



# Thermal Solutions Manufacturing Heavy Duty Products

## San Bernardino, CA. Plant Capabilities 2023

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, & 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 – .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 – .050"
- 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 >
<b>VE / VT / VTW</b>	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
<b>VTW only</b>	*5	3 1/4	3 1/2	1/4	3 5/8	3/8
<b>VTW only</b>	*6	3 7/8	4 1/8	1/4	4 3/8	1/2
<b>VTH</b>	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
<b>VH</b>	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>B VOSS</b>	3	2 3/16	2 3/8	3/16	2 1/2	5/16
	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
<b>R &amp; S</b>						
	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
<b>X &amp; L</b>	2	1 7/8	1 7/8	0	2 1/8	1/4
	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
<b>Z</b>	3	2 3/16	2 3/8	3/16	2 1/2	5/16
	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 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>B</b> 1/2" SMOOTH or DIMPLED IN LINE TUBES with BRASS ON 1/2" CENTERS			
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 .050", .100", .125" BOLTED
8	6"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
<b>TIN PASTE FACE COAT (TPFC)</b>		<b>MAX HDR SIZE 18" x 85"</b>	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
<b>CORES OVER 62 1/2" WIDE MUST BE 2 PIECE CORE</b>		CRANK BOXES & CRANK HOLES	

<b>R &amp; S</b> 1/2" SMOOTH or DIMPLED STAGGERED TUBES ON 9/16" CENTERS "R" Style Fin Louvered, "S" Style Fin NON-Louvered COPPER FINS			
ROWS DEEP	CORE DEPTH	MAX CORE SIZE	HEADER OPTIONS
3	1 3/4"	72" x 84"	RADIUS W/ & W/O GROOVE
4	2 3/8"	72" x 84"	SQUARE W/ & W/O GROOVE
5	2 7/8"	72" x 84"	SPECIAL HAND FORMED HEADERS
6	3 7/16"	72" x 84"	CRIMPED & BOX CONVERSION HEADER
7	3 15/16"	72" x 84"	.032" SOLDER or .050", .100", .125" BOLTED
8	4 1/2"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
<b>TIN PASTE FACE COAT (TPFC)</b>		<b>MAX HDR SIZE 18" x 85"</b>	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
<b>CORES OVER 62 1/2" WIDE MUST BE 2 PIECE CORE</b>		CRANK BOXES & CRANK HOLES	

<b>T</b> 1/2" SMOOTH or DIMPLED STAGGERED TUBES ON 9/16" CENTERS BRASS FINS			
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 .050", .100", .125" BOLTED
8	6"	72" x 84"	RIBBED - w/ 1 3/4" CONTINUOUS OVERHANG ONE SIDE
<b>TIN PASTE FACE COAT (TPFC)</b>		<b>MAX HDR SIZE 18" x 85"</b>	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
<b>CORES OVER 62 1/2" WIDE MUST BE 2 PIECE CORE</b>		CRANK BOXES & CRANK HOLES	



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<b>Z</b>	<b>1/2" SMOOTH or DIMPLED CANTED TUBES ON 5/8" CENTERS COPPER, STEEL, BRASS NON-LOUVERED FINS</b>		
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 .050", .100", .125" BOLTED
<b>NO 8 ROW COPPER</b>		<b>TIN PASTE FACE COAT (TPFC) MAX HDR SIZE 18" x 85"</b>	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
<b>CORES OVER 62 1/2" WIDE MUST BE 2 PIECE CORE</b>		CRANK BOXES & CRANK HOLES	

<b>X</b>	<b>3/4" STAGGERED TUBES ON 5/8" CENTERS - <u>NON-LOUVERED</u> COPPER or BRASS 2 ROW COPPER ONLY</b>		
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 .050", .100", .125" BOLTED
8	6 1/8"	72" x 84"	
<b>TIN PASTE FACE COAT (TPFC)</b>		<b>MAX HDR SIZE 18" x 85"</b>	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
<b>CORES OVER 62 1/2" WIDE MUST BE 2 PIECE CORE</b>		CRANK BOXES & CRANK HOLES	
<b>!!! NO DIMPLED TUBES !!!</b>			

<b>LX</b>	<b>3/4" STAGGERED TUBES ON 5/8" CENTERS - <u>LOUVERED</u> COPPER X FINS</b>		
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 .050", .100", .125" BOLTED
8	6 1/8"	72" x 84"	
<b>TIN PASTE FACE COAT (TPFC)</b>		<b>MAX HDR SIZE 18" x 85"</b>	
CORNER REINFORCEMENTS - .100" BRASS		FINS PER INCH - 5 - 6 - 7 - 8 - 9 - 10 - 11	
<b>CORES OVER 62 1/2" WIDE MUST BE 2 PIECE CORE</b>		CRANK BOXES & CRANK HOLES	
<b>MUST BE ENTERED AS " X " w/NOTES TO LOUVER !!! NO DIMPLED TUBES !!!</b>			

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<b>VT &amp; VTW</b>			
VT 1/2" SMOOTH, DIMPLED or HEAVY WALLED TUBES ON .550" CENTERS – <u>LOUVERED SERPENTINE COPPER FINS</u> <u>NO ONE PIECE 5 or 6 ROW VTs</u>			
VTW 1/2" SMOOTH, DIMPLED or HEAVY WALLED TUBES ON .550" CENTER – <u>NON-LOUVERED SERPENTINE COPPER FINS</u> 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
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 .050" BOLT ON or SQUARE w/o GROOVE
MINIMUM CORE SIZE 9 3/4 x 7 5/16 VT FINS PER INCH 12 - 13 - 14 VTW FINS PER INCH 8 - 9 - 10 <b>TIN PASTE FACE COAT (TPFC) VTWs ONLY, , HEADER MOUNTED CBOXES ONLY</b>			

<b>VE</b> 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
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 .050" BOLT ON or SQUARE w/o GROOVE
<b>MINIMUM CORE SIZE 9 3/4 x 9 7/16 FINS PER INCH 14 - 15 - 16 HEADER MOUNTED CBOXES ONLY</b>			

<b>VH</b> 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 & .050" BOLT ON or SQUARE w/o GROOVE
MINIMUM CORE SIZE 12 x 9 7/16 CORNER REINFORCEMENTS - .100" BRASS FINS PER INCH 12 - 13 - 14 - 15 - 16 CRANK BOXES ANYWHERE			

<b>VTH</b> 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
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 & .050" BOLT ON or SQUARE w/o GROOVE
MINIMUM CORE SIZE 12 x 9 7/16 CORNER REINFORCEMENTS - .100" BRASS FINS PER INCH 12 - 13 - 14 - 15 - 16 CRANK BOXES ANYWHERE			

