

Part Name OUTPUT SHAFT 1		Customer Part Number 250.6.4316.35	
Shown on Drawing No. 250.6.4316.35		Organization Part #	
Engineering Change Level F Index (d)		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 ITALY		TYP 250 Renault	
City	Region	Postal Code	Country
MODUGNO	BARI	70026	ITALY
MATERIALS REPORTING		Application	
Has customer-required Substances of Concern information been reported? Submitted by IMDS or other customer format:		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> n/a	
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 checked="" 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>20/01/2015</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 <u>[Signature]</u>		Date <u>20/01/2015</u>	
Print Name		Customer Tracking Number (optional)	

Item	Characteristic	Tolerance	Part 1	Part 2	Part 3	Part 4	Part 5	Device
1	MDK I	57,621-57,686	57,673	57,662	57,665	57,668	57,67	Calibro a sfere
7	Gradi Almen su pistra campione		-	-	-	-	-	0,51 Altimetro

Misurazioni Manuali

OS1 250 6 4316 35

13-gen-15

**GETRAG**

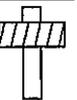
Production Part Approval

DIMENSIONAL TEST RESULTS

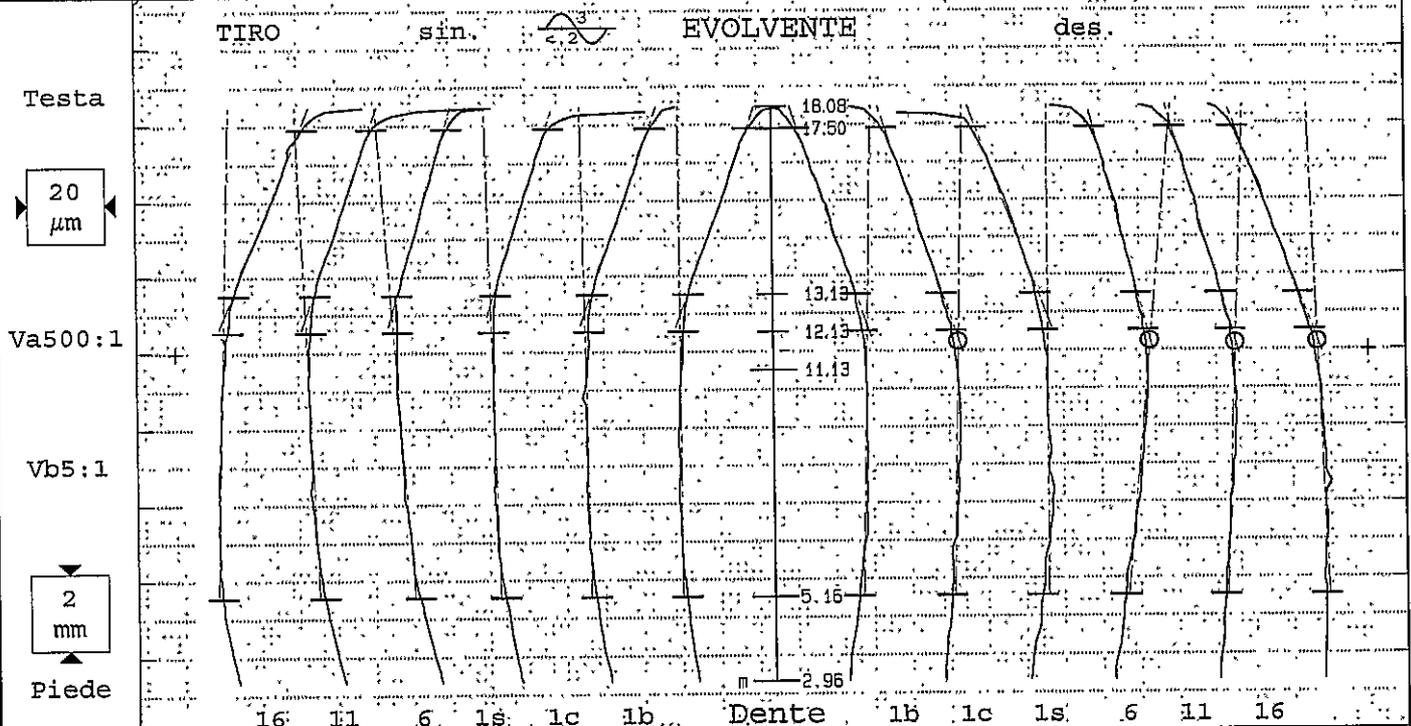
Organization: GETRAG					Part Number: 250.6.4316.35								
Supplier/Vendor Code: GETRAG Modugno					Part Name: Output Shaft 1								
INSPECTION FACILITY: NA					Design Record Change Level: F Index (d) 30/07/2014								
					Engineering Change Documents:								
					Organization Measurement Results (Data)								
Item	Dimension/Specification	Specification / Limits		Test Date	Qty. Tested	1	2	3	4	5	Test distruttivo	Ok	Not Ok
1	MDK l	57,621	57,686		5	57,673	57,662	57,665	57,668	57,670		ok	
2	Root diameter l	45,480	45,800		5	45,778	45,774	45,774	45,770	45,776		ok	
3	Tip diameter l	59,690	59,850		5	59,697	59,701	59,736	59,699	59,741		ok	
4	Rz 4 dentatura Z20	0	4 μ		5	3,10	2,31	2,19	1,81	2,39		ok	
	Rmax 8 dentatura Z20	0	8 μ		5	3,68	2,65	3,38	2,24	2,88		ok	
5	0,040 A - B Z21	0	40 μ		5	10	14	10	10	10		ok	
6	Dettaglio "M"	-	-		5	OK	OK	OK	OK	OK		ok	
	Diametro Ø 59,4 -0,3	59,100	59,400		5	59,199	59,236	59,230	59,206	59,229		ok	
7	Gradi Almen secondo GN 4110 (misura indiretta su piastrina campione) 0,550 ±0,05 mm	0,500	0,600		-	-	-	-	-	-	0,510	ok	
Toothling microgeometry validated by standard measurement report						SIGNATURE G. Cicirelli		TITLE QPE		DATE 13/01/2015			

GETRAG

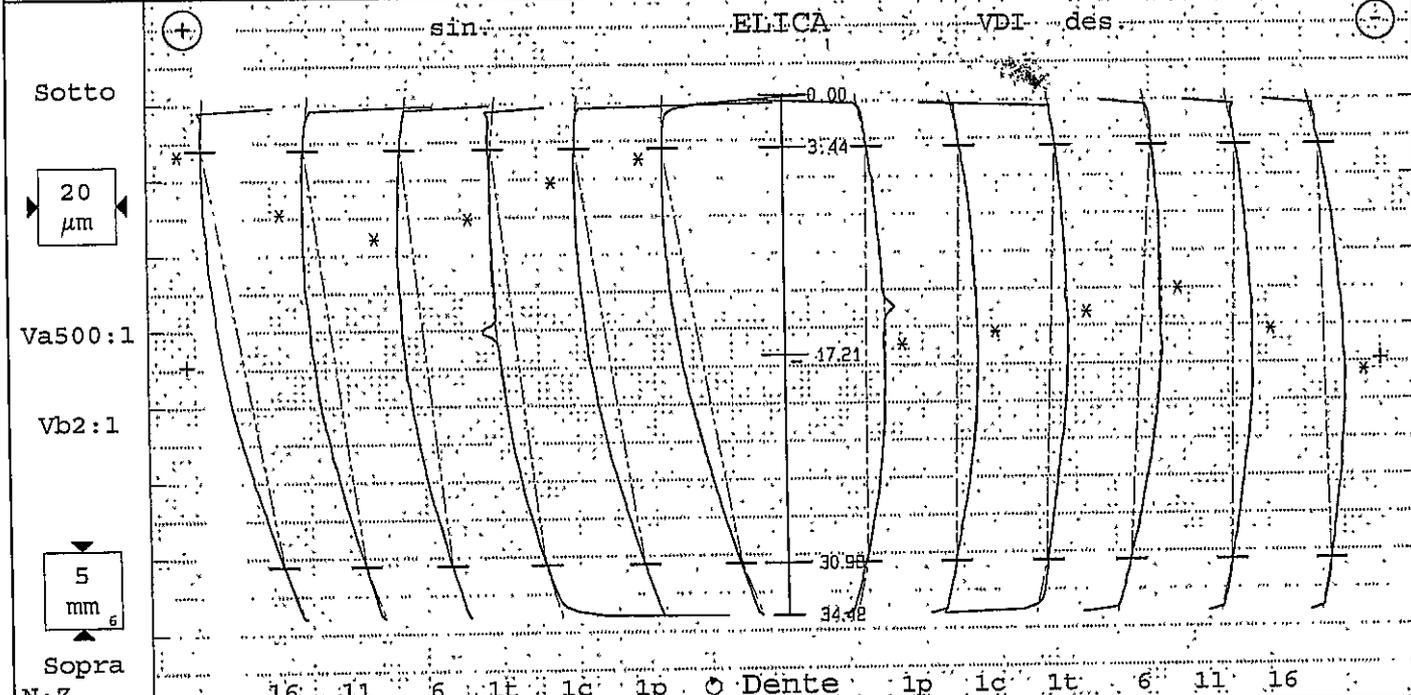
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 06:33
Denominazione:	Output Shaft 1		Numero denti z	20	Largh. fasc. dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.5		Angolo pressione	20°	Tratto elica Ls	27.54mm
Masch.Nr.:	M001	Spindel: Forme	Ang. 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	
fHm	±6	2	Var 7								±6	Var 9							2	
fHa	±7	2	-2	3	5	2	1	0		±7	1	2	0	6	2	-3	2			
Fa		4	3	4	6	3	3	2			3	3	3	6	3	5	4			
ffa	9	2	2	2	2	2	2	2		9	2	3	3	3	2	4	3			
fKo	-22/-14	-19	-19	-19	-18	-16	-18	-18		-22/-14	-19	-20	-19	-20	-18	-19	-19			



N:Z	Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
fHm	25±6	20	Var 10								±6	Var 10							3	
fHs	25±13	20	25	19	15	16	21	24		±13	-1	-3	-4	-8	-3	2	-3			
FB		6	3	7	8	10	5	4			7	8	4	8	4	5	6			
ffs	9	1	1	1	1	5	1	1		9	3	1	1	1	1	1	1			
CB	2/6	5	5	6	5	5	5	5		2/6	5	5	4	5	5	5	5			
Bd		8																	3	





Nr. prog.: STI0410005 0	PNC35 B4784	Controllore: turno B	Data: 11.12.2014 06:33
Denominazione: Output Shaft 1	Numero denti z: 20	Angolo pressione: 20°	
Numero disegno.: 250.6.4316.35-IF	Modulo m: 2.3mm	Angolo elica: -26.7°	
Commessa/serie nr.: ppap pz.5	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001	Spindel: FORMERZEUG	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

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	5		14		5		14	
Gr. salto di passo fu max	2		18		2		18	
Scarto di divisione Rp	10				10			
Err. globale di divisione Fp	31		50		29		50	
Err. cordale di divisione Fpz/8	14				15			

Centricità Fr (Ø-sfera =3.5mm)

⊙ : 9µm

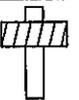
20µm
500:1

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



GETRAG

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 07:14
Denominazione:	Output Shaft 1		Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.5		Angolo pressione	20°	Tratto elica LB	27.54mm
Masch.Nr.:	M001	Spindel: Formata	Angolo elicoidale	-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: 45.778mm [45.48/45.8]

Testa-Ø: 59.697mm [59.69/59.85]

VDI



STIRNRAD GEAR		Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978) gültig für Wälz- und Einzelzahn 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
Modul Normal module	m_n	# 0.004	f_{pk}
Eingriffswinkel Normal pressure angle	α_n		0.014
Schrägungswinkel Helix angle	β		0.014
Stärkungsrichtung Hand of helix			0.018
Profilverschiebungsfaktor Addendum modification coeff.	x		f_{pk}
Teilkreisdurchmesser Pitch diameter	d		F_r
Kopfdurchmesser Outside diameter	d_a		R_s
Kopfnutzkreis, theo. max. d_{ha} Tip diam. usable theo.	d_{ha}		
Kopfnutzkreis, theo. min. d_{ha} Tip diam. usable theo.	d_{ha}		
Fußkreisdurchmesser Foot diameter	d_f		
Fußnutkreisdurchmesser Foot diameter usable	d_{fv}		
Grundkreisradius Base circle radius	r_b		
Grundkreisdurchmesser Base diameter	d_b		
Normalzahnstärke Normal tooth thickness	max. s_n		
Normalzahnstärke Normal tooth thickness	min. s_n		
Meßzährezahl Number of teeth spanned	k		
Zahnweite Base tangent length	max. W_k		
Zahnweite Base tangent length	min. W_k		
Meßkugeldurchmesser Ball diameter	D_M		
Diam. Zweikugelmaß max. M_{2k} Measurement o. balls	max. M_{2k}		
Diam. Zweikugelmaß min. M_{2k} Measurement o. balls	min. M_{2k}		
Vendritflankenspiel Circumferential backlash	theo. 0.066 0.172		

Toleranzen der Verzahnung (DIN 3961 vom Aug. 1978) gültig für Wälz- und Einzelzahn Tolerances of gearing (DIN 3961 of Aug. 1978) valid for values at individual tooth		linke Fl. left flank	rechte Fl. right flank
Profil-Formabweichung Profile form error	f_{pk}	# 0.004	
Profil-Gesamtabweichung Total profile error	F_p		
Profil-Winkelabweichung Profile angle error	f_{hc}	0.000 ± 0.007	0.000 ± 0.007
Flanken-Winkelabweichung Tooth alignment error	f_{hp}	0.000 ± 0.025 ± 0.013	0.000 ± 0.013
Flanken-Gesamtabweichung Total alignment error	F_p		
Flanken-Formabweichung Longitudinal alignment err.	f_{fp}	# 0.004	
Teillungs-Gesamtabweichung Cumulative pitch error	F_r		
Einl.-Wälzabweichung Tangential composite error	F_t		
Einflanken-Wälzsprung Tang. tooth to tooth comp. err.	f_r		
Radbreite im Meßkreis d_M Facewidth in meas. diam.	b	34.42	
Radbreite in Meas. diam.			

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

Messdurchmesser = 48.05 -0.30 \approx 2.96
 honing diameter

left fl. = drive in forwards direction

Measuring plane for MdK

TOP
 Z.O.

Abbildungen sind unmaßstäblich.
 Diagrams not to scale.

Buch.	Anz.	Änd.Nr.
Datum Name 2012-11-21 Cricenti, Fabrizio		
gezeichnet 2012-11-21 Cricenti, Fabrizio		
geprüft 2012-11-21 Cricenti, Fabrizio		

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

Wkz-Profil siehe Werkzeugaufdatenblatt Nr. 250.6.4316.35
 For Tooth profile, see tool data sheet number

linke Flanke / left flank
 rechte Flanke / right flank
 linke Flanke / left flank
 rechte Flanke / right flank
 Linear Auswertung / Linear regression
 Profil nicht höhlballig / Profile not concave

*Schreibbeginn
 * Start of machining
 *Average values
 48.05 -0.30 \approx 2.96

* f_{pk} (zwischen d_h und dem Schreibbeginn ds) max f_{pk}/2, jedoch 0.003 zulässig
 * f_{pk} (between d_h and start of checking ds) max f_{pk}/2, 0.003 allowable.

Profil- und Flankenlinenprüfung nach VD/INDE 2612
 Tabellenwerte für f_p und f_{hp} sind auf die gesamte Radbreite im Meßkreis d_M bezogen
 Flankenlinienprüfbereich L_β = 0.8*b hochgerechnet auf 1.0*b
 Begriffe für Stirnräder nach DIN 888, 3960, 3998

Profil- und 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_β = 0.8*b calculated to 1.0*b
 Terms of the tooth system according to DIN (German Industrial Standards) No. 888, 3960, 3998

f_{pk} = + 0.025 ± 0.006
 Average values
 f_{hp} = 0.000 ± 0.006

f_{pk} = + 0.002 ± 0.004
 (0.8*b)
 Lead Twist L.F.I. +0.004 ± 0.004
 Lead Twist R.F.I. +0.004 ± 0.004
 (Lead Twist = f_{HB} Root minus f_{HB} Tip)
 f_{HB} Root at pdN 5.16, f_{HB} Tip at pdN 17.20

f_{pk} = 0.000 ± 0.006
 Average values
 f_{hp} = 0.000 ± 0.006

Vertrieb:
 Schutzvermerk nach ISO 18018 beachten
 Protection per ISO 18018
 德國 GEFET FALAS
 GETRAG Getriebe- und Zahnradfabrik
 Hermann Hagenmeyer GmbH & Cie KG
 Remark:

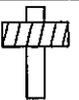
Ersetz für
 Ersatzverwendung
 bei Getriebeanalyse: 250

Zeichnungsnummer
 Drawing number: 250.6.4316.35

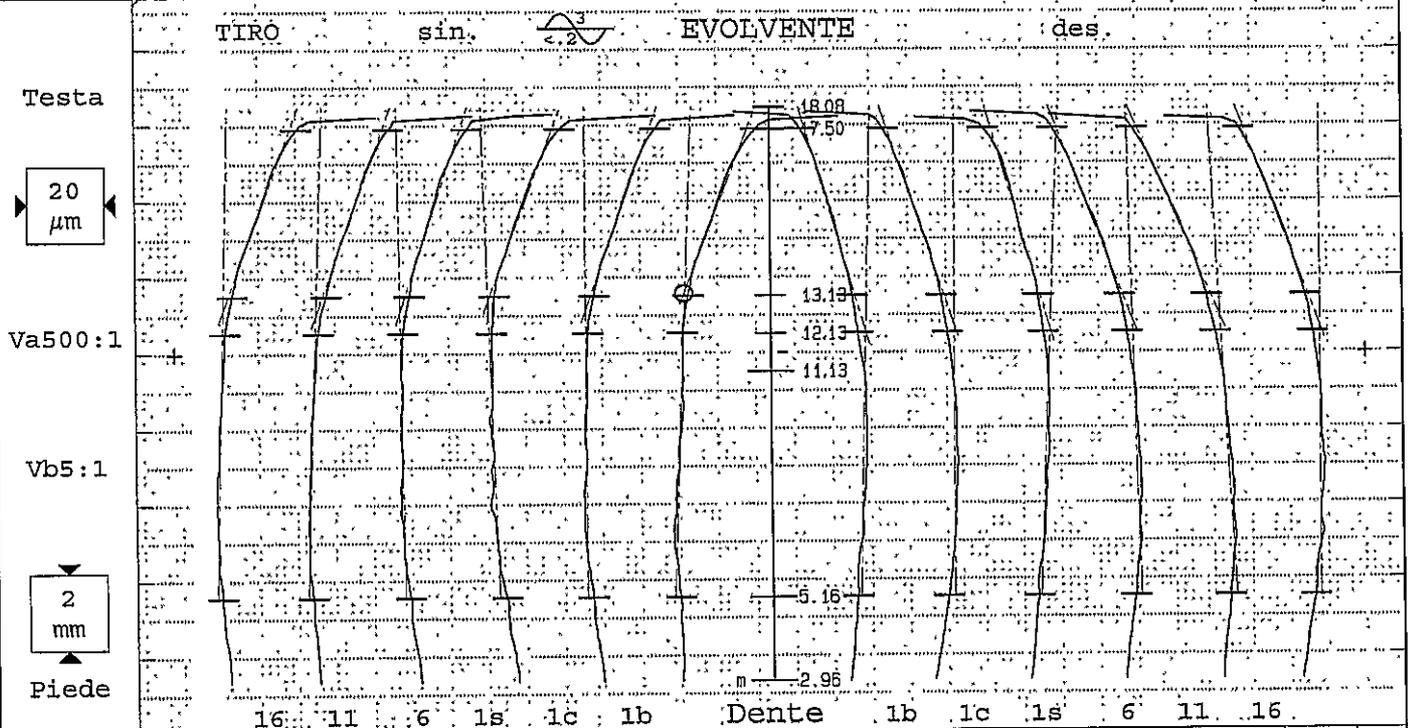
Output Shaft: k1

GETRAG

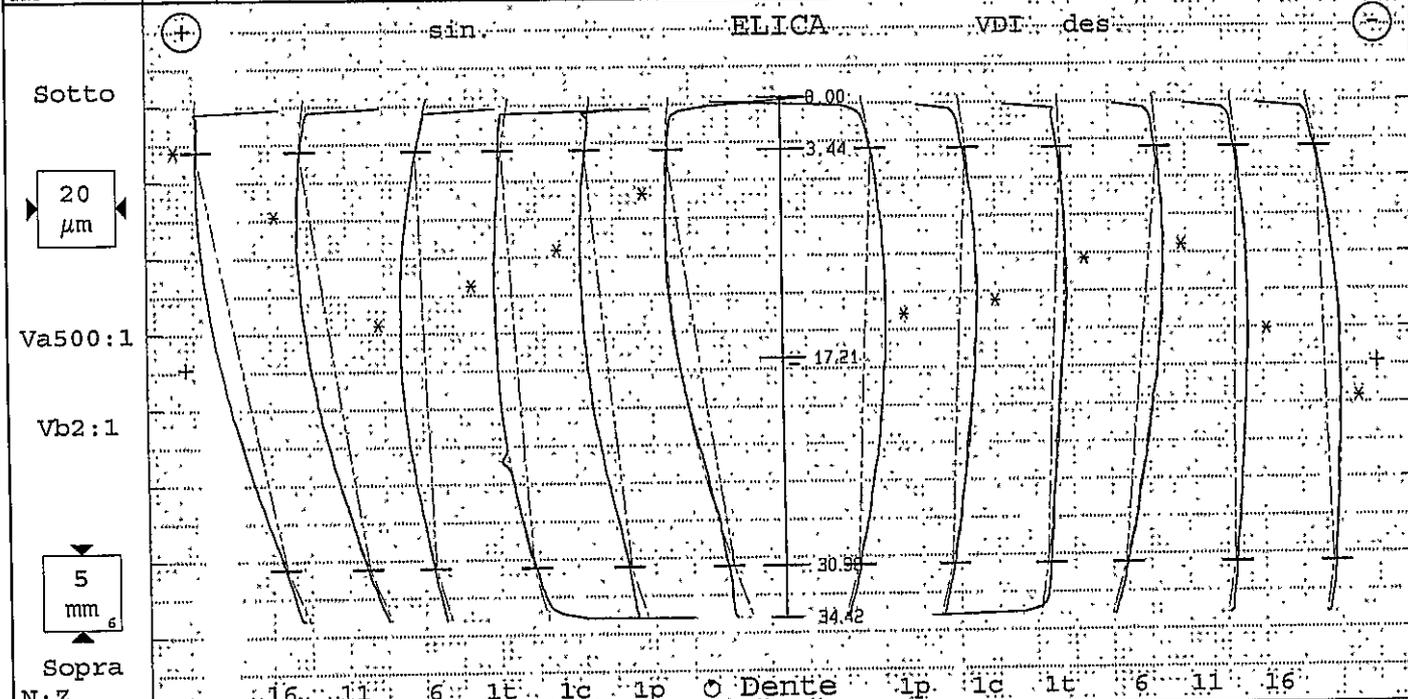
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410o05 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 06:27
Denominazione:	Output Shaft 1		Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.3		Angolo pressione	20°	Tratto elica Lβ	27.54mm
Masch.Nr.:	M001	Spindel: Forme	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	
fHm	±6	-1	Var 3								±6	Var 4							-2	
fHa	±7	-1	-2	-2	1	2	0	-3		±7	2	0	3	-2	-4	0	-2			
Fa	2	2	2	3	2	4	2	3		3	3	4	4	5	3	4				
ffa	9	2	2	2	2	3	2	2		9	3	3	3	3	3	3				
fKo	-22/-14	-17	-17	-16	-17	-18	-17	-15		-22/-14	-17	-18	-17	-18	-19	-20	-19			



N:Z	Tolerance	Medio	Val.misur [μm]							Qual	Tolerance	Val.misur [μm]							Medio	Qual
fHsm	25±6	18	Var 24								±6	Var 16							-4	
fHs	25±13	18	29	22	5	9	14	21		±13	-6	-6	-6	-12	-2	4	-4			
Fβ	10	10	5	6	17	13	11	7		6	5	9	9	2	5	5				
ffβ	9	1	1	1	1	3	1	2		9	1	1	2	1	1	1				
Cβ	2/6	6	6	6	6	5	5	5		2/6	5	4	2	5	3	4				
Bd		12																	0	





Nr. prog.: STI0410o05 0	PNC35 B4784	Controllora: turno B	Data: 11.12.2014 06:27
Denominazione: Output Shaft 1	Numero denti z: 20	Angolo pressione: 20°	
Numero disegno: 250.6.4316.35-IF	Modulo m: 2.3mm	Angolo elica: -26.7°	
Comessa/serie nr.: ppap pz.3	Untersuchungszweck: Laufende Messung		
Masch.Nr.: M001	Spindel: Formelwerkzeug:	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

Corsa per misura divis.: 52.625 z=17.2mm

	fianco sinistro / TIRO				fianco destro			
	Val. misur	Qual.	Val. amn	Qual.	Val. misur	Qual.	Val. amn	Qual.
Gr. err. singoli divisione fp max	3		14		4		14	
Gr. salto di passo fu max	2		18		2		18	
Scarto di divisione Rp	6				7			
Err. globale di divisione Fp	16		50		21		50	
Err. cordale di divisione Fpz/8	9				10			

Centricità Fr (Ø-sfera =3.5mm)

⊙ : 13µm

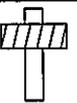
20µm

500:1

Err. di concentricità Fr	14	40
Variaz. spessore dente Rs		

GETRAG

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 07:13
Denominazione:	Output Shaft 1		Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.3		Angolo pressione	20°	Tratto elica L _S	27.54mm
Masch.Nr.:	M001	Spindel: Formu	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

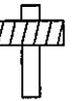
Piede-Ø: 45.774mm [45.48/45.8]
 Testa-Ø: 59.701mm [59.69/59.85]

VDI

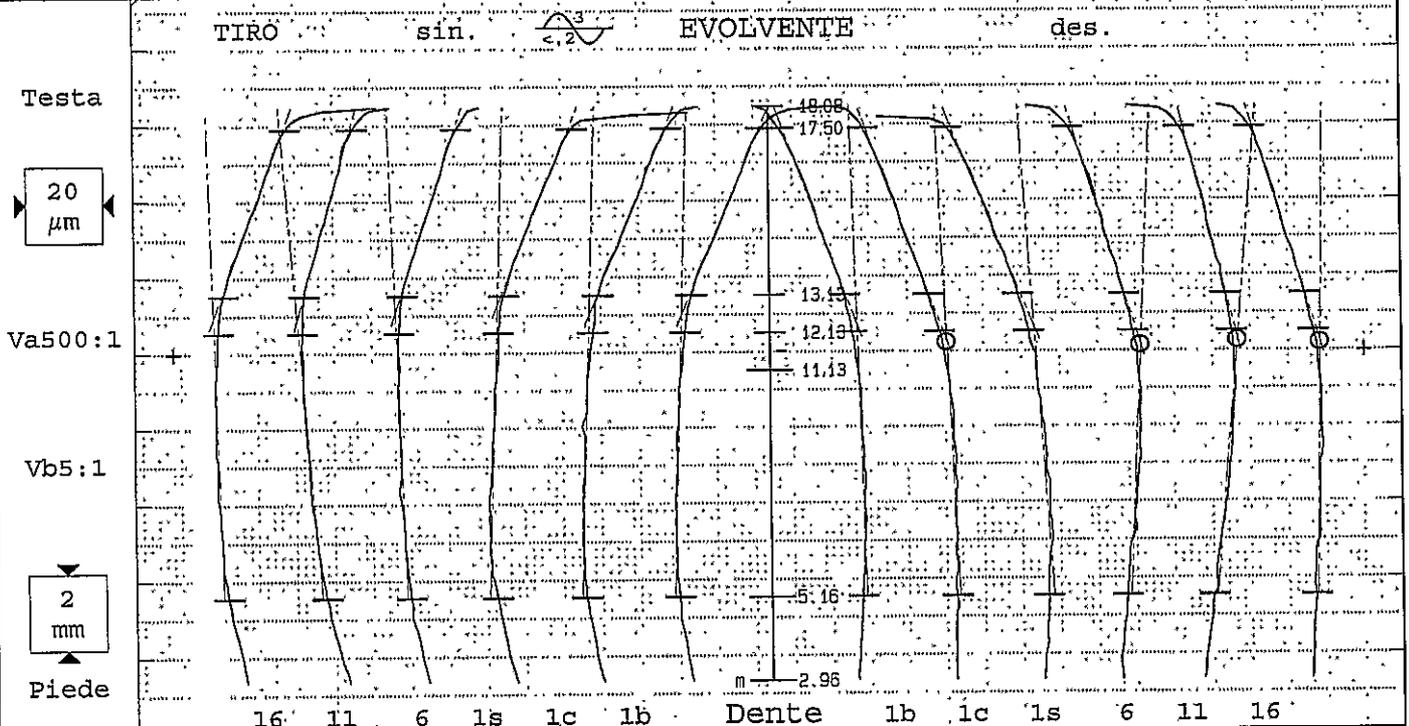


GETRAG

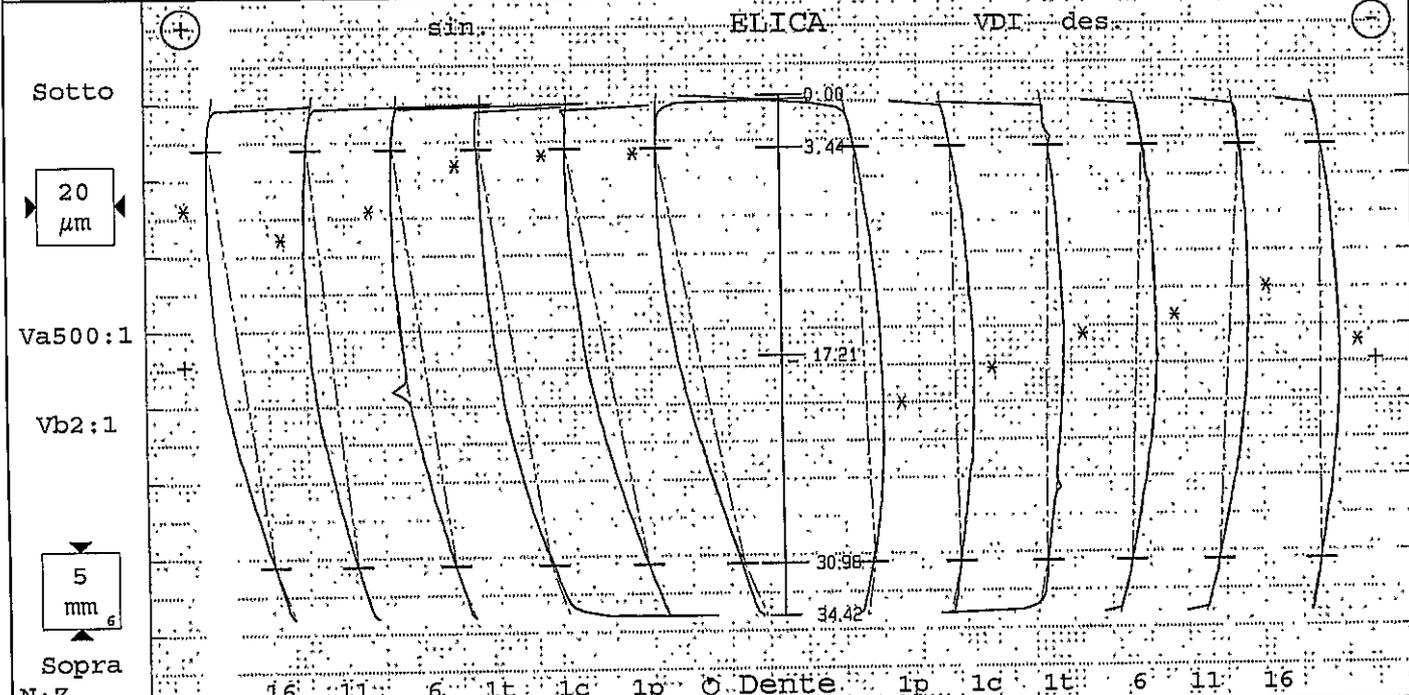
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllere:	turno B	Data:	11.12.2014 06:52
Denominazione:	Output Shaft 1		Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.2		Angolo pressione	20°	Tratto elica Ls	27.54mm
Masch.Nr.:	M001	Spindel: Forme	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



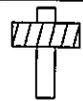
Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
		Var									Var									
fHm	±6	2									±6								2	
fHa	±7	2	2	6	2	-2	-2	-2		±7	-2	-3	-5	3	6	1	2			
Fa		4	3	6	3	3	3	3			4	5	6	4	6	3	5			
ffa	9	2	2	2	2	3	2	2		9	2	3	3	4	3	3	3			
fko	-22/-14	-19	-20	-18	-18	-17	-18	-19		-22/-14	-18	-18	-18	-20	-18	-18	-19			



N:Z	Tolerance	Medio	Var							Qual	Tolerance	Var							Medio	Qual
fHsm	25±6	20									±6								-3	
fHs	25±13	20	20	15	19	22	25	27		±13	5	2	-2	-5	-8	-1	-3			
Fs		7	6	8	10	4	4	4			5	4	3	6	7	4	5			
ffs	9	2	1	0	5	1	1	1		9	1	1	2	1	1	1				
CS	2/6	5	6	5	5	5	5	6		2/6	5	5	4	5	5	5				
Bd		5																	7	

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Nr. prog.: STI0410005 0 PNC35 B4784	Controllore: turno B	Data: 11.12.2014 06:52
Denominazione: Output Shaft 1	Numero denti z 20	Angolo pressione 20°
Numero disegno.: 250.6.4316.35-IF	Modulo m 2.3mm	Angolo elica -26.7°
Commessa/serie nr.: ppap pz.2	Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: FORMERKZEUG	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

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	6		14		5		14	
Gr. salto di passo fu max	2		18		2		18	
Scarto di divisione Rp	11				10			
Err. globale di divisione Fp	31		50		28		50	
Err. cordale di divisione Fpz/8	14				14			

Centricità Fr (Ø-sfera =3.5mm)

⊙ : 9µm

20µm
500:1

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

GETRAG

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 07:11
Denominazione:	Output Shaft 1		Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.2		Angolo pressione	20°	Tratto elica L _S	27.54mm
Masch.Nr.:	M001	Spindel: Form	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: 45.774mm [45.48/45.8]

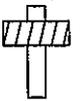
Testa-Ø: 59.736mm [59.69/59.85]

VDI

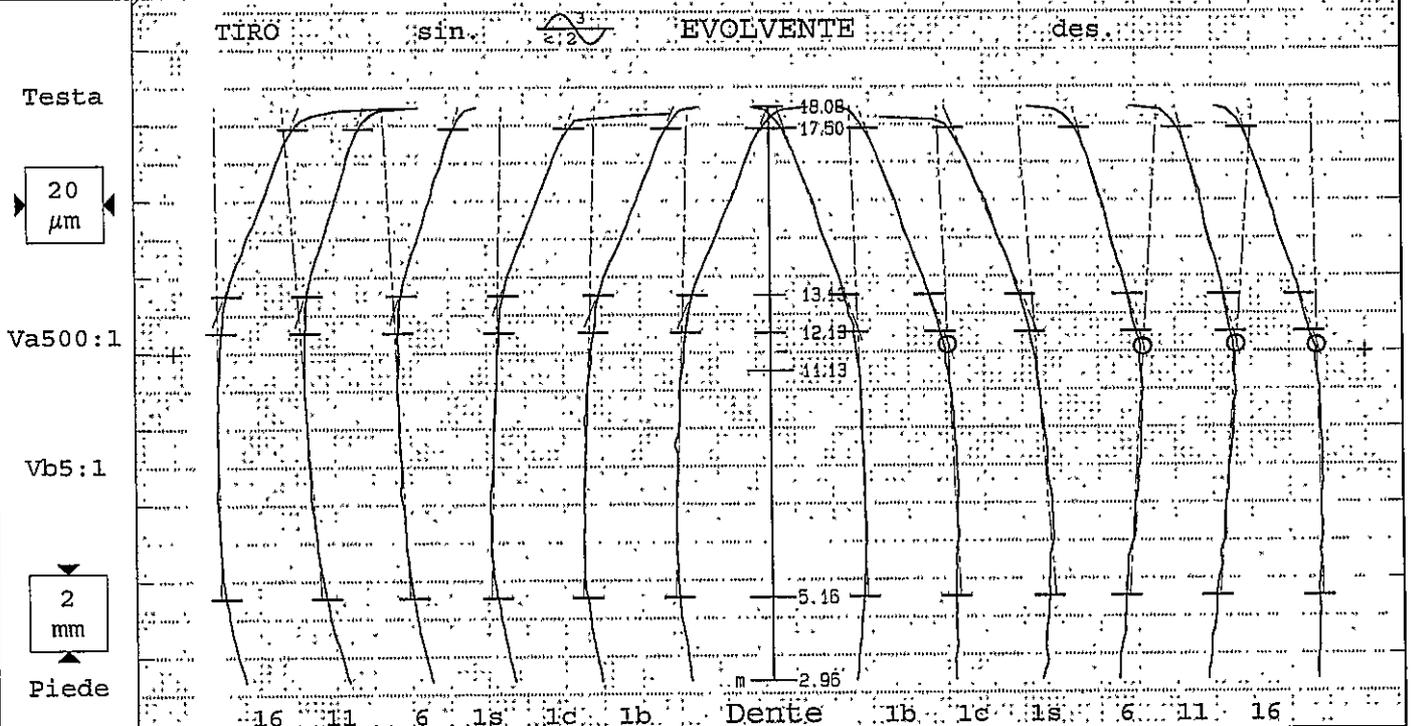


GETRAG

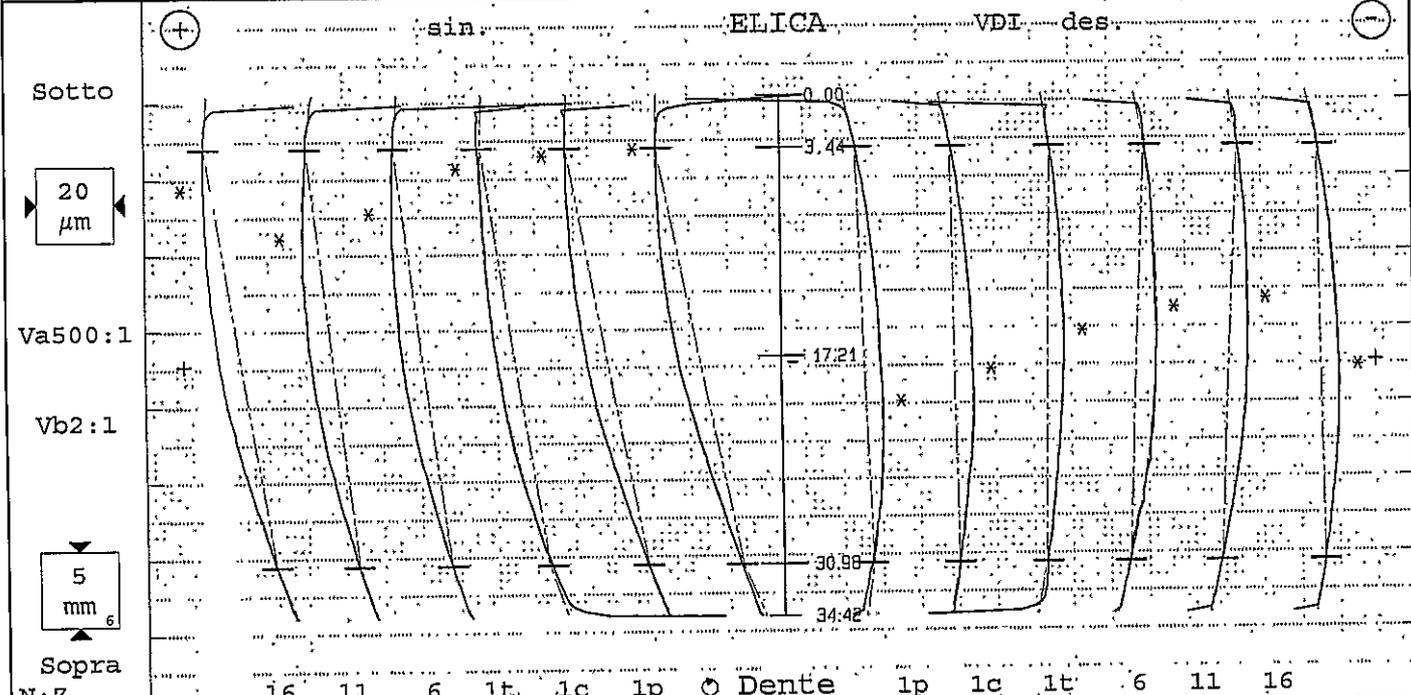
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 06:47
Denominazione:	Output Shaft 1		Numero denti z	20	Largh. fasc. dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolvent. La	6.97mm
Commessa/serie nr.:	ppap pz.4		Angolo pressione	20°	Tratto elica LS	27.54mm
Masch. Nr.:	M001	Spindel: Formata	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

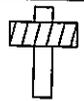


Tolerance	Medio	Val. misur [μm]							Qual	Tolerance	Val. misur [μm]							Medio	Qual
fHm	±6	Var 7								±6	Var 8								1
fHa	±7	1	5	3	-2	-2	-2		±7	-2	-3	-5	4	5	-1	1			
Fa	4	2	6	4	3	3	3		3	5	6	5	6	4	5				
ffa	9	2	2	2	2	2	2	9	2	3	3	3	3	3	3				
fko	-22/-14	-19	-20	-19	-18	-17	-18	-19	-22/-14	-17	-19	-17	-20	-18	-18	-19			



N:Z	Tolerance	Medio	Val. misur [μm]							Qual	Tolerance	Val. misur [μm]							Medio	Qual
fHsm	25±6	21	Var 10								±6	Var 8								-2
fHs	25±13	21	23	16	18	21	26	27	±13	5	2	-2	-6	-6	1	-2				
Fs	6	6	5	8	7	4	4	4		5	4	3	6	6	3	5				
ffs	9	1	1	1	1	1	1	1	9	1	1	1	1	1	1	1				
Cs	2/6	6	6	6	5	5	5	6	2/6	4	5	4	5	5	5	5				
Bd	6	6														7				





Nr. prog.: STI0410005 0	PNC35 B4784	Controllore: turno B	Data: 11.12.2014 06:47
Denominazione: Output Shaft 1	Numero denti z	20	Angolo pressione 20°
Numero disegno.: 250.6.4316.35-IF	Modulo m	2.3mm	Angolo elica -26.7°
Commessa/serie nr.: ppap pz.4	Untersuchungszweck:	Laufende Messung	
Masch.Nr.: M001	Spindel: FORMER	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

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	6		14		5		14	
Gr. salto di passo fu max	2		18		2		18	
Scarto di divisione Rp	11				10			
Err. globale di divisione Fp	31		50		28		50	
Err. cordale di divisione Fpz/8	14				15			

Centricità Fr (Ø-sfera =3.5mm)

⊙ : 9µm

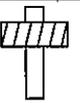
20µm
500:1

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



GETRAG

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 07:07
Denominazione:	Output Shaft 1		Numero denti z	20	Largh.fasc.dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Module m	2.3mm	Tratto evolv. La	6.97mm
Comessa/serie nr.:	ppap pz.4		Angolo pressione	20°	Tratto elica LS	27.54mm
Masch.Nr.:	M001	Spindel: Forme	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

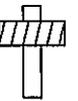
Piede-Ø: 45.77mm [45.48/45.8]
 Testa-Ø: 59.699mm [59.69/59.85]

VDI

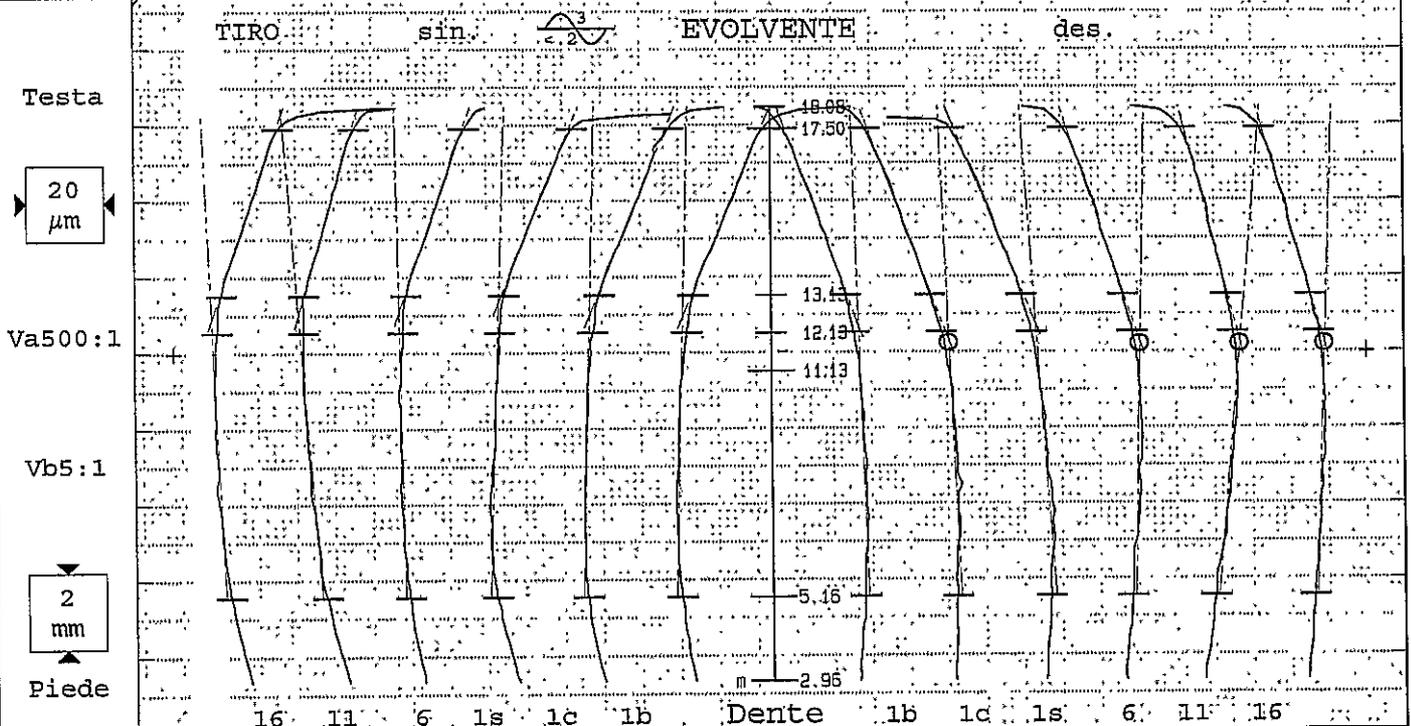


GETRAG

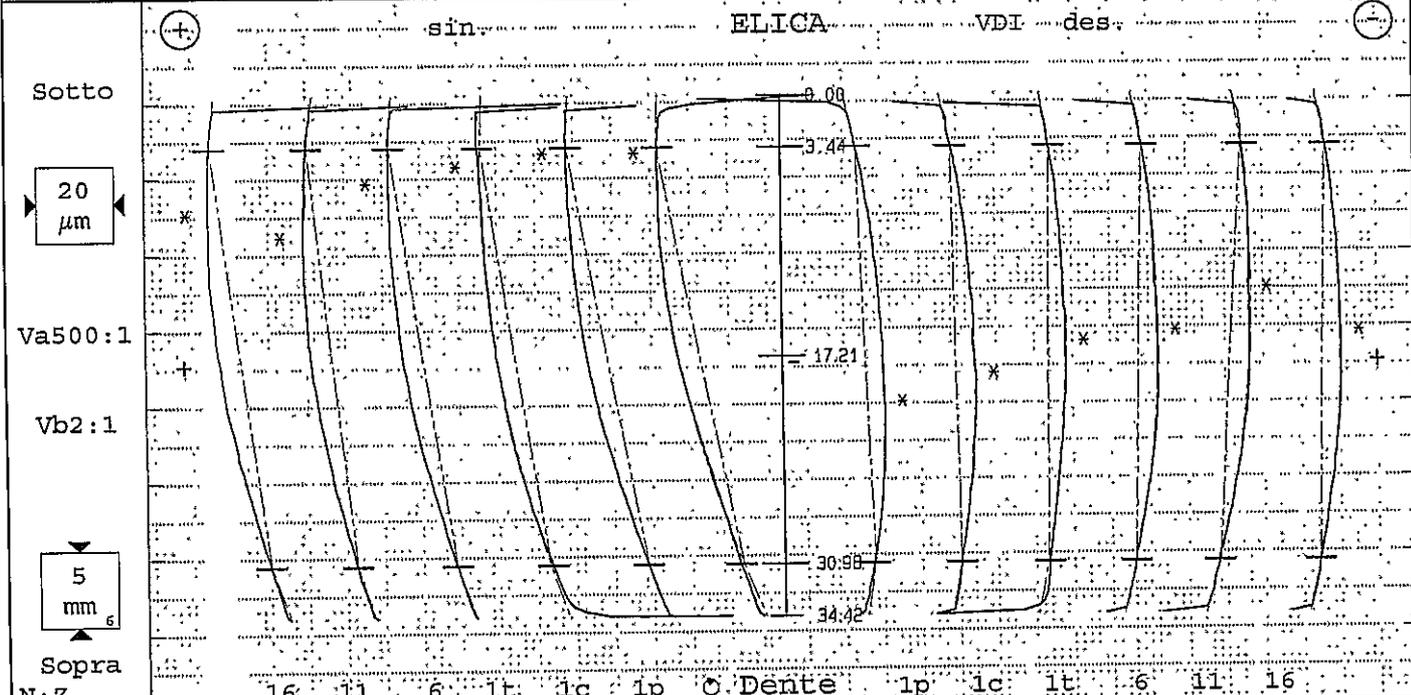
Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 06:57
Denominazione:	Output Shaft 1		Numero denti z	20	Largh. fasc. dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Modulo m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.1		Angolo pressione	20°	Tratto elica Ls	27.54mm
Masch.Nr.:	M001	Spindel: Forme	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
fHm ±6	2	Var 8								±6								2	
fHa ±7	2	3	6	1	-2	-2	-2		±7	-2	-3	-5	1	6	2	2			
Fa	4	4	6	3	3	3	3			4	5	6	3	6	3	4			
ffa 9	2	2	2	2	3	2	2		9	2	3	2	3	3	3	3			
fko -22/-14	-19	-19	-18	-18	-17	-19	-19		-22/-14	-17	-19	-18	-20	-19	-18	-19			



N:Z	Tolerance	Medio	Var 9							Qual	Tolerance	Var 10							Medio	Qual
fHsm 25±6	20										±6									-3
fHs 25±13	20	19	16	21	22	25	27		±13	5	2	-2	-3	-8	-3	-3				
Fs	6	7	8	5	4	3	4			6	5	3	5	8	4	6				
ffs 9	1	1	1	1	1	1	1		9	1	1	1	1	1	1	1				
Cs 2/6	5	6	5	5	5	5	6		2/6	5	5	4	5	5	5	5				
Bd	5															7				



GETRAG**Ruota cilindrica Divisione**

Nr. prog.: STI0410005 0	PNC35 B4784	Controllore: turno B	Data: 11.12.2014 06:57
Denominazione: Output Shaft 1	Numero denti z	20	Angolo pressione 20°
Numero disegno: 250.6.4316.35-IF	Modulo m	2.3mm	Angolo elica -26.7°
Comessa/serie nr.: ppap pz.1	Untersuchungszweck:	Laufende Messung	
Masch.Nr.: M001	Spindel: FORMERZEUG:	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

Corsa per misura divis.: 52.625 ±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	6		14		5		14	
Gr. salto di passo fu max	2		18		2		18	
Scarto di divisione Rp	11				10			
Err. globale di divisione Fp	31		50		29		50	
Err. cordale di divisione Fpz/8	14				14			

Centricità Fr (Ø-sfera =3.5mm)

⊙ : 9µm

20µm

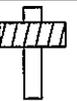
500:1

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



GETRAG

Ruota cilindrica Evolvente/Elica



Nr. prog.:	STI0410005 0	PNC35 B4784	Controllore:	turno B	Data:	11.12.2014 07:03
Denominazione:	Output Shaft 1		Numero denti z	20	Largh. fasc. dent. b	34.42mm
Numero disegno.:	250.6.4316.35-IF		Module m	2.3mm	Tratto evolv. La	6.97mm
Commessa/serie nr.:	ppap pz.1		Angolo pressione	20°	Tratto elica LS	27.54mm
Masch.Nr.:	M001	Spindel: Formn	Ang. 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: 45.776mm [45.48/45.8]

Testa-Ø: 59.741mm [59.69/59.85]

VDI

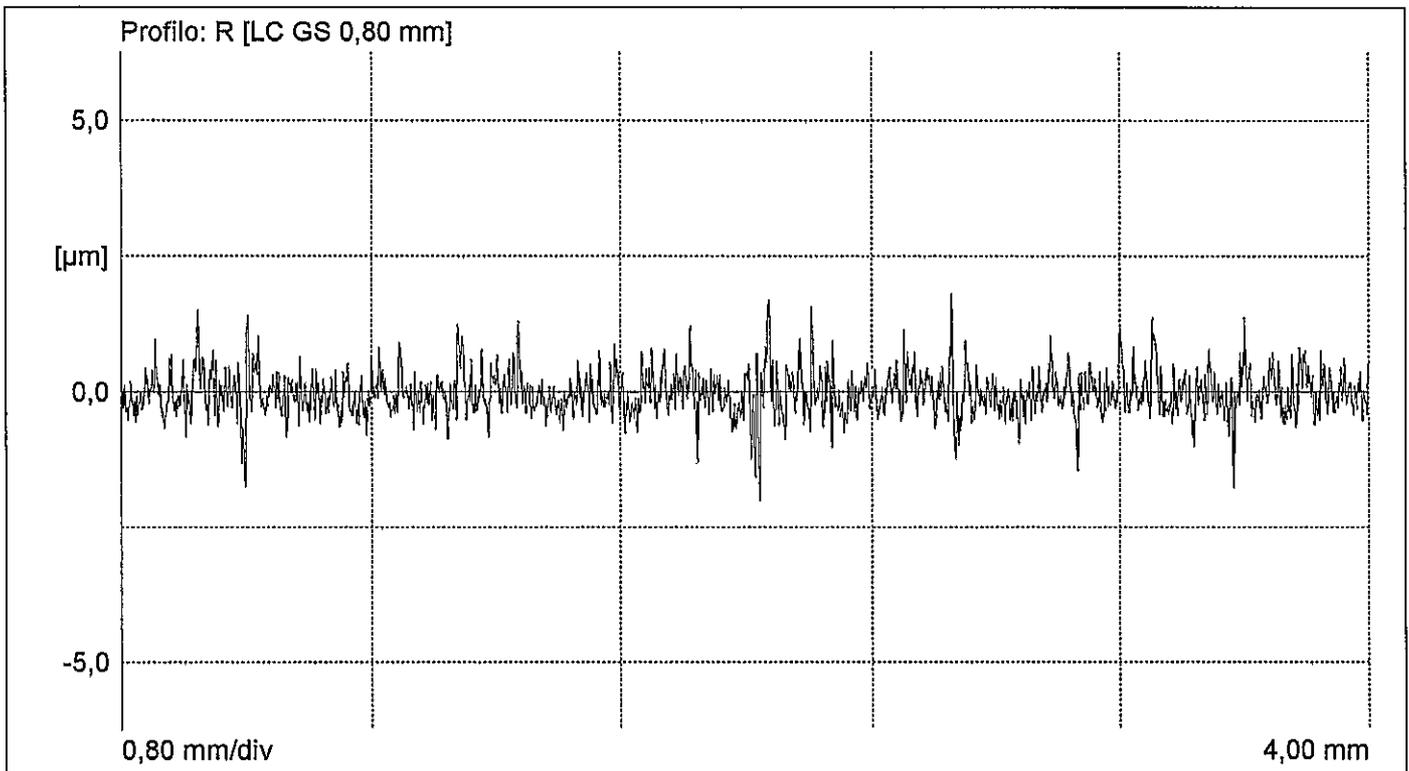




Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4316 PPAP PZ
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:26
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	0,29	µm
Rmax	3,68	µm
Rz	3,10	µm

PERTHOMETER CONCEPT

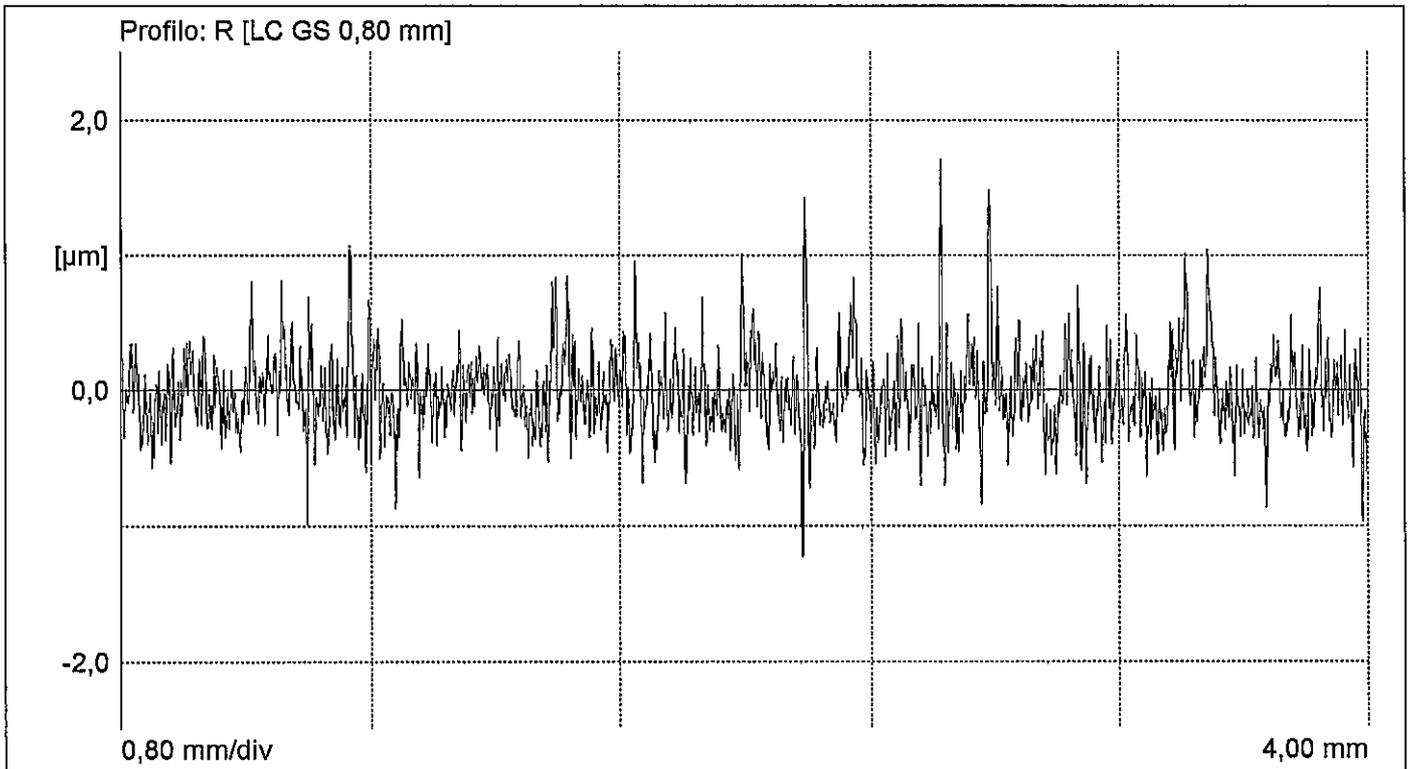


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 1
Numero: 4316 PPAP PZ.2
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 08:24
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	0,22	µm
Rmax	2,65	µm
Rz	2,31	µm

PERTHOMETER CONCEPT

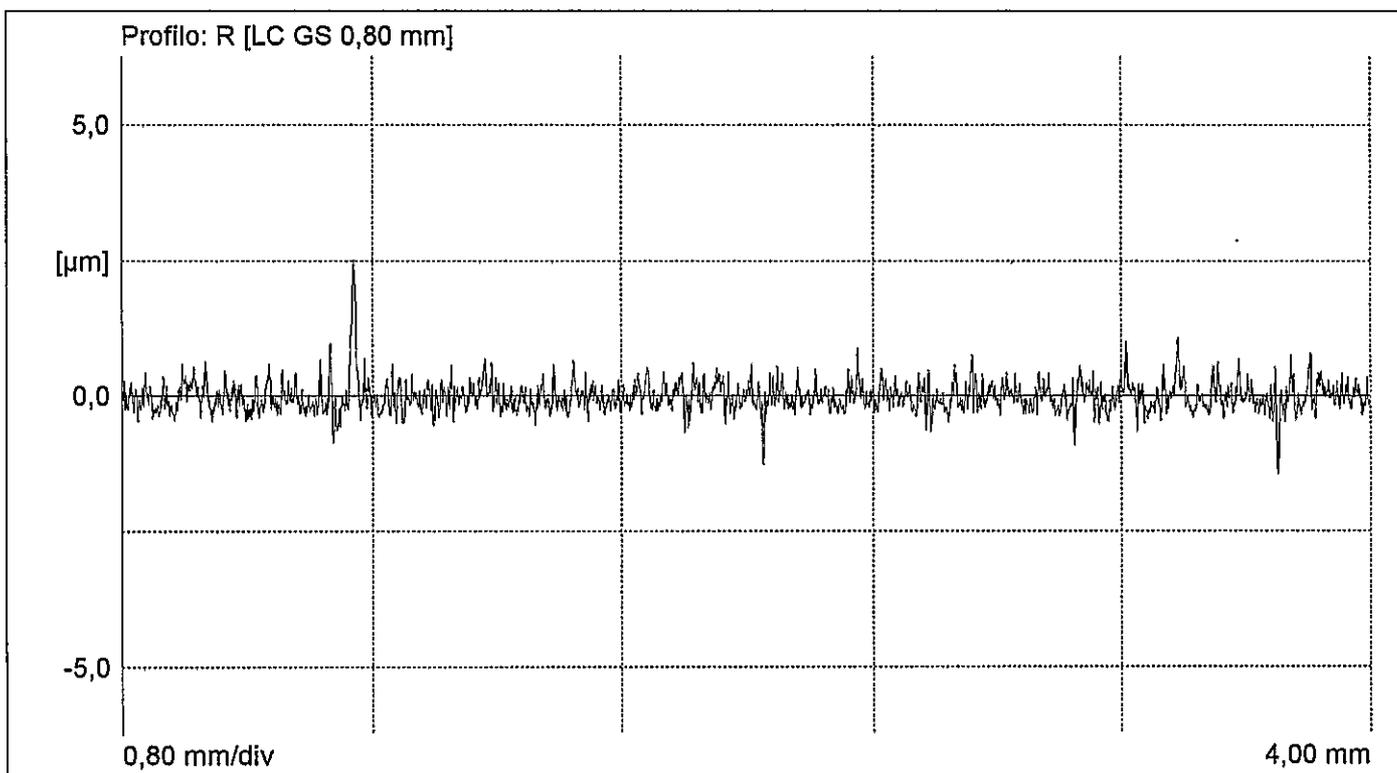


Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto: OS 1
Numero: 4316 PPAP PZ.3
Operatore: LINO MAGRONE
Data, ora: 18/12/2014, 08:22
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	3,38	µm
Rz	2,19	µm

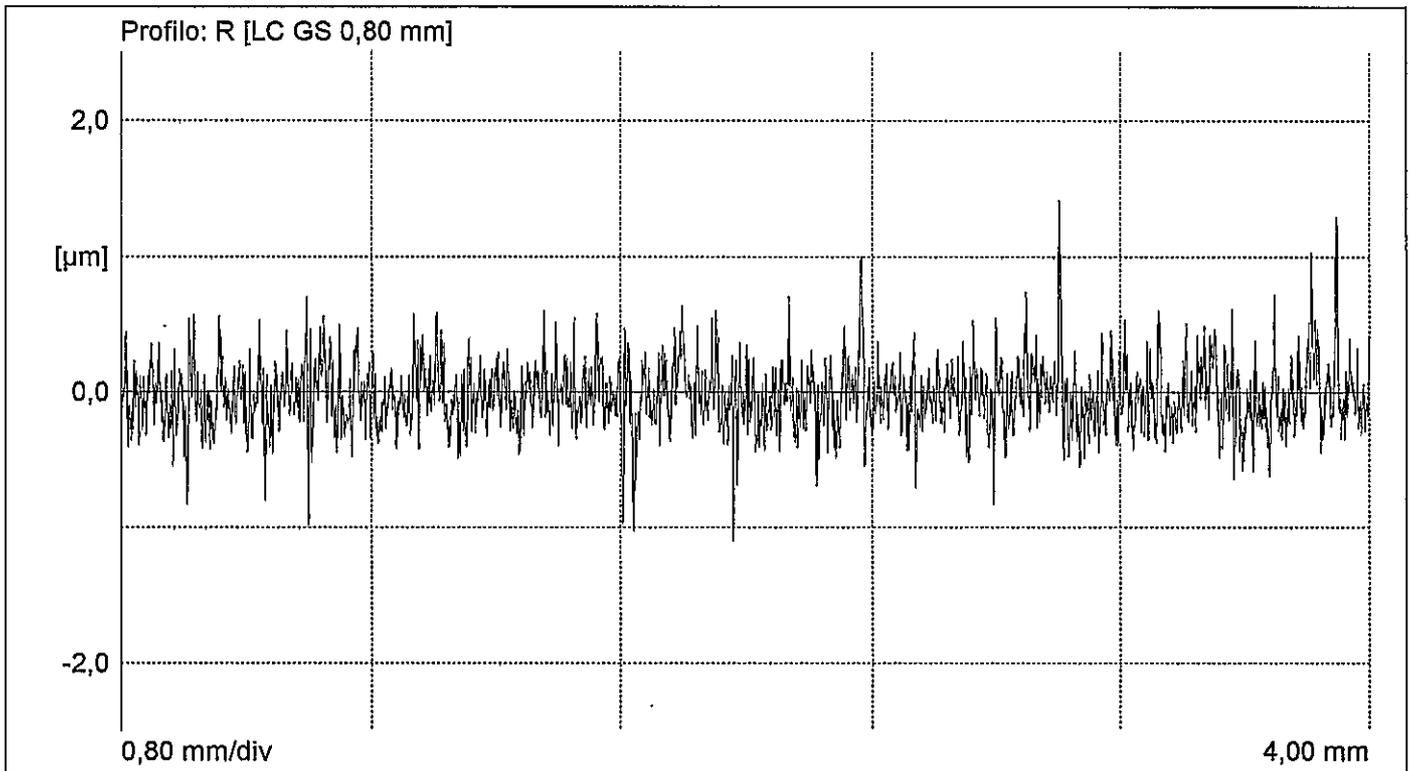
PERTHOMETER CONCEPT



Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4316 PPAP PZ.4
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:33
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	2,24	µm
Rz	1,81	µm

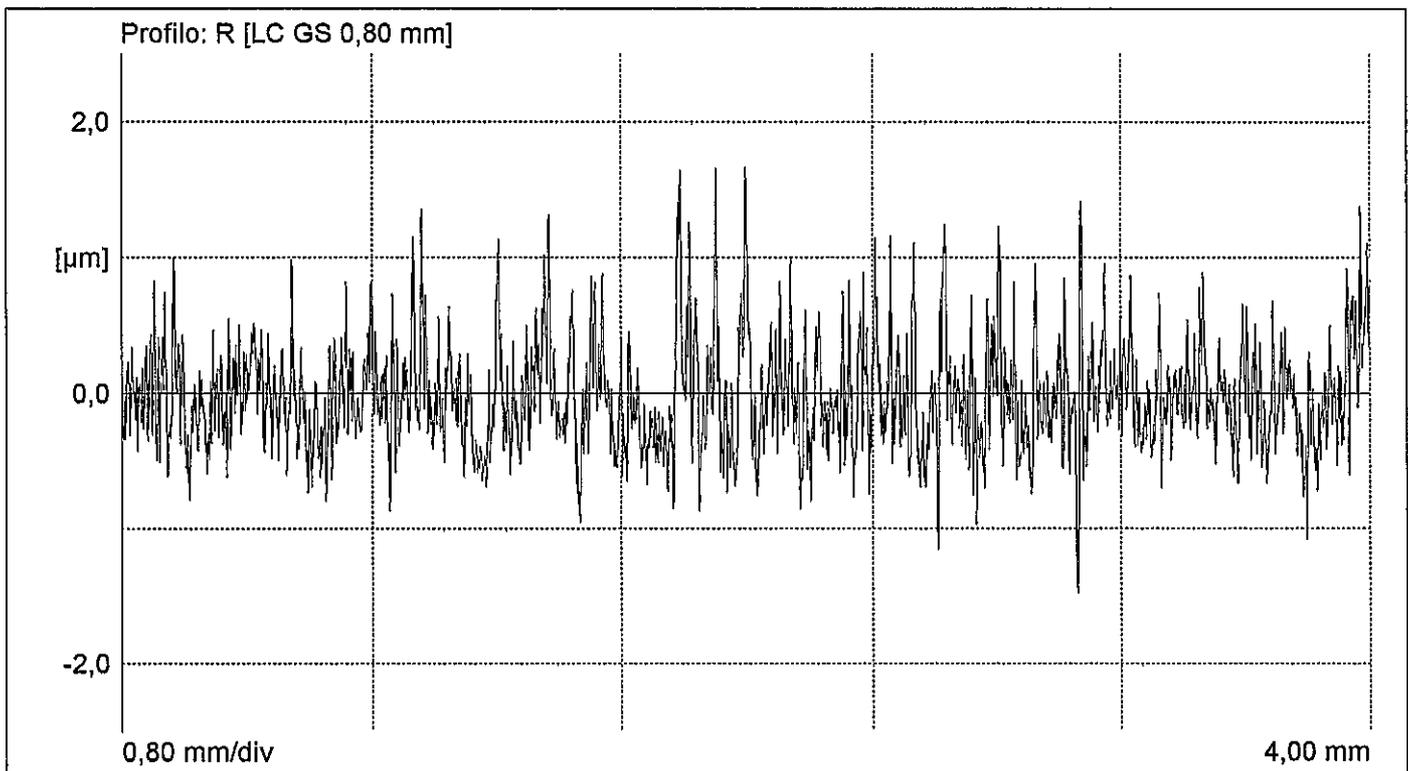
PERTHOMETER CONCEPT



Via dei Ciclamini 4 Modugno Bari

Sala Metrologica GPS5

Oggetto:	OS 1
Numero:	4316 PPAP PZ.5
Operatore:	LINO MAGRONE
Data, ora:	18/12/2014, 08:32
Nota:	RZ DENTE
Tastatore:	MFV-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	0,30	µm
Rmax	2,88	µm
Rz	2,39	µm

PERTHOMETER CONCEPT



Operatore: Amministratore: super	Data: 16-12-2014 11:34	Numero seriale di fatto: Pz1	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4316_EDISON\2506431635_Part M.mtl
Nota di programma		Unità di misura: [mm, °]	Tipo: Z_PPAPIOS1_4316__EDISON Modello: 2506431635_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
11	Part_M_D59.4	59.400	59.199	-0.201		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:34	Numero seriale di lotto: Pz2	Nr. 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4316_EDISON\2506431635_Part M.mil
	Unità di misura: [mm, °]		Tipo: Z_PPAPIOS1_4316_EDISON	Modello: 2506431635_Part M

Nota di programr	Nota:
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GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
11	Part_M_D59.4	59.400	59.236	-0.164		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:35	Numero seriale di lotto: Pz3 Unità di misura: [mm , °]	Nri: 0	Config. file: C:\Stan\Archive\Z_PPAPIOS1_4316_EDISON\2506431635_Part M.mtl	Tipo: Z_PPAPIOS1_4316_EDISON	Modello: 2506431635_Part M
Nota di programr			Nota:			

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
11 	Part_M_D59.4	59.400	59.230	-0.170		-0.300	0.000



Operatore: Amministratore: super	Data: 16-12-2014 11:35	Numero seriale di lotto: Pz4	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4316_EDISON\2506431635_Part M.mtl
		Unità di misura: [mm, °]	Tipo: Z_PPAPIOS1_4316_EDISON	Modello: 2506431635_Part M

Nota di programir	Nota:
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GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
11	Part_M_D59.4	59.400	59.206	-0.194		-0.300	0.000



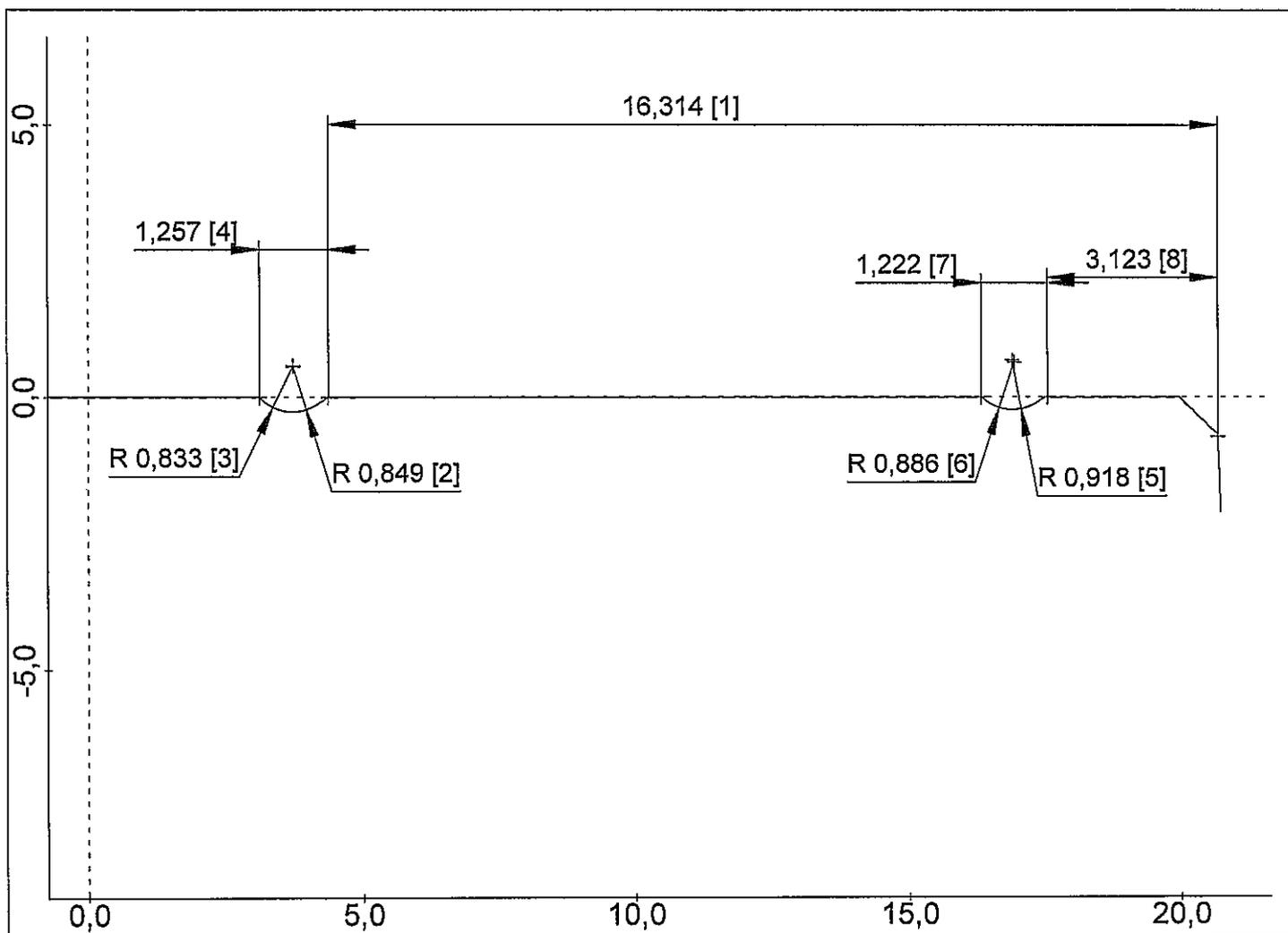
Operatore: Amministratore: super	Data: 16-12-2014 11:36	Numero seriale di lotto: Pz5	Nr: 0	Config. file: C:\Start\Archive\Z_PPAPIOS1_4316_EDISON\2506431635_Part M.mtl
Nota di programma		Unità di misura: [mm, °]	Tipo: Z_PPAPIOS1_4316_EDISON Modello: 2506431635_Part M	
Nota:				

GRAP.	Descrizione	Nominale	Misura	Scostamento	FUORI TOL.	TOL. INF.	TOL. SUP.
11	Part_M_D59.4	59.400	59.229	-0.171		-0.300	0.000

Via dei Ciclamini 4, Modugno (BA)

Oggetto: OS 1
Numero: 4316 PPAP
Operatore: TURNO C
Data, ora: 15.12.2014, 07:01
Nota: PROFILO M
Tastatore: PCV 350 / 33 mm

Macchina: MOA 416120 001

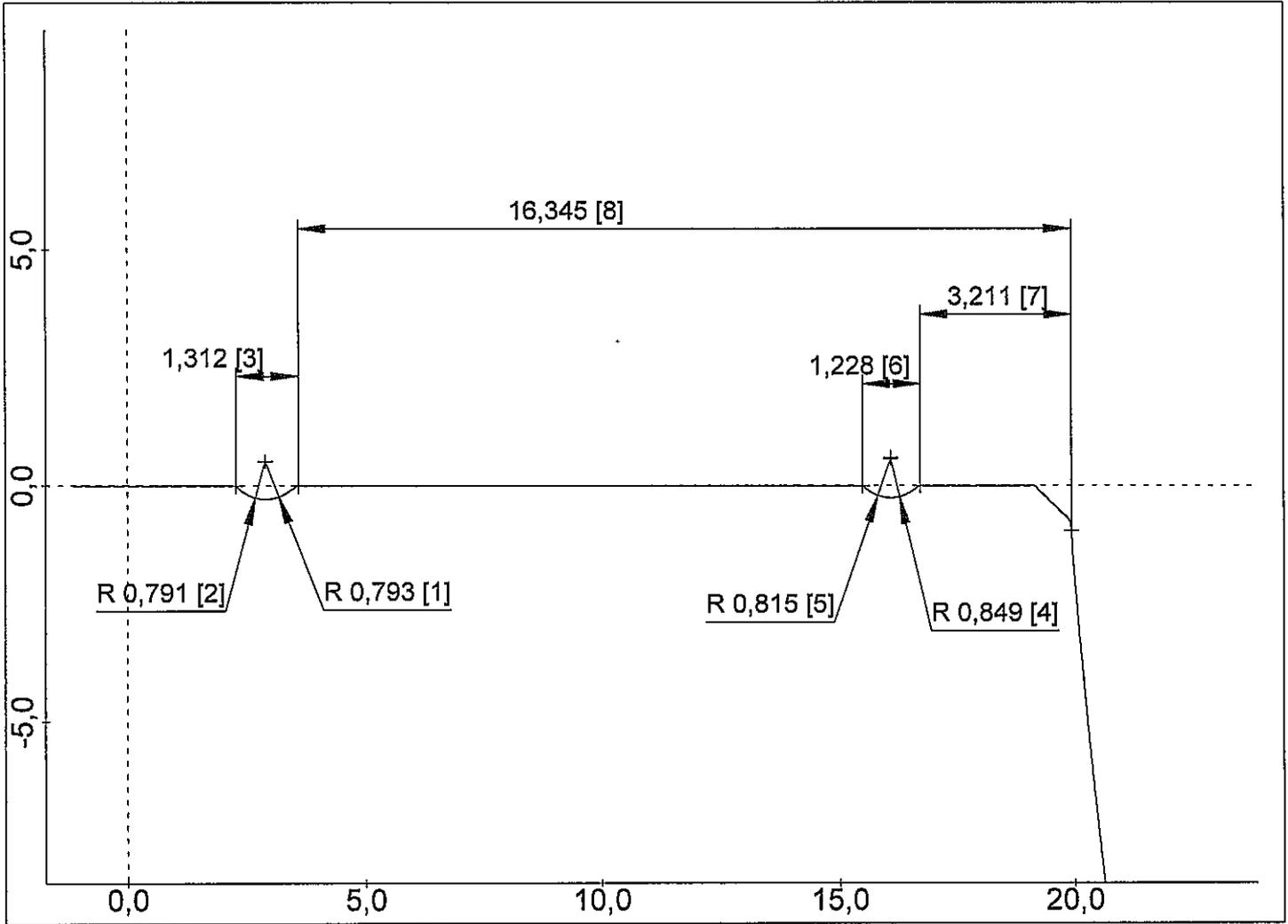


PERTHOMETER CONCEPT



Via dei Ciclamini 4, Modugno (BA)

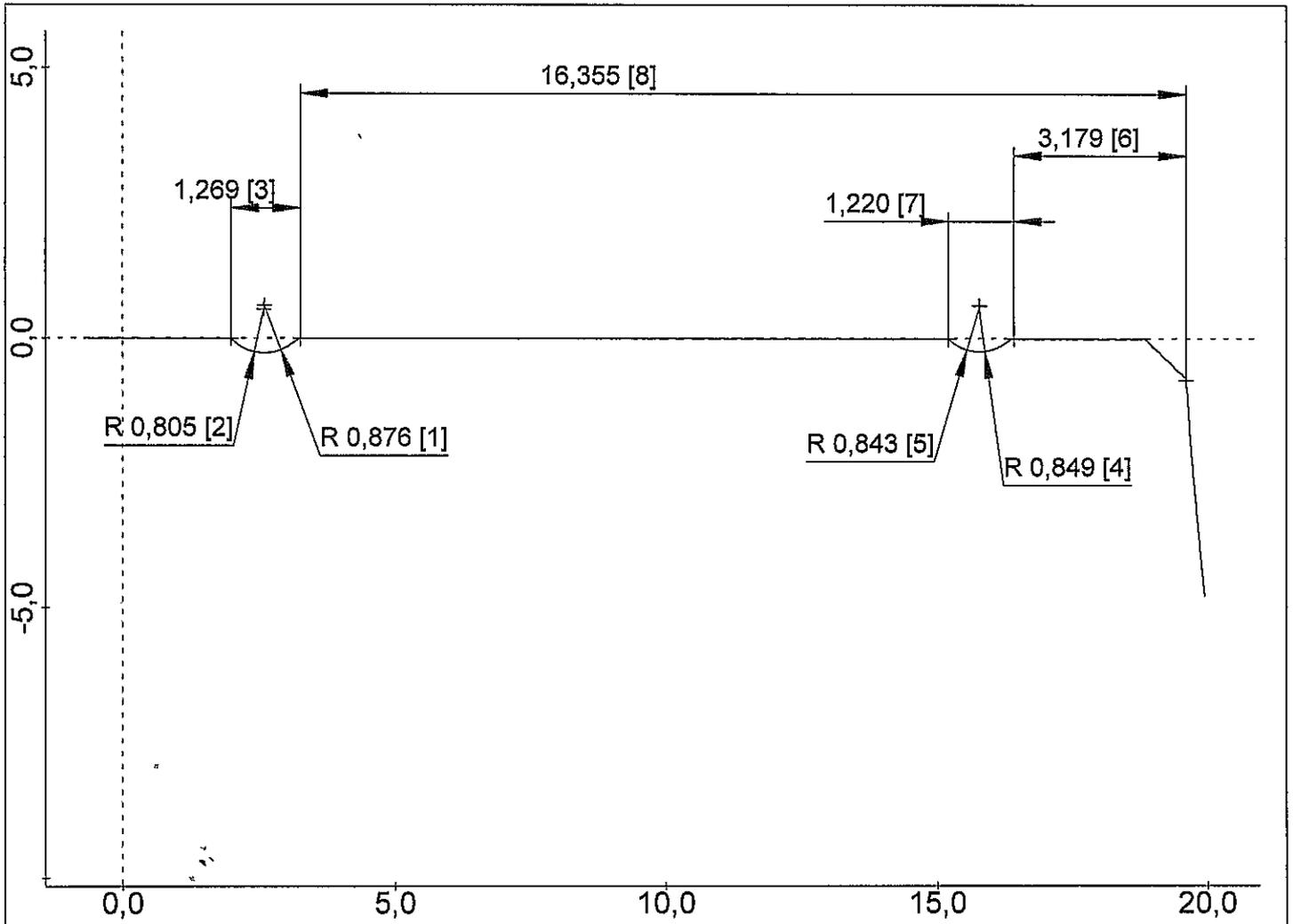
Macchina: MOA 416120 001



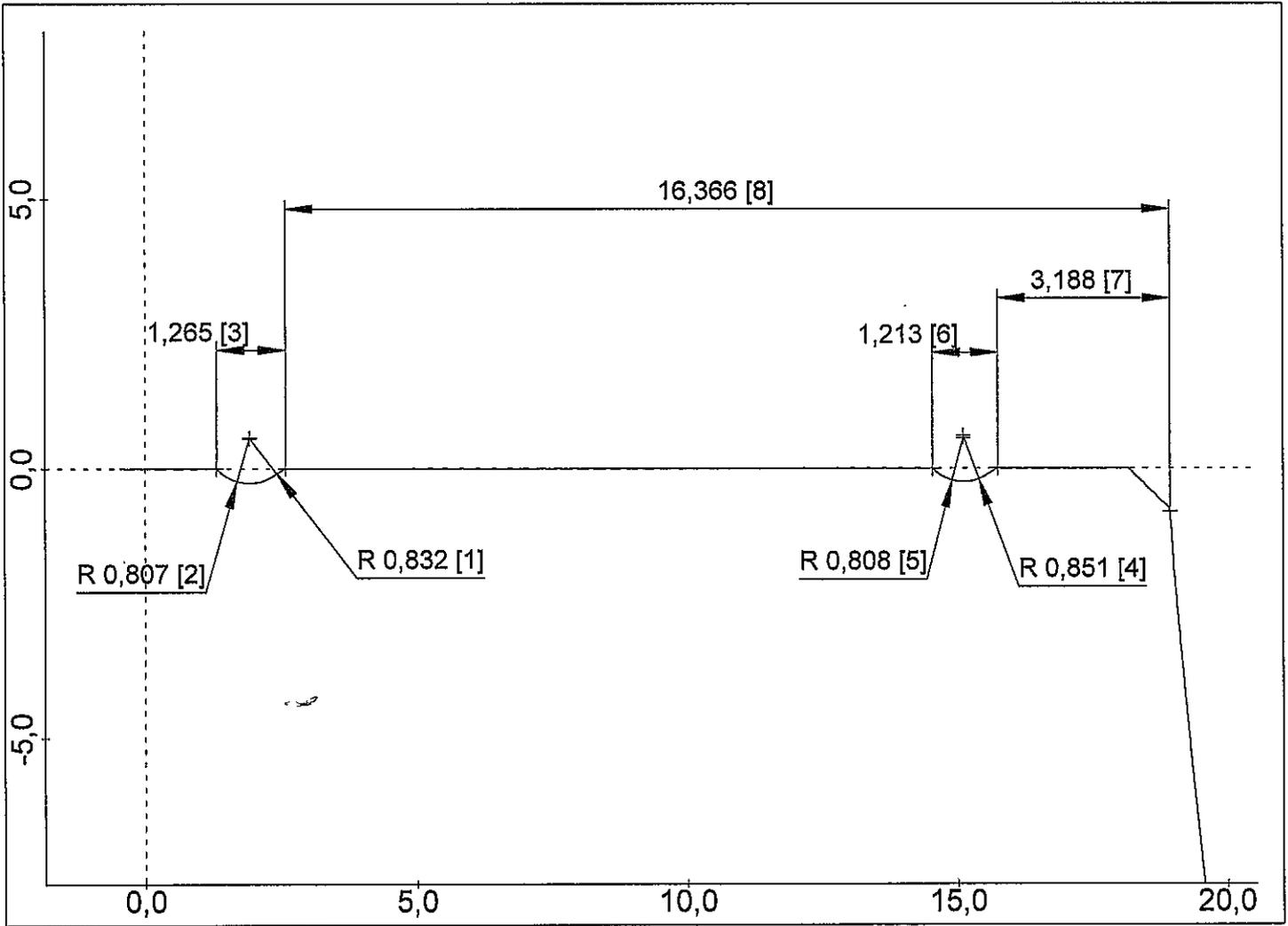
PERTHOMETER CONCEPT

Via dei Ciclamini 4, Modugno (BA)

Macchina: MOA 416120 001



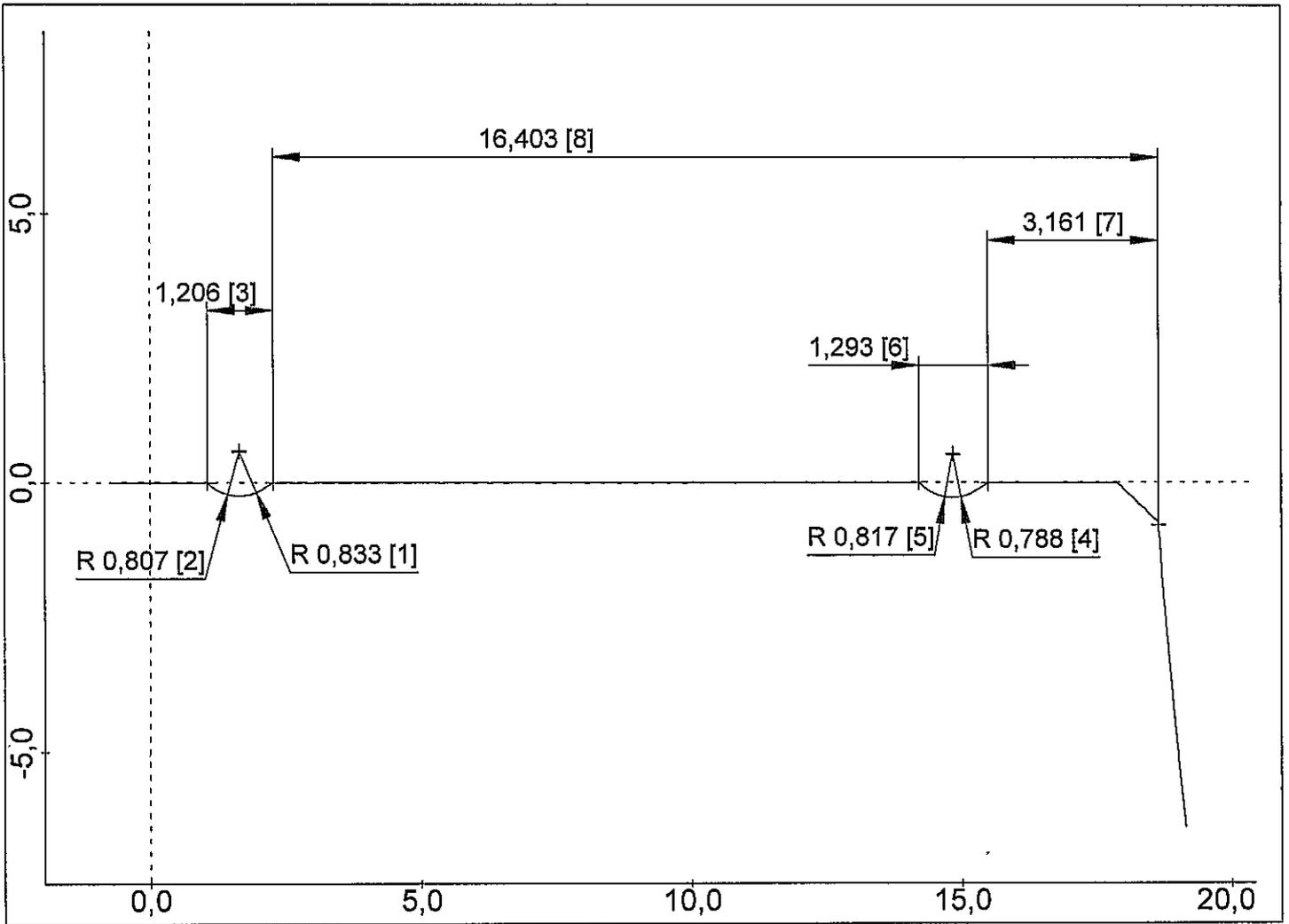
PERTHOMETER CONCEPT



PERTHOMETER CONCEPT

Via dei Ciclamini 4, Modugno (BA)

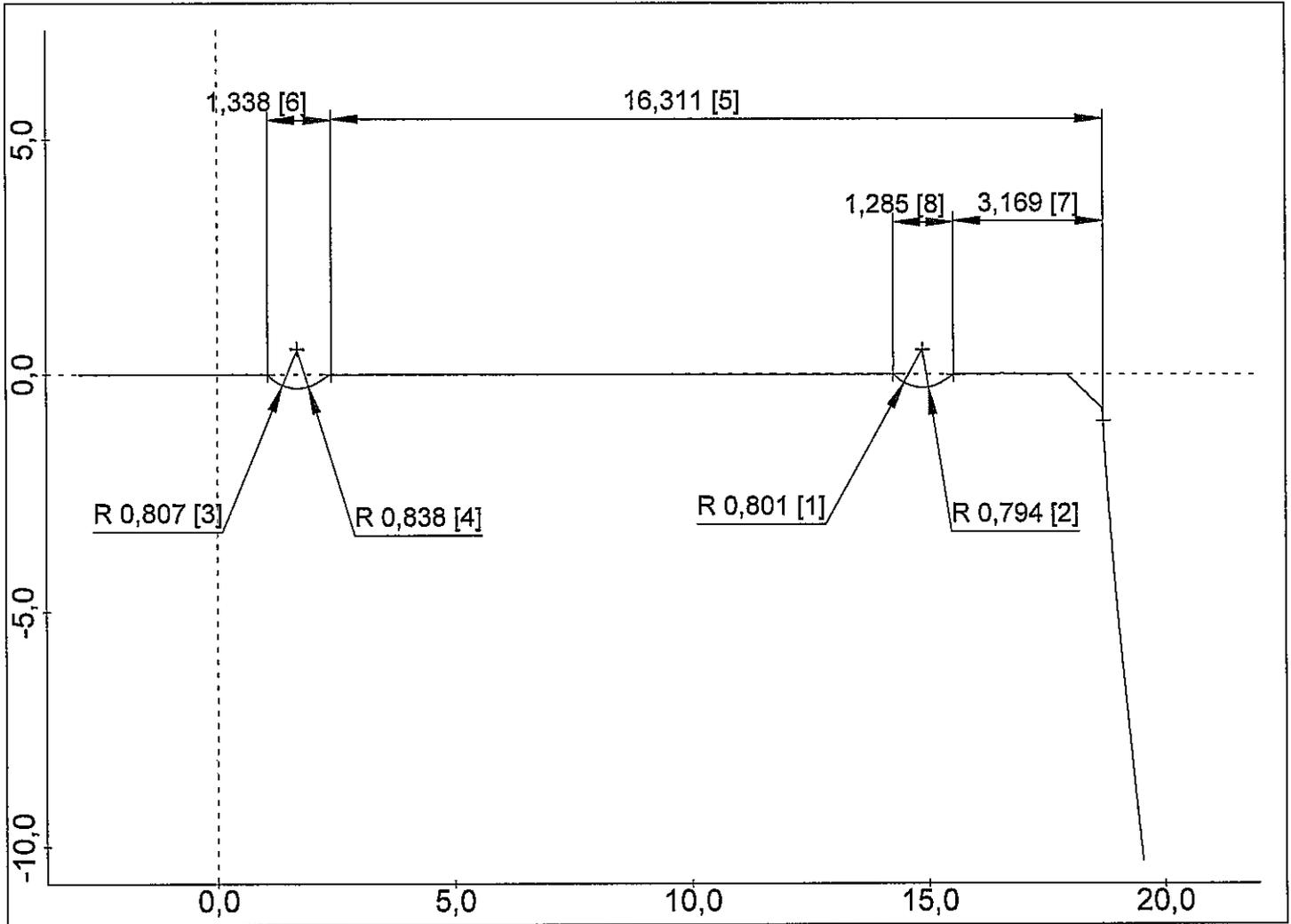
Oggetto:	OS 1
Numero:	4316 PPAP PZ.5
Operatore:	TURNO C
Data, ora:	16.12.2014, 08:57
Nota:	PROFILO M
Tastatore:	PCV 350 / 21 mm
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT

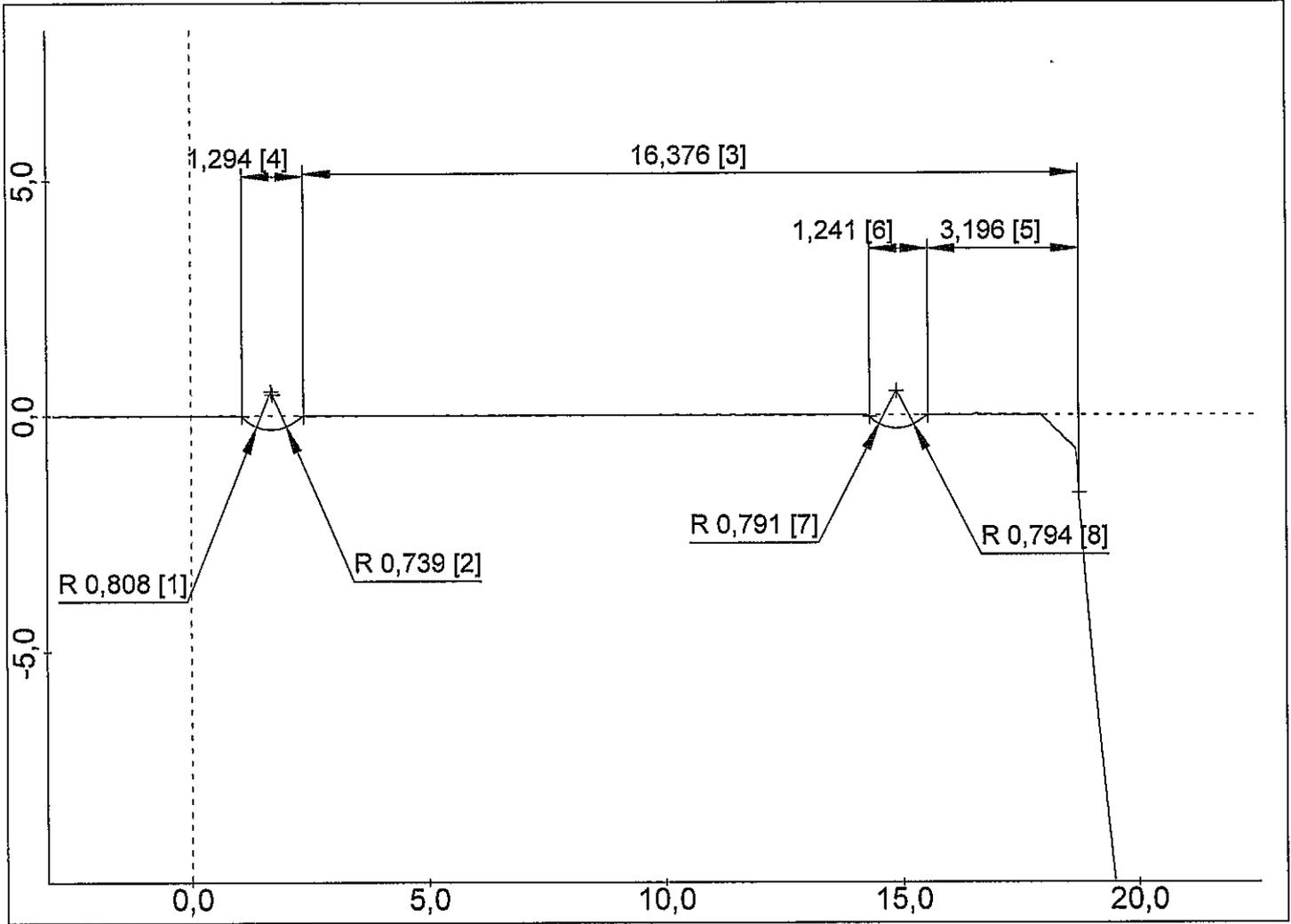
Oggetto: OS1
Numero: 4316 N2
Operatore: TURNO C
Nota: PROF. M
Tastatore: PCV 350 / 21 mm
Data, ora: 11.12.2014

Macchina: MOA 416120 001



PERTHOMETER CONCEPT

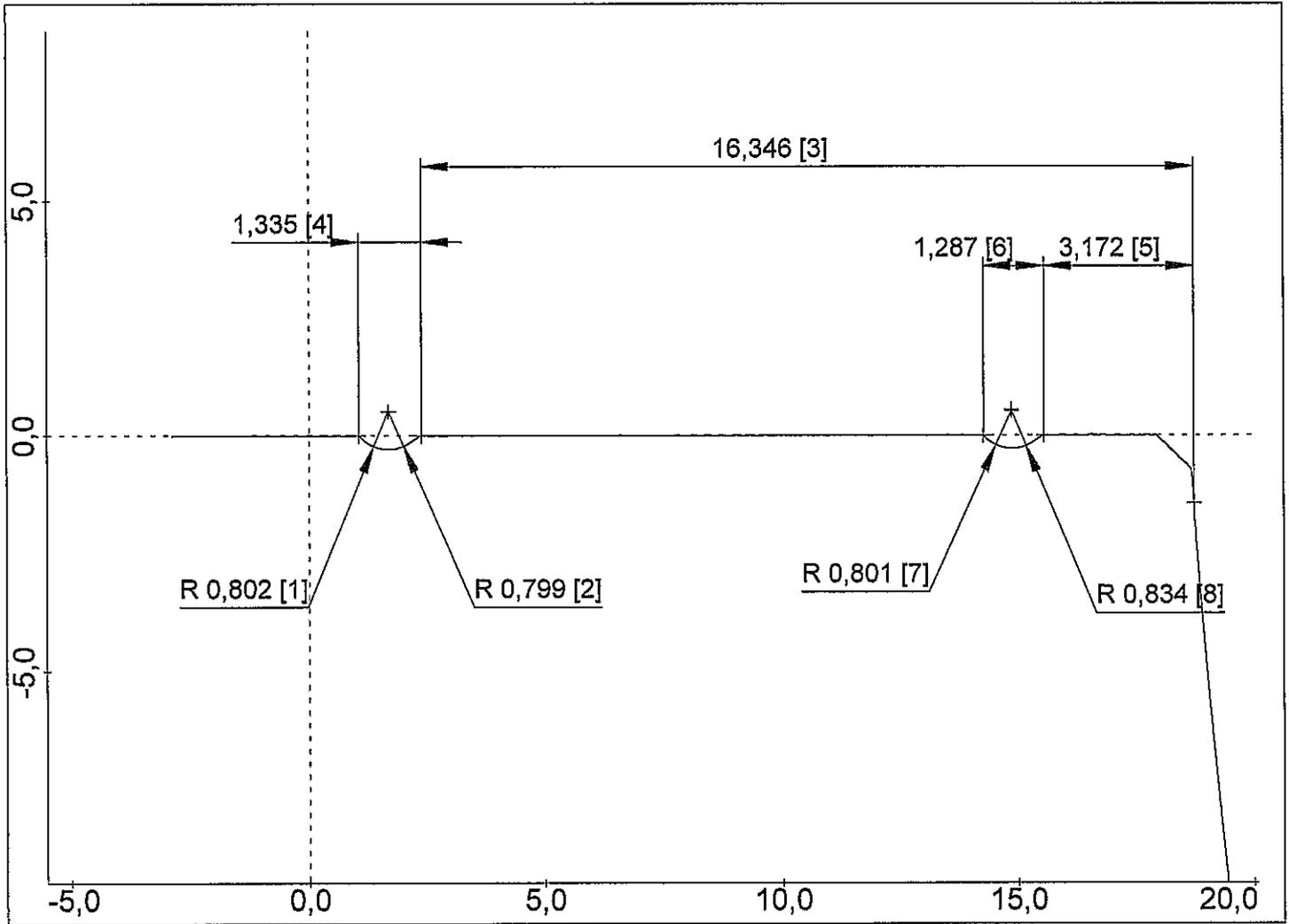
Oggetto:	OS1
Numero:	4316 N3
Operatore:	TURNO C
Nota:	PROF. M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT

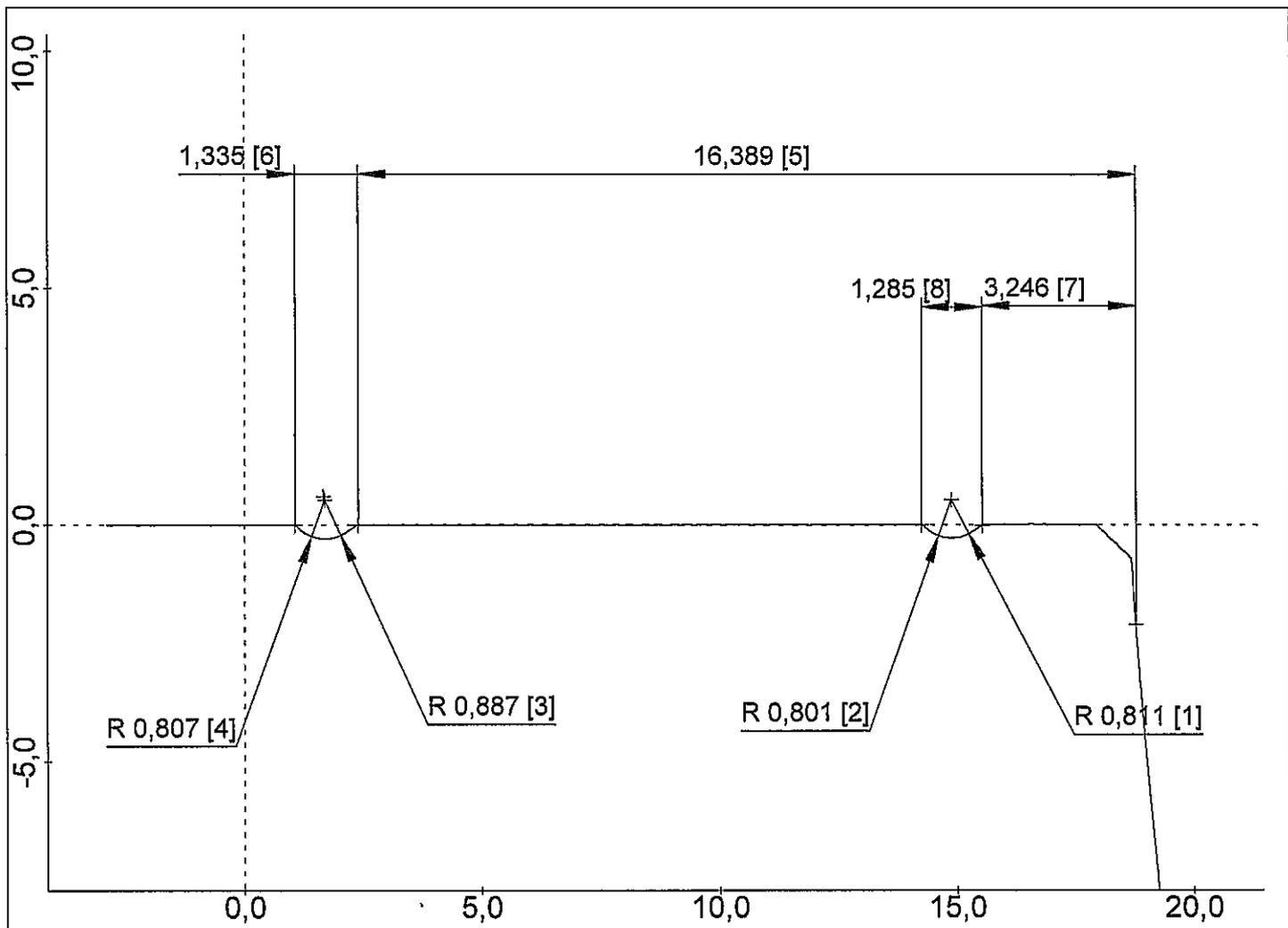
Oggetto: OS1
Numero: 4316 N4
Operatore: TURNO C
Nota: PROF. M
Tastatore: PCV 350 / 21 mm
Data, ora: 11.12.2014

Macchina: MOA 416120 001



PERTHOMETER CONCEPT

Oggetto:	OS1
Numero:	4316 N5
Operatore:	TURNO C
Nota:	PROF. M
Tastatore:	PCV 350 / 21 mm
Data, ora:	11.12.2014
Macchina:	MOA 416120 001



PERTHOMETER CONCEPT

circuiti di controllo: 1 / 2 / sala di misura

Istruzioni di controllo

■ ■ ■ GETRAG
PP Produzione GPS

Materiale: 2506431635

Descrizione: Albero di uscita 1

Stato: Rilasciato Produzione + Calcolo costi

Indice del disegno finito:

Data emissione:

16.01.2013 / Emiliano Zella

Operazione: 0200 Levigatura di potenza Z= 20

Centro di lavoro: HNW15245 LEVIGATURA OS1

Data aggiornamento:

16.01.2013 / Emiliano Zella

n. SAP ID interno	Caratteristica	Misura nom. n.	LTI	LTS	Strumento di controllo	Quantità	Frequenza RK1:	Quantità	Frequenza RK2:	Quantità	Frequenza Sala di misura	Cambio ut.	Metodi di gestione / Documentazione
00002	GN 3010												
	Controllo 1° pz sec. VBZ 450_804102				MVZ-400249 EVOLVENTIMETRO					1	1° pz 2.3.1.1-R 2		Misur: 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 G. T. sfere da 3,5	57,653 mm	57,621	57,686	MZA-401071 CALCOLATORE DI MISURA E9066 MARPOSS	3	pz ogni 100 per macchina						CR1: calcolatore di misura
0020	M DIAGRAMMA COMPLETO CON SVERGOLAMENTO	mm			MVZ-400249 EVOLVENTIMETRO					1	pz. per rack / macchina		Misur: diagramma di dentatura
0030	M Oscillazione Fr	0,000 mm		0,032	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac.		Misur: diagramma di dentatura
0032	Somma Passo Fp	0,000 mm		0,040	MVZ-400249 EVOLVENTIMETRO					1	pz a turno/mac.		Misur: diagramma di dentatura
0042	Sup. dente completamente levigata					3	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

Istruzioni di controllo



PP Produzione GPS

Materiale: 2506431635

Descrizione: Albero di uscita 1

Operazione: 0135 Pallinatura

Centro di lavoro: OKU15476 PALLINATURA M5MT

Indice del disegno finito:

Data emissione:

15.04.2013 / Vito Fiore

Data aggiornamento:

15.01.2015 / Donato Pletanza

ID interno	Caratteristica	Misura nomin.	LTI	LTS	Strumento di controllo	Quantità	Frequenza RK1:	Quantità	Frequenza RK2:	Quantità	Frequenza Sala di misura	Cambio lit.	Metodi di gestione / Documentazione
0002	aspetto visivo					3	pz per rack						CR1: no documentazione
0012	controllo presenza marcatura					1	100%						CR1: no documentazione
0022	M Intensità di pallinatura (Almen)	0,550 mm	0,500	0,600	MHM-432101 COMPARAT. DIGITALE 0-25; 1/1000	1	pz a giorno/ma cchiana						CR1: Tabella di registrazione dati