

**LOCK-N-STITCH** Inc.  
 Casting Repair Specialists  
 1015 S. Soderquist Rd.  
 Turlock CA 95380

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## **Final Report**

Customer Dresser-Rand Phone 801-295-2940  
 Contact Allen Bowers Alt phone 801-557-2447 cell  
 Address 25 N. 400 W. #6 Fax 801-295-0292  
 City, State, Zip N. Salt Lake City, UT. 84054 Date 10.15/2013

Part Large compressor frame  
 Serial number \_\_\_\_\_ Inspected by Customer

**1. Base metal**

- cast iron
- ductile iron
- cast steel
- cast aluminum
- other \_\_\_\_\_

**2. Machinability**

- no previous repairs
- arc-welded
- brazed
- heat-related cracks
- other \_\_\_\_\_

**3. Casting shape where cracked**

- flat
- inside/outside corner
- radius
- other \_\_\_\_\_

**4. Cause of damage**

- impact
- heat
- freezing
- normal operation
- other Yielding studs

**5. Length of crack/s**

- #1 4.5" Diameter pull out
- #2 Partial Pull out
- #3 1" Crack from bolt hole
- #4 1" Raidial crack around bolt hole.

**6. Material thickness**

2"  
Bolt hole dimensions:  
1-1/4 -7 X 2.00 deep

**7. Operating pressure**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

8. Operating temperature

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. Working environment

- hot
- cold

safety concerns

describe: Need: Hard hat,  
Safety glasses, steel toe boots, FRC,  
H2S Monitors, short on-site safety class.

- other \_\_\_\_\_

10. Remachining requirements

bolt holes

- bearing bores

machined surfaces

- other \_\_\_\_\_

11. Customer's needs

permanent repair

- temporary repair

turnaround time

describe: \_\_\_\_\_

\_\_\_\_\_

- other \_\_\_\_\_

12. Accessibility

room for the tools?

- room for the operator/s?

need for disassembly?

describe: \_\_\_\_\_

\_\_\_\_\_

- other \_\_\_\_\_

13. Inspection method(s)

Customer Photos

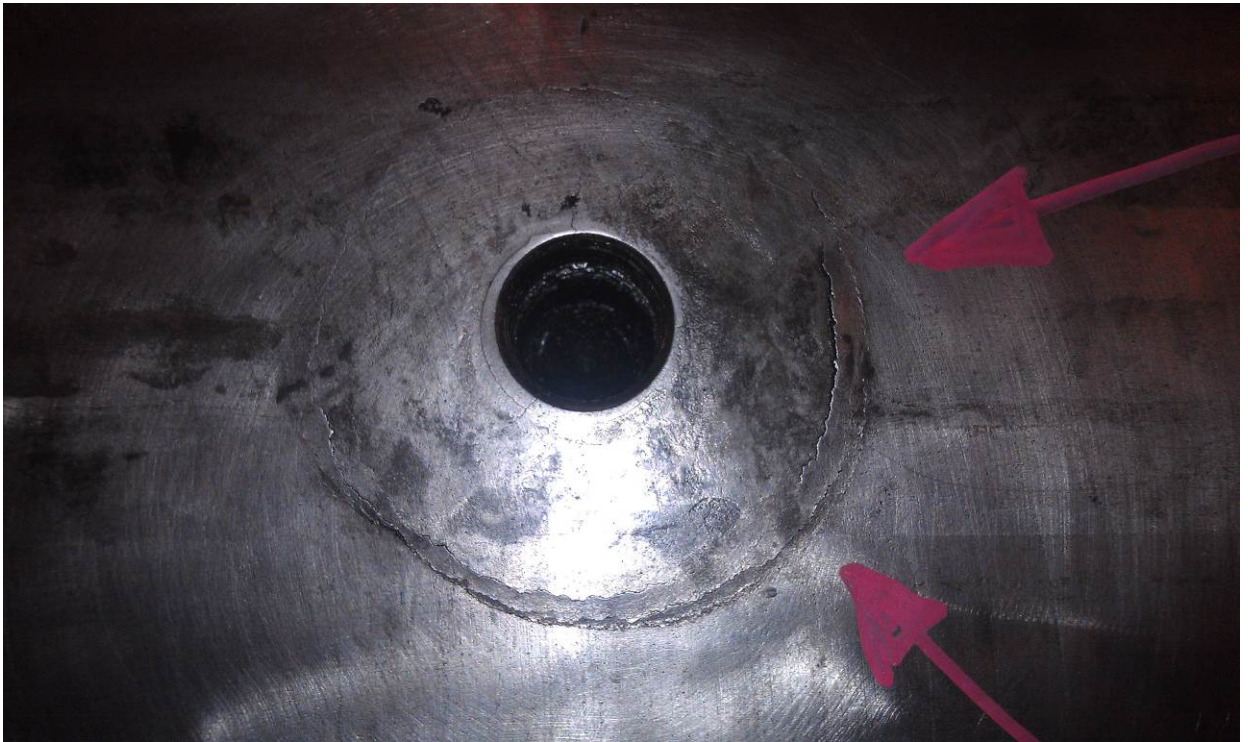
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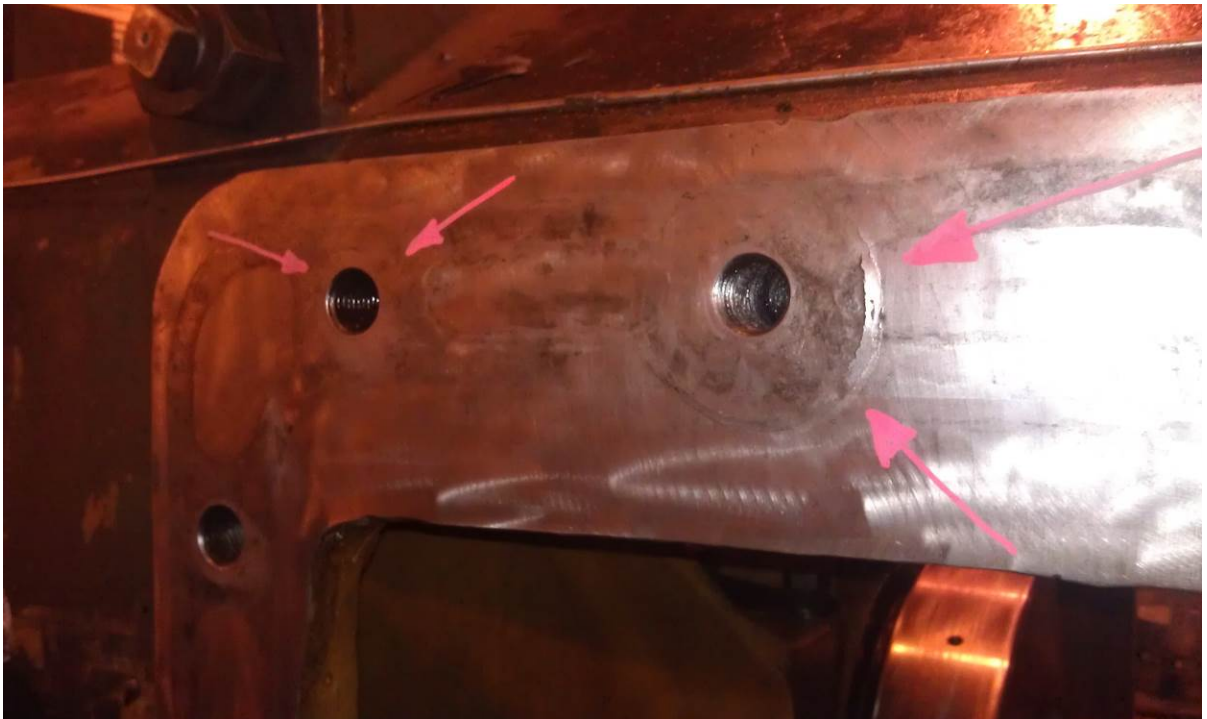
14. Damage found:



#1 Bolt hole has large pull out







# 1 Bolt hole repair:



1<sup>st</sup> we drilled existing damaged bolt hole to the tap drill size for the FFB-12 insert and as a pilot hole for the counter boring tool.

2<sup>nd</sup> We removed the damaged and broken cast iron from around the bolt hole by machining it out.

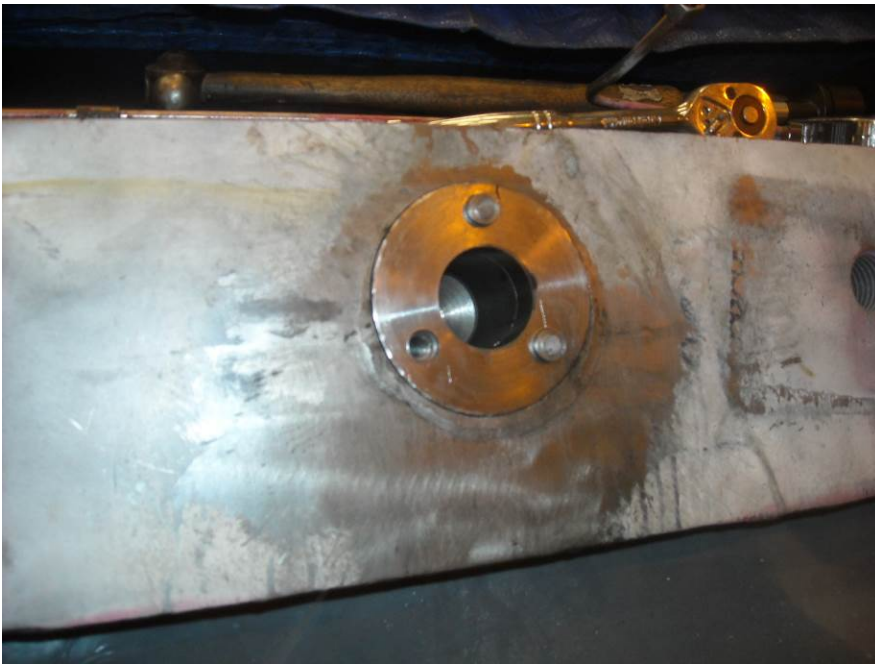




The counter bore depth was cut to .500" deep.

3<sup>rd</sup> A steel plate was pre-machined at our facility and was inserted to into the counter bored hole.





4<sup>th</sup> The steel plate was anchored with 3 *CASTMASTER C3CHS* stitching pins made from 4140 steel.

5<sup>th</sup> We stitched around the steel plate with L8B stitching pins to lock and seal the steel plate into the frame.





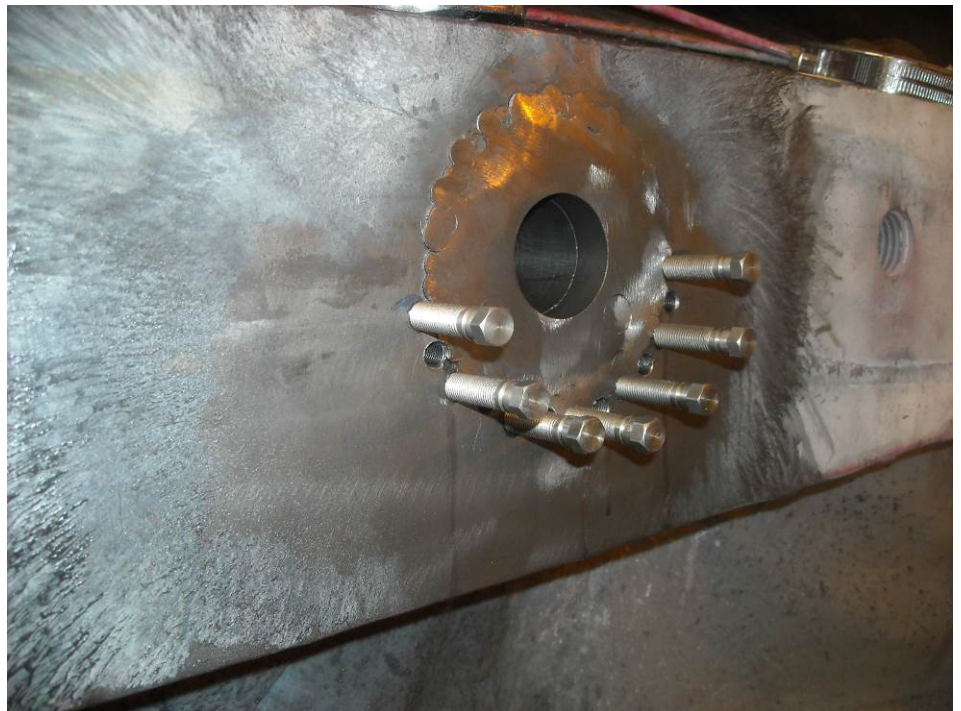


The final series of L8B pins being installed.

**A total of 12” of stitching was required to complete the installation of the steel plate**

Adding a second row of L8B stitching pins to replace the remaining missing cast iron

**A total of 6” of stitching was required to replace the missing iron.**





Second row of stitching pins  
Installed and ground close for  
final machining.

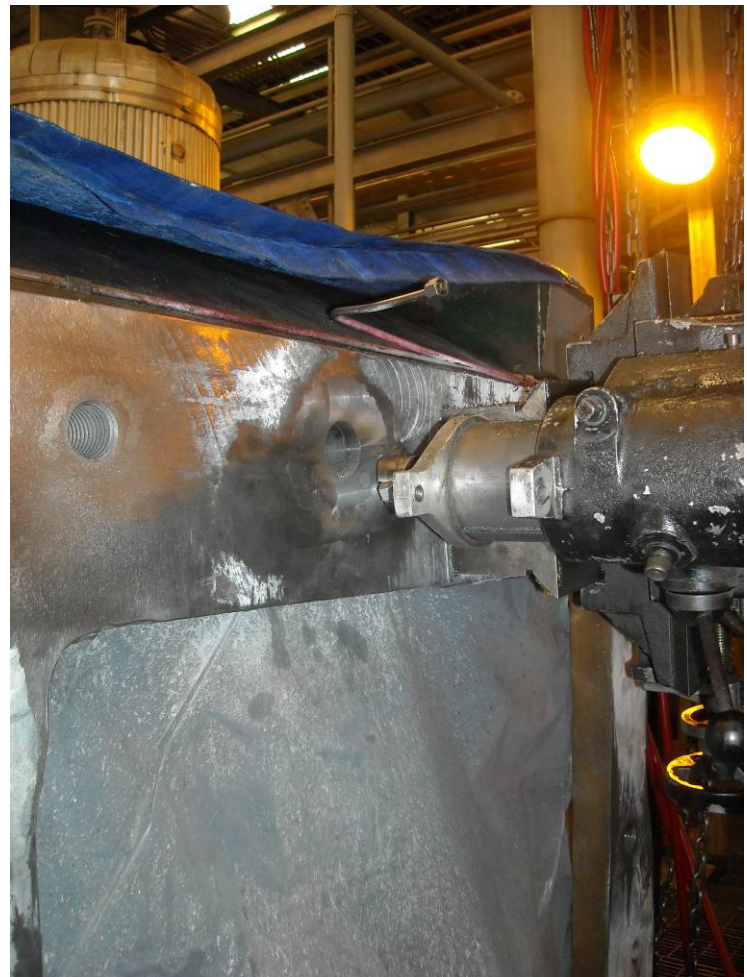
Setting up the portable  
mill to machine flat for  
gasket seal.





In process of milling of the installed plate.

Final cut.



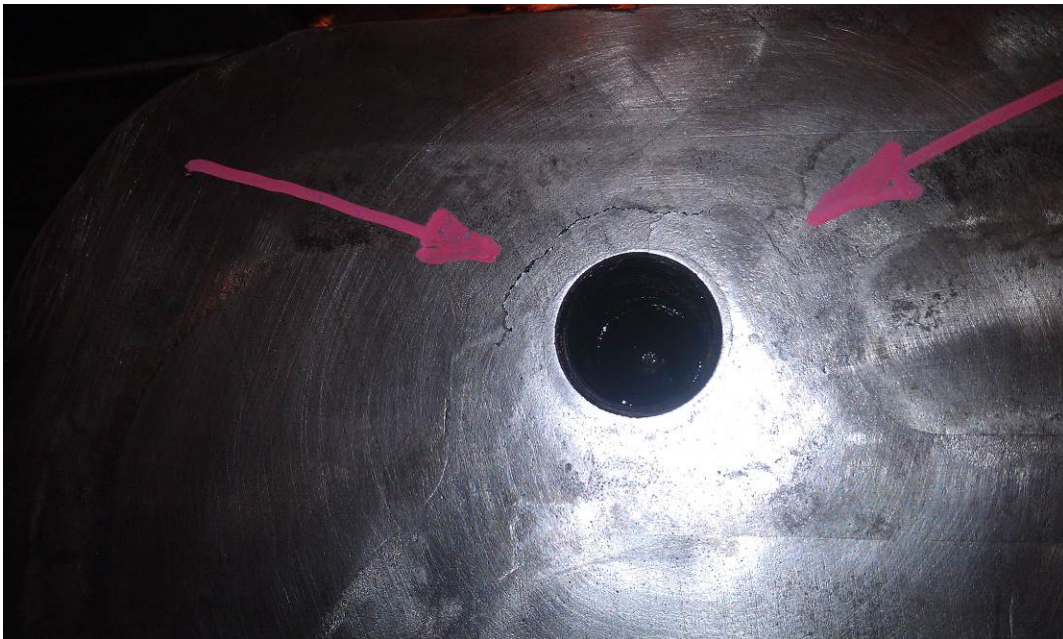


After final machining we installed the patented *FULL-TORQUE* FFB121147 insert through the plate and into the cast iron to produce a new hole that is stronger than new.

Repair completed and inspected by mag particle to assure there is the correct overlap of the stitching pins and that all cracks are completely removed.



# 2 Pulled Bolt hole on cylinder # 4 bolt hole dim. 1 1/4-7 X 2.00"



#2 Bolt hole repair:



Repair of crack was made by stitching 3" crack with L8B stitching pins.

L8B stitching pins being installed overlapping to remove 100% of the crack.





Stitching completed ready for insert to be installed.



*FULL-TORQUE* insert Installed.



c.

Bolt hole #2 completed.

# 3 Cracked bolt hole on Cylinder # 4



# 3 Bolt hole repair:

Stitched 1" crack using  
L6C stitching pins.



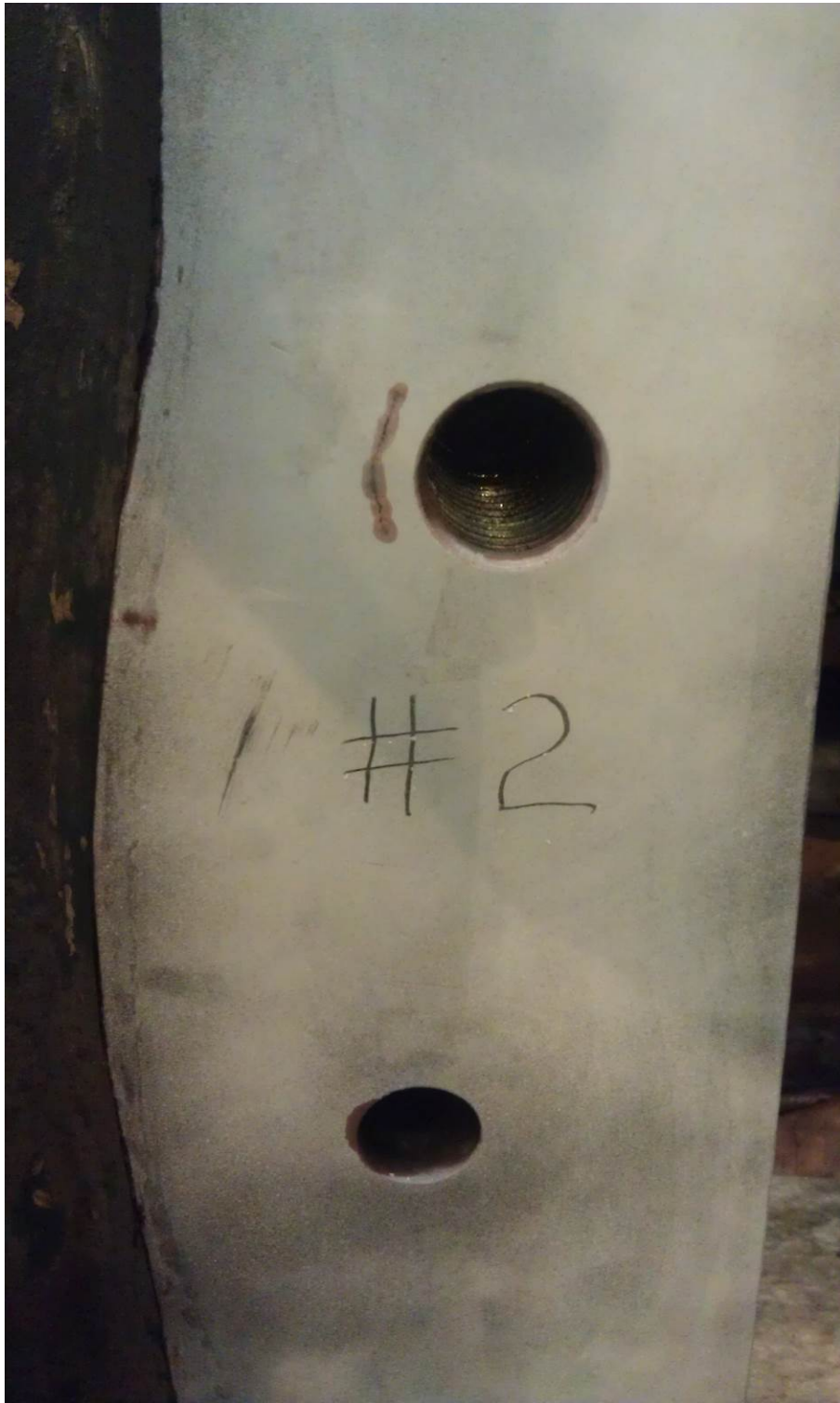


Completed repair after installation of the *FULL-TORQUE* FFB-12 insert.

# 4  
hole on



Damaged Bolt  
cylinder # 2



# 4 Bolt hole repair.



Stitched 1" crack using L6C Stitching pins and installed *Full-TORQUE* FFB121147 insert to complete repair.

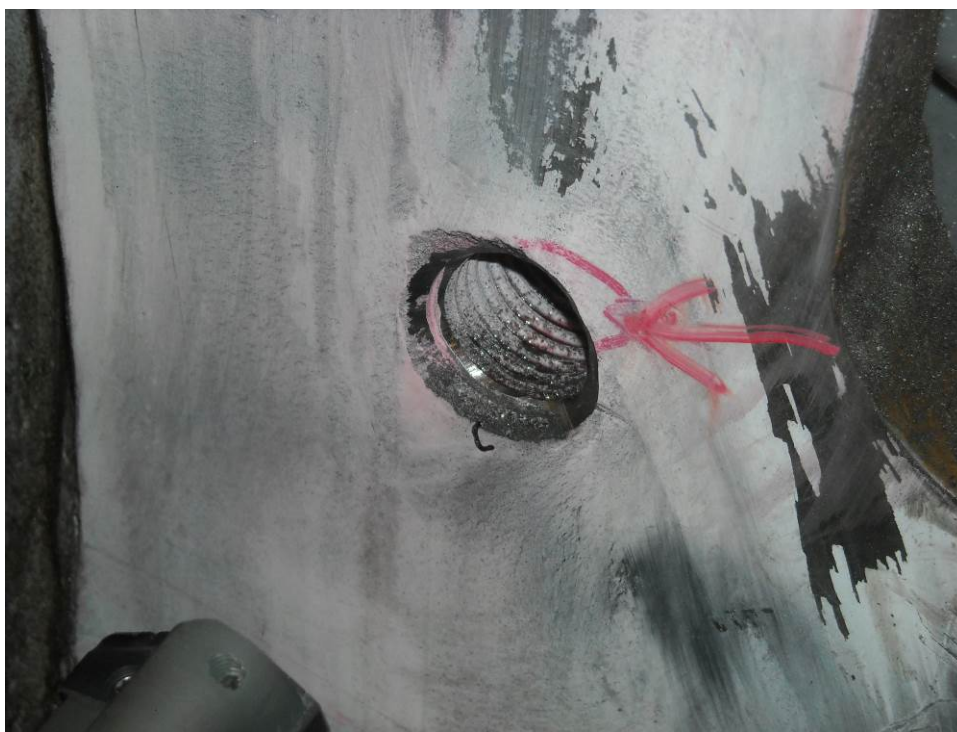


**After initial inspection from customer a wet magnetic particle test was completed by the customer and found an additional 6 damaged bolt holes.**

# 5 Bolt hole repair:

Bolt hole # 5 had a short crack that was removed and repaired by installing the *FULL-TORQUE* FFB121147 insert only.

Bolt hole # 5 repair completed with *FULL-TORQUE* insert installed.

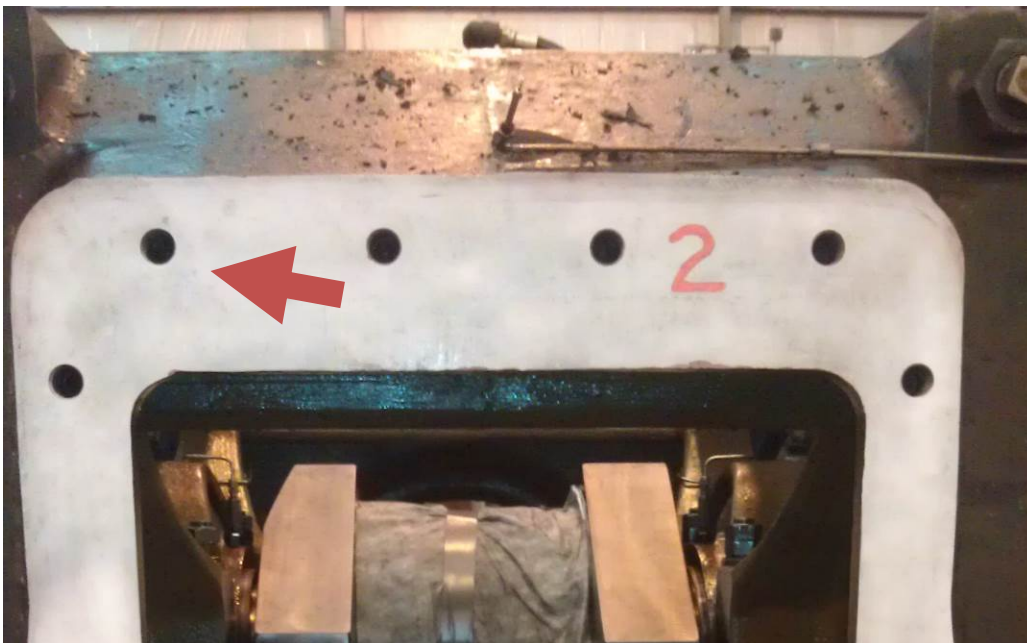


# 6 Bolt hole repair



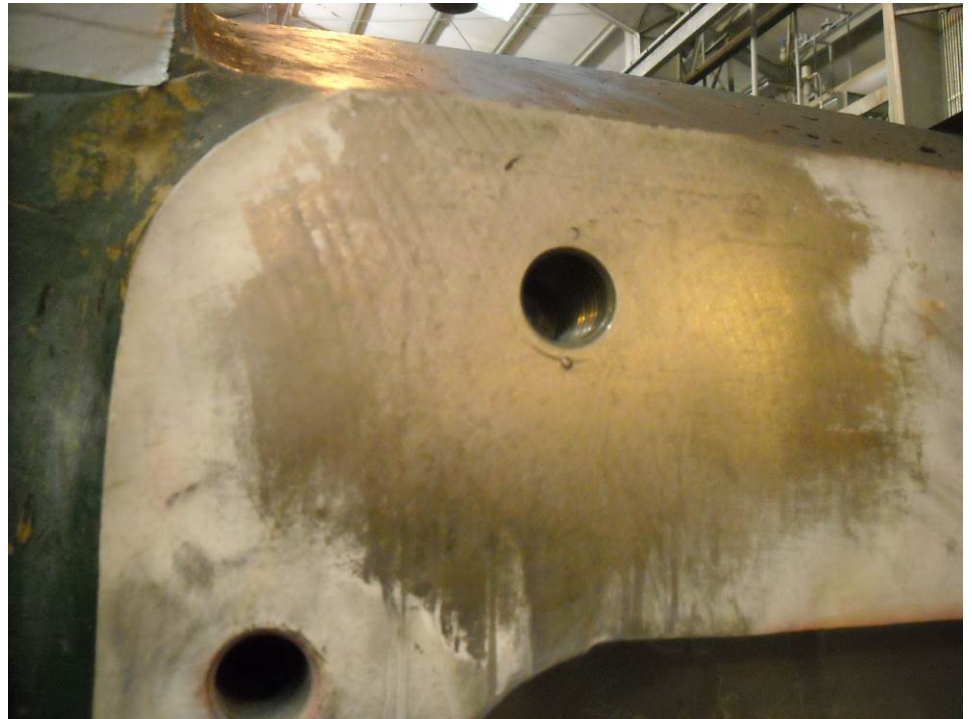
# 6 Bolt hole damage was repaired by stitching 1" with L6C stitching pins, and installing a *FULL-TORQUE* FFB-12 insert.

Bolt hole # 7



Bolt hole # 7 Had a very small crack in the top thread.

By installing the *FULL-TORQUE* Insert it removed the crack and completed the repair.



Bolt hole repairs # 8,9,10 on cylinder # 3 of the frame



#8 had a very small crack in the top thread and was repaired by installing a *FULL-TORQUE* insert to repair damage.

#9 bolt hole was repaired by just installing a *FULL-TORQUE* insert.



# 10 bolt hole was repaired by just installing a *FULL-TORQUE* insert.

After all repairs were completed we completely cleaned the area worked in of all metal shavings inside and out.





Inside # 4

Inside # 3



Inside # 2



Outside # 4

Outside # 3



Outside # 2

Other photos sent by customer





Conclusion:

A total of 23” of crack was repaired using “L” Series *LOCK-N-STITCH* stitching pins to the depth of 1”. None of the cracks found were deeper than .500” deep. A total of 10- FFB121147 *FULL-TORQUE*

blind inserts were installed that were made custom for this job. The inside measurements are 1 ¼ X 1 7/8” deep X 7tpi.

Warranty available:

This limited warranty covers our materials and workmanship for the repair of your part. Disassembly and downtime are not covered by this warranty. The limited warranty is for a period of one year from the date of completion of the repair. If there should be any failure in our repair during that period of time due to faulty materials and or workmanship, we will again repair the part at our cost including all labor, materials and travel expense, or we could choose to refund the money you paid for the repair in part or full. We reserve the right to make the final decision whether to repair or refund. This is the limit of our liability. Be aware that we are not responsible for failures due to faulty installation or improper operation and maintenance of the part. If the problem that caused the original damage has not been remedied this warranty will become null and void.

Prepared by:

Jeff Reed

10-25-2013

Regional Sales Representative

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