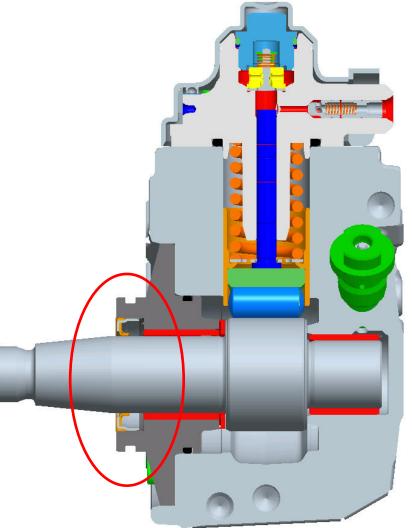
EA11003EN-01703[0] Status problems/measures CP4GE CONFIDENTIAL crack in oil seal

INFORMATION Redacted PURSUANT TO THE FREEDOM OF INFORMATION ACT (FOIA), 5 U.S.C. 552(B)(6)





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EA11003EN-01703[1] Status problems/measures CP4G E4Concerpential crack in oil seal: Summary

Rubberizing Steel band PTFE sealing lip

Problem
Cause
Status
Immediate measure

Leaking CP4 due to crack in oil seal

Cause	Process temperature exceeded when pressing on the oil seal blanks at the supplier		
Status	27 0 km (12 VW, 15 Audi), 7 (+ 5 not yet confirmed) VW field complaints		
Immediate measure 🕞	Pulse bubble test of ongoing series production and warehouse stocks		
	at Bosch and VW Group plants until clean date from	08/18/2010, done.	
Corrective measures	Introduction of an additional air-conditioning system in the press space 07/23/2010, done		
	Investigation of the temperature and flow profile in the press space by Bosch room climate experts (incl. temperature measurement with		
	10 sensors and data logger)	09/1-2/2010, done.	
	Reduction of the limit temperature of room monitoring	09/20/2010, done.	
	Concept for optimizing the room air conditioning	11/26/2010	
	Direct, proximity-type temperature measurement of the billet under		
	examination	11/26/2010	



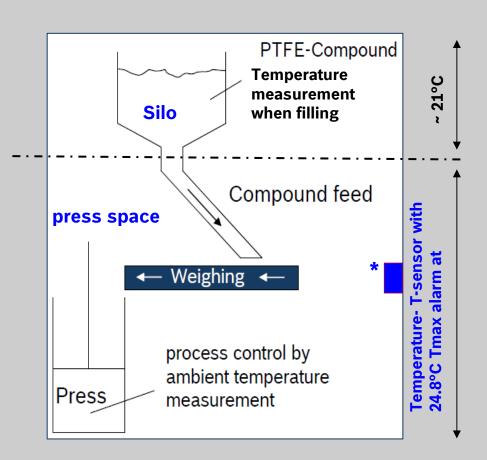
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EA11003EN-01703[2] Status problems Aleasures CAGE (COMPONENTIAL Crack in oil seal: Cause/temperature in the press space

- The room temperature in the press space is set using a an air-conditioning system.
- The PTFE compound in the silo is held at a stable 21°C.
- A temperature sensor* on a wall supplies the control signal.
- The temperature distribution in the press space is not constant.
- A ∆T up to just under +2°C was measured between the sensor and the area above the press (by Bosch room climate experts).
- The press is switched off if the room temperature exceeds 24.8°C as measured on the temperature sensor.



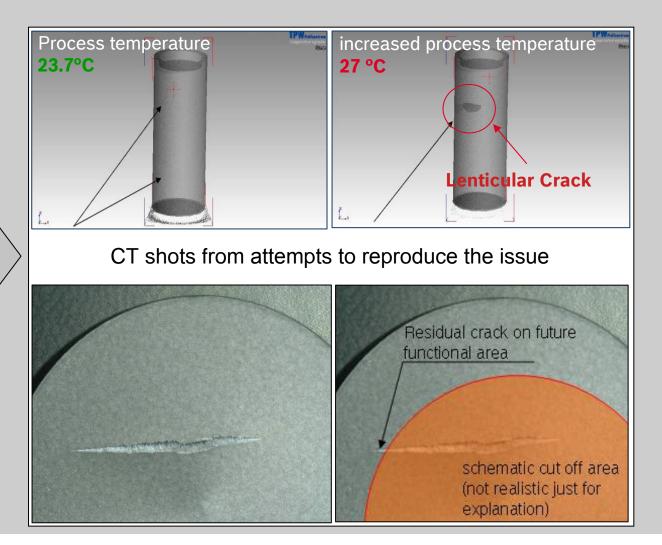


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EA11003EN-01703[3] Status problems/measures CP4GE4CONFIDENTIAL crack in oil seal: Cause / Fault mechanism

If the powder temperature is too high when pressing, the viscosity of the material prevents correct outgassing of the air that is contained, so that the air remains in the blank prior to sinterizing.



Non-escaped air expands during the sinterizing process and can cause the matrix structure to burst => lenticular cracks



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EA11003EN-01703[4] Status problems/reasures CP4GE4CONFIDENTIAL Crack in oil seal: Backup

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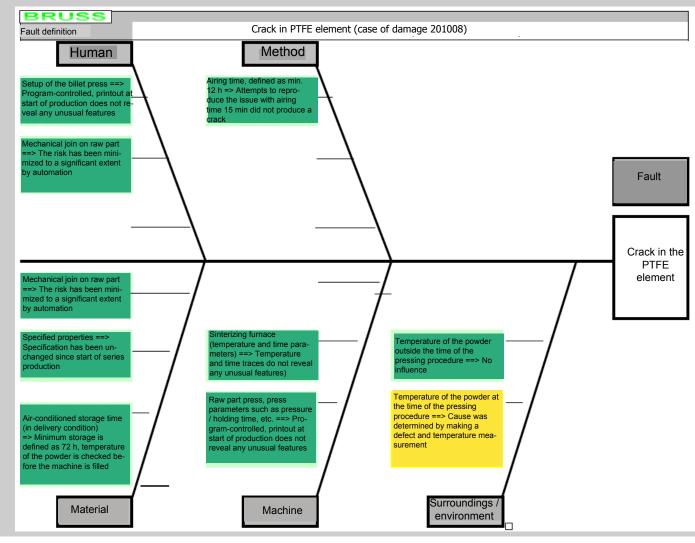
Backup



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EA11003EN-01703[5] Status problems/measures CP4GE4Concerpential Backup crack in oil seal: Ishikawa



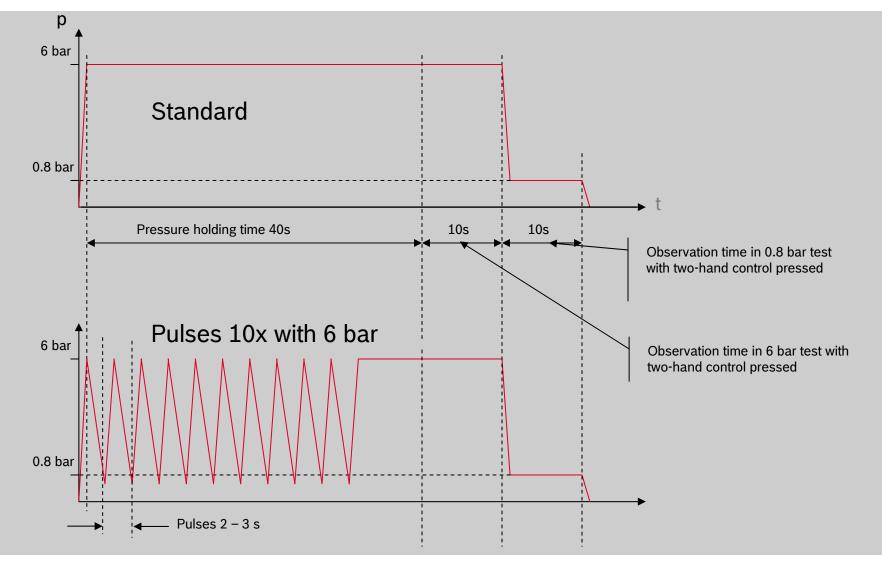


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EA11003EN-01703[6] Status problems/measures CP4GE4Concerpendiate Backup crack in oil seal: Pulse bubble test





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