

- **small sizes**
- **compact design**
- **variety of types**



### Description

These air-oil coolers are characterized by a compact design. Multipass versions are especially suitable for low flow applications. The radiators are made of aluminum, the housing made of sheet steel. The cooler is built up of shallow tubes having internal turbulators and external fins which are brazed on all contact surfaces, which results in a hugely efficient heat transfer.

### Application

High temperatures in hydraulic applications, gears or engines are not desired. A suitable oil cooler can prevent heat excess, thus improving lubrication, seal life, reducing leakage and wear. Often a separate circuit for cooling and filtering is used. Another way is to cool the return flow or the hot drain oil of variable flow pumps.

### Technical Data

max. operating pressure: 10bar  
max. oil temperature: 130°C

Size		109	SAE - 2/1,5		SAE - 6/4,5	
Number of passes		3	4	1	4	1
Nominal flow	[l/min]	3	4	40	6	50
Pressure drop at nominal flow and 55 mm <sup>2</sup> /s	[bar]	0.6	0.8	0.46	1.4	1
Fan 230V 50Hz	[W]	N/A	24		45 (RAD: 80)	
	[A]	N/A	0.11		0.31 (RAD: 0.36)	
Fan 115V 60Hz	[W]	N/A	18		46	
	[A]	N/A	0.21		0.4	
Fan 24V DC	[W]	6	4.5		16	
	[A]	0.25	0.19		0.56	
Fan 12V DC	[W]	5.8	3.9		16 (SL: 36)	
	[A]	0.48	0.33		1.12 (SL: 3)	
Electrical connection		strands	strands		strands	
Noise level	[dB(A)]	41	51		51 (SL: 58)	
Connection port		G3/8" female*	G1/2" female		G1/2" female	G3/4" male**
Weight appr.	[kg]	0.85	1.8		3.5	

\*available with „G1/4" female“

\*available with „G1/2" male“

other sizes are available on request

### Type code

LK	SAE- 2/1,5	- 1	---	- 24V DC	- ...
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**SL** = Economy type

**RAD** = with radial fan

e.g. other port connections

**Nominal voltage (230V 50Hz, 115V 60Hz, 12V DC, 24V DC)**

**Electric connection**

**omit** = with terminal block

**A** = with connector plug

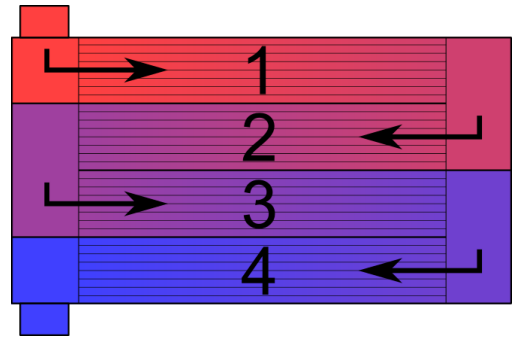
**Number of passes (1 / 3 / 4)**

**Size (109, SAE-2/1,5, SAE-6/4,5)**

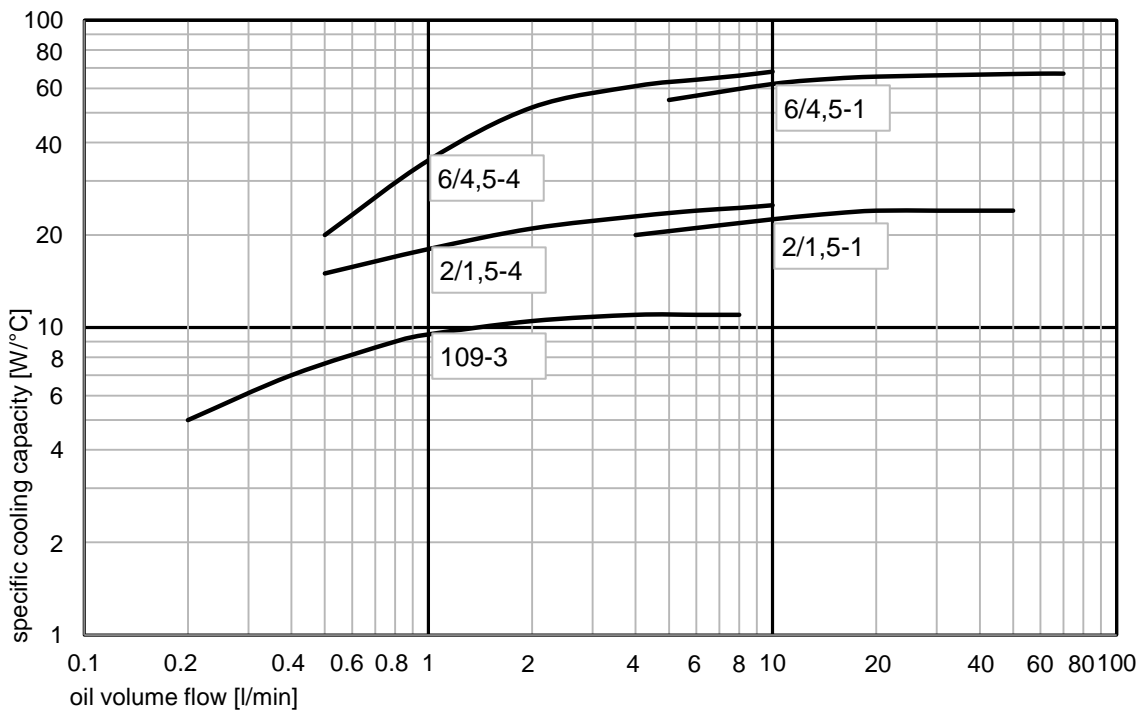
**Air – Oil Cooler**

**Passes**

In multipass types, the oil flows several times through the cooling tubes. The cooling is much better, especially for low flows. (The picture on the right side shows a type with 4 passes.)



**Cooling capacity characteristic**



**Cooling capacity**

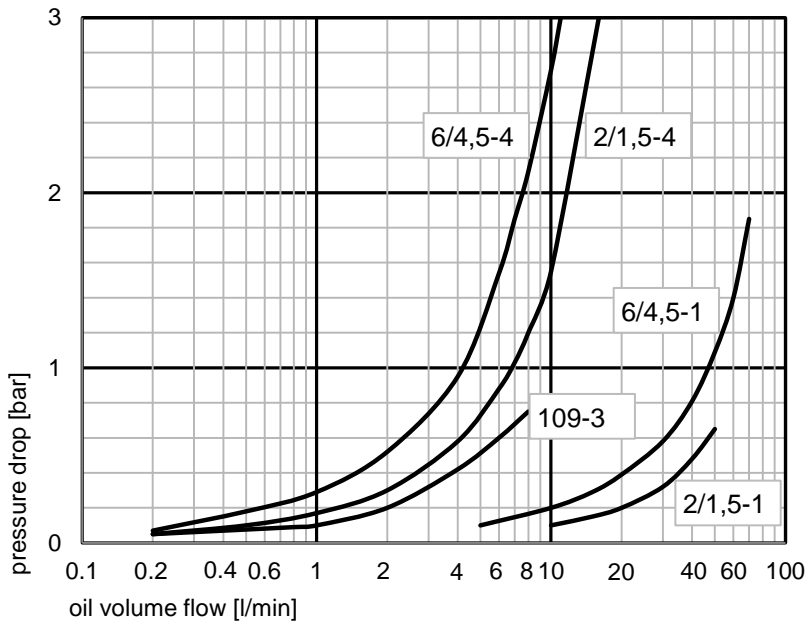
The specific cooling capacity can be determined from the diagram at the volume flow. With that the cooling capacity can be calculated as follows:

$$\text{cooling capacity [W]} = \text{specific cooling capacity [W/°C]} * (\text{oil inlet temperature} - \text{air temperature})[°C]$$

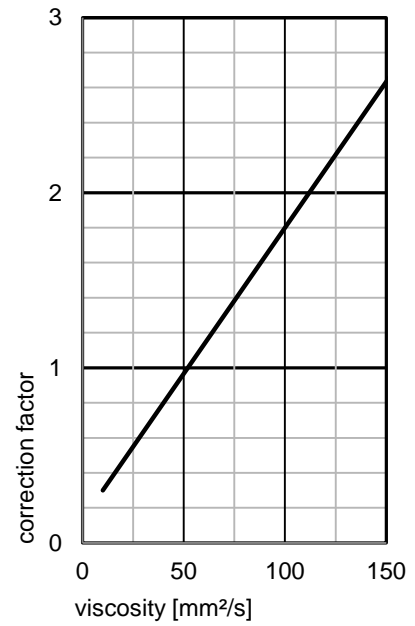
Calculating the cooling capacity exactly is very complex. The cooling capacity characteristic is only approximately. It's also possible to get a higher cooling capacity.

**Pressure drop characteristic**

at 55 mm<sup>2</sup>/s = 55cSt = ISO VG 32 at 28°C



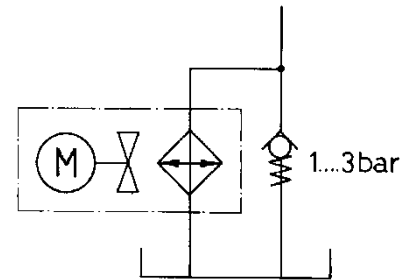
**Correction factor**



**Installation recommendation**

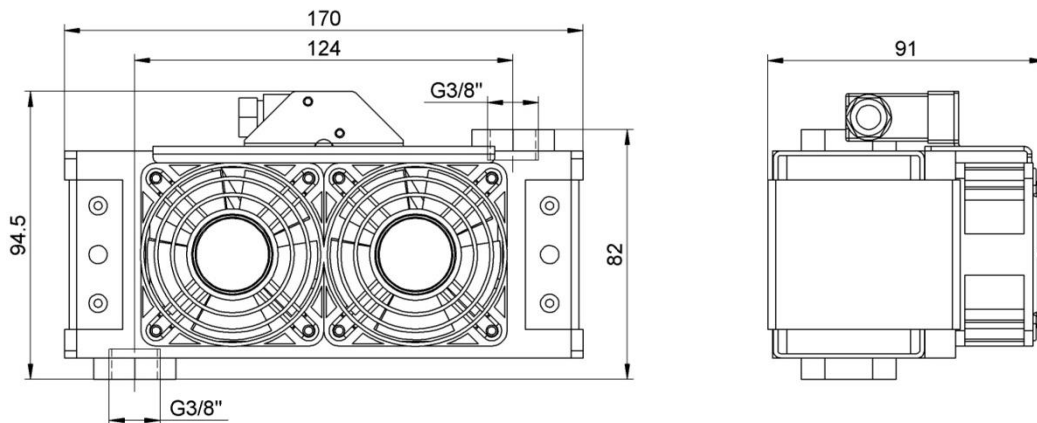
If applied on return lines it is recommended to install a by-pass check valve to protect against pressure peaks. Cracking pressure should be between 1 and 3 bar. The check valve is preferably in a straight line with the return pipe.

It's necessary to install the cooler free of stress. Stresses can easily cause cracking the radiator.

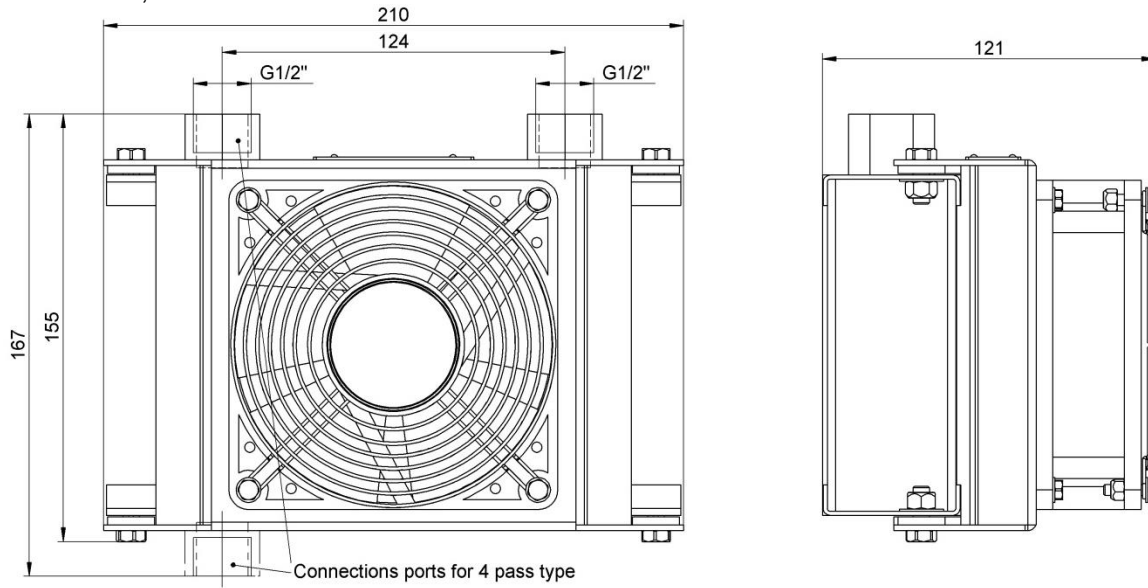


**Dimensions**

LK 109-3-...-A



LK SAE 2/1,5



LK SAE 6/4,5-...-A

