

Part Name **OUTPUT SHAFT 2** Customer Part Number **250.6.4238.35**
 Shown on Drawing No. **250.6.4238.35** Organization Part #
 Engineering Change Level **F Index (I)** Dated **30-lug-14**
 Additional Engineering Changes Dated
 Safety and/or Government Regulation Yes No Purchase Order No. Weight (kg) **1,626**
 Checking Aid No. Checking Aid Engineering Change Level Dated

ORGANIZATION MANUFACTURING INFORMATION **CUSTOMER SUBMITTAL INFORMATION**
GETRAG MODUGNO **Renault**
 Organization Name & Supplier/Vendor Code Customer Name/Division
VIA DEI CICLAMINI N°4 **Renault**
 Street Address Buyer/Buyer Code
MODUGNO BARI 70026 ITALY **TYP 250 Renault**
 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

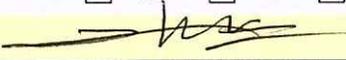
REASON FOR SUBMISSION (Check at least one)
 Initial Submission Change to Optional Construction or Material
 Engineering Change(s) Supplier or Material Source Change
 Tooling: Transfer, Replacement, Refurbishment, or additional Change in Part Processing
 Correction of Discrepancy Parts Produced at Additional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

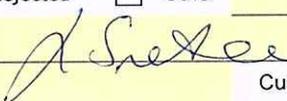
REQUESTED SUBMISSION LEVEL (Check one)
 Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.
 Level 2 - Warrant with product samples and limited supporting data submitted to customer.
 Level 3 - Warrant with product samples and complete supporting 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: 250.6.4238.35								
Supplier/Vendor Code: GETRAG Modugno					Part Name: Output Shaft 2								
INSPECTION FACILITY:					Design Record Change Level: F Index (I) 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 l	57,374	57,433		5	57,386	57,396	57,398	57,397	57,383		ok	
2	Root diameter l	46,050	46,350		5	46,175	46,178	46,175	46,176	46,175		ok	
3	Tip diameter l	59,740	59,900		5	59,756	59,748	59,821	59,742	59,754		ok	
4	Rz 4 dentatura Z19	0	4 μ		5	3,26	3,40	3,22	2,95	3,85		ok	
	Rmax 8 dentatura Z19	0	8 μ		5	4,77	3,51	3,67	3,48	4,98		ok	
5	∇ 0,032 A - B Z19	0	32 μ		5	12	8	29	26	13		ok	
6	Dettaglio "M"	-	-		5	OK	OK	OK	OK	OK		ok	
	Diametro Ø 59,45 -0,3	59,150	59,450		5	59,259	59,242	59,225	59,215	59,209		ok	

Tooth microgeometry validated by standard measurement report

SIGNATURE	TITLE	DATE
G. Cicirelli	QPE	12/01/2015

Item	Characteristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5	Device
1	MDK I	57,374±57,433	57,386	57,396	57,398	57,397	57,383	Calibro a sfere

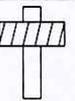
Misurazioni Manuali

OS2 2506423835

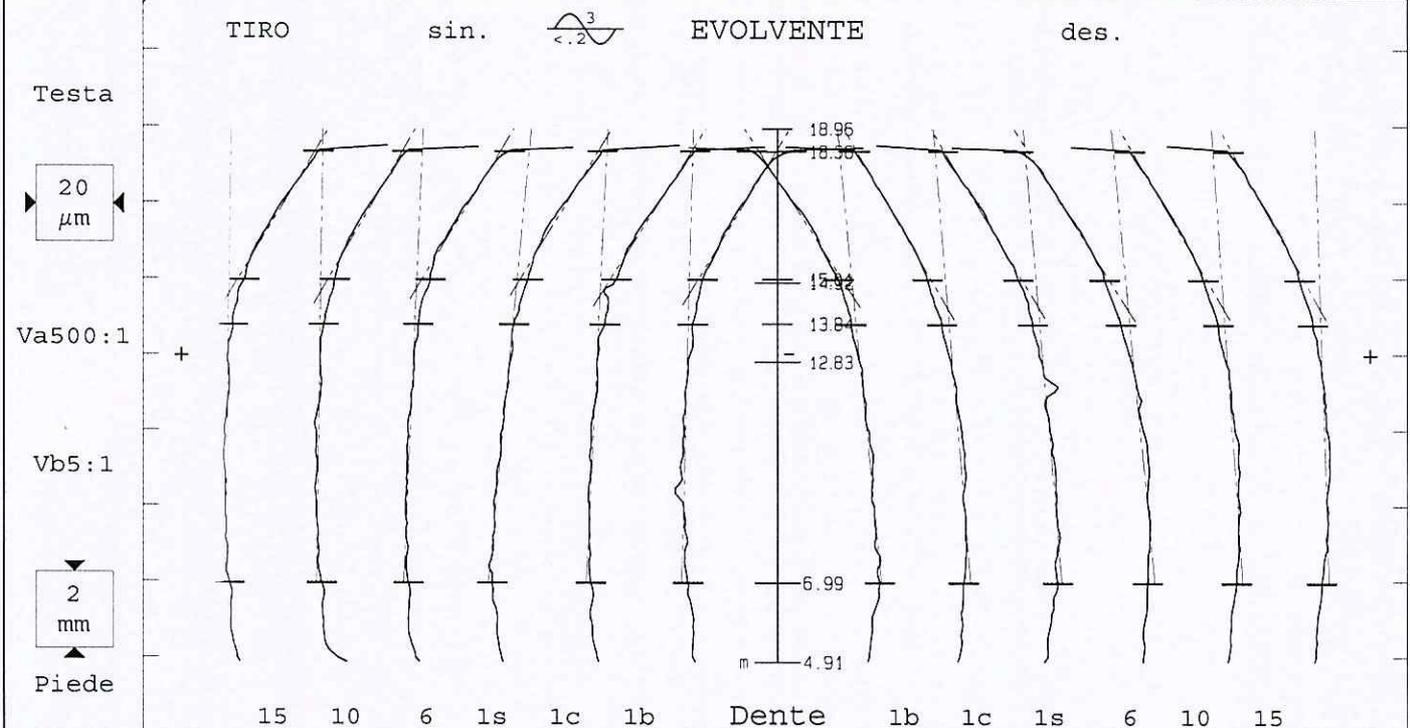
12-gen-15

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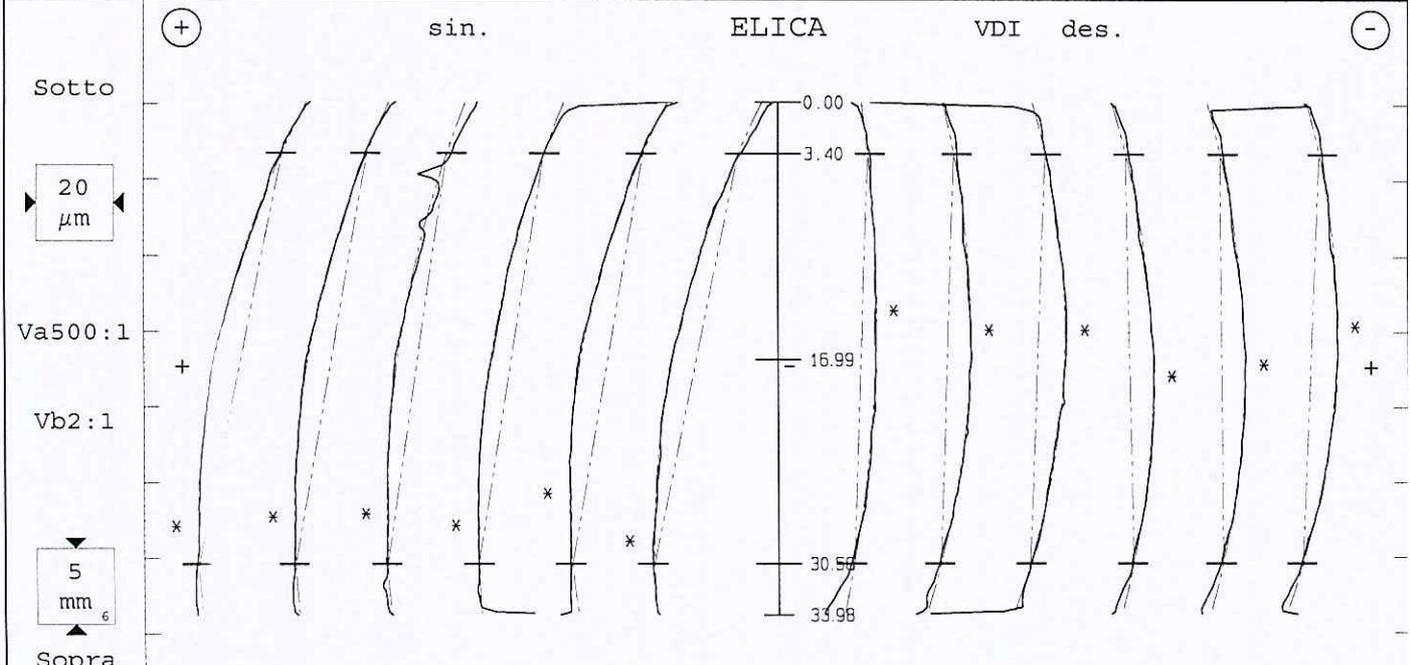
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 14:13
Denominazione:	Output Shaft 2	Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF	Modulo m	2.4mm	Tratto evolv. La	6.85mm
Commissa/serie nr.:	PZ-1	Angolo pressione	20°	Tratto elica Ls	27.18mm
Masch.Nr.:	M001	spindel: Formn. elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-22.47°	Fat.scor.pr. x	1.09

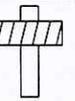


Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
fHam	±6 -2	Var 2							±6	Var 5						-5	
fHa	±7 -2	-1	-1	-3	-6	-3	-2		±7	-7	-6	-6	-7	-5	-2	-5	
Fa	3	3	2	4	7	4	5		8	7	7	8	6	5	7		
ffa	4 2	2	3	2	2	2	4		4	2	3	5	4	3	3		
fKo	-22/-14 -21	-22	-21	-20	-18	-22	-22		-22/-14	-21	-21	-21	-22	-21	-22	-22	

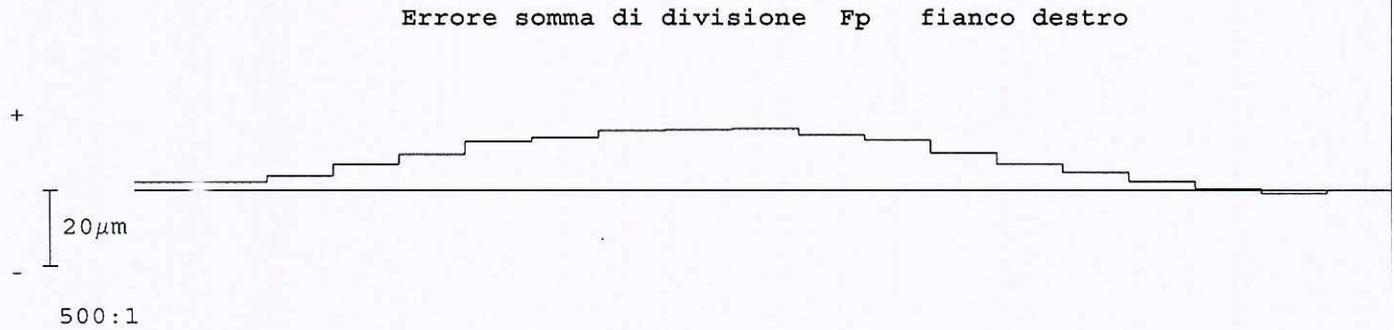


N:Z	Tolerance	Medio	Var 7						Qual	Tolerance	Var 9						Medio	Qual
fHsm	-25±6	-24	Var 7							±6	Var 9						-2	
fHs	-25±13	-24	-27	-24	-20	-22	-23	-27		±13	-5	-4	-5	3	1	-6	-2	
Fß	16	7	6	5	11	5	6	6		16	5	7	8	5	34	8	14	
ffß	9	3	1	1	7	1	1	1		9	2	2	1	2	1	2	2	
Cß	2/6	6	7	6	5	5	7	6		2/6	4	6	7	6	6	7	6	
Bd		-5															0	

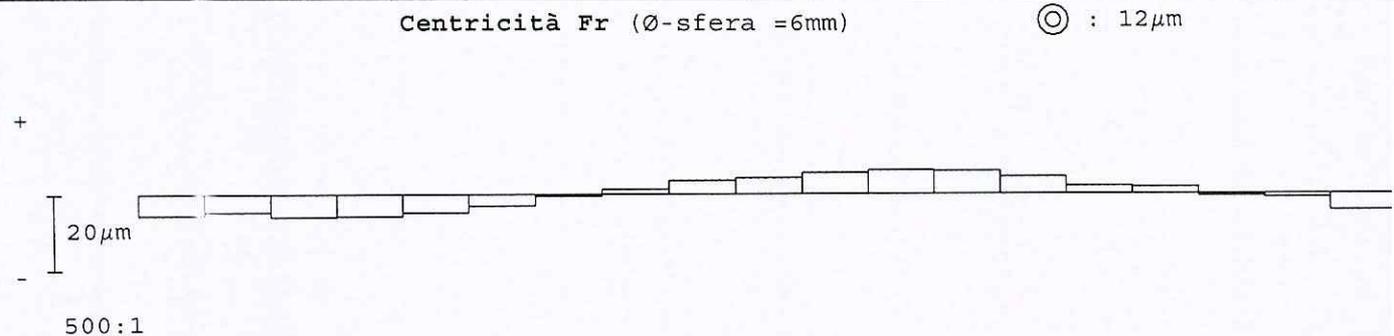




Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 14:47
Denominazione:	Output Shaft 2	Numero denti z	19	Angolo pressione	20°
Numero disegno.:	250.6.4238.35-IF	Modulo m	2.4mm	Angolo elica	-24°
Comessa/serie nr.:	Pz-1	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	FORMER	Arbeitszeug:	Charge:



Corsa per misura divis.: 55.142 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	4		14		3		14	
Gr. salto di passo	fu max	5		18		2		18	
Scarto di divisione	Rp	7				6			
Err. globale di divisione	Fp	12		40		17		40	
Err. cordale di divisione	Fpz/8	6				6			

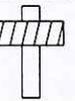


Err. di concentricità	Fr	12	32
Variaz. spessore dente	Rs		

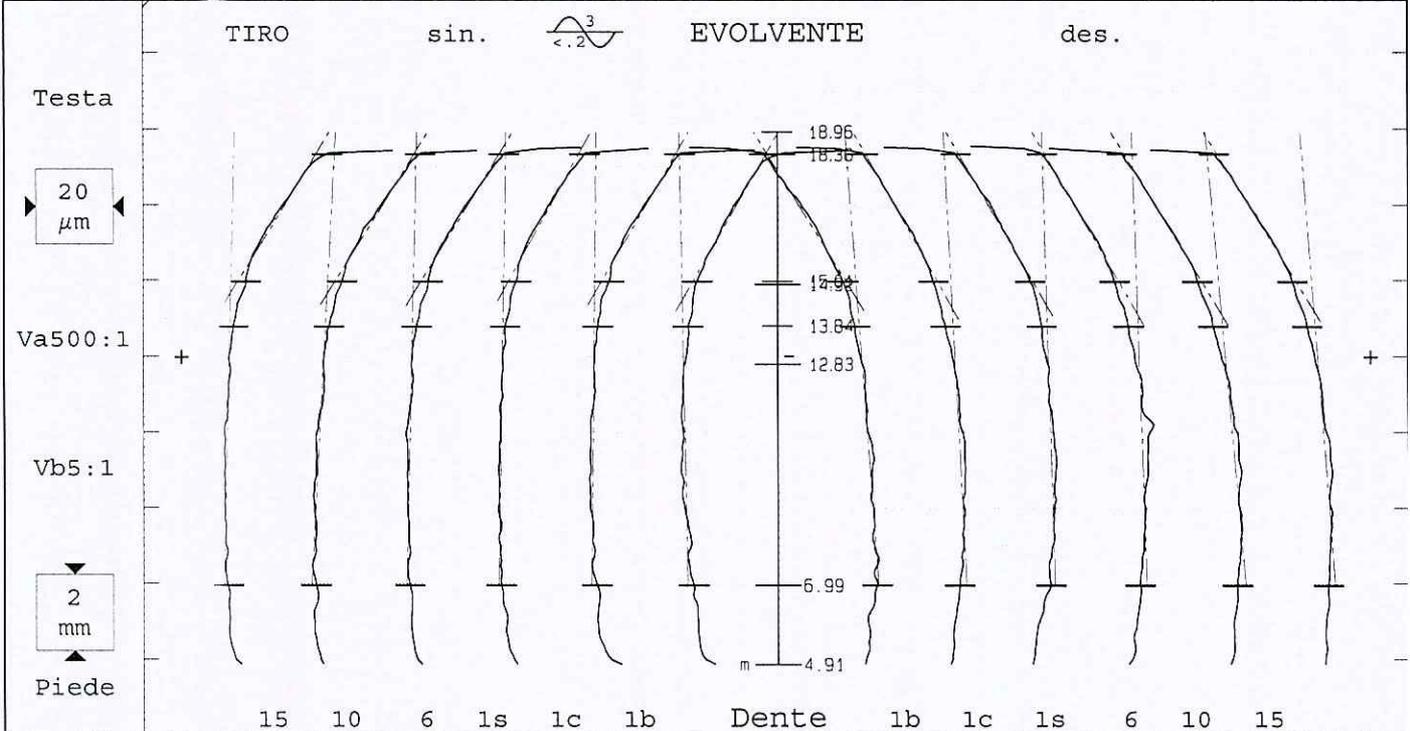


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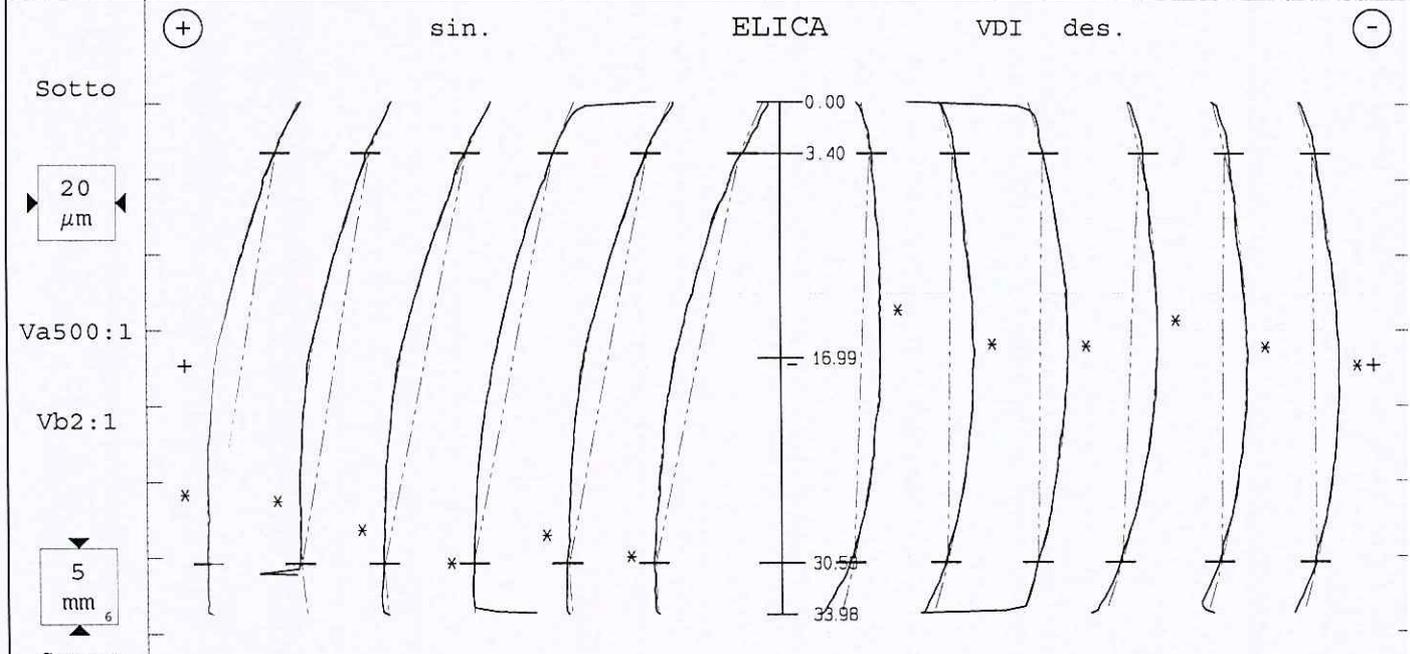
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	TURNO c	Data:	09.01.2015 14:20	
Denominazione:	Output Shaft 2	Numero denti z	19	Largh.fasc.dent. b	33.98mm	
Numero disegno.:	250.6.4238.35-IF	Modulo m	2.4mm	Tratto evolv. La	6.85mm	
Comessa/serie nr.:	Pz-2	Angolo pressione	20°	Tratto elica Ls	27.18mm	
Masch.Nr.:	M001	spindel: Forme	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm	
Werkzeug:	Charge:	Ang. Base	-22.47°	Fat.scor.pr. x	1.09	



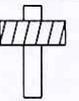
Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual	
fH _{am}	±6	-2	Var 3							±6	Var 4						-4	
fH _a	±7	-2	-2	-4	-2	-1	-1	1		±7	-5	-3	-2	-2	-6	-5	-4	
F _a	3	3	2	5	3	2	2	3		4	6	5	4	7	8	7	7	
ff _a	4	2	2	2	2	1	2	3		4	2	3	3	6	4	4	4	
fK _o	-22/-14	-21	-21	-21	-22	-19	-21	-22		-22/-14	-21	-21	-22	-23	-22	-22	-22	



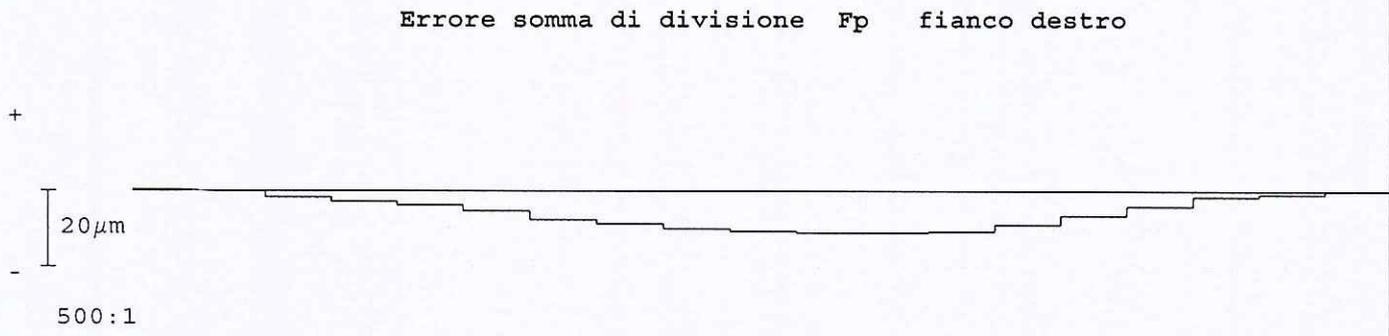
N:Z	Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
fH _{βm}	-25±6	-25	Var 5							±6	Var 7						-2	
fH _β	-25±13	-25	-22	-23	-27	-27	-26	-28		±13	-6	-2	-2	-6	-1	1	-2	
F _β	16	11	6	27	6	4	5	6		16	7	6	6	8	6	5	6	
ff _β	9	1	1	1	1	1	1	1		9	1	1	1	2	2	2	2	
C _β	2/6	6	7	6	6	5	6	6		2/6	5	6	7	7	6	6	6	
B _d		-1															-4	

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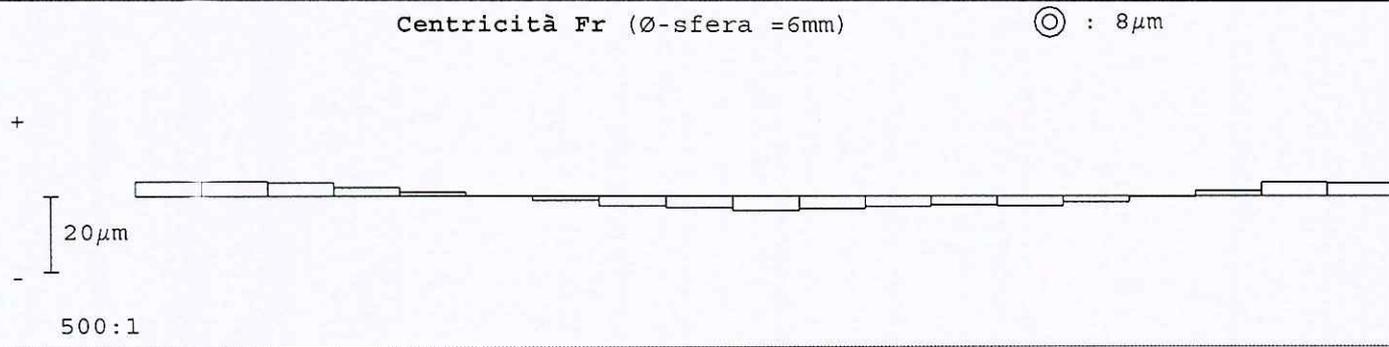




Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 14:49
Denominazione:	Output Shaft 2		Numero denti z	19	Angolo pressione	20°
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Angolo elica	-24°
Commessa/serie nr.:	PZ-2		Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: FORMER	Bestellg:	Charge:		



		fianco sinistro / TIRO				fianco destro			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Corsa per misura divis.:	55.142 z=17mm								
Gr. err. singoli divisione	fp max	1		14		3		14	
Gr. salto di passo	fu max	2		18		2		18	
Scarto di divisione	Rp	2				5			
Err. globale di divisione	Fp	4		40		11		40	
Err. cordale di divisione	Fpz/8	3				5			

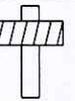


Err. di concentricità	Fr	8	32
Variab. spessore dente	Rs		

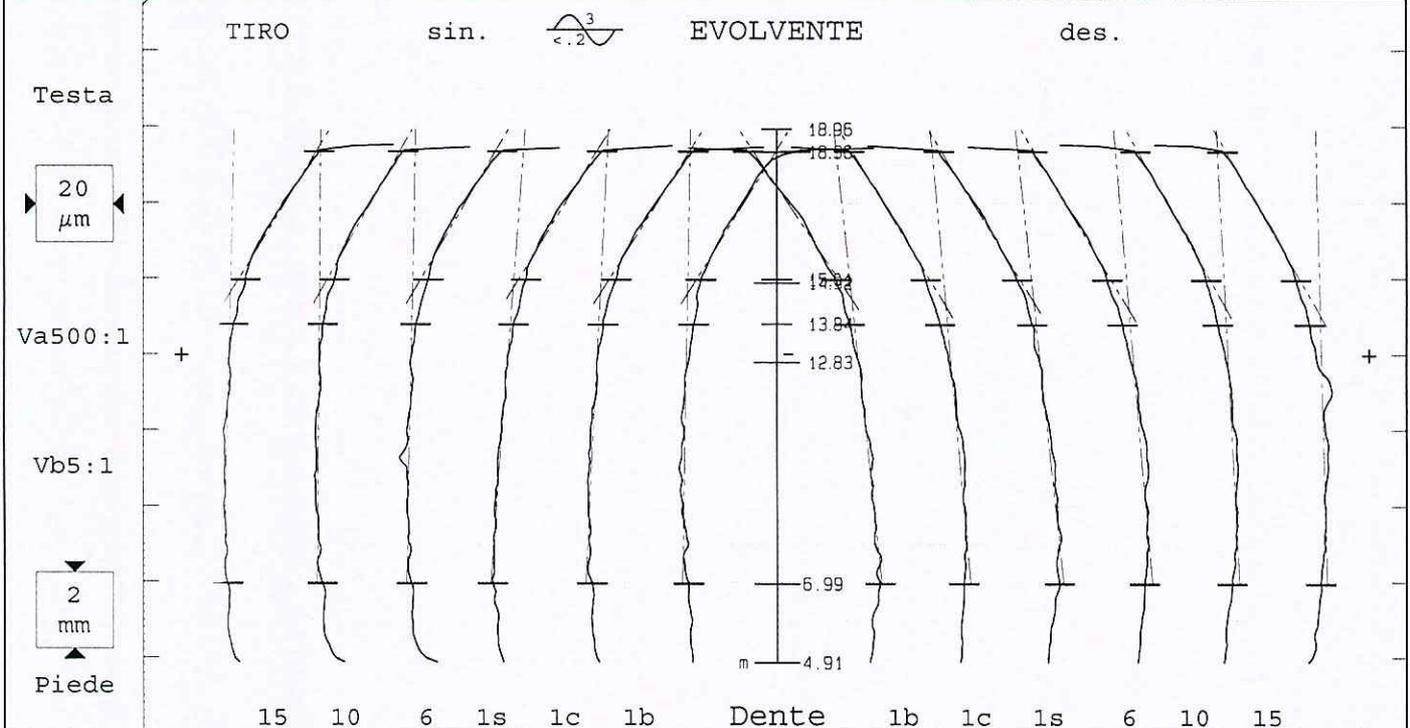


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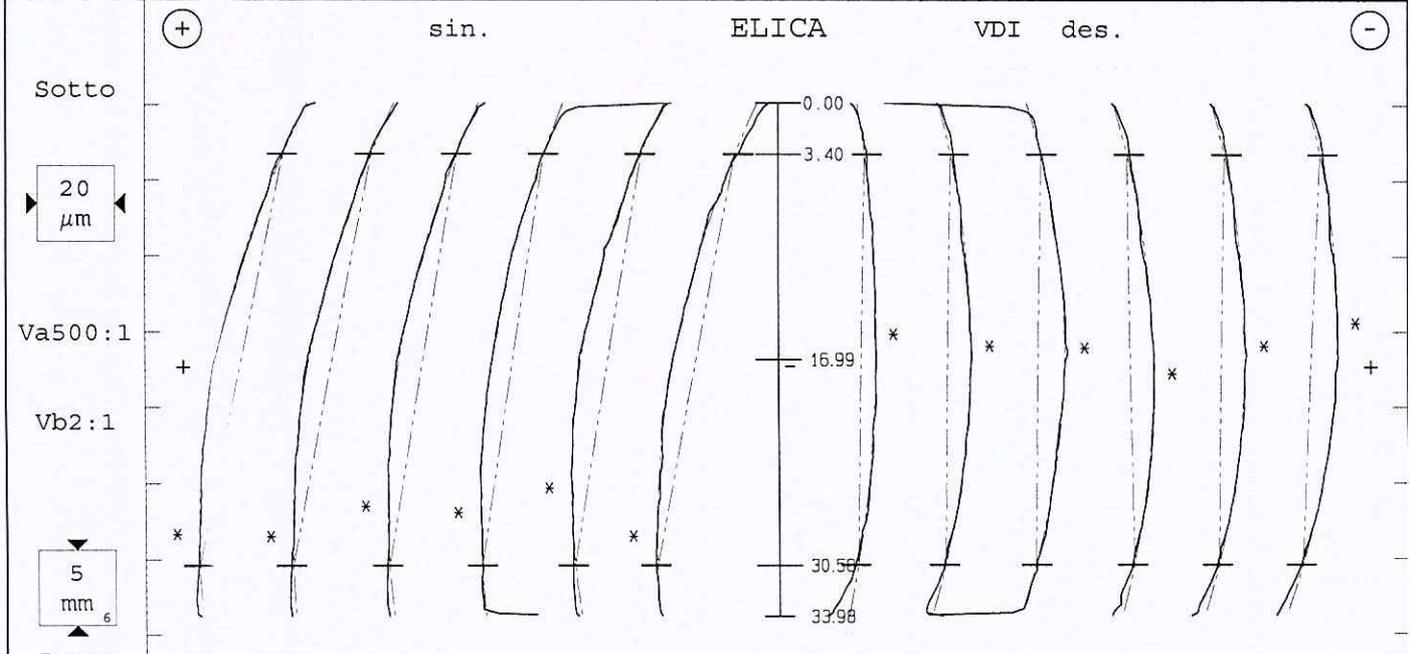
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 14:36
Denominazione:	Output Shaft 2		Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Tratto evolv. La	6.85mm
Comessa/serie nr.:	Pz-3		Angolo pressione	20°	Tratto elica L _B	27.18mm
Masch.Nr.:	M001	Spindel: Formel	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung		Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-22.47°		Fat.scor.pr. x	1.09



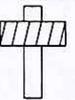
Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
		Var 2								Var 4							
fHam	±6 -2								±6							-4	
fHa	±7 -2	-2	-1	-1	-5	-3	-1		±7	-7	-6	-7	-6	-3	-2	-4	
Fa	3	3	2	4	6	4	4			8	7	8	7	5	6	6	
ffa	4 3	2	2	4	1	3	3		4	3	3	3	4	4	6	4	
fko	-22/-14 -21	-22	-21	-21	-19	-21	-22		-22/-14	-22	-21	-20	-21	-21	-24	-22	



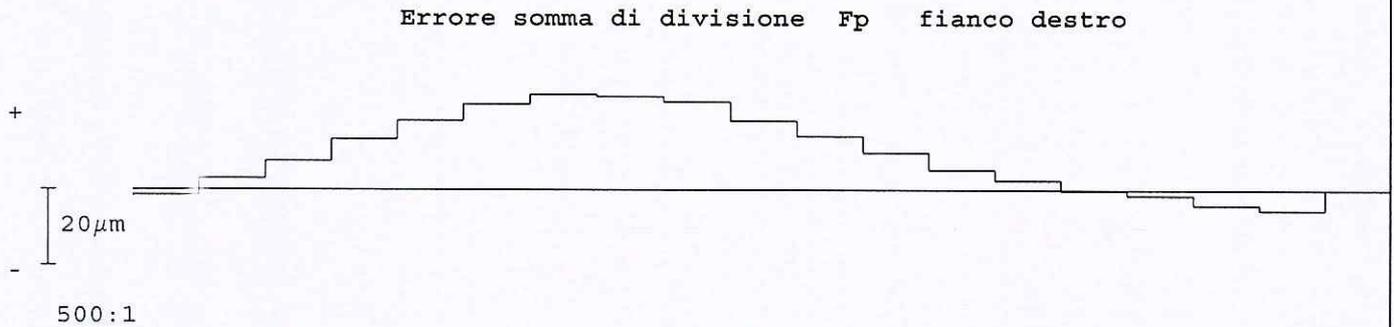
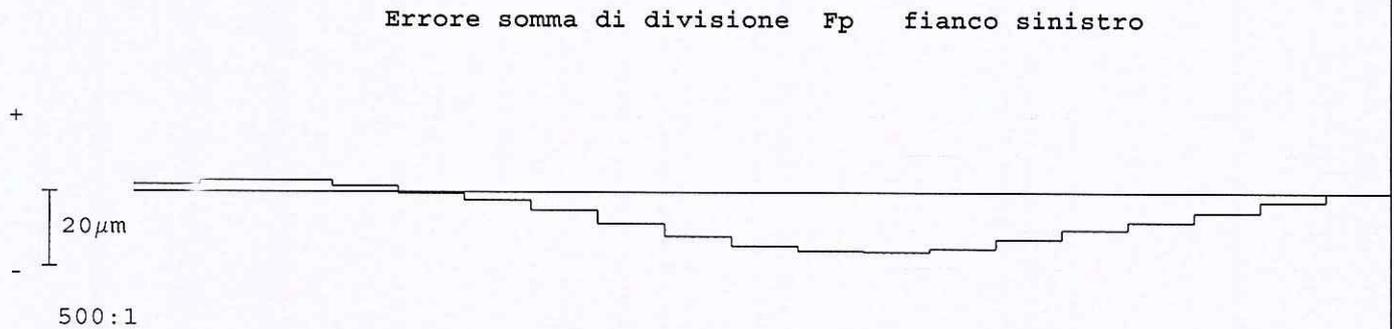
N:Z	Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
			Var 6								Var 8							
fH _{Bm}	-25±6	-25								±6							-2	
fH _B	-25±13	-25	-28	-26	-23	-20	-22	-25		±13	-2	-2	-2	2	-2	-6	-2	
F _B	16	6	6	5	5	6	6	5		16	4	6	7	5	6	8	6	
ff _B	9	1	1	1	1	1	1	2		9	1	1	2	1	1	1	1	
C _B	2/6	6	6	6	6	5	7	6		2/6	4	6	7	6	6	7	6	
Bd		-5															0	

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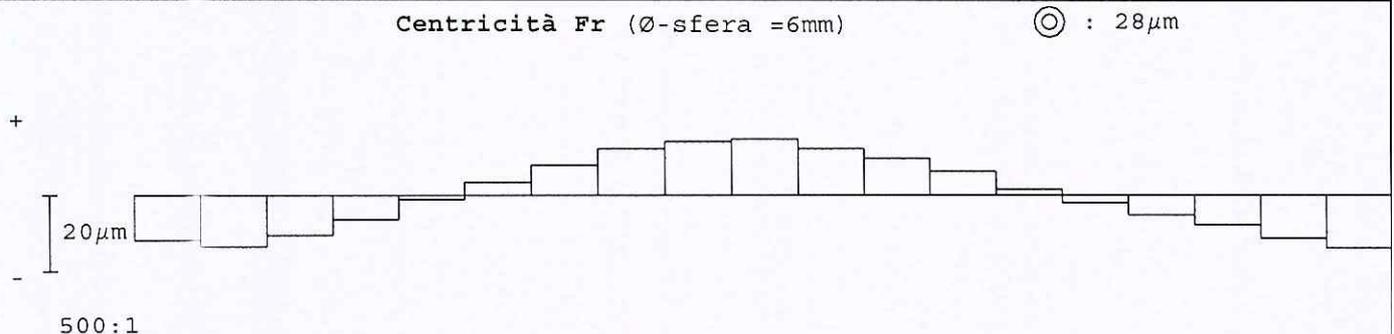




Nr. prog.:	STIO410005 0 PNC35 B4784	Controllore:	TURNO c	Data:	09.01.2015 14:51
Denominazione:	Output Shaft 2	Numero denti z	19	Angolo pressione	20°
Numero disegno.:	250.6.4238.35-IF	Modulo m	2.4mm	Angolo elica	-24°
Commessa/serie nr.:	Pz-3	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	FORMA 64	Charge:	



		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		6		14	
Gr. salto di passo	fu max	2		18		7		18	
Scarto di divisione	Rp	7				11			
Err. globale di divisione	Fp	19		40		30		40	
Err. cordale di divisione	Fpz/8	7				11			



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

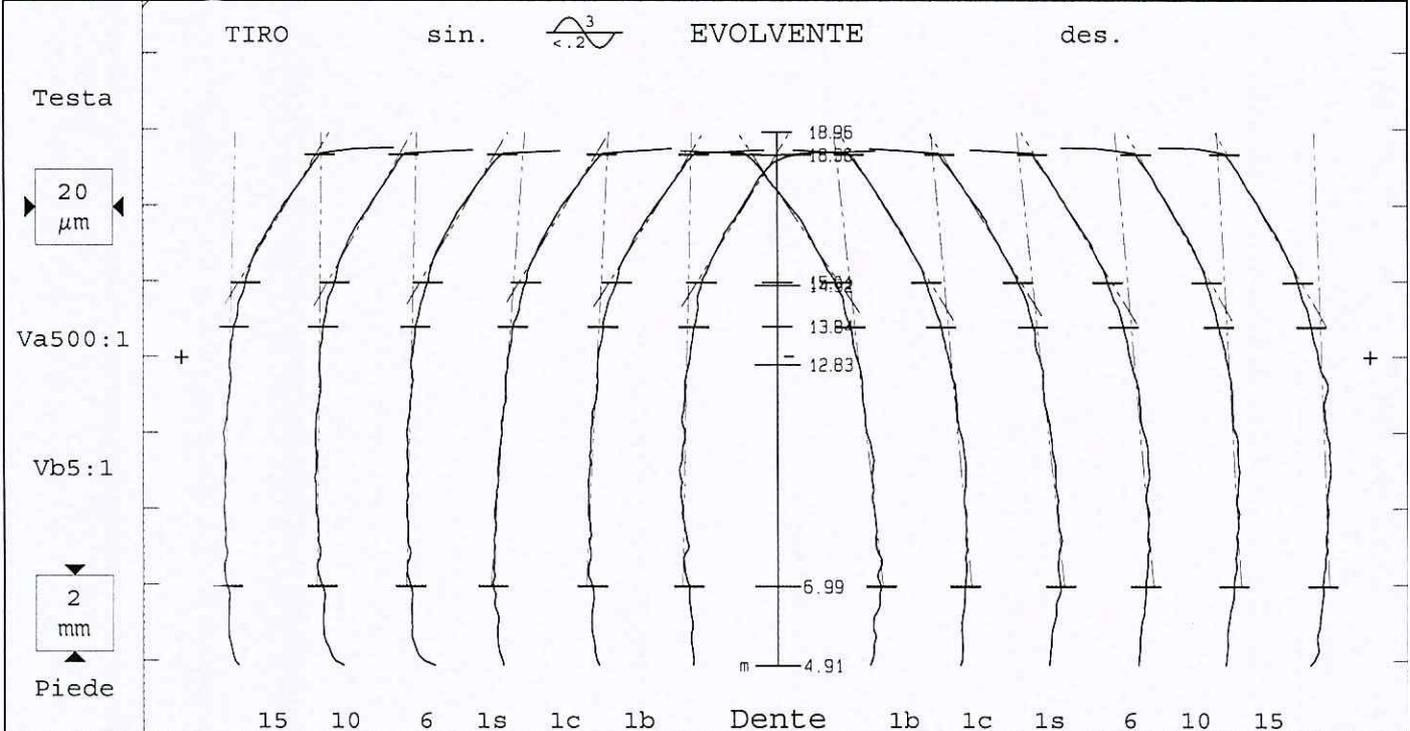


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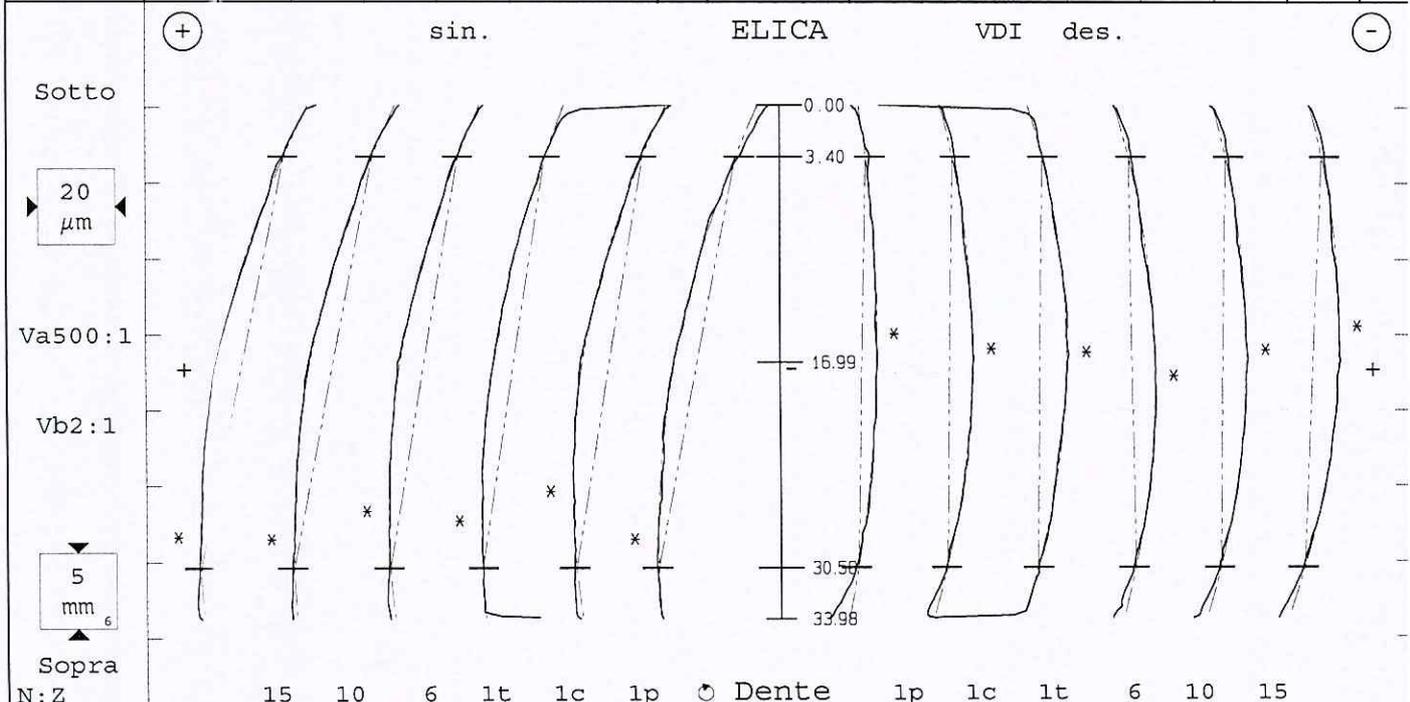
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 14:39
Denominazione:	Output Shaft 2		Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Tratto evolv. La	6.85mm
Comessa/serie nr.:	Pz-4		Angolo pressione	20°	Tratto elica Ls	27.18mm
Masch.Nr.:	M001	Spindel: Formel	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung		Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-22.47°		Fat.scor.pr. x	1.09



Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual
		Var 2								Var 4							
fHam	±6 -2	-2	-1	-2	-5	-3	-1		±6	-7	-6	-7	-6	-4	-2	-5	
fHa	±7 -2								±7								
Fa	3	3	2	2	5	4	4			8	7	8	7	6	5	6	
ffa	4 2	2	2	2	1	2	3		4	3	3	2	4	4	4	4	
fko	-22/-14 -21	-21	-21	-21	-19	-21	-22		-22/-14	-22	-21	-20	-21	-21	-23	-22	



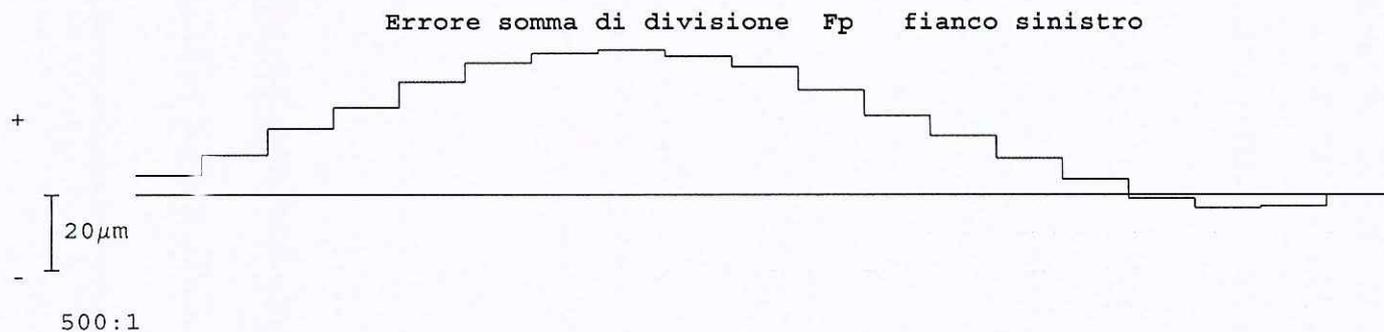
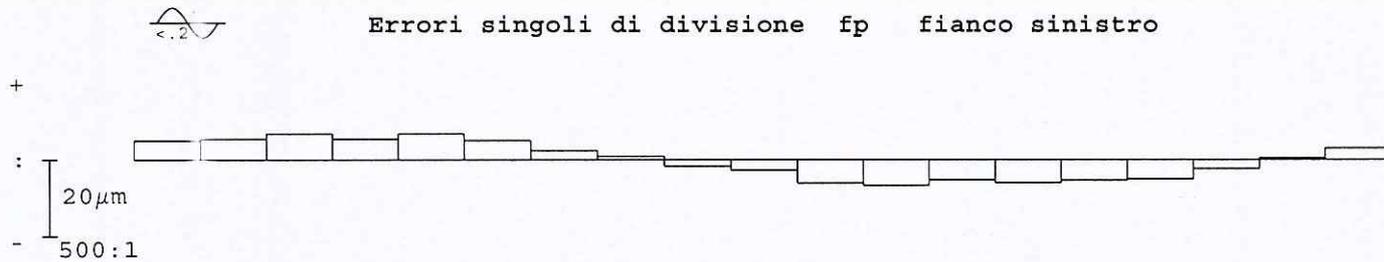
fHsm	-25±6 -25	Var 6							±6	Var 8						-2
fHs	-25±13 -25	-28	-26	-23	-21	-22	-25		±13	-3	-2	-2	2	-2	-6	-2
Fß	16 6	6	5	6	6	6	5		16	4	6	7	5	6	8	6
ffß	9 1	1	1	1	1	1	2		9	2	1	1	1	1	2	1
Cß	2/6 6	6	6	6	5	7	6		2/6	4	6	7	6	6	7	6
Bd	-4															-1

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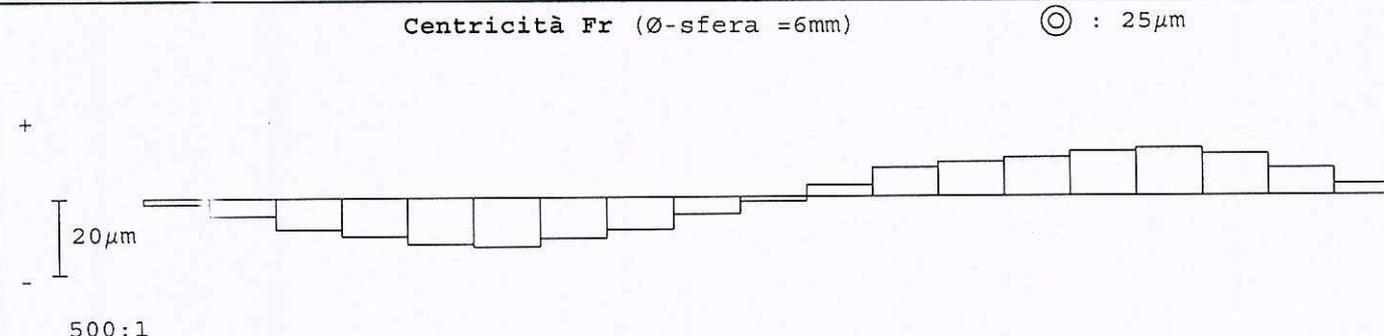




Nr. prog.:	STIO410005 0 PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 14:54
Denominazione:	Output Shaft 2	Numero denti z	19	Angolo pressione	20°
Numero disegno.:	250.6.4238.35-IF	Modulo m	2.4mm	Angolo elica	-24°
Commessa/serie nr.:	PZ-4	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: FORMER	Ort: Kitzbühel	Charge:	



Corsa per misura divis.: 55.142 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	7		14		6		14	
Gr. salto di passo	fu max	3		18		3		18	
Scarto di divisione	Rp	14				11			
Err. globale di divisione	Fp	42	x	40		29		40	
Err. cordale di divisione	Fpz/8	13				10			

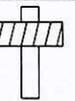


Err. di concentricità	Fr	26	32		
Variaz. spessore dente	Rs				

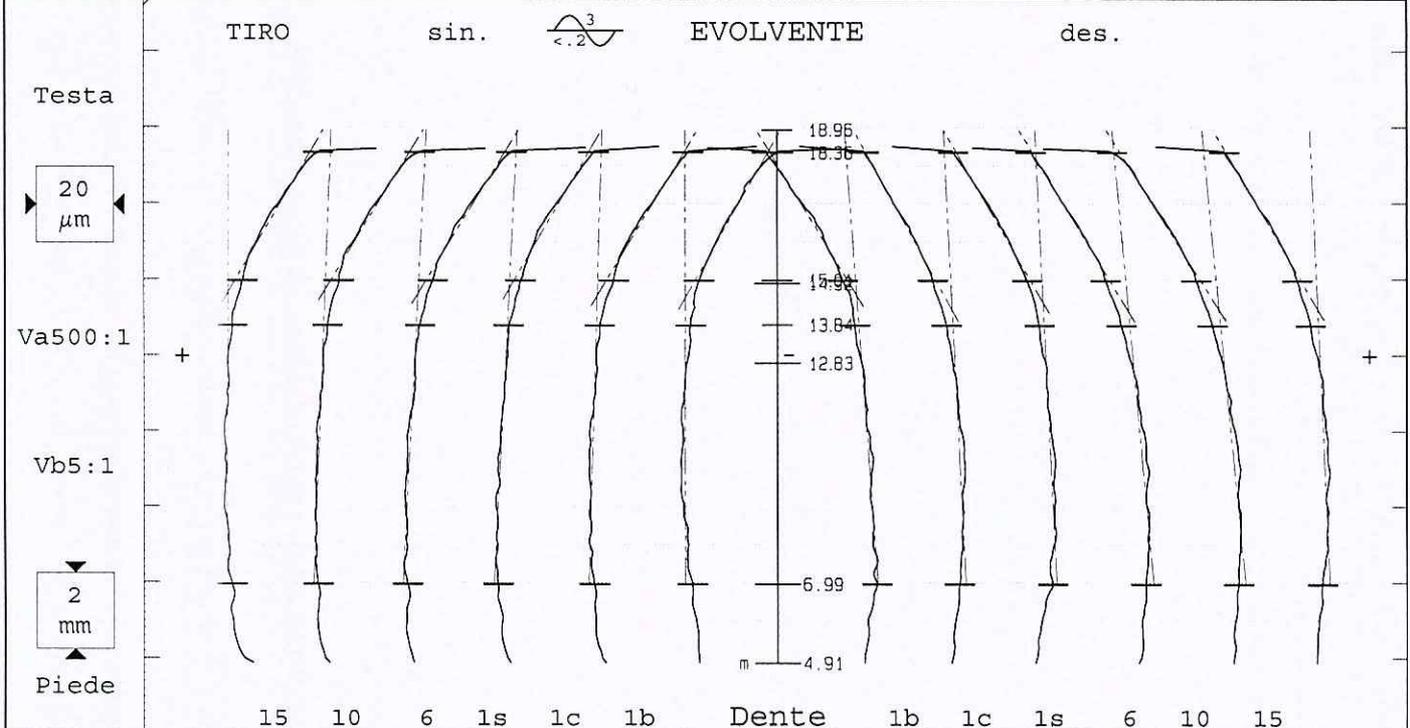


GETRAG

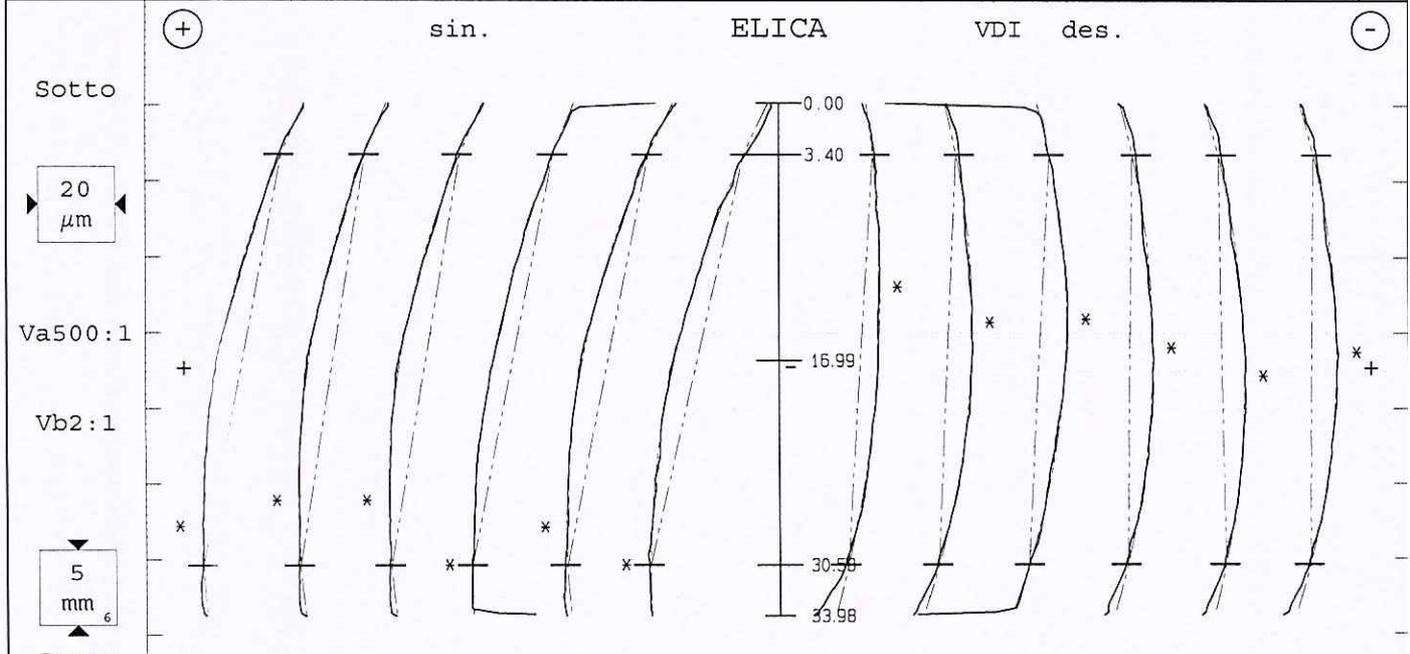
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 16:06
Denominazione:	Output Shaft 2		Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Tratto evolv. La	6.85mm
Comessa/serie nr.:	ppap 5		Angolo pressione	20°	Tratto elica L8	27.18mm
Masch.Nr.:	M001	Spindel: Formel	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung		Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-22.47°		Fat.scor.pr. x	1.09



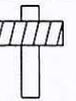
Tolerance	Medio	Val.misur [µm]							Qual	Tolerance	Val.misur [µm]							Medio	Qual
		Var 4									Var 4								
fH _{am}	±6	-2								±6								-5	
fH _a	±7	-2	0	-3	-4	-4	-2	0		±7	-5	-3	-3	-6	-7	-3	-5		
F _a		3	2	3	4	3	3	3			6	5	4	7	8	5	6		
ff _a	4	2	2	2	2	2	2	3		4	2	3	3	4	4	4	4		
fK _o	-22/-14	-21	-21	-21	-21	-19	-21	-22		-22/-14	-20	-21	-21	-21	-22	-22	-22		



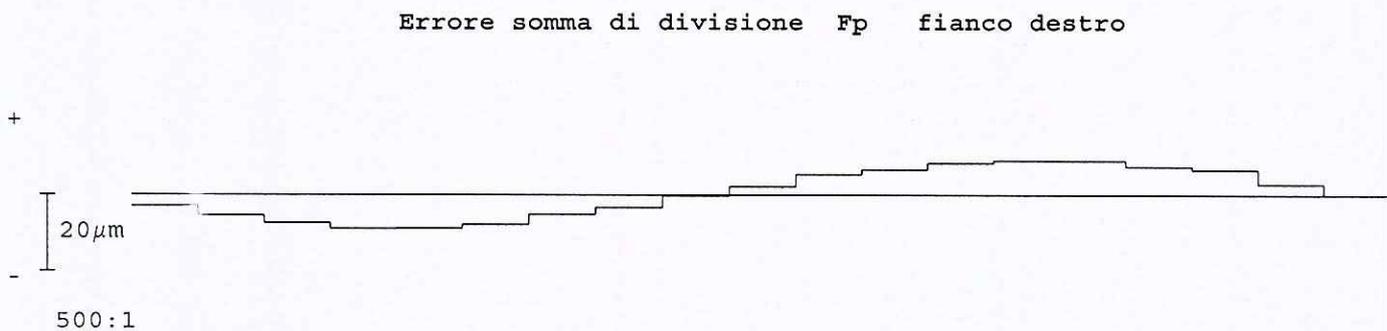
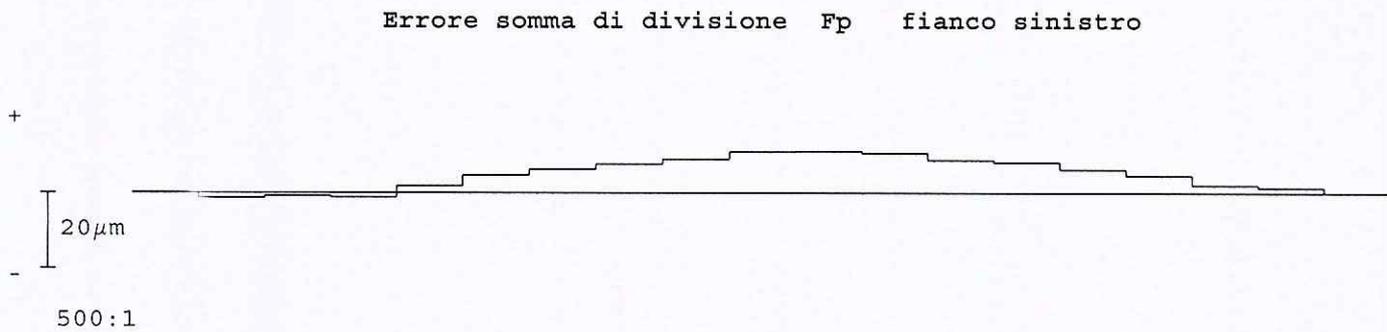
Tolerance	Medio	Val.misur [µm]							Qual	Tolerance	Val.misur [µm]							Medio	Qual
		Var 6									Var 8								
fH _{βm}	-25±6	-24								±6								-2	
fH _β	-25±13	-24	-26	-21	-23	-27	-27	-31		±13	-8	-6	-7	-2	2	-1	-2		
F _β	16	6	5	6	6	4	5	7		16	8	8	9	6	5	6	6		
ff _β	9	1	1	1	1	1	1	1		9	2	2	1	2	2	2	2		
C _β	2/6	7	6	6	7	5	7	6		2/6	5	6	7	6	6	7	6		
B _d		-4																	-1

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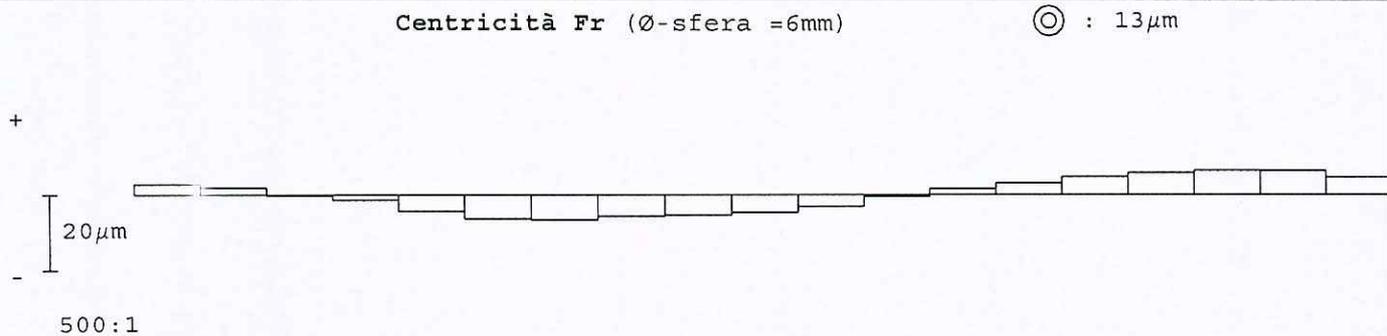




Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO C	Data:	09.01.2015 16:06
Denominazione:	Output Shaft 2		Numero denti z	19	Angolo pressione	20°
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Angolo elica	-24°
Commessa/serie nr.:	ppap 5		Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: Formnetz	Werkzeug:	Charge:		

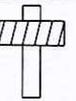


Corso per misura divis.: 55.142 z=17mm		fianco sinistro / TIRO				fianco destro			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	3		14		4		14	
Gr. salto di passo	fu max	3		18		3		18	
Scarto di divisione	Rp	6				7			
Err. globale di divisione	Fp	12		40		18		40	
Err. cordale di divisione	Fpz/8	6				7			



Err. di concentricità	Fr	13	32	
Variaz. spessore dente	Rs			



GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 11:06
Denominazione:	Output Shaft 2		Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Tratto evolv. La	6.85mm
Comessa/serie nr.:	ppap n.1		Angolo pressione	20°	Tratto elica L _S	27.18mm
Masch.Nr.:	M001	spindel: Formel	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung		∅ Base db	46.3706mm	Palpatore ∅	(#1) 1mm
Werkzeug:	Charge:		Ang. Base	-22.47°	Fat.scor.pr. x	1.09

TIRO

Piede-∅: 46.175mm [46.05/46.35]
 Testa-∅: 59.756mm [59.74/59.9]

VDI

GETRAG**Ruota cilindrica Evolvente/Elica**

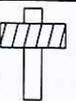
Nr. prog.:	STI041005 0 PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 11:03
Denominazione:	Output Shaft 2	Numero denti z	19	Largh. fasc. dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF	Modulo m	2.4mm	Tratto evolv. La	6.85mm
Commessa/serie nr.:	ppap n.3	Angolo pressione	20°	Tratto elica L8	27.18mm
Masch.Nr.:	M001	Spindel: Formest. Elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung	Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-22.47°	Fat. scor. pr. x	1.09

TIRO

Piede-Ø: 46.178mm [46.05/46.35]

Testa-Ø: 59.748mm [59.74/59.9]

VDI

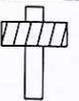
GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 11:05
Denominazione:	Output Shaft 2		Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Tratto evolv. La	6.85mm
Commessa/serie nr.:	ppap n.2		Angolo pressione	20°	Tratto elica L _S	27.18mm
Masch.Nr.:	M001	Spindel: Formel	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung		Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base		-22.47°	Fat.scor.pr. x	1.09

TIRO

Piede-Ø: 46.175mm [46.05/46.35]
 Testa-Ø: 59.821mm [59.74/59.9]

VDI

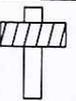
GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 11:01
Denominazione:	Output Shaft 2		Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Tratto evolv. La	6.85mm
Comessa/serie nr.:	ppap n.4		Angolo pressione	20°	Tratto elica L8	27.18mm
Masch.Nr.:	M001	spindel: Forme	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung		Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:		Ang. Base	-22.47°	Fat.scor.pr. x	1.09

TIRO

Piede-Ø: 46.176mm [46.05/46.35]
 Testa-Ø: 59.742mm [59.74/59.9]

VDI

GETRAG**Ruota cilindrica Evolvente/Elica**

Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 11:07
Denominazione:	Output Shaft 2		Numero denti z	19	Largh.fasc.dent. b	33.98mm
Numero disegno.:	250.6.4238.35-IF		Modulo m	2.4mm	Tratto evolv. La	6.85mm
Comessa/serie nr.:	ppap n.5		Angolo pressione	20°	Tratto elica L8	27.18mm
Masch.Nr.:	M001	spindel: Formel	Angolo elica	-24°	Inizio elab. M1	6.99mm
Untersuchungszweck:	Laufende Messung		Ø Base db	46.3706mm	Palpatore Ø	(#1) 1mm
Werkzeug:		Charge:	Ang. Base	-22.47°	Fat.scor.pr. x	1.09

TIRO

Piede-Ø: 46.175mm [46.05/46.35]
 Testa-Ø: 59.754mm [59.74/59.9]

VDI

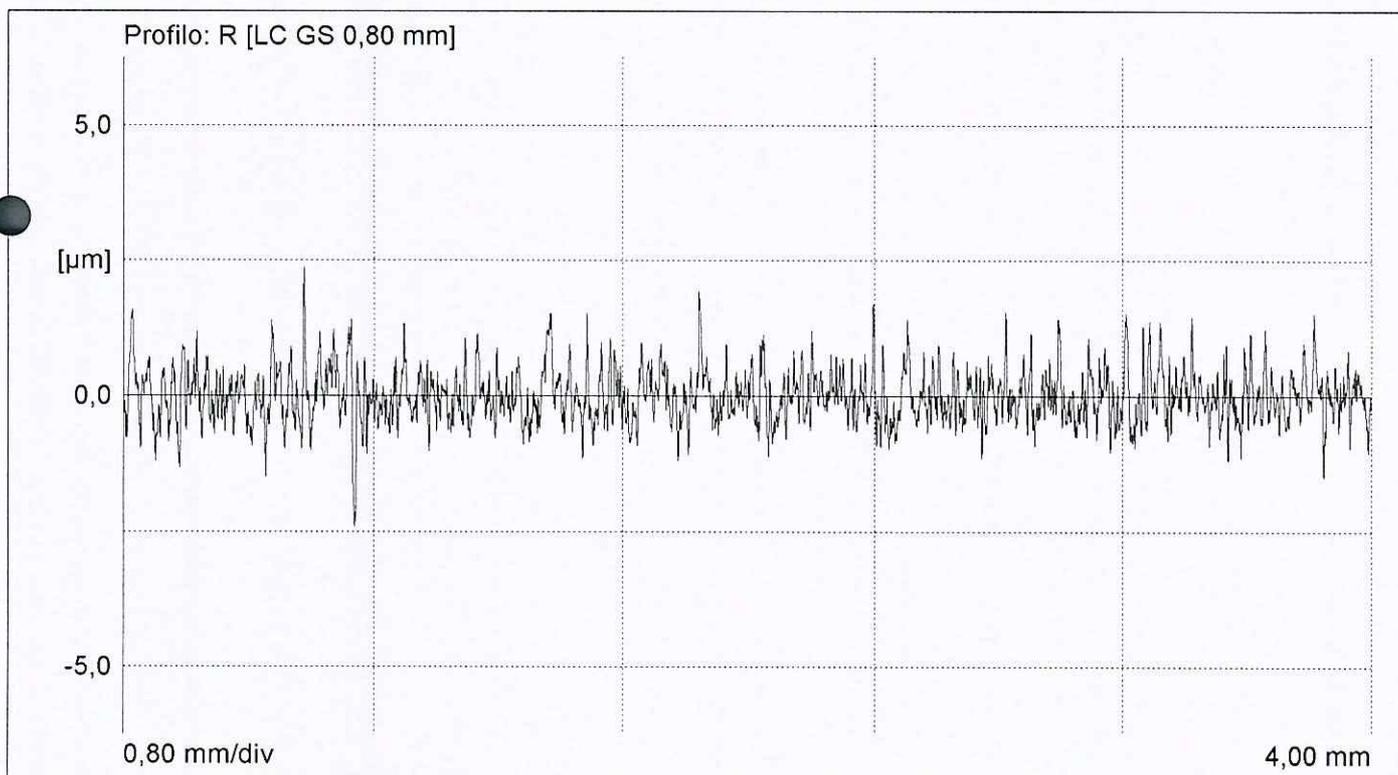


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 4238 PPAP PZ.1
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 08:59
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	0,39	µm
Rmax	4,77	µm
Rz	3,26	µm

PERTHOMETER CONCEPT

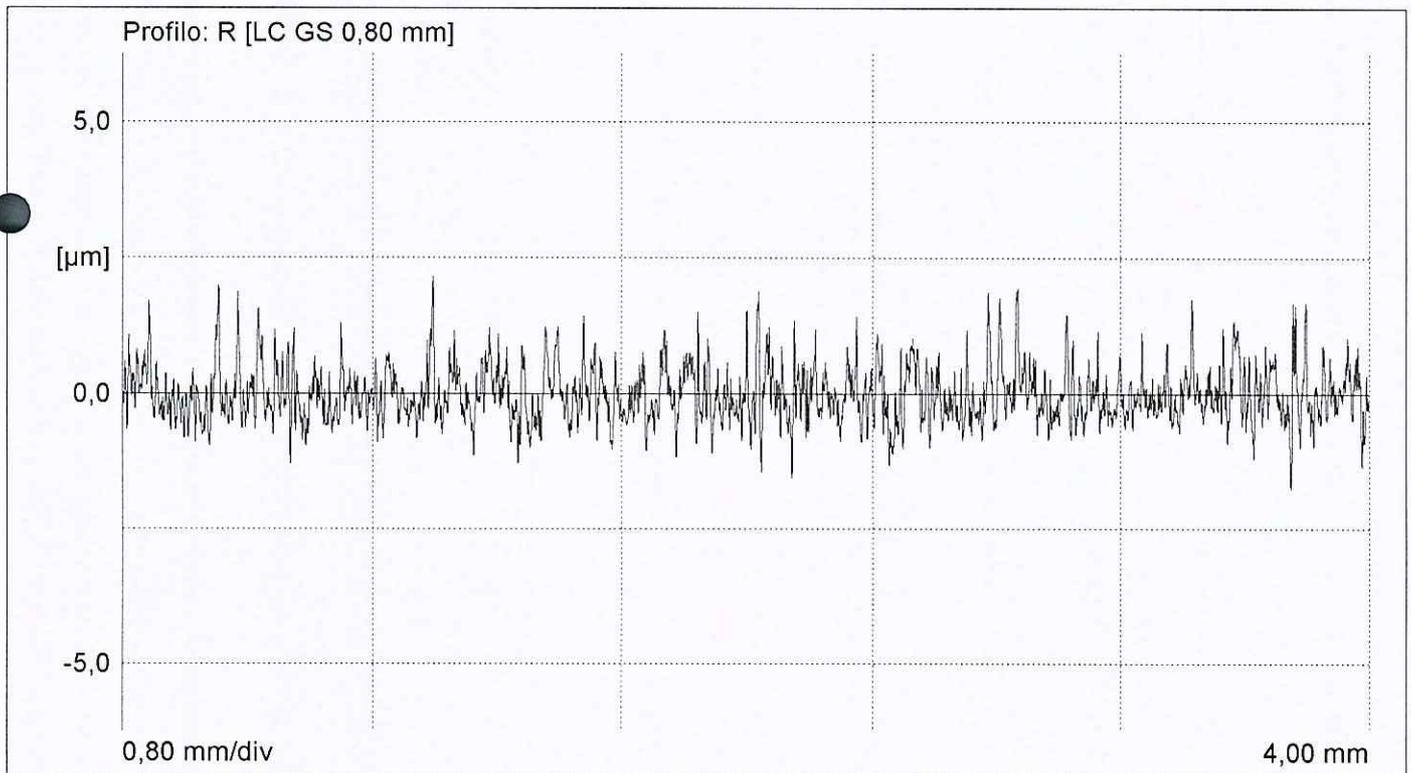


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 4238 PPAP PZ.2
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 08:57
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	0,40	µm
Rmax	3,51	µm
Rz	3,40	µm

PERTHOMETER CONCEPT

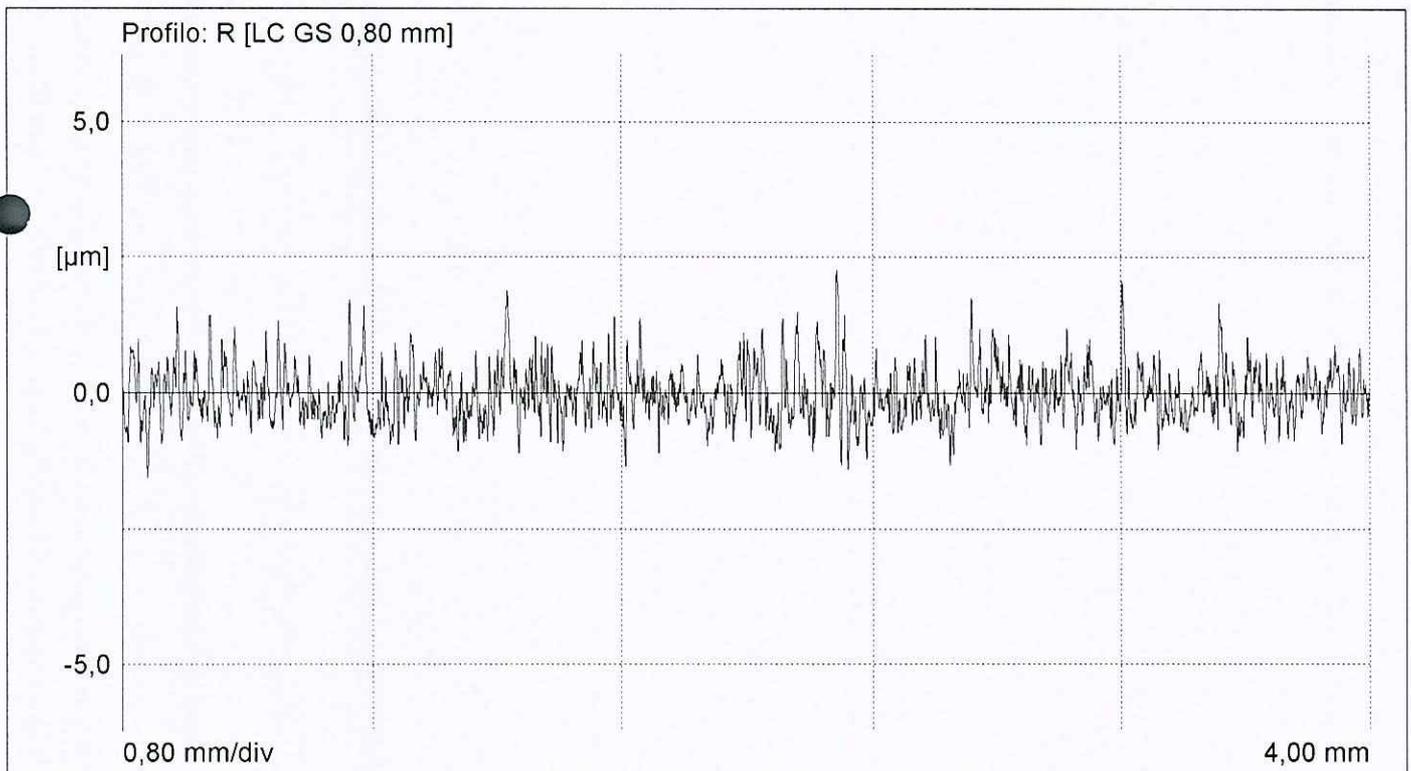


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 4238 PPAP PZ.3
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:04
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	0,40	µm
Rmax	3,67	µm
Rz	3,22	µm

PERTHOMETER CONCEPT

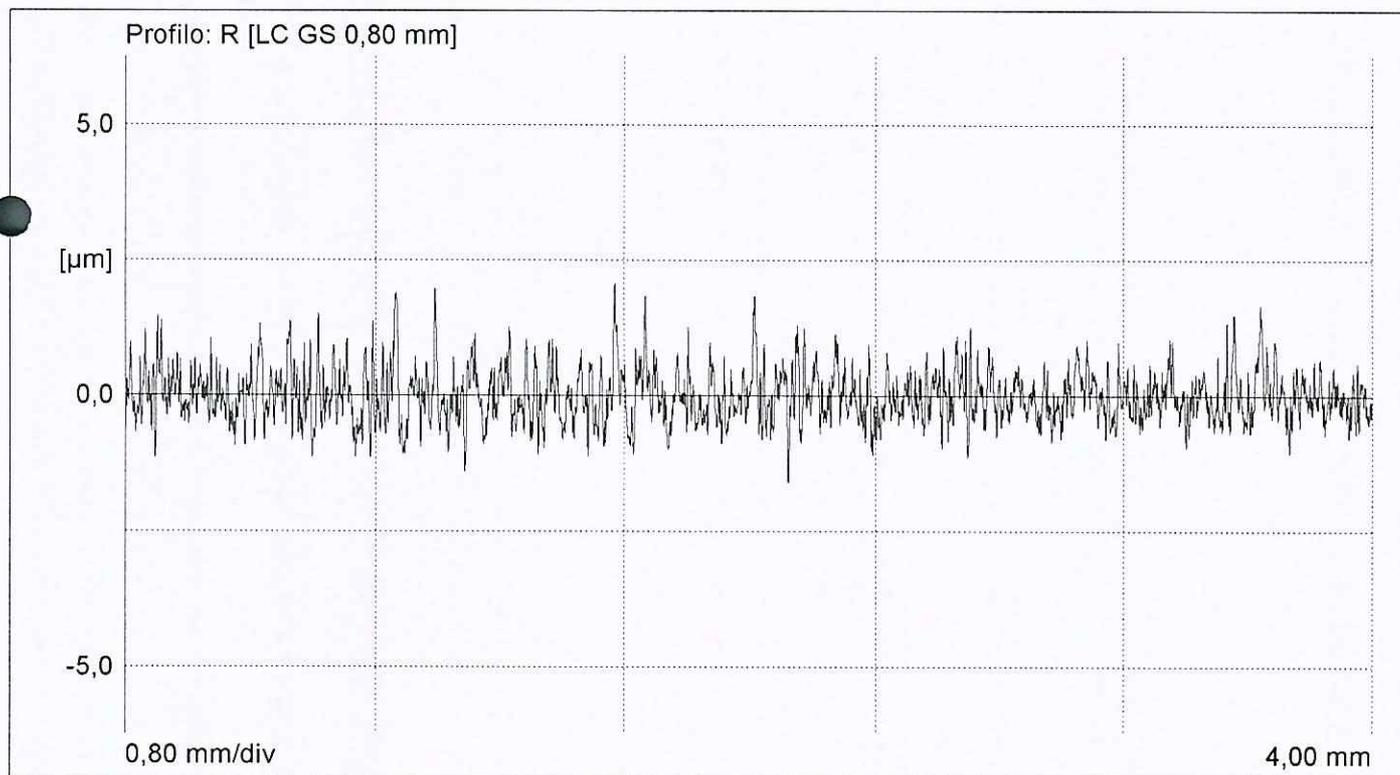


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 4238 PPAP PZ.4
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:00
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	0,39	µm
Rmax	3,48	µm
Rz	2,95	µm

PERTHOMETER CONCEPT

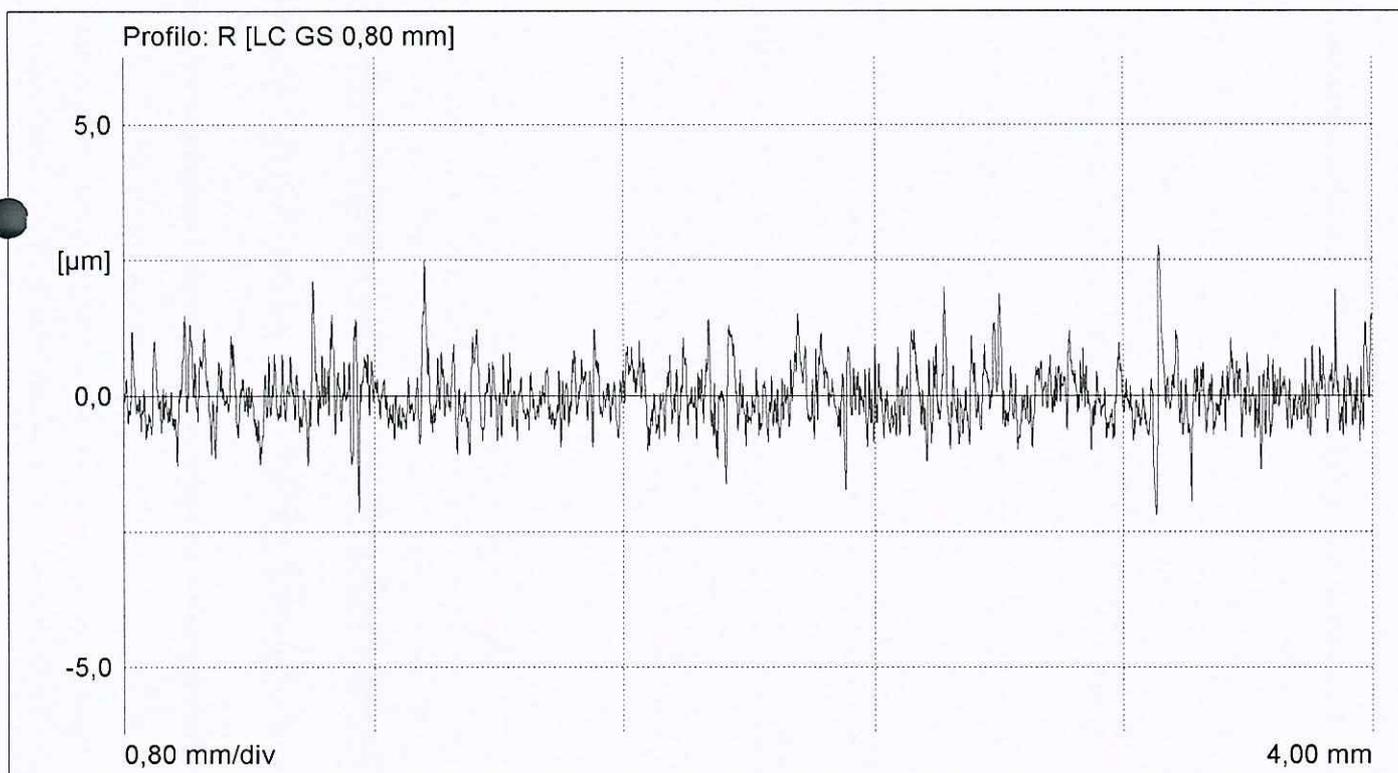


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 2
Numero: 4238 PPAP PZ.5
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 09:02
Nota: RZ DENTE
Tastatore: MFW-250 -20

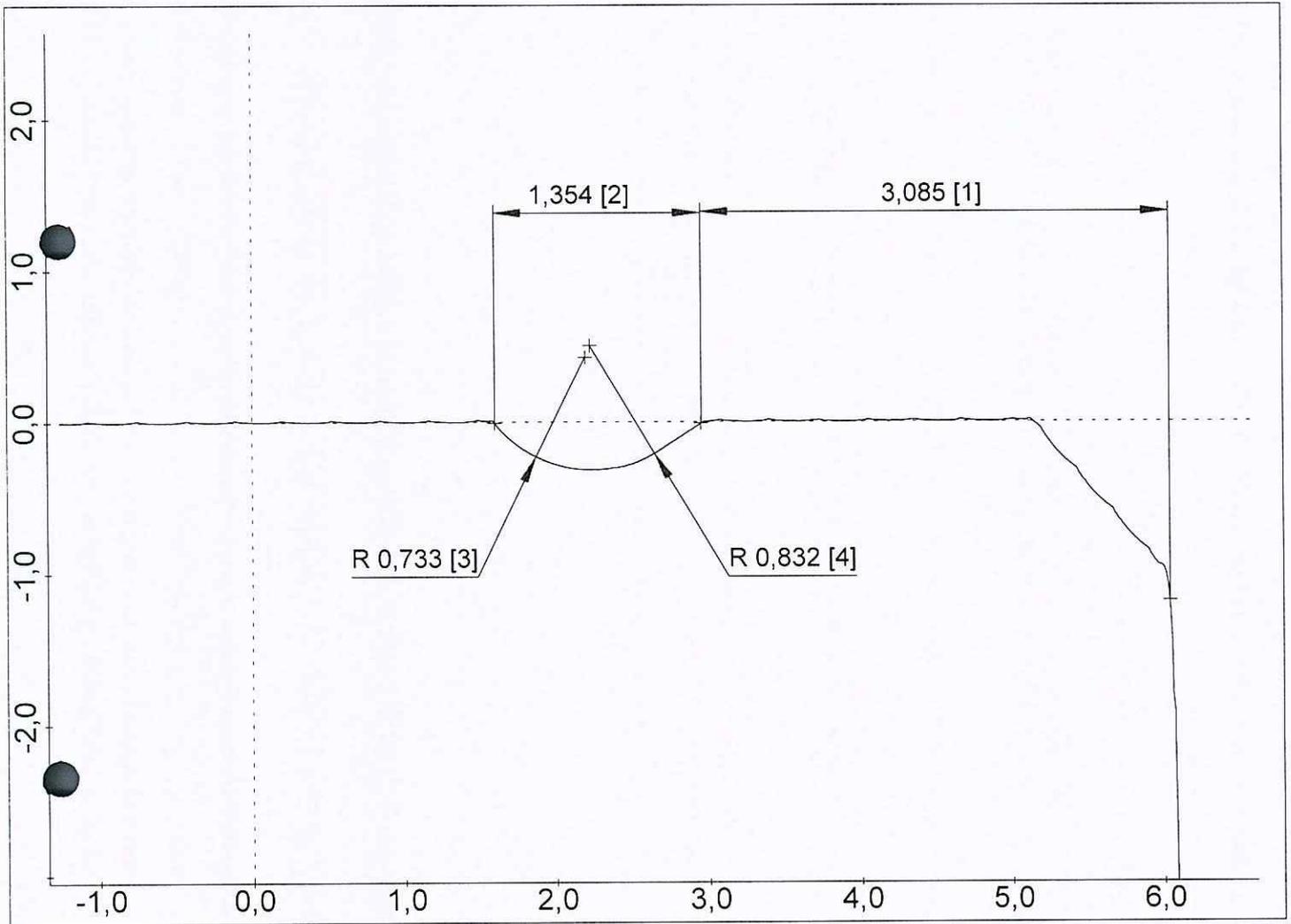
MACCHINA: MOA 416121 002



LC (GS)	0,80	mm
LT	5,60	mm
LM	4,00	mm
Z	5	
VB	± 250	μm
Ra	0,41	μm
Rmax	4,98	μm
Rz	3,85	μm

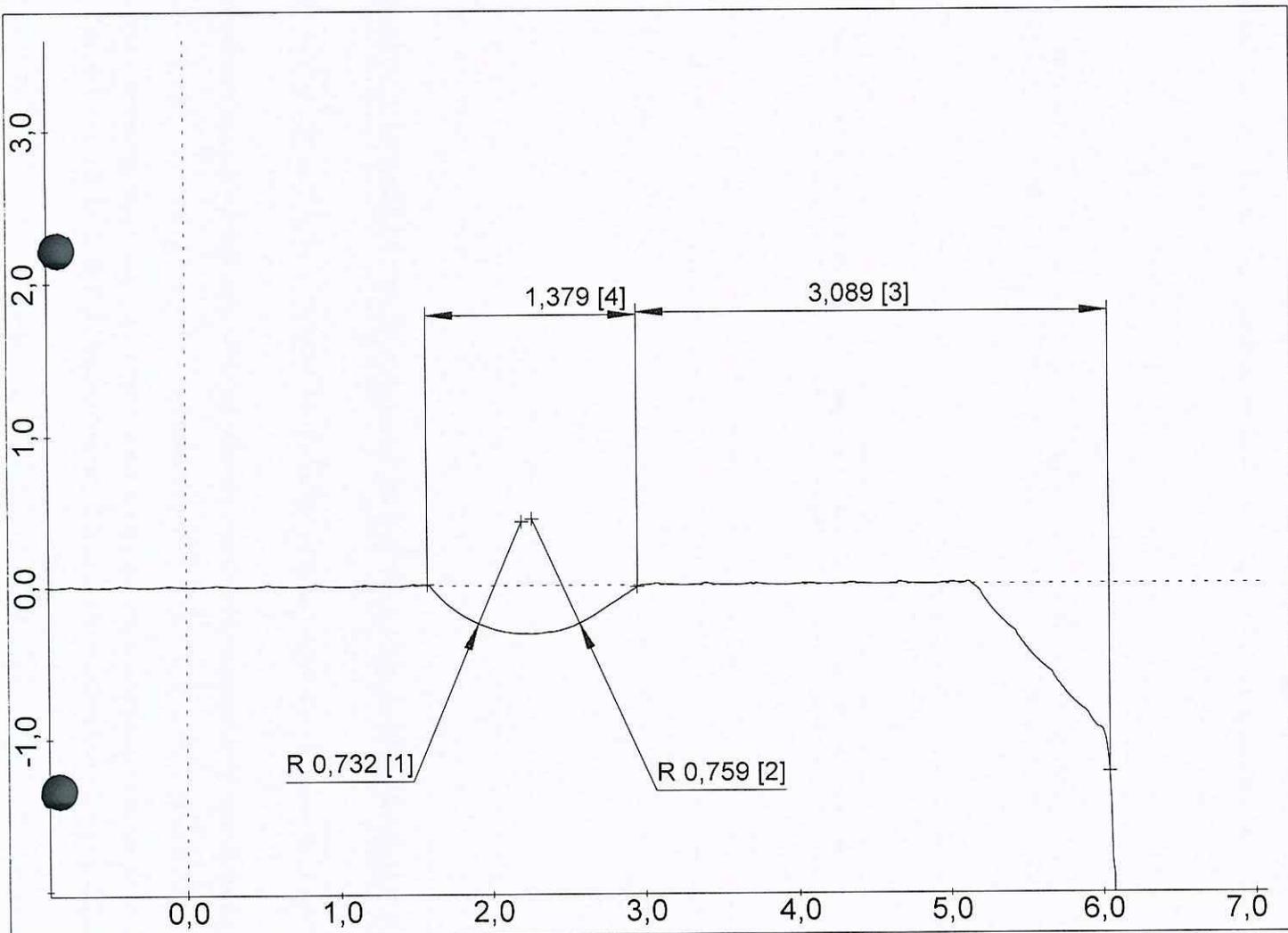
PERTHOMETER CONCEPT

Oggetto:	OS2
Numero:	4238 N1
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001

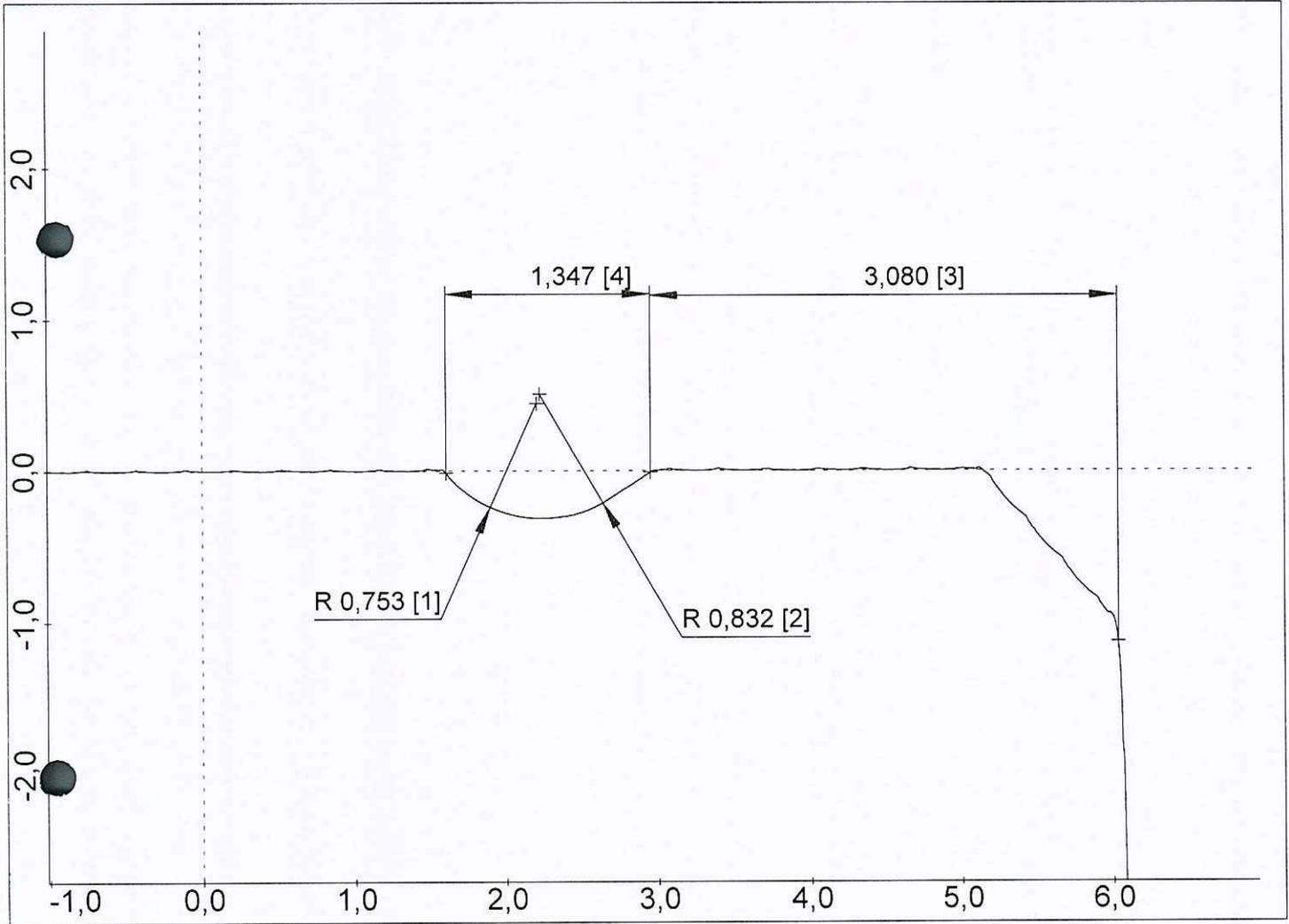


PERTHOMETER CONCEPT

Oggetto:	OS2
Numero:	4238 N2
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001

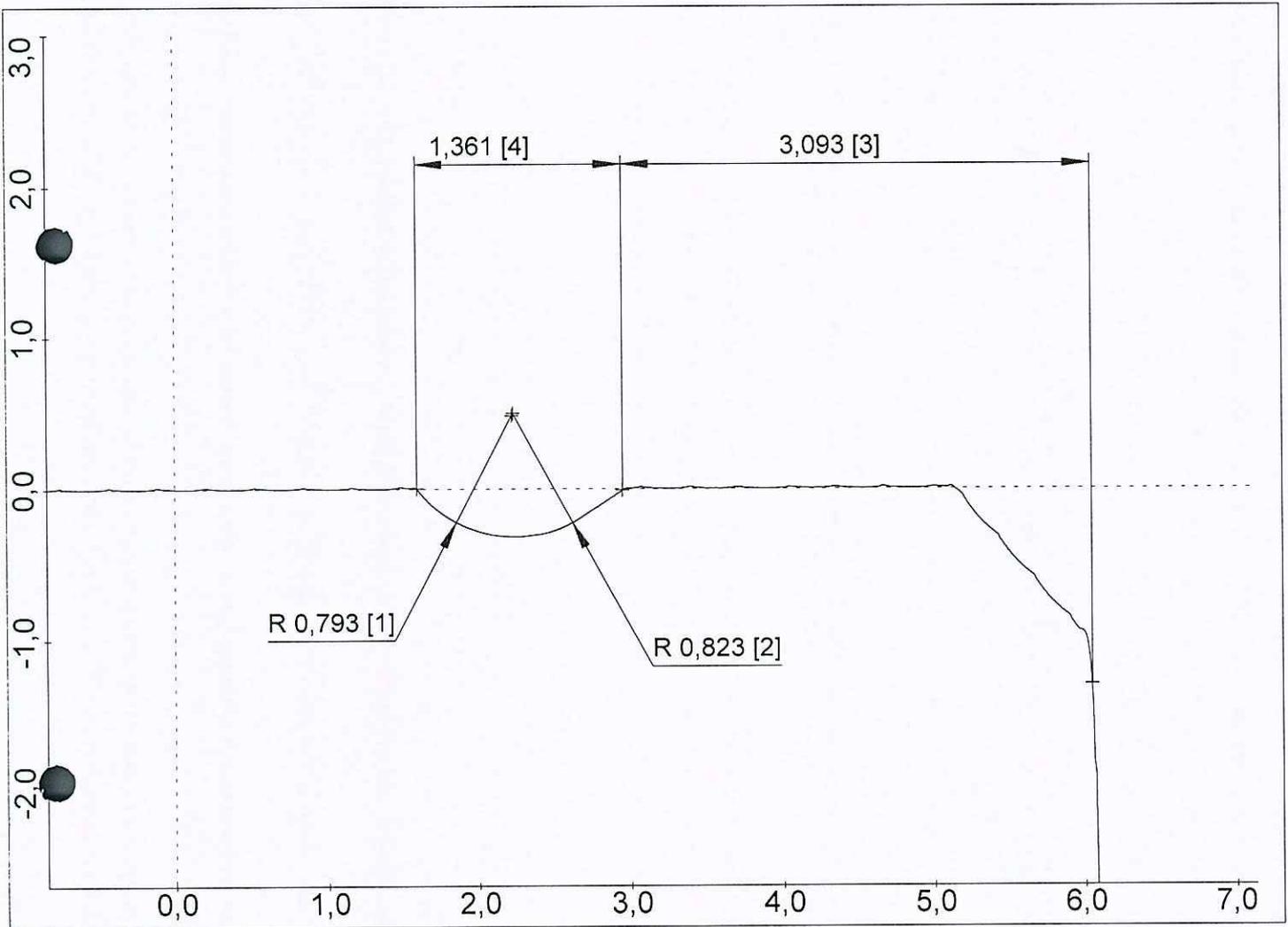


PERTHOMETER CONCEPT



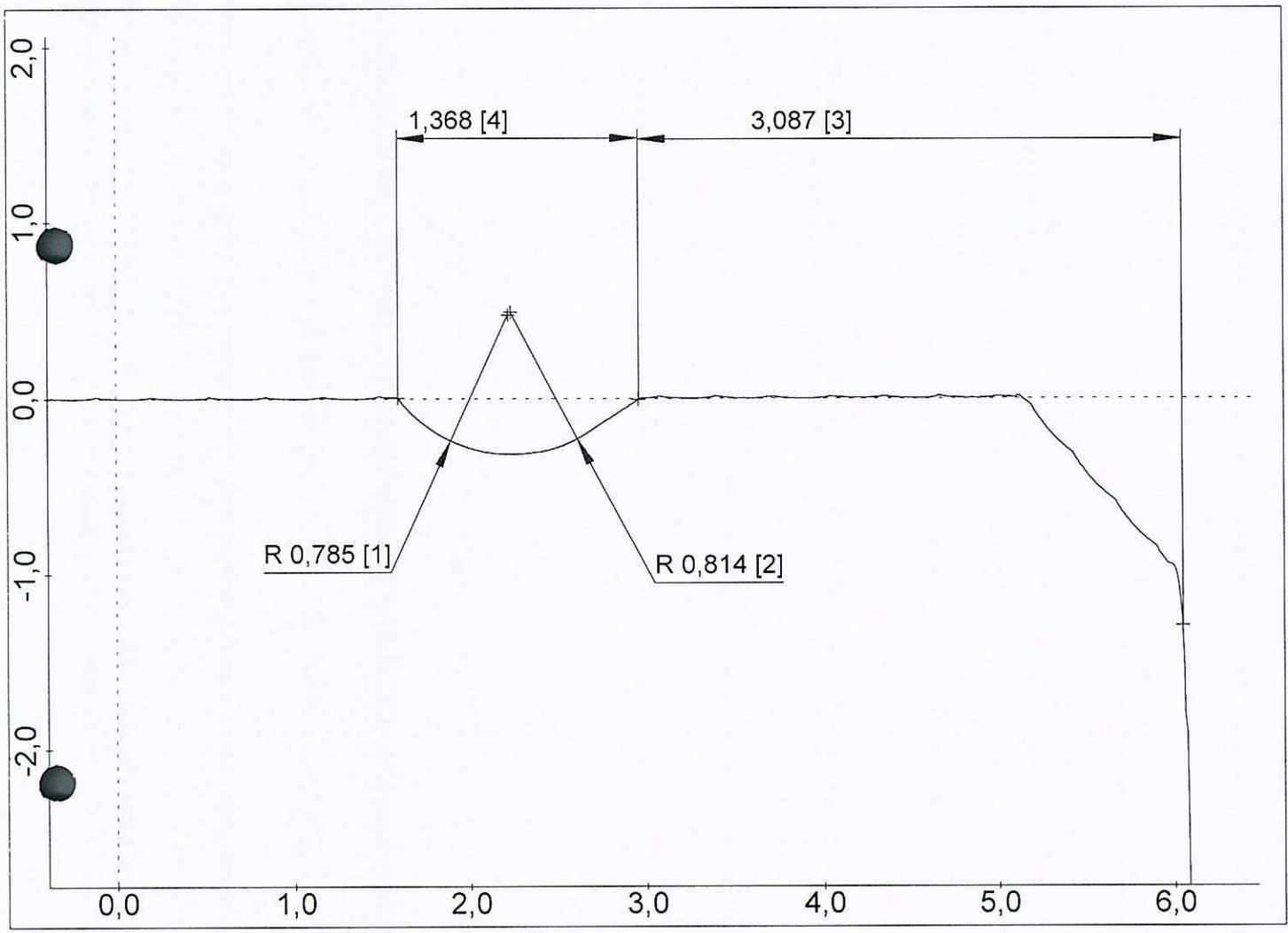
PERTHOMETER CONCEPT

Oggetto:	OS2
Numero:	4238 N4
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT

Oggetto:	OS2
Numero:	4238 N5
Operatore:	TURNO C
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT



Operatore: Amministratore: super	Data: 16-12-2014 11:09	Numero seriale di lotto: Pz1	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS2_4238_EDISON\2506423835_Part M.mtl
		Unità di misura: [mm , °]		Tipo: Z_PPAP\OS2_4238_EDISON Modello: 2506423835_Part M

Nota di programm	Nota:
------------------	-------

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D59.45	59.450	59.259	-0.191		-0.300	0.000



Operatore: Amministratore: super	Date: 16-12-2014 11:10	Numero seriale di lotto: Pz2	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS2_4238_EDISON\2506423835_Part M.mtl
Nota di programn		Unità di misura: [mm , °]	Tipo: Z_PPAP\OS2_4238_EDISON Modello: 2506423835_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D59.45	59.450	59.242	-0.208		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:10	Numero seriale di lotto: Pz3	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS2_4238_EDISON\2506423835_Part M.mtl
Nota di programn		Unità di misura: [mm , °]	Tipo: Z_PPAP\OS2_4238_EDISON Modello: 2506423835_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
I	Part_M_D59.45	59.450	59.225	-0.225		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:11	Numero seriale di lotto: Pz4	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS2_4238_EDISON\2506423835_Part M.mtl
Nota di programm		Unità di misura: [mm , °]	Tipo: Z_PPAP\OS2_4238_EDISON Modello: 2506423835_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
■■■■	Part_M_D59.45	59.450	59.215	-0.235		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:12	Numero seriale di lotto: Pz5	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\OS2_4238_EDISON\2506423835_Part M.mtl
Nota di programm		Unità di misura: [mm , °]	Tipo: Z_PPAP\OS2_4238_EDISON Modello: 2506423835_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
I	Part_M_D59.45	59.450	59.209	-0.241		-0.300	0.000

Istruzioni di controllo



PP Produzione GPS

Materiale: 2506423835

Descrizione: Albero di uscita 2

Stato: Rilasciato Produzione + Calcolo costi

Indice del disegno finito: F

Data emissione: 21.12.2011 / Stefano Billi

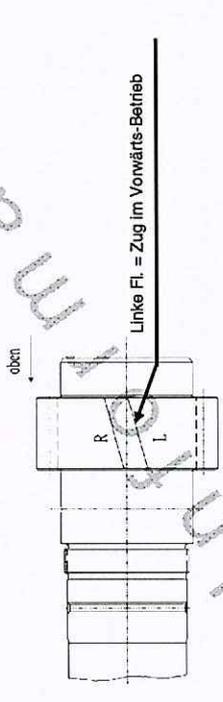
Operazione: 0200 Levigatura di potenza Z= 19

Data aggiornamento: 05.12.2014 / Emiliano Zella

Centro di lavoro: HNW15340 LEVIGATURA OS2

0002	0004	0012	0018	0020	0025	0030	0060					
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
Controllo 1° pz sec. VBZ 450_802991				MVZ-400249 EVOLVENTIMETRO						1° pz 2.3.1.1-R 2		Misu: controllo primo pezzo
aspetto, privo di bava, senza danno				MOA-416121 RUGOSIMETRO TIPO PRK						1° pz 2.3.1.1-R 2		
					3	pz per rack						CR1: no documentazione
DIAMETRO Mk DA G. T. sfere da 3,5	57,403 mm	57,374	57,433	MZA-450311 Calcolatore di misura E9066 Marposs	3	pz ogni 100 per macchina						CR1: no documentazione
DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO						1 pezzo ogni cambio parametri macchina		Misu: diagramma di dentatura
DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO						Ultimo PZ. prima ravvivatura		Misu: diagramma di dentatura
Oscillazione Fr			0,032	MVZ-400249 EVOLVENTIMETRO						pz a turno/mac.		Misu: diagramma di dentatura
Somma Passo Fp			0,040	MVZ-400249 EVOLVENTIMETRO						pz a turno/mac.		Misu: diagramma di dentatura
Controllo visivo per pulizia denti					8	pz per rack						

STIRNRAD		Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978)				(8)
GEAR		Tolerances of gearing (DIN 3961 of Aug. 1978)				
valid for values at individual tooth						
Zähnezahl Number of teeth	z	linke Fl. left flank	rechte Fl. right flank	f_{α}	Eingriffsteilungs-Abweich. Normal pitch error	f_{α}
Modul Normal module	m_n	0.009		f_p	Teilungs-Einzelabweichung Adjacent pitch error	f_p
Eingriffswinkel Normal pressure angle	α_n	0.000		f_u	Teilungssprung Diff. bet. adjacent pitches	f_u
Schrägungswinkel Helix angle	β	± 0.007		F_{Σ}	Teilungs-Summenabweich. Cumulative ctr. pitch error	F_{Σ}
Steigungsrichtung Hand of helix	LINKS	± 0.013		R_{out}	Rundlaufabweichung Radial run-out	R_{out}
Profilverschiebungsfaktor Addendum modification coeff.	x	0.016		R_s	Zahndickenschwankung Range of tooth thckn. error	R_s
Teilkreisdurchmesser Pitch diameter	d	0.009		F_r	Zweiell.-Wälzabweichung Radial composite error	F_r
Kopfkreisdurchmesser Outside diameter	d_a	0.040		f_r	Zweiell.-Wälzsprung Radial tooth to tooth comp. err.	f_r
Kopfnutzkreisd. theo. max. Tip diam. usable theo.	d_{ha}	0.009		R_{ρ}	Meßkreis Krümmungsradius Radius of curvature meas. diam.	R_{ρ}
Kopfnutzkreisd. theo. min. Tip diam. usable theo.	d_{ha}	0.009		b	Radbreite im Meßkreis Facewidth in meas. diam.	b
Fußkreisdurchmesser Foot diameter	d_f	33.98				
Fußnutzkreisdurchmesser Foot diameter usable	d_{fw}	0.040				
Grundkreisradius Base circle radius	r_b	0.040				
Grundkreisdurchmesser Base diameter	d_b	0.040				
Normalzahndicke Normal tooth thickness	max. s_n	0.040				
Normalzahndicke Normal tooth thickness	min. s_n	0.040				
Meßzähnezahl Number of teeth spanned	k	0.040				
Zahnweite Base tangent length	max. W_k	0.040				
Zahnweite Base tangent length	min. W_k	0.040				
Meßkugeldurchmesser Ball diameter	D_M	0.040				
Diam. Zweikugelmaß Measurement o. balls	max. M_{gk}	0.040				
Diam. Zweikugelmaß Measurement o. balls	min. M_{gk}	0.040				
Vordrehflankenspiel Circumferential backlash	theo. 0.065 0.170	0.040				

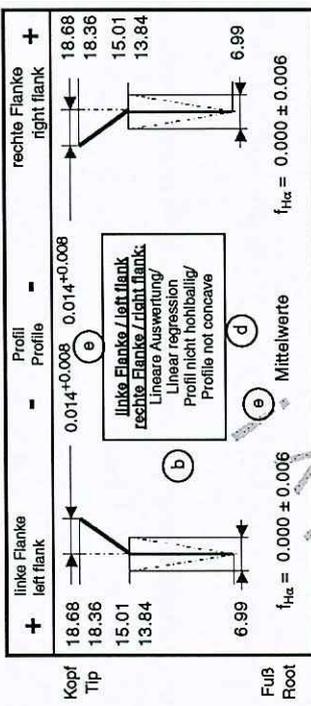


Honddurchmesser = 47.40 -0.30 = 4.91 honing diameter

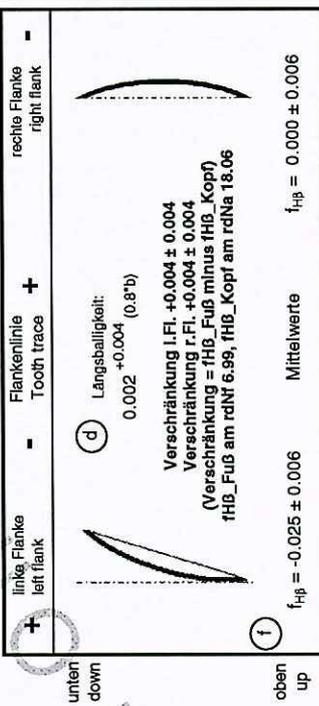
Der Verlauf der Profil- und Flankenlinie muss über den Messbereich stetig sein (ein- oder mehrfache Richtungsänderungen sind nicht zulässig)

The form of the profile and helix has to be continuous (one or more changes of directions are not allowed)

Für fp max. zwei Wellen zulässig
For fp max. two waves allowed



$f_{HK} = 0.000 \pm 0.006$
Mittelwerte
 $\phi = 47.40 -0.30 = 4.91$



$f_{HP} = -0.025 \pm 0.006$ Mittelwerte
 $f_{HP} = 0.000 \pm 0.006$

• Plusabweichung des bis zum Schmelbeginn verlängerten vermittelnden Ist-Profiles max $f_{d/2}$
• Plusdeviation of the average profile, extended to the start of checking, max $f_{d/2}$

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

Profile and helix checking according to VD/INDE 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 $L\beta = 0.8 \cdot b$ calculated to $1.0 \cdot b$
Terms of the tooth system according to DIN (German Industrial Standards) No. 868, 3960, 3998

Verteiler:	
f	2 35917
e	2 35392
d	2 35276
c	1 35149
b	1 2509012
a	3 2504260
Buch.	Anz.
Abbildungen sind unmaßstäblich. Diagrams not to scale.	
Erstverwendung bei Getriebeartype: 250.0.0004.16	
Datum	Name
gez. 2008-02-04	Paaßen, Holger
gepr.	
Verzahnungsblatt Endkontrolle Final Check Gear Data	
Benennung: Namng:	
Abtriebswelle K2	
Zeichnungsnummer: Drawing number:	
250.6.4238.35	

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

Wkz-Profil siehe Werkzeugdatenblatt Nr. 250.6.4238.35
For Tooth profile, see tool data sheet number