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# **Air Oil Coolers**

LOC Cooling System for Industrial Use





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.

# LOC Cooling System

# For industrial use – maximum cooling capacity 45 kW

The LOC cooling system with three-phase AC motor is optimized for use in the industrial sector. The system is supplied ready for installation. An integrated circulation pump makes it possible to cool and treat the oil in a separate circuit – offline cooling. The cooling system can also be equiped with Parker filter unit. Together with a wide range of accessories, the LOC cooling system is suitable for installation in most applications and environments. The maximum cooling capacity is 45 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

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:

- **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.









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.

Integrated ciculation pump produces and even flow with low pressure pulsations.



Quiet fan and fan motor.

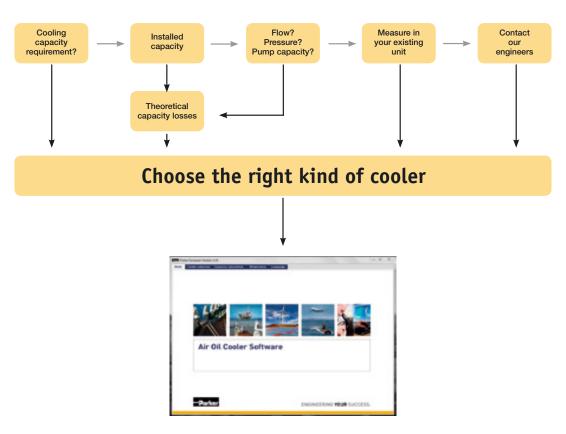
Cooler matrix with low pressure drop and high cooling capacity.

Compact design and low weight.





# Calculate the **Cooling Capacity Requirement**



Enter your values ....



... suggested solution







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.







# **Technical specification**

- LOC is designed primarily for synthetic oils, vegetable oils and mineral oil type HL/HLP in accordance with DIN 51524. Maximum oil temperature 100 °C.
- Maximum negative pressure in the inlet line is 0.4 bar with an oil-filled pump. Maximum pressure on the pump's suction side is 0.5 bar.
- Maximum working pressure for the pump is 10 bar. For information about suction height, pressure, etc. see the QPM3 pump manual.

# **3-PHASE MOTOR**

3-phase asynchronous motors in accordance with IEC 60034-1 Nominal voltage F Insulation class Rise of temperature В Protection class IP 55 -20 °C -Recommended ambient temperature +40 °C

## **MATERIAL**

Pump housing Aluminum 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

# **CONTACT PARKER HANNIFIN** FOR ADVICE ON

- Oil temperatures > 100 °C
- Oil viscosity > 100 cSt
- Aggressive environments
- Ambient air rich in particles
- High-altitude locations

<sup>\* =</sup> See separate instructions for electric motor.

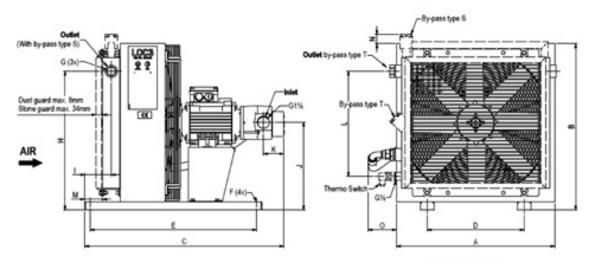
ТҮРЕ	Nom. oil flow I/min	Cooling capacity in kW at EDT 40 °C	Cooling capacity kW/°C	Acoustic pressure level LpA dB(A) 1m*	No. of poles/ Capacity kW	Weight kg (approx)
LOC3 004 - 4 - D - A	20	2.7	0.07	57	4-0.75	23
LOC3 007 - 4 - D - A	20	5.6	0.14	64	4-0.75	30
LOC3 007 - 4 - D - B	40	7.2	0.18	64	4075	30
LOC3 007 - 4 - D - C	60	8.0	0.20	65	4-1.50	36
LOC3 007 - 4 - D - D	80	8.4	0.21	65	4-1.50	36
LOC3 011 - 4 - D - A	20	9.2	0.23	70	4-0.75	34
LOC3 011 - 4 - D - B	40	10.4	0.26	70	4-0.75	34
LOC3 011 - 6 - D - C	40	7.6	0.19	61	6-1.10	40
LOC3 011 - 6 - D - D	55	8.8	0.22	61	6-1.10	40
LOC3 011 - 4 - D - C	60	12.0	0.30	70	4-1.50	40
LOC3 011 - 4 - D - D	80	13.2	0.33	70	4-1.50	40
LOC3 016 - 4 - D - A	20	11.2	0.28	74	4-1.50	45
LOC3 016 - 4 - D - B	40	15.6	0.39	74	4-1.50	45
LOC3 016 - 6 - D - C	40	12.4	0.31	64	6-1.10	45
LOC3 016 - 6 - D - D	55	14.0	0.35	64	6-1.10	45
LOC3 016 - 4 - D - C	60	18.0	0.45	74	4-1.50	45
LOC3 016 - 4 - D - D	80	19.6	0.49	74	4-1.50	45
LOC3 023 - 4 - D - B	40	21.2	0.53	77	4-1.50	53
LOC3 023 - 6 - D - C	40	16.8	0.42	67	6-1.10	53
LOC3 023 - 6 - D - D	55	18.4	0.46	67	6-1.50	53
LOC3 023 - 4 - D - C	60	24.4	0.61	77	4-2.20	62
LOC3 023 - 4 - D - D	80	26.8	0.67	77	4-2.20	62
LOC3 033 - 6 - A - D	55	26.0	0.65	74	6-2.20	92
LOC3 033 - 4 - A - C	60	32.0	0.80	85	4-3.00	76
LOC3 033 - 4 - A - D	80	34.8	0.87	85	4-3.00	76
LOC3 044 - 6 - A - D	55	34.0	0.85	77	6-2.20	98
LOC3 044 - 4 - A - C	60	40.0	1.00	86	4-3.00	85
LOC3 044 - 4 - A - D	80	44.8	1.12	86	4-3.00	85

<sup>\* =</sup> Electric motors specified are calculated for max. working pressure 6 bar at 125 cSt and 50 Hz, 4 bar at 125 cSt and 60 Hz. If you require higher pressure, please contact us for a choice of motors with a higher output.

<sup>=</sup> Noise level tolerance  $\pm$  3 dB(A).







Туре	Α	В	С	D	Е	F	G	Н	1	J	K	L	М	N	0
LOC3 004-4-D-A	267	284	542	134	420	Ø9	G1	206	88	159	62	90	55	67	123
LOC3 007-4-D-A	365	395	602	203	510	Ø9	G1	292	83	214	62	80	50	45	105
LOC3 007-4-D-B	365	395	615	203	510	Ø9	G1	292	83	214	74	80	50	45	105
LOC3 007-4-D-C	365	395	667	203	510	Ø9	G1	292	83	214	87	80	50	45	105
LOC3 007-4-D-D	365	395	680	203	510	Ø9	G1	292	83	214	100	80	50	45	105
LOC3 011-4-D-A	440	470	626	203	510	Ø9	G1	366	83	252	62	175	50	41	103
LOC3 011-4-D-B	440	470	639	203	510	Ø9	G1	366	83	252	74	175	50	41	103
LOC3 011-4-D-C	440	470	691	203	510	Ø9	G1	366	83	252	87	175	50	41	103
LOC3 011-4-D-D	440	470	704	203	510	Ø9	G1	366	83	252	100	175	50	41	103
LOC3 011-6-D-C	440	470	717	203	510	Ø9	G1	366	83	252	87	175	50	41	103
LOC3 011-6-D-D	440	470	730	203	510	Ø9	G1	366	83	252	100	175	50	41	103
LOC3 016-4-D-A	496	526	687	203	510	Ø9	G1	427	83	280	62	300	50	46	107
LOC3 016-4-D-B	496	526	699	203	510	Ø9	G1	427	83	280	74	300	50	46	107
LOC3 016-4-D-C	496	526	712	203	510	Ø9	G1	427	83	280	87	300	50	46	107
LOC3 016-4-D-D	496	526	725	203	510	Ø9	G1	427	83	280	100	300	50	46	107
LOC3 016-6-D-C	496	526	738	203	510	Ø9	G1	427	83	280	87	300	50	46	107
LOC3 016-6-D-D	496	526	725	203	510	Ø9	G1	427	83	280	100	300	50	46	107
LOC3 023-4-D-B	580	610	729	356	610	Ø14	G1	509	98	322	74	385	65	44	104
LOC3 023-4-D-C	580	610	770	356	610	Ø14	G1	509	98	322	87	385	65	44	104
LOC3 023-4-D-D	580	610	783	356	610	Ø14	G1	509	98	322	100	385	65	44	104
LOC3 023-6-D-C	580	610	770	356	610	Ø14	G1	509	98	322	87	385	65	44	104
LOC3 023-6-D-D	580	610	783	356	610	Ø14	G1	509	98	322	100	385	65	44	104
LOC3 033-4-A-C	692	722	798	356	610	Ø14	G1 1/4	619	103	378	87	326	70	38	99
LOC3 033-4-A-D	692	722	810	356	610	Ø14	G1 1/4	619	103	378	100	326	70	38	99
LOC3 033-6-A-D	692	722	825	356	610	Ø14	G1 1/4	619	103	378	100	326	70	38	99
LOC3 044-4-A-C	629	866	823	356	610	Ø14	G1 1/4	780	103	450	87	504	70	59	99
LOC3 044-4-A-D	629	866	835	356	610	Ø14	G1 1/4	780	103	450	100	504	70	59	99
LOC3 044-6-A-D	629	866	850	356	610	Ø14	G1 1/4	780	103	450	100	504	70	59	99





# Key for LOC3 cooling systems

All positions must be filled in when ordering

EXAMPLE: LOC3 - 011 - 6 - A - C - L - 50 - S20 - D - 00 - 0

1 2 3 4 5 6 7 8 9 10/11 12

# 1. TYPE OF COOLING SYSTEM = LOC3

# 2. COOLER SIZE

004, 007, 011, 016, 023, 033, 044

## 3. NUMBER OF POLES, MOTOR

4 - pole	= 4
6 - pole	= 6

## 4. VOLTAGE AND FREQUENCY

230/400V 50HZ <sup>17</sup>	=	А	
460 alt 480V 60Hz11)	=	В	
230/400V 50Hz alt			
480V 60Hz <sup>2)</sup>	=	D	
500V 50Hz (not standard)	=	Ε	
400/690V 50Hz, 460 alt			
480V 60Hz	=	F	
525V 50Hz. 575V 60Hz	=	G	
Motor for special voltage			
(stated in plain language)3)	=	Χ	
1) = for LOC3 033 to LOC3 044			

- 1) = for LOC3 033 to LOC3 044. 2) = for LOC3 007 to LOC3 023. 3) For other options contact Parker
- <sup>3)</sup> For other options contact Parker Hannifin for assistance. All motors apply to IEC 60034, IEC 60072 and EN 50347.

# 5. PUMP SIZE

Displacement 15 cm <sup>3</sup> /r	= A
Displacement 30 cm <sup>3</sup> /r	= B
Displacement 45 cm <sup>3</sup> /r	= C
Displacement 60 cm <sup>3</sup> /r	= D
Special	= X

# 6. BYPASS VALVE, PUMP

No bypass valve	= O
Built-in bypass valve,	
5 bar internal	= L
Built-in bypass valve,	
10 bar internal	= H
Built-in bypass valve,	
5 bar external	= K
Built-in bypass valve,	
10 bar external	= M

# 7. THERMO CONTACT

For temperature alarm, not for			
direct control of electric motor.			
No thermo contact	= 00		
40 °C	= 40		
50 °C	= 50		
60 °C	= 60		
70 °C	= 70		
80 °C	= 80		
90 °C	= 90		

# 8. COOLER MATRIX

Standard $= 000$	
Two-pass = T00	
Built-in, pressure-controlled	
bypass, single-pass	
2  bar = S20	
5  bar = S50	
8 bar = \$80	
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 = \$25 60 °C, 2.2 bar = \$26

# $70 \, ^{\circ}\text{C}$ , 2.2 bar = S27 90 $^{\circ}\text{C}$ , 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 LOC 004	

# 9. MATRIX GUARD

No guard	= 0
Stone guard	= S
Dust guard	= D
Dust and stone guard	= P

# 10. FILTER UNIT

No filter unit	= 0
Filter unit	= X
Please contact Parker Ha	annifin for guidance
and information regardin	g filter units.

# 11. PRESSURE DROP INDICATOR

No pressure drop	
indicator.	= 0
Pressure drop indicator	= X

# 12. STANDARD/SPECIAL

Standard	= 0
Special	= Z

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







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 wellplanned 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.



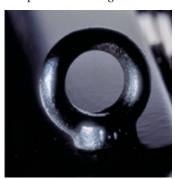
# Thermo contact

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 temperaturecontrolled bypass valve, but positioned externally.

Note: must be ordered separately.



# Stone guard/Dust guard

Protects components and systems from tough conditions.





# **Motion & Control Technologies**

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements.

It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience. breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker.

For further information, call our European Product Information Centre at 00800 27 27 53 74.



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- Regional transports
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- Fuel systems and components

   Refrigerant distribution

  Hydraulic systems and components

   Safety relief valves
- Inert nitrogen generating systems Solenoid valves Pneumatic systems
- and components Wheels and brakes



# CLIMATE CONTROL

## Agriculture

- Air conditioning
- Food, beverage and dairy
- · Life sciences and medical
- Precision cooling
- Transportation

- CO<sub>2</sub> controls
   Electronic controllers
- Filter driers
- Hand shut-off valves
- Hoses and fittings Pressure regulating valves
- Refrigerant distributors
- Thermostatic expansion valves

- Controllers
- Gantry robots
- Human machine interfaces
- Inverters
- Linear motors, slides and stages
- Precision stages
- Servo motors, drives and controls



### **ELECTROMECHANICAL**

# Aerospace

- Factory automation
- · Food and beverage Life science and medical
- Machine tools
- Packaging machinery
- Paper machinery
- · Plastics machinery and converting
- Primary metals
- · Semiconductors and electronics
- · Wire & cable

- AC/DC drives and systems
- Flectric actuators

- Industrial PCs

- Stepper motors
- Structural extrusions

# **FILTRATION**

### Food and beverage

- · Life sciences
- Marine
- Mobile equipment
- Power generation
- Process
- Transportation

- Analytical gas generatorsCompressed air and gas filters
- Condition monitoringEngine air, fuel and oil filtration
- and systems
- Hydraulic, lubrication and coolant filters
- Process, chemical, water and microfiltration filters
- Nitrogen, hydrogen and zero air generators



# **FLUID & GAS HANDLING**

- Aerospace
- Agriculture
- Bulk chemical handling
   Construction machinery
- Food and beverageFuel and gas delivery
- Industrial machinery
- Oil and das
- Transportation

# Welding

- · Brass fittings & valves Diagnostic equipment
- Fluid conveyance system
- Industrial hosesPTFE and PFA hoses, tubing
- and plastic fittings
   Rubber and thermoplastic
- hoses and couplings
   Tube fittings and adapters · Quick disconnect couplings



# **HYDRAULICS**

- Aerospace Aerial lift
- Agriculture
- Construction machinery
- Industrial machinery
- Mining
- Oil and gas
- Power generation and energyTruck hydraulics
- · Diagnostic equipment Hydraulic cylinders
- and accumulators Hydraulic motors and pumps
- Hvdraulic systems
- Hydraulic valves and controls Power take-offs · Rubber and thermoplastic hoses
- and couplings Tube fittings and adaptersQuick-disconnect couplings

- Aerospace
  - Conveyor and materials handling Factory automation
  - Food and beverage

**PNEUMATICS** 

- Life science and medical
- Machine tools Packaging machineryTransportation and automotive

- Air preparation Compact cylinders
- Field bus valve systems
- Guided cylinders
- Manifolds
- Miniature fluidics
- Pneumatic actuators and grippers
- Pneumatic valves and controls
- Rodless cylinders Rotary actuatorsTie-rod cylinders
- Grippers
- · Pneumatic accessories
- Vacuum generators, cups



## PROCESS CONTROL

- Chemical and refining
- Food, beverage and dairy Medical and dental
- Microelectronics

### Oil and gas • Power generation

- Analytical sample conditioning products and systems
  • Fluoropolymer chemical delivery
- fittings, valves and pumps

   High purity gas delivery fittings, valves and regulators

  Instrumentation fittings, valves
- and regulators

   Medium pressure fittings
- and valves · Process control manifolds



# **SEALING & SHIELDING**

- Aerospace Chemical processing
- Consumer
   Energy, oil and gas
- Fluid powerGeneral industrial
- Information technology Life sciences
- Military
- Semiconductor Telecommunications

# Transportation

- Dynamic seals Elastomeric 0-rings
- EMI shielding
   Extruded and precision-cut, fabricated elastomeric seals

  • Homogeneous and inserted
- Metal and plastic retained composite seals Thermal management

elastomeric shapes High temperature metal seals



10







# **Notes**





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Catalogue HY10-6003/UK, POD, 10/2012, ZZ



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