GETRAG

Part Submission Warrant

31 L330

Part Name	Speed Gear 3 RD	Customer Part Number	250.1.4221.78
Shown on Drawing No.	250.1.4221.78	Organization Part #	
Engineering Change Level	a 35670	Dated	31 07 2014
Additional Engineering Changes		Dated	

Safety and/or Government Regulation ☐ Yes ☑ No Purchase Order No. Weight (kg) 1,453

Checking Aid No. Checking Aid Engineering Change Level Dated

ORGANIZATION MANUFACTURING INFORMATION

GETRAG MODUGNO
Organization Name & Supplier/Vendor Code

VIA DEI CICLAMINI N°4
Street Address

City	Region	Postal Code	Country
MODUGNO	BARI	70026	ITALY

CUSTOMER SUBMITTAL INFORMATION

RENAULT
Customer Name/Division

Buyer/Buyer Code

TYP 250
Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? ☑ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format:

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 Additional Location
- ☑ Other - please specify below

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

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 ______ / ______ hours. I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from this declaration below.

EXPLANATION / COMMENTS: New documentation for first PPAP lost

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

Organization Authorized Signature Date 15 Jan 2015

Print Name Pennacchia Vincenzo Phone No. tel 390805858580 Fax No.

Title GPS 1 Leader E-mail vincenzo.pennacchia@getrag.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

Part Warrant Disposition: ☒ Approved ☐ Rejected ☐ Other

Customer Signature Date 15.01.15

Print Name Customer Tracking Number (optional)

March 2006 CFG-1001

GETRAG Production Part Approval

DIMENSIONAL TEST RESULTS

Organization:	GETRAG	Part Number:	250.1.4221.78
Supplier/Vendor Code:	GETRAG Modugno	Part Name:	Speed Gear 3 RD
INSPECTION FACILITY:		Design Record Change Level:	a 35670
NA		Engineering Change Documents:	

Organization Measurement Results (Data)

Item	Dimension/Specification	Specification / Limits		Test Date	Qty. Tested	1	2	3	4	5	test distruttivo	Ok	Not Ok
1	Profile Teeth	--	--		5	ok	ok	ok	ok	ok		ok	
2	Root diameter	106,900	106,450		5	106,849	106,843	106,828	106,826	106,738		ok	
3	Outside diameter	118,850	118,590		5	118,730	118,732	118,716	118,716	118,655		ok	
4	MDK	114,750	114,663		5	114,690	114,675	114,697	114,696	114,703		ok	

SIGNATURE	TITLE	DATE
G. Russo	QPE	15 Jan 2015

STIRNRAD / GEAR	external / außenverzahnt	Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978) gültig für Werte am Einzelzahn / Tolerances of gearing (DIN 3961 of Aug. 1978) valid for values at individual tooth (7)				
Zähnezahl / Number of teeth z	55		linke Fl. / left flank	rechte Fl. / right flank		
Modul / Normal module m_n	1.800000	Profil-Formabweichung / Profile form error $f_{f\alpha}$	0.005		Eingriffsteilungs-Abweich. / Normal pitch error f_{pe}	0.010
Eingriffswinkel / Normal pressure angle α_n	17° 30' 0"	Profil-Gesamtabweichung / Total profile error F_α			Teilungs-Einzelabweichung / Adjacent pitch error f_p	0.010
Schrägungswinkel / Helix angle β	29° 15' 0"	Profil-Winkelabweichung / Profile angle error $f_{H\alpha}$	0.000 ± 0.010	0.000 ± 0.010	Teilungssprung / Diff. bet. adjacent pitches f_u	0.012
Steigungsrichtung / Hand of helix	LEFT	Flankenl.-Winkelabweich. / Tooth alignment error $f_{H\beta}$	0.000 ± 0.013	+ 0.015 ± 0.013	Teilungs-Summenabweich. / Cumulative circ. pitch error F_{pk}	
Profilverschiebungsfaktor / Addendum modification coeff. x	-0.062	Flankenl.-Gesamtabweich. / Total alignment error F_β			Rundlaufabweichung / Radial run-out F_r	0.032
Teilkreisdurchmesser / Pitch diameter d	113.468	Flankenl.-Formabweich. / Longitudinal alignment err. $f_{f\beta}$	0.005		Zahndickenschwankung / Range of tooth thickn. error R_S	
Kopfkreisdurchmesser / Outside diameter d_a	118.85 $_{-0.26}$	Teilungs-Gesamtabweich. / Cumulative pitch error F_p	0.050			
Kopfnutzkreisd. theo. max. / Tip diam. usable theo. d_{Na}	118.40	Einf.-Wälzabweichung / Tangential composite error F_i'			Zweifl.-Wälzabweichung / Radial composite error F_i''	0.028
Kopfnutzkreisd. theo. min. / Tip diam. usable theo. d_{Na}	118.00	Einflanken-Wälzsprung / Tang. tooth to tooth comp. err. f_i'			Zweifl.-Wälzsprung / Radial tooth to tooth comp. err. f_i''	0.012
Fußkreisdurchmesser / Root diameter d_f	106.90 $_{-0.45}$	Radbreite im Meßkreis d_M / Facewidth in meas. diam. b	13.00		Meßkreis Krümmungsradius / Radius of curvature meas. diam. ρ_{dM}	17.51
Fußnutzkreisdurchmesser / Root diameter usable d_{Nf}	109.82					
Grundkreisradius / Base circle radius r_b	53.357					
Grundkreisdurchmesser / Base diameter d_b	106.713					
Normalzahndicke max. / Normal tooth thickness s_n	2.679					
Normalzahndicke min. / Normal tooth thickness s_n	2.654					
Meßzähnezahl / Number of teeth spanned k						
Zahnweite max. / Base tangent length W_k						
Zahnweite min. / Base tangent length W_k						
Meßkugeldurchmesser / Ball diameter D_M	2.5000					
Diam. Zweikugelmaß max. / Measurement o. balls M_{dK}	114.750					
Diam. Zweikugelmaß min. / Measurement o. balls M_{dK}	114.663					
Verdrehflankenspiel theo. / Circumferential backlash	0.071 / 0.171					

3

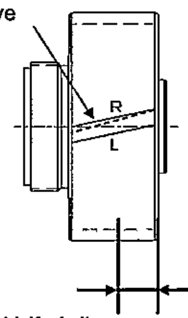
2

4

Vorbearbeitungsdaten siehe Verzahnungsblatt Vorbearbeitung gleicher Nr.
For pre-machining dimensions, see gear data sheet same number

Wkz-Profil siehe Werkzeugdatenblatt Nr. / For Tooth profile, see tool data sheet number: 250.1.4221.78

right fl. = drive

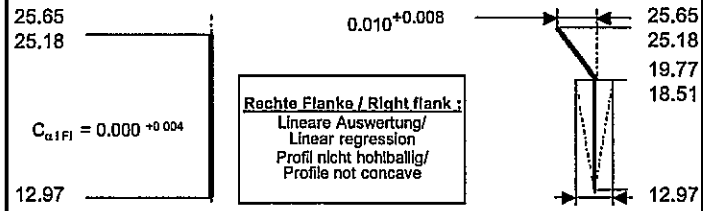


3.5 Measuring plane for MdK

Bezugsprofil-Schleifscheibe
Grinding tool data

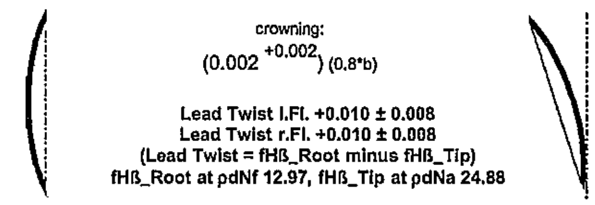
Schleifscheibenkopfhöhe / Grinding wheel tip height h_{aP0S} = 3.050
Schleifscheibenkopfradius / Grinding wheel tip radius ρ_{aP0S} = 0.616
Schleifdurchmesser / grinding diameter = 108.92 $_{-0.30}$ ≡ 10.91
Hondurchmesser / honing diameter = 108.92 $_{-0.30}$ ≡ 10.91

+ linke Flanke / left flank	- Profil / Profile -	rechte Flanke / right flank +
Kopf / Tip: 25.65, 25.18	0.010 $^{+0.008}$	25.65, 25.18, 19.77, 18.51
$C_{\alpha 1 Fl}$ = 0.000 $^{+0.004}$	**Rechte Flanke / Right flank :** Lineare Auswertung/ Linear regression; Profil nicht hohlballig/ Profile not concave	
Fuß / Root: 12.97		12.97
$f_{H\alpha}$ = 0.000 ± 0.006	Average values	$f_{H\alpha}$ = 0.000 ± 0.006



* Schreibbeginn / * Start of checking: Ø = 108.92 $_{-0.30}$ ≡ 10.91

+ linke Flanke / left flank	- Flankenlinie / Tooth trace +	rechte Flanke / right flank -
unten / down	crowning: (0.002 $^{+0.002}$) (0.8*b)	
	Lead Twist l.Fl. +0.010 ± 0.008 **Lead Twist r.Fl. +0.010 ± 0.008** **(Lead Twist = fHß_Root minus fHß_Tip)** **fHß_Root at ρdNf 12.97, fHß_Tip at ρdNa 24.88**	
oben / up: $f_{H\beta}$ = 0.000 ± 0.006	Average values	$f_{H\beta}$ = + 0.015 ± 0.006



* ffαf (zwischen dNf und dem Schreibbeginn ds) max ffα/2, jedoch 0.003 zulässig
* ffαf (between dNf and start of checking ds) max ffα/2, 0.003 allowable.

Profil- und Flankenlinienprüfung nach VDI/VDE 2612
Tabellenwerte für F_β und $f_{H\beta}$ sind auf die gesamte Radbreite im Meßkreis d_M bezogen
Flankenlinienprüfbereich Lβ = 0.8*b hochgerechnet auf 1.0*b
Begriffe für Stirnräder nach DIN 868, 3960, 3998

Profile and helix checking according to VDI/VDE 2612
Listed tolerance data for F_β and $f_{H\beta}$ refers to the total face width in the meas. dia. d_M
Tooth trace testing area Lβ = 0.8*b calculated to 1.0*b
Terms of the tooth system according to DIN (German Industrial Standards) No. 868, 3960, 3998

Buch.	Anz.	Änd.Nr.		Datum	Name

Verteiler:

Schutzvermerk nach ISO 16016 beachten
Protection per ISO 16016

GETRAG
GETRAG Getriebe- und Zahnradfabrik
Hermann Hagenmeyer GmbH & Cie KG

Abbildungen sind unmaßstäblich.
Diagrams not to scale.

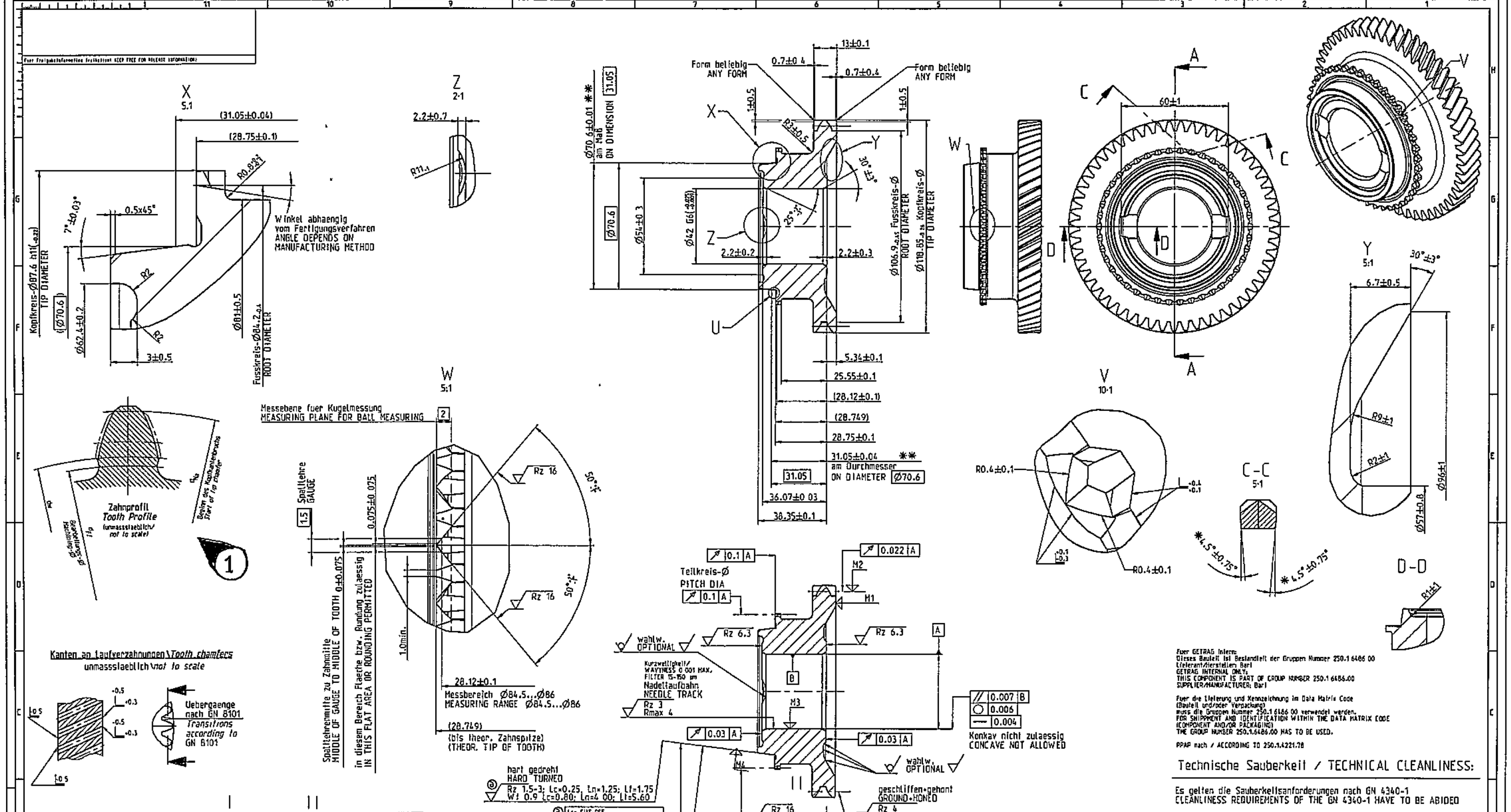
Ersatz für:
Erstverwendung bei Getriebetype: 250.0.0004.16

Remark:

	Datum	Name
gez.	08.05.2014	Cricenti, Fabrizio
gepr.		

Verzahnungsblatt Endkontrolle
Final Check Gear Data
Benennung: / Naming:
Speed Gear 3rd

Zeichnungsnummer: / Drawing number:
250.1.4221.78



		I	II	in Messebene
Aussenverzahnung / EXTERNAL GEAR				
Zahnwelle/ SPLINE DATA EXTERNAL				
Bezugsdurchmesser / REFERENCE DIAMETER d_g			88	
Modul / NORMAL MODULE m_n		1.800	2.0	
Zaehnezahl / NUMBER OF TEETH z		55	42	
Eingriffswinkel / NORMAL PRESSURE ANGLE α_n		17.5°	30°	
Schraegungswinkel / HELIX ANGLE β		29.25°	0°	
Richtung / HAND OF HELIX		LEFT, links	STRAIGHT/gerade	
Bezugsprofil / BASIC RACK				
Profilverschiebung/ADDENDUM MODIFICATION xm_n	Nennmass / NOMINAL	-0.111	0.9	
Qualitaet / GEAR TOOTH QUALITY		7		
Toleranzklasse / TOLERANCE CLASS			10	
Zahndicke / TOOTH THICKNESS s_n Nennmass / BASE DIMENSION	effective max		4.016	
Zahndicke / TOOTH THICKNESS s_n (Einzelmessung / ACTUAL)	max.	2.679	3.975	3.870
	min.	2.654	3.904	3.796
Messkugel-Ø / BALL DIA D_M		2.50	5	
Pruefmass / MEASUREMENT OVER BALLS M_{dK} (Einzelmessung / ACTUAL)	max.	114.750	94.519	94.406
	min.	114.663	94.413	94.295

circuiti di controllo: 1 / 2 / sala di misura

Istruzioni di controllo

GETRAG

PP Produzione GPS

Materiale:	2501422178		Indice del disegno finito:	-
Descrizione:	Ruota dentata libera 3.M.	Stato:Rilasciato Produzione + Calcolo costi	Data emissione:	11.11.2014 / Vito Fiore
Operazione:	**0230 Rettifica denti**		Data aggiornamento:	09.01.2015 / Rocco Tanzella
Centro di lavoro:	SLW14250 RETTIFICA DENTI SG3			

n.SAP ID interno	GN 3010	Caratteristica	Misura nomin.	LTI	LTS	Strumento di controllo	Quantità	Frequenza RK1:	Quantità	Frequenza RK2:	Quantità	Frequenza Sala di misura	Cambio ut.	Metodi di gestione / Documentazione
0004		Controllo 1° pz secondo Gear data 250.1.4221.7X				MVZ-400249 EVOLVENTIMETRO					1	1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo
						MOA-416121 RUGOSIMETRO TIPO PRK					1	1° pz 2.3.1.1-R 2		
						MZA-401071 CALCOLATORE DI MISURA E9066 MARPOSS					1	1° pz 2.3.1.1-R 2		
0024	M	Diametro Mdk sfere 2.5	114,697 mm	114,645	114,750	MZA-401071 CALCOLATORE DI MISURA E9066 MARPOSS	3	pz ogni 100 per macchina						CR1: calcolatore di misura
0034	M	Evolvente ed elica sec.G.T. con svergolamento		.		MVZ-400249 EVOLVENTIMETRO					1	pz ogni 100 per macchina		Misu: diagramma di dentatura
0036	M	Svergolamento evolventi				MVZ-400249 EVOLVENTIMETRO					1	Ultimo PZ. prima ravvivatu ra		Misu: diagramma di dentatura
0044	M	Errore globale di divisione Fp	0,000 mm	0,000	0,050	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac .		Misu: diagramma di dentatura
0046	M	Oscillazione radiale dentat. Fr	0,000 mm	0,000	0,032	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac .		Misu: diagramma di dentatura
0054	M	Rugosità dente Rz	mm	0,000	0,004	MOA-416121 RUGOSIMETRO TIPO PRK					1	1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo
0064	M	Rugosità dente Rmax	µm	0,0	6,3	MOA-416121 RUGOSIMETRO TIPO PRK					1	1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo
0076		Controllo chimico bruciature secondo procedura WTL 3.4.10.01	.				1	pz cambio mola rettifica						CR1: controllo primo pezzo
0084		Superf. dente completamente rettificata					10	pz per rack						CR1: no documentazione

Point	Caractheristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5
4	MDK	114,750/114,663	114,69	114,675	114,697	114,696	114,703

Manual measures by Marposs

SR3 2501 4221 78

07,Jan ,2015

*

GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.: STI0410o05 0 PNC35 B4784	Controllore: TURNO c		Data: 13.01.2015 10:51
Denominazione: SR3	Numero denti z	55	Largh.fasc.dent. b 13mm
Numero disegno.: 250.1.4221.75-IF	Modulo m	1.8mm	Tratto evolv. Lα 12.21/5.54mm
Commessa/serie nr.: PPAP 1	Angolo pressione	17.5°	Tratto elica Lß 10.4mm
Masch.Nr.: M001 Spindel: Formmeßt	Angolo elica	-29.25°	Inizio elab. M1 12.97mm
Untersuchungszweck: Laufende Messung	Ø Base db	106.7133mm	Palpatore Ø (#1)1mm
Werkzeug: Charge:	Ang. Base	-27.775°	Fat.scor.pr. x -.062

Testa

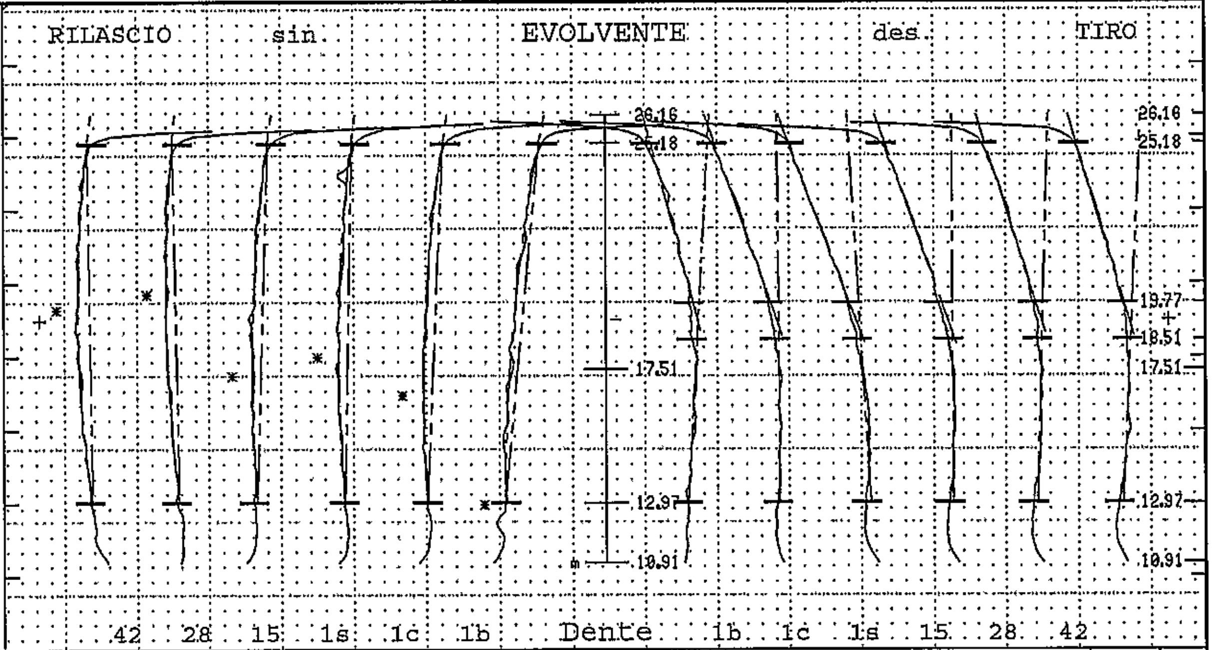
20 µm

Va500:1

Vb4:1

2.5 mm

Piede



Tolerance		Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
fHαm	±6	-1	Var 6							±6	Var 2						1	
fHα	±10	-1	1	2	-3	-2	-4	-9		±10	2	0	-3	0	1	2	1	
Fα		4	3	2	5	4	5	10			3	2	4	2	3	3	3	
ffα	5	2	2	2	2	4	2	2		5	2	2	2	2	2	2	2	
Cα	2/6	3	3	3	3	3	3	2			1	1	2	1	2	2	2	
fKo		0	0	0	0	0	0	0		-18/-10	-16	-17	-17	-18	-17	-17	-18	
P/T-φ[mm]		106.849	[106.45/106.9]								118.730	[118.59/118.85]						

Sotto

20 µm

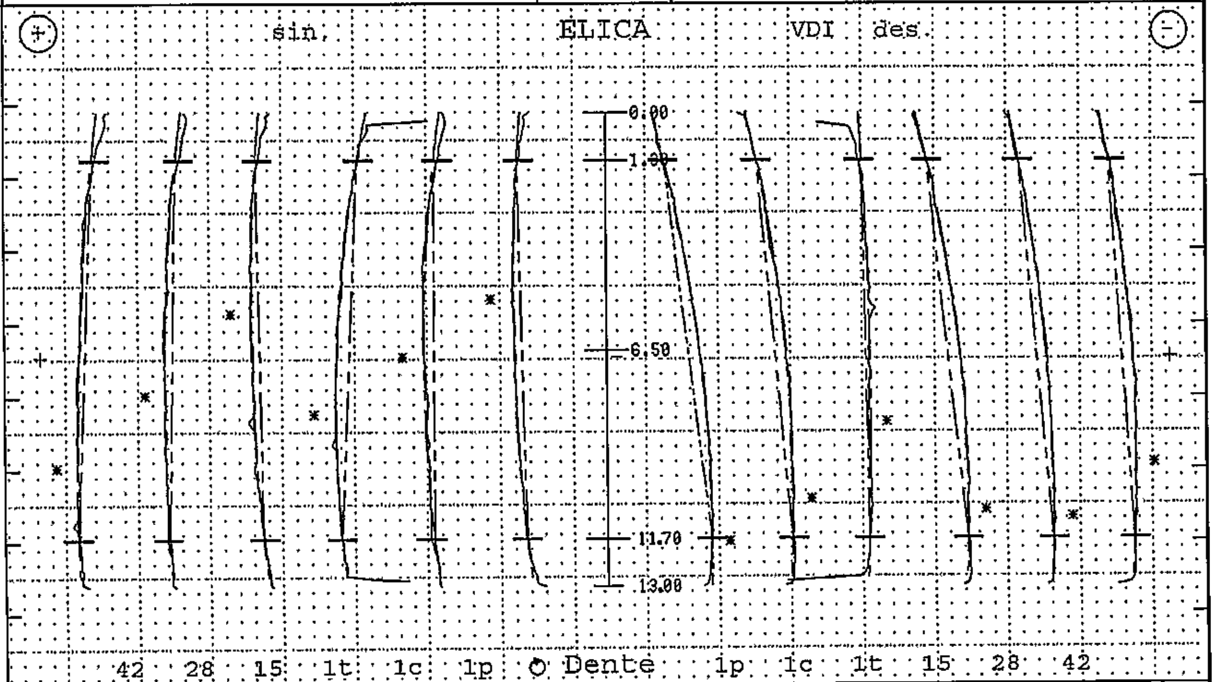
Va500:1

Vb5:1

2 mm

Sopra

N:Z



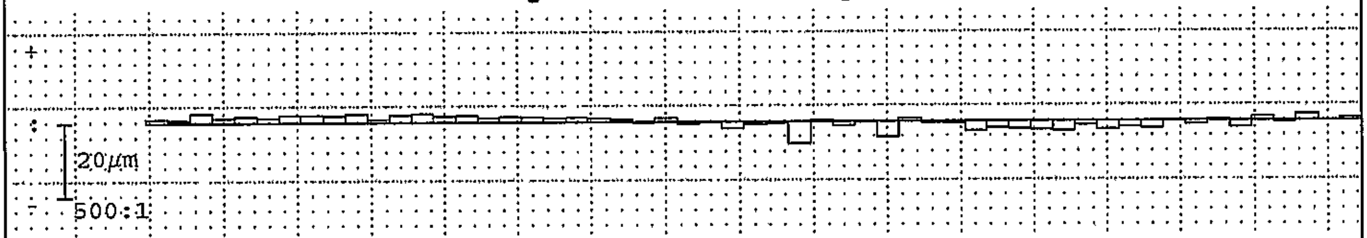
fHßm	±6	-1	Var 7							15±6	Var 5						12	
fHß	±13	-1	-5	-2	2	-6	0	3		15±13	16	12	2	14	12	9	12	
Fß		4	6	4	3	6	2	3			2	3	10	2	3	5	3	
ffß	5	2	2	2	2	2	2	1		5	1	1	3	1	1	1	1	
Cß	2/4	2	2	2	2	4	3	2		2/4	3	3	1	3	3	3	3	
Bd	10±8	9								10±8							14	

GETRAG

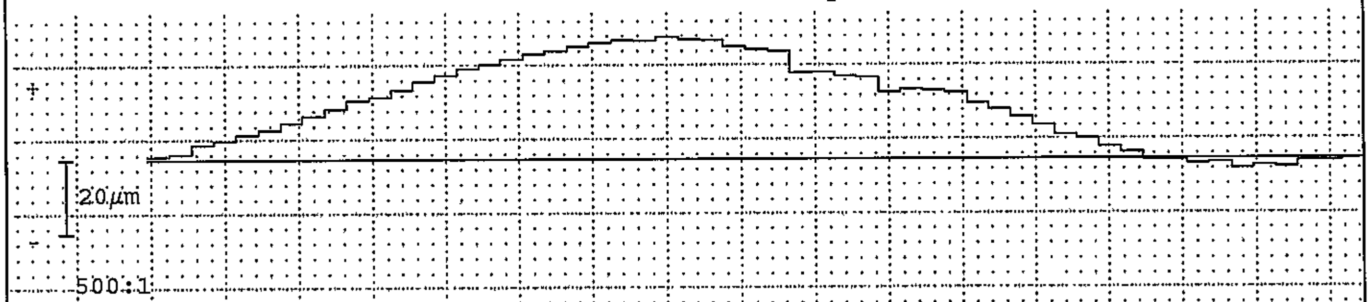
Ruota cilindrica Divisione

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	TURNO c	Data:	13.01.2015 10:51
Denominazione:	SR3	Numero denti z	55	Angolo pressione	17.5°
Numero disegno.:	250.1.4221.75-IF	Modulo m	1.8mm	Angolo elica	-29.25°
Commessa/serie nr.:	PPAP 1	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001 Spindel: Formmeister 1	Werkzeug:		Charge:	

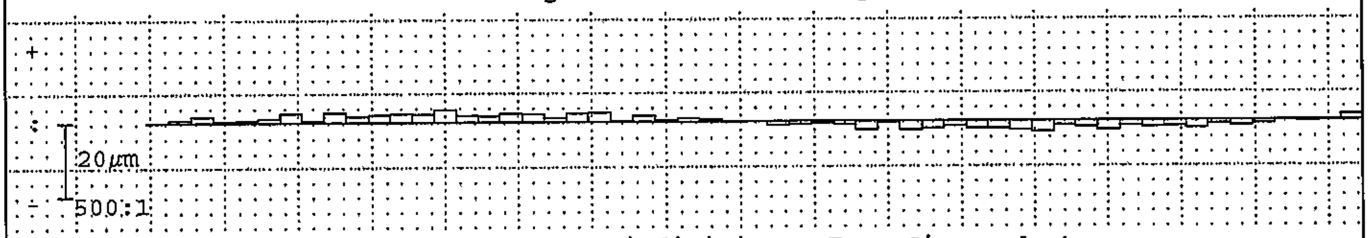
Errori singoli di divisione fp fianco sinistro



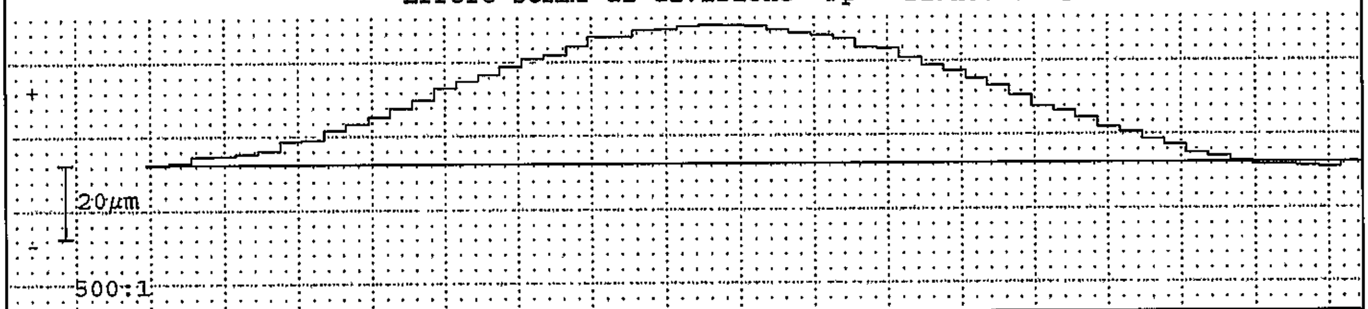
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



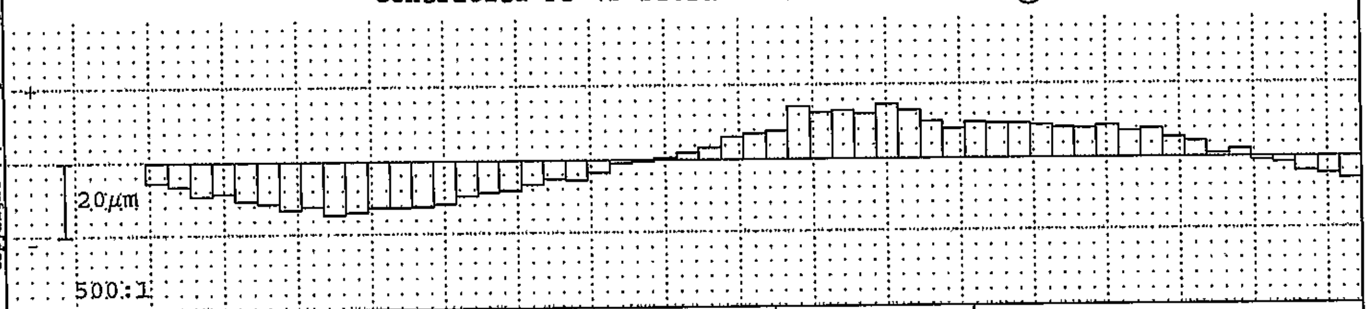
Errore somma di divisione Fp fianco destro



Corsa per misura divis.:112.313 z=6.5mm

		fianco sinistro / RILASCIO				fianco destro / TIRO			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	6		10		3		10	
Gr. salto di passo	fu max	6		12		2		12	
Scarto di divisione	Rp	8				6			
Err. globale di divisione	Fp	36		50		39		50	
Err. cordale di divisione	Fpz/8	15				16			

Centricità Fr (Ø-sfera =2.75mm) ◎ : 25µm



Err. di concentricità	Fr	29	32	
Variaz. spessore dente	Rs			

KLINGELNBERG

GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	TURNO C	Data:	13.01.2015 10:58
Denominazione:	SR3	Numero denti z	55	Largh.fasc.dent. b	13mm
Numero disegno.:	250.1.4221.75-IF	Modulo m	1.8mm	Tratto evolv. La	12.21/5.54mm
Commessa/serie nr.:	PPAP 2	Angolo pressione	17.5°	Tratto elica Lß	10.4mm
Masch.Nr.:	M001 Spindel: Formnest1	Angolo elica	-29.25°	Inizio elab. M1	12.97mm
Untersuchungszweck:	Laufende Messung	Ø Base db	106.7133mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-27.775°	Fat.scor.pr. x	-.062

Testa

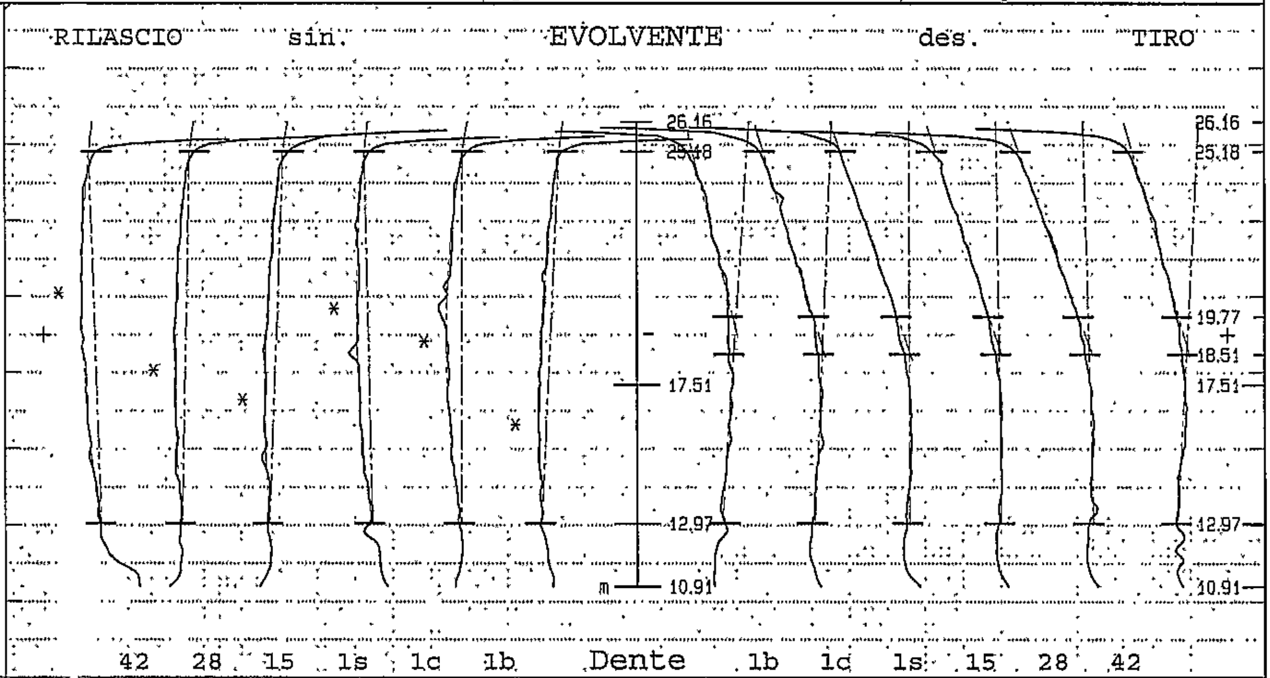
20 µm

Va500:1

Vb4:1

2.5 mm

Piede



Tolerance		Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
fHαm	±6	-1	Var 7							±6	Var 3						1	
fHα	±10	-1	3	-2	-4	2	0	-5		±10	3	2	0	-1	-1	2	1	
Fα		5	4	4	6	5	6	6			4	3	2	2	3	3	3	
ffα	5	3	3	2	3	4	3	2		5	2	2	2	1	2	2	2	
Cα	2/6	3	3	3	3	3	4	2			1	1	2	1	1	1	1	
fKo		0	0	0	0	0	0	0		-18/-10	-14	-18	-18	-16	-17	-17	-17	
P/T-φ[mm]		106.843	[106.45/106.9]								118.732	[118.59/118.85]						

Sotto

20 µm

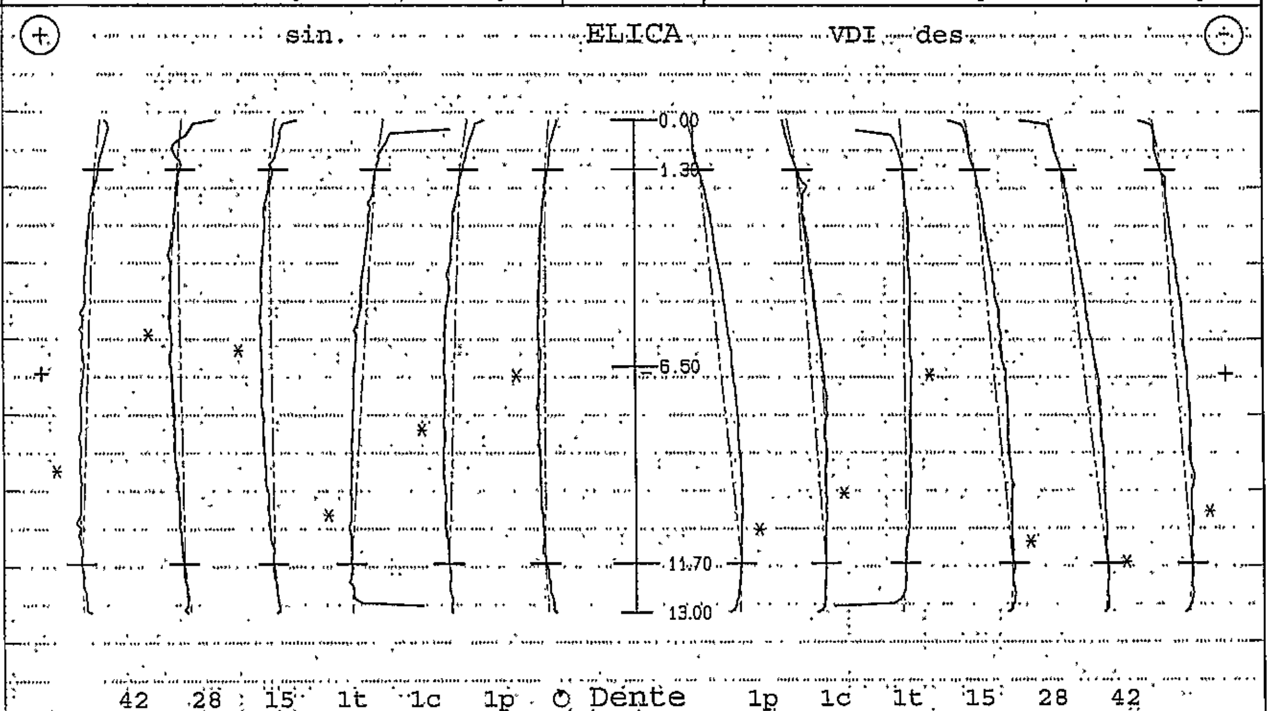
Va500:1

Vb5:1

2 mm

Sopra

N:Z

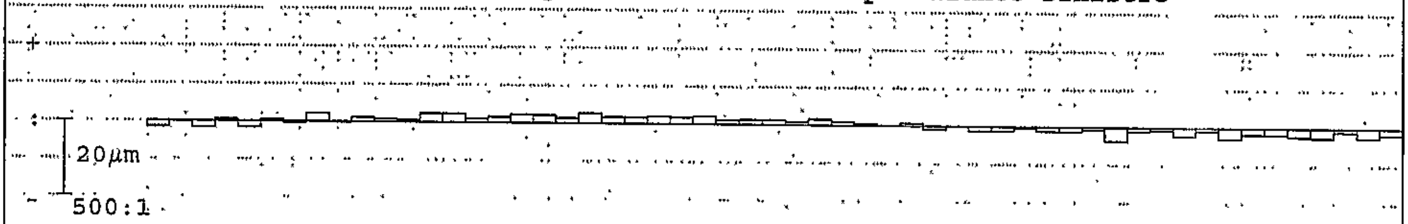


Tolerance		Medio	Val.misur						Qual	Tolerance	Val.misur						Medio	Qual
fHßm	±6	-2	Var 7							15±6	Var 6						12	
fHß	±13	-2	-5	2	1	-8	-4	0		15±13	13	9	0	12	15	10	12	
Fß		4	5	3	2	8	4	2			2	7	12	3	2	5	4	
ffß	5	2	2	2	2	2	2	1		5	1	3	1	1	1	1	2	
Cß	2/4	3	2	3	3	2	3	2		2/4	3	3	2	3	3	3	3	
Bd	10±8	8								10±8							13	

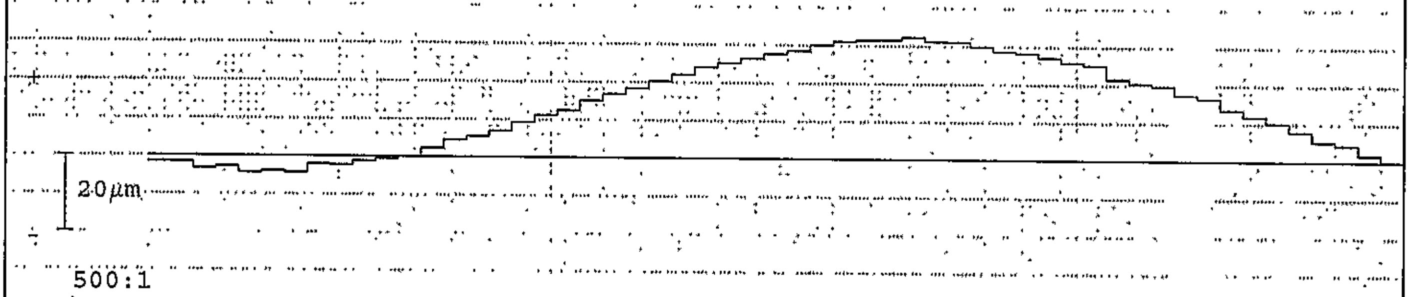
GETRAG	Ruota cilindrica Divisione

Nr. prog.: STI0410005 0 PNC35 B4784	Controllore: TURNO C		Data: 13.01.2015 10:58
Denominazione: SR3	Numero denti z	55	Angolo pressione 17.5°
Numero disegno.: 250.1.4221.75-IF	Modulo m	1.8mm	Angolo elica -29.25°
Commessa/serie nr.: PPAP 2	Untersuchungszweck:	Laufende Messung	
Masch.Nr.: M001 Spindel: Formmeat 1	Werkzeug:		Charge:

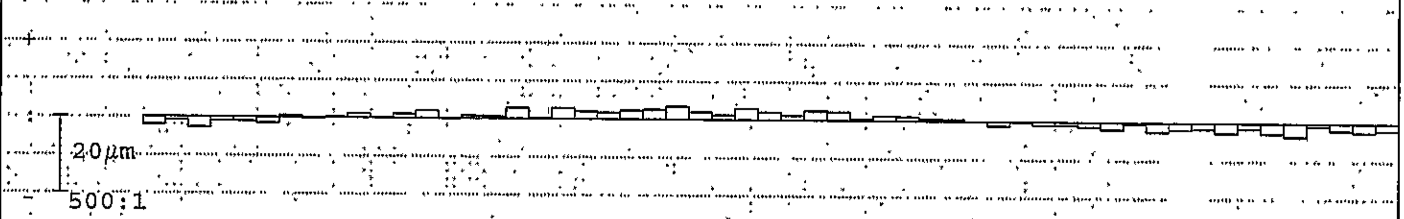
Errori singoli di divisione fp fianco sinistro



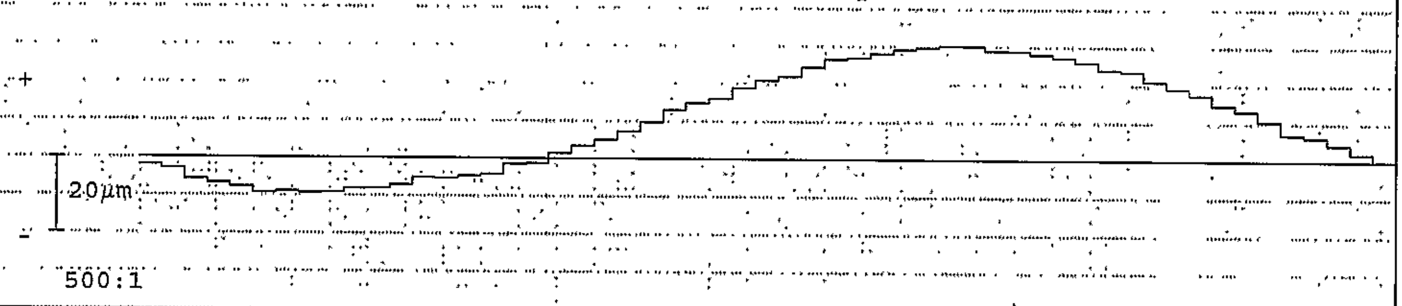
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



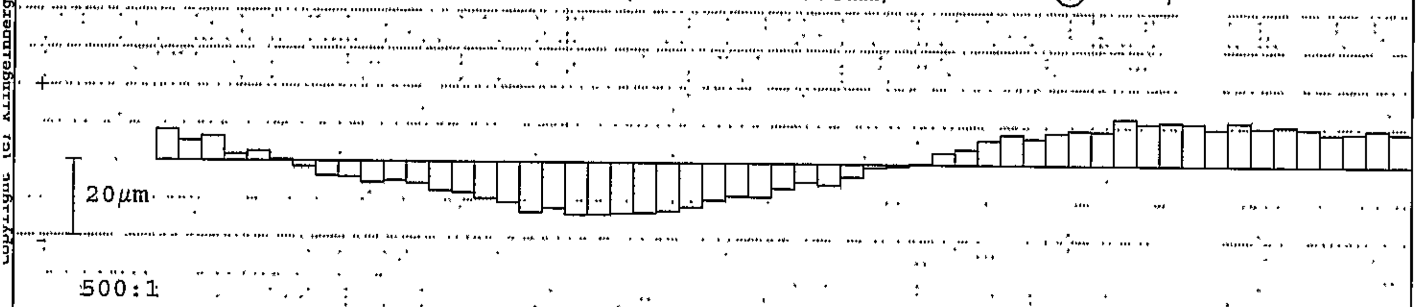
Errore somma di divisione Fp fianco destro



Corsa per misura divis.:112.313 z=6.5mm

		fianco sinistro / RILASCIO				fianco destro / TIRO			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	4		10		4		10	
Gr. salto di passo	fu max	3		12		3		12	
Scarto di divisione	Rp	7				7			
Err. globale di divisione	Fp	36		50		40		50	
Err. cordale di divisione	Fpz/8	15				16			

Centricità Fr (Ø-sfera =2.75mm) ◎ : 24µm



Err. di concentricità	Fr	26	32	
Variaz. spessore dente	Rs			

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GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	TURNO c	Data:	13.01.2015 11:20
Denominazione:	SR3	Numero denti z	55	Largh.fasc.dent. b	13mm
Numero disegno.:	250.1.4221.75-IF	Modulo m	1.8mm	Tratto evolv. Lα	12.21/5.54mm
Commessa/serie nr.:	PPAP 3	Angolo pressione	17.5°	Tratto elica Lβ	10.4mm
Masch.Nr.:	M001 Spindel: Formnest	Angolo elica	-29.25°	Inizio elab. M1	12.97mm
Untersuchungszweck:	Laufende Messung	Ø Base db	106.7133mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-27.775°	Fat.scor.pr. x	-.062

Testa

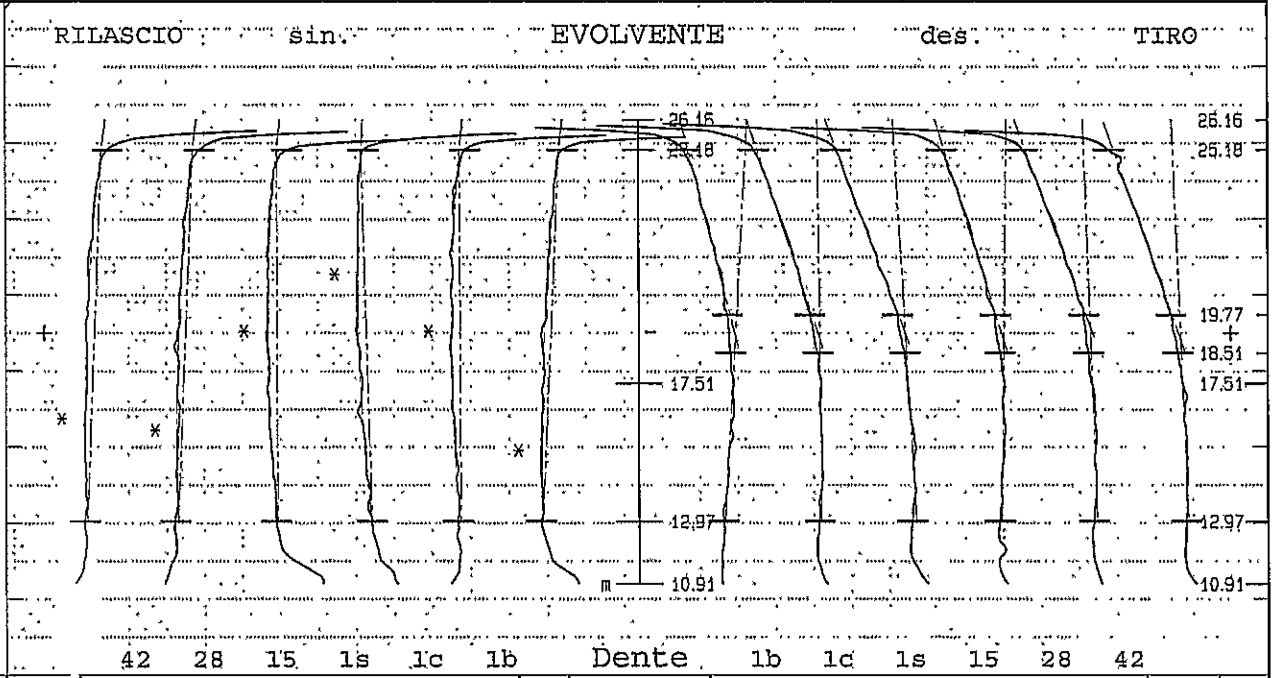
20 µm

Va500:1

Vb4:1

2.5 mm

Piede



Tolerance		Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
fHαm	±6	-2	Var 4							±6	Var 3						-1	
fHα	±10	-2	-4	-4	0	3	0	-4		±10	2	0	-3	1	-2	-2	-1	
Fα		5	6	6	4	3	2	6			3	1	3	2	2	3	2	
ffα	5	3	2	3	3	2	2	2		5	2	1	2	2	2	2	2	
Cα	2/6	2	2	2	3	2	2	2			1	1	1	1	1	1	1	
fKo		0	0	0	0	0	0	0		-18/-10	-15	-16	-15	-16	-15	-16	-16	
P/T-φ[mm]		106.828	[106.45/106.9]								118.716	[118.59/118.85]						

Sotto

20 µm

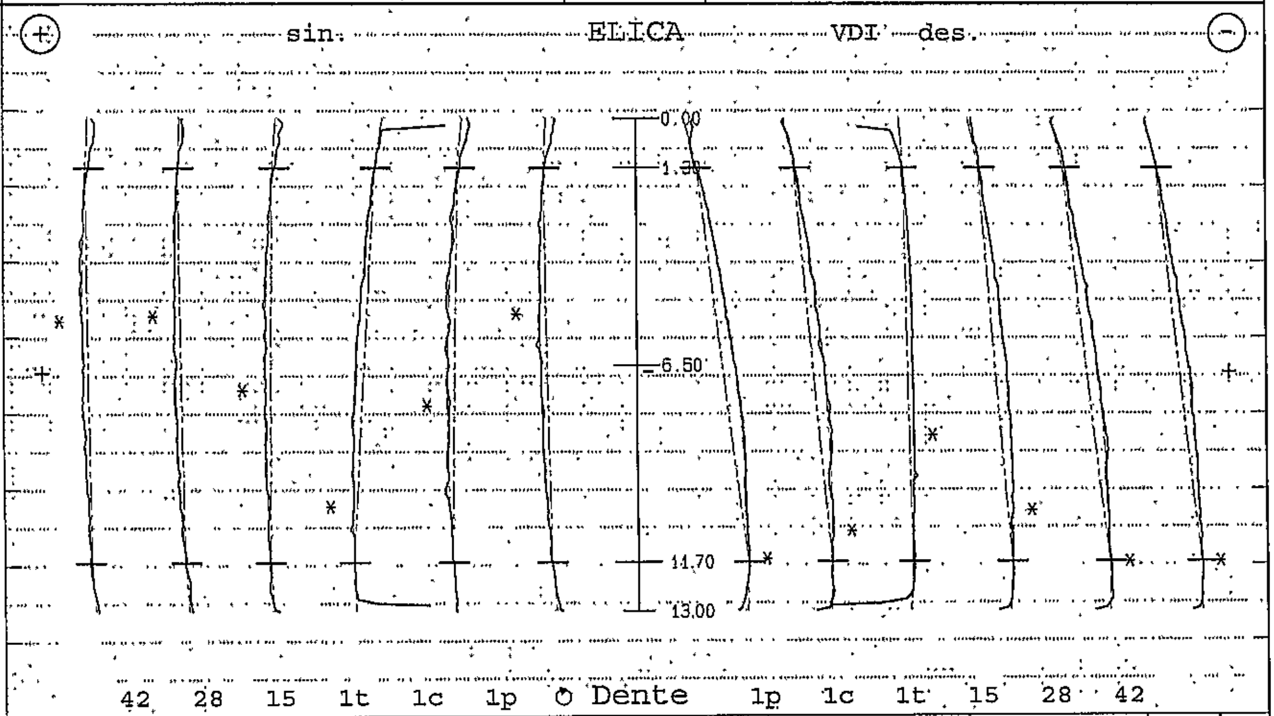
Va500:1

Vb5:1

2 mm

Sopra

N:Z

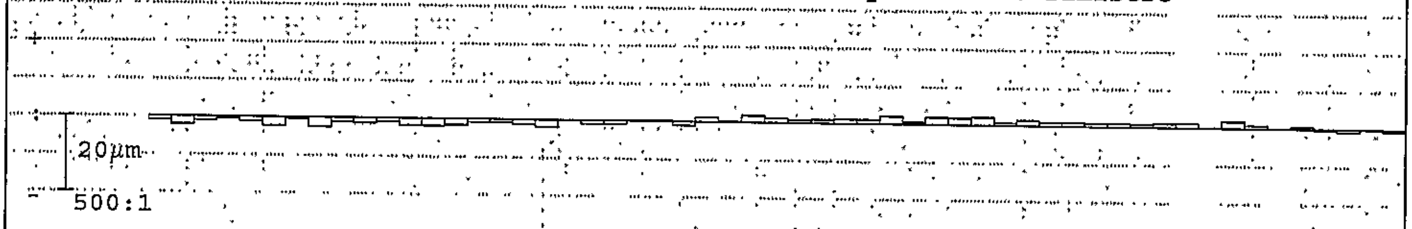


fHβm	±6	0	Var 4							15±6	Var 4						13
fHβ	±13	0	2	2	-1	-8	-2	2		15±13	16	12	3	11	15	15	13
Fβ		3	2	3	2	6	3	2			3	3	10	4	2	1	3
ffβ	5	2	2	1	1	1	2	2		5	1	2	1	1	1	1	1
Cβ	2/4	2	2	2	2	2	2	2		2/4	3	3	1	3	3	2	3
Bd	10±8	10								10±8							13

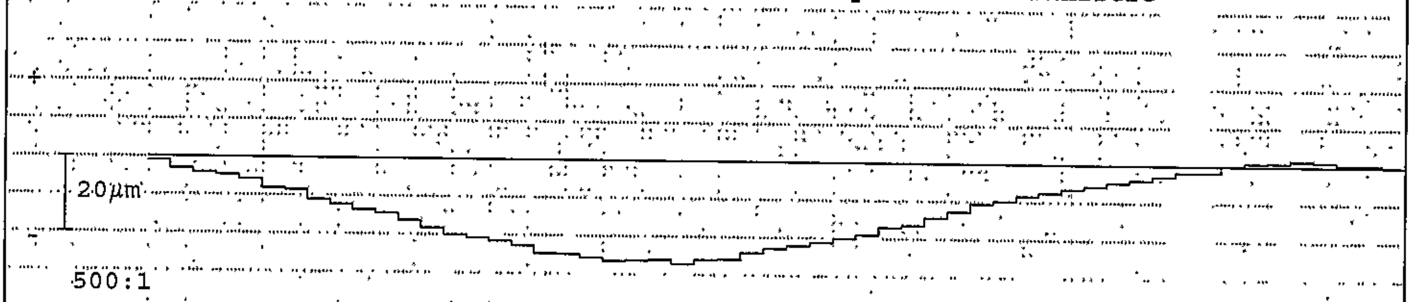
GETRAG	Ruota cilindrica Divisione

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	TURNO C	Data:	13.01.2015 11:20
Denominazione:	SR3	Numero denti z	55	Angolo pressione	17.5°
Numero disegno.:	250.1.4221.75-IF	Modulo m	1.8mm	Angolo elica	-29.25°
Commessa/serie nr.:	PPAP 3	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: Formneat	Werkzeug:	Charge:	

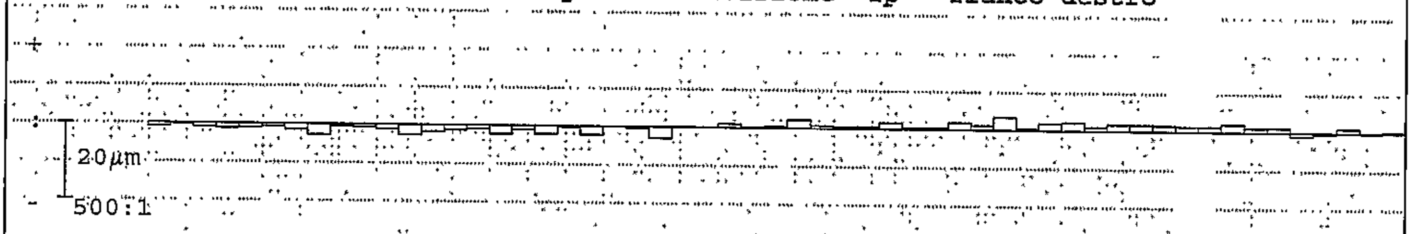
Errori singoli di divisione fp fianco sinistro



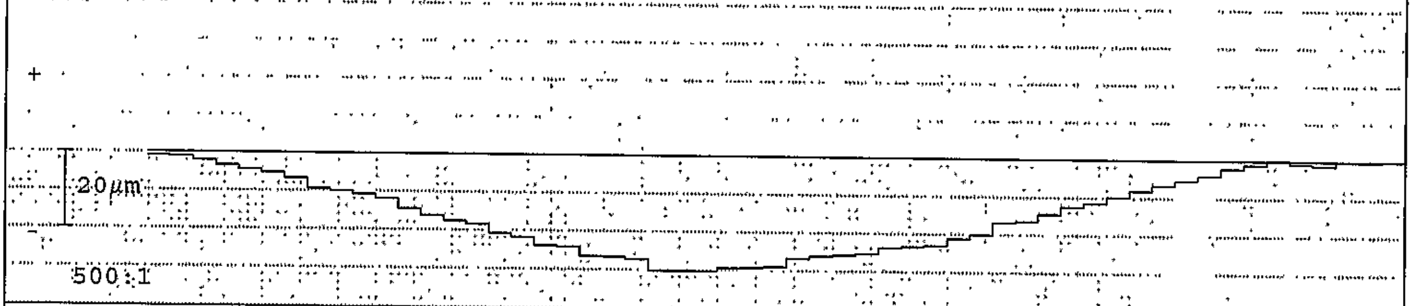
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



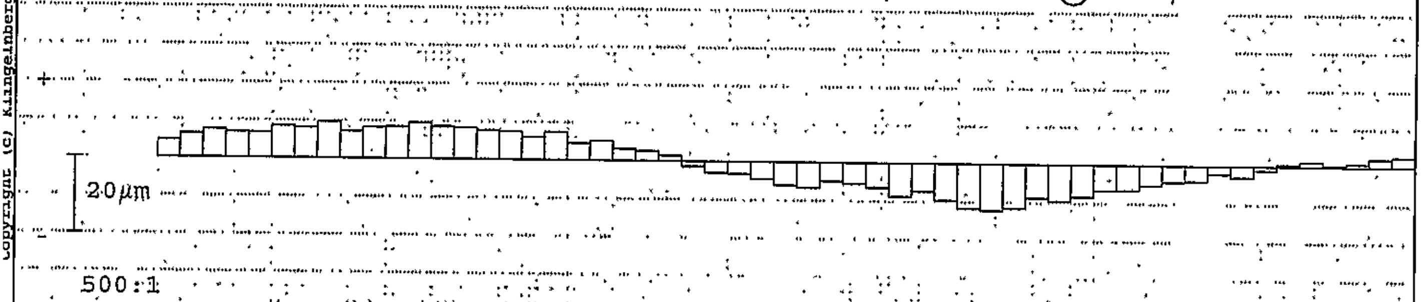
Errore somma di divisione Fp fianco destro



Corsa per misura divis.:112.313 z=6.5mm

		fianco sinistro / RILASCIO				fianco destro / TIRO			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	3		10		3		10	
Gr. salto di passo	fu max	2		12		3		12	
Scarto di divisione	Rp	5				6			
Err. globale di divisione	Fp	29		50		31		50	
Err. cordale di divisione	Fpz/8	11				12			

Centricità Fr (Ø-sfera =2.75mm) ◎ : 18µm



Err. di concentricitá	Fr	22	32	
Variaz. spessore dente	Rs			

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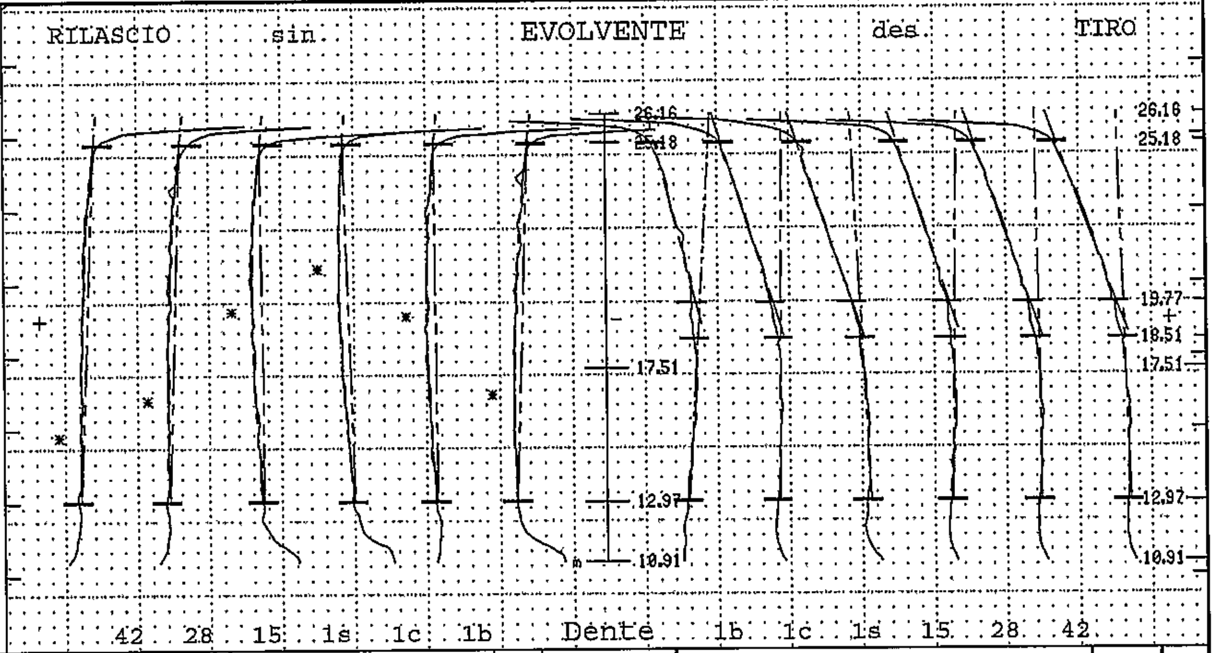
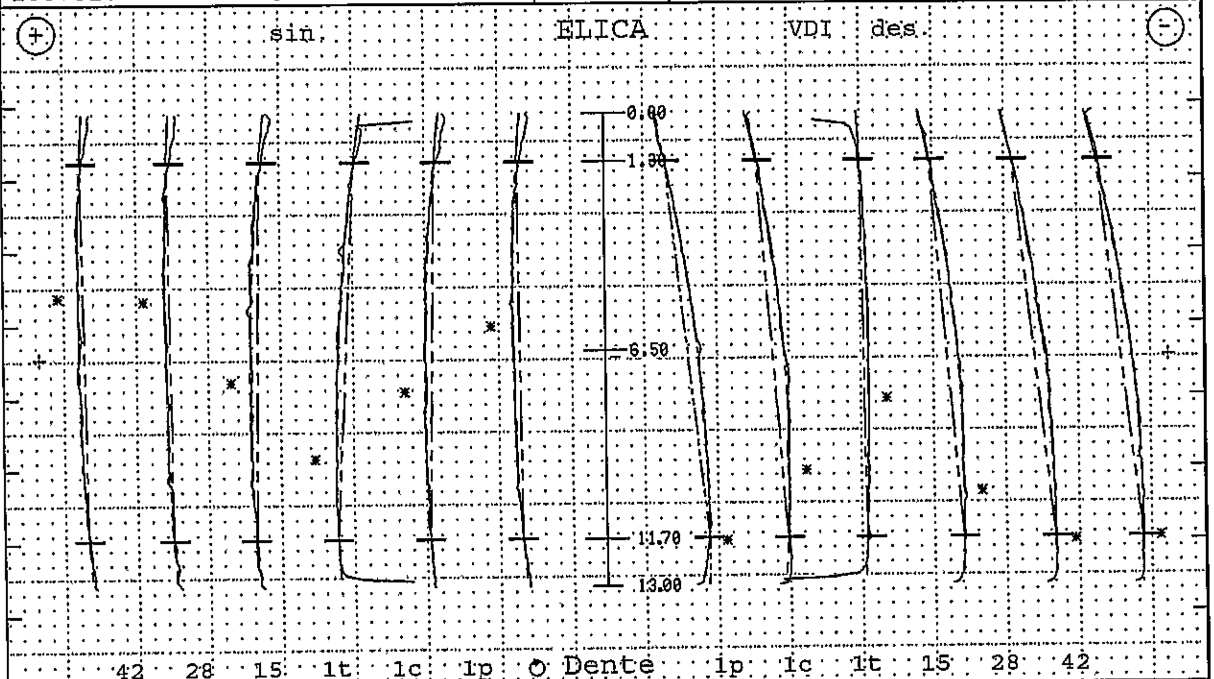
GETRAG Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	TURNO c	Data:	13.01.2015 11:12
Denominazione:	SR3	Numero denti z	55	Largh.fasc.dent. b	13mm
Numero disegno.:	250.1.4221.75-IF	Modulo m	1.8mm	Tratto evolv. Lα	12.21/5.54mm
Commessa/serie nr.:	PPAP 4	Angolo pressione	17.5°	Tratto elica Lß	10.4mm
Masch.Nr.:	M001 Spindel: Formm[illegible]	Angolo elica	-29.25°	Inizio elab. M1	12.97mm
Untersuchungszweck:	Laufende Messung	Ø Base db	106.7133mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-27.775°	Fat.scor.pr. x	-.062



Tolerance		Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
fHαm	±6	-1	Var 5							±6	Var 2						0	
fHα	±10	-1	-4	-3	1	3	1	-3		±10	3	0	-2	1	-1	-1	0	
Fα		5	6	6	4	3	2	4			3	2	3	2	2	2	2	
ffα	5	3	2	4	3	2	2	3		5	2	1	2	2	2	1	2	
Cα	2/6	2	2	2	3	2	2	2			1	1	1	1	1	1	1	
fKo		0	0	0	0	0	0	0		-18/-10	-15	-17	-15	-16	-17	-17	-17	
P/T-φ[mm]		106.826	[106.45/106.9]								118.716	[118.59/118.85]						

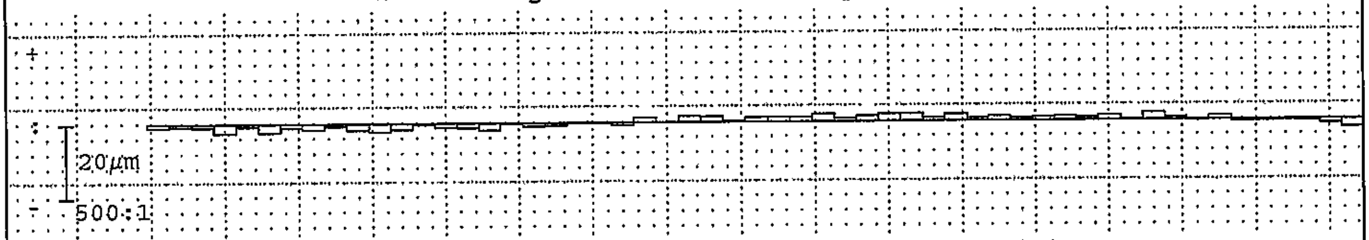


fHßm	±6	0	Var 4							15±6	Var 4						13
fHß	±13	0	2	2	-2	-6	-2	1		15±13	15	11	2	11	14	15	13
Fß		3	2	2	3	6	3	2			3	5	10	4	2	2	3
ffß	5	2	2	2	2	2	1	2		5	2	1	1	1	1	1	1
Cß	2/4	2	2	2	2	2	2	2		2/4	3	3	1	3	3	3	3
Bd	10±8	7								10±8							13

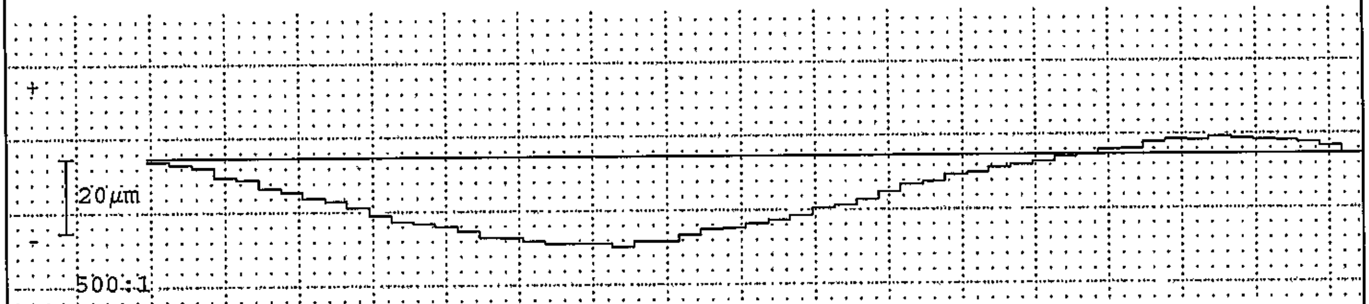
GETRAG — Ruota cilindrica Divisione

Nr. prog.: STI0410o005 0 PNC35 B4784	Controllore: TURNO c	Data: 13.01.2015 11:12	
Denominazione: SR3	Numero denti z: 55	Angolo pressione: 17.5°	
Numero disegno.: 250.1.4221.75-IF	Modulo m: 1.8mm	Angolo elica: -29.25°	
Commessa/serie nr.: PPAP 4	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001 Spindel: Formm[illegible]	[illegible]zeug:	Charge:	

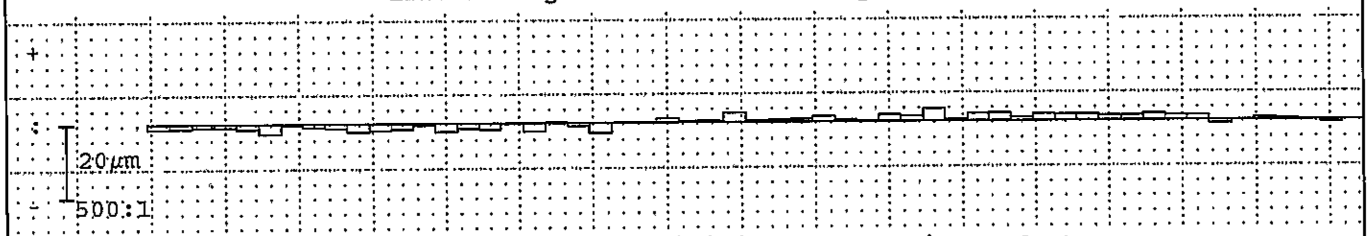
Errori singoli di divisione fp fianco sinistro



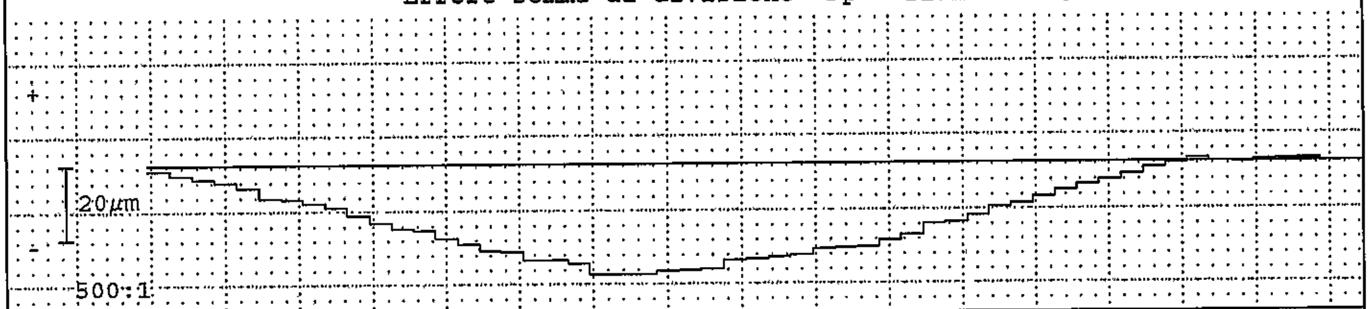
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



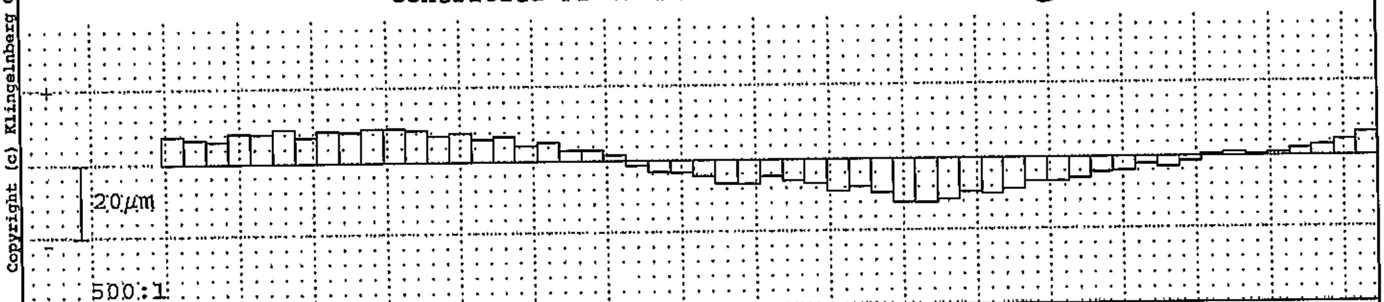
Errore somma di divisione Fp fianco destro



Corsa per misura divis.:112.313 z=6.5mm

		fianco sinistro / RILASCIO				fianco destro / TIRO			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	2		10		3		10	
Gr. salto di passo	fu max	2		12		3		12	
Scarto di divisione	Rp	4				6			
Err. globale di divisione	Fp	29		50		31		50	
Err. cordale di divisione	Fpz/8	12				12			

Centricità Fr (Ø-sfera =2.75mm) ◎ : 19µm



Err. di concentricitá	Fr	22	32	
Variaz. spessore dente	Rs			

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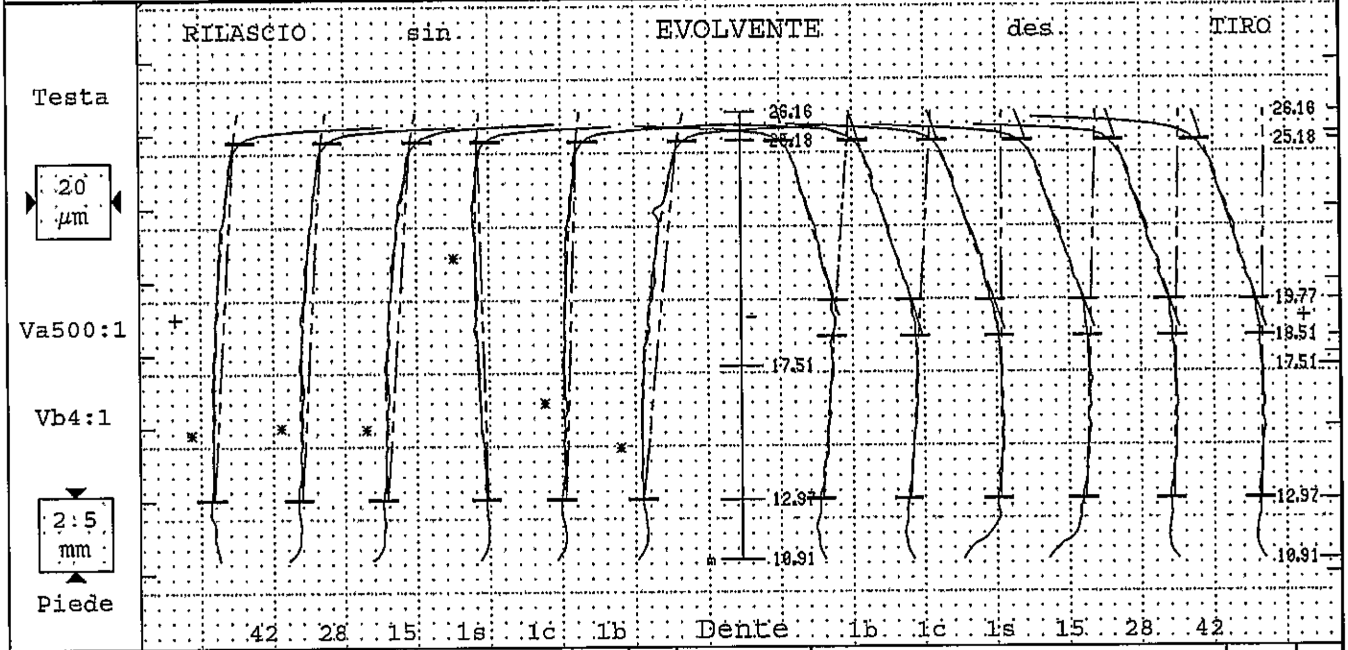
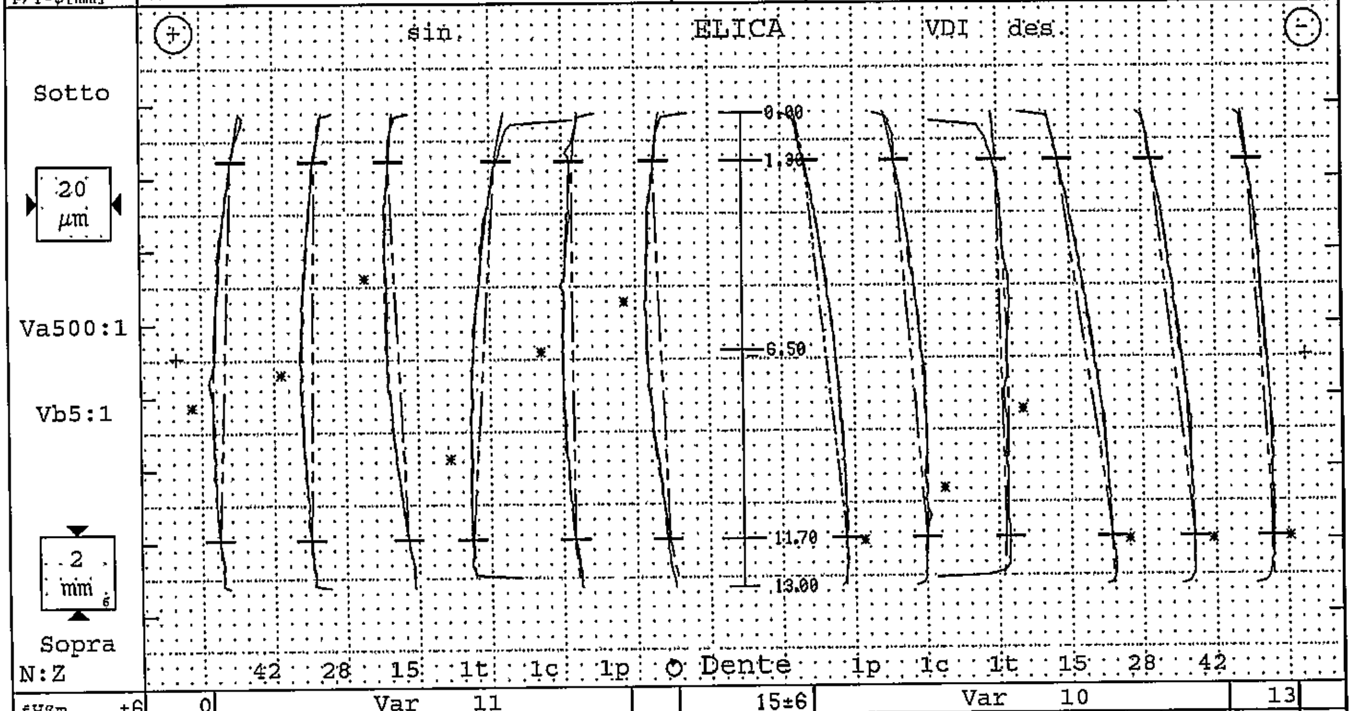
GETRAG Ruota cilindrica Evolvente/Elica

Nr. prog.: STI0410o005 0 PNC35 B4784	Controllore: TURNO c	Data:	13.01.2015 11:28
Denominazione: SR3	Numero denti z 55	Largh.fasc.dent. b	13mm
Numero disegno.: 250.1.4221.75-IF	Modulo m 1.8mm	Tratto evolv. Lα	12.21/5.54mm
Commessa/serie nr.: PPAP 5	Angolo pressione 17.5°	Tratto elica Lß	10.4mm
Masch.Nr.: M001 Spindel: Formmest	Angolo elica -29.25°	Inizio elab. M1	12.97mm
Untersuchungszweck: Laufende Messung	Ø Base db 106.7133mm	Palpatore Ø	(#1)1mm
Werkzeug: Charge:	Ang. Base -27.775°	Fat.scor.pr. x	-.062



Tolerance		Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
fHαm	±6	-6	Var 4							±6	Var 3						1	
fHα	±10	-6	-6	-6	-7	3	-3	-10		±10	3	3	0	1	1	0	1	
Fα		8	8	8	10	3	6	11			5	3	2	3	2	2	3	
ffα	5	3	3	3	3	3	3	4		5	2	2	1	2	2	2	2	
Cα	2/6	2	2	2	3	2	2	3			1	1	1	1	2	1	1	
fKo		0	0	0	0	0	0	0		-18/-10	-17	-18	-18	-18	-17	-17	-18	
P/T-φ[mm]		106.738	[106.45/106.9]								118.655	[118.59/118.85]						



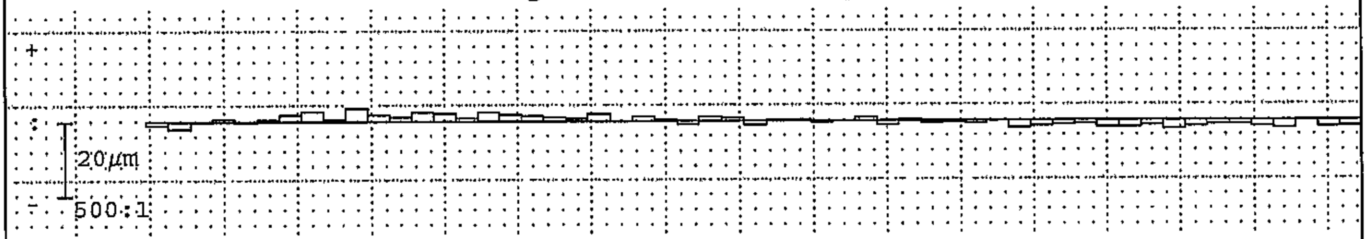
fHßm	±6	0	Var 11							15±6	Var 10						13
fHß	±13	0	-5	-2	6	-8	0	5		15±13	14	11	3	18	14	8	13
Fß		4	4	2	6	8	2	4			2	4	8	4	1	7	4
ffß	5	2	2	1	1	1	2	1		5	1	2	2	1	1	1	1
Cß	2/4	3	3	3	3	3	3	4		2/4	3	3	2	2	2	2	2
Bd	10±8	13								10±8							11

GETRAG

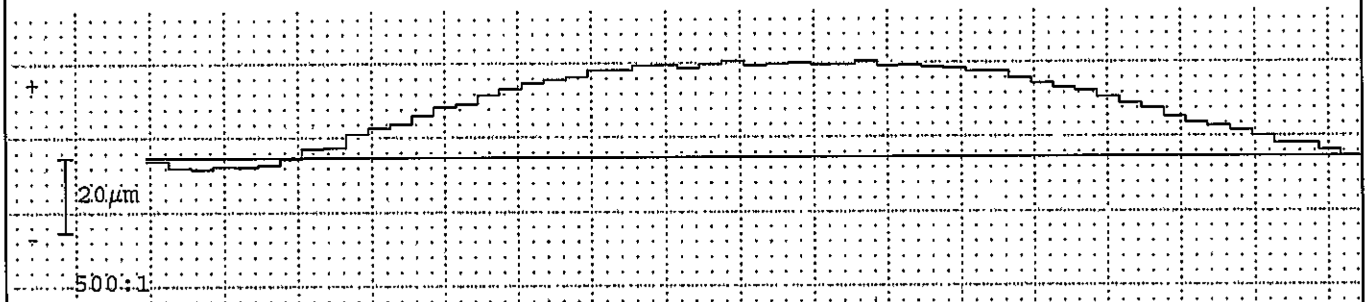
Ruota cilindrica Divisione

Nr. prog.: STI0410o005 0 PNC35 B4784	Controllore: TURNO c	Data:	13.01.2015 11:28
Denominazione: SR3	Numero denti z 55	Angolo pressione	17.5°
Numero disegno.: 250.1.4221.75-IF	Modulo m 1.8mm	Angolo elica	-29.25°
Commessa/serie nr.: PPAP 5	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001 Spindel: Formmeßzeug:		Charge:	

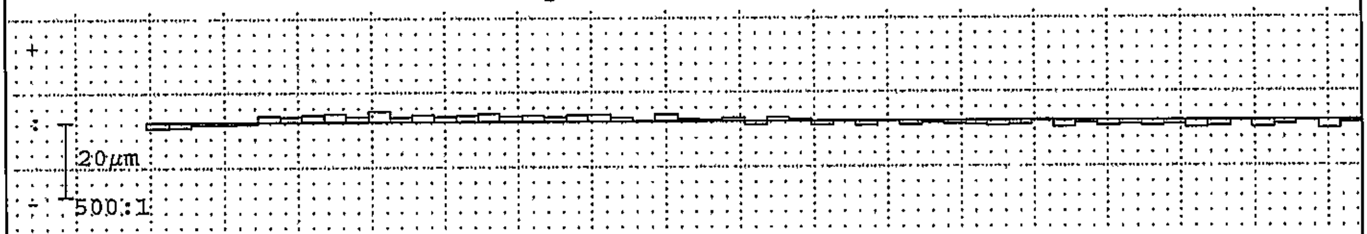
Errori singoli di divisione fp fianco sinistro



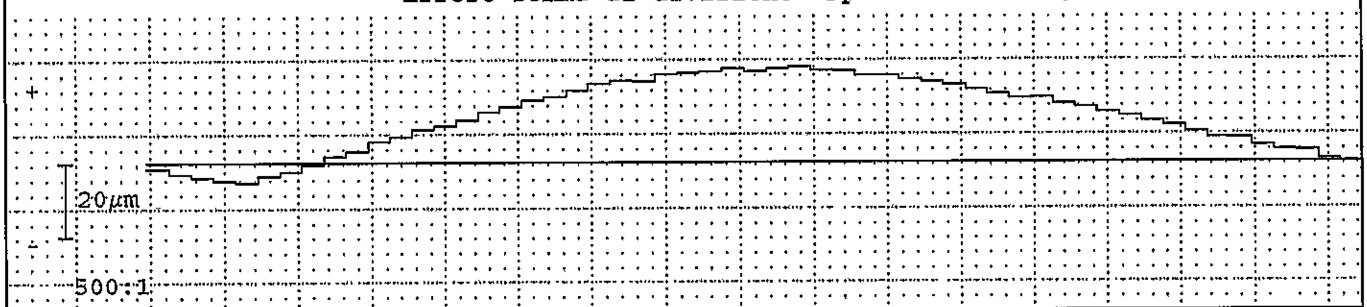
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



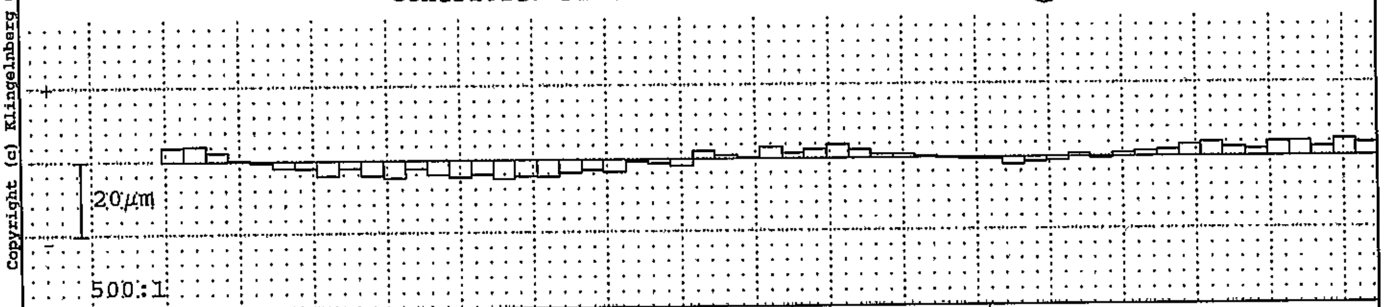
Errore somma di divisione Fp fianco destro



Corsa per misura divis.:112.313 z=6.5mm

		fianco sinistro / RILASCIO		fianco destro / TIRO	
		Val.misur Qual.	Val. amm Qual.	Val.misur Qual.	Val. amm Qual.
Gr. err. singoli divisione	fp max	3	10	3	10
Gr. salto di passo	fu max	3	12	2	12
Scarto di divisione	Rp	5		5	
Err. globale di divisione	Fp	29	50	31	50
Err. cordale di divisione	Fpz/8	14		12	

Centricità Fr (Ø-sfera =2.75mm) ◎ : 5µm



Err. di concentricitá	Fr	10	32	
Variaz. spessore dente	Rs			

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