

# Inch Product Range Automation Components

**FESTO**



Piston Rod Actuators, Double Acting				
Type		Piston Ø [in] <sup>1)</sup>	Port Sizes [UNF/NPT]	Strokes [in] <sup>1)</sup>
<b>Cylinders to Industry Standard</b>				
	DNC to ISO 15552	1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5	1/8, 1/4, 3/8, 1/2	1 ... 20
	DNG to ISO	1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5, 6	1/8, 1/4, 3/8, 1/2, 3/4	0.4 ... 80
	DSNU to ISO 6432	5/16, 3/8, 1/2, 5/8, 3/4, 1	10-32, 1/8	0.04 ... 20
	DNA to NFPA	1 1/2, 2, 2 1/2, 3 1/4, 4, 5	3/8, 1/2	0.4 ... 80
<b>Round Cylinders</b>				
	DSNU	1 1/4, 1 5/8, 2, 2 1/2	1/8, 1/4, 3/8	0.125 ... 20
<b>Compact Cylinders</b>				
	ADN <sup>2)</sup>	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5	10-32, 1/8, 1/4	0.04 ... 20
	ADVU	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5	10-32, 1/8, 1/4	0.04 ... 16
<b>Narrow Profile Cylinders</b>				
	DZF	1/2, 11/16, 1, 1 1/4, 1 5/8, 2, 2 1/2 <sup>3)</sup>	10-32, 1/8, 1/4	0.04 ... 12
	DZH	5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2 <sup>3)</sup>	10-32, 1/8, 1/4, 3/8	0.04 ... 40
<b>Corrosion-resistant Cylinders to Industry Standard</b>				
	CRDSNU to ISO 6432	1/2, 5/8, 3/4, 1	10-32, 1/8	0.4 ... 20
	CRDNG to ISO 15552	1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5	1/8, 1/4, 3/8, 1/2	0.4 ... 80
<b>Corrosion-resistant Round Cylinders</b>				
	CRDSW	1 1/4, 1 5/8, 2, 2 1/2	1/8, 1/4, 3/8	0.4 ... 20

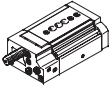
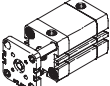
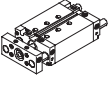
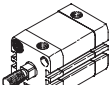
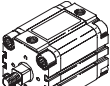
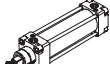
Piston Rod Actuators, Single Acting				
Type		Piston Ø [in] <sup>1)</sup>	Port Sizes [UNF/NPT]	Strokes [in] <sup>1)</sup>
<b>Cylinders to Industry Standard</b>				
	ESNU to ISO 6432	5/16, 3/8, 1/2, 5/8, 3/4, 1	10-32, 1/8	0.04 ... 2
<b>Round Cylinders</b>				
	ESNU	1 1/4, 1 5/8, 2, 2 1/2	1/8, 1/4, 3/8	0.04 ... 2
<b>Compact Cylinders</b>				
	AEN <sup>2)</sup>	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5	10-32, 1/8, 1/4	0.04 ... 1
	AEVU	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5	10-32, 1/8, 1/4	0.04 ... 1

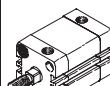
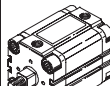
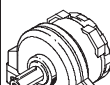
Rodless Actuators, Double Acting				
Type		Piston Ø [in] <sup>1)</sup>	Port Sizes [UNF/NPT]	Strokes [in] <sup>1)</sup>
	DGP	11/16, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3	10-32, 1/8, 1/4, 3/8, 1/2	0.4 ... 118
	DGPL	11/16, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3	10-32, 1/8, 1/4, 3/8, 1/2	0.4 ... 118
	DGO	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8	10-32, 1/8, 1/4	0.4 ... 145
	DGC	5/16, 1/2, 11/16, 1, 1 1/4, 1 5/8, 2, 2 1/2	10-32, 1/8, 1/4, 3/8	0.04 ... 335

Guide Units				
Type		Piston Ø [in] <sup>1)</sup>	Port Sizes [UNF/NPT]	Strokes [in] <sup>1)</sup>
	FEN for DSNU cylinders	5/16, 3/8, 1/2, 5/8, 3/4, 1	–	0.04 ... 10
	FENG for DNC and DNG cylinders	1 1/4, 1 5/8, 2, 2 1/2, 3, 4	–	0.04 ... 20

1) Approximated values; for reference only.  
 2) The piston rod of the ADN is available with either male or female thread.  
 3) Equivalent Piston Ø

# Pneumatic Cylinders and Actuators

Guided Piston Rod Actuators, Double Acting				
Type	Piston Ø [in] <sup>1)</sup>	Port Sizes [UNF/NPT]	Strokes [in] <sup>1)</sup>	
<b>Slides</b>				
	DGSL	3/8, 1/2, 5/8, 3/4, 1	10-32, 1/8	0.4 ... 8
<b>Actuators with Guides</b>				
	ADNGF	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4	10-32, 1/8	0.04 ... 16
	DFM-B	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2	10-32, 1/8, 1/4	0.4 ... 16
<b>Square Rod Actuators</b>				
	ADN-Q	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4, 5	10-32, 1/8, 1/4	0.04 ... 16
	ADVULQ	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4	10-32, 1/8	0.04 ... 16
	DNGL	1 1/4, 1 5/8, 2, 2 1/2, 3, 4	1/8, 1/4, 3/8, 1/2, 3/4	0.04 ... 24

Guided Piston Rod Actuators, Single Acting				
Type	Piston Ø [in] <sup>1)</sup>	Port Sizes [UNF/NPT]	Strokes [in] <sup>1)</sup>	
<b>Square Rod Actuators</b>				
	AEN-Q	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4	10-32, 1/8	0.04 ... 1
	AEVULQ	1/2, 5/8, 3/4, 1, 1 1/4, 1 5/8, 2, 2 1/2, 3, 4	10-32, 1/8	0.04 ... 1
<b>Rotary Actuators</b>				
Type	Piston Ø [in] <sup>1)</sup>	Port Sizes [UNF/NPT]	Swivel Angle [°]	
	DSR	3/8, 1/2, 5/8, 1, 1 1/4, 1 5/8	M3, 10-32, 1/8, 1/4	0 ... 184

1) Approximated values; for reference only.

Stand-alone Directional Control Valves				
Type	Valve Functions	Nominal Flow Rate	Port Sizes [UNF/NPT]	
	VUVB*)	3/2-way 4/2-way	scfm: 7 ... 35 l/min: 200 ... 1,000	1/4, 5/16, 3/8
	Tiger Classic, Solenoid Valves*)	3/2-way 5/2-way	scfm: 18 ... 265 l/min: 500 ... 7,500	1/8, 1/4, 1/2
	Tiger Classic, Pneumatic Valves	3/2-way 5/2-way	scfm: 18 ... 265 l/min: 500 ... 7,500	1/8, 1/4

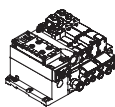
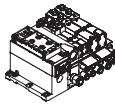
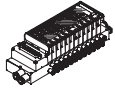
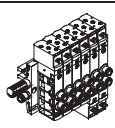
Specialty Valves				
Type	Valve Functions	Nominal Flow Rate	Port Sizes [UNF/NPT]	
<b>Proportional Pressure Regulators</b>				
	VPPM	3/2-way piloted diaphragm valve	scfm: 0 ... 55 l/min: 0 ... 1,400	1/8
<b>Fast-switching Valves</b>				
	MHJ9	2/2-way	scfm: 1.8 ... 3.5 l/min: 50 ... 100	Push-in fittings for tubing O.D. 1/4"
	MHJ10	2/2-way	scfm: 1.8 ... 3.5 l/min: 50 ... 100	Push-in fittings for tubing O.D. 1/4"
<b>Process and Media Valves</b>				
	VZWM*)	Diaphragm valve	scfm: 1 ... 23 l/min: 27 ... 650	1/4, 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2, 2
	VLX	Diaphragm valve	scfm: 1.4 ... 8.2 l/min: 40 ... 230	1/4, 3/8, 1/2, 3/4, 1
<b>Stand-alone Valves with Port Pattern to NAMUR<sup>1)</sup></b>				
	NVF3*) MFH*) MN1H*) MGTBH*)	5/2-way <sup>2)</sup>	scfm: 14 ... 35 l/min: 400 ... 1,000	1/4
	VOFC*)	3/2-way 5/2-way	scfm: 21 ... 106 l/min: 600 ... 3,000	1/4, 1/2

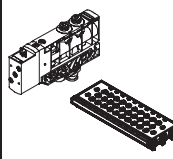
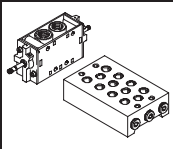
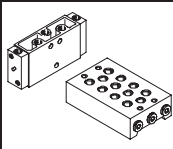
1) Selected types approved in accordance with directive 94/9/EC (ATEX).

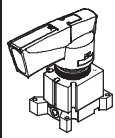
2) Can be changed from 5/2 to 3/2 function using the seal plate included in the scope of delivery.

\*) Valves marked with an asterisk support 110 VAC coils.

# Valves and Valve Manifolds

Directional Control Valve Manifolds			
Type	Valve Functions	Nominal Flow Rate	Port Sizes [UNF/NPT]
<b>Valve Manifolds to ISO 15 407-2 and ISO 5599-2</b>			
	<b>VTSA (Type 44)*</b> 2x 3/2-way 5/2-way 5/3-way	scfm: 7 ... 113 l/min: 180 ... 3,200	1/8, 1/4, 3/8, 1/2
<b>Valve Manifolds for Standard Applications</b>			
	<b>VTSA-F (Type 45)*</b> 2x 3/2-way 5/2-way 5/3-way	scfm: 12 ... 49 l/min: 330 ... 1,400	1/8, 1/4
	<b>VTOC (Type 84)</b> 2x 3/2-way	scfm: 0.4 l/min: 10	10-32, 1/8 Push-in fittings for tubing O.D. 1/8, 1/4, 3/8"
	<b>VTUB (Type 24)*</b> 3/2-way 4/2-way	scfm: 7 ... 35 l/min: 200 ... 1,000	1/4, 1/2 Push-in fittings for tubing O.D. 1/4, 5/16, 3/8"

Directional Control Valve Manifolds			
Type	Valve Functions	Nominal Flow Rate	Port Sizes [UNF/NPT]
<b>Valve Manifolds for Standard Applications (continued)</b>			
	<b>VUVB*</b> 3/2-way 4/2-way	scfm: 7 ... 35 l/min: 200 ... 1,000	1/4, 1/2 Push-in fittings for tubing O.D. 1/4, 5/16, 3/8"
	<b>Tiger Classic, Solenoid Valves*</b> 3/2-way, Normally closed or open 5/2-way, Single or double solenoid	scfm: 18 ... 265 l/min: 500 ... 7,500	1/8, 1/4, 1/2
	<b>Tiger Classic, Pneumatic Valves</b> 3/2-way, Normally closed or open 5/2-way, Single or double pilot	scfm: 18 ... 265 l/min: 500 ... 7,500	1/8, 1/4

Manual and Mechanical Valves			
Type	Valve Function	Nominal Flow Rate	Port Sizes [UNF/NPT]
<b>VHER Hand Lever Valves</b>			
	<b>VHER</b> 4/3-way, mid-position closed	scfm: 21 ... 152 l/min: 600 ... 4,300	1/8, 1/4, 1/2

\*) Valves marked with an asterisk support 110 VAC coils.

# Air Preparation Units, MS Series



Standard Assembled Combination Units 1 ... 9		
	Pneumatic Connection	Consisting of
	1/4NPT 1/2NPT	Filter regulator with pressure gauge Pressure regulator with pressure gauge Filter Lubricator On-off valve Soft-start valve Distribution block

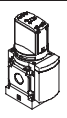
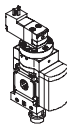

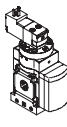

Service Units MS-FRC		
	Pneumatic Connection	Consisting of
	1/8NPT 1/4NPT 3/8NPT 1/2NPT	Filter regulator with pressure gauge Lubricator



Filter/Regulators and Pressure Regulators			
	Pneumatic Connection	Nominal Flow Rate	Pressure Regulating Ranges
<b>Filter/Regulators MS-LFR</b>			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 30 ... 600 l/min: 850 ... 17,000	psi: 4.4 ... 235 bar: 0.3 ... 16
<b>Standard Pressure Regulators MS-LR, MS-LRB</b>			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 11 ... 777 l/min: 300 ... 7,300	psi: 4.4 ... 235 bar: 0.3 ... 16
<b>Precision Pressure Regulators MS-LRP</b>			
	1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT	scfm: 28 ... 177 l/min: 800 ... 5,000	psi: 0.7 ... 176 bar: 0.05 ... 12
<b>Electrical Pressure Regulators MS-LRE</b>			
	1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT	scfm: 78 ... 265 l/min: 2,200 ... 7,500	psi: 4.4 ... 235 bar: 0.3 ... 16

Filters			
	Pneumatic Connection	Nominal Flow Rate	Filtration grade [µm]
<b>Standard Filters MS-LF</b>			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 35 ... 565 l/min: 1,000 ... 16,000	5, 40
<b>Fine and Micro Filters MS-LFM</b>			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 4.2 ... 353 l/min: 120 ... 10,000	0.01, 1
<b>Active Carbon Filters MS-LFX</b>			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 8.8 ... 230 l/min: 250 ... 6,500	N/A (Residual oil content ≤ 0.003 mg/m <sup>2</sup> ) Prefiltration with 0.01 µm filtration grade recommended

Other Servicing Components			
	Pneumatic Connection	Nominal Flow Rate	Miscellaneous
<b>Membrane Air Dryers MS-LDM</b>			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT	scfm: 1.8 ... 14 l/min: 50 ... 400	Pressure dew point reduction: 17 ... 20 K
<b>Water Separators MS-LWS</b>			
	1/4NPT, 3/8NPT, 1/2NPT	scfm: 0.4 ... 353 l/min: 10 ... 1,000	–
<b>Lubricators MS-LOE</b>			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 39 ... 777 l/min: 1,100 ... 22,000	–

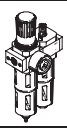
## Air Preparation Units, MS Series

On-Off and Soft-start Valves			
	Pneumatic Connection	Nominal Flow Rate	Function
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 42 ... 1,130 l/min: 1,200 ... 32,000	On-Off valve MS-EM, manually operated
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 35 ... 1,130 l/min: 1,000 ... 32,000	On-Off valve MS-EE, solenoid actuated
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 35 ... 1,483 l/min: 1,000 ... 42,000	Soft-start valve MS-DL, pneumatically actuated
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 35 ... 1,483 l/min: 1,000 ... 42,000	Soft-start valve MS-DE, solenoid actuated
	1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT	scfm: 95 ... 228 l/min: 2,700 ... 6,450	Soft-start/Exhaust valve MS-SV, solenoid actuated

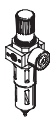
Distribution Blocks MS-FRM, MS-FRZ			
	Pneumatic Connection	Nominal Flow Rate	Miscellaneous
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT, 1 1/4NPT, 1 1/2NPT, 2NPT	scfm: 42 ... 1,765 l/min: 1,200 ... 50,000	Options: Pressure gauge Pressure sensor
	1/4NPT, 1/2NPT	scfm: 102 ... 515 l/min: 2,900 ... 14,600	Without pressure gauge


## Air Preparation Units, D Series

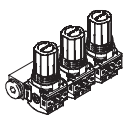
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Service Units FRC		
	Pneumatic Connection	Consisting of
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	Filter regulator with pressure gauge Lubricator

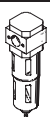
Filter/Regulators and Pressure Regulators			
	Pneumatic Connection	Nominal Flow Rate	Pressure Regulating Ranges

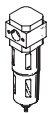
Filter/Regulators LFR			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 4 ... 275 l/min: 110 ... 7,800	psi: 7 ... 176 bar: 0.5 ... 12

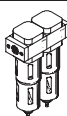
Pressure Regulators LR, LRS			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 4 ... 297 l/min: 120 ... 8,400	psi: 7 ... 176 bar: 0.5 ... 12

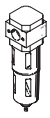
Pressure Regulator Combinations LRB-K, 2 ... 5 Regulators			
	1/4NPT, 3/8NPT, 1/2NPT	scfm: 56 ... 134 l/min: 1,600 ... 3,800	psi: 7 ... 176 bar: 0.5 ... 12

Filters			
	Pneumatic Connection	Nominal Flow Rate	Filtration grade [µm]


Standard Filters LF			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 6 ... 187 l/min: 170 ... 5,300	5, 40

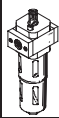
Fine and Micro Filters LFMB/LFMA			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 3 ... 98 l/min: 80 ... 2,780	0.01 (LFMA) 1 (LFMB)

Fine and Micro Filter Combinations LFMA			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 4 ... 21 l/min: 125 ... 600	0.01, 1

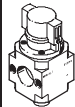
Active Carbon Filters LFX			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 13 ... 39 l/min: 360 ... 1,100	N/A (Residual oil content ≤ 0.003 mg/m <sup>2</sup> ) Prefiltration with 0.01 µm filtration grade recommended

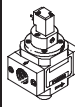
Other Servicing Components			
	Pneumatic Connection	Nominal Flow Rate	Miscellaneous

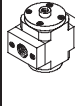
Membrane Air Dryers LDM			
	1/2NPT, 3/4NPT, 1NPT	scfm: 11 ... 35 l/min: 300 ... 1,100	Pressure dew point reduction: 20 K

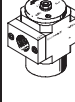
Lubricators LOE			
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 6 ... 318 l/min: 160 ... 9,000	–

On-Off and Soft-start Valves			
	Pneumatic Connection	Nominal Flow Rate	Function


	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 35 ... 293 l/min: 1,000 ... 6,500	On-Off valve HE, manually operated
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	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 35 ... 293 l/min: 1,000 ... 6,500	On-Off valve HEE, solenoid actuated
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	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 35 ... 293 l/min: 1,000 ... 6,500	On-Off valve HEP, pneumatically actuated
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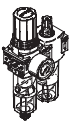
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 35 ... 293 l/min: 1,000 ... 6,500	Soft-start valve HEL, pneumatically actuated
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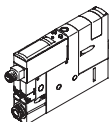
Distribution Blocks FRM/FRZ			
	Pneumatic Connection	Nominal Flow Rate	


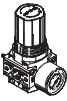
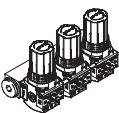
	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 53 ... 706 l/min: 1,500 ... 20,000	Options: Pressure gauge Pressure sensor
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# Air Preparation Units, DB Series, Polymer; Individual Devices; Sensors

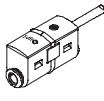

Service Units FRC-DB		
	Pneumatic Connection	Consisting of
	1/8NPT, 1/4NPT, 3/8NPT	Filter regulator with pressure gauge Lubricator

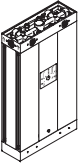
Vacuum Generators OVEM			
	Max. Suction Rate	Pneumatic Connection	Description
	scfm: 0.2 ... 1.6 l/min: 6 ... 45	1/8NPT, 1/4NPT QS-1/4, QS-5/16	High vacuum or high suction rate Ejector pulse Open silencer

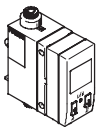

Filter/Regulators and Pressure Regulators			
	Pneumatic Connection	Nominal Flow Rate	Pressure Regulating Range [psi]
<b>Filter/Regulators LFR-DB</b>			
	1/8NPT, 1/4NPT, 3/8NPT	scfm: 18 ... 42 l/min: 500 ... 1,200	psi: 7 ... 176 bar: 0.5 ... 12
<b>Pressure Regulators LR-DB</b>			
	1/8NPT, 1/4NPT, 3/8NPT	scfm: 28 ... 46 l/min: 800 ... 1,300	psi: 7 ... 103 bar: 0.5 ... 7
<b>Pressure Regulator Combinations LRB-DB-K, 2 ... 5 Regulators</b>			
	1/2NPT	scfm: 35 l/min: 1,000	psi: 7 ... 103 bar: 0.5 ... 7

Pressure Gauges MA			
	Operating Pressure and Display Units	Pneumatic Connection	Description
	0 ... 1, 0 ... 2.5, 0 ... 6, 0 ... 10, 0 ... 16, 0 ... 25 bar	1/4NPT	Pressure gauge, to DIN EN 837-1
	0 ... 36, 0 ... 145, 0 ... 232 psi	1/8NPT, 1/4NPT	Pressure gauge w/ adjustable red/green range, to DIN EN 837-1
	0 ... 10 bar	QS-5/32, QS-3/16, QS-1/4, QS-5/16 QS-3/8	Pressure gauge for QS fittings

On-Off Valves HE-LO, Manually Operated			
	Pneumatic Connection	Nominal Flow Rate	Pressure Regulating Range [psi]
	3/8NPT, 1/2NPT, 3/4NPT, 1NPT	scfm: 35 ... 353 l/min: 1,000 ... 10,000	-

Pressure Sensors			
	Pressure Measuring Ranges	Pneumatic Connection	Electrical Output, Switching Function
<b>SDE5</b>			
	psi: -14 ... 147 bar: -1 ... 10	Push-in fitting for tubing OD 5/32 or 1/4"	N/O or N/C contact, switchable, 1 ... 10 V Freely programmable
<b>SPAB</b>			
	psi: -14 ... 147 bar: -1 ... 10	10-32UNF, 1/8NPT	PNP, 2x PNP, NPN, 2x NPN, 1 ... 5 V Freely programmable

Adsorption Dryers PDAD			
	Pneumatic Connection	Output Flow Rate	Description
	3/8NPT, 1/2NPT	scfm: 3.1 ... 35 l/min: 87 ... 994	Cold-regenerating adsorption dryer for decentralised compressed air drying Pressure dew point: -40 or -70 °C

Flow Sensors			
	Flow Measuring Ranges	Pneumatic Connection	Electrical Output, Switching Function
<b>SFAB</b>			
	scfm: 0 ... 35 l/min: 0.1 ... 1,000	Push-in fitting for tubing OD 1/4, 5/16 or 3/8"	2x PNP, 2x NPN, 0 ... 10 V, 4 ... 20 mA Threshold comparator, Window comparator
<b>SFAM</b>			
	scfm: 0.4 ... 177 l/min: 10 ... 5,000	1/2, 1 NPT	2x PNP, 2x NPN, 0 ... 10 V, 4 ... 20 mA Threshold comparator, Window comparator

# QS/QSM Push-in Fittings

Male Thread, External Hex			
Type		Threaded Connection	Tubing O.D. [in]
QS QSM		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QSL QSM L		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QSL L QSM L L		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QST QSM T		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QST L QSM T L		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QST3, 3 outlets (reducing)		1/8NPT, 1/4NPT, 3/8NPT	5/32, 3/16, 1/4, 5/16, 3/8
QSLV 2, 3, 4 or 6 outlets, rotatable		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QSY 2 outlets		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSQ 4 outlets		1/8NPT, 1/4NPT	5/32, 3/16, 1/4
QSYL		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSYLV		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	3/16, 1/4, 5/16, 3/8, 1/2

Male Thread, Internal Hex			
Type		Threaded Connection	Tubing O.D. [in]
QS-I QSM-I		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSL-I		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8

Female Thread, External Hex			
Type		Threaded Connection	Tubing O.D. [in]
QSF QSM F		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSSF bulkhead fitting		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8
QSLF		1/8NPT, 1/4NPT, 3/8NPT	5/32, 3/16, 1/4, 5/16, 3/8

Male and Female Thread, External Hex			
Type		Threaded Connection	Tubing O.D. [in]
QSTF		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSYTF		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/4, 5/16, 3/8, 1/2

Rotary Fittings, Male Thread, External Hex			
Type		Threaded Connection	Tubing O.D. [in]
QSR		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSR L		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2

Self-closing Fittings, Male Thread, External Hex			
Type		Threaded Connection	Tubing O.D. [in]
QSK		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSK L		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2

# QS/QSM/QB Push-in Connectors, Accessories, Cartridge and Hybrid Fittings



Connectors			
Type		Tubing O.D. D1 [in]	Tubing O.D. D2 [in]
QS		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QSK self-closing		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
Bulkhead connectors QSS, QSMS QSSK, self-closing		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QSL QSM		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QST		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QST3, 3 outlets (reducing)		3/16, 5/16, 3/8	5/32, 3/16, 1/4, 5/16, 3/8
QSY QSMY		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QSQ		3/16, 1/4, 5/16	5/32, 3/16, 1/4
QSX QSMX		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2

Cartridge Fittings			
Type		Nominal Size	Tubing O.D. [in]
QSPKG		10, 14, 17, 18, 20, 21, 24	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSPLK QSPLLK QSPLKG		18	5/32, 1/4, 5/16, 3/8

Hybrid Fittings			
Type		Metric Threaded Connection	Tubing O.D. [in]
<b>External Hex</b>			
QB		M5, R1/8, R1/4, R3/8, R1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBL		M5, R1/8, R1/4, R3/8, R1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QBT		M5, R1/8, R1/4, R3/8, R1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
<b>Internal Hex</b>			
QS-I QSM-I		M3, M5, R1/8, R1/4, R3/8, R1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2








**Note:** Products with metric connectors can be used within inch tubing systems via hybrid fittings.








Reducers			
Type		Tubing O.D. D1 [in]	Tubing O.D. D2 [in]
QS QSM-H		3/16, 1/4, 5/16, 3/8	3/16, 1/4, 5/16, 3/8
QSL QSM-L-H		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2



Sleeves, Caps and Plugs			
Type		Tubing O.D. D1 [in]	Tubing O.D. D2 [in]
QSH		5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8
QSC QSMC		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QSC-H QSMC-H		1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8


# QB Push-in Fittings, Quick Basic





Male Thread, External Hex			
Type		Threaded Connection	Tubing O.D. [in]
QB		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBL		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBLL		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBLV		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBT		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBTL		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBY 2 outlets		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2





Connectors			
Type		Tubing O.D. D1 [in]	Tubing O.D. D2 [in]
QB		5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
Bulkhead connectors QBS		5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBL		5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBT		5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBT3, 3 outlets (reducing)		3/16, 1/4, 5/16, 3/8	5/32, 1/4, 5/16
QBY 2 outlets		5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBX		5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2







Female Thread, External Hex			
Type		Threaded Connection	Tubing O.D. [in]
QBF		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
QBLF		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2



Reducers			
Type		Tubing O.D. D1 [in]	Tubing O.D. D2 [in]
QB		1/8, 5/32, 1/4, 5/16, 3/8, 1/2	1/8, 5/32, 1/4, 5/16, 3/8






Sleeves and Plugs			
Type		Tubing O.D. D1 [in]	Tubing O.D. D2 [in]
QBH		3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8
QBC		5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2





# Flow Control Valves


Non-return and Hand-slide Valves		
Type	Connection D1, Tubing O.D. [in] / Thread	Connection D2, Tubing O.D. [in] / Thread
H-QS	 5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
HA, HB	 10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8
HGL piloted	 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT
W	 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT

Ball Valves		
Type	Connection D1, Tubing O.D. [in] / Thread	Connection D2, Tubing O.D. [in] / Thread
HE, 2/2 and 3/2 valves	 3/16, 1/4, 5/16, 3/8, 1/2	3/16, 1/4, 5/16, 3/8, 1/2
	 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	3/16, 1/4, 5/16, 3/8, 1/2
	 1/8NPT, 1/4NPT, 3/8NPT	1/8NPT, 1/4NPT, 3/8NPT
QH	 1/8, 5/32, 3/16, 1/4	1/8, 5/32, 3/16, 1/4
	 1/8NPT, 1/4NPT	1/8, 1/4
QHS, bulkhead version	 1/8NPT, 1/4NPT	1/8, 5/32, 3/16

Flow Control Valves with QS Push-in Fittings		
Type	Connection D1, Tubing O.D. [in]	Connection D2, Tubing O.D. [in]
Exhaust or Supply Air Control		
GR-QS, with QS Push-in connector	 5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
GR-QB, with BasicLine Push-in connector	 5/32, 3/16, 1/4, 5/16, 3/8, 1/2	5/32, 3/16, 1/4, 5/16, 3/8, 1/2

Flow Control Valves with Male Thread and QS/QB Push-in Fittings, CK Quick Connectors or Barbed Fittings			
Type		Threaded Connection D1	Connection D2, Tubing O.D./I.D. [in]
Exhaust Air Control			
GRLA-QS		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2
GRLA		1/8NPT, 1/4NPT, 3/8NPT	1/4, 3/8
GRLA-QB		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
Supply Air Control			
GR LZ		10-32-UNF, 1/8NPT	3/16, 1/4, 3/8
Exhaust or Supply Air Control			
GR LO		10-32-UNF	3/16, 1/4

Flow Control Valves with Male/Female Thread			
Type		Threaded Connection D1	Threaded Connection D2
Exhaust Air Control			
GRLA		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT
Exhaust Air Control with Muffler			
GRE		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	–
Supply Air Control			
GR LZ		10-32-UNF, 1/8NPT	10-32-UNF, 1/8NPT
Exhaust or Supply Air Control			
GR LO		10-32-UNF	10-32-UNF

Quick Exhaust Valves with Muffler			
Type		Threaded Connection D1	Threaded Connection D2
SEU		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT

Pressure Regulating Valves without Pressure Gauge			
Type		Connection D1, Tubing O.D. [in] / Thread	Connection D2, Tubing O.D. [in]
<b>Pressure Regulating Valves without Pressure Gauge</b>			
LR-QS		10-32-UNF, 1/8NPT, 1/4NPT	5/32, 3/16, 1/4, 5/16
LR-QS		1/4NPT	1/4
<b>Pressure Regulating Valves with Pressure Gauge</b>			
LRMA		1/16NPT, 1/8NPT, 1/4NPT	3/16, 1/4, 5/16
LRMA		1/4NPT	1/4
<b>Differential Pressure Regulators without Pressure Gauge</b>			
LRL		10-32-UNF, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2
LRL		10-32-UNF, 1/16NPT, 1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT	5/32, 3/16, 1/4, 5/16, 3/8, 1/2

Silencers		
Type		Threaded Connection D1 / Threaded Connection D2
U		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT

Blind Plugs, Double Nipples		
Type		Threaded Connection D1 / Threaded Connection D2
B		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT, 1NPT
E		1/8NPT, 1/4NPT, 3/8NPT, 1/2NPT, 3/4NPT

External Calibrated			
Type		Tubing O.D. D1 [in]	Characteristics
	<b>PUN-H</b> Polyurethane, ether-based	1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	Very high flexibility Food approval Good resistance against microbes, UV-radiation and hydrolysis
	<b>PEN</b> Polyethylene	5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	High flexibility Very good resistance against hydrolysis Good resistance against chemicals, microbes and UV-radiation
	<b>PLN</b> Polyethylene	5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8	Very good resistance against hydrolysis Good resistance against chemicals, microbes and UV-radiation

Internal Calibrated			
Type		Tubing I.D. D1 [in]	Characteristics
	<b>PU</b> Polyurethane, ester-based	1/8, 5/32, 3/16, 1/4, 5/16, 3/8	Good resistance against UV-radiation

# Product Range and Company Overview

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Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



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