



ERATV - European Register of Authorised Types of Vehicles

11-141-0001-7-001-001 CAH1A1

Status: Published

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Section 1: General Information

[PDF](#) [Excel](#) [XML](#)

▼ 0. Identification of the type

0.1 0.2 0.4 Type ID: 11-141-0001-7-001-001

0.3 Date of record: 09.09.2021

▼ 1. General Information

1.1 Type name: CAH1A1

1.2 Alternative type name:

▼ 1.3 Manufacturer

▼ 1.3.1 Manufacturer identification data

1.3.1.1 Name of organisation: CRRG ZHUZHOU CO., LTD

1.3.1.2 Registered business number: 914302007790310965

1.3.1.3 Organisation code:

▼ 1.3.2 Manufacturer contact data

1.3.2.1 Address of organisation, street and number: Tianxin High-tech Garden, Shiféng District Zhuzhou

1.3.2.2 Town: Tianxin

1.3.2.3 Country code:

1.3.2.4 Post code: 412001

1.3.2.5 E-mail address: kleinstlokh_h_tsi@crrogc.cc

Registration Method: New Type

Registered Vehicle Type:

1.4 Category:	Traction vehicles
1.5 Subcategory:	Locomotive
1.6 Platform:	CHA1A

Section 2: Conformity with TSI

2.1 Conformity with TSI and Sections not complied with:

1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30	CR CCS (Dec 2006/679/EC amended by Dec 2006/860/EC) LOC & PAS (Regulation (EU) No 1302/2014) amended by Reg.(EU)2016/919 amended by Reg.(EU)2018/868 amended by Reg.(EU) 2019/776 Noise (Regulation (EU) No 1304/2014 amended by Regulation (EU) 2019/774) SRT (Regulation (EU) No 1303/2014) amended by Reg.(EU) 2016/912) amended by Reg.(EU) 2019/776
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2.3 Applicable specific cases (specific cases conformity with which has been assessed)

1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30	CR CCS (Dec 2006/679/EC amended by Dec 2006/860/EC) LOC & PAS (Regulation (EU) No 1302/2014) amended by Reg.(EU)2016/919 amended by Reg.(EU)2018/868 amended by Reg.(EU) 2019/776 Noise (Regulation (EU) No 1304/2014 amended by Regulation (EU) 2019/774) SRT (Regulation (EU) No 1303/2014) amended by Reg.(EU) 2016/912) amended by Reg.(EU) 2019/776
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2.2 Reference of 'EC type examination certificates'

Section 3: Authorisations

Section 4: Technical Characteristics

EC certificate of verification : Reference of 'EC type examination certificates' (if module SB applied) and/or 'EC design examination certificates' (if module SH1 applied)	2411/1/SB/2020/CCO/DEEN/TNL2014-01-V04_28/06/2021
EC certificate of verification : Reference of 'EC type examination certificates' (if module SB applied) and/or 'EC design examination certificates' (if module SH1 applied)	2411/4/SD/2020/CCO/DEEN/TNL2014-02-V04_28/06/2021
EC certificate of verification : Reference of 'EC type examination certificates' (if module SB applied) and/or 'EC design examination certificates' (if module SH1 applied)	2411/6/SD/2020/CCO/DEEN/TNL2014-03-V04_28/06/2021
3.1.1 Member state of authorisation:	Germany(DE)
3.1.2.1 Status:	Valid
3.1.2.2 Validity of Authorisation (until):	
3.1.2.3 Coded conditions for use and other restrictions:	<p>1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30</p> <p>1 Technical restriction related to construction</p> <p>1.1 Minimum curve radius in meters: 100</p> <p>1.3 Speed restrictions in Km/h: 80</p> <p>1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0</p> <p>2 Geographical restriction</p> <p>2.1 Kinematic gauge (coding WAG TSI): G1/GI2</p> <p>2.2 Wheelset gauge: 2.2.4 Gauge 1435</p> <p>2.4 ERTMS on board: 2.4.2 GSM-R voice</p> <p>2.5 B System on board</p> <p>2.5.1 Class B signalling system: 2.5.153 INDUSI I60</p> <p>2.5.2 Class B radio system: 2.5.219 Analogue Radio Germany - UIC 751</p> <p>3 Environmental restrictions</p> <p>3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1</p>
3.1.2.4 Non-coded conditions for use and other restrictions:	<p>1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30</p> <ul style="list-style-type: none"> • Eine Fährverkehrsfähigkeit wurde nicht nachgewiesen. • Eine Steilstreckentauglichkeit wurde nicht nachgewiesen. • Die einzusetzende SIM Karte muss die Anforderungen der MORANE/EIRENE Spezifikation erfüllen. • Die Anforderungen der Call Arbitration Tabellen in EIRENE SRS Version 15.4.0 und 16.0.0 widersprechen sich in einigen Punkten. Die Call Arbitration gemäß Version 15.4.0 wird erfüllt. Die daraus resultierenden Konsequenzen sind mit den entsprechenden Bahnbetreibern abzustimmen.

- Die Lokomotive des Typs CHA1A1 darf nur innerhalb nationaler Schienennetze betrieben werden und ihr Einsatzgebiet darf sich mit einem Bereich, der mit ETCS ausgestattet ist oder innerhalb von fünf Jahren nach Zulassung für solche Fahrzeuge ausgestattet werden wird, um nicht mehr als 150 km überschneiden.
- Das vorgesehene Einsatzgebiet ist der Verkehr im Netz der DB (einschließlich des Netzes der S-Bahn Hamburg und seiner Tunnel), die Lokomotive ist vorgesehen für Bergungsdienste von Zügen ohne Fahrgäste sowie für Rangieraufgaben in Wartungszentren. Die Lokomotiven werden ausschließlich durch Personal der S-Bahn Hamburg geführt."
- Eine Genehmigung gemäß Art. 14 Abs. 1 lit. e) VO(EU) 2018/545 ist nur für die bislang existierende Lokomotive 9080 1004 002-4 zulässig. Für die Genehmigung weiterer Fahrzeuge gemäß Art. 14 Abs. 1 lit. d) VO(EU) 2018/545 ist die Erfüllung der Anforderungen der aktuellen Ausgabe der "Bekanntgabe 09 - AK ZZS" nachzuweisen.

3.1.3.1.2.1.1 Name of organisation:	CRRG SHANDONG CO., LTD.
3.1.3.1.2.1.2 Registered business number:	91370100664851254J
3.1.3.1.2.1.3 Organisation code:	
3.1.3.1.2.2.1 Address of organisation, street and number:	73, HUAICUN STREET, HUAIYIN DISTRICT
3.1.3.1.2.2.2 Town:	JINAN
3.1.3.1.2.2.3 Country code:	CHINA
3.1.3.1.2.2.4 Post code:	250022
3.1.3.1.2.2.5 E-mail address:	liuyinhua.sd@crrgc.cc

▼ 3.1.3.1.2.1 Authorisation holder identification data

▼ 3.1.3.1.2.2 Authorisation holder contact data

3.1.3.1.1 Date of the original authorisation:	30.08.2021
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▼ 3.1.3.1.2 Authorisation holder

3.1.3.1.3 Authorisation document reference:	DE8020210144
3.1.3.1.4 Certificate of verification : Reference of type examination or design examination type:	TSI RST: EG Prüfbescheinigung Nr.2411/6/SD/2020/RST/DEEN/TNL2013-03-V04 (Locomotive Type CHA1_A1) TSI CCS: EG Prüfbescheinigung Nr.2411/6/SD/2020/CCO/DEEN/TNL2014-03-V04 (Locomotive Type CHA1_A1 Train Radio) NNTR: Zwischenprüfbescheinigung Nr.TNL-2017_23_DeBo_Z_V1.3 (Locomotive Type CHA1_A1)
3.1.3.1.5 Parameters for which conformity to applicable national rules has been assessed:	1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30 2009/965/EC 3.2 Vehicle dynamics 3.2.1 Running safety and dynamics 3.2.2 Equivalent conicity, wheel profile and limits 3.3 Bogies / running gear 3.3.2 Wheelset (Axle + wheels) 3.3.3 Wheel 3.3.4 Wheel/rail interface (including wheel flange lubrication and sanding) 4.1 Functional requirements for braking at train level 4.5 Brake performance 4.5.1 Emergency braking 4.5.2 Service braking 4.5.3 Calculations related to thermal capacity 4.5.4 Parking brake 4.6 Braking adhesion management 4.6.2 Wheel slide protection system 4.7 Braking force production 4.7.1 Braking force production 4.7.2 Friction brake 4.7.2.3 Brake pads 4.7.3 Dynamic brake linked to traction 4.7.6 Parking brake 6.1 Impact of the environment on the vehicle 6.1.2 Aerodynamic effects on the vehicle 6.1.2.1 Crosswind effects 7.2 Visual and audible vehicle identification and warning functions 7.2.1 Vehicle marking 8.4 Electromagnetic compatibility 8.4.2 Electromagnetic compatibility with the signalling and telecommunications network 8.4.3 Electromagnetic compatibility with other vehicles and with the trackside part of the railway system 8.4.4 Electromagnetic compatibility with the environment 9.1 Driver's cab design 9.1.2 Access to driver's cab 9.1.2.2 Driver's cab emergency exits 9.1.3 Windscreen in driver's cab 9.1.3.1 Mechanical characteristics 9.1.3.2 Optical characteristics

12.1 On-board radio system

12.1.1 Non-GSM-R radio system

12.2 On-board signalling

12.2.1 National on-board signalling systems

3.1.3.1.6 Comments:

3.1.3.1.7 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013: Erklärung des Vorschlagenden zur Berücksichtigung der CSM-VO, VD 3001-372-002" mit Datum 09.07.2021

▼ 3.1.3.1 Authorisation

3.0 Area Of Use: DE(Germany)

▼ 3.1 Authorisation in

▼ 3.1.2 Current status

▼ 3.1.3 Historical

▶ 3.1.3.1 Initial Registration

4.1.3 Wheel set gauge ^{RC} 1435 mm

4.1.12 Number of vehicles composing the fixed formation (for fixed formation only) 1

4.13.1 Signalling

4.13.1.1 ETCS equipment on-board and the set of specifications from CCS TSI Annex A ^{RC} None

4.13.1.5 Class B or other train protection control and warning systems installed (system and if applicable version) ^{RC} PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30

4.13.1.8 ETCS System Compatibility Not applicable

4.13.2 Radio

4.13.2.1 GSM-R Radio voice on board and its Baseline ^{RC} Regulation 2016/919 Set_3

4.13.2.3 Class B or other radio systems installed (system and if applicable version) ^{RC} None

4.13.2.5 Radio Voice System Compatibility	RSC-EU-0
4.13.2.6 Voice and operational communication implementation ^{RC}	TRS6000 Release 4.2.0
4.13.2.7 GSM-R Radio Data communication on board and its Baseline ^{RC}	None
4.13.2.8 Radio Data System Compatibility	Not applicable
4.13.2.10 Voice SIM Card GSM-R Home Network	GSM-R D (Germany)
4.13.2.12 Voice SIM Card support of Group ID 555	True
4.10.1 Energy supply system (voltage and frequency) ^{RC}	Autonomous

4.1.2 Speed

4.1.2.1 Maximum design speed	1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30 80 km/h
4.1.5 Maximum number of trainsets or locomotives coupled together in multiple operation.	1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30 2
4.2.1 Reference profile ^{RC}	G1 GI2
4.3.1 Temperature range	T1 (-25 to +40)
4.3.3 Snow, ice and hail conditions	Nominal
4.4.1 Fire safety category ^{RC}	A

4.5.2 Design mass

4.5.2.1 Design mass in working order	56000 kg
4.5.2.2 Design mass under normal payload	56000 kg

4.5.2.3 Design mass under exceptional payload ^{RC} 56000 kg

4.5.3 Static axle load

4.5.3.1 Static axle load in working order 14000 kg

4.5.3.2 Static axle load under normal payload 14000 kg

4.5.3.3 Static axle load under exceptional payload ^{RC} 14000 kg

4.5.3.4 Position of the axles along the unit (axle spacing) : a: Distance between axles b: Distance from end axle to the end of the nearest coupling plane c: distance between two inside axles **1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30**
 a: 0002,20 m b: 0002,57 m c: 0004,86 m
Explanations: The vehicles have 4 axles and two bogies. Axles 1 & 2 in the first bogie and Axles 3 & 4 in the other bogie. a) distance within each bogie (between axles 1 & 2 as well as between axles 3 & 4); b) distance between axle 1 and the nearest coupling plane, as well as distance between axle 4 and the nearest coupling plane; c) distance between axles 2 & 3 (inside axles).

4.5.5 Total vehicle mass (for each vehicle of the unit) **1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30**
 56000 kg

4.5.6 Mass per wheel **1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30**
 7000 kg

4.6.4 Combination of maximum speed and maximum cant deficiency for which the vehicle was assessed ^{RC} **1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30**
 0090.00 km/h - 0143.00 mm

4.6.5 Rail inclination ^{RC} **1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30**
 1/40

4.7.1 Maximum average deceleration 0,93 m/s²

4.7.2.1 Brake performance on steep gradients with normal payload

4.7.2.1.1 Reference case of TSI Reference case of (80 km/h, 21‰ (mm/m), 46 km)

4.7.2.1.6 Maximum brake thermal energy capacity **1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30**
 121600 kJ

4.7.3 Parking brake

4.7.3.3 Maximum gradient on which the 83 ‰ (mm/m)

unit is kept immobilized by the parking
brake alone (if the vehicle is fitted with it)

4.7.4.1 Eddy current brake

4.7.4.1.1 Eddy current track brake fitted RC False

4.7.4.2 Magnetic brake

4.7.4.2.1 Magnetic track brake fitted RC False

4.7.4.3 Regenerative brake (only for vehicles with electrical traction)

4.7.4.3.1 Regenerative brake fitted RC True

4.7.4.3.2 Possibility of preventing the
use of the regenerative brake (only if
fitted with regenerative brake) RC False

4.7.5 Emergency brake : Stopping
distance and deceleration profile for
each load condition per design
maximum speed a: Load condition:
working order b: Load condition: normal
payload c: Load condition: exceptional
payload

1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30
a: 0267,00 m 0000,93 m/s²
b: 0267,00 m 0000,93 m/s²
c: 0267,00 m 0000,93 m/s²

4.7.6 For general operation : Brake
weight percentage (lambda) or Braked
mass

1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30
116,00 (%) or 00062,00 tonnes

4.7.7 Service brake: At maximum
service brake: Stopping distance,
Maximum deceleration, for the load
condition 'design mass under normal
payload' at the design maximum speed.

1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30
0313,00 m - 0000,79 m/s²

4.7.8 Wheel slide protection system

1435mm / Autonomous / PZB 90 Betriebssoftware S-Bahn Hamburg 03.09-30
True

4.8.1 Vehicle length	14,4 m
4.8.2 Minimum in-service wheel diameter ^{RC}	780 mm
4.8.4 Minimum horizontal curve radius capability ^{RC}	100 m
4.8.5 Minimum vertical convex curve radius capability	500 m
4.8.6 Minimum vertical concave curve radius capability	500 m
4.9.1 Type of end coupling	Manual (Tensile force: 0850.0000 kN; Compressive force: 1000.0000 kN) Automatic Type 10 / Scharfenberg (Tensile force: 0300.0000 kN; Compressive force: 0250.0000 kN)
4.9.2 Axle bearing condition monitoring (hot axles box detection) ^{RC}	Detectable by line side
4.12.3.1 Platform heights for which the vehicle is designed. ^{RC}	n.a. mm
4.14.1 Type of train detection systems for which the vehicle has been designed and assessed ^{RC}	Axle counters

Germany
