

Function:

The Oventrop heating oil filters "Oilpur" retain impurities in the heating oil and allow for a safe operation of the oil pump and the burner nozzle at the oil consumer.

If required, the oil supply is shut off with the help of a quick-acting isolating valve.

The filters are produced for one and two pipe systems:

Type 2120, "Oilpur Z A" Two pipe filter with isolation

Type 2122, "Oilpur E A R" One pipe filter with isolation and return flow feed

Type 2123, "Oilpur E A" One pipe filter with isolation

Type 2124, "Oilpur E" One pipe filter without isolation

Model:

Filter head made of brass, filter cup made of transparent plastic for suction systems, alternatively with metal cup (PN16) for pressurised systems.

Sealing between filter head and filter cup with O-ring.

The Oventrop heating oil filters "Oilpur" can be equipped with filter inserts made of different materials, such as sintered plastic (Siku), felt, stainless steel, sintered bronze (Sika 0), paper "opticlean" and the filter cartridge (PN 10).

All filters sized G $\frac{3}{8}$ are suitable for use with compression fittings 6, 8, 10 and 12 mm (compression nut and compression ring made of brass) on the tank side. The compression fittings are to be ordered separately.

Advantages:

- The bracket allows for a universal installation of the Oventrop heating oil filters "Oilpur". As a result, the complete pipework is fixed securely.
- The filters with a G $\frac{3}{8}$ female thread on the tank side and can be connected universally. This size is also available with male thread on the burner side for the direct connection of the burner hoses.
- Different filter inserts are available. By choosing the suitable filter insert, the filters can be adapted to any requirement.
- Two pipe filter: The non-return check valve on the return side prevents the oil from escaping from the return pipe, for instance when replacing the burner hoses.
- One pipe filter with return flow feed: To avoid air pockets in front of the filter insert, a part of the returned heating oil is filtered again. This quantity adjusts automatically. In suction systems, the burner is switched off in case of a broken burner hose. The isolating valve is easy to use.



"Oilpur"

Technical data:

Connections

Tank side: G $\frac{1}{4}$, G $\frac{3}{8}$ or G $\frac{1}{2}$ female thread.
Size G $\frac{3}{8}$ can be used with brass compression fittings 6, 8, 10 and 12 mm.

Burner side: G $\frac{1}{4}$, G $\frac{3}{8}$ or G $\frac{1}{2}$ female thread, as well as G $\frac{3}{8}$ male thread with taper for burner hoses

Medium: EL type of heating oil according to DIN 51603-1, heating oil with a FAME proportion up to 20% according to DIN EN 14214 and diesel according to DIN EN 590

Installation position: Vertical, filter cup pointing downwards

Operating temperature: -10°C up to +60°C,
with metal cup up to +85°C,
0°C up to 40°C recommended, see DIN 4755 and "Choice of the filter insert"

Operating pressure:

- Transparent filter cups:
Only for suction systems
Oil filters with these filter cups may be used above and below (up to 11 m) the oil level, permissible test pressure up to 6 bar.

- Filter cartridge: 10 bar
- Metal filter cup: 16 bar

Max. suction pressure: -0.5 bar,
max. of 0.4 bar recommended, see DIN 4755

TÜV tested: TÜV Rhineland, no.: S 209 2015 T4

DIN tested: Reg.-No.: 2 Y 118

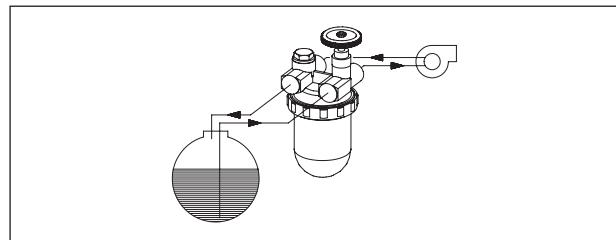
Types of installations:

As the output of the burner pump is higher than the nozzle capacity, the excess has to be expelled. 3 types of installation are possible.

Two pipe system:

Supply and return pipe to the tank; the oil flow in the supply pipe corresponds to the burner pump output.

Note: The two pipe system is no longer used for new heating systems in Germany.



"Oilpur Z A" Two pipe filter with isolation, type 2120:

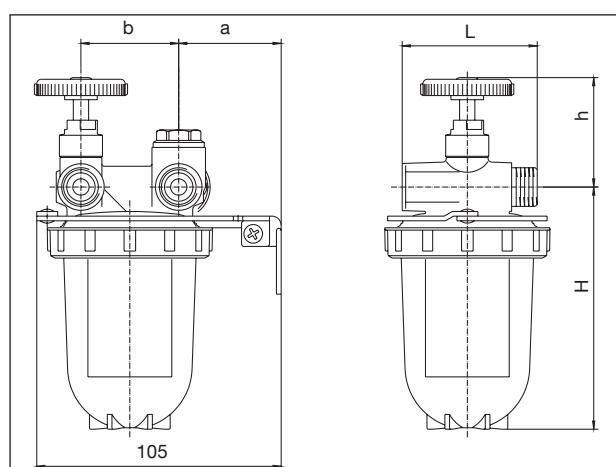
A non-return check valve is integrated in the return pipe. It prevents the oil from escaping from the return pipe, for instance when replacing the burner hoses.

There is no connection between the supply and return pipe.

Size:	G 3/8	G 3/8	G 1/2
Tank/burner side	F*/M**	F*/F	F/F
Siku	2120561	2120261	
Siku-Magnum	2120803		
Felt	2120503		
Sika 0		2120003	
Stainless steel	2120403	2120103	2120104

* for Oventrop brass compression fittings 6, 8, 10 and 12 mm

** with inner taper for the direct connection of burner hoses



Dimensions two pipe filters:

Size	H*	h	b	a	L	LM
G 3/8	105	48	42	44	56.5	58.5
G 1/2	105	64	46	42	62	

* with Magnum filter cup H = 150, with filter cartridge H = 108.

Flow rates in l/h (EL type of heating oil), two pipe filters (supply):

Δp [bar]	0.05	0.1*	0.2	0.3	0.4
G 3/8 Siku	114	160	225	275	320
Felt	106	150	210	260	300
Sika 0	117	165	235	285	330
Stainless steel	127	180	225	310	360
Cartridge	110	155	220	270	310
G 1/2 Siku	335	475	670	825	950
Niro	385	545	770	945	1090

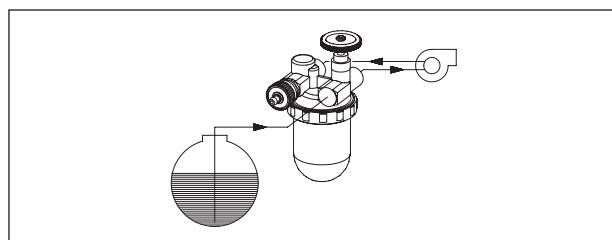
*permissible pressure loss according to EN 12514-2 with the filter insert 50% contaminated

One pipe system with return flow feed:

There is only one pipe from the tank to the filter. The oil flow corresponds to the nozzle capacity (heat output in kW : 10 corresponds to the nozzle capacity in l/h). The burner pump is connected to the supply and return.

Alternatively, heating oil filter/heating oil deaerator combinations, "Toc-Duo-3", type 21427 or one pipe heating oil filters "Oilpur E A" with heating oil deaerators "Toc-Uno", type 21429 can be used in one pipe systems with return flow feed.

In general, burner pumps need a supply and a return connection and this is why the one pipe system with return flow feed is usually installed in new installations.



"Oilpur E A R" One pipe filter with return flow feed, type 2122:

To facilitate initial operation, for instance after replacement of the filter, the filter is equipped with a manual airvent. During burner operation, an excess pressure is built up in the return pipe (with 50 to 300 l/h, the excess pressure is between 0.6 and 1.2 bar). Any possible inlet pressure must be added. This value must not exceed the permissible pump pressure. To avoid air pockets in front of the filter insert, a part of the returned heating oil is filtered again. This quantity adjusts automatically.

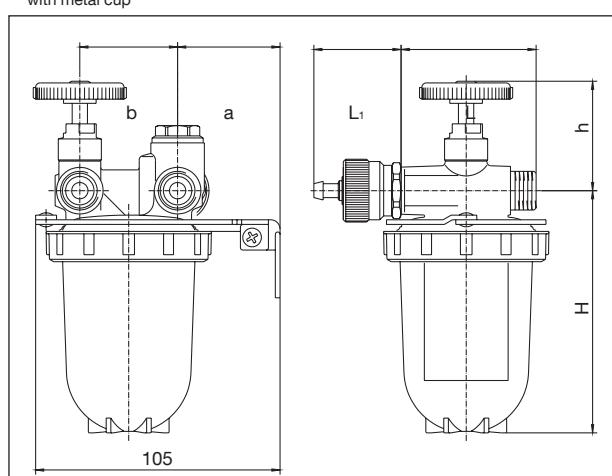
In suction systems, the burner is switched off in case of a broken burner hose.

Size:	G 3/8	G 3/8	G 1/2
Tank/burner side	F*/M**	F*/F	F/F
Siku	2122561	2122261	2122262
Siku-Magnum fine	2121871		
Felt	2122503		
Stainless steel	2122403	2122103	
"opticlean"	2152554 ***		

* for Oventrop brass compression fittings 6, 8, 10 and 12 mm

** with inner taper for the direct connection of burner hoses

*** with metal cup



Dimensions one pipe filters with return flow feed:

Size	H*	h	b	a	L	LM	L1
G 3/8	105	48	42	44	56.5	58.5	38
G 1/2	105	64	46	42	62		38

* with Magnum filter cup H = 150, with filter cartridge H = 108

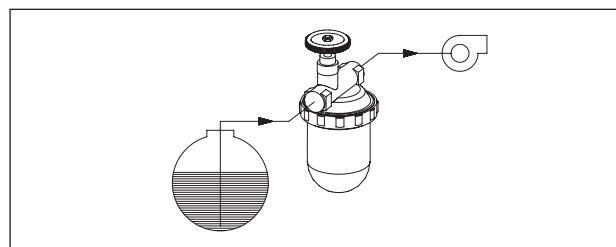
**Flow rates in l/h (EL type of heating oil),
one pipe filters with return flow feed (supply):**

Δp [bar]	0.05	0.1*	0.2	0.3	0.4
G 3/8 Siku	114	160	225	275	320
Felt	106	150	210	260	300
Sika 0	117	165	235	285	330
Stainless steel	127	180	225	310	360
"opticlean"	100	140	200	245	285
Cartridge	110	155	220	270	310
G 1/2 Siku	335	475	670	825	950
Stainless steel	385	545	770	945	1090

*permissible pressure loss according to EN 12514-2 with the filter insert 50% contaminated

One pipe system:

There is only one pipe from the tank to the burner. The oil flow corresponds to the nozzle capacity (Heat output in kW: 10 corresponds to the nozzle capacity in l/h). The excess oil is fed into the supply inside the burner pump (not possible with each pump).



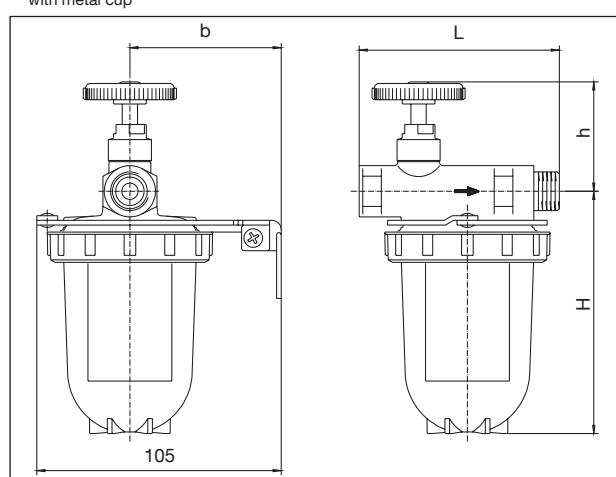
"Oilpur E A" One pipe filter with isolation, type 2123:

Size:	G 3/8	G 3/8	G 1/2
Tank/burner side	F/M**	F*/F	F/F
Siku	2123561	2123261	
Siku-Magnum fine	2123871		
Felt	2123503		
Stainless steel		2123103	2123104
"opticlean" ***		2153554	

* for Oventrop brass compression fittings 6, 8, 10 and 12 mm

** with inner taper for the direct connection of burner hoses

***with metal cup



Dimensions one pipe filters with isolation:

Size	H	h	a	L	L _M
G 3/8	105	48	65	75	86
G 1/2	105	64	65	80	

* with Magnum filter cup H = 150, with filter cartridge H = 108;

with "opticlean" long H = 194.

**Flow rates in l/h (EL type of heating oil),
one pipe filters with isolation:**

Δp [bar]	0.05	0.1*	0.2	0.3	0.4
G 3/8 Siku	145	205	290	355	410
Felt	135	190	270	330	380
Sika 0	149	210	295	365	420
Stainless steel	153	215	305	370	430
"opticlean"	124	175	257	310	360
Cartridge	142	200	280	346	400
G 1/2 Siku	335	500	705	865	1000
Stainless steel	385	620	875	1075	1240

*permissible pressure loss according to EN 12514-2 with the filter insert 50% contaminated

These filters are often combined with a heating oil deaerator and are used in one pipe systems with return flow feed.

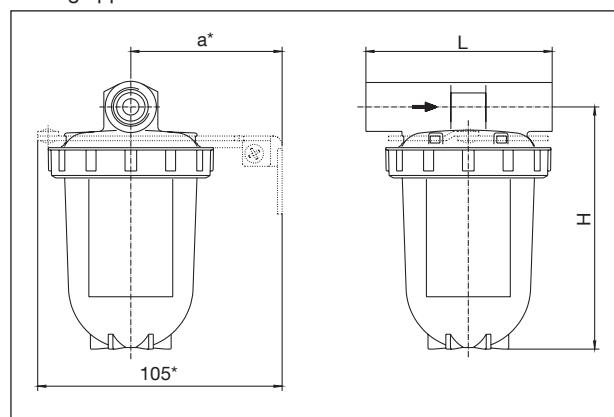
"Oilpur E" One pipe filter without isolation, type 2124:

Size:	G 1/4	G 3/8	G 1/2
Tank/burner side	F/F	F*/F	F/F
Siku	2124360	2124361	2124362
Stainless steel	2124203	2124204	

* for Oventrop brass compression fittings 6, 8, 10 and 12 mm

The one pipe filter without isolation is installed as protection filter in front of other components, such as oil meters.

Please observe that an isolating valve is prescribed in front of heating appliances.



Dimensions one pipe filters without isolation:

Size	H	h	a*	L	d
G 1/4	105	11	65	80	71
G 3/8	105	11	65	80	71
G 1/2	105	14	65	80	71

* Supplied without bracket

**Flow rates in l/h (EL type of heating oil),
one pipe filters without isolation:**

Δp [bar]	0.05*	0.1	0.2	0.3	0.4
G 1/4 Siku	315	445	630	770	890
G 3/8 Siku	380	540	765	935	1080
Stainless steel	245	600	850	1040	1200
G 1/2 Siku	620	875	1240	1515	1750
Stainless steel	720	1015	1435	1760	2030

*permissible pressure loss according to EN 12514-2 with the filter insert 50% contaminated

Installation advice:

The heating oil filter has to be installed at an appropriate location, for instance near the oil device. A bracket is supplied with the models with isolating valve.

Care must be taken that the ambient temperature does not exceed 60 °C, i.e. do not mount the heating oil filter near an un-insulated part of the boiler or the exhaust pipe or above flaps of the heating which can be opened.

In case of high temperatures, the plastic filter cup should be replaced with a metal filter cup.

In pressurised systems, for instance behind a feed unit/pump, the plastic filter cup also has to be replaced with a metal filter cup.

The filter cup is to be installed vertically with the filter cup pointing downwards.

It can be installed above or below the oil level.

For maintenance and monitoring, the Oventrop heating oil filter "Oilpur" is to be installed in a prominent position which is easily accessible.

The heating oil filters have female threads G 1/4, G 3/8 or G 1/2 which correspond to the DIN standard 3585. Screw-in fittings with a short R thread can also be sealed in.

All heating oil filters sized G 3/8 are suitable for use with Oventrop compression fittings on the tank side.

Oventrop brass compression fittings for 6, 8, 10 or 12 mm pipe, item no.: 212705_ (see "Accessories").

Size G 3/8 is also available with male thread on the burner side for the direct connection of the burner hoses.

Flooding:

The Oventrop heating oil filters "Oilpur" may also be installed in areas prone to flooding with the height of flooding not exceeding 5 m.

After a flooding, any dirt on the outside should be removed.

Frictional electricity:

In case of high velocities, frictional electricity may arise at the plastic components. At high flow rates, especially in larger installations working in two pipe operation, it is therefore recommended to use the brass filter cup or the filter cartridge instead of the plastic filter cup.

Note regarding liquid fuels:



The current heating oil filters (marking "A" on the body) are suitable for EL type of heating oil according to DIN 51603-1, heating oil with a FAME proportion up to 20% according to DIN EN 14214 and diesel according to DIN EN 590.

The O-rings of older heating oil filters (without marking "A" on the body) are only suitable for a bio proportion up to 5%.

When using a metal cup, the heating oil filters "Oilpur" are also suitable for bio heating oil (FAME according to DIN EN 14213), bio diesel (FAME according to DIN EN 14214), PME, RME or rape oil fuel according to E-DIN 51605, rape oil, palm oil and other vegetable oils as well as kerosene.

The one pipe system is recommended when using heating oils with a bio proportion.

In one pipe systems, the fuel is consumed in the filter and is not returned to the tank.

This is why the oil in the tank cannot be adversely affected by contact with copper surfaces of pipework, valves or fittings.

Sizing of the suction pipe:

The DIN standard DIN 4755 recommends a velocity between 0.2 and 0.5 m/s in suction pipes.

Heating oil may contain air. In case of underlying pressure in the upper parts of the suction pipe, the air may be expelled with volatile oil particles. These air bubbles must be transported constantly to the burner. They may gather in pipes which are too large. If a big air bubble reaches the burner, it may cause a malfunction.

In one pipe systems, the heating oil flow corresponds to the quantity of burned oil (per 10 kW heat output approx. 1 litre/hour).

For two pipe systems, the burner pump capacity has to be taken into consideration.

Formula for the velocity w in m/s:

$$w = 0.3537 \cdot V / D^2$$

with V – Heating oil flow in l/h

D – Inner diameter of the suction pipe in mm

Pipes with an inner diameter of less than 4 mm are not recommended.

This results in the following standard values:

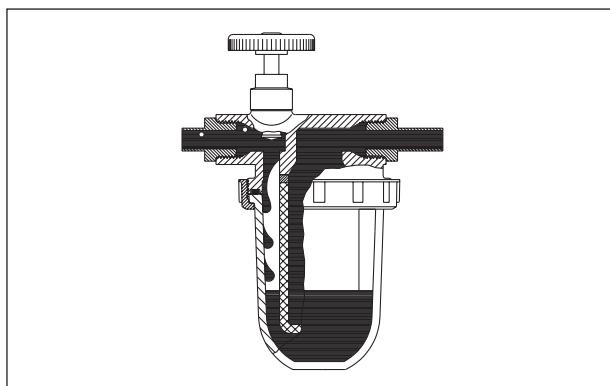
Flow rate in the suction pipe V	Inner pipe diameter [mm]	Pipe (s=1mm) Example:
up to 23 l/h	4	6 x 1
20 up to 50 l/h	6	8 x 1
35 up to 90 l/h	8	10 x 1
56 up to 145 l/h	10	12 x 1
95 up to 240 l/h	13	15 x 1

The suction pressure must not exceed 0.4.

Air pockets in the filter cup:

Air and volatile air particles may be expelled from the oil and accumulate in front of the oil moistened filter cup. This is especially noticeable where the oil flow is low (example: a burner capacity of 30 kW corresponds to an oil flow of about 3 l/h in one pipe systems). As the inside of the filter insert is completely filled with oil, oil supply with a simultaneous filtration is guaranteed.

The sizing of the suction pipe has to be checked in case of burner malfunctions.





Choice of the filter insert:

There is no universal filter insert! Each model has its advantages and its disadvantages. For this reason, the filter insert which guarantees a trouble-free operation without maintenance during the heating period should always be chosen for the heating oil installation.

The oil pipes must be installed and operated in a frost-free location as oil of low temperature expels paraffin which may block the filter (see also DIN 4755). The finer the filter insert, the more this phenomena applies.

To protect the narrow opening of the burner nozzle, a fine filtering is recommended for smaller installations and less fine filter inserts for larger installations.

The **sintered plastic insert** (Siku) consists of a mass of miniature plastic balls. Its surface is enlarged by the inwards drawn form. Burner malfunctions caused by erosion of fibre particles or similar are avoided.

In case of heavily polluted heating oil, the longer model (Magnum) is recommended which increases service life.

This insert cannot be cleaned and has to be replaced at the beginning of each heating period.

Filter inserts made of sintered plastic:

Siku	50 - 75 µm	~ 100 cm ²
Siku	25 - 40 µm (red bayonet)	
Siku "Magnum"	50 - 75 µm	~ 185 cm ²
Siku "Magnum"	25 - 40 µm (red bayonet)	

The **felt insert** provides very fine filtering and many ageing by-products of the heating oil are filtered out. A fine tissue almost completely retaining the felt fibres is integrated on the inside. Individual felt fibres may, however, not be retained by the tissue and reach the burner nozzle. This filter insert is not recommended for smaller burner capacities.

The insert cannot be cleaned and has to be replaced at the beginning of each heating period.

Felt	50 - 75 µm	~ 53 cm ²
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The **stainless steel insert** is a rugged insert and provides good quality of filtering coarse impurities. It is a typical long lasting insert especially suitable for installations with higher capacities. It can be cleaned with heating oil or detergent.

Stainless steel	100 - 150 µm	~ 50 cm ²
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The **sintered bronze insert** (Sika) consists of a mass of miniature bronze balls. It is dimensionally stable and possesses excellent filtering characteristics but is not easy to clean and needs to be replaced at the beginning of each heating period.

Sika 0	50 - 100 µm	~ 50 cm ²
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The **paper filter insert** "opticlean" consists of a special paper and allows for the finest filtering with a very large surface. Short and long models are available.

Attention: The long filter insert "opticlean" only fits the filter cup item no. 2126774.

The "opticlean" fine filter insert with a mesh size of 5-20 µm is especially recommended for small and medium burner capacities in one pipe systems. It is also recommended for installations which are operated with bio heating oils. Bio heating oils may dissolve coarse impurities which may block filter inserts with a small surface.

The "opticlean" fine filter insert MX-11 with a mesh size of ~ 2 µm is a "high end" filter. The filter material developed by the car industry features a micro fibre fleece surface and is especially suitable for small pipes or very fine burner nozzles.

The insert cannot be cleaned and has to be replaced at the beginning of each heating period.

Paper filter inserts

„opticlean“ (MC-7) short	5 - 20 µm	~ 700 cm ²
„opticlean“ (MC-18) long	5 - 20 µm	~ 1850 cm ²
„opticlean“ (MX-11) long	~ 2 µm	~ 1200 cm ²

Due to its much larger filter surface, the **filter cartridge** (fine filtering) has a long service life and offers very fine filtering. The cartridge cannot be cleaned and has to be replaced by a new one.

It consists of a metal cup with integrated filter insert (filter paper) and is resistant to a pressure of up to 10 bar. Existing Oventrop heating oil filters which are equipped with an insert with bayonet catch can be converted using the adapter item no. 2120691 (heating oil filters sized G 1/2 manufactured since 1991).

Filter cartridge, PN10	~ 25 µm	~ 1020 cm ²
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Replacement or cleaning of the filter insert:

It is recommended to replace the filter insert at the beginning of each heating period or to clean it.

Close the isolating valve, unscrew the collar nut and remove it with the filter cup. Unscrew the filter insert by turning it anticlockwise and remove it. Refit the new or cleaned filter insert and fix the filter cup. It must be ensured that the sealing surface and the O-ring are clean. Hand tighten the collar nut (do not use excessive force!).

The O-ring must be replaced if damaged, but at least after 5 years.

The transparent plastic filter cup must be replaced if damaged or in case of strong discolouration, but at least after 20 years.

A multi purpose spanner is available to loosen the collar nut (item no. 2126691).

The filter cartridge is screwed onto the adapter and can be unscrewed by turning. The seal of the new filter insert should be slightly greased with heating oil. Hand tighten the filter cartridge. A tool to loosen the filter cartridge is available (item no. 2126695).

Accessories and spare parts:	Item no.:
O-ring for sealing filter cup/filter head	2166500
Collar nut	2126600
Transparent filter cup for suction systems	2126751
Transparent filter cup "Magnum" for suction systems	2126755
Transparent filter cup for suction systems for "opticlean" long	2126774
Metal filter cup for pressurised systems PN16	2126754
Conversion set for "Magnum", consisting of filter cup, filter insert (Siku 50-75 µm) and O-ring	2120891
Bracket for DN 10	2126803
Bracket for DN 15	2126804
Handwheel for DN 10	2126951
Handwheel for DN 15	2126952
Multi purpose spanner to loosen the collar nut	2126691

Filter inserts:

	Item no.:
Sintered plastic	
Siku 50 - 75 µm	2126300
Siku 25 - 40 µm (red bayonet)	2126354
Siku 50 - 75 µm "Magnum"	2126355
Siku 25 - 40 µm "Magnum" (red bayonet)	2126371
Felt 50 - 75 µm	2126200
Stainless steel 100 - 150 µm	2126100
Sintered bronze	
Sika 0 50 - 100 µm	2126051
Paper filter insert	
"opticlean" 5 - 20 µm short (MC 7)	2126454
"opticlean" 5 - 20 µm long (MC-18)	2126474
"opticlean" ~ 2 µm long (MX-11)	2126484
Filter cartridge, PN10 25 µm	2126400
Adapter for connection filter head	2120691
Tool for cartridge (to loosen the filter)	2126695

"Ofix-Oil" Compression fittings

for the connection of copper pipe to the tank side
with DN 10 or G $\frac{3}{8}$ "

Connection set (2-fold) for two pipe filters	Item no.:
6 mm	2127050
8 mm	2127051
10 mm	2127052
12 mm	2127053
Connection set (1-fold) for one pipe filters	
6 mm	2127650
8 mm	2127651
10 mm	2127652
12 mm	2127653
Brass reinforcing sleeves for copper pipe with a wall thickness of 1 mm	
6 mm	2123951
8 mm	2123952
10 mm	1029651
12 mm	1029652



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