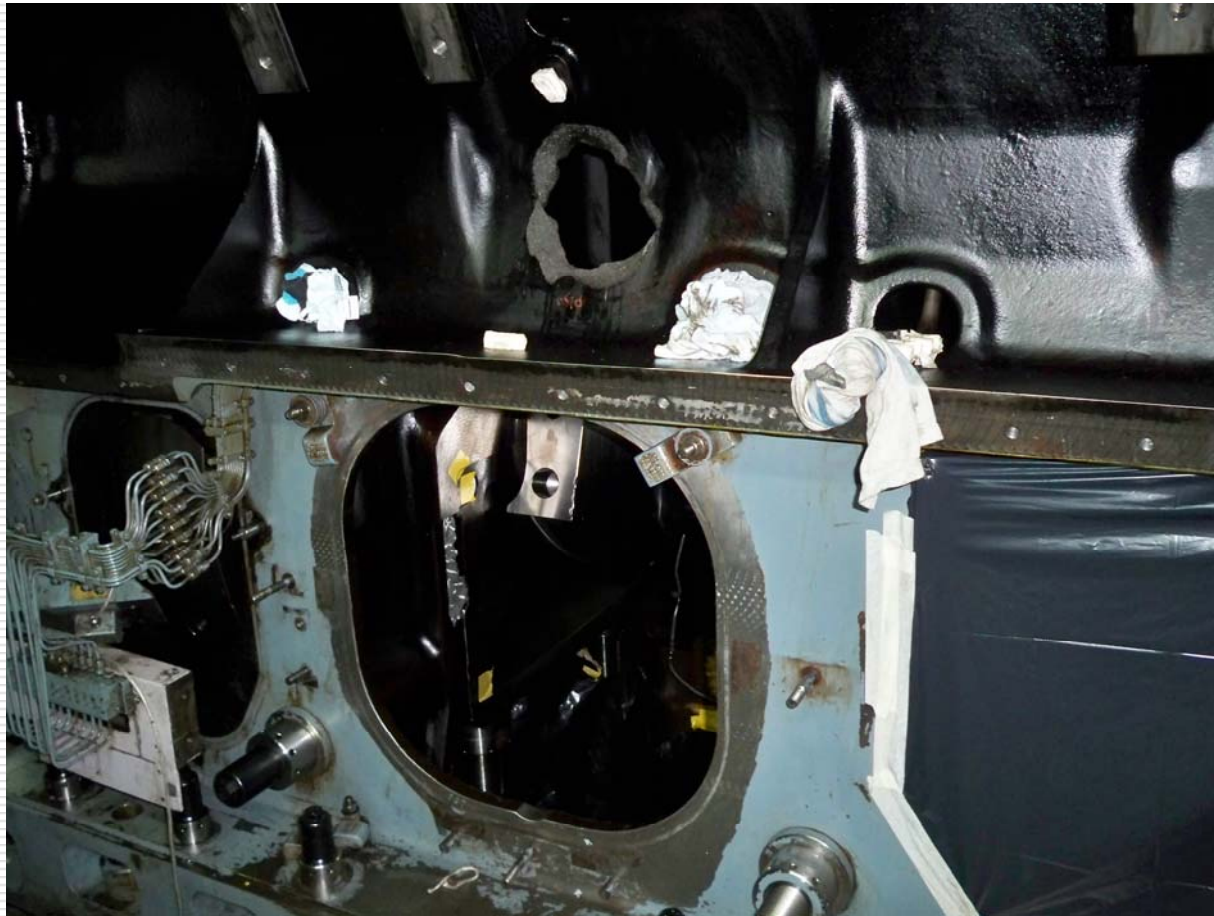


# MAN V18 Crack repair

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Repaired July 2010

# Scope of Work

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- 1. Cut out the damaged and broken edges around the blow-out into the Cam box to create perpendicular and straight edges.**
  - 2. Cut the class 40 gray iron patch to fit into the prepared hole with a very close fit.**
  - 3. Metal stitch the patch into cam box using our *Castmaster* stitching pins. This produced a continuous row of overlapping pins completely around the patch.**
  - 4. The cracks below the inspection door was stitched with *Castmaster* stitching pins in the same way as the patch with the pins extending all the way through the cracked walls of the block**
  - 5. Installed L40 Locks across the crack to add additional strength.**
  - 6. The stitching is complete the repairs are ground and machined flush to the surface making the stitching repair invisible.**
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# Damaged Cam box

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Grinding out the edges around the blow-out in the Cam box. This creates the straight edges for the patch.



# Making patch for Cam Box

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Tracing out the template to manufacture the patch for the blow-out hole.



# Manufacturing the patch

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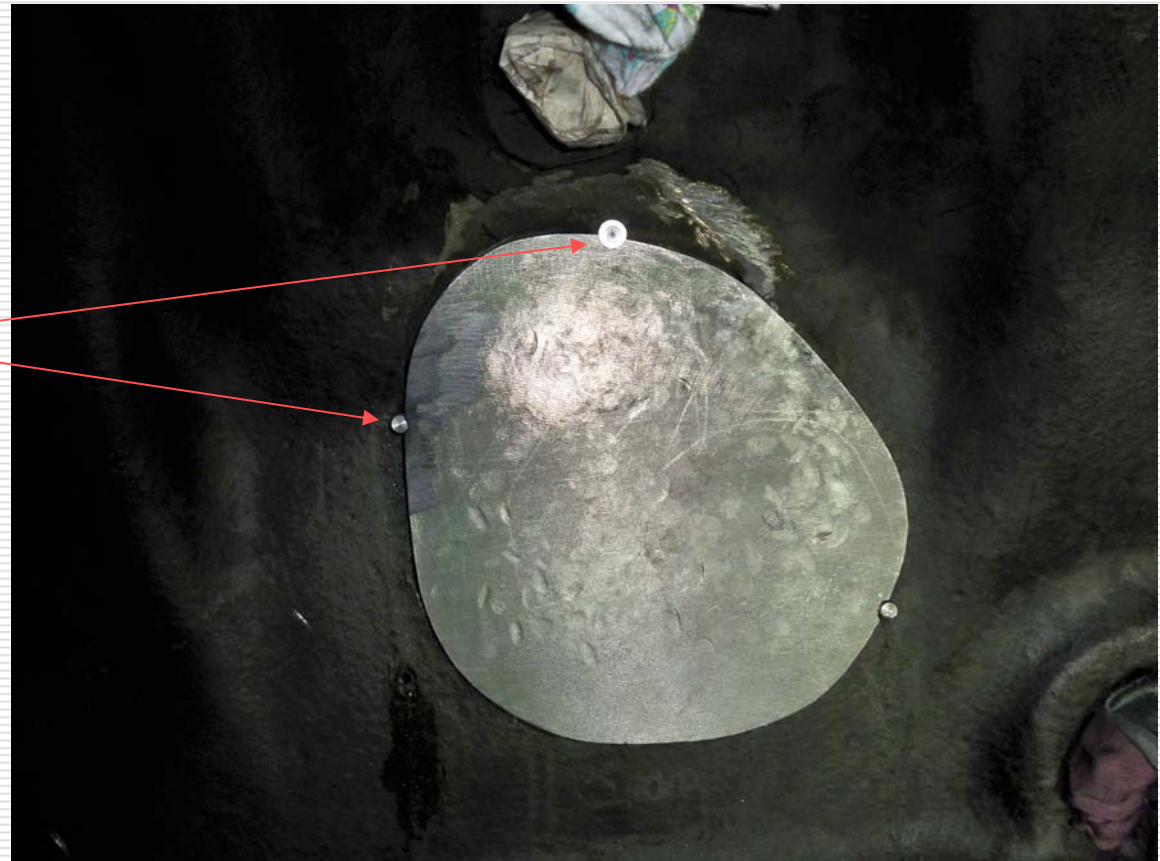
Once the template is traced on the new section of cast iron the piece is cut to size with a portable cut off wheel.



# Fitting the patch

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Patch was fitted  
in blow-out hole  
in Cam box using  
three Castmaster  
pins to hold in  
place.



# Installing the stitching pins

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C3 CASTMASTER stitching pins were installed along the crack.

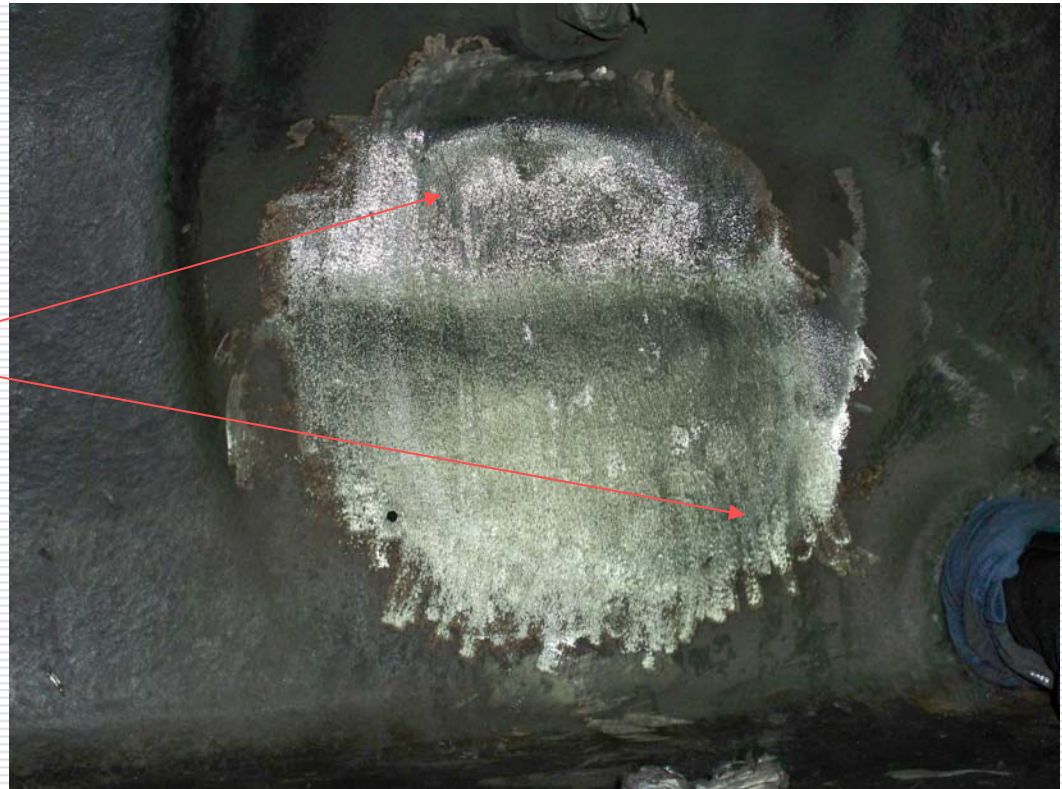
These special stitching pins have our patented Spiral hook threads that add strength and high pressure seal.



# Finished repair on blow-out hole

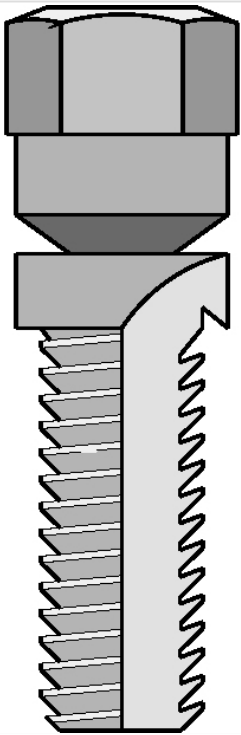
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Once the repair was completed there is no sign of the crack or the patch.

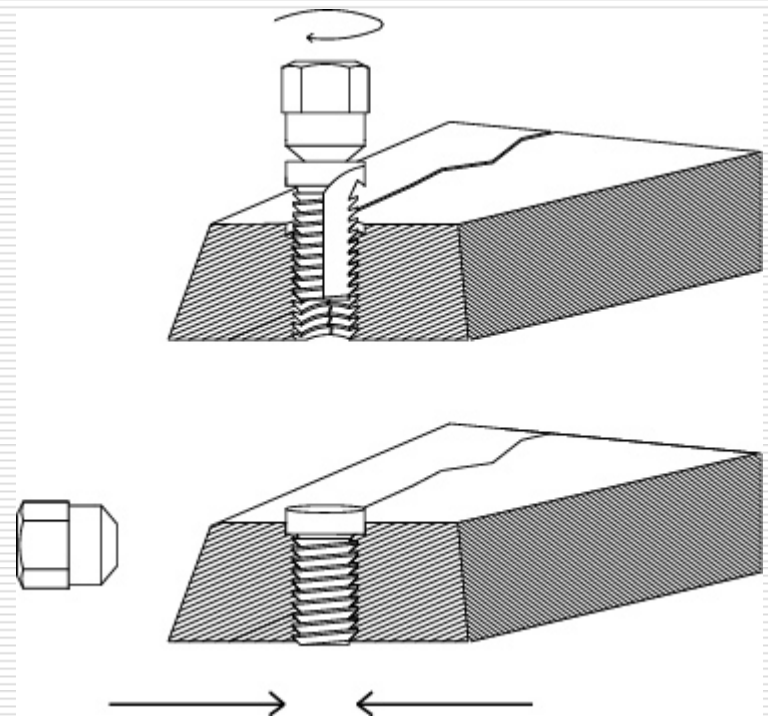




# CASTMASTER® Stitching Pins



**CASTMASTER stitching pins have the unique ability to draw the sides of a crack together when tightened into the drilled, Spotfaced and tapped hole.**



# Damaged area around Inspection Door.

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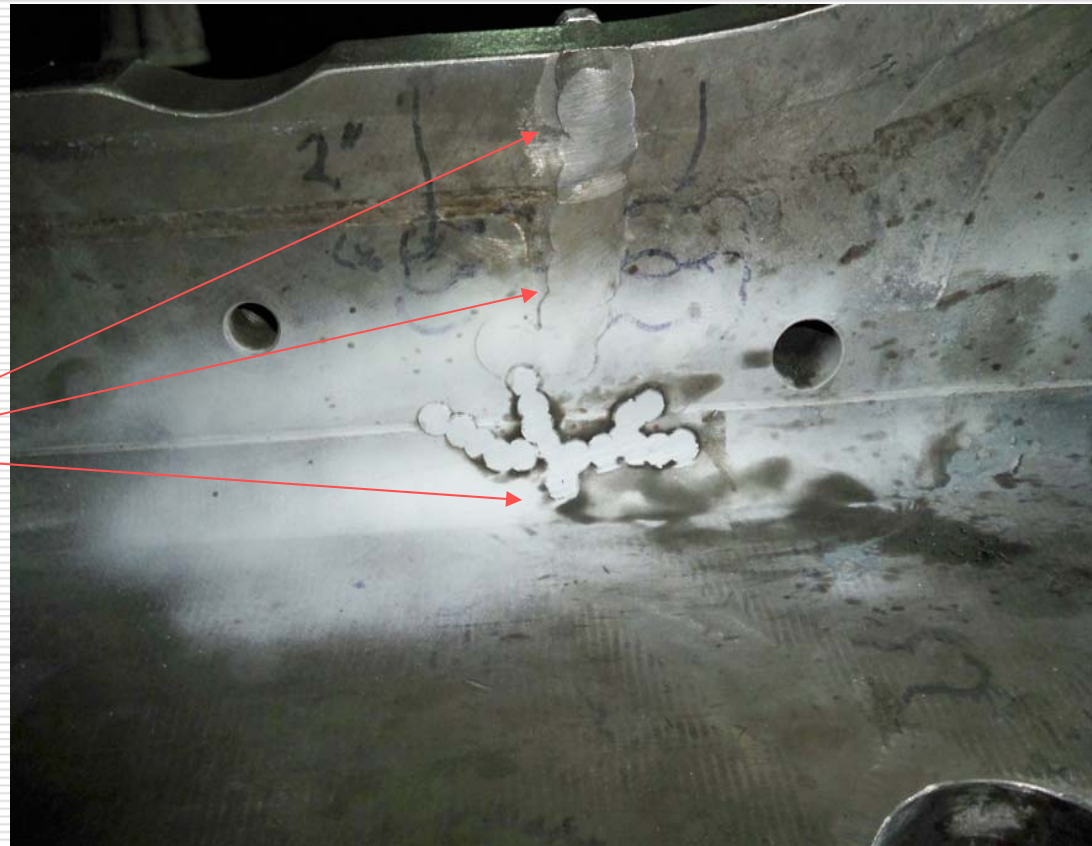
Here you will see the crack damage below the inspection door during the stitching process.



# Stitching completed on Inspection door

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Castmaster stitching pins are installed along the cracks.



# Installing L40 Locks

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Using a precision drill jig to drill the pattern for a L40 lock to add additional strength across the repair.



# L40 lock installed

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The L40 lock is now installed and ready to be machined and ground flush.



# Completed repair of Cam box and Inspection door

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- Here you see the repair of the Cam box blow-out and the lower wall of the Inspection door and landing area repairs.



# Finished pictures of the repair

- Finished repair inside Cam box.



# Lower wall and floor

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- Lower inspection wall and landing.







- ❑ Repair is completed on July 17, 2010
  - ❑ #9 crank pin grinding was completed on July 23, 2010 by Goltens Miami after LNS finished their work.
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