

Oil Separators

1. Description

Screw compressors with oil injection cooling play a substantial part in modern compressed air generation. In addition to the compact design and good energy utilization the manufacturers of this equipment consider the recovery of the injected cooling oil an important design target.

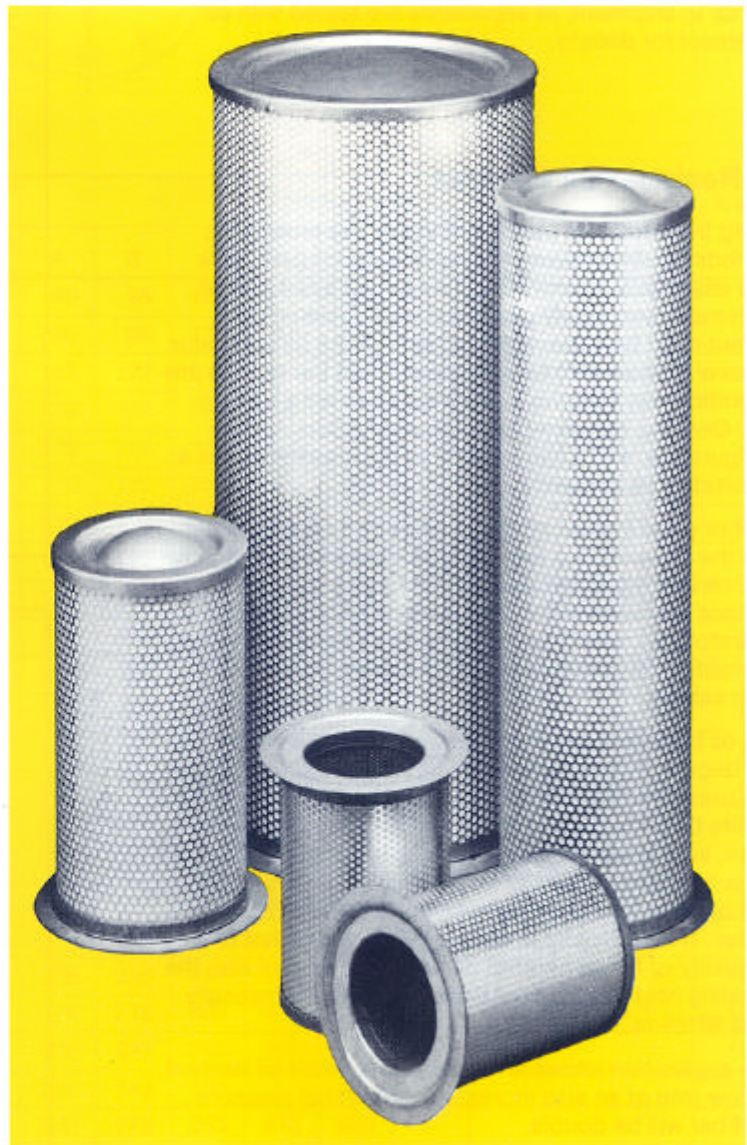
For many years, MAHLE oil separators have proved to be ideal in this field of application. In combination with a system-compatible selection of air intake filters and oil filters they warrant a good quality of the compressed air at reasonable service life and operating cost.

The use of high-quality materials, modern production and testing procedures ensure a high product quality and operating reliability.

MAHLE oil separators are of compact design and have coaxially arranged primary and secondary layers. Rugged supporting tubes ascertain geometrically uniform conditions and good drainage of the coagulated oil, even when the pressure load varies.

The standard design complies with the trade association requirements with respect to temperature resistance and electrical conductivity.

- Low resistance
- Large-volume filter area
- Long service life
- High separating effect
- Compact, rugged design



2. Mode of Operation

1. The flow through the separator is from the outside to the inside. The fine oil mist coagulates while passing through the micro-fine fiberglass and is drained on the bottom as liquid.
2. The second filter layer traps larger oil drops that were dragged along by the flow, and their specific gravity causes them to rapidly sink down. The design-stipulated flow conditions prevent the oil from being dragged along.
3. Depending on the installation, the oil collects on the bottom of the element or, with horizontal installation, is drained from the bottom of the element and is taken to the suction side of the compressor.
4. The service life of the separators depends exclusively on the contamination by solid matter which plugs the fine filter media so that the pressure loss increases. Owing to the large-open area of the filter layer used, a service life of more than 5000 operating hours can be reached. However, this requires good filtration of the intake air and of the tube oil.
5. Prior to shipment, all separators are tested with oil aerosol for density.

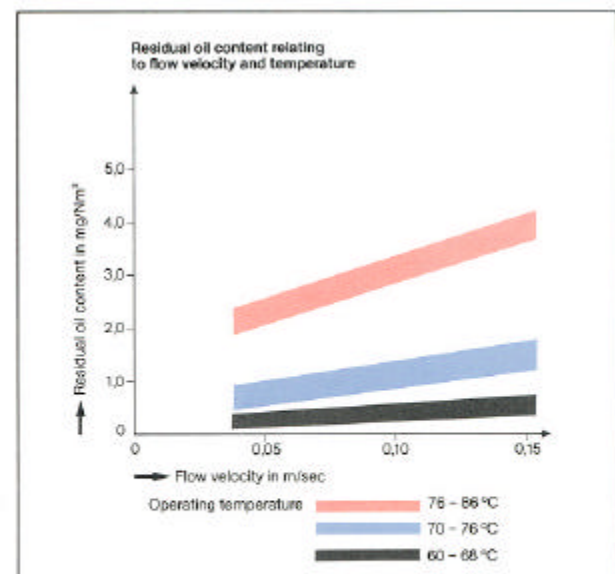
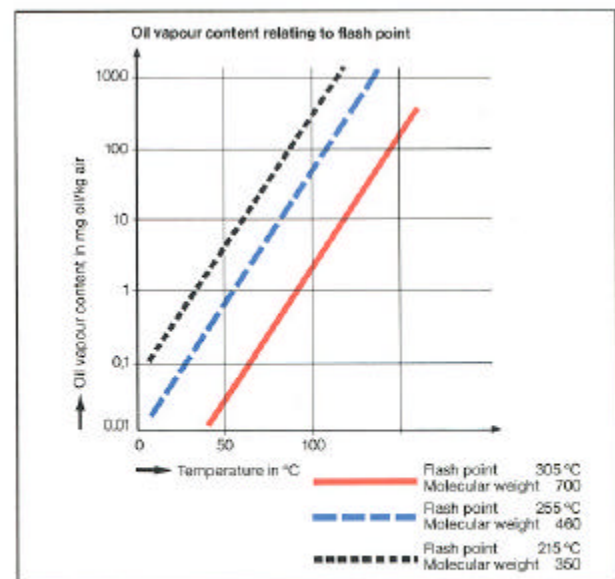
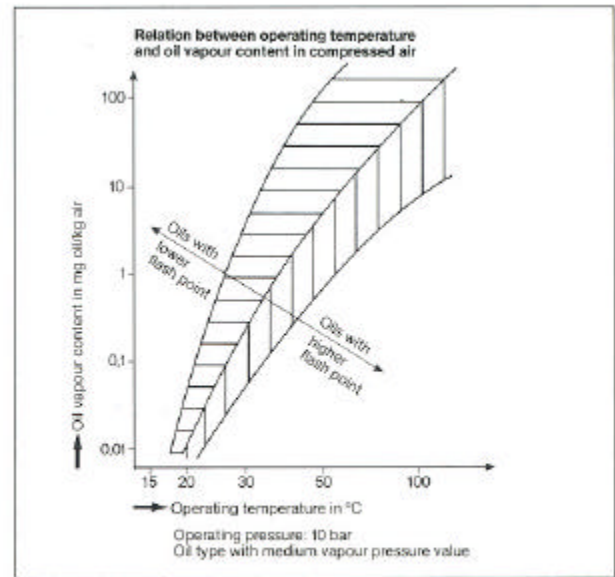
3. Residual Oil Content

During the course of the recent years, the measuring methods for determining the residual oil content have been essentially improved so that nowadays it can be much more accurately predicted what residual oil content must be expected upstream of the oil separator. However, it must also be pointed out that the type of pre-separation has a strong influence on the values measured. Only the combination of pre-separation, oil tank configuration, and a high-quality oil separator ensures a low residual oil content.

Another great impact on the residual oil content comes from the oil operating temperature. Depending on the type of oil and the temperature rise, varying quantities of oil vapor develops which cannot be retained by the oil separator and, therefore, condenses elsewhere. The quoted residual oil contents should therefore be taken as mean values.

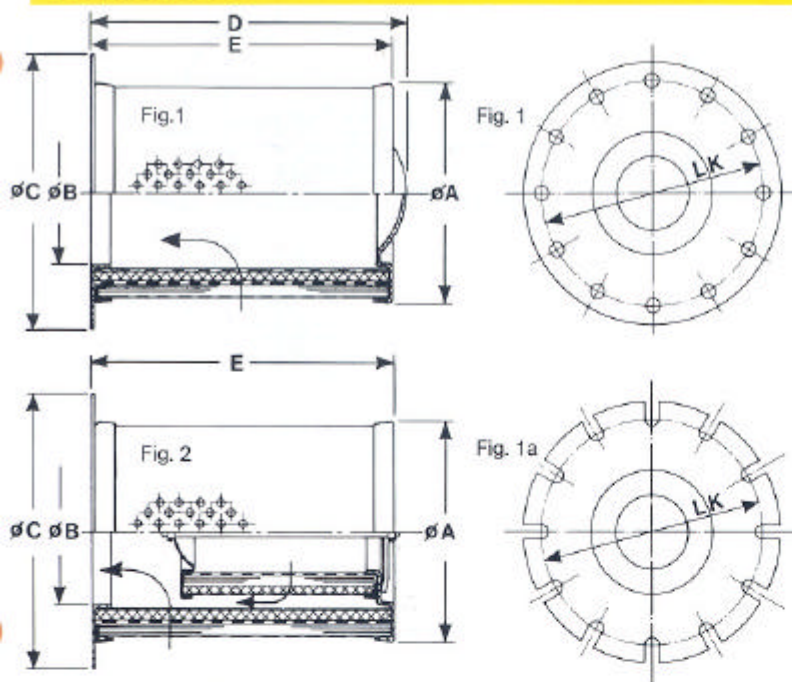
High oil temperatures promote the oil aging process to a high degree. Following is a rule of thumb: Each 10°C temperatures increase in excess of 70°C reduces the oil service life by 50%. When the lube oil filtration is only mediocre, very small oil aging products enter the oil separator via the compressed air so that the oil separator then must operate as a fine filter which it is actually not provided for. The unavoidable consequence is that not only the quality of the generated compressed air, but also the operating cost in particular depend on a systematically tuned filtration.

If the application allows an increased residual oil content, the flow rate at an also increased differential pressure of 0,4 bar will be double.



Residual oil contents measured under isokinetic conditions using the diaphragm filter method upstream of fine oil separators.

4. Dimensions



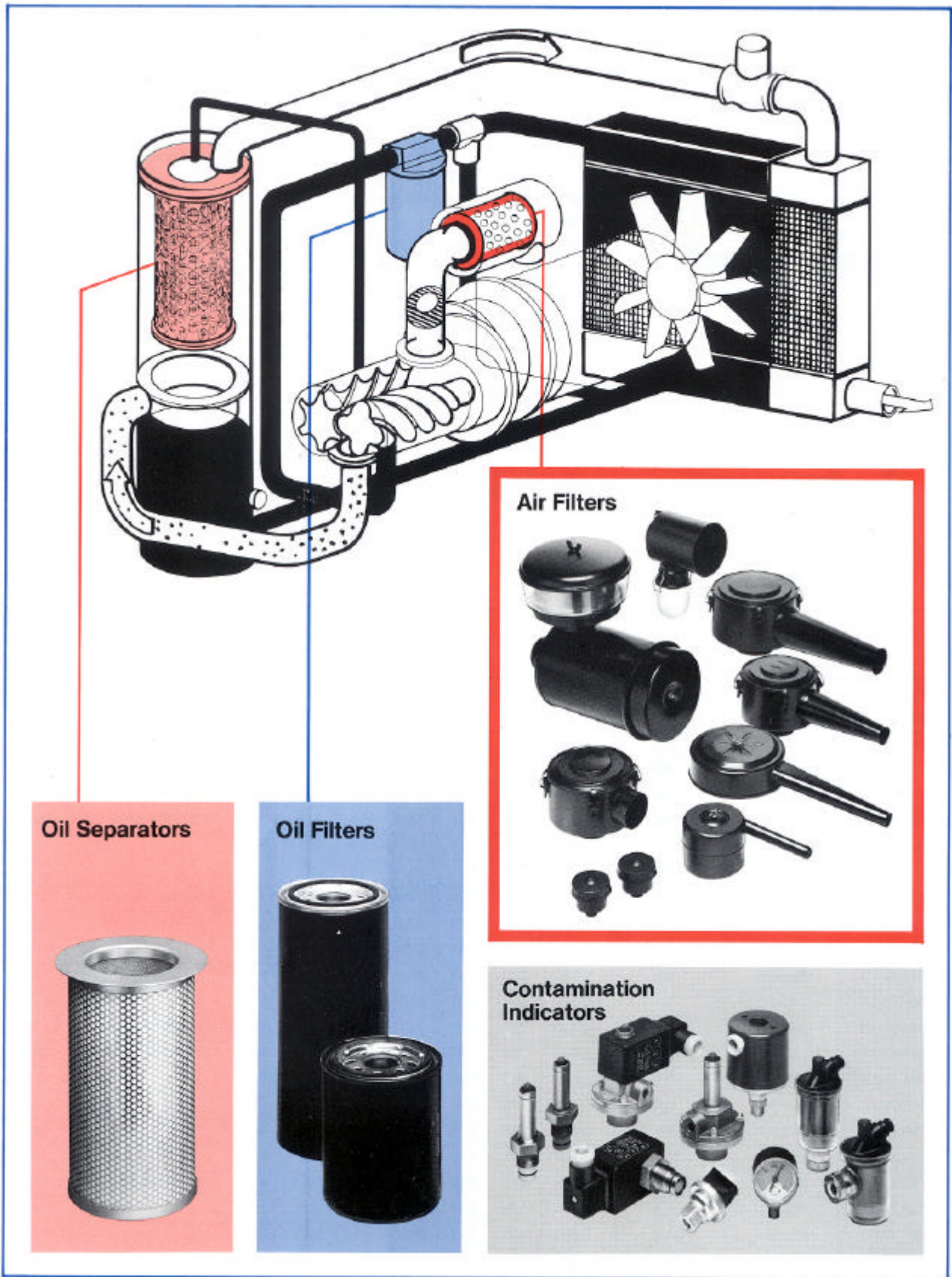
5. Technical data

Support:	steel, zinc plated, conductive connected
Filter media:	borosilicate glas fiber fleece polymer mix fiber fleece polyester fleece
Temperature resistance:	max. + 120 °C
Spontaneous ignition temperature:	> 280 °C

6. Order Numbers

Order number	Type number	Flow rate in Nm ³ /min at*	Filter area (cm ²)	Dimensions (mm)							Weight kg ca.
				A	B	C	D	E	Fig.	Flange details	
768.831.0	852.655	2,4	750	140	95	170	210	200	1		1,5
768.788.2	852.582	3,8	1200	140	95	170	317	307	1		2,0
768.822.9	852.645	2,6	834	170	122	248	191	181	1	LK 220 8xø17	1,8
768.751.0	852.474	3,6	1090	170	122	200	242	232	1		2,0
774.430.3	852.537	3,6	1090	170	122	248	242	232	1	LK 210 8xø17	2,0
768.815.3	852.637	4,8	1470	170	122	248	314	304	1	LK 220 8xø17	2,3
768.749.4	852.473	4,8	1470	170	122	200	314	304	1		2,3
768.745.2	852.469	7,0	2140	170	122	200	445	435	1		3,0
771.277.1	852.632	7,9	2400	170	122	300	495	485	1	LK 226 12xø14	3,5
768.813.8	852.631	9,8	3010	170	122	200	613	603	1		4,0
768.798.1	852.619	3,9	1200	223	168	273	210	200	1		3,0
768.784.1	852.538	6,8	2150	223	168	273	350	340	1		5,3
768.748.6	852.472	9,1	2780	223	168	273	445	435	1		6,0
768.778.3	852.522	9,1	2780	223	168	273	445	435	1a	LK 260 12xø14	6,0
768.779.1	852.523	12,5	3900	223	168	273	612	602	1a	LK 260 12xø14	7,0
768.747.8	852.471	12,5	3900	223	168	273	612	602	1		7,0
768.794.0	852.590	8,0	2400	275	218	324	315	305	1		7,5
768.797.3	852.606	12,1	3650	275	218	324	465	455	1		8,0
774.433.7	852.540	20,4	6200	275	218	324	762	752	1		13,0
782.135.8	852.529	24,2	7450	275	218	400	910	900	1	LK 350 16xø18	15,0
768.746.0	852.470	14,5	4430	300	243	353	512	502	1		10,0
768.785.8	852.564	24,2	8050	300	243	353	-	662	2		11,3
768.744.5	852.468	19,4	5900	300	243	353	672	662	1		11,3
771.300.1	852.581	27,4	10400	300	243	353	-	805	2		14,7
774.442.8	852.605	24,1	7550	300	243	420	860	850	1	LK 370 12xø24	15,0
768.783.3	852.535	28,1	9550	393	329	460	810	805	1	LK 433 12xø14	20,0
768.782.5	852.533	36,1	12280	496	423	554	815	800	1	LK 530 12xø14	30,0

* Rating at a Δp of approx 0,2 bar and an operating pressure of 7 bar



Oil Separators



Oil Filters



Air Filters



Contamination Indicators



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