

## HYDAC INTERNATIONAL



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

#### Description

The FluidAqua Mobil FAM 25/45/60/75/95 series operates on the principle of vacuum dewatering to eliminate free and dissolved water as well as free and dissolved gases from hydraulic and lubrication fluids. Since it uses HYDAC offline filter element technology with its high contamination retention capacity and filtration efficiency, the unit is extremely economical. All units have an AquaSensor AS1000 for continuous monitoring of the water content and for controlling the unit. A particle sensor CS1000 can also be supplied as an option for simultaneous monitoring of solid particle contamination. To increase the dewatering capacity, for high viscosity fluids or for low fluid temperatures, an integrated heater is provided. The Siemens S7 series of programmable logic control (PLC) in combination with a Siemens control panel guarantees simple and reliable operation in many 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 LifeCycle Cost (LCC)

#### Technical specifications

FAM	25	45	60	75	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 (outlet)	≈ 1.5 ... 4.5 bar				
Permitted pressure at suction port (without suction hose)	-0.2 ... +1 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 ... 40°C				
Relative humidity (ambient) **	Max. 90%, non-condensing				
Electrical power consumption *					
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
Dimensions (L x W x H (with heater))	1375 x 690 x 1700 (1877)	1375 x 690 x 1700 (1877)	1800 x 850 x 1895 (1960)	1800 x 850 x 1895 (1960)	1800 x 850 x 1895 (1960)
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).

E7.613.4/03.16

## Model code

**FAM - 75 - M - 2 - A - 40 - R - H - B - 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 Ph1)
C = 200 V, 50 Hz, 3 Ph1)	H = 440 V, 60 Hz, 3 Ph1)	O = 460 V, 60 Hz, 3 Ph1)
D = 200 V, 60 Hz, 3 Ph1)	I = 500 V, 50 Hz, 3 Ph	X = other voltages on request
E = 220 V, 60 Hz, 3 Ph	K = 480 V, 60 Hz, 3 Ph1)	

### 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 design

B = Basic, operator panel language in German/English/French/Spanish/Portuguese  
B1 = Basic, operator panel language in German/English/Finnish/Swedish/Bulgarian  
B2 = Basic, operator panel language in German/English/Russian/Polish/Hungarian  
B3 = Basic, operator panel language in German/English/Italian/Dutch/Danish  
(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 medium "M" and "I" (if non-standard seal required for the particular operating medium) (see Model Code under "Operating medium") : Example: FAM-25-M....-V)

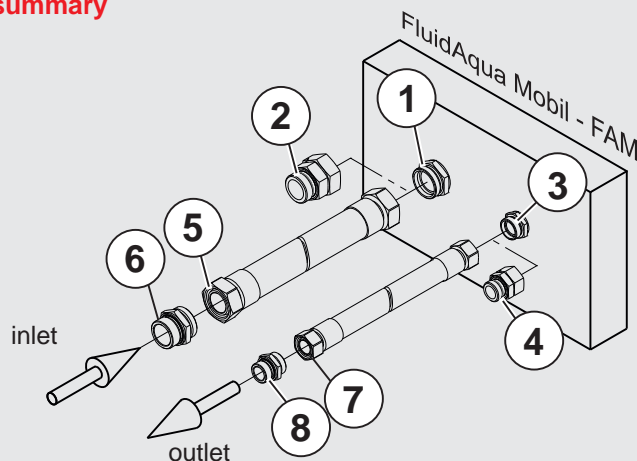
<sup>1)</sup> Supplied without plug

\* 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).

**Preferred models with a shorter delivery time can be found in the brochure "HFS Preferred Models 7.960"**

## FAM connection summary



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)*	28L / M52x2 (male thread)*	28L / M52x2 (male thread)*	28L / 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)**

\*) Connection Form D to ISO 8434-1 Series L (corresponds to ISO 12151, Form S, Series L)

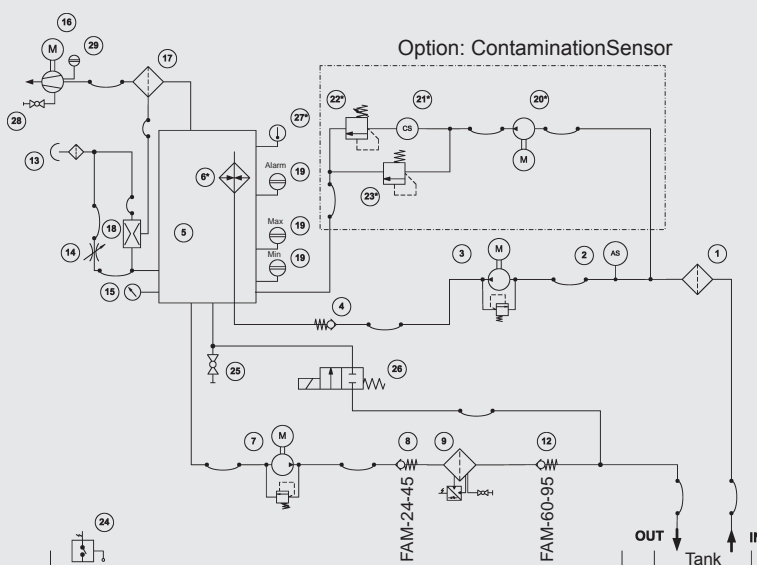
\*\*) Screw-in spigot to ISO 1179-2 (Form E)

\*\*\*) Connection Form N to ISO 8434-4 Series L (corresponds to ISO 12151, Form SWS, Series L)

Items 1 ... 4 are supplied with the stationary FAM.

Items 1 ... 8 are supplied with the mobile FAM, in addition to the hoses.

## Hydraulic circuit diagram



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

## Type of vacuum pump

The vacuum pump used for sizes FAM 25/45 is an oil-lubricated rotary vane vacuum pump.

For FAM 45/60/95 we recommend the reliable water ring vacuum pump, which only requires mains water as the operating medium, instead of a special vacuum pump oil.

Since the vacuum produced is 100% oil-free, this pump has many advantages: a high level of operating reliability, excellent compatibility with water

vapour and condensate, low operating costs and cool, clean and, above all, odourless discharged air. In addition some of the water removed from the oil is recovered within the water ring vacuum pump and returned to the service water circuit of the pump. Depending on the operating conditions, the water ring vacuum pump is therefore completely self-sufficient in water.

## 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

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 have a great effect on the dewatering efficiency. Therefore the specifications can only serve as an indication.

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

## Heater option

By using the built-in heater, the dewatering capacity can be increased, particularly in the case of high viscosity fluids or fluids at low temperatures.

If the temperature of the fluid is raised by 10 °C then the dewatering capacity increases by up to 50 %. The ideal temperature for dewatering is ≈ 50 ... 60 °C.

Generally speaking, for operating viscosities of between 350 ... 550 mm<sup>2</sup>/sec the heater option must be selected and the heater must be in operation.

## Available voltages and required external fuse

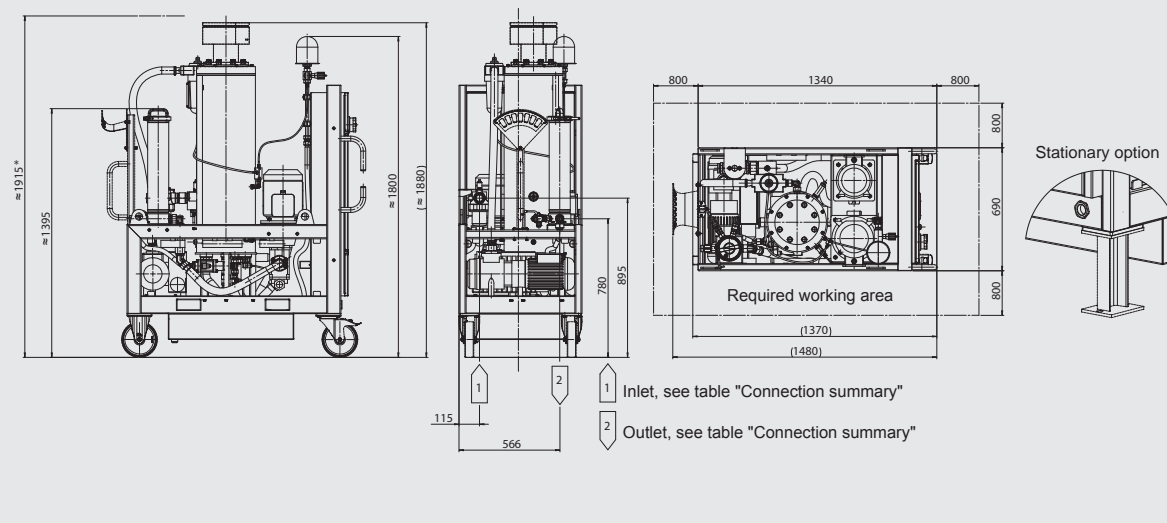
Applicable only when automatic fuses with trip characteristics type C are used.

FAM size \ Voltages	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
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	Special version, only on request.	63 A	Special version, only on request.	63 A	Special version, only on request.	63 A	Special version, only on request.
D = 200 V, 60 Hz, 3 Ph	32 A	63 A	63 A	Special version, only on request.	63 A	Special version, only on request.	63 A	Special version, only on request.	63 A	Special version, only on request.
E = 220 V, 60 Hz, 3 Ph	32 A	63 A	32 A	63 A	63 A	Special version, only on request.	63 A	Special version, only on request.	63 A	Special version, only on request.
F = 230 V, 60 Hz, 3 Ph	32 A	63 A	32 A	63 A	63 A	Special version, only on request.	63 A	Special version, only on request.	63 A	Special version, only on request.
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	Special version, only on request.	63 A	Special version, only on request.	63 A	Special version, only on request.
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.

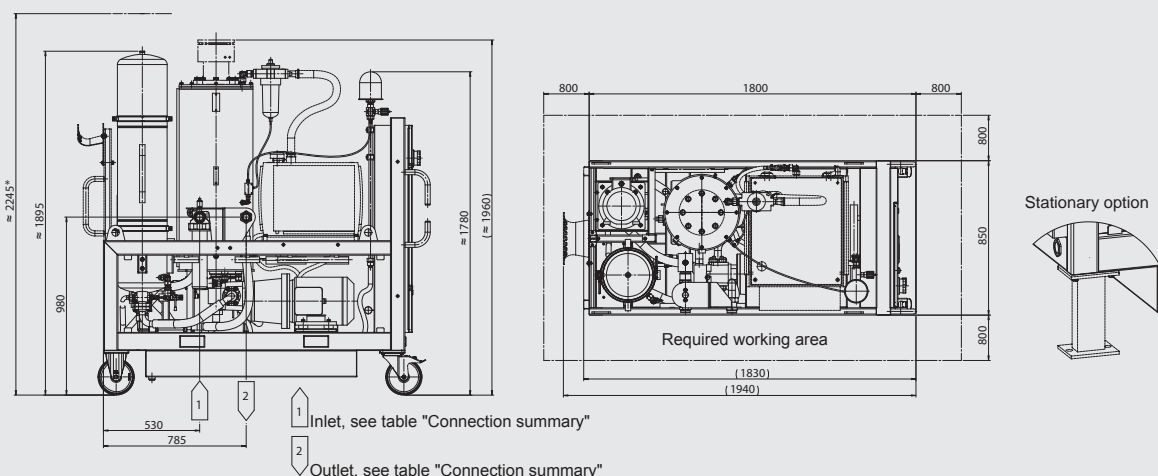
## Measurements

### FAM-25/45



## Measurements

### FAM-60/75/95



## Filter elements for suction filter

The suction filter is supplied fitted with a filter element.

### FAM-25/45

1 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

1 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	Description	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

## Items supplied

- FluidAqua Mobil, ready-for-connection (without cover panel package, see Accessories).
- Suction and pressure hoses supplied with 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)
- Technical documentation consisting of:
  - Operating and Maintenance Manual
  - Electrical circuit diagram
  - Test certificate
  - CE conformity declaration

## Accessories

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

### FAM-25/45

Part number	Description
3334212	Cover panel FAM 25/45

### FAM-60/75/95

Part number	Description
3334177	Cover panel FAM 60/75/95

