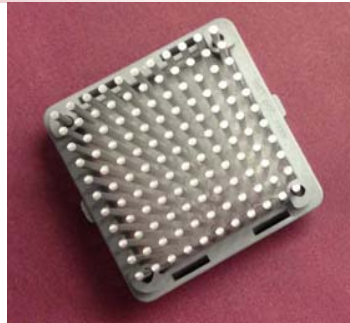


## 901-910 SERIES CHIPSET HEAT SINKS

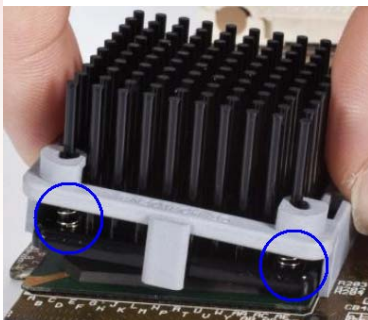


PIN FIN &  
ELLIPTICAL  
HEAT SINKS

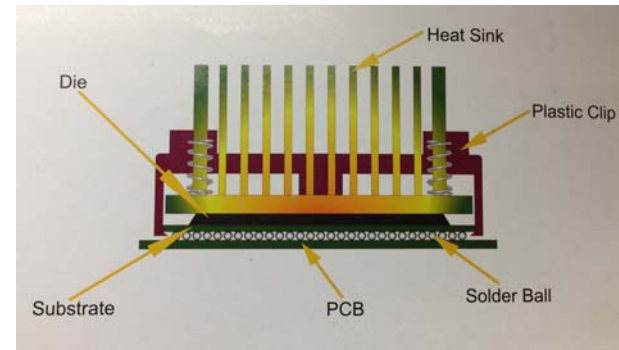


Wakefield-Vette's 901-910 Series Heat Sinks for Chipset can match up to devices from Intel, Broadcom, Xilinx, TI, Motorola and many more! These heat sinks are designed for air flow applications. Enclosed pages have thermal performance data for natural forced convection values.

**4 Springs at  
each corner**



**wakefield-vette**  
**New Chip Set Heat Sinks**



Wakefield-Vette heat sink assembles onto chip set using the space that is between the PCB and the substrate of the solder balls. The solder balls provide a minimal gap of .5mm to .7mm. Attachment feature is below a .4mm thickness. The clipping system will not interfere or damage chip. Contact area is the edge of chip.



**Thermal Cooling Solutions from SMART to FINISH**

## 901-910 SERIES CHIPSET HEAT SINKS



**Material:** AL 6063

**Finish:** Black Anodize

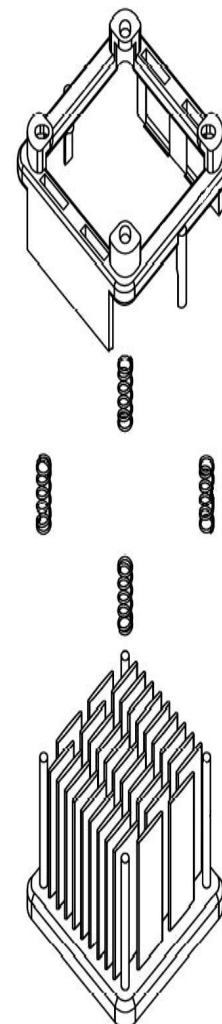
All dimensions in millimeters (mm)



### Part Numbering System

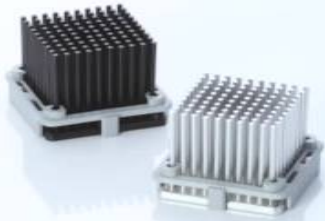
| Series             | Chip Size        | Construction      | Height           | Spring Type *   | Finish         | Interface     |
|--------------------|------------------|-------------------|------------------|-----------------|----------------|---------------|
| <u>901-</u><br>XXX | <u>19-</u><br>XX | <u>1-</u><br>X    | <u>12-</u><br>XX | <u>1-</u><br>X  | <u>B-</u><br>X | <u>1</u><br>X |
| 901                | 19               | 1= Elliptical Fin | 12 = 11.6        | 1 = .9-2.1 CST  | B = BLK ANO    | 0 = None      |
| 902                | 21               | 2= Pin Fin        | 15 = 14.6        | 2 = 2.2-3.4 CST |                | 1 = T725      |
| 903                | 23               |                   | 18 = 17.6        |                 |                |               |
| 904                | 27               |                   | 21 = 20.6        |                 |                |               |
| 905                | 29               |                   | 23 = 22.6        |                 |                |               |
| 906                | 31               |                   | 28 = 27.6        |                 |                |               |
| 907                | 33               |                   | 33 = 32.6        |                 |                |               |
| 908                | 35               |                   |                  |                 |                |               |
| 909                | 37.5             |                   |                  |                 |                |               |
| 910                | 40               |                   |                  |                 |                |               |

\*Note: When selecting part number chip set thickness (CST) relates to spring selection!



**Thermal Cooling Solutions from SMART to FINISH**

## 901-910 SERIES CHIPSET HEAT SINKS



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### THERMAL PERFORMANCE



|     | HT | CHIP<br>SIZE | PIN FIN               |                                 |          |          | ELLIPTICAL FIN        |                                 |           |          |
|-----|----|--------------|-----------------------|---------------------------------|----------|----------|-----------------------|---------------------------------|-----------|----------|
|     |    |              | NATURAL<br>CONVECTION | FORCED<br>CONVECTION<br>200 LFM | 400 LFM  | 600 LFM  | NATURAL<br>CONVECTION | FORCED<br>CONVECTION<br>200 LFM | 400 LFM   | 600 LFM  |
| 901 | 12 | 19mm         | 12.74 C/W             | 6.6 C/W                         | 4.79 C/W | 4.16 C/W | 14.77 C/W             | 6.63 C/W                        | 5.09 C/W  | 4.38 C/W |
|     | 15 | 19mm         | 12.05 C/W             | 6.3 C/W                         | 4.51 C/W | 3.86 C/W | 14 C/W                | 6.12 C/W                        | 4.63 C/W  | 3.95 C/W |
|     | 18 | 19mm         | 11.35 C/W             | 5.97 C/W                        | 4.16 C/W | 3.47 C/W | 13.23 C/W             | 5.67 C/W                        | 4.17 C/W  | 3.58 C/W |
|     | 21 | 19mm         | 10.66 C/W             | 5.66 C/W                        | 3.89 C/W | 3.21 C/W | 12.46 C/W             | 5.28 C/W                        | 3.87 C/W  | 3.24 C/W |
|     | 23 | 19mm         | 10.55 C/W             | 5.36 C/W                        | 3.64 C/W | 2.99 C/W | 11.98 C/W             | 4.89 C/W                        | 3.58 C/W  | 3.06 C/W |
|     | 28 | 19mm         | 10.27 C/W             | 4.91 C/W                        | 3.36 C/W | 2.71 C/W | 11.5 C/W              | 4.38 C/W                        | 3.26 C/W  | 2.80 C/W |
| 902 | 33 | 19mm         | 9.99 C/W              | 4.52 C/W                        | 3.07 C/W | 2.49 C/W | 9.57 C/W              | 4.04 C/W                        | 2.98 C/W  | 2.62 C/W |
|     | 12 | 21mm         | 12.4 C/W              | 6.61 C/W                        | 4.37 C/W | 3.7 C/W  | 14.31 C/W             | 5.81 C/W                        | 3.86 C/W  | 3.16 C/W |
|     | 15 | 21mm         | 11.73 C/W             | 5.84 C/W                        | 4.09 C/W | 3.42 C/W | 13.57 C/W             | 5.3 C/W                         | 3.5 C/W   | 2.89 C/W |
|     | 18 | 21mm         | 11.06 C/W             | 5.51 C/W                        | 3.76 C/W | 3.07 C/W | 12.83 C/W             | 4.95 C/W                        | 3.35 C/W  | 2.66 C/W |
|     | 21 | 21mm         | 10.38 C/W             | 5.20 C/W                        | 3.49 C/W | 2.84 C/W | 12.09 C/W             | 4.61 C/W                        | 3.111 C/W | 2.47 C/W |
|     | 23 | 21mm         | 10.27 C/W             | 4.9 C/W                         | 3.26 C/W | 2.62 C/W | 11.63 C/W             | 4.32 C/W                        | 2.91 C/W  | 2.32 C/W |
| 903 | 28 | 21mm         | 9.98 C/W              | 4.55 C/W                        | 2.98 C/W | 2.42 C/W | 10.47 C/W             | 3.89 C/W                        | 2.61 C/W  | 2.09 C/W |
|     | 33 | 21mm         | 9.7 C/W               | 4.18 C/W                        | 2.73 C/W | 2.21 C/W | 9.3 C/W               | 3.57 C/W                        | 2.37 C/W  | 1.95 C/W |
|     | 12 | 23mm         | 12.06 C/W             | 5.72 C/W                        | 3.95 C/W | 3.24 C/W | 13.85 C/W             | 4.75 C/W                        | 3.31 C/W  | 2.79 C/W |
|     | 15 | 23mm         | 11.41 C/W             | 5.39 C/W                        | 3.67 C/W | 2.99 C/W | 13.14 C/W             | 4.38 C/W                        | 3.05 C/W  | 2.53 C/W |
|     | 18 | 23mm         | 10.76 C/W             | 5.05 C/W                        | 3.35 C/W | 2.67 C/W | 12.44 C/W             | 4.07 C/W                        | 2.81 C/W  | 2.32 C/W |
|     | 21 | 23mm         | 10.11 C/W             | 4.74 C/W                        | 3.1 C/W  | 2.46 C/W | 11.73 C/W             | 3.84 C/W                        | 2.57 C/W  | 2.11 C/W |
| 904 | 23 | 23mm         | 9.99 C/W              | 4.44 C/W                        | 2.87 C/W | 2.31 C/W | 11.28 C/W             | 3.59 C/W                        | 2.4 C/W   | 1.97 C/W |
|     | 28 | 23mm         | 9.70 C/W              | 4.09 C/W                        | 2.62 C/W | 2.12 C/W | 10.16 C/W             | 3.22 C/W                        | 2.17 C/W  | 1.8 C/W  |
|     | 33 | 23mm         | 9.41 C/W              | 3.83 C/W                        | 2.43 C/W | 1.96 C/W | 9.04 C/W              | 2.93 C/W                        | 1.95 C/W  | 1.64 C/W |
|     | 12 | 27mm         | 11.38 C/W             | 4.84 C/W                        | 3.11 C/W | 2.32 C/W | 12.93 C/W             | 4.34 C/W                        | 3 C/W     | 2.53 C/W |
|     | 15 | 27mm         | 10.78 C/W             | 4.48 C/W                        | 2.84 C/W | 2.12 C/W | 12.29 C/W             | 4.05 C/W                        | 2.76 C/W  | 2.29 C/W |
|     | 18 | 27mm         | 10.17 C/W             | 4.13 C/W                        | 2.56 C/W | 1.88 C/W | 11.64 C/W             | 3.73 C/W                        | 2.5 C/W   | 2.07 C/W |
| 905 | 21 | 27mm         | 9.56 C/W              | 3.82 C/W                        | 2.32 C/W | 1.72 C/W | 11 C/W                | 3.43 C/W                        | 2.31 C/W  | 1.9 C/W  |
|     | 23 | 27mm         | 9.44 C/W              | 3.51 C/W                        | 2.11 C/W | 1.6 C/W  | 10.58 C/W             | 3.21 C/W                        | 2.11 C/W  | 1.71 C/W |
|     | 28 | 27mm         | 9.13 C/W              | 3.26 C/W                        | 1.97 C/W | 1.49 C/W | 9.54 C/W              | 2.89 C/W                        | 1.84 C/W  | 1.51 C/W |
|     | 33 | 27mm         | 8.82 C/W              | 3.07 C/W                        | 1.82 C/W | 1.39 C/W | 8.51 C/W              | 2.62 C/W                        | 1.66 C/W  | 1.35 C/W |
|     | 12 | 29mm         | 11.04 C/W             | 4.08 C/W                        | 2.55 C/W | 1.98 C/W | 12.47 C/W             | 4.09 C/W                        | 2.74 C/W  | 2.25 C/W |
|     | 15 | 29mm         | 10.46 C/W             | 3.82 C/W                        | 2.32 C/W | 1.78 C/W | 11.86 C/W             | 3.81 C/W                        | 2.52 C/W  | 2.02 C/W |
| 905 | 18 | 29mm         | 9.87 C/W              | 3.58 C/W                        | 2.14 C/W | 1.58 C/W | 11.25 C/W             | 3.56 C/W                        | 2.31 C/W  | 1.84 C/W |
|     | 21 | 29mm         | 9.28 C/W              | 3.33 C/W                        | 1.96 C/W | 1.44 C/W | 10.63 C/W             | 3.3 C/W                         | 2.12 C/W  | 1.65 C/W |
|     | 23 | 29mm         | 9.16 C/W              | 3.13 C/W                        | 1.82 C/W | 1.34 C/W | 10.23 C/W             | 3.06 C/W                        | 1.91 C/W  | 1.49 C/W |
|     | 28 | 29mm         | 8.84 C/W              | 2.82 C/W                        | 1.64 C/W | 1.2 C/W  | 9.24 C/W              | 2.72 C/W                        | 1.69 C/W  | 1.33 C/W |
|     | 33 | 29mm         | 8.53 C/W              | 2.59 C/W                        | 1.47 C/W | 1.07 C/W | 8.24 C/W              | 2.47 C/W                        | 1.49 C/W  | 1.18 C/W |

Thermal Cooling Solutions from SMART to FINISH

## 901-910 SERIES CHIPSET HEAT SINKS



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### THERMAL PERFORMANCE



|     | HT | CHIP<br>SIZE | PIN FIN               |                         |          |          | ELLIPTICAL FIN        |                         |          |          |          |
|-----|----|--------------|-----------------------|-------------------------|----------|----------|-----------------------|-------------------------|----------|----------|----------|
|     |    |              | NATURAL<br>CONVECTION | FORCED CONVECTION (C/W) |          |          | NATURAL<br>CONVECTION | FORCED CONVECTION (C/W) |          |          |          |
|     |    |              |                       | 200 LFM                 | 400 LFM  | 600 LFM  |                       | 200 LFM                 | 400 LFM  | 600 LFM  |          |
| 906 | 12 | 31mm         | 10.71 C/W             | 3.49 C/W                | 2.28 C/W | 1.69 C/W |                       | 12.02 C/W               | 3.37 C/W | 2.25 C/W | 1.87 C/W |
|     | 15 | 31mm         | 10.14 C/W             | 3.18 C/W                | 2.03 C/W | 1.5 C/W  |                       | 11.43 C/W               | 3.13 C/W | 2.02 C/W | 1.66 C/W |
|     | 18 | 31mm         | 9.57 C/W              | 2.93 C/W                | 1.86 C/W | 1.33 C/W |                       | 10.85 C/W               | 2.85 C/W | 1.79 C/W | 1.45 C/W |
|     | 21 | 31mm         | 9.01 C/W              | 2.72 C/W                | 1.69 C/W | 1.2 C/W  |                       | 10.27 C/W               | 2.63 C/W | 1.63 C/W | 1.31 C/W |
|     | 23 | 31mm         | 8.88 C/W              | 2.5 C/W                 | 1.54 C/W | 1.07 C/W |                       | 9.88 C/W                | 2.44 C/W | 1.5 C/W  | 1.19 C/W |
|     | 28 | 31mm         | 8.56 C/W              | 2.26 C/W                | 1.38 C/W | .96 C/W  |                       | 8.93 C/W                | 2.21 C/W | 1.36 C/W | 1.05 C/W |
| 907 | 33 | 31mm         | 8.24 C/W              | 2.09 C/W                | 1.27 C/W | .88 C/W  |                       | 7.98 C/W                | 2.02 C/W | 1.19 C/W | .93 C/W  |
|     | 12 | 33mm         | 10.37 C/W             | 3.32 C/W                | 2.18 C/W | 1.62 C/W |                       | 11.56 C/W               | 3.23 C/W | 2.09 C/W | 1.73 C/W |
|     | 15 | 33mm         | 9.82 C/W              | 3.14 C/W                | 1.99 C/W | 1.45 C/W |                       | 11 C/W                  | 2.97 C/W | 1.88 C/W | 1.54 C/W |
|     | 18 | 33mm         | 9.28 C/W              | 2.89 C/W                | 1.78 C/W | 1.3 C/W  |                       | 10.45 C/W               | 2.69 C/W | 1.7 C/W  | 1.37 C/W |
|     | 21 | 33mm         | 8.73 C/W              | 2.67 C/W                | 1.60 C/W | 1.13 C/W |                       | 9.9 C/W                 | 2.5 C/W  | 1.52 C/W | 1.22 C/W |
|     | 23 | 33mm         | 8.60 C/W              | 2.45 C/W                | 1.43 C/W | .99 C/W  |                       | 9.54 C/W                | 2.3 C/W  | 1.37 C/W | 1.08 C/W |
| 908 | 28 | 33mm         | 8.27 C/W              | 2.24 C/W                | 1.28 C/W | .87 C/W  |                       | 8.62 C/W                | 2.08 C/W | 1.23 C/W | .98 C/W  |
|     | 33 | 33mm         | 7.94 C/W              | 2.03 C/W                | 1.15 C/W | .77 C/W  |                       | 7.71 C/W                | 1.89 C/W | 1.08 C/W | .86 C/W  |
|     | 12 | 35mm         | 10.03 C/W             | 3.06 C/W                | 1.97 C/W | 1.49 C/W |                       | 11.1 C/W                | 3.07 C/W | 2.07 C/W | 1.64 C/W |
|     | 15 | 35mm         | 9.5 C/W               | 2.85 C/W                | 1.81 C/W | 1.34 C/W |                       | 10.58 C/W               | 2.79 C/W | 1.87 C/W | 1.46 C/W |
|     | 18 | 35mm         | 8.98 C/W              | 2.6 C/W                 | 1.64 C/W | 1.19 C/W |                       | 10.06 C/W               | 2.54 C/W | 1.69 C/W | 1.27 C/W |
|     | 21 | 35mm         | 8.46 C/W              | 2.4 C/W                 | 1.5 C/W  | 1.07 C/W |                       | 9.53 C/W                | 2.35 C/W | 1.52 C/W | 1.15 C/W |
| 909 | 23 | 35mm         | 8.32 C/W              | 2.19 C/W                | 1.34 C/W | .97 C/W  |                       | 8.75 C/W                | 2.13 C/W | 1.35 C/W | 1.01 C/W |
|     | 28 | 35mm         | 7.99 C/W              | 1.97 C/W                | 1.19 C/W | .83 C/W  |                       | 7.93 C/W                | 1.94 C/W | 1.19 C/W | .86 C/W  |
|     | 33 | 35mm         | 7.65 C/W              | 1.82 C/W                | 1.06 C/W | .7 C/W   |                       | 7.11 C/W                | 1.69 C/W | 1.02 C/W | .72 C/W  |
|     | 12 | 37.5mm       | 9.60 C/W              | 2.93 C/W                | 1.90 C/W | 1.36 C/W |                       | 10.52 C/W               | 3.11 C/W | 2.01 C/W | 1.61 C/W |
|     | 15 | 37.5mm       | 9.11 C/W              | 2.71 C/W                | 1.72 C/W | 1.19 C/W |                       | 10.04 C/W               | 2.82 C/W | 1.79 C/W | 1.41 C/W |
|     | 18 | 37.5mm       | 8.61 C/W              | 2.52 C/W                | 1.53 C/W | 1.05 C/W |                       | 9.56 C/W                | 2.59 C/W | 1.59 C/W | 1.22 C/W |
| 910 | 21 | 37.5mm       | 8.11 C/W              | 2.25 C/W                | 1.36 C/W | .88 C/W  |                       | 9.08 C/W                | 2.38 C/W | 1.41 C/W | 1.06 C/W |
|     | 23 | 37.5mm       | 7.98 C/W              | 2.04 C/W                | 1.2 C/W  | .75 C/W  |                       | 8.75 C/W                | 2.15 C/W | 1.24 C/W | .94 C/W  |
|     | 28 | 37.5mm       | 7.63 C/W              | 1.82 C/W                | 1.01 C/W | .63 C/W  |                       | 7.93 C/W                | 1.88 C/W | 1.08 C/W | .8 C/W   |
|     | 33 | 37.5mm       | 7.29 C/W              | 1.6 C/W                 | .87 C/W  | .52 C/W  |                       | 7.11 C/W                | 1.64 C/W | .93 C/W  | .68 C/W  |
|     | 12 | 40mm         | 9.18 C/W              | 2.84 C/W                | 1.86 C/W | 1.36 C/W |                       | 9.95 C/W                | 3.09 C/W | 1.93 C/W | 1.56 C/W |
|     | 15 | 40mm         | 8.71 C/W              | 2.64 C/W                | 1.65 C/W | 1.18 C/W |                       | 9.51 C/W                | 2.77 C/W | 1.73 C/W | 1.37 C/W |
| 910 | 18 | 40mm         | 8.24 C/W              | 2.4 C/W                 | 1.44 C/W | .98 C/W  |                       | 9.06 C/W                | 2.74 C/W | 1.52 C/W | 1.17 C/W |
|     | 21 | 40mm         | 7.77 C/W              | 2.21 C/W                | 1.27 C/W | .86 C/W  |                       | 8.62 C/W                | 2.22 C/W | 1.35 C/W | .99 C/W  |
|     | 23 | 40mm         | 7.63 C/W              | 2 C/W                   | 1.15 C/W | .73 C/W  |                       | 8.3 C/W                 | 2.01C/W  | 1.19 C/W | .87 C/W  |
|     | 28 | 40mm         | 7.27 C/W              | 1.77 C/W                | .99 C/W  | .62 C/W  |                       | 7.55 C/W                | 1.8 C/W  | 1.04 C/W | .75 C/W  |
|     | 33 | 40mm         | 6.92 C/W              | 1.58 C/W                | .85 C/W  | .51 C/W  |                       | 6.78 C/W                | 1.61 C/W | .88 C/W  | .64 C/W  |

Thermal Cooling Solutions from SMART to FINISH

## 901-910 SERIES CHIPSET HEAT SINKS



### SHOCK TEST SPECIFICATION :

Wave Form : Half sine wave

Acceleration : 50 g

Duration Time : 11 ms

No. of Shock : Each axis 3 times

Shock Direction :  $\pm X$ ,  $\pm Y$ ,  $\pm Z$  axis

Reliability & Communication Testing  
Instruments

### Random Vibration test

Frequency : 5 Hz to 500 Hz

Acceleration : 3.13 grms

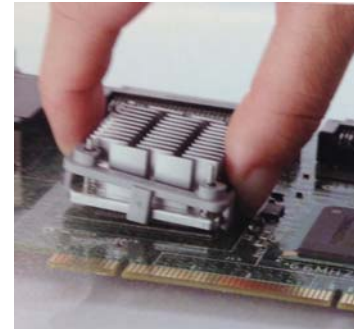
P.S.D : 0.01 g<sup>2</sup>/HZ (5 Hz)

0.02 g<sup>2</sup>/HZ (20 Hz to 500 Hz)

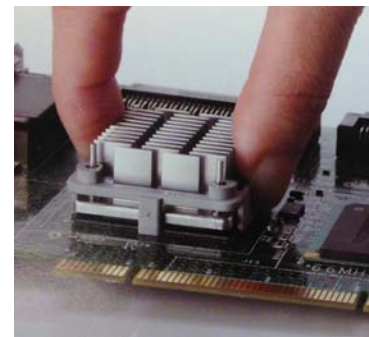
Test Axis : X, Y, Z axis

Test Time : 10 mins (Each axis)

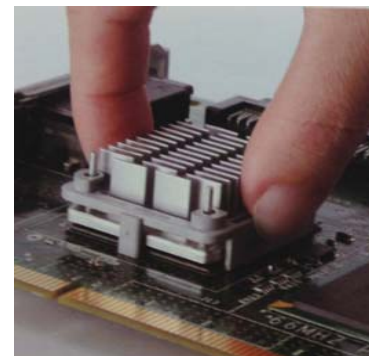
Total Test Time : 30 mins



**STEP 1:** Center heat Sink onto BGA. Tilt and hook one side of the clip under the BGA chip.



**STEP 2:** Press down the other side of clip to snap it onto the BGA chip.



**STEP :3** Make sure the stop pin is not on top of the chip set. Installation Done!



**Thermal Cooling Solutions from SMART to FINISH**

## 901-910 SERIES CHIPSET HEAT SINKS



## Contact Us / Corporate Location Information

Wakefield-Vette is Global. Global presence means our engineering, design, sales and support are close to our customers, in the Americas, Europe, Middle East and Asia. It means multi-national manufacturing and delivery. And it means a global Wakefield-Vette supply chain that can deliver, and provide support quickly, anywhere, with the highest quality solutions.

Contact sales for a list of Distributors that carry stock.

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New Hampshire

33 Bridge Street

Pelham.NH 03076

Phone: 603-635-2800

Fax: 603-635-1900

[Info@wakefield-vette.com](mailto:Info@wakefield-vette.com)

(Wakefield-Vette Headquarters)

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## Thermal Cooling Solutions from SMART to FINISH