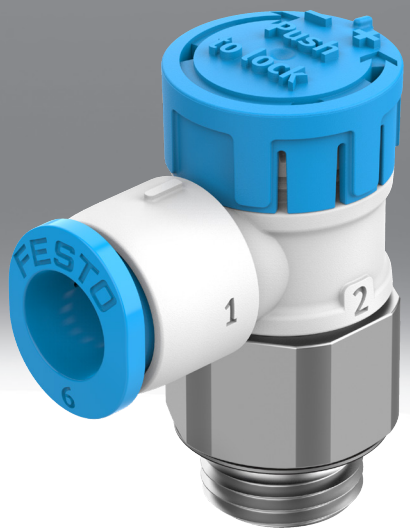
One-way flow control valve VFOE



Characteristics

At a glance

Link vfoe

One-way flow control valve for direct mounting on the drive

- Low-cost solution for standard applications
- Simple and reliable adjustment of the speed of a pneumatic cylinder
- Extremely easy assembly
- Fast commissioning
- Compact dimensions
- Suitable for use in accordance with ATEX declaration from Festo for zones 1, 2 and 21, 22

Diagrams

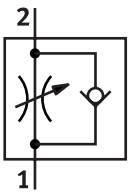
Link vfoe

The diagrams shown in this document are also available online. These can be used to display precise values.

Function

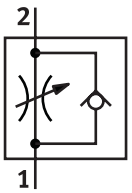
One-way flow control valves regulate the piston speed of pneumatic drives as they advance and retract. This is achieved through the appropriate control of the flow rate of compressed air in the exhaust air or supply air direction.

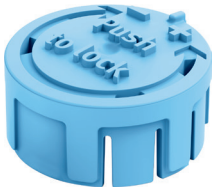
[E] One-way flow control valve for exhaust air



The throttle function only works in the exhaust air direction, the non-return function works in the opposite direction.
Exhaust air version recognisable by the blue rotary knob.

[S] One-way flow control valve for supply air





The throttle function only works in the supply air direction, the non-return function works in the opposite direction.
Supply air variant recognisable by the light blue rotary knob.

Special material properties

[F1A] Recommended for production plants for manufacturing lithium-ion batteries, F1A

Application note: Foreign particles can adhere to the product or form during installation. Depending on the application, it may be necessary to purge the product with clean compressed air, to clean it after installation and to operate it with ducted exhaust air.

Package unit

Packaging quantity in pieces (standard: 1)

Type code

001	Series	
VFOE	One-way flow control valve	

002	Design	
L	L-shape	

003	Function	
E	One-way flow control valve for exhaust air	
S	One-way flow control valve for supply air	

004	Adjusting component	
T	Rotary knob with detent	

005	Pneumatic connection 2	
G18	G1/8	
G14	G1/4	
G38	G3/8	
M5	M5	
M7	M7	
R14	R1/4	
R18	R1/8	
R38	R3/8	

006	Pneumatic connection 1	
Q4	Push-in connector 4 mm	
Q6	Push-in connector 6 mm	
Q8	Push-in connector 8 mm	
Q10	Push-in connector 10 mm	

007	Special material properties	
	None	
F1A	Recommended for production plants for manufacturing lithi-um-ion batteries, F1A	

008	Package unit	
	Standard	
P20	20	
P50	50	

Datasheet

General technical data – VFOE-LE							
Pneumatic connection, port 2	M5	G1/8	G1/4	G3/8	R1/8	R1/4	R3/8
Pneumatic connection, port 1	QS-4 QS-6	QS-4 QS-6 QS-8	QS-6 QS-8 QS-10	QS-8 QS-10	QS-4 QS-6 QS-8	QS-6 QS-8 QS-10	QS-8 QS-10
Valve function	Exhaust air one-way flow control function						
Type of actuation	Manual						
Mounting position	Any						
Adjustment component	Rotary knob with latch						
Type of mounting	Screw-in						
Rotatability	360°/no continuous swivelling permissible						
Nominal torque	2 Nm	5 Nm	10 Nm	13 Nm	–		
Tolerance for nominal tightening torque	±20%				–		
Max. tightening torque	2.4 Nm	6 Nm	12 Nm	15.6 Nm	–		
Product weight	3.3 g	9.5 g	16 g	29.5 g	9.5 g	16 g	29.5 g

General technical data – VFOE-LS				
Pneumatic connection, port 2	M5	M7	G1/8	R1/8
Pneumatic connection, port 1	QS-4 QS-6		QS-4 QS-6 QS-8	
Valve function	Supply air one-way flow control function			
Type of actuation	Manual			
Mounting position	Any			
Adjustment component	Rotary knob with latch			
Type of mounting	Screw-in			
Rotatability	360°/no continuous swivelling permissible			
Nominal torque	2 Nm	3 Nm	5 Nm	–
Tolerance for nominal tightening torque	±20%			–
Max. tightening torque	2.4 Nm	3.6 Nm	6 Nm	–
Product weight	3.3 g	4 g	9.5 g	

Operating and environmental conditions – Special material properties: none	
Operating pressure complete temperature range	0.02 ... 1 MPa
Operating pressure complete temperature range	0.2 ... 10 bar
Operating pressure complete temperature range	2.9 ... 145 psi
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	-10 ... 60°C
Media temperature	-10 ... 60°C
Corrosion resistance class CRC [1]	1 - Low corrosion stress

1) More information www.festo.com/x/topic/kbk

Datasheet

Operating and environmental conditions – Special material properties: F1A	
Operating pressure complete temperature range	0.02 ... 1 MPa
Operating pressure complete temperature range	0.2 ... 10 bar
Operating pressure complete temperature range	2.9 ... 145 psi
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	-10 ... 60°C
Media temperature	-10 ... 60°C
Corrosion resistance class CRC [1]	0 - No corrosion stress

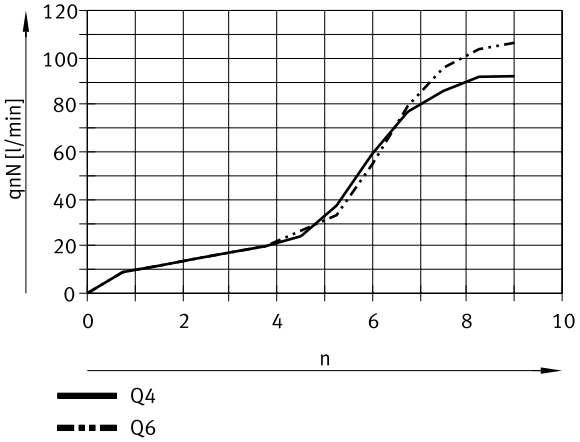
1) More information www.festo.com/x/topic/kbk

Materials	
Material housing	PBT
Material cover	PBT
Material release ring	PBT
Material threaded bolt	Steel, chemically nickel-plated, Galvanised steel
Material static seals	NBR
Material dynamic seals	HNBR
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364 zone III
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1
ATEX declaration [1]	For zones 1, 2, 21, 22, The information in the certificate must be observed!

1) Next information www.festo.com/catalogue/vfoe → Support/Downloads.

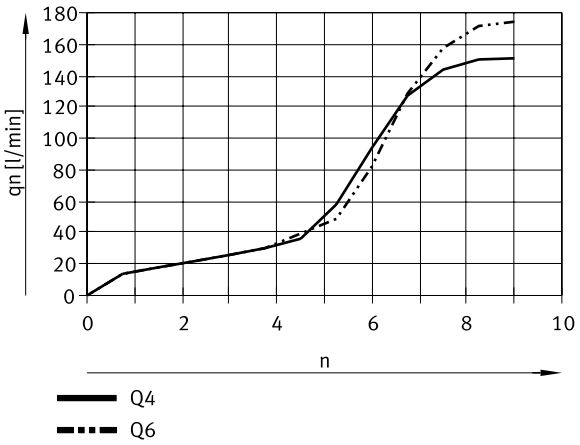
Materials – special material properties: F1A	
Material threaded bolt	Steel, chemically nickel-plated
Suitability for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)
Variants	Metals with copper, zinc or nickel by mass as main constituent are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils.
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1

Standard nominal flow rate qnN at 0.6 → 0.5 MPa as a function of spindle revolutions n for threaded connection M5 (exhaust air)

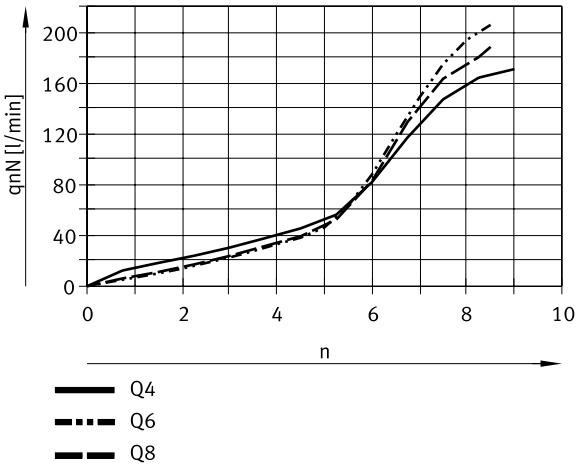


Datasheet

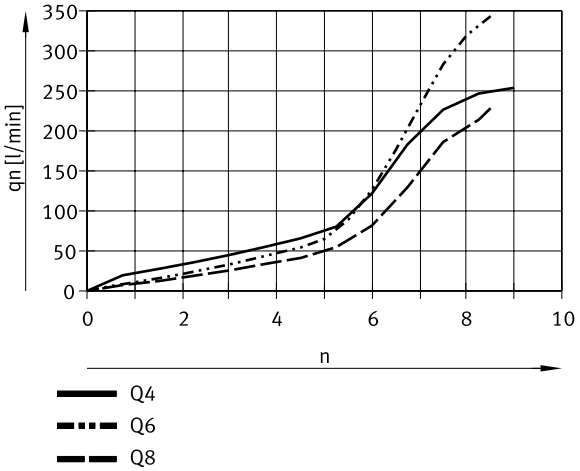
Standard flow qn at 0.6 → 0 MPa as a function of spindle revolutions n for threaded connection M5 (exhaust air)



Standard nominal flow rate qnN at 0.6 → 0.5 MPa as a function of spindle revolutions n for threaded connection G1/8, R1/8 (exhaust air)

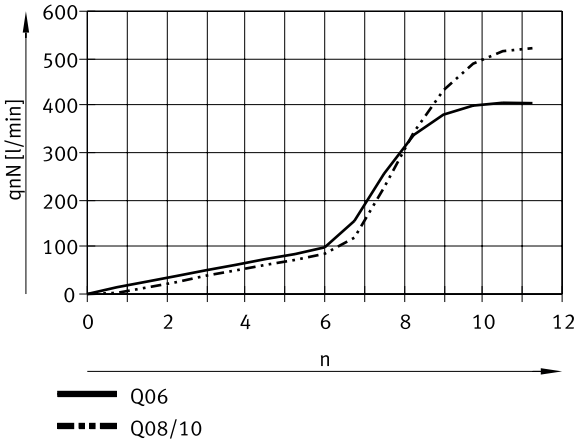


Standard flow qn at 0.6 → 0 MPa as a function of spindle revolutions n for threaded connection G1/8, R1/8 (exhaust air)

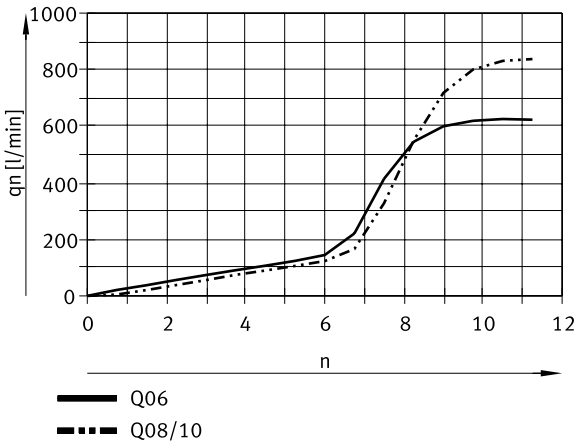


Datasheet

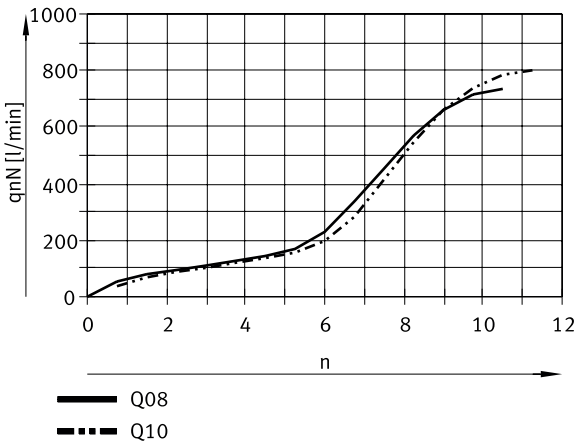
Standard nominal flow rate qnN at 0.6 → 0.5 MPa as a function of spindle revolutions n for threaded connection G1/4, R1/4 (exhaust air)



Standard flow qn at 0.6 → 0 MPa as a function of spindle revolutions n for threaded connection G1/4, R1/4 (exhaust air)

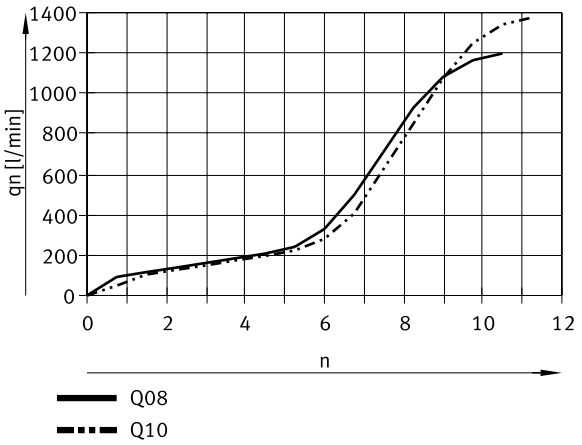


Standard nominal flow rate qnN at 0.6 → 0.5 MPa as a function of spindle revolutions n for threaded connection G3/8, R3/8 (exhaust air)

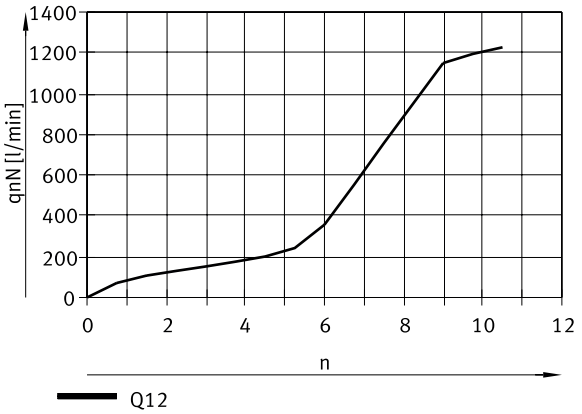


Datasheet

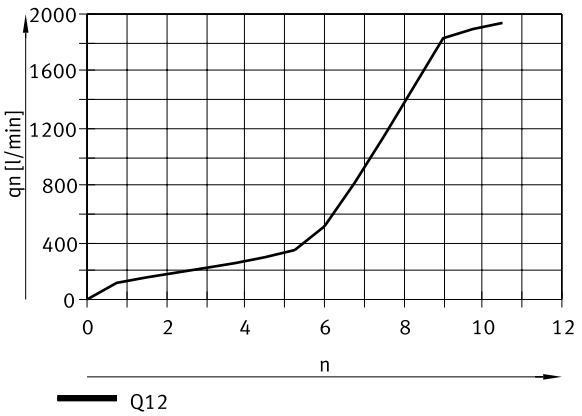
Standard flow qn at 0.6 → 0 MPa as a function of spindle revolutions n for threaded connection G3/8, R3/8 (exhaust air)



Standard nominal flow rate qnN at 0.6 → 0.5 MPa as a function of spindle revolutions n for threaded connection G1/2, R1/2 (exhaust air)

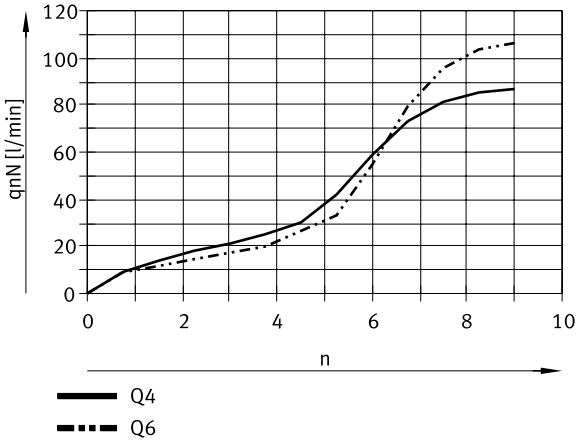


Standard flow qn at 0.6 → 0 MPa as a function of spindle revolutions n for threaded connection G1/2, R1/2 (exhaust air)

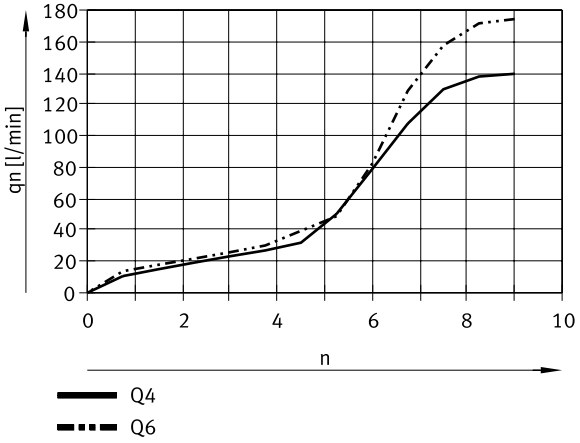


Datasheet

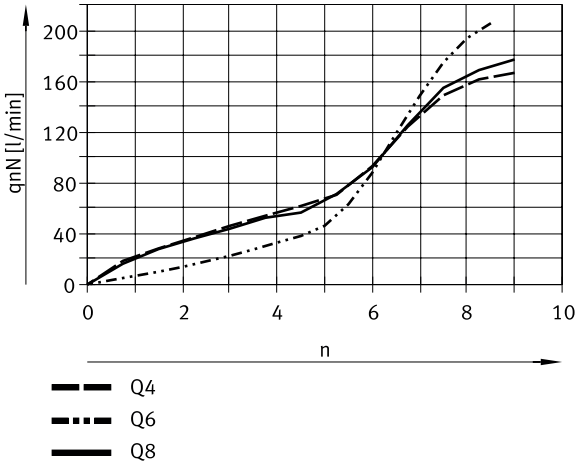
Standard nominal flow rate qnN at 0.6 → 0.5 MPa as a function of spindle revolutions n for threaded connection M5, M7 (supply air)



Standard flow qn at 0.6 →0 MPa as a function of spindle revolutions n for threaded connection M5, M7 (supply air)

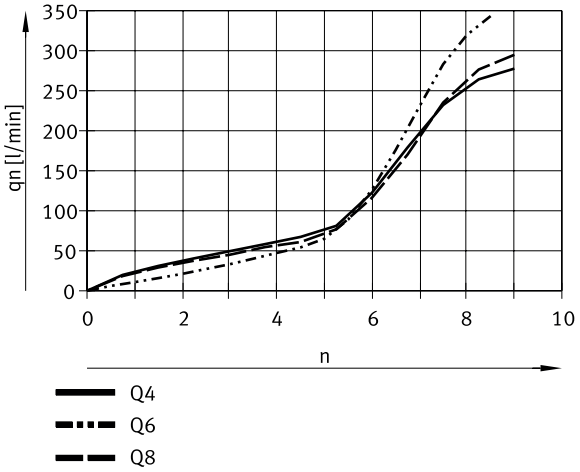


Standard nominal flow rate qnN at 0.6 → 0.5 MPa as a function of spindle revolutions n for threaded connection G1/8, R1/8 (supply air)



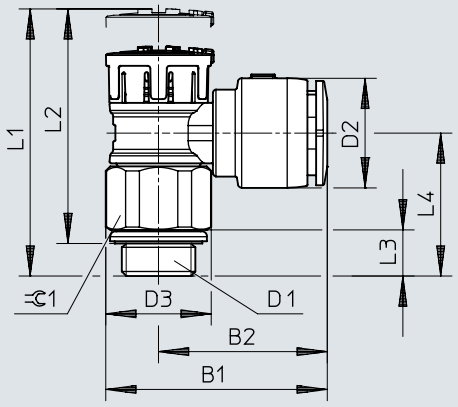
Datasheet

Standard flow qn at 0.6 → 0 MPa as a function of spindle revolutions n for threaded connection G1/8, R1/8 (supply air)



Dimensions

Dimensions – VFOE-...-M.../G.. Download CAD data www.festo.com

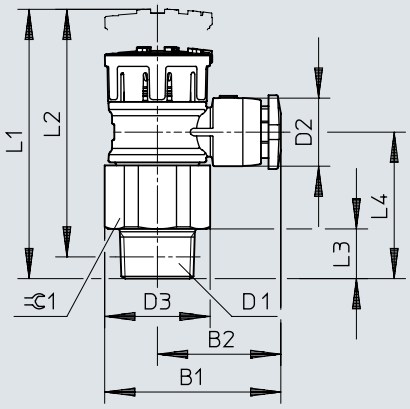


VFOE-...-M../G..	B1	B2	D1	D2 ø	D3 ø	L1		L2		L3	L4	⊂ 1
						1)	2)	1) (max.)	2)			
VFOE-...-M5-Q4	19,6	14,6	M5	9	10	27,6	26,6	25	24	4,1	13,9	9
VFOE-...-M5-Q6	22,6	17,6	M5	11	10	27,6	26,6	25	24	4,1	13,9	9
VFOE-...-M7-Q4	19,6	14,6	M7	9	10	29,5	28,5	25	24	6	15,8	9
VFOE-...-M7-Q6	22,6	17,6	M7	11	10	29,5	28,5	25	24	6	15,8	9
VFOE-...-G18-Q4	23,3	16,3	G1/8	9	14	31,7	30,3	27,4	26	6,1	18,9	13
VFOE-...-G18-Q6	24,4	17,4	G1/8	11	14	31,7	30,3	27,4	26	6,1	18,9	13
VFOE-...-G18-Q8	29,3	22,3	G1/8	14,5	14	31,7	30,3	27,4	26	6,1	18,9	13
VFOE-...-G14-Q6	28,3	19,3	G1/4	11	17,9	38,6	36,7	33,9	32	7	22	16
VFOE-...-G14-Q8	30	21	G1/4	14,5	17,9	38,6	36,7	33,9	32	7	22	16
VFOE-...-G14-Q10	35,1	26,2	G1/4	16,5	17,9	38,6	36,7	33,9	32	7	22	16
VFOE-...-G38-Q8	34,5	23,3	G3/8	14,5	22,4	44,1	41,9	38,2	36	8,5	26,2	21
VFOE-...-G38-Q10	39,6	28,4	G3/8	17,5	22,4	44,1	41,9	38,2	36	8,5	26,2	21
VFOE-...-G12-Q12	46,8	33,3	G1/2	20,8	27	53,7	50,8	46,8	43,9	9,5	31	24

1) Unlocked
2) Locked

Dimensions

Dimensions – VFOE-...-R.. Download CAD data www.festo.com



VFOE-...-R..	B1	B2	D1	D2 ø	D3 ø	L1		L2		L3	L4	⫧1
						1)	2)	1) (max.)	2)			
VFOE-...-R18-Q4	23,3	16,3	R1/8	9	14	32,2	30,8	29,2	27,8	6,6	19,4	13
VFOE-...-R18-Q6	24,4	17,4	R1/8	11	14	32,2	30,8	29,2	27,8	6,6	19,4	13
VFOE-...-R18-Q8	29,3	22,3	R1/8	14,5	14	32,2	30,8	29,2	27,8	6,6	19,4	13
VFOE-...-R14-Q6	28,3	19,3	R1/4	11	17,9	41,2	39,3	36,7	34,8	10,1	25,1	16
VFOE-...-R14-Q8	30	21	R1/4	14,5	17,9	41,2	39,3	36,7	34,8	10,1	25,1	16
VFOE-...-R14-Q10	35,1	26,2	R1/4	17,5	17,9	41,2	39,3	36,7	34,8	10,1	25,1	16
VFOE-...-R38-Q8	34,5	23,3	R3/8	14,5	22,4	45,2	43	40,7	38,5	10,1	27,8	21
VFOE-...-R38-Q10	39,6	28,4	R3/8	17,5	22,4	45,2	43	40,7	38,8	10,1	27,8	21
VFOE-...-R12-Q12	46,8	33,3	R1/2	20,8	27	55,8	52,9	50,8	47,9	12,1	33,6	24

1) Unlocked
2) Locked

Ordering data

Ordering data – Exhaust air one-way flow control function

	Pneumatic connection, port 2	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Part no.	Type
	M5	QS-4	90 l/min	50 ... 90 l/min	**8068723**	**VFOE-LE-T-M5-Q4**
					8095432	**VFOE-LE-T-M5-Q4-P50**
		QS-6	105 l/min	60 ... 105 l/min	**8068724**	**VFOE-LE-T-M5-Q6**
	G1/8	QS-4	150 l/min	90 ... 150 l/min	**8068725**	**VFOE-LE-T-G18-Q4**
		QS-6	165 l/min	110 ... 200 l/min	**8095433**	**VFOE-LE-T-G18-Q6-P50**
					8068726	**VFOE-LE-T-G18-Q6**
		QS-8	170 l/min	130 ... 200 l/min	**8068727**	**VFOE-LE-T-G18-Q8**
	G1/4	QS-6	400 l/min	350 ... 450 l/min	**8068728**	**VFOE-LE-T-G14-Q6**
		QS-8	500 l/min	370 ... 500 l/min	**8068729**	**VFOE-LE-T-G14-Q8**
					8095434	**VFOE-LE-T-G14-Q8-P50**
		QS-10			**8068730**	**VFOE-LE-T-G14-Q10**
	G3/8	QS-8	720 l/min	600 ... 900 l/min	**8068731**	**VFOE-LE-T-G38-Q8**
		QS-10	750 l/min	700 ... 1000 l/min	**8095435**	**VFOE-LE-T-G38-Q10-P20**
					8068732	**VFOE-LE-T-G38-Q10**
	R1/8	QS-4	150 l/min	90 ... 150 l/min	**8068734**	**VFOE-LE-T-R18-Q4**
		QS-6	165 l/min	110 ... 200 l/min	**8068735**	**VFOE-LE-T-R18-Q6**
		QS-8	170 l/min	130 ... 200 l/min	**8068736**	**VFOE-LE-T-R18-Q8**
	R1/4	QS-6	400 l/min	350 ... 450 l/min	**8068737**	**VFOE-LE-T-R14-Q6**
		QS-8	500 l/min	370 ... 500 l/min	**8068738**	**VFOE-LE-T-R14-Q8**
		QS-10			**8068739**	**VFOE-LE-T-R14-Q10**
	R3/8	QS-8	720 l/min	600 ... 900 l/min	**8068740**	**VFOE-LE-T-R38-Q8**
		QS-10	750 l/min	700 ... 1000 l/min	**8068741**	**VFOE-LE-T-R38-Q10**

Ordering data – Supply air one-way flow control function

	Pneumatic connection, port 2	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Part no.	Type
	M5	QS-4	85 l/min	50 ... 90 l/min	**8068743**	**VFOE-LS-T-M5-Q4**
		QS-6	100 l/min	60 ... 100 l/min	**8068744**	**VFOE-LS-T-M5-Q6**
	M7	QS-4	85 l/min	50 ... 90 l/min	**8068745**	**VFOE-LS-T-M7-Q4**
		QS-6	100 l/min	60 ... 100 l/min	**8068746**	**VFOE-LS-T-M7-Q6**
	G1/8	QS-4	165 l/min	90 ... 165 l/min	**8068747**	**VFOE-LS-T-G18-Q4**
		QS-6	170 l/min	110 ... 200 l/min	**8068748**	**VFOE-LS-T-G18-Q6**
		QS-8		130 ... 200 l/min	**8068749**	**VFOE-LS-T-G18-Q8**
	R1/8	QS-4	165 l/min	90 ... 165 l/min	**8068750**	**VFOE-LS-T-R18-Q4**
		QS-6	170 l/min	110 ... 200 l/min	**8068751**	**VFOE-LS-T-R18-Q6**
		QS-8		130 ... 200 l/min	**8068752**	**VFOE-LS-T-R18-Q8**

Ordering data Products for battery production – exhaust air one-way flow control function

	Pneumatic connection, port 2	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Part no.	Type
	M5	QS-4	90 l/min	50 ... 90 l/min	**8157642**	**VFOE-LE-T-M5-Q4-F1A**
		QS-6	105 l/min	60 ... 105 l/min	**8157641**	**VFOE-LE-T-M5-Q6-F1A**
	G1/8	QS-4	150 l/min	90 ... 150 l/min	**8223994**	**VFOE-LE-T-G18-Q4-F1A**
		QS-6	165 l/min	110 ... 200 l/min	**8223995**	**VFOE-LE-T-G18-Q6-F1A**
		QS-8	170 l/min	130 ... 200 l/min	**8223996**	**VFOE-LE-T-G18-Q8-F1A**
	G1/4	QS-6	400 l/min	350 ... 450 l/min	**8223997**	**VFOE-LE-T-G14-Q6-F1A**
		QS-8	500 l/min	370 ... 500 l/min	**8223998**	**VFOE-LE-T-G14-Q8-F1A**

Ordering data

Ordering data Products for battery production – exhaust air one-way flow control function

	Pneumatic connection, port 2	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Part no.	Type
	G1/4	QS-10	500 l/min	370 ... 500 l/min	**8223999**	**VFOE-LE-T-G14-Q10-F1A**
	G3/8	QS-8	720 l/min	600 ... 900 l/min	**8223986**	**VFOE-LE-T-G38-Q8-F1A**
		QS-10	750 l/min	700 ... 1000 l/min	**8224001**	**VFOE-LE-T-G38-Q10-F1A**

Ordering data Products for battery production – Supply air one-way flow control function

	Pneumatic connection, port 2	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Part no.	Type
	M5	QS-4	85 l/min	50 ... 90 l/min	**8157630**	**VFOE-LS-T-M5-Q4-F1A**
		QS-6	100 l/min	60 ... 100 l/min	**8157629**	**VFOE-LS-T-M5-Q6-F1A**
	G1/8	QS-4	165 l/min	90 ... 165 l/min	**8224003**	**VFOE-LS-T-G18-Q4-F1A**
		QS-6	170 l/min	110 ... 200 l/min	**8224004**	**VFOE-LS-T-G18-Q6-F1A**
		QS-8		130 ... 200 l/min	**8224005**	**VFOE-LS-T-G18-Q8-F1A**