

## HYDAC INTERNATIONAL



### FluidAqua Mobil FAM 25/45/60/75/95 Series

#### Description

The FluidAqua Mobil FAM 25/45/60/75/95 series operates according to the principle of vacuum dewatering to separate free and dissolved water as well as free and dissolved gases from hydraulic and lubrication fluids.

By using HYDAC bypass filter technology, with its high contamination retention capacity and separation performance, the unit achieves a very high level of cost effectiveness.

All units have an AquaSensor AS 1000 to continuously monitor the water content and to control the unit. A CS 1000 particle sensor for simultaneous monitoring of the solid particle contamination can be integrated optionally.

To increase the dewatering capacity, a heater can be integrated optionally for highly viscous fluids or for low fluid temperatures.

The Siemens S7 series programmable logic controller (PLC) used in combination with a Siemens touch control panel guarantees simple and reliable handling in numerous local languages.

#### Advantages

Extremely low residual water levels, gas levels and particle contamination in the operating fluids make for:

- Longer oil change intervals
- Improved component service life
- Greater machine availability
- Reduction in the life cycle cost (LCC)

#### Technical specifications

	FAM 25	FAM 45	FAM 60	FAM 75	FAM 95
Flow rates at 50 Hz	≈ 25 l/min	≈ 45 l/min	≈ 60 l/min	≈ 75 l/min	≈ 95 l/min
Flow rates at 60 Hz	≈ 30 l/min	≈ 54 l/min	≈ 72 l/min	≈ 90 l/min	≈ 114 l/min
Permitted fluids**	Fluids compatible with NBR seals: <ul style="list-style-type: none"><li>● Mineral oils to DIN 51524</li><li>● Gear oils to DIN 51517, 51524</li></ul> Operating fluids compatible with FKM (FPM,Viton®) seals <ul style="list-style-type: none"><li>● Synthetic esters (HEES) DIN 51524/2</li><li>● Vegetable oils (HETG, HTG)</li><li>● HFD fluids (not for pure phosphate ester which require EPDM seals).</li></ul>				
Sealing material	see model code				
Filter size of fine filter	OLF-10		2600 MRF 3/11/40		
Filter elements of fine filter xxx= Filtration rating	N10DMxxx		2600RxxxBN4HC/-KB (-V-KB) N40FMxxx		
Clogging indicator	VM 2 C.0	VM 2 C.0	VM 2 C.0	VM 2 C.0	VM 2 C.0
Pump type, vacuum pump	Rotary vane vacuum pump		Rotary vane vacuum pump or Water ring vacuum pump		
Pump type, others	Gear pumps				
Operating pressure	max. 6 bar				
Permitted pressure at suction port (without suction hose)	-0.2 to 1 bar				
Permitted pressure at outlet (without return hose) **	0 to 3.5 bar				
Operation viscosity range**	15 ... 350 mm²/sec (without built-in heater) 15 ... 550 mm²/sec (with built-in heater)				
Fluid temperature range **	10 ... 80°C				
Ambient temperature **	10 ... 40°C				
Storage temperature range **	10 to 50°C				
Relative humidity (ambient) **	Max. 90%, non-condensing				
Electrical power consumption (50 Hz)*					
Without heater	≈ 3.5 kW	≈ 4.5 kW	≈ 5.9 kW	≈ 7.5 kW	≈ 7.5 kW
With heater	≈ 10.5 kW	≈ 13.5 kW	≈ 19.5 kW	≈ 25.5 kW	≈ 25.5 kW
Heating output (optional)	≈ 6.75 kW	≈ 9 kW	≈ 13.5 kW	≈ 18 kW	≈ 18 kW
Protection class	IP 54	IP 55	IP 55	IP 55	IP 55
Length of electric cable / plug	10 m / CEE (depending on the nominal voltage, see model code)				
Hoses, length	5 m (mobile FAMs only)				
Material of hoses	see model code				
Connection, inlet/outlet	see table "Connection summary"				
Weight when empty	≈ 410 kg	≈ 430 kg	≈ 550 kg	≈ 590 kg	≈ 620 kg
Achievable residual water content	< 100 ppm – hydraulic and heavy oils < 50 ppm – turbine oils (ISO VG 32/46) < 10 ppm – transformer oils ***				

\* Maximum specifications given, depends on equipment

\*\* For other fluids, viscosities or temperature ranges, please contact us.

\*\*\* Units not suitable for "Online" and "Onload" operation (transformer in operation and connected to grid).

## Model code

**FAM - 75 - M - 2 - A - 40 - R - H - C1 - AC1 - 00 - /V**

### Basic model

FAM = FluidAqua Mobil

### Size

25 ≈ 25 l/min    45 ≈ 45 l/min    60 ≈ 60 l/min  
75 ≈ 75 l/min    95 ≈ 95 l/min    (50 Hz)

### Operating medium

M = Mineral oil - NBR seals, NBR hoses, tested with mineral oil\*

I = Insulating oil - NBR seals, NBR hoses,  
tested with insulating oil (Shell Diala)\*\*

X = HFD-R fluids - FKM seals, UPE hoses,  
tested with HFD-R fluid (Fyrquel)\*

B = Biodegradable oils (based on esters) - FKM seals,  
NBR hoses, tested with biodegradable oils based on esters\*

### Mechanical type

1 = Stationary (with feet)

2 = Mobile (with castors and hose attachment)

### Voltage, frequency, power supply

A = 400 V, 50 Hz, 3 Ph	F = 230 V, 60 Hz, 3 Ph	L = 220 V, 50 Hz, 3 Ph
B = 415 V, 50 Hz, 3 Ph	G = 380 V, 60 Hz, 3 Ph	N = 575 V, 60 Hz, 3 Ph <sup>1)</sup>
C = 200 V, 50 Hz, 3 Ph <sup>1)</sup>	H = 440 V, 60 Hz, 3 Ph <sup>1)</sup>	O = 460 V, 60 Hz, 3 Ph <sup>1)</sup>
D = 200 V, 60 Hz, 3 Ph <sup>1)</sup>	I = 500 V, 50 Hz, 3 Ph	X = other voltages
E = 220 V, 60 Hz, 3 Ph	K = 480 V, 60 Hz, 3 Ph <sup>1)</sup>	on request

### Filter size of fine filter

10 = OLF 10 Toploader (FAM 25/45 only)

26 = OFU 2600 (FAM 60/75/95 only)

40 = MRF 3/11/40 (FAM 60/75/95 only)

### Vacuum pump type

R = rotary vane vacuum pump

W = water ring vacuum pump (for FAM 60/75/95 only)

WA = water ring vacuum pump with automatic water supply (for FAM 60/75/95 only)

### Heater

H = Heater appropriate for the size (see technical data)  
for available voltages, see following pages

Z = without heater

### Control concept

C1 = Comfort, control panel language de/en/fr/es/pt/it/nl/da/fi/sv

C2 = Comfort, control panel language de/en/bg/hu/ru/pl/zh  
(other languages on request)

### Measuring equipment

A = AquaSensor

AC1 = AquaSensor + ContaminationSensor ISO4406:1999

AC2 = AquaSensor + ContaminationSensor SAE AS 4059(D)

AC3 = AquaSensor + ContaminationSensor NAS 1638

### Modification number

00 = the latest version is always supplied

### Supplementary details

No details = standard

V = FKM seals for **operating fluid** "M" and "I" (if non-standard seal required for the particular **operating fluid**)  
(see Model Code under "Operating fluid") Example : FAM-25-M....-V

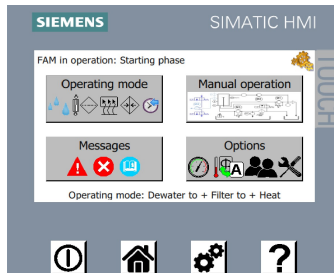
<sup>1)</sup> Supplied without plug

\* Residues of test fluid will remain in the unit after testing.

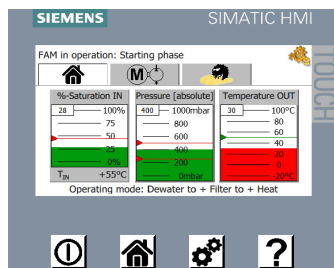
\*\* Units not suitable for "Online" and "Onload" operation (transformer in operation and connected to grid).

## Control concept

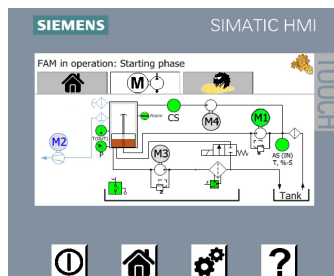
- Siemens S7-1200 with 4" KTP400 TFT colour display with touch and key operation



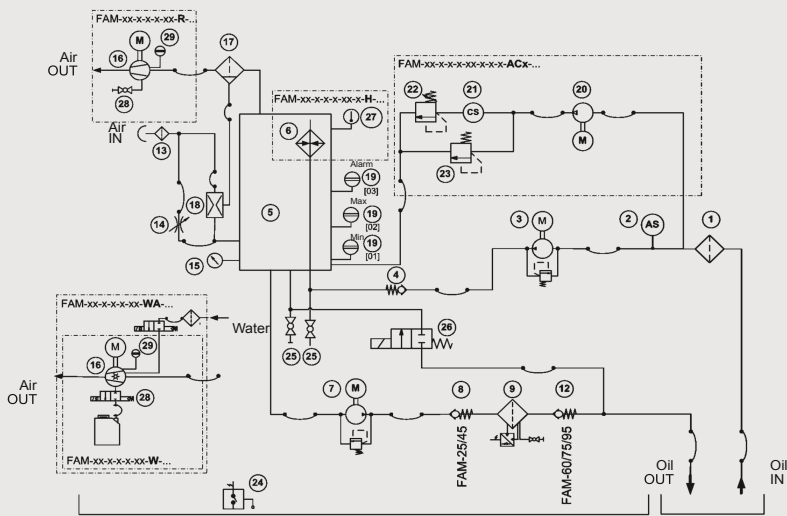
- Display of water content (% saturation), fluid temperature and optional particle contamination in numerical and graphic form with graphical progress display of measured values



- Automatic, state-based and energy-saving operation through control of the unit via integrated or external AquaSensor or integrated ContaminationSensor
- Display of hydraulic circuit diagram for active or defective components, such as motors/pumps, level sensors and heaters



Hydraulic circuit diagram



- 1 Suction filter
- 2 AquaSensor AS 1000
- 3 Filling pump
- 4 Non-return valve
- 5 Vacuum column
- 6 Heater (optional)
- 7 Evacuation pump
- 8 Check valve (FAM-25/45 only)
- 9 Fluid filter for separating solid particles
- 10 Differential pressure switch for monitoring the filter
- 11 Drain for fluid filter
- 12 Check valve (FAM-60/75/95 only)
- 13 Air filter and dryer
- 14 Needle valve for vacuum setting
- 15 Pressure sensor for measuring the pre-set vacuum
- 16 Vacuum pump
- 17 Oil mist separator
- 18 Vacuum suction nozzle for the oil mist separator
- 19 Level sensor for vacuum column
- 20 Pump for ContaminationSensor CS1000 (optional)
- 21 ContaminationSensor CS1000 (optional)
- 22 Pressure relief valve for CS1000 (optional)
- 23 Pressure relief valve for CS1000 (optional)
- 24 Leakage indicator for oil drip tray
- 25 Drain for vacuum column
- 26 Return valve
- 27 Temperature sensor (for the heater 6 option)
- 28 Drain for vacuum pump
- 29 Level sensor for vacuum pump

Sizing

As a rough guide, the FluidAqua Mobil can be sized according to the tank volume of the system.

Tank volume in litres	FAM
< 2,000	FAM 5*
1,000 – 7,000	FAM 10/15** / 10**
7,000 – 15,000	FAM 25 / FAM 45E***
15,000 – 25,000	FAM 45
25,000 – 35,000	FAM 60
35,000 – 45,000	FAM 75 / FAM 75E***
> 45,000	FAM 95

\* see Brochure no. 7.639 FAM 5  
\*\* see Brochure no. 7.949 FAM 10  
\*\*\* see Brochure no. 7.654 FAM Economy

- Select a larger size for systems with very high and continuous process-related water entry.
- In contrast, for systems with just a small amount of moisture entry via tank breathing, one size smaller can be selected.
- Ideally the water content will be measured periodically to determine the water entry per hour/day. Our sales specialists can then determine the suitable size if they know the oil type, oil temperature, operating viscosity, system dimensions, environmental conditions and target water content.

In general, it must however be noted that sizing will depend on the application, the fluid, the temperature of the fluid and the ambient temperature, the fluid quantity and the water ingress into the system. These factors have a major influence on the dewatering performance. The information can thus only serve as a general reference.

		Dewatering rate
Water content	↑	↑
Fluid temperature	↑	↑
Detergent additives	↑	↓
Flow rate of the FAM	↑	↑

For dimensioning and project planning, please use the FAM checklist, doc. no.: 10000495854

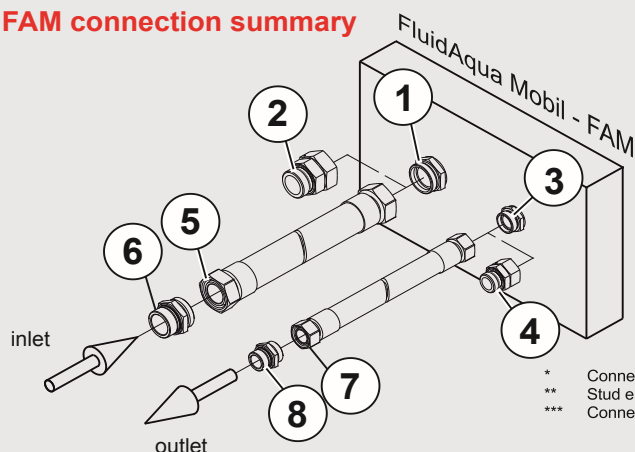
## Available voltages and required external fuse

Applicable only when automatic fuses with trip characteristics type C are used.

FAM size	FAM 25	FAM 25 with heater	FAM 45	FAM 45 with heater	FAM 60	FAM 60 with heater	FAM 75	FAM 75 with heater	FAM 95	FAM 95 with heater
Voltages										
A = 400 V, 50 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A
B = 415 V, 50 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A
C = 200 V, 50 Hz, 3 Ph	32 A	63 A	63 A		63 A		63 A		63 A	
D = 200 V, 60 Hz, 3 Ph	32 A	63 A	63 A		63 A		63 A		63 A	
E = 220 V, 60 Hz, 3 Ph	32 A	63 A	32 A	63 A	63 A		63 A		63 A	
F = 230 V, 60 Hz, 3 Ph	32 A	63 A	32 A	63 A	63 A		63 A		63 A	
G = 380 V, 60 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A
H = 440 V, 60 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A
I = 500 V, 50 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A
K = 480 V, 60 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A
L = 220 V, 50 Hz, 3 Ph	32 A	63 A	32 A	63 A	63 A		63 A		63 A	
N = 575 V, 60 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A
O = 460 V, 60 Hz, 3 Ph	16 A	32 A	16 A	32 A	32 A	63 A	32 A	63 A	32 A	63 A

Special version, only on request.

## FAM connection summary



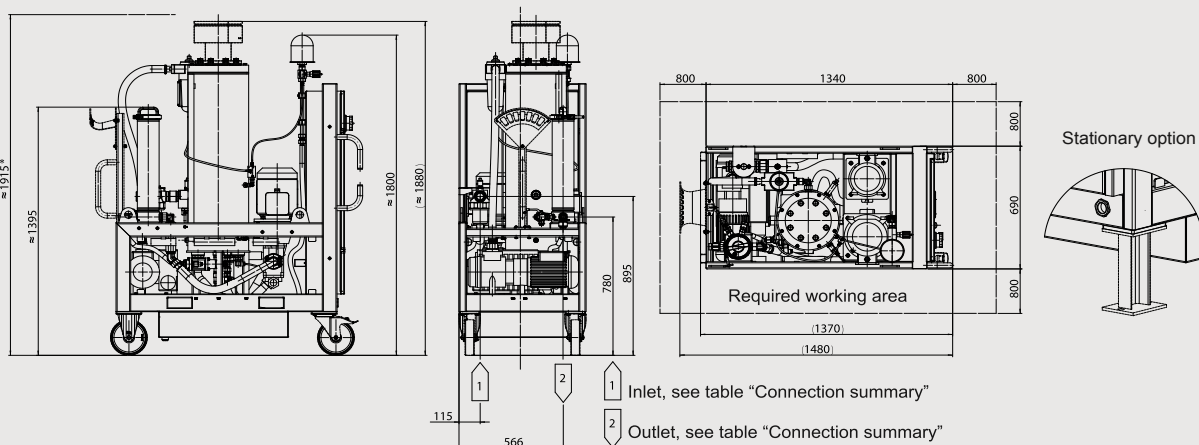
\* Connection Form D to ISO 8434-1 Series L (corresponds to ISO 12151, Form S, Series L)  
\*\* Stud end to ISO 1179-2 (Form E)  
\*\*\* Connection Form N to ISO 8434-4 Series L (corresponds to ISO 12151, Form SWS, Series L)

Items 1 to 4 are supplied with the stationary FAM.  
Items 5 to 8 are supplied with the mobile FAM, in addition to the connection hoses.

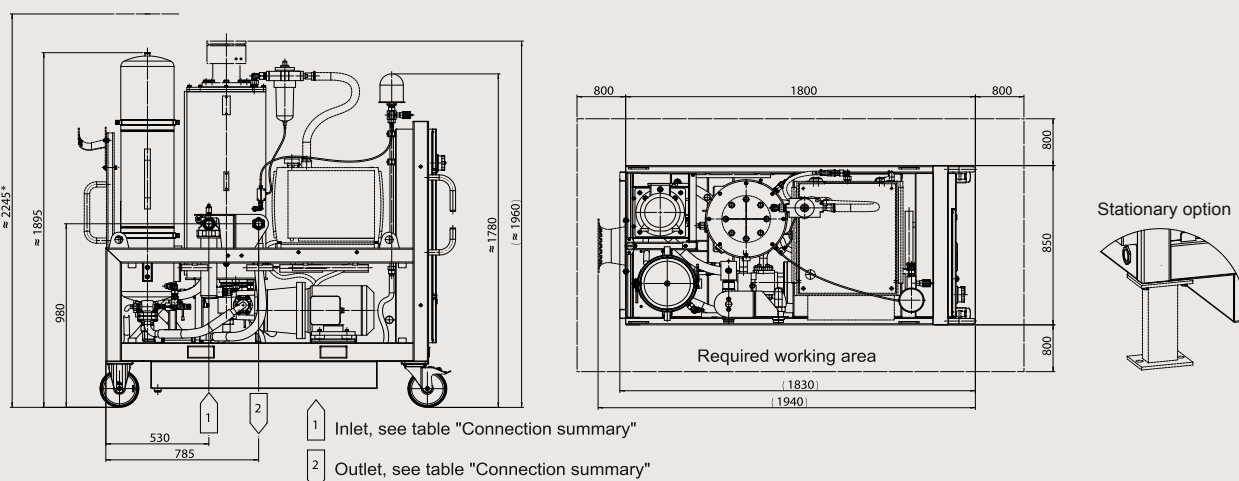
Item	FAM 25	FAM 45	FAM 60	FAM 75	FAM 95
1 - FAM inlet connector	42L / M52x2 (male thread)*	42L / M52x2 (male thread)*	42L / M52x2 (male thread)*	42L / M52x2 (male thread)*	42L / M52x2 (male thread)*
2 - Adapter	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**
3 - FAM outlet connector	28L / M36x2 (male thread)*	28L / M36x2 (male thread)*	42L / M52x2 (male thread)*	42L / M52x2 (male thread)*	42L / M52x2 (male thread)*
4 - Adapter	Adapter G1 A (male thread)**	Adapter G1 A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**
5 - Suction hose connection	42L / M52x2 (female thread)***	42L / M52x2 (female thread)***	42L / M52x2 (female thread)***	42L / M52x2 (female thread)***	42L / M52x2 (female thread)***
6 - Adapter	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**
7 - Pressure hose connection	28L / M36x2 (female thread)***	28L / M36x2 (female thread)***	42L / M52x2 (female thread)***	42L / M52x2 (female thread)***	42L / M52x2 (female thread)***
8 - Adapter	Adapter G1 A (male thread)**	Adapter G1 A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**	Adapter G1½ A (male thread)**

## Measurements

### FAM-25/45



### FAM-60/75/95





## Items supplied

- FluidAqua Mobil, ready for connection (without cover panel package, see Accessories)
- With suction and return hose on mobile version
- Vacuum pump oil (1 litre) for initial filling of rotary vane vacuum pump (for FAM-x-x-x-x-R- ... only)
- Key, square 6 mm (for switch cabinet and cover panel)
- Connection adapter (see FAM connection summary)
- Technical documentation consisting of:
  - Operating and Maintenance Manual
  - Electrical circuit diagram
  - Test certificate
  - CE conformity declaration

## Filter elements for suction filter

The suction filter is supplied fitted with a filter element.

### FAM 25/45

One filter element of the type 0160 D 200 W/HC is required.

Part number	Description	Filtration rating	Seal
1250304	0160 D 200 W/HC	200µm	NBR
1265447	0160 D 200 W/HC/-V	200µm	FKM

### FAM 60/75/95

One filter element of the type 0280 D 200 W/HC is required.

Part number	Description	Filtration rating	Seal
1269748	0280 D 200 W/HC	200µm	NBR
1271978	0280 D 200 W/HC/-V	200µm	FKM

## Filter elements for fine filter

Filter elements for the fine filter must be ordered separately and must be fitted before commissioning on site.

### FAM 25/45

OLF 10: 1 filter element of the type N10DMxxx is required.

Part number	Description	Filtration rating	Seal
3539235	N10DM002	2 µm	FKM
3539237	N10DM005	5 µm	FKM
3539238	N10DM010	10 µm	FKM
3539242	N10DM020	20 µm	FKM

### FAM 60/75/95

OFU 2600: 1 filter element of the type 2600RxxxBN4HC/-KB (-V-KB) is required.

Part number	Description	Filtration rating	Seal
1263071 (1263784)	2600R003BN4HC/-KB (-V-KB)	3 µm	NBR (FKM)
1263072 (1263785)	2600R005BN4HC/-KB (-V-KB)	5 µm	NBR (FKM)
1263073 (1263786)	2600R010BN4HC/-KB (-V-KB)	10 µm	NBR (FKM)
1263074 (1263787)	2600R020BN4HC/-KB (-V-KB)	20 µm	NBR (FKM)

MRF 3/11/40: 11 filter elements of the type N40MRxxx-PES1F are required.

Part number	Designation	Filtration rating	Seal
3509897	N40FM-P001-PES1F	1 µm	FKM
3536452	N40FM-P003-PES1F	3 µm	FKM
3506155	N40FM-P005-PES1F	5 µm	FKM
3506053	N40FM-P010-PES1F	10 µm	FKM
3491730	N40FM-P020-PES1F	20 µm	FKM

## Accessories

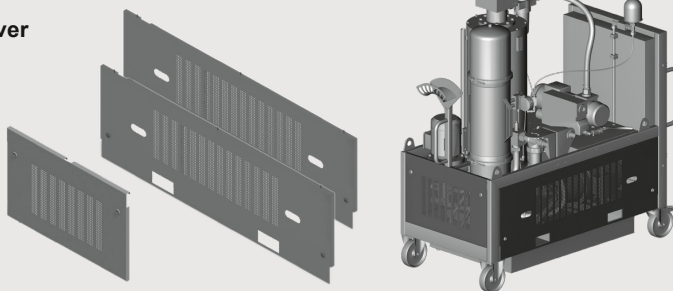
– Cover panel package: 2 x side sections, 1 x rear cover

### FAM-25/45

<b>Part number</b>	<b>Description</b>
3334212	Cover panel FAM 25/45

### FAM-60/75/95

<b>Part number</b>	<b>Description</b>
3334177	Cover panel FAM 60/75/95



– Retrofit kit Ethernet connection for web server

For FAM with SIEMENS S7-1200 controller, PLC program version V1.56 and higher.

**Part number 4355412**

## Note

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

EN 7.613.5/03.19