



3M4>S

Part Name: <u>Speed Gear 4</u>		Cust. Part No.: <u>251.1.1226.50</u>
Shown on Drawing No.: <u>251.1.1226.50</u>		Org. Part No.: <u>251.1.1226.50</u>
Engineering Change Level: <u>3 Index "J" (C005149_MIP_1)</u>		Dated: <u>19/07/2016</u>
Additional Engineering Changes: <u>na</u>		Dated: <u>na</u>
Safety and/or Government Regulation: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Purchase Order No.: _____
Checking Aid No.: <u>na</u>		Weight (kg): <u>0.862</u>
Checking Aid Engineering Change Level: <u>na</u>		Dated: <u>na</u>

<b>ORGANIZATION MANUFACTURING INFORMATION</b> <u>Getrag S.p.A.</u> Organization Name & Supplier / Supplier Code  <u>Via dei Ciclamini, 4</u> Street Address  <table style="width:100%;"> <tr> <td><u>Modugno (Ba) Puglia</u></td> <td><u>70026</u></td> <td><u>Italy</u></td> </tr> <tr> <td>City</td> <td>Region</td> <td>Postal Code</td> </tr> <tr> <td></td> <td></td> <td>Country</td> </tr> </table>	<u>Modugno (Ba) Puglia</u>	<u>70026</u>	<u>Italy</u>	City	Region	Postal Code			Country	<b>CUSTOMER SUBMITTAL INFORMATION</b> <u>Bari assembly line (GPS4)</u> Customer Name / Division  <u>na</u> Buyer / Buyer Code  <u>DCT300</u> Application
<u>Modugno (Ba) Puglia</u>	<u>70026</u>	<u>Italy</u>								
City	Region	Postal Code								
		Country								

**MATERIALS REPORTING**

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

Submitted by IMDS or other customer format: \_\_\_\_\_  
 (IMDS=International Material Data System)

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

**REASON FOR SUBMISSION (Check at least one)**

<input checked="" type="checkbox"/> Initial Submission <input type="checkbox"/> Engineering Change(s) <input type="checkbox"/> Tooling: Transfer, Replacement, Refurbishment, or additional <input type="checkbox"/> Correction of Discrepancy <input type="checkbox"/> Tooling Inactive > than 1 year	<input type="checkbox"/> Change to Optional Construction or Material <input type="checkbox"/> Supplier or Material Source Change <input type="checkbox"/> Change in Part Processing <input type="checkbox"/> Parts Produced at Other or Additional Location <input type="checkbox"/> Other - please specify below (e.g. additional specific customer requirement or e.g. change of EP parts)
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**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 na

**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 163 / 8 hours. I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from the declaration below.

**EXPLANATION / COMMENTS:** - First PPAP Submission (only differences from variant 251.1.1087.50).  
 - Identification grooves deleted in according with change C006077

Is each Customer Tool properly tagged and numbered?  Yes  No  n/a

Organization Authorized Signature: \_\_\_\_\_ Date: 10/01/2018

Print Name: Tursi Dario Maria Phone No.: +39 0805858360 Fax No.: \_\_\_\_\_

Title: 7DCT300 Launch Manager E-Mail: dario\_tursi@magna.com

**FOR CUSTOMER USE ONLY (If applicable))**

Part Warrant Disposition:  Approved  Rejected  Other

Customer Signature: \_\_\_\_\_ Date: 10/01/2018

Print Name: \_\_\_\_\_ Customer Tracking No.: \_\_\_\_\_



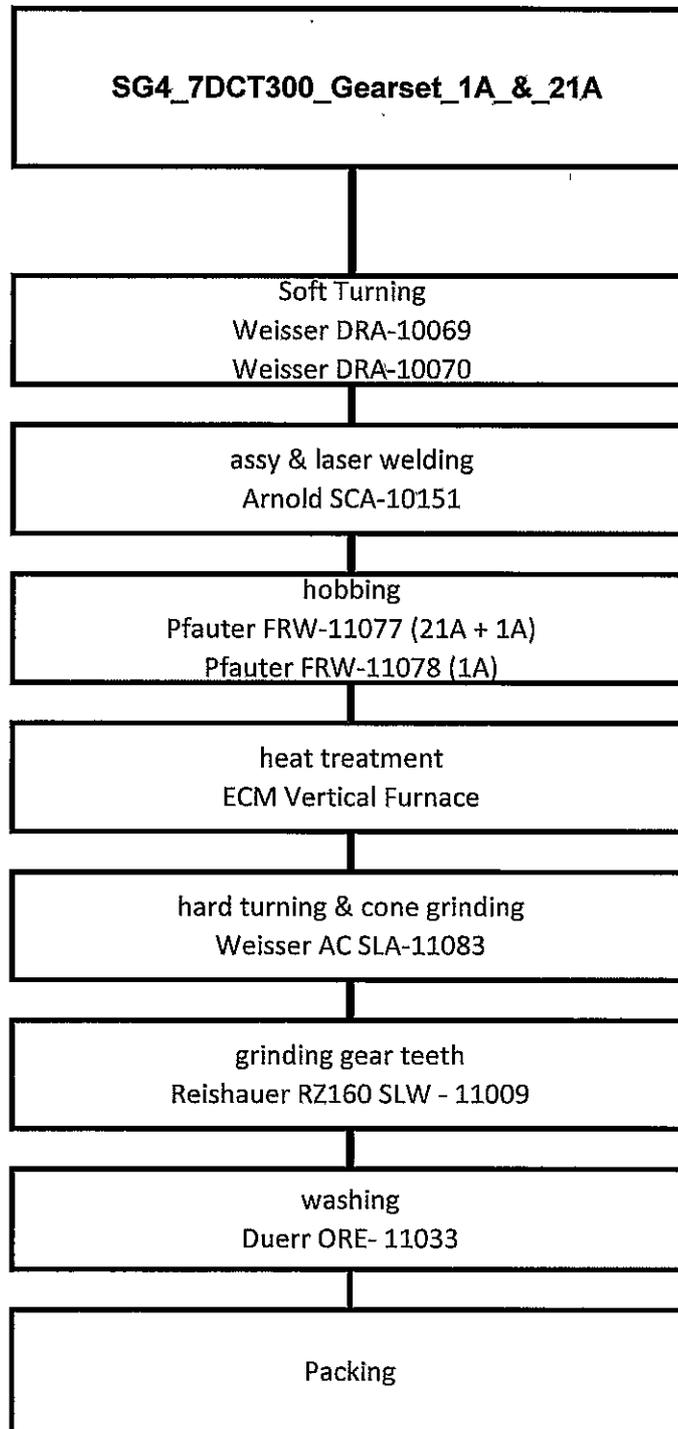
New P/N introduction - 1226.50

Short description: Initial PPAP (only differences from 1087)

PPAP Requirements	Required	Note	PPAP Docs updated
1 Design Records	Yes	Final Drawing + G.D. + VBZ	Yes
2 Authorized Engineering change documents	Yes	see dwg	Yes
3 Customer Engineering approval	n.a.		
4 DFMEA	NO		
5 Process flow diagram(s)	Yes		Yes
6 PFMEA	Yes		Yes
7 Control plan	Yes		Yes
8 Measurement system analysis studies	Yes	Studio Tipo 1 per MdK	Yes
9 Dimensional results	Yes		Yes
10 Records of Material / Performance test results	NO		
11 Initial process studies	Yes	Ppk for MdK and Fr	Yes
12 Qualified laboratory documentation	NO		
13 Appearance Approval Report (A.A.R.)	n.a.		
14 Sample Production Parts	Yes		Yes
15 Master sample	Yes		Yes
16 Checking aids	n.a.		
17 Customer-Specific Requirements	NO		
18 Part Submission Warrant (PSW)	Yes		Yes

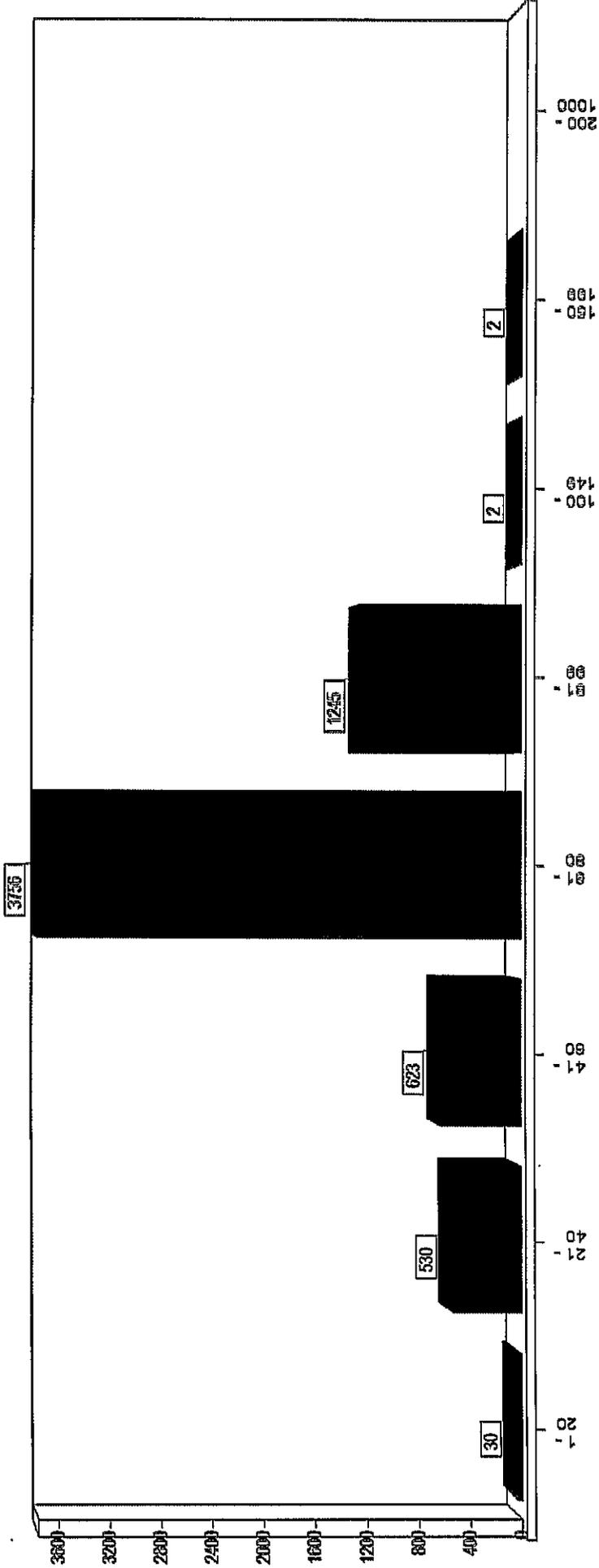
Other requirements			
1 PSW Raw part	NO		
2 PSW E.P. part	NO		
3 PSW Engagement Rings	NO		

10/01/2018



# DCT300 – GEARSSET: PFMEA RPN Status

<b>■ ■ ■ GETRAG</b>		F M E A Processo		Numero: Pagina:	12.1.1.1.1
Tipo Modulo/Produzione/Lotto: 7DCT300		Numero Disegno: Gearset 1A + 21A Stato modifica:		Emesso: 31.03.2015	
PFMEA Elemento: GEARSSET 7DCT300		Codice dell'operazione: Tubo Stato modifica:		Emesso: Modificato: 13.01.2017 20.11.2017	
		Responsabile: Gestrag Dlter: Gestrag			
		Responsabile: Papagna, Oscuro, NDI, Cichelli, Tanzi T., Terlizza, Landolfina, Guarna, Sambolai, Caponio, Vicenti, Piccino, Pieno Dlter:			

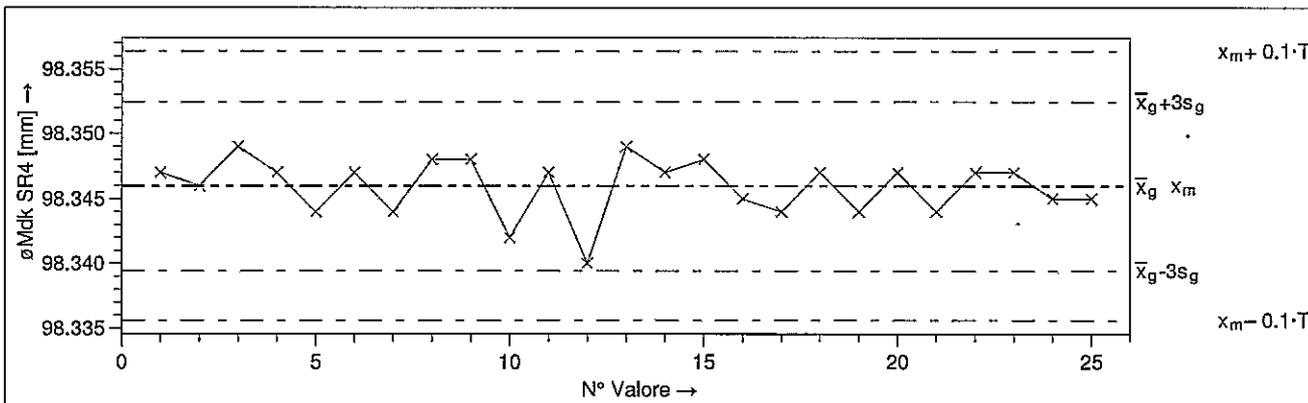


Frequenza



# Capacità strumenti di misura

Data/ora	13/11/2017	Nome oper.	G.Sette	Reparto/Area/Prod.	NN	Posto di prova	Dentatura SR4
Calibro		Master			Caratteristica		
Desc. calibro	Banchetto in acciaio	Desc. mast.	SR4	Desc. Car.	øMdk SR4		
N° calibro	MVZ 406001 004	N° master	MVZ 400565 001	N° Caratt.	2511122750		
Ris. calibro	0.001	Valore reale mast	98.346	Val. Nom 98.346	LSS	98.398	$\Delta = 0.052$
Caus. Pr.	Cg CgK	Unità di misura	mm	Unità di n mm	LSI	98.294	$\Delta = -0.052$
Nota	Banchetto øMdk MVZ 406001 004 per ruote dentate DCT 300 soft						



i	x <sub>i</sub>	i	x <sub>i</sub>	i	x <sub>i</sub>	i	x <sub>i</sub>	i	x <sub>i</sub>
1	98.347	6	98.347	11	98.347	16	98.345	21	98.344
2	98.346	7	98.344	12	98.340	17	98.344	22	98.347
3	98.349	8	98.348	13	98.349	18	98.347	23	98.347
4	98.347	9	98.348	14	98.347	19	98.344	24	98.345
5	98.344	10	98.342	15	98.348	20	98.347	25	98.345

Valori a disegno		Valori Calcolati		Statistiche	
$x_{m+0.1 \cdot T}$	= 98.35640	$x_{max g}$	= 98.349	$\bar{x}_g + 3s_g$	= 98.35245
$x_m$	= 98.34600	$x_{min g}$	= 98.340	$\bar{x}_g$	= 98.34592
$x_{m-0.1 \cdot T}$	= 98.33560	$R_g$	= 0.009	$\bar{x}_g - 3s_g$	= 98.33939
$0.2 \cdot T$	= 0.02080	$n_{tot}$	= 25	$6s_g$	= 0.01307
$T$	= 0.104			$s_g$	= 0.00218
Unità di misura	= mm			$ Bi $	= 0.000080000
				$n_{eff}$	= 25

Test per Bias			Risultati del test : non significativo
Bias	=	0.08%	

Minimo riferimento per sistema di misura capace			
Risoluzione	%RE =	0.96%	$T_{min} (\%RE) = 0.0200$
$\%EV = \frac{EV}{T}$	=	12.56%	$T_{min} (\%EV) = 0.261$
$C_g = \frac{0.2 \cdot T}{4 \cdot s_g}$	=	$1.72 \leq 2.39 \leq 3.06$	$T_{min} (C_g) = 0.0579$
$C_{gk} = \frac{0.1 \cdot T -  \bar{x}_g - x_m }{2 \cdot s_g}$	=	$1.69 \leq 2.37 \leq 3.05$	$T_{min} (C_{gk}) = 0.0587$

Sistema di misura capace (%RE,min,C<sub>g</sub>,C<sub>gk</sub>)

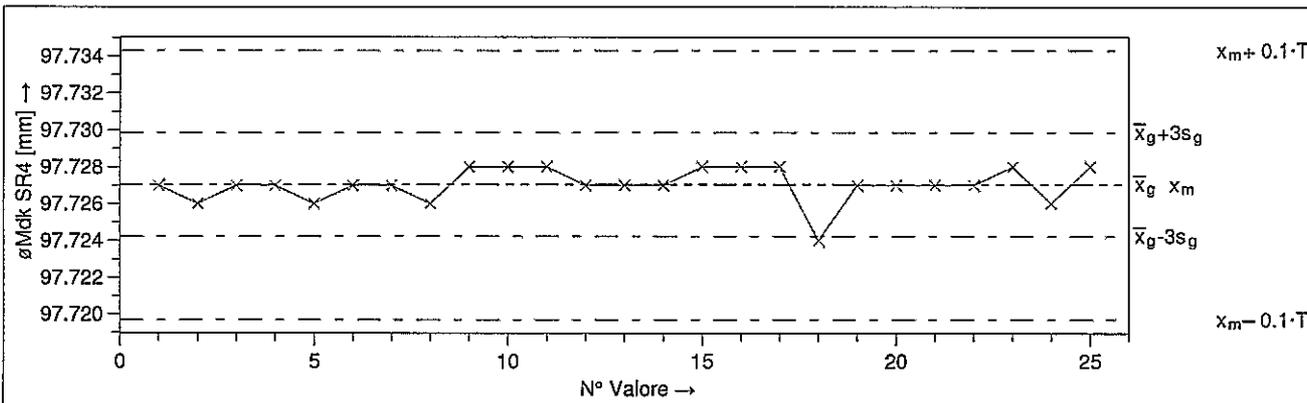
GETRAG MSA 2017: Capability of measuring system (Type-1 Study)



# Capacità strumenti di misura

Pagina  
1 / 1

Data/ora .	11/11/2017	Nome oper.	G.Sette	Reparto/Area/Prod.	NN	Posto di prova	Rettificanti D.A.
Calibro		Master		Caratteristica			
Desc. calibro	Banchetto in acciaio	Desc. mast.	SR4	Desc. Car.	øMdk SR4		
N° calibro	MVZ 406001 020	N° master	MVZ 400565 002	N° Caratt.	2511122750		
Ris. calibro	0.001	Valore reale mast	97.727	Val. Nom	97.727	LSS	97.763 $\Delta = 0.036$
Caus. Pr.	Cg CgK	Unità di misura	mm	Unità di n	mm	LSI	97.691 $\Delta = -0.037$
Nota	Banchetto øMdk MVZ 406001 020 per ruote dentate DCT 300 hard						



i	x <sub>i</sub>	i	x <sub>i</sub>	i	x <sub>i</sub>	i	x <sub>i</sub>	i	x <sub>i</sub>
1	97.727	6	97.727	11	97.728	16	97.728	21	97.727
2	97.726	7	97.727	12	97.727	17	97.728	22	97.727
3	97.727	8	97.726	13	97.727	18	97.724	23	97.728
4	97.727	9	97.728	14	97.727	19	97.727	24	97.726
5	97.726	10	97.728	15	97.728	20	97.727	25	97.728

Valori a disegno		Valori Calcolati		Statistiche	
$x_{m+0.1 \cdot T}$	= 97.73430	$x_{max g}$	= 97.728	$\bar{x}_g + 3s_g$	= 97.72984
$x_m$	= 97.72700	$x_{min g}$	= 97.724	$\bar{x}_g$	= 97.72704
$x_{m-0.1 \cdot T}$	= 97.71970	$R_g$	= 0.004	$\bar{x}_g - 3s_g$	= 97.72424
$0.2 \cdot T$	= 0.01460	$n_{tot}$	= 25	$6s_g$	= 0.00561
$T$	= 0.073			$s_g$	= 0.000935
Unità di misura	= mm			$ Bi $	= 0.000040000
				$n_{eff}$	= 25

### Test per Bias

Bias = 0.05%

Risultati del test : non significativo

### Minimo riferimento per sistema di misura capace

Risoluzione	%RE = 1.37%		$T_{min} (\%RE)$	= 0.0200
$\%EV = \frac{EV}{T}$	= 7.68%		$T_{min} (\%EV)$	= 0.112
$C_g = \frac{0.2 \cdot T}{4 \cdot s_g}$	= 2.81 ≤ 3.91 ≤ 5.00		$T_{min} (C_g)$	= 0.0248
$C_{gk} = \frac{0.1 \cdot T -  \bar{x}_g - x_m }{2 \cdot s_g}$	= 2.78 ≤ 3.88 ≤ 4.99		$T_{min} (C_{gk})$	= 0.0253

Sistema di misura capace (%RE,min,C<sub>g</sub>,C<sub>gk</sub>)



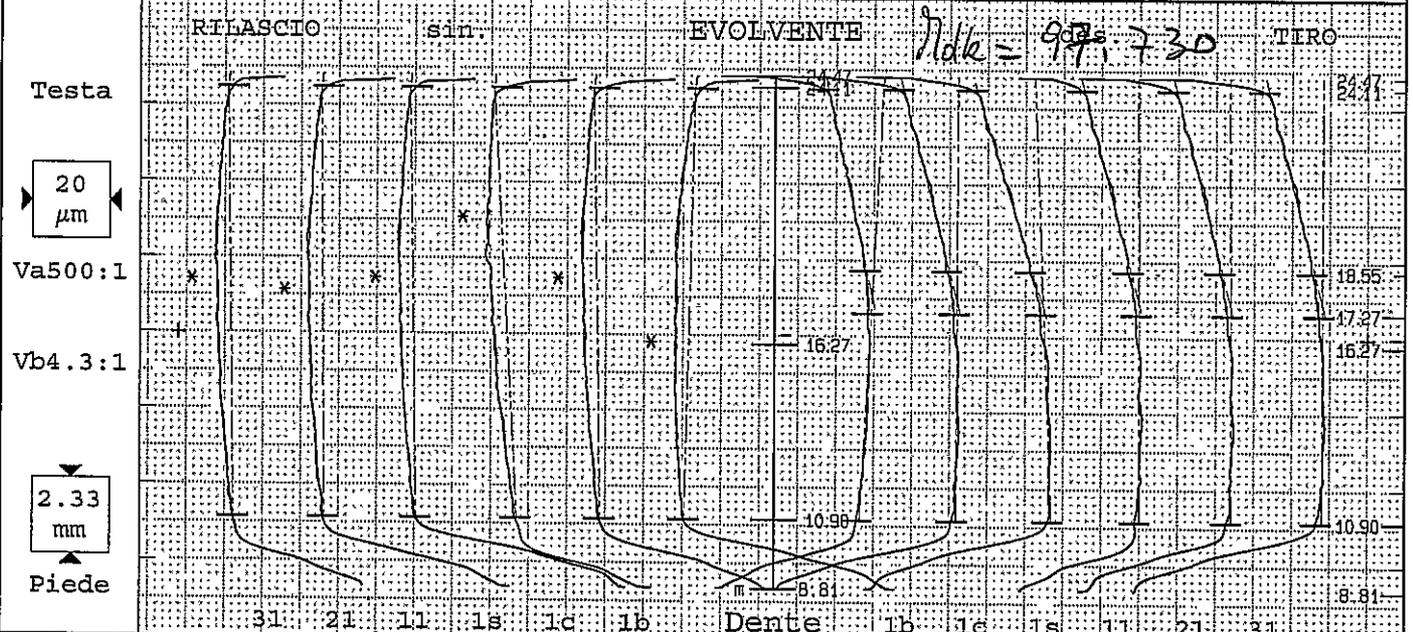
□ GETRAG MSA 2017: Capability of measuring system (Type-1 Study)



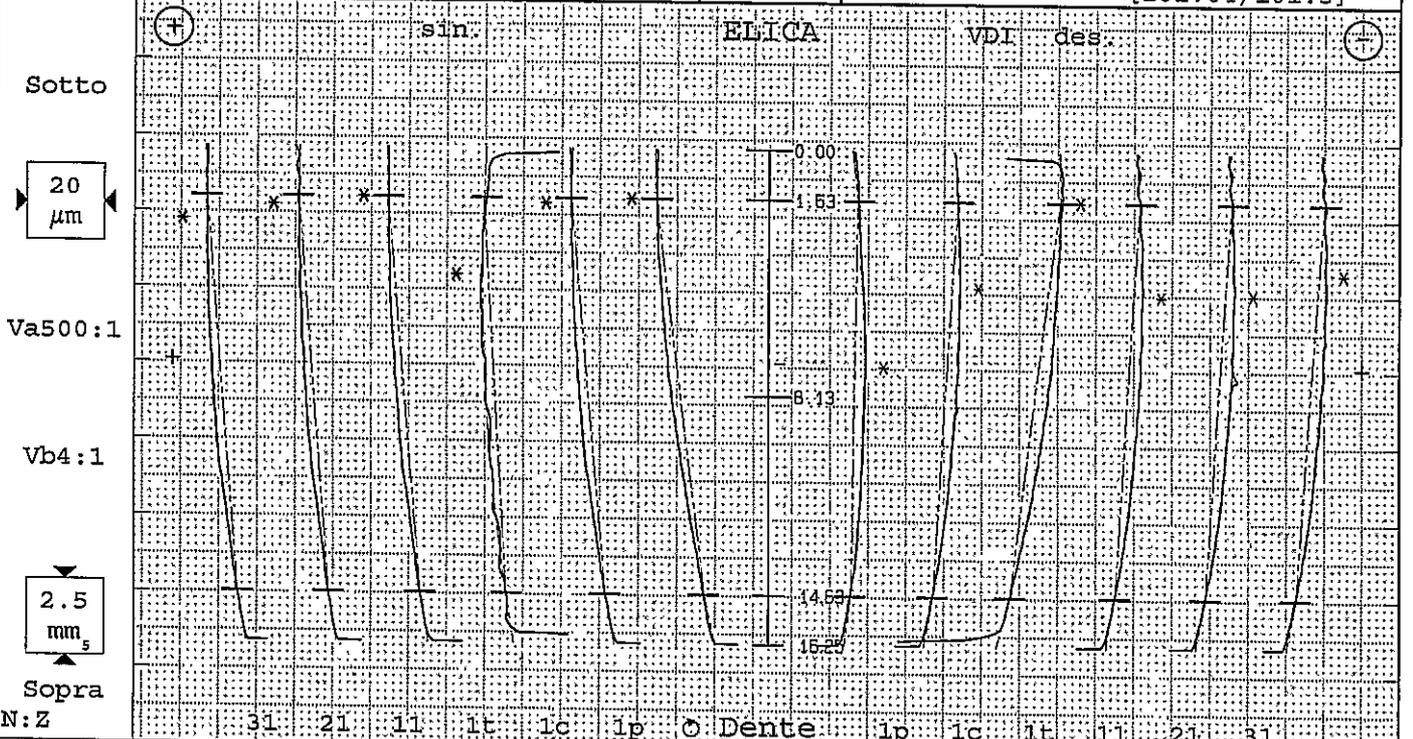
# Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllere: turno c	Data: 04.11.2017 21:49
Denominazione: SR4		Numero denti z 40	Largh.fasc.dent. b 16.25mm
Numero disegno.: D51.1.1227.50-IF		Modulo m 2.05mm	Tratto evolv. La 13.21/6.37mm
Comessa/serie nr.: 1		Angolo pressione 17°30'00"	Tratto elica Ls 13mm
Masch.Nr.: M001	Spindel: Formulas	Angolo elica -28°54'00"	Inizio elab. M1 10.9mm
Untersuchungszweck: Laufende Messung		Ø Base db 88.1236mm	Palpatore Ø (#2D) 1mm
Werkzeug: Charge:		Ang. Base -27°26'46"	Fat.scor.pr. x .394



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
fHm	±5	1.4	Var a 0.9								±5	Var a 0.8							-0.2	
fHa	±8	1.4	1.5	0.8	1.7	6.1	1.7	-2.7		±8	6.1	0.3	-4.5	-0.5	-0.5	0.1	-0.2			
Fa		4.3	3.8	4.7	3.9	7.0	4.9	6.1			3.4	2.0	2.9	2.0	1.9	2.4	2.1			
ffa	5	2.4	1.9	2.4	2.2	4.3	3.1	2.5		5	1.5	1.9	1.9	2.1	2.0	2.4	2.1			
ca	1/5	3.6	3.6	3.7	3.5	3.8	3.7	3.8			1.3	1.5	1.4	1.5	1.4	1.6	1.5			
Ca										-16/-8	-14.6	-14.5	-15.4	-14.2	-14.0	-14.1	-14.2			
ffaF	3	0.0	0.2	0.3	0.1	0.5	0.3	0.1		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
P/T-Ø [mm]		87.710 [87.57/87.87]									101.155 [101.04/101.3]									



N:Z		3l	2l	1l	1t	1c	1p	Ø Dente	1p	1c	1t	1l	2l	3l		
fHm	8±4	10.5	FV -8.5 Var β 1.2						-10±4	FV-14.4 Var β 1.3					-8.5	
fHb	8±8	10.5	10.1	9.9	10.7	7.3	11.1	15.8	-10±8	-2.1	-8.1	-16.5	-8.0	-8.4	-9.3	-8.5
fHs		2.5	2.2	2.3	2.4	2.7	2.9	5.9		6.2	3.1	5.7	2.8	4.0	2.4	3.1
ffa	5	0.6	0.6	0.6	0.6	1.6	0.5	0.5	5	0.7	0.6	0.9	0.6	1.7	0.7	0.9
cB	1/5	2.2	2.3	2.1	2.1	2.4	2.3	2.2	1/5	2.7	2.9	3.3	3.0	3.2	2.9	3.0

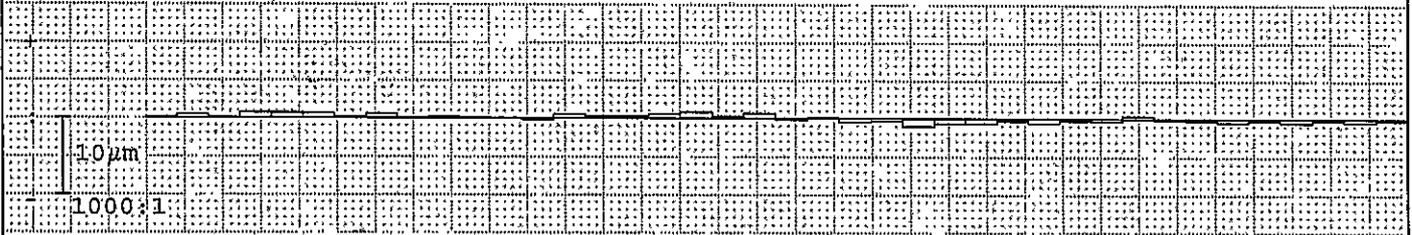


# Ruota cilindrica Divisione

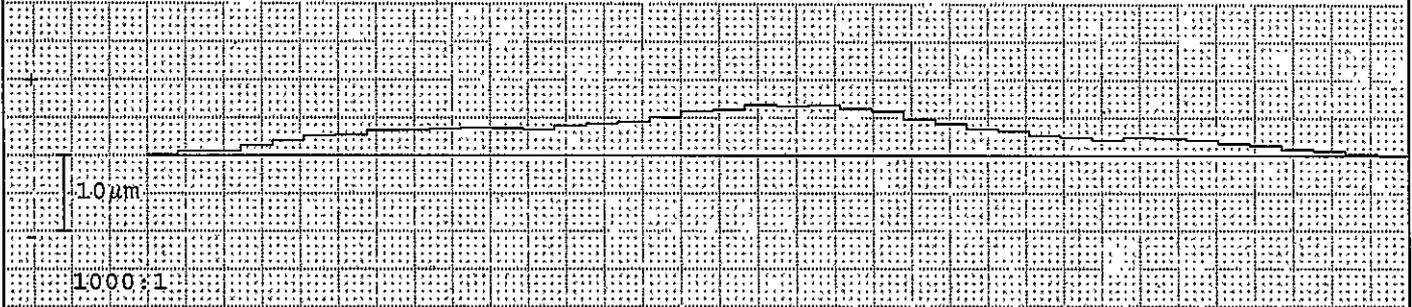


Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno c	Data: 04.11.2017 21:49
Denominazione: SR4		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno: D51.1.1227.50-IF		Modulo m 2.05mm	Angolo elica -28°54'00"
Commessa/serie nr.: 10		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formelwerkzeug	Charge:	

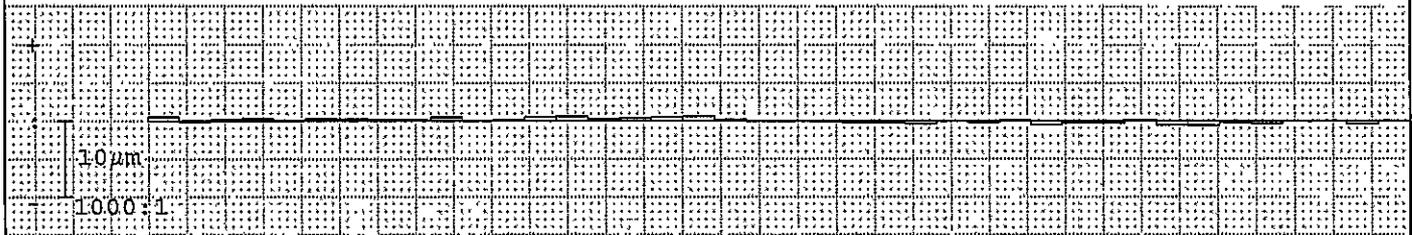
## Errori singoli di divisione fp fianco sinistro



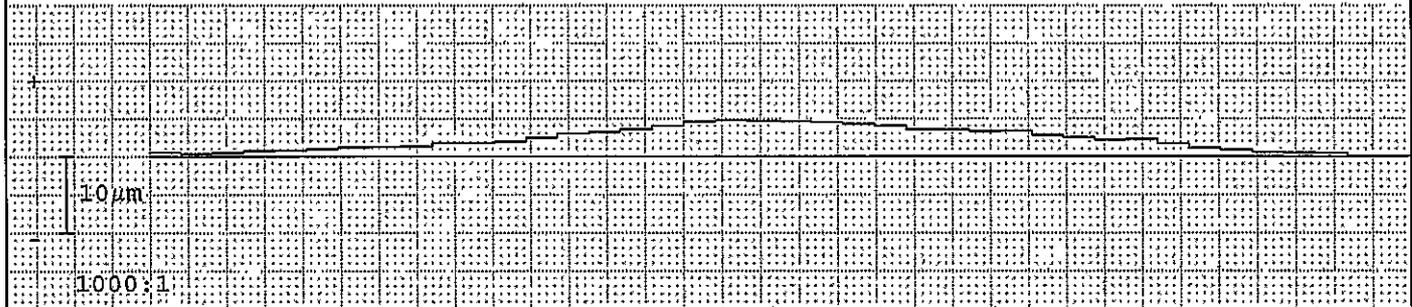
## Errore somma di divisione Fp fianco sinistro



## Errori singoli di divisione fp fianco destro



## Errore somma di divisione Fp fianco destro

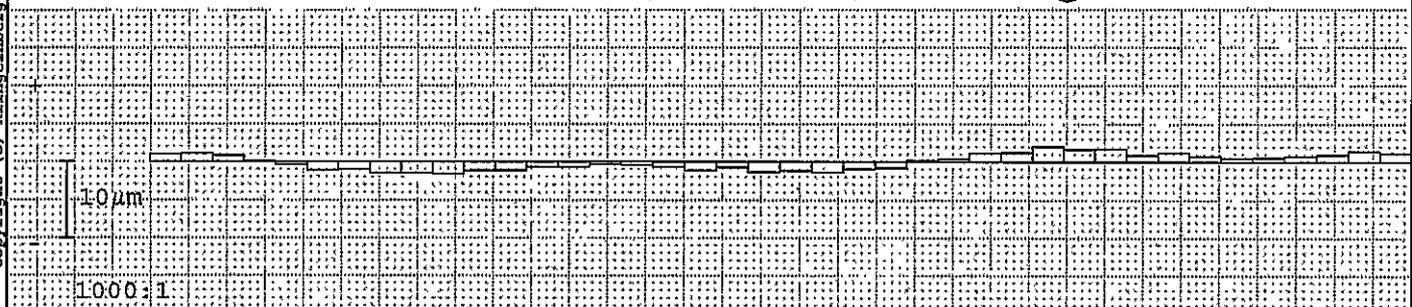


Corso per misura divis.: 93.939 z=8.1mm

	fianco sinistro / RILASCIO				fianco destro / TIRO			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	1.0		10.0		0.6		10.0	
Gr. salto di passo fu max	0.8		12.0		0.7		12.0	
Scarto di divisione Rp	1.8				1.2			
Err. globale di divisione Fp	6.7		36.0		4.7		36.0	
Err. cordale di divisione Fpz/8	3.2				2.1			

Centricità Fr (Ø-sfera =3mm)

⊙ : 2.6µm

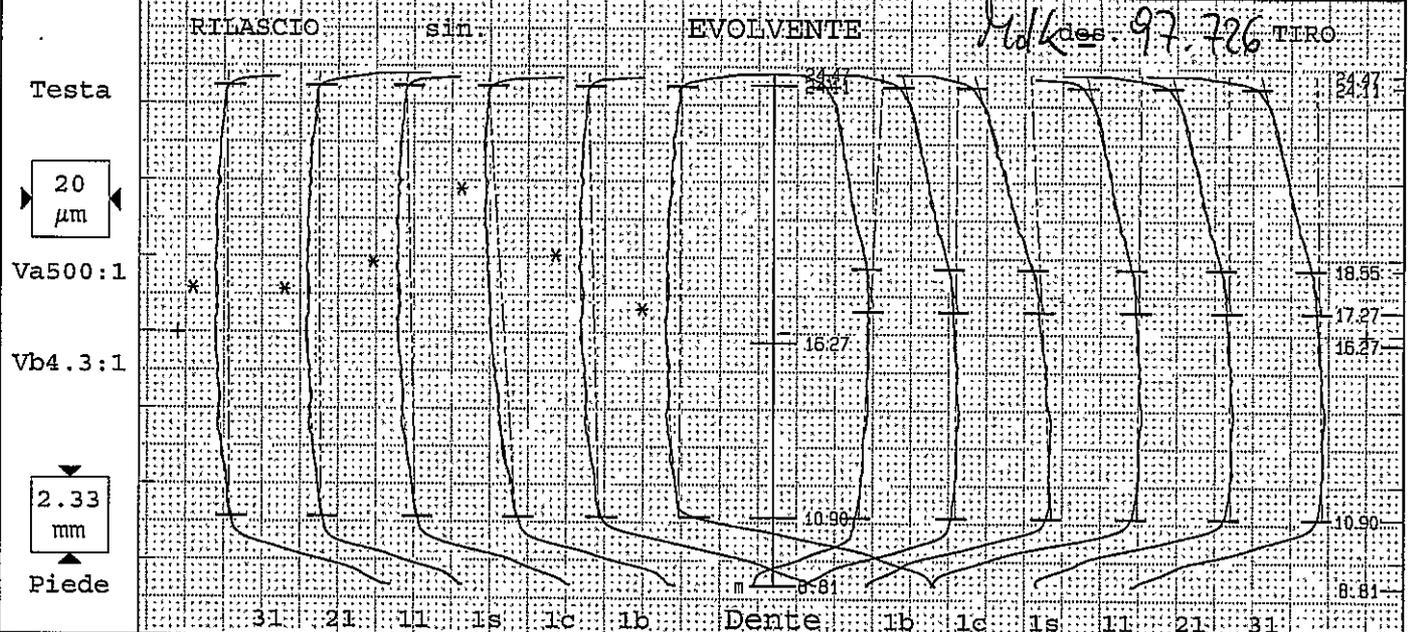


Err. di concentricità Fr	3.6	28.0
Variaz. spessore dente Rs		

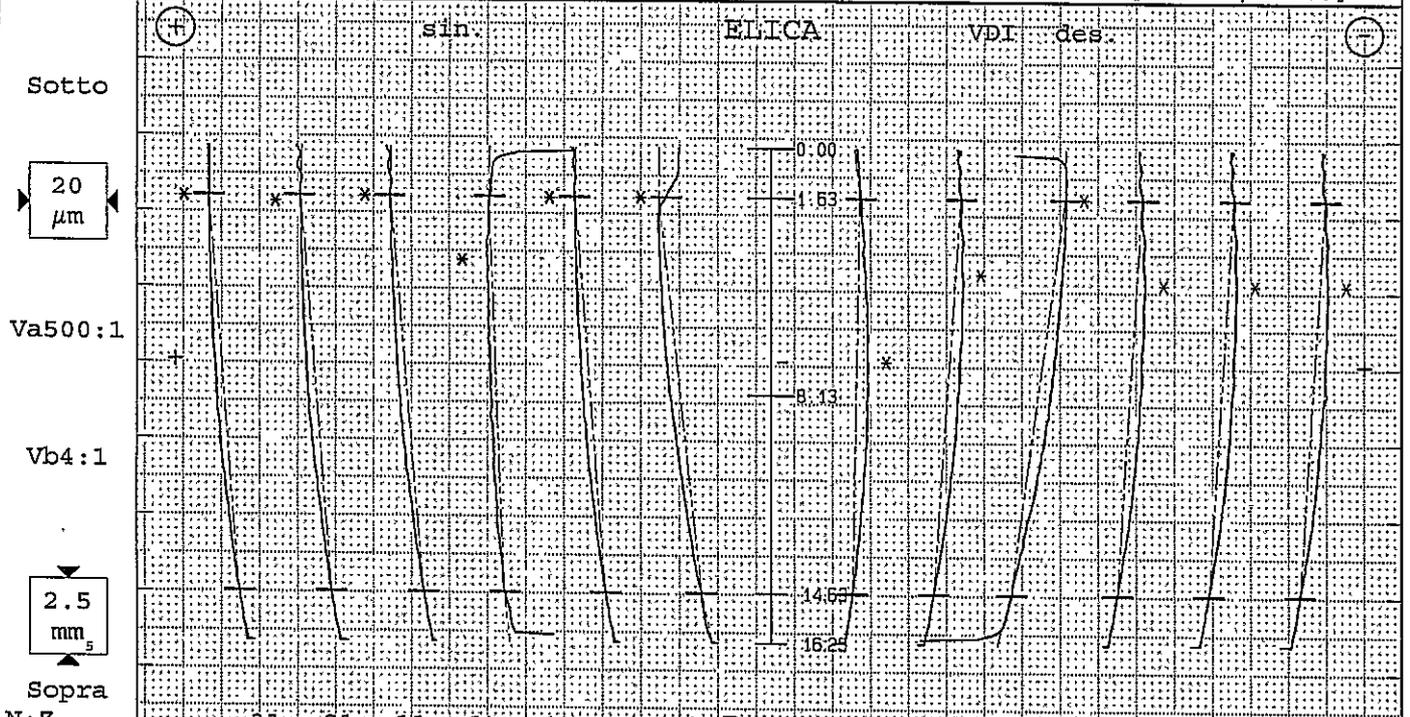
# Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412_06 0	P26 601265	Controllore: turno c	Data: 04.11.2017 20:28
Denominazione: SR4		Numero denti z 40	Largh. fasc. dent. b 16.25mm
Numero disegno.: D51.1.1227.50-IF		Modulo m 2.05mm	Tratto evolvent. La 13.21/6.37mm
Commessa/serie nr.: 2		Angolo pressione 17°30'00"	Tratto elica LE 13mm
Masch. Nr.: M001	Spindel: Formaggio	Angolo elic. -28°54'00"	Inizio elab. MI 10.9mm
Untersuchungszweck: Laufende Messung		Ø Base db 88.1236mm	Palpatore Ø (#2D) 1mm
Werkzeug:	Charge:	Ang. Base -27°26'46"	Fat. scor. pr. x .394



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
fHm	±5	1.8	Var a 2.2								±5	Var a 2.7							-0.2	
fHa	±8	1.8	0.8	0.7	2.6	7.3	2.9	-0.4		±8	6.0	0.4	-5.4	1.0	-0.6	-1.7	-0.2			
Fa		4.1	3.3	3.5	4.7	8.5	5.0	6.8			3.6	2.0	3.3	2.8	2.5	2.1	2.4			
ffa	5	1.4	1.5	1.4	1.4	1.6	1.4	5.0		5	1.9	1.9	2.5	2.6	2.6	2.5	2.4			
ca	1/5	3.3	3.2	3.3	3.5	3.4	3.3	3.5			1.1	1.5	1.6	1.7	1.7	1.6	1.6			
Ca										-16/-8	-13.7	-13.8	-14.1	-13.6	-13.9	-13.8	-13.8			
ffaf	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
P/T-Ø [mm]		87.712	[87.57/87.87]									101.182	[101.04/101.3]							



N:Z		31	21	11	1t	1c	1p	Ø Dente	1p	1c	1t	11	21	31		
fHm	8±4	10.2	FV -8.6	Var β 1.1				-10±4	FV -15.6	Var β 0.8				-8.4		
fHs	8±8	10.2	9.8	10.1	10.9	5.2	9.8	13.8	-10±8	-2.5	-8.9	-18.1	-8.1	-8.1	-8.3	-8.4
Fβ		2.6	2.0	2.6	3.2	2.8	2.5	4.9		5.9	2.4	6.8	2.8	2.7	3.3	2.8
ffa	5	0.5	0.5	0.5	0.6	0.7	0.3	2.1	5	0.7	0.6	0.7	0.7	0.7	1.1	0.8
cβ	1/5	2.0	2.0	2.1	2.0	1.5	2.0	2.6	1/5	3.0	2.9	3.2	2.9	2.9	2.9	2.9

CGG 808006

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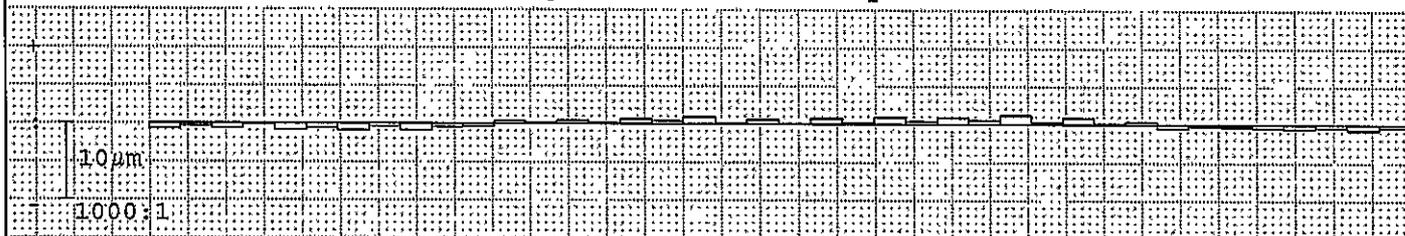


# Ruota cilindrica Divisione

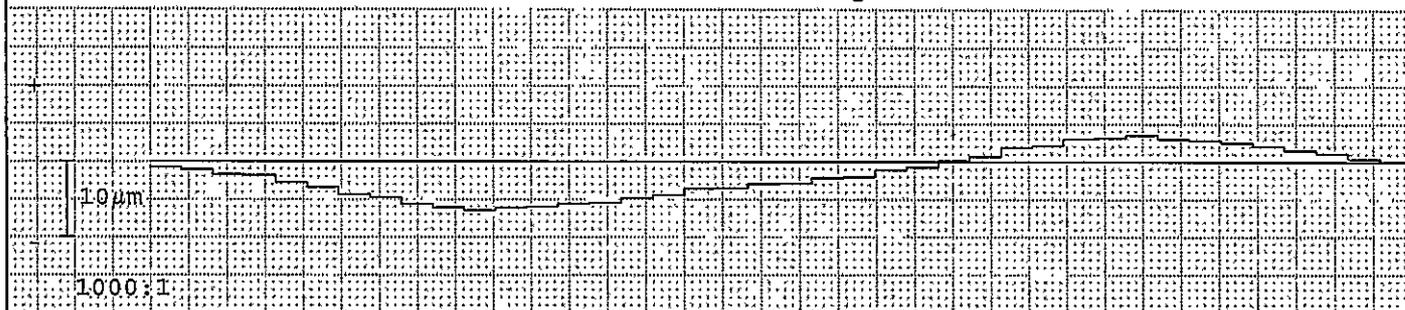


Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno c	Data: 04.11.2017 20:28
Denominazione: SR4		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno: D51.1.1227.50-IF		Modulo m 2.05mm	Angolo elica -28°54'00"
Comessa/serie nr.: 2		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: FORMER	Charge:	

## Errori singoli di divisione fp fianco sinistro



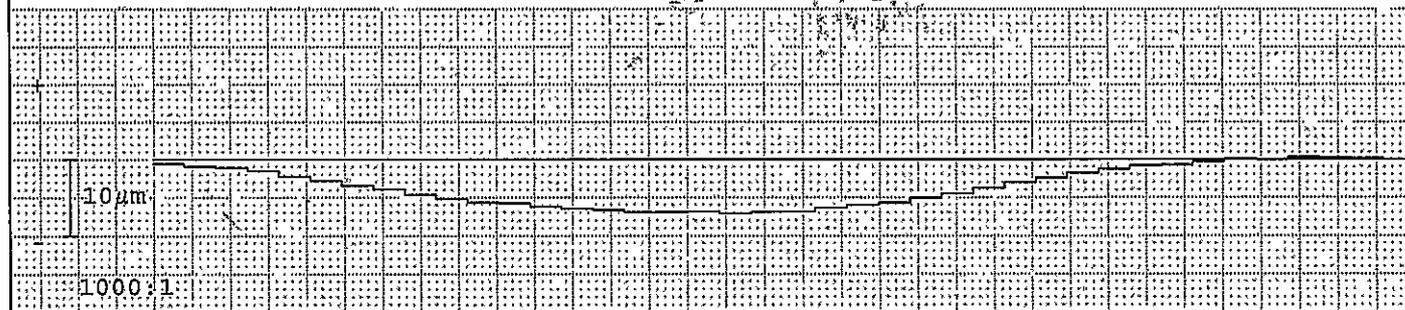
## Errore somma di divisione Fp fianco sinistro



## Errori singoli di divisione fp fianco destro

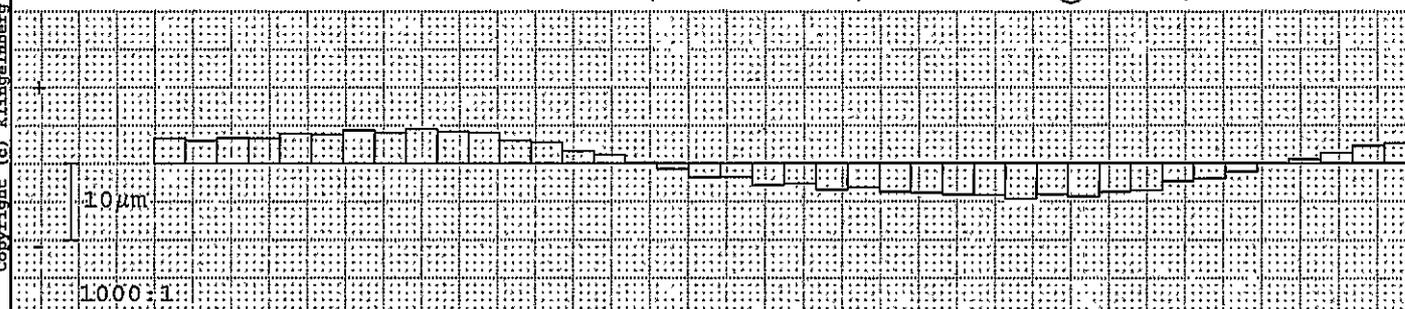


## Errore somma di divisione Fp fianco destro



	Corsa per misura divis.: 93.939 z=8.1mm	fianco sinistro / RILASCIO				fianco destro / TIRO			
		Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione	fp max	1.2		10.0		0.8		10.0	
Gr. salto di passo	fu max	0.9		12.0		0.5		12.0	
Scarto di divisione	Rp	2.1				1.5			
Err. globale di divisione	Fp	10.0		36.0		7.4		36.0	
Err. cordale di divisione	Fpz/8	3.8				3.3			

## Centricità Fr (Ø-sfera =3mm) Ⓞ : 8.8µm



Err. di concentricità	Fr	9.2	28.0
Variaz. spessore dente	Rs		

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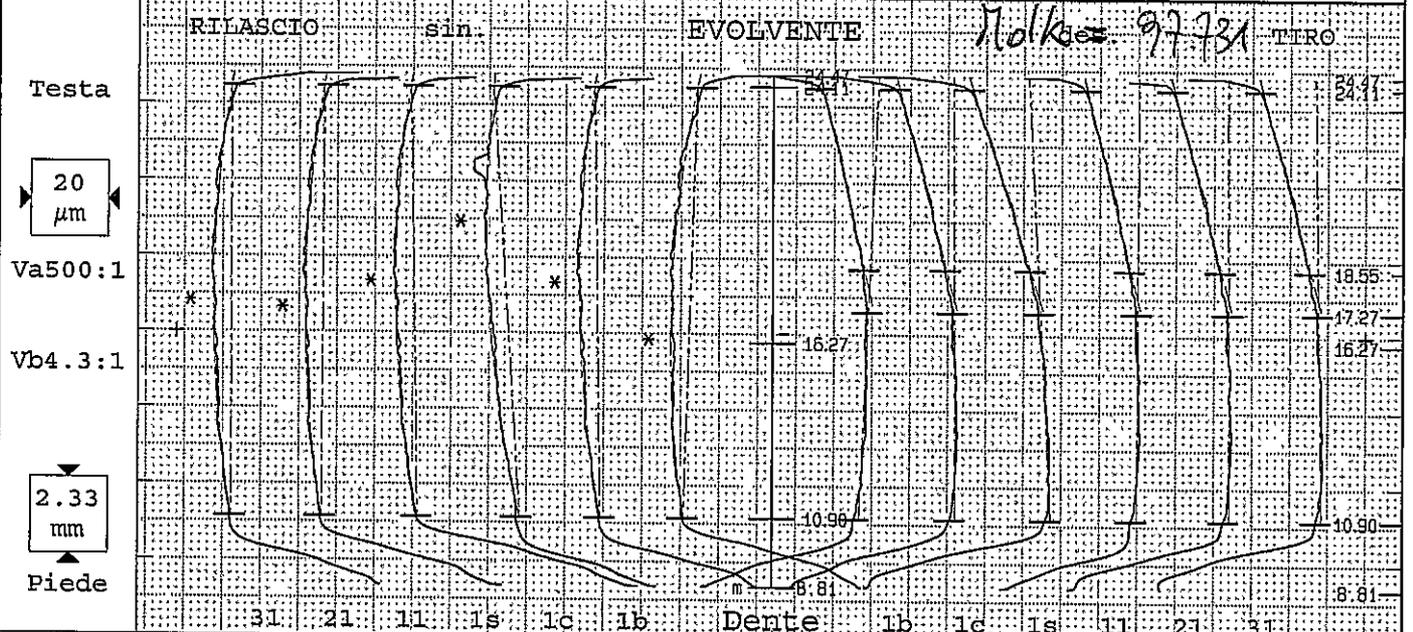
Docum.archiviato elettronicamente.Archiviazione cartacea non necessaria



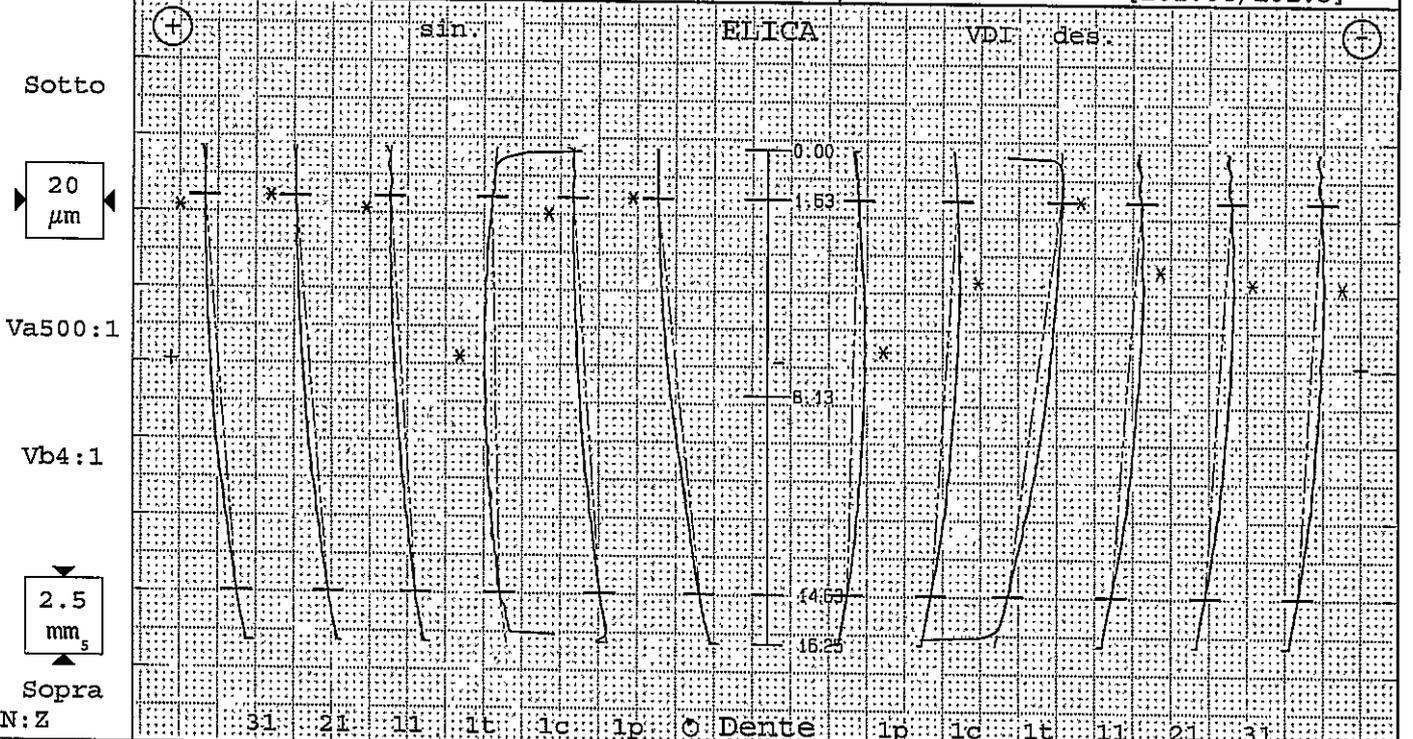
# Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412_06 0		P26 601265		Controllora: turno c		Data: 04.11.2017 19:50	
Denominazione: SR4		Numero denti z		40		Largh.fasc.dent. b 16.25mm	
Numero disegno.: D51.1.1227.50-IF		Modulo m		2.05mm		Tratto evolv. La 13.21/6.37mm	
Comessa/serie nr.: <del>10</del> 3		Angolo pressione		17°30'00"		Tratto elica LE 13mm	
Masch.Nr.: M001		Spindel: Formasyl		Angolo elica		-28°54'00"	
Inizio elab. M1		10.9mm		Palpatore ø		#2D) 1mm	
Untersuchungszweck: Laufende Messung		ø Base db		88.1236mm		Fat.scor.pr. x .394	
Werkzeug:		Charge:		Ang. Base		-27°26'46"	



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual	
fHm	±5	0.8	Var a 2.4								±5	Var a 2.1							-0.6	
fHa	±8	0.8	0.0	-0.5	1.9	7.1	1.8	-3.4		±8	4.9	-0.6	-5.9	0.4	-0.5	-1.7	-0.6			
Fa		5.7	5.9	6.6	5.4	10.8	4.9	7.0			3.3	2.0	3.1	2.3	2.2	1.8	2.1			
ffa	5	2.6	2.6	2.9	2.7	6.3	2.2	2.3		5	2.1	2.1	2.1	2.2	2.3	2.2	2.2			
ca	1/5	4.7	4.7	4.6	4.9	4.7	4.7	5.0			1.4	1.5	1.3	1.5	1.4	1.4	1.5			
Ca										-16/-8	-14.5	-14.3	-14.9	-13.6	-14.1	-14.0	-14.0			
ffaf	3	0.0	0.7	0.4	0.3	1.1	0.5	0.3		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
P/T-ø [mm]		87.714 [87.57/87.87]									101.175 [101.04/101.3]									



N:Z		3l	2l	1l	1t	1c	1p	ø Dente	1p	1c	1t	1l	2l	3l		
fHm	8±4	9.5	FV-11.3			Var B 2.3			-10±4	FV-14.1			Var B 2.0		-8.6	
fHs	8±8	9.5	10.4	10.6	8.3	2.6	8.6	13.9	-10±8	-3.4	-8.6	-17.5	-9.7	-8.5	-7.7	-8.6
Fs		2.3	2.7	2.7	1.4	5.2	2.2	4.4		5.5	2.6	6.4	2.1	2.4	2.9	2.5
ffs	5	0.5	0.6	0.5	0.5	1.0	0.5	0.7	5	0.4	0.7	0.8	0.6	0.6	0.7	0.7
cs	1/5	2.0	2.2	2.0	1.8	2.8	1.9	2.1	1/5	3.0	2.9	3.1	3.0	2.9	2.7	2.9

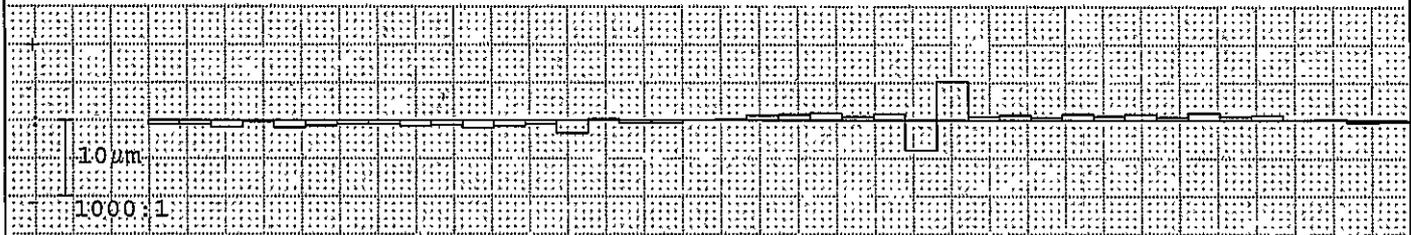


# Ruota cilindrica Divisione

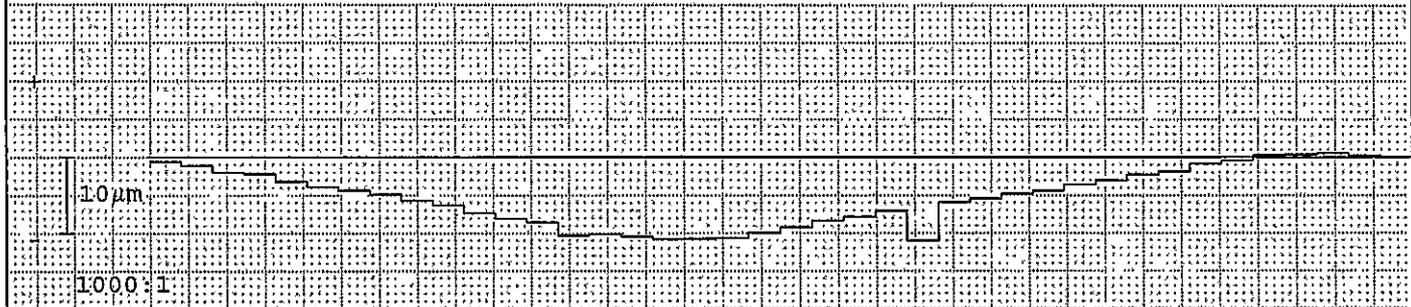


Nr. prog.: STI0412 06 0	P26 601265	Controllatore: turno c	Data: 04.11.2017 19:50
Denominazione: SR4		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno.: D51.1.1227.50-IF		Modulo m 2.05mm	Angolo elicca -28°54'00"
Comessa/serie nr.: <del>3</del> 3		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formosa	Arbeitszeug:	Charge:

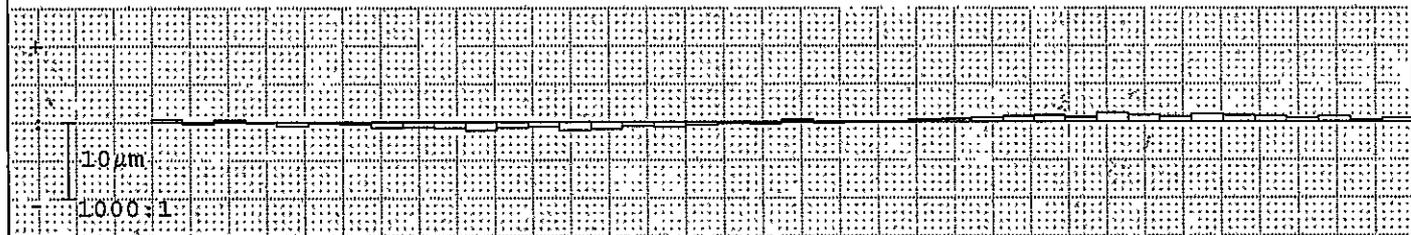
## Errori singoli di divisione fp fianco sinistro



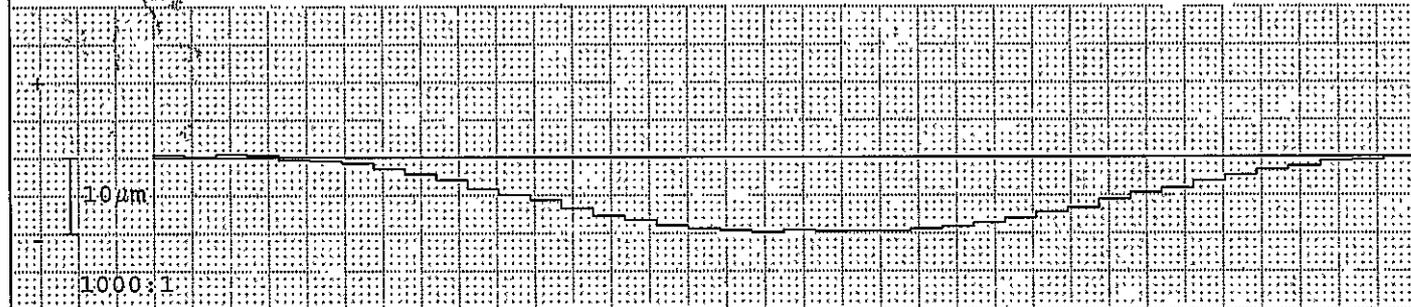
## Errore somma di divisione Fp fianco sinistro



## Errori singoli di divisione fp fianco destro



## Errore somma di divisione Fp fianco destro

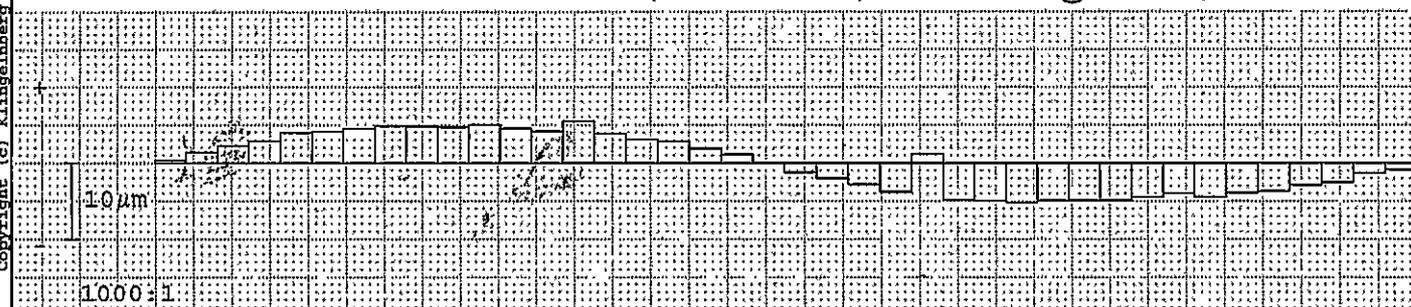


Corsa per misura divis.: 93.939 z=8.1mm

	fianco sinistro / RILASCIO				fianco destro / TIRO			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	5.1		10.0		1.2		10.0	
Gr. salto di passo fu max	9.1		12.0		0.6		12.0	
Scarto di divisione Rp	9.1				2.3			
Err. globale di divisione Fp	11.5		36.0		10.3		36.0	
Err. cordale di divisione Fpz/8	7.4				4.7			

Centricità Fr (Ø-sfera =3mm).

⊙ : 10.2µm

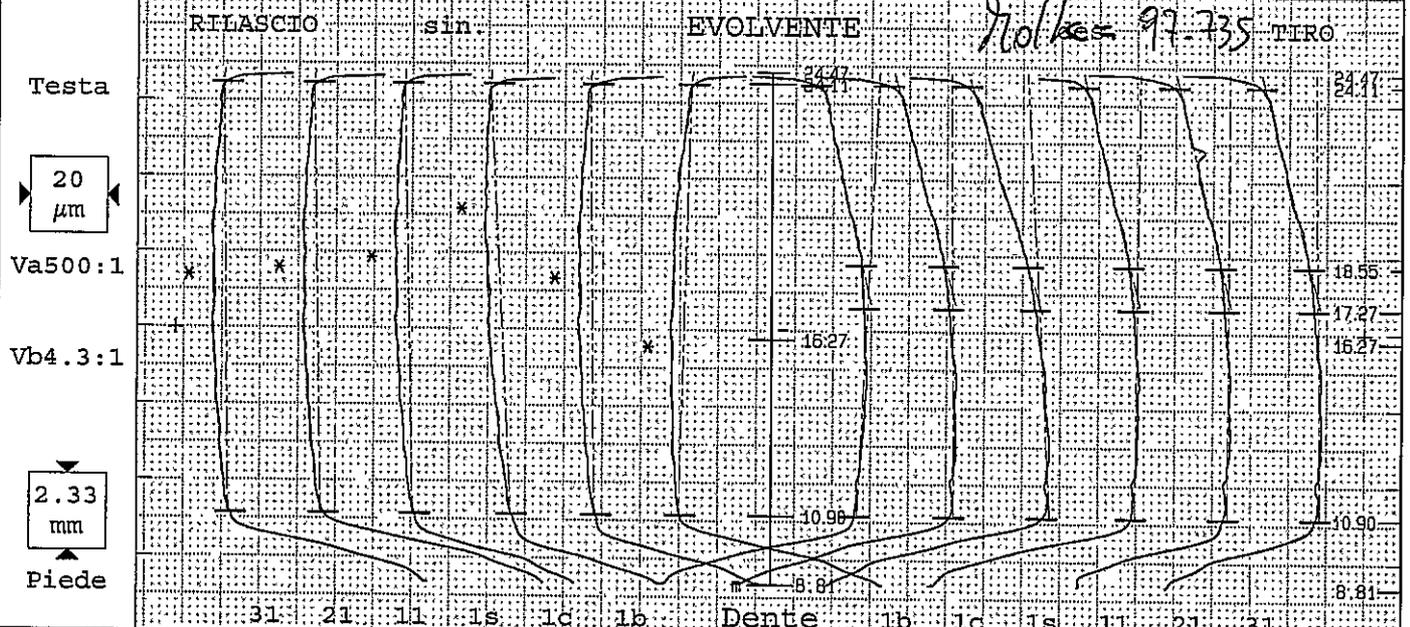


Err. di concentricità Fr	10.7	28.0	
Variaz. spessore dente Rs			

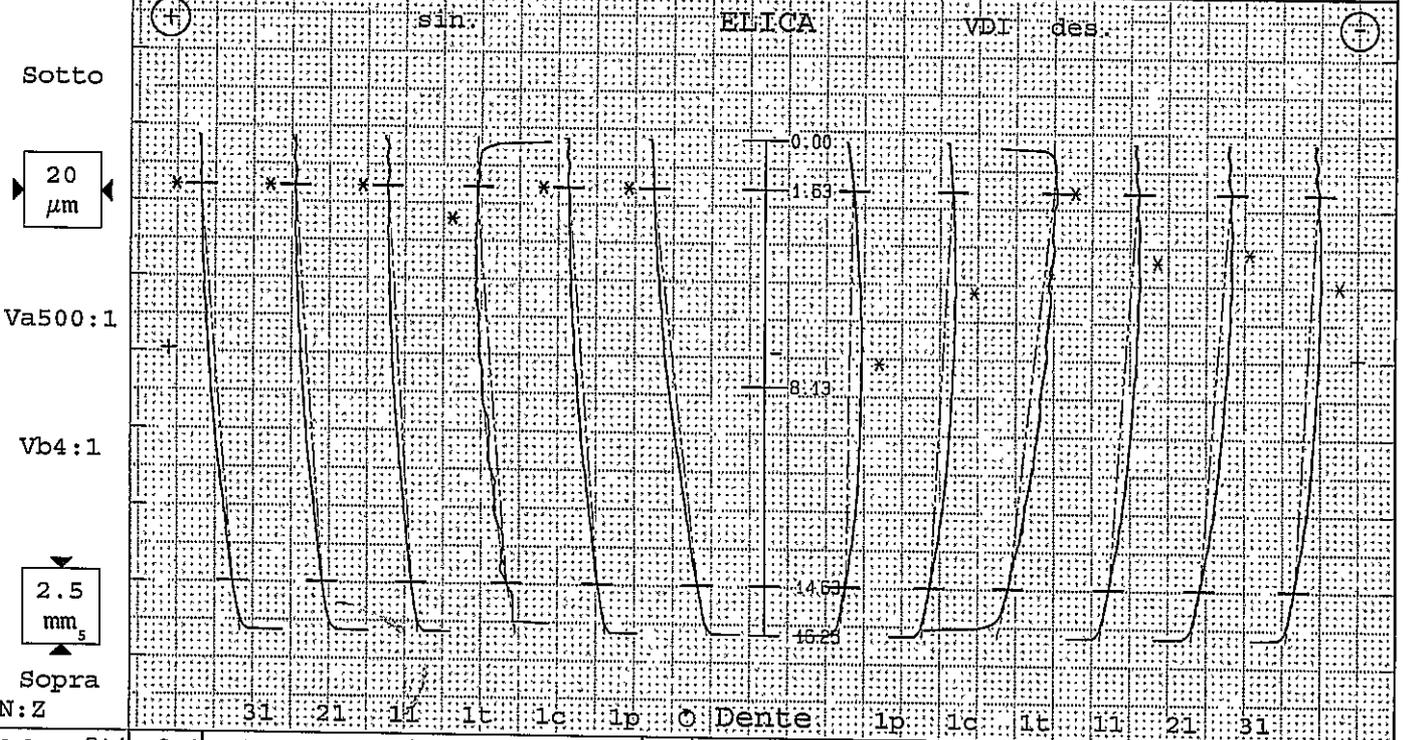
# Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno c	Data: 04.11.2017 21:21
Denominazione: SR4		Numero denti z 40	Largh.fasc.dent. b 16.25mm
Numero disegno: D51.1.1227.50-IF		Modulo m 2.05mm	Tratto evolv. La 13.21/6.37mm
Commessa/serie nr.: <del>43</del> 4		Angolo pressione 17°30'00"	Tratto elica LE 13mm
Masch.Nr.: M001	Spindel: Form	Angolo Elica -28°54'00"	Inizio elab. MI 10.9mm
Untersuchungszweck: Laufende Messung		Ø Base db 88.1236mm	Palpatore Ø (#2D) 1mm
Werkzeug:	Charge:	Ang. Base -27°26'46"	Fat.scor.pr. x .394



Tolerance	Medio	Val. misur [µm]							Qual	Tolerance	Val. misur [µm]							Medio	Qual
		Var a									Var a								
fH <sub>cm</sub>	±5	1.8								±5									
fH <sub>a</sub>	±8	1.8	1.4	2.0	2.5	5.6	1.3	-2.9		±8	5.4	-1.0	-6.0	1.0	0.3	-1.3	-0.3		
F <sub>a</sub>		4.5	4.2	4.9	4.7	6.6	4.2	5.0			3.3	2.2	3.8	2.2	1.9	2.2	2.1		
ff <sub>a</sub>	5	1.7	1.4	1.7	1.2	2.7	2.4	1.2		5	1.8	2.2	3.0	2.0	1.9	1.9	2.0		
ca	1/5	3.4	3.3	3.6	3.3	3.4	3.5	3.3			1.5	1.7	2.0	1.7	1.6	1.7	1.7		
Ca										-16/-8	-15.0	-14.2	-14.7	-14.0	-13.3	-13.5	-13.8		
ff <sub>of</sub>	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
P/T-Ø [mm]		87.703 [87.57/87.87]									101.166 [101.04/101.3]								



N:Z		FV -4.6							Qual	FV-12.8							Qual		
		Var β								Var β									
fH <sub>cm</sub>	8±4	9.4								-10±4									
fH <sub>B</sub>	8±8	9.4	10.6	9.2	8.0	10.1	9.7	14.7		-10±8	-2.0	-7.2	-14.8	-9.3	-9.8	-7.6	-8.5		
FB		1.7	2.4	1.4	0.9	3.0	2.1	6.3			6.6	3.4	4.9	2.2	2.0	3.0	2.7		
ff <sub>B</sub>	5	0.6	0.6	0.5	0.6	2.1	0.5	0.5		5	0.9	0.6	1.4	0.6	0.8	0.6	0.7		
c <sub>B</sub>	1/5	1.7	1.7	1.7	1.6	2.4	1.7	1.8		1/5	3.2	3.0	2.9	2.9	2.8	2.9	2.9		

Docum.archiviato elettronicamente.Archiviazione cartacea non necessaria

CGC 808006

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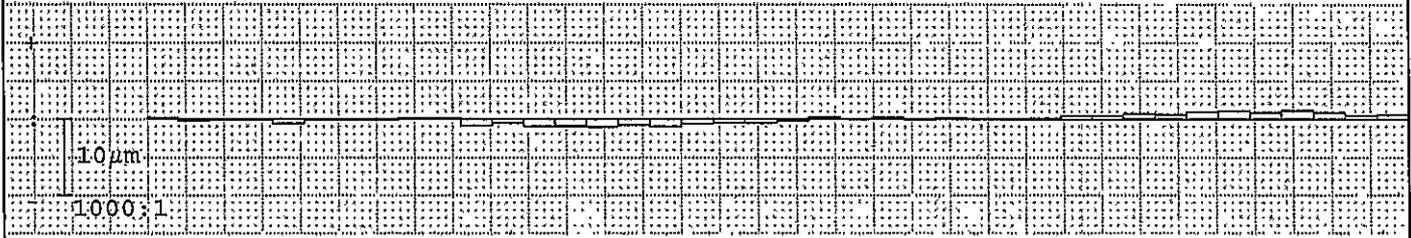


# Ruota cilindrica Divisione

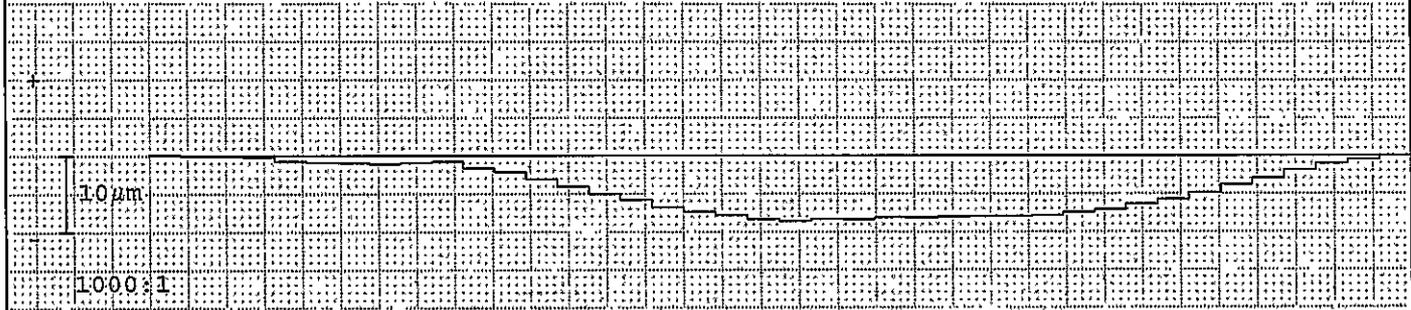


Nr. prog.: STI0412_06_0	P26 601265	Controllore: turno c	Data: 04.11.2017 21:21
Denominazione: SR4		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno.: D51.1.1227.50-IF		Modulo m 2.05mm	Angolo elicca -28°54'00"
Comessa/serie nr.: <u>4</u>		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Form	Erzeug:	Charge:

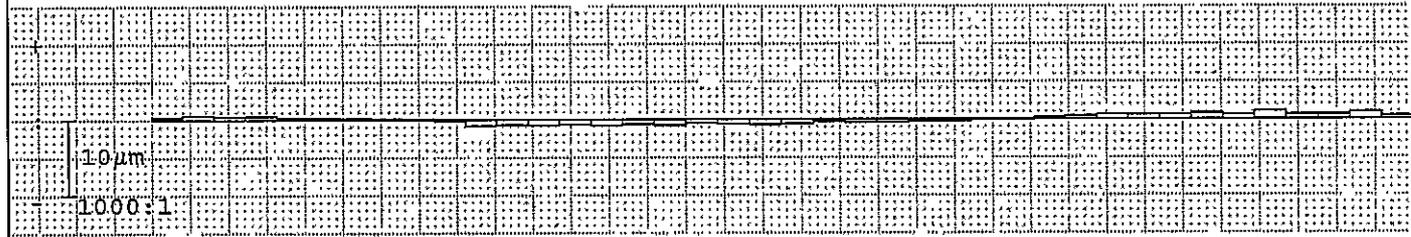
## Errori singoli di divisione fp fianco sinistro



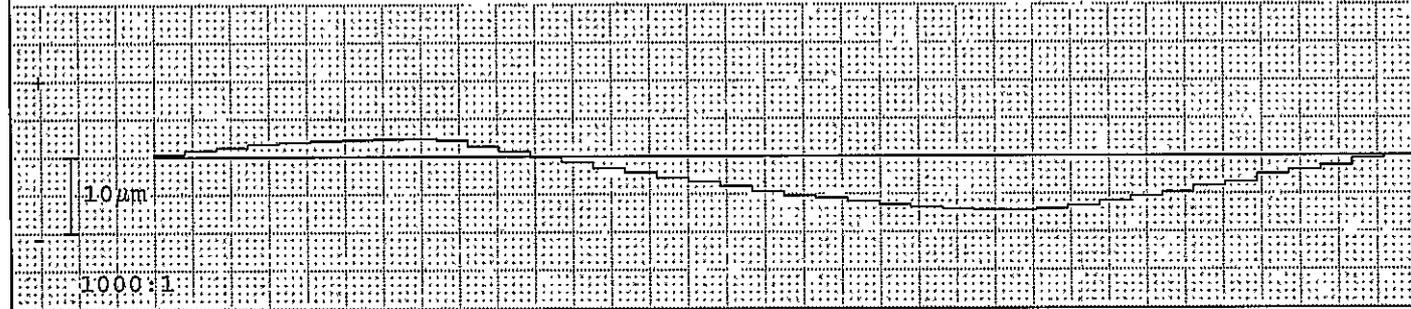
## Errore somma di divisione Fp fianco sinistro



## Errori singoli di divisione fp fianco destro



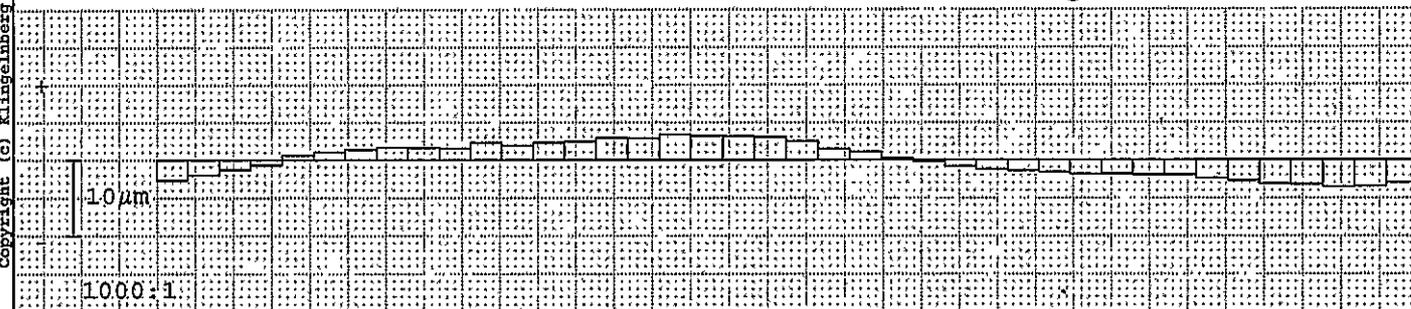
## Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 93.939 z=8.1mm	fianco sinistro / RILASCIO				fianco destro / TIRO			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	1.1		10.0		1.0		10.0	
Gr. salto di passo fu max	1.0		12.0		0.6		12.0	
Scarto di divisione Rp	2.1				1.8			
Err. globale di divisione Fp	8.8		36.0		9.6		36.0	
Err. cordale di divisione Fpz/8	4.8				3.7			

## Centricità Fr (Ø-sfera =3mm)

⊙ : 6.1µm



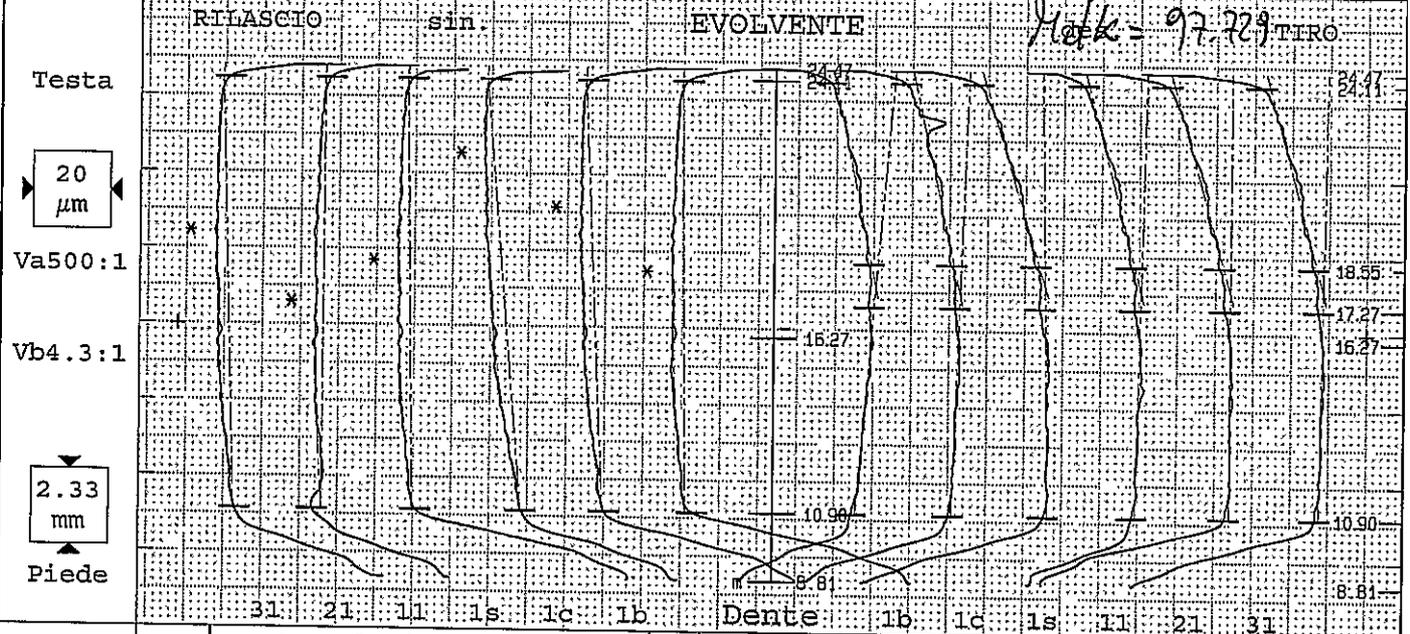
Err. di concentricità Fr	6.9	28.0	
Variaz. spessore dente Rs			

Docum.archiviato elettronicamente.Archiviazione cartacea non necessaria

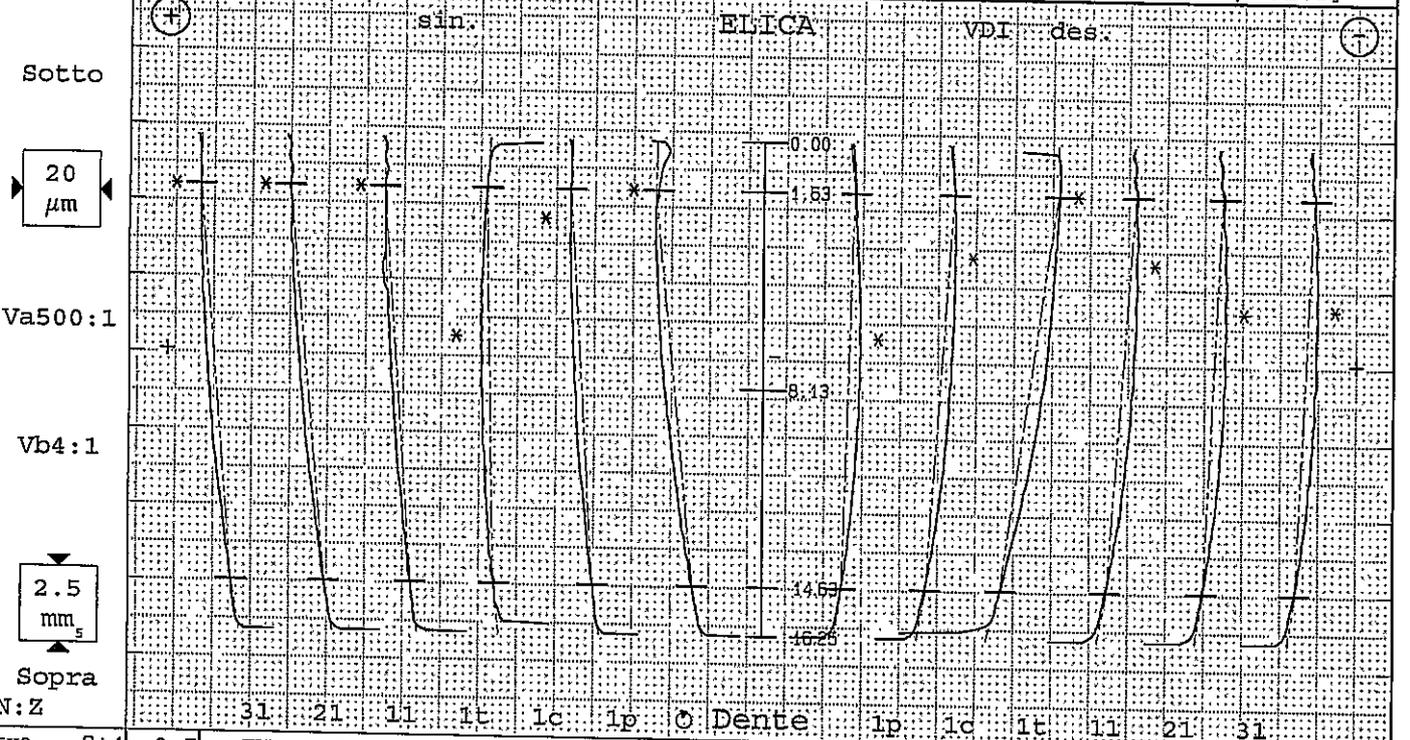
# Ruota cilindrica Evolvente/Elica



Nr. prog.: STI0412 06 0		P26 601265		Controllore: turno c		Data: 04.11.2017 21:17	
Denominazione: SR4		Numero denti z		40		Largh.fasc.dent. b 16.25mm	
Numero disegno.: D51.1.1227.50-IF		Modulo m		2.05mm		Tratto evolv. La 13.21/6.37mm	
Comessa/serie nr.: 5		Angolo pressione		17°30'00"		Tratto elica Ls 13mm	
Masch.Nr.: M001		Spindel: Forme		Angolo elica		Inizio elab. M1 10.9mm	
Untersuchungszweck: Laufende Messung		Ø Base db		88.1236mm		Palpatore Ø (#2D) 1mm	
Werkzeug: Charge:		Ang. Base		-27°26'46"		Fat.scor.pr. x .394	



Tolerance	Medio	Val.misur [µm]							Qual	Tolerance	Val.misur [µm]							Medio	Qual	
fHm	±5	2.5	Var a 5.3								±5	Var a 4.0							2.0	
fHa	±8	2.5	3.3	-0.3	1.9	9.5	5.0	1.4		±8	9.6	4.0	-1.9	2.3	0.0	1.8	2.0			
Fa		5.0	4.6	4.4	4.6	10.1	6.2	5.0			5.6	2.9	2.6	3.1	2.2	2.3	2.6			
ffa	5	2.7	2.3	4.0	2.0	2.7	2.3	2.6		5	2.0	2.0	2.3	3.1	2.2	2.1	2.4			
ca	1/5	2.8	2.9	2.1	3.0	3.6	3.1	3.0			1.0	1.1	1.2	1.3	1.2	1.3	1.2			
Ca																				
ffaf	3	0.0	0.0	2.4	0.0	0.0	0.0	0.0		-16/-8	15.5	14.2	15.2	15.3	15.2	15.4	15.0			
P/T-Ø [mm]		87.724 [87.57/87.87]									101.194 [101.04/101.3]									



N:Z		31	21	11	1t	1c	1p	Ø Dente	1p	1c	1t	11	21	31			
fHm	8±4	9.7	FV -9.7					4.2		-10±4	FV-14.9					3.3	-7.5
fHs	8±8	9.7	10.5	11.7	9.1	2.7	7.5	12.4		-10±8	-3.8	-9.0	-18.7	-9.2	-6.0	-5.9	-7.5
FS		2.3	2.6	3.6	1.9	4.9	1.1	4.5			5.0	2.3	7.2	2.3	3.9	3.9	3.1
ffs	5	0.7	0.5	0.6	1.3	0.9	0.5	1.0		5	0.5	0.6	0.7	1.0	0.9	0.6	0.8
cB	1/5	1.8	2.0	1.8	1.6	2.2	1.8	2.5		1/5	2.9	2.6	3.4	2.8	2.2	2.2	2.2

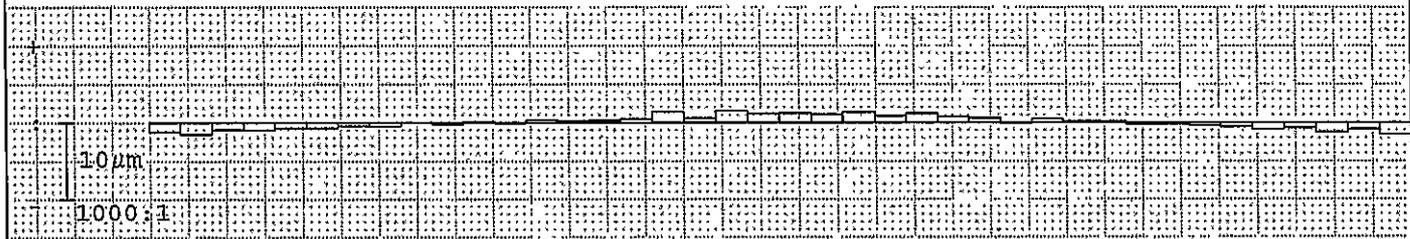


# Ruota cilindrica Divisione

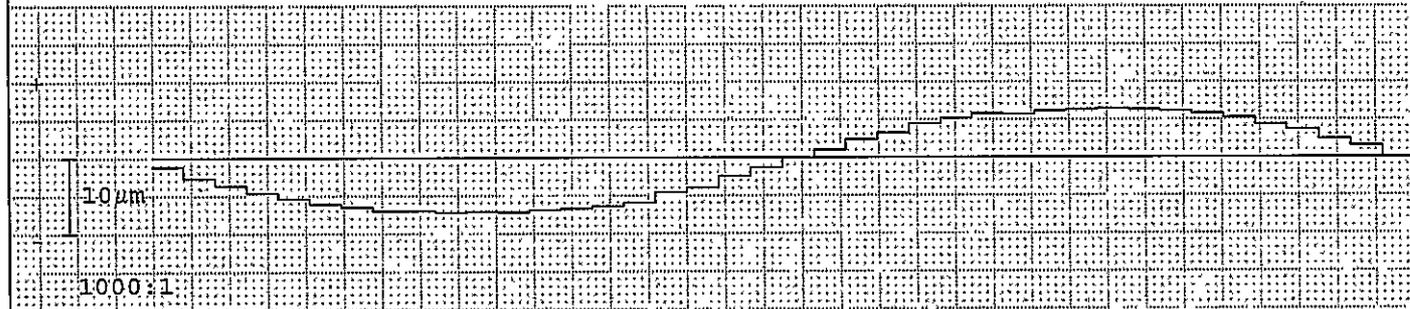


Nr. prog.: STI0412 06 0	P26 601265	Controllore: turno c	Data: 04.11.2017 21:17
Denominazione: SR4		Numero denti z 40	Angolo pressione 17°30'00"
Numero disegno.: D51.1.1227.50-IF		Modulo m 2.05mm	Angolo elica -28°54'00"
Comessa/serie nr.: <del>40</del> S		Untersuchungszweck: Laufende Messung	
Masch.Nr.: M001	Spindel: Formelwerkzeug	Charge:	

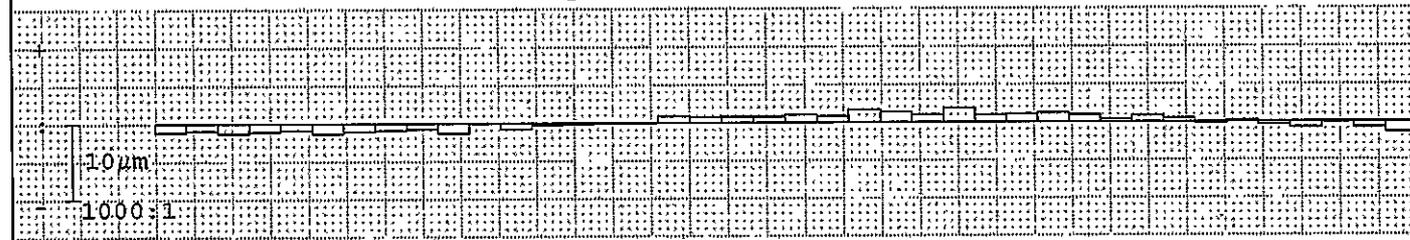
## Errori singoli di divisione fp fianco sinistro



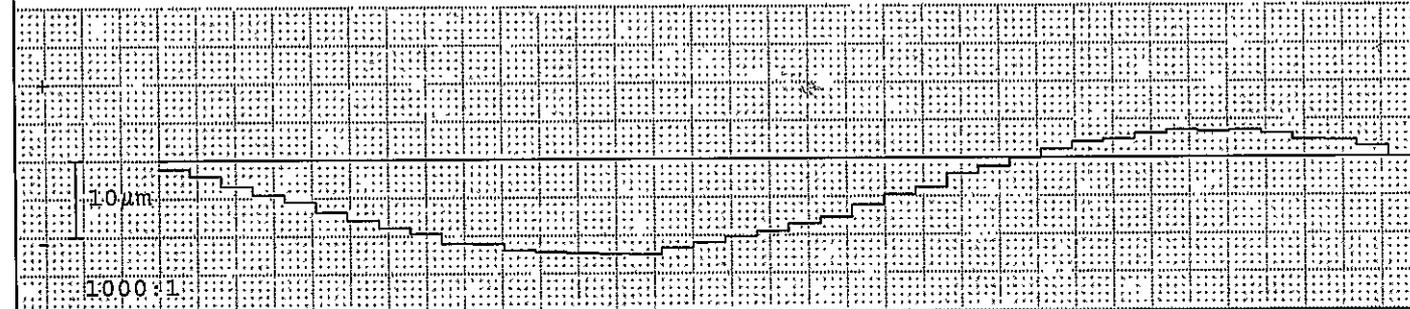
## Errore somma di divisione Fp fianco sinistro



## Errori singoli di divisione fp fianco destro



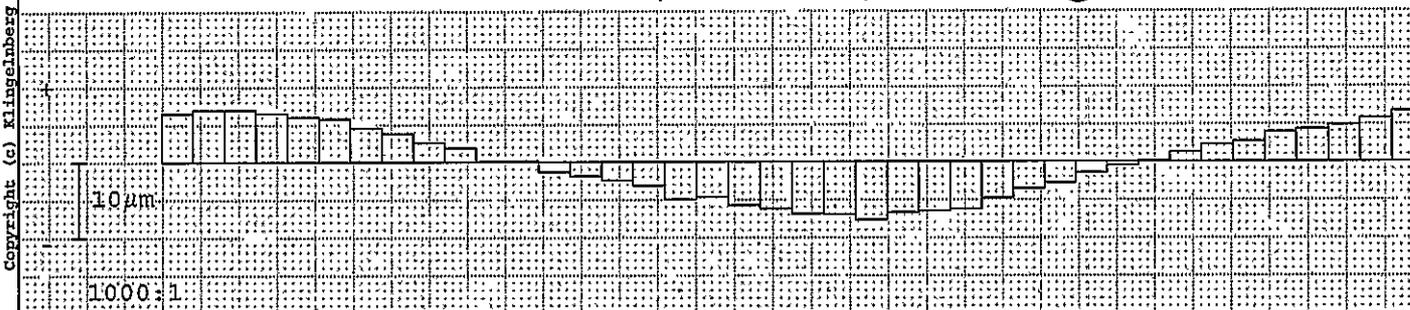
## Errore somma di divisione Fp fianco destro



Corsa per misura divis.: 93.939 z=8.1mm	fianco sinistro / RILASCIO				fianco destro / TIRO			
	Val. misur	Qual.	Val. amm	Qual.	Val. misur	Qual.	Val. amm	Qual.
Gr. err. singoli divisione fp max	1.5		10.0		1.8		10.0	
Gr. salto di passo fu max	0.9		12.0		1.3		12.0	
Scarto di divisione Rp	3.0				3.2			
Err. globale di divisione Fp	13.7		36.0		16.1		36.0	
Err. cordale di divisione Fpz/8	6.3				6.6			

## Centricità Fr (Ø-sfera =3mm)

⊙ : 13.4µm



Err. di concentricità Fr	14.6	28.0	
Variaz. spessore dente Rs			

**REPORT 18/009**

Date: 04/01/18  
Author: R. Padolecchia

**Reason for analysis:** PPAP  
*Motivo dell'indagine:* G\_904340-2 part compliance control

**Requester:** WLQ - Stefano Picerno  
*Richiedente:*

**Part Name:** 7 DCT 300 gearset - 21A variant  
*Nome particolare:*  
**Material:** GCG\_805000 Part 2  
*Materiale:*  
**State of part:** Finished  
*Stato del particolare:*

**P/N:** -  
**S/N:** -  
**Customer:** Renault  
*Cliente:*

**Result:** OK  
*Risultato:*

**Distribution list:** WLQ - S. Picerno  
*Lista di distribuzione:* ME - L. Landriscina

**Notes:**  
*Note:*  
**Spray equipment:** Flushing cabinet Hydac CTU-1230-M-Z-R  
**Spray method:** QPS 130033 (gears)  
QPS 130034 (shafts)  
**Membrane material:** cellulose nitrate  
**Pore size [mm]:** 5,0

**Cleanliness Analysis (Analisi della Pulizia)**

Part	P/N	Washing Machine	Detergent	Sampling date	Wetted surface [cm <sup>2</sup> ]	Gravimetric evaluation [mg/1000cm <sup>2</sup> ]	Max Allowable [mg/1000cm <sup>2</sup> ]
SG1	251.1.1081.50	ORE 11033	NC 3300	21/12/17	627.41	0.70	2.5
DG	251.1.1223.50	ORE 11033	NC 3300	18/12/17	613.40	1.40	2.5
SG3	251.1.1225.50	ORE 11033	NC 3300	21/12/17	401.6	1.80	2.5
SG4	251.1.1226.50	ORE 11033	NC 3300	21/12/17	344.46	1.05	2.5
SG5	251.1.1228.50	ORE 11033	NC 3300	20/12/17	340.18	1.16	2.5
SG6	251.1.1230.50	ORE 11033	NC 3300	20/12/17	277.62	1.02	2.5
SG7	251.1.1232.50	ORE 11033	NC 3300	20/12/17	152.64	0.85	2.5
REV	251.1.1094.50	ORE 11033	NC 3300	02/01/18	434.08	1.04	2.5
RG	251.1.1080.50	ORE 11033	NC 3300	02/01/18	1036.22	1.25	2.5
DG_Fix	251.1.1220.35	ORE 11033	NC 3300	02/01/18	561.69	1.55	2.5
IS1	251.6.1073.35	ORE 11033	NC 3300	03/01/18	416.99	2.03	2.5
IS2	251.6.1218.35	ORE 11033	NC 3300	03/01/18	671.89	1.09	2.5
OS1	251.6.1076.35	ORE 11033	NC 3300	04/01/18	610.51	1.98	2.5
OS2	251.6.1078.35	ORE 11033	NC 3300	04/01/18	514.21	1.51	2.5





Component	Operation	Machine	Part Number	Transferability	Items	Spec.	Ins	ORI	Mag	Chk	Chk Last Update	Hi	PP	Ppk	PP Last Update	Containment Actions	Corrective Actions	Owner	Date
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	42.40025.0A009	X	PPAP	1.67	2.72	2.15	12/10/2017	1.15	1.62	03/03/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	42.40025.0A009	X	PPAP	1.67	1.68	1.83	2/10/2017	1.26	1.62	03/03/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	20.90.0A000	X	PPAP	1.67	2.05	1.85	12/10/2017	2.94	2.19	03/03/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	21.5.0A000	X	PPAP	1.67	2.14	1.85	2/10/2017	1.76	1.59	03/03/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	19.2.0A000	X	PPAP	1.67	2.35	2.28	2/10/2017	2.05	2.01	03/03/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	1.5.10.0	X	PPAP	1.67	1.88	1.75	2/10/2017	1.69	1.67	03/03/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	72.92.90	X	PPAP	1.67	4.82	4.22	10/10/2018	1.91	1.88	08/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	65.0A000	X	PPAP	1.67	2.19	2.12	10/10/2018	2.18	2.08	08/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	70.0A000	X	PPAP	1.67	2.19	2.12	10/10/2018	2.18	2.08	08/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	20.98.0A000	X	PPAP	1.67	4.98	4.28	10/10/2018	2.12	2.10	08/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	19.2.0A000	X	PPAP	1.67	2.35	2.28	10/10/2018	2.18	2.10	08/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	22	X	PPAP	1.67	1.74	1.74	25/02/2017	-	1.75	25/02/2017	Process centering			W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	7.5.0A000	X	PPAP	1.67	2.21	2.12	25/02/2017	2.09	1.99	25/02/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	7.5.0A000	X	PPAP	1.67	2.21	2.12	25/02/2017	2.09	1.99	25/02/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	27.75.0A000	X	PPAP	1.67	1.80	1.80	25/02/2017	1.29	1.27	25/02/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	21.220.0A000	X	PPAP	1.67	1.86	1.78	25/02/2017	1.32	1.30	25/02/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	19.2.0A000	X	PPAP	1.67	4.00	4.00	25/02/2017	3.19	1.98	25/02/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	19.2.0A000	X	PPAP	1.67	2.72	2.72	25/02/2017	2.17	1.75	25/02/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	19.2.0A000	X	PPAP	1.67	2.72	2.72	25/02/2017	2.17	1.75	25/02/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	7.5.0A000	X	PPAP	1.67	3.51	2.15	15/12/2017	2.19	1.68	07/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	9.4000	X	PPAP	1.67	1.55	0.77	15/12/2017	1.89	1.65	07/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	0.70.0A000	X	PPAP	1.67	2.14	1.80	15/12/2017	2.08	1.74	07/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	21.02.0A000	X	PPAP	1.67	12.96	10.39	15/12/2017	2.51	1.99	07/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	19.2.0A000	X	PPAP	1.67	3.83	1.09	15/12/2017	4.13	2.17	07/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	22	X	PPAP	1.67	-	2.24	15/05/2017	-	2.71	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	max. 60.950mm. 68.215	X	PPAP	1.67	7.35	6.72	15/05/2017	3.64	2.42	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	9.4000	X	PPAP	1.67	1.75	1.19	27/10/2017	1.84	1.78	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	9.4000	X	PPAP	1.67	2.24	1.19	27/10/2017	1.84	1.78	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	27.75.0A000	X	PPAP	1.67	3.65	1.76	27/10/2017	3.08	1.98	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	19.2.0A000	X	PPAP	1.67	4.46	2.36	27/10/2017	1.14	1.31	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	15.05.0A000	X	PPAP	1.67	2.87	1.69	27/10/2017	2.28	2.24	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	15.05.0A000	X	PPAP	1.67	2.87	1.69	27/10/2017	2.28	2.24	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	9.4000	X	PPAP	1.67	0.6	0.6	27/10/2017	0.6	0.6	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	9.4000	X	PPAP	1.67	1.80	1.80	24/10/2018	2.08	2.02	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	27.75.0A000	X	PPAP	1.67	4.56	2.26	24/10/2018	2.25	2.23	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	15.05.0A000	X	PPAP	1.67	3.97	2.21	24/10/2018	2.42	2.23	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	max. 67.040mm. 50.974	X	PPAP	1.67	1.95	1.95	27/05/2017	3.19	2.55	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	22	X	PPAP	1.67	-	3.93	1/05/2017	-	2.58	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	max. 131.650mm. 131.571	X	PPAP	1.67	2.58	2.30	1/05/2017	3.13	1.68	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	max. 128.355. 126.128.305	X	PPAP	1.67	2.58	2.30	1/05/2017	2.19	1.68	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	22	X	PPAP	1.67	-	3.93	1/05/2017	-	2.58	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	max. 128.355. 126.128.305	X	PPAP	1.67	2.58	2.30	1/05/2017	2.19	1.68	25/05/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	0.5000	X	PPAP	1.67	2.57	1.44	26/01/2017	2.23	2.11	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	0.5000	X	PPAP	1.67	2.57	1.44	26/01/2017	2.23	2.11	03/03/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	25.850A000.03	X	PPAP	1.67	3.53	2.10	26/01/2017	1.31	1.53	22/06/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	17.755A000.08	X	PPAP	1.67	1.49	0.45	26/01/2017	1.71	0.92	22/06/2017	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	9.5000	X	PPAP	1.67	1.48	1.65	18/10/2017	2.16	2.13	24/02/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	25.850A000.03	X	PPAP	1.67	13.51	9.63	18/10/2017	2.55	2.35	24/02/2018	100% checked on PP Mapass	NA		W18
5605	Head Tuning & Core Grinding	SJAI1080	251.11092.50	1A-21A	DIA_001	17.755A000.08	X	PPAP	1.67	1.76	0.55	18/10/2017	2.27	0.58	24/02/2018	100% checked on PP Mapass	NA		W18

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Date 03/01/2018  
Author: R. Padolecchia

Reason for analysis: <i>Motivo dell'indagine:</i>	PPAP
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Requester: <i>Richiedente:</i>	WLQ - M. Vicenti
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Part Name: <i>Nome particolare:</i>	SG4
Material: <i>Materiale:</i>	GCG_805000 Part 2
State of part: <i>Stato del particolare:</i>	Finito

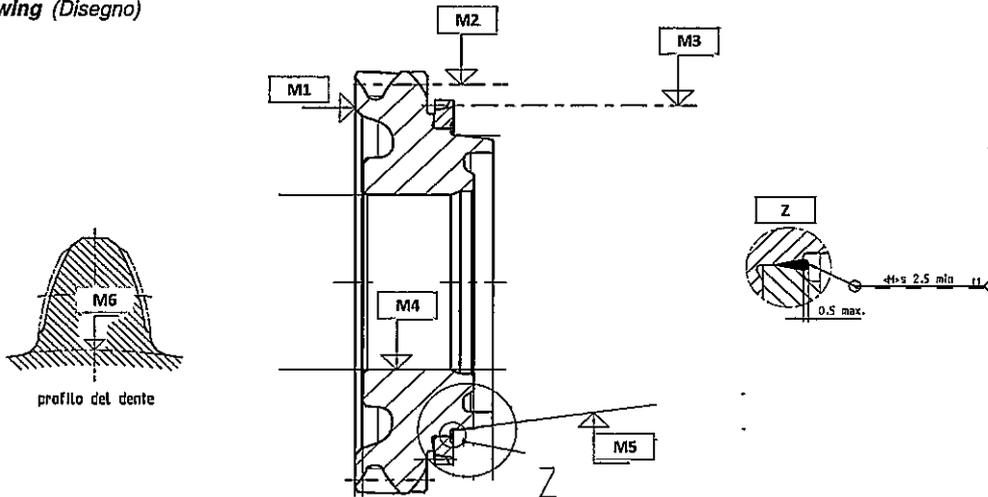
P/N:	251.1.1226.50
S/N:	-
Customer: <i>Cliente:</i>	Renault

Result: <i>Risultato:</i>	OK
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Distribution list: <i>Lista di distribuzione:</i>	WLQ - M. Vicenti
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Notes: <i>Note:</i>	Versione 21 A
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**Drawing (Disegno)**



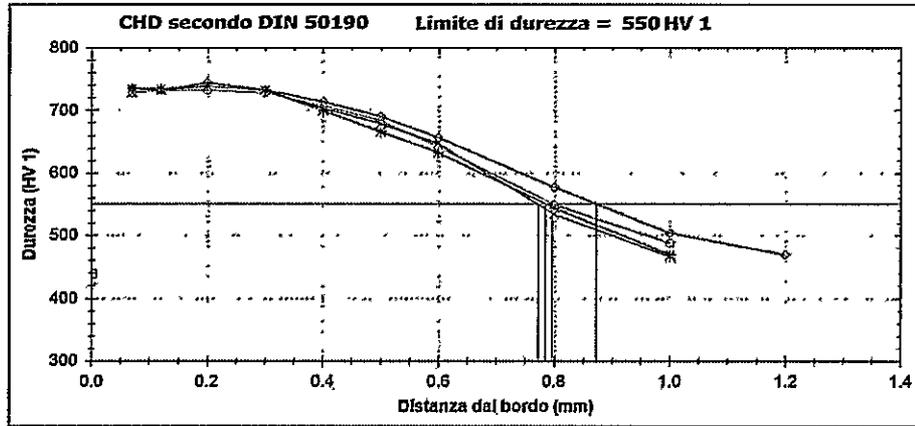
Picture 1: posizioni di misura a disegno.

**Surface hardness verification (verifica durezza superficiale)**

Component	Scale	Position	Measured Value	Range
Gear	HRC	M1	60.6	-
Gear	HRA	M1	81.1	80.5 + 2.5

**CHD and core hardness verification (verifica CHD e durezza a cuore)**

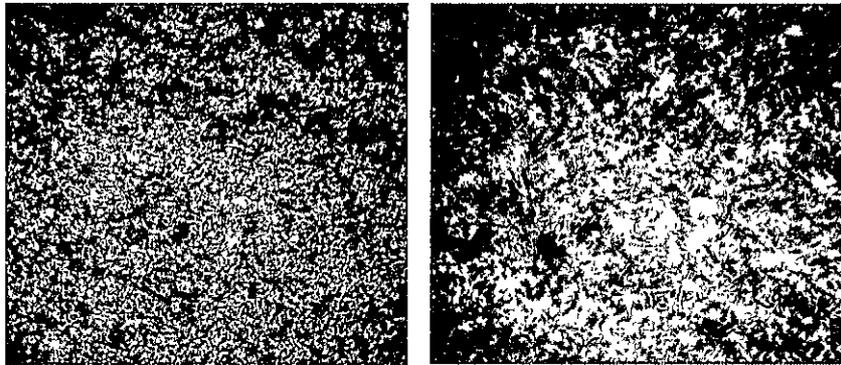
Component	Scale	Sample #	Position	Measured Value	Range
Gear	CHD 550 HV1	33/18	M2 (tooth flank)	0.80	0.5 + 0.4 mm
Gear	CHD 550 HV1	33/18	M3 (c. ring tooth flank)	0.87	0.5 mm min.
Gear	CHD 550 HV1	33/18	M4 (Bore)	0.78	0.3 mm min.
Gear	CHD 550 HV1	33/18	M5 ( Cone )	0.77	0.4 mm min.
Core Hardness	Core hardness HV10	33/18	M6 (tooth core)	438	≥ 300
Core Hardness	Core hardness HV10	33/18	M6 (tooth core KK)	417	≥ 300



Picture 2: profili di durezza

*Microstructure analysis (analisi della microstruttura)*

Sample #	33/18
Gear - Tooth flank surface structure:	Martensite e austenite residua (5-10%)
Gear - Tooth base core structure:	Martensite, bainite



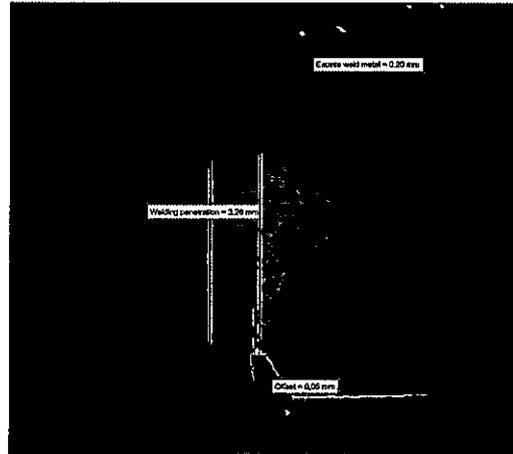
Picture 3: Microstruttura sul fianco dente (a sinistra) ed a cuore sulla base dente (a destra).

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Date 03/01/2018  
Author: R. Padolecchia

*Analysis at Stereomicroscope (Analisi allo Stereomicroscopio)*

Part	Radial Offset [mm]	Penetration [mm]	Excess weld metal	Sample#
SG4 - clutch ring (Z)	0.05	3.27	0.2	34/18
Range	max 0.1	2.5 min	max 0.5	



Picture 4: Sezione saldatura



