aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
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MAC Series

Air Oil Cooler with AC motor for Marine Applications

Parker

ENGINEERING YOUR SUCCESS.

Description

The MAC series is engineered for Marine offshore applications and provides cooling capacity up to 300 kW. Corrosion resistance meets C5M-M requirements in accordance with ISO 12944.

The MAC Series benefits from Parker's experience and knowledge in cooling and has been specially developed to withstand the most challenging environments. Its robust design provides extended availability and reduced maintenance which is especially critical for applications in remote or hard to reach locations.

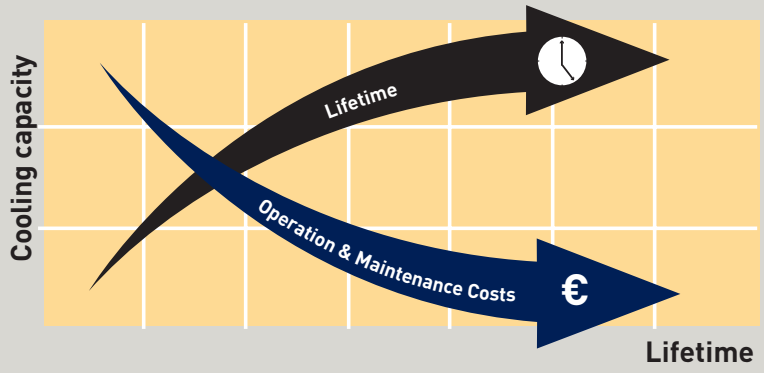
Efficiency
The MAC air oil cooler provides high performance cooling with a maximum cooling capacity of 300kW, providing efficient and cost saving cooling solutions for hydraulic systems.

Sustainability
The MAC series is REACH/RoHs compliant and offers low noise levels making it more environmentally and user friendly.

Flexibility
Parker offer a complete cooler and accessories range with a wide selection of cooling capacities and sizes to suit every hydraulic systems.

Benefits

The MAC air oil cooler series has been specially engineered for installation in highly corrosive environments and offers enhanced longevity due to its state of the art design and coating technology for corrosion resistance.



Applications

Parker coolers are used in a broad variety of applications. Below are several examples of applications in which the cooler products can be utilized, however please contact us for more information.

MARINE

- **Deck Machinery**
  Winches
  Shark Jaws & Guide Pins
- **Ship Equipment**
  Steering Gear
  Hydraulic Power Units
- **Cargo Handling**
  Ship Cranes
  Hatch Covers

WIND POWER

- **Turbine**
  Generator and Electrical
  CabinetGear Box

The new MAC Series combines high-performance, efficient fluid cooling with unrivalled corrosion resistance to offer a dependable solution for challenging nearshore and offshore marine applications.

SECURE INSTALLATION

- **Safe and secure lifting** points.
- Console with cable clamp holes for safe and easy wiring of motor with no extra drilling or welding required.
- Rounded feet prevent damage to installation and provide corrosion protection when positioning cooler.
- Installation manual provided with all products giving **safe handling** information and installation guidance for the cooler.

SIMPLIFIED MAINTENANCE

- Parts painted prior to manufacture and assembled with A4 stainless steel fasteners to allow disassembly and reassembly without compromising corrosion protection.
- Reduced number of components to minimise mechanical interferences and give **simplified** spare parts list for **maintenance** teams.

OPERATIONAL EXCELLENCE

- **Corrosion resistance qualified** 720 hours for offshore in neutral salt spray test to ISO 9227
- Optimised drainage to avoid corrosion risk from sea water or condensation.
- No gaps or sharp edges prevent corrosion initiation or paint removal risks.
- Tropicalized paint protection inside housing and connection box to ensure harsh environment performance.

COOL UNDER PRESSURE

- Cooling capacity up to 300kW.
- Maximum operating pressure 21 bar.
- **REACH & RoHS compliant.**
- Safety Machinery to ISO 12100, ISO 4413 and ISO 13857.
- LVD and EMC compliant.

Specification of Parts & Components

Design and coating technology tested and approved on specially designed test pieces in an external certified test laboratory. The MAC Series benefits from Parker's experience and knowledge in cooling technologies coupled with state of the art design and coating technology for corrosion protection.

Category	Coating	Motor	Additional Treatments
Offshore **C5M-M**	Approved 720 hours Neutral Salt Spray test (EN ISO 9227) by certified test laboratory	Cast iron housing, Stainless steel shaft, IP56, A4 Fasteners, Tropicalized painting	Fasteners are additionally treated with corrosion prevention

MAC Code Key

Type: **MAC 076 6 A O 00 000 0 0 0 S 00 00**

Series

Cooler Size
007, 011, 016, 023, 033, 044, 056,
076, 110, 113, 200, 214

Number of poles
4, 6 & 8

Voltage and Frequency
A – 230/400V 50Hz
B - 265/460V 60 Hz
E – 500V 60Hz
F – 400/690V 50Hz
G - 525V 50Hz
H – 575V 60Hz
I – 690V 60Hz

X – Motor for special voltage or frequency.

For other options please contact Parker for assistance. All motors apply to IEC 60034, IEC 60072 and EN 50347

Applications
O – Offshore C5M-M

Thermo contact
00 – No thermo contact
40 – 40°C
50 – 50°C
60 – 60°C
70 – 70°C
80 – 80°C
90 – 90°C
TP – Minimess connector

Cooler Matrix
000 – Standard
Built-in, pressure-controlled bypass, single-pass (up to size 78)
S10 – 1bar S30 – 3bar S60 – 6bar
S20 – 2bar S50 – 5bar S80 – 8bar
Built-in, pressure-controlled bypass, single-pass. Hose type (Size 110-214)
H10 – 1bar H30 – 3bar H60 – 6bar
H20 – 2bar H50 – 5bar H80 – 8bar
Built-in temperature and pressure-controlled bypass, single-pass (up to size 78)
S24 – 40°C 2,2bar S26 – 60°C 2,2bar S28 – 80°C 2,2bar
S25 – 50°C 2,2bar S27 – 70°C 2,2bar S29 –90°C 2,2bar

Special features
00 – Standard
Other contact Division

Color
00 - RAL 9005, Jet Black
01 - RAL 9010, Pure White
03 - RAL 9002, Grey White
Other contact Division

Fan
S – Suction fan PPG
Other contact Division

Matrix guard
0 – Nothing
D – Dust guard
S – Stone guard
P – Dust & stone guards

Matrix Mounting
0 – Standard
Other contact Division

Connectors
0 – Standard BSPP
C – SAE 2”
D – SAE 2 1/2”

Offshore Applications

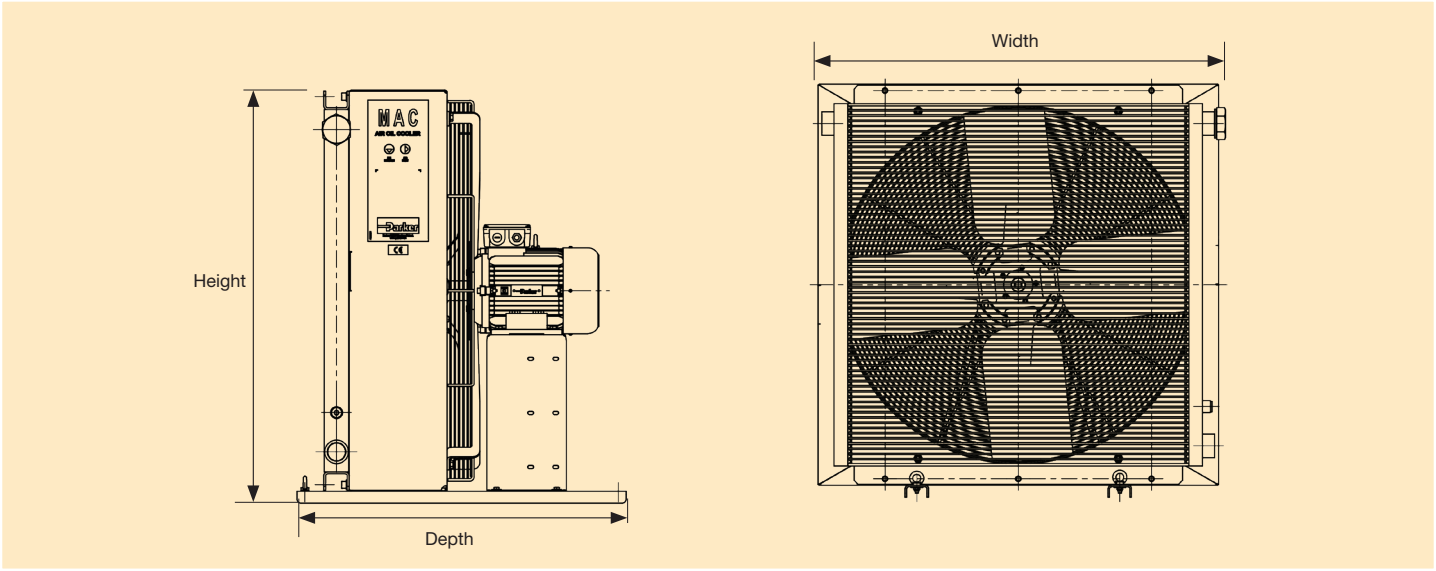
C5M-M (Approved 720 Hours level according to Salt Spray Test - ISO 9227)

Max static pressure: 21 bar
Max Dynamic pressure: 14 bar **
Standard Voltage: 230/400V (±5%), 50Hz
Fluid Type: Mineral Oil Or Water/Glycol
Standard Colour: Jet Black (RAL 9005)
** Tested in accordance with ISO/DIS 10771-1

Part Number	Type	Size	Motor Type Asynchronous Motor	Rated Flow Rate (lpm)	Maximum Cooling Capacity (kW/°C)	*Noise Level (dB(A))	Port Size (inch)	Motor Output (kW)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
58310007600	MAC0074AO00000000S0000	007	4-Pole	130	0,15	62	G1	0,25	345	365	510	25.7
58310011600	MAC0114AO00000000S0000	011	4-Pole	150	0,38	67	G1	0,25	470	440	510	30
58310016600	MAC0164AO00000000S0000	016	4-Pole	200	0,6	70	G1	0,37	526	496	510	40
58310023600	MAC0234AO00000000S0000	023	4-Pole	200	0,8	76	G1	0,75	610	580	510	50
58310033600	MAC0334AO00000000S0000	033	4-Pole	300	1,2	84	G1	2,2	722	692	618	88
58310044600	MAC0444AO00000000S0000	044	4-Pole	300	1.4	85	G1 1/4	2,2	866	692	643	93
58310056600	MAC0564AO00000000S0000	056	4-Pole	300	1.7	84	G1 1/4	3,0	898	868	668	111
58310076600	MAC0766AO00000000S0000	076	6-Pole	400	1.95	86	G1 1/2	2,2	1052	1022	710	151
58310110600	MAC1106AO00000000S0000	110	6-Pole	400	2.3	90	G2	5,5	1215	1185	785	194
58310113150	MAC1138AO00000000S0000	113	8-Pole	500	3.4	88	G2	2,2	1215	1200	871	288
58310113600	MAC1136AO00000000S0000	113	6-Pole	500	4.3	88	G2	5,5	1215	1200	871	288
58310200600	MAC2008AO00000000S0000	200	8-Pole	1000	5.5	92	G2	11	1630	1510	1006	408
58310214600	MAC2146AO00000000S0000	214	6-Pole	1000	8	92	G2	11	1630	1510	1006	423

*= Acoustic pressure level LpA dB(A) 1m. Noise level tolerance ± 3 dB(A).

Cooler with console

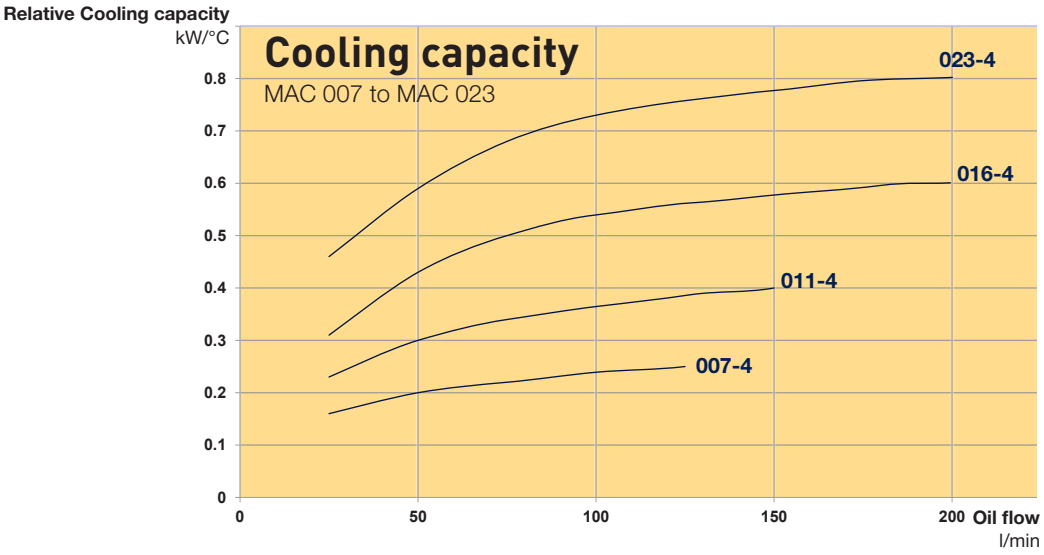


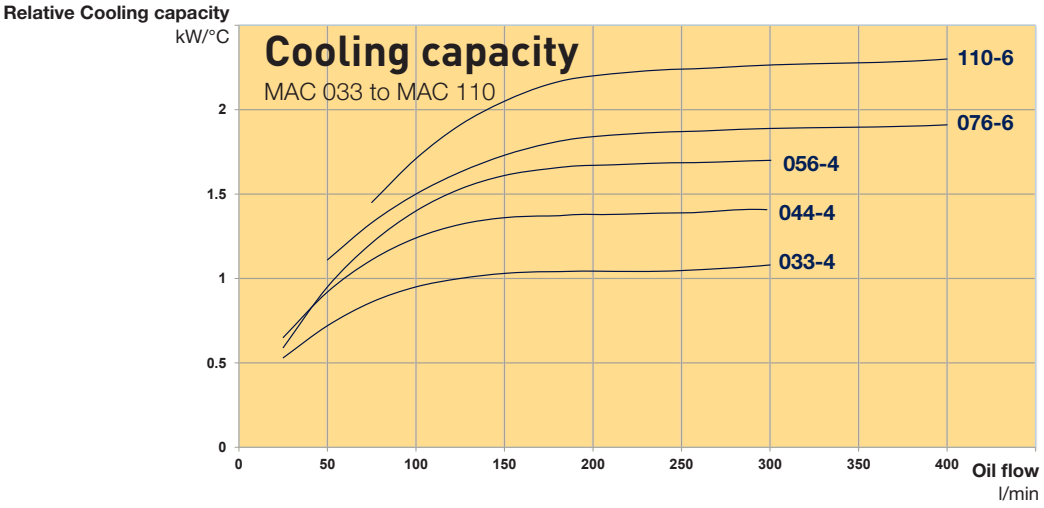
Parker offers an extensive range of options therefore please contact your local Parker sales company for any other requirements.

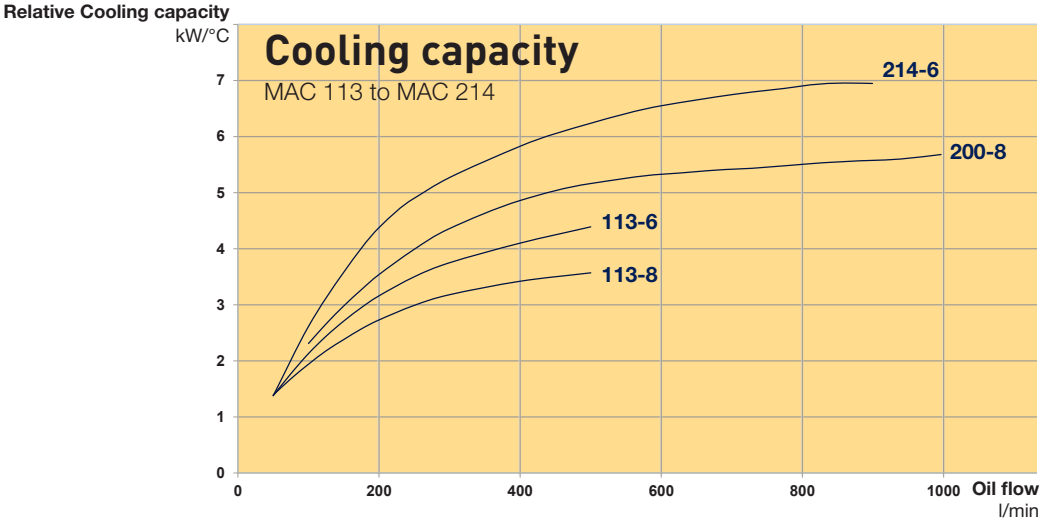
For easy configuration, click **here** for the MAC's product page on parker.com.

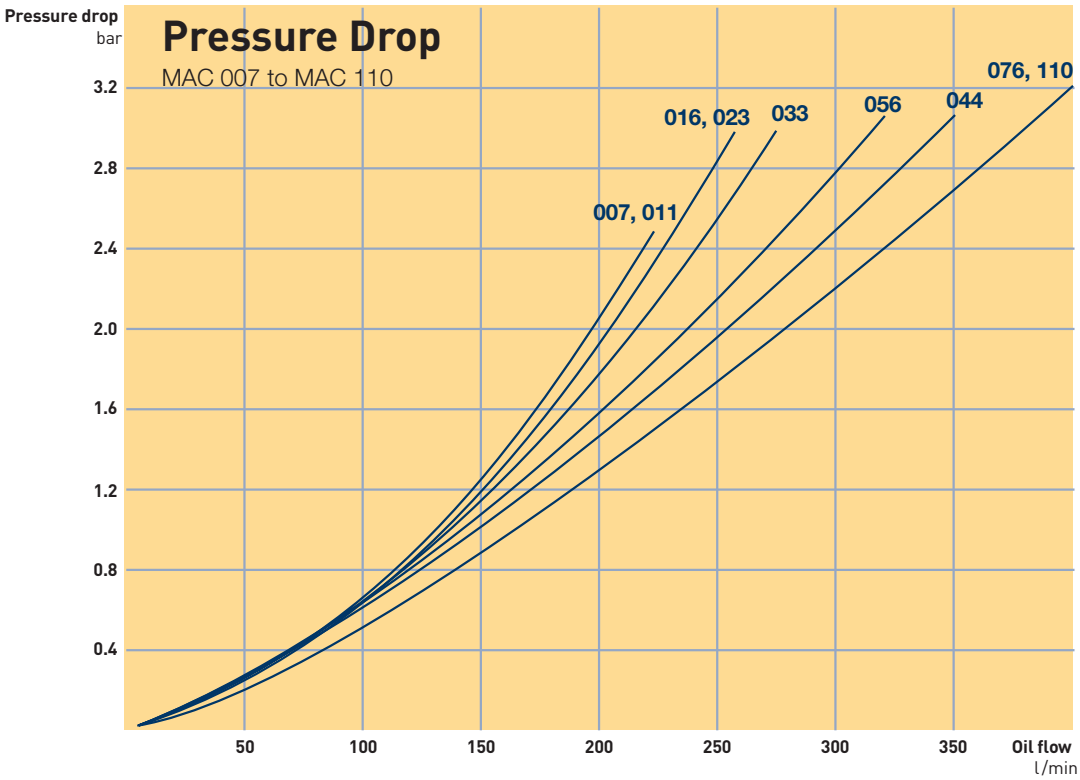
Cooling Performance

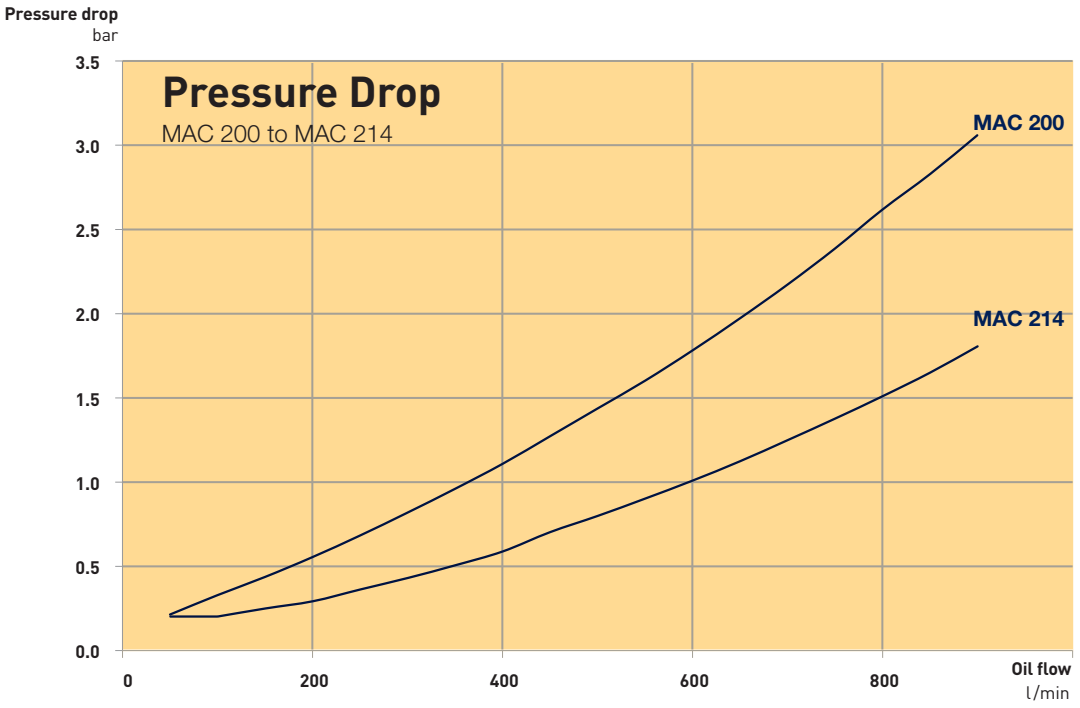
The cooling capacity curves are based on the inlet oil temperature and the ambient air temperature. An oil temperature of 60°C and an air temperature of 20°C produce a temperature difference of 40°C. Multiply by kW/°C for total cooling capacity according to the European Standard EN 1048:1998.








Pressure drop
bar
Pressure Drop
MAC 007 to MAC 110
076, 110
044
056
033
016, 023
007, 011
3.2
2.8
2.4
2.0
1.6
1.2
0.8
0.4
50
100
150
200
250
300
350
Oil flow
l/min


Pressure drop
bar
Pressure Drop
MAC 200 to MAC 214
MAC 200
MAC 214
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
200
400
600
800
Oil flow
l/min

Take the Next Step

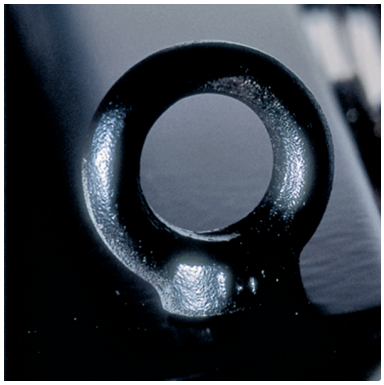
- choose the right accessories

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.

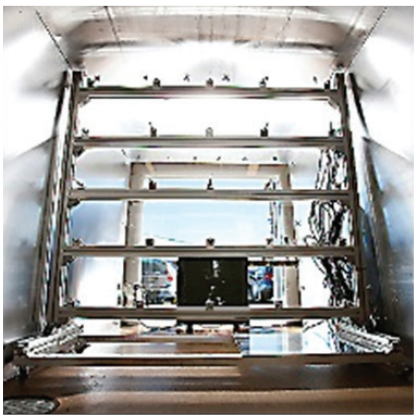
Please contact Parker Hannifin for guidance and information.

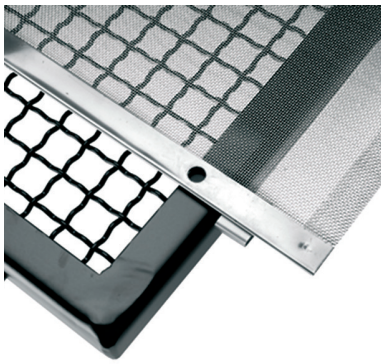
With our specialist expertise, industry knowledge and advanced technology, we can offer a range of different solutions for coolers and accessories to meet your requirements.

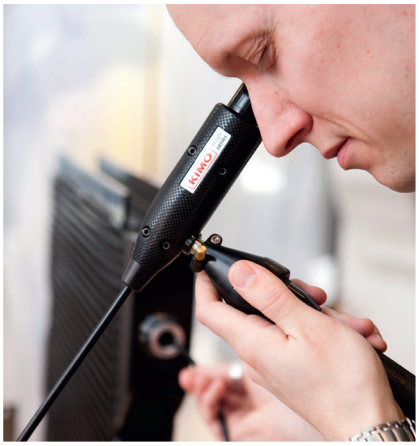


Lifting eyes - included as standard
For safe and simple handling during installation and relocation - only used for installation and maintenance

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.







Stone guard/Dust guard
In dirty environments a dust guard prevents the matrix from getting clogged by medium and large size particles or chips and allows easier maintenance. The Stone guard protects the matrix from damage by projectiles. When shielded, the cooler is protected in the toughest conditions and the risk of unscheduled maintenance is reduced to a minimum.

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

Online Support

www.parker.com/acde

You can find the latest product information on the Parker website, parker.com/acde. Designed to be accessible via desktops, tablets and smart phones you can download cooler sizing software, brochures, manuals and 3D models. All of the latest product news and contact information is also included on the website.

Global Sales Network

Part numbers

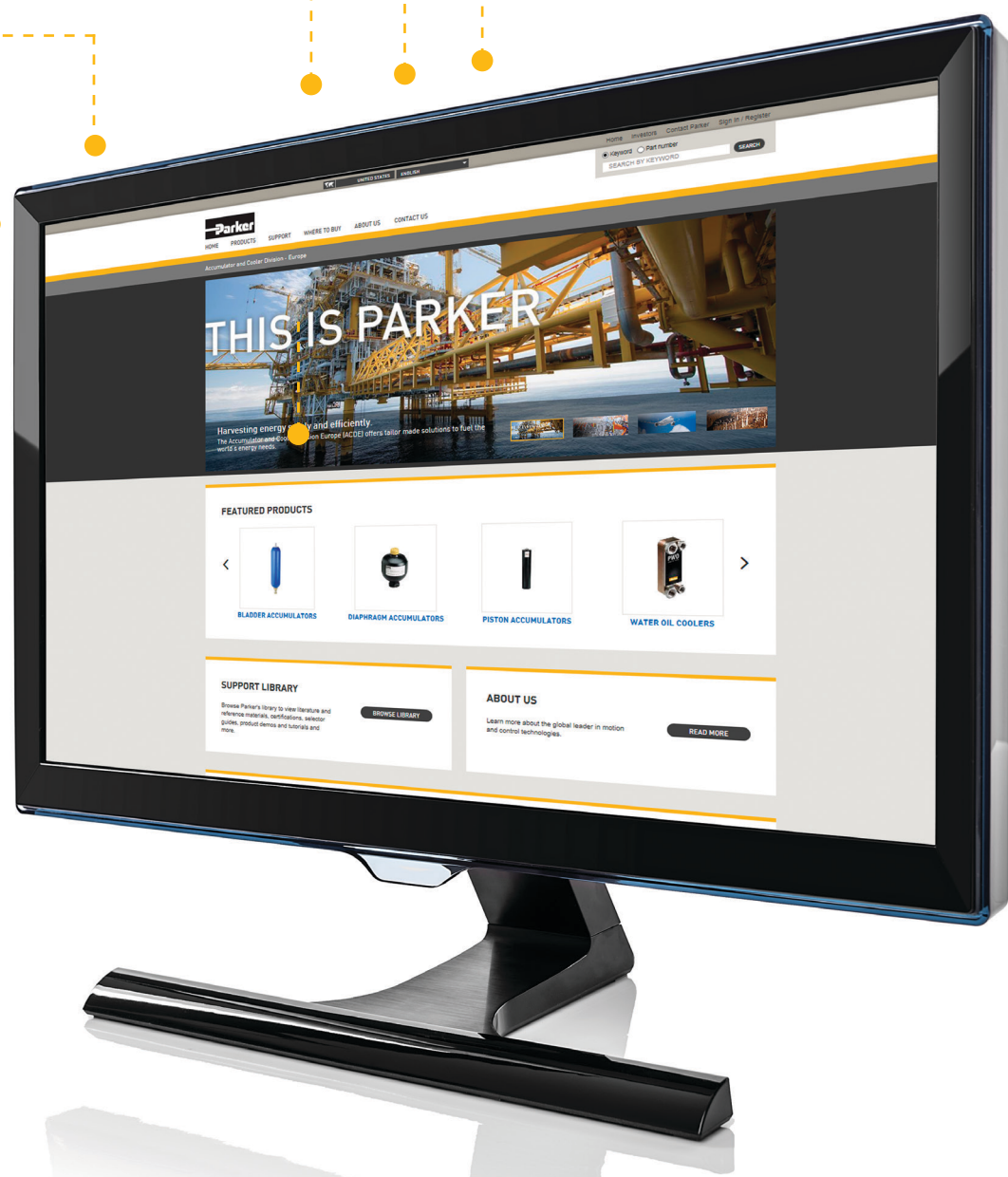
Sizing Software

3D Models

Technical Specification

Brochures

Manuals



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