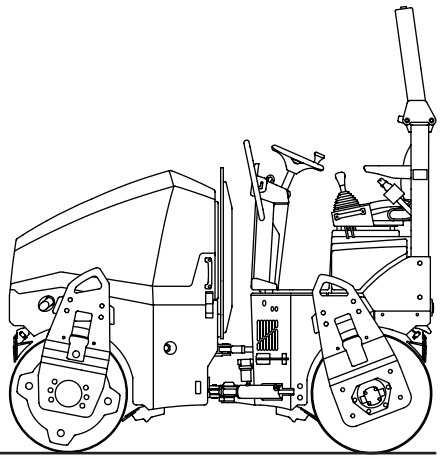
ARX 23.1-2
ARX 26.1-2

LIGHT TANDEM ROLLER
YANMAR 3TNV88F
EU Stage V, U.S. EPA Tier 4f



OPERATING MANUAL

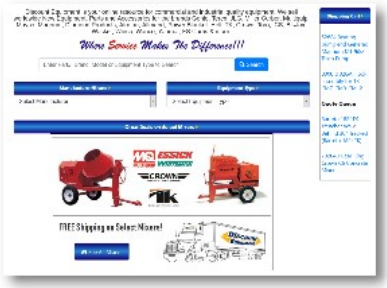
EDITION 07/2024 EN
ARX 23.1-2 YA St V / T4f Product Identification Number 3093873 -
ARX 26.1-2 YA St V / T4f Product Identification Number 3097292 -

AMMANN

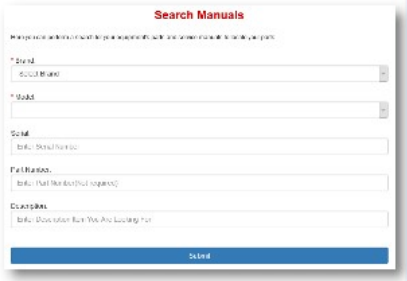
PARTS FINDER

Search Website by Part Number

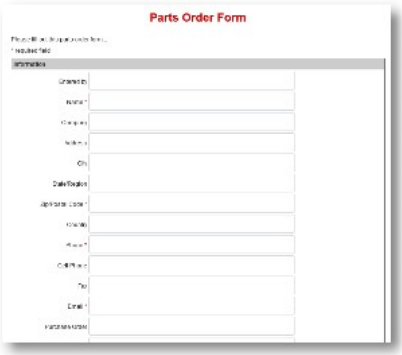
Discount Equipment



Search Manual Library For Parts Manual & Lookup Part Numbers – Purchase or Request Quote



Can't Find Part or Manual? Request Help by Manufacturer, Model & Description



Discount-Equipment.com is your online resource for quality parts & equipment.

Florida: 561-964-4949 Outside Florida TOLL FREE: 877-690-3101

Need parts?

Click on this link: http://www.discount-equipment.com/category/5443-parts/ and choose one of the options to help get the right parts and equipment you are looking for. Please have the machine model and serial number available in order to help us get you the correct parts. If you don't find the part on the website or on one of the online manuals, please fill out the request form and one of our experienced staff members will get back to you with a quote for the right part that your machine needs.

We sell worldwide for the brands: Genie, Terex, JLG, MultiQuip, Mikasa, Essick, Whiteman, Mayco, Toro Stone, Diamond Products, Generac Magnum, Airman, Haulotte, Barreto, Power Blanket, Nifty Lift, Atlas Copco, Chicago Pneumatic, Allmand, Miller Curber, Skyjack, Lull, Skytrak, Tsurumi, Husquvarna Target, Stow, Wacker, Sakai, Mi-T-M, Sullair, Basic, Dynapac, MBW, Weber, Bartell, Bennar Newman, Haulotte, Ditch Runner, Menegotti, Morrison, Contec, Buddy, Crown, Edco, Wyco, Bomag, Laymor, EZ Trench, Bil-Jax, F.S. Curtis, Gehl Pavers, Heli, Honda, ICS/PowerGrit, IHI, Partner, Imer, Clipper, MMD, Koshin, Rice, CH&E, General Equipment ,Amida, Coleman, NAC, Gradall, Square Shooter, Kent, Stanley, Tamco, Toku, Hatz, Kohler, Robin, Wisconsin, Northrock, Oztec, Toker TK, Rol-Air, APT, Wylie, Ingersoll Rand / Doosan, Innovatech, Con X, Ammann, Mecalac, Makinex, Smith Surface Prep,Small Line, Wanco, Yanmar

ES / EU Prohlášení o shodě

(**Původní ES/EU prohlášení o shodě /** *Original EC/EU Declaration of conformity / Ursprüngliche EG-/EU-Konformitätserklärung*)

EC / EU Declaration of conformity / EG-/EU-Konformitätserklärung

(**Překlad původního ES/EU prohlášení o shodě /** *Translation original EC/EU Declaration of conformity / Übersetzung der ursprünglichen EG-/EU-Konformitätserklärung*)

Originální ES/EU prohlášení o shodě je dodané s dokumenty během expedice stroje. / *The original EC/EU Declaration of Conformity is supplied with documents during expedition of machine. / Das Original der EG-/EU-Konformitätserklärung wird mit den Unterlagen während des Versands der Maschine mitgeliefert.*

Výrobce / *Manufacturer / Hersteller:* **Adresa /** *Address / Adresse:* **IČ /** *Identification Number / Ident.-Nr:*	Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic 000 08 753
Jméno a adresa osoby pověřené sestavením technické dokumentace podle 2006/42/ES a jméno a adresa osoby, která uchovává technickou dokumentaci podle 2000/14/ES / *Name and address of the person authorised to compile the technical file according to 2006/42/EC and name and address of the person, who keeps the technical documentation according to 2000/14/EC / Name und Adresse der mit der Zusammenstellung der technischen Dokumentation beauftragten Person gemäß 2006/42/EG und Name und Adresse der mit der Aufbewahrung der technischen Dokumentation beauftragten Person gemäß 2000/14/EG:*	Ing. Radek Ostrý Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic
Popis strojního zařízení / *Description of the machinery / Beschreibung der Maschineneinrichtung:*	
Označení / *Designation / Bezeichnung:*	Lehký tandemový válec / Light Tandem Roller / Leichte Tandemwalze
Typ / *Type / Typ:*	ARX 23.1-2
Verze / *Version / Version:*	
Product Identification Number:	
Motor / *Engine / Motor:*	Yanmar 3TNV88F-EP, vznětový, jmenovitý výkon (SAE J1995 Gross): 18,2 kW, jmenovité otáčky: 2400 min-1. / Yanmar 3TNV88F-EP, Diesel, nominal power (SAE J1995 Gross): 18,2 kW, rated speed: 2400 RPM. / Yanmar 3TNV88F-EP, Dieselmotor, Nennleistung (SAE J1995 Gross): 18,2 kW, Nenndrehzahl: 2400 min-1.
Prohlašujeme, že strojní zařízení splňuje všechna příslušná ustanovení uvedených směrnic / *We declare, that the machinery fulfils all the relevant provisions mentioned Directives / Wir erklären, dass die Maschineneinrichtung sämtliche entsprechenden Bestimmungen aufgeführter Richtlinien erfüllt:*	Strojní zařízení – směrnice 2006/42/ES / *Machinery Directive 2006/42/EC / Maschineneinrichtung – Richtlinie 2006/42/EG* Elektromagnetická kompatibilita – směrnice 2014/30/EU / *Electromagnetic Compatibility Directive 2014/30/EU / Elektromagnetische Kompatibilität – Richtlinie 2014/30/EU* Emise hluku – směrnice 2000/14/ES / *Noise Emission Directive 2000/14/EC / Lärmemissionen – Richtlinie 2000/14/EG*
Harmonizované technické normy a technické normy použité k posouzení shody / *The harmonized technical standards and the technical standards applied to the conformity assessment / Harmonisierte technische Normen und für die Beurteilung der Konformität verwendete Normen:*	EN ISO 12100:2010, EN 474-1:2022, EN 474-13:2022
Osoby zúčastněné na posouzení shody / *Bodies engaged in the conformity assessment / An der Konformitätsbeurteilung beteiligte Personen:*	Notifikovaná osoba č. 1016 / Notified Body No.: 1016 / Notifizierte Stelle Nr.: 1016 Státní zkušebna strojů a.s., Třanovského 622/11, 163 04 Praha 6–Řepy, ČR. / The Government Testing Laboratory of Machines J.S.C., Třanovského 622/11, 163 04 Praha 6–Řepy, Czech Republic / Staatliche Prüfstelle für Maschinen AG, Třanovského 622/11, 163 04 Praha 6–Řepy, Tschechische Republik.
Použitý postup posouzení shody / *To the conformity assessment applied procedure / Verwendetes Vorgehen der Konformitätsbeurteilung:*	Na základě směrnice 2000/14/ES příloha VI / *Pursuant to the Noise Emission Directive 2000/14/EC, Annex VI / Aufgrund der Richtlinie 2000/14/EG, Anlage VI*
Naměřená hladina akustického výkonu / *Measured sound power level / Gemessener Schallleistungspegel:*	L_{WA} = 104 dB
Garantovaná hladina akustického výkonu / *Guaranteed sound power level / Garantierter Schallleistungspegel:*	L_{WA} = 106 dB

Místo a datum vydání / *Place and date of issue / Ort und Datum der Ausgabe:* Nové Město nad Metují,

Osoba zmocněná k podpisu za výrobce / *Signed by the person entitled to deal in the name of manufacturer / Zeichnungsberechtigter für den Hersteller:*

Jméno / *Name / Name:*	Mgr. Petr Lubas
Funkce / *Grade / Stelle:*	COD Demand Manager
Podpis / *Signature / Unterschrift:*	

UK Prohlášení o shodě

(Původní UK prohlášení o shodě / Original UK Declaration of conformity)

UK Declaration of conformity

(Překlad původního UK prohlášení o shodě /Translation original UK Declaration of conformity)

Originální UK prohlášení o shodě je dodané s dokumenty během expedice stroje.
The original UK Declaration of Conformity is supplied with documents during expedition of machine.

Výrobce / *Manufacturer:* **Adresa** / *Address:* **IČ** / *Identification Number:*	Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic 000 08 753
Jméno a adresa osoby pověřené sestavením technické dokumentace podle předpisů o dodávkách strojních zařízení (bezpečnost) z roku 2008 a jméno a adresa osoby, která uchovává technickou dokumentaci podle Předpisů o dodávkách strojních zařízení (bezpečnost) z roku 2008 / *Name and address of the person authorised to compile the technical file according to Supply of Machinery (Safety) Regulations 2008 and name and address of the person, who keeps the technical documentation according to Supply of Machinery (Safety) Regulations 2008*	Ing. Radek Ostrý Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic
Popis strojního zařízení / *Description of the machinery:*	
Označení / *Designation:*	Lehký tandemový válec / Light Tandem Roller
Typ / *Type:*	ARX 23.1-2
Verze / *Version:*	
Product Identification Number:	
Motor / *Engine:*	Yanmar 3TNV88F-EP, vznětový, jmenovitý výkon (SAE J1995 Gross): 18,2 kW, jmenovité otáčky: 2400 min^{-1} . / Yanmar 3TNV88F-EP, Diesel, nominal power (SAE J1995 Gross): 18,2 kW, rated speed: 2400 RPM.
Prohlašujeme, že strojní zařízení splňuje všechna příslušná ustanovení uvedených předpisů / *We declare, that the machinery fulfils all the relevant provisions mentioned Legislation*	Strojní zařízení – Předpisy o dodávkách strojních zařízení (bezpečnost) z roku 2008 / *Supply of Machinery (Safety) Regulations 2008* Elektromagnetická kompatibilita – Předpisy o elektromagnetické kompatibilitě z roku 2016 / *Electromagnetic Compatibility Regulations 2016* Emise hluku – Emise hluku v životním prostředí zařízením pro použití ve venkovním prostředí z roku 2001 / *Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001*
Technické normy použité k posouzení shody / *The technical standards applied to the conformity assessment*	BS EN 500-1+A1, BS EN 500-4
Osoby zúčastněné na posouzení shody / *Bodies engaged in the conformity assessment*	Schválená osoba / Approved Body AnP Certification Limited, 2 Parkfield Street, Rusholme, Manchester, M14 4PN, Spojené království Velké Británie a Severního Irska / *AnP Certification Limited, 2 Parkfield Street, Rusholme, Manchester, M14 4PN, United Kingdom of Great Britain and Northern Ireland*
Použitý postup posouzení shody / *To the conformity assessment applied procedure*	Na základě předpisu Emise hluku v životním prostředí podle zařízení pro použití ve venkovním prostředí z roku 2001 Příloha 9 / *Pursuant to the Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 Schedule 9*
Naměřená hladina akustického výkonu / *Measured sound power level:*	L_{WA} = 104 dB
Garantovaná hladina akustického výkonu / *Guaranteed sound power level:*	L_{WA} = 106 dB

Místo a datum vydání / *Place and date of issue:* Nové Město nad Metují,

Osoba zmocněná k podpisu za výrobce / *Signed by the person entitled to deal in the name of manufacturer:*

Jméno / *Name:* Mgr. Petr Lubas
Funkce / *Grade:* COD Demand Manager
Podpis / *Signature:*

CZ / EN

ES / EU Prohlášení o shodě

(**Původní ES/EU prohlášení o shodě /** *Original EC/EU Declaration of conformity / Ursprüngliche EG-/EU-Konformitätserklärung*)

EC / EU Declaration of conformity / EG-/EU-Konformitätserklärung

(**Překlad původního ES/EU prohlášení o shodě /** *Translation original EC/EU Declaration of conformity / Übersetzung der ursprünglichen EG-/EU-Konformitätserklärung*)

Originální ES/EU prohlášení o shodě je dodané s dokumenty během expedice stroje. / *The original EC/EU Declaration of Conformity is supplied with documents during expedition of machine. / Das Original der EG-/EU-Konformitätserklärung wird mit den Unterlagen während des Versands der Maschine mitgeliefert.*

Výrobce / *Manufacturer / Hersteller:* **Adresa /** *Address / Adresse:* **IČ /** *Identification Number / Ident.-Nr:*	Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic 000 08 753
Jméno a adresa osoby pověřené sestavením technické dokumentace podle 2006/42/ES a jméno a adresa osoby, která uchovává technickou dokumentaci podle 2000/14/ES / *Name and address of the person authorised to compile the technical file according to 2006/42/EC and name and address of the person, who keeps the technical documentation according to 2000/14/EC / Name und Adresse der mit der Zusammenstellung der technischen Dokumentation beauftragten Person gemäß 2006/42/EG und Name und Adresse der mit der Aufbewahrung der technischen Dokumentation beauftragten Person gemäß 2000/14/EG:*	Ing. Radek Ostrý Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic
Popis strojního zařízení / *Description of the machinery / Beschreibung der Maschineneinrichtung:*	
Označení / *Designation / Bezeichnung:*	Lehký tandemový válec / Light Tandem Roller / Leichte Tandemwalze
Typ / *Type / Typ:*	ARX 26.1-2
Verze / *Version / Version:*	
Product Identification Number:	
Motor / *Engine / Motor:*	Yanmar 3TNV88F-EP, vznětový, jmenovitý výkon (SAE J1995 Gross): 18,2 kW, jmenovité otáčky: 2400 min-1. / Yanmar 3TNV88F-EP, Diesel, nominal power (SAE J1995 Gross): 18,2 kW, rated speed: 2400 RPM. / Yanmar 3TNV88F-EP, Dieselmotor, Nennleistung (SAE J1995 Gross): 18,2 kW, Nenndrehzahl: 2400 min-1.
Prohlašujeme, že strojní zařízení splňuje všechna příslušná ustanovení uvedených směrnic / *We declare, that the machinery fulfils all the relevant provisions mentioned Directives / Wir erklären, dass die Maschineneinrichtung sämtliche entsprechenden Bestimmungen aufgeführter Richtlinien erfüllt:*	Strojní zařízení – směrnice 2006/42/ES / *Machinery Directive 2006/42/EC / Maschineneinrichtung – Richtlinie 2006/42/EG* Elektromagnetická kompatibilita – směrnice 2014/30/EU / *Electromagnetic Compatibility Directive 2014/30/EU / Elektromagnetische Kompatibilität – Richtlinie 2014/30/EU* Emise hluku – směrnice 2000/14/ES / *Noise Emission Directive 2000/14/EC / Lärmemissionen – Richtlinie 2000/14/EG*
Harmonizované technické normy a technické normy použité k posouzení shody / *The harmonized technical standards and the technical standards applied to the conformity assessment / Harmonisierte technische Normen und für die Beurteilung der Konformität verwendete Normen:*	EN ISO 12100:2010, EN 474-1:2022, EN 474-13:2022
Osoby zúčastněné na posouzení shody / *Bodies engaged in the conformity assessment / An der Konformitätsbeurteilung beteiligte Personen:*	Notifikovaná osoba č. 1016 / Notified Body No.: 1016 / Notifizierte Stelle Nr.: 1016 Státní zkušebna strojů a.s., Třanovského 622/11, 163 04 Praha 6–Řepy, ČR. / The Government Testing Laboratory of Machines J.S.C., Třanovského 622/11, 163 04 Praha 6–Řepy, Czech Republic / Staatliche Prüfstelle für Maschinen AG, Třanovského 622/11, 163 04 Praha 6–Řepy, Tschechische Republik.
Použitý postup posouzení shody / *To the conformity assessment applied procedure / Verwendetes Vorgehen der Konformitätsbeurteilung:*	Na základě směrnice 2000/14/ES příloha VI / *Pursuant to the Noise Emission Directive 2000/14/EC, Annex VI / Aufgrund der Richtlinie 2000/14/EG, Anlage VI*
Naměřená hladina akustického výkonu / *Measured sound power level / Gemessener Schallleistungspegel:*	L_{WA} = 104 dB
Garantovaná hladina akustického výkonu / *Guaranteed sound power level / Garantierter Schallleistungspegel:*	L_{WA} = 106 dB

Místo a datum vydání / *Place and date of issue / Ort und Datum der Ausgabe:* Nové Město nad Metují,

Osoba zmocněná k podpisu za výrobce / *Signed by the person entitled to deal in the name of manufacturer / Zeichnungsberechtigter für den Hersteller:*

Jméno / *Name / Name:* Mgr. Petr Lubas
Funkce / *Grade / Stelle:* COD Demand Manager
Podpis / *Signature / Unterschrift:*

CZ / EN / DE

UK Prohlášení o shodě

(Původní UK prohlášení o shodě / Original UK Declaration of conformity)

UK Declaration of conformity

(Překlad původního UK prohlášení o shodě /Translation original UK Declaration of conformity)

Originální UK prohlášení o shodě je dodané s dokumenty během expedice stroje.
The original UK Declaration of Conformity is supplied with documents during expedition of machine.

Výrobce / *Manufacturer:* **Adresa** / *Address:* **IČ** / *Identification Number:*	Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic 000 08 753
Jméno a adresa osoby pověřené sestavením technické dokumentace podle předpisů o dodávkách strojních zařízení (bezpečnost) z roku 2008 a jméno a adresa osoby, která uchovává technickou dokumentaci podle Předpisů o dodávkách strojních zařízení (bezpečnost) z roku 2008 / *Name and address of the person authorised to compile the technical file according to Supply of Machinery (Safety) Regulations 2008 and name and address of the person, who keeps the technical documentation according to Supply of Machinery (Safety) Regulations 2008*	Ing. Radek Ostrý Ammann Czech Republic s.r.o. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic
Popis strojního zařízení / *Description of the machinery:*	
Označení / *Designation:*	Lehký tandemový válec / Light Tandem Roller
Typ / *Type:*	ARX 26.1-2
Verze / *Version:*	
Product Identification Number:	
Motor / *Engine:*	Yanmar 3TNV88F-EP, vznětový, jmenovitý výkon (SAE J1995 Gross): 18,2 kW, jmenovité otáčky: 2400 min^{-1}. / Yanmar 3TNV88F-EP, Diesel, nominal power (SAE J1995 Gross): 18,2 kW, rated speed: 2400 RPM.
Prohlašujeme, že strojní zařízení splňuje všechna příslušná ustanovení uvedených předpisů / *We declare, that the machinery fulfils all the relevant provisions mentioned Legislation*	Strojní zařízení – Předpisy o dodávkách strojních zařízení (bezpečnost) z roku 2008 / *Supply of Machinery (Safety) Regulations 2008* Elektromagnetická kompatibilita – Předpisy o elektromagnetické kompatibilitě z roku 2016 / *Electromagnetic Compatibility Regulations 2016* Emise hluku – Emise hluku v životním prostředí zařízením pro použití ve venkovním prostředí z roku 2001 / *Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001*
Technické normy použité k posouzení shody / *The technical standards applied to the conformity assessment*	BS EN 500-1+A1, BS EN 500-4
Osoby zúčastněné na posouzení shody / *Bodies engaged in the conformity assessment*	Schválená osoba / Approved Body AnP Certification Limited, 2 Parkfield Street, Rusholme, Manchester, M14 4PN, Spojené království Velké Británie a Severního Irska / *AnP Certification Limited, 2 Parkfield Street, Rusholme, Manchester, M14 4PN, United Kingdom of Great Britain and Northern Ireland*
Použitý postup posouzení shody / *To the conformity assessment applied procedure*	Na základě předpisu Emise hluku v životním prostředí podle zařízení pro použití ve venkovním prostředí z roku 2001 Příloha 9 / *Pursuant to the Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 Schedule 9*
Naměřená hladina akustického výkonu / *Measured sound power level:*	L_{WA} = 104 dB
Garantovaná hladina akustického výkonu / *Guaranteed sound power level:*	L_{WA} = 106 dB

Místo a datum vydání / *Place and date of issue:* Nové Město nad Metují,

Osoba zmocněná k podpisu za výrobce / *Signed by the person entitled to deal in the name of manufacturer:*

Jméno / *Name:* Mgr. Petr Lubas
Funkce / *Grade:* COD Demand Manager
Podpis / *Signature:*

CZ / EN

AMMANN

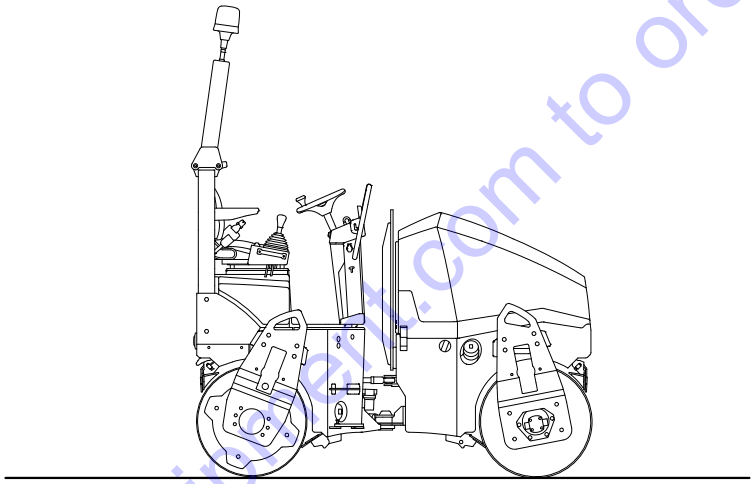
Congratulations on your purchase of the AMMANN compaction machine. This modern compaction machine is characterised by simple operation and maintenance and is the product of many years of experience of the AMMANN company in compaction machines, especially road rollers. In order to avoid faults due to improper operation and maintenance, we request you to read this operating manual with great care and keep it for later reference.

With kind regards,

AMMANN

Ammann Czech Republic s. r. o. | Náchodská 145 | CZ-549 01 Nové Město nad Metují

☏ + 420 491 476 111 | Fax + 420 491 470 215 | info@ammann.com | www.ammann.com



588026

These instructions are "original instructions for use" within the meaning of paragraph 1.7.4.1 of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006.

This operating manual consists of:

I. Specification manual II. Operating manual III. Maintenance manual

The purpose of this manual is to familiarize operators with safe operation of the roller and provide them information for maintenance. Therefore it is necessary to pass this manual to operators and ensure that it will be read by them carefully before the road roller is used.

AMMANN assumes no responsibility if the machine is operated incorrectly or is used incorrectly in operating modes, which may result in injury or death, damage to the machine or property or environmental pollution.

Adherence to maintenance instructions increases the reliability and lifetime of the machinery and reduces repair costs and down time.

In order to ensure smooth operation of the AMMANN compaction equipment, use only original spare parts supplied by AMMANN for repairs.

The operating instructions must always be kept available on the machine in an appropriate place.

Preface

Information, specifications, and recommended operation and maintenance instructions contained in this publication are basic and final information at the time of the printing of this publication. Print errors, technical modifications and modifications of illustrations are reserved. All dimensions and weights are approximate, and therefore not binding.

Ammann Czech Republic s. r. o. reserves the right to perform modifications at any time with no obligation to inform the machine user. If you identify any differences between the machine operated by you and the information contained in this publication, contact your local dealer.

SAFETY NOTICE SIGNS

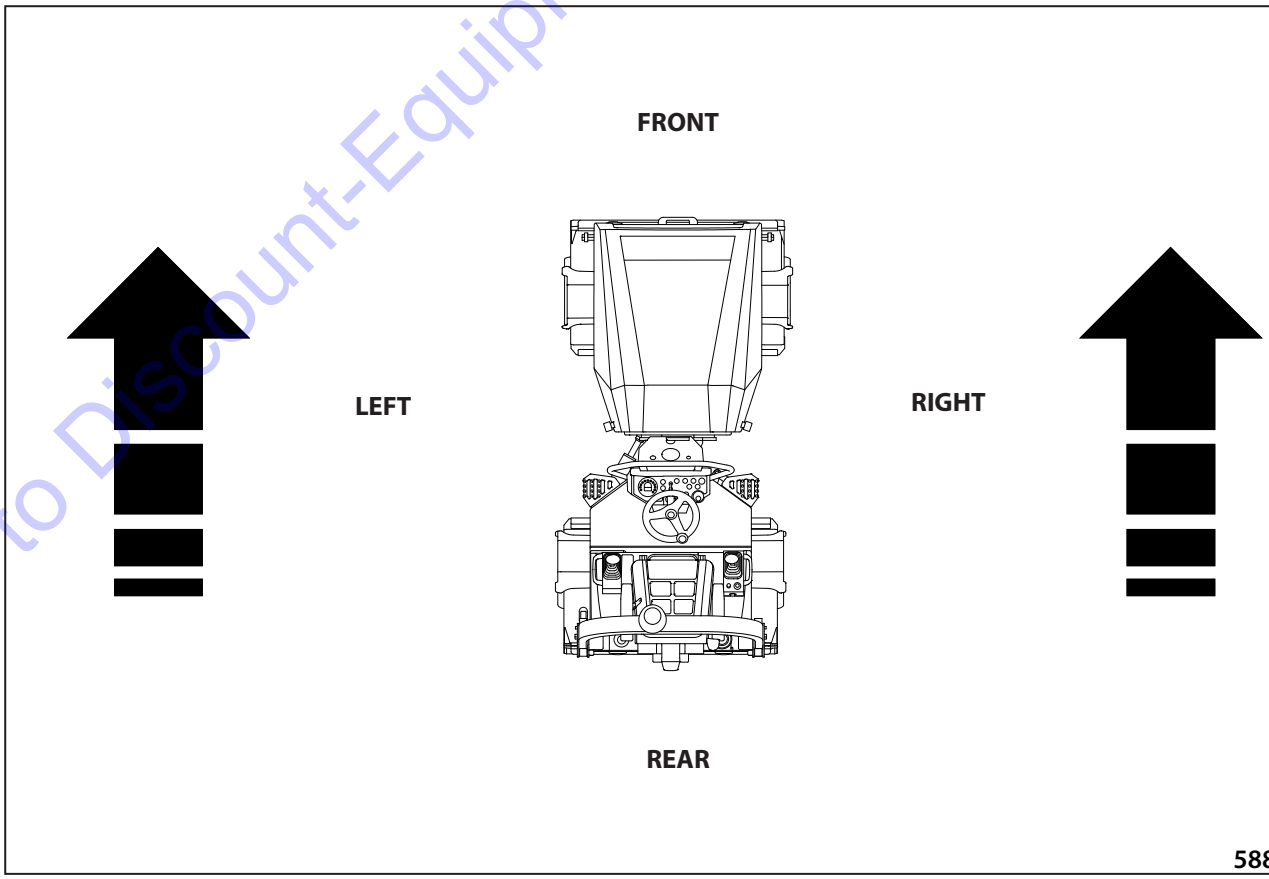
The notice warns of a serious risk of personal injury or other personal hazards.

The notice warns of possible damage to the machine or its parts.

The notice warns of the necessity of environmental protection.

! CAUTION!

As used in this operating manual, the terms right, left, front and rear indicate sides of the machine moving forward.



Contents

Contents

1 SPECIFICATION MANUAL

ARX 23.1-2
ARX 26.1-2
(YANMAR Tier 4 Final)

Machine description

Light Tandem Roller with an articulated frame and two smooth drums. Both drums are hydrostatic-driven and vibrating. The rear drum vibration is switchable. The concept of the frame allows compacting close to the walls and elevated kerbs on both sides of the machine. It is convenient for works within constrained areas due to its small dimensions and short turning radius. The operator's post provides perfect control of both edges of the drums.

Combined machines have only a front smooth vibrating drum. The rear axle consists of tyres with smooth shoes (compactor).

Specification of the expected use of the machine

The machine is designed for small compaction works in road construction (building local roads, cycle paths, pavements, parking areas and garage driveways) and in building construction (small industrial areas).

ARX 23.1-2 / ARX 26.1-2 - The machine is suitable for compacting asphalt mixes up to the (compacted) layer thickness of 120 mm (4.7"), mixed soils up to the layer thickness of 180 mm (7.1") or sandy and gritty materials up to the layer thickness of 250 mm (9,8").

ARX 23.1-2 C / ARX 26.1-2 C - The machine is suitable for compacting asphalt mixes up to the (compacted) layer thickness of 100 mm (3,9"), mixed soils up to the layer thickness of 150 mm (5,9") or sandy and gritty materials up to the layer thickness of 220 mm (8,7").

The machine is not suitable for compacting rock fill, loam and clay materials.

The machines are designed for operation in arid, temperate and cold climates according to EN 60721-2-1:2014 with a limited temperature range from -15 °C (5 °F) to +45 °C (113 °F) and a maximum absolute humidity of 25 $g.m^{-3}$. Storage temperature from -25 °C (-12 °F) to + 45 °C (113 °F).

The standard version of the machine is not designed for operation on roads. For more information, please contact your dealer.

The machine that complies with the requirements as to health protection and safety is provided with a nameplate with CE certification.

1. Name – always mentioned only in the English version
2. Type
3. Product identification number
4. Rated power
5. Operating weight
6. Maximum weight
7. Shipping weight
8. Version
9. Engine emissions
10. Front axle load
11. Rear axle load
12. Model year
13. Month/year of manufacture

Nameplate position

Nameplate

Please fill in the following data:

(see nameplate and Yanmar engine nameplate)

Machine type

.....

Product Identification Number

.....

Year of manufacture

.....

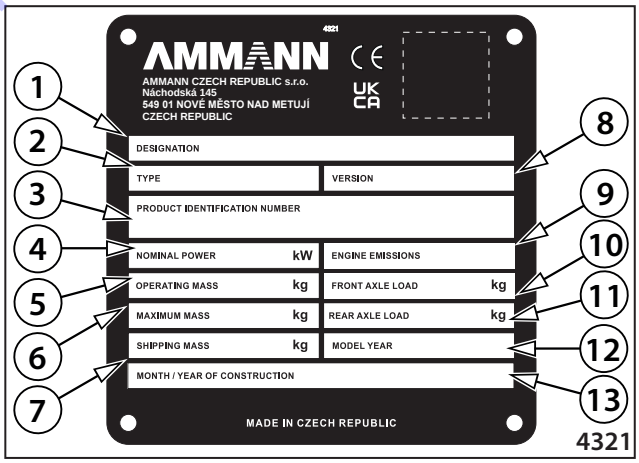
Engine type

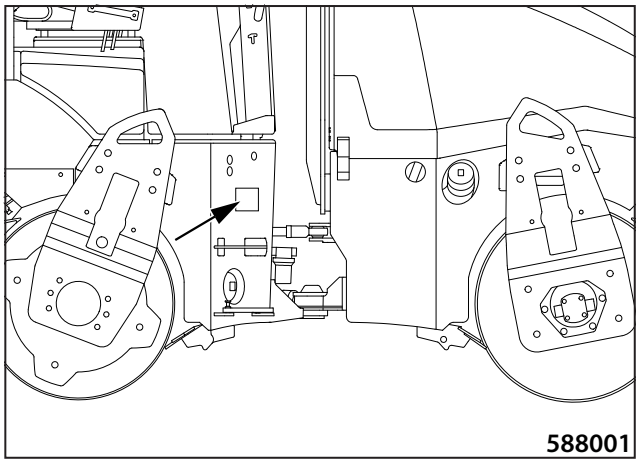
.....

Serial number of the engine

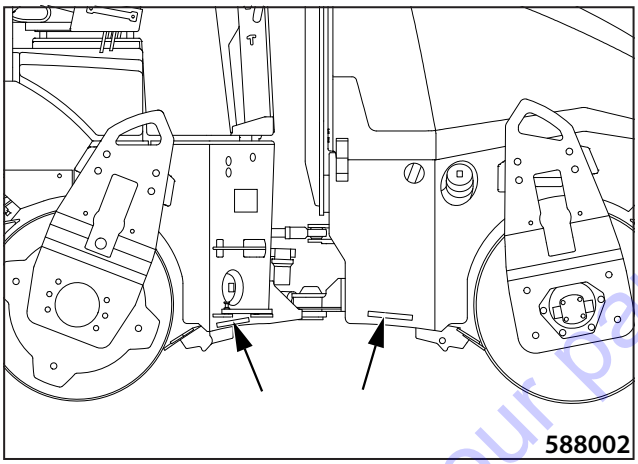
.....

The data mentioned in the table refer always when you contact the dealer or manufacturer.



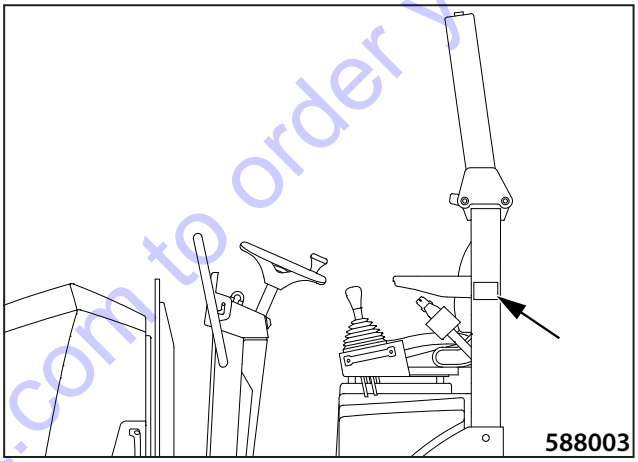


Serial number of the machine frame



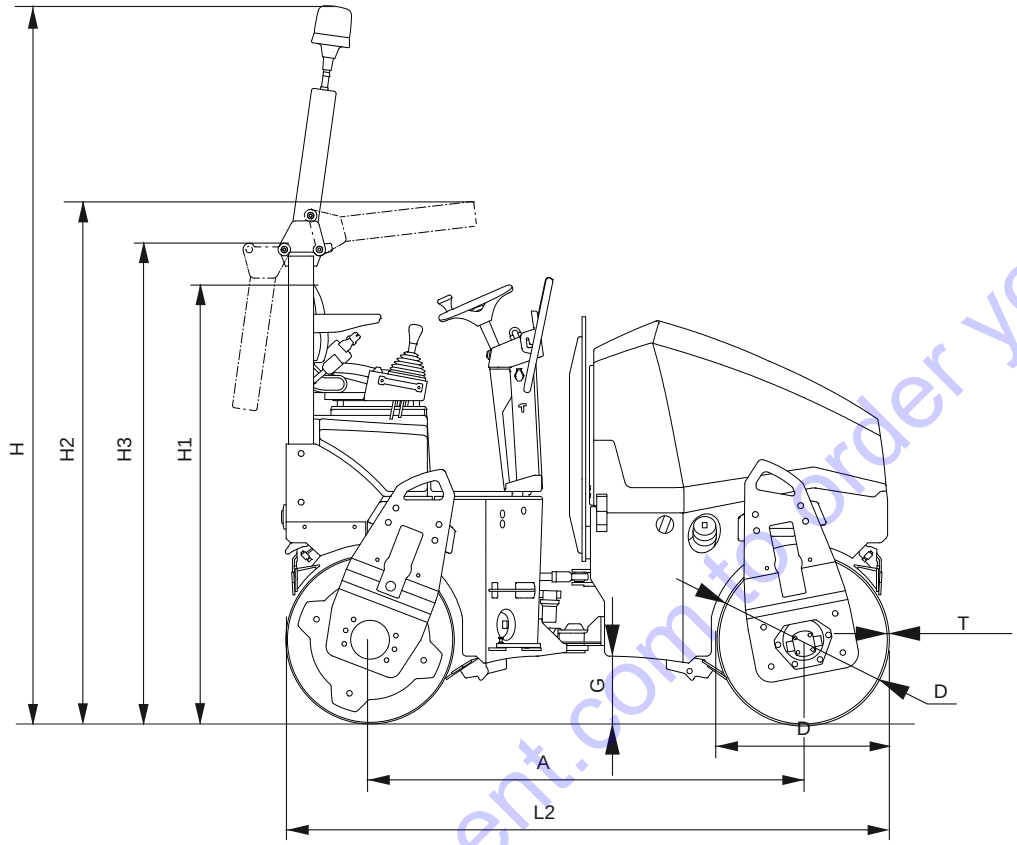
Position of the ROPS nameplate

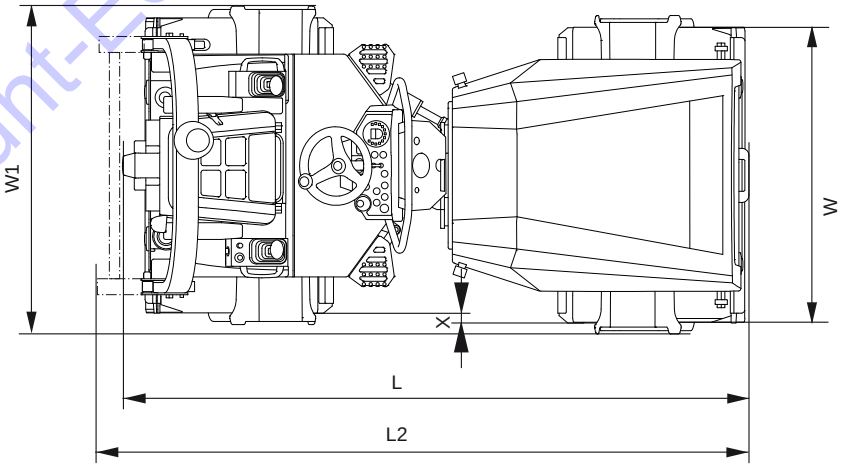
ROPS nameplate



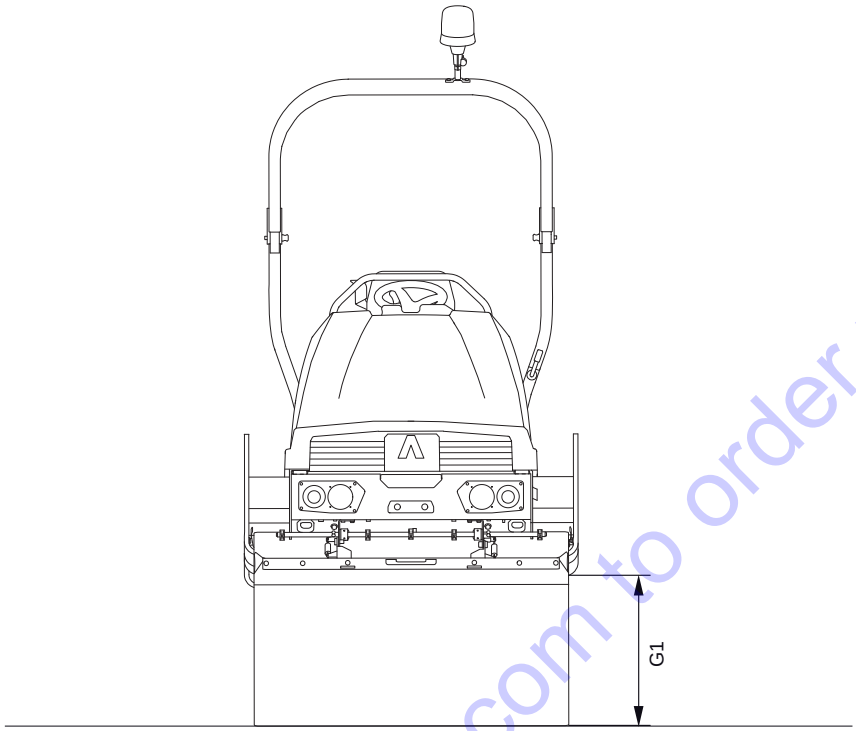
Engine nameplate position

1.2 Dimensional drawing of the machine





588004A



588611

mm (in)	ARX 23.1-2		ARX 23.1-2 C		ARX 26.1-2		ARX 26.1-2 C	
	EU Stage V, U.S. EPA Tier 4 Final							
A	1740	(68.5)	1755	(69.1)	1740	(68.5)	1755	(69.1)
D	700	(27.6)	700 / 635	(27.6 / 25)	700	(27.6)	700 / 635	(27.6 / 25)
G	280	(11.0)	280	(11.0)	280	(11.0)	280	(11.0)
G1	490	(19.3)	490	(19.3)	490	(19.3)	490	(19.3)
H	2550	(100.4)	2550	(100.4)	2550	(100.4)	2550	(100.4)
H1	1815	(71.5)	1815	(71.5)	1815	(71.5)	1815	(71.5)
H2	2140	(84.3)	2140	(84.3)	2140	(84.3)	2140	(84.3)
H3	1935	(76.2)	1935	(76.2)	1935	(76.2)	1935	(76.2)
L	2500	(98.4)	2500	(98.4)	2500	(98.4)	2500	(98.4)
L1	2585	(101.8)	2585	(101.8)	2585	(101.8)	2585	(101.8)
L2	2430	(95.7)	2420	(95.3)	2430	(95.7)	2420	(95.3)
W	1000	(39.4)	1000	(39.4)	1200	(47.2)	1200	(47.2)
W1	1130	(44.5)	1120	(44.1)	1350	(53.1)	1295	(51.0)
X	40	(1.6)	-	(-)	40	(1.6)	-	(-)
T	13	(0.5)	13	(0.5)	13	(0.5)	13	(0.5)

1.3 Technical data

		ARX 23.1-2	ARX 23.1-2 C	ARX 26.1-2	ARX 26.1-2 C
		EU Stage V, U.S. EPA Tier 4 Final			
Weight					
Operating weight of EN 500-1+A1 (CECE)	kg (lb)	2260 (4980)	2110 (4650)	2460 (5420)	2300 (5070)
Operating load of EN 500-1+A1 (CECE) on front axis	kg (lb)	1070 (2360)	1070 (2360)	1180 (2600)	1180 (2600)
Operating load of EN 500-1+A1 (CECE) on rear axis	kg (lb)	1190 (2620)	1040 (2290)	1280 (2820)	1120 (2470)
Weight of half fluid capacities	kg (lb)	110 (240)	115 (250)	110 (240)	115 (250)
Operating weight of ISO 6016	kg (lb)	2275 (5020)	2135 (4710)	2475 (5460)	2315 (5100)
Maximum weight with accessories	kg (lb)	2495 (5500)	2310 (5090)	2655 (5850)	2500 (5510)
Maximum permitted weight according to ROPS	kg (lb)	2850 (6280)	2850 (6280)	2850 (6280)	2850 (6280)
Static linear load of front drum	kg/cm (lb/in)	10,7 (20)	10,7 (20)	9,8 (20)	9,8 (20)
Static linear load of rear drum	kg/cm (lb/in)	10,9 (20)	-	10,7 (20)	-
Weight of Canopy	kg (lb)	35 (80)	35 (80)	35 (80)	35 (80)
Weight of Ammann edge cutter	kg (lb)	50 (110)	50 (110)	50 (110)	50 (110)
Deduction for the transport weight to the EN 500-1+A1 (CECE) operating weight.	kg (lb)	180 (400)	185 (410)	180 (400)	185 (410)
Driving characteristics					
Maximum transport speed	km/h (MPH)	10 (6,2)	10 (6,2)	10 (6,2)	10 (6,2)
Climbing ability without vibration	%	30	30	30	30
Climbing ability with vibration	%	25	25	25	25
Lateral static stability	%	55	36	55	43
Lateral stability during driving without vibration	%	20	20	20	20
Lateral stability during driving with vibration	%	10	10	10	10
Turning radius inner (edge)	mm (in)	2500 (98,4)	2500 (98,4)	2400 (94,5)	2400 (94,5)
Turning radius outer (contour)	mm (in)	3750 (147,6)	3750 (147,6)	3910 (153,9)	3910 (153,9)
Type of drive	-	Hydrostatic	Hydrostatic	Hydrostatic	Hydrostatic
Number of driving axles	-	2	2	2	2
Oscillation angle	°	6,5	6,5	6,5	6,5
Angle of steering	°	30	30	30	30
Steering					
Type of steering	-	Joint	Joint	Joint	Joint
Steering control	-	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Linear hydraulic motors	-	1	2	1	1

		ARX 23.1-2	ARX 23.1-2 C	ARX 26.1-2	ARX 26.1-2 C
		EU Stage V, U.S. EPA Tier 4 Final			
Engine					
Manufacturer	-	Yanmar	Yanmar	Yanmar	Yanmar
Type	-	3TNV88F-EP	3TNV88F-EP	3TNV88F-EP	3TNV88F-EP
Power according to SAE J1995	kW	18,2	18,2	18,2	18,2
Number of cylinders	-	3	3	3	3
Cylinder capacity	cm^3 (cu in)	1642 (100)	1642 (100)	1642 (100)	1642 (100)
Nominal speed	min^{-1} (RPM)	2400	2400	2400	2400
Working speed I	min^{-1} (RPM)	2400	2400	2400	2400
Working speed II	min^{-1} (RPM)	2100	2100	2100	2100
Maximum torque	Nm (ft lb)/rpm	83.4 ~ 92.2 / 1440	83.4 ~ 92.2 / 1440	83.4 ~ 92.2 / 1440	83.4 ~ 92.2 / 1440
Average fuel consumption	l/h (gal US/h)	3,4 (0,9)	3,4 (0,9)	3,4 (0,9)	3,4 (0,9)
Engines complies with emission regulations	-	EU Stage V, US EPA Tier 4 Final	EU Stage V, US EPA Tier 4 Final	EU Stage V, US EPA Tier 4 Final	EU Stage V, US EPA Tier 4 Final
Cooling system of engine	-	Liquid	Liquid	Liquid	Liquid
Brakes					
Operating	-	Hydrostatic	Hydrostatic	Hydrostatic	Hydrostatic
Parking	-	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc
Emergency	-	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc
Vibration					
Frequency I	Hz (VPM)	58 (3480)	58 (3480)	58 (3480)	58 (3480)
Frequency II	Hz (VPM)	66 (3960)	66 (3960)	66 (3960)	66 (3960)
Amplitude I	mm (in)	0,5 (0,02)	0,5 (0,02)	0,5 (0,02)	0,5 (0,02)
Amplitude II	mm (in)	0,5 (0,02)	0,5 (0,02)	0,5 (0,02)	0,5 (0,02)
Centrifugal force I	kN	30	30	34	34
Centrifugal force II	kN	35	35	41	41
Type of drive	-	Hydrostatic	Hydrostatic	Hydrostatic	Hydrostatic
Watering					
Type of watering	-	Pressure	Pressure	Pressure	Pressure
Number of pumps	-	1	1	1	1
Number of filtrations	-	2	2	2	2
Fluid capacities					
Fuel	l (gal US)	35 (9,2)	35 (9,2)	35 (9,2)	35 (9,2)
Water for drum watering	l (gal US)	190 (50,2)	190 (50,2)	190 (50,2)	190 (50,2)
Engine (oil filling)	l (gal US)	6,7 (1,8)	6,7 (1,8)	6,7 (1,8)	6,7 (1,8)
Cooling system	l (gal US)	3,2 (0,8)	3,2 (0,8)	3,2 (0,8)	3,2 (0,8)
Hydraulic system	l (gal US)	28,5 (7,5)	28,5 (7,5)	28,5 (7,5)	28,5 (7,5)
Spraying emulsion	l (gal US)	-	12 (3,2)	-	12 (3,2)

1.3 Technical data

		ARX 23.1-2	ARX 23.1-2 C	ARX 26.1-2	ARX 26.1-2 C
		EU Stage V, U.S. EPA Tier 4 Final			
Wiring					
Voltage	V	12	12	12	12
Battery capacity	Ah	77	77	77	77
Noise and vibration emissions					
Measured sound pressure level A, L_{pA} at the operator's position (platform) *	dB	85	85	85	85
Uncertainty K_{pA} *	dB	2	2	2	2
Guaranteed sound power level A, L_{WA} **	dB	106	106	106	106
Highest weighted effective value of acceleration of vibrations transmitted to the whole body (platform) ***	m/s^2 (ft/s^2)	<0,5 (<1,6)	<0,5 (<1,6)	<0,5 (<1,6)	<0,5 (<1,6)
Total value of acceleration of vibrations transmitted to hands (platform) ***	m/s^2 (ft/s^2)	<2,5 (<8,2)	<2,5 (<8,2)	<2,5 (<8,2)	<2,5 (<8,2)
Optional equipment					
Additional lights					
Direction indicators					
Working lights					
Beacon					
Back signal horn					
Licence plate holder					
One-point lifting lug					
Battery disconnector					
2nd travel control lever					
Arm rest					
Water tank lock					
Infra thermometer					
ACE Force					
ATC inter-axle lock					
Edge cutter					
Fixed scrapers					
Hinged scrapers					
Set of filters, 500 h					
FOPS roof (mounted on the ROPS)					
Canopy					
Seat heating					
Special colour design					
Additional documentation set					
Certificate of Origin					
Audible brake warning					
Rear-view mirrors					
Telematic					
Green LED beacon					

* measured according to EN 474-13:2022

** measured according to DIRECTIVE 2000/14/EC and EN ISO 3744:2010

*** measured according to EN 1032:2003+A1:2008 while driving with vibration on gravel foundation

Notes

2 OPERATING MANUAL

ARX 23.1-2

ARX 26.1-2

(YANMAR Tier 4 Final)

2.1.1 Safety precautions during operation of the machine

Safety measures given in the individual chapters of the technical documentation supplied with the machine must be supplemented with safety precautions in the workplace in force within the respective country where the machine is used, with respect to organization of work, working process and personnel involved.

2.1.1.1 Before compacting works are started

- The building contractor (machine user) is liable to issue instructions for operators and maintenance workers that include requirements to provide for safe operation of the machine.
- Before the compacting works are started, he must verify:
  - utility lines
  - underground areas (direction, depth)
  - seepage or sudden escape of harmful substances
  - ground-bearing capacity, travel plane slope
  - other obstacles and specify work safety measures.

  He must make the machine operator carrying out the earth works familiar with the above items.
- He must specify a technological procedure including a working process for the specific job that specifies among others:
  - measures for works under extraordinary conditions (works within protection zones, extreme slopes, etc.)
  - precautions for any natural disaster hazards
  - work performance requirements and observance of principles of health and safety at work
  - technical and organizational measures to ensure safety of employees, workplaces and surroundings.

  He must make the machine operators provably familiar with the technological procedure.

2.1.1.2 Work in the dangerous area

Any damage to the utility lines must be immediately reported to their provider, and at the same time measures must be taken to prevent unauthorized persons from entering the dangerous area.

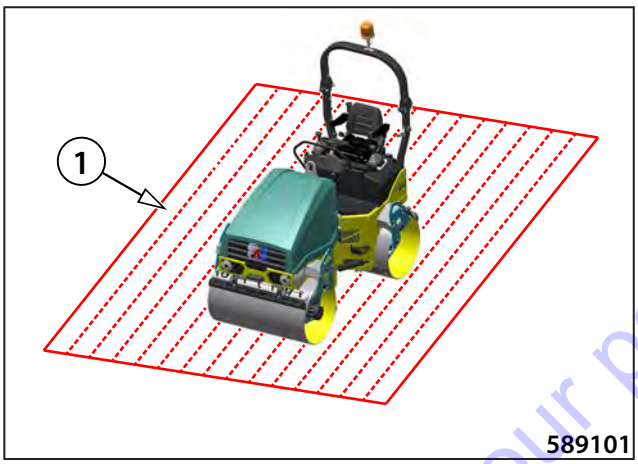
The worker is not allowed to work alone in a workplace where another worker is not in sight and within an ear shot who if necessary will be able to provide help or call for help unless another effective form of supervision or communication is ensured.

2.1.1.3 Danger zone of the machine and safe distance

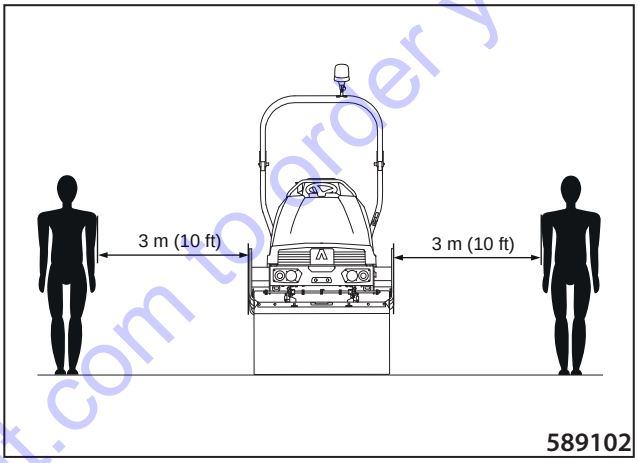
Danger zone of a stationary machine:

The danger zone of a stationary machine (1) with the engine off or running may only be entered for the purpose of maintenance work and cleaning of the machine, provided that the following conditions are met:

- if the machine is stationary and secured against spontaneous movement,
- entry is allowed only to professionally qualified, instructed and trained personnel intended for the operation and maintenance of the machine.



All workers on the jobsite, in the vicinity of the machine but not directly operating or maintaining the machine, must keep a safe distance from the machine and not enter the danger zone of a stationary machine with the engine switched off or running.



The danger zone of a stationary machine with the engine switched off or running is at a distance of 3 m from a stationary machine on the left and right side of the machine and 15 m in front and rear of the direction of travel of the machine!

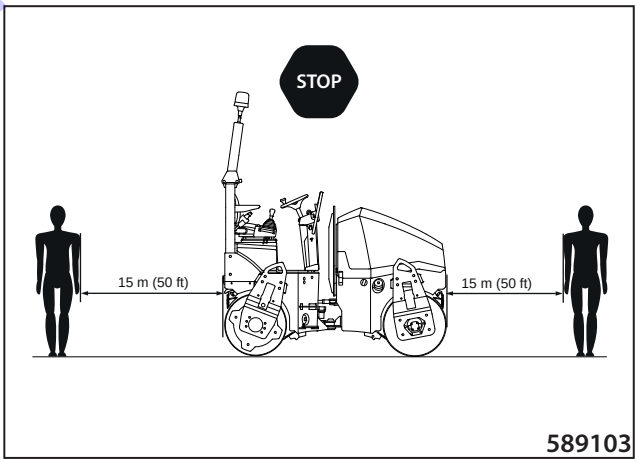
Only professionally qualified, instructed and trained personnel designated to operate and maintain the machine may enter the danger zone of the machine!

The machine owner and the machine operator must ensure that all workers on the jobsite comply with the prohibition of entry into the danger zone of the machine!

The machine owner and the machine operator must ensure that, in areas where it is not possible to observe the specified safe distances, supervision is provided by another person or even several persons who will oversee the movement of surrounding persons and the movement of the machine! These persons must be in contact with the machine operator by means of a communication device or by means of the designated signals according to Chapter 2.1.6. Hand signals.

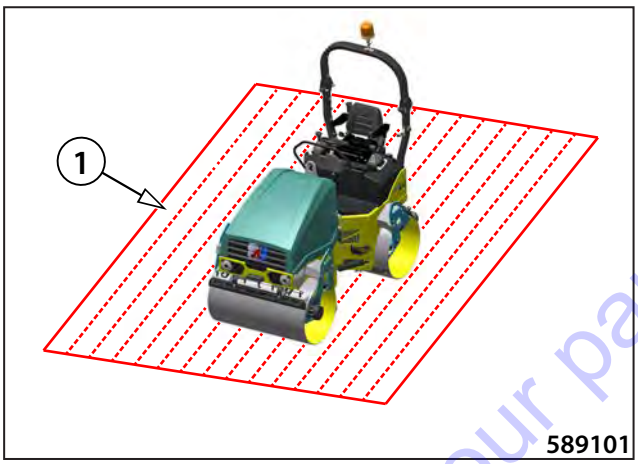
These requirements during machine operation are considered mandatory with regard to the safety of persons!

AMMANN assumes no responsibility if the machine is operated incorrectly or is used incorrectly in operating modes, which may result in personal injury or death, damage to the machine or property!

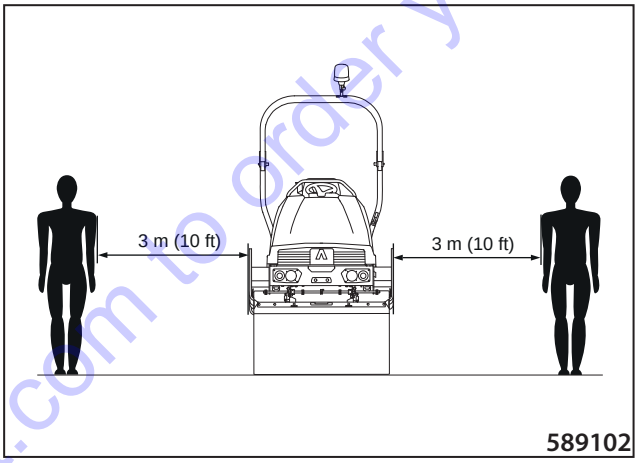


Danger zone of a moving machine:

No persons may be present in the danger zone of the machine (1) when the machine is in motion.



All workers on the jobsite near the machine but not directly operating the machine must keep a safe distance from the machine and not enter the machine's danger zone while the machine is in motion.



The machine's danger zone is at a distance of 3 m from a moving machine on the left and right side of the machine and 20 m in front and rear of the direction of travel of the machine!

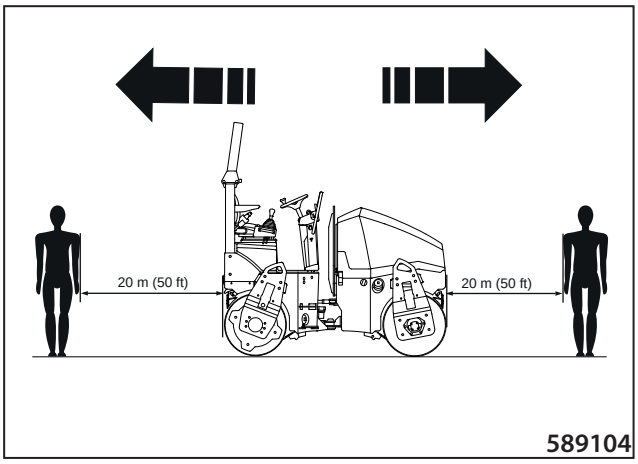
No persons may be present in the danger zone of the machine when the machine is moving!

The machine owner and the machine operator must ensure that all workers on the jobsite comply with the prohibition of entry into the danger zone of the machine!

The machine owner and the machine operator must ensure that, in areas where it is not possible to observe the specified safe distances, supervision is provided by another person or even several persons who will oversee the movement of surrounding persons and the movement of the machine! These persons must be in contact with the machine operator by means of a communication device or by means of the designated signals according to Chapter 2.1.6. Hand signals.

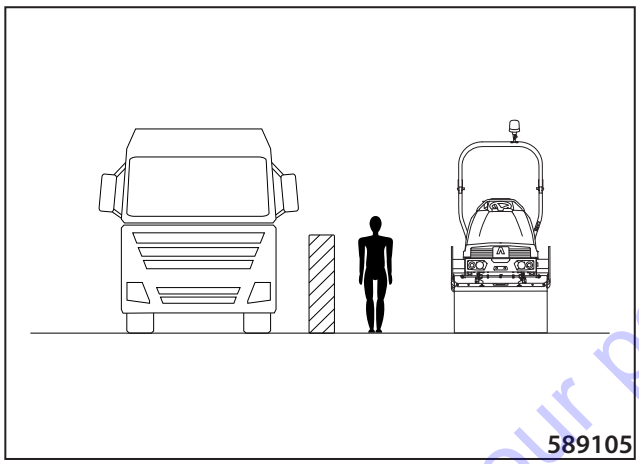
These requirements during machine operation are considered mandatory with regard to the safety of persons!

AMMANN assumes no responsibility if the machine is operated incorrectly or is used incorrectly in operating modes, which may result in personal injury or death, damage to the machine or property!



Safe distance between a public road and the construction site:

The safe distance between a public road and the construction site must be defined by a visible barrier against unauthorized entry into the construction site.



The safe distance between a public road and the construction site shall be determined by the machine operator on the basis of the relevant national regulations.

The machine owner and operator must ensure a safe distance between the public road and the jobsite area!

AMMANN assumes no responsibility if the machine is operated incorrectly or is used incorrectly in operating modes, which may result in personal injury or death, damage to the machine or property!

2.1.1.3 Ensurance of safety measures by the provider

- He must ensure that the machine is operated only under conditions and only for purposes it is technically capable of according to conditions specified by the manufacturer and respective standards.
- He must ensure that the machine is used only in such a way and in such a workplace where there is no risk of transmission of dangerous vibrations and damage to nearby facilities, etc.
- He must ensure a regular inspection of operation and technical condition, and regular machine maintenance in intervals according to the lubrication and maintenance instructions. If the technical condition of the machine does not meet requirements to such an extent that the machine endangers safety of operation, persons and property, or damages and impairs the environment, it must be put out of service until the defects are removed.
- He must specify who is allowed to carry out operation, maintenance and repairs of the machine as well as what activities can be carried out in such cases.
- Every person who drives the machine or performs maintenance and repairs of the machine must be familiarised with instructions stated in the operating manual of the machine.
- He must ensure that the fire extinguisher is checked on regular basis.
- He must ensure that the "Operating manual" is available at a designated location in the machine.
- He must ensure continuous supervision by an appointed person during machine operation on public roads and is liable in particular for releasing instructions to ensure health protection and work safety.
- He must ensure that dangerous substances (fuel, oils, coolant, etc.) must be removed from places of leakage according to their nature to avoid their adverse impact on the environment, safety of operation and human health.

2.1.1.4 Protective ROPS frame

When the ROPS protection frame is used:

- the machine frame must not be damaged (broken, bent, etc.) in the connection point
- the protective ROPS frame itself must not show corrosion, cracks or breaks
- the protective ROPS frame must not be loose during operation of the machine
- all bolted connections must meet requirements of the specification and must be tightened to the specified torque
- bolts must not be damaged, distorted and must not show rust marks.
- Additional modifications must not be carried out on the protective ROPS frame without the approval of the manufacturer because they can result in decrease of its strength (e.g. holes, welding, etc.).
- The machine weight must not exceed the maximum permissible weight according to the protective ROPS frame.

2.1.2 Requirements for the qualification of machine operators

Only a person having been trained according to ISO 7130 and other local and national instructions and standards specified for operators of this group of machines, is allowed to operate the machine.

2.1.3 Driver's obligations

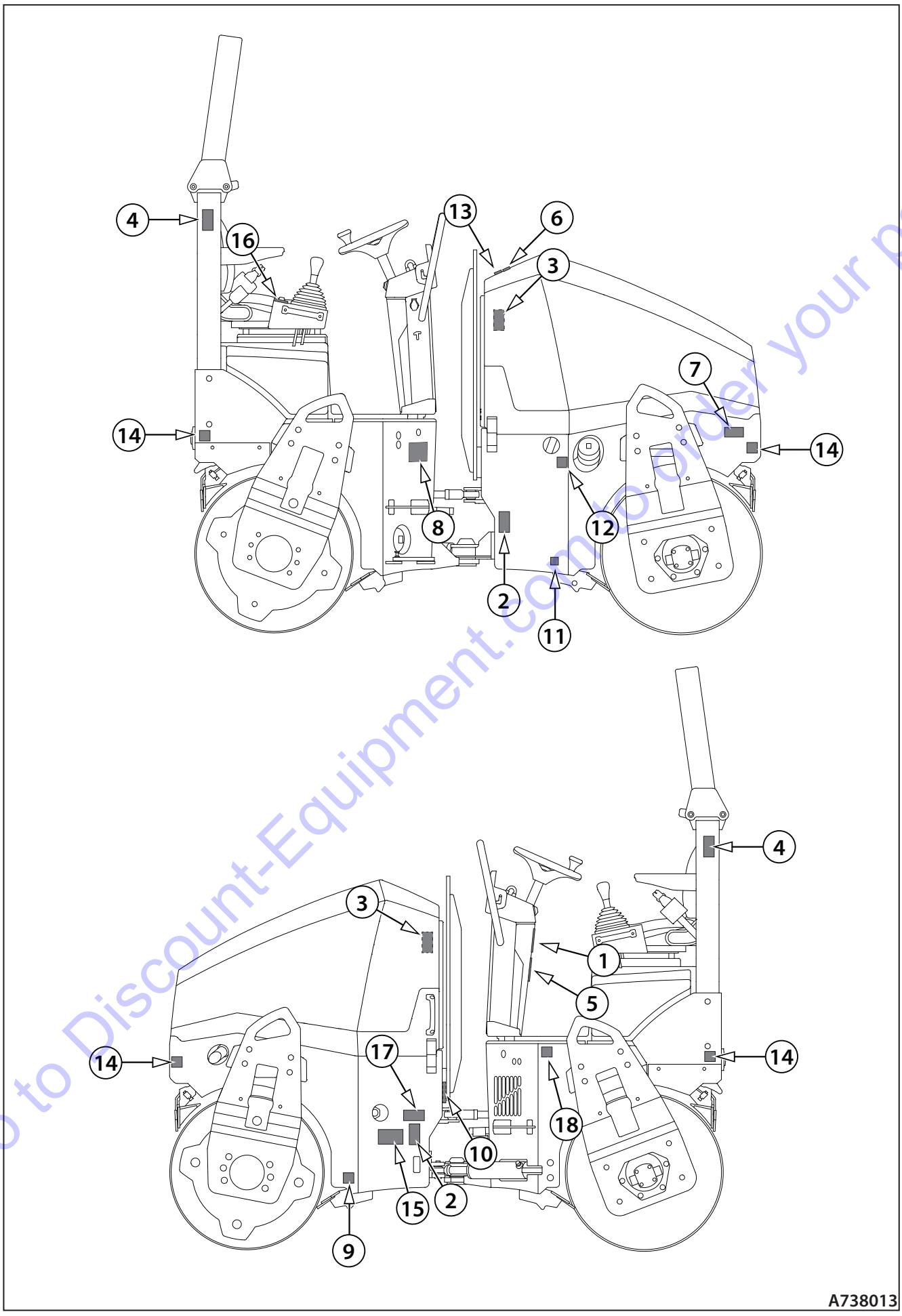
- Before starting operation of the machine, the machine operator is obliged to get familiar with instructions stated in the documentation supplied together with the machine, especially with safety precautions, and strictly observe the instructions. This also applies to personnel assigned to maintain, adjust and repair the machine. (In case you do not understand some parts of the manuals, contact the nearest dealer or the manufacturer.)
- He may drive the machine only if he is fully familiarized with all functions of the machine and working and operating elements and knows precisely how to operate the machine.
- The driver is obliged to follow the safety signs located on the machine and keep them legible.
- Before starting the work, the operator must get familiar with the workplace environment, i.e. with obstructions, slopes, utility line system and with necessary types of workplace protections with respect to the surroundings (noise, vibration, etc.).
- The operator while working with the machine must be fastened with the safety belt.
- The safety belt and its brackets must not be damaged.
- When there is a risk to health, human life, property, failures, during hardware accidents, or there are symptoms of such risks during operation, the operator must stop his work and secure the machine against undesired starting, communicate this to a responsible worker and to a possible extent notify all the persons exposed to such hazard.
- Before starting operation of the machine, the operator is obliged to get familiar with the records and operating deviations found out during the previous work shift.
- Before starting the work, the driver is obliged to inspect the machine and accessories and to check control elements and communication and safety equipment for functioning according to the manual. If he finds a defect that might endanger the safety of work and is not able to repair it, then he must not put the machine into operation and must report the defect to a responsible worker.
- If the operator finds a defect during operation, he must immediately stop the machine and secure it safely against undesirable starting.
- During operation the operator must watch the machine run and record any detected defects into the operation logbook.
- The operator must maintain an operation logbook which is meant for records of machine acceptances and take-overs carried out between operators, of defects and repairs done during operation and keeping files of serious events during the work shift.
- Before putting the machine into operation, he must check the brakes and steering for functioning.
- Before the engine is put into operation, both travel controls must be in the parking position (P); no persons are allowed to stay within dangerous reach of the machine.
- The driver must always notify the others each time the machine is put into operation with the help of a sound or light signal before starting the engine of the machine.
- After a warning alarm, the operator may put the machine into operation only when all workers have left the endangered area. During operation of the machine it is necessary to follow safety instructions and not to carry out any activity that might endanger the work safety; the operator must be fully engaged in driving the machine. He must always sit on the seat while driving the machine.
- The driver must comply with technological procedures of works or instructions of a responsible worker.
- When rolling (traversing) the machine within the workplace, he must adapt the driving speed to terrain conditions, the work performed and weather conditions. He must watch continuously the clearance to avoid collision with any obstruction.
- If the operator finishes or interrupts operation of the machine and leaves the machine, he must carry out safety measures against unauthorized use of the machine and undesired start up. The operator must remove the key from the ignition box, lock the cab or dashboard cover and disconnect the electrical installation using the disconnector.
- When the operation is completed, park the machine at a suitable parking place (flat, bearing surface) so as not to endanger stability of the machine; the machine must not interfere with traffic roads, must not be exposed to falling objects (rocks), and must be protected against any natural disaster of another kind (floods, landslides, etc.).
- When parking the machine on roads, the measures according to road traffic regulations shall be taken. The machine must be marked properly.
- After finishing the work with the machine, all of the defects, damages to the machine and any repairs made must be recorded in the operation logbook. When the operators take turns, one operator is obliged to report any identified facts to the other operator.
- The operator must use personal protective equipment – work clothes, work shoes, protective helmet and protective goggles.
- He must equip the machine with accessories and equipment as prescribed.
- He must keep the operator's stand, foot rests and walkways clean.
- Keep the machine free of oil contaminants and inflammable materials.
- If the machine could come into contact with high voltage, the following principles must be observed:
  - try to leave the hazardous zone with the machine;
  - do not leave the operator's stand;
  - warn the others to keep off and not touch the machine.

2.1.4 Forbidden activities – safety and guarantee

The following is forbidden

- Travelling with the seat belt not fastened.
- Using the machine in case of an evident defect of the machine.
- Using the machine when any of the operating fluid levels is low.
- To repair the engine without authorization – except common changes of operating fluids and filters, only an authorized service organization is allowed to intervene in the engine, including the peripheral components of the engine (for example, the alternator, the starter, the thermostat, the electrical installation of the engine.
- Increasing and decreasing the engine speed rapidly; you could damage the engine.
- Using the emergency brake for turning off the engine during normal operation of the machine.
- Operate the machine in potentially explosive atmospheres (ATEX) and underground areas.
- Using the machine after ingestion of alcoholic beverages or drugs.
- Using the machine if its operation might endanger its technical condition, safety (life, health) of persons, facilities or objects, or road traffic and its continuity.
- Putting the machine into operation and using the machine when other persons are within its danger zone – the exception is a training of a driver by an instructor.
- Putting the machine into operation and using the machine when a safety device (emergency brake, hydraulic locks, etc.) has been removed or damaged.
- Travelling and compacting in such slopes where the machine stability would be broken (overturning). The stated machine static stability is reduced by dynamic effects of the drive.
- Travelling and compacting in such gradients of slopes where there is a risk of soil breaking off (dropping) under the machine or of loss of adhesion and of uncontrolled slip.
- Controlling the machine in some other way than stated in the operating manual.
- Travelling and compacting with vibration according to the bearing capacity of the subsoil in such a distance from the slope edge or trenches where there is a risk of landslide or shoulder breaking off (dropping) together with the machine.
- Travelling and compacting with vibration in such a distance from walls, cuts and slopes where there is a risk of landslide and the machine could be covered up with soil.
- Compacting with vibration in such a distance from buildings or facilities and equipment within which there is a risk of damage due to transmission of vibration.
- Moving and transporting persons on the machine.
- Working with the machine if the operator´s stand is not properly attached.
- Working with the machine when the bonnet, cab or platform is lifted off.
- Working with the machine if there are other machines or means of transport in its danger zone, except those that operate in mutual cooperation with the machine.
- Working with the machine at a place that is not seen from the operator's stand and where hazard to people or property could occur unless the occupational safety is ensured through some other way, e.g. by a duly instructed signalling person.
- Working with the machine in a protected zone of electric lines or substations.
- Crossing electric cables if they are not properly protected against mechanical damage.
- Working with the machine in reduced visibility or at night unless the machine's working area and the workplace are illuminated sufficiently.
- Leaving the seat of the machine operator when the machine is running.
- Getting in or off on the run, jumping down from the machine.
- Sitting on the railing or external parts of the machine during a drive.
- Leaving the machine unattended – moving away from the machine without having prevented its misuse.
- Disabling safety, protective or locking systems or altering their parameters.
- Using a machine from which oil, fuel, coolant or other operating fluid is leaking.
- Starting the engine in a different way than given in the operating manual.
- Placing other items (tools, accessories) than items for personal use on the operator's stand.
- Placing materials or other items on the machine.
- Removing dirt while the machine is running.
- Performing maintenance, cleaning or repairs with the machine not secured against spontaneous movement or accidental start, and if a person can come in contact with moving parts of the machine.
- Touching moving parts of the machine with the human body or items and tools held in hands.
- Smoking or handling open fire when checking or pumping fuels, replacing and refilling oils, lubricating the machine and inspecting the battery and refilling the battery.
- Conveying rags saturated with inflammable materials and inflammable liquids in loose vessels on the machine (in the engine compartment).
- Leave the engine running in enclosed, unventilated areas. Exhaust fumes are dangerous to life.
- Performing modifications on the machine without the prior consent of the manufacturer.
- Moving electrical conductors.
- Using other than original spare parts.
- Intervening in electrical and electronic units in any manner.
- Using the pressure washing near the control unit of the machine.
- Filling the hydraulic circuit during the guarantee period in a different way than using the hydraulic unit.
- Working long-term in the vibro stroke mode!
- Operating the machine without external rear view mirrors.

Non-observance of the above provisions can impact on the assessment of a complaint and effectiveness of the engine guarantee period.



2.1.5 Safety notices and signs applied on the machine

1 Read the operating manual
Hearing protection
Washing the machine with water
Keep calm and adjust

4338

Read the operating manual - Get perfectly familiar with the machine operation and maintenance according to the operating manual!

Hearing protection - Dangerous noise level! Use hearing protection.

Washing the machine with water - Dangerous situation. Prevent water from entering electric and electronic parts of the machine as it may result in damage of the equipment and personal injury. Read the operation manual!

Keep calm and adjust - Turn off the engine and remove the key from the ignition box before performing maintenance or repairs.

2 Pinch points

3865

Maintain a safe distance from the machine; there is a danger of squeezing by the machine between the front and rear frames.

3 Risk of injury

3866

There is a risk of injury. Do not touch rotating parts while the engine is running. There is a risk of burns. Do not touch hot parts of the machine unless you make sure that they are sufficiently cold.

4 Risk of injury

3864bz

There is a risk of fatal injury. Do not operate the machine when the ROPS is lowered.

2.1 Main safety precautions

5 Using the parking and emergency brakes

3867bz

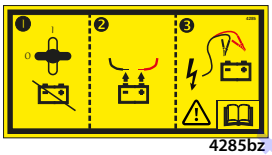
Use the parking brake only when the machine is stopped. Use the emergency brake only for stopping the machine in emergency.

6 Safety belt

3863bz

Fasten the safety belt before the machine starts moving.

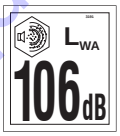
7 Charging the battery



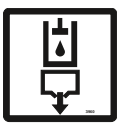
4285bz

Risk of electric shock! Charge the battery according to the operating manual!

8 Guaranteed sound power level



9 Hydraulic oil drain plug



3960

10 Engine oil drain plug

11 Fuel drain plug

12 Fuelling

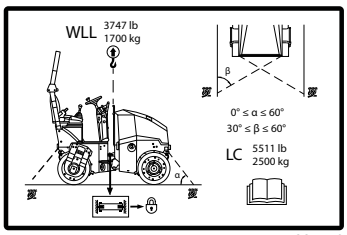
13 Lifting point

When lifting, suspend the machine only in these holes.

14 Fastening hole

When transporting, fasten the machine only in these holes.

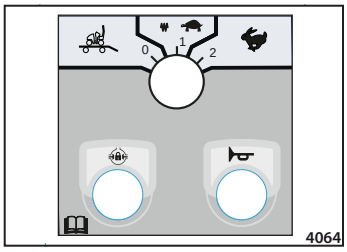
15 Suspension diagram



1227540

To lift the machine, use slings with a sufficient lifting capacity according to chapter Loading the machine. Before hanging, lock the articulation of the machine.

16 Travel mode switch



4064

17 California Proposition 65

4055bz

Exhaust gases and their components, operating fluids, batteries and other machine accessories contain chemicals known in the state of California to be substances which may cause cancer, congenital defects and other reproduction problems.

When handling these substances, abide by relevant safety precautions.

Further information see www.p65warnings.ca.gov

18 Emulsion sprinkling tank

3518

2.1.6 Hand signals

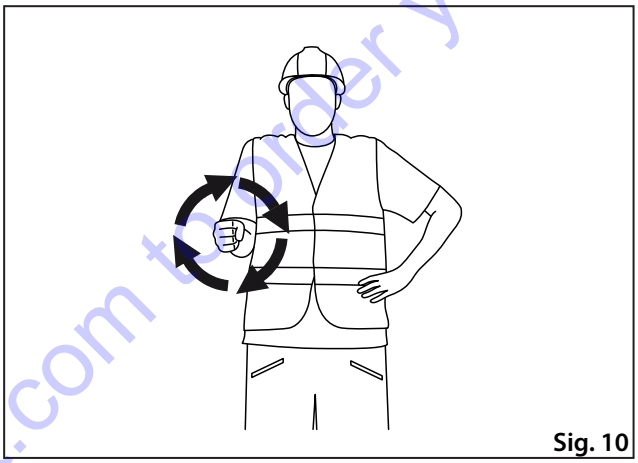
Signals given by an assistant operator if the operator cannot see the travelling or working area or work devices of the machine.

The following principles must be observed:

- For communication purposes, only a limited number of signals must be used.
- The signals must be clearly distinguishable to prevent any misunderstanding.
- Hand signals can only be used when ambient conditions allow clear communication between persons.
- Hand signals must be as similar as possible to intuitive movements.
- Single-handed signals can be done with any hand.

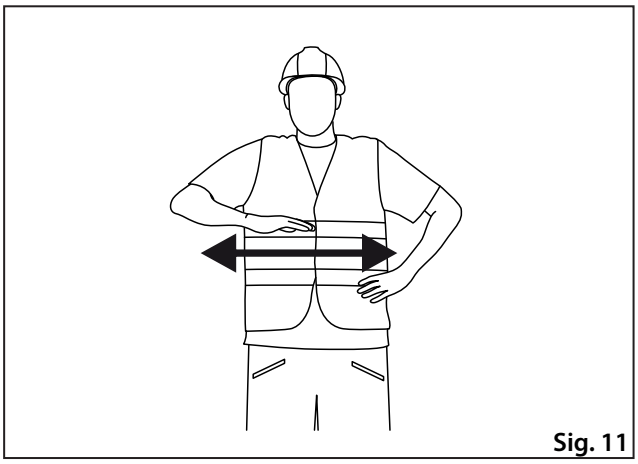
SIGNALS FOR GENERAL COMMANDS

Engine start



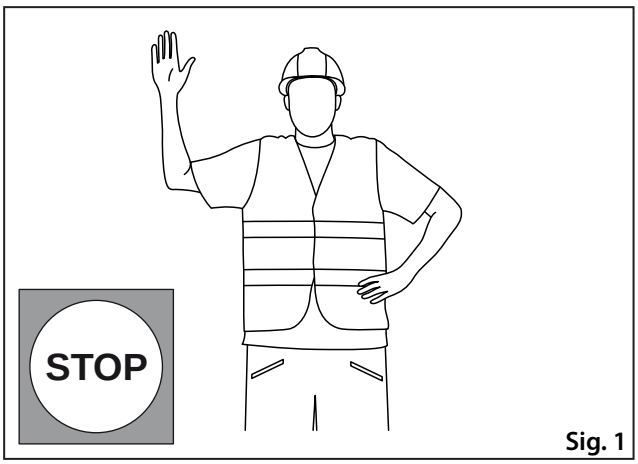
Sig. 10

Engine OFF



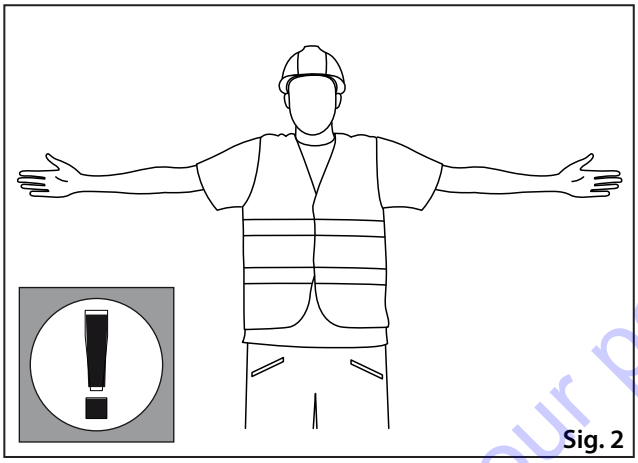
Sig. 11

Stop



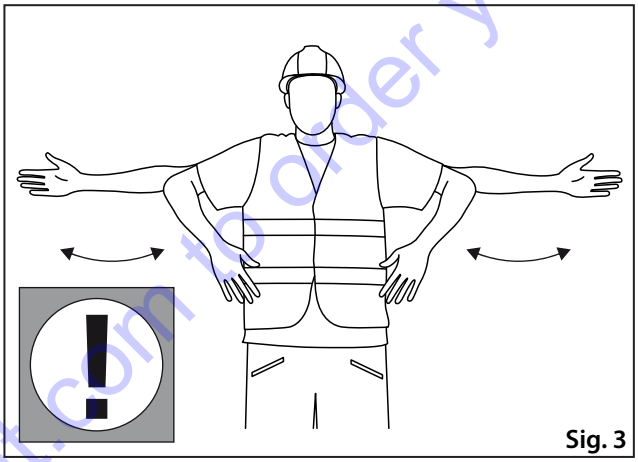
Sig. 1

Watch out!



Sig. 2

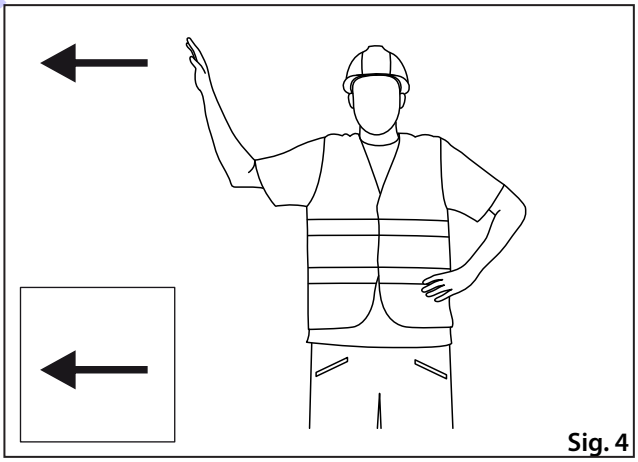
Watch out, danger!



Sig. 3

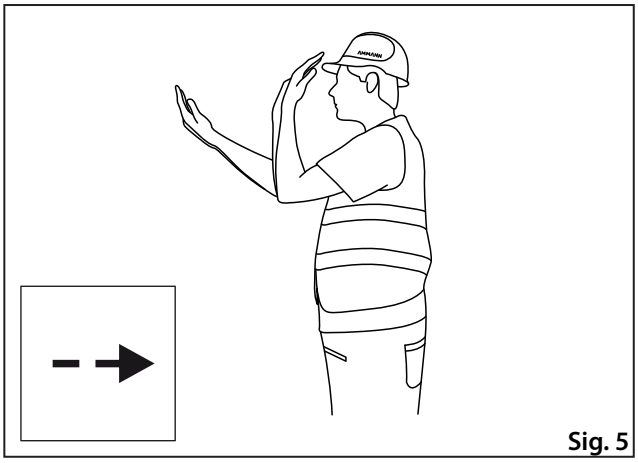
SIGNALS FOR DRIVE

Travel



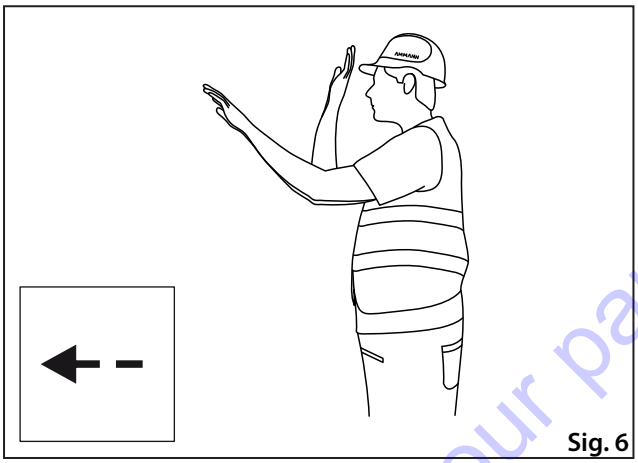
Sig. 4

Slow forward travel – towards me



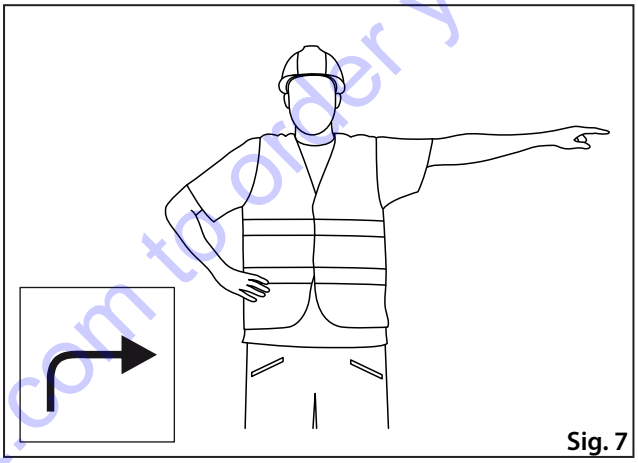
Sig. 5

Slow reverse travel – away from me



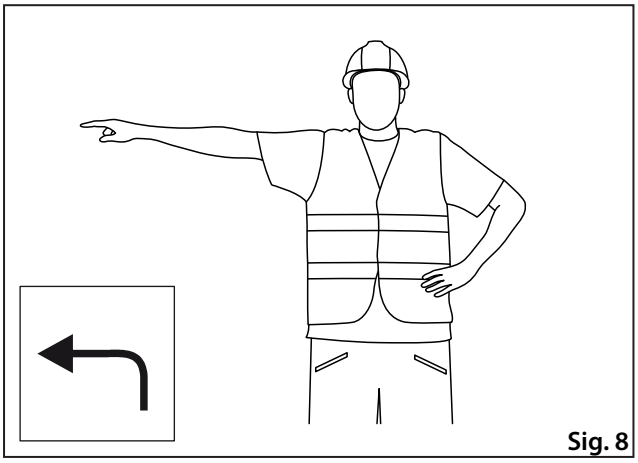
Sig. 6

Drive to the right



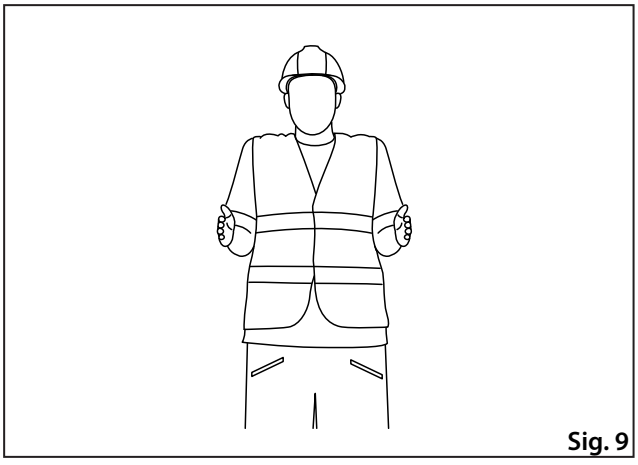
Sig. 7

Drive to the left



Sig. 8

Short distance travel



Sig. 9

2.2 Environmental and hygiene principles

2.2.1 Hygiene principles

When operating and storing the machines, the user is obliged to observe general principles of health and environmental protection, and laws and regulations relating to the given points at issue within the territory where the machine is used.

- Petroleum products, cooling system fluids, battery fluids and coating compounds including thinners are substances harmful to health. Workers coming into contact with the above products during operation or maintenance of the machine are obliged to follow general principles of their own health protection and comply with safety and hygienic manuals made by manufacturers of the products.

  In particular we draw your attention to the following:

  - protect your eyes and skin while working with the batteries
  - protect your skin while handling petroleum products, coating compounds and coolants
  - wash your hands properly after finishing the work and before eating, treat your hands with a suitable reparation cream
  - when handling cooling systems, follow instructions given in the manuals supplied with the machine.
- Always store petroleum products, cooling system fluids, battery cartridges and coating compounds including organic thinners, and also cleaners and preserving agents in original and properly labelled containers. These materials are not allowed to be stored in unlabelled bottles or in any other containers considering the possible risk of confusion. Possible confusion with foodstuffs or beverages is very dangerous.
- If by accident the skin, eyes or mucous membrane is stained or if you breathe in the vapours of such products, apply immediately the principles of the first aid. In case of accidental ingestion of these products, immediately seek medical help.
- When working with a machine that is not provided with a cab or when the cab windows are open, always use ear protectors of suitable type and version.

2.2.2 Environmental principles

- Discarded operating fluids of individual systems of the machine and also some of its parts become hazardous wastes with dangerous properties for the environment.

  This category of waste products includes in particular:

  - organic and synthetic lubricating materials, oils and fuels;
  - coolants;
  - battery fluids and batteries;
  - cleaning and preservative agents;
  - all dismounted filters and filter cartridges,
  - all used and discarded hydraulic or fuel hoses, rubber-metal elements and other parts of the machine contaminated by the above mentioned products.

It is necessary to treat the above mentioned materials and parts after they have been discarded in accordance with relevant national regulations applicable to environmental and health protection.

2.3 Preservation and storage

2.3.1 Short-term preservation and storage for 1–2 months

Wash and clean the entire machine carefully. Before parking the machine for preservation and storage, run the engine to warm it up to its operating temperature. Park the machine on a solid and flat surface at a safe place with no risk of natural disaster (floods, landslides, fire, etc.) for the machine.

In addition:

- repair paints where damaged.
- lubricate all lubrication points
- confirm that water fillings are drained
- check that the coolant has the required antifreeze properties
- check that the batteries are charged and/or recharge them if necessary
- lubricate chromed surfaces of piston rods with preservative grease
- We recommend you to protect the machine against corrosion with a preservative coating (applied by spraying), especially where corrosion can occur.

2.3.2 Preservation and storage of the machine for a period over 2 months

For machine shut-down, the same principles are applicable as for the short-term preservation.

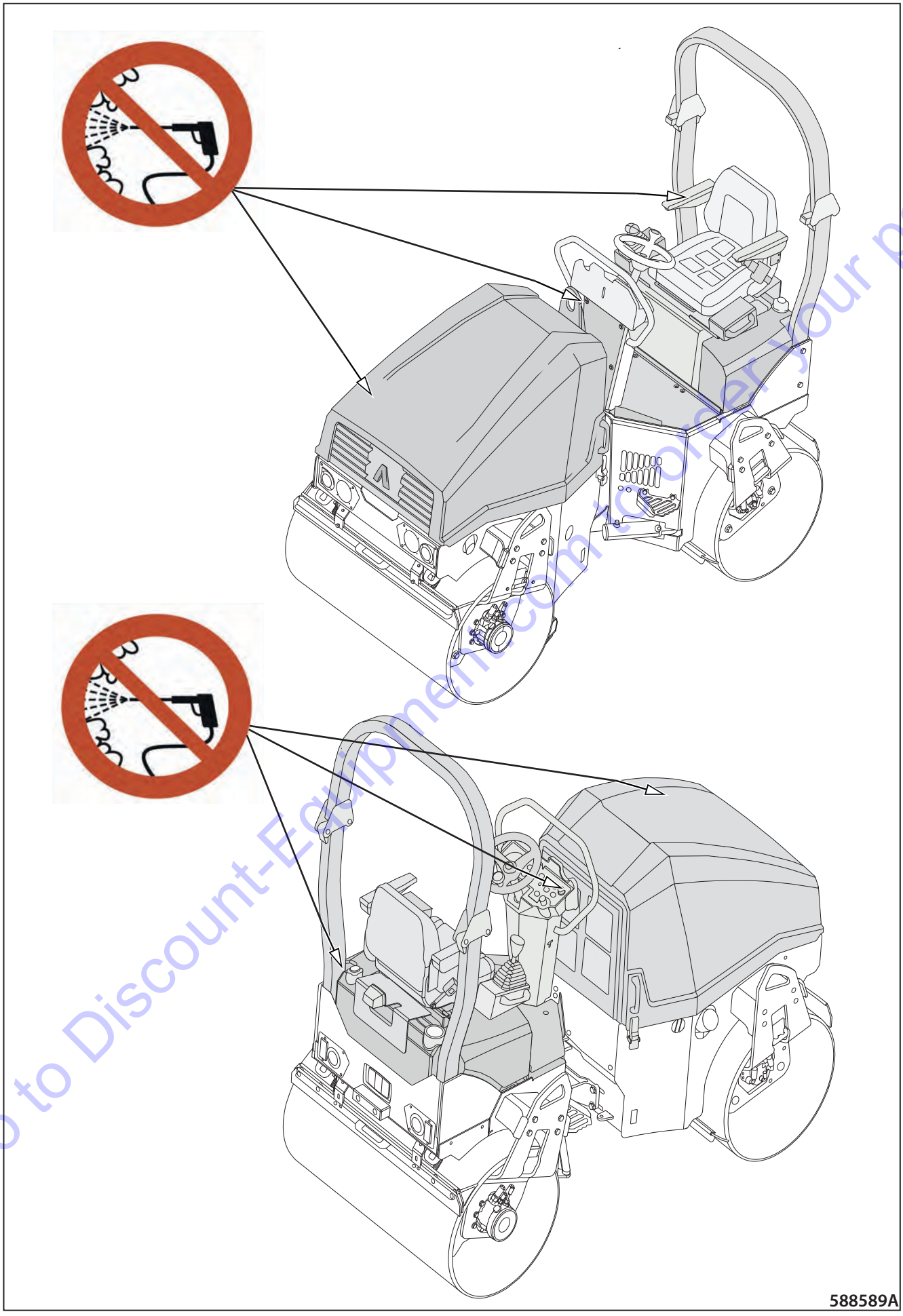
In addition it is recommended to:

- remove the batteries, check for condition and store them in a cool and dry room (charge the batteries regularly)
- support the drum frame so that the shock-absorbing system shows minimal sag
- protect the rubber elements by coating with special preservative agent
- cover the suction and exhaust pipe of the engine with double PE foil and tighten it carefully with sealing tape
- spray a special liquid on the headlights, external rear-view mirrors and other elements of the external electrical installation and wrap in PE foil to protect them
- When storing the machine outdoors, protect the ROPS frame by wrapping it in PE film carefully secured with adhesive tape. Prolonged exposure to rain may cause damage to the ROPS frame.
- preserve the engine according to the manufacturer's manual – mark visibly that the engine is preserved.

After 6 months, we recommend you to inspect the condition of preservation and renew if required.

Never start the engine during storage!

When the machine is stored under field conditions, check that the parking place is not exposed to danger of flooding due to floods and that there is no other type of danger in this area (landslip etc.)!



2.3.3 Machine depreservation

- Check all parts of the machine for damage during storage and for missing parts.

If the machine has been preserved, remove the preservative agents as follows:

Wash off the preservative agents using a high-pressure stream of hot water with common degreasers:

Wash the machine while observing environmental principles.

Caution! Do not use a high-pressure stream to wash the edge cutter and the highlighted parts of the machine as shown in Fig. 588589A, as this could seriously damage the machine.

Prevent water from entering the air filter, electrical and electronic parts of the machine.

Do not use a high-pressure stream near the control unit!

Use a high-pressure stream at a maximum angle of 90 degrees downwards.

Remove the preservation and wash the machine in places with intercepting sumps to catch the water and depreservation agents.

Remove the preservation according to the manufacturer's manual.

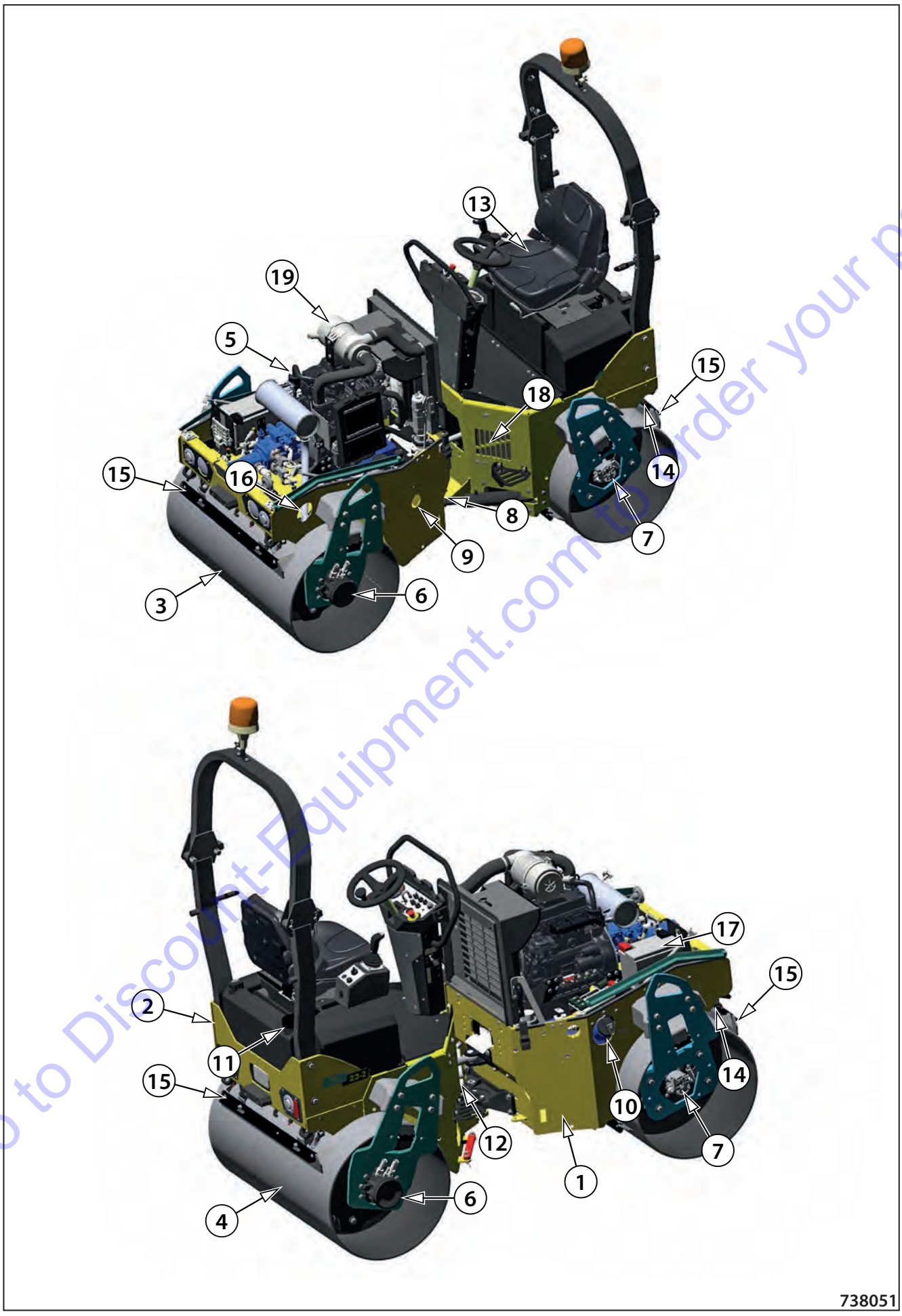
Before putting the machine into operation, check the operating fluids.

2.4 Machine disposal after its service life

When disposing the machine following its service life, the user is obliged to follow national waste and environmental regulations and acts. In the above cases, we recommend you to always contact:

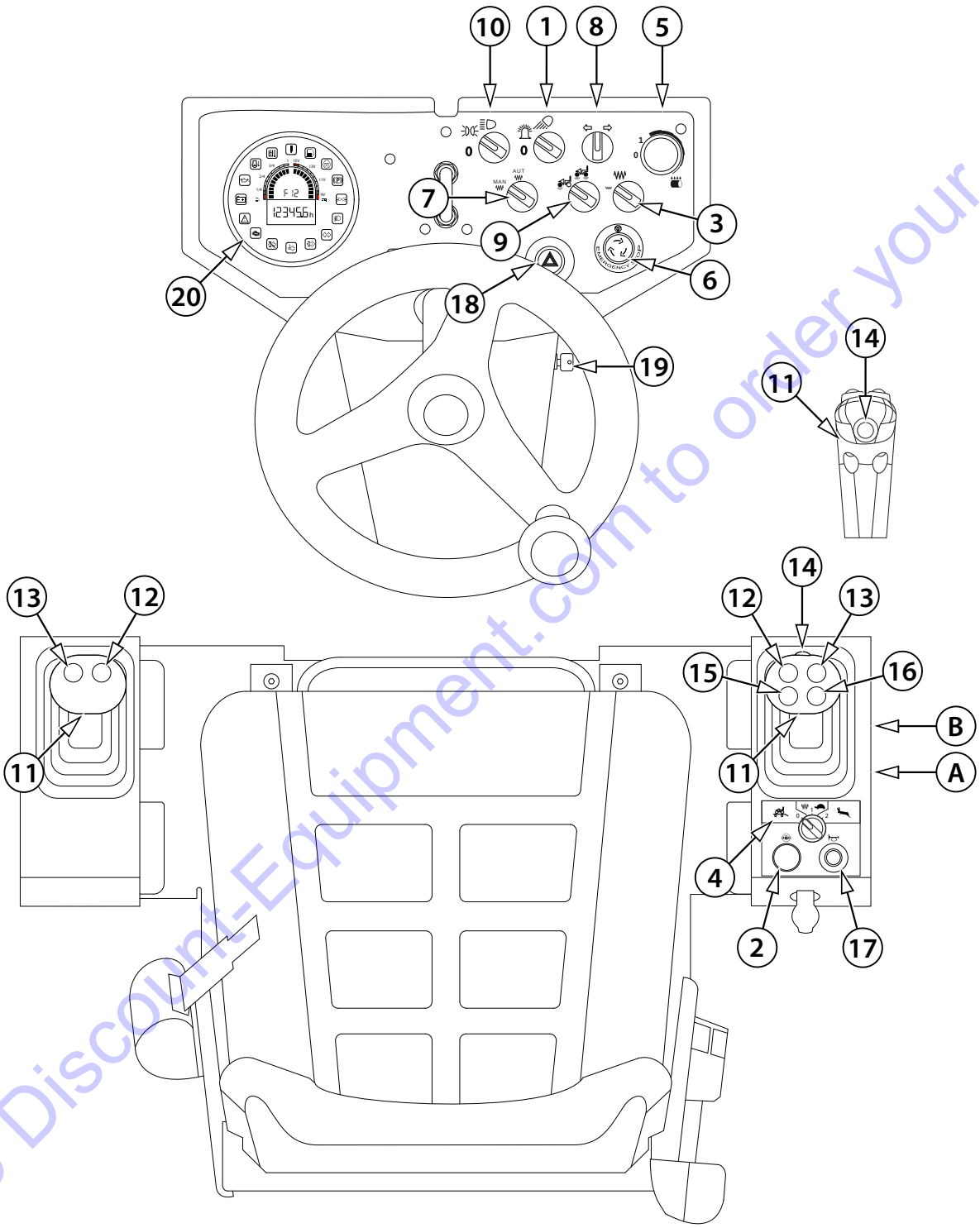
- specialized companies with a respective authorization for these operations
- the machine manufacturer or accredited contracting service organizations authorized by the manufacturer.

The machine manufacturer Ammann shall not be liable for damage to the health of users or environmental damage caused by non-compliance with the above mentioned rules.



Legend:

1 - Front frame
2 - Rear frame
3 - Front drum
4 - Rear drum
5 - Engine
6 - Travel hydraulic motor
7 - Vibration hydraulic motor
8 - Steering joint
9 - Hydraulic oil level indicator
10 - Fuel tank
11 - Sprinkling tank
12 - Sprinkling filter
13 - Operator's stand
14 - Drum sprinkling
15 - Drum scraper
16 - Exhaust pipe
17 - Battery
18 - Hydraulic oil cooler
19 - Air filter

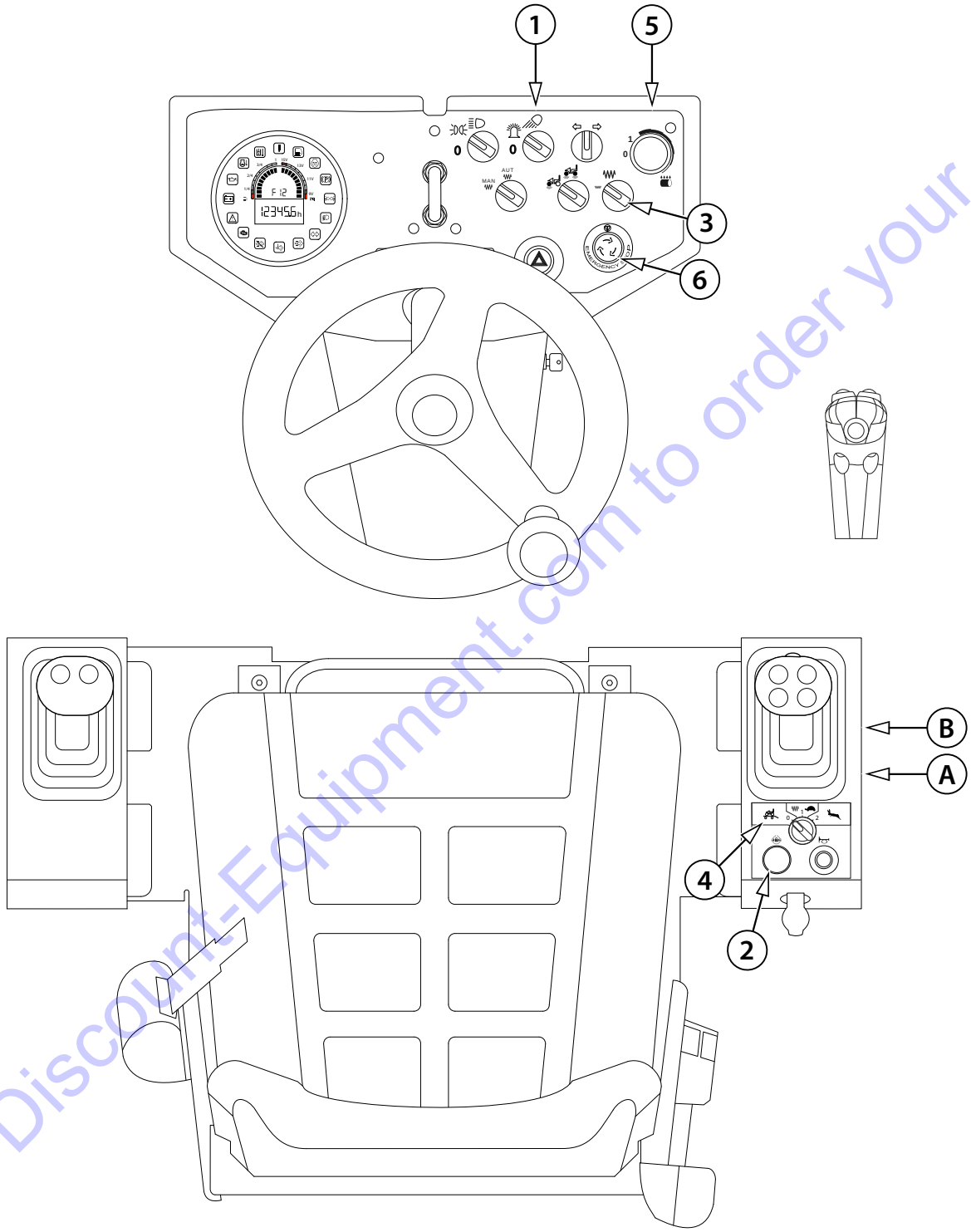


A738002

2.6.1 Dashboard and control panels

Legend:

A - Brake test button
B - Calibration button
1 - Beacon and rear light change-over switch
2 - Differential lock button
3 - Vibration amplitude selector switch
4 - Travel mode switch
5 - Sprinkling potentiometer
6 - Emergency brake button
7 - Vibration mode selector switch (manual mode / automatic mode)
8 - Turn indicators switch
9 - Vibrating drum selector switch
10 - Lights switch (outline lights / front lights)
11 - Travel control
12 - Vibration switch
13 - Sprinkling switch
14 - Edge cutter sprinkling switch
15 - Edge cutter button – up
16 - Edge cutter button – down
17 - Horn switch
18 - Warning lights
19 - Ignition box
20 - Display



Brake test button (A)

The brake test button (A) is located at the bottom of the control panel.

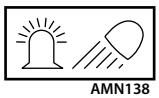
It is used to check the correct function of the parking brake of the machine.

Calibration button (B)

The calibration button (B) is located at the bottom of the control panel.

Used to calibrate functions:

- start ramp HARD / SOFT
- activation of the left travel lever
- infra thermometer setting °C / °F


AMN138

Beacon and rear light change-over switch (1)

- To the gear 1: The beacon is ON.

If the beacon and rear light switch is missing and the machine is still equipped with a beacon, the beacon will start in continuous operation when the ignition key is turned to position II.


AMN45

Differential lock button (2)

It is used for turning on/off the differential lock.

The differential lock prevents the drum from slipping when crossing a difficult terrain.

Turn the differential lock off after the difficult ground has been overcome!

Vibration amplitude selector switch (3)

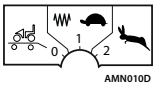
- low frequency (engine speed 2100 RPM)
- high frequency (engine speed 2400 RPM)

Before changing vibration parameters (frequency), stop the vibration.

The speed will be adjusted automatically when the vibration is switched on (12)

It is forbidden to vibrate on the spot.

It is prohibited to change vibration parameters which the machine is vibrating.



AMN010D

Travel mode switch (4)

Loading mode (0)

- Limited travel speed.
- Activated differential lock.
- Blocked working functions of the machine (vibration).

Working mode (1)

- Machine working speed (max. 7 km/h).
- Option to activate the differential lock for the time necessary.
- Option to activate the working functions of the machine (vibration).

Transport mode (2)

- Machine transport speed (max. 10 km/h).
- Deactivated differential lock.
- Blocked working functions of the machine (vibration).


AMN83

Sprinkling potentiometer (5)

OFF in the position "0".

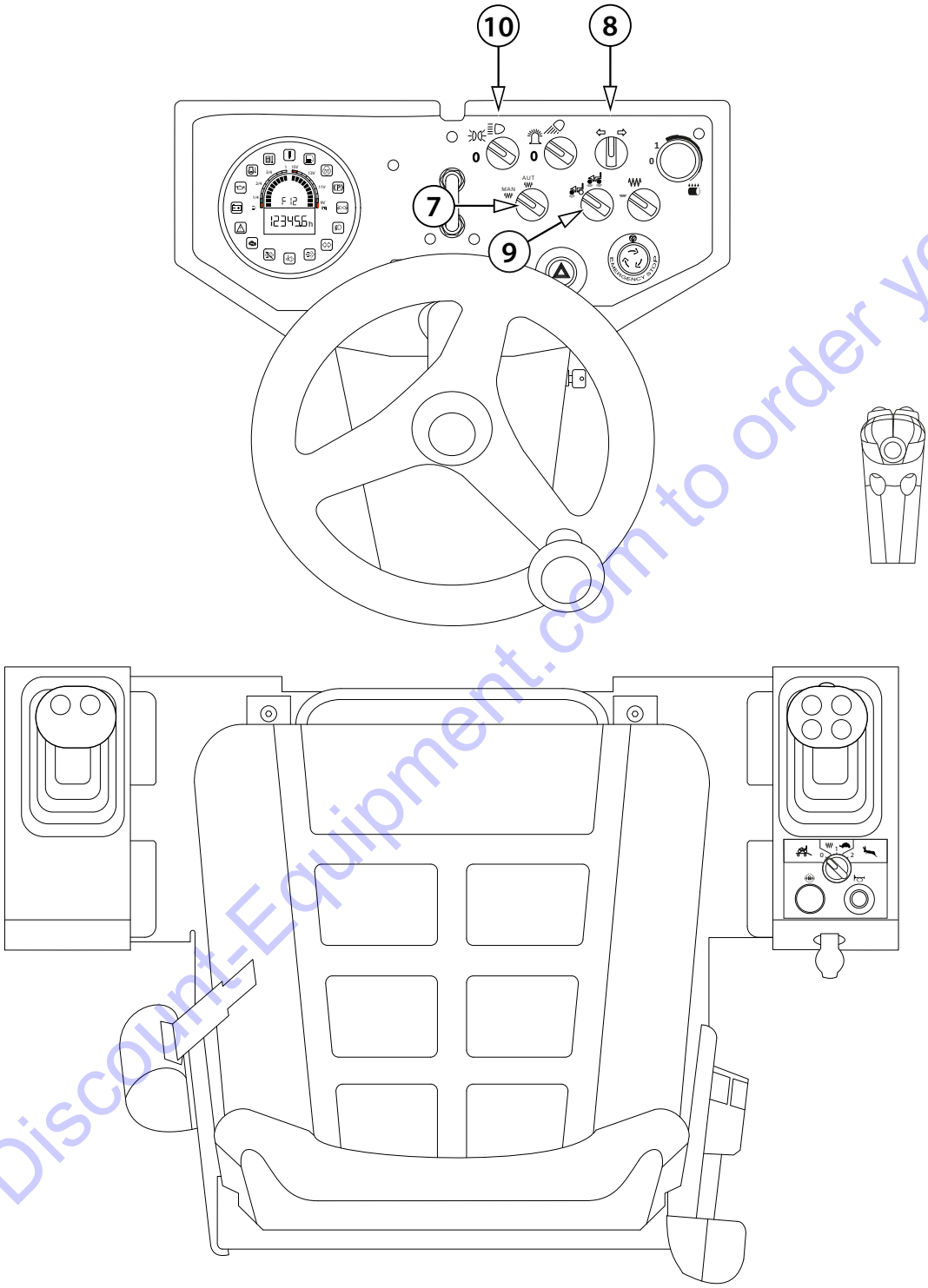
ON in the position "1".

Turn the sprinkling potentiometer from the position "1" to the position "MIN" to smoothly control the sprinkling intensity of the drums.

AMN142

Emergency brake button (6)

Pressing the button activates the emergency brake of the machine. The machine stops, the engine shuts down. After activating the emergency brake button the indicator lamps for battery charging (22), engine lubrication (23), parking brake (29) and emergency stop (26) are shown on the display.



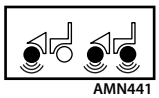
3726G

Vibration mode selector switch (manual mode / automatic mode) (7)

- Manual vibration mode – vibration can be switched on when the machine is stationary or moving. Drum sprinkling – vibration can be switched on when the machine is stationary or moving.
- Automatic vibration mode – vibration is automatically switched on when the machine starts moving and automatically switched off when the machine stops. Automatic activation of drum sprinkling when the machine starts moving and automatic deactivation of drum sprinkling when the machine stops.

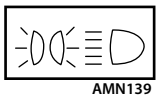

3726CH

Direction lights switch (8)


AMN441

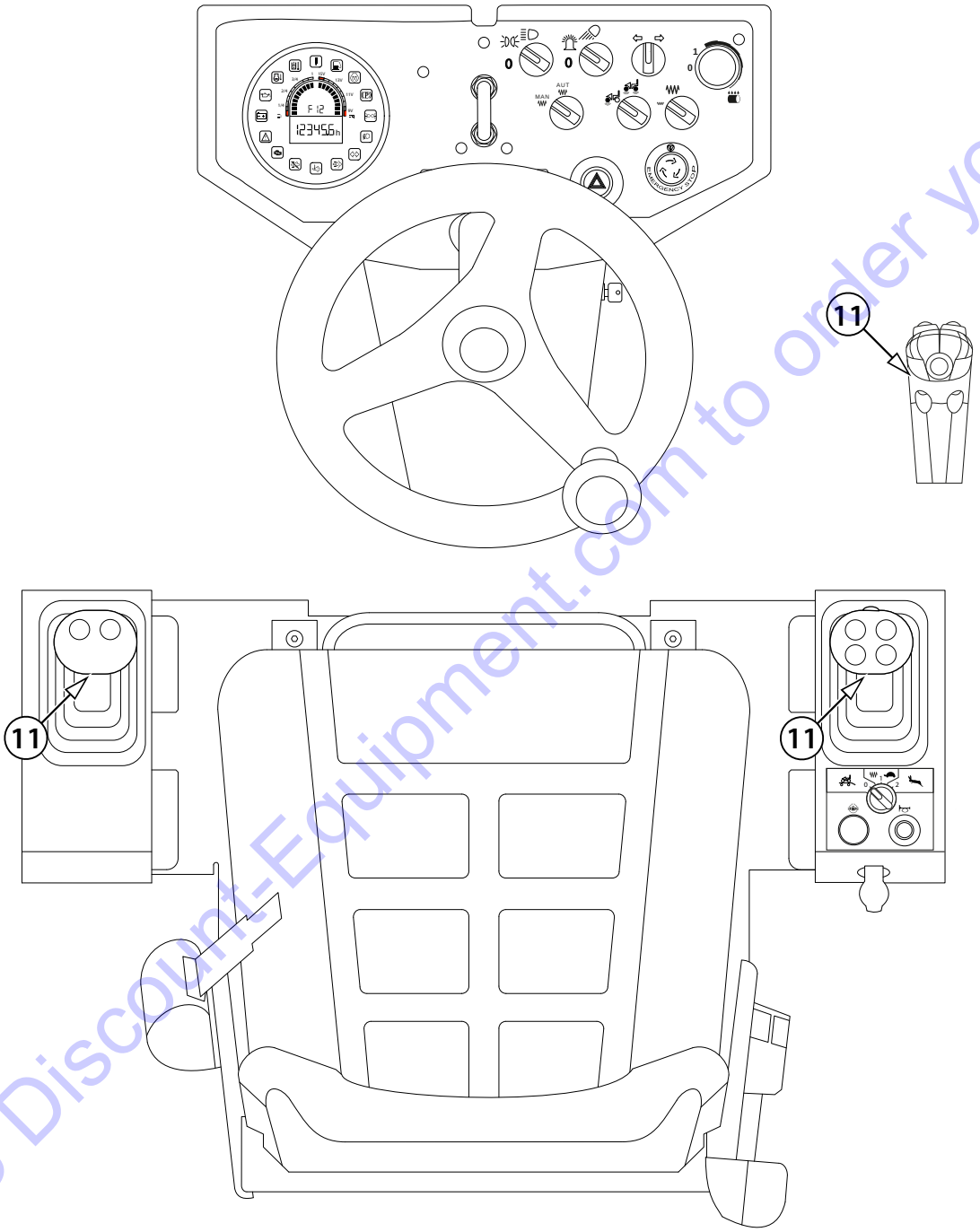
Vibrating drum selector switch (9)

- front drum
- front and rear drum


AMN139

Lights switch (parking lights / headlamps) (10)

- parking lights
- headlamps



A738005

Travel control – right (standard) (11)

The travel control is used to set the engine speed, the parking brake, forward/reverse direction and the travel speed of the machine. Direction and speed of machine travel is controlled by shifting the control from zero position (0) forward or backward. The travel speed corresponds to the displacement of the travel control at the set speed gear. The travel control is fixed in the set position except for the zero position (0).

The travel control can activate the so-called panic response (Chapter 2.7.2).

Shifting the control to the neutral position (N) stops the machine – the parking brake is not engaged!

If you leave the travel lever in the neutral position (N), it is possible that the machine will move from the slope due to leakages of the hydraulic system.

The parking brake position (P) is indicated by lighting up of the parking brake indicator lamp.

The travel control is fitted with vibration, drum sprinkling, edge cutter (up/down) and edge cutter sprinkling switches.

- P - parking brake – activated parking brake, idle engine speed
- N - neutral – the machine is not braked, idle engine speed
- 0 - zero position – working engine speed
- F - forward travel – working engine speed
- R - reverse travel – working engine speed

Travel control – left (optional)

The travel control is used to set the engine speed, the parking brake, forward/reverse direction and the travel speed of the machine. Direction and speed of machine travel is controlled by shifting the control from zero position (0) forward or backward. The travel speed corresponds to the displacement of the travel control at the set speed gear. The travel control is fixed in the set position except for the zero position (0).

The travel control can activate the so-called panic response (Chapter 2.7.2).

Shifting the control to the neutral position (N) stops the machine – the parking brake is not engaged!

If you leave the travel lever in the neutral position (N), it is possible that the machine will move from the slope due to leakages of the hydraulic system.

The parking brake position (P) is indicated by lighting up of the parking brake indicator lamp.

The travel control is fitted with vibration and drum sprinkling.

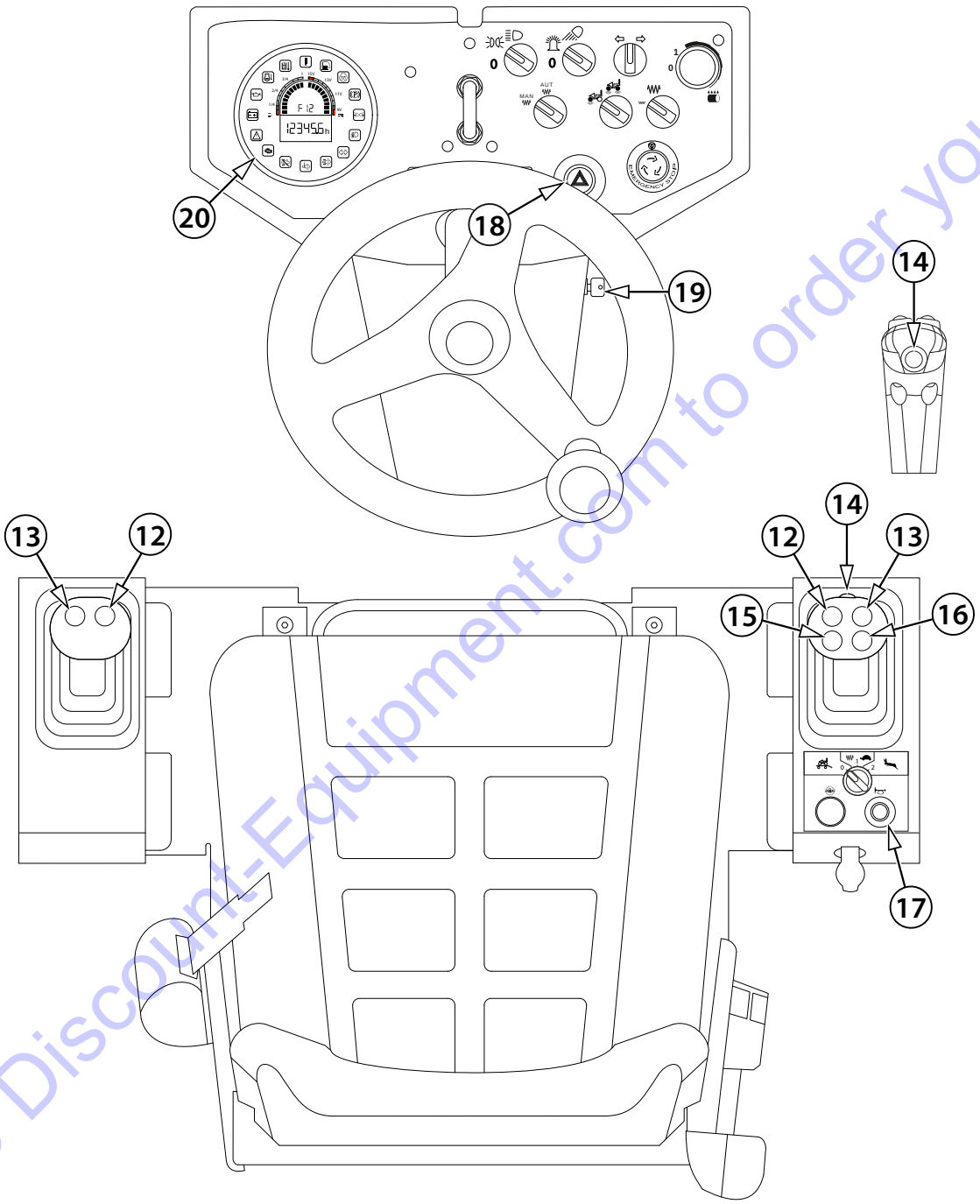
- P - parking brake – activated parking brake, idle engine speed
- N - neutral – the machine is not braked, idle engine speed
- 0 - zero position – working engine speed
- F - forward travel – working engine speed
- R - reverse travel – working engine speed

Note

If requested by the customer, the machine can be equipped with the second travel control (11) placed on the left armrest. However, only one of travel controls (11) may remain active.

For the machine travel using one of the controls (the active one), the inactive travel control must be set to the parking brake position (P).

The selection of the active travel control can be changed while the machine is in motion according to chapter 2.7.2.



A738006


2612

Vibration switch (12)

Press the switch to turn on/off the vibration function.


AMN83

Sprinkling switch (13)

Press the switch to turn on/off the drum sprinkling function.


AMN83

Edge cutter sprinkling switch (14)

Press the switch to turn on/off the edge cutter sprinkling function.


3355

Edge cutter button – up (15)

Pressing the button sets the edge cutter to the transport position.


3355

Edge cutter button – down (16)

Pressing the button sets the edge cutter to the working position.


2246

Warning horn button (15)


595417

Warning lights switch (16)

Ignition box (19)

0 – OFF

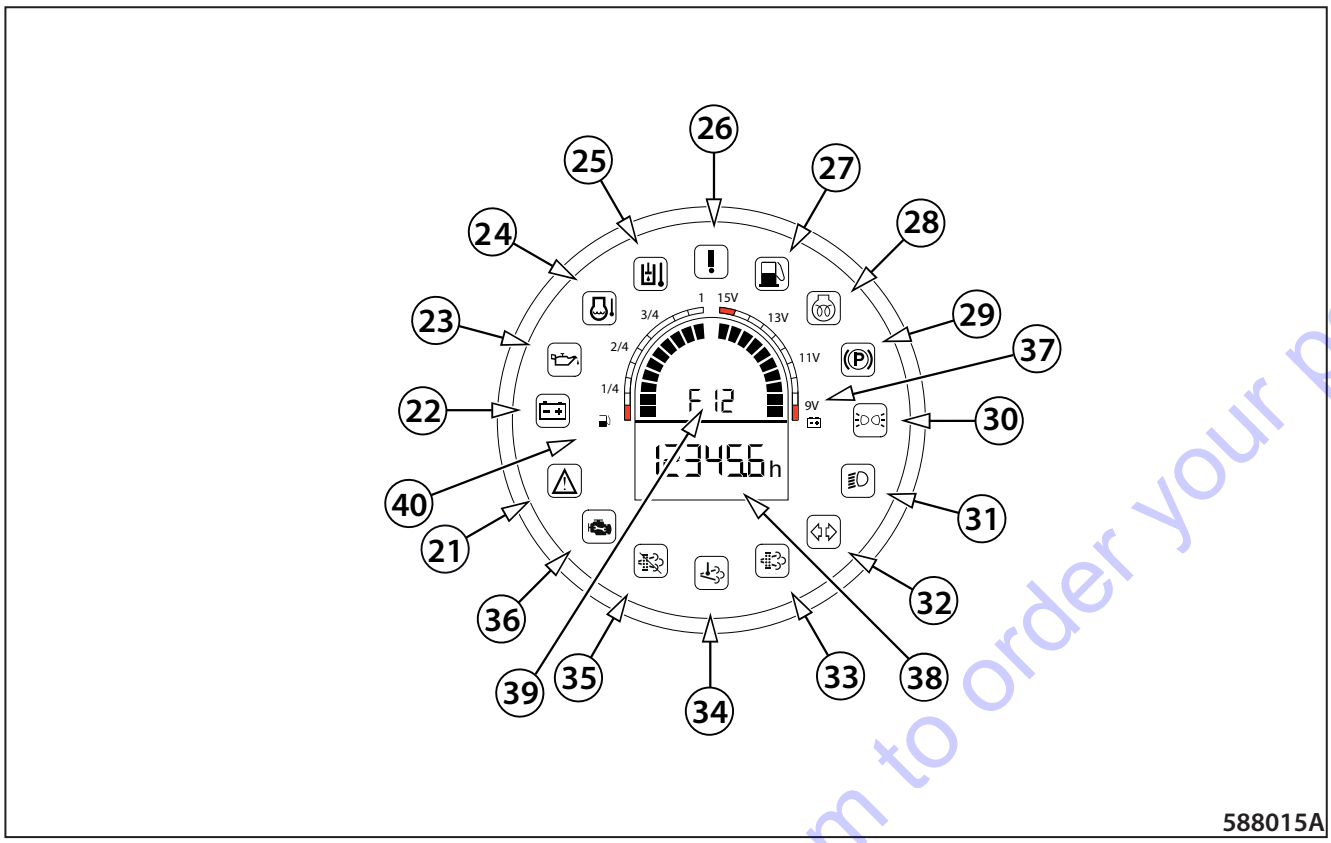
I – ON / Engine glowing

II – Not assigned

III – Engine starting

Display (20)

Instrument to display parameters and functions of the engine and of the machine.



Display (20)

Instrument to display parameters and functions of the engine and of the machine.

Indicator lamps

21 - Error message indicator lamp
22 - Battery charging indicator lamp
23 - Engine oil pressure indicator lamp
24 - Coolant temperature indicator lamp
25 - Hydraulic oil temperature indicator lamp
26 - Emergency stop indicator lamp
27 - Fuel reserve indicator lamp
28 - Engine glowing indicator lamp
29 - Brake indicator lamp
30 - Outline lights indicator lamp
31 - Low beam lights indicator lamp
32 - Indicator lamp for direction indicators
33 - DPF clogging indicator lamp
34 - Indicator lamp of high temperature of exhaust gases
35 - Suppression of DPF regeneration indicator lamp
36 - Engine failure indicator lamp
37 - Battery voltage indicator
38 - Engine hour counter
39 - Error message indicator
40 - Fuel tank indicator

The warning indicator lamps for engine oil pressure, battery charging and brakes must light up when the ignition is ON. As soon as you start the engine, the indicator lamps must go off.


AMN58

Error message indicator lamp (21)

The error message indicator lamp lights up when the control system detects an error. At the same time, the error code appears on the display.

- Check the machine according to the table of error message codes.

If the indicator lamp remains lighting, call the service!


2777

Battery charging indicator lamp (22)

When the battery charging indicator lamp lights up during operation or it does not go off after the engine is started, carry out the undermentioned steps:

- Stop the engine.
- Check the V-belt of the engine for damage and loosening. If the indicator lamp is still lit up when the engine is started, contact the service centre.


AMN49

Engine lubrication indicator lamp (23)

When the engine lubrication indicator lamp lights up during operation or does not go off after the engine is started up, you must stop the machine immediately and turn off the engine!

- Check the engine for oil leaks and for correct oil level.
- If the oil level in the engine is correct, call the service!


AMN76

Coolant temperature indicator lamp (24)

When the engine overheating indicator lamp lights up during operation, turn off the engine and refill the coolant! Check the cooling circuit for leaks! Check the hoses for damage and missing hose clips.


2635

Hydraulic oil temperature indicator lamp (25)

The hydraulic oil temperature indicator lamp lights up when the oil temperature exceeds 85 °C.

If the oil temperature exceeds 95 °C, the error F32 will appear.


592520

Emergency stop indicator lamp (26)

The emergency stop indicator lamp lights if the emergency brake button (6) is enabled.

If the indicator lamp does not go off when the emergency brake button is disabled, look for the cause!

The engine can be started only after the defect is repaired!


595425

Fuel indicator lamp (27)

When the fuel indicator lamp lights up, the tank capacity is sufficient for half-hour operation of the machine.

Refill the fuel!


3518

Engine glowing indicator lamp (28)

It indicates the engine warming up before the cold start.


2703

Parking brake indicator lamp (29)

The lighting indicator lamp indicates that the parking brake was enabled.


AMN146

Outline lights indicator lamp (30)

The indicator lamp indicates that the parking lights are ON.


596303

Headlamps indicator light (31)

The indicator lamp indicates that the headlamps are ON.


595200

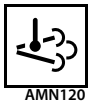
Indicator lamp for direction indicators (32)

The indicator lamp indicates that the directions indicators are ON.


AMN118

Indicator lamp of DPF (Diesel Particulate Filter) clogging (33)

The machine is not equipped with a DPF.


AMN120

Indicator lamp of high temperature of exhaust gases (34)

The function is not activated.


AMN442

Indicator lamp of DPF (diesel particulate filter) regeneration suppression (35)

The machine is not equipped with a DPF.


AMN47

Engine failure indicator lamp (36)

The indicator lamp indicates an engine failure.

The lighting indicator lamp during operation of the engine indicates a failure.

The engine stalls – the machine stops and the parking brake is engaged.

The engine can be started only after the defect is repaired!


2777

Battery voltage indicator (37)


AMN26

Worked hours indicator (38)

Error message code indicator (39)


595425

Fuel level indicator (40)

Seat

Seat adjustment

1 Backrest inclination adjustment
2 Seat springing stiffness
3 Longitudinal seat travel
4 Seat cross travel

Seat springing stiffness

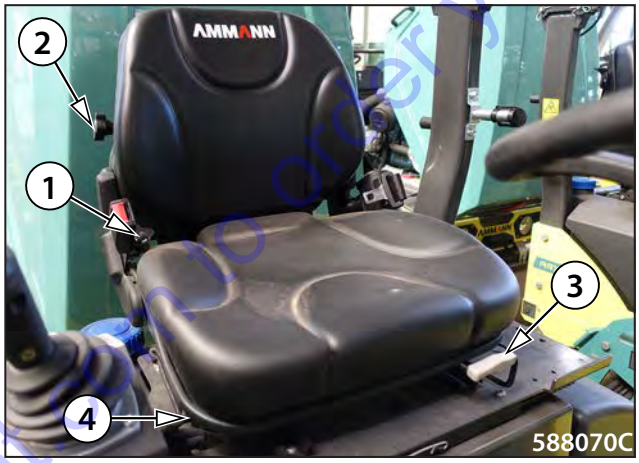
Turn the switch (2) to set stiffness according to driver's weight between 50 and 120 kg (110 - 265 lb).

Adjust the seat before driving the machine.

The driver must be fastened with the safety belt while driving.

Non-observance of this instruction can lead to death or serious injury.

During travel of the machine, the driver must have his legs on the machine platform; there is a risk of injury when the machine turns.



Longitudinal seat travel

- After raising the lever (3), it is possible to move the seat in the longitudinal direction forward-rearward.

Seat cross travel

- After raising the lever (4), it is possible to move the seat in the cross direction to the left and right.

Seat switch

The seat switch is located in the seat cushion.

If the driver is not sitting on the seat, the seat switch is deactivated and the operation of the machine is restricted in one of the following ways – blocking of engine start, blocking of moving off, stopping of the machine or switching off the engine.

These restrictions vary depending on:

- the time period for which the seat switch is deactivated,
- the position of the travel control (if it is in the parking brake "P" position or outside this position)

Engine start blocking

If the driver is not sitting on the seat, engine start is blocked unless the travel control is in the parking brake position (P).

To enable engine start, set the travel control to the parking brake position (P).

Movement blocking

If the driver is not sitting on the seat, moving off is blocked. In this case, moving the travel control out of the parking brake (P) position switches off the engine with a 5 second delay.

To be able to move off, sit on the seat and set the travel control to the parking brake position (P).

Machine stop

If the driver leaves the seat for more than 5 seconds and less than 10 seconds when the travel control is not in the parking brake position (P), the machine stops. The traction force of the machine is off, vibration is off and, after a delay, the parking brake engages (P).

To be able to move off again, sit on the seat and set the travel control to the parking brake position (P).

Engine shutdown

If the driver leaves the seat for more than 10 seconds when the travel control is not in the parking brake position (P), the engine shuts down.

To re-enable engine start, sit on the seat and set the travel control to the parking brake position (P).

It is forbidden to load the seat switch with other items!

When operating the machine, the driver must follow the safety regulations and not carry out any activity that might endanger the safety of work; the driver must fully focus on steering the machine.

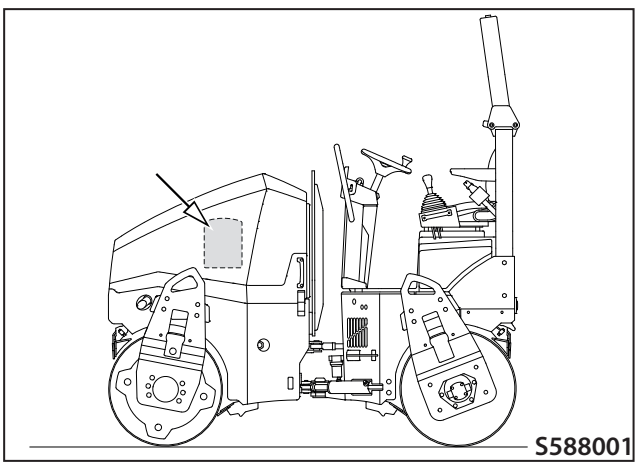
When operating the machine, the driver must always sit on the seat and wear the seat belt.

When leaving the machine, the driver must take measures against unauthorized use of the machine and against unintentional starting.

Document box

The storage box situated on the inner left side of the bonnet is used to store the Operating Manual and other documents related to the operation of the machine.

The Operating Manual must always be kept in the machine in an appropriate place to be always available for the driver of the machine for viewing.



Fire extinguisher (optional equipment)

Place to install a fire extinguisher.

The manufacturer recommends that the machine be equipped with a fire extinguisher.

Fuse box

F1 – 7.5 A .....Parking lights

F2 – 7.5 A .....Tail lights, licence plate light

F3 – 15 A .....Headlamps

F4 – 15 A .....Rear light, ROPS lights, beacon, green beacon, monitoring device

F5 – 5 A.....Direction indicators

F6 – 5 A.....Control unit – electronics

F7 – 40 A .....Control unit – power part

F8 – 5 A.....Display, alternator excitation

F9 – 25 A .....Hydraulic oil cooler

F10 – 10 A.....Service socket, seat heating

F11 – 7.5A (15 A*) Water sprinkling pump, emulsion sprinkling pump at the axle

F12 – 7.5 A.....Right travel lever, left travel lever, differential lock switch, working mode selector, horn switch, brake tester, calibration button

F13 – 7.5 A.....Horn

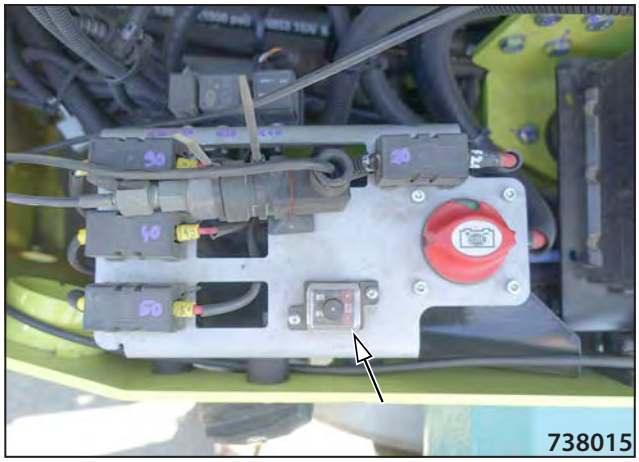
F14 – 5 A .....Seat switch

F15 – 5 A .....Infra thermometer, monitoring device

F16 – 10 A.....Fuel pump, K22 engine auxiliary relay, engine control unit

* ARX23.1-2 C, ARX26.1-2 C

Battery disconnector fuses



F20 – 70 A.....main fuse

F21 – 10 A.....Engine auxiliary relay

F22 – 5 A .....Compaction module

F30 – 80 A.....Glowing

F40 – 60 A.....Starter

F50 – 80 A.....Alternator

Dashboard cover

The cover protects the dashboard from:

- weather effects
- vandalism
- handling by others

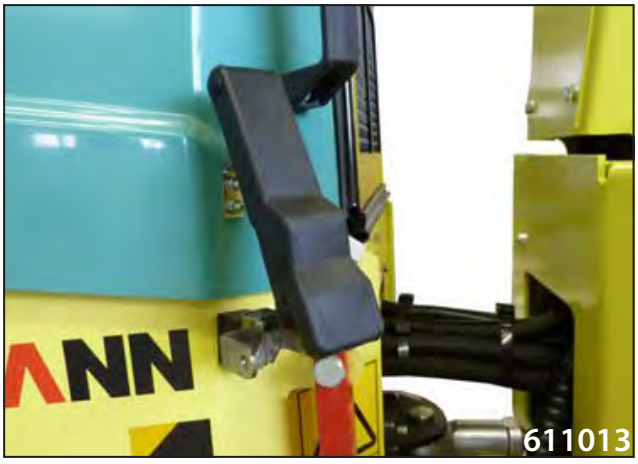
The cover of the dashboard can be locked with a padlock; the padlock is not delivered in the machine equipment.

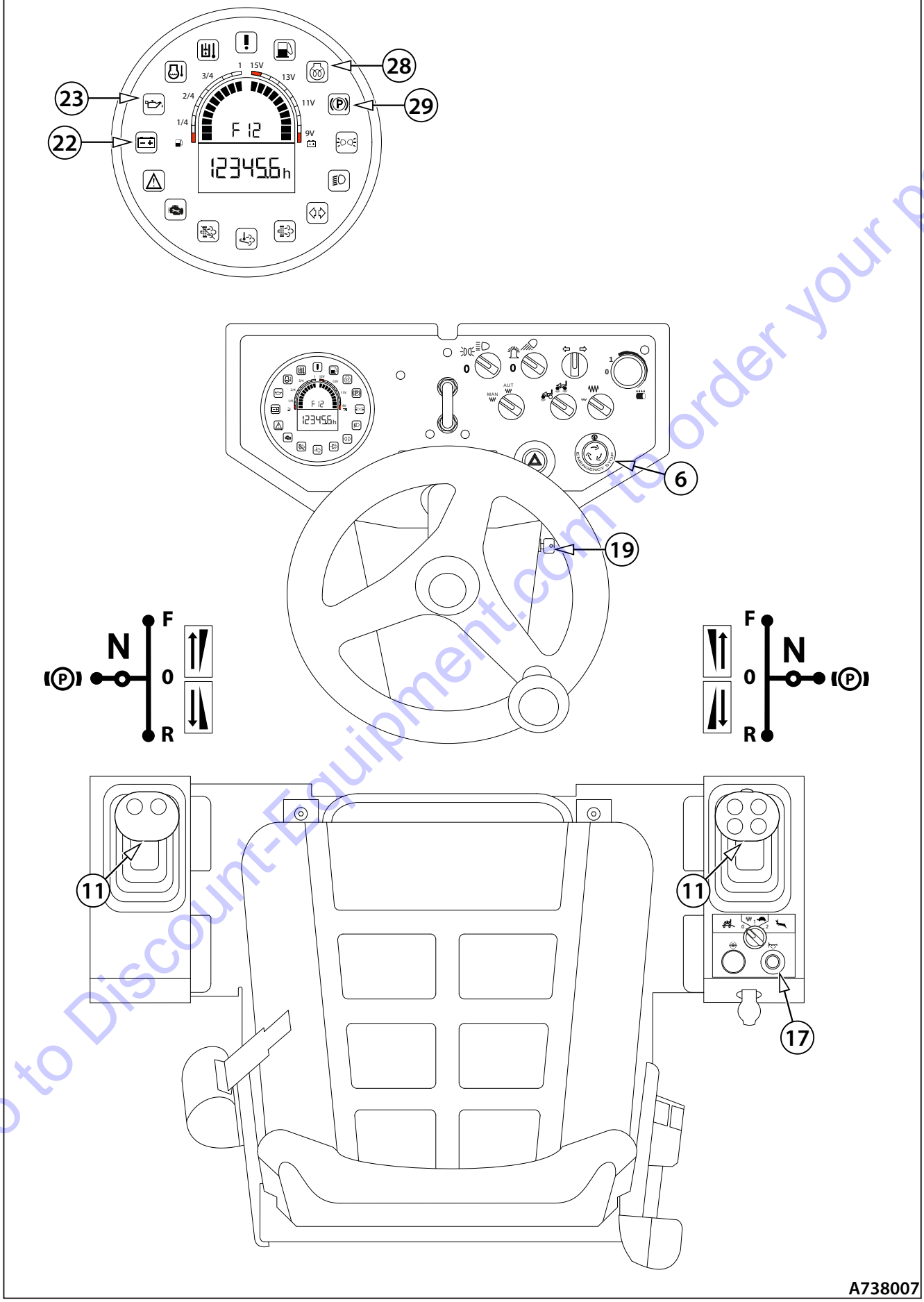
Engine bonnet

The bonnet protects the engine from:

- weather effects
- vandalism
- handling by others

The bonnet of the engine can be locked with a padlock; the padlock is not delivered in the machine equipment.





2.7.1 Starting the engine

Daily before starting the engine, check the oil level in the engine and in the hydraulic tank, fuel level in the fuel tank and water level in the water tank. Check that there are no loosened, worn or missing parts on the machine.

Start the engine only from the driver's stand! Use the warning horn to signal the engine starting and check that nobody is endangered by starting the engine!

Starting the engine:

Turn on the battery disconnector.

Sit down on the seat.

Fasten your seat belt.

Set the travel control (11) to the brake position (P). When the machine is equipped with two travel controls, set both travel controls to the parking brake position (P).

Check that the emergency brake (6) is not enabled.

Insert the key into the ignition box (19) in the position "0" and switch over to the position "I".

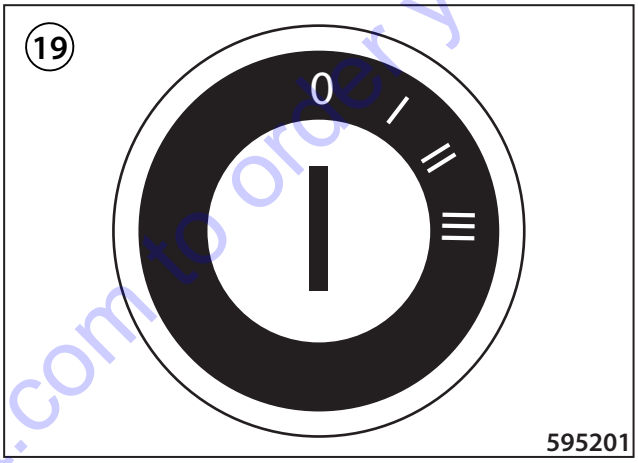
The indicator lamps for battery charging (22), engine lubrication (23) and parking brake (29) will light up on the display (20).

Based on the ambient temperature, the engine ignition is automatically activated and the engine glowing indicator lamp (28) illuminates.

Use the warning horn (17) to signal that the engine is starting.

Then turn the key to the "III" position to start the engine. Once the engine started, release the key.

After the start, the indicator lamps for battery charging (22), engine lubrication (23) and engine glowing (28) must go out on the display (20).



When driving with a cold engine and cold hydraulic oil, the braking distances are longer than when the oil has reached its operating temperature.

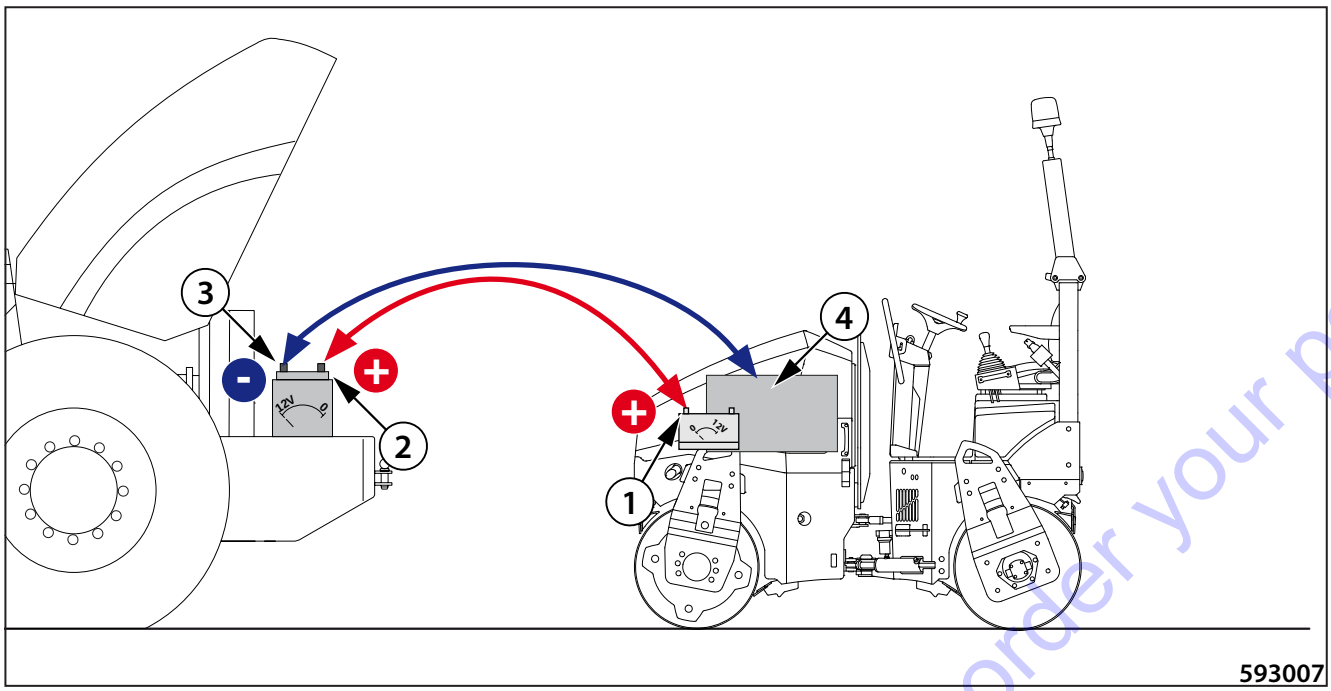
Do not start the engine for more than 30 seconds. Wait for 2 minutes before starting again.

Following the engine start let the engine idle at increased speed for 3–5 min.

If the coolant temperature does not reach at least 40 °C (104 °F), do not load the engine at full power!

Note

If the engine cannot be started or stops after a while, bleed the fuel system according to Chapter 3.6.49.



Start-up procedure using leads from an external power supply:

The starting supply from the external power supply must be 12 V.

Always follow the undermentioned operation sequence.

1/ Connect one end of the (+) pole of the cable to the (+) pole of the discharged battery.

2/ Connect the other end of the (+) pole of the cable to the (+) pole.

3/ Connect one end of the (–) pole of the cable to the (–) pole of the external battery.

4/ Connect the other end of the (–) pole of the cable to any part of the started machine, which is attached to the engine (or with the engine block itself).

When the engine has been started, disconnect cables in reverse order.

Do not connect the (–) pole of the cable to the (–) pole of the discharged battery of the machine being started! During the starting heavy sparking may occur and gases of the charged battery may explode.

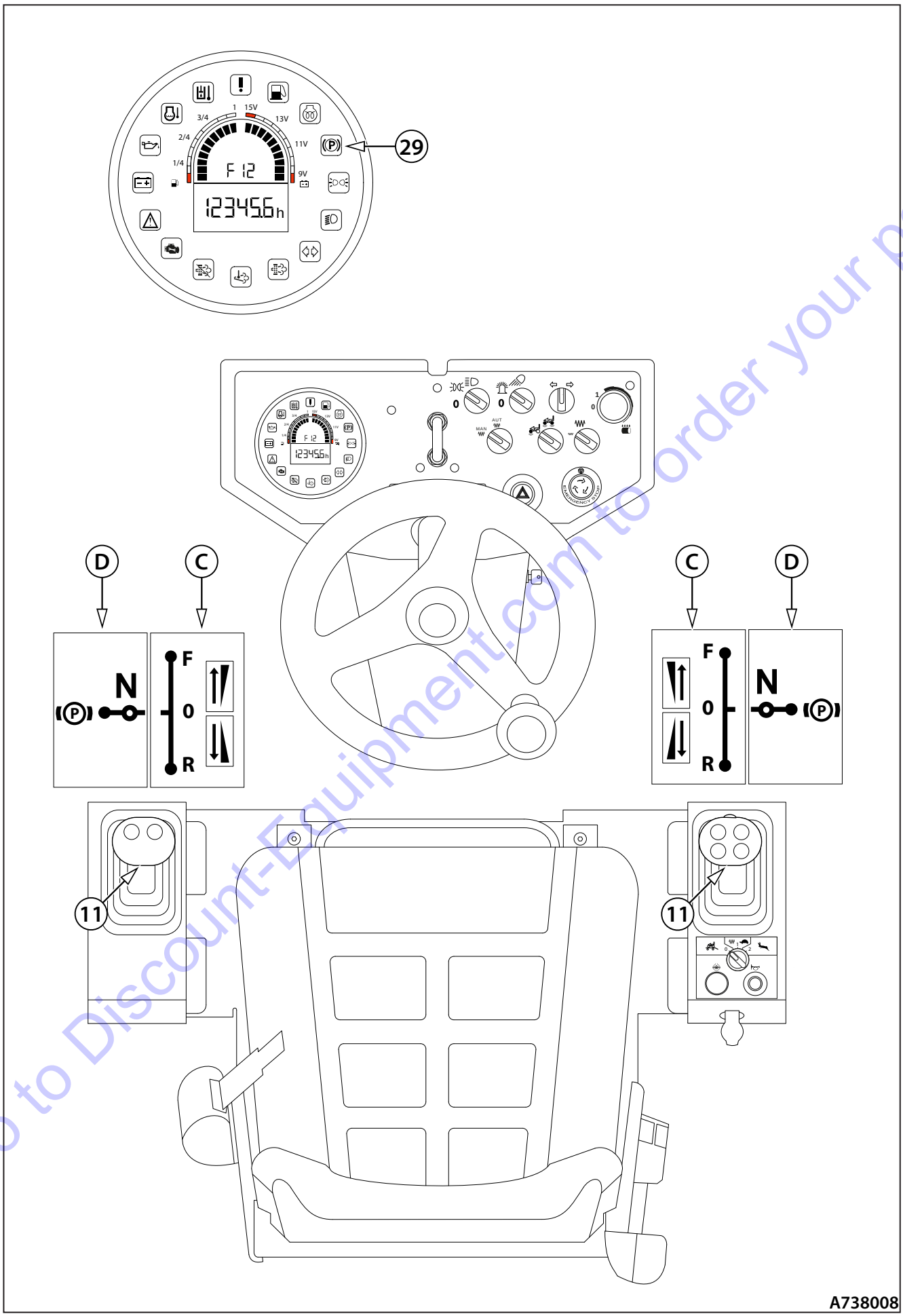
Uninsulated parts of clamps of the jump leads must not touch each other!

The jump lead connected to the (+) pole of the batteries must not come into contact with electrically conductive parts of the machine – danger of a short circuit!

Do not lean over the batteries – possibility of electrolyte burns!

Remove flammable sources (open flame, burning cigarettes, etc.)

Do not check the presence of voltage in the wire by sparking against the machine frame!



2.7.2 Drive and reverse drive

Use the warning horn to signal that the engine is starting and wait long enough so that all persons could leave the area around the machine or under the machine in time!

Before moving off, check that the articulation joint of the machine is locked.

Before moving off, check that the area in front of and behind the machine is empty and that there are no persons or obstructions there!

The operator must not control the machine from the ground. If they do so and do not sit on the seat when they move the travel control out of the parking brake position (P), the machine behaves as described in the description of the seat switch (chapter 2.6).

The operator must not leave the operator seat when operating the machine. If he does so anyway and leaves the seat when the travel control is in deflected form the parking brake position (P), the machine behaves according to the seat switch description (Chapter 2.6).

Engine speed

The engine speed is set automatically by moving the travel control (11).

Idle engine speed (D)

- Parking brake position (P)
- Neutral position (N)

Increased engine speed (C)

- Zero position (0)
- Forward travel (F)
- Reverse travel (R)

Selection of the travel direction

Selection of the travel direction is set on the active travel control. Set and leave the inactive travel control in the parking brake position (P).

Start the engine.

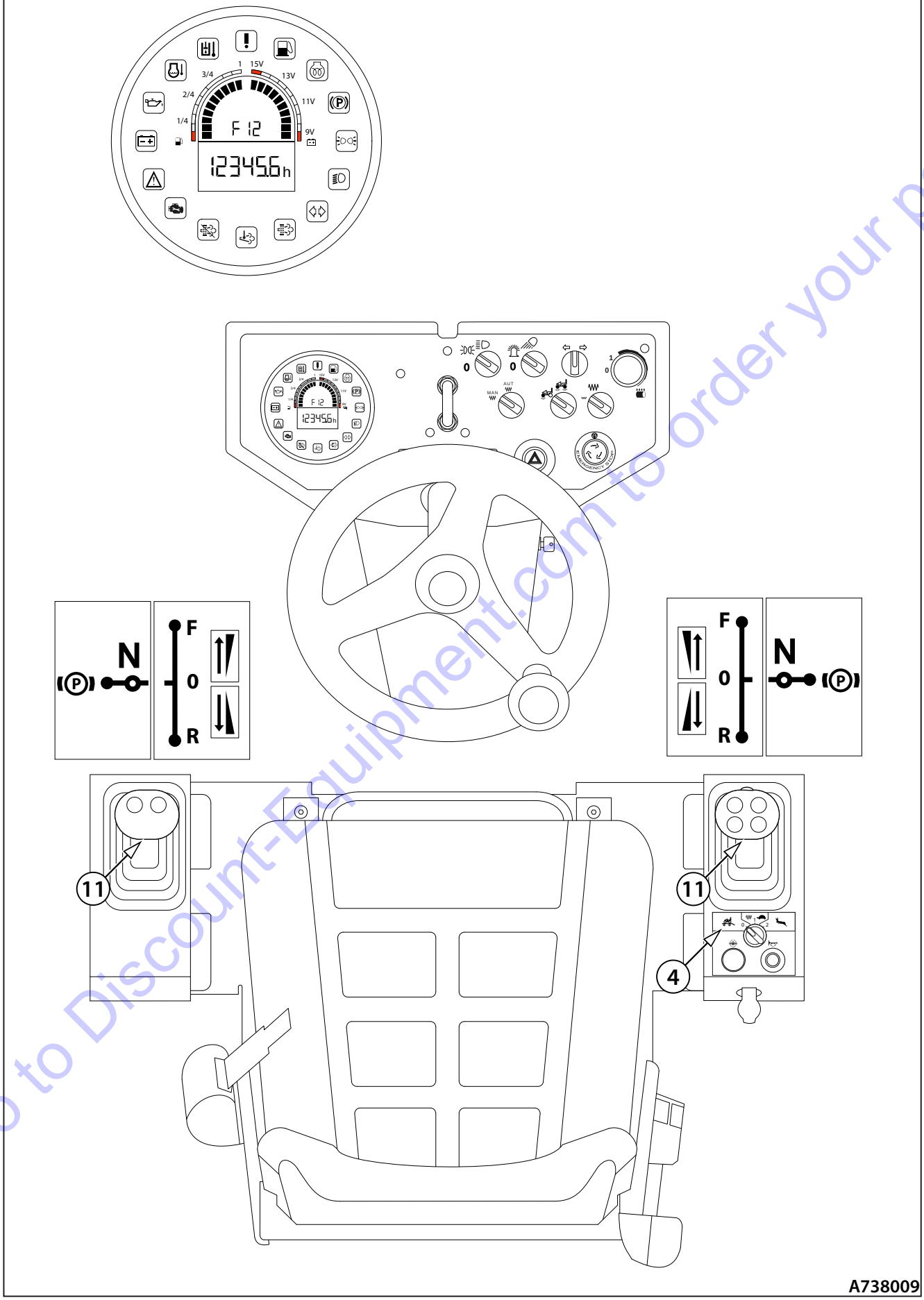
Move the travel control (11) from the parking brake (P) to the neutral position (N) – releasing of the brakes, the parking brake indicator lamp (29) goes out. The engine idle speed is set.

Move the travel control (11) to the position (0) and select a travel direction (F/R). The engine working speed is set.

When the driver releases the travel control (11), it does not return to the zero position automatically. The travel control remains in the selected position.

When the driver quickly moves the travel control (11) via the zero position (0) from the selected direction of travel of the machine to the opposite direction of travel of the machine, e.g. due to a dangerous situation, the machine stops and the parking brake is activated (panic reaction).

When the driver moves travel control (11) from the selected direction of machine travel to the neutral position, e.g. due to a in a safe situation, the machine stops but the parking brake is not engaged. This may cause counting movement of the machine when driving down the slope, due to leakages form the hydraulic system.



Selection of the travel direction

- Selection of the travel direction is set on the active travel control. Set and leave the inactive travel control in the parking brake position (P).
- Start the engine.
- Move the travel control (11) from the parking brake (P) to the neutral position (N) – releasing of the brakes, the parking brake indicator lamp (29) goes out. The engine idle speed is set.
- Move the travel control (11) to the position (0) and select a travel direction (F/R). The engine working speed is set.

When the driver releases the travel control (11), it does not return to the zero position automatically. The travel control remains in the selected position.

When the driver quickly moves the travel control (11) through the zero position (0) from the selected direction of travel of the machine to the opposite direction of travel of the machine, e.g. due to a dangerous situation, the machine stops and the parking brake is engaged (panic response).

When the driver moves travel control (11) from the selected direction of machine travel to the neutral position, e.g. due to a dangerous situation, the machine stops but the parking brake is not engaged. This may cause counting movement of the machine when driving down the slope, due to leakages form the hydraulic system.

Travel speed selection

- The travel speed is set on the active travel control. Set and leave the inactive travel control in the parking brake position (P).
- The travel speed corresponds to the displacement of the travel control (11) forward or rearward from the zero position (0) in the given operating mode (4).
- The travel speed can be changed with the travel mode switch (4).

Selecting the active travel control when the machine is travelling

- For the machine travel using one of the controls (the active one), the inactive travel control must be set to the parking brake position (P).
- Move the inactive travel control out of the parking brake position (P) and set the active travel control to the parking brake (P) position within 3 sec.
- The machine stops when the 3 sec limit is exceeded.
- When the machine is stopped, move both of the travel controls (11) to the parking brake position (P) and then select the driving direction on the active travel control (11).

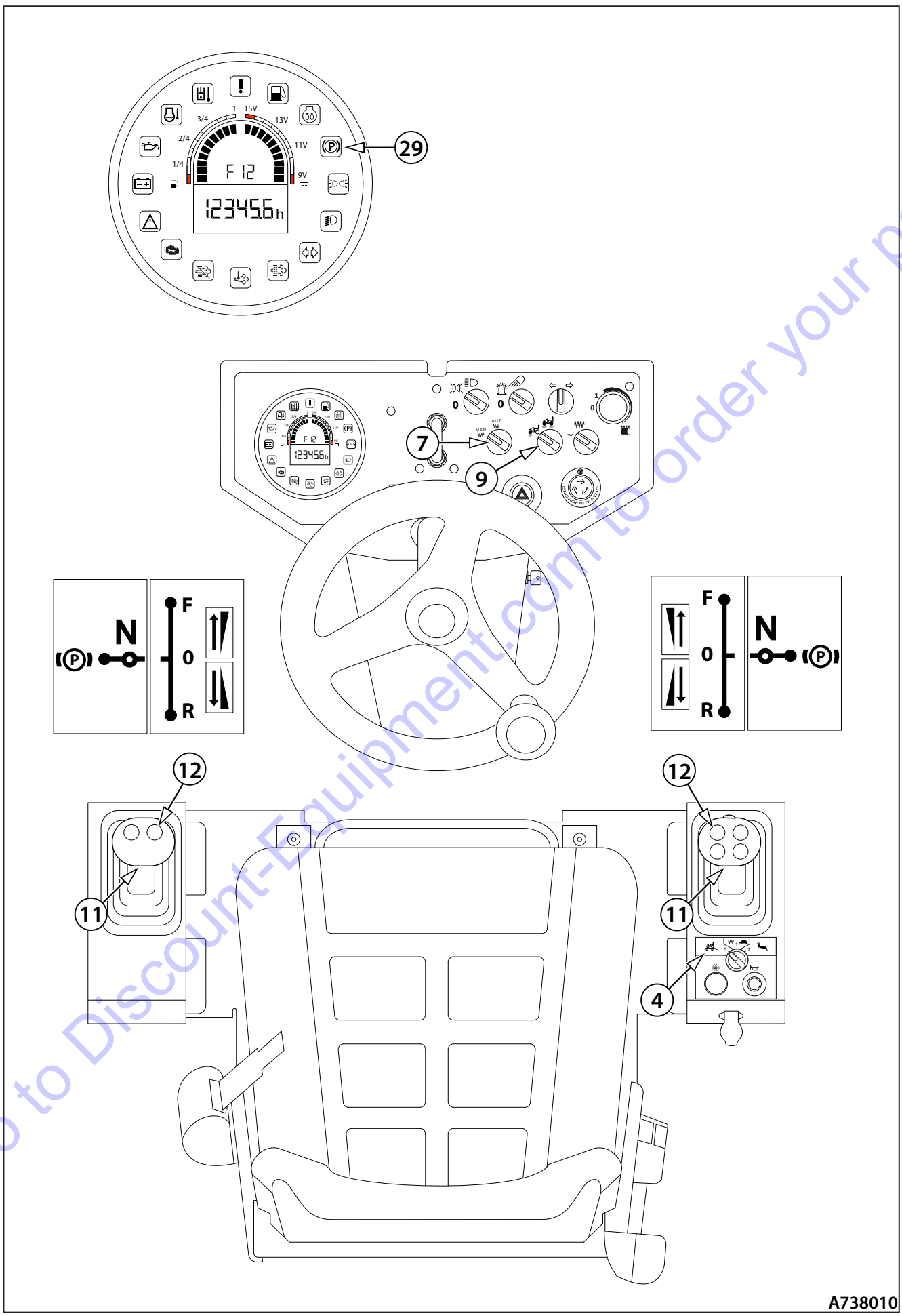
Panic response

The immediate stop of the machine using the travel control (11) applies to all of the travel modes of the machine. When the travel control (11) is changed to the opposite position through (0) within 1 second, the machine will stop – the parking brake will be engaged and the engine will keep running, i.e. panic response. When the machine vibration is on, the vibration will stop also when the manual vibration mode is selected. When the machine is equipped with two travel controls, the panic response can be enabled also on the inactive travel control. The machine can start moving again after the travel control (11) is changed to the neutral position (0) and the travel direction (F/R) is selected.

Note

If the driver leaves the driver's seat while the travel control is not in the brake position (P), the machine behaves according to the seat switch description (Chapter 2.6).

When the driver moves travel control from the brake position (P) without sitting on the seat at that time, the engine will be stopped after 5 seconds.



Machine travel and reversing with vibration

It is forbidden to enable the vibration when the machine is standing.

If the parking brake indicator lamp (29) is on, move the travel control (11) from the parking brake (P) position to the (0) position.

Manual mode

- Use the vibration mode switch (7) to set the manual mode.
- Use the vibrating drum selector (9) to select the front drum vibration or front and rear drum vibration.
- Use the travel mode switch (4) to set mode "1" – the working mode of the machine.
- Using the travel control (11) select the forward (F) or reverse (R) travel direction.

Turning on

- Turn on the vibration with the switch (12).

Turning off

- Turn off the vibration with the switch (12).

Note

When the travel control (11) is in the zero position (0), vibration of the machine is still active. Vibration is automatically turned off in the parking brake position (P).

Automatic mode

- Use the vibration mode switch (7) to set the automatic mode.
- Use the vibrating drum selector (9) to select the front drum vibration or front and rear drum vibration.
- Use the travel mode switch (4) to set mode "1" – the working mode of the machine.
- Using the travel control (11) select the forward (F) or reverse (R) travel direction.

Turning on

- Press the vibration switch (12).
- The vibration will be automatically turned on when the travel speed is more than 1–2 km/h (0.6–1.2 mph).
- The vibration will be automatically turned off when the travel speed is less than 1–2 km/h (0.6–1.2 mph).
- Vibration and sprinkling remains enabled even after the travel control (11) has been smoothly shifted through the zero position (0).

Turning off

- Press the vibration switch (12).

Note

If the travel control (11) is set to the neutral position (N) or parking brake position (P), the vibration and the sprinkling will be automatically turned off.

Panic response

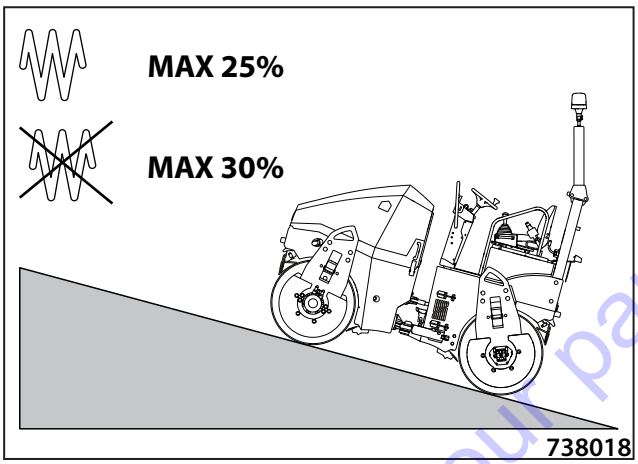
The immediate stop of the machine using the travel control (11) applies to all of the travel modes of the machine. When the travel control (11) is changed to the opposite position through (0) within 1 second, the machine will stop – the parking brake will be engaged and the engine will keep running, i.e. panic response. When the machine vibration is on, the vibration will stop also when the manual vibration mode is selected. The machine can start moving again after the travel control (11) is changed to the parking brake position (P) and the travel direction (F/R) is selected.

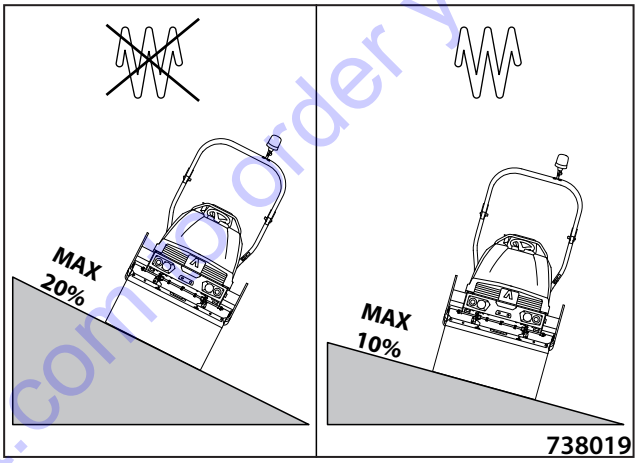
For the maximum permissible slope gradient when driving uphill and across the slope gradient, see figures.

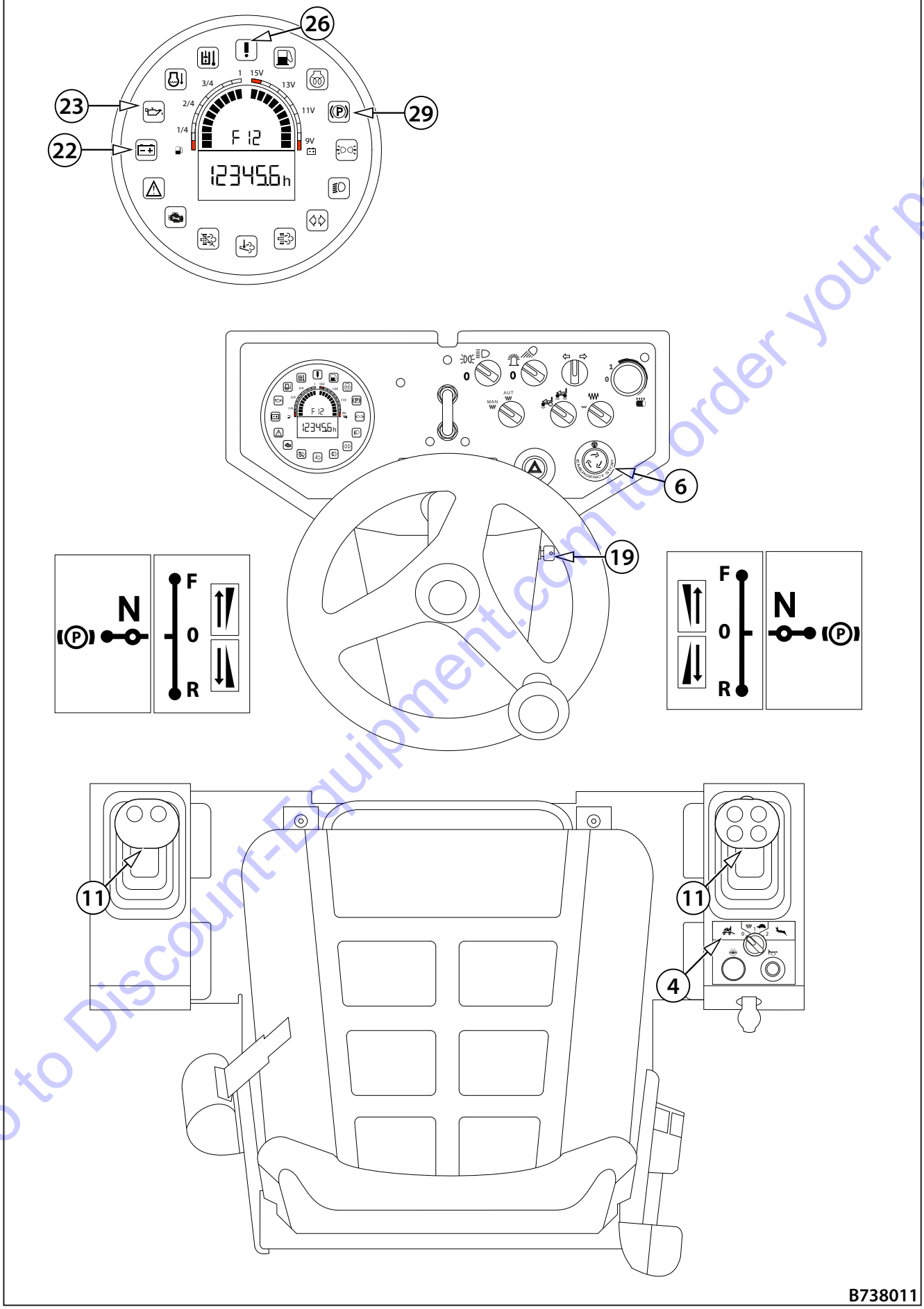
The given values will be lower depending on adhesive conditions and the instantaneous weight of the machine!

Prevent potential danger and pay extra attention to the adherence to permitted slope gradients.

Observe safety precautions. The machine operator must always be fastened with the safety belt.







2.7.3 Stopping the machine and turning off the engine

Stop the machine by changing the travel control (11) to the neutral position (N).

Brake the machine by changing the travel control (11) to the brake position (P).

Switch over the key in the ignition box (19) to the position "0", take out the key from the ignition box and close the lid.

Turn off the battery disconnector when shutting down the machine.

2.7.4 Machine emergency stop

In a dangerous situation requiring the machine to immediately stop, press the emergency brake button (6).
The machine will stop moving immediately, the engine will stop working and the parking brake will be enabled.

Turning on:

Press the emergency brake button (6) to brake the machine immediately, turn off the engine and apply the parking brake.

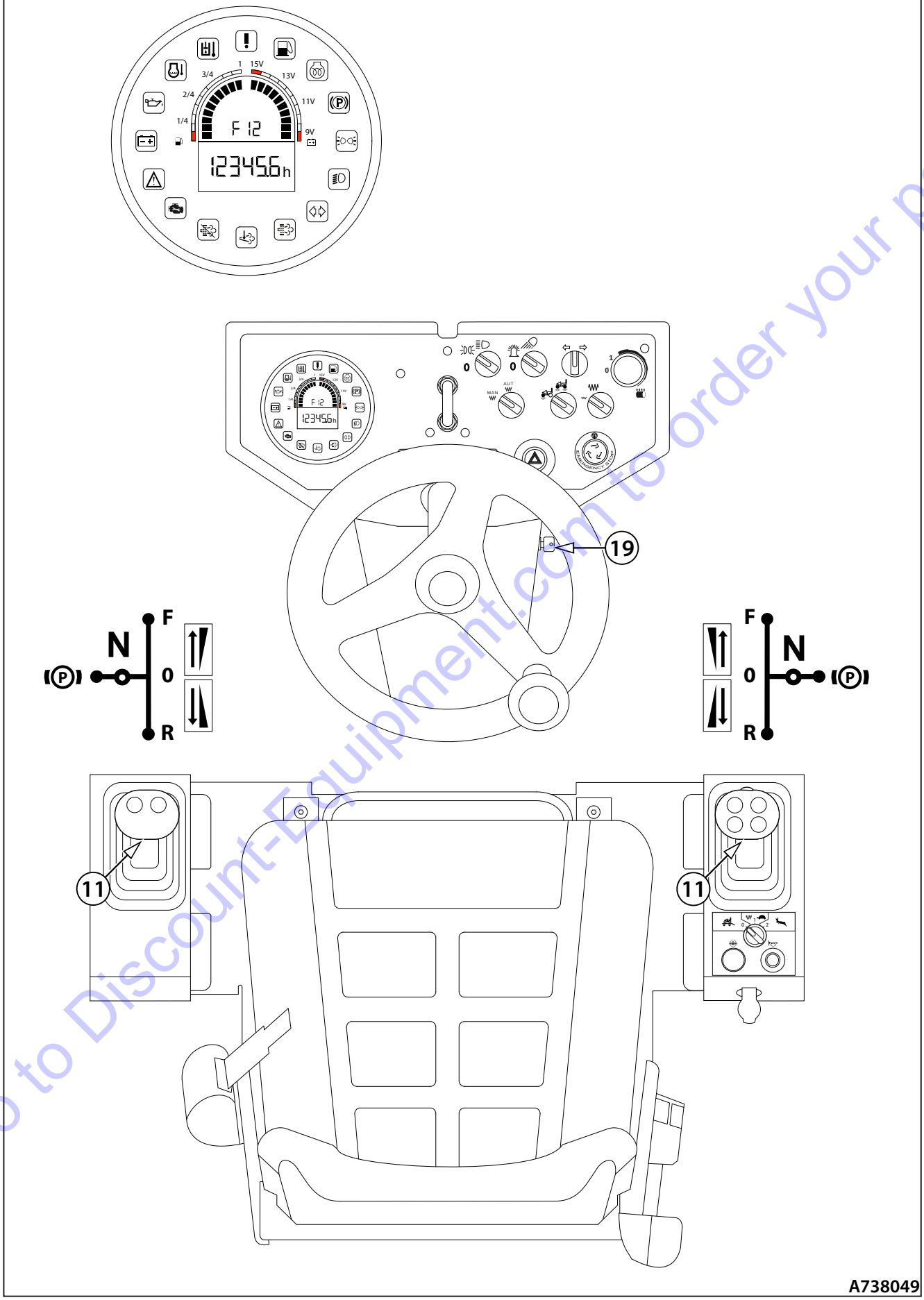
The indicator lamps for battery charging (22), engine lubrication (23), parking brake (29) and emergency stop (26) will light up on the display.

Turning off:

Turn the emergency brake button (6) in the direction of arrows.

The indicator lamps for battery charging (22), engine lubrication (23) and parking brake (29) will remain light up on the display.

Move the travel control (11) to the parking brake zero position (P) and then start the engine.



2.7.5 Machine parking

Shut down the machine on a flat and solid surface where there is no potential natural hazard (e.g. landslides, flooding).

Change the travel control (11) to the brake position (P).

Switch over the key in the ignition box (19) to the position "0", take out the key from the ignition box and close the lid.

Turn off the battery disconnector if it is installed in the machine.

Clean the machine from dirt.

Check the whole machine and repair defects that occurred during operation.

Lock the cover of the dashboard and the engine bonnet with a padlock.

Note

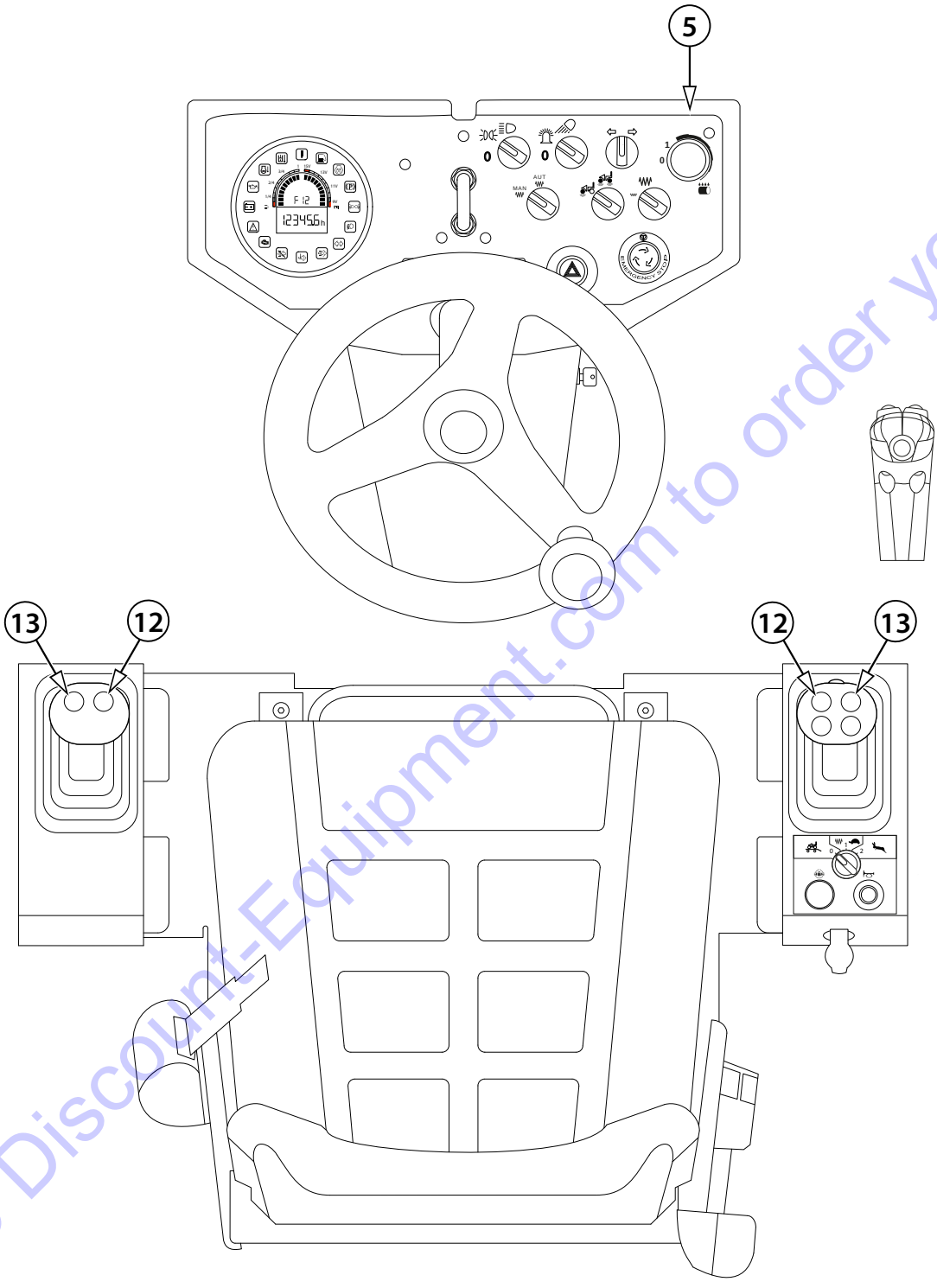
The padlock is not delivered in the machine equipment.

Protect the dashboard and the engine compartment from unauthorized access of others by locking the dashboard cover and the engine bonnet.

2.7.6 Panic response

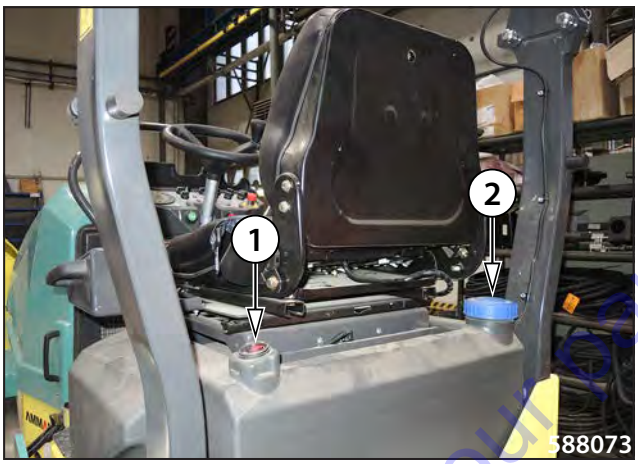
The immediate stop of the machine using the travel control (11) applies to all of the travel modes of the machine. When the travel control (11) is changed to the opposite position through (0) within 1 second, the machine will stop – the parking brake will be engaged and the engine will keep running, i.e. panic response. When the machine vibration is on, the vibration will stop also when the manual vibration mode is selected. The machine can start moving again after the travel control (11) is changed to the parking brake position (P) and the travel direction (F/R) is selected.

It is forbidden to use the panic response for common stopping the machine. Enable the panic response only in emergency when the machine must be stopped immediately.



A738050

2.7.7 Sprinkling



The water level in the tank is shown on the indicator (1).

Hole to fill the water tank (2).

Check the water level in the tank before putting the machine into operation.

Turn on the sprinkling with the sprinkling potentiometer (5).

Position 0 – sprinkling OFF

Position 1 – sprinkling ON

Turning from the position 1 to the right to turn on the interval sprinkling.

In the interval sprinkling mode you can continuously control the sprinkling break interval.

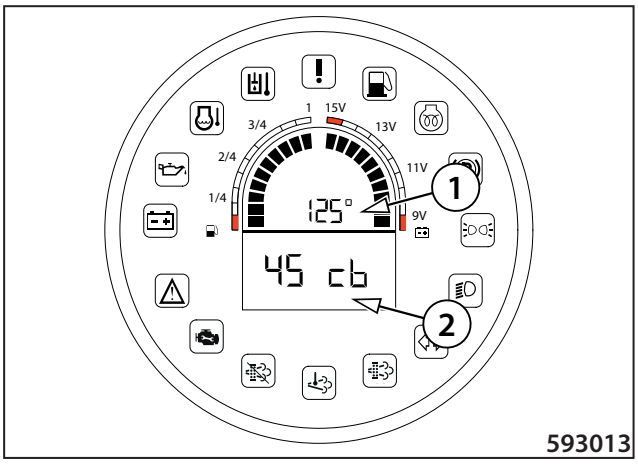
Using the sprinkling switch (13), it is possible to turn on the sprinkling at any time, e.g. before driving on a compacted bitumen surface.

- While the sprinkler switch (13) is held, sprinkling is on.
- When the sprinkling switch (13) is released, sprinkling switches off.

Note

At a combined machine, the sprinkling switch (13) is used for sprinkling the tyres and the sprinkling potentiometer (5) is used for sprinkling the drum.

2.7.8 ACE Force (optional equipment)



The ACE Force system measures current surface compaction at the front drum and shows the value of compaction in the unit of cb (MN/m) on the multifunctional display.

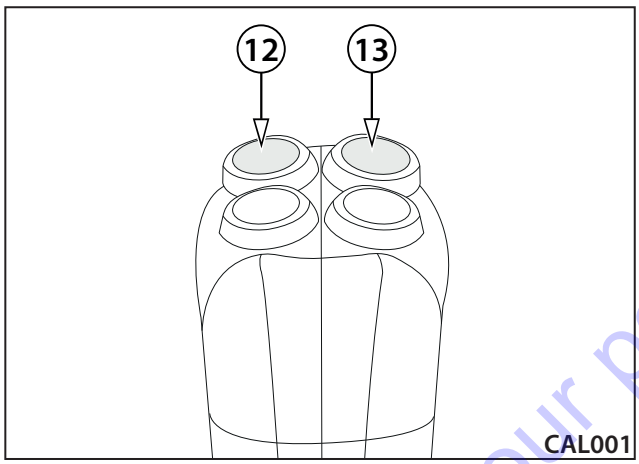
1 - surface temperature

2 - compaction value

ACE Force is switched on and off by pressing the vibration switch (12). Values are not saved or printed.

2.7.9 Infrathermometer (optional equipment)

It is activated by turning on the key in the switch box (19) and it displays the temperature of the bitumen surface being rolled. The measured temperature in °C is indicated on the display.



Control

In the following text, the "OK button" means the vibration switch (12). The "select button" means the sprinkling switch (13). These buttons only work on the right travel control.

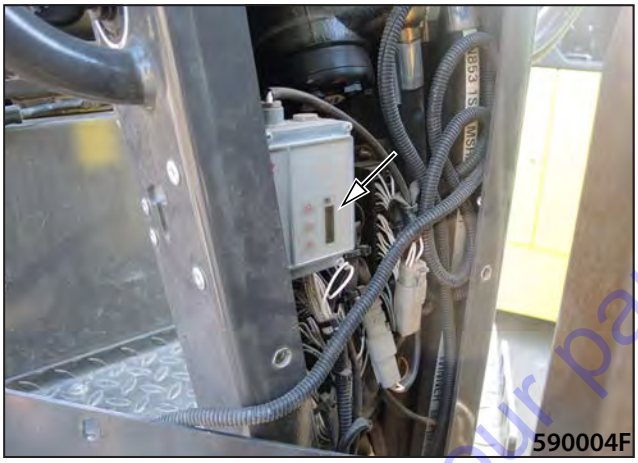
Procedure to set the units of measure °C or °F

After setting the required parameters on the display of the infra thermometer, the values are saved automatically.

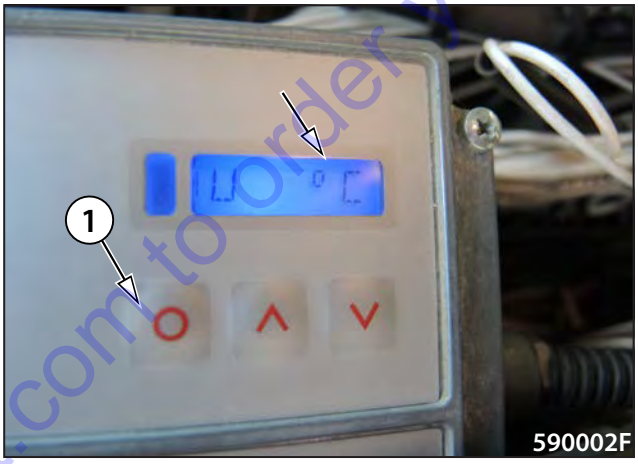
Remove the cover.

Turn the key in the ignition box to the "I" position.

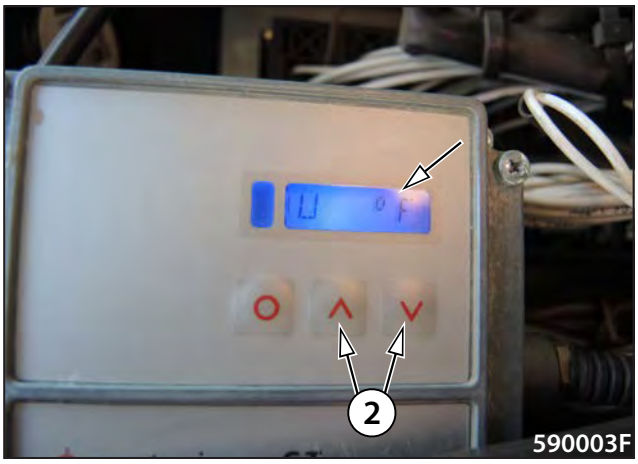
The infra thermometer display will light up.



Switch over with the MODE button (1) until °C appears on the display.

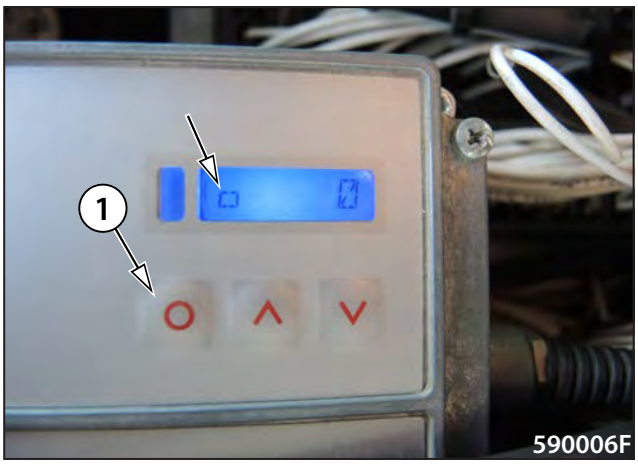


Switch over with the UP and DOWN arrows (2) until °F appears on the display.

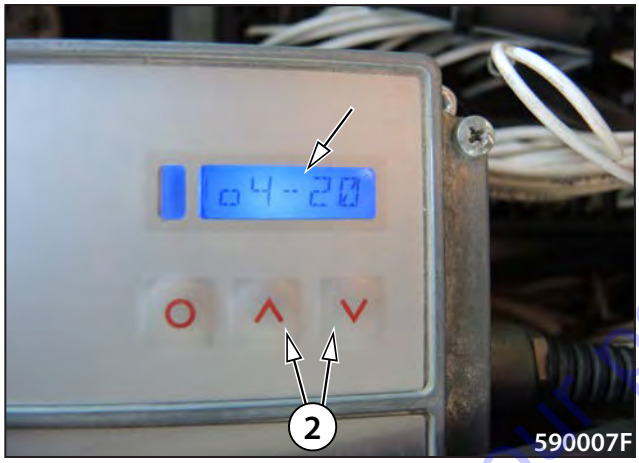


Set the current output of the infra thermometer.

- Switch over with the MODE button (1) until the “o” symbol appears on the display.

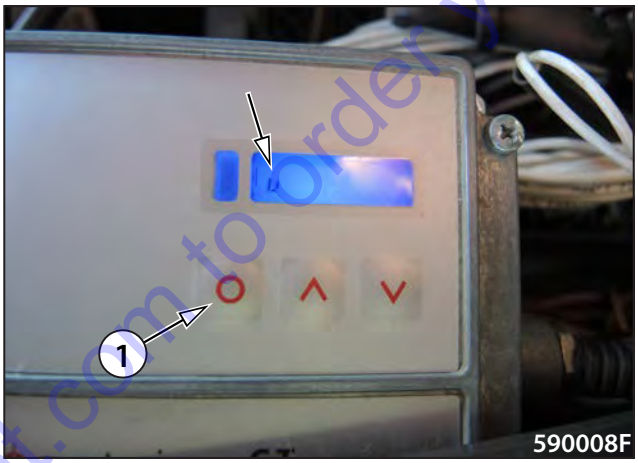


- Switch over with the UP and DOWN arrows (2) until 4–20 mA appears on the display.

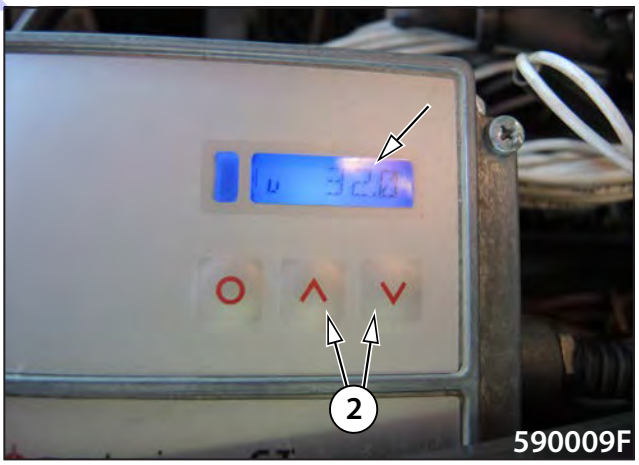


Set the minimum temperature.

- Switch over with the MODE button (1) until the “u” symbol appears on the display.

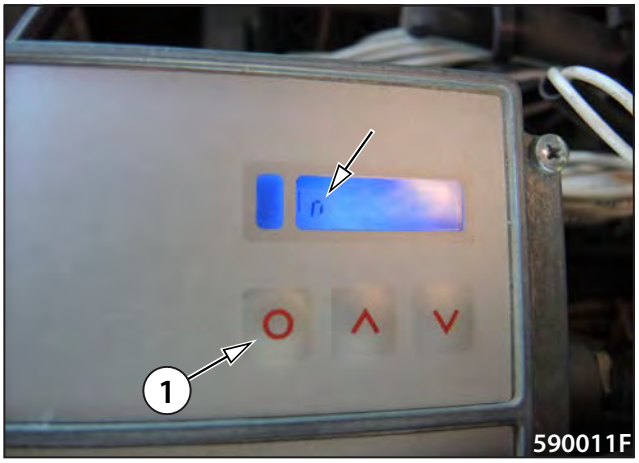


- Switch over with the UP and DOWN arrows (2) until the value of 32.0 °F appears on the display.

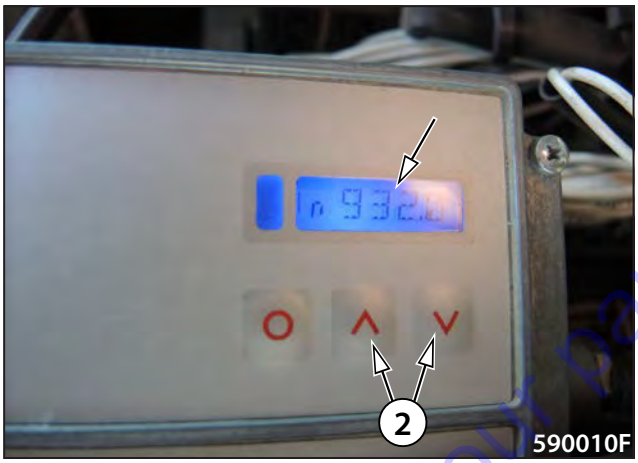


Set the maximum temperature.

- Switch over with the MODE button (1) until the “n” symbol appears on the display.



- Switch over with the UP and DOWN arrows (2) until the value of 932.0 °F appears on the display.



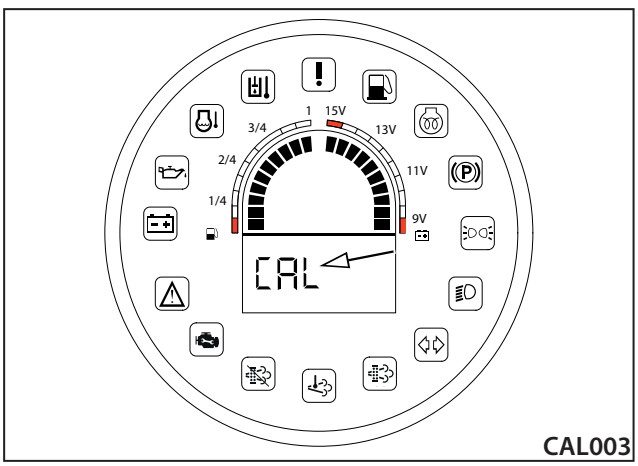
- Mount the cover.

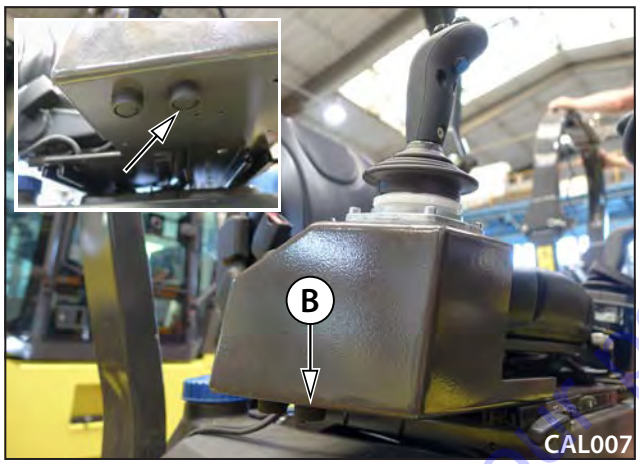
Turn the key in the ignition box to the "I" position.

Sit in the driver's seat (activation of the seat switch).

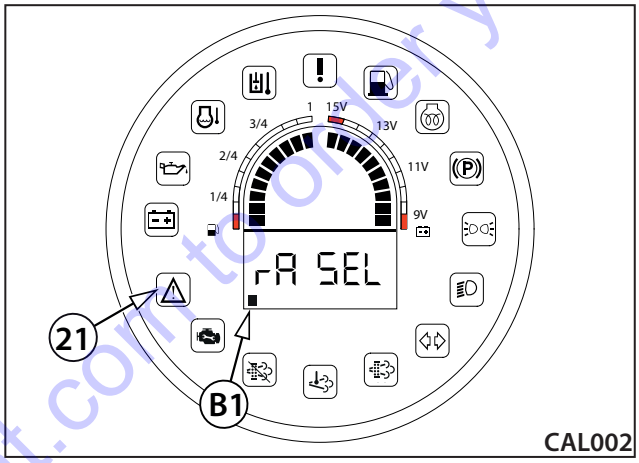
Set the travel control to the parking brake position "P".

Press the calibration button (B) for 5 seconds. While the button is held down, the display shows the "CAL" status.

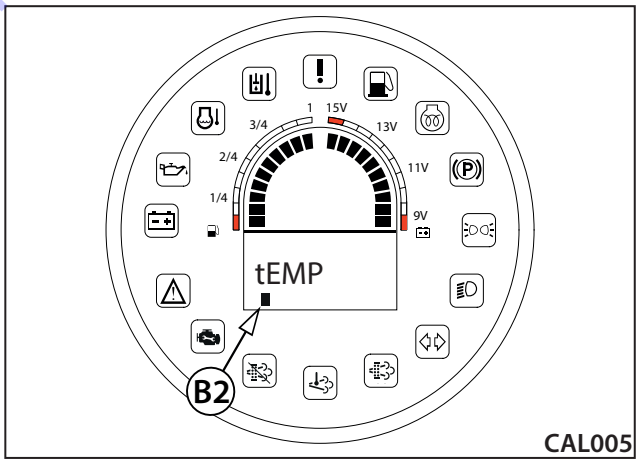




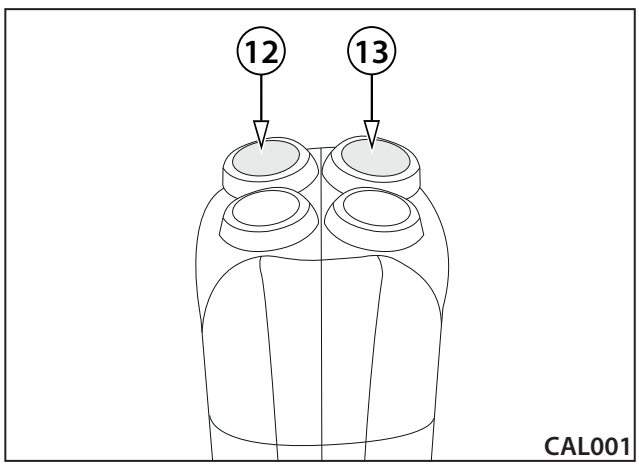
After 5 seconds, the display shows B1 and, at the same time, the error message indicator lamp (21) starts flashing.



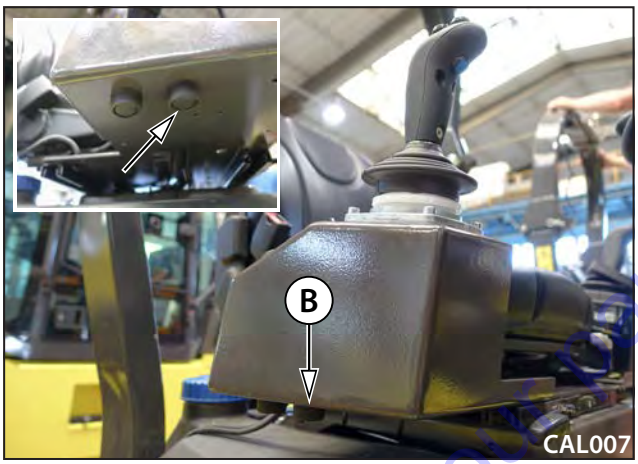
Using the Select button (13), scroll to the B2 tab (Fahrenheit/ Celsius temperature unit selection) and press OK (12) to confirm.



Use the Select button (13) to set the desired unit and press OK (12) to confirm.



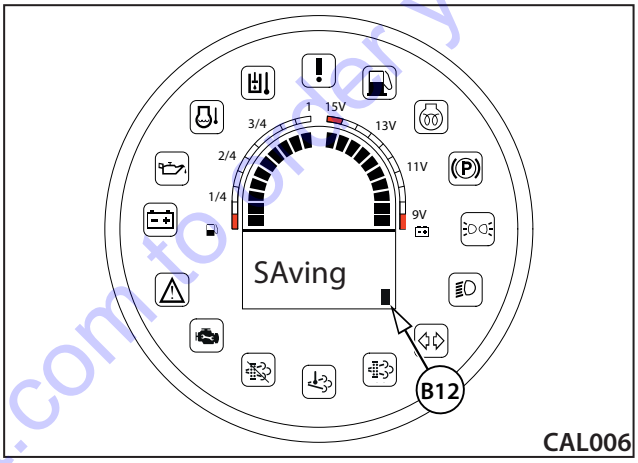
Use the Select button (13) to scroll to the B12 tab and press the calibration button (B) for 5 seconds.



While the button is held down, the display shows the "Saving" status.

If the parameters are OK, they are saved and the display shows the "Saved" status.

If the set parameters are not OK, the display shows the "Error" status. The set parameters are not saved and the whole process must be repeated.



To complete the setting, switch off ignition by turning the key in the ignition box to the "0" position.

To exit the calibration mode without saving, switch off ignition or press the calibration button for 5 seconds when the tab is not set to B12.

Start the engine. The display will show the measured value in degrees Fahrenheit or Celsius.

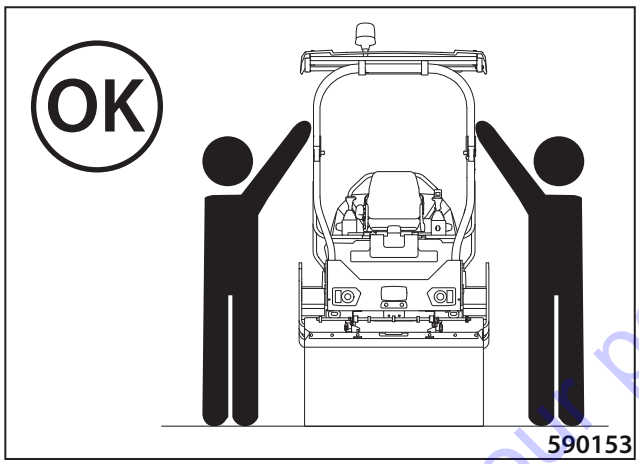
2.7.10 ROPS lifting and lowering

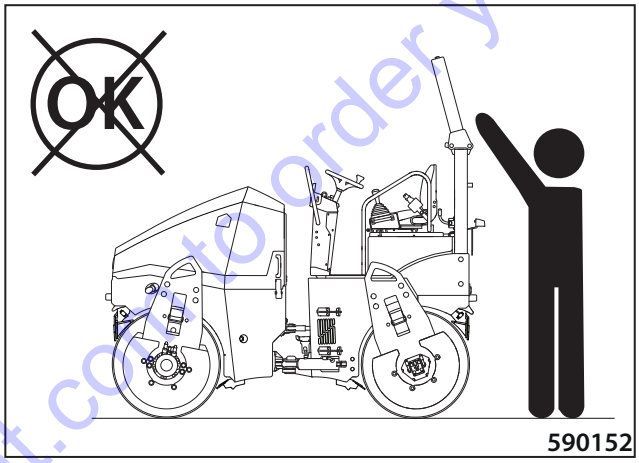
Lower or raise the ROPS frame always with the help of another person.

It is forbidden to lower or raise the ROPS frame without the help of another person.

Use the lowered frame only for transporting the machine. Do not operate the machine when the ROPS frame is lowered.

Handle the ROPS frame always from the left and right side of the machine. There must be no persons under the ROPS frame while the frame is being lowered and raised. There is a risk of injury due to the falling ROPS frame.



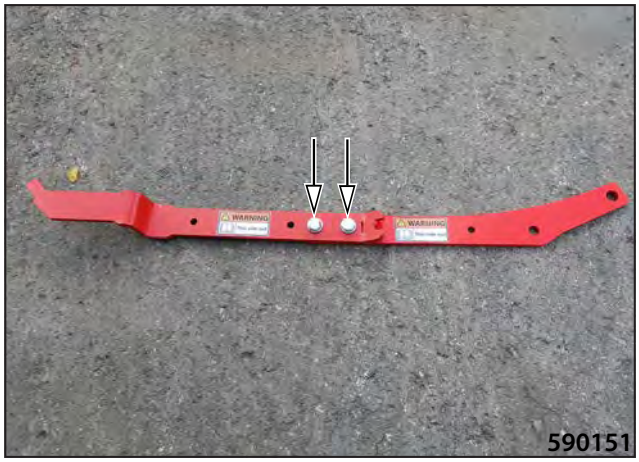


ROPS frame fixture

There is a dismantled ROPS frame fixture attached under the engine bonnet on the left side.

Install the ROPS frame fixture before its use according to Fig. 590151.

The ROPS frame fixture assists the operator when lowering and raising the ROPS frame.



Lowering procedure of the ROPS frame

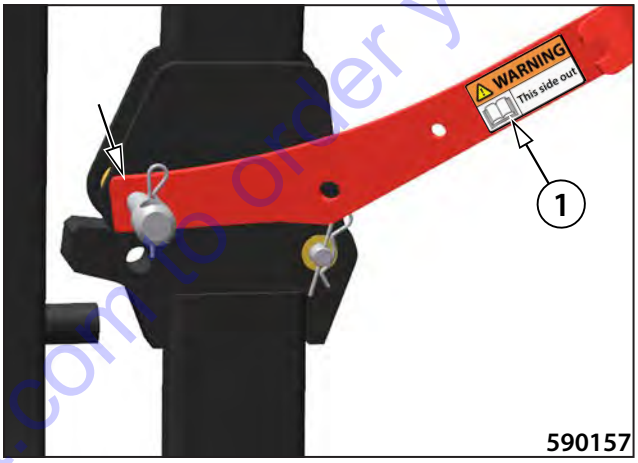
Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

Put the fixture on the outside of the frame and install the front pins of the ROPS frame from the outside of the ROPS frame.

Put the fixture on the frame so that the warning label (1) on the fixture points out of the machine.

Secure the front pins with the cotter pins from the outside of the ROPS frame.

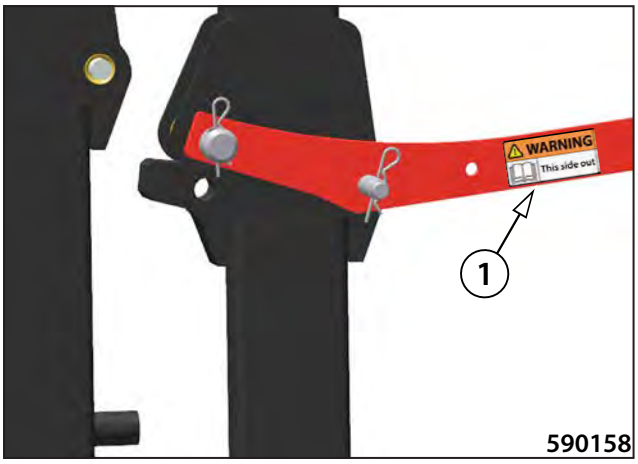


Remove the cotter pins of the rear pins of the ROPS frame.

Loosen the rear pins by ca. 1–2 turns.

Put on the fixture.

Secure the rear pins with the cotter pins from the outside of the ROPS frame.



Note:

Insert the cotter pins of the rear pins into the hole further away from the pin shoulder.

Using the ROPS frame fixture lower the frame completely.

Take extra care when lowering the ROPS frame. There is a risk of injury due to the falling ROPS frame.

Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

Rotate the ROPS frame fixture.

Install the front pins and secure them with the cotter pins.

Remove the cotter pins of the rear pins of the ROPS frame.

Take out the ROPS frame fixture.

Tighten the rear pins and secure them with the cotter pins.

Note:

Insert the cotter pins of the rear pins into the hole closer to the pin shoulder.

Raising procedure of the ROPS frame

Remove the cotter pins of the rear pins of the ROPS frame.

Loosen the rear pins by ca. 1–2 turns.

Put the fixture on the outside of the frame.

Put the fixture on the frame so that the warning label (1) on the fixture points out of the machine.

Secure the rear pins with the cotter pins from the outside of the ROPS frame.

Note:

Insert the cotter pins of the rear pins into the hole further away from the pin shoulder.

Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

Put on the fixture and install the front pins of the ROPS frame from the outside of the ROPS frame.

Secure the front pins with the cotter pins from the outside of the ROPS frame.

Using the ROPS frame fixture raise the frame completely.

Take extra care when raising the ROPS frame. There is a risk of injury due to the falling ROPS frame.

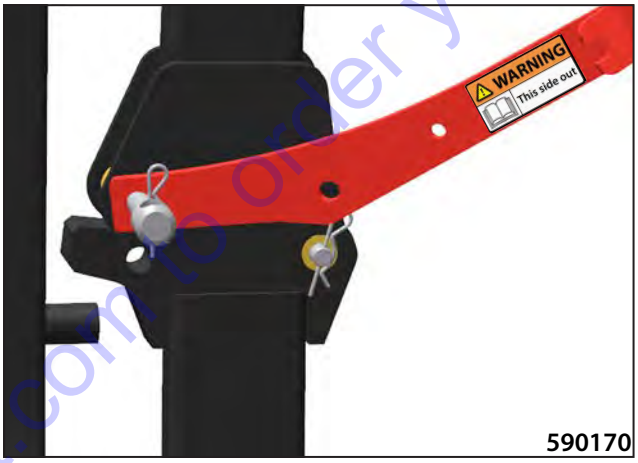
Remove the cotter pins of the rear pins of the ROPS frame.

Rotate the ROPS frame fixture.

Tighten the rear pins and secure them with the cotter pins.

Note:

Insert the cotter pins of the rear pins into the hole closer to the pin shoulder.

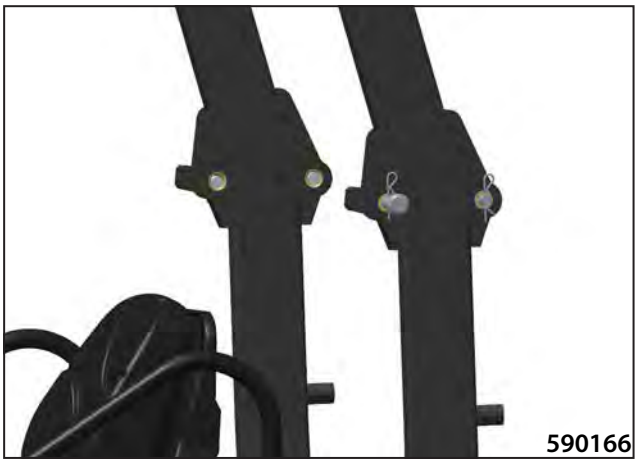


Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

Take out the ROPS frame fixture.

Attach the front pins from the inside of the ROPS frame and secure them with the cotter pins.



There is a risk of injury due to the falling ROPS frame when it is being lowered and raised. During machine operation, both sides of the frame must be reliably secured with pins and cotter pins.

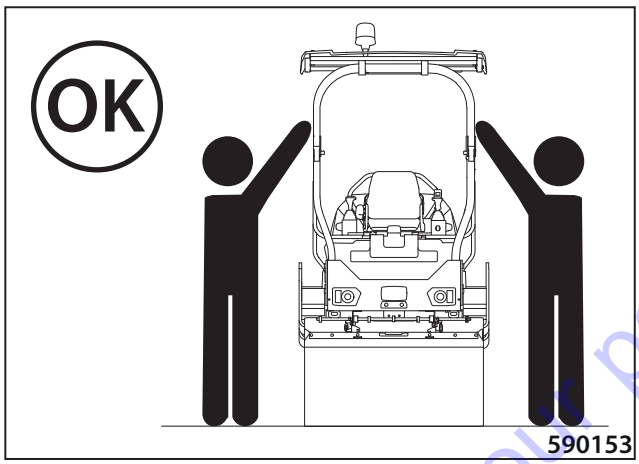
2.7.10.1 Lowering and lifting of the ROPS frame with a plastic canopy

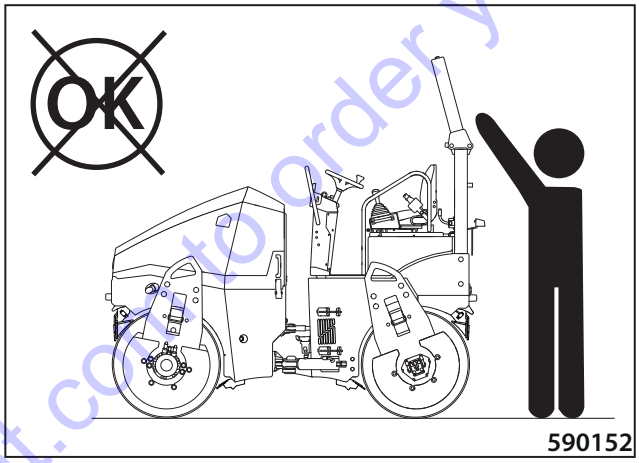
Lower or raise the ROPS frame always with the help of another person.

It is forbidden to lower or raise the ROPS frame without the help of another person.

Use the lowered frame only for transporting the machine. Do not operate the machine when the ROPS frame is lowered.

Handle the ROPS frame always from the left and right side of the machine. There must be no persons under the ROPS frame while the frame is being lowered and raised. There is a risk of injury due to the falling ROPS frame.



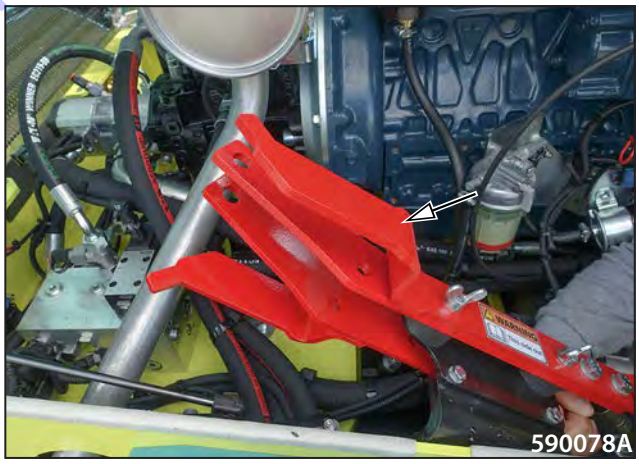


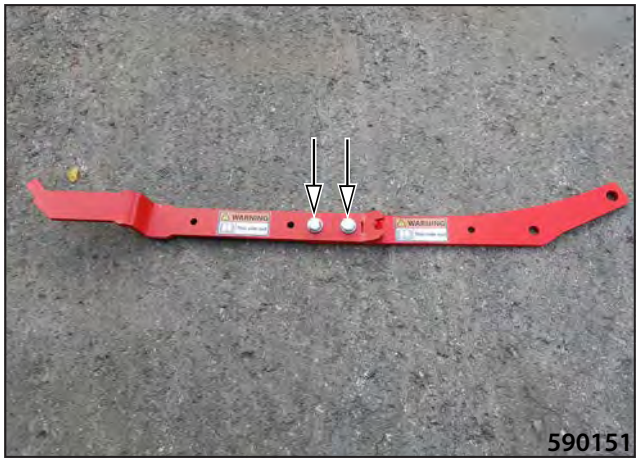
ROPS frame fixtures

There are dismantled ROPS frame fixtures attached under the engine bonnet on the left side.

Install the ROPS frame fixtures before their use according to Fig. 590151.

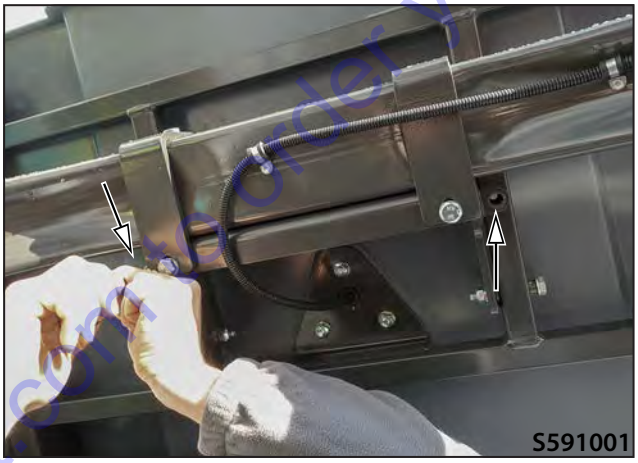
The ROPS frame fixtures assist the operator when lowering and raising the ROPS frame.



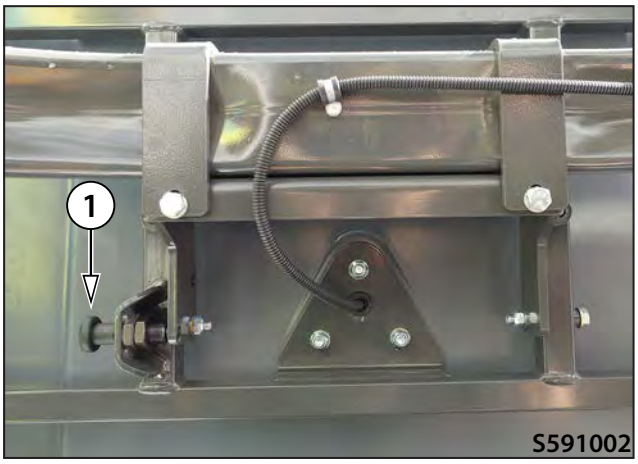


Lowering procedure

Remove the screws (2x) at the bottom of the plastic canopy.



Release the canopy by pulling out the lever (1) slightly and lower the canopy.



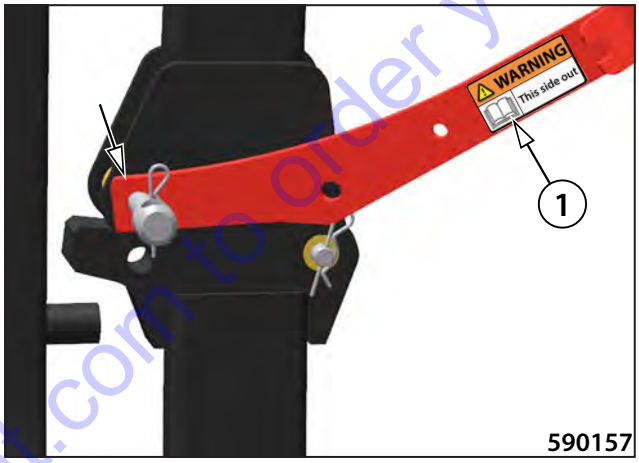
Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

Put the fixtures on the outside of the frame and install the front pins of the ROPS frame.

Place the fixtures on the frame so that the warning label (1) on the fixture points out of the machine.

Secure the front pins with the cotter pins from the outside of the ROPS frame.



Remove the cotter pins of the rear pins of the ROPS frame.

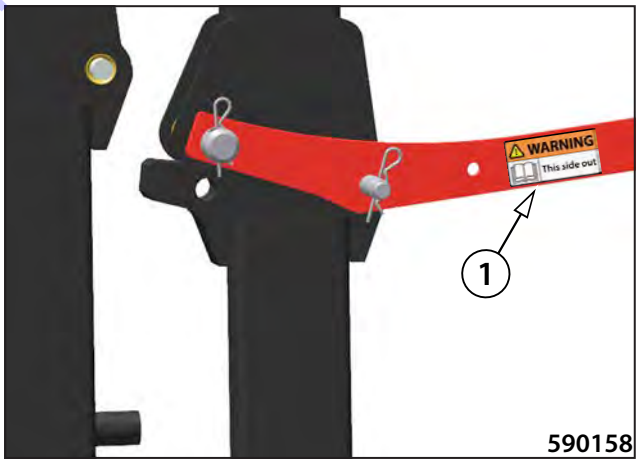
Loosen the rear pins by ca. 1–2 turns.

Put on the fixtures.

Secure the rear pins with the cotter pins from the outside of the ROPS frame.

Note:

Insert the cotter pins of the rear pins into the hole further away from the pin shoulder.



Using the ROPS frame fixtures lower the frame completely.

Take extra care when lowering the ROPS frame. There is a risk of injury due to the falling ROPS frame.

Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

Rotate the ROPS frame fixture.

Install the front pins and secure them with the cotter pins.

Remove the cotter pins of the rear pins of the ROPS frame.

Take out the ROPS frame fixtures.

Tighten the rear pins and secure them with the cotter pins.

Note:

Insert the cotter pins of the rear pins into the hole closer to the pin shoulder.

ROPS lifting

Remove the cotter pins of the rear pins of the ROPS frame.

Loosen the rear pins by ca. 1–2 turns.

Put the fixtures on the outside of the frame.

Place the fixtures on the frame so that the warning label (1) on the fixture points out of the machine.

Secure the rear pins with the cotter pins from the outside of the ROPS frame.

Note:

Insert the cotter pins of the rear pins into the hole further away from the pin shoulder.

Remove the cotter pins on the front pins of the ROPS frame.

Put on the fixtures.

Secure the front pins with the cotter pins from the outside of the ROPS frame.

Using the ROPS frame fixtures raise the frame completely.

Take extra care when raising the ROPS frame. There is a risk of injury due to the falling ROPS frame.

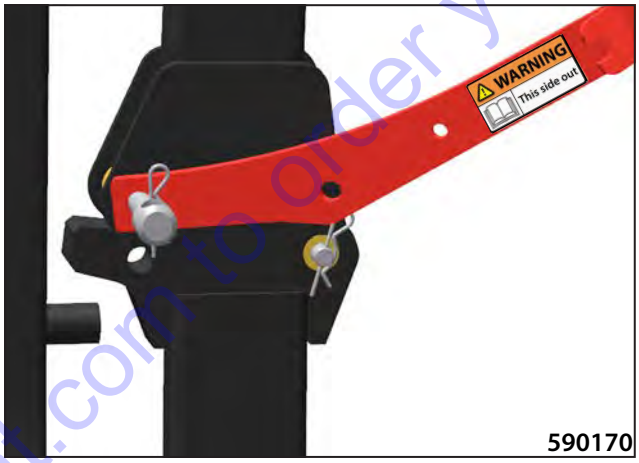
Remove the cotter pins of the rear pins of the ROPS frame.

Rotate the ROPS frame fixture.

Tighten the rear pins and secure them with the cotter pins.

Note:

Insert the cotter pins of the rear pins into the hole closer to the pin shoulder.

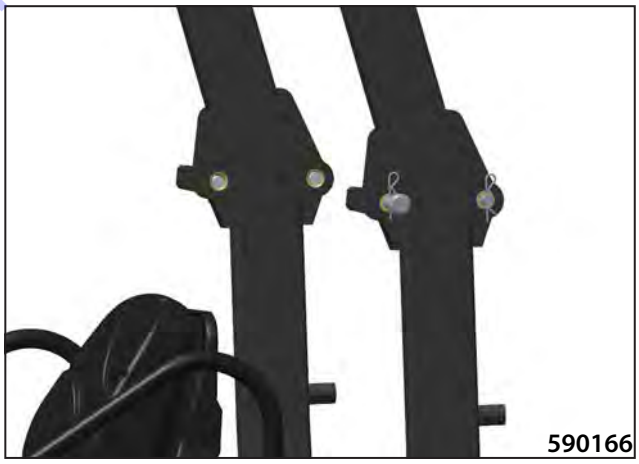


Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

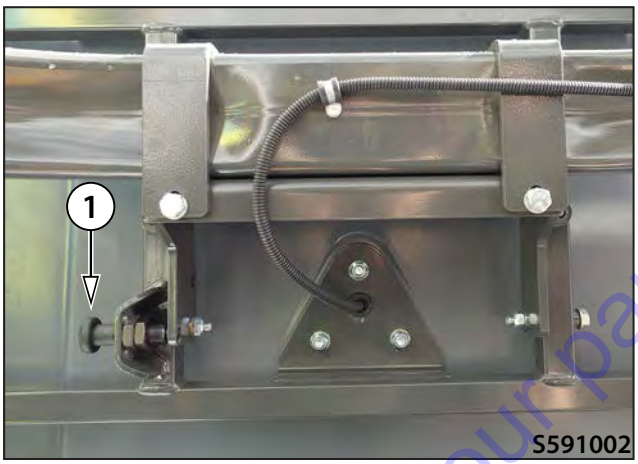
Take out the ROPS frame fixtures.

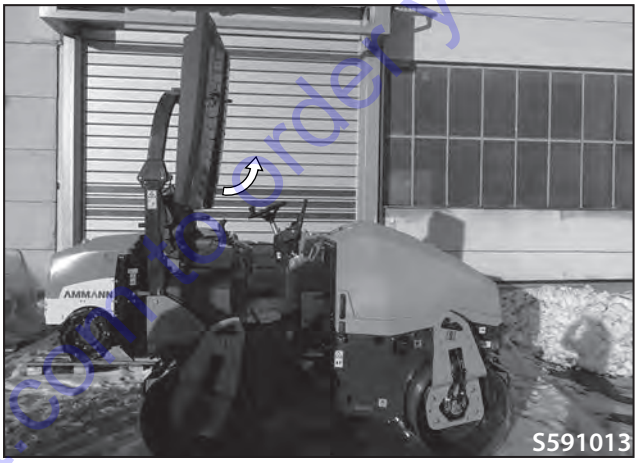
Attach the front pins from the inside of the ROPS frame and secure them with the cotter pins.



There is a risk of injury due to the falling ROPS frame when it is being lowered and raised. During machine operation, both sides of the frame must be reliably secured with pins and cotter pins.

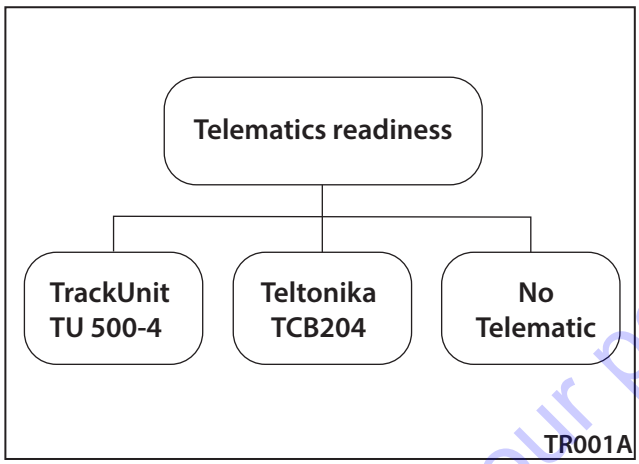
Release the canopy by pulling out the lever (1) slightly and raise the canopy.





Mount the screws (2x) at the bottom of the plastic canopy.

2.7.11 Telematics readiness



Global positioning system with telemetry that monitors operating systems of the machine (machine start, engine speed, fuel consumption, number of engine hours, etc.) and its current position.

The GPS system allows the geofencing function (machine operation limited to a defined area) and remote machine monitoring, which helps finding a stolen machine.

Note

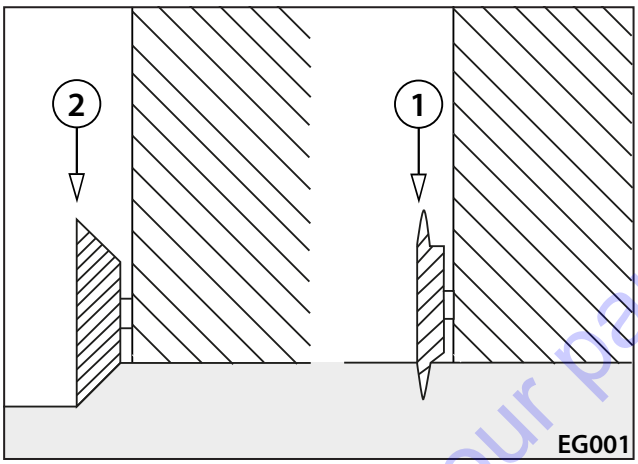
The availability and content of the given data depends on the selected manufacturer of the telematics system.

Turn off the battery disconnector before installation or maintenance.

Installation shall only be carried out by trained personnel according to the wiring diagram.

In case of a failure, contact your dealer or Ammann Technical Support.

2.7.12 Edge cutter (optional equipment)



The edge cutter set contains a cutting and compaction disc.

The cutting disc (1) is used to cut the road at the desired location and align the road edges.

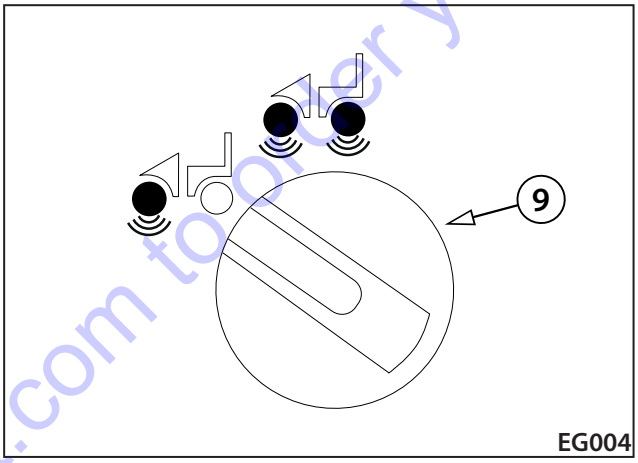
The compaction disc (2) is used to finish the compaction of road edges.

Note

If one of the discs is not in use, attach it to the holder provided.

Edge cutter pre-adjustment

Before working with the edge cutter, set the vibrating drum selector (9) to the left (front drum).



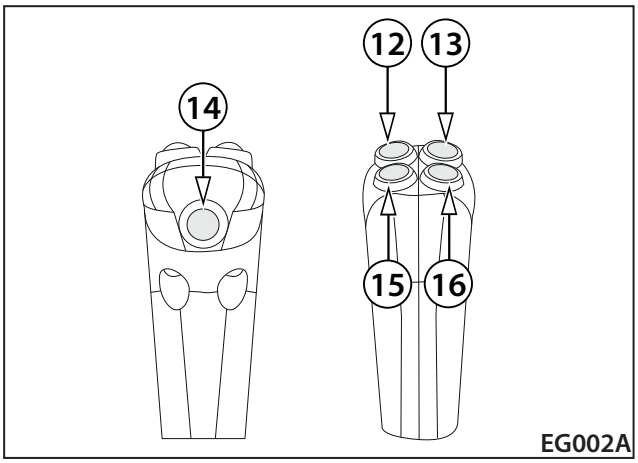
Note

The edge cutter only works flawlessly with a pre-adjusted edge cutter.

Control procedure

Set the desired height of the edge cutter using its up (15) and down (16) button.

Make sure nobody is endangered when the edge cutter is started.



Turn on drum sprinkling using the sprinkling button (13).

Turn on edge cutter sprinkling using the edge cutter sprinkling button (14).

Note

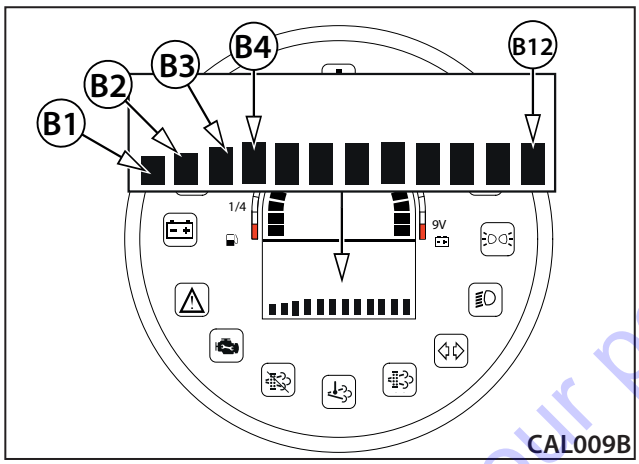
The water inlet of edge cutter sprinkling only works when continuous drum sprinkling is on.

Turn on vibration with the vibration switch (12).

Note

After turning on vibration, the edge cutter automatically rises and is inoperative.

2.7.13 Calibration mode



Tabs

B1 Ramp selection (rA SEL)

- selection of the Hard value
- selection of the Medium value
- selection of the Soft value
- return one level

B2 Fahrenheit/Celsius temperature unit selection (tEMP)

- selection of the Fahrenheit value
- selection of the Celsius value
- return one level

B3 Left lever selection (LEFtLu)

- selection of active lever
- selection of inactive lever
- return one level

B4 Telematics option (tELSEL)

- no telematics unit connected (nO tcu)
- unit without CAN bus data connected (nO cAn)
- unit with CAN bus data connected (cAn)
- return one level back (BAC)

B12 Save and exit (SAvE)

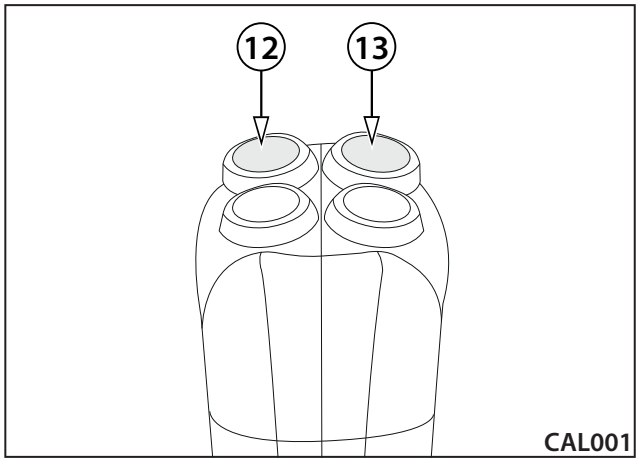
- Values saved
- Error saving values

Control

In the following text, the "OK button" means the vibration switch (12). The "select button" means the sprinkling switch (13). These buttons only work on the right travel control.

Press the select button (13) to scroll through tabs B1 to B12 and parameters of the given folders.

Use the OK button (12) to confirm your selection.



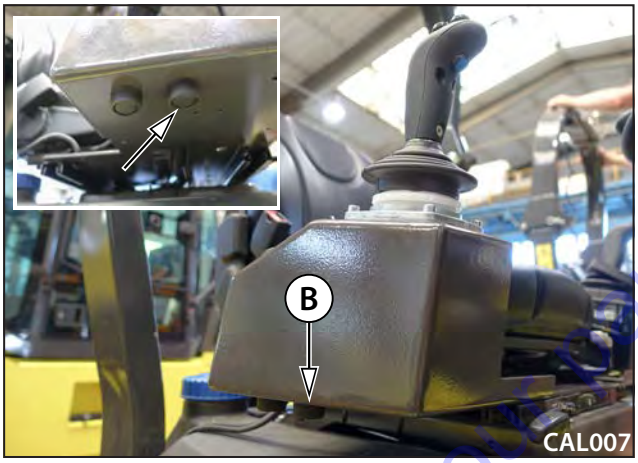
Calibration procedure:

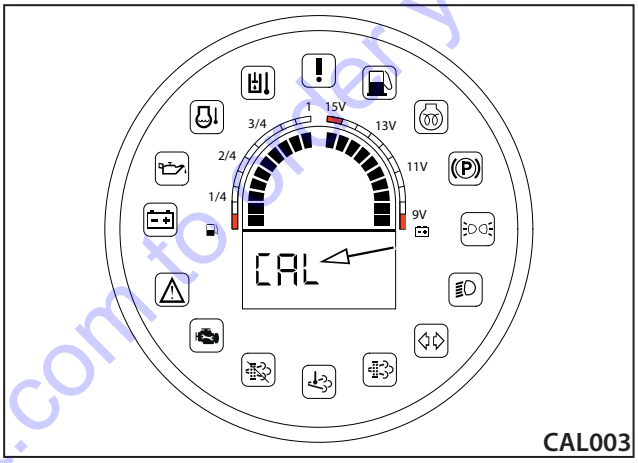
Sit down on the seat.

Set the travel control to the parking brake position (P). When the machine is equipped with two travel controls, set both travel controls to the parking brake position (P).

Turn the key in the ignition box to the "I" position.

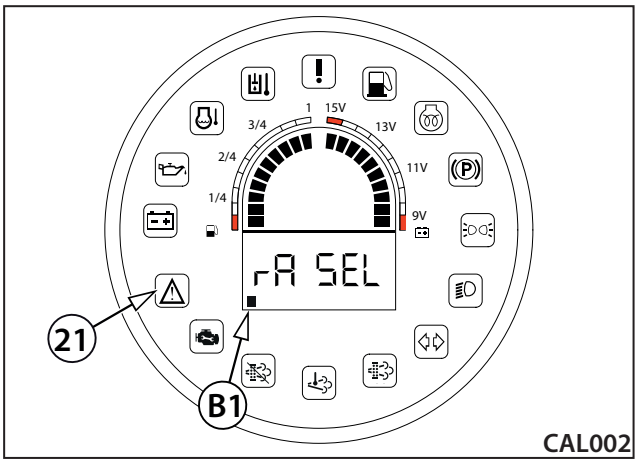
Press the calibration button (B) for 5 seconds. While the button is held down, the display shows the "CAL" status.

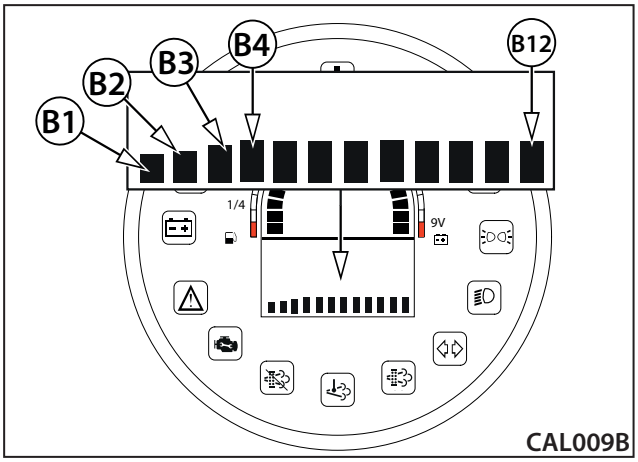




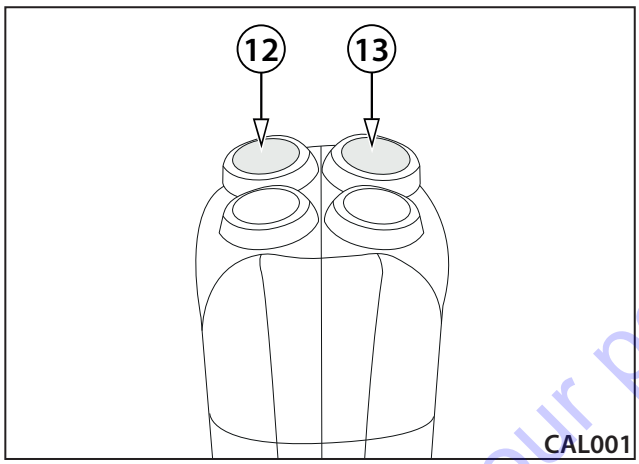
After 5 seconds, the display shows B1 and, at the same time, the error message indicator lamp (21) starts flashing. The error message indicator lamp (21) flashes for the duration of the calibration.

Use the select button (13) to select the tab and press OK (12) to confirm. The display will show the current state of the set parameter (e.g. SOFT when choosing the ramp – B1).

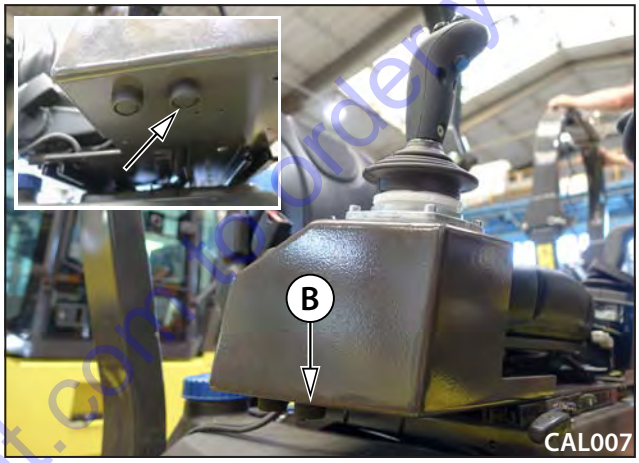




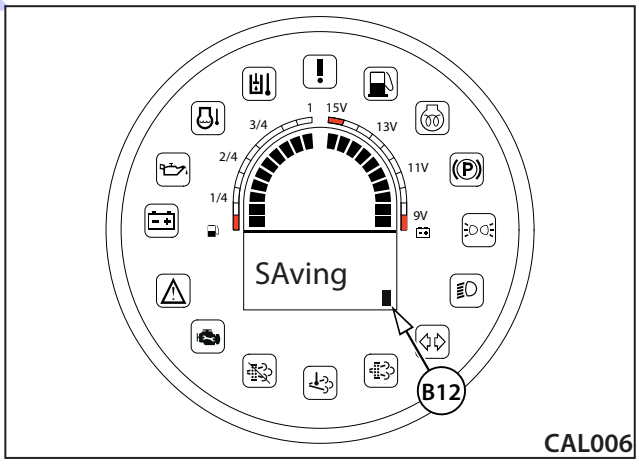
Select the parameter and press OK to confirm (12).



After all required parameters are set, set the B12 tab and press the calibration button (B) for 5 seconds.



While the button is held down, the display shows the "Saving" status.

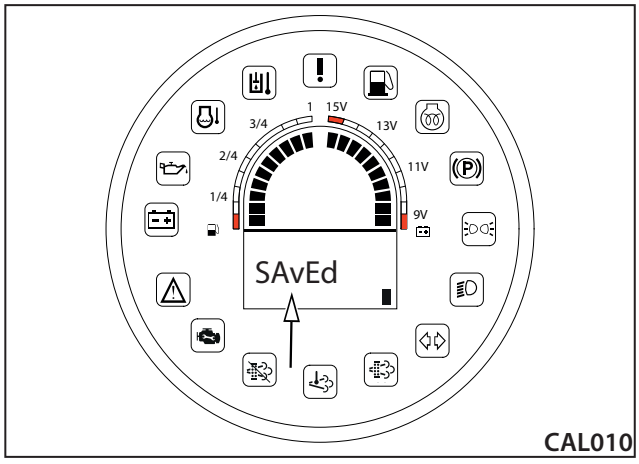


If the parameters are OK, the data saved and the display shows the "Saved" status.

If the set parameters are not OK, the display shows the "Err" status. The set parameters are not saved and the whole calibration must be repeated.

To complete the calibration, switch off ignition by turning the key in the ignition box to the "0" position.

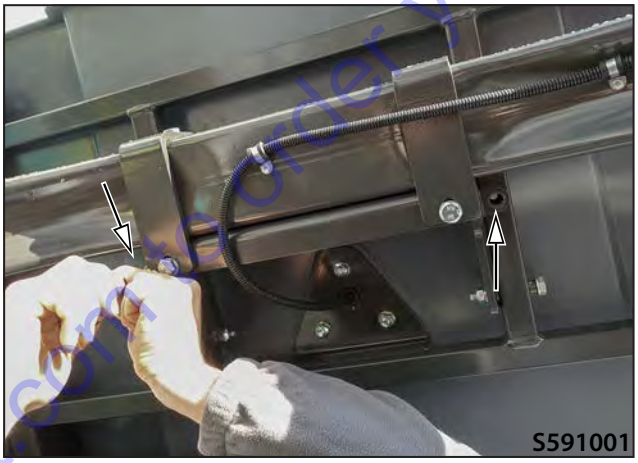
To exit the calibration mode without saving, switch off ignition or press the calibration button for 5 seconds when the tab is not set to B12.



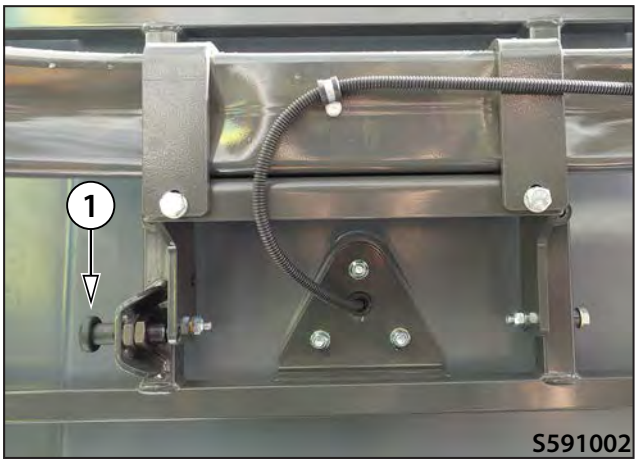
2.7.14 Lowering and raising of the plastic canopy

Lowering procedure

Remove the screws (2x) at the bottom of the plastic canopy.

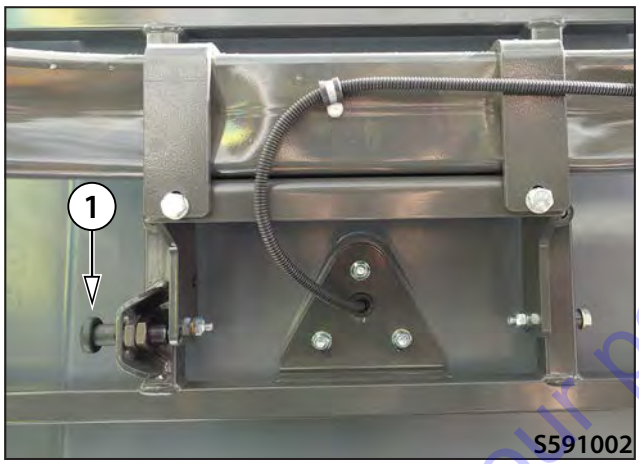


Release the canopy by pulling out the lever (1) slightly and lower the canopy.



Raising procedure

Release the canopy by pulling out the lever (1) slightly and raise the canopy.



Mount the screws (2x) at the bottom of the plastic canopy.

- The machine can move on its own within the work site.

When driving, observe the safety measures applicable to the working site.

- The machine should be transported on a vehicle on public roads.

When transporting the machine on a vehicle, observe regulations applicable to the given territory.

Use the loading mode to load the machine. Switch over the travel mode selector (4) to position "0".

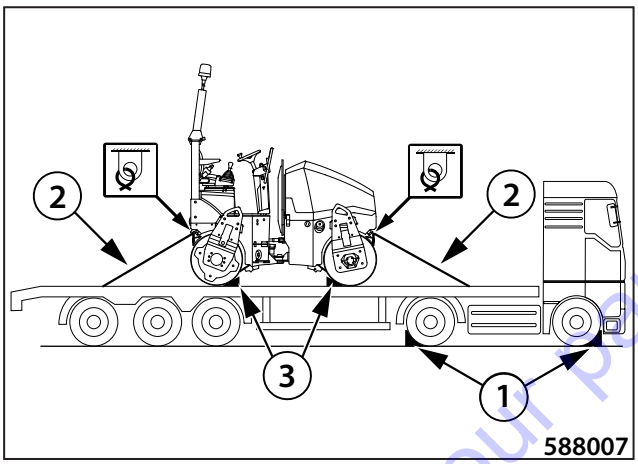
When loading and unloading, the vehicle transporting the machine must be braked and mechanically protected against accidental movement using wedges (1).

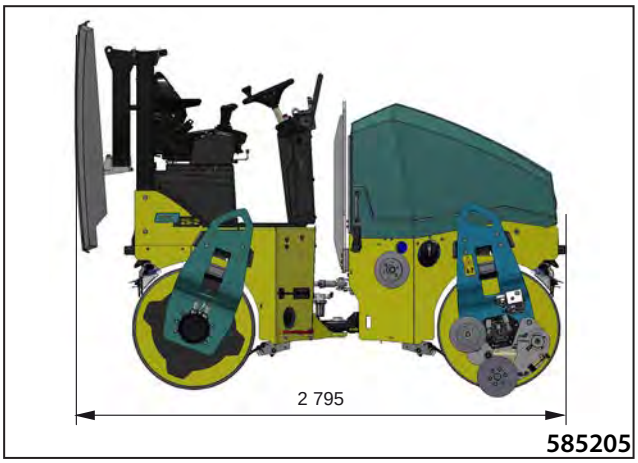
The articulation joint of the machine must be secured with a strut against tilting on the vehicle.

The machine on the vehicle must be properly anchored and mechanically secured with the slings (2) in tie-down holes against longitudinal and lateral displacement as well as against overturning. The machine drums must be secured against accidental movement using wedges (3).

If the machine is equipped with folding scrapers, the scrapers must be folded, see Chapter 3.6.9 Scraper adjustment.

Take extra care when loading a machine with a plastic canopy.





2.8 Machine transport

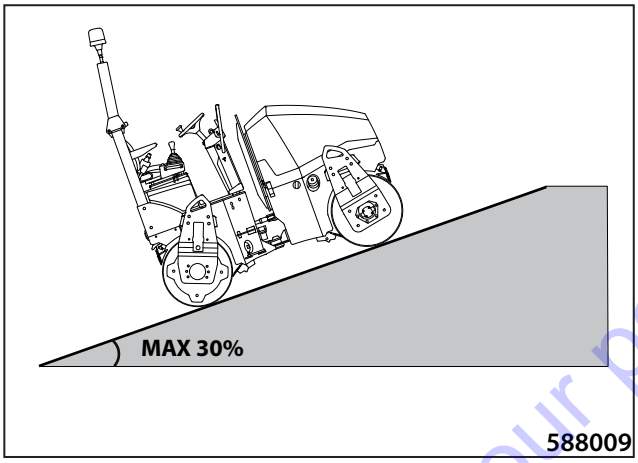
2.8.1 Loading the machine

Use a loading ramp or a crane to load the machine onto a mean of transport.

2.8.1.1 Loading the machine using a ramp

When loading the machine using a ramp, all safety regulations related to loading of the machine valid in the place of loading must be adhered to. The ramp must have an appropriate loading capacity, anti-slip surface and must be put on a flat surface. We recommend that you adhere to the BGR 233 regulation.

The maximum allowable inclination of the access ramp is 30%.



Use the loading mode to load the machine. Switch over the travel mode selector (4) to position "0".

When loading the machine, another person must be present to give hand signals to the machine operator for driving on the ramp. See the list of hand signals in chapter 2.1.6.

Pay increased attention when loading the machine. Improper handling can cause serious injury or death.

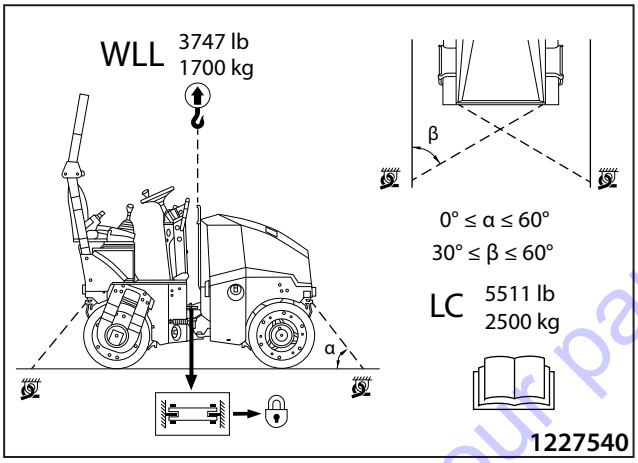
Non-adherence to the prescribed parameters of the access ramp may result in damage to the machine.

2.8.1.2 Loading the machine using a crane

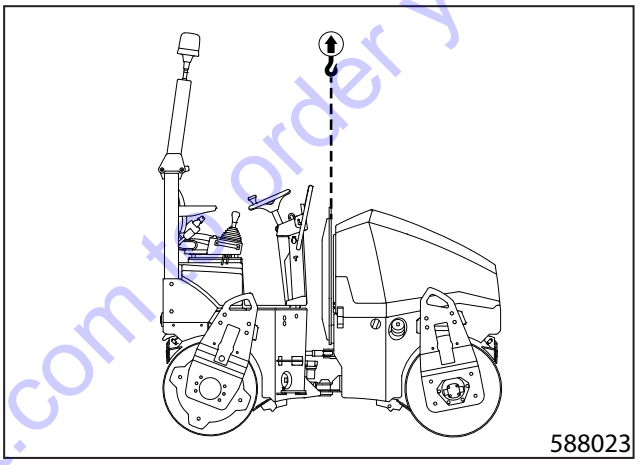
For loading with a crane, the machine is provided with a 1-point or 4-point suspension.

Use a crane with a sufficient load capacity.

Observe relevant national safety measures while loading the machine using a crane.



Before lifting, the articulation joint of the machine must be secured with the strut 1 against tilting and secured with the pin 2 and the lock 3.



Observe safety regulations while loading and unloading!

Use a crane with a sufficient load capacity!

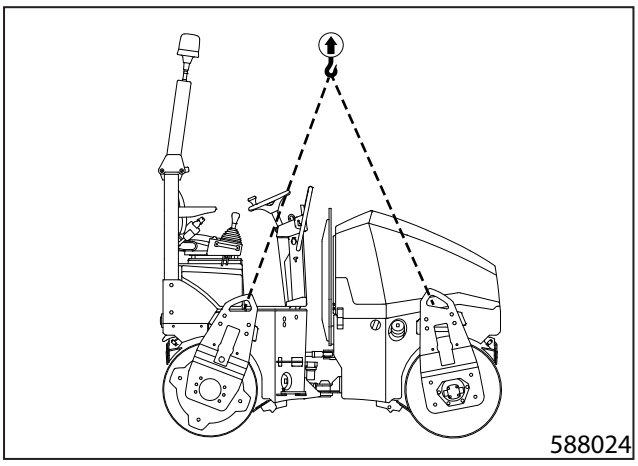
Use corresponding and unbroken hoisting slings with a sufficient load capacity!

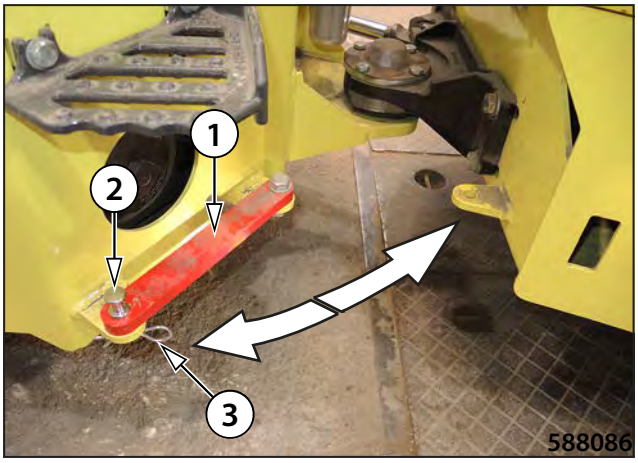
The machine must be tied to the 4-point or 1-point suspension!

The maximum permissible working load for the one-point suspension is 2.7 tons.

Only a trained person (slinger) may carry out the tying of the machine!

Do not enter under the lifted load!

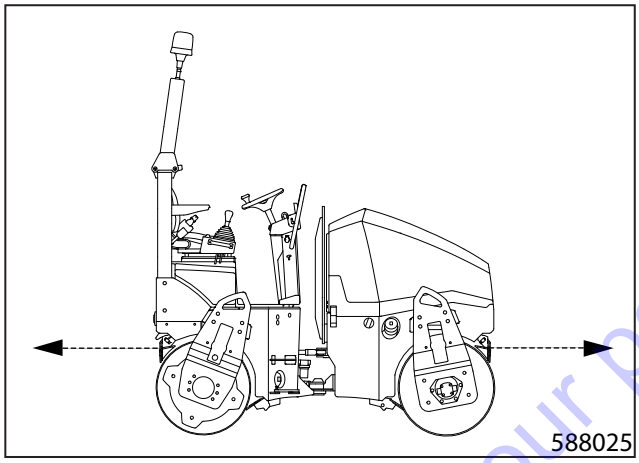




2.9 Special conditions to use the machine

2.9.1 Towing the machine

The machine is provided with two towing lugs on the front frame and with two towing lugs on the rear frame.



Releasing the machine brake

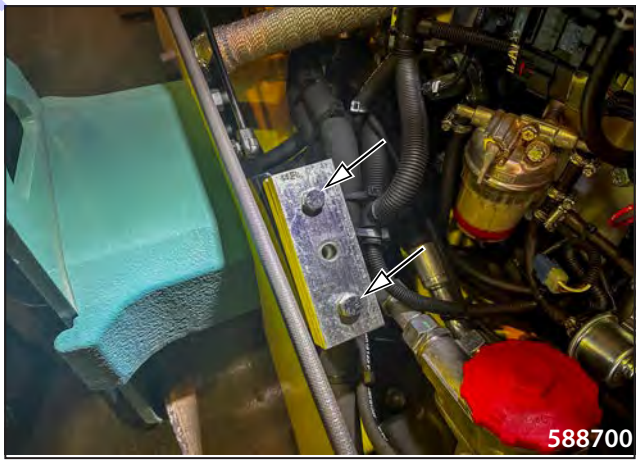
Secure the articulation joint of the machine against tilting.

Remove the brake discs.

Note

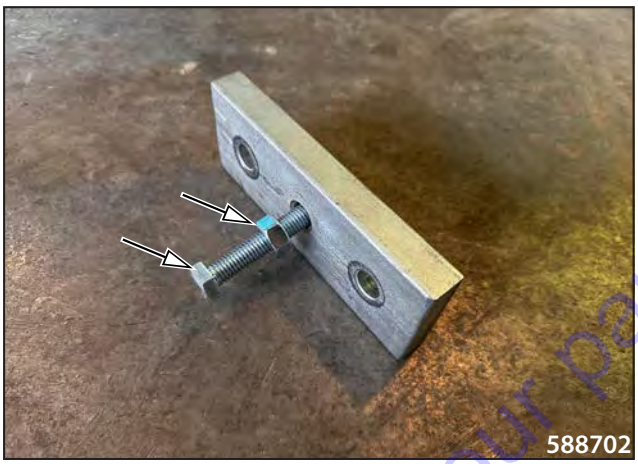
Brake pad dimensions 20x160x60

Screw M12X85



Dismount protective lids on the front and rear travel hydraulic motor.

Insert the screw and nut into the brake pad.



Mount a brake disc on the front drum travel hydraulic motor.

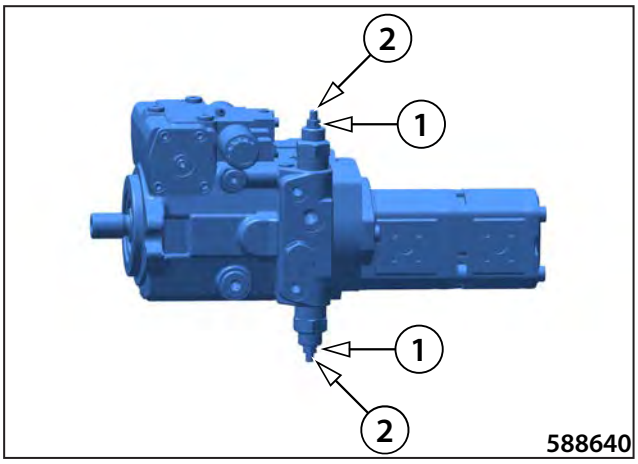
Tighten the screw to the stop (approx. by half a turn).

On the travel pump, loosen the lock nut (1) of the hydraulic valve and fully tighten the valve adjusting screw (2).

Note

Repeat the same procedure for the hydraulic motor of the rear drum travel.

When the towing is completed, return the machine into its original shape using the reverse procedure.



2.9 Special conditions to use the machine

Towing procedure

- Secure the articulation joint of the machine against tilting.
- Attach the tow ropes or tow bars.
- Pull out the machine from the danger area.

The towed machine must be attached to both tow lugs.

For towing, use undamaged tow ropes or tow bars of a sufficient capacity 1.5 × higher than the weight of the towed vehicle. Do not use a chain for the towing.

It is necessary to maintain the minimal angular deviation from the direction of towing. The maximum possible angular deviation is 30°.

The towing movement must be smooth. Do not exceed the towing speed by more than 1 km/hour (0.6 mph).

Tow the roller at the shortest distance possible – to rescue when it gets stuck or to remove when it is broken and obstructing. Do not tow for a distance exceeding 10 m (11 yd).

The towing machine should correspond with its size to the damaged machine. It must have a sufficient traction power (output), weight, and brake effect.

While towing downhill using a rope, another towing machine must be connected to the rear part of the damaged machine. In this way you can prevent an uncontrolled motion of the damaged machine.

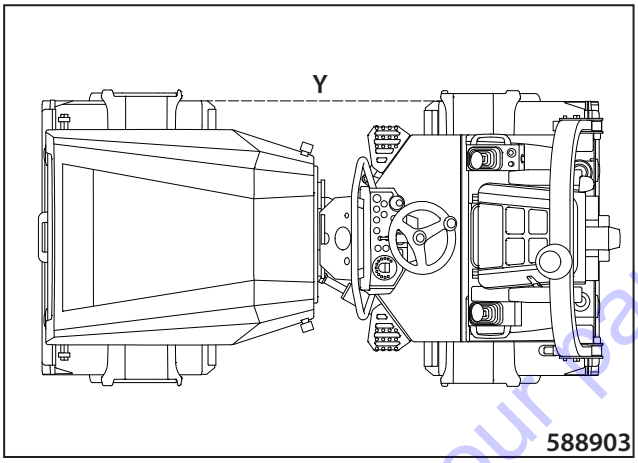
No person may be on the towed machine!

Do not touch hot parts of the machine, there is a burn hazard!

2.9.2 Drum offset

In-line position (Y)

In the in-line position, the machine drums are aligned in the same plane.

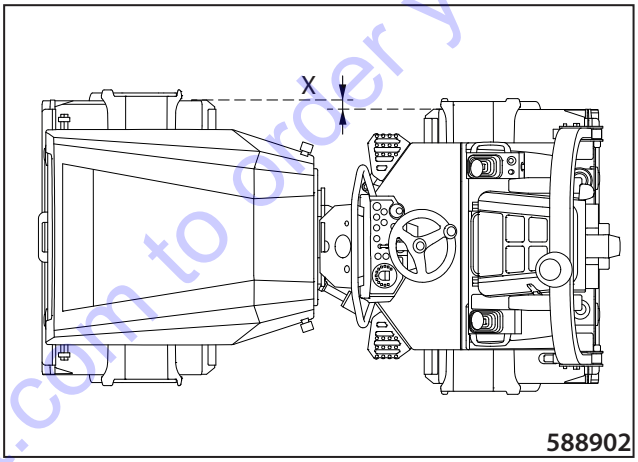


To adjust the drum from the offset position to the in-line position:

- Lock the strut (5) using the pin (6) and safety pin (7).
- Loosen the screws (3) and move the suspension of the connecting rod (1) to the left and then tighten the screws (3).
- Loosen the screws (4) and move the joint part (2) to the right and then tighten the screws (4).
- Unlock the strut (5) using the pin (6) and safety pin (7).

Offset position (X)

In the offset position, the front drum of the machine is offset to the right side from the rear drum. The drum offset is 40 mm.



To adjust the drums from the in-line position to the offset position:

- Lock the strut (5) using the pin (6) and safety pin (7).
- Loosen the screws (3) and move the suspension of the connecting rod (1) to the right and then tighten the screws (3).
- Loosen the screws (4) and move the joint part (2) to the left and then tighten the screws (4).
- Unlock the strut (5) using the pin (6) and safety pin (7).

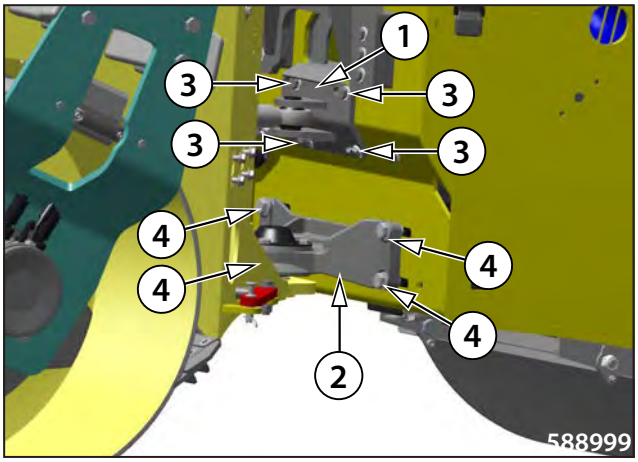
Danger of injury!

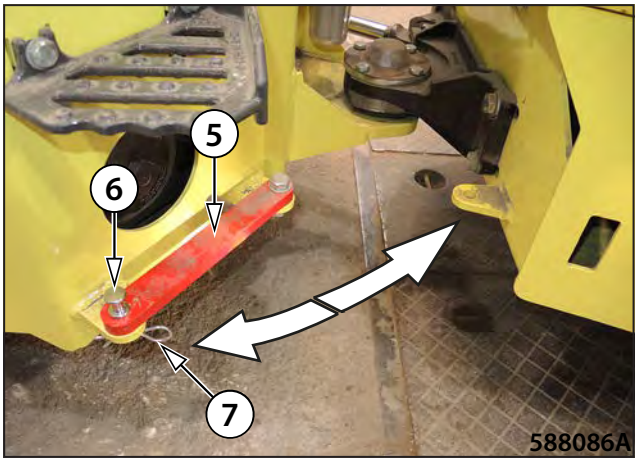
Carry out the drum offset when the engine is not running!

Lock the front and rear frame with the strut (5) in the joint area to prevent squeezing.

After the drum offset is completed, unlock the front and rear frame using the strut (5) in the joint area.

Make sure there are no persons in the dangerous area of the machine.





2.9.3 Machine operation during initial run period

When putting a new machine into operation or during the first 30 hours after a complete overhaul, do not run the machine at full power!

2.9.4 Machine operation at low temperatures

The compaction in the winter season depends on the content of fine particles and water in the soil being compacted. With the temperature dropping below the freezing point the soil becomes more solid and harder to compact.

At the temperatures below 0 °C (32 °F) it is possible to compact only dry soils (and loose stony materials), or carry out rapid compaction of non-frozen materials (before the soil gets frozen).

Prepare the machine for operation at low temperatures:

- Check concentration of the engine coolant.
- Replace the engine oil with the oil recommended for the range of ambient temperatures.
- Use hydraulic oil of the corresponding cinematic viscosity.
- Use a winter diesel.
- Check the battery for charging.

The good condition of the battery is a precondition for good starting under low temperatures. The machine can be used at full power only after the operating fluids have been heated to their operating temperatures.

2.9.5 Machine operation at higher temperatures and humidity

The engine power output decreases with the increasing temperature and air humidity. Considering that both of the factors reducing the engine power are independent on each other, it is possible to describe their impact as follows:

- Every 10 °C (18 °F) of the temperature rise means a power drop by up to 4% (at a constant humidity);
- Every 10% of the relative humidity rise means a power drop by up to 2% (at a constant temperature).

At outdoor temperatures when the hydraulic oil temperature is constantly about 90 °C (194 °F), we recommend you to replace the oil with the oil ISO VG 100 having the cinematic viscosity of 100 mm^2/s at 40 °C (104 °F).

2.9.6 Machine operation at higher altitudes

With the increasing altitude, the engine power output decreases as a result of the lower atmospheric pressure and specific density of the incoming air.

The engine power depends on the environment, in which the machine is working.

2.9.7 Machine operation in dusty environment

While operating in a very dusty environment, shorten cleaning and replacement intervals of air filter cartridges and shorten cleaning intervals of coolers.

The recommended cleaning interval is once a week.

2.9.8 Driving with vibration on compacted and hard materials

When the machine works with vibration on hard materials (e.g. loose stony materials) or materials with a high degree of compaction, the drum can lose its contact with the compacted material (so-called vibro stroke). Due to this condition, the transfer of vibrations to the machine frame and to the driver's stand increases. It can be partly removed by increasing the travel speed or by changing the vibration parameters of the machine (using a smaller amplitude).

If it is necessary to work with the machine in conditions when the operator can be exposed to higher vibrations, the machine user must modify working procedures to protect the driver's health.

Note

When driving with vibration on a different background material than specified in the Specification manual, the emission values of the vibration acceleration will be different – Noise and vibration emissions.

3 MAINTENANCE MANUAL

ARX 23.1-2
ARX 26.1-2
(YANMAR Tier 4 Final)

3.1 Safety and other measures during maintenance of the machine

3.1.1 Safety during machine maintenance

Carry out lubrication, maintenance and adjustment as follows:

- By professionally trained personnel;
- according to safety instructions given in the operating manual
- in intervals stated in the lubrication chart according to worked hours
- On the machine standing on a flat and solid surface and secured against movement (with scotch blocks), always with the engine off, the key removed from the ignition box and the wiring disconnected;
- At cold machine parts;
- after the machine, lubrication points and maintenance points have been cleaned
- using suitable undamaged tools,
- By replacing parts with new original parts according to the spare parts catalogue;
- By providing sufficient lighting of the entire machine during poor visibility and at night;
- By reinstalling all removed covers and safety elements after the work is completed;
- By retightening screw connections to the specified tightening torque and checking the connections for leakage;
- After the operating fluids are heated – beware of burns – use only recommended media.

After the adjustment or maintenance is completed, check all safety devices for proper operation!

3.1.2 Fire protection when operating fluids are changed

- Considering the fire danger, the flammable liquids used on the machine are divided into the following hazard classes:

  II hazard class – diesel fuel

  IV hazard class IV – mineral oils, lubricating greases
- The oil change point must be where it cannot interfere in explosion or fire hazard areas.
- It must be identified by “No smoking” and “No open flame” plates and signs.
- The handling area must be dimensioned so that it can catch a volume of the flammable liquid equal to the capacity of the biggest vessel, transport container.
- It must be equipped with portable fire extinguishers.
- For handling oils and diesel fuel, use vessels such as metal barrels, jerry cans and sheet-metal cans.
- The transport containers must be properly closed during storage.
- The containers must be provided with one hole, always stored with the hole up and secured so that their content cannot flow out and drip off.
- Vessels must be marked with non-removable writings showing the contents and flammability classes.

3.1.3 Environmental and hygiene principles

When operating or maintaining the machines, the user is obliged to follow general principles of health and environment protection according to laws, ordinances and regulations in individual territories when the machine is used.

Hygiene principles

- Petroleum products, cooling system fluids, battery fluids and coating compounds including thinners are substances harmful to health. Workers coming into contact with the above products during operation or maintenance of the machine are obliged to follow general principles of their own health protection and comply with safety and hygienic manuals made by manufacturers of the products.
- In particular we draw your attention to the following:
- protect your eyes and skin while working with the batteries
- protect your skin while handling petroleum products, coating compounds and coolants
- wash your hands properly after finishing the work and before eating, treat your hands with a suitable reparation cream
- follow instructions given in this manual.

- Always store petroleum products, cooling system fluids, battery fluids and coating compounds including thinners and also cleaners and preservative agents in their original and properly labelled containers. These materials are not allowed to be stored in unlabelled bottles or in any other containers considering the possible risk of confusion. Possible confusion with foodstuffs or beverages is very dangerous.
- If by accident the skin, eyes or mucous membrane is stained or if you breathe in the vapours of such products, apply immediately the principles of the first aid. In case of accidental ingestion of these products, immediately seek medical help.
- While working with the machine when it is provided with a platform or the cab windows are open, always use ear protectors of suitable type and version.

Environmental principles

The operating fluids of the individual systems of the machine and also some of its parts after discarded (dismounted, exchanged) become hazardous wastes with dangerous properties for the environment.

- This category of waste products includes in particular:
- organic and synthetic lubricating materials, oils and fuels;
- coolants;
- battery fluids and batteries;
- cooling system media;
- cleaning and preservative agents;
- all dismounted filters and filter cartridges,
- all used and discarded hydraulic or fuel hoses, rubber-metal elements and other parts of the machine contaminated by the above mentioned products.

It is necessary to treat the above mentioned materials and parts after they have been discarded in accordance with relevant national regulations valid for protection of the environment and in compliance with regulations of the health protection.

3.2 Specification of operating fluids

3.2.1 Engine oil

The engine oil is specified according to the performance and viscosity classification.

Performance classification according to

API (**A**MERICAN **P**ETROLEUM **I**NSTITUTE)

ACEA (**A**SSOTIATION DES **C**ONSTRUCTEUERS **E**UROPPÉENS DE **A**UTOMOBILE)

Viscosity classification

To determine the SAE (Society of Automotive Engineers) viscosity class, the ambient temperature and type of operation where the machine is used are decisive.

Use of permissible oils according to API: CF, CF-4, CI-4

SAE 15W-40 year-round

If a fuel with a high sulphur content is used, use only CF oil.

Note

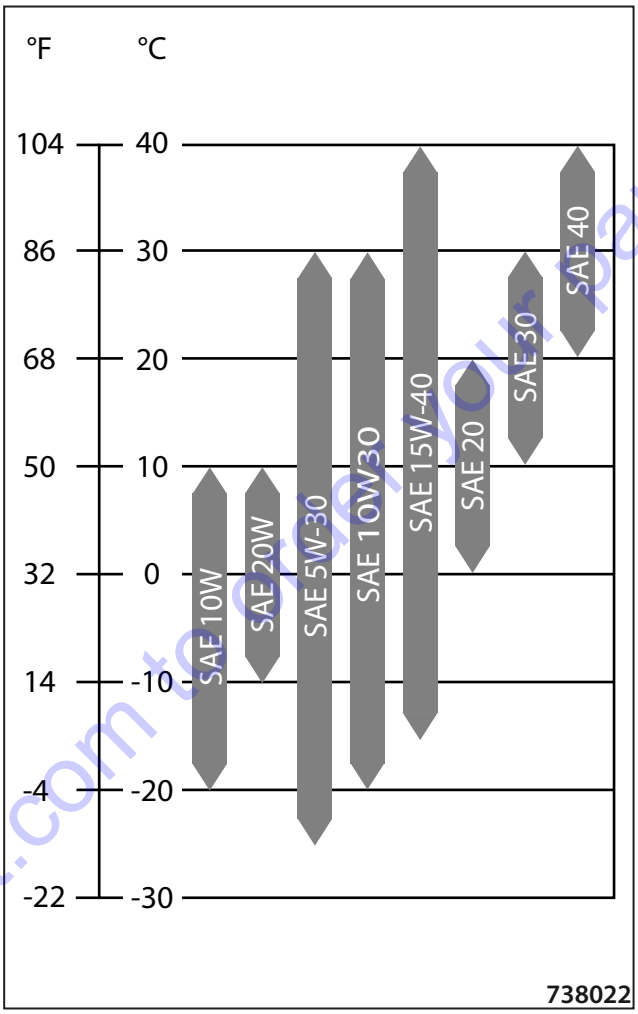
Exceeding the lower temperature limit does not result in damage to the engine; it can only cause some starting difficulties.

It is recommended that universal multi-range oils are used to avoid the necessity of oil changes due to changes of ambient temperature.

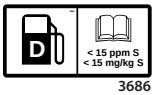
For easy starts at the temperatures below 0 °C (32 °F), the engine manufacturer recommends the SAE 10W-30 oil.

Exceeding the upper temperature limit, considering the reduced lubricating capabilities of the oil must not last for long.

Viscosity diagram



3.2.2 Fuel



3686

Diesel oil is used as fuel for the engine:

- EN590
- ASTM D975: 1D S15, 2D S15

Note

Use fuels with a sulphur content of up to 0.1 % (1000 ppm).

At ambient temperatures below 0 °C (32 °F), use winter diesel fuel.

Mixing diesel with special additives is forbidden.

3.2.3 Coolant

The coolant specification must meet requirements of:

- SAE J1034
- SAE J814c
- JIS K-2234
- ASTM D3306

To fill the cooling circuit, use the coolant in the mixing ratio of 50%/50% with high-quality water (thermal protection up to -37 °C).

Change the coolant every 2 years at the latest.

Note

The machines are filled with a cooling solution with the Bantleon Avia Antifreeze NG coolant, specification SAE J 1034 at the manufacturer's during the production.

It is a coolant containing silicates based on monoethylene glycol. It does not contain phosphates, nitrates, amines and borates.

There is an Avia NG label placed where the coolant is to be filled into the machine.

Refill the cooling circuit with the same or a completely miscible coolant of the required specification.

If the use of a different, immiscible coolant is necessary, the cooling circuit must be completely drained and cleaned with clean water repeatedly, at least 3 times. However, it is not allowed to use a coolant of a different specification than stated by the engine manufacturer.

The coolant protects the cooling system from freezing, corrosion, cavitation, overheating etc.

It is forbidden to operate the machine without coolant even for a short time.

It is forbidden to use a coolant of a different than prescribed specification and base. The engine and the cooling system can get damaged and the warranty lost.

Always check the ratio of antifreeze cooling agent in the coolant with a refractometer before the winter season starts.

Water quality

Do not use hard water with a higher content of calcium and magnesium, which brings calculus formation, and with a higher content of chlorides and sulphates, which causes corrosion.

The maximum content of compounds of calcium and magnesium is 170 milligrams – hardness of water.

The maximum content of compounds of chlorine is 40 milligrams.

The maximum content of compounds of sulphur is 100 milligrams.

Safety instructions:

1) Protect your hands with protective gloves.
2) In case of ingestion immediately seek medical treatment.
3) In case of contact with skin or clothing immediately wash the affected area with clean water.
4) Do not mix different types of coolants. The mixture can cause a chemical reaction with formation of harmful substances.

3.2.4 Hydraulic oil

For the hydraulic system of the machine, it is necessary to use only high-quality hydraulic oil grades according to ISO 6743/HV (equal to DIN 51524 part 3 HVLP).

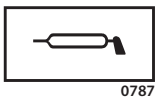
Fill the machines with hydraulic oil that has cinematic viscosity of 46 mm^2/s at 40 °C (104 °F) ISO VG 46. This oil is the most appropriate to be used within the widest range of ambient temperatures.

Synthetic hydraulic oil

The hydraulic system can be filled with synthetic oil, which if leaks occur will be degraded completely by micro-organisms present in water and soil.

Please consult always with oil manufacturer or dealer any switching from mineral oil to synthetic one or mixing the oils of various brands!

3.2.5 Lubricating grease



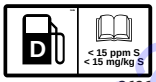
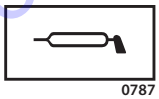
To lubricate the machine you must use plastic grease containing lithium according to:

ISO 6743/9 CCEB 2

DIN 51 502 KP2K-30

3.2.6 Emulsion

For sprinkling the tyres, use anti-adhesive emulsion of RHODOSIL EMULSION E1P with water in the mixing ratio of 1.5:100.

Part	Fluid type	Fluid quantity l (gal US)	Brand
Engine	Engine oil according to Chapter 3.2.1.	6.7 (1.8)	 2412
Fuel tank	Fuel according to Chapter 3.2.2.	35 (9.3)	 3686
Hydraulic system	Hydraulic oil according to Chapter 3.2.4.	28.5 (7.5)	 2158
Steering joint bearings, stirrup bearings, steering swivel pins, suspensions	Lubricating grease according to Chapter 3.2.5.	as required	 0787
Cooling system	Coolant according to the chapter 3.2.3.	3.2 (0.9)	 2152
Sprinkling tank	Water	190 (50.2)	 AMN59
Emulsion sprinkling tank	Emulsion according to Chapter 3.2.6	12 (3.2)	 AMN242

3.4 Lubrication and maintenance chart

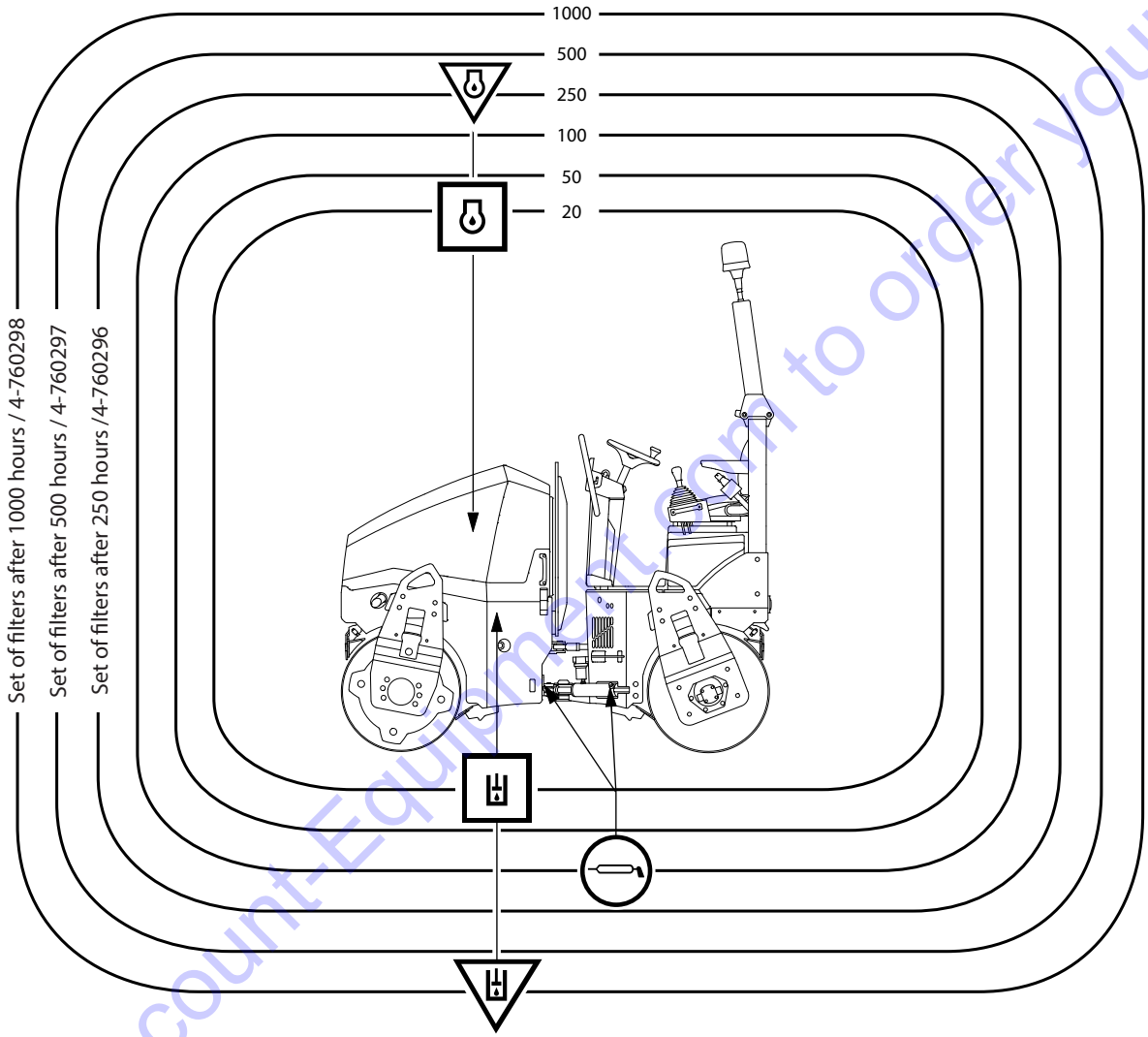
Every 20 hours of operation (daily)	
3.6.1	Fuel check
3.6.2	Checking the oil in the engine
3.6.3	Engine coolant check
3.6.4	Checking the oil in the hydraulic tank
3.6.5	Cleaning the hydraulic oil cooler
3.6.6	Air filter check
3.6.7	Check of the sprinkling emulsion level
3.6.8	Sprinkling tank refilling
3.6.9	Scraper adjustment
3.6.10	Check of warning and checking devices
3.6.11	Engine leakage check
3.6.12	Brake test
3.6.13	Check of the tightness of the fuel and hydraulic system
3.6.14	Electrical installation check
3.6.15	Check of the water separator on the fuel filter
Every 50 hours of operation	
3.6.16	Cleaning the water separator on the fuel filter
3.6.17	Battery check
3.6.18	Checking the fan and engine belt for condition
After 50 hours of operation	
3.6.29	Hydraulic oil change and filter replacement
Every 100 hours of operation	
3.6.19	Machine lubrication
3.6.20	Tyre pressure check
Every 250 hours of operation	
3.6.21	Engine oil change and engine oil filter replacement
3.6.22	Fuel tank cleaning
3.6.23	Air filter cleaning
3.6.24	Sprinkling filter cleaning

Every 500 hours of operation	
3.6.25	Fuel filter replacement
3.6.26	Replacement of the fuel separator filter cartridge
3.6.27	Replacement of air filter cartridges
3.6.28	Check of rubber-metal elements of the engine cooler
Every 1000 hours of operation	
3.6.29	Hydraulic oil change and filter replacement*
3.6.30	Damping system check
3.6.31	Swinging support check
3.6.32	Articulation joint check
3.6.33	Valve clearance check and adjustment
Every 2000 hours of operation	
3.6.34	Engine coolant change
3.6.35	Replacement of hoses of the cooling and fuel systems
Every 3000 hours of operation	
3.6.36	EGR valve inspection
Maintenance as required	
3.6.37	Cleaning the water tank
3.6.38	Cleaning the machine
3.6.39	Draining water from the sprinkling circuit before the winter season
3.6.40	Rear-view mirrors
3.6.41	Charging of the battery
3.6.42	Checking the screw connections for tightening

* **First after 50 engine hours.**

LUBRICATION AND SERVICE PLAN

□	INSPECTION
○	LUBRICATION
▽	REPLACEMENT



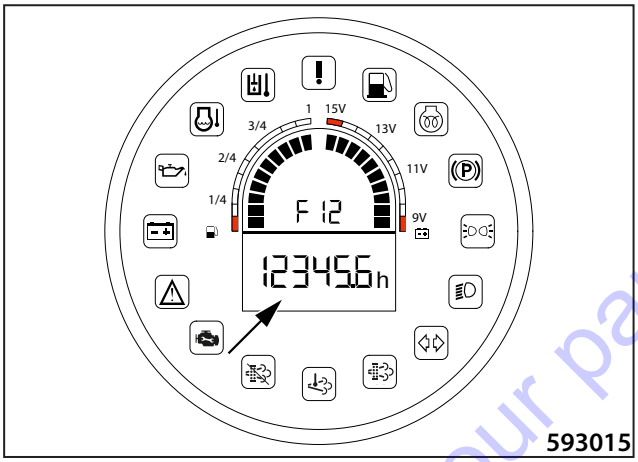
	Engine oil:	SAE 15W/40	API CF-4
	Hydraulic oil:	ISO VG 46 HVLP	
	Lubricating grease:	ISO 6743/9	DIN 51 502

593074A

3.6 Lubrication and maintenance operations

The lubrication and maintenance chart contains tasks and instructions that must be followed at certain intervals. If the table contains two intervals of mandatory maintenance, e.g. every 1000 hours of operation or 1 year, always use the interval that occurs first.

The worked hours can be determined by daily reading of the data on the worked hours counter.



This manual includes only basic information about the engine; the other data are given in the operation and maintenance manual, which is a part of documentation supplied together with the machine.

Follow also instructions given in the engine operating and maintenance manual!

Retighten removed or loosened bolts, plugs, threaded joints in the hydraulic system, etc. with the tightening torque specified in tables in the chapter 3.6.42 unless a different value is given for the respective operation.

Carry out maintenance works with the machine placed on a flat, solid surface and secured against any spontaneous movement, always with the engine off, and the key removed from the ignition box and with the disconnected electrical installation (unless required otherwise).

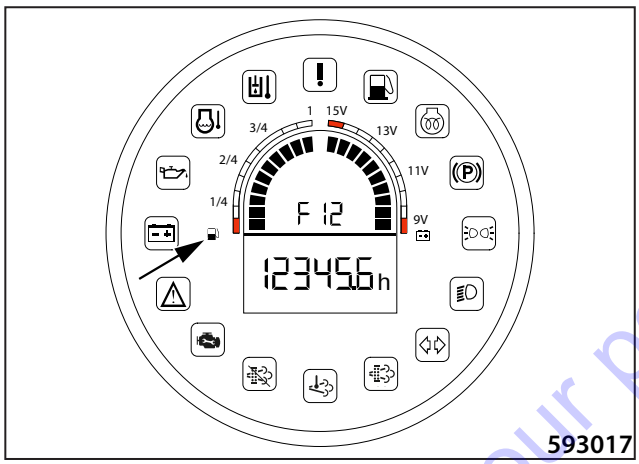
After the first 50 hours of operation of the new machine or after its general overhaul, carry out the following operations according to Chapter:

3.6.21	Engine oil change
3.6.29	Filter hydraulic oil change

Every 20 hours of operation (daily)

3.6.1 Fuel check

Check the fuel level on the dashboard and refill if necessary.



593017

Clean the tank cap and the filler neck.

Unlock the lock and remove the cap.

Refill the tank up to the bottom line of the filler neck.

588038

Note

The fuel tank volume is 35 l (9.3 gal US).

Fill up the same fuel type; see Chap. 3.2.2.
Check the fuel tank and the fuel circuit for leaks.

Do not smoke and do not use open flame while working.
Do not refill the fuel when the engine is running.

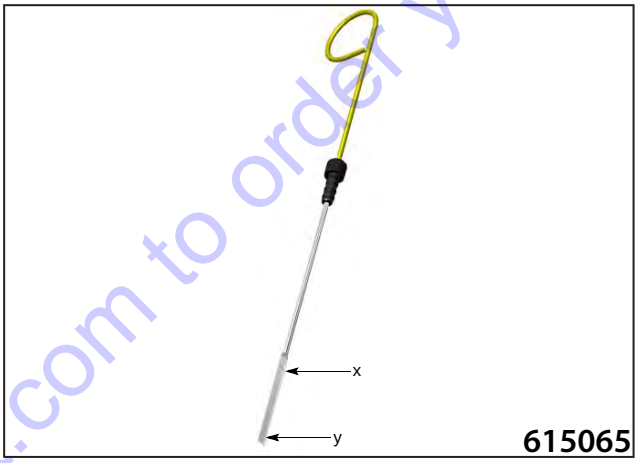
Stop the fuel soaking into the ground.

3.6.2 Engine oil check

Wait for about 5 min. until the oil flows down into the engine sump.

Take out the oil dipstick, wipe it, insert fully back and take it out again to read out the oil level.

Keep the level within the range of gauge marks imprinted in the dipstick. The lower mark shows the lowest possible oil level, the upper mark indicates the highest.



Refill the oil as required.

Refill engine oil through the filler neck.

Check the engine for leaks and remove the cause.

Check the engine for damaged and/or missing parts and for changes in appearance.

Note

The total volume of oil in the engine is 6.7 litres (1.8 US gal).

Do not use the engine unless the oil level in the engine is correct.

Carry out the check after the oil has been cooled down.

Fill up the same oil type; see Chap. 3.2.1.

Stop the oil soaking into the ground.

3.6.3 Engine coolant check

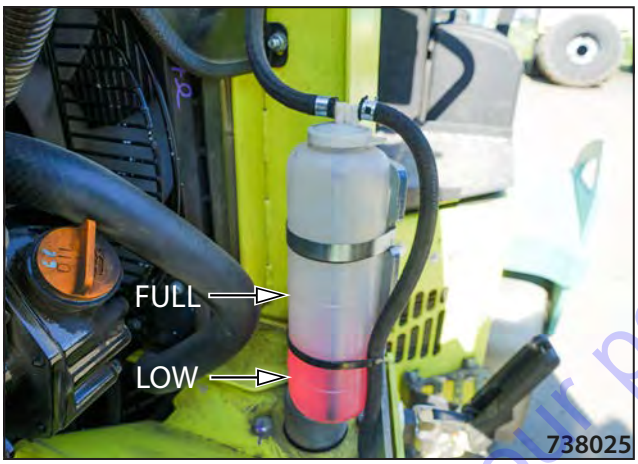
Let the coolant cool below 50 °C (120 °F).

Do visual inspection of the level on the expansion tank. The fluid level must be between the upper (MAX) and the lower (MIN) mark.

Refill the coolant as required. Carry out the refilling through the filler neck.

Note

The total volume of coolant in the engine is 3.2 l (0.8 gal US).



Remove the filler cap only after the temperature of the engine coolant drops below 50 °C (120 °F). If you remove the plug at a higher temperature, there is a risk of steam or coolant scalding due to an internal overpressure.

The level must not drop below the lower mark.

Refill only with a coolant containing antifreeze agents on the same basis according to Chapter 3.2.3.

Do not use any additives to repair the cooling system leakage into the engine coolant!

Do not refill cold coolant into a hot engine. There is a danger of damage to the engine castings.

In case of larger losses, find out where the cooling system leaks and repair the cause.

3.6.4 Checking the oil in the hydraulic tank

Check the hydraulic oil level always when the engine is cold but running.

Put the machine on a flat terrain.

Let the engine run at idle.

Check the oil level in the inspection hole.

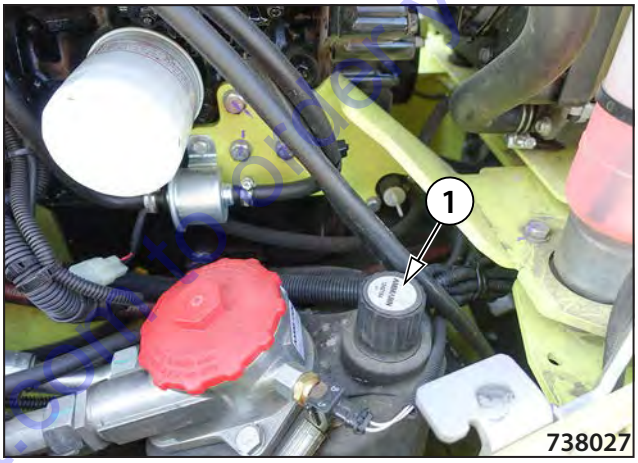
The ideal oil level is when the gauge is half-full.

Hydraulic oil refilling

Take off the ventilation filter (1) from the filler neck.

Refill the required quantity of hydraulic oil.

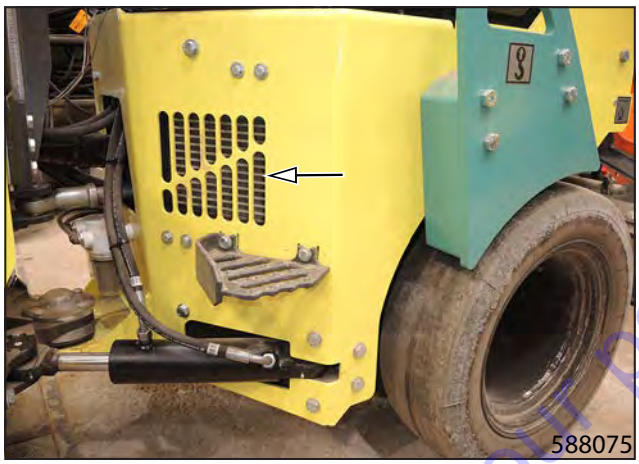
Screw in the ventilation filter (1) back in place.



Always lubricate the O-ring before screwing it in place.
Check the oil when it is cooled down.
Fill up the same oil type; see Chap. 3.2.4.

Stop the oil soaking into the ground.

3.6.5 Cleaning the hydraulic oil cooler



Check the cooling fins that they are not dirty or clogged.

Clean the fins with water or blow through with compressed air.

When working in a very dusty environment, carry out the cleaning daily. The cooler fouling results in reduced cooling effect and increased temperatures of the engine coolant and of the hydraulic oil.

Never clean the cooler with high pressure (e.g. with strong water jets).

When the cooler is contaminated by petroleum products, use a cleaning agent and proceed according to the manufacturer's instructions! Find out the cause of contamination!

Do not smoke while working!

Check the hydraulic circuit for leakage.

Follow environmental standards and regulations when cleaning the machine!

Clean the machine in a workplace equipped with a catching system of cleaning agents to avoid contamination of the soil and water resources!

Do not use forbidden cleaning agents!

3.6.6 Air filter check

Check that the suction hole is not dirty.

Clean the exit slit and squeeze to remove any dust trapped.

Note

Any dust trapped in the dust valve is automatically emptied during operation of the machine.

Replace the dust valve immediately if it is damaged!

3.6.7 Sprinkling emulsion level check

Open the lid.

Remove the tank cap.

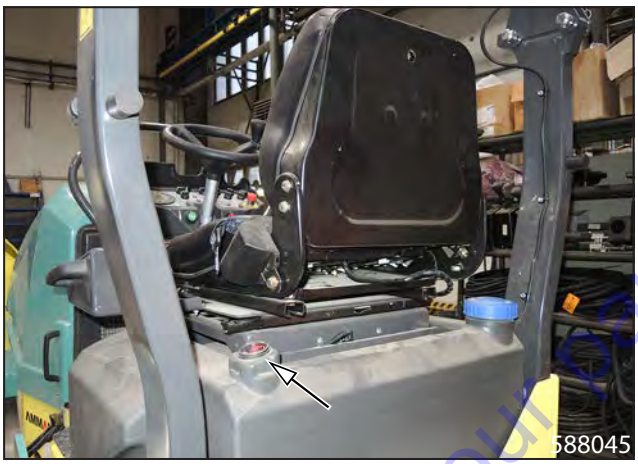
Refill the emulsion.

Fill up the same emulsion type; see Chap. 3.2.6.

Stop the emulsion soaking into the ground.

3.6.8 Sprinkling tank refilling

Check the water level in the tank in the inspection hole.



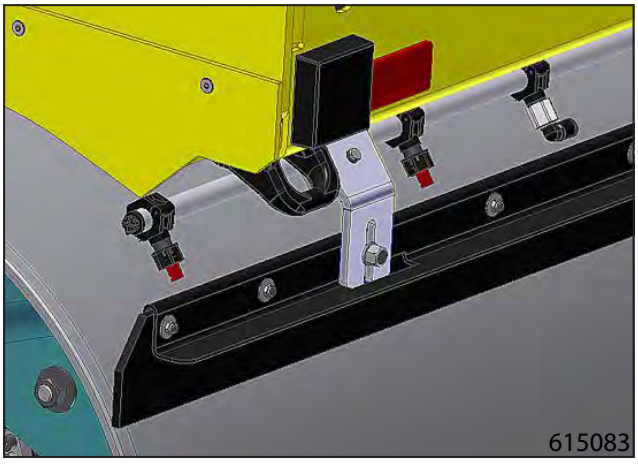
Open the tank cap and refill with clean water.

Before the winter period, drain the water from the water tank and from the sprinkling system!

3.6.9 Scraper adjustment

Fixed scrapers (optional equipment)

Loosen the screws and move the scraper so that it is in contact with the drum.



Hinged scrapers (optional equipment)

The hinged scrapers can be lifted and lowered manually. Before driving adjust the drum scrapers and move the scraper so that it is in contact with the drum.

Scrapers for the wheel axle

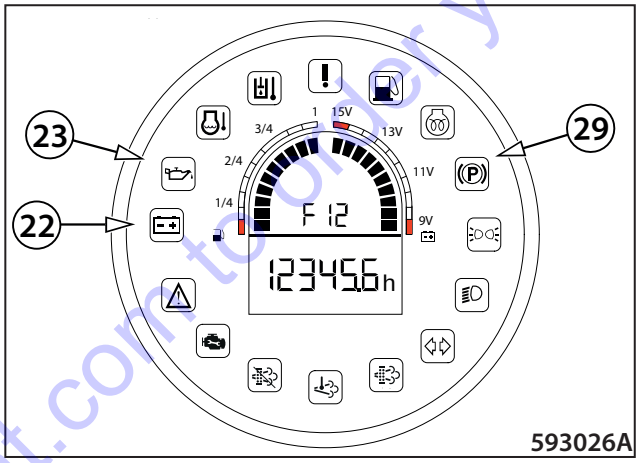
Adjust the tyre scrapers so that there is a gap of 3–5 mm between the scraper and the tyre.

Never wipe off the emulsion.

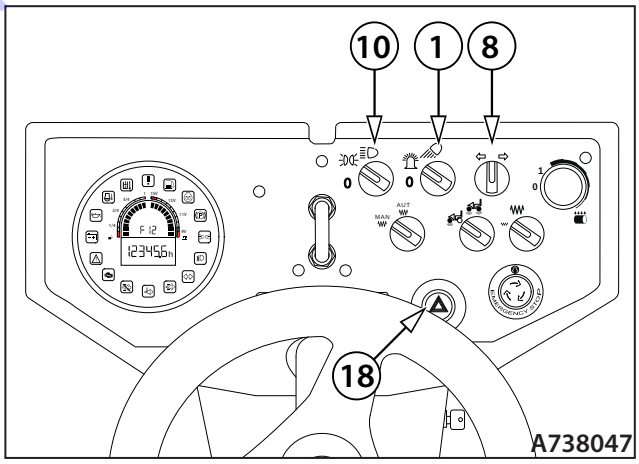
3.6.10 Inspection of warning and checking devices

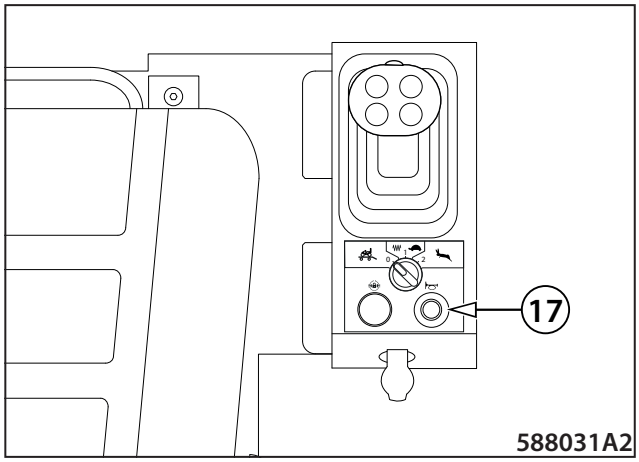
Turn the key in the ignition box to the position I.

The indicator lamps for battery charging (22), engine lubrication (23) and parking brake (29) will light up.



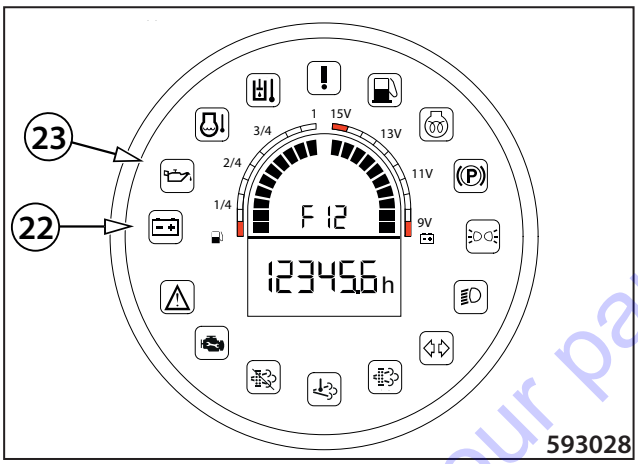
Then check the switches (1, 8, 10, 17, 18) for operation.





Start the engine according to Chapter 2.7.1.

After the start, the battery charging indicator lamp (22), engine lubrication indicator lamp (23) and engine glowing indicator lamp (28) must go out.



Move off the machine:

After the travel control (11) is changed to the neutral position "N", the brake indicator lamp (29) goes out.

Emergency brake button function:

Let the machine stay on the spot and set the travel control to the neutral position (N).

Press the emergency brake button (6).

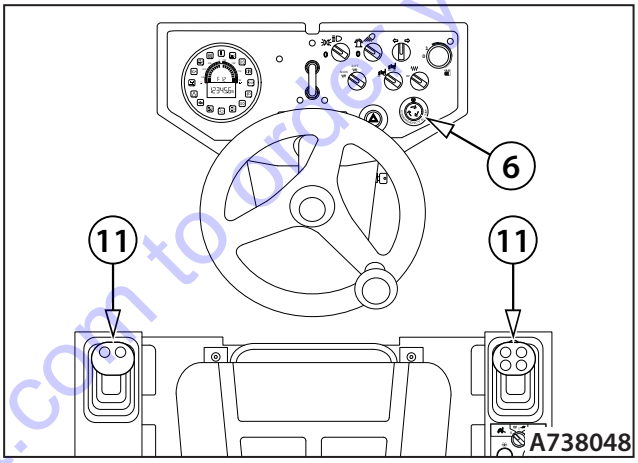
The brake is enabled and the engine stalls.

The emergency stop indicator lamp (26) and the parking brake indicator lamp (29) light up.

Turn the emergency brake button (6) in the direction of arrows. The emergency stop indicator lamp (26) goes out.

Set the travel control (11) to the parking brake position (P) and the engine speed control (3) to the idle speed position.

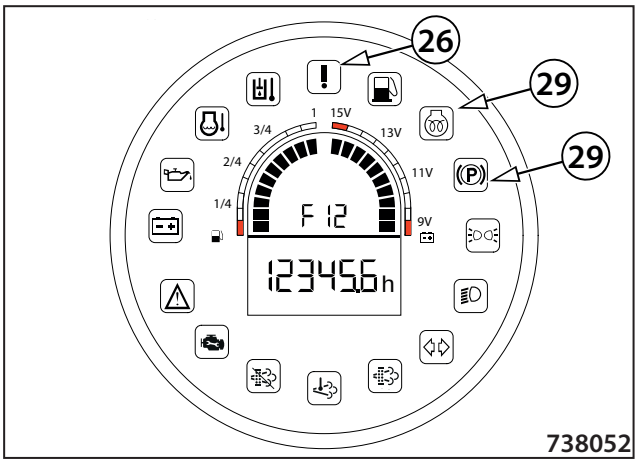
Now you can start the engine again.



Use the audible alarm to announce the engine start!

Before starting the engine, check that nobody is endangered by the engine start!

Make sure that the area in front of and behind the machine is free and no persons are present there!



During operation, check the instruments and indicator lamps continuously.

Promptly repair any failures!

3.6.11 Engine leakage check

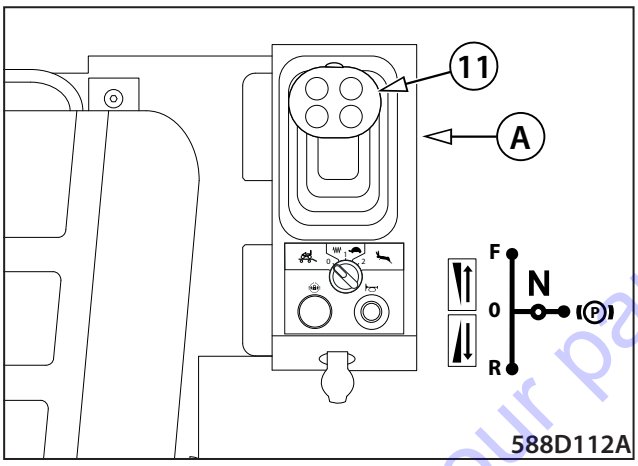
Visually check the engine and the engine compartment for oil leakage.

Remove the identified defects.

3.6.12 Brake test

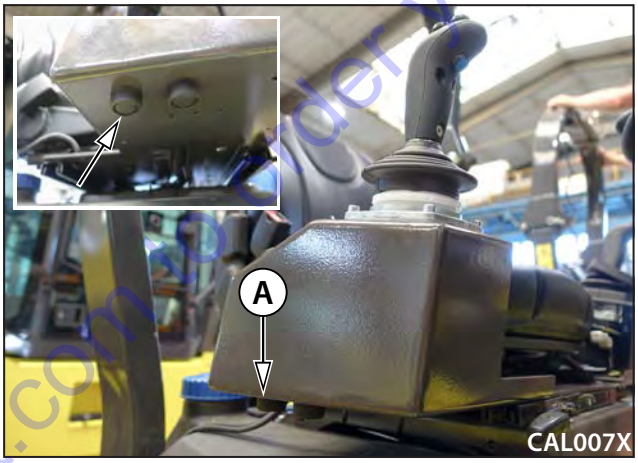
3.6.12.1 Check of the parking brake

This test verifies the function of the parking brake. The ability of the parking brake to hold the machine can be checked using the "Brake Test" mode. After starting this mode, the traction force of the machine acts on the stationary machine with the parking brake (P) engaged for a given time.



Perform the test on a level and solid surface.

Check that the area in front of and behind the machine is empty and free of persons or obstacles. Ensure a suitable safe distance in front of the machine, behind the machine as well as on its sides.



Procedure

Place the machine on a flat and solid surface.

Sit in the driver's position and start the engine according to Chapter 2.7.1.

The travel control (11) must be in the parking brake position "P".

Switch to the "Brake test" mode by pressing the brake test button (A) for 5 seconds. While the button is held down, the display shows the "btn br" status.

After 5 seconds, the display shows the "br tSt" status.

Start the test by setting the travel control to the forward travel position.

The machine must not move off. If the machine moves off, the test is unsuccessful – the machine stops by itself after 3 seconds or it can be stopped by moving the travel control (11) to any position except for the forward position.

The test can be interrupted prematurely by moving the lever anywhere out of the forward position. This stops the traction force. The machine is still in the "Brake test" mode.

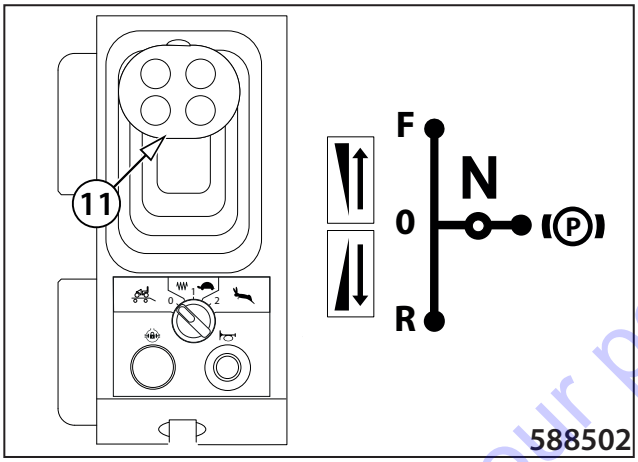
For normal operation or to repeat the brake test, stop the "Brake test" mode by moving the travel control (11) back to the parking brake position "P".

To repeat the test, follow the steps above to start the "Brake test" mode.

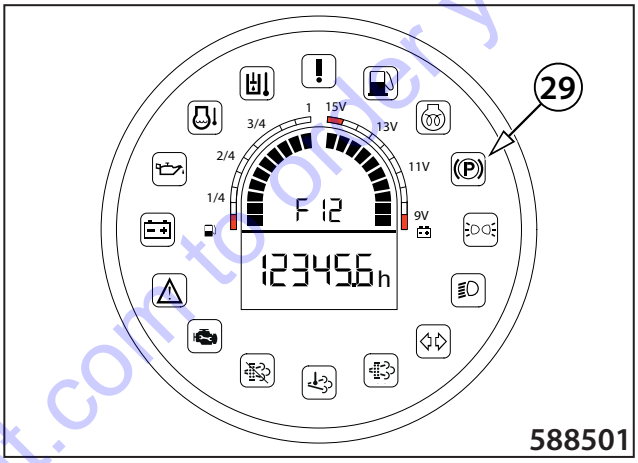
After an unsuccessful brake test, secure the machine against spontaneous movement by wheel chocks and contact the service.

3.6.12.2 Check of the emergency brake

This test verifies the function of the emergency brake. Due to possible wear of the parking brake, the emergency brake check is to be performed with a stationary machine. During normal operation, the emergency brake button is to be used in the event of danger when the machine is running. After pressing the emergency brake button, the traction force immediately stops and the parking brake (P) engages.



Check that the area in front of and behind the machine is empty and free of persons or obstacles. Ensure a suitable safe distance in front of the machine, behind the machine as well as on its sides.



Procedure:

Place the machine on a flat and solid surface.

Sit in the driver's position and start the engine according to Chapter 2.7.1.

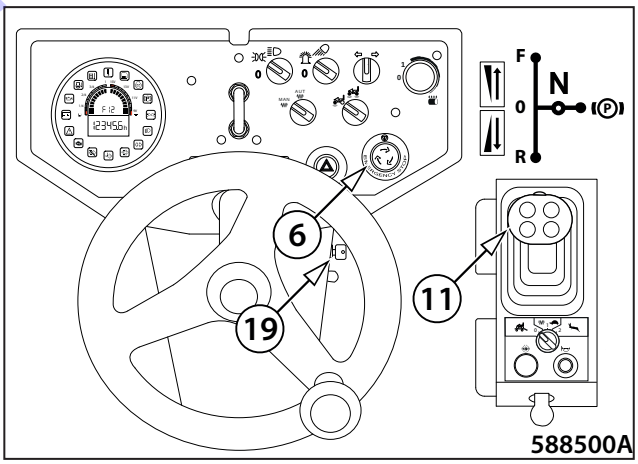
Set the travel control (11) to the neutral position "N".

The parking brake indicator lamp (29) goes off.

The brake is disengaged.

Press the emergency brake button (6). The engine stops and the parking brake indicator lamp (29) lights up.

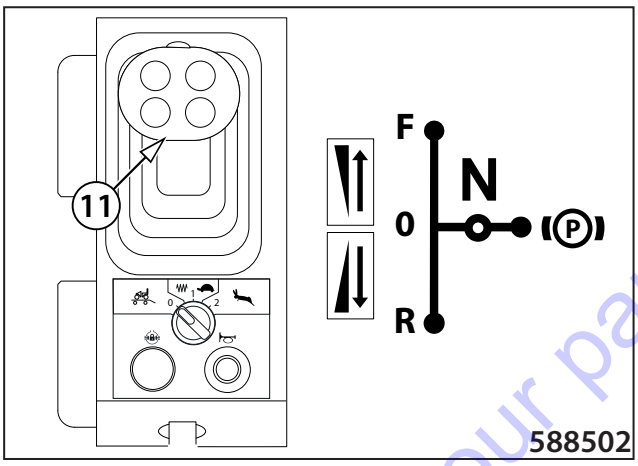
If the engine does not shut down, turn it off using the key in the ignition box, secure the machine against spontaneous movement using wedges on a level and solid surface and contact service.



The emergency stop button (6) is only to be used to stop the machine in an emergency. Use the service brake to stop the machine normally. To turn off the engine normally, use the ignition box (19) – turn the key to the "0" position.

3.6.12.3 Check of the service brake

This test verifies the function of the service brake. After activating the service brake, the hydraulic components of the machine drive adjust to stop the machine. The service brake can be controlled at any time. Using the service brake does not activate the parking brake (P).



Check that the area in front of and behind the machine is empty and free of persons or obstacles. Ensure a suitable safe distance in front of the machine, behind the machine as well as on its sides.

Perform the test on a level and solid surface. If the test is performed on a slope, the machine may start moving due to leaking hydraulics even though the service brake is in order!

Procedure:

Place the machine on a flat and solid surface.

Sit in the driver's position and start the engine according to Chapter 2.7.1.

Move off by setting the travel control (11) to the forward travel position "F".

Set the travel control to the neutral position "N".

The machine will stop and the parking brake will not activate.

To move off again or control the brake during braking, move the travel control (11) back to the forward travel position "F".

If the machine does not stop, activate the emergency brake, secure the machine against spontaneous movement using wedges on a level and solid surface and contact service.

Activation of the emergency brake will cause a high mechanical and hydraulic load of the machine. Always test the parking brake after activating the emergency brake while driving.

3.6.13 Check of the tightness of the fuel and hydraulic system

Visually check the condition of the fuel and hydraulic system for leaking operating fluids or damage to individual system components (material degradation – ageing).

Remove the identified defects.

3.6.14 Electrical installation check

Check cables, connectors, protective hoses and their attachments for damage, in particular if they are near hot surfaces and moving parts of the machine including the engine. Replace damaged parts. Use only original spare parts.

3.6.15 Check of the water separator on the fuel filter

Check the condition of the fuel filter separator. If necessary, clean the filter according to chapter 3.6.16 Cleaning the water separator on the fuel filter.

Every 50 hours of operation

3.6.16 Cleaning the water separator on the fuel filter

If the red ring goes up from the bottom, drain the water from the separator.

Close the stop valve (1).

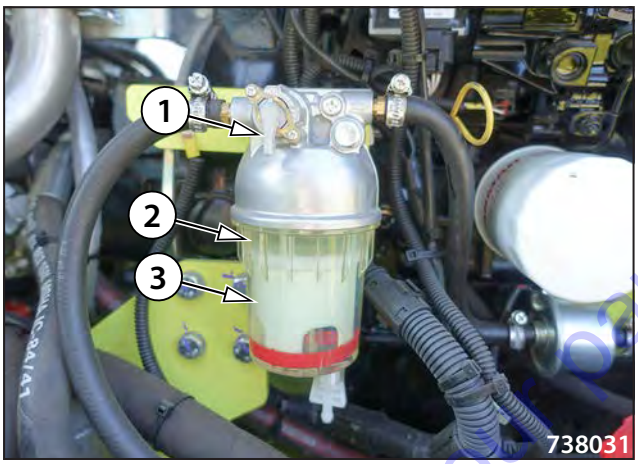
Unscrew the filter housing (2).

Clean the filter element (3).

Screw in the filter housing back (2)

Open the stop valve (1).

Turn the ignition on. The fuel pump will bleed the system automatically.



Fuel filter cartridge
Order number: 1103780

Do not smoke while working!

Check the water separator for leaks.

Stop the fluid soaking into the ground.

3.6.17 Battery check

Stop the engine.

Turn off the battery disconnector.

Clean the surface of batteries.

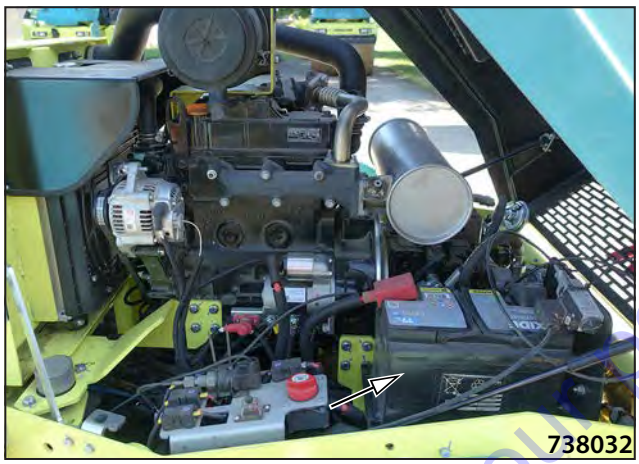
Check the condition of the terminals and clamps. Clean the terminals and clamps. Apply a thin layer of grease on the terminals.

MAINTENANCE-FREE BATTERY

In case of a maintenance-free battery version (the battery has no accessible plugs), check only the rest voltage on the terminals. The batteries cannot be refilled. If the rest voltage is 12.6 V and more, the battery is fully charged. If the rest voltage is below 12.4 V, the battery should be charged immediately. After the battery is charged, leave it to stand for 2–3 hours and then measure the voltage again. The mounting is recommended 24 hours after the charging.

Note

The rest voltage is the voltage measured at the terminals of the battery, which was at rest for at least 12 hours – it was not either charged or discharged.



Do not turn the battery upside down; the electrolyte may pour down from the degassing plugs.

If the electrolyte is spilled, wash the affected area with water and neutralize with lime.

Hand over old inoperative batteries for disposal.

Keep the battery dry and clean.

Do not disconnect the battery when the engine is running.

When working with the battery always follow instructions of the battery manufacturer!

Disconnect the battery for repair or while handling wires and electrical components in the wiring circuit to prevent short-circuit.

When disconnecting the battery, first disconnect the cable of the (-) pole. When connecting the battery, first connect the (+) pole.

Use rubber gloves and eye protection when handling the battery.

Use suitable clothing to protect your skin against contact with the electrolyte.

After eye contact with the battery electrolyte, immediately flush the affected eye thoroughly with running water for several minutes. Then seek medical treatment.

If you ingest the electrolyte, drink large quantities of milk, water or suspension of magnesium hydroxide in water.

In case of skin contact with electrolyte, remove your clothing and shoes, wash the affected skin immediately with soap and water or with solution of water and soda. Then seek medical treatment.

Do not eat, drink and smoke while working!

After completing the work, wash your hands and face thoroughly with water and soap!

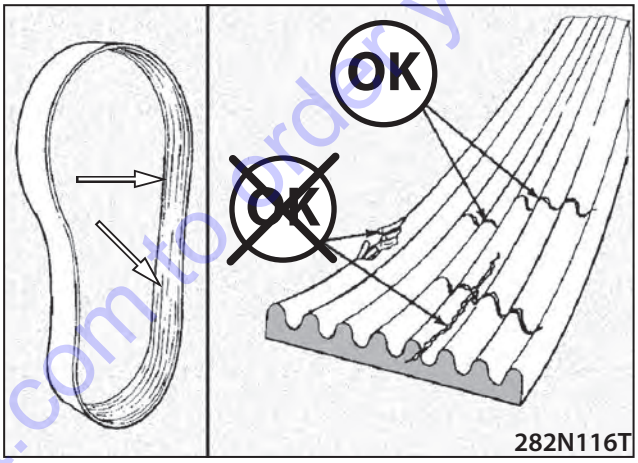
Do not check that a wire is live by touching the machine frame.

Never make direct conductive connection between both poles of the battery to avoid a short circuit and a risk of explosion of the battery.

3.6.18 Check of the fan and engine belt for condition

Fan wear check:

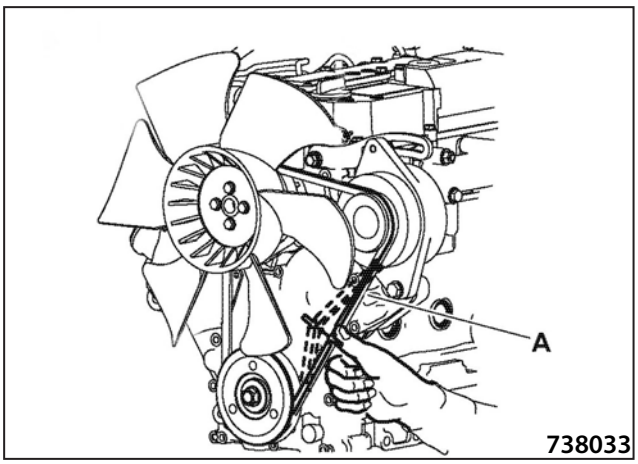
Check the fan visually. Replace the fan if damaged (e.g. missing parts of materials, cracks, shape changes, etc.).



Belt wear check:

Visually inspect the belt.

Cracks perpendicular to the belt width are not considered to be a fault. If longitudinal cracks appear on the belt, or the belt edges are ragged, or some material parts are pulled off, then the belt must be replaced.

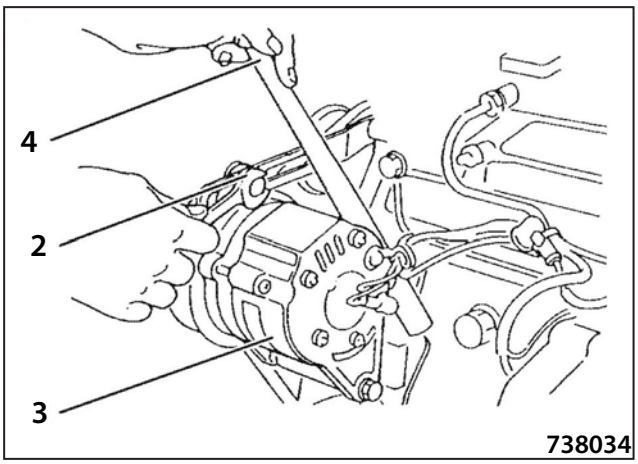


Belt tension check:

Press with your thumb at the spot where the belt length between the pulleys is the longest with a force of approximately 98 N (22 lb). The correct sag (A) of a used belt is 10–14 mm. The correct sag (A) of a new belt is 8–12 mm.

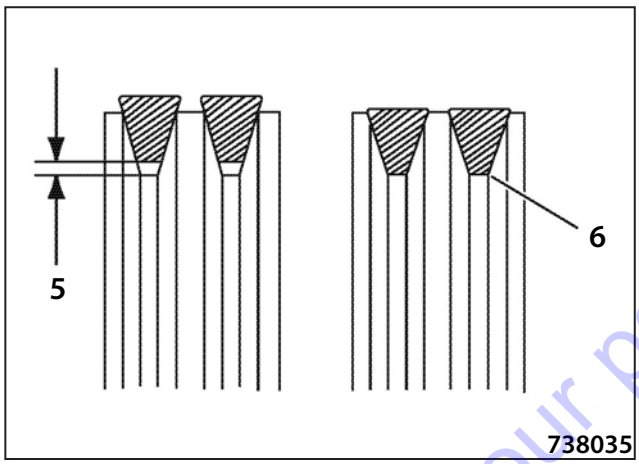
Note:

A used belt is a belt that has been used with the engine running for 5 minutes or more.



If necessary, tension the belt (1) by loosening the adjusting screw (2) and moving the alternator (3) with the crowbar (4). After tensioning the belt, tighten the adjusting screw (2).

Check the belt for correct tension. There must be clearance between the belt and the bottom of the pulley groove (5). If there is no clearance between the belt and the bottom of the pulley groove (6), replace the motor belt.



Every 100 hours of operation

3.6.19 Machine lubrication

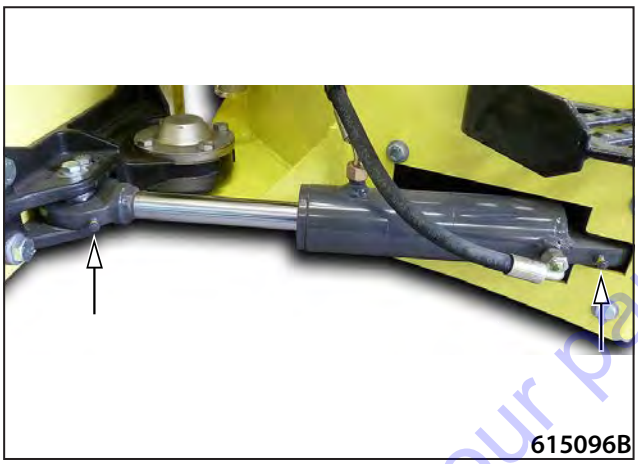
Remove the caps on the grease nipples.

Before lubrication, clean the grease nipple.

Connect the grease gun to the grease nipple.

Lubricate the bearing sufficiently until the lubricant starts to flow out.

Replace the protective cover.



Note

After every machine cleaning or steam cleaning, lubricate the bearing again.

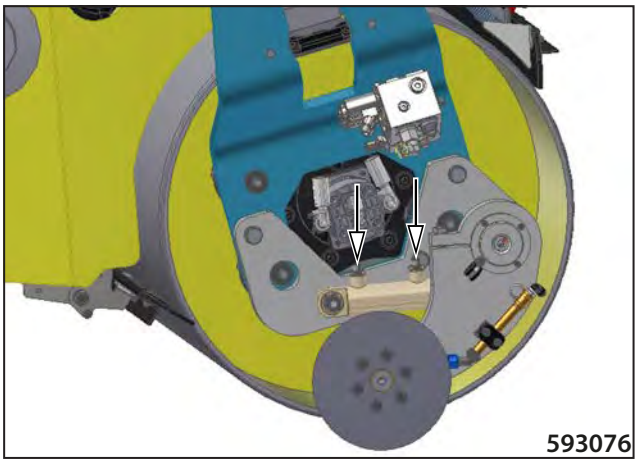
Steering linear hydraulic motor

Turn the steering mechanism up to the stop to lubricate the hydraulic cylinder.

Turn the machine slightly to the right and to the left. This will loosen the bearings.

Edge cutter

Pins 2×

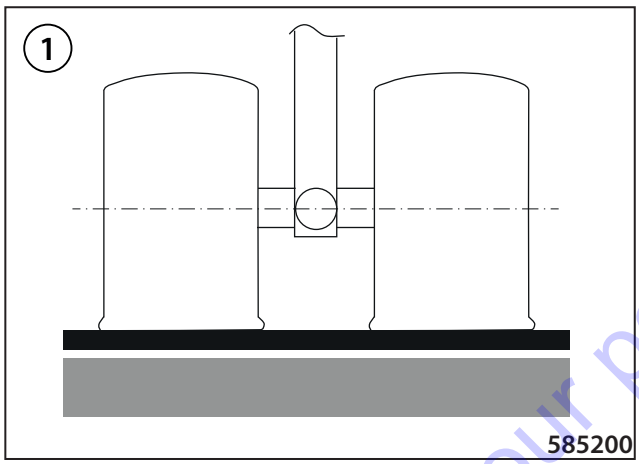


3.6.20 Tyre pressure check

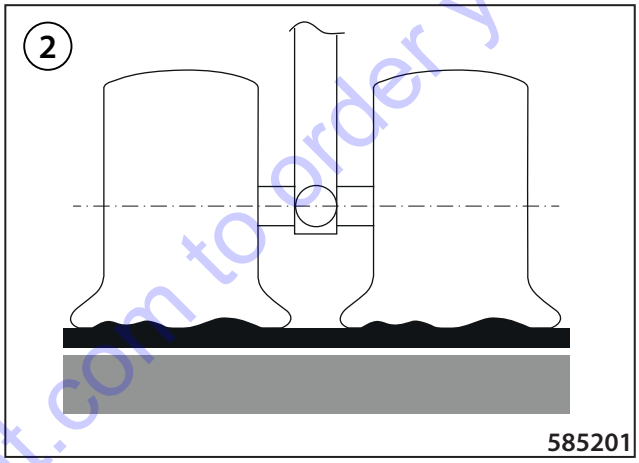
On combined rollers, check the tyre pressure with a tyre pressure gauge and adjust if necessary. The pressure is factory-set to 1 bar as standard.

The tyre pressure must be adjusted to the degree of soil compaction.

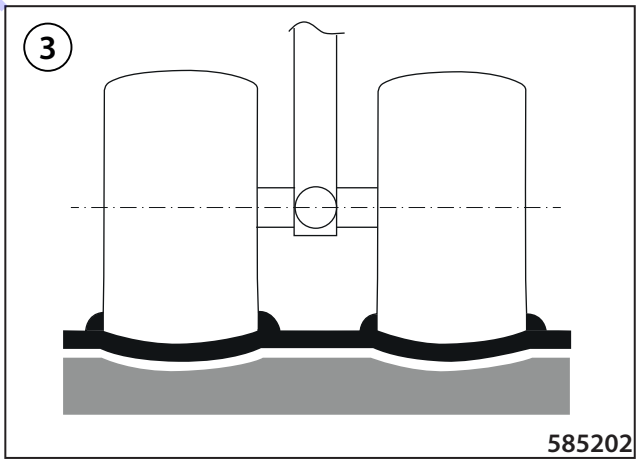
Tyre pressure OK (1)



Tyre pressure too low (2)



Tyre pressure too high (3)



Pay attention to the equal pressure in all of the tyres.

When fabric is visible on the tyre surface, the tyres must be replaced.

Every 250 hours of operation

3.6.21 Engine oil change and engine oil filter replacement

Drain the oil after the operation is finished immediately after the coolant has cooled down to 60 °C (140 °F), or warm up the engine during operation until the coolant temperature reaches 60 °C (140 °F).

Turn off the engine.

Turn off the battery disconnector.

The engine oil drain plug is on the left side in front between the front and rear frame of the machine.

Turn the machine to the right to get better access to the drain plug.

The total volume of oil in the engine is 6.7 litres (1.8 US gal).

Remove the drain plug and let the oil drain out.

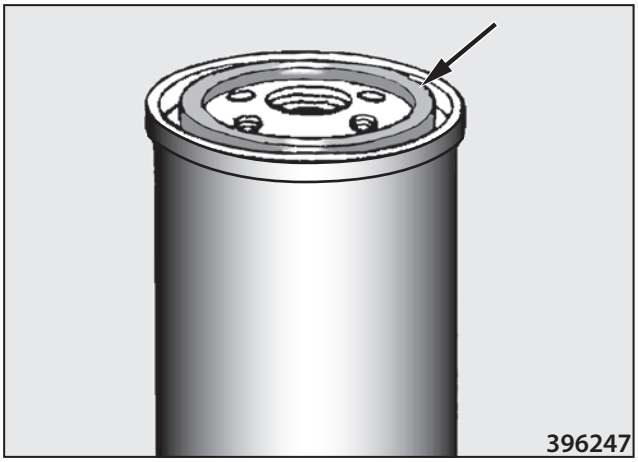
Remount the plug.

Clean the surface around the head of the oil filter.

Remove the filter. Clean the seating surface for the filter gasket.

Lubricate the gasket with oil.

Mount the new filter.



Do not overtighten the filter to prevent damage to the thread and gasket.

Engine oil filter
Order number: 1772196

Fill the engine through the filler neck.

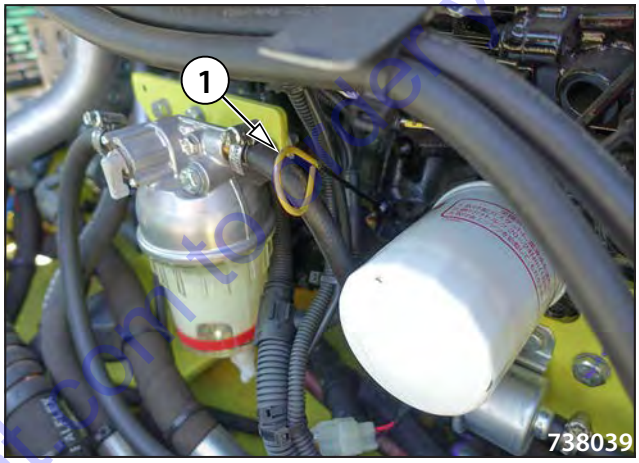
Keep the level within the range of gauge marks imprinted in the dipstick (1). The lower mark shows the lowest possible oil level, the upper mark indicates the highest.

Refill the oil to the upper oil level mark (1). The oil volume is 6.7 l (1.8 gal US), including the oil filter volume.

Note

After refilling, start the engine and leave it running for 2–3 min. Check tightness of drain plug and filter.

Stop the engine, wait for 5 minutes until the oil runs down to the engine sump. Then check the level with the oil dipstick.



Caution! There is a risk of scalding when draining hot oil.

Let the oil cool down below 50 °C (122 °F).

Follow the fire-fighting measures.

When changing oil, check that the old oil has been drained from the tank completely. Do not mix different types of oils.

Change the oil after 6 months at the latest even if 500 hours have not been worked. Exchange oil in the interval that comes first.

Use recommended filters only; refer to the spare parts catalogue. Use recommended oils; see chapter 3.2.1.

Catch the drained oil and do not let it soak into the ground.

Used oil and filters are environmentally hazardous waste – hand it over for disposal.

3.6.22 Fuel tank cleaning

Over time, condensed water accumulates in the fuel tank and it should be drained.

Remove the plug from the fuel tank.

Place a vessel under the drain plug.

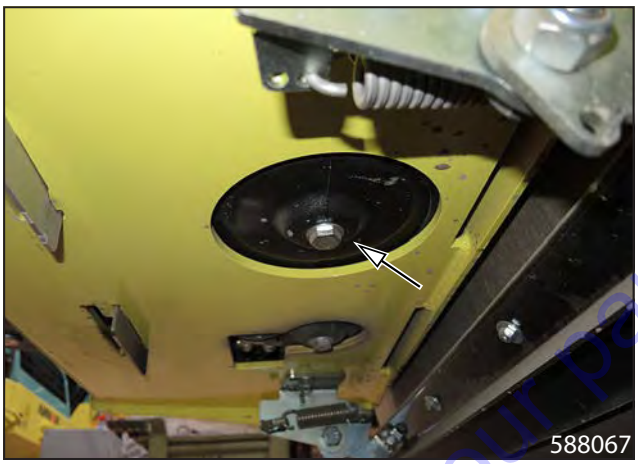
Drain the diesel fuel.

Check and clean the interior of the tank.

Put on the screw plug.

Tighten the screw connection with your hand.

Fill the fuel tank with diesel fuel up to the lower edge of the filler neck.



Do not smoke while working!

Catch the drained fuel.

3.6.23 Air filter cleaning

Remove the main cartridge of the air filter and clean with compressed air.

Clean the internal area of the filter and of the contact surface to avoid contamination of the safety cartridge.

Never use compressed air to clean the filter interior.

3.6.24 Sprinkling filter cleaning

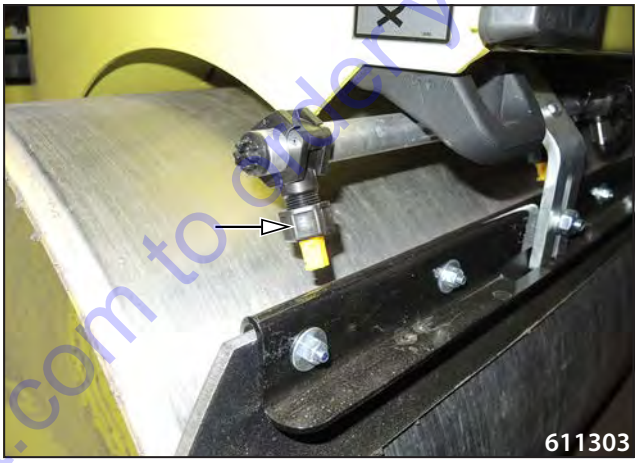
Remove the sprinkling filter vessel, remove the strainer, clean it and mount back.

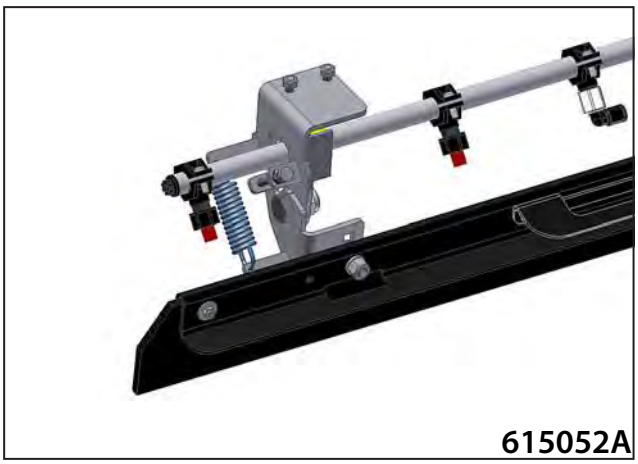
Check the seal.

Replace if damaged.


615111A

Remove and clean the sprinkler strainers.


611303


615052A

Every 500 hours of operation, but at least once a year

3.6.25 Fuel filter replacement

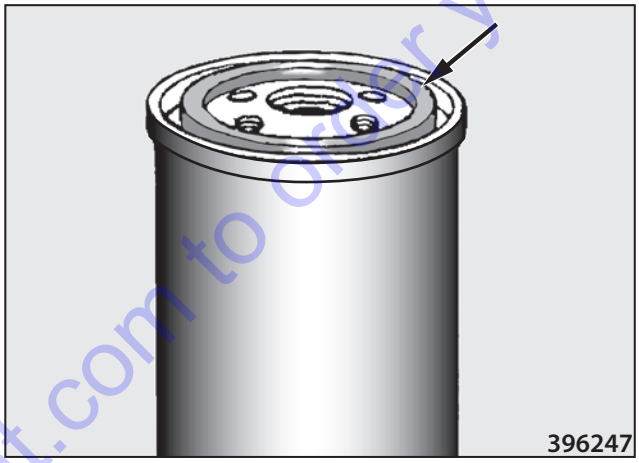
Clean the fuel filter head.

Remove the filter.

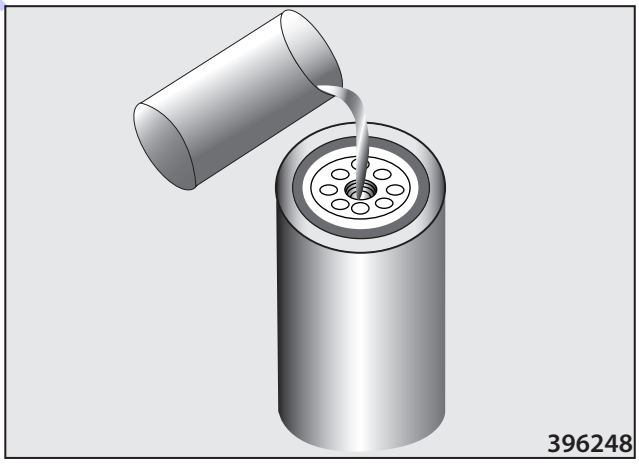
Lubricate the seal rings of the new filters with oil.

Fill up the filter with new fuel. Mount the new filter in the machine. Tighten manually!

Bleed the fuel system.



Fuel filter
Order number: 1772197



Follow safety regulations!

Do not smoke and do not use an open flame while working on the fuel system!

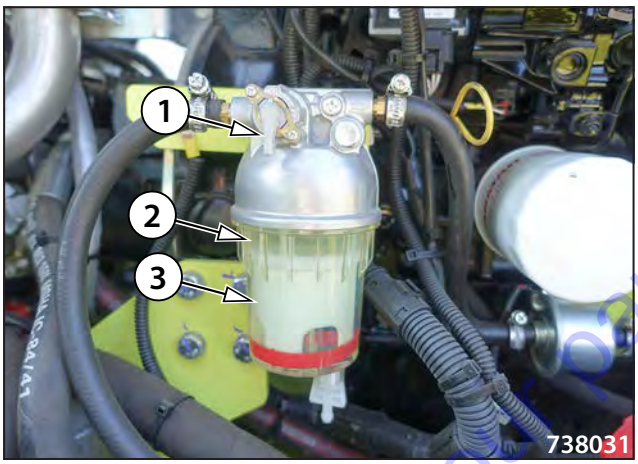
Use original filters specified by the manufacturer.

Do NOT tighten the filters with force!

Catch the drained fuel.

Store used filters in a separate container and hand them over for disposal.

3.6.26 Replacement of the fuel separator filter cartridge



If the red ring goes up from the bottom, drain the water from the separator.

Close the stop valve (1).

Unscrew the filter housing (2).

Replace the filter element (3).

Refit the filter housing (2).

Open the stop valve (1).

Turn the ignition on. The fuel pump will bleed the system automatically.

Fuel filter cartridge
Order number: 1103780

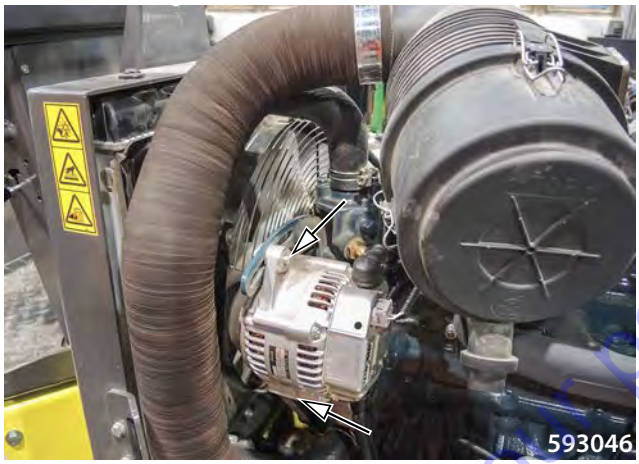
Do not smoke while working!

Check the water separator for leaks.

Prevent the fluid from soaking into the ground.

3.6.27 Replacement of air filter cartridges

If the F250 error code appears on the display during operation of the machine, the cartridge must be replaced, however after 500 operation hours at the latest.



Remove the filter cap.

Take out the main cartridge.

Air filter cartridge, external
Order number: 1503942

Take out the safety cartridge.

Replace the safety cartridge after every third replacement of the main cartridge.

Air filter cartridge, internal
Order number: 1503941

Clean the internal area of the filter and of the contact surface so that no dust is taken into the inner supply piping towards the engine.

Insert the new safety cartridge.

Insert the new main cartridge. Check that both cartridges are mounted correctly and are sealing.

Remove the air filter dust valve, clean and remount.

Check connections and the piping for leakage and the engine inlet opening on the bonnet for clogging (e.g. by leaves).

Do NOT clean filter's inner space with pressure air so no dust is taken into the engine intake piping.

Use original cartridges, only.

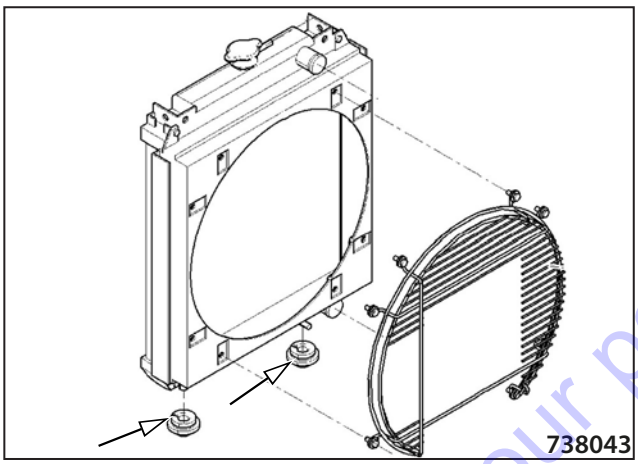
Take care not to splash water into the air filter.

Replace the dust valve immediately if it is damaged!

NEVER operate the machine with the filter body or lid damaged.

3.6.28 Check of rubber-metal elements of the engine cooler

Recheck the rubber-metal elements for condition and for rubber-to-metal bond strength.



Replace if damaged.

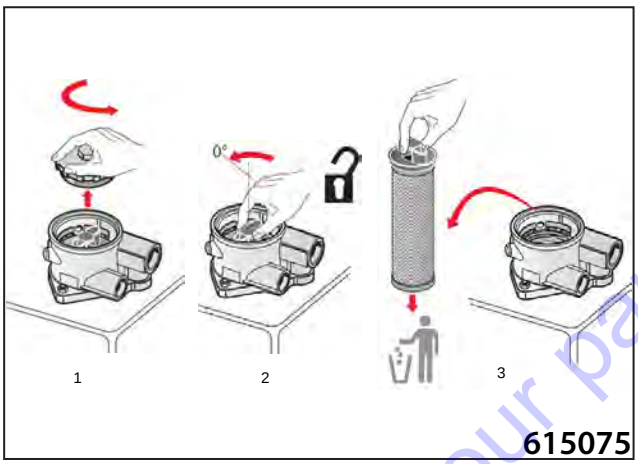
Recheck screws and nuts for tightening.

Rubber-metal element of the engine cooler
Order number: 1-952352

Every 1000 hours of operation

3.6.29 Hydraulic oil change and filter replacement

Check for the first time after 50 hours.



Hydraulic oil filter replacement

Take off the filter cap.

Unlock the filter cartridge.

Pull out the filter cartridge from the filter housing.

Dispose of the filter cartridge ecologically.

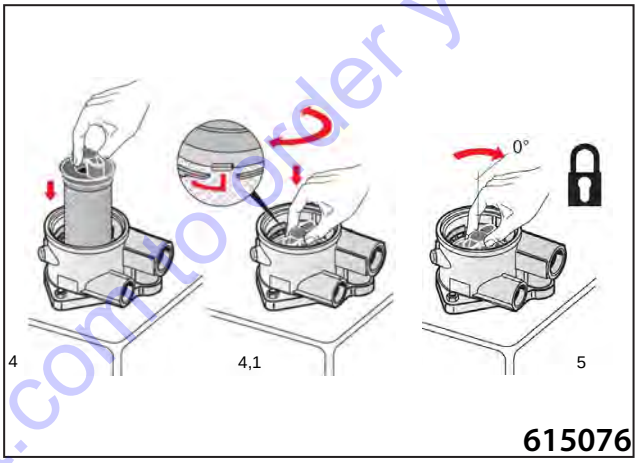
Insert the new filter cartridge in the correct place. Keep the position of the safety cam.

Turn the filter cartridge clockwise all the way to the stop.

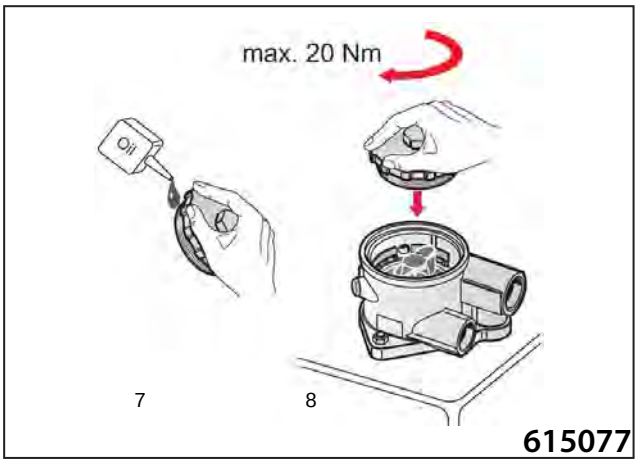
Oil the sealing ring on the filter cap slightly.

Put the filter cap in place.

Tighten the cap with the torque spanner (max. torque 20 Nm).



Set of hydraulic oil filters
Order number: 1182946



Hydraulic oil draining

Place a vessel under the hydraulic oil drain plug. Oil charge is 28.5 l (7.5 gal US).

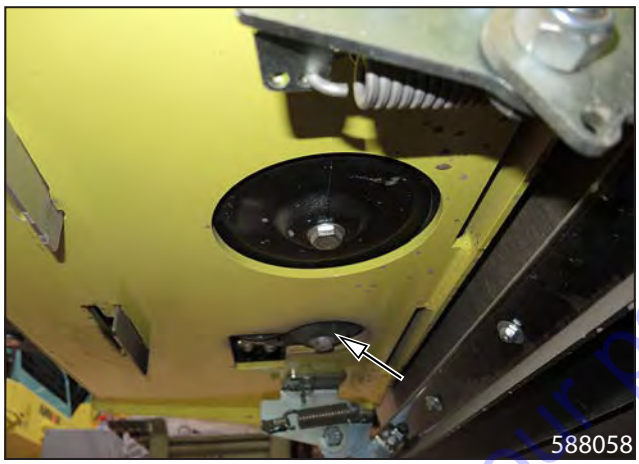
Take out the ventilation filter.

Remove the cap from the hydraulic tank.

Let the oil flow out into the vessel.

Mount the plug. Tighten the screw connection with hand.

Tighten the screw connections in the hydraulic tank with hand.



Note

Drain hydraulic oil only at operating temperature. Residues in the tank are drained with the oil.

Hydraulic circuit filling

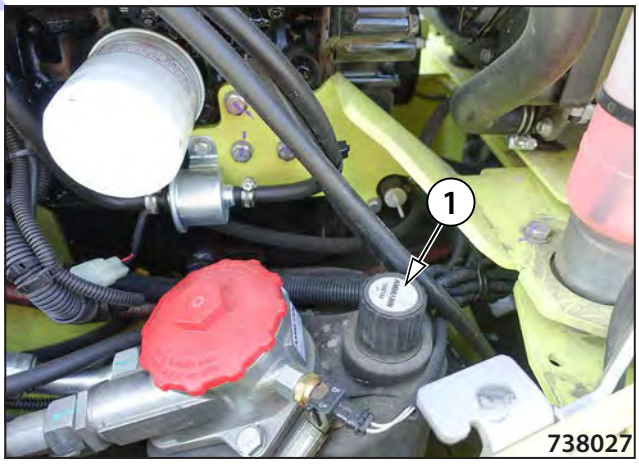
Take out the ventilation filter (1).

Fill the hydraulic oil through the hole into the tank.

Replace the ventilation filter with a new one.

Lubricate the seal ring of the new filter cap with oil.

Mount a new filter (1).



Change the oil when the oil is warm, preferably after you stop using the machine.

Let the drained oil cool down below 50 °C (122 °F).

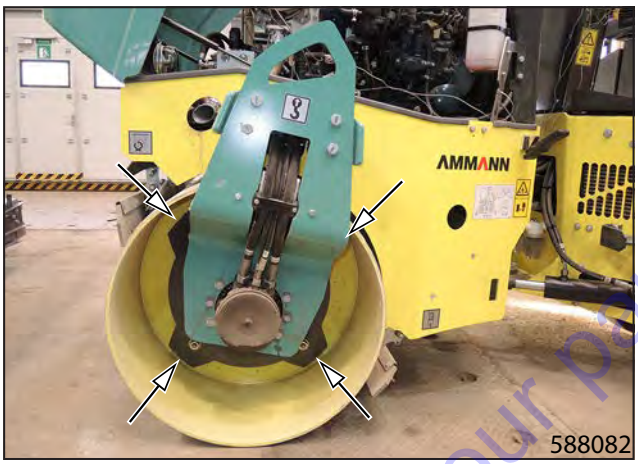
Refill the same type of oil.

Prevent oil from soaking into the ground.

3.6.30 Damping system check

Recheck the rubber-metal elements for condition and for rubber-to-metal bond strength.

Drum rubber-metal element
Order number: 1175152

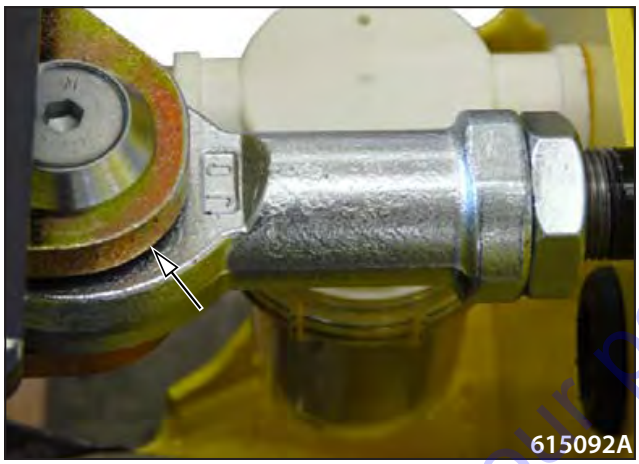


Engine rubber-metal element
Order number: 1622945

Replace if damaged.

Recheck screws and nuts for tightening.

3.6.31 Swinging support check



Once a year check the swinging support for excessive clearance.

Machine equipped with a one-point lifting lug

Lift the machine with a crane while using the one-point lifting lug.

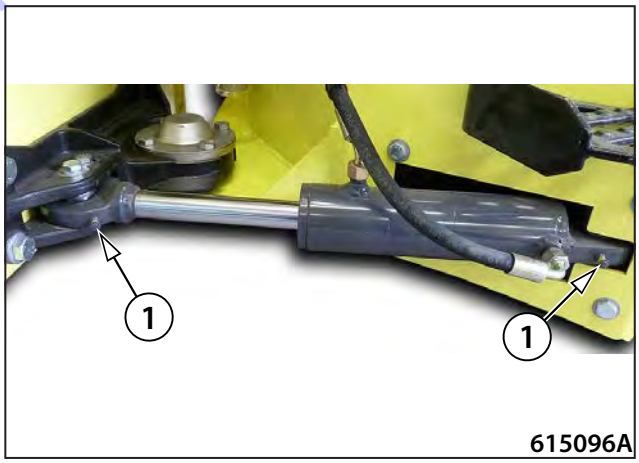
Visually check the clearance of the swinging support by applying pressure on the machine alternatively upwards and downwards.

The machine is not equipped with a one-point lifting lug

Lift the machine slightly with a suitable hydraulic jack.

Visually check the clearance of the swinging support by applying pressure on the machine alternatively upwards and downwards.

3.6.32 Articulation joint check



Once a year check the articulation joint for excessive clearance.

Machine equipped with a one-point lifting lug

Lift the machine with a crane while using the one-point lifting lug.

Visually check the clearance of the articulated joint by applying pressure on the machine alternatively upwards and downwards.

The machine is not equipped with a one-point lifting lug

Lift the machine slightly with a suitable hydraulic jack.

Visually check the clearance of the articulated joint by applying pressure on the machine alternatively upwards and downwards

3.6.33 Valve clearance check and adjustment

Contact the YANMAR service for adjusting the engine valves.

Every 2000 hours of operation

3.6.34 Engine coolant change

Open the cooling system by removing the overpressure plug on the expansion tank.

Remove the drain plug and drain the coolant.

Note

The total volume of coolant in the engine is 3.2 l (0.8 US gal).

3.6.35 Replacement of hoses of the cooling system

Replace hoses of the cooling system.

3.6.36 EGR valve inspection

Contact the YANMAR service for EGR valve inspection.

Maintenance as required

3.6.37 Cleaning the water tank

Remove the cap of the filler neck of the tank.

Clean the strainer in the filler neck.

Remove the drain plug of the water tank.

Rinse the tank with running water.

3.6.38 Cleaning the machine

Clean the machine from big impurities after completing the work.

Clean the whole machine completely on regular basis, at least once a week.

Before cleaning with pressure water or steam, cover all holes, into which the cleaning agent could penetrate (e.g. intake opening of the engine). After completing the cleaning, remove the end caps.

Do not direct the running water or steam at the electric parts or insulation materials. Always cover such materials (interior of the alternator, etc.).

Clean with the engine stopped.

Do not use aggressive or easily ignitable cleaning agents (e.g. petrol and/or easily flammable substances).

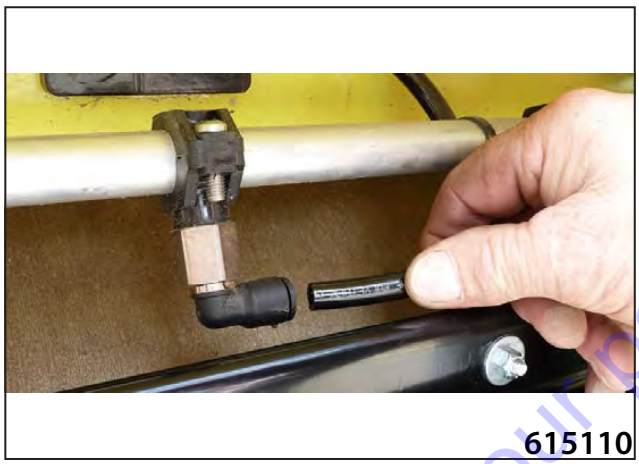
Follow environmental standards and regulations when cleaning the machine!

Clean the machine in a workplace equipped with a catching system of cleaning agents to avoid contamination of the soil and water resources!

Do not use forbidden cleaning agents!

3.6.39 Draining water from the sprinkling circuit before the winter season

Water must be drained from the sprinkling circuit before the winter season because the individual parts may get damaged due to frost.



615110

615111B

Procedure for draining water from the sprinkling circuit

Release the quick coupler of the sprinkling hose.

Push the ring against the screw joint.

Remove the hose from the coupler.

The water will flow out automatically.

Turn on the sprinkling and let the pump run briefly. The remaining water will flow out.

Removal of the sprinkling filter

Remove and clean the vessel with the sprinkling filter. Keep the vessel with the filter in a safe place.

3.6.40 Rear-view mirrors

Before driving the machine, the machine operator (driver) must clean and adjust the external rear view mirrors so that they can clearly see the area behind the machine even when the machine is moving.

It is forbidden to operate the machine without the external rear view mirrors!

Always clean and adjust the external rear view mirrors when the machine is stationary and secured against unintentional movement!

Clean and adjust the external rear view mirrors from the ground or from the driver's stand!

3.6.41 Charging of the battery

- Remove the battery from the machine to charge.
- Only use chargers with an appropriate rated voltage. Check that the charger is strong enough to charge the battery not too strong to charge with excessive current.
- Read and observe the operating manual of the charger manufacturer.

- Check that the ventilation holes in the battery cover are not dirty or clogged and that gases can escape freely.
- Connect the positive terminal (+) of the battery to the positive terminal of the charger.
- Connect the negative terminal (-) of the battery to the negative terminal of the charger.
- Turn on the charger only after connecting the battery.
- Charge the battery with current corresponding to one tenth of the battery capacity.
- After charging, first turn off the charger and then disconnect the cables from the battery.

- The battery is fully charged, if:
  - electric current and voltage remain constant in the case of voltage-controlled chargers,
  - the charging voltage in the case of current-controlled chargers does not increase within two hours, the automatic charger turns off or switches to maintaining charge.

Use rubber gloves and eye protection devices when handling the battery.

Use suitable clothing to protect your skin against contact with the electrolyte.

After eye contact with the battery electrolyte, immediately flush the affected eye thoroughly with running water for several minutes. Then seek medical advice.

After ingestion of the electrolyte drink large quantities of milk, water or suspension of magnesium hydroxide in water.

In case of skin contact with electrolyte, remove your clothing and shoes, wash the affected skin immediately with soap and water or with solution of water and soda. Then seek medical advice.

Do not eat, drink and smoke while working!

After completing the work, wash your hands and face thoroughly with water and soap!

Do not check that a wire is live by touching the machine frame.

When working with the battery always follow instructions of the battery manufacturer!

Never charge a frozen battery or battery with a temperature above 45 °C.

Stop charging if the battery is hot or leaking acid.

Check that the ventilation holes in the battery cover are not dirty or clogged and that gases can escape freely. If the ventilation holes are clogged, gases can accumulate inside the battery and irreversibly damage it.

Never make direct conductive connection between both poles of the battery to avoid a short circuit and a risk of explosion of the battery.

Do not turn the battery upside down, the electrolyte can flow out.

If the electrolyte is spilled, wash the affected area with water and neutralize with lime.

Hand over the old inoperative battery for disposal.

3.6.42 Checking the screw connections for tightening

- Check regularly the screw connections for loosening.
- Use torque spanners for tightening.

	TIGHTENING TORQUE					TIGHTENING TORQUE			
	For screws 8.8 (8G)		For screws 10.9 (10K)			For screws 8.8 (8G)		For screws 10.9 (10K)	
Thread	Nm	lb ft	Nm	lb ft	Thread	Nm	lb ft	Nm	lb ft
M6	10	7.4	14	10.3	M18×1.5	220	162.2	312	230.1
M8	24	25.0	34	25.0	M20	390	287.6	550	405.6
M8×1	19	14.0	27	19.9	M20×1.5	312	230.1	440	324.5
M10	48	35.4	67	49.4	M22	530	390.9	745	549.4
M10×1.25	38	28.0	54	39.8	M22×1.5	425	313.4	590	435.1
M12	83	61.2	117	86.2	M24	675	497.8	950	700.6
M12×1.25	66	48.7	94	69.3	M24×2	540	398.2	760	560.5
M14	132	97.3	185	136.4	M27	995	733.8	1400	1032.5
M14×1.5	106	78.2	148	109.1	M27×2	795	586.3	1120	826.0
M16	200	147.5	285	210.2	M30	1,350	995.7	1,900	1401.3
M16×1.5	160	118.0	228	168.1	M30×2	1,080	796.5	1,520	1121.0
M18	275	202.8	390	287.6					

Values given in the table are tightening torques for dry threads (friction coefficient = 0.14). The values are not applicable to lubricated threads.

Table of tightening torques of cap nuts with sealing O-rings – hoses

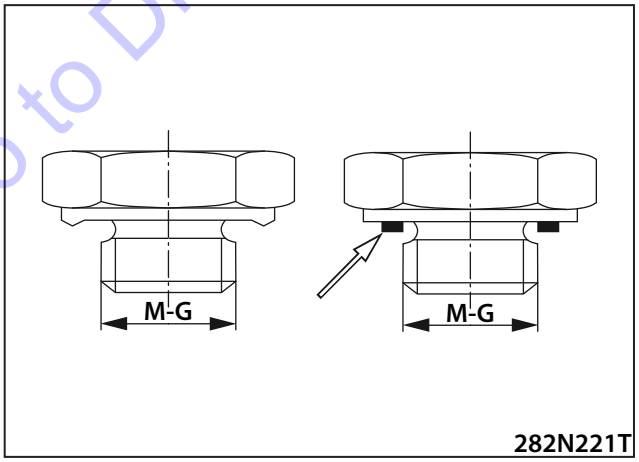
			Tightening torque values of cap nuts with O-rings – hoses					
			Nm			lb ft		
Spanner size	Thread	Pipe	Nominal	Min	Max	Nominal	Min	Max
14	12×1.5	6	20	15	25	15	11	18
17	14×1.5	8	38	30	45	28	22	33
19	16×1.5	8	45	38	52	33	28	38
		10						
22	18×1.5	10	51	43	58	38	32	43
		12						
24	20×1.5	12	58	50	65	43	37	48
27	22×1.5	14	74	60	88	55	44	65
		15						
30	24×1.5	16	74	60	88	55	44	65
32	26×1.5	18	105	85	125	77	63	92
36	30×2	20	135	115	155	100	85	114
		22						
41	36×2	25	166	140	192	122	103	142
46		28						
50	42×2	30	240	210	270	177	155	199
50	45×2	35	290	255	325	214	188	240
	52×2	38	330	280	380	243	207	280
		42						

Table of tightening torque values for necks with tightening edges or with flat gaskets

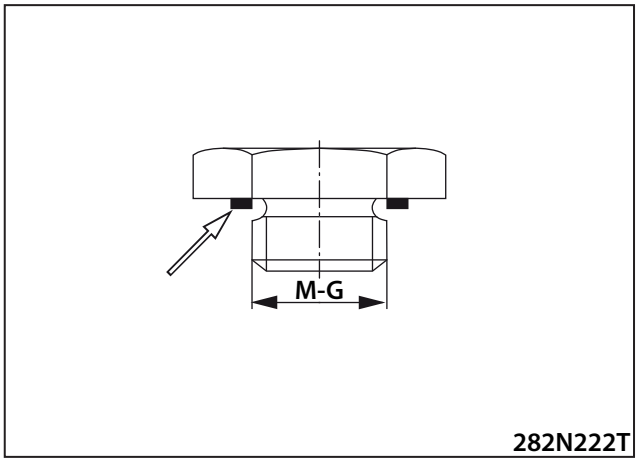
	Neck tightening torques	
G-M	**Nm**	**lb ft**
G 1/8	25	18
G 1/4	40	30
G 3/8	95	70
G 1/2	130	96
G 3/4	250	184
G 1	400	295
G 11/4	600	443
G 11/2	800	590
10×1	25	18
12×1.5	30	22
14×1.5	50	37
16×1.5	60	44
18×1.5	60	44
20×1.5	140	103
22×1.5	140	103
26×1.5	220	162
27×1.5	250	184
33×1.5	400	295
42×1.5	600	443
48×1.5	800	590

Table of tightening torques for plugs with flat gaskets

	Plug tightening torques	
G-M	**Nm**	**lb ft**
G 1/8	15	11
G 1/4	33	24
G 3/8	70	52
G 1/2	90	66
G 3/4	150	111
G 1	220	162
G 11/4	600	443
G 11/2	800	590
10×1	13	10
12×1.5	30	22
14×1.5	40	30
16×1.5	60	44
18×1.5	70	52
20×1.5	90	66
22×1.5	100	74
26×1.5	120	89
27×1.5	150	111
33×1.5	250	184
42×1.5	400	295
48×1.5	500	369



282N221T



282N222T

3.7 Troubleshooting

The defects are usually caused by incorrect operation of the machine. Therefore in case of any defect read carefully instructions given in the operation and maintenance manual for your machine and engine. If you cannot identify a cause of the defect, contact the service department of the authorised dealer or the manufacturer.

The troubleshooting in hydraulic and electric systems requires knowledge of hydraulic systems and electrical installations; therefore contact the service department of an authorised dealer or the manufacturer for troubleshooting.

3.7 Troubleshooting

3.7.1 List of error codes displayed on the display

Machine error codes

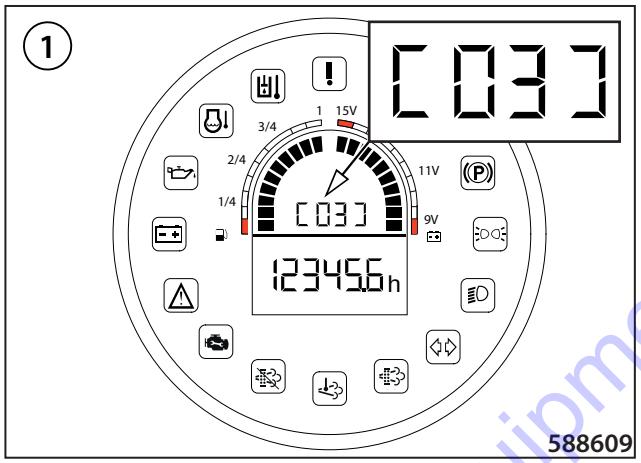
First stage

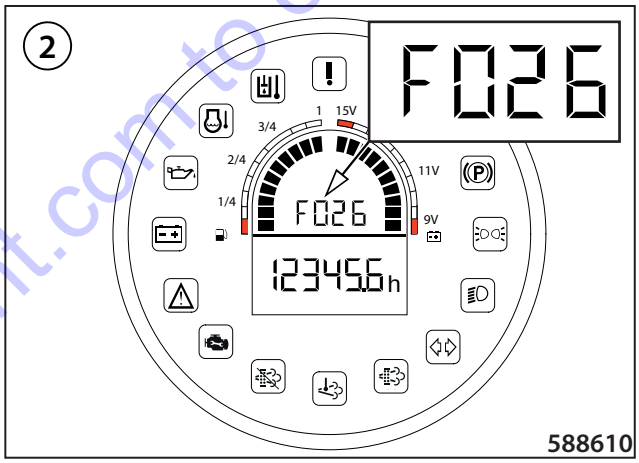
There are no errors, but warnings of some processes.

Warning on the display	Description
- 11	Seat contact open
- 12	One or both levers are out of Parking brake position
- 16	Immobiliser is active

Second stage

If there are one or more active errors (from the engine or control unit), the display first shows the amount of these errors in square brackets (1) and then the numbers of the errors one by one (2). The errors are thus displayed one by one as long as they are active.





Error on the display	SPN	Description
F21	52300	[MACH] Drive Joystick Right failure
F23	52301	[MACH] Drive Joystick Left failure
F25	51010	[PIN_134] SprinkPot - Master input signal short to power
F26	51305	[PIN_128] HydrTempR - Input signal short to power
F26	52016	[SF] SF5.2 - SafetyFunction Hydraulic temperature sensor diagnostic (SF_HydrOilTempSensor-Diagnostics)
F29	51000	[PIN_150] VibrRearDrum - An input signal is too low / Short circuit to ground
F29	51001	[PIN_174] VibrMode - An input signal is too low / Short circuit to ground
F29	51002	[PIN_101] VibrTypeFineLow - An input signal is too low / Short circuit to ground
F29	51005	[PIN_125] VibrTypeRoughLow - An input signal is too low / Short circuit to ground

Error on the display	SPN	Description
F29	51006	[PIN_156] VibrFrontOn - HS OpenLoad / Short To Power external
F29	51007	[PIN_180] VibrRearOn - HS OpenLoad / Short To Power external
F29	51008	[PIN_183] VibrRoughOn - HS OpenLoad / Short To Power external
F30	51103	[PIN_186] BrakeValve - HS OpenLoad / Short To Power external
F32	52015	[SF] SF5.1 - SafetyFunction Hydraulic oil over temperature (SF_HydrOilOverTemperature)
F36	51100	[PIN_153] PumpFW - Deviation of current control
F37	51101	[PIN_177] PumpRW - Deviation of current control
F38	52006	[SF] SF2.9 - SafetyFunction Drive direction (SF_DriveDirection)
F42	51301	[PIN_104] Infratemperature - Master input signal short to power
F45	52314	[MACH] Frequency out of range or 0x12 Compaction module: The freq. pulse on the input is missing but the muru and delta phi are on the bus.
F46	52315	[MACH] Amplitude too low or 0x21 Compaction module: The internal acceleration sensor has an error or an overflow of the measurement range.
F47	52319	[MACH] Compaction module: communication failure
F48	52310	[MACH] 0x01 Compaction module: The device has no parameters at all (new device reset to factory settings).
F48	52311	[MACH] 0x02 Compaction module: The parameters are invalid (out of range or generally no mass and only SN and type).
F48	52312	[MACH] 0x03 Compaction module: The device has no calibration (basic parameters set
F48	52313	[MACH] 0x11 Compaction module: No muru and delta phi The muru and delta phi are not received (but vibration is on). 1
F48	52316	[MACH] 0x31 Compaction module: The measurement algorithm
F48	52318	[MACH] Compaction module: ACE not calibrated [DM_ERR_07]
F50	52003	[SF] SF2.4 - SafetyFunction Parking brake monitoring (SF_ParkingBrakeMonitoring)
F51	50029	[HW] CAN_BUS0 - CAN Bus off
F51	50030	[HW] CAN_BUS0 - CAN warning
F51	50031	[HW] CBUS0_HWBUF_SND0 - HW-Buffer overflow send
F51	50032	[HW] CBUS0_HWBUF_SND1 - HW-Buffer overflow send
F51	50033	[HW] CBUS0_HWBUF_SND2 - HW-Buffer overflow send
F51	50034	[HW] CBUS0_HWBUF_SND3 - HW-Buffer overflow send
F51	50035	[HW] CBUS0_HWBUF_SND4 - HW-Buffer overflow send
F51	50036	[HW] CBUS0_HWBUF_SND5 - HW-Buffer overflow send
F51	50037	[HW] CBUS0_HWBUF_RCV0 - HW-Buffer overflow receive
F51	50038	[HW] CBUS0_HWBUF_RCV1 - HW-Buffer overflow receive
F51	50039	[HW] CBUS0_HWBUF_RCV2 - HW-Buffer overflow receive

Error on the display	SPN	Description
F51	50040	[HW] CBUS0_HWBUF_RCV3 - HW-Buffer overflow receive
F51	50041	[HW] CBUS0_HWBUF_RCV4 - HW-Buffer overflow receive
F51	50042	[HW] CBUS0_HWBUF_RCV5 - HW-Buffer overflow receive
F51	50043	[HW] CBUS0_HWBUF_RCV6 - HW-Buffer overflow receive
F51	50044	[HW] CBUS0_HWBUF_RCV7 - HW-Buffer overflow receive
F51	50045	[HW] CBUS0_CBUF_SND_1 - Software Buffer SW-Overflow
F52	50046	[HW] CAN_BUS1 - CAN Bus off
F52	50047	[HW] CAN_BUS1 - CAN warning
F52	50048	[HW] CBUS1_HWBUF_SND0 - HW-Buffer overflow send
F52	50049	[HW] CBUS1_HWBUF_SND1 - HW-Buffer overflow send
F52	50050	[HW] CBUS1_HWBUF_SND2 - HW-Buffer overflow send
F52	50051	[HW] CBUS1_HWBUF_SND3 - HW-Buffer overflow send
F52	50052	[HW] CBUS1_HWBUF_SND4 - HW-Buffer overflow send
F52	50053	[HW] CBUS1_HWBUF_SND5 - HW-Buffer overflow send
F52	50054	[HW] CBUS1_HWBUF_RCV0 - HW-Buffer overflow receive
F52	50055	[HW] CBUS1_HWBUF_RCV1 - HW-Buffer overflow receive
F52	50056	[HW] CBUS1_HWBUF_RCV2 - HW-Buffer overflow receive
F52	50057	[HW] CBUS1_HWBUF_RCV3 - HW-Buffer overflow receive
F52	50058	[HW] CBUS1_HWBUF_RCV4 - HW-Buffer overflow receive
F52	50059	[HW] CBUS1_HWBUF_RCV5 - HW-Buffer overflow receive
F52	50060	[HW] CBUS1_HWBUF_RCV6 - HW-Buffer overflow receive
F52	50061	[HW] CBUS1_HWBUF_RCV7 - HW-Buffer overflow receive
F53	50010	[HW] CAN_BUS2 - CAN Bus off
F53	50011	[HW] CAN_BUS2 - CAN warning
F53	50062	[HW] CBUS2_HWBUF_SND0 - HW-Buffer overflow send
F53	50063	[HW] CBUS2_HWBUF_SND1 - HW-Buffer overflow send
F53	50064	[HW] CBUS2_HWBUF_SND2 - HW-Buffer overflow send
F53	50065	[HW] CBUS2_HWBUF_SND3 - HW-Buffer overflow send
F53	50066	[HW] CBUS2_HWBUF_SND4 - HW-Buffer overflow send
F53	50067	[HW] CBUS2_HWBUF_SND5 - HW-Buffer overflow send
F53	50068	[HW] CBUS2_HWBUF_RCV0 - HW-Buffer overflow receive

Error on the display	SPN	Description
F53	50069	[HW] CBUS2_HWBUF_RCV1 - HW-Buffer overflow receive
F53	50070	[HW] CBUS2_HWBUF_RCV2 - HW-Buffer overflow receive
F53	50071	[HW] CBUS2_HWBUF_RCV3 - HW-Buffer overflow receive
F53	50072	[HW] CBUS2_HWBUF_RCV4 - HW-Buffer overflow receive
F53	50073	[HW] CBUS2_HWBUF_RCV5 - HW-Buffer overflow receive
F53	50074	[HW] CBUS2_HWBUF_RCV6 - HW-Buffer overflow receive
F53	50075	[HW] CBUS2_HWBUF_RCV7 - HW-Buffer overflow receive
F54	52100	[SW] SafeApp module DLEVR function SetParam unsuccessful
F54	52101	[SW] SafeApp module SFOM_Pump function SetParam unsuccessful
F54	52102	[SW] SafeApp module SFOM_ParkBrake function SetParam unsuccessful
F54	52103	[SW] SafeApp module DMGT function Init unsuccessful
F54	52104	[SW] SafeApp module DLEVR function Init unsuccessful
F54	52105	[SW] SafeApp module SFOM_ShutOff function Init unsuccessful
F54	52106	[SW] SafeApp module SFOM_Pump function Init unsuccessful
F54	52107	[SW] SafeApp module SFOM_ParkBrake function Init unsuccessful
F54	52108	[SW] SafeApp module SFOM_EMCYStop function Init unsuccessful
F55	52200	[SW] App module ENG SetParam unsuccessful
F55	52201	[SW] App module VIBR SetParam unsuccessful
F55	52202	[SW] App module DRIVE SetParam unsuccessful
F55	52203	[SW] App module ECO SetParam unsuccessful
F55	52204	[SW] App module REL SetParam unsuccessful
F55	52205	[SW] App module COOL SetParam unsuccessful
F55	52206	[SW] App module EMCY SetParam unsuccessful
F55	52207	[SW] App module CANMSG SetParam unsuccessful
F55	52208	[SW] App module ERR SetParam unsuccessful
F55	52209	[SW] App module SPRKL SetParam unsuccessful
F55	52210	[SW] App module LIGSIG SetParam unsuccessful
F55	52211	[SW] App module CUT SetParam unsuccessful
F55	52212	[SW] App module BTN SetParam unsuccessful
F55	52213	[SW] App module TCU SetParam unsuccessful
F55	52214	[SW] App module DMGT function Init unsuccessful

Error on the display	SPN	Description
F55	52215	[SW] App module ENG function Init unsuccessful
F55	52216	[SW] App module VIBR function Init unsuccessful
F55	52217	[SW] App module DRIVE function Init unsuccessful
F55	52218	[SW] App module ECO function Init unsuccessful
F55	52219	[SW] App module REL function Init unsuccessful
F55	52220	[SW] App module COOL function Init unsuccessful
F55	52221	[SW] App module EMCY function Init unsuccessful
F55	52222	[SW] App module CANMSG function Init unsuccessful
F55	52223	[SW] App module ERR function Init unsuccessful
F55	52224	[SW] App module SPRKL function Init unsuccessful
F55	52225	[SW] App module LIGSIG function Init unsuccessful
F55	52226	[SW] App module CUT function Init unsuccessful
F55	52227	[SW] App module BTN function Init unsuccessful
F55	52228	[SW] App module TCU function Init unsuccessful
F55	52229	[SW] App module HMI function Init unsuccessful
F55	52230	[SW] App module CALIB function Init unsuccessful
F55	52231	[SW] App module SERV function Init unsuccessful
F55	52232	[SW] App module INCTRL function Init unsuccessful
F55	52233	[SW] App module HMI function SetParam unsuccessful
F55	52234	[SW] App module CALIB function SetParam unsuccessful
F55	52235	[SW] App module SERV function SetParam unsuccessful
F55	52236	[SW] App module INCTRL function SetParam unsuccessful
F55	52237	[SW] Software blocks of pins initialization unsuccessful
F56	50000	[HW] Ecu0_Safety - Input board circuit error - supply check needed
F56	50001	[HW] Ecu0_Safety - Fatal input board circuit error
F56	50002	[HW] Ecu0_Safety - Input pin error - check ECU Timer-Inputs and EMI
F56	50003	[HW] Ecu0_Safety - Digital pin error - check ECU hardware and EMI
F56	50004	[HW] Ecu0_Safety - PWM output error - check ECU hardware and EMI
F56	50005	[HW] Ecu0_Safety - CPU core error - check source code and EMI
F56	50006	[HW] Ecu0_Safety - Memory error
F56	50007	[HW] Ecu0_Safety - Error during watchdog startup - check watchdog timing constraints

Error on the display	SPN	Description
F56	50008	[HW] Ecu1_Safety - Safety switch error - check external shut-off pins and ECU hardware
F56	50009	[HW] Ecu1_Safety - Application code called safe state
F56	50012	[HW] Ecu1_Safety - Fatal error caused safe state - replace ECU
F56	50013	[HW] Ecu1_Safety - BSP error caused safe state - replace ECU
F56	50014	[HW] EcuSil - Task overload
F56	50015	[HW] EcuSil - Batttery Low
F56	50016	[HW] EcuSil - Battery High
F57	50019	[HW] SensorSupply - Sensor Supply S1 Low
F57	50020	[HW] SensorSupply - Sensor Supply S1 High
F57	50021	[HW] SensorSupply - Sensor Supply S2 Low
F57	50022	[HW] SensorSupply - Sensor Supply S2 High
F57	50023	[HW] SensorSupply - Sensor Supply 5V Low
F57	50024	[HW] SensorSupply - Sensor Supply 5V High
F58	50017	[HW] EcuSil - Temperature Low
F58	50018	[HW] EcuSil - Temperature High
F59	50025	[HW] ErrList - List load oneset
F59	50026	[HW] ErrList - List load defect
F59	50027	[HW] ErrList - List store defect
F59	50028	[HW] ErrList - DM_LIST_OVERFLOW
F60	52305	[HW] Engine type auto detection failed
F61	52306	[HW] Engine CAN communication lost
F62	52308	[HW] Alternator error
F63	52309	[HW] Engine speed is too high
F64	52329	[SW] Engine speed mismatch between command and measurement
F70	52000	[SF] SF2.1 - SafetyFunction Drive pump diagnostic (SF_PumpDiagnostics)
F71	52001	[SF] SF2.2 - SafetyFunction Operator presence detection hard ramp (SF_OperatorPresenceDetectionHard)
F72	52002	[SF] SF2.3 - SafetyFunction Emergency stop (SF_EmcyStop)
F73	52004	[SF] SF2.5 - SafetyFunction Drive lever position validation (SF_DriveLeverPosValidation)
F74	52005	[SF] SF2.6 - SafetyFunction Parking brake diagnostic (SF_ParkingBrakeDiagnostic)
F76	52008	[SF] SF3.1 - SafetyFunction Drive lever crosscheck (SF_DriveLeverCrosscheck)

Error on the display	SPN	Description
F77	52009	[SF] SF3.2 / SF3.7 - SafetyFunction Operator presence detection soft ramp (SF_OperatorPresence-DetectionSoft)
F78	52010	[SF] SF3.3 - SafetyFunction Gear switch pump limitation (SF_GearSwitchPumpLimitation)
F79	52011	[SF] SF4.1 - SafetyFunction Drive lever CAN validation external input lever right (SF_DriveLever-CANValidationExtInpLvrR)
F80	52012	[SF] SF4.1 - SafetyFunction Drive lever CAN validation (SF_DriveLeverCANValidation)
F81	52013	[SF] SF4.2 - SafetyFunction Drive lever Emergency Stop - panic reaction (SF_DriveLeverEMCYS-top)
F82	52014	[SF] SF4.7 - SafetyFunction Drive lever presence (SF_DriveLeverCount)
F83	52017	[SF] SF6.1 - SafetyFunction Gear switch crosscheck (SF_GearSwitchCrossCheck)
F84	52018	[SF] SF7.1 - SafetyFunction Drive lever autodetection (SF_DriveLeverAutodetection)
F100	633	[ENG] Rail pressure limiter emergency open
F101	1347	[ENG] SCV(MPROP) stuck
F102	1239	[ENG] Fuel leak (in high pressured fuel system)
F103	157	[ENG] Rail pressure sensor: Low
F104	157	[ENG] Rail pressure sensor: High
F105	523535	[ENG] Injector charge voltage: High
F106	651	[ENG] Open circuit of harness/coil in 1st cylinder injector
F107	653	[ENG] Open circuit of harness/coil in 3rd cylinder injector
F108	654	[ENG] Open circuit of harness/coil in 4th cylinder injector
F109	652	[ENG] Open circuit of harness/coil in 2nd cylinder injector
F110	110	[ENG] Engine overheat - SPN 110
F111	190	[ENG] Engine overrun
F112	100	[ENG] Oil pressure error
F112	52307	[HW] Oil pressure error for mechanical engine
F113	628	[ENG] ECU FLASH ROM error
F114	1077	[ENG] ECU CPU (Main IC) error
F115	523527	[ENG] ECU CPU (Monitoring IC) error
F116	523525	[ENG] Injector charge voltage: Low
F117	1347	[ENG] Open circuit of SCV (MPROP)
F118	1347	[ENG] SCV (MPROP) drive system error

Error on the display	SPN	Description
F119	1077	[ENG] Injector drive IC error or Open circuit
F120	523605	[ENG] Internal injector drive circuit short
F121	3509	[ENG] Sensor supply voltage 1: Low
F122	3509	[ENG] Sensor supply voltage 1: High
F123	523523	[ENG] No.1 & 4 cylinder injector short to +B or GND
F124	523524	[ENG] No. 2 & 3cylinder injector short to +B or GND
F125	679	[ENG] Pressure limiter not open
F126	679	[ENG] Rail pressure failure after pressure limiter open
F127	523547	[ENG] CAN2 Bus off
F128	523604	[ENG] CAN1 Bus off
F129	523548	[ENG] CAN-KBT Frame error
F150	132	[ENG] MAF sensor: Low
F151	132	[ENG] MAF sensor: High
F152	3252	[ENG] Emission deterioration
F153	4765	[ENG] Emergency Exhaust gas temperature sensor 0: High - F153
F154	3242	[ENG] Emergency Exhaust gas temperature sensor 1: High
F155	3246	[ENG] Emergency Exhaust gas temperature sensor 2: High - F155
F156	3701	[ENG] Excessive PM5
F157	523601	[ENG] High exhaust gas temp. after emergency high temp. DTC.
F200	636	[ENG] NE-G phase shift. NE: Crankshaft position sensor. G : Camshaft position sensor
F201	157	[ENG] High rail pressure
F202	110	[ENG] Coolant temperature sensor: Low - F202
F203	110	[ENG] electrical engine - Coolant temperature sensor: High - F203
F203	52317	[ENG] mechanical engine - Coolant temperature sensor: High - F203
F204	636	[ENG] No input of NE sensor (Crank position sensor) pulse
F205	636	[ENG] NE sensor (Crank position sensor) pulse number error
F206	523544	[ENG] Batt short of glow relay driving circuit
F207	168	[ENG] Battery voltage: Low
F208	168	[ENG] Battery voltage: High

Error on the display	SPN	Description
F209	1347	[ENG] Batt short circuit of SCV (MPROP)
F210	3510	[ENG] Sensor supply voltage 2: Low - F210
F211	3510	[ENG] Sensor supply voltage 2: High - F211
F212	3511	[ENG] Sensor supply voltage 3: Low
F213	3511	[ENG] Sensor supply voltage 3: High
F214	91	[ENG] Accelerator position sensor 1: Low
F215	91	[ENG] Accelerator position sensor 1: High
F216	29	[ENG] Accelerator position sensor 2: Low
F217	29	[ENG] Accelerator position sensor 2: High
F218	523543	[ENG] Accelerator position sensor error (CAN)
F250	132	[ENG] Intake air volume: Low
F251	523574	[ENG] EGR actuator open circuit
F252	523574	[ENG] EGR actuator coil short
F253	523572	[ENG] EGR position sensor failure
F254	3242	[ENG] Exhaust gas temperature sensor 1: Low
F255	3242	[ENG] Exhaust gas temperature sensor 1: High
F256	4765	[ENG] Exhaust gas temperature sensor 0: Low - F256
F257	4765	[ENG] Exhaust gas temperature sensor 0: High - F257
F258	523580	[ENG] Intake throttle feedback error
F259	91	[ENG] Accelerator position sensor correlation error
F260	523575	[ENG] EGR actuator valve stuck
F261	523576	[ENG] EGR (DC motor) overheat
F262	523577	[ENG] EGR (DC motor) temp. sensor failure
F263	3246	[ENG] Exhaust gas temperature sensor 2: Low - F263
F264	3246	[ENG] Exhaust gas temperature sensor 2: High - F264
F265	3251	[ENG] Differential pressure sensor 1: Low
F266	3251	[ENG] Differential pressure sensor 1: High
F267	523582	[ENG] Intake throttle lift sensor: Low
F268	523582	[ENG] Intake throttle lift sensor: High
F269	3701	[ENG] Excessive PM3
F270	3701	[ENG] Excessive PM4
F271	132	[ENG] Boost pressure low
F272	523599	[ENG] All exhaust temp. sensor failure
F273	523602	[ENG] High frequency of regeneration
F274	523578	[ENG] No communication with EGR

The texts are given only in the original language version or as a translation of the original into the English language version.

Error on the display	SPN	Description
F300	172	[ENG] Intake air temp. error: Low
F301	172	[ENG] Intake air temp. error: High
F302	102	[ENG] Boost pressure sensor: Low
F303	102	[ENG] Boost pressure sensor: High
F304	723	[ENG] No input of G sensor (Camshaft position sensor) pulse
F305	723	[ENG] G-sensor (Camshaft position sensor) pulse number error
F306	676	[ENG] Open circuit of glow relay driving circuit - F306
F307	523544	[ENG] Ground short of glow relay driving circuit
F308	676	[ENG] Glow heater relay driving circuit overheat - F308
F309	523538	[ENG] QR (IQA) data error
F310	523538	[ENG] No QR (IQA) data
F311	1485	[ENG] Main relay is locked in closed position
F312	677	[ENG] Ground short of Starter relay driving circuit
F313	108	[ENG] Barometric pressure sensor error (Low side)
F314	108	[ENG] Barometric pressure sensor error (High side)
F350	171	[ENG] Intake air temp. built-in MAF sensor: Low
F351	171	[ENG] Intake air temp. built-in MAF sensor: High
F352	523700	[ENG] EEPROM check sum error
F353	523589	[ENG] Low coolant temp. in parked regeneration
F354	523590	[ENG] Parked regeneration time out
F355	523603	[ENG] Over heat pre-caution - F355
F356	523591	[ENG] CAN CCVS (Parking SW and Vehicle speed) frame error
F357	523592	[ENG] CAN CM1 (Regen SW) frame error
F358	523593	[ENG] CAN DDC1 (Transmission) frame error
F359	523594	[ENG] CAN ETC2 (Neutral SW) frame error
F360	523595	[ENG] CAN ETC5 (Neutral SW) frame error
F361	523596	[ENG] CAN TSC1 frame error
F362	523598	[ENG] CAN EBC1 frame error
F500	51004	[PIN_116] Alternator - Input is short to Ground
F501	51009	[PIN_159] VibrHighOn - HS OpenLoad / Short To Power external
F502	51011	[PIN_179] Sprinkling - HS OpenLoad / Short To Power external
F503	51012	[PIN_158] SprinklingCutter - HS OpenLoad / Short To Power external
F504	51014	[PIN_157] CutterUp - HS OpenLoad / Short To Power external
F505	51015	[PIN_181] CutterDown - HS OpenLoad / Short To Power external
F506	51100	[PIN_153] PumpFW - Open circuit

The texts are given only in the original language version or as a translation of the original into the English language version.

3.7 Troubleshooting

Error on the display	SPN	Description
F507	51101	[PIN_177] PumpRW - Open circuit
F508	51104	[PIN_152] Difflock - HS OpenLoad / Short To Power external
F509	51107	[PIN_151] BrakePressure - An input signal is too low / Short circuit to ground
F510	51200	[PIN_162] StarterRun - HS OpenLoad / Short To Power external
F512	51203	[PIN_161] FuelValve - HS OpenLoad / Short To Power external
F513	51204	[PIN_161] EngEcuOn - HS OpenLoad / Short To Power external
F514	51205	[PIN_188] PreheatRelay - HS OpenLoad / Short To Power external
F515	51206	[PIN_114] PreheatingIn - An input signal is too low / Short circuit to ground
F516	51207	[PIN_126] EngineOverheat - An input signal is too low / Short circuit to ground
F517	51208	[PIN_102] EngineOilPressure - An input signal is too low / Short circuit to ground
F518	51300	[PIN_103] FuelTank - Input signal short to power
F519	51302	[PIN_122] FrontParkingLights - An input signal is too low / Short circuit to ground
F520	51303	[PIN_123] LeftDirectionLights - An input signal is too low / Short circuit to ground
F521	51304	[PIN_124] StartT50 - An input signal is too low / Short circuit to ground
F522	51306	[PIN_111 PIN_135] SeatSwitch - Logical Error between pin 0 and 1
F525	51309	[PIN_138] PreheatingLamp - An input signal is too low / Short circuit to ground
F526	51310	[PIN_146] FrontHeadLights - An input signal is too low / Short circuit to ground
F527	51311	[PIN_147] RightDirectionLights - An input signal is too low / Short circuit to ground
F528	51312	[PIN_148] Immobiliser - An input signal is too low / Short circuit to ground
F529	51313	[PIN_154] Fan - HS OpenLoad / Short To Power external
F531	51315	[PIN_191] Horn - HS OpenLoad / Short To Power external
F534	51318	[PIN_194] TelematicEngineRun - HS OpenLoad / Short To Power external
F535	51319	[PIN_251] PumpReturn - HS OpenLoad / Short To Power external
F536	51321	[PIN_160] Edge Cutter Enable (digital output - short to GND/PWR
F537	51322	[PIN_184] DPF auto regeneration enable (digital output - short to GND
F538	51323	[PIN_187] DPF parked regeneration command (digital output - short to GND
F539	51324	[PIN_239] DPF parked regeneration request (switch normally open - short to GND/PWR
F540	51325	[PIN_252] DPF inhibit regeneration request (switch normally open - short to GND/PWR

Safety function errors

Error on the display	Description
F70	[SF] SF2.1 - SafetyFunction Drive pump diagnostic
F71	[SF] SF2.2 - SafetyFunction Operator presence detection hard ramp
F72	[SF] SF2.3 - SafetyFunction Emergency stop
F73	[SF] SF2.5 - SafetyFunction Drive lever position validation
F74	[SF] SF2.6 - SafetyFunction Parking brake diagnostic
F76	[SF] SF3.1 - SafetyFunction Drive lever crosscheck
F77	[SF] SF3.2 / SF3.7 - SafetyFunction Operator presence detection soft ramp
F78	[SF] SF3.3 - SafetyFunction Gear switch pump limitation
F79	[SF] SF4.1 - SafetyFunction Drive lever CAN validation external input lever right
F80	[SF] SF4.1 - SafetyFunction Drive lever CAN validation
F81	[SF] SF4.2 - SafetyFunction Drive lever Emergency Stop - panic reaction
F82	[SF] SF4.7 - SafetyFunction Drive lever presence
F83	[SF] SF6.1 - SafetyFunction Gear switch crosscheck
F84	[SF] SF7.1 - SafetyFunction Drive lever autodetection

Pin error reporting

Error on the display	Description
F500	ECU PIN_116 failure Alternator
F501	ECU PIN_159 failure VibrHighOn
F502	ECU PIN_179 failure Sprinkling
F503	ECU PIN_158 failure SprinklingCutter
F504	ECU PIN_157 failure CutterUp
F505	ECU PIN_181 failure CutterDown
F506	ECU PIN_153 failure PumpFW
F507	ECU PIN_177 failure PumpRW
F508	ECU PIN_152 failure Difflock
F509	ECU PIN_151 failure BrakePressure
F510	ECU PIN_162 failure StarterRun
F512	ECU PIN_161 failure FuelValve
F513	ECU PIN_161 failure EngEcuOn
F514	ECU PIN_188 failure PreheatRelay
F515	ECU PIN_114 failure PreheatingIn
F516	ECU PIN_126 failure EngineOverheat
F517	ECU PIN_102 failure EngineOilPressure
F518	ECU PIN_103 failure FuelTank
F519	ECU PIN_122 failure FrontParkingLights
F520	ECU PIN_123 failure LeftDirectionLights
F521	ECU PIN_124 failure StartT50
F522	ECU PIN_111 PIN_135 failure SeatSwitch - Logical Error between pin 0 and 1
F525	ECU PIN_138 failure PreheatingLamp
F526	ECU PIN_146 failure FrontHeadLights
F527	ECU PIN_147 failure RightDirectionLights
F528	ECU PIN_148 failure Immobiliser
F529	ECU PIN_154 failure Fan
F530	ECU PIN_155 failure HornSeat
F531	ECU PIN_191 failure Horn
F532	ECU PIN_173 failure BrakeLight
F533	ECU PIN_176 failure HornBack
F534	ECU PIN_194 failure TelematicEngineRun
F535	ECU PIN_251 failure PumpReturn

Yanmar engine errors

If an engine error is displayed, stop the machine and contact service.

Error	Description
F130	[ENG] Engine Fuel Rack Position Sensor : Shorted to high source
F131	[ENG] E-ECU Internal Temperature Sensor: Too high
F132	[ENG] System voltage : Too High
F133	[ENG] System voltage : Too Low
F134	[ENG] Engine Fuel Injection Pump Speed Sensor : Shorted to low source
F135	[ENG] Engine Fuel Rack Actuator Relay : Circuit fault B
F136	[ENG] Engine Fuel Rack Actuator Relay : Circuit fault A
F137	[ENG] Oil Pressure Switch: Shorted to low source
F138	[ENG] Charge warning
F139	[ENG] Engine Coolant Temperature : Abnormal Malfunction
F140	[ENG] Air Cleaner : Mechanical Malfunction
F141	[ENG] Oily Water Separator : Michanical Malfunction
F142	[ENG] Engine : Malfunction
F143	[ENG] Engine Fuel Rack Actuator : Shorted to high source
F144	[ENG] Engine Fuel Rack Actuator : Shorted to low source
F145	[ENG] Engine Fuel Rack Actuator : Mechanical Malfunction
F146	[ENG] E-ECU internal fault : EEPROM Check Sum Error (Data Set 2)
F147	[ENG] E-ECU internal fault : FlashROM Check Sum Error (Main Software)
F148	[ENG] E-ECU internal fault: Engine Map Data Version Error
F219	[ENG] Engine Fuel Rack Position Sensor: Shorted to low source
F220	[ENG] Accelerator Pedal Position Sensor "B" : Below normal operational range (SAE J1843)
F221	[ENG] Accelerator Pedal Position Sensor "A" : Below normal operational range (SAE J1843)
F222	[ENG] Accelerator Pedal Position Sensor "A" : Not available (SAE J1843)
F223	[ENG] Accelerator Pedal Position Sensor "B" : Above normal operational range (SAE J1843)
F224	[ENG] Accelerator Pedal Position Sensor "B" : Below normal operational range (SAE J1843)
F225	[ENG] Accelerator Pedal Position Sensor "B" : Not available (SAE J1843)
F226	[ENG] E-ECU Internal Temperature Sensor: Shorted to high source
F227	[ENG] E-ECU Internal Temperature Sensor: Shorted to low source
F228	[ENG] Sensor 5V: Shorted to high source
F229	[ENG] Sensor 5V: Shorted to low source
F230	[ENG] Battery Charge Switch : Shorted to low source
F231	[ENG] High Speed CAN Communication : Communication fault
F232	[ENG] E-ECU internal fault : EEPROM ReadWrite fault
F233	[ENG] E-ECU Main Relay : Shorted to low source
F234	[ENG] E-ECU internal fault : Sub-CPU Error A
F235	[ENG] E-ECU internal fault : Sub-CPU Error B
F236	[ENG] E-ECU internal fault : Sub-CPU Error C
F237	[ENG] Immobilizer : CAN Communication fault
F238	[ENG] Immobilizer : Pulse Communication fault
F239	[ENG] Immobilizer : System fault
F275	[ENG] EGR Stepping Motor "A" : Circuit fault B
F276	[ENG] EGR Stepping Motor "A" : Circuit fault A
F277	[ENG] EGR Stepping Motor "B" : Circuit fault B

The texts are given only in the original language version or as a translation of the original into the English language version.

Error	Description
F278	[ENG] EGR Stepping Motor "B" : Circuit fault A
F279	[ENG] EGR Stepping Motor "C" : Circuit fault B
F280	[ENG] EGR Stepping Motor "C" : Circuit fault A
F281	[ENG] EGR Stepping Motor "D" : Circuit fault B
F282	[ENG] EGR Stepping Motor "D" : Circuit fault A
F283	[ENG] Air Heater Relay : Circuit fault B
F284	[ENG] Air Heater Relay : Circuit fault A
F285	[ENG] Cold Start Device : Circuit fault B
F286	[ENG] Cold Start Device : Circuit fault A
F315	[ENG] Accelerator Pedal Position Sensor "B" : Intermittent fault
F316	[ENG] Barometric Pressure Sensor : Intermittent fault
F317	[ENG] E-ECU Internal Temperature Sensor: Intermittent fault
F318	[ENG] Engine Coolant Temperature Sensor : Intermittent fault
F319	[ENG] Sensor 5V : Intermittent fault
F320	[ENG] Auxiliary Speed Sensor : Shorted to low source
F321	[ENG] Engine Fuel Rack Actuator Relay : Intermittent fault
F322	[ENG] Reserved
F323	[ENG] Air Heater Relay : Intermittent fault
F363	[ENG] Cold Start Device : Intermittent fault

Messages displayed on the display

Displayed message	Description of the displayed message	Note
btnCAL	Calibration button pressed	
btn br	Brake test button pressed	
br tSt	Brake test active	
rA SEL	Ramp selection	
HArd	Hard ramp	
SoFt	Soft ramp	
tEMP	Temperature unit selection	
C	Celsius	
F	Fahrenheit	
LEFtLu	Left lever presence selection	
OFF	Off - left lever not present	
On	On - left lever present	
tc SEL	Rear drum type (tandem/combi) selection	
tAndEM	Tandem	
CoMbI	Combi	
Saue	Save (menu item)	
SAuIn9	Saving	
SAuEd	Saved	
btnOFF	Off button pressed	
Error	Error when saving new parameters values	
PUMP	Pump calibration (menu item)	
CUrr	Current in mA	Current (to the forward/reverse travel coil) during calibration, the value in [mA] is shown in the upper display
SUCC	Success	The calibration of minimum currents to travel coils successfully completed
FAIL	Failure	Error in the calibration of minimum currents to travel coils – values have not been changed
bAC	Back	One step back in the menu structure
UndEF	Undefined	Unspecified error (contact the service centre)
dPFErr	DPF error	No message about the DPF filter status received from the engine.

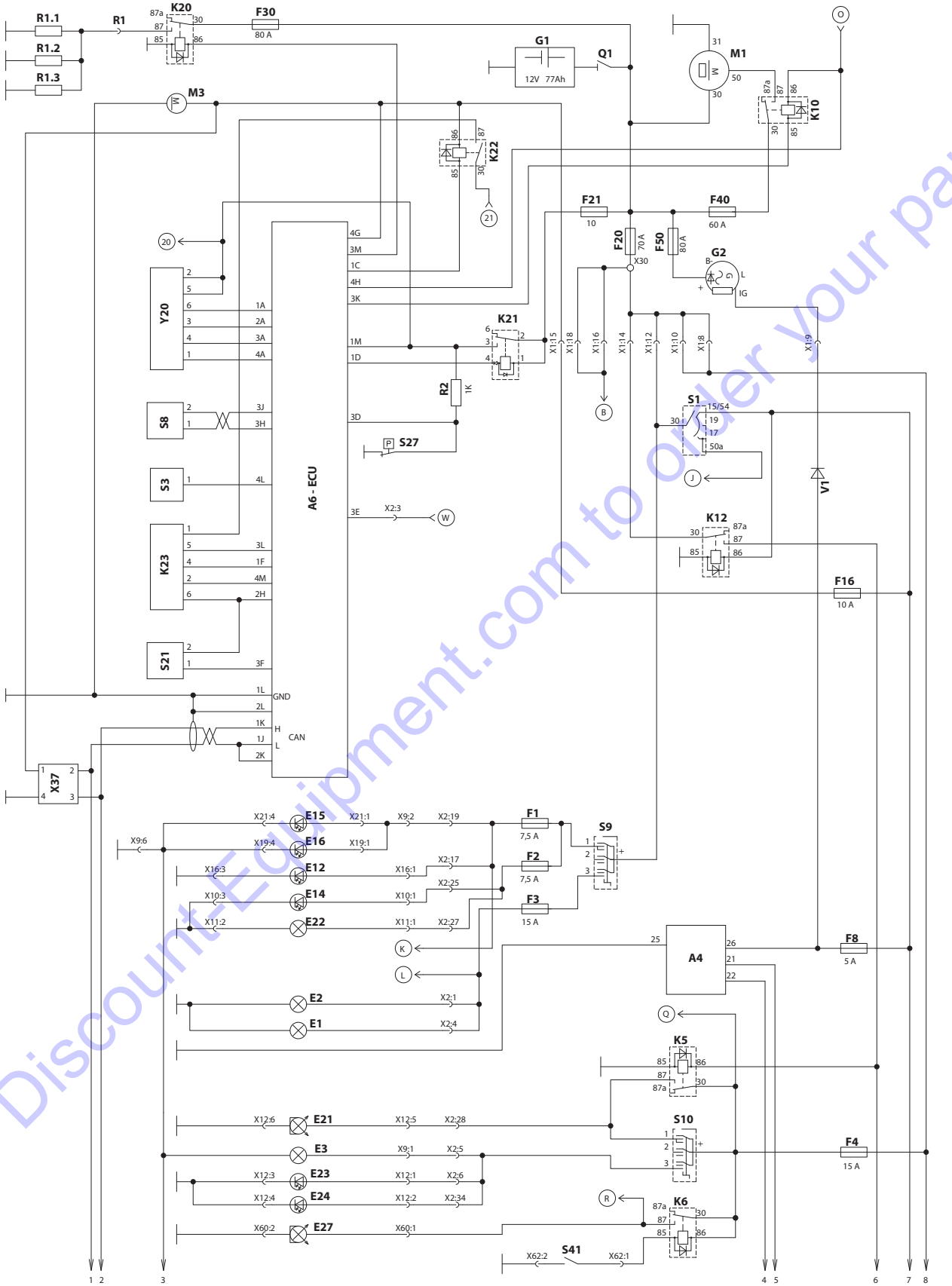
3.8 Appendices

Wiring diagram

Legend:

A7	**Gessmann right travel lever**
S27	Vibration switch
S28	Sprinkling switch
S29	Edge cutter sprinkling switch
S30	Edge cutter selector
A9	**Gessmann left travel lever**
S31	Vibration switch
S32	Sprinkling switch
S33	Edge cutter sprinkling switch
S34	Edge cutter selector
A4	**Bauser display**
A1	Fuel gauge indicator (CAN)
A2	Voltage indicator
H1	ERROR indicator lamp (CAN)
H2	Charging indicator lamp (CAN)
H3	Engine oil pressure indicator lamp (CAN)
H4	Coolant temperature indicator lamp (CAN)
H5	Hydraulic oil temperature indicator lamp (CAN)
H6	Emergency stop indicator lamp (CAN)
H7	Diesel fuel reserve indicator lamp (CAN)
H8	Engine glowing indicator lamp (CAN)
H9	Brake indicator lamp (CAN)
H10	Parking lights indicator lamp (CAN)
H11	Headlamps indicator lamp (CAN)
H12	Indicator lamp for direction indicators (CAN)
A3	Computer HY-TTC 510
A4	Bauser multifunctional display
A5	Infra thermometer
A6	Engine control unit
A7	Travel lever – right
A8	Monitoring device
A9	Travel lever – left
A10	Compaction module
A11	Frequency sensor
B3	Hydraulic oil temperature sensor
B4	Fuel gauge float
C1	Noise suppressing filter
E1, 2	Front headlamps
E3	Rear lights
E12, 14	Front parking lights
E15, 16	Tail lights
E17, 19	Right direction indicators
E18, 20	Left direction indicators
E21	Warning beacon
E22	Licence plate lighting
E23, 24	Working lights, ROPS
E25, 26	Brake lights
E27	Green beacon
F1-16	Fuses
F21, 22	Fuses
F20	Main fuse
F30	Glowing fuse
F40	Starter fuse
F50	Alternator fuse
G1	Battery
G2	Alternator
H13	Horn
H14	Reversing horn
H16	Seat contact delay horn
K1–6	Auxiliary relay
K10	Starter relay
K11	Interrupter
K12	Auxiliary relay
K20	Glowing relay
K21, 22	Auxiliary relay
K23	Fuel injector control
M1	Engine starter
M2	Hydraulic oil cooler
M3	Fuel pump
M4	Sprinkling pump
M11	Emulsion sprinkling pump
Q1	Battery disconnector
R1.1–1.3	Engine glowing
R11	Seat heating
S1	Ignition box
S2	Emergency brake button
S3	CSD coil
S4	Sprinkling potentiometer
S5	Drive mode switch
S6	Automatic vibration switch
S7	Vibration switch, rear
S8	Engine speed sensor
S9	Headlamps switch
S10	Rear lights switch
S11	Warning lights switch
S12	Direction indicators switch
S15	Quantity divider switch (lock)
S18	Seat switch
S21	Cooling water temperature sensor
S22	Brake pressure switch
S24	Horn switch
S25	Brake test switch
S26	Calibration switch
S27	Engine oil pressure switch
S40	Vibration selection switch
S41	Seatbelt switch
V1	Diode
X30	Auxiliary power supply point
X35	Machine diagnostics socket
X36	Engine diagnostic socket
X37	Yanmar diagnostics socket
Y2	Brake valve electromagnet
Y3	Valve electromagnet, forward travel
Y4	Reverse travel valve electromagnet
Y5	Vibration valve electromagnet, front
Y6	Vibration valve electromagnet, rear
Y9	Sprinkling pump valve electromagnet
Y11	Quantity divider valve electromagnet
Y12	Valve electromagnet of the edge cutter – up
Y13	Valve electromagnet of the edge cutter – down
Y14	Valve electromagnet of the edge cutter sprinkling
Y20	EGR valve

(*) Optional equipment
(**) not available



45436A_1en

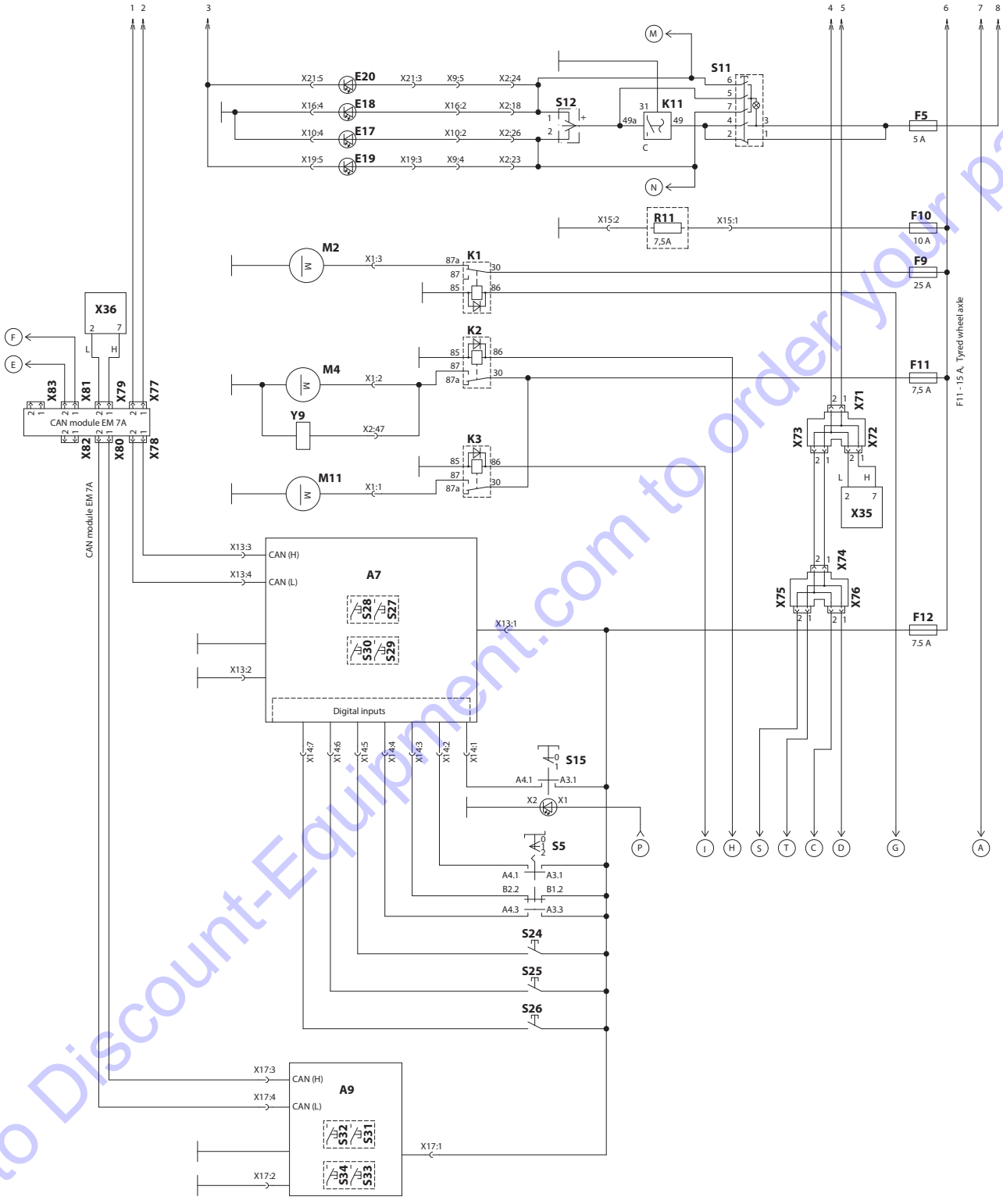
3.8 Appendix

Wiring diagram

Legend:

A7	**Gessmann right travel lever**
S27	Vibration switch
S28	Sprinkling switch
S29	Edge cutter sprinkling switch
S30	Edge cutter selector
A9	**Gessmann left travel lever**
S31	Vibration switch
S32	Sprinkling switch
S33	Edge cutter sprinkling switch
S34	Edge cutter selector
A4	**Bauser display**
A1	Fuel gauge indicator (CAN)
A2	Voltage indicator
H1	ERROR indicator lamp (CAN)
H2	Charging indicator lamp (CAN)
H3	Engine oil pressure indicator lamp (CAN)
H4	Coolant temperature indicator lamp (CAN)
H5	Hydraulic oil temperature indicator lamp (CAN)
H6	Emergency stop indicator lamp (CAN)
H7	Diesel fuel reserve indicator lamp (CAN)
H8	Engine glowing indicator lamp (CAN)
H9	Brake indicator lamp (CAN)
H10	Parking lights indicator lamp (CAN)
H11	Headlamps indicator lamp (CAN)
H12	Indicator lamp for direction indicators (CAN)
A3	Computer HY-TTC 510
A4	Bauser multifunctional display
A5	Infra thermometer
A6	Engine control unit
A7	Travel lever – right
A8	Monitoring device
A9	Travel lever – left
A10	Compaction module
A11	Frequency sensor
B3	Hydraulic oil temperature sensor
B4	Fuel gauge float
C1	Noise suppressing filter
E1, 2	Front headlamps
E3	Rear lights
E12, 14	Front parking lights
E15, 16	Tail lights
E17, 19	Right direction indicators
E18, 20	Left direction indicators
E21	Warning beacon
E22	Licence plate lighting
E23, 24	Working lights, ROPS
E25, 26	Brake lights
E27	Green beacon
F1-16	Fuses
F21, 22	Fuses
F20	Main fuse
F30	Glowing fuse
F40	Starter fuse
F50	Alternator fuse
G1	Battery
G2	Alternator
H13	Horn
H14	Reversing horn
H16	Seat contact delay horn
K1–6	Auxiliary relay
K10	Starter relay
K11	Interrupter
K12	Auxiliary relay
K20	Glowing relay
K21, 22	Auxiliary relay
K23	Fuel injector control
M1	Engine starter
M2	Hydraulic oil cooler
M3	Fuel pump
M4	Sprinkling pump
M11	Emulsion sprinkling pump
Q1	Battery disconnector
R1.1–1.3	Engine glowing
R11	Seat heating
S1	Ignition box
S2	Emergency brake button
S3	CSD coil
S4	Sprinkling potentiometer
S5	Drive mode switch
S6	Automatic vibration switch
S7	Vibration switch, rear
S8	Engine speed sensor
S9	Headlamps switch
S10	Rear lights switch
S11	Warning lights switch
S12	Direction indicators switch
S15	Quantity divider switch (lock)
S18	Seat switch
S21	Cooling water temperature sensor
S22	Brake pressure switch
S24	Horn switch
S25	Brake test switch
S26	Calibration switch
S27	Engine oil pressure switch
S40	Vibration selection switch
S41	Seatbelt switch
V1	Diode
X30	Auxiliary power supply point
X35	Machine diagnostics socket
X36	Engine diagnostic socket
X37	Yanmar diagnostics socket
Y2	Brake valve electromagnet
Y3	Valve electromagnet, forward travel
Y4	Reverse travel valve electromagnet
Y5	Vibration valve electromagnet, front
Y6	Vibration valve electromagnet, rear
Y9	Sprinkling pump valve electromagnet
Y11	Quantity divider valve electromagnet
Y12	Valve electromagnet of the edge cutter – up
Y13	Valve electromagnet of the edge cutter – down
Y14	Valve electromagnet of the edge cutter sprinkling
Y20	EGR valve

(*) Optional equipment
(**) not available



45436A_2en

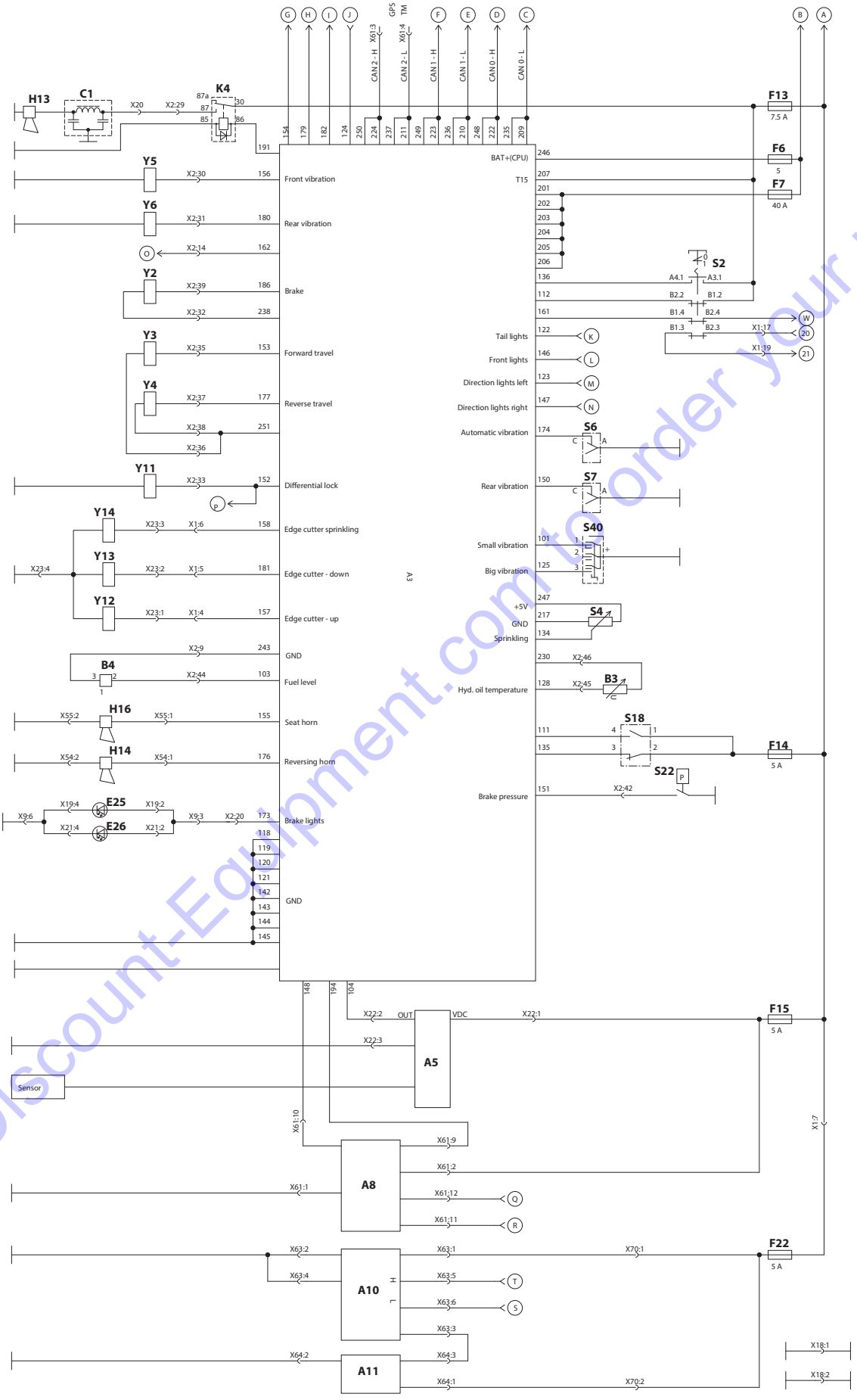
3.8 Appendix

Wiring diagram

Legend:

A7	**Gessmann right travel lever**
S27	Vibration switch
S28	Sprinkling switch
S29	Edge cutter sprinkling switch
S30	Edge cutter selector
A9	**Gessmann left travel lever**
S31	Vibration switch
S32	Sprinkling switch
S33	Edge cutter sprinkling switch
S34	Edge cutter selector
A4	**Bauser display**
A1	Fuel gauge indicator (CAN)
A2	Voltage indicator
H1	ERROR indicator lamp (CAN)
H2	Charging indicator lamp (CAN)
H3	Engine oil pressure indicator lamp (CAN)
H4	Coolant temperature indicator lamp (CAN)
H5	Hydraulic oil temperature indicator lamp (CAN)
H6	Emergency stop indicator lamp (CAN)
H7	Diesel fuel reserve indicator lamp (CAN)
H8	Engine glowing indicator lamp (CAN)
H9	Brake indicator lamp (CAN)
H10	Parking lights indicator lamp (CAN)
H11	Headlamps indicator lamp (CAN)
H12	Indicator lamp for direction indicators (CAN)
A3	Computer HY-TTC 510
A4	Bauser multifunctional display
A5	Infra thermometer
A6	Engine control unit
A7	Travel lever – right
A8	Monitoring device
A9	Travel lever – left
A10	Compaction module
A11	Frequency sensor
B3	Hydraulic oil temperature sensor
B4	Fuel gauge float
C1	Noise suppressing filter
E1, 2	Front headlamps
E3	Rear lights
E12, 14	Front parking lights
E15, 16	Tail lights
E17, 19	Right direction indicators
E18, 20	Left direction indicators
E21	Warning beacon
E22	Licence plate lighting
E23, 24	Working lights, ROPS
E25, 26	Brake lights
E27	Green beacon
F1-16	Fuses
F21, 22	Fuses
F20	Main fuse
F30	Glowing fuse
F40	Starter fuse
F50	Alternator fuse
G1	Battery
G2	Alternator
H13	Horn
H14	Reversing horn
H16	Seat contact delay horn
K1–6	Auxiliary relay
K10	Starter relay
K11	Interrupter
K12	Auxiliary relay
K20	Glowing relay
K21, 22	Auxiliary relay
K23	Fuel injector control
M1	Engine starter
M2	Hydraulic oil cooler
M3	Fuel pump
M4	Sprinkling pump
M11	Emulsion sprinkling pump
Q1	Battery disconnector
R1.1–1.3	Engine glowing
R11	Seat heating
S1	Ignition box
S2	Emergency brake button
S3	CSD coil
S4	Sprinkling potentiometer
S5	Drive mode switch
S6	Automatic vibration switch
S7	Vibration switch, rear
S8	Engine speed sensor
S9	Headlamps switch
S10	Rear lights switch
S11	Warning lights switch
S12	Direction indicators switch
S15	Quantity divider switch (lock)
S18	Seat switch
S21	Cooling water temperature sensor
S22	Brake pressure switch
S24	Horn switch
S25	Brake test switch
S26	Calibration switch
S27	Engine oil pressure switch
S40	Vibration selection switch
S41	Seatbelt switch
V1	Diode
X30	Auxiliary power supply point
X35	Machine diagnostics socket
X36	Engine diagnostic socket
X37	Yanmar diagnostics socket
Y2	Brake valve electromagnet
Y3	Valve electromagnet, forward travel
Y4	Reverse travel valve electromagnet
Y5	Vibration valve electromagnet, front
Y6	Vibration valve electromagnet, rear
Y9	Sprinkling pump valve electromagnet
Y11	Quantity divider valve electromagnet
Y12	Valve electromagnet of the edge cutter – up
Y13	Valve electromagnet of the edge cutter – down
Y14	Valve electromagnet of the edge cutter sprinkling
Y20	EGR valve

(*) Optional equipment
(**) not available

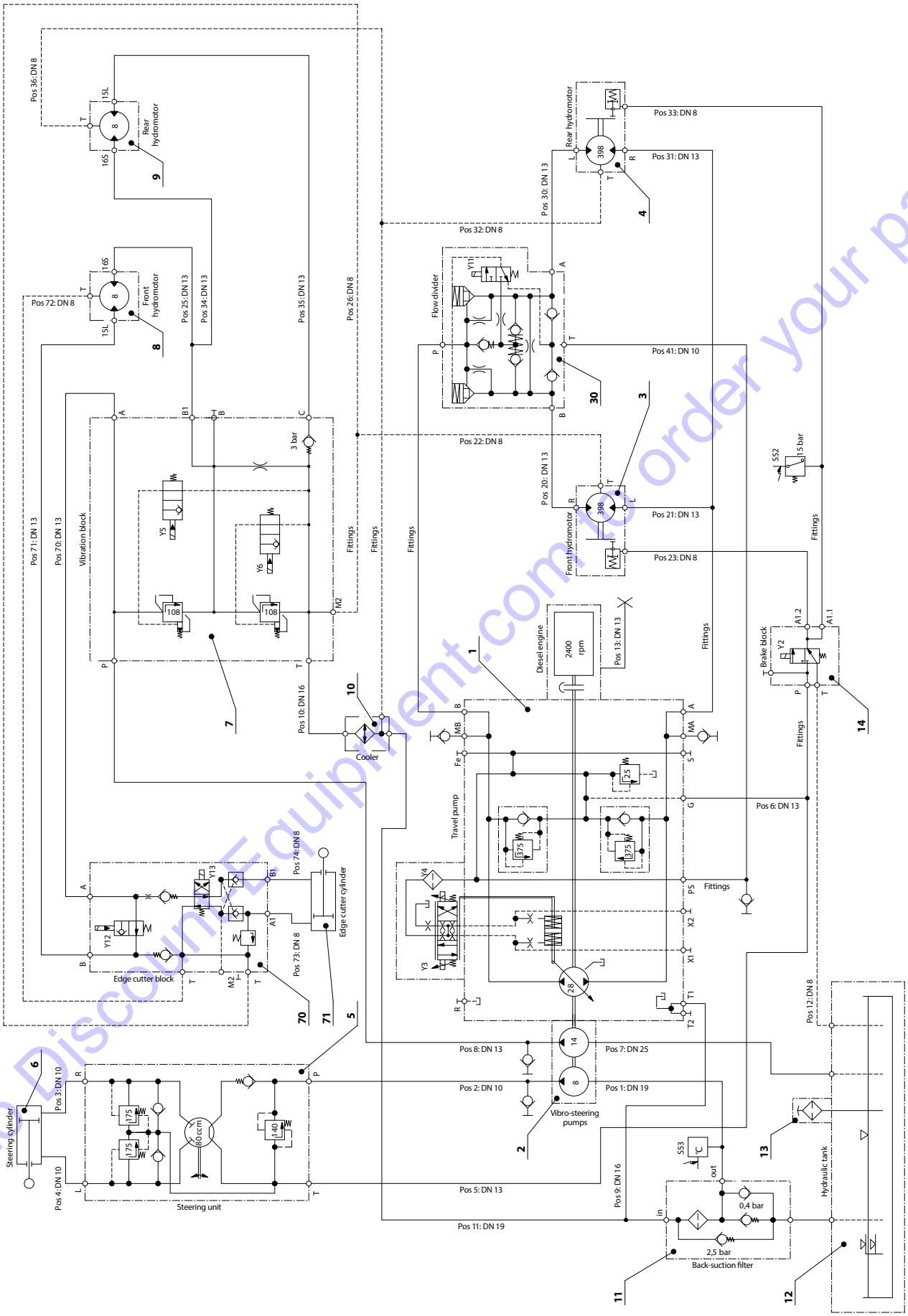


45436A_3en

Hydraulic diagram ARX 23.1-2 / ARX 26.1-2

Legend:

1 Travel pump
2 Pump, vibration, steering
3 Travel engine, front
4 Travel engine, rear
5 Steering unit (Orbitrol)
6 Steering cylinder
7 Vibration switching valve
8 Front hydraulic motor
9 Rear hydraulic motor
10 Oil cooler
11 Suction return filter
12 Hydraulic oil tank
13 Input ventilation filter
14 Brake block
30 Flow distributor
70 Edge cutter block
71 Drum edge cutter

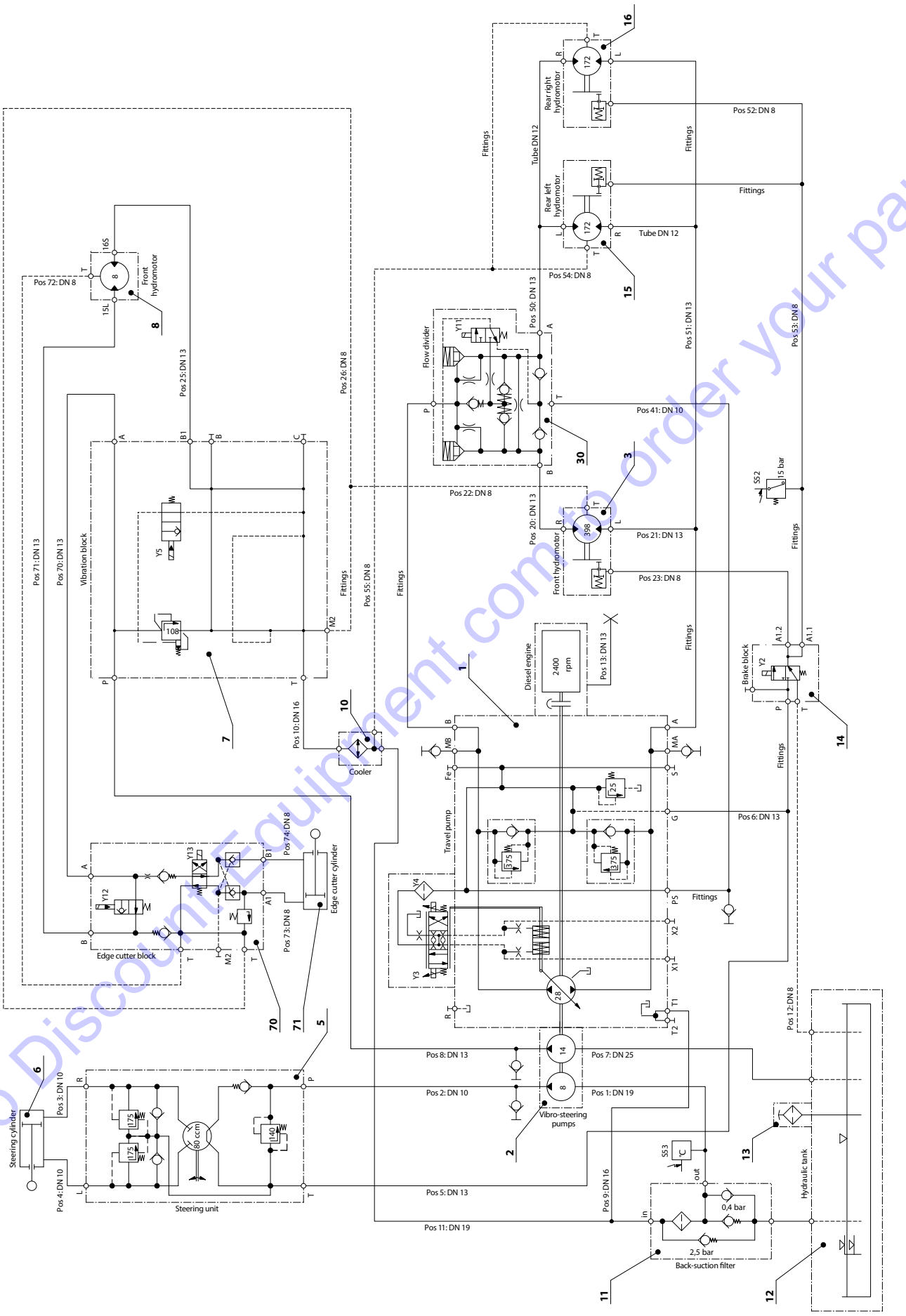


43424_en

Hydraulic diagram ARX 23.1-2 C, ARX 26.1-2 C

Legend:

1 Travel pump
2 Pump, vibration, steering
3 Travel engine, front
5 Control unit
6 Steering cylinder
7 Vibration block
8 Front hydraulic motor
10 Oil cooler
11 Suction return filter
12 Hydraulic oil tank
13 Input ventilation filter
14 Brake block
15 Rear left hydraulic motor
16 Rear right hydraulic motor
30 Flow distributor
70 Edge cutter block
71 Edge cutter cylinder



3.8 Appendix

Table of spare parts for regular maintenance

Chapter	Spare part	Order number
3.6.16	Fuel filter cartridge	1103780
3.6.21	Engine oil filter	1772196
3.6.24	Fuel filter	1772197
3.6.26	Fuel filter cartridge	1103780
3.6.27	Air filter cartridge, external	1503942
3.6.27	Air filter cartridge, internal	1503941
3.6.28	Engine cooler rubber-metal element	1-952352
3.6.29	Set of hydraulic oil filters	1182946
3.6.30	Drum rubber-metal element	1175152
3.6.30	Engine rubber-metal element	1622945

Content of the filter set after 250 hours (4-760296)

Chapter	Spare part	Number of parts	Order number
3.6.21	Engine oil filter	1	1772196

Content of the filter set after 500 hours (4-760297)

Chapter	Spare part	Number of parts	Order number
3.6.21	Engine oil filter	1	1772196
3.6.24	Fuel filter	1	1772197
3.6.26	Fuel filter cartridge	1	1103780
3.6.27	Air filter cartridge, external	1	1503942
3.6.27	Air filter cartridge, internal	1	1503941

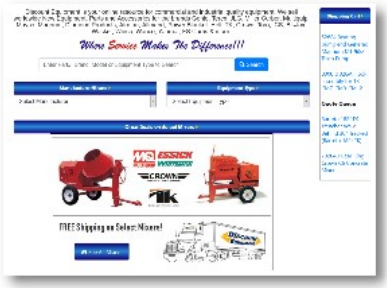
Content of the filter set after 1000 hours (4-760298)

Chapter	Spare part	Number of parts	Order number
3.6.21	Engine oil filter	1	1772196
3.6.24	Fuel filter	1	1772197
3.6.26	Fuel filter cartridge	1	1103780
3.6.27	Air filter cartridge, external	1	1503942
3.6.27	Air filter cartridge, internal	1	1503941
3.6.29	Set of hydraulic oil filters	1	1182946

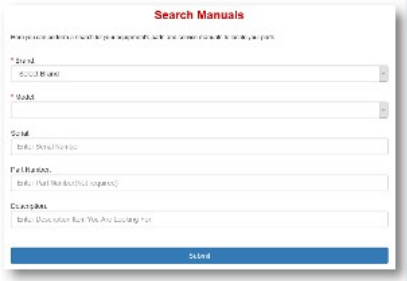
PARTS FINDER

Search Website by Part Number

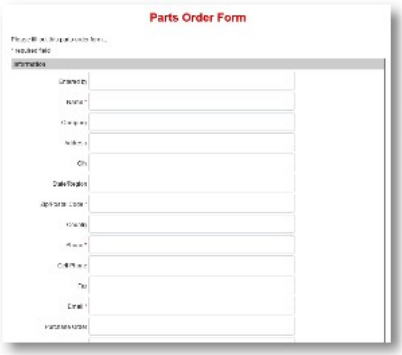
Discount Equipment



Search Manual Library For Parts Manual & Lookup Part Numbers – Purchase or Request Quote



Can't Find Part or Manual? Request Help by Manufacturer, Model & Description



Discount-Equipment.com is your online resource for quality parts & equipment.

Florida: 561-964-4949 Outside Florida TOLL FREE: 877-690-3101

Need parts?

Click on this link: http://www.discount-equipment.com/category/5443-parts/ and choose one of the options to help get the right parts and equipment you are looking for. Please have the machine model and serial number available in order to help us get you the correct parts. If you don't find the part on the website or on one of the online manuals, please fill out the request form and one of our experienced staff members will get back to you with a quote for the right part that your machine needs.

We sell worldwide for the brands: Genie, Terex, JLG, MultiQuip, Mikasa, Essick, Whiteman, Mayco, Toro Stone, Diamond Products, Generac Magnum, Airman, Haulotte, Barreto, Power Blanket, Nifty Lift, Atlas Copco, Chicago Pneumatic, Allmand, Miller Curber, Skyjack, Lull, Skytrak, Tsurumi, Husquvarna Target, Stow, Wacker, Sakai, Mi-T-M, Sullair, Basic, Dynapac, MBW, Weber, Bartell, Bennar Newman, Haulotte, Ditch Runner, Menegotti, Morrison, Contec, Buddy, Crown, Edco, Wyco, Bomag, Laymor, EZ Trench, Bil-Jax, F.S. Curtis, Gehl Pavers, Heli, Honda, ICS/PowerGrit, IHI, Partner, Imer, Clipper, MMD, Koshin, Rice, CH&E, General Equipment ,Amida, Coleman, NAC, Gradall, Square Shooter, Kent, Stanley, Tamco, Toku, Hatz, Kohler, Robin, Wisconsin, Northrock, Oztec, Toker TK, Rol-Air, APT, Wylie, Ingersoll Rand / Doosan, Innovatech, Con X, Ammann, Mecalac, Makinex, Smith Surface Prep,Small Line, Wanco, Yanmar