Model information document relating to EU type-approval of a type of (or a type of a vehicle with regard to) a braking system

A.	General information	Comments
2.	**General information concerning systems, components or separate technical units**	
2.1.	**Make(s) (trade name(s) of manufacturer):**	
2.2.	**Type:**	
2.2.1.	Commercial name(s) (if available):	
2.2.2.	Type-approval number(s) (if available):	
2.2.3.	Type-approval(s) issued on (date, if available):	
2.2.4.	For components and separate technical units, location and method of attachment of the type-approval mark(s) (if available):	
2.3.	**Company name and address of manufacturer:**	
2.3.1.	Name(s) and address(es) of assembly/manufacture plants:	
2.3.2.	Name and address of manufacturer's authorised representative (if any):	
2.4.	**For systems and separate technical units, vehicle(s) for which they are intended for:**	
2.4.1.	Type:	
2.4.2.	Variant(s):	
2.4.3.	Version(s):	
2.4.4.	Commercial name(s) (if available):	
2.4.5.	Category, subcategory and speed index of the vehicle:	
3.	**General construction characteristics**	
3.1.	Photographs or drawings of a representative version of the vehicle:	
3.2.	Scale and dimensioned drawing of the whole vehicle:	

3.3.	**Axles and wheels:**	
3.3.1.	Number of axles and wheels:	
3.3.2.	Number and position of axles with twinned wheels:	
3.3.3.	Number and position of steered axles:	
3.3.4.	Number and position of powered axles:	
3.3.5.	Number and position of braked axles:	
3.4.	**For C-category vehicles**	
3.4.1.	Crawler undercarriage configuration: set of track trains at front/set of track trains at rear/set of track trains at front and set of track trains at rear/continuous track train at each side of the vehicle	
3.4.2.	Number and position of powered set of track trains:	
3.4.3.	Number and position of braked set of track trains:	
3.4.4.	**Steering for C-category vehicles**	
3.4.4.1.	Steering by changing the speed between the left-hand side and right-hand side track trains: yes/no/not applicable	
3.4.4.2.	Steering by pivoting of two opposite or all four track trains: yes/no/not applicable	
3.4.4.3.	Steering by articulation of the front and rear part of the vehicle around a central vertical axis: yes/no/not applicable	
3.4.4.4.	Steering by articulation of the front and rear part of the vehicle around a central vertical axis and by changing the direction of the wheels on the wheeled axle: yes/no/not applicable	
3.5.	**Chassis**	
3.5.1.	Chassis overall drawing:	
3.5.2.	Type of chassis for categories T and C: backbone/central tube/ladder/articulated/chassis with side members/other (if other: specify: …)	

3.5.3.	Type of chassis for categories R and S: drawbar/rigid drawbar/centre-axle/other (if other: specify: …)	
3.12.	For R- and S-category vehicles, type of braking: unbraked/inertia-braked/continuous braked/semi-continuous braked/hydraulic braked/pneumatic braked	
4.	**Masses and dimensions (in kg and mm) (Refer to drawings where applicable)**	
4.1	**Range of vehicle mass (overall)**	
4.1.1.	Unladen mass	
4.1.1.1.	Unladen mass(es) in running order:	
4.1.1.1.1.	Maximum:	_____kg
4.1.1.1.2.	Minimum:	_____kg
4.1.1.1.3.	Distribution of this (these) mass(es) among the axles:	_____kg
4.1.1.1.4.	In the case of a rigid drawbar or centre-axle R- or S-category vehicle indicate the vertical load on the coupling point (S):	_____kg
4.1.2.	**Maximum mass(es), as declared by the manufacturer**	
4.1.2.1.	Technically permissible maximum laden mass(es) of the vehicle:	_____kg
4.1.2.1.1	Technically permissible maximum mass(es) per axle:	Axle 1 _____kg Axle 2 _____kg Axle _:_____kg
4.1.2.1.2.	In the case of a rigid drawbar or centre-axle R- or S-category vehicle indicate the vertical load on the front coupling point (S):	_____kg
4.1.2.1.3.	Limits on the distribution of this (these) mass(es) among the axles (specify the minimum limits in percentages on the front axle and on the rear axle):	_____%
4.1.3.	Technically permissible towable mass(es) for T- or C-category vehicles for each chassis/ braking configuration of the R- or S-category vehicle (for R- and S-category vehicles, indicate the maximum permissible load(s) on the rear coupling point):	

R- and S category vehicle	**Drawbar**	**Rigid drawbar**	**Centre-axle**

Brake			
Unbraked ([1])	… kg	… kg	… kg
Inertia-braked	… kg	… kg	… kg
Hydraulic braked	… kg	… kg	… kg
Pneumatic braked	… kg	… kg	… kg
([*1]) Calculated using the partially laden condition defined by the tractor manufacturer in agreement with the technical service set out in point 3.1.1.2 of Annex II to Commission Delegated Regulation (EU) 2015/68.			

4.1.4.	Total technically permissible mass(es) of the tractor (T- or C-category vehicle) and towed vehicle (R- or S-category vehicle) combination for each chassis/braking configuration of the R- or S-category vehicle:

R- and S category vehicle Brake	**Drawbar**	**Rigid drawbar**	**Centre-axle**
Unbraked	… kg	… kg	… kg
Inertia-braked	… kg	… kg	… kg
Hydraulic braked	… kg	… kg	… kg
Pneumatic braked	… kg	… kg	… kg

4.2.	**Range of vehicle dimensions (overall)**	
4.2.2.5.	Wheelbase:	_____mm
4.2.2.6.	Distance(s) between consecutive axles	1-2: _____mm 2-3: _____mm, 3-4: _____mm, etc.
4.2.2.7.	For rigid draw bar and centre axle R- and S-category vehicles:	
4.2.2.7.1.	Distance between the coupling point and the first axle:	_____mm
4.2.2.7.2.	Distance between the coupling point and the last axle:	_____mm
4.2.2.8.	Maximum and minimum width of track of each axle (measured between the symmetry planes of the single or twin tyres or of the tyres in triple formation normally fitted) (to be stated by the manufacturer):	
4.2.2.8.1.	Maximum:	Axle 1_____mm Axle 2_____mm

		Axle _:_____mm
4.2.2.8.2.	Minimum:	Axle 1_____mm Axle 2_____mm Axle _:_____mm
4.2.2.9.	Position of centre of gravity of the vehicle in the longitudinal, transverse and vertical direction:	
4.2.2.9.1.	For T2-, T4.1-, T4.3-categories and C2-, C4.1-, C4.3-categories, height of the centre of gravity, measured in relation to the ground using the tyres normally fitted on the vehicle:	_____mm
4.2.2.9.1.1.	For T2-and C2-categories, indicate the ratio between entry 4.2.2.9.1 and the average minimum track for each axle:	Axle 1_____mm Axle 2_____mm Axle _:_____mm
4.2.2.9.1.2.	For T4.1-and C4.1-categories, indicate the ratio between entry 4.2.2.9.1 and the average minimum track of all of the axles:	
5.	**General powertrain characteristics**	
5.1.	Maximum vehicle speed	
5.1.1.	**Forward maximum vehicle speed**	
5.1.1.1.	Declared maximum design vehicle speed:	_____km/h
5.1.1.2.	Calculated maximum design vehicle speed in top gear (show factors used in calculation):	_____km/h
5.1.1.3.	Measured maximum vehicle speed:	_____km/h
5.1.2.	**Rearward maximum vehicle speed**	
5.1.2.1.	Declared rearward maximum design vehicle speed:	_____km/h
B.	**Information on environmental and propulsion performance**	
6.	**Essential characteristics of the engine**	
6.1.7.	Category and sub-category of the engine:	
6.2.1.	Combustion Cycle: four stroke cycle/two stroke cycle/rotary/other (specify):	
6.2.2.	Ignition Type: Compression ignition/spark ignition	
6.2.3.1.	Cylinders' number:	_____

	and configuration:	_____
6.3.2.1.	Declared rated speed:	_____rpm
6.3.2.1.2.	Declared rated net power:	_____kW
6.3.2.2.	Maximum power speed:	_____rpm
6.3.2.2.2.	Maximum net power:	_____kW
6.3.6.4.	Engine total swept volume:	_____cm^3
9.	**Energy storage device(s)**	
9.1.	Description: battery/capacitor/flywheel/generator	
9.2.	Identification number:	
9.3.	Kind of electrochemical couple:	
9.4.	Energy stored	
9.4.1.	For battery, voltage: and capacity:	_____ _____Ah in 2h
9.4.2.	For capacitor:	_____J
9.4.3.	For flywheel/generator:	_____J
9.4.3.1.	Flywheel moment of inertia:	_____kg m^2
9.4.3.1.1.	Additional moment of inertia if no gear is engaged:	_____kg m^2
9.5.	Charger: on-board/external/without	
11.	**Drive-train and control**	
11.1.	Brief description and schematic drawing of the vehicle drive-train and its control system (transmission ratio change system, clutch control or any other element of drive-train):	
11.2.	**Transmission**	
11.2.1.	Brief description and schematic drawing of transmission ratio change system(s) and its control:	
11.2.2.	Diagram and or drawing of the power transmission:	
11.2.3.	Type of power transmission: Gear (including planetary gear sets) / belt / hydrostatic / electric / other (if other, specify: …)	

11.2.4.	Brief description of the electrical/electronic components (if any):	
11.2.5.	Location relative to the engine:	
11.2.6.	Method of control:	
11.2.7.	Transfer box: with/without	
11.2.8.	Type of transmission ratio change system: Mechanical (gear change) / Double clutch (gear change) / Semi-automatic (gear change) / Automatic (gear change) / Continuously Variable Transmission/ hydrostatic / not applicable / other (if other, specify: …)	
11.3.	**Clutch (if any)**	
11.3.1.	Brief description and schematic drawing of the clutch and its control system:	
11.3.2.	Maximum torque conversion:	
11.4.	Gear ratios	

Gear	**Internal gearbox ratios (ratios of engine to gearbox output shaft revolutions)**	**Internal transfer box ratios (ratios of engine to transfer box output shaft revolutions)**	**Final drive ratio(s) (ratio of gearbox output shaft to driven wheel revolutions)**	**Total gear ratios**	**Ratio (engine speed/vehicle speed) for manual transmission only**
Maximum for CVT ([1]) 1 2 3					
Minimum for CVT ([1]) Reverse 1 …					
([*1]) Continuously variable transmission					

11.5.	**Differential lock**	
11.5.1.	Differential lock: yes/no/optional	
41.	**Suspension**	

41.1.	Brief description and schematic drawing of suspension and its control system for of each axle or group of axles or wheel:	
41.2.	Drawing of the suspension arrangements:	
41.3.	Level adjustment: yes/no/optional	
41.4.	Brief description of the electrical/electronic components:	
41.5.	Air-suspension for driving axle(s): yes/no	
41.5.1.	Suspension of driving axle(s) equivalent to air-suspension: yes/no	
41.5.2.	Frequency and damping of the oscillation of the sprung mass:	
41.6.	Air-suspension for non-driving axle(s): yes/no	
41.6.1.	Suspension of non-driving axle(s) equivalent to air-suspension: yes/no	
41.6.2.	Frequency and damping of the oscillation of the sprung mass:	
41.7.	Characteristics of the springing parts of the suspension (design, characteristics of the materials and dimensions):	
41.8.	Vehicle equipped with hydro-pneumatic/hydraulic/pneumatic suspension	
41.9.	Stabilisers: yes/no/optional	
41.10.	Shock absorbers: yes/no/optional	
41.11.	Other devices (if any):	
42.	**Axle(s) and tyres**	
42.1.	Description (including photographs and drawings) of the axle(s):	
42.2.	Material(s) and method of construction:	
42.3.	Make (where appropriate):	
42.4.	Type (where appropriate):	
42.5.	Maximum permissible mass supported by the axle(s):	_____kg
42.6.	Axle(s) dimensions:	
42.6.1.	Length:	_____mm

42.6.2.	Width:	_____mm
42.7.	Braking connection to the axle(s): axial/radial/integrated/other (if other, specify: …)	
42.8.	Dimensions of the largest permissible tyres on braked axles:	
42.8.1.	Nominal rolling circumference of the largest tyres on braked axles:	
42.8.2.	Dimensions of the largest permissible tyres on powered axles:	
42.8.3.	Nominal rolling circumference of the of the largest tyres on powered axles:	
43.	**Braking**	
43.1.	Brief description of the braking system(s) installed on the vehicle:	
43.2.	Specifications of the vehicle with respect to the control circuits of the pneumatic, hydraulic and/or electric control lines of the braking system(s) and a list of the supported messages and parameters:	
43.4.	**Braking system(s)**	
43.4.1.	Description of the braking system(s) operation (including any electronic parts), electric block diagram, hydraulic or pneumatic circuit plan:	
43.4.2	Schematic drawing and operating sketch of the braking system(s):	
43.4.3.	List of braking-system components, properly identified:	
43.4.4.	Technical explanation on the calculation for the braking system(s) (determination of the ratio of the total braking forces at the circumference of the wheels to the force applied to the braking control):	
43.4.5.	External energy source(s) (if any) (characteristics, capacity of energy reservoirs, maximum and minimum pressure, pressure gauge and minimum-pressure warning device on the dashboard, vacuum reservoirs and supply valve,	

	supply compressors, compliance with provisions regarding pressure equipment):	
43.4.6.	Electronic braking system: yes/no/optional	
43.4.7.	Type-I test report number(s), in accordance with Annex VII to Commission Delegated Regulation (EU) 2015/68 (if applicable):	
43.5.	**Braking transmission (on towing vehicle)**	
43.5.1.	Braking transmission of the service braking system on towing vehicle: mechanical/pneumatic/hydraulic/hydrostatic/without power assistance/power-assisted/fully powered transmission	
43.5.2.	Transmission technology: pneumatic/hydraulic/both pneumatic and hydraulic	
43.5.3.	Locking of left and right braking controls: yes/no	
43.6.	**Towed vehicle braking control devices (on towing vehicle)**	
43.6.1.	Towed vehicle braking control system technology: Hydraulic / Pneumatic / Electric/None	
43.6.2.	Description of the connectors, couplings and safety devices (including drawings, sketches and the identification of any electronic parts):	
43.6.2.1.	Pneumatic connection type: Two lines/None	
43.6.2.1.1.	Pneumatic supply pressure (two lines):	_____kPa
43.6.2.1.2.	Electrical control line: yes/no	
43.6.2.2.	Hydraulic connection type: Single line / Two lines / None	
43.6.2.2.1.	Hydraulic supply pressure: Single line: Two lines:	_____kPa _____kPa
43.6.2.2.2.	Presence of ISO 7638:2003 connector: yes/no	

43.7.	**Towed vehicle braking devices (on towed vehicle)**	
43.7.1.	Towed vehicle braking control system technology: Hydraulic / Pneumatic / Electric/ Inertia / None	
43.7.2.	Towed vehicle-brake actuating device: Drum / Disc / Other	
43.7.2.1.	Description and characteristics:	
43.7.3.	Description of the connectors, couplings and safety devices (including drawings, sketches and the identification of any electronic parts):	
43.7.3.1.	Pneumatic connection type: Two lines/None	
43.7.3.1.1.	Electrical control line: yes/no	
43.7.3.2.	Hydraulic connection type: Two lines / None	
43.7.3.2.1.	Presence of ISO 7638:2003 connector: yes/no	
43.A	**Towed vehicle axle and brake information document with respect to the alternative type i and type iii procedure**	
43.A.1.	General	
43.A.1.1.	Name and address of axle or vehicle manufacturer:	
43.A.2.	Axle data	
43.A.2.1.	Manufacturer (name and address):	
43.A.2.2.	Type/variant:	
43.A.2.3.	Axle identifier:	ID1-_____
43.A.2.4.	Test axle load (Fe):	_____daN
43.A.2.5.	Wheel and brake data according to the following figures 1A and 1B	
43.A.3.	**Brake**	
43.A.3.1.	General information	
43.A.3.1.1.	Make:	
43.A.3.1.2.	Manufacturer (name and address):	

43.A.3.1.3.	Type of brake (e.g. drum / disc):	
43.A.3.1.3.1.	Variant (e.g. S-cam, single wedge etc.):	
43.A.3.1.4.	Brake identifier:	ID2-_____
43.A.3.1.5.	Brake data according to the figures 2A and 2B:	
43.A.3.2.	**Drum brake data**	
43.A.3.2.1.	Brake adjustment device (external/integrated):	
43.A.3.2.2.	Declared maximum brake input torque Cmax:	_____Nm
43.A.3.2.3.	Mechanical efficiency:	η =_____
43.A.3.2.4.	Declared brake input threshold torque C0,dec:	_____Nm
43.A.3.2.5.	Effective length of the cam shaft:	_____mm
43.A.3.3.	**Brake drum**	
43.A.3.3.1.	Max diameter of friction surface (wear limit)	_____mm
43.A.3.3.2.	Base material:	
43.A.3.3.3.	Declared mass:	_____kg
43.A.3.3.4.	Nominal mass:	_____kg
43.A.3.4.	**Brake lining**	
43.A.3.4.1.	Manufacturer and address	
43.A.3.4.2.	Make	
43.A.3.4.3.	Type	
43.A.3.4.4.	Identification (type identification on lining)	
43.A.3.4.5.	Minimum thickness (wear limit) … mm	_____mm
43.A.3.4.6.	Method of attaching friction material to brake shoe:	
43.A.3.4.6.1.	Worst case of attachment (in the case of more than one):	
43.A.3.5.	**Disc brake data**	
43.A.3.5.1.	Connection type to the axle (axial, radial, integrated, etc.):	

43.A.3.5.2.	Brake adjustment device (external/integrated):	
43.A.3.5.3.	Max. actuation stroke:	_____mm
43.A.3.5.4.	Declared maximum input force ThAmax:	_____daN
43.A.3.5.4.1	Cmax = ThAmax · le :	_____Nm
43.A.3.5.5.	Friction radius: re =	_____mm
43.A.3.5.6.	Lever length: le =	_____mm
43.A.3.5.7.	Input/output ratio (le/ee): i =	
43.A.3.5.8.	Mechanical efficiency:	η =_____
43.A.3.5.9.	Declared brake input threshold force ThA0,dec:	_____N
43.A.3.5.9.1.	C0,dec = ThA0,dec · le :	_____Nm
43.A.3.5.10.	Minimum rotor thickness (wear limit):	_____mm
43.A.3.6.	**Brake disc data**	
43.A.3.6.1.	Disc type description:	
43.A.3.6.2.	Connection/mounting to the hub:	
43.A.3.6.3.	Ventilation (yes/no):	
43.A.3.6.4.	Declared mass:	_____kg
43.A.3.6.5.	Nominal mass:	_____kg
43.A.3.6.6.	Declared external diameter:	_____mm
43.A.3.6.7.	Minimum external diameter:	_____mm
43.A.3.6.8.	Inner diameter of friction ring:	_____mm
43.A.3.6.9.	Width of ventilation channel (if appl.):	_____mm
43.A.3.6.10.	Base material:	
43.A.3.7.	**Brake pad data**	
43.A.3.7.1.	Manufacturer and address:	
43.A.3.7.2.	Make:	
43.A.3.7.3.	Type:	
43.A.3.7.4.	Identification (type identification on pad back plate):	
43.A.3.7.5.	Minimum thickness (wear limit):	_____mm

43.A.3.7.6.	Method of attaching friction material to pad back plate:	
43.A.3.7.6.1.	Worst case of attachment (in the case of more than one):	

Figure 1A

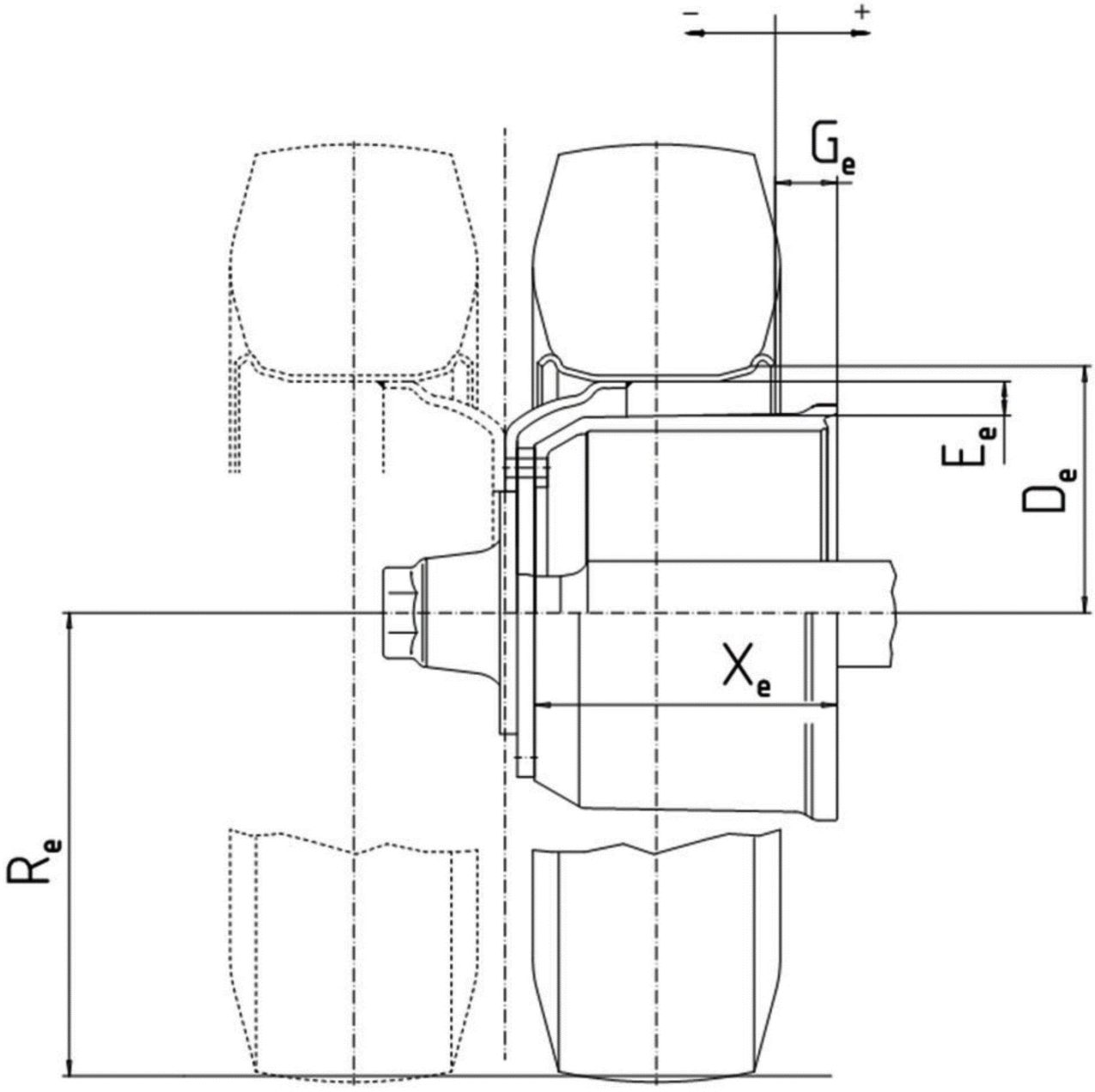


Figure 1B

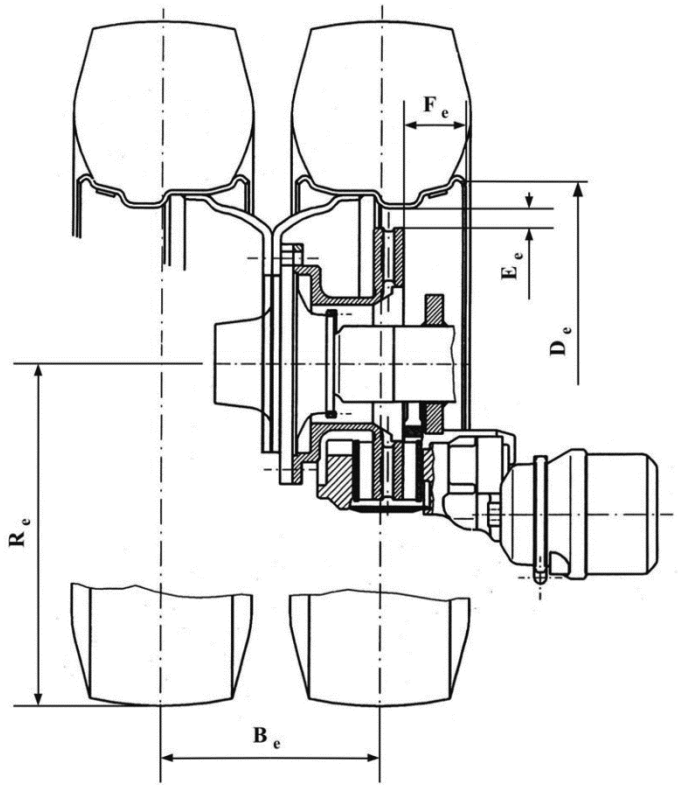


Figure 2A

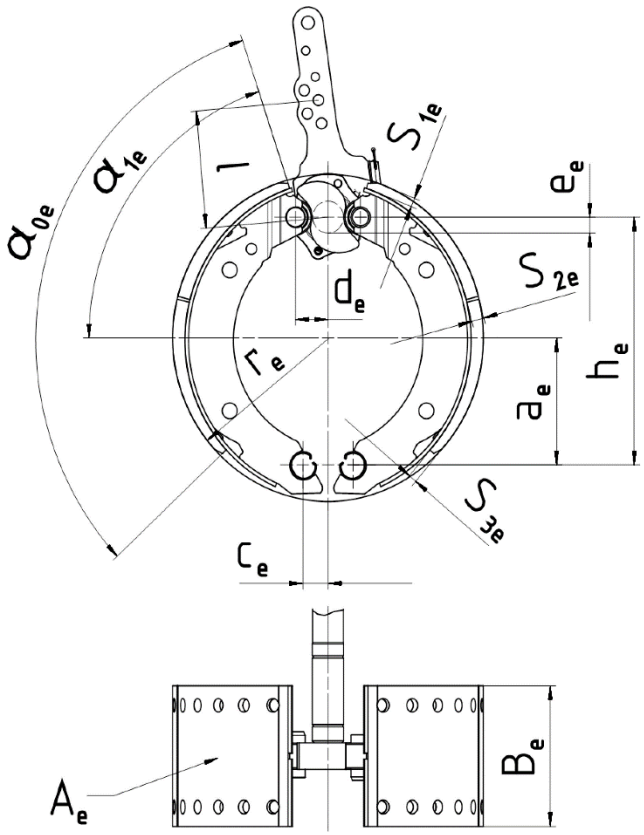
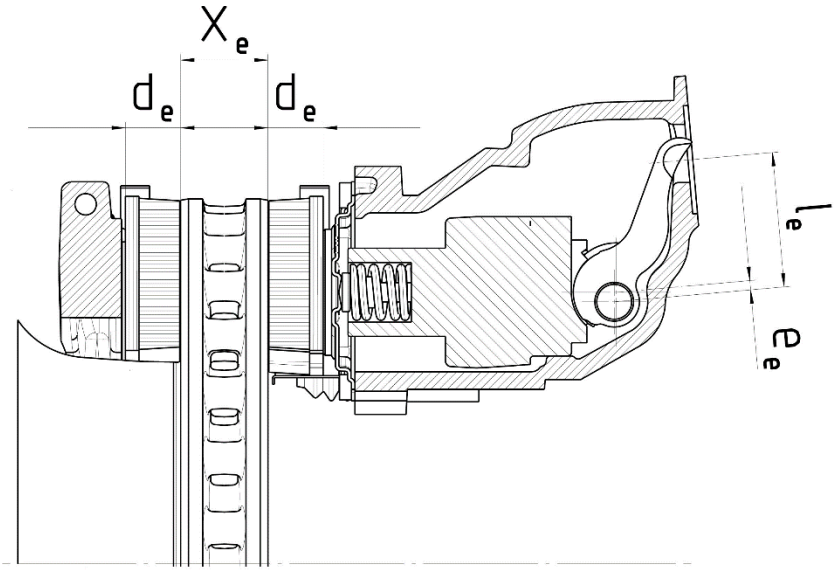
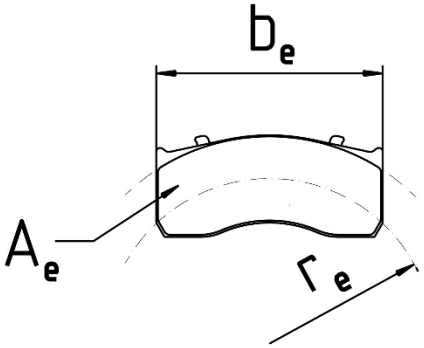


Figure 2B





xe (mm)	ae (mm)	he (mm)	ce (mm)	de (mm)	ee (mm)	α0e	α1e	be (mm)	re (mm)	Ae (cm2)	S1e (mm)	S2e (mm)	S3e (mm)