GETRAG 312638 **Part Submission Warrant**

Part Name: OUTPUT SHAFT 1 | Customer Part Number: 250.6.4305.35

Shown on Drawing No.: 250.6.4305.35 | Organization Part #:

Engineering Change Level: 3 Index (d) | Dated: 30-lug-14

Additional Engineering Changes: | Dated:

Safety and/or Government Regulation ☐ Yes ☑ No | Purchase Order No.: | Weight (kg): 1,969

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

Renault
Customer Name/Division

Renault
Buyer/Buyer Code

TYP 250 Renault
Application

MATERIALS REPORTING

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

Submitted by IMDS or other customer format:

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

REASON FOR SUBMISSION (Check at least one)

- ☐ Initial Submission
- ☑ Engineering Change(s)
- ☐ Tooling: Transfer, Replacement, Refurbishment, or additional
- ☐ Correction of Discrepancy
- ☐ Tooling Inactive > than 1 year
- ☐ Change to Optional Construction or Material
- ☐ Supplier or Material Source Change
- ☐ Change in Part Processing
- ☐ Parts Produced at Additional Location
- ☑ Other - please specify below

REQUESTED SUBMISSION LEVEL (Check one)

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

SUBMISSION RESULTS

The results for ☑ dimensional measurements ☑ material and functional tests ☐ appearance criteria ☑ statistical process package

These results meet all drawing and specification requirements: ☑ Yes ☐ NO (If "NO" - Explanation Required)

Mold / Cavity / Production Process

DECLARATION

I hereby affirm that the samples represented by this warrant are representative of our parts which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of 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: 250.6.4305.35
Supplier/Vendor Coc GETRAG Modugno	Part Name: Output Shaft 1
INSPECTION FACILITY: NA	Design Record Change Level: 3 Index (d) 30/07/2014
	Engineering Change Documents:

Item	Dimension/Specification	Specification / Limits		Test Date	Qty. Tested	Organization Measurement Results (Data) 1	2	3	4	5	Test distruttivo	Ok	Not Ok
1	MDK I	57,621	57,686		5	57,633	57,647	57,639	57,641	57,634		ok	
2	Root diameter I	45,480	45,800		5	45,785	45,786	45,786	45,785	45,783		ok	
3	Tip diameter I	59,590	59,850		5	59,730	59,731	59,721	59,731	59,724		ok	
4	Rz 4 dentatura Z20	0	4 µ		5	1,42	1,57	1,96	1,20	1,85		ok	
	Rmax 8 dentatura Z20	0	8 µ		5	1,63	1,85	2,31	1,42	2,93		ok	
5	↗ 0,040 A - B Z20	0	40 µ		5	23	23	24	23	24		ok	
6	Dettaglio "M"	-	-		5	OK	OK	OK	OK	OK		ok	
	Diametro Ø 59.4 -0,3	59,100	59,400		5	59,220	59,242	59,249	59,217	59,214		ok	

Toothing microgeometry validated by standard measurement report

SIGNATURE	TITLE	DATE
G. Cicirelli	QPE	16/01/2015

Item	Caractheristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5	Device
1	MDK I	57,621÷57,686	57,633	57,647	57,639	57,641	57,634	Calibro a sfere

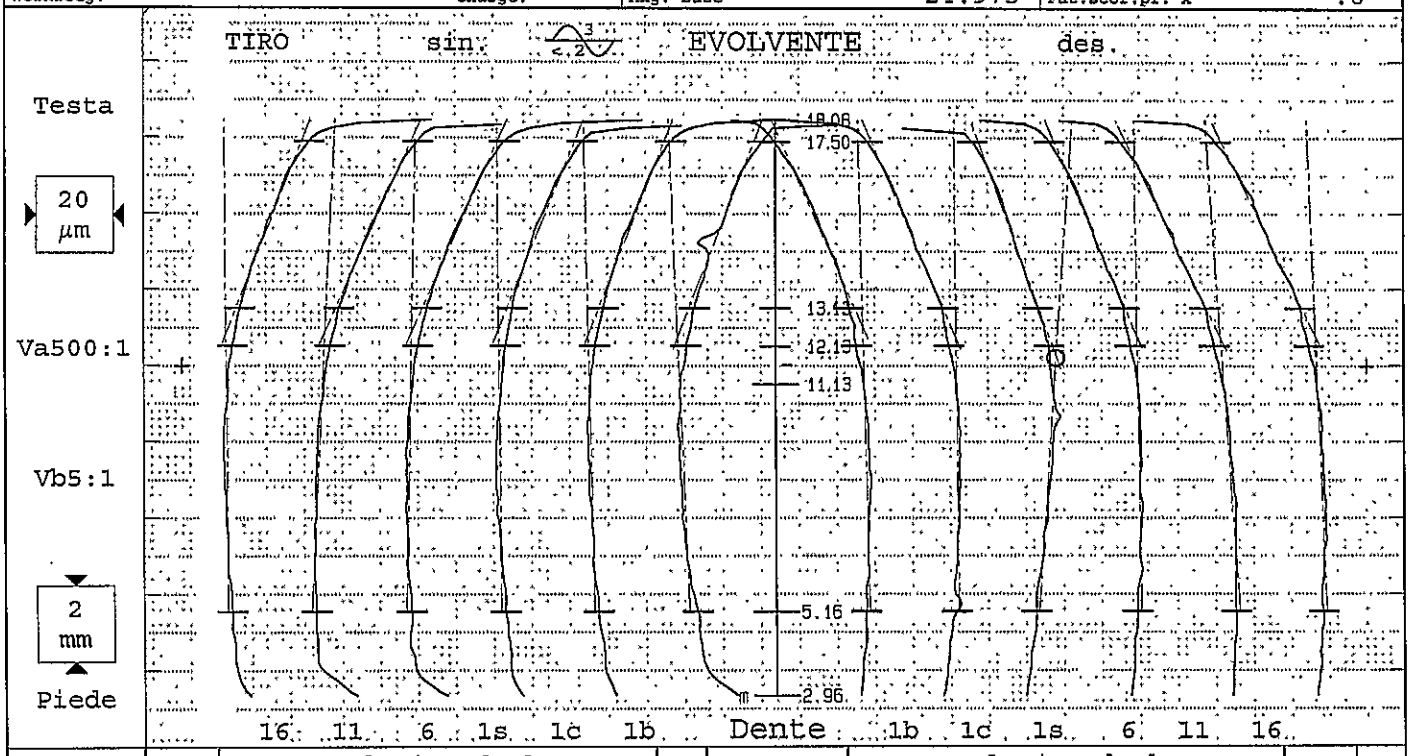
Misurazioni Manuali

OS1 250 6 4305 35

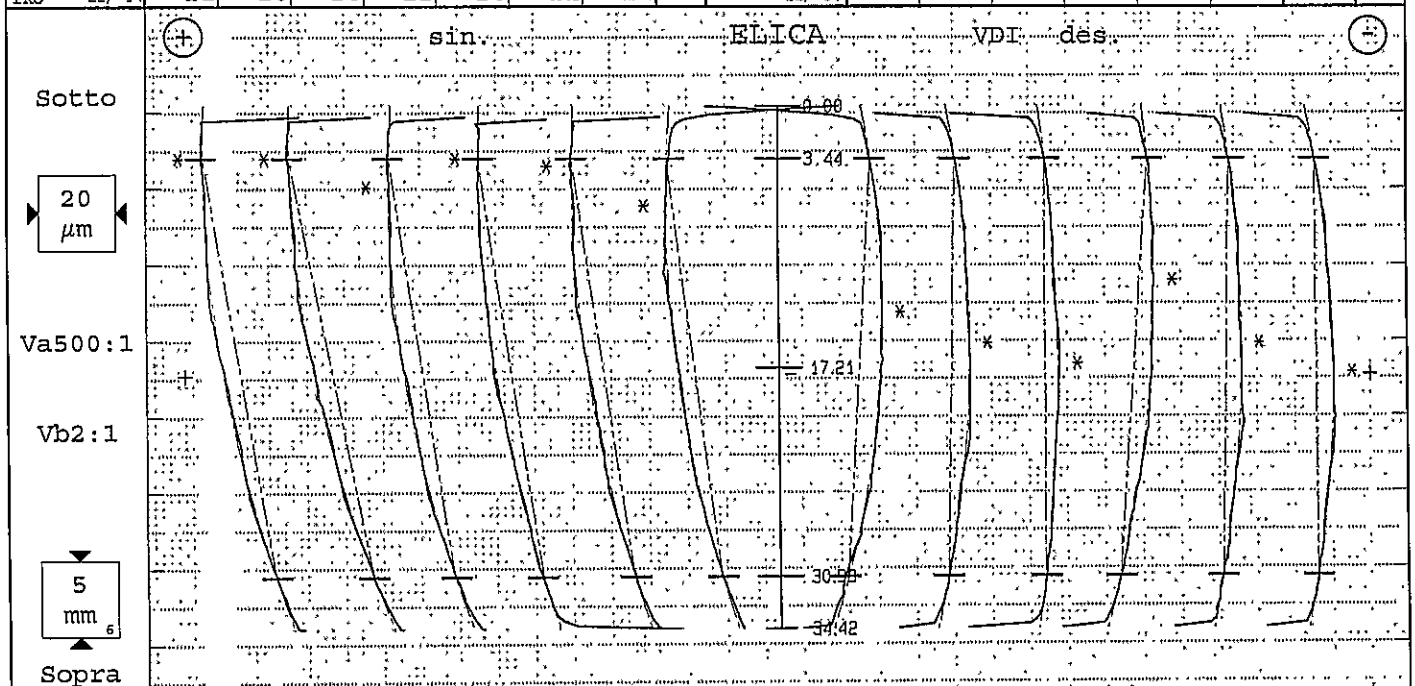
13-gen-15

GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:42
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.1	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formmaster	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	Ø Base db	47.6847mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6



Tolerance	Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
fHαm ±6	-1	Var 4							±6	Var 4						-3	
fHα ±7	-1	0	-3	-1	0	1	3		±7	-2	-1	5	-1	-5	-3	-3	
Fα	3	3	4	3	3	3	5			4	3	7	3	6	5	4	
ffα 4	3	3	2	3	3	2	3		4	3	3	4	3	3	3	3	
fKo -22/-14	-21	-20	-20	-22	-20	-21	-22		-22/-14	-20	-22	-24	-21	-21	-23	-22	



fHßm 25±6	23	Var 7							±6	Var 10						-4
fHß 25±13	23	23	27	21	21	20	17		±13	-8	-3	0	-10	-2	0	-4
Fß	4	3	4	5	5	5	7			9	4	6	8	4	3	5
ffß 9	1	1	1	1	1	1	2		9	2	1	1	1	2	1	1
Cß 2/6	5	4	5	5	4	4	5		2/6	6	5	3	5	4	5	5
Bd	-4															-8

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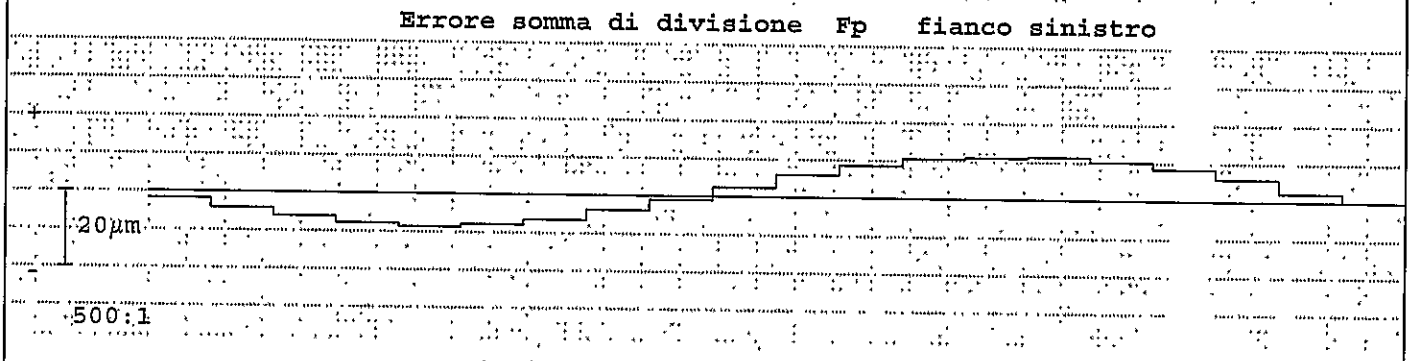
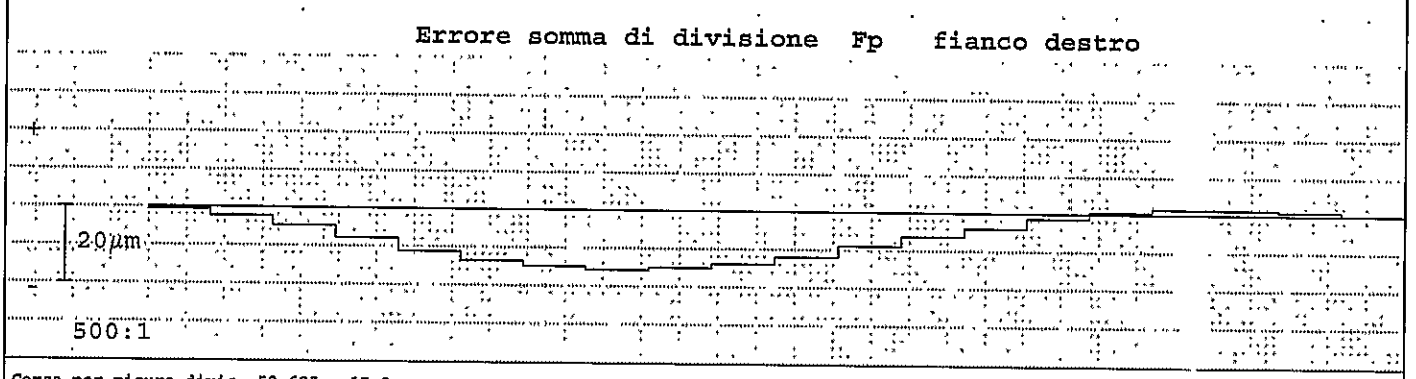
GETRAG — Ruota cilindrica Divisione

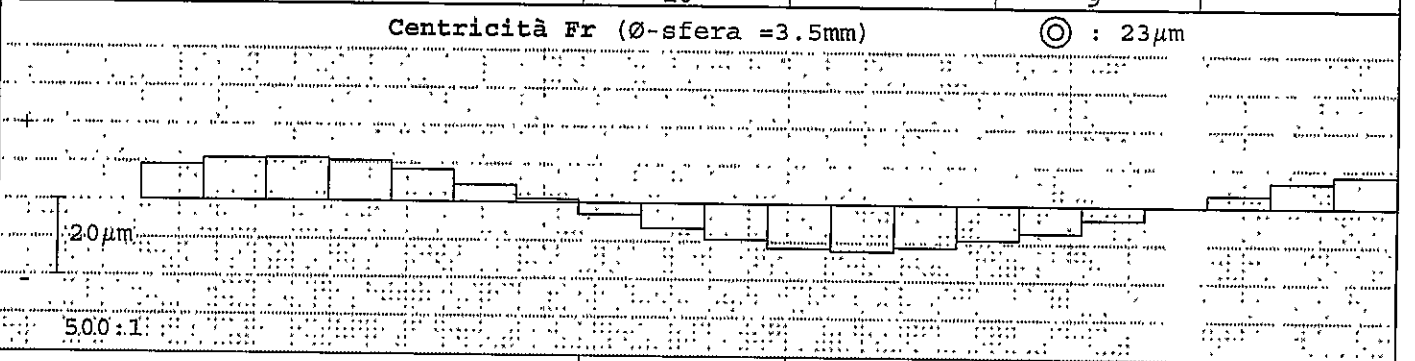
Nr. prog.: STI0410o05 0 PNC35 B4784	Controllore: turno B	Data: 11.12.2014 08:42	
Denominazione: Output Shaft 1	Numero denti z 20	Angolo pressione 20°	
Numero disegno.: 250.6.4305.35-IF	Modulo m 2.3mm	Angolo elica -26.7°	
Commessa/serie nr.: ppap pz.1	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001 Spindel: Formmeßzeug	Charge:		





Corsa per misura divis.:52.625 z=17.2mm

		fianco sinistro / TIRO				fianco destro			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	4		14		3		14	
Gr. salto di passo	fu max	2		18		1		18	
Scarto di divisione	Rp	7				6			
Err. globale di divisione	Fp	20		50		17		50	
Err. cordale di divisione	Fpz/8	10				9			



Err. di concentricitá	Fr	23	40	
Variaz. spessore dente	Rs			

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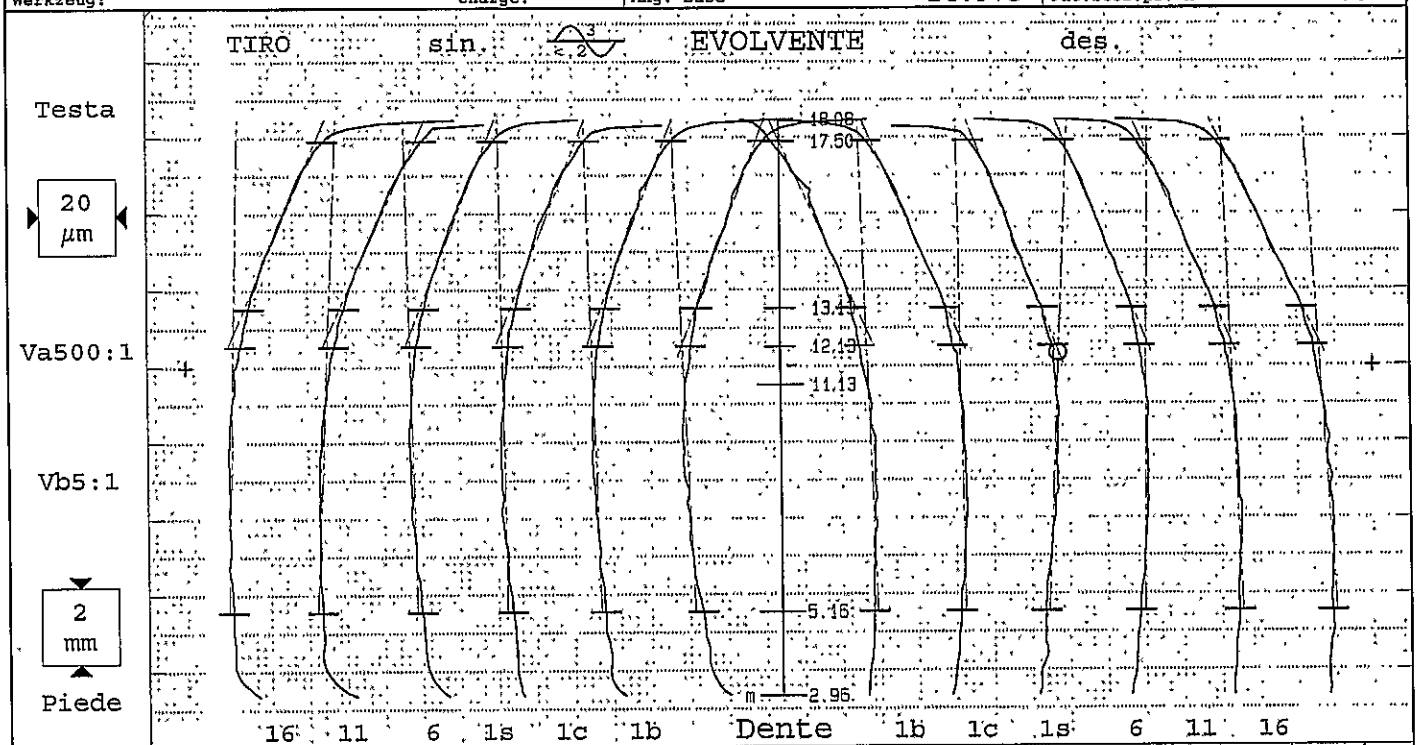
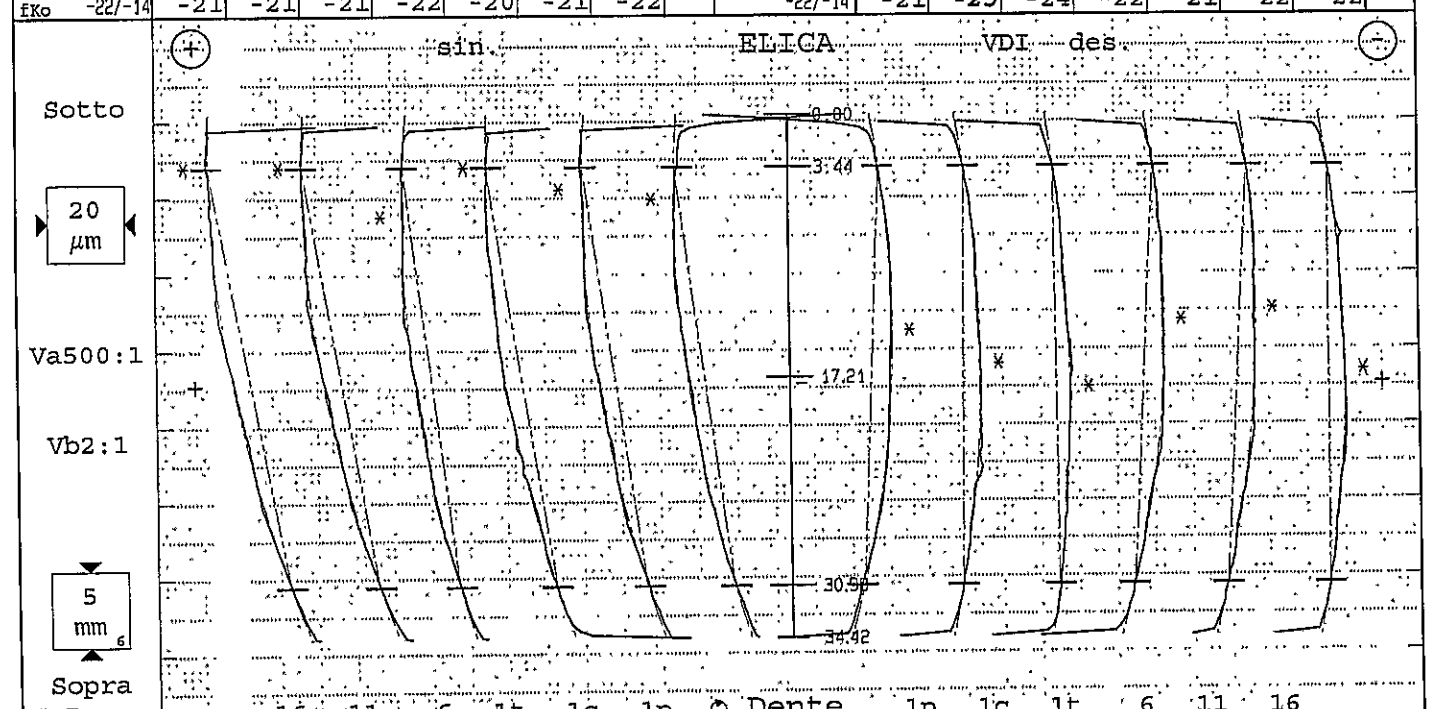
GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:37
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.2	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formnestl	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	Ø Base db	47.6847mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6



Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
		Var 5								Var 5							
fHαm ±6	0								±6							-2	
fHα ±7	0	-2	-3	2	1	2	3		±7	-2	-1	3	1	-3	-4	-2	
Fα	3	3	4	3	3	3	5			4	4	4	2	4	5	4	
ffα 4	3	3	3	3	3	3	3		4	3	3	3	3	3	3	3	
fKα -22/-14	-21	-21	-21	-22	-20	-21	-22		-22/-14	-21	-23	-24	-22	-21	-22	-22	



fHßm 25±6	22	Var 8							±6	Var 6						-4	
fHß 25±13	22	26	24	18	22	20	18		±13	-6	-1	1	-7	-7	-1	-4	
Fß	5	4	3	7	5	5	7			7	4	5	7	7	3	5	
ffß 9	1	1	2	1	1	1	1		9	1	2	1	1	1	2	2	
Cß 2/6	5	5	5	5	4	5	4		2/6	5	5	3	5	5	4	5	
Bd	-4															-7	

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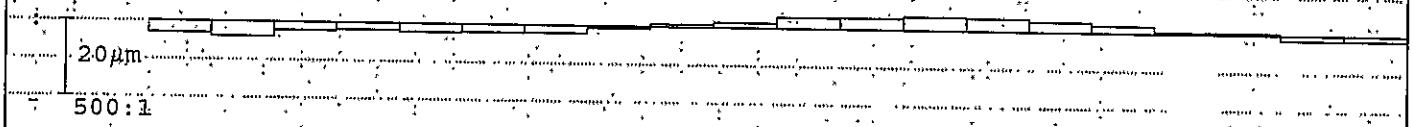
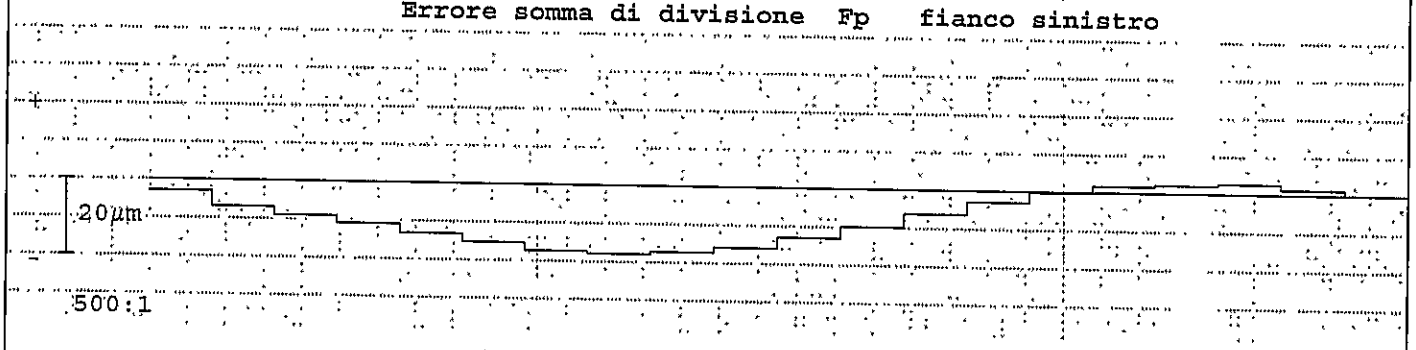
Ruota cilindrica Divisione

Nr. prog.: STI0410o05 0 PNC35 B4784	Controllore: turno B	Data: 11.12.2014 08:37	
Denominazione: Output Shaft 1	Numero denti z 20	Angolo pressione 20°	
Numero disegno.: 250.6.4305.35-IF	Modulo m 2.3mm	Angolo elica -26.7°	
Commessa/serie nr.: ppap pz.2	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001 Spindel: Formmesszeug		Charge:	

Errori singoli di divisione fp fianco sinistro

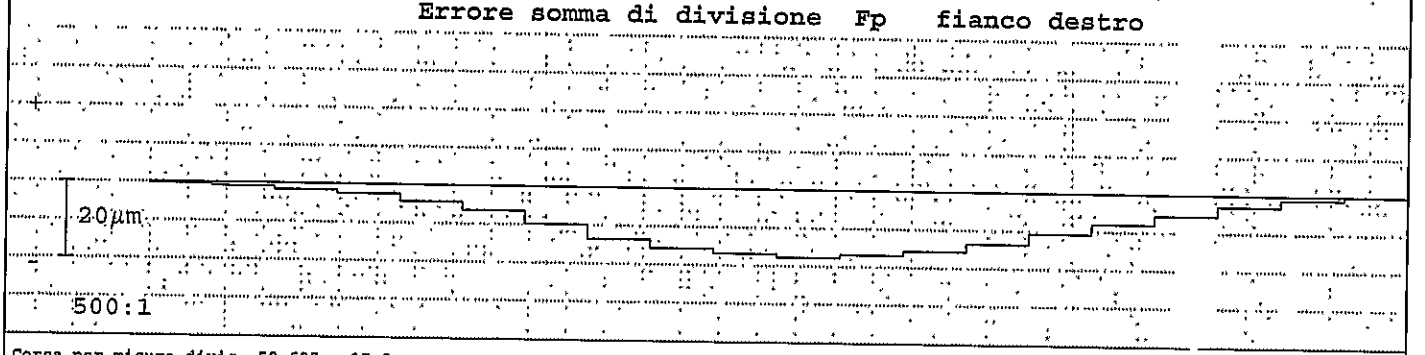


Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

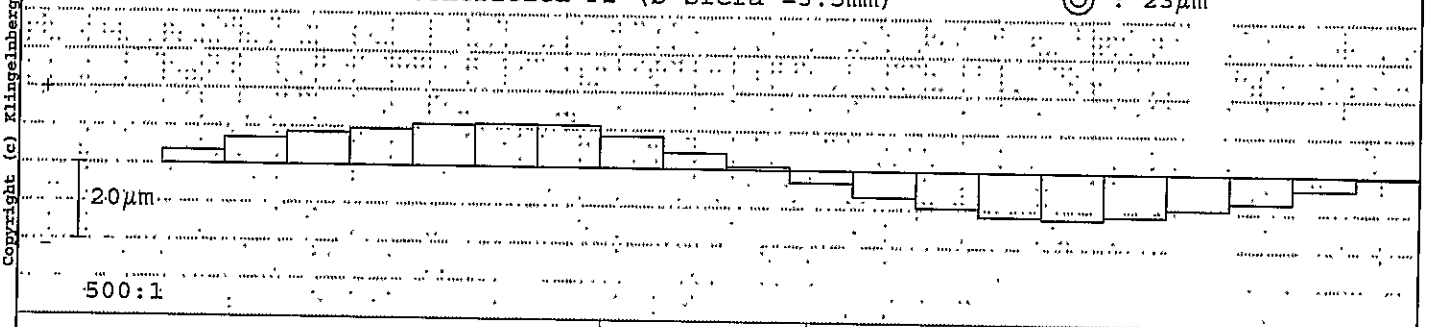
Errore somma di divisione Fp fianco destro



Corsa per misura divis.:52.625 z=17.2mm

		fianco sinistro / TIRO				fianco destro			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	4		14		4		14	
Gr. salto di passo	fu max	2		18		2		18	
Scarto di divisione	Rp	8				7			
Err. globale di divisione	Fp	21		50		18		50	
Err. cordale di divisione	Fpz/8	10				9			

Centricità Fr (Ø-sfera =3.5mm) ◎ : 23µm



Err. di concentricitá	Fr	23	40	
Variaz. spessore dente	Rs			

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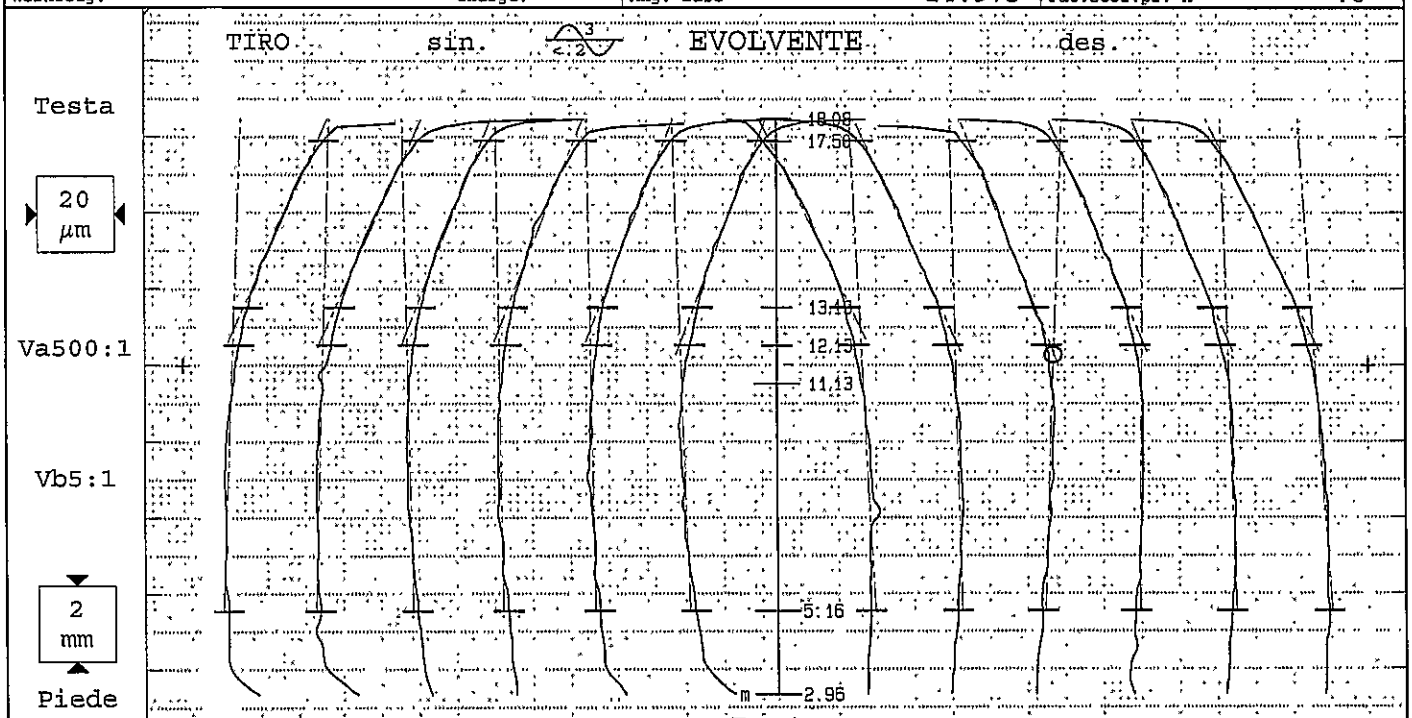
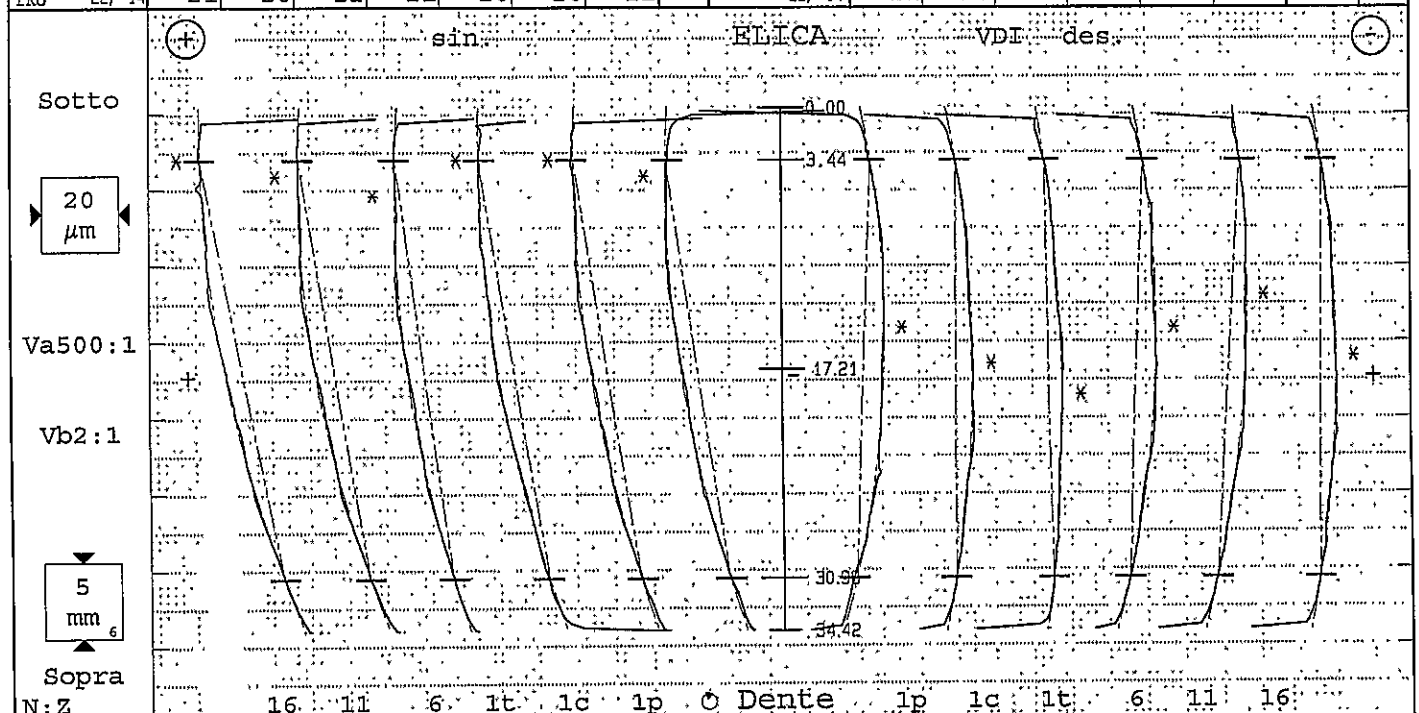
Nr. prog.: STI0410o05 0 PNC35 B4784	Controllore: turno B	Data: 11.12.2014 08:28	
Denominazione: Output Shaft 1	Numero denti z 20	Largh.fasc.dent. b 34.42mm	
Numero disegno.: 250.6.4305.35-IF	Modulo m 2.3mm	Tratto evolv. La 6.97mm	
Commessa/serie nr.: ppap pz.3	Angolo pressione 20°	Tratto elica Lß 27.54mm	
Masch.Nr.: M001 Spindel: Formmaster	Angolo elica -26.7°	Inizio elab. M1 5.16mm	
Untersuchungszweck: Laufende Messung	ø Base db 47.6847mm	Palpatore ø (#1) 1mm	
Werkzeug: Charge:	Ang. Base -24.975°	Fat.scor.pr. x .6	



Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
fHαm ±6	-1	Var 4							±6	Var 6						-2	
fHα ±7	-1	-3	-2	1	1	1	2		±7	-4	-2	2	1	-2	-5	-2	
Fα	4	4	4	3	3	3	4			7	4	4	2	4	6	4	
ffα 4	3	3	3	3	3	3	4		4	5	3	3	3	3	3	3	
fKo -22/-14	-21	-20	-22	-21	-20	-20	-22		-22/-14	-21	-23	-24	-23	-21	-22	-22	



fHßm 25±6	23	Var 8							±6	Var 7						-4
fHß 25±13	23	27	23	19	23	21	20		±13	-5	-1	2	-5	-8	-1	-4
Fß	5	4	4	6	4	4	6			7	3	6	6	7	3	5
ffß 9	2	2	2	1	1	1	2		9	2	1	1	1	1	1	1
Cß 2/6	5	5	5	5	4	4	4		2/6	6	5	3	5	5	4	5
Bd	-3															-7

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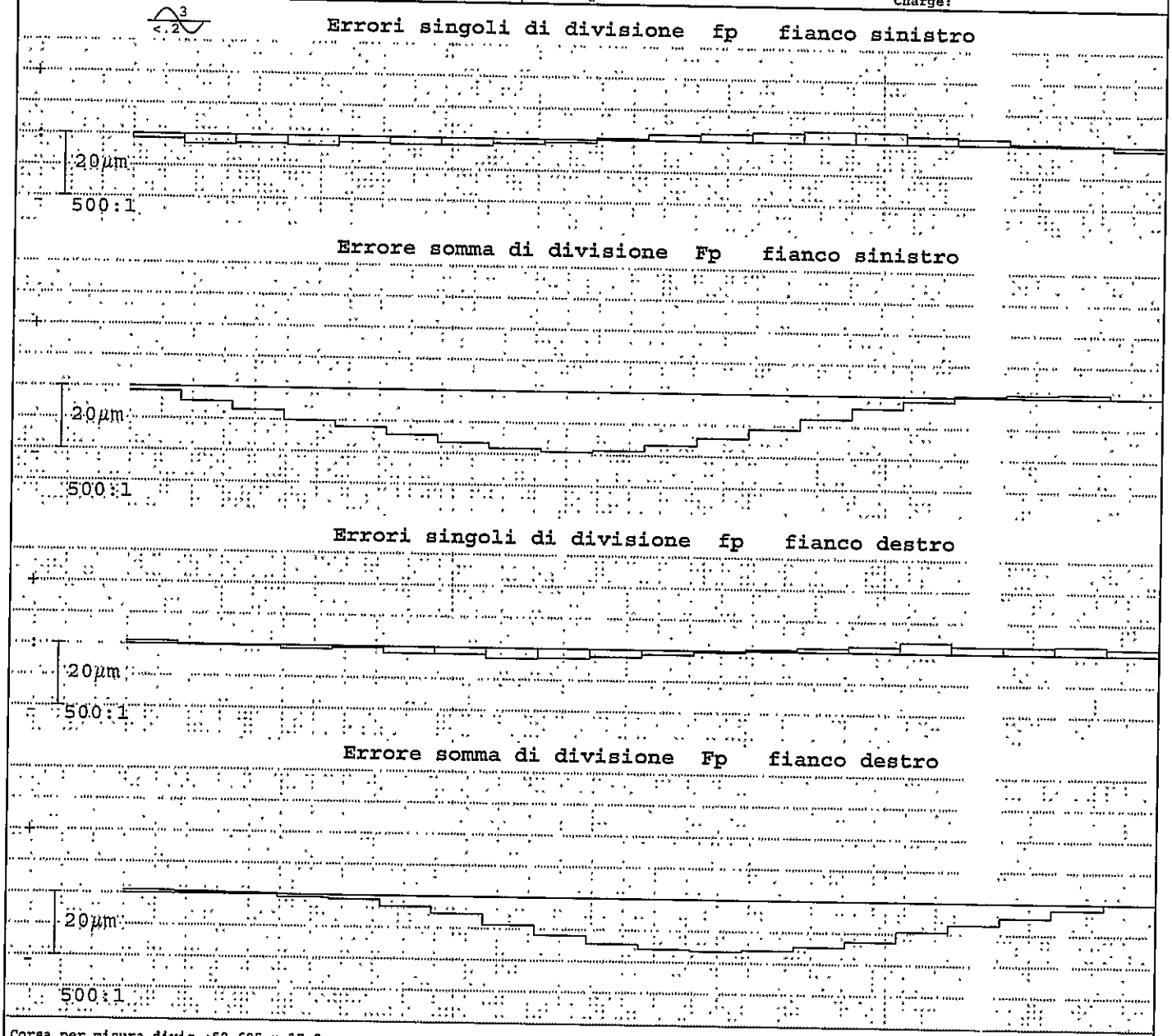
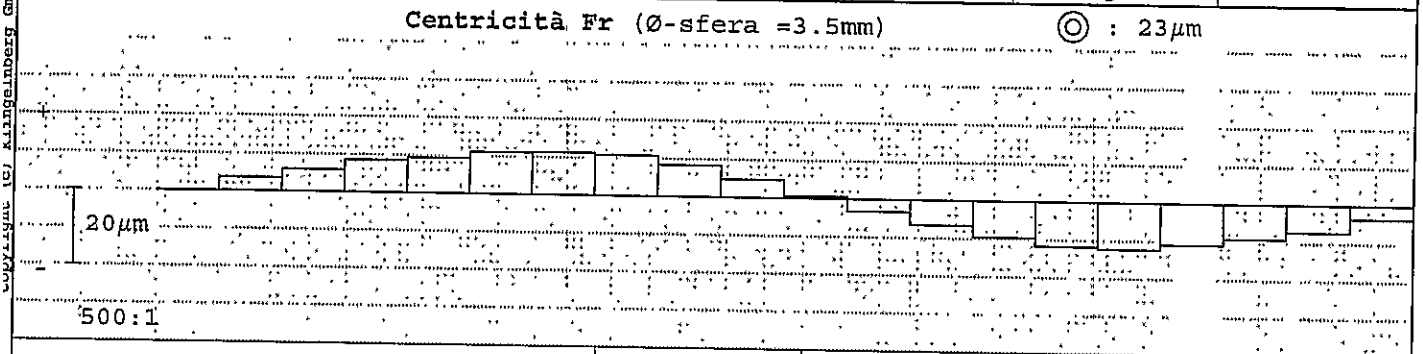
Ruota cilindrica Divisione

Nr. prog.: STI0410o05 0 PNC35 B4784	Controllore: turno B	Data: 11.12.2014 08:28	
Denominazione: Output Shaft 1	Numero denti z 20	Angolo pressione 20°	
Numero disegno.: 250.6.4305.35-IF	Modulo m 2.3mm	Angolo elica -26.7°	
Commessa/serie nr.: ppap pz.3	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001 Spindel: Formmesskeil	Werkzeug:	Charge:	



Corsa per misura divis.:52.625 z=17.2mm

		fianco sinistro / TIRO				fianco destro			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	4		14		3		14	
Gr. salto di passo	fu max	2		18		2		18	
Scarto di divisione	Rp	7				6			
Err. globale di divisione	Fp	20		50		17		50	
Err. cordale di divisione	Fpz/8	10				9			



Err. di concentricitá	Fr	24	40	
Variaz. spessore dente	Rs			

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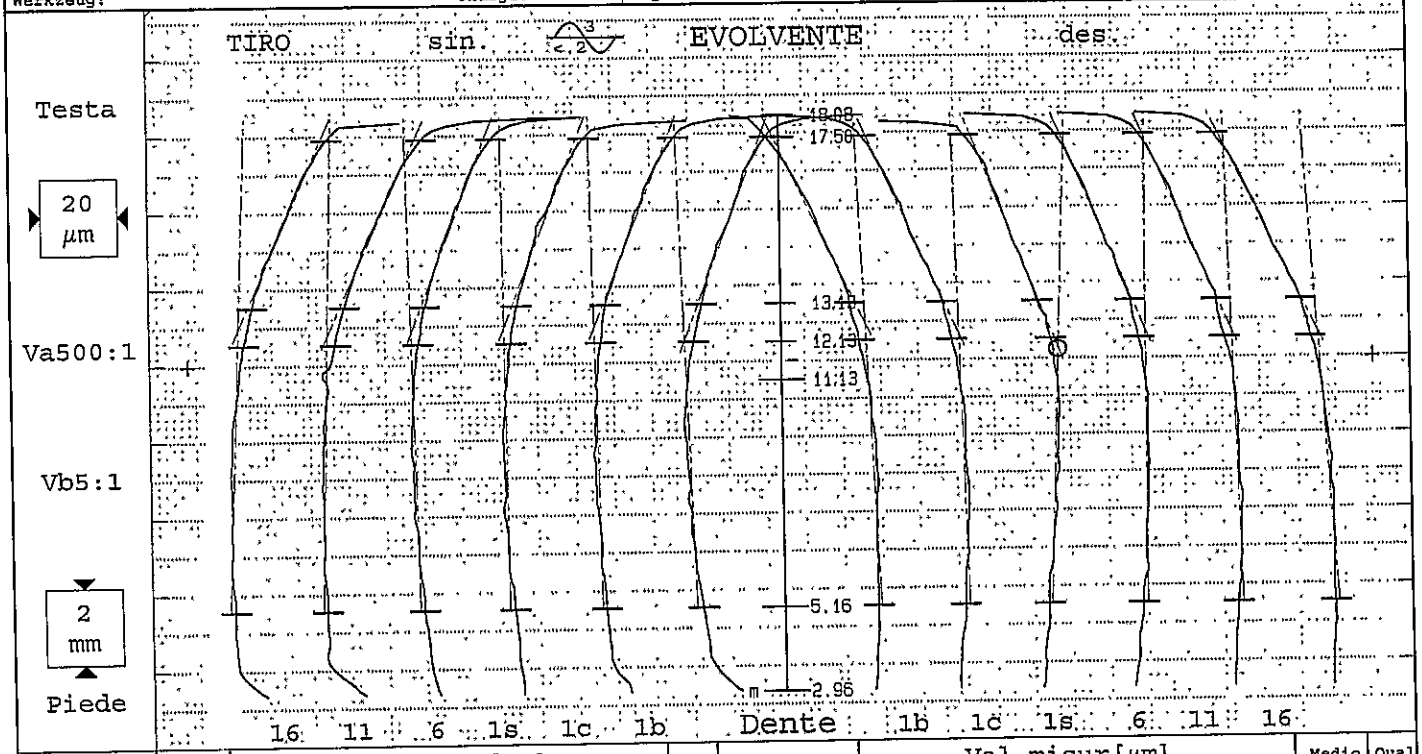
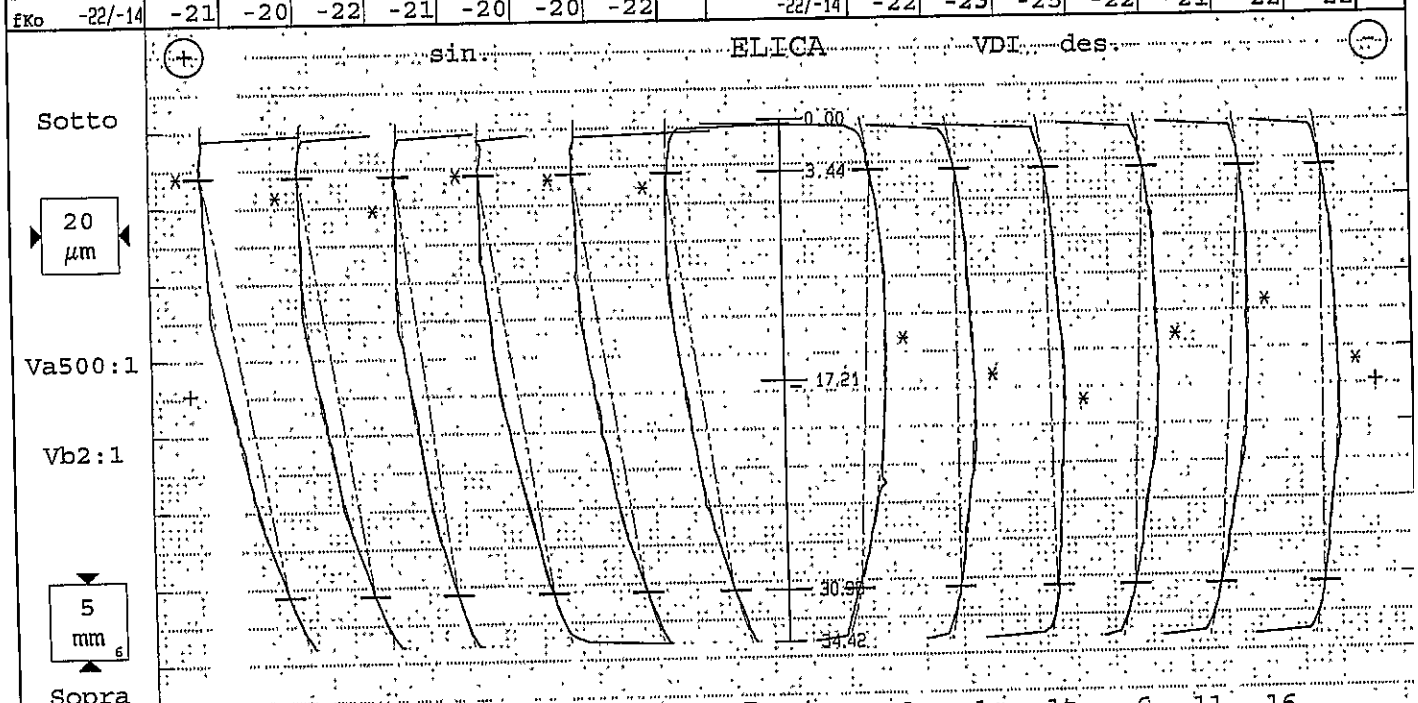
Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:23
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.4	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formnestl	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	Ø Base db	47.6847mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6



Tolerance	Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
		Var 5								Var 5							
fHαm ±6	-1								±6							-2	
fHα ±7	-1	-3	-2	2	1	1	2		±7	-3	-2	3	0	-2	-5	-2	
Fα	4	4	4	3	3	3	4			5	4	4	2	4	6	4	
ffα 4	3	3	3	3	3	3	4		4	3	3	3	2	3	3	3	
fKo -22/-14	-21	-20	-22	-21	-20	-20	-22		-22/-14	-22	-23	-25	-22	-21	-22	-22	



N:Z																
fHßm 25±6	22								±6							-4
fHß 25±13	22	27	23	18	23	21	20		±13	-5	0	2	-5	-8	-1	-4
Fß	5	4	4	6	4	4	6			7	3	5	6	7	3	5
ffß 9	2	2	2	2	1	1	2		9	3	1	1	1	2	1	1
Cß 2/6	5	5	5	4	4	4	4		2/6	5	4	3	5	5	4	5
Bd	-3															-7

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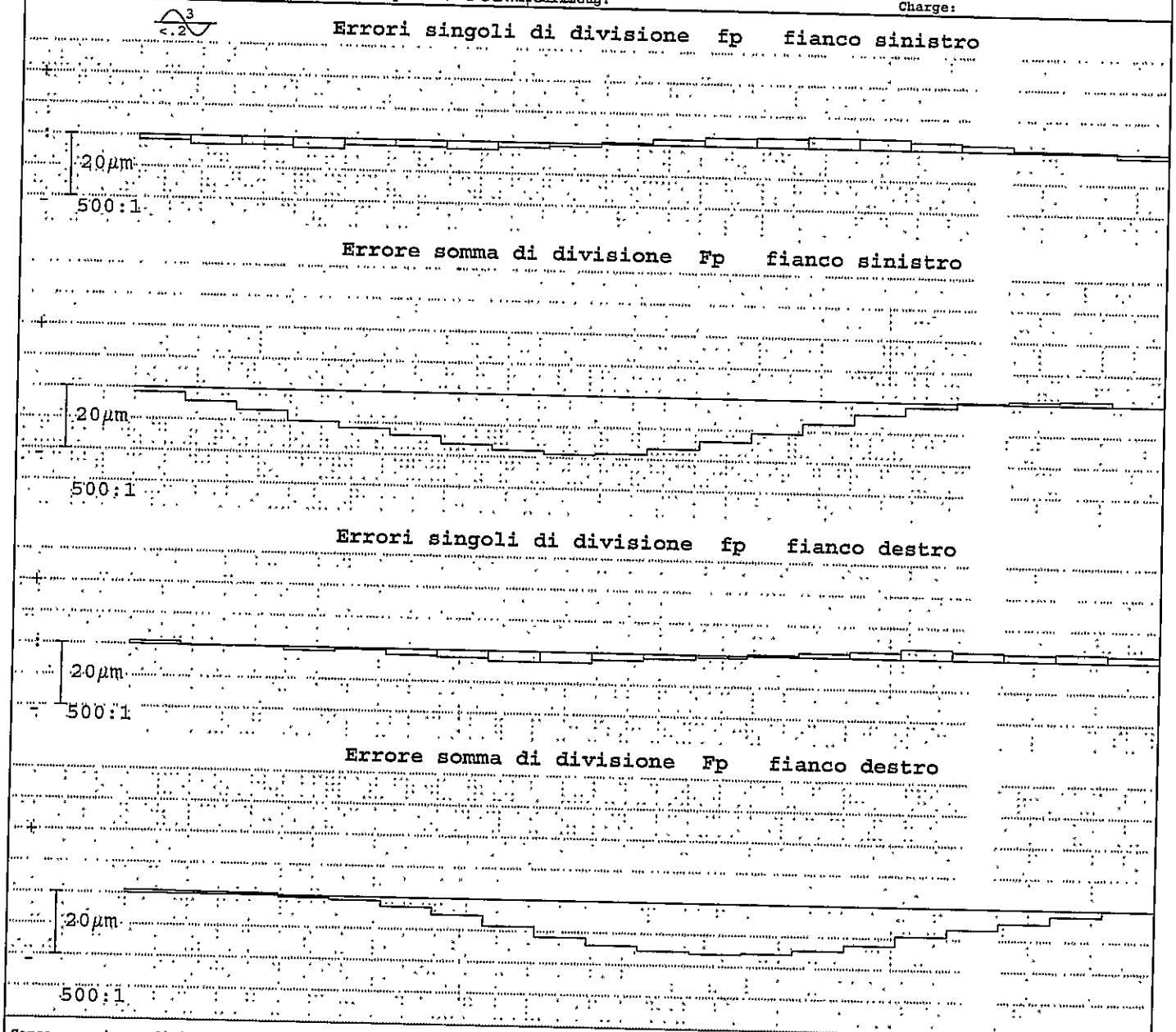
GETRAG

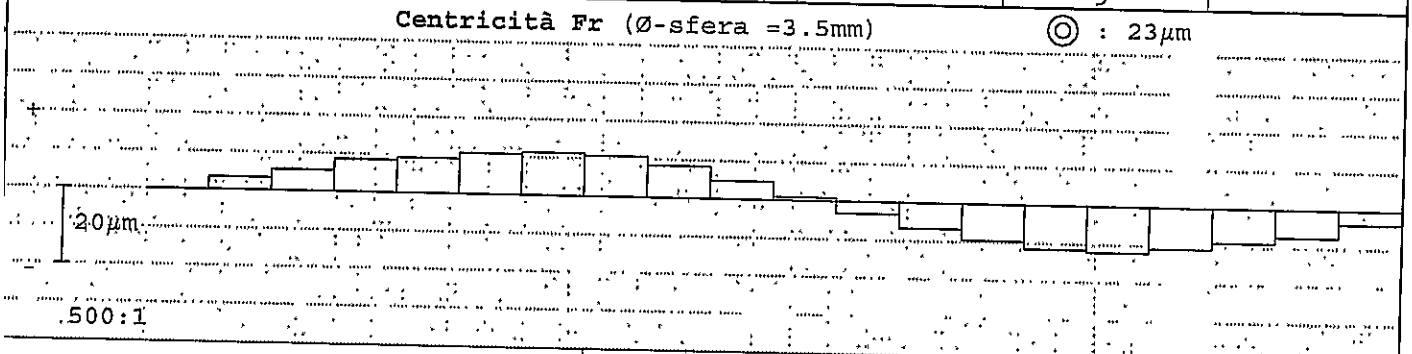
Ruota cilindrica Divisione

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:23
Denominazione:	Output Shaft 1	Numero denti z	20	Angolo pressione	20°
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Angolo elica	-26.7°
Commessa/serie nr.:	ppap pz.4	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001 Spindel: Formmaskenzeug			Charge:	



Corsa per misura divis.:52.625 z=17.2mm

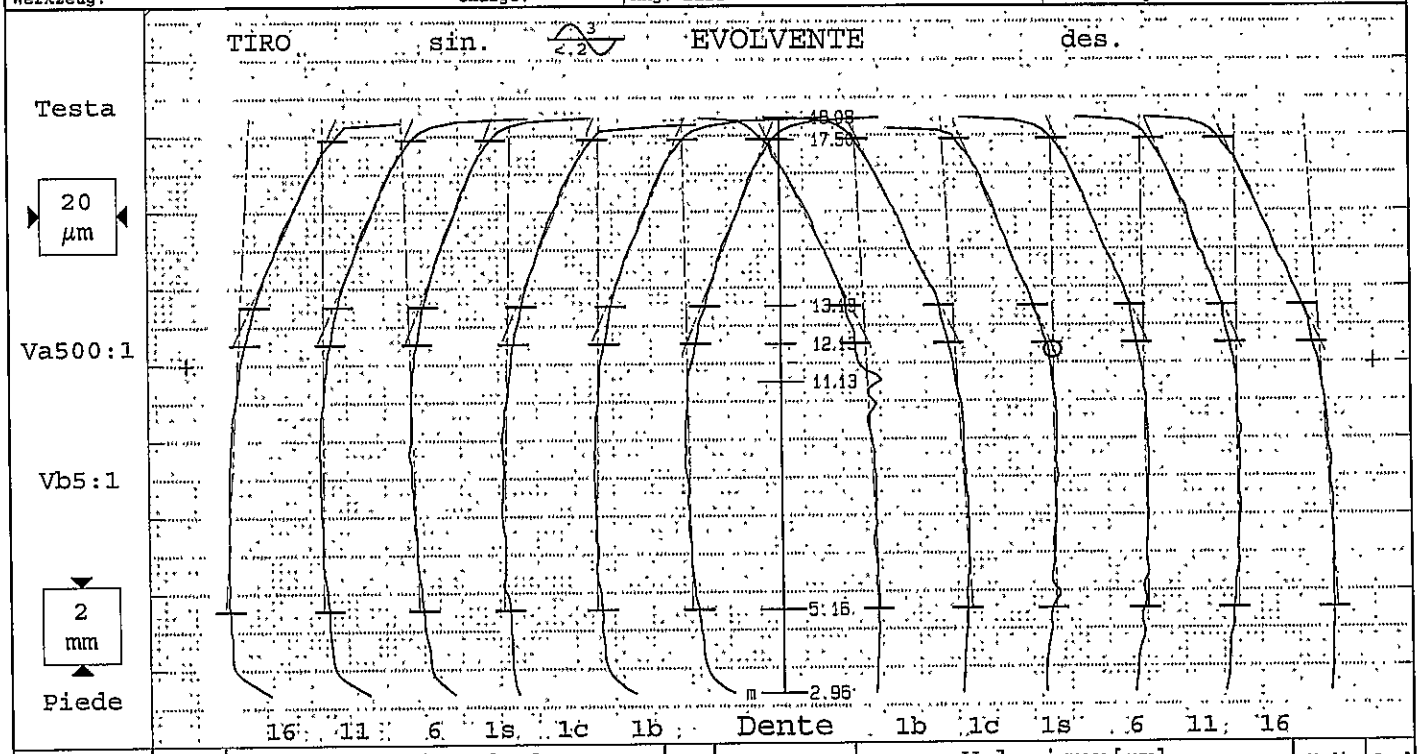
		fianco sinistro / TIRO				fianco destro			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	3		14		3		14	
Gr. salto di passo	fu max	2		18		1		18	
Scarto di divisione	Rp	6				6			
Err. globale di divisione	Fp	20		50		17		50	
Err. cordale di divisione	Fpz/8	10				9			



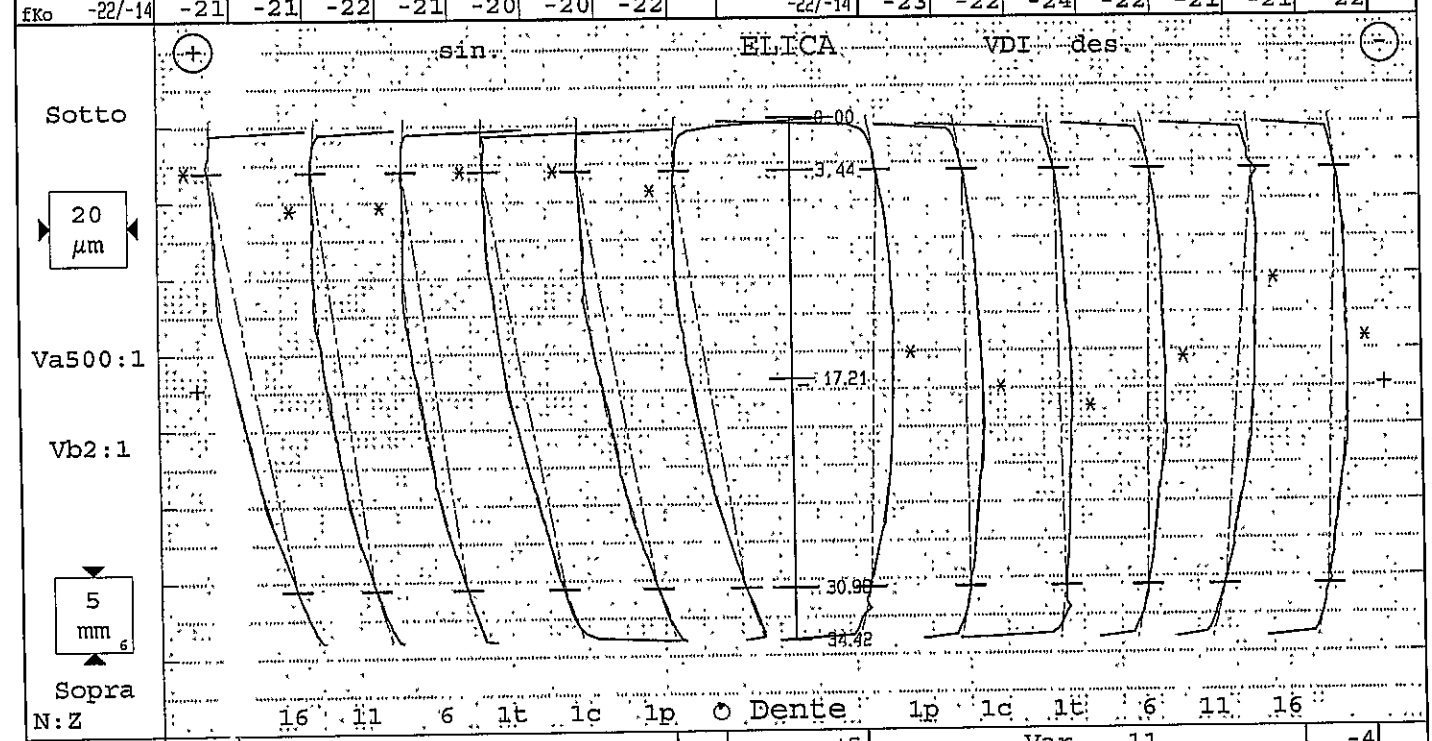
Err. di concentricitá	Fr	23	40
Variaz. spessore dente	Rs		

GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:14
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.5	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formmesst.	Angolo elica	-26.7°	Inizio elab. Mi	5.16mm
Untersuchungszweck:	Laufende Messung	Ø Base db	47.6847mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6



Tolerance	Medio	Val.misur[µm]						Qual	Tolerance	Val.misur[µm]						Medio	Qual
		Var 6								Var 4							
fHαm ±6	-1								±6							-2	
fHα ±7	-1	-4	0	2	-1	-1	1		±7	-3	-4	0	-1	0	-4	-2	
Fα	4	5	3	4	3	3	3			7	5	3	3	3	6	4	
ffα 4	3	2	3	3	3	3	3		4	6	3	3	3	3	3	3	
fKo -22/-14	-21	-21	-22	-21	-20	-20	-22		-22/-14	-23	-22	-24	-22	-21	-21	-22	



fHßm 25±6	23	Var 8							±6	Var 11						-4	
fHß 25±13	23	27	19	20	26	25	22		±13	-3	1	2	-2	-10	-4	-4	
Fß	5	5	6	5	3	3	7			5	3	3	4	10	4	5	
ffß 9	2	1	1	2	1	2	1		9	1	1	1	1	2	1	1	
Cß 2/6	5	5	5	5	4	5	5		2/6	5	4	3	4	4	4	4	
Bd	-4															-5	

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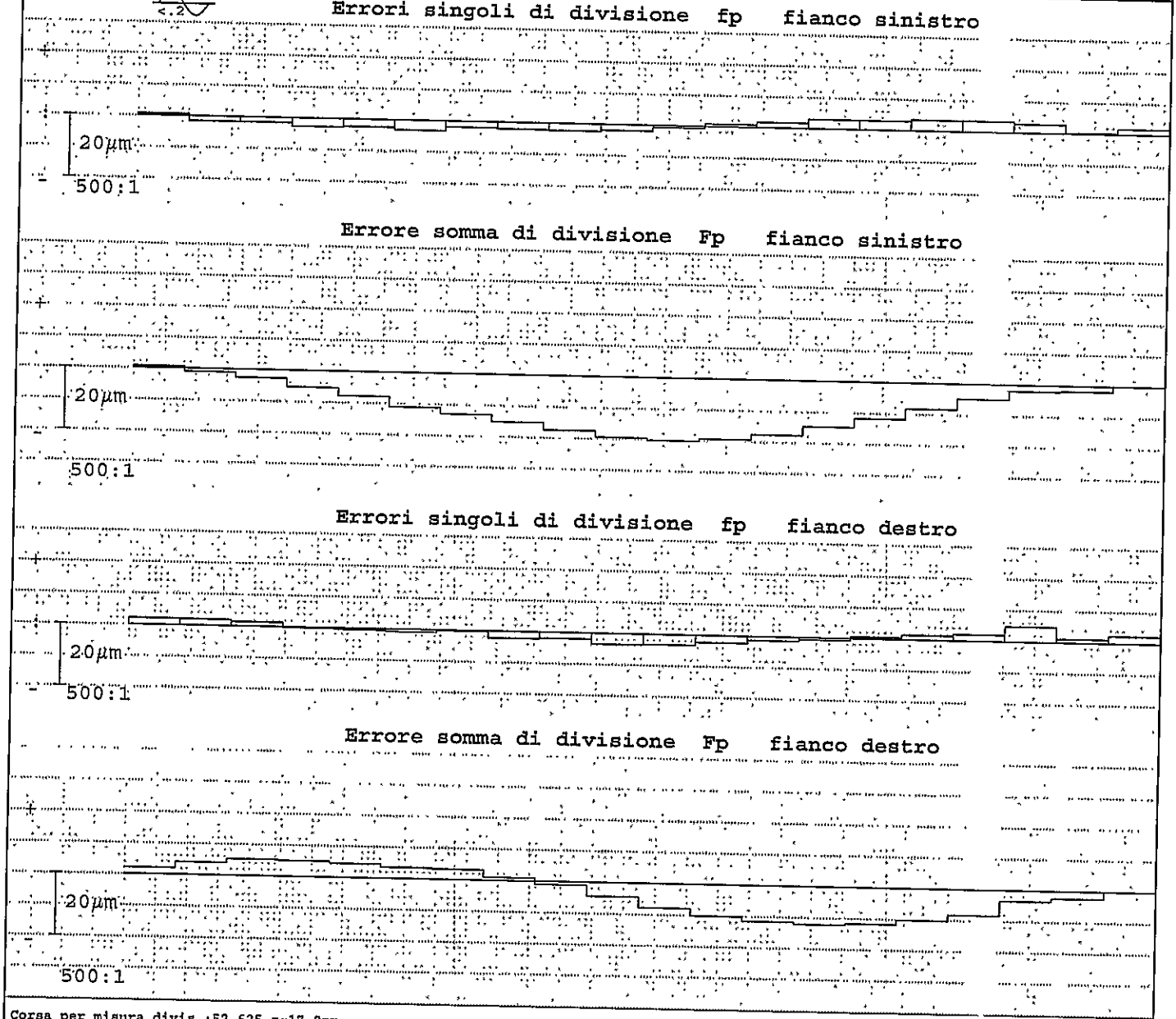
GETRAG

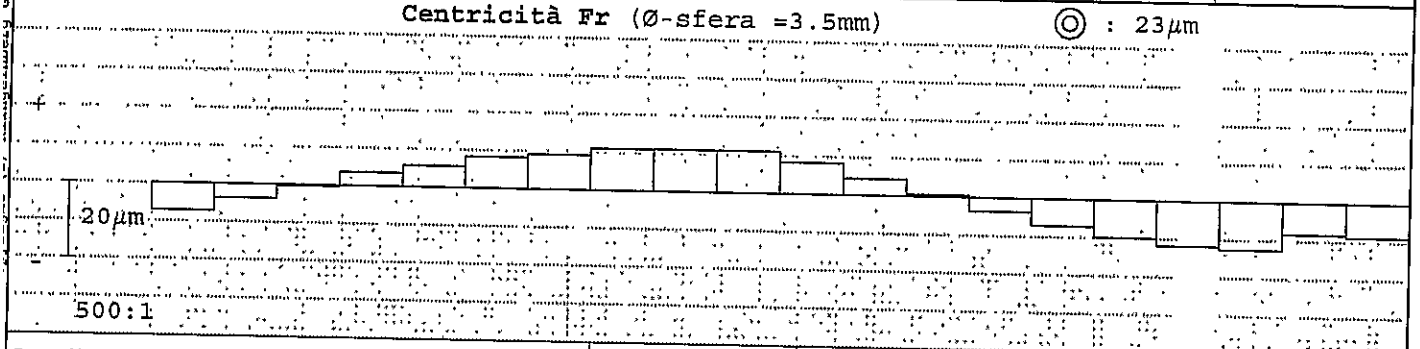
Ruota cilindrica Divisione

Nr. prog.: STI0410o05 0 PNC35 B4784	Controllore: turno B	Data: 11.12.2014 08:14	
Denominazione: Output Shaft 1	Numero denti z 20	Angolo pressione 20°	
Numero disegno.: 250.6.4305.35-IF	Modulo m 2.3mm	Angolo elica -26.7°	
Commessa/serie nr.: ppap pz.5	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001 Spindel: Formmesstech.	Werkzeug:	Charge:	



Corsa per misura divis.:52.625 z=17.2mm

		fianco sinistro / TIRO				fianco destro			
		Val.misur	Qual.	Val. amm	Qual.	Val.misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	3		14		5		14	
Gr. salto di passo	fu max	3		18		4		18	
Scarto di divisione	Rp	6				8			
Err. globale di divisione	Fp	21		50		17		50	
Err. cordale di divisione	Fpz/8	10				9			



Err. di concentricitá	Fr	24	40	
Variaz. spessore dente	Rs			

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GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:51
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.1	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formnest	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	Ø Base db	47.6847mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6

TIRO

Piede-Ø: 45.785mm [45.48/45.8]

Testa-Ø: 59.73mm [59.59/59.85]

VDI

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GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o005 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:53
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.2	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formnestl	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	ø Base db	47.6847mm	Palpatore ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6

TIRO

Piede-Ø: 45.786mm [45.48/45.8]
Testa-Ø: 59.731mm [59.59/59.85]

VDI

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GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 08:56
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.3	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formmaster	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	ø Base db	47.6847mm	Palpatore ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6

TIRO

Piede-Ø: 45.786mm [45.48/45.8]

Testa-Ø: 59.721mm [59.59/59.85]

VDI

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GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 09:00
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.4	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formnest	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	Ø Base db	47.6847mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6

TIRO

Piede-Ø: 45.785mm [45.48/45.8]

Testa-Ø: 59.731mm [59.59/59.85]

VDI

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GETRAG — Ruota cilindrica Evolvente/Elica

Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 09:02
Denominazione:	Output Shaft 1	Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4305.35-IF	Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.5	Angolo pressione	20°	Tratto elica Lß	27.54mm
Masch.Nr.:	M001 Spindel: Formnestl	Angolo elica	-26.7°	Inizio elab. M1	5.16mm
Untersuchungszweck:	Laufende Messung	Ø Base db	47.6847mm	Palpatore Ø	(#1)1mm
Werkzeug:	Charge:	Ang. Base	-24.975°	Fat.scor.pr. x	.6

TIRO

Piede-Ø: 45.783mm [45.48/45.8]

Testa-Ø: 59.724mm [59.59/59.85]

VDI

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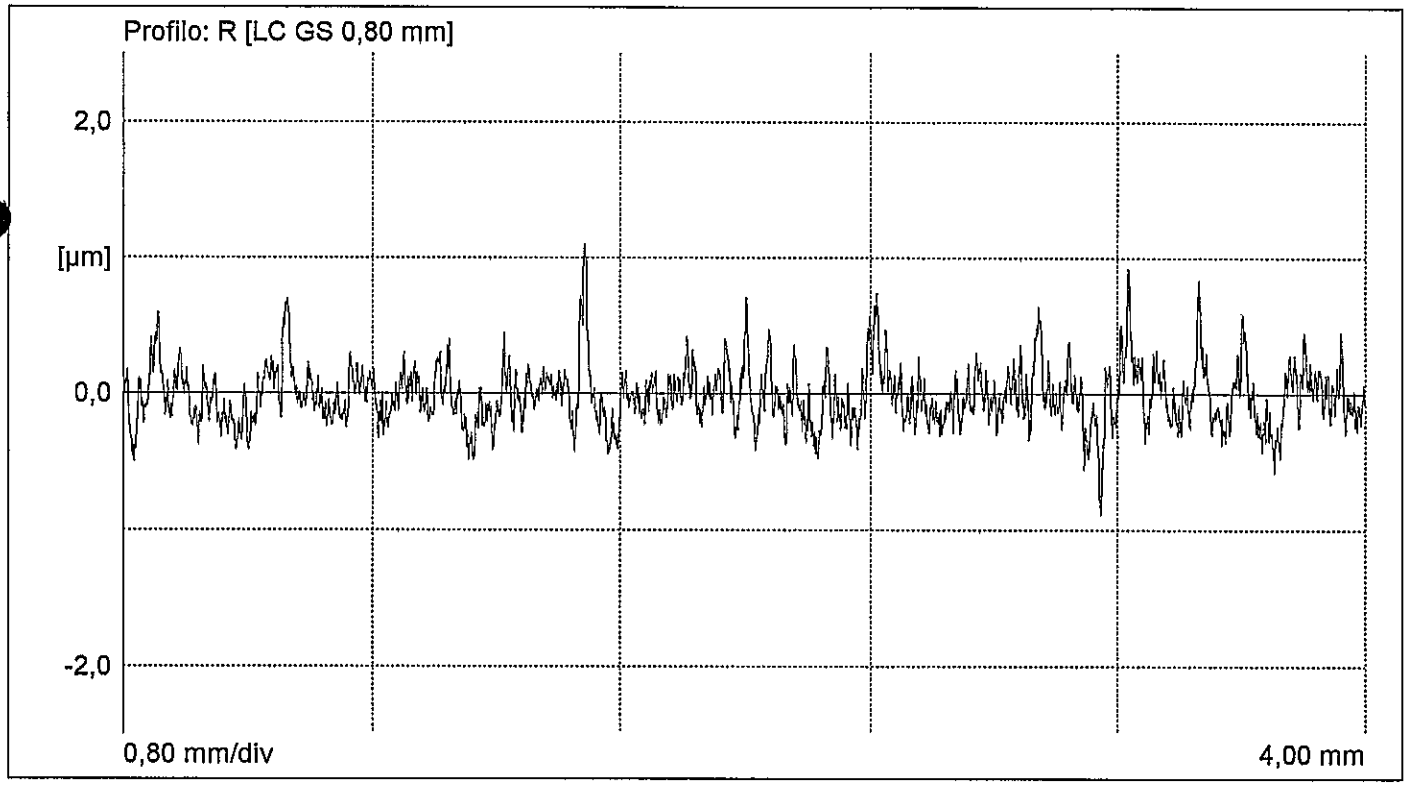
GETRAG

Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4305 PPAP PZ.1
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:14
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	0,17	µm
Rmax	1,63	µm
Rz	1,42	µm

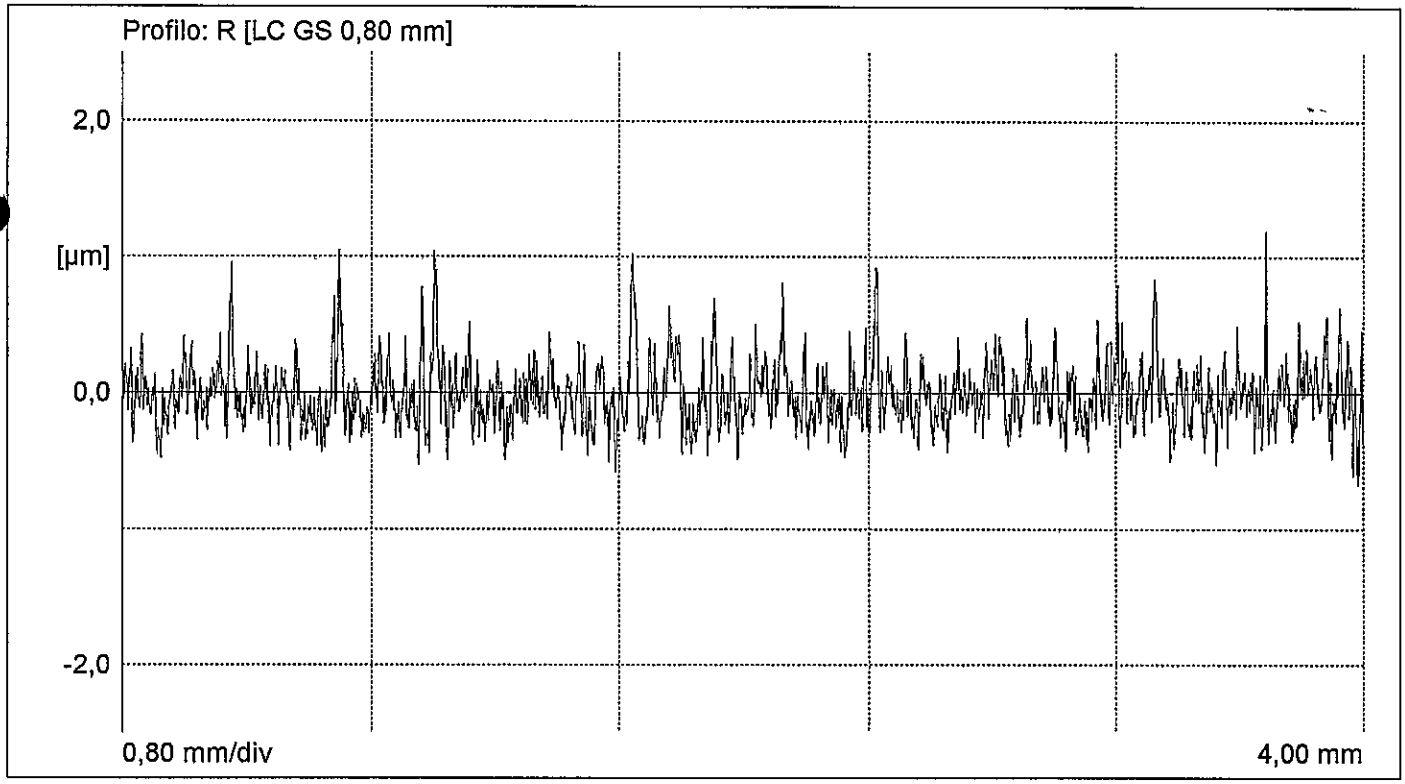
PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4305 PPAP PZ.2
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:17
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	1,85	µm
Rz	1,57	µm

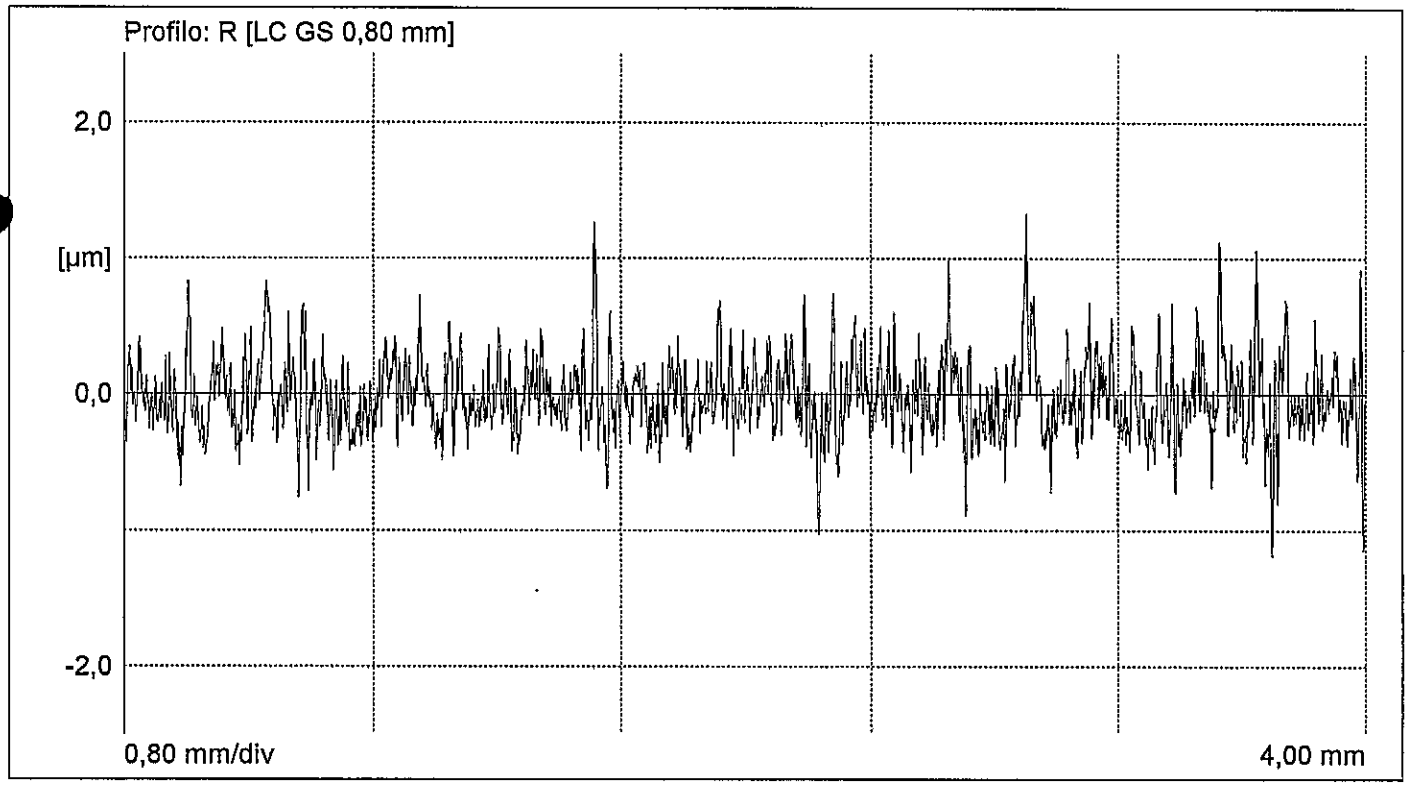
PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4305 PPAP PZ.3
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:18
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	2,31	µm
Rz	1,96	µm

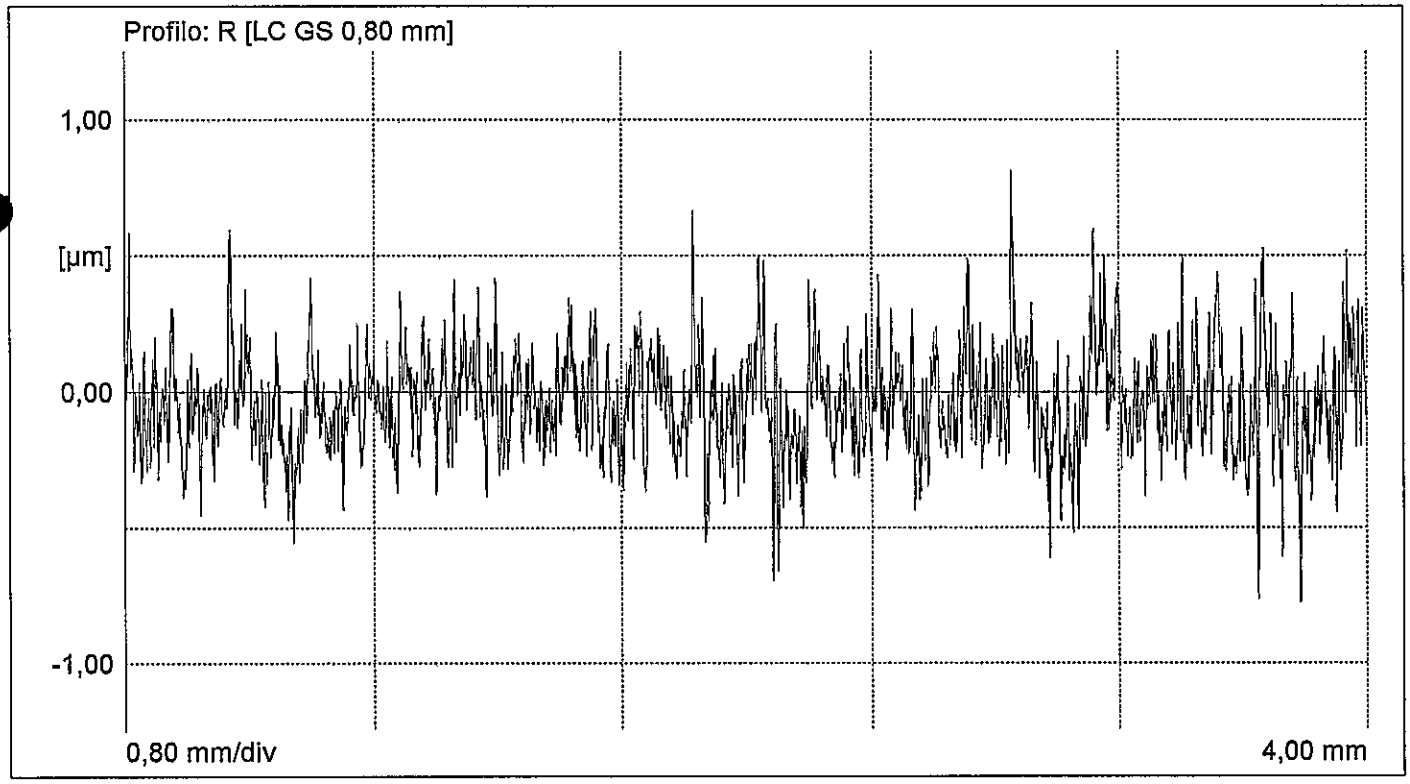
PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4305 PPAP PZ.4
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:12
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	0,14	µm
Rmax	1,42	µm
Rz	1,20	µm

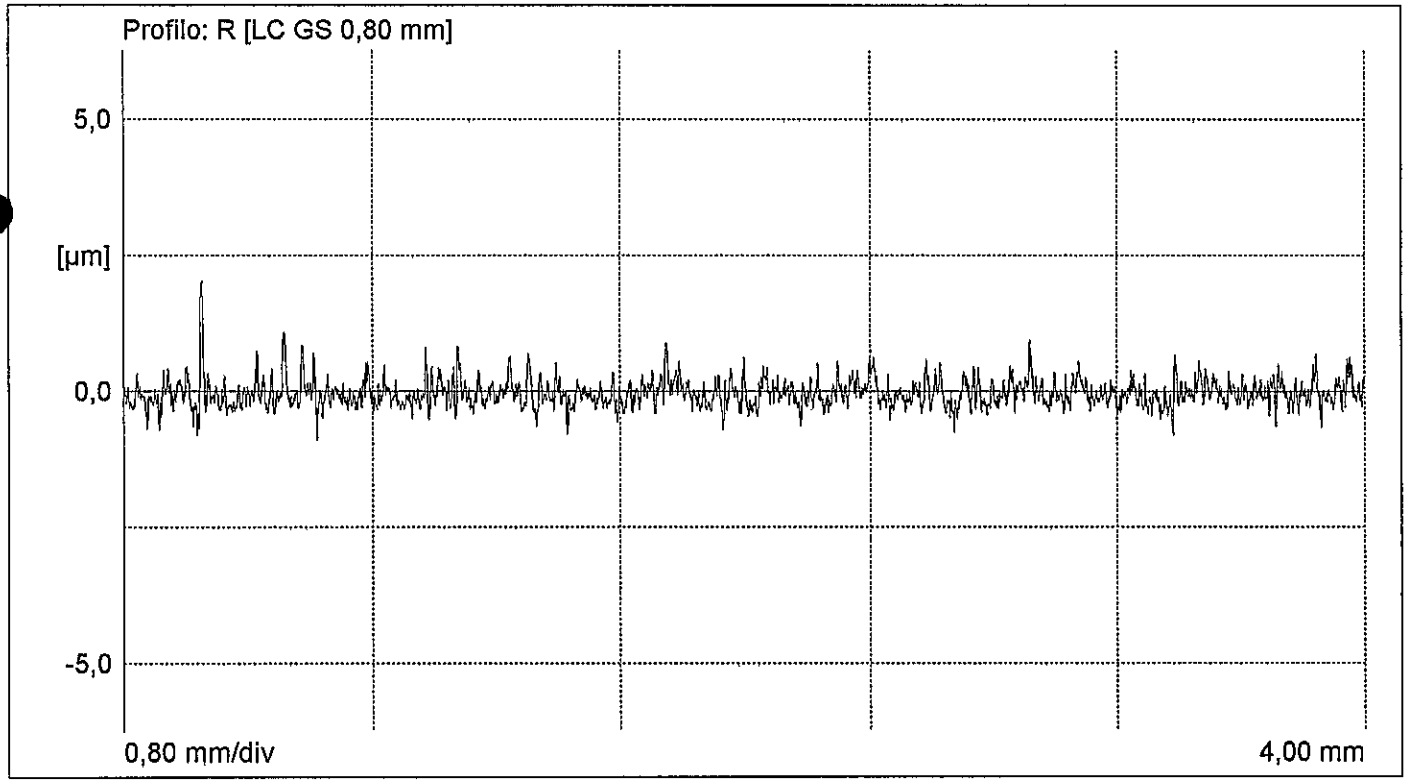
PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4305 PPAP PZ.5
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:10
Nota:	RZ DENTE
Tastatore:	MFW-250 -20
MACCHINA:	MOA 416121 002



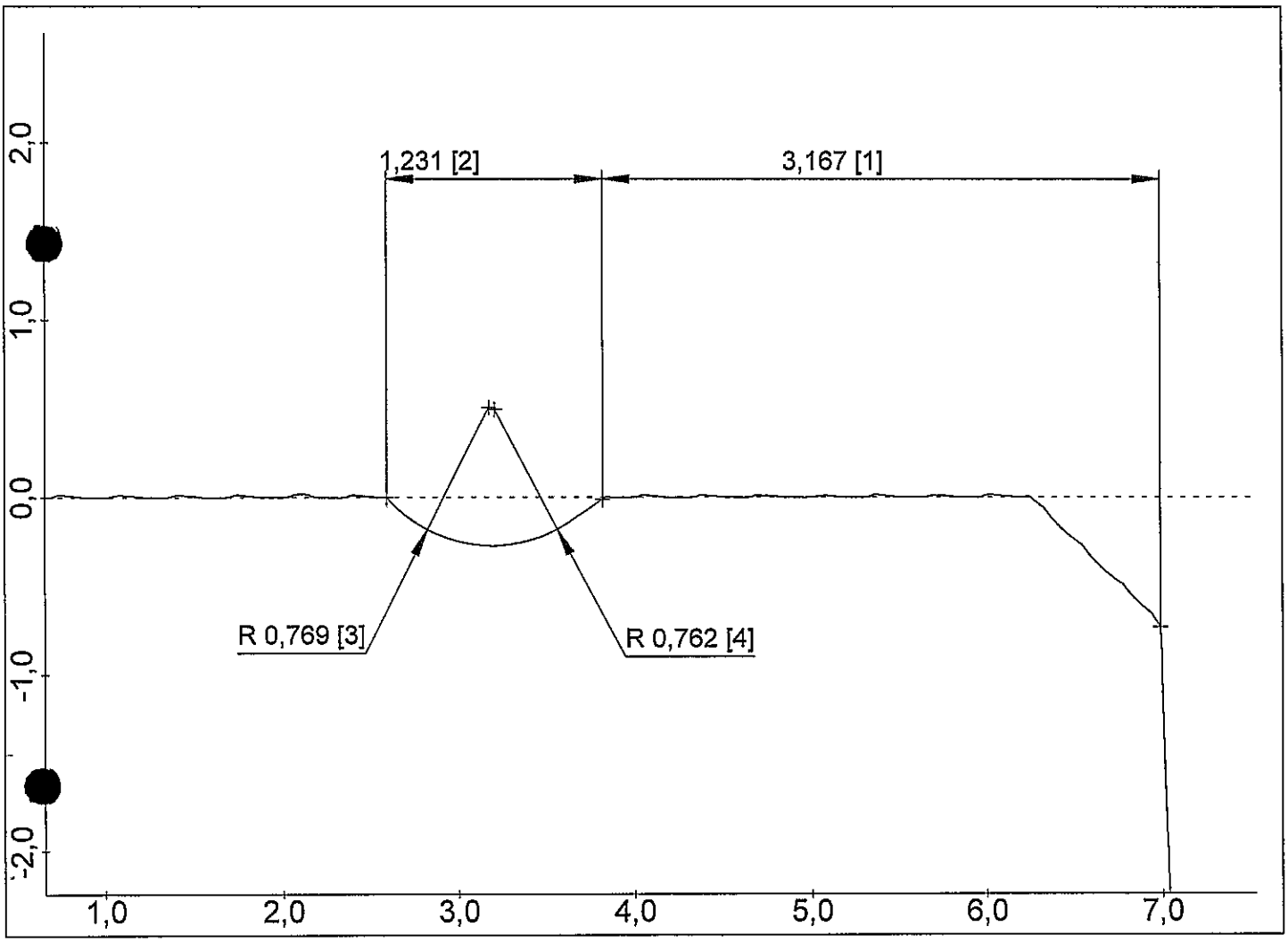
LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250	µm
Ra	0,19	µm
Rmax	2,93	µm
Rz	1,85	µm

PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	OS1
Numero:	4305 N1
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001

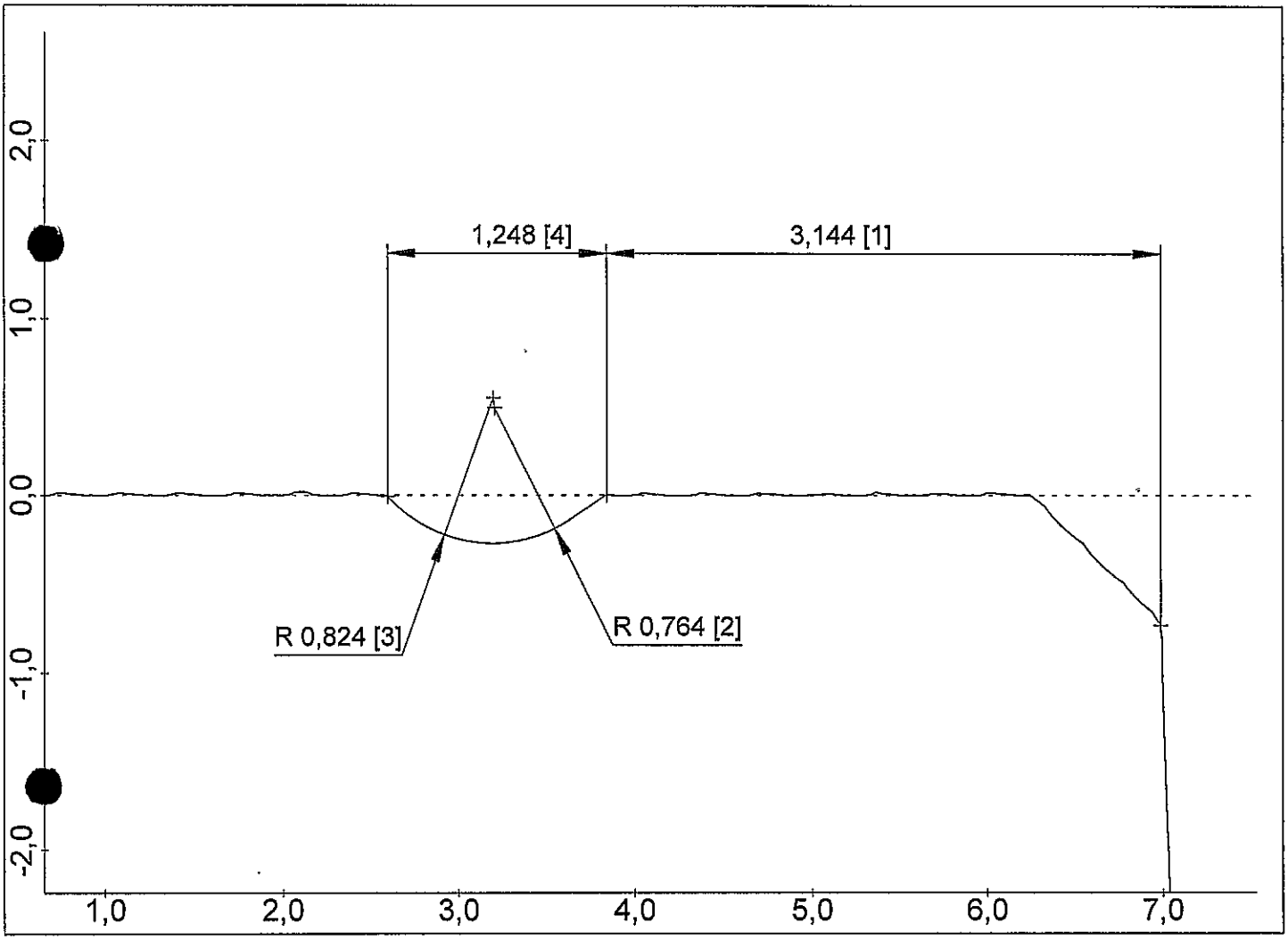


PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	OS1
Numero:	4305 N2
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001

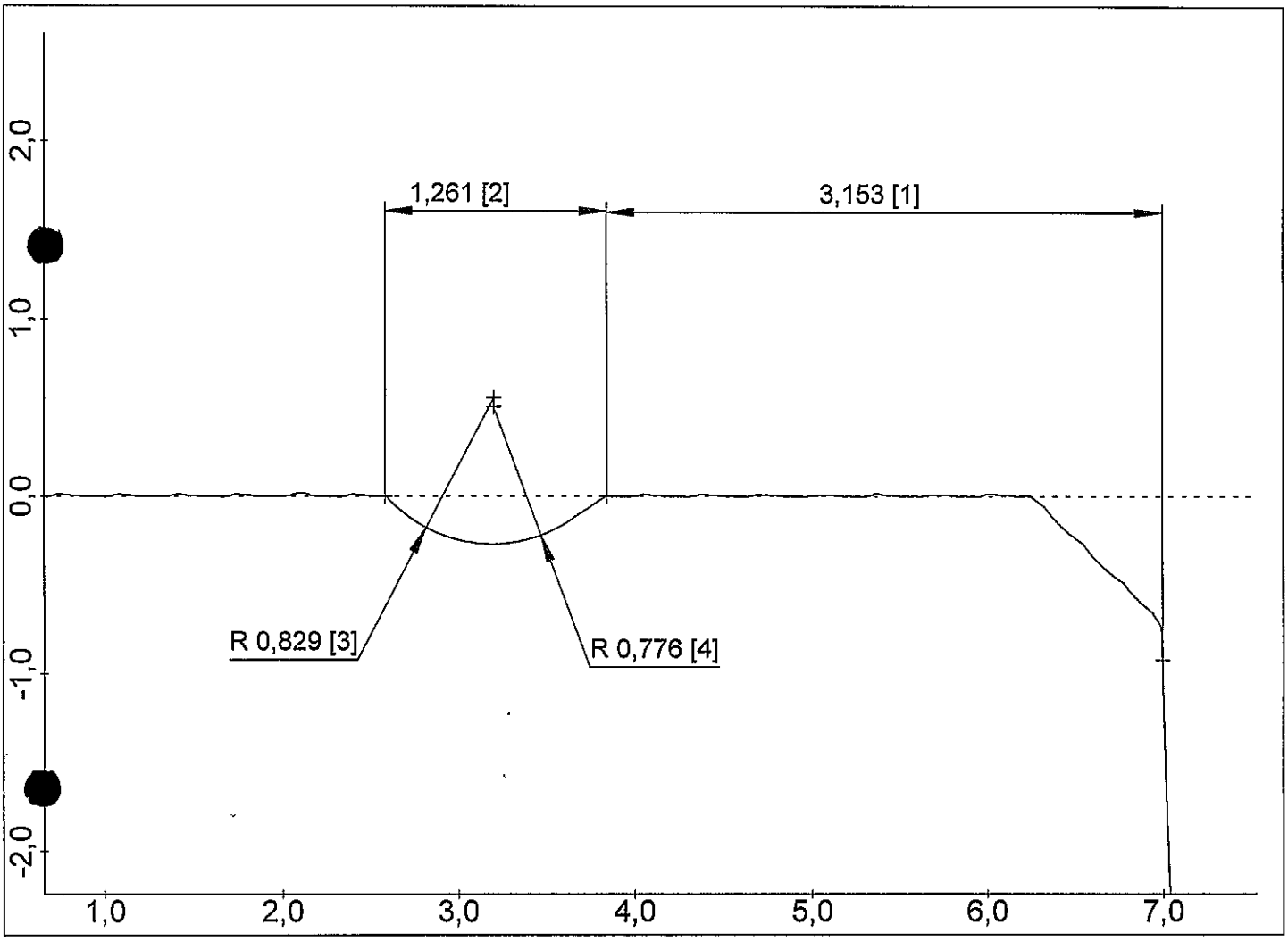


PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	OS1
Numero:	4305 N3
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001

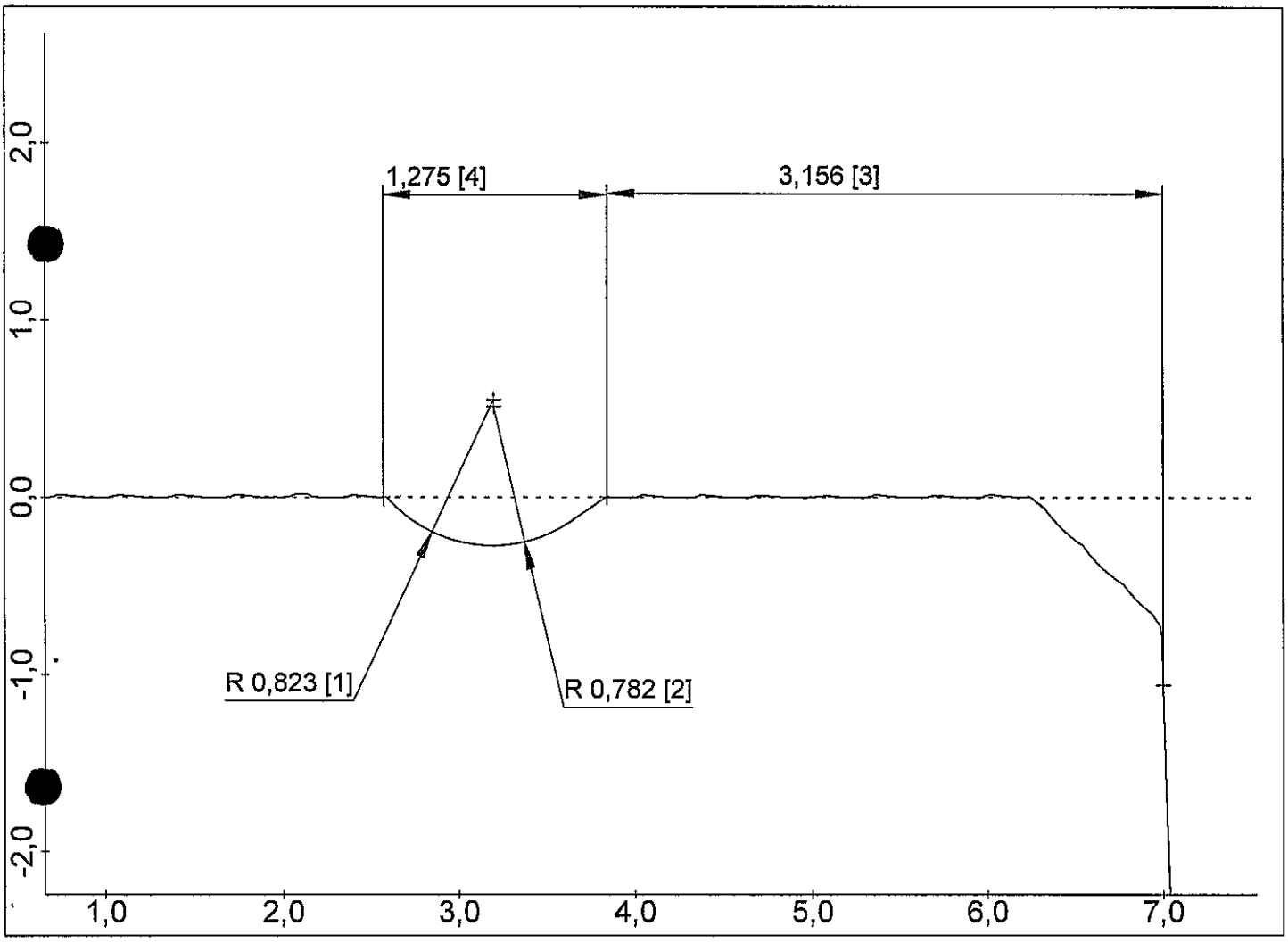


PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	OS1
Numero:	4305 N4
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001

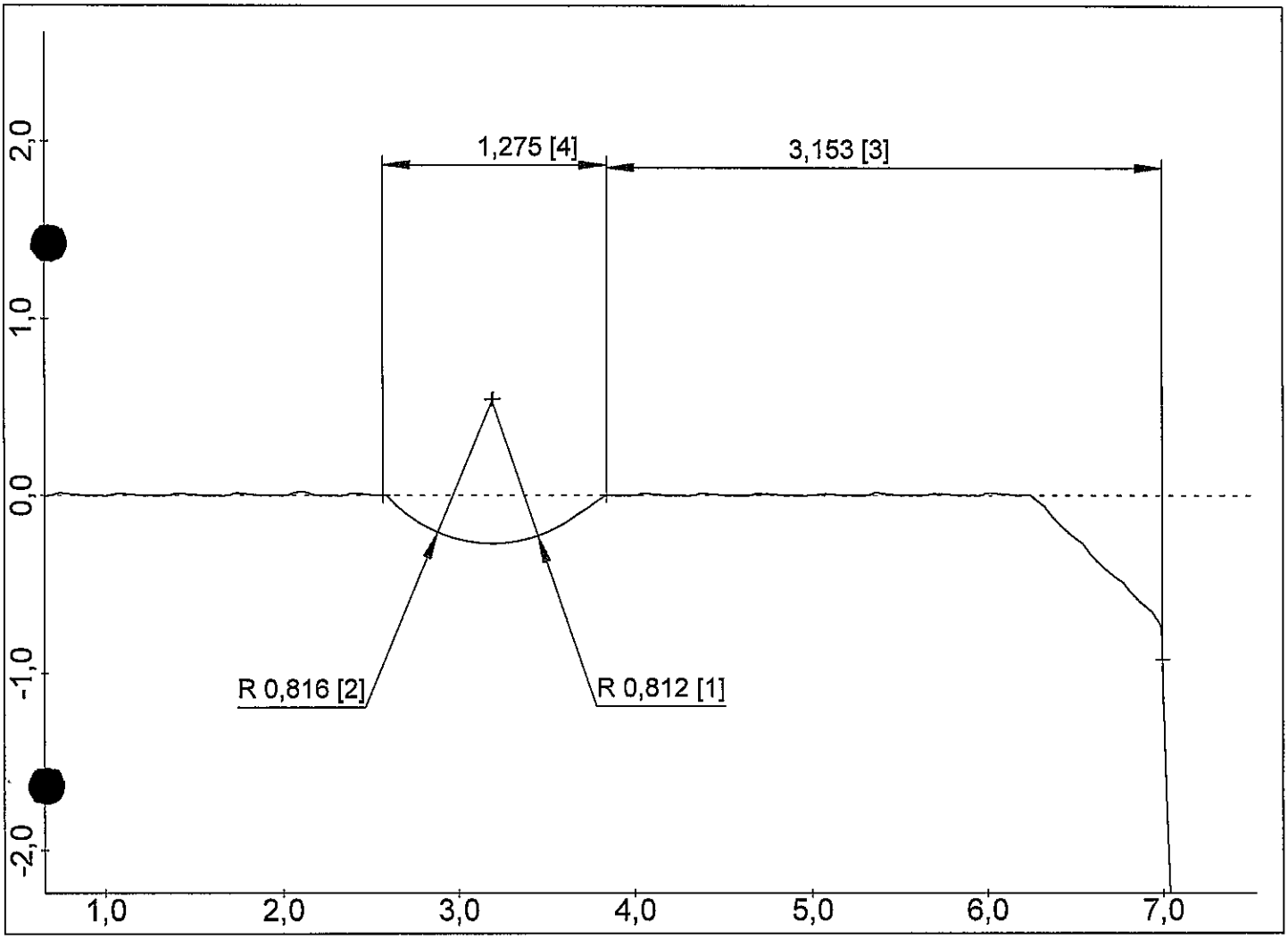


PERTHOMETER CONCEPT

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	OS1
Numero:	4305 N5
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT

GETRAG SPA - MTL Measure report

Operatore:	Data:	Numero seriale di lotto:	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS1_4305_EDISON\2506430535_Part M.mtl
Amministratore: super	16-12-2014 11:28	Pz1		Tipo: Z_PPAP\OS1_4305_EDISON
		Unità di misura:	[mm , °]	Modello: 2506430535_Part M

Nota di programm

Nota:

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
||	Part_M_D59.4	59.400	59.220	-0.180		-0.300	0.000

GETRAG SPA - MTL Measure report

Operatore:	Data:	Numero seriale di lotto:	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS1_4305_EDISON\2506430535_Part M.mtl
Amministratore: super	16-12-2014 11:30	Pz2		Tipo: Z_PPAP\OS1_4305_EDISON
		Unità di misura:	[mm , °]	Modello: 2506430535_Part M

Nota di programm:

Nota:

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
||	Part_M_D59.4	59.400	59.242	-0.158		-0.300	0.000

GETRAG SPA - MTL Measure report

Operatore:	Data:	Numero seriale di lotto: Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS1_4305_EDISON\2506430535_Part M.mtl
Amministratore: super	16-12-2014 11:30	Pz3	Tipo: Z_PPAP\OS1_4305_EDISON
		Unità di misura: [mm , °]	Modello: 2506430535_Part M

Nota di programm

Nota:

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
||	Part_M_D59.4	59.400	59.249	-0.151		-0.300	0.000

GETRAG SPA - MTL Measure report

Operatore:	Date:	Numero seriale di lotto:	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS1_4305_EDISON\2506430535_Part M.mtl
Amministratore: super	16-12-2014 11:31	Pz4		Tipo: Z_PPAP\OS1_4305_EDISON
		Unità di misura:	[mm , °]	Modello: 2506430535_Part M

Nota di programm

Nota:

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
||	Part_M_D59.4	59.400	59.217	-0.183		-0.300	0.000

GETRAG SPA - MTL Measure report

Operatore:	Data:	Numero seriale di lotto: Nr: 0	Config. file. C:\Start\Archive\Z_PPAP\OS1_4305_EDISON\2506430535_Part M.mtl
Amministratore: super	16-12-2014 11:32	Pz5	Tipo: Z_PPAP\OS1_4305_EDISON
		Unità di misura: [mm , °]	Modello: 2506430535_Part M

Nota di programm

Nota:

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
||	Part_M_D59.4	59.400	59.214	-0.186		-0.300	0.000

Istruzioni di controllo

GETRAG

PP Produzione GPS

Materiale: 2506430535
Descrizione: Albero di uscita 1 Stato:Rilasciato Produzione + Calcolo costi
Operazione: 0200 Levigatura di potenza Z= 21
Centro di lavoro: HNW15245 LEVIGATURA OS1

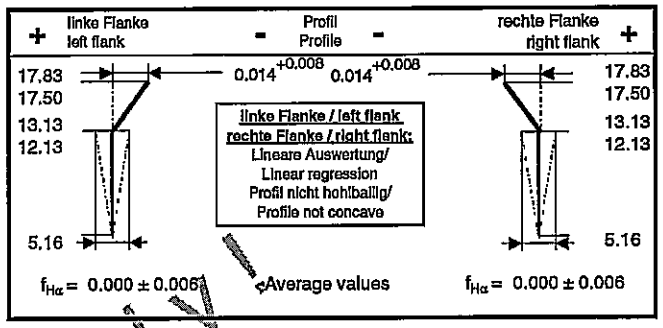
Indice del disegno finito: -
Data emissione: 07.02.2012 / Vito Fiore
Data aggiornamento: 12.11.2014 / Emiliano Zella

n. SAP ID Interno	GN 3010	Caratteristica	Misura nomin.	LTI	LTS	Strumento di controllo	Quantità	Frequenza RK1:	Quantità	Frequenza RK2:	Quantità	Frequenza Sala di misura	Cambio ut.	Metodi di gestione / Documentazione
0002		Controllo 1° pz sec. VBZ 450_802989				MVZ-400249 EVOLVENTIMETRO					1	1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo
						MOA-416121 RUGOSIMETRO TIPO PRK					1	1° pz 2.3.1.1-R 2		
0004		aspetto, privo di bava, senza danno					3	pz per rack						CR1: no documentazione
0012	M	DIAMETRO MdK DA GEAR TESTING	61,120 mm	61,087	61,153	MZA-401071 CALCOLATORE DI MISURA E9066 MARPOSS	3	pz ogni 100 per macchina						CR1: calcolatore di misura
0014		DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO					1	Ultimo PZ. prima ravvivatu ra		Misu: diagramma di dentatura
0020	M	DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO					1	1 pezzo ogni cambio parametri macchina		Misu: diagramma di dentatura
0030	M	Oscillazione Fr	0,000 mm		0,032	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac .		Misu: diagramma di dentatura
0032		Somma Passo Fp	0,000 mm		0,040	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac .		Misu: diagramma di dentatura
0042		Sup. dente completamente levigata					8	pz per rack						CR1: no documentazione

Trattare i prodotti non conformi secondo procedura 2.3.5 del Manuale dei Processi

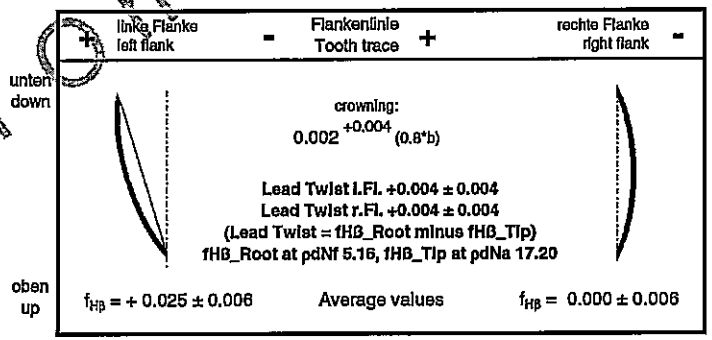
Gli audit di prodotto sono stati eseguiti secondo il piano annuale

STIRNRAD / GEAR	außenverzahnt / external	Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978) gültig für Werte am Einzelzahn / Tolerances of gearing (DIN 3961 of Aug. 1978) valid for values at individual tooth (8)				
Zähnezahl z / Number of teeth	20		linke Fl. / left flank	rechte Fl. / right flank		
Modul m_n / Normal module	2.300000	Profil-Formabweichung $f_{f\alpha}$ / Profile form error	# 0.009		Eingriffsteilungs-Abweich. f_{pe} / Normal pitch error	0.014
Eingriffswinkel α_n / Normal pressure angle	20° 0' 0"	Profil-Gesamtabweichung F_α / Total profile error			Teilungs-Einzelabweichung f_p / Adjacent pitch error	0.014
Schrägungswinkel β / Helix angle	26° 42' 0"	Profil-Winkelabweichung $f_{H\alpha}$ / Profile angle error	0.000 ± 0.007	0.000 ± 0.007	Teilungssprung f_u / Diff. bet. adjacent pitches	0.018
Steigungsrichtung / Hand of helix	LEFT	Flankenl.-Winkelabweich. $f_{H\beta}$ / Tooth alignment error	+ 0.025 ± 0.013	0.000 ± 0.013	Teilungs-Summenabweich. F_{pk} / Cumulative circ. pitch error	
Profilverschiebungsfaktor x / Addendum modification coeff.	0.600	Flankenl.-Gesamtabweich. F_β / Total alignment error			Rundlaufabweichung F_r / Radial run-out	0.040
Teilkreisdurchmesser d / Pitch diameter	51.490	Flankenl.-Formabweich. $f_{f\beta}$ / Longitudinal alignment err.	# 0.009		Zahndickenschwankung R_s / Range of tooth thickn. error	
Kopfkreisdurchmesser d_a / Outside diameter	59.85 -0.16	Teilungs-Gesamtabweich. F_p / Cumulative pitch error	0.050			
Kopfnutzkreisd. theo. max. d_{Na} / Tip diam. usable theo.	59.55	Einf.-Wälzabweichung F_i' / Tangential composite error			Zweifl.-Wälzabweichung F_i'' / Radial composite error	0.045
Kopfnutzkreisd. theo. min. d_{Na} / Tip diam. usable theo.	59.15	Einflanken-Wälzsprung f_i' / Tang. tooth to tooth comp. err.			Zweifl.-Wälzsprung f_i'' / Radial tooth to tooth comp. err.	0.018
Fußkreisdurchmesser d_f / Root diameter	45.80 -0.32	Radbreite im Meßkreis d_M b / Facewidth in meas. diam.	34.42		Meßkreis Krümmungsradius ρ_{dM} / Radius of curvature meas. diam.	11.13
Fußnutzkreisdurchmesser d_{Nf} / Root diameter usable	48.79					
Grundkreisradius r_b / Base circle radius	23.842					
Grundkreisdurchmesser d_b / Base diameter	47.685					
Normalzahndicke max. s_n / Normal tooth thickness	4.617					
Normalzahndicke min. s_n / Normal tooth thickness	4.587					
Meßzähnezahl k / Number of teeth spanned						
Zahnweite max. W_k / Base tangent length						
Zahnweite min. W_k / Base tangent length						
Meßkugeldurchmesser D_M / Ball diameter	3.5000					
Diam. Zweikugelmaß max. M_{dK} / Measurement o. balls	57.686					
Diam. Zweikugelmaß min. M_{dK} / Measurement o. balls	57.621					
Verdrehflankenspiel theo. / Circumferential backlash	0.066 / 0.172					



* Schreibbeginn
* Start of checking

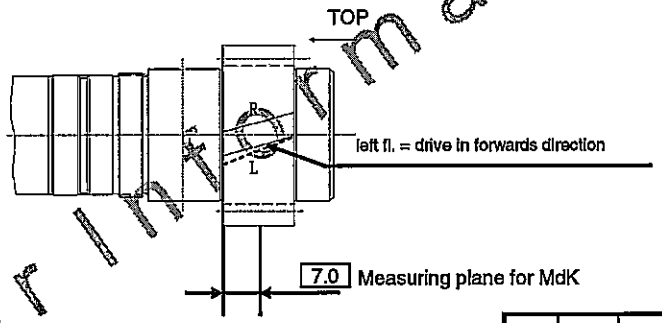
Ø 48.05 -0.30 = 2.96



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

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

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



Honing diameter: Hondurchmesser = 48.05 -0.30 = 2.96

\# 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 fp max. zwei Wellen zulässig
For fp max. two waves allowed

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

Wkz-Profil siehe Werkzeugdatenblatt Nr. / For Tooth profile, see tool data sheet number: 250.6.4305.35

Buch.	Anz.	Änd.Nr.		Datum	Name

Abbildungen sind unmaßstäblich. / Diagrams not to scale.

Ersatz für
Ersatzverwendung bei Getriebetype: 250

	Datum	Name
gez.	2012-01-30	Paaßen, Holger
gepr.		

Verzahnungsblatt Endkontrolle / Final Check Gear Data
Benennung / Naming: Output Shaft K1

Verteiler:

Schutzvermerk nach ISO 16016 beachten / Protection per ISO 16016

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

Remark:

Zeichnungsnummer / Drawing number: 250.6.4305.35

For information only