

Part Name Ring Gear		Customer Part Number 250.1.6405.00	
Shown on Drawing No. 250.1.6405.00		Organization Part # _____	
Engineering Change Level b 35624		Dated 11 Dec 2013	
Additional Engineering Changes _____		Dated _____	
Safety and/or Government Regulation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Purchase Order No. _____	
Weight (kg) 2,794		Checking Aid No. _____	
Checking Aid Engineering Change Level _____		Dated _____	
ORGANIZATION MANUFACTURING INFORMATION		CUSTOMER SUBMITTAL INFORMATION	
GETRAG MODUGNO		FORD	
Organization Name & Supplier/Vendor Code _____		Customer Name/Division _____	
VIA DEI CICLAMINI N°4		Buyer/Buyer Code _____	
Street Address _____		Application _____	
MODUGNO BARI	70026	ITALY	TYP 250
City	Region	Postal Code	Country
MATERIALS REPORTING			
Has customer-required Substances of Concern information been reported? Submitted by IMDS or other customer format:		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> n/a
Are polymeric parts identified with appropriate ISO marking codes?		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> n/a
REASON FOR SUBMISSION (Check at least one)			
<input type="checkbox"/> Initial Submission	<input type="checkbox"/> Change to Optional Construction or Material		
<input checked="" type="checkbox"/> Engineering Change(s)	<input type="checkbox"/> Supplier or Material Source Change		
<input type="checkbox"/> Tooling: Transfer, Replacement, Refurbishment, or additional	<input type="checkbox"/> Change in Part Processing		
<input type="checkbox"/> Correction of Discrepancy	<input type="checkbox"/> Parts Produced at Additional Location		
<input type="checkbox"/> Tooling Inactive > than 1 year	<input checked="" type="checkbox"/> Other - please specify below		
REQUESTED SUBMISSION LEVEL (Check one)			
<input type="checkbox"/> Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.			
<input type="checkbox"/> Level 2 - Warrant with product samples and limited supporting data submitted to customer.			
<input checked="" type="checkbox"/> Level 3 - Warrant with product samples and complete supporting data submitted to customer.			
<input type="checkbox"/> Level 4 - Warrant and other requirements as defined by customer.			
<input type="checkbox"/> Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.			
SUBMISSION RESULTS			
The results for <input checked="" type="checkbox"/> dimensional measurements <input checked="" type="checkbox"/> material and functional tests <input type="checkbox"/> appearance criteria <input checked="" type="checkbox"/> statistical process package			
These results meet all drawing and specification requirements: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> n/a			
Organization Authorized Signature _____		Date 19 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: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Other			
Customer Signature _____		Date 19-01-15	
Print Name _____	Customer Tracking Number (optional) _____		

**GETRAG**

Production Part Approval

DIMENSIONAL TEST RESULTS

Organization:	GETRAG	Part Number:	250.1.6405.00
Supplier/Vendor Code:	GETRAG Modugno	Part Name:	Ring gear
INSPECTION FACILITY:	NA	Design Record Change Level:	b 35624
		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	191,600	191,150		5	191,464	191,410	191,461	191,427	191,465		ok	
3	Outside diameter	204,1	203,8		5	203,895	203,834	203,883	203,850	203,882		ok	
4	MDK	203,775	203,709		5	203,746	203,741	203,712	203,710	203,711		ok	
5													
6													
7													
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March 2006

CFG-1003

SIGNATURE

TITLE

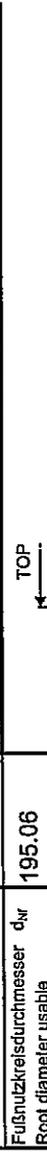
DATE

G. Russo

QPE

19 Jan 2015

STIRNRAD GEAR		Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978) valid for values at individual tooth		Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978) valid for values at individual tooth	
external außenverzahnt		linke Fl. left flank	rechte Fl. right flank		
Zähnezahl Number of teeth	78				
Modul Normal module	2.250000	# 0.005	# 0.005	Eingriffsteilungs-Abwech. Normal pitch error	f_{pe} 0.011
Eingriffswinkel Normal pressure angle	20° 0' 0"			Teilungs-Einzelabweichung Adjacent pitch error	f_p 0.011
Schrägungswinkel Helix angle	27° 48' 0"	-0.006 ± 0.007	-0.006 ± 0.007	Teilungssprung Diff. bet. adjacent pitches	f_d 0.014
Steigungsrichtung Hand of helix	RIGHT	-0.005 ± 0.008	0.000 ± 0.008	Teilungs-Summenabweich. F_{pk} Cumulative circ. pitch error	F_{pk}
Profilverschleißfaktor Addendum modification coeff.	-0.082			Rundlaufabweichung Radial run-out	F_r 0.032
Teilkreisdurchmesser Pitch diameter	198.399	# 0.005	# 0.005	Zahndickenschwankung Range of tooth thicken. error	R_s
Kopfkreisdurchmesser Outside diameter	204.10 -0.30		0.045		
Kopfnutkreisrad. theo. max. d_{ha} Tip diam. usable theo.	203.77			Zweifl.-Wälzabweichung Radial composite error	F_r 0.036
Kopfnutkreisrad. theo. min. d_{ha} Tip diam. usable theo.	203.30			Zweifl.-Wälzsprung Radial tooth to tooth comp. err.	f_r 0.016
Fußkreisdurchmesser Root diameter	191.60 -0.45		30.30	Meßkreis Krümmungsradius ρ_{Mk} Radius of curvature meas. diam.	ρ_{Mk} 37.26
Fußnutkreisdurchmesser Root diameter usable	195.06				
Grundkreisdurchmesser Base circle radius	91.737				
Grundkreisdurchmesser Base diameter	183.475				
Normalzahnstärke Normal tooth thickness	3.323				
Normalzahnstärke Normal tooth thickness	3.298				
Meßzähnezahl Number of teeth spanned	k				
Zahnweite Base tangent length	max. W_k				
Zahnweite Base tangent length	min. W_k				
Meßkugeldurchmesser Ball diameter	D_M				
Diam. Zweikugelmäß max. M_{dk} Measurement o. balls	203.775				
Diam. Zweikugelmäß min. M_{dk} Measurement o. balls	203.709				
Verzahnflankenspiel Circumferential backlash	theo. 0.072 0.169				

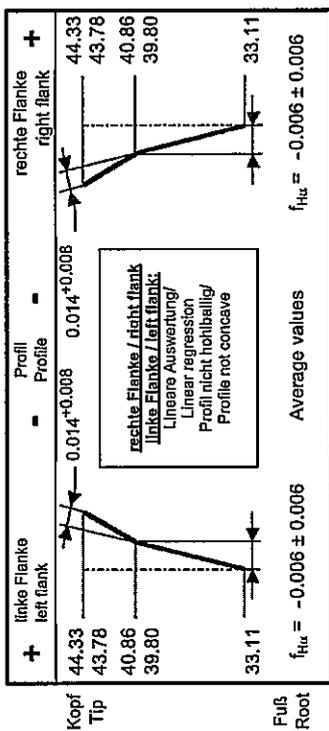


Der Verlauf der Profil- und Flankenlinie muss über den Messbereich stetig sein (ein- oder mehrfache Richtungsänderungen sind nicht zulässig)
The form of the profile and helix has to be continuous (one or more changes of directions are not allowed)
Für f_p max. zwei Wellen zulässig
For f_p max. two waves allowed

Bezugsprofil-Schleifschelbe Grinding tool data	
Schleifscheibenkopfhöhe h_{pos}	3.100
Grinding wheel tip height	
Schleifscheibenkopfradius ρ_{pos}	0.812
Grinding wheel tip radius	
Schleifdurchmesser = 193.20 -0.30 = 30.26 grinding diameter	

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

Wkz-Profil siehe Werkzeugdatenblatt Nr. 250.1.3666.52
For Tooth profile, see tool data sheet number



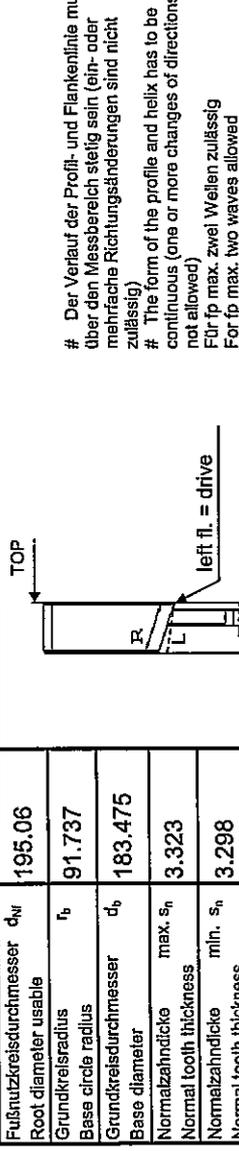
linke Flanke left flank
rechte Flanke right flank
Profil Profile
Average values
 $f_{hp} = -0.005 \pm 0.006$
 $f_{hp} = 0.000 \pm 0.006$
Schreibbeginn Start of checking
 $\phi = 193.50 -0.30 \approx 30.74$
Flankenlinie Tooth trace
Average values
 $f_{fp} = -0.005 \pm 0.006$
 $f_{fp} = 0.000 \pm 0.006$
crowning: $+0.003$ (0.8%)
Lead Twist l.Fl. $+0.015 \pm 0.008$
Lead Twist r.Fl. $+0.010 \pm 0.008$
(Lead Twist = $f_{Hk_Root}(pdNf=33.11)$ minus $f_{Hk_Tip}(pdNs=43.48)$)

* f_{fp} (zwischen dNf und dem Schreibbeginn ds) max $f_{fp/2}$, jedoch 0.003 zulässig
* f_{fp} (between dNf and start of checking ds) max $f_{fp/2}$, 0.003 allowable.
Profil- und Flankenlinienerprüfung nach VDI/VDE 2612
Tabellenwerte für F_p und f_{hp} sind auf die gesamte Radbreite im Meßkreis d_M bezogen
Flankenlinienerprüfungsbereich $L_f = 0.8 \cdot b$ hochgerechnet auf $1.0 \cdot b$
Begriffe für Stirnräder nach DIN 868, 3960, 3998
Profil- und helix checking according to VDI/VDE 2612
Listed tolerance data for F_p and f_{hp} refers to the total face width in the meas. dia. d_M
Tooth trace testing area $L_f = 0.8 \cdot b$ calculated to $1.0 \cdot b$
Terms of the tooth system according to DIN (German Industrial Standards) No. 868, 3960, 3998

Ersatz für Erskverwendung bei Getriebeyppe	
250	
Verzahnungsblatt Endkontrolle Final Check Gear Data	
Bearbeitung Naming:	
Buch, Anz.	Änd.Nr.
Datum	Name
Abbildungen sind unmaßstäblich. Diagrams not to scale.	
250	
Verzahnungsblatt Endkontrolle Final Check Gear Data	
Berechnung Naming:	
250.1.3666.52	

GETRAG Getriebe- und Zahnradfabrik
Hermann Hagenmeyer GmbH & Cie KG
Schutzvermerk nach ISO 16016 beschriften
Protection per ISO 16016
Verteiler:
Remark:

STIRNRAD GEAR		Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978) Tolerances of gearing (DIN 3961 of Aug. 1978) valid for values at individual tooth.		(7)	
external außenverzahnt		linke Fl. left flank	rechte Fl. right flank		
Zahlzähl Number of teeth	z				
Modul Normal module	m_n			Eingriffstellungs-Abweich. Normal pitch error	f_{pa}
Eingriffswinkel Normal pressure angle	α_n			Teilungs-Einzelabweichung Adjacent pitch error	f_p
Schraubungswinkel Helix angle	β			Teilungs-Sprung Diff. bet. adjacent pitches	f_u
Steigungsrichtung Hand of helix	RIGHT			Teilungs-Summenabweich. F_{pk} Cumulative circ. pitch error	F_{pk}
Profilverschiebungsfaktor Addendum modification coeff.	x			Rundlaufabweichung Radial run-out	F_r
Teilkreisdurchmesser Pitch diameter	d			Zahndickenschwankung Range of tooth thckn. error	R_s
Kopfkreisdurchmesser Outside diameter	d_a				
Kopfnutkreis the. max. d_{na} Tip diam. usable theo.	d_{na}			Zweifl.-Wälzabweichung Radial composite error	F_r
Kopfnutkreis the. min. d_{nb} Tip diam. usable theo.	d_{nb}			Zweifl.-Wälzsprung Radial tooth to tooth comp. err.	f_r
Fußkreisdurchmesser Root diameter	d_f			Meßkreis Krümmungsradius ρ_{Mk} Radius of curvature meas. diam.	ρ_{Mk}
Fußnutkreisdurchmesser Root diameter usable	d_{f1}				
Grundkreisradius Base circle radius	r_b				
Grundkreisdurchmesser Base diameter	d_b				
Normalzahnstärke Normal tooth thickness	max. s_n				
Normalzahnstärke Normal tooth thickness	min. s_n				
Meßzähnezahl Number of teeth spanned	k				
Zahnweite Base tangent length	max. W_k				
Zahnweite Base tangent length	min. W_k				
Meßkugeldurchmesser Ball diameter	D_M				
Diam. Zweikugelmäß max. M_{dk} Measurement o. balls	max. M_{dk}				
Diam. Zweikugelmäß min. M_{dk} Measurement o. balls	min. M_{dk}				
Verdrehflankenpiel Circumferential backlash	theo.				
	0.072				
	0.169				

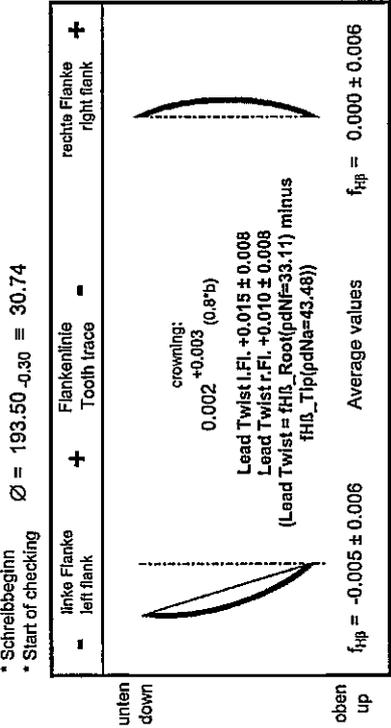
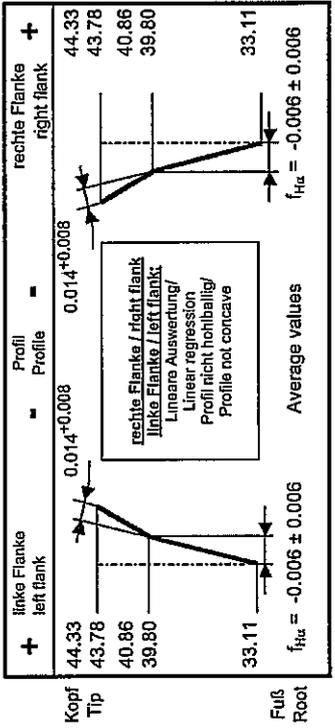


Der Verlauf der Profil- und Flankenlinie muss über den Messbereich stetig sein (ein- oder mehrfache Richtungsänderungen sind nicht zulässig)
The form of the profile and helix has to be continuous (one or more changes of directions are not allowed)
Für f_p max. zwei Wellen zulässig
For f_p max. two waves allowed

Ersetzung für Ersatz bei Getriebeprüfung	250.0.0003.14
Verzahnungsblatt Endkontrolle	
Final Check Gear Data	
Bemerkung: Remarks:	
Erstellung	
Gezeichnet	
Geprüft	
Datum	17.06.2013
Name	Cricenti, Fabrizio
Verzahnungsnummer: Drawing number:	250.1.3666.76

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

Witz-Profil siehe Werkzeugdatenblatt Nr. 250.1.3666.76
For Tooth profile, see tool data sheet number



* f_{H15} (zwischen d_{NI} und dem Schreibleit d_S) max f_{H15} , jedoch 0,003 zulässig
* f_{H15} (between d_{NI} and start of chocking d_S) max f_{H15} , 0,003 allowable.

Profil- und Flankenlinienprüfung nach VDI/VDE 2612
Tabellenwerte für F_p und f_{H15} sind auf die gesamte Radbreite im Meßkreis d_M bezogen
Flankenlinienprüfbereich $L_p = 0.8 \cdot b$ hochgerechnet auf $1.0 \cdot b$
Begriffe für Stirnräder nach DIN 868, 3960, 3998

Profile and helix checking according to VDI/VDE 2612
Listed tolerance data for F_p and f_{H15} refers to the total face width in the meas. dia. d_M
Tooth trace testing area $L_p = 0.8 \cdot b$ calculated to $1.0 \cdot b$
Terms of the tooth system according to DIN (German Industrial Standards) No. 868, 3960, 3998

Ersetzung für Ersatz bei Getriebeprüfung	250.0.0003.14
Verzahnungsblatt Endkontrolle	
Final Check Gear Data	
Bemerkung: Remarks:	
Erstellung	
Gezeichnet	
Geprüft	
Datum	17.06.2013
Name	Cricenti, Fabrizio
Verzahnungsnummer: Drawing number:	250.1.3666.76

Istruzioni di controllo



PP Produzione GPS

Materiale: 2501640500 Stato: Rilascio in generale (ciclo alternativo) Indice del disegno finito: B

Descrizione: Chart corona Data emissione: 25.11.2014 / Vito Fiore

Operazione: 0230 Rettifica dentatura con RZ303C

Centro di lavoro: SLW14850 RETTIFICA DENTI RG

Data aggiornamento: 13.03.2014 / Vito Fiore

Identificativo	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
0002	Controllo 1° pz secondo Gear data 250.1.3666.51				MVZ-400249 EVOLVENTIMETRO						1° pz 2.3.1.1-R 2		CR1: controllo primo pezzo
0010	Diametro Mdk (RZ303C e RZF)	203,742 mm	203,709	203,775	MOA-416121 RUGOSIMETRO TIPO PRK MZA-450311 Calcolatore di misura E9066 Marposs MZA-450311 Calcolatore di misura E9066 Marposs	3	pz ogni 100 per macchina				1° pz 2.3.1.1-R 2 1° pz 2.3.1.1-R 2 1° pz 2.3.1.1-R 2		CR1: calcolatore di misura
0020	Evolvente ed elica sec.G.D. con svergolamento (RZ303C)				MVZ-400249 EVOLVENTIMETRO					1	pz ogni 100 per macchina		Misu: diagramma di dentatura
0022	Evolvente ed elica sec.G.D. con svergolamento (RZF)				MVZ-400249 EVOLVENTIMETRO					1	ogni 50 pz prodotti /macchina		Misu: diagramma di dentatura
0030	SOMMA DI PASSO Fp (RZ303C)	mm		0,045	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac.		Misu: diagramma di dentatura
0032	SOMMA DI PASSO Fp (RZF)	mm		0,045	MVZ-400249 EVOLVENTIMETRO					1	ogni 50 pz prodotti /macchina		Misu: diagramma di dentatura
0040	OSCILLAZIONE RADIALE Fp (RZ303C)	mm		0,032	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac.		Misu: diagramma di dentatura
0042	OSCILLAZIONE RADIALE Fp (RZF)	mm		0,032	MVZ-400249 EVOLVENTIMETRO					1	ogni 50 pz prodotti /macchina		Misu: diagramma di dentatura
0044	Controllo ammassature del materiale da rettificare con ingranometro automatico (RZ303C)	mm		0,300	MRA-450155 Ingranometro automatico Reishauer RZ303C	1	100% di pezzi						CR1: calcolatore di misura
0050	RUGOSITA' Rz	0,0 µm	0,0	4,0	MOA-416121 RUGOSIMETRO TIPO PRK					1	1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo

Istruzioni di controllo



PP Produzione GPS

Materiale: 2501640500
 Descrizione: Chart corona
 Operazione: 0230 Rettifica dentatura con RZ303C
 Centro di lavoro: SLW14850 RETTIFICA DENTI RG
 Stato: Rilascio in generale (ciclo alternativo)
 Indice del disegno finito: B
 Data emissione: 25.11.2014 / Vito Fiore
 Data aggiornamento: 13.03.2014 / Vito Fiore

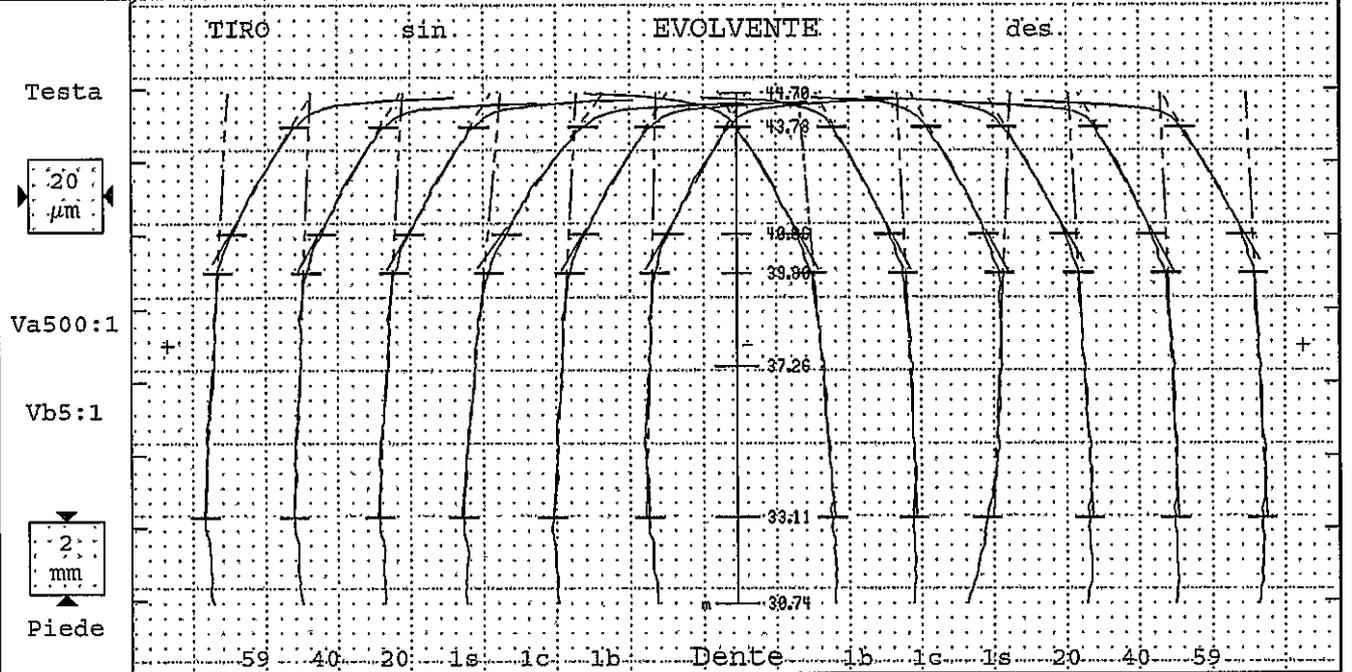
0060	GN 3010	Caratteristica	Misura nomin.	LTI	LTS	Strumento di controllo	Quantità	Frequenza RK1:	Quantità	Frequenza RK2:	Quantità	Frequenza Sala di misura	Gambio ut	Metodi di gestione / Documentazione
		RUGOSITA' Rmax	0,0 µm	0,0	6,3	MOA-416121 RUGOSIMETRO TIPO PRK						1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo
0070		Controllo chimico bruciature secondo procedura WTL 3.4.10.01					1	pz cambio mola rettifica						CR1: controllo primo pezzo
0080		Contr. vis. assenza rettifica incompleta					3	pz ogni 100 per macchina						CR1: no documentazione

GETRAG

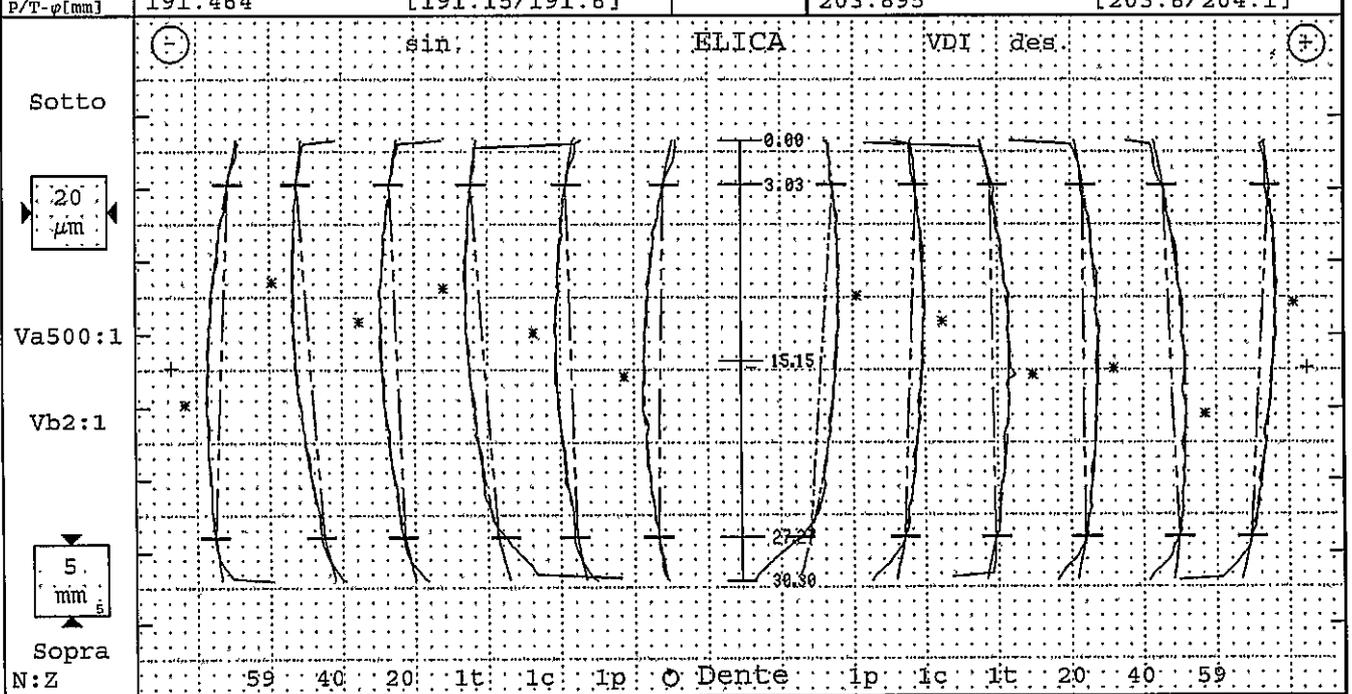
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno A	Data:	22.12.2014 16:24
Denominazione:	ring gear		Numero denti z	78	Largh.fasc.dent. b	30.3mm
Numero disegno.:	250.1.3666.52-IF		Modulo m	2.25mm	Tratto evolv. La	6.69mm
Commessa/serie nr.:	PPAP NR.1		Angolo pressione	20°	Tratto elica Lb	24.24mm
Masch.Nr.:	M001	Spindel: Formu	Angolo elicale	27.8°	Inizio elab. M1	33.11mm
Untersuchungszweck:	Laufende Messung		Ø Base db	183.4749mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:		Ang. Base	25.993°	Fat.scor.pr. x	-.082



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
fHm	-6±6	-4	Var 1								-6±6	Var 1							-3	
fHα	-6±7	-4	-4	-3	-4	-6	-4	-2		-6±7	-6	-3	3	-4	-3	-3	-3			
Fα		3	3	4	3	2	3	5			2	4	10	3	4	4	4			
ffα	5	1	1	2	1	2	1	2		5	2	2	3	2	2	2	2			
fKo	-22/-14	-19	-18	-20	-19	-22	-19	-20		-22/-14	-17	-18	-22	-18	-18	-18	-18			
P/T-φ[mm]	191.464	[191.15/191.6]								203.895	[203.8/204.1]									



εHsm	-5±6	-3	Var 13								±6	Var 11							1
εHs	-5±8	-3	3	-9	-5	-9	-3	2		±8	8	4	-2	-1	-5	6	1		
Fβ		5	8	4	3	7	3	7			10	4	5	3	5	6	5		
ffβ	5	1	1	1	1	3	1	1		5	4	1	3	2	1	2	2		
Cβ	2/5	4	4	4	4	4	4	4		2/5	4	4	5	4	4	4	4		
Bd	15±8	11									10±8								10

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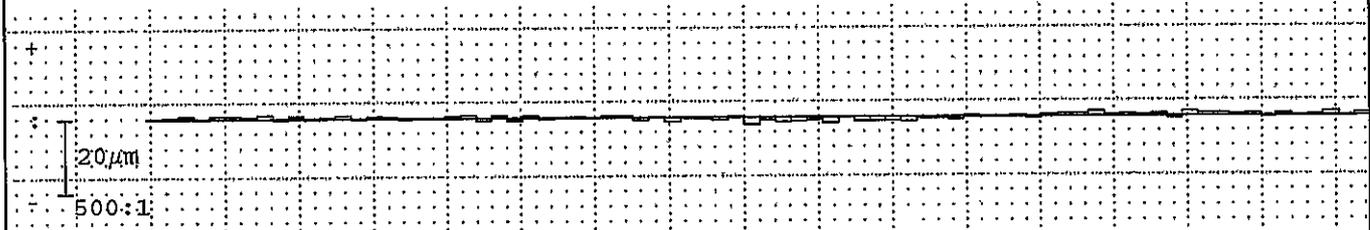
GETRAG

Ruota cilindrica Divisione

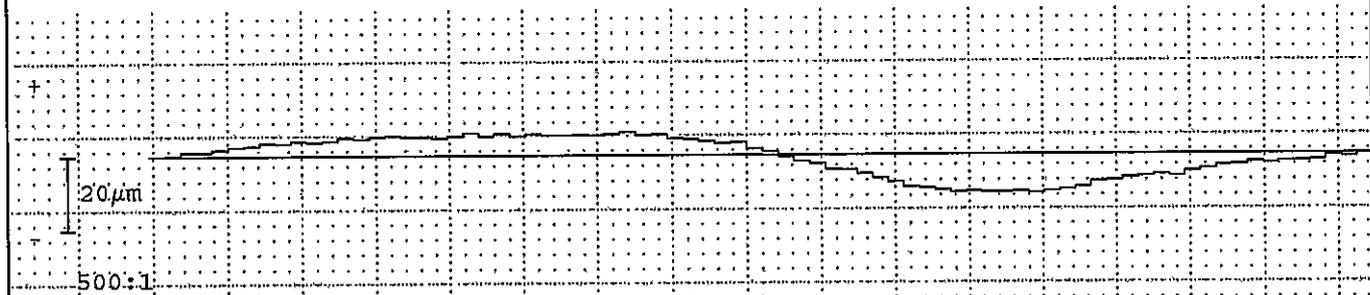


Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	turno A	Data:	22.12.2014 16:24
Denominazione:	ring gear	Numero denti z	78	Angolo pressione	20°
Numero disegno.:	250.1.3666.52-IF	Modulo m	2.25mm	Angolo elica	27.8°
Commessa/serie nr.:	PPAP NR.1	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: FORM	Gr. Zahn:	Charge:	

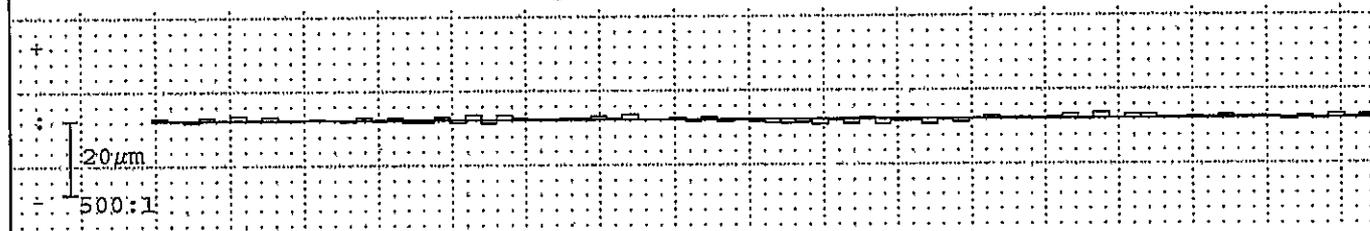
Errori singoli di divisione fp fianco sinistro



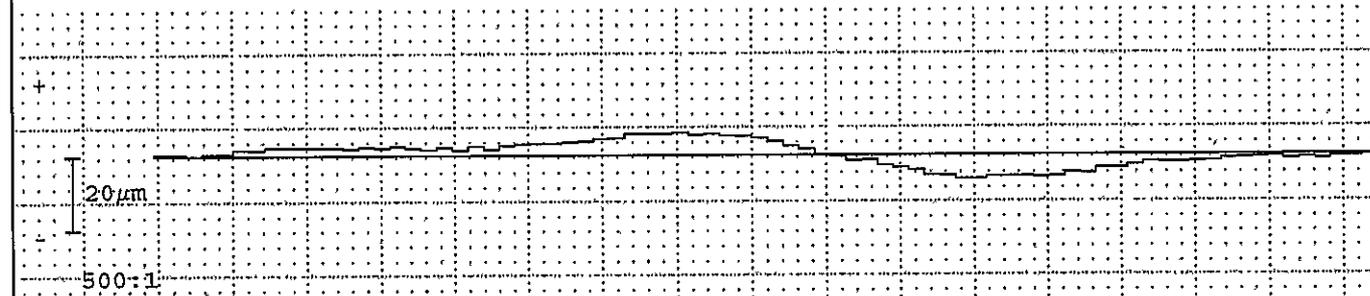
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



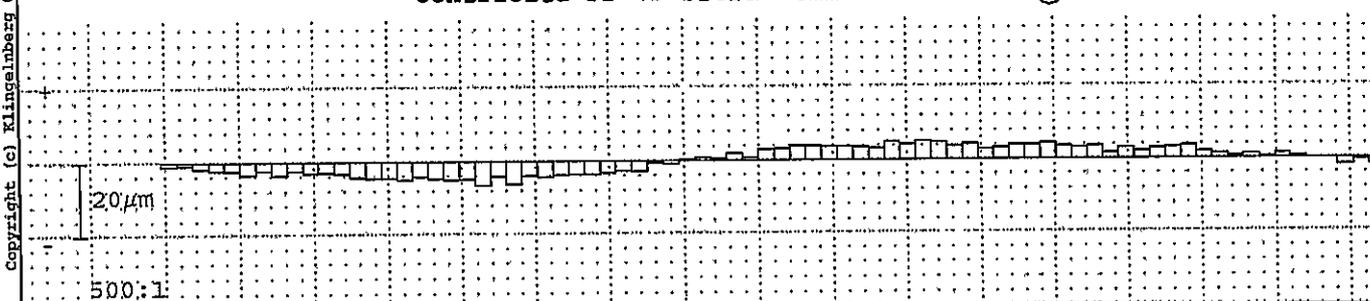
Errore somma di divisione Fp fianco destro



Corso per misura divis.:198.03l z=15.2mm	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	2		11		2		11	
Gr. salto di passo fu max	2		14		2		14	
Scarto di divisione Rp	3				3			
Err. globale di divisione Fp	16		45		13		45	
Err. cordale di divisione Fpz/8	11				9			

Centricità Fr (Ø-sfera =4mm)

⊙ : 9µm



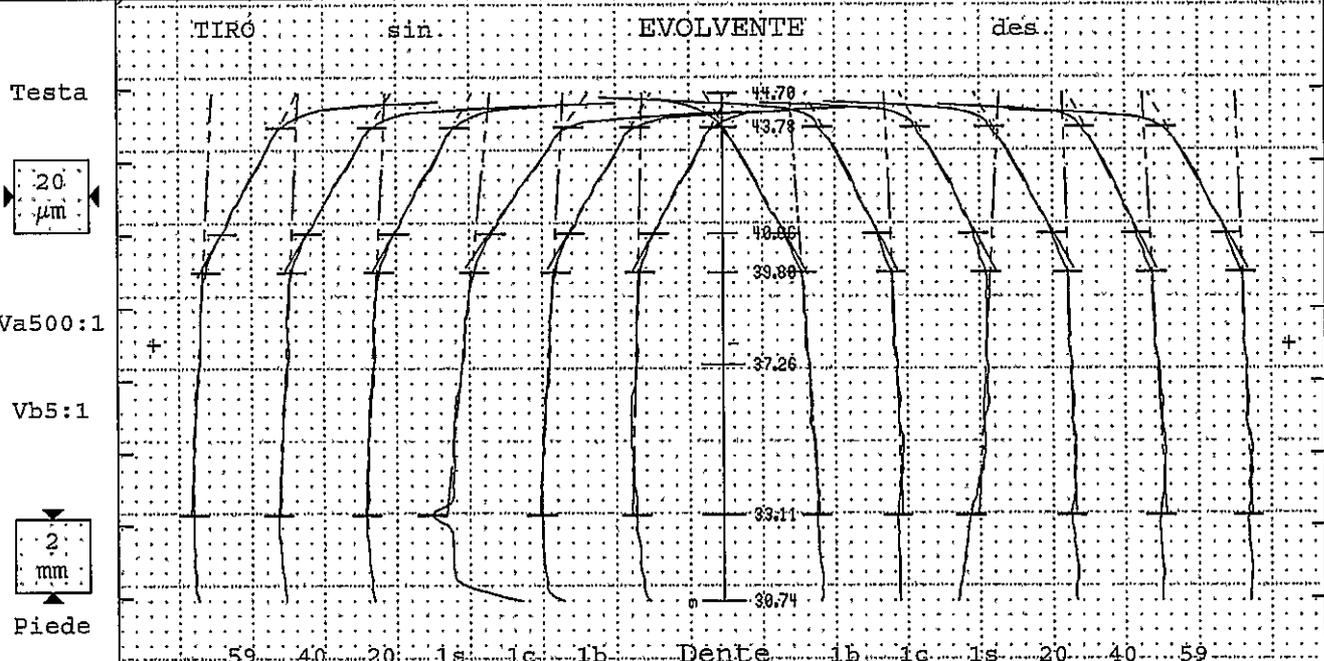
Err. di concentricità Fr	12	32	
Variaz. spessore dente Rs			

GETRAG

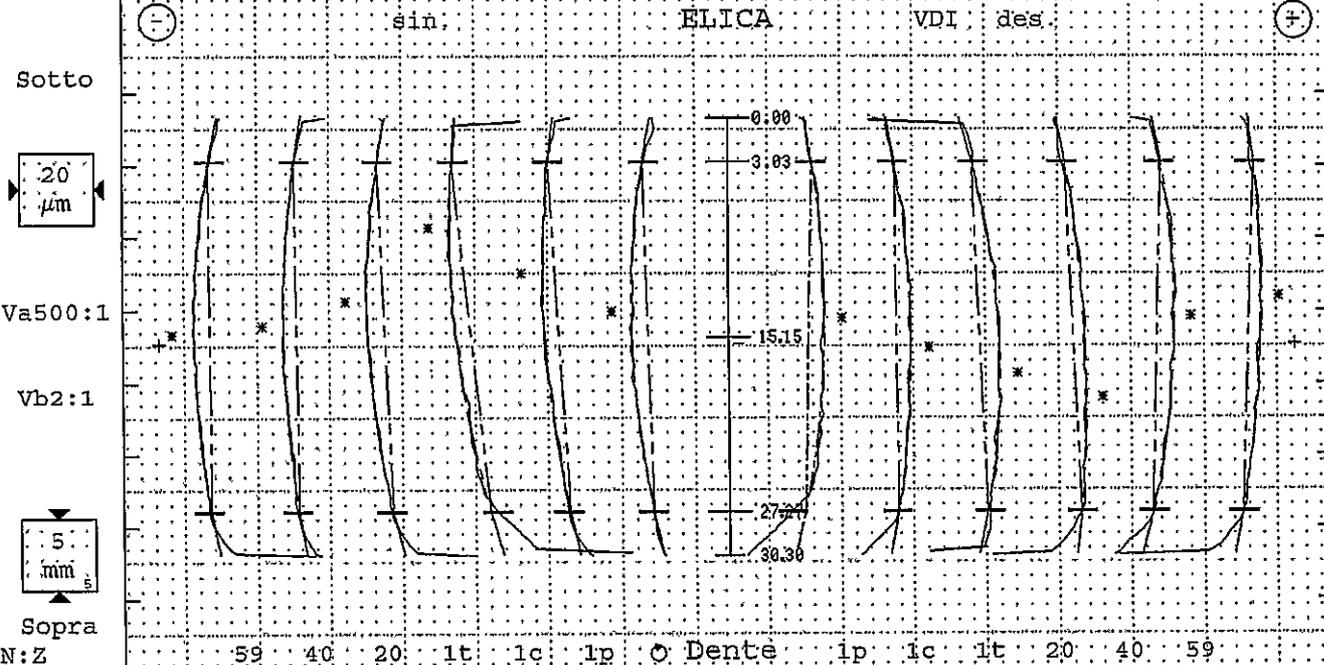
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno A	Data:	22.12.2014 16:07
Denominazione:	ring gear		Numero denti z	78	Largh.fasc.dent. b	30.3mm
Numero disegno.:	250.1.3666.52-IF		Modulo m	2.25mm	Tratto evolv. La	6.69mm
Comessa/serie nr.:	PPAP NR.2		Angolo pressione	20°	Tratto elica L8	24.24mm
Masch.Nr.:	M001	Spindel: Form	Angolo elica	27.8°	Inizio elab. M1	33.11mm
Untersuchungszweck:	Laufende Messung		Ø Base db	183.4749mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:		Ang. Base	25.993°	Fat.scor.pr. x	-.082



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual		
		Var									Var										
fHm	-6±6	-3									-6±6								-3		
fHα	-6±7	-3	-3	-3	-3	-7	-4	-2		-6±7	-5	-3	3	-2	-4	-2	-3				
Fα		3	3	3	3	6	3	5			2	5	11	5	4	5	5				
ffα	5	1	1	1	1	5	1	2		5	1	3	4	2	2	2	2				
fKo	-22/-14	-19	-19	-20	-19	-21	-19	-19		-22/-14	-19	-17	-22	-19	-16	-19	-18				
P/T-φ[mm]		191.410	[191.15/191.6]									203.834	[203.8/204.1]								



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
		Var									Var									
fH8m	-5±6	-4									±6								0	
fH8	-5±8	-4	-1	-1	-5	-13	-7	-3		±8	3	-1	-5	-5	3	4	0			
FB		4	5	4	3	11	3	4			7	3	6	6	4	4	4			
ffB	5	1	1	1	1	3	1	1		5	5	1	1	1	2	2	2			
CB	2/5	4	4	4	5	4	4	4		2/5	4	4	5	3	5	3	4			
Bd	15±8	10									10±8								8	

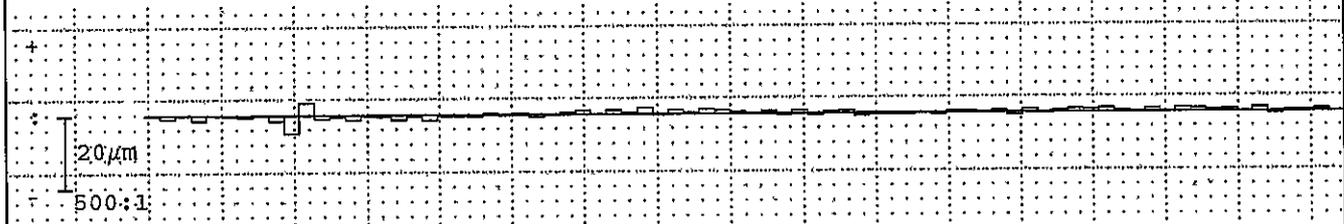
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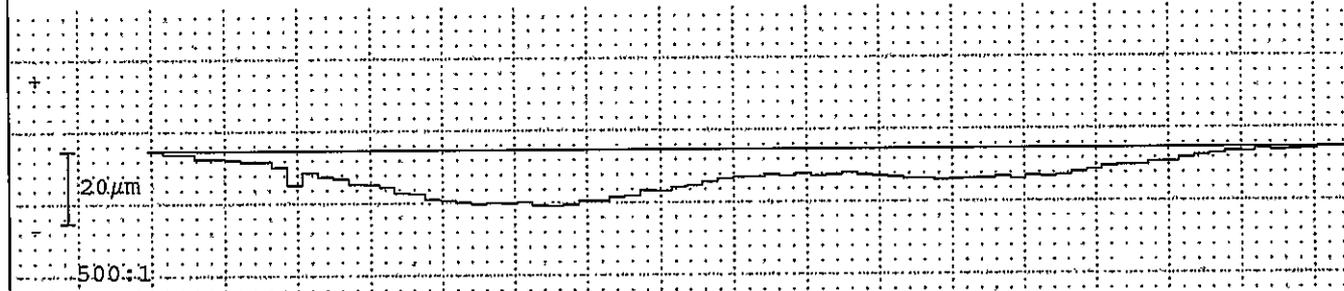


Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	turno A,	Data:	22.12.2014 16:07
Denominazione:	ring gear	Numero denti z	78	Angolo pressione	20°
Numero disegno.:	250.1.3666.52-IF	Modulo m	2.25mm	Angolo elica	27.8°
Commessa/serie nr.:	PPAP NR.2	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: Form	GrZedg:	Charge:	

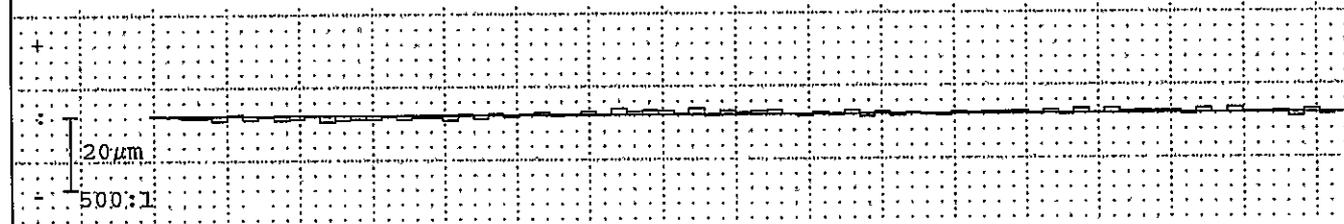
Errori singoli di divisione fp fianco sinistro



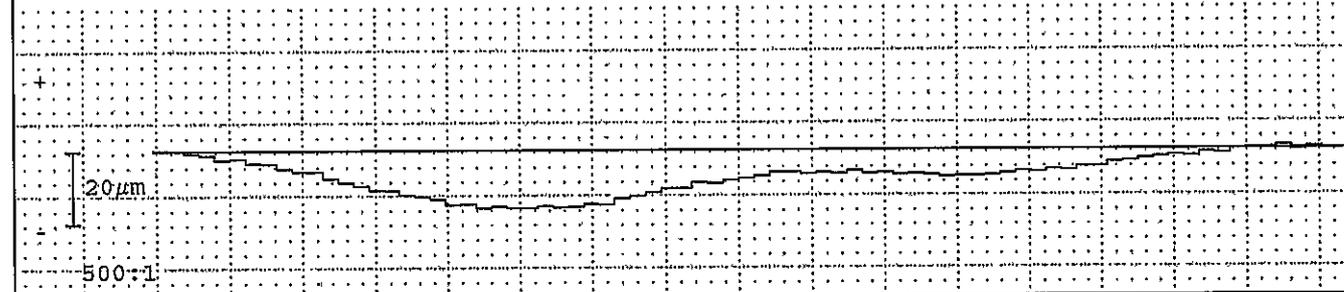
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



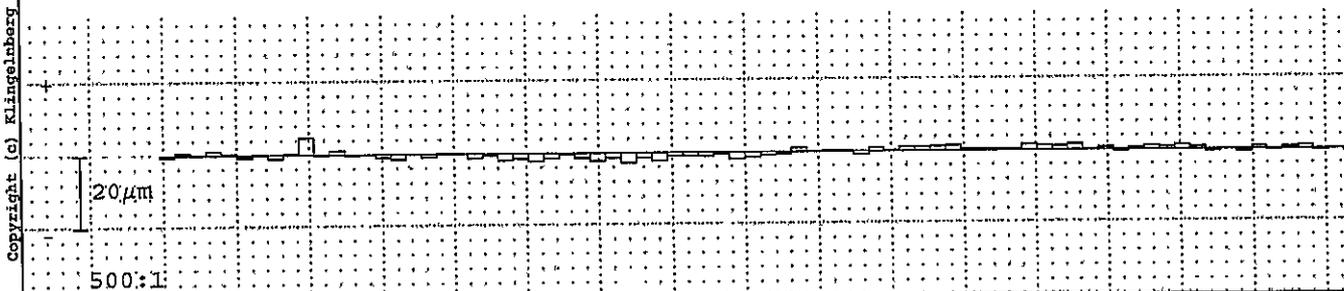
Errore somma di divisione Fp fianco destro



Corso per misura divis.: 198.031 z=15.2mm		fianco sinistro / TIRO				fianco destro			
		Val. misur	Qual.	Val. amn	Qual.	Val. misur	Qual.	Val. amn	Qual.
Gr. err. singoli divisione	fp max	5		11		2		11	
Gr. salto di passo	fu max	8		14		2		14	
Scarto di divisione	Rp	8				4			
Err. globale di divisione	Fp	15		45		17		45	
Err. cordale di divisione	Fpz/B	9				9			

Centricità Fr (Ø-sfera =4mm)

⊙ : 2µm



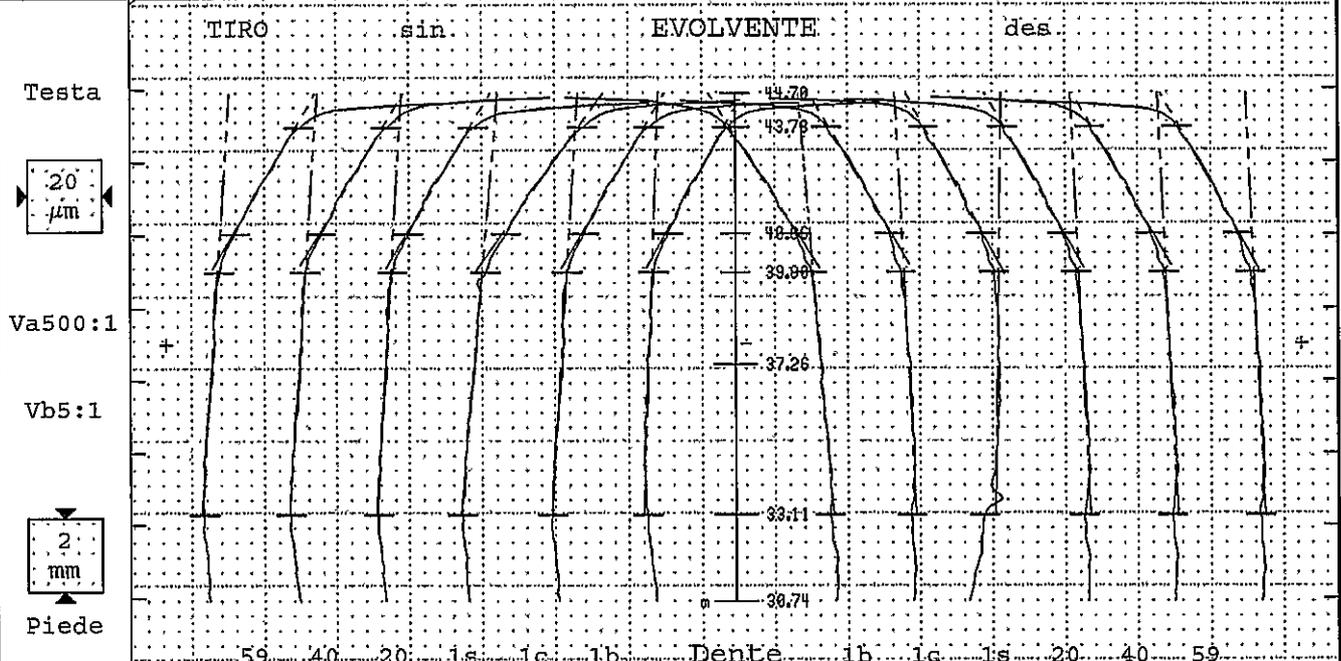
Err. di concentricità	Fr	7	32	
Variaz. spessore denta	Rs			

GETRAG

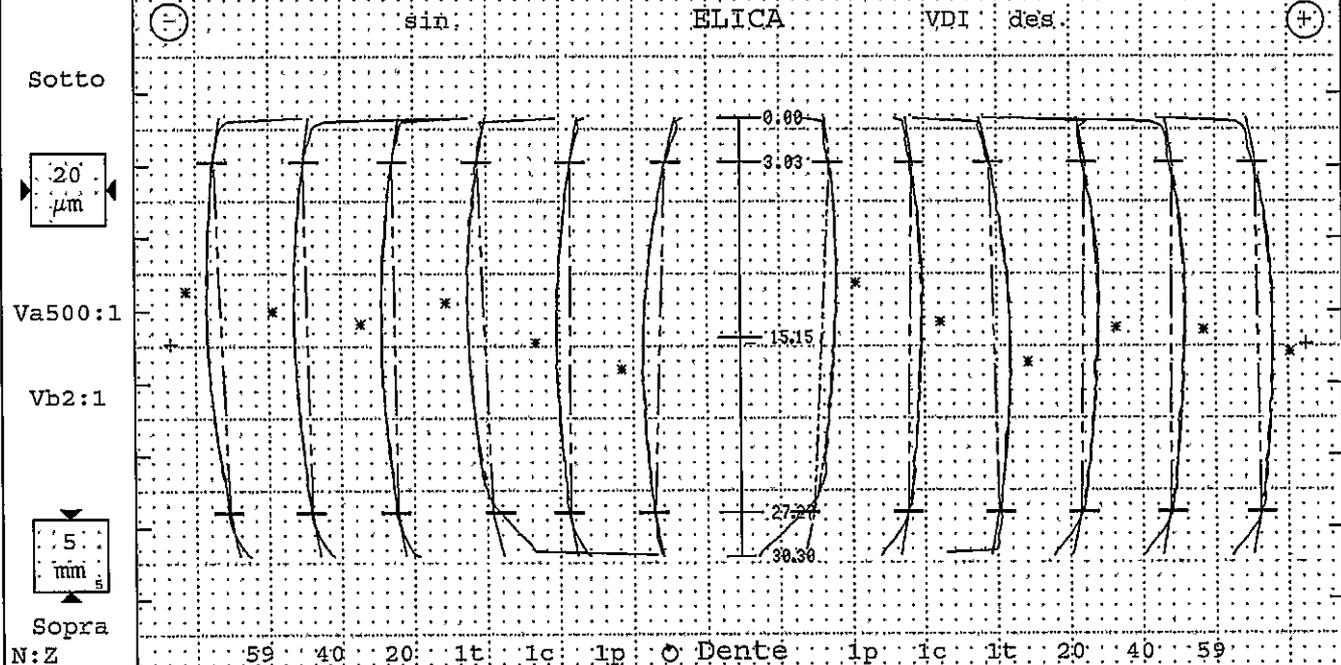
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	turno A	Data:	22.12.2014 15:58
Denominazione:	ring gear		Numero denti z	78	Largh.fasc.dent. b	30.3mm
Numero disegno.:	250.1.3666.52-IF		Modulo m	2.25mm	Tratto evolv. La	6.69mm
Commessa/serie nr.:	PPAP NR.3		Angolo pressione	20°	Tratto elica Ls	24.24mm
Masch.Nr.:	M001	Spindel: Form	Angolo elica	27.8°	Inizio elab. M1	33.11mm
Untersuchungszweck:	Laufende Messung		Ø Base db	183.4749mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:		Ang. Base	25.993°	Fat.scor.pr. x	-.082



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
fHm	-6±6	-4	Var 0								-6±6	Var 0							-3	
fHα	-6±7	-4	-4	-4	-4	-6	-4	-2		-6±7	-5	-3	1	-3	-3	-3	-3			
Fα		3	3	2	3	2	3	5			2	4	9	4	4	4				
ffα	5	1	1	1	1	2	1	2		5	1	2	5	2	2	2				
fKα	-22/-14	-19	-19	-19	-19	-23	-19	-18		-22/-14	-20	-19	-21	-19	-19	-19				
P/T-φ[mm]	191.461	[191.15/191.6]								203.883	[203.8/204.1]									



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
fHsm	-5±6	-3	Var 5								±6	Var 3							1	
fHs	-5±8	-3	-5	-3	-2	-5	0	4		±8	6	2	-3	2	1	-1	1			
Fs		4	2	3	4	5	5	8			8	3	4	3	3	4	3			
ffs	5	1	1	1	1	3	1	1		5	4	1	1	1	2	2				
Cs	2/5	4	4	4	4	5	4	4		2/5	4	3	4	4	4	4				
Bd	15±8	9									10±8								9	

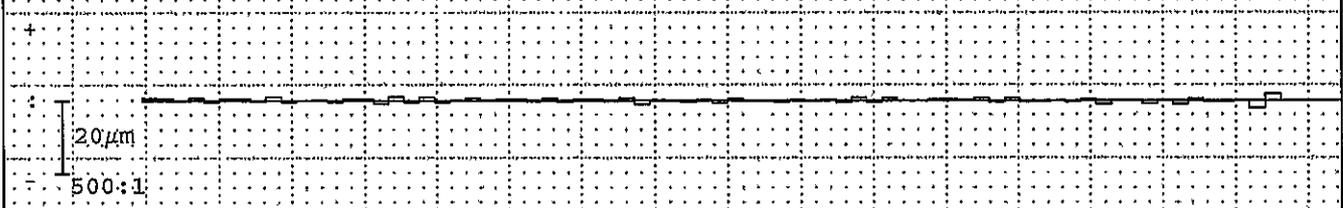
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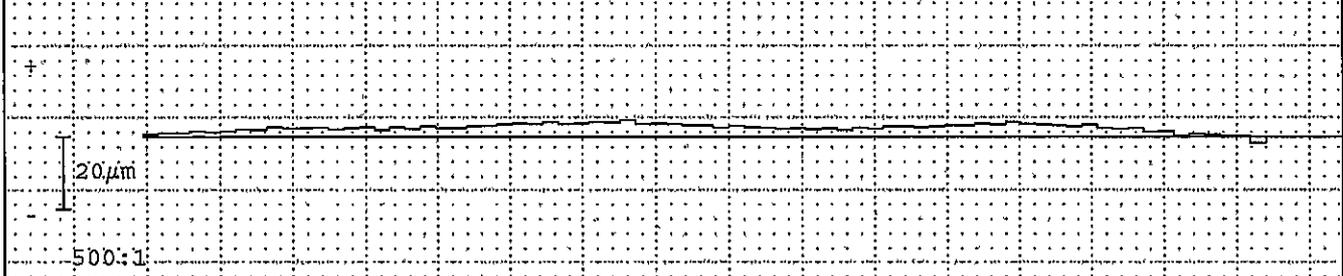


Nr. prog.: STI0410005 0	PNC35 B4784	Controllore: turno A	Data: 22.12.2014 15:58
Denominazione: ring gear		Numero denti z 78	Angolo pressione 20°
Numero disegno: 250.1.3666.52-IF		Modulo m 2.25mm	Angolo elica 27.8°
Comessa/serie nr.: PPAP NR.3		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: FORM	Erzeug:	Charge:

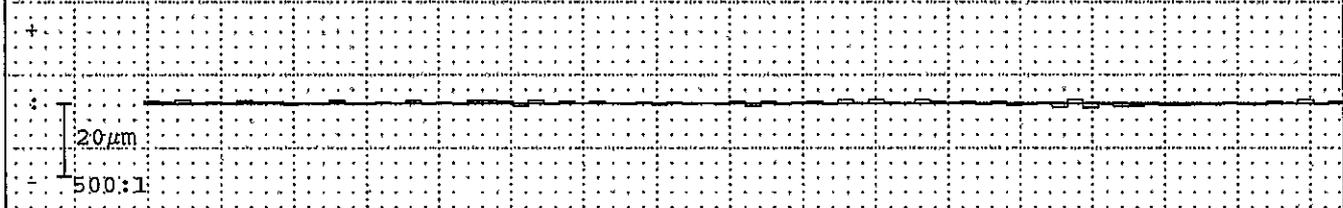
Errori singoli di divisione fp fianco sinistro



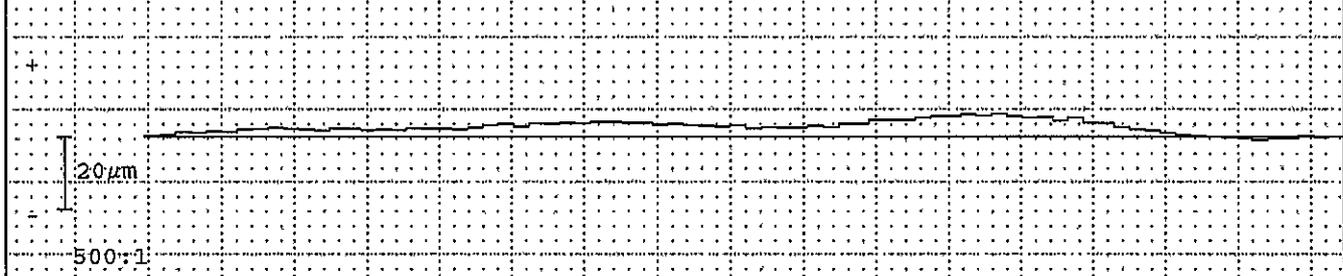
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

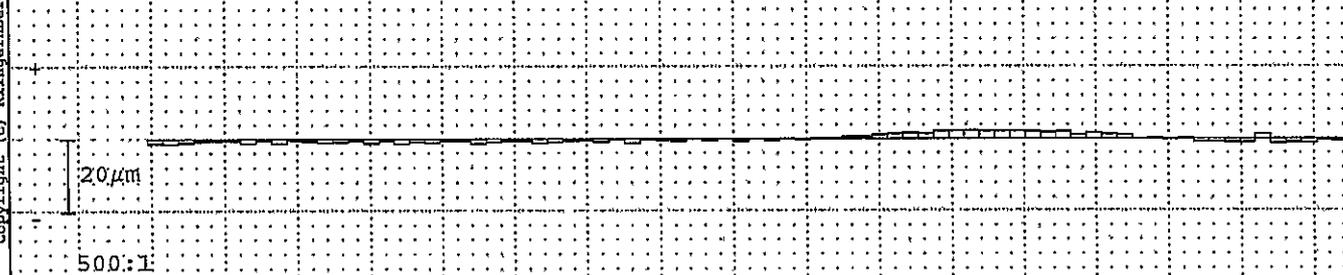


Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 198.031 z=15.2mm	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	2		11		1		11	
Gr. salto di passo fu max	4		14		2		14	
Scarto di divisione Rp	4				2			
Err. globale di divisione Fp	6		45		7		45	
Err. cordale di divisione Fpz/8	4				5			

Centricità Fr (Ø-sfera =4mm) \odot : 3µm



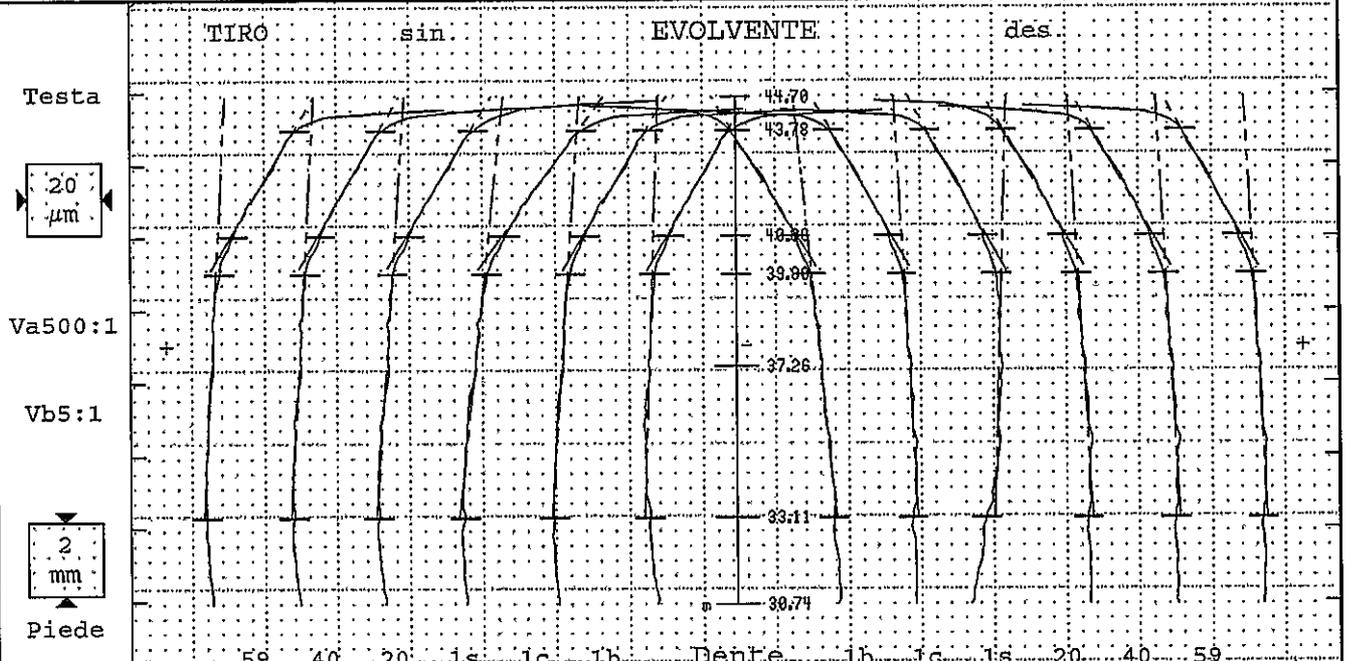
Err. di concentricità Fr	4	32	
Variab. spessore dente Rs			

GETRAG

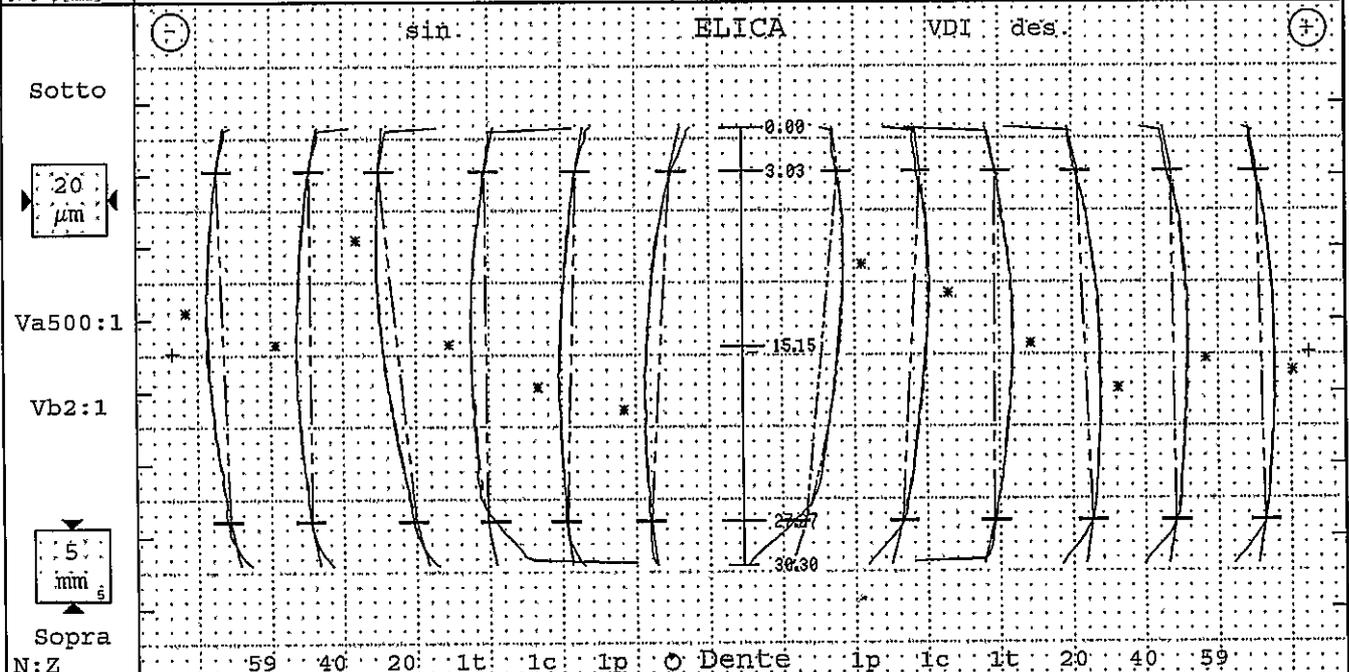
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno A	Data:	22.12.2014 16:15
Denominazione:	ring gear		Numero denti z	78	Largh. fasc. dent. b	30.3mm
Numero disegno:	250.1.3666.52-IF		Modulo m	2.25mm	Tratto evolv. Ia	6.69mm
Commessa/serie nr.:	PPAP NR.4		Angolo pressione	20°	Tratto elica Is	24.24mm
Masch.Nr.:	M001	Spindel: Forme	Angolo elica	27.8°	Inizio elab. M1	33.1mm
Untersuchungszweck:	Laufende Messung		Ø Base db	183.4749mm	Palpatore Ø	(#1)1mm
Werkzeug:		Charge:	Ang. Base	25.993°	Fat. scor. pr. x	- .082



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var 2									Var 0								
fHm -6±6	-4									-6±6								-4	
fHa -6±7	-4	-3	-4	-5	-7	-5	-2		-6±7	-7	-4	2	-4	-4	-4	-4	-4	-4	
Fα	3	3	3	3	2	2	5			1	4	9	3	3	4	4	4	4	
ffα	5	2	1	2	2	2	1	3		5	1	2	3	2	2	2	2	2	2
fKo -22/-14	-19	-19	-19	-19	-22	-19	-19		-22/-14	-18	-18	-22	-18	-18	-18	-18	-18	-18	
P/T-φ [mm]	191.427	[191.15/191.6]								203.850	[203.8/204.1]								



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var 15									Var 12								
fHsm -5±6	-3									±6								0	
fHB -5±8	-3	-4	0	-12	0	3	7		±8	12	7	1	-5	-1	-2		0		
FB	5	3	4	5	5	7	11			13	6	3	5	4	4	5	5	5	
FFB	5	1	1	1	1	3	1	1		5	4	2	1	1	2	1	2	2	2
CB 2/5	4	4	4	4	4	3	4		2/5	5	4	5	4	4	4	4	4	4	
Bd 15±8	7									10±8								11	

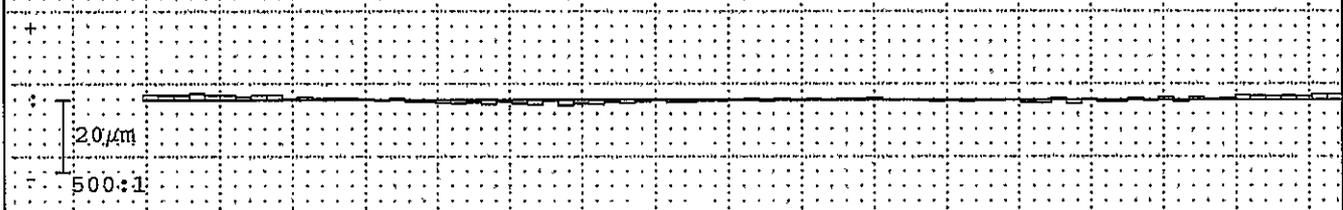
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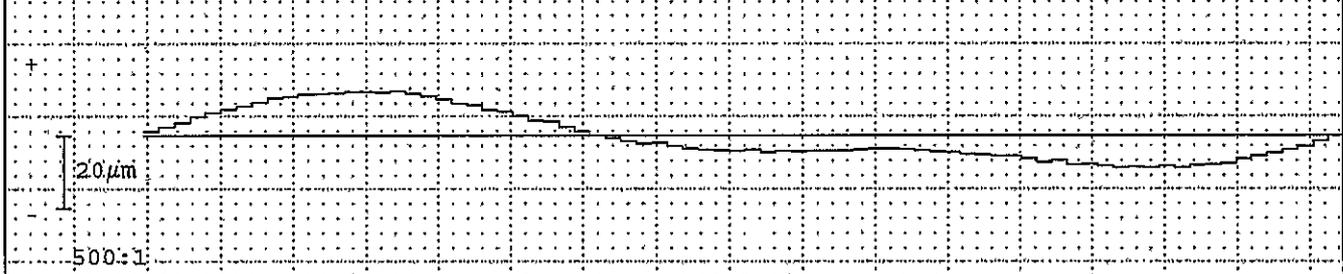


Nr. prog.: STI0410o05 0	PNC35 B4784	Controllore: turno A	Data: 22.12.2014 16:15
Denominazione: ring gear		Numero denti z 78	Angolo pressione 20°
Numero disegno.: 250.1.3666.52-IF		Modulo m 2.25mm	Angolo elica 27.8°
Comessa/serie nr.: PPAP NR.4		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: FORM	Getrag:	Charge:

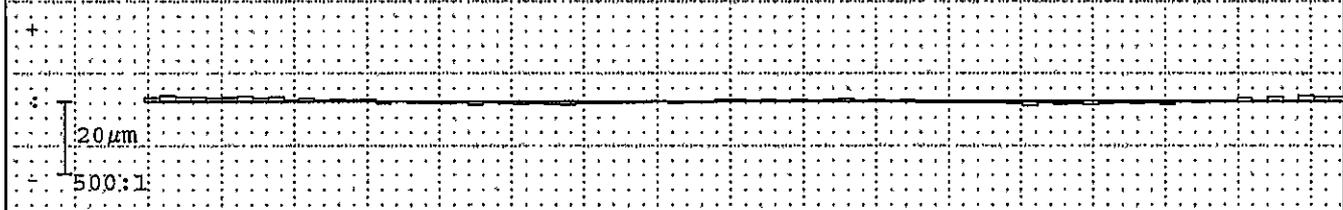
Errori singoli di divisione fp fianco sinistro



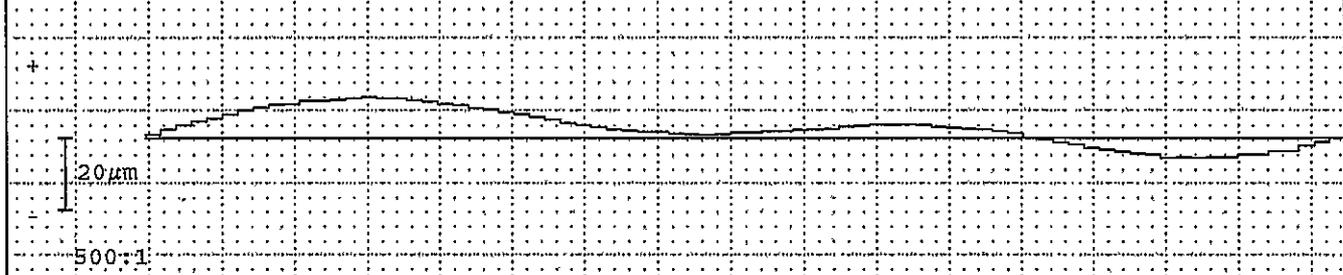
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

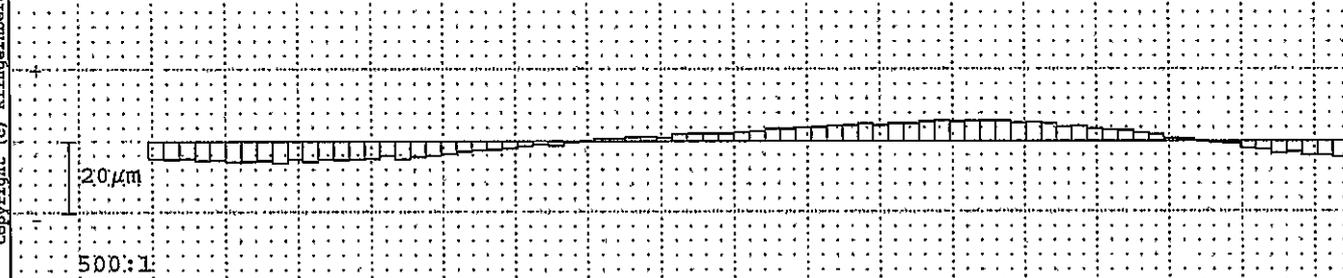


Errore somma di divisione Fp fianco destro



Correa per misura divis.: 198.031 z=15.2mm	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	2		11		1		11	
Gr. salto di passo fu max	2		14		1		14	
Scarto di divisione Rp	3				2			
Err. globale di divisione Fp	21		45		17		45	
Err. cordale di divisione Fpz/8	12				11			

Centricità Fr (Ø-sfera =4mm) © : 11µm



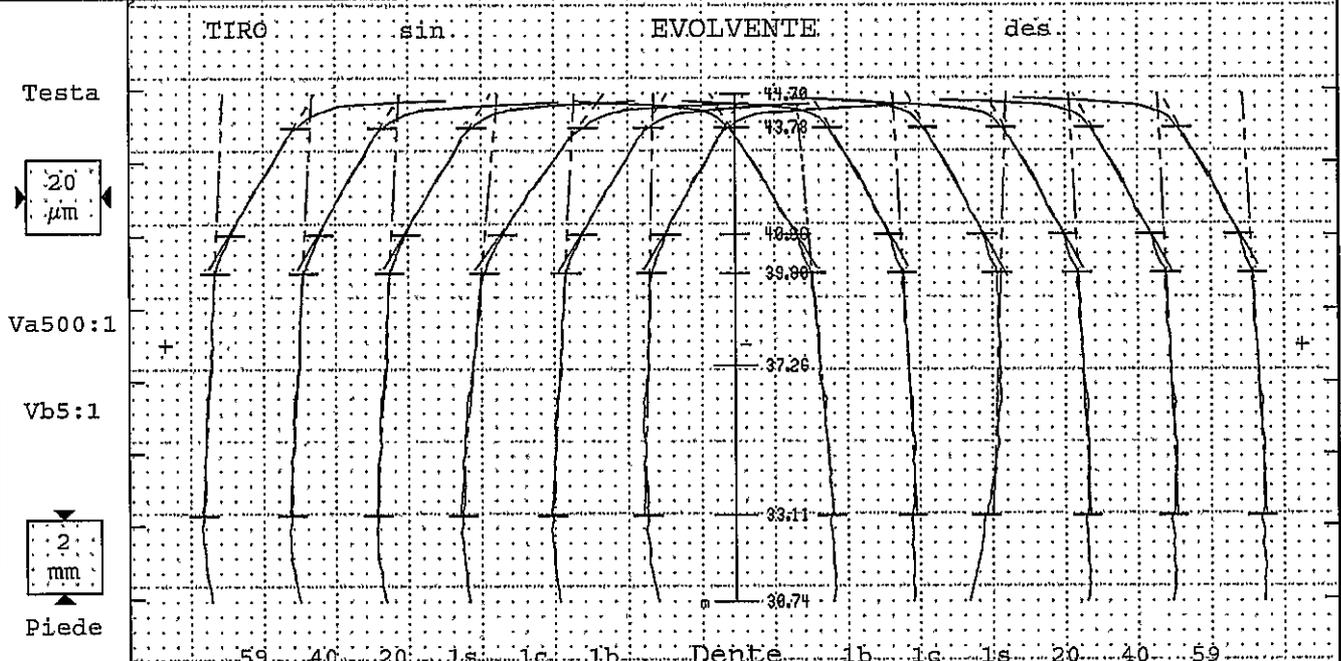
Err. di concentricità Fr	12	32	
Variab. spessore dente Rs			

GETRAG

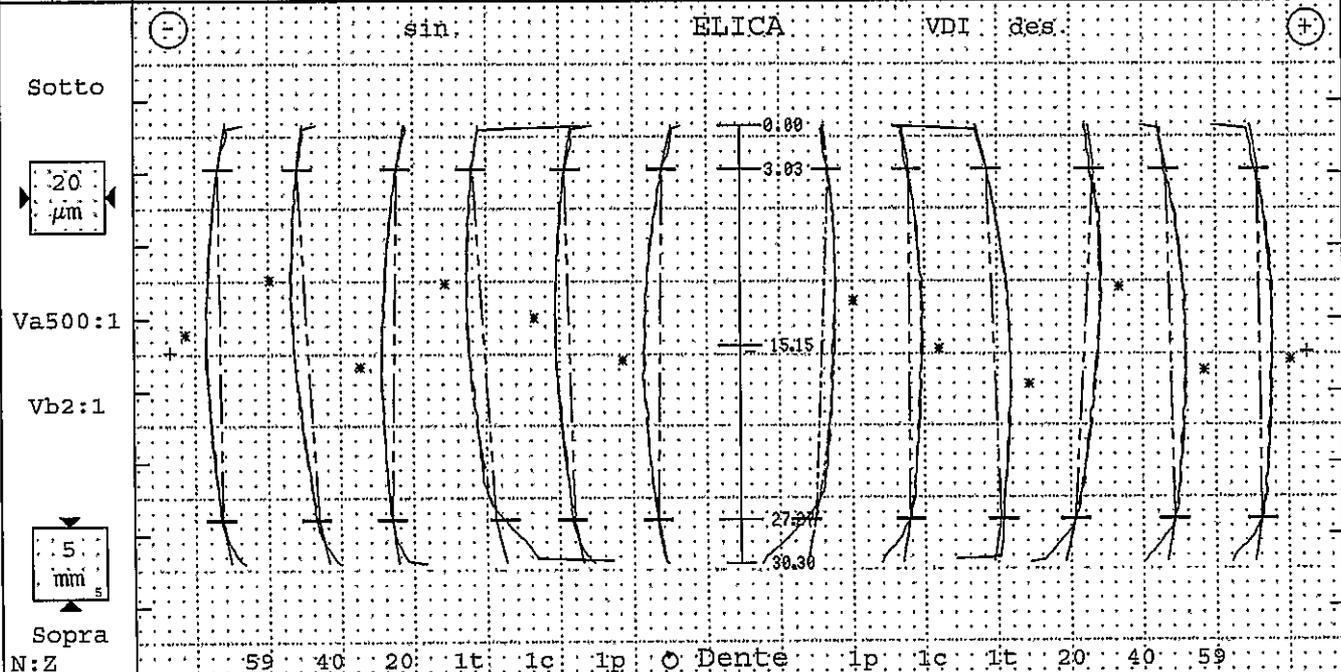
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	turno A	Data:	22.12.2014 15:48
Denominazione:	ring gear		Numero denti z	78	Largh. fasc. dent. b	30.3mm
Numero disegno.:	250.1.3666.52-IF		Modulo m	2.25mm	Tratto evolv. La	6.69mm
Comessa/serie nr.:	PAPP NR.5		Angolo pressione	20°	Tratto elica Ls	24.24mm
Masch.Nr.:	M001	Spindel: Form	Angolo elica	27.8°	Inizio slab. M1	33.1mm
Untersuchungszweck:	Laufende Messung		Ø Base db	183.4749mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:		Ang. Base	25.993°	Fat. scor. pr. x	- .082



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var 1									Var 1								
fH _{am}	-6±6	-4							-6±6							-4			
fH _α	-6±7	-4	-3	-4	-4	-6	-4	-2	-6±7	-6	-4	2	-3	-3	-4	-4			
F _α		3	3	3	3	2	3	5		1	3	9	4	4	4	4			
f _{fα}	5	1	1	1	1	2	1	2	5	1	2	3	2	2	2	2			
fK _o	-22/-14	-20	-20	-19	-20	-23	-20	-20	-22/-14	-19	-18	-22	-18	-19	-18	-18			
P/T-φ[mm]		191.465	[191.15/191.6]								203.882	[203.8/204.1]							



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var 9									Var 10								
fH _{sm}	-5±6	-2							±6							1			
fH _s	-5±8	-2	-1	-7	2	-8	-3	1	±8	5	0	-5	7	-3	-1	1			
F _s		4	4	3	5	6	3	6		7	3	5	6	4	3	4			
f _{f_s}	5	1	1	1	1	4	1	1	5	4	1	1	2	1	2	2			
C _s	2/5	4	4	4	3	4	4	4	2/5	4	4	4	4	4	4	4			
B _d	15±8	9							10±8							10			

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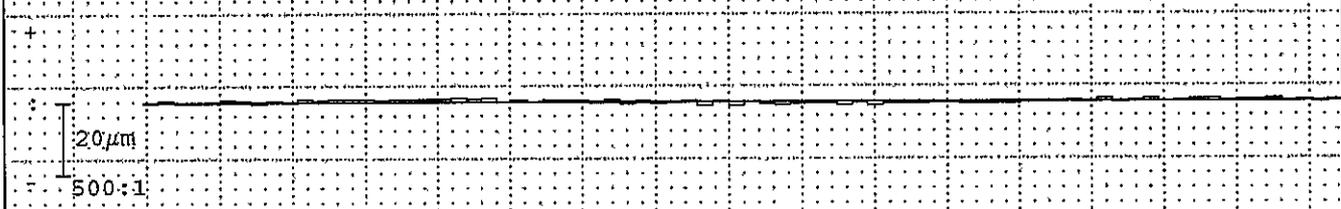
GETRAG

Ruota cilindrica Divisione

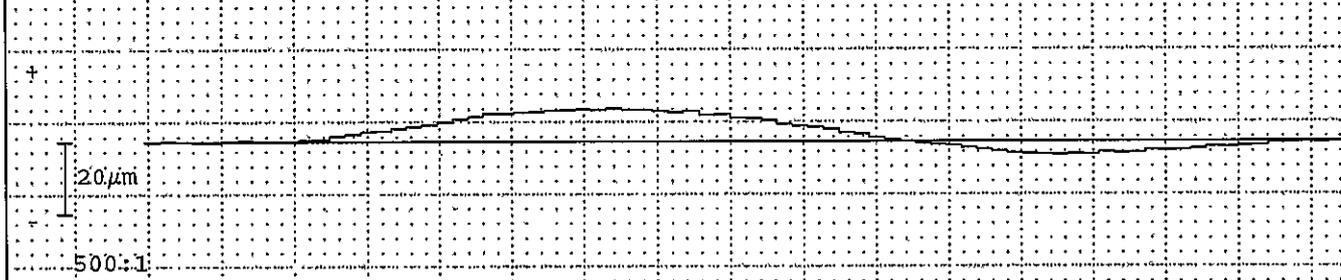


Nr. prog.: STI0410005 0	PNC35 B4784	Controllora: turno A	Data: 22.12.2014 15:48
Denominazione: ring gear		Numero denti z 78	Angolo pressione 20°
Numero disegno.: 250.1.3666.52-IF		Modulo m 2.25mm	Angolo elica 27.8°
Comessa/serie nr.: PAPP NR.5		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: FORM	Erzdg:	Charge:

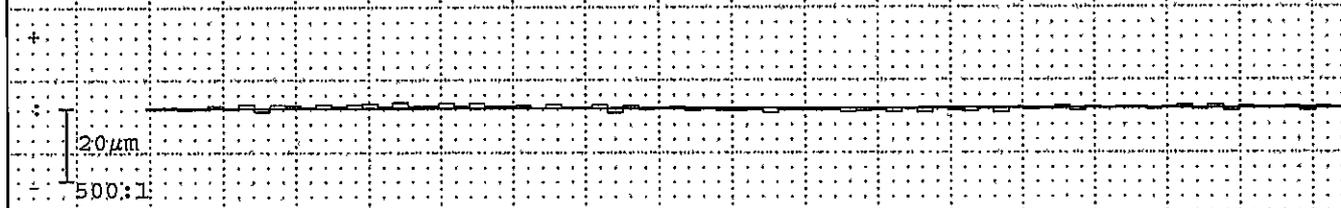
Errori singoli di divisione fp fianco sinistro



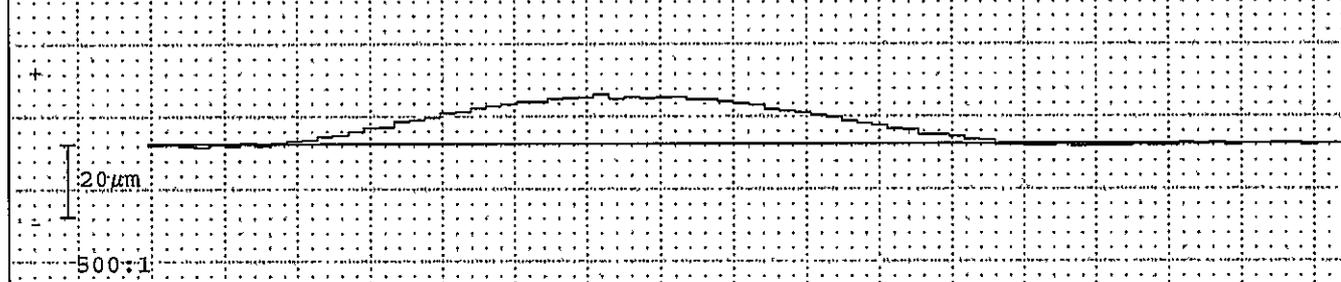
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



Errore somma di divisione Fp fianco destro

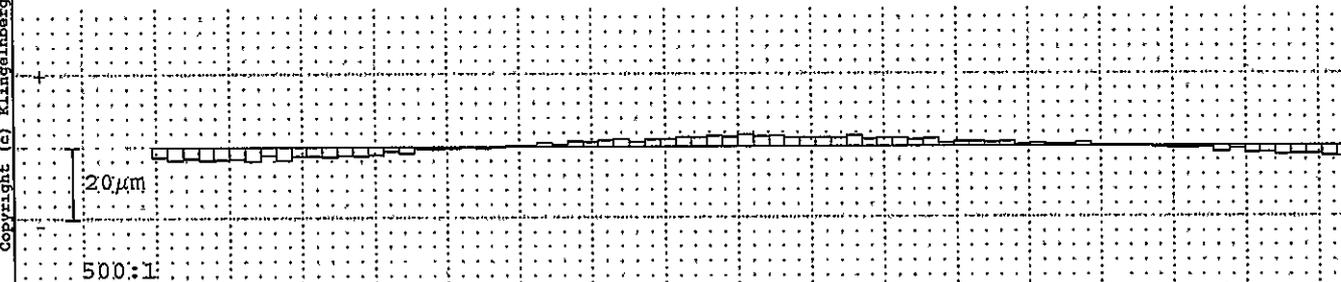


Corso per misura divis.: 198.031 z=15.2mm

	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	1		11		1		11	
Gr. salto di passo fu max	1		14		2		14	
Scarto di divisione Rp	2				2			
Err. globale di divisione Fp	13		45		14		45	
Err. cordale di divisione Fpz/8	6				8			

Centricità Fr (Ø-sfera =4mm)

⊙ : 6µm



Err. di concentricità Fr	7	32	
Variab. spessore dente Rs			

Point	Characteristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5
4	MDK	203,775/203,709	203,746	203,741	203,712	203,71	203,711

Manual measures by Marposs

RG 250 1 6405 00

12, Jan 2015 2014