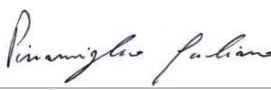


	Test report n.	811-QL18-R01 ver.0
	Applicant/ Antragsteller	Fondmetal S.p.A. Via Bergamo, 4 24050 Palosco (BG) Italy
	EUT/Type	PKW-Rad - Type FMI01_8520


GUTACHTEN über die Dauerfestigkeit von Rädern
Strength Certificate for Wheels

Nr. 811-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_8520	
Modell Model	-	
Radgröße Wheel dimension	8,5Jx20 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.

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	Test report n.	811-QL18-R01 ver.0
	Applicant/ Antragsteller	Fondmetal S.p.A. Via Bergamo, 4 24050 Palosco (BG) Italy
	EUT/Type	PKW-Rad - Type FMI01_8520

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
39 5112M	FMI01_8520 39 5112M / ohne Ring	5/112/57,1	39	900	2400	04/2018
39 5112N	FMI01_8520 39 5112N / ohne Ring	5/112/66,5	39	900	2400	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	15,05 kg * ohne Lackierung / Unpainted * Weigth 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 39 5112N

The following identification will be casted or impressed on the inner and/or outer side of the wheel , see sample wheel version 39 5112N

	Außenseite / Outer side	Innenseite / Inner side
Herstellerzeichen / Manufacturer sign	-	FONDMETAL
Radtyp / Wheel type	-	FMI01_8520
Radausführung / Version	-	s.p. I Übersicht / overview
Radgröße / Wheel dimension	-	8,5Jx20 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 51994	-
ECE Nummer / ECE number	E3 124R-013091	-

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.	811-QL18-R01 ver.0
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	EUT/Type	PKW-Rad - Type FMI01_8520

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, VkB1 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, VkB1 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
39 5112M	5/112/57,1	39	900	2400	6759	1	1
39 5112N	5/112/66,5	39	900	2400	6759	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
39 5112M	5/112/57,1	39	900	2208	305/50 R20	4,5	2000	1
39 5112N	5/112/66,5	39	900	2208	305/50 R20	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.	811-QL18-R01 ver.0
Applicant/ Antragsteller	Fondmetal S.p.A. Via Bergamo, 4 24050 Palosco (BG) Italy
EUT/Type	PKW-Rad - Type FMI01_8520

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
39 5112M	5/112/57,1	39	900	-	-	-	-
39 5112N	5/112/66,5	39	900	720	225/30 R20	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_8520395	Date 04/07/2018 rev.0 date 12/04/2018
---	--

VI. Datum Bericht und Test /Report and test date

Ver. 0: 09/07/2018 - Test Date: From 28/06/2018 to 06/07/2018

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WHEEL DESCRIPTION

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

Certification request: ABE Document

1. General information

- Wheel Type: FMI01_8520
- Wheel Size: 8.5 J x 20" 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_8520	39 5112M	39	5x112	57.1	-	OE BOLT V036	Audi, VW, Seat, Skoda
FMI01_8520	39 5112N	39	5x112	66.5	AA01 (57.1)	OE BOLT V036	Audi, VW, Seat, Skoda, Mercedes, BMW, Infiniti

4. Drawings / Accessories

- Wheel drawing numbers: FMI01_8520395 rev.1
- 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 Si7 Mg - T6
- 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

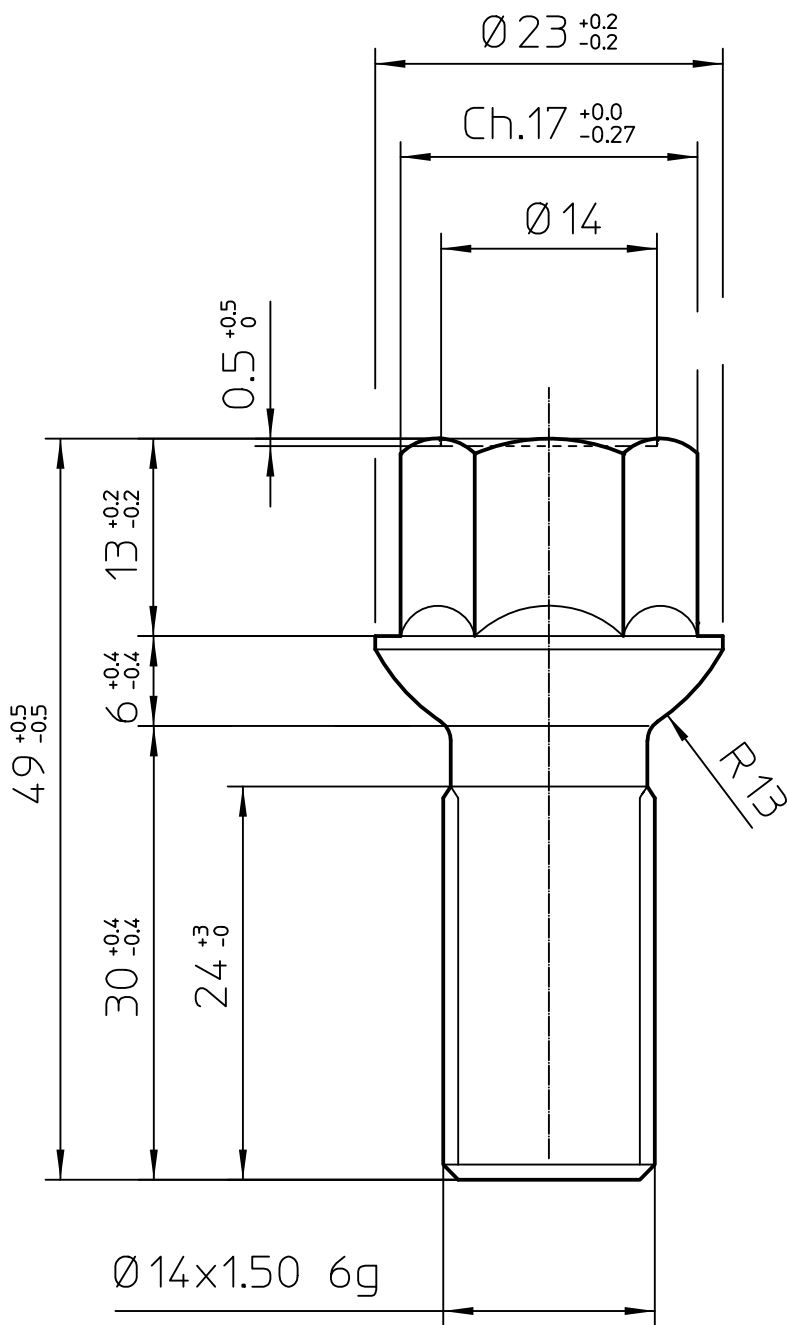
10. Production plant

- 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

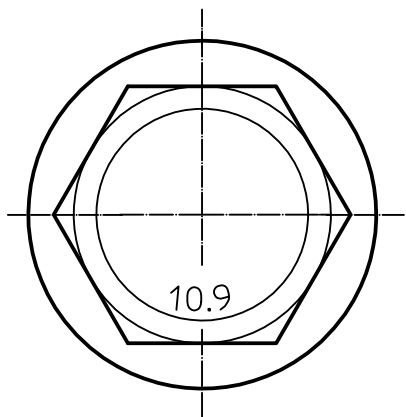
2018-08-05

Ufficio tecnico Fondmetal

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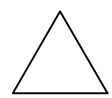


Ø 14x1.50 6g



DENOMINAZIONE:
Beschreibung

VITE M14 x 1.5 ch.17

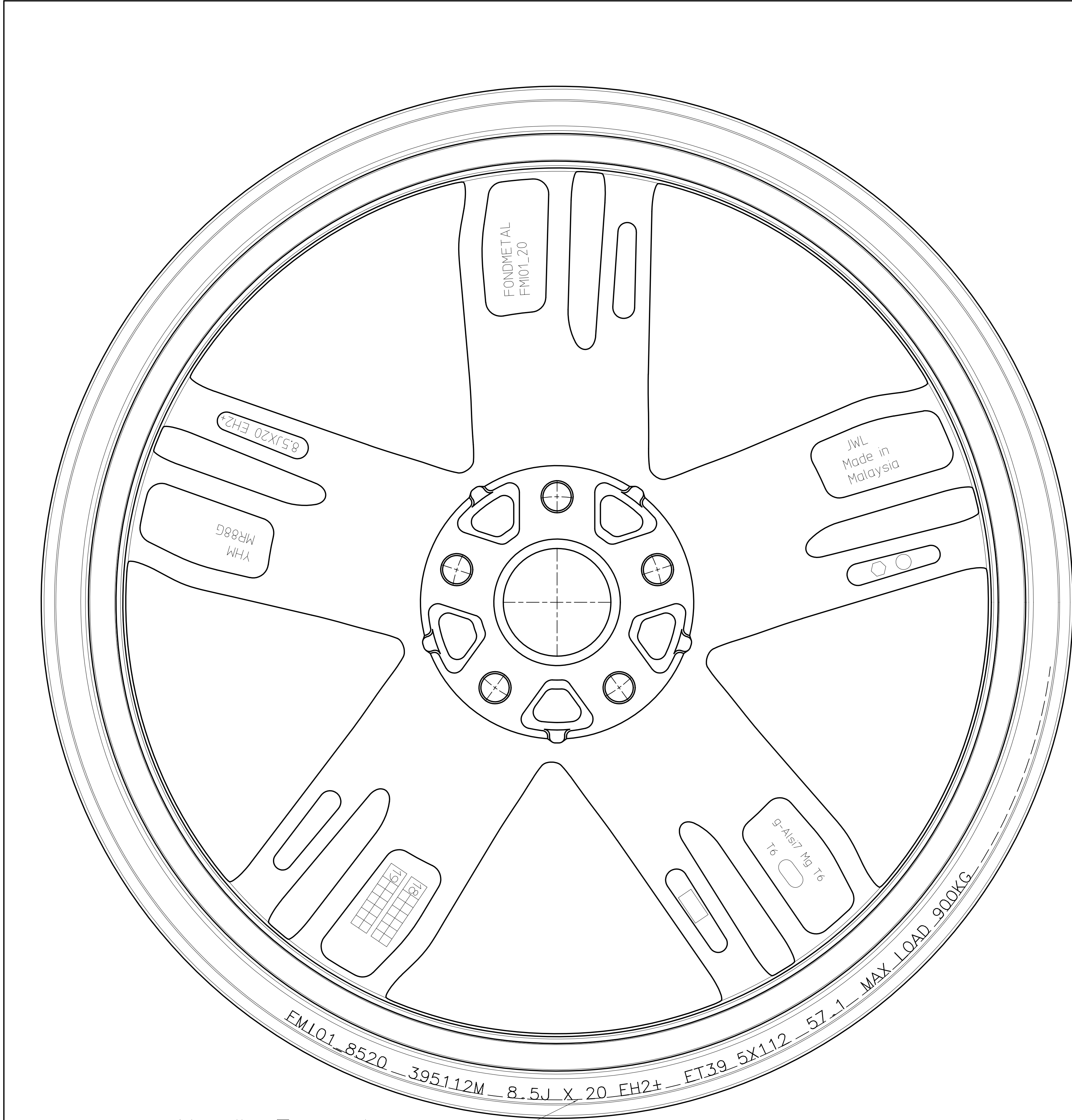


Via BERGAMO 4, PALOSCO (BG) ITALY
www.fondmetal.com

CODICE PARTICOLARE Teilenummer	V036
DISEGNO N° Zeichnung Nr.	V036
MATERIALE Werkstoff	10.9
FINITURA Lackierung	Lanthane
DISEGNATO DA gezeichnet von	S. RAINERI
CONTROLLATO DA Überprüft von	G. CORIONI
DATA Datum	30/11/17
SCALA Maßstab	2:1
REV.	0

TIPO DI VEICOLO
FAHRZEUG TYP

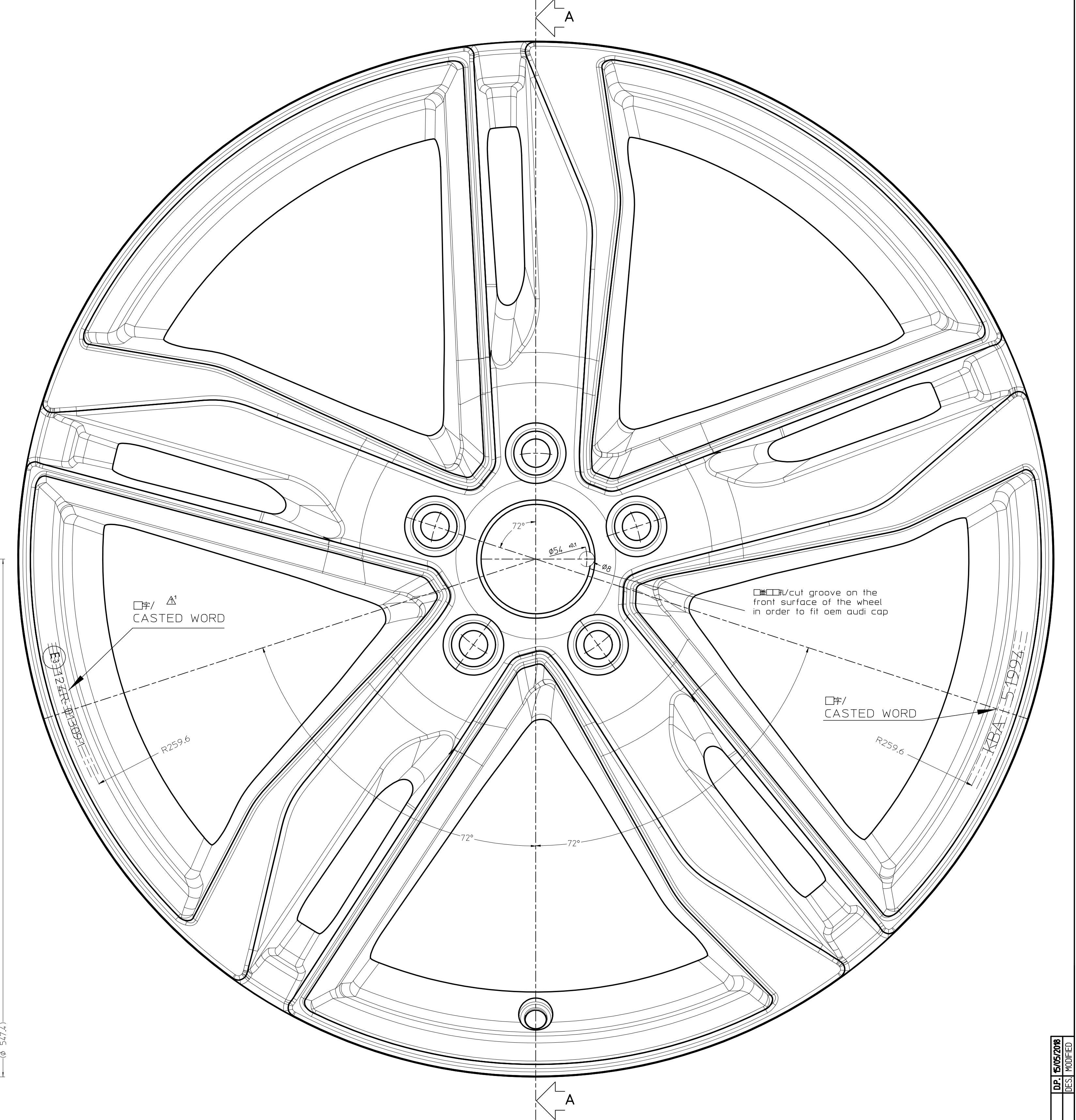
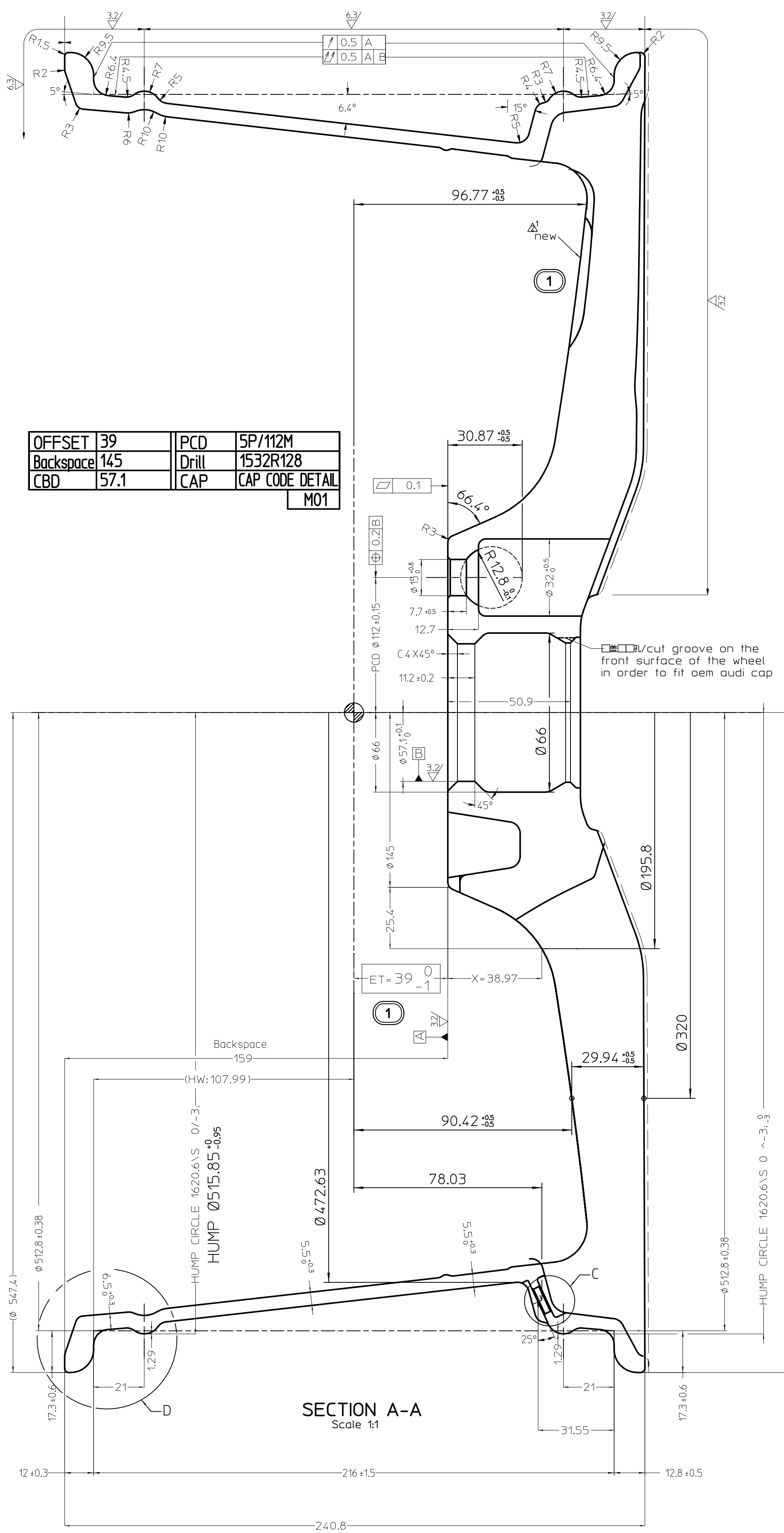
CODICE BIMECC:
S17D30R13



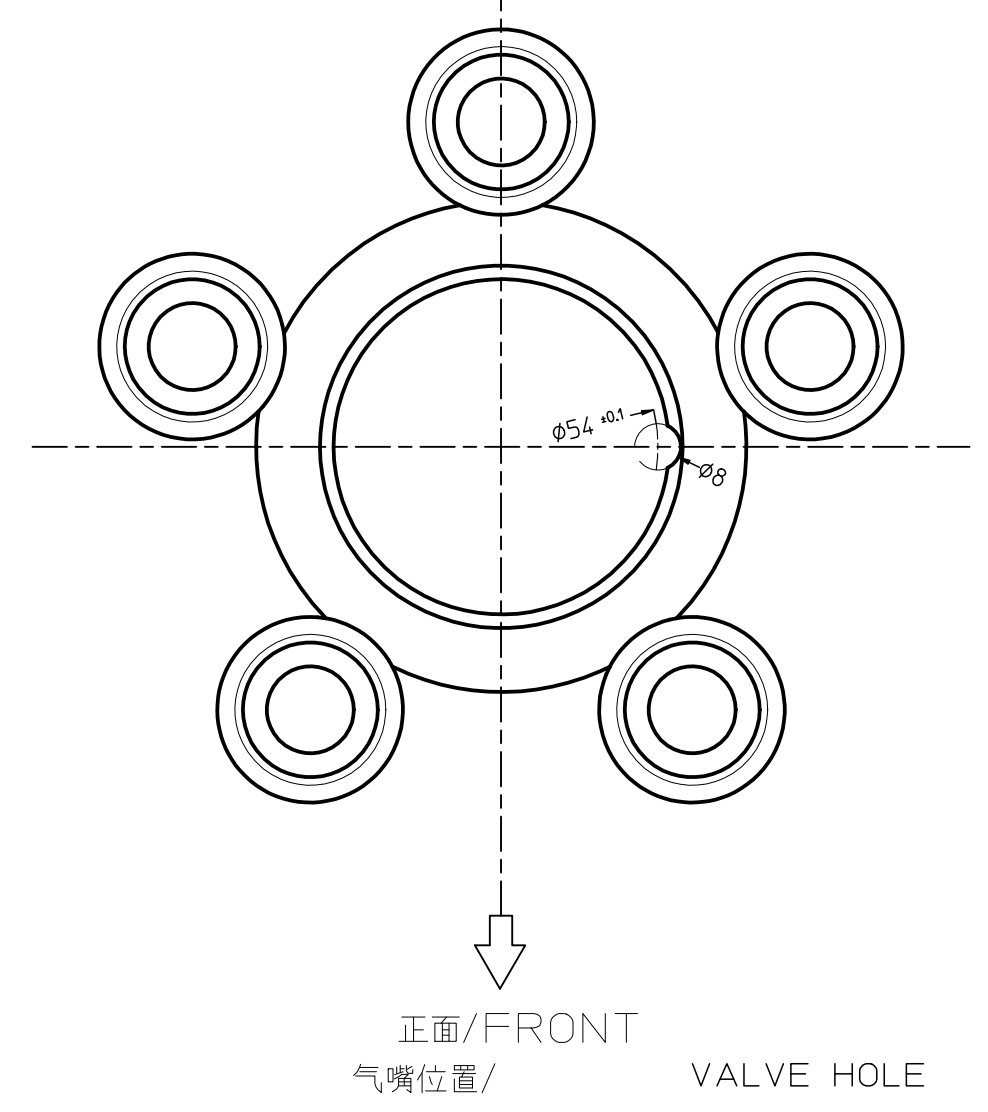
Needle Engraving

Rear 'J' engrave contents :

SPEC	Content
1 ET39 5X112 57.1	FM101_8520 395112M 8.5JX20 EH2+ ET39 5X112M 57.1 MAX LOAD 900KG
2 ET39 5X112 66.5	FM101_8520 395112N 8.5JX20 EH2+ ET39 5X112N 66.5 MAX LOAD 900KG

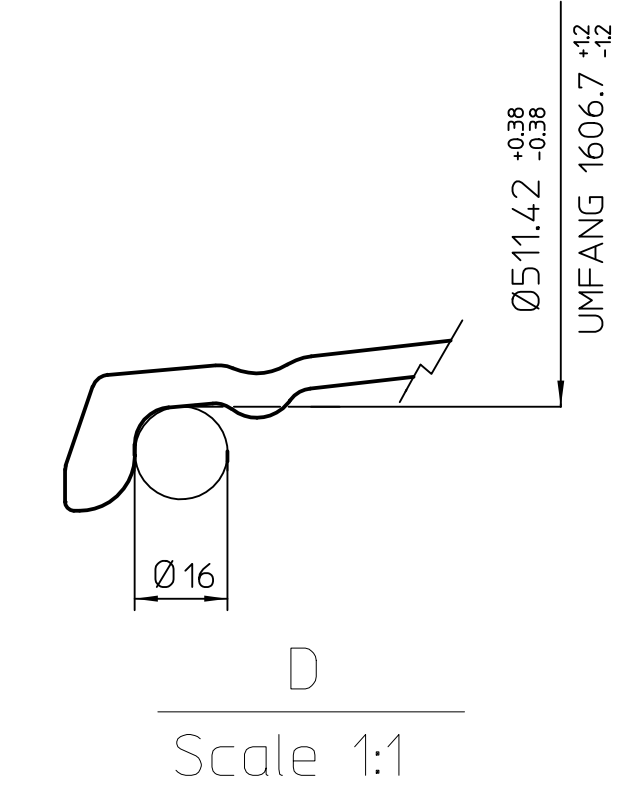
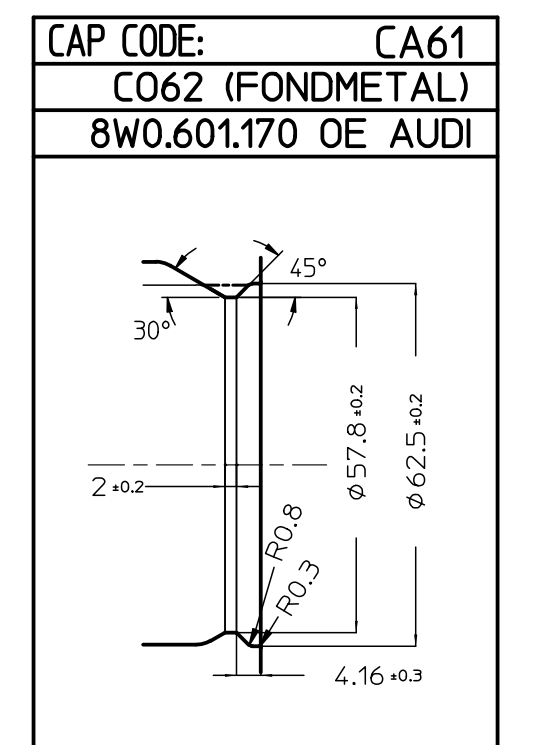
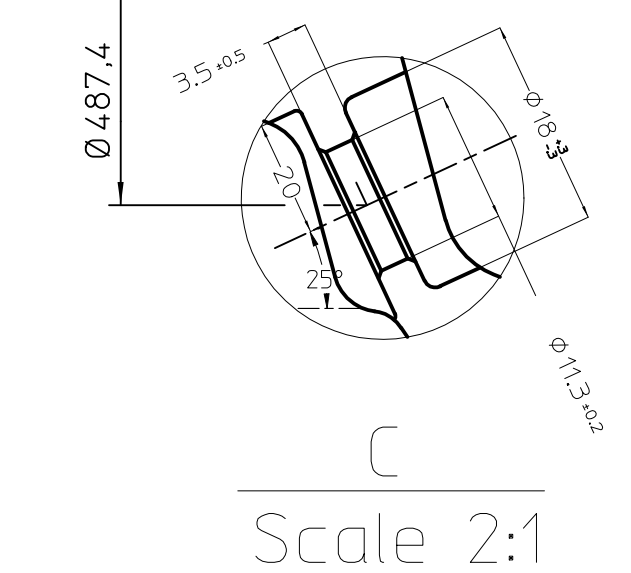
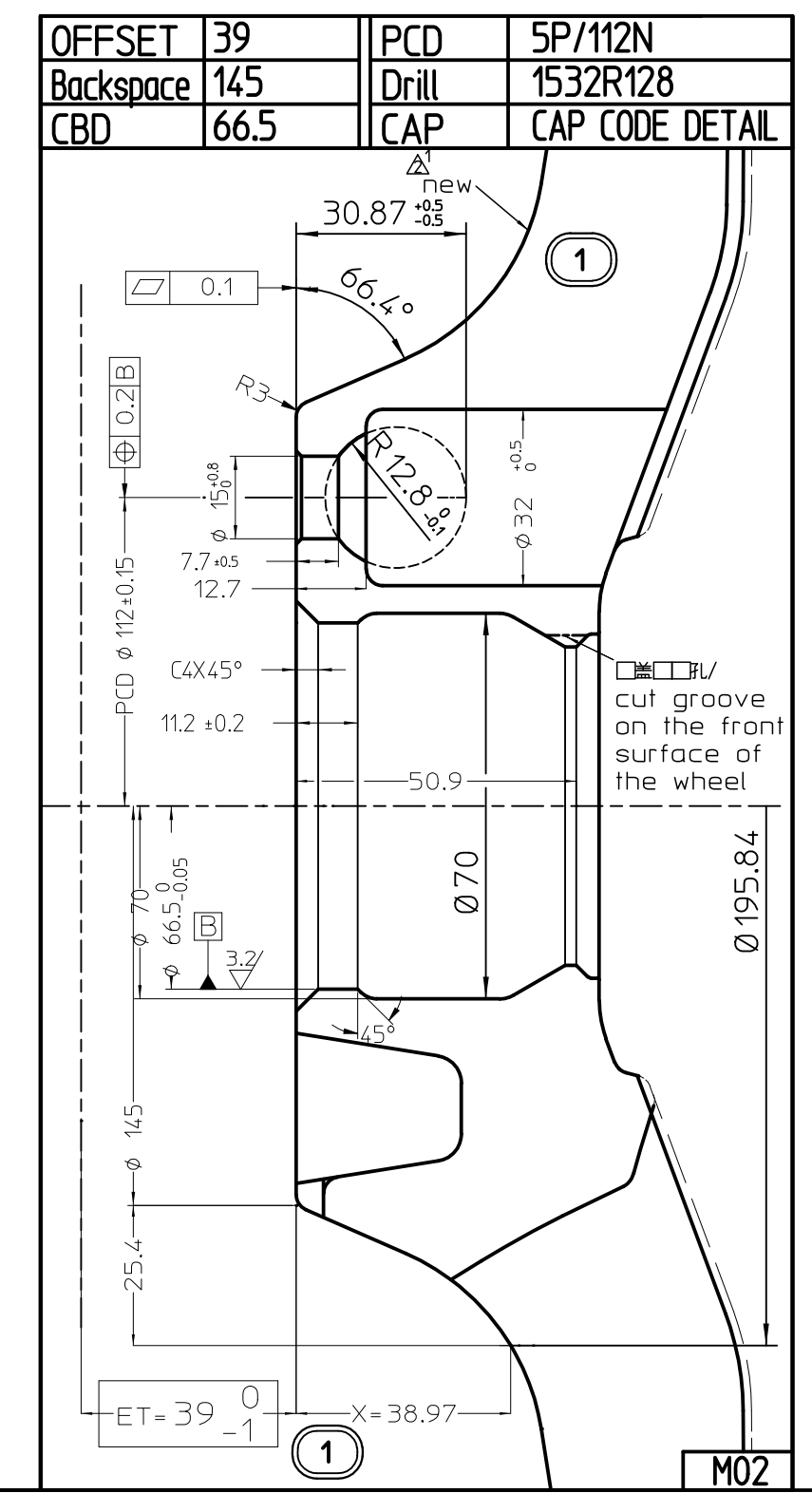


GROOVE ON THE FRONT SURFACE OF WHEEL
正面止口槽位置示意图



Inscription Content	Front	Content	Remarks
1	XXXX-XXXX		
2	KBA 51994		
3			
Back			
1	MR88G	Model	
2	8.5JX20 EH2+	Size	
3	FONDOMETAL FM101_20	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	18	Casting Year/Month	
12	19	Casting Year/Month	
13	YHM		

CNC Method	M01	M02
PCD Hole	5P	5P
PCD	112M	112N
HUB	57.1	66.5
PCDD	1532R128	1532R128
ET	39	39
PAD	145	145



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

Δ#	2	BACKSPACE PROFILE AND OFFSET TOLERANCE AMEND	22-03-2018
Δ	1	ADD ECE NUMBER	18-12-2017

TYPE	FM101_8520
MODEL	8.5JX20EH2+
SCALE	1:1 (2:1)
DATE	12/04/2018
DESIGNED BY	YHI MANSON BHD
CHECKED BY	D.P.
APPROVED BY	

AUDI	FM101_8520	39	112N	66.5	5
AUDI	FM101_8520	39	112M	57.1	5
VEHICLE BRAND	MODEL	TYPE	ET	PCD	C.B. HOLE
MARCA	TIPO	INTERASSE	ESPACIAM. BUCHE		

No.	Name	Part no.	Qty	Material	Remark
	For Customer Confirmation	ALULAB	3	Customer	Version
	Factory model name	MR88G -20X8.5-EH2+			
	Drawing NO.	MR88G_8520EH2+_01			

YHI MANUFACTURING (MALAYSIA) SDN BHD
Total 1 page | Page no. 1 | Unit | mm | Scale | 1:1
FILE: FM101_8520395_1