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Air Oil Coolers

LAC with AC Motor for Industrial Use



Parker

ENGINEERING YOUR SUCCESS.



The Olaer Group is part of Parker Hannifin since July 1st, 2012. With manufacturing and sales in 14 countries in North America, Asia and Europe, the Olaer Group expands Parker's presence in geographic growth areas and offers expertise in hydraulic accumulator and cooling systems for target growth markets such as oil and gas, power generation and renewable energy.

LAC Air Oil Coolers

For industrial use – maximum cooling capacity 300 kW

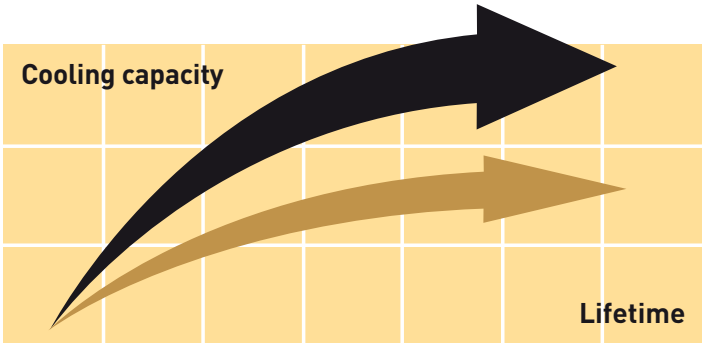
The LAC air oil cooler with single-phase or three-phase AC motor is optimized for use in the industrial sector. Together with a wide range of accessories, the LAC cooler is suitable for installation in most applications and environments. The maximum cooling capacity is 300 kW at ETD 40 °C. Choosing the 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-efficiency and environmental consideration.

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:
(Ploss = Pcool = Pin – Pused).
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:
- **The hydraulic system's useful life is extended.**
- **The oil's useful life is extended.**
- **The hydraulic system's availability increases – more operating time and fewer shutdowns.**
- **Service and repair costs are reduced.**
- **High efficiency level maintained in continuous operation – the system's efficiency falls if the temperature exceeds the ideal working temperature.**





Parker

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

Easy to maintain and easy to retrofit in many applications.

Compact design and low weight.



Quiet fan and fan motor.

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

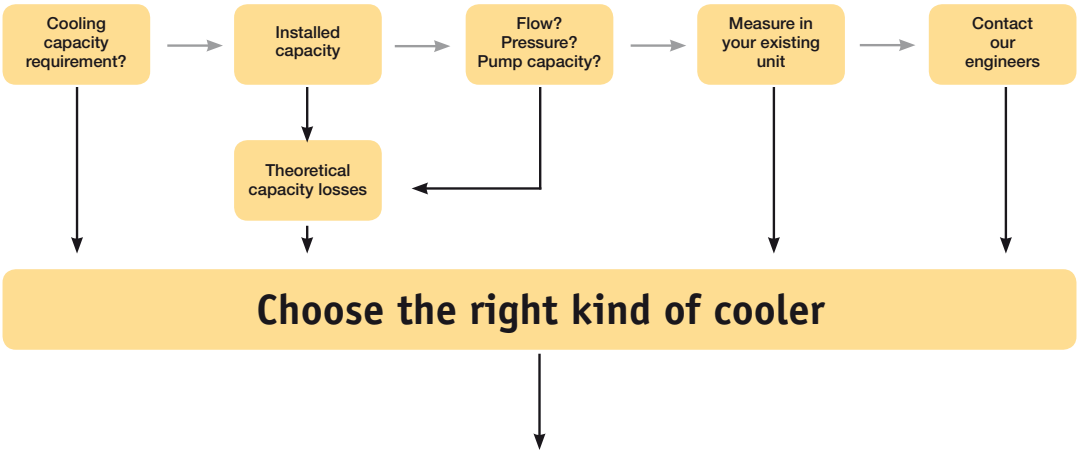
Cooler matrix with low pressure drop and high cooling capacity.

LAC-M and LAC-X

LAC air oil coolers are also available in two special versions, LAC-X (ATEX version), approved for applications where there may be an explosive environment above ground, and LAC-M, adapted to be able better to deal with corrosion attacks, for example in marine environments.

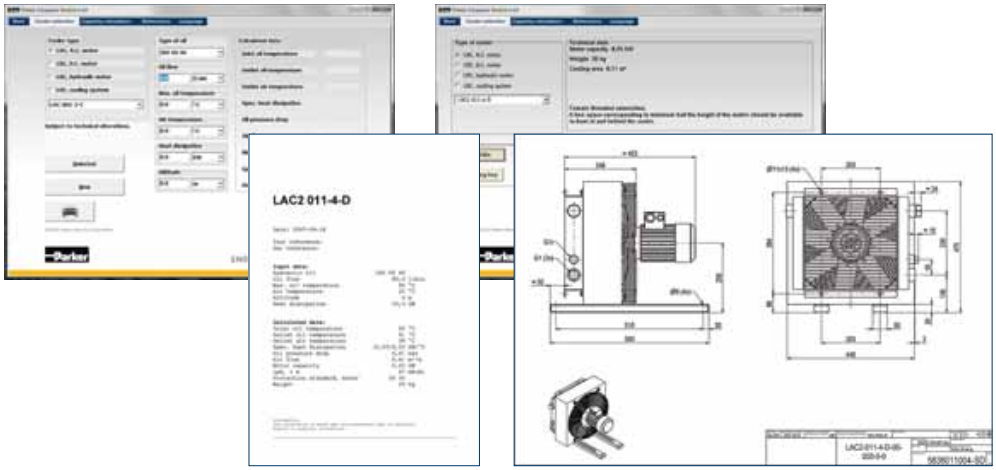
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Calculate the Cooling Capacity Requirement





Enter your values ....



... suggested solution

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Better energy consumption means not only less environmental impact, but also reduces operating costs, i.e. more cooling per € invested.

More Cooling per €

with precise calculations and our engineers' support

Optimal sizing produces efficient cooling. Correct sizing requires knowledge and experience. our calculation program, combined with our engineers' support, gives you access to this very knowledge and experience. The result is more cooling per € invested. The user-friendly calculation program can be downloaded from www.olaer.se

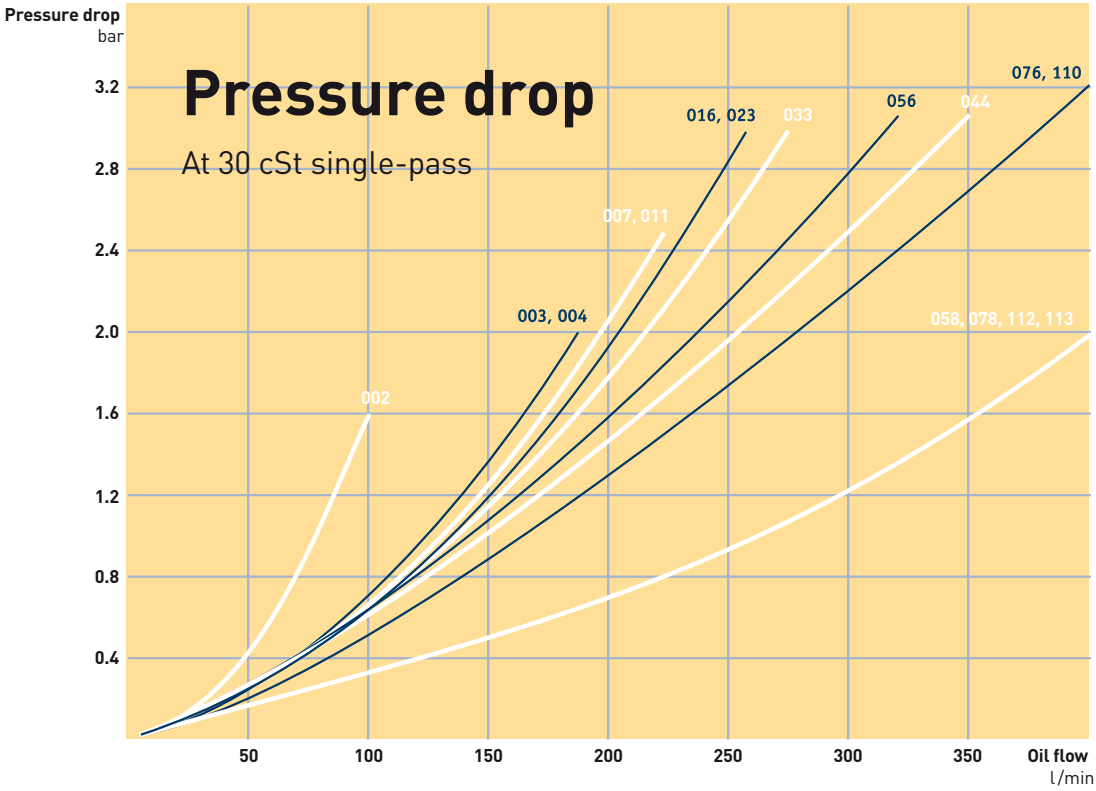
Valuable system review into the bargain
A more wide-ranging review of the hydraulic system is often a natural element of cooling calculations. Other potential system improvements can then be discussed – e.g. filtering, offline or online cooling, etc. Contact us for further guidance and information.

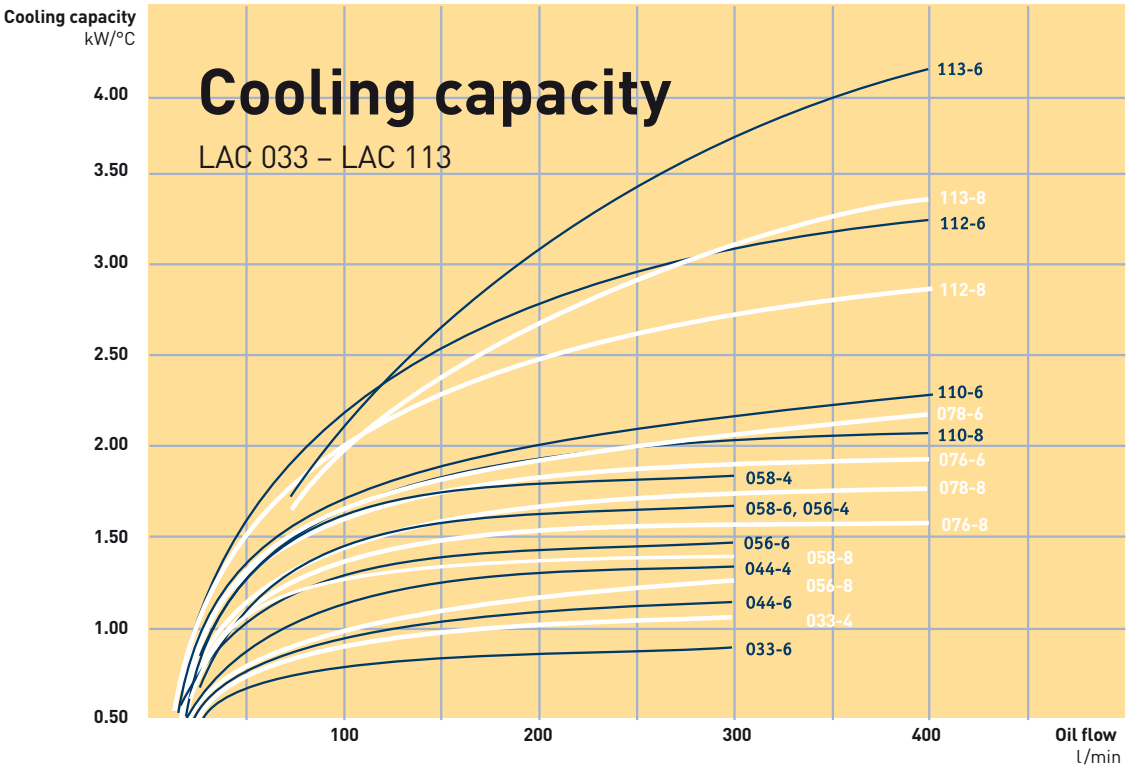
Parker Hannifin's quality and performance guarantee insurance for your operations and systems
A constant striving towards more cost-efficient and environment friendly hydraulic systems requires continuous development. Areas where we are continuously seeking to improve performance include cooling capacity, noise level, pressure drop and fatigue. Meticulous quality and performance tests are conducted in our laboratory. All tests and measurements take place in accordance with standardised methods - cooling capacity in accordance with EN1048, noise level ISO 3743, pressure drop EN 1048 and fatigue ISO 10771-1.

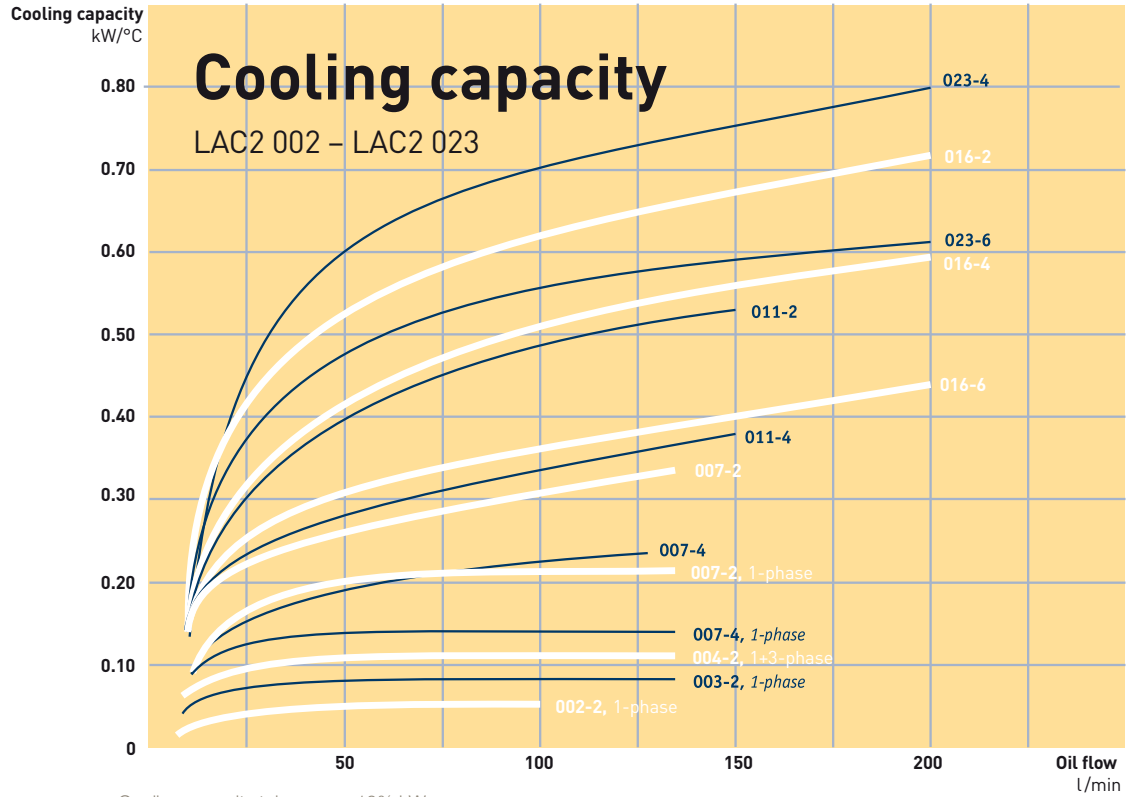




The cooling capacity curves are based on the inlet oil temperature and the ambient air temperature. An oil temperature of 60 °C and an air temperature of 20 °C produce a temperature difference of 40 °C. Multiply by kW/°C for total cooling capacity.

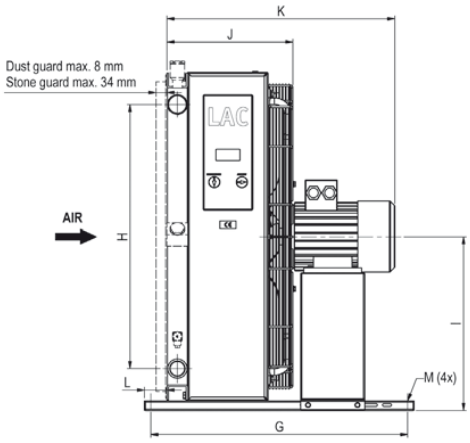






Cooling capacity tolerance ± 10% kW.

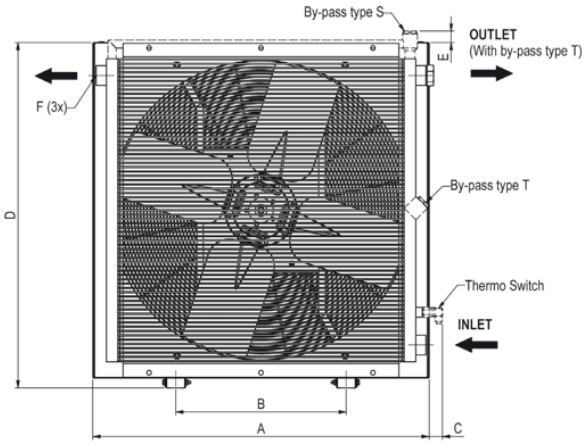
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TYPE		Acoustic pressure level LpA dB(A) 1m*	No. of poles/ Capacity kW	Weight kg (approx)
LAC2	002-2-single-phase	50	2-0.05	4
LAC2	003-2-single-phase	61	2-0.05	5
LAC2	004-2-single-phase	63	2-0.07	6
LAC2	004-2-single-phase	63	2-0.07	6
LAC2	007-4-single-phase	65	2-0.08	9
LAC2	007-2-single-phase	79	2-0.24	10
LAC2	007-4-three-phase	62	4-0.25	15
LAC2	007-2-three-phase	79	2-0.55	16
LAC2	011-4-three-phase	67	4-0.25	20
LAC2	011-2-three-phase	82	2-1.10	25
LAC2	016-6-three-phase	60	6-0.18	23
LAC2	016-4-three-phase	70	4-0.37	24
LAC2	016-2-three-phase	86	2-1.10	27
LAC2	023-6-three-phase	64	6-0.18	35
LAC2	023-4-three-phase	76	4-0.75	36
LAC	033-6-three-phase	74	6-0.55	45
LAC	033-4-three-phase	84	4-2.20	52
LAC	044-6-three-phase	76	6-0.55	63
LAC	044-4-three-phase	85	4-2.20	65
LAC	056-8-three-phase	73	8-0.55	73
LAC	056-6-three-phase	81	6-1.50	75
LAC	056-4-three-phase	84	4-2.20	75
LAC	058-8-three-phase	74	8-0.55	80
LAC	058-6-three-phase	82	6-1.50	82
LAC	058-4-three-phase	85	4-2.20	82
LAC	076-8-three-phase	79	8-1.10	130
LAC	076-6-three-phase	86	6-2.20	140
LAC	078-8-three-phase	80	8-1.10	136
LAC	078-6-three-phase	87	6-2.20	146
LAC	110-8-three-phase	84	8-2.20	160
LAC	110-6-three-phase	90	6-5.50	170
LAC	112-8-three-phase	85	8-2.20	168
LAC	112-6-three-phase	91	6-5.50	178
LAC	113-8-three-phase	80	8-2.20	218
LAC	113-6-three-phase	88	6-5.50	237
LAC	200-8-three-phase	86	8-4.00	365
LAC	200-6-three-phase	92	6-11.00	405

* = Noise level tolerance ± 3 dB(A).

OUTLET
(With by-pass type S)



TYPE		A	B	C	D	E	F	G	H	I	J	K	L	Mø
LAC2	002-2-single-phase	165	74	82	189	-	G½	190	72	97	105	167	39	9
LAC2	003-2-single-phase	244	134	82	223	71	G1	148	90	114	161	218	31	9x14
LAC2	004-4-single-phase	267	134	82	256	69	G1	148	90	131	165	222	28	9x14
LAC2	004-2-single-phase	267	134	82	256	69	G1	148	90	131	165	222	28	9x14
LAC2	007-4-single-phase	340	203	77	345	54	G1	267	160	175	189	249	49	9x14
LAC2	007-2-single-phase	340	203	77	345	54	G1	267	160	175	189	249	49	9x14
LAC2	007-4-three-phase	365	203	64	395	42	G1	510	160	213	225	429	50	9
LAC2	007-2-three-phase	365	203	64	395	42	G1	510	160	213	225	434	50	9
LAC2	011-4-three-phase	440	203	62	470	41	G1	510	230	250	249	453	50	9
LAC2	011-2-three-phase	440	203	62	470	41	G1	510	230	250	249	475	50	9
LAC2	016-6-three-phase	496	203	66	526	46	G1	510	230	278	272	474	50	9
LAC2	016-4-three-phase	496	203	66	526	46	G1	510	230	278	272	479	50	9
LAC2	016-2-three-phase	496	203	66	526	46	G1	510	230	278	272	496	50	9
LAC2	023-6-three-phase	580	356	63	610	44	G1	510	305	320	287	489	50	9
LAC2	023-4-three-phase	580	356	63	610	44	G1	510	305	320	287	511	50	9
LAC	033-6-three-phase	692	356	53	722	42	G1¼	510	406	376	318	534	50	9
LAC	033-4-three-phase	692	356	53	722	42	G1¼	510	406	376	318	618	50	9
LAC	044-6-three-phase	692	356	53	866	59	G1¼	510	584	448	343	559	50	9
LAC	044-4-three-phase	692	356	53	866	59	G1¼	510	584	448	343	643	50	9
LAC	056-8-three-phase	868	356	49	898	43	G1¼	510	584	448	343	643	50	9
LAC	056-6-three-phase	868	508	49	898	43	G1¼	510	584	464	368	668	50	9
LAC	056-4-three-phase	868	508	49	898	43	G1¼	510	584	464	368	668	50	9
LAC	058-8-three-phase	868	508	49	898	43	G2	510	584	464	388	652	30	9
LAC	058-6-three-phase	868	508	49	898	43	G2	510	584	464	388	682	30	9
LAC	058-4-three-phase	868	508	49	898	43	G2	510	584	464	388	688	30	9
LAC	076-8-three-phase	1022	518	41	1052	45	G1½	800	821	541	393	693	70	14
LAC	076-6-three-phase	1022	518	41	1052	45	G1½	800	821	541	393	710	70	14
LAC	078-8-three-phase	1022	518	41	1052	45	G2	800	821	541	413	713	50	14
LAC	078-6-three-phase	1022	518	41	1052	45	G2	800	821	541	413	730	50	14
LAC	110-8-three-phase	1185	600	54	1215	45	G2	800	985	623	418	785	70	14
LAC	110-6-three-phase	1185	600	54	1215	45	G2	800	985	623	418	785	70	14
LAC	112-8-three-phase	1185	600	54	1215	45	G2	800	985	623	438	805	50	14
LAC	112-6-three-phase	1185	600	54	1215	45	G2	800	985	623	438	805	50	14
LAC	113-8-three-phase	1200	600	82	1215	45	G2	860	985	623	465	833	82	14
LAC	113-6-three-phase	1200	600	82	1215	45	G2	860	985	623	465	871	82	14
LAC	200-8-three-phase	Please see LAC 200 brochure for more information												
LAC	200-6-three-phase													

Key for LAC/LAC2 Air Oil Coolers

All positions must be filled in when ordering:

EXAMPLE:	*LAC2 -*	*016 -*	*6 -*	*A -*	*50 -*	*T20 -*	*D -*	*0*
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*

1. AIR OIL COOLER WITH AC MOTOR = LAC / LAC2

2. COOLER SIZE

002, 003, 004, 007, 011, 016, 023, 033, 044, 056, 058, 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 50HZ)

No motor	= 0
230/400V 50Hz[1)]	= A
460V alt 480V 60Hz[1)]	= B
Single-phase 230V 50Hz (not IE2)	= C
230/400V 50Hz 460 alt 480V 60Hz[2)]	= D
500V 50Hz (not standard)	= E
400/690V 50Hz 460 alt 480V 60Hz	= F
525V 50Hz, 575V 60Hz	= 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 Parker 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	= O
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	Aluminum
Fan blades/hub	Glass fibre reinforced polypropylene/ Aluminum
Fan housing	Steel
Fan guard	Steel
Other parts	Steel
Surface treatment	Electrostatically powder-coated

TECHNICAL DATA, COOLER MATRIX

Maximum static operating pressure	21 bar
Dynamic operating pressure	14 bar*
Heat transfer limit	± 6 %
Maximum oil inlet temperature	120 °C

* Tested in accordance with ISO/DIS 10771-1

TECHNICAL DATA FOR 3-PHASE MOTOR

3-phase asynchronous motors in accordance with IEC 34-1 and IEC 72 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	230/400V 50/60Hz
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 PARKER HANNIFIN FOR ADVICE ON

Oil temperatures	> 120 °C
Oil viscosity	> 100 cSt

Aggressive environments
Ambient air rich in particles
High-altitude locations

The information in this brochure is subject to change without prior notice.

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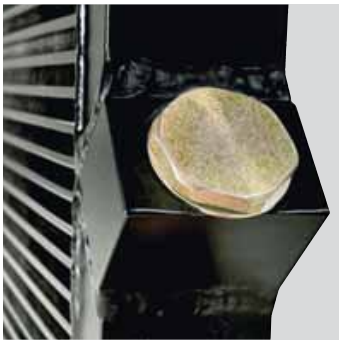


With our specialist expertise, industry knowledge and advanced technology, we can offer a range of different solutions for coolers and accessories to meet your requirements.

Take the Next Step

- choose the right accessories

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 Parker Hannifin 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.

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