

**Fast and clean
for safe food production**

FESTO

Service unit combinations
D series



Proven standard: D series

**D series:
Highly robust, universal and standardised**



**Standard, proven for years:
the D series**

Ideal for all standard applications in the food and packaging industry, requiring a complete choice of highly-robust standard products, each offering the right flow rate for a particular need. These products can be ordered quickly and easily as a ready-made combination – in over 400 variants with all kinds of optional features.

Fast delivery and fast installation – thanks to the Festo plug and work® principle! A feature of every product is coated smooth surfaces for enhanced corrosion protection and very easy cleaning, sturdy metal housings and all-metal guards to give protection against mechanical and chemical attack, together with an efficient connector system.

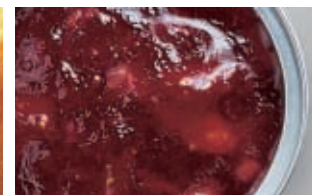
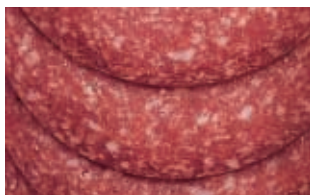
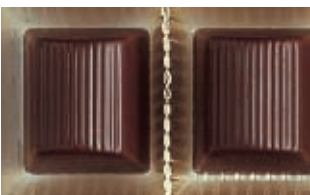


**Economical thanks to
appropriate sizes**

Choose from four different sizes (D-Micro to D-Maxi) with a wide range of functionality. But Festo offers far more than just quality components. Festo also offers total support in the form of its “Industrial Services”.

For example, for anyone who can’t find the right combination because their requirements are too specialised, there is the configurator in Festo’s electronic catalogue.

www.festo.com/catalogue



Why the need for compressed air preparation?

Air is not always as clean as it appears to be! Particularly when used in the food and packaging industry, a further important point needs to be considered since, as part of an HACCP audit, compressed air also comes under the scrutiny of the certifying authority!

Air humidity and condensation

The maximum water absorption capacity of air greatly depends on temperature, irrespective of pressure. The volume of air absorbed is specified in g per m³. With increasing temperature, the quantity of water absorbed increases. Conversely, large quantities of water are released if the temperature cools down. This leads to corrosion and damage in the compressed air system and on the components connected. The use of compressed air dryers eliminates such problems from the outset. In addition to this, the use of a compressed air dryer is recommended for the processing of dried food.

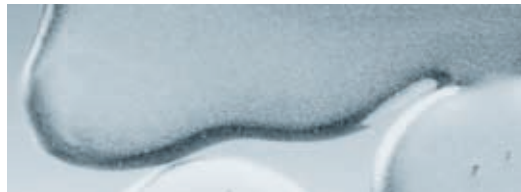
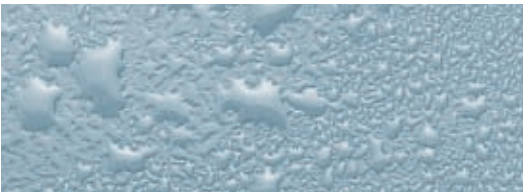
Oil contamination

Even if oil-free compressors are used, oil particles are drawn in from the ambient air. Since this oil is generally not specifically intended for the lubrication of pneumatic components, there is a risk of damage to delicate components and in a worst case scenario the contamination of food.

Dirt and rust particles

Solid particles occur in the form of dust (carbon, rust particles) and are present at build-up points. Coastal areas are generally less dusty, but instead are subject to salt particles from evaporated sea water droplets. Dust is divided into the following categories:

Coarse dust (> 10 µm),
fine dust (1 – 10 µm)
and superfine dust (< 1 µm).



Compressed air qualities in the food and packaging industry

A simple rule of thumb applies for the definition of compressed air quality in the food and packaging industry:

The compressed air must be so clean as to damage neither the product or in the worst case scenario, the consumer.

Compressed air quality is generally categorised into the following quality classes in accordance with DIN ISO 8573-1:

1. Quality class of solid contamination
2. Quality class for water content
3. Quality class for overall oil content

Compressed air qualities to DIN ISO 8573-1 (Status: 01/2004)

Class	Oil	Particle	Workpiece density [mg/m ³]	Water	
	aerosol + vapour [mg/m ³]	Particle size [µm]		Pressure dewpoint [°C]	Water content [g/m ³]
1	0,01	0,1	0,1	- 70	0,003
2	0,1	1	1	- 40	0,12
3	1	5	5	- 20	0,88
4	5	15	8	+ 3	6,0
5	25	40	10	+ 7	7,8
6	-	-	-	+ 10	9,4
7	-	-	-	Not specified	Not specified

This recommendation applies to all air compressors, regardless of compression method or mechanical design.

The following applications have particularly high requirements regarding compressed air in the food and packaging industry:

“Non dried foods”

Compressed air comes into direct contact with “non dried foods” (e.g. drinks, meat, vegetables etc.)

Compressed air is used for transporting, mixing or for the production of food in general and is therefore in direct contact with food.

“Packaging machines”

Compressed air comes into direct contact with packaging materials which are subsequently filled with food. The packaging material therefore becomes part of the food zone.

For both instances the following classification applies for compressed air quality in accordance with DIN ISO 8573-1:

Dust: Class 1
Water: Class 4
Oil: Class 1



Examples of predefined service units ex stock

“Dried foods”

Compressed air comes into direct contact with dried foods

Compressed air is used for the transporting, mixing or for the production of food in general and therefore comes into direct contact with foodstuffs. However, in this case even more stringent requirements apply since air humidity plays a major role!

For such applications the following classifications in accordance with DIN ISO 8573-1 should be considered:

Dust: Class 1
Water: Class 2
Oil: Class 1



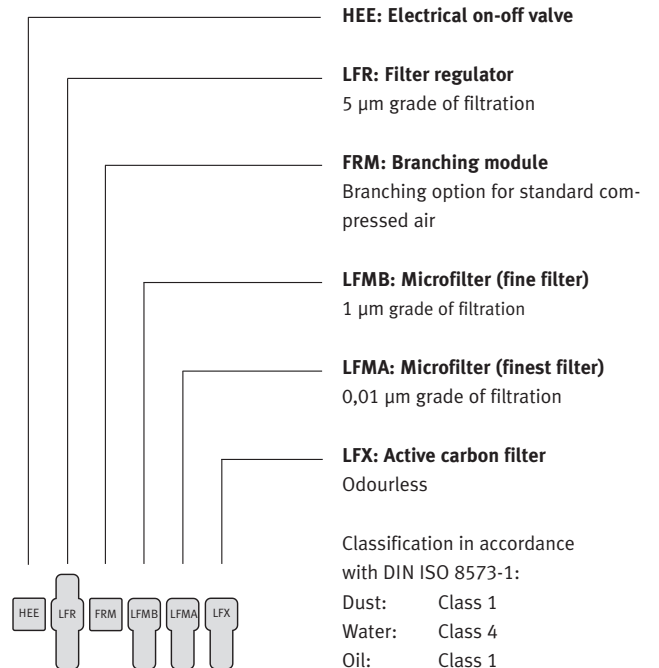
Maximum possible safety

Compliance with the compressed air qualities listed here is imperative in order to ensure the maximum possible safety of food and to protect the health of the consumer – true to the motto of food producers: “Protecting the brand!”

Necessary requirement to achieve the mentioned compressed air quality classes 1.4.1 respectively 1.2.1: Central drying of the compressed air using a refrigeration dryer after the compressor.

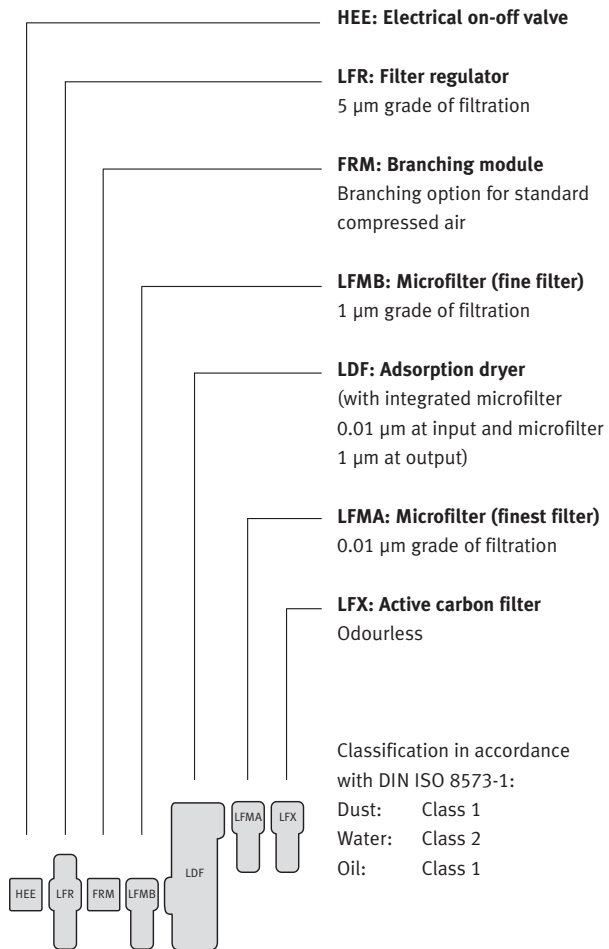
A typical service unit combination for the processing of “non dried” foodstuffs:

If compressed air quality 1.2.1 is required, we recommend the use of compressed air quality 1.4.1 generated with the aid of one of the combinations of devices described here, using the Festo adsorption dryer type LDF for drying. The dryer should be interconnected downstream of the filter regulator LFR or branching module FRM and upstream of the microfilters.



Assortment of service units combinations for the food industry

A typical service unit combination for the processing of dried foodstuffs:



Choice of service unit combinations for the food industry: D-MINI

Compressed air quality 1.4.1: The most compact combination for decentralised compressed air preparation

Connection size: G 1/4 (D-MINI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

Position 1: Filter regulator LFR-1/4-D-5M-MINI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
Position 2: Fine filter LFMB-D-MINI, degree of filtration 1 µm
Position 3: Finest filter LFMA-D-MINI, degree of filtration 0,01 µm
Position 4: Active carbon filter LFX-D-MINI

Mounting material: Threaded bolt FRB-D-MINI
Mounting bracket HFOE-D-MINI

Flow rate: qnN = 160 l/min [$\Delta p = 70$ mbar]



Position	Type code	Part number	Quantity
1	LFR-1/4-D-5M-MINI-A	162 727	1
2	LFMB-D-MINI	192 569	1
3	LFMA-D-MINI	192 563	1
4	LFX-D-MINI	532 776	1
/	FRB-D-MINI	159 642	3
/	HFOE-D-MINI	159 638	1

Compressed air quality 1.4.1: Branching option for standard compressed air

Connection size: G 1/4 (D-MINI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

Position 1: Filter regulator LFR-1/4-D-5M-MINI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
Position 2: Branching module FRM-D-MINI
Position 3: Fine filter LFMB-D-MINI, degree of filtration 1 µm
Position 4: Finest filter LFMA-D-MINI, degree of filtration 0,01 µm
Position 5: Active carbon filter LFX-D-MINI

Mounting material: Threaded bolt FRB-D-MINI
Mounting bracket HFOE-D-MINI

Flow rate: qnN = 160 l/min [$\Delta p = 70$ mbar]

Flow rate after branching module: qnN = 1,272 l/min [$\Delta p = 1$ bar]
qmax = 1,859 l/min



Position	Type code	Part number	Quantity
1	LFR-1/4-D-5M-MINI-A	162 727	1
2	FRM-D-MINI	170 684	1
3	LFMB-D-MINI	192 569	1
4	LFMA-D-MINI	192 563	1
5	LFX-D-MINI	532 776	1
/	FRB-D-MINI	159 642	4
/	HFOE-D-MINI	159 638	1

Compressed air quality 1.4.1: Branching option for standard compressed air and manual on-off valve

Connection size: G 1/4 (D-MINI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

- Position 1: Manual on-off valve HE-D-MINI
- Position 2: Filter regulator LFR-1/4-D-5M-MINI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
- Position 3: Branching module FRM-D-MINI
- Position 4: Fine filter LFMB-D-MINI, degree of filtration 1 µm
- Position 5: Finest filter LFMA-D-MINI, degree of filtration 0,01 µm
- Position 6: Active carbon filter LFX-D-MINI

Mounting material: Threaded bolt FRB-D-MINI
Mounting bracket HFOE-D-MINI

Flow rate: qnN = 160 l/min [Δp = 70 mbar]

Flow rate after branching module: qnN = 1,211 l/min [Δp = 1 bar]
qmax = 1,755 l/min



Position	Type code	Part number	Quantity
1	HE-D-MINI	170 681	1
2	LFR-1/4-D-5M-MINI-A	162 727	1
3	FRM-D-MINI	170 684	1
4	LFMB-D-MINI	192 569	1
5	LFMA-D-MINI	192 563	1
6	LFX-D-MINI	532 776	1
/	FRB-D-MINI	159 642	5
/	HFOE-D-MINI	159 638	1

Compressed air quality 1.4.1: Branching option for standard compressed air and electrical on-off valve

Connection size: G 1/4 (D-MINI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

- Position 1: Electrical on-off valve HEE-D-MINI-24, 24 V DC
- Position 2: Filter regulator LFR-1/4-D-5M-MINI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
- Position 3: Branching module FRM-D-MINI
- Position 4: Fine filter LFMB-D-MINI, degree of filtration 1 µm
- Position 5: Finest filter LFMA-D-MINI, degree of filtration 0,01 µm
- Position 6: Active carbon filter LFX-D-MINI

Mounting material: Threaded bolt FRB-D-MINI
Mounting bracket HFOE-D-MINI

Flow rate: qnN = 160 l/min [Δp = 70 mbar]

Flow rate after branching module: qnN = 1,212 l/min [Δp = 1 bar]
qmax = 1,761 l/min



Position	Type code	Part number	Quantity
1	HEE-D-MINI-24	172 956	1
2	LFR-1/4-D-5M-MINI-A	162 727	1
3	FRM-D-MINI	170 684	1
4	LFMB-D-MINI	192 569	1
5	LFMA-D-MINI	192 563	1
6	LFX-D-MINI	532 776	1
/	FRB-D-MINI	159 642	5
/	HFOE-D-MINI	159 638	1

Choice of service unit combinations for the food industry: D-MIDI

Compressed air quality 1.4.1: The most compact combination for decentralised compressed air preparation

Connection size: G 3/8 (D-MIDI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

Position 1: Filter regulator LFR-3/8-D-5M-MIDI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
Position 2: Fine filter LFMB-D-MIDI, degree of filtration 1 µm
Position 3: Finest filter LFMA-D-MIDI, degree of filtration 0,01 µm
Position 4: Active carbon filter LFX-D-MIDI

Mounting material: Threaded bolt FRB-D-MIDI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 380 l/min [Δp = 70 mbar]



Position	Type code	Part number	Quantity
1	LFR-3/8-D-5M-MIDI-A	162 729	1
2	LFMB-D-MIDI	192 570	1
3	LFMA-D-MIDI	192 564	1
4	LFX-D-MIDI	532 777	1
/	FRB-D-MIDI	159 595	3
/	HFOE-D-MIDI/MAXI	159 593	1

Compressed air quality 1.4.1: Branching option for standard compressed air

Connection size: G 3/8 (D-MIDI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

Position 1: Filter regulator LFR-3/8-D-5M-MIDI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
Position 2: Branching module FRM-D-MIDI
Position 3: Fine filter LFMB-D-MIDI, degree of filtration 1 µm
Position 4: Finest filter LFMA-D-MIDI, degree of filtration 0,01 µm
Position 5: Active carbon filter LFX-D-MIDI

Mounting material: Threaded bolt FRB-D-MIDI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 380 l/min [Δp = 70 mbar]

Flow rate after branching module: qnN = 1,892 l/min [Δp = 1 bar]
qmax = 3,326 l/min



Position	Type code	Part number	Quantity
1	LFR-3/8-D-5M-MIDI-A	162 729	1
2	FRM-D-MIDI	170 685	1
3	LFMB-D-MIDI	192 570	1
4	LFMA-D-MIDI	192 564	1
5	LFX-D-MIDI	532 777	1
/	FRB-D-MIDI	159 595	4
/	HFOE-D-MIDI/MAXI	159 593	1

Compressed air quality 1.4.1: Branching option for standard compressed air and manual on-off valve

Connection size: G 3/8 (D-MIDI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

- Position 1: Manual on-off valve HE-D-MIDI
- Position 2: Filter regulator LFR-3/8-D-5M-MIDI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
- Position 3: Branching module FRM-D-MIDI
- Position 4: Fine filter LFMB-D-MIDI, degree of filtration 1 µm
- Position 5: Finest filter LFMA-D-MIDI, degree of filtration 0,01 µm
- Position 6: Active carbon filter LFX-D-MIDI

Mounting material: Threaded bolt FRB-D-MIDI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 380 l/min [Δp = 70 mbar]

Flow rate after branching module: qnN = 1,884 l/min [Δp = 1 bar]
qmax = 3,280 l/min



Position	Type code	Part number	Quantity
1	HE-D-MIDI	170 682	1
2	LFR-3/8-D-5M-MIDI-A	162 729	1
3	FRM-D-MIDI	170 685	1
4	LFMB-D-MIDI	192 570	1
5	LFMA-D-MIDI	192 564	1
6	LFX-D-MIDI	532 777	1
/	FRB-D-MIDI	159 595	5
/	HFOE-D-MIDI/MAXI	159 593	1

Compressed air quality 1.4.1: Branching option for standard compressed air and electrical on-off valve

Connection size: G 3/8 (D-MIDI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

- Position 1: Electrical on-off valve HEE-D-MIDI-24, 24 V DC
- Position 2: Filter regulator LFR-3/8-D-5M-MIDI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
- Position 3: Branching module FRM-D-MIDI
- Position 4: Fine filter LFMB-D-MIDI, degree of filtration 1 µm
- Position 5: Finest filter LFMA-D-MIDI, degree of filtration 0,01 µm
- Position 6: Active carbon filter LFX-D-MIDI

Mounting material: Threaded bolt FRB-D-MIDI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 380 l/min [Δp = 70 mbar]

Flow rate after branching module: qnN = 1,809 l/min [Δp = 1 bar]
qmax = 3,268 l/min



Position	Type code	Part number	Quantity
1	HEE-D-MIDI-24	172 959	1
2	LFR-3/8-D-5M-MIDI-A	162 729	1
3	FRM-D-MIDI	170 685	1
4	LFMB-D-MIDI	192 570	1
5	LFMA-D-MIDI	192 564	1
6	LFX-D-MIDI	532 777	1
/	FRB-D-MIDI	159 595	5
/	HFOE-D-MIDI/MAXI	159 593	1

Choice of service unit combinations for the food industry: D-MAXI

Compressed air quality 1.4.1: The most compact combination for decentralised compressed air preparation

Connection size: G 3/4 (D-MAXI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

Position 1: Filter regulator LFR-3/4-D-5M-MAXI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
Position 2: Fine filter LFMB-D-MAXI, degree of filtration 1 µm
Position 3: Finest filter LFMA-D-MAXI, degree of filtration 0,01 µm
Position 4: Active carbon filter LFX-D-MAXI

Mounting material: Threaded bolt FRB-D-MAXI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 900 l/min [$\Delta p = 70$ mbar]



Position	Type code	Part number	Quantity
1	LFR-3/4-D-5M-MAXI-A	162 732	1
2	LFMB-D-MAXI	192 571	1
3	LFMA-D-MAXI	192 565	1
4	LFX-D-MAXI	532 778	1
/	FRB-D-MAXI	159 643	3
/	HFOE-D-MIDI/MAXI	159 593	1

Compressed air quality 1.4.1: Branching option for standard compressed air

Connection size: G 3/4 (D-MAXI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

Position 1: Filter regulator LFR-3/4-D-5M-MAXI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
Position 2: Branching module FRM-D-MAXI
Position 3: Fine filter LFMB-D-MAXI, degree of filtration 1 µm
Position 4: Finest filter LFMA-D-MAXI, degree of filtration 0,01 µm
Position 5: Active carbon filter LFX-D-MAXI

Mounting material: Threaded bolt FRB-D-MAXI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 900 l/min [$\Delta p = 70$ mbar]

Flow rate after branching module: qnN = 2,572 l/min [$\Delta p = 1$ bar]
qmax = 3,849 l/min



Position	Type code	Part number	Quantity
1	LFR-3/4-D-5M-MAXI-A	162 732	1
2	FRM-D-MAXI	170 686	1
3	LFMB-D-MAXI	192 571	1
4	LFMA-D-MAXI	192 565	1
5	LFX-D-MAXI	532 778	1
/	FRB-D-MAXI	159 643	4
/	HFOE-D-MIDI/MAXI	159 593	1

Compressed air quality 1.4.1: Branching option for standard compressed air and manual on-off valve

Connection size: G 3/4 (D-MAXI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

- Position 1: Manual on-off valve HE-D-MAXI
- Position 2: Filter regulator LFR-3/4-D-5M-MAXI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
- Position 3: Branching module FRM-D-MAXI
- Position 4: Fine filter LFMB-D-MAXI, degree of filtration 1 µm
- Position 5: Finest filter LFMA-D-MAXI, degree of filtration 0,01 µm
- Position 6: Active carbon filter LFX-D-MAXI

Mounting material: Threaded bolt FRB-D-MAXI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 900 l/min (Δp = 70 mbar)

Flow rate after branching module: qnN = 2,639 l/min [Δp = 1 bar]
qmax = 3,844 l/min



Position	Type code	Part number	Quantity
1	HE-D-MAXI	170 683	1
2	LFR-3/4-D-5M-MAXI-A	162 732	1
3	FRM-D-MAXI	170 686	1
4	LFMB-D-MAXI	192 571	1
5	LFMA-D-MAXI	192 565	1
6	LFX-D-MAXI	532 778	1
/	FRB-D-MAXI	159 643	5
/	HFOE-D-MIDI/MAXI	159 593	1

Compressed air quality 1.4.1: Branching option for standard compressed air and electrical on-off valve

Connection size: G 3/4 (D-MAXI)

Mounting type: Mounting bracket HFOE
Set includes the required mounting material

- Position 1: Electrical on-off valve HEE-D-MAXI-24, 24 V DC
- Position 2: Filter regulator LFR-3/4-D-5M-MAXI-A
Pressure range up to 12 bar, degree of filtration 5 µm, automatic condensate drain, with pressure gauge
- Position 3: Branching module FRM-D-MAXI
- Position 4: Fine filter LFMB-D-MAXI, degree of filtration 1 µm
- Position 5: Finest filter LFMA-D-MAXI, degree of filtration 0,01 µm
- Position 6: Active carbon filter LFX-D-MAXI

Mounting material: Threaded bolt FRB-D-MAXI
Mounting bracket HFOE-D-MIDI/MAXI

Flow rate: qnN = 900 l/min [Δp = 70 mbar]

Flow rate after branching module: qnN = 2,397 l/min [Δp = 1 bar]
qmax = 3,823 l/min



Position	Type code	Part number	Quantity
1	HEE-D-MAXI-24	172 962	1
2	LFR-3/4-D-5M-MAXI-A	162 732	1
3	FRM-D-MAXI	170 686	1
4	LFMB-D-MAXI	192 571	1
5	LFMA-D-MAXI	192 565	1
6	LFX-D-MAXI	532 778	1
/	FRB-D-MAXI	159 643	5
/	HFOE-D-MIDI/MAXI	159 593	1

D series: Individual components

Manual on-off valve HE

- 3/2-way manual on-off valve
- The unit is vented when switched off
- Ducted exhaust possible via a threaded connection
- The switching position is immediately recognisable
- Commercially available padlock can be used for security



Electrical on-off valve HEE

- Electrical on-off valve for pressurising and exhausting pneumatic systems
- With solenoid coil without plug socket
- Choice of 3 voltage ranges
- Manual override pushing and detenting



Filter regulator LFR/LFRS

- Space-saving design with filter and regulator in a single unit
- Optional with manual condensate drain or integrated, automatic condensate drain
- Good particle separation and high flow rate
- Choice of filter cartridges: 40 or 5 µm



Branching module FRM

- Branching module for compressed air distribution for attachment of additional modules (Pressure regulator, pressure switch, etc.)
- Can be used as an intermediate outlet for different air qualities



Fine and micro filters LFMB/LFMA

- High efficiency filter for special requirements
- Choice of filter cartridges: 1 µm or 0.01 µm
- Available as pre-assembled filter combination
- Optional with manual condensate drain or integrated, automatic condensate drain



Active carbon filter LFX

- Removal of liquid and gaseous oil particles from compressed air using active carbon
- Active carbon filter cartridges provide odour and oil-free air to food industry standard
- Pre-filtration down to a particle size of 0.01 µm is recommended



Adsorption dryer LDF

- Cold-regenerating adsorption dryer with defined pressure dew point:: -40 °C; on request -70 °C
- High flow rate (up to 1600 l/min) for decentralised compressed air drying
- Effectively prevents corrosion, wear, excessive product wastage, frequent maintenance and damage to sensitive machinery



Red-green pressure gauge MA-...-RG

- Standard pressure gauge housing
- Diameters: 40, 50 and 63 mm
- Special design for TPM measures
- Scale with printed green segment
- Two adjustable, red tolerance ranges



Threaded bolt FRB

- Corrosion resistance class CRC 2
- Copper, PTFE and silicone-free



Mounting bracket HFOE

- Corrosion resistance class CRC 2
- Copper, PTFE and silicone-free



Clean Design drives, valves, fittings and tubing

Standard cylinder CDN

- To VDMA 24 562/ISO 6431
- Easy to clean design
- Integrated sensors
- High corrosion resistance
- Food industry approval for lubricating grease (to NSF-H1) and piston rod wiper seal
- Optional: Cap screws made of stainless steel



Round cylinder CRHD

- Hygienic design
- Made entirely from stainless steel
- Very high corrosion resistance
- Reliable product in harsh environments
- Repairable (cap is screwed to the profile)
- Food industry approval for lubricating grease (to NSF-H1) and piston rod wiper seal



Valve terminal CDVI

- Easy to clean design
- High corrosion resistance
- Can be mounted without additional control cabinet
- Easy to maintain
- Sturdy product in demanding environment
- Up to three pressure zones possible



QS-F fitting

- Robust solid-metal fitting
- More than 130 different types
- Also suitable with high temperatures
- Viton seals with FDA approval
- Resistant to most cleaning agents



CRQS fitting

- Robust, made of stainless steel
- 4 variants available: Straight, L, T type and as bulkhead fitting
- Type L and T: Rotatable 360°
- Very high corrosion resistance



Tubing PUN-H, PLN, PFAN

PUN-H

- Hydrolysis resistant
- Microbe resistant
- Food industry approved to Directive 2002/72/EU and FDA



PLN

- Highly resistant to chemicals and cleaning agents
- Food industry approved to Directive 2002/72/EU



PFAN

- Very high chemicals resistance
- Suitable for applications with high temperatures
- Food industry approved to Directive 2002/72/EU and FDA



Services at a glance

Festo Easy Assembly Services: Step for step greater cost savings!

The use of complete assemblies saves on assembly time and money: Just one part number, one order, one item, one date, supplied in one package. But the benefits also extend to procurement, logistics, design and documentation. A guarantee for components and function offers maximum reliability.

Maximum efficiency, closely graduated:

Thanks to the PrePack Service, the PreAssembly Service or ready-to-install pneumatic components.

All reduce the total cost of your Pneumatics.

- Maximum process reliability
- Simplification of procurement
- Simplification of logistics
- Reduction of assembly time

For further information:
www.festo.com/download
(product short information 912.3)

The principle: greater complexity, greater benefits

23,000 types in the catalogue	One part number, one package	In addition to the benefits of PrePack – an assembled solution	In addition to PreAssembly – designed, assembled and tested by Festo
Individual components	PrePack	PreAssembly	Ready-to-install pneumatics

Festo compressed air consumption analysis: optimum compressed air supply, reliable processes

Benefits not only you but your customers too. Thanks to Festo, you and your customers know for the first time precisely how much compressed air your machines and assembly equipment are using and therefore how your optimal supply network should look in terms of compressor, processing and interconnection.

Including: From measurements of machine throughput to analysis and documentation of measurements, there are individually tailored modular solutions for the form of documentation you require.

For further information:
www.festo.com/download
(product short information 912.4)

Festo compressed air quality analysis: Reliability for pneumatic systems

Modern pneumatics places specific requirements on air quality if it is to operate perfectly and trouble-free: virtually free of particles, residual moisture and compressor oils, depending on the respective DIN ISO 8573 class.

The compressed air quality analysis supplies all data from A – Z, from compressed air production to compressed air to the distribution of compressed air.

To ensure that users have the right air quality, measurements are taken of the compressed-air quality at each point of consumption and an application-specific analysis is carried out. Potential weak points are identified and possible solutions are developed – drawing on Festo's comprehensive know-how and technical equipment.

For further information:
www.festo.com/download
(product short information 912.5)



Take a look into the future ...

TPM prognosis: 100 % machine availability

You don't need to be clairvoyant to be able to predict maximum possible production reliability for the manufacture of food products. But you'll need to look ahead: with Total Productive Maintenance (TPM).

Corner stones for 100 % productivity

With these TPM corner stones you'll bring your equipment up to speed for good:

- Planned maintenance program as a systematic procedure
- Preventive maintenance right from the beginning of the planning and procurement stage
- Training in basic TPM principles
- Autonomous maintenance carried out by equipment operators supplemented with preventative measures and the execution of complicated repairs by trained technicians

100 % hygiene x 100 % quality = safety² by using HACCP

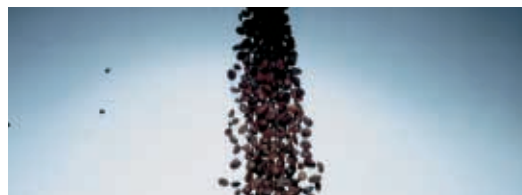
Your formula for maximised food safety in food production sequences: HACCP. Monitors critical points for optimised quality with minimal risk. Festo products and services assist you in prevention.

With the help of HACCP (hazard analysis critical control points), you can define and monitor all of the critical points within your production sequence by establishing limit values within the system. Systematic monitoring facilitates immediate correction in the event of a critical situation.

Festo can help you safeguard your brand name – effectively.

Further information regarding HACCP, TPM, clean design and hygienic design products from Festo is available at:

www.festo.com/food



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