



The Oventrop Quality Management System is certified to DIN-EN-ISO 9001

Heating oil filters "Oilpur"

Technical information

Function:

The Oventrop heating oil filters "Oilpur" are produced for one and two pipe systems. The filters for two pipe systems are additionally equipped with a non-return check valve on the return side and the filters with return flow feed with an airvent expelling air prior to operation.

Advantages:

The loose adjustable bracket allows a universal installation of the heating oil filters "Oilpur" $\frac{3}{8}$ " and $\frac{1}{2}$ ". As a result, the complete pipework is secured.

The filters have a female thread and can be connected universally. Size $\frac{3}{8}$ " is also available with male thread (inner taper) on burner side for hose connection. By choosing the suitable filter insert (sintered plastic, sintered bronze, nickel mesh, felt, paper) or the filter cartridge, the filters can be adapted to meet any requirements.

The supply pipe may be easily shut off by using the isolating valve.

The non-return check valve of the two pipe filters is self-cleaning and may be easily removed in case of failure even if the filter is installed.

The airvent of the one pipe filter with return flow is easy to use. During normal operation, the return is depressurised, i.e. it is not pressurised by a spring assisted valve.

Model:

Filter head and collar nut made of brass.

The standard transparent filter cup of the sizes $\frac{1}{4}$ " to $\frac{1}{2}$ " is only suitable for **suction** systems. For pressurised systems, Oventrop offers a transparent filter cup (PN 6) or a brass filter cup (PN 16). The cup of the filter cartridge is made of steel (PN 10) and size $\frac{3}{4}$ " has an aluminium filter cup (PN 10).

Sealing between filter head and cup with an O-ring made of NBR.

The Oventrop heating oil filters "Oilpur" can be equipped with one of the following inserts:

Sintered plastic (Siku)	50-75 μ m	or 25-40 μ m
as above, long (Siku Magnum)	50-75 μ m	or 25-40 μ m
Felt	50-75 μ m	
Nickel mesh (stainless steel)	100-150 μ m	
Sintered bronze (Sika 0)	50-100 μ m	
as above (Sika 2/Sika 3)	25-40 μ m	or 20-25 μ m
Paper insert "Opticlean"	5-20 μ m	
Filter cartridge (via adapter)	15-25 μ m	

All filters of the size $\frac{3}{8}$ " are suitable for use with compression fittings 6, 8, 10 or 12 mm (compression nut and compression ring made of brass) which are to be ordered separately.

Application:

Oventrop heating oil filters "Oilpur" are suitable for EL type of heating oil, size $\frac{3}{8}$ " also for M type of heating oil.

According to DIN 4755, velocities between 0.2 and 0.5 m/s are recommended for the sizing of the suction pipe. This results in the following standard values:

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

The suction pressure should not exceed 0.4 bar. If necessary, the next higher dimension should be chosen.



Technical data:

Connections

Tank side:

$\frac{1}{4}$ " to $\frac{3}{4}$ " female thread, size $\frac{3}{8}$ " can be used with brass compression fittings 6, 8, 10 or 12 mm

Burner side:

$\frac{1}{4}$ " to $\frac{3}{4}$ " female thread, as well as $\frac{3}{8}$ " male thread with inner taper for hose connection

Fluid:

EL type of heating oil according to DIN 51603-1 (09.2003)

Installation position:

vertical, filter cup pointing downwards

Working temperature:

-10°C to +60°C, 0°C to +40°C recommended, see DIN 4755 and "Choice of the filter insert"

Working pressure:

-Transparent filter cup:

only for suction systems. Oil filters with this cup may be used below (up to 11 m) and above the oil level.

-Transparent filter cup PN 6:

6 bar

-Filter cartridge:

10 bar

-Aluminium cup ($\frac{3}{4}$):

10 bar

-Brass filter cup:

16 bar

Suction pressure:

max. of -0.5 bar

max. of -0.4 bar recommended, see DIN 4755

TÜV tested:

TÜV Rheinland, no.: S 209 2005 T1

Installation:

The heating oil filter has to be installed at an appropriate location. The bracket (models $\frac{3}{8}$ " and $\frac{1}{2}$ " with isolating valve) serves as fixing device.

Care should be taken that the max. ambient temperature does not exceed 60°C, i.e. do not mount the filter near an un-isolated part of the boiler or the exhaust pipe or near a burner access cover. In case of high temperatures, the plastic filter cup should be replaced by a brass filter cup.

The filter is to be installed vertically with the filter cup pointing downwards. It can be installed above or below the oil level.

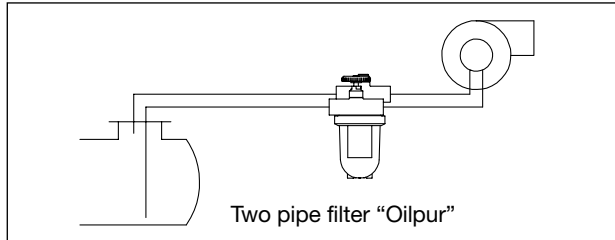
For maintenance and monitoring, the Oventrop heating oil filter "Oilpur" must be installed at an exposed and accessible location.

Types of installation:

As the output of the burner pump is higher than the nozzle capacity, the excess must be expelled. 3 types of connection are possible:

Two pipe system:

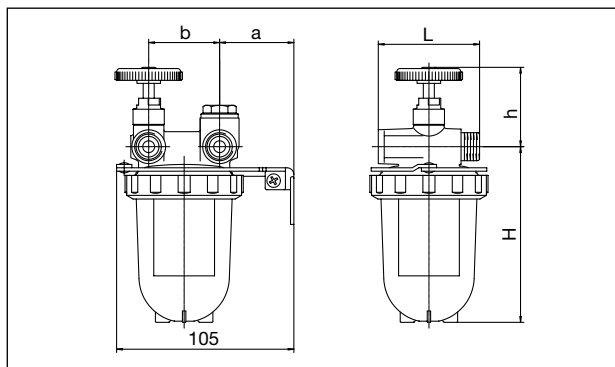
Supply and return pipe to the tank; the oil flow corresponds to the burner pump output. A non-return check valve on the return side prevents the oil from escaping from the return pipe, e.g. when replacing the return hose.



Two pipe filter, item nos.:

Size tank/burner side	3/8" F*/M**	3/8" F*/F	1/2" F/F
Siku	2120561	2120261	2120262
Felt	2120503	2120203	
Sika 0	2120303	2120003	
Nickel mesh	2120403	2120103	2120104
Filter cartridge	2120603	2120703	
Siku Magnum	2120803		
Siku Magnum fine	2120871		

* for Oventrop brass compression fittings 6, 8, 10 and 12 mm
 ** with inner taper for direct burner hose connection



Dimensions two pipe filter:

Size	H*	h	b	a	L	L _M
3/8"	105	48	42	44	58	60
1/2"	105	64	46	42	62	

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

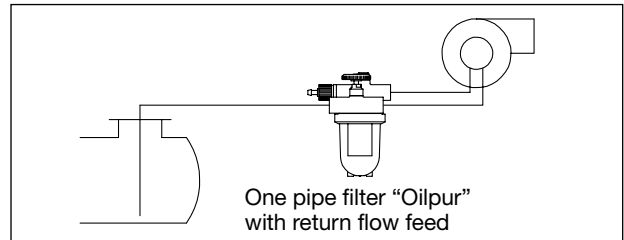
Flow rates in l/h, two pipe filter (supply):

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

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

One pipe system with return flow feed:

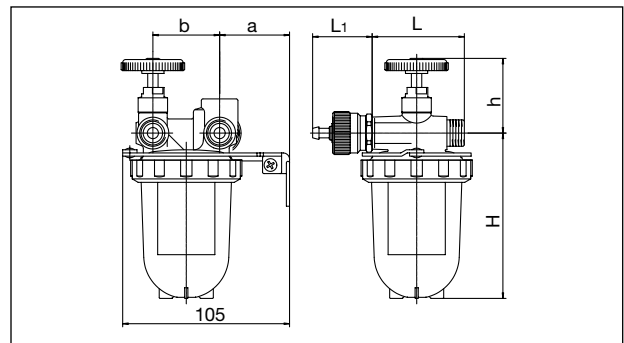
Only one supply pipe from the tank. The oil flow corresponds to the burner nozzle capacity (heat output in kW: 10 corresponds to the nozzle capacity in l/h). The burner pump is connected to the supply and return. To facilitate initial operation, e.g. after replacement of the filter, the filter is equipped with a manual airvent. Alternatively, filter-deaerator combinations can be used for the one pipe system (e.g. "Toc-Duo-N", item no. 214 28, or one pipe heating oil filter "Oilpur" with "Toc-Uno-N", item no. 214 29).



One pipe filter with return flow feed, item nos.:

Size tank/burner side	3/8" F*/M**	3/8" F*/F	1/2" F/F
Siku	2122561	2122261	2122262
Felt	2122503	2122203	
Sika 0	2122303	2122003	
Nickel mesh	2122403	2122103	2122104
"Opticlean"	2122554		
Filter cartridge	2122603	2122703	
Siku Magnum	2121803		
Siku Magnum fine	2121871		

* for Oventrop brass compression fittings 6, 8, 10 and 12 mm
 ** with inner taper for direct burner hose connection



Dimensions one pipe filter with return flow feed:

Size	H*	h	b	a	L	L _M	L ₁
3/8"	105	48	42	44	56	58	38
1/2"	105	64	46	42	62		38

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

Flow rates in l/h, one pipe filter with return flow feed (supply):

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

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

Flow rates in l/h, (return):

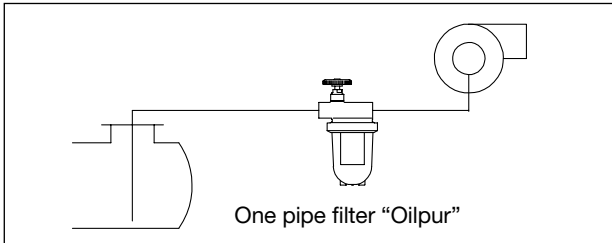
Δp [bar]	0.05	0.1	0.2	0.4	0.6	0.8	1.0	1.2	1.5
Operation	105	150	205	295	360	420	460	505	570
Deaeration	—	—	—	—	—	open	160	210	350

During deaeration, an excess pressure is built up on the return side. This may not exceed the permissible pump pressure. Any possible inlet pressure must be added.

Note: The standard burner pumps for boilers in one- and two-family houses circulate approx. 45 up to 80 l/h and are designed for oil pipe pressures up to 2 bar.

One pipe system:

Only one pipe from the tank to the burner. The oil flow corresponds to the burner 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).

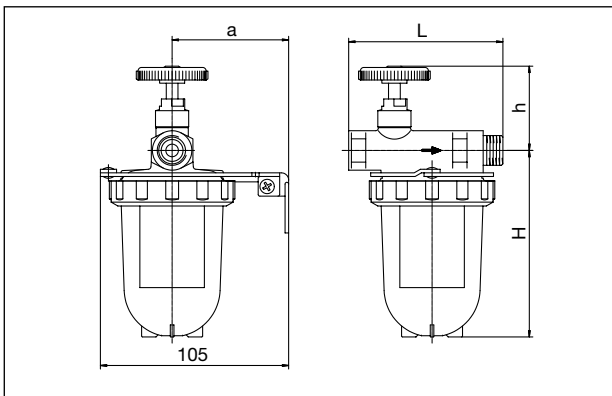


One pipe filter with isolation, item nos.:

Size	3/8"	3/8"	1/2"	3/4"
tank/burner side	F*/M**	F*/F	F/F	F/F
Siku	2123561	2123261	2123262	
Felt	2123503	2123203		
Sika 0	2123303	2123003		
Nickel mesh	2123403	2123103	2123104	2123606
„Opticlean“	2123554			
Filter cartridge	2123603	2123703		
Siku-Magnum	2123803			
Siku-Magnum fine	2123871			

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

** with inner taper for direct burner hose connection



Dimensions one pipe filter with isolation:

Size	H*	h	a	L	L _M
3/8"	105	48	65	75	86
1/2"	105	64	65	80	
3/4"	165	100	-	120	

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

** without bracket

Flow rates in l/h, one pipe filter with isolation:

Δp [bar]		0.05	0.1*	0.2	0.3	0.4
3/8"	Siku	145	205	290	355	410
	Felt	135	190	270	330	380
	Sika 0	149	210	295	365	420
	Nickel mesh	153	215	305	370	430
	„Opticlean“	124	175	257	310	360
	Filter cartridge	142	200	280	346	400
1/2"	Siku	335	500	705	865	1000
	Nickel mesh	385	620	875	1075	1240
3/4"	Nickel mesh	850	1200	1695	2075	2400

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

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

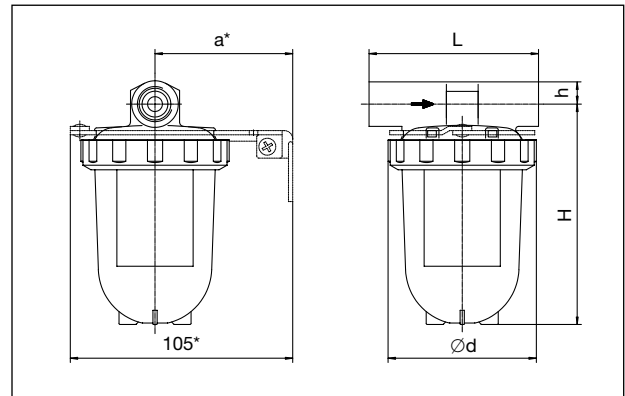
One pipe filter without isolation, item nos.:

Size	1/4"	3/8"	1/2"
tank/burner side	F/F	F*/F	F/F
Siku	2124360	2124361	2124362
Felt	2124302	2124303	
Sika 0		2124003	
Nickel mesh		2124203	2124204

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

The one pipe filter without isolating valve is installed as protection filter in front of other components, e.g. oil meters.

Please observe that an isolating valve is prescribed in front of heating appliances (see TRbF 50).



Dimensions one pipe filter without isolation:

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

* supplied without bracket

Flow rates in l/h, filter without isolation:

Δp [bar]		0.05*	0.1	0.2	0.3	0.4
1/4"	Siku	315	445	630	770	890
	Felt	235	335	475	580	670
	Sika 0	420	590	835	1020	1180
3/8"	Siku	380	540	765	935	1080
	Felt	270	380	540	660	760
	Nickel mesh	245	600	850	1040	1200
1/2"	Siku	620	875	1240	1515	1750
	Nickel mesh	720	1015	1435	1760	2030

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



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 troublefree operation without maintenance during the heating period should always be chosen for the heating oil installation.

The oil pipes must be installed and operated at a frost-free location as oil of low temperature expels paraffin which may block the filter. 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 special form offers a larger surface. Possible burner malfunctions caused by erosion of fibre particles or similar are avoided.

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

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

The **felt insert** provides very fine filtering as many ageing by-products of heating oil are filtered out. A fine tissue almost completely retaining the felt fibres is integrated on the inside.

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

The **nickel mesh insert** (stainless steel) – a rugged insert with high mechanical stability – provides good quality of filtering impurity. It is a typical long lasting insert and easy to clean with heating oil or detergent.

The **sintered bronze insert** (Sika 0) consists of a mass of miniature bronze balls. It is dimensionally stable and offers fine filtering but it cannot be cleaned and needs to be replaced at the beginning of each heating period.

The **paper filter insert** "Opticlean" consists of a special paper and allows the finest filtering with a very large surface.

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

Due to its much larger filter surface, the **filter cartridge** (fine filtering) has a much longer service life than the filter inserts mentioned above. At the same time, it offers very fine filtering. The filter 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. 212 06 91 (size 1/2" since end of 1991).

Cleaning or replacement of the filter insert:

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

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

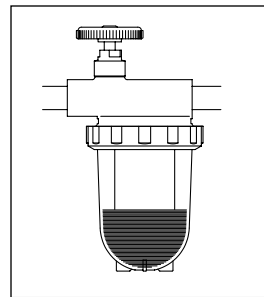
A multi-purpose key is available to loosen the collar nut (item no. 212 66 91).

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 filter cartridge.

A tool to loosen the filter cartridge is available (key, for filter cartridge and retaining of adapter, item no. 212 66 95).

Air pockets in the filter cup:

Air and volatile oil particles may be expelled from the oil and accumulate in front of the oil moistened filter insert. This is especially noticeable where the oil flow is low (example: 30 kW burner capacity 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.



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.

Flooding:

The Oventrop heating oil filters "Oilpur" may also be installed in areas prone to flooding.

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



Tested by TÜV Rheinland

Subject to technical modification without notice.
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OVENTROP UK LTD.
Unit 1 – The Loddon Centre
Wade Road
Basingstoke, Hampshire RG24 8FL
Great Britain
Telephone (0 1256) 3304 41
Telefax (Sales) (0 1256) 3305 25
Telefax (General) (0 1256) 4709 70
E-Mail sales@oventrop.co.uk

F. W. OVENTROP GmbH & Co. KG
Paul-Oventrop-Straße 1
D-59939 Olsberg
Germany
Telephone (0 2962) 82-0
Telefax (0 2962) 82-450
E-Mail mail@oventrop.de
Internet www.oventrop.de