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Laminova Intercoolers

HEAT EXCHANGER APPLICATIONS:

- Intercoolers
- Oil coolers
- Power steering cooling
- Transmission oil cooling
- Diesel fuel cooling
- Hydraulic system cooling
- Air conditioning

The Laminova heat exchangers are especially designed for intercoolers in turbo and supercharged petrol and diesel engines. They are compact, easy to install and more efficient than conventional heat exchangers.

The heat exchangers are easily installed in the inlet manifold. You get cold air right from the start.

The air-to-liquid system increases engine efficiency and decreases fuel consumption. The surface area is extremely large compared to common plate style intercoolers. The Laminova heat exchanger and the core are patented.

The core can be delivered as a separate component, ready for installation.

ADVANTAGES:

- Superior cooling performance.
- Extremely low pressure drop.
- Ideal to integrate in the inlet manifold.
- Increased response due to short flow length in the system.
- Robust design. One piece aluminium extrusion.
- No soldering or braising - soft mounting with O-rings.
- Reduce sound and pulsation. Improved air distribution balance.
- Possible combination with the AC media.

MOCAL oil control systems

Importer/Distributor- BAT Inc. 7630 Matoaka Road. Sarasota, FL 34243
phone (941) 355-0005 fax (941) 355-4683

Technical data & applications

Installation: Supercharger and turbo
Best result is achieved if the heat exchanger is installed in the inlet manifold. This also increases the response compared to traditional air-to-air intercoolers due to shorter flow length.

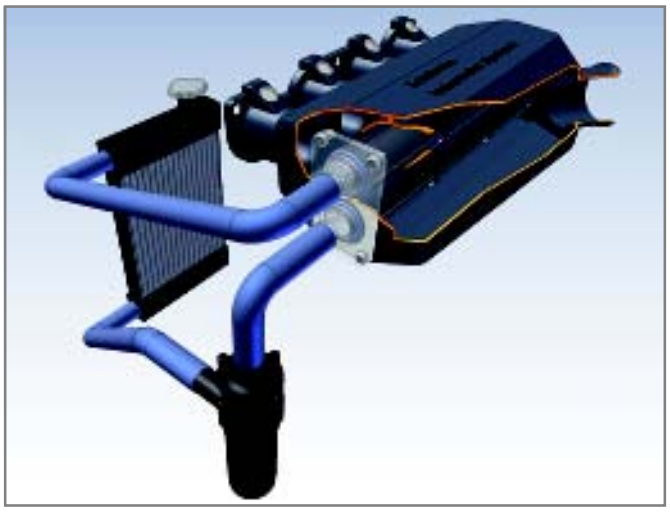
Special core for charged engines
We have a special core for airflow in charged engines. This core has longer and higher fins and less break-up zones (more surface) than the traditional core for liquid applications. Normally a package of 2-4 cores is needed to meet specification. Cores used are Ø39.5 & 45 mm.

Separate cooling circuit
The air-to-liquid intercooler system needs a separate cooling circuit with a circulation pump and a separate radiator.

Usage with air conditioning system
The Laminova intercooler can be combined with the air conditioning system for even better efficiency. Please contact Laminova for further information.

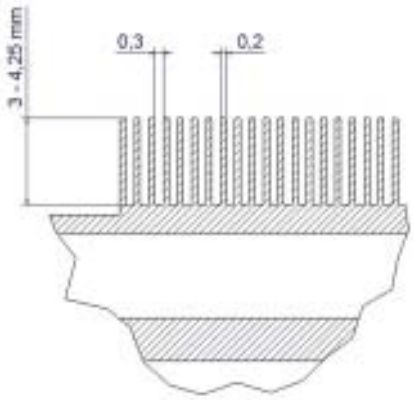
Racing/After Market
Laminova also supply intercooler housings for use in racing/aftermarket applications and as prototypes for test and evaluation.

Environmental advantages
The intercooler reduces hazardous emissions of e.g. nitrogen. The engine temperature becomes more even due to improved air distribution balance. This also decreases fuel consumption.



Laminova intercoolers in manifold connected with radiator.

Air flow over the core.



Cross section of the core.

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Technical data & applications

Installation
Best result is achieved if the heat exchanger is installed in the inlet manifold. This improves the response compared to that of traditional air-to-air intercoolers due to shorter flow length. The Laminova intercooler reduces the noise level and pulsation.

Special core for charged engines
We have a special core for air flow in charged engines. This core has longer and higher fins and fewer break-up zones (more surface) than the traditional core for liquid applications. Normally, a package of 2-4 cores is needed to meet specifications. Cores used are ø39.5 and ø45 mm.

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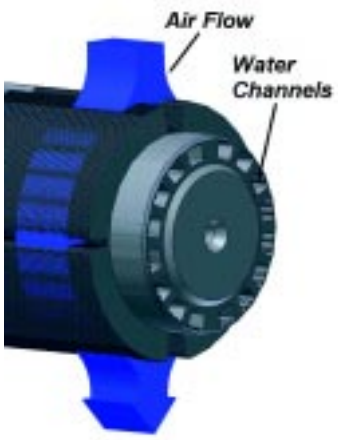
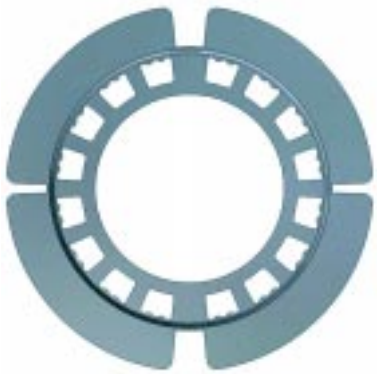
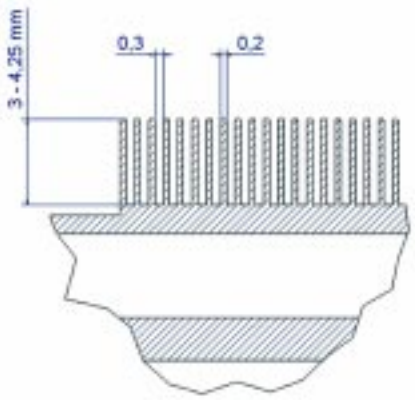


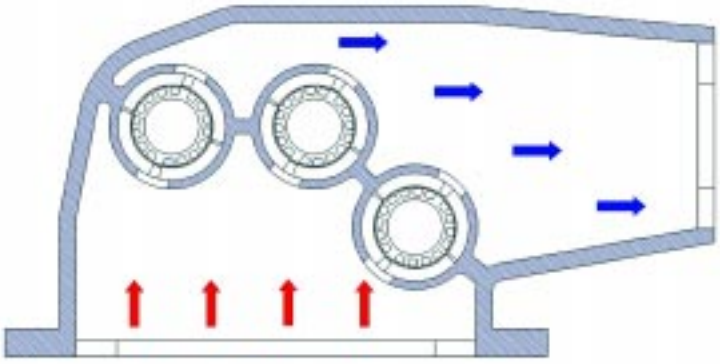
Air flow over the core.



Special core for intercooler.



Cross section of a core showing height of fins, distances between them and their thickness in mm.



Example of air flow in an inlet manifold.

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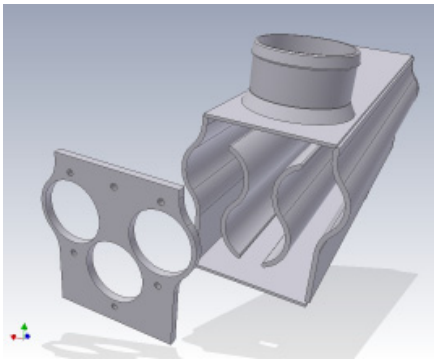
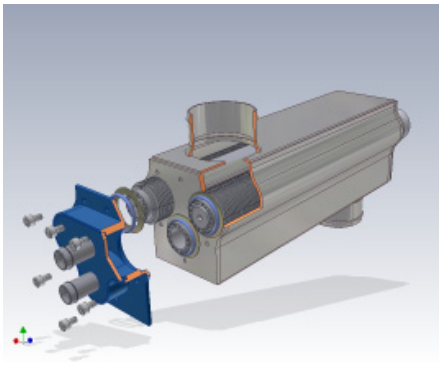
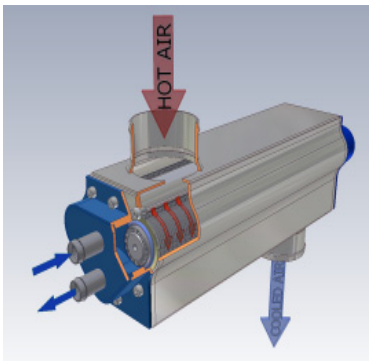




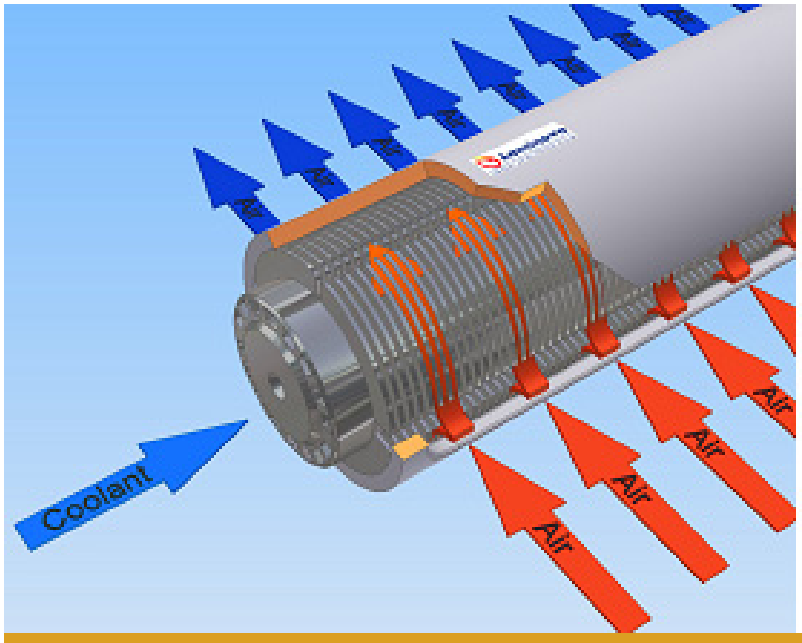


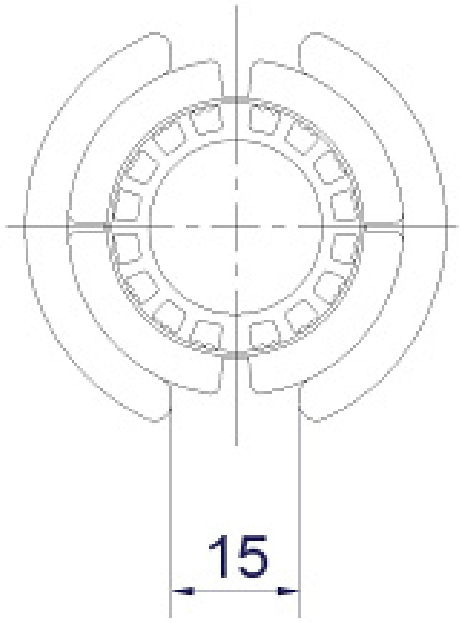
Intercooler

Laminova heat exchangers are especially designed for intercoolers in turbo and super-charged petrol and diesel engines. The heat exchangers are compact, easy to install and more efficient than conventional coolers.
The Laminova system utilizes liquid as coolant.

Laminova heat exchanger systems have a unique designed core for intercooler applications. The air-to-liquid system gives increased efficiency compared to an air-to-air system. With the air-to-liquid system you will get cold air right from the start.

The most efficient way is to integrate the cooler cores into the inlet manifold. This gives a very compact and light system. The unit contains a small volume of air, which gives better torque, response and performance compared to those of conventional coolers.





Air slots

Inlet and outlet slots are needed to route the air in between the fins.
The slots should be about 15 mm wide.

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Technical data & applications

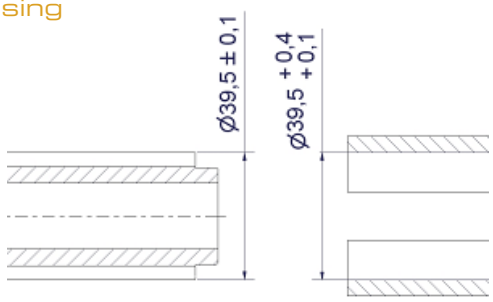
Special core for charged engines

We have a special core for air flow in charged engines. This core has longer and higher fins and fewer break-up zones (more surface) than the traditional core for liquid applications. The break up zones are not needed (like on oil cooler cores) as the air in normal conditions don't act laminar the way oil does.

Normally, a package of 2-4 cores is needed to meet specifications. Cores used are ø39.5 and ø45 mm.

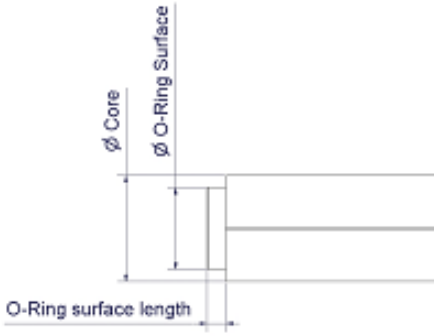
Clearance between cooler core and housing

A clearance example for intercooler applications is shown on the sketch. Please note that it must be possible to assemble the core, without tooling, in every occasion.



Standard core sizes and tolerances

Core diameter is defined by the diameter of the finned section. The o-ring surface length can easily be adapted for different o-ring sealing designs.

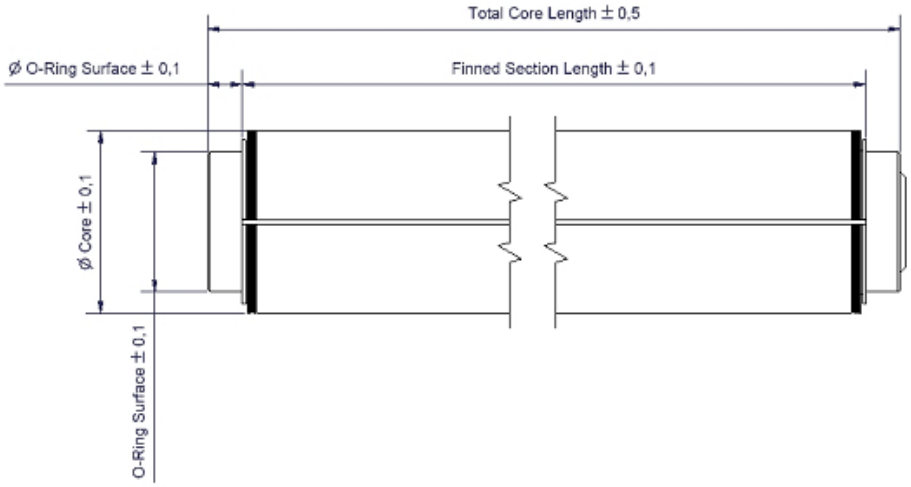


The intercooler core is available in two diameters ø39,5 and ø45.

Ø Core	Ø O-Ring Surface	Ø Centre hole
39,5	30,2±0,1	20,4
45	36,4±0,1	26,6

The core sizes above are standard in our production. For specific needs other sizes can be developed.

The total length including o-ring surfaces defines core length. Normal length tolerance is ➖0,5mm.
The sketch shows normal tolerances on a Laminova core. Please contact Laminova for consultation regarding specific needs.



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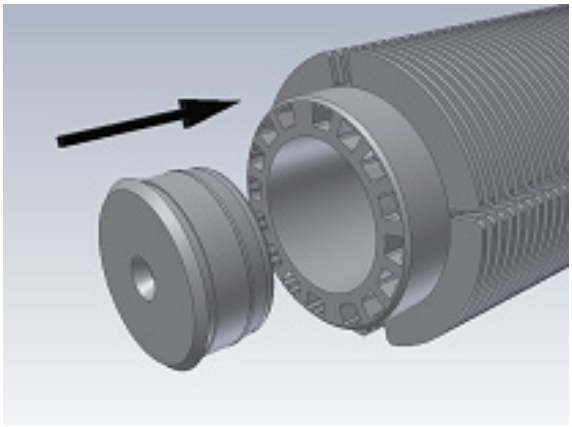
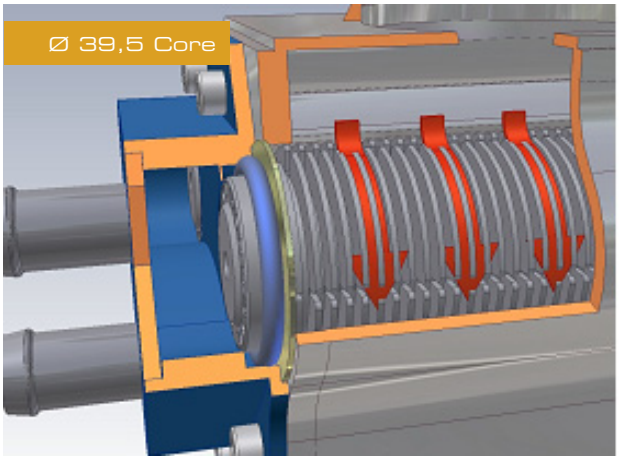


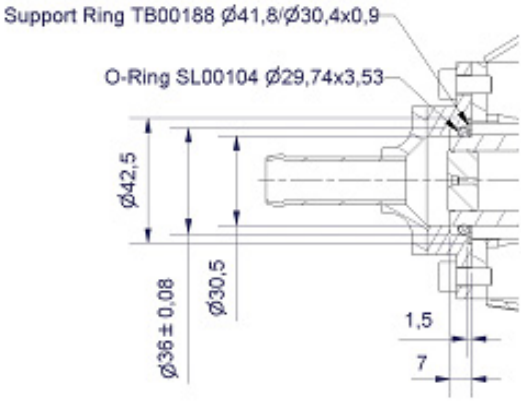
Coolant side

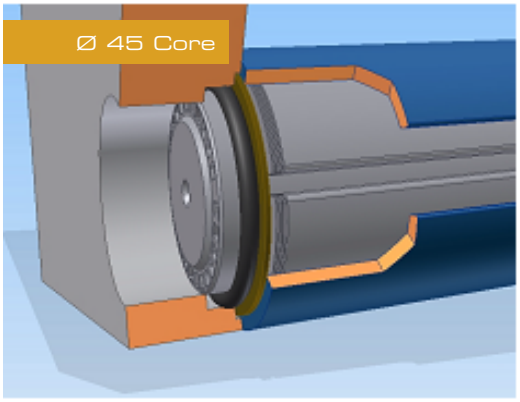
In intercooler applications for automotives a separate coolant circuit is used. Preferably a small electric pump does the water circulation and therefore the intercooler cores are fully plugged most of the times, i.e. there is no internal by-pass.
This means that all coolant takes part in the heat ransfer process.

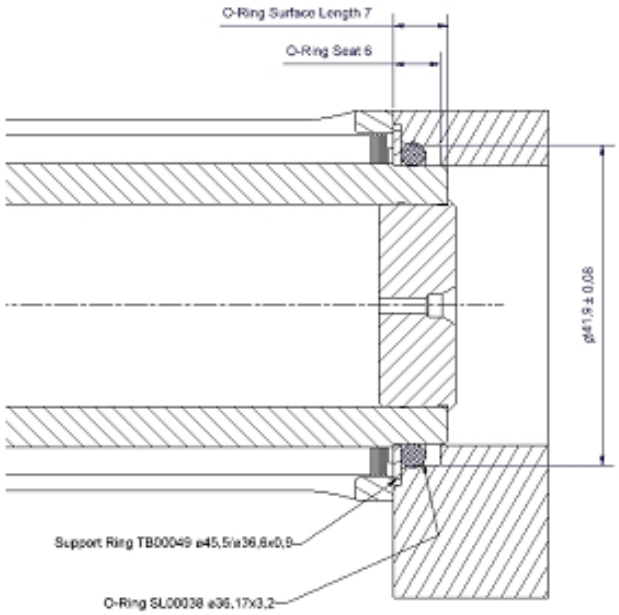
O-ring sealing

Below are examples of o-ring sealings for the ø39,5 and ø45 core. The core needs to be positioned axially. To prevent the fins on the core to be squeezed the housing should be slightly longer than the fin section on the core, normally 0.2 mm.









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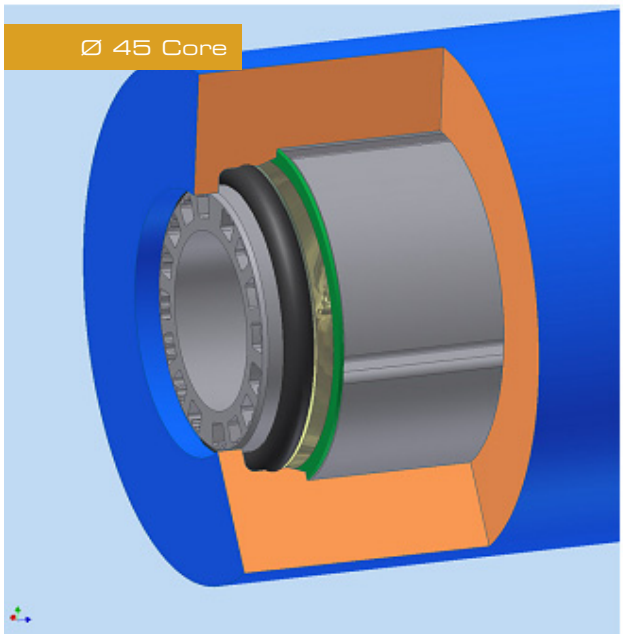
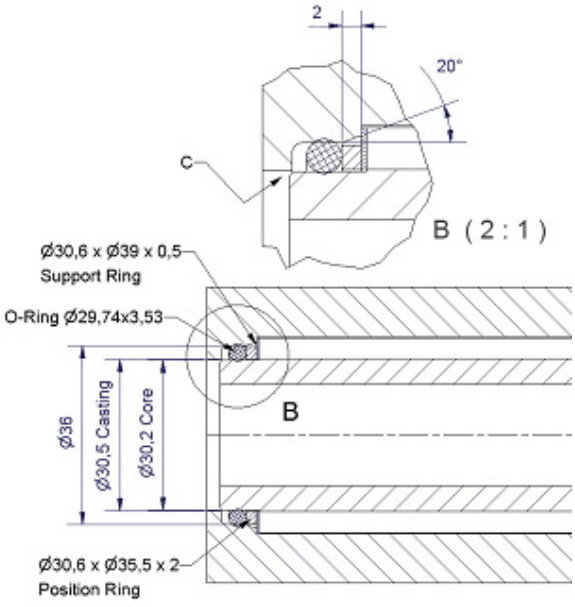
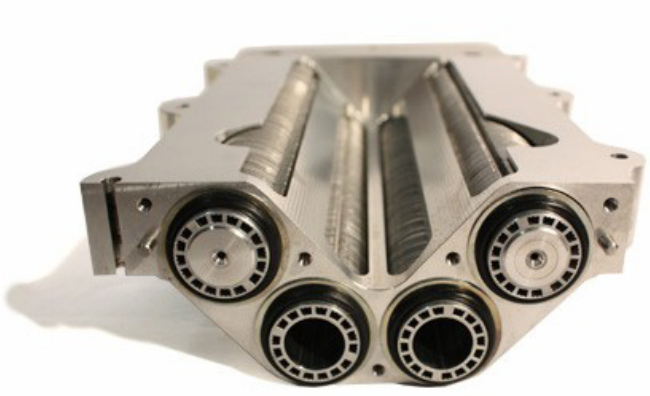
Technical data & applications

In some occasions a larger chamfer is needed. Especially when a dead end hole is used (only one end cap). To prevent the o-ring to slide into the chamfer a Position Ring can be used. It is also important to check with a tolerance stack-up that the o-ring can't fall off (Note C) in any occasion.







Cores as installed in a custom V manifold plenum. *(photo courtesy of Science of Speed)*

Example of a complete 4 core manifold/ plenum ststem show in disassembled form. *(photo courtesy of Science of Speed)*

Parts Price List

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10/2016 Prices subject to change without notice.

Intercooler Parts:

SUPPORT RING 30.8/36.8 0.5mm
TB00092 $5.50

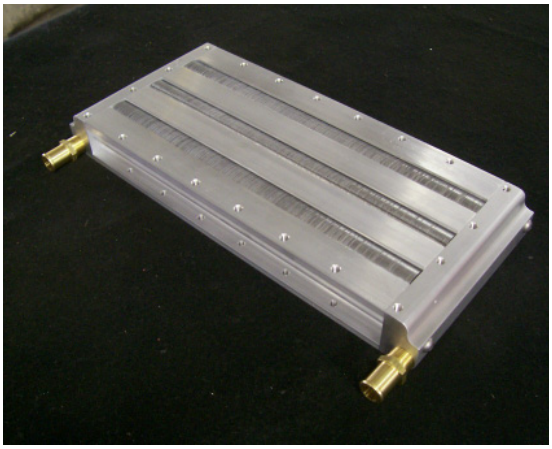
SUPPORT RING 30.4/41.8 0.9mm
TB00188 $5.50

SUPPORT RING 30.6/39.0 0.5mm
TB00215 $5.50

SUPPORT RING 30.6/35.5 2.0mm
TB00215 $5.50

O-RING IC39.5 29.75 X 3.53mm
SL00104 $2.95

Each intercooler core is supported by 2 support rings and 2 orings



Laminova Intercooler Cores 39.4mm Diameter x (length)

39.5 x 407mm	CA00078	$218.00 each
click for drawing	CA00078-2	$393.00 2 cores
	CA00078-3	$522.00 3 cores
	CA00078-4	$640.00 4 cores
	CA00078-6	$876.00 6 cores
39.5 x 392mm	CA00031	$214.00 each
click for drawing	CA00031-2	$386.00 2 cores
	CA00031-3	$513.00 3 cores
	CA00031-4	$628.00 4 cores
	CA00031-6	$858.00 6 cores
39.5 x 332mm	SA00201	$195.00 each
click for drawing	SA00201-2	$351.00 2 cores
	SA00201-3	$468.00 3 cores
	SA00201-4	$574.00 4 cores
	SA00201-6	$786.00 6 cores
39.5 x 245mm	CA00066	$180.00 each
click for drawing	CA00066-2	$324.00 2 cores
	CA00066-3	$432.00 3 cores
	CA00066-4	$528.00 4 cores
	CA00066-6	$726.00 6 cores
39.5 x 198.2mm	CA00028	$172.00 each
click for drawing	CA00028-2	$310.00 2 cores
	CA00028-3	$414.00 3 cores
	CA00028-4	$506.00 4 cores
	CA00028-6	$696.00 6 cores

Laminova Intercooler Cores 45mm Diameter x (length)

45 x 332mm	CA00001	$199.00 each
click for drawing	CA00001-2	$360.00 2 cores
	CA00001-3	$477.00 3 cores
	CA00001-4	$586.00 4 cores
	CA00001-6	$798.00 6 cores

Intercooler Assemblies:

In future we will be offering a selection of multiable core assemblies that can be configured into manifolds or housings. More information will be posted here at a later date.

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