

PRECISION COMPRESSION MOUNTING CLAMP SYSTEMS

Wakefield Engineering compression pack heat sinks and clamp systems provide electrical and industrial equipment manufacturers with complete system solutions for proper installation and heat dissipation for high-power compression pack semiconductor. All components for

device mounting and cooling are available separately for all standard compression requirements from 800 lbs (362.9 kg) to 16,000 lbs (7,257.5 kg) force in both natural and forced convection applications.

Clamp Assembly Series	Maximum Clamping Force Force Range	Maximum Diameter (Ref) Power Disc Device	Crossbar Stud Centerline to Centerline Dimension
130 Series	800 lbs (362.9 kg) - 2,000 lbs (907.2 kg)	2.25 in. (57.2 mm)	2.750 in. (69.9 mm) Ref
139 Series	3,000 lbs (1,360.8 kg) and 5,000 lbs (2,268.0 kg)	3.50 in. (88.9 mm)	4.000 in. (101.6 mm) Ref
143 Series	1,000 lbs (453.6 kg) - 6,000 lbs (2,721.6 kg)	3.50 in. (88.9 mm)	4.000 in. (101.6 mm) Ref
144 Series	1,000 lbs (453.6 kg) - 6,000 lbs (2,721.6 kg)	4.00 in. (101.6 mm)	4.625 in. (117.5 mm) Ref
145 Series	2,000 lbs (907.2 kg) - 10,000 lbs (4,535.9 kg)	4.50 in. (114.3 mm)	5.500 in. (139.7 mm) Ref
146 Series	8,000 lbs (3,628.8 kg) - 16,000 lbs (7,257.5 kg)	5.25 in. (133.4 mm)	6.000 in. (152.4 mm) Ref
131/132/133 Series	High-Performance Press Pack Heat Sinks		

These high-quality mounting clamp assemblies are the worldwide standard for mounting, compression, and clamping press-pack SCR, thyristor, rectifier, and other high power disc packaged devices utilized in power distribution equipment, industrial controls, transportation systems, and power supply and conversion systems.

Clamp assemblies will accommodate devices with overall case diameters to 5.25 in. (133.4 mm) maximum. Vertical device mounting space available for assemblies is determined by selecting an appropriate series crossbar by length which, when a series spring assembly is

selected (based on maximum clamping force required), will provide the necessary vertical clearance space. For the 130 and 139 Series, this determination is made by subtracting the chosen spring assembly "Z" dimension (refer to dimensional tables) from the crossbar assembly "X" dimension minimum and maximum values, to calculate the available device mounting space clearance for the particular assembly combination. Spring assembly "Z" dimension is the dimension measured from the spring assembly device mounting surface to the spring assembly top surface. Some series have fixed dimensions for alpha characters. All spring assemblies are designed with a force indicator gauge.



130 SERIES Compression Mounting Clamp Assemblies for Semiconductors to 2.25 in. (57.2mm) Diameter

130 SERIES CROSSBAR 800 lb - 2,000 lb (362.8 kg - 907.2 kg)

Crossbar Device Mounting, Surface to Spring Assembly
Top Surface Dimension

Model No.	"X" Dimension Min. In. (mm)	Max. In. (mm)	Weight lbs. (grams)
130-A ▲	1.74 (44.2)	2.12 (53.8)	0.4 (181.44)
130-B ▲	2.05 (52.1)	2.43 (61.7)	0.418 (189.60)
130-C ▲	2.36 (59.9)	2.74 (69.6)	0.427 (193.68)
130-D ▲	2.67 (67.8)	3.05 (77.5)	0.437 (198.22)
130-E	2.98 (75.7)	3.36 (85.3)	0.447 (202.76)
130-F	3.29 (83.6)	3.67 (93.2)	0.461 (209.11)
130-G	3.60 (91.4)	3.98 (101.1)	0.476 (215.91)
130-H	3.91 (99.3)	4.29 (109.0)	0.486 (220.45)
130-J	4.22 (107.2)	4.60 (116.8)	0.497 (225.44)
130-K	4.53 (115.1)	4.91 (124.7)	0.51 (231.33)
130-L	4.34 (122.9)	5.22 (132.6)	0.52 (235.87)
130-M	5.15 (130.8)	5.53 (140.5)	0.534 (242.22)
130-N	5.46 (138.7)	5.84 (147.3)	0.544 (246.75)
130-P	5.77 (146.6)	6.15 (156.2)	0.559 (253.56)

130 SERIES SPRING ASSEMBLY

Model No.	No. of Leaves	"Z" Dim. in. (mm)	Max Force lb (kg)	Weight lbs (gms)
130-1 ▲	2	0.90 (22.9)	2,000 (907.2)	0.331 (150.14)
130-2 ▲	2	0.50 (12.7)	800 (362.8)	0.19 (86.18)
130-3	3	0.61 (15.5)	1,200 (544.3)	0.219 (99.34)
130-4	4	0.72 (18.3)	1,600 (727.8)	0.333 (151.05)
130-5 ▲	5	0.83 (21.1)	2,000 (907.2)	0.408 (185.07)

Notes:

1. Spring assemblies are stainless steel leaves with a force indicator gauge, except the lowest cost Type 130-1 spring assembly manufactured from automotive grade stainless steel.

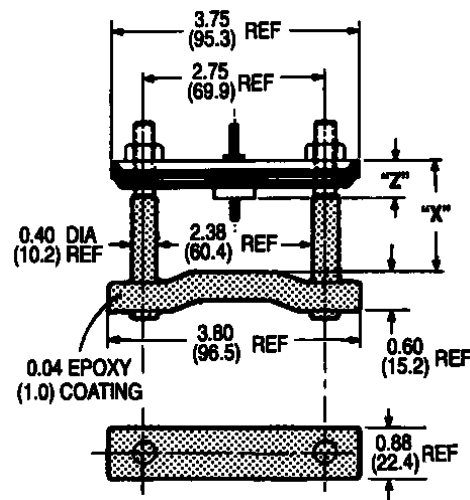
Order Guide:

Order Crossbar and Spring Assembly separately by type number from table.

Dimensions:

in. (mm)
lb. (kg)

MECHANICAL DIMENSIONS



Dimensions: in. (mm)

PRECISION COMPRESSION MOUNTING CLAMP SYSTEMS



139 SERIES Compression mounting clamp assemblies for semiconductors to 3.50 in. (88.9 mm) Diameter

139 SERIES CROSSBAR

3,000 lb - 5,000 lb, (1,360.8 kg - 2,268.0 kg), Crossbar Device Mounting, Surface to Spring Assembly, Top Surface Dimension

139-3 SERIES CROSSBAR - 3,000 LB (1,360.8)				139-5 SERIES CROSSBAR - 5,000 LB (2,268.0)			
Model No.	"X" Dimension		Weight lbs. (grams)	Model No.	"X" Dimension		Weight lbs. (grams)
	Min	Max			Min	Max	
	in. (mm)				in. (mm)		
139-3A	1.52 (38.6)	1.89 (48.0)	0.689 (312.52)	139-5A	1.52 (38.6)	1.89 (48.0)	0.94 (426.38)
139-3B	1.83 (46.5)	2.21 (56.1)	0.7 (317.51)	139-5B	1.83 (46.5)	2.21 (56.1)	0.96 (435.45)
139-3C	2.14 (54.4)	2.52 (64.0)	0.706 (320.24)	139-5C	2.14 (54.4)	2.52 (64.0)	0.98 (444.52)
139-3D ▲	2.45 (62.2)	2.83 (71.9)	0.721 (327.04)	139-5D	2.45 (62.2)	2.83 (71.9)	1.01 (458.13)
139-3E	2.77 (70.4)	3.14 (79.8)	0.732 (332.03)	139-5E ▲	2.77 (70.4)	3.14 (79.8)	1.02 (462.66)
139-3F	3.08 (78.2)	3.45 (87.6)	0.741 (336.11)	139-5F ▲	3.08 (78.2)	3.45 (87.6)	1.033 (468.56)
139-3G ▲	3.39 (86.1)	3.77 (95.8)	0.762 (345.64)	139-5G ▲	3.39 (86.1)	3.77 (95.8)	1.053 (477.63)
139-3H	3.70 (94.0)	4.08 (103.6)	0.773 (350.63)	139-5H ▲	3.70 (94.0)	4.08 (103.6)	1.074 (487.64)
130-3J	4.01 (101.9)	4.39 (111.5)	0.784 (355.62)	139-5J ▲	4.33 (101.9)	4.39 (111.5)	1.064 (482.62)
139-3K	4.33 (110.0)	4.70 (119.4)	0.79 (358.34)	139-5K	4.33 (110.0)	4.70 (119.4)	1.075 (487.61)
139-3L	4.64 (117.9)	5.01 (127.3)	0.793 (359.70)	139-5L ▲	4.64 (117.9)	5.01 (127.3)	1.088 (493.51)
139-3M	4.95 (125.7)	5.33 (135.4)	0.796 (361.06)	139-5M	4.95 (125.7)	5.33 (135.4)	1.102 (499.86)
139-3N	5.26 (133.6)	5.64 (143.3)	0.832 (377.39)	139-5N	5.26 (133.6)	5.64 (143.3)	1.11 (503.49)
139-3P	5.57 (141.5)	5.95 (151.1)	0.838 (380.11)	139-5P ▲	5.57 (141.5)	5.95 (151.1)	1.171 (531.16)

CROSSBAR HEIGHT AND WIDTH

Series Number	Height "A" Reference in. (mm)	Width "B" Reference in. (mm)
139-3	0.72 (18.3)	0.95 (24.1)
139-5	1.02 (25.9)	0.83 (21.1)

Order Guide:

Order Crossbar and Spring Assembly separately by type number from table.

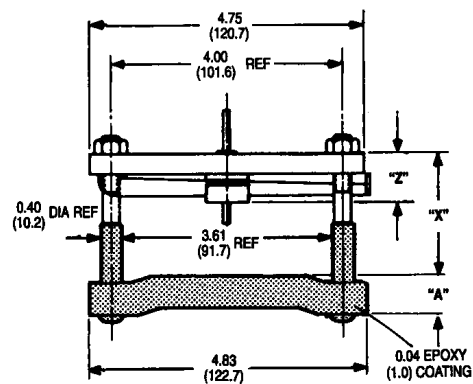
Dimensions:

in. (mm)
lb. (kg)

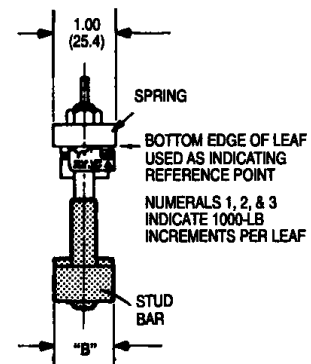
139 SERIES SPRING ASSEMBLY

Model Number	Number of Leaves	"Z" Dimension in. (mm)	Maximum Force lb. (kg)
139-1 ▲	1	0.87(22.1)	3,000 (1,360.8)
139-2 ▲	2	1.25(31.8)	5,000 (2,268.0)

MECHANICAL DIMENSIONS



Dimensions: in. (mm)



PRECISION COMPRESSION MOUNTING CLAMP SYSTEMS



143 SERIES *Compression Mounting Clamp Assemblies for Semiconductors to 3.50 in (88.9 mm) Diameter*

143 SERIES CROSSBAR

2,000 lb - 6,000 lb (907.2 kg - 2,721.6 kg)

Crossbar Device Mounting, Surface to Spring Assembly, Top Surface Dimension

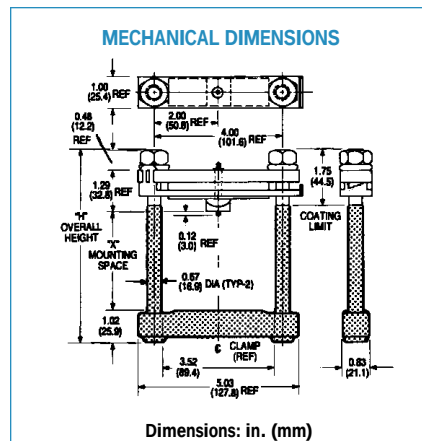
Model No.	"X" Dimension		Overall Height "H" In. (mm)	Weight lbs. (grams)
	Min	Max In. (mm)		
143-A	1.30 (33.0)	1.80 (45.7)	4.68 (118.9)	1.100 (498.95)
143-B	1.86 (45.7)	2.30 (58.4)	5.18 (131.6)	1.125 (510.29)
143-C	2.30 (58.4)	2.80 (71.1)	5.68 (144.3)	1.150 (521.63)
143-D	2.80 (71.1)	3.30 (83.8)	6.18 (157.0)	1.175 (532.97)
143-E ▲	3.30 (83.8)	3.80 (96.5)	6.68 (169.7)	1.200 (544.31)
143-F	3.80 (96.5)	4.30 (109.2)	7.18 (182.4)	1.225 (555.65)
143-G	4.30 (109.2)	4.80 (121.9)	1.68 (195.1)	1.250 (566.99)
143-H	4.80 (121.9)	5.30 (134.6)	8.18 (207.8)	1.275 (578.33)
143-J	5.30 (134.6)	5.80 (147.3)	8.68 (220.5)	1.300 (589.67)
143-K	5.80 (147.3)	6.30 (160.0)	9.18 (233.2)	1.325 (601.00)
143-L	6.30 (160.0)	6.80 (172.7)	9.68 (245.9)	1.350 (612.35)

143 SERIES SPRING ASSEMBLY

Model Number	Number of Leaves	Max. Clamping Force lb. (kg)	Weight lbs. (grams)
143-2 ▲	2	6,000 (2,721.6)	0.813 (368.77)

Order Guide:
Order Crossbar and Spring Assembly separately by type number from table.

Dimensions:
in. (mm)
lb. (kg)



144 SERIES *Compression Mounting Clamp Assemblies for Semiconductors to 4.00 in (101.6mm) Diameter*

144 SERIES CROSSBAR

1,000 lb - 6,000 lb (453.6 kg - 2,721.6 kg)

Crossbar Device Mounting, Surface to Spring Assembly
Top Surface Dimension

Model No.	"X" Dimension		Weight lbs (grams)
	Min	Max In. (mm)	
144-A	1.50 (38.1)	2.00 (50.8)	1.231 (558.37)
144-B	2.00 (50.8)	2.50 (63.5)	1.262 (572.43)
144-C ▲	2.50 (63.5)	2.50 (63.5)	1.285 (582.87)
144-D ▲	3.00 (76.2)	3.50 (88.9)	1.310 (594.21)
144-E ▲	3.50 (88.9)	4.00 (101.6)	1.352 (613.26)

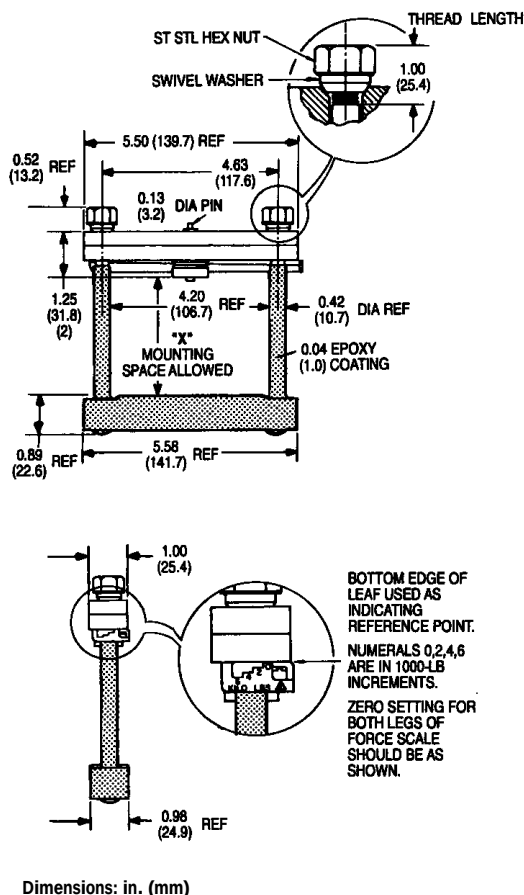
144 SERIES SPRING ASSEMBLY

Model No.	Clamping Force Range lb (kg)	Weight lbs (grams)
144-2 ▲	1,000 (453.6) - 6,000 (2,721)	1.772 (803.77)

Order Guide:
Order Crossbar and Spring Assembly separately by type number from table.

Dimensions:
in. (mm)
lb. (kg)

MECHANICAL DIMENSIONS



PRECISION COMPRESSION MOUNTING CLAMP SYSTEMS



145 SERIES *Compression Mounting Clamp Assemblies for Semiconductors to 4.50 in (114.3 mm) Diameter*

145 SERIES CROSSBAR

2,000 lb - 10,000 lb (907.2 kg - 4,535.9 kg)

Crossbar Device Mounting, Surface to Spring Assembly, Top Surface Dimension

Model No.	"X" Dimension		Overall Height "H" In. (mm)	Weight lbs. (grams)
	Min	Max In. (mm)		
145-A	1.75 (44.5)	2.50 (63.5)	6.00 (152.4)	3.845 (1744.06)
145-B ▲	2.50 (63.5)	3.25 (82.6)	6.75 (171.5)	3.987 (1808.47)
145-C	3.25 (82.6)	4.00 (101.6)	7.50 (190.5)	4.06 (1841.58)
145-D ▲	4.00 (101.6)	4.75 (120.7)	8.25 (209.6)	4.187 (1899.19)
145-E	4.75 (120.7)	5.50 (139.7)	9.00 (228.6)	4.37 (1982.20)
145-F	5.50 (139.7)	6.25 (158.8)	9.75 (247.7)	4.459 (2022.57)

145 SERIES SPRING ASSEMBLY

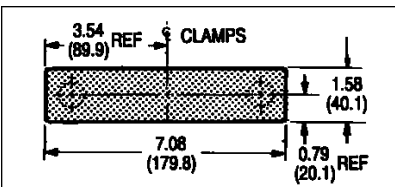
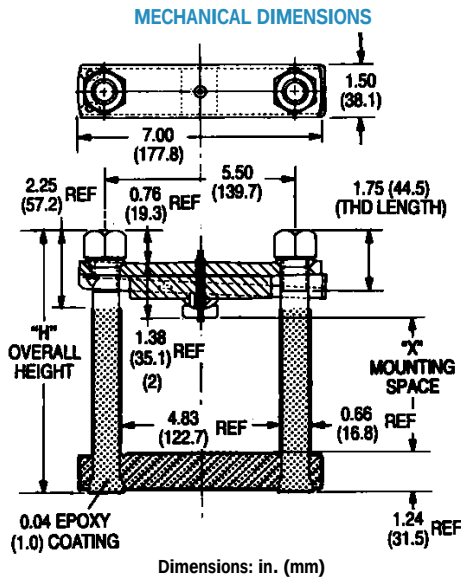
Model No.	Clamping Force Range lb (kg)	Weight lbs (grams)
145-2 ▲	2,000 (907.2) - 10,000 (4,535.9)	2.01 (911.72)

Order Guide:

Order Crossbar and Spring Assembly separately by type number from table.

Dimensions:

in. (mm)
lb. (kg)



146 SERIES *Compression Mounting Clamp Assemblies for Semiconductors to 5.25 in (133.5 mm) Diameter*

146 SERIES CROSSBAR

8,000 lb -16,000 lb (3,628.7 kg - 7,257.4 kg)

Crossbar Device Mounting, Surface to Spring Assembly, Top Surface Dimension

Model No.	"X" Dimension		Overall Height "H" In. (mm)	Weight lbs. (grams)
	Min	Max In. (mm)		
146-A	1.54 (39.1)	2.29 (58.2)	5.92 (150.4)	3.813 (1729.55)
146-B	2.29 (58.2)	3.04 (77.2)	6.67 (169.4)	3.938 (1786.25)
146-C ▲	3.04 (77.2)	3.79 (96.3)	7.42 (188.5)	4.063 (1842.95)
146-D	3.79 (96.3)	4.54 (115.3)	8.17 (207.5)	4.188 (1899.64)
146-E	4.54 (115.3)	5.29 (134.4)	8.92 (226.6)	4.313 (1956.34)
146-F	5.29 (134.4)	6.04 (153.4)	9.67 (245.6)	4.438 (2013.04)
146-G	6.04 (153.4)	6.79 (172.5)	10.42 (264.7)	4.563 (2069.74)

146 SERIES SPRING ASSEMBLY

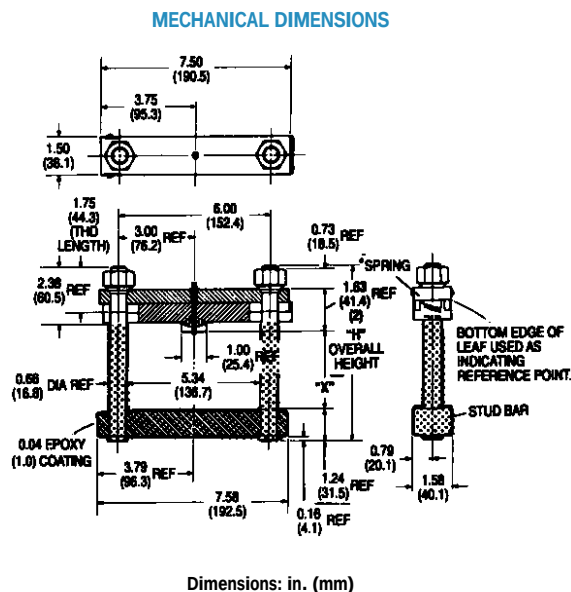
Model Number	Number of Leaves	Clamping Force Range lb (kg)	Maximum Force lb (grams)
146-2 ▲	2	8,000 (3,628.7) - 16,000 (7,257.5)	2,688 (1,219.26)

Order Guide:

Order Crossbar and Spring Assembly separately by type number from table.

Dimensions:

in. (mm)
lb. (kg)



131/132/133 SERIES HIGH-PERFORMANCE HEAT SINKS FOR COMPRESSION TYPE DEVICES



131/132/133 SERIES

Dimensions: in.(mm)

Finish: B = Black Anodized
G = Gold Iridite

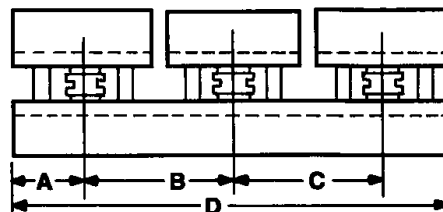
Material: Aluminum Alloy

Standard P/N Black Anodize ^(4, 5)	Gold Iridite	Width in. (mm)	Nominal Dimensions: ⁽¹⁾			Clamp System Series ⁽⁶⁾	Thermal Performance at Typical Load ⁽²⁾	
			Length "A" in. (mm)	Height in. (mm)			Natural Convection (°C/W) ⁽³⁾	Convection (°C/W) @ 500 LFM)
131-4.5B	131-4.5G	5.000 (127.0)	4.500 (114.3)	1.125 (28.6)	130	0.83	0.240	
132-4.5B	132-4.5G	5.000 (127.0)	4.500 (114.3)	2.250 (57.2)	130	0.61	0.170	
132-10B	132-10G	5.000 (127.0)	10.000 (254.0)	2.250 (57.2)	130	0.38	0.130	
132-15.5B	132-15.5G	5.000 (127.0)	15.500 (393.7)	2.250 (57.2)	130	0.28	0.100	
132-5-B9	132-5-G9 ▲	5.000 (127.0)	5.000 (127.0)	2.250 (57.2)	139	0.61	0.170	
132-11-B9	132-11-G9 ▲	5.000 (127.0)	11.000 (299.4)	2.250 (57.2)	139	0.37	0.120	
133-4.5B	133-4.5G	7.000 (139.2)	4.500 (114.3)	3.125 (79.4)	130	0.37	0.110	
133-7.5B	133-7.5G	7.000 (139.2)	7.500 (190.5)	3.125 (79.4)	130	0.28	0.085	
133-10B	133-10G	7.000 (139.2)	10.000 (254.0)	3.125 (79.4)	130	0.26	0.082	
133-5-B9	133-5-G9	7.000 (139.2)	5.000 (127.0)	3.125 (79.4)	139	0.37	0.110	
133-7.5-B9	133-7.5-G9	7.000 (139.2)	7.500 (190.5)	3.125 (79.4)	139	0.28	0.085	
133-11-B9	133-11-G9	7.000 (139.2)	11.000 (279.4)	3.125 (79.4)	139	0.24	0.076	

Notes:

- Nominal dimensions for one heat sink of this type.
- Thermal performance values shown are per pair of heat sinks.
- Natural convection performance at 50°C heat sink rise above ambient.
- Black anodize finish [1.875 in. (47.6 mm) diameter spot face. Device mounting surface area free of finish].
- Predrilled heat sinks accept 130 and 139 Series clamp systems.

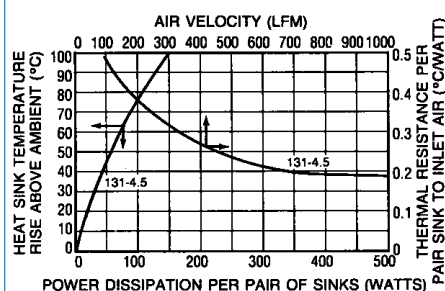
MULTIPLE ASSEMBLY CONFIGURATION



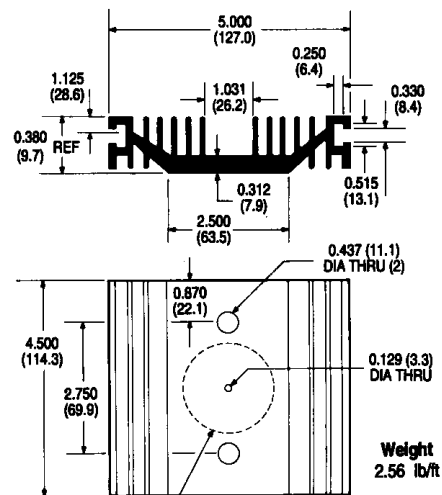
Type	Use with	A	B	C	D
131-4.5	—	—	—	See Fig. 131	—
132-4.5	—	—	—	See Fig. 132	—
132-10	2 ea 132-4.5	2.25	5.50	—	10.0
132-15.5	3 ea 132-4.5	2.25	5.50	5.50	15.5
133-4.5	—	—	—	See Fig. 133	—
133-7.5	—	—	—	See Fig. 133	—
133-10	2 ea 133-4.5	2.25	5.50	—	10.0
132-5-9**	—	—	—	See Fig. 132	—
132-11-9**	2 ea 132-5-9	2.50	6.00	—	11.00
133-5-9**	—	—	—	See Fig. 133	—
133-7.5-9**	—	—	—	See Fig. 133	—
133-11-9**	2 ea 133-5-9	2.50	6.00	—	11.00

** -9 indicates heat sinks drilled for 139 clamp.

131 SERIES NATURAL AND FORCED CONVECTION CHARACTERISTICS

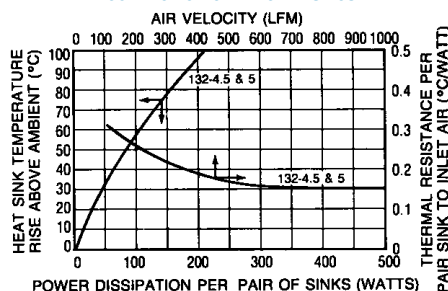


MECHANICAL DIMENSIONS (EXTRUSION PROFILE 3849)

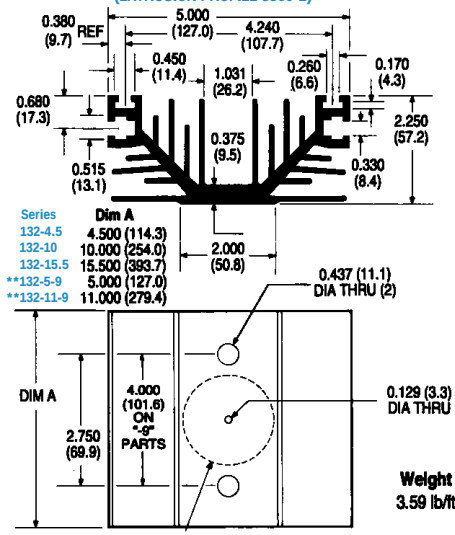


*1.875 (47.6) DIA MACHINED FLAT WITHIN 0.0015 (0.04) TIR FREE OF FINISH ON BLACK ANODIZE PARTS ONLY
*SURFACES FREE OF FINISH ON "B" PARTS

132 SERIES NATURAL AND FORCED CONVECTION CHARACTERISTICS



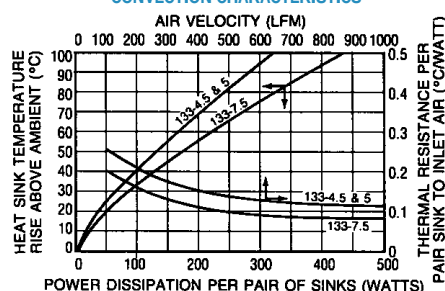
MECHANICAL DIMENSIONS (EXTRUSION PROFILE 3560-2)



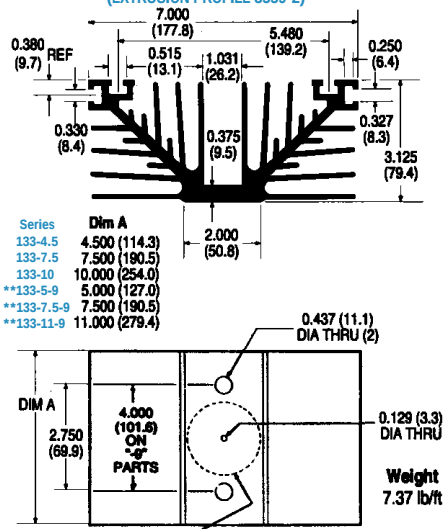
*1.875 (47.6) DIA MACHINED FLAT WITHIN 0.0015 (0.04) TIR FREE OF FINISH ON BLACK ANODIZE PARTS ONLY
*SURFACES FREE OF FINISH ON "B" PARTS
**4.000 (101.6) ON "G" PARTS

Dimensions: in. (mm)

133 SERIES NATURAL AND FORCED CONVECTION CHARACTERISTICS



MECHANICAL DIMENSIONS (EXTRUSION PROFILE 3559-2)



*1.875 (47.6) DIA MACHINED FLAT WITHIN 0.0015 (0.04) TIR FREE OF FINISH ON BLACK ANODIZE PARTS ONLY
*SURFACES FREE OF FINISH ON "B" PARTS
**4.000 (101.6) ON "G" PARTS