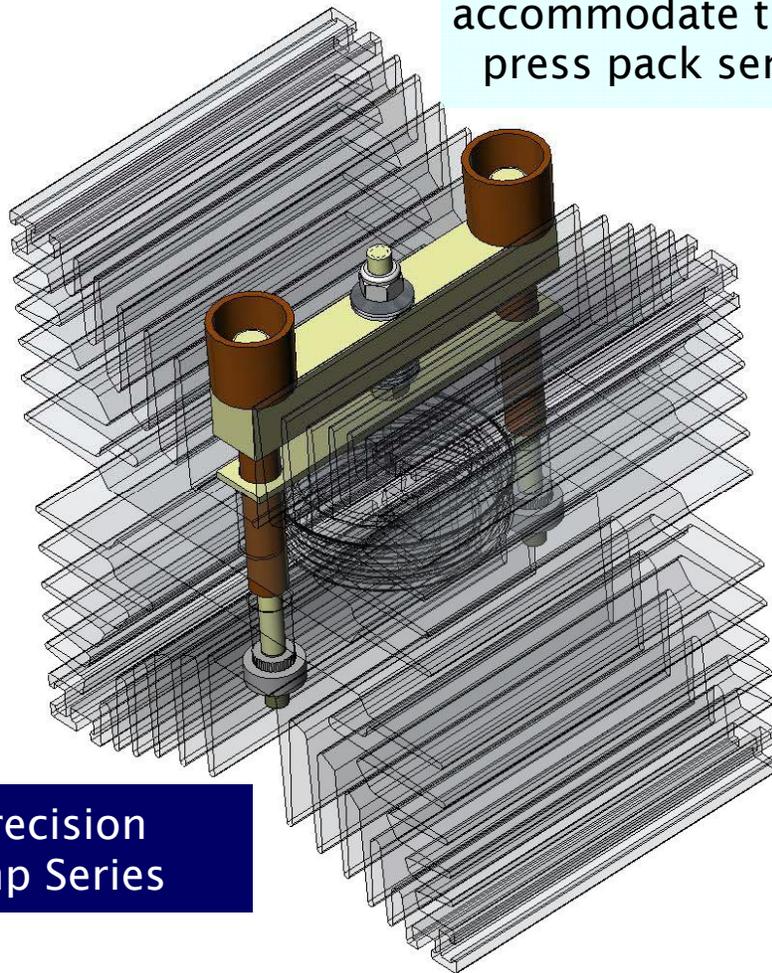




ICONOPOWER LIMITED

Precision Clamps for Press Pack
Semiconductors
4KN - 50KN (900lbf to 11250lbf)
19mm to 75mm Semiconductors

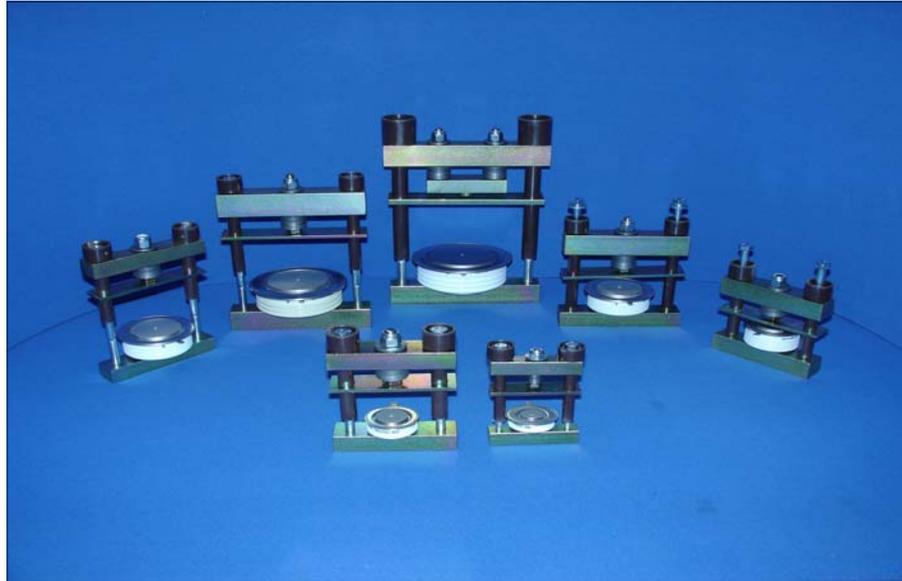
The ICONOPOWER range of high quality precision clamps accommodate the full range of press pack semiconductors.



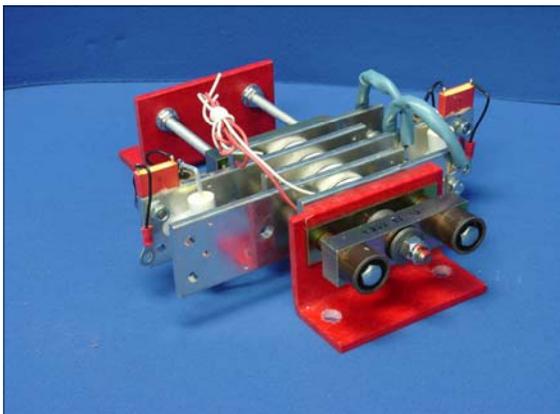
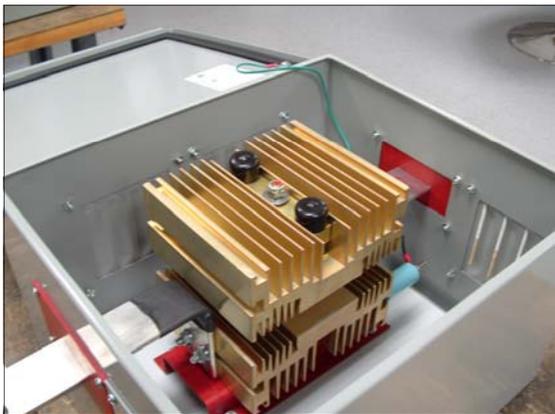
High Precision
CP Clamp Series

Special Features Include:

- ACCURATE PRECALIBRATED FORCE
- CONSTANT APPLIED PRESSURE
- AN UNLIMITED RANGE OF CLAMPING DISTANCES



Iconopower's range of CP clamps



CP clamps installed in Iconopower custom built assemblies

Web Site: www.iconopower.com
Email: sales@iconopower.com
Telephone: 613-744-3670
Fax: 613-744-8452



High Precision CP Series

The Iconopower range of high quality precision clamps accommodate devices with a force range of 4KN – 50 KN (900lbsf to 11250lbsf) for semiconductors with a 19mm to 75mm diameter mounting surface.

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

Features

High Accuracy Calibrated Force
Constant Applied Pressure
Unlimited Range of Clamping Distances
Simple Installation

Key Factors

The clamping force is critical and must be in accordance with the manufacturer's semiconductor specifications.

Pressure must be perpendicularly distributed over the " puck " surface to allow the best electrical contact with least amount of thermal resistance.

All Iconopower clamps have been designed to allow for these two functions, and **each clamp is individually calibrated.**

The insulator material has excellent dielectric and mechanical features, offering:

- High temperature capability
- High dielectric strength

The pre - calibrated force indicator eliminates the need for any special equipment or torque wrenches

Construction and Information

A two rod system with Belleville washers is used to give the clamping force on the device. This force is achieved when the top Belleville washers are just free to move.

The insulator material has been specially selected to ensure the best performance of dielectric and mechanical compressive strength and also allows for high temperature operation. The material meets UL standard 94 V-0 at 0.8mm for flammability.

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Part Number Explanation

CP	1,2,3,4,5,6, or 7	A,B,C,D & F	XX	XX
Clamp	Interaxis Dimension "A"	Style	Nominal Clamping Force kN	Clamping Distance Dimension "Z" (see page 6)

Example: CP4B22E = 22kN clamp on 3.5" bolt centers with a clamping distance range of 1.50-1.75" and no back bar.

Clamp Dimensions Table

Clamp Type	"A" BOLT CENTERS		MAXIMUM CLAMP FORCE		MAXIMUM CELL DIAMETER		TYPICAL BOLT TYPE
	inches	mm	LBS	kN	inches	mm	mm
CP1	2.12	54	2250	10	1.75	44	M6
CP2	2.75	70	3375	15	2.26	57	M8
CP3	3.11	79	3375	15	2.63	66	M8
CP4	3.50	89	5400	24	3.0	76	M8
CP5	4.00	102	7200	32	3.53	89	M8
CP6	4.65	118	9000	40	4.0	102	M10
CP7	5.50	140	10125	50	4.86	123	M10

Clamp Type	MAX "B" BAR HEIGHT *		"L" BAR LENGTH		INSULATOR DIAMETER			
	inches	mm	inches	mm	C1		C2	
	inches	mm	inches	mm	inches	mm	inches	mm
CP1	1.84	47	2.75	70	0.84	21.3	0.36	9.25
CP2	2.14	54	3.74	95	1.0	25.4	0.48	12.20
CP3	2.26	57.5	4.11	104	1.0	25.4	0.48	12.20
CP4	2.38	60.5	4.44	113	1.0	25.4	0.48	12.20
CP5	2.87	73	5.0	127	1.0	25.4	0.48	12.20
CP6	3.91	99	5.7	144	1.4	35.6	0.61	12.20
CP7	3.94	100	6.8	173	1.4	35.6	0.65	12.20

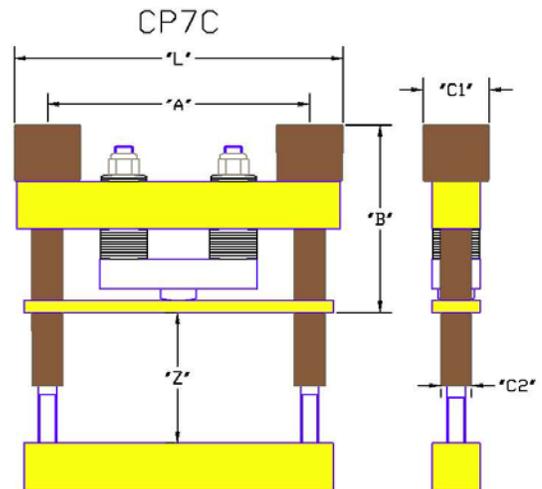
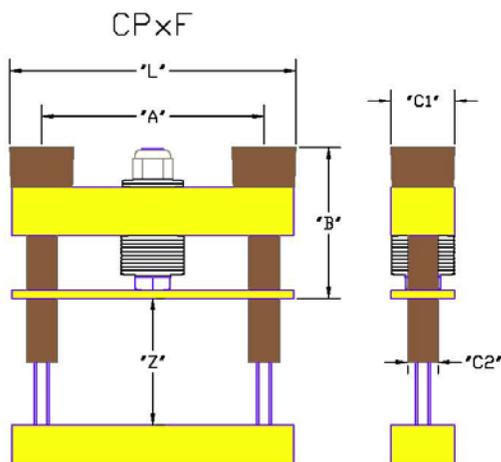
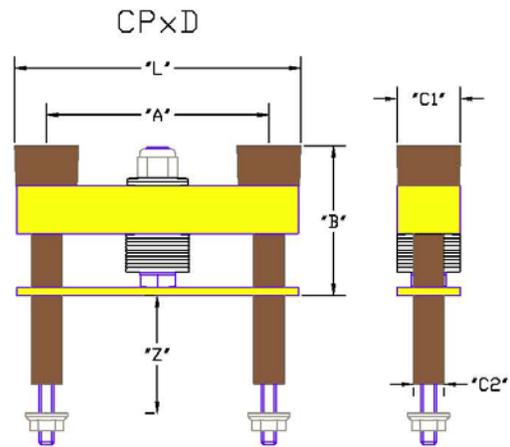
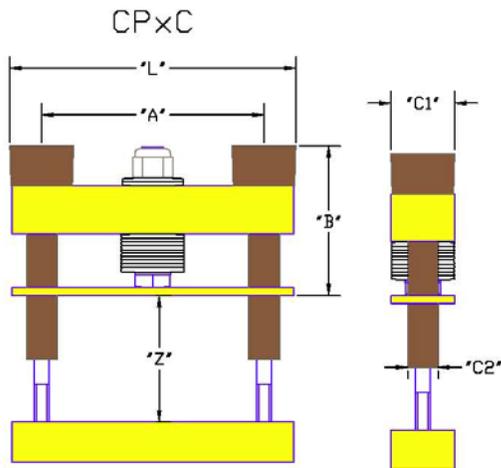
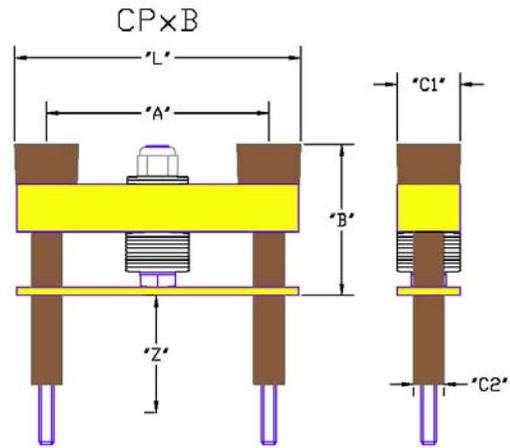
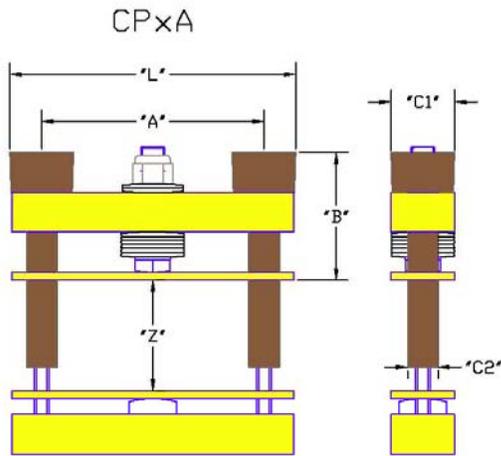
* - BAR ASSEMBLY HEIGHT MAY BE LESS AT LOWER FORCES

In the interest of product improvement, ICONOPOWER reserves the right to change specifications at any time without notice

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Standard Clamp Styles



Clamp Distance—Dimension “Z”

	inches	mm
A	0.50-0.75	12.7-19.1
B	0.75-1.00	19.1-25.4
C	1.00-1.25	25.4-31.8
D	1.25-1.50	31.8-38.1
E	1.50-1.75	38.1-44.5
F	1.75-2.00	44.5-50.8

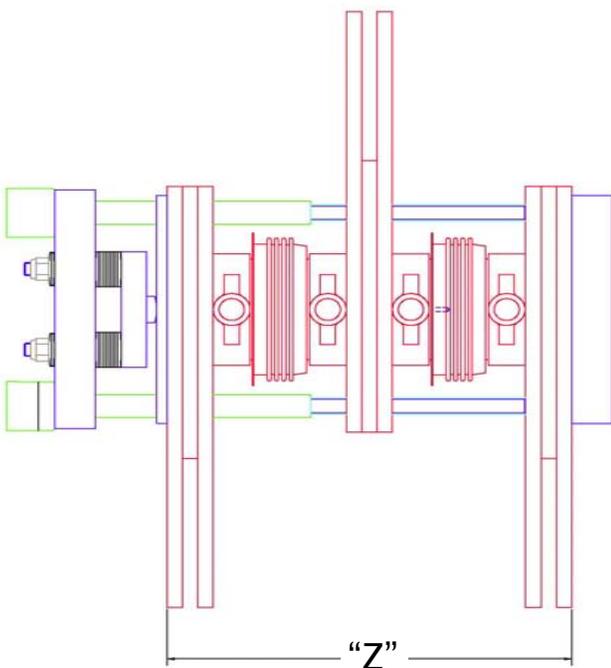
	inches	mm
G	2.00-2.25	50.8-57.2
H	2.25-2.50	57.2-63.5
J	2.50-2.75	63.5-69.9
K	2.75-3.00	69.9-76.2
L	3.00-3.25	76.2-82.3
M	3.25-3.50	82.3-88.9

	inches	mm
N	3.50-3.75	88.9-95.3
P	3.75-4.00	95.3-101.6
Q	4.00-4.75	101.6-108.8
R	4.25-4.50	108.8-114.3
S	4.50-4.75	114.3-120.7
T	4.75-5.00	120.7-127.0

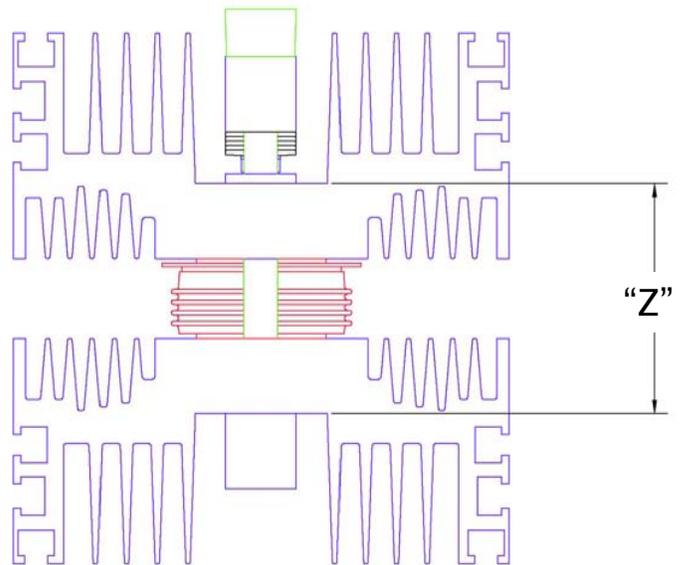
	inches	mm
V	5.00-5.25	127.0-133.4
W	5.25-5.50	133.4-139.7
Y	5.50-5.75	139.7-146.1
AA	5.75-6.00	146.1-152.4
AB	6.00-6.25	152.4-158.8
AC	6.25-6.50	158.8-165.1

Examples of Clamping Dimension “Z”

Calculate the clamping distance required and reference with tables above.



Water cooled assembly

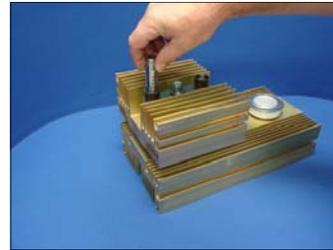


Air cooled assembly

Clamping Procedure

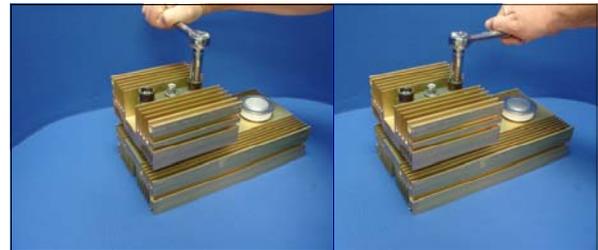
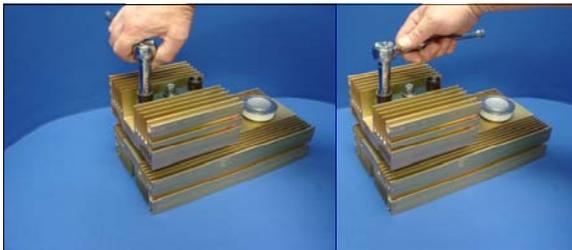
The Iconopower precision CP clamp range uses a two rod system with Belleville washers to apply the required clamping force on the device. This force is achieved when the top Belleville washers are just free to move. **This pre - calibrated force indicator eliminates the need for any special equipment or torque wrenches.**

1. After loosely assembling all the components with the capsule device between the heat sinks, finger tighten the two bolts.



2. Check that the top bar is parallel with the heat sink and make sure that it is centrally located i.e. not at an angle to the channel in the heat sink.

3. Using a socket (wrench) tighten each bolt by a quarter turn alternately.



4. Check the top Belleville washers after each bolt has been quarter turned. Correct force is applied when the washers are just free to move.



Please feel free to contact Iconopower if any further details are required.

Iconopower offers two other ranges of clamps:

Low Profile Clamps

A range of clamps with a low profile head height suitable for applications where this dimension is critical.

As with the CP style, these clamps are also available in an unlimited range of clamping distances, are individually calibrated and utilize our simple visual installation system.

Upon your selection, we can provide you with a detailed dimensioned drawing specific to your requirement.

This catalog is available in PDF format from our website www.iconopower.com or by calling our office for a hard copy.



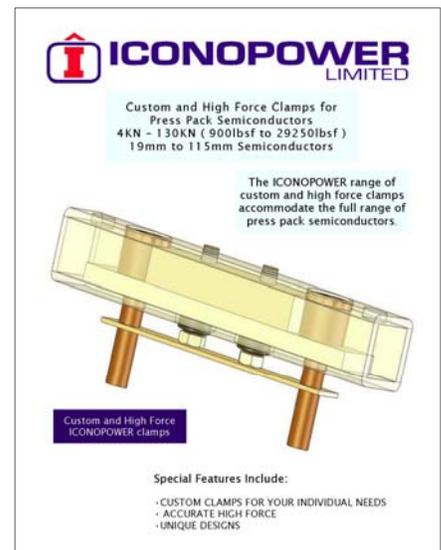
Custom and High Force Clamps (up to 130KN)

Not every clamp you require may be from our standard range. Let ICONOPOWER's experienced team work with you to provide a clamping solution specific to your individual needs.

As with the CP style, these clamps are also available in an unlimited range of clamping distances, are individually calibrated and utilize our simple visual installation system.

Upon your selection, we can provide you with a detailed dimensioned drawing specific to your requirement.

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About Iconopower

Based in Ottawa, Canada in a 10,000 square foot facility we offer over 30 years of experience in the power component industry. In addition to manufacturing clamps, Iconopower can select, *usually from it's inventory*, a power semiconductor (stud, discrete or module) to meet any specification.

All these products can be brought together with an Iconopower custom designed and built assembly.

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