

Safety and polishing filtration of cold pressed vegetable oil

1. Introduction

Cold pressed vegetable oil is normally treated with three filtration steps after each other. Oil for fuel applications has to reach the required quality, according to the pre-standard DIN V 51605 for rape seed oil as fuel.

Why safety and polishing filtration?

The three step amafiltergroup filtration system can reach the required fuel oil quality of less than 24 mg solids / kg oil without problems. The same three step filtration system is also used for oil for food purposes. amafiltergroup can supply the individual components as well as the complete filtration system. Skid mounted units are available in varying sizes for complete systems, and also for main and safety / polishing filtration steps. The filtration units can be supplied either manually operated or fully automated. For installation and commissioning amafiltergroup can offer a complete service. More than 200 amafiltergroup filtration systems for cold pressed vegetable oil are successfully in operation since years. Main filtration with an amafiltergroup pressure leaf filter removes the solids from the oil. Safety filtration with an amafiltergroup bag filter removes possible break-through particles. Polishing filtration with an amafiltergroup cartridge filter removes very fine solids according to the requirements.

Safety filtration with bag filter

The bag filter for safety filtration is placed after the main filter. The filtration velocity depends on viscosity (temperature) and type and amount of solids (possible break-through particles).

Polishing filtration with cartridge filter

Polishing filtration with a cartridge filter is done after the bag filter. Here very fine particles are removed to reach the required final product quality. The cartridge filter consists of a multiple cartridge filter housing and filter cartridges from wound cotton.



2. Filter bags and bag filter housings

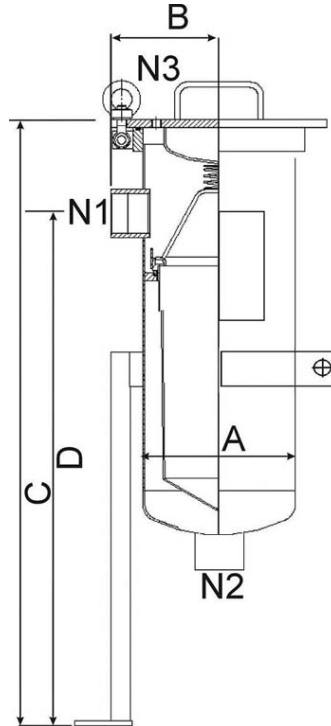
For safety filtration of cold pressed vegetable oil a filter bag inside a bag filter housing is used. The AFE-180 is the standard housing for this application. For fuel applications an MAHLE Industrial Filtration polyester filter bag with 1 µm has to be used. For oil for food consumption the same filter bags are used as standard.

Features

- Easy to use, good interior sealing and accessibility.
- Material of construction: 1.4571 (316Ti). Pickled and passivated.
- Cover closing with hinged eye bolts and eye nuts (galvanised steel).
- Flat cover with handle. O#ring sealing: Buna-N.
- Strong stainless metal mesh support basket for low flow resistance and maximum utilisation of entire surface area.
- Slightly conical support basket for easy filter bag removal.
- Liquid displacement cover: no liquid runs over the side when opening the filter.
- Perfect sealing between unfiltered liquid and filtered liquid is achieved by a spring-loaded hold-down device onto the filter bag and support basket. The filter bag seals with a felt-covered Snap-Collar ring or plastic seal which tightly fits into the support basket.
- Height#adjustable legs.
- Available from stock.

Specifications

Design pressure	: -1/6 bar(g)
Design temperature	: 0/120 °C
Operating temperature	: depending on the filter media and gaskets used
PED 97/23/EC cat.	: article 3 paragraph 3
Maximum differential pressure	
- design	: 4.0 bar
- operating	: 2.5 bar



Model	Dimensions						Nozzle specifications		
	Ø A [mm]	Standout B [mm]	Height C [mm]	Nozzle height D [mm]	Volume [dm³]	Weight [kg]	Inlet N1	Outlet N2	Vent N3
AFE-90-T-2	219	156	max. 1020	max. 585	19	21	Rp 2	Rp 2	Rp 1/4
AFE-180-T-2	219	156	max. 1370	max. 1245	34	33	Rp 2	Rp 2	Rp 1/4

3. Filter cartridges and cartridge filter housings

Polishing filtration of the cold pressed oil is achieved with filter cartridges inside the cartridge filter housing. The filter cartridges remove very fine particles to meet the specifications for solids content in the oil. Special MAHLE Industrial Filtration filter cartridges from wound cotton (bleached white) with 10", 20", 30" or 40" length and stainless steel core are used. In oil for fuel applications 1 µm filter cartridges have to be used to reach the required quality. In oil for food consumption applications the same 1 µm filter cartridges are used as standard.

Cartridge filter housings

The amafiltergroup AFM and AFK cartridge filter housings are used for polishing filtration of cold pressed vegetable oil.

The filter cartridges are mounted into the cartridge filter housings. Depending on required capacity the cartridge filter housing is selected.

The following housings are available:

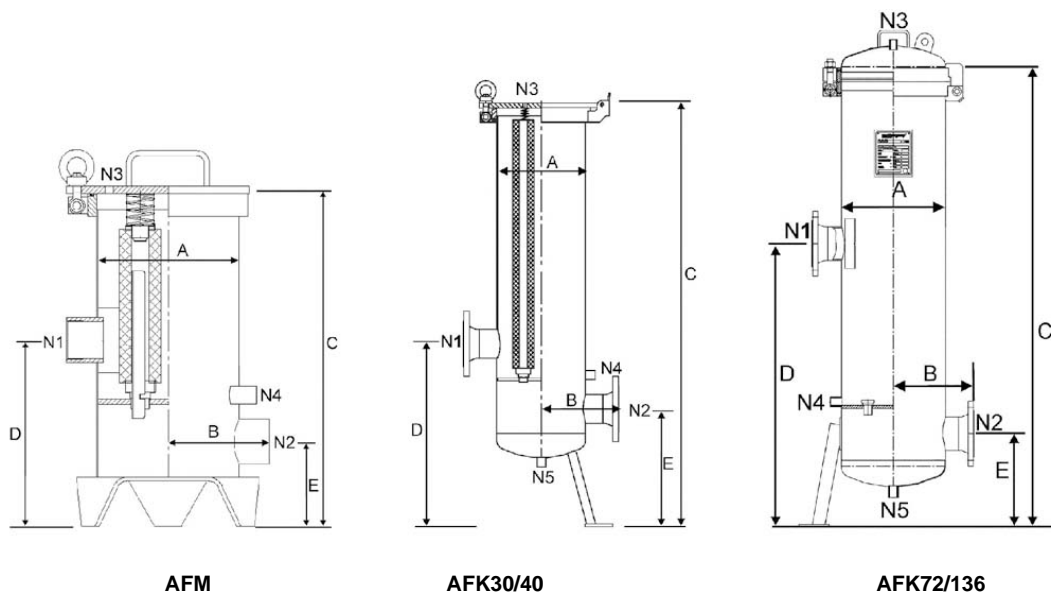
- AFM6-1T-2 - 6 x 10" cartridges
- AFM12-2T-2 - 6 x 20" cartridges
- AFM18-3T-2 - 6 x 30" cartridges
- AFM24-4T-2 - 6 x 40" cartridges
- AFK30-3T-3F - 10 x 30" cartridges
- AFK40-4T-3F - 10 x 40" cartridges
- AFK72-4T-4F - 18 x 40" cartridges
- AFK136-4T-6F - 34 x 40" cartridges

Features

- Easy to use, good interior sealing and accessibility.
- Material of construction: 1.4571 (316Ti). Pickled and passivated.
- Cover closing
 - AFM: Flat cover with handle and hinged eye bolts and eye nuts (galvanised steel).
 - AFK30/40: Flat hinged cover with handle and hinged eye bolts and eye nuts (stainless steel).
 - AFK72: Hinged cover with hinged eye bolts and hexagon nuts (stainless steel).
 - AFK136: Cover with davit and hinged eye bolts and eye nuts (stainless steel).
- O-ring sealing: Buna-N.
- Delivery from stock or at short notice.

Specifications

Type	AFM6/12/18/24	AFK30/40	AFK72/136
Design pressure	10 bar (g)	10 bar (g)	12 bar (g)
Design temperature	0 / 90 °C	-10 / 150 °C	-10 / 150 °C
PED 97/23/EC	article 3, par. 3	category III	category III / IV
Maximum differential pressure			
- design	2.5 bar	2.5 bar	2.5 bar
- operating	2.5 bar	2.5 bar	2.5 bar



Model	Dimensions							Nozzle specification (N3, N4 and N5 are plugged)				
	Ø A [mm]	Standout B [mm]	Height C [mm]	Nozzle height D [mm]	Nozzle height E [mm]	Volume [dm ³]	Weight [kg]	Inlet N1	Outlet N2	Vent N2	Drain (dirt) N4	Drain (clean) N5
AFM6	219	156	506	199	280	17	20	Rp 2	Rp 2	Rp ¼	Rp ½	-
AFM12	219	156	765	199	280	26	23	Rp 2	Rp 2	Rp ¼	Rp ½	-
AFM18	219	156	1020	199	280	36	26	Rp 2	Rp 2	Rp ¼	Rp ½	-
AFM24	219	156	1295	199	280	45	29	Rp 2	Rp 2	Rp ¼	Rp ½	-
AFK30	273	240	1285	560	360	60	29	DN80 PN16	DN80 PN16	Rp ¼	Rp ½	Rp ½
AFK40	273	240	1560	560	360	75	65	DN80 PN16	DN80 PN16	Rp ¼	Rp ½	Rp ½
AFK72	356	275	1510	960	315	128	180	DN100 PN16	DN100 PN16	Rp ½	Rp ¾	Rp ¾
AFK136	508	380	1630	1080	405	302	290	DN150 PN16	DN150 PN16	Rp ½	Rp ¾	Rp ¾

Height required for changing cartridges is height C plus cartridge length. Dimensions are for reference only. Use dimensional drawing for installation purposes. Subject to technical alteration without prior notice.