# B6F, B6G, B6S: Three-way flanged valves (nominal pressure 16, 25, 40 bar)

For continuous control of hot, warm and cold water or of air (B6G, B6S also for steam). Valve body of grey cast iron (GG25), ductile cast iron (GGG40.3) or cast steel (GSC25); spindle, seat and plug of stainless steel, metallic sealing. Stuffing box with Teflon seal. Valve curve is either equal percentage or linear. When spindle is extracted, passage A-AB is closed.

		Grey cas	t iron PN 16	Ductile	cast iron PN 25	Cast ste	eel PN 40	
Nom.	k <sub>vs</sub> -	Туре	Wt.	Туре	Wt.	Туре	Wt.	
dia. DN	value m <sup>3</sup> /h		kg		kg		kg	
15	1.6	B6F 15 F324	5.3	B6G 15 F3	<b>24</b> 5.5	B6S 15 F325	5.8	
15	2.5	B6F 15 F314	5.3	B6G 15 F3	<b>14</b> 5.5	B6S 15 F315	5.8	
15	4	B6F 15 F304	5.3	B6G 15 F3	<b>04</b> 5.5	B6S 15 F305	5.8	
20	6.3	B6F 20 F304	7	B6G 20 F3	<b>04</b> 7.1	B6S 20 F305	7.8	
25	4	B6F 25 F924	8.3			B6S 25 F925	9.2	
25	6.3	B6F 25 F914	8.3			B6S 25 F915	9.2	
25	10	B6F 25 F304	8.3	B6G 25 F3	<b>04</b> 8.3	B6S 25 F305	9.2	
32	16	B6F 32 F304	11.1	B6G 32 F3	<b>04</b> 11.1	B6S 32 F305	11.7	
40	25	B6F 40 F304	13.7	B6G 40 F3	<b>04</b> 14.5	B6S 40 F305	14.7	
50	16	B6F 50 F924	18.6			B6S 50 F925	19.2	
50	25	B6F 50 F914	18.6			B6S 50 F915	19.2	
50	40	B6F 50 F304	18.6	B6G 50 F3	<b>04</b> 19.5	B6S 50 F305	19.2	
65	63	B6F 65 F304	28			B6S 65 F305	31	
80	40	B6F 80 F924	39.9			B6S 80 F925	45	
80	63	B6F 80 F914	39.9			B6S 80 F915	45	
80	100	B6F 80 F304	39.9			B6S 80 F305	45	
100	160	B6F 100 F30	4 56.7			B6S 100 F305	66	
125	250	B6F 125 F30	4 82			B6S 125 F305	94	
150	340	B6F 150 F30	<b>4</b> 113			B6S 150 F305	124	
Operating temp. <sup>1</sup> ): –15180 °C Operating pressure: up to 120 °C 16 bar up to 180 °C 13 bar Stuffing box brass/Teflon				Operating te Operating p up to 120 up to 240 Stuffing box	emp. <sup>1)</sup> : –15240 °C pressure: ) °C 25 bar ) °C 20 bar x brass/Teflon	C Operating temp Operating pres up to 120 °C up to 240 °C Stuffing box sta	ting temp. <sup>1</sup> ): -40240 °C ating pressure: to 120 °C 40 bar to 240 °C 32 bar ng box stainl. steel/Teflon	
Valve	curve:				Dimension drawin	g 7M104,	7M105	
Control flow A-ABequal-percentageMixing flow B-ABcomplementaryControl ratio:50 (typical)					Fitting instructions Valve MV 50515			
Con	trol flow	, A-AB	< 0.05% of kva	lue	Assembly AV 4	345 MV 40.	136	
Mixi	ng flow E	B-AB	$\leq$ 1% of k <sub>vs</sub> -value		Assembly AVP	142 MV 505	5766	
Valve	stroke (D	N 1550)	14 mm		-			
valve	stroke (L	05150)	40 mm					



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#### Model variants

**F2..** With linear curve (F9.. availabel with equal-percent. only)

Accessories	
0217268	Stuffing-box heating 15 W, for media below 0 °C, DN 1550, MV 505498
0217639	Stuffing-box heating 15 W, for media below 0 °C, DN 65150, MV 505498
	Specify when ordering: 24 V = /001, 230 V = /004
0360715 000	Stuffing box of stainless steel/Teflon for DN 1550, spare part, MV 505245
0360718 000	Stuffing box of stainless steel/Teflon for DN 65150, spare part, MV 505245
0361259 000	Intermediate piece for DN 1550 with AVP142 valve drive.
	Required for media above 130 °C. Assembled as per MV 505495
0361 /	Soft sealing for DN 1550 (see table on page 76.18 or 76.528/5)
0361316	Counter flange for B6F (see table on page 76.18 or 76.528/5)
0360390	Counter flange for B6G and B6S (see table on page 76.18 or 76.528/5)
0378034 001	Valve with packing box, silicon-free; synthetic lubricant; max. 130 °C
0378034 002	Valve with packing box, grease-free; max. 240 °C
1) At temp	under 0 °C, use stuffing-box heating (accessory): over 130 °C, use intermediate piece (ac

1)	At temp. under 0 °C, use stuffing-box heating (accessory); over 130 °C, use intermediate piece (accessory)
2)	With soft seal: leakage rate < $0,0001\%$ of k <sub>vs</sub> , available as accessory for DN 1550, (not for Type F9)



# Combination: B6F, PN 16 with pneumatic drive AVP142...AV45

Drive Max. press. p <sub>stat</sub>	Drive AVP142 F001 <sup>2</sup> ) s. $p_{stat} \leq 10 \text{ bar}$		AV43 P15 ≤ 16 bar			AV43 P10 <sup>2)</sup> ≤ 16 bar			AV44 P10 ≤ 16 bar			
Running time <sup>1)</sup>	10 s			14 S			14 S			20 S		
Valve	∆p <sub>max</sub>	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>	
B6F 15 F304	10.0	22.3		10	16		10	16		1	١	
B6F 20 F304	10.0	13.6		10	13		10	16		-	-	
B6F 25 F304	7.5	7.5		7	7		10	14		10	16	
B6F 32 F304	5.0	7.5		7	7		10	14		10	16	
B6F 40 F304	3.2	3.6		3	3		6	6		9	16	
B6F 50 F304	2.0	2.3		2	2		4	4		8	11	
Drive		1V43 F	230	1	1V44 F	20	4	V45 F	215	4	V45 P	10

Drive Max. press. p <sub>stat</sub> Running time <sup>1)</sup>	Drive         AV43 P30           ess. p <sub>stat</sub> ≤ 16 bar           g time 1)         24 s		AV44 P20 ≤ 16 bar 40 s			AV45 P15 ≤ 16 bar 90 s			AV45 P10 ≤ 16 bar 90 s			
Valve	∆p <sub>max</sub>	∆p <sub>s</sub>		$\Delta p_{max}$	∆p <sub>s</sub>		$\Delta p_{max}$	∆p <sub>s</sub>		$\Delta p_{max}$	$\Delta p_{\rm s}$	
B6F 65 F304	1.4	1.5		3.0	3.0		4.5	6.0		4.5	12	
B6F 80 F304	0.9	1.0		2.0	2.0		3.5	4.0		3.5	8	
B6F 100 F304	0.6	0.6		1.2	1.2		2.5	2.5		3.0	5	
B6F 125 F304	0.4	0.4		0.8	0.8		1.5	1.5		2.0	3	
B6F 150 F304	0.3	0.3		0.6	0.6		1.0	1.0		1.0	2	



Relates to the Centair air capacity (400 l<sub>n</sub>/h) and to a line of 20 m in length and 4 mm in diameter
 Unsuitable for use with XSP 31 or 31G positioners (due to static friction in the Teflon packing box).

Pressure-stroke curve (with integrated valve)



# Combination: B6G, PN 25 with pneumatic drive AVP142...AV44

Drive Max. press. p <sub>stat</sub> Running time <sup>1)</sup>	AVP <sup>∕</sup> ≤	AVP142 F001 <sup>2)</sup> ≤ 10 bar 10 s			AV43 P15 ≤ 25 bar 14 s			AV43 P10 <sup>2)</sup> ≤ 25 bar 14 s			AV44 P10 ≤ 25 bar 20 s		
Valve	$\Delta p_{max}$	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>		
B6G 15 F304	11.5	22.3		16	23		16	25		_	-		
36G 20 F304	12.4	13.6		13	13		16	25		-	-	1	
B6G 25 F304	7.5	7.5		7	7		14	14		16	25	1	
B6G 32 F304	5.0	7.5		7	7		10	14		16	25		
B6G 40 F304	3.2	3.6		3	3		6	6		16	17	1	
B6G 50 F304	2.0	2.3		2	2		4	4		11	11		

Relates to the Centair air capacity (400 l<sub>n</sub>/h) and to a line of 20 m in length and 4 mm in diameter
 Unsuitable for use with XSP 31 or 31G positioners (due to static friction in the Teflon packing box).

#### Pressure-stroke curve (with integrated valve)



Control flow A-AB closed when drive is without pressure (function E, as delivered ex works)
 — — Control flow A-AB open when drive is without pressure (function A)

Complete type Valve: Drive: Example:	designation: Valve and drive each with F-variant. F-variant, technical data and accessories, see valve type table. F-variant, technical data accessories and fitting position, see Section 71. B6G 15 F304/AVP142 F001
$\Delta p_{max}$ in bar	Max. permissible pressure difference across the valve at which the drive can still safely open and close the valve
$\Delta p_s$ in bar	<ul> <li>Max. permissible pressure difference across the valve during malfunction at which the drive can still close the valve.</li> </ul>
p <sub>stat</sub> in bar	Dormant press. at valve when pump is inactive. Fluidic level of the plant and the press. increase caused by the press. tank or the steam pressure should be taken into account.



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Drive Max. press. p <sub>stat</sub> Running time <sup>1)</sup>	AVP142 F001 <sup>2)</sup> ≤ 10 bar 10 s		AV43 P15 ≤ 25 bar 14 s			AV43 P10 <sup>2)</sup> ≤ 25 bar 14 s			AV44 P10 ≤ 25 bar 20 s			
Valve	$\Delta p_{max}$	∆p <sub>s</sub>		$\Delta p_{max}$	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>		$\Delta p_{max}$	∆p <sub>s</sub>	
B6S 15 F305	11.5	22.3		16	23		16	25		_	_	
B6S 20 F305	12.4	13.6		13	13		16	25		-	_	
B6S 25 F305	7.5	7.5		7	7		14	14		16	25	
B6S 32 F305	5.0	7.5		7	7		10	14		16	25	
B6S 40 F305	3.2	3.6		3	3		6	6		16	17	
B6S 50 F305	2.0	2.3		2	2		4	4		11	11	

Drive Max. press. p <sub>stat</sub> Running time <sup>1)</sup>	AV43 P30 ≤ 16 bar 24 s			AV44 P20 ≤ 16 bar 40 s			AV45 P15 ≤ 40 bar 90 s			AV45 P10 ≤ 40 bar 90 s		
Valve	$\Delta p_{max}$	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>		$\Delta p_{max}$	∆p <sub>s</sub>		∆p <sub>max</sub>	∆p <sub>s</sub>	
B6S 65 F305	1.4	1.5		3.0	3.0		6.0	6.0		10.0	12	
B6S 80 F305	0.9	1.0		2.0	2.0		4.0	4.0		7.0	8	
B6S 100 F305	0.6	0.6		1.2	1.2		2.5	2.5		4.5	5	
B6S 125 F305	0.4	0.4		0.8	0.8		1.5	1.5		3.0	3	
B6S 150 F305	0.3	0.3		0.6	0.6		1.0	1.0		2.0	2	

1) Relates to the Centair air capacity (400  $I_n/h$ ) and to a line of 20 m in length and 4 mm in diameter 2) Unsuitable for use with XSP 31 or 31G positioners (due to static friction in the Teflon packing box).





Control flow A-AB closed when drive is without pressure (function E, as deliverBd £214orks)
 — — Control flow A-AB open when drive is without pressure (function A)

Complete type Valve: Drive: Example:	designation: Valve and drive each with F-variant. F-variant, technical data and accessories, see valve type table. F-variant, technical data, accessories and fitting position, see Section 71. B6S 15 F305/AVP142 F001
$\Delta p_{max}$ in bar $\Delta p_s$ in bar $p_{stat}$ in bar	<ul> <li>Max. permissible pressure difference across the valve at which the drive can still safely open and close the valve.</li> <li>Max. permissible pressure difference across the valve during malfunction at which the drive can still close the valve.</li> <li>Dormant press. at valve when pump is inactive. Fluidic level of the plant and the press. increase caused by the press. tank or the steam pressure should be taken into account.</li> </ul>

## Appendix: Accessory for flange valve V6F, G, S and B6F, G, S

#### Plug with soft seal for through and three-way valves

O361.../... Plug and spindle, complete, with soft seal, fitted ex works in valve, for through flange valve V6F, V6G, V6S and three-way valve B6F, B6G, B6S of nominal diameters DN 15...50.
 Leakage rate for control flow A-AB < 0,0001% of k<sub>vs</sub>-value, Plug with glass-fibre-reinforced PTFE sealing ring Max. operating temperature: 180 °C for V6F, B6F Max. operating temperature: 240 °C for V6G, V6S, B6G, B6S

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Nom. dia. DN	k <sub>vs</sub> - value m³/h	Plug/spindle for equal-perc. curve	Valve F-variant	Plug/spindle for linear curve	Valve F-variant	
15	0.16	0361397 000 1)	F37 .	0361402 000 1)	F27 .	
15	0.25	0361396 000 1)	F36 .	0361401 000 1)	F26 .	
15	0.4	0361395 000 <sup>1)</sup>	F35 .	0361400 000 <sup>1)</sup>	F25 .	
15	0.63	0361394 000 <sup>1)</sup>	F34 .	0361399 000 1)	F24 .	
15	1	0361393 000 1)	F33 .	0361398 000 1)	F23 .	
15	1.6	0361319 000	F32 .	0361322 000	F22 .	
15	2.5	0361318 000	F31.	0361321 000	F21.	
15	4	0361317 000	F30.	0361320 000	F20.	
20	6.3	0361323 000	F30.	0361324 000	F20.	
25	10	0361325 000	F30.	0361326 000	F20.	
32	16	0361327 000	F30.	0361328 000	F20.	
40	25	0361329 000	F30.	0361330 000	F20.	
50	40	0361331 000	F30.	0361332 000	F20 .	
1		· · ·				

Only for through flange valve

Specify when ordering: e.g. through valve: V6F 50 F304+0361331 000 or three-way valve: B6F 50 F304+0361331 000

#### Counter flange for through and three-way valves

0360390	60390 Counter flange, smooth, for PN 25 and PN 40 incl. asbestos-free seal 2 pieces required for through valve, 3 pieces for three-way valve.							seal.				
	DN	15	20	25	32	40	50	65	80	100	125	150
0361316	Count 2 piec DN	er flang es requ 15	e, smoo ired for 20	oth, for througl 25	PN 10 a h valve, 32	and PN 3 piece 40	16 incl es for th 50	. asbes iree-wa 65	tos-free y valve 80	seal. 100	125	150

Specify when ordering: DN 25 = /025, DN 40 = /040 etc.

## Operation

Using a pneumatic drive, the valve can be moved to any position. When the spindle is extracted, control passage A-AB is closed. Where pneumatic drives are used, the valves should not close with the pressure, otherwise pressure surges ensue.





## **Engineering and fitting notes**

Can be fitted in any position, except facing downwards, for temperatures up to 240 °C. If the temperature of the medium is above 180 °C, we recommend that the unit be fitted horizontally. The adaptor 361259 should be used for the combination with the AVP142 F001 valve drive when the temperature is above 130 °C. The adaptor can also be used as an extension when the pipe insulation is very thick.

The ingress of condensate, dripping water etc., along the stem and into the drive should be prevented. When fitting the drive to the valve, care must be taken not to turn the valve plug on the two stops (seat), thus damaging the seal.

The drive can be equipped with the XSP 31 or XSP 31 G positioner should any of the following be demanded: a split range; an improvement in the setting accuracy; an increase in positional speed or air capacity; reversible direction of action (see Section 79).

	Additional	technical	details
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Туре	Δp <sub>v</sub>	Туре	Δp <sub>v</sub>		Туре	Δp <sub>v</sub>
B6F 15 F. 24	10	B6G 15 F. 24	16	B6S	15 F. 25	16
B6F 15 F. 14	10	B6G 15 F. 14	16	B6S	5 15 F. 15	16
B6F 15 F. 04	10	B6G 15 F. 04	16	B6S	15 F. 05	16
B6F 20 F. 04	10	B6G 20 F. 04	16	B6S	20 F. 05	16
B6F 25 F. 04	10	B6G 25 F. 04	16	B6S	25 F. 05	16
B6F 32 F. 04	10	B6G 32 F. 04	16	B6S	32 F. 05	16
B6F 40 F. 04	9	B6G 40 F. 04	16	B6S	40 F. 05	16
B6F 50 F. 04	8	B6G 50 F. 04	16	B6S	50 F. 05	16
B6F 65 F. 04	4.5			B6S	65 F. 05	10
B6F 80 F. 04	3.5			B6S	80 F. 05	7
B6F 100 F. 04	3			B6S	100 F. 05	4.5
B6F 125 F. 04	2			B6S	125 F. 05	3
B6F 150 F. 04	1			B6S	150 F. 05	2

 $\Delta p_v$  in bar = max. pressure difference across the valve in any stroke position, limited by the noise level and erosion (max. values without being limited by the force of the drive).

#### Additional details on accessories

/ la alterolliar a	
0217268	Heating for stuffing box 15 W; housing of light metal; connecting cable $3 \times 0.75$ mm <sup>2</sup> ,
	earth connection, 1 m in length, cable end sleeves; degree of protection IP 54.
0217639	Heating for stuffing box 15 W; housing of light metal; connecting cable $3 \times 0.75$ mm <sup>2</sup> ,
	earth connection, 1 m in length, cable end sleeves; degree of protection IP 54.
0360715 000	Stuffing box of stainless steel / Teflon for V6F, B6F and V6G, B6G valve,
	DN 1550, marked "N" on the specification plate.
0360718 000	Stuffing "box" of stainless steel / Teflon for V6F, B6F and V6G, B6G valve
	DN 65150, marked" N" on the specification plate.

## Additional details on model types

Valve body for B6F valve of gray cast iron GG25; for B6G valve of ductile cast iron GGG40.3; for B6S valve of cast steel GS-C 25N with smooth bored flanges as per DIN 2501, VSM 18643. Valve fitting width as per DIN 3202. Flat seal of copper and asbestos-free material at the body of the valve. Stuffing box of brass with Teflon packing for B6F and B6G valves; of stainless steel with Teflon packing for B6S valve. Valve body is coloured anthracite grey (RAL 7016) and is matt.

## Material numbers as per DIN

	Туре	Material no.	Description	DIN norm
Valve body	B6F	EN-JL 1040	EN-GJL-250 (GG25)	EN 1561
Valve body	B6G	EN-JS 1025	EN-GJS-400-18-LT (GGG 40.3)	EN 1561
Valve body	B6S	1.0619	GP 240 GH (GS-C 25 N)	EN 10213-2
Valve seat	B6F, B6G, B6S	1.4021	X 8 Cr 13	EN 10088-3
Spindle - plug	B6F, B6G, B6S	1.4305	X 12 CrNiS 18 9	EN 10088-3
Stuffing box	B6F, B6G	2.0401	Cu Zn 39Pb3	17 660
Stuffing box	B6S	1.4021	X 20 Cr 13	EN 10088-3

## Explanation of terms used

#### ∆p<sub>v</sub>:

Maximum permissible pressure difference across the valve in any stroke position, limited by the noise level and erosion.

The valve as a traversed element is defined by this parameter specifically in its hydraulic behaviour. By monitoring cavitation, erosion and the noise thus produced, improvements can be achieved in both life expectancy and durability.

## ∆p<sub>max</sub>:

Maximum permissible pressure difference across the valve at which the drive (control pressure 0 or 1.2 bar) can firmly open and close the valve.

Static pressure and fluidic influences are taken into account. This value helps to maintain smooth stroke action and valve sealing. In doing so, the valve's  $\Delta p_v$  value is not exceeded.

## ∆p<sub>s</sub>:

Maximum permissible pressure difference across the valve in the event of a malfunction (e.g. loss of supply pressure, excess temperature and pressure, burst pipe) at which the drive can firmly close the valve and, if necessary, hold the full operating pressure against atmospheric pressure. Since this is a safety function with `fast' stroke,  $\Delta p_s$  can be larger than  $\Delta p_{max}$  or, respectively,  $\Delta p_v$ . This value is valid only when the pneumatic drive is fitted with either a relay (RUEP) or converter (XUEP). The resultant fluidic disturbances are soon overcome and play a minor role here.

On the three-way valves, the values apply only for the control passage.

## $\Delta p_{stat}$ :

Line pressure behind the valve. This corresponds largely to the dead pressure when the pump is switched off, e.g. due to the level of liquid in the plant, an increase in pressure via the pressure store, steam pressure etc.

## **Technical information**

- Pressure and temperature specifications
- Flow parameters
- Sauter slide rule for valve sizing
- Slide rule manual
- PC program "Valvedim" for Sauter valve sizing
- Technical manual "Manipulating units"
- Parameters, Notes on installation, Control, Pneumatic manipulating units, General information

DIN 2401 VDI/VDE 2173 7 090011 003 7 000129 003 7 000675 003 7 000477 003



In ventilation and air condition systems with mixing valves





In heating systems with mixing valves













M360832a





150 290 222 702 480 300 250 26 (8x) 28

M360834a

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# **Dimension drawings 7M105**

Valves B6F, B6G, B6S with pneumatic drives AVP142









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AV44



Intermediate piece

# Fitting width:

Take measurement 'c' and number of flange holes from valve dimension drawing 7M104..

Note increase in length of 60 mm due to intermediate insulating piece. (accessory no. 0361259)



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# **Sauter Components**