LDC

Air Oil Coolers with DC Motor
for mobile use

„Perfectly designed and ideal for mobile systems.”

Yvo Blanchard, OLAER (Schweiz) AG
For mobile use –  
maximum cooling capacity 30 kW

The LDC air oil cooler with 12 or 24 V DC motor is optimized for use in the mobile industry. Together with a wide range of accessories, the LDC cooler is suitable for installation in most applications and environments. The maximum cooling capacity is 30 kW at ETD 40 °C. Choosing the right cooler requires precise system sizing. The most reliable way to size is with the aid of our calculation program. This program, together with precise evaluations from our experienced, skilled engineers, gives you the opportunity for more cooling per € invested.

Temperature optimisation - a basic prerequisite for cost-efficient operation

Temperature balance in a hydraulic system occurs when the cooler can cool down the energy input that the system does not consume - the system’s lost energy: \( P_{\text{loss}} = P_{\text{cool}} = P_{\text{in}} - P_{\text{used}} \). Temperature optimisation means that temperature balance occurs at the system’s ideal working temperature – the temperature at which the oil’s viscosity and the air content comply with recommended values.

The correct working temperature produces a number of economic and environmental benefits:

- Extended hydraulic system life.
- Extended oil life.
- Increased hydraulic system availability - more operating time and fewer shutdowns.
- Reduced service and repair costs.
- Maintained high efficiency in continuous operation – the system efficiency falls if the temperature exceeds the ideal working temperature.

Overheating - an expensive problem

An under-sized cooling capacity produces a temperature balance that is too high. The consequences are poor lubricating properties, internal leakage, a higher risk of cavitation, damaged components, etc. Overheating leads to a significant drop in cost-efficiency and environmental consideration.
Clever design and the right choice of materials and components produce a long useful life, high availability and low service and maintenance costs. DC motor 12V/24V. Easy to maintain and easy to retrofit in many applications.

Cooler matrix with low pressure drop and high cooling capacity. Quiet fan and fan motor. Compact design and low weight.
## DIMENSIONS LDC

<table>
<thead>
<tr>
<th>Type</th>
<th>Acoustic pressure level LpA dB(A) 1m*</th>
<th>Weight (approx)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<th>O</th>
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* Noise level tolerance ± 3 dB(A).

Manufacturer’s tolerances not taken into account. The right to make modifications reserved.
The cooling capacity curves are based on the inlet oil temperature and the ambient air temperature. An oil temperature of 60 °C and an air temperature of 20 °C produce a temperature difference of 40 °C. Multiply by kW/°C for total cooling capacity.

**Cooling capacity**
LDC 002 – LDC 033

The cooling capacity curves are based on the inlet oil temperature and the ambient air temperature. An oil temperature of 60 °C and an air temperature of 20 °C produce a temperature difference of 40 °C. Multiply by kW/°C for total cooling capacity.

**Pressure drop**
At 30 cSt single-pass

Heat transfer limit ± 10% kW.
KEY FOR LDC / TECHNICAL SPECIFICATION

Example
LDC - 016 - A - S - 00 - S20 - S - 0

1. Air Oil cooler with DC motor = LDC

2. Cooler size
002, 003, 004, 007, 011, 016, 020, 023 and 033

3. Motor voltage
12 V DC = A
24 V DC = B

4. Accessories for DC motor
No motor accessories = 0
Smart DC Drive, soft start.
Requires a thermo contact pos. 5. = S

5. Thermo contact
No thermo contact = 0
Thermo contact Smart DC Drive
40 °C = 40 45 °C = 40
50 °C = 50 50 °C = 50
60 °C = 60 55 °C = 55
70 °C = 70 60 °C = 60
80 °C = 80 75 °C = 75
90 °C = 90 95 °C = 95

6. Cooler matrix
Standard = 000
Two-pass = T00
Built-in, pressure-controlled bypass, single-pass
2 bar = S20
5 bar = S50
8 bar = S80
Built-in, pressure-controlled bypass, two-pass*
2 bar = T20
5 bar = T50
8 bar = T80
Built-in, temperature and pressure-controlled bypass, single-pass
50 °C, 2,2 bar = S25
60 °C, 2,2 bar = S26
70 °C, 2,2 bar = S27
90 °C, 2,2 bar = S29
Built-in, temperature and pressure-controlled bypass, two-pass*
50 °C, 2,2 bar = T25
60 °C, 2,2 bar = T26
70 °C, 2,2 bar = T27
90 °C, 2,2 bar = T29
* = Not valid for LDC 004.

7. Matrix guard
No guard = 0
Stone guard = S
Dust guard = D
Dust and stone guard = P

8. Standard / Special
Standard = 0
Special = Z

Technical specification

Fluid combinations
Mineral oil
Oil / Water emulsion
Water glycol
Phosphate ester

Material
Cooler matrix
Fan blades / guard
Fan housing
Other parts
Surface treatment

Technical data cooler matrix
Maximum static working pressure
Dynamic working pressure
Heat transfer limit
Maximum oil inlet temperature

Cooling capacity curve
The cooling capacity curves in this technical data sheet are based on tests in accordance with EN 104B and have been produced using oil type ISO VG 46 at 60 °C.

Contact OLAER for advice on:
Oil temperatures
Oil viscosity
Other liquids
Ambient air rich in particles
High-altitude locations

Electric motor

LDC 002 003 004 007 - 020 023 - 033
Speed (rpm)
3 700 3 670 3 350 3 060
Protection std.
IP 68
Insulation class
H
Ambient temp.
- 30 °C bis + 80 °C
Power consump. (A) 12 V
6,5 8 8 20
Power consump. (A) 24 V
3,5 4 4 10
* LDC 023 and LDC 033 uses two motors.

Connection chart

All positions must be filled in when ordering.
With our specialist expertise, industry knowledge and advanced technology, we can offer a range of different solutions for coolers and accessories to meet your requirements.

Supplementing a hydraulic system with a cooler, cooler accessories and an accumulator gives you increased availability and a longer useful life, as well as lower service and repair costs.

All applications and operating environments are unique. A well-planned choice of the following accessories can thus further improve your hydraulic system.

Please contact OLAER for guidance and information.

**Pressure-controlled bypass valve**
*Integrated*
Allows the oil to bypass the cooler matrix if the pressure drop is too high. Reduces the risk of the cooler bursting, e.g. in connection with cold starts and temporary peaks in pressure or flow. Available for single-pass or two-pass matrix design.

**Thermo contact**
Sensor with fixed set point, for temperature warnings. Can be used for more cost-efficient operation and better environmental consideration through the automatic control of the fan motor, either on or off.

**Temperature-controlled bypass valve**
*Integrated*
Allows the oil to bypass the cooler matrix if the pressure drop is higher than 2.2 bar or less than the chosen temperature. The bypass closes when the oil temperature increases. Different closing temperatures available. Available for singlepass or two-pass matrix design.

**Lifting eyes**
For simple installation and relocation.

**Temperature-controlled 3-way valve**
*External*
Same function as the temperature-controlled bypass valve, but positioned externally. Note: must be ordered separately.

**Stone guard/Dust guard**
Protects components and systems from tough conditions.