



Thermal Solutions Manufacturing Heavy Duty Products

San Bernardino, CA. Plant Capabilities 2019

1390 Tippecanoe San Bernardino, CA. 92408 Phone: 1-800-776-4775 Fax: 909-796-1349

Thermal Solutions Manufacturing's San Bernardino facility provides same-day service to its local customers and in most cases overnight service on in-stock radiators, condensers, complete truck radiators, charge air coolers, heaters and built to order Serpentine and Flat Fin cores for trucks, off-highway and industrial applications.

Thermal Solutions Manufacturing offers coverage for both foreign and domestic passenger cars and light trucks. Our regional manufacturing plants and our national distribution system combine the local service you need with the fast delivery and model coverage you demand. Team up with Thermal Solutions Manufacturing.

Wherever you go, we have your Thermal Solution!

Flat Fin Cores

- Fin Materials - Copper, Brass, Solder Coated Brass, & Steel.
- Fins per Inch – 5 – 6 – 7 – 8 – 9 – 10– 11
- Tubes – 1/2" Smooth, Dimpled & 3/4" Smooth
- Header Gauges – .032" solder-on, bolted headers – .040", .050", .100" & .125"
- Corner Reinforcements - .100" brass
- Crank Box – Less than 9" Tall, Solid Pipe 9" Tall or Greater Solid Pipes or Rubber Hose.
- Center Mount Bar and Support Fins Construction 7 & 9 fpi, Maximum Height 72"
- TIN PASTE FACE COAT (TPFC)

VT – VE – VH – VTH – VTW Cores

- Maximum Core Size – VT 52" x 46"
- Maximum Core Size – VTW 52" x 46"
- Maximum Core Size – VE 52" x 46"
- Maximum Core Size – VH 54" x 46"
- Maximum Core Size – VTH 54" x 46"
- Fins per Inch – 8 – 16 fpi
- Tubes – 1/2" Smooth, Dimpled & 5/8" Smooth & Dimpled
- Header Gauges – .032" solder-on, bolted headers – .040", .050" & .100"
- Corner Reinforcements - .100" brass
- Crank Box- Less than 9" Tall, Solid Pipe Only. 9" Tall or Greater, Solid Pipe or Rubber Hose.

SAN BERNARDINO MINIMUM HEADER WIDTHS

Type	Rows	Size	Smallest Width w/o Drop Seam	w/o DS Hdr must be >	Smallest Width W/ Drop Seam	w/ DS Hdr must be >
VE / VT / VTW	2	1 1/4	1 1/2	1/4	1 5/8	3/8
	3	1 15/16	2 1/8	3/16	2 3/16	1/4
	4	2 5/8	2 13/16	3/16	2 15/16	5/16
VTW only	*5	3 1/4	3 1/2	1/4	3 5/8	3/8
VTW only	*6	3 7/8	4 1/8	1/4	4 3/8	1/2
VTH	2	1 1/2	1 11/16	3/16	1 7/8	3/8
	3	2 3/16	2 3/8	3/16	2 5/8	7/16
	4	3	3 3/16	3/16	3 3/8	3/8
	5	3 3/4	4	1/4	4 1/8	3/8
VH	2	1 1/2	1 11/16	3/16	1 15/16	7/16
	3	2 3/16	2 3/8	3/16	2 5/8	7/16
	4	3	3 1/4	1/4	3 3/8	3/8
	5	3 3/4	4	1/4	4 1/8	3/8
B STEEL / T	2	1 7/16				
	3	2	2 1/4	1/4	2 3/8	3/8
	4	2 11/16	B-2 7/8 / T-2 15/16		3	5/16
	5	3 7/16	3 11/16	1/4	3 13/16	3/8
	6	4 3/16	4 7/16	1/4	4 9/16	3/8
	7	5 1/4	5 5/16	1/16	5 7/16	3/16
	8	5 3/4	6 1/16	5/16	6 3/16	7/16
	B VOSS	3	2 3/16	2 3/8	3/16	2 1/2
4		3	3	0	3 1/8	1/8
5		3 3/4	3 13/16	1/16	3 15/16	3/16
6		4 5/8	4 9/16	- 1/16	4 11/16	1/16
7		5 1/16	5 5/16	1/4	5 7/16	3/8
8		6	6 1/16	1/16	6 3/16	3/16
R & S	2	1 1/4	1 1/2	1/4	1 5/8	3/8
	3	1 3/4	1 7/8	1/8	2 1/16	5/16
	4	2 3/8	2 7/16	1/16	2 9/16	3/16
	5	2 7/8	3 1/8	1/4	3 1/4	3/8
	6	3 3/8	3 9/16	3/16	3 13/16	7/16
	7	3 15/16	4 1/16	1/8	4 3/16	1/4
	8	4 1/2	4 11/16	3/16	4 7/8	3/8
	X & L	2	1 7/8	1 7/8	0	2 1/8
3		2 1/4	2 1/4	0	2 7/16	3/16
4		3	3 1/8	1/8	3 1/4	1/4
5		3 3/4	3 7/8	1/8	4	1/4
6		4 5/8	4 3/4	1/8	4 7/8	1/4
7		5 1/4	5 1/4	0	5 7/16	3/16
8		6 1/8	6 3/16	1/16	6 5/16	3/16
Z		3	2 3/16	2 3/8	3/16	2 1/2
	4	3	3 1/8	1/8	3 1/4	1/4
	5	3 3/4	3 7/8	1/8	4	1/4
	6	4 5/8	4 5/8	0	4 3/4	1/8
	7	5 1/4	5 3/8	1/8	5 1/2	1/4
	8	6	6 1/8	1/8	6 1/4	1/4



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B 1/2" SMOOTH or DIMPLED IN LINE TUBES with BRASS or SOLDER COATED BRASS FINNS ON 1/2" CENTERS or STEEL on 9/16" CENTERS			
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
3	2 1/4"	72" x 84"	RADIUS W/ & W/O GROOVE, NO 3 ROW STEEL
4	3"	72" x 84"	SQUARE W/ & W/O GROOVE
5	3 3/4"	72" x 84"	SPECIAL HAND FORMED HEADERS
6	4 1/2"	72" x 84"	CRIMPED & BOX CONVERSION HEADER
7	5 1/4"	72" x 84"	.032" SOLDER or .040", .050", .100", .125" BOLTED
8	6"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
TIN PASTE FACE COAT (TPFC)		MAX HDR SIZE 18" x 85"	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
CORES OVER 60" WIDE MAY BE 2 PIECE CORE		CRANK BOXES & CRANK HOLES	

R & S 1/2" SMOOTH or DIMPLED STAGGERED TUBES ON 9/16" CENTERS "R" Style Fin Louvered, "S" Style Fin NON-Louvered COPPER FINNS			
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
2	1 1/4"	72" x 84"	RADIUS W/ & W/O GROOVE
3	1 3/4"	72" x 84"	SQUARE W/ & W/O GROOVE
4	2 3/8"	72" x 84"	SPECIAL HAND FORMED HEADERS
5	2 7/8"	72" x 84"	CRIMPED & BOX CONVERSION HEADER
6	3 7/16"	72" x 84"	.032" SOLDER or .040", .050" .100", .125" BOLTED
7	3 15/16"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
8	4 1/2"	72" x 84"	
TIN PASTE FACE COAT (TPFC)		MAX HDR SIZE 18" x 85"	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
CORES OVER 60" WIDE MAY BE 2 PIECE CORE		CRANK BOXES & CRANK HOLES	

T 1/2" SMOOTH or DIMPLED STAGGERED TUBES ON 9/16" CENTERS BRASS FINNS			
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
3	2 1/4"	72" x 84"	RADIUS W/ & W/O GROOVE
4	3"	72" x 84"	SQUARE W/ & W/O GROOVE
5	3 3/4"	72" x 84"	SPECIAL HAND FORMED HEADERS
6	4 1/2"	72" x 84"	CRIMPED & BOX CONVERSION HEADER
7	5 1/4"	72" x 84"	.032" SOLDER or .040", .050" .100", .125" BOLTED
8	6"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
TIN PASTE FACE COAT (TPFC)		MAX HDR SIZE 18" x 85"	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
CORES OVER 60" WIDE MAY BE 2 PIECE CORE		CRANK BOXES & CRANK HOLES	



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Z 1/2" SMOOTH or DIMPLED CANTED TUBES ON 5/8" CENTERS COPPER, STEEL, BRASS OR SOLDER COATED BRASS NON-LOUVERED FINS			
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
3	2 3/16"	72" x 84"	RADIUS W/ & W/O GROOVE
4	2 15/16"	72" x 84"	SQUARE W/ & W/O GROOVE
5	3 11/16"	72" x 84"	SPECIAL HAND FORMED HEADERS
6	4 7/16"	72" x 84"	CRIMPED & BOX CONVERSION HEADER
7	5 3/16"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
8	6"	72" x 84"	.032" SOLDER or .040", .050" .100", .125" BOLTED
NO 8 ROW COPPER TIN PASTE FACE COAT (TPFC) MAX HDR SIZE 18" x 85" CORNER REINFORCEMENTS - .100" BRASS FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11 CORES OVER 60" WIDE MAY BE 2 PIECE CORE CRANK BOXES & CRANK HOLES			

X 3/4" STAGGERED TUBES ON 5/8" CENTERS - <u>NON-LOUVERED</u> COPPER, BRASS or SOLDER COATED BRASS FIN			
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
2	1 7/8"	72" x 84"	RADIUS W/ & W/O GROOVE
3	2 1/4"	72" x 84"	SQUARE W/ & W/O GROOVE
4	3"	72" x 84"	SPECIAL HAND FORMED HEADERS
5	3 3/4"	72" x 84"	CRIMPED & BOX CONVERSION HEADER
6	4 5/8"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
7	5 1/4"	72" x 84"	.032" SOLDER or .040", .050" .100", .125" BOLTED
8	6 1/8"	72" x 84"	
TIN PASTE FACE COAT (TPFC) MAX HDR SIZE 18" x 85" CORNER REINFORCEMENTS - .100" BRASS FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11 CORES OVER 60" WIDE MAY BE 2 PIECE CORE CRANK BOXES & CRANK HOLES !!! NO DIMPLED TUBES !!!			

LX 3/4" STAGGERED TUBES ON 5/8" CENTERS - <u>LOUVERED</u> COPPER X FINS			
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
2	1 7/8"	72" x 84"	RADIUS W/ & W/O GROOVE
3	2 1/4"	72" x 84"	SQUARE W/ & W/O GROOVE
4	3"	72" x 84"	SPECIAL HAND FORMED HEADERS
5	3 3/4"	72" x 84"	CRIMPED & BOX CONVERSION HEADER
6	4 5/8"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
7	5 1/4"	72" x 84"	.032" SOLDER or .040", .050" .100", .125" BOLTED
8	6 1/8"	72" x 84"	
TIN PASTE FACE COAT (TPFC) MAX HDR SIZE 18" x 85" CORNER REINFORCEMENTS - .100" BRASS FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11 CORES OVER 60" WIDE MAY BE 2 PIECE CORE CRANK BOXES & CRANK HOLES MUST BE ENTERED AS 02715X w/NOTES TO LOUVER !!! NO DIMPLED TUBES !!!			

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VT & VTW	VT 1/2" SMOOTH, DIMPLED or HEAVY WALLED TUBES ON .550" CENTERS – <u>LOUVERED</u> SERPENTINE COPPER FINS NO 6 ROW VTS		
	VTW 1/2" SMOOTH, DIMPLED or HEAVY WALLED TUBES ON .550" CENTER – <u>NON-LOUVERED</u> SERPENTINE COPPER FINS 5 & 6 ROW VTW CORES ARE ONE PIECE		
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
2	1 1/4"	52" x 46"	RADIUS W/ & W/O GROOVE, w/GROOVE
3	2"	52" x 46"	SQUARE W/ & W/O GROOVE
4	2 5/8"	52" x 46"	SPECIAL HAND FORMED HEADERS
5 VTW ONLY	3 3/8"	52" x 46"	CRIMPED & BOX CONVERSION HEADER
6 VTW ONLY	4"	52" x 46"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE .032" SOLDER or .040", .050" or .100" BOLTED
MINIMUM CORE SIZE - 9 3/4" x 7 5/16" VT FINS PER IN - 12 - 13 - 14 VTW FINS PER IN - 8 - 9 - 10 HEADER MOUNTED CBOXES ONLY			

VE	1/2" SMOOTH, DIMPLED or HEAVY WALLED TUBES ON 3/8" CENTERS - LOUVERED SERPENTINE COPPER FINS		
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
2	1 1/4"	52" x 46"	RADIUS W/ & W/O GROOVE, w/GROOVE
3	2"	52" x 46"	SQUARE W/ & W/O GROOVE
4	2 5/8"	52" x 46"	SPECIAL HAND FORMED HEADERS
			CRIMPED & BOX CONVERSION HEADER
			RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE .032" SOLDER or .040", .050" or .100" BOLTED
MINIMUM CORE SIZE - 9 3/4 x 9 7/16 FINS PER INCH 14 - 15 - 16 HEADER MOUNTED CBOXES ONLY			

VH	5/8" SMOOTH OR DIMPLED TUBES ON 1/2" CENTERS - LOUVERED SERPENTINE COPPER FINS		
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
2	1 1/2"	54" x 46"	RADIUS W/ & W/O GROOVE, w/GROOVE
3	2 1/4"	54" x 46"	SQUARE W/ & W/O GROOVE
4	3"	54" x 46"	SPECIAL HAND FORMED HEADERS
5	3 3/4"	54" x 46"	CRIMPED & BOX CONVERSION HEADER
			RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE .032" SOLDER & .040", or .050" ONLY BOLT ON
MINIMUM CORE SIZE - 12" x 9 7/16" CORNER REINFORCEMENTS - .100" BRASS FINS PER INCH - 14 - 15 CRANK BOXES ANYWHERE			

VTH	5/8" SMOOTH OR DIMPLED TUBES ON 7/16" CENTERS HIGHLY LOUVERED SERPENTINE COPPER FINS		
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
2	1 1/2"	54" x 46"	RADIUS W/ & W/O GROOVE, w/GROOVE
3	2 1/4"	54" x 46"	SQUARE W/ & W/O GROOVE
4	3"	54" x 46"	SPECIAL HAND FORMED HEADERS
5	3 3/4"	54" x 46"	CRIMPED & BOX CONVERSION HEADER
			RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE .032" SOLDER & .040", or .050" ONLY BOLT ON
MINIMUM CORE SIZE - 12" x 9 7/16" CORNER REINFORCEMENTS - .100" BRASS FINS PER INCH - 12 - 13 - 14 - 15 - 16 CRANK BOXES ANYWHERE			