

A close-up photograph of a radiator header, showing a grid of oval-shaped openings. The metal has a golden-brown hue, likely due to the manufacturing process. The background is blurred, focusing attention on the header's structure.

Patented Ultra-Fused® technology extends radiator life up to 500%

The solution for high wear-and-tear applications

Ultra-Fused® products greatly reduce tube-to-header leaks and significantly extend radiator life

Ultra-Fused® technology from Thermal Solutions.

Traditional heavy duty radiators for on-highway vehicles use soldered tube-to-header joints. But solder can often fail as tubes expand and contract with temperature changes during use in certain high-stress applications. Ultra-Fused® technology from Thermal Solutions Manufacturing solves these early failure issues.

The Ultra-Fused® weld process actually fuses the base materials together by replacing the soldered tube-to-header joints with all TIG-welded joints. Ultra-Fused® technology provides unsurpassed strength and durability. Our OEM radiator design also incorporates thicker, seam-welded tubes to further enhance durability in high-stress applications. Additional flexibility is built into the header to prevent cracking that can result from bumps, vibration and jarring road conditions.

We use our Ultra-Fused® tube-to-header weld process on the entire header for applications known to have issues with higher than normal wear and tear caused by racking and twisting stresses from the OEM frame. **Lab tests have shown that Ultra-Fused® greatly reduces tube-to-header leaks and extends the overall radiator life expectancy by 5 times that of most standard designs available today.**

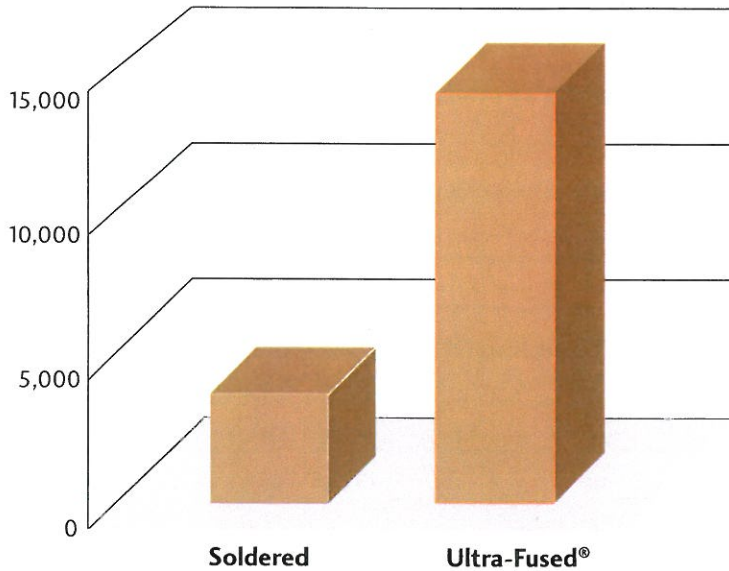
Ultra-Fused[®] applications

TSM Number	Common Make	Core				Top Header					Bottom Header				
		Height	Width	Depth	Rows	Width	Length	Bolt Holes	Hdr Shape	Over Hang	Width	Length	Bolt Holes	Hdr Shape	Over Hang
0284075	MACK	29	34-1/4	2-1/4	3	6-1/4	36-3/8	46	A	C	6-1/4	36-3/8	46	A	C
0284751	PETERBILT	29-1/4	34-3/4	3	4	6-5/8	37-1/2	42	F	C	6-5/8	37-1/2	42	F	C
0284045	MACK	29-5/16	39-7/8	2-1/4	3	6-1/4	42	48	A	C	6-1/4	42	48	A	C
0284050	MACK	29-5/16	39-7/8	3	4	6-1/4	42	48	A	C	6-1/4	42	48	A	C
0284841	MACK	29-5/16	39-7/8	1-1/2	2	6-1/4	42	48	A	C	6-1/4	42	48	A	C
0284020	MACK	30-3/8	34-3/4	2-1/4	3	6-1/4	36-3/8	46	A	C	6-1/4	36-3/8	46	A	C
0284718	MACK	30-3/8	34-3/4	3	4	6-1/4	36-3/8	46	A	C	6-1/4	36-3/8	46	A	C
0284749	VOLVO TRUCK	31-3/4	40-1/2	2-1/4	3	7	43-3/8	56	A	2-13/16	7	43-3/8	56	A	2-13/16
0284694	INTL/NAVISTAR	32-3/16	26-1/4	3	4	6-1/8	27-1/2	38	A	1-3/8	6-1/8	27-1/2	38	A	1-3/8
0284527	WESTERN STAR	32-1/2	34-3/4	3	4	7	37-7/8	46	A	C	6-5/8	37-7/8	46	A	C
0284531	WESTERN STAR	32-1/2	34-3/4	2-1/4	3	7	37-7/8	46	A	2-1/4	6-5/8	37-7/8	46	A	2-1/4
0284021	GMC TRUCK	32-3/4	42-3/4	2-1/4	3	7	45-1/4	60	B	1-5/8	7	45-1/4	60	B	1-5/8
0284025	GMC TRUCK	32-3/4	42-3/4	3	4	7	45-1/4	60	B	1-5/8	7	45-1/4	60	B	1-5/8
0284095	KENWORTH	32-3/4	28-1/2	2-1/4	3	7-5/16	32-1/8	40	A	2-1/2	7-5/16	32-1/8	40	A	2-1/2
0284519	KENWORTH	32-3/4	28-1/2	3	4	7-5/16	32-1/8	40	A	2-1/2	7-5/16	32-1/8	40	A	2-1/2
0284808	KENWORTH	32-3/4	28-1/2	3	4	7-5/16	32-1/8	40	A	C	7-5/16	32-1/8	40	A	C
0284040	WESTERN STAR	34	34-3/4	3	4	6-5/8	37-7/8	46	A	C	6-5/8	37-7/8	46	A	C
0284060	WESTERN STAR	34	34-3/4	3	4	6-5/8	37-7/8	46	A	C	6-5/8	37-7/8	46	A	C
0284085	KENWORTH	35	41	3	4	7-5/16	43-1/2	52	A	C	7-5/16	43-1/2	52	A	C
0284030	PETERBILT	36-1/4	34-1/4	3	4	6-5/8	37-1/2	42	F	C	6-5/8	37-1/2	42	F	C
0284065	PETERBILT	36-1/4	34-1/4	2-1/4	3	6-1/2	37-1/2	42	F	C	6-1/2	37-1/2	42	F	C
0284646	PETERBILT	36-1/4	34-1/4	3	4	6-5/8	37-1/2	42	F	C	6-5/8	37-1/2	42	F	C
0284708	PETERBILT	36 1/4	34 1/4	2-1/4	3	6-1/2	37-1/2	42	A	C	6-1/2	37-1/2	42	A	C
0284631	FREIGHTLINER	37	31-7/8	2-1/4	3	6-3/4	34-1/2	40	ZZ	C	6-3/4	34-1/2	40	ZZ	C
0284632	FREIGHTLINER	37	31-7/8	3	4	6-3/4	34-1/2	40	ZZ	C	6-3/4	34-1/2	40	ZZ	C
0284647	FREIGHTLINER	37	31-7/8	2-1/4	3	6-3/4	34-1/2	40	Z	C	6-3/4	34-1/2	40	Z	C
0284648	FREIGHTLINER	37	31-7/8	3	4	6-3/4	34-1/2	40	ZZ	C	6-3/4	34-1/2	40	ZZ	C
0284697	MACK	37-1/4	30-3/4	2-1/4	3	6-3/8	33	40	A	C	6-3/8	33	40	A	C
0284090	PETERBILT	37-1/2	38-3/4	3	4	9-5/8	41-1/8	48	F	3-1/2	7	40-3/8	46	F	1-1/2
0284746	PETERBILT	37-1/2	38-3/4	3	4	9-5/8	41-1/8	48	F	3-15/16	7	40-3/8	46	F	1-7/8
0284826	INTL/NAVISTAR	37-5/8	25-1/8	2-1/4	3	6-1/8	27-1/2	38	A	C	6-1/8	27-1/2	38	A	C

TSM Number	Common Make	Core				Top Header					Bottom Header				
		Height	Width	Depth	Rows	Width	Length	Bolt Holes	Hdr Shape	Over Hang	Width	Length	Bolt Holes	Hdr Shape	Over Hang
0284070	FORD TRUCK	37-7/8	27-3/8	2-1/4	3	10-1/4	31-1/4	56	XX	1-5/8	6	31-1/4	52	XX	1-5/8
0284688	FORD TRUCK	37-7/8	27-3/8	2-1/4	3	10-1/4	31-1/4	56	XX	1-1/2	6	31-1/4	56	XX	1-1/2
0284719	FORD TRUCK	37-7/8	27-3/8	3	4	10-1/4	31-1/4	56	XX	1-5/8	6	31-1/4	52	XX	1-5/8
0284722	FORD TRUCK	37-7/8	27-3/8	1-1/2	2	10-1/4	31-1/4	56	XX	1-5/8	6	31-1/4	52	XX	1-5/8
0284690	VOLVO TRUCK	38	34-3/4	3	4	7	37-7/8	50	A	2-1/8	7	37-7/8	50	A	2-1/8
0284691	VOLVO TRUCK	38	34-3/4	2-1/4	3	7	37-7/8	50	A	1-7/8	7	37-7/8	50	A	1-7/8
0284628	MACK	38-5/8	34-1/4	3	4	6-1/4	36-3/8	46	A	C	6-1/4	36-3/8	46	A	C
0284629	MACK	38-5/8	34-1/4	2-1/4	3	6-1/4	36-3/8	46	A	1-5/8	6-1/4	36-3/8	46	A	1-5/8
0284724	MACK	38-5/8	34-1/4	3	4	6-1/4	36-3/8	46	A	C	6-1/4	36-3/8	46	A	C
0284015	INTL/NAVISTAR	39-3/4	30-1/4	2-1/4	3	6-3/4	32-1/8	38	A	1-3/4	6-3/4	32-1/8	38	A	1-3/4
0284078	INTL/NAVISTAR	39-3/4	30-1/4	3	4	6-3/4	32-1/8	38	A	C	6-3/4	32-1/8	38	A	C
0284740	INTL/NAVISTAR	39-3/4	30-1/4	3	4	6-3/4	32-1/8	38	A	1-3/4	6-3/4	32-1/8	38	A	1-3/4
0284804	INTL/NAVISTAR	39-3/4	30-1/4	2-1/4	3	6-3/4	32-1/8	38	A	1-3/4	6-3/4	32-1/8	38	A	1-3/4
0284035	INTL/NAVISTAR	39-7/8	28-1/2	2-1/4	3	6	30-3/4	40	A	C	6	30-3/4	40	A	C
0284305	INTL/NAVISTAR	39-7/8	28-1/2	3	4	6	30-3/4	40	A	C	6	30-3/4	40	A	C
0284315	INTL/NAVISTAR	39-7/8	35-7/8	2-1/4	3	6	38-1/8	48	A	C	6	38-1/8	48	A	C
0284692	INTL/NAVISTAR	39-7/8	35-7/8	3	4	6	38-1/8	48	A	C	6	38-1/8	48	A	C
0284693	INTL/NAVISTAR	39-7/8	27-3/8	2-1/4	3	6	30-3/4	40	A	C	6	30-3/4	40	A	C
0284703	INT/NAVISTAR	39-7/8	28-1/2	3	4	6	30-3/4	40	A	C	6	30-3/4	40	A	C
0284055	KENWORTH	40	28-1/2	2-1/4	3	7-5/16	32-1/8	40	A	C	7-5/16	32-1/8	40	A	C
0284080	KENWORTH	40	28-1/2	2-1/4	3	7-5/16	32-1/8	40	A	2-1/2	7-5/16	32-1/8	40	A	2-1/2
0284626	KENWORTH	40	28-1/2	3	4	7-5/16	32-1/8	40	A	C	7-5/16	32-1/8	40	A	C
0284653	KENWORTH	40	28-1/2	3	4	7-5/16	32-1/8	40	A	2-1/2	7-5/16	32-1/8	40	A	2-1/2
0284010	INTL/NAVISTAR	42-3/4	27-7/8	2-1/4	3	6	31-1/4	42	B	C	6	31-1/4	42	B	C
0284715	INTL/NAVISTAR	42-3/4	27-7/8	3	4	6	31-1/4	42	B	C	6	31-1/4	42	B	C
0284337	FORD TRUCK	43-1/4	33	2-1/4	3	9	36-3/4	52	B	1-1/4	5-7/16	36-3/4	48	B	1-1/4
0284723	FORD TRUCK	43-1/4	33	2-1/4	3	9	36-3/4	52	B	1-1/4	5-7/16	36-3/4	48	B	1-1/4
0284709	GMC TRUCK	44	2-3/8	3	4	7	29-7/8	42	XX	1-9/16	6-3/8	29-7/8	42	XX	1-5/16

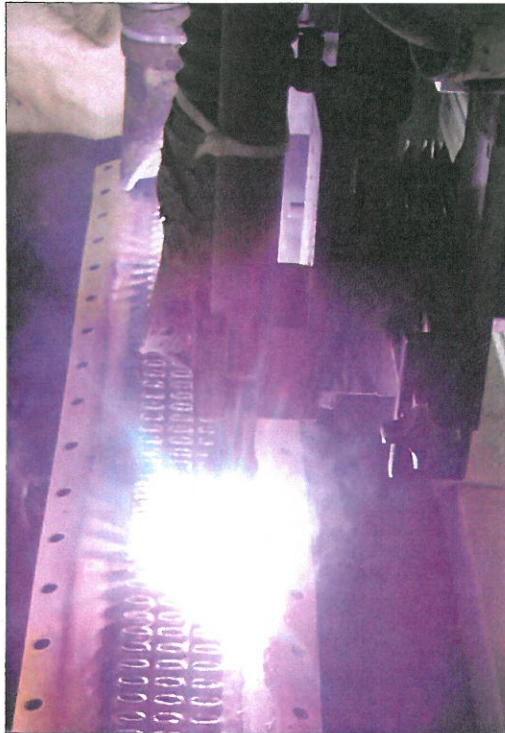
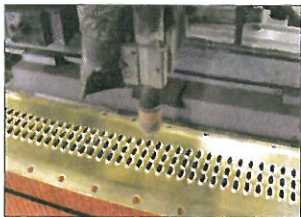
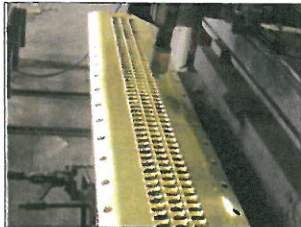
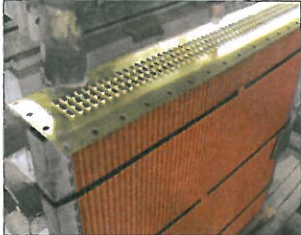
The Ultra-Fused® process creates stronger bonds that endure under high-stress conditions

**Soldered vs. Ultra-Fused®
Tube-To-Header Joint Cycles To Failure
70°F to 240°F Thermal Cycle**



Ultra-Fused® lasts up to five times longer! Lab results using thermal cycle testing have shown that Ultra-Fused® greatly reduces tube-to-header leaks.

This extends the overall life expectancy of the radiator by five times that of most standard designs available today.



Left column, top to bottom: A core is set up and prepared to begin the Ultra-Fused® process.

Right column: Ultra-Fused® process actually fuses the base materials together to create a stronger, more durable bond.

Individual welders track along pre-programmed patterns to ensure the accuracy and strength of each weld.

Every unit is 100% quality tested for leaks and strength upon completion.

