

Part Name OUTPUT SHAFT 1		Customer Part Number 250.6.4307.35	
Shown on Drawing No. 250.6.4307.35		Organization Part #	
Engineering Change Level F Index (g)		Dated 30-lug-14	
Additional Engineering Changes		Dated	
Safety and/or Government Regulation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Purchase Order No.	
Checking Aid No.		Weight (kg) 1,969	
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	TYP 250 Renault	
City	Region	Application	
	Postal Code		
	Country		
MATERIALS REPORTING			
Has customer-required Substances of Concern information been reported?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> n/a	
Submitted by IMDS or other customer format:			
Are polymeric parts identified with appropriate ISO marking codes?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> n/a	
REASON FOR SUBMISSION (Check at least one)			
<input type="checkbox"/> Initial Submission	<input type="checkbox"/> Change to Optional Construction or Material		
<input checked="" type="checkbox"/> Engineering Change(s)	<input type="checkbox"/> Supplier or Material Source Change		
<input type="checkbox"/> Tooling: Transfer, Replacement, Refurbishment, or additional	<input type="checkbox"/> Change in Part Processing		
<input type="checkbox"/> Correction of Discrepancy	<input type="checkbox"/> Parts Produced at Additional Location		
<input type="checkbox"/> Tooling Inactive > than 1 year	<input checked="" type="checkbox"/> Other - please specify below		
REQUESTED SUBMISSION LEVEL (Check one)			
<input type="checkbox"/> Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.			
<input type="checkbox"/> Level 2 - Warrant with product samples and limited supporting data submitted to customer.			
<input checked="" type="checkbox"/> Level 3 - Warrant with product samples and complete supporting data submitted to customer.			
<input type="checkbox"/> Level 4 - Warrant and other requirements as defined by customer.			
<input type="checkbox"/> Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.			
SUBMISSION RESULTS			
The results for <input checked="" type="checkbox"/> dimensional measurements <input checked="" type="checkbox"/> material and functional tests <input type="checkbox"/> appearance criteria <input checked="" type="checkbox"/> statistical process package			
These results meet all drawing and specification requirements: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> NO (If "NO" - Explanation Required)			
Mold / Cavity / Production Process			
DECLARATION			
I hereby affirm that the samples represented by this warrant are representative of our parts which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of <u>2000</u> / <u>24</u> 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? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> n/a			
Organization Authorized Signature		Date <u>29/01/2015</u>	
Print Name Dario Tursi		Phone No. cell +39-393-9814554	
Title GPS 2 Leader		Fax No.	
		E-mail dario.tursi@getrag.com	
FOR CUSTOMER USE ONLY (IF APPLICABLE)			
Part Warrant Disposition: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Other			
Customer Signature		Date <u>29/01/2015</u>	
Print Name		Customer Tracking Number (optional)	

DIMENSIONAL TEST RESULTS

Organization: GETRAG					Part Number: 250.6.4307.35								
Supplier/Vendor Coc GETRAG Modugno					Part Name: Output Shaft 1								
INSPECTION FACILITY: NA					Design Record Change Level: F Index (g) 30/07/2014								
					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	61,087	61,153		5	61,131	61,130	61,132	61,102	61,124		ok	
2	Root diameter l	49,180	49,500		5	49,391	49,394	49,379	49,367	49,340		ok	
3	Tip diameter l	63,740	63,900		5	63,800	63,802	63,871	63,872	63,381		ok	
4	Rz 4 dentatura Z21	0	4 μ		5	1,68	1,67	1,61	1,66	1,70		ok	
	Rmax 8 dentatura Z21	0	8 μ		5	1,93	1,90	2,08	1,88	1,92		ok	
5	$\sqrt{0.040}$ A - B Z21	0	40 μ		5	10	11	3	5	16		ok	
6	Dettaglio "M"	-	:		5	OK	OK	OK	OK	OK		ok	
	Diametro Ø 63,45 -0,3	63,150	63,450		5	63,225	63,204	63,206	63,219	63,268		ok	

Tooth microgeometry validated by standard measurement report

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

Item	Characteristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5	Device
1	MDK I	61,087-61,153	61,131	61,130	61,132	61,102	61,124	Calibro a sfere

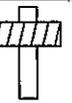
Misurazioni Manuali

OS1 250 6 4307 35

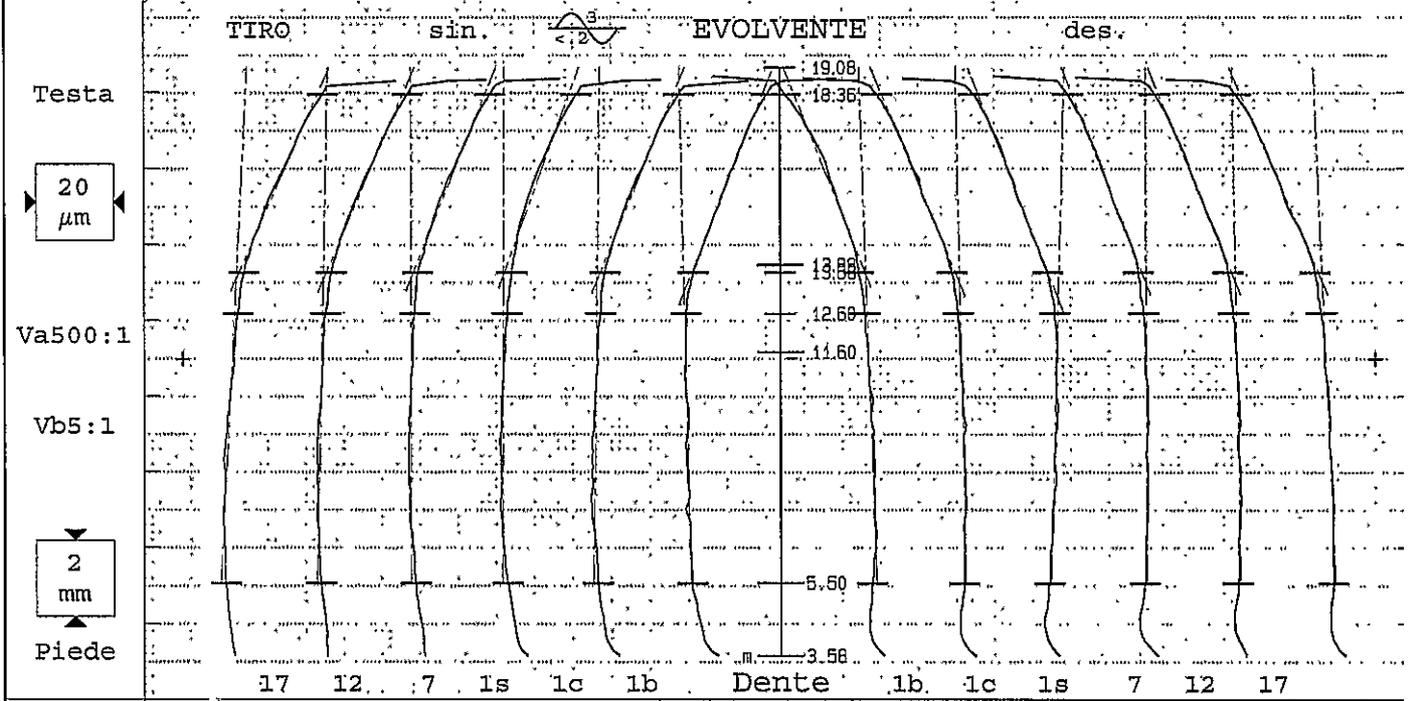
13-gen-15

GETRAG

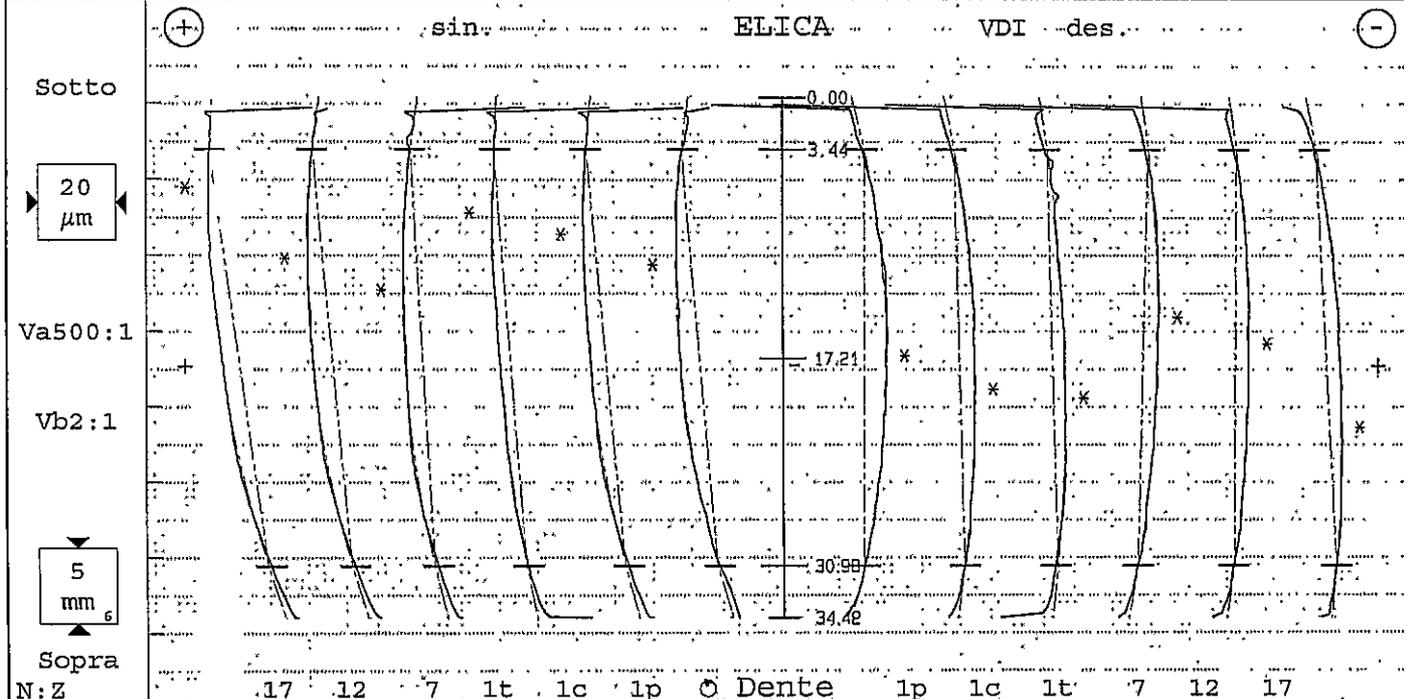
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO c	Data:	09.12.2014 12:23
Denominazione:	Output Shaft 1		Numero denti z	21	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4307.35-IF		Modulo m	2.4mm	Tratto evolv. La	7.1mm
Comessa/serie nr.:	pz 1		Angolo pressione	20°	Tratto elica Ls	27.54mm
Masch.Nr.:	M001	Spindel: Forme	Angolo elica	-24°	Inizio elab. M1	5.5mm
Untersuchungszweck:	Laufende Messung		Ø Base db	51.2517mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:		Ang. Base	-22.47°	Fat.scor.pr. x	.65



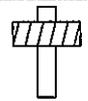
Tolerance	Medio	Val. misur [µm]						Qual	Tolerance	Val. misur [µm]						Medio	Qual	
fHcm	±5	-2	Var 4							±5	Var 3						-1	
fHa	±7	-2	-4	-2	0	0	-1	2	±7	-2	-1	2	0	-1	-3	-1		
Fa	3		4	2	2	2	3	2		3	2	2	1	2	3	2		
ffa	4	2	2	2	2	2	2	1	4	2	2	2	1	1	1	1		
fKo	-22/-14	-19	-19	-20	-19	-17	-19	-21	-22/-14	-17	-19	-22	-19	-19	-19	-19		
P/T-φ [mm]		49.391	[49.18/49.5]							63.800	[63.74/63.9]							



N:Z	Tolerance	Medio	Var 11							Tolerance	Var 10						Medio	Qual
fHcm	15±6	13	Var 11							±6	Var 10						1	
fHs	15±13	13	19	13	8	10	12	11	±13	0	3	3	-4	-1	6	1		
Fs	16	7	12	6	7	4	4	5	16	4	4	4	4	3	6	4		
ffs	9	1	1	1	2	1	1	1	9	1	1	3	1	1	1	1		
Cs	2/6	5	5	5	5	3	4	5	2/5	6	4	3	4	4	4	4		
Bd		1														-3		

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Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	TURNO C	Data:	09.12.2014 12:23
Denominazione:	Output Shaft 1	Numero denti z	21	Angolo pressione	20°
Numero disegno:	250.6.4307.35-IF	Modulo m	2.4mm	Angolo elica	-24°
Commessa/serie nr.:	pz 1	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	FORMULAZIONE	Charge:	



Errori singoli di divisione fp fianco sinistro

20µm

500:1

Errore somma di divisione Fp fianco sinistro

20µm

500:1

Errori singoli di divisione fp fianco destro

20µm

500:1

Errore somma di divisione Fp fianco destro

20µm

500:1

Corso per misura divis. 158.287 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	5				5			
Err. globale di divisione	Fp	17		50		14		50	
Err. cordale di divisione	Fpz/8	8				7			

Centricità Fr (Ø-sfera =5mm) © : 10µm

20µm

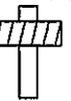
500:1

Err. di concentricità	Fr	10	40	
Variaz. spessore dente	Rs			

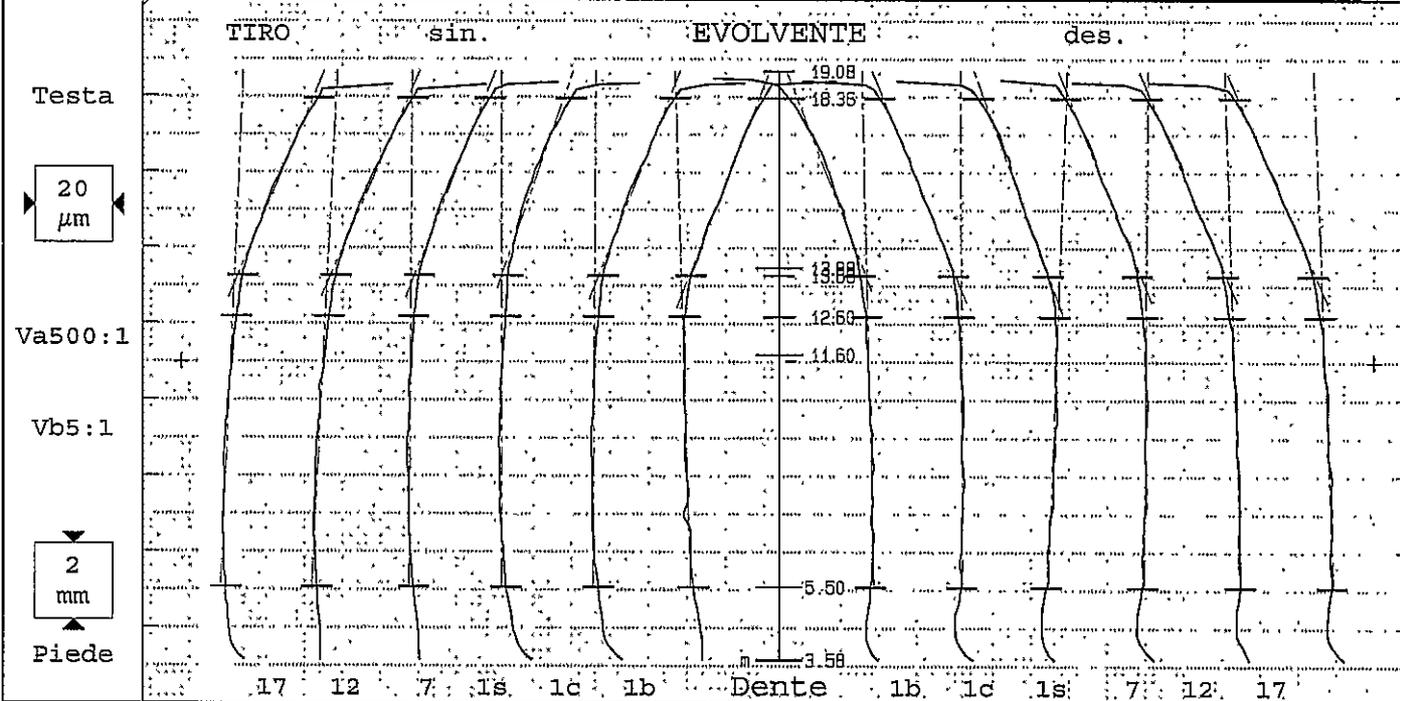


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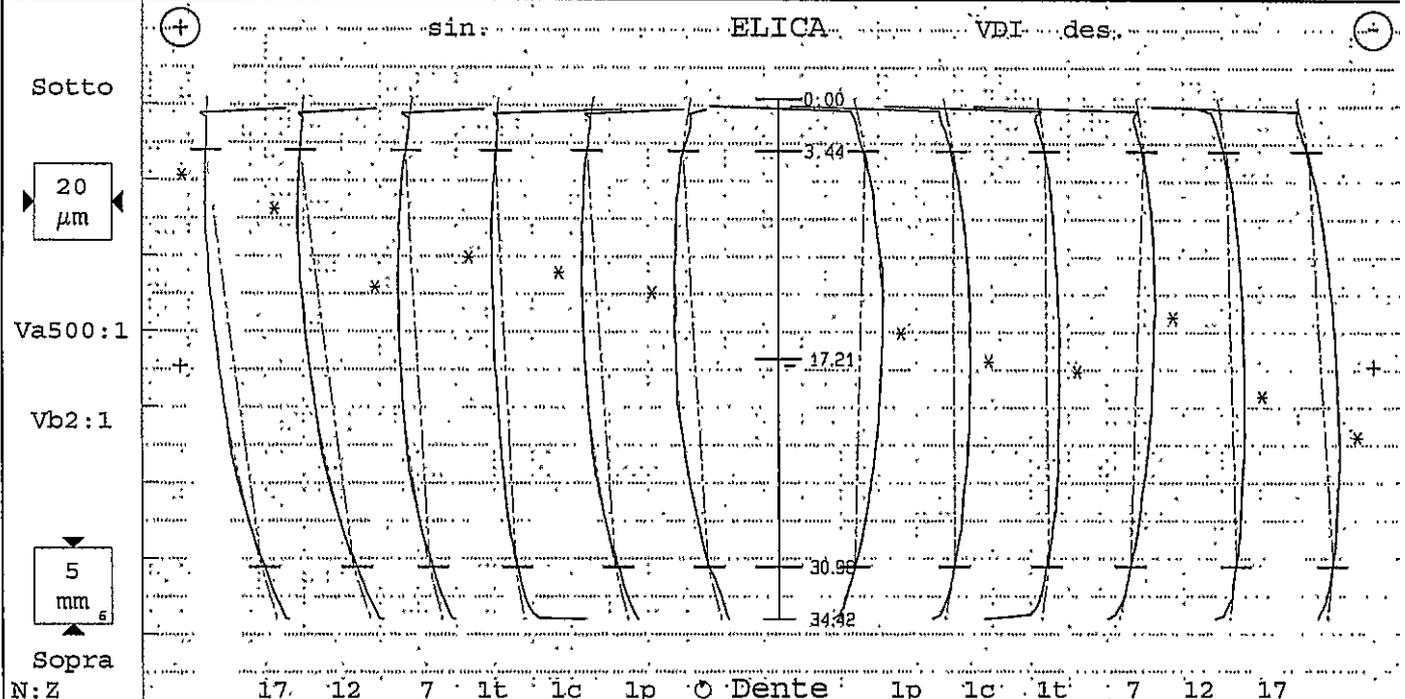
Ruota cilindrica Evolvente/Elica



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Denominazione:	Output Shaft 1		Numero denti z	21	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4307.35-IF		Modulo m	2.4mm	Tratto evolv. La	7.1mm
Commessa/serie nr.:	pz 2		Angolo pressione	20°	Tratto elica Lb	27.54mm
Masch.Nr.:	M001	Spindel: Formm	Angolo elica	-24°	Inizio elab. M1	5.5mm
Untersuchungszweck:	Laufende Messung		Ø Base db	51.2517mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:		Ang. Base	-22.47°	Fat.scor.pr. x	.65

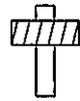


Tolerance	Medio	Val. misur [µm]						Qual	Tolerance	Val. misur [µm]						Medio	Qual	
		Var 4								Var 4								
fHm	±5 -2								±5							-1		
fHa	±7 -2	-3	-4	0	0	0	2		±7	-2	0	3	1	-2	-3	-1		
Fa	3 3	4	4	2	2	2	3			2	2	3	1	3	3	2		
ffa	4 2	2	2	2	2	2	2		4	2	1	2	1	1	2	1		
fKo	-22/-14 -19	-19	-19	-19	-16	-19	-22		-22/-14	-17	-20	-22	-21	-19	-20	-20		
P/T-φ [mm]	49.394	[49.18/49.5]								63.802	[63.74/63.9]							



N:Z		Var 10							Tolerance	Var 12						
fHsm	15±6 13								±6							2
fHs	15±13 13	18	18	8	7	9	8		±13	-4	0	1	-4	3	8	2
Fg	16 9	11	10	8	7	6	7		16	6	3	2	7	4	7	5
ffR	9 1	1	1	2	1	1	1		9	1	1	1	1	1	1	1
CR	2/6 5	4	5	5	3	4	5		2/6	6	5	3	4	3	4	4
Bd	1															-5





Nr. prog.: STI0410005 0	PNC35 B4784	Controllore: TURNO c	Data: 09.12.2014 12:31
Denominazione: Output Shaft 1	Numero denti z 21	Angolo pressione 20°	
Numero disegno: 250.6.4307.35-IF	Modulo m 2.4mm	Angolo elica -24°	
Comessa/serie nr.: pz 2	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001	Spindel: FORMULAZIONE	Charge:	

Errori singoli di divisione fp fianco sinistro

20µm

500:1

Errore somma di divisione Fp fianco sinistro

20µm

500:1

Errori singoli di divisione fp fianco destro

20µm

500:1

Errore somma di divisione Fp fianco destro

20µm

500:1

Corso per misura divis. 158.287 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		2		18	
Scarto di divisione	Rp	6				6			
Err. globale di divisione	Fp	18		50		16		50	
Err. cordale di divisione	Fpz/8	9				8			

Centricità Fr (Ø-sfera =5mm)

⊙ : 11µm

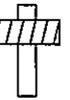
20µm

500:1

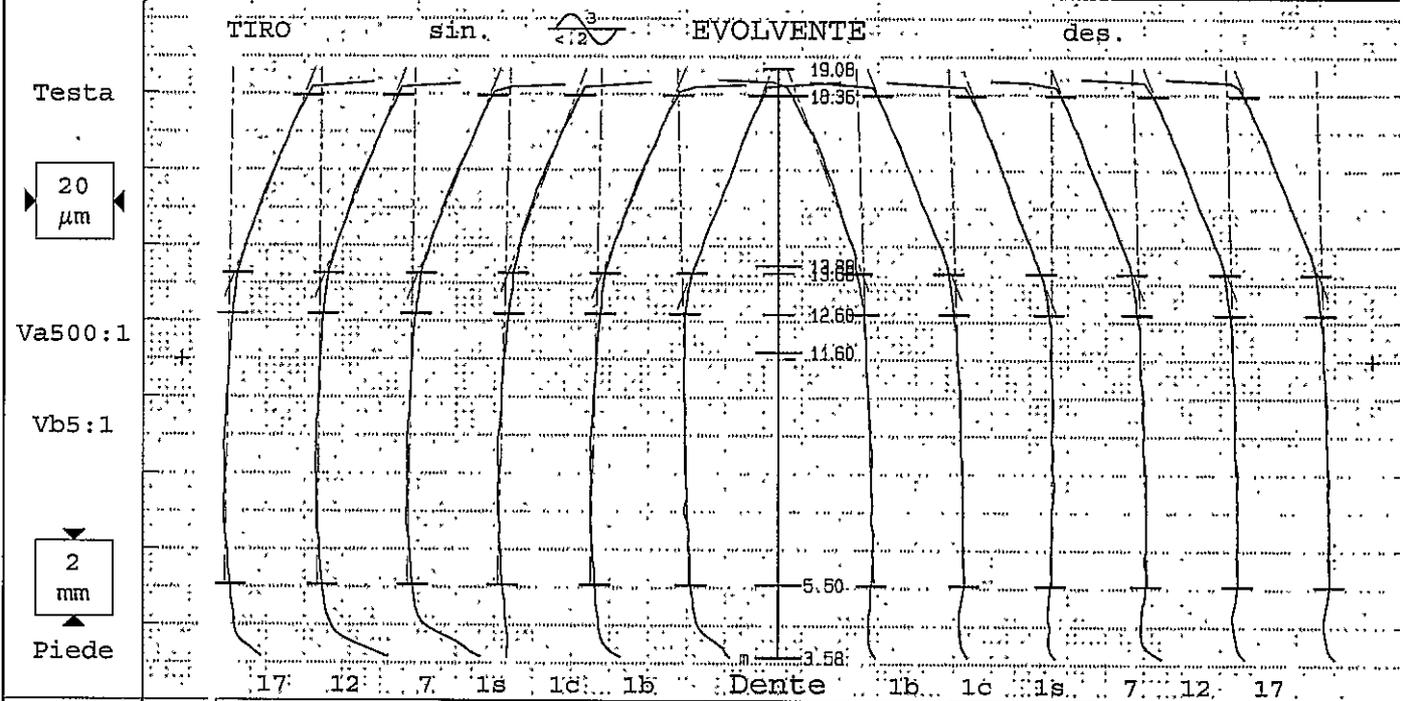
Err. di concentricità	Fr	11	40
Variaz. spessore dente	Rs		

GETRAG

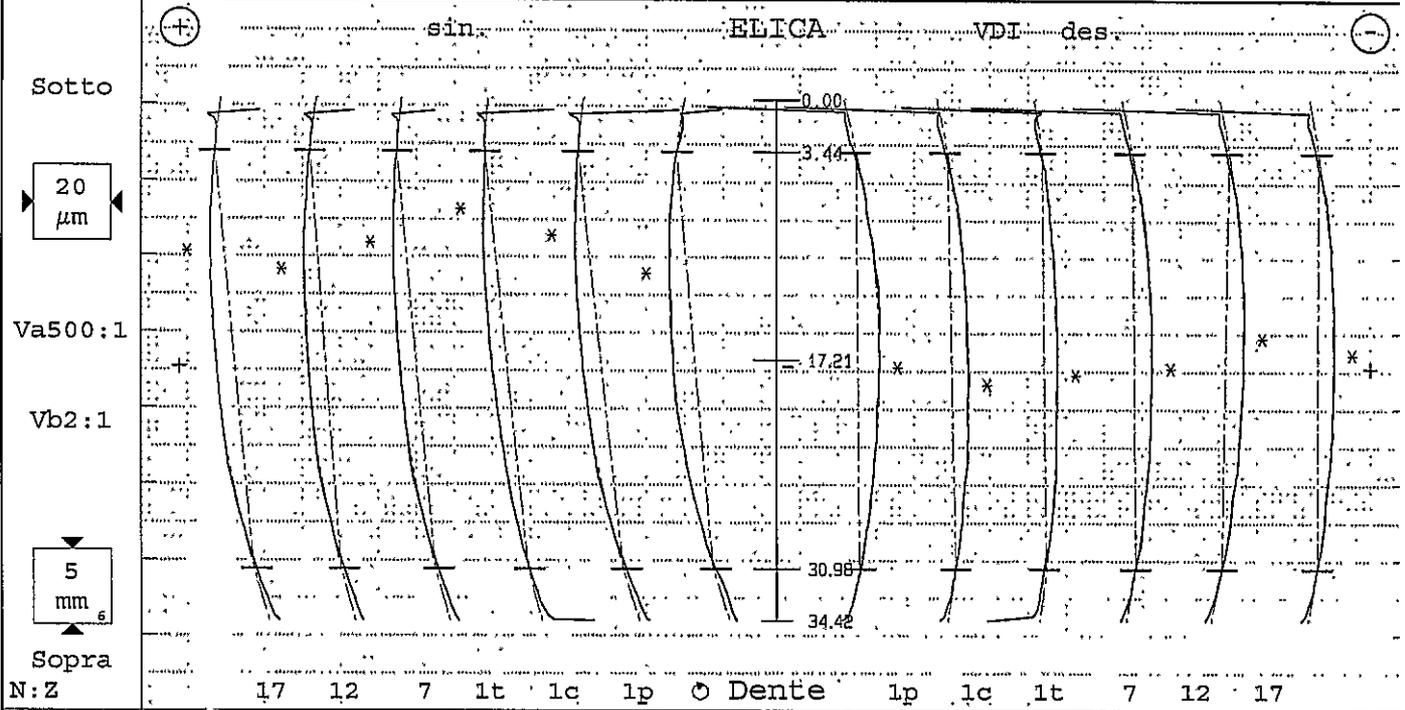
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0 PNC35 B4784	Controllore:	TURNO C	Data:	09.12.2014 12:43
Denominazione:	Output Shaft 1	Numero denti z	21	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4307.35-IF	Modulo m	2.4mm	Tratto evolv. La	7.1mm
Comessa/serie nr.:	pz 3	Angolo pressione	20°	Tratto elica LE	27.54mm
Masch.Nr.:	M001 Spindel: Formm	Angolo elica	-24°	Inizio elab. MI	5.5mm
Untersuchungszweck:	Laufende Messung	Ø Base db	51.2517mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-22.47°	Fat.scor.pr. x	.65



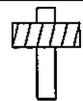
Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var 1									Var 0								
fHm ±5	-1	-1	-1	-1	-2	-2	2		±5	-2	-2	0	-2	-2	-2	-2	-2		
fHa ±7	-1	-1	-1	-1	-2	-2	2		±7	-2	-2	0	-2	-2	-2	-2	-2		
Fa 2	2	2	2	2	3	3	2			3	3	2	3	2	2	3	3		
ffa 4	2	2	2	2	2	2	1		4	2	1	1	1	1	1	1	1		
fKo -22/-14	-19	-19	-19	-19	-17	-19	-22		-22/-14	-16	-19	-21	-19	-19	-19	-19	-19		
P/T-φ [mm]	49.379	[49.18/49.5]									63.871								[63.74/63.9]



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var 5									Var 6								
fHm 15±6	13	13	10	13	14	15	12		±6	1	3	1	1	-3	-1	0	0		
fHs 15±13	13	13	10	13	14	15	12		±13	1	3	1	1	-3	-1	0	0		
Fs 16	6	6	5	5	7	8	5		15	5	5	3	5	7	6	6	6		
ffs 9	1	1	1	1	1	1	1		9	1	1	1	1	1	1	1	1		
Cs 2/5	5	5	5	5	4	5	6		2/5	6	4	4	5	5	4	5	5		
Bd	-2																0		

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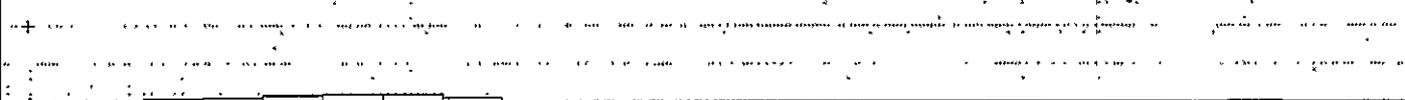




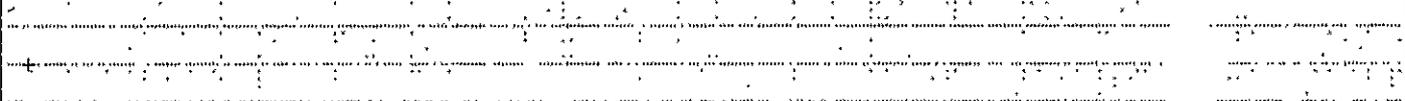
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Denominazione:	Output Shaft 1		Numero denti z	21	Angolo pressione	20°
Numero disegno:	250.6.4307.35-IF		Modulo m	2.4mm	Angolo elica	-24°
Comessa/serie nr.:	pz 3		Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: FORMER	Zeichn.:		Charge:	



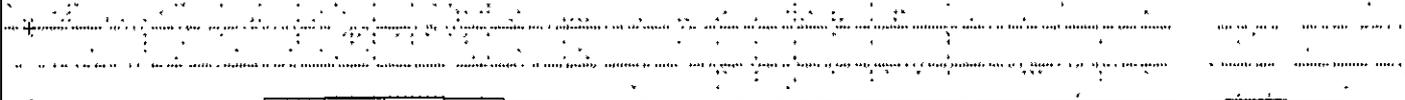
Errori singoli di divisione fp fianco sinistro



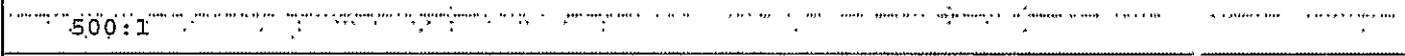
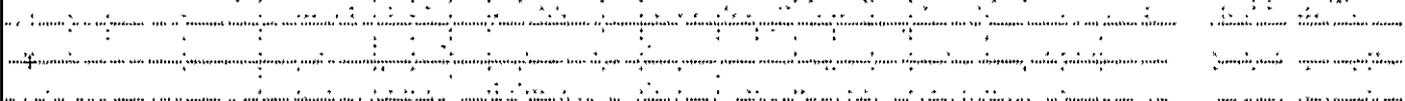
Errore somma di divisione Fp fianco sinistro



Errori singoli di divisione fp fianco destro

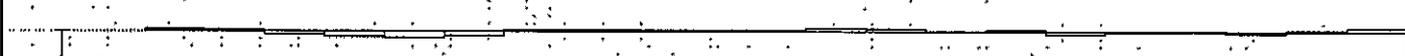


Errore somma di divisione Fp fianco destro



	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	2		14		2		14	
Gr. salto di passo fu max	1		18		1		18	
Scarto di divisione Rp	3				4			
Err. globale di divisione Fp	7		50		7		50	
Err. cordale di divisione Fpz/8	5				4			

Centricità Fr (Ø-sfera =5mm) ☉ : 1µm

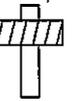


Err. di concentricità Fr	3	40	
Variab. spessore dente Rs			

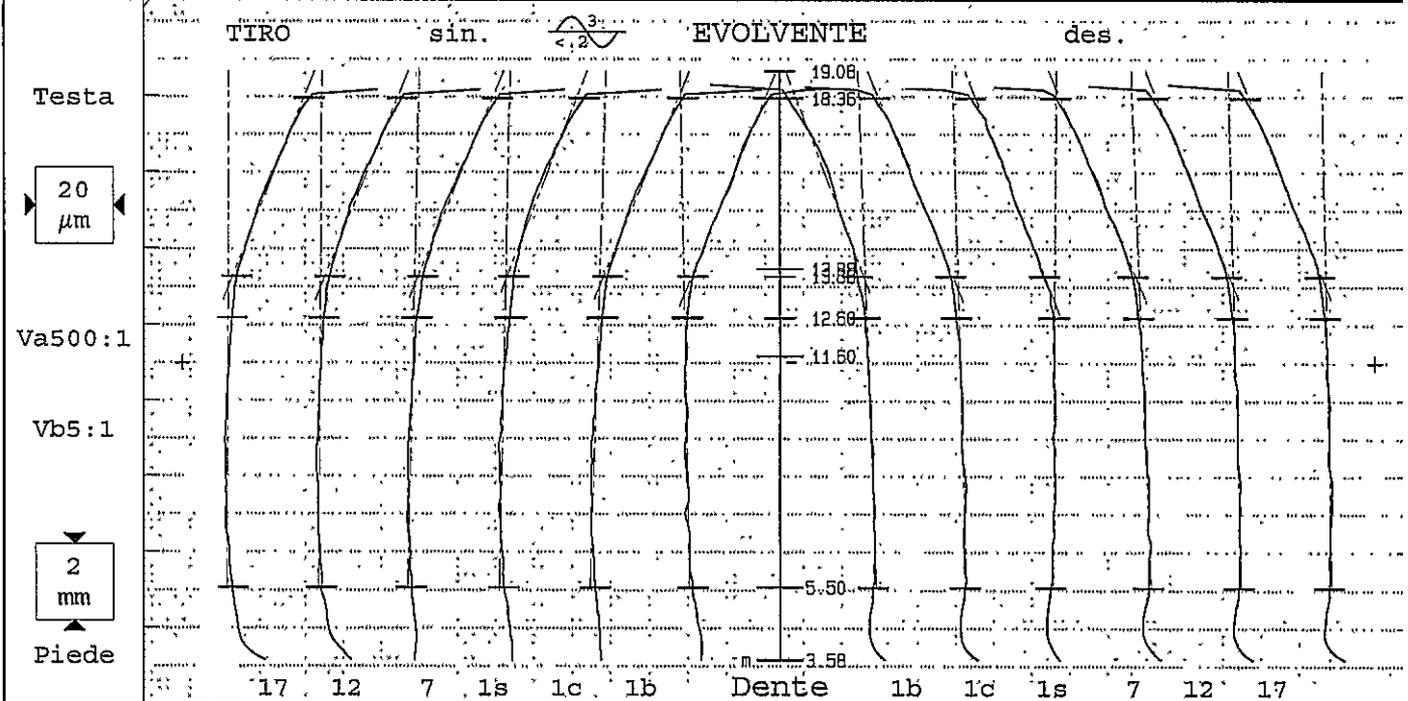


GETRAG

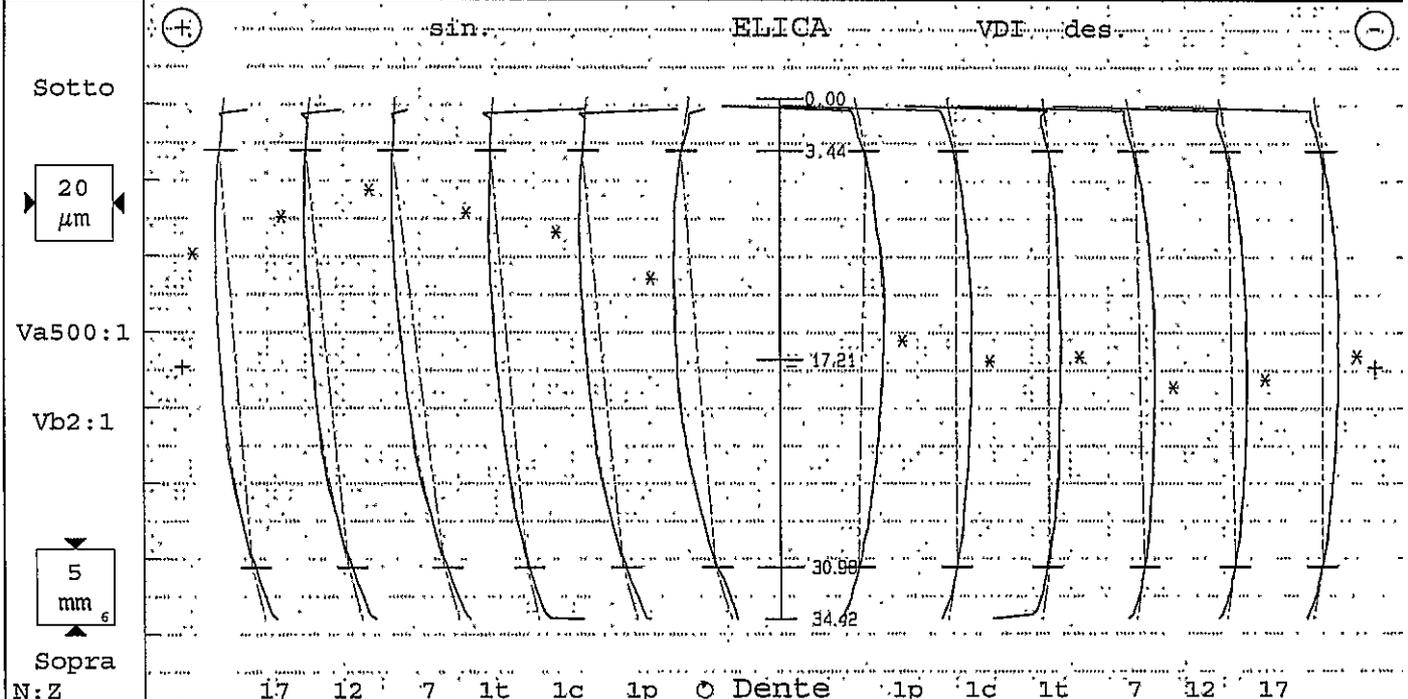
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	TURNO c	Data:	09.12.2014 12:54
Denominazione:	Output Shaft 1		Numero denti z	21	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4307.35-IF		Modulo m	2.4mm	Tratto evolv. La	7.1mm
Commessa/serie nr.:	pz 4		Angolo pressione	20°	Tratto elica Ls	27.54mm
Masch.Nr.:	M001	Spindel: Forme	Angolo elica	-24°	Inizio elab. Ml	5.5mm
Untersuchungszweck:	Laufende Messung		Ø Base db	51.2517mm	Palpatore Ø	(#1) 1mm
Werkzeug:	Charge:	Ang. Base	-22.47°	Fat.scor.pr. x	.65	



Tolerance	Medio	Val. misur [µm]						Qual	Tolerance	Val. misur [µm]						Medio	Qual		
		Var								Var									
fHm	±5	-1								±5								-2	
fHa	±7	-1	0	-1	-2	-1	-2	1	±7	-3	-2	0	-3	-2	-1	-2			
Fa	3		2	2	3	3	3	2		3	3	1	3	2	2	3			
ffa	4	2	2	2	2	2	2	2	4	1	1	1	1	1	1	1			
fKo	-22/-14	-20	-20	-20	-19	-17	-19	-22	-22/-14	-16	-19	-21	-19	-19	-19	-19			
P/T-φ [mm]		49.367	[49.18/49.5]								63.872	[63.74/63.9]							



N:Z		Var								Var								
fHSm	15±6	14								±6								1
fHs	15±13	14	11	14	17	12	13	11	±13	-3	0	0	3	2	0	1		
Fs	16	6	5	5	8	3	7	6	16	5	3	4	4	4	3	4		
ffs	9	2	1	2	2	1	1	1	9	1	1	1	1	1	1	1		
CS	2/6	4	4	4	4	3	4	6	2/6	6	4	3	4	4	4	4		
Bd		-1																-3

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Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	TURNO C	Data:	09.12.2014 12:54
Denominazione:	Output Shaft 1	Numero denti z	21	Angolo pressione	20°
Numero disegno.:	250.6.4307.35-IF	Modulo m	2.4mm	Angolo elicita	-24°
Commessa/serie nr.:	pz 4	Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel:	FORMA 4	Charge:	



Errori singoli di divisione fp fianco sinistro

20µm
500:1

Errore somma di divisione Fp fianco sinistro

20µm
500:1

Errori singoli di divisione fp fianco destro

20µm
500:1

Errore somma di divisione Fp fianco destro

20µm
500:1

	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		1		14	
Gr. salto di passo fu max	2		18		1		18	
Scarto di divisione Fp	5				2			
Err. globale di divisione Fp	8		50		6		50	
Err. cordale di divisione Fpz/8	5				4			

Centricità Fr (Ø-sfera =5mm)

⊙ : 3µm

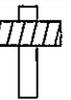
20µm
500:1

Err. di concentricità Fr	5	40
Variat. spessore dente Rs		

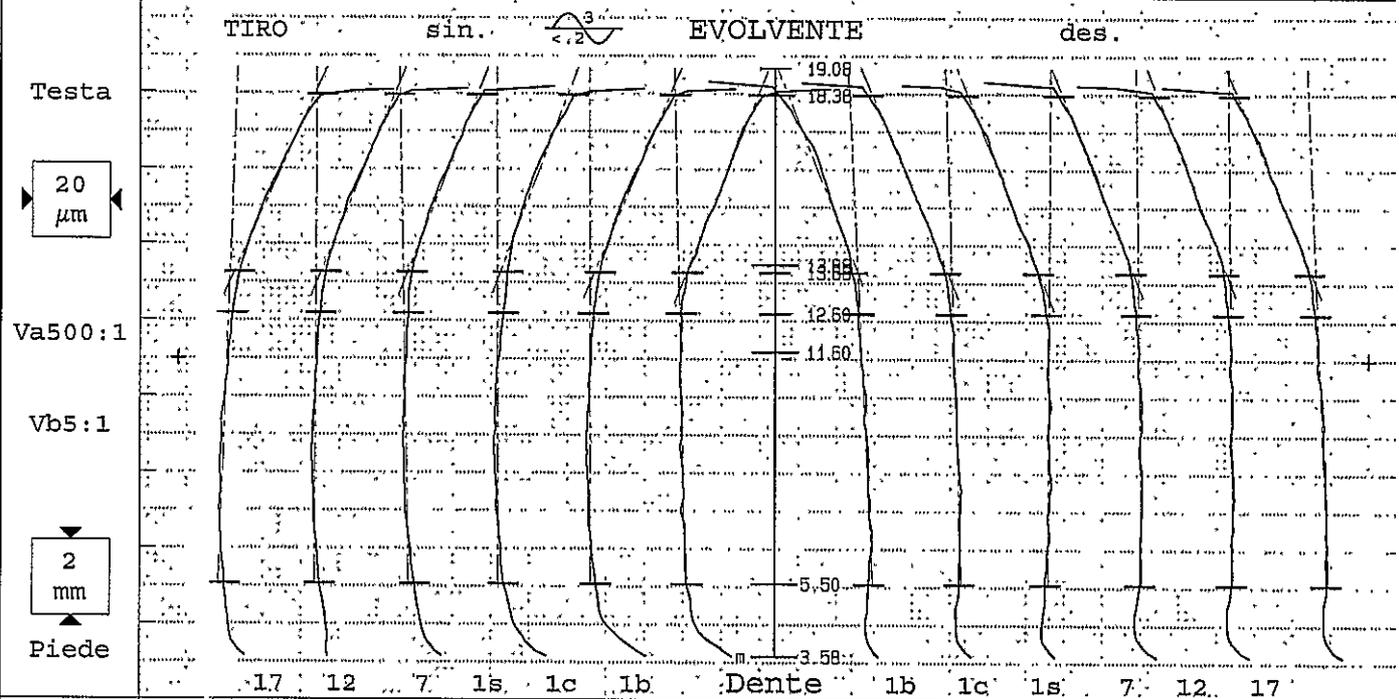


GETRAG

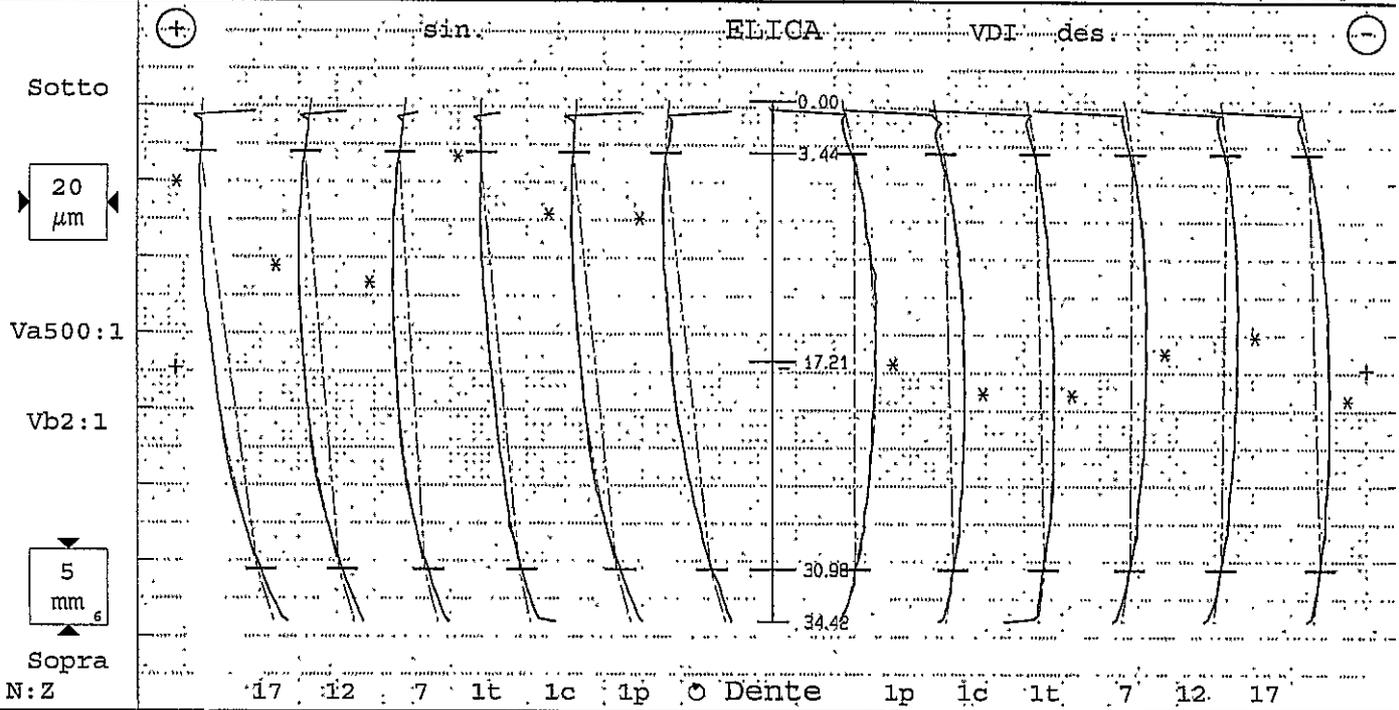
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0 PNC35 B4784	Controllore:	TURNO C	Data:	09.12.2014 13:00	
Denominazione:	Output Shaft 1	Numero denti z	21	Largh.fasc.dent. b	34.42mm	
Numero disegno.:	250.6.4307.35-IF	Modulo m	2.4mm	Tratto evolv. La	7.1mm	
Commessa/serie nr.:	pz 5	Angolo pressione	20°	Tratto elica Lb	27.54mm	
Masch.Nr.:	M001	spindel: Forme	Angolo elica	-24°	inizio elab. Ml	5.5mm
Untersuchungszweck:	Laufende Messung	Ø Base db	51.2517mm	Palpatore Ø	(#1) 1mm	
Werkzeug:	Charge:	Ang. Base	-22.47°	Fat.scor.pr. x	.65	



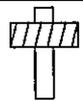
Tolerance	Medio	Val.misur [µm]						Qual	Tolerance	Val.misur [µm]						Medio	Qual	
		Var								Var								
fHm	±5	-1								±5							-2	
fHa	±7	-1	-3	0	1	0	0	2	±7	-3	-2	0	-1	-1	-3	-2		
Fa	3	3	2	3	3	3	2	4	3	2	2	2	3	3				
ffa	4	2	2	2	3	2	1	4	2	1	2	1	1	1				
fKo	-22/-14	-21	-20	-21	-20	-19	-21	-22	-22/-14	-16	-19	-22	-19	-19	-19			
P/T-φ [mm]	49.340	[49.18/49.5]							63.831	[63.74/63.9]								



N:Z		Var								Var							
fHsm	15±6	13								±6							1
fHB	15±13	13	19	11	8	13	14	15	±13	0	3	3	-1	-2	4	1	
FB	16	7	9	6	7	5	5	5	16	5	5	4	4	6	4	5	
ffB	9	2	2	1	1	1	2	1	9	2	1	1	1	1	1		
CB	2/6	5	4	5	5	3	4	4	2/6	6	4	4	4	4	4		
Bd		2															-3

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Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	TURNO C	Data:	09.12.2014 13:00
Denominazione:	Output Shaft 1		Numero denti z	21	Angolo pressione	20°
Numero disegno.:	250.6.4307.35-IF		Modulo m	2.4mm	Angolo elica	-24°
Commessa/serie nr.:	pz 5		Untersuchungszweck:	Laufende Messung		
Masch.Nr.:	M001	Spindel: FORMER	Skizze:		Charge:	



Errori singoli di divisione fp fianco sinistro

20µm
500:1

Errore somma di divisione Fp fianco sinistro

20µm
500:1

Errori singoli di divisione fp fianco destro

20µm
500:1

Errore somma di divisione Fp fianco destro

20µm
500:1

	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				5			
Err. globale di divisione Fp	22		50		12		50	
Err. cordale di divisione Fpz/8	10				7			

Centricità Fr (Ø-sfera =5mm) ☉ : 14µm

20µm
500:1

Err. di concentricità Fr	16	40	
Variab. spessore dente Rs			



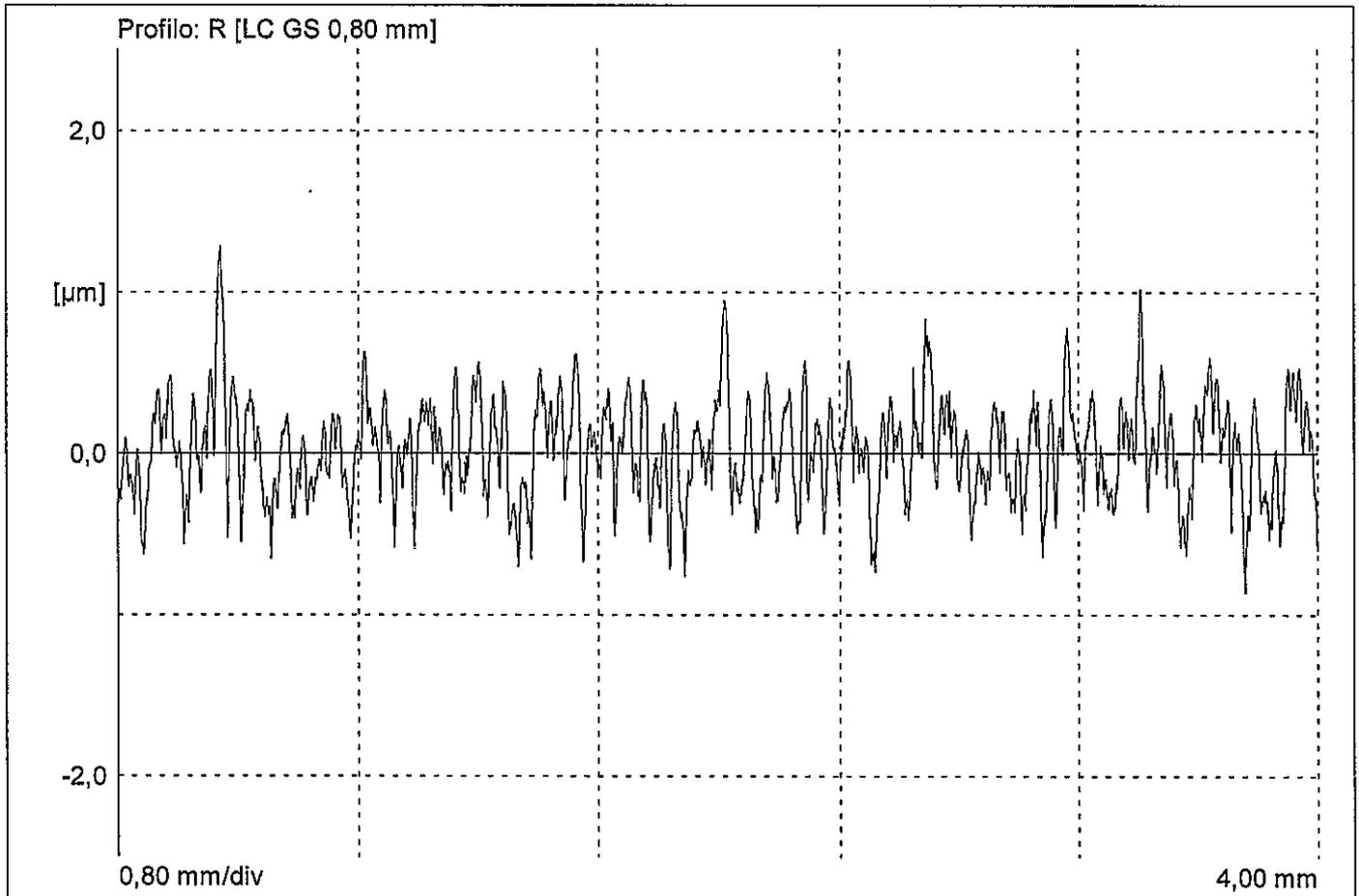


Via dei Ciclamini,4 Modugno (BA)

Sala Metrologica GPS5

Oggetto: OS 1
Numero: 4307PPAP PZ.1
Operatore: TURNO C
Data, ora: 18/12/2014, 11:47
Nota: RZ DENTE
Tastatore: MFW-250 50

MACCHINA: MOA 416121 001



LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250,0	µm
Ra	0,24	µm
Rmax	1,93	µm
Rz	1,68	µm

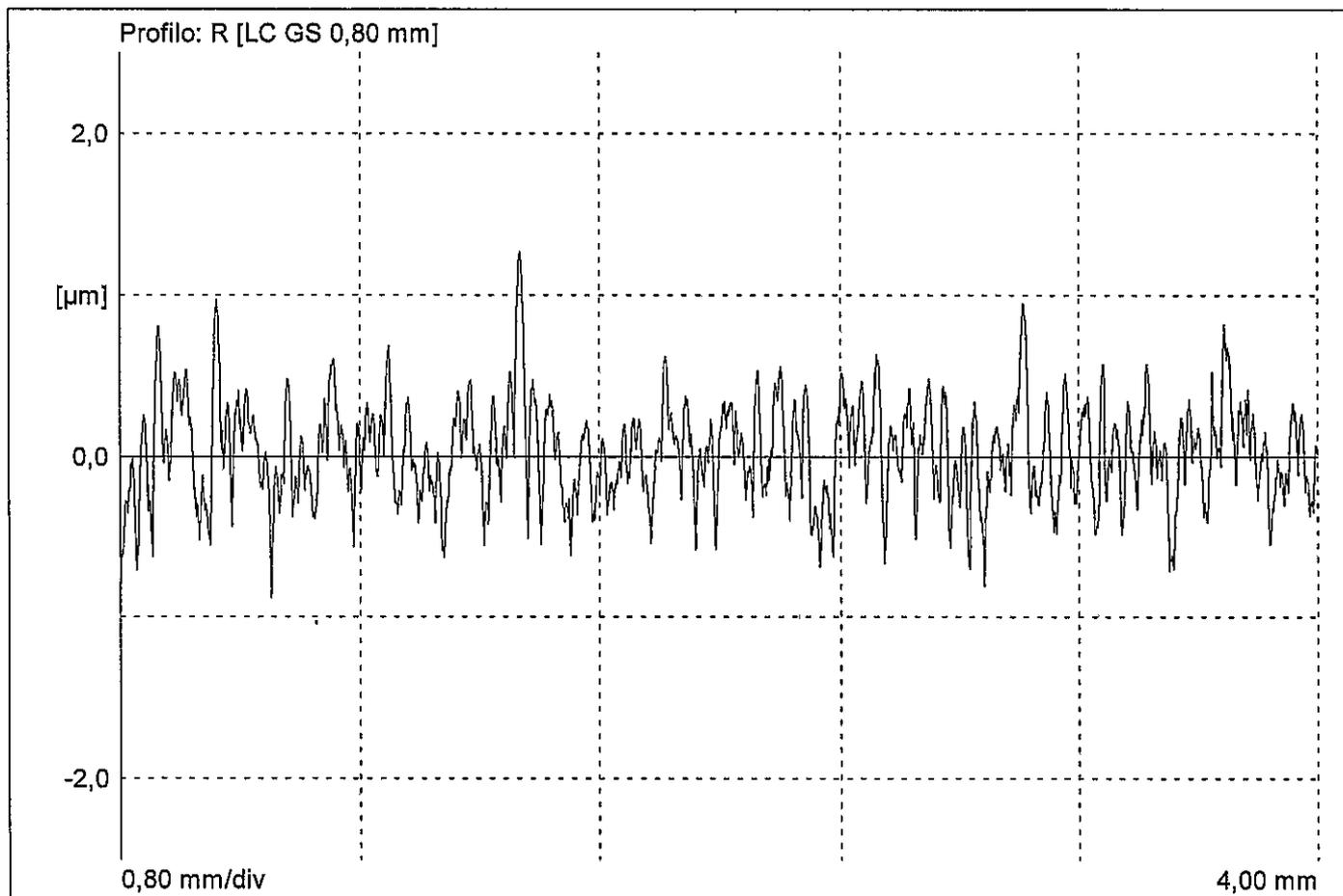
PERTHOMETER CONCEPT

Via dei Ciclamini,4 Modugno (BA)

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4307PPAP PZ.2
Operatore:	TURNO C
Data, ora:	18/12/2014, 11:46
Nota:	RZ DENTE
Tastatore:	MFW-250 50

MACCHINA:	MOA 416121 001
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LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250,0	µm
Ra	0,24	µm
Rmax	1,90	µm
Rz	1,67	µm

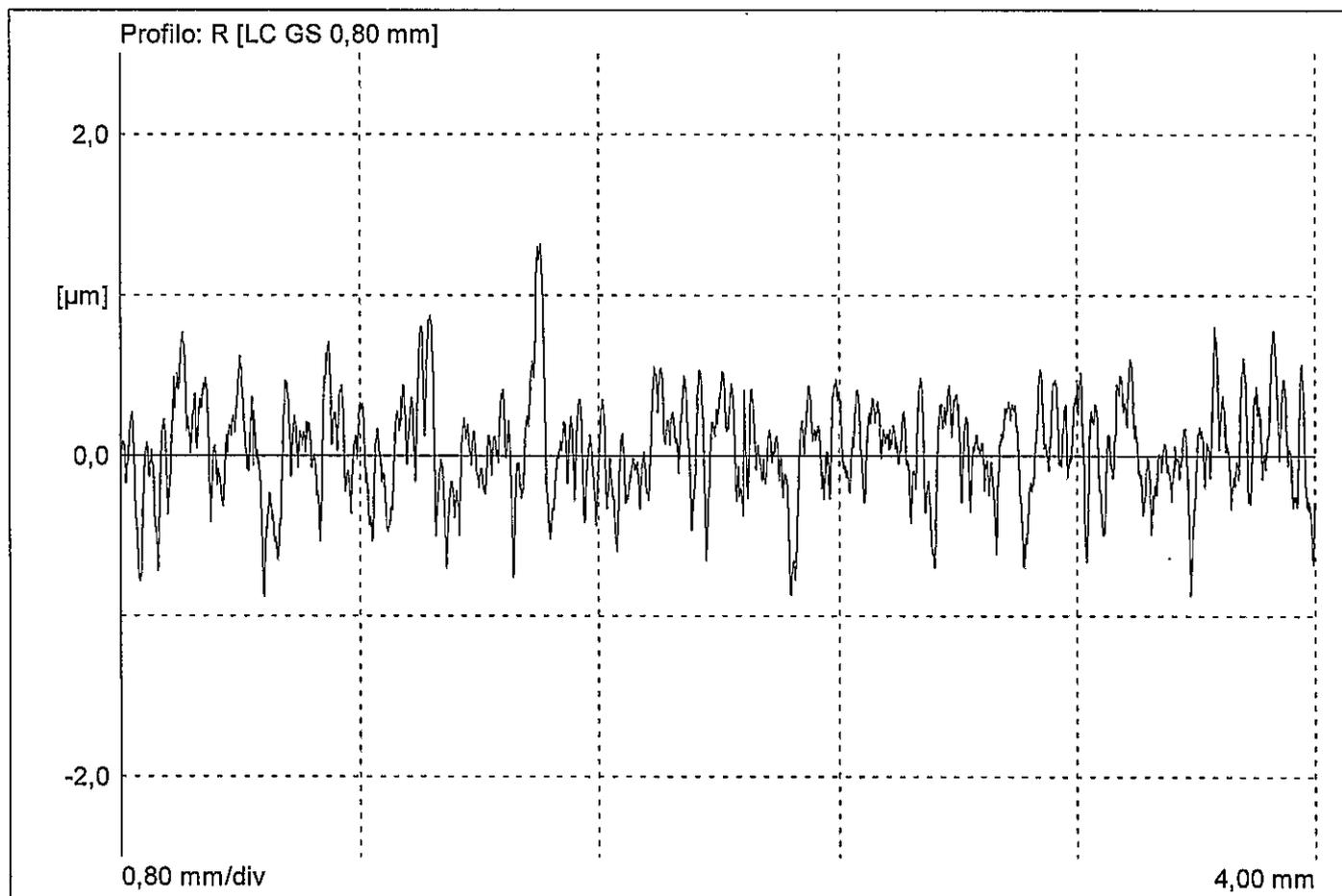
PERTHOMETER CONCEPT

Via dei Ciclamini,4 Modugno (BA)

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4307PPAP PZ.3
Operatore:	TURNO C
Data, ora:	18/12/2014, 11:44
Nota:	RZ DENTE
Tastatore:	MFV-250 50

MACCHINA:	MOA 416121 001
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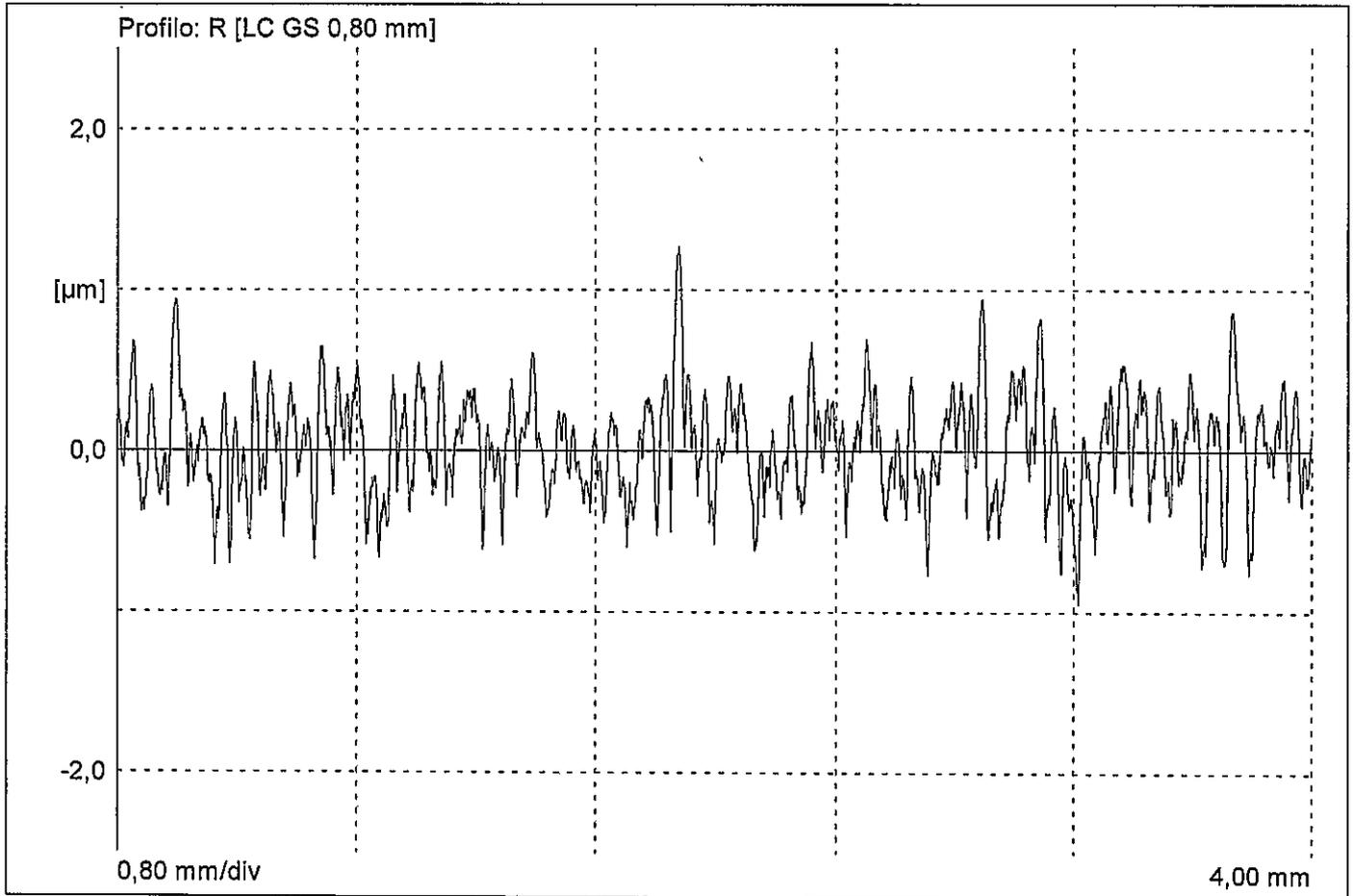


LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250,0	µm
Ra	0,24	µm
Rmax	2,08	µm
Rz	1,61	µm

PERTHOMETER CONCEPT

Oggetto: OS 1
Numero: 4307PPAP PZ.4
Operatore: TURNO C
Data, ora: 18/12/2014, 11:43
Nota: RZ DENTE
Tastatore: MFW-250 50

MACCHINA: MOA 416121 001

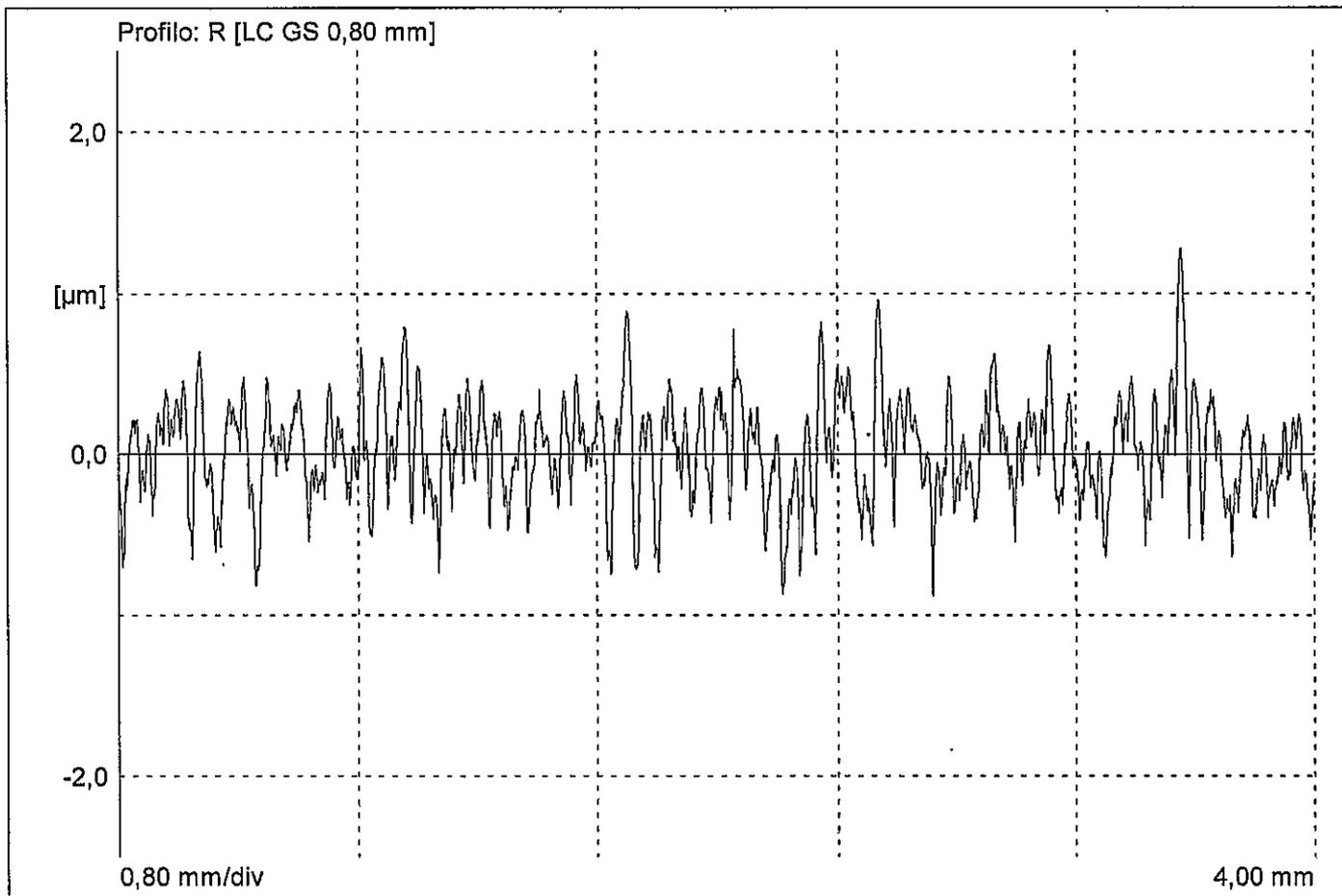


LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250,0	µm
Ra	0,25	µm
Rmax	1,88	µm
Rz	1,66	µm

Via dei Ciclamini,4 Modugno (BA)

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4307PPAP PZ.5
Operatore:	TURNO C
Data, ora:	18/12/2014, 11:42
Nota:	RZ DENTE
Tastatore:	MFW-250 50
MACCHINA:	MOA 416121 001



LT	5,60	mm
LM	4,00	mm
Z	5	
VB	±250,0	µm
Ra	0,24	µm
Rmax	1,92	µm
Rz	1,70	µm

PERTHOMETER CONCEPT



Operatore: Amministratore: super	Data: 09-01-2015 11:03	Numero seriale di tutto: Pz_1	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4307_EDISON\2506430735_Part M.mtl
		Unità di misura: [mm , °]		Tipo: Z_PPAPIOS1_4307_EDISON Modello: 2506430735_Part M

Nota di programn	Nota:
------------------	-------

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D63.45	63.450	63.225	-0.225		-0.300	0.000



Operatore: Amministratore: super	Data: 09-01-2015 11:04	Numero seriale di tutto: Pz_2	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4307_EDISON\2506430735_Part M.mtl
		Unità di misura: [mm , °]		Tipologia: Z_PPAPIOS1_4307_EDISON Modello: 2506430735_Part M

Nota di programma: _____ Note: _____

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D63.45	63.450	63.204	-0.246		-0.300	0.000



Operatore: Amministratore: super	Date: 09-01-2015 11:05	Numero seriale di lotto: Pz_3	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4307_EDISON\2506430735_Part M.mtl
		Unità di misura: [mm , °]		Tip: Z_PPAPIOS1_4307_EDISON Modello: 2506430735_Part M

Nota di programr	Nota:
------------------	-------

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D63.45	63.450	63.206	-0.244		-0.300	0.000



Operatore: Amministratore: super	Data: 09-01-2015 11:05	Numero seriale di lotto: Pz_4 Unità di misura: [mm , °]	Nr: 0	Config. file: C:\Start\Archive\Z_PPAP\IOS1_4307_EDISON\2506430735_Part M.mt	Tipo: Z_PPAP\IOS1_4307_EDISON	Modello: 2506430735_Part M
-------------------------------------	------------------------------	---	-------	---	-------------------------------	----------------------------

Nota di programma: _____ Nota: _____

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
1	Part_M_D63.45	63.450	63.219	-0.231		-0.300	0.000

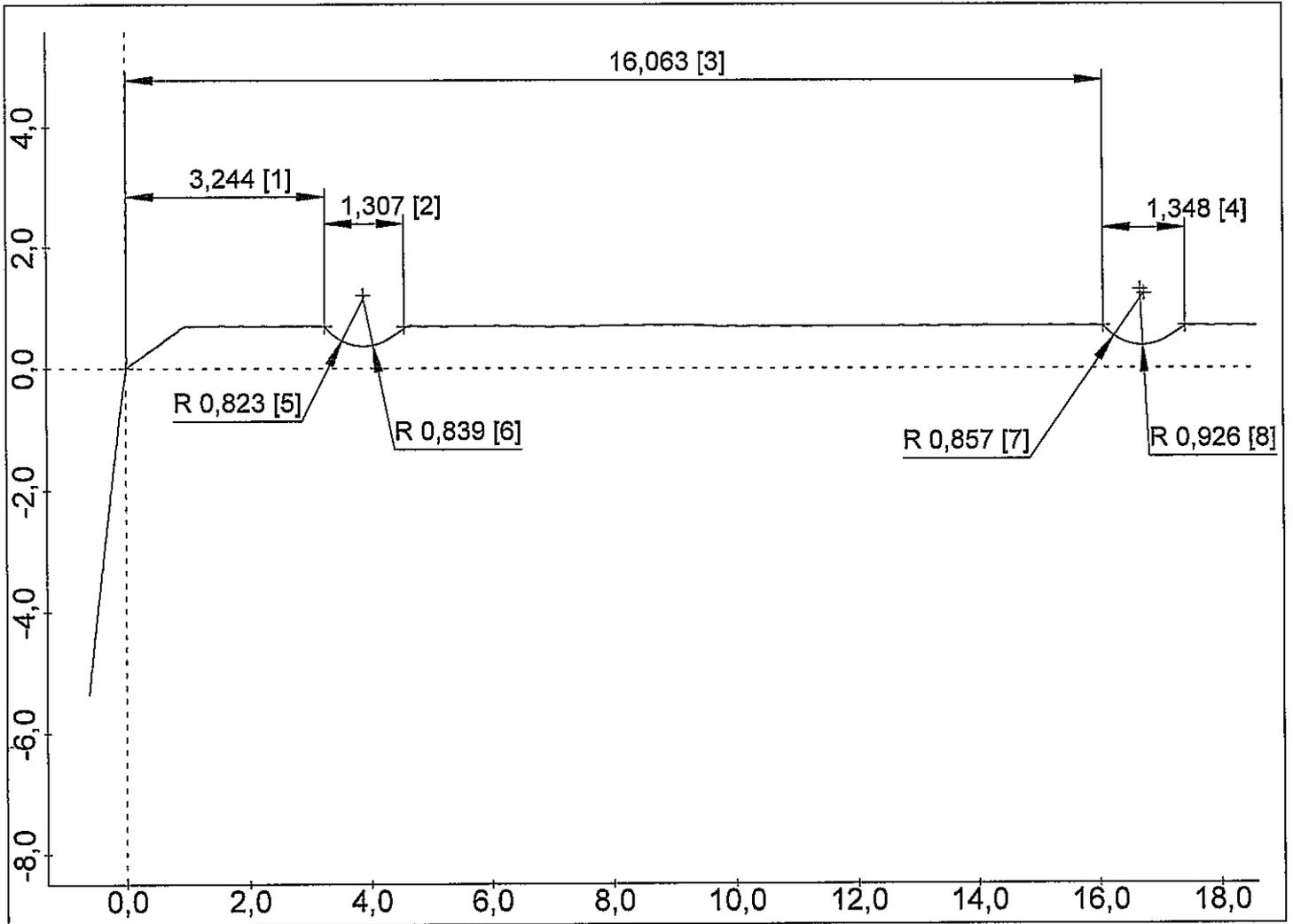


Operatore: Amministratore: super	Date: 09-01-2015 11:06	Numero seriale di lotto: Pz_5 Unità di misura: [mm , °]	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4307_EDISON\2506430735_Part M.mtl	Tipo: Z_PPAPIOS1_4307_EDISON	Modello: 2506430735_Part M
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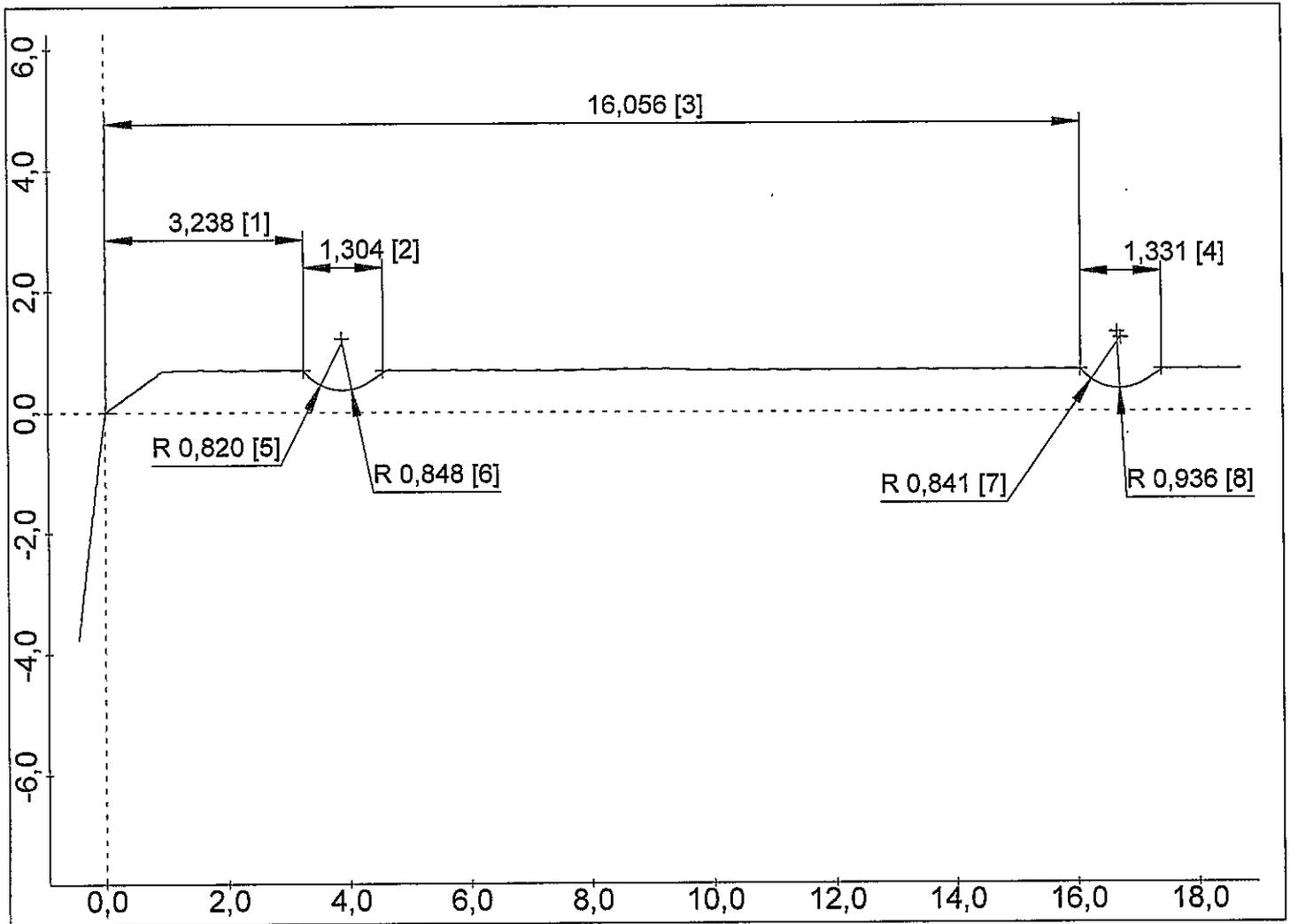
Nota di programr

Nota:

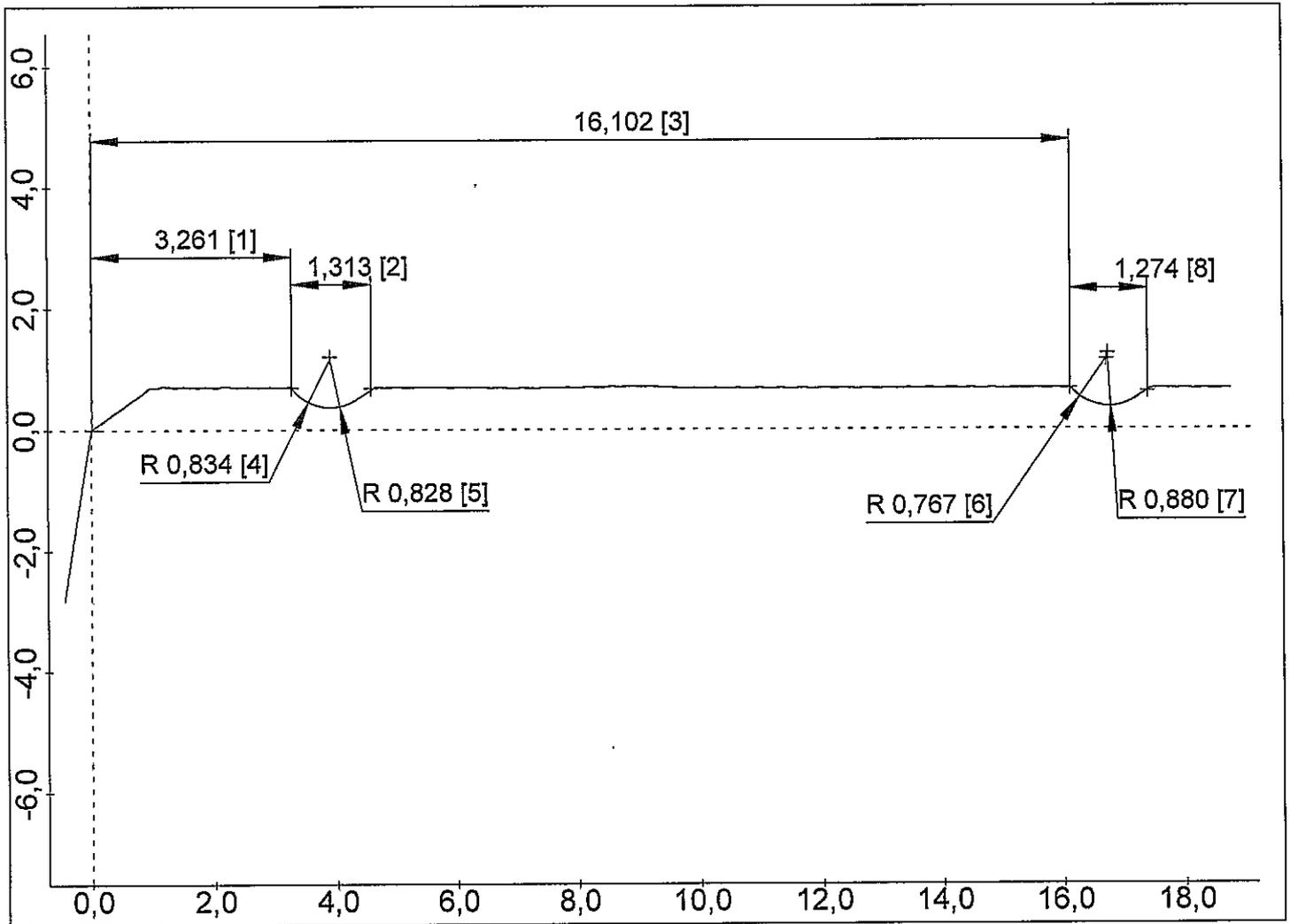
GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
	Part_M_D63.45	63.450	63.268	-0.182		-0.300	0.000



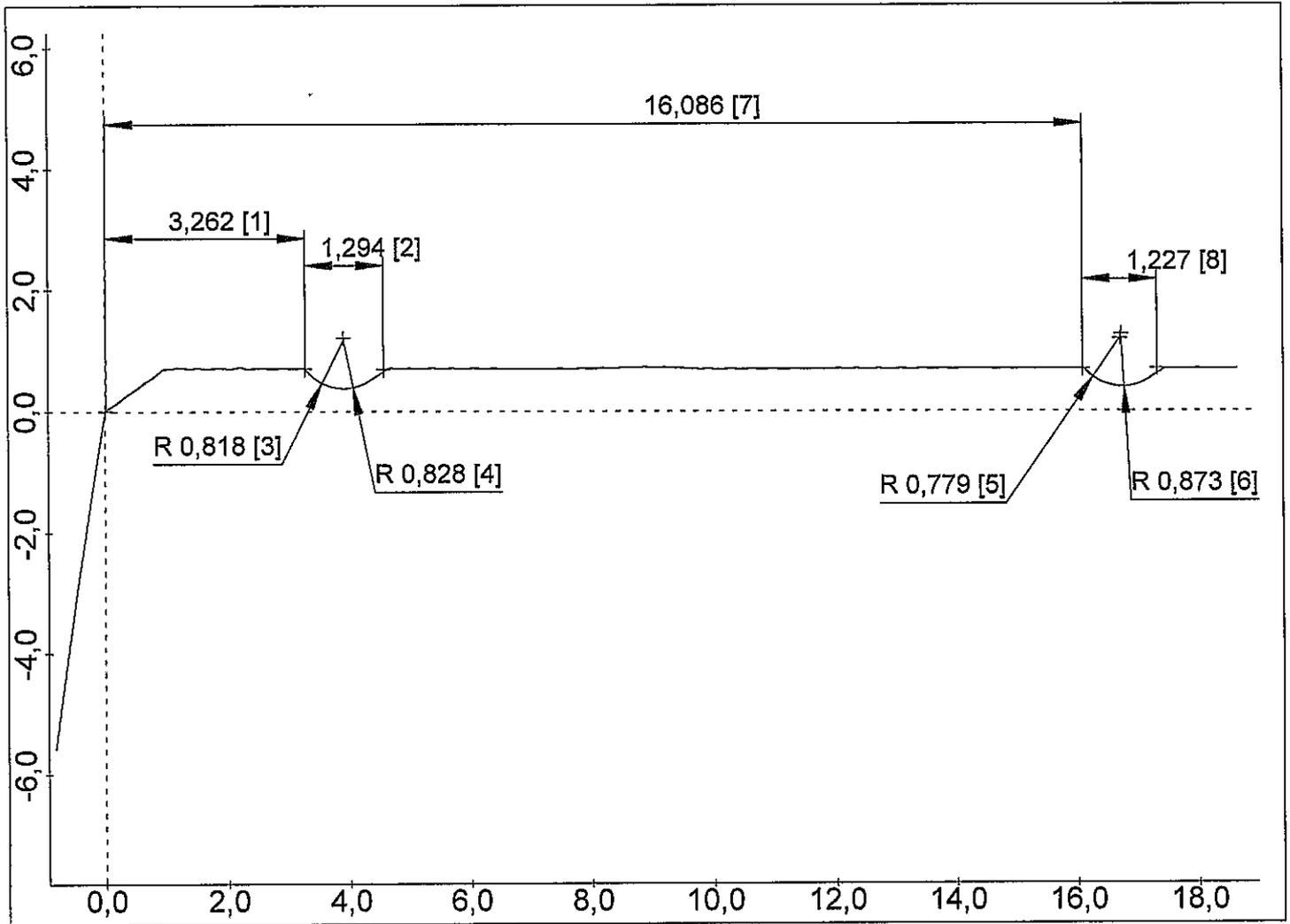
PERTHOMETER CONCEPT



PERTHOMETER CONCEPT



PERTHOMETER CONCEPT



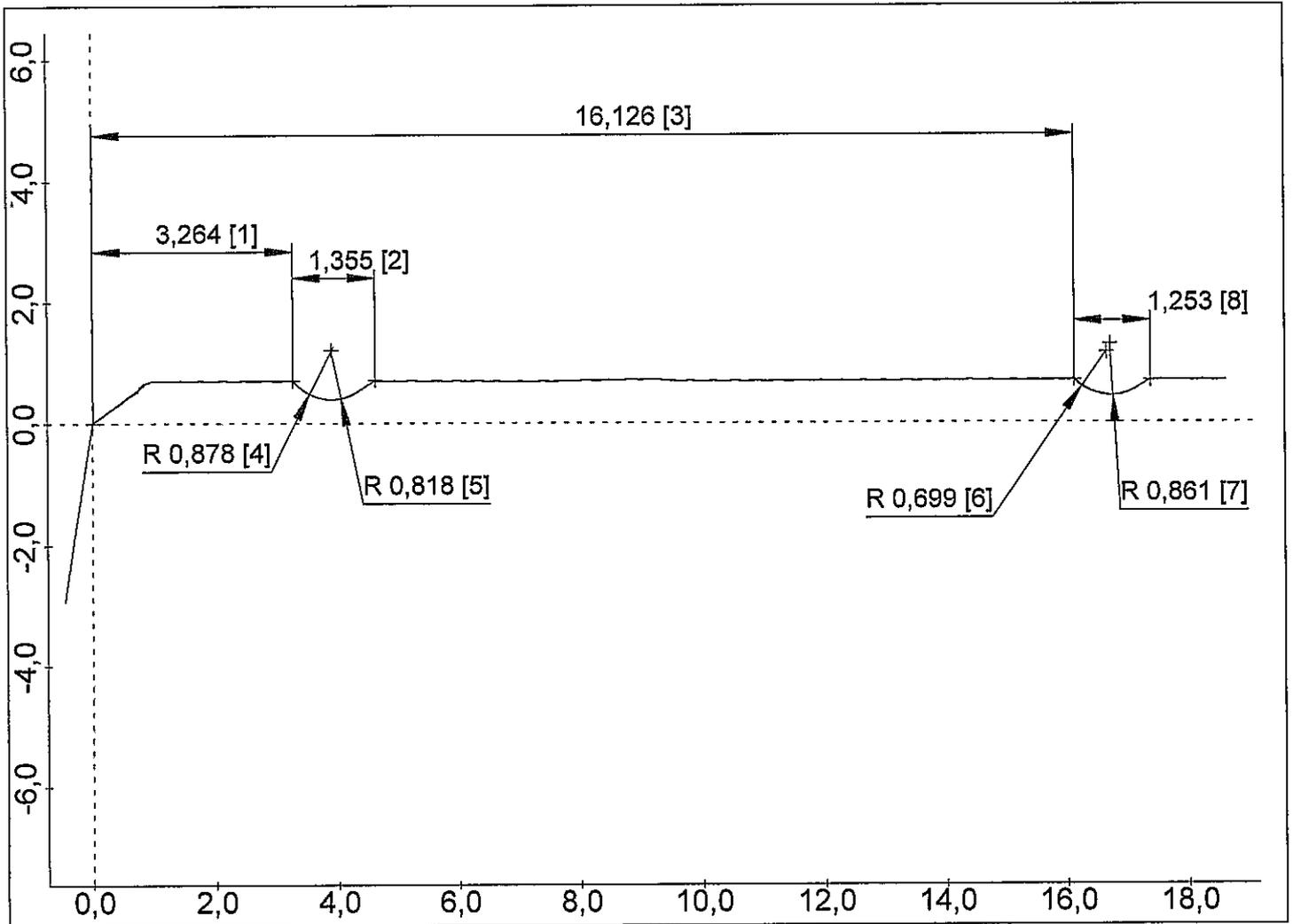
PERTHOMETER CONCEPT



Via dei Ciclamini 4, Modugno (BA)

Oggetto: OS1
Numero: 4307 PPAP PZ.5
Operatore: TURNO B
Data, ora: 09.01.2015, 11:26
Nota: PART. M
Tastatore: PCV 350 / 33 mm

Macchina: MOA 416120 001



PERTHOMETER CONCEPT

Istruzioni di controllo

■ ■ ■ GETRAG
PP Produzione GPS

Materiale: 2506430735

Descrizione: Albero di uscita 1

Stato: Rilasciato Produzione + Calcolo costi

Indice del disegno finito:

Data emissione:

15.02.2013 / Rocco Nitti

Operazione: 0200 Levigatura di potenza Z= 21

Centro di lavoro: HNW15245 LEVIGATURA OS1

Data aggiornamento:

12.11.2014 / Emiliano Zella

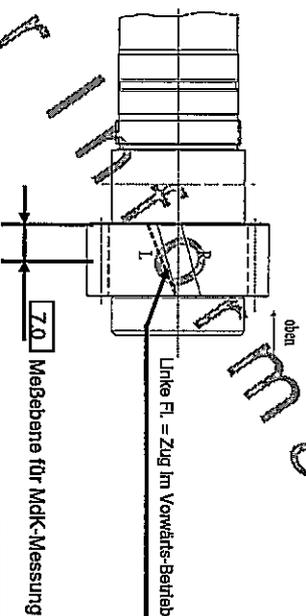
n. SAP Differno	Caratteristica	Misura nomin.	LTI	LTS	Strumento di controllo	Quantità	Frequenza RK1:	Quantità	Frequenza RK2:	Quantità	Frequenza Sala di misura	Cambio ut.	Metodi di gestione / Documentazione
0002	GN 3010 Controllo 1° pz sec. VBZ 450_804111				MVZ-400249 EVOLVENTIMETRO MOA-416121 RUGOSIMETRO TIPO PRK								Misur: controllo primo pezzo
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				MVZ-400249 EVOLVENTIMETRO			1					Misur: diagramma di dentatura
0020	M DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO			1					Misur: diagramma di dentatura
0030	M Oscillazione Fr	0,000 mm		0,032	MVZ-400249 EVOLVENTIMETRO			1					Misur: diagramma di dentatura
0032	Somma Passo Fp	0,000 mm		0,040	MVZ-400249 EVOLVENTIMETRO			1					Misur: diagramma di dentatura
0042	Sup. dente completamente levigata					8	pz per rack						CR1: no documentazione

STRIBRAD		Toleranzen der Verzahnung (DIN 3961, vom Aug. 1978)	
GEAR		gültig für Messen am Einzelzahn Tolerances of gearing (DIN 3961, of Aug. 1978) valid for values at individual tooth.	
außenverzählt	external		
Zahnanzahl z	21	Profil-Formabweichung f_{fa}	0,009
Modul m_n	2,400000	Profil-Formabweichung f_{fb}	0,009
Normaldruckwinkel α_n	20° 0' 0"	Einflügelstellungs-Abweich. f_{ϕ}	0,014
Normaldruckwinkel β	24° 0' 0"	Normal pitch error	0,014
Schraugungswinkel		Teilungs-Einzelabweichung f_p	0,014
Helix angle		Teilungs-gesamtabweichung f_{ϕ}	0,018
Stellungserichtung	LINKS	Teilungssprung f_{ϕ}	0,018
Profilverschiebungsfaktor x	0,650	Diff. bei adja-cent pitch	0,018
Addendum modification coeff.		Teilungs-Summenabweich. F_{ϕ}	
Teilkreisdurchmesser d	55,170	Cumulative s/c, pitch error F_{ϕ}	0,040
Pitch diameter		Fundamentalabweichung F_{ϕ}	0,040
Kopfkreisdurchmesser d_a	63,90 -0,16	Radial run-out	
Outside diameter		Radial run-out	
Kopfnutkreis, theo. max d_{ha}	63,45	Zahnflanken-schwankung R_e	
Tip diam. usable theo.		Range of tooth thick. error	
Kopfnutkreis, theo. min. d_{hs}	63,05	Zweil.-Wälzabweichung F_r	0,045
Tip diam. usable theo.		Radial composite error	0,018
Fußkreisdurchmesser d_f	49,50 -0,32	Zweil.-Wälzsperrung	
Foot diameter		Radial tooth to tooth comp. err.	
Fußnutkreisdurchmesser d_{fw}	52,42	Radial tooth to tooth comp. err.	
Foot diameter usable		Radial tooth to tooth comp. err.	
Grundkreisdurchmesser d_b	25,626	Radial tooth to tooth comp. err.	
Base circle radius		Radial tooth to tooth comp. err.	
Grundkreisdurchmesser d_b	51,252	Radial tooth to tooth comp. err.	
Base diameter		Radial tooth to tooth comp. err.	
Normalzahnstärke max. s_n	4,905	Radial tooth to tooth comp. err.	
Normal tooth thickness		Radial tooth to tooth comp. err.	
Normalzahnstärke min. s_n	4,875	Radial tooth to tooth comp. err.	
Normal tooth thickness		Radial tooth to tooth comp. err.	
Messzahnanzahl k		Radial tooth to tooth comp. err.	
Number of teeth spanned		Radial tooth to tooth comp. err.	
Zahnweite max. W_k		Radial tooth to tooth comp. err.	
Base tangent length		Radial tooth to tooth comp. err.	
Zahnweite min. W_k		Radial tooth to tooth comp. err.	
Base tangent length		Radial tooth to tooth comp. err.	
Messgehäusedurchmesser D_M	3,5000	Radial tooth to tooth comp. err.	
Ball diameter		Radial tooth to tooth comp. err.	
Diam. Zweikugelmess max. M_{2k}	61,153	Radial tooth to tooth comp. err.	
Diam. Zweikugelmess min. M_{2k}	61,087	Radial tooth to tooth comp. err.	
Measurement o. balls		Radial tooth to tooth comp. err.	
Verdrehflankenspiel theo.	0,065	Radial tooth to tooth comp. err.	
Circumferential backlash	0,168	Radial tooth to tooth comp. err.	

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

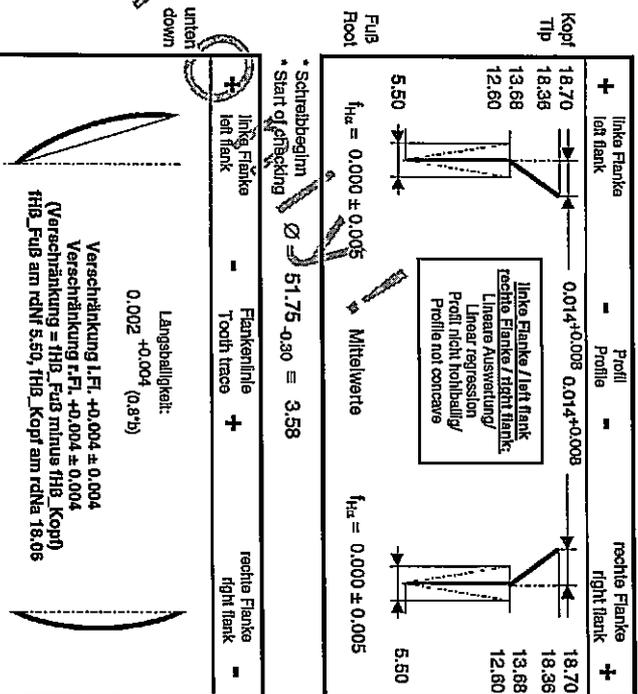
Wkz-Profil siehe Werkzeugdatenblatt Nr.
For Tooth profile, see tool data sheet number

250.6.4307.35



Höfchdurchmesser = 51,75 ± 0,30 \approx 3,58
Nenn diameter

Der Verlauf der Profil- und Flankenlinie muss über den Messbereich stetig sein (ein- oder mehrfache Fluchtungsänderungen 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



• Flankabweichung des bis zum Schreibbeginn verhängerten vermittelnden (st.-)Profils max $f_{\phi 2}$
• Pseudabweichung der average profile, extended to the start of checking, max $f_{\phi 2}$

Profil- und Flankenlinienprüfung nach VDI/VDE 2812
Tabellewerte für F_{ϕ} und f_{ϕ} sind auf die gesamte Radbreite im Maßkreis d_m bezogen
Flankenlinienprüfbereich $L_B = 0,8 \cdot b$ hochgerechnet auf $1,0 \cdot b$
Begriffe für Stirnräder nach DIN 989, 3960, 3998

Profile and helix checking according to VDI/VDE 2812
Listed tolerance data for F_{ϕ} and f_{ϕ} refers to the total face width in the meas. dia. d_m
Tooth trace testing area, $L_B = 0,8 \cdot b$ calculated to $1,0 \cdot b$
Terms of the tooth system according to DIN (German Industrial Standards) No. 888, 3960, 3998

Abbildungen sind unverändertlich. Diagrams not to scale.		Einzel- für Einzelnutzung bei Getriebeprüf.		Verzahnungsblatt-Endkontrolle Final Check Gear Data		Zeichnungen unter Drahtnummer	
Datum	Name	Anz.	Änd.Nr.	Datum	Name	250.6.4307.35	
02.2012-05-21	Ciccirelli, Fabrizio					250.6.4307.35	
gepr.						250.6.4307.35	