



# Swiftech APOGEE Drive II CPU Waterblock with Integrated Pump - Intel 2011 Version

\$135.95

## Product Images



## Short Description

ap.o.gee: The farthest or highest point; the apex; a final climactic stage.

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Like a phoenix rising from its ashes, the Apogee™ Drive II integrated pump & waterblock returns to take its place at the helm of Swiftech's CPU waterblock product line. Close to 24 months in the making, it includes all the latest technological advancements that we have to offer:

- Best thermal performance: the Apogee™ Drive II manages to achieve *better* thermal performance than the award-winning Apogee™ HD.
- Best hydraulic performance: thanks to the integrated, PWM controlled MCP35X pump, which has established itself as the best-in-class pump on the market, the Apogee™ Drive II is the world's only waterblock that can be considered as a *flow enhancing device*, as opposed to a flow-robbing device.
- Best retention mechanism: proven time and again to satisfy beginners and hard-core enthusiasts alike for its ease of use, reliability, and repeatable results.
- Compact form factor enables liquid cooling in space constrained applications.
- Adjustable G1/4 inlet and outlet ports, compatible with all compression fittings.
- Illuminated logo in 3 colors: Red, Blue, or green.

## Features

SUMMARY	
<b>Improved Thermal Performance</b>	World's best thermal performance based on our comparative testing, when added to a conventional liquid cooling system including pump, radiator, and reservoir, the Apogee™ Drive II yielded up to 1.2°C better thermal performance than the Apogee™ HD (Intel i7 2600K socket 1155) - When installed in a system by itself, including only a radiator and a reservoir, the Apogee™ Drive II edged the HD by 0.2°C (Intel i7 2600K socket 1155).
<b>NO Flow Restriction</b>	With the top 5 water-blocks in the world being within a couple of degrees from each other, the next differentiating factor to many enthusiast users is flow restriction. Given that the Apogee™ Drive II has an integrated pump - one that features the highest flow rate in the useable range, it doesn't restrict flow at all -on the contrary, it enhances it!
<b>Twice the Reliability</b>	Even if we consider that adding a second pump to a liquid cooling system yields relatively marginal thermal improvements, the redundancy offered by a second pump is a priceless safety feature that can save your expensive components from fatal overheating in case of a pump failure.
<b>Speed-adjustable</b>	Thanks to the PWM function of the integrated MCP35X pump, the Apogee™ Drive II pump speed - and operating noise, can be adjusted from 1300 RPM all the way to 4500 RPM. When two pumps are running in tandem in a liquid cooling system, it is not necessary that their speed be identical. So your Apogee Drive can either be pushing massive flow at 4500 RPM, or simply humming along in the background at a completely silent 1300 RPMs. Either way, it will never slow down your flow, but always increase it.  Another great benefit of the BIOS controlled PWM is that the pump speed can be tied to the CPU temperature and increase or slow-down depending on CPU load. The pump could be running at minimum speed when the processor is at idle, and speed-up when the CPU temperature reaches a set temperature.
<b>Compact form factor</b>	Have you ever tried to fit a conventional liquid cooling system in a small form factor computer? The Apogee™ Drive II makes this challenge a great bit easier by consolidating 2 best-in-class performing devices into one.

<p>Fine-tuned Retention Mechanism, with universal Desktop Processor Compatibility</p>	<p>Swiftech's retention mechanism is widely recognized as the simplest and safest to use. It has been further enhanced with added attention to details and quality, such as hollowed thumb screws, and improved back-plate fabrication.</p> <p>In order to avoid waste, and reduce cost, the Apogee™ Drive II is available in 3 separate versions compatible with the following socket form factors:</p> <ul style="list-style-type: none"> <li>• Version 1155: for Intel® processors using Socket LGA 775 and 1155/56 : back-plate for 1155 is included and socket 1155 back-plate is installed by default; the back-plate for socket 775 is not included and mailed to users free-of-charge.</li> <li>• Version 2011: for Intel® processors using Socket LGA 2011</li> <li>• Version AMD: for AMD® processors using Sockets 754, 939, 940, AM2, AM3, 770, F, FM1 and the latest AM4 (Ryzen processors)</li> <li>• Separate kits are also available for the above 3 groups of sockets for upgrade purposes.</li> </ul>
<p>Shipped with High Performance Thermal Compound</p>	<p>The Apogee™ HD ships with Swiftech's TIM-Mate™ thermal compound highly rated for its excellent thermal performance and ease of application.</p>
<p>Lower Cost of Ownership</p>	<p>When considering the cost of purchasing an MCP35X pump (\$99.95)+ an Apogee™ HD (\$74.95), the total cost at MSRP is \$175; compare this to the \$140 MSRP of the Apogee™ Drive II (average of three models), this is a \$35 or 20% saving.</p>

## Specifications

### Pump Specifications

#### Technical Specifications

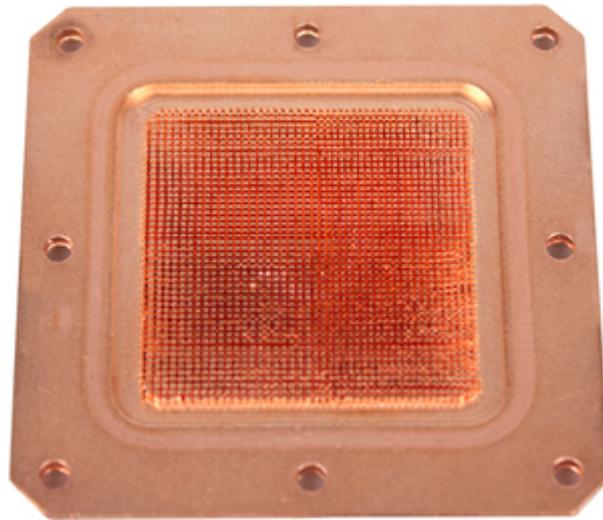
Motor type	Electronically commutated, brushless DC, spherical motor
Nominal voltage	12 V DC
Operating voltage range	9 to 13.4 VDC
Max. nominal power (@12 V)	18 W
Max. nominal current (@12 V)	1.5 A
Max. nominal head (@12 V)	14.7 ft (4.4m)
Max nominal discharge (@12 V)	~ 4.75 GPM (17.5 LPM)
Maximum pressure	22 PSI (1.5 BAR)

Temperature range	Up to 140 °F (60 °C)
Electrical power connector	Molex 4 pin
PWM + RPM Signals	4-pin connector
Speed adjustment range	1300 to 4500 rpm
RoHS	Compliant
MTBF	50,000 Hours

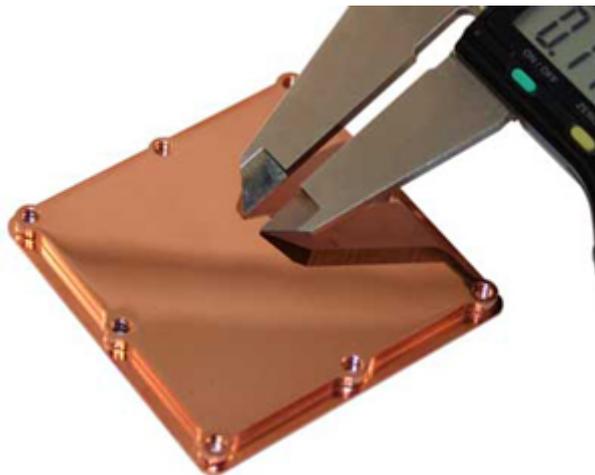
Waterblock Specifications



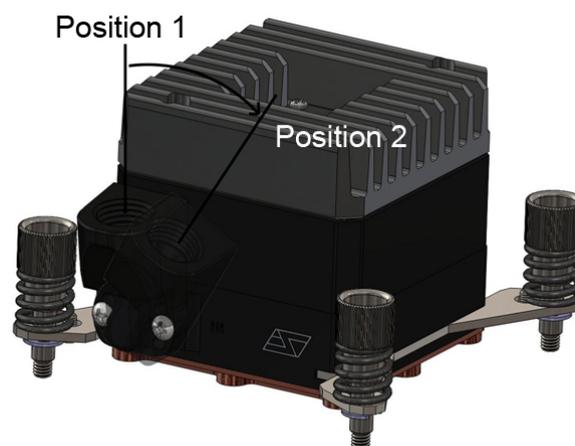
The water-block housing is precision-machined from black polyacetal copolymer (POM). A separate black anodized aluminum heatsink is included to provide additional cooling to the pump; the heatsink also serves as a receptacle for the LED and colored acrylic inserts included in 3 colors: red (installed by default), blue and green.



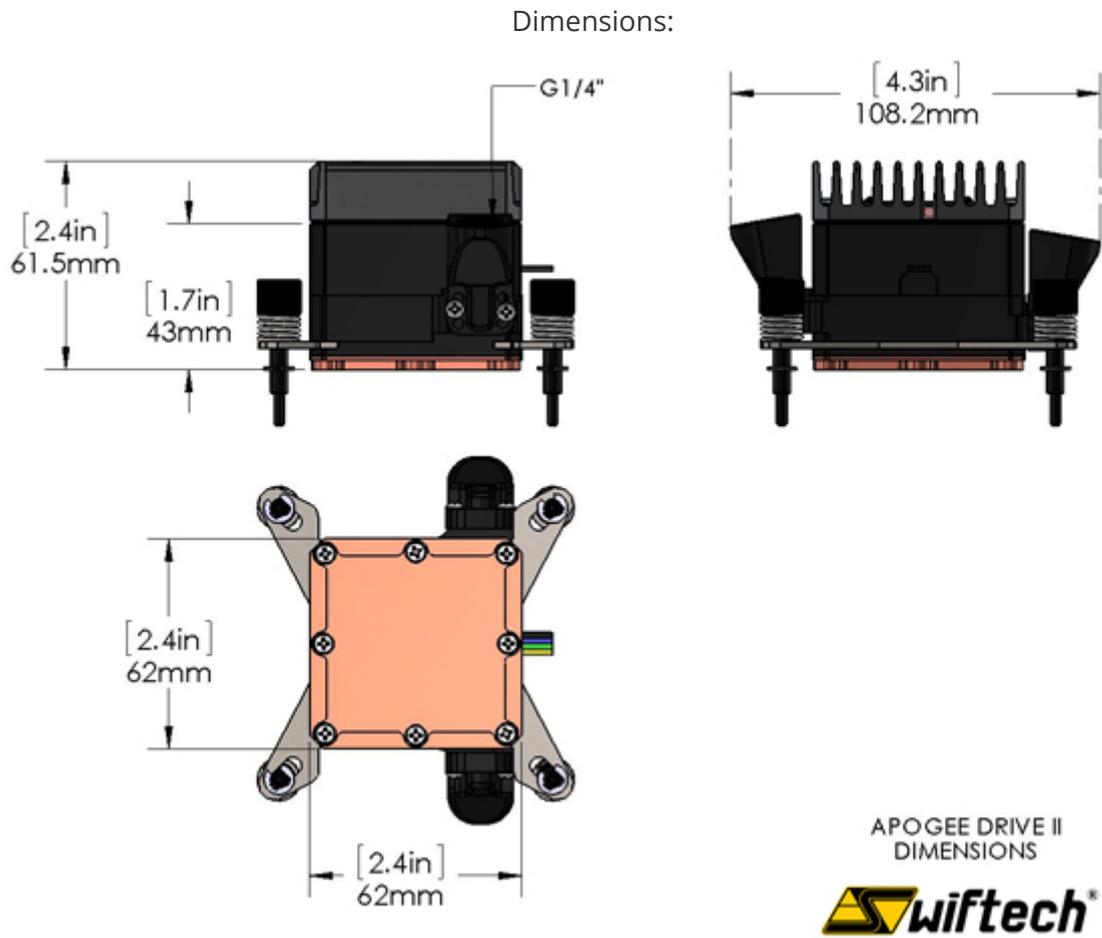
The base-plate is precision-machined from C10 copper. Thermal design of the cooling engine is characterized by Swiftech's fin/pin matrix composed of 225  $\mu\text{m}$  (0.009") micro structures.



The mating surface to the CPU is mirror polished, in full compliance with Swiftech's highest quality standards

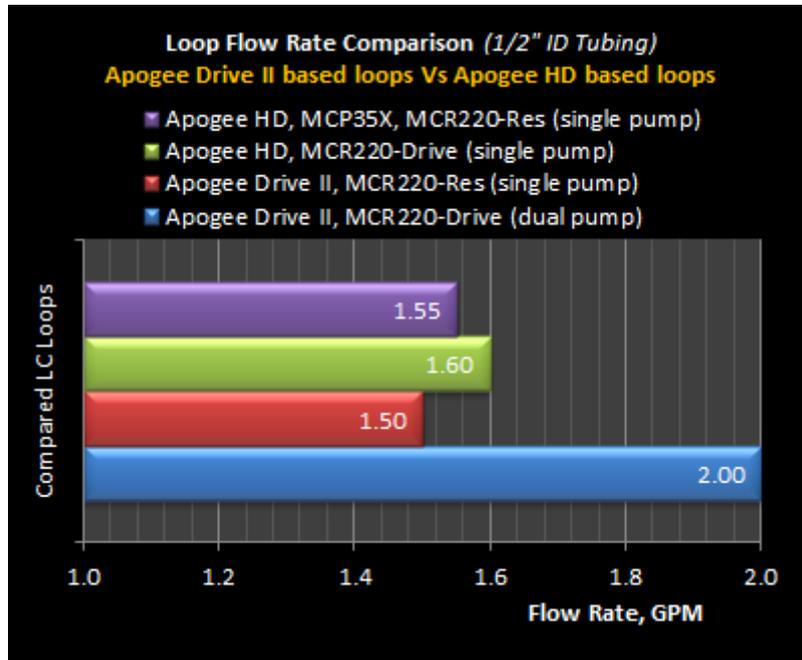


From default (vertical), the inlet and outlet ports can be tilted to an angle in order for example to facilitate tube routing in space constrained applications.



Net Weight: 20 ounces (567 grams)

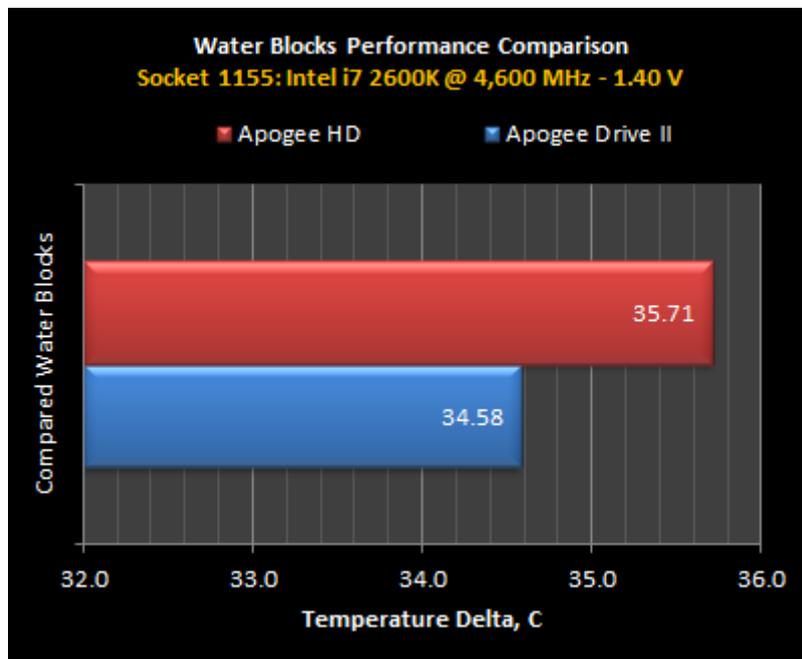
Loop flow rate comparative data

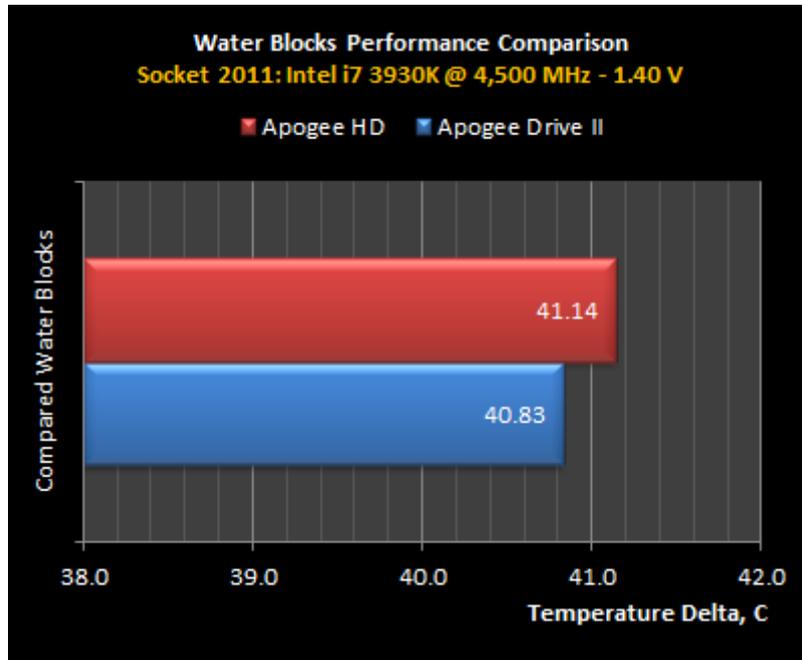


### Comparative Temperature Data:

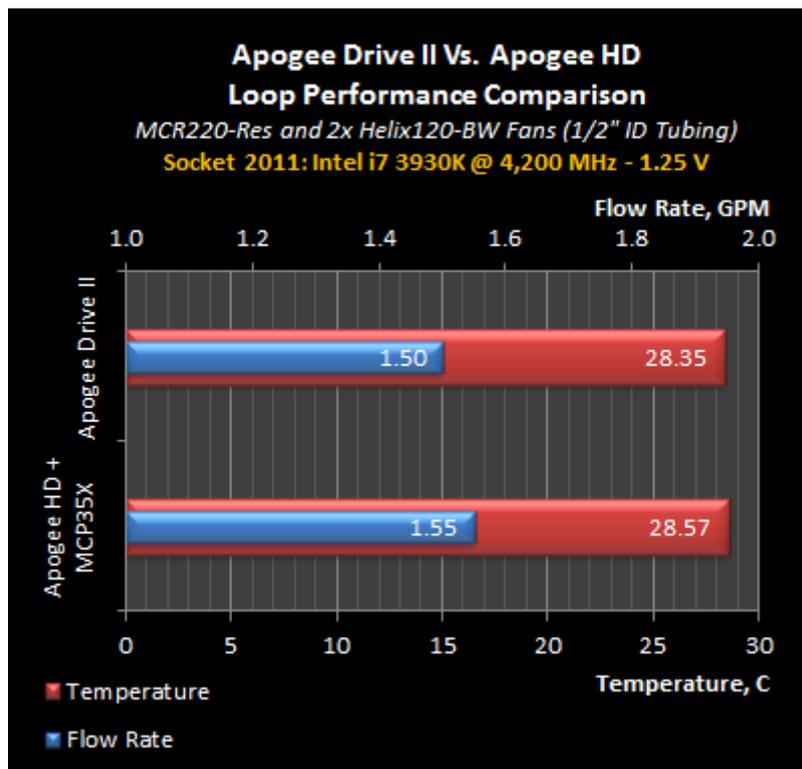
The following graphs reports the data collected from testing performed with actual retail processors under 100% load using CPU Burn. Published results are the best of a minimum of 5 mounts. These results are indicative of our test bench settings and of the tested processors only. Results may vary from one processor to another.

The following two charts compare thermal performance while the Apogee Drive II is added to an existing loop, for a total of two pumps in operations:





The following chart compares thermal performance of a conventional setup versus one where both water-block and pump have been replaced by an Apogee™ Drive II (1 pump in operations):



Note: "Temperature Delta" means the difference between the average CPU core temperature and the average air temperature. This reporting method reflects the true efficiency of the cooling system because it eliminates ambient air temperature variations in the data being compared. Users are cautioned that the above data is provided for reference only, and is not directly comparable with CPU temperature values collected a) from an enclosed chassis and b) without deducting ambient air data.

\*\*\* How to obtain your free AMD mounting hardware \*\*\*

- World; except Europe, Australia & China: email [help@swiftech.com](mailto:help@swiftech.com) with a copy of your proof purchase (invoice)

## Additional Information

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Brand	Swiftech
SKU	APD2-2011
Weight	2.5000
Color	Black
CPU Series	Intel 2011/2011-3/2066
Block CPU Type	Intel
Block Style	Copper-Acetal

