



31454

Part Name: Speed Gear 5 Cust. Part No.: 251.1.1228.50
 Shown on Drawing No.: 251.1.1228.50 Org. Part No.: 251.1.1228.50
 Engineering Change Level: 3 Index "-" (C005149_MIP_1) Dated: 19/07/2016
 Additional Engineering Changes: na Dated: na
 Safety and/or Government Regulation: Yes No Purchase Order No.: _____ Weight (kg): 0.459
 Checking Aid No.: na Checking Aid Engineering Change Level: na Dated: na

ORGANIZATION MANUFACTURING INFORMATION

CUSTOMER SUBMITTAL INFORMATION

Getrag S.p.A.
 Organization Name & Supplier / Supplier Code

Bari assembly line (GPS4)
 Customer Name / Division

Via dei Ciclamini, 4
 Street Address

na
 Buyer / Buyer Code

Modugno (Ba) Puglia 70026 Italy
 City Region Postal Code Country

DCT300
 Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? Yes No n/a
 Submitted by IMDS or other customer format:
 (IMDS=International Material Data System)

Are polymeric parts identified with appropriate ISO marking codes? Yes No n/a

REASON FOR SUBMISSION (Check at least one)

- Initial Submission
- Engineering Change(s)
- Tooling: Transfer, Replacement, Refurbishment, or additional
- Correction of Discrepancy
- Tooling Inactive > than 1 year
- Change to Optional Construction or Material
- Supplier or Material Source Change
- Change in Part Processing
- Parts Produced at Other or Additional Location
- Other - please specify below (e.g. additional specific customer requirement or e.g. change of EP parts)

REQUESTED SUBMISSION LEVEL (Check one)

- Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.
- Level 2 - Warrant with product samples and limited supporting data submitted to customer.
- Level 3 - Warrant with product samples and complete supporting data submitted to customer.
- Level 4 - Warrant and other requirements as defined by customer.
- Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.

SUBMISSION RESULTS

The results for: dimensional measurements material and functional tests appearance criteria statistical process package
 These results meet all drawing and specification requirements: Yes No (If "NO" - Explanation Required)
 Mold / Cavity / Production Process na

DECLARATION

I hereby affirm that the samples represented by this warrant are representative of our parts which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of 163 / 8 hours. I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from the declaration below.

EXPLANATION / COMMENTS: - First PPAP Submission (only differences from variant 251.1.1089.51).
 - Identification grooves deleted in according with change C006077

Is each Customer Tool properly tagged and numbered? Yes No n/a

Organization Authorized Signature: _____ Date: 10/01/2018

Print Name: Tursi Dario Maria Phone No.: +39 0805858360 Fax No.: _____

Title: 7DCT300 Launch Manager E-Mail: dario.tursi@magna.com

FOR CUSTOMER USE ONLY (if applicable))

Part Warrant Disposition: Approved Rejected Other

Customer Signature: _____ Date: 10.01.18

Print Name: _____ Customer Tracking No.: _____

New P/N introduction - 1228.50

Short description: Initial PPAP (only differences from 1089)

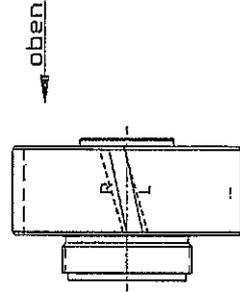
PPAP Requirements		Required	Note	PPAP Docs updated
1	Design Records	Yes	Final Drawing + G.D. + VBZ	Yes
2	Authorized Engineering change documents	Yes	— see dwg	Yes
3	Customer Engineering approval	n.a.		
4	DFMEA	NO		
5	Process flow diagram(s)	Yes		Yes
6	PFMEA	Yes		Yes
7	Control plan	Yes		Yes
8	Measurement system analysis studies	Yes	Studio Tipo 1 per MdK	Yes
9	Dimensional results	Yes		Yes
10	Records of Material / Performance test results	NO		
11	Initial process studies	Yes	Ppk for MdK and Fr	Yes
12	Qualified laboratory documentation	NO		
13	Appearance Approval Report (A.A.R.)	n.a.		
14	Sample Production Parts	Yes		Yes
15	Master sample	Yes		Yes
16	Checking aids	n.a.		
17	Customer-Specific Requirements	NO		
18	Part Submission Warrant (PSW)	Yes		Yes

Other requirements			
1	PSW Raw part	NO	
2	PSW E.P. part	NO	
3	PSW Engagement Rings	NO	

10/01/2018

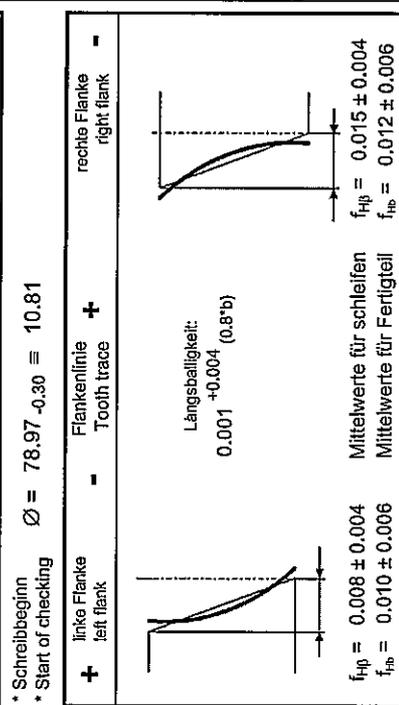
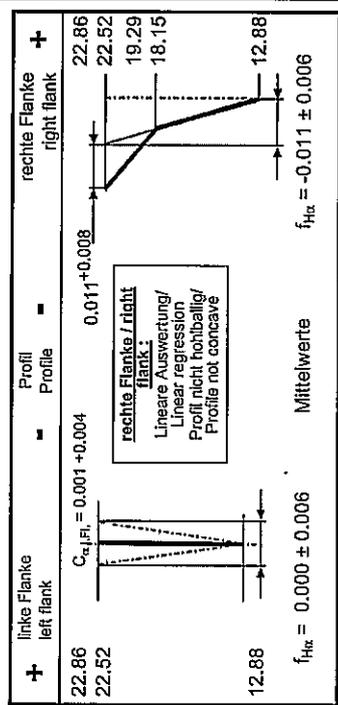
STIRNRAD GEAR		Toleranzen der Verzahnung (DIN 3981 vom Aug. 1978) gültig für Wellen mit Einzelzahn Tolerances of gearing (DIN 3981 of Aug. 1978) valid for values at individual tooth	
außenverzähnt external		linke Fl. left flank	rechte Fl. right flank
Zähnezahl Number of teeth	40	0.005	0.010
Modul Normal module	1.750000		0.010
Eingriffswinkel Normal pressure angle	17° 30' 0"		0.010
Schrägungswinkel Helix angle	30° 0' 0"	0.000 ± 0.010	0.012
Steigungsrichtung Hand of helix	LINKS	0.010 ± 0.010	
Profilverschiebungsfaktor Addendum modification coeff.	x		
Teilkreisdurchmesser Pitch diameter	d		
Kopfkreisdurchmesser Outside diameter	d _a		
Kopfnutkreisd. theo. max. d _{ha} Tip diam. usable theo.	88.65		
Kopfnutkreisd. theo. min. d _{ha} Tip diam. usable theo.	88.30		
Fußkreisdurchmesser Root diameter	d _f		
Fußnutkreisdurchmesser Root diameter usable	80.20		
Grundkreisradius Base circle radius	r _b		
Grundkreisdurchmesser Base diameter	d _b		
Normalzahnstärke max. s _p Normal tooth thickness	4.020		
Normalzahnstärke min. s _n Normal tooth thickness	3.995		
Meßzähnezahl Number of teeth spanned	k		
Zahnweite max. W _k Base tangent length	41.534		
Zahnweite min. W _k Base tangent length	41.510		
Meßkugeldurchmesser Ball diameter	D _k		
Diam. Zweikugelmäß max. M _{dk} Measurement o. balls	88.320		
Diam. Zweikugelmäß min. M _{dk} Measurement o. balls	88.260		
Verdreiflankenspiel Circumferential backlash	0.065 0.166		

Toleranzen der Verzahnung (DIN 3981 vom Aug. 1978) gültig für Wellen mit Einzelzahn Tolerances of gearing (DIN 3981 of Aug. 1978) valid for values at individual tooth		linke Fl. left flank	rechte Fl. right flank
Profil-Formabweichung Profile form error	f _{fa}	0.005	0.010
Profil-Gesamtabweichung Total profile error	F _{pa}		
Profil-Winkelabweichung Profile angle error	f _{fa}	0.000 ± 0.010	0.012
Flanken-Winkelabweichung Tooth alignment error	f _{fb}	0.010 ± 0.010	
Flanken-Gesamtabweichung Total alignment error	F _{pb}		
Flanken-Formabweichung Longitudinal alignment err.	f _{fp}	0.005	
Teilungs-Gesamtabweichung Cumulative pitch error	F _p	0.045	
Einf.-Wälzabweichung Tangential composite error	F _r		
Einflanken-Wälzsprung Tang. tooth to tooth comp. err.	f _r		
Radbreite im Meßkreis d _W Facewidth in meas. diam.	b	15.04	



Toleranzen der Verzahnung (DIN 3981 vom Aug. 1978) gültig für Wellen mit Einzelzahn Tolerances of gearing (DIN 3981 of Aug. 1978) valid for values at individual tooth		linke Fl. left flank	rechte Fl. right flank
Profil-Formabweichung Profile form error	f _{fa}	0.005	0.010
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Radbreite im Meßkreis d _W Facewidth in meas. diam.	b	15.04	

Toleranzen der Verzahnung (DIN 3981 vom Aug. 1978) gültig für Wellen mit Einzelzahn Tolerances of gearing (DIN 3981 of Aug. 1978) valid for values at individual tooth		linke Fl. left flank	rechte Fl. right flank
Profil-Formabweichung Profile form error	f _{fa}	0.005	0.010
Profil-Gesamtabweichung Total profile error	F _{pa}		
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Einf.-Wälzabweichung Tangential composite error	F _r		
Einflanken-Wälzsprung Tang. tooth to tooth comp. err.	f _r		
Radbreite im Meßkreis d _W Facewidth in meas. diam.	b	15.04	



* Start of checking $\varnothing = 78.97 - 0.30 \approx 10.81$

linke Flanke left flank

rechte Flanke right flank

Flankenlinie Tooth trace

Längsbiegeligkeit: 0.001 ± 0.004 (0.8°b)

Mittelwerte für schleifen $f_{fp} = 0.008 \pm 0.004$

Mittelwerte für Fertigteil $f_{fb} = 0.010 \pm 0.006$

* f_{fa} (zwischen d_{nf} und dem Schreibbeginn ds) max f_{fa}/2, jedoch 0.003 zulässig

* f_{fb} (zwischen d_{nf} und dem Schreibbeginn ds) max f_{fb}/2, 0.003 allowable.

Profil- und Flankenliniennormung nach G_808006 und VDI/VDE 2612

Flankenliniennormbereich L_f = 0.8*b hochgerechnet auf 1.0*b

Begriffe für Stirnräder nach DIN 868, 3980, 3998

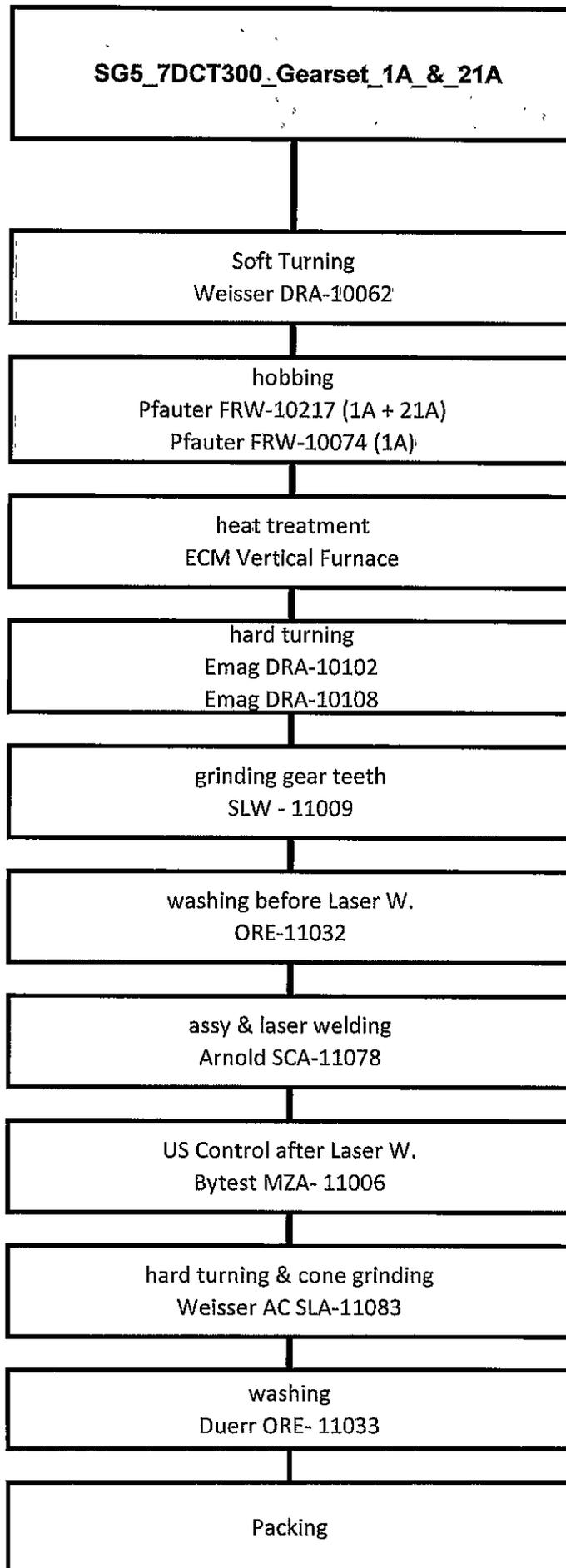
Profil- und helix checking according to G_808006 and VDI/VDE 2612

Tooth trace testing area L_f = 0.8*b calculated to 1.0*b

Terms of the tooth system according to DIN (German Industrial Standards) No. 868, 3980, 3998

Toleranzen der Verzahnung (DIN 3981 vom Aug. 1978) gültig für Wellen mit Einzelzahn Tolerances of gearing (DIN 3981 of Aug. 1978) valid for values at individual tooth		linke Fl. left flank	rechte Fl. right flank
Profil-Formabweichung Profile form error	f _{fa}	0.005	0.010
Profil-Gesamtabweichung Total profile error	F _{pa}		
Profil-Winkelabweichung Profile angle error	f _{fa}	0.000 ± 0.010	0.012
Flanken-Winkelabweichung Tooth alignment error	f _{fb}	0.010 ± 0.010	
Flanken-Gesamtabweichung Total alignment error	F _{pb}		
Flanken-Formabweichung Longitudinal alignment err.	f _{fp}	0.005	
Teilungs-Gesamtabweichung Cumulative pitch error	F _p	0.045	
Einf.-Wälzabweichung Tangential composite error	F _r		
Einflanken-Wälzsprung Tang. tooth to tooth comp. err.	f _r		
Radbreite im Meßkreis d _W Facewidth in meas. diam.	b	15.04	

Toleranzen der Verzahnung (DIN 3981 vom Aug. 1978) gültig für Wellen mit Einzelzahn Tolerances of gearing (DIN 3981 of Aug. 1978) valid for values at individual tooth		linke Fl. left flank	rechte Fl. right flank
Profil-Formabweichung Profile form error	f _{fa}	0.005	0.010
Profil-Gesamtabweichung Total profile error	F _{pa}		
Profil-Winkelabweichung Profile angle error	f _{fa}	0.000 ± 0.010	0.012
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Einf.-Wälzabweichung Tangential composite error	F _r		
Einflanken-Wälzsprung Tang. tooth to tooth comp. err.	f _r		
Radbreite im Meßkreis d _W Facewidth in meas. diam.	b	15.04	



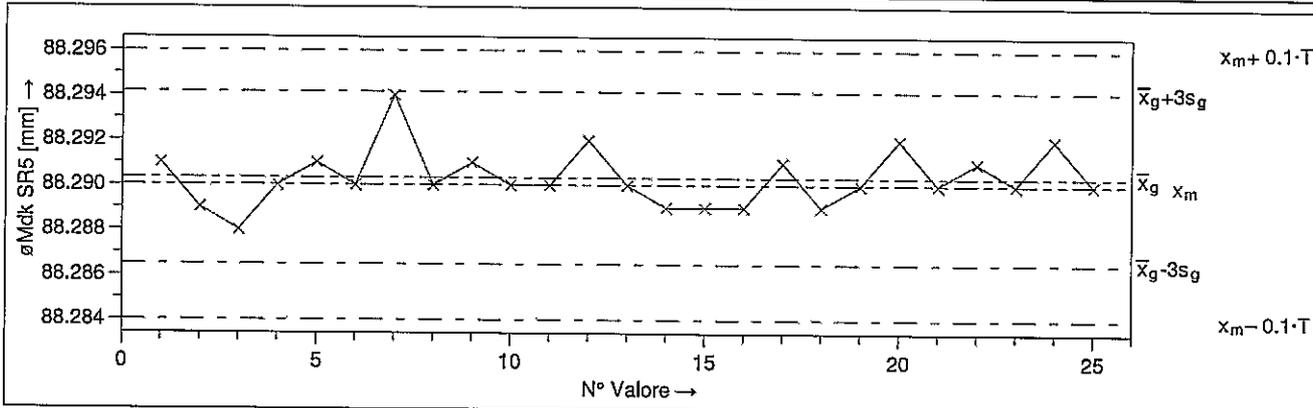
DCT300 – GEARSSET: PFMEA RPN Status

GETRAG		FMEA Processo		Numero: Pagina: Emesso:	12.1.1.1 3108/2015
Tipo/Modello/Produzione/Lotto: 7DCT300		Numero Disegno: Gearsset TA + 21A Stato modifica:	Responsabile: Getrag Dlter: Getrag		
FMEA Elemento: GEARSSET 7DCT300		Codice dell'operazione: Tutto Stato modifica:	Responsabile: Papagna, Osorno, NDI, Ciarelli, Tamzi T., Terlizza, Landiscina, Guarna, Sinterfeld, Capomio, Vicenti, Picerno, PIANO Dlter:	Emesso: Modificato: 13/01/2017 20/11/2017	





Data/ora	11/11/2017	Nome oper.	G.Sette	Reparto/Area/Prod.	NN	Posto di prova	Rettilifica denti DCT
Calibro		Master		Caratteristica			
Desc. calibro	Banchetto in acciaio	Desc. mast.	SR5	Desc. Car.	øMdk SR5		
N° calibro	MVZ 406001 020	N° master	MVZ 400566 002	N° Caratt.	2511122950		
Ris. calibro	0.001	Valore reale mast	88.29	Val. Nom	88.290	LSS	88.320 $\hat{=} 0.030$
Caus. Pr.	Cg CgK	Unità di misura	mm	Unità di r mm	LSI	88.260	$\hat{=} -0.030$
Nota	Banchetto øMdk MVZ 406001 020 per ruote dentate DCT 300 hard						



i	x _i	i	x _i	i	x _i	i	x _i	i	x _i
1	88.291	6	88.290	11	88.290	16	88.289	21	88.290
2	88.289	7	88.294	12	88.292	17	88.291	22	88.291
3	88.288	8	88.290	13	88.290	18	88.289	23	88.290
4	88.290	9	88.291	14	88.289	19	88.290	24	88.292
5	88.291	10	88.290	15	88.289	20	88.292	25	88.290

Valori a disegno		Valori Calcolati		Statistiche	
$x_{m+0.1 \cdot T}$	= 88.29600	$x_{max\ g}$	= 88.294	$\bar{x}_g + 3s_g$	= 88.29417
x_m	= 88.29000	$x_{min\ g}$	= 88.288	\bar{x}_g	= 88.29032
$x_{m-0.1 \cdot T}$	= 88.28400	R_g	= 0.006	$\bar{x}_g - 3s_g$	= 88.28647
$0.2 \cdot T$	= 0.01200	n_{tot}	= 25	$6s_g$	= 0.00769
T	= 0.060			s_g	= 0.00128
Unità di misura	= mm			$ Bi $	= 0.00032000
				n_{eff}	= 25

Test per Bias			Risultati del test : non significativo
Bias	=	0.53%	

Minimo riferimento per sistema di misura capace				
Risoluzione	%RE = 1.67%		$T_{min} (\%RE)$	= 0.0200
$\%EV = \frac{EV}{T}$	= 12.82%		$T_{min} (\%EV)$	= 0.154
$C_g = \frac{0.2 \cdot T}{4 \cdot s_g}$	= $1.68 \leq 2.34 \leq 3.00$		$T_{min} (C_g)$	= 0.0341
$C_{gk} = \frac{0.1 \cdot T - \bar{x}_g - x_m }{2 \cdot s_g}$	= $1.58 \leq 2.22 \leq 2.86$		$T_{min} (C_{gk})$	= 0.0373

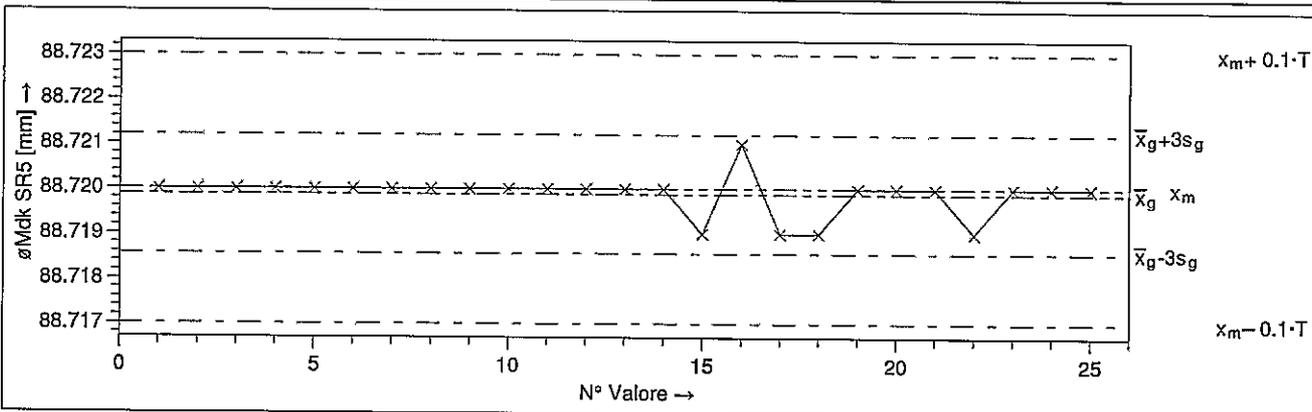
Sistema di misura capace (%RE,min,C_g,C_{gk})

GETRAG MSA 2017: Capability of measuring system (Type-1 Study)



Capacità strumenti di misura

Data/ora	13/11/2017	Nome oper.	G.Sette	Reparto/Area/Prod.	NN	Posto di prova	Dentatura SR5
Calibro		Master			Caratteristica		
Desc. calibro	Banchetto in acciaio	Desc. mast.	SR5	Desc. Car.	øMdk SR5		
N° calibro	MVZ 406001 004	N° master	MVZ 400566 001	N° Caratt.	2511122950		
Ris. calibro	0.001	Valore reale mast	88.72	Val. Nom	88.720	LSS	88.735 $\hat{=}$ 0.015
Caus. Pr.	Cg CgK	Unità di misura	mm	Unità di n mm	LSI	88.705 $\hat{=}$ -0.015	
Nota	Banchetto øMdk MVZ 406001 004 per ruote dentate DCT 300 soft						



i	x_i	i	x_i	i	x_i	i	x_i	i	x_i
1	88.720	6	88.720	11	88.720	16	88.721	21	88.720
2	88.720	7	88.720	12	88.720	17	88.719	22	88.719
3	88.720	8	88.720	13	88.720	18	88.719	23	88.720
4	88.720	9	88.720	14	88.720	19	88.720	24	88.720
5	88.720	10	88.720	15	88.719	20	88.720	25	88.720

Valori a disegno		Valori Calcolati		Statistiche	
$x_{m+0.1 \cdot T}$	= 88.72300	$x_{max g}$	= 88.721	$\bar{x}_g + 3s_g$	= 88.72120
x_m	= 88.72000	$x_{min g}$	= 88.719	\bar{x}_g	= 88.71988
$x_{m-0.1 \cdot T}$	= 88.71700	R_g	= 0.002	$\bar{x}_g - 3s_g$	= 88.71856
$0.2 \cdot T$	= 0.00600	n_{tot}	= 25	$6s_g$	= 0.00264
T	= 0.030			s_g	= 0.000440
Unità di misura	= mm			$ B $	= 0.00012000
				n_{eff}	= 25

Test per Bias			Risultati del test : non significativo
Bias	=	0.40%	

Minimo riferimento per sistema di misura capace			
Risoluzione	%RE =	3.33%	$T_{min} (\%RE) = 0.0200$
$\%EV = \frac{EV}{T}$	=	8.79%	$T_{min} (\%EV) = 0.0528$
$C_g = \frac{0.2 \cdot T}{4 \cdot s_g}$	=	2.45 ≤ 3.41 ≤ 4.37	$T_{min} (C_g) = 0.0117$
$C_{gk} = \frac{0.1 \cdot T - \bar{x}_g - x_m }{2 \cdot s_g}$	=	2.34 ≤ 3.27 ≤ 4.21	$T_{min} (C_{gk}) = 0.0129$

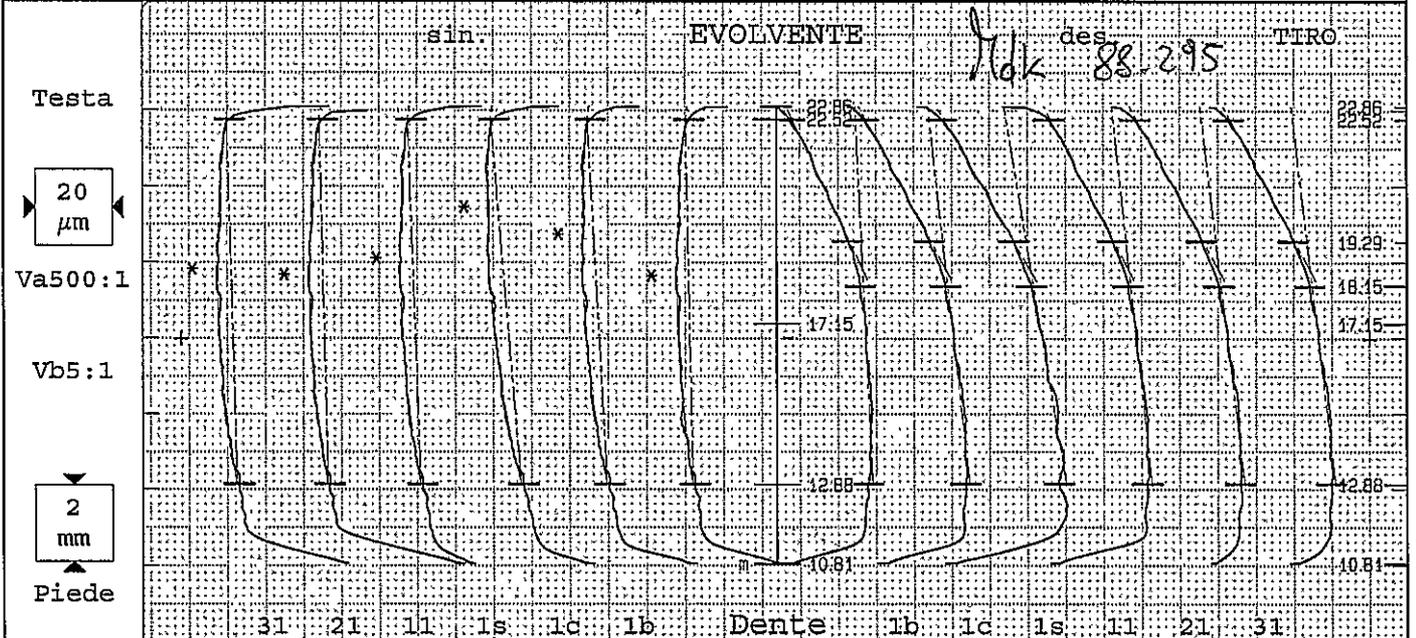
Sistema di misura capace (%RE, min, C_g , C_{gk}) 

□ GETRAG MSA 2017: Capability of measuring system (Type-1 Study)

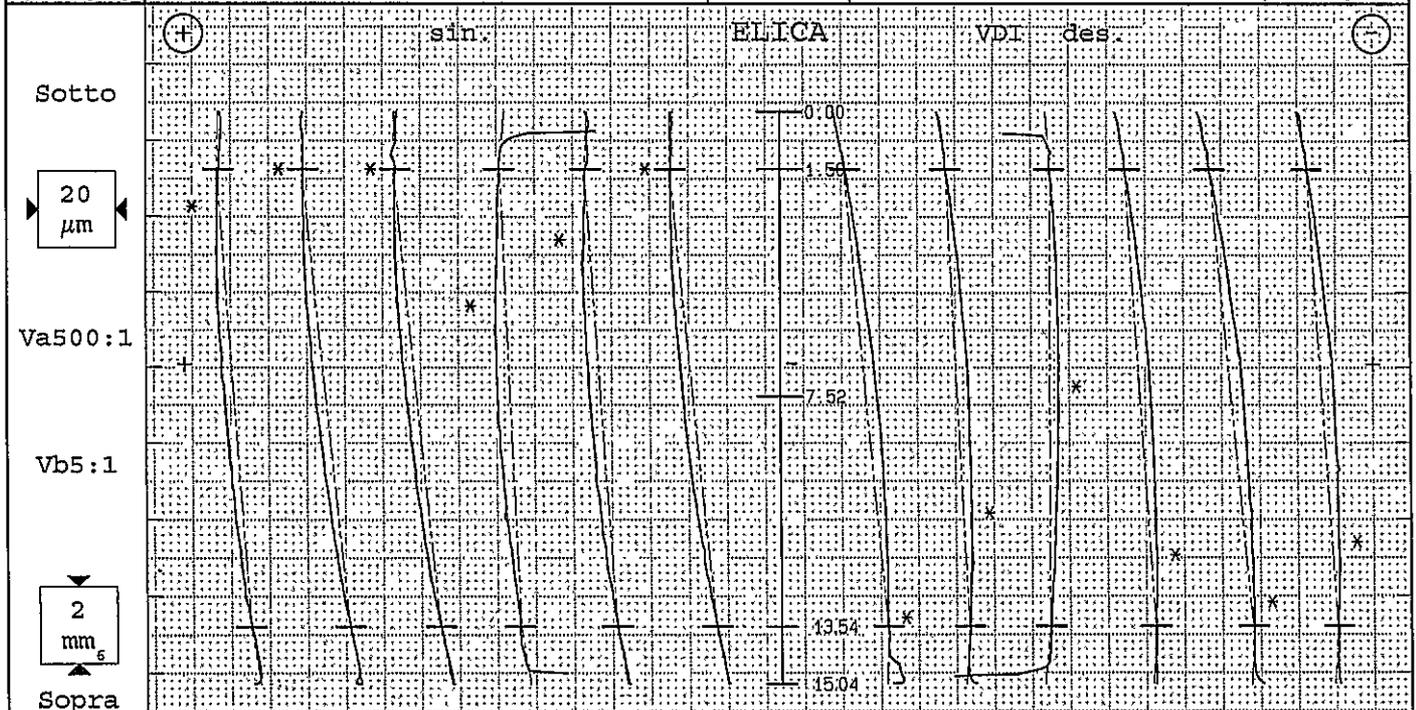
Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:08
Denominazione: SR5	Numero denti z 40	Largh. fasc. dent. b 15.04mm	
Numero disegno.: D51.1.1229.50-ICA	Modulo m 1.75mm	Tratto evolv. La 9.64/5.27mm	
Commessa/serie nr.: Pezzo n.1	Angolo pressione 17°30'00"	Tratto elica Ls 12.03mm	
Masch.Nr.: M001	Spindel: Forme e file elica	-30°00'00"	Inizio elab. M1 12.88mm
Untersuchungszweck: Laufende Messung	Ø Base db 75.9519mm	Palpatore Ø (#2D) 1mm	
Werkzeug: Charge:	Ang. Base -28°28'50"	Fat. scor. pr. x 1.152	



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
fH _{am}	±6	3.3	Var a 2.8								-11±6	Var a 1.1							-10.8	
fH _a	±7	3.3	2.6	2.2	3.3	7.9	5.0	1.8		-11±7	-4.4	-10.6	-15.7	-10.1	-11.2	-11.2	-10.8			
F _a		5.4	5.0	4.7	5.2	9.2	6.7	4.1			4.4	2.0	3.3	2.2	1.9	1.9	2.0			
ff _a	5	1.5	1.5	1.4	1.5	1.5	1.5	1.8		5	1.9	1.9	3.0	2.0	2.0	1.9	2.0			
c _a	1/5	3.5	3.5	3.7	3.4	3.7	3.4	3.0												
Ca										-19/-11	-16.7	-16.9	-16.4	-16.4	-16.9	-16.5	-16.7			
ffa _F	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
P/T-ø [mm]											88.963							[88.84/89.1]		



N:Z	fH _{sm}	FV	Var β					Qual	fH _s	FV	Var β					Qual
10±6	12.8	-8.2	5.2						12±6	14.4	6.5					
10±10	12.8	10.7	15.3	14.9	6.5	10.1	14.7	12±10	13.9	7.3	-0.5	9.6	13.8	9.7	10.1	
Fβ	3.5	2.1	4.8	4.8	4.2	2.2	4.5		4.8	4.3	10.4	3.0	3.6	3.2	3.5	
ff _β	5	0.8	0.8	0.6	0.8	1.0	0.8	0.6	5	0.5	0.7	0.6	0.4	0.6	0.8	0.6
cβ	1/5	2.8	2.6	2.7	2.9	3.3	2.9	2.7	1/5	2.9	2.9	2.3	2.7	3.1	3.1	3.0

CGG 808006

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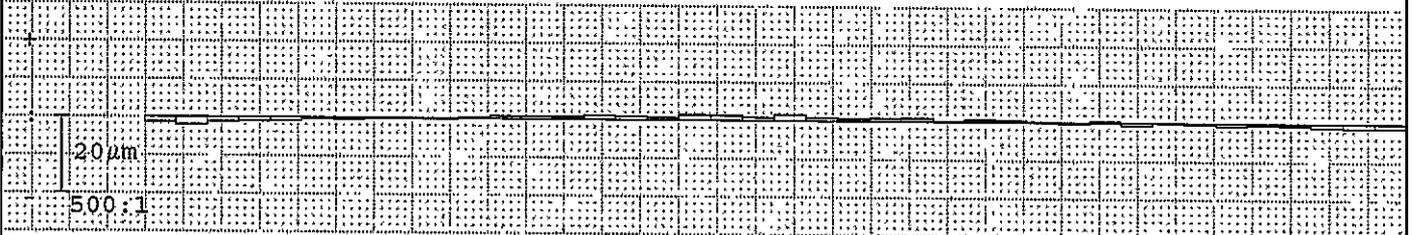


Ruota cilindrica Divisione

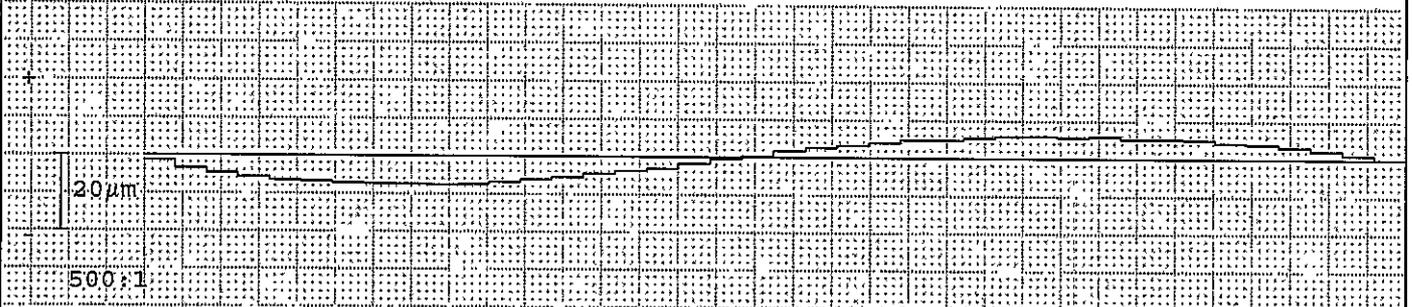


Nr. prog.: STI0412_06_0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:08
Denominazione: SR5		Numero denti z: 40	Angolo pressione: 17°30'00"
Numero disegno: D51.1.1229.50-ICA		Modulo m: 1.75mm	Angolo elica: -30°00'00"
Commessa/serie nr.: Pezzo n.1		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: FORMER	estzeitg:	Charge:

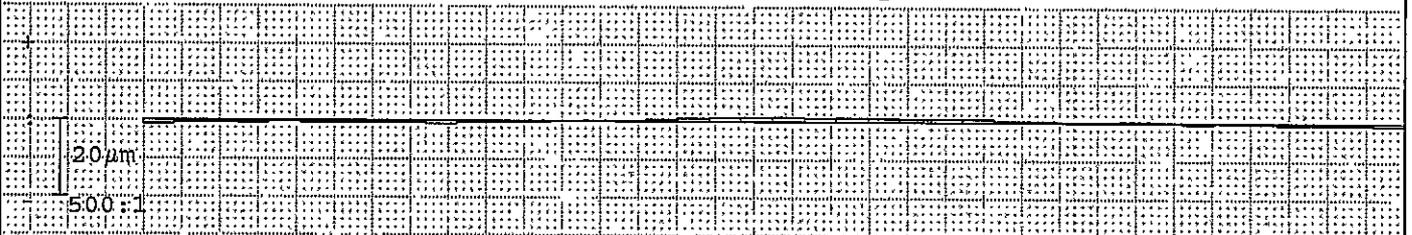
Errori singoli di divisione fp fianco sinistro



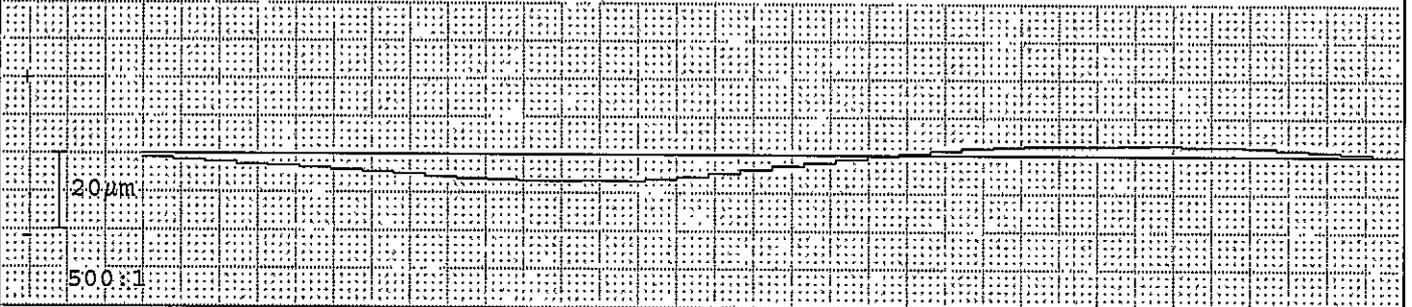
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

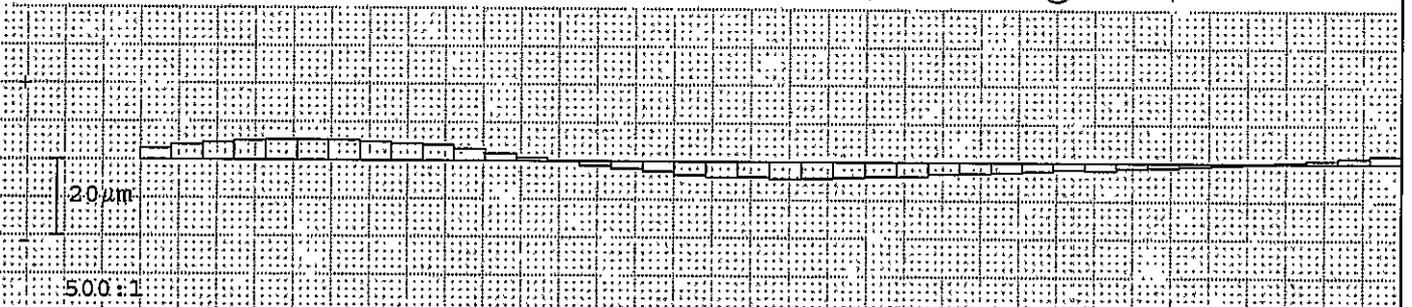


Errore somma di divisione Fp fianco destro



		fianco sinistro				fianco destro / TTRO			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	2.1		10.0		1.1		10.0	
Gr. salto di passo	fu max	1.1		12.0		0.5		12.0	
Scarto di divisione	Rp	3.6				2.1			
Err. globale di divisione	Fp	13.5		45.0		9.9		45.0	
Err. cordale di divisione	Fpz/8	6.9				4.8			

Centricità Fr (Ø-sfera =2.75mm) Ⓞ : 8.7µm



Err. di concentricità	Fr	9.8	32.0
Variab. spessore denta	Rs		

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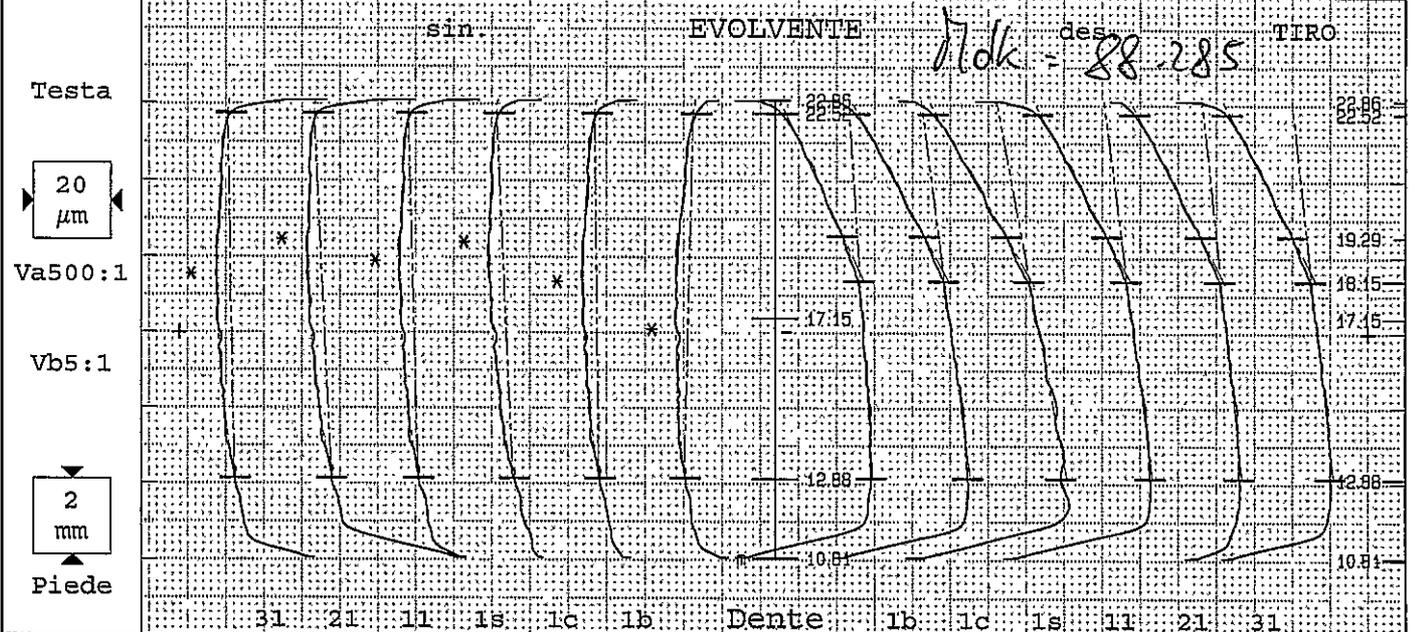
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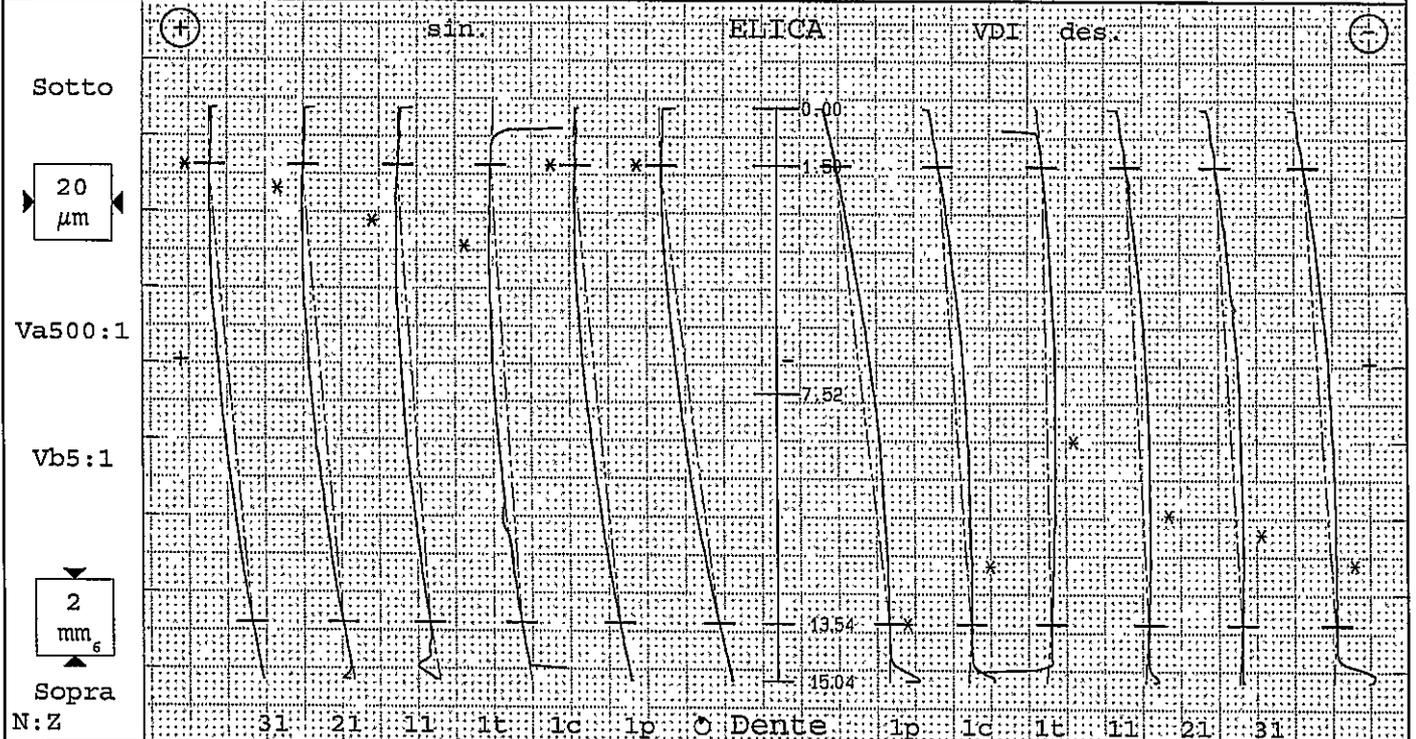
Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:13
Denominazione: SR5	Numero denti z	40	Largh. fasc. dent. b 15.04mm
Numero disegno.: D51.1.1229.50-ICA	Modulo m	1.75mm	Tratto evolv. La 9.64/5.27mm
Commissa/serie nr.: Pezzo n.2	Angolo pressione	17°30'00"	Tratto elica Ls 12.03mm
Masch. Nr.: M001	Spindel: Forme	Angolo elica -30°00'00"	Inizio elab. M1 12.88mm
Untersuchungszweck: Laufende Messung	Ø Base db	75.9519mm	Palpatore Ø (#2D) 1mm
Werkzeug:	Charge:	Ang. Base -28°28'50"	Fat. scor. pr. x 1.152



Tolerance	Medio	Val. misur [µm]								Qual	Tolerance	Val. misur [µm]								Medio	Qual	
fHm	±6	2.6	Var a 3.4									-11±6	Var a 2.5								-11.3	
fHa	±7	2.6	1.8	4.6	2.7	4.4	1.2	-2.2		-11±7	-6.2	-12.5	-17.8	-12.3	-10.0	-10.5	-11.3					
Fa		4.9	4.4	6.3	4.8	6.3	4.1	4.6			2.9	1.4	4.1	1.3	1.6	1.6	1.5					
ffa	5	1.6	1.6	1.7	1.6	1.5	1.5	1.5		5	1.1	1.4	2.5	1.3	1.4	1.5	1.4					
ca	1/5	3.5	3.5	3.6	3.3	3.7	3.5	3.2														
Ca										-19/-11	-16.6	-17.1	-16.6	-17.1	-17.4	-16.8	-17.1					
ffaaf	3	0.0	0.0	0.1	0.1	0.0	0.0	0.0		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
P/T-Ø [mm]											88.952								[88.84/89.1]			



N:Z	fHsm	FV	Var B								Qual	FV	Var B								Qual
31	10±6	-8.8	4.1								12±6	15.1	3.2								9.0
21	10±10	14.0	13.1	10.6	9.7	14.7	18.5		12±10	17.4	10.1	2.3	7.1	8.3	10.3	9.0					
11		4.1	3.8	3.7	4.4	2.5	4.4	6.9		11.4	5.4	7.4	4.3	4.1	9.4	5.8					
1t	5	0.7	0.6	0.7	0.7	1.4	0.7	0.5		5	0.5	0.7	0.6	0.6	1.0	0.6	0.7				
1c	1/5	2.9	2.7	3.0	2.8	3.0	2.9	2.8		1/5	3.0	2.7	2.3	2.7	2.7	2.8	2.7				

CGG 808006

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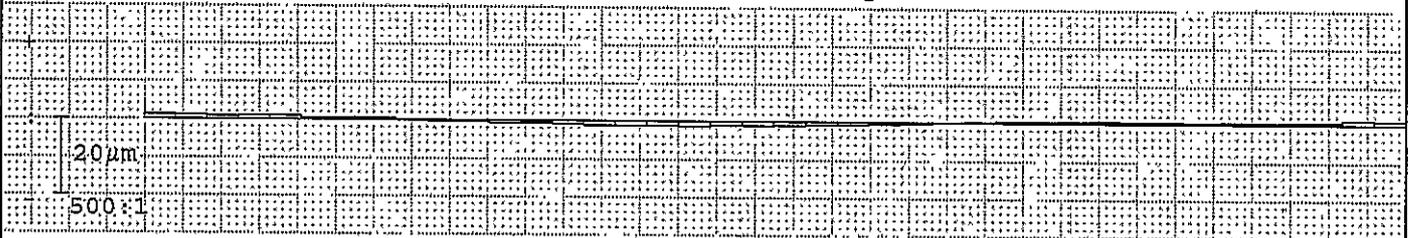


Ruota cilindrica Divisione

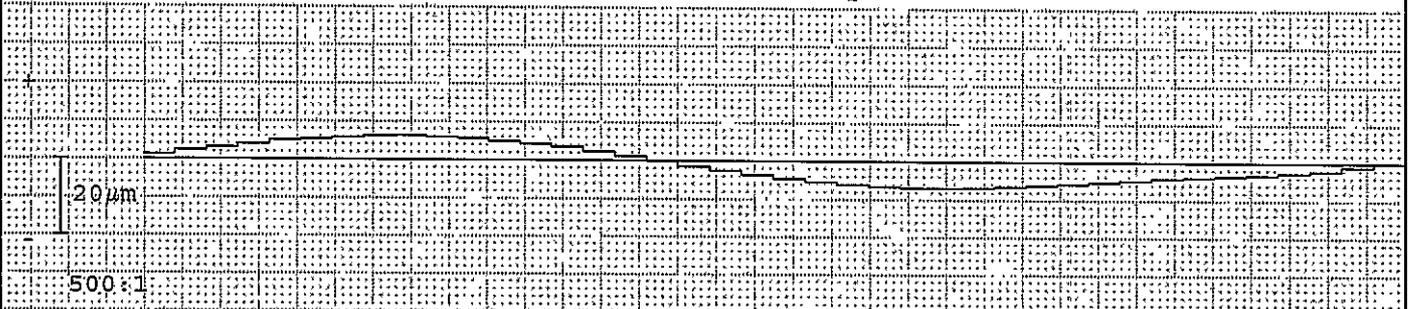


Nr. prog.: STI0412 06 0	P26 601265	Controllora: turno C	Data: 16.10.2017 08:13
Denominazione: SR5		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno.: D51.1.1229.50-ICA		Modulo m 1.75mm	Angolo elica -30°00'00"
Comessa/serie nr.: Pezzo n.2		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formstempel	Charge:	

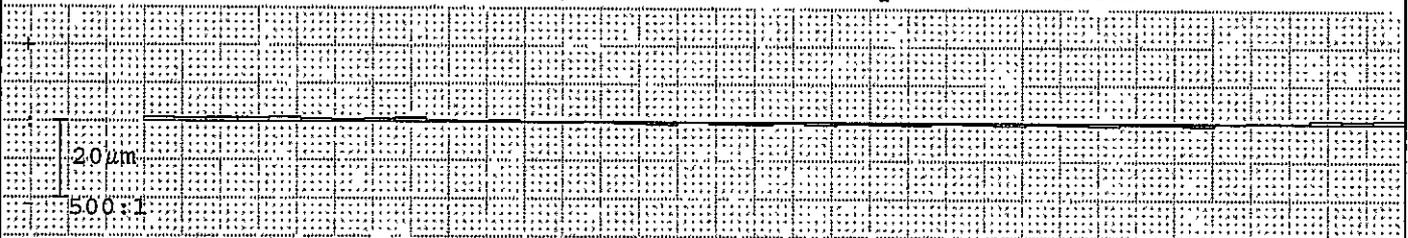
Errori singoli di divisione fp fianco sinistro



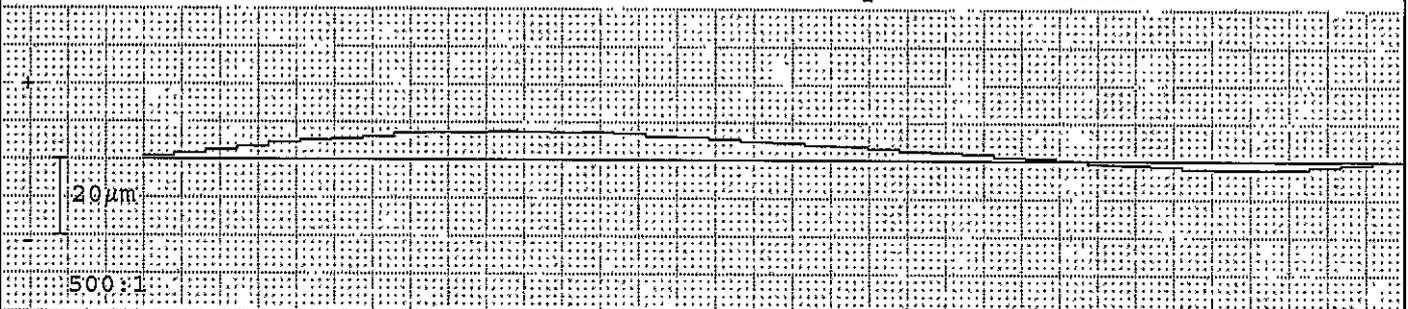
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

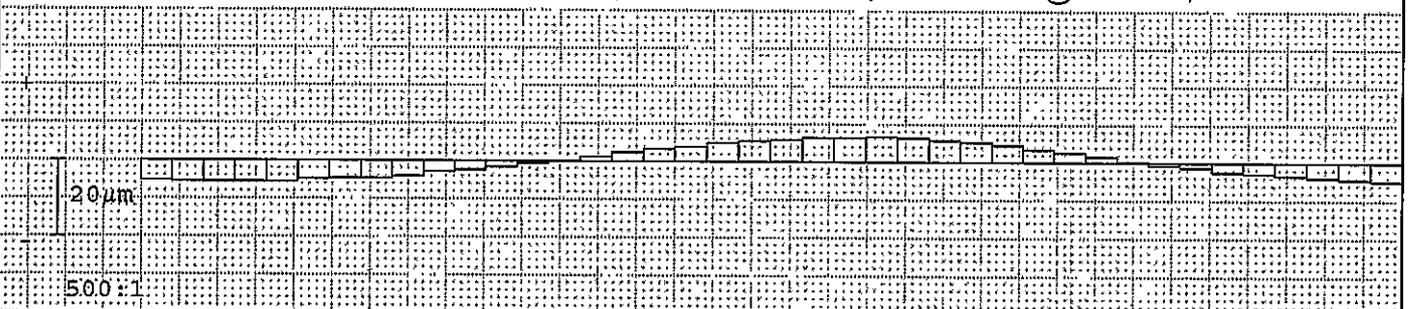


Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 83.338 z=7.5mm	fianco sinistro				fianco destro / TIRO			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	1.3		10.0		1.1		10.0	
Gr. salto di passo fu max	0.7		12.0		0.7		12.0	
Scarto di divisione Rp	2.5				1.9			
Err. globale di divisione Fp	13.2		45.0		9.7		45.0	
Err. cordale di divisione Fpz/8	6.0				4.5			

Centricità Fr (Ø-sfera =2.75mm) © : 11.9 μm

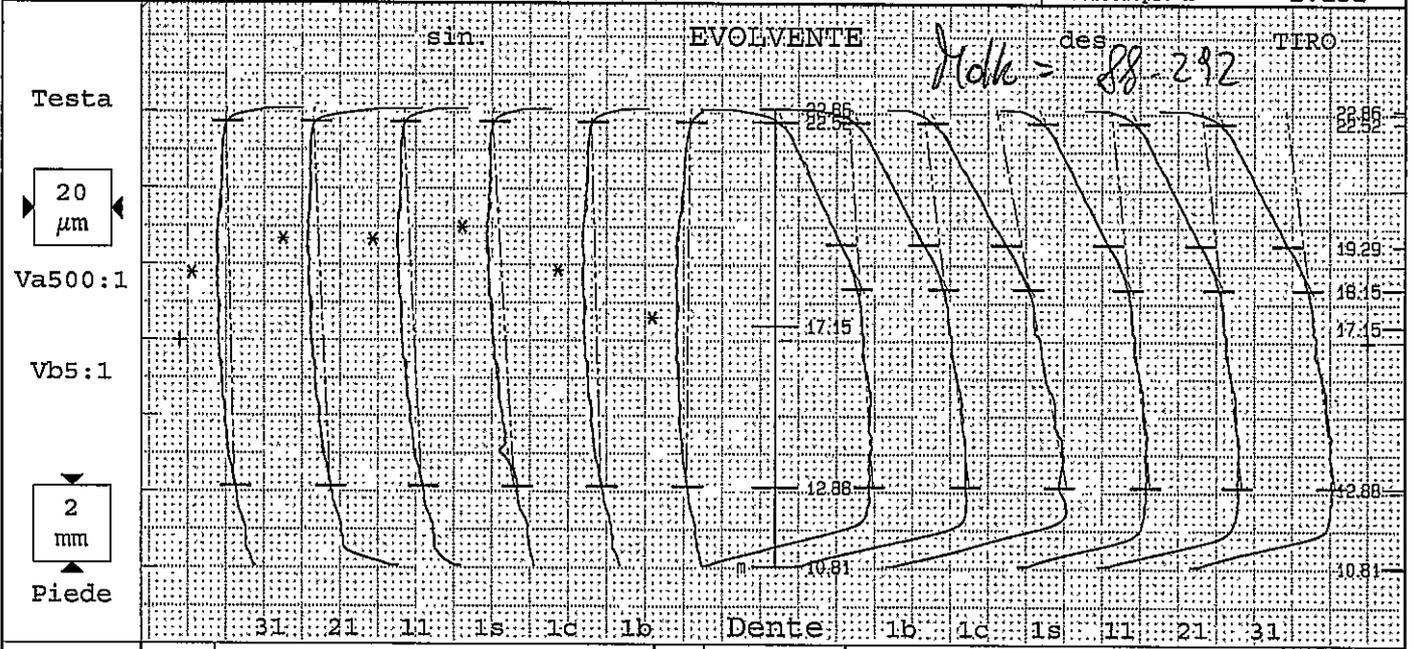


Err. di concentricità Fr	12.2	32.0	
Variaz. spessore dente Rs			

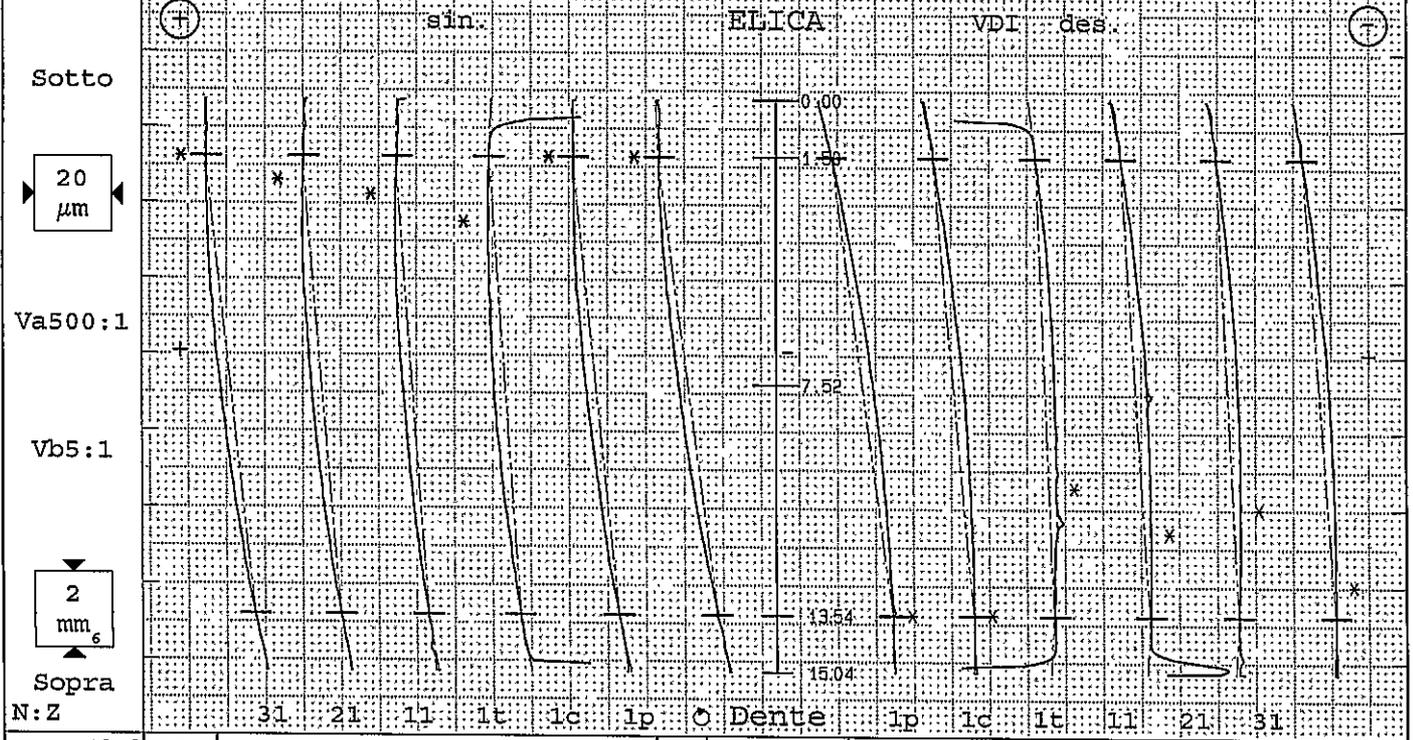
Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:18
Denominazione: SR5	Numero denti z 40	Largh. fasc. dent. b 15.04mm	
Numero disegno.: D51.1.1229.50-ICA	Modulo m 1.75mm	Tratto evolv. La 9.64/5.27mm	
Commessa/serie nr.: Pezzo n.3	Angolo pressione 17°30'00"	Tratto elica Ls 12.03mm	
Masch. Nr.: M001	Spindel: FORMULA	Angolo elica -30°00'00"	Inizio elab. M1 12.88mm
Untersuchungszweck: Laufende Messung	Ø Base db 75.9519mm	Palpatore ø (#2D) 1mm	
Werkzeug: Charge:	Ang. Base -28°28'50"	Fat. scor. pr. x 1.152	



Tolerance	Medio	Val. misur [µm]								Qual	Tolerance	Val. misur [µm]								Medio	Qual	
fHm	±6	3.5	Var a 2.6									-11±6	Var a 2.7								-11.0	
fHa	±7	3.5	2.2	4.4	4.8	5.7	2.4	-0.9		-11±7	-6.1	-11.7	-17.7	-9.7	-10.0	-12.4	-11.0					
Fa		4.9	4.1	5.4	6.0	7.3	4.2	3.1			3.3	1.7	4.3	2.1	2.1	1.8	1.9					
ffa	5	1.1	1.0	1.2	1.0	3.0	1.0	1.1		5	2.0	1.8	3.0	1.8	1.9	1.7	1.8					
ca	1/5	3.2	3.2	3.1	3.3	3.4	3.2	3.0														
Ca																						
ffaf	3	0.0	0.0	0.0	0.1	0.0	0.0	0.0		-19/-11	-17.3	-17.5	-16.6	-17.4	-17.2	-16.9	-17.3					
P/T-ø [mm]											88.925							[88.84/89.1]				



N: Z	fHsm	FV	Var β								Qual	FV-14.2	Var β									
	10±6	13.7	-9.1	5.5									12±6	14.2	6.2							
	10±10	13.7	16.3	12.6	10.8	10.3	15.0	19.4		12±10	20.0	13.4	5.8	9.5	7.2	10.9	10.3					
	Fβ	3.7	5.2	3.2	2.0	2.2	4.5	7.5			7.0	2.4	5.0	19.5	4.1	2.1	7.0					
	ffβ	5	0.6	0.4	0.6	0.7	0.6	0.6	0.7	5	0.8	0.4	2.1	1.4	0.3	0.4	0.6					
	cβ	1/5	2.7	2.8	2.8	2.6	2.9	2.7	2.5	1/5	2.8	2.7	2.6	2.9	2.7	2.5	2.7					

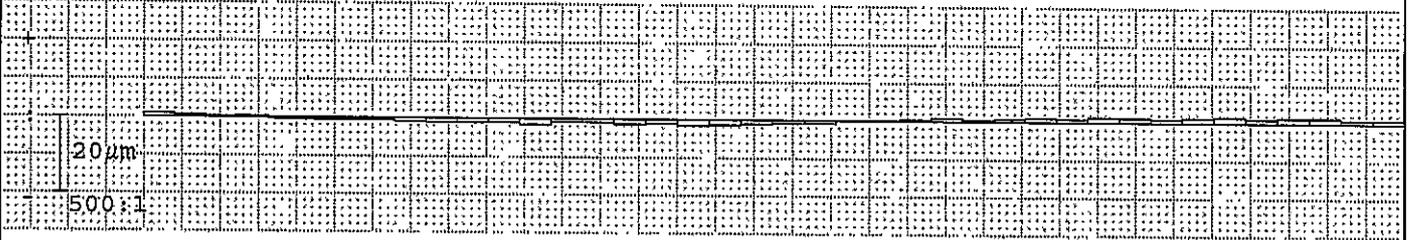


Ruota cilindrica Divisione

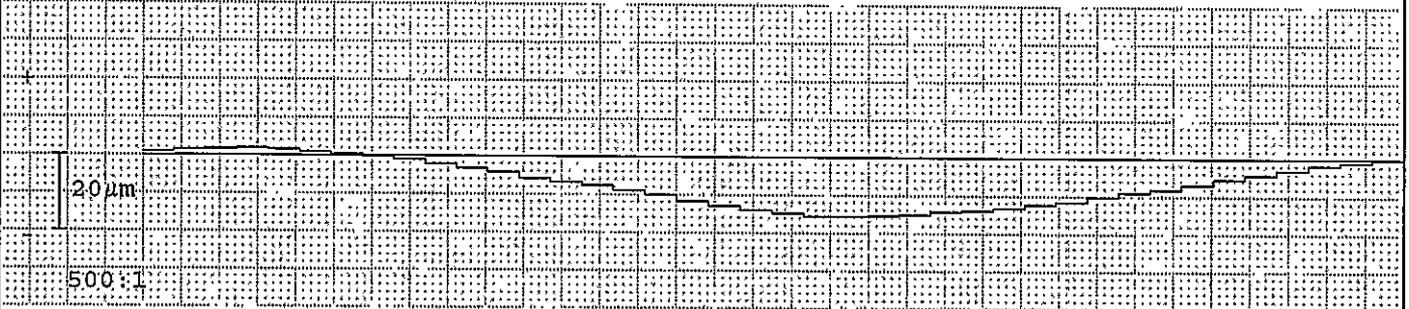


Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:18
Denominazione: SR5		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno.: D51.1.1229.50-ICA		Modulo m 1.75mm	Angolo elica -30°00'00"
Commessa/serie nr.: Pezzo n.3		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formelwerkzeug	Charge:	

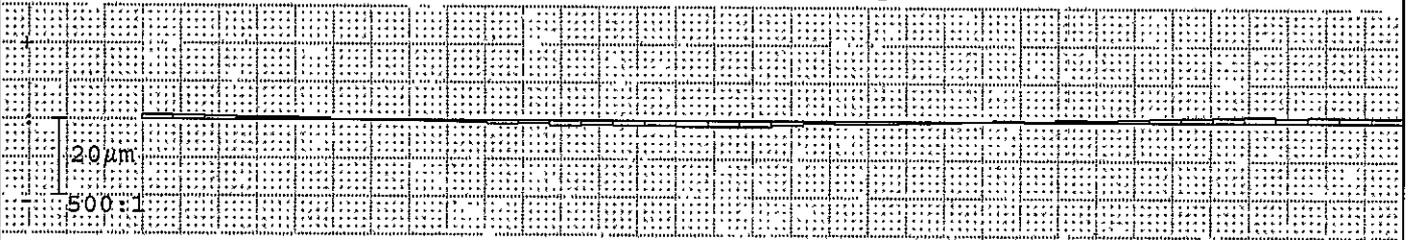
Errori singoli di divisione fp fianco sinistro



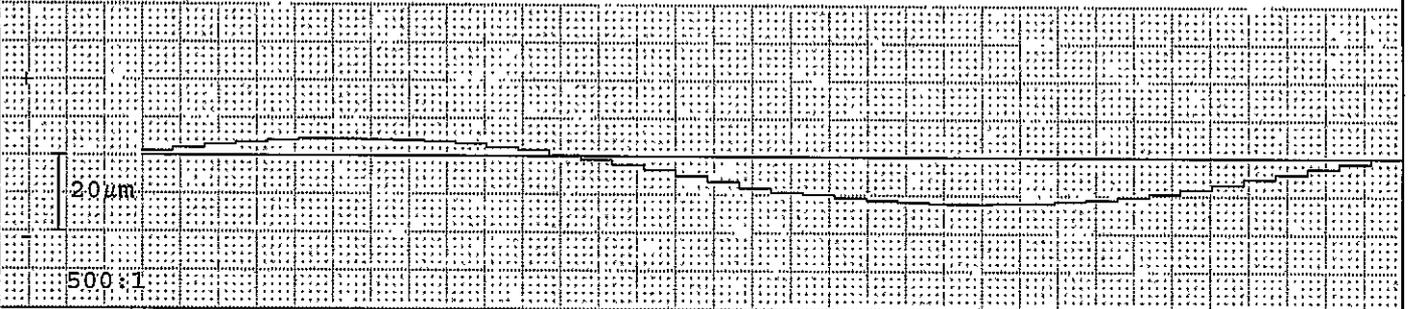
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

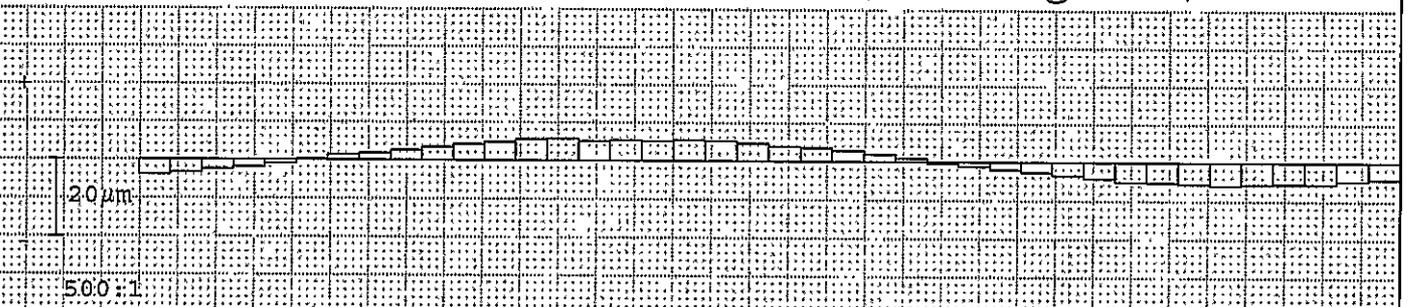


Errore somma di divisione Fp fianco destro



		fianco sinistro		fianco destro / TIRO					
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	1.6		10.0		1.6		10.0	
Gr. salto di passo	fu max	0.9		12.0		0.7		12.0	
Scarto di divisione	Rp	3.1				3.1			
Err. globale di divisione	Fp	17.5		45.0		16.8		45.0	
Err. cordale di divisione	Fpz/8	6.5				7.3			

Centricità Fr (Ø-sfera =2.75mm) Ⓞ : 11.4 μm



Err. di concentricità	Fr	11.6	32.0
Variaz. spessore dente	Rs		

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Docum.archiviato elettronicamente.Archiviazione cartacea non necessaria



Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:37
Denominazione: SR5	Numero denti z	40	Largh.fasc.dent. b 15.04mm
Numero disegno.: 1229.50-ICA-PIEDE	Modulo m	1.75mm	Tratto evolv. La 9.64/5.27mm
Comessa/serie nr.: Pezzo n.3	Angolo pressione	17°30'00"	Tratto elica L& 12.03mm
Masch.Nr.: M001	Spindel: Forme ang. elica	-30°00'00"	Inizio elab. M1 12.88mm
Untersuchungszweck: Laufende Messung	Ø Base db	75.9519mm	Palpatore Ø (#5E) .5mm
Werkzeug: Charge:	Ang. Base	-28°28'50"	Fat.scor.pr. x 1.152

<p>Piede-Ø: 77.875mm [77.78/78.1]</p>	<p style="text-align: right;">TIRO</p>
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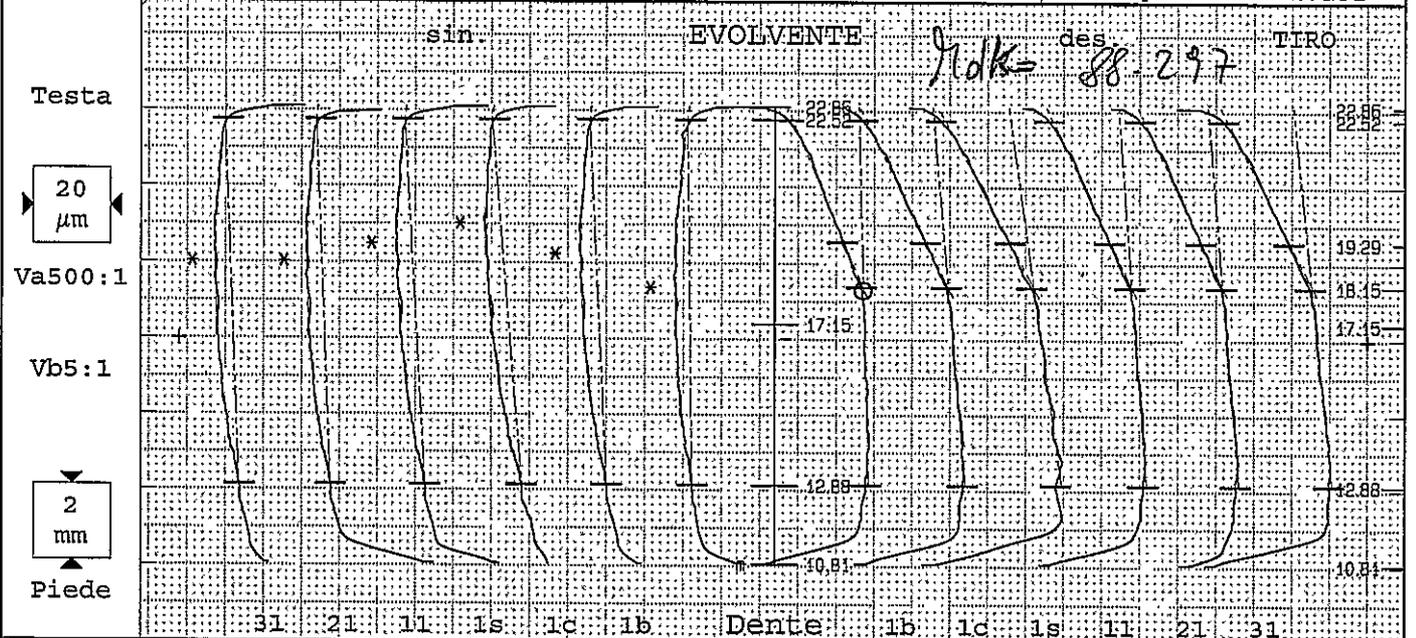
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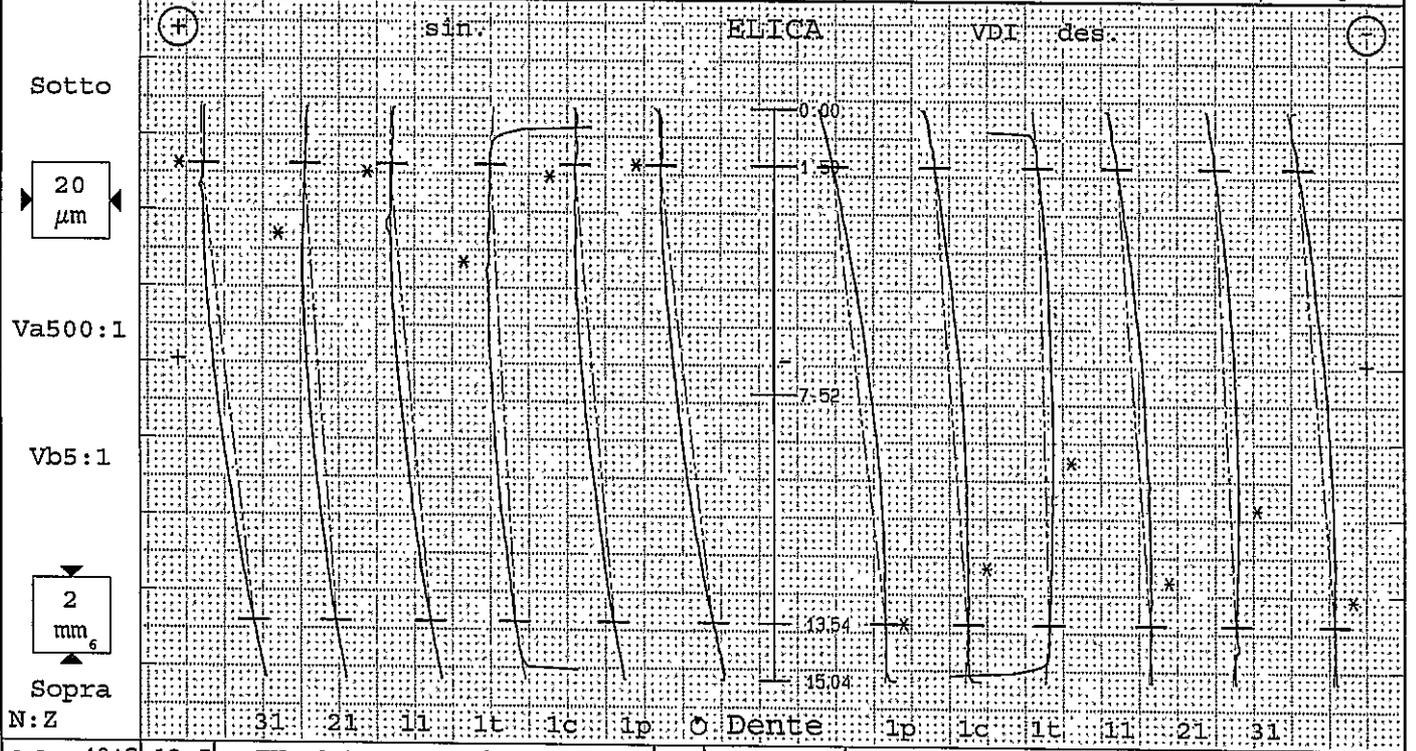
Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:23
Denominazione: SR5		Numero denti z 40	Largh. fasc. dent. b 15.04mm
Numero disegno: D51.1.1229.50-ICA		Modulo m 1.75mm	Tratto evolv. La 9.64/5.27mm
Comessa/serie nr.: Pezzo n.4		Angolo pressione 17°30'00"	Tratto elica Ls 12.03mm
Masch.Nr.: M001	Spindel: FORME	Angolo elica -30°00'00"	Inizio elab. M1 12.88mm
Untersuchungszweck: Laufende Messung		Ø Base db 75.9519mm	Palpatore ø (#2D) 1mm
Werkzeug:	Charge:	Ang. Base -28°28'50"	Fat. scor. pr. x 1.152



Tolerance	Medio	Val. misur [μm]							Qual	Tolerance	Val. misur [μm]							Medio	Qual	
fHm	±6	4.3	Var a 1.7								-11±6	Var a 2.7							-8.3	
fHa	±7	4.3	3.7	3.7	5.4	7.8	4.5	1.2		-11±7	-2.5	-8.3	-13.5	-7.1	-7.9	-9.8	-8.3			
Fa		6.1	5.7	5.7	6.8	9.0	6.3	3.8			5.1	2.4	2.8	3.0	2.8	1.8	2.5			
ffa	5	1.3	1.2	1.5	1.1	1.3	1.2	1.8		5	1.3	1.2	2.6	1.4	1.3	1.3	1.3			
ca	1/5	4.2	4.1	4.1	4.2	4.5	4.2	3.8												
Ca										-19/-11	-17.4	-17.9	-17.2	-17.5	-17.0	-17.7	-17.5			
ffaf	3	0.0	0.9	0.8	0.9	1.1	1.0	0.6		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
P/T-ø [mm]											88.934							[88.84/89.1]		



fHm	10±6	13.5	FV -8.7	Var β 6.5				12±6	FV-14.2	Var β 5.1			10.2				
fHB	10±10	13.5	17.1	10.6	13.4	8.2	12.7	16.9		12±10	17.5	10.8	3.3	10.9	7.0	12.1	10.2
FS		4.0	6.3	2.2	4.2	2.7	3.1	6.8			6.2	2.6	6.7	2.3	4.4	2.0	2.8
ffB	5	1.1	1.3	0.6	1.6	0.8	0.7	0.5		5	0.4	0.6	0.6	0.7	0.5	0.4	0.6
cB	1/5	2.9	2.9	3.1	2.8	2.9	2.7	2.6		1/5	3.3	2.8	2.3	2.7	2.8	2.7	2.8

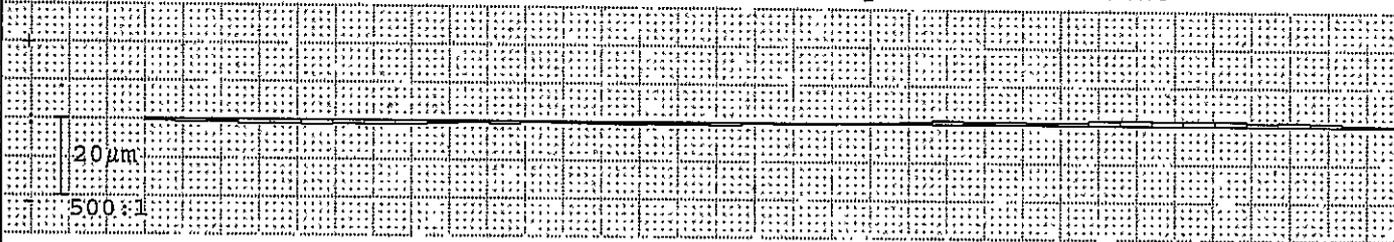


Ruota cilindrica Divisione

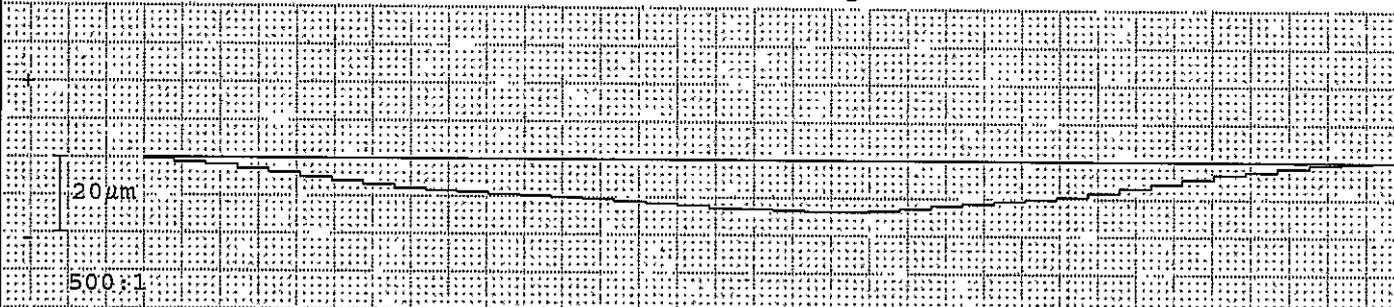


Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:23
Denominazione: SR5		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno.: D51.1.1229.50-ICA		Modulo m 1.75mm	Angolo elica -30°00'00"
Commessa/serie nr.: Pezzo n.4		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formelwerkzeug	Charge:	

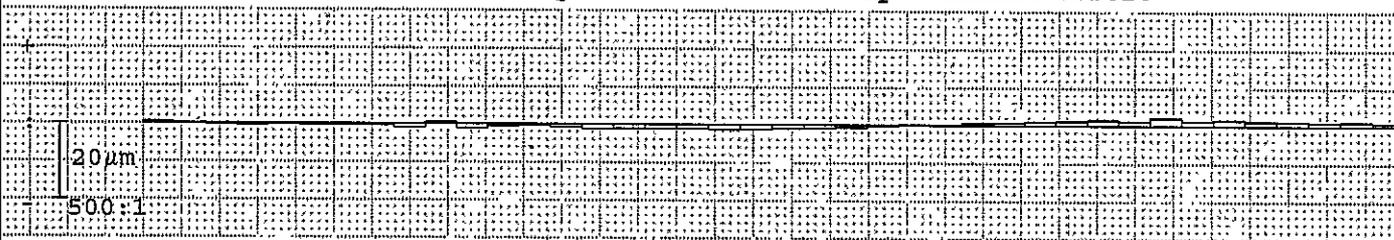
Errori singoli di divisione fp fianco sinistro



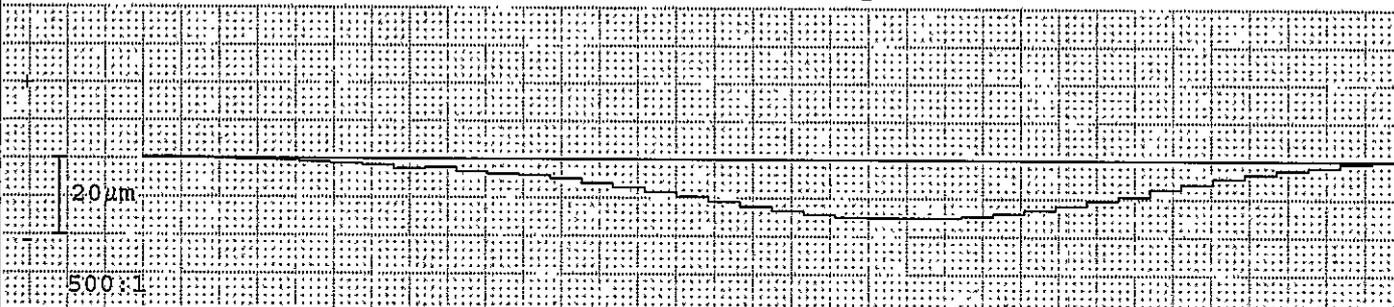
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



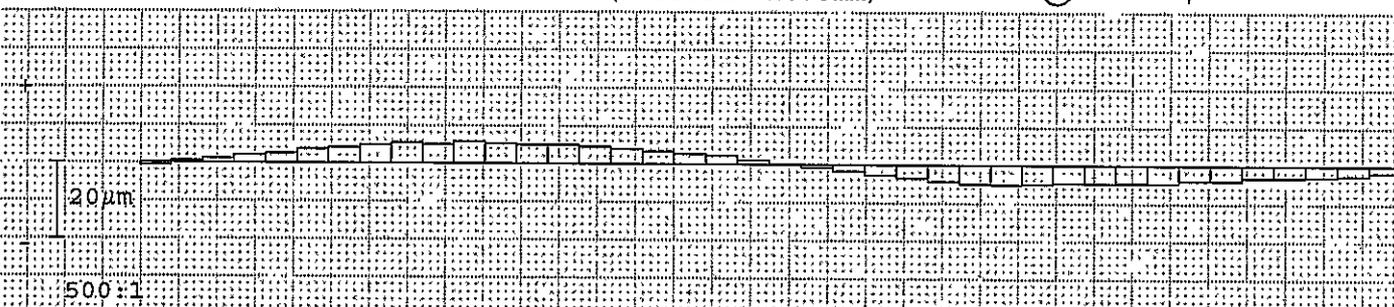
Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 83.338 z=7.5mm		fianco sinistro				fianco destro / TIRO			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	1.3		10.0		2.0		10.0	
Gr. salto di passo	fu max	0.7		12.0		1.5		12.0	
Scarto di divisione	Rp	2.5				3.4			
Err. globale di divisione	Fp	13.7		45.0		15.5		45.0	
Err. cordale di divisione	Fpz/8	6.2				7.3			

Centricità Fr (Ø-sfera =2.75mm)

⊙ : 10.6 μm

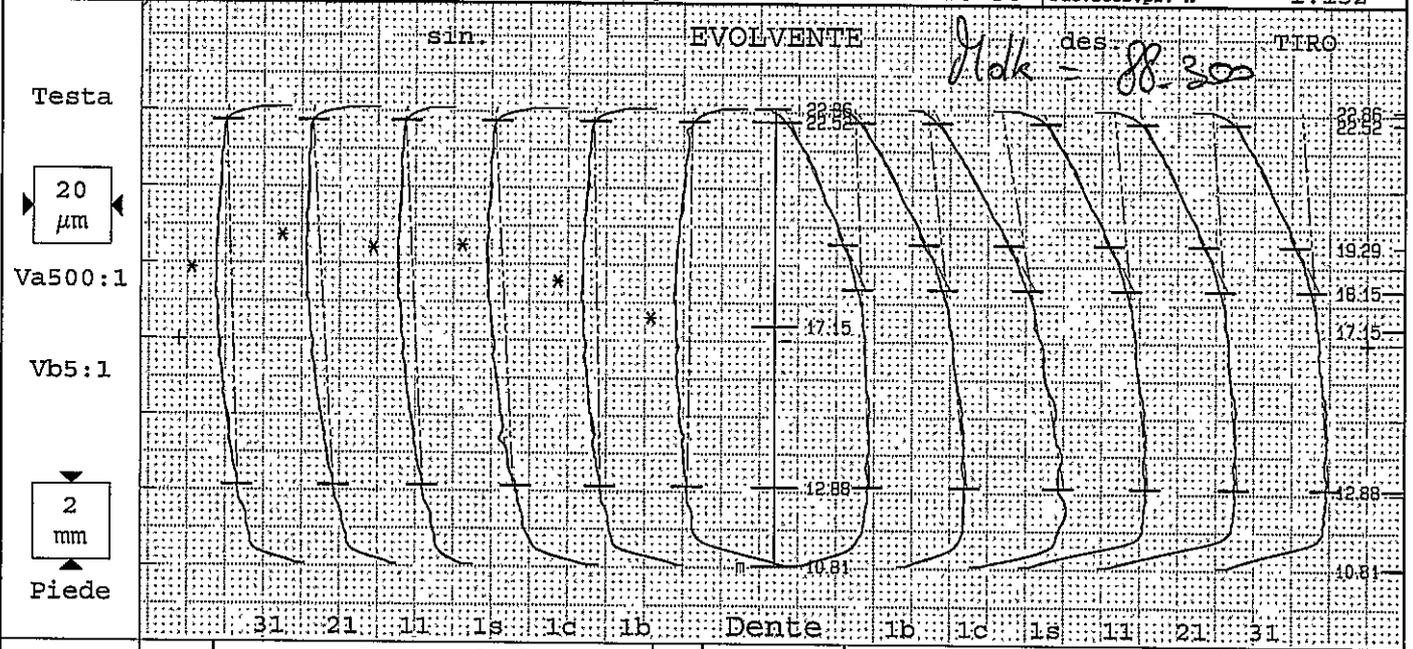


Err. di concentricità	Fr	10.9	32.0
Variab. spessore dente	Rs		

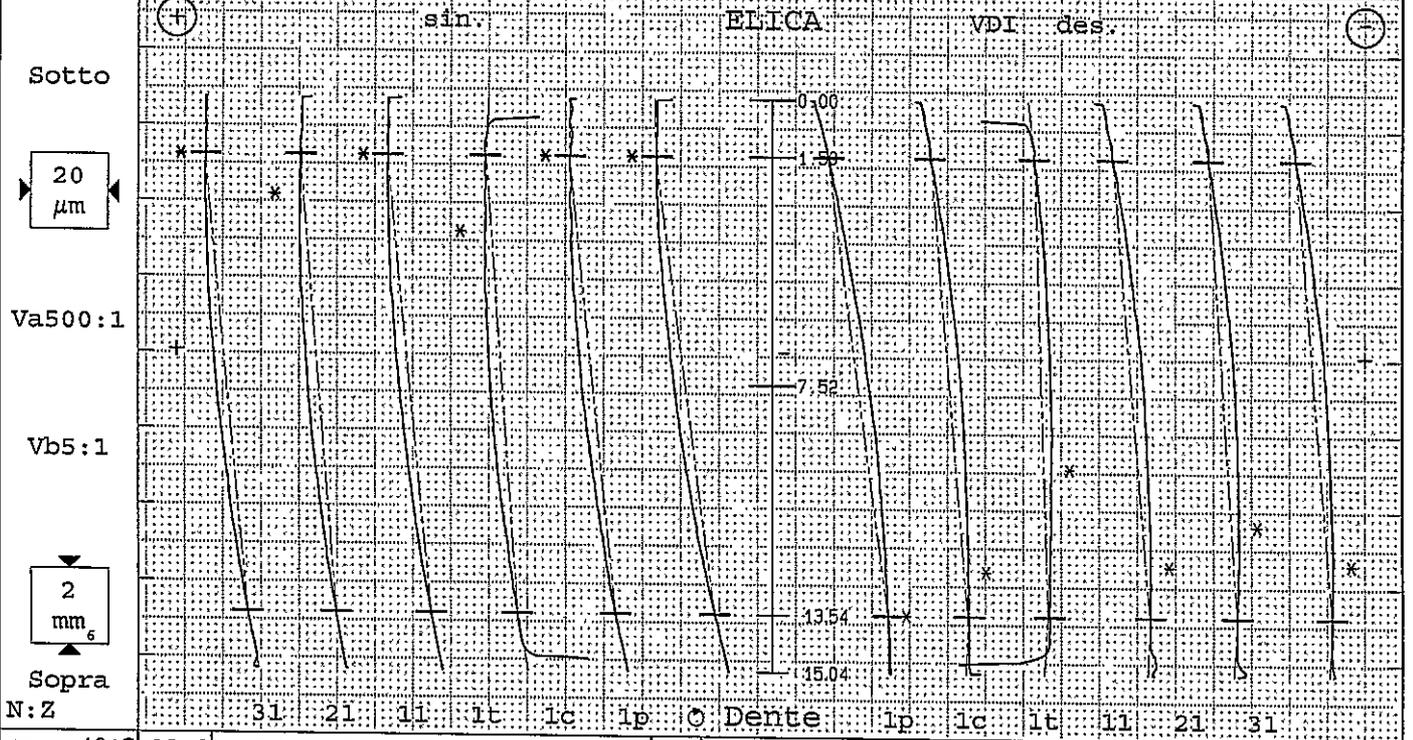
Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:27
Denominazione: SR5		Numero denti z 40	Largh. fasc. dent. b 15.04mm
Numero disegno.: D51.1.1229.50-ICA		Modulo m 1.75mm	Tratto evolv. La 9.64/5.27mm
Commessa/serie nr.: Pezzo n.5		Angolo pressione 17°30'00"	Tratto elica L& 12.03mm
Masch.Nr.: M001	Spindel: FORMULA	Angolo elica -30°00'00"	Inizio elab. M1 12.88mm
Untersuchungszweck: Laufende Messung		Ø Base db 75.9519mm	Palpatore ø (#2D) 1mm
Werkzeug:	Charge:	Ang. Base -28°28'50"	Fat. scor. pr. x 1.152



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var a 3.8									Var a 3.7								
fHm ±6	3.8									-11±6									-8.2
fHa ±7	3.8	3.1	5.6	4.6	4.9	1.8	-1.1		-11±7	-4.1	-10.3	-16.0	-8.7	-6.6	-7.0	-8.2			
Fa	5.3	4.9	6.4	5.7	6.8	4.1	4.2			4.0	1.8	4.2	2.2	3.2	2.9	2.5			
ffa 5	1.0	1.0	1.0	1.0	2.0	1.1	1.6		5	2.0	1.9	2.9	1.9	2.1	1.9	2.0			
ca 1/5	3.7	3.9	3.7	3.7	3.8	3.6	3.6												
Ca									-19/-11	-17.0	-17.5	-16.8	-17.6	-17.8	-17.2	-17.5			
ffaf 3	0.0	0.5	0.4	0.5	0.0	0.5	0.7		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
P/T-ø [mm]										88.961							[88.84/89.1]		



N:Z	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var β 3.0									Var β 2.7								
fHsm 10±6	13.8									12±6									11.4
fHs 10±10	13.8	14.0	11.9	14.3	10.3	14.9	19.0		12±10	19.7	12.1	4.3	12.0	9.4	12.0	11.4			
FB	3.8	3.9	2.8	4.1	2.2	4.4	7.4			6.2	3.1	6.0	2.5	3.3	2.4	2.8			
ffB 5	0.5	0.5	0.5	0.4	0.5	0.7	0.5		5	0.4	0.6	0.8	0.5	0.3	0.5	0.5			
cB 1/5	2.8	2.7	2.9	2.8	3.1	2.8	3.0		1/5	2.9	3.0	2.4	3.1	3.1	3.1	3.1			

GCG 808006

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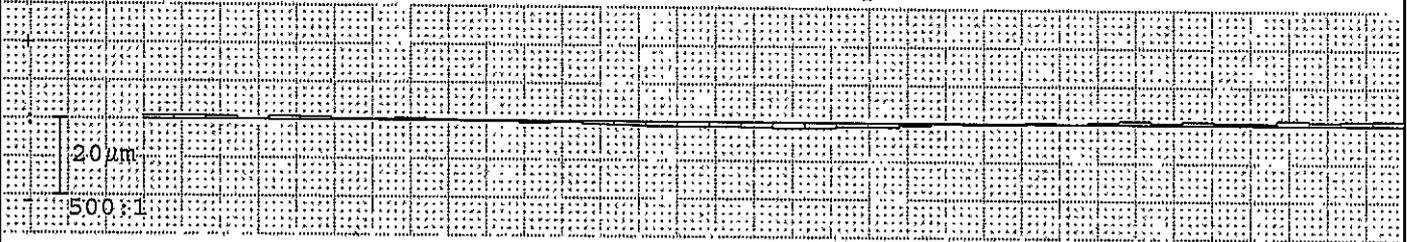


Ruota cilindrica Divisione

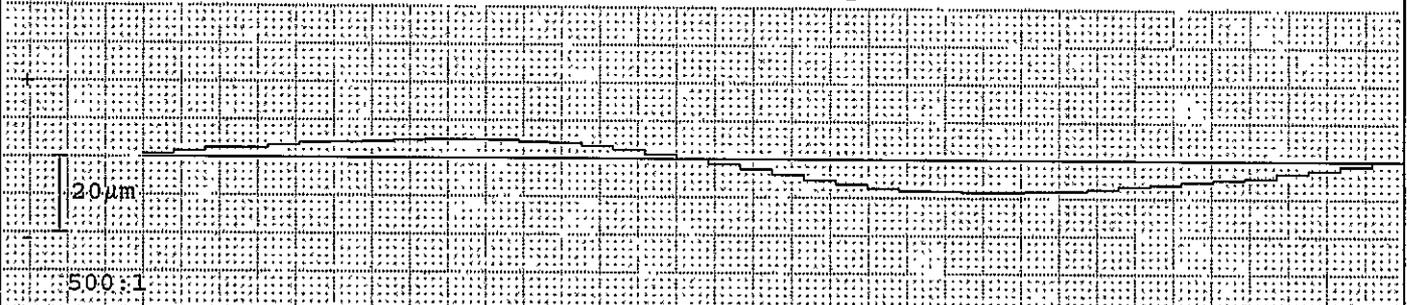


Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:27
Denominazione: SR5		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno.: D51.1.1229.50-ICA		Modulo m 1.75mm	Angolo elica -30°00'00"
Comessa/serie nr.: Pezzo n.5		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formtestzeig		Charge:

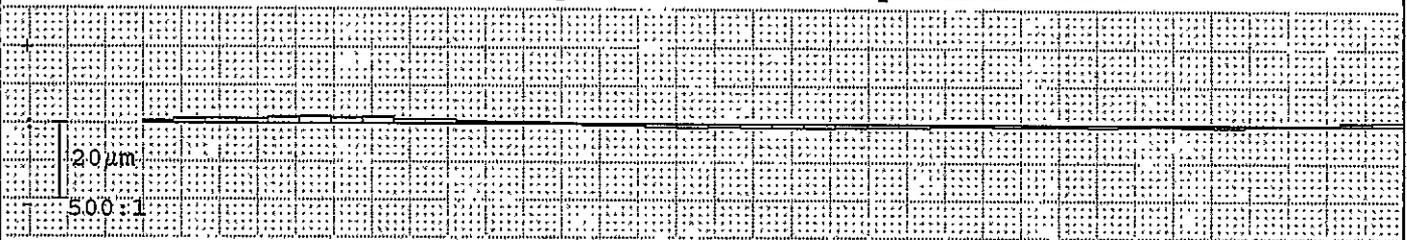
Errori singoli di divisione fp fianco sinistro



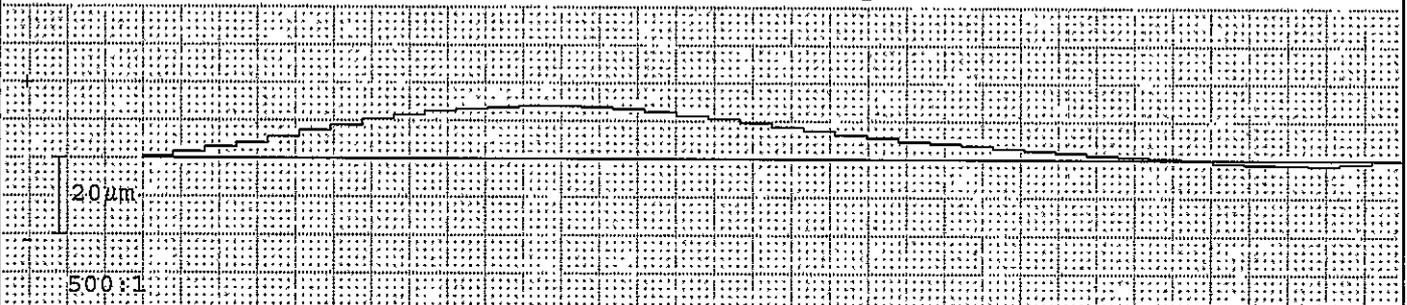
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

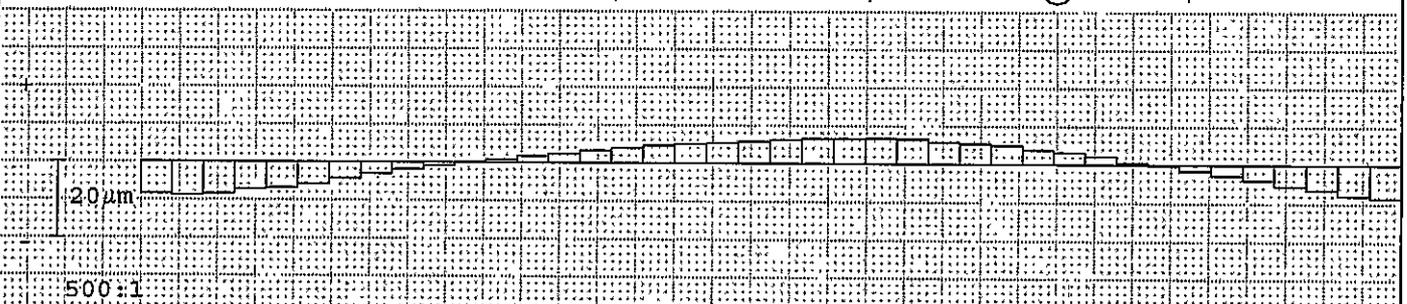


Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 83.338 z=7.5mm		fianco sinistro				fianco destro / TIRO			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	1.5		10.0		1.7		10.0	
Gr. salto di passo	fu max	0.8		12.0		0.8		12.0	
Scarto di divisione	Rp	2.8				2.8			
Err. globale di divisione	Fp	13.4		45.0		15.3		45.0	
Err. cordale di divisione	Fpz/8	6.6				7.4			

Centricità Fr (Ø-sfera =2.75mm) \odot : 14.6 μm



Err. di concentricità	Fr	15.6	32.0
Variab. spessore dente	Rs		

Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno C	Data: 16.10.2017 08:33
Denominazione: SR5		Numero denti z 40	Largh.fasc.dent. b 15.04mm
Numero disegno.: 1229.50-ICA-PIEDE		Modulo m 1.75mm	Tratto evolv. La 9.64/5.27mm
Commessa/serie nr.: Pezzo n.5		Angolo pressione 17°30'00"	Tratto elica L& 12.03mm
Masch.Nr.: M001	Spindel: Formule	Angolo elicalelica -30°00'00"	Inizio elab. Ml 12.88mm
Untersuchungszweck: Laufende Messung		Ø Base db 75.9519mm	Palpatore Ø (#5E) .5mm
Werkzeug:	Charge:	Ang. Base -28°28'50"	Fat.scor.pr. x 1.152

<p>Piede-Ø: 77.89mm [77.78/78.1]</p>	<p style="text-align: right;">TIRO</p>
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	<p style="text-align: right;">VDI</p>
--	---------------------------------------



REPORT 18/003

Date: 02/01/2018
Author: G. Borracci

Reason for analysis: <i>Motivo dell'indagine:</i>	PPAP
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Requester: <i>Richiedente:</i>	WLQ - Stefano Picerno
--	-----------------------

Part Name: <i>Nome particolare:</i>	SPEED GEAR 5th
Material: <i>Materiale:</i>	GCG_805000 Part 2
State of part: <i>Stato del particolare:</i>	Finito

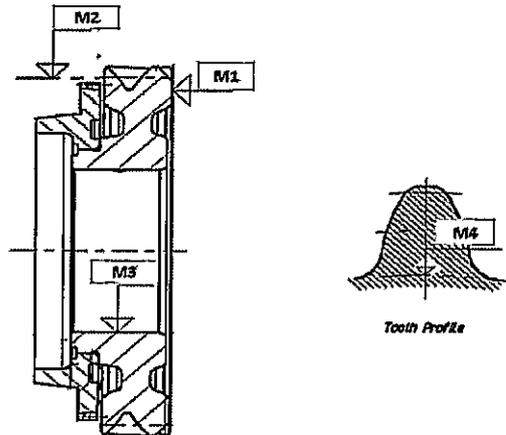
P/N:	251.1.1228.50
S/N:	-
Customer: <i>Cliente:</i>	-

Result: <i>Risultato:</i>	OK
-------------------------------------	----

Distribution list: <i>Lista di distribuzione:</i>	WLQ - S. Picerno
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Notes: <i>Note:</i>	Variante 21A
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Drawing (Disegno)



Picture 1: estratto del disegno del particolare, posizione dei punti di misura per le caratteristiche metallurgiche.

Surface Hardness Verification (Verifica Durezza Superficiale)

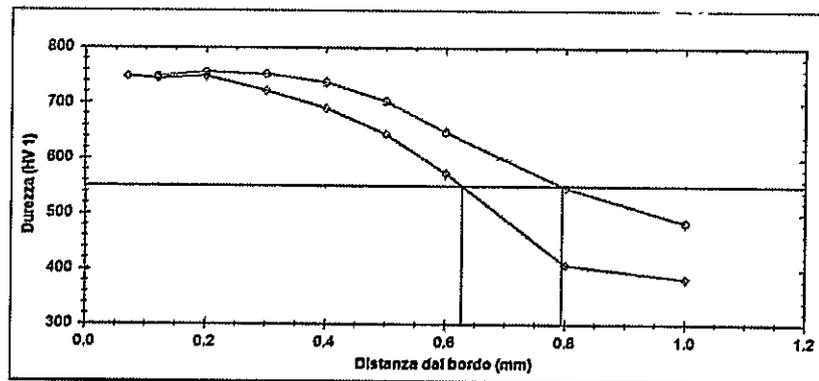
Scale	Position	Values [mm]	Range	Component
HRC	M1	61.0	-	Gear
HRA	M1	81.2	80.5 + 2.5	Gear

REPORT 18/003

Date: 02/01/2018
Author: G. Borracci

CHD Verification (Verifica CHD)

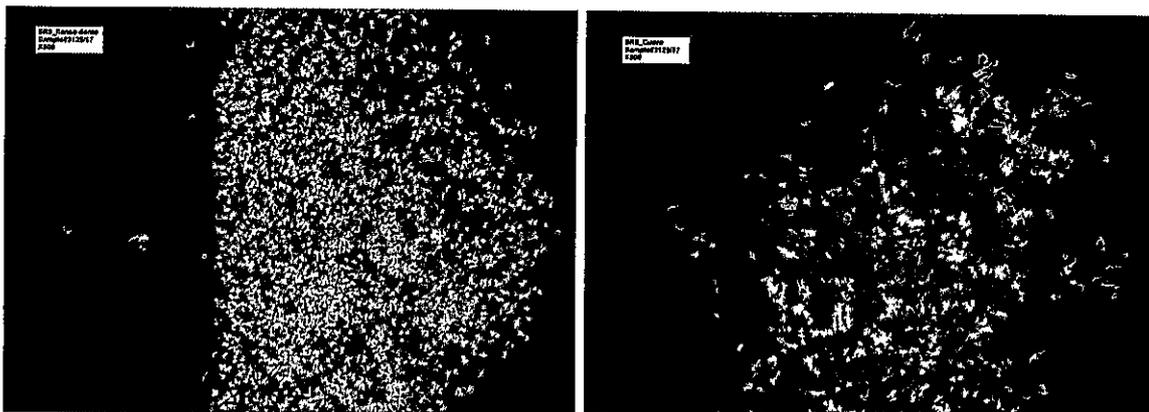
	Sample	Position	Measured Value	Range
	CHD 550 HV1	3361/16	M2	0.79
	CHD 550 HV1	3361/16	M3	0.62
	Core hardness HV10	3361/16	M5	397
				0.50 + 0.40 mm
				min 0.50 mm
				≥ 300



Picture 2: profili di durezza.

Analysis at Metallographic Microscope (Analisi al Microscopio Metallografico)

Sample #	3125/17
Gear - Tooth flank surface structure:	5% austenite residua
Gear - Tooth base core structure:	martensite + bainite



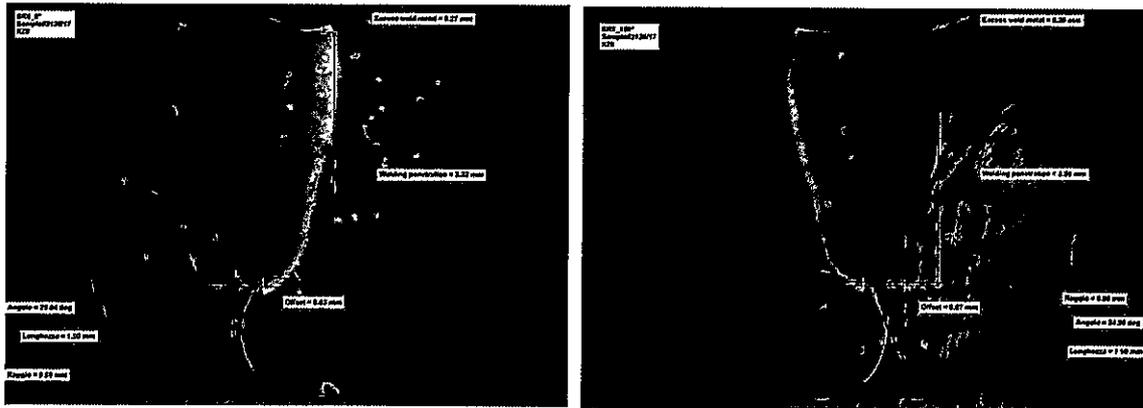
Picture 3: Microstruttura sul fianco dente (a sinistra) ed a cuore sulla base dente (a destra), ingrandimento 500x.

REPORT 18/003

Date: 02/01/2018
Author: G. Borracci

Analysis at Stereomicroscope (Analisi allo Stereomicroscopio)

Sample#	Penetration [mm]		Excess weld metal [mm]		Offset [mm]	
	0°	180°	0°	180°	0°	180°
3126/17	3.32	3.28	0.270	0.260	0.030	0.070
Range	min 2.8		max 0,5		max 0.1	



Picture 4: Sezioni del giunto saldato a 180°.

REPORT 18/009

Date: 04/01/18
Author: R. Padolecchia

Reason for analysis: PPAP
Motivo dell'indagine: G_904340-2 part compliance control

Requester: WLQ - Stefano Picerno
Richiedente:

Part Name: 7 DCT 300 gearset - 21A variant
Nome particolare:
Material: GCG_805000 Part 2
Materiale:
State of part: Finished
Stato del particolare:

P/N: -
S/N: -
Customer: Renault
Cliante:

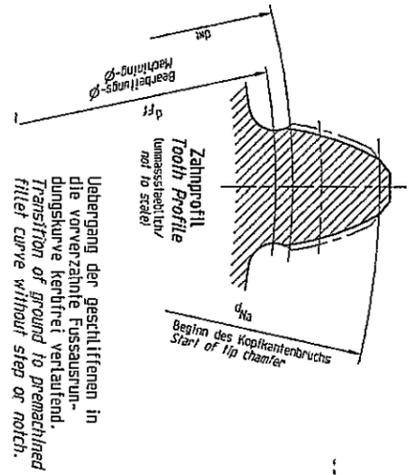
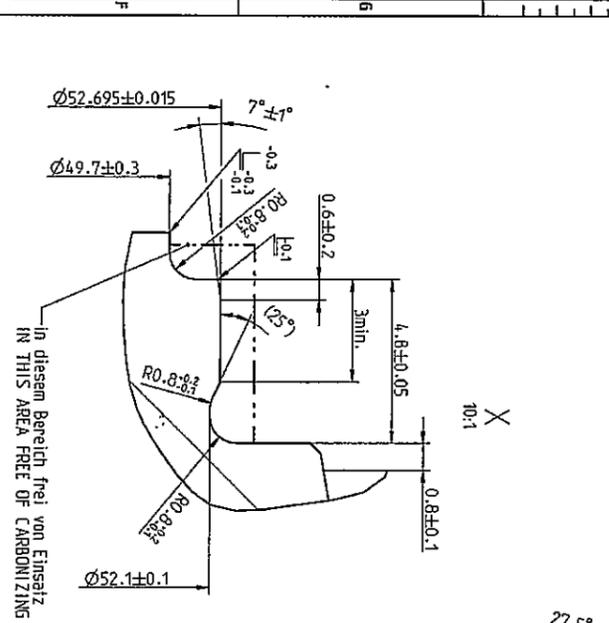
Result: OK
Risultato:

Distribution list: WLQ - S. Picerno
Lista di distribuzione: ME - L. Landriscina

Notes:
Note:
Spray equipment:
Flushing cabinet Hydac GTU-1230-M-Z-R
Spray method:
QPS 130033 (gears)
QPS 130034 (shafts)
Membrane material:
cellulose nitrate
Pore size [mm]:
5,0

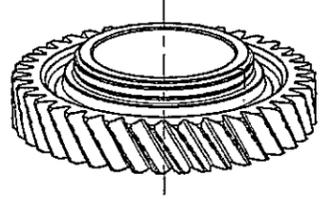
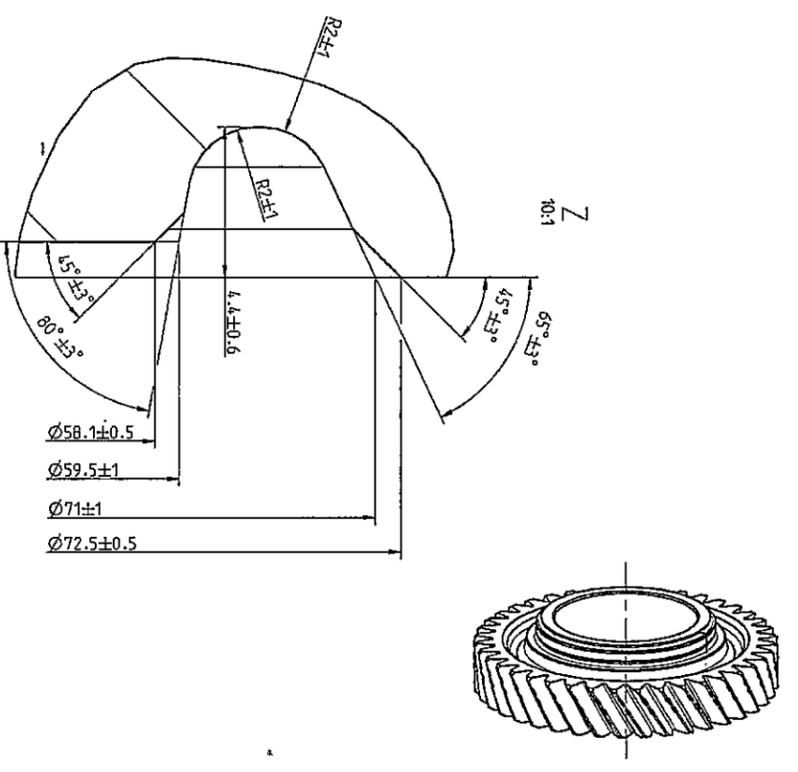
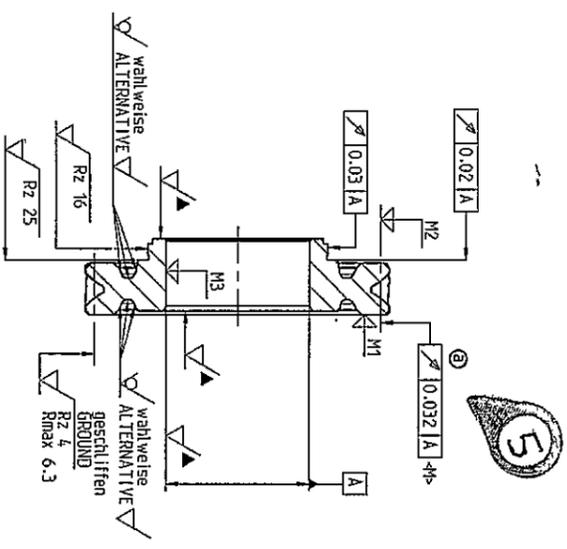
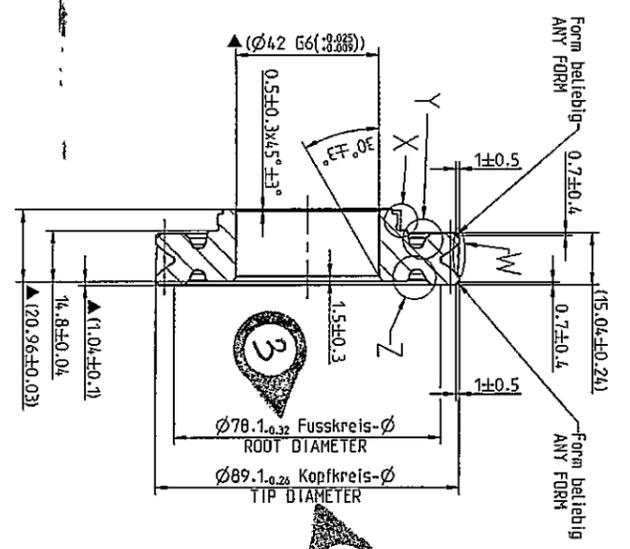
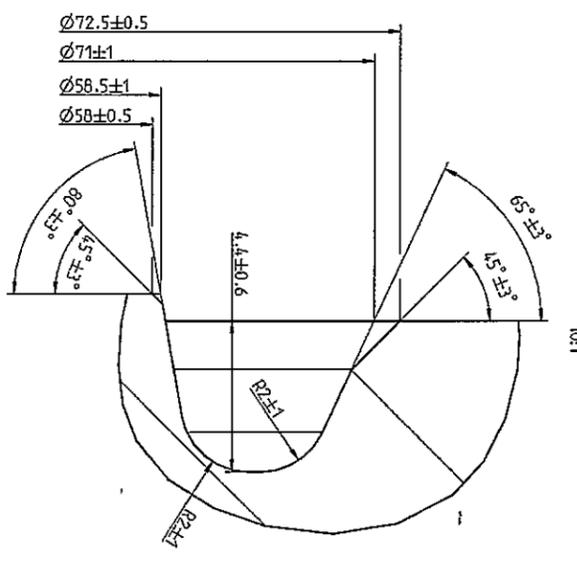
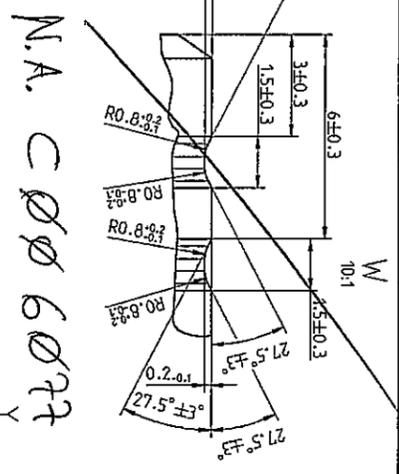
Cleanliness Analysis (Analisi della Pulizia)

Part	P/N	Washing Machine	Detergent	Sampling date	Wetted surface [cm ²]	Gravimetric evaluation [mg/1000cm ²]	Max Allowable [mg/1000cm ²]
SG1	251.1.1081.50	ORE 11033	NC 3300	21/12/17	627.41	0.70	2.5
DG	251.1.1223.50	ORE 11033	NC 3300	18/12/17	613.40	1.40	2.5
SG3	251.1.1225.50	ORE 11033	NC 3300	21/12/17	401.6	1.80	2.5
SG4	251.1.1226.50	ORE 11033	NC 3300	21/12/17	344.46	1.05	2.5
SG5	251.1.1228.50	ORE 11033	NC 3300	20/12/17	340.18	1.16	2.5
SG6	251.1.1230.50	ORE 11033	NC 3300	20/12/17	277.62	1.02	2.5
SG7	251.1.1232.50	ORE 11033	NC 3300	20/12/17	152.64	0.85	2.5
REV	251.1.1094.50	ORE 11033	NC 3300	02/01/18	434.08	1.04	2.5
RG	251.1.1080.50	ORE 11033	NC 3300	02/01/18	1036.22	1.25	2.5
DG_Fix	251.1.1220.35	ORE 11033	NC 3300	02/01/18	561.69	1.55	2.5
IS1	251.6.1073.35	ORE 11033	NC 3300	03/01/18	416.99	2.03	2.5
IS2	251.6.1218.35	ORE 11033	NC 3300	03/01/18	671.89	1.09	2.5
OS1	251.6.1076.35	ORE 11033	NC 3300	04/01/18	610.51	1.98	2.5
OS2	251.6.1078.35	ORE 11033	NC 3300	04/01/18	514.21	1.51	2.5



① VERZÄHNUNG OPTIONAL, ENTGRÄTET NACH G.908101 / CHAMFERING OPTIONAL ON GEAR ACC. TO G.908101
 FORM SD - Grösse siehe ② / FORM SD - Size see ②

Aussenverzählung / EXTERNAL GEAR	
Zahnweite / SPLINE DATA EXTERNAL	
Bezugsabmesser / REFERENCE DIAMETER d_g	1.750
Modul / MODUL m_g	4.0
Zahnanzahl / NUMBER OF TEETH z	17.5*
Eintrittshöhe / ADDITIONAL PRESSURE ANGLE α_g	30.10°
Schneckenrad / HELIX ANGLE β	
Richtung / HAND OF HELIX	LEFT, LINKS
Bezugsanzahl / BASIC RATIO	
Prüfverfahren / INSPECTION IDENTIFICATION	Handmessung / Hand measurement
Qualität / GEAR TOOTH QUALITY	2.0/6
Toleranzklasse / TOLERANCE CLASS	7
Zahnwerk / TOOTH THICKNESS s_g	stetliche Messung / constant measurement
Zahnweite / TOOTH THICKNESS s_g	4.020
Eintrittshöhe / ADDITIONAL PRESSURE ANGLE α_g	3.995
Prüfverfahren / INSPECTION IDENTIFICATION	3.00
Prüfanzahl / REFERENCE DIAMETER d_g	88.320
Eintrittshöhe / ADDITIONAL PRESSURE ANGLE α_g	88.260



② einseitige Härte und angelesen nach G.804002
 CASE HARDENED AND TEMPERED ACCORDING TO G.804002
 M1 (Oberflächenhärte/CASE HARDNESS) : 80.5-2.5 HRA
 M2 (Zahnflanke/TOOTH FLANK) : CHD (ENH) S50 HV=0.5-0.4
 M3 (Bohrung/BORE) : CHD (ENH) S50 HV=0.5-0.4
 M4 (Kernhärte/CORE HARDNESS) : 300min. HV10

Aussenverzählung / EXTERNAL GEAR	
Zahnweite / SPLINE DATA EXTERNAL	
Bezugsabmesser / REFERENCE DIAMETER d_g	1.750
Modul / MODUL m_g	4.0
Zahnanzahl / NUMBER OF TEETH z	17.5*
Eintrittshöhe / ADDITIONAL PRESSURE ANGLE α_g	30.10°
Schneckenrad / HELIX ANGLE β	
Richtung / HAND OF HELIX	LEFT, LINKS
Bezugsanzahl / BASIC RATIO	
Prüfverfahren / INSPECTION IDENTIFICATION	Handmessung / Hand measurement
Qualität / GEAR TOOTH QUALITY	2.0/6
Toleranzklasse / TOLERANCE CLASS	7
Zahnwerk / TOOTH THICKNESS s_g	stetliche Messung / constant measurement
Zahnweite / TOOTH THICKNESS s_g	4.020
Eintrittshöhe / ADDITIONAL PRESSURE ANGLE α_g	3.995
Prüfverfahren / INSPECTION IDENTIFICATION	3.00
Prüfanzahl / REFERENCE DIAMETER d_g	88.320
Eintrittshöhe / ADDITIONAL PRESSURE ANGLE α_g	88.260