

# Application Report JL French

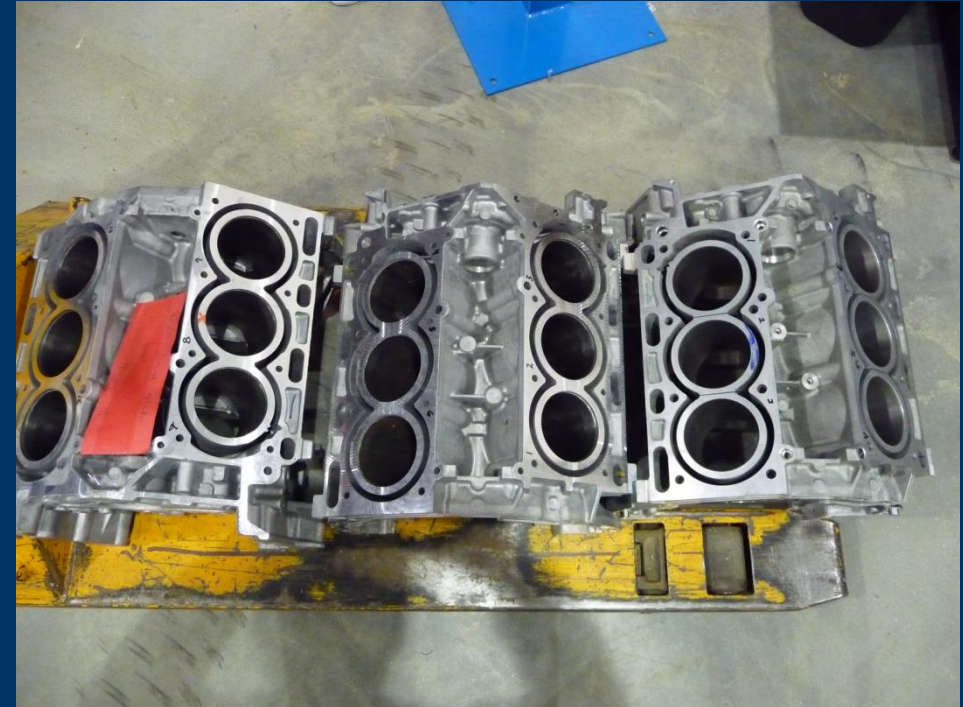
## Customer:

JL French

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Sheboygan, WI 53082

Attn: Marshall Johnson



Rohmann LP

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[www.rohmann.com](http://www.rohmann.com)

- **Application:**

Eddy Current inspection of aluminium six cylinder with steel sleeve inserts. Manual inspection preferred with ease of use and semi fast throughput capabilities.

- **Sample parts:**

JL French provided 3 sample blocks. The first two blocks provided were not in the finished production state. One block had a known crack located at the bottom of the sleeve. The last block received was honed out and in the final state of the block. This block also contained a known defect located towards the bottom of the marked sleeve.

- **Objective:**

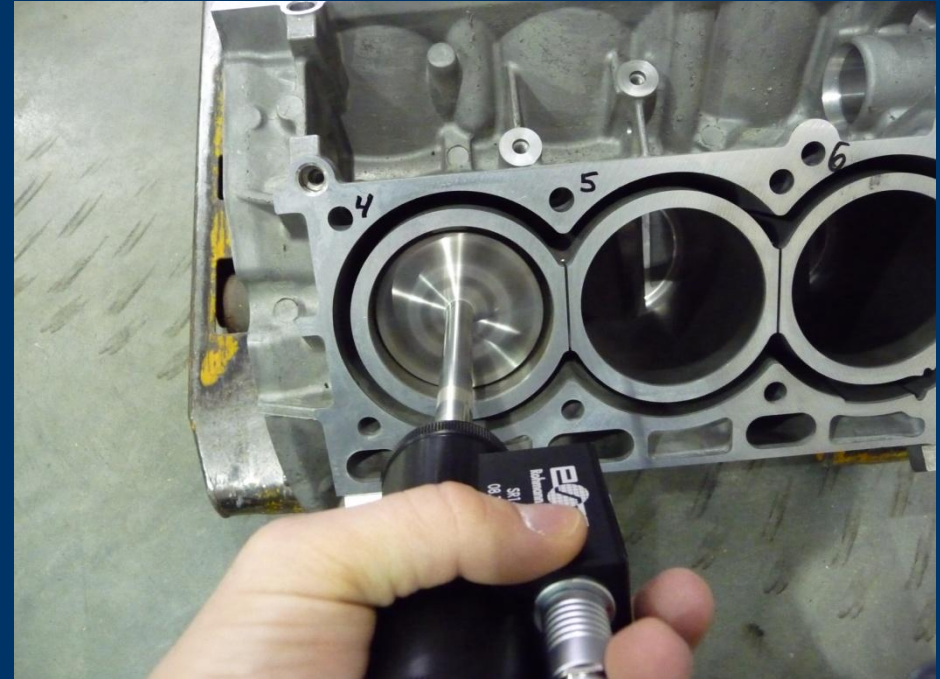
The cracks to be detected are known defects that were located visually. We need to be able to locate defects using a ID inspection probe with rotary inspection for fast manual throughput.





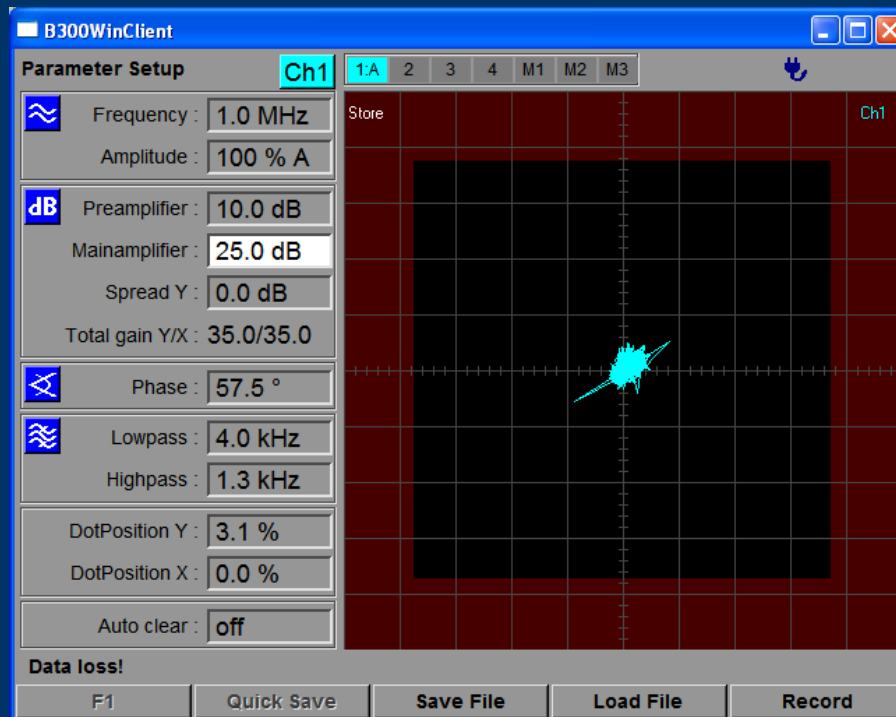
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- An ELOTEST B332 was the instrument of choice to perform the inspection, along with a RS-140-88-LP ID stainless steel differential probe.
- The engine blocks were laying flat on the pallet jack and the probe was inserted manually into the sleeves while rotating at approx. 1100RPM. Each sleeve was numbered for recording purposes
- Parameter settings: for all scans:
  - f = 1 MHz
  - Preamp = 10 db
  - Gain = 25 db
  - Y-spread = 0db
  - LP = 4 kHz
  - HP = 1.3 kHz



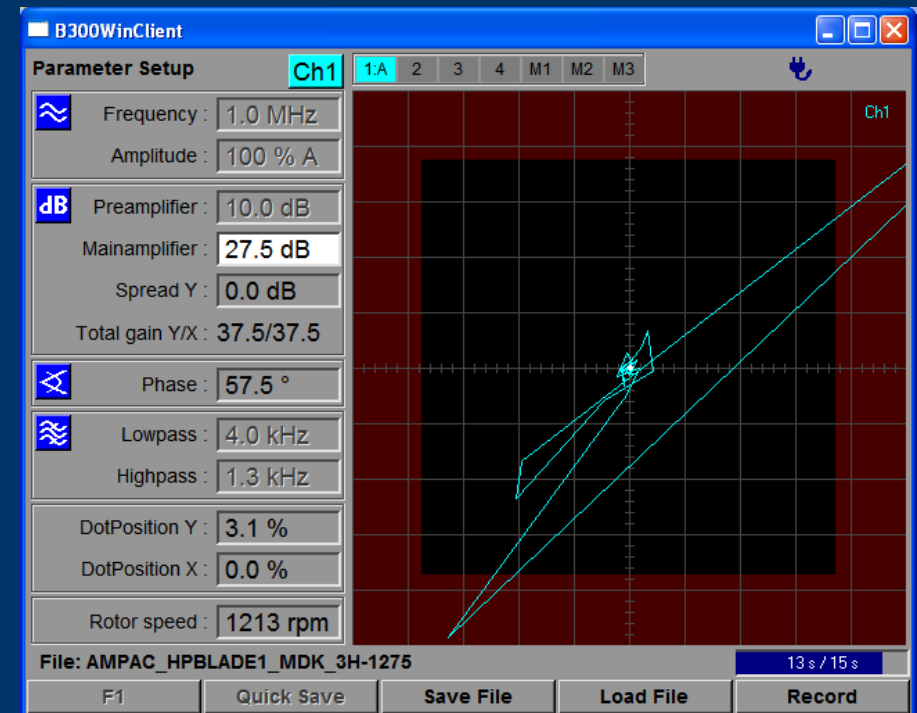
## Finished Block Sleeve #1

No defect located



## Finished Block Sleeve #2

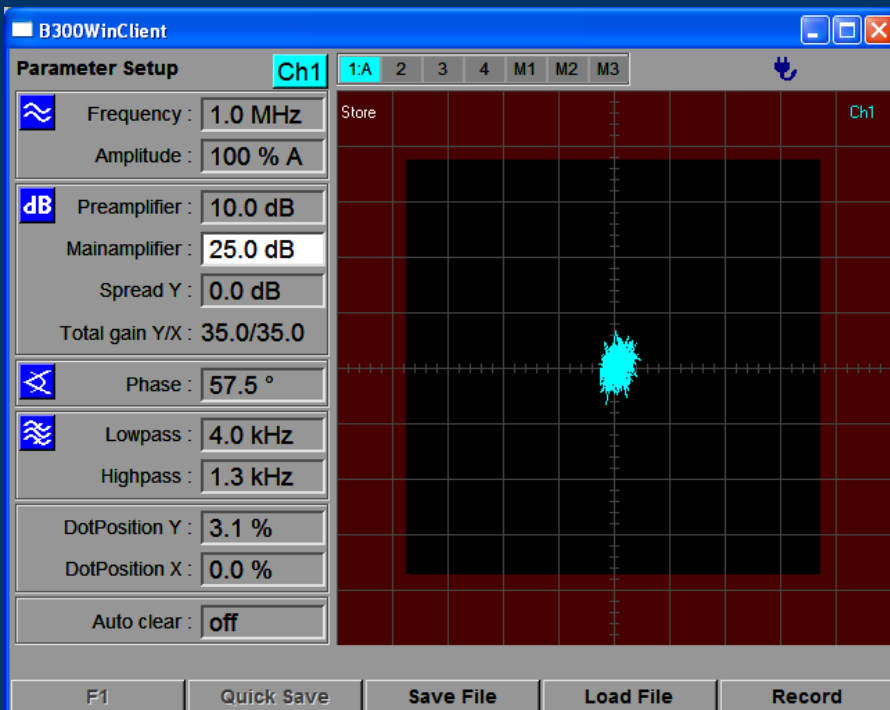
Defect located: marked defect near the bottom of sleeve



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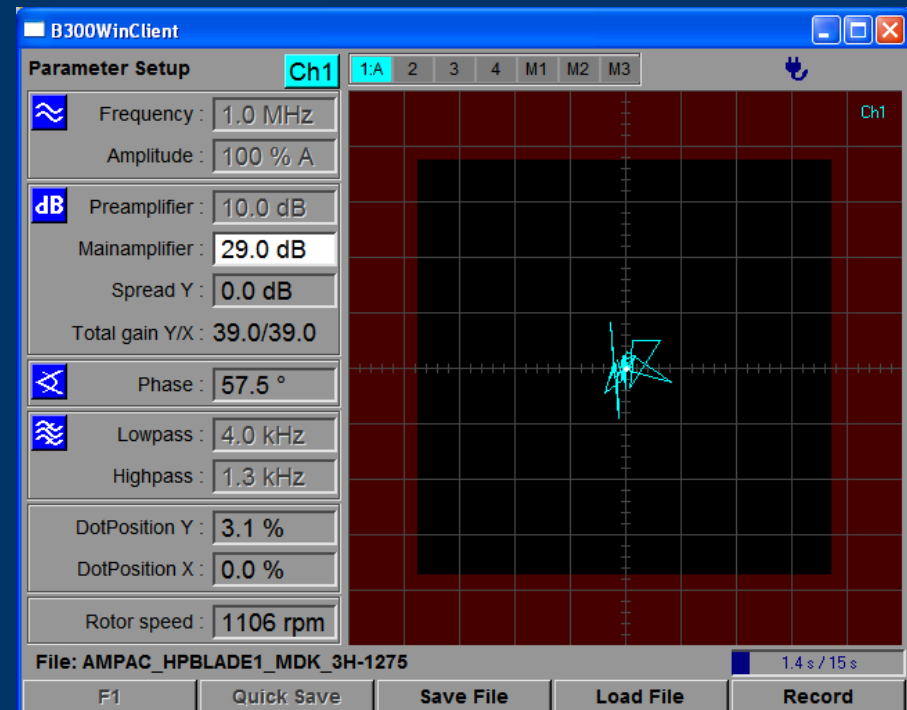
## Finished Block Sleeve #3

No defect located



## Finished Block Sleeve #4

No defect located



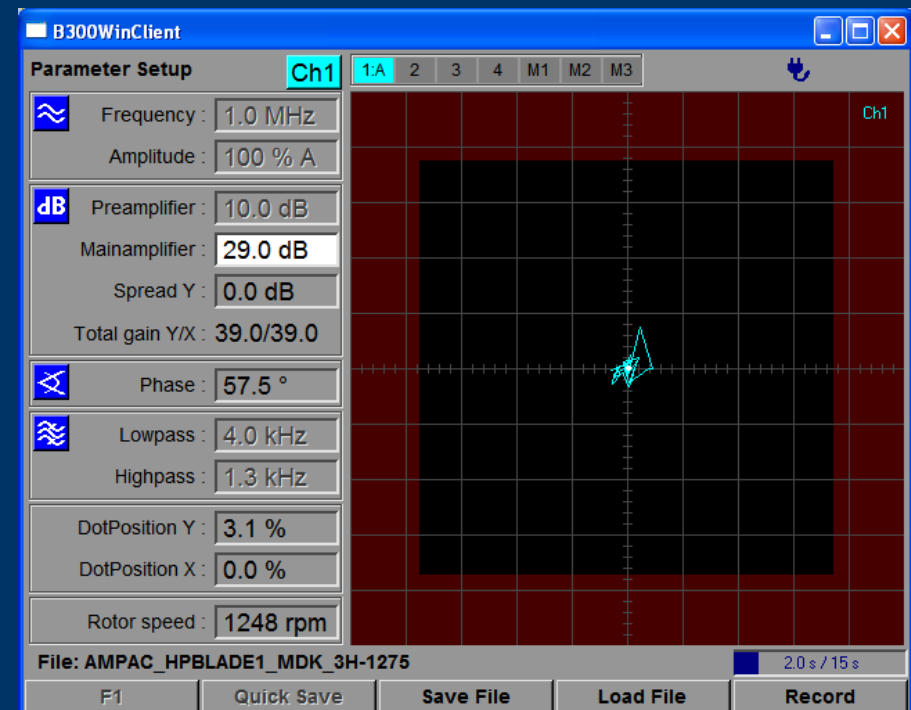
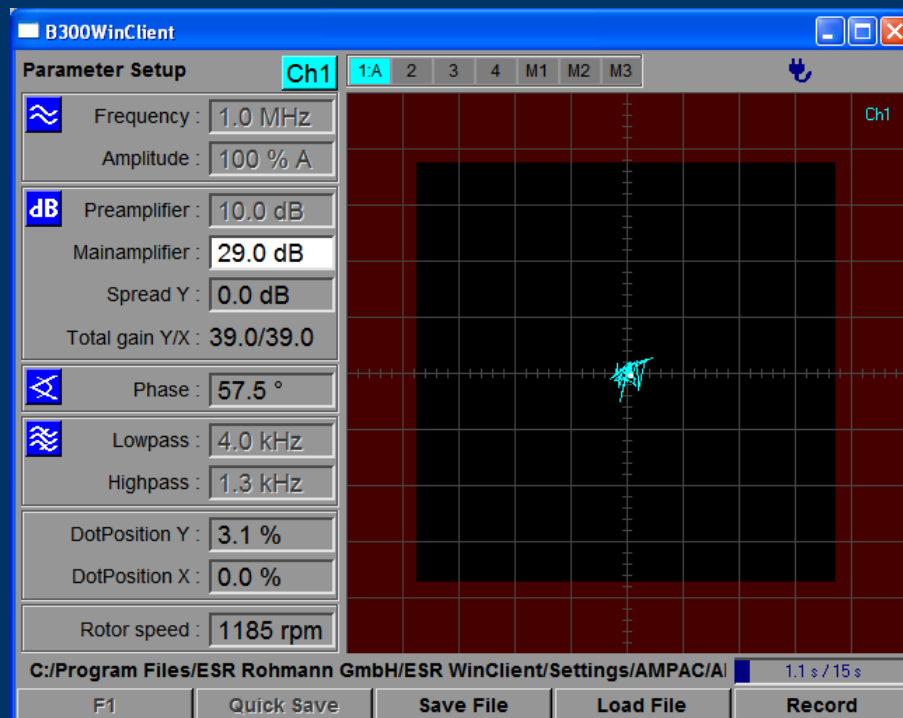
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## Finished Block Sleeve #5

No defect located

## Finished Block Sleeve #6

No defect located



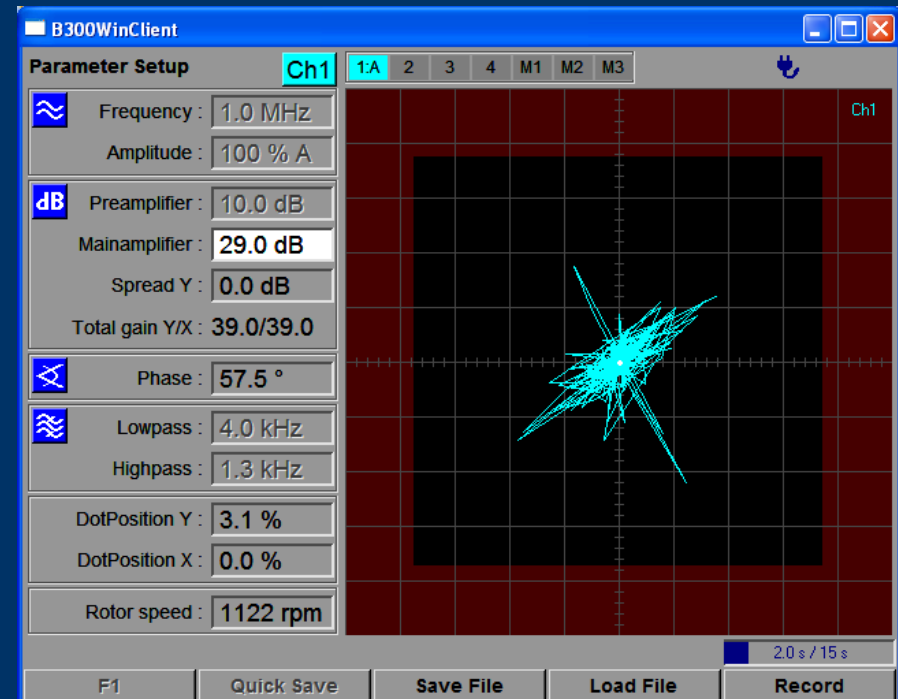
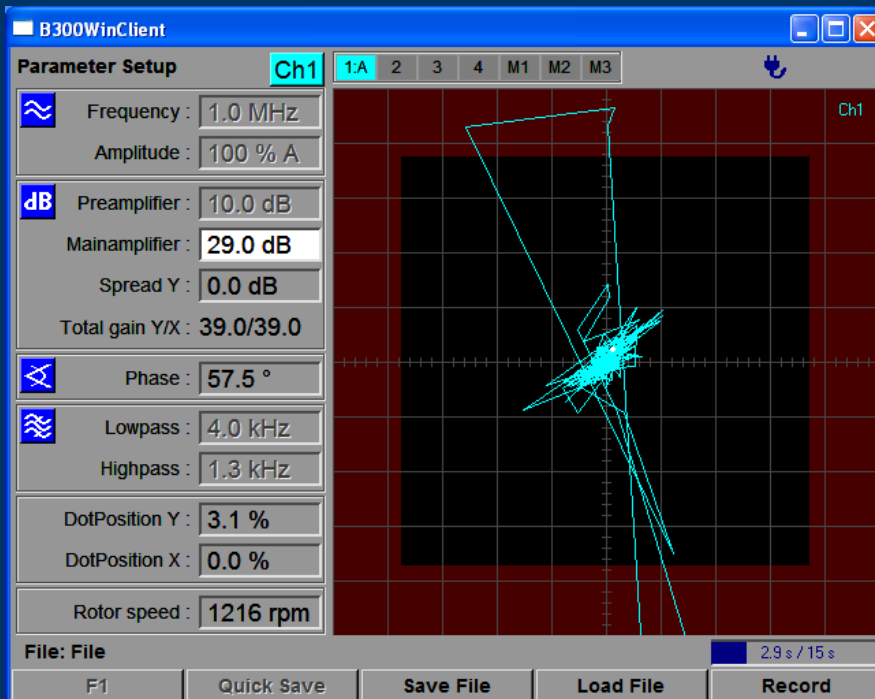


## Non Finished Block Sleeve #7

No defect marked, but internal flash not removed creates a false reject (signal results from noise/flash)

## Non Finished Block Sleeve #8

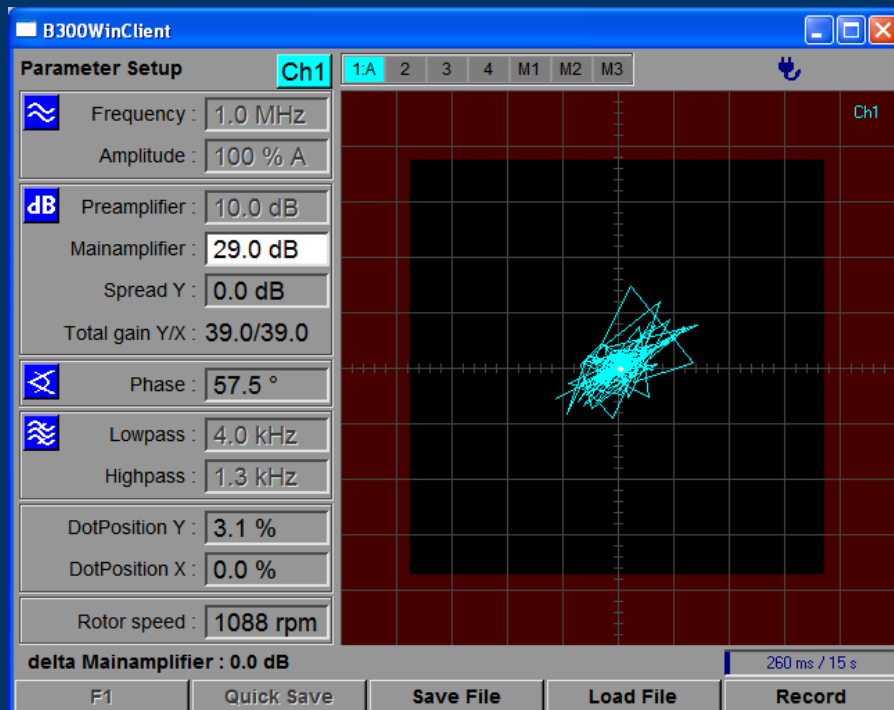
Defect Located: Marked area with known defect located at bottom of sleeve.  
Amplitude of signal is not as large as Sleeve #7, which is a clear sign this stage of the block is not clean enough to inspect in



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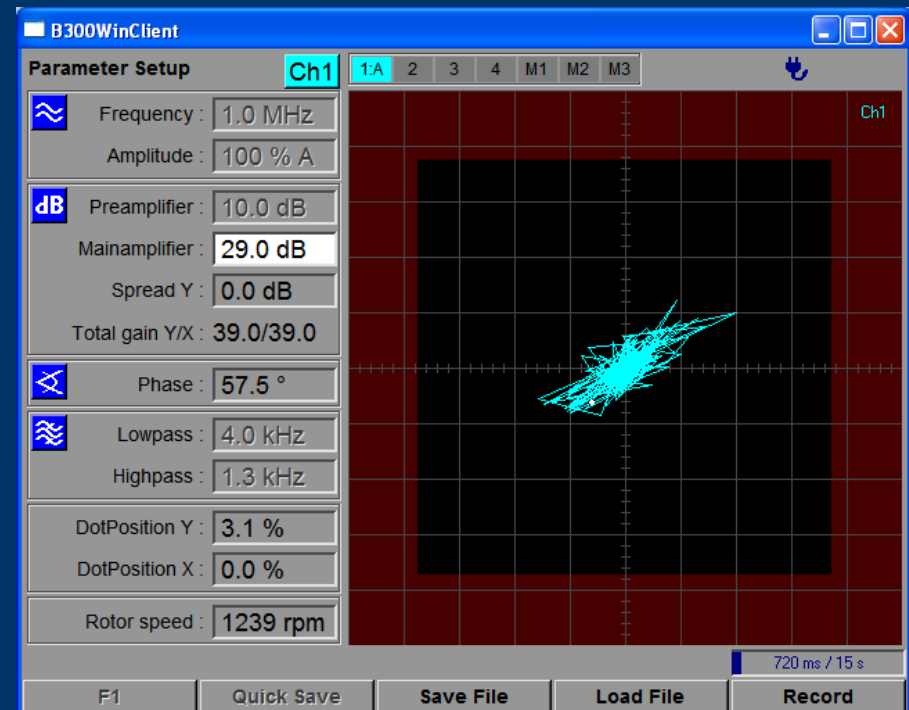
## Non Finished Block Sleeve #9

No defect located (signal results from noise/flash)



## Non Finished Block Sleeve #10

No defect located (signal results from noise/flash)



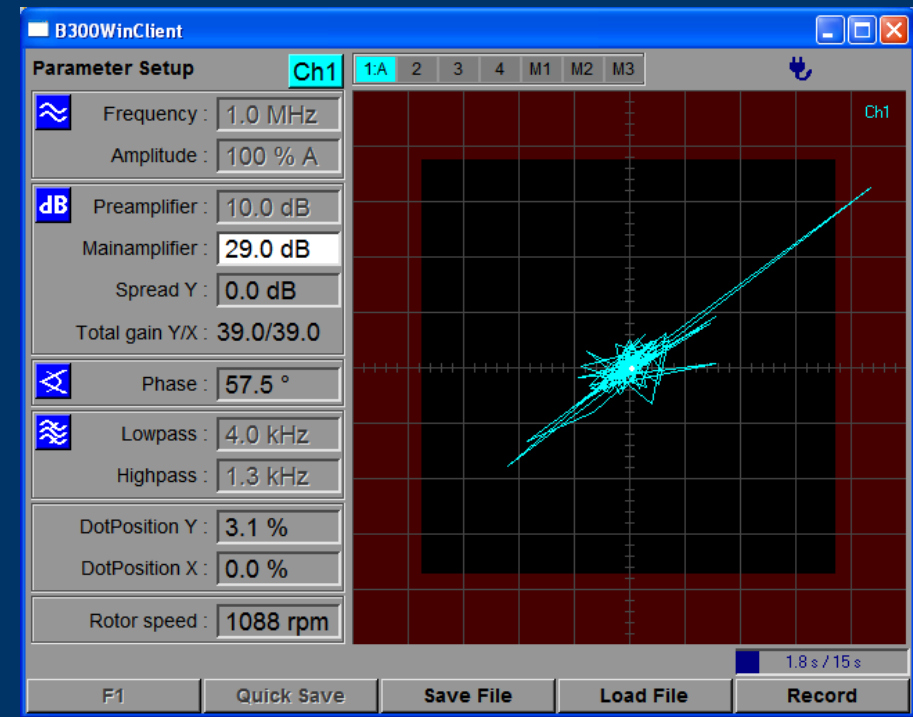
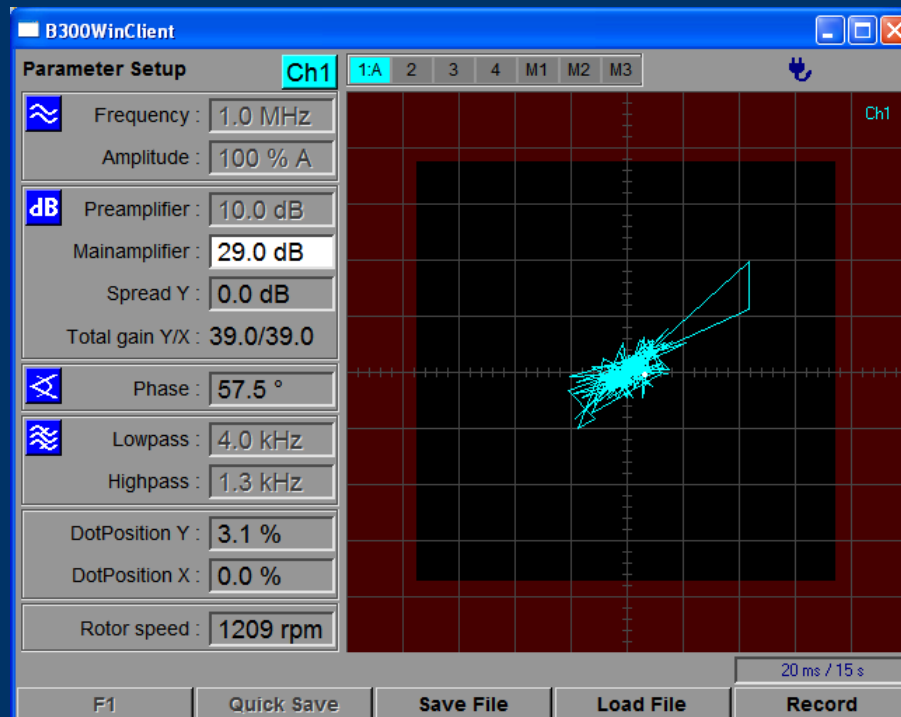


## Non Finished Block Sleeve #11

No defect (signal results from noise/flash)

## Non Finished Block Sleeve #12

No defect (signal results from noise/flash)



- Conclusion

The first two engine blocks that were sent in that were not honed out completely were not feasible for EC inspection. You will find that if you try and inspect in this non finished state you would be rejecting approx 60-70% false rejects due to aluminium flash on the internal wall of the sleeves.

- The finished engine block is the only feasible state for EC inspection. However, to perform this inspection manually you must be able to touch the wall of the sleeves with the ID probe. The only way you could carry out a inspection without touching the internal wall would be to have critical placement and fixturing of the rotor and engine block. This may be an issue regarding the ID tolerances and OD of the eddy current probe. These issues can be further discussed at your convenience



- Equipment Recommendations:
- An ELOTEST M2 Lite could be used with a SR1 Rotor, rotor cable, RS delrin probe for little to no internal scratching of the ID wall and external power supply to drive the rotor. (this option may not be needed based on the weight of the delrin probe)

