Cross Reference

Wakefield Engineering Part Number	Value Engineered Products Part Number	Darrah Part Number
130	VE1272 VE2270	CPL2
	VE2500 VE3000	CPL3
	VE2350 VE5350	CPL4
139	VE3500 VE5500	CPL5
143	VE3501 / VE3510 VE5501 / VE5510	CPL5
144	VE6500 / VE6501 VE7500 / VE7501 VE6510 / VE7510 VE9546	CPL6
145	VE9555	CPL7

Clamping Force Conversions

KGF = KILO GRAMS FORCE

$\frac{KGF}{102}$ = KILO NEWTONS (kN)

KILO NEWTONS (kN) X 224.8 = POUNDS (LBS)

POUNDS (LBS) X .004448 = KILO NEWTONS (kN)

Double Insulated High Voltage Clamps

Both the clamp head and the brace block are isolated from the Heatsinks.

Two Device, Three Hole Clamp

Mount two Semiconductors on common base with single clamp.

Type 120 - Thermal Joint Compound

For use between non-conductive surfaces.
i.e.: Thermostat and Isolated Modules Base to Heatsinks.

No. 2 EJC - Electrical Joint Compound

For use between conductive surfaces.
i.e.: Between Semiconductor Pole Faces and Heatsinks.

Darrah Electric Company is a stocking distributor for Iconopower Clamps.

DARRAH ELECTRIC COMPANY

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Discover, Visa, MasterCard and American Express Accepted

DARRAH's Power Semiconductor Clamps

Darrah offers a full range of Iconopower precision clamps for press pack power semiconductors.

Available for all applications with mounting forces ranging from 4 kN (kilo Newtons) through 50 kN (900 lbs – 11,250 lbs).

The mounting of press pack semiconductors demands the use of a clamp to exert precise force in accordance with the value indicated by the semiconductor manufacturer. Applying the correct force also assures a good electrical performance and a low thermal resistance.

- **Accurate pre-calibrated force**
- **Low profile**
- **Simple to use**
- **Each clamp is individually calibrated and marked with the corresponding force.**
- **Built in force indicator, no special gauges or torque wrenches are required for achieving correct force.**
- **Competitively priced, typical lead time - stock to 4 weeks.**
- **Highest Di-Electric strength available. Single sided insulated clamps pass 2.5 KV testing, Double insulated are rated to 8 KV, and have been tested to 10 KV.**

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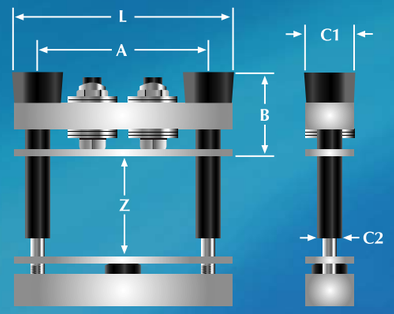
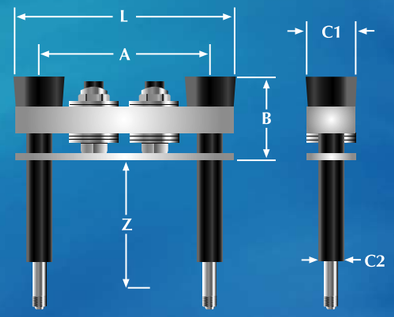
A Full Range of Power Semiconductor Clamps

Standard Clamp Styles

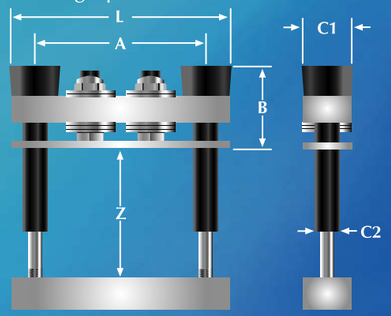
CPL x A
Pivot at both ends



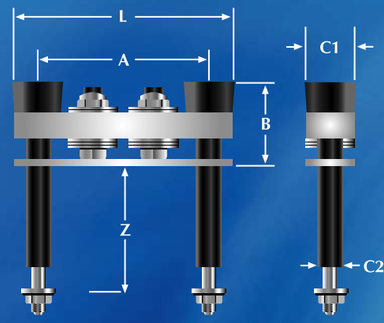
CPL x B
Threaded rear Heatsink



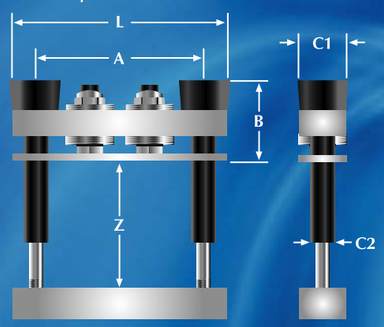
CPL x C
Single pivot threaded brace block



CPL x D
No brace block



CPL x F
Clamp bolts attached to brace block



Higher forces to 145 kN (32,596 lbs.) are available. Ultra low profiles are available upon request.

Clamp Dimensions Table

Clamp Type	"A" Bolt Centers	Maximum Clamp Force		Maximum Semiconductor Diameter	Typical Bolt Type	Maximum "B" Clamp Head Height	"L" Clamp Width	Insulator Diameter	
	Inches	LBS	kN	Inches	mm	Inches	Inches	C1 Inches	C2 Inches
CPL2	2.75	3375	15	2.26	M8	2.14	3.74	1.0	0.48
CPL3	3.11	3375	15	2.63	M8	2.26	4.11	1.0	0.48
CPL4	3.50	5400	24	3.0	M8	2.38	4.44	1.0	0.48
CPL5	4.0	7200	32	3.53	M8	2.87	5.0	1.0	0.48
CPL6	4.65	9000	40	4.0	M10	3.91	5.7	1.4	0.61
CPL7	5.5	11240	50	4.86	M10	3.94	6.8	1.4	0.65

Darrah Part Number Designation Code

CPL 5 C 22 F

CPL
Low Profile Clamp

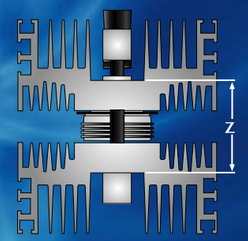
Clamp Bolts Center to Center
2=2.75″
3=3.10″
4=3.50″
5=4.0″
6=4.65″
7=5.50″

Clamp Style
A=Pivot at both ends
B=Treaded rear Heatsink
C=Single Pivot threaded brace block
D=No brace block
F=Clamp bolts are attached to brace block

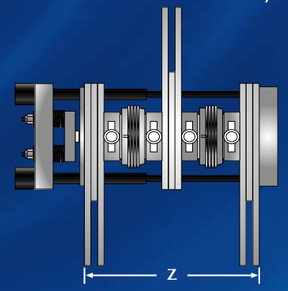
Clamping Force in kN

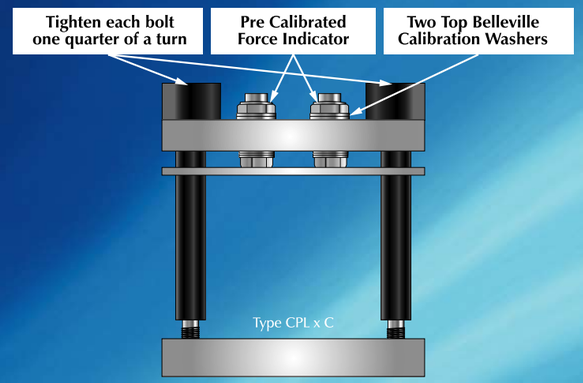
Clamping Distance "Z"

Air cooled assembly



Water cooled assembly





Clamping Distance "Z" Dimensions

	Inches		Inches		Inches
A	0.50 - 0.75	AA	5.75 – 6.00	BA	11.00 – 11.25
B	0.75 – 1.00	AB	6.00 – 6.25	BB	11.25 – 11.50
C	1.00 – 1.25	AC	6.25 – 6.50	BC	11.50 – 11.75
D	1.25 – 1.50	AD	6.50 – 6.75	BD	11.75 – 12.00
E	1.50 – 1.75	AE	6.75 – 7.00	BE	12.00 – 12.25
F	1.75 – 2.00	AF	7.00 – 7.25	BF	12.25 – 12.50
G	2.00 – 2.25	AG	7.25 – 7.50	BG	12.50 – 12.75
H	2.25 – 2.50	AH	7.50 – 7.75	BH	12.75 – 13.00
J	2.50 – 2.75	AJ	7.75 – 8.00	BJ	13.00 – 13.25
K	2.75 – 3.00	AK	8.00 – 8.25	BK	13.25 – 13.50
L	3.00 – 3.25	AL	8.25 – 8.50	BL	13.50 – 13.75
M	3.25 – 3.50	AM	8.50 – 8.75	BM	13.75 – 14.00
N	3.50 – 3.75	AN	8.75 – 9.00	BN	14.00 – 14.25
P	3.75 – 4.00	AP	9.00 – 9.25	BP	14.25 – 14.50
Q	4.00 – 4.25	AQ	9.25 – 9.50	BQ	14.50 – 14.75
R	4.25 – 4.50	AR	9.50 – 9.75	BR	14.75 – 15.00
S	4.50 – 4.75	AS	9.75 – 10.00	BS	15.00 – 15.25
T	4.75 – 5.00	AT	10.00 – 10.25	BT	15.25 – 15.50
V	5.00 – 5.25	AV	10.25 – 10.50	BV	15.50 – 15.75
W	5.25 – 5.50	AW	10.50 – 10.75	BW	15.75 – 16.00
Y	5.50 – 5.75	AY	10.75 – 11.00	BY	16.00 – 16.25

- High current power semiconductors require accurate force to operate at designed rating.
- All semiconductor manufacturers list a recommended mounting force on their data sheet for optimal device performance.
- The forward voltage drop and thermal resistance of the semiconductor is affected by the mounting force that is applied to the device.
- This mounting force must be evenly distributed over the entire surface of the pole faces or contact area of the semiconductor.
- Thermal resistance and ON state voltage drop will increase and the surge rating will decrease when mounting force is below recommended values.
- Excessive mounting force may reduce the load cycling capability by excessive deformation of the thin wafer structures, or at worst, by silicon cracks.

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