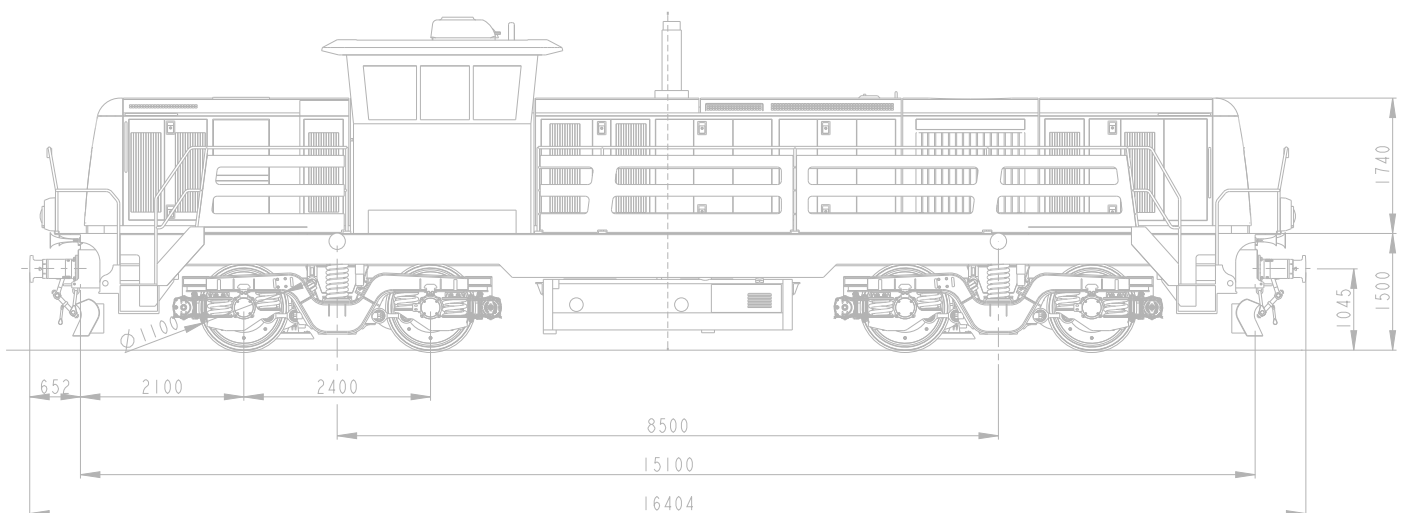


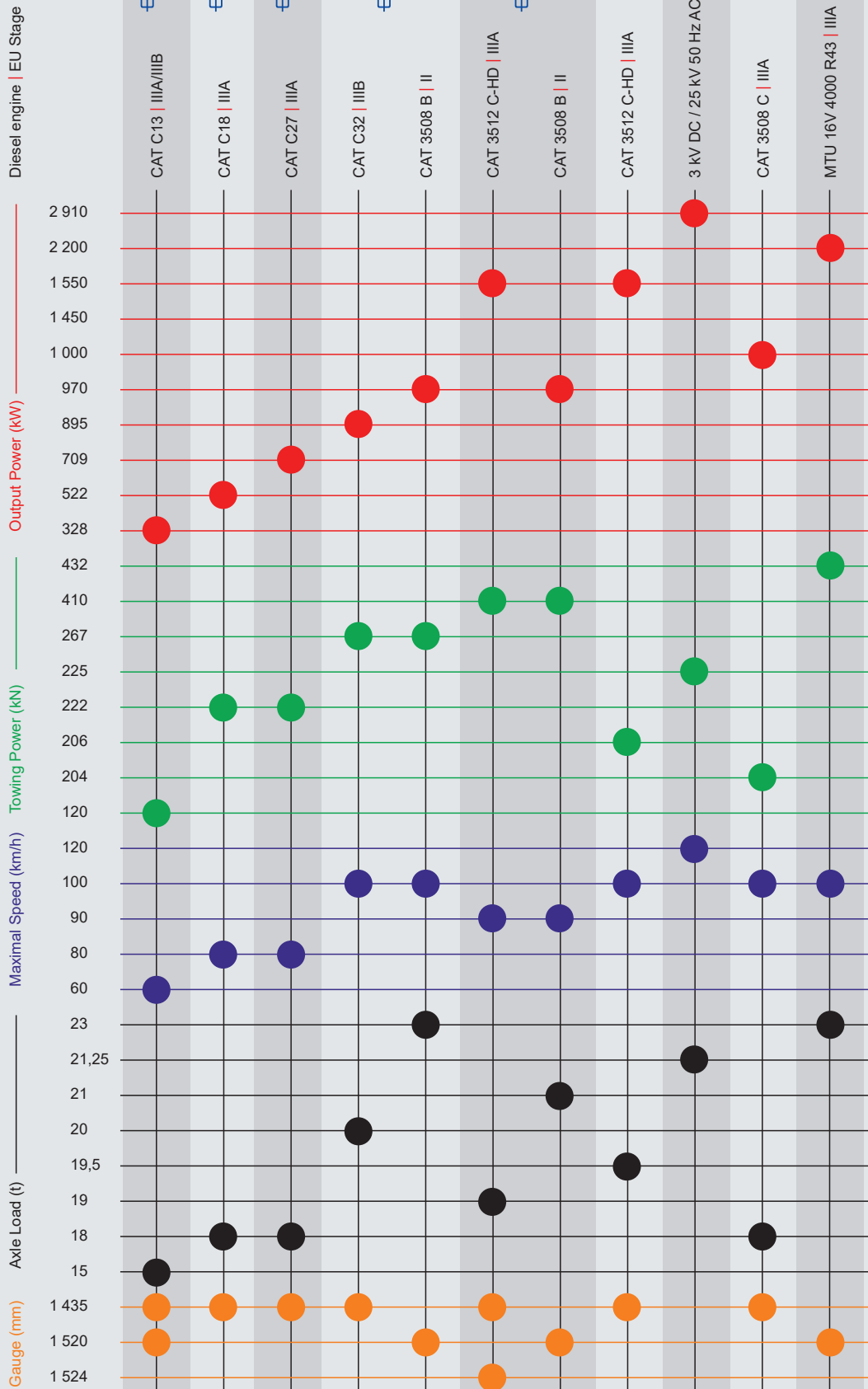


## ▶ CATALOGUE

of locomotives and special vehicles



# Locomotive Portfolio CZ LOKO














## CZ LOKO locomotives

CZ LOKO, a.s is the largest manufacturer of diesel-electric locomotives in the Czech Republic with a unique offer of solutions for the development of locomotive fleets. The product portfolio includes the production of new locomotives, complex modernisation, all levels of repairs, maintenance and renting of rail vehicles. To **improve safety**, CZ LOKO locomotives are equipped with a digital control system, LED signal lights and a tower cab providing a 360° view. To **improve efficiency** the equipment of locomotives includes cruise control or automatic speed control, multi-control operation, diesel engine preheating, GPS/GSM remote monitoring, wheel slide protection (by braking), instrument panel diagnostics and wheel flange lubrication with grease. To further **reduce operating costs**, locomotives can be equipped with a sliding bearing of traction motors, a radio remote control, an automatic coupler and an anti-skid system. An ergonomic workplace, an independently heated and air-conditioned cab, a refrigerator and a microwave oven provide **comfort to the engine driver**. The design of standard series of CZ LOKO locomotives provides room for customisation according to national infrastructure systems and for individual customisations according to the customer's requirements.

### Traction at a constant speed on a 5 ‰ gradient

locomotive

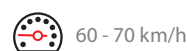
CAT C13, 328 kW 1 250 t/8,9 km/h		EffiShunter 300 Page 3 - 6
CAT C18, 522 kW 2 450 t/9 km/h		EffiShunter 500 Page 7 - 8
CAT C27, 709 kW 2 200 t/12,5 km/h		EffiShunter 700 Page 9 - 10
CAT C32, 895 kW 2 650 t/14,5 km/h		EffiShunter 1 000 Page 11 - 14
CAT C3508B, 970 kW 2 700 t/16 km/h		EffiShunter 1 000 Page 11 - 14
CAT 3512C HD, 1 550 kW 3 950 t/15,6 km/h		EffiShunter 1600 Page 15 - 18
CAT 3508B, 970 kW 4 000 t/9,3 km/h		EffiShunter 1600 Page 15 - 18
CAT 3512C HD, 1 550 kW 2 050 t/30 km/h		EffiLiner 1600 Page 19 - 20
3 kV DC / 25 kV 50 Hz AC, 2 910 kW 2 000 t/67,5 km/h		EffiLiner 3000 Page 21 - 22
CAT 3508C, 1 000 kW 1 950 t/19 km/h		741.7 Page 23 - 24
2x MTU 16V 4000 R43, 2x 2 200 kW 8 000 t / 22,6 km/h		2M62UM Page 25 - 26

### Special vehicles

CZ LOKO has developed and produced numerous new and modernised vehicles for the construction, renewal and maintenance of lines, including fault diagnosis and repair of traction lines. Thanks to transfer of traction forces by modern systems, unification of parts and numerous optional technologies and working superstructures, the vehicle enables the operators to significantly increase work team productivity while maintaining the safety of people and equipment.

### parameters / optional accessories

vehicle



MUV 74

Page 27 - 28

# EFFISHUNTER<sup>®</sup> 300

Diesel locomotive EffiShunter 300 is primarily intended for shunting service. The locomotive is equipped with alternating/direct current power transmission (AC/DC) from the diesel engine to two powered wheelsets. Parameters of the vehicle are optimized for shunting in depots and stations, and for operation on industrial sidings and special lines (e.g. the underground).

## Benefits and advantages:

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- spacious and safe platforms for shunters
- service period: 5 000 km / 2 months



The two-axle vehicle undercarriage consists of individually powered wheelsets with suspension and shock-absorption. The traction motors are nose-suspended on the axles using sliding bearings. The drive unit is located in the front hood of the locomotive and comprises the Caterpillar diesel engine and the Siemens traction alternator. The front hood space includes most of the auxiliary drives, engine cooling block and the pneumatic unit. Electrical switchgear is installed in the rear hood. The power regulation and control of the entire locomotive is ensured by the control system made by MSV elektronika with cruise control function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO air brake and a parking (stored-energy) brake.

## Parameters of EffiShunter 300:

Track gauge	1 435 mm	1 520 mm
Meets the standards	TSI	GOST
Number of powered axles	2	
Wheelset arrangement	Bo	
Maximum operating speed	60 km/h	
Minimum curve radius	60 m	
Line category	A	
Lateral compatibility	2	
Power transmission	electric AC/DC	
Diesel engine	CAT C13	
EU Stage	IIIA/IIIB	IIIA
Engine output	328 kW	
Maximum towing capacity	90 kN	
Nominal weight	30 t	
Axle load	15 t	
Compressor output	108 m <sup>3</sup> /h	
Fuel tank volume	700 l	
Climate class	-40 to +40°C	

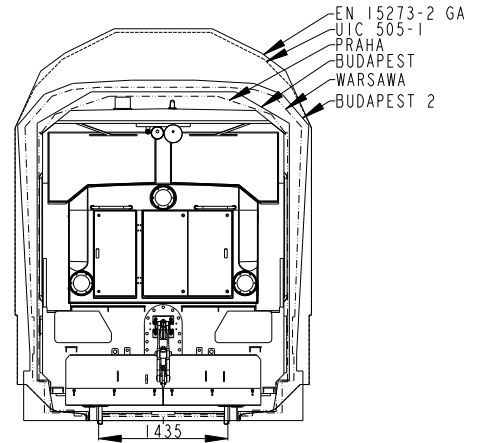
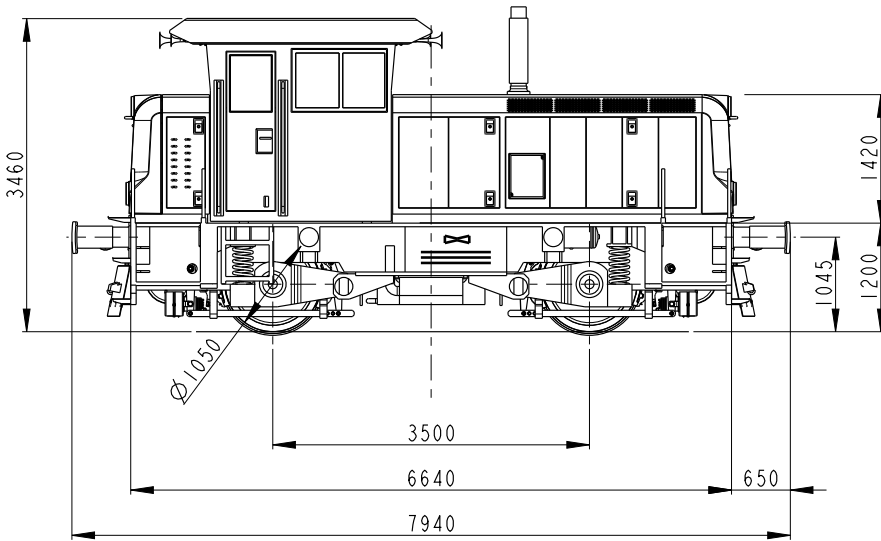
## Equipment:

- digital control system
- cruise control
- remote monitoring by means of GSM and GPS technologies
- multiple control
- knorr oil-free compressor
- air drier
- stored-energy spring-actuated parking brake
- antiskid device (by traction)

## Optional equipment:

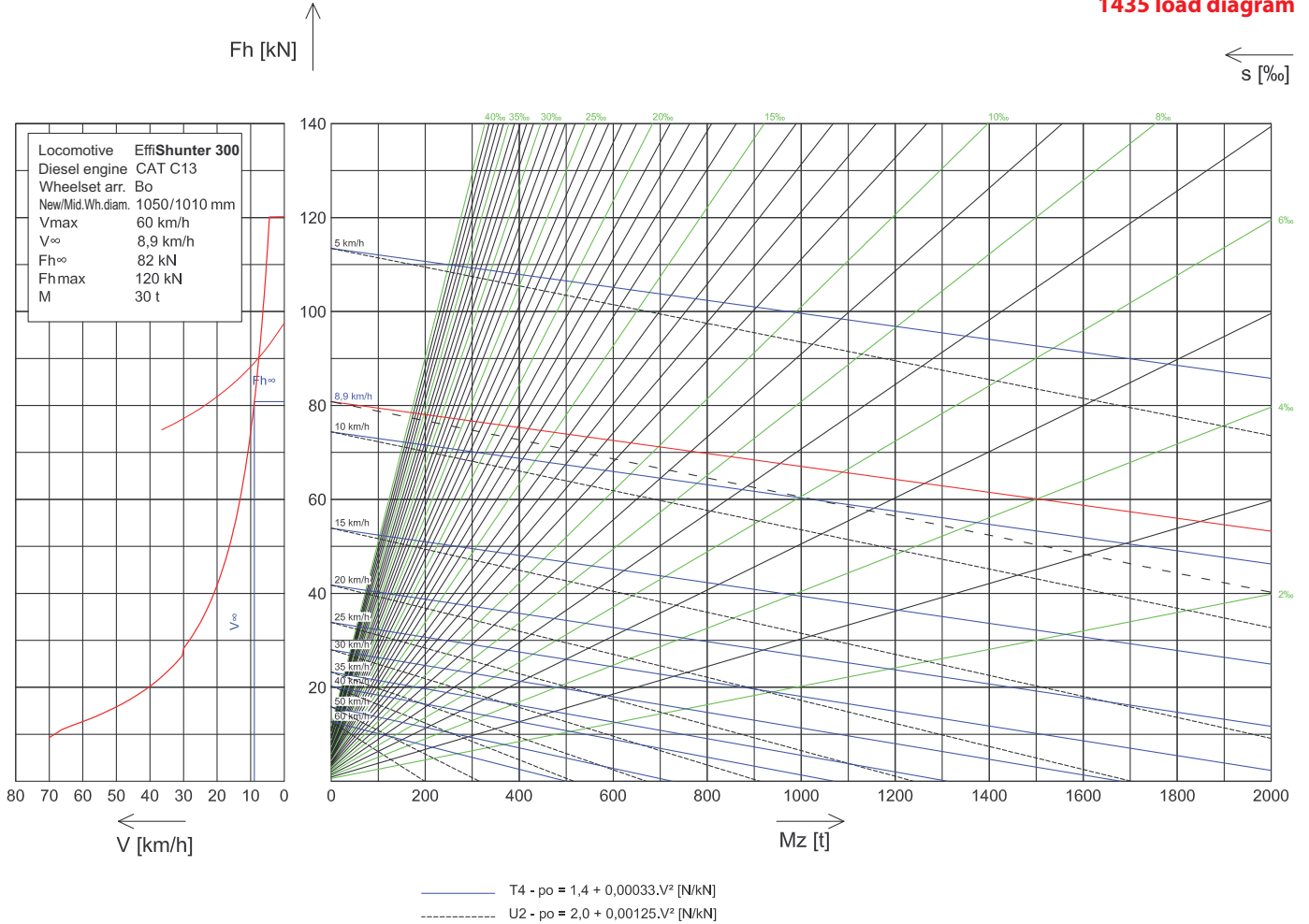
- wheel slide protection (by braking)
- remote radio control
- automatic coupling device
- camera system

## 1435 locomotive model drawing

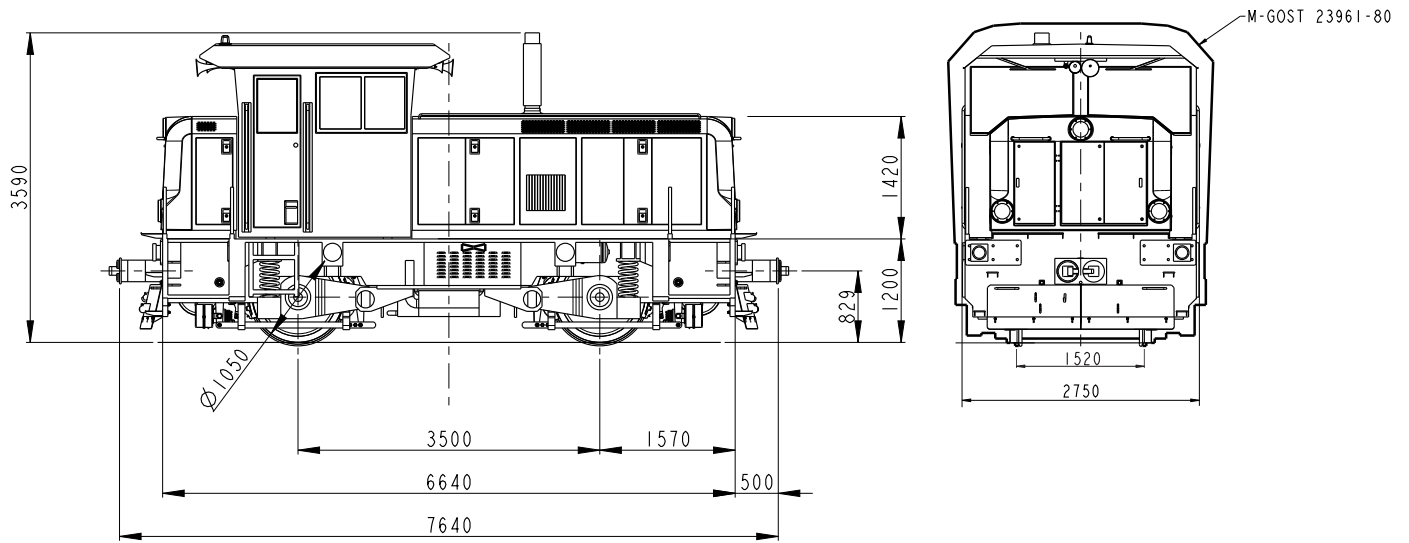


Metro Suitable

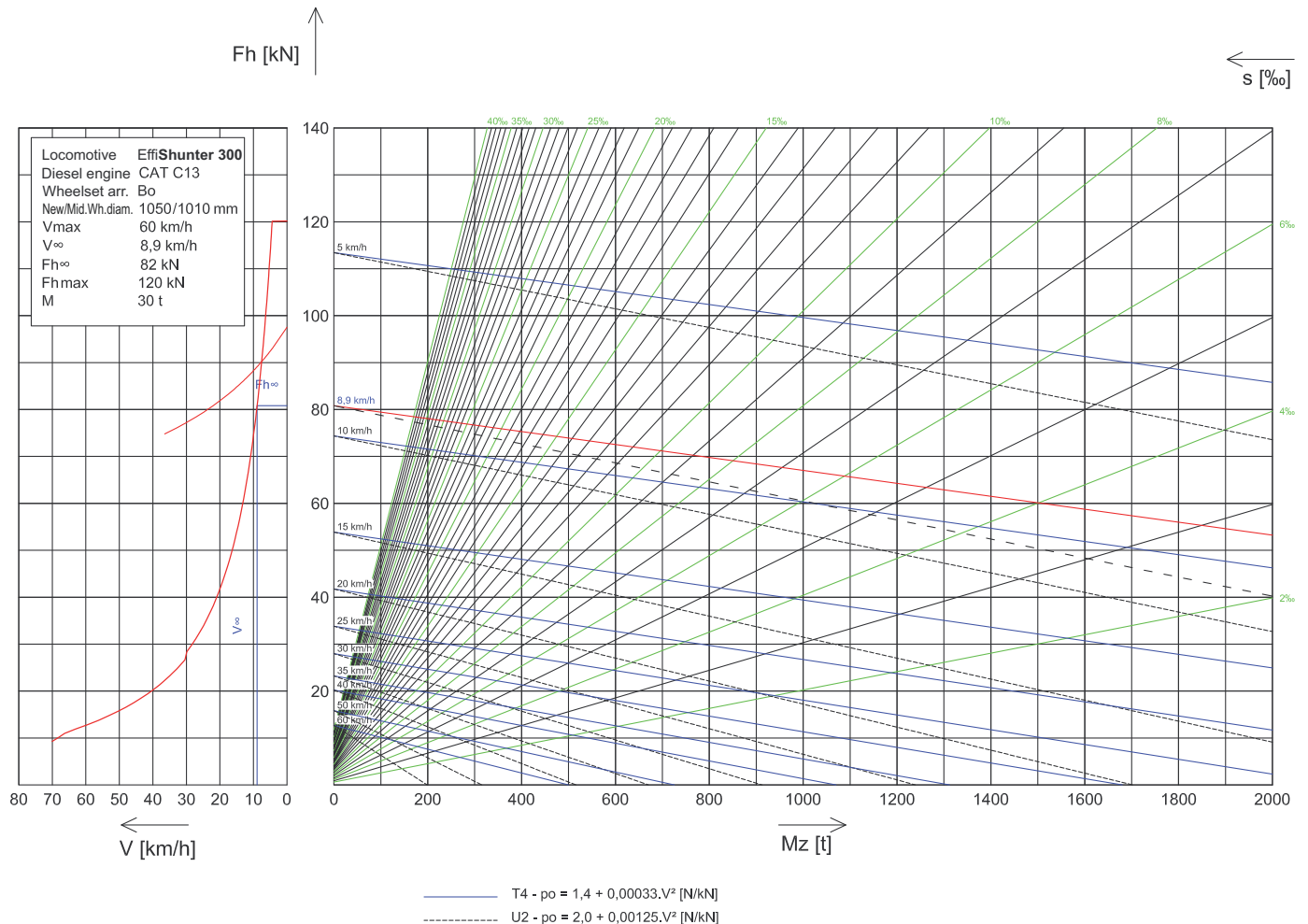
## 1435 load diagram



## 1520 locomotive model drawing



## 1520 load diagram





# EFFISHUNTER<sup>®</sup> 500

Diesel locomotive EffiShunter 500 is primarily intended for shunting service. The locomotive is equipped with alternating/direct current power transmission (AC/DC) from the diesel engine to four powered wheelsets. Parameters of the vehicle are optimized for station shunting and for operation on industrial sidings, e.g. in metallurgical, mining and petrochemical sectors.

## Benefits and advantages:

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- spacious and safe platforms for shunters
- service period: up to 10 000 km / 2 months



The undercarriage of the locomotive comprises two double-axle bogies with individual drive of all wheelsets. The traction motors are nose-suspended on the axles using sliding or roller bearings. The drive unit is located in the front hood of the locomotive and comprises the Caterpillar diesel engine and the Siemens traction alternator. The front hood space includes most of the auxiliary drives, engine cooling block and the pneumatic unit. The rear hood contains an electric switchboard, or the electrodynamic brake block. The power regulation and control of the entire locomotive is ensured by the control system made by MSV elektronika with cruise control function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO air brake and a parking (hand) brake. The locomotive can also be equipped with an electrodynamic brake (EDB).

## Parameters of EffiShunter 500:

Track gauge	1 435 mm
Meets the standards	EN
Number of powered axles	4
Wheelset arrangement	B'o B'o
Maximum operating speed	80 km/h
Minimum curve radius	80 (60) m
Line category	B1
Lateral compatibility	1
Power transmission	electric AC/DC
Diesel engine	CAT C18
EU Stage	IIIA
Engine output	522 kW
Maximum towing capacity	222 kN
Nominal weight	72 t
Axle load	18 t
Compressor output	140 – 175 m <sup>3</sup> /h
Fuel tank volume	4 000 l
Climate class	-25 to +40°C

## Equipment:

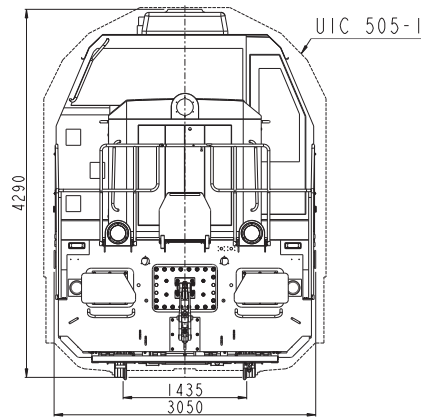
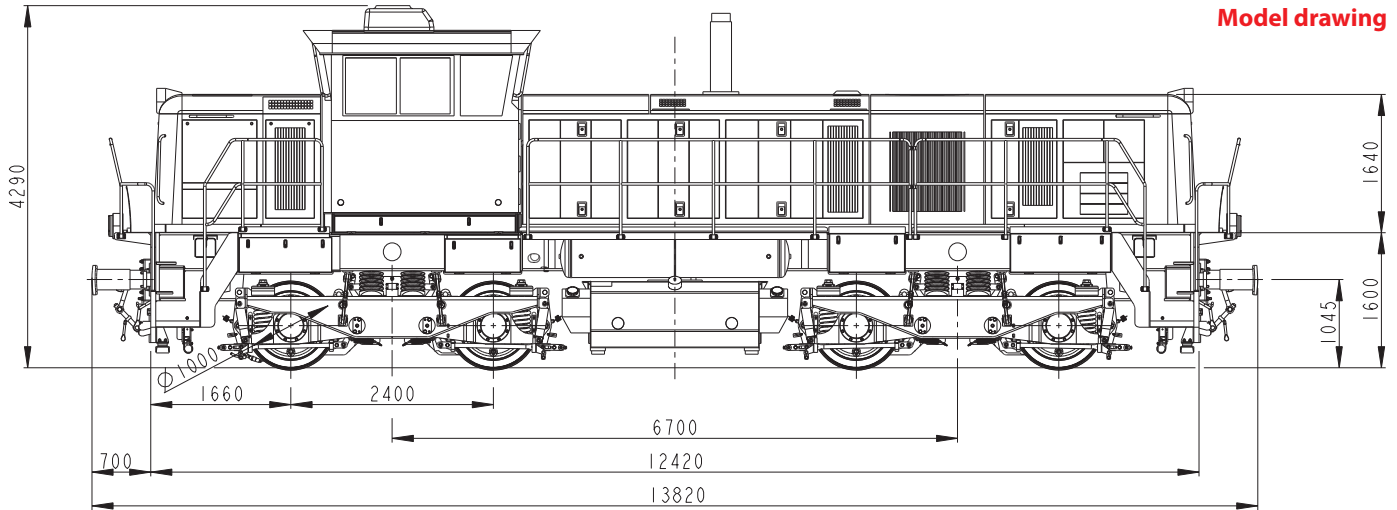
- digital control system
- cruise control
- remote monitoring by means of GSM and GPS technologies
- multiple control
- air drier
- antiskid device (by traction)

## Optional equipment:

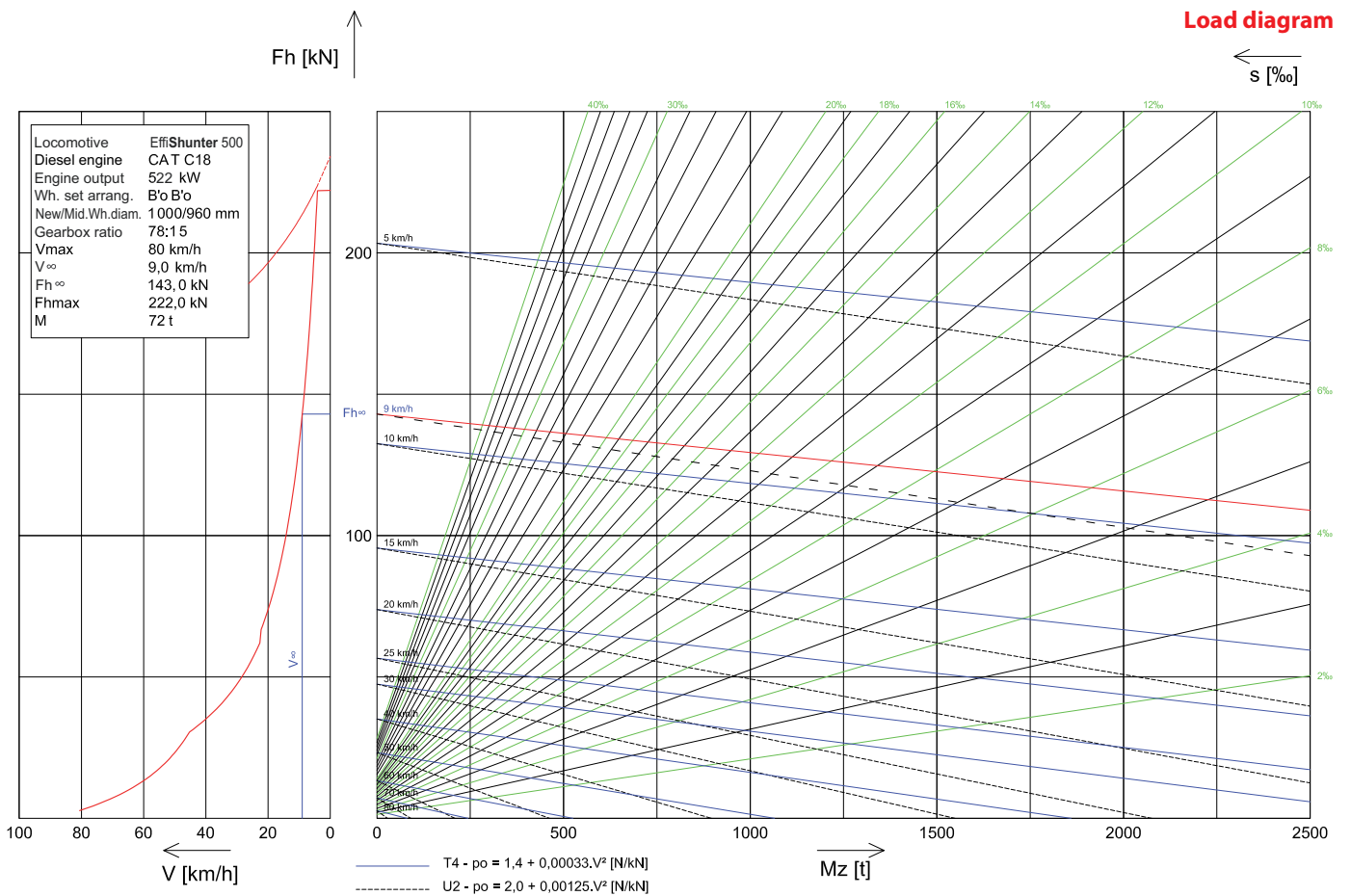
- electrodynamic brake (EDB)
- wheel slide protection (by breaking)
- deformation elements
- rolling fitting of traction motors
- remote radio control
- automatic shunting coupler
- camera system



Model drawing



Load diagram



Locomotive	EffiShunter 500
Diesel engine	CAT C18
Engine output	522 kW
Wh. set arrang.	B'o B'o
New/Mid.Wh.diam.	1000/960 mm
Gearbox ratio	78:15
Vmax	80 km/h
V $\infty$	9,0 km/h
Fh $\infty$	143,0 kN
Fhmax	222,0 kN
M	72 t

# EFFISHUNTER<sup>®</sup> 700

Diesel locomotive EffiShunter 700 is primarily intended for shunting service. The locomotive is equipped with alternating/direct current power transmission (AC/DC) from the diesel engine to four powered wheelsets. Parameters of the vehicle are optimized for station shunting and for heavy operation on industrial sidings, e.g. in metallurgical, mining and petrochemical sectors.

## Benefits and advantages:

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- spacious and safe platforms for shunters
- service period: up to 10 000 km / 2 months



The undercarriage of the locomotive comprises two double-axle bogies with individual drive of all wheelsets. The traction motors are nose-suspended on the axles using sliding or roller bearings. The drive unit is located in the front hood of the locomotive and comprises the Caterpillar diesel engine and the Siemens traction alternator. The front hood space includes most of the auxiliary drives, engine cooling block and the pneumatic unit. The rear hood contains an electric switchboard, or the electrodynamic brake block. The power regulation and control of the entire locomotive is ensured by the control system made by MSV elektronika with cruise control function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO air brake and a parking (hand) brake. The locomotive can also be equipped with an electrodynamic brake (EDB).

## Parameters of EffiShunter 700:

Track gauge	1 435 mm
Meets the standards	EN
Number of powered axles	4
Wheelset arrangement	B'o B'o
Maximum operating speed	80 km/h
Minimum curve radius	80 (60) m
Line category	B1
Lateral compatibility	1
Power transmission	electric AC/DC
Diesel engine	CAT C27
EU Stage	IIIA
Engine output	709 kW
Maximum towing capacity	222 kN
Nominal weight	72 t
Axle load	18 t
Compressor output	140 – 175 m <sup>3</sup> /h
Fuel tank volume	4 000 l
Climate class	-25 to +40°C

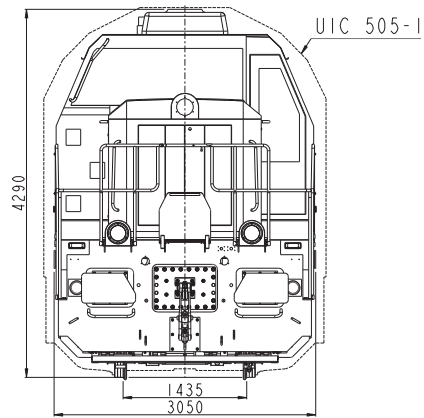
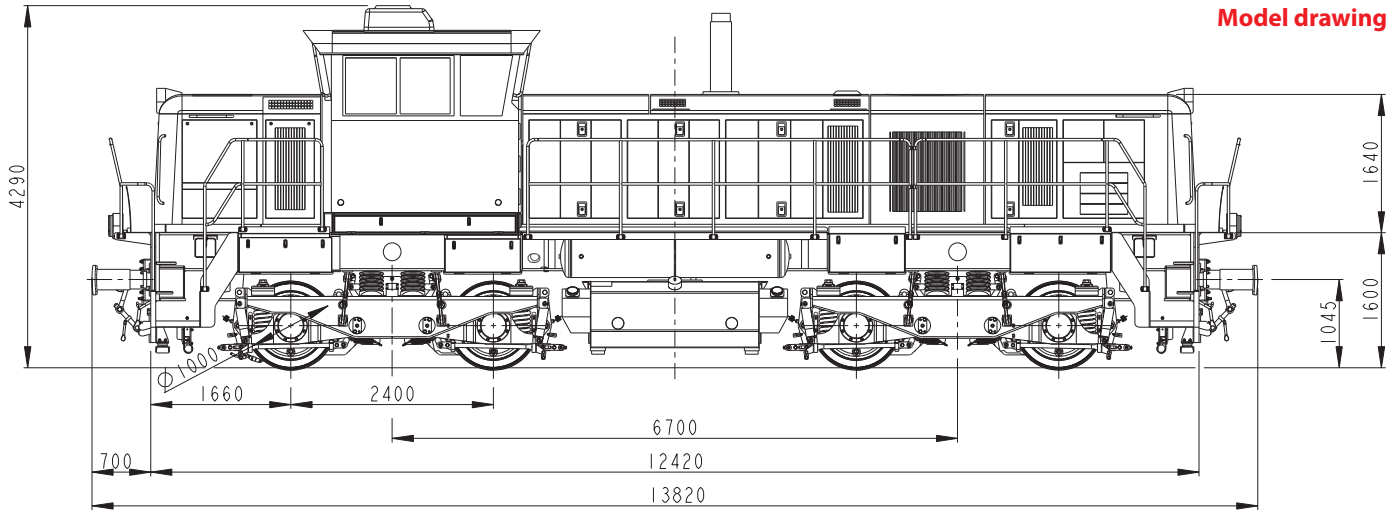
## Equipment:

- digital control system
- cruise control
- remote monitoring by means of GSM and GPS technologies
- multiple control
- air drier
- antiskid device (by traction)

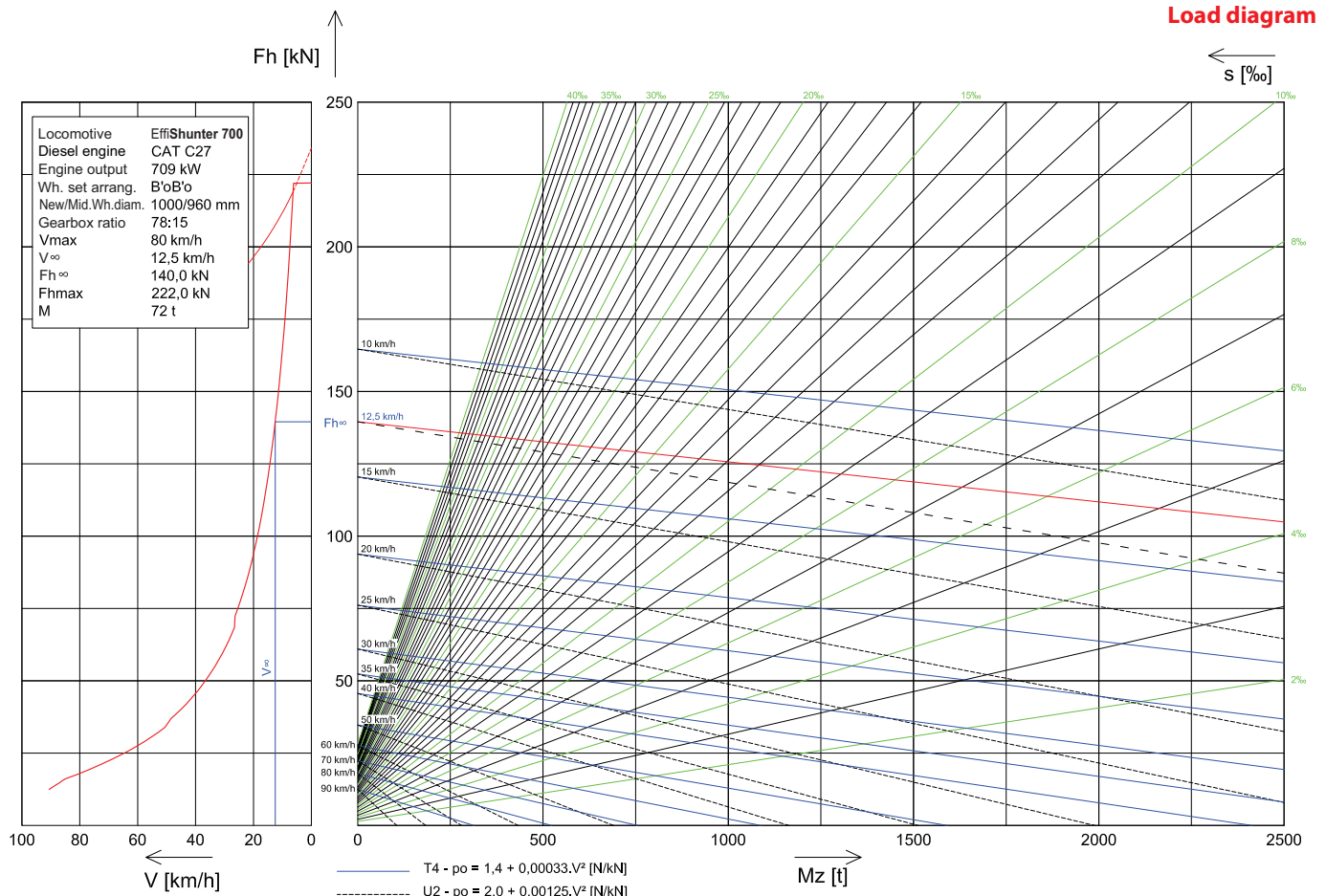
## Optional equipment:

- electrodynamic brake (EDB)
- wheel slide protection (by breaking)
- deformation elements
- rolling fitting of traction motors
- remote radio control
- automatic shunting coupler
- camera system

Model drawing



Load diagram



# EFFISHUNTER<sup>®</sup> 1000

Diesel locomotive EffiShunter 1000 is intended for shunting and line service. The locomotive is equipped with alternating power transmission (AC/AC) from the diesel engine to four powered wheelsets. For optimum use of the locomotive's power, the asynchronous traction motors are individually powered and controlled. Parameters of the vehicle are optimized for station shunting and for heavy operation on industrial sidings, e.g. in metallurgical, mining and petrochemical sectors with the possibility to perform line service.

## Benefits and advantages:

- high reliability
- low operating and maintenance costs
- electric AC/AC power transmission
- individually powered traction motors
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- spacious and safe platforms for shunters
- service period: 30 000 km / 2 months



The undercarriage of the locomotive comprises two double-axle bogies with individual drive of all wheelsets. The traction motors are nose-suspended on the axles using rolling bearings. The drive unit is located in the front hood of the locomotive and comprises the Caterpillar diesel engine and the Siemens traction alternator. The front hood space includes most of the auxiliary drives, engine cooling block and the pneumatic unit. The rear hood contains electric switchboards and the electrodynamic brake block. The power regulation and control of the entire locomotive is ensured by the control system made by MSV elektronika with cruise control function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO air brake and a parking (stored-energy) brake.

## Parameters of EffiShunter 1 000:

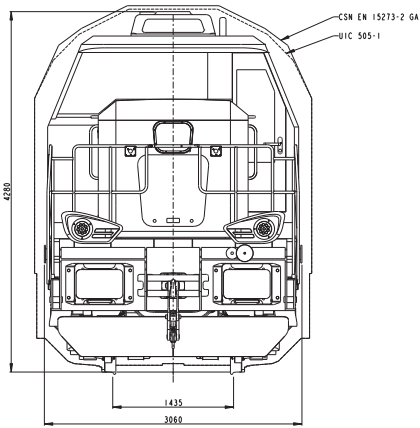
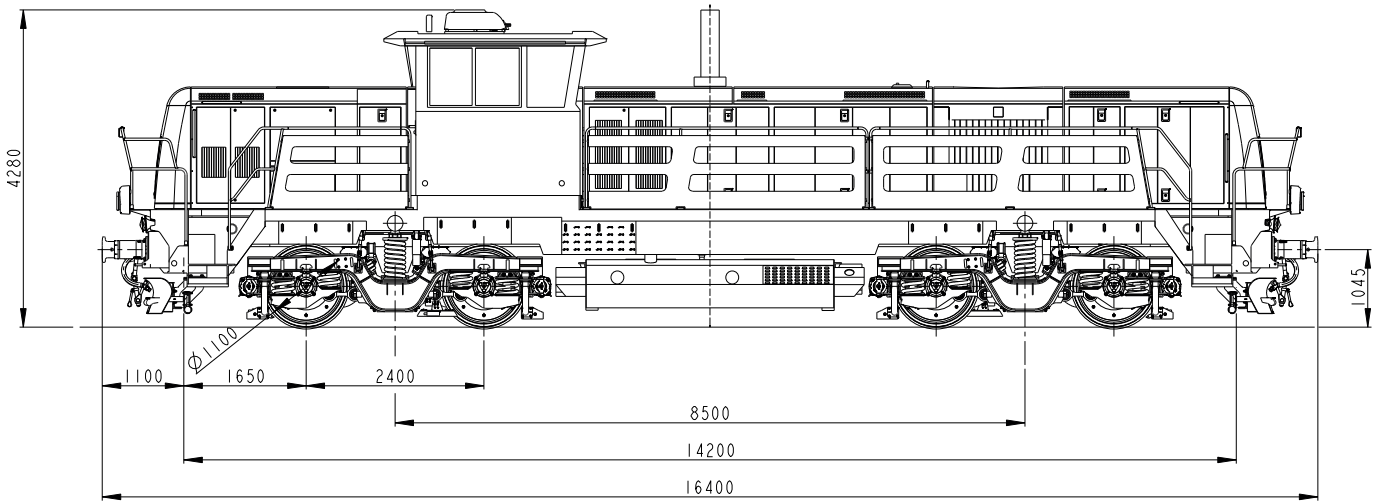
Track gauge	1 435 mm	1 520 mm
Meets the standards	TSI	GOST
Number of powered axles	4	
Wheelset arrangement	B'o B'o	
Maximum operating speed	100 km/h	
Minimum curve radius	80 m (65 m)	
Line category	B1	-
Lateral compatibility	1	-
Power transmission	electric AC/AC	
Diesel engine	CAT C32	CAT 3508 B
EU Stage	IIIB	II
Engine output	895 kW	970 kW
Maximum towing capacity	267 kN	
Nominal weight	80 t	92 t
Axle load	20 t	23 t
Compressor output	140 - 252 m <sup>3</sup> /h	210 m <sup>3</sup> /h
Fuel tank volume	4 200 l	
Climate class	-40 to +40 °C	-50 to +40 °C

## Equipment:

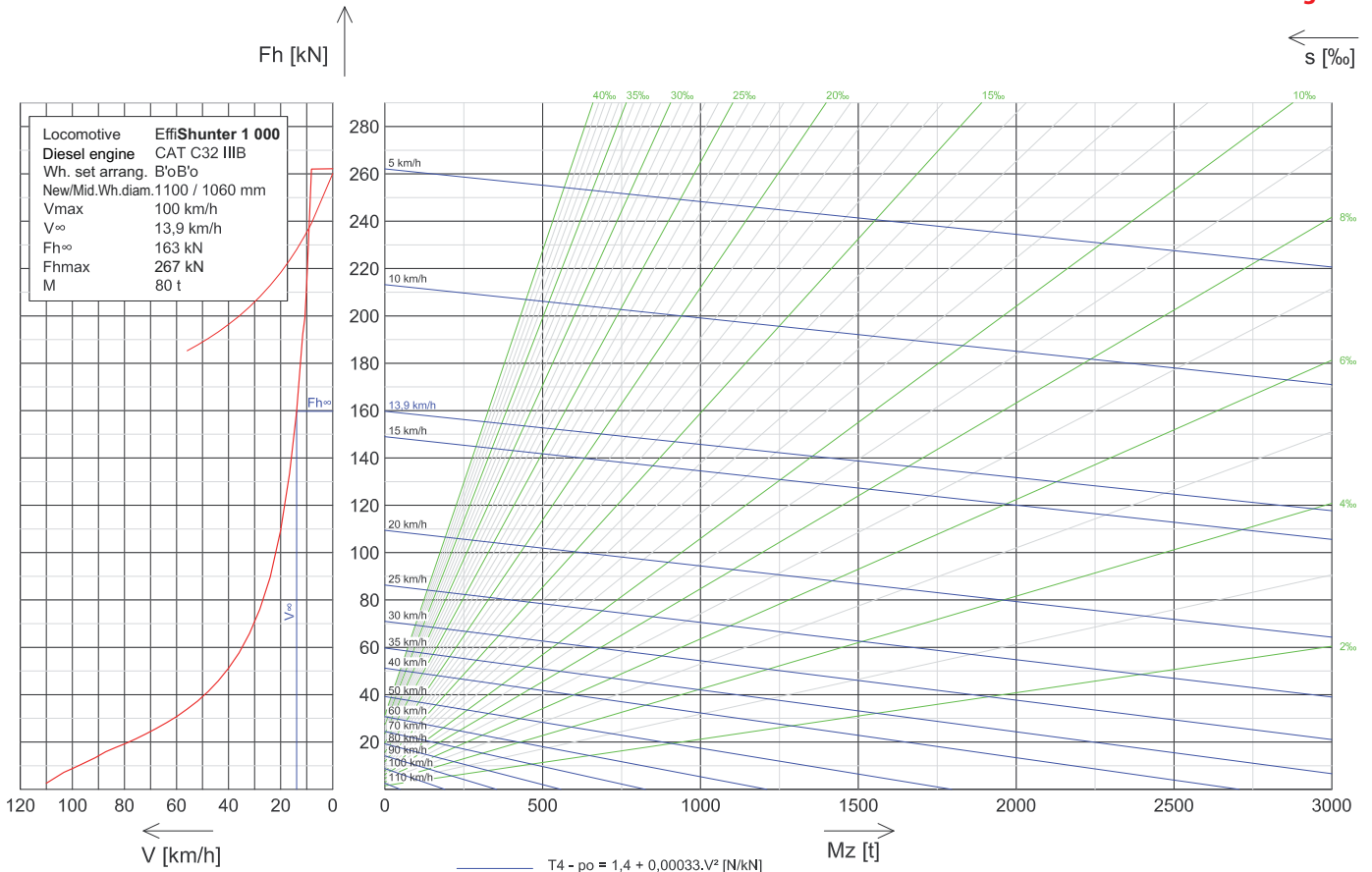
- digital control system
- cruise control
- remote monitoring by means of GSM and GPS technologies
- multiple control
- rolling fitting of traction motors
- air drier
- disc brake
- electrodynamic brake (EDB)
- stored-energy spring-actuated parking brake
- wheel slide protection and antiskid device
- deformation elements

## Optional equipment:

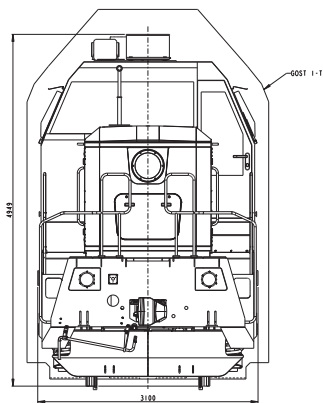
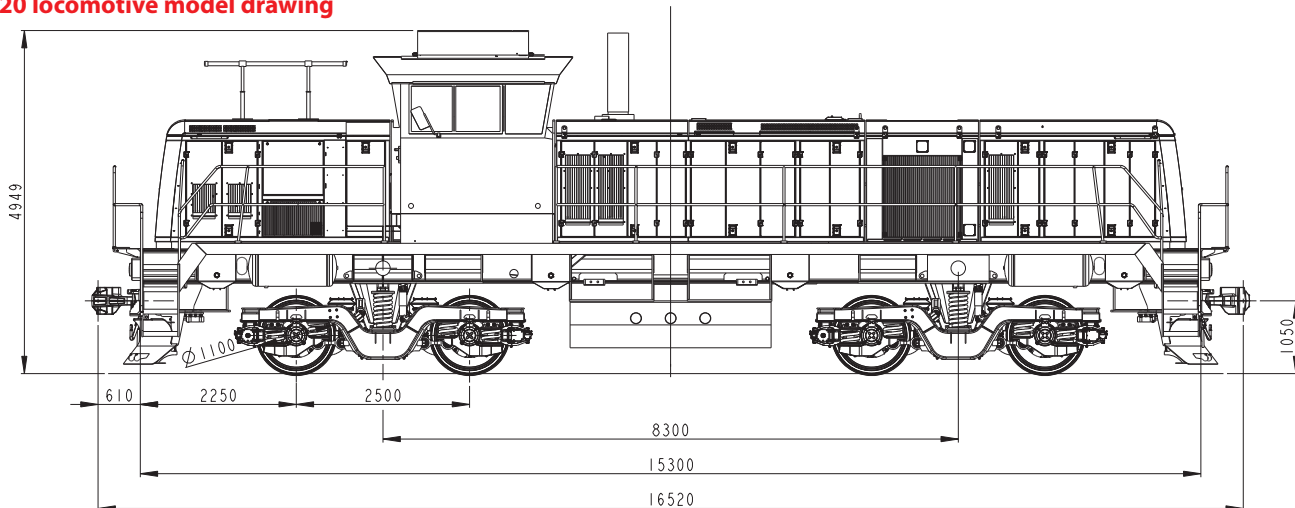
- remote radio control
- automatic coupling device
- camera system



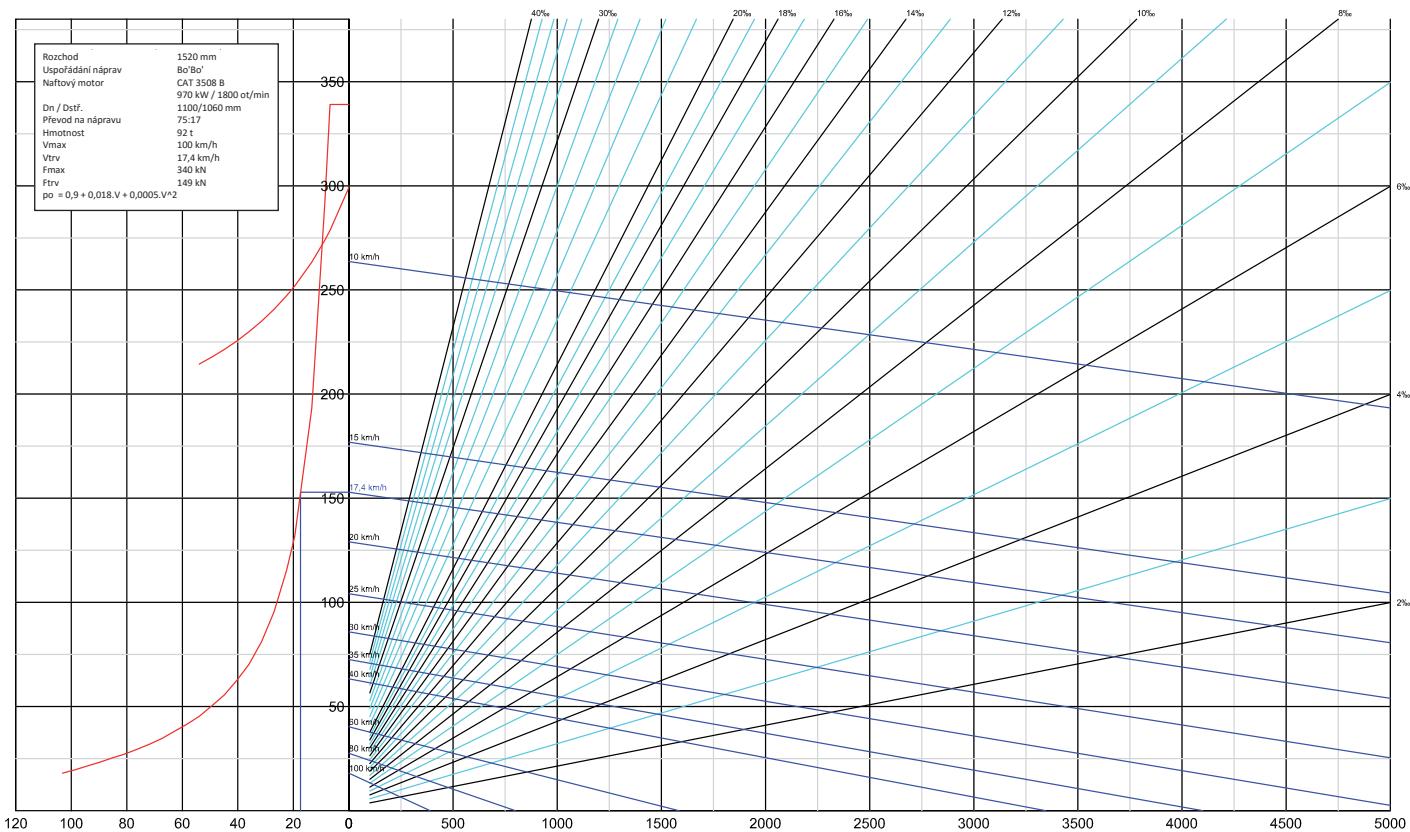
1435 load diagram



## 1520 locomotive model drawing



## 1520 load diagram



## Modern concept

The new concepts for hoods, ventilation grilles and filters ensure maximum noise reduction. The new design of the frame enables re-cessing of the diesel engine. Along with low hoods, this solution enables a perfect field of view from the cab. This incredibly increased the operator's comfort and overview of the operating situation. CAT diesel engines provide highly economical operation with minimum idle consumption. Design solutions excel especially in low maintenance and operating costs.

## The bogie makes the locomotive

Wheelsets guided on con rods in combination with the suspension use the so-called FLEXI-COIL effect. Springs are not only stressed in the axial vertical direction, but also in the transverse direction. This has a positive effect on stability of bogie drive on a straight track and significantly simplifies the structure of the whole secondary suspension node. The primary suspension consists of a pair of coil springs at every axle box. Shock-absorption of suspension is ensured by hydraulic dampers. Con rods serve to transfer towing as well as braking forces and guiding of the wheelsets. The mechanical disc brake uses brake discs on the discs of wheelsets.

## Low operating costs

The structure and design of the EffiShunter 1 000 locomotive was conceived from the beginning as a set of operation-proven units showing high long-term reliability with a cost-efficient maintenance regime. Thanks to long-term monitoring and evaluation of behaviour of individual interchangeable units, the EffiShunter 1 000 locomotive can guarantee high reliability.

Bogie design, output and design of the drive units, the hood shape and materials, as well as the new locomotive cab, were designed with regard to cost-efficient operation. Roller bearings on traction motors, the use of power-efficient electrodynamic brakes (EDB) and disc brakes contributed to the extension of the scheduled maintenance interval up to 30 000 km. Electric auxiliary drives can operate without a system of V-belts and optimize the necessary input power from the drive unit.

## Noise reduction

The locomotive was designed with the goal to minimise external and internal noise. This is supported by the design of filters in the hoods as well as their insulation. Noise transmitted to driver's cab has also been minimised. Noise was also reduced by the design of the undercarriage with a disc brake. Substantial noise reduction while turning curves and at track crossings was achieved by wheel flange lubrication with grease, which reduces mechanical wear of wheel flanges.

## Digital control system

A perfect overview of the entire vehicle's diagnostic operating values enables the control system of the locomotive to select a safe and cost-efficient mode of train drive. Values are also recorded for consequent operational evaluation and transmitted to a remote server via GSM technology. The control system therefore provides a complete picture of the operation of the vehicle to the operator as well as the service team.

## Modern and functional design

The characteristic design of the locomotive is not only an aerodynamic shell for the protection of modern components. Hoods also have many functional elements. They ensure air supply for cooling the drive units, while minimizing the noise transmission to the surrounding areas, preventing the ingress of water and thermally insulate internal areas. At the same time they have to enable easy access for maintenance of the vehicle. A modern driver's cab meets strict ergonomic and health requirements. The quality of driver's cab increases safety of operation.



# EFFISHUNTER® 1600

Diesel locomotive class EffiShunter 1600 is intended for shunting and line service. The locomotive is equipped with alternating/direct current power transmission (AC/DC) from the diesel engine to six powered wheelsets. Parameters of the vehicle are optimized for station shunting and for heavy operation on industrial sidings, e.g. in metallurgical, mining and petrochemical sectors, and for the line service.



## Benefits and advantages:

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- spacious and safe platforms for shunters
- service period: up to 10 000 km / 2 months

The undercarriage of the locomotive comprises two three-axle bogies with individual drive of all wheelsets. The traction motors are nose-suspended on the axles using sliding or roller bearings. The drive unit is located in the front hood and comprises of the Caterpillar diesel engine and the Siemens traction alternator. The front hood space includes most of the auxiliary drives, engine cooling block and the pneumatic unit. The rear hood contains electric switchboards and the electrodynamic brake block. The power regulation and control of the entire locomotive is ensured by the control system made by MSV elektronika with cruise control or automatic speed control (ASC) function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO/MT3 Transmash air brake, a parking (hand) brake and an electrodynamic brake (EDB).

## Parameters of EffiShunter 1600:

Track gauge	1 435 / 1 524 mm	1 520 mm
Meets the standards	TSI	GOST
Number of powered axles	6	
Wheelset arrangement	C'o C'o	
Maximum operating speed	90 km/h	
Minimum curve radius	120 m	
Line category	C2	-
Lateral compatibility	3	-
Power transmission	electric AC/DC	
Diesel engine	CAT 3512 C-HD	CAT 3508 B
EU Stage	IIIA	II
Engine output	1 550 kW	970 kW
Maximum towing capacity	383 kN	
Nominal weight	115.2 t	126 t
Axle load	19.2 t	21 t
Compressor output	252 m <sup>3</sup> /h	360 m <sup>3</sup> /h
Fuel tank volume	4 500 - 5 000 l	
Climate class	-40 to +40 °C	-50 to +40 °C

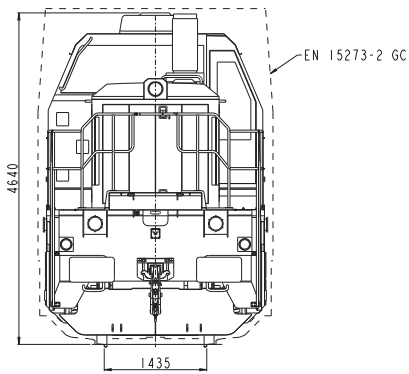
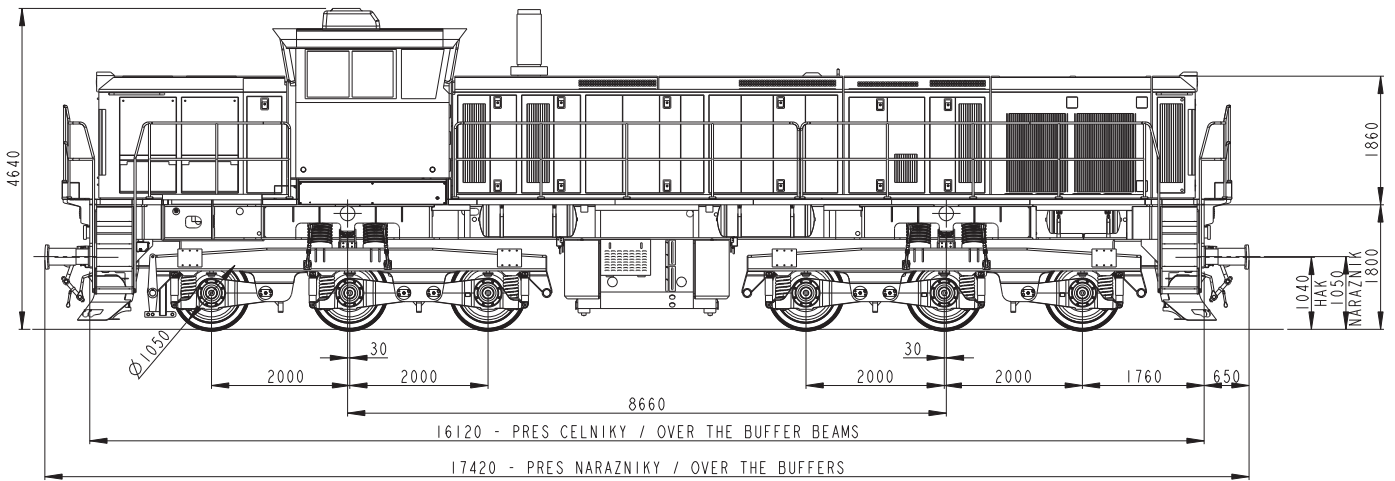
## Equipment:

- digital control system
- automatic speed control (ASC)
- remote monitoring by means of GSM and GPS technologies
- multiple control
- air drier
- electrodynamic brake (EDB)
- antiskid device (by traction)
- deformation elements

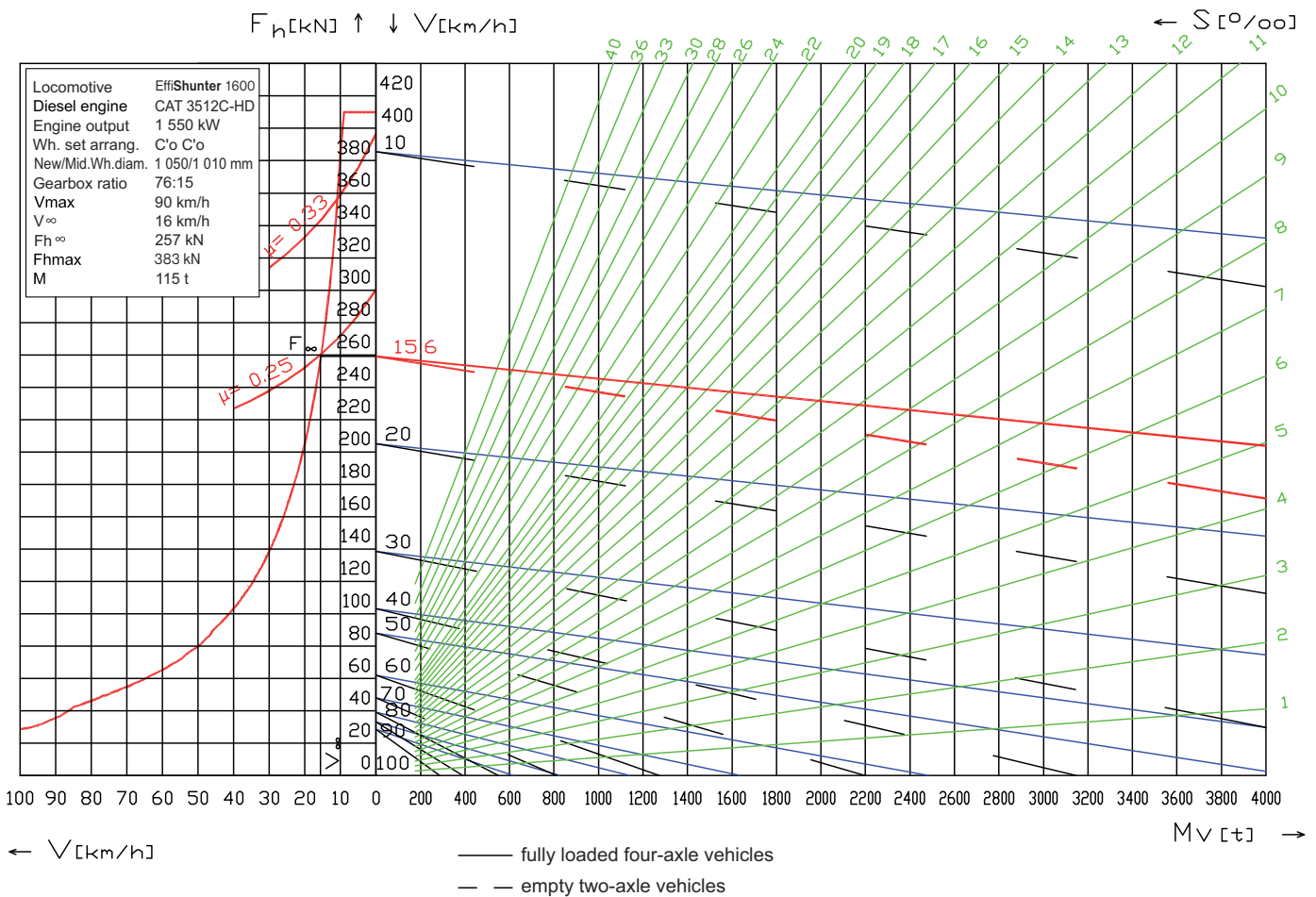
## Optional equipment:

- rolling fitting of traction motors
- wheel slide protection (by breaking)
- remote radio control
- automatic shunting coupler
- camera system

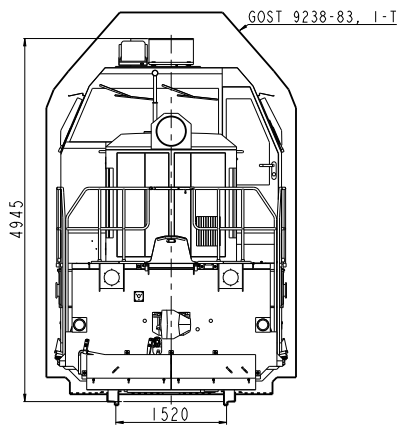
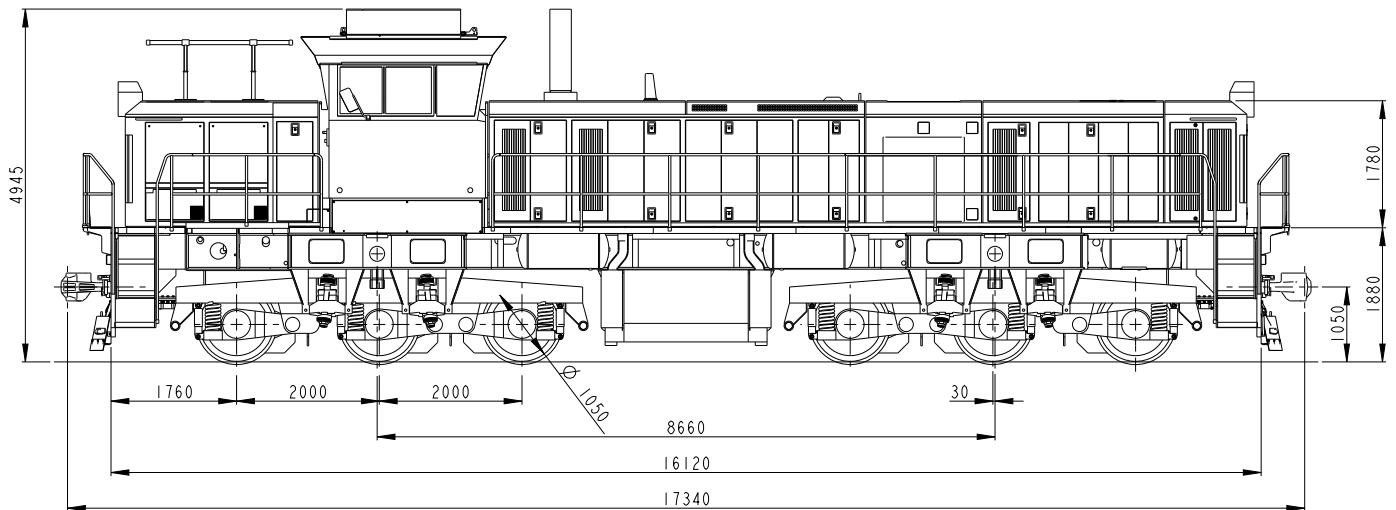




### 1435 load diagram



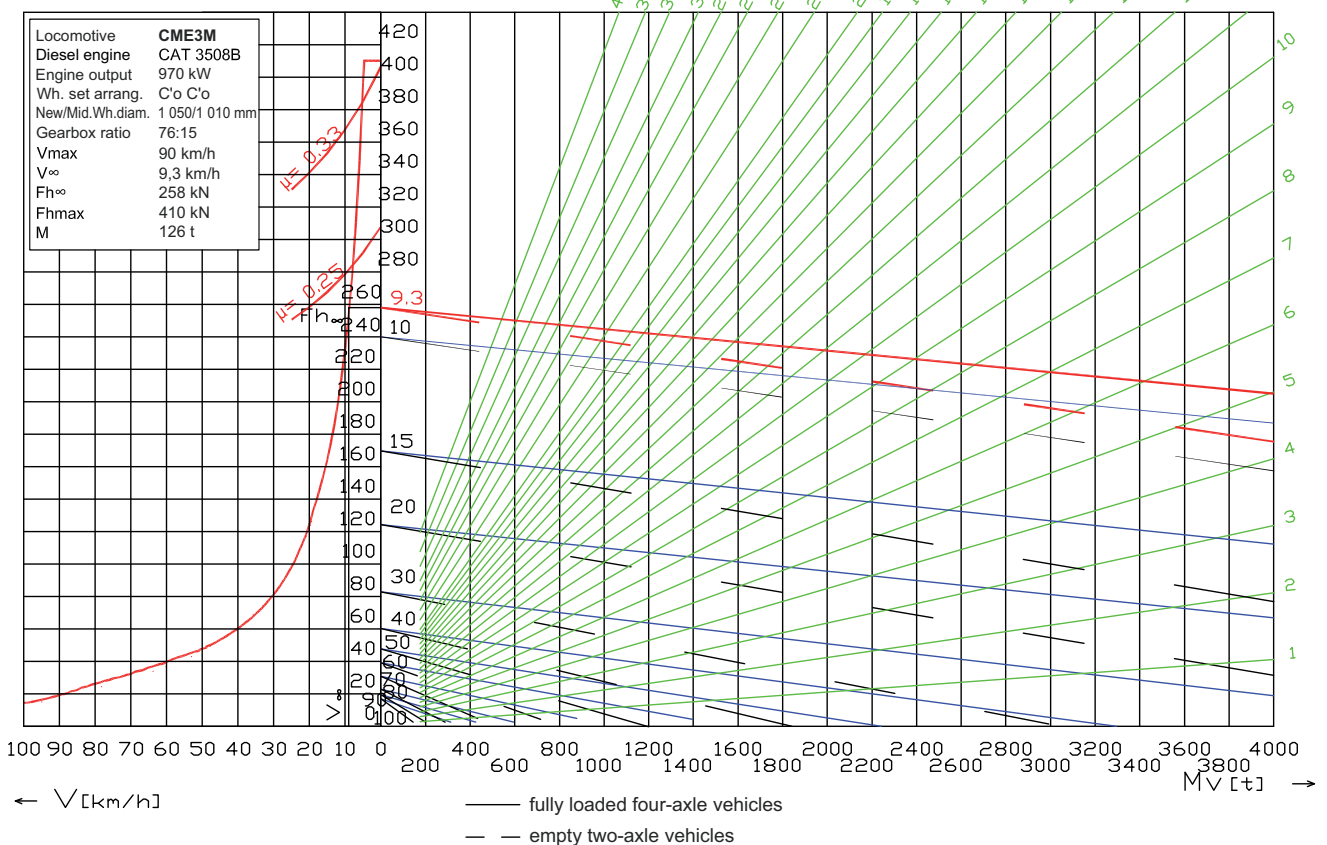
## 1520 locomotive model drawing

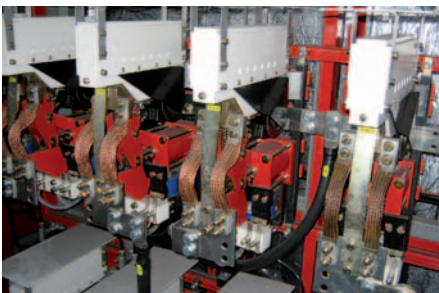


## 1520 load diagram

$F_h$  [kN]  $\uparrow$   $\downarrow$   $V$  [km/h]

$S$  [‰]





# EFFILINER<sup>®</sup> 1600

The diesel locomotive class EffiLiner1600 is designed as a cab unit type with two driver's cabs. The locomotive is equipped with alternating/direct current power transmission (AC/DC) from the diesel engine to four powered wheelsets. Parameters of the vehicle are optimized for line service.

## Benefits and advantages:

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- service period: up to 10 000 km / 2 months



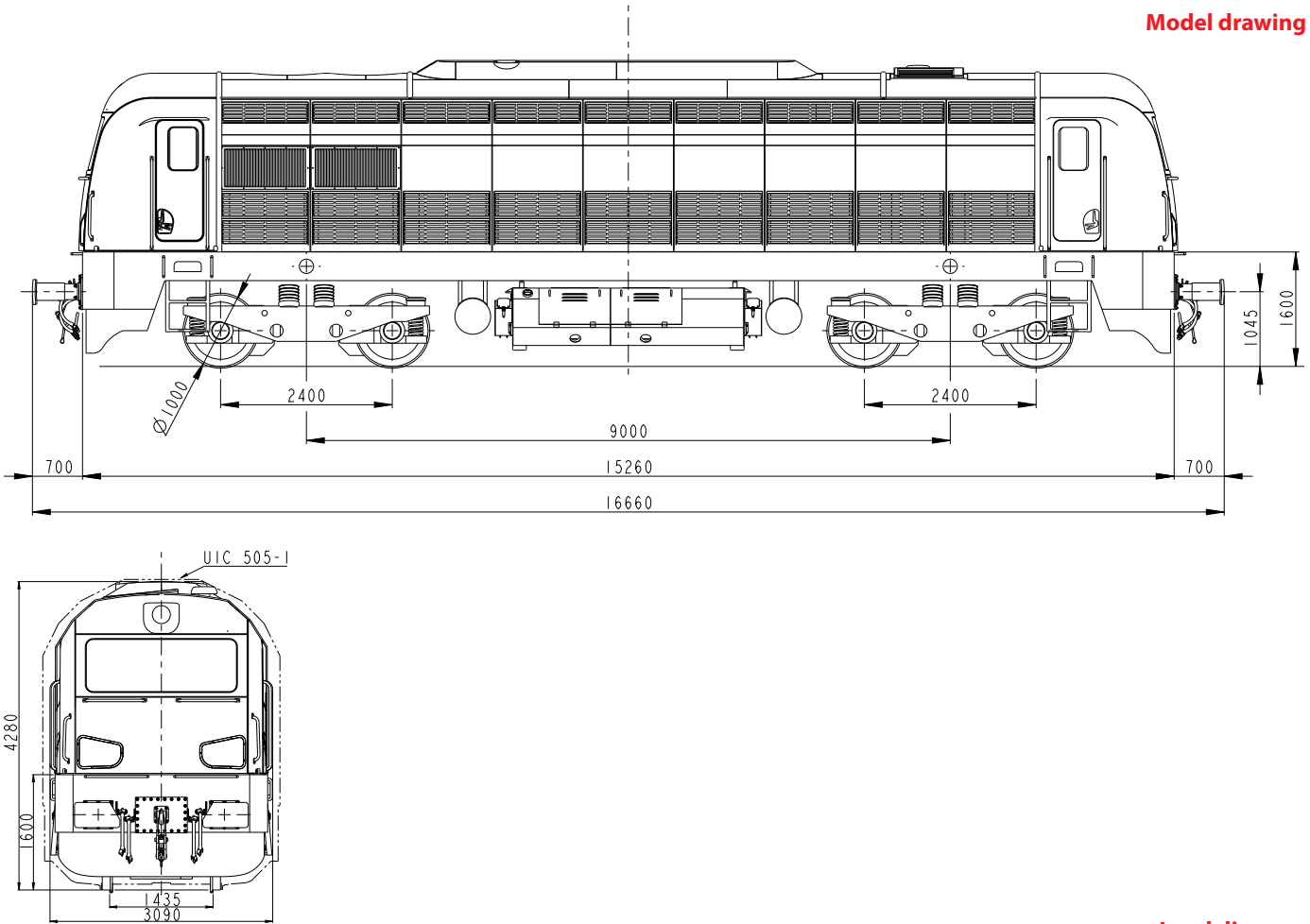
The undercarriage of the locomotive comprises two double-axle bogies with individual drive of all wheelsets. The traction motors are nose-suspended on the axles using roller bearings. The drive unit is located in the engine room and comprises the Caterpillar diesel engine and the Siemens traction alternator. In the engine room there are also auxiliary drives, a diesel engine cooling block, a pneumatic block and a switchboard with an electrodynamic brake block. The power regulation and control of the whole locomotive is ensured by the control system made by MSV elektronika with automatic speed control (ASC) function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO air brake and a parking (stored-energy) brake.

## Parameters of EffiLiner 1 600:

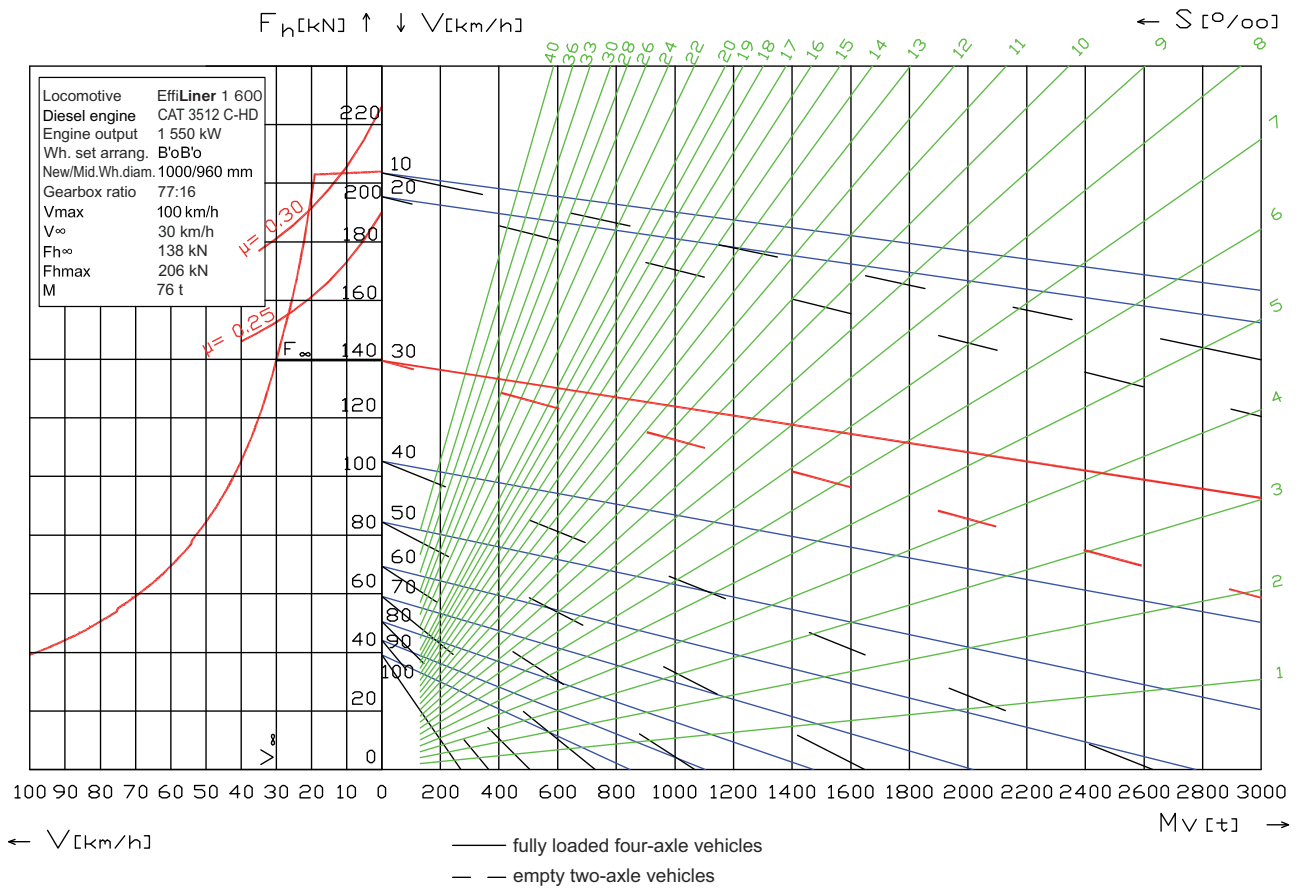
Track gauge	1 435 mm
Meets the standards	EN
Number of powered axles	4
Wheelset arrangement	B'o B'o
Maximum operating speed	100 km/h
Minimum curve radius	100 m
Line category	B1
Lateral compatibility	1
Power transmission	electric AC/DC
Diesel engine	CAT 3512 C-HD
EU Stage	IIIA
Engine output	1 550 kW
Maximum towing capacity	206 kN
Nominal weight	76 t
Axle load	19.5 t
Compressor output	175 m <sup>3</sup> /h
Fuel tank volume	5 000 l
Climate class	-25 to +40°C

## Equipment:

- digital control system
- automatic speed control (ASC)
- remote monitoring by means of GSM and GPS technologies
- multiple control
- rolling fitting of traction motors
- air drier
- electrodynamic brake (EDB)
- stored-energy spring-actuated parking brake
- anti-skid equipment and antiskid device (by traction)
- deformation elements
- camera system



Load diagram



# EFFILINER<sup>®</sup> 3000

The EffiLiner 3000 electric locomotive is primarily designed for line service on national and regional railways. The parameters of this modernised, two system locomotive, initially termed 'Class 12' is optimised for medium power.

## Benefits and advantages:

- high reliability
- low operational and maintenance costs
- environment friendly
- application of unified solutions
- high comfort and crew security
- excellent visibility
- service period: 15 000 km / 2 months



The locomotive's undercarriage consists of two 2-axle bogies with all wheelsets driven individually. The traction motors are fixed and the torque is transferred by the help of flexible couplings. The locomotive's hood is fit by spring coils on two 2-axle bogies. Draw gear enables the transfer of vertical forces from the bogies to the hoods and back. An almost symmetrically arranged engine room with traction converters, the traction converter and traction motor cooling modules, brake resistors, pneumatic block, and low voltage distributor, is located between both cabinets. Two collectors ensure power transfer from overhead lines. The current runs from the collectors to the traction transformer through a 25kV 50 Hz AC power system. Traction converter power flows directly from the 3kV DC network. When powered by a 25kV 50 Hz AC network, two traction converters, one for each bogie, are powered from two secondary winding transformers. The converters are fit with IGBT transistors, which enable continuous power regulation in both operating and braking modes, including recuperation. The locomotive has three air brake systems (train/indirect brake, locomotive/direct brake, additional brake), a mechanical hand brake and a dynamic brake (EDB). The train/direct brake is the DAKO-GP system, which operates in both freight and passenger modes.

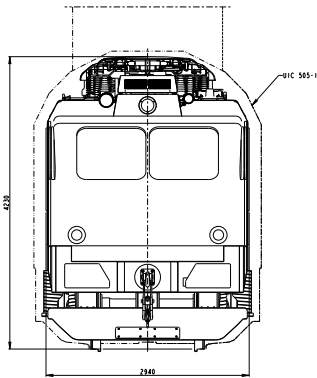
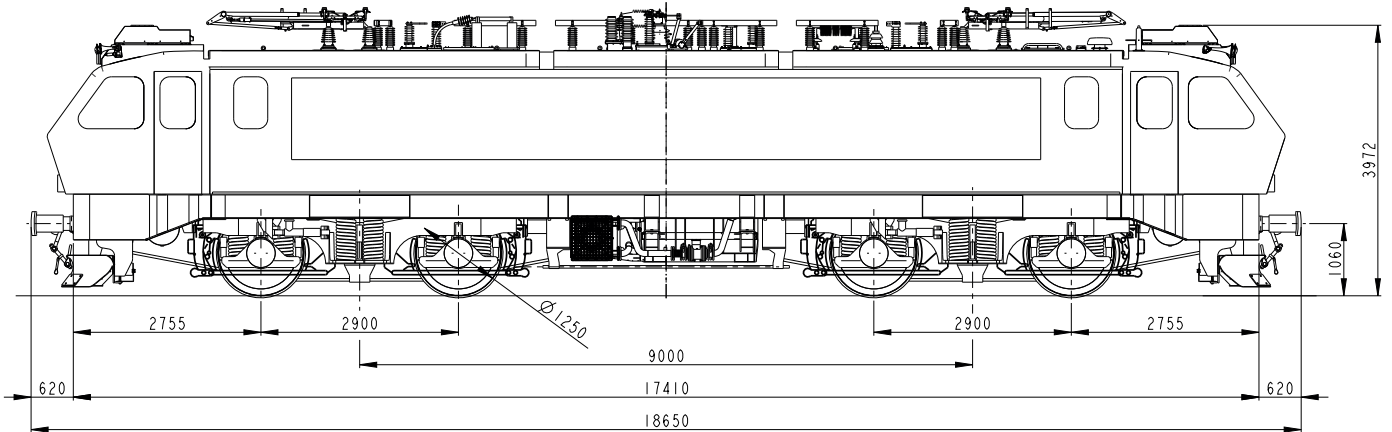
## Parameters of EffiLiner 3 000:

gauge	1 435 mm
meets standards	TSI
number of powered axles	4
wheelset arrangement	B'o B'o
maximum operating speed	120 km/h
minimum curve radius	100 m
power system	3 kV DC / 25 kV 50 Hz AC
engine output	2910 kW
maximum towing capacity	225 kN
nominal weight	85 t
axle load	21,25 t
compressor output	252 m <sup>3</sup> /h
climate class	-25 to +40 °C

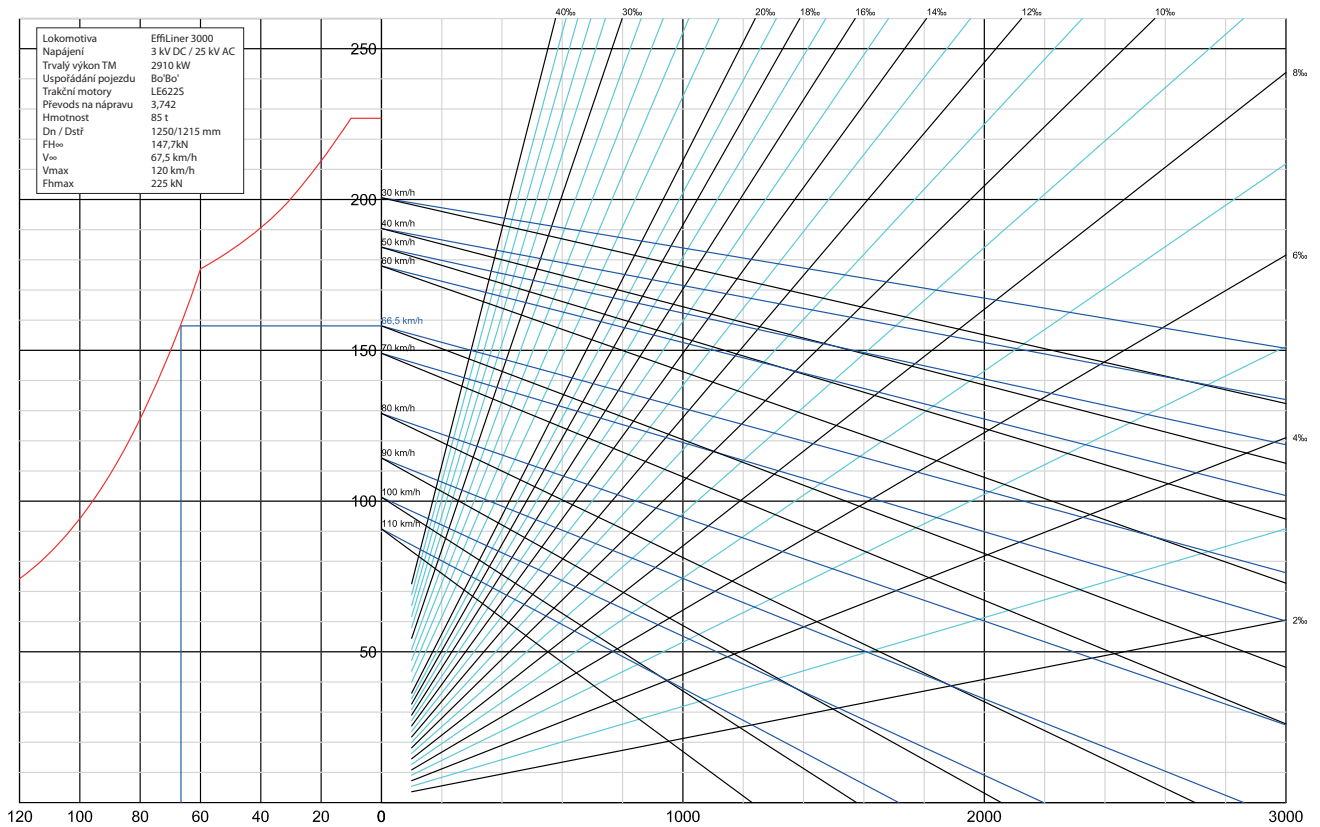
## Equipment:

- digital control system
- automatic speed regulation
- remote monitoring through GSM and GPS technology
- multiple control
- Mattei compressor
- air dryer
- anti-skid protection (upon traction)
- wheel slip protection (upon braking)

## Model drawing



## Load diagram



Diesel locomotive class **741.7** is intended for shunting and line service. The locomotive is equipped with alternating/direct current power transmission (AC/DC) from the diesel engine to four powered wheelsets. Parameters of the vehicle are optimized for station shunting and for heavy operation on industrial sidings, e.g. in metallurgical, mining and petrochemical sectors with the possibility to perform line service.

**Benefits and advantages:**

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- spacious and safe platforms for shunters
- service period: up to 10 000 km / 2 months



The undercarriage of the locomotive comprises two double-axle bogies with individual drive of all wheelsets. The traction motors are nose-suspended on the axles using sliding or roller bearings. The drive unit is located in the front hood of the locomotive and comprises the Caterpillar diesel engine and the Siemens traction alternator. The front hood space includes most of the auxiliary drives, the engine cooling block and the pneumatic unit. The rear hood contains an electric switchboard, or the electrodynamic brake block. The power regulation and control of the entire locomotive is ensured by the control system made by MSV elektronika with automatic speed control (ASC) function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO air brake and a parking (hand) brake. The locomotive can also be equipped with an electrodynamic brake (EDB) upon request.

**Parameters of 741.7:**

Track gauge	1 435 mm
Meets the standards	EN
Number of powered axles	4
Wheelset arrangement	B'o B'o
Maximum operating speed	100 km/h
Minimum curve radius	80 (60) m
Line category	B1
Lateral compatibility	1
Power transmission	electric AC/DC
Diesel engine	CAT 3508 C
EU Stage	IIIA
Engine output	1 000 kW
Maximum towing capacity	204 kN
Nominal weight	72 t
Axle load	18 t
Compressor output	186 m <sup>3</sup> /h
Fuel tank volume	4 000 l
Climate class	-25 to +40°C

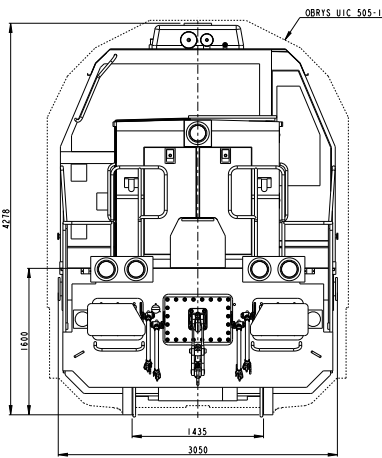
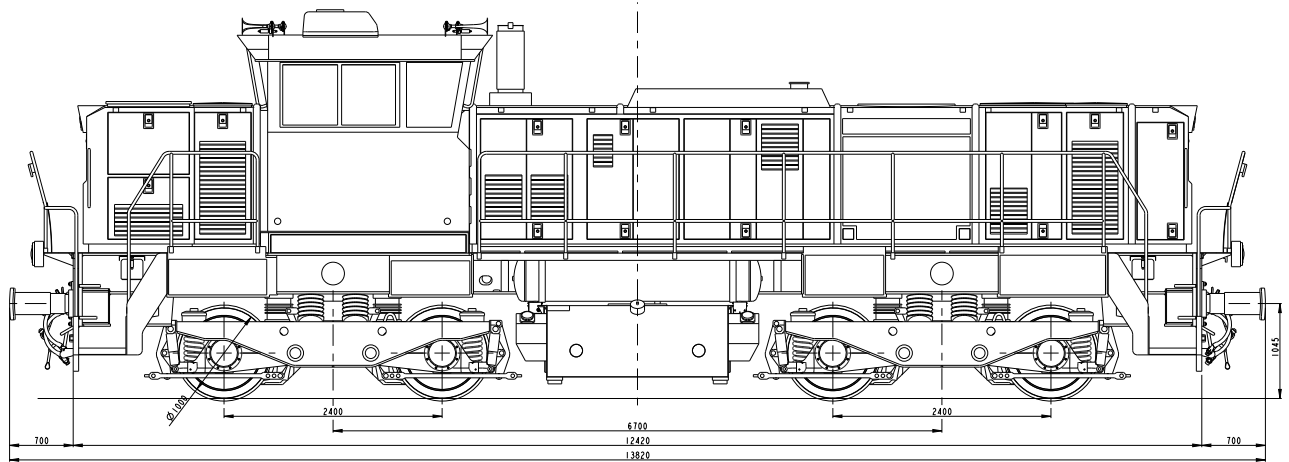
**Equipment:**

- digital control system
- automatic speed control (ASC)
- remote monitoring by means of GSM and GPS technologies
- multiple control
- air drier
- antiskid device (by traction)

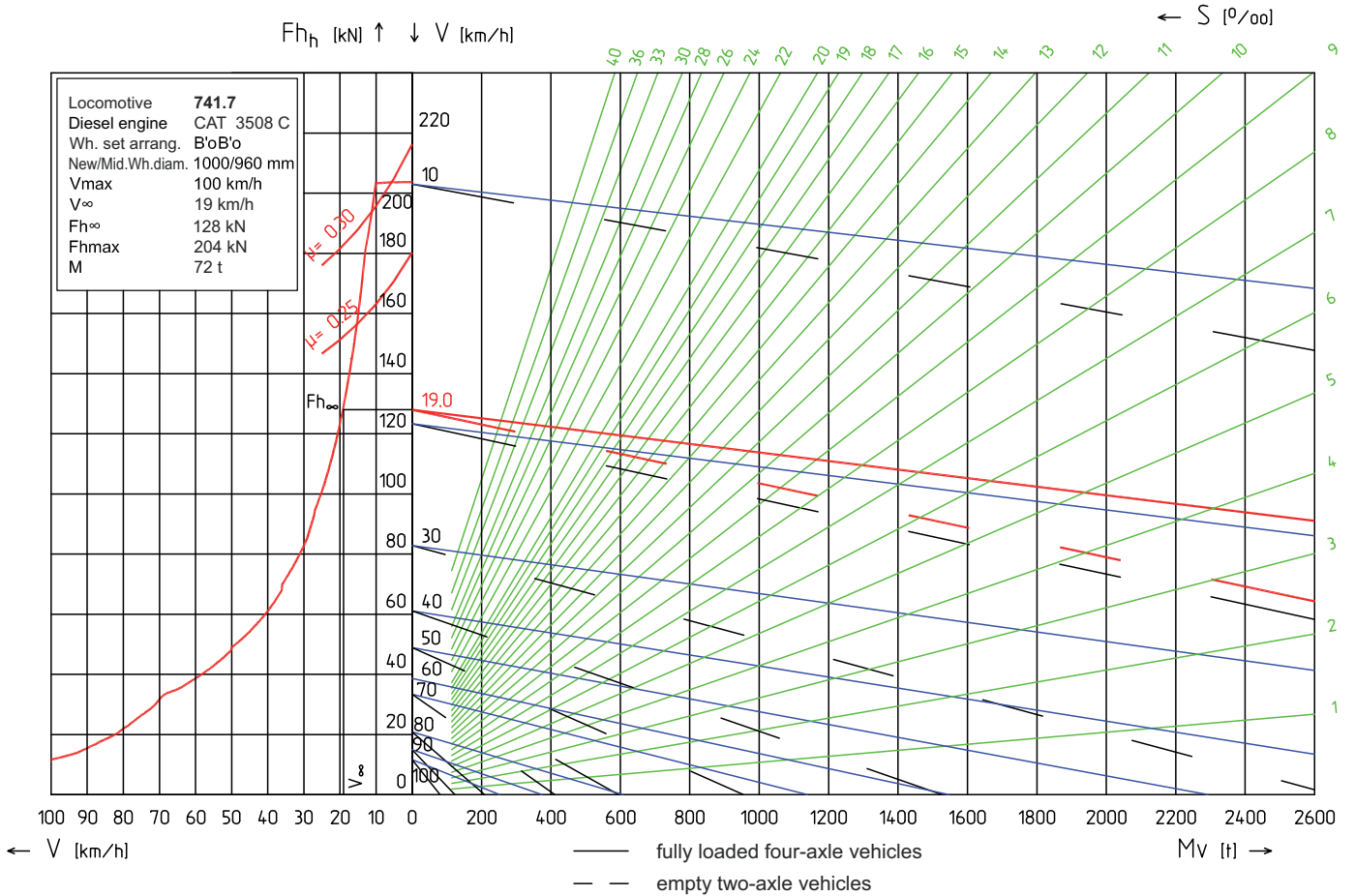
**Optional equipment:**

- rolling fitting of traction motors
- electrodynamic brake (EDB)
- wheel slide protection (by breaking)
- deformation elements
- remote radio control
- automatic shunting coupler
- camera system





Load diagram



# 2M62U

The two-piece diesel locomotive class **2M62UM** is designed as a cab unit type with one driver's cab in each section. The locomotive is equipped with alternating/direct current power transmission (AC/DC) from the diesel engine to six powered wheelsets in each of two sections. Parameters of the vehicle are optimized for line service.

## Benefits and advantages:

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- extended service intervals
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility



The undercarriage of each of two sections of the locomotive comprises two three-axle bogies with individual drive of all wheelsets. The traction motors are nose-suspended on the axles using sliding bearings. The drive unit is located in the engine room and comprises the MTU diesel engine and the Lechmotoren traction alternator. In the engine room there are also auxiliary drives, a diesel engine cooling block, a pneumatic block and a switchboard with an electrodynamic brake block. The power regulation and control of the whole locomotive is ensured by the control system made by MSV elektronika with automatic speed control (ASC) function and remote diagnostics by means of GSM and GPS technologies. The locomotive is equipped with a DAKO air brake and a parking (hand) brake.

## Parameters of one section of 2M62UM:

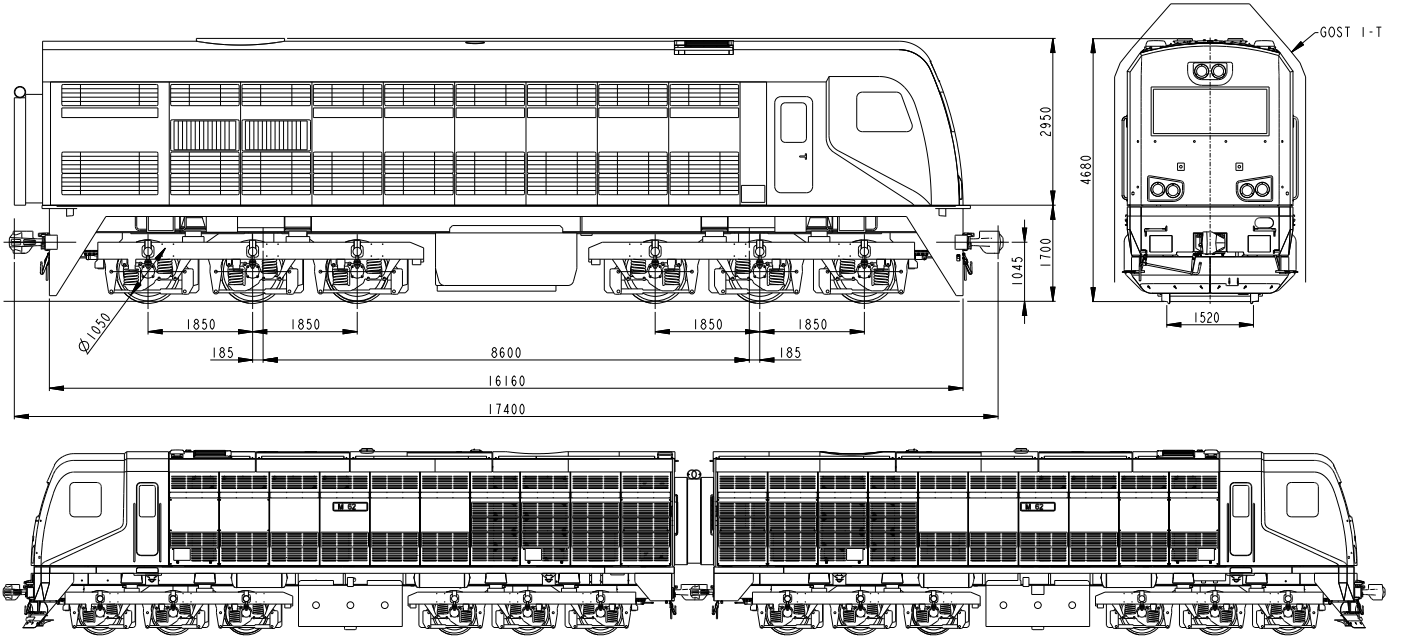
Track gauge	1 520 mm
Meets the standards	EN
Number of powered axles	6
Wheelset arrangement	C'o C'o
Maximum operating speed	100 km/h
Minimum curve radius	125 m
Power transmission	electric AC/DC
Diesel engine	MTU 16V 4000 R43
EU Stage	IIIA
Engine output	2 200 kW
Maximum towing capacity	432 kN
Nominal weight	138 t
Axle load	23 t
Compressor output	318 m <sup>3</sup> /h
Fuel tank volume	7 100 l
Climate class	-40 to +40°C

## Equipment:

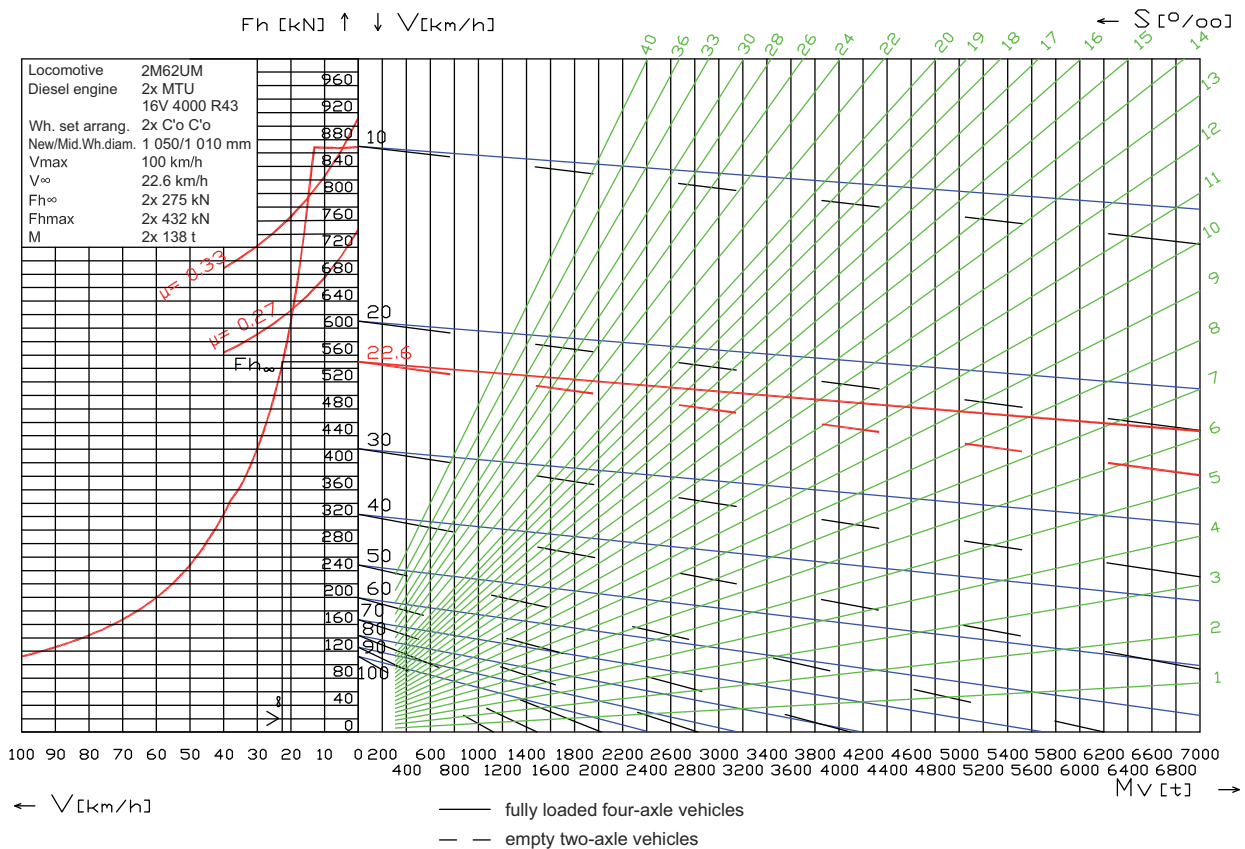
- digital control system
- automatic speed control (ASC)
- remote monitoring by means of GSM and GPS technologies
- multiple control
- air drier
- electrodynamic brake (EDB)
- antiskid device (by traction)
- camera system

## Optional equipment:

- wheel slide protection (by braking)



Load diagram

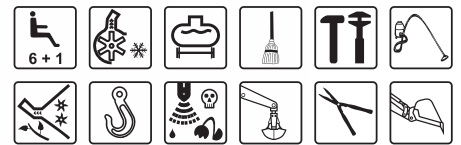


The universal motor truck **MUV 74** is designed for railway line maintenance. The vehicle is equipped with hydrostatic power transmission from the diesel engine to two powered wheelsets.



**Benefits and advantages:**

- high reliability
- low operating and maintenance costs
- environmentally friendly operation
- modern concept and design
- application of unified solutions
- high comfort and operator safety
- excellent visibility
- service period: 1 000 km / 3 months



A two-axle undercarriage of the vehicle consists of a wheelset with the internal seating of axle bearings and suspension. There is an individual hydraulic motor for each wheelset. The drive unit is located behind the driver's cab and consists of the Caterpillar diesel engine and a hydraulic block of Parker components. Behind the drive unit there is a freight compartment with folding and removable sides. Under the main frame there is a fuel tank, vehicle accumulators and a pneumatic block. Protective fender elements are installed on the front of the vehicle at buffer height. Spring-loaded couplers can be installed on the vehicle. Fixtures for transport of rails with various lengths are installed on the sides of the vehicle. The vehicle offers the speed mode for driving at 0 – 70 km/h and a working speed mode at 2 – 10 km/h. The vehicle is equipped with an air brake and a parking (stored-energy) brake.



**Parameters of MUV 74:**

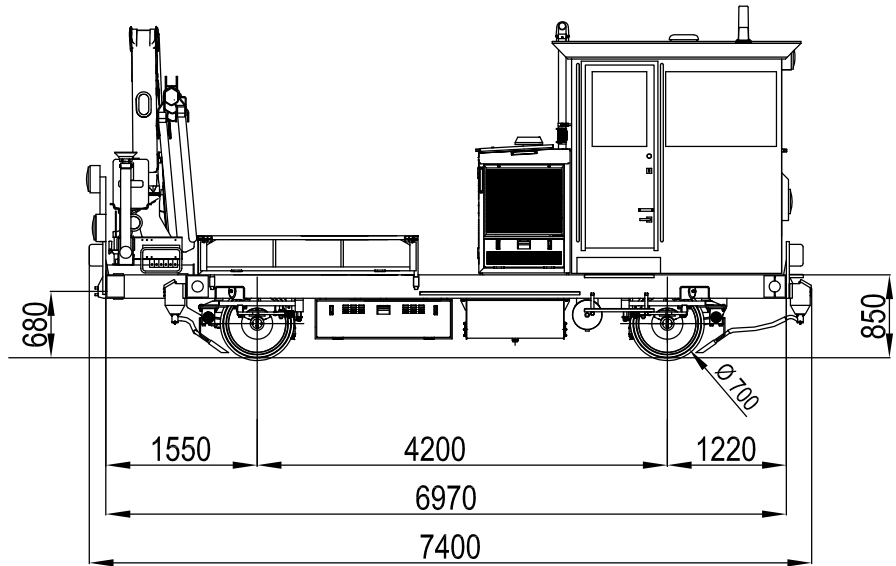
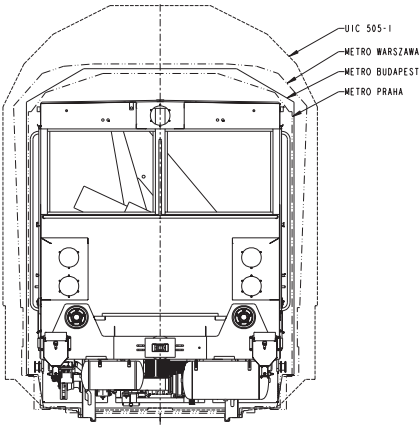
Track gauge	1 435 mm
Meets the standards	EN
Number of powered axles	2
Wheelset arrangement	Bo
Maximum operating speed	70 km/h
Minimum curve radius	90 m
Power transmission	hydrostatic
Diesel engine	CAT C 4.4
EU Stage	IIIB
Engine output	130 kW
Maximum towing capacity	16 kN
Nominal weight	12.5 t
Axle load	6.25 t
Fuel tank volume	250 l
Loading capacity	max. 5 t
Seats (for seating persons)	1+6
Climatic class	-25 to +40 °C

**Equipment:**

- digital control system
- cruise control
- operating speed 2 to 10 km/h
- air drier
- stored-energy spring-actuated parking brake
- disc brake

**Optional equipment:**

- hydraulic loading crane with remote control
- rotator, hook, grab, shovel dipper, drill, etc.
- grass mower
- sweeper for cleaning of platforms and other areas
- snow cutter
- snow-plough
- storage tank superstructure
- mobile workshop
- trolley superstructure
- vacuum cleaner
- shredder
- gravel sand plough
- GPK measuring system etc.









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