





<b>Change Request</b> <input type="checkbox"/>	<b>Change Order</b> <input checked="" type="checkbox"/>	<b>Initiator of Change</b>
<b>Reason for Change</b> Drawings distribution		External: Customer <input type="checkbox"/> Supplier <input type="checkbox"/> Internal: <input checked="" type="checkbox"/>
<b>Reference</b> German change order: C000260_MIP_1.		<b>Issued by:</b> Team: B/WLQ1 Name: M. Di Pasquale Date: Sept, 8th 2017

<b>Description of Change</b> New Gridning burn etching standard GN 04320 to be applied for all gearset parts.
--

Distribution List	Drawings (DDA)¹	Change Information		Drawings (DDA)¹	Change Information
Issuer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	B/WLQ1: <i>Central Quality</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B/ELE1: <i>Product Engineering</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	B/WLQ3: <i>Customer Service</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B/ELE2/3: <i>Testing</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	B/WLQ2: <i>Metallurgical Laboratory</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B/WLP: <i>ME</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	B/GPS1: <i>Production line - Gears</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B/EX: <i>Program management</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	B/GPS2: <i>Production line - Shafts</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B/BLF: <i>Finance &amp; Controlling</i>	<input type="checkbox"/>	<input type="checkbox"/>	B/GPS3: <i>Housings</i>	<input type="checkbox"/>	<input type="checkbox"/>
B/EEL: <i>Logistics</i>	<input type="checkbox"/>	<input type="checkbox"/>	B/GPS4: <i>Assembly line</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B/WLQ4: <i>SQA</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
B/WLQ4: <i>Incoming Inspection</i>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

<b>Getrag Plants</b>					
DEU: <i>Untergruppenbach</i>	<input type="checkbox"/>	<input type="checkbox"/>	GEC: <i>Sterling Heights</i>	<input type="checkbox"/>	<input type="checkbox"/>
DEL: <i>Ludwigsburg</i>	<input type="checkbox"/>	<input type="checkbox"/>	GPG: <i>Charlestone</i>	<input type="checkbox"/>	<input type="checkbox"/>
DEN: <i>Neuenstein</i>	<input type="checkbox"/>	<input type="checkbox"/>	GFT: <i>Köln</i>	<input type="checkbox"/>	<input type="checkbox"/>
DER: <i>Rosenberg</i>	<input type="checkbox"/>	<input type="checkbox"/>	GFT: <i>Kechnec</i>	<input type="checkbox"/>	<input type="checkbox"/>
DEW: <i>Bad Windsheim</i>	<input type="checkbox"/>	<input type="checkbox"/>	GTC: <i>Detroit</i>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

<b>Customers</b>					
C'HANGAN: <i>Chongqing (CN)</i>	<input type="checkbox"/>	<input type="checkbox"/>	FORD: <i>Detroit (US)</i>	<input type="checkbox"/>	<input type="checkbox"/>
CUMMINS: <i>Darlington (US)</i>	<input type="checkbox"/>	<input type="checkbox"/>	LAND ROVER: <i>Longbridge (UK)</i>	<input type="checkbox"/>	<input type="checkbox"/>
GME: <i>Rüsselsheim (DE)</i>	<input type="checkbox"/>	<input type="checkbox"/>	NAMG: <i>Longbridge (UK)</i>	<input type="checkbox"/>	<input type="checkbox"/>
GMB: <i>Saõ Paolo Brazil (BR)</i>	<input type="checkbox"/>	<input type="checkbox"/>	RENAULT: <i>Paris (FR)</i>	<input type="checkbox"/>	<input type="checkbox"/>
GM-NAO & SATURN: <i>Detroit (US)</i>	<input type="checkbox"/>	<input type="checkbox"/>	ROVER: <i>Longbridge (UK)</i>	<input type="checkbox"/>	<input type="checkbox"/>
FIAT: <i>Torino (IT)</i>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

<b>Remarks</b>	<b>BP</b> <input type="checkbox"/>
----------------	---------------------------------------

## 1 Index

1	Index.....	2
2	Info .....	2
3	Spare parts.....	2
4	Drawing Distribution .....	2
5	Instructions .....	14
6	Breakpoint request .....	17

## 2 Info

We need a clear specification for grinding burns and for the detection of them. Linamar affected.

## 3 Spare parts

- No impact on Spare parts -

## 4 Drawing Distribution

- **2501438175**            **SPEED GEAR 1ST CPL.**            **AE " c " from 17.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
- **2501438075**            **SPEED GEAR 1ST CPL.**            **AE " d " from 18.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2501437875**            **SPEED GEAR 1ST CPL.**            **AE " e " from 18.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
- **2501470375**            **SPEED GEAR 1ST CPL.**            **AE " d " from 18.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2501520375**            **SPEED GEAR 1ST CPL.**            **AE " d " from 18.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2501471075**            **SPEED GEAR 1ST CPL.**            **AE " d " from 18.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.



- **2501364178**            **SPEED GEAR 3RD.**            **AE " c " from 18.07.2017**  
(Maturity level of specification 3 approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2501364175**            **SPEED GEAR 3RD.**            **AE " k " from 18.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2501364177**            **SPEED GEAR 3RD.**            **AE " g " from 18.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2501516975**            **SPEED GEAR 3RD.**            **AE " h " from 18.07.2017**  
(Maturity level of specification F approved)  
A/7: TEXT GRINDING BURNS ADDED.
  
- **2501516976**            **SPEED GEAR 3RD.**            **AE " f " from 18.07.2017**  
(Maturity level of specification F approved)  
A/7: TEXT GRINDING BURNS ADDED.
  
- **2501439035**            **SPEED GEAR 4TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2501470535**            **SPEED GEAR 4TH CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2501522835**            **SPEED GEAR 4TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
  
- **2501364237**            **SPEED GEAR 4TH CPL**            **AE " g " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
  
- **2501364238**            **SPEED GEAR 4TH CPL**            **AE " g " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
  
- **2501364234**            **SPEED GEAR 4TH CPL**            **AE " e " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
  
- **2501387535**            **SPEED GEAR 4TH CPL**            **AE " f " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
  
- **2501387536**            **SPEED GEAR 4TH CPL**            **AE " e " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.

- **2501422437**            **SPEED GEAR 5TH CPL**            **AE " e " from 19.07.2017**  
(Maturity level of specification F approved)  
F/4: TEXT GRINDING BURNS ADDED.
  
- **2501422438**            **SPEED GEAR 5TH CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
F/4: TEXT GRINDING BURNS ADDED.
  
- **2501438735**            **SPEED GEAR 5TH CPL**            **AE " c " from 19.07.2017**  
(Maturity level of specification F approved)  
F/4: TEXT GRINDING BURNS ADDED.
  
- **2501438935**            **SPEED GEAR 5TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
F/4: TEXT GRINDING BURNS ADDED.
  
- **2501364439**            **SPEED GEAR 5TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification 3 approved)  
D/3: TEXT GRINDING BURNS ADDED.
  
- **2501364437**            **SPEED GEAR 5TH CPL**            **AE " e " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
  
- **2501364438**            **SPEED GEAR 5TH CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
  
- **2501377835**            **SPEED GEAR 5TH CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
  
- **2501377836**            **SPEED GEAR 5TH CPL**            **AE " c " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
  
- **2501422637**            **SPEED GEAR 6TH CPL**            **AE " h " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2501422638**            **SPEED GEAR 6TH CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2501437935**            **SPEED GEAR 6TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification 3 approved)  
D/3: TEXT GRINDING BURNS ADDED.
  
- **2501432035**            **SPEED GEAR 6TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.

- **2501432135**            **SPEED GEAR 6TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2501364634**            **SPEED GEAR 6TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
- **2501364637**            **SPEED GEAR 6TH CPL**            **AE " f " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
- **2501364638**            **SPEED GEAR 6TH CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
E/4: TEXT GRINDING BURNS ADDED.
- **2501364639**            **SPEED GEAR 6TH CPL**            **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2501387735**            **SPEED GEAR 6TH CPL**            **AE " f " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
- **2501387736**            **SPEED GEAR 6TH CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
- **2501422807**            **SPEED GEAR REV CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED.
- **2501364808**            **SPEED GEAR REV CPL**            **AE " c " from 19.07.2017**  
(Maturity level of specification 3 approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2501364805**            **SPEED GEAR REV CPL**            **AE " d " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2501423436**            **GEAR 5TH**                            **AE " e " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA;  
M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (AFTER GRINDING): CHD (Eht)  
550=0.3min.; M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE  
HARDENED AND TEMPERED ACC. TO G\_804002. M1 (CASE HARDNESS): 80.5 +  
2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5; M3 (AFTER GRINDING): CHD  
(Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for  
heat treatment has to be applied.

- **2501365436**                    **GEAR 5TH**                    **AE " f " from 19.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (AFTER GRINDING): CHD (Eht) 550=0.3min.; M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002. M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5; M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501378235**                    **GEAR 5TH**                    **AE " e " from 19.07.2017**  
(Maturity level of specification 3 approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (AFTER GRINDING): CHD (Eht) 550=0.3min.; M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002. M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5; M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501424754**                    **RING GEAR**                    **AE " a " from 19.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501424778**                    **RING GEAR**                    **AE " a " from 19.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501424052**                    **RING GEAR**                    **AE " a " from 19.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.

- **2501424077**                      **RING GEAR**                      **AE " a " from 19.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501424755**                      **RING GEAR**                      **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
C/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501424779**                      **RING GEAR**                      **AE " b " from 19.07.2017**  
(Maturity level of specification F approved)  
C/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501518651**                      **RING GEAR**                      **AE " b " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501518675**                      **RING GEAR**                      **AE " c " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.

- **2501518751**                    **RING GEAR**                    **AE " b " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501518775**                    **RING GEAR**                    **AE " c " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501377351**                    **RING GEAR**                    **AE " a " from 20.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501375751**                    **RING GEAR**                    **AE " b " from 20.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.
  
- **2501366051**                    **RING GEAR**                    **AE " a " from 20.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA; M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied.

- **2501366078**                    **RING GEAR**                    **AE " a " from 20.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA;  
M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300  
HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE  
HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3  
(INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to  
be applied.
  
- **2501366652**                    **RING GEAR**                    **AE " a " from 20.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA;  
M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300  
HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE  
HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3  
(INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to  
be applied.
  
- **2501366676**                    **RING GEAR**                    **AE " a " from 20.07.2017**  
(Maturity level of specification F approved)  
B/6: TEXT GRINDING BURNS ADDED; A/4; HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA;  
M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4; M3 (INSIDE BASE OF TOOTH): min. 300  
HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE  
HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.5+0.4 M3  
(INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to  
be applied.
  
- **2506431435**                    **INPUT SHAFT INNER**                    **AE " e " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2506428735**                    **INPUT SHAFT INNER**                    **AE " k " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2506429135**                    **INPUT SHAFT INNER**                    **AE " k " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2506517835**                    **INPUT SHAFT INNER**                    **AE " e " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
  
- **2506365336**                    **INPUT SHAFT INNER**                    **AE " r " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.

- **2506368235**            **INPUT SHAFT INNER**            **AE " g " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506431235**            **INPUT SHAFT OUTER**            **AE " k " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506428535**            **INPUT SHAFT OUTER**            **AE " m " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506438435**            **INPUT SHAFT OUTER**            **AE " d " from 20.07.2017**  
(Maturity level of specification F approved)  
D/4: TEXT GRINDING BURNS ADDED.
- **2506428935**            **INPUT SHAFT OUTER**            **AE " m " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506521635**            **INPUT SHAFT OUTER**            **AE " c " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506521335**            **INPUT SHAFT OUTER**            **AE " b " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506365139**            **INPUT SHAFT OUTER**            **AE " o " from 20.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506388035**            **INPUT SHAFT OUTER**            **AE " k " from 20.07.2017**  
(Maturity level of specification 3 approved)  
C/3: TEXT GRINDING BURNS ADDED.
- **2506430535**            **OUTPUT SHAFT 1**            **AE " h " from 20.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/4: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND  
TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH  
FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4  
(INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to  
be applied. Also hardness was missing for M2, M3.
- **2506430735**            **OUTPUT SHAFT 1**            **AE " l " from 20.07.2017**  
(Maturity level of specification 3 approved)  
D/3: TEXT GRINDING BURNS ADDED.

- **2506431635**                      **OUTPUT SHAFT 1**                      **AE " j " from 20.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/7: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND  
TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH  
FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has  
to be applied. Also hardness was missing for M2, M3.
  
- **2506397335**                      **OUTPUT SHAFT 1**                      **AE " f " from 20.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/7: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND  
TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH  
FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has  
to be applied. Also hardness was missing for M2, M3.
  
- **2506397435**                      **OUTPUT SHAFT 1**                      **AE " e " from 20.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/7: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND  
TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH  
FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has  
to be applied. Also hardness was missing for M2, M3.
  
- **2506397535**                      **OUTPUT SHAFT 1**                      **AE " f " from 20.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/7: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND  
TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH  
FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has  
to be applied. Also hardness was missing for M2, M3.
  
- **2506397635**                      **OUTPUT SHAFT 1**                      **AE " f " from 20.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/7: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND

TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied. Also hardness was missing for M2, M3.

- **2506424535**                      **OUTPUT SHAFT 2**                      **AE " n " from 21.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/4: HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied. Also hardness was missing for M2, M3.
  
- **2506423835**                      **OUTPUT SHAFT 2**                      **AE " n " from 21.07.2017**  
(Maturity level of specification F approved)  
C/3: TEXT GRINDING BURNS ADDED; A/4: HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied. Also hardness was missing for M2, M3.
  
- **2506365835**                      **OUTPUT SHAFT 2**                      **AE " o " from 21.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/4: HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied. Also hardness was missing for M2, M3.
  
- **2506377135**                      **OUTPUT SHAFT 2**                      **AE " n " from 21.07.2017**  
(Maturity level of specification 3 approved)  
D/3: TEXT GRINDING BURNS ADDED; A/4: HARDNESS SPECIFICATION UPDATED WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min. M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has to be applied. Also hardness was missing for M2, M3.

- **2506375535**                      **OUTPUT SHAFT 2**                      **AE " o " from 21.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/4: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND  
TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH  
FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has  
to be applied. Also hardness was missing for M2, M3.
- **2506366435**                      **OUTPUT SHAFT 2**                      **AE " k " from 21.07.2017**  
(Maturity level of specification F approved)  
D/3: TEXT GRINDING BURNS ADDED; A/4: HARDNESS SPECIFICATION UPDATED  
WAS: CASE HARDENED AND TEMPERED M1 (CASE HARDNESS): 80.5 + 2.5 HRA  
M2 (TOOTH FLANK): CHD (Eht) =0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) =0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10 WILL BE: CASE HARDENED AND  
TEMPERED ACC. TO G\_804002 M1 (CASE HARDNESS): 80.5 + 2.5 HRA M2 (TOOTH  
FLANK): CHD (Eht) 550=0.7+0.5 M3 (AFTER GRINDING): CHD (Eht) 550=0.5min.  
M4 (INSIDE BASE OF TOOTH): min. 300 HV10. Getrag standard for heat treatment has  
to be applied. Also hardness was missing for M2, M3.

## 5 Instructions

- The modification must be followed from all affected departments.
- The old drawing must be replaced.
- GPS1 department has to take a break point, for modification referred to:
  - 2501438175;
  - 2501438075;
  - 2501437875;
  - 2501470375;
  - 2501520375;
  - 2501471075;
  - 2501429775;
  - 2501429777;
  - 2501369276;
  - 2501422175;
  - 2501422178;
  - 2501364178;
  - 2501364175;
  - 2501364177;
  - 2501516975;
  - 2501516976;
  - 2501439035;
  - 2501470535;
  - 2501522835;
  - 2501364237;
  - 2501364238;
  - 2501364234;

- 2501387535;
  - 2501387536;
  - 2501422437;
  - 2501422438;
  - 2501438735;
  - 2501438935;
  - 2501364439;
  - 2501364437;
  - 2501364438;
  - 2501377835;
  - 2501377836;
  - 2501422637;
  - 2501422638;
  - 2501437935;
  - 2501432035;
  - 2501432135;
  - 2501364634;
  - 2501364637;
  - 2501364638;
  - 2501364639;
  - 2501387735;
  - 2501387736;
  - 2501422807;
  - 2501364808;
  - 2501364805;
  - 2501423436;
  - 2501365436;
  - 2501378235;
  - 2501424754;
  - 2501424778;
  - 2501424052;
  - 2501424077;
  - 2501424755;
  - 2501424779;
  - 2501518651;
  - 2501518675;
  - 2501518751;
  - 2501518775;
  - 2501377351;
  - 2501375751;
  - 2501366051;
  - 2501366078;
  - 2501366652;
  - 2501366676.
- GPS2 department has to take a break point, for modification referred to:
    - 2506431435;
    - 2506428735;
    - 2506429135;
    - 2506517835;
    - 2506365336;
    - 2506368235;

- 2506431235;
  - 2506428535;
  - 2506438435;
  - 2506428935;
  - 2506521635;
  - 2506521335;
  - 2506365139;
  - 2506388035;
  - 2506430535;
  - 2506430735;
  - 2506431635;
  - 2506397335;
  - 2506397435;
  - 2506397535;
  - 2506397635;
  - 2506424535;
  - 2506423835;
  - 2506365835;
  - 2506377135;
  - 2506375535;
  - 2506366435.
- **#MTC1137#: THE CHANGE IS READY TO BE IMPLEMENTED. THE CHAMPION HAS TO MAKE SURE THAT ALL CHECK LIST ACTIVITIES ARE COMPLETE BEFORE KICKING OFF THE MODIFICATION. BREAK POINT MUST BE COMMUNICATED TO ELE1.**

## 6 Breakpoint request

Data di comunicazione modifica: DATE OF THE CHANGE ORDER:		Numero di comunicazione modifica: CHANGE ORDER NUMBER:				
Codice pezzo: PART NUMBER:		Denominazione: PART NAME:				
<b>PRODUZIONE</b> PRODUCTION	Codice pezzo: PART NUMBER COMPONENT:					
	Data di produzione: PRODUCTION DATE:					
	Data di uscita: DELIVERY DATE:				Firma: SIGNATURE:	
<b>MONTAGGIO</b> ASSEMBLY	Tipo di cambio: TRANSMISSION VARIANT:					
	Data di montaggio: ASSEMBLY DATE:					
	1° numero cambio: 1ST TRANSMISSION AFFECTED BY THE CHANGE:				Firma: SIGNATURE:	
<b>SPEDIZIONE</b> LOGISTICS	Termine di consegna: DELIVERY DATE:					
	Data di uscita: DELIVERY DATE:				Firma: SIGNATURE:	
Osservazioni: REMARKS:						
Destinatari: DISTRIBUTION LIST:	✓	✓			✓	
Reparto: DEPARTMENT:	GPS1	GPS2	GPS3	GPS4	ELE 1	
Data: DATE:						

# GETRAG GROUP STANDARD

**GN\_04320**  
Version01:2011-02  
APPROVED

Stichwörter	Ätzen, Feinbearbeitung, Makroätzbild, Rissprüfung, Schleifbrandätzung, Schleifbrandprüfung, Schleifen, Schleifrisse	Ersatzhinweis Ersetzt GN 4320 Version: 2003-01
Keywords	Etching, fine machining operations, macro etching pattern, crack test, grinding burn etching, cracks	Supersession Notice: Supersedes: GN 4320 Version: 2003-01

## Schleifbrandätzung Grinding burn etching

### ANWENDUNGSHINWEIS / APPLICATION NOTICE:

Deutsch:    Seiten 2 bis 5  
English:     Pages 6 to 9

Im Zweifelsfall muss das deutschsprachige Original als bindender Text herangezogen werden.  
In case of doubt, the German language original must be consulted as the authoritative text.

### FREIGABEHINWEIS / RELEASE NOTICE:

	GETRAG Group	
Dokumenteigner Document Owner	Dr. Marc Wettlaufer <b>2011-02-08</b> Datum / Date	Zentrale Technik <b>Marc Wettlaufer</b> Unterschrift / Signature
Genehmigung Approval	Manfred Kirchner <b>2011-02-08</b> Datum / Date	Leiter Zentrale Technik <b>Manfred Kirchner</b> Unterschrift / Signature
Freigabe Release	Günter Braun <b>2011-02-08</b> Datum / Date	Normung <b>Günter Braun</b> Unterschrift / Signature

### PROTECTION NOTICE ISO 16016    SCHUTZVERMERK ISO 16016

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization are prohibited. Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or design.

Weitergabe sowie Vervielfältigung dieses Dokuments, Verwertung und Mitteilung seines Inhalts verboten, soweit nicht ausdrücklich gestattet. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patent-, Gebrauchsmuster- oder Geschmacksmustereintragung vorbehalten.

GETRAG Group all rights reserved 2011		<b>Printed copies are uncontrolled</b>
Owner: Marc Wettlaufer / <a href="mailto:marc.wettlaufer@getrag.de">marc.wettlaufer@getrag.de</a> Department: Zentrale Technik	Security Classification: <b>CONFIDENTIAL</b>	Page: 1 / 9 Retention: 25.01/S + 12

## 1 ZWECK

Diese Norm bezieht sich bei der Beschreibung der Schleifbrandätzung im Wesentlichen auf Schleifbearbeitungsverfahren. Sie gilt aber auch sinngemäß für andere Feinbearbeitungsverfahren.

## 2 ANWENDUNG UND GELTUNGSBEREICH

Die GN 4320 wird für Bauteile (außer Sinterteile) angewendet, an denen eine spanabhebende Feinbearbeitung erfolgt, insbesondere wenn in der Zeichnung bzw. in den mitgeltenden Fertigungsunterlagen Bezug darauf genommen wird. Diese Norm gilt für die Fertigung der gesamten GETRAG Group sowie Zulieferfirmen, bei denen Feinbearbeitungsverfahren zur Anwendung kommen.

## 3 BESCHREIBUNG

Schleifbrand entsteht durch unsachgemäße Schleifbearbeitung. Das Risiko für das Auftreten von Schleifbrand besteht grundsätzlich bei jedem Schleifprozess. Weiter ist das Erkennen der Bauteileschädigung mit dem bloßen Auge nur bedingt möglich, eine sichere Methodik besteht nur durch Makroätzbild, Rissprüfung für Schleifrisse oder durch Härteprüfung der Randschicht.

Da kleine Fehleranteile (= stochastisch auftretender Schleifbrand) nur mit unverhältnismäßig großem Prüfaufwand feststellbar sind, sind mit der üblichen Stichprobengröße der Schleifbrandätzung somit nur systematische Fehler festzustellen.

### 3.1 Systematische Fehler und Ursachen

Die Schleifbrandätzung ist demnach eine Prüfung, die insbesondere bei systematischen Änderungen oder besonderen Vorfällen angebracht ist. Dies soll aus allgemeinen Prüfanweisungen für einen Schleifprozess und aus der Prüfanweisung hervorgehen.

Systematische Änderungen, die eine Schleifbrandätzung erfordern, sind beispielsweise:

- Scheibenwechsel (anderer Hersteller, anderer Typ (Bindung, Körnung))
- Austausch Abrichtwerkzeug
- Prozessoptimierungen
- Änderungen der Abrichtparameter, ggf. Abrichtfehler
- Anzeichen auf Fehler im Kühlschmierstoffsystem, geringe Kühlung
- Erhöhtes Schleifaufmaß

### 3.2 Auswirkungen

- Abnahme der Oberflächenhärte im äußersten Randbereich: Abnahme der Verschleißfestigkeit → Getriebeausfälle durch Lagerschäden etc.
- Bildung von Mikrorissen (Schleifrisse): Getriebeausfälle durch Dauerbruch des geschädigten Bauteils

## 4 PRÜFUNG

### 4.1 Probenentnahme

Arbeitstäglich ist ein Bauteil jeder Bauteilnummer, das geschliffen wird und bei dem eine Schleifbrandprüfung im Prüfplan gefordert ist, nach der letzten Schleifoperation auf Schleifbrand zu prüfen.

Hierbei müssen alle geschliffenen Flächen geprüft werden!

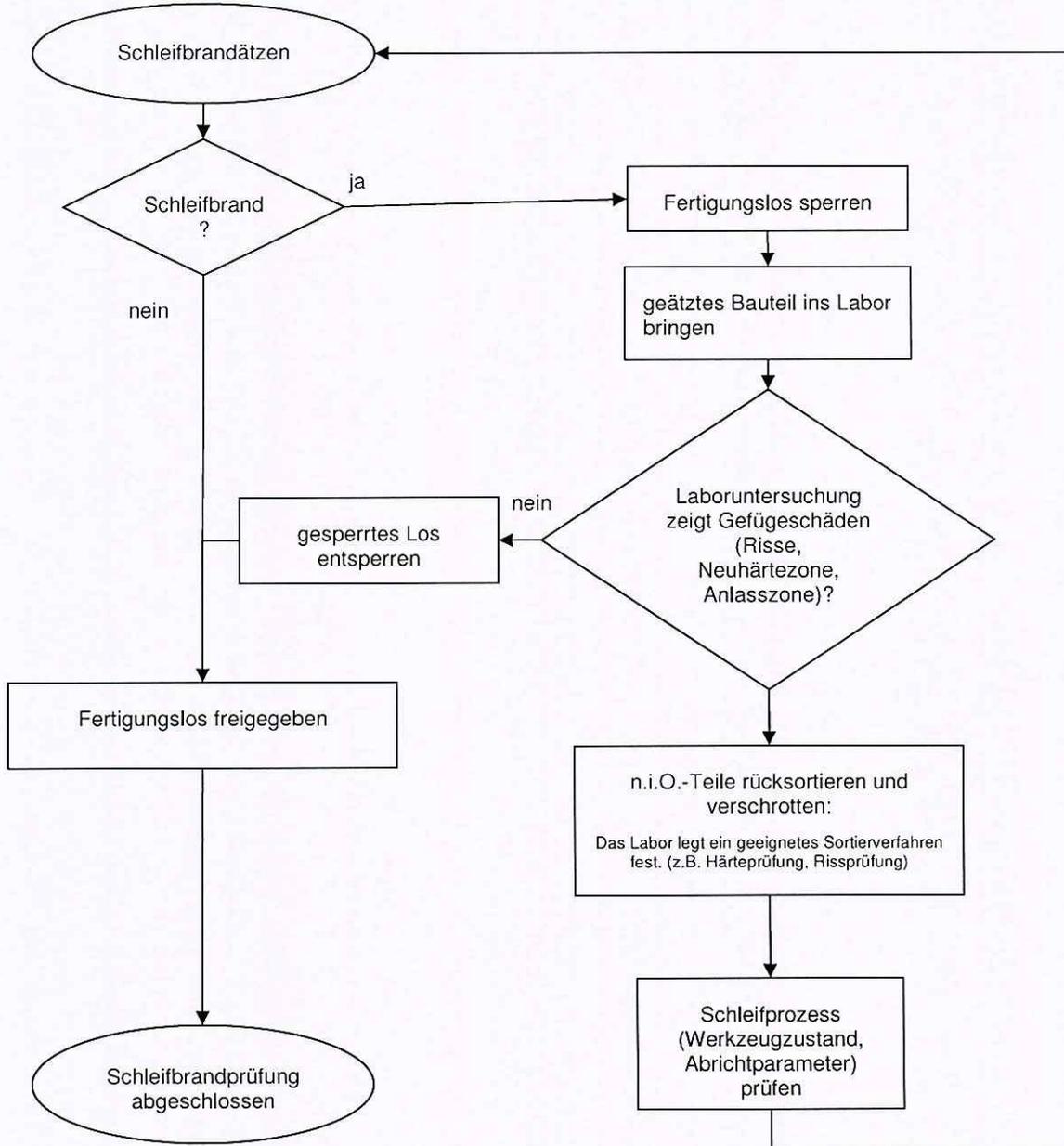
Bei konventionellen Schleifscheiben muss hierfür das letzte Teil vor dem Abrichten verwendet werden. Bei CBN-Werkzeugen, muss hierfür das letzte Teil vor dem Werkzeugwechsel geätzt werden.

 Printed copies are uncontrolled.  
 Ausdrucke unterliegen nicht dem Änderungsdienst.

GETRAG Group all rights reserved 2011		<b>Printed copies are uncontrolled</b>
Owner: Marc Wettlaufer / <a href="mailto:marc.wettlaufer@getrag.de">marc.wettlaufer@getrag.de</a> Department: Zentrale Technik	Security Classification: <b>CONFIDENTIAL</b>	Page: 2 / 9 Retention: 25.01/S + 12

Dieser Prüfzyklus stellt die Mindestanforderung dar und kann ggf. durch werkspezifische Arbeitsanweisungen oder Prüfpläne weiter verfeinert werden.

**4.2 Ablaufbeschreibung**



Printed copies are uncontrolled. Ausdrücke unterliegen nicht dem Änderungsdienst.

Kann aufgrund der Schleifbrandätzung nicht zweifelsfrei entschieden werden, dass kein Schleifbrand vorliegt, muss ein Schliff angefertigt werden. In jedem Fall ist das Labor einzubeziehen.

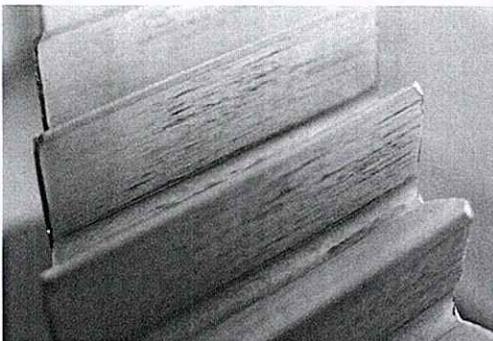
GETRAG Group all rights reserved 2011		<b>Printed copies are uncontrolled</b>
Owner: Marc Wettlaufer / <a href="mailto:marc.wettlaufer@getrag.de">marc.wettlaufer@getrag.de</a> Department: Zentrale Technik	Security Classification: <b>CONFIDENTIAL</b>	Page: 3 / 9 Retention: 25.01/S + 12

### 4.3 Durchführung

Teilschritt	Zeit	Badzusammensetzung
1. Entfetten		Entfettungsmittel Bauteile gut reinigen absolut fettfrei und trocken
2. Ätzen	4 min	5%ige ethanolische Salpetersäure $\text{HNO}_3$ (65%) mit Wasser gut abspülen
3. Nachätzen	8 min	10%ige ethanolische Salzsäure $\text{HCl}$ (32%) mit Wasser gut abspülen
4. Neutralisieren	4 min	15%ige ethanolische Ammoniaklösung $\text{NH}_3$ (25%) mit Wasser gut abspülen und trocknen
5. Konservierung		bei Weiterverwendung der Teile <ul style="list-style-type: none"> <li>Trotz des Prozesses mit Wasser Abspülen in Teilschritt 2 und 3 können, an einzelnen Bauteiloberflächenbereichen Säurereste zurückbleiben. Dies bewirkt weiteren Ätzangriff der Oberfläche, der zu Folgeschäden im Getriebebetrieb führen kann. Um dies zu verhindern, ist der Neutralisationsvorgang umgehend (innerhalb 30 min) nach Beendigung des Teilschritts 3 durchzuführen.</li> <li>Durch die Neutralisation und Konservierung lassen sich schleifbrandfreie Bauteile weiterverwenden. Versuche zeigten, dass eine Gefahr bezüglich Wasserstoffversprödung durch den Beiz- bzw. Ätzvorgang (Teilschritte 2 u. 3) nicht besteht. (Quelle: FVA - Vorhaben Nr. 100 „Wasserstoffversprödung“ 1986).</li> <li>Die Reihenfolge der Teilschritte ist einzuhalten.</li> <li>Da die Säuren im Alterungsprozess ihre Wirkung verlieren, sind die Bäder mit geeigneten Verfahren hinsichtlich ihrer Wirksamkeit zu überwachen und das Ergebnis ist in einem Kontrollbuch zu dokumentieren.</li> <li>Die Angaben über die Bäder bezüglich Neuansatz sind ebenfalls in einem Kontrollbuch zu dokumentieren.</li> </ul>

### 4.4 Aussehen

Schleifbrand erscheint im Vergleich zur helleren Gesamtoberfläche des geschliffenen Bereichs grundsätzlich als Dunkelfärbung (tiefschwarz bis dunkel schattiert). Diese dunklen Zonen können flächenartig, gezogen, sowie punktiert auftreten.



## 4.5 Auswertung und Nachweis

Die Veränderungen der Oberflächeneigenschaften können durch folgende Verfahren nachgewiesen werden:

- Mikrohärteprüfung im Schliff: Prüfkraft  $\leq 9,81$  N (HV 1)
- röntgenographische Spannungs-Dehnungs-Messung

## 5 NORMATIVE VERWEISE

### 5.1 Normative Verweise

- GN 3010 Klassifizierung und Kennzeichnung von Merkmalen in technischen Zeichnungen von Getrieben
- GCG\_803001 Merkmalsklassifizierung
- GR\_00017\_TEIL 1 Fehler-Möglichkeiten-und Einfluß-Analyse (FMEA)
- GR\_00017\_Teil 2 System-FMEA – Bedeutung der Fehlerfolgen auf Fahrzeugebene
- Werkspezifische Betriebsanweisungen der Schleifbrandätzlösungen

### 5.2 Quelle

Intern: Bitte kontaktieren Sie die Stelle für normative Dokumente in Ihrer Organisation.

Extern (z.B. Lieferanten): Bitte kontaktieren Sie Ihren Unternehmenskontakt für den Bezug von Unternehmensstandards.

## 6 ÄNDERUNGSANZEIGE

Änderung	Beschreibung	Seiten	Genehmigung	Datum
00	Neu-Erstellung	alle	Stefan Müller	2010-06-11
01	Seite 1 überarbeitet	1	Günter Braun	2011-02-08
	Englische Übersetzung vervollständigt	6-9		
	Normative Verweise überarbeitet	5, 9		

GETRAG Group all rights reserved 2011		<b>Printed copies are uncontrolled</b>
Owner: Marc Wettlaufer / <a href="mailto:marc.wettlaufer@getrag.de">marc.wettlaufer@getrag.de</a> Department: Zentrale Technik	Security Classification: <b>CONFIDENTIAL</b>	Page: 5 / 9 Retention: 25.01/S + 12

## 1 PURPOSE

In describing grinding burn etching, this standard essentially refers to grinding operations, but it also applies analogously to other fine machining operations.

## 2 APPLICATION AND SCOPE

The GN 04320 is applied to components (except for sintered parts) to be subjected to fine machining operations, particularly if referred to in the drawing or co-applicable production documents. This standard is valid for mass production for the entire GETRAG group and for suppliers performing fine machining operations.

## 3 DESCRIPTION

Grinding burn is the result of improper grinding operations. The risk of grinding burn exists basically in connection with any grinding process. Moreover, the detection of grinding burn defects by visual inspection is possible only conditionally. The only reliable method is a macro etching pattern or a hardness test of the surface layer.

In consequence of the fact, that little error contributions (= stochastically occurring grinding burn) require great deal of inspection effort are with the method of the common sample size only systematic errors identifiable.

### 3.1 Systematic defects and their causes

Consequently, grinding burn etching is a test to be performed whenever systematic changes or incidents occur. This should be specified in the general test instructions for a grinding process and in the relevant test instructions

Systematic changes, requiring grinding burn etching, are for example:

- Grinding wheel change
- Grinding tool change
- Process optimizations
- Revised tooling specifications
- Signs of coolant system malfunctions, reduced cooling efficiency
- Higher grinding allowance

### 3.2 Effects

- Reduced hardness in the surface zone: Reduced resistance to wear → Gearbox failures due to bearing damage etc
- Formation of micro cracks (grinding cracks): gearbox failures due to fatigue fracture of the deteriorated component

## 4 TESTING

### 4.1 Sampling

Per working day is to check one part of each part number, which is be grinded and a grinding burn check is given in the control plan. The check is to make after the last grinding operation. At this there must be checked all grinded areas !

For conventional grinding wheels therefore the last part before dressing must be used.

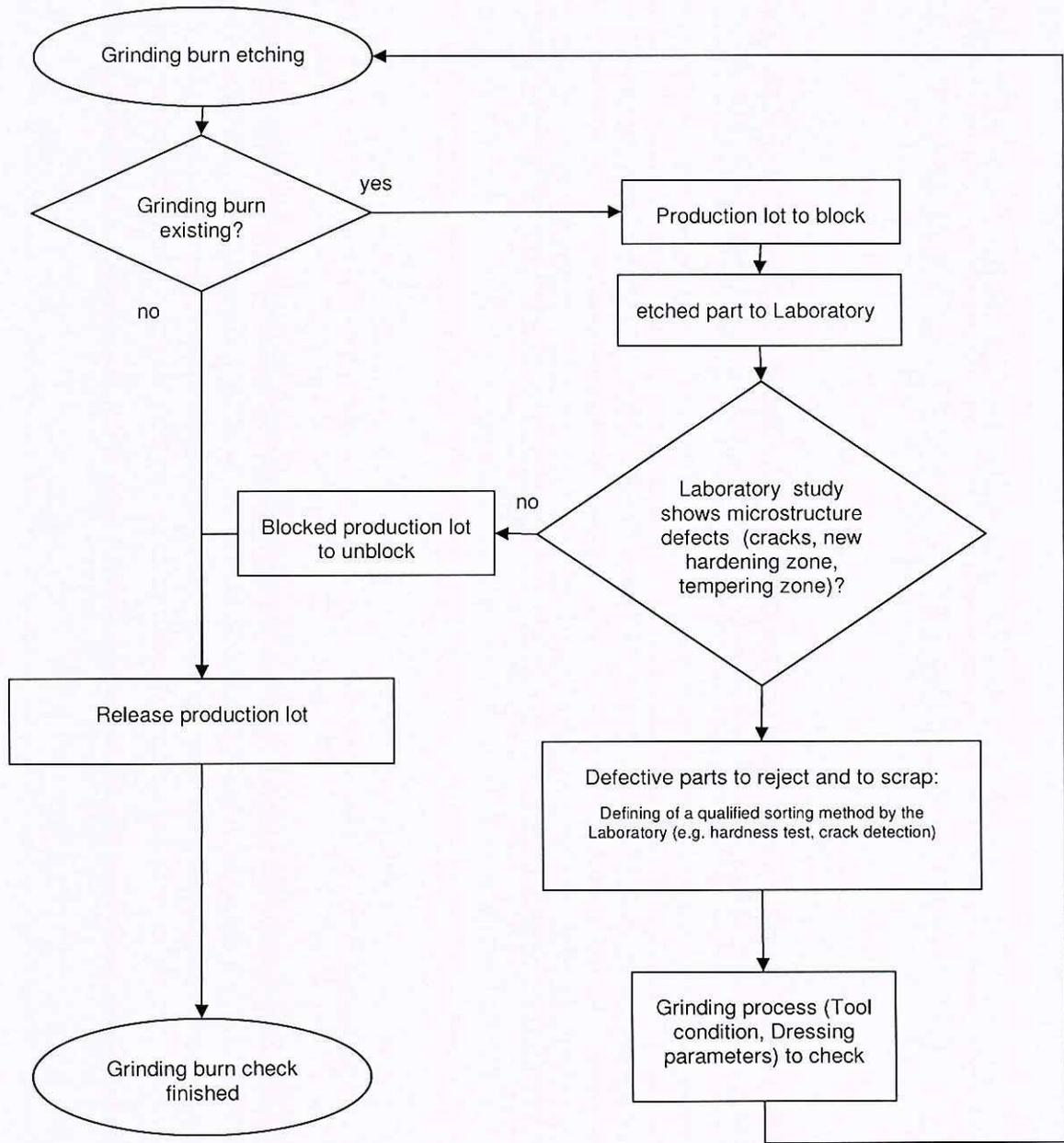
For CBN grinding tools therefore the last part before tool changing must be etched.

Printed copies are uncontrolled.  
Ausdrucke unterliegen nicht dem Aenderungsdienst.

GETRAG Group all rights reserved 2011		<b>Printed copies are uncontrolled</b>
Owner: Marc Wettlaufer / <a href="mailto:marc.wettlaufer@getrag.de">marc.wettlaufer@getrag.de</a> Department: Zentrale Technik	Security Classification: <b>CONFIDENTIAL</b>	Page: 6 / 9 Retention: 25.01/S + 12

This test cycle describes minimum requirement. In case of specific operating instruction or control plans, the test cycle must be sophisticated. Besides these general standards, the test cycles shall be defined by plant-specific working instructions or test schedules.

**4.2 Procedure (graphical description)**



Printed copies are uncontrolled. Ausdrücke unterliegen nicht dem Änderungsdienst.

### 4.3 Procedure

Step	Time	Bath composition
1. Degreasing		Degreasing agent Clean, degrease and dry components well
2. Etching	4 min	5% ethanolic nitric acid HNO <sub>3</sub> (65%) Rinse well with water
3. Re-etching	8 min	10% ethanolic hydrochloric acid HCL (32%) Rinse well with water
4. Neutralizing	4 min	15% ethanolic ammonia solution NH <sub>3</sub> (25%) Rinse well with water and dry
5. Conservation		for further use of the parts <ul style="list-style-type: none"> <li>• Despite the water rinsing process as in steps 2 and 3 residual acid may remain on individual component surface areas so that further surface edging attacks can occur and lead to consequential damage during the gearbox operation. To prevent such a condition, the neutralization process must be performed immediately (within 30 minutes) after completion of step 3.</li> <li>• Neutralization and conservation permit further use of components exhibiting no grinding burn. Test have shown that there exists no risk of hydrogen embrittlement as a result of the pickling or etching process (step 2 and 3) (source: FVA - Project No. 100 "hydrogen embrittlement" 1986).</li> <li>• The order of the individual steps shall be observed.</li> <li>• Because of the fact that the acids loose effect by aging, the effectiveness of the acid baths is to check with capable methods. The results of the checks are to document in a time-book.</li> <li>• The preparation specifications for new baths shall be documented in a control book.</li> </ul>

### 4.4 Grinding burn aspects of the etching pattern

Compared to the brighter overall surface of the ground area, grinding burn always has a darker aspect (deep black to dark shading). Such dark zones may take the form of flats, strings or dots.



GETRAG Group all rights reserved 2011		Printed copies are uncontrolled
Owner: Marc Wettlaufer / <a href="mailto:marc.wettlaufer@getrag.de">marc.wettlaufer@getrag.de</a> Department: Zentrale Technik	Security Classification: <b>CONFIDENTIAL</b>	Page: 8 / 9 Retention: 25.01/S + 12

#### 4.5 Evaluation and evidence

Any changes of the surface characteristics can be detected using the following techniques:

- Micro hardness test on grinding area: testing force  $\leq 9,81$  N (HV 1)
- radiographic stress-strain test

### 5 NORMATIVE REFERENCES

#### 5.1 Normative References

- GN 3010 Classification and identification of characteristics on engineering drawings of gearboxes
- GCG\_803001 Characteristic Classification
- GR\_00017\_TEIL 1 Potential-Failure-Mode-and-Effects-Analysis (FMEA)
- GR\_00017\_Teil 2 System-FMEA – failure effects of vehicle level
- Working instructions for acid solutions which are used for grinding burn etching

#### 5.2 Source

Internally: Please contact the normative Documents coordination of your organization.

Externally (e.g. suppliers): Please contact your company contact for obtaining company normative documents.

### 6 RECORD OF REVISION

Revision	Description	Pages affected	Approval	Date
00	New set up	all	Stefan Müller	2010-06-11
01	Page 1 revised	1		
	English translation completed	6-9		
	Normative references revised	5, 9	Günter Braun	2011-02-08

 Printed copies are uncontrolled.  
 Ausdrücke unterliegen nicht dem Änderungsdienst.

GETRAG Group all rights reserved 2011		<b>Printed copies are uncontrolled</b>
Owner: Marc Wettlaufer / <a href="mailto:marc.wettlaufer@getrag.de">marc.wettlaufer@getrag.de</a> Department: Zentrale Technik	Security Classification: <b>CONFIDENTIAL</b>	Page: 9 / 9 Retention: 25.01/S + 12

# Foglio QPS

Stabilimento	BARI	Data creazione	30/04/14
Reparto	GPS1 / GPS2 / WLQ2	QPS-N°	130101
Macchina	N. A.	Revisione-N°	2
Cambio Tipo (Elementi)	RETIFICA	Pagina	1 di 2
Tact time (Line)	00.00 min:sec	Componente/Variante	TUTTI
Stazione	relativo a (Loghi)	Elemento principale	(Fare riferimento a WES per fasi complesse)
man			
auto			
walk			

**Perché & Esperienza**  
(Sicurezza - Qualità - Ambiente)

Utilizzare esclusivamente i DPI indicati qui di fianco, idonei per l'utilizzo delle soluzioni presenti nelle vasche (vedi simboli di identificazione rischi chimici). Consigliabile l'utilizzo di indumenti a manica lunga o camicia da lavoro. L'armadio deve restare chiuso quando non in uso.

**Immagine / Spiegazione**

Step principale	Verifiche Dispositivi di Sicurezza	Verifica Livelli Soluzioni	Esecuzione Controllo
1	Indossare idonei occhiali di protezione e guanti antiacido. Attivare l'aspiratore ed attendere 5 minuti prima di aprire gli sportelli dell'armadio. Se già acceso, si può procedere subito con l'apertura.	Verificare che i livelli delle vasche siano sufficienti per la completa immersione del pezzo o della porzione di pezzo da controllare. Ripristinare, se necessario, il livello delle vasche contenenti acqua, utilizzando l'apposita manichetta. Nel caso in cui le soluzioni alcoliche siano insufficienti, avvertire Coordinatore e Laboratorio.	Immergere il pezzo da controllare nelle 8 vasche, utilizzando esclusivamente l'idoneo gancio, attenendosi rigorosamente alla sequenza ed ai tempi indicati nello schema. Nel caso in cui il pezzo non dovesse annerirsi dopo l'immersione nella vasca 3 (soluzione di acido nitrico), sospendere il controllo ed avvertire Coordinatore e Laboratorio (le soluzioni potrebbero essere esauste).
2			Lo schema riproduce la posizione reale delle vasche guardando frontalmente l'armadio. Sollevare il coperchio dei singoli fusti solo per il tempo necessario ad immergere i particolari. Immergere i pezzi con cautela onde evitare schizzi. Tenere chiuso l'armadio durante le fasi più lunghe (immersione nelle vasche 3, 5 e 7).
3			

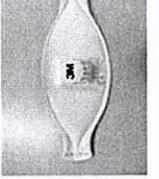


**IRRITANTE**





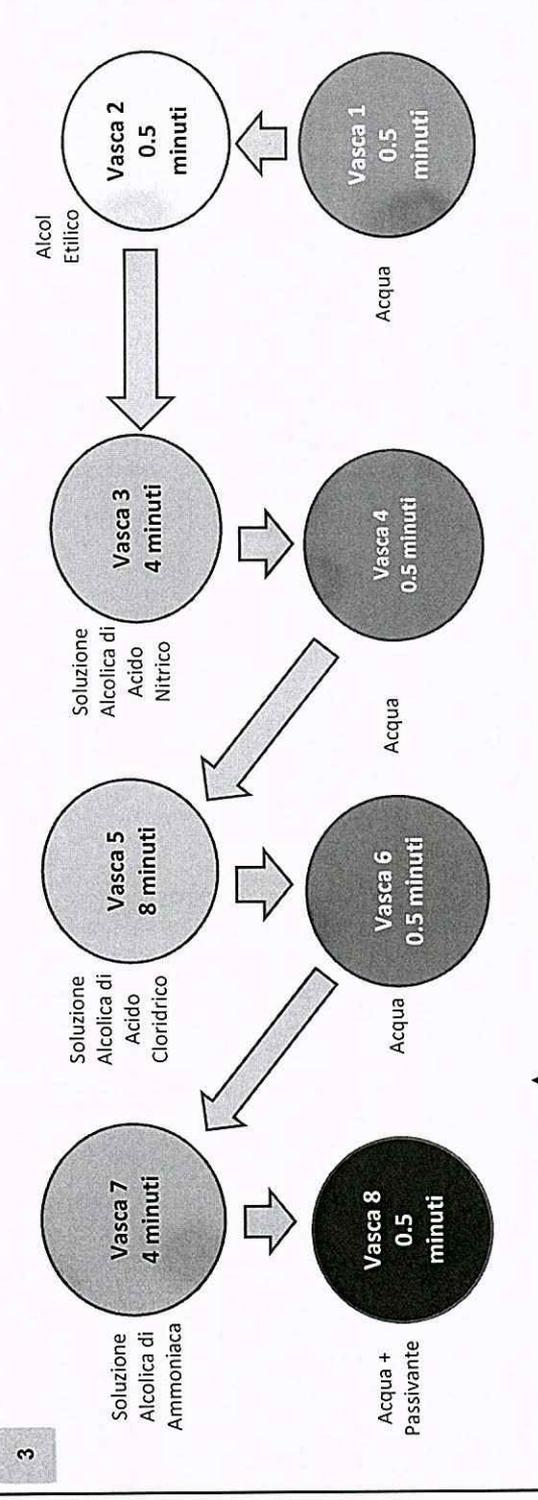
**INFIAMMABILE**





**CORROSIVO**







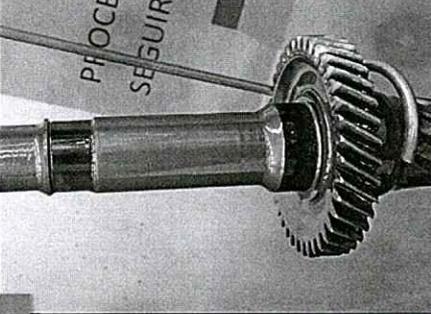
Occhiale a maschera (Pulsafe)



Respiratore (9332) Classe FFP3 in polipropilene + valvola



Guanti antiacido in neoprene Neotop



Aspetto normale del pezzo dopo immersione nella vasca 3 (zone retificate annerite)

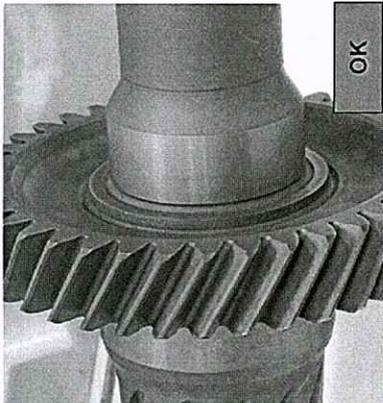
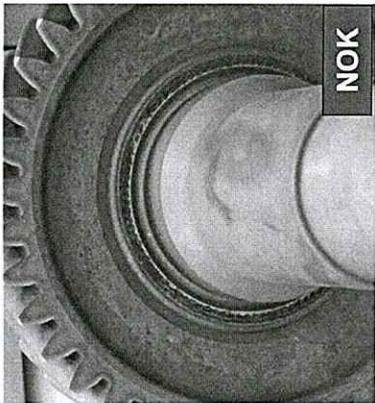
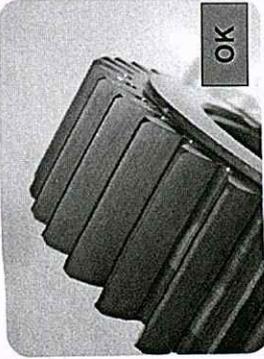
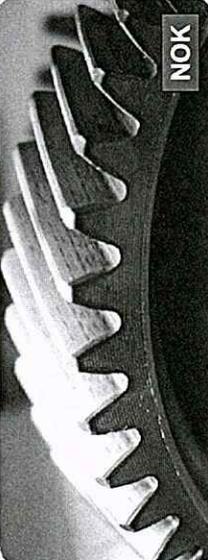
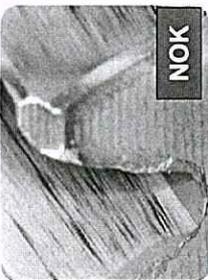
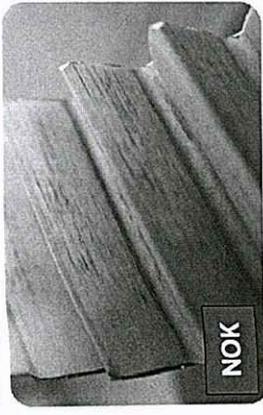
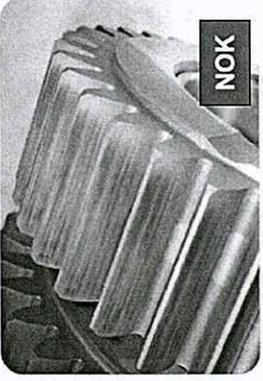
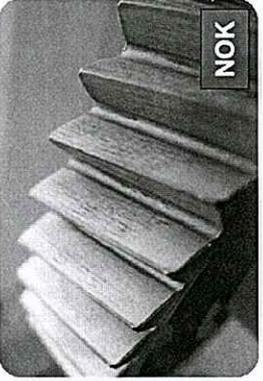
**DPI necessari**

00:00 | 00:00 | 00:00

**Loghi**

Condizioni critiche  
  Sicurezza  
  Controllo qualità  
  Consegne  
  Costi  
  Inventario  
  Ambiente

**Gestione ambientale**

Foglio QPS		BARI	Data creazione	30/04/14	
Stabilimento		GPS1 / GPS2 / WLQ2	QPS-N°	130101	
Reparto		N. A.	Revisione-N°	2	
Macchina		RETIFICA	Pagina	2 di 2	
Processo (OP-N°)		TUTTI	Tipo modello	TUTTI	
Tact time (Line)		00:00 min:sec	Componente/variante	TUTTI	
Step principale		<p><b>Elemento principale</b> (Fare riferimento a WES per fasi complesse)</p>			
Fase N°		<p><b>Perché &amp; Esperienza</b> (Sicurezza - Qualità - Ambiente)</p>			
1	Ispezione Superfici	<p>In caso di risultato NOK, allertare immediatamente il Coordinatore. Il pezzo controllato NOK dev'essere portato in Laboratorio per un esame metallurgico approfondito. I pezzi prodotti fino al controllo precedente OK devono essere registrati e trattati secondo il capitolo 2.3.5.8 del Manuale della Qualità (Procedura di gestione dei prodotti affetti da problemi di qualità).</p>			
2	Stoccaggio Particolari Controllati	<p>Il pezzo controllato con esito OK dev'essere lasciato presso la postazione controllo bruciature identificato (indicando la macchina di provenienza, giorno e turno del controllo), fino al controllo successivo.</p>			
<p><b>4</b></p>  <p><b>OK</b></p>  <p><b>NOK</b></p>  <p><b>NOK</b></p>		<p><b>4</b></p>  <p><b>OK</b></p>  <p><b>NOK</b></p>  <p><b>NOK</b></p>  <p><b>NOK</b></p>  <p><b>NOK</b></p>  <p><b>NOK</b></p>			

### Foglio QPS - Approvazione, Training e storia delle modifiche

CREAZIONE / AGGIORNAMENTO (obbligatorio)		DIPENDE DALLA NORMATIVA E/O DALL'ORGANIZZAZIONE DELLO STABILIMENTO					
Responsabile del processo	Produzione *	Sicurezza	Produttività	Qualità	Ambiente	Manutenzione	Ergonomia
F. Guerra	F. Spezzacatena	F. Guerra					
Supervisor Lab	Manager Qualità	Supervisor Lab					
18/05/2017	18/05/2017	18/05/2017					
F. Guerra	F. Spezzacatena	F. Guerra					

\* Rappresentante di produzione che può essere GPS Leader o Supervisore  
Attestazione di training (vedi modulo registrazione training)

Operatore	Data e firma	Operatore	Data e firma	Operatore	Data e firma	Operatore	Data e firma	Operatore	Data e firma	Operatore	Data e firma
<b>NON NECESSARIO; UTILIZZARE IL MODULO DI REGISTRAZIONE FORMAZIONE COD. G_F13_0009_07</b>											

### Storia delle modifiche

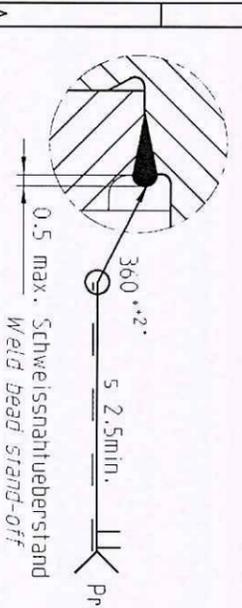
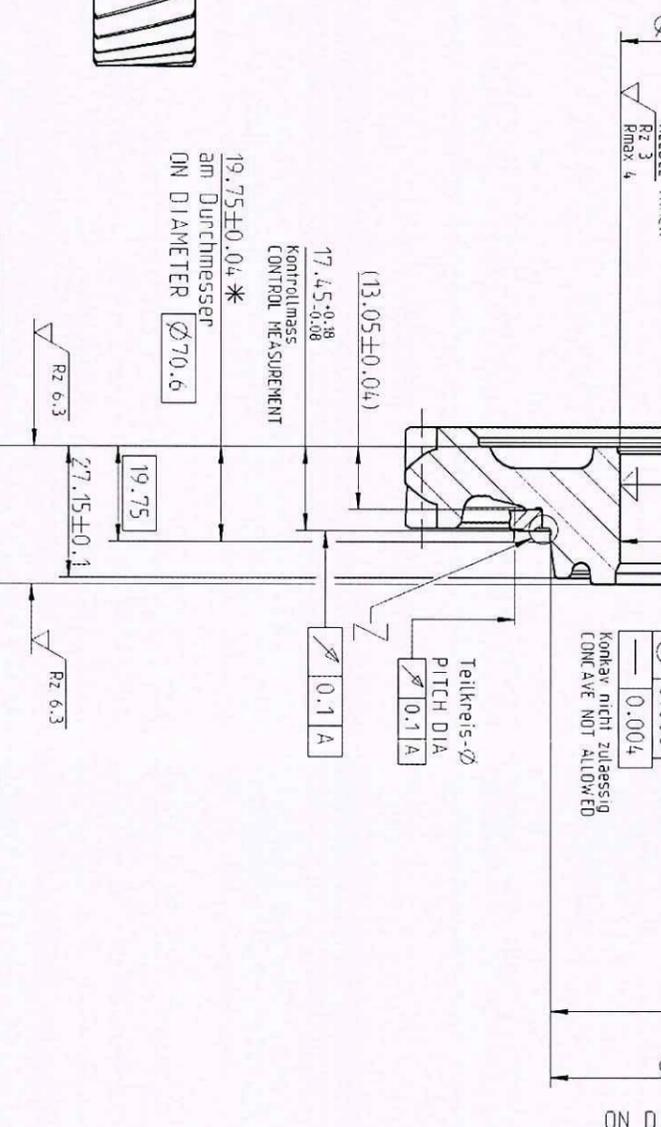
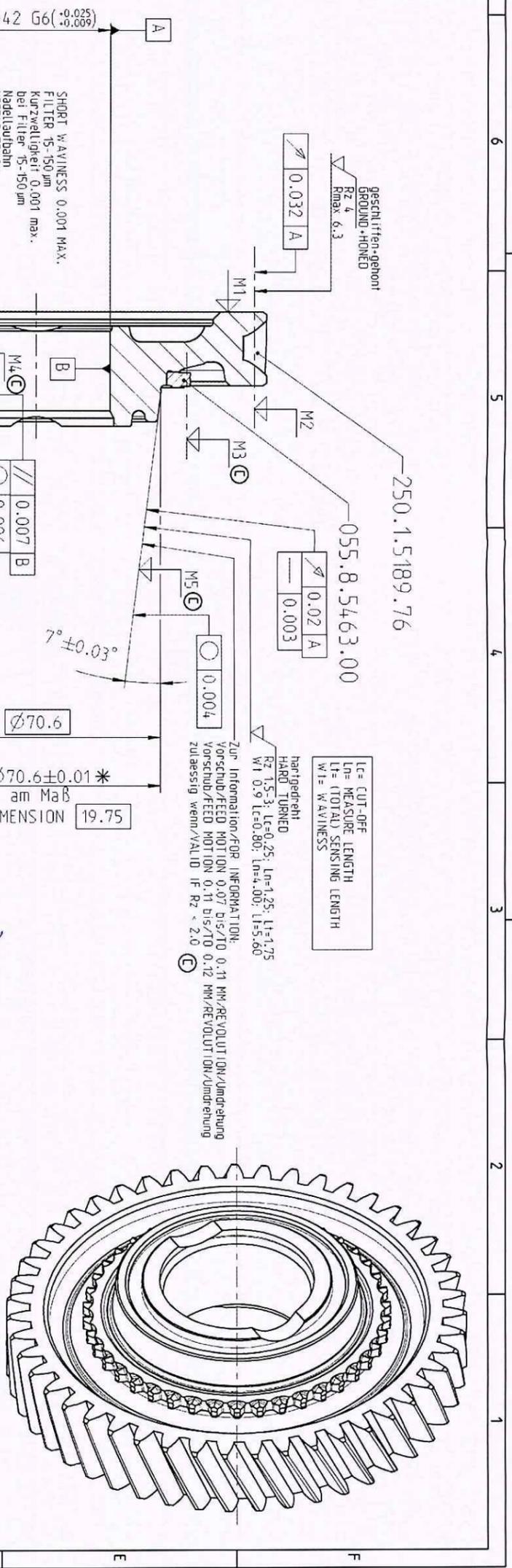
Tutte le date di attestazione del training devono essere successive alle date delle modifiche

N°	Data	Causa della modifica	Contenuto del cambiamento	N°	Data	Causa della modifica	Contenuto del cambiamento
0	30.04.14	creato/modificato da F. Guerra / WLQZ					
1	01.09.16	aggiornamento con esempi	aggiunte foto da casi reali				
2	18.05.17	trasposizione nel nuovo formato	formato				

### Revisione annuale del foglio QPS

Verificare le seguenti fasi:  
Contenuto/sequenza delle attività sono ancora validi  
I valori dei tempi sono ancora validi  
I tool da usare sono corretti

Data	responsabile del processo						



CHECKED ACCORDING ENGINEERING SPECIFICATION S 357R-7M161-AA. DEVIATION FROM THIS SPECIFICATION: LONGITUDINAL MICRO CRACKS IN THE WELDING MATERIAL ARE PERMISSIBLE TO A TOTAL OF 2% AROUND THE CIRCUMFERENCE.

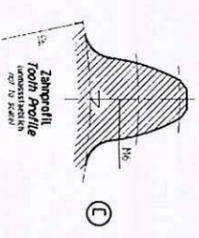
@@ Technische Sauberkeit / TECHNICAL CLEANLINESS:  
 Es gelten die Anforderungen nach GN 4340-1  
 CLEANLINESS REQUIREMENTS OF THE GN 4340-1 HAVE TO BE ABIDED  
 Feuer Getrag internen Gebrauch / FOR GETRAG INTERNAL USE  
 Bauteiloberfläche fuer Pruefung / SURFACE TO PROVE:  
 545 cm<sup>2</sup>

DWG EXAMPLES  
 FOR ALL GEARST, ALL VARIANTS

@ Feuer geschliffene Oberflächen, kein Schleifbrand erlaubt.  
 Schleifbrandätzung nach GN\_04320.  
 IN CASE OF GROUND SURFACES, GRINDING BURNS NOT ALLOWED.  
 ETCHING TEST ACCORDING TO GN\_04320.

Naehere Angaben zur Verzahnung  
 siehe Verzahnungsblatt  
 250.15189.76  
 FURTHER GEAR DATA SEE  
 DATA SHEET NUMBER  
 250.15189.76

\* wahlweise Messung  
 ALTERNATIVE MEASUREMENT



einsetzgehaertet und angelassen nach 6.804002  
 CASE HARDENED AND TEMPERED ACCORDING TO 6.804002  
 M1 (Oberflaechenhaerte/CASE HARDNESS) : 80.5+2.5 HRA  
 M2 (Zahnflanke/TOOTH FLANK) : CHD (Eh) 550+0.5+0.4  
 M3 (Zahnflanke/TOOTH FLANK) : CHD (Eh) 550+0.5+0.4  
 M4 (Bohrung/BORE) : CHD (Eh) 550+0.3min.  
 M5 (Konus/CONE) : CHD (Eh) 550+0.4+0.4  
 M6 (Kernhaerte/INSIDE BASE OF TOOTH) : min. 300 HV10

GC/G	0	<M>	<H>	<L>	<A>	0	<A>	0	<H>	<L>	<A>	0	<H>	<L>	<A>	0	<H>	<L>	<A>													
GN 3010	0	<H>	d	1x	000260-mp-1	C3:Texti Schleifbrand hinzu/TEXT GRINDING BURNS ADDED	0	<L>	5x	E00468-mp-1	E03: Text-Zur Information/ZUR INFORMATION: Verschub/FEED POSITION... hinzu/ADDED. B.z. CHD SYMBOL SHUB/SHUB/FEED POSITION...	0	<A>	1x	350088	Technische Sauberkeit/TECHNICAL CLEANLINESS aktualisiert/UPDATED	0	<H>	2x	E00055-ep-12	Gruebung fuer Hartboeren hinzu / TURNING DEPRESSION FOR HARD TURNING ADDED Sensitivitaet/SENSITIVITY Level: approved	0	<L>	3	2x	E00055-ep-12	Gruebung fuer Hartboeren hinzu / TURNING DEPRESSION FOR HARD TURNING ADDED Sensitivitaet/SENSITIVITY Level: approved	0	<A>	1x	350088	Technische Sauberkeit/TECHNICAL CLEANLINESS aktualisiert/UPDATED