1. GENERAL DESCRIPTION

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1. GENERAL DESCRIPTION

1.1. INTRODUCTION

The locomotives described in this manual are provided with an EMD 16-710-G3B turbocharged diesel engine. The engine supplies the main generator with the power mechanically necessary for generating electric current for the traction. The traction power is distributed by the transmission system to each traction motor fitted on the bogies. Each traction motor is directly geared to a couple of driven wheels.

Basically, the cab located next the electric cabinet is considered to be the front cab. All the information contained in this manual regarding the location or identification of any equipment is based on this principle. Traction motor #1, #2 and #3 are located in this order on this bogie #1 that is located under this cab.

The locomotive is designed in order to run in single or multiple operation with single control up to three units. When operating in this mode, all the units will be simultaneously controlled from the leading unit by intercommunicating the locomotive control circuits through the multiple unit located on the locomotive front part.

The operation control of most locomotive systems is performed by a computer (EM2000 microprocessor). The computer detects and warns about most locomotive fault conditions through messages on the display (located on the desk) and through audible alarms. It also records failure messages and significant information in a file memory. This is useful for obtaining a permanent record of events and failures for corrective maintenance.

In Figure 1-1 are shown the general dimensions and the layout of the equipment fitted on the locomotive.

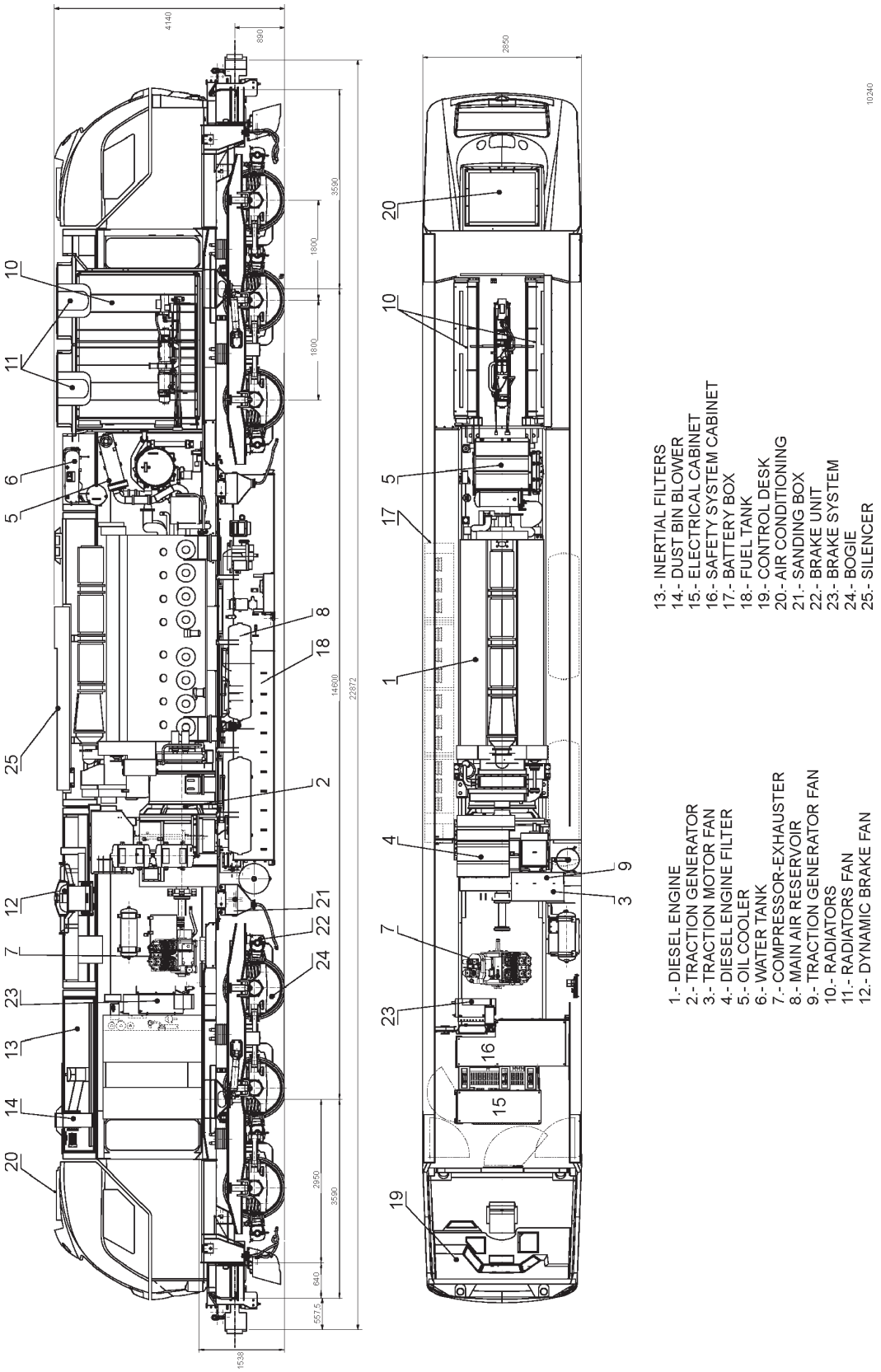

Figure 1-1. E4000 Locomotive equipment layout (1 of 2)

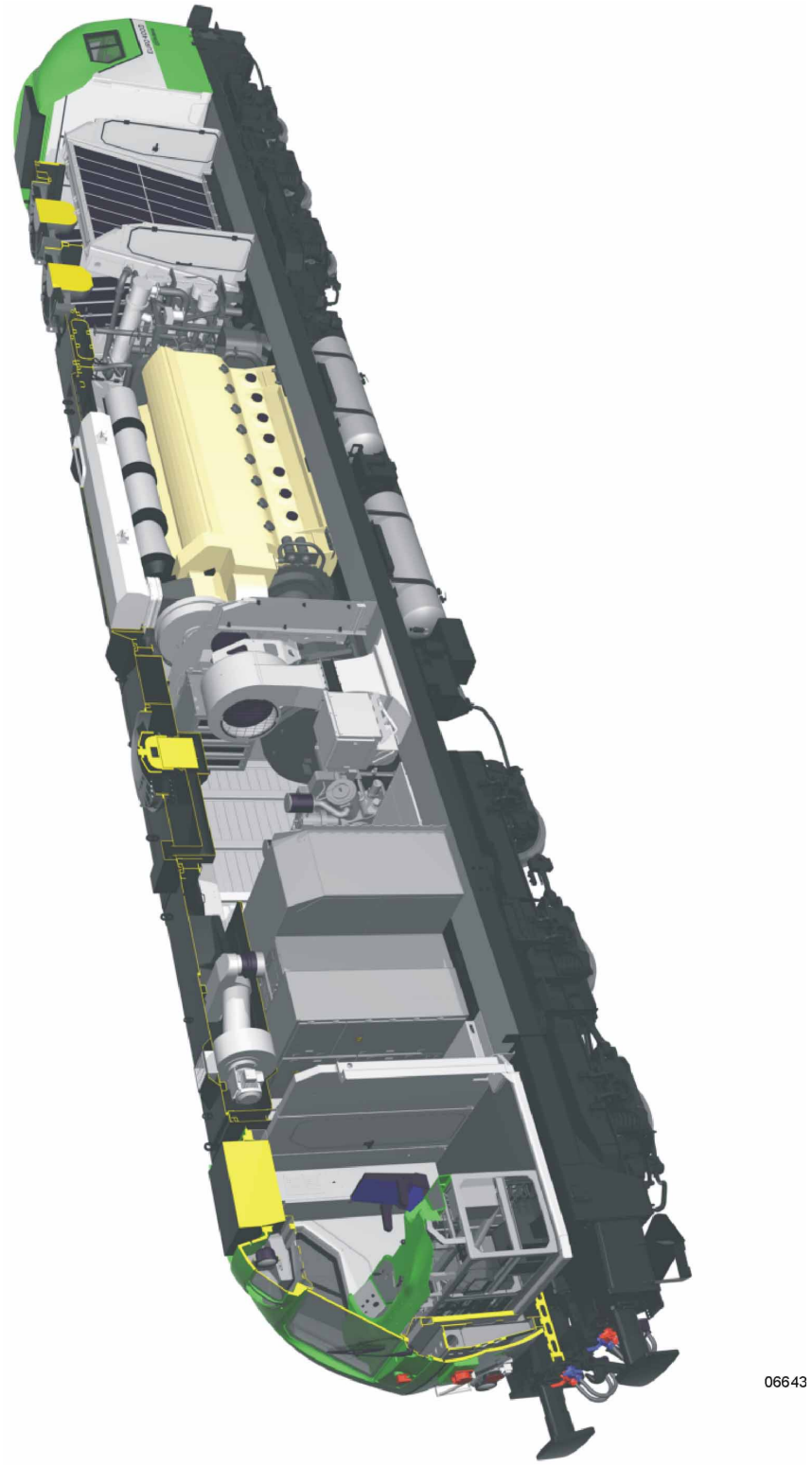

Figure 1-1. Typical E4000 Locomotive equipment layout (2 of 2)

1.2 GENERAL DATA

Main Features

Locomotive Model: ..... EURO 4000

Axle Arrangement: ..... Co' Co'

Number of Driving Cabs: 2

Nominal Power UIC ..... 3187 KW (4000 HP)

Locomotive Axleload ..... 20,5 ± 2% Tn

Approximate Weight with Supplies: ..... 123 ± 3% Tn

Operating Features

Traction

Maximum Speed ..... 130 Km/h

Overspeed (Traction Cutout) ..... 132 Km/h

Overspeed (Emergency Brake Application) ..... 136 Km/h

Maximum Traction Effort (Starting) ..... approx. 400 KN

Tractive Effort at Continuous Rating ..... approx. 244 KN

Tractive Effort at 120 km/h ..... approx. 79,3 KN

Pneumatic Brake

Type ..... KNORR-MBS

Braking System ..... Dual air / Vacuum

Maximum Brake Effort ..... approx. 91 KN

Tread Brake Cylinders:

- Without Parkbrake ..... 4 per Bogie

- With Parkbrake ..... 2 per Bogie

Maximum Pressure in Brake Cylinders ..... 3,4 Bar

Dynamic Brake

Type ..... Rheostatic

Brake Effort at 120 Km/h ..... approx. 50 KN

Maximum Brake Effort (at 41 Km/h approx.) ..... approx. 141 KN

Maximum Power (600 A) ..... 1500 KW

Diesel Engine

Model 16-710G3B-T2

Type ..... Turbocharged

Operating Principle ..... 2 stroke

Number of Cylinders 16

Cylinder Arrangement ..... 45º V

Compression Ratio 16:1

Rotation Direction ..... Anticlockwise

Diameter and Stroke ..... 230,2 x 279 mm. (9-1/16" x 11")

Idle speed ..... 200 r.p.m.

Maximum Speed ..... 904 r.p.m.

Main Generator

Model AR20/CA6

Maximum Current in Continuous Mode ..... 8100 A

Maximum Output Voltage (DC) ..... 1465 Vcc

Auxiliary Alternator

Mode CA6

Type ..... A.C. Three-phase

Nominal Voltage ..... 215 V between phases

Frequency at 900 r.p.m. ..... 120 Hz.

Auxiliary Generator

Type ..... A.C.

Continuous Output Voltage (after being rectified) ..... 72 up to 78 Vcc.

Power .....18 KW

Traction Motors

Model ..... D43 TR

Quantity ..... 6 (one per axle)

Type .....Serial DC Motor, Forced Ventilation

Maximum Current in Continuous Mode. ..... 950 A

Battery

Type ..... Sealed Pb

Number of Elements 32

Nominal Voltage ..... 64 V

Capacity (Amps per hour) .....425 Ah

Air Compressor - Exhauster

Type ..... GARDNER DENVER

Model ..... WLS

Comperssor portion ..... 2 cylinders and interccoler

Exhauster portion ..... 4 cylinders

Minimum air production at 900 r.p.m. and 9 Bar .....2800 l/min

Minimum exhauster at 900 r.p.m. and 20" Hg Vac ..... 400 CFM

Main Reservoirs

Air Capacity .....800 l

Air Dryer

Model ..... GRAHAM-WHITE 994-100

Operating Pressure .....5,2 to 10,4 Bar

Bogies

Type ..... C (3 Driving Axles)

Track Gauge (in mm) ..... 1067 mm

Wheelbase ..... 1800 mm

Wheel Diameter (New Wheel) ..... 1067 mm

Wheel Diameter (Maximum Wear) ..... 991 mm

Gear Ratio 71:18

Minimum Curve Negotiation Radius ..... 90 m

Supplies

Fuel Tank ..... 6450 l

Diesel Engine Oil ..... 1300 l

Cooling Water ..... 1500 l

Sand ..... 480 l

Nominal Dimensions

Distance Between Pivots ..... 14600 mm

Distance Between Couplers ..... 23000 mm

Maximum Width ..... 2850 mm

Maximum Height ..... 4264 mm