

Part Name **OUTPUT SHAFT 2** Customer Part Number **250.6.3755.35**

Shown on Drawing No. **250.6.3755.35** Organization Part # _____

Engineering Change Level **F Index (m)** Dated **30-lug-14**

Additional Engineering Changes _____ Dated _____

Safety and/or Government Regulation Yes No Purchase Order No. _____ Weight (kg) **1,458**

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

MODUGNO BARI 70026 ITALY

City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

FORD

Customer Name/Division

FORD

Buyer/Buyer Code

TYP 250 FORD

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 Change to Optional Construction or Material

Engineering Change(s) Supplier or Material Source Change

Tooling: Transfer, Replacement, Refurbishment, or additional Change in Part Processing

Correction of Discrepancy Parts Produced at Additional Location

Tooling Inactive > than 1 year 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 2000 / 24 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: **ripetizione per smarrimento documentazione precedente**

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

Organization Authorized Signature _____ Date 20/01/2015

Print Name **Dario Tursi** Phone No. **cell +39-393-9814554** Fax No. _____

Title **GPS 2 Leader** E-mail **dario.tursi@getrag.com**

FOR CUSTOMER USE ONLY (IF APPLICABLE)

Part Warrant Disposition: Approved Rejected Other _____

Customer Signature _____ Date 20/01/2015

Print Name _____ Customer Tracking Number (optional) _____

**GETRAG**

Production Part Approval

DIMENSIONAL TEST RESULTS

Organization: GETRAG					Part Number: 250.6.3755.35								
Supplier/Vendor Cod GETRAG Modugno					Part Name: Output Shaft 2								
INSPECTION FACILITY:					Design Record Change Level: F Index (m) 30/07/2014								
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	MDK I	49,874	49,937		5	49,894	49,889	48,890	49,892	49,896		ok	
2	Root diameter I	39,100	38,650		5	38,824	38,843	38,841	38,838	38,838		ok	
3	Tip diameter I	51,640	51,900		5	51,652	51,683	51,688	51,647	51,689		ok	
4	Rz 4 dentatura Z18	0	4 μ		5	3,60	3,71	3,53	3,89	3,65		ok	
	Rmax 8 dentatura Z18	0	8 μ		5	4,06	4,15	4,04	4,77	4,02		ok	
5	$\sqrt{0.032}$ A - B Z18	0	32 μ		5	6	7	7	6	7		ok	
6	Dettaglio "M"	-	-		5	OK	OK	OK	OK	OK		ok	
	Diametro Ø 51,4 -0,3	51,100	51,400		5	51,277	51,263	51,278	51,297	51,247		ok	

Toothing microgeometry validated by standard measurement report

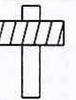
SIGNATURE	TITLE	DATE
G. Cicirelli	QPE	13/01/2015

Item	Characteristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5	Device
1	MDK I	49,874-49,937	49,894	49,889	48,89	49,892	49,896	Calibro a sfere

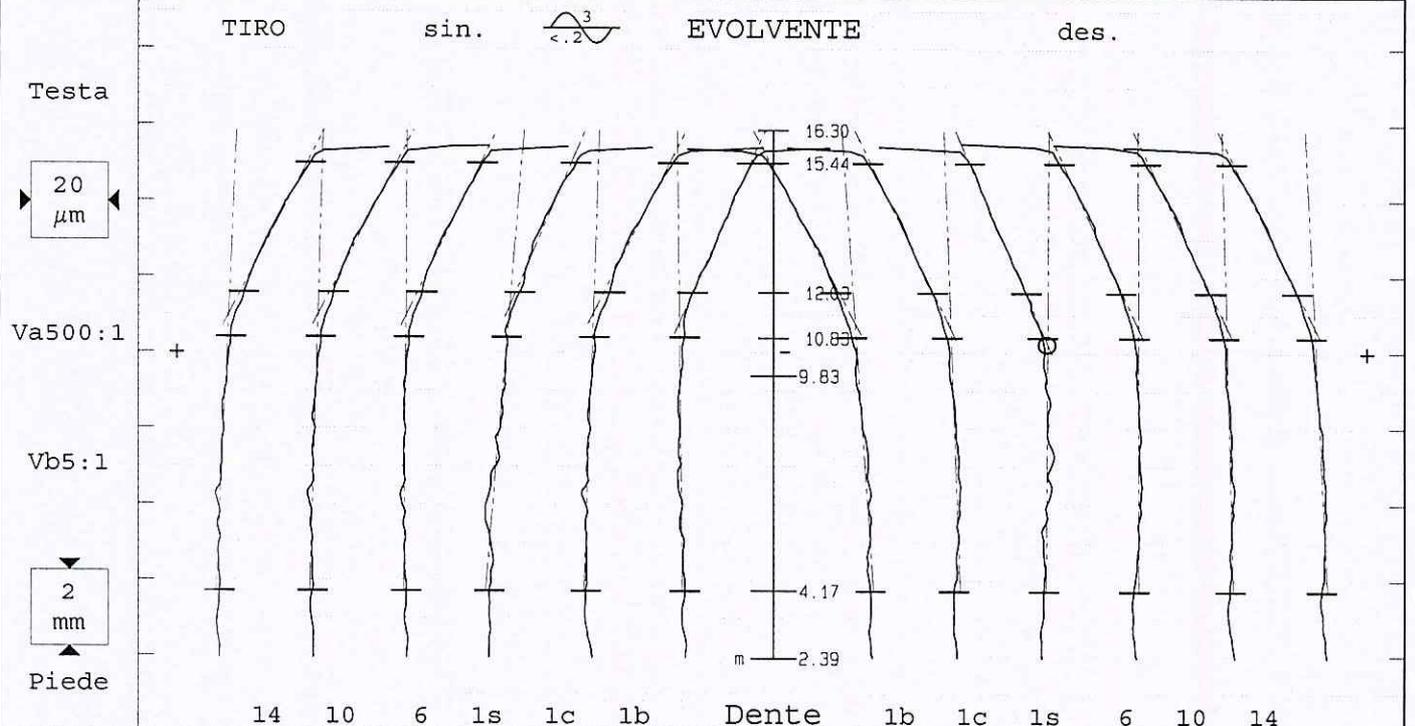
Misurazioni Manuali

OS2 2506375535

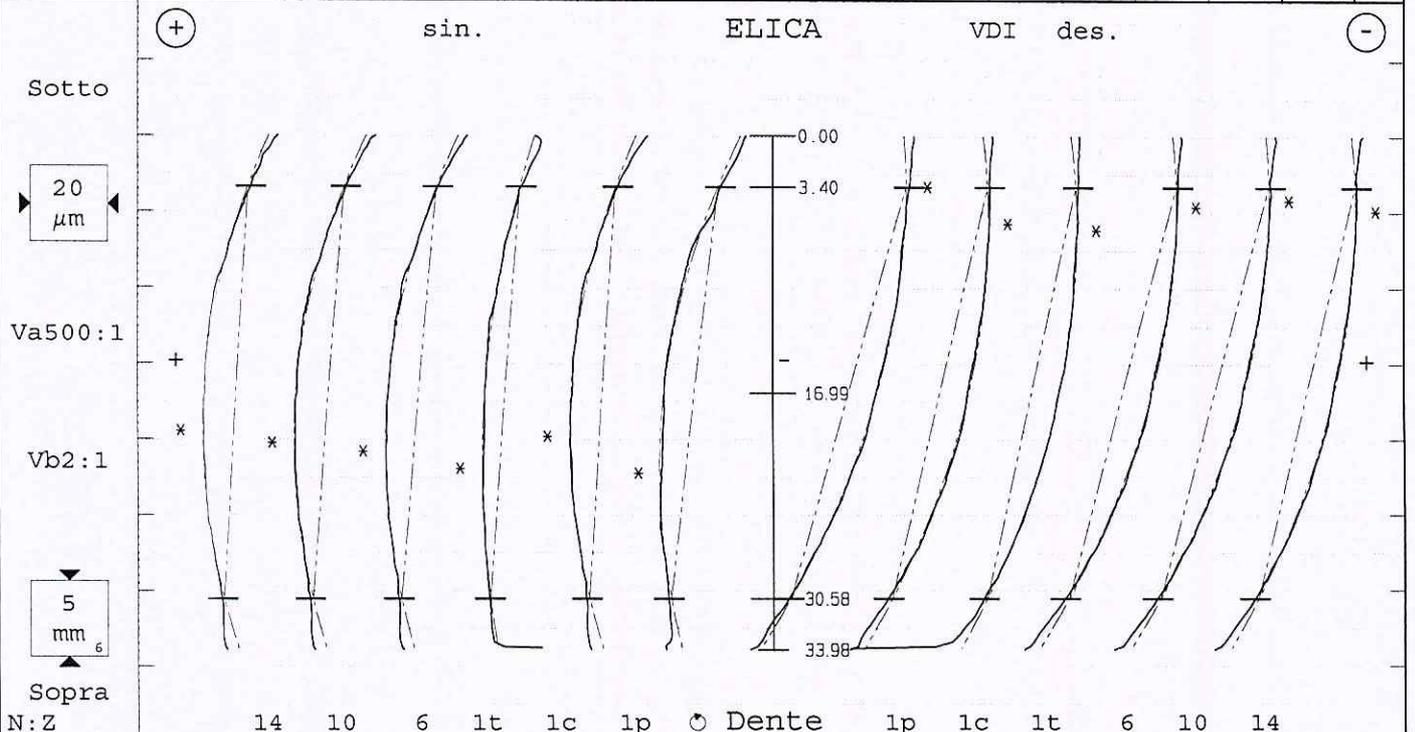
13-gen-15



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	12.01.2015 10:46
Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commissa/serie nr.:	pz 1		Angolo pressione	20°	Tratto elica Lβ	27.18mm
Masch.Nr.:	M001	Spindel: Formm	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-27.102°		Fat.scor.pr. x	.634



Tolerance	Medio	Val.misur [μm]						Qual	Tolerance	Val.misur [μm]						Medio	Qual	
fHm	±6	-2	Var 2							±6	Var 3						-2	
fHa	±10	-2	-3	-2	-1	-6	-2	1		±10	-5	-2	0	0	-2	-3	-2	
Fa		4	4	4	2	6	4	2			5	4	3	2	3	4	3	
ffa	4	2	2	2	2	3	2	2		4	2	3	3	2	2	2	2	
fKo	-22/-14	-19	-19	-20	-19	-13	-19	-19		-22/-14	-19	-20	-21	-20	-19	-19	-20	



N:Z	Tolerance	Medio	Val.misur [μm]						Qual	Tolerance	Val.misur [μm]						Medio	Qual
fHβm	-7±6	-10	Bd -5 Var 4							-30±6	Bd -9 Var 4						-34	
fHβ	-7±13	-10	-8	-10	-12	-10	-9	-15		-30±13	-38	-32	-29	-35	-36	-32	-34	
Fβ		5	5	5	6	4	4	12			9	5	3	7	7	5	6	
ffβ	4	1	2	1	1	1	1	2		4	1	2	2	2	1	2	2	
Cβ	5/9	8	8	9	8	5	8	8		5/9	8	8	7	8	8	7	8	

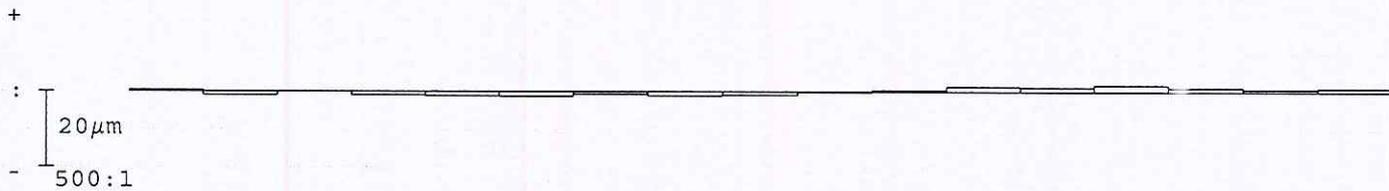




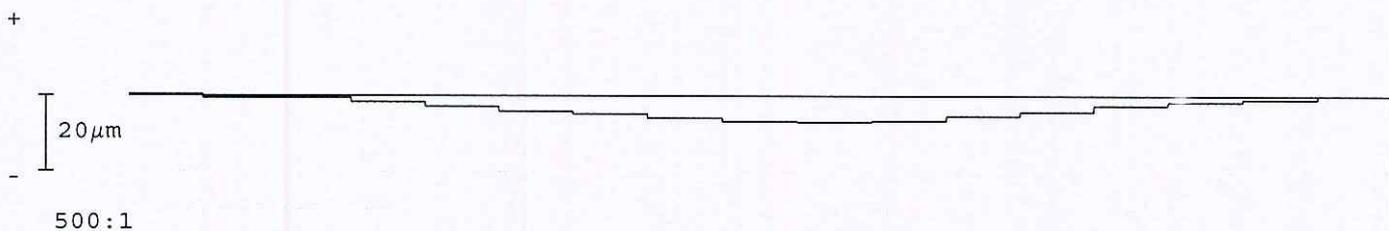
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Denominazione:	Output Shaft 2	Numero denti z	17	Angolo pressione	20°
Numero disegno.:	250.6.3755.35-IF	Modulo m	2.25mm	Angolo elica	-29°
Commessa/serie nr.:	pz 1	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	Formelwerkzeug	Charge:	



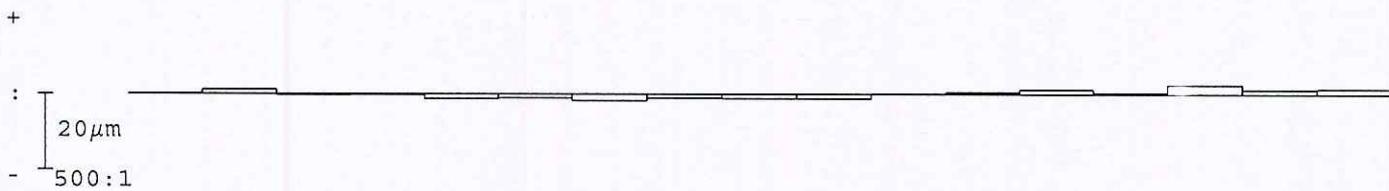
Errori singoli di divisione fp fianco sinistro



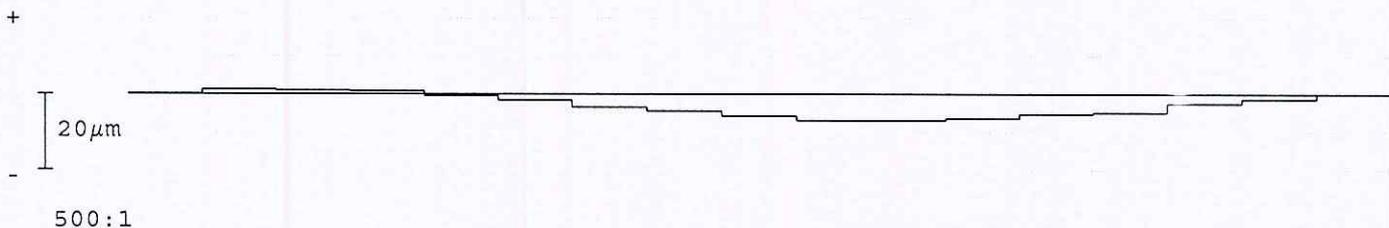
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

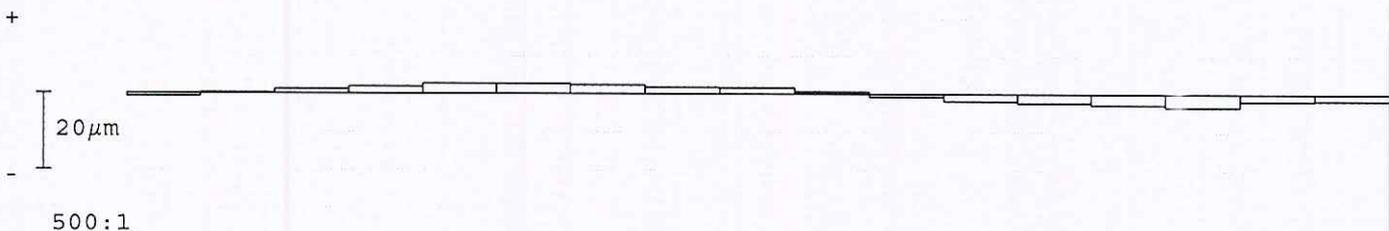


Errore somma di divisione Fp fianco destro

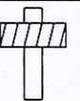


Corso per misura divis.: 44.909 z=17mm		fianco sinistro / TIRO				fianco destro			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	2		14		2		14	
Gr. salto di passo	fu max	1		18		2		18	
Scarto di divisione	Rp	3				4			
Err. globale di divisione	Fp	7		40		8		40	
Err. cordale di divisione	Fpz/8	3				4			

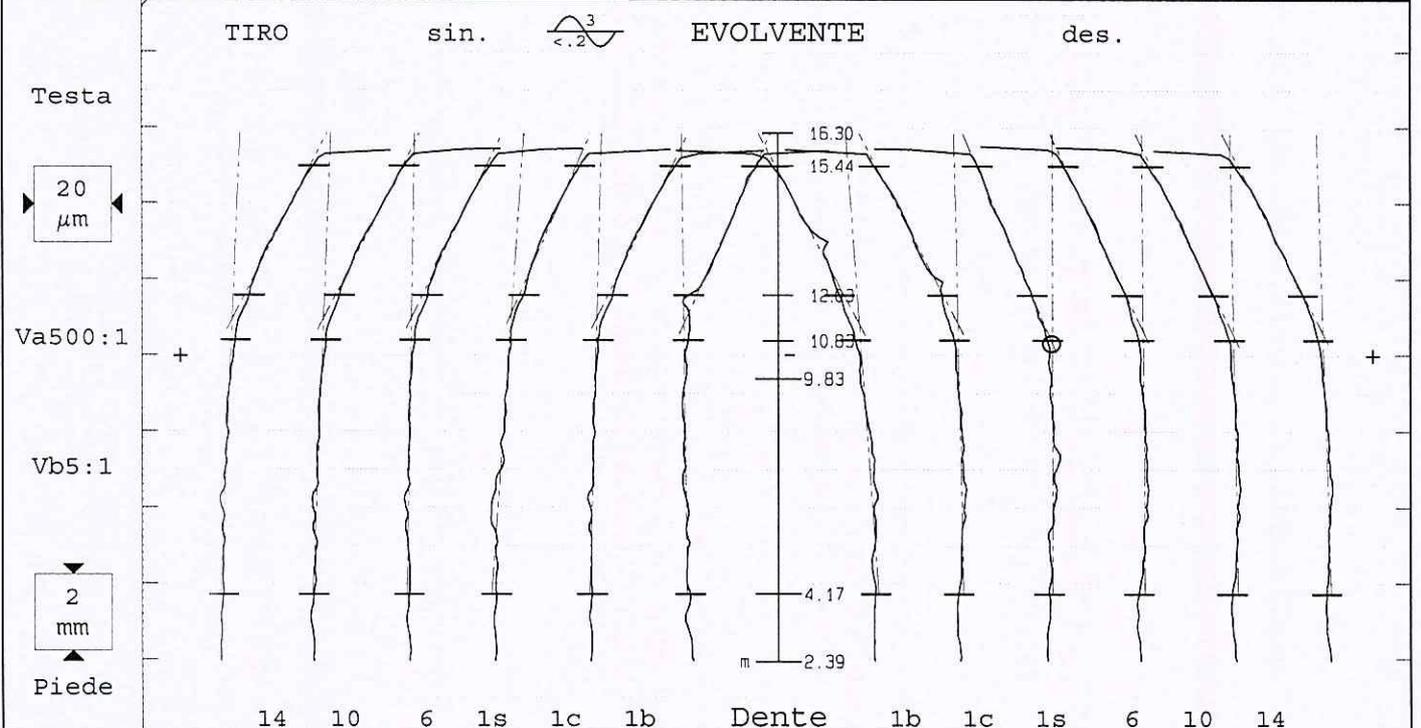
Centricità Fr (Ø-sfera = 3.5mm) ☉ : 6µm



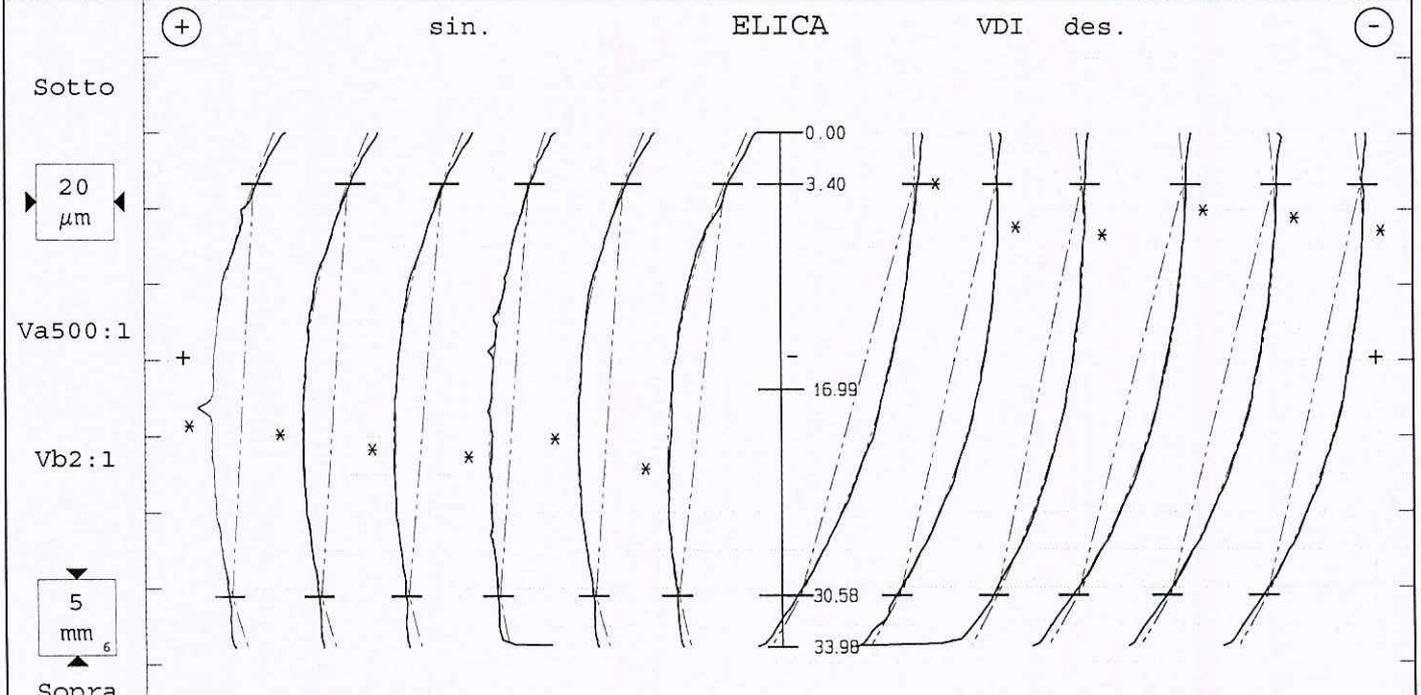
Err. di concentricità	Fr	6	32		
Variaz. spessore dente	Rs				



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Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pz 2		Angolo pressione	20°	Tratto elica Lβ	27.18mm
Masch.Nr.:	M001	Spindel: Formn. 51	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-27.102°	Fat.scor.pr. x	.634	



Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
fHsm	±6	Var 2							±6	Var 2						-1	
fHa	±10	-3	-3	-1	-5	-2	1		±10	-5	-1	0	0	-1	-2	-1	
Fa	4	4	4	3	5	3	2		4	6	3	3	3	3	4	3	
ffa	4	2	2	2	3	2	2		4	3	3	3	3	3	2	3	
fKo	-22/-14	-19	-19	-19	-14	-18	-19		-22/-14	-19	-21	-20	-20	-21	-21	-21	



N:Z		14	10	6	1t	1c	1p	Ø Dente	1p	1c	1t	6	10	14		
fHsm	-7±6	-9	Bd	-5	Var	4		-30±6	Bd	-10	Var	4		-33		
fHβ	-7±13	-9	-7	-9	-11	-10	-9	-15	-30±13	-38	-32	-28	-35	-34	-31	-33
Fβ	6	8	5	6	4	5	9		9	5	3	7	7	5	6	
ffβ	4	3	5	2	1	3	2	2	4	2	1	2	2	2	2	2
Cβ	5/9	8	8	8	6	8	8		5/9	7	8	8	8	8	8	8

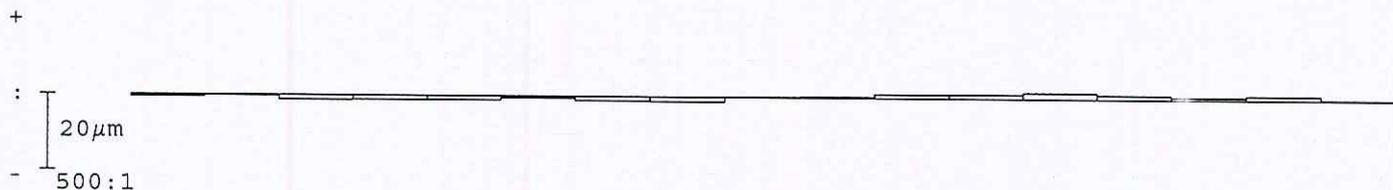




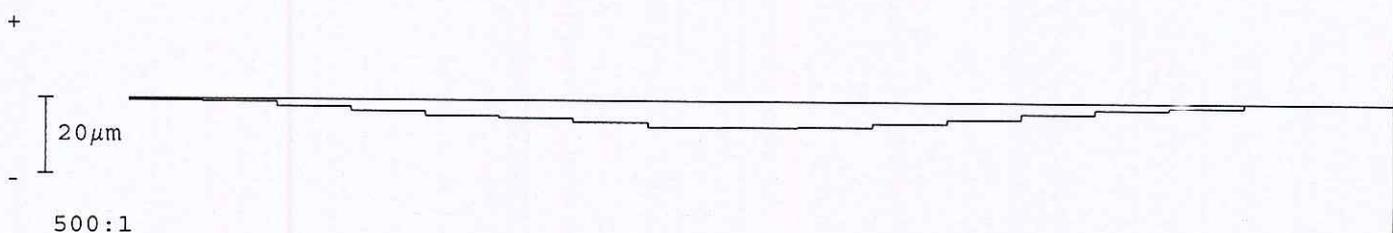
Nr. prog.: STI0410005 0 PNC35 B4784	Controllore: TURNO C	Data: 12.01.2015 10:52
Denominazione: Output Shaft 2	Numero denti z 17	Angolo pressione 20°
Numero disegno.: 250.6.3755.35-IF	Modulo m 2.25mm	Angolo elica -29°
Commessa/serie nr.: pz 2	Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formelwerk	Charge:



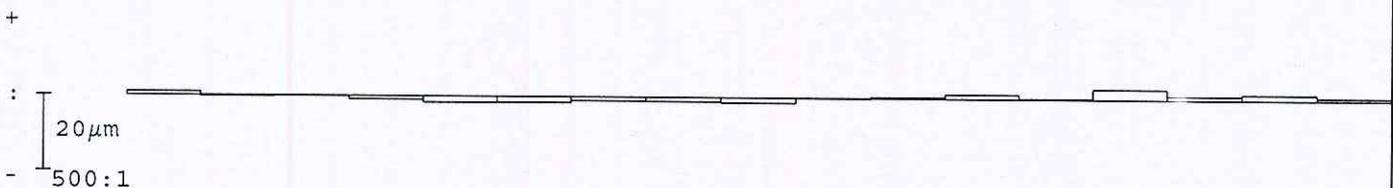
Errori singoli di divisione fp fianco sinistro



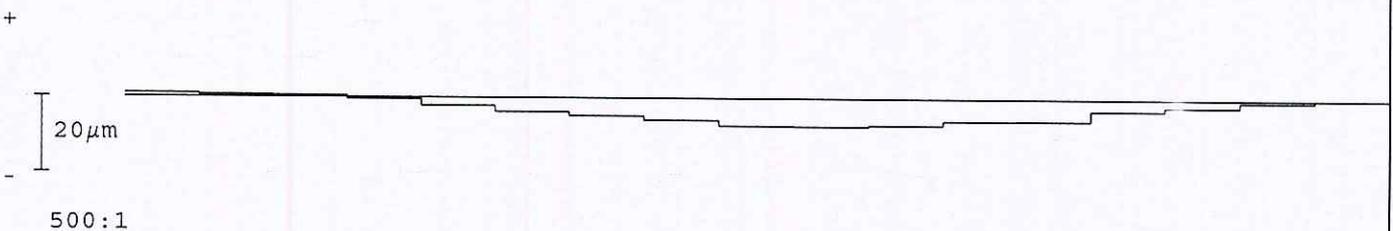
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

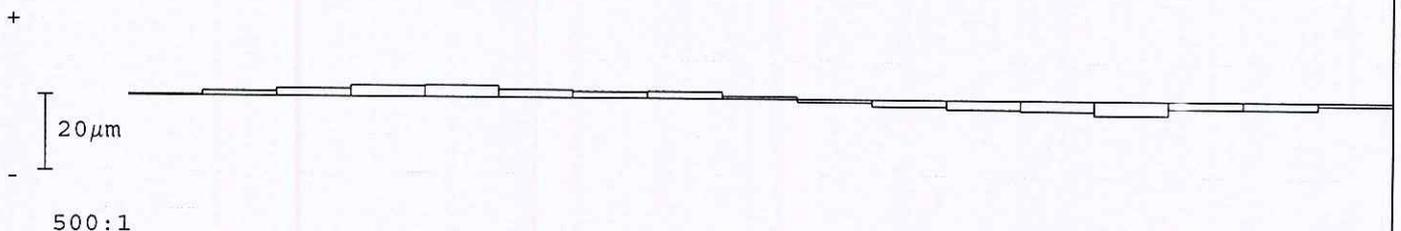


Errore somma di divisione Fp fianco destro



	Corso per misura divis.: 44.909 z=17mm							
	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	2		14		3		14	
Gr. salto di passo fu max	1		18		3		18	
Scarto di divisione Rp	3				5			
Err. globale di divisione Fp	7		40		8		40	
Err. cordale di divisione Fpz/8	3				4			

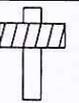
Centricità Fr (Ø-sfera = 3.5mm) ☉ : 6µm



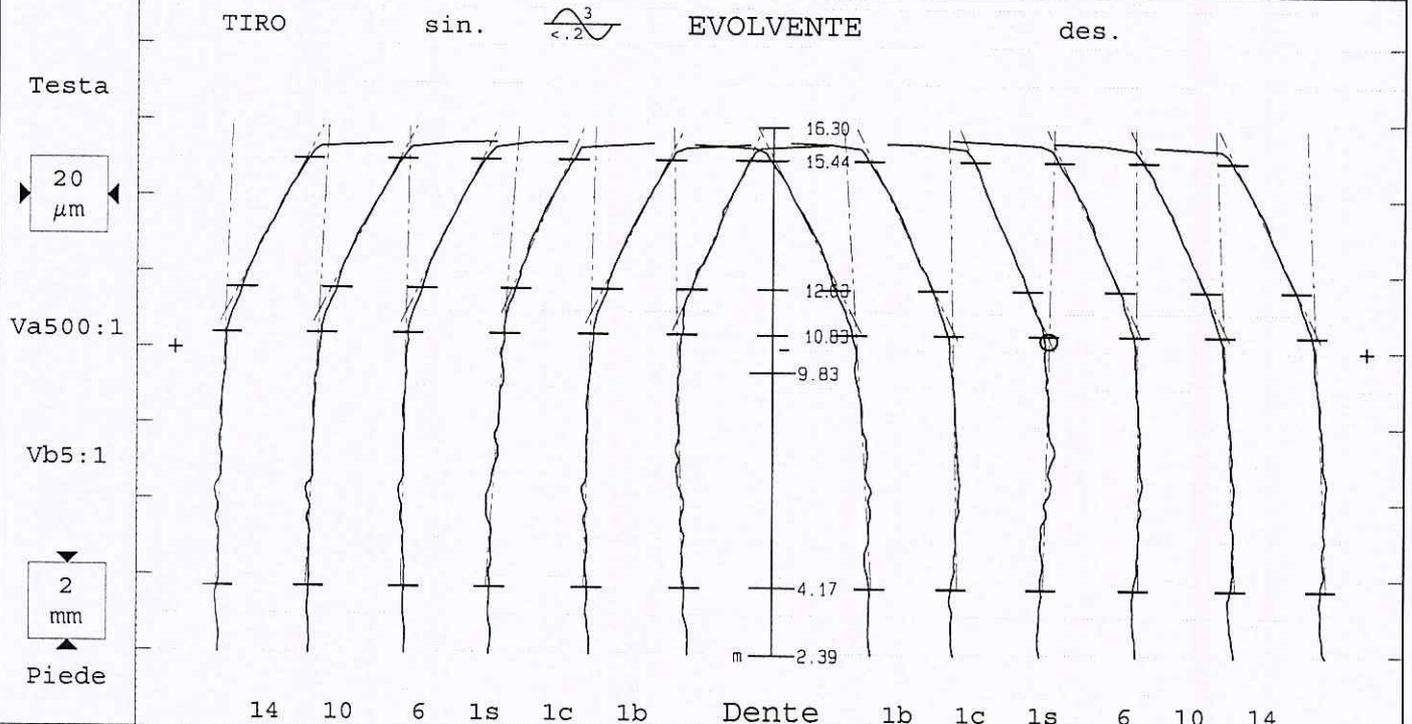
Err. di concentricità Fr	7	32		
Variab. spessore dente Rs				

GETRAG

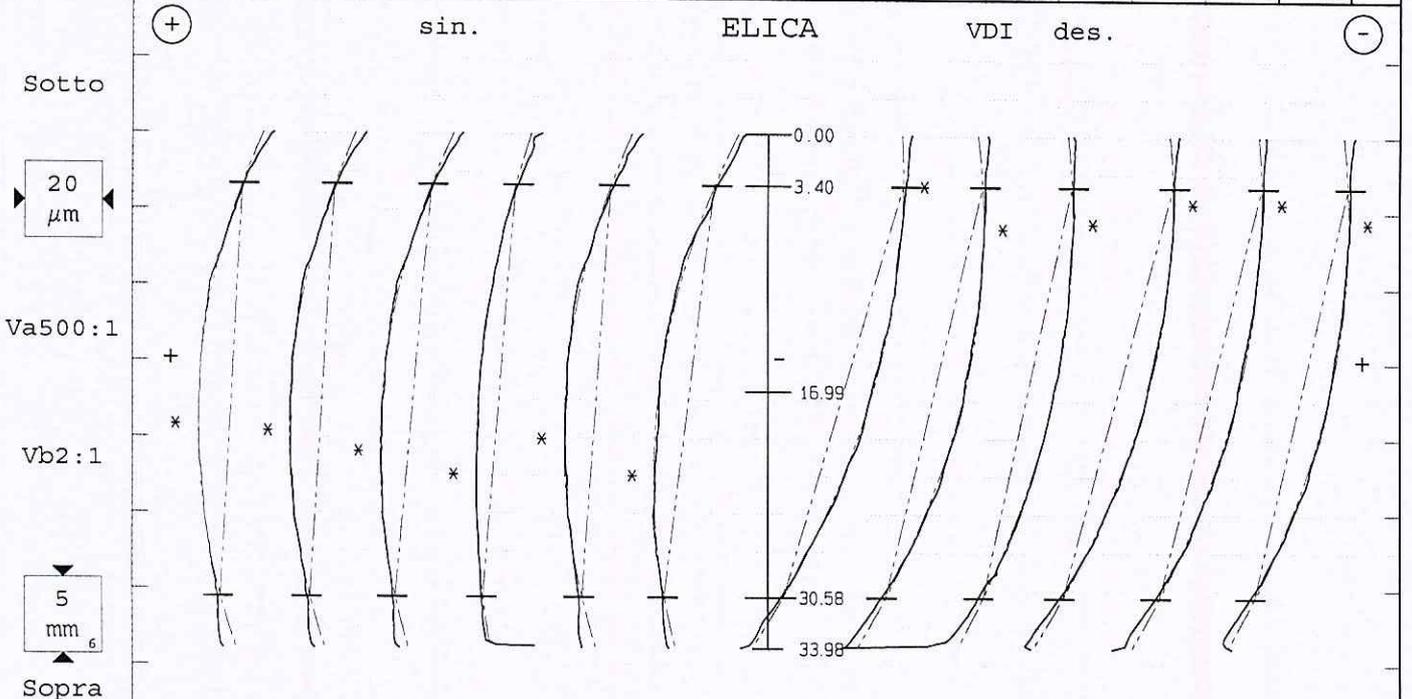
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	12.01.2015 10:59
Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pz 3		Angolo pressione	20°	Tratto elica Ls	27.18mm
Masch.Nr.:	M001	Spindel: Formata	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:		Ang. Base	-27.102°	Fat.scor.pr. x	.634



Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual	
		Var 2									Var 2							
fH _{am}	±6	-2							±6							-2		
fH _a	±10	-2	-2	-3	-1	-5	-2	1	±10	-4	-1	1	-1	-3	-3	-2		
F _a	3		3	4	3	5	3	2		5	3	4	2	4	4	3		
ffa	4	2	2	2	2	3	2	2	4	3	3	4	3	2	3	3		
fK _o	-22/-14	-19	-20	-19	-19	-14	-19	-19	-22/-14	-19	-20	-21	-19	-19	-19	-19		



N:Z		14	10	6	1t	1c	1p	Dente	1p	1c	1t	6	10	14		
fH _{sm}	-7±6	-9	Bd	-5	Var	5		-30±6	Bd	-10	Var	5		-33		
fH _B	-7±13	-9	-7	-8	-12	-11	-9	-16	-30±13	-39	-32	-29	-36	-33	-31	-33
F _B	5		4	5	6	5	5	9		10	5	3	7	5	4	5
ff _B	4	1	1	1	1	1	2	2	4	1	2	2	2	2	2	2
CB	5/9	8	9	8	8	5	8	8	5/9	8	8	7	8	7	8	8

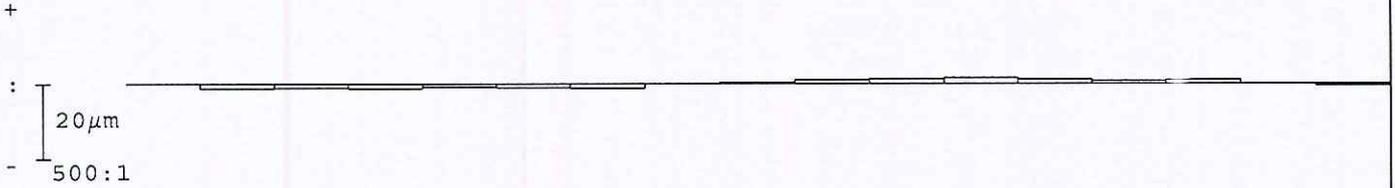




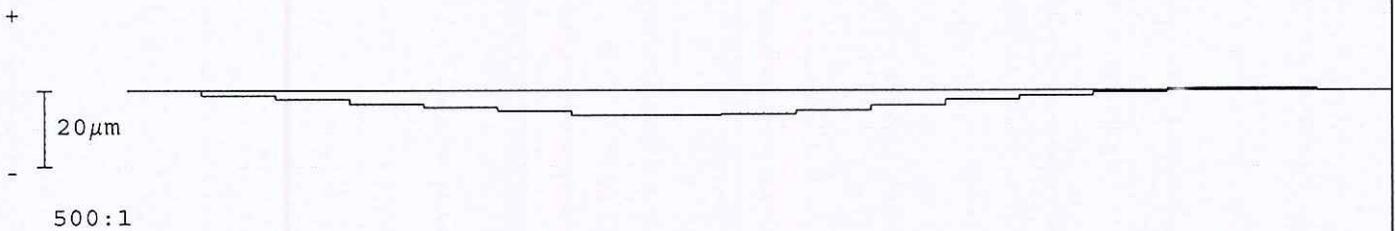
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Denominazione:	Output Shaft 2		Numero denti z	17	Angolo pressione	20°
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Angolo elica	-29°
Commessa/serie nr.:	pz 3		Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: Formnerzeug:	Charge:			



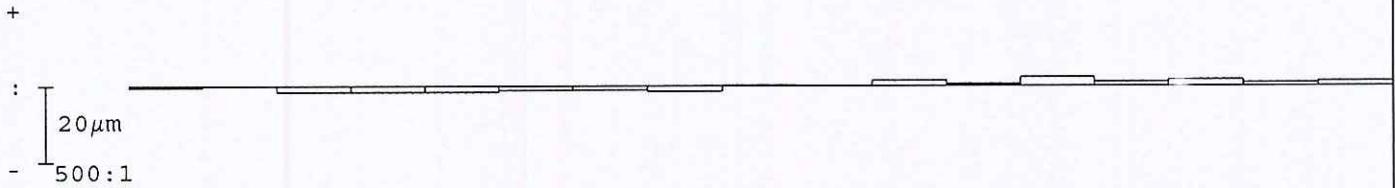
Errori singoli di divisione fp fianco sinistro



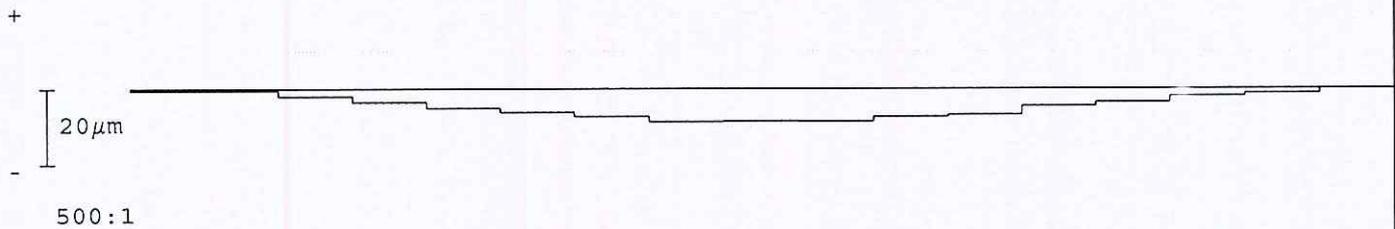
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

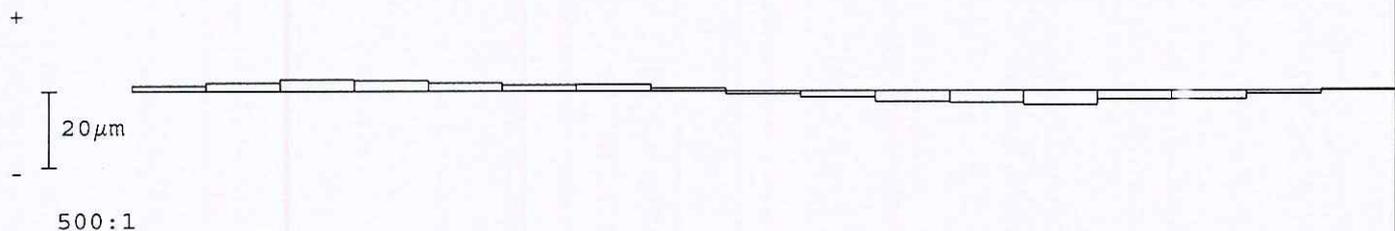


Errore somma di divisione Fp fianco destro

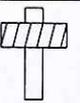


	Corsa per misura divis.: 44.909 z=17mm							
	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	2		14		2		14	
Gr. salto di passo fu max	1		18		2		18	
Scarto di divisione Rp	3				4			
Err. globale di divisione Fp	7		40		9		40	
Err. cordale di divisione Fpz/8	3				3			

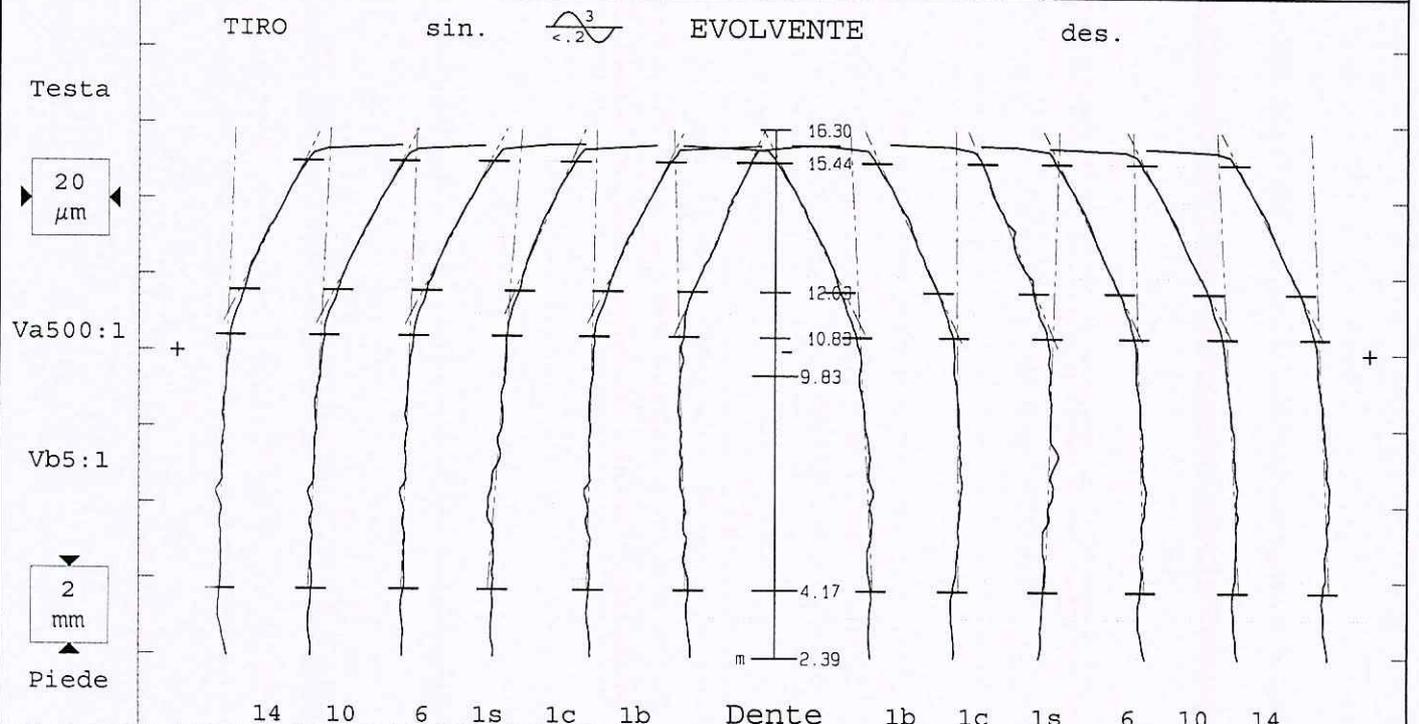
Centricità Fr (Ø-sfera =3.5mm) © : 6µm



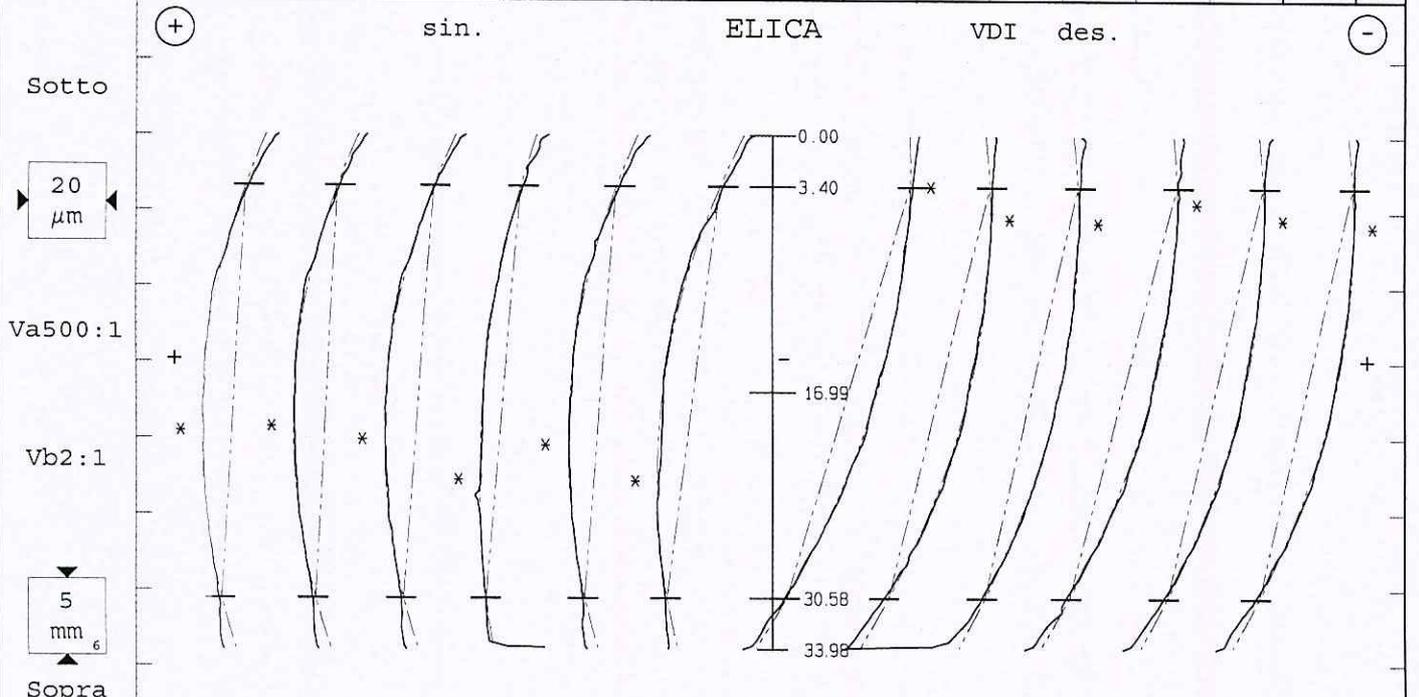
Err. di concentricità Fr	7	32		
Variation spessore dente Rs				



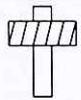
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Denominazione:	Output Shaft 2	Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF	Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pz 4	Angolo pressione	20°	Tratto elica Lβ	27.18mm
Masch.Nr.:	M001 Spindel: Formm. 1	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung	Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-27.102°	Fat.scor.pr. x	.634



Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
		Var 2								Var 3							
fHam ±6	-2	-2	-3	-2	-5	-1	2		±6	-3	0	2	-2	-3	-3	-2	
fHa ±10	-2	4	4	4	5	3	3		±10	4	3	4	3	4	4	4	
Fa 4	2	2	2	2	3	2	2		4	3	3	4	2	3	3	3	
ffa 4	2	-19	-19	-20	-13	-19	-20		-22/-14	-19	-20	-20	-20	-20	-20	-20	
fXo -22/-14	-19																



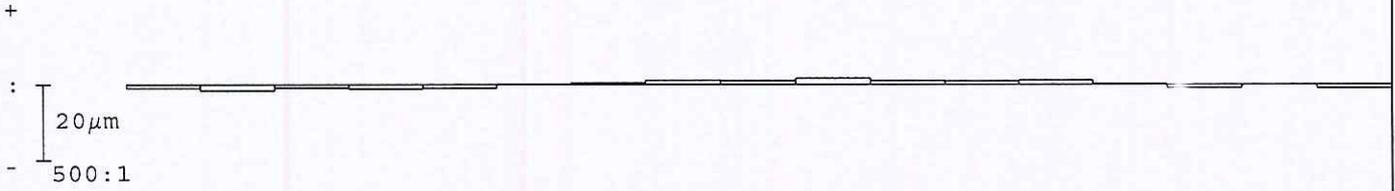
N:Z		Dente							Dente							
		Var 3							Var 4							
fHβm -7±6	-9	-8	-7	-10	-11	-10	-17		-30±6	-40	-33	-31	-35	-31	-31	-33
fHβ -7±13	-9	4	4	5	5	5	11		-30±13	11	6	4	7	4	4	5
Fβ 5	5	2	2	1	2	2	2		4	1	2	2	2	2	2	2
ffβ 4	2	8	9	9	5	8	8		5/9	8	8	7	8	8	8	8
Cβ 5/9	9															



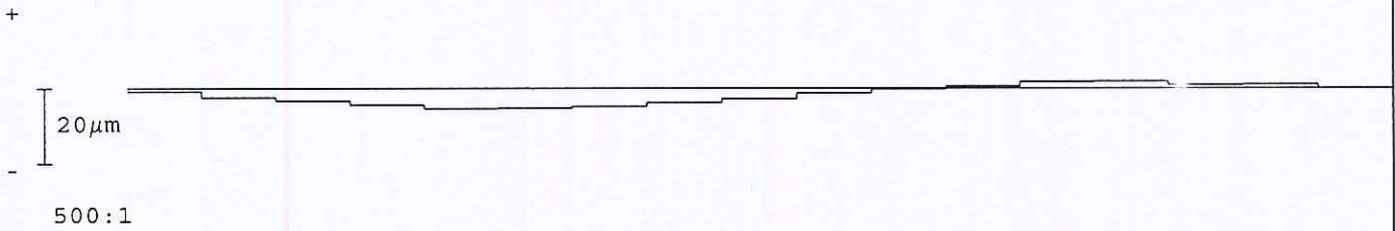
Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	TURNO C	Data:	12.01.2015 11:05
Denominazione:	Output Shaft 2	Numero denti z	17	Angolo pressione	20°
Numero disegno.:	250.6.3755.35-IF	Modulo m	2.25mm	Angolo elica	-29°
Commessa/serie nr.:	pz 4	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: Formel	Getzdg:	Charge:	



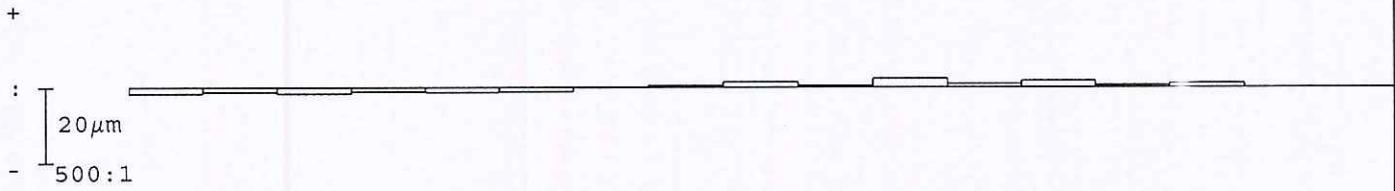
Errori singoli di divisione fp fianco sinistro



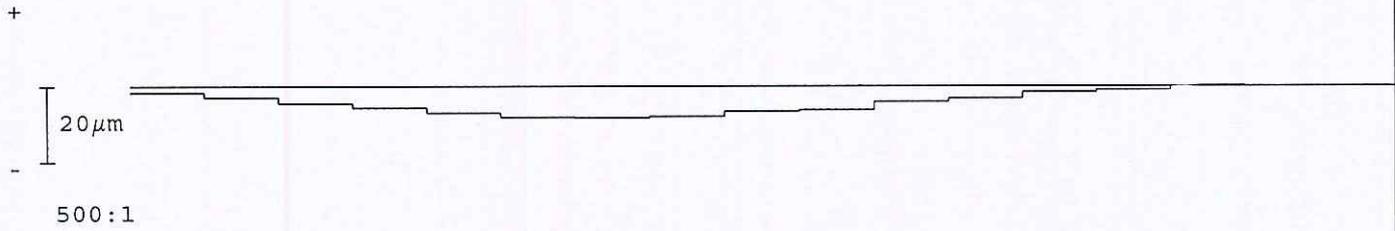
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

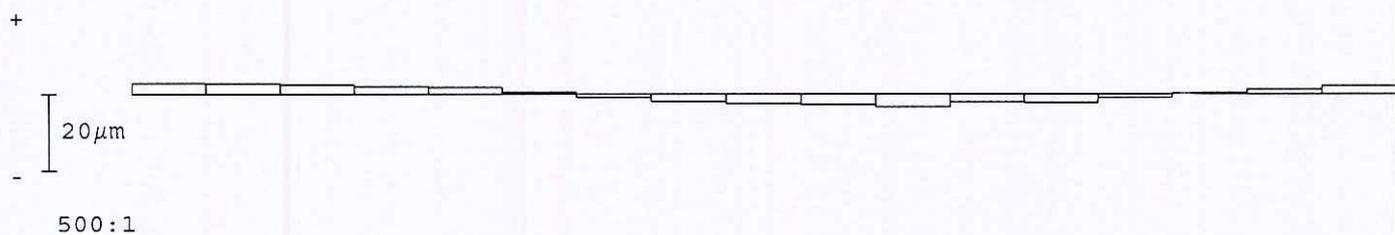


Errore somma di divisione Fp fianco destro

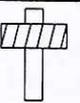


Corsa per misura divis.: 44.909 z=17mm	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	2		14		2		14	
Gr. salto di passo fu max	1		18		2		18	
Scarto di divisione Rp	4				4			
Err. globale di divisione Fp	7		40		8		40	
Err. cordale di divisione Fpz/8	3				3			

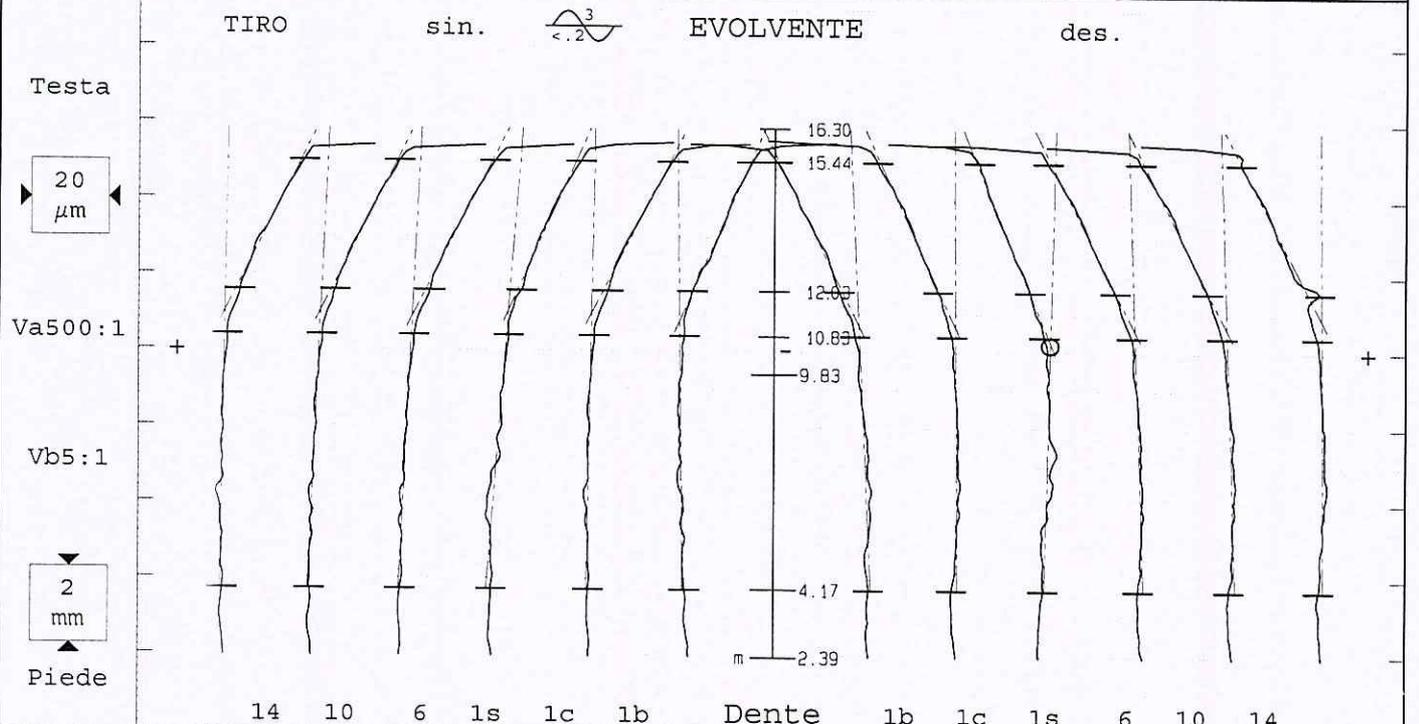
Centricità Fr (Ø-sfera = 3.5mm) \odot : 6µm



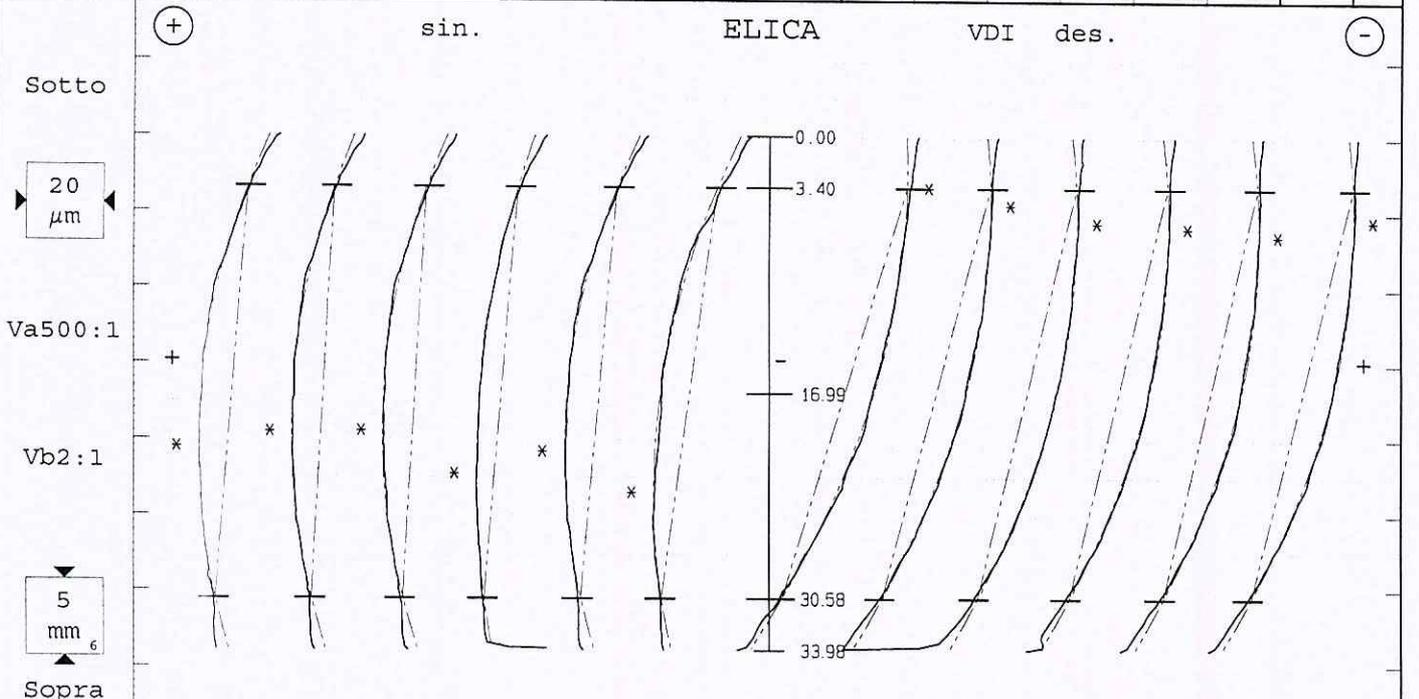
Err. di concentricità Fr	6	32		
Variaz. spessore dente Rs				



Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	TURNO C	Data:	12.01.2015 11:11
Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pz 5		Angolo pressione	20°	Tratto elica Lβ	27.18mm
Masch.Nr.:	M001	Spindel: Formn. 1	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:		Ang. Base	-27.102°	Fat.scor.pr. x	.634

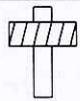


Tolerance	Medio	Val.misur [µm]							Qual	Tolerance	Val.misur [µm]							Medio	Qual
		Var 2									Var 2								
fHam	±6	-2								±6								-1	
fHa	±10	-2	-1	-3	-3	-5	-1	1		±10	-3	-1	2	-2	-2	0		-1	
Fa		4	3	4	4	6	3	2			5	2	4	3	4	3		3	
ffa		4	2	2	2	3	2	2		4	3	3	4	2	3	2		3	
fko	-22/-14	-19	-19	-18	-19	-15	-20	-19		-22/-14	-19	-20	-21	-21	-20	-21		-21	



fHsm	Medio	Bd -7 Var 4							Qual	fHsm	Bd -9 Var 5							Medio	Qual
fHsm	-7±6	-10								-30±6								-33	
fHb	-7±13	-10	-11	-8	-8	-11	-12	-18		-30±13	-41	-36	-32	-32	-31	-34		-33	
Fβ		5	5	4	4	5	6	11			12	7	5	5	5	5		6	
ffβ		4	1	1	1	1	1	2		4	2	1	2	2	2	2		2	
CB	5/9	8	8	8	8	6	8	7		5/9	8	8	8	8	8	8		8	

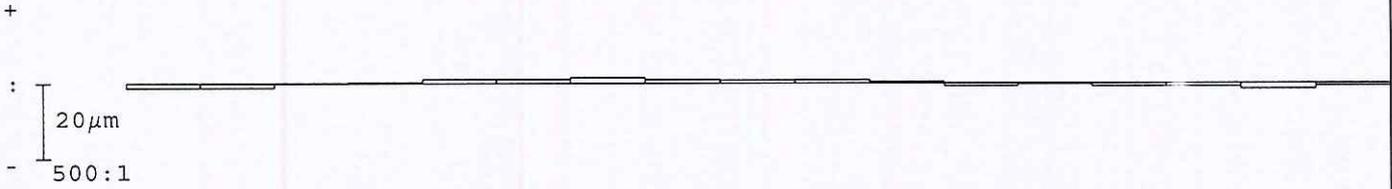




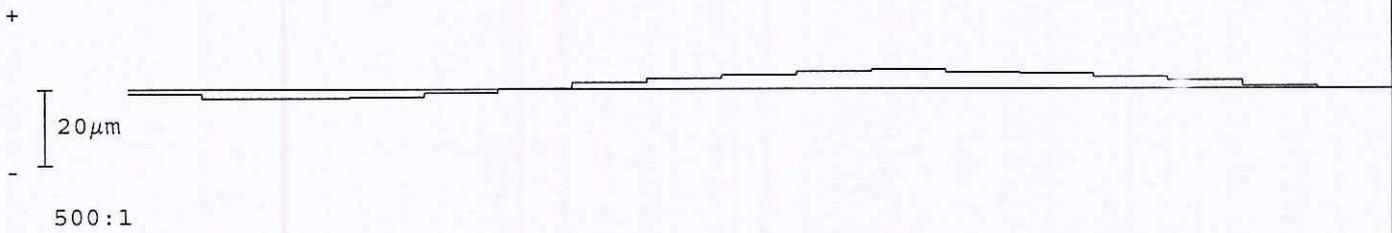
Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	12.01.2015 11:11
Denominazione:	Output Shaft 2		Numero denti z	17	Angolo pressione	20°
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Angolo elica	-29°
Commessa/serie nr.:	pz 5		Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: Formel	Skizze:	Charge:		



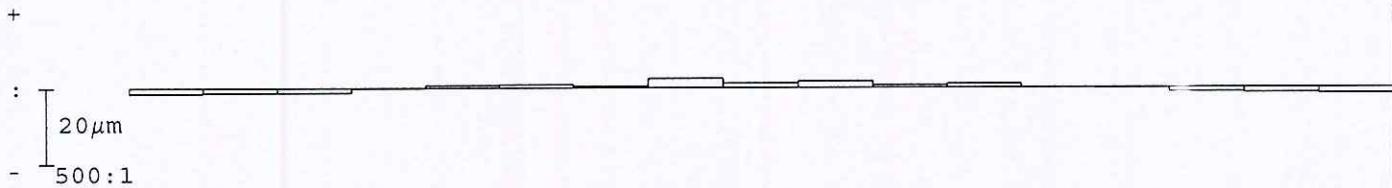
Errori singoli di divisione fp fianco sinistro



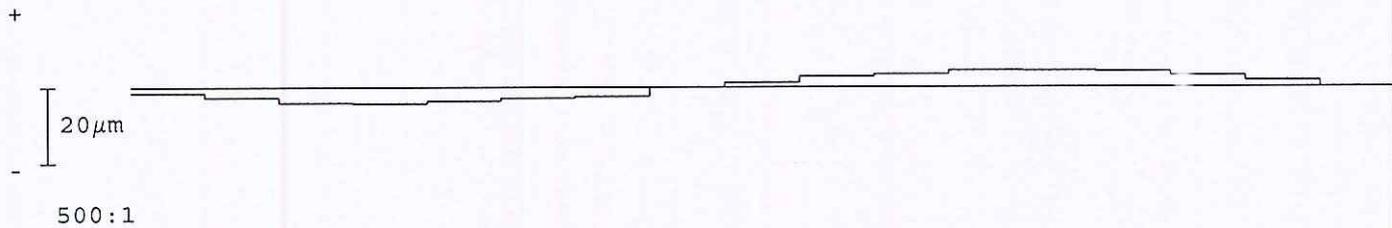
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



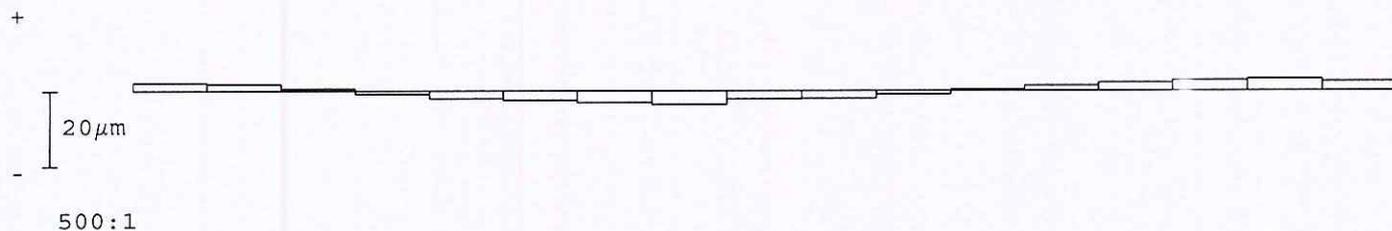
Errore somma di divisione Fp fianco destro



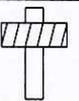
Corsa per misura divis.: 44.909 z=17mm		fianco sinistro / TIRO				fianco destro			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	2		14		2		14	
Gr. salto di passo	fu max	1		18		2		18	
Scarto di divisione	Rp	4				4			
Err. globale di divisione	Fp	7		40		9		40	
Err. cordale di divisione	Fpz/8	3				4			

Centricità Fr (Ø-sfera = 3.5mm)

⊙ : 6µm



Err. di concentricità	Fr	7	32		
Variatione spessore dente	Rs				

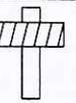
GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	TURNO C	Data:	13.01.2015 08:54
Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pezzo 1		Angolo pressione	20°	Tratto elica L _S	27.18mm
Masch.Nr.:	M001	Spindel: Formmest	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:		Charge:	Ang. Base	-27.102°	Fat.scor.pr. x	.634

TIRO

Piede-Ø: 38.824mm [38.65/39.1]
 Testa-Ø: 51.652mm [51.64/51.9]

VDI

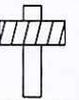
GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI041005 0 PNC35 B4784	Controllore:	TURNO C	Data:	13.01.2015 08:56
Denominazione:	Output Shaft 2	Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF	Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pezzo 2	Angolo pressione	20°	Tratto elica L _S	27.18mm
Masch.Nr.:	M001 Spindel: Formata	Ang. elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung	Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-27.102°	Fat.scor.pr. x	.634

TIRO

Piede-Ø: 38.843mm [38.65/39.1]
 Testa-Ø: 51.683mm [51.64/51.9]

VDI

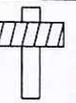
GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	13.01.2015 08:58
Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pezzo 3		Angolo pressione	20°	Tratto elica L _S	27.18mm
Masch.Nr.:	M001	Spindel: Formn	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:		Charge:	Ang. Base	-27.102°	Fat.scor.pr. x	.634

TIRO

Piede-Ø: 38.841mm [38.65/39.1]
 Testa-Ø: 51.688mm [51.64/51.9]

VDI

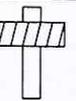
GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	13.01.2015 08:59
Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pezzo 4		Angolo pressione	20°	Tratto elica L8	27.18mm
Masch.Nr.:	M001	Spindel: Formel	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:		Charge:	Ang. Base	-27.102°	Fat.scor.pr. x	.634

TIRO

Piede-Ø: 38.838mm [38.65/39.1]
 Testa-Ø: 51.647mm [51.64/51.9]

VDI

GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI041005 0	PNC35 B4784	Controllore:	TURNO C	Data:	13.01.2015 09:02
Denominazione:	Output Shaft 2		Numero denti z	17	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3755.35-IF		Modulo m	2.25mm	Tratto evolv. La	6.66mm
Commessa/serie nr.:	pezzo 5		Angolo pressione	20°	Tratto elica L&S	27.18mm
Masch.Nr.:	M001	Spindel: Forme	Angolo elica	-29°	Inizio elab. M1	4.17mm
Untersuchungszweck:	Laufende Messung		Ø Base db	40.3766mm	Palpatore Ø	(#1) 1mm
Werkzeug:		Charge:	Ang. Base	-27.102°	Fat.scor.pr. x	.634

TIRO

Piede-Ø: 38.839mm [38.65/39.1]
 Testa-Ø: 51.689mm [51.64/51.9]

VDI

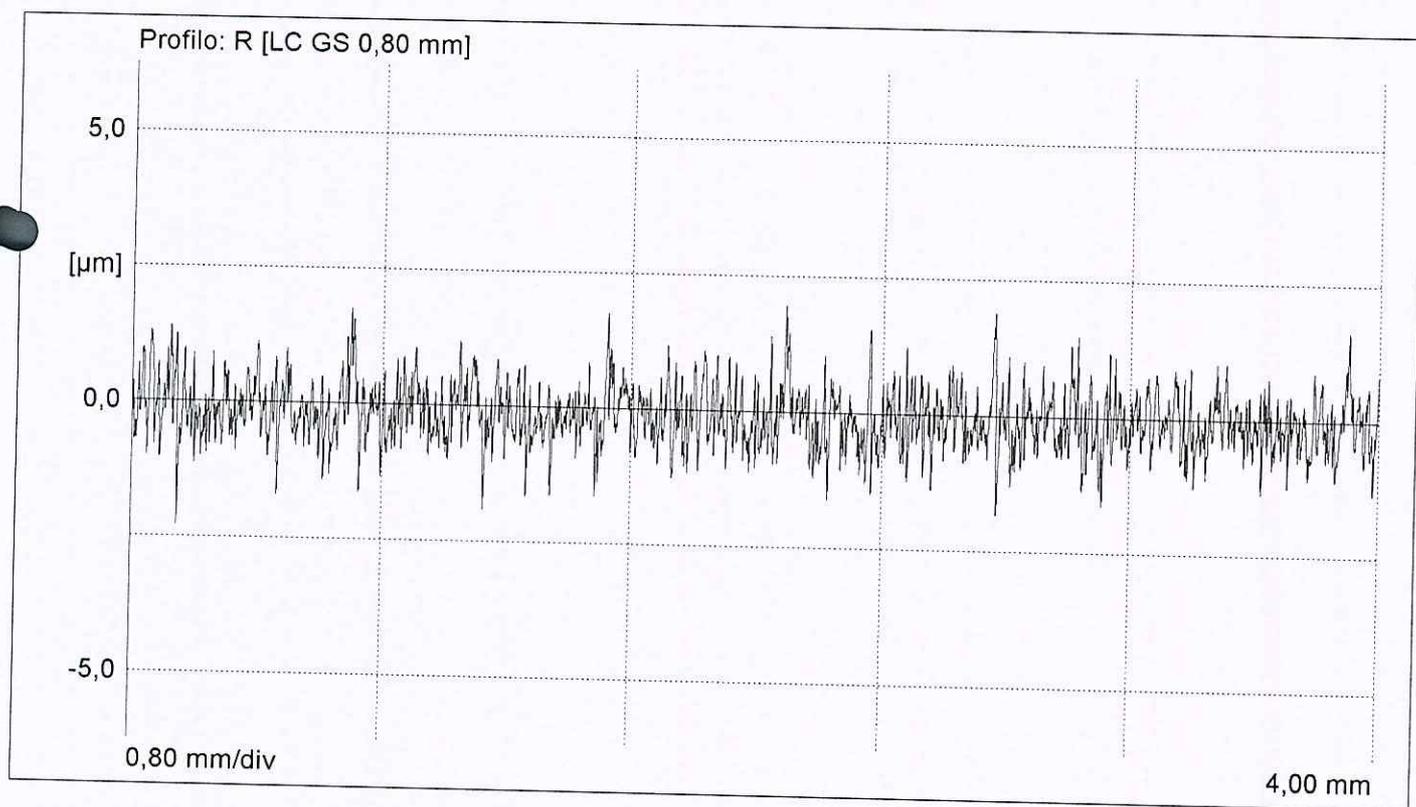


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 37755PPAP PZ.1
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:50
Nota: RZ DENTE
Tastatore: MFW-250 -20

MACCHINA: MOA 416121 002



LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	± 250	μm
Ra	0,43	μm
Rmax	4,06	μm
Rz	3,60	μm

PERTHOMETER CONCEPT

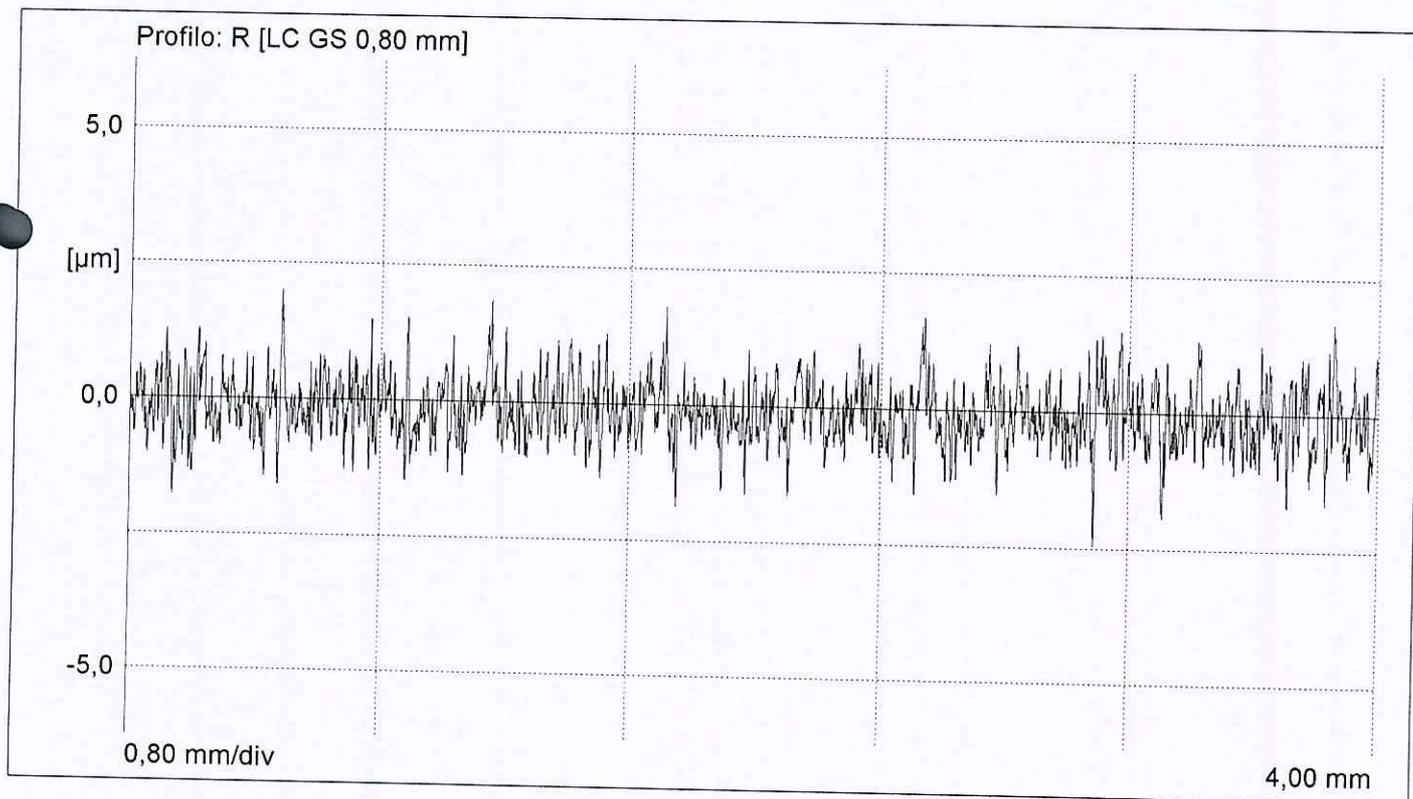


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 37755PPAP PZ.2
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:48
Nota: RZ DENTE
Tastatore: MFW-250 -20

MACCHINA: MOA 416121 002



LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250	µm
Ra	0,45	µm
Rmax	4,15	µm
Rz	3,71	µm

PERTHOMETER CONCEPT

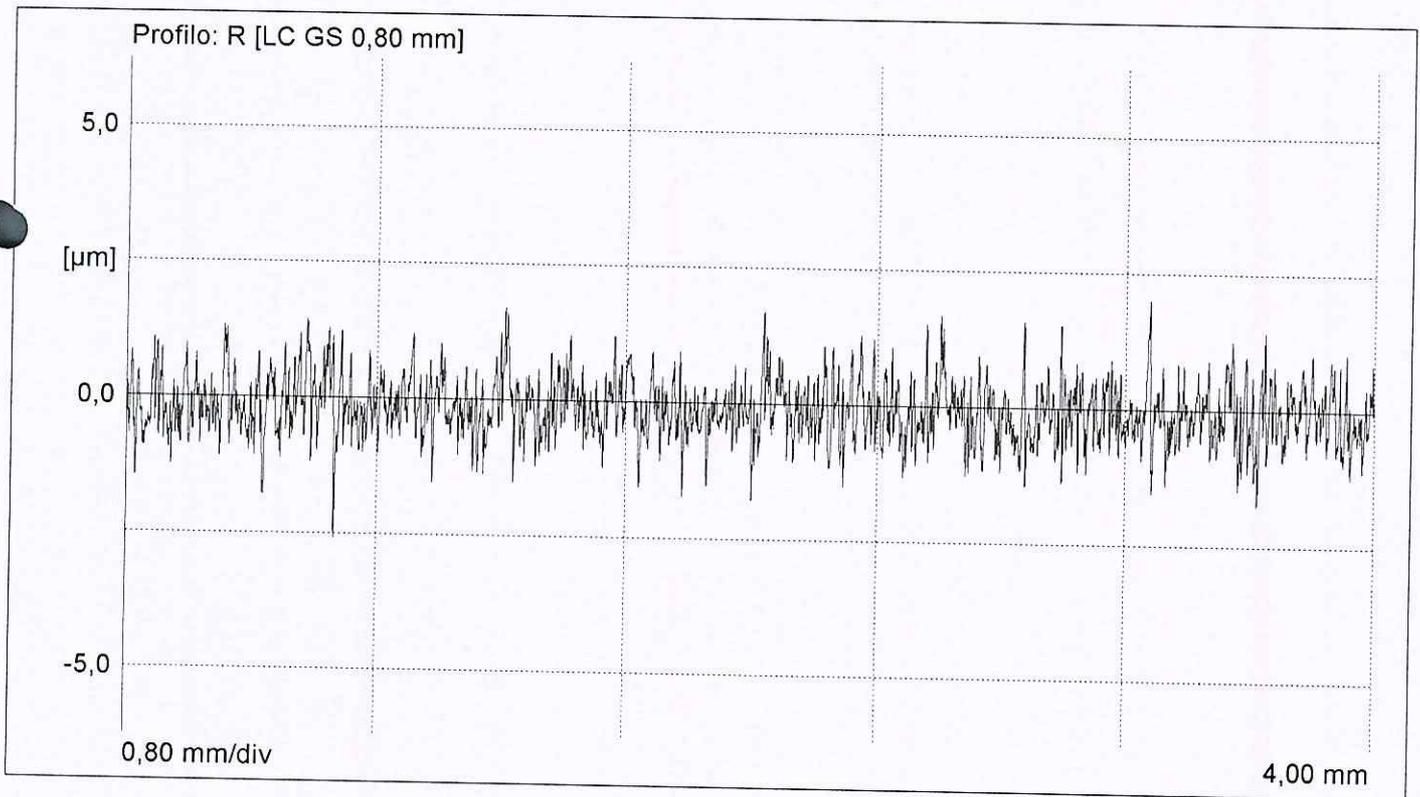


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 2
Numero:	37755PPAP PZ.3
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 09:48
Nota:	RZ DENTE
Tastatore:	MFW-250 -20

MACCHINA:	MOA 416121 002
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LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250	µm
Ra	0,44	µm
Rmax	4,04	µm
Rz	3,53	µm

PERTHOMETER CONCEPT

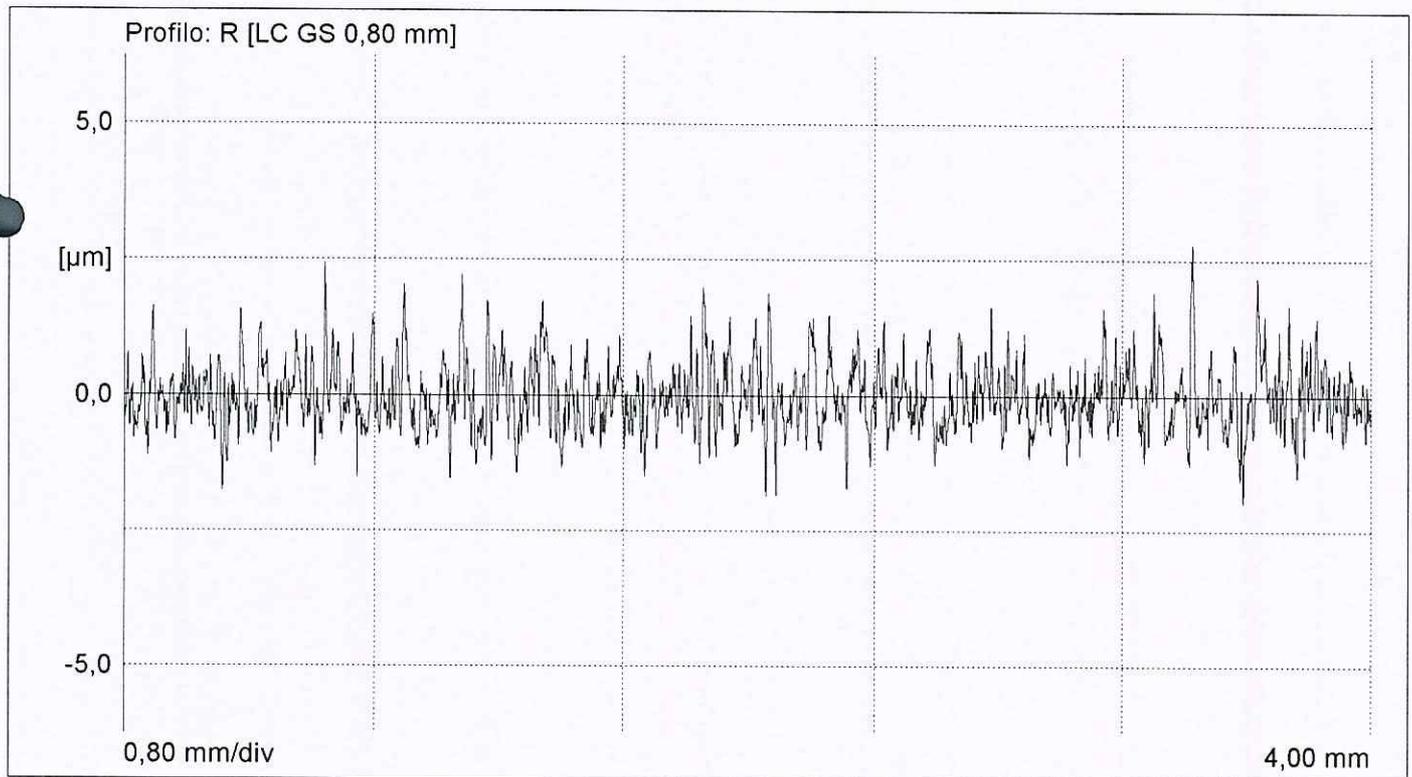


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 37755PPAP PZ.4
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:38
Nota: RZ DENTE
Tastatore: MFW-250 -20

MACCHINA: MOA 416121 002



LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250	µm
Ra	0,48	µm
Rmax	4,77	µm
Rz	3,89	µm

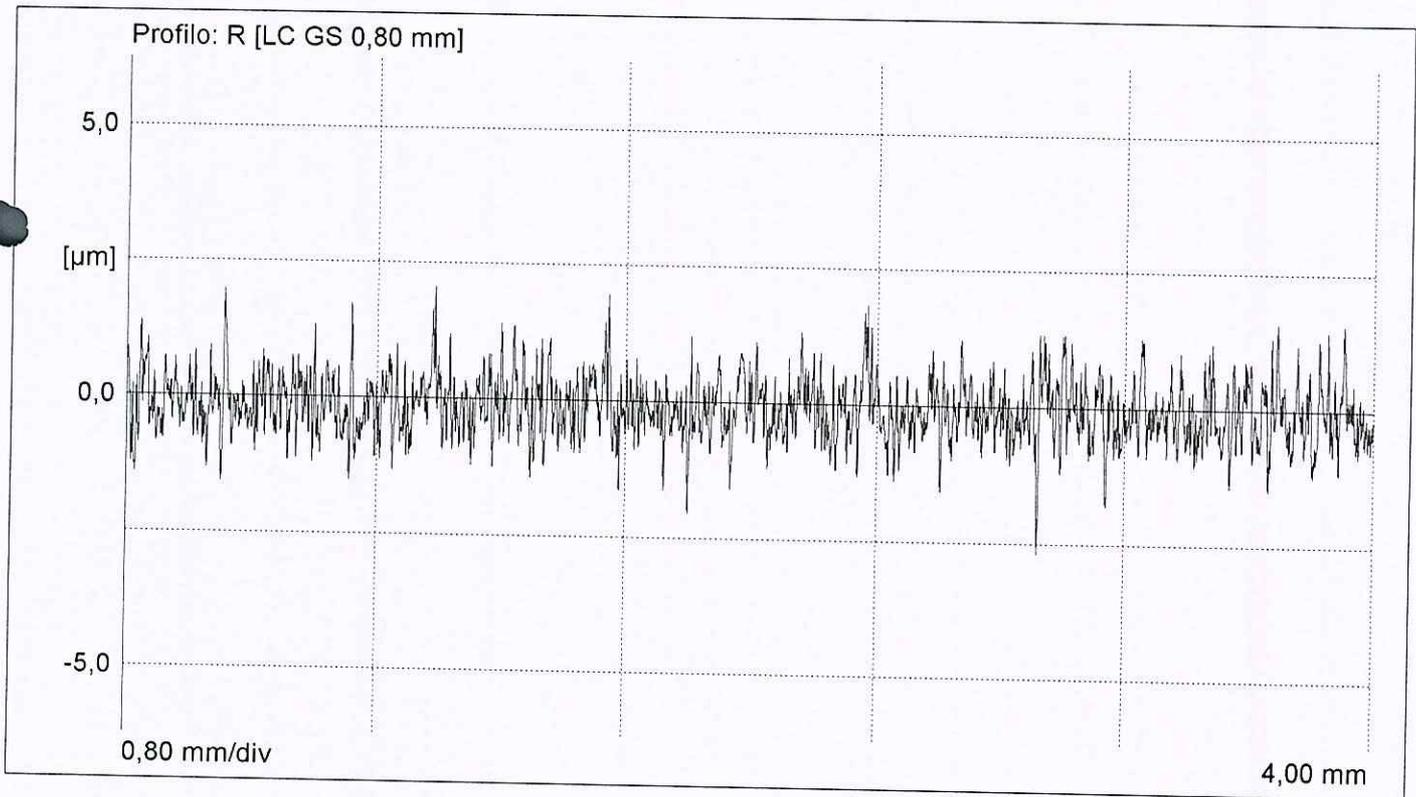
PERTHOMETER CONCEPT



Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 2
Numero:	37755PPAP PZ.5
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 09:47
Nota:	RZ DENTE
Tastatore:	MFW-250 -20
MACCHINA:	MOA 416121 002

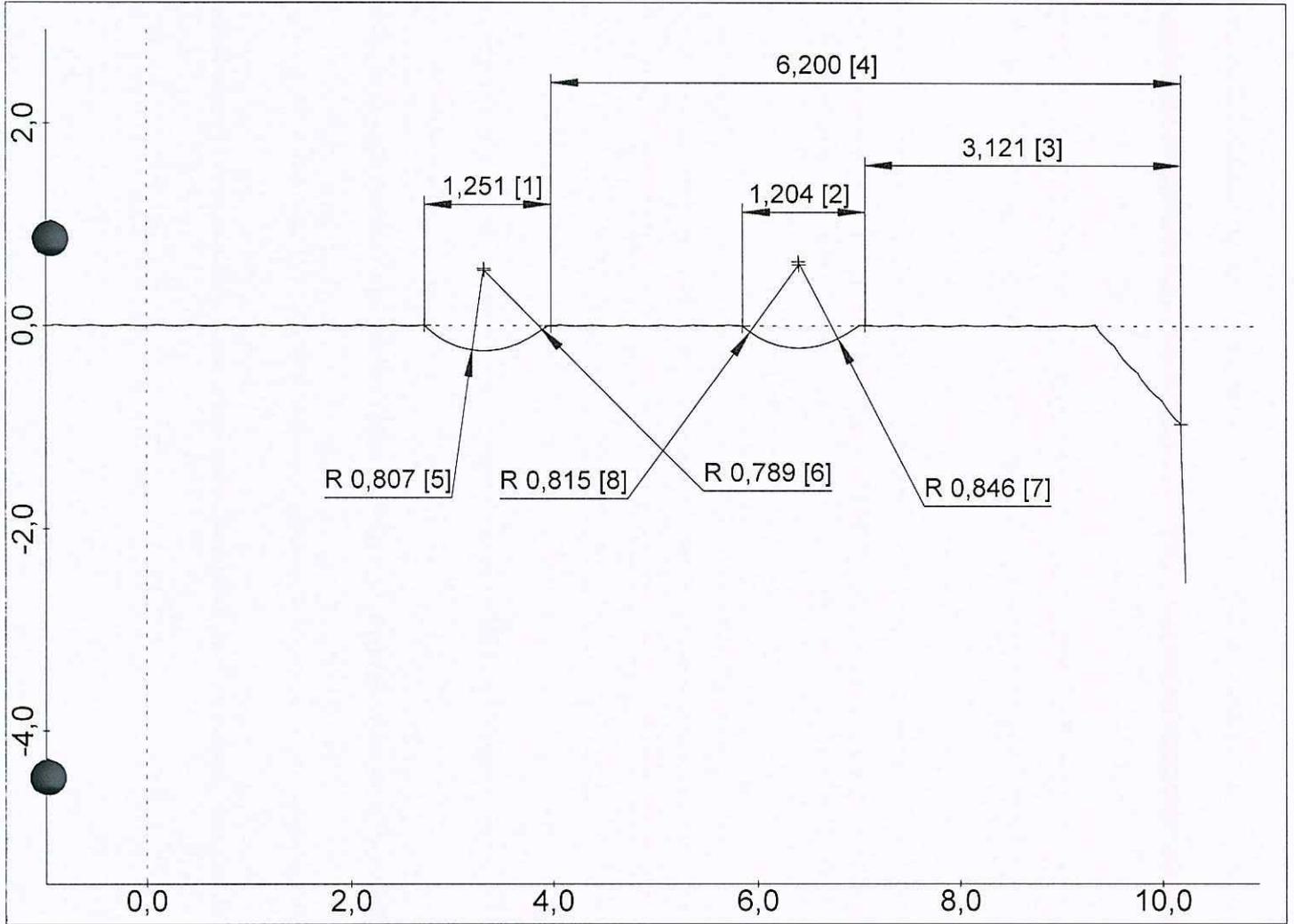


LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250	µm
Ra	0,45	µm
Rmax	4,02	µm
Rz	3,65	µm

PERTHOMETER CONCEPT

Via dei Ciclamini 4, Modugno (BA)

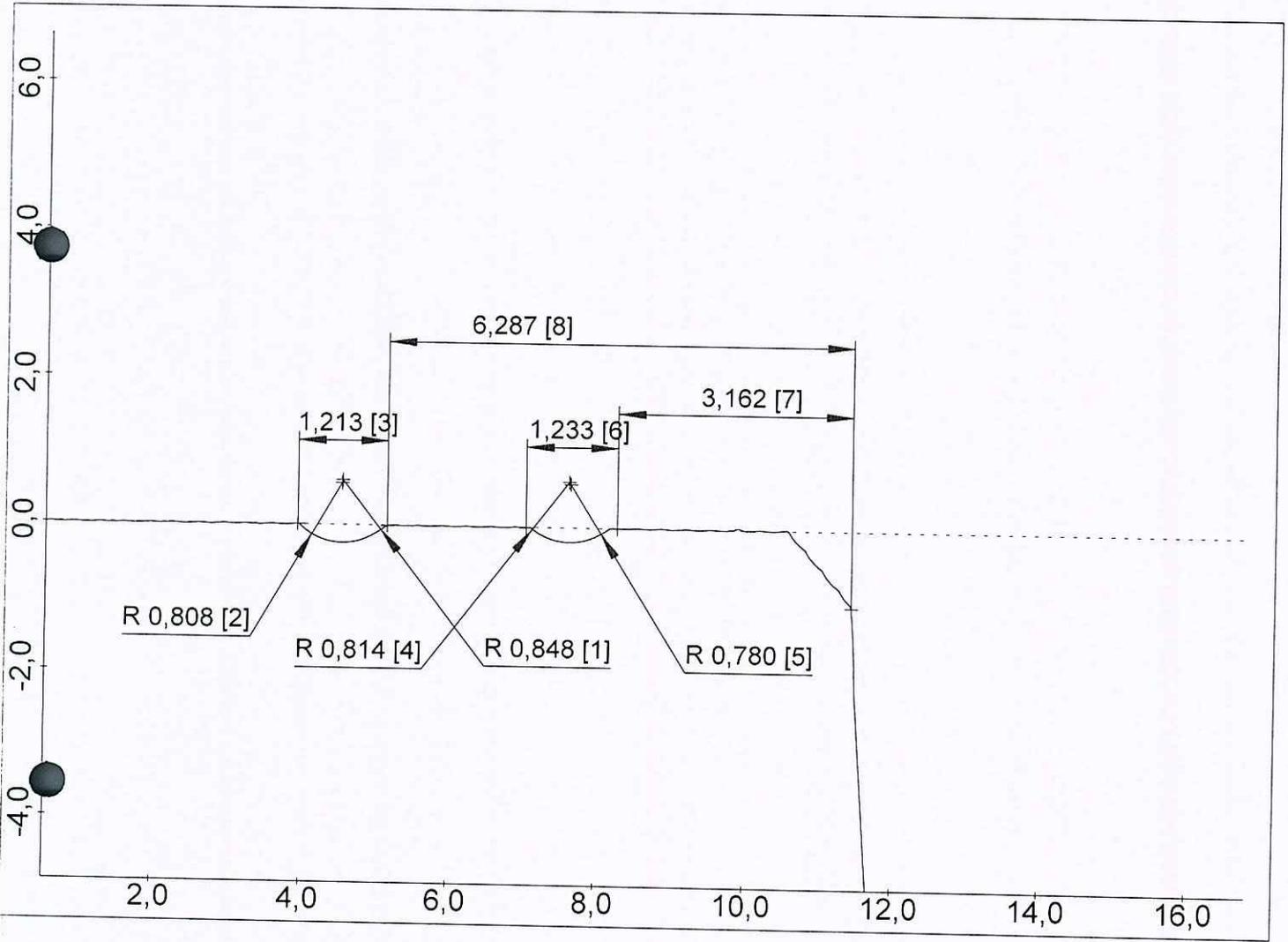
Oggetto:	OS 2
Numero:	3755 PPAP <i>pe 1.</i>
Operatore:	TURNO C
Data, ora:	15.12.2014, 07:22
Nota:	PROFILO M
Tastatore:	PCV 350 / 33 mm
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT

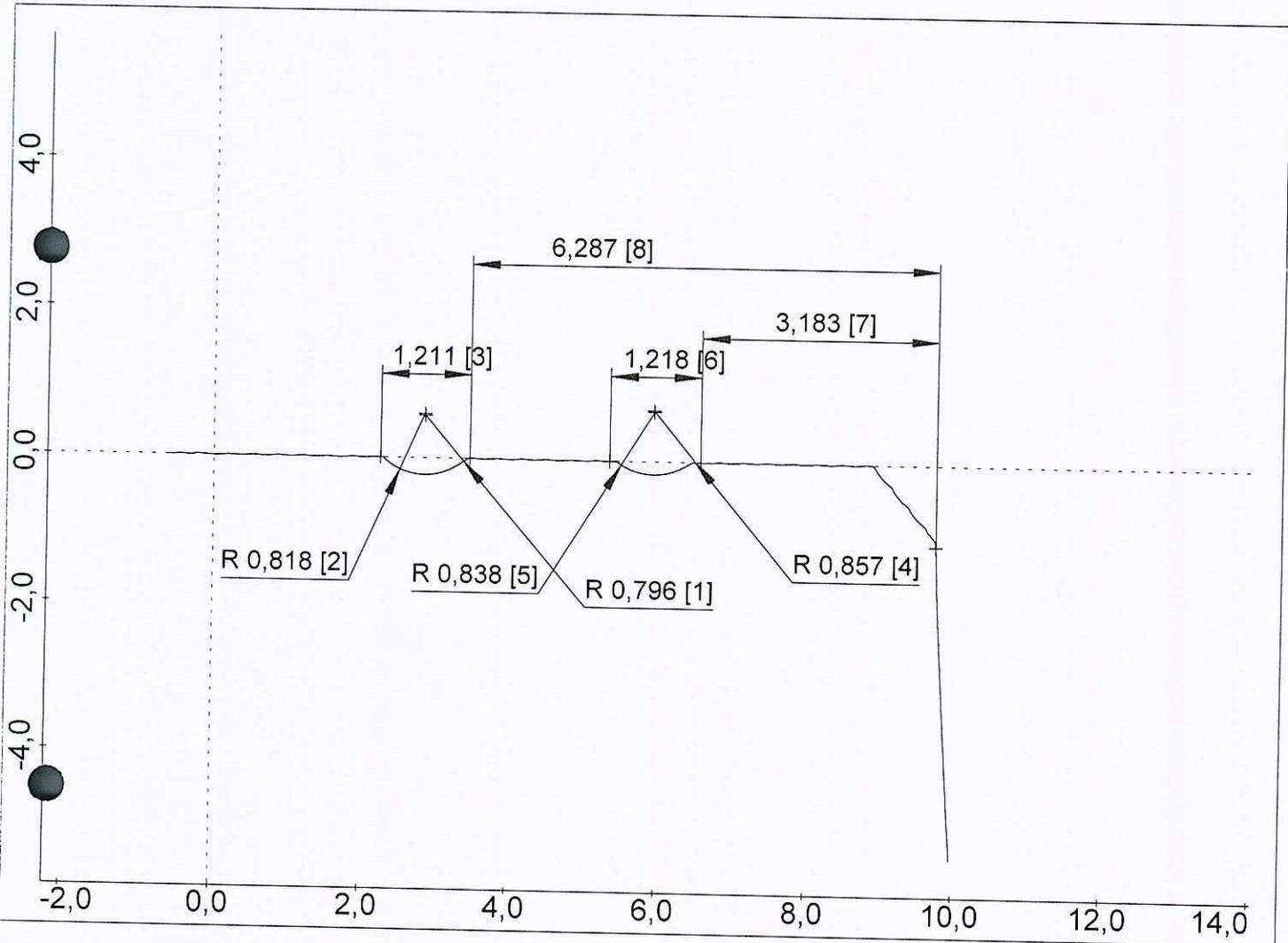
Oggetto: OS 2
Numero: 3755 PPAP PZ.2
Operatore: TURNO C
Data, ora: 18.12.2014, 09:37
Nota: PROFILO M
Tastatore: PCV 350 / 21 mm

Macchina: MOA 416120 001

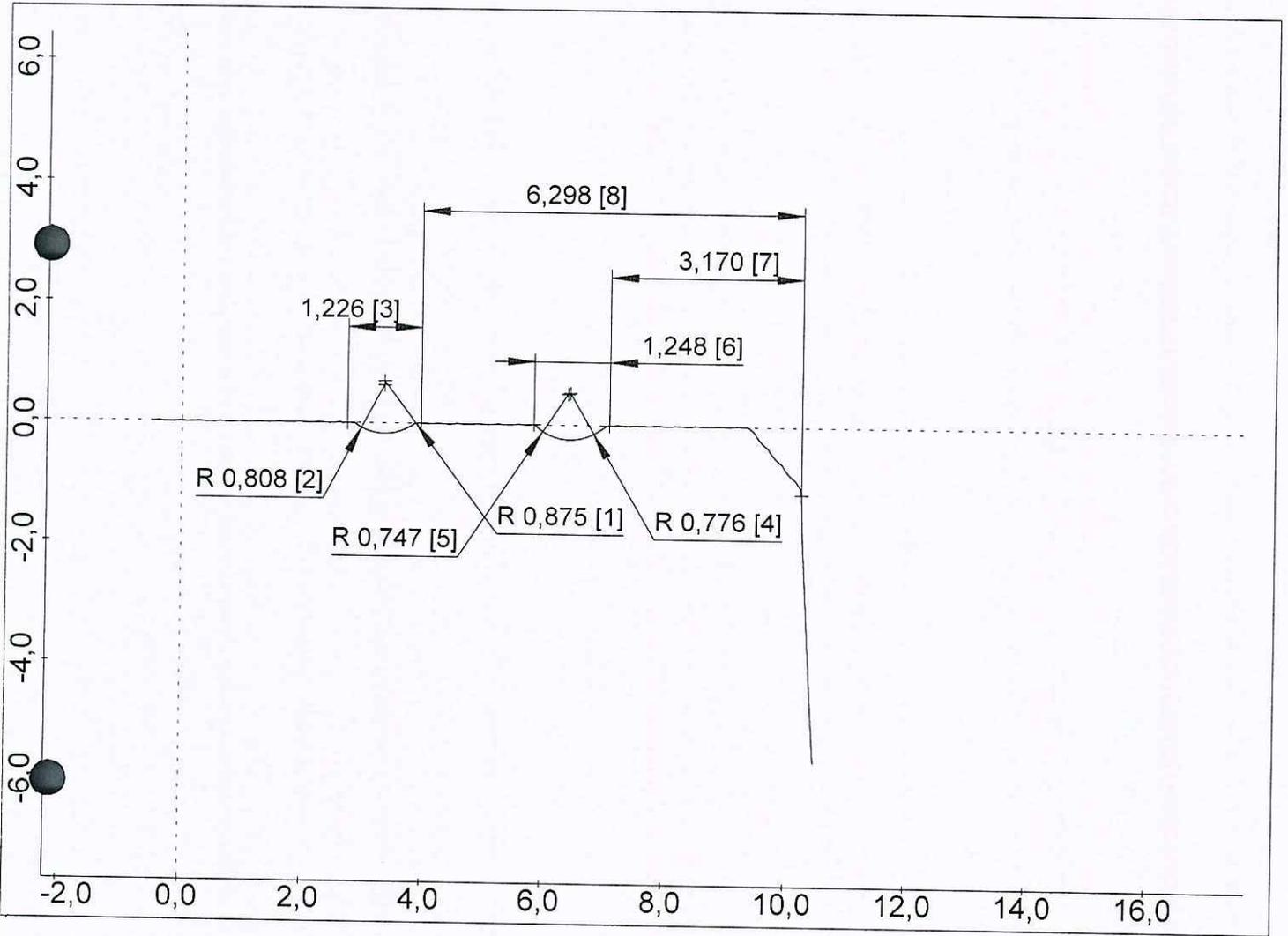


PERTHOMETER CONCEPT

Oggetto:	OS 2
Numero:	3755 PPAP PZ.3
Operatore:	TURNO C
Data, ora:	18.12.2014, 09:43
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Macchina:	MOA 416120 001

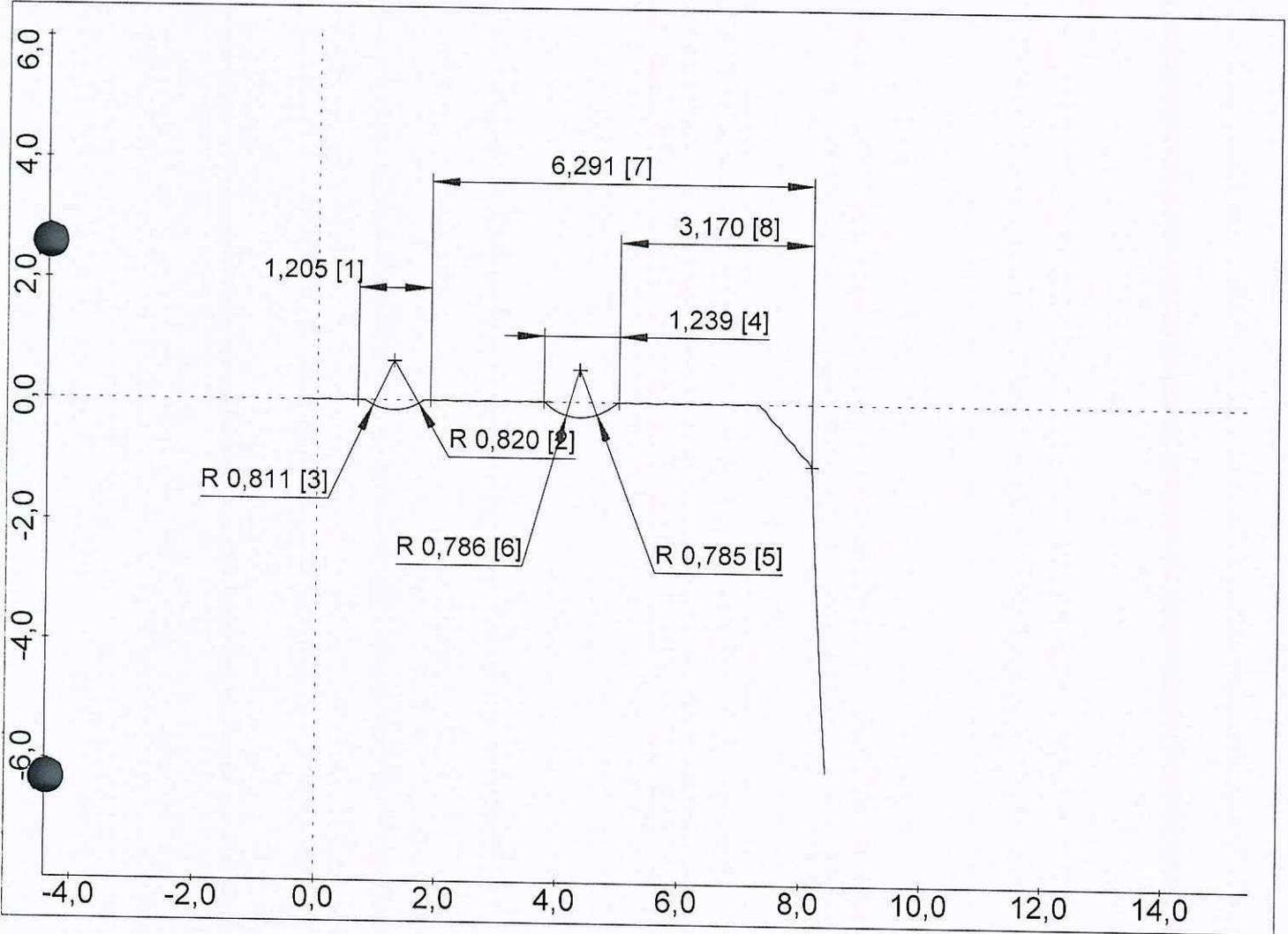


PERTHOMETER CONCEPT



PERTHOMETER CONCEPT

Oggetto:	OS 2
Numero:	3755 PPAP PZ.5
Operatore:	TURNO C
Data, ora:	18.12.2014, 09:55
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT



Operatore: Amministratore: super	Data: 16-12-2014 10:53	Numero seriale di lotto: Pz1	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\IOS2_3755_EDISON\2506375535_Part M.mtl
Nota di programmm		Unità di misura: [mm , °]	Tipo: Z_PPAP\IOS2_3755_EDISON	Modello: 2506375535_Part M
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
■	Part_M_D51.4	51.400	51.277	-0.123		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 10:55	Numero seriale di lotto: Pz2	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3755_EDISON\2506375535_Part M.mtl
Nota di programmm		Unità di misura: [mm, °]	Tipo: Z_PPAPIOS2_3755_EDISON	Modello: 2506375535_Part M
			Nota:	

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_ D51.4	51.400	51.263	-0.137		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 10:58	Numero seriale di lotto: Pz3	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3755_EDISON\2506375535_Part M.mtl
Nota di programn		Unità di misura: [mm , °]	Modello: 2506375535_Part M	Nota:

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D51.4	51.400	51.278	-0.122		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 10:56	Numero seriale di lotto: Pz4	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3755_EDISON\2506375535_Part M.mtl
Nota di program		Unità di misura: [mm, °]	Tipo: Z_PPAPIOS2_3755_EDISON	Modello: 2506375535_Part M
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D51.4	51.400	51.297	-0.103		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 10:57	Numero seriale di lotto: Pz5	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3755_EDISON\2506375535_Part M.mtl
Nota di programmn		Unità di misura: [mm, °]	Modello: 2506375535_Part M	Nota:

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
■	Part_M_D51.4	51.400	51.247	-0.153		-0.300	0.000

Istruzioni di controllo



PP Produzione GPS

Materiale: 2506375535

Indice del disegno finito: H

Descrizione: Albero di uscita 2

21.12.2011 / Stefano Billi

Operazione: 0200 Levigatura di potenza 3755z= 17

Data emissione:

05.12.2014 / Emiliano Zella

Centro di lavoro: HNW15340 LEVIGATURA OS2

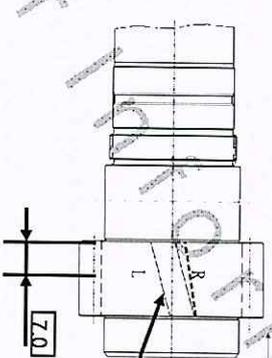
Data aggiornamento:

n. Sp. Identif.	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 sec. VBZ 450_803424				MVZ-400249 EVOLVENTIMETRO								CR2: controllo primo pezzo
0004	aspetto, privo di bava, senza danno				MOA-416121 RUGOSIMETRO TIPO PRK	3	pz per rack						CR1: no documentazione
0012	DIAMETRO MdK DA G. T. sfere 3.5 mm	49,906 mm	49,874	49,937	MZA-450311 Calcolatore di misura E9066 Marposs	3	pz ogni 100 per macchina						CR1: no documentazione
0016	DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO					1	Ultimo PZ. prima ravvivatura		Misu: diagramma di dentatura
0020	DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO					1	1 pezzo ogni cambio parametri macchina		Misu: diagramma di dentatura
0025	Oscillazione Fr			0,032	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac.		Misu: diagramma di dentatura
0030	Somma Passo Fp			0,040	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac.		Misu: diagramma di dentatura
0060	Controllo visivo per pulizia denti					8	pz per rack						CR1: no documentazione

STRIRNRAD	external	Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978)	(9)
GEAR	ausenverzahnt	gültig für Werte am Einzelzahn Tolerances of gearing (DIN 3961 of Aug. 1978) valid for values at individual tooth	
Zahnzahl Number of teeth	z	17	
Modul Normal module	m_n	2.250000	
Eingriffswinkel Normal pressure angle	α_n	20° 0' 0"	
Schrägungswinkel Helix angle	β	29° 0' 0"	
Steigungsrichtung Hand of helix		LEFT	
Profilverschiebungsfaktor Addendum modification coeff.	x	0.634	
Teilstrahldurchmesser Pitch diameter	d	43.733	
Kopfkreisdurchmesser Outside diameter	d_a	51.90 -0.26	
Kopfnutkreis theo. max. d_{wa} Tip diam. usable theo.	d_{wa}	51.30	
Kopfnutkreis theo. min. d_{wa} Tip diam. usable theo.	d_{wa}	50.83	
Fußkreisdurchmesser Root diameter	d_f	39.10 -0.45	
Fußnutkreisdurchmesser Root diameter usable	d_{fw}	41.23	
Grundstrahlradius Base circle radius	r_b	20.188	
Grundstrahldurchmesser Base diameter	d_b	40.377	
Normalzahnradicke Normal tooth thickness	max. s_n	4.572	
Normalzahnradicke Normal tooth thickness	min. s_n	4.542	
Normalzahnradicke Normal tooth thickness		4.542	
Wälzähnezahl Number of teeth spanned	k		
Zahnweite Base tangent length	min. W_k		
Zahnweite Base tangent length	max. W_k		
Meßkugeldurchmesser Ball diameter	D_M	3.5000	
Diam. Zweikugelnmaß max. M_k Measurement o. balls		49.937	
Diam. Zweikugelnmaß min. M_k Measurement o. balls		49.874	
Verdriftflankenkehl Circumferential backlash	theo.	0.072	
		0.171	

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

Wkz-Profil siehe Werkzeugdatenblatt Nr. 250.6.3755.35
For Tooth profile, see tool data sheet number



+	linke Flanke left flank	-	Profil	-	rechte Flanke right flank	+
Kopf	15.82				15.82	
TIP	15.44				15.44	
	12.03				12.03	
	10.83				10.83	
Fuß	4.17				4.17	
Root	$f_{hp} = 0.000 \pm 0.006$				$f_{hp} = 0.000 \pm 0.006$	

* Schreibbeginn $\varnothing = 40.66 - 0.30 \pm 2.39$
 * Start of checking
 * linke Flanke left flank * Flankenlinie Tooth trace * rechte Flanke right flank

crowning:
 $0.005 + 0.004 (0.8^*)$
 Lead Twist = $+0.004 \pm 0.004$
 Lead Twist = $f_{Hb_Root}(4.17)$ minus $f_{Hb_Tip}(15.44)$

oben up $f_{hp} = -0.007 \pm 0.006$ (9) Average values $f_{hp} = -0.030 \pm 0.006$ (f)

* f_{hd} (zwischen d_{fl} und dem Schreibbeginn d_s) max $f_{hd} \leq 2$, jedoch 0.003 zulässig
 * f_{fd} (between d_{fl} and start of checking d_s) max $f_{fd} \leq 2$, 0.003 allowable.
 Profil- und Flankenliniennprüfung nach VDI/VDE 2612
 Tabellenwerte für f_p und f_{hp} sind auf die gesamte Radbreite im Meßkreis d_M bezogen
 Flankenliniennprüfbereich $l_B = 0.8^* b$ hochgerechnet auf $1.0^* b$
 Begriffe für Strömäder nach DIN 988, 3960, 3998
 Profile and 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 $l_B = 0.8^* b$ calculated to $1.0^* b$
 Terms of the tooth system according to DIN (German Industrial Standards) (No. 888, 3960, 3998)

h	2	36149	Seite Änd.
f	2	35976	Seite Änd.
g	2	35560	Seite Änd.
Buch.	Anz.	Änd.Nr.	
Abbildungen sind unmaßstäblich. Diagrams not to scale.			
Ersatz für Entwurfzeichnung bei Getriebetypen 250.0.0053.11			
Datum	Name		
gez. 2009-01-07	Cricenti, Fabrizio		
gepr.	Final Check Gear Data		
Benennung: Output Shaft K2			
Verzahnungsblatt Endkontrolle			
Zeichnungsnummer: Drawing number:			
250.6.3755.35			