

Section 1: General Information

0. Identification of the type

0.1 0.2 0.4 Type ID: 71-056-0003-0-001-001

0.3 Date of record: 2020-07-15

1. General Information

1.1 Type name: EMC LGV Hybride

1.2 Alternative type name: Engin de maintenance caténaire

1.3 Manufacturer:

1.3.1 Manufacturer identification data:

1.3.1.1 Name of organisation: John Cockerill (CMI S.A.)

1.3.1.2 Registered business number: BE 0422 362 447

1.3.1.3 Organisation code:

1.3.2 Manufacturer contact data:

1.3.2.1 Address of organisation, street and number: Avenue Griener, 1

1.3.2.2 Town: SERAING BELGIQUE

1.3.2.3 Country code: BE

1.3.2.4 Post code: B-4100

1.3.2.5 E-mail address: welcome@johncockerill.com

Registration Method: New Type

Registered Vehicle Type:

1.4 Category: Special Vehicles

1.5 Subcategory: Self-propelled special vehicle

1.6 Platform: -

Section 2: Conformity with TSI

2.1 Conformity with TSI and Sections not complied with:

1435mm / Autonomous / Crocodile

Not conform to any TSI

1435mm / Autonomous / DAAT

Not conform to any TSI

1435mm / Autonomous / TVM 430

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

Rapport DeBo Réf : DGOPPIPEO/DeBo/OT762

Section 3: Authorisations

France

3.0 Area Of Use: FR(France)

3.1.1 Member state of authorisation: France(FR)

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:

1435mm / Autonomous / Crocodile

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.2 Track circuit restrictions: True

1.3 Speed restrictions in Km/h: 80

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.5 B System on board

2.5.1 Class B signalling system: 2.5.107 Crocodile

2.5.1 Class B signalling system: 2.5.130 DAAT

2.5.1 Class B signalling system: 2.5.147 TVM 430

2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise

3 Environmental restrictions

3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1

4 Restrictions on use

4.1 Time based: True

4.2 Condition based (distance travelled, wear, etc.): True

5 On-board equipment

5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

1435mm / Autonomous / DAAT

- 1 Technical restriction related to construction
 - 1.1 Minimum curve radius in meters: 100
 - 1.2 Track circuit restrictions: True
 - 1.3 Speed restrictions in Km/h: 80
 - 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0
- 2 Geographical restriction
 - 2.1 Kinematic gauge (coding WAG TSI): G1
 - 2.2 Wheelset gauge: 2.2.4 Gauge 1435
 - 2.4 ERTMS on board: 2.4.2 GSM-R voice
 - 2.5 B System on board
 - 2.5.1 Class B signalling system: 2.5.107 Crocodile
 - 2.5.1 Class B signalling system: 2.5.130 DAAT
 - 2.5.1 Class B signalling system: 2.5.147 TVM 430
 - 2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise
- 3 Environmental restrictions
 - 3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1
- 4 Restrictions on use
 - 4.1 Time based: True
 - 4.2 Condition based (distance travelled, wear, etc.): True
- 5 On-board equipment
 - 5.1 Recording device: 5.1.02 "Acquisition et Traitement des Événements de Sécurité en Statique" (ATESS)

1435mm / Autonomous / TVM 430

- 1 Technical restriction related to construction
 - 1.1 Minimum curve radius in meters: 100
 - 1.2 Track circuit restrictions: True
 - 1.3 Speed restrictions in Km/h: 100
 - 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0
- 2 Geographical restriction
 - 2.1 Kinematic gauge (coding WAG TSI): G1
 - 2.2 Wheelset gauge: 2.2.4 Gauge 1435
 - 2.4 ERTMS on board: 2.4.2 GSM-R voice
 - 2.5 B System on board
 - 2.5.1 Class B signalling system: 2.5.107 Crocodile

2.5.1 Class B signalling system: 2.5.130 DAAT
 2.5.1 Class B signalling system: 2.5.147 TVM 430
 2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise
 3 Environmental restrictions
 3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1
 4 Restrictions on use
 4.1 Time based: True
 4.2 Condition based (distance travelled, wear, etc.): True
 5 On-board equipment
 5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

3.1.2.4 Non-coded conditions for use and other restrictions:

3.1.3.1.1 Date of the original authorisation: 2020-07-09

3.1.3.2.2 Date of the last modification: 2020-11-17

3.1.3.2.3 Authorisation holder:

3.1.3.2.3.1 Authorisation holder identification data:

3.1.3.2.3.1.1 Name of organisation: SNCF Réseau (DGOP PI P EO)

3.1.3.2.3.1.2 Registered business number: 412280737

3.1.3.2.3.1.3 Organisation code:

3.1.3.2.3.2 Authorisation holder contact data:

3.1.3.2.3.2.1 Address of organisation, street and number: 18 rue de Dunkerque

3.1.3.2.3.2.2 Town: Paris

3.1.3.2.3.2.3 Country code: 87

3.1.3.2.3.2.4 Post code: 75010

3.1.3.2.3.2.5 E-mail address: andre.herreman@reseau.sncf.fr

3.1.3.2.4 Authorisation document reference: FR8020200008

3.1.3.2.5 Certificate of verification : Reference of type examination or design examination type:

BE/000422.36
 2.447/2020/0
 00001

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

1435mm / Autonomous / Crocodile

0.0 None

1435mm / Autonomous / DAAT

0.0 None

1435mm / Autonomous / TVM 430

0.0 None

3.1.3.2.7 Comments:

3.1.3.2.8 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013:

déclaration référencée "déclaration du proposant (fabricant) au sens du règlement UE 402-2013" du 05/11/2020

3.1.3.1 Initial Registration

3.1.2.3 Coded conditions for use and other restrictions:

1435mm / Autonomous / Crocodile

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.2 Track circuit restrictions: True

1.3 Speed restrictions in Km/h: 80

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.5 B System on board

2.5.1 Class B signalling system: 2.5.107 Crocodile

2.5.1 Class B signalling system: 2.5.130 DAAT

2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise

3 Environmental restrictions

3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1

4 Restrictions on use

4.1 Time based: True

4.2 Condition based (distance travelled, wear, etc.): True

5 On-board equipment

5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

1435mm / Autonomous / DAAT

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.2 Track circuit restrictions: True

1.3 Speed restrictions in Km/h: 80

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 0

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1

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3 Environmental restrictions

3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1

4 Restrictions on use

4.1 Time based: True

4.2 Condition based (distance travelled, wear, etc.): True

5 On-board equipment

5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

3.1.2.4 Non-coded conditions for use and other restrictions:

3.1.3.1.1 Date of the original authorisation: 2020-07-09

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3.1.3.1.2.1 Authorisation holder identification data:

3.1.3.1.2.1.1 Name of organisation: SNCF Réseau (DGOP PI P EO)

3.1.3.1.2.1.2 Registered business number: 412280737

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3.1.3.1.2.2.3 Country code:	87
3.1.3.1.2.2.4 Post code:	75010
3.1.3.1.2.2.5 E-mail address:	andre.herreman@reseau.sncf.fr
3.1.3.1.3 Authorisation document reference:	FR8020200008
3.1.3.1.4 Certificate of verification : Reference of type examination or design examination type:	BE/000422.36 2.447/2020/0 00001
3.1.3.1.5 Parameters for which conformity to applicable national rules has been assessed:	1435mm / Autonomous / Crocodile 0.0 None 1435mm / Autonomous / DAAT 0.0 None
3.1.3.1.7 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013:	déclaration sans référence du 22/06/2020
3.1.3.2 Modification	
3.1.3.2.2 Date of the last modification:	2020-11-17
3.1.2.3 Coded conditions for use and other restrictions:	<p>1435mm / Autonomous / Crocodile</p> <p>2 Geographical restriction</p> <p>2.5.1 Class B signalling system: 2.5.147 TVM 430</p> <p>1435mm / Autonomous / DAAT</p> <p>2 Geographical restriction</p> <p>2.5.1 Class B signalling system: 2.5.147 TVM 430</p> <p>1435mm / Autonomous / TVM 430</p> <p>1 Technical restriction related to construction</p> <p>1.1 Minimum curve radius in meters: 100</p> <p>1.2 Track circuit restrictions: True</p> <p>1.3 Speed restrictions in Km/h: 100</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</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>

2.5 B System on board

2.5.1 Class B signalling system: 2.5.107 Crocodile

2.5.1 Class B signalling system: 2.5.130 DAAT

2.5.1 Class B signalling system: 2.5.147 TVM 430

2.7 Noise category: 2.7.4 Can be used in all quieter routes-TSI Noise not compliant – exempted in accordance with TSI Noise

3 Environmental restrictions

3.1 Climatic zone EN 50125-1:2014: 3.1.1 T1

4 Restrictions on use

4.1 Time based: True

4.2 Condition based (distance travelled, wear, etc.): True

5 On-board equipment

5.1 Recording device: 5.1.02 "Acquisition et Traitement des Evénements de Sécurité en Statique" (ATESS)

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

1435mm / Autonomous / TVM 430

0.0 None

3.1.3.2.8 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013:

déclaration référencée "déclaration du proposant (fabricant) au sens du règlement UE 402-2013" du 05/11/2020

Section 4: Technical Characteristics

4.1.3 Wheel set gauge
RC

1435 mm

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

2

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

Crocodile
DAAT
TVM 430

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	None (GSMR conforme IN 1418)
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	Not applicable
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
4.10.1 Energy supply system (voltage and frequency) RC	Autonomous

4.1.2 Speed

4.1.2.1 Maximum design speed	1435mm / Autonomous / Crocodile	80	km/h
	1435mm / Autonomous / DAAT	80	km/h
	1435mm / Autonomous / TVM 430	100	km/h
4.2.1 Reference profile RC	G1		
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	OTM		

4.5.2 Design mass

4.5.2.1 Design mass in working order RC	112250	kg
4.5.2.2 Design mass under normal payload RC	115250	kg
4.5.2.3 Design mass under exceptional payload RC	115250	kg

4.5.3 Static axle load

4.5.3.1 Static axle load in working order RC	19000	kg
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4.5.3.2 Static axle load under normal payload RC	19500	kg			
4.5.3.3 Static axle load under exceptional payload RC	20000	kg			
4.5.3.4 Position of the axles along the unit (axle spacing) :	1435mm / Autonomous / Crocodile	a: 0001,80 b: 0001,62 c: 0013,55	m		
a: Distance between axles	1435mm / Autonomous / DAAT	a: 0001,80 b: 0001,62 c: 0013,55	m		
b: Distance from end axle to the end of the nearest coupling plane	1435mm / Autonomous / TVM 430	a: 0001,80 b: 0001,62 c: 0013,55	m		
c: distance between two inside axles RC					
4.5.5 Total vehicle mass (for each vehicle of the unit) RC	1435mm / Autonomous / Crocodile	112250	kg		
	1435mm / Autonomous / DAAT	112250	kg		
	1435mm / Autonomous / TVM 430	112250	kg		
4.5.6 Mass per wheel RC	1435mm / Autonomous / Crocodile	9750	kg		
	1435mm / Autonomous / DAAT	9750	kg		
	1435mm / Autonomous / TVM 430	9750	kg		
4.6.4 Combination of maximum speed and maximum cant deficiency for which the vehicle was assessed RC	1435mm / Autonomous / Crocodile	0080,00	km/h	0130,00	mm
	1435mm / Autonomous / DAAT	0080,00	km/h	0130,00	mm
	1435mm / Autonomous / TVM 430	0100,00	km/h	0130,00	mm
4.6.5 Rail inclination RC	1435mm / Autonomous / Crocodile	1/20			
	1435mm / Autonomous / DAAT	1/20			
	1435mm / Autonomous / TVM 430	1/20			
4.7.1 Maximum average deceleration	0.8	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 of (80 km/h, 21‰ (mm/m), 46 km)				

4.7.2.1.6 Maximum brake thermal energy capacity	1435mm / Autonomous / Crocodile	2180	kJ
	1435mm / Autonomous / DAAT	2180	kJ
	1435mm / Autonomous / TVM 430	2180	kJ

4.7.3 Parking brake

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)	15	‰ (mm/m)
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4.7.4.1 Eddy current brake

4.7.4.1.1 Eddy current track brake fitted RC	False
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4.7.4.2 Magnetic brake

4.7.4.2.1 Magnetic track brake fitted RC	False
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4.7.4.3 Regenerative brake (only for vehicles with electrical traction)

4.7.4.3.1 Regenerative brake fitted RC	True
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4.7.4.3.2 Possibility of preventing the use of the regenerative brake (only if fitted with regenerative brake) RC	True
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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 / Crocodile	a: 0332,00	m	0000,80	m/s ²
		b: 0332,00	m	0000,80	m/s ²
		c: 0332,00	m	0000,80	m/s ²
	1435mm / Autonomous / DAAT	a: 0332,00	m	0000,80	m/s ²
		b: 0332,00	m	0000,80	m/s ²
		c: 0332,00	m	0000,80	m/s ²
	1435mm / Autonomous / TVM 430	a: 0556,00	m	0000,75	m/s ²
		b: 0556,00	m	0000,75	m/s ²
		c: 0556,00	m	0000,75	m/s ²

4.7.6 For general operation :	1435mm / Autonomous / Crocodile	000,00	(%) or	00108,00	tonnes
Brake weight percentage (lambda) or Braked mass	1435mm / Autonomous / DAAT	000,00	(%) or	00108,00	tonnes
	1435mm / Autonomous / TVM 430	000,00	(%) or	00108,00	tonnes
4.7.7 Service brake: At maximum service brake:	1435mm / Autonomous / Crocodile	0349,00	m	0000,80	m/s ²
Stopping distance,	1435mm / Autonomous / DAAT	0349,00	m	0000,80	m/s ²
Maximum deceleration, for the load condition 'design mass under normal payload' at the design maximum speed.	1435mm / Autonomous / TVM 430	0561,00	m	0000,75	m/s ²
4.7.8 Wheel slide protection system	1435mm / Autonomous / Crocodile	False			
	1435mm / Autonomous / DAAT	False			
	1435mm / Autonomous / TVM 430	False			
4.8.1 Vehicle length		31.4	m		
4.8.2 Minimum in-service wheel diameter		860	mm		
RC					
4.8.4 Minimum horizontal curve radius capability		100	m		
RC					
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				
4.9.2 Axle bearing condition monitoring (hot axles box detection)			Detectable by line side		
RC					
4.14.1 Type of train detection systems for which the vehicle has been designed and assessed			Track circuits		
RC			Axle counters		