



The Art of Metal Stitching

Instructions for repairing cracked 5.9 Cummins 53 series block

This group of castings marked with a #53 on the drivers side toward the front lower part of the block. This is a typical crack that tends to occur during normal operation. The crack is found on the passenger side on the water jacket below the core plugs. The block tends to be thin in this area.



The crack is accessed by removing the fender well and turbo. The crack needs to be defined by mag particle or dye-penetrant inspection.



Drill spacing jig



The drill spacing jig locating pin is placed into the first drilled hole that is centered on the crack at one end of the crack.



Drill through the spacing jig using both holes. Move the jig over so the locating pin slips into the last drilled hole. Continue this process until....



every other hole has been drilled over the entire length of the crack. The drilled holes need to extend past the end of the crack at least by one at each end of the crack.

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The most important step in installing the C1 stitching pins is understanding and setting the stop on the spotfacer. When working with thin casting walls like the 5.9 Cummins block you need to pay attention to the wall thickness. There needs to be at least 4 threads in the casting after tapping. This requires between 1/8" and 3/16" for the threads. If you spotface too deep there will not be enough thickness for the threads left. Set the stop so that the points of the cutter extends from the stop equal to the depth you want to cut. The minimum depth of cut needs to make a complete circle with the full depth of the points. The maximum depth should be 50% of the length of the shoulder of the C1 pin. It is recommended to leave some of the shoulder left protruding above the surface when you grind down the shoulder after twisting off the head of the pin on this block. In thin iron you can cut the head off instead of twisting it off if it fails to get tight enough. You can even bend the head to the side to break it off.



Place the Spotfacer in a drill with the stop set to the right depth and spot-face the holes.



The first series of holes are drilled, then spotfaced and tapped using the L750 tapping fluid.



Install the pins using the LHC724 thread sealant in the tapped holes and tightening the pins until tight or until the heads twist off.



The first row of pins are installed.



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Drill, spotface and tap the second series of holes making sure to skip every other remaining space.



After installing the second series of pins and grinding the shoulders down to the same height as the first series, drill, spotface, tap and install the third series of pins.



If there are any gaps left between any of the pins simply install more pins to fill the gaps. Grind the pins down being careful to leave 50% of the shoulder remaining including the portions that are below and above the surface.



Pressure test your repair to 15 PSI with compressed air. Use a soap solution to spray the surface to inspect for leaks. If any leaks are detected you can add more pins where the leak is. Paint the repair when completed to prevent rust.