Part Submission Warrant

MAGNA GETRAG

311356

Part Name:	Speed Gear 6 Cpl	Cust. Part No.:	251.1.1091.51
Shown on Drawing No.:	251.1.1091.51	Org. Part No.:	251.1.1091.51
Engineering Change Level:	3 Index "-" (C008341_MIP_1)	Dated:	27/02/2017
Additional Engineering Changes:	na	Dated:	na
Safety and/or Government Regulation:	☐ Yes ☑ No Purchase Order No.:	Weight (kg):	0.549
Checking Aid No.:	na Checking Aid Engineering Change Level: na	Dated:	na

ORGANIZATION MANUFACTURING INFORMATION

Getrag S.p.A.
Organization Name & Supplier / Supplier Code

Via dei Ciclamini, 4
Street Address

Modugno (Ba) Puglia 70026 Italy
City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

Bari assembly line (GPS4)
Customer Name / Division

na
Buyer / Buyer Code

DCT300
Application

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)

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

REQUESTED SUBMISSION LEVEL (Check one)

☐ Level 1 - Warrant only (and for designated appearance items, an Appearrance 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: Change on sub-component drawing 251.1.1092.50 Lev. 3 Index "c" (C003238_MIP_2) of 31/07/2017:
- Diameters for trust washer on bottom side
- Getrag standard for heat treatment measurement (already in place)

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

Organization Authorized Signature: [signature] Date: 19/10/17

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: d. Spatale Date: 19/10/17

Print Name: Customer Tracking No.: -

GETRAG Production Part Approval

DIMENSIONAL TEST RESULTS

Organization:	GETRAG	Part Number:	251.1.1092.50
Supplier/Vendor Code:	GETRAG Modugno	Part Name:	Speed Gear 6
INSPECTION FACILITY:		Design Record Change Level:	3 Index "c"
NA		Engineering Change Documents:	C003238_MIP_2 - 31/07/2017

Item	Dimension/Specification	Specification / Limits		Classif.	Qty. Tested	Organization Measurement Results (Data) 1	2	3	4	5	controllo distruttivo	Ok	Not Ok
1	Internal diameter	57.200	57.160		5	57.161	57.152	57.164	57.110	57.108		OK	
2	Diameter on suface	55.600	55.400		5	55.537	55.594	55.536	55.548	55.598		OK	
3	Step	0.200	0.000		5	0.000	0.003	0.010	0.001	0.011		OK	
4	Radius	1.000	0.700		5	0.820	0.881	0.789	0.776	0.727		OK	

March 2006 CFG-1003

SIGNATURE	TITLE	DATE
Vicenti D.	ME	19/10/2017

Design Release: 2017-09-18 Gennaro Pierro
SAP Release: 2017-09-20 Nicole.Devincenzo
Document Status: approved

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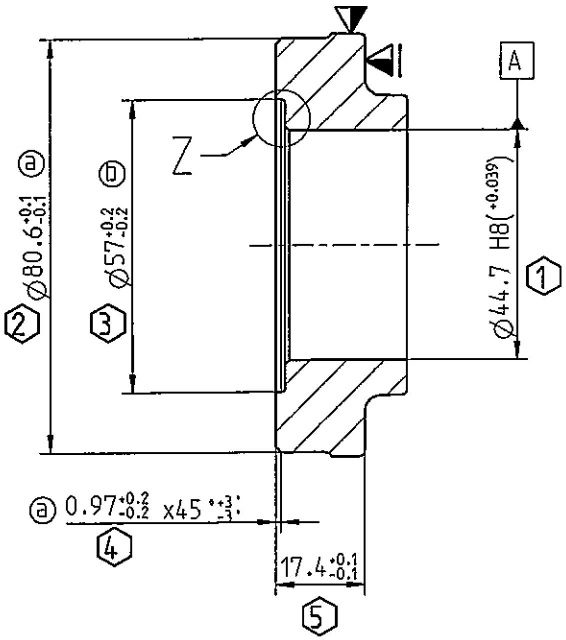

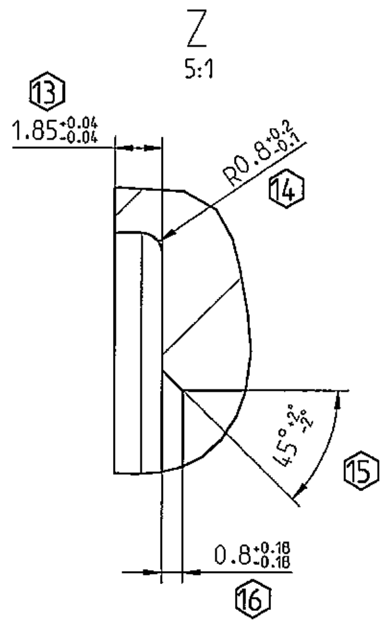

Rz 40 (✓)

0.3

▼ = Serraggio

▼ = Battuta

GCG 803001	0	<M>				
	0	<C>				
	0	<M>				
	0	<C>				
	0	<A>	b	1x		DB: 57 WAS 57.5
CAD Pro/Engineer			a	2X		DB: 80.6+0.1-0.1 WAS 80.6-0.1; BB: 0.97 WAS 0.94
			-	-	T72415	MATURITY LEVEL OF SPECIFICATION 3 APPROVED
Scala / SCALE M: 1:1 (5:1)			Lettera CHANGE INDEX	Numero NUMBER	N. variante CHANGE REQUEST NO	Varanti MODIFICATION --consentite solo su CAD; controllare FMEA-- --ONLY ALLOWED BY CAD; CHECK FMEA--

Tolleranze generiche per dimensioni, forma, posizione ISO 2768 - mH smussi, raggi e angoli ISO 2768 - v

GENERAL TOLERANCES FOR LINEAR DIMENSIONS, FORM AND POSITION ISO 2768 - mH; CHAMFERS, RADII AND ANGULAR DIMENSIONS ISO 2768 - v

Senza nessuna indicazione sul utilizzo e rilascio. L'informazione su questo disegno sono non obbligatori.
INFORMATION ON THIS DRAWING PROVIDED WITHOUT OBLIGATION IF USAGE AND RELEASE ARE NOT SHOWN.

L'analisi della misurazione del diametro viene effettuato con la distribuzione normale (Metodo Gauss)
EVALUATION OF THE DIAMETER MEASUREMENT IS CARRIED OUT ACCORDING TO THE GAUSS METHOD (ARITHMETICAL MEAN VALUE)

Tolleranze di forma e posizione FORM AND POSITION TOLERANCES EN ISO 1101	Tolleranze TOLERANCING ISO 8015	Oberflaechenangaben SURFACE TEXTURE GN 4005	Werkstueckkanten BREAK EDGES ISO 13715

N. di Macchina MACHINE-NO -	Macchina MACHINE -	GETRAG S.p.A.
Dimensione grezzo UNMACH. DIM.	Ø82.3 x 26.7	
Nome NAME: Gennaro.Pierro	Semilavorato SEMI-FINISHED: 2511109290	
Data Date: 4/10/2017 11:49:58 AM	Materiale Material: GCG_805000_02_20MnCrS5	Protezione secondo ISO 16016 PROTECTION PER ISO 16016
Primo utilizzo FIRST USAGE: 251	Teilenummer PART-NO: 2511109250	N. di Gruppo GROUP-NO: -
Denominazione / ITEM NAME: Ruota 6 libera VBZ - Tornitura op. 1	Codice. / ITEM NO.: 011_804469	Formato/SIZE A3; Foglio/SHEET 1; di/OF 1
La Massa MASS: 0.552 kg; Superficie Surface: 16278 mm²	N. di Semilavorato SEMI FINISHED NUMBER: -	

Document Revision: 20170918121138, printed on 2017-10-19 at 09:06 by Mirko.Vicenti

Design Release: 2017-09-18 Gennaro Pierro
SAP Release: 2017-09-20 Nicole.Devincenzo
Document Status: approved

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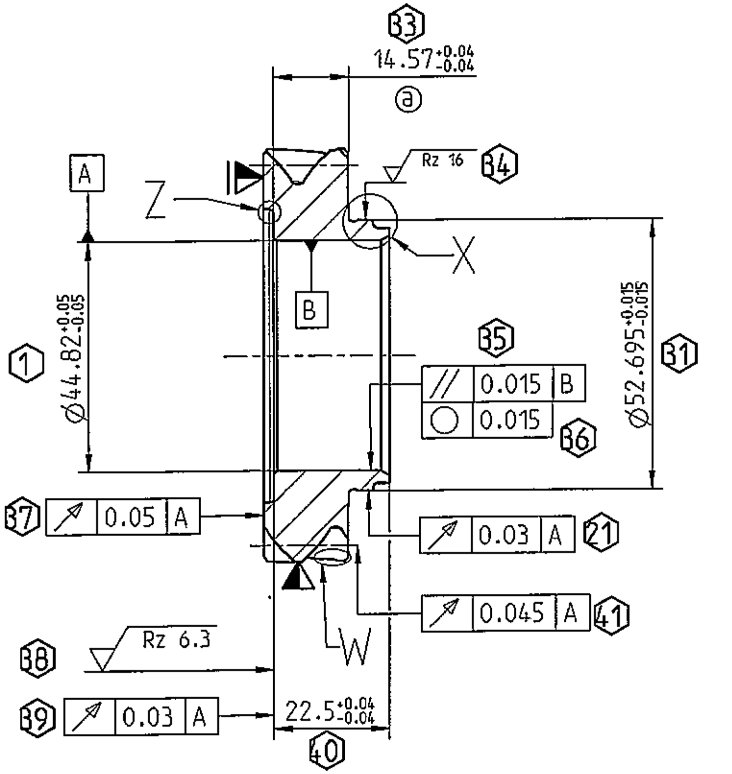
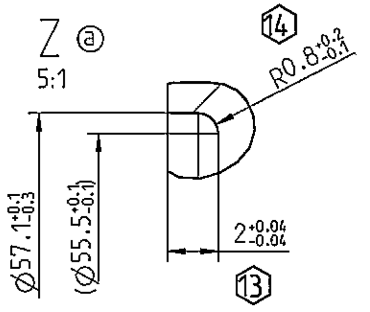
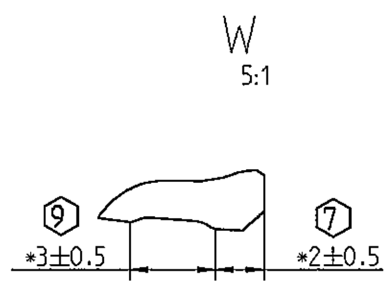
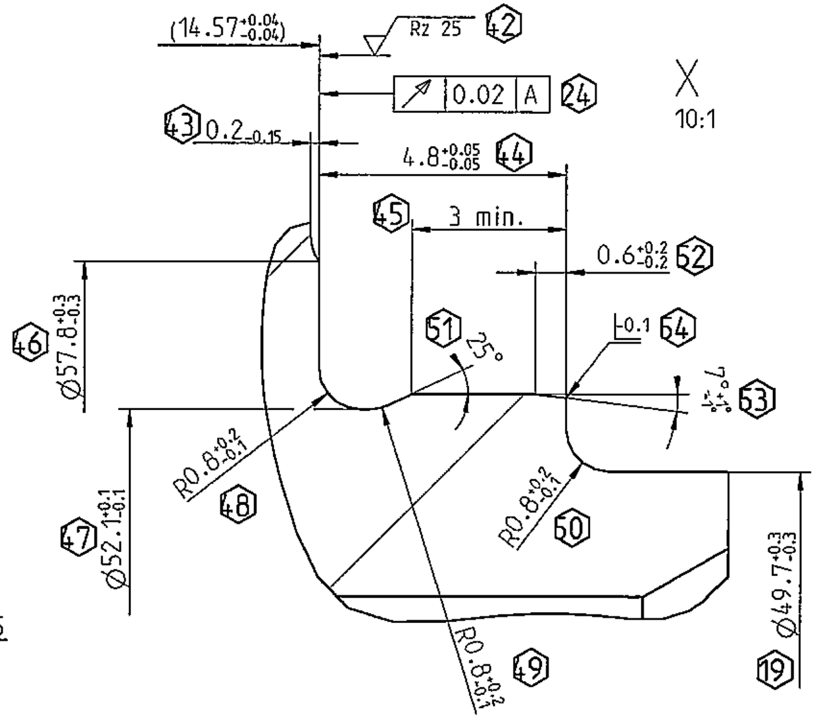






* CONTROLLO OPZIONALE



Rz 40 (✓)

0.3 (⊥)

▼ = Serraggio

▼ = Battuta

GCG 803001	0	<M>			
	0	<C>			
	0	<M>			
	0	<C>			
	0	<A>			
CAD Pro/Engineer		a	2X		DETAIL Z MODIFIED; Eó: 14.57 WAS 14,52
		-	-	T72415	MATURITY LEVEL OF SPECIFICATION 3 APPROVED
Scala / SCALE M: 1:1 (5:1; 10:1)		Lettera CHANGE INDEX	Numero NUMBER	N. variante CHANGE REQUEST NO.	Varanti MODIFICATION --consentite solo su CAD; controllare FMEA-- --ONLY ALLOWED BY CAD; CHECK FMEA--

Tolleranze generiche per dimensioni, forma, posizione ISO 2768 - mH smussi, raggi e angoli ISO 2768 - v

GENERAL TOLERANCES FOR LINEAR DIMENSIONS, FORM AND POSITION ISO 2768 - mH; CHAMFERS, RADII AND ANGULAR DIMENSIONS ISO 2768 - v

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INFORMATION ON THIS DRAWING PROVIDED WITHOUT OBLIGATION IF USAGE AND RELEASE ARE NOT SHOWN.

L'analisi della misurazione del diametro viene effettuata con la distribuzione normale (Metodo Gauss)
EVALUATION OF THE DIAMETER MEASUREMENT IS CARRIED OUT ACCORDING TO THE GAUSS METHOD (ARITHMETICAL MEAN VALUE)

Tolleranze di forma e posizione FORM AND POSITION TOLERANCES EN ISO 1101	Tolleranze TOLERANCING ISO 8015	Oberflaechenangaben SURFACE TEXTURE GN 4005	Werkstueckkanten BREAK EDGES ISO 13715

N. di Macchina MACHINE-NO	-	Macchina MACHINE	-
Dimensione grezzo UNMACH. DIM.	Ø82.3 x 26.7		
Nome NAME	Gennaro.Pierro	Semilavorato SEMI-FINISHED	Trattamento Termico
Data Date	5/18/2016 1:20.13 PM	Materiale Material	GCG_805000_02_20MnCrS5
Primo utilizzo FIRST USAGE	251	Teilenummer PART-NO	2511109250
N. di Gruppo GROUP-NO	-		

GETRAG S.p.A.

Protezione secondo ISO 16016
PROTECTION PER ISO 16016

Denominazione / ITEM NAME: Ruota 6 libera VBZ - Tornitura hard

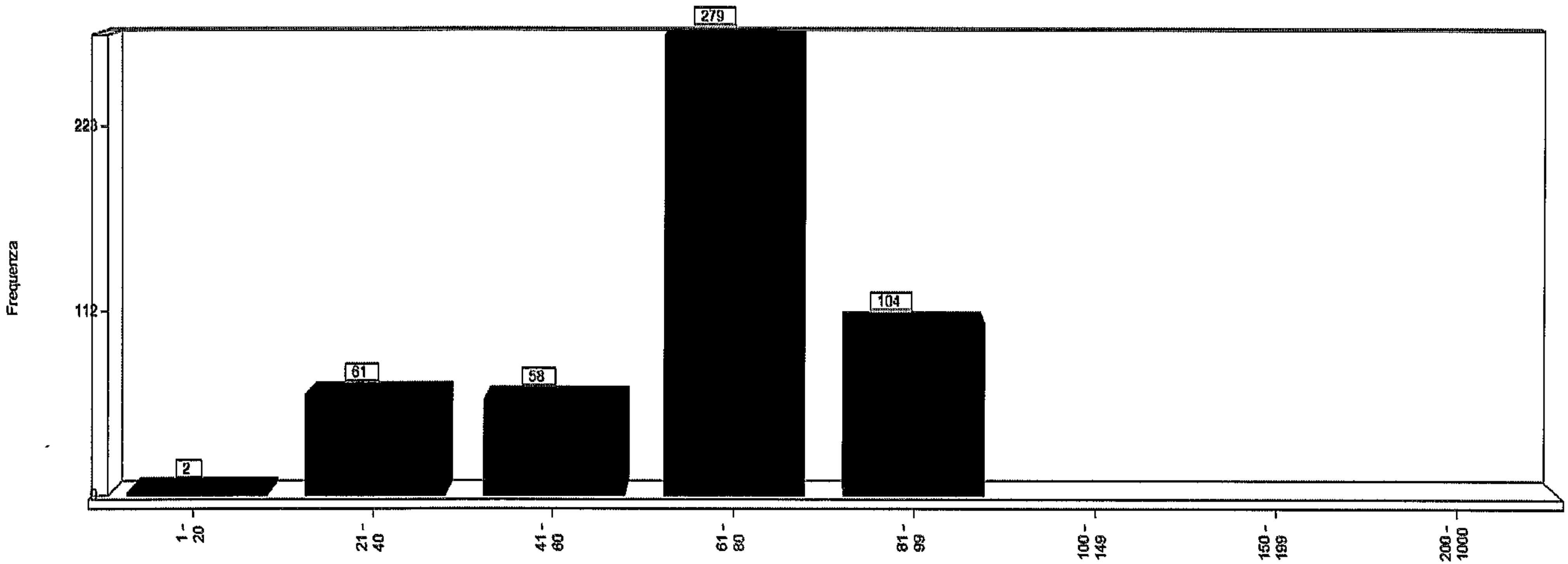
Codice. / ITEM NO.: 080_804469

Formato/SIZE: A3 | Foglio/SHEET: 1 | di/OF: 1

La Massa MASS: 0.370 kg | Superficie Surface: 18257 mm² | N. di Semilavorato SEMI FINISHED NUMBER: -

DCT300 – SG6: PFMEA RPN Status

GETRAG	FMEA Processo		Numero: 1.2.3.11.1.1.1 Pagina:
Tipo/Modello/Produzione/Lotto: 7DCT300	Numero Disegno: 251.1.1091.51 Stato modifica: Lev.3 - 27/02/2017 "-"	Responsabile: Getrag Ditta: Getrag	Emesso: 31/08/2015
FMEA/Elemento: SG6	Codice dell'operazione: Tutte Stato modifica:	Responsabile: Papagna, Nitti, Landriscina, Guerra, Cicirelli, Oscuro, Caponio, Vicenti Ditta: Getrag	Emesso: 13/01/2017 Modificato: 06/03/2017



Istruzioni di controllo

MAGNA GETRAG

PP Produzione GPS

Materiale: 2511109250/S
Descrizione: Ruota dentata libera 6.M. soft Stato:Rilasciato Produzione + Calcolo costi
Operazione: **0020 Tornitura soft**
Centro di lavoro: DRA14500 TORNITURA SOFT SG6

Indice del disegno finito:
Data emissione: 16.10.2017 / Stefano Billi
Data aggiornamento: 03.10.2017 / Filippo Papagna

n.SAP ID interno	CLASS.CARATT	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
0004		Controllo 1° pz. sec. VBZ 011/012_804469				MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	1° pz GO_V24_0013_07		Misu: controllo primo pezzo
						MOA-416120 PROFILOMETRO PCV					1	1° pz GO_V24_0013_07		
0014		PdC per Versione DCT300												
0016		Controllo visivo presenza: smussi diametro esterno, smussi diametro interno, gole grezze e gole lavorate.					1	ogni 30 pz	1	pz prima e dopo cambio ut.				
0018		Controllo visivo anomalie(superfici lavorate, trucioli incollati, bave, lavorazioni incomplete ecc.)					1	ogni 30 pz	1	pz prima e dopo cambio ut.				
0020		Controllo visivo gola Identificazione (presente sul diametro esterno di camera2)					1	ogni 30 pz	1	pz prima e dopo cambio ut.				
0084		Distanza cam1 17.4±0.1 (su 3 punti a 120°)	17,400 mm	17,300	17,500	MHM-408048 COMPARATORE DIGITALE 0-50, 1/1000	1	pz a cambio utensile						
0094		Distanza op1 1,85± 0.04	1,850 mm	1,810	1,890	MHM-408048 COMPARATORE DIGITALE 0-50, 1/1000	1	ogni 30 pz						Misu: protocollo macchina 3D
						MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		
0114		Diametro camera1 - 57.0±0.2	57,000 mm	56,800	57,200	MAI-408045 CALIBRO A CORSOIO 0-150/100			1	pz prima e dopo cambio ut.				Misu: protocollo macchina 3D
						MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		
0116		Altezza smusso 0.97±0.2 x45° (diametro esterno)	0,970 mm	0,770	1,170	MHM-458587 banco di misura smussi assiale tornitura	1	pz a cambio utensile						

Istruzioni di controllo

MAGNA GETRAG

PP Produzione GPS

Materiale:	2511109250/S	Indice del disegno finito:	
Descrizione:	Ruota dentata libera 6.M. soft Stato:Rilasciato Produzione + Calcolo costi	Data emissione:	16.10.2017 / Stefano Billi
Operazione:	**0020 Tornitura soft**	Data aggiornamento:	03.10.2017 / Filippo Papagna
Centro di lavoro:	DRA14500 TORNITURA SOFT SG6		

n.SAP ID interno	CLASS.CARATT	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
0124		Diametro esterno Op1/2 80.6±0.1	80,600 mm	80,500	80,700	MAI-408045 CALIBRO A CORSOIO 0-150/100	1	ogni 30 pz						Misu: protocollo macchina 3D
						MAI-408045 CALIBRO A CORSOIO 0-150/100			1	pz a cambio utensile				
						MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		
0134		Diametro foro 44,7 H8 (Quota Marposs)	44,700 mm	44,700	44,739	MIR-453728 tampone di misura Ø44.7 sr5-sr6	1	ogni 30 pz						Misu: protocollo macchina 3D
						MIR-453728 tampone di misura Ø44.7 sr5-sr6			1	pz prima e dopo cambio ut.				
						MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		
0136		Altezza smusso foro cam1 0.80± 0.18 x45°	0,800 mm	0,620	0,980	MHM-458587 banco di misura smussi assiale tornitura	1	pz a cambio utensile						
0164		Altezza camera2 - 22.6±0.05	22,600 mm	22,550	22,650	MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		Misu: protocollo macchina 3D
0166		Altezza camera2 - 24.7±0.05	24,700 mm	24,650	24,750	MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		Misu: protocollo macchina 3D
0174		Distanza 16.4 ±0.05 (Quota Marposs)	16,400 mm	16,350	16,450	MHM-408048 COMPARATORE DIGITALE 0-50, 1/1000	1	ogni 30 pz						Misu: protocollo macchina 3D
						MHM-408048 COMPARATORE DIGITALE 0-50, 1/1000			1	pz prima e dopo cambio ut.				
						MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		

Istruzioni di controllo

MAGNA GETRAG

PP Produzione GPS

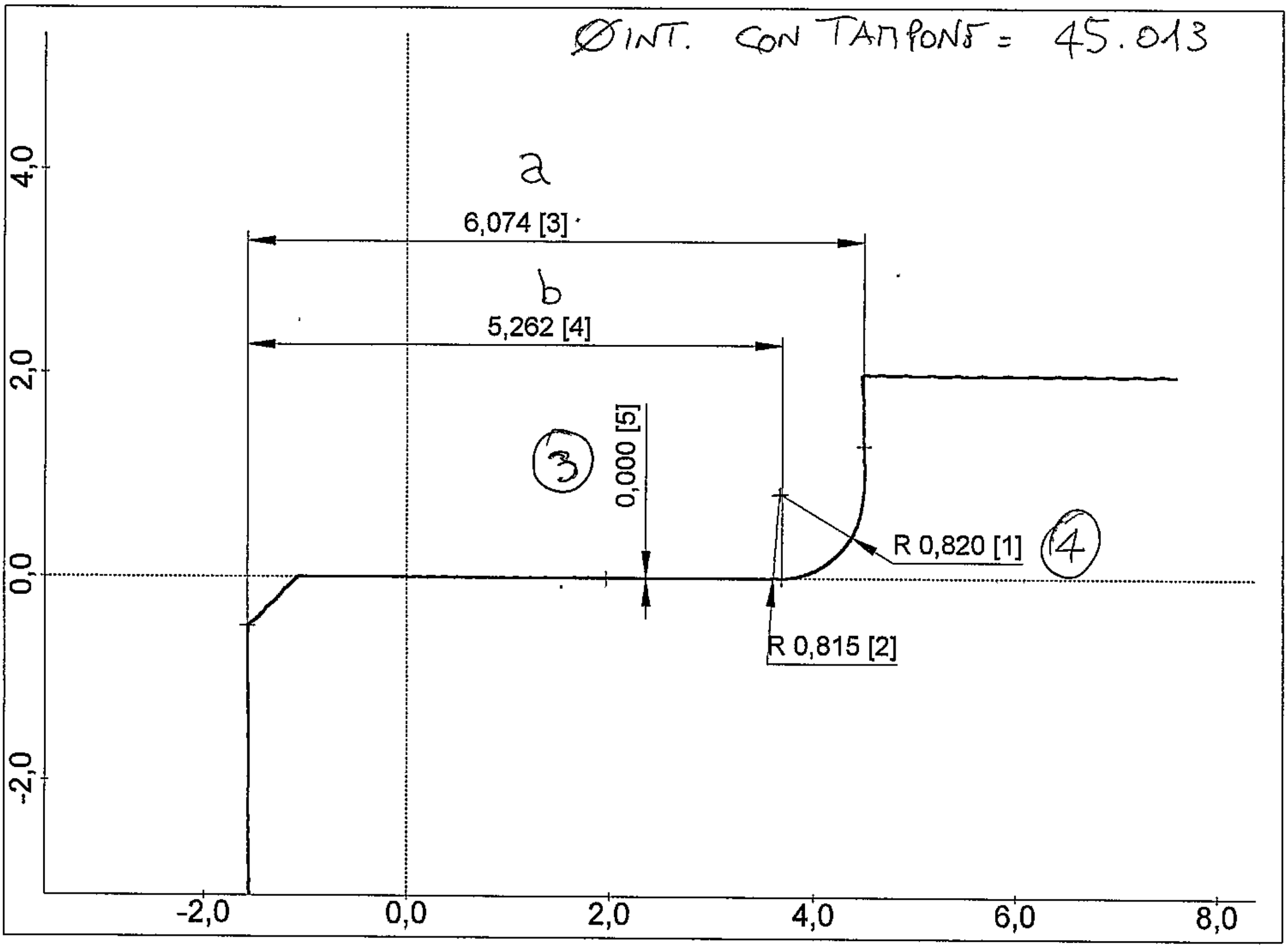
Materiale:	2511109250/S	Indice del disegno finito:	
Descrizione:	Ruota dentata libera 6.M. soft Stato:Rilasciato Produzione + Calcolo costi	Data emissione:	16.10.2017 / Stefano Billi
Operazione:	**0020 Tornitura soft**	Data aggiornamento:	03.10.2017 / Filippo Papagna
Centro di lavoro:	DRA14500 TORNITURA SOFT SG6		

n.SAP IDinterno	CLASS.CARATT	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
0184		Oscillazione assiale op1 0.03	0,000 mm	0,000	0,030	MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		Misu: protocollo macchina 3D
0194		Oscillazione assiale op2 - 0.03	0,000 mm	0,000	0,030	MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		Misu: protocollo macchina 3D
0204		Oscillazione radiale op2 - 0.05	0,000 mm	0,000	0,050	MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		Misu: protocollo macchina 3D
0214		Distanza smusso foro cam2 1.95 ±0.1x30°	1,950 mm	1,850	2,050	MHM-458587 banco di misura smussi assiale tornitura	1	pz a cambio utensile						
0224		Diametro colletto 56,7 ±0,1(Quota marposs)	56,700 mm	56,600	56,800	MAI-408045 CALIBRO A CORSOIO 0-150/100	1	ogni 30 pz						Misu: protocollo macchina 3D
						MAI-408045 CALIBRO A CORSOIO 0-150/100			1	pz prima e dopo cambio ut.				
						MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		
0234		Diametro camera2 - 49.7±0.3	49,700 mm	49,400	50,000	MAI-414258 MACCHINA MIS. 3D ZEISS PRISMO					1	pz/mac inizio e metà turno		Misu: protocollo macchina 3D

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	SR 6
Numero:	1091 PZ N.1
Operatore:	TURNO C
Data, ora:	18.10.2017, 09:35
Nota:	PART Z (PPAP)
Tastatore:	PCV 350 / 33 mm
Macchina:	MOA 416120 002



PERTHOMETER CONCEPT

① = $(2 \times a) + \varnothing INT = (2 \times 6{,}074) + 45{,}013 =$
$= 57{,}161$

② = $(2 \times b) + \varnothing INT. = (2 \times 5{,}262) + 45{,}013 =$
$= 55{,}537$

Area Riservata alla Produzione

Valutazione Profilo

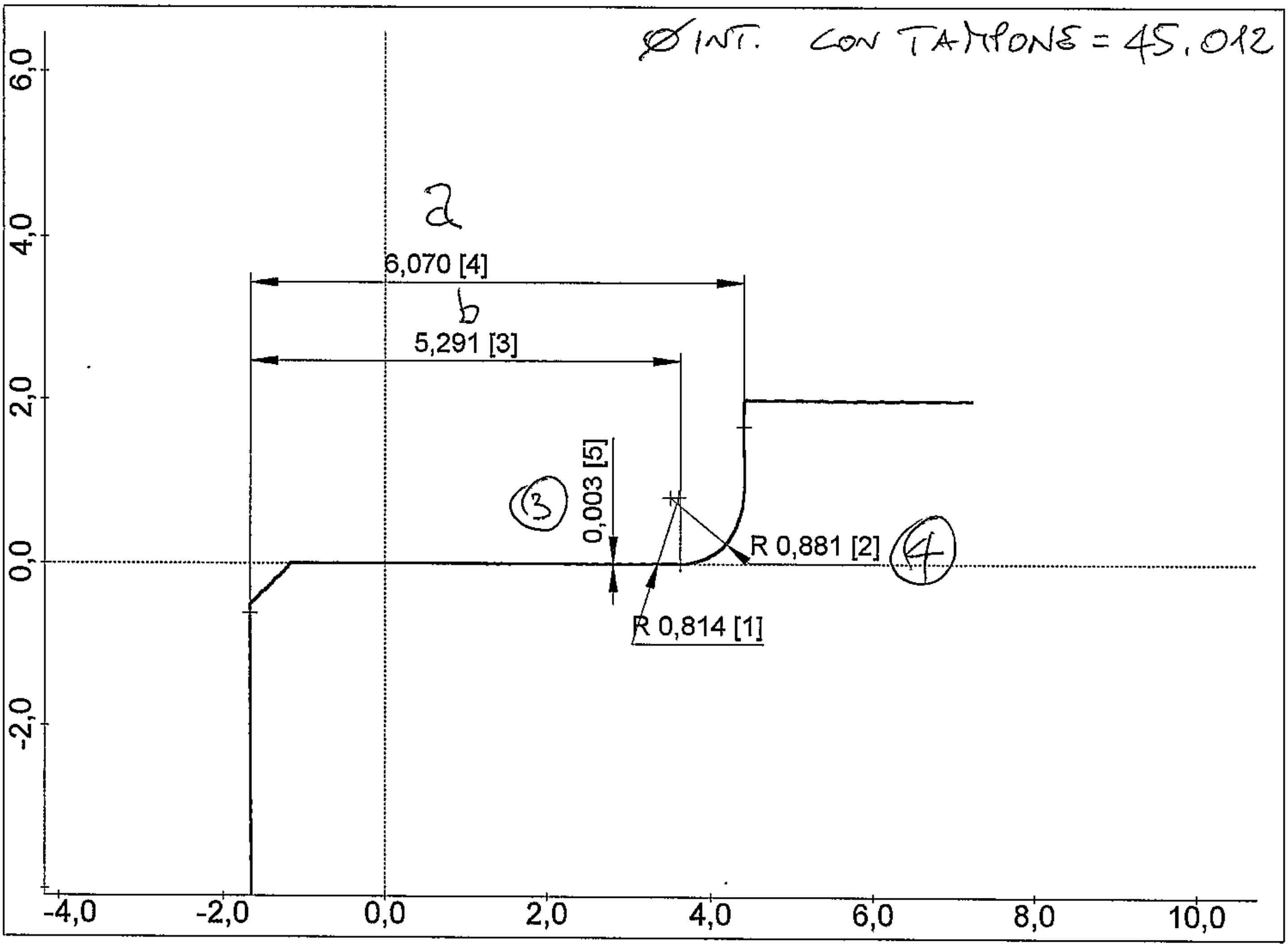
OK	☐
NOK	☐

N°BADGE ODP RICEVENTE

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	SR 6
Numero:	1091 PZ N.2
Operatore:	TURNO C
Data, ora:	18.10.2017, 09:29
Nota:	PART Z (PPAP)
Tastatore:	PCV 350 / 33 mm
Macchina:	MOA 416120 002



PERTHOMETER CONCEPT

① = (2 × a) + ∅ INT. = 57.152

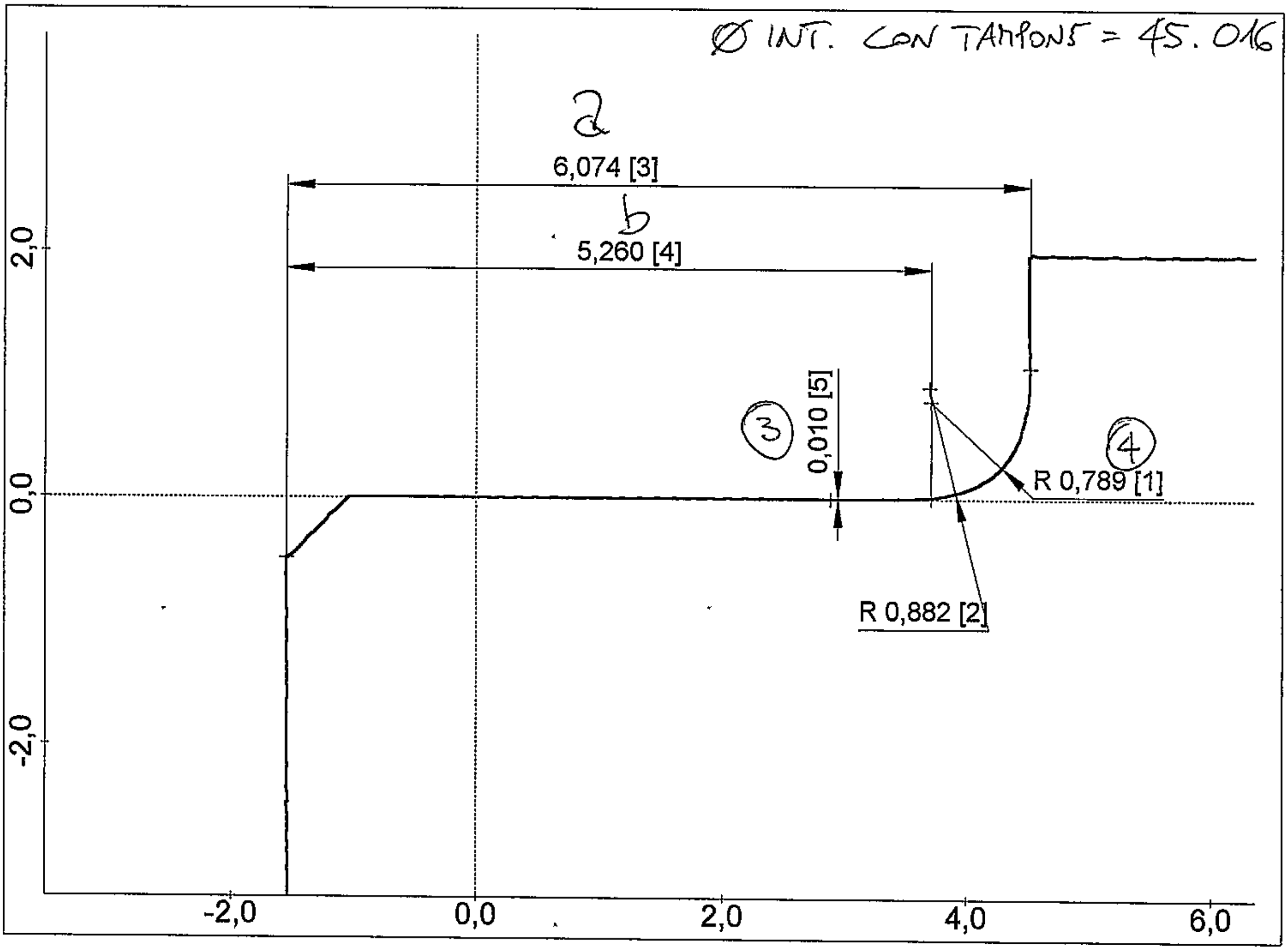
② = (2 × b) + ∅ INT. = 55.594

Area Riservata alla Produzione	
Valutazione Profilo	
OK	☐
NOK	☐
N°BADGE ODP RICEVENTE	

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	SR 6
Numero:	1091 PZ N.3
Operatore:	TURNO C
Data, ora:	18.10.2017, 09:26
Nota:	PART Z (PPAP)
Tastatore:	PCV 350 / 33 mm
Macchina:	MOA 416120 002



PERTHOMETER CONCEPT

Area Riservata alla Produzione	
Valutazione Profilo	
OK	☐
NOK	☐
N°BADGE ODP RICEVENTE	

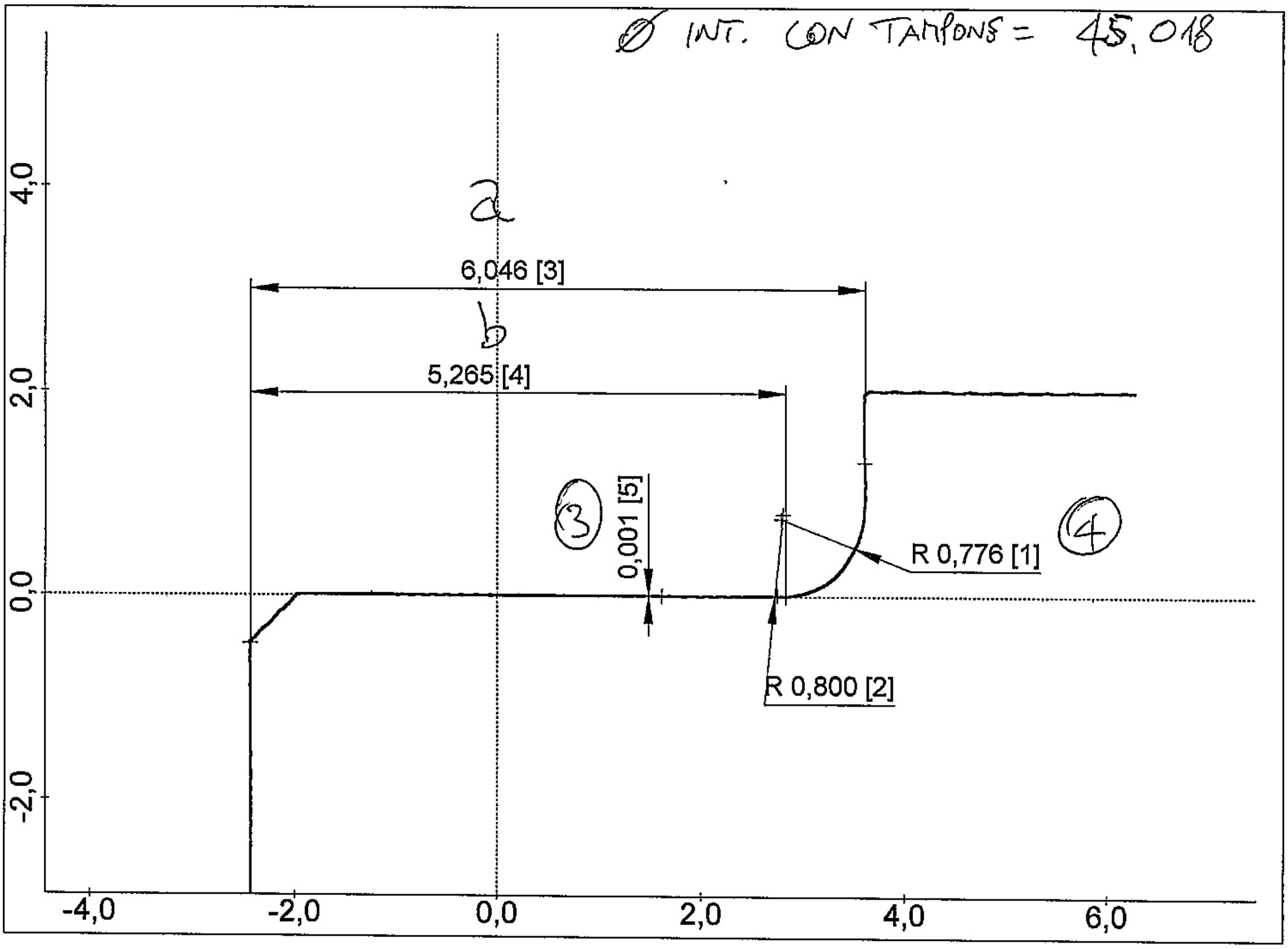
1 = 57.164

2 = 55.536

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	SR 6
Numero:	1091 PZ N.4
Operatore:	TURNO C
Data, ora:	18.10.2017, 09:22
Nota:	PART Z (PPAP)
Tastatore:	PCV 350 / 33 mm
Macchina:	MOA 416120 002



PERTHOMETER CONCEPT

Area Riservata alla Produzione

Valutazione Profilo

OK ☐

NOK ☐

N°BADGE ODP RICEVENTE

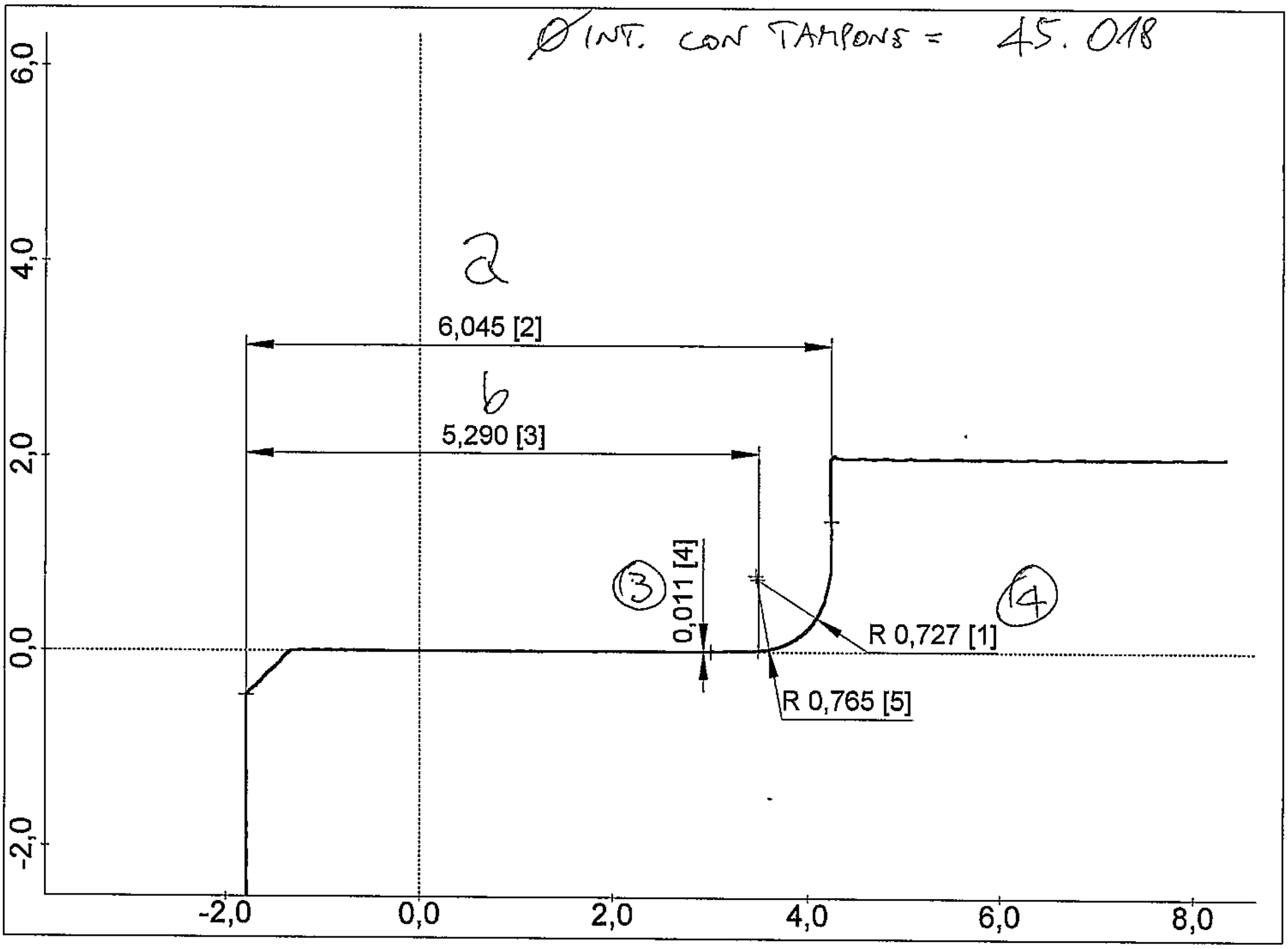
1 = 57.110

2 = 55.548

GETRAG

Via dei Ciclamini 4, Modugno (BA)

Oggetto:	SR 6
Numero:	1091 PZ N.5
Operatore:	TURNO C
Data, ora:	18.10.2017, 09:15
Nota:	PART Z (PPAP)
Tastatore:	PCV 350 / 33 mm
Macchina:	MOA 416120 002



PERTHOMETER CONCEPT

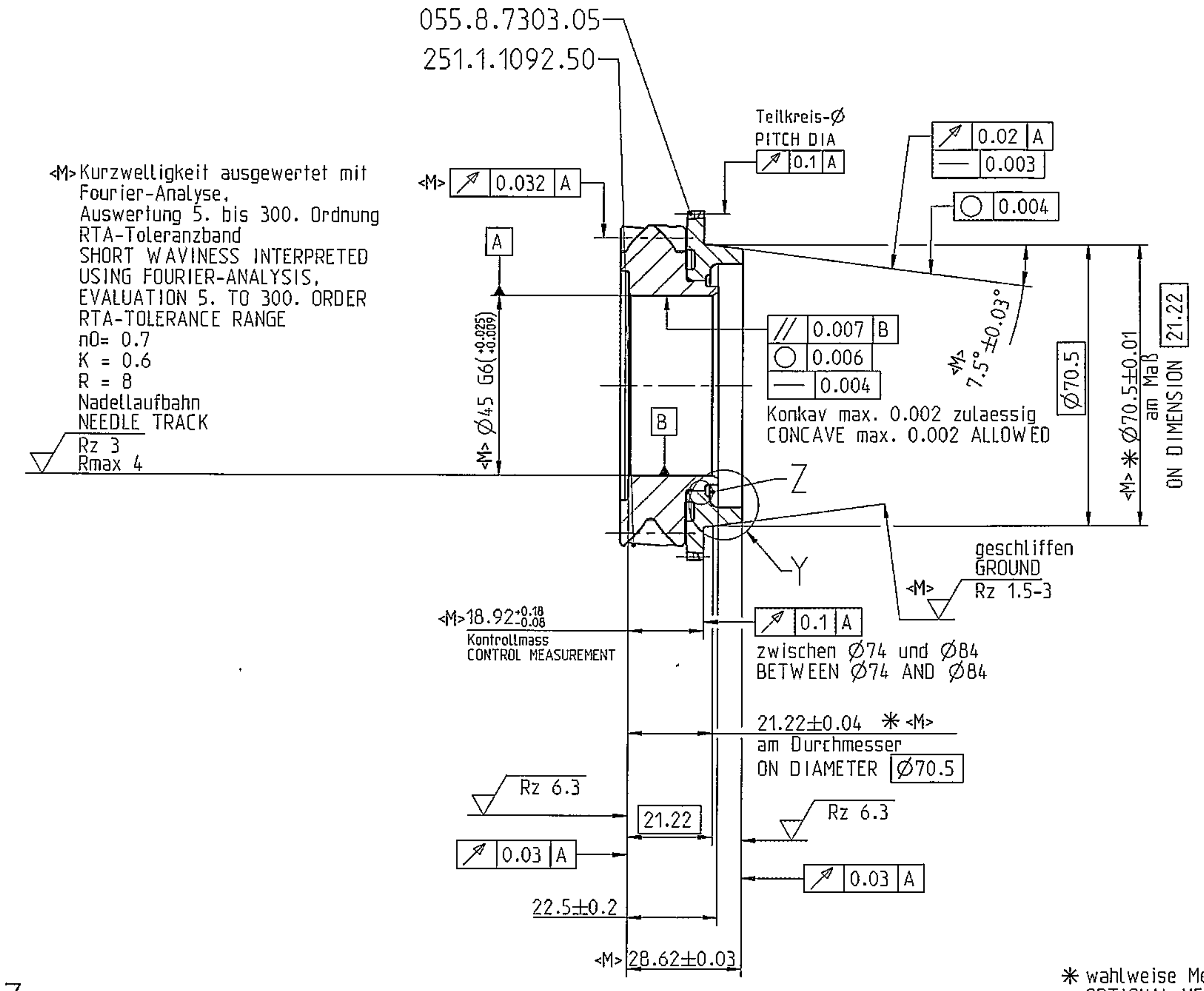
Area Riservata alla Produzione	
Valutazione Profilo	
OK	☐
NOK	☐
N°BADGE ODP RICEVENTE	

1 = 57.108

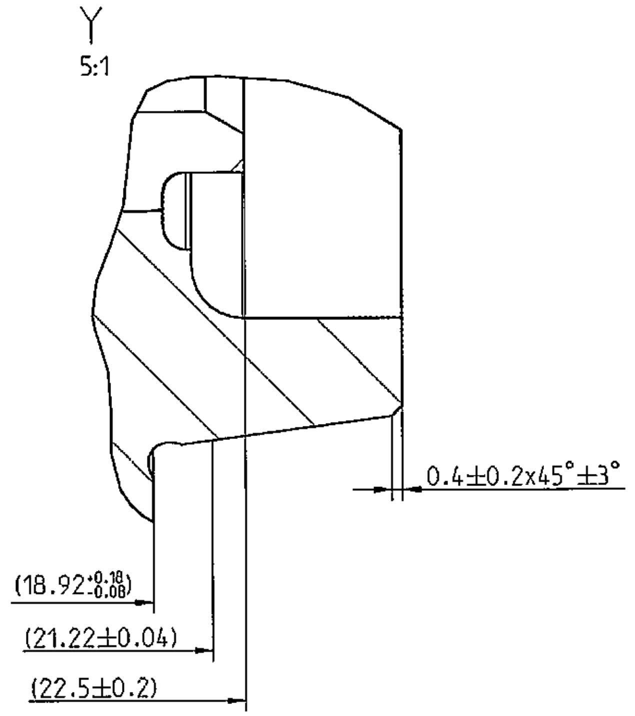
2 = 55.598

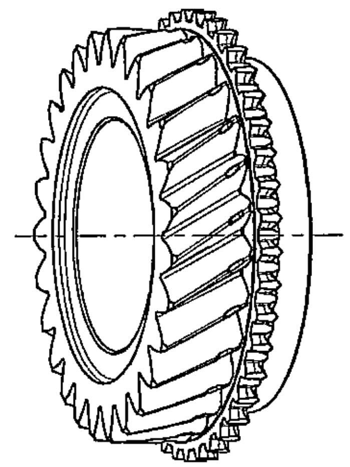
Design Release: 2017-02-28 Filippo.Russo
Function Release: 2017-02-28 Andreas.Baecker
Geardata Release: not required
Material Release: not required
SAP Release: 2017-03-06 Hartmut.Kobald
Document Status: approved

Fuer Freigabeinformation freihalten! KEEP FREE FOR RELEASE INFORMATION!



✳ wahlweise Messung
OPTIONAL MEASUREMENT





Technische Sauberkeit / TECHNICAL CLEANLINESS:

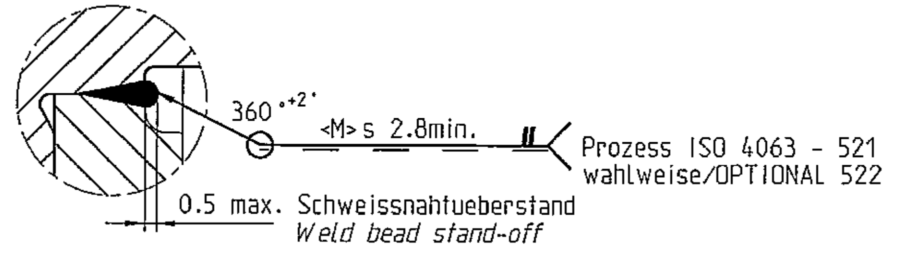
Bauteiloberflaeche fuer Pruefung / SURFACE TO PROVE:
siehe Zeichnungskopf der Einzelteile /
SEE DRAWING TITLE BLOCK OF SINGLE PARTS

G_A=2.5mg / 1000cm²

Pruefung an Hand der Anweisung / EXAMINATION BASED ON DIRECTIVE:
G_904340-2

Naehere Angaben zur Verzahnung
siehe Verzahnungsblatt
251.1.1092.50
FURTHER GEAR DATA SEE
DATA SHEET NUMBER
251.1.1092.50

Z
unmassstaeblich
not to scale



<M>CHECKED ACCORDING ENGINEERING SPECIFICATION
S 3S7R-7M161-AA. DEVIATION FROM THIS SPECIFICATION:
LONGITUDINAL MICRO CRACKS IN THE WELDING MATERIAL ARE
PERMISSIBLE TO A TOTAL OF 2% AROUND THE CIRCUMFERENCE.

GCG_803001	11	<M>
	0	<C>
	0	PTC

Buchst. / CHANGE INDEX	Anzahl / NUMBER	Aend.-Nr. / CHANGE ORDER NO.	Aenderung / MODIFICATION	Datum / DATE
--	--	C00834 1M1P1	Spezifikationsreifegrad 3 erteilt SPECIFICATION MATURITY LEVEL 3 APPROVED	20170227
			--nur mittels CAD zulaessig; FMEA ueberpruefen-- --ONLY ALLOWED BY CAD; CHECK FMEA--	

Massstab / SCALE M: 1:1 (--)

Informationen auf dieser Zeichnung sind ohne Angaben zu Verwendung und Freigabe unverbindlich.
INFORMATION ON THIS DRAWING PROVIDED WITHOUT OBLIGATION IF USAGE AND RELEASE ARE NOT SHOWN.

Auswertung der Durchmessermessung erfolgt nach der Gauss-Methode (Arithmetischer Mittelwert)
EVALUATION OF THE DIAMETER MEASUREMENT IS CARRIED OUT ACCORDING TO THE GAUSS METHOD (ARITHMETICAL MEAN VALUE)

Allgemeintoleranzen fuer Laengenmasse, Form und Lage ISO 2768 - mH gebrochene Kanten, Radien und Winkelmasse ISO 2768 - v
GENERAL TOLERANCES FOR LINEAR DIMENSIONS, FORM AND POSITION ISO 2768 - mH, CHAMFERS, RADII AND ANGULAR DIMENSIONS ISO 2768 - v

Form- und Lagetolerierung / FORM AND POSITION TOLERANCES	Tolerierung / TOLERANCING	Oberflaechenangaben / SURFACE TEXTURE	Werkstueckkanten / BREAK EDGES
EN ISO 1101	ISO 8015	GN 4005	ISO 13715

Werkstoff / MATERIAL

Halbzeug / SEMI-FINISHED: -

oelbenetzte Oberflaeche / OIL WETTED SURFACE: 0 mm²
Gesamtoberflaeche / SURFACE AREA: 0 mm²
Masse / MASS: 0.549 kg

GETRAG
Getriebe- und Zahnradfabrik Hermann Hagenmeyer GmbH & Cie KG

Schutzvermerk nach ISO 16016 beachten
PROTECTION PER ISO 16016

Benennung / ITEM NAME: Schaltrad 6. Gang vst.
SPEED GEAR 6TH CPL.

Artikel-Nr./ ITEM NO.: 2511109151
CAD-Modell: 2511109151

Blatt/SHEET 1 von/OF 1 — Reifegrad / MATURITY: 3 — Format / SIZE: A2

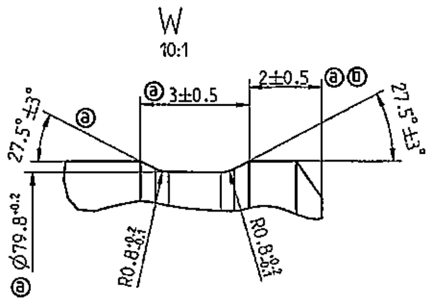
Ersatz fuer / SUBSTITUTE FOR: -

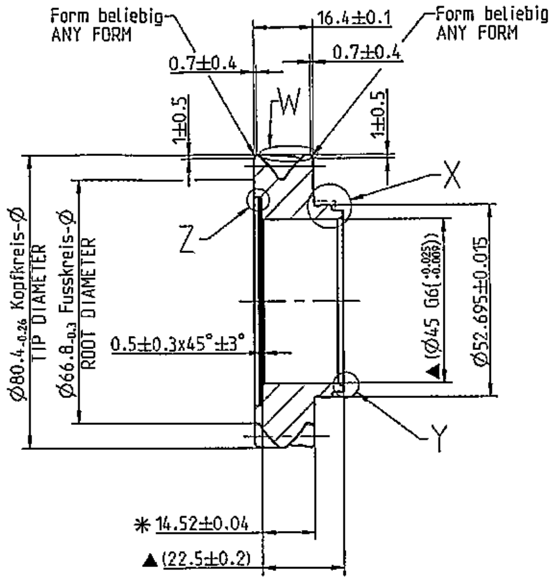
INTRALINK DATA	CHECKED IN BY	CHECKED IN ON: dd.mm.yyyy hh:mm:ss	VERSION
Zchng./DRW:	Petra.Kaufmann	27.02.2017 12:21:52	0
MODEL:	Petra.Kaufmann	27.02.2017 12:21:52	0+

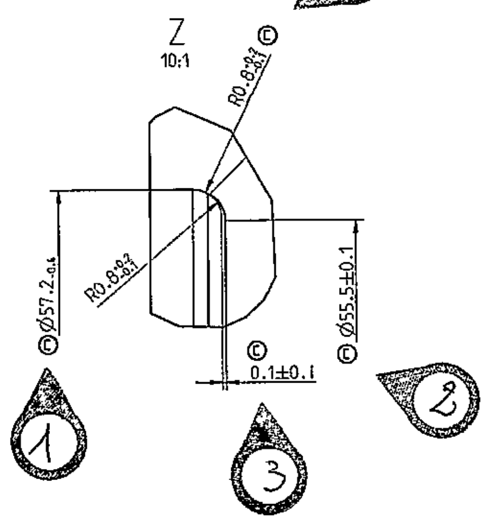
Document Revision: 20170227122625, printed on 2017-10-19 at 11:24 by Mirko.Vicenti

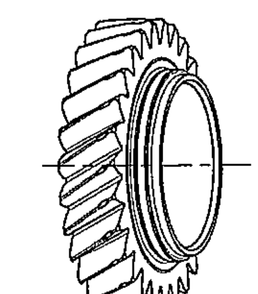
Design Release:	2017-07-31 Filippo.Russo
Function Release:	2017-07-31 Daniel.Sans
Geardata Release:	2017-07-31 Filippo.Russo
Material Release:	2017-07-31 Julia.Tietze
SAP Release:	2017-07-31 Hartmut.Kobold
Document Status:	approved

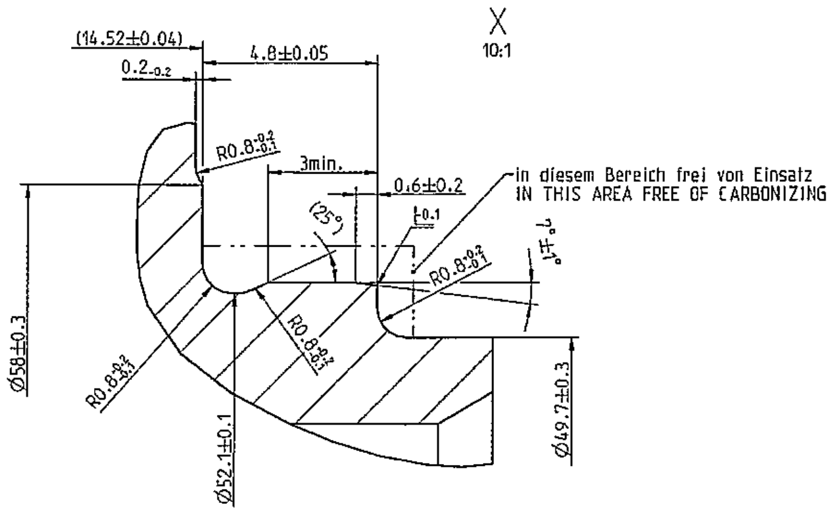
Fuer Freigabeinformation freibelassen/ KEEP FREE FOR RELEASE INFORMATION!

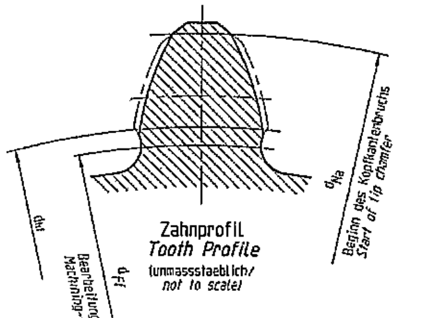


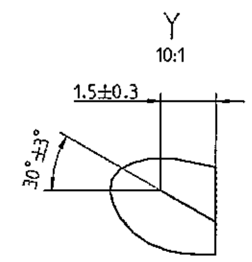




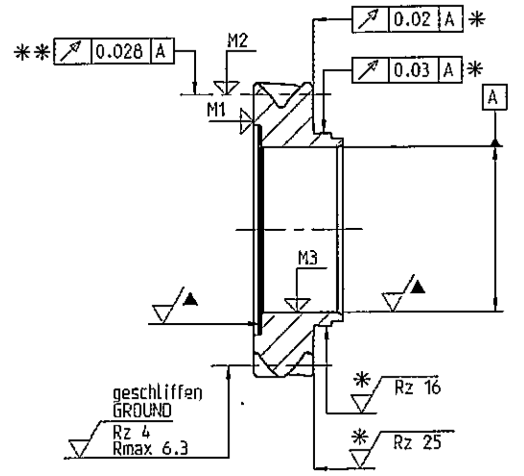








Uebergang der geschliffenen in die vorverzahnte Fussausrundungskurve kerbfrei verlaufend.
Transition of ground to premachined fillet curve without step or notch.



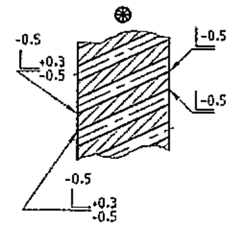
vorbearbeitet, Fertigmass▲ (...)
siehe 251.1.1091.50
PREMACHINED, FINISHED DIMENSION▲ (...)
SEE 251.1.1091.50

Kanten an Laufverzahnungen / *Tooth chamfers*
unmassstaeblich / *not to scale*

Naehere Angaben zur Verzahnung
siehe Verzahnungsblatt gleicher Nummer
FURTHER GEAR DATA SEE
DATA SHEET SAME NUMBER

Rz 63 (√)

① VERZAHNUNG OPTIONAL ENTGRATET NACH G_908101 / CHAMFERING OPTIONAL ON GEAR ACC. TO G_908101
FORM SD - Groesse siehe ⊛ / FORM SD - Size SEE ⊛

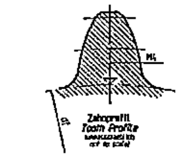


Aussenverzahnung / EXTERNAL GEAR		
Zahnwelle/ SPLINE DATA EXTERNAL		
Bezugsdurchmesser / REFERENCE DIAMETER d_B		
Modul / NORMAL MODULE m_n		2.250
Zaehnezahl / NUMBER OF TEETH z		27
Eingriffswinkel / NORMAL PRESSURE ANGLE α_n		17.5°
Schraegungswinkel / HELIX ANGLE β		29.0°
Richtung / HAND OF HELIX		LEFT, links
Bezugsprofil / BASIC RACK		
Profilverschiebung/ADDENDUM MODIFICATION $x \cdot m_n$	Nennmass / NOMINAL	3.251
Qualitaet / GEAR TOOTH QUALITY (DIN3961)		7
Toleranzklasse / TOLERANCE CLASS		
Zahndicke / TOOTH THICKNESS s_n (Lehrenmass / GAGE DIMENSION)	effective max	
Zahndicke / TOOTH THICKNESS s_n (Einzelmessung / ACTUAL)	max.	5.511
	min.	5.486
Messkugel-Ø / BALL DIA D_M		5.00
Pruefmass / MEASUREMENT OVER BALLS M_{dK} (Einzelmessung / ACTUAL)	max.	82.985
<M>	min.	82.936

ALREADY IN PLACE

✱ Theoretisches Mass / Vorschlag fuer die Produktion. Fertigungsmass ist mittels Chargenvorlauf zu definieren.
THEORETICAL DIMENSION / PROPOSAL FOR PRODUCTION.
FINAL DIMENSION TO BE DEFINED BY PRODUCTION TRIAL RUN.

✱✱ Vorschlag fuer die Produktion. Toleranz fuer Verzahnungsrundlauf ist von der Fertigung so zu waehlen, dass die Toleranz fuer Verzahnungsrundlauf im vst. Zustand eingehalten wird.
PROPOSAL FOR PRODUCTION. TOLERANCE OF TOOTH RUN-OUT HAS TO BE DEFINED BY PRODUCTION TO ACHIEVE TOLERANCE OF TOOTH RUN-OUT IN cpl. CONDITION.



ⓒ einsatzgehaertet und angelassen nach G_804002
CASE HARDENED AND TEMPERED ACCORDING TO G_804002
M1 (Oberflaechenhaerte/CASE HARDNESS) : 80.5+2.5 HRA
M2 (Zahnflanke/TOOTH FLANK) : CHD (Eht) 550 HV1=0.5+0.4
M3 (Bohrung/BORE) : CHD (Eht) 550 HV1=0.3min.
M4 (Kernhaerte/CORE HARDNESS) : 300min. HV10

GCG_803001	1	<M>	c	5x	C003236M1P2	Z: Ø57.2-0.4 war/WAS Ø57.5±0.2, R0.8+0.2/-0.1, 0.1±0.1 und/AND Ø55.5±0.1 neu/NEW; Haertespezifikation/HARDNESS SPECIFICATION aktualisiert/UPDATED; 20170731
	0	<C>				
	0	PTC	b	1x	C003551M1P2	W: 2±0.5 war/WAS 11.4±0.5 — 20160530
CAD Pro/Engineer			a	4x	C002551M1P1	W: 11.4±0.5 neu/NEW, 4±0.3 entf./DEL., 3±0.5 war/WAS 1.5±0.3, Ø79.8+0.2 war/WAS 0.2+0.1 — 20160404
			--	--	C002439CP1	Spezifikationsreifegrad 3 erteilt SPECIFICATION MATURITY LEVEL 3 APPROVED — 20151126
Massstab / SCALE M: 1:1 (--)			Buchst. CHANGE INDEX	Anzahl NUMBER	Aend.-Nr. CHANGE ORDER NO.	Aenderung --nur mittels CAD zulaessig FMEA ueberpruefen-- MODIFICATION --ONLY ALLOWED BY CAD; CHECK FMEA-- / Datum DATE

Allgemeintoleranzen fuer Laengenmasse. Form und Lage ISO 2768 - mH gebrochene Kanten, Radien und Winkelmasse ISO 2768 - v
GENERAL TOLERANCES FOR LINEAR DIMENSIONS, FORM AND POSITION ISO 2768 - mH. CHAMFERS, RADII AND ANGULAR DIMENSIONS ISO 2768 - v

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Auswertung der Durchmessermessung erfolgt nach der Gauss-Methode (Arithmetischer Mittelwert)
EVALUATION OF THE DIAMETER MEASUREMENT IS CARRIED OUT ACCORDING TO THE GAUSS METHOD (ARITHMETICAL MEAN VALUE)

Form- und Lagetolerierung FORM AND POSITION TOLERANCES EN ISO 1101	Tolerierung TOLERANCING ISO 8015	Oberflaechenangaben SURFACE TEXTURE GN 4005	Werkstueckkanten BREAK EDGES ISO 13715

Werkstoff / MATERIAL	GCG805000-02_20MnCrS5	GETRAG Getriebe- und Zahnradfabrik Hermann Hagenmeyer GmbH & Cie KG	
oelbenetzte Oberflaeche OIL WETTED SURFACE 0 mm²	Halbzeug SEMI-FINISHED -		
	Gesamtoberflaeche SURFACE AREA 18297 mm²	Masse MASS 0.367 kg	Schutzvermerk nach ISO 16016 beachten PROTECTION PER ISO 16016
Benennung / ITEM NAME: Schaltrad 6. Gang SPEED GEAR 6TH	Artikel-Nr./ ITEM NO. 2511109250 CAD-Modell- 2511109250	Blatt/SHEET 1 von/OF 1	Reifegrad MATURITY 3 / Format SIZE A1
Ersatz fuer SUBSTITUTE FOR -	INTRALINK DATA Zchng / DRW: MODEL:	CHECKED IN BY Petra.Kaufmann Petra.Kaufmann	CHECKED IN ON: dd mm yyyy hh:mm:ss 31.07.2017 09:01:09 31.07.2017 09:01:09 / VERSION 10 10+