

## Flow sensors SFAB

**FESTO**



## Flow sensors SFAB

Key features

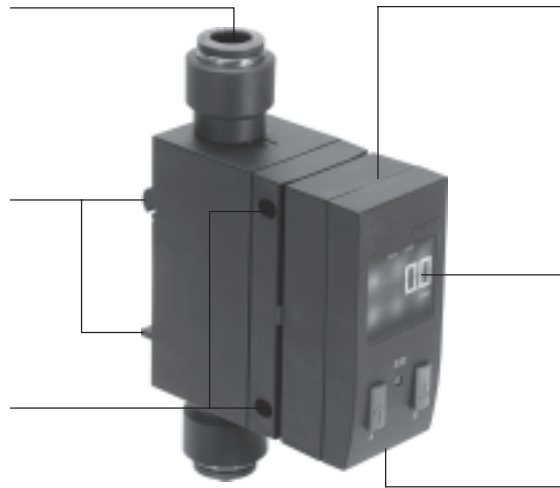
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### At a glance

Quick and secure installation thanks to QS fitting

Manifold assembly of the sensor via H-rail or individual assembly via adapter plate for wall mounting

Plate assembly of the sensor using mounting screws



Display can be rotated 270°

- High-contrast LCD display with blue background and white 9-segment display
- Bar graph visualises the current measured value
- Switching point-dependent colour change

Central electrical connection via M12 plug

### Impressive, simple, reliable

Designed according to the attractive display and operation concept of the proven pressure sensor SDE1, the flow sensors have produced outstanding results in the areas of:

- Leakage detection in production
- Leakage tightness testing of end products
- Flow monitoring in parts feeding

The sensor supplies:

- Absolute flow rate information
  - with threshold values and
  - convenient switching point adjustment via a display
- Cumulative air consumption measurement
- Patented – adjustable consumption-based switching impulse for the cumulative air consumption measurement via the switching output

### Easier to operate

- A large, illuminated LCD display increases the operational safety and makes the currently displayed flow rate or consumption values easy to read
- Measured values outside the measuring range are visualised: flow rate values are shown flashing
- Values falling below or above the threshold can also be detected remotely or, if the sensor is in

an inaccessible location, by means of the display changing colour

- Simple checking of the current sensor settings in SHOW mode
- Simple switching between consumption and flow rate display
- An integrated flow control valve can be ordered as a flow control element via the modular product system for values up to 200 l/min

### Flexible installation

This is enabled by the extremely compact design that does away with the need for an upstream and downstream smoothing section; the SFAB has an integrated stabilising flow channel.

### Systematically more reliable

The sensor supplies precise information thanks to its very large measuring range, even in the case of fluctuating or unreliable flow rate conditions.

### User-friendly

- Quick and easy menu navigation
- Integrated QS fittings
- Ultra-fast teach-in function as with the proven pressure sensor SDE1
- Secure connections with extremely short assembly times

- Manual consumption measurement with start/stop and reset functionality
- Rotatable display

### Advantages

#### For the designer

- During design, minimal information is required regarding the applied flow rate
- Plug and work solution
- The same device can be used for different applications
- The sensor covers a large measuring range with a specified accuracy thanks to its high dynamic response of 1:100
- NPN/PNP switching via the software
- Minimal assembly times
- Flexible installation without restrictions imposed by smoothing sections, any installation position
- High pneumatic connection variance possible via the modular product system
- Design of more efficient machines

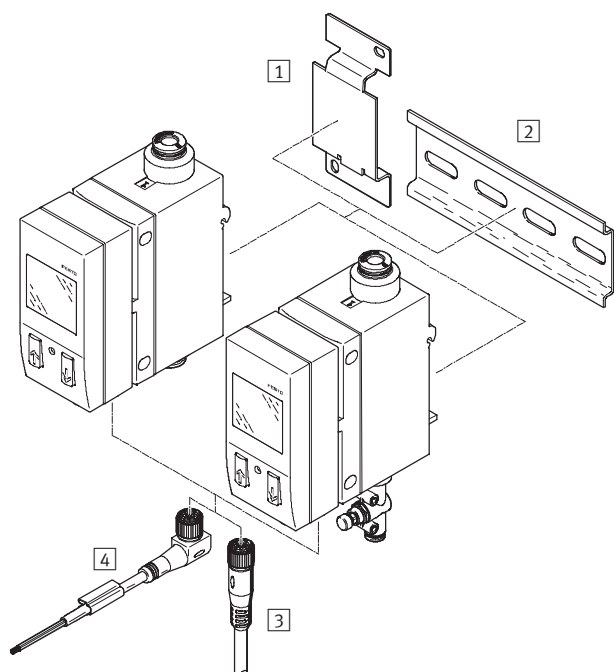
#### For the machine operator

- Precise information is available even in the event of fluctuating pressure conditions
- Flow rates can be read easily and reliably
- Visualisation (colour change, flashing measured value) of deviations
- Easy operation without the need for training
- Greater system reliability
- Displayed values:
  - Can be displayed for flow rate and consumption for different standard conditions
  - Can be filtered/averaged with highly dynamic measuring independently of the analogue output
- Fast commissioning thanks to easy-to-use, intuitive teach-in function

# Flow sensors SFAB

Peripherals overview

## Peripherals overview



Mounting attachments and accessories		→ Page/Internet
1	Adapter plate SDE1-...-W-... (included in the scope of delivery with SFAB-...-W...)	11
2	Mounting rail to DIN EN 60715	nrh
3	Connecting cable NEBU-M12G5, straight socket	11
4	Connecting cable NEBU-M12G5, angled socket	11

## Flow sensors SFAB

Type codes

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		SFAB	-	600	U	-	H	Q8	-	P2	-	M12
<b>Type</b>												
SFAB	Flow sensor											
<b>Flow measuring range [l/min]</b>												
10	Max. 10											
50	Max. 50											
200	Max. 200											
600	Max. 600											
1000	Max. 1,000											
<b>Flow input</b>												
U	Unidirectional											
<b>Type of mounting</b>												
H	Via H-rail											
W	Via wall bracket											
<b>Pneumatic connection</b>												
Q6	Push-in connector 6 mm											
Q8	Push-in connector 8 mm											
Q10	Push-in connector 10 mm											
<b>Electrical output</b>												
2SA	2x PNP or NPN, 1 analogue output 4 ... 20 mA											
2SV	2x PNP or NPN, 1 analogue output 0 ... 10 V											
<b>Electrical connection</b>												
M12	Straight plug, M12x1, 5-pin											

Additional variants can be ordered using the modular system → 10

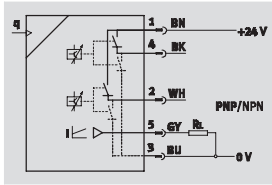
- Pneumatic connection
- Additional function (flow control element)
- Electrical accessories
- EU certification (ATEX)

## Flow sensors SFAB

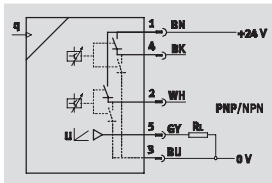
Technical data

Function

Current output 2SA



Voltage output 2SV



- Analogue output 0 ... 10 V, adjustable switching outputs 2x PNP or 2x NPN
- Analogue output 4 ... 20 mA, adjustable switching outputs 2x PNP or 2x NPN
- Freely selectable pulse output for consumption measurement
- Analogue filter for setting the rise time
- Digital filter for smoothing the display values



General technical data						
		-10U	-50U	-200U	-600U	-1000U
General						
Certification	C-Tick					
	c UL us - Recognized (OL)					
CE mark (see declaration of conformity)	To EU EMC Directive					
	In accordance with EU Explosion Protection Directive (ATEX)					
Note on materials	RoHS-compliant					
Input signal/measuring element						
Measured variable	Flow rate, consumption					
Direction of flow	Unidirectional P1 → P2					
Measuring principle	Thermal					
Flow measuring range	[l/min]	0.1 ... 10	0.5 ... 50	2 ... 200	6 ... 600	10 ... 1,000
Operating pressure	[bar]	0 ... 10				
Nominal pressure	[bar]	6				
Operating medium	Air quality class 3:4:1 to DIN ISO 8573-1			Air quality class 5:4:3 to DIN ISO 8573-1		
	Nitrogen			Nitrogen		
Temperature of medium	[°C]	0 ... 50				
Ambient temperature	[°C]	0 ... 50				
Nominal temperature	[°C]	23				

## Flow sensors SFAB

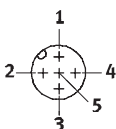
Technical data

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Electrical data						
		-10U	-50U	-200U	-600U	-1000U
Output, general <sup>1), 2)</sup>						
Accuracy of zero point ±FS	[%]	0.3				
Accuracy of margin ±FS	[%]	3				
Repetition accuracy of zero point ±FS	[%]	0.2				
Repetition accuracy of margin ±FS	[%]	0.8				
Temperature coefficient of margin ±FS/K	[%]	≤0.1				
Pressure dependence of margin ±FS/bar	[%]	0.5				
Switching output						
Switching output		2x PNP or 2x NPN, adjustable				
Switching function		Window comparator or threshold value comparator, adjustable				
Switching element function		N/C or N/O contact, adjustable				
Switch-on time		Adjustable (factory setting: approx. 80 ms)				
Switch-off time		Adjustable (factory setting: approx. 80 ms)				
Max. output current	[mA]	100				
Voltage drop	[V]	Max. 1.5				
Inductive protective circuit		Adapted to MZ, MY, ME coils				
Analogue output						
Characteristic flow rate curve	[l/min]	0 ... 10	0 ... 50	0 ... 200	0 ... 600	0 ... 1,000
Output characteristic curve for current	[mA]	4 ... 20				
Output characteristic curve for voltage	[V]	0 ... 10				
Rise time	[ms]	Possible settings: 15, 30, 60 (factory setting), 125, 250, 500, 999				
Max. load resistance at current output	[ohms]	500				
Min. load resistance at voltage output	[kohms]	10				
Output, additional data						
Protection against short circuit		Yes				
Protection against overloading		Yes				
Electronic components						
Operating voltage range DC	[v]	15 ... 30				
Protection against polarity reversal		For all electrical connections				
Electromechanical components						
Electrical connection		Straight plug, M12x1, 5-pin				
Max. length of connecting cable	[m]	<10				

1) Accuracy with nominal conditions (6 bar, 23 °C and horizontal installation position).

2) % FS = % of the measuring range final value (full scale).

Pin allocation		
Plug M12x1, 5-pin	Pin	Meaning
	1	Operating voltage +24 V DC
	2	Binary output B
	3	0 V
	4	Binary output A
	5	Analogue output C

## Flow sensors SFAB

Technical data

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Mechanical components					
	-10U	-50U	-200U	-600U	-1000U
Temperature dependence of the flow control valve setting <sup>1)</sup> ±FS (0 ... 50 °C)	8	8	2	–	–
Mounting position	Any				
Pneumatic connection <sup>2)</sup>	QS6	QS6	–	–	–
	QS8	QS8	QS8	–	–
	QS10	QS10	QS10	QS10	QS10
	QS12	QS12	QS12	QS12	QS12
	QS $\frac{1}{4}$	QS $\frac{1}{4}$	–	–	–
	QS $\frac{5}{16}$	QS $\frac{5}{16}$	QS $\frac{5}{16}$	–	–
	QS $\frac{3}{8}$	QS $\frac{3}{8}$	QS $\frac{3}{8}$	QS $\frac{3}{8}$	QS $\frac{3}{8}$
Product weight [g]	160				
Material	Housing				

- 1) The flow rate value set using the flow control valve is additionally dependent on the operating pressure. This means that the flow rate value changes if the operating pressure is changed, even if the flow control valve setting remains the same.
- 2) The pneumatic connections cannot be freely selected when configuring a sensor with flow control element, modular product system → 10.

Display/operation						
		-10U	-50U	-200U	-600U	-1000U
Indicator type		Illuminated LCD, blue				
Displayable units		l/min, l/h, scfm, l, m³, scf			l/min, scfm, l, m³, scf	
Setting range for flow rate threshold value		1% FS ... 100% FS				
Setting range for consumption	[l]	0.1 ... 1,999.9	0.2 ... 1,999.9	1 ... 1,999.9	2 ... 1,999.9	3 ... 1,999.9
impulse threshold value	[m³]	0.01 ... 199.99			0.1 ... 1,999.9	1 ... 19,999
	[scf]	0.01 ... 199.99		0.03 ... 199.99	0.1 ... 1,999.9	
Hysteresis setting range		0% FS ... 90% FS				

Immissions/emissions					
	-10U	-50U	-200U	-600U	-1000U
Storage temperature [°C]	–20 ... +80 (characteristic -D: –10 ... +60)				
Degree of protection	IP65				
Pressure drop [mbar]	<100				
Electrical protection class	III				

## Flow sensors SFAB

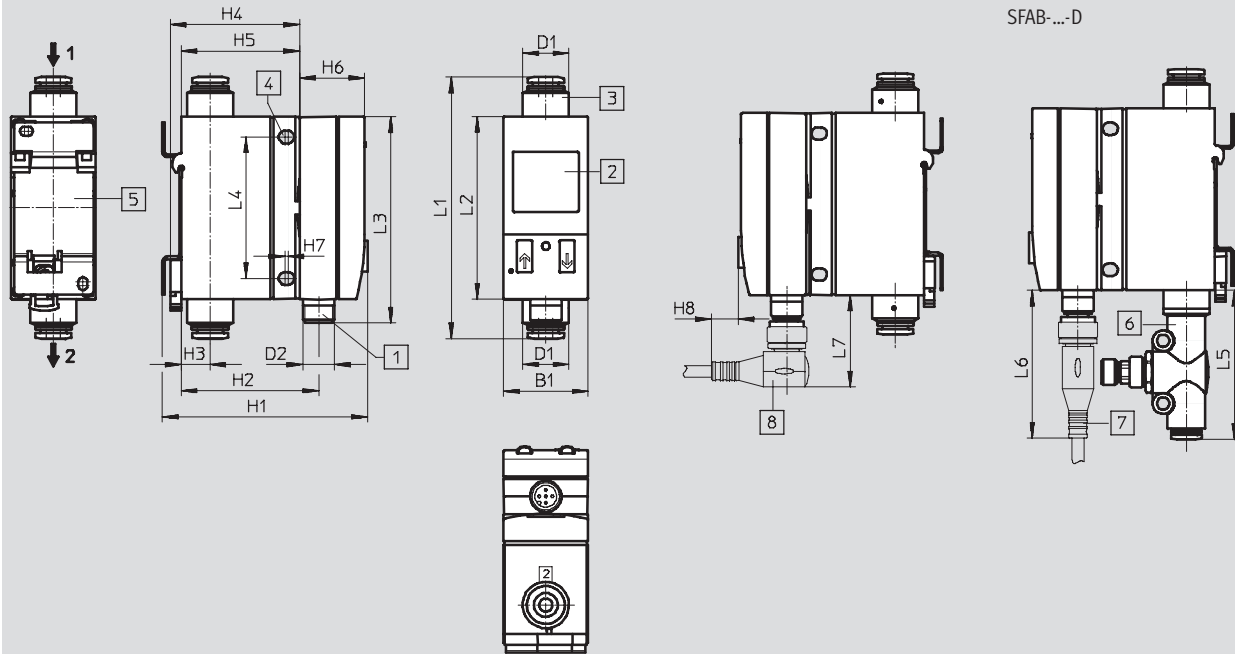
Technical data

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### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

SFAB-...-H/-W



1 Plug M12x1 to EN 60947-5-2

2 LCD display

3 Pneumatic connection

4 Hole for mounting screw M4

5 Adapter plate  
for wall mounting

6 Flow control element  
(rotatable)

7 Connecting cable,  
straight socket

8 Connecting cable,  
angled socket

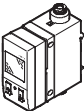
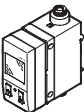
Type	B1	D1	D2	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4	L5	L6	L7
SFAB-...-HQ6	32.3	17.7	M12x1	–	52.5	11	49.4	45.2	24.8	1.1	11	95.6	69.8	78.9	54	–	56	35
SFAB-...-HQ6-...-D												–				57.1		
SFAB-...-HQ8												99.8				–		
SFAB-...-HQ8-...-D												–				59.2		
SFAB-...-HQ10		22	119.8	–														
SFAB-...-HQ12			124.4	–														
SFAB-...-WQ6	32.3	17.7	M12x1	79	52.5	11	49.4	45.2	24.8	1.1	11	95.6	69.8	78.9	54	–	56	35
SFAB-...-WQ6-...-D												–				57.1		
SFAB-...-WQ8												99.8				–		
SFAB-...-WQ8-...-D												–				59.2		
SFAB-...-WQ10												22				119.8		



# Flow sensors SFAB

Technical data

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Ordering data				
Version	Electrical output	Flow measuring range [l/min]	Part No.	Type
H-rail mounting				
	2x PNP or NPN, 1 analogue output 4 ... 20 mA	0.1 ... 10	565385	SFAB-10U-HQ6-2SA-M12
		0.5 ... 50	565389	SFAB-50U-HQ6-2SA-M12
		2 ... 200	565393	SFAB-200U-HQ8-2SA-M12
		2 ... 200	565397	SFAB-200U-HQ10-2SA-M12
		6 ... 600	565401	SFAB-600U-HQ10-2SA-M12
		10 ... 1,000	565405	SFAB-1000U-HQ10-2SA-M12
	2x PNP or NPN, 1 analogue output 0 ... 10 V	0.1 ... 10	565386	SFAB-10U-HQ6-2SV-M12
		0.5 ... 50	565390	SFAB-50U-HQ6-2SV-M12
		2 ... 200	565394	SFAB-200U-HQ8-2SV-M12
		2 ... 200	565398	SFAB-200U-HQ10-2SV-M12
		6 ... 600	565402	SFAB-600U-HQ10-2SV-M12
		10 ... 1,000	565406	SFAB-1000U-HQ10-2SV-M12
	Wall or surface mounting			
	2x PNP or NPN, 1 analogue output 4 ... 20 mA	0.1 ... 10	565387	SFAB-10U-WQ6-2SA-M12
		0.5 ... 50	565391	SFAB-50U-WQ6-2SA-M12
		2 ... 200	565395	SFAB-200U-WQ8-2SA-M12
		2 ... 200	565399	SFAB-200U-WQ10-2SA-M12
		6 ... 600	565403	SFAB-600U-WQ10-2SA-M12
		10 ... 1,000	565407	SFAB-1000U-WQ10-2SA-M12
	2x PNP or NPN, 1 analogue output 0 ... 10 V	0.1 ... 10	565388	SFAB-10U-WQ6-2SV-M12
		0.5 ... 50	565392	SFAB-50U-WQ6-2SV-M12
		2 ... 200	565396	SFAB-200U-WQ8-2SV-M12
		2 ... 200	565400	SFAB-200U-WQ10-2SV-M12
		6 ... 600	565404	SFAB-600U-WQ10-2SV-M12
		10 ... 1,000	565408	SFAB-1000U-WQ10-2SV-M12

## Flow sensors SFAB

Ordering data – Modular products

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Ordering table				
		Condi- tions	Code	Enter code
<b>M</b>	Module No.	<b>563795</b>		
	Function	Flow sensor	<b>SFAB</b>	-SFAB
			-	
<b>O</b>	Medium	Compressed air	-	
<b>M</b>	Flow measuring range l/min	Max. 10	<b>10</b>	
		Max. 50	<b>50</b>	
		Max. 200	<b>200</b>	
		Max. 600	<b>600</b>	
		Max. 1,000	<b>1000</b>	
	Flow input	Unidirectional	<b>U</b>	U
	Type of mounting	H-rail mounting	<b>-H</b>	
		Wall mounting	<b>-W</b>	
	Pneumatic connection	Push-in connector 6 mm	<b>1</b> <b>Q6</b>	
		Push-in connector 8 mm	<b>2</b> <b>Q8</b>	
		Push-in connector 10 mm	<b>Q10</b>	
		Push-in connector 12 mm	<b>Q12</b>	
		Push-in connector for 1/4	<b>1</b> <b>T14</b>	
		Push-in connector for 5/16	<b>2</b> <b>T516</b>	
		Push-in connector for 3/8	<b>T38</b>	
	Electrical output	2x PNP or NPN, 1 analogue output 4 ... 20 mA	<b>-2SA</b>	
		2x PNP or NPN, 1 analogue output 0 ... 10 V	<b>-2SV</b>	
	Electrical connection	Plug M12, A-coded	<b>-M12</b>	M12
<b>O</b>	Additional function	Not specified		
		Control element	<b>3</b> <b>-D</b>	
	Electrical accessories	Not specified		
		Angled plug socket, cable 2.5 m	<b>-2.5A</b>	
		Straight socket, cable 2.5 m	<b>-2.5S</b>	
		Angled plug socket, cable 5 m	<b>-5A</b>	
		Straight socket, cable 5 m	<b>-5S</b>	
	EU certification	Not specified		
		II 3GD	<b>-EX2</b>	

**1** **Q6, T14** Not with flow measuring range 200; 600; 1,000

**2** **Q8, T516** Not with flow measuring range 600; 1,000

**3** **D** Only with flow measuring range 10, 50 in combination with pneumatic connection Q6  
Only with flow measuring range 200 in combination with pneumatic connection Q8

### Transfer order code

563795 SFAB - - -U - - - M12 - - -

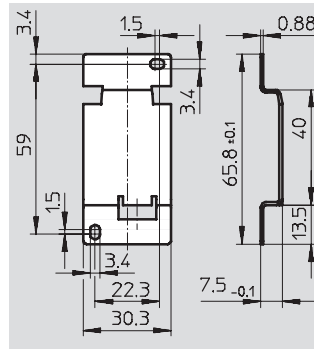
## Flow sensors SFAB

Accessories

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**Adapter plate SDE1-...-W...**  
for wall or surface mounting

Material:  
Steel



Ordering data		
	Part No.	Type
Adapter plate <sup>1)</sup>	194 297	SDE1-...-W...

1) Included in the scope of delivery with SFAB-...-W...

Ordering data – Connecting cables			Technical data ➔ Internet: nebu	
	Number of wires	Cable length [m]	Part No.	Type
M12x1, straight socket				
	5	2.5	541330	NEBU-M12G5-K-2.5-LE5
		5	541331	NEBU-M12G5-K-5-LE5
M12x1, angled socket				
	5	2.5	567843	NEBU-M12W5-K-2.5-LE5
		5	567844	NEBU-M12W5-K-5-LE5

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### A Complete Suite of Automation Services

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Complete custom engineered solutions



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# Festo North America

## Festo Regional Contact Center

5300 Explorer Drive  
Mississauga, Ontario L4W 5G4  
Canada

### USA Customers:

For ordering assistance,

**Call:** 1.800.99.FESTO (1.800.993.3786)

**Fax:** 1.800.96.FESTO (1.800.963.3786)

**Email:** [customer.service@us.festo.com](mailto:customer.service@us.festo.com)

For technical support,

**Call:** 1.866.GO.FESTO (1.866.463.3786)

**Fax:** 1.800.96.FESTO (1.800.963.3786)

**Email:** [product.support@us.festo.com](mailto:product.support@us.festo.com)

### Canadian Customers:

**Call:** 1.877.GO.FESTO (1.877.463.3786)

**Fax:** 1.877.FX.FESTO (1.877.393.3786)

**Email:** [festo.canada@ca.festo.com](mailto:festo.canada@ca.festo.com)

## USA Headquarters

Festo Corporation  
395 Moreland Road  
P.O. Box 18023  
Hauppauge, NY 11788, USA  
[www.festo.com/us](http://www.festo.com/us)

## USA Sales Offices

### Appleton

North 922 Tower View Drive, Suite N  
Greenville, WI 54942, USA

### Boston

120 Presidential Way, Suite 330  
Woburn, MA 01801, USA

### Chicago

1441 East Business Center Drive  
Mt. Prospect, IL 60056, USA

### Dallas

1825 Lakeway Drive, Suite 600  
Lewisville, TX 75057, USA

### Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320  
Auburn Hills, MI 48326, USA

### New York

395 Moreland Road  
Hauppauge, NY 11788, USA

### Silicon Valley

4935 Southfront Road, Suite F  
Livermore, CA 94550, USA

## United States



**USA Headquarters, East:** Festo Corp., 395 Moreland Road, Hauppauge, NY 11788

Phone: 1.631.435.0800; Fax: 1.631.435.8026;

Email: [info@festo-usa.com](mailto:info@festo-usa.com)

[www.festo.com/us](http://www.festo.com/us)

## Canada



**Headquarters:** Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4

Phone: 1.905.624.9000; Fax: 1.905.624.9001;

Email: [festo.canada@ca.festo.com](mailto:festo.canada@ca.festo.com)

[www.festo.ca](http://www.festo.ca)

## Mexico



**Headquarters:** Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquahuac,  
54020 Tlalneapantla, Edo. de México

Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;

Email: [festo.mexico@mx.festo.com](mailto:festo.mexico@mx.festo.com)

[www.festo.com/mx](http://www.festo.com/mx)

## Central USA

Festo Corporation  
1441 East Business  
Center Drive  
Mt. Prospect, IL 60056, USA  
Phone: 1.847.759.2600  
Fax: 1.847.768.9480



## Western USA

Festo Corporation  
4935 Southfront Road,  
Suite F  
Livermore, CA 94550, USA  
Phone: 1.925.371.1099  
Fax: 1.925.245.1286



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