

Section 1: General Information

0. Identification of the type

0.1 0.2 Type ID: 13-175-0001-3-001

0.3 Date of record: 2020-10-30

1. General Information

1.1 Type name: Serie 105

1.2 Alternative type name:

1.3 Manufacturer's name: CAF

Registration Method: New Type of a new Platform

Registered Vehicle Type:

1.4 Category: Traction vehicles

1.5 Subcategory: Self-propelled passenger trainset (incl. railbusses)

1.6 Platform: OARIS

Section 2: Conformity with TSI

2.1 Conformity with TSI and Sections not complied with:

1435mm / AC 25kV-50Hz / ASFA
HS RST (Dec 2008/232/EC)
HS+CR SRT (Dec 2008/163/EC)
HS+CR PRM (Dec 2008/164/EC)
HS and CR CCS (Dec 2012/88/EU amended by Dec (EU) 2015/14)

1435mm / AC 25kV-50Hz / Level 2
HS RST (Dec 2008/232/EC)
HS+CR SRT (Dec 2008/163/EC)
HS+CR PRM (Dec 2008/164/EC)
HS and CR CCS (Dec 2012/88/EU amended by Dec (EU) 2015/14)

1435mm / AC 25kV-50Hz / LZB
HS RST (Dec 2008/232/EC)
HS+CR SRT (Dec 2008/163/EC)
HS+CR PRM (Dec 2008/164/EC)
HS and CR CCS (Dec 2012/88/EU amended by Dec (EU) 2015/14)

2.3 Applicable specific cases (specific cases conformity with which has been assessed)

2.2 Reference of 'EC type examination certificates'

Reference of 'EC type examination certificates' - if module SB applied - and/or 'design verification certificate' - if module SH1 applied 0986/1/SB/2020/RST/ES/147/V01

Section 3: Authorisations

Spain

3.1.2.1 Status: Active

3.1.2.2 Validity of Authorisation (until):

3.1.2.3 Coded Restrictions:

1435mm / AC 25kV-50Hz / ASFA

1 Technical Restrictions

1.1 Minimum curve radius in meters: 125 m
velocidad reducida y sin respetar el gálibo en depósitos y talleres

1435mm / AC 25kV-50Hz / Level 2

1 Technical Restrictions

1.1 Minimum curve radius in meters: 125 m
velocidad reducida y sin respetar el gálibo en depósitos y talleres

1.3 Speed restrictions in Km/h (Marked on wagons and coaches but not marked on locos): 300

1435mm / AC 25kV-50Hz / LZB

1 Technical Restrictions

1.1 Minimum curve radius in meters: 125 m
velocidad reducida y sin respetar el gálibo en depósitos y talleres

1.3 Speed restrictions in Km/h (Marked on wagons and coaches but not marked on locos): 300

3.1.2.4 Non Coded Restrictions:

1435mm / AC 25kV-50Hz / ASFA

Con catenaria Re 250 (Línea Madrid-Sevilla) no se superan los límites de las fuerzas de contacto hasta la velocidad de 300 km/h, en condiciones normales (con regulación activa, tanto en posición de codo abierto como en posición de codo cerrado) y sin regulación activa sólo en posición de codo abierto.

En la condición sin regulación activa y posición de codo cerrado no se superan los límites de las fuerzas de contacto hasta la velocidad de 200 km/h.

El listado de señales a registrar por el registrador jurídico del equipo LZB-80/16 E, DSK (EFA 15), no contiene la totalidad de señales requeridas por la normativa técnica nacional para este sistema.

Las pruebas realizadas ponen de manifiesto la compatibilidad del tren con los siguientes circuitos de vía: FTGS 46, FTGS 917, FS 3000 y UM71/2000

1435mm / AC 25kV-50Hz / Level 2

Con catenaria Re 250 (Línea Madrid-Sevilla) no se superan los límites de las fuerzas de contacto hasta la velocidad de 300 km/h, en condiciones normales (con regulación activa, tanto en posición de codo abierto como en posición de codo cerrado) y sin regulación activa sólo en posición de codo abierto.

En la condición sin regulación activa y posición de codo cerrado no se superan los límites de las fuerzas de contacto hasta la velocidad de 200 km/h.

El listado de señales a registrar por el registrador jurídico del equipo LZB-80/16 E, DSK (EFA 15), no contiene la totalidad de señales requeridas por la normativa técnica nacional para este sistema.

Las pruebas realizadas ponen de manifiesto la compatibilidad del tren con los siguientes circuitos de vía: FTGS 46, FTGS 917, FS 3000 y UM71/2000 1435mm / AC 25kV-50Hz / LZB

Con catenaria Re 250 (Línea Madrid-Sevilla) no se superan los límites de las fuerzas de contacto hasta la velocidad de 300 km/h, en condiciones normales (con regulación activa, tanto en posición de codo abierto como en posición de codo cerrado) y sin regulación activa sólo en posición de codo abierto.

En la condición sin regulación activa y posición de codo cerrado no se superan los límites de las fuerzas de contacto hasta la velocidad de 200 km/h.

El listado de señales a registrar por el registrador jurídico del equipo LZB-80/16 E, DSK (EFA 15), no contiene la totalidad de señales requeridas por la normativa técnica nacional para este sistema.

Las pruebas realizadas ponen de manifiesto la compatibilidad del tren con los siguientes circuitos de vía: FTGS 46, FTGS 917, FS 3000 y UM71/2000

3.1.3.1.1 Date of the original authorisation:

2020-10-30

3.1.3.1.2 Authorisation holder:

CAF

3.1.3.1.3 Authorisation document reference:

ES5920204016

3.1.3.1.4 National certificate references:

017/2020/V01

3.1.3.1.5 Parameters for which conformity to applicable national rules has been assessed:

1435mm / AC 25kV-50Hz / ASFA
2015/2299/EU

1 Documentation

2 Structure and mechanical parts

3 Track interaction and gauging

4 Braking

5 Passenger-related items

6 Environmental conditions and aerodynamic effects

7 External warning, signalling, marking functions and software integrity requirements

8 On-board power supply and control systems
9 Staff facilities, interfaces and environment
10 Fire safety and evacuation
11 Servicing
12.1.1 Non-GSM-R radio system
12.2.1 National on-board signalling systems
13.1 Specific items to place on-board
1435mm / AC 25kV-50Hz / Level 2
2015/2299/EU
1 Documentation
2 Structure and mechanical parts
3 Track interaction and gauging
4 Braking
5 Passenger-related items
6 Environmental conditions and aerodynamic effects
7 External warning, signalling, marking functions and software integrity requirements
8 On-board power supply and control systems
9 Staff facilities, interfaces and environment
10 Fire safety and evacuation
11 Servicing
12.1.1 Non-GSM-R radio system
12.2.1 National on-board signalling systems
13.1 Specific items to place on-board
1435mm / AC 25kV-50Hz / LZB
2015/2299/EU
1 Documentation
2 Structure and mechanical parts
3 Track interaction and gauging
4 Braking
5 Passenger-related items
6 Environmental conditions and aerodynamic effects
7 External warning, signalling, marking functions and software integrity requirements
8 On-board power supply and control systems
9 Staff facilities, interfaces and environment
10 Fire safety and evacuation
11 Servicing

12.1.1 Non-GSM-R radio system

12.2.1 National on-board signalling systems

13.1 Specific items to place on-board

3.1.3.1.6 Comments:

3.1.3.1 Initial Registration

3.1.2.3 Coded Restrictions:

1435mm / AC 25kV-50Hz / ASFA

1 Technical Restrictions

1.1 Minimum curve radius in meters: 125 m
velocidad reducida y sin respetar el gálibo en depósitos y talleres

1435mm / AC 25kV-50Hz / Level 2

1 Technical Restrictions

1.1 Minimum curve radius in meters: 125 m
velocidad reducida y sin respetar el gálibo en depósitos y talleres

1.3 Speed restrictions in Km/h (Marked on wagons and coaches but not marked on locos): 300

1435mm / AC 25kV-50Hz / LZB

1 Technical Restrictions

1.1 Minimum curve radius in meters: 125 m
velocidad reducida y sin respetar el gálibo en depósitos y talleres

1.3 Speed restrictions in Km/h (Marked on wagons and coaches but not marked on locos): 300

3.1.2.4 Non Coded Restrictions:

1435mm / AC 25kV-50Hz / ASFA

Con catenaria Re 250 (Línea Madrid-Sevilla) no se superan los límites de las fuerzas de contacto hasta la velocidad de 300 km/h, en condiciones normales (con regulación activa, tanto en posición de codo abierto como en posición de codo cerrado) y sin regulación activa sólo en posición de codo abierto.

En la condición sin regulación activa y posición de codo cerrado no se superan los límites de las fuerzas de contacto hasta la velocidad de 200 km/h.

El listado de señales a registrar por el registrador jurídico del equipo LZB-80/16 E, DSK (EFA 15), no contiene la totalidad de señales requeridas por la normativa técnica nacional para este sistema.

Las pruebas realizadas ponen de manifiesto la compatibilidad del tren con los siguientes circuitos de vía: FTGS 46, FTGS 917, FS 3000 y UM71/2000

1435mm / AC 25kV-50Hz / Level 2

Con catenaria Re 250 (Línea Madrid-Sevilla) no se superan los límites de las fuerzas de contacto hasta la velocidad de 300 km/h, en condiciones normales (con regulación activa, tanto en posición de codo abierto como en posición de codo cerrado) y sin regulación activa sólo en posición de codo abierto.

En la condición sin regulación activa y posición de codo cerrado no se superan los límites de las fuerzas de contacto hasta la velocidad de 200 km/h.

El listado de señales a registrar por el registrador jurídico del equipo LZB-80/16 E, DSK (EFA 15), no contiene la totalidad de señales requeridas por la normativa técnica nacional para este sistema.

Las pruebas realizadas ponen de manifiesto la compatibilidad del tren con los siguientes circuitos de vía: FTGS 46, FTGS 917, FS 3000 y UM71/2000 1435mm / AC 25kV-50Hz / LZB

Con catenaria Re 250 (Línea Madrid-Sevilla) no se superan los límites de las fuerzas de contacto hasta la velocidad de 300 km/h, en condiciones normales (con regulación activa, tanto en posición de codo abierto como en posición de codo cerrado) y sin regulación activa sólo en posición de codo abierto.

En la condición sin regulación activa y posición de codo cerrado no se superan los límites de las fuerzas de contacto hasta la velocidad de 200 km/h.

El listado de señales a registrar por el registrador jurídico del equipo LZB-80/16 E, DSK (EFA 15), no contiene la totalidad de señales requeridas por la normativa técnica nacional para este sistema.

Las pruebas realizadas ponen de manifiesto la compatibilidad del tren con los siguientes circuitos de vía: FTGS 46, FTGS 917, FS 3000 y UM71/2000

3.1.3.1.1 Date of the original authorisation:

2020-10-30

3.1.3.1.2 Authorisation holder:

CAF

3.1.3.1.3 Authorisation document reference:

ES5920204016

3.1.3.1.4 National certificate references:

017/2020/V01

3.1.3.1.5 Parameters for which conformity to applicable national rules has been assessed:

1435mm / AC 25kV-50Hz / ASFA

1 Documentation

2 Structure and mechanical parts

3 Track interaction and gauging

4 Braking

5 Passenger-related items

6 Environmental conditions and aerodynamic effects

7 External warning, signalling, marking functions and software integrity requirements

8 On-board power supply and control systems

9 Staff facilities, interfaces and environment

10 Fire safety and evacuation

11 Servicing

12.1.1 Non-GSM-R radio system

12.2.1 National on-board signalling systems

13.1 Specific items to place on-board

1435mm / AC 25kV-50Hz / Level 2

1 Documentation

2 Structure and mechanical parts

3 Track interaction and gauging

4 Braking

5 Passenger-related items

6 Environmental conditions and aerodynamic effects

7 External warning, signalling, marking functions and software integrity requirements

8 On-board power supply and control systems

9 Staff facilities, interfaces and environment

10 Fire safety and evacuation

11 Servicing

12.1.1 Non-GSM-R radio system

12.2.1 National on-board signalling systems

13.1 Specific items to place on-board

1435mm / AC 25kV-50Hz / LZB

1 Documentation

2 Structure and mechanical parts

3 Track interaction and gauging

4 Braking

5 Passenger-related items

6 Environmental conditions and aerodynamic effects

7 External warning, signalling, marking functions and software integrity requirements

8 On-board power supply and control systems

9 Staff facilities, interfaces and environment

10 Fire safety and evacuation

- 11 Servicing
- 12.1.1 Non-GSM-R radio system
- 12.2.1 National on-board signalling systems
- 13.1 Specific items to place on-board

Section 4: Technical Characteristics

Wheel set gauge

4.1.3 Wheel set gauge	1435	mm
-----------------------	------	----

4.13.1 Signalling

4.13.1.1 ETCS equipment on-board and its level	Level 2
--	---------

4.13.1.2 ETCS baseline.version (x.y). If the version is not fully compatible it shall be indicated in brackets	2.0 (2.3.0.d)
--	---------------

4.13.1.3 ETCS on-board equipment for reception of infill-function information via loop or GSM-R	GSM-R
---	-------

4.13.1.4 ETCS national applications implemented (NID_XUSER of Packet 44)	None
--	------

4.13.1.5 Class B or other train protection control and warning systems installed (system and if applicable version)	ASFA (Digital ET v2 Siemens) LZB (LZB-80/16 EL E: 6.42)
---	--

4.13.1.6 Special conditions implemented on-board to switch over between different train protection control and warning systems.	ASFA (Digital ET v2 Siemens) -> LZB (LZB-80/16 EL E: 6.42) Level 2 -> ASFA (Digital ET v2 Siemens) Level 2 -> LZB (LZB-80/16 EL E: 6.42)
---	--

4.13.2 Radio

4.13.2.1 GSM-R equipment on board and its version (FRS and SRS)	7/15
---	------

4.13.2.2	Number of GSM-R mobile sets in driving cab for data transmission		1			
4.13.2.3	Class B or other radio systems installed (system and if applicable version)		UIC Radio			Chapter 1-4+6
4.13.2.4	Special conditions implemented on-board to switch over between different radio systems.		None			
4.10.1	Energy supply system		AC 25kV-50Hz			
4.10.2	Maximum power (to be indicated for each energy supply system the vehicle is equipped for)	AC 25kV-50Hz	5100			kW
4.10.3	Maximum rated current from the catenary (to be indicated for each electrical energy supply system the vehicle is equipped for)	AC 25kV-50Hz	265			A
4.10.5	Height of interaction of pantograph with contact wires (over top of rail) (to be indicated for each energy supply system the vehicle is equipped for)	AC 25kV-50Hz	4535.00		m	6560.00 m
4.10.6	Pantograph head (to be indicated for each energy supply system the vehicle is equipped for)	AC 25kV-50Hz	1600			mm
4.10.7	Number of pantographs in contact with the overhead contact line (OCL) (to be indicated for each energy supply system the vehicle is equipped for)	AC 25kV-50Hz	1			

4.10.10 Material of pantograph contact strip the vehicle may be equipped with (to be indicated for each energy supply system the vehicle is equipped for)	AC 25kV-50Hz	Plain carbon
4.10.11 Automatic dropping device (ADD) fitted (to be indicated for each energy supply system the vehicle is equipped for)	AC 25kV-50Hz	True
4.10.12 TSI conform energy meter for billing purposes installed on board	AC 25kV-50Hz	True

4.1.2 Speed

4.1.2.1 Maximum design speed	1435mm / AC 25kV-50Hz / ASFA	200	km/h
	1435mm / AC 25kV-50Hz / Level 2	320	km/h
	1435mm / AC 25kV-50Hz / LZB	320	km/h
4.1.4 Conditions of use regarding train formation			Fixed formation
4.1.5 Maximum number of trainsets or locomotives coupled together in multiple operation.	1435mm / AC 25kV-50Hz / ASFA	1	
	1435mm / AC 25kV-50Hz / Level 2	1	
	1435mm / AC 25kV-50Hz / LZB	1	
4.1.8 Type meets the requirements necessary for validity of the vehicle authorisation granted by one Member State in other MSs			Not applicable
4.1.10 Structural category			P-II of EN12663-1:2010
4.2.1 Vehicle kinematic gauge (interoperable gauge)			G1
4.3.1 Temperature range			T3 (-25 to +45)
4.3.2 Altitude range			A1
4.3.3 Snow ice and hail conditions			nominal

4.4.1 Fire safety category		B	
4.5.2 Design mass			
4.5.2.1 Design mass in working order		226288	kg
4.5.2.2 Design mass under normal payload		244038	kg
4.5.2.3 Design mass under exceptional payload		244038	kg
4.5.3 Static axle load			
4.5.3.1 Static axle load in working order		14797	kg
4.5.3.2 Static axle load under normal payload/ maximum payload for freight wagons		0	kg
4.5.3.3 Static axle load under exceptional payload		17000	kg
4.6.1 Cant deficiency (maximum uncompensated lateral acceleration) for which the vehicle has been assessed	1435mm	154.4	mm
4.6.2 Vehicle equipped with a cant deficiency compensation system ("tilting vehicle")		False	
4.7.1 Maximum train deceleration		1.33	m/s ²
4.7.2.1 Brake performance on steep gradients with normal payload			
4.7.2.1.1 Reference case of TSI		Reference case (90% of design speed, Category 1 of HS INF TSI Dec 2008/217/EC)	
4.7.3 Parking brake			
4.7.3.2 Parking brake type (if the vehicle is fitted with it)		Automatic	

4.7.3.3 Maximum gradient on which the unit is kept immobilized by the parking brake alone (if the vehicle is fitted with it)	35	‰ (mm/m)
4.7.4.1 Eddy current brake		
4.7.4.1.1 Eddy current brake fitted	False	
4.7.4.2 Magnetic brake		
4.7.4.2.1 Magnetic brake fitted	False	
4.7.4.3 Regenerative brake (only for vehicles with electrical traction)		
4.7.4.3.1 Regenerative brake fitted	True	
4.7.4.3.2 Possibility of preventing the use of the regenerative brake (only if fitted with regenerative brake)	False	
4.8.1 Vehicle length	101.2	m
4.8.2 Minimum in-service wheel diameter	850	mm
4.8.4 Minimum horizontal curve radius capability	250	m
4.8.8 Suitability for transport on ferries	False	
4.9.1 Type of end coupling (indicating tensile and compressive forces)	Automatic Type 10 / Scharfenberg	
4.9.2 Axle bearing condition monitoring (hot axles box detection)	Onboard equipped (OP)	
4.9.3 Flange lubrication		
4.9.3.1 Flange lubrication fitted	True	
4.9.3.2 Possibility of preventing the use of the lubrication device (only if fitted with flange lubrication)	False	
4.11.1 Pass-by noise level (dB(A))	92	dB(A)

4.11.2 Pass-by noise level was measured under reference conditions	False	
4.11.3 Stationary noise level (dB(A))	63	dB(A)
4.11.4 Starting noise level (dB(A))	77	dB(A)

4.12.1 General passenger related characteristics

4.12.1.1 Number of fixed seats	From 00211 To 00211
4.12.1.2 Number of toilets	5
4.12.1.3 Number of sleeping places	From 00000 To 00000

4.12.2 PRM related characteristics

4.12.2.1 Number of priority seats	From 00016 To 00016
4.12.2.2 Number of wheelchair spaces	From 00002 To 00002
4.12.2.3 Number of PRM accessible toilets	1
4.12.2.4 Number of wheelchair accessible sleeping places	From 00000 To 00000

4.12.3 Passenger access and egress

4.12.3.1 Platform heights for which the vehicle is designed.	760	mm
	680 mm	mm
4.12.3.2 Description of any integrated boarding aids (if provided)	moveable steps	
4.12.3.3 Description of any portable boarding aids if considered in the design of the vehicle for meeting the PRM TSI requirements	Evacuation walkway	

4.14.1 Type of train detection systems for which the vehicle has been designed and assessed	track circuits
---	----------------

4.14.2 Detailed vehicle characteristics related to compatibility with train detection systems

4.14.2.1 Maximum distance between consecutive axles	14400	mm
---	-------	----

4.14.2.2	Minimum distance between consecutive axles	2500	mm		
4.14.2.3	Distance between the first and the last axle	93300	mm		
4.14.2.4	Maximum length of the vehicle nose	4685	mm		
4.14.2.5	Minimum wheel rim width	135	mm		
4.14.2.6	Minimum wheel diameter	850	mm		
4.14.2.7	Minimum flange thickness	22	mm		
4.14.2.8	Minimum flange height	27.5	mm		
4.14.2.9	Maximum flange height	36	mm		
4.14.2.10	Minimum axle load	13.574	t		
4.14.2.12	Wheel material is ferromagnetic	True			
4.14.2.13	Maximum sanding output	000026.000	g	000001.000	s
4.14.2.14	Possibility of preventing the use of sanding	True			
4.14.2.16	Maximum impedance between opposite wheels of a wheelset	0.01	Ohm		
4.14.2.17	Minimum vehicle impedance (between wheels and pantograph) (only for vehicles equipped for 1500V or 3000V DC)	AC 25kV-50Hz	0,05 Ohm		