OLAER

for the perfect flow

LAC

Air Oil Coolers with AC Motor

for industrial use

„**Power and usability** in one."

Sandro Stoll, OLAER (Schweiz) AG

AIR OIL COOLERS LAC

For industrial use – maximum cooling capacity 170 kW

The LAC air oil cooler with single-phase or three-phase AC motor is optimized for use in the industrial sector. Together with a wide range of accessories, the LAC cooler is suitable for installation in most applications and environments. The maximum cooling capacity is 170 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.

Overheating - an expensive problem

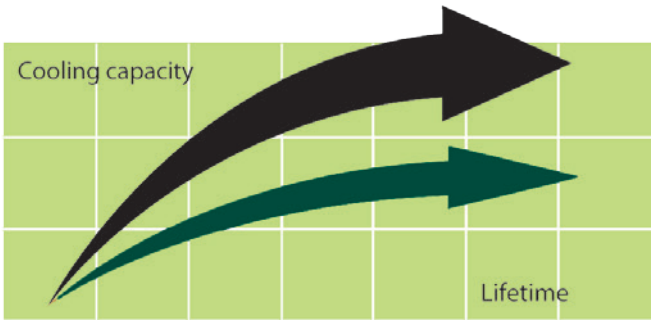
An under-sized cooling capacity produces a temperature balance that is too high. The consequences are poor lubricating properties, internal leakage, a higher risk of cavitation, damaged components, etc. Overheating leads to a significant drop in cost-effciency and environmental consideration.

Temperature optimisation - a basic prerequisite for cost-effcient 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**loss = **P**cool = **P**in – **P**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.



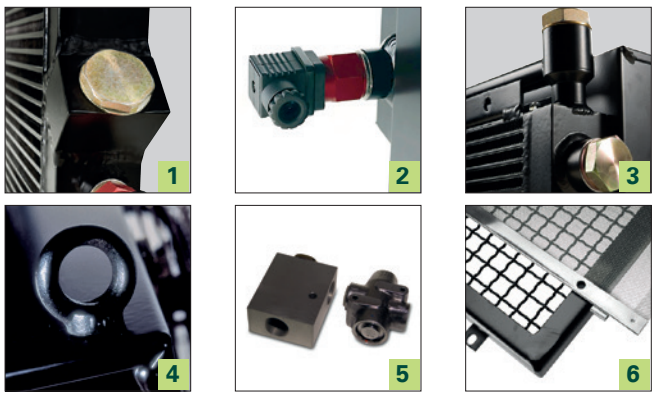
THE RIGHT ACCESSORIES

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.



1. Pressure-controlled bypass valve *Integrated*
2. Thermo contact
3. Temperature-controlled bypass valve *Integrated*
4. Lifting eyes
5. Temperature-controlled 3-way valve *External*
6. Stone guard/Dust guard

Clever design and the right choice of materials and components produce a long useful life, high availability and low service and maintenance costs.

Compact design and low weight.

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.

AC motor single-phase for smaller and three-phase for larger cooler sizes.

LAC-X and LAC-M

LAC cooling systems are also available in two special versions:

LAC-X (Atex version) is approved for the use in explosive areas.

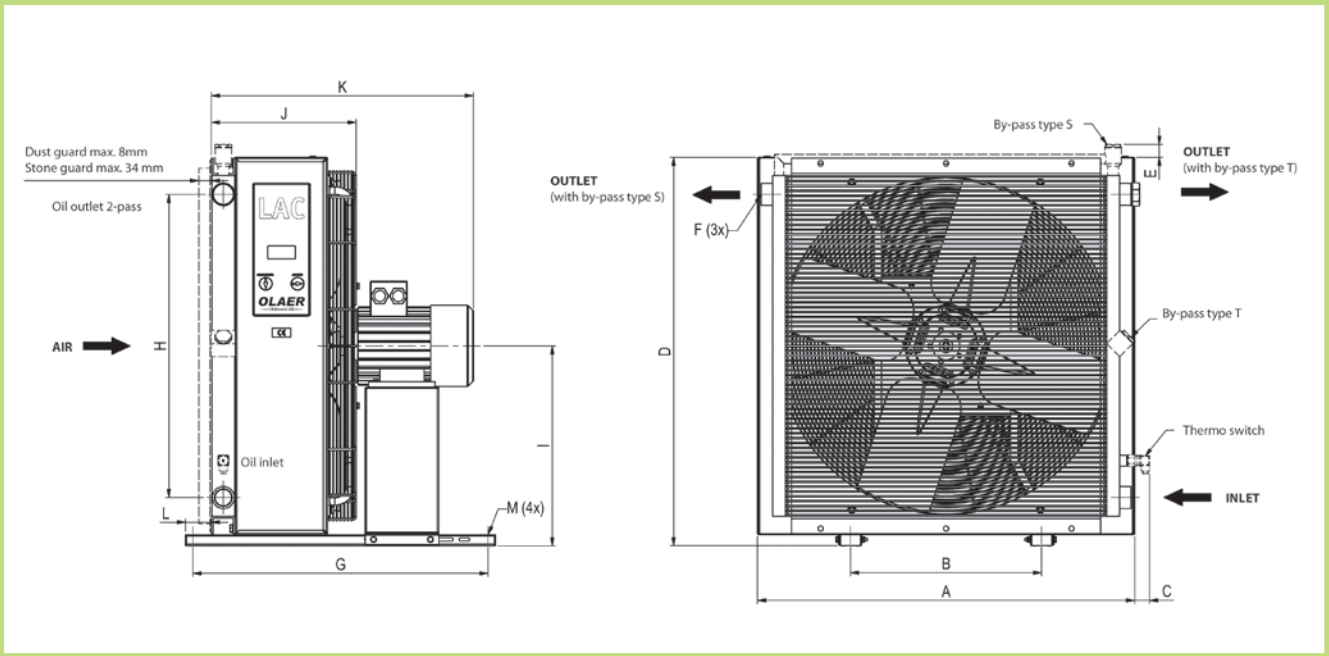
LAC-M is ideal for marine applications requiring very good corrosion resistance.

TECHNICAL SPECIFICATION LAC

Type	Acoustic pressure level LpA dB(A) 1m*	No. of poles / Capa-city kW	Weight (approx) kg	A	B	C	D	E	F	G	H	I	J	K	L	M ø
LAC2 002 - 2 - single-phase	50	2 / 0,05	4	165	74	82	189	-	G ½	190	72	97	105	167	39	9
LAC2 003 - 2 - single-phase	61	2 / 0,05	5	244	134	82	223	71	G 1	148	90	114	161	218	31	9x14
LAC2 004 - 4 - single-phase	63	4 / 0,07	6	267	134	82	256	69	G 1	148	90	131	165	222	28	9x14
LAC2 004 - 2 - single-phase	63	2 / 0,07	6	267	134	82	256	69	G 1	148	90	131	165	222	28	9x14
LAC2 007 - 4 - single-phase	65	2 / 0,08	9	340	203	77	345	54	G 1	267	160	175	189	249	49	9x14
LAC2 007 - 2 - single-phase	79	2 / 0,24	10	340	203	77	345	54	G 1	267	160	175	189	249	49	9x14
LAC2 007 - 4 - three-phase	62	4 / 0,25	15	365	203	64	395	42	G 1	510	160	213	225	429	50	9
LAC2 007 - 2 - three-phase	79	2 / 0,25	16	365	203	64	395	42	G 1	510	160	213	225	434	50	9
LAC2 011 - 4 - three-phase	67	4 / 0,25	20	440	203	62	470	41	G 1	510	230	250	249	453	50	9
LAC2 011 - 2 - three-phase	82	2 / 1,10	25	440	203	62	470	41	G 1	510	230	250	249	475	50	9
LAC2 016 - 6 - three-phase	60	6 / 0,18	23	496	203	66	526	46	G 1	510	230	278	272	474	50	9
LAC2 016 - 4 - three-phase	70	4 / 0,37	24	496	203	66	526	46	G 1	510	230	278	272	479	50	9
LAC2 016 - 2 - three-phase	86	2 / 1,10	27	496	203	66	526	46	G 1	510	230	278	272	496	50	9
LAC2 023 - 6 - three-phase	64	6 / 0,18	35	580	356	63	610	44	G 1	510	305	320	287	489	50	9
LAC2 023 - 4 - three-phase	76	4 / 0,75	36	580	356	63	610	44	G 1	510	305	320	287	511	50	9
LAC 033 - 6 - three-phase	74	6 / 0,55	45	692	356	53	722	42	G 1¼	510	406	376	318	534	50	9
LAC 033 - 4 - three-phase	84	4 / 2,20	52	692	356	53	722	42	G 1¼	510	406	376	318	650	50	9
LAC 044 - 6 - three-phase	76	6 / 0,55	63	692	356	53	866	59	G 1¼	510	584	448	343	559	50	9
LAC 044 - 4 - three-phase	85	4 / 2,20	65	692	356	53	866	59	G 1¼	510	584	448	343	643	50	9
LAC 056 - 8 - three-phase	73	8 / 0,55	73	868	356	49	898	43	G 1¼	510	584	448	343	643	50	9
LAC 056 - 6 - three-phase	81	6 / 1,50	75	868	508	49	898	43	G 1¼	510	584	464	368	668	50	9
LAC 056 - 4 - three-phase	84	4 / 2,20	75	868	508	49	898	43	G 1¼	510	584	464	368	668	50	9
LAC 058 - 8 - three-phase	74	8 / 0,55	80	868	508	49	898	43	G 2	510	584	464	388	652	30	9
LAC 058 - 6 - three-phase	82	6 / 1,50	82	868	508	49	898	43	G 2	510	584	464	388	682	30	9
LAC 058 - 4 - three-phase	85	4 / 2,20	82	868	508	49	898	43	G 2	510	584	464	388	688	30	9
LAC 076 - 8 - three-phase	79	8 / 1,10	130	1022	518	41	1052	45	G 1½	800	821	541	393	693	70	14
LAC 076 - 6 - three-phase	86	6 / 2,20	140	1022	518	41	1052	45	G 1½	800	821	541	393	710	70	14
LAC 078 - 8 - three-phase	80	8 / 1,10	136	1022	518	41	1052	45	G 2	800	821	541	413	713	50	14
LAC 078 - 6 - three-phase	87	6 / 2,20	146	1022	518	41	1052	45	G 2	800	821	541	413	730	50	14
LAC 110 - 8 - three-phase	84	8 / 2,20	160	1185	600	54	1215	45	G 2	800	985	623	418	785	70	14
LAC 110 - 6 - three-phase	90	6 / 5,50	170	1185	600	54	1215	45	G 2	800	985	623	418	785	70	14
LAC 112 - 8 - three-phase	85	8 / 2,20	168	1185	600	54	1215	45	G 2	800	985	623	438	805	50	14
LAC 112 - 6 - three-phase	91	6 / 5,50	178	1185	600	54	1215	45	G 2	800	985	623	438	805	50	14
LAC 113 - 8 - three-phase	80	8 / 2,20	218	1200	600	82	1215	45	G 2	860	985	623	465	833	82	14
LAC 113 - 6 - three-phase	88	6 / 5,50	237	1200	600	82	1215	45	G 2	860	985	623	465	871	82	14
LAC 200 - 8 - three-phase	86	8 / 4,00	365	For more informations, contact OLAER please.												
LAC 200 - 8 - three-phase	92	6 / 11,00	405													

* Noise level tolerance ± 3 dB(A).

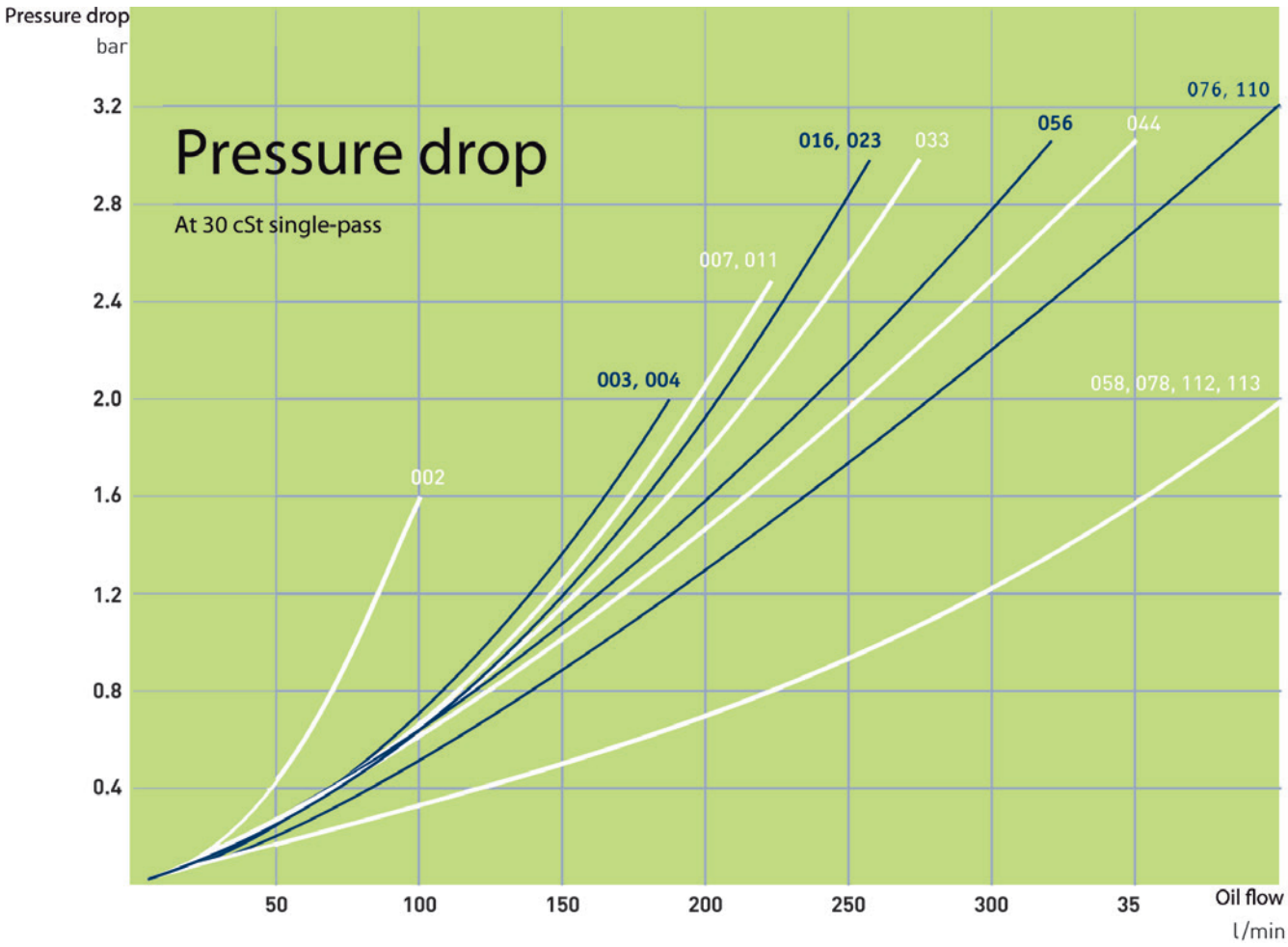
DIMENSIONS LAC



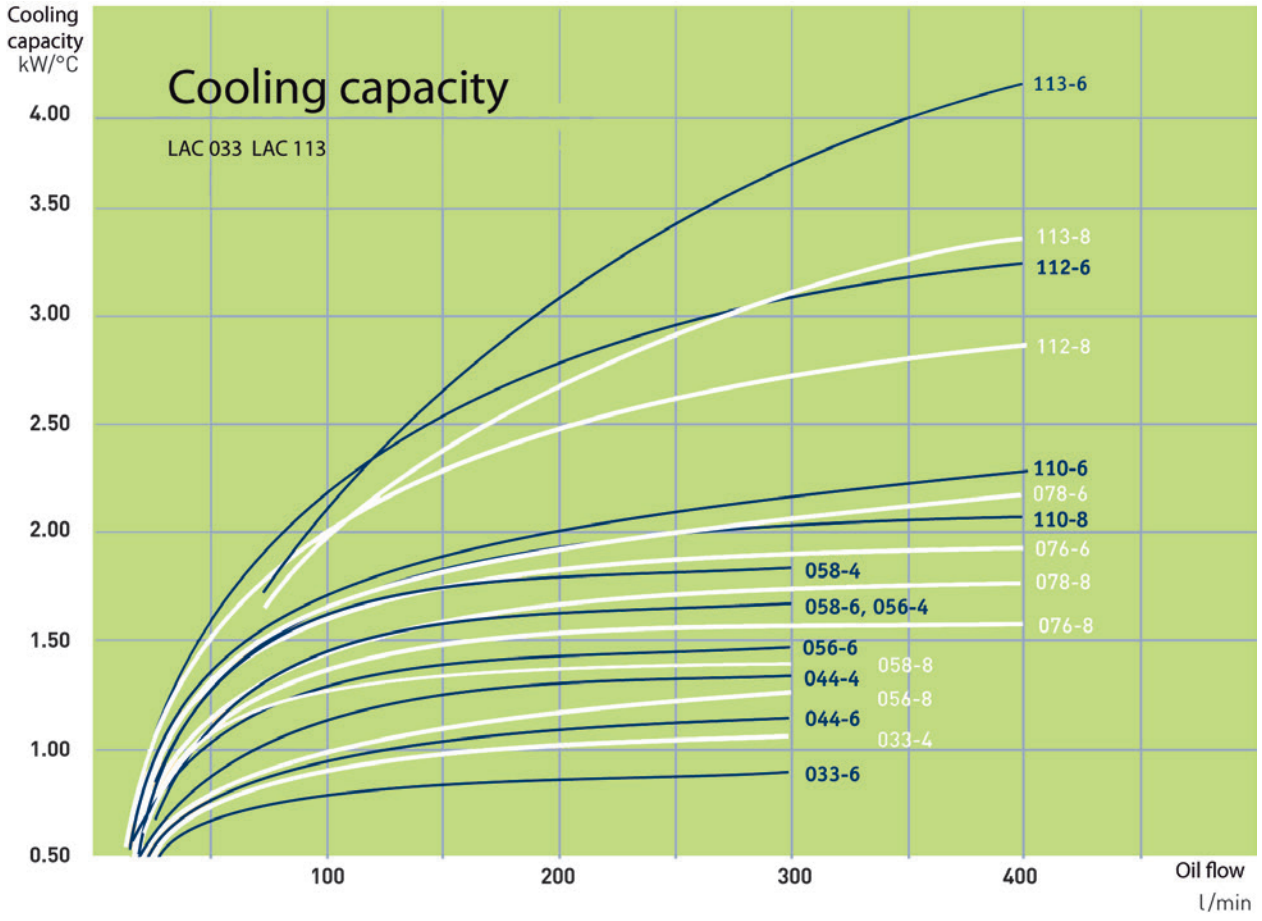
Manufacturer's tolerances not taken into account.

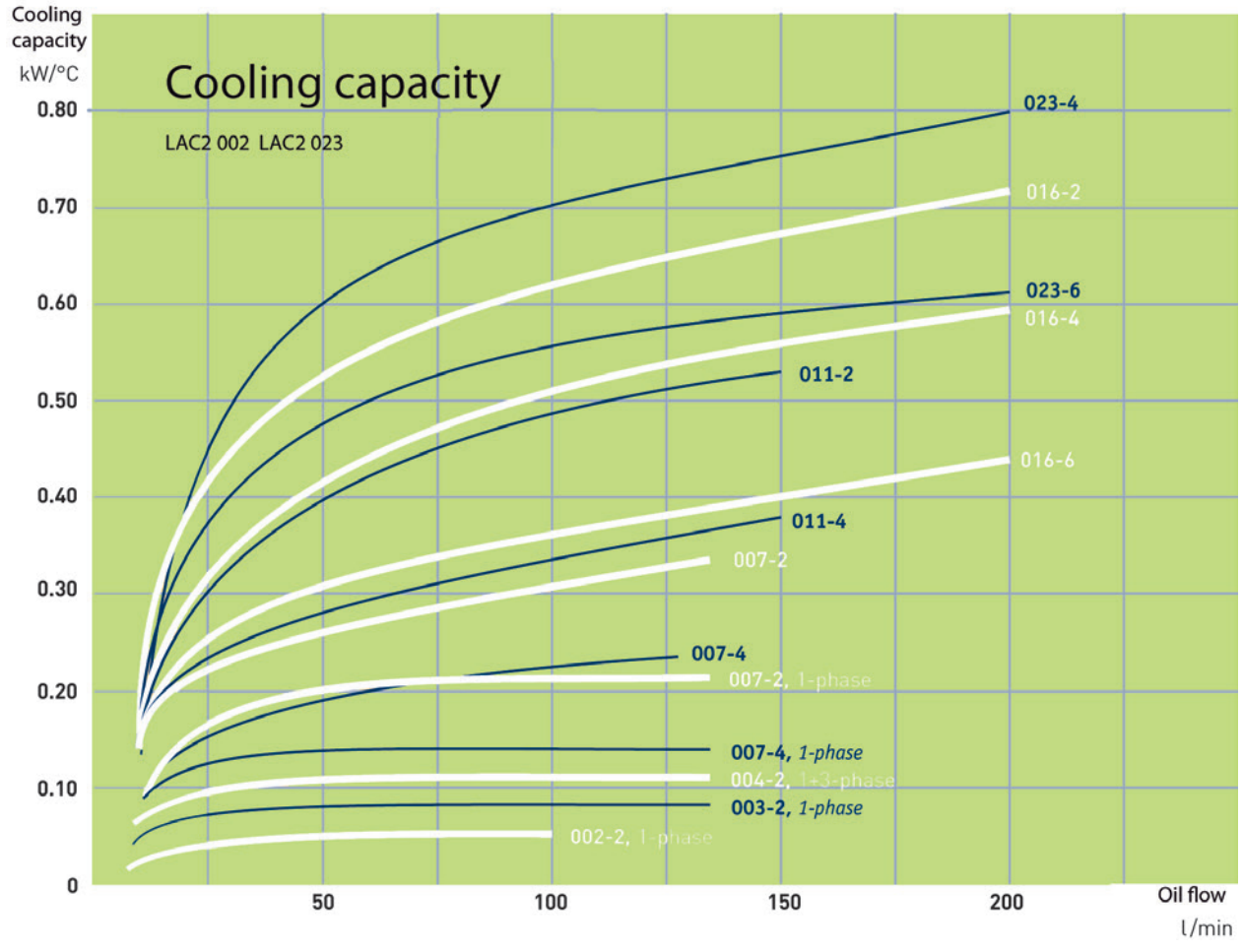
The right to make modifications reserved.

PRESSURE DROP LAC



COOLING CAPACITY LAC





KEY FOR LAC / TECHNICAL SPECIFICATION

Example

LAC2 - 016 - 6 - A - 50 - T20 - D - 0

1 2 3 4 5 6 7 8

All positions must be filled in when ordering.

1. Air Oil Cooler with AC motor	= LAC/LAC2

2. Cooler size
002, 003, 004, 007, 011, 016, 023, 033, 044, 056, 076, 078, 110, 112, 113 and 200

3. Number of poles, motor	
2-pole	= 2
4-pole	= 4
6-pole	= 6
8-pole	= 8

4. Voltage and frequency (IE2 guaranteed at 50 Hz)	
No motor	= 0
230/400V 50 Hz[1)]	= A
460 bzw. 480V 60 Hz[1)]	= B
Single-phase 230 V 50 Hz (not IE2)	= C
230/400 V 50 Hz, 460 alt 480 V 60 Hz[2)]	= D
500 V 50 Hz (no standard)	= E
400/690 V 50 Hz, 460 alt 480 V 60 Hz	= F
525 V 50 Hz, 575 V 60 Hz	= G
Motor for special voltage or frequency (stated in plain language)[3)]	= X

1) For LAC 033 to LAC 113
2) For LAC2 007 to LAC2 023
3) For other options contact OLAER for assistance.
All motors apply to IEC 60034, IEC 60072 and EN 50347.

5. Thermo contact	
No thermo contact	= 00
40 °C	= 40
50 °C	= 50
60 °C	= 60
70 °C	= 70
80 °C	= 80
90 °C	= 90

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 for LAC2 002 - LAC2 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	HL/HLP in accordance with DIN 51524
Oil / Water emulsion	HFA, HFB in accordance with CETOP RP 77H
Water glycol	HFC in accordance with CETOP RP 77H
Phosphate ester	HFD-R in accordance with CETOP RP 77H

Material	
Cooler matrix	Aluminium
Fan blades / hub	Glass fibre reinforced polypropylene / Aluminium
Fan housing	Steel
Fan guard	Steel
Other parts	Steel
Surface treatment	Electrostatically powder-coated

Technical data for cooler matrix	
Maximum static operating pressure	21 bar
Dynamic operating pressure	14 bar Tested in accordance with ISO/DIS 10771-1.
Heat transfer limit	± 6 %
Maximum oil inlet temperature	120 °C

Technical data for 3-phase motor	
3-phase asynchronous motors in accordance with IEC 34-1 and IEC 60072 in accordance with DIN 57530/VDE 0530	
Insulation class	F
Rise of temperature	B
Protection class	IP 55

Technical data for 1-phase motor	
Insulation class	B
Rise of temperature	B
Protection class	IP 44

Technical data for 3-phase motor LAC2 004	
Rated voltage	230/400 V 50/60 Hz
Insulation class	B
Rise of temperature	B
Protection class	IP 44

Cooling capacity curve
The cooling capacity curves in this technical data sheet are based on tests in accordance with EN 1048 and have been produced using oil type ISO VG 46 at 60 °C.

Contact OLAER for advice on:	
Oil temperatures	> 120 °C
Oil viscosity	> 100 cSt
Other liquids Aggressive environments Ambient air rich in particles High-altitude locations	

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