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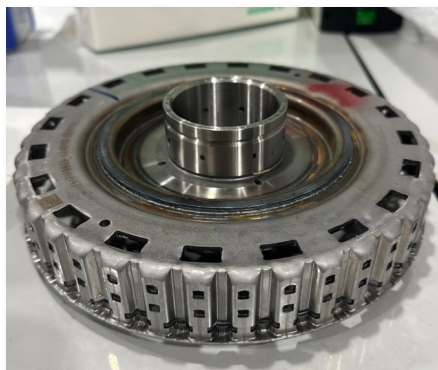
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CUTTING OF LARGE COMPONENTS

The first source of error for faulty investigations lies in the sampling and cutting process. Artefacts occurring here increase misinterpretations during the evaluation of the microstructure. The usual problems by cutting the normal parts can become chaotic by the large components. Here we show the process of cutting a clutch housing and a differential drive. Cut-off machines Qcut 400 A and 500 A, QATM premium Al_2O_3 cut-off wheels (such as FS-C $\varnothing$ 400 and $\varnothing$ 500 mm) and QATM standard anti corrosion coolant ensure optimum results during cutting of these large parts.

Objective:

The samples must be cut four times longitudinal with an 90° rotation after the second cut. The clutch housings were cut with the Qcut 400 A and the differential drive with the Qcut 500 A. Detailed parameters and images will be found in the following report.



Clutch housing



Differential drive

part of **VERDER**
scientific

CUTTING – CLUTCH HOUSING

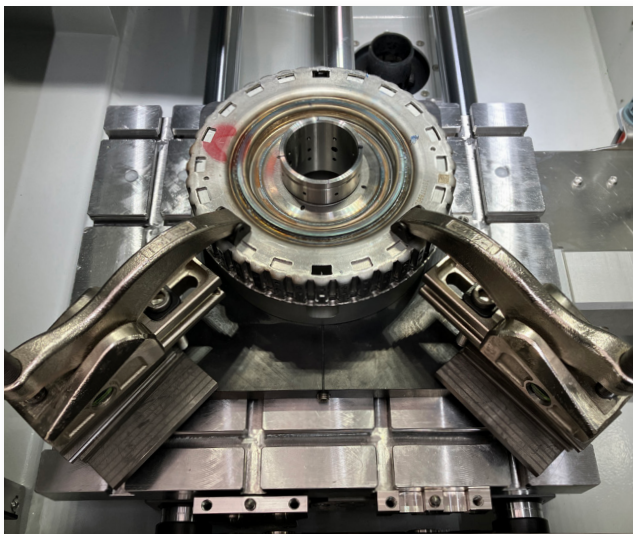


Cut-off machine Qcut 400 A

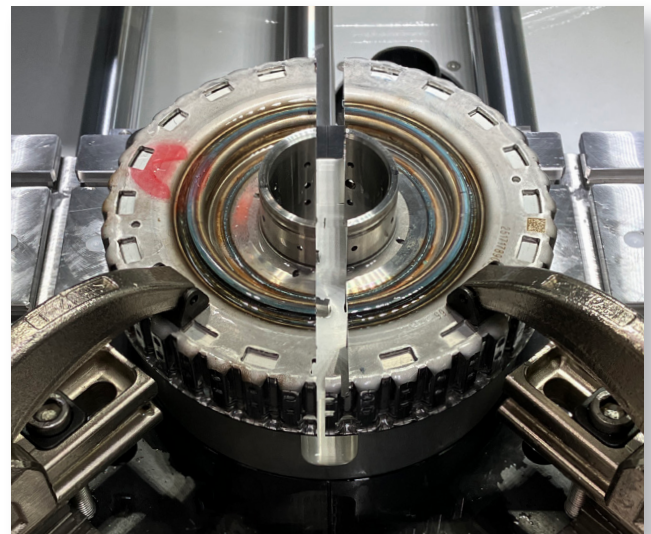
Device	Qcut 400 A	
Cut-off wheel	FS-C 400	Item no.: 95012548
Anti-corrosion coolant	QATM - Standard	Item no.: 95014282
Clamping tool	- Special clamping device - Universal Vice Mono 132	Item no.: SON00554 Item no.: Z13550011
Cutting method	Step cut Y (X+Y-axis)	
Parameters	- Feed speed - Pulse parameter - Rotational speed	0.8 mm/s without pulse 1900 rpm

Note

- To get under the lowest point of the sample we used the step cut Y to dive into the samples and continue with the horizontal cut.
- Cutting Time: approx. 25 minutes (with manual 90° rotation)
- Cut-off wheel wear: approx. 1 mm



Clutch housing before cutting



Clutch housing after cut one and two

CUTTING – CLUTCH HOUSING



Clutch housing after cut three and four



Detailed image sample adapter and sample



Separated segments

CUTTING – DIFFERENTIAL DRIVE

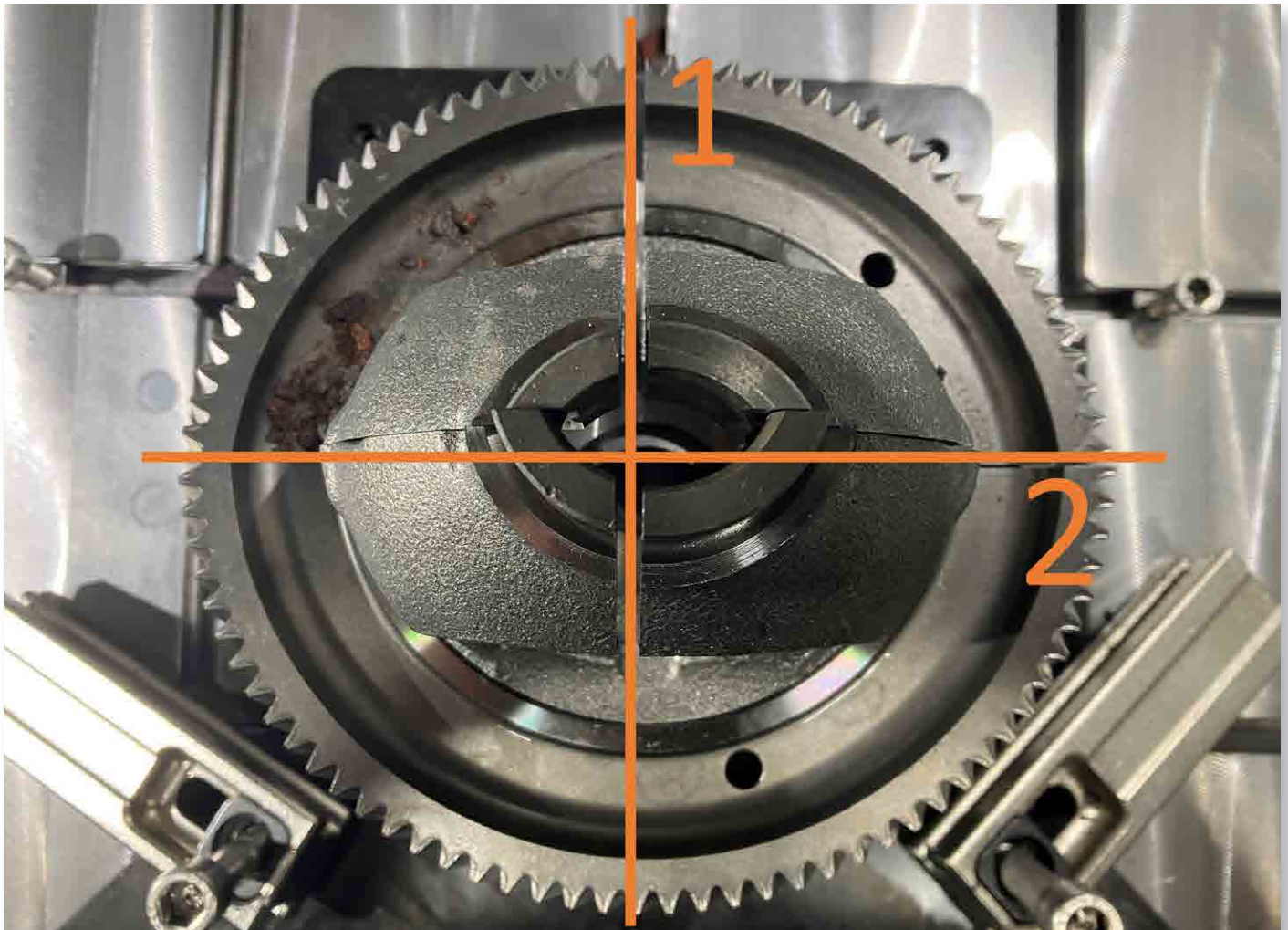


Cut-off machine Qcut 500 A

Device	Qcut 500 A	
Cut-off wheel	FS-C 500	Item no.: 95012562
Anti-corrosion coolant	QATM - Standard	Item no.: 95014282
Clamping tool	- Special clamping device	Item no.: SON00554
	- Universal Vice Mono 132	Item no.: Z13550011
Cutting method	Horizontal cut (X-axis)	
Parameters	- Feed speed	0.4 mm/s
	- Pulse parameter	without pulse
	- Rotational speed	1700 rpm

Note

- Cutting Time: approx. 50 minutes (with manual 90° rotation)
- Cut-off wheel wear: approx. 3 mm
- **Attention:** Note the order of the cuts!! (see figure below)
In our trials the cut-off wheel was blocked in the sample, because we started with cut 2. In our opinion the inner stress is lower if the sample will be cut in the order shown in the figure below.



Order of cuts

CUTTING – DIFFERENTIAL DRIVE



Special clamping device with sample adapter



Differential drive after two cuts



Separated segments

Find out more at
www.qatm.com