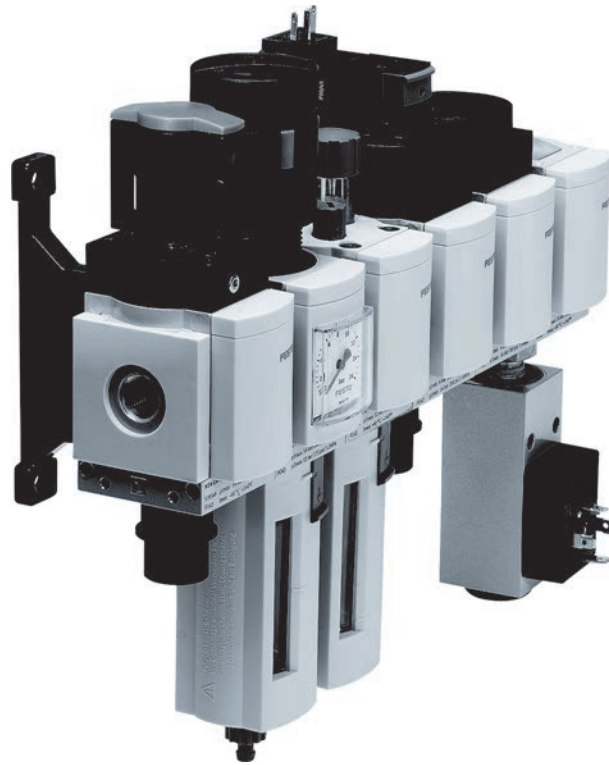
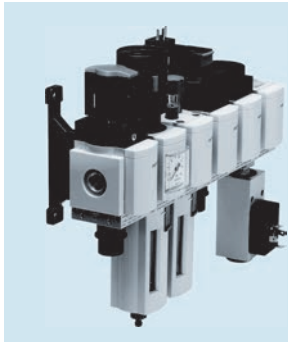


# 12 Compressed air preparation



- + Service units for preparing compressed air, consisting of different combinations of units in two series
- + Filter regulator: space-saving design with filter and regulator integrated in a single unit
- + Filter for purifying the compressed air for various quality classes
- + Pressure regulators for air preparation
- + Lubricator for improving the compressed air as lubricant for pneumatic components
- + On/Off valves for switching on and exhausting of systems
- + Soft-start valves for gradual pressure build-up
- + Adsorption dryer with a defined pressure dew point
- + Branching modules and distributor blocks

## Highlights



### MSB

Service unit combinations, MS series

- + Combinations of filter regulator, filter, lubricator, on-off valve and soft-start valve
- + Sizes: 4, 6, 9

Page 956



### MS-SV-C

Soft-start/quick exhaust valves

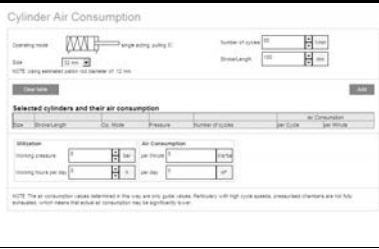

- + Single channel venting up to Performance Level c and category 1 to EN ISO 13849-1
- + For reducing pressure quickly and reliably and for building up pressure gradually

Page 1029


## Table of contents

Product overview .....	934
Selection aid .....	948
Service unit combinations MSB .....	956
Service unit combinations MSB-FRC .....	956
Filter regulator MS-LFR .....	969
Water separator MS-LWS .....	979
Pressure regulators MS-LR .....	985
Pressure regulators MS-LRB .....	995
Precision pressure regulators MS-LRP .....	1002
Precision pressure regulators LRP, LRPS .....	1053
On-off valves MS-EM .....	1008
On-off valves MS-EE .....	1015
Soft-start valves MS-DL .....	1024
Soft-start/quick exhaust valves MS-SV .....	1029
Branching modules MS-FRM .....	1042


## Software tool

<p><b>Air consumption</b></p>		<p>Calculate your system's air consumption quickly and conveniently. Simply enter all the drives and tubing, set the cycle times and working pressure and the air consumption per minute and per day will be calculated for you. It includes a feature for exporting the input table together with the result directly to Excel.</p>	<p>This tool can be found</p> <ul style="list-style-type: none"> <li>• either in the electronic catalogue by clicking on the blue button "Engineering"</li> <li>• or on the DVD under Engineering Tools.</li> </ul>
<p><b>Configurator</b></p>		<p>Design a product with numerous features reliably and quickly with the help of the configurator. Select all the relevant product features step-by-step. The use of logic checks ensures that only correct configurations are available for selection. A dynamic graphic generated on the basis of the configuration provides visual assistance in selecting the correct product features.</p>	<p>The configurator is part of the electronic and is not available as a separate software program.</p>



## Service unit combinations: MSE series

<p>Type</p>	 <p>Service unit combination MSE6</p>
<p><b>Pneumatic port 1</b></p>	<p>G1/2, connecting plate</p>
<p><b>Standard nominal flow rate</b></p>	<p>4500 l/min</p>
<p><b>Flow measuring range</b></p>	<p>5000 l/min</p>
<p><b>Operating pressure</b></p>	<p>4 ... 10 bar</p>
<p><b>Electric controls</b></p>	<p>Bus node for PROFIBUS DP</p>
<p><b>Function</b></p>	<p>Energy saving (2/2-way function DE, V24)</p>
<p><b>Description</b></p>	<ul style="list-style-type: none"> <li>• Intelligent pneumatic service unit for optimising the use of compressed air as energy medium</li> <li>• Equipped with measuring, control and diagnostic functions</li> <li>• Identification of production downtime and leakages</li> <li>• Used as process monitoring module</li> <li>• Electrical activation via bus node</li> <li>• Size: 6</li> </ul>
<p>→ Page/online</p>	<p><a href="#">mse6</a></p>



## Service unit combinations: MS series

<p>Type</p>	 <p>Service unit combination MSB4, MSB6, MSB9</p>
<p><b>Pneumatic connection 1</b></p>	<p>G1/8, G1/4, G1/2, G3/4, G1, G1 1/4, G1 1/2</p>
<p><b>Standard nominal flow rate</b></p>	<p>550 ... 18000 l/min</p>
<p><b>Pressure regulation range</b></p>	<p>0.5 ... 16 bar</p>
<p><b>Operating pressure</b></p>	<p>0 ... 20 bar</p>
<p><b>Grade of filtration</b></p>	<p>0.01 ... 40 µm</p>
<p><b>Description</b></p>	<ul style="list-style-type: none"> <li>• Combination of filter regulator MS-LFR, filter MS-LF, lubricator MS-LOE, on-off valve MS-EM, MS-EE, soft-start valve MS-DL</li> <li>• Sizes: 4, 6, 9</li> </ul>
<p>→ Page/online</p>	<p><a href="#">956</a></p>


## Service unit combinations: D series, metal

Type	 Service unit combination with lubricator FRC-K	 Service unit combination without lubricator LFR-K, LFRS-K
<b>Pneumatic connection 1</b>	G1/8, G1/4, G3/8, G1/2, G3/4	G1/8, G1/4, G3/8, G1/2, G3/4
<b>Standard nominal flow rate</b>	530 ... 8200 l/min	575 ... 9400 l/min
<b>Pressure regulation range</b>	0.5 ... 12 bar	0.5 ... 12 bar
<b>Operating pressure</b>	1 ... 16 bar	1 ... 16 bar
<b>Grade of filtration</b>	40 µm	40 µm
<b>Description</b>	<ul style="list-style-type: none"> <li>• Combination of filter regulator LFR, branching module FRM, lubricator LOE, on-off valve HE, HEE, soft-start valve HEL, mounting accessories</li> <li>• Sizes: mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>• Combination of filter regulator LFR, LFRS, branching module FRM, on-off valve HE, HEE, soft-start valve HEL, mounting accessories</li> <li>• Sizes: mini, midi, maxi</li> </ul>
<b>→ Page/online</b>	<a href="#">frc</a>	<a href="#">lfr</a>


## Service unit combinations: D series, polymer

Type	 Service unit combination FRC-DB	 Service unit combination LFR-DB
<b>Pneumatic port 1</b>	G1/8, G1/4	G1/8, G1/4
<b>Standard nominal flow rate</b>	400 ... 700 l/min	500 ... 1900 l/min
<b>Pressure regulation range</b>	0.5 ... 7 bar	0.5 ... 7 bar
<b>Operating pressure</b>	1.5 ... 10 bar	1.5 ... 10 bar
<b>Grade of filtration</b>	5 ... 40 µm	5 ... 40 µm
<b>Description</b>	<ul style="list-style-type: none"> <li>• Combination of on-off valve, filter regulator, distributor module and lubricator</li> <li>• Size: mini</li> </ul>	<ul style="list-style-type: none"> <li>• Combination of on-off valve, filter regulator and distributor module</li> <li>• Size: mini</li> </ul>
<b>→ Page/online</b>	<a href="#">frc</a>	<a href="#">frc</a>


## Filter regulators/lubricators: MS series

Type	 Service unit combination MSB4-FRC, MSB6-FRC
<b>Pneumatic port 1</b>	G1/8, G1/4, G3/8, G1/2
<b>Standard nominal flow rate</b>	800 ... 4800 l/min
<b>Pressure regulation range</b>	0.3 ... 12 bar
<b>Operating pressure</b>	1.5 ... 20 bar
<b>Grade of filtration</b>	5 ... 40 µm
<b>Description</b>	<ul style="list-style-type: none"> <li>• Filter, regulator and lubricator functions in a single unit</li> <li>• High flow rate and highly efficient in removing contaminants</li> <li>• Good regulation characteristics with minimal pressure hysteresis</li> <li>• Sizes: 4, 6</li> </ul>
<b>→ Page/online</b>	<a href="#">956</a>


## Filter regulators/lubricators: D series, metal

	
Type	Service unit FRC, FRCS
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M5, M7, QS-4, QS-6
Standard nominal flow rate	80 ... 8700 l/min
Pressure regulation range	0.5 ... 12 bar
Operating pressure	1 ... 16 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> <li>• Filter, regulator and lubricator functions in a single unit</li> <li>• Sizes: micro, mini, midi, maxi</li> </ul>
→ Page/online	<a href="#">frc</a>


## Filter regulators/lubricators: D series, polymer

	
Type	Service unit FRC-DB
Pneumatic connection 1	G1/8, G1/4
Standard nominal flow rate	400 ... 650 l/min
Pressure regulation range	0.5 ... 7 bar
Operating pressure	1.5 ... 10 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> <li>• Filter, regulator and lubricator functions in a single unit</li> <li>• With manual or semi-automatic condensate drain</li> <li>• Size: mini</li> </ul>
→ Page/online	<a href="#">frc</a>


## Filter regulators: MS series

	
Type	Filter regulator MS4-LFR, MS6-LFR, MS9-LFR, MS12-LFR
Pneumatic connection 1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1
Standard nominal flow rate	850 ... 23000 l/min
Pressure regulation range	0.3 ... 16 bar
Operating pressure	0.8 ... 20 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> <li>• MS4-LFR, MS6-LFR: directly actuated diaphragm regulator, MS9-LFR: piloted or directly actuated filter-diaphragm regulator, MS12-LFR: piloted diaphragm regulator without internal air consumption</li> <li>• Good regulation characteristics with minimal hysteresis and primary pressure compensation</li> <li>• Good particle and condensate separation</li> <li>• Available with or without secondary venting</li> <li>• High flow rate</li> <li>• Lockable rotary knob</li> <li>• Return flow option for exhausting from output 2 to input 1 already integrated</li> <li>• Sizes: 4, 6, 9, 12</li> </ul>
→ Page/online	<b>969</b>





## Filter regulators: D series, metal

	
Type	Filter regulator LFR, LFRS
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M5, M7, QS-4, QS-6
Standard nominal flow rate	110 ... 11000 l/min
Pressure regulation range	0.5 ... 12 bar
Operating pressure	1... 16 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> <li>• Two pressure gauge connections for different fitting options</li> <li>• With manual, semi-automatic or fully automatic condensate drain</li> <li>• Lockable rotary knob</li> <li>• Sizes: micro, mini, midi, maxi</li> </ul>
→ Page/online	<a href="#">lfr</a>





## Filter regulators: D series, polymer

	
Type	Filter regulator LFR-DB
Pneumatic connection 1	G1/8, G1/4
Standard nominal flow rate	500 ... 1200 l/min
Pressure regulation range	0.5 ... 7 bar
Operating pressure	1.5... 10 bar
Grade of filtration	5 ... 40 µm
Description	<ul style="list-style-type: none"> <li>• With manual or semi-automatic condensate drain</li> <li>• Size: mini</li> </ul>
→ Page/online	<a href="#">lfr</a>


## Filters: MS series

				
Type	Filter MS4-LF, MS6-LF, MS9-LF, MS12-LF	Fine filter MS4-LFM-B, MS6-LFM-B, MS9-LFM-B, MS12-LFM-B	Micro filter MS4-LFM-A, MS6-LFM-A, MS9-LFM-A, MS12-LFM-A	Activated carbon filter MS4-LFX, MS6-LFX, MS9-LFX, MS12-LFX
Pneumatic connection 1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1
Standard nominal flow rate	1000 ... 16000 l/min	120 ... 7600 l/min	120 ... 7000 l/min	250 ... 6000 l/min
Operating pressure	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar	0 ... 20 bar
Grade of filtration	5 ... 40 µm	1 µm	0.01 µm	
Description	<ul style="list-style-type: none"> <li>• Good particle and condensate separation</li> <li>• High flow rate with minimal pressure drop</li> <li>• Optionally with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain</li> <li>• Sizes: 4, 6, 9, 12</li> </ul>	<ul style="list-style-type: none"> <li>• High-efficiency filter for exceptionally clean compressed air</li> <li>• Removal of oil aerosols from compressed air</li> <li>• Optionally with differential pressure indicator for indication of contamination</li> <li>• Optionally with electronic filter pollution indicator</li> <li>• Sizes: 4, 6, 9, 12</li> </ul>	<ul style="list-style-type: none"> <li>• High-efficiency filter for exceptionally clean compressed air</li> <li>• Removal of oil aerosols from compressed air</li> <li>• Optionally with differential pressure indicator for indication of contamination</li> <li>• Optionally with electronic filter pollution indicator</li> <li>• Sizes: 4, 6, 9, 12</li> </ul>	<ul style="list-style-type: none"> <li>• Removal of gaseous oil particles from compressed air using activated carbon</li> <li>• Air quality class at the output [1.4.1] acc. to ISO 8573-1</li> <li>• Eliminates odours and vapours</li> <li>• Residual oil content ≤ 0.003 mg/m<sup>3</sup></li> <li>• Sizes: 4, 6, 9, 12</li> </ul>
→ Page/online	<a href="#">ms4-lf</a>	<a href="#">ms4-lfm-b</a>	<a href="#">ms4-lfm-a</a>	<a href="#">ms4-lfx</a>


## Filters: D series, metal design

Type	 Filter LF	 Fine filter LFMB	 Micro filter LFMA	 Fine filter combination LFMB
<b>Pneumatic connection 1</b>	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1, M5, M7, QS4, QS6	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	G1/8, G1/4, G3/8, G1/2, G3/4, G1
<b>Standard nominal flow rate</b>	170 ... 5300 l/min	250 ... 1250 l/min	130 ... 950 l/min	125 ... 600 l/min
<b>Operating pressure</b>	0 ... 16 bar	1 ... 16 bar	1 ... 16 bar	1 ... 16 bar
<b>Grade of filtration</b>	5 ... 40 µm	1 µm	0.01 µm	0.01 ... 1 µm
<b>Description</b>	<ul style="list-style-type: none"> <li>• Good particle and condensate separation</li> <li>• With manual or fully automatic condensate drain</li> <li>• Sizes: micro, mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>• High-efficiency filter for exceptionally clean compressed air</li> <li>• Removal of oil aerosols from compressed air</li> <li>• Version with differential pressure indicator for visual indication of filter contamination</li> <li>• Sizes: mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>• High-efficiency filter for exceptionally clean compressed air</li> <li>• Removal of oil aerosols from compressed air</li> <li>• Version with differential pressure indicator for visual indication of filter contamination</li> <li>• Sizes: mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>• High-efficiency filter for exceptionally clean compressed air</li> <li>• Fully assembled filter combination, comprising LFMB and LFMA</li> <li>• Version with differential pressure indicator for visual indication of filter contamination</li> <li>• Sizes: mini, midi, maxi</li> </ul>
<b>→ Page/online</b>	<a href="#">lf</a>	<a href="#">lfmb</a>	<a href="#">lfma</a>	<a href="#">lfmba</a>

## Filters: D series, metal




Type	 Activated carbon filter LFX
<b>Pneumatic connection 1</b>	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1
<b>Standard nominal flow rate</b>	300 ... 1430 l/min
<b>Operating pressure</b>	0 ... 16 bar
<b>Grade of filtration</b>	
<b>Description</b>	<ul style="list-style-type: none"> <li>• Removal of gaseous oil particles from compressed air using activated carbon</li> <li>• Air quality class at the output [1.4.1] acc. to ISO 8573-1</li> <li>• Eliminates odours and vapours</li> <li>• Residual oil content ≤ 0.003 mg/m<sup>3</sup></li> <li>• Sizes: mini, midi, maxi</li> </ul>
<b>→ Page/online</b>	<a href="#">lfx</a>

## Filters: individual devices



Type	 Filter silencer LFU
<b>Size</b>	G1/4, G3/8, G1/2, G1
<b>Grade of filtration</b>	1 µm
<b>Operating pressure</b>	0 ... 16 bar
<b>Flow rate with respect to atmosphere</b>	4000 ... 12500 l/min
<b>Noise reduction</b>	Reduction by 40 dB
<b>Description</b>	<ul style="list-style-type: none"> <li>• Removes up to 99.99% of oil and other contaminants from exhaust air</li> <li>• Manual rotary condensate drain</li> <li>• Exhaust noise reduced regardless of frequency</li> </ul>
<b>→ Page/online</b>	<a href="#">lfu</a>




## Regulators: MS series

Type	 Pressure regulator MS4-LR, MS6-LR, MS9-LR	 Pressure regulator MS12-LR	 Pressure regulator MS4-LRB, MS6-LRB
<b>Pneumatic connection 1</b>	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	Connecting plate	Connecting plate, G1/4, G3/8, G1/2
<b>Standard nominal flow rate</b>	1000 ... 33000 l/min	12000 ... 22000 l/min	300 ... 7300 l/min
<b>Pressure regulation range</b>	0.3 ... 16 bar	0.15 ... 16 bar	0.3 ... 16 bar
<b>Operating pressure</b>	0.8 ... 20 bar	0.8 ... 21 bar	0.8 ... 20 bar
<b>Max. pressure hysteresis</b>	0.25 ... 0.4 bar	0.04 ... 0.4 bar	0.25 bar
<b>Description</b>	<ul style="list-style-type: none"> <li>• High flow rate with minimal pressure drop</li> <li>• Good regulation characteristics with minimal hysteresis and primary pressure compensation</li> <li>• Available with or without secondary venting</li> <li>• Lockable rotary knob</li> <li>• Optional pressure sensor and rotary knob pressure gauge</li> <li>• Sizes: 4, 6, 9</li> </ul>	<ul style="list-style-type: none"> <li>• High flow rate with minimal pressure drop</li> <li>• Good regulation characteristics with minimal hysteresis and primary pressure compensation</li> <li>• With secondary venting</li> <li>• Lockable rotary knob</li> <li>• MS12-LR-...-PO: pneumatically actuated (pressure range determined by means of pilot regulator)</li> <li>• MS12-LR-...-PE6: electrically actuated (pilot control by proportional pressure regulator)</li> <li>• Size: 12</li> </ul>	<ul style="list-style-type: none"> <li>• To build up a regulator manifold with through air supply for pressure ranges that can be adjusted independently of another</li> <li>• Good regulation characteristics with minimal hysteresis and primary pressure compensation</li> <li>• Lockable rotary knob</li> <li>• With and without secondary venting</li> <li>• Integrated return flow option for exhausting from output 2 to input 1</li> <li>• Optional pressure sensor and rotary knob pressure gauge</li> <li>• Sizes 4, 6</li> </ul>
<b>→ Page/online</b>	985	<a href="#">ms12-lr</a>	995



## Regulators: MS series

Type	 Precision pressure regulator MS6-LRP, MS6-LRPB	 Electric pressure regulator MS6-LRE
<b>Pneumatic connection 1</b>	Connecting plate, G1/4, G3/8, G1/2	Connecting plate, G1/4, G3/8, G1/2
<b>Standard nominal flow rate</b>	800 ... 5000 l/min	2200 ... 7500 l/min
<b>Pressure regulation range</b>	0.05 ... 12 bar	0.3 ... 16 bar
<b>Operating pressure</b>	1 ... 14 bar	0.8 ... 20 bar
<b>Max. pressure hysteresis</b>	0.02 bar	0.25 bar
<b>Description</b>	<ul style="list-style-type: none"> <li>• As individual device and for manifold assembly</li> <li>• Manifold assembly with through air supply</li> <li>• Good regulation characteristics with minimal hysteresis and primary pressure compensation</li> <li>• High secondary venting</li> <li>• Lockable rotary knob</li> <li>• Optionally with pressure sensor with display</li> <li>• Size: 6</li> </ul>	<ul style="list-style-type: none"> <li>• With integrated electric drive unit for remotely setting the output pressure</li> <li>• Constant output pressure even in the event of a power failure thanks to the fail-safe function</li> <li>• Optionally with control unit with display</li> <li>• Optional pressure sensor</li> <li>• With or without secondary venting</li> <li>• Size: 6</li> </ul>
<b>→ Page/online</b>	1002	<a href="#">ms6-lre</a>


## Regulators: D series, metal

Type	 Pressure regulator LR, LRS	 Pressure regulator LRB, LRBS	 Pressure regulator combination LRB-K
<b>Pneumatic connection 1</b>	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M5, M7, QS-4, QS-6	Connecting plate	G1/4, G3/8, G1/2
<b>Standard nominal flow rate</b>	120 ... 12500 l/min	1600 ... 3800 l/min	1000 ... 3800 l/min
<b>Pressure regulation range</b>	0.5 ... 12 bar	0.5 ... 12 bar	0.5 ... 12 bar
<b>Operating pressure</b>	0 ... 16 bar	1 ... 16 bar	1 ... 16 bar
<b>Max. pressure hysteresis</b>	0.2 ... 0.5 bar	0.2 bar	0.2 ... 0.5 bar
<b>Description</b>	<ul style="list-style-type: none"> <li>Lockable design</li> <li>Two pressure gauge connections for different installation options</li> <li>Micro, mini, midi size: directly actuated diaphragm regulator</li> <li>Maxi size: piloted piston regulator, diaphragm regulator LRS-DI</li> <li>Optional return flow option for venting from output 2 to input 1</li> <li>Optionally with pressure gauge</li> <li>Sizes: micro, mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>To build up a regulator manifold with through air supply for pressure ranges that can be adjusted independently of another</li> <li>Without pressure gauge</li> <li>Directly actuated diaphragm regulator</li> <li>Settings secured via detent on rotary knob and push-in adjustment lock</li> <li>Lockable design</li> <li>Sizes: mini, midi</li> </ul>	<ul style="list-style-type: none"> <li>Regulator manifold with through air supply for pressure ranges that can be adjusted independently of another</li> <li>Without pressure gauge</li> <li>Directly actuated diaphragm regulator</li> <li>Settings secured via detent on rotary knob and push-in adjustment lock</li> <li>Sizes: mini, midi</li> </ul>
<b>→ Page/online</b>	<a href="#">lr</a>	<a href="#">lrb</a>	<a href="#">lrb</a>


## Regulators: D series, polymer

Type	 Pressure regulator LR-DB	 Pressure regulator combination LRB-DB
<b>Pneumatic connection 1</b>	G1/8, G1/4	G1/2
<b>Standard nominal flow rate</b>	≥1300 l/min	≥1000 l/min
<b>Pressure regulation range</b>	0.5 ... 7 bar	0.5 ... 7 bar
<b>Operating pressure</b>	1.5 ... 10 bar	0 ... 16 bar
<b>Max. pressure hysteresis</b>	0.5 bar	0.5 bar
<b>Description</b>	<ul style="list-style-type: none"> <li>Set values are secured by locking the rotary knob</li> <li>Optionally with pressure gauge</li> <li>Size: mini</li> </ul>	<ul style="list-style-type: none"> <li>Regulator manifold with through air supply for pressure ranges that can be adjusted independently of another</li> <li>Without pressure gauge</li> <li>Set values are secured by locking the rotary knob</li> <li>Size: mini</li> </ul>
<b>→ Page/online</b>	<a href="#">lr-db</a>	<a href="#">lrb-db</a>


## Regulators: individual devices

	
Type	Precision pressure regulator LRP, LRPS
Pneumatic connection 1	G1/4
Standard nominal flow rate	800 ... 2300 l/min
Pressure regulation range	0.05 ... 10 bar
Operating pressure	1 ... 12 bar
Max. pressure hysteresis	0.02 bar
Description	<ul style="list-style-type: none"> <li>• Lockable design</li> <li>• Good regulation characteristics with minimal hysteresis and primary pressure compensation</li> <li>• High secondary venting</li> </ul>
→ Page/online	1053




## Lubricators: MS series

	
Type	Lubricator MS4-LOE, MS6-LOE, MS9-LOE, MS12-LOE
Pneumatic connection 1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1
Standard nominal flow rate	1100 ... 27000 l/min
Operating pressure	1 ... 16 bar
Minimum flow rate for lubricator function	40 ... 400 l/min
Description	<ul style="list-style-type: none"> <li>• Proportional lubricator with precision oil metering</li> <li>• Quick and easy top-up even under pressure</li> <li>• Oil capacity 30 ... 1500 cm<sup>3</sup></li> <li>• Sizes: 4, 6, 9, 12</li> </ul>
→ Page/online	<a href="#">ms4-loe</a>




## Lubricators: D series

	
Type	Lubricator LOE
Pneumatic connection 1	G1/8, G1/4, G3/8, G1/2, G3/4, G1, M5, M7, QS-4, QS-6
Standard nominal flow rate	160 ... 9000 l/min
Operating pressure	0 ... 16 bar
Minimum flow rate for lubricator function	3 ... 10 l/min
Description	<ul style="list-style-type: none"> <li>• Proportional lubricator with precision oil metering</li> <li>• Quick and easy top-up even under pressure</li> <li>• Oil capacity 6.5 ... 190 cm<sup>3</sup></li> <li>• Sizes: micro, mini, midi, maxi</li> </ul>
→ Page/online	<a href="#">loe</a>



## On-off and soft-start valves: MS series

Type	 Soft-start and quick exhaust valve MS6-SV-E, MS6-SV-D	 Soft-start/quick exhaust valve MS6-SV-C, MS9-SV-C	 On-off valve MS4-EM1, MS6-EM1, MS9-EM, MS12-EM
Pneumatic port 1	Connecting plate, G1/2	Sub-base, G1/2, G3/4, G1	Sub-base, G1/8, G1/4, 3/8, G1/2, G3/4, G1
Standard nominal flow rate	4300 l/min	5700 l/min, 14150 ... 16460 l/min	1200 ... 32000 l/min
Operating pressure	3.5 ... 10 bar	3 ... 18 bar, 3.5 ... 16 bar	0 ... 20 bar
Type of actuation	Electrical	Electrical	Manual
Description	<ul style="list-style-type: none"> <li>Reliable 2-channel venting with self-monitoring up to Performance Level e and category 4 to EN ISO 13849-1</li> <li>SIL 3</li> <li>For reducing pressure quickly and reliably and for building up pressure gradually</li> <li>Adjustable pressure build-up time</li> <li>Optionally with silencer</li> <li>Supply voltage 24 V DC</li> <li>Size: 6</li> </ul>	<ul style="list-style-type: none"> <li>Single-channel venting up to Performance Level c and category 1 to EN ISO 13849-1</li> <li>For reducing pressure quickly and reliably and for building up pressure gradually</li> <li>Adjustable pressure build-up time</li> <li>Adjustable switch-through pressure</li> <li>Supply voltage 24 V DC</li> <li>Size: 6, 9</li> </ul>	<ul style="list-style-type: none"> <li>Manual 3/2-way valve for pressurising and venting pneumatic installations</li> <li>A silencer can be attached or the exhaust air ducted at port 3</li> <li>Switching position is immediately recognisable</li> <li>Optional with pressure gauge and pressure sensor</li> <li>Sizes: 4, 6, 9, 12</li> </ul>
→ Page/online	<a href="#">ms6-sv-e</a> , 1038	1029	1008



## On-off and soft-start valves: MS series

Type	 On-off valve MS4-EE, MS6-EE, MS9-EE, MS12-EE	 Soft-start valve MS4-DL, MS6-DL, MS12-DL	 Soft-start valve MS4-DE, MS6-DE, MS12-DE
Pneumatic connection 1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1	Connecting plate, G1/8, G1/4, G3/8, G1/2, G3/4, G1
Standard nominal flow rate	1000 ... 32000 l/min	1000 ... 42000 l/min	1000 ... 42000 l/min
Operating pressure	3 ... 18 bar	2 ... 20 bar	3 ... 18 bar
Type of actuation	Electrical	Pneumatic	Electrical
Description	<ul style="list-style-type: none"> <li>Electrical 3/2-way valve for pressurising and venting pneumatic installations</li> <li>A silencer can be attached or the exhaust air ducted at port 3</li> <li>Supply voltage 24 V DC, 110, 230 V AC</li> <li>Optional with pressure gauge and pressure sensor</li> <li>With solenoid coil, without plug socket</li> <li>Sizes: 4, 6, 9, 12</li> </ul>	<ul style="list-style-type: none"> <li>2/2-way valve for slowly pressurising pneumatic installations (for use with on-off valves EM1 and EE)</li> <li>For building up pressure gradually</li> <li>Adjustable pressure build-up time</li> <li>Sizes: 4, 6, 12</li> </ul>	<ul style="list-style-type: none"> <li>2/2-way valve for slowly pressurising pneumatic installations with electrically switchable pressure switchover point</li> <li>Supply voltage 24 V DC, 110, 230 V AC</li> <li>Switchable pressure switching point</li> <li>For advancing the drives slowly and reliably into the initial position</li> <li>For avoiding sudden and unexpected movements</li> <li>Adjustable pressure build-up time</li> <li>Sizes: 4, 6, 12</li> </ul>
→ Page/online	1015	1024	<a href="#">ms4-de</a>


## On-off and soft-start valves: D series

Type	 On-off valve HE	 On-off valve HEE	 On-off valve HEP	 Soft-start valve HEL
<b>Pneumatic connection 1</b>	G1/8, G1/4, G3/8, G1/2, G3/4, G1	G1/8, G1/4, G3/8, G1/2, G3/4, G1	G1/8, G1/4, G3/8, G1/2, G3/4, G1	G1/8, G1/4, G3/8, G1/2, G3/4, G1
<b>Standard nominal flow rate</b>	1000 ... 10000 l/min	1000 ... 6500 l/min	1000 ... 6500 l/min	1000 ... 6500 l/min
<b>Operating pressure</b>	0 ... 16 bar	2.5 ... 16 bar	0 ... 16 bar	3 ... 16 bar
<b>Type of actuation</b>	Manual	Electrical	Pneumatic	Pneumatic
<b>Description</b>	<ul style="list-style-type: none"> <li>Manual 3/2-way valve for pressurising and venting pneumatic installations</li> <li>A silencer can be attached or the exhaust air ducted at port 3</li> <li>The switching position is immediately recognisable</li> <li>Sizes: mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>Electrical 3/2-way valve for pressurising and venting pneumatic installations</li> <li>A silencer can be attached or the exhaust air ducted at port 3</li> <li>With solenoid coil, without plug socket</li> <li>Solenoid head can be repositioned by 4 x 90°</li> <li>Detenting and non-detenting manual override</li> <li>Supply voltage 24 V DC, 110, 230 V AC</li> <li>Sizes: mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>Pneumatic 3/2-way valve for pressurising and venting pneumatic installations</li> <li>Especially suitable for applications requiring explosion protection</li> <li>Sizes: mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>2/2-way valve for slowly pressurising pneumatic installations (for use with on-off valves HE and HEE)</li> <li>For building up pressure gradually</li> <li>Adjustable pressure build-up time</li> <li>Sizes: mini, midi, maxi</li> </ul>
<b>→ Page/online</b>	<a href="#">he</a>	<a href="#">hee</a>	<a href="#">hep</a>	<a href="#">hel</a>


## On-off and soft-start valves: individual devices

Type	 Shut-off valve HE-LO	 Solenoid valve, pneumatic valve MFHE, VLHE
<b>Pneumatic connection 1</b>	G3/8, G1/2, G3/4, G1	G1/4, G3/8, G1/2
<b>Standard nominal flow rate</b>	15000 ... 10000 l/min	1200 ... 2900 l/min
<b>Operating pressure</b>	1 ... 10 bar	2 ... 12 bar
<b>Type of actuation</b>	Manual	Electric, pneumatic
<b>Description</b>	<ul style="list-style-type: none"> <li>To OSHA 29 CFR 147</li> <li>For shutting off the compressed air supply whilst simultaneously venting systems powered by compressed air</li> <li>Can be locked in the closed position</li> <li>Screwed into piping, through-holes for wall mounting</li> </ul>	<ul style="list-style-type: none"> <li>3/2-way valve for reducing pressure quickly and for building up pressure gradually</li> <li>For F-solenoid coils</li> <li>Manual override, detenting</li> </ul>
<b>→ Page/online</b>	<a href="#">he-lo</a>	<a href="#">mfhe</a>


## Air dryers: MS series

Type	 Membrane air dryer MS4-LDM1, MS6-LDM1
<b>Pneumatic connection 1</b>	Connecting plate, G1/8, G1/4, G3/8, G1/2
<b>Standard nominal flow rate</b>	50 ... 400 l/min
<b>Operating pressure</b>	3 ... 12.5 bar
<b>Pressure dew point reduction</b>	20 K
<b>Description</b>	<ul style="list-style-type: none"> <li>Final dryer with excellent operational reliability</li> <li>Suitable for use as an individual device or for integration into existing service unit combinations</li> <li>Flow rate-dependent dew point reduction</li> <li>Wear-free function requiring no external energy</li> <li>Sizes: 4, 6</li> </ul>
<b>→ Page/online</b>	<a href="#">ms4-ldm1</a>

## Air dryers: D series



	
Type	Membrane air dryer LDM1
Pneumatic connection 1	G1/2, G3/4, G1
Standard nominal flow rate	300 ... 1000 l/min
Operating pressure	3 ... 12.5 bar
Pressure dew point reduction	17 ... 20 K
Description	<ul style="list-style-type: none"> <li>• Final dryer with excellent operational reliability</li> <li>• Suitable for use as an individual device or for integration into existing service unit combinations</li> <li>• Flow rate-dependent dew point reduction</li> <li>• Wear-free function requiring no external energy</li> <li>• Size: maxi</li> <li>• Individual device with or without sub-bases, for service unit combination</li> </ul>
→ Page/online	<a href="#">ldm1</a>

## Air dryers: individual devices



	
Type	Adsorption dryer PDAD
Pneumatic connection 1	G3/8, G1/2
Standard nominal flow rate	10 ... 1000 l/min
Supply pressure 1	4 ... 16 bar
Pressure dew point	-40 °C or -70 °C
Description	<ul style="list-style-type: none"> <li>• Ideal for decentralised compressed air drying</li> <li>• Integrated filtering of oil and particulates</li> <li>• Defined pressure dew point</li> <li>• Low purge air consumption</li> </ul>
→ Page/online	<a href="#">pdad</a>

12

## Compressed air distribution units: MS series

		
Type	Branching module MS4-FRM, MS6-FRM, MS9-FRM, MS12-FRM	Distributor block MS4-FRM-FRZ, MS6-FRM-FRZ
Pneumatic port 1	Sub-base, G1/8, G1/4, G3/8, G1/2, G3/4, G1, G11/4, G11/2	G1/4, G1/2
Standard nominal flow rate in main flow direction 1->2	1200 ... 50000 l/min	4050 ... 14600 l/min
Operating pressure	0 ... 20 bar	0 ... 20 bar
Description	<ul style="list-style-type: none"> <li>• Optionally with integrated non-return function and pressure switch</li> <li>• Outlet at top and bottom</li> <li>• Can be used as an intermediate distributor for varying air qualities</li> <li>• Optionally with pressure sensor</li> <li>• Sizes: 4, 6, 9, 12</li> </ul>	<ul style="list-style-type: none"> <li>• Slim pneumatic distributor</li> <li>• Outlet at top and bottom</li> <li>• Can be used as an intermediate distributor for varying air qualities</li> <li>• Can be used as an adapter between two pressure regulators with large rotary knob with pressure gauge on size MS4</li> <li>• Sizes: 4, 6</li> </ul>
→ Page/online	<a href="#">1042</a>	<a href="#">ms*-frm-frz</a>


## Compressed air distribution units: D series

		
<b>Type</b>	Branching module FRM	Distributor block FRZ
<b>Pneumatic port 1</b>	G1/8, G1/4, G3/8, G1/2, G3/4, G1	Manifold module
<b>Standard nominal flow rate in main flow direction 1-&gt;2</b>	1100 ... 20000 l/min	
<b>Operating pressure</b>	0 ... 16 bar	
<b>Description</b>	<ul style="list-style-type: none"> <li>• Optionally with integrated non-return function and pressure switch</li> <li>• Outlet at top and bottom</li> <li>• Can be used as an intermediate distributor for varying air qualities</li> <li>• Sizes: mini, midi, maxi</li> </ul>	<ul style="list-style-type: none"> <li>• Slim pneumatic distributor</li> <li>• Outlet at top and bottom</li> <li>• Can be used as an intermediate distributor for varying air qualities</li> <li>• Sizes: micro, mini, midi, maxi</li> </ul>
<b>→ Page/online</b>	<a href="#">frm</a>	<a href="#">frz</a>

## Condensate drain

			
<b>Type</b>	Water separator MS6-LWS, MS9-LWS, MS12-LWS	Condensate drain PWEA	Condensate drain WA
<b>Pneumatic port</b>		G1/2	M9
<b>Pneumatic connection 1</b>	Connecting plate, G1/4, G3/8, G1/2, G3/4, G1		
<b>Operating pressure</b>	0.8 ... 16 bar	0.8 ... 16 bar	0 ... 16 bar
<b>Description</b>	<ul style="list-style-type: none"> <li>• Efficient and maintenance-free water separator</li> <li>• Constantly high condensate separation (99%) up to the maximum flow rate</li> <li>• Optionally with fully automatic or fully automatic, electrically actuated condensate drain</li> <li>• Sizes: 6, 9, 12</li> </ul>	<ul style="list-style-type: none"> <li>• Fully automatic condensate drain with independent electrical controller</li> <li>• Interface for communicating with master control device</li> <li>• Reliable thanks to non-contacting capacitive sensor</li> <li>• Can be used with service units or simply in piping systems</li> <li>• Ready status and switching status indicated via LEDs and electrical interface</li> </ul>	<ul style="list-style-type: none"> <li>• For attachment to service units and compressed air networks/systems</li> <li>• Automatic emptying after the max. fill level has been reached</li> <li>• Automatic emptying after the operating pressure <math>p &lt; 0.5</math> bar is switched off</li> <li>• Manual actuation during operation is possible</li> </ul>
<b>→ Page/online</b>	<a href="#">979</a>	<a href="#">pwea</a>	<a href="#">wa</a>



## Pressure boosters

	
Type	Pressure booster DPA
Pneumatic connection 1	G1/4, G3/8, G1/2
Output pressure 2	4 ... 16 bar
Supply pressure 1	2 ... 10 bar
Description	<ul style="list-style-type: none"> <li>• Pneumatic pressure increase up to the double inlet pressure</li> <li>• Optional as pressure booster/air pressure reservoir combinations</li> <li>• Any mounting position</li> <li>• Short filling times</li> <li>• Long service life</li> <li>• Compact design</li> <li>• Optionally with sensing option</li> </ul>
→ Page/online	<a href="#">dpa</a>

## Pressure indicators

				
Type	Pressure gauge PAGN	Pressure gauge MA	Flanged pressure gauge FMA	Flanged precision pressure gauge, precision pressure gauge FMAP, MAP
Type of mounting	In-line installation	In-line installation	Front panel mounting	Front panel mounting, in-line installation
Display range	0 ... 16 bar	0 ... 25 bar	0 ... 16 bar	0 ... 16 bar
Pneumatic port	Cartridge 10 mm, R1/8	G1/8, G1/4, M5, QS4, QS6, QS8, R1/8, R1/4	G1/4	G1/4, R1/8
Operating pressure	0 ... 16 bar	0 ... 25 bar	0 ... 16 bar	0 ... 16 bar
Measurement accuracy class	1.6, 2.5, 4	1.6, 2.5, 4, 5	1.6, 2.5	1, 1.6
Description	<ul style="list-style-type: none"> <li>• Pneumatic connection via QSP-10</li> <li>• Mounting via retaining clamp</li> <li>• Display units bar, psi</li> </ul>	<ul style="list-style-type: none"> <li>• Designs based on DIN EN 837-1, optionally with red-green range</li> <li>• Pneumatic connection via R, metric or G thread, push-in connector</li> <li>• Display units bar, psi, MPa</li> </ul>	<ul style="list-style-type: none"> <li>• Designs based on EN 837-1</li> <li>• Front panel mounting</li> <li>• Pneumatic connection via G thread</li> <li>• Display units bar, psi</li> </ul>	<ul style="list-style-type: none"> <li>• Designs based on EN 837-1</li> <li>• Screw-in or front panel mounting</li> <li>• Pneumatic connection via R or G thread</li> <li>• Display units bar, psi</li> </ul>
→ Page/online	<a href="#">pagn</a>	<a href="#">ma</a>	<a href="#">fma</a>	<a href="#">fmap</a>

## Pressure indicators

		
Type	Pressure gauge kit DPA-MA-SET	Vacuum gauge VAM, FVAM
Type of mounting	With male thread	Front panel mounting, screw-in
Display range		-1 bar, -1 ... 9 bar
Pneumatic port	G1/8, G1/4, R1/8	G1/8, G1/4, R1/8, R1/4
Operating pressure	10 ... 16 bar	-1 bar, -1 ... 9 bar
Measurement accuracy class	2.5, 4	2.5
Description	<ul style="list-style-type: none"> <li>• For pressure booster DPA</li> <li>• For monitoring the supply and output pressure</li> <li>• Pneumatic connection via R or G thread</li> </ul>	<ul style="list-style-type: none"> <li>• Designs based on DIN EN 837-1, optionally with red-green range</li> <li>• Screw-in or front panel mounting</li> <li>• Pneumatic connection via R or G thread</li> <li>• Double or single scale</li> <li>• Display units bar, in Hg, psi</li> </ul>
→ Page/online	<a href="#">dpa</a>	<a href="#">vam</a>



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- Tubing with special printing
- Pressure gauge with red-green range

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Overview/Configuration/Order  
→ [www.festo.com/catalogue/ms series](http://www.festo.com/catalogue/ms series)

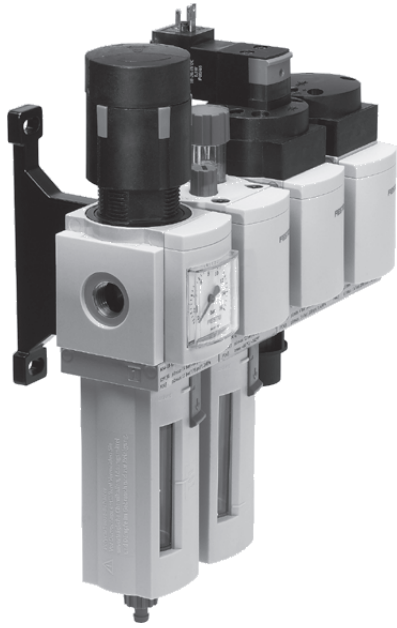


Additional information/Support/User documentation  
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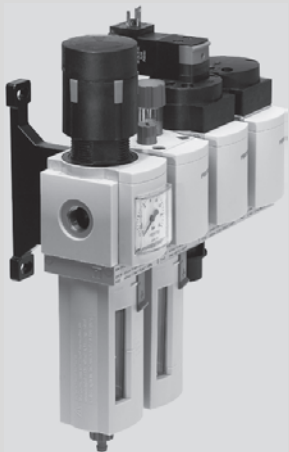
MS series

Service units

# Selection aid



- + Extremely high flow rates
- + Individual configuration in the modular system
- + Built-in pressure/flow sensors
- + Built-in safety valves
- + Energy efficiency thanks to size mix

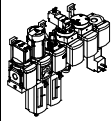
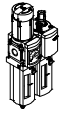
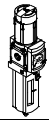






- Easy to assemble thanks to a modular structure
- 4 sizes (G1/8 to G2):  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm,  
MS9 – grid dimension 90 mm, MS12 – grid dimension 124 mm
- Compact with high flow rates: up to 22000 l/min
- Integrated safety functions
- Broad range of functions: individual components, pre-assembled combinations ex-stock, application-specific combinations or complete turnkey solutions
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)  
→ [www.festo.com/catalogue/baureihe\\_ms](http://www.festo.com/catalogue/baureihe_ms)

## Features

- Solutions for every application from individual components through pre-assembled combinations ex-stock and application-specific combinations to complete turnkey solutions
- Wealth of options ensures the right solution for every task
- Reliable compressed air supply thanks to ultra-modern functional modules with integrated sensors and remote adjustment function
- Maximum flow rates with minimum space requirement
- Flow rates up to 22000 l/min with size MS12
- CAD models and configurator for easy selection of application-specific individual devices and MSB4, MSB6 and MSB9 combinations  
→ [www.festo.com/catalogue](http://www.festo.com/catalogue)
- Simple connection system saves time when replacing individual modules without dismantling the entire unit
- Locking filter bowls and lockable valves fitted as standard for maximum control of the operating pressure and maximum safety
- With soft-start valves, filter contamination indicator and fully automatic condensate drain for reliable operation of your system











## Product range overview

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Grade of filtration [µm]				
				0.05	0.05	0.1	0.3	0.1	0.5	0.01	1	5	40	
Code			AG...	0.7	2.5	4	7	12	16	D8	A	B	C	E
<b>Service unit combinations (additional variants can be ordered using the configurator → online: msb4, msb6 or msb9)</b>														
<b>MSB</b> 	4	G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	-	■	■
	6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	-	■	■
	9	-												
	12	-												
<b>Service units</b>														
<b>MSB-FRC</b> 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	-	■	■
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	-	■	■
	9	-												
	12	-												
<b>Individual devices</b>														
<b>Filter regulators MS-LFR</b> 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-	■	■
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-	■	■
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	-	-	-	-	-	■	■
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	-	■	■
<b>Filter MS-LF</b> 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	■	■
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	■	■
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	■	■
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	■	■
<b>Fine and micro filters MS-LFM</b> 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	■	■	-	-	-
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	■	-	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	■	■	-	-	-
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	-	-	-
<b>Activated carbon filters MS-LFX</b> 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	-	-
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	-	-
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-	-
<b>Water separators MS-LWS</b> 	4	-												
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	-	-
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-	-

## Product range overview

Type	Size	Bowl guard		Condensate drain				Pressure indication					Security		Options		→ Page/ online
		Plastic bowl guard	Metal bowl guard	Manual rotary	Semi-automatic	Fully automatic	External, fully automatic, electric	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensors	Rotary knob with detent, can be locked using accessories	Rotary knob with integrated lock	Pneumatic silencers	Direction of flow from right to left	
Code		R	U	M	H	V	E...	VS	AG	A8	A4	AD...	AS	E11	S	Z	
<b>Service unit combinations</b>																	
MSB	4	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	957
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Service units</b>																	
MSB-FRC	4	■	-	■	-	■	-	-	■	-	-	-	■	-	-	■	967
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Individual devices</b>																	
Filter regulators MS-LFR	4	■	■	■	■	■	-	■	■	■	■	■	■	■	-	■	970
	6	■	■	■	■	■	■	■	■	-	■	■	■	■	-	■	
	9	-	■	■	■	■	■	■	■	-	■	■	■	■	-	■	
	12	-	■	■	-	■	■	■	■	-	■	-	■	■	-	■	
Filter MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms*-lf
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms*-lfm
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	
Activated carbon filters MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms*-lfx
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	
	9	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	
Water separators MS-LWS	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	980
	6	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	








## Product range overview

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Supply voltage				
				0.05	0.05	0.1	0.3	0.1	0.5	24 V DC, pin allocation to EN 175301	24 V DC, connection M12 to IEC 61076-2-101	110 V AC, pin allocation to EN 175301	230 V AC, pin allocation to EN 175301	
Code			AG...	D2	D4	D5	D6	D7	D8	V24	V24P	V110	V230	
<b>Individual devices</b>														
Pressure regulators <b>MS-LR</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-	
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	-	-	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	-	
Pressure regulators <b>MS-LRB</b>		4	G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-	
		6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-	
		9	-	-	-	-	-	-	-	-	-	-	-	
		12	-	-	-	-	-	-	-	-	-	-	-	
Precision pressure regulators <b>MS-LRP</b>		4	-	-	-	-	-	-	-	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-	
		9	-	-	-	-	-	-	-	-	-	-	-	
		12	-	-	-	-	-	-	-	-	-	-	-	
Precision pressure regulators <b>MS-LRPB</b>		4	-	-	-	-	-	-	-	-	-	-	-	
		6	G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-	
		9	-	-	-	-	-	-	-	-	-	-	-	
		12	-	-	-	-	-	-	-	-	-	-	-	
Electric pressure regulators <b>MS-LRE</b>		4	-	-	-	-	-	-	-	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-	
		9	-	-	-	-	-	-	-	-	-	-	-	
		12	-	-	-	-	-	-	-	-	-	-	-	
Lubricators <b>MS-LOE</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	
On-off valves <b>MS-EM(1)</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	
On-off valves <b>MS-EE</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	■	-	■	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	-	■	
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	■	■	■	■
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	■	■
Soft-start valves <b>MS-DL</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	
		9	-	-	-	-	-	-	-	-	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	
Soft-start valves <b>MS-DE</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	■	-	■	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	-	■	
		9	-	-	-	-	-	-	-	-	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	■	■

## Product range overview

Type	Size	Bowl guard		Pressure indication				Security			Options		→ Page/ online
		Plastic bowl guard	Metal bowl guard	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensors	Rotary knob with detent, can be locked using accessories	Rotary knob with integrated lock	Pneumatic silencers	Direction of flow from right to left	
Code		R	U	VS	AG	A8	A4	AD...	AS	E11	S	Z	
<b>Individual devices</b>													
Pressure regulators <b>MS-LR</b>	4	-	-	■	■	■	■	■	■	■	-	■	986
	6	-	-	■	■	-	■	■	■	■	-	■	
	9	-	-	■	■	-	■	■	■	■	-	■	
	12	-	-	■	■	-	■	■	■	■	-	■	
Pressure regulators <b>MS-LRB</b>	4	-	-	■	■	■	■	■	■	■	-	■	996
	6	-	-	■	■	-	■	■	■	■	-	■	
	9	-	-	■	■	-	■	■	■	■	-	■	
Precision pressure regulators <b>MS-LRP</b>	4	-	-	■	-	■	■	■	■	■	-	■	1003
	6	-	-	■	-	■	■	■	■	■	-	■	
	9	-	-	■	-	■	■	■	■	■	-	■	
	12	-	-	■	-	■	■	■	■	■	-	■	
Precision pressure regulators <b>MS-LRPB</b>	4	-	-	■	-	■	■	■	■	■	-	■	ms6-lrpb
	6	-	-	■	-	■	■	■	■	■	-	■	
	9	-	-	■	-	■	■	■	■	■	-	■	
	12	-	-	■	-	■	■	■	■	■	-	■	
Electric pressure regulators <b>MS-LRE</b>	4	-	-	■	■	-	■	-	-	-	-	■	ms6-lre
	6	-	-	■	■	-	■	-	-	-	-	■	
	9	-	-	■	■	-	■	-	-	-	-	■	
	12	-	-	■	■	-	■	-	-	-	-	■	
Lubricators <b>MS-LOE</b>	4	■	■	-	-	-	-	-	-	-	-	■	ms*-loe
	6	■	■	-	-	-	-	-	-	-	-	■	
	9	-	■	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	-	-	■	
On-off valves <b>MS-EM(1)</b>	4	-	-	■	■	■	■	■	-	-	■	■	1009
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-	-	■	■	-	■	■	-	-	■	■	
	12	-	-	■	■	-	■	■	-	-	■	■	
On-off valves <b>MS-EE</b>	4	-	-	■	■	■	■	■	-	-	■	■	1016
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-	-	■	■	-	■	■	-	-	■	■	
	12	-	-	■	■	-	■	■	-	-	■	■	
Soft-start valves <b>MS-DL</b>	4	-	-	■	■	■	■	■	-	-	-	■	1025
	6	-	-	■	■	-	■	■	-	-	-	■	
	9	-	-	■	■	-	■	■	-	-	-	■	
	12	-	-	■	■	-	■	■	-	-	-	■	
Soft-start valves <b>MS-DE</b>	4	-	-	■	■	■	■	■	-	-	-	■	ms*-de
	6	-	-	■	■	-	■	■	-	-	-	■	
	9	-	-	■	■	-	■	■	-	-	-	■	
	12	-	-	■	■	-	■	■	-	-	-	■	

## Product range overview

Type	Size	Pneumatic connection in housing	Connecting plate	Performance Level			Supply voltage				
				Category 1, 1-channel	Category 3, 2-channel	Category 4, 2-channel with self-monitoring	24 V DC, pin allocation to EN 175301	24 V DC, connection M12 to IEC 61076-2-101/to EN 60947-5-2	110 V AC, pin allocation to EN 175301	230 V AC, pin allocation to EN 175301	
Code			AG...	C	D	E	V24	V24P	V110	V230	
<b>Individual devices</b>											
Soft-start/quick exhaust valves <b>MS-SV-C</b>		4	–								
		6	G1/2	G1/4, G3/8, G1/2, G3/4	■	–	–	■	■	■	■
		9	G3/4, G1	G1/2, G3/4, G1, G11/4, G11/2	■	–	–	■	■	■	■
		12	–								
Soft-start/quick exhaust valves <b>MS-SV-D</b>		4	–								
		6	G1/2	G1/4, G3/8, G1/2, G3/4	–	■	–	■	■	–	–
		9	–								
		12	–								
Soft-start/quick exhaust valves <b>MS-SV-E</b>		4	–								
		6	G1/2	G1/4, G3/8, G1/2, G3/4	–	–	■	■	–	–	–
		9	–								
		12	–								
Membrane air dryers <b>MS-LDM1</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	–	–	–	–
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	–	–	–	–
		9	–								
		12	–								
Branching modules <b>MS-FRM</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	–	–	–	–
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	–	–	–	–
		9	G3/4, G1	G1/2, G3/4, G1, G11/4, G11/2	–	–	–	–	–	–	–
		12	–	G1, G11/4, G11/2, G2	–	–	–	–	–	–	–
Distributor blocks <b>MS-FRM-FRZ</b>		4	–	–	–	–	–	–	–	–	
		6	–	–	–	–	–	–	–	–	
		9	–								
		12	–								
Flow sensors <b>SFAM</b>		4	–								
		6	G1/2	G1/2	–	–	–	–	–	–	–
		9	–	G1, G11/2	–	–	–	–	–	–	–
		12	–								



## Product range overview

Type	Size	Bowl guard		Pressure indication				Electrical output		Options		→ Page/ online	
		Plastic bowl guard	Metal bowl guard	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensors	2x PNP or NPN, 1 analogue output 4 ... 20 mA	2x PNP or NPN, 1 analogue output 0 ... 10 V	Pneumatic silencers		Direction of flow from right to left
Code		R	U	VS	AG	A8	A4	AD...	2SA	2SV	S	Z/R	
<b>Individual devices</b>													
Soft-start/quick exhaust valves <b>MS-SV-C</b>	4	-											1030
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-	-	■	■	-	■	■	-	-	■	■	
	12	-											
Soft-start/quick exhaust valves <b>MS-SV-D</b>	4	-											1037
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-											
	12	-											
Soft-start/quick exhaust valves <b>MS-SV-E</b>	4	-											ms6-sv
	6	-	-	■	■	-	■	■	-	-	■	■	
	9	-											
	12	-											
Membrane air dryers <b>MS-LDM1</b>	4	-	■	-	-	-	-	-	-	-	-	■	ms*-ldm1
	6	-	■	-	-	-	-	-	-	-	-	■	
	9	-											
	12	-											
Branching modules <b>MS-FRM</b>	4	-	-	■	■	■	■	■	-	-	-	■	1043
	6	-	-	■	■	-	■	■	-	-	-	■	
	9	-	-	■	■	-	■	■	-	-	-	■	
	12	-	-	■	-	-	-	-	-	-	-	-	
Distributor blocks <b>MS-FRM-FRZ</b>	4	-	-	-	-	-	-	-	-	-	-	■	ms*-frz
	6	-	-	-	-	-	-	-	-	-	-	■	
	9	-											
	12	-											
Flow sensors <b>SFAM</b>	4	-											sfam
	6	-	-	-	-	-	-	-	■	■	-	■	
	9	-	-	-	-	-	-	-	■	■	-	■	
	12	-											



Overview/Configuration/Ordering  
 → [www.festo.com/catalogue/msb](http://www.festo.com/catalogue/msb)

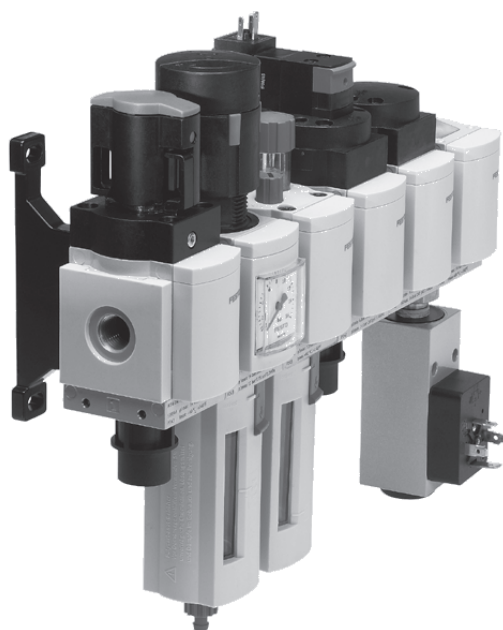


Additional information/Support/User documentation  
 → [www.festo.com/sp/msb](http://www.festo.com/sp/msb)

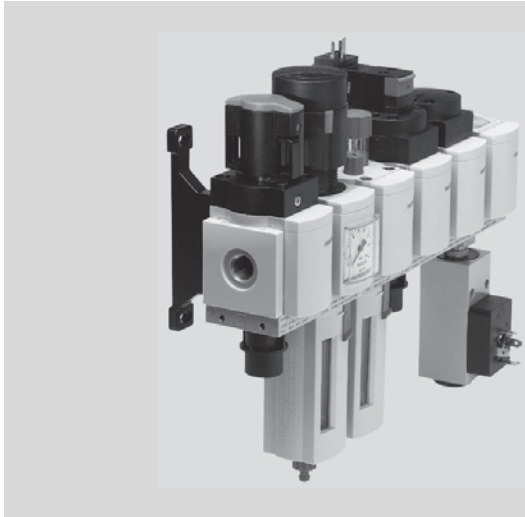
MS series

Service unit combinations

# MSB



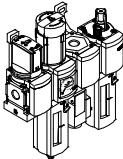
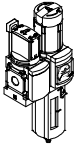
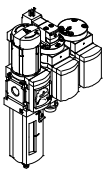
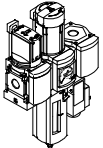
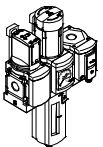
- + Service unit combinations in the sizes 4, 6, 9
- + Combinations of filter regulator MS-LFR, filter MS-LF, fine and micro filter MS-LFM, activated carbon filter MS-LFX, pressure regulator MS-LR, MS-LRB, precision pressure regulator MS-LRP, MS-LRPB, electric pressure regulator MS-LRE, lubricator MS-LOE, on-off valve MS-EM, MS-EE, soft-start valve MS-DL, MS-DE, soft-start/quick exhaust valve MS-SV, membrane air dryer MS-LDM1
- + Combinations of filter, regulator and lubricator functions in a single unit
- + High flow rate and highly efficient in removing contaminants
- + Good regulation characteristics with minimal pressure hysteresis



- Pre-assembled combinations, fully assembled and tested
- Rapid availability
- 2 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm
- ★ Quick ordering of basic designs → 960, 962, 965, 967

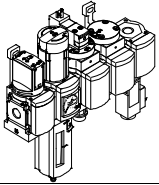
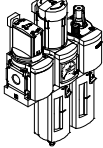
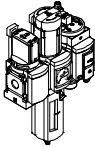
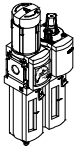
→ [www.festo.com/catalogue/msb](http://www.festo.com/catalogue/msb)

**Product range overview**

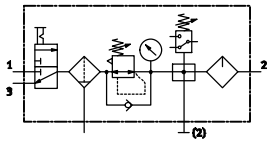
Combina- tion	Version	Size	Pneumatic port	Flow rate [l/min]	→ Page/ online	
<b>Service unit combination</b>						
1		<ul style="list-style-type: none"> <li>• On-off valve MS-EM1, manually operated</li> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• Branching module MS-FRM-Y with pressure switch</li> <li>• Lubricator MS-LOE</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	950	959
2		<ul style="list-style-type: none"> <li>• On-off valve MS-EM1, manually operated</li> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	950 ... 1700	960
			6	G1/2	4800 ... 5100	
3		<ul style="list-style-type: none"> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• On-off valve MS-EE-V24/10V24, solenoid actuated (24 V DC)</li> <li>• Soft-start valve MS-DL, pneumatically actuated</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	750	961
			6	G1/2	3100	
4		<ul style="list-style-type: none"> <li>• On-off valve MS-EM1, manually operated</li> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• Branching module MS-FRM-Y with pressure switch</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	1300	962
			6	G1/2	4500	
		<ul style="list-style-type: none"> <li>• On-off valve MS-EM1, manually operated</li> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• Branching module MS-FRM-AD7 with pressure sensor for operational status indicator</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	1600	962
			6	G1/2	4500	

## Service unit combinations MSB, MS series

## Product range overview

Combina- tion	Version		Size	Pneumatic port	Flow rate [l/min]	→ Page/ online
<b>Service unit combination</b>						
5		<ul style="list-style-type: none"> <li>• On-off valve MS-EM1, manually operated</li> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• On-off valve MS-EE-V24, solenoid actuated (24 V DC)</li> <li>• Soft-start valve MS-DL, pneumatically actuated</li> <li>• Branching module MS-FRM-Y with pressure switch</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	750	963
			6	G1/2	3000 ... 3100	
6		<ul style="list-style-type: none"> <li>• On-off valve MS-EM1, manually operated</li> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• Lubricator MS-LOE</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	750	964
			6	G1/2	3100	
7		<ul style="list-style-type: none"> <li>• On-off valve MS-EM1, manually operated</li> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• On-off valve MS-EE-10V24P-AD7, solenoid actuated (24 V DC), with pressure sensor for operational status indicator</li> <li>• Mounting bracket MS-WP</li> </ul>	4	G1/4	1400	965
			6	G1/2	4000	
<b>Filter regulator/lubricator</b>						
MSB-FRC		<ul style="list-style-type: none"> <li>• Filter regulator MS-LFR with pressure gauge</li> <li>• Lubricator MS-LOE</li> </ul>	4	G1/8, G1/4	850 ... 1400	967
			6	G1/4, G3/8, G1/2	1900 ... 4800	

**Data sheet – Service unit combination 1**



- Manual on-off valve
- Filter regulator with pressure gauge
- Branching module with pressure switch
- Lubricator
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure switch PEV-1/4-B-OD	With adjustable pressure switching point, plug socket, EN 175301, type A, cube	<a href="#">pev</a>

Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>
Size	MSB4	
Pneumatic port	G1/4	
Regulating function	With primary pressure compensation, with return flow action, with secondary venting, outlet pressure constant	
Type of mounting	Via accessories	
Mounting position	Vertical ±5°	
Grade of filtration [µm]	40	
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
Actuator lock	Rotary knob with detent, can be locked using accessories	
Pressure regulation range [bar]	1 ... 12	
Pressure indication	Via pressure gauge for indicating the outlet pressure	
Length/width/height [mm]	80/160/219	

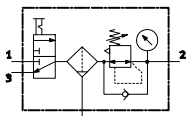
Standard nominal flow rate q <sub>nN</sub>		
Size	MSB4	
q <sub>nN</sub> [l/min]	Grade of filtration 40 µm	950

Operating conditions		
Condensate drain	Manual rotary	
Size	MSB4	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases	
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will be required)	
Operating pressure [bar]	1.5 ... 14	
Ambient temperature [°C]	-10 ... +60	
Oil viscosity	ISO VG 32	

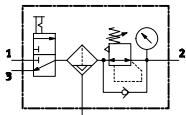
**Ordering data**

Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type
MSB4	Manual rotary	G1/4	40	542295	MSB4-1/4:C3J1F3M1-WP

## Data sheet – Service unit combination 2



- Manual on-off valve
- Filter regulator with pressure gauge
- Mounting bracket



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>			
Size	MSB4		MSB6		
Pneumatic port	G $\frac{1}{4}$		G $\frac{1}{2}$		
Regulating function	With primary pressure compensation, with return flow action, with secondary venting, outlet pressure constant				
Type of mounting	Via accessories				
Mounting position	Vertical $\pm 5^\circ$				
Grade of filtration	[ $\mu\text{m}$ ]	40	5	40	5
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [6:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [6:4:4]
Bowl guard	Plastic bowl guard				
Condensate drain	Manual rotary Fully automatic				
Actuator lock	Rotary knob with detent, can be locked using accessories				
Pressure regulation range	[bar]	0.5 ... 12		0.5 ... 12	
Pressure indication	Via pressure gauge for indicating the outlet pressure				
Length/width/height	[mm]	80/80/219 (222) <sup>2)</sup>		100/124/301 (304) <sup>1)</sup>	

1) Value in brackets with fully automatic condensate drain.

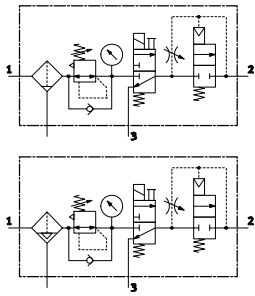
Standard nominal flow rate $q_{nN}$		Manual rotary		Fully automatic	
Condensate drain		MSB4	MSB6	MSB4	MSB6
$q_{nN}$ [l/min]	Grade of filtration 40 $\mu\text{m}$	1700	5100	1000	5100
	Grade of filtration 5 $\mu\text{m}$	950	4800	950	4800

Operating conditions		Manual rotary		Fully automatic	
Condensate drain		MSB4	MSB6	MSB4	MSB6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases			
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will be required)			
Operating pressure	[bar]	0.8 ... 14	0.8 ... 18	2 ... 12	2 ... 12
Ambient temperature	[°C]	-10 ... +60	-10 ... +60	+5 ... +60	+5 ... +60

## Ordering data

Size	Condensate drain	Connection	Grade of filtration [ $\mu\text{m}$ ]	Part no.	Type
MSB4	Manual rotary	G $\frac{1}{4}$	40	★ 8025354	MSB4- $\frac{1}{4}$ :C3J1-WP
		G $\frac{1}{4}$	5	542304	MSB4- $\frac{1}{4}$ :C3J3-WP
	Fully automatic	G $\frac{1}{4}$	40	542298	MSB4- $\frac{1}{4}$ :C3J2-WP
		G $\frac{1}{4}$	5	542310	MSB4- $\frac{1}{4}$ :C3J4-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	★ 8025355	MSB6- $\frac{1}{2}$ :C3J1-WP
		G $\frac{1}{2}$	5	542280	MSB6- $\frac{1}{2}$ :C3J3-WP
	Fully automatic	G $\frac{1}{2}$	40	542274	MSB6- $\frac{1}{2}$ :C3J2-WP
		G $\frac{1}{2}$	5	542286	MSB6- $\frac{1}{2}$ :C3J4-WP

**Data sheet – Service unit combination 3**



- Filter regulator with pressure gauge
- Electric on-off valve (24 V DC)
- Pneumatic soft-start valve
- Mounting bracket



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

Technical data		MSB4	MSB6
Size		MSB4	MSB6
Pneumatic port		G1/4	G1/2
Regulating function		With primary pressure compensation, with return flow action, with secondary venting, outlet pressure constant	
Type of mounting		Via accessories	
Mounting position		Vertical ±5°	
Grade of filtration	[µm]	40	
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:4:4]	
Bowl guard		Plastic bowl guard	
Condensate drain		Manual rotary	
		–	Fully automatic
Actuator lock		Rotary knob with detent, can be locked using accessories	
Pressure regulation range	[bar]	4 ... 12	
Pressure indication		Via pressure gauge for indicating the outlet pressure	
Length/width/height	[mm]	80/120/219	100/186/301 (304) <sup>1)</sup>

1) Value in brackets with fully automatic condensate drain.

Standard nominal flow rate $q_{nN}$		MSB4	MSB6
Size		MSB4	MSB6
$q_{nN}$ [l/min]	Grade of filtration 40 µm	750	3100

Electrical data – Electric on-off valve	
Coil characteristics	24 V DC: 1.5 W; perm. voltage fluctuations –25%/+10%
Electrical connection	Plug, square design to EN 175301-803, type C

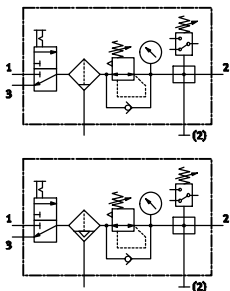
Operating conditions			
Condensate drain		Manual rotary	Fully automatic
Size		MSB4	MSB6
Operating medium		Compressed air to ISO 8573-1:2010 [–:4:–]	
		Inert gases	
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will be required)	
Operating pressure	[bar]	4.5 ... 14	4.5 ... 18
Ambient temperature	[°C]	–10 ... +60	–10 ... +60

**Ordering data**

Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type
MSB4	Manual rotary	G1/4	40	531101	MSB4-1/4:J1D1A1-WP
MSB6	Manual rotary	G1/2	40	530222	MSB6-1/2:J1D1A1-WP
	Fully automatic	G1/2	40	530224	MSB6-1/2:J2D1A1-WP

## Service unit combinations MSB, MS series

## Data sheet – Service unit combination 4



- Manual on-off valve
- Filter regulator with pressure gauge
- Branching module with pressure switch or with pressure sensor
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure switch PEV-1/4-B-OD	With adjustable pressure switching point, plug socket, EN 175301, type A, cube	<a href="#">pev</a>
Pressure sensor SDE5-D10-O-...-P-M8	With 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact	923

Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>			
Size	MSB4	Pressure sensors		MSB6	
Branching module with	Pressure switch	Pressure sensors		Pressure switch	Pressure sensor
Pneumatic connection	G $\frac{1}{4}$		G $\frac{1}{2}$		
Regulating function	With primary pressure compensation, with return flow action, with secondary venting, outlet pressure constant				
Type of mounting	Via accessories				
Mounting position	Vertical $\pm 5^\circ$				
Grade of filtration [ $\mu\text{m}$ ]	40				
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]				
Bowl guard	Plastic bowl guard				
Condensate drain	Manual rotary	Manual rotary	Manual rotary	Manual rotary	
	Fully automatic	–	Fully automatic	–	
Actuator lock	Rotary knob with detent, can be locked using accessories				
Pressure regulation range [bar]	0.5 ... 12	0.5 ... 10	0.5 ... 12	0.5 ... 10	
Pressure indication	Via pressure gauge for indicating the outlet pressure				
Length/width/height [mm]	80/120/219 (222) <sup>1)</sup>	82/120/219	100/186/301 (304) <sup>1)</sup>	102/186/301	

1) Value in brackets with fully automatic condensate drain.

Standard nominal flow rate $q_{nN}$		MSB4		MSB6	
Branching module with		Pressure switch	Pressure sensors	Pressure switch	Pressure sensor
$q_{nN}$ [l/min]	Grade of filtration 40 $\mu\text{m}$	1300	1600	4500	4500

Operating conditions		MSB4		MSB6	
Condensate drain		Manual rotary		Fully automatic	
Size		MSB4	MSB6	MSB4	MSB6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases			
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will be required)			
Operating pressure [bar]		0.8 ... 14	0.8 ... 18	2 ... 12	2 ... 12
Ambient temperature [°C]		-10 ... +60 (0 ... +50) <sup>2)</sup>	-10 ... +60 (0 ... +50) <sup>2)</sup>	+5 ... +60	+5 ... +60

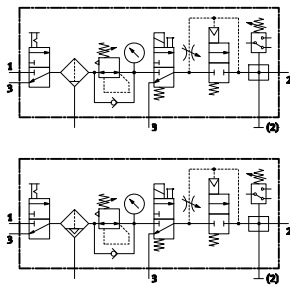
2) Value in brackets applies to branching module with pressure sensor.

## Ordering data

Size	Condensate drain	Connection	Grade of filtration [ $\mu\text{m}$ ]	Part no.	Type
<b>Branching module with pressure switch</b>					
MSB4	Manual rotary	G $\frac{1}{4}$	40	542294	MSB4-1/4:C3J1F3-WP
	Fully automatic	G $\frac{1}{4}$	40	542300	MSB4-1/4:C3J2F3-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	542270	MSB6-1/2:C3J1F3-WP
	Fully automatic	G $\frac{1}{2}$	40	542276	MSB6-1/2:C3J2F3-WP
<b>Branching module with pressure sensor</b>					
MSB4	Manual rotary	G $\frac{1}{4}$	40	★ 8025356	MSB4-1/4:C3J1F12-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	★ 8025357	MSB6-1/2:C3J1F12-WP



**Data sheet – Service unit combination 5**



- Manual on-off valve
- Filter regulator with pressure gauge
- Electric on-off valve (24 V DC)
- Pneumatic soft-start valve
- Branching module with pressure switch
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure switch PEV-1/4-B-OD	With adjustable pressure switching point, plug socket, EN 175301, type A, cube	<a href="#">pev</a>

Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>	
Size	MSB4	MSB6	
Pneumatic port	G1/4	G1/2	
Regulating function	With primary pressure compensation, with return flow action, with secondary venting, outlet pressure constant		
Type of mounting	Via accessories		
Mounting position	Vertical ±5°		
Grade of filtration [µm]	40	40	5
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [6:4:4]
Bowl guard	Plastic bowl guard		
Condensate drain	Manual rotary		
	Fully automatic		
Actuator lock	Rotary knob with detent, can be locked using accessories		
Pressure regulation range [bar]	4 ... 12		
Pressure indication	Via pressure gauge for indicating the outlet pressure		
Length/width/height [mm]	80/200/219 (222) <sup>1)</sup>	100/310/301 (304) <sup>1)</sup>	

1) Value in brackets with fully automatic condensate drain.

Standard nominal flow rate q <sub>NN</sub>		MSB4	MSB6
q <sub>NN</sub> [l/min]	Grade of filtration 40 µm	750	3100
	Grade of filtration 5 µm	–	3000

Electrical data – Electric on-off valve	
Coil characteristics	24 V DC: 1.5 W; perm. voltage fluctuations –25%/+10%
Electrical connection	Plug, square design to EN 175301-803, type C

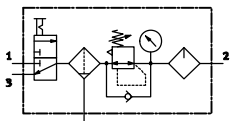
Operating conditions		Manual rotary		Fully automatic	
Size	MSB4	MSB6	MSB4	MSB6	
Condensate drain					
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
	Inert gases				
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will be required)				
Operating pressure [bar]	4.5 ... 14	4.5 ... 18	4.5 ... 12	4.5 ... 12	
Ambient temperature [°C]	–10 ... +60	–10 ... +60	+5 ... +60	+5 ... +60	

**Ordering data**

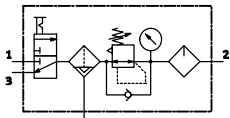
Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type
MSB4	Manual rotary	G1/4	40	542293	MSB4-1/4:C3J1D1A1F3-WP
	Fully automatic	G1/4	40	542299	MSB4-1/4:C3J2D1A1F3-WP
MSB6	Manual rotary	G1/2	40	542269	MSB6-1/2:C3J1D1A1F3-WP
		G1/2	5	542281	MSB6-1/2:C3J3D1A1F3-WP
	Fully automatic	G1/2	40	542275	MSB6-1/2:C3J2D1A1F3-WP
		G1/2	5	542287	MSB6-1/2:C3J4D1A1F3-WP

## Service unit combinations MSB, MS series

## Data sheet – Service unit combination 6



- Manual on-off valve
- Filter regulator with pressure gauge
- Lubricator
- Mounting bracket



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>	
Size	MSB4	MSB6	
Pneumatic port	G $\frac{1}{4}$	G $\frac{1}{2}$	
Regulating function	With primary pressure compensation, with return flow action, with secondary venting, outlet pressure constant		
Type of mounting	Via accessories		
Mounting position	Vertical $\pm 5^\circ$		
Grade of filtration	[ $\mu\text{m}$ ]	40	
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]		
Bowl guard	Plastic bowl guard		
Condensate drain	Manual rotary		Fully automatic
Actuator lock	Rotary knob with detent, can be locked using accessories		
Pressure regulation range	[bar]	1 ... 12	
Pressure indication	Via pressure gauge for indicating the outlet pressure		
Length/width/height	[mm]	80/120/219	100/186/301 (304) <sup>1)</sup>

1) Value in brackets with fully automatic condensate drain.

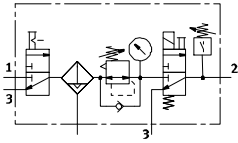
Standard nominal flow rate $q_{nN}$		MSB4	MSB6
Size			
$q_{nN}$ [l/min]	Grade of filtration 40 $\mu\text{m}$	750	3100

Operating conditions			
Condensate drain	Manual rotary		Fully automatic
Size	MSB4	MSB6	MSB6
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases		
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will be required)		
Operating pressure	[bar]	1.5 ... 14	1.5 ... 18
Ambient temperature	[°C]	-10 ... +60	-10 ... +60
Oil viscosity		ISO VG 32	

## Ordering data

Size	Condensate drain	Connection	Grade of filtration [ $\mu\text{m}$ ]	Part no.	Type
MSB4	Manual rotary	G $\frac{1}{4}$	40	542296	MSB4- $\frac{1}{4}$ :C3J1M1-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	542272	MSB6- $\frac{1}{2}$ :C3J1M1-WP
	Fully automatic	G $\frac{1}{2}$	40	542278	MSB6- $\frac{1}{2}$ :C3J2M1-WP

**Data sheet – Service unit combination 7**



- Manual on-off valve
- Filter regulator with pressure gauge
- Electric on-off valve (24 V DC) with pressure sensor
- Mounting bracket



Branching module version	Description	→ Page/ online
Pressure sensor SDE5-D10-O-...-P-M8	With 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact	923

Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>	
Size	MSB4	MSB6	
Pneumatic port	G $\frac{1}{4}$	G $\frac{1}{2}$	
Regulating function	With primary pressure compensation, with return flow action, with secondary venting, outlet pressure constant		
Type of mounting	Via accessories		
Mounting position	Vertical $\pm 5^\circ$		
Grade of filtration [ $\mu\text{m}$ ]	40		
Air purity class at the output	Compressed air to ISO 8573-1:2010 [7:4:4]		
Bowl guard	Plastic bowl guard		
Condensate drain	Manual rotary		
Actuator lock	Rotary knob with detent, can be locked using accessories		
Pressure regulation range [bar]	0.5 ... 10		
Pressure indication	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output Via pressure gauge for indicating the outlet pressure		
Length/width/height [mm]	82/120/219	102/186/301	

Standard nominal flow rate $q_{nN}$		MSB4	MSB6
Size			
$q_{nN}$ [l/min]	Grade of filtration 40 $\mu\text{m}$	1400	4000

Electrical data – Electric on-off valve	
Coil characteristics	24 V DC: 1.8 W; perm. voltage fluctuations $-15\%/+10\%$
Electrical connection	Plug M12x1 to IEC 61076-2-101

Operating conditions	
Condensate drain	Manual rotary
Size	MSB4 MSB6
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will be required)
Operating pressure [bar]	0.8 ... 14 0.8 ... 18
Ambient temperature [°C]	0 ... +60 0 ... +60

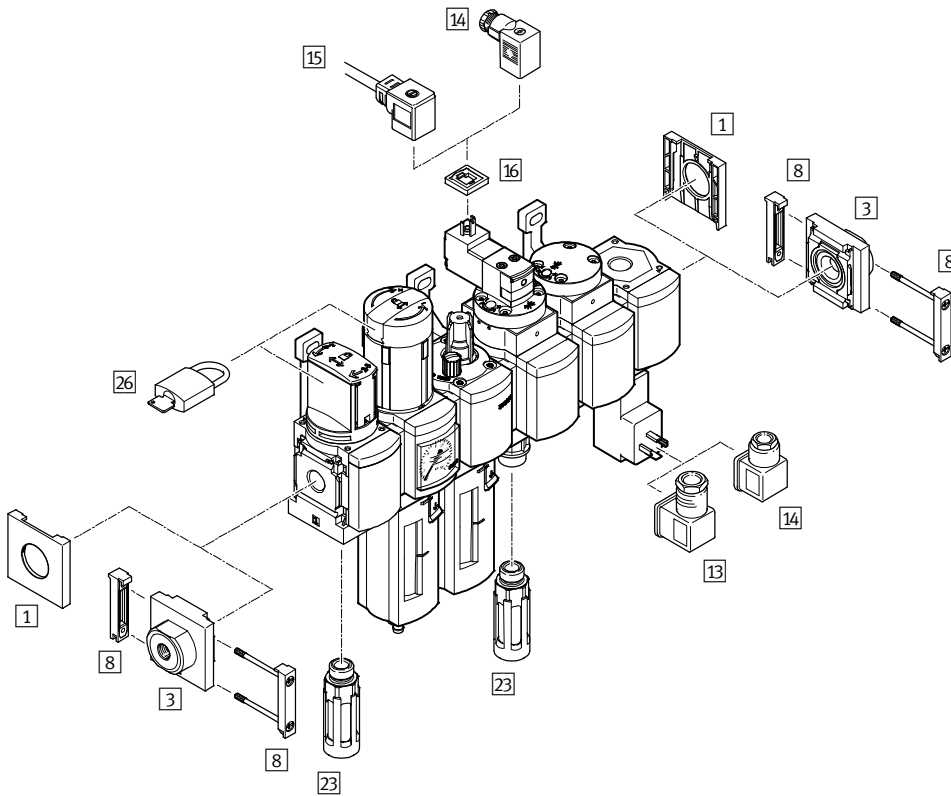
★ **Quick ordering<sup>1)</sup>**

Size	Condensate drain	Connection	Grade of filtration [ $\mu\text{m}$ ]	Part no.	Type
MSB4	Manual rotary	G $\frac{1}{4}$	40	★ 8025358	MSB4- $\frac{1}{4}$ :C3:J1:D14-WP
MSB6	Manual rotary	G $\frac{1}{2}$	40	★ 8025359	MSB6- $\frac{1}{2}$ :C3:J1:D14-WP

1) All products in this table are easy to select and quick to order.

# Service unit combinations MSB, MS series

## Accessories

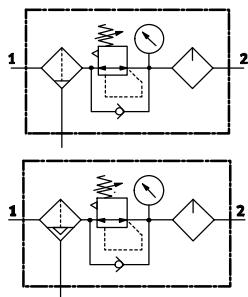


**Note**  
The range of accessories depends on the service unit combination selected.

Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
8 Module connector MS4/6-MV	1049
13 Angled plug socket PEV-1/4-WD-LED	1050
14 Plug socket MSSD-C-4P for pressure switch PEV Plug socket MSSD-EB for on-off valve MS4/6-EE	1050
15 Plug socket with cable KMEB	1050

Accessories	→ Page/online
16 Illuminating seal MEB-LD	1050
23 Silencer U	1052
26 Padlock LRVS-D	1052
- Connecting cable NEBU-M8...-LE3 for pressure sensor SDE5	1050
- Special oil OFSW	1052
- Filter cartridge MS4/6-LFP	1052

## Data sheet



- Filter regulator with pressure gauge
- Lubricator

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

Technical data		MSB4				MSB6	
Size		MSB4		MSB6			
Pneumatic port 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2	
Design		Filter regulator with pressure gauge and proportional standard mist lubricator					
Regulating function		With primary pressure compensation, with secondary venting, with return flow action, outlet pressure constant					
Type of mounting		Via accessories					
Mounting position		Vertical ±5°					
Grade of filtration	[µm]	40					
		5					
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:4-] (grade of filtration 40 µm)					
		Compressed air to ISO 8573-1:2010 [6:4-] (grade of filtration 5 µm)					
Bowl guard		Plastic bowl guard			Plastic bowl guard		
		-			Integrated as metal bowl guard		
Condensate drain		Manual rotary					
		Fully automatic					
Actuator lock		Rotary knob with detent, can be locked using accessories					
Pressure regulation range	[bar]	-	0.3 ... 7	-	0.3 ... 7	-	0.3 ... 7
		0.5 ... 12					
Pressure indication		Via pressure gauge for indicating the outlet pressure					
Length/width/height	[mm]	57/80/222			77/124/303		

Standard nominal flow rate $q_{nN}$		MSB4		MSB6		
Size		MSB4		MSB6		
Pneumatic port 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2
Grade of filtration 40 µm						
$q_{nN}$ [l/min] <sup>1)</sup>	With pressure regulation range 0.3 ... 7 bar	-	1400	-	-	4800
	With pressure regulation range 0.5 ... 12 bar	850	900	1900	3500	3700
Grade of filtration 5 µm						
$q_{nN}$ [l/min] <sup>1)</sup>	With pressure regulation range 0.5 ... 12 bar	-	850	-	-	3600

1) Measured at  $p_1 = 10$  bar and  $p_2 = 6$  bar,  $\Delta p = 1$  bar.

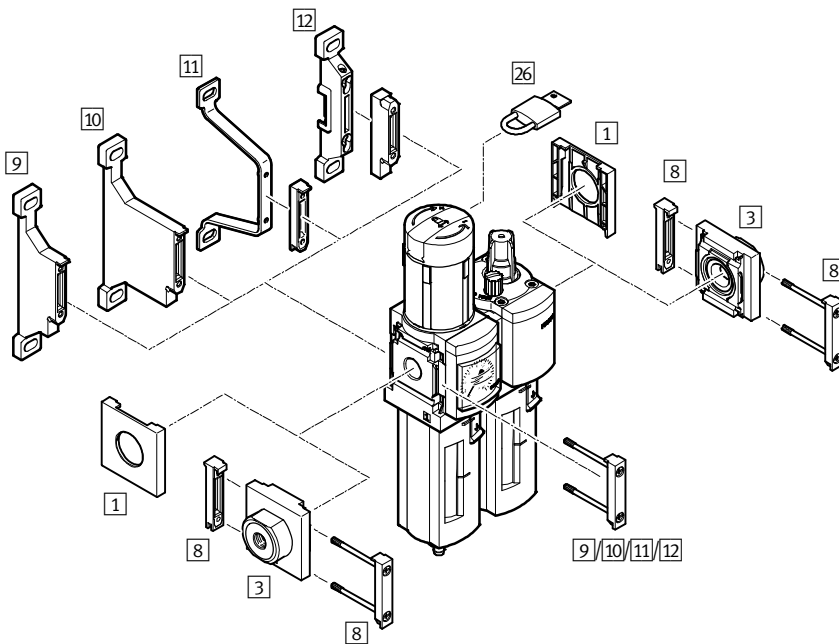
Operating conditions		MSB4		MSB6		
Condensate drain		Manual rotary		Fully automatic		
Size		MSB4		MSB6		
Operating medium		Compressed air to ISO 8573-1:2010 [-:4:-]			Compressed air to ISO 8573-1:2010 [7:4:-]	
		Inert gases				
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will be required)				
Operating pressure	[bar]	1.5 ... 14	1.5 ... 20	2 ... 12	2 ... 12	
Ambient temperature	[°C]	-10 ... +60	-10 ... +60	+5 ... +60	+5 ... +60	
Oil viscosity		ISO VG 32				

Materials		MSB4		MSB6	
Housing		Die-cast aluminium			
Rotary knob		PA, POM			
Bowl	Plastic bowl guard	PC			
	Metal bowl guard	Wrought aluminium alloy			
Seals		NBR			

## Ordering data

Size	Condensate drain	Connection	Grade of filtration [µm]	Part no.	Type
<b>Pressure regulation range 0.3 ... 7 bar</b>					
<b>Plastic bowl guard</b>					
MSB4	Manual rotary	G $\frac{1}{4}$	40	531109	MSB4- $\frac{1}{4}$ -FRC1:J5M1
MSB6	Manual rotary	G $\frac{1}{2}$	40	530230	MSB6- $\frac{1}{2}$ -FRC1:J5M1
<b>Pressure regulation range 0.5 ... 12 bar</b>					
<b>Plastic bowl guard</b>					
MSB4	Manual rotary	G $\frac{1}{8}$	40	531133	MSB4- $\frac{1}{8}$ -FRC5:J1M1
		G $\frac{1}{4}$	40	★ 531117	MSB4- $\frac{1}{4}$ -FRC5:J1M1
			5	531121	MSB4- $\frac{1}{4}$ -FRC7:J3M1
	Fully automatic	G $\frac{1}{4}$	40	531119	MSB4- $\frac{1}{4}$ -FRC6:J2M1
MSB6	Manual rotary	G $\frac{1}{4}$	40	530268	MSB6- $\frac{1}{4}$ -FRC5:J1M1
			40	530292	MSB6- $\frac{3}{8}$ -FRC5:J1M1
		G $\frac{1}{2}$	40	★ 530244	MSB6- $\frac{1}{2}$ -FRC5:J1M1
			5	530248	MSB6- $\frac{1}{2}$ -FRC7:J3M1
		Fully automatic	G $\frac{1}{2}$	40	530246
<b>Metal bowl guard</b>					
MSB6	Manual rotary	G $\frac{1}{2}$	40	530252	MSB6- $\frac{1}{2}$ -FRC9:J11M2
			5	530234	MSB6- $\frac{1}{2}$ -FRC11:J9M2
	Fully automatic	G $\frac{1}{2}$	40	530232	MSB6- $\frac{1}{2}$ -FRC10:J12M2
			5	530236	MSB6- $\frac{1}{2}$ -FRC12:J10M2

## Accessories – MS4/MS6



Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
8 Module connector MS4/6-MV	1049
9 Mounting bracket MS4/6-WP	1049
10 Mounting bracket MS4/6-WPB	1049

Accessories	→ Page/online
11 Mounting bracket MS4/6-WPE	1049
12 Mounting bracket MS4/6-WPM	1049
26 Padlock LRVS-D	1052
- Special oil OFSW	1052
- Filter cartridge MS4/6-LFP	1052



Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-lfr](http://www.festo.com/catalogue/ms*-lfr)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-lfr](http://www.festo.com/sp/ms*-lfr)

Filter regulators  
MS series

Filter regulators

# MS-LFR



- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + Good particle and condensate separation
- + Available with or without secondary venting
- + High flow rate
- + MS4-LFR, MS6-LFR: directly actuated diaphragm regulator, MS9-LFR: piloted or directly actuated filter-diaphragm regulator, MS12-LFR: piloted diaphragm regulator without internal air consumption
- + Lockable rotary knob
- + Return flow option for exhausting from output 2 to output 1 already integrated



- Good particle and condensate separation
- High flow rate
- 4 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm,  
MS9 – grid dimension 90 mm, MS12 – grid dimension 124 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)
- ★ Quick ordering of basic designs → 976

→ [www.festo.com/catalogue/ms\\*-lfr](http://www.festo.com/catalogue/ms*-lfr)

## Product range overview

Size	Pneumatic port	Product options																		
		D5	D6	D7	E	C	R	U	M	H	V	DI	VS	AG	A8	A4	AD...	BAR	AS	Z
4	1/8, 1/4	■	■	■	■	■	■	■	■	■	■	–	■	– <sup>1)</sup>	■	■	■	– <sup>1)</sup>	■	■
6	1/4, 3/8, 1/2	■	■	■	■	■	■	■	■	■	■	–	■	– <sup>1)</sup>	–	■	■	– <sup>1)</sup>	■	■
9	3/4, 1, G	■	■	■	■	■	–	■	■	■	■	■	■	■	–	■	■	■	■	■
12	G	–	■	■	■	■	–	■	■	–	■	–	■	– <sup>1)</sup>	–	■	–	– <sup>1)</sup>	■	■

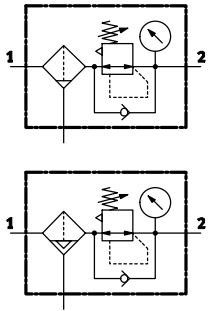
1) MS pressure gauge with indicating range in bar included in the basic configuration by default.

## Product options

1/8	Female thread G1/8	R	Plastic bowl with plastic bowl guard	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	BAR	Pressure gauge scale in bar
1/4	Female thread G1/4	U	Metal bowl guard	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	PSI	Pressure gauge scale in psi
3/8	Female thread G3/8	M	Manual condensate drain	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	MPA	Pressure gauge scale in Mpa
1/2	Female thread G1/2	H	Semi-automatic condensate drain	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	OS	Without secondary venting
3/4	Female thread G3/4	V	Fully automatic condensate drain	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	LD	Long rotary knob
1	Female thread G1	E2	External condensate drain, fully automatic, electric, 110 V AC, terminals	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	AS	Rotary knob with detent, can be locked using accessories
AGA	Connecting plate G1/8	E3	External condensate drain, fully automatic, electric, 230 V AC, terminals	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	E11	Rotary knob with integrated lock
AGB	Connecting plate G1/4	E4	External condensate drain, fully automatic, electric, 24 V DC, terminals	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	WR	Mounting bracket with knurled nut for regulator head
AGC	Connecting plate G3/8	DI	Directly actuated regulator			WP	Mounting bracket
AGD	Connecting plate G1/2	VS	Cover plate			WPM	Mounting bracket
AGE	Connecting plate G3/4	AG	MS pressure gauge			WPB	Mounting bracket for large wall gap
AGF	Connecting plate G1	A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge			WB	Mounting bracket
AGG	Connecting plate G1 1/4	A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge			WBM	Mounting bracket
AGH	Connecting plate G1 1/2	RG	Integrated pressure gauge, red/green scale			EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
AGI	Connecting plate G2					UL1	UL certification (cULus, ordinary locations for Canada and USA)
G	Module without connecting thread, without connecting plate					Z	Direction of flow from right to left
D5	Pressure regulation range 0.3 ... 4 bar						
D6	Pressure regulation range 0.3 ... 7 bar						
D7	Pressure regulation range 0.5 ... 12 bar						
D8	Pressure regulation range 0.5 ... 16 bar						
E	Grade of filtration 40 µm						
C	Grade of filtration 5 µm						



Data sheet



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Technical data		MS4		MS6			MS9	
Size		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1
Pneumatic port 1, 2								... <sup>1)</sup>
Design		Filter regulator with/without pressure indication						
		–						Piloted diaphragm regulator
Regulating function		Directly actuated diaphragm regulator						
Regulating function		With return flow action, with secondary venting, with primary pressure compensation						
Type of mounting		Via accessories						
		In-line installation						
Mounting position		Vertical ±5°						
Grade of filtration [µm]		40						
		5						
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:4:4] (grade of filtration 40 µm)						
		Compressed air to ISO 8573-1:2010 [6:4:4] (grade of filtration 5 µm)						
Bowl guard		Plastic bowl guard						–
		Integrated as metal bowl guard						
Condensate drain		Manual rotary						
		Semi-automatic						
		Fully automatic						
Actuator lock		Rotary knob with detent						
		Rotary knob with detent, can be locked using accessories						
Pressure regulation range [bar]	D5	0.5 ... 4						
	D6	0.5 ... 7						
	D7	0.5 ... 12 (0.5 ... 10 bar with pressure sensor AD...)						
Pressure indication		Via pressure gauge for indicating the outlet pressure						
	AD1/AD3	Via pressure sensor with LCD display for indicating the output pressure and with electrical output					–	
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output						
Length [mm]	standard	57		77			109	
	With cover plate VS	54		76			109	
	With adapter plate A8/A4	59		79			110	
	With pressure sensor AD1/AD3	83		103			–	
	With pressure sensor AD7/AD9	59		79			112	
Width [mm]		40		62			104	
							90	
Height [mm] <sup>2)</sup>	Plastic bowl guard	219 ... 223 <sup>3)</sup> + 25 <sup>4)</sup>		300 ... 305 <sup>3)</sup> + 25 <sup>4)</sup>			–	
	Metal bowl guard	236 ... 240 <sup>3)</sup> + 68 <sup>4)</sup>		309 ... 313 <sup>3)</sup> + 68 <sup>4)</sup>			451 (444 <sup>5)</sup> + 150 <sup>4)</sup>	

- 1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → 1049.
- 2) Height applies to filter regulator with detenting rotary knob, can be locked using accessories. The filter regulator without lockable rotary knob is approx. 9 mm smaller.
- 3) Value is dependent on the condensate drain.
- 4) Installation dimension for removing the filter bowl.
- 5) Value in brackets applies to the directly actuated filter regulator MS9-LFR...-DI.

## Data sheet

Standard nominal flow rate $q_{NN}$								
Size		MS4		MS6			MS9	
Pneumatic port 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1
Grade of filtration 40 $\mu$ m								
$q_{NN}$ [l/min]	With pressure regulation range D5 <sup>1)</sup>	1100	1900	2200	6000	7200	18000 $\pm$ 15% (16000 $\pm$ 15%) <sup>3)</sup>	23000 $\pm$ 15% (20000 $\pm$ 15%) <sup>3)</sup>
	With pressure regulation range D6 <sup>2)</sup>	1000	1700	2800	5700	6200	16000 $\pm$ 15% (12000 $\pm$ 15%) <sup>3)</sup>	20000 $\pm$ 15% (10000 $\pm$ 15%) <sup>3)</sup>
	With pressure regulation range D7 <sup>2)</sup>	900	1500	2500	4000	4500	16000 $\pm$ 15%	20000 $\pm$ 15%
Grade of filtration 5 $\mu$ m								
$q_{NN}$ [l/min]	With pressure regulation range D5 <sup>1)</sup>	900	1800	2000	5500	6900	17000 $\pm$ 15% (16000 $\pm$ 15%) <sup>3)</sup>	20000 $\pm$ 15% (18000 $\pm$ 15%) <sup>3)</sup>
	With pressure regulation range D6 <sup>2)</sup>	900	1500	2700	5000	5600	15000 $\pm$ 15% (12000 $\pm$ 15%) <sup>3)</sup>	18000 $\pm$ 15% (10000 $\pm$ 15%) <sup>3)</sup>
	With pressure regulation range D7 <sup>2)</sup>	850	1200	2200	3500	4000	15000 $\pm$ 15%	18000 $\pm$ 15%

1) MS4/MS6: Measured at  $p_1 = 10$  bar and  $p_2 = 3$  bar,  $\Delta p = 1$  bar.  
MS9: Measured at  $p_1 = 10$  bar and  $p_2 = 4$  bar,  $\Delta p = 1$  bar.

2) Measured at  $p_1 = 10$  bar and  $p_2 = 6$  bar,  $\Delta p = 1$  bar.

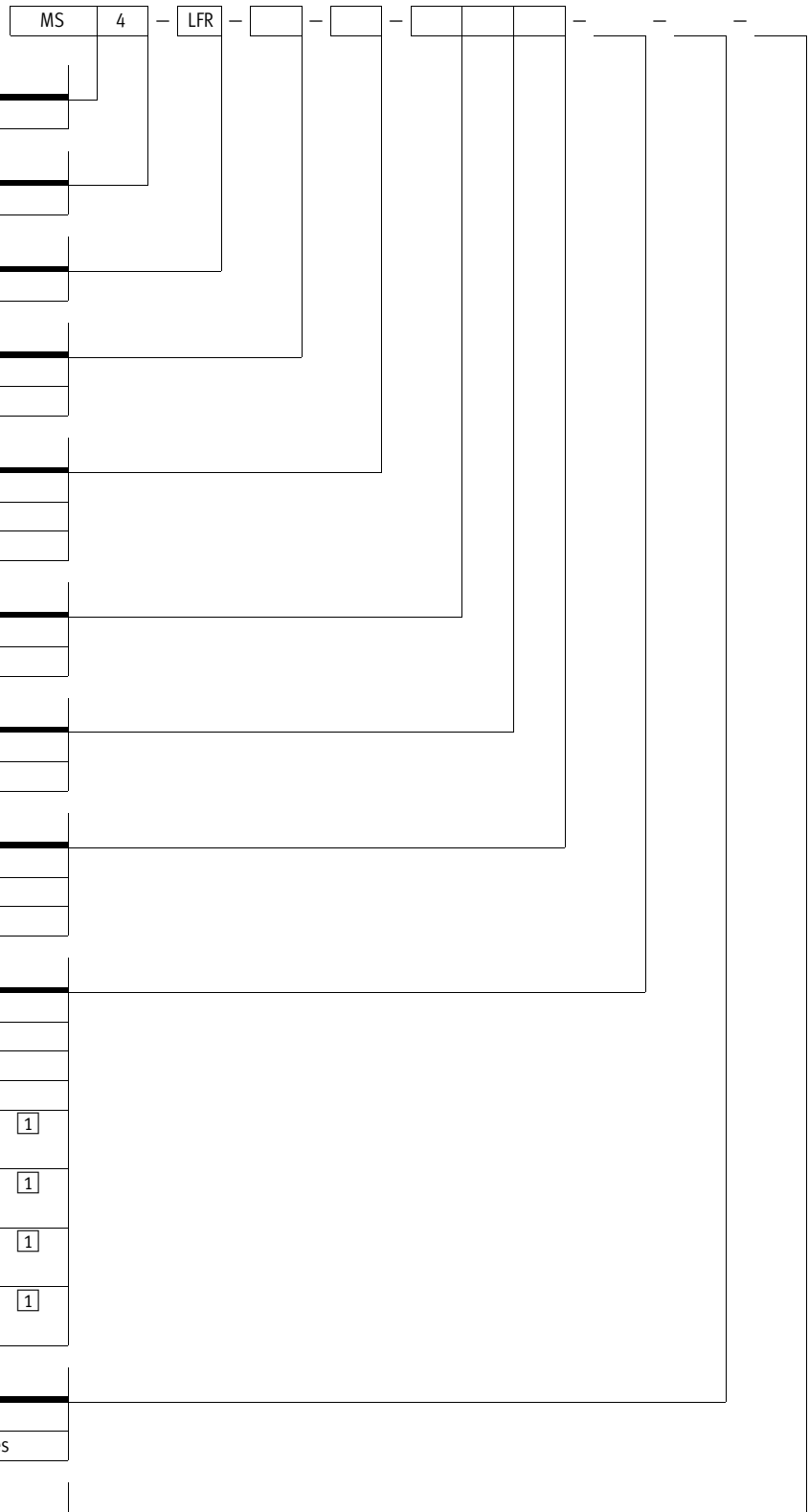
3) Value in brackets applies to the directly actuated filter regulator MS9-LFR-...-DI.

Operating conditions					
Condensate drain		Manual rotary		Semi-automatic	Fully automatic
Size		MS4	MS6	MS9	MS4/MS6/MS9
Operating medium		Compressed air to ISO 8573-1:2010 [--:4:-]			Compressed air to ISO 8573-1:2010 [7:4:-]
		Inert gases			
Operating pressure	[bar]	0.8 ... 14	0.8 ... 20	1 ... 20	1.5 ... 12
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) <sup>4)</sup>		+5 ... +60 (+5 ... +50) <sup>4)</sup>	
				2 ... 12	
				+5 ... +60 (+5 ... +50) <sup>4)</sup>	

4) Value in brackets applies to MS4/MS6/MS9-LFR with pressure sensor AD...

Materials		
Housing		Die-cast aluminium
Rotary knob		PA, POM
Bowl	Plastic bowl guard	PC
	Metal bowl guard	Wrought aluminium alloy, die-cast aluminium
Seals		NBR

Order code – MS4



Series	
MS	Standard service unit
Size	
4	Grid dimension 40 mm
Type	
LFR	Filter regulator
Pneumatic port	
1/8	Female thread G1/8
1/4	Female thread G1/4
Pressure regulation range	
D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar
Grade of filtration	
E	40 µm
C	5 µm
Bowl guard	
R	Plastic bowl guard
U	Integrated as metal bowl guard
Condensate drain	
M	Manual rotary
H	Semi-automatic
V	Fully automatic
Pressure gauge alternatives	
–	With MS pressure gauge, bar
VS	Cover plate
A8	Adapter plate for EN pressure gauge 1/8
A4	Adapter plate for EN pressure gauge 1/4
AD1	Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin <span style="border: 1px solid black; padding: 0 2px;">1</span>
AD3	Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <span style="border: 1px solid black; padding: 0 2px;">1</span>
AD7	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>
AD9	Pressure sensor without display, plug M8, window comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>
Actuator lock	
–	Rotary knob with detent
AS	Rotary knob with detent, can be locked using accessories
Direction of flow	
–	From left to right
Z	From right to left

1 Measuring range max. 10 bar.

**Order example:**

MS4-LFR-1/4-D7-ERM-AS

Standard service unit, grid dimension 40 mm - filter regulator - female thread G1/4 - pressure regulation range 0.5 ... 12 bar - grade of filtration 40 µm - plastic bowl guard - manual rotary condensate drain - with MS pressure gauge, bar - rotary knob with detent, can be locked using accessories - flow direction from left to right

## Filter regulators MS-LFR, MS series

## Order code – MS6

MS		6		LFR													
<b>Series</b>																	
MS	Standard service unit																
<b>Size</b>																	
6	Grid dimension 62 mm																
<b>Type</b>																	
LFR	Filter regulator																
<b>Pneumatic port</b>																	
1/4	Female thread G1/4																
3/8	Female thread G3/8																
1/2	Female thread G1/2																
<b>Pressure regulation range</b>																	
D5	0.3 ... 4 bar																
D6	0.3 ... 7 bar																
D7	0.5 ... 12 bar																
<b>Grade of filtration</b>																	
E	40 µm																
C	5 µm																
<b>Bowl guard</b>																	
R	Plastic bowl guard																
U	Integrated as metal bowl guard																
<b>Condensate drain</b>																	
M	Manual rotary																
H	Semi-automatic																
V	Fully automatic																
<b>Pressure gauge alternatives</b>																	
–	With MS pressure gauge, bar																
VS	Cover plate																
A4	Adapter plate for EN pressure gauge 1/4																
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin <span style="border: 1px solid black; padding: 0 2px;">1</span>																
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <span style="border: 1px solid black; padding: 0 2px;">1</span>																
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>																
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>																
<b>Actuator lock</b>																	
–	Rotary knob with detent																
AS	Rotary knob with detent, can be locked using accessories																
<b>Direction of flow</b>																	
–	From left to right																
Z	From right to left																

1 Measuring range max. 10 bar.

**Order example:**

MS6-LFR-1/2-D7-CRM-AS

Standard service unit, grid dimension 62 mm - filter regulator - female thread G1/2 - pressure regulation range 0.5 ... 12 bar - grade of filtration 5 µm - plastic bowl guard - manual rotary condensate drain - with MS pressure gauge, bar - rotary knob with detent, can be locked using accessories - flow direction from left to right

Order code – MS9

MS 9 – LFR – – – – U – – – – –

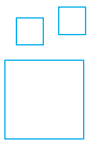
<b>Series</b>	
MS	Standard service unit
<b>Size</b>	
9	Grid dimension 90 mm
<b>Type</b>	
LFR	Filter regulator
<b>Pneumatic port</b>	
3/4	Female thread G3/4
1	Female thread G1
G	Module without connecting thread, without connecting plate Connecting plates → 1049
<b>Pressure regulation range</b>	
D5	0.5 ... 4 bar
D6	0.5 ... 7 bar
D7	0.5 ... 12 bar
<b>Grade of filtration</b>	
E	40 µm
C	5 µm
<b>Bowl guard</b>	
U	Integrated as metal bowl guard
<b>Condensate drain</b>	
M	Manual rotary
H	Semi-automatic
V	Fully automatic
<b>Regulator type</b>	
–	Piloted
DI	Directly actuated <span style="float: right;">1</span>
<b>Pressure gauge / Pressure gauge alternatives</b>	
VS	Cover plate
AG	With MS pressure gauge
A4	Adapter plate for EN pressure gauge 1/4
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="float: right;">2</span>
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="float: right;">2</span>
<b>Alternative pressure gauge scale</b>	
–	No pressure gauge scale <span style="float: right;">3</span>
BAR	Bar <span style="float: right;">4</span>
<b>Actuator lock</b>	
–	Rotary knob with detent
AS	Rotary knob with detent, can be locked using accessories
<b>Direction of flow</b>	
–	From left to right
Z	From right to left

1 Only with pressure regulation range D5, D6.  
 2 Measuring range max. 10 bar.

3 Not with MS pressure gauge AG.

4 Only with MS pressure gauge AG.

## Ordering – Product options



Configurable  
product

This product and all its options can  
be ordered using the configurator.

The configurator can be found under  
Products on the DVD or

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

★ Quick ordering<sup>1)</sup>

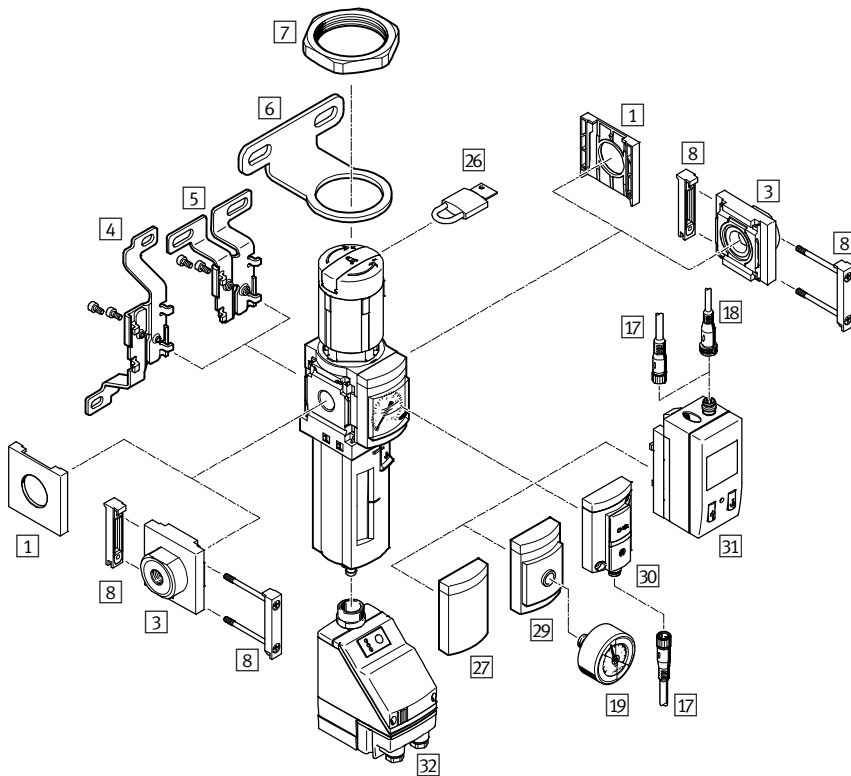
Part no.	Type
<b>MS4</b>	
529144	MS4-LFR-1/4-D6-CRM-AS
529146	MS4-LFR-1/4-D6-CRV-AS
529148	MS4-LFR-1/4-D6-ERM-AS
529150	MS4-LFR-1/4-D6-ERV-AS
529152	MS4-LFR-1/4-D7-CRM-AS
529154	MS4-LFR-1/4-D7-CRV-AS
–	–
535720	MS4-LFR-1/4-D7-CUV-AS
529156	MS4-LFR-1/4-D7-ERM-AS
529158	MS4-LFR-1/4-D7-ERV-AS
535724	MS4-LFR-1/4-D7-EUM-AS
535722	MS4-LFR-1/4-D7-EUV-AS

Part no.	Type
<b>MS6</b>	
529176	MS6-LFR-1/2-D6-CRM-AS
529178	MS6-LFR-1/2-D6-CRV-AS
529180	MS6-LFR-1/2-D6-ERM-AS
529182	MS6-LFR-1/2-D6-ERV-AS
529184	MS6-LFR-1/2-D7-CRM-AS
529186	MS6-LFR-1/2-D7-CRV-AS
530338	MS6-LFR-1/2-D7-CUM-AS
530340	MS6-LFR-1/2-D7-CUV-AS
529188	MS6-LFR-1/2-D7-ERM-AS
529190	MS6-LFR-1/2-D7-ERV-AS
529192	MS6-LFR-1/2-D7-EUM-AS
529194	MS6-LFR-1/2-D7-EUV-AS

Part no.	Type
<b>MS9</b>	
564110	MS9-LFR-G-D6-EUM-AG-BAR-AS
564111	MS9-LFR-G-D6-EUV-AG-BAR-AS
564118	MS9-LFR-G-D7-EUM-AG-BAR-AS
564119	MS9-LFR-G-D7-EUV-AG-BAR-AS

1) All products in this table are easy to select and quick to order.

Accessories – MS4/MS6



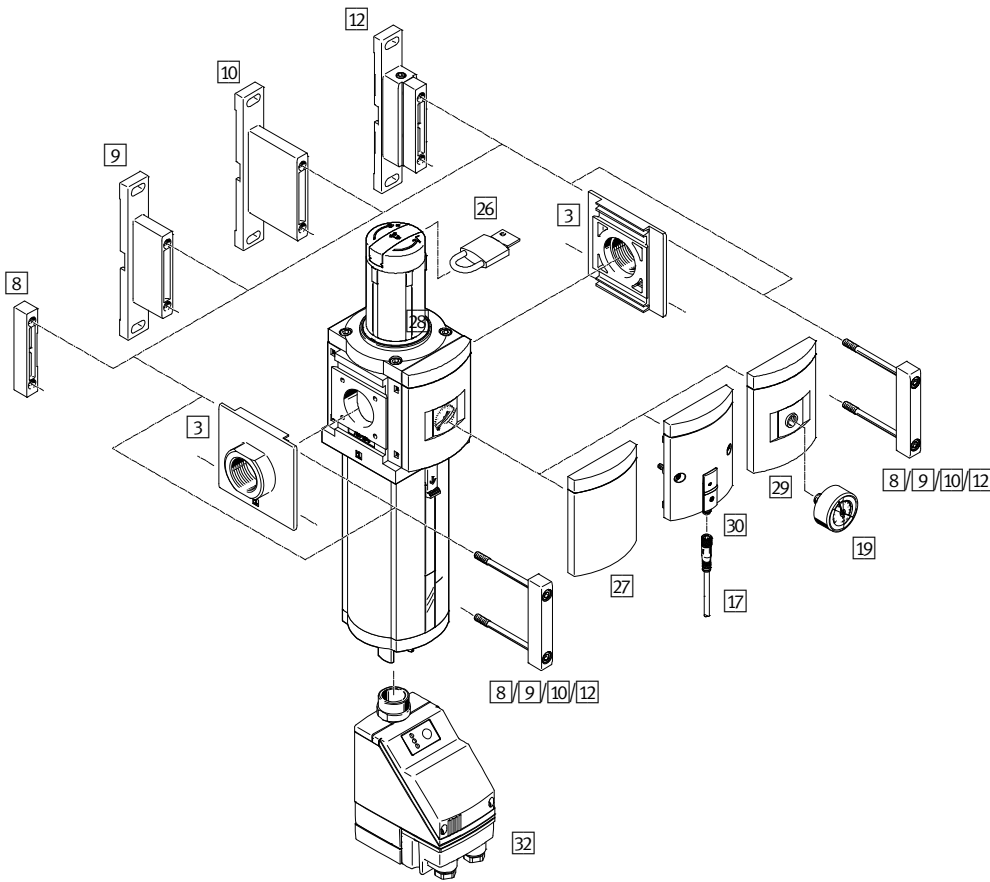
Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
4 Mounting bracket MS4/6-WB <sup>1</sup>	1049
5 Mounting bracket MS4/6-WBM <sup>1</sup>	1049
6 Mounting bracket MS4/6-WR <sup>1</sup>	1049
7 Hex nut MS4/6-WRS <sup>1</sup>	1049
8 Module connector MS4/6-MV	1049
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051
26 Padlock LRVS-D	1052
27 Cover plate VS	973
29 Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	973
30 Pressure sensor with operational status indicator AD7/AD9	973

1) Mounting component for individual device.

Accessories	→ Page/online
31 Pressure sensor with LCD display AD1/AD3	973
32 Fully automatic condensate drain, electrically actuated (for MS6 only)	<a href="#">ms6-lfr</a>
- Mounting plate MS4/6-AEND	1049
- Mounting bracket MS4/6-WP <sup>2</sup>	1049
- Mounting bracket MS4/6-WPB <sup>2</sup>	1049
- Mounting bracket MS4/6-WPE <sup>2</sup>	1049
- Mounting bracket MS4/6-WPM <sup>2</sup>	1049
- Module connector MS4/6-RMV	1052
- Module connector MS4/6-AMV	1052
- Module connector MS6/9-ARMV	1052
- Filter cartridge MS4/6-LFP	1052
- Power supply module MS4/6-E-IPM	<a href="#">ms*-e-ipm*</a>
- Branching module MS4/6-A-IPM	<a href="#">ms*-a-ipm*</a>

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3] with mounting plate MS4/6-AEND.

## Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... <sup>1)</sup>	1049
8 Module connector MS9-MV <sup>1)</sup>	1049
9 Mounting bracket MS9-WP	1049
10 Mounting bracket MS9-WPB	1049
12 Mounting bracket MS9-WPM <sup>1)</sup>	1049
17 Connecting cable NEBU-M8...-LE3	1050
19 Pressure gauge MA	1051
26 Padlock LRVS-D	1052
27 Cover plate VS	975

Accessories	→ Page/online
28 MS pressure gauge AG	975
29 Adapter plate A4 for EN pressure gauge 1/4	975
30 Pressure sensor with operational status indicator AD7/AD9	975
32 Fully automatic condensate drain, electrically actuated	<a href="#">ms9-lfr</a>
- Module connector MS9-RMV	1052
- Module connector MS6-9-ARMV	1052
- Filter cartridge MS9-LFP	1052

1) Not suitable for individual devices with connecting thread G3/4 or G1.





Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-lws](http://www.festo.com/catalogue/ms*-lws)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-lws](http://www.festo.com/sp/ms*-lws)

Condensate drain  
MS series

Water separators

# MS-LWS



- + Maintenance-free
- + Constantly high condensate separation (99%) up to the maximum flow rate
- + Metal bowl
- + Optionally with fully automatic or fully automatic, electrically actuated condensate drain

# Water separators MS-LWS, MS series



- Constantly high condensate separation (99%) up to the maximum flow rate
- Maintenance-free
- 3 sizes:  
MS6 – grid dimension 62 mm, MS9 – grid dimension 90 mm, MS12 – grid dimension 124 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)

→ [www.festo.com/catalogue/ms\\*-lws](http://www.festo.com/catalogue/ms*-lws)

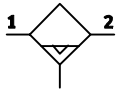
## Product range overview

Size	Pneumatic port	Product options		
		U	V	Z
6	1/4, 3/8, 1/2	■	■	■
9	3/4, 1, G	■	■	■
12	G	■	■	■

## Product options

1/4	Female thread G1/4	AGG	Connecting plate G1 1/4	E2	External condensate drain, fully automatic, electric, 110 V AC, terminals	WPM	Mounting bracket
3/8	Female thread G3/8	AGH	Connecting plate G1 1/2	E3	External condensate drain, fully automatic, electric, 230 V AC, terminals	WPB	Mounting bracket for large wall gap
1/2	Female thread G1/2	AGI	Connecting plate G2	E4	External condensate drain, fully automatic, electric, 24 V DC, terminals	WB	Mounting bracket
3/4	Female thread G3/4	G	Module without connecting thread, without connecting plate	WP	Mounting bracket	EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
1	Female thread G1	U	Metal bowl guard			UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGB	Connecting plate G1/4	V	Fully automatic condensate drain			Z	Direction of flow from right to left
AGC	Connecting plate G3/8						
AGD	Connecting plate G1/2						
AGE	Connecting plate G3/4						
AGF	Connecting plate G1						

## Data sheet

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

Technical data		MS6					MS9	
Size		MS6					MS9	
Pneumatic port 1, 2		G1/4	G3/8	G1/2	G3/4	G1	– <sup>1)</sup>	
Design		Centrifugal separator						
Type of mounting		Via accessories						
		In-line installation						
Mounting position		Vertical ±5°						
Air purity class at the output		Compressed air to ISO 8573-1:2010 [7:7:4]				Compressed air to ISO 8573-1:2010 [–:7:4]		
Bowl guard		Integrated as metal bowl guard						
Condensate drain		Fully automatic						
Degree of condensate separation [%]		99						
Length [mm]		76				109		
Width [mm]		62				104		90
Height [mm]		220 + 68 <sup>2)</sup>				345 + 50 <sup>2)</sup>		

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → 1049.

2) Installation dimension for removing the filter bowl.

Standard nominal flow rate  $q_{nN}$ 

Standard nominal flow rate $q_{nN}$		MS6			MS9		
Size		MS6			MS9		
Pneumatic port 1, 2		G1/4	G3/8	G1/2	G3/4	G1	– <sup>3)</sup>
$q_{nN}$ <sup>4)</sup>	[l/min]	2400	3500	3800	12000 ±15%	15000 ±15%	

3) Dependent on the connecting plate selected, must be ordered separately as an accessory → 1049.

4) Measured at  $p_1 = 6$  bar and  $\Delta p = 1$  bar.

## Operating conditions

Condensate drain		Fully automatic					
Size		MS6			MS9		
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]				Compressed air to ISO 8573-1:2010 [–:–:–]	
		Inert gases				–	
Operating pressure	[bar]	2 ... 12					
Ambient temperature	[°C]	+5 ... +60					

## Materials

Housing		Die-cast aluminium					
Bowl		Wrought aluminium alloy					
Seals		NBR					

# Water separators MS-LWS, MS series

## Order code – MS6/MS9

		MS	-	LWS	-		-	U	-	V	-	
<b>Series</b>												
MS	Standard service unit											
<b>Size</b>												
6	Grid dimension 62 mm											
9	Grid dimension 90 mm											
<b>Type</b>												
LWS	Water separator											
<b>Pneumatic connection</b>												
MS6												
1/4	Female thread G1/4											
3/8	Female thread G3/8											
1/2	Female thread G1/2											
MS9												
3/4	Female thread G3/4											
1	Female thread G1											
G	Module without connecting thread, without connecting plate Connecting plates → 1049											
<b>Bowl guard</b>												
U	Integrated as metal bowl guard											
<b>Condensate drain</b>												
V	Fully automatic											
<b>Direction of flow</b>												
-	From left to right											
Z	From right to left											

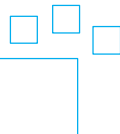
12

**Order example:**

MS6-LWS-1/2-U-V

Standard service unit, grid dimension 62 mm - water separator - female thread G1/2 - metal bowl guard - fully automatic condensate drain - flow direction from left to right

## Ordering – Product options



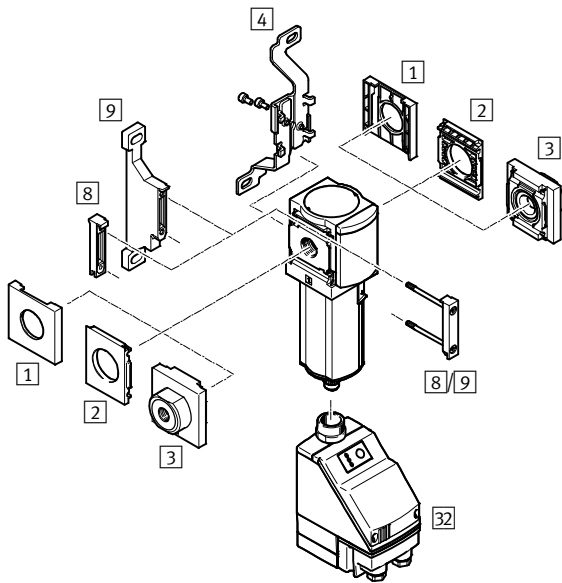
**Configurable product**

**This product and all its options can be ordered using the configurator.**

The configurator can be found under Products on the DVD or  
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

## Accessories – MS6



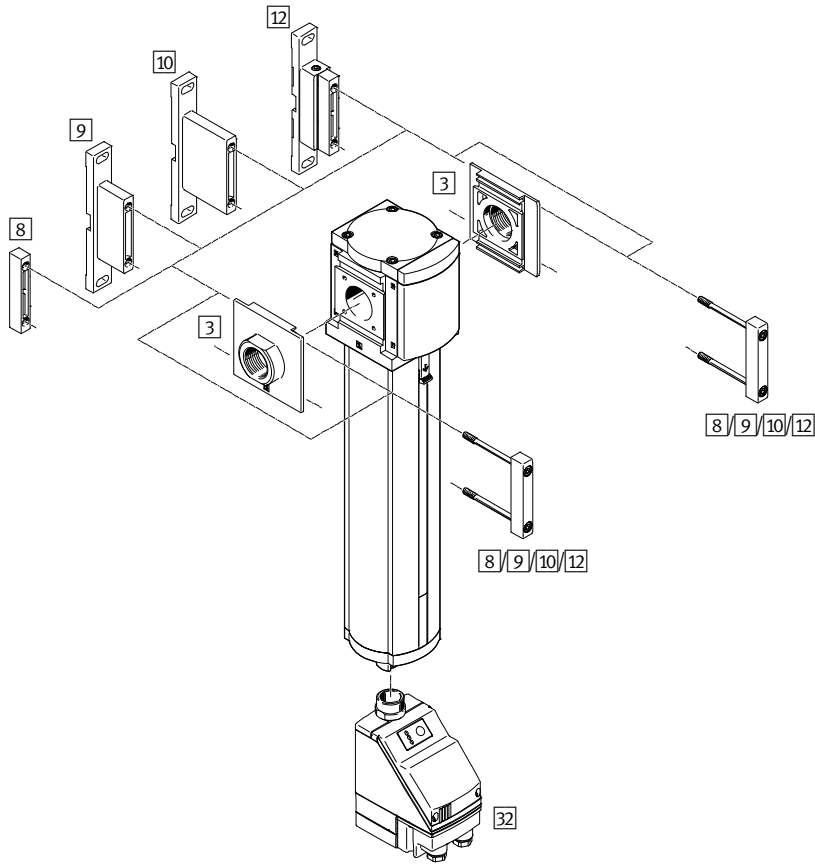
Accessories	→ Page/online
1 Cover cap MS6-END	1049
2 Mounting plate MS6-AEND	1049
3 Connecting plate kit MS6-AG...	1049
4 Mounting bracket MS6-WB <sup>1</sup>	1049
8 Module connector MS6-MV	1049
9 Mounting bracket MS6-WP <sup>2</sup>	1049
32 Fully automatic condensate drain, electrically actuated	<a href="#">ms6-lws</a>

1) Mounting component for individual device.

Accessories	→ Page/online
– Mounting bracket MS6-WPB <sup>2</sup>	1049
– Mounting bracket MS6-WPE <sup>2</sup>	1049
– Mounting bracket MS6-WPM <sup>2</sup>	1049
– Module connector MS4/6-RMV	1052
– Module connector MS4/6-AMV	1052
– Module connector MS6-9-ARMV	1052
– Power supply module MS4/6-E-IPM	<a href="#">ms*-e-ipm*</a>
– Branching module MS4/6-A-IPM	<a href="#">ms*-a*ipm*</a>

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS6-AG... [3]/with mounting plate MS6-AEND [2].

## Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... <sup>1)</sup>	1049
8 Module connector MS9-MV <sup>1)</sup>	1049
9 Mounting bracket MS9-WP	1049
10 Mounting bracket MS9-WPB	1049
12 Mounting bracket MS9-WPM <sup>1)</sup>	1049

Accessories	→ Page/online
32 Fully automatic condensate drain, electrically actuated	<a href="#">ms9-lws</a>
- Module connector MS9-RMV	1052
- Module connector MS6-9-ARMV	1052

1) Not suitable for individual devices with connecting thread G¾ or G1.



Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-lr](http://www.festo.com/catalogue/ms*-lr)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-lr](http://www.festo.com/sp/ms*-lr)

Controller  
MS series

Pressure regulators

# MS-LR



- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + High flow rate with minimal pressure drop
- + Optionally with secondary venting
- + Lockable rotary knob
- + With pressure sensor with display and rotary knob pressure gauge
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm



- High flow rate with minimal pressure drop
- Suitable for front panel mounting
- 4 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm,  
MS9 – grid dimension 90 mm, MS12 – grid dimension 124 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)
- ★ Quick ordering of basic designs → 992

→ [www.festo.com/catalogue/ms\\*-lr](http://www.festo.com/catalogue/ms*-lr)

## Product range overview

Size	Pneumatic port	Product options															
		D5	D6	D7	PO	DI	VS	AG	A8	A4	AD...	BAR	DM1	DM2	AS	Z	
4	1/8, 1/4	■	■	■	–	–	■	– <sup>1)</sup>	■	■	■	– <sup>1)</sup>	■	■	■	■	
6	1/4, 3/8, 1/2	■	■	■	–	–	■	– <sup>1)</sup>	–	■	■	– <sup>1)</sup>	–	■	■	■	
9	3/4, 1, G	■	■	■	■	■	■	■	–	■	■	■	–	–	■	■	
12	G	–	■	■	■	–	■	– <sup>1)</sup>	–	■	–	– <sup>1)</sup>	–	–	■	■	

1) MS pressure gauge with indicating range in bar included in the basic configuration by default.

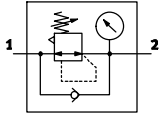
## Product options

1/8	Female thread G1/8	D8	Pressure regulation range 0.5 ... 16 bar, manually operated	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	OS	Without secondary venting
1/4	Female thread G1/4	PO	Pressure regulation range 0.5 ... 16 bar, pneumatically actuated	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	LD	Long rotary knob
3/8	Female thread G3/8	PE6	Pressure regulation range 0.15 ... 6 bar, solenoid actuated	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	DM1	Rotary knob pressure gauge, small
1/2	Female thread G1/2	DI	Directly actuated regulator	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	DM2	Rotary knob pressure gauge, large
3/4	Female thread G3/4	VS	Cover plate	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	KD	Rotary knob underneath
1	Female thread G1	AG	MS pressure gauge	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	AS	Rotary knob with detent, can be locked using accessories
AGA	Connecting plate G1/8	A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge	BAR	Pressure gauge scale in bar	E11	Rotary knob with integrated lock
AGB	Connecting plate G1/4	A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge	PSI	Pressure gauge scale in psi	WR	Mounting bracket with knurled nut for regulator head
AGC	Connecting plate G3/8	RG	Integrated pressure gauge, red/green scale	MPA	Pressure gauge scale in Mpa	WP	Mounting bracket
AGD	Connecting plate G1/2	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin			WPM	Mounting bracket
AGE	Connecting plate G3/4	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin			WPB	Mounting bracket for large wall gap
AGF	Connecting plate G1					WB	Mounting bracket
AGG	Connecting plate G1 1/4					WBM	Mounting bracket
AGH	Connecting plate G1 1/2					EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
AGI	Connecting plate G2					UL1	UL certification (cULus, ordinary locations for Canada and USA)
G	Module without connecting thread, without connecting plate					Z	Flow direction from right to left
D5	Pressure regulation range 0.3 ... 4 bar, manually operated						
D6	Pressure regulation range 0.3 ... 7 bar, manually operated						
D7	Pressure regulation range 0.5 ... 12 bar, manually operated						

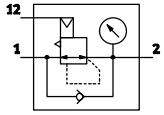


## Data sheet

Manually operated D5/D6/D7



Pneumatically actuated PO

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

Technical data		MS4		MS6			MS9		
Size									
Pneumatic port 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1	... <sup>1)</sup>
Pilot air connection 12 with pressure regulation range PO		-						G1/4	
Design		Directly actuated diaphragm regulator						Piloted diaphragm regulator	
								Directly actuated diaphragm regulator	
Regulating function		With return flow action, with secondary venting, with primary pressure compensation							
Type of mounting		Via accessories							
		In-line installation							
		Front panel mounting							
Mounting position		any							
Actuator lock		Rotary knob with detent							
		Rotary knob with detent, can be locked using accessories							
Pressure regulation range/operation [bar]	D5	0.5 ... 4, manually operated <sup>2)</sup>							
	D6	0.5 ... 7, manually operated <sup>2)</sup>							
	D7	0.5 ... 12, manually operated (0.5 ... 10 bar with pressure sensor AD... <sup>2)</sup>							
	PO <sup>3)</sup>	-						0.5 ... 16, pneumatically actuated	
Pressure indication		Via pressure gauge for displaying the outlet pressure							
	DM1/DM2	Via pressure gauge in rotary knob for displaying outlet pressure						-	
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output						-	
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output							
Length [mm]	With MS pressure gauge	57		77			109		
	With cover plate VS	54		76			109		
	With adapter plate A8/A4	59		79			110		
	With pressure sensor AD1/AD3	83		103			-		
	With pressure sensor AD7/AD9	59		79			112		
Width [mm]	Standard	40		62			104		90
	With rotary knob pressure gauge DM2	60		62			-		
Height [mm]	With rotary knob with detent, can be locked using accessories AS <sup>4)</sup>	125		189			225 (218) <sup>5)</sup>		
	With rotary knob pressure gauge DM1	113		-			-		
	With rotary knob pressure gauge DM2	116		177			-		
	With pressure regulation range PO	-		-			120		

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → 1049.

2) MS4: The pressure regulation range for pressure regulators with rotary knob pressure gauge DM... starts at 0.8 bar.

3) Outlet pressure p<sub>2</sub> corresponds roughly to the applied pilot pressure p<sub>12</sub>.

4) The pressure regulator without lockable rotary knob is about 9 mm smaller.

5) Value in brackets applies to the directly actuated pressure regulator MS9-LR-...DI.

## Data sheet

Standard nominal flow rate $q_{NN}$		MS4		MS6			MS9	
Size								
Pneumatic port 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1
$q_{NN}$ [l/min]	With pressure regulation range D5 <sup>1)</sup>	1200	2100	2400	5500	7500	19000 ±15% (14000 ±15%) <sup>3)</sup>	26000 ±15% (20000 ±15%) <sup>3)</sup>
	With pressure regulation range D6 <sup>2)</sup>	1150	1800	3000	5800	6500	17000 ±15% (14000 ±15%) <sup>3)</sup>	20000 ±15% (11000 ±15%) <sup>3)</sup>
	With pressure regulation range D7 <sup>2)</sup>	1000	1700	2700	4500	5500	17000 ±15%	20000 ±15%
	With pressure regulation range PO <sup>2)</sup>	–	–	–	–	–	21000 ±15%	25000 ±15%

1) MS4/MS6: Measured at  $p_1 = 10$  bar and  $p_2 = 3$  bar,  $\Delta p = 1$  bar.

MS9: Measured at  $p_1 = 10$  bar and  $p_2 = 4$  bar,  $\Delta p = 1$  bar.

2) Measured at  $p_1 = 10$  bar and  $p_2 = 6$  bar,  $\Delta p = 1$  bar.

3) Value in brackets applies to the directly actuated pressure regulator MS9-LR-...-DI.

Operating conditions		MS4		MS6		MS9	
Size							
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					
		Inert gases				–	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)					
Operating pressure	[bar]	0.8 ... 14		0.8 ... 20		1 ... 20	
Ambient temperature	[°C]	–10 ... +60 (0 ... +50) <sup>4)</sup>		–10 ... +60 (0 ... +50) <sup>4)</sup>		–10 ... +60 (0 ... +50) <sup>4)</sup>	

4) Value in brackets applies to MS4/MS6/MS9-LR with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Rotary knob	PA/POM
Seals	NBR

## Order code – MS4

	MS	4	LR						
<b>Series</b>									
MS	Standard service unit								
<b>Size</b>									
4	Grid dimension 40 mm								
<b>Type</b>									
LR	Pressure regulator								
<b>Pneumatic port</b>									
1/8	Female thread G1/8								
1/4	Female thread G1/4								
<b>Pressure regulation range/operation</b>									
D5	0.3 ... 4 bar, manually operated								
D6	0.3 ... 7 bar, manually operated								
D7	0.5 ... 12 bar, manually operated								
<b>Pressure gauge alternatives</b>									
–	With MS pressure gauge, bar <span style="float: right;">1</span>								
VS	Cover plate								
A8	Adapter plate for EN pressure gauge 1/8								
A4	Adapter plate for EN pressure gauge 1/4								
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin <span style="float: right;">2</span>								
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <span style="float: right;">2</span>								
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="float: right;">2</span>								
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="float: right;">2</span>								
<b>Rotary knob alternative</b>									
–	Standard								
DM1	Rotary knob pressure gauge, small <span style="float: right;">3</span>								
DM2	Rotary knob pressure gauge, large <span style="float: right;">4</span>								
<b>Actuator lock</b>									
–	Rotary knob with detent								
AS	Rotary knob with detent, can be locked using accessories <span style="float: right;">1</span>								
<b>Direction of flow</b>									
–	From left to right								
Z	From right to left								

1 Not with rotary knob alternative DM1 or DM2.

2 Not with rotary knob alternative DM2. Measuring range max. 10 bar

3 Only with pressure gauge alternative VS, A8, A4, AD1, AD3, AD7 or AD9.

4 Only with pressure gauge alternative VS, A8 or A4.

**Order example:**

MS4-LR-1/4-D6-A4-DM2

Standard service unit, grid dimension 40 mm - pressure regulator - female thread G1/4 - pressure regulation range 0.3 ... 7 bar, manually operated - with adapter plate for EN pressure gauge 1/4 - rotary knob pressure gauge, large - rotary knob with detent - flow direction from left to right



## Order code – MS9

		MS	9	-	LR	-		-		-		-		-		-		-	
<b>Series</b>																			
MS	Standard service unit																		
<b>Size</b>																			
9	Grid dimension 90 mm																		
<b>Type</b>																			
LR	Pressure regulator																		
<b>Pneumatic port</b>																			
3/4	Female thread G3/4																		
1	Female thread G1																		
G	Module without connecting thread, without connecting plate Connecting plates → 1049																		
<b>Pressure regulation range/operation</b>																			
D5	0.5 ... 4 bar, manually operated																		
D6	0.5 ... 7 bar, manually operated																		
D7	0.5 ... 12 bar, manually operated																		
P0	0.5 ... 16 bar, pneumatically actuated																		
<b>Regulator type</b>																			
-	Piloted																		
DI	Directly actuated <span style="border: 1px solid black; padding: 0 2px;">1</span>																		
<b>Pressure gauge / Pressure gauge alternatives</b>																			
AG	With MS pressure gauge																		
VS	Cover plate																		
A4	Adapter plate for EN pressure gauge 1/4																		
AD7	Pressure sensor with operational status indicator, plug <span style="border: 1px solid black; padding: 0 2px;">2</span> M8, threshold value comparator, PNP, N/O contact																		
AD9	Pressure sensor with operational status indicator, plug <span style="border: 1px solid black; padding: 0 2px;">2</span> M8, window comparator, PNP, N/O contact																		
<b>Alternative pressure gauge scale</b>																			
-	No pressure gauge scale <span style="border: 1px solid black; padding: 0 2px;">3</span>																		
BAR	Bar <span style="border: 1px solid black; padding: 0 2px;">4</span>																		
<b>Actuator lock</b>																			
Pressure regulation range/operation P0																			
-	None																		
Pressure regulation range/operation D5/D6/D7																			
-	Rotary knob with detent																		
AS	Rotary knob with detent, can be locked using accessories																		
<b>Direction of flow</b>																			
-	From left to right																		
Z	From right to left																		

1 Only with pressure regulation range/operation D5, D6.

2 Measuring range max. 10 bar.  
3 Not with MS pressure gauge AG.

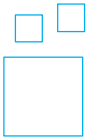
4 Only with MS pressure gauge AG.

**Order example:**

MS9-LR-G-D6-DI-AG-BAR-AS

Standard service unit, grid dimension 90 mm - pressure regulator - module without connecting thread, without connecting plate - pressure regulation range 0.5 ... 7 bar, manually operated - directly actuated regulator - with MS pressure gauge - pressure gauge scale in bar - rotary knob with detent, can be locked using accessories - flow direction from left to right

## Ordering – Product options



**Configurable product**

**This product and all its options can be ordered using the configurator.**

The configurator can be found under Products on the DVD or  
 → [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

★ Quick ordering<sup>1)</sup>

Part no.	Type
<b>MS4</b>	
529415	MS4-LR-1/4-D5-AS
529417	MS4-LR-1/4-D6-AS
529419	MS4-LR-1/4-D7-AS

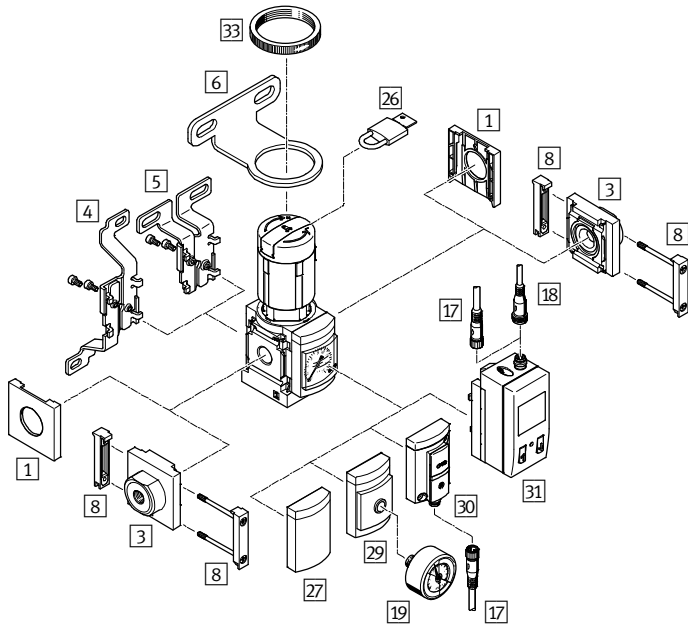
Part no.	Type
<b>MS6</b>	
529989	MS6-LR-1/2-D5-AS
529991	MS6-LR-1/2-D6-AS
529993	MS6-LR-1/2-D7-AS

Part no.	Type
<b>MS9</b>	
564136	MS9-LR-G-D6-AG-BAR-AS
564138	MS9-LR-G-D7-AG-BAR-AS

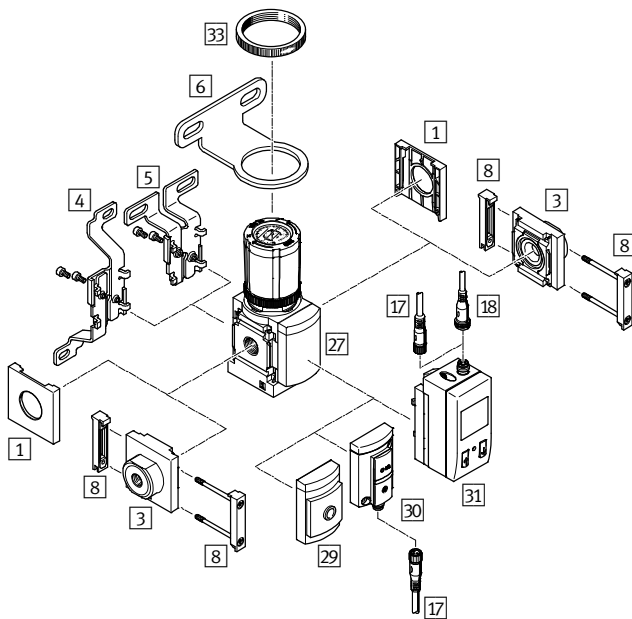
1) All products in this table are easy to select and quick to order.

## Accessories – MS4/MS6

With standard rotary knob



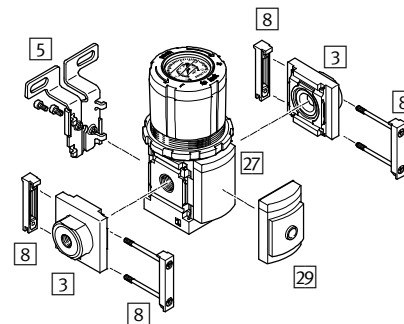
With rotary knob pressure gauge DM1 (MS4 only) or DM2 (MS6 only)



With rotary knob pressure gauge DM2 (MS4 only)

## Note

Due to the protruding rotary knob, only a distributor block MS4-FRM-FRZ or a branching module MS4-FRM can be connected as a directly adjacent service unit component.



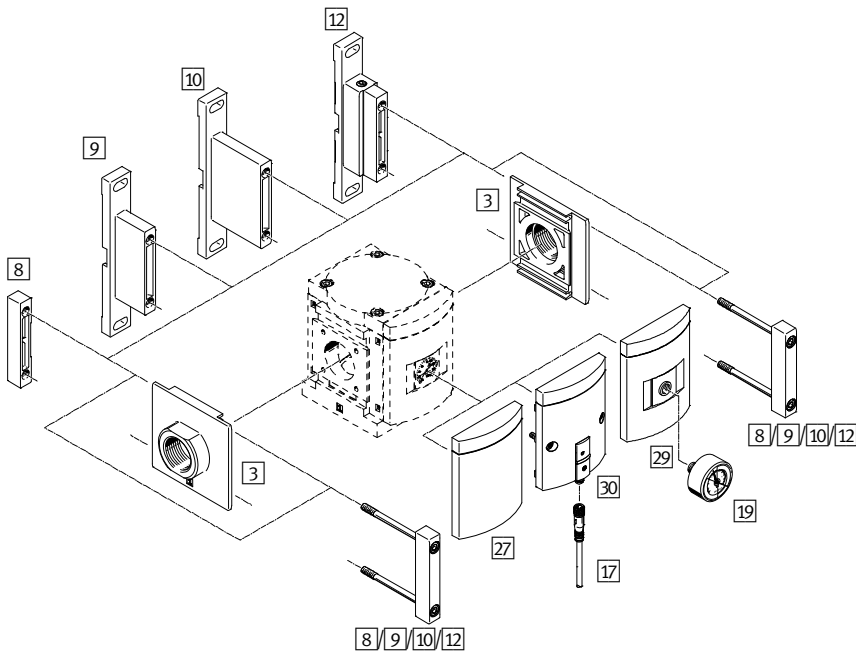
Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
4 Mounting bracket MS4/6-WB <sup>1</sup>	1049
5 Mounting bracket MS4/6-WBM <sup>1</sup>	1049
6 Mounting bracket MS4/6-WR <sup>1</sup>	1049
8 Module connector MS4/6-MV	1049
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051
26 Padlock LRV5-D	1052
27 Cover plate VS	989
29 Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	989
30 Pressure sensor with operational status indicator AD7/AD9	989

1) Mounting component for individual device

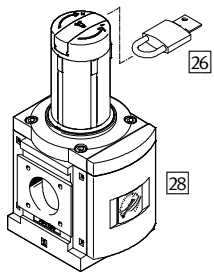
Accessories	→ Page/online
31 Pressure sensor with LCD display AD1/AD3	989
33 Knurled nut MS-LR (included in the scope of delivery)	–
– Mounting plate MS4/6-AEND	1049
– Mounting bracket MS4/6-WP <sup>2</sup>	1049
– Mounting bracket MS4/6-WPB <sup>2</sup>	1049
– Mounting bracket MS4/6-WPE <sup>2</sup>	1049
– Mounting bracket MS4/6-WPM <sup>2</sup>	1049
– Module connector MS4/6-RMV	1052
– Module connector MS4/6-AMV	1052
– Module connector MS6-9-ARMV	1052
– Power supply module MS4/6-E-IPM	ms*-e-ipm*
– Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3] with mounting plate MS4/6-AEND.

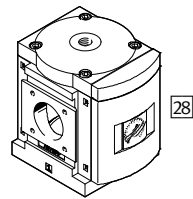
## Accessories – MS9



Manually operated D5/D6/D7



Pneumatically actuated P0



12

Accessories	→ Page/online
3 Connecting plate kit MS9-AG... <sup>1)</sup>	1049
8 Module connector MS9-MV <sup>1)</sup>	1049
9 Mounting bracket MS9-WP	1049
10 Mounting bracket MS9-WPB	1049
12 Mounting bracket MS9-WPM <sup>1)</sup>	1049
17 Connecting cable NEBU-M8...-LE3	1050
19 Pressure gauge MA	1051

1) Not suitable for individual devices with connecting thread G3/4 or G1.

Accessories	→ Page/online
26 Padlock LRVS-D	1052
27 Cover plate VS	991
28 MS pressure gauge AG	991
29 Adapter plate A4 for EN pressure gauge 1/4	991
30 Pressure sensor with operational status indicator AD7/AD9	991
- Module connector MS9-RMV	1052
- Module connector MS6-9-ARMV	1052





Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-lrb](http://www.festo.com/catalogue/ms*-lrb)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-lrb](http://www.festo.com/sp/ms*-lrb)

Regulators  
MS series

Pressure regulators

# MS-LRB



- + For manifold assembly with through air supply
- + For configuring a regulator manifold with independent pressure regulation ranges
- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + Actuator lock to protect set values against adjustment
- + With and without secondary venting
- + Integrated return flow option for exhausting from output 2 to output 1
- + Optional pressure sensor
- + Optional rotary knob pressure gauge



- For manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- 2 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)

→ [www.festo.com/catalogue/ms\\*-lrb](http://www.festo.com/catalogue/ms*-lrb)

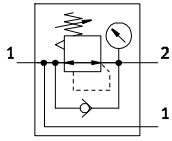
## Product range overview

Size	Pneumatic port	Product options														
		D5	D6	D7	VS	A8	A4	AD...	DM1	DM2	AS	BC	BD	BE	Z	
4	1/4	■	■	■	■	■	■	■	■	■	–	■	■	■	–	■
6	1/2	■	■	■	■	–	■	■	–	■	■	–	■	■	■	■

## Product options

1/4	Female thread G1/4	RG	Integrated pressure gauge, red/green scale	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	BC	Angled outlet block QS-6
1/2	Female thread G1/2	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	BD	Angled outlet block QS-8
AGA	Connecting plate G1/8	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	BE	Angled outlet block QS-10
AGB	Connecting plate G1/4	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	PSI	Pressure gauge scale in psi	WR	Mounting bracket with knurled nut for regulator head
AGC	Connecting plate G3/8	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	MPA	Pressure gauge scale in Mpa	WP	Mounting bracket
AGD	Connecting plate G1/2	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	OS	Without secondary venting	WPM	Mounting bracket
AGE	Connecting plate G3/4			LD	Long rotary knob	WPB	Mounting bracket for large wall gap
D5	Pressure regulation range 0.3 ... 4 bar, manually operated			DM1	Rotary knob pressure gauge, small	WB	Mounting bracket
D6	Pressure regulation range 0.3 ... 7 bar, manually operated			DM2	Rotary knob pressure gauge, large	WBM	Mounting bracket
D7	Pressure regulation range 0.5 ... 12 bar, manually operated			KD	Rotary knob underneath	EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
D8	Pressure regulation range 0.5 ... 16 bar, manually operated			AS	Rotary knob with detent, can be locked using accessories	UL1	UL certification (cULus, ordinary locations for Canada and USA)
VS	Cover plate			E11	Rotary knob with integrated lock	Z	Pressure output to the front
A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge						
A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge						

## Data sheet

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

Technical data		MS4	MS6
Size		MS4	MS6
Pneumatic connection 1		G $\frac{1}{4}$	G $\frac{1}{2}$
Pneumatic connection 2		G $\frac{1}{4}$	G $\frac{1}{2}$
		QS-6 (angled outlet block)	QS-8 (angled outlet block)
		QS-8 (angled outlet block)	QS-10 (angled outlet block)
Design	Directly actuated diaphragm regulator with through compressed air supply		
Regulating function	With return flow action, with secondary venting, with primary pressure compensation		
Type of mounting	Via accessories		
	In-line installation		
	Front panel mounting		
Mounting position	Any		
Actuator lock	Rotary knob with detent		
	Rotary knob with detent, can be locked using accessories		
Pressure regulation range/operation [bar]	D5	0.3 ... 4, manually operated <sup>1)</sup>	
	D6	0.3 ... 7, manually operated <sup>1)</sup>	
	D7	0.5 ... 12, manually operated (0.5 ... 10 bar with pressure sensor AD... <sup>1)</sup>	
Pressure indication	Via pressure gauge for indicating the outlet pressure		
	DM1/DM2	Via pressure gauge in rotary knob for displaying outlet pressure	
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output	
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output	
Length [mm]	With MS pressure gauge	57 (78) <sup>2)</sup>	77 (100) <sup>2)</sup>
	With cover plate VS	54 (75) <sup>2)</sup>	76 (99) <sup>2)</sup>
	With adapter A8/A4	59 (80) <sup>2)</sup>	79 (102) <sup>2)</sup>
	With pressure sensor AD1/AD3	83 (104) <sup>2)</sup>	103 (126) <sup>2)</sup>
	With pressure sensor AD7/AD9	59 (80) <sup>2)</sup>	79 (102) <sup>2)</sup>
Width [mm]		40	62
Height [mm]	With rotary knob with detent, can be locked using accessories AS <sup>3)</sup>	125	189
	With rotary knob pressure gauge DM1	115	–
	With rotary knob pressure gauge DM2	–	177

1) MS4: The pressure regulation range for pressure regulators with rotary knob pressure gauge DM1 starts at 0.8 bar.

2) Value in brackets with angled outlet block.

3) The pressure regulator without lockable rotary knob is approx. 9 mm smaller.

Standard nominal flow rate  $q_{nN}$ 

Size		MS4		MS6			
		Standard	Angled outlet block		Standard	Angled outlet block	
			QS-6	QS-8		QS-8	QS-10
$q_{nN}$ [l/min]	With pressure regulation range D5 <sup>4)</sup>	1900	300	650	7300	600	750
	With pressure regulation range D6 <sup>5)</sup>	1700	350	840	6300	880	1000
	With pressure regulation range D7 <sup>5)</sup>	1500 <sup>6)</sup>	350	640	5500	800	950

4) Measured at  $p_1 = 10$  bar and  $p_2 = 3$  bar,  $\Delta p = 1$  bar.5) Measured at  $p_1 = 10$  bar and  $p_2 = 6$  bar,  $\Delta p = 1$  bar.6)  $q_{nN} = 800$  l/min,  $q_{n \max} = 2200$  l/min with rotary knob pressure gauge DM1.

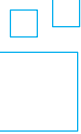
## Data sheet

Operating conditions		MS4	MS6
Size			
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases	
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	0.8 ... 14	0.8 ... 20
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) <sup>1)</sup>	-10 ... +60 (0 ... +50) <sup>1)</sup>

1) Value in brackets applies to MS4/MS6-LRB with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Rotary knob	PA/POM
Seals	Nitrile rubber

## Ordering – Product options



**Configurable product**

**This product and all its options can be ordered using the configurator.**

The configurator can be found under Products on the DVD or  
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

## Order code – MS4

		MS	4	–	LRB	–	1/4	–	–	–	–	–	–
<b>Series</b>													
MS	Standard service unit												
<b>Size</b>													
4	Grid dimension 40 mm												
<b>Type</b>													
LRB	Pressure regulator												
<b>Pneumatic port</b>													
1/4	Female thread G1/4												
<b>Pressure regulation range/operation</b>													
D5	0.3 ... 4 bar, manually operated												
D6	0.3 ... 7 bar, manually operated												
D7	0.5 ... 12 bar, manually operated												
<b>Pressure gauge alternatives</b>													
–	With MS pressure gauge, bar											1	
VS	Cover plate											2	
A8	Adapter plate for EN pressure gauge 1/8											3	
A4	Adapter plate for EN pressure gauge 1/4											3	
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin											3/4	
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA											3/4	
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact											4/5	
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact											4/5	
<b>Rotary knob alternative</b>													
–	Standard												
DM1	Rotary knob pressure gauge, small											6	
<b>Actuator lock</b>													
–	Rotary knob with detent												
AS	Rotary knob with detent, can be locked using accessories											1	
<b>Pressure output</b>													
–	No angled outlet block												
BC	Angled outlet block QS-6												
BD	Angled outlet block QS-8												
<b>Alternative direction of flow</b>													
–	Pressure output to the rear												
Z	Pressure output to the front												

1 Not with rotary knob alternative DM1.

2 Must be selected if alternative flow direction Z is selected without pressure output BC, BD.

3 Not in combination with alternative flow direction Z.

4 Measuring range max. 10 bar.

5 In combination with alternative flow direction Z only with pressure output BC, BD.

6 Only with pressure gauge alternative VS, A8, A4, AD1, AD3, AD7 or AD9.

**Order example:**

MS4-LRB-1/4-D6-VS-DM1-BD

Standard service unit, grid dimension 40 mm - pressure regulator - female thread G1/4 - pressure regulation range 0.3 ... 7 bar, manually operated - with cover plate - rotary knob pressure gauge, small - rotary knob with detent - angled outlet block QS-8 - pressure output to the rear

## Pressure regulators MS-LRB, MS series

## Order code – MS6

		MS	6	-	LRB	-	1/2	-	-	-	-	-	-	-	-
<b>Series</b>															
MS	Standard service unit														
<b>Size</b>															
6	Grid dimension 62 mm														
<b>Type</b>															
LRB	Pressure regulator														
<b>Pneumatic port</b>															
1/2	Female thread G1/2														
<b>Pressure regulation range/operation</b>															
D5	0.3 ... 4 bar, manually operated														
D6	0.3 ... 7 bar, manually operated														
D7	0.5 ... 12 bar, manually operated														
<b>Pressure gauge alternatives</b>															
-	With MS pressure gauge, bar													1	
VS	Cover plate													2	
A4	Adapter plate for EN pressure gauge 1/4													3	
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin													3/4	
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA													3/4	
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact													4/5	
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact													4/5	
<b>Rotary knob alternative</b>															
-	Standard														
DM2	Rotary knob pressure gauge, large													6	
<b>Actuator lock</b>															
-	Rotary knob with detent														
AS	Rotary knob with detent, can be locked using accessories													1	
<b>Pressure output</b>															
-	No angled outlet block														
BD	Angled outlet block QS-8														
BE	Angled outlet block QS-10														
<b>Alternative direction of flow</b>															
-	Pressure output to the rear														
Z	Pressure output to the front														

1 Not with rotary knob alternative DM2.

2 Must be selected if alternative flow direction Z is selected without pressure output BD, BE.

3 Not in combination with alternative flow direction Z.

4 Measuring range max. 10 bar.

5 In combination with alternative flow direction Z only with pressure output BD, BE.

6 Only with pressure gauge alternative VS, A4, AD1, AD3, AD7 or AD9.

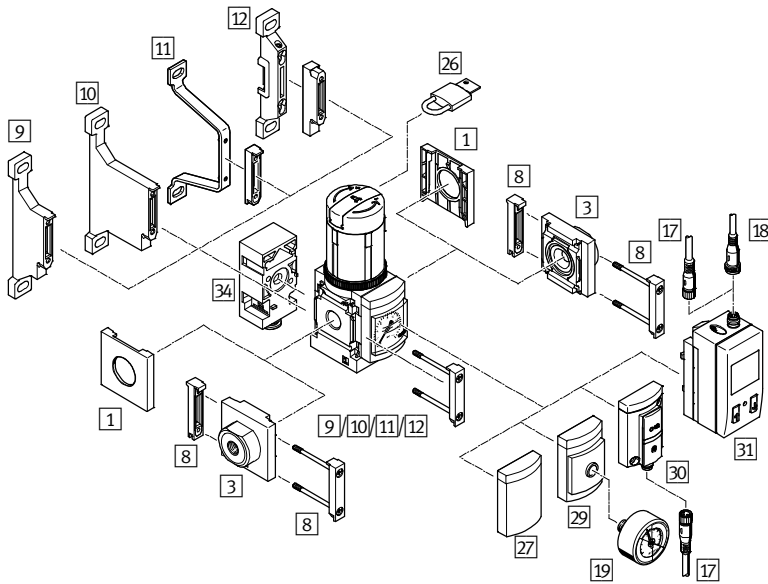
**Order example:**

MS6-LRB-1/2-D6-AD9-AS-BD

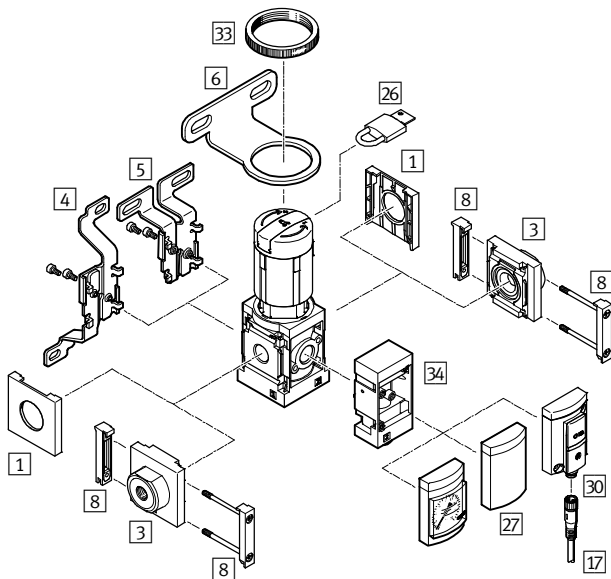
Standard service unit, grid dimension 62 mm - pressure regulator - female thread G1/2 - pressure regulation range 0.3 ... 7 bar, manually operated - with pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact - standard rotary knob - rotary knob with detent, can be locked using accessories - angled outlet block QS-8 - pressure output to the rear

## Accessories – MS4/MS6

## Pressure output to the rear



## Pressure output to the front (alternative flow direction Z)



Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
4 Mounting bracket MS4/6-WB <sup>1</sup>	1049
5 Mounting bracket MS4/6-WBM <sup>1</sup>	1049
6 Mounting bracket MS4/6-WR <sup>1</sup>	1049
8 Module connector MS4/6-MV	1049
9 Mounting bracket MS4/6-WP <sup>2</sup>	1049
10 Mounting bracket MS4/6-WPB <sup>3</sup>	1049
11 Mounting bracket MS4/6-WPE <sup>3</sup>	1049
12 Mounting bracket MS4/6-WPM <sup>4</sup>	1049
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051

- 1) Mounting component for individual device  
 2) Only with alternative flow direction Z and/or only with pressure output BC, BD, BE.

Accessories	→ Page/online
26 Padlock LRV5-D	1052
27 Cover plate VS	999
29 Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	999
30 Pressure sensor with operational status indicator AD7/AD9	999
31 Pressure sensor with LCD display AD1/AD3	999
33 Knurled nut MS-LR (included in the scope of delivery)	–
34 Angled outlet block B...	999
– Mounting plate MS4/6-AEND	1049
– Module connector MS4/6-RMV	1052
– Module connector MS4/6-AMV	1052
– Module connector MS6/9-ARMV	1052
– Power supply module MS4/6-E-IPM	ms*-e-ipm*
– Branching module MS4/6-A-IPM	ms*-a*ipm*

- 3) Not in combination with alternative flow direction Z and pressure output BC, BD, BE.  
 4) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3] with mounting plate MS4/6-AEND.



Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-lrp](http://www.festo.com/catalogue/ms*-lrp)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-lrp](http://www.festo.com/sp/ms*-lrp)

Regulators  
MS series

Precision pressure regulators

# MS-LRP



- + As individual device and for manifold assembly
- + Manifold assembly with through air supply
- + Good regulation characteristics with minimal hysteresis and primary pressure compensation
- + Actuator lock to protect set values against adjustment
- + Optionally with pressure sensor with display
- + Size 6
- + Grid dimension 62 mm





- For sensitive applications requiring a hysteresis of 0.02 bar
- High flow rate with minimal pressure drop
- Suitable for front panel mounting
- 1 size:  
MS6 – grid dimension 62 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)

→ [www.festo.com/catalogue/ms\\*-lrp](http://www.festo.com/catalogue/ms*-lrp)

## Product range overview

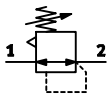
Size	Pneumatic port	Product options											
		D2	D4	D5	D7	PO	VS	A8	A8M	A4	AD...	AS	Z
6	1/4, 3/8, 1/2	■	■	■	■	■	■	■	■	■	■	■	■

## Product options

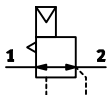
1/4	Female thread G1/4	VS	Cover plate	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	AS	Rotary knob with detent, can be locked using accessories
3/8	Female thread G3/8	A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	E11	Rotary knob with integrated lock
1/2	Female thread G1/2	A8M	Adapter plate for EN pressure gauge 1/8, with precision pressure gauge	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	WR	Mounting bracket with knurled nut for regulator head
AGB	Connecting plate G1/4	A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	WP	Mounting bracket
AGC	Connecting plate G3/8	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	WPM	Mounting bracket
AGD	Connecting plate G1/2	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	LD	Long rotary knob	WB	Mounting bracket
AGE	Connecting plate G3/4	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	KD	Rotary knob underneath	EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
D2	Pressure regulation range 0.05 ... 0.7 bar, manually operated					UL1	UL certification (cULus, ordinary locations for Canada and USA)
D4	Pressure regulation range 0.05 ... 2.5 bar, manually operated					Z	Direction of flow from right to left
D5	Pressure regulation range 0.1 ... 4 bar, manually operated						
D7	Pressure regulation range 0.1 ... 12 bar, manually operated						
PO	Pressure regulation range 0.1 ... 12 bar, pneumatically actuated						

## Data sheet

Manually operated D2/D4/D5/D7



Pneumatically actuated PO



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>		
Size	MS6			
Pneumatic port 1, 2	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
Pneumatic connection 3	G $\frac{1}{4}$			
Pilot air connection 12 with pressure regulation range PO	G $\frac{1}{8}$			
Design	Piloted precision diaphragm regulator			
Regulating function	With secondary venting			
Type of mounting	Via accessories In-line installation Front panel mounting			
Mounting position	Any			
Actuator lock	Rotary knob with detent Rotary knob with detent, can be locked using accessories			
Pressure regulation range/operation [bar]	D2 <sup>1)</sup>	0.05 ... 0.7, manually operated		
	D4 <sup>1)</sup>	0.05 ... 2.5, manually operated		
	D5 <sup>1)</sup>	0.1 ... 4, manually operated		
	D7 <sup>1)</sup>	0.1 ... 12, manually operated (0.1 ... 10 bar with pressure sensor AD...)		
	PO <sup>2)</sup>	0.1 ... 12, pneumatically actuated (0.1 ... 10 bar with pressure sensor AD...)		
Pressure indication	A8M	Via precision pressure gauge for displaying outlet pressure		
	AD1/AD3	Via pressure sensor with LCD display for indicating the output pressure and with electrical output		
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the output pressure and with electrical output		
Length [mm]	With cover plate VS	76		
	With adapter plate A8/A4	79		
	With adapter plate and precision pressure gauge A8M	116		
	With pressure sensor AD1/AD3	103		
	With pressure sensor AD7/AD9	79		
Width [mm]	62			
Height [mm]	With rotary knob with detent, can be locked using accessories AS <sup>3)</sup>	219 + 5 <sup>4)</sup>		
	With pressure regulation range PO	136		

- 1) Inlet pressure  $p_1 \geq$  outlet pressure  $p_2 + 1$  bar.
- 2) Outlet pressure  $p_2 =$  pilot pressure  $p_{12} + \max. 0.5$  bar.
- 3) The precision pressure regulator without lockable rotary knob is approx. 9 mm smaller.
- 4) Installation dimension for pulling out the rotary knob.

Standard nominal flow rate $q_{nN}$		G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Pneumatic connection 1, 2	G $\frac{1}{4}$			
$q_{nN}$ [l/min]	With pressure regulation range D2 <sup>5)</sup>	800	1100	1600
	With pressure regulation range D4 <sup>6)</sup>	1100	1400	2300
	With pressure regulation range D5 <sup>7)</sup>	1400	1700	3000
	With pressure regulation range D7/PO <sup>8)</sup>	3000	3300	5000

- 5) Measured at  $p_1 = 10$  bar and  $p_2 = 0.5$  bar,  $\Delta p = 0.1$  bar.
- 6) Measured at  $p_1 = 10$  bar and  $p_2 = 1.5$  bar,  $\Delta p = 0.1$  bar.
- 7) Measured at  $p_1 = 10$  bar and  $p_2 = 2.5$  bar,  $\Delta p = 0.1$  bar.
- 8) Measured at  $p_1 = 10$  bar and  $p_2 = 6.0$  bar,  $\Delta p = 0.1$  bar.

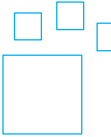
## Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Lubricated operation not possible
Operating pressure [bar]	1 ... 14
Ambient temperature [°C]	-10 ... +60 (0 ... +50) <sup>1)</sup>

1) Value in brackets applies to MS6-LRP with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Rotary knob	PA/POM
Seals	Nitrile rubber

## Ordering – Product options



**Configurable product**

**This product and all its options can be ordered using the configurator.**

The configurator can be found under Products on the DVD or  
[→ www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

## Order code – MS6

		MS	6	–	LRP	–		–		–		–		–		–		–	
<b>Series</b>																			
MS	Standard service unit																		
<b>Size</b>																			
6	Grid dimension 62 mm																		
<b>Type</b>																			
LRP	Precision pressure regulator																		
<b>Pneumatic connection</b>																			
1/4	Female thread G1/4																		
3/8	Female thread G3/8																		
1/2	Female thread G1/2																		
<b>Pressure regulation range/operation</b>																			
D2	0.05 ... 0.7 bar, manually operated																		
D4	0.05 ... 2.5 bar, manually operated																		
D5	0.1 ... 4 bar, manually operated																		
D7	0.1 ... 12 bar, manually operated																		
PO	0.1 ... 12 bar, pneumatically actuated																		
<b>Pressure gauge alternatives</b>																			
VS	Cover plate																		
A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge																		
A8M	Adapter plate for EN pressure gauge 1/8, with precision pressure gauge																		
A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge																		
AD1	Pressure sensor with LCD display, plug M8, 1 switching <sup>1</sup> output PNP, 3-pin																		
AD3	Pressure sensor with LCD display, plug M12, 1 switching <sup>1</sup> output PNP, 4-pin, analogue output 4 ... 20 mA																		
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <sup>2</sup>																		
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <sup>2</sup>																		
<b>Actuator lock</b>																			
Pressure regulation range/operation PO																			
–	None																		
Pressure regulation range/operation D2/D4/D5/D7																			
–	Rotary knob with detent																		
AS	Rotary knob with detent, can be locked using accessories																		
<b>Direction of flow</b>																			
–	From left to right																		
Z	From right to left																		

<sup>1</sup> Measuring range max. 10 bar.  
Not with pressure regulation range/operation D2, D4

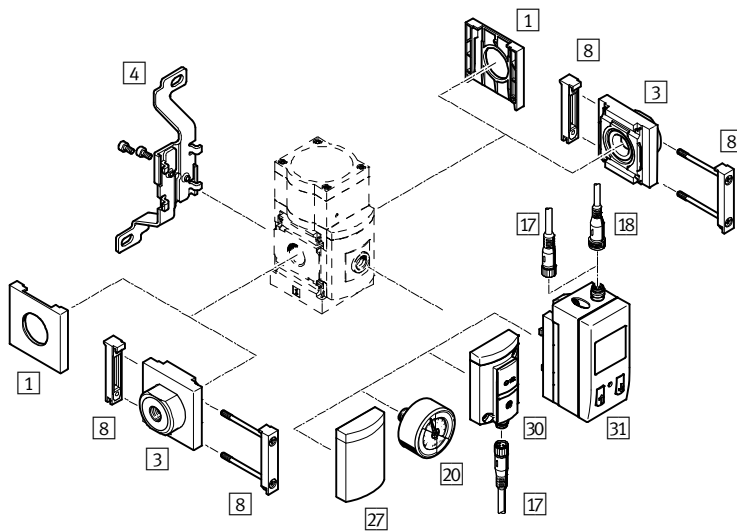
<sup>2</sup> Measuring range max. 10 bar.  
Not with pressure regulation range/operation D2

**Order example:**

MS6-LRP-1/2-D5-A8M-AS

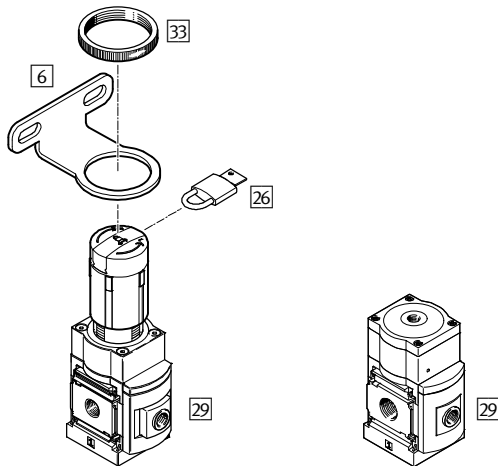
Standard service unit, grid dimension 62 mm - precision pressure regulator - female thread G1/2 - pressure regulation range 0.1 ... 4 bar, manually operated - with adapter plate for EN pressure gauge 1/8, with precision pressure gauge - rotary knob with detent, can be locked using accessories - flow direction from left to right

## Accessories – MS6



Manually operated D2/D4/D5/D7

Pneumatically actuated PO



Accessories	→ Page/online
<b>1</b> Cover cap MS6-END	1049
<b>3</b> Connecting plate kit MS6-AG...	1049
<b>4</b> Mounting bracket MS6-WB <sup>1</sup>	1049
<b>6</b> Mounting bracket MS6-WR <sup>1</sup>	1049
<b>8</b> Module connector MS6-MV	1049
<b>17</b> Connecting cable NEBU-M8...-LE3	1050
<b>18</b> Connecting cable NEBU-M12...-LE4	1050
<b>20</b> Precision pressure gauge A8M/MAP	1006, 1051
<b>26</b> Padlock LRV5-D	1052
<b>27</b> Cover plate VS	1006
<b>29</b> Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	1006
<b>30</b> Pressure sensor with operational status indicator AD7/AD9	1006

1) Mounting component for individual device

Accessories	→ Page/online
<b>31</b> Pressure sensor with LCD display AD1/AD3	1006
<b>33</b> Knurled nut MS-LR (included in the scope of delivery)	–
– Mounting plate MS6-AEND	1049
– Mounting bracket MS6-WP <sup>2</sup>	1049
– Mounting bracket MS6-WPB <sup>2</sup>	1049
– Mounting bracket MS6-WPE <sup>2</sup>	1049
– Mounting bracket MS6-WPM <sup>2</sup>	1049
– Module connector MS6-RMV	1052
– Module connector MS4-6-AMV	1052
– Module connector MS6-9-ARMV	1052
– Power supply module MS4/6-E-IPM	<a href="#">ms*-e-ipm*</a>
– Branching module MS4/6-A-IPM	<a href="#">ms*-a-ipm*</a>

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS6-AG... **3**/with mounting plate MS6-AEND.



Overview/Configuration/Order  
→ [www.festo.com/catalogue/ms\\*-em](http://www.festo.com/catalogue/ms*-em)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-em](http://www.festo.com/sp/ms*-em)

On-off valves and soft-start valves  
MS series

On-off valves

# MS-EM



- + Manual actuation
- + A silencer can be attached or the exhaust air ducted at port 3
- + Optionally with pressure gauge and pressure sensor with display
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm



- Manually operated on-off valve for pressurising and exhausting pneumatic systems
- 4 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm, MS9 – grid dimension 90 mm, MS12 – grid dimension 124 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)
- ★ Quick ordering of basic designs → 1012

→ [www.festo.com/catalogue/ms\\*-em](http://www.festo.com/catalogue/ms*-em)

## Product range overview

Size	Pneumatic port	Product options								
		S	VS	AG	A8	A4	AD...	BAR	2	Z
4	1/8, 1/4	■	– <sup>1)</sup>	■	■	■	■	–	–	■
6	1/4, 3/8, 1/2	■	– <sup>1)</sup>	■	–	■	■	–	–	■
9	3/4, 1, G	■	■	■	–	■	–	■	■	■
12	G	■	– <sup>1)</sup>	■	–	■	–	–	–	■

1) Cover plate included in the basic configuration by default.

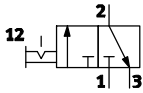
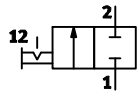
## Product options

1/8	Female thread G1/8	S	Silencer	AD4	Pressure sensor with LCD display, plug M12, 1 switching output	BAR	Pressure gauge scale in bar
1/4	Female thread G1/4	VS	Cover plate		NPN, 4-pin, analogue output	PSI	Pressure gauge scale in psi
3/8	Female thread G3/8	AG	MS pressure gauge		4 ... 20 mA	MPA	Pressure gauge scale in Mpa
1/2	Female thread G1/2	A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	2	2/2-way valve
3/4	Female thread G3/4	A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge			WP	Mounting bracket
1	Female thread G1	RG	Integrated pressure gauge, red/green scale	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	WPM	Mounting bracket
AGA	Connecting plate G1/8	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	WPB	Mounting bracket for large wall gap
AGB	Connecting plate G1/4	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	WB	Mounting bracket
AGC	Connecting plate G3/8	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			WBM	Mounting bracket
AGD	Connecting plate G1/2					EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
AGE	Connecting plate G3/4					UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGF	Connecting plate G1					Z	Direction of flow from right to left
AGG	Connecting plate G1 1/4						
AGH	Connecting plate G1 1/2						
AGI	Connecting plate G2						
G	Module without connecting thread, without connecting plate						

## On-off valves MS-EM, MS series

FESTO

## Data sheet



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>							
Size		MS4		MS6			MS9		
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	... <sup>1)</sup>
Pneumatic connection 3		G $\frac{1}{4}$		G $\frac{1}{2}$			G1		
Design		Rotary slide valve					Piston spool valve		
Type of mounting		via accessories In-line installation							
Mounting position		any							
Actuation type		Manual							
Valve function		–					2/2-way valve, bistable		
Exhaust function		3/2-way valve, bistable							
Exhaust function		No flow control							
Type of pilot control		Direct							
Direction of flow		Non-reversible							
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure							
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output					–		
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output					–		
Length [mm]	With cover plate	54		76			109		
	With MS pressure gauge AG	65		85			109		
	With adapter plate A8/A4	59		79			110		
	With pressure sensor AD1/AD3	83		103			–		
	With pressure sensor AD7/AD9	59		79			–		
Width [mm]		40		62			104		90
Height [mm]	Without silencer	104		151			272		
	With silencer	151		257			431		

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → 1049.

Standard nominal flow rate $q_{nN}$		MS4		MS6			MS9		
Size		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	... <sup>2)</sup>
$q_{nN1 \rightarrow 2}$ [l/min]	In main flow direction <sup>3)</sup>	1200	2200	3000	5500	8700	14500	18000	8000 ... 18000
$q_{nN2 \rightarrow 3}$ [l/min]	In relief direction <sup>3)</sup>	1900	1700	6800	6600	6200	14900	14100	13200 ... 16500

2) Dependent on the connecting plate selected, must be ordered separately as an accessory → 1049.

3) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar.

Operating conditions		MS4		MS6			MS9		
Size									
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]					Inert gases		
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will be required)							
Operating pressure	[bar]	0 ... 14 (0 ... 10) <sup>4)</sup>		0 ... 18 (0 ... 10) <sup>4)</sup>			0 ... 20		
Ambient temperature	[°C]	–10 ... +60 (0 ... +50) <sup>4)</sup>		–10 ... +60 (0 ... +50) <sup>4)</sup>			–10 ... +60		

4) Value in brackets applies to MS4/MS6-EM1 with pressure sensor AD...



## Data sheet

Materials	
Housing	Die-cast aluminium
Seals	Nitrile rubber

## Order code – MS4/MS6

Series	
MS	Standard service unit
Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm
Type	
EM1	Manually operated on-off valve
Pneumatic port	
MS4	
1/8	Female thread G1/8
1/4	Female thread G1/4
MS6	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2
Pneumatic silencer	
–	Without silencer
S	Pneumatic silencer
Pressure gauge / Pressure gauge alternatives	
–	Cover plate
AG	MS pressure gauge, bar
A8	Adapter plate for EN pressure gauge 1/8 (MS4 only)
A4	Adapter plate for EN pressure gauge 1/4
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin <span style="border: 1px solid black; padding: 0 2px;">1</span>
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <span style="border: 1px solid black; padding: 0 2px;">1</span>
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>
Direction of flow	
–	From left to right
Z	From right to left

1 Measuring range max. 10 bar.

## Order example:

MS6-EM1-1/2-S-AD1

Standard service unit, grid dimension 62 mm - manually operated on-off valve - female thread G1/2 - with silencer - with pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin - flow direction from left to right

# On-off valves MS-EM, MS series

## Order code – MS9

MS		9		EM													
<b>Series</b>																	
MS		Standard service unit															
<b>Size</b>																	
9		Grid dimension 90 mm															
<b>Type</b>																	
EM		Manually operated on-off valve															
<b>Pneumatic port</b>																	
3/4		Female thread G3/4															
1		Female thread G1															
G		Module without connecting thread, without connecting plate Connecting plates → 1049															
<b>Pneumatic silencer</b>																	
-		Without silencer <span style="float:right">1</span>															
S		Pneumatic silencer															
<b>Pressure gauge / Pressure gauge alternatives</b>																	
VS		Cover plate															
AG		MS pressure gauge															
A4		Adapter plate for EN pressure gauge 1/4															
<b>Alternative pressure gauge scale</b>																	
-		No pressure gauge scale <span style="float:right">2</span>															
BAR		Bar <span style="float:right">3</span>															
<b>Valve function</b>																	
-		3/2-way valve															
2		2/2-way valve <span style="float:right">4</span>															
<b>Direction of flow</b>																	
-		From left to right															
Z		From right to left															

1 Only with 2/2-way valve function.

3 Only with MS pressure gauge AG.

4 Not with silencer S.

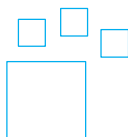
2 Not with MS pressure gauge AG.

### Order example:

MS9-EM-1-S-AG-BAR

Standard service unit, grid dimension 90 mm - manually operated on-off valve - female thread G1 - with silencer - with MS pressure gauge - pressure gauge scale in bar - 3/2-way valve - flow direction from left to right

## Ordering – Product options



**Configurable product**

**This product and all its options can be ordered using the configurator.**

The configurator can be found under Products on the DVD or  
→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

### ★ Quick ordering<sup>1)</sup>

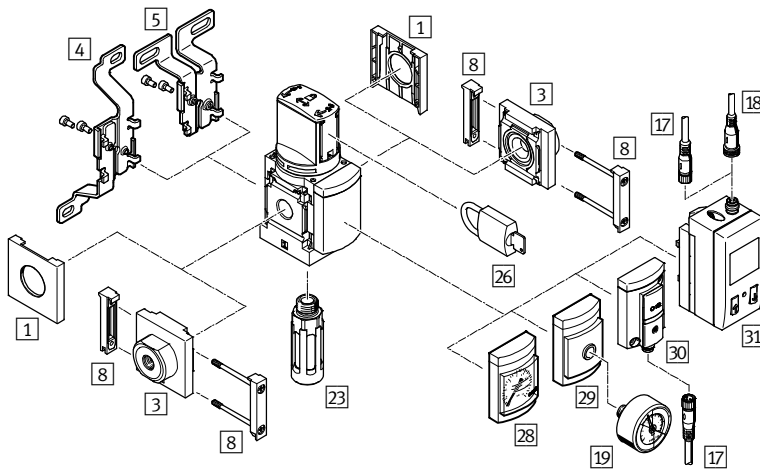
Part no.	Type
<b>MS4</b>	
541258	MS4-EM1-1/4
541259	MS4-EM1-1/4-S

Part no.	Type
<b>MS6</b>	
541267	MS6-EM1-1/2
541268	MS6-EM1-1/2-S

Part no.	Type
<b>MS9</b>	
562952	MS9-EM-G-S-VS

1) All products in this table are easy to select and quick to order.

## Accessories – MS4/MS6



Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
4 Mounting bracket MS4/6-WB <sup>1</sup>	1049
5 Mounting bracket MS4/6-WBM <sup>1</sup>	1049
8 Module connector MS4/6-MV	1049
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051
23 Silencer U	1052
26 Padlock LRVS-D	1052
28 MS pressure gauge AG	1011
29 Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	1011

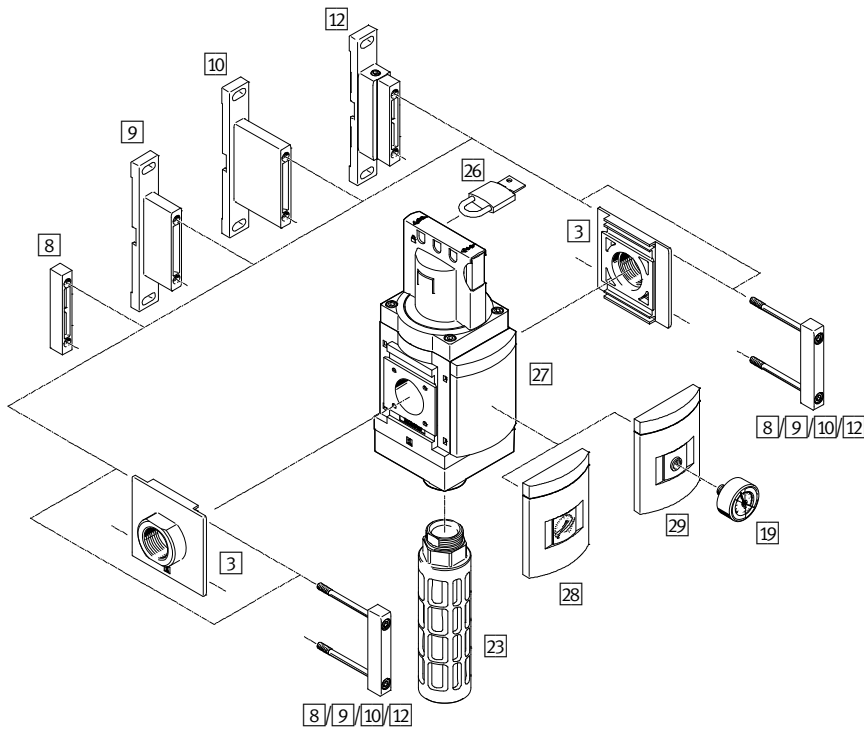
1) Mounting component for individual device

Accessories	→ Page/online
30 Pressure sensor with operational status indicator AD7/AD9	1011
31 Pressure sensor with LCD display AD1/AD3	1011
- Mounting plate MS4/6-AEND	1049
- Mounting bracket MS4/6-WP <sup>2</sup>	1049
- Mounting bracket MS4/6-WPB <sup>2</sup>	1049
- Mounting bracket MS4/6-WPE <sup>2</sup>	1049
- Mounting bracket MS4/6-WPM <sup>2</sup>	1049
- Module connector MS4/6-RMV	1052
- Module connector MS4/6-AMV	1052
- Module connector MS6-9-ARMV	1052
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3] with mounting plate MS4/6-AEND.

# On-off valves MS-EM, MS series

## Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... <sup>1)</sup>	1049
8 Module connector MS9-MV <sup>1)</sup>	1049
9 Mounting bracket MS9-WP	1049
10 Mounting bracket MS9-WPB	1049
12 Mounting bracket MS9-WPM <sup>1)</sup>	1049
19 Pressure gauge MA	1051
23 Silencer U	1052

Accessories	→ Page/online
26 Padlock LRVS-D	1052
27 Cover plate VS	1012
28 MS pressure gauge AG	1012
29 Adapter plate A4 for EN pressure gauge 1/4	1012
- Module connector MS9-RMV	1052
- Module connector MS6-9-ARMV	1052

1) Not suitable for individual devices with connecting thread G3/4 or G1.



Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-ee](http://www.festo.com/catalogue/ms*-ee)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-ee](http://www.festo.com/sp/ms*-ee)

On-off valves and soft-start valves

MS series

On-off valves, electrical

# MS-EE



- + Solenoid actuation
- + Supply voltage 24 V DC, 110, 230 V AC
- + Optionally with pressure sensor with display
- + With solenoid coil, without plug socket
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm

# On-off valves MS-EE, MS series



- Solenoid actuated on-off valve for pressurising and exhausting pneumatic systems
- Choice of three voltage ranges
- 4 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm, MS9 – grid dimension 90 mm, MS12 – grid dimension 124 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)
- ★ Quick ordering of basic designs → 1021

→ [www.festo.com/catalogue/ms\\*-ee](http://www.festo.com/catalogue/ms*-ee)

## Product range overview

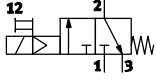
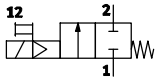
Size	Pneumatic port	Product options											
		V24	10V24	S	VS	AG	A8	A4	AD...	BAR	2	Z	
4	1/8, 1/4	■	■	■	...1)	■	■	■	■	■	-	-	■
6	1/4, 3/8, 1/2	■	■	■	...1)	■	-	■	■	■	-	-	■
9	3/4, 1, G	■	-	■	■	■	-	■	-	-	■	■	■
12	G	■	-	■	...1)	■	-	■	-	-	-	-	■

1) Cover plate included in the basic configuration by default.

## Product options

1/8	Female thread G1/8	10V24		AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact
1/4	Female thread G1/4	Supply voltage 24 V DC (pin allocation to EN 175301), 4 ... 10 bar		AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	BAR	Pressure gauge scale in bar
3/8	Female thread G3/8			AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	PSI	Pressure gauge scale in psi
1/2	Female thread G1/2	10V24P		AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	MPA	Pressure gauge scale in Mpa
3/4	Female thread G3/4	Supply voltage 24 V DC, M12 to IEC 61076-2-101, 4 ... 10 bar		AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	2	2/2-way valve
1	Female thread G1	V110		AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	WP	Mounting bracket
AGA	Connecting plate G1/8	Supply voltage 110 V AC (pin allocation to EN 175301), 3 ... 18 bar		AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	WPM	Mounting bracket
AGB	Connecting plate G1/4					WPB	Mounting bracket for large wall gap
AGC	Connecting plate G3/8	V230				WB	Mounting bracket
AGD	Connecting plate G1/2	Supply voltage 230 V AC (pin allocation to EN 175301), 3 ... 18 bar				WBM	Mounting bracket
AGE	Connecting plate G3/4					EX2	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
AGF	Connecting plate G1	S	Silencer			UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGG	Connecting plate G1 1/4	VS	Cover plate			Z	Direction of flow from right to left
AGH	Connecting plate G1 1/2	AG	MS pressure gauge				
AGI	Connecting plate G2	A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge				
G	Module without connecting thread, without connecting plate	A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge				
V24	Supply voltage 24 V DC (pin allocation to EN 175301), 3 ... 18 bar	RG	Integrated pressure gauge, red/green scale				
V24P	Supply voltage 24 V DC (pin allocation for plug M12 to DESINA), 3 ... 16 bar						

## Data sheet



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>							
Size		MS4		MS6			MS9		
Pneumatic connection 1, 2		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1	... <sup>1)</sup>
Pneumatic connection 3		G1/4		G1/2			G1		
Design		Piston spool valve							
Type of mounting		Via accessories In-line installation							
Mounting position		Any							
Type of actuation		Electric							
Valve function		-						2/2-way valve, closed, single-solenoid	
		3/2-way valve, closed, single-solenoid							
Exhaust function		No flow control							
Manual override		Non-detenting/detenting (supply voltage V24)							
		Non-detenting (supply voltage 10V24)						-	
Reset method		Mechanical spring							
Switching position display		Via accessories							
Type of pilot control		Piloted							
Pilot air supply		Internal							
Direction of flow		Non-reversible							
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure							
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output					-		
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output					-		
Length [mm]	With cover plate	75 (63) <sup>2)</sup>		97 (83) <sup>2)</sup>			109		
	With MS pressure gauge AG	86 (65) <sup>2)</sup>		106 (85) <sup>2)</sup>			109		
	With adapter plate A8/A4	80 (63) <sup>2)</sup>		100 (83) <sup>2)</sup>			110		
	With pressure sensor AD1/AD3	104		124			-		
	With pressure sensor AD7/AD9	80		100			-		
Width [mm]		40		62			104		90
Height [mm]	Without silencer	143		186			239		
	With silencer	191		292			398		

- 1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → 1049.  
 2) Value in brackets with repositioned solenoid actuator (180°), i.e. solenoid points to the front.

Standard nominal flow rate $q_{nN}$		MS4		MS6			MS9		
Size		G1/8	G1/4	G1/4	G3/8	G1/2	G3/4	G1	... <sup>3)</sup>
$q_{nN1 \rightarrow 2}$ [l/min]	In main flow direction <sup>4)</sup>	1000	2000	2600	5500	7000	14500	18000	8000 ... 18000
$q_{nN2 \rightarrow 3}$ [l/min]	In relief direction <sup>4)</sup>	1600	1600	7000	6200	5500	14900	14100	13200 ... 16500

- 3) Dependent on the connecting plate selected, must be ordered separately as an accessory → 1049.  
 4) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar.

## On-off valves MS-EE, MS series

## Data sheet

Electrical data					
Size	MS4		MS6		MS9
Supply voltage	V24	10V24	V24	10V24	V24
Coil characteristics	24 V DC: 1.5 W	24 V DC: 1.8 W	24 V DC: 1.5 W	24 V DC: 1.8 W	24 V DC: 4.5 W
Electrical connection	Plug, square design to EN 175301-803, type C				Plug, square design to EN 175301-803, type A
Degree of protection for solenoid coil	IP65				
Duty cycle [%]	100				

Operating conditions					
Size	MS4		MS6		MS9
Supply voltage	V24	10V24	V24	10V24	V24
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
	Inert gases				–
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will be required)				
Operating pressure [bar]	4 ... 14 (4 ... 10) <sup>1)</sup>	4 ... 10	4 ... 18 (4 ... 10) <sup>1)</sup>	4 ... 10	3.5 ... 16
Ambient temperature [°C]	–10 ... +60 (0 ... +50) <sup>1)</sup>	–10 ... +50 (0 ... +50) <sup>1)</sup>	–10 ... +60 (0 ... +50) <sup>1)</sup>	–10 ... +50 (0 ... +50) <sup>1)</sup>	–10 ... +60

1) Value in brackets applies to MS4/MS6-EE with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Seals	NBR



## Order code – MS4/MS6

	MS	–	EE	–	–	–	–	–	–
<b>Series</b>									
MS	Standard service unit								
<b>Size</b>									
4	Grid dimension 40 mm								
6	Grid dimension 62 mm								
<b>Type</b>									
EE	Solenoid actuated on-off valve								
<b>Pneumatic port</b>									
MS4									
1/8	Female thread G1/8								
1/4	Female thread G1/4								
MS6									
1/4	Female thread G1/4								
3/8	Female thread G3/8								
1/2	Female thread G1/2								
<b>Supply voltage</b>									
V24	24 V DC (pin allocation to EN 175301), max. 18 bar								
10V24	24 V DC (pin allocation to EN 175301), max. 10 bar								
<b>Pneumatic silencer</b>									
–	Without silencer								
S	Pneumatic silencer								
<b>Pressure gauge / Pressure gauge alternatives</b>									
–	Cover plate								
AG	MS pressure gauge, bar								
A8	Adapter plate for EN pressure gauge 1/8 (MS4 only)								
A4	Adapter plate for EN pressure gauge 1/4								
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin								1
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA								1
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact								1
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact								1
<b>Direction of flow</b>									
–	From left to right								
Z	From right to left								

1 Measuring range max. 10 bar.

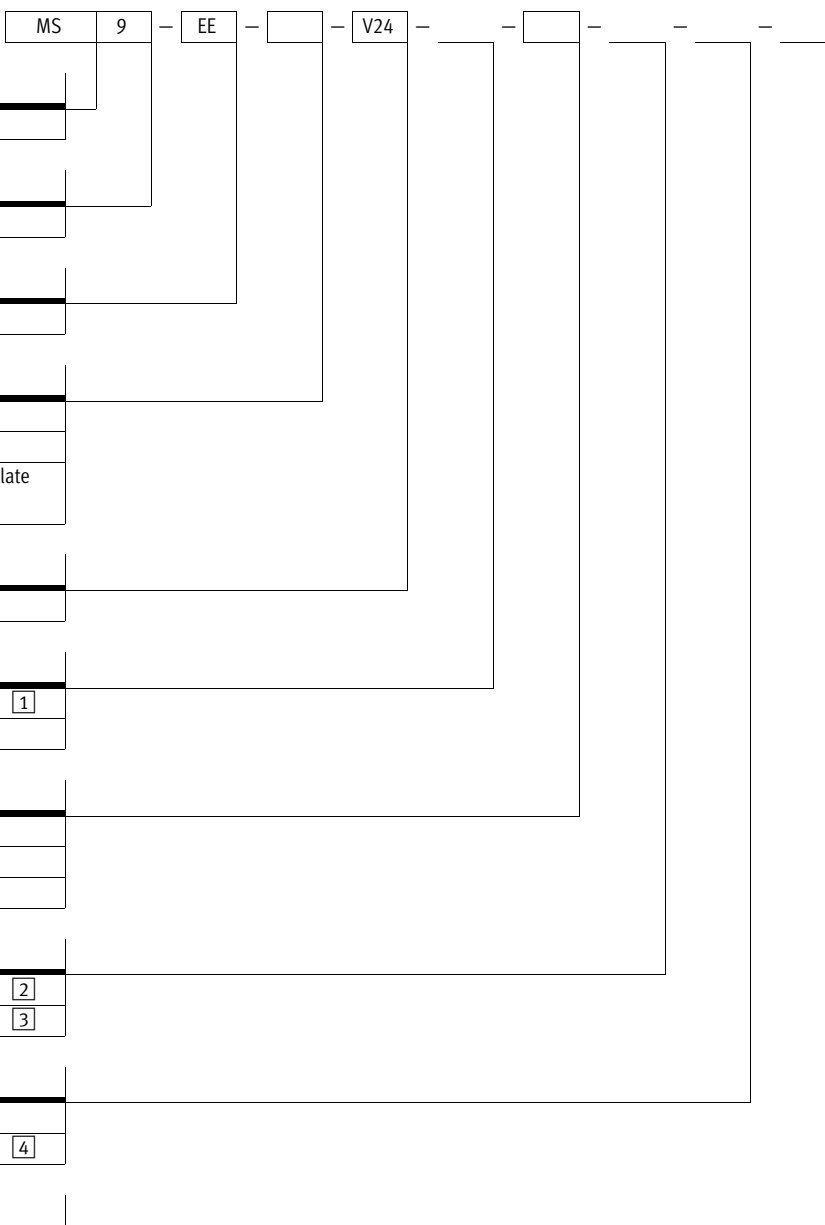
**Order example:**

MS4-EE-1/8-10V24-S

Standard service unit, grid dimension 40 mm - solenoid actuated on-off valve - female thread G1/8 - supply voltage 24 V DC, operating pressure 4 ... 10 bar - with silencer - with cover plate - flow direction from left to right

# On-off valves MS-EE, MS series

## Order code – MS9



Series	
MS	Standard service unit

Size	
9	Grid dimension 90 mm

Type	
EE	Solenoid actuated on-off valve

Pneumatic port	
3/4	Female thread G3/4
1	Female thread G1
G	Module without connecting thread, without connecting plate Connecting plates → 1049

Supply voltage	
V24	24 V DC (pin allocation to EN 175301), max. 16 bar

Pneumatic silencer	
–	Without silencer <span style="float: right;">1</span>
S	Pneumatic silencer

Pressure gauge / Pressure gauge alternatives	
VS	Cover plate
AG	MS pressure gauge
A4	Adapter plate for EN pressure gauge 1/4

Alternative pressure gauge scale	
–	No pressure gauge scale <span style="float: right;">2</span>
BAR	Bar <span style="float: right;">3</span>

Valve function	
–	3/2-way valve
2	2/2-way valve <span style="float: right;">4</span>

Direction of flow	
–	From left to right
Z	From right to left

1 Only with 2/2-way valve function.

3 Only with MS pressure gauge AG.

4 Not with silencer S.

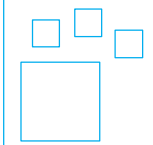
2 Not with MS pressure gauge AG.

### Order example:

MS9-EE-G-V24-S

Standard service unit, grid dimension 90 mm - solenoid actuated on-off valve - module without connecting thread, without connecting plate - supply voltage 24 V DC, operating pressure 3.5 ... 16 bar - with silencer - with cover plate - no pressure gauge scale - 3/2-way valve - flow direction from left to right

## Ordering – Product options



**Configurable  
product**

**This product and all its options can  
be ordered using the configurator.**

The configurator can be found under  
Products on the DVD or

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

★ Quick ordering<sup>1)</sup>

Part no.	Type
<b>MS4</b>	
<b>542578</b>	<b>MS4-EE-1/4-10V24</b>
<b>542598</b>	<b>MS4-EE-1/4-10V24-S</b>

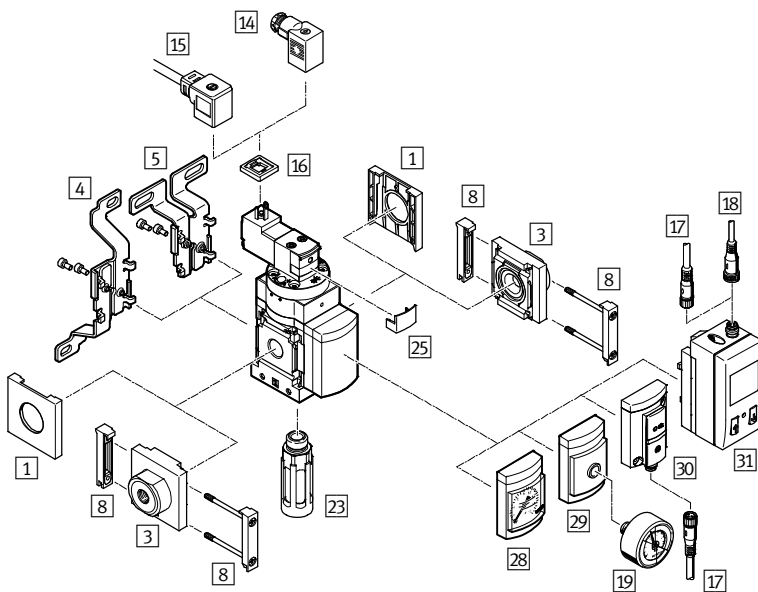
Part no.	Type
<b>MS6</b>	
<b>542582</b>	<b>MS6-EE-1/2-10V24</b>
<b>542602</b>	<b>MS6-EE-1/2-10V24-S</b>

Part no.	Type
<b>MS9</b>	
<b>562940</b>	<b>MS9-EE-G-V24-S-VS</b>

1) All products in this table are easy to select and quick to order.

# On-off valves MS-EE, MS series

## Accessories – MS4/MS6



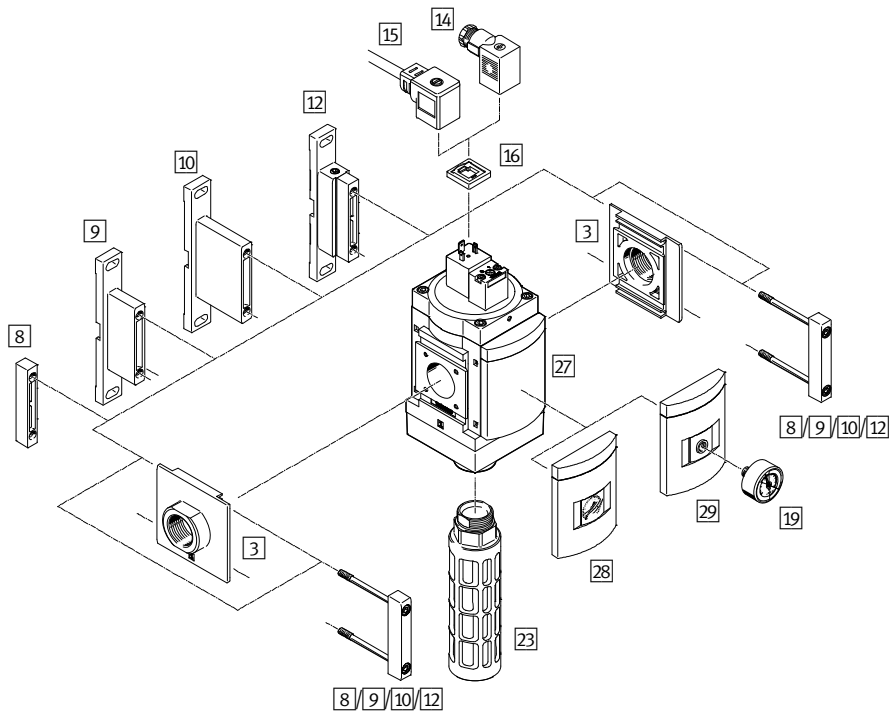
Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
4 Mounting bracket MS4/6-WB <sup>1</sup>	1049
5 Mounting bracket MS4/6-WBM <sup>1</sup>	1049
8 Module connector MS4/6-MV	1049
14 Plug socket MSSD-EB	1050
15 Plug socket with cable KMEB	1050
16 Illuminating seal MEB-LD	1050
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051
23 Silencer U	1052
25 Locking clip CPV18-HV	1052
28 MS pressure gauge AG	1019

Accessories	→ Page/online
29 Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	1019
30 Pressure sensor with operational status indicator AD7/AD9	1019
31 Pressure sensor with LCD display AD1/AD3	1019
- Mounting plate MS4/6-AEND	1049
- Mounting bracket MS4/6-WP <sup>2</sup>	1049
- Mounting bracket MS4/6-WPB <sup>2</sup>	1049
- Mounting bracket MS4/6-WPE <sup>2</sup>	1049
- Mounting bracket MS4/6-WPM <sup>2</sup>	1049
- Module connector MS4/6-RMV	1052
- Module connector MS4/6-AMV	1052
- Module connector MS6-9-ARMV	1052
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a-ipm*

1) Mounting component for individual device

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3]/with mounting plate MS4/6-AEND.

## Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... <sup>1)</sup>	1049
8 Module connector MS9-MV <sup>1)</sup>	1049
9 Mounting bracket MS9-WP	1049
10 Mounting bracket MS9-WPB	1049
12 Mounting bracket MS9-WPM <sup>1)</sup>	1049
14 Plug socket MSSD-C	1050
15 Plug socket with cable KMC	1050
16 Illuminating seal MC-LD	1050

Accessories	→ Page/online
19 Pressure gauge MA	1051
23 Silencer U	1052
27 Cover plate VS	1020
28 MS pressure gauge AG	1020
29 Adapter plate A4 for EN pressure gauge 1/4	1020
- Module connector MS9-RMV	1052
- Module connector MS6-9-ARMV	1052

1) Not suitable for individual devices with connecting thread G3/4 or G1.



Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-dl](http://www.festo.com/catalogue/ms*-dl)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-dl](http://www.festo.com/sp/ms*-dl)

On-off valves and soft-start valves  
MS series

Soft-start valves

# MS-DL



- + For slowly pressurising and venting pneumatic installations (for use with on-off valves EM1 and EE)
- + For advancing the drives slowly and reliably into the initial position
- + For avoiding sudden and unexpected movements
- + Adjustable switching time delay
- + Sizes 4, 6, 12
- + Grid dimension 40, 62, 124 mm



- Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic systems
- Adjustable switching time delay
- 3 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm, MS12 – grid dimension 124 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)
- ★ Quick ordering of basic designs → 1027

→ [www.festo.com/catalogue/ms\\*-dl](http://www.festo.com/catalogue/ms*-dl)

## Product range overview

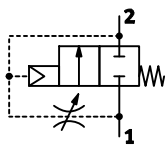
Size	Pneumatic port	Product options				
		AG	A8	A4	AD...	Z
4	1/8, 1/4	■	■	■	■	■
6	1/4, 3/8, 1/2	■	–	■	■	■
12	G	■	–	■	–	■

## Product options

1/8	Female thread G1/8	A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	PSI	Pressure gauge scale in psi
1/4	Female thread G1/4	A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	MPA	Pressure gauge scale in Mpa
3/8	Female thread G3/8	RG	Integrated pressure gauge, red/green scale	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	WP	Mounting bracket
1/2	Female thread G1/2	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	WPM	Mounting bracket
AGA	Connecting plate G1/8	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	WB	Mounting bracket
AGB	Connecting plate G1/4	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			WBM	Mounting bracket
AGC	Connecting plate G3/8					EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
AGD	Connecting plate G1/2					UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGE	Connecting plate G3/4					Z	Direction of flow from right to left
AGF	Connecting plate G1						
AGG	Connecting plate G1 1/4						
AGH	Connecting plate G1 1/2						
AGI	Connecting plate G2						
G	Module without connecting thread, without connecting plate						
AG	MS pressure gauge						

## Soft-start valves MS-DL, MS series

## Data sheet



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>			
Size	MS4		MS6		
Pneumatic port 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Design	Piston seat				
Type of mounting	Via accessories In-line installation				
Mounting position	Any				
Type of actuation	Pneumatic				
Valve function	2/2-way valve				
Exhaust function	With flow control				
Reset method	Mechanical spring				
Type of pilot control	Direct				
Pilot air supply	External				
Direction of flow	Non-reversible				
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure			
	AD1/AD3	Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output			
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output			
Length [mm]	With cover plate	54	76		
	With MS pressure gauge AG	65	85		
	With adapter plate A8/A4	59	79		
	With pressure sensor AD1/AD3	83	103		
	With pressure sensor AD7/AD9	59	79		
Width [mm]	40		62		
Height [mm]	83		108		

Standard nominal flow rate $q_{nN}$		MS4		MS6		
Size	MS4		MS6			
Pneumatic port 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
$q_{nN1 \rightarrow 2}$ [l/min] In main flow direction <sup>1)</sup>	1000	2000	2800	5050	6450	
$q_{nN2 \rightarrow 1}$ [l/min] In relief direction <sup>1)</sup>	1000	2000	2800	5050	6400	

1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar.

Operating conditions		MS4		MS6		
Size	MS4		MS6			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases					
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will be required)					
Operating pressure [bar]	4 ... 14 (4 ... 10) <sup>2)</sup>		4 ... 18 (4 ... 10) <sup>2)</sup>			
Ambient temperature [°C]	-10 ... +60 (0 ... +50) <sup>2)</sup>		-10 ... +60 (0 ... +50) <sup>2)</sup>			

2) Value in brackets applies to MS4/MS6-DL with pressure sensor AD...

Materials	
Housing	Die-cast aluminium
Seals	NBR



## Order code – MS4/MS6

		MS	–	DL	–		–		–	
<b>Series</b>										
MS	Standard service unit									
<b>Size</b>										
4	Grid dimension 40 mm									
6	Grid dimension 62 mm									
<b>Type</b>										
DL	Pneumatically actuated soft-start valve									
<b>Pneumatic port</b>										
MS4										
1/8	Female thread G1/8									
1/4	Female thread G1/4									
MS6										
1/4	Female thread G1/4									
3/8	Female thread G3/8									
1/2	Female thread G1/2									
<b>Pressure gauge / Pressure gauge alternatives</b>										
–	Cover plate									
AG	MS pressure gauge, bar									
A8	Adapter plate for EN pressure gauge 1/8 (MS4 only)									
A4	Adapter plate for EN pressure gauge 1/4									
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin <span style="border: 1px solid black; padding: 0 2px;">1</span>									
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <span style="border: 1px solid black; padding: 0 2px;">1</span>									
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>									
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="border: 1px solid black; padding: 0 2px;">1</span>									
<b>Direction of flow</b>										
–	From left to right									
Z	From right to left									

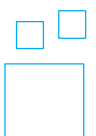
1 Measuring range max. 10 bar.

**Order example:**

MS6-DL-3/8-A4

Standard service unit, grid dimension 62 mm - pneumatically actuated soft-start valve - female thread G3/8 - with adapter plate for EN pressure gauge 1/4 - flow direction from left to right

## Ordering – Product options

	<b>Configurable product</b>	<b>This product and all its options can be ordered using the configurator.</b>	The configurator can be found under Products on the DVD or <a href="http://www.festo.com/catalogue/...">→ www.festo.com/catalogue/...</a>	Enter the type code in the search field.
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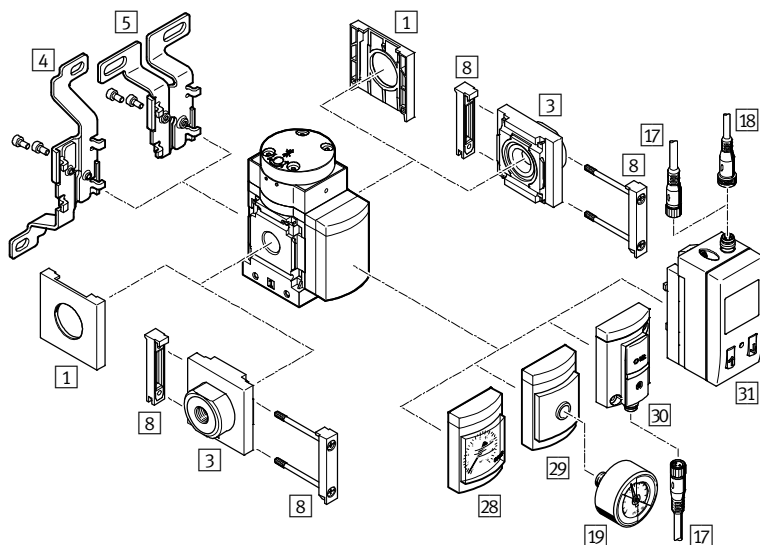
★ Quick ordering<sup>1)</sup>

Part no.	Type	Part no.	Type
<b>MS4</b>		<b>MS6</b>	
529531	MS4-DL-1/4	529817	MS6-DL-1/2

1) All products in this table are easy to select and quick to order.

# Soft-start valves MS-DL, MS series

## Accessories – MS4/MS6



Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
3 Connecting plate kit MS4/6-AG...	1049
4 Mounting bracket MS4/6-WB <sup>1</sup>	1049
5 Mounting bracket MS4/6-WBM <sup>1</sup>	1049
8 Module connector MS4/6-MV	1049
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051
28 MS pressure gauge AG	1027
29 Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	1027
30 Pressure sensor with operational status indicator AD7/AD9	1027

Accessories	→ Page/online
31 Pressure sensor with LCD display AD1/AD3	1027
- Mounting plate MS4/6-AEND	1049
- Mounting bracket MS4/6-WP <sup>2</sup>	1049
- Mounting bracket MS4/6-WPB <sup>2</sup>	1049
- Mounting bracket MS4/6-WPE <sup>2</sup>	1049
- Mounting bracket MS4/6-WPM <sup>2</sup>	1049
- Module connector MS4/6-RMV	1052
- Module connector MS4/6-AMV	1052
- Module connector MS6-9-ARMV	1052
- Power supply module MS4/6-E-IPM	<a href="#">ms*-e-ipm*</a>
- Branching module MS4/6-A-IPM	<a href="#">ms*-a*ipm*</a>

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3]/with mounting plate MS4/6-AEND.

1) Mounting component for individual device.



Overview/Configuration/Ordering  
→ [www.festo.com/catalogue/ms\\*-sv](http://www.festo.com/catalogue/ms*-sv)



Additional information/Support/User documentation  
→ [www.festo.com/sp/ms\\*-sv](http://www.festo.com/sp/ms*-sv)

On-off valves and soft-start valves  
MS series

Soft-start/quick exhaust valves

# MS-SV



- + Performance Level: category 1, to EN ISO 13849-1
- + For reducing pressure quickly and reliably and for building up pressure gradually
- + Switching time delay adjustable via a flow control valve for gradual pressure build-up
- + Supply voltage 24 V DC
- + Size 6, 9
- + Grid dimension 62, 90 mm

# Soft-start/quick exhaust valves MS-SV-C, MS series



- Performance Level c, category 1 to EN ISO 13849-1
- For reducing pressure quickly and reliably and for building up pressure gradually
- The filling flow rate can be set via a flow control valve for gradual pressure build-up
- Adjustable pressure switchover point
- 2 sizes:  
MS6 – grid dimension 62 mm, MS9 – grid dimension 90 mm
- ★ Quick ordering of basic designs → 1034

→ [www.festo.com/catalogue/ms\\*-sv](http://www.festo.com/catalogue/ms*-sv)

## Product range overview

Size	Pneumatic port	Product options											
		C	V24	10V24	S	VS	AG	A4	AD...	BAR	MH	MK	Z
6	1/2	■	■	■	■	— <sup>1)</sup>	■	■	■	—	—	■	■
9	3/4, 1, G	■	■	—	■	■	■	■	■	■	■	■	■

1) Cover plate included in the basic configuration by default.

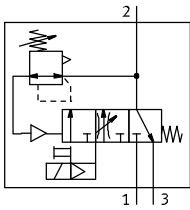
## Product options

1/2	Female thread G1/2	10V24P		AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	MPA	Pressure gauge scale in Mpa		
3/4	Female thread G3/4		Supply voltage 24 V DC, M12 to IEC 61076-2-101, 3 ... 10 bar	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	WP	Mounting bracket		
1	Female thread G1		V110	Supply voltage 110 V AC (pin allocation to EN 175301), 3 ... 18 bar	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	WPM	Mounting bracket	
AGB	Connecting plate G1/4		V230	Supply voltage 230 V AC (pin allocation to EN 175301), 3 ... 18 bar	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	WPB	Mounting bracket for large wall gap	
AGC	Connecting plate G3/8			S	Silencer	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	WB	Mounting bracket
AGD	Connecting plate G1/2			VS	Cover plate	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	MH	Tamper protection, cover for manual override only
AGE	Connecting plate G3/4			AG	MS pressure gauge	BAR	Pressure gauge scale in bar	MK	Tamper protection, full cover for manual override and adjusting screws
AGF	Connecting plate G1			A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge	PSI	Pressure gauge scale in psi	UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGG	Connecting plate G1 1/4			RG	Integrated pressure gauge, red/green scale	Z	Direction of flow from right to left		
AGH	Connecting plate G1 1/2			AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin				
G	Module without connecting thread, without connecting plate			AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin				
C	Performance Level "c"								
V24	Supply voltage 24 V DC (pin allocation to EN 175301), 3 ... 18 bar								
V24P	Supply voltage 24 V DC with M12 plug socket adapter (pin allocation to EN 60947-5-2), 3 ... 18 bar								
10V24	Supply voltage 24 V DC (pin allocation to EN 175301), 3 ... 10 bar								

## Soft-start/quick exhaust valves MS-SV-C, MS series

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## Data sheet



Electropneumatic soft-start/quick exhaust valve for gradual pressurisation and quick exhausting of system compon-

ents (single channel). The main flow control valve in the end cap permits a slower build-up of output

pressure p2. Once the outlet pressure p2 has reached the set pressure switchover point (switching pressure), the valve

opens and the full operating pressure p1 is present at the output.

Safety data		MS6	MS9
Size		MS6	MS9
Conforms to standard		EN ISO 13849-1	
Safety function		Exhausting	
Performance Level (PL)		Exhausting: up to category 1, PL c	
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

Technical data		MS6	MS9
Size		MS6	MS9
Pneumatic port 1, 2		G $\frac{1}{2}$	G $\frac{3}{4}$   G1   <sup>-1)</sup>
Pneumatic port 3		G $\frac{3}{4}$	G1
Design		Piston spool valve	
Type of mounting		Via accessories In-line installation	
Mounting position		Any	
Valve function		3/2-way valve, closed, single solenoid Soft-start function, adjustable	
Exhaust function		No flow control	
Manual override	At the pilot solenoid valve	Non-detenting/detenting (supply voltage V24) Non-detenting (supply voltage 10V24)	Non-detenting (supply voltage V24) -
	At the soft-start/quick exhaust valve	Detenting, self-resetting	
Reset method		Mechanical spring	
Type of control		Piloted	
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure	
	AD1/AD3	Via pressure sensor with LCD display for indicating the output pressure and with electrical output	-
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the output pressure and with electrical output	
Length [mm]	With cover plate VS	76	109
	With MS pressure gauge AG	77	109
	With adapter plate A4	78.5	110
	With pressure sensor AD1/AD3	102	-
	With pressure sensor AD7/AD9	79	112
Width [mm]		62	104   90
Height [mm]	Without silencer	181	271
	With silencer	311	437

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → 1049.

## Soft-start/quick exhaust valves MS-SV-C, MS series

## Data sheet

Flow rate characteristics				
Size	MS6		MS9	
Pneumatic port 1, 2	G½		G¾	G1 <sup>-1)</sup>
Standard nominal flow rate $q_{N^{(2)}}$ in main flow direction 1→2 [l/min]	5700		14150	16460
Standard flow rate exhaust 6→0 bar with silencer S [l/min]	7600		21450	20870
				8300 ... 16550
				19730 ... 21720

- 1) Dependent on the connecting plate selected, must be ordered separately as an accessory → 1049.  
 2) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar.

Electrical data			
Size	MS6		MS9
Supply voltage	V24	10V24	V24
Coil characteristics	24 V DC: 1.5 W	24 V DC: 1.8 W	24 V DC: 8.4 W
Electrical connection	Plug, 2-pin, to EN 175301-803, type C		Plug, square design to EN 175301-803, type A
Degree of protection	IP65 with plug socket		
Duty cycle [%]	100		

Operating conditions			
Size	MS6		MS9
Supply voltage	V24	10V24	V24
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	3 ... 18 (3 ... 10) <sup>3)</sup>	3 ... 10	3.5 ... 16 (3.5 ... 10) <sup>3)</sup>
Ambient temperature [°C]	0 ... +60 (0 ... +50) <sup>3)</sup>		
Noise level [dB (A)]	-		93

- 3) Value in brackets applies to MS6/MS9-SV-C with pressure sensor AD...

Materials		
Size	MS6	MS9
Housing	Die-cast aluminium	
Piston spool	High-alloy stainless steel	Brass
Seals	NBR	

## Order code – MS6

		MS	6	–	SV	–	1/2	–	C	–		–		–		–	
<b>Series</b>																	
MS	Standard service unit																
<b>Size</b>																	
6	Grid dimension 62 mm																
<b>Type</b>																	
SV	Soft-start/quick exhaust valve																
<b>Pneumatic port</b>																	
1/2	Female thread G1/2																
<b>Performance Level</b>																	
C	Category 1, 1-channel, to EN ISO 13849-1																
<b>Supply voltage</b>																	
V24	24 V DC (pin allocation to EN 175301), 3 ... 18 bar																
10V24	24 V DC (pin allocation to EN 175301), 3 ... 10 bar																
<b>Pneumatic silencer</b>																	
–	None																
S	Pneumatic silencer																
<b>Pressure gauge / Pressure gauge alternatives</b>																	
–	Cover plate																
AG	MS pressure gauge, bar																
A4	Adapter plate for EN pressure gauge 1/4																
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin <span style="float: right;">1</span>																
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <span style="float: right;">1</span>																
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="float: right;">1</span>																
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="float: right;">1</span>																
<b>Tamper protection</b>																	
–	No tamper protection																
MK	Full cover																
<b>Direction of flow</b>																	
–	From left to right																
Z	From right to left																

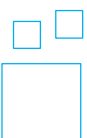
1 Measuring range max. 10 bar.

**Order example:**

MS6-SV-1/2-C-10V24-S-AG-MK

Standard service unit, grid dimension 62 mm - soft-start/quick exhaust valve - female thread G1/2 - Performance Level "c"/category 1, 1-channel, to EN ISO 13849-1 - supply voltage 24 V DC, operating pressure 3 ... 10 bar - with silencer - with MS pressure gauge, bar - with tamper protection, full cover - flow direction from left to right

## Ordering – Product options



**Configurable product**

**This product and all its options can be ordered using the configurator.**

The configurator can be found under Products on the DVD or

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

## Soft-start/quick exhaust valves MS-SV-C, MS series

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## Order code – MS9

	MS	9	–	SV	–		–	C	–	V24	–	S	–		–		–		–	
<b>Series</b>																				
MS	Standard service unit																			
<b>Size</b>																				
9	Grid dimension 90 mm																			
<b>Type</b>																				
SV	Soft-start/quick exhaust valve																			
<b>Pneumatic port</b>																				
3/4	Female thread G3/4																			
1	Female thread G1																			
G	Module without connecting thread, without connecting plate Connecting plates → 1049																			
<b>Performance Level</b>																				
C	Category 1, 1-channel, to EN ISO 13849-1																			
<b>Supply voltage</b>																				
V24	24 V DC (pin allocation to EN 175301), 16 bar																			
<b>Pneumatic silencer</b>																				
S	Pneumatic silencer																			
<b>Pressure gauge / Pressure gauge alternatives</b>																				
VS	Cover plate																			
AG	MS pressure gauge																			
A4	Adapter plate for EN pressure gauge 1/4																			
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="float: right;">1</span>																			
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="float: right;">1</span>																			
<b>Alternative pressure gauge scale</b>																				
–	No pressure gauge scale <span style="float: right;">2</span>																			
BAR	Bar <span style="float: right;">3</span>																			
<b>Tamper protection</b>																				
–	No tamper protection																			
MH	Cover for manual override only																			
MK	Full cover																			
<b>Direction of flow</b>																				
–	From left to right																			
Z	From right to left																			

1 Measuring range max. 10 bar.

2 Not with MS pressure gauge AG.

3 Only with MS pressure gauge AG.

**Order example:**

MS9-SV-G-C-V24-S-VS-MK

Standard service unit, grid dimension 90 mm - soft-start/quick exhaust valve - module without connecting thread, without connecting plate - Performance Level "c"/category 1, 1-channel, to EN ISO 13849-1 - supply voltage 24 V DC, operating pressure 3.5 ... 16 bar - with silencer - with cover plate - with tamper protection, full cover - flow direction from left to right

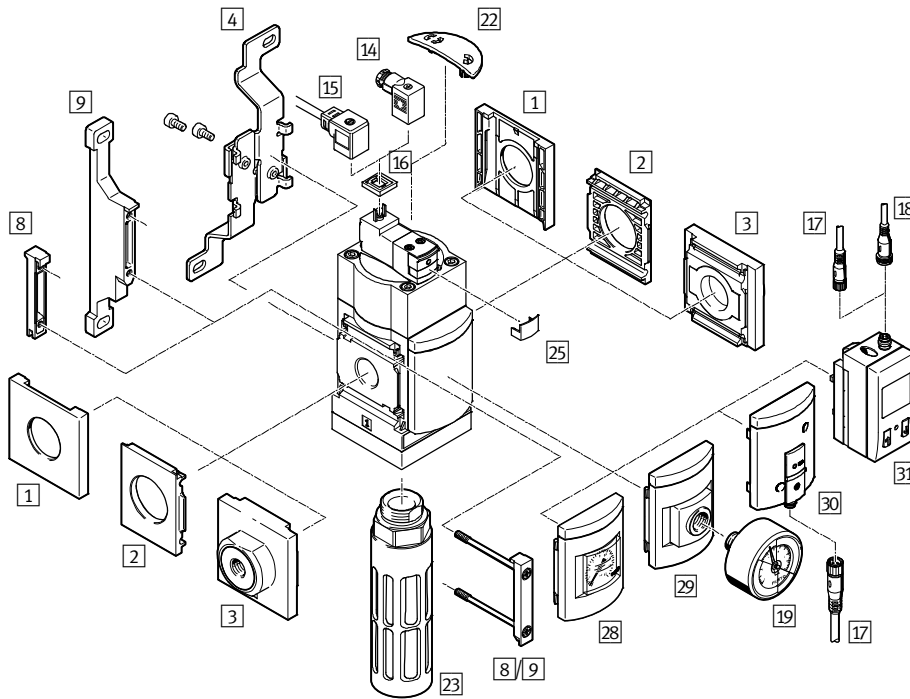
★ Quick ordering<sup>1)</sup>

Part no.	Type	Part no.	Type
<b>MS6</b>		<b>MS9</b>	
<b>8001469</b>	<b>MS6-SV-1/2-C-10V24-S</b>	<b>570737</b>	<b>MS9-SV-G-C-V24-S-VS</b>

1) All products in this table are easy to select and quick to order.



## Accessories – MS6



Accessories	→ Page/online
1 Cover cap MS6-END	1049
2 Mounting plate MS6-AEND	1049
3 Connecting plate kit MS6-AG...	1049
4 Mounting bracket MS6-WB <sup>1</sup>	1049
8 Module connector MS6-MV	1049
9 Mounting bracket MS6-WP <sup>2</sup>	1049
14 Plug socket MSSD-EB	1050
15 Plug socket with cable KMEB	1050
16 Illuminating seal MEB-LD	1050
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051
22 Cover MS6-SV-C-MK	1051
23 Silencer U	1052

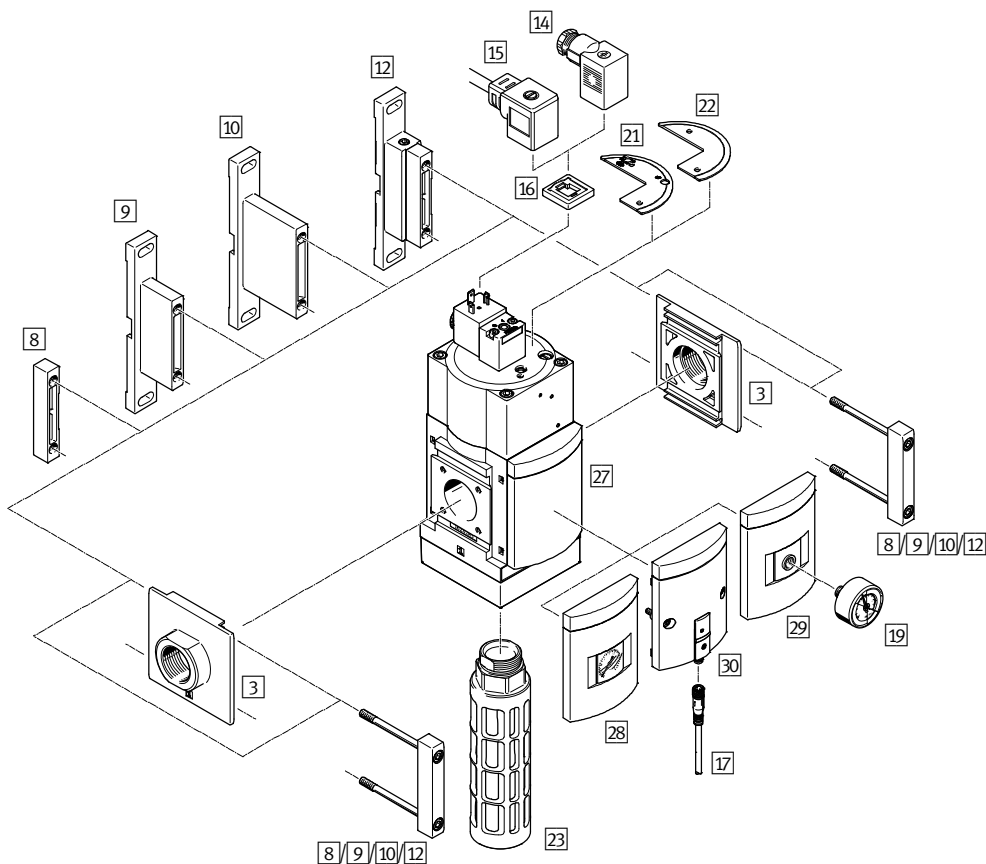
1) Mounting component for individual device.

Accessories	→ Page/online
25 Locking clip CPV18-HV	1052
28 MS pressure gauge AG	1033
29 Adapter plate A4 for EN pressure gauge 1/4	1033
30 Pressure sensor with operational status indicator AD7/AD9	1033
31 Pressure sensor with LCD display AD1/AD3	1033
- Mounting bracket MS6-WPB <sup>2</sup>	1049
- Mounting bracket MS6-WPE <sup>2</sup>	1049
- Mounting bracket MS6-WPM <sup>2</sup>	1049
- Module connector MS6-RMV	1052
- Module connector MS4-6-AMV	1052
- Module connector MS6-9-ARMV	1052
- Power supply module MS6-E-IPM	ms*-e-ipm*
- Branching module MS6-A-IPM	ms*-a-ipm*

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS6-AG... [3]/with mounting plate MS6-AEND [2].

# Soft-start/quick exhaust valves MS-SV-C, MS series

## Accessories – MS9



Accessories	→ Page/online
3 Connecting plate kit MS9-AG... <sup>1)</sup>	1049
8 Module connector MS9-MV <sup>1)</sup>	1049
9 Mounting bracket MS9-WP	1049
10 Mounting bracket MS9-WPB	1049
12 Mounting bracket MS9-WPM <sup>1)</sup>	1049
14 Plug socket MSSD-C	1050
15 Plug socket with cable KMC	1050
16 Illuminating seal MC-LD	1050
17 Connecting cable NEBU-M8...-LE3	1050
19 Pressure gauge MA	1051

Accessories	→ Page/online
21 Cover MS9-SV-MH	1051
22 Cover MS9-SV-MK	1051
23 Silencer U	1052
27 Cover plate VS	1034
28 MS pressure gauge AG	1034
29 Adapter plate A4 for EN pressure gauge 1/4	1034
30 Pressure sensor with operational status indicator AD7/AD9	1034
- Module connector MS9-RMV	1052
- Module connector MS6-9-ARMV	1052

1) Not suitable for individual devices with connecting thread G3/4 or G1.

## Soft-start/quick exhaust valves MS-SV-C, MS series

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- Category 3, Performance Level d up to category 4, Performance Level e to EN ISO 13849-1
- For reducing pressure quickly and reliably and for building up pressure gradually
- The filling flow rate can be set via a flow control valve for gradual pressure build-up
- 1 size:  
MS6 – grid dimension 62 mm

→ [www.festo.com/catalogue/ms\\*-sv](http://www.festo.com/catalogue/ms*-sv)

## Product range overview

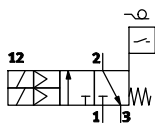
Size	Pneumatic port	Product options											
		D	10V24	2M8	2M12	20E	S3	SO	AG	A4	AD...	Z	
6	1/2	■	■	■	■	■	■	■	■	■	■	■	■

## Product options

1/2	Female thread G1/2	2M8	2 proximity sensors SMT with cable (plug connector M8x1, 3-pin, rotatable thread, cable length 0.3 m)	SO	Silencer open	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA
AGB	Connecting plate G1/4			AG	MS pressure gauge		
AGC	Connecting plate G3/8			A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge		
AGD	Connecting plate G1/2			RG	Integrated pressure gauge, red/green scale	PSI	Pressure gauge scale in psi
AGE	Connecting plate G3/4	2M12	2 proximity sensors SMT with cable (plug connector M12x1, 3-pin, rotatable thread, cable length 0.3 m)	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	MPA	Pressure gauge scale in Mpa
D	Performance Level "d"			AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	WP	Mounting bracket
10V24	Supply voltage 24 V DC (pin allocation to EN 175301), 3 ... 10 bar	20E	2 proximity sensors SMT with cable (open end, 3-wire, cable length 5 m)	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	WPM	Mounting bracket
10V24P	Supply voltage 24 V DC, M12 to IEC 61076-2-101, 3 ... 10 bar	S3	Additional proximity sensor SMT; required to achieve Performance Level "e"; port depends on connection technology chosen			WPB	Mounting bracket for large wall gap
						WB	Mounting bracket
						Z	Direction of flow from right to left

# Soft-start/quick exhaust valves MS-SV-C, MS series

## Data sheet



The electropneumatic soft-start/quick exhaust valve is used to reduce pressure quickly and safely and to build up pressure gradually in industrial pneumatic piping systems and terminal equipment. The MS6-SV-D has two safety functions:

- pressure release
- protection from unexpected start-up (non-switching)

The MS6-SV-D has a 2-channel structure, i.e. it has two internal 2-way valves which can be controlled separately by pilot

valves (V1 and V2) situated on the cover. These valves are actuated when both coils are energised simultaneously; this changes the MS6-SV-D from the normal position to the switching position. The outlet pressure p2 rises slowly in accordance with the throttle setting. The main seat opens when the switch-through pressure is reached. The normal position is achieved by switching off both coils. Two proximity sensors (S1 and S2) se-

cured on the housing monitor the directional control valves. A further proximity sensor (S3) can optionally be added to monitor the soft-start valve. The MS6-SV-D can achieve various categories and safety levels to EN ISO 13849-1 depending on how the directional control valves are monitored. Where there is appropriate integration into the control chain as well as appropriate linking of the signals for initial po-

sition sensing with the signals for activation (plausibility checking):

- Performance Level d/category 3 to EN ISO 13849-1 and EN ISO 13849-2 can be achieved when using sensors S1 and S2 and
- Performance Level e/category 4 to EN ISO 13849-1 and EN ISO 13849-2 can be achieved when using sensors S1, S2 and S3.

### Note

To avoid back pressures, it is recommended that the device be operated together with the silencer UOS-1. The silencer can be ordered via the order reference (SO → 1040) or as an accessory (UOS-1 → 1052).

### Note

Only devices that do not impair pressure release may be positioned downstream of the MS6-SV-...-D. The MS6-SV-...-D is not permitted for use as a press safety valve.

- Conforms to standard IEC 61508
- Switching time delay adjustable via a flow control valve for gradual pressure build-up; main seat opens at approx. 50% of operating pressure
- Optional pressure sensor

### Safety data

Size	MS6
Conforms to standard	EN ISO 13849-1 and EN ISO 13849-2
Safety function	Pressure release and protection from unexpected start-up (non-switching)
Performance Level (PL)	Category 3, PL d with sensing by S1 and S2 Category 4, PL e with sensing by S1, S2 and S3
Safety integrity level (SIL)	SIL 3
Note on forced switch on/off	Switching frequency min. 1/month
Certificate issuing authority	BGIA 0904020
CE marking (see declaration of conformity)	To EC Machinery Directive To EU EMC Directive
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

### Note on forced switch on/off: switching frequency min. 1/month

The mechanical system is not tested in the controlled (i.e. pressurised) state. If the process-related switching frequency (pressure release) is less than once a month, the machine operator must carry out a forced switch-off.

## Data sheet

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

Technical data		MS6
Size		MS6
Pneumatic port 1, 2		G $\frac{1}{2}$
Pneumatic connection 3		G1
Design		Piston seat
Type of mounting		Via accessories In-line installation
Mounting position		Any
Valve function		3/2-way valve, closed, single solenoid Soft-start function, adjustable
Exhaust function		No flow control
Manual override		None
Reset method		Mechanical spring
Type of pilot control		Piloted
Pressure indication		AG AD1/AD3
		Via pressure gauge for indicating the outlet pressure Via pressure sensor with LCD display for indicating the outlet pressure and with electrical output
Length [mm]	With cover plate VS	89
	With MS pressure gauge AG	90
	With adapter plate A4	91.5
	With pressure sensor AD1/AD3	116
Width [mm]		62
Height [mm]	Without silencer	257
	With silencer	404

Standard nominal flow rate  $q_{nN}^{1)}$ 

Size		MS6
Pneumatic port 1, 2		G $\frac{1}{2}$
$q_{nN1 \rightarrow 2}$ [l/min]	In main flow direction	4300
$q_{nN2 \rightarrow 3}$ [l/min]	In relief direction	9000 <sup>2)</sup>

1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar.

2) Measured with respect to atmosphere with silencer UOS-1

## Electrical data

Size		MS6
Supply voltage		10V24
Coil characteristics		24 V DC: 1.8 W
Electrical connection		2 x plug connectors, 2-pin, to EN 175301-803, type C
Degree of protection		IP65 with plug socket
Duty cycle	[%]	100

## Operating conditions

Size		MS6
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[bar]	3.5 ... 10
Ambient temperature	[°C]	-10 ... +50 (0 ... +50) <sup>3)</sup>
Noise level	[dB (A)]	75 (with silencer UOS-1)

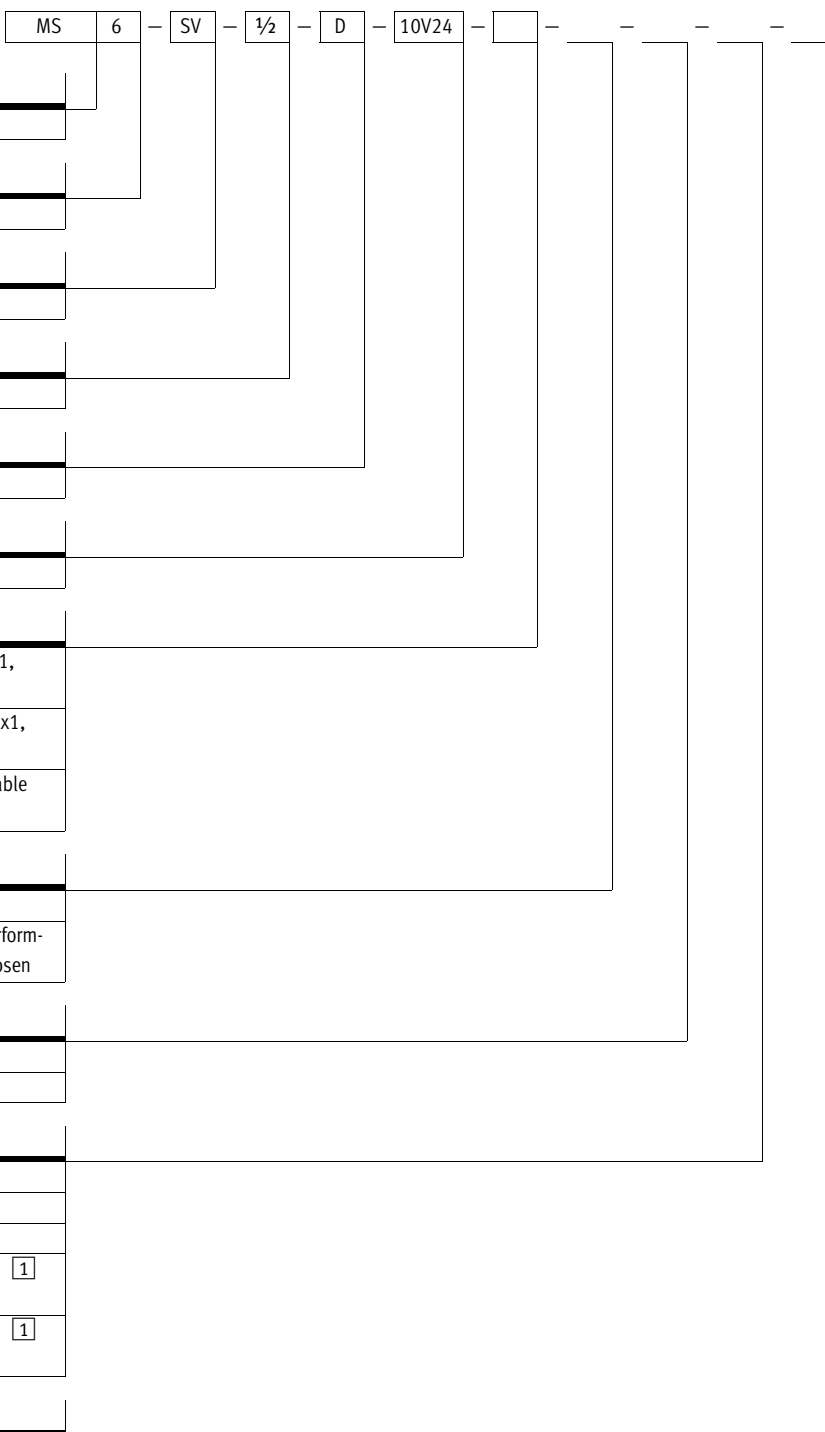
3) Value in brackets applies to MS6-SV-D with pressure sensor AD...

## Materials

Size		MS6
Housing		Die-cast aluminium
Piston rod		High-alloy stainless steel
Seals		NBR

# Soft-start/quick exhaust valves MS-SV-C, MS series

## Order code – MS6



**Series**

MS	Standard service unit
----	-----------------------

**Size**

6	Grid dimension 62 mm
---	----------------------

**Type**

SV	Soft-start and quick exhaust valve
----	------------------------------------

**Pneumatic port**

1/2	Female thread G1/2
-----	--------------------

**Performance Level**

D	Category 3, 2-channel, to EN ISO 13849-1
---	--

**Supply voltage**

10V24	24 V DC (pin allocation to EN 175301)
-------	---------------------------------------

**Connection technology**

2M8	2 proximity sensors SMT with cable (plug connector M8x1, 3-pin, rotatable thread, cable length 0.3 m)
2M12	2 proximity sensors SMT with cable (plug connector M12x1, 3-pin, rotatable thread, cable length 0.3 m)
20E	2 proximity sensors SMT with cable (open end, 3-wire, cable length 5 m)

**Extended sensing**

-	None
S3	Additional proximity sensor SMT; required to achieve Performance Level e; port depends on connection technology chosen

**Pneumatic silencer**

-	None
S0	Silencer open

**Pressure gauge / Pressure gauge alternatives**

-	Cover plate
AG	MS pressure gauge, bar
A4	Adapter plate for EN pressure gauge 1/4
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin <span style="border: 1px solid black; padding: 0 2px;">1</span>
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <span style="border: 1px solid black; padding: 0 2px;">1</span>

**Flow direction**

-	From left to right
Z	From right to left

1 Measuring range max. 10 bar.

## Ordering – Product options

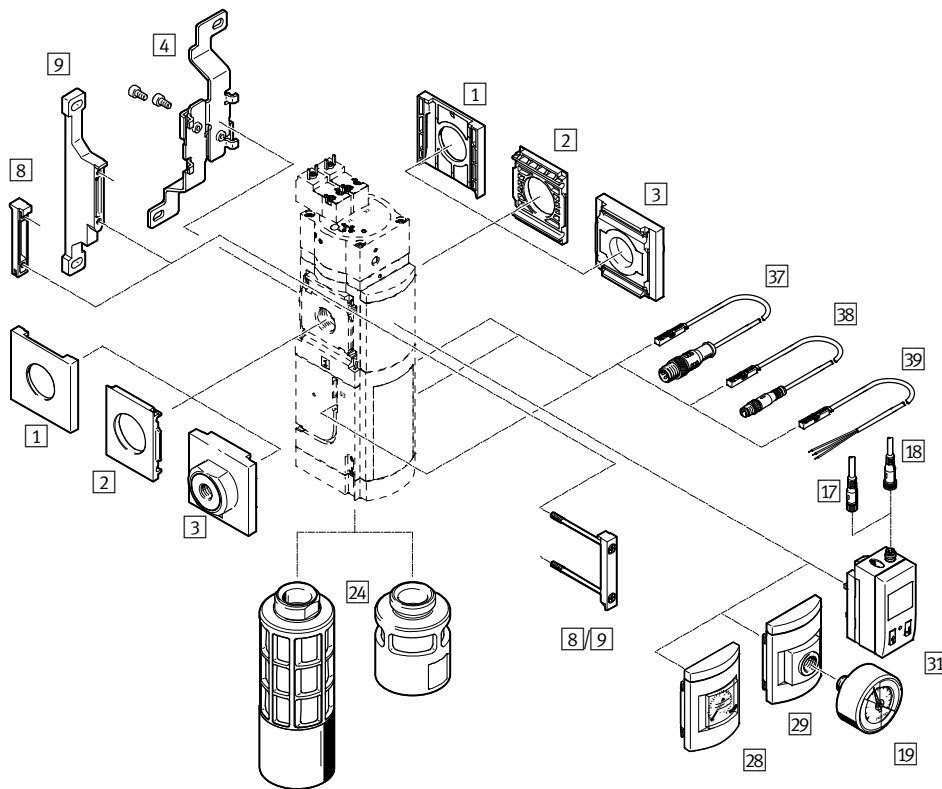
**Configurable product**

**This product and all its options can be ordered using the configurator.**

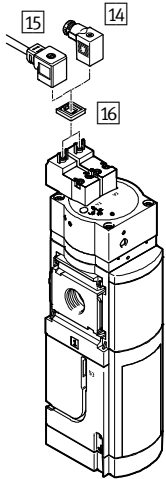
The configurator can be found under Products on the DVD or  
[www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

## Accessories – MS6



## Supply voltage 10V24



Accessories	→ Page/online
1) Cover cap MS6-END	1049
2) Mounting plate MS6-AEND	1049
3) Connecting plate kit MS6-AG...	1049
4) Mounting bracket MS6-WB <sup>1</sup>	1049
8) Module connector MS6-MV	1049
9) Mounting bracket MS6-WP <sup>2</sup>	1049
14) Plug socket MSSD-EB	1050
15) Plug socket with cable KMEB	1050
16) Illuminating seal MEB-LD	1050
17) Connecting cable NEBU-M8...-LE3	1050
18) Connecting cable NEBU-M12...-LE4	1050
19) Pressure gauge MA	1051
24) Silencer UOS	1052
28) MS pressure gauge AG	1040

1) Mounting component for individual device

Accessories	→ Page/online
29) Adapter plate A4 for EN pressure gauge 1/4	1040
31) Pressure sensor with LCD display AD1/AD3	1040
37) Proximity sensor 2M12	1040
38) Proximity sensor 2M8	1040
39) Proximity sensor 20E	1040
- Mounting bracket MS6-WPB <sup>2</sup>	1049
- Mounting bracket MS6-WPE <sup>2</sup>	1049
- Mounting bracket MS6-WPM <sup>2</sup>	1049
- Module connector MS6-RMV	1052
- Module connector MS4-6-AMV	1052
- Module connector MS6-9-ARMV	1052
- Power supply module MS6-E-IPM	ms*-e-ipm*
- Branching module MS6-A-IPM	ms*-a-ipm*

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS6-AG... [3]/with mounting plate MS6-AEND [2].



Overview/Configuration/Ordering

→ [www.festo.com/catalogue/ms\\*-frm](http://www.festo.com/catalogue/ms*-frm)



Additional information/Support/User documentation

→ [www.festo.com/sp/ms\\*-frm](http://www.festo.com/sp/ms*-frm)

Air distributors

MS series

Branching modules

# MS-FRM



- + Designs with integrated non-return function, with pressure switch
- + Pneumatic distributor with 4 connections
- + Can be used as an intermediate distributor for varying air qualities
- + Outlet at top and bottom
- + Optionally with pressure sensor with display
- + Sizes 4, 6, 9, 12
- + Grid dimension 40, 62, 90, 124 mm





- Pneumatic manifold with 4 connections
- Can be used as an intermediate distributor for varying air qualities
- 4 sizes:  
MS4 – grid dimension 40 mm, MS6 – grid dimension 62 mm, MS9 – grid dimension 90 mm, MS12 – grid dimension 124 mm
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)

→ [www.festo.com/catalogue/ms\\*-frm](http://www.festo.com/catalogue/ms*-frm)

## Product range overview

Size	Pneumatic port	Product options									
		VS	AG	A8	A4	AD...	BAR	X	Y	M12	Z
4	1/8, 1/4	– <sup>1)</sup>	■	■	■	■	–	■	■	■	■
6	1/4, 3/8, 1/2	– <sup>1)</sup>	■	–	■	■	–	■	■	■	■
9	3/4, 1, G	■	■	–	■	■	■	■	■	■	■
12	G	– <sup>1)</sup>	–	–	–	–	–	–	–	–	–

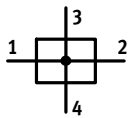
1) Cover plate included in the basic configuration by default.

## Product options

1/8	Female thread G1/8	VS	Cover plate	AD4	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	X	Pressure switch with display, plug socket, EN 175301, type A, cube
1/4	Female thread G1/4	AG	MS pressure gauge	AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	Y	Pressure switch without display, plug socket, EN 175301, type A, cube
3/8	Female thread G3/8	A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge	AD8	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	M12	Pressure switch without display, plug socket, round, M12, 4-pin
1/2	Female thread G1/2	A4	Adapter plate for EN pressure gauge 1/4, without pressure gauge	AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	WP	Mounting bracket
3/4	Female thread G3/4	RG	Integrated pressure gauge, red/green scale	AD10	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	WPM	Mounting bracket
1	Female thread G1	AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	BAR	Pressure gauge scale in bar	WPB	Mounting bracket for large wall gap
AGA	Connecting plate G1/8	AD2	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	PSI	Pressure gauge scale in psi	WB	Mounting bracket
AGB	Connecting plate G1/4	AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	MPA	Pressure gauge scale in Mpa	WBM	Mounting bracket
AGC	Connecting plate G3/8					EX4	EU certification (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU)
AGD	Connecting plate G1/2					UL1	UL certification (cULus, ordinary locations for Canada and USA)
AGE	Connecting plate G3/4					Z	Flow direction from right to left
AGF	Connecting plate G1						
AGG	Connecting plate G1 1/4						
AGH	Connecting plate G1 1/2						
AGI	Connecting plate G2						
G	Module without connecting thread, without connecting plate						
I	Integrated non-return function						

## Branching modules MS-FRM, MS series

## Data sheet



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>							
Size		MS4		MS6			MS9		
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	... <sup>1)</sup>
Pneumatic connection 3		G $\frac{1}{4}$		G $\frac{1}{2}$			G1		
Pneumatic connection 4		G $\frac{1}{4}$		G $\frac{1}{2}$			G1		
Design		Branching module							
Type of mounting		Via accessories In-line installation							
Mounting position		Any							
Pressure indication	AG	Via pressure gauge for indicating the outlet pressure							
	AD1/AD3	Via pressure sensor with LCD display for indicating the output pressure and with electrical output					-		
	AD7/AD9	Via pressure sensor with operational status indicator for displaying the outlet pressure and with electrical output							
Length [mm]	Standard	54		76			109		
	With MS pressure gauge AG	65		77			109		
	With adapter plate A8/A4	59		79			110		
	With pressure sensor AD1/AD3	83		103			-		
	With pressure sensor AD7/AD9	59		79			112		
	With pressure switch X/Y	63		76			109		
Width [mm]		40		62			104		90
Height [mm]	Standard	60		87			122		
	With pressure switch X/Y/M12	153		187			227		

1) Module without connecting thread/without connecting plate. The connecting plate must be ordered separately as an accessory → 1049.

Standard nominal flow rate $q_{nN}$		MS4		MS6			MS9		
Size		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1	... <sup>2)</sup>
$q_{nN1 \rightarrow 2}$ [l/min]	In main flow direction <sup>3)</sup>	1800	4600	4200	9200	14700	25000	45000	10000 ... 50000
$q_{nN1 \rightarrow 3}$ [l/min]	Outlet at top <sup>3)</sup>	1600	1500	6000	4700	4400	13000		
$q_{nN1 \rightarrow 4}$ [l/min]	Outlet at bottom <sup>3)</sup>	1700	1500	6400	4800	4600	13000		

2) Dependent on the connecting plate selected, must be ordered separately as an accessory → 1049.

3) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar.

Operating conditions		MS4		MS6			MS9	
Size			X/Y/M12		X/Y/M12		X/Y/M12	
Pressure switch		-	X/Y/M12	-	X/Y/M12	-	X/Y/M12	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]						
		Inert gases					-	
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will be required)						
Operating pressure	[bar]	0 ... 14 (0 ... 10) <sup>4)</sup>	0 ... 12 (0 ... 10) <sup>4)</sup>	0 ... 20 (0 ... 10) <sup>4)</sup>	0 ... 12 (0 ... 10) <sup>4)</sup>	0 ... 20 (0 ... 10) <sup>4)</sup>	0 ... 12 (0 ... 10) <sup>4)</sup>	
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) <sup>4)</sup>						

4) Value in brackets applies to MS4/MS6/MS9-FRM with pressure sensor AD...

## Data sheet

Materials	
Housing	Die-cast aluminium
Seals	Nitrile rubber

## Order code – MS4/MS6

Series	
MS	Standard service unit
Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm
Type	
FRM	Branching module
Pneumatic port	
MS4	
1/8	Female thread G1/8
1/4	Female thread G1/4
MS6	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2
Pressure gauge/adaptor plate	
–	Cover plate
AG	MS pressure gauge, bar
A8	Adapter plate for EN pressure gauge 1/8 (MS4 only)
A4	Adapter plate for EN pressure gauge 1/4
AD1	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin <sup>1</sup>
AD3	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA <sup>1</sup>
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <sup>1</sup>
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <sup>1</sup>
Pressure switch PEV	
–	Without pressure switch PEV
X	Pressure switch PEV with display, plug socket, EN 175301, type A, cube <sup>2</sup>
Y	Pressure switch PEV without display, plug socket, EN 175301, type A, cube <sup>2</sup>
M12	Pressure switch PEV without display, plug socket, round, M12, 4-pin <sup>2</sup>
Direction of flow	
–	From left to right
Z	From right to left

<sup>1</sup> Measuring range max. 10 bar.<sup>2</sup> Max. permissible operating pressure p1 = 12 bar.

## Order example:

MS6-FRM-1/2

Standard service unit, grid dimension 62 mm - branching module - female thread G1/2 - with cover plate - without pressure switch PEV - direction of flow from left to right

## Branching modules MS-FRM, MS series

## Order code – MS9

MS		9	FRM					
<b>Series</b>								
MS	Standard service unit							
<b>Size</b>								
9	Grid dimension 90 mm							
<b>Type</b>								
FRM	Branching module							
<b>Pneumatic port</b>								
3/4	Female thread G3/4							
1	Female thread G1							
G	Module without connecting thread, without connecting plate Connecting plates → 1049							
<b>Pressure gauge / Pressure gauge alternatives</b>								
VS	Cover plate							
AG	MS pressure gauge							
A4	Adapter plate for EN pressure gauge 1/4							
AD7	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact <span style="float: right;">1</span>							
AD9	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact <span style="float: right;">1</span>							
<b>Alternative pressure gauge scale</b>								
-	No pressure gauge scale <span style="float: right;">2</span>							
BAR	Bar <span style="float: right;">3</span>							
<b>Pressure switch</b>								
-	Without pressure switch PEV							
X	Pressure switch PEV with display, plug socket, EN 175301, type A, cube <span style="float: right;">4</span>							
Y	Pressure switch PEV without display, plug socket, EN 175301, type A, cube <span style="float: right;">4</span>							
M12	Pressure switch PEV without display, plug socket, round, M12, 4-pin <span style="float: right;">4</span>							
<b>Direction of flow</b>								
-	From left to right							
Z	From right to left							

1 Measuring range max. 10 bar.

2 Not with MS pressure gauge AG.

3 Only with MS pressure gauge AG.

4 Max. permissible operating pressure p1 = 12 bar.

## Order example:

MS9-FRM-G-VS-Y

Standard service unit, grid dimension 90 mm - branching module - module without connecting thread, without connecting plate - with cover plate - no pressure gauge scale - with pressure switch PEV without display, plug socket, EN 175301, type A, cube - direction of flow from left to right

## Ordering – Product options



Configurable product

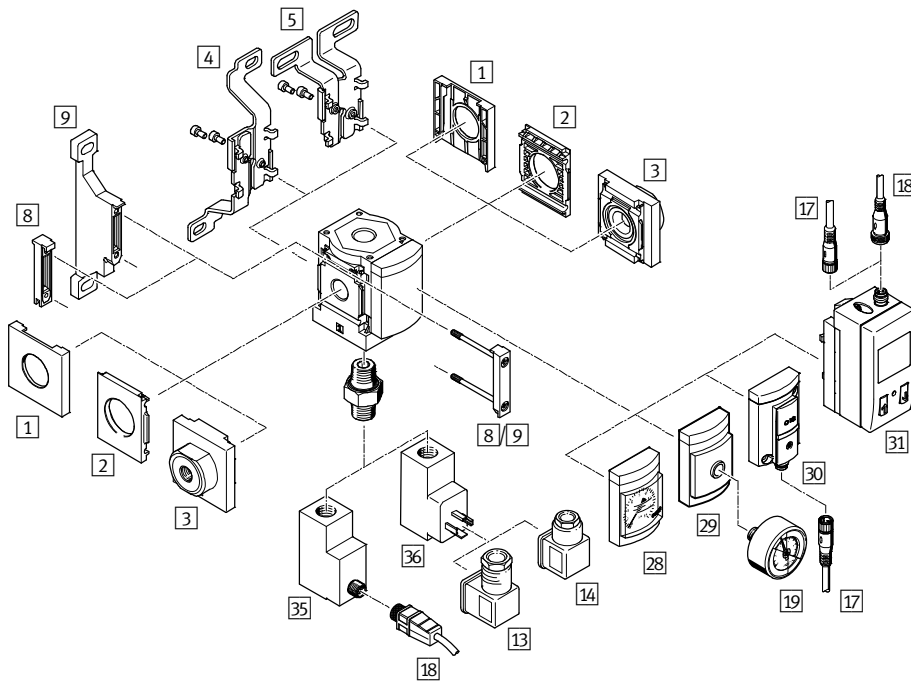
This product and all its options can be ordered using the configurator.

The configurator can be found under Products on the DVD or

→ [www.festo.com/catalogue/...](http://www.festo.com/catalogue/...)

Enter the type code in the search field.

## Accessories – MS4/MS6



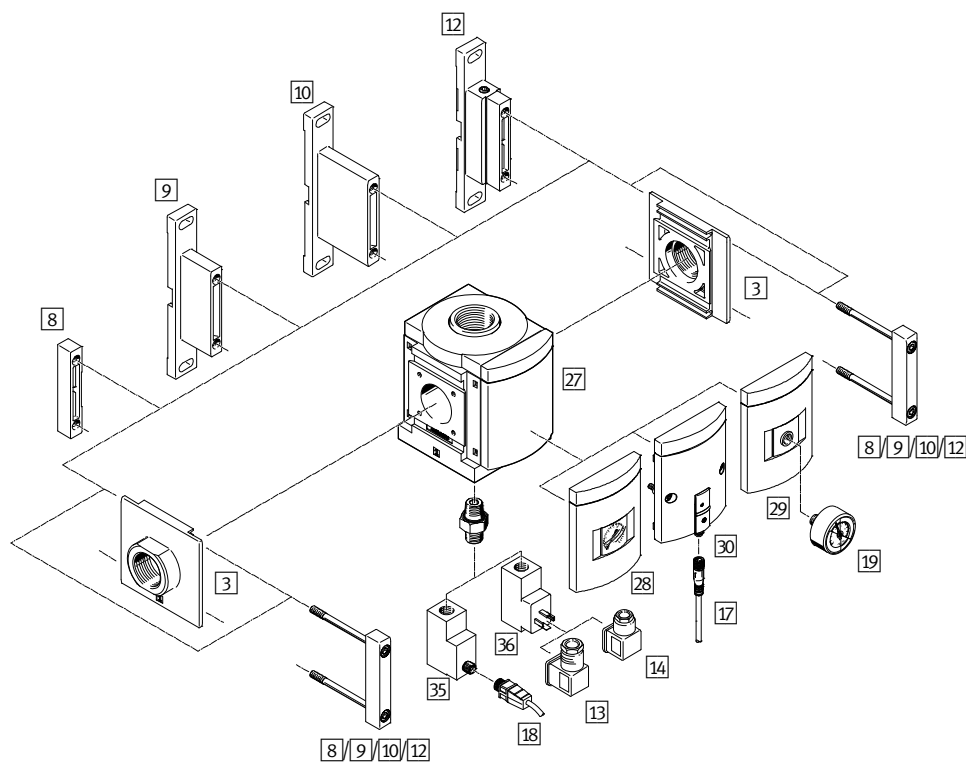
Accessories	→ Page/online
1 Cover cap MS4/6-END	1049
2 Mounting plate MS4/6-AEND	1049
3 Connecting plate kit MS4/6-AG...	1049
4 Mounting bracket MS4/6-WB <sup>1</sup>	1049
5 Mounting bracket MS4-WBM <sup>1</sup>	1049
8 Module connector MS4/6-MV	1049
9 Mounting bracket MS4/6-WP <sup>2</sup>	1049
13 Angled plug socket PEV-1/4-WD-LED	1050
14 Plug socket MSSD-C-4P	1050
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050
19 Pressure gauge MA	1051
28 MS pressure gauge AG	1045

1) Mounting component for individual device.

Accessories	→ Page/online
29 Adapter plate A8/A4 for EN pressure gauge 1/8/1/4	1045
30 Pressure sensor without display AD7/AD9	1045
31 Pressure sensor with display AD1/AD3	1045
35 Pressure switch M12	1045
36 Pressure switch X/Y	1045
- Mounting bracket MS4/6-WPB <sup>2</sup>	1049
- Mounting bracket MS4/6-WPE <sup>2</sup>	1049
- Mounting bracket MS4/6-WPM <sup>2</sup>	1049
- Module connector MS4/6-RMV	1052
- Module connector MS4-6-AMV	1052
- Module connector MS6-9-ARMV	1052
- Power supply module MS4/6-E-IPM	ms*-e-ipm*
- Branching module MS4/6-A-IPM	ms*-a*ipm*

2) Mounting and connecting component for a combination of devices or individual devices with connecting plate kit MS4/6-AG... [3] with mounting plate MS4/6-AEND [2].

## Accessories – MS9

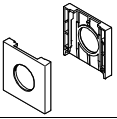

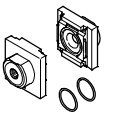






Accessories	→ Page/online
3 Connecting plate kit MS9-AG... <sup>1)</sup>	1049
8 Module connector MS9-MV <sup>1</sup>	1049
9 Mounting bracket MS9-WP	1049
10 Mounting bracket MS9-WPB	1049
12 Mounting bracket MS9-WPM <sup>1</sup>	1049
13 Angled plug socket PEV-1/4-WD-LED	1050
14 Plug socket MSSD-C-4P	1050
17 Connecting cable NEBU-M8...-LE3	1050
18 Connecting cable NEBU-M12...-LE4	1050


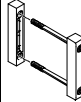

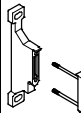
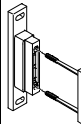
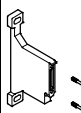
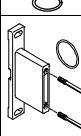
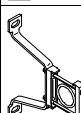
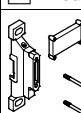
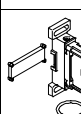
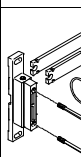
Accessories	→ Page/online
19 Pressure gauge MA	1051
27 Cover plate VS	1046
28 MS pressure gauge AG	1046
29 Adapter plate A4 for EN pressure gauge 1/4	1046
30 Pressure sensor without display AD7/AD9	1046
35 Pressure switch M12	1046
36 Pressure switch X/Y	1046
- Module connector MS9-RMV	1052
- Module connector MS6-9-ARMV	1052

1) Not suitable for individual devices with connecting thread G3/4 or G1.



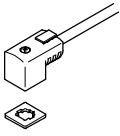

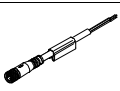
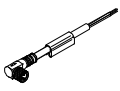
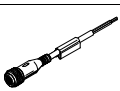
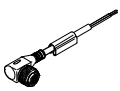
## Accessories – Ordering data

	Size	Part no.	Type
<b>1 Cover cap MS-END</b> Dimensions online: → <a href="#">ms*-end</a>			
	MS4	538779	MS4-END
	MS6	538780	MS6-END
<b>2 Mounting plate MS-AEND</b> Dimensions online: → <a href="#">ms*-aend</a>			
	MS4	542966	MS4-AEND
	MS6	535408	MS6-AEND
<b>3 Connecting plate kit MS-AG</b> Dimensions online: → <a href="#">ms*-ag*</a>			
	MS4	G1/8	526068 MS4-AGA
		G1/4	526069 MS4-AGB
		G3/8	526070 MS4-AGC
	MS6	G1/4	526080 MS6-AGB
		G3/8	526081 MS6-AGC
		G1/2	526082 MS6-AGD
G3/4		526083 MS6-AGE	
MS9	G1/2	552954 MS9-AGD	
	G3/4	★ 552955 MS9-AGE	
	G1	★ 552956 MS9-AGF	
	G1 1/4	★ 552957 MS9-AGG	
	G1 1/2	★ 552958 MS9-AGH	

	Size	Part no.	Type
<b>4 Mounting bracket MS-WB</b> Dimensions online: → <a href="#">ms*-wb</a>			
	MS4	★ 532185	MS4-WB
	MS6	★ 532196	MS6-WB
<b>5 Mounting bracket MS-WBM</b> Dimensions online: → <a href="#">ms*-wbm</a>			
	MS4	526062	MS4-WBM
<b>6 Mounting bracket MS-WR</b> Dimensions online: → <a href="#">ms*-wr</a>			
	MS4	★ 526064	MS4-WR
	MS6	★ 526075	MS6-WR
<b>7 Hex nut MS-WRS</b>			
	MS4	532187	MS4-WRS
	MS6	532188	MS6-WRS




	Size	Part no.	Type
<b>8 Module connector MS-MV</b>			
For connecting modules			
	MS4	★ 532798	MS4-MV
	MS6	★ 532799	MS6-MV
	MS9	★ 552950	MS9-MV
<b>Module connector MS-MVM</b>			
For connecting the modules with rotary knob underneath			
	MS4	★ 532800	MS4-MVM
	MS6	★ 532801	MS6-MVM
<b>9 Mounting bracket MS-WP</b> Dimensions online: → <a href="#">ms*-wp</a>			
	MS4	★ 532184	MS4-WP
	MS6	★ 532195	MS6-WP
	MS9	★ 552947	MS9-WP
<b>10 Mounting bracket MS-WPB</b> Dimensions online: → <a href="#">ms*-wpb</a>			
	MS4	For large wall gap	★ 526063 MS4-WPB
	MS6	For large wall gap	★ 526074 MS6-WPB
	MS9	For large wall gap	★ 552949 MS9-WPB
<b>11 Mounting bracket MS-WPE</b> Dimensions online: → <a href="#">ms*-wpe</a>			
	MS4	For large wall gap	558869 MS4-WPE
	MS6	For large wall gap	1025936 MS6-WPE
<b>12 Mounting bracket MS-WPM</b> Dimensions online: → <a href="#">ms*-wpm</a>			
	MS4	For clearance 40 mm	★ 526060 MS4-WPM-D
		For clearance 80 mm	526061 MS4-WPM-2D
	MS6	For clearance 62 mm	★ 526073 MS6-WPM-D
		For clearance 124 mm	532186 MS6-WPM-2D
	MS9	For clearance 90 mm or 180 mm	★ 552948 MS9-WPM

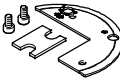


## Accessories – Ordering data

Description		Part no.	Type			
<b>13 Angled plug socket PEV-¼-WD-LED</b>		Technical data online: → <a href="#">pev</a>				
	For pressure switch PEV	4-pin, 15 ... 30 V DC	Yellow LED			
		4-pin, ≤ 230 V AC ≤ 180 V DC	Yellow LED			
		<b>164274</b>	<b>PEV-¼-WD-LED-24</b>			
		<b>164275</b>	<b>PEV-¼-WD-LED-230</b>			
<b>14 Plug socket MSSD</b>		Technical data online: → <a href="#">mssd</a>				
	For pressure switch PEV		<b>171157</b> MSSD-C-4P			
	For MS4/6-EE and MS6-SV-C	3-pin	Screw terminal			
		4-pin	Insulation displacement connector			
	For MS9-EE and MS9-SV-C	3-pin	Screw terminal			
4-pin		Insulation displacement connector				
		<b>151687</b>	<b>MSSD-EB</b>			
		<b>192745</b>	<b>MSSD-EB-S-M14</b>			
		<b>34583</b>	<b>MSSD-C</b>			
		<b>192748</b>	<b>MSSD-C-S-M16</b>			
<b>15 Plug socket with cable KMEB/KMC</b>		Technical data online: → <a href="#">km</a>				
	For MS4/6-EE and MS6-SV-C	2-pin, 24 V DC	LED	2.5 m	<b>547268</b>	<b>KMEB-3-24-2,5-LED</b>
			–	5 m	<b>547269</b>	<b>KMEB-3-24-5-LED</b>
		3-pin, 24 V DC	LED	2.5 m	<b>547270</b>	<b>KMEB-3-24-2,5</b>
			–	5 m	<b>547271</b>	<b>KMEB-3-24-5</b>
	For MS9-EE and MS9-SV-C	3-pin, 24 V DC	LED	2.5 m	<b>151688</b>	<b>KMEB-1-24-2,5-LED</b>
			–	5 m	<b>151689</b>	<b>KMEB-1-24-5-LED</b>
		3-pin, 230 V AC	–	10 m	<b>193457</b>	<b>KMEB-1-24-10-LED</b>
			–	2.5 m	<b>151690</b>	<b>KMEB-1-230AC-2,5</b>
		5 m	<b>151691</b>	<b>KMEB-1-230AC-5</b>		
		2.5 m	<b>30931</b>	<b>KMC-1-24DC-2,5-LED</b>		
		5 m	<b>30933</b>	<b>KMC-1-24DC-5-LED</b>		
		10 m	<b>193459</b>	<b>KMC-1-24-10-LED</b>		
		2.5 m	<b>30932</b>	<b>KMC-1-230AC-2,5</b>		
		5 m	<b>30934</b>	<b>KMC-1-230AC-5</b>		
<b>16 Illuminating seal MEB-LD/MC-LD</b>		Technical data online: → <a href="#">meb</a>				
	For plug socket with cable KMEB and plug socket MSSD-EB	12 ... 24 V DC	<b>151717</b> MEB-LD-12-24DC			
		230 V DC/AC ±10%	<b>151718</b> MEB-LD-230AC			
	For plug socket with cable KMC and plug socket MSSD-C	12 ... 24 V DC	<b>19145</b> MC-LD-12-24DC			
		230 V DC/AC ±10%	<b>19146</b> MC-LD-230AC			
<b>17 Connecting cable NEBU-M8</b>		Technical data → <a href="#">1162</a>				
	M8x1, 3-pin	2.5 m	★ <b>541333</b> NEBU-M8G3-K-2.5-LE3			
		5 m	★ <b>541334</b> NEBU-M8G3-K-5-LE3			
	M8x1, 4-pin	2.5 m	<b>541342</b> NEBU-M8G4-K-2.5-LE4			
		5 m	<b>541343</b> NEBU-M8G4-K-5-LE4			
	M8x1, 3-pin	2.5 m	★ <b>541338</b> NEBU-M8W3-K-2.5-LE3			
		5 m	★ <b>541341</b> NEBU-M8W3-K-5-LE3			
	M8x1, 4-pin	2.5 m	<b>541344</b> NEBU-M8W4-K-2.5-LE4			
		5 m	<b>541345</b> NEBU-M8W4-K-5-LE4			
<b>18 Connecting cable NEBU-M12</b>		Technical data → <a href="#">1162</a>				
	M12x1, 3-pin	2.5 m	<b>541363</b> NEBU-M12G5-K-2.5-LE3			
		5 m	<b>541364</b> NEBU-M12G5-K-5-LE3			
	M12x1, 4-pin	2.5 m	★ <b>550326</b> NEBU-M12G5-K-2.5-LE4			
		5 m	★ <b>541328</b> NEBU-M12G5-K-5-LE4			
	M12x1, 3-pin	2.5 m	<b>541367</b> NEBU-M12W5-K-2.5-LE3			
		5 m	<b>541370</b> NEBU-M12W5-K-5-LE3			
	M12x1, 4-pin	2.5 m	<b>550325</b> NEBU-M12W5-K-2.5-LE4			
		5 m	<b>541329</b> NEBU-M12W5-K-5-LE4			









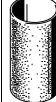


## Accessories – Ordering data

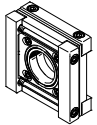
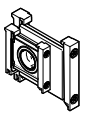
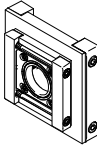
	Connection	Indicating range	Part no.	Type
<b>19 Pressure gauge MA</b> <span style="float: right;">Technical data online: → <a href="#">ma</a></span>				
EN 837-1				
	R $\frac{1}{8}$	0 ... 25 bar	<b>526167</b>	<b>MA-40-25-<math>\frac{1}{8}</math>-EN</b>
	R $\frac{1}{4}$	0 ... 16 bar	<b>187080</b>	<b>MA-40-16-R<math>\frac{1}{4}</math>-EN</b>
	G $\frac{1}{4}$	0 ... 16 bar	<b>183901</b>	<b>MA-40-16-G<math>\frac{1}{4}</math>-EN</b>
EN 837-1, with red/green range				
	R $\frac{1}{8}$	0 ... 16 bar	<b>525726</b>	<b>MA-40-16-R<math>\frac{1}{8}</math>-E-RG</b>
	R $\frac{1}{4}$	0 ... 16 bar	<b>525729</b>	<b>MA-50-16-R<math>\frac{1}{4}</math>-E-RG</b>
<b>20 Precision pressure gauge MAP</b> <span style="float: right;">Technical data online: → <a href="#">map</a></span>				
EN 837-1				
	R $\frac{1}{8}$	0 ... 1 bar	<b>161126</b>	<b>MAP-40-1-<math>\frac{1}{8}</math>-EN</b>
		0 ... 4 bar	<b>162842</b>	<b>MAP-40-4-<math>\frac{1}{8}</math>-EN</b>
		0 ... 6 bar	<b>161127</b>	<b>MAP-40-6-<math>\frac{1}{8}</math>-EN</b>
		0 ... 16 bar	<b>161128</b>	<b>MAP-40-16-<math>\frac{1}{8}</math>-EN</b>

	Size	Description	Part no.	Type
<b>21 Cover MS-SV-MH</b>				
	For MS9-SV-C	Tamper protection for manual override at the soft-start/ quick exhaust valve and manual override at the pilot solenoid valve	<b>1457670</b>	<b>MS9-SV-MH</b>
<b>22 Cover MS-SV-MK</b>				
	For MS6-SV-C	Tamper protection for manual override at the soft-start/ quick exhaust valve, flow control screw, adjusting screw for pressure switchover point and manual override at the pilot solenoid valve (MS6-SV-...-C-10V24 only)	<b>8001479</b>	<b>MS6-SV-C-MK</b>
	For MS9-SV-C	Tamper protection for manual override at the soft-start/ quick exhaust valve, flow control screw, adjusting screw for pressure switchover point and manual override at the pilot solenoid valve	<b>1457669</b>	<b>MS9-SV-MK</b>

## Accessories – Ordering data

	Description	Part no.	Type
<b>23</b>	<b>Silencer U</b>	<b>Technical data → 1238</b>	
	G1/4	★ 6842	U-1/4-B
	G1/2	★ 6844	U-1/2-B
	G3/4	6845	U-3/4-B
	G1	151990	U-1-B
<b>24</b>	<b>Silencer UOS</b>		
	G1, for high exhaust rate	552252	UOS-1
	G1, for low exhaust rate	1901207	UOS-1-LF
<b>25</b>	<b>Locking clip CPV18-HV</b>		
	For MS4/6-EE-...-V24 and MS6-SV-C-...-V24	530056	CPV18-HV
<b>26</b>	<b>Padlock LRVS-D</b>		
	-	193786	LRVS-D
	<b>Special oil OFSW</b>		
	Packaging unit 1 litre	152811	OFSW-32

	Size	Part no.	Type
<b>Filter cartridge MS-LFP-C, grade of filtration 5 µm</b>			
	MS4	Colour: blue	534501 MS4-LFP-C
	MS6	Colour: blue	534499 MS6-LFP-C
	MS9		570309 MS9-LFP-C
<b>Filter cartridge MS-LFP-E, grade of filtration 40 µm</b>			
	MS4	Colour: white	534502 MS4-LFP-E
	MS6	Colour: white	534500 MS6-LFP-E
	MS9		570310 MS9-LFP-E

	Size	Part no.	Type
<b>Module connector MS-RMV</b>			
<b>Dimensions online: → <a href="#">ms*-rmv</a></b>			
For connecting service units turned 90° to the connection axis			
	MS4	543490	MS4-RMV
	MS6	543491	MS6-RMV
	MS9	552952	MS9-RMV
<b>Module connector MS-AMV</b>			
<b>Dimensions online: → <a href="#">ms*-amv</a></b>			
For connecting MS4 and MS6 service units into one unit			
	MS4/MS6	543489	MS4-6-AMV
<b>Module connector MS-ARMV</b>			
<b>Dimensions online: → <a href="#">ms*-armv</a></b>			
For connecting MS6 and MS9 into one unit, For turning a service unit 90° to the connection axis as an option			
	MS6/MS9	552951	MS6-9-ARMV



Overview/Configuration/Order  
→ [www.festo.com/catalogue/lrp](http://www.festo.com/catalogue/lrp)



Additional information/Support/User documentation  
→ [www.festo.com/sp/lrp](http://www.festo.com/sp/lrp)

Regulators  
Individual devices

Precision pressure regulators

# LRP



- + Lockable design
- + Precision pressure adjustment possible both in static and dynamic applications
- + Good response characteristics during rapid modification of supply pressure and flow rate
- + Supply pressure fluctuations are almost entirely compensated

## Precision pressure regulators LRP/LRPS

FESTO



- 4 pressure regulation ranges
- Precision pressure adjustment possible both in static and dynamic applications
- Good response characteristics during rapid changes to operating pressure and flow rate
- Operating pressure fluctuations are almost entirely compensated
- Selected types in accordance with the ATEX Directive for explosive atmospheres → [www.festo.com/catalogue/ex](http://www.festo.com/catalogue/ex)

→ [www.festo.com/catalogue/lrp](http://www.festo.com/catalogue/lrp)

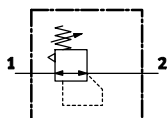
## Product range overview

Type	Pneumatic connection	Standard nominal flow rate [l/min]	Pressure regulation range [bar]	Operating pressure [bar]	Max. pressure hysteresis [bar]	Product options
Rotary knob with detent						
LRP	G $\frac{1}{4}$	800 ... 2300	0.05 ... 10	1 ... 12	0.02	EX4
Rotary knob with integrated lock						
LRPS	G $\frac{1}{4}$	800 ... 2300	0.05 ... 10	1 ... 12	0.02	–

## Product options

EX4 II 2GD to EU Directive 94/9/EC (II 2GD II in accordance with EU Directive 94/9/EC valid until 19.04.2016, then 2014/34/EU))

## Data sheet



Technical data		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>	
Type		LRP	LRPS
Pneumatic connection 1, 2		G $\frac{1}{4}$	
Design		Piloted precision diaphragm regulator	
Regulating function		With secondary venting	
Type of mounting		Via accessories In-line installation Front panel mounting	
Mounting position		Any	
Actuator lock		Rotary knob with detent	Rotary knob with integrated lock
Pressure regulation range	[bar]	0.05 ... 0.7 0.05 ... 2.5 0.05 ... 4 0.1 ... 10	
Pressure indication		G $\frac{1}{8}$ prepared	
Length/width/height	[mm]	50/50/108	50/50/138 + min. 60 <sup>1)</sup>

1) Clearance for removing the key.

Standard nominal flow rate $q_{nN}$					
Pressure regulation range	[bar]	0.05 ... 0.7	0.05 ... 2.5	0.05 ... 4	0.1 ... 10
$q_{nN}$ <sup>2)</sup>	[l/min]	800	1800	2000	2300

2) Measured at  $p_1 = 12$  bar and  $\Delta p_2 = 100$  mbar.

## Data sheet

Operating conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Lubricated operation not possible
Operating pressure [bar]	1 ... 12
Ambient temperature [°C]	-10 ... +60

Materials	
Housing	Die-cast aluminium
Rotary knob	PA
Knurled nut	Aluminium
Seals	Nitrile rubber

## Order code

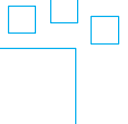
Type	LRP	–	1/4	–	
LRP	Precision pressure regulator				
Actuator lock					
–	Rotary knob with detent				
S	Rotary knob with integrated lock				
Pneumatic connection					
1/4	Female thread G1/4				
Pressure regulation range					
0.7	0.05 ... 0.7 bar				
2.5	0.05 ... 2.5 bar				
4	0.05 ... 4 bar				
10	0.1 ... 10 bar				

## Order example:

LRP-1/4-4

Precision pressure regulator - rotary knob with detent - female thread G1/4 - pressure regulation range 0.05 ... 4 bar

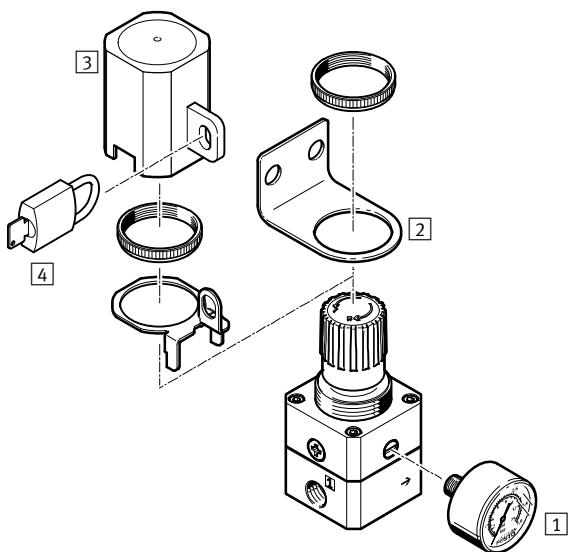
## Ordering – Product options

	<b>Configurable product</b>	<b>This product and all its options can be ordered using the configurator.</b>	The configurator can be found under Products on the DVD or → <a href="http://www.festo.com/catalogue/...">www.festo.com/catalogue/...</a>	Enter the type code in the search field.
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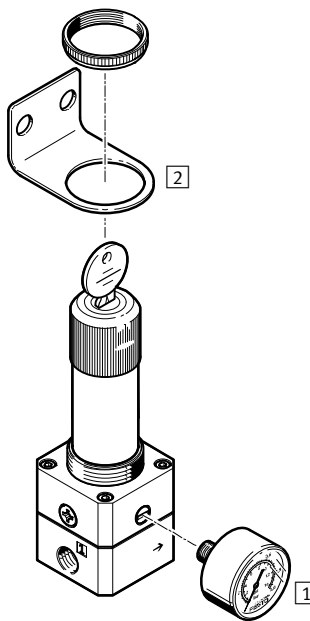
# Precision pressure regulators LRP/LRPS

## Accessories

Precision pressure regulator LRP




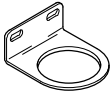
Precision pressure regulator LRPS





Accessories	→ Page/online
1 Precision pressure gauge MAP	1056
2 Mounting bracket HR	1056

Accessories	→ Page/online
3 Regulator lock LRVS	1056
4 Padlock LRVS-D	1056

## Accessories – Ordering data

	Indicating range	Part no.	Type
	<b>1 Precision pressure gauge MAP</b> <b>Technical data online: → map</b>		
	0 ... 1 bar	161126	MAP-40-1-1/8-EN
	0 ... 4 bar	162842	MAP-40-4-1/8-EN
	0 ... 6 bar	161127	MAP-40-6-1/8-EN
	0 ... 16 bar	161128	MAP-40-16-1/8-EN
<b>2 Mounting bracket HR</b>			
	-	159503	HR-1/4-P

	Part no.	Type
<b>3 Regulator lock LRVS</b>		
	193785	LRVS-LRP-1/4
<b>4 Padlock LRVS-D</b>		
	193786	LRVS-D