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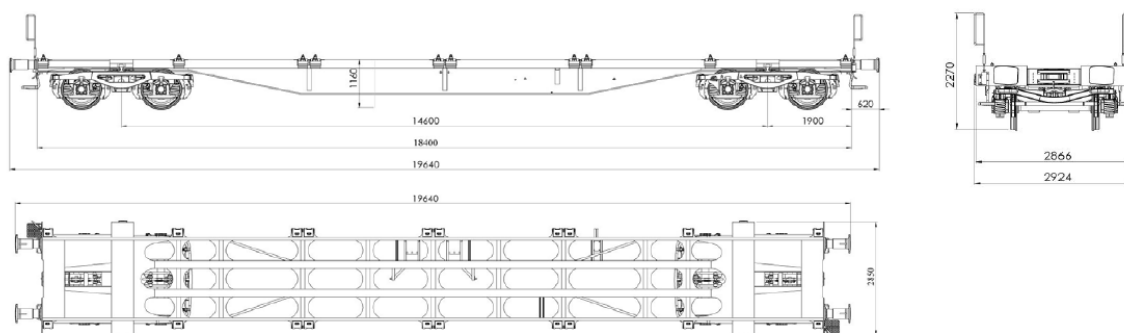
Business #: 9593

Customer: Vako

# NOBO FILE

## VAKO SGNSS WAGON

CONFIDENTIAL



LIST OF SUCCESSIVE VERSIONS:

Version	Date	Changes
1	28/07/2020	Initial version
2	05/10/2020	Clarification on the area of use: Wagon Marked as "TEN GE"

*The latest version supersedes the previous.*

VALIDATION:

	Signature
Name : R. DENOYELLE Function : Project Manager	

*People who have written and checked this report (listed on the cover) approved it using secure electronic authorization, with CERTIFER's EDM software keeping a trace of it.*

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### List of attached documents

**303 EC Declaration of Conformity for BA004 wheelset BA002 Axle**  
**302\_1 EC Declaration of Conformity for BA004 Wheel**  
**3 TR/00008830306445/2020/000001 (Declaration of conformity for running gear)**  
**359 Declaration of Conformity - COFREN-S501**  
**EC\_9593\_0002\_08 Workbook TSI-WAG 2019**  
**EC\_9593\_0004\_02 Workbook TSI-NOI 2014**  
**EC\_9593\_0005\_2 NoBo Report**

## Introduction

This file is built according to the recommendation of the RFU-STR-0011 version 10 of 23/06/2020 issued by NB-RAIL which is the coordination group of the Notified Bodies.

## 0. Actors

### 0.1. Identification of the Notified Body

**CERTIFER SA**

**18, rue Edmond Membrée  
CS 40141  
F – 59300 VALENCIENNES**

**Numéro 2593**

### 0.2. Identification of the applicant

**VAKO  
Fatih Sultan Mah. 2368 Sok. No:6  
Çamlıkpark , Etimesgut / Ankara**

### 0.3. Identification of the manufacturer and significant sub-contractors

Manufacturer:

**VAKO  
Fatih Sultan Mah. 2368 Sok. No:6  
Çamlıkpark , Etimesgut / Ankara**

Main sub-contractors :

Sub-systems	Sub-Contractors
<b>Brake system</b>	Knorr
<b>Wheel</b>	MA Steel
<b>wheelset</b>	Jiangsu Railteco
<b>Screw Coupling</b>	MSV metal
<b>Buffer</b>	MSV metal
<b>Draw Hook</b>	MSV metal
<b>Brake Shoes</b>	Cofren
<b>Bogies</b>	Vako

## 1. Notified body Certificates

- “EC” Certificate of Verification: **2593/6/SD/2020/RST/EN/9593/0102 V02**
- Quality system approval: **2593/4/SD/2020/RST/9306/0003 version 1**

➤ “EC” Type Examination Certificate : **2593/1/SB/2020/RST/EN/9593/0101 V02**

## 2. Conditions and limits of use

Wagon Marked as “TEN GE” (conformity to core TSI + § 7.1.2 + appendix C)

<b>List of harmonized and national restriction codes - conditions and limits of use ((EU) 2019/250 Annex V)</b>			
<b>Cat</b>	<b>Type</b>	<b>Value or specification</b>	<b>Name</b>
1	1	75 m	Minimum curve radius in meters
1	3	120 km/h	Speed restrictions (on the given network) in km/h
2	1	G1	Kinematic gauge (coding WAG TSI)
2	2	4	Wheelset gauge
2	7	2	Noise category
3	1	1	Climatic zone EN50125:2014, Clause 4.3
4	2	2	Condition based (distance travelled, wear, etc.)

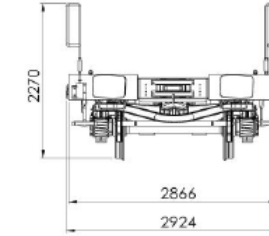
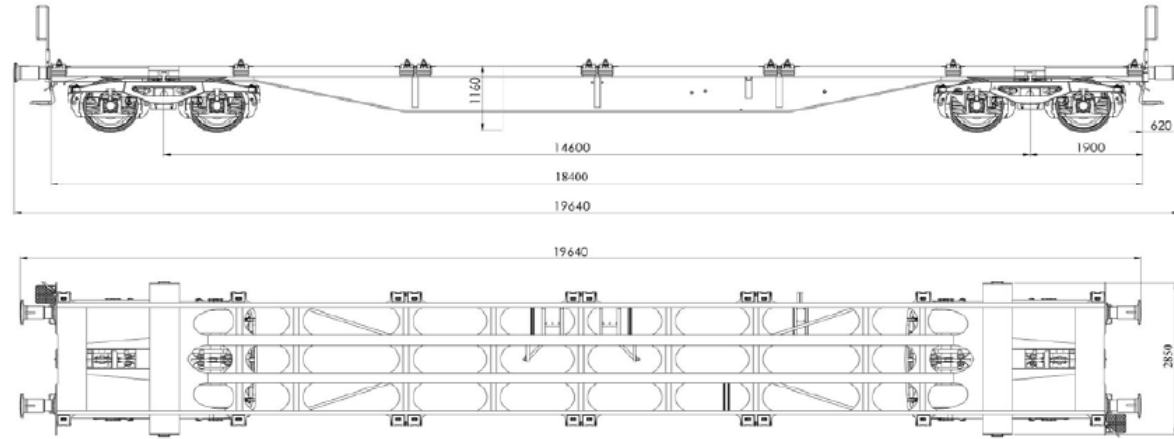
## 3. Project scope

The scope is a SGNSS Wagon designed by Vako defined by general drawing (ref 101\_1 SGNSS)

### 3.1. General project description

The wagon is defined by the following specifications.

TECHNICAL SPECIFICATIONS						
1	MAX. LOAD CAPACITY	70000 Kg.				
2	TARE	19730 Kg.				
3	SOLE AREA	38,6 m²				
4	BETWEEN BOGIE AXIS	14600 mm				
5	CHASSIS LENGTH	18400 mm				
6	BUFFER TO BUFFER LENGTH	19640 mm				
7	HEIGHT OF WAGON	2250 mm				
8	WAGONWIDTH	2100 mm				
9	HEIGHT OF THE PLATFORM	1160 mm				
10	BOGIE TYPE	Y25 Ls(s)d1-K				
11	BETWEEN THE BOGIE AXLES	1800 mm				
12	WHEEL DIAMETER	Ø 920 MONOBLOCK				
13	AXLE LOAD	22,5 Ton				
14	DRAW GEAR	Elastomer				
15	DRAW HOOK	150 Ton				
16	SPARE PARTS	According to the VPI				
17	BUFFER TYPE	CAT A - EN15551+A1				
18	AIR BRAKE	Knorr Bremse				
19	REGULATOR TYPE	DRV2A-450H				
20	MAX. SPEED AT AN AXLE LOAD 20/22.5 t	120/100 km/h				
21	ROLLER BEARING	NJ/NJP 130 x 240				
22	CONTAINER TYPE - GAUGE - TRACK GAUGE	10°, 20°, 30°, 40° - G1 - 1435 mm				
23	WORKING TEMPERATURE INTERVAL OF WAGONS (T1)	T1: -25 C° to +40 C° (Nominal)				
24	INTERNATIONAL CONFORMITY	RIV - TSI WAG 321/2013				
25	INSTALLING TABLE		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
		<b>S</b>	<b>44 t</b>	<b>52 t</b>	<b>60 t</b>	<b>70 t</b>
		<b>SS</b>	<b>44 t</b>	<b>52 t</b>	<b>60 t</b>	



	Vagon Tipi Wagon Type	Sgnas 60'
<b>DARA</b> Tare	Knorr Fren Sistemi ile With the Knorr Brake System	20000 ± 100 Kg
<b>BOJİ ÖZELLİKLERİ</b> Bogie Features	Boji Tipi Bogie Type	Y25b(a)d1
	Dingli Yüku Axle Load	225 t
	Ray Açıklığı Track Gauge	1435 mm
	Tekerlek Tipi ve Çapı Wheelset Type and Diameter	Monoblok / Ø 920
	Dingli Eksenleri Arası Distance Between Axes	1800 mm
<b>TAMPON</b> Buffer	Tampon Buffer	According UIC 525-1 EN 15551-A1 Category A
	Tampon Ölçüsü Buffer Head Size	340x450
	Tampon Stası Buffer Stroke	105 mm

<b>CER</b> Draw Gear	Cer Tertibatı Tipi Drawgear Type	According to EN 15565:2009+A1 1500kN
	Çekme Kancası Tipi Coupler Hook	According to EN 15566:2009+A1 1500kN
	Koşum Takımı Screw Coupler	According to EN 15566:2009+A1 1350kN
<b>FREN SİSTEMİ</b> Brake System	Fren Tipi Brake Type	Havali Fren Sistemi Air Brake System
	Sabot Tipi Brake Shoe Type	K Type Costid 810
	ET Freni Handbrake Type	Yandan Volanlı On the side of the wagon
	Boş Vagonun Maks. Hızı Max.Speed of Empty Wagon	120 km/h
	Yükli Vagonun Maks. Hızı Max.Speed of Loaded Wagon	100 km/h
<b>DiĞER ÖZELLİKLER</b> Other Features	Kıvrık Yarıçapı Curve Radius	75 m
	Yükleme Yüksekliği Loading Height	1160 mm
	Güvenlik Pimli Sayısı Number of Spigots (OPTIONAL)	20

YÜKLEME KAPASİTESİ LOADING CAPACITY
10', 20', 30', 40' Konteyner. 10', 20', 30' Konteynerler farklı kombinasyonlarda
10', 20', 30', 40' Container Different Combinations 10', 20', 30'

YÜKLEME TABLOSU LOADING TABLE				
	A	B	C	D
s	44 t	52 t	60 t	70 t
ss	44 t	52 t	60 t	

Kaynak Performans Sınıfı: CPC2	Kaynak Kontrol Sınıfı: CE3	Malzeme: S355J2+N	Ağırlık: 19420	Ölçekte: 1:40	A1
Resim No:					
Özay:	Ahmet Demirköpran				
Çizim:	Koray Çrüm				
Kontrol:	Emir Yılmaz				
		Resim Adı:	Sgnas WAGON		
					Tolerans verilmeyen ölçüler için standartlar: Kaynaklı Yapılar: EN 13920 BDF Uzunluk ve Açılı Ölçüleri: EN 22768-1 m Şekil ve Konular: EN 22768 K
					<b>SGNSS</b> Resim No / Poz. No VK.01.00.00.00.00

### 3.2. Legal scope and project history

- Directive (EU) 2016/797 of the European parliament and of the council of 11 May 2016 on the interoperability of the rail system within the European union
- COMMISSION REGULATION (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem 'rolling stock — freight wagons' of the rail system in the European Union, repealing Decision 2006/861/EC and Amended by Commission Implementing Regulation (EU) 2019/776 of 16 May 2019
- COMMISSION REGULATION (EU) No 1304/2014 of 26 November 2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' amending Decision 2008/232/EC, repealing Decision 2011/229/EU and Amended by Commission Implementing Regulation (EU) 2019/774 of 16 May 2019
- COMMISSION IMPLEMENTING REGULATION (EU) 2018/545 of 4 April 2018 establishing practical arrangements for the railway vehicle authorisation and railway vehicle type authorisation process pursuant to Directive (EU) 2016/797 of the European Parliament and of the Council
- Technical document 000MRA1044 de l'ERA version 1.1

This scope is the scope frozen at the beginning of the contract (contract signed the 07/02/2020) corresponding to the phase A defined in the TSI "Rolling stock-Freight Wagon" corresponding to the assessment plan ref. DP\_3818\_0001\_2.

### 3.3. Technical scope and interfaces

Refer to §4.1

### 3.4. Non-application of TSIs

Not applicable

### 3.5. List of specific cases

Not applicable

### 3.6. List of specific environmental conditions

Not applicable

## 4. Project documentation provided by the applicant

### 4.1. Evidence documents

- 101\_1 SGNSS - Project Drawings REV2
- 102 Signal Support
- 104 BA002 Axle
- 105 Shunter Space
- 106 Safety Area of Coupling Cock



- 114 Screw Coupling\_ 1350kN
- 115 Handbrake
- 116 BA004 Wheel
- 117 Buffer kat.A MINER 35kJ 450
- 118 BA004 Wheelset
- 124 Draw Gear 1500kN MINER ST-9-2
- 125 Draw Hook 150t
- 126 Tow Hooks
- 129 Draw Hook Clearance
- 131 Buffer und Draw Gear Configuration
- 132 Draw Hook and Draw gear Clearance
- 133 Earthing Cable
- 134 Draw Hook and Buffing Centre
- 135 Tail Light Bracket
- 138 Working Space of Buffer
- 139 Buffer Configuration
- 149 Footsteps And Handrails
- 150 Label Holders and Attachment Devices
- 151 Location of Tow Hooks
- 152 Lifting and Jacking Points
- 153 Buffer Dimensions
- 154 Slack Adjuster Clearance rev.01
- 155 Technical Drawing - C810-S501
- 156 SKF Roller Bearing Drawing
- 157 BA182 Axlebox Drawing
- 158 Container Locks
- 159 Y25Ls(s)d1- HABD
- 160 Y25 Bogie BJ.06.00.00.00
- 161 Container Locks
- 202 Electrical installations
- 203 Buffer 3.1
- 204 Screw Coupling 3.1
- 205 Draw Hook 3.1
- 208 Operating Rules Rev1
- 209 Marking of Units (to be considered as a template)
- 212 System Protection Rules
- 213 Maintenance Description File
- 213\_1 Maintenance Manual Quarterly
- 214 The Grease Technical Data Sheet
- 216 3.1 certificate for BA004 wheelsets
- 216\_1 Wheel Mounting Pressure Curve Chart-1
- 216\_2 Mounting Pressure Curve Chart-2
- 216\_3 Mounting Pressure Curve Chart-3
- 216\_4 Wheelset report
- 216\_5 Wheels Inspection Report
- 218 SGNSS Bracing\_ Calculation
- 219 Calculation of Meter Pressure rev1
- 220 SGNSS Safety and Health Guidelines
- 221 Draw Gear 3.1

- 221\_1 Draw Gear Technical Diagram
- 222 Tow Hooks Calculation
- 223 Technical Descriptions
- 224 General Documentation - Rev5 (contains the marking)
- 225 Outer Spring
- 226 Inner Spring
- 227 Spring
- 230\_1 Piping Diagram TA50887\_11\_EN00
- 230\_10 Slack Adjuster
- 230\_11 End Cocks
- 230\_12 Brake Coupling
- 230\_13 Hose Pipe
- 230\_14 Brake Changeover Device
- 230\_15 Angle Cock
- 230\_2 Brake Modes and Calculation TA50887\_41\_EN00
- 230\_3 Changeover Device G-P
- 230\_4 Distributor Valve
- 230\_5 Minimum Brake Performance
- 230\_6 Dynamic Test Calculations Rev1
- 230\_7 Air Reservoir
- 230\_8 Brake Cylinder
- 230\_9 KE Bracket
- 231 Brake Block Holder Rev1
- 232 Brake Coupling Head
- 233 Brake Pipe Hose Coupling
- 234 Temperature ranges
- 235 SGNSS Track Gauge (1435 mm)
- 236 Reference Profile of Gauge
- 239 SGNSS Wheelset Properties rev1
- 241 SGNSS Health And Safety Conditions
- 242 SGNSS Compability With Train Detection Systems
- 243 C10\_Location of Parking Brake Handles
- 244 C14\_Specific Brake Thermal Capacity Rev1
- 245 Minimum Parking Brake Performance rev1
- 246 SGNSS Kinematic Gauge
- 247 SGNSS Parking Brake Declaration of Conformity Rev1
- 248 Inspection Certificates COFREN-S501
- 249 Static Brake Test Report
- 250\_TA50887\_42 EN00\_Parking\_Brake
- 251\_General technical conditions of axle box
- 252 Maintenance Plan
- 253 SGNSS Simplified Evaluation TSI Noise
- 254 Brake Coupling Assembly
- 255 Parking Brake Explanation
- 256 Air Reservoir Calculation of SGNSS rev1
- 301 EC Declaration Axle
- 301 TSI-BA002 Axle
- 301\_1 TSI Certificate BA002 Axle
- 302 BA004 wheel TSI certificate

- 302 TSI-BA004 Wheel
- 302\_1 BA004 wheel EC certificate
- 302\_1 EC Declaration of Conformity for BA004 Wheel
- 302\_2 EC declaration of conformity Wheel
- 303 EC Declaration of Conformity for BA004 wheelset BA002 Axle
- 303 TSI Certificate BA004 Wheelset
- 303\_1 EC Declaration of Wheelset
- 303\_1 TSI-BA004 Wheelset
- 306\_1 Screw Coupling SB
- 306\_2 Screw Coupling SD
- 307\_1 Buffer SB
- 307\_2 Buffer SD
- 308\_1 Draw Gear SB
- 308\_2 Draw Gear SD
- 309\_1 Draw Hook SB
- 309\_2 Draw Hook SD
- 312 Declaration of Conformity Brake System
- 312\_1 Brake Cylinder EC Declaration
- 312\_2 Slack Adjuster EC Declaration
- 312\_3 Pneumatic Kupplung EC Declaration
- 312\_4 Distributor Valve EC Declaration
- 312\_5 Angle Cock EC Declaration
- 312\_6 Relay Valve EC Declaration
- 312\_7 Weighing Valve EC Declaration
- 313 TSI Cert Brake System
- 318 VAKO 15085 Certification
- 330\_BA004 wheels thermal mechanical type test
- 336 Running Dynamic Behaviour Declaration
- 337 Declaration of conformity SKF
- 337\_1 TSI cert. SKF
- 340 VAKO\_AcousticReportv01c
- 344 VAKO\_Vagon2\_Equipment and Torsional Stiffness\_v01b
- 346 VAKO\_Vagon2\_FatigueFEM\_v03a
- 347 VAKO\_Vagon2\_StaticFEM\_v01e
- 356 VAKO\_DecayRate\_Reportv01a
- 357 ISO 9001-2015
- 358 VAKO\_Wagon2\_BuffingImpactTest\_v01d
- 359 Declaration of Conformity - COFREN-S501
- 360 Module CH Vako Y25 Bogie
- 361 EC Declaration of Y25Ls(s)d1 Bogie
- 362 VAKO - SGNSS Dynamic Brake Test Report v.01d

#### 4.2. Interoperability constituents

Constituent	Declaration	Date Of validity	Conditions of use
AXLE	303 EC Declaration of Conformity for BA004 wheelset BA002 Axle	29/03/2022	Maximum vertical static force 23,5 t

WHEEL	302_1 EC Declaration of Conformity for BA004 Wheel	14/11/2021	Nominal tread diameter	920	mm
			Maximum vertical static force	11,75	t
			Maximum speed	120	km/h
			In-service limits	840	mm
			Maximum braking energy	50	Kw
WHEELS ET	303 EC Declaration of Conformity for BA004 wheelset BA002 Axle	29/03/2022	Track gauge	1435	mm
			Nominal wheel tread diameter	920	mm
			Maximum vertical static force	23,5	t
Running gear (BOGIE)	TR/00008830306445/2020/000001	23/01/2021	Track gauge	1435	mm
			Maximum speed	120	km/h
			Maximum cant deficiency	130	mm
			Minimum tare of the unit	16	t
			Maximum axle load	22,5	t
			Range of distances between bogie pivots or range of wheelbase of 'two-axle units'	6.5-20.0	m
			Maximum height of centre of gravity of empty unit	2500	mm
			Coefficient of height of centre of gravity of loaded unit	2350	mm
			Minimum torsional stiffness coefficient of car body	0,5x10 <sup>10</sup>	N.mm <sup>2</sup> /rad
			Maximum mass distribution coefficient for empty units	0,55	
			Minimum nominal wheel diameter	920(new)	mm
			Rail inclination	1:20 and 1:40	
Friction element for wheel tread brakes (BRAKE SHOES)	359 Declaration of Conformity - COFREN-S501		<b>Dynamic friction coefficients and their tolerance bands</b>		The dynamic coefficient of friction depends from application force, speed, axle load, temperature, brake configuration (1Bg, 2Bg, 1 Bgu or 2Bgu), etc. In other words, it depends from the type of application. You've to know that C810 is UIC homologated and this means that the coefficient of friction is included in the band attached.
			<b>Minimum static friction coefficient</b>		According the UIC A12 test program, the minimum static coefficient for a K block is 0,20. With C810, the absolute minimum found is 0,21
			<b>Maximum permitted brake forces applied on the element</b>		According UIC is 40 KN but on our blocks it's permitted also higher values
			<b>Suitability for train detection by systems based on track circuits</b>		According the UIC A7 program (shuntage test) performed in Becorit, the material C810 is suitable for this application
			<b>Suitability for severe environmental conditions</b>		UIC define the winter test in A5 test program. The test was done and passed.

Conditions of use have been checked by CERTIFER and are coherent with technical specifications (§3) and conditions and limits of use (§2).

#### 4.3. Intermediate Statement of Verification (ISV)

Not Applicable

#### 4.4. Detailed Conformity Assessment Requirements

For the detail of conformity assessment refer to the compliance matrices **EC-9593\_0002\_08** for TSI-WAG 2019 and **EC\_9593\_0004\_02** for TSI-NOI 2014.

### 5. EC conformity assessment process information and results

The assessment was done according module SB and the results of the conformity is recorded in the report EC9593\_0005\_2 corresponding to the clause by clause EC\_9593\_0002\_08 and EC\_9593\_0004\_02 dealing with the TSIs “Rolling Stock – Freight Wagons” and “Rolling Stock – Noise”. All the opened items in these CbC are now closed. The wagon is marked as TEN GE and is compliant to core TSI + § 7.1.2 + appendix C.

The SD certificate was already edited before to start the Design examination. The audit’s results are recorded in the report EC9306\_0002\_1 and the conclusion was positive:

***“The audit took place in an excellent climate; all planned points have been audited.  
The quality management system of Va-Ko is correctly applied to “Rolling Stock – Freight Wagons”  
and “Rolling Stock – Noise” Subsystems according to module SD.  
The auditors have confidence in Va-Ko’s ability to manufacture the Sgnss-W Container-Platform  
wagon in accordance with the applicable standards, directives and regulations.”***

This audited wagon was a standard wagon. In comparison to the current assessed wagon only the brake is different. Then CERTIFER consider the SD certificate 2593/4/SD/2020/RST/9306/0003 version 1, also valid for the SGNSS wagon object of the SB certificate 2593/1/SB/2020/RST/EN/9593/0101 V01.