

Part Name **OUTPUT SHAFT 2** Customer Part Number **250.6.3771.35**
 Shown on Drawing No. **250.6.3771.35** Organization Part # _____
 Engineering Change Level **F Index (1)** Dated **30-lug-14**
 Additional Engineering Changes _____ Dated _____
 Safety and/or Government Regulation Yes No Purchase Order No. _____ Weight (kg) **1,607**
 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 **FORD**
 Street Address _____ Buyer/Buyer Code _____
MODUGNO BARI 70026 ITALY **TYP 250 FORD**
 City Region Postal Code Country 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 20/01/15
 Print Name _____ Customer Tracking Number (optional) _____

**GETRAG**

Production Part Approval

DIMENSIONAL TEST RESULTS

Organization: GETRAG	Part Number: 250.6.3771.35
Supplier/Vendor Code: GETRAG Modugno	Part Name: Output Shaft 2

INSPECTION FACILITY: NA	Design Record Change Level: F Index (I) 30/07/2014
	Engineering Change Documents:

Item	Dimension/Specification	Specification / Limits		Test Date	Qty. Tested	Organization Measurement Results (Data)					Test distruttivo	Ok	Not Ok
						1	2	3	4	5			
1	MDK I	56,698	56,763		5	56,723	56,715	56,721	56,732	56,711		ok	
2	Root diameter I	44,550	45,000		5	44,703	44,725	44,736	44,738	44,726		ok	
3	Tip diameter I	59,240	59,500		5	59,307	59,305	59,305	59,281	59,318		ok	
4	Rz 4 dentatura Z18	0	4 μ		5	1,71	1,85	1,71	1,62	2,00		ok	
	Rmax 8 dentatura Z18	0	8 μ		5	2,07	2,62	1,97	1,90	2,58		ok	
5	0,032 A - B Z18	0	40 μ		5	19	19	19	19	22		ok	
6	Dettaglio "M"	-	-		5	OK	OK	OK	OK	OK		ok	
	Diametro Ø 59,05 -0,3	58,750	59,050		5	58,985	58,909	58,909	58,972	58,960		ok	

Toothing microgeometry validated by standard measurement report

SIGNATURE	TITLE	DATE
G. Cicirelli	QPE	09/01/2015

Item	Caracteristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5	Device
1	MDK I	56,698±56,763	56,723	56,715	56,721	56,732	56,711	Calibro a sfere

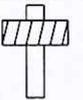
Misurazioni Manuali

OS2 2506377135

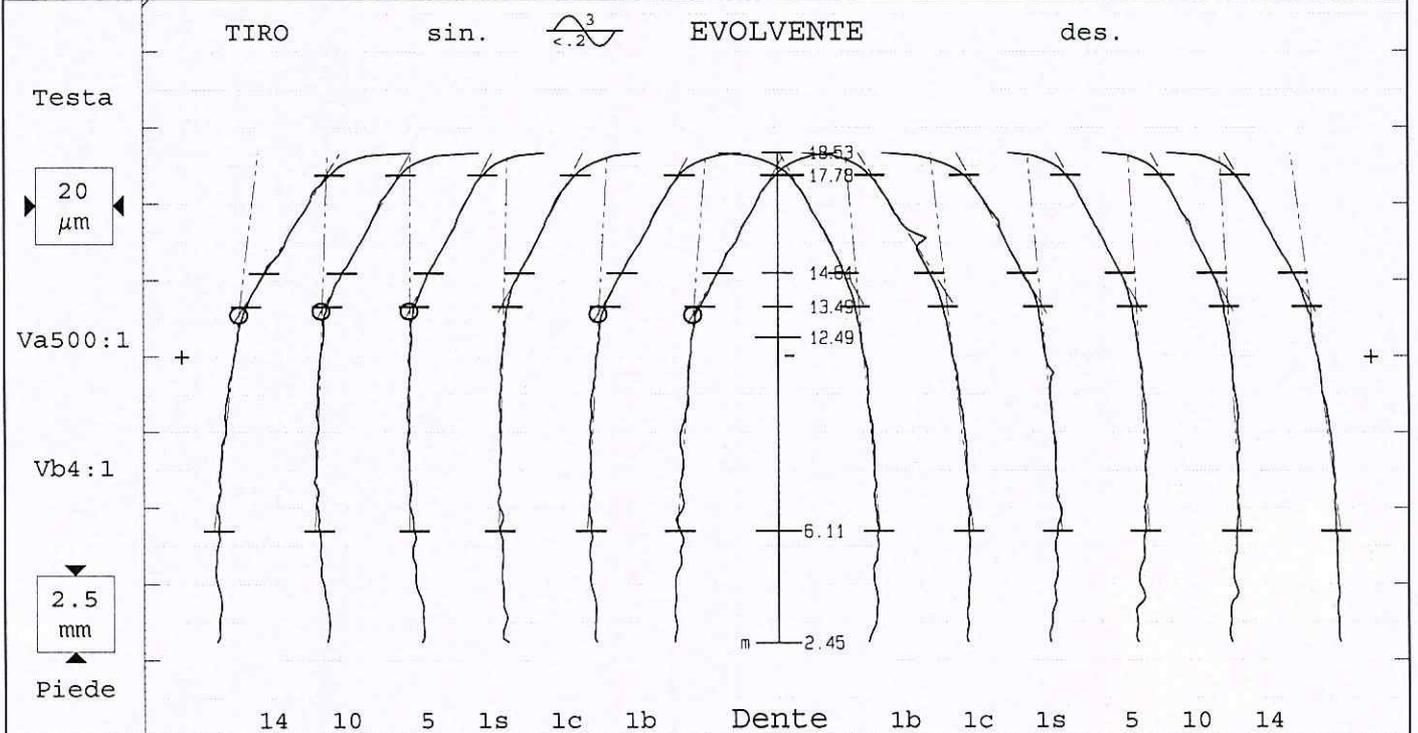
09-gen-15

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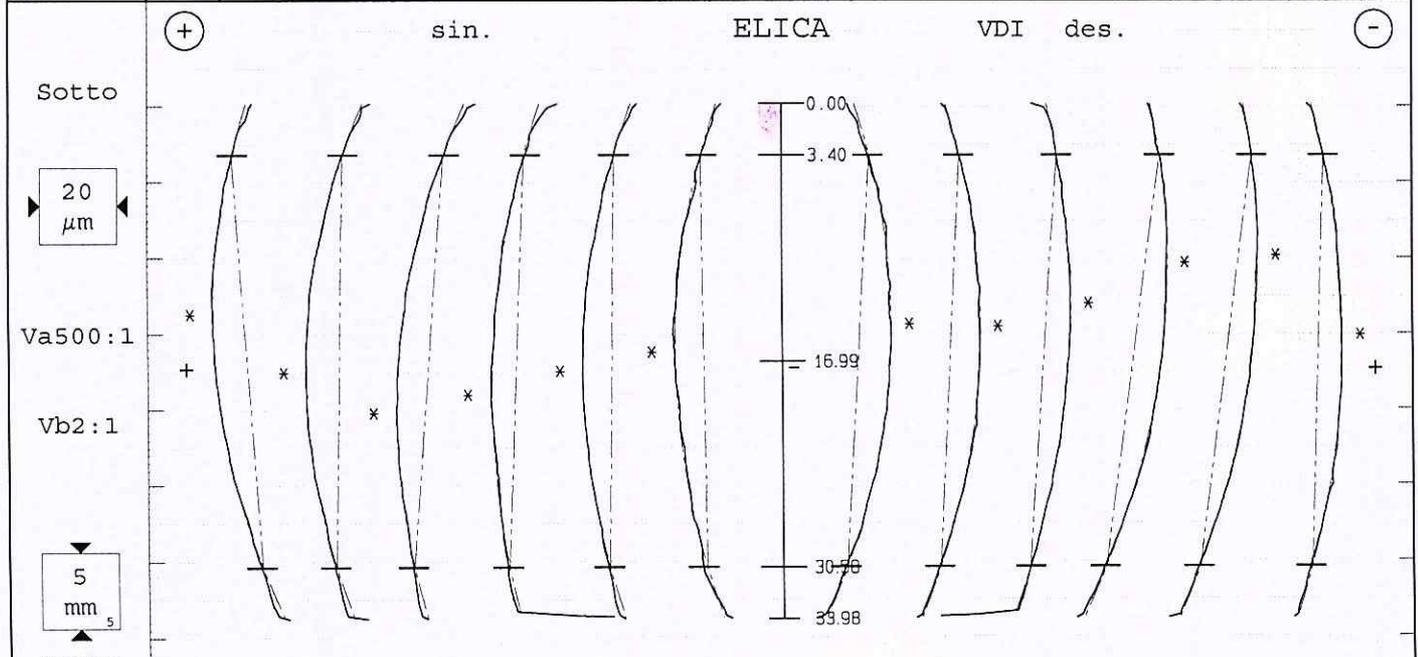
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	P26 B7681	Controllore:	turno c	Data:	17.12.2014 09:51
Denominazione:	Output Shaft 2		Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF		Modulo m	2.45mm	Tratto evolv. La	7.38mm
Commessa/serie nr.:	PPAP PZ 1		Angolo pressione	20°00'00"	Tratto elica Lβ	27.18mm
Masch.Nr.:	M001	Spindel: Formm	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung		∅ Base db	46.5519mm	Palpatore ∅ (#2C)	1mm
Werkzeug:	Charge:		Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

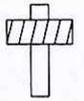


Tolerance	Medio	Val.misur [μ m]							Qual	Tolerance	Val.misur [μ m]							Medio	Qual	
fHam	± 6	-3	Var 7								± 6	Var 5							-5	
fHa	± 10	-3	-7	-2	0	-1	-3	-5		± 10	-5	-7	-5	-3	-3	-8	-5			
Fa	5	8	4	2	3	4	6		6	7	6	4	4	8	6					
ffa	4	2	2	2	2	3	3		4	2	2	3	2	2	2					
fXo	-20/-12	-19	-19	-19	-18	-17	-18	-18		-20/-12	-14	-16	-16	-16	-15	-16				



N:Z		Var 20									Var 14								
fHβm	-7±6	-1	Var 20									Var 14							-12
fHβ	-7±13	-1	10	-2	-10	-5	-2	2			-8	-7	-9	-18	-17	-4	-12		
Fβ	7	13	6	5	2	5	7			8	8	5	4	3	9	6			
ffβ	4	1	1	1	1	1	2			4	1	1	1	1	1	1			
Cβ	5/9	8	8	9	8	6	7	7		5/9	9	8	7	8	7	6			
Bd	4±4	7								4±4						1			

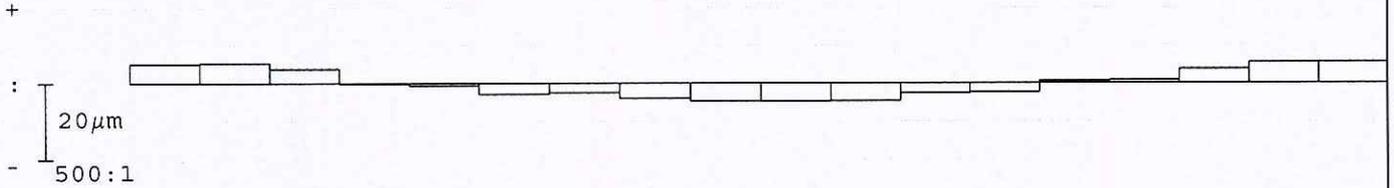




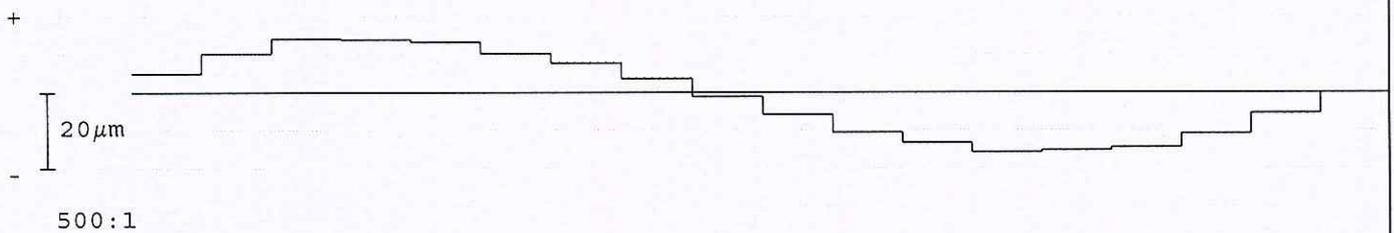
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Denominazione:	Output Shaft 2	Numero denti z	18	Angolo pressione	20°00'00"
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Angolo elica	-29°00'00"
Commessa/serie nr.:	PPAP PZ 1	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	Formelwerkzeug	Charge:	



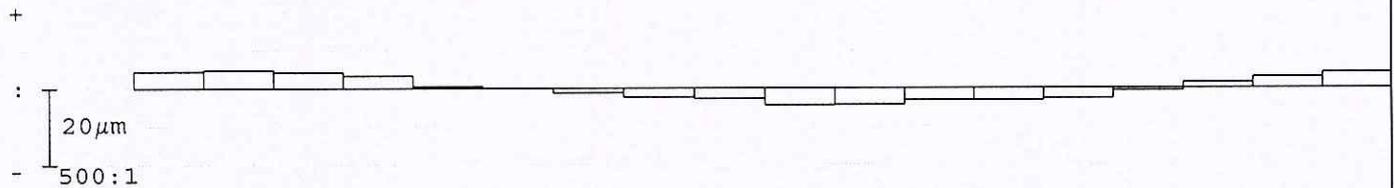
Errori singoli di divisione fp fianco sinistro



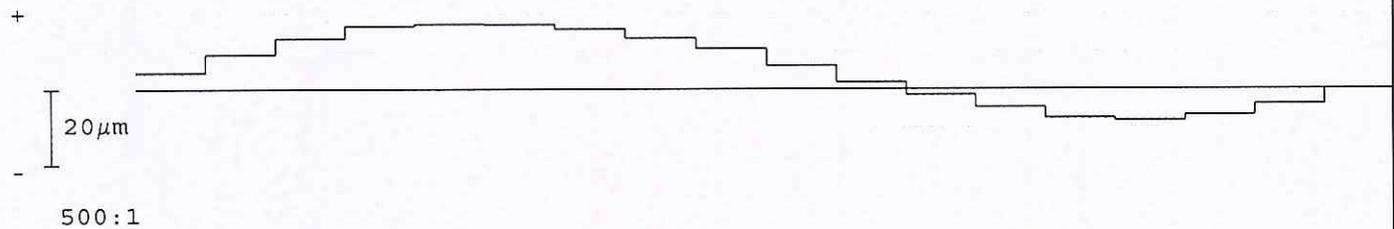
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



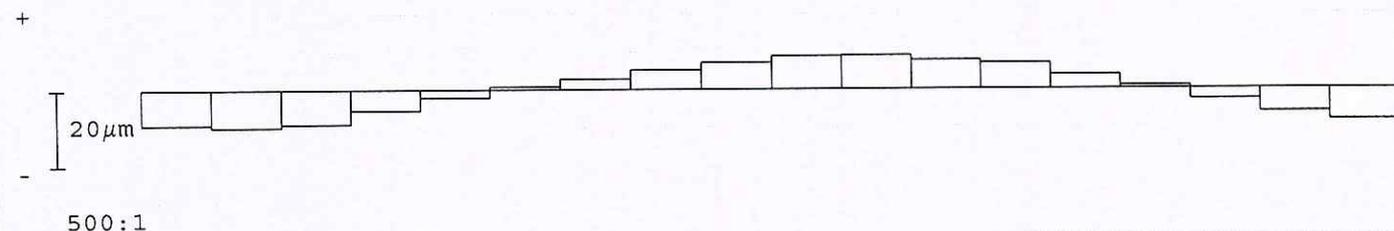
Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 52.831 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	6		14		5		14	
Gr. salto di passo	fu max	4		18		3		18	
Scarto di divisione	Rp	11				10			
Err. globale di divisione	Fp	30		50		25		50	
Err. cordale di divisione	Fpz/8	11				9			

Centricità Fr (Ø-sfera =4.25mm)

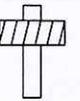
⊙ : 19µm



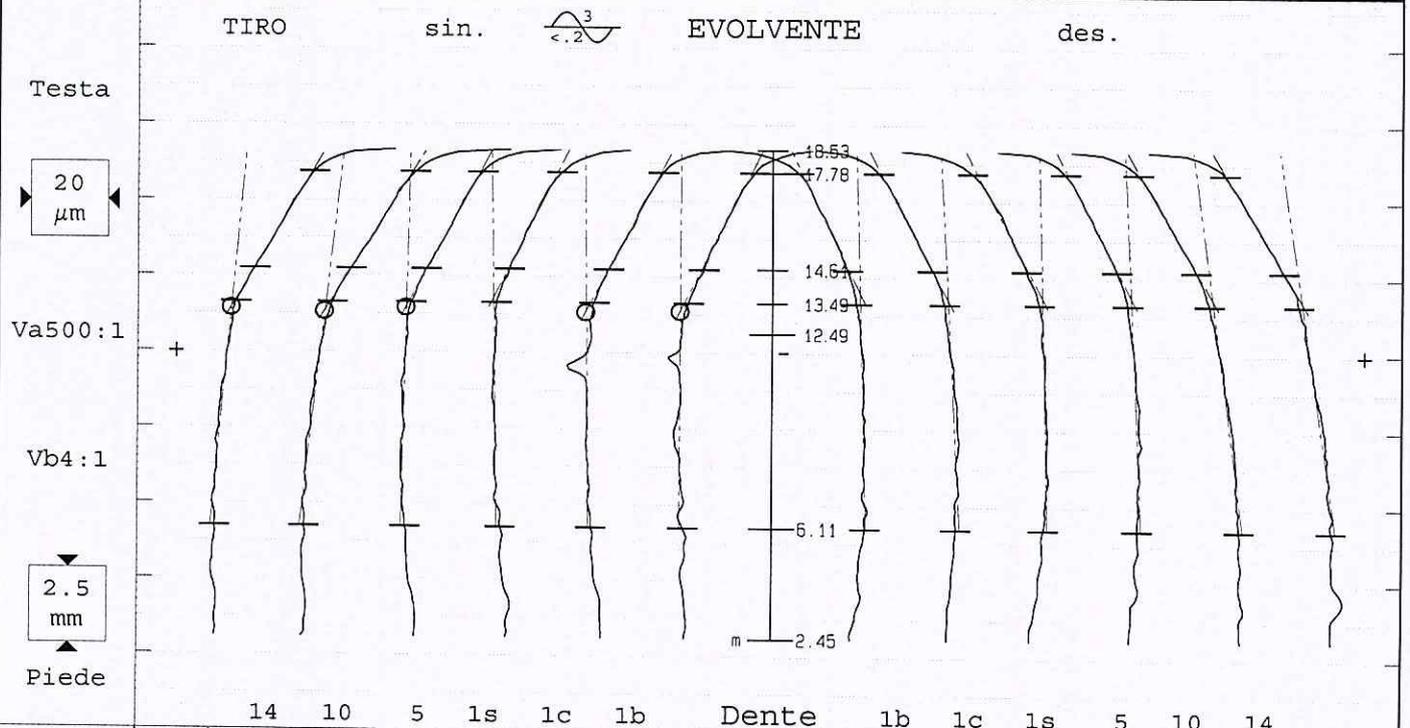
Err. di concentricità	Fr	19	40	
Variaz. spessore dente	Rs			

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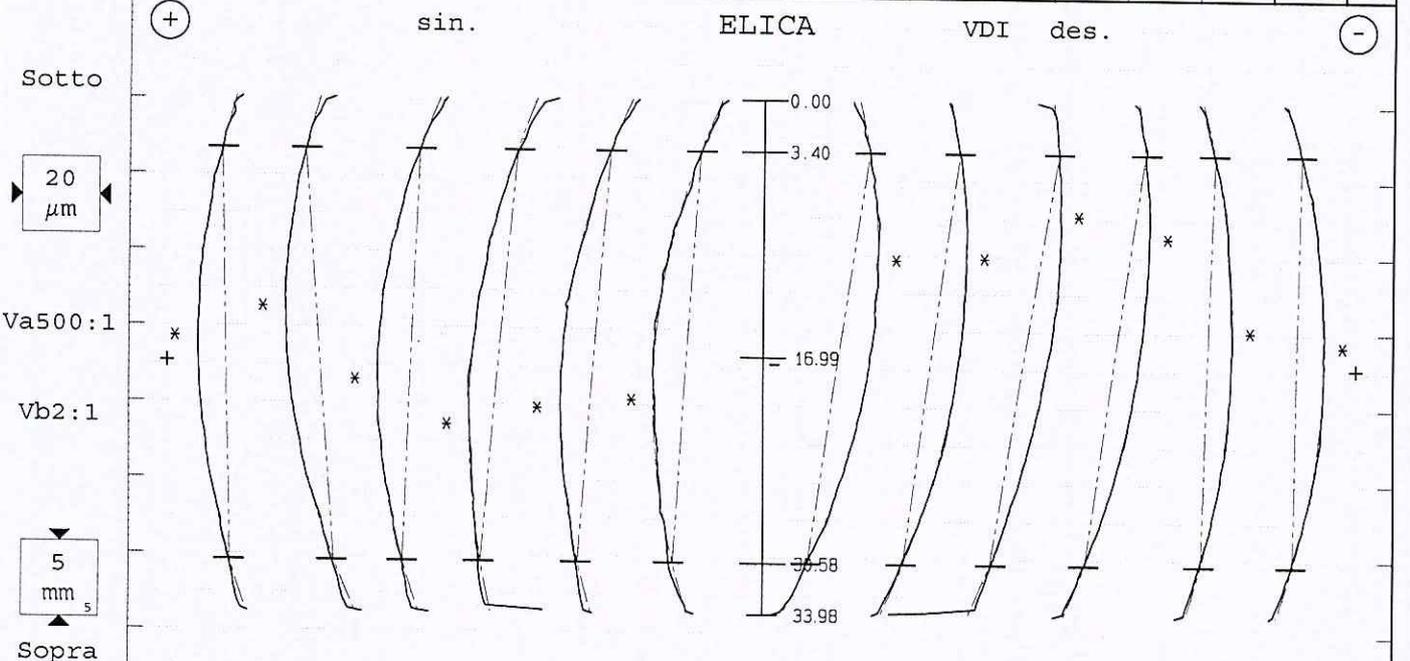
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0 P26 B7681	Controllore:	turno c	Data:	17.12.2014 11:49	
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm	
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm	
Commessa/serie nr.:	ppap pz.2	Angolo pressione	20°00'00"	Tratto elica Ls	27.18mm	
Masch.Nr.:	M001	Spindel: Formata	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm	
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731	



Tolerance	Medio	Val.misur [µm]							Qual	Tolerance	Val.misur [µm]							Medio	Qual	
fH _{am}	±6	-3	Var 8								±6	Var 6							-6	
fH _a	±10	-3	-5	-7	-1	1	1	0		±10	-2	-3	-1	-3	-8	-9	-6			
F _a	6	6	8	3	2	7	5		6	3	4	3	4	8	9	6				
ffa	4	4	2	3	2	2	7	5	4	2	2	2	2	2	2	2				
fK _o	-20/-12	-19	-18	-19	-18	-17	-20	-18	-20/-12	-14	-16	-16	-15	-15	-15	-15				



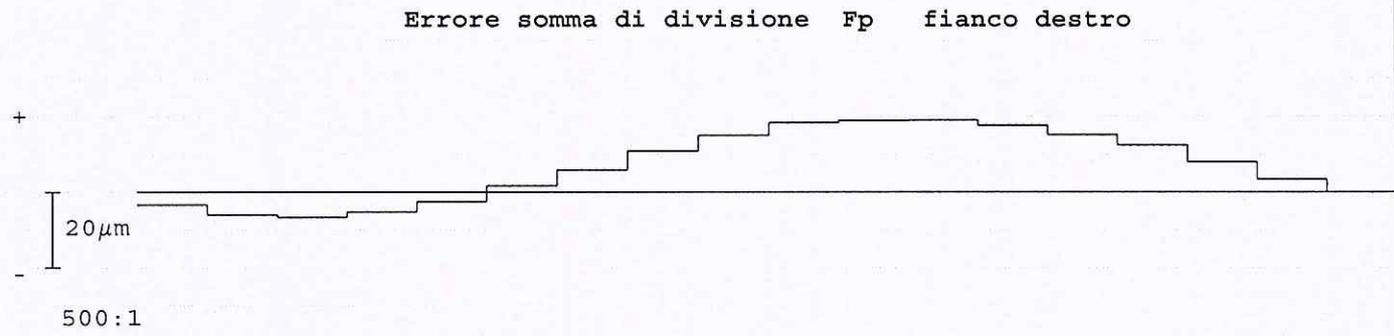
N:Z		Var 20								Var 16									
fH _{Sm}	-7±6	-1	Var 20								-15±6	Var 16							-11
fH _S	-7±13	-1	3	10	-5	-12	-10	-9		-15±13	-20	-18	-22	-19	-4	-3	-11		
F _B	8	8	8	13	4	5	5	5		8	6	4	6	4	9	10	7		
ff _B	4	1	1	1	1	1	1	2		4	1	1	1	1	1	1	1		
CS	5/9	8	7	8	9	7	8	8		5/9	8	8	6	7	6	7	7		
Bd	4±4	3	Var 20								4±4	Var 16							2

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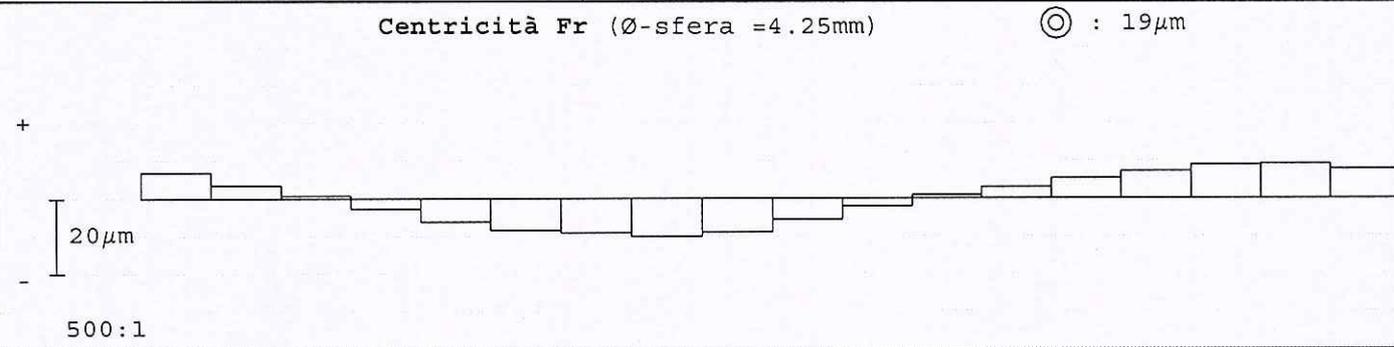




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Denominazione: Output Shaft 2		Numero denti z: 18	Angolo pressione: 20°00'00"
Numero disegno.: 250.6.3771.35-IF		Modulo m: 2.45mm	Angolo elica: -29°00'00"
Commessa/serie nr.: ppap pz.2		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formel	Ort: Kitz	Charge:



Corsa per misura divis.: 52.831 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	6		14		5		14	
Gr. salto di passo fu max	4		18		3		18	
Scarto di divisione Rp	11				10			
Err. globale di divisione Fp	30		50		26		50	
Err. cordale di divisione Fpz/8	11				9			

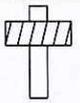


Err. di concentricità Fr	19	40	
Variaz. spessore dente Rs			

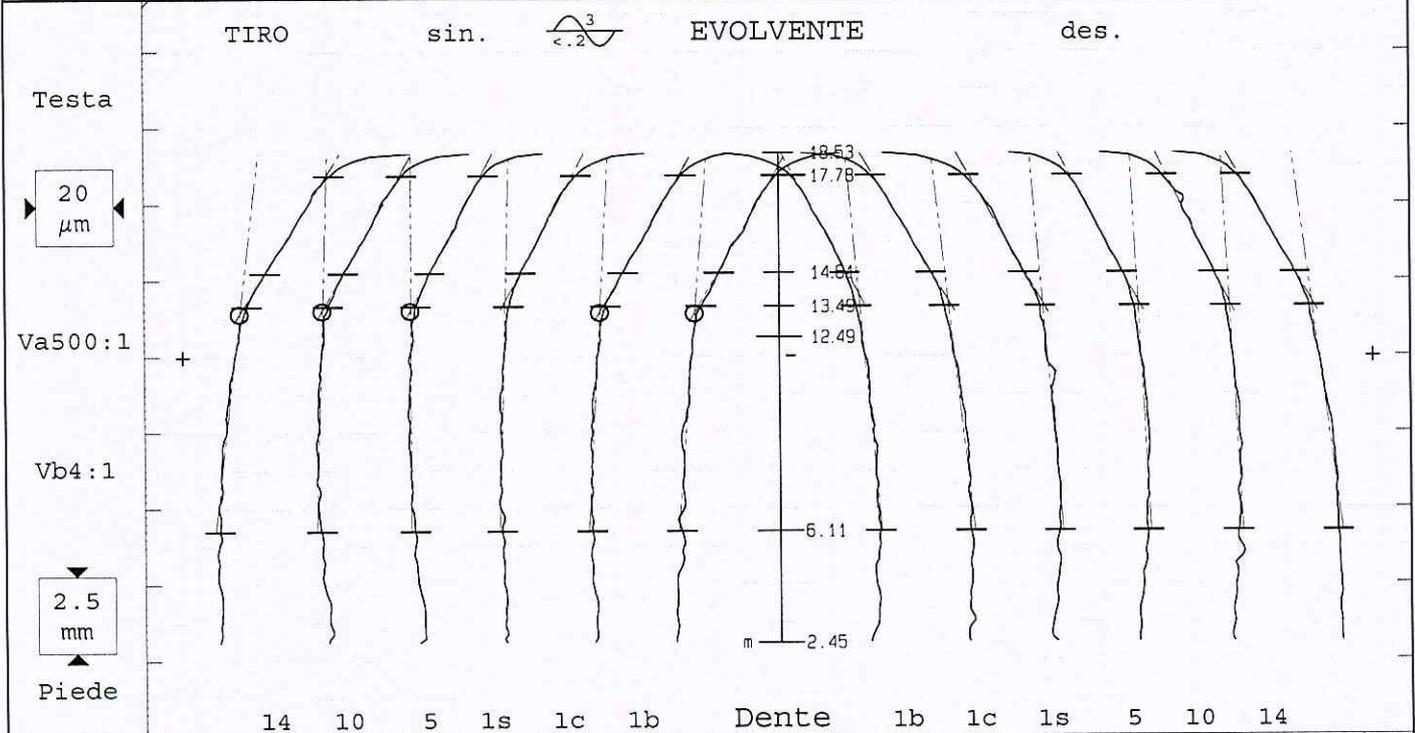


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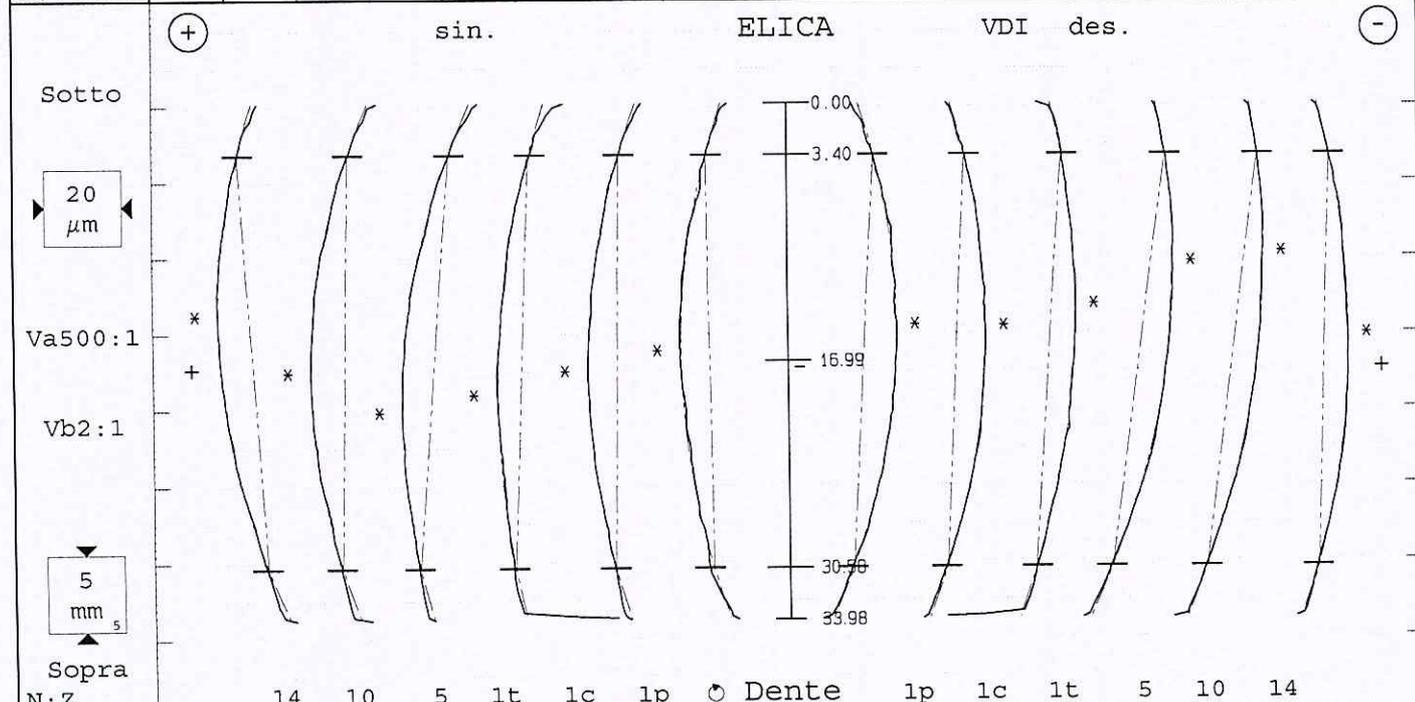
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	P26 B7681	Controllore:	turno c	Data:	17.12.2014 10:11
Denominazione:	Output Shaft 2		Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF		Modulo m	2.45mm	Tratto evolv. La	7.38mm
Commessa/serie nr.:	PPAP PZ 3		Angolo pressione	20°00'00"	Tratto elica L _S	27.18mm
Masch.Nr.:	M001	Spindel: Formm	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung		∅ Base db	46.5519mm	Palpatore ∅ (#2C)	1mm
Werkzeug:	Charge:		Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

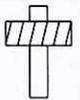


Tolerance	Medio	Val.misur [μm]							Qual	Tolerance	Val.misur [μm]							Medio	Qual	
fH _{am}	±6	-3	Var 7								±6	Var 5							-5	
fH _a	±10	-3	-7	-2	0	-2	-3	-5		±10	-5	-7	-5	-3	-3	-8	-5			
Fa		4	8	3	2	3	4	6			6	7	5	4	4	8	6			
ffa	4	2	2	2	2	2	2	3		4	2	2	3	2	2	2	2			
fK _o	-20/-12	-19	-18	-19	-18	-17	-19	-18		-20/-12	-14	-16	-16	-16	-15	-15	-16			



N:Z		Var 19								-15±6	Var 14							-12	
fH _{sm}	-7±6	-1	Var 19								-15±6	Var 14							-12
fH _S	-7±13	-1	9	-2	-10	-5	-2	2		-15±13	-7	-7	-9	-18	-17	-4	-12		
FB		7	13	6	5	2	5	7			8	7	5	4	3	9	6		
ff _S	4	1	1	1	1	1	1	2		4	1	1	1	1	1	1	1		
CB	5/9	8	9	9	8	6	7	7		5/9	9	8	7	8	7	6	7		
Bd	4±4	7								4±4							2		

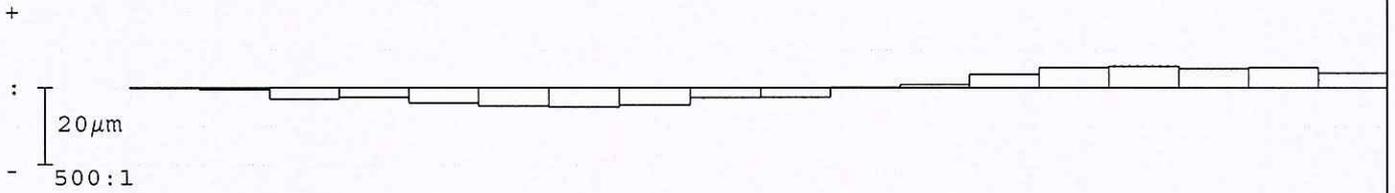




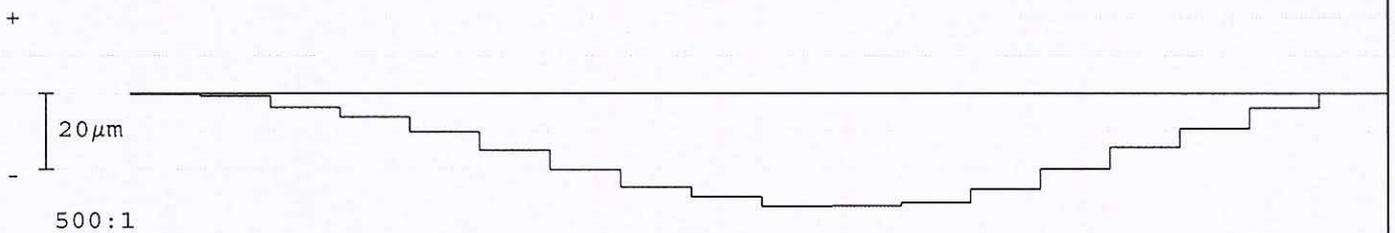
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Denominazione:	Output Shaft 2	Numero denti z	18	Angolo pressione	20°00'00"
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Angolo elica	-29°00'00"
Commessa/serie nr.:	PPAP PZ 3	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	Formelwerkzeug:	Charge:	



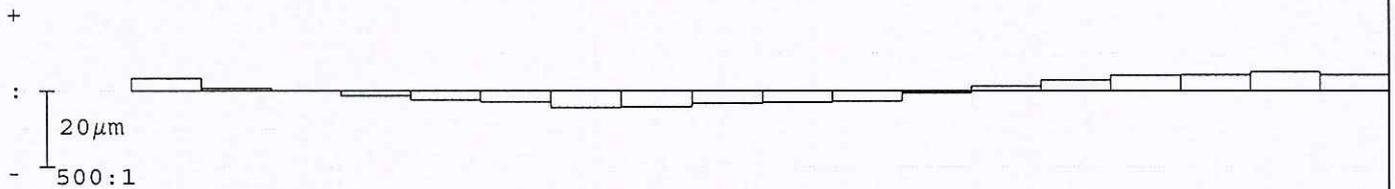
Errori singoli di divisione fp fianco sinistro



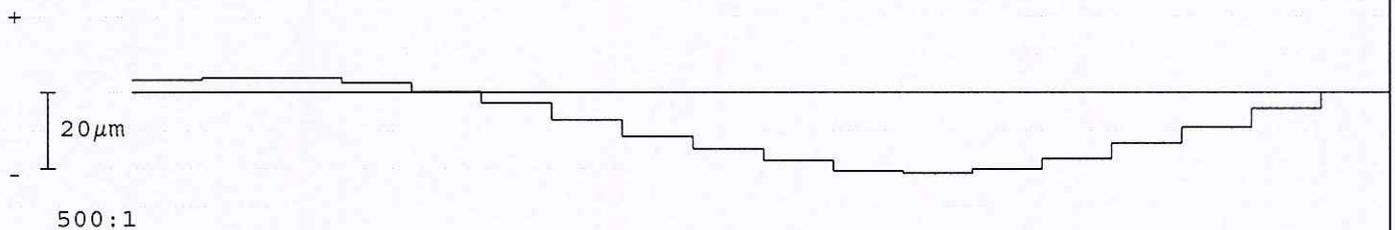
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro



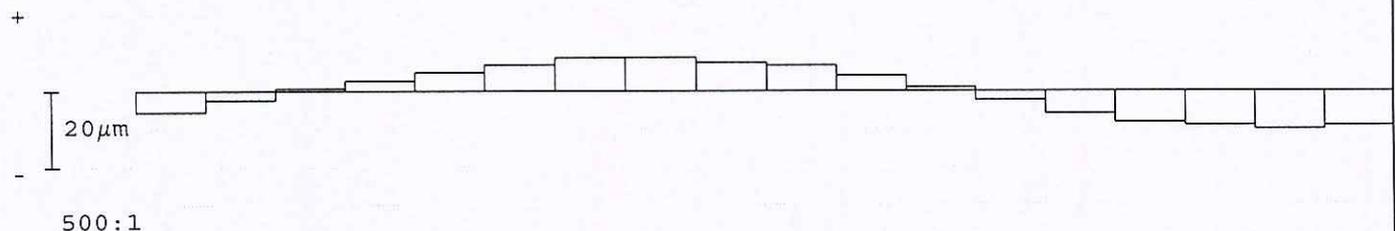
Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 52.831 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	6		14		5		14	
Gr. salto di passo fu max	4		18		3		18	
Scarto di divisione Rp	11				9			
Err. globale di divisione Fp	30		50		25		50	
Err. cordale di divisione Fpz/8	11				9			

Centricità Fr (Ø-sfera =4.25mm)

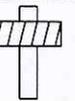
⊙ : 18µm



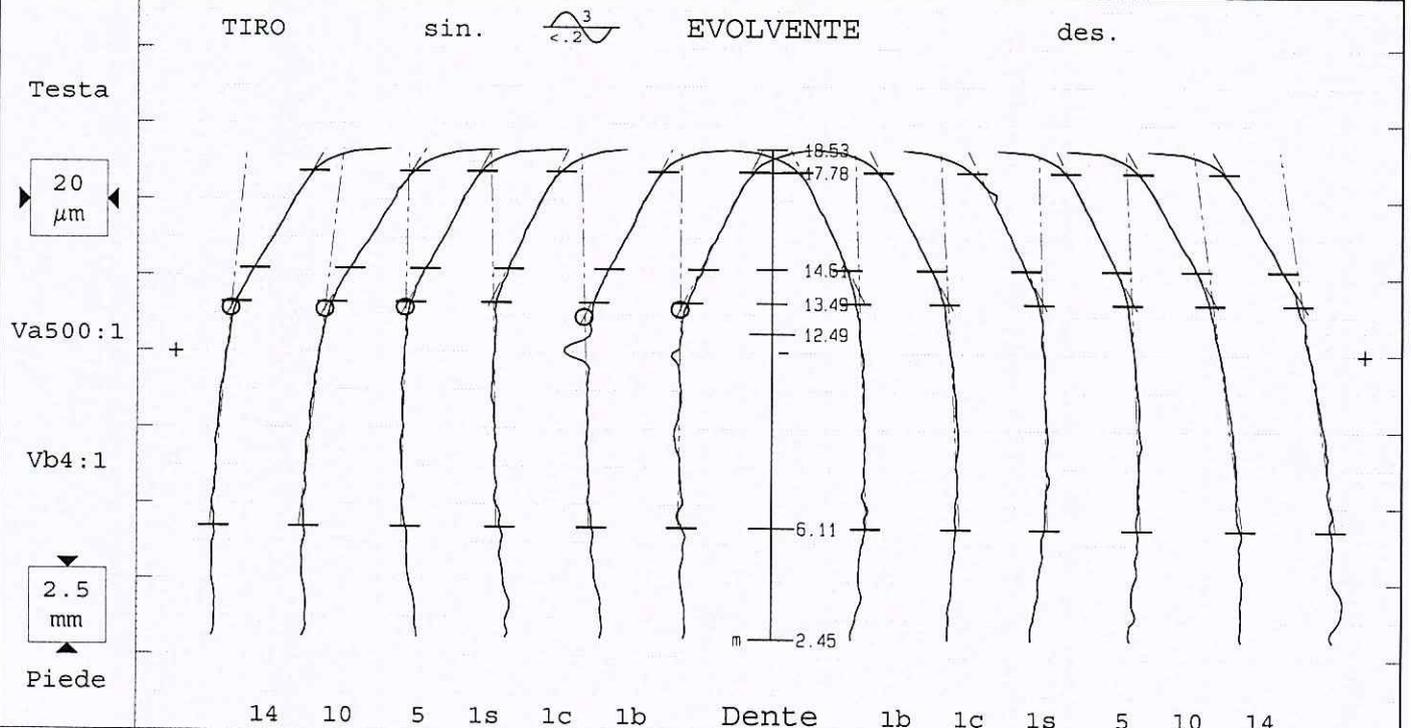
Err. di concentricità Fr	19	40	
Variaz. spessore dente Rs			

GETRAG B7681

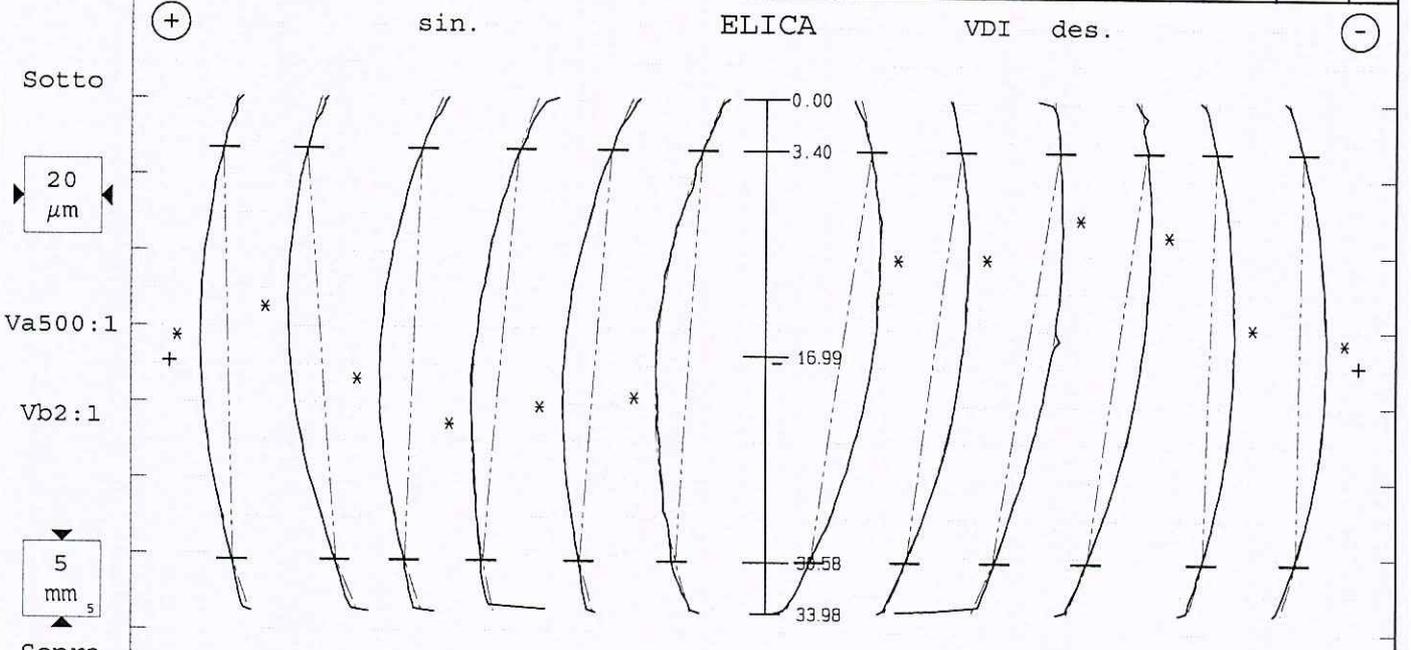
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 P26 B7681	Controllore:	turno c	Data:	17.12.2014 11:57	
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm	
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm	
Commessa/serie nr.:	ppap pz.4	Angolo pressione	20°00'00"	Tratto elica Lb	27.18mm	
Masch.Nr.:	M001	Spindel: Forme	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm	
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731	

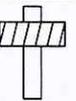


Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
		Var									Var									
fH _{am}	±6	-3	8								±6	6							-6	
fH _a	±10	-3	-6	-7	-1	1	1	0		±10	-2	-3	-2	-3	-8	-9	-6			
F _a		6	6	8	3	3	8	5			4	4	3	4	8	10	7			
ff _a	4	4	2	3	2	2	8	5		4	2	2	2	2	2	2	2			
fK _o	-20/-12	-19	-18	-19	-19	-17	-20	-18		-20/-12	-14	-16	-16	-15	-15	-15	-15			

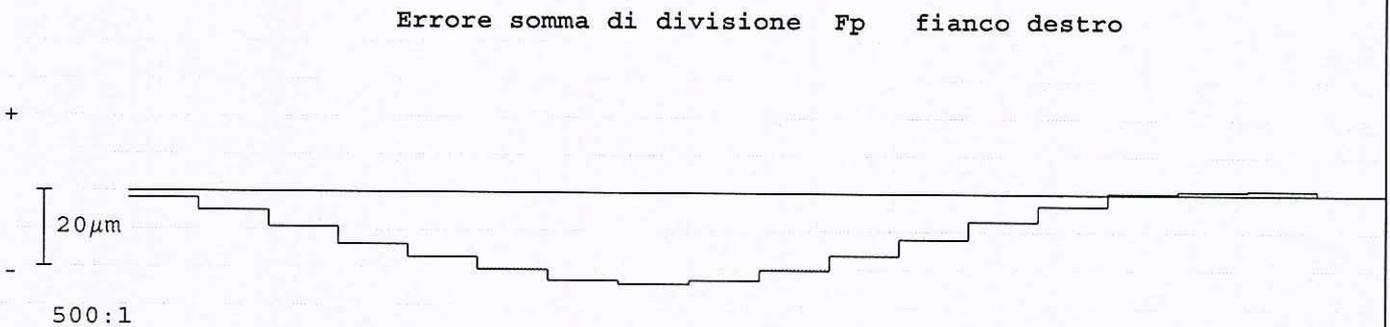
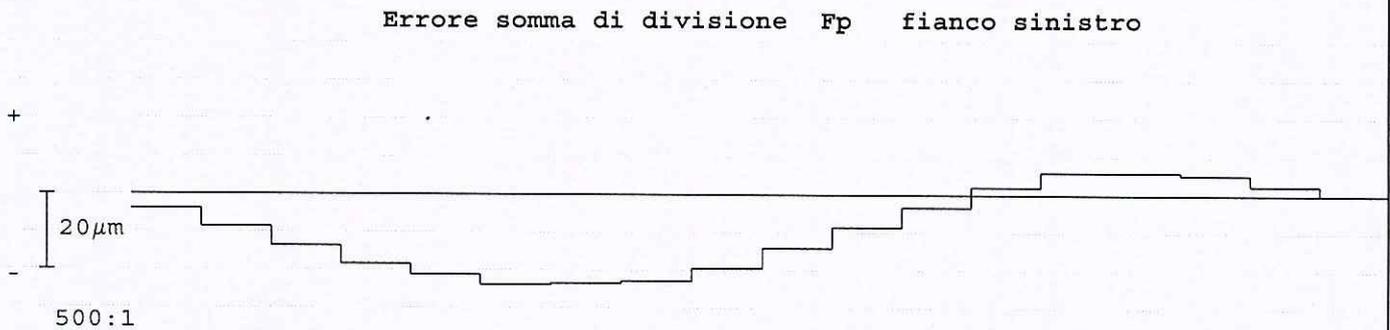


Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
		Var									Var									
fH _{Bm}	-7±6	-1	20								-15±6	18							-11	
fH _B	-7±13	-1	3	10	-5	-12	-10	-9		-15±13	-20	-18	-22	-20	-5	-2	-11			
F _B		8	8	13	4	5	5	5			6	4	6	5	8	10	7			
ff _B	4	1	1	1	1	1	1	2		4	1	1	2	1	1	1	1			
CB	5/9	8	7	8	9	7	8	8		5/9	8	8	7	7	6	7	7			
Bd	4±4	3									4±4								2	

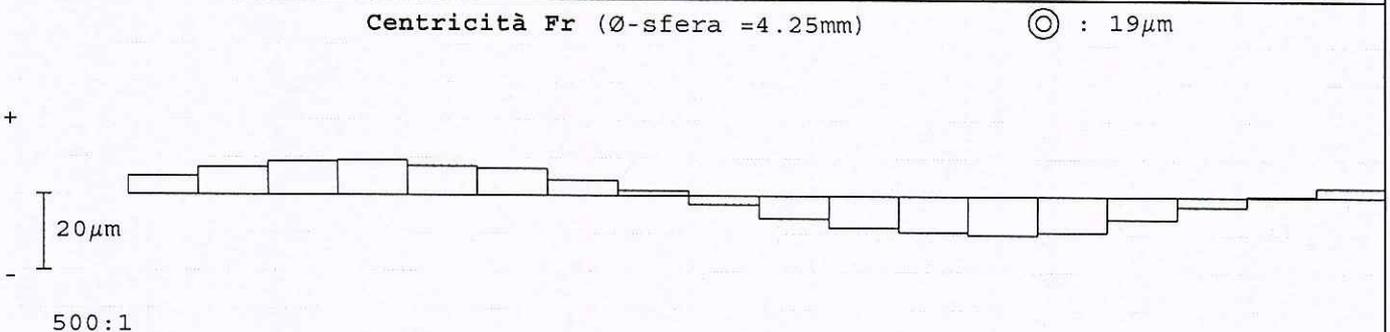




Nr. prog.:	STI0410005 0 P26 B7681	Controllore:	turno c	Data:	17.12.2014 11:57
Denominazione:	Output Shaft 2	Numero denti z	18	Angolo pressione	20°00'00"
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Angolo elica	-29°00'00"
Commessa/serie nr.:	ppap pz.4	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	Formelwerkzeug	Charge:	



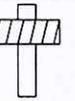
	Corsa per misura divis.: 52.831 z=17mm							
	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	6		14		5		14	
Gr. salto di passo fu max	4		18		3		18	
Scarto di divisione Rp	11				10			
Err. globale di divisione Fp	30		50		25		50	
Err. cordale di divisione Fpz/8	11				9			



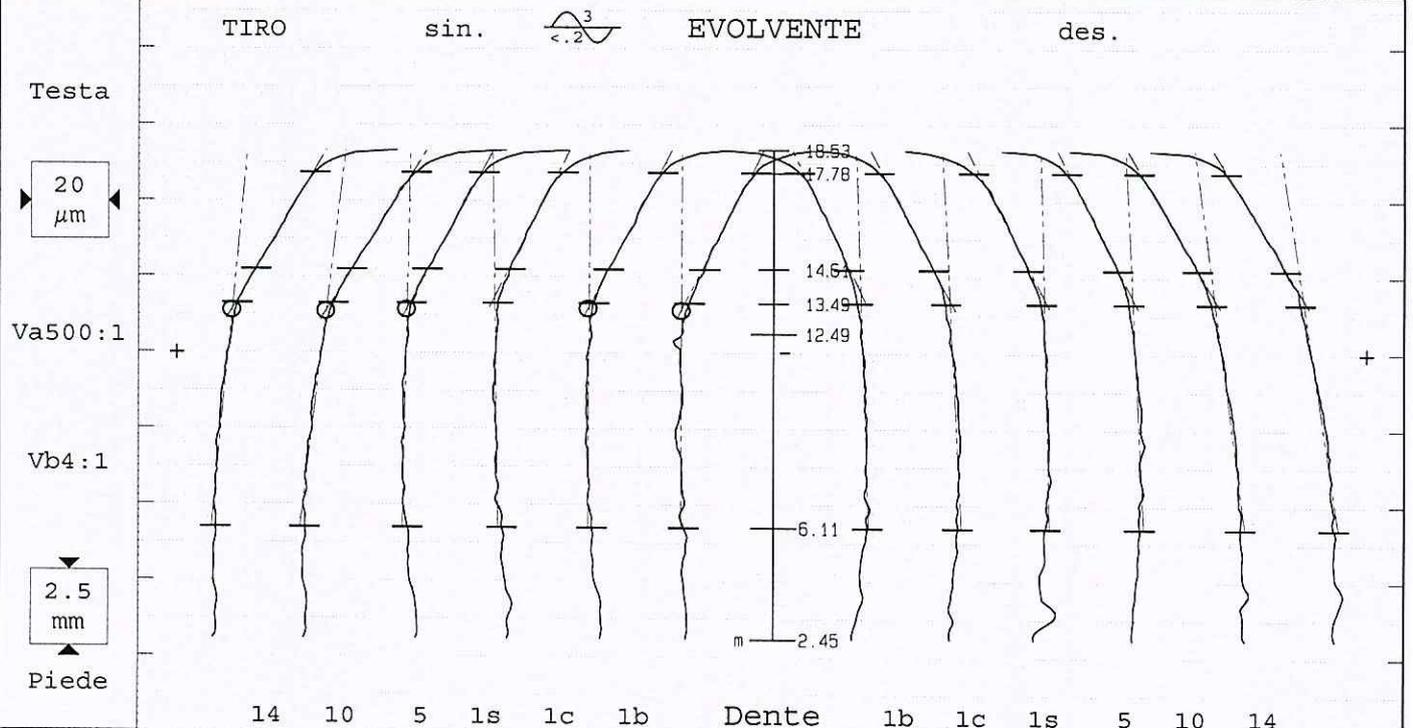
Err. di concentricità Fr	19	40	
Variaz. spessore dente Rs			

GETRAG B7681

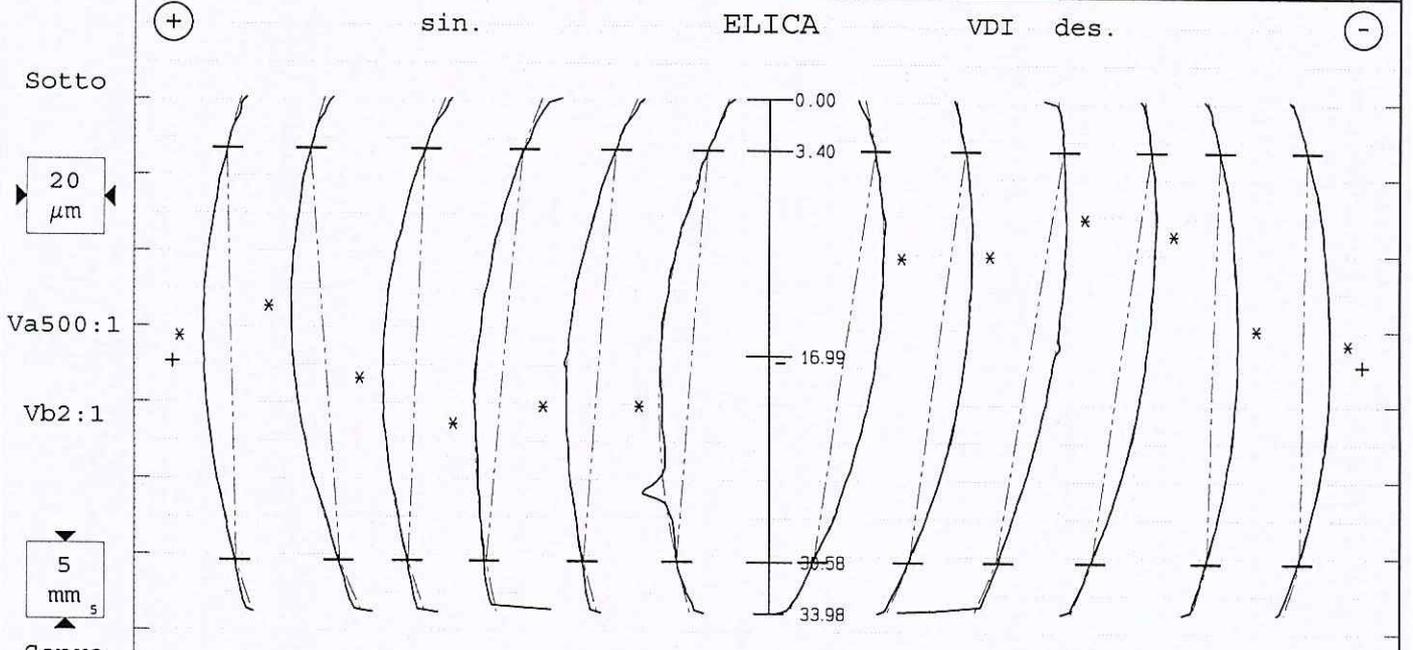
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	P26 B7681	Controllore:	turno c	Data:	17.12.2014 12:01
Denominazione:	Output Shaft 2		Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF		Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	ppap pz.5		Angolo pressione	20°00'00"	Tratto elica Lb	27.18mm
Masch.Nr.:	M001	Spindel: Formm	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung		Ø Base db	46.5519mm	Palpatore Ø (#2C)	1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"		Fat.scor.pr. x	.731

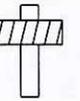


Tolerance	Medio	Val.misur [µm]							Qual	Tolerance	Val.misur [µm]							Medio	Qual	
fH _{am}	±6	-4	Var 7								±6	Var 6							-6	
fH _a	±10	-4	-6	-7	-1	1	0	0		±10	-2	-3	-1	-3	-8	-9	-6			
F _a		5	6	8	3	3	2	4			3	4	3	4	8	9	6			
ffa	4	2	2	2	2	2	2	4		4	2	2	2	3	2	2	2			
fK _o	-20/-12	-18	-18	-18	-19	-17	-18	-18		-20/-12	-14	-16	-16	-15	-15	-15	-15			

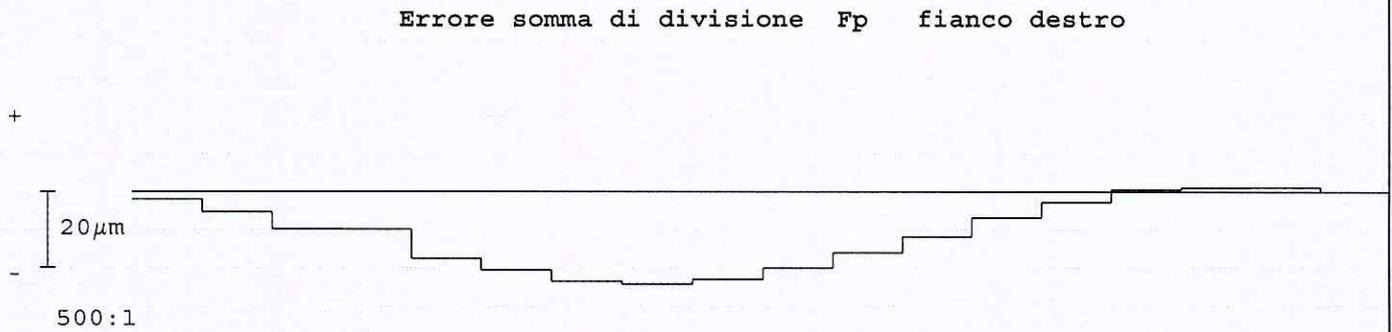
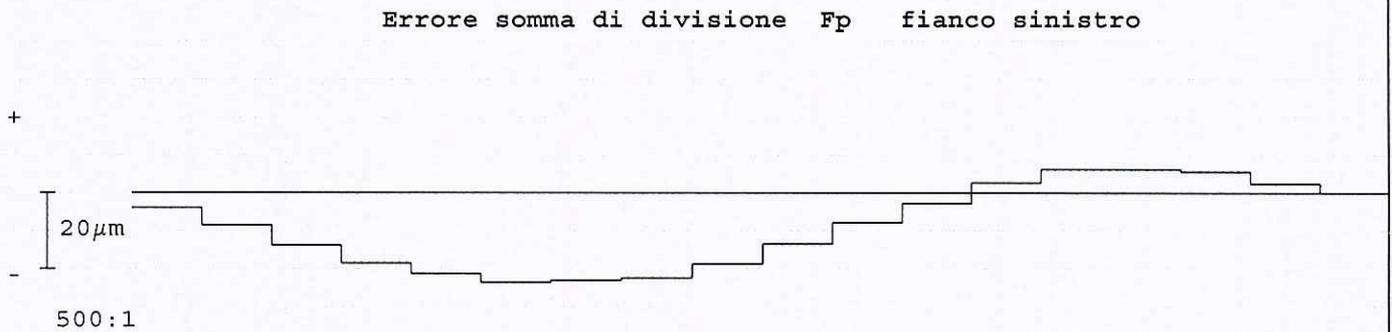


Tolerance	Medio	Val.misur [µm]							Qual	Tolerance	Val.misur [µm]							Medio	Qual	
fH _{sm}	-7±5	-1	Var 20								-15±5	Var 18							-11	
fH _ß	-7±13	-1	3	10	-5	-12	-10	-10		-15±13	-20	-18	-22	-20	-4	-2	-11			
F _ß		8	8	13	4	5	6	10			6	4	6	5	9	10	7			
ff _ß	4	1	1	1	1	1	1	7		4	1	1	2	1	1	1	1			
C _ß	5/9	8	7	8	9	7	8	8		5/9	8	8	7	7	6	7	7			
B _d	4±4	2								4±4							2			

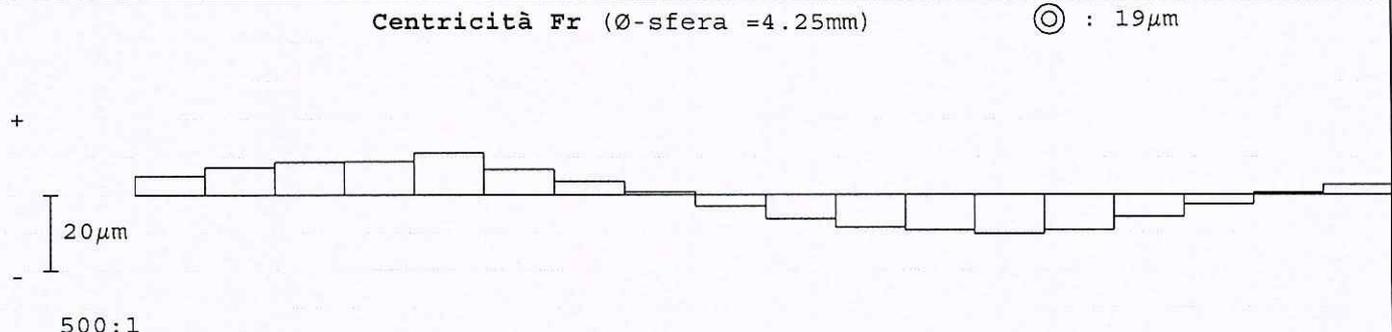




Nr. prog.:	STI0410005 0 P26 B7681	Controllore:	turno c	Data:	17.12.2014 12:01
Denominazione:	Output Shaft 2	Numero denti z	18	Angolo pressione	20°00'00"
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Angolo elica	-29°00'00"
Commessa/serie nr.:	ppap pz.5	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	Formnerke	Charge:	



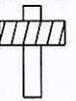
	Corsa per misura divis.: 52.831 z=17mm							
	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amn	Qual.	Val. misur	Qual.	Val. amn	Qual.
Gr. err. singoli divisione fp max	6		14		8		14	
Gr. salto di passo fu max	4		18		8		18	
Scarto di divisione Rp	11				13			
Err. globale di divisione Fp	30		50		25		50	
Err. cordale di divisione Fpz/8	11				11			



Err. di concentricità Fr	22	40	
Variab. spessore dente Rs			

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO c	Data:	11.12.2014 15:12
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 1	Angolo pressione	20°00'00"	Tratto elica LS	27.18mm
Masch.Nr.:	M001 Spindel: Formm	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

TIRO

Testa-Ø: 59.307mm [59.24/59.5]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO C	Data:	11.12.2014 15:13
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 2	Angolo pressione	20°00'00"	Tratto elica L _S	27.18mm
Masch.Nr.:	M001 Spindel: Forme	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

TIRO

Testa-Ø: 59.305mm [59.24/59.5]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica

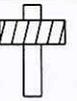


Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO C	Data:	11.12.2014 15:15
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 3	Angolo pressione	20°00'00"	Tratto elica L _S	27.18mm
Masch.Nr.:	M001 Spindel: Formn	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

TIRO

Testa-Ø: 59.305mm [59.24/59.5]

VDI

GETRAG B7590**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO C	Data:	11.12.2014 15:20
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 4	Angolo pressione	20°00'00"	Tratto elica L8	27.18mm
Masch.Nr.:	M001 Spindel: Forme	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

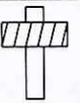
TIRO

Testa-Ø: 59.281mm [59.24/59.5]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI041005 0 P26 B7590	Controllore:	TURNO c	Data:	11.12.2014 15:22
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 5	Angolo pressione	20°00'00"	Tratto elica LS	27.18mm
Masch.Nr.:	M001 Spindel: Formn	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

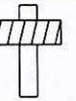
TIRO

Testa-Ø: 59.318mm [59.24/59.5]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410c05 0 P26 B7590	Controllore:	TURNO C	Data:	11.12.2014 15:24
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 5	Angolo pressione	20°00'00"	Tratto elica L _S	27.18mm
Masch.Nr.:	M001 Spindel: Formel	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

TIRO

Piede-Ø: 44.703mm [44.55/45]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO C	Data:	11.12.2014 15:26
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 4	Angolo pressione	20°00'00"	Tratto elica LS	27.18mm
Masch.Nr.:	M001 Spindel: Formm	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

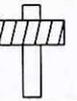
TIRO

Piede-Ø: 44.725mm [44.55/45]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO C	Data:	11.12.2014 15:28
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 3	Angolo pressione	20°00'00"	Tratto elica L _S	27.18mm
Masch.Nr.:	M001 Spindel: Formm	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

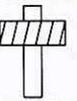
TIRO

Piede-Ø: 44.736mm [44.55/45]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO C	Data:	11.12.2014 15:30
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Commessa/serie nr.:	pezzo 2	Angolo pressione	20°00'00"	Tratto elica L _S	27.18mm
Masch.Nr.:	M001 Spindel: Formm	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

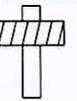
TIRO

Piede-Ø: 44.738mm [44.55/45]

VDI

GETRAG B7590

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 P26 B7590	Controllore:	TURNO c	Data:	11.12.2014 15:31
Denominazione:	Output Shaft 2	Numero denti z	18	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.3771.35-IF	Modulo m	2.45mm	Tratto evolv. La	7.38mm
Comessa/serie nr.:	pezzo 1	Angolo pressione	20°00'00"	Tratto elica LS	27.18mm
Masch.Nr.:	M001 Spindel: Formn	Angolo elica	-29°00'00"	Inizio elab. M1	6.11mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.5519mm	Palpatore Ø	(#2C) 1mm
Werkzeug:	Charge:	Ang. Base	-27°06'06"	Fat.scor.pr. x	.731

TIRO

Piede-Ø: 44.726mm [44.55/45]

VDI

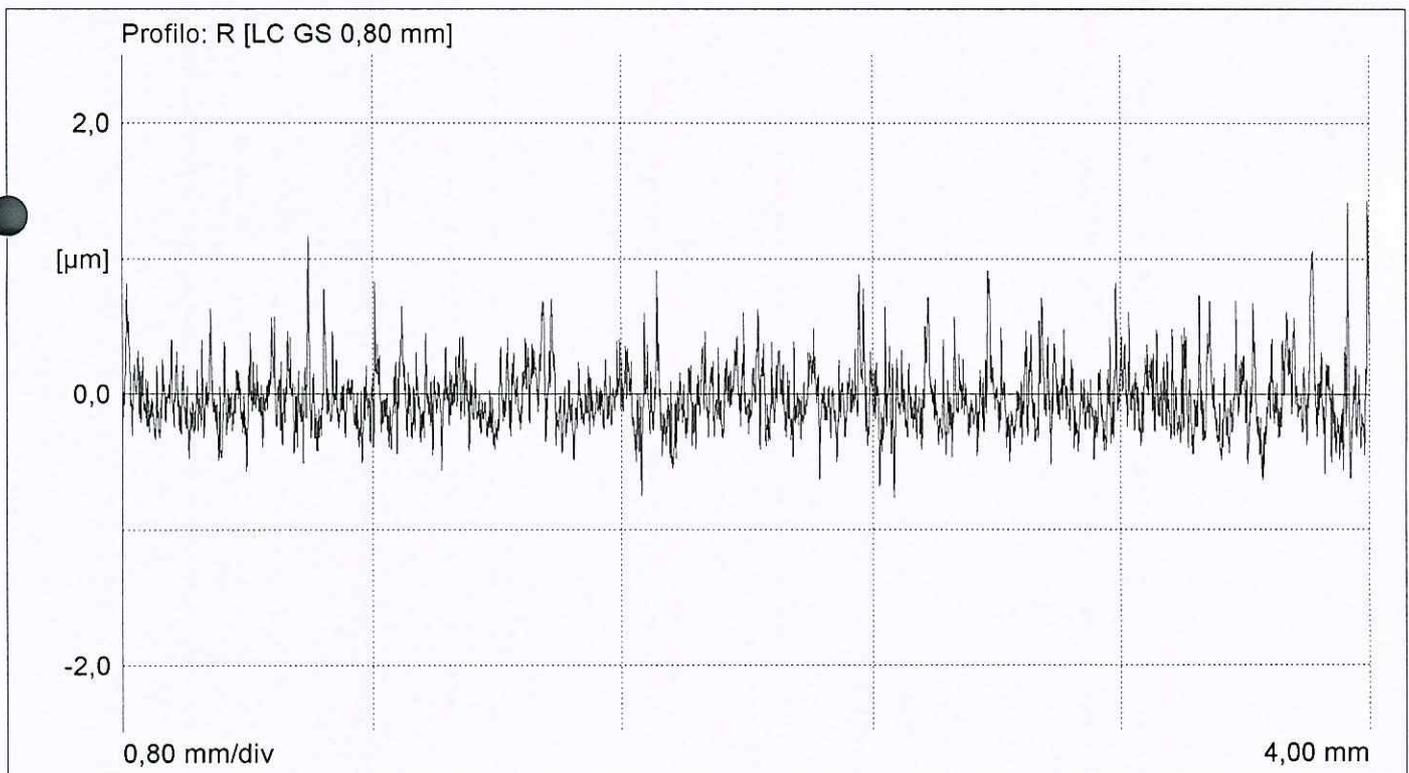


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 3771PPAP PZ.1
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:25
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	0,19	µm
Rmax	2,07	µm
Rz	1,71	µm

PERTHOMETER CONCEPT

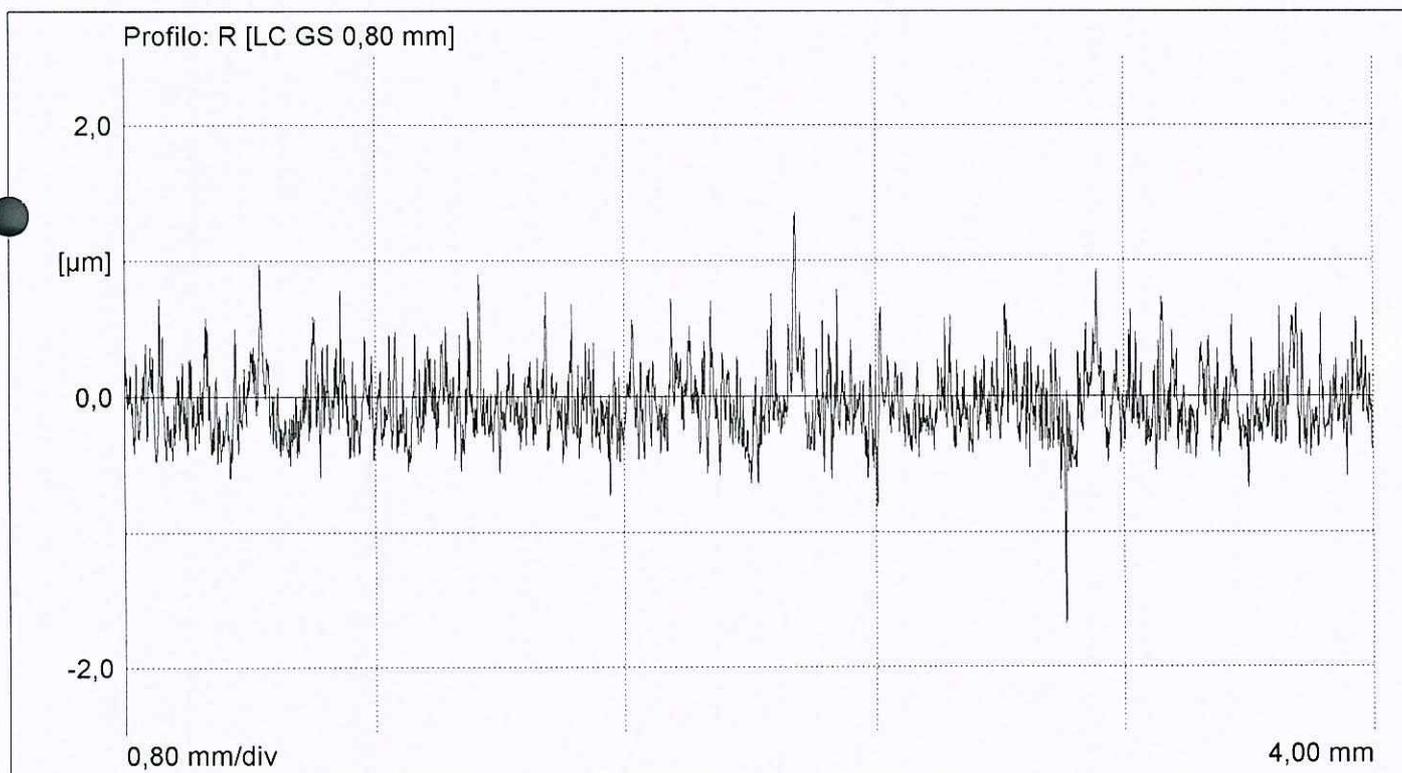


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 3771PPAP PZ.2
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:28
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	0,21	μm
Rmax	2,62	μm
Rz	1,85	μm

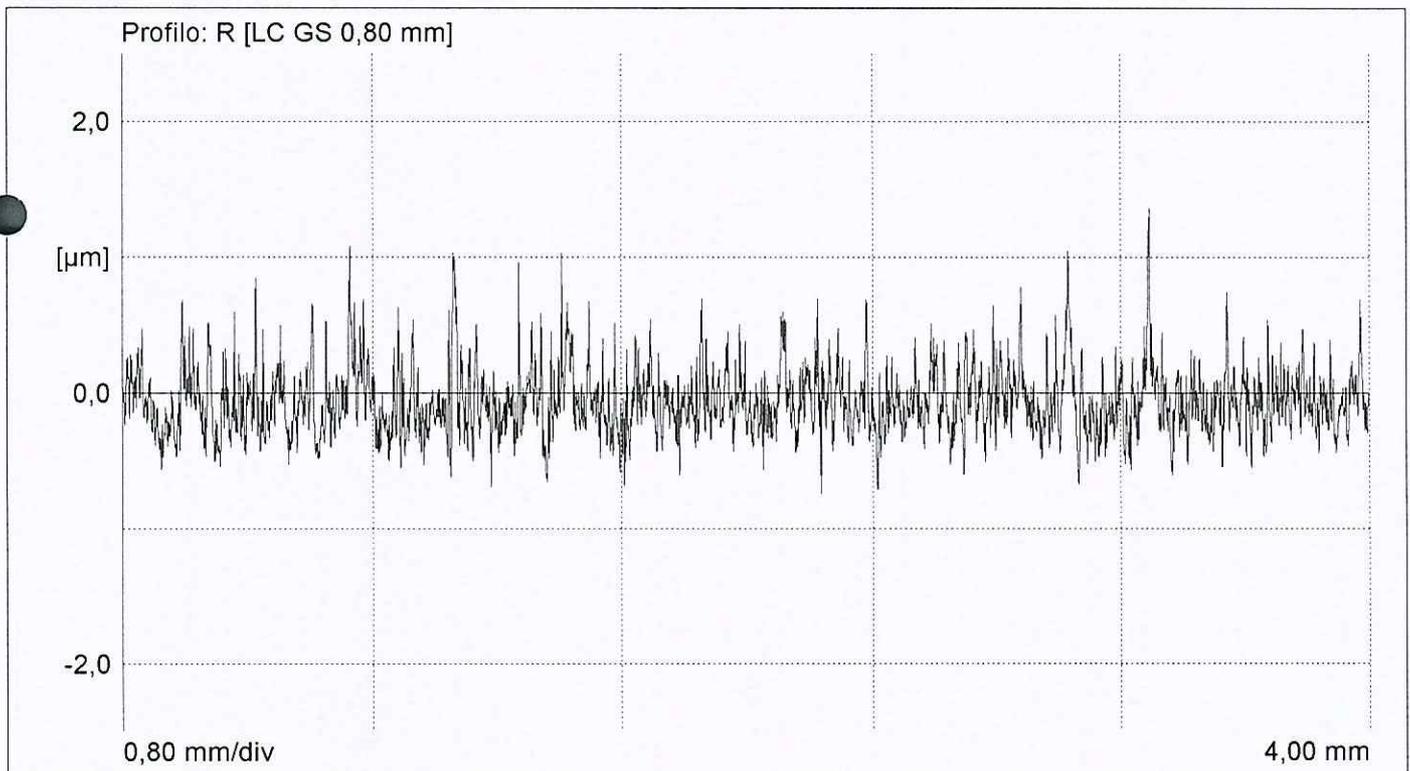
PERTHOMETER CONCEPT



Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 2
Numero:	3771PPAP PZ 3
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 09:27
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	0,20	µm
Rmax	1,97	µm
Rz	1,71	µm

PERTHOMETER CONCEPT

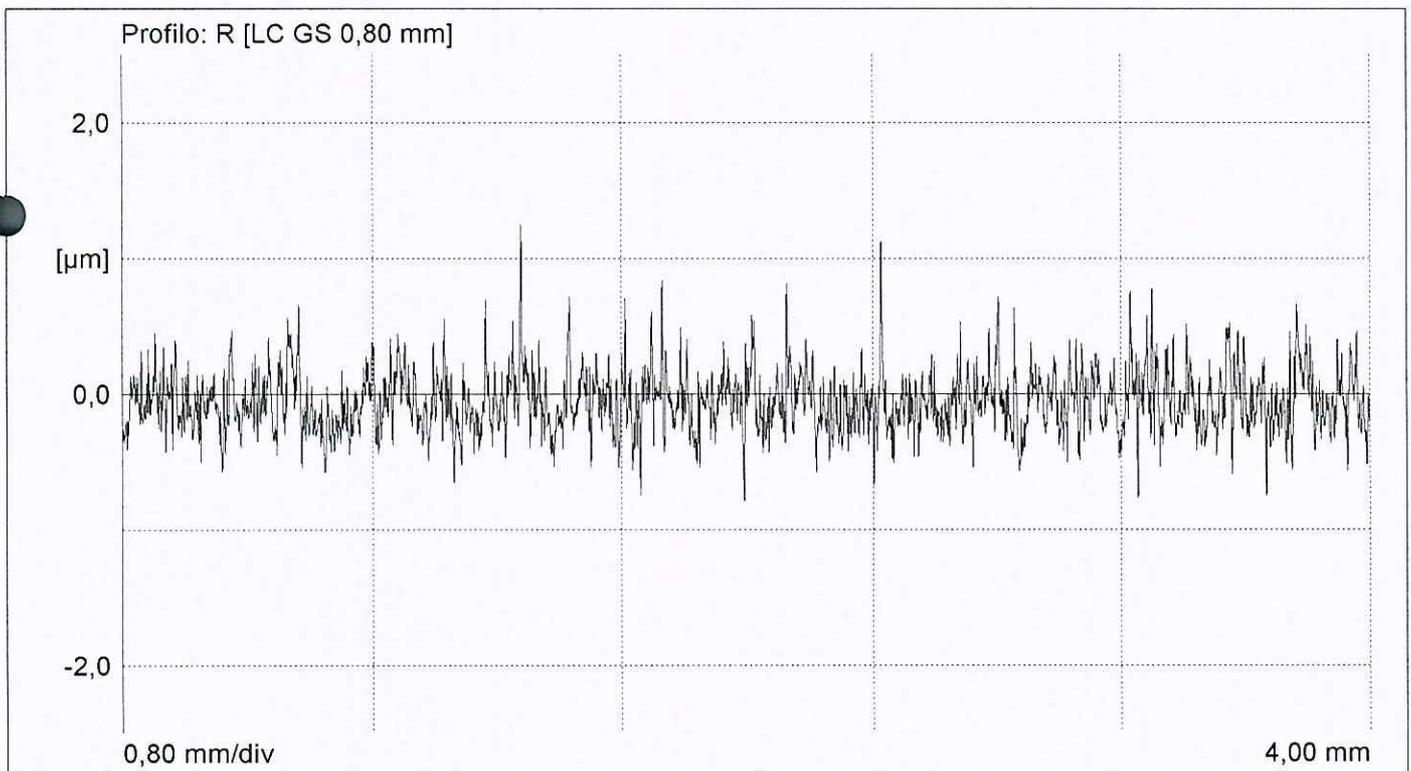


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 3771PPAP PZ.4
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:23
Nota: RZ DENTE
Tastatore: MFW-250 -20

MACCHINA: MOA 416121 002

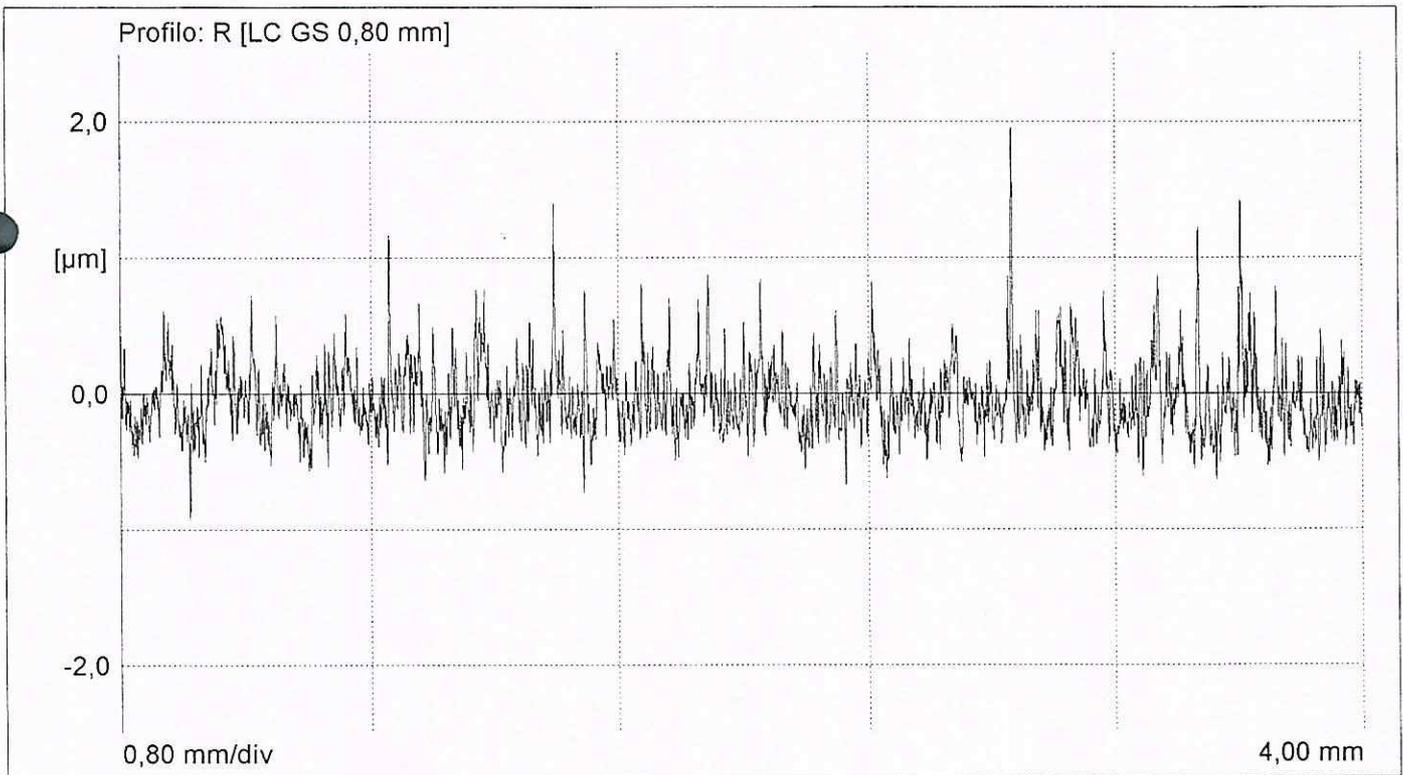


LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250	µm
Ra	0,18	µm
Rmax	1,90	µm
Rz	1,62	µm

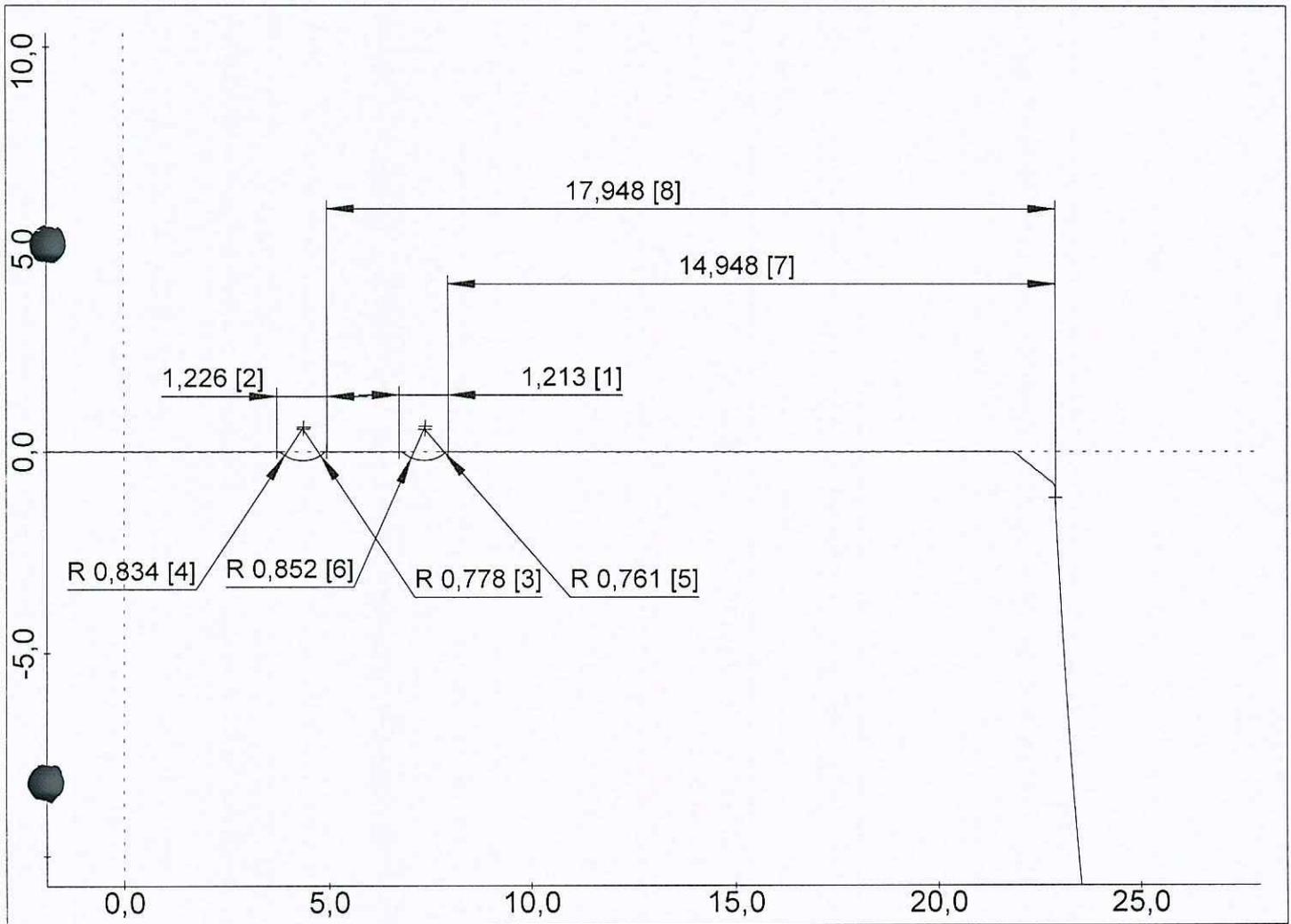
PERTHOMETER CONCEPT

Oggetto: OS 2
Numero: 3771PPAP PZ.5
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:31
Nota: RZ DENTE
Tastatore: MFW-250 -20

MACCHINA: MOA 416121 002



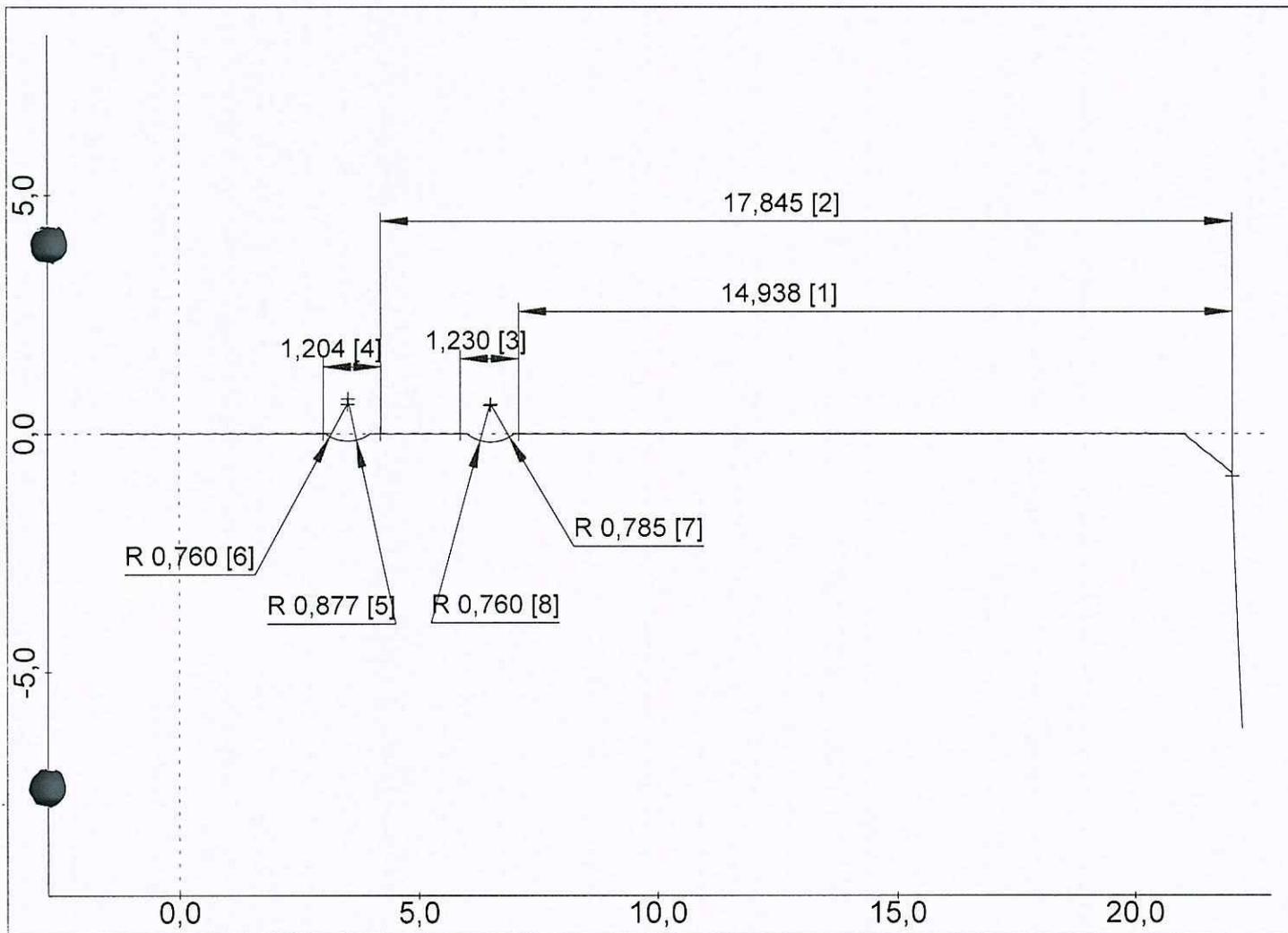
LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250	µm
Ra	0,21	µm
Rmax	2,58	µm
Rz	2,00	µm



PERTHOMETER CONCEPT

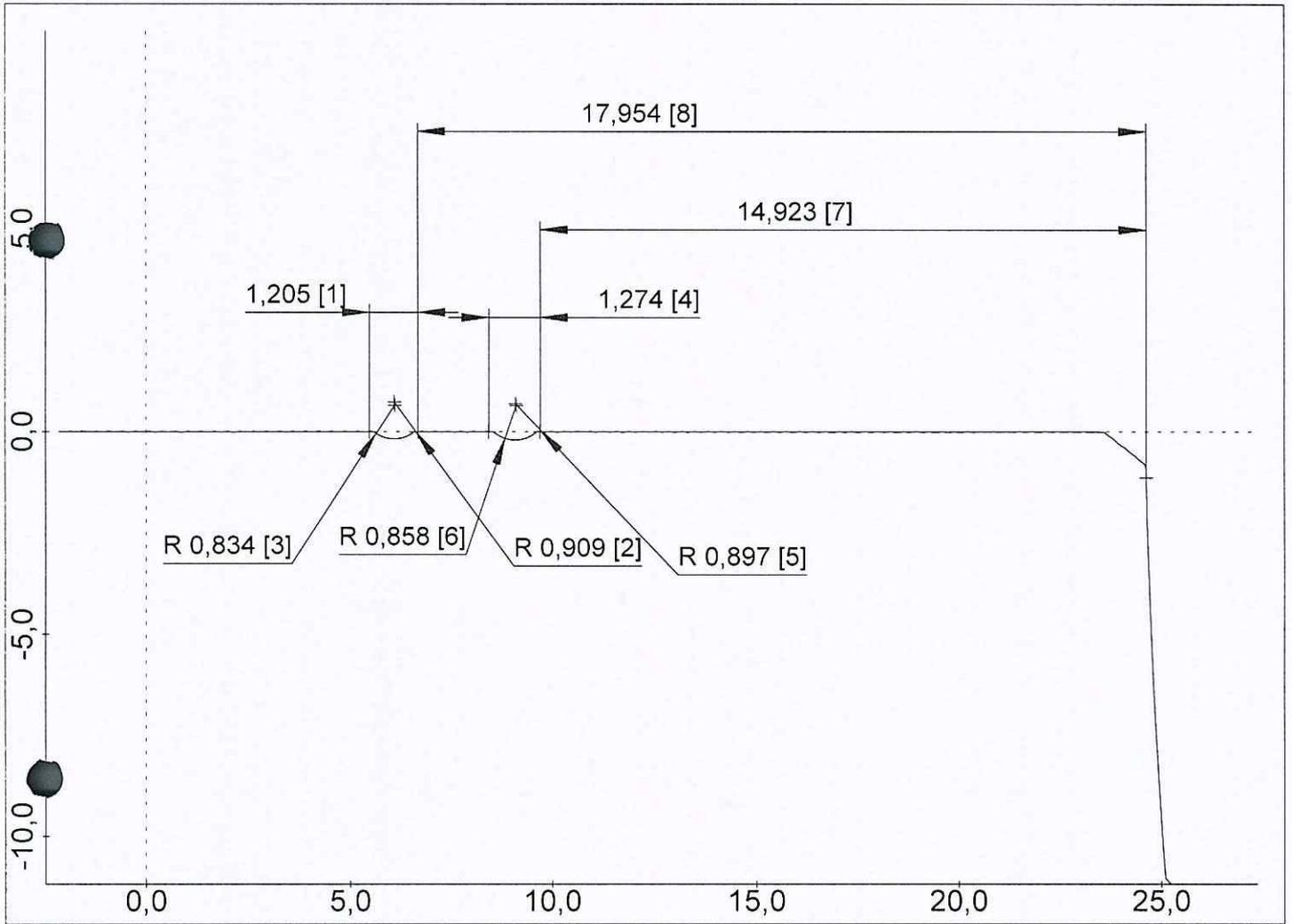
Via dei Ciclamini 4, Modugno (BA)

Macchina: MOA 416120 001

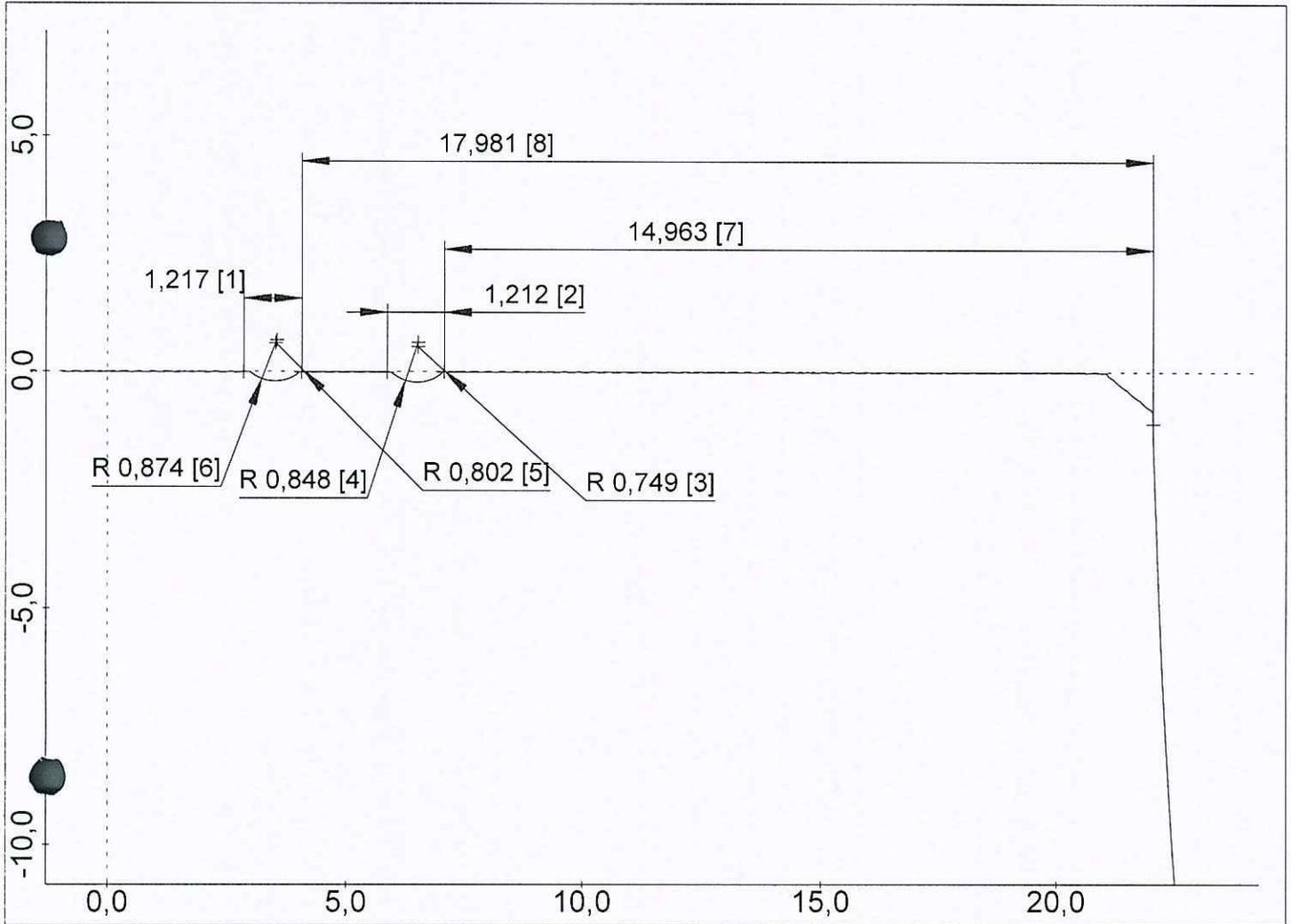


PERTHOMETER CONCEPT

Oggetto:	OS 2
Numero:	3771 PPAP PZ.3
Operatore:	TURNO C
Data, ora:	16.12.2014, 07:15
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Macchina:	MOA 416120 001

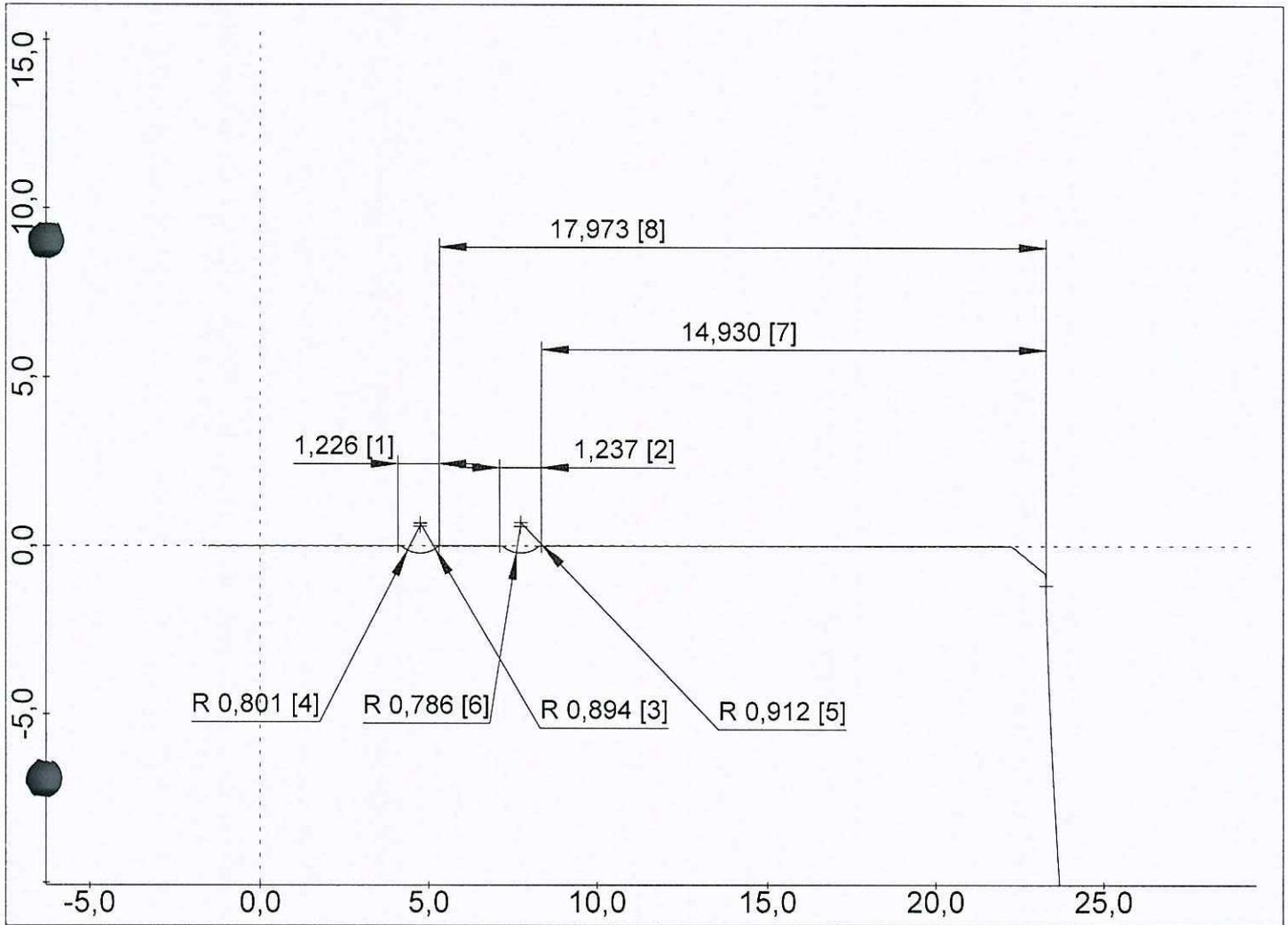


PERTHOMETER CONCEPT



PERTHOMETER CONCEPT

Oggetto:	OS 2
Numero:	3771 PPAP PZ.5
Operatore:	TURNO C
Data, ora:	16.12.2014, 07:25
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT



Operatore: Amministratore: super	Data: 16-12-2014 11:13	Numero seriale di lotto: Pz1	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3771_EDISON\2506377135_Part M.mtl
	Unità di misura: [mm , °]		Tipo: Z_PPAPIOS2_3771_EDISON	Modello: 2506377135_Part M
Nota di programm			Nota:	

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
11	Part_M_D59.05	59.050	58.985	-0.065		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:14	Numero seriale di lotto: Pz2	Nr. 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3771_EDISON\2506377135_Part M.mtl
		Unità di misura: [mm , °]		Tipo: Z_PPAPIOS2_3771_EDISON Modello: 2506377135_Part M

Nota di programm	Nota:
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GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D59.05	59.050	58.909	-0.141		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:15	Numero seriale di lotto: Pz3	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3771_EDISON\2506377135_Part M.mtl
		Unità di misura: [mm , °]		Tipo: Z_PPAPIOS2_3771_EDISON Modello: 2506377135_Part M

Nota di programr	Nota:
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GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
	Part_M_D59.05	59.050	58.909	-0.141		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:15	Numero seriale di lotto: Pz4	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3771_EDISON\2506377135_Part M.mtl
Nota di programm		Unità di misura: [mm , °]	Tipo: Z_PPAPIOS2_3771_EDISON Modello: 2506377135_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
■	Part_M_D59.05	59.050	58.972	-0.078		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:16	Numero seriale di lotto: Pz5	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS2_3771_EDISON\2506377135_Part M.mtl
Nota di programm		Unità di misura: [mm , °]	Tipo: Z_PPAPIOS2_3771_EDISON Modello: 2506377135_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
■	Part_M_D59.05	59.050	58.960	-0.090		-0.300	0.000

Istruzioni di controllo



PP Produzione GPS

Materiale: 2506377135

Indice del disegno finito:

Descrizione: Albero di uscita 2

Data emissione:

Operazione: 0200 Levigatura di potenza 377z= 18

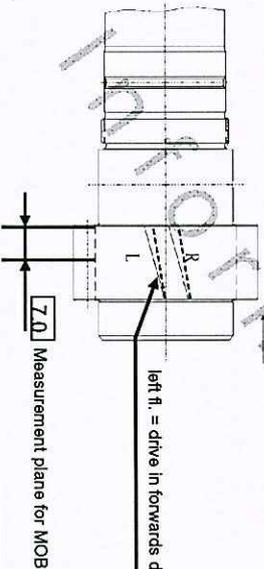
Data aggiornamento:

Centro di lavoro: HNW15340 LEVIGATURA OS2

05.12.2014 / Emiliano Zella

Id. Ssp 0000	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
0002		Controllo 1° pz sec. VBZ 450_803428				MVZ-400249 EVOLVENTIMETRO					1	1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo
0004		aspetto, privo di bava, senza danno				MOA-416121 RUGOSIMETRO TIPO PRK		pz per rack			1	1° pz 2.3.1.1-R 2		CR1: no documentazione
0012	M	DIAMETRO MdK DA G. T. sfere 3.5 mm	56,730 mm	56,698	56,763	MZA-450311 Calcolatore di misura E9066 Marposs	3	pz ogni 100 per macchina						CR1: no documentazione
0016	M	DIAGRAMMA COMPLETO CON SVEROGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO					1	1 pezzo ogni cambio parametri macchina		Misu: diagramma di dentatura
0020	M	DIAGRAMMA COMPLETO CON SVEROGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO					1	Ultimo PZ. prima ravvivatu ra		Misu: diagramma di dentatura
0025	M	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

STIRNRAD		external	Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978)		(8)
GEAR		außenverzahnt	gültig für Werte am Einzelzahn Tolerances of gearing (DIN 3961 of Aug. 1978) valid for values at individual tooth		
Zähnezahl Number of teeth	z	18			
Modul Normal module	m_n	2.450000	Profil-Formabweichung f_{fa} Profile form error	0.004	Eingriffstleistungs-Abweich. Normal pitch error f_{pe}
Eingriffswinkel Normal pressure angle	α_n	20° 0' 0"	Profil-Gesamtabweichung F_a Total profile error		Tilgungs-Einzelabweichung f_p Normal pitch error
Steigungswinkel Helix angle	β	29° 0' 0"	Profil-Winkelabweichung $f_{H\alpha}$ Profile angle error	0.000 ± 0.010	Tilgungs-Summenabweich. F_{pk} Cumulative circ. pitch error
Steigungsrichtung Hand of helix		LEFT	Flanken-Winkelabweich. $f_{H\beta}$ Tooth alignment error	-0.007 ± 0.013	Tilgungs-Summenabweich. F_{pk} Cumulative circ. pitch error
Profilverschiebungsfaktor Addendum modification coeff.	x	0.731	Flanken-Gesamtabweich. $F_{F\beta}$ Total alignment error		Rundlaufabweichung F_r Radial run-out
Teilkeilsdurchmesser Pitch diameter	d	50.422	Flankenl.-Formabweich. $f_{F\beta}$ Longitudinal alignment err.	0.004	Zahndickenschwankung R_s Range of tooth thckn. error
Kopfkreisdurchmesser Outside diameter	d_a	59.50 -0.26	Tilgungs-Gesamtabweich. F_p Cumulative pitch error	0.050	Zwei-/-Wälzabweichung F_{Ft} Radial composite error
Kopfkreisrad. theo. max. d_{ha} Tip diam. usable theo.		59.05	Einf.-Wälzabweichung F_t Tangential composite error		Zwei-/-Wälzabweichung F_{Ft} Radial composite error
Kopfnutzrad. theo. min. d_{ha} Tip diam. usable theo.		58.58	Einflanken-Wälzsprung f_t Tang. tooth to tooth comp. err.		Zwei-/-Wälzsprung f_t Radial tooth to tooth comp. err.
Fußkreisdurchmesser Root diameter	d_f	45.00 -0.45	Radbreite im Melzkreis d_w Facewidth in meas. diam.	33.98	Melzkreis (Kürmmungsradius) r_{pw} Radius of curvature meas. diam.
Fußnutkreisdurchmesser Root diameter usable	d_{fr}	48.13			
Grundkreisradius Base circle radius	r_b	23.276			
Grundkreisdurchmesser Base diameter	d_b	46.552			
Normalzahnradicke Normal tooth thickness	max. s_n	5.152			
Normalzahnradicke Normal tooth thickness	min. s_n	5.122			
Melzähnezahl Number of teeth spanned	k				
Zahnweite Base tangent length	max. W_k				
Zahnweite Base tangent length	min. W_k				
Ball diameter Mekkgelddurchmesser	D_M	3.5000			
Diam. Zweikugelnmaß max. M_{k1} Messurteilmaß o. balls		56.763			
Diam. Zweikugelnmaß min. M_{k2} Messurteilmaß o. balls		56.698			
Verzahnflankenkeil Circumferential backlash	theo.	0.072			
		0.172			

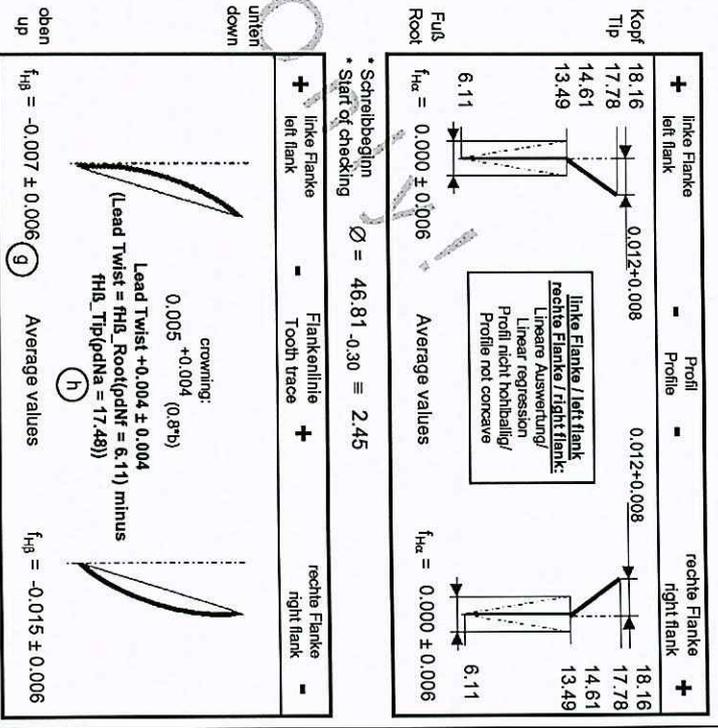


Honddurchmesser = 46.81 -0.30 = 2.45 honing diameter
 # Der Verlauf der Profil- und Flankenlinie muss über den Messbereich stetig sein (ein- oder mehrfache Richtungsänderungen sind nicht zulässig)
 # The form of the profile and helix has to be continuous (one or more changes of directions are not allowed)
 Für f_p max. zwei Wellen zulässig
 For f_p max. two waves allowed

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

Wkz-Profil siehe Werkzeugaßenblatt Nr. 250.6.3771.35
 For Tooth profile, see tool data sheet number

Abbildungen sind unmaßstäblich Diagrams not to scale.		Ersatz für Erstverwendung bei Gebläsebaup.		Rev. "A" 20110606 250.0.0053.18		Verzahnungsblatt Endkontrolle Final Check Gear Data	
Datum	Name	Abbildg	Anz	Änd.Nr.	Datum	Name	Zeichnungsnummer: Drawing number:
gez. 2009-05-13	Cricenti, Fabrizio	h	1	36169_2	201006	Cricenti	250.6.3771.35
gepr.		g	2	35560	201106	Cricenti	
Abbildungen sind unmaßstäblich Diagrams not to scale.		Erersatz für Erstverwendung bei Gebläsebaup.		Rev. "A" 20110606 250.0.0053.18		Verzahnungsblatt Endkontrolle Final Check Gear Data	
Datum		Name		Abbildg		Anz	
gez. 2009-05-13		Cricenti, Fabrizio		h		1	
gepr.				g		2	
Output Shaft K2				g		2	



Profile and helix checking according to VDI/VDE 2612
 Listed tolerance data for F_p and $f_{H\beta}$ refers to the total face width in the meas. dia. d_m
 Tooth trace testing area $L\beta = 0.87d$ calculated to 1.0°
 Terms of the tooth system according to DIN (German Industrial Standards) No. 868, 3960, 3998

* f_{Ht} (zwischen d_{Ht} und dem Schreibbeginn d_s) max. f_{Ht2} , jedoch 0.003 zulässig
 * $f_{H\beta}$ (zwischen $d_{H\beta}$ und start of checking d_s) max. $f_{H\beta2}$, 0.003 allowable.

Profil- und Flankenliniennprüfung nach VDI/VDE 2612
 Tabellenwerte für F_p und $f_{H\beta}$ sind auf die gesamte Radbreite im Melzkreis d_w bezogen
 Flankenliniennprüfbereich $L\beta = 0.87d$ hochgerechnet auf 1.0°
 Begriffe für Stirnräder nach DIN 868, 3960, 3998