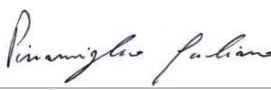


	Test report n.	568-QL18-R01 ver.0
	Applicant/ Antragsteller	Fondmetal S.p.A. Via Bergamo, 4 24050 Palosco (BG) Italy
	EUT/Type	PKW-Rad - Type FMI01_8519


GUTACHTEN über die Dauerfestigkeit von Rädern
Strength Certificate for Wheels

Nr. 568-QL18-R01 ver.0

Adressen Addresses		
Antragsteller Applicant	Fondmetal S.p.A. - Via Bergamo, 4 - 24050 Palosco (BG) Italy	
Hersteller Manufacturer	YHI Manufacturing (Malaysia) Sdn. Bhd. - 3533, Jalan P.B.R 28, Kawasan Perindustrian Bukit Rambai , 75250 Melaka, Malaysia	
Prüflabor Test laboratory	Qualilab s.r.l. Via Trento, 87 25020 – Capriano del Colle (BS)	
Daten und Berechtigungen Dates and authorization		
Datum Bericht und Test Report and test date	Siehe Punkt VI / See point VI	
Unterschriften Authorization	Giuliano Pizzamiglio Testing Engineer	 
	Ing. Carsten Seyring Reviewer	
Prüfgegenstand (Herstellerangaben) Equipment under test (declared by the applicant)		
Prüfgegenstand Description equipment under test	PKW-Rad /Wheel for Passenger Cars	
Typ Type	FMI01_8519	
Modell Model	-	
Radgröße Wheel dimension	8,5Jx19 EH2+	
Anzuwendende Normen Applicable norms		
	<p>Die Dauerfestigkeit, der hier beschriebenen Räder, wurde gemäss der "Richtlinien für die Prüfung von Sonderrädern für Kfz und ihren Anh. BMV/StV 13/36.25.07-20.01, VkB1 S 1377" vom 25.11.1998 und ECE-R 124 Änd. 00 Erg. 01 geprüft.</p> <p>The strength resistance of the wheels described in this report were tested in accordance with the "guidelines for the testing and inspection of special wheels for motor vehicles and their trailers BMV/StV 13/36.25.07-20.01, VkB1 S 1377" from 25th of November 1998 and ECE-R 124 Supp. 00 amend. 01</p>	

The test results and observations indicated in this test report refer exclusively to the samples tested. It is not permitted to transfer the results to other systems or configurations. The publication or duplication of this test report with enclosures, or Part of this test report or enclosures, without a written consent of the test laboratory is not permitted. The test laboratory not assumes any liability to any party for any loss, expense or damage occasioned by the use of this report. Any use of the laboratories name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by the test laboratory. In case of a multilingual test report, the English version is the only official version.

§ 22 51954

	Test report n.	568-QL18-R01 ver.0
	Applicant/ Antragsteller	Fondmetal S.p.A. Via Bergamo, 4 24050 Palosco (BG) Italy
	EUT/Type	PKW-Rad - Type FMI01_8519

0. Zentrierart / Centering type

Mittenzentrierung

Centering on Hub Flange

I. Übersicht / Overview

Ausführung/ Version	Kennzeichnung Rad/Zentrierung Wheel identification/ centering rings	Lochzahl/ Lochkreis/ Mittenloch-Ø [mm] Number of holes/ PCD/ centre hole Ø	ET [mm] offset	Radlast [kg] Wheel load	Abroll- umfang [mm] Rolling circum- ference	Gültig ab Herstell- datum Valid from production date
32 5112M	FMI01_8519 32 5112M / ohne Ring	5/112/57,1	32	730	2275	04/2018
32 5112N	FMI01_8519 32 5112N / ohne Ring	5/112/66,5	40	730	2275	04/2018
40 5112N	FMI01_8519 40 5112N / ohne Ring	5/112/66,5	40	730	2275	04/2018

I.1. Beschreibung der Räder / Description of wheels

Handelsmarke Trade mark	FONDMETAL
Art der Räder Type of wheels	Einteiliges Leichtmetall Rad Aluminum One piece wheels
Korrosionsschutz Corrosion protection	Mehrschicht Einbrennlackierung Multilayer Coating , Baked Paint
Masse des Rades Weight of wheel	13,25 kg * ohne Lackierung / Unpainted * Weigh referes to wheel controlled under I.3

I.2. Radanschluss und Befestigungselemente / Wheel attachment and fastening elements

Siehe Punkt I. Übersicht und Anhaenge

See point I. overview and enclosures

I.3. Kennzeichnung der Räder / Wheel identification


An den Rädern wird folgende Kennzeichnung an der Außen- bzw. Innenseite eingegossen bzw. eingeprägt, siehe Beispiel Radausführung 40 5112N

The following identification will be casted or impressed on the inner and/or outer side of the wheel , see sample wheel version 40 5112N

	Außenseite / Outer side	Innenseite / Inner side
Herstellerzeichen / Manufacturer sign	-	FONDMETAL
Radtyp / Wheel type	-	FMI01_8519
Radausführung / Version	-	s.p. I Übersicht / overview
Radgröße / Wheel dimension	-	8,5Jx19 EH2+
Einpreßtiefe / Offset	-	s.p. I Übersicht / overview
Herstellungsdatum / Date of manufacturing	-	Monat und Jahr
Herkunftsmerkmal / Origin	-	Made in Malaysia
Gießerei-kennzeichnung / Casting identification	-	-
KBA Nummer / KBA number	KBA 51954	-
ECE Nummer / ECE number	E3 124R-013083	-

Zusätzlich können auf der Radinnenseite bzw.-außenseite verschiedene Kontrollzeichen angebracht sein.

Additionally other control labels could be affixed on the outer- or inner side of the wheel.

	Test report n.	568-QL18-R01 ver.0
	Applicant/ Antragsteller	Fondmetal S.p.A. Via Bergamo, 4 24050 Palosco (BG) Italy
	EUT/Type	PKW-Rad - Type FMI01_8519

I.4. Verwendungsbereich / Application field

Die Räder sind fuer Personenkraftwagen vorgesehen.

The wheels are designated to be mounted on passenger cars.

II. Radprüfung / Wheel testing

Die Dauerfestigkeit, der hier beschriebenen Räder, wurde gemäss der "Richtlinien für die Prüfung von Sonderrädern für Kfz und ihren Anh. BMV/StV 13/36.25.07-20.01, VkBl S 1377" vom 25.11.1998 und ECE-R 124 Änd. 00 Erg. 01 geprüft.

The strength resistance of the wheels described in this report were tested in accordance with the "guidelines for the testing and inspection of special wheels for motor vehicles and their trailers BMV/StV 13/36.25.07-20.01, Vkl S 1377" from 25th of November 1998 and ECE-R 124 Supp. 00 amend. 01

II.1. Felge / Rim

Die Maße und Tolleranzen der Felgenkontour entsprechen der E.T.R.T.O. Norm.

Dimensions and tollerances of the rim-contour are in accordance with the E.T.R.T.O.

II.2. Werkstoffe der Räder / Materials of wheels

Zusammensetzung, Festigkeitswerte und Korrosionsverhalten des Werkstoffes sind in der Beschreibung des Herstellers aufgefuehrt; diese Angaben wurden durch uns nicht ueberprueft.

Composition, strength values and corrosion behaviour of the materials are listed in the technical description of the manufacturer, these data are not verified by us.

II.3. Festigkeitsprüfung / Strength test

II.3.1. Dauerfestigkeitsprüfung / Endurance strength test

Prüfinstrument / Measurement instrument:

LEONARDO FR12 QL internal n° QL-IN-069 and Inmess RBT-8K internal n° QL-IN-089

Ausführung/ Version	Lochzahl/Loch- kreis [mm]/ Number of holes / PCD / centre hole Ø	ET [mm] Offset	Radlast [kg] Wheel load	Abroll- umfang [mm] Rolling circumference	Prüfmoment Mb max bei 100% [Nm] Bending moment	Anzahl Kurz- zeittest Short time test qty	Anzahl Lang- zeittest Long time test qty
32 5112M	5/112/57,1	32	730	2275	5126	-	-
32 5112N	5/112/66,5	32	730	2275	5126	1	1
40 5112N	5/112/66,5	40	730	2275	5240	1	1

Die Prüfung wurde mit positivem Ergebnis abgeschlossen.

The test was performed with positive result.

II.3.2. Abrollprüfung / Rim rolling test

Prüfinstrument / Measurement instrument:

Rim rolling machine GOAL QL internal n° QL-IN-068

Ausführung/ Version	Lochzahl/Loch- -kreis-[mm]/ Number of holes/ PCD / centre hole Ø	ET [mm] Offset	Radlast [kg] Wheel load	Prüf- last [daN] Test Load	Reifengröße Tire dimension	Reifenfüll- druck [bar] Tire pressure	Prüf- distanz [km] Test distance	Anzahl Abroll- test Rolling- Test qty
32 5112N	5/112/66,5	32	730	1791	275/55 R19	4,5	2000	1
40 5112N	5/112/66,5	40	730	1791	275/55 R19	4,5	2000	1

Die Prüfung wurde mit positivem Ergebnis abgeschlossen. Alle anderen Versionen sind abgeleitet.

The test was performed with positive result. All other versions are derived.



Test report n.	568-QL18-R01 ver.0
Applicant/ Antragsteller	Fondmetal S.p.A. Via Bergamo, 4 24050 Palosco (BG) Italy
EUT/Type	PKW-Rad - Type FMI01_8519

II.3.3. Impact Prüfung / Impact test

Prüfinstrument / Measurement instrument:
Impact tester INMESS QL internal n° QL-IN-153

Ausführung/ Version	Lochzahl/Lochkreis [mm]/ Number of holes/ PCD / centre hole Ø	ET [mm] Offset	Radlast [kg] Wheel load	Fallmasse [kg] Impact weight	Reifengröße Tire dimension	Reifenfüll- druck [bar] Tire pressure	Anzahl Impact- test Impact-Test qty
32 5112M	5/112/57,1	32	730	-	-	-	-
32 5112N	5/112/66,5	32	730	618	225/30 R19	2,0	2
40 5112N	5/112/66,5	40	730	618	225/30 R19	2,0	2

Die Prüfung wurde mit positivem Ergebnis abgeschlossen.
The test was performed with positive result.

III. Prüfergebnis / Test result

Aufgrund der durchgeführten Prüfungen bestehen keine technischen Bedenken o.g. Räder an den in Verwendungsbereichsgutachten genannten Fahrzeugen und den dort aufgeführten Bedingungen zu verwenden.
Based on the performed tests there are no technical objections to apply the wheels described above to the vehicles listed in the application certificate under fulfillment of the mounting conditions.

IV. Hinweis / Note

V. Anlagen /Enclosures

Beschreibung / Technical description : Radzeichnung / Drawing n° : FMI01_8519	Date 11/05/2018 rev.0 date 04/04/2018
--	--

VI. Datum Bericht und Test /Report and test date

Ver. 0: 15/05/2018 - Test Date: From 07/05/2018 to 14/05/2018

§ 22 51954

WHEEL DESCRIPTION

Please find details of wheels supplied to TUV for testing listed below.

Certification request: Strength Certificate (Dauerfestigkeit) + ABE Document

1. General information

- Wheel Type: FMI01_8519
- Wheel Size: 8.5 J x 19" EH2+
- Tyre type: Tubeless
- Snow chain: See TUV indications
- Face Parallelity and Roundness of Rim: 0.30 mm
- Rim Base: According To Std. E.T.R.T.O.
- Valve Type: Customer Own (STD E.T.R.T.O. 11.3F)
- Balancing Weights: Only Adhesive

2. Applications

- All models homologated

3. Measurement and other

PART NUMBER		ET	PCD	C.B.	Rings	Bolt & Nuts	Application
FMI01_8519	32 5112M	32	5x112	57.1	-	OE BOLT V035	Audi, BMW, Infiniti, Mercedes, Seat, Skoda, Volkswagen
FMI01_8519	32 5112N	32	5x112	66.5	-	OE BOLT V035	Audi, BMW, Infiniti, Mercedes, Seat, Skoda, Volkswagen
FMI01_8519	40 5112N	40	5x112	66.5	-	OE BOLT V035	Audi, BMW, Infiniti, Mercedes, Seat, Skoda, Volkswagen

4. Drawings / Accessories

- Wheel drawing numbers: FMI01_8519__5 rev 0
- Centering: See draw in attachment
- Hubcap: See draw in attachment
- Valve: See draw in attachment
- Wheel Bolt/Nut: See draw in attachment
- Starting Torque the Wheel Nuts: See TUV Indication

5. Construction

- Wheel Standard: E.T.R.T.O.
- Construction: One Piece Wheels
- Design: Fondmetal Wheels

6. Description of the Wheel Manufacturing

- Features: Gravity casting
- Heat treatment: No
- Machining Process: Fully CNC Machined & CNC drilling
- Varnishing: 3 layer, powder coat, colour paint, lacquer

7. Material

- Material: Aluminium alloy G-Al Si10 Cu
- Enervations load: Rp02 70 N/mm2
- Tension strength: Rm 140 N/mm2
- Elongation: A 2%
- Density: 2.65 kg/dm3
- Hardness: Min. 50 HB
- Chemical Analysis:

Silicio Si%	Rame Cu%	Ferro Fe%	Manganese Mn%	Cromo Cr%	Zinco Zn%	Magnesio Mg%	Titanio Ti%	Altro %
6.5 - 7.5	≤ 0.02	≤ 0.15	≤ 0.02	≤ 0.01	≤ 0.03	0.28 - 0.35	0.08 - 0.15	≤ 0.02
Nichel Ni%	Piombo Pb%	Stronzio Sr%	Sodio Na%	Calcio Ca%	Potassio P%	Antimonio Sb%	Cadmio Cd%	Bismuto Bi%
≤ 0.003	≤ 0.0012	0.005 0.012	≤ 0.001	≤ 0.003	≤ 0.001	≤ 0.003	≤ 0.003	≤ 0.003

8. Corrosion Consistency of the Material

- Against influence of the water: Very good
- Against seawater: Very good - Minimum 384 hours Corrosion Protection to UNI ISO 9227

9. Quality Control

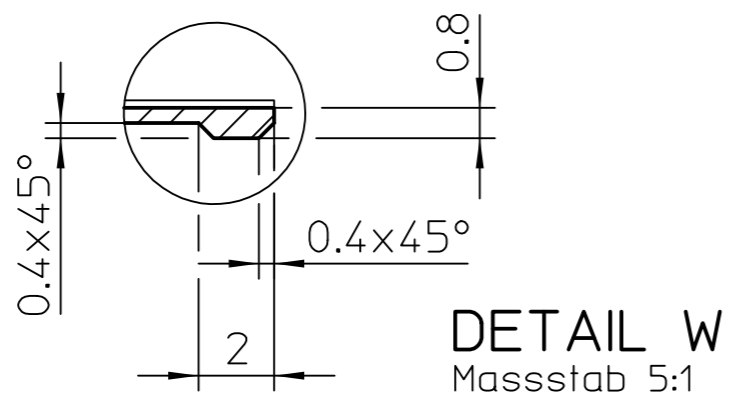
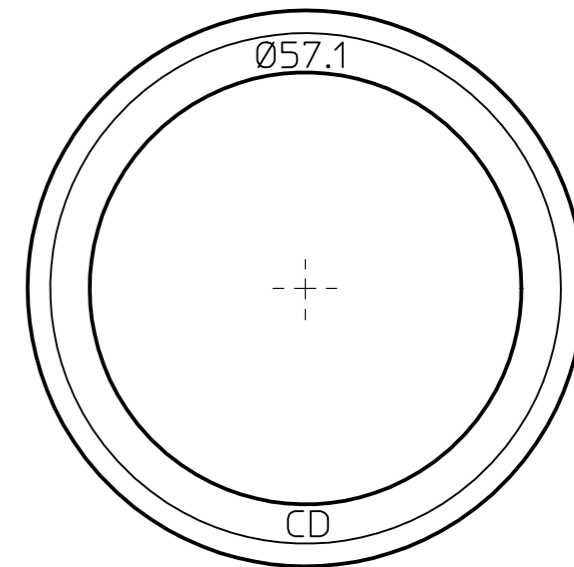
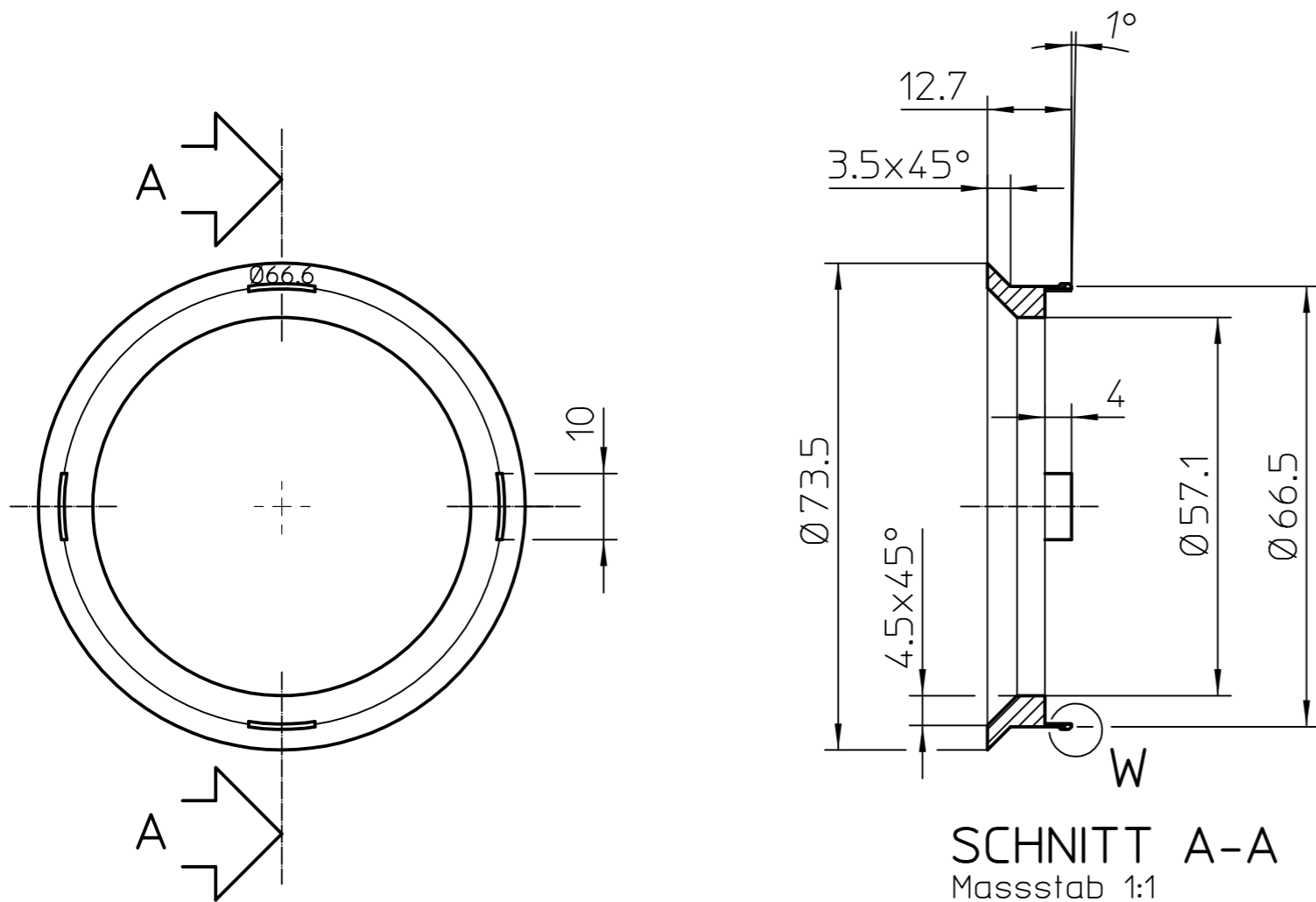
- Material Analysis
- 100% X-Ray Analysis
- Dimensional Inspection Throughout manufacture
- Statistical Process Control on Critical Dimensions
- A 100% tubeless
- A 100% visual inspection

10. Production plant

- Casting: YHI Manufacturing (Malaysia) Sdn. Bhd.
3533, Jalan P.B.R 28,
Kawasan Perindustrian Bukit Rambai,
75250 Melaka, MALAYSIA
- Machining Process: YHI Manufacturing (Malaysia) Sdn. Bhd.
3533, Jalan P.B.R 28,
Kawasan Perindustrian Bukit Rambai,
75250 Melaka, MALAYSIA
- Varnishing / Paint Finish: YHI Manufacturing (Malaysia) Sdn. Bhd.
3533, Jalan P.B.R 28,
Kawasan Perindustrian Bukit Rambai,
75250 Melaka, MALAYSIA
- Finish Control: YHI Manufacturing (Malaysia) Sdn. Bhd.
3533, Jalan P.B.R 28,
Kawasan Perindustrian Bukit Rambai,
75250 Melaka, MALAYSIA
- Dispatch/Delivery: Fondmetal Spa, Via Bergamo, Palosco BG

2018-05-11

Ufficio tecnico Fondmetal



DENOMINAZIONE: Beschreibung		ANELLINO DI CENTRAGGIO			
 Via BERGAMO 4, PALOSCO (BG) ITALY www.fondmetal.com	CODICE PARTICOLARE Teilenummer	AA 01			
	DISEGNO N° Zeichnung Nr.	1AN_AA01			
	MATERIALE Werkstoff	PA66 FV20			
	FINITURA Lackierung	Plastica ROSSO			
	Riferim. Cod. BIMECC Referenz-code BIMECC	AP666571			
	DISEGNATO DA Gezeichnet von	S. FORESTI			
	CONTROLLATO DA Überprüft von	S. RAINERI			
	DATA Datum	22/04/2015	SCALA Maßstab	1:1 (5:1)	
	REV.	A0			

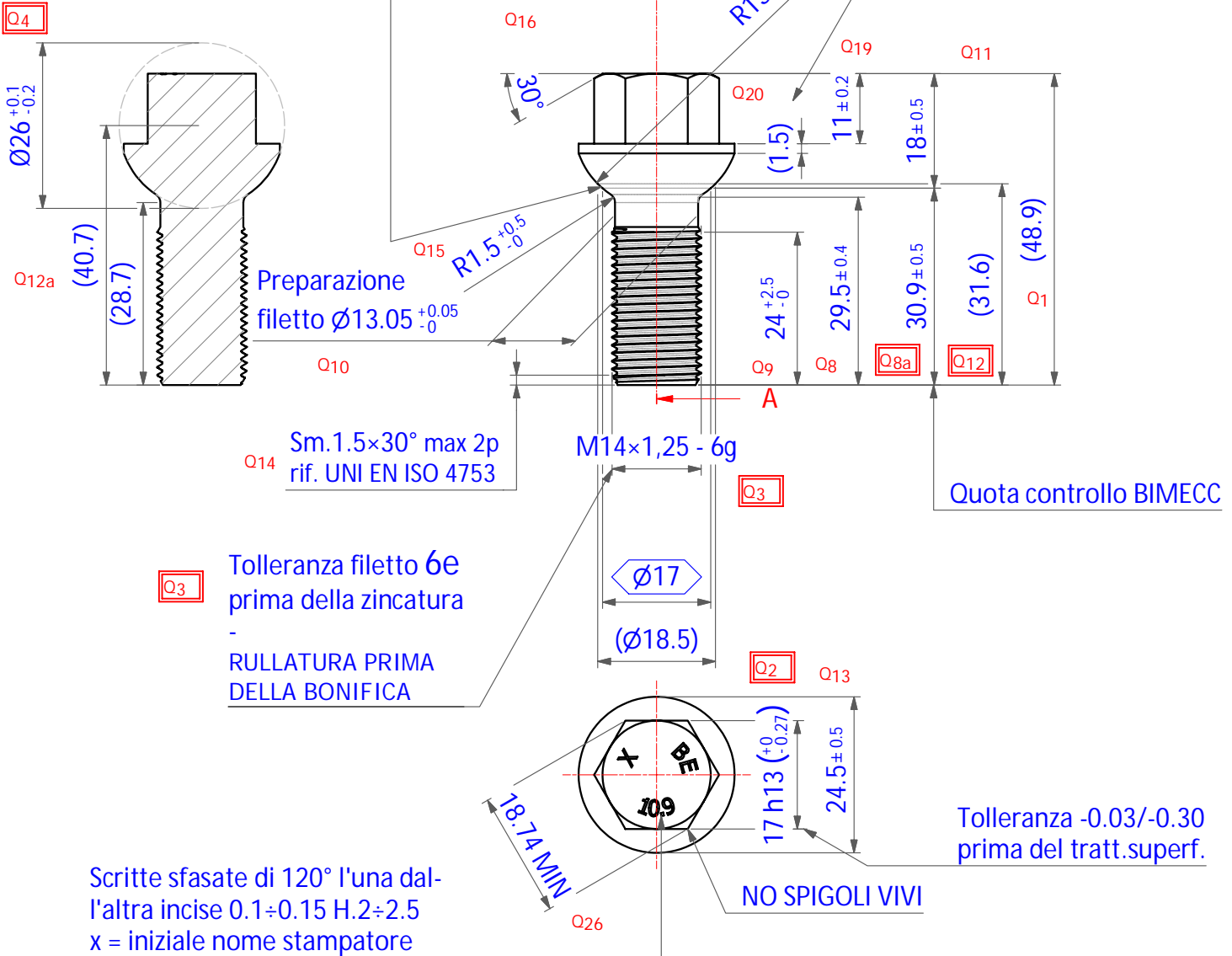
ALLE EIGENTUMSRECHTE VON FONDOMETAL S.P.A. VORBEHALTEN. DER NACHDRUCK ZUR HERSTELLUNG DER HIER DARGESTELLTEN TEILE SOWIE DIE WEITERGABE AN DRITTE DIESER ZEICHNUNG IST, OHNE SCHRIFTLICHE GENEHMIGUNG SEITENS FONDOMETAL S.P.A., UNTERSAGT. JEDLICHE ZUWIDERHANDLUNG WIRD STRAFRECHTLICH VERFOLGT.

TUTTI I DIRITTI DI PROPRIETA' SONO RISERVATI A FONDOMETAL S.P.A.. SENZA AUTORIZZAZIONE DELLA STESSA SE NE VIETA SIA LA RIPRODUZIONE ANCHE SOLO PARZIALE PER LA COSTRUZIONE DEI PEZZI RAPPRESENTATI, SIA LA COMUNICAZIONE A TERZI DEL PRESENTE DISEGNO. QUALSIASI INOSSERVANZA VIENE PUNITA A NORMA DI LEGGE.

A-A (1 : 1)

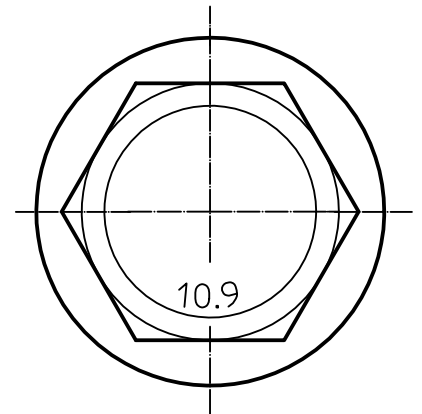
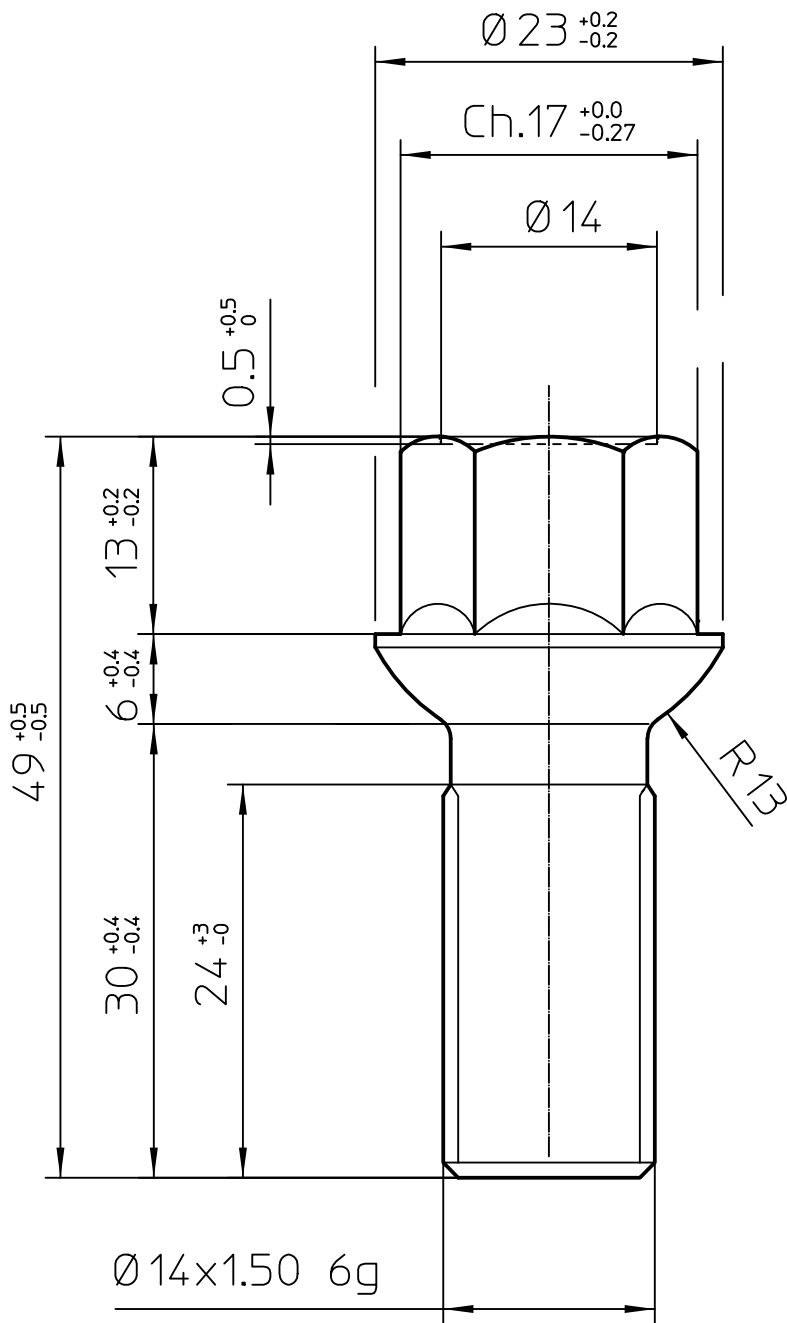
Eeguire profilo sferico esente da imperfezioni e intagli

Questo spessore deve essere uniforme per ragioni estetiche



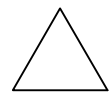
02	09/10/2014	Aggiornato tolleranza Q4 e messo su vista A-A la quota diametrale della sfera con relativa tolleranza (D.A.)
01	08/09/2014	Aggiornato disegno per produzione da stampaggio come art. 003.0013.004.04 (A) cliente (UT+UCOM)
alpha2	27/08/2014	DISEGNO PROVVISORIO
00	08/05/2014	Emissione disegno con codice definitivo
alpha	18/04/2014	Emissione disegno provvisorio per proposta ed analisi offerta, considero di usare C17F27 come sbizzato (D.A.)

REV	DATA	UPDATE		
SMUSSI NON QUOT.	SM=0.5x45°	MATERIALE: 30MnB3 UNI EN ISO 898-1 W.N.1.5510 (28B2 UNI EN 10263-4)		
RACCORDI NON QUOT.	R=0.5	TRATTAMENTO TERMICO Bonifica	CLASSE 10.9	DUREZZA HRC 32÷39
Bimecc engineering		Trattamento di protezione superficiale T.P.S. DeltaProtekt KL100 - NSS min. 240 h		
Via Volta 18/20/26/28 35030 Veggiano PADOVA ITALY www.bimecc.it		NOTE Tolleranza filetto prima della zincatura 6e Qx rif. x docs qualità --> vedi mod. SGV		
Quote senza indicazione di tolleranza secondo UNI EN ISO 22768 - mK, con specifiche a relative norme per: - viti, viti prigioniere e dadi riferirsi inoltre a UNI EN ISO 898-1, 2, 6 UNI EN ISO 4759-1 e UNI EN 26157 - rondelle UNI EN ISO 4759 - 3		LAV. GENERALE 1/6		
Descrizione articolo Vite sferica R.13 Ch.17 M14x1.25 S.29,5 L.48,9 Øe24,5 CL10.9 - KL100		PESO G. 76,2 g		
Questo disegno è proprietà di "Bimecc Engineering S.p.A. - a socio unico" e non può essere riprodotto, né comunicato a terzi senza ns autorizzazione scritta		SCALA 1:1		
		DIS. DATA 27/08/2014		
		VISTO Creato da: Davide AGGUJARO Ultima > modifica: Davide AGGUJARO		
		CODICE DB/PF:		
		CODICE S17F29-KL100		



DENOMINAZIONE:
Beschreibung

VITE M14 x 1.5 ch.17



CODICE PARTICOLARE
Teilenummer

V036

DISEGNO N°
Zeichnung Nr.

V036

TIPO DI VEICOLO
FAHRZEUG TYP

MATERIALE
Werkstoff

10.9



FINITURA
Lackierung

Lanthane

DISEGNATO DA
gezeichnet von

S. RAINERI

Via BERGAMO 4, PALOSCO (BG) ITALY
www.fondmetal.com

CONTROLLATO DA
Überprüft von

G. CORIONI

DATA
Datum

30/11/17

SCALA
Maßstab

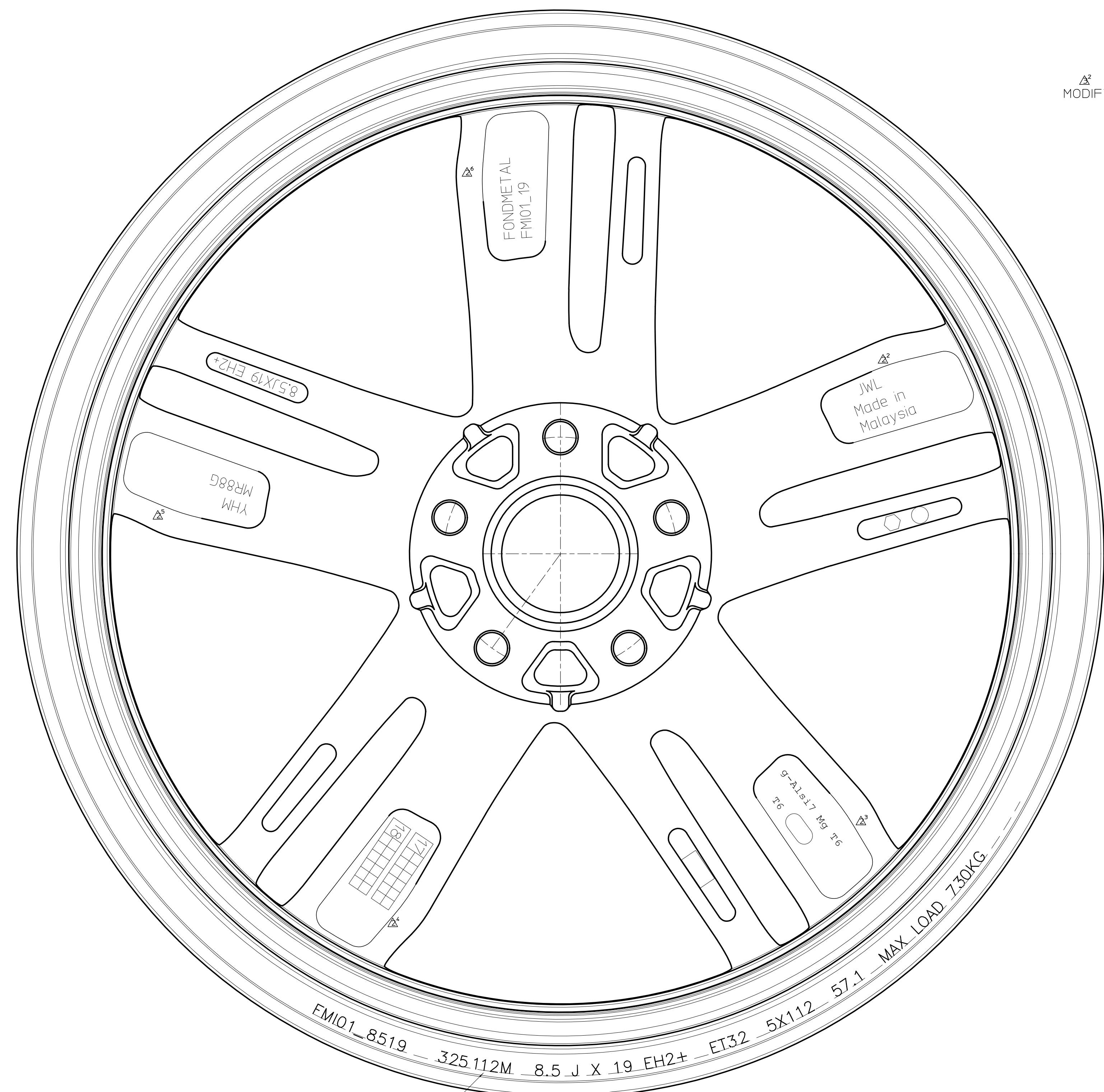
2:1

CODICE BIMECC:
S17D30R13

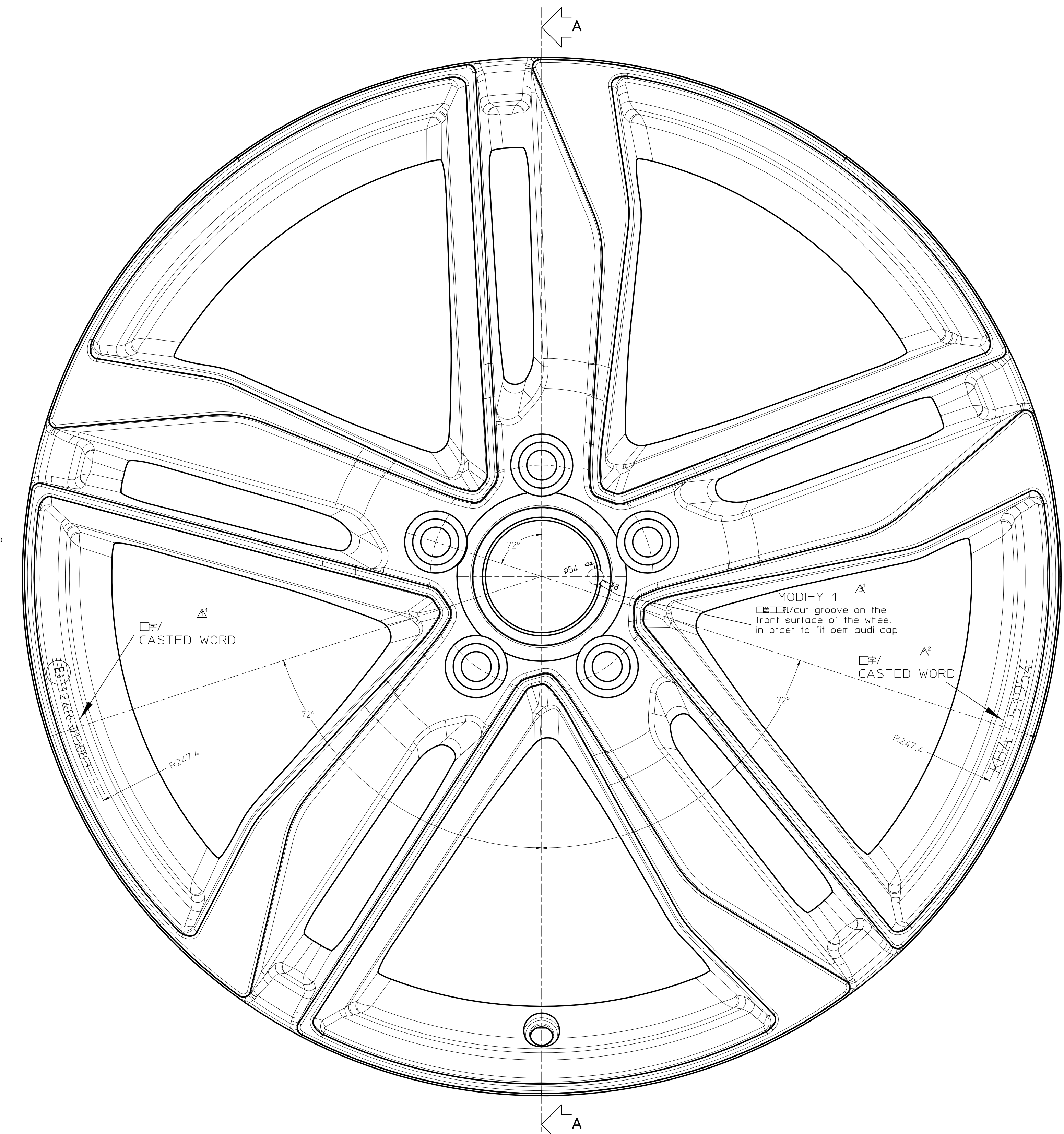
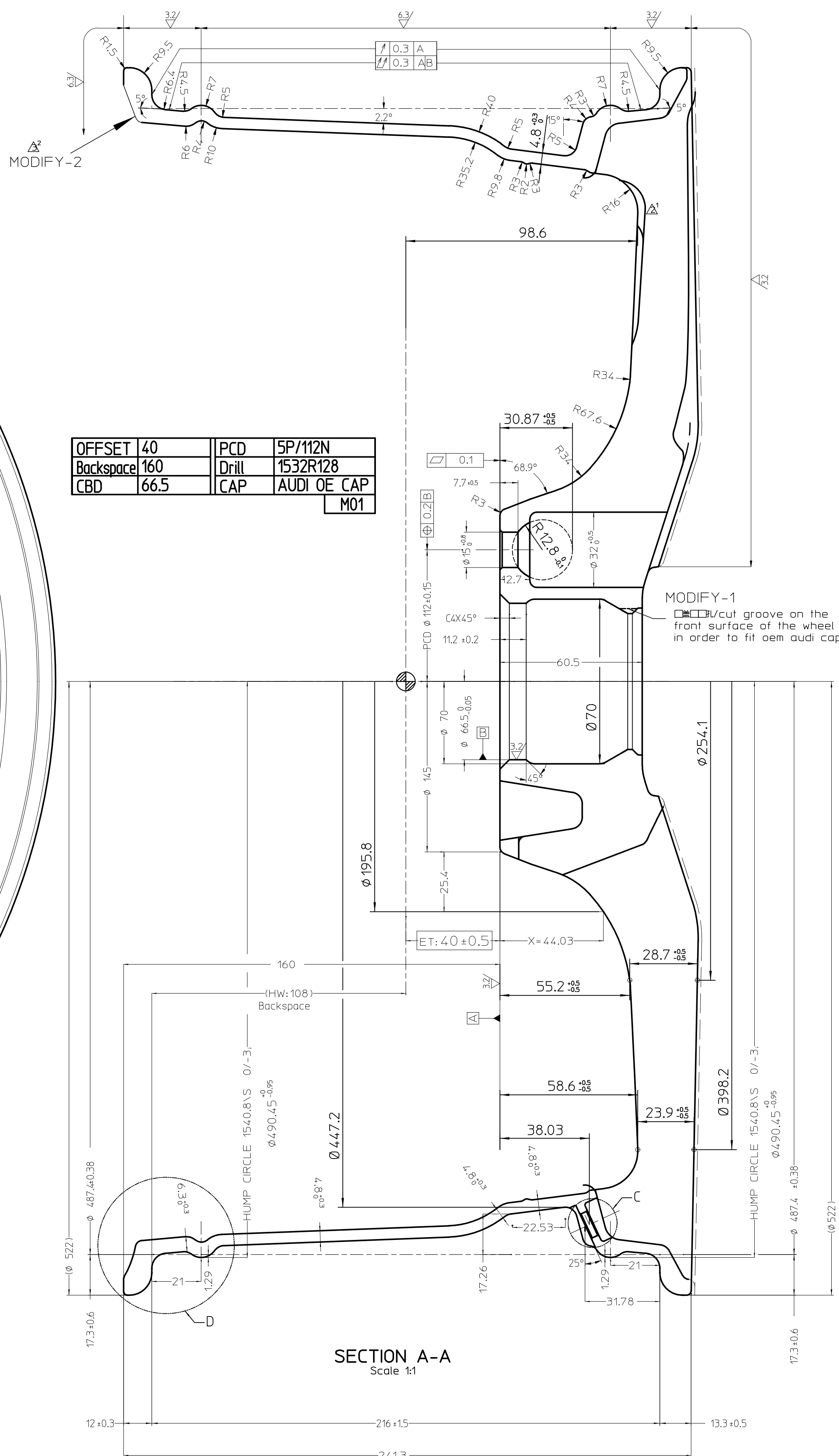
REV.

0

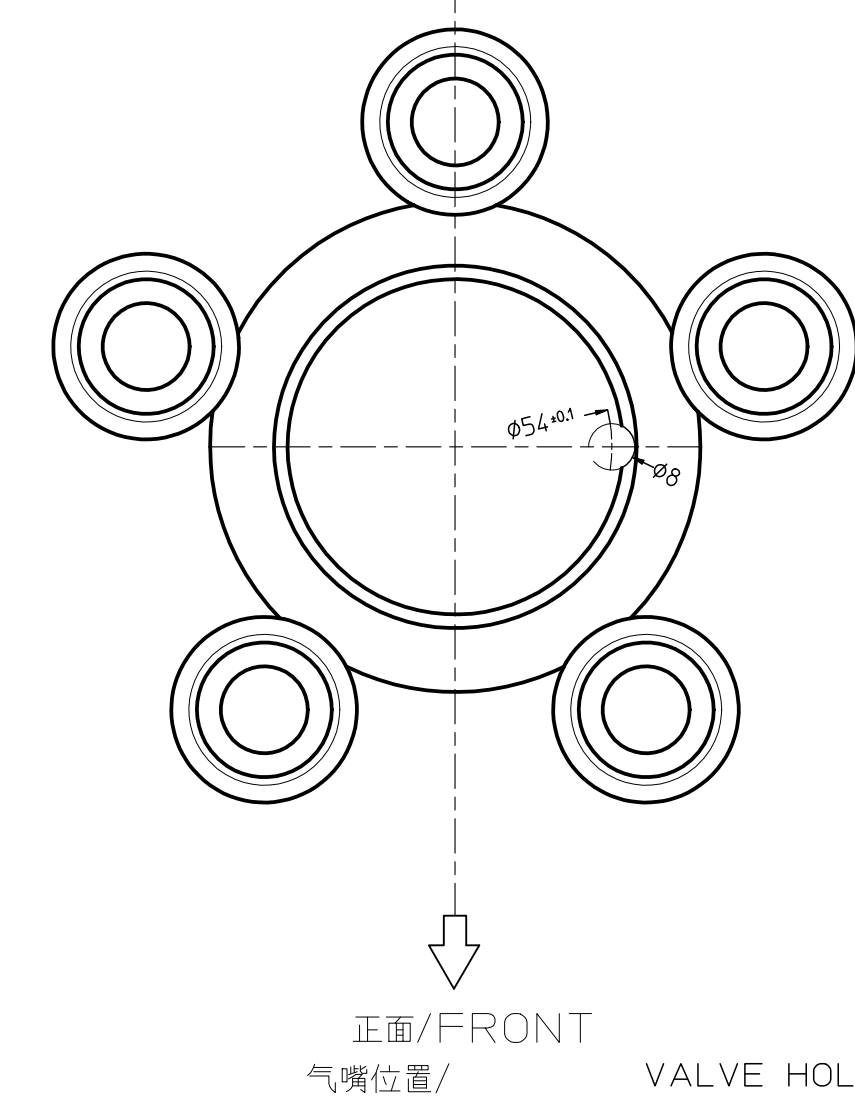
MR88G-1985与 MN635F-985共口模.



Needle Engraving



MODIFY-1
GROOVE ON THE FRONT SURFACE OF WHEEL
正面止口槽位置示意图



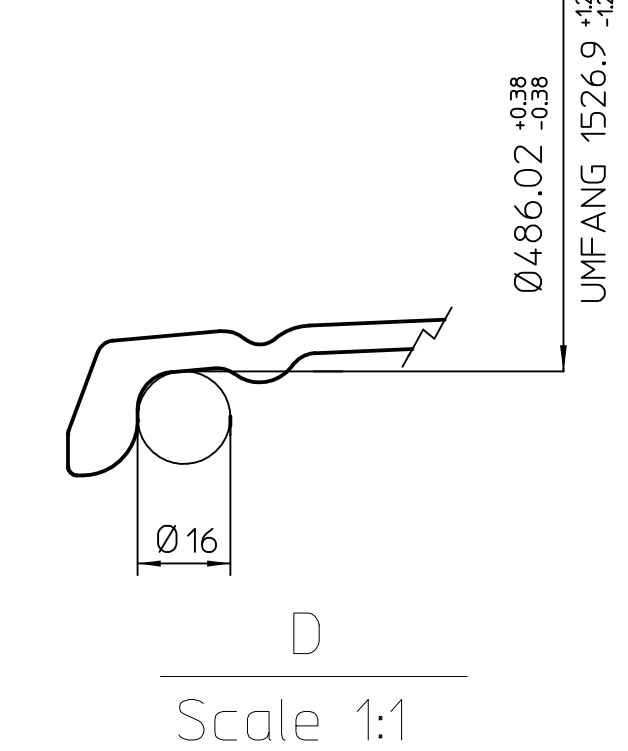
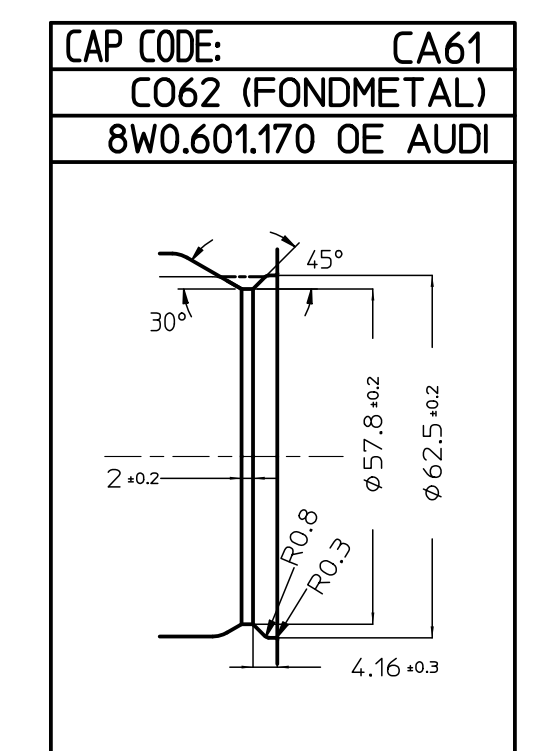
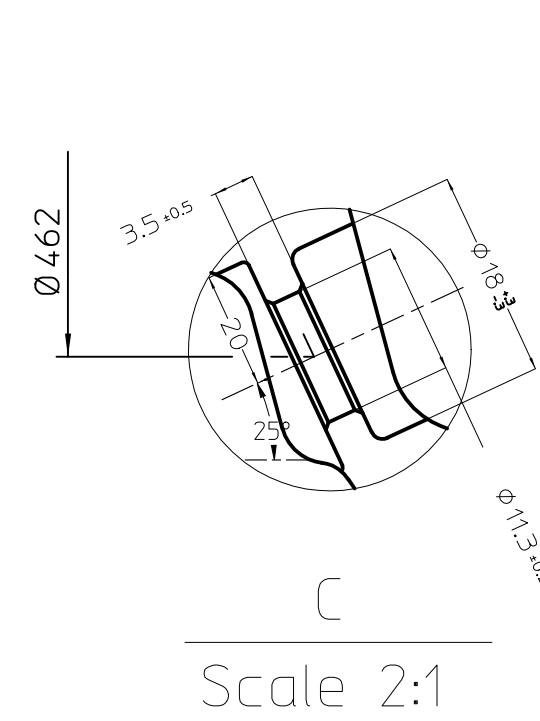
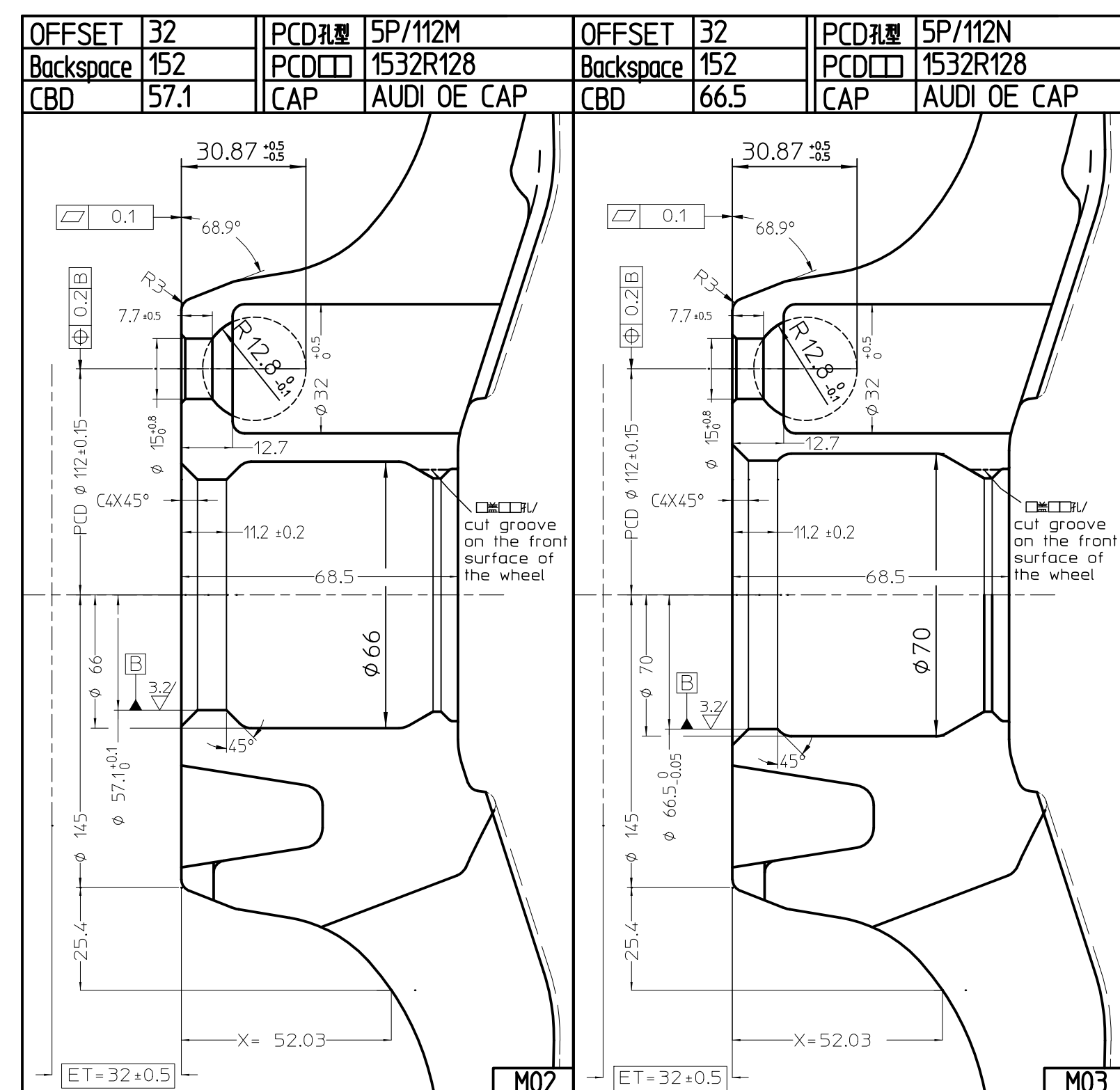
Rear 'J' engrave contents :

SPEC	Content
1 ET32 5X112 57.1	FM101_8519 325112M 8.5JX19 EH2+ ET32 5X112 57.1 MAX LOAD 730KG
2 ET32 5X112 66.5	FM101_8519 325112N 8.5JX19 EH2+ ET32 5X112 66.5 MAX LOAD 730KG
3 ET40 5X112 66.5	FM101_8519 405112N 8.5JX19 EH2+ ET40 5X112 66.5 MAX LOAD 730KG

Inscription Content

Front	Content	Remarks
1	KBA 51954	
2	124R-013083	
3		
Back	Content	Remarks
1	MR88G	Model
2	8.5JX19 EH2+	Size
3	FONDOMETAL FM101_19	Customer Model Code
4	JWL	
5	Made in Malaysia	
6	○	Air Leak Test Staff No.
7	○	CNC Staff No.
8	g-Als17 Mg T6	
9	○	Heat Treatment No.
10	○	Casting Staff No.
11	17	Casting Year/Month
12	18	Casting Year/Month
13	YHM	

CNC Method	M01	M02	M03
PCD Hole	5P	5P	5P
PCD	112N	112M	112N
HUB	66.5	57.1	66.5
PCDD	1532R128	1532R128	1532R128
ET	40	32	32
PAD	Ø145	Ø145	Ø145



TYPE	MODEL	ET	PCD	PCD	PCD	PCD	PCD
8.5JX19EH2+	11	124	112	112	112	112	112
DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
YHI MANSON BHD	YHI MANSON BHD	YHI MANSON BHD	YHI MANSON BHD	YHI MANSON BHD	YHI MANSON BHD	YHI MANSON BHD	YHI MANSON BHD

No.	Name	Part no.	Qty	Material	Remark
4	ALULAB				
For Customer Confirmation					
Customer Version					
Factory model name MR88G -19X8.5-EH2+					
Drawing NO. MR88G_8519EH2+_02					
YHI MANUFACTURING (MALAYSIA) SDN BHD					
Total 1 page Page no. 1 Unit mm Scale 1:1					

Mark	Place	Content	Signature	Date
Δ*	2	ADD GROOVE ON CAP HOLE AND REAR J PROFILE AMEND		14-12-2017
Δ*	6	CHANGE BACKSPACE POCKET PROFILE		23-11-2017
Δ*	2	ADD KBA NUMBER & ECE NUMBER		22-11-2017

Inscription width	height	0.6-0.8mm	Max. Load Index	730KG
More than 1 less than 4	±0.1	Wheel weight KG		
More than 4 less than 16	±0.2	Material	A356-T6	
More than 16 less than 63	±0.3	Designed by		
More than 63 less than 250	±0.5	Checked by		
More than 250 less than 1000	±0.8	Approved by		
More than 1000 less than 2000	±1			