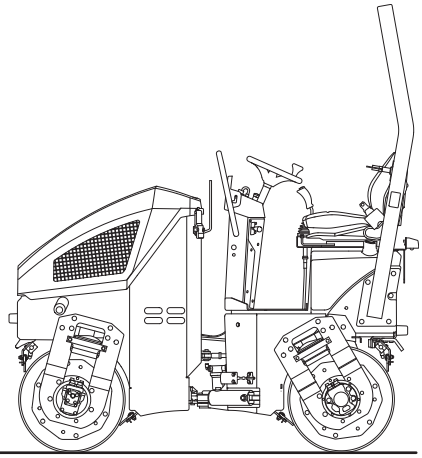
ARX 10.1

LIGHT TANDEM ROLLER
HONDA GX630
EU STAGE V, EPA PHASE 3



OPERATING MANUAL

EDITION 01/2025 EN
Product Identification Number 3102216 -

AMMANN

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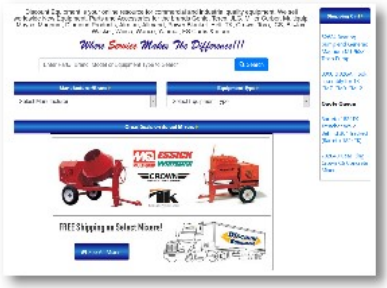

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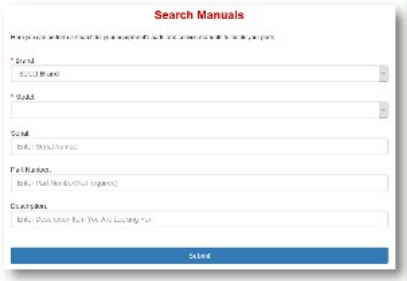

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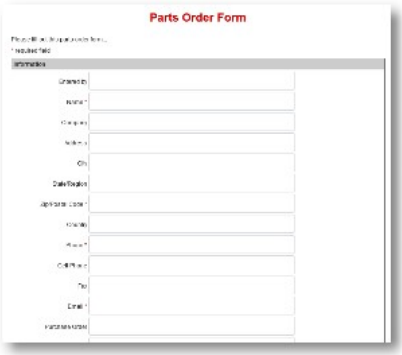

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ES / EU Prohlášení o shodě

(**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 10.1
Verze / *Version / Version:*	
Product Identification Number:	
Motor / *Engine / Motor:*	Honda GX630, zážehový, jmenovitý výkon (SAE J1995): 15,5 kW, jmenovité otáčky: 3400 min^{-1}. */ Honda GX630, petrol, nominal power (SAE J1995): 15,5 kW, rated speed: 3400 RPM. /* *Honda GX630, benzinmotor, Nennleistung (SAE J1995): 15,5 kW, Nenndrehzahl: 3400 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} = 102 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

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
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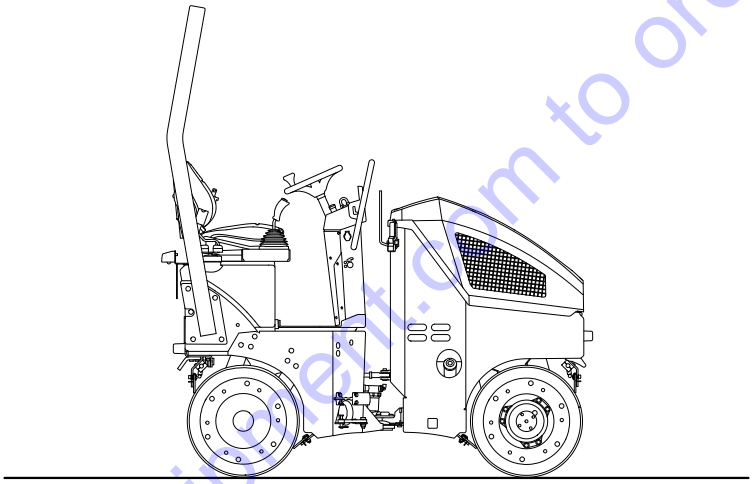


623001

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

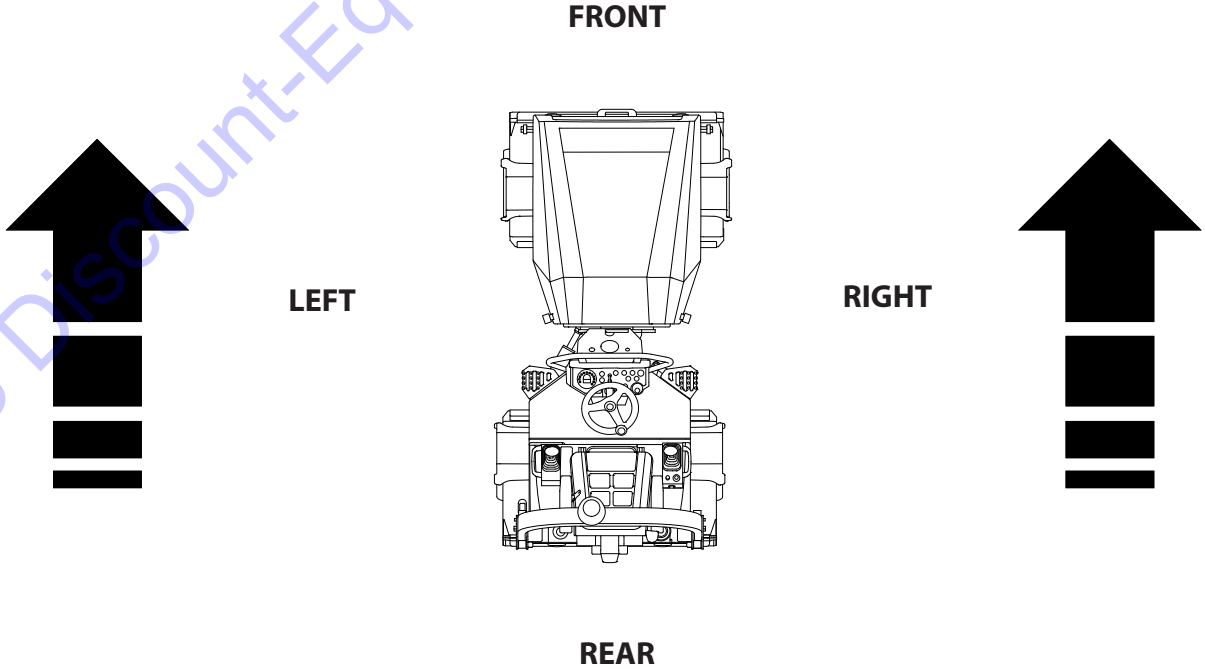
The notice warns of a serious risk of personal injury or other personal hazards.

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

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1 SPECIFICATION MANUAL

ARX 10.1
(Honda Phase 3)

Machine description

Light tandem roller with an articulated frame and two smooth drums. Both drums are hydrostatic-driven, the front drum is vibrating. The concept of the frame allows compacting close to walls and elevated kerbs on one side 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.

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 10.1 - The machine is suitable for compacting asphalt mixes up to the (compacted) layer thickness of 60 mm (2.4"), mixed soils up to the layer thickness of 100 mm (3.9") or sandy and gritty materials up to the layer thickness of 150 mm (5.9").

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 +40 °C (104 °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.

Please fill in the following data:

(see nameplate and Honda engine nameplate)

Machine type

.....

Product Identification Number

.....

Year of manufacture

.....

Engine type

.....

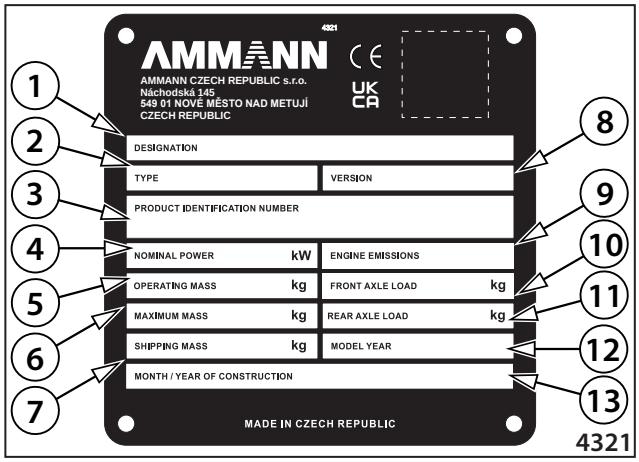
Serial number of the engine

.....

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

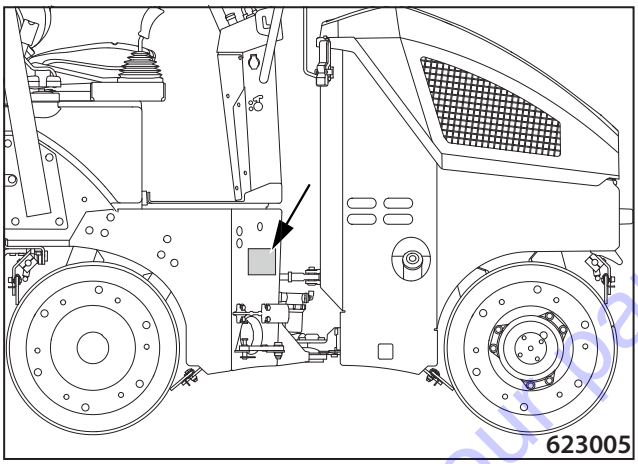
The machine that complies with the requirements as to health protection and safety is provided with a nameplate with CE certification.

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

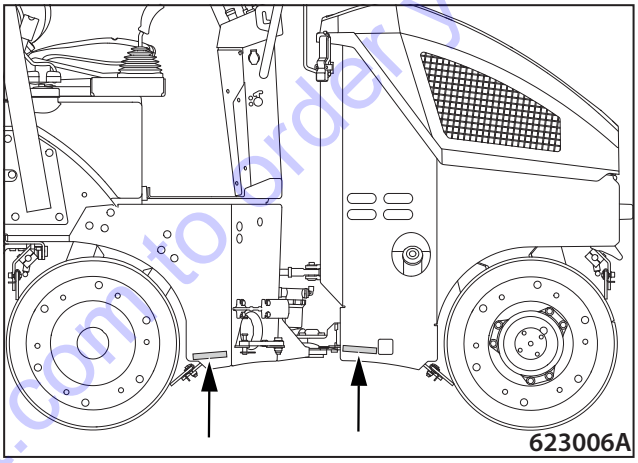


Nameplate position

Nameplate

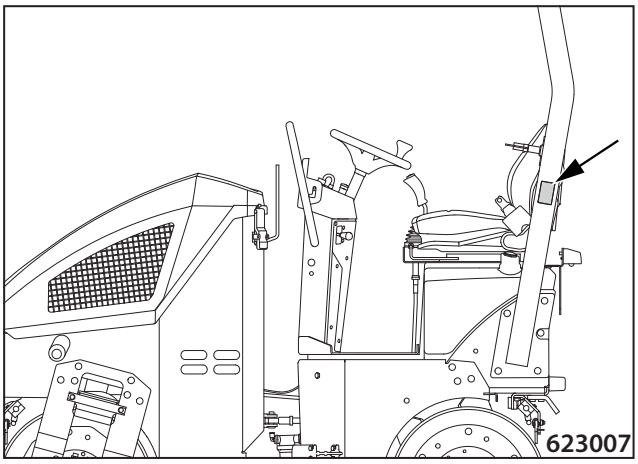


Serial number of the machine frame

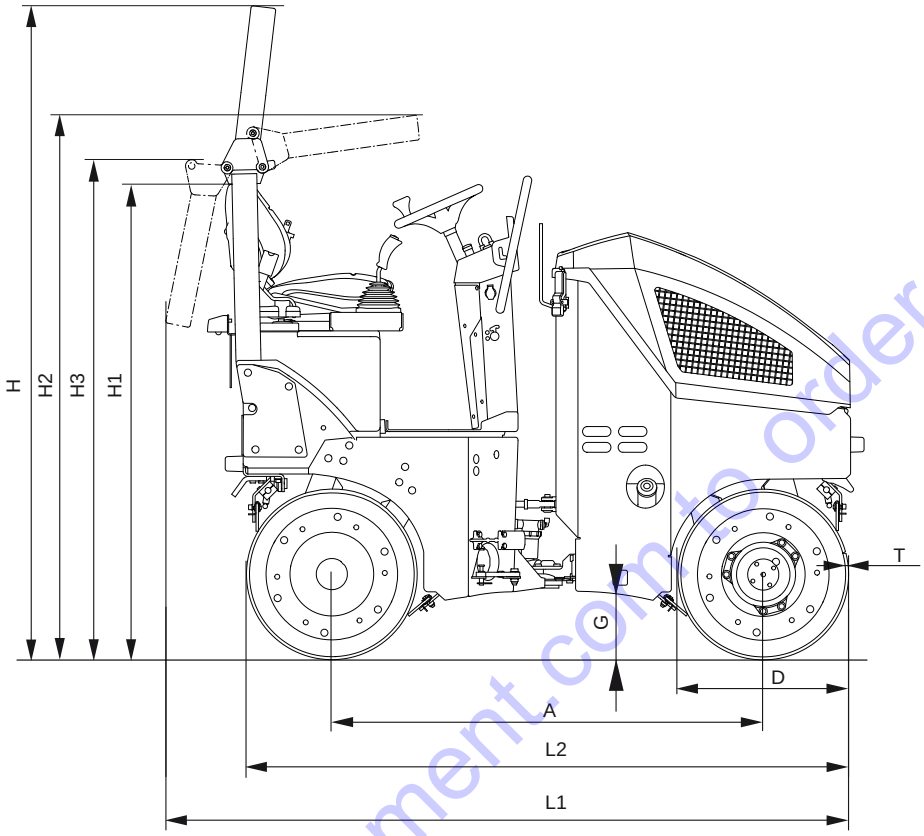


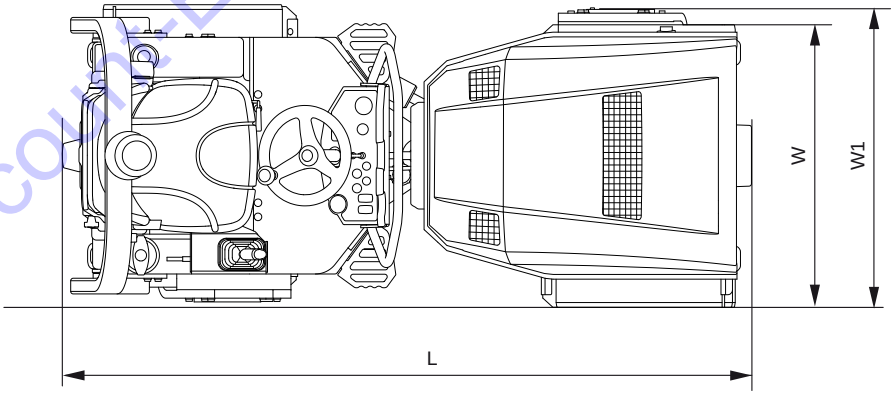
Position of the ROPS nameplate

ROPS nameplate



1.2 Dimensional drawing of the machine





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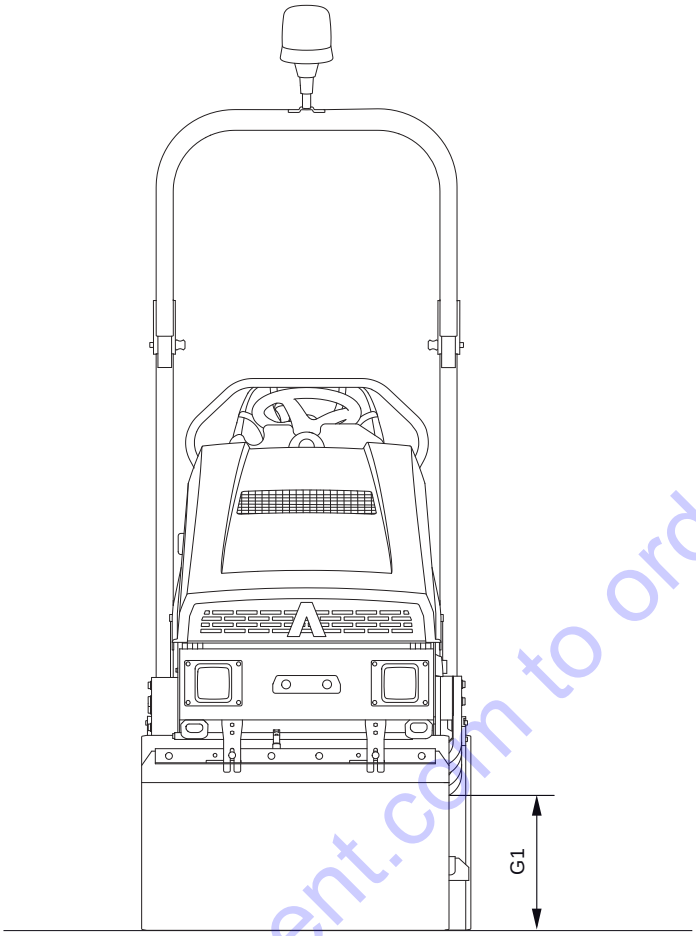

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mm (in)	ARX 10.1 EU Stage V, EPA Phase 3	
A	1440	(56,7)
D	572	(22,5)
G	206	(8,1)
G1	370	(14,6)
H	2400	(94,5)
H1	1620	(63,8)
H2	1830	(72,0)
H3	1725	(67,9)
L	2140	(84,3)
L1	2330	(91,7)
L2	2020	(79,5)
W	900	(35,4)
W1	950	(37,4)
T	10	(0,4)

* The dimensional drawing of the machine is identical for both types of ROPS frame.

1.3 Technical data

		ARX10.1
		EU Stage V, EPA Phase 3
Weight		
Operating weight of EN 500-1+A1 (CECE)	kg (lb)	1300 (2870)
Operating load of EN 500-1+A1 (CECE) on front axis	kg (lb)	570 (1260)
Operating load of EN 500-1+A1 (CECE) on rear axis	kg (lb)	730 (1610)
Weight of half fluid capacities	kg (lb)	65 (140)
Operating weight of ISO 6016	kg (lb)	1310 (2890)
Maximum weight with accessories	kg (lb)	1398 (3080)
Maximum permitted weight according to ROPS	kg (lb)	1700 (3750)
Static linear load of front drum	kg/cm (lb/in)	6,3 (10)
Static linear load of rear drum	kg/cm (lb/in)	8,1 (20)
Weight of Canopy	kg (lb)	33 (70)
Deduction for the transport weight to the EN 500-1+A1 (CECE) operating weight.	kg (lb)	140 (310)
Driving characteristics		
Maximum transport speed	km/h (MPH)	7,5 (4,7)
Climbing ability without vibration	%	30
Climbing ability with vibration	%	30
Lateral static stability	%	53
Lateral stability during driving without vibration	%	20
Lateral stability during driving with vibration	%	10
Turning radius inner (edge)	mm (in)	2470 (97,2)
Turning radius outer (contour)	mm (in)	3460 (136,2)
Type of drive	-	Hydrostatic
Number of driving axles	-	2
Oscillation angle	°	5
Angle of steering	°	33
Steering		
Type of steering	-	Joint
Steering control	-	Hydrostatické
Linear hydraulic motors	-	1

		ARX10.1
		EU Stage V, EPA Phase 3
Engine		
Manufacturer	-	HONDA
Type	-	GX 630
Power according to SAE J1995	kW	15,5
Number of cylinders	-	2
Cylinder capacity	cm^3 (cu in)	688 (42)
Nominal speed	min^{-1} (RPM)	3400
Working speed I	min^{-1} (RPM)	3400
Maximum torque	Nm (ft lb)/rpm	48.3 / 2500
Average fuel consumption	l/h (gal US/h)	4,5 (1,2)
Engines complies with emission regulations	-	EU Stage V / EPA Phase 3
Cooling system of engine	-	vzduchová
Brakes		
Operating	-	Hydrostatic
Parking	-	Mechanical multiple-disc
Emergency	-	Mechanical multiple-disc
Vibration		
Frequency I	Hz (VPM)	76 (4560)
Amplitude I	mm (in)	0,5 (0,02)
Centrifugal force I	kN	16,4
Type of drive	-	Hydrostatic
Watering		
Type of watering	-	Pressure
Number of pumps	-	1
Number of filtrations	-	2
Fluid capacities		
Fuel	l (gal US)	30 (7,9)
Water for drum watering	l (gal US)	110 (29,1)
Engine (oil filling)	l (gal US)	1,35 (0,4)
Hydraulic system	l (gal US)	15 (4)
Wiring		
Voltage	V	12
Battery capacity	Ah	50

1.3 Technical data

		ARX10.1
		EU Stage V, EPA Phase 3
Noise and vibration emissions		
Measured sound pressure level A, L_{pA} at the operator's position (platform) *	dB	87
Uncertainty K_{pA} *	dB	2
Guaranteed sound power level A, L_{WA} **	dB	106
Declared highest weighted effective value of vibration acceleration transmitted to the whole body (platform) ***	m/s^2 (ft/s^2)	<0,5 (<1,6)
Declared total value of vibration acceleration transmitted to hands (platform) ***	m/s^2 (ft/s^2)	<2,5 (<8,2)
Optional equipment		
Frame ROPS		
Warning Beacon for ROPS LED		
Road Lights		
Additional Lights for ROPS		
Back-up Alarm		
Water Tank Lock		
Hydraulic Oil Biodegradable		
Seat Belt 3″		
Additional Mirror		
Base Machine Tandem Version In-Line		
Toolset		
Certificate of Origin		
Additional Documentation Printed		
Maintenance Kit 100h		
Overseas Shipping Preparation		
Roof for ROPS		
Warning Beacon for Hard Canopy		
Additional Lights for Hard Canopy		
Telematics ServiceLink Light		
Maintenance Kit 200h		
Back-up Alarm Adaptive		
Frame Rigid ROPS		

* 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

2 OPERATING MANUAL

ARX 10.1
(Honda Phase 3)

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.

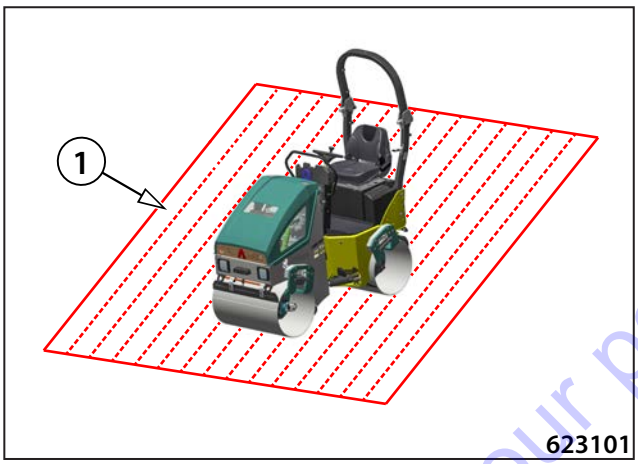
The worker is not allowed to work alone in a workplace where another worker is not in sight and within an ear shot who if necessary will be able to provide help or call for help unless another effective form of supervision or communication is ensured.

2.1.1.3 Danger zone of the machine and safe distance

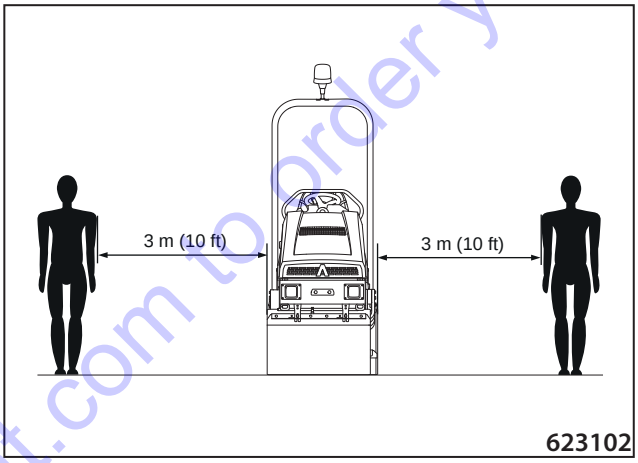
Danger zone of a stationary machine:

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 10 m in front and rear of the direction of travel of the machine!

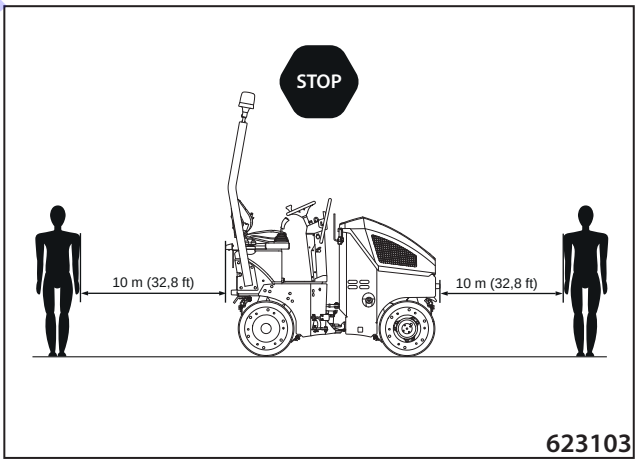
Only professionally qualified, instructed and trained personnel designated to operate and maintain the machine may enter the danger zone of the machine!

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.

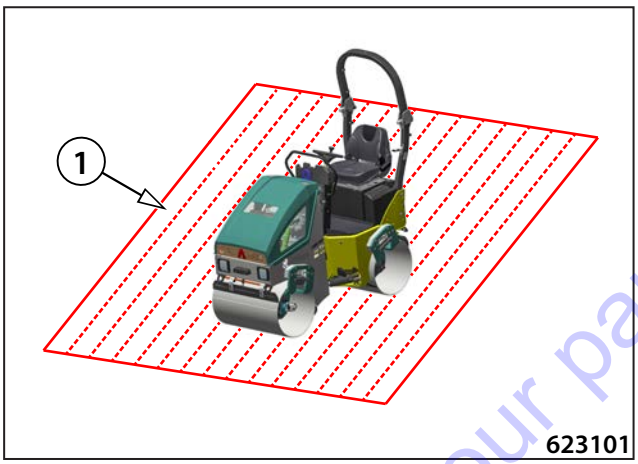
These requirements during machine operation are considered mandatory with regard to the safety of persons!

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!

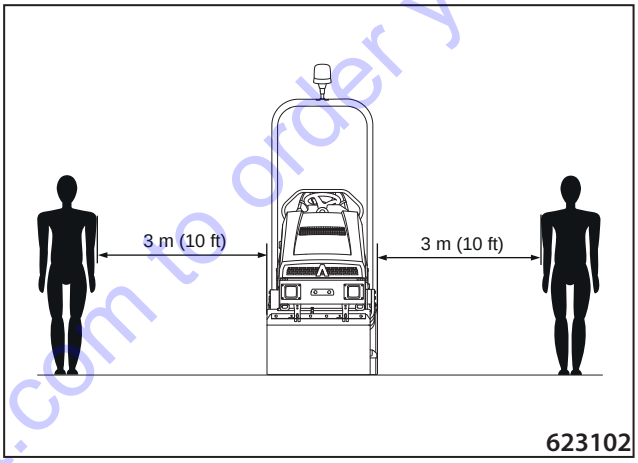


Danger zone of a moving machine:

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 15 m in front and rear of the direction of travel of the machine!

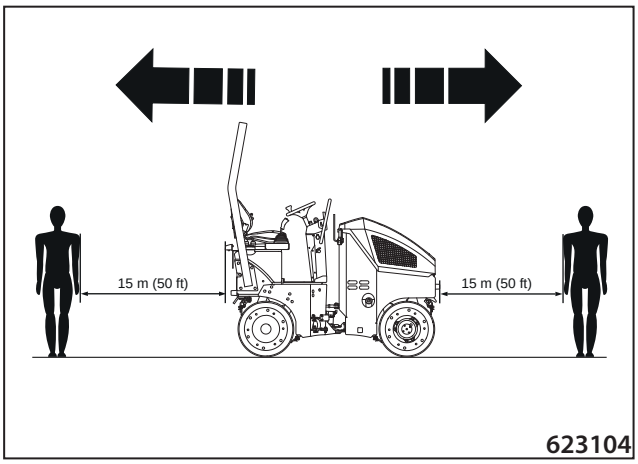
No persons may be present in the danger zone of the machine when the machine is moving!

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.

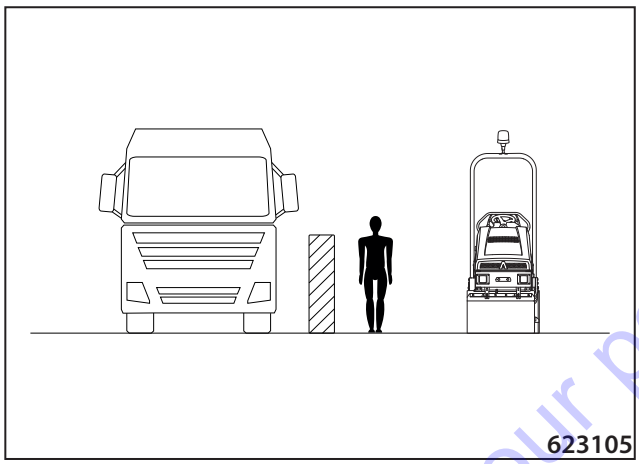
These requirements during machine operation are considered mandatory with regard to the safety of persons!

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!

2.1.1.4 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.

2.1.1.5 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 machine must not be operated with the ROPS protective frame lowered. There is a risk of fatal injury.
- 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, the travel control must be in the parking brake 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.
- The driver must always sit on the seat while driving the machine considering the restrictions imposed by the seat switch.
- 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, they must carry out safety measures against unauthorized use of the machine and undesired start up. Set the travel control to the parking brake position (P), remove the key from the ignition box, lock the dashboard cover and disconnect the wiring 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.
- Keep the machine equipped with the prescribed machine accessories and equipment.
- 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.

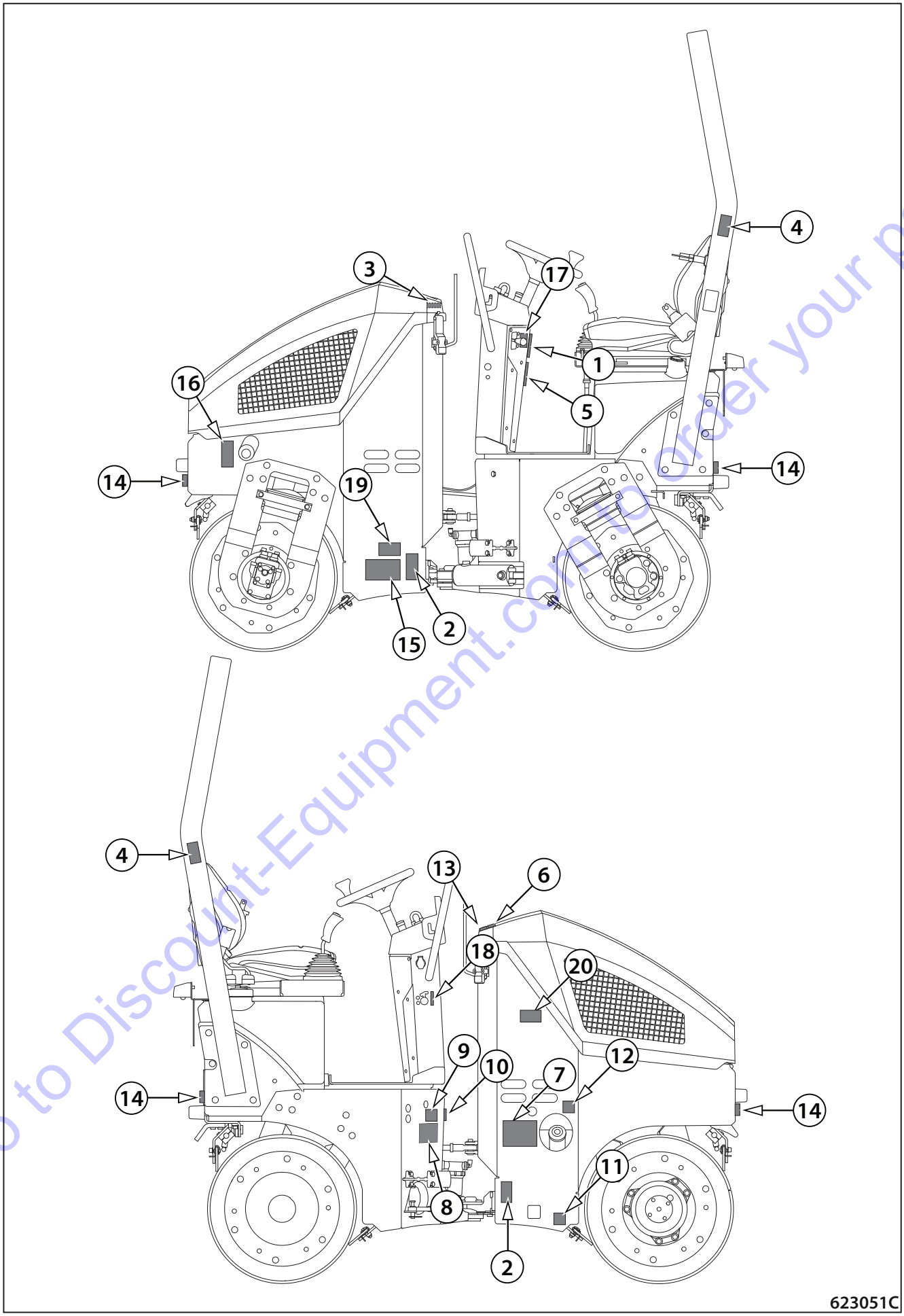
2.1.4 Forbidden activities – safety and guarantee

The following is forbidden

- Controlling the machine in some other way than stated in the operating manual.
- 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.
- 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.
- Operate 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.
- Work with the machine and operate 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.
- Travelling with the seat belt not fastened.
- 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!
- Operate the machine when the ROPS protective frame is lowered. Use the lowered frame only for transporting the machine.
- 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.

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 Fuel check

4369bz

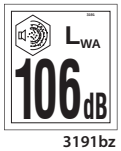
Check the fuel level in the tank. Do not overfill the tank – fill to the bottom of the filler neck.

Use eye protection and avoid smoking or handling open flames when checking and handling fuel. Read the Operating Manual.

8 Nameplate of the machine

4321bz

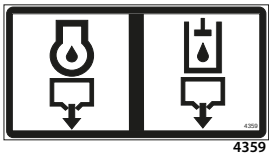
9 Emitted noise



3191bz

External noise level of the machine.

10 Drain plugs of the engine and hydraulic oil



4359

11 Fuel drain plug


3213

12 Fuelling

4294bz

13 Lifting point


2153bz

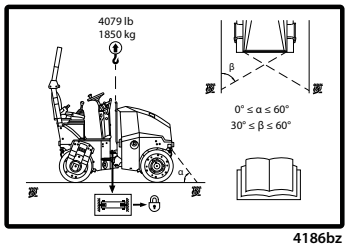
When lifting, suspend the machine only in these holes.

14 Fastening hole


3048bz

When transporting, fasten the machine only in these holes.

15 Suspension diagram



4186bz

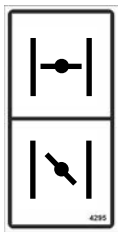
To lift the machine, use slings with a sufficient lifting capacity according to chapter Loading the machine. Before hanging, lock the articulation of the machine.

16 Risk of injury

4231bz

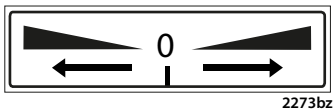
There is a risk of burns. Do not touch hot parts of the machine unless you have made sure that they have sufficiently cooled down.

17 Choke



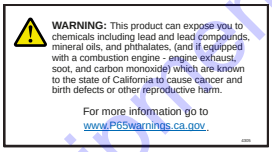
4295bz

18 Engine speed



2273bz

19 California Proposition 65



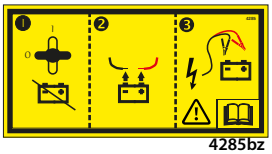
4305bz

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

20 Charging the battery



4285bz

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

2.1.6 Hand signals

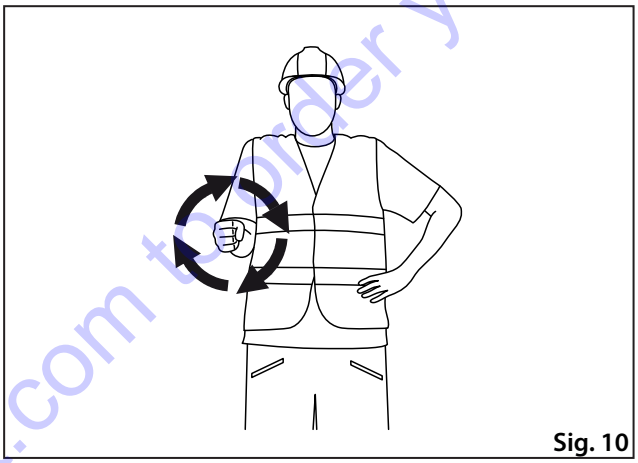
Signals given by an assistant operator if the operator cannot see the travelling or working area or work devices of the machine.

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.

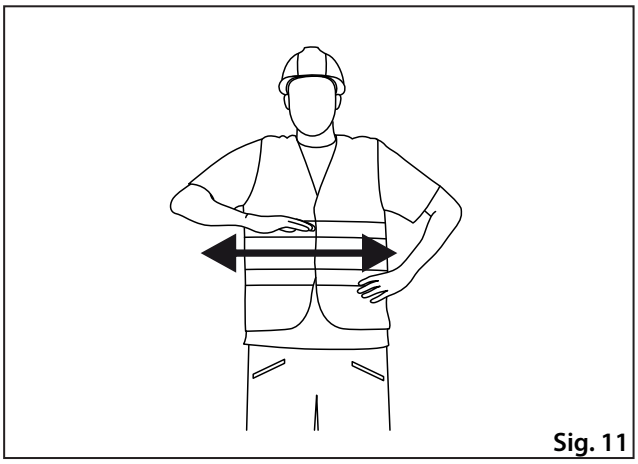
SIGNALS FOR GENERAL COMMANDS

Engine start



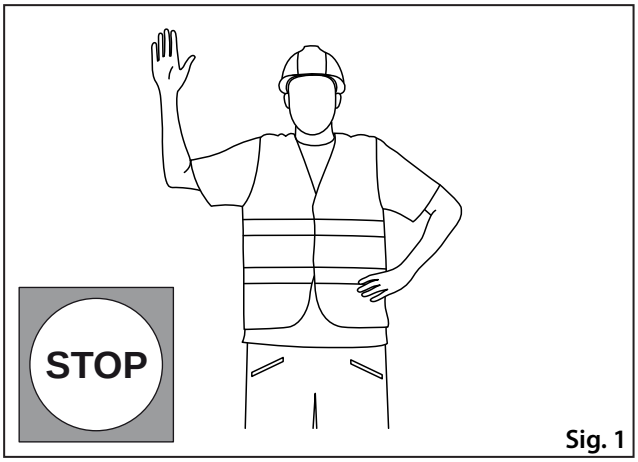
Sig. 10

Engine OFF



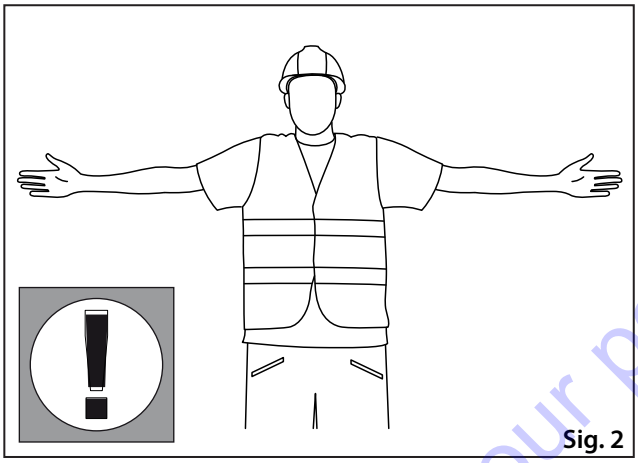
Sig. 11

Stop



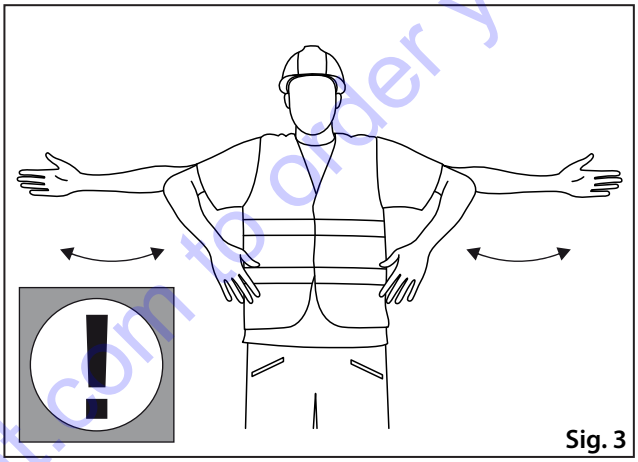
Sig. 1

Watch out!



Sig. 2

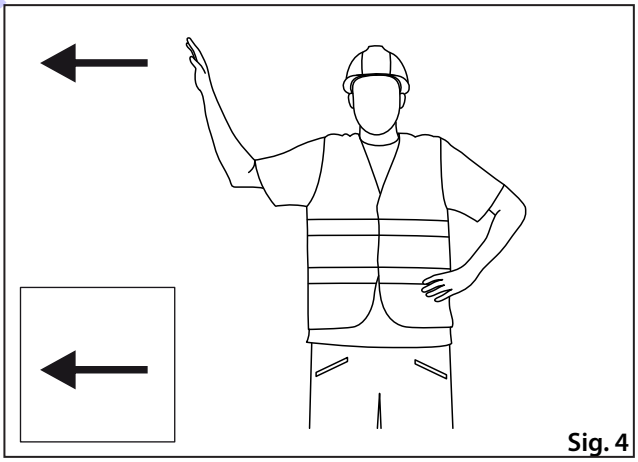
Watch out, danger!



Sig. 3

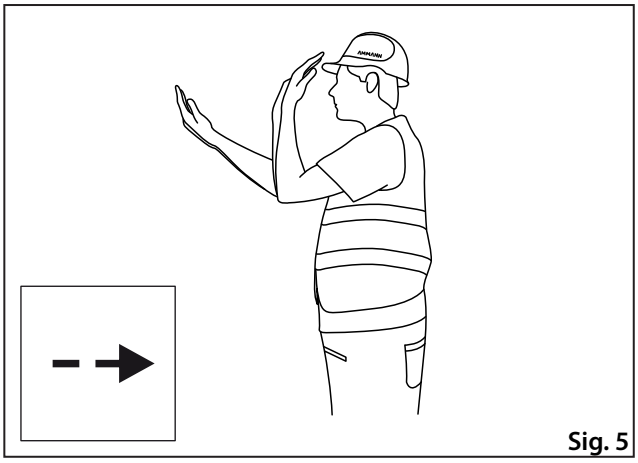
SIGNALS FOR DRIVE

Travel



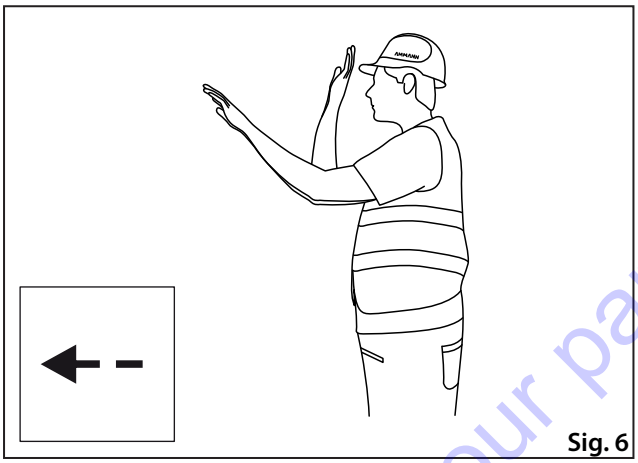
Sig. 4

Slow forward travel – towards me



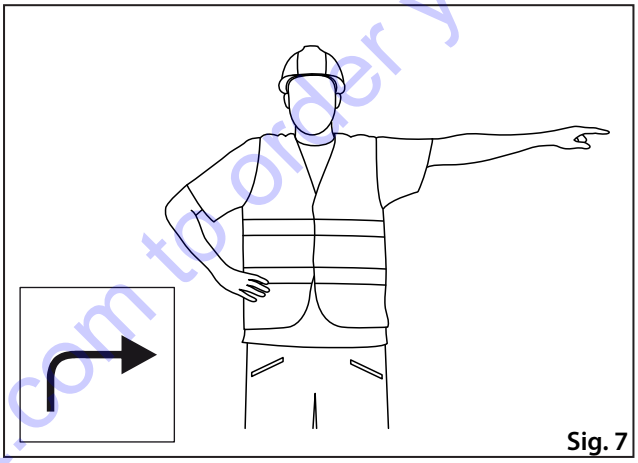
Sig. 5

Slow reverse travel – away from me



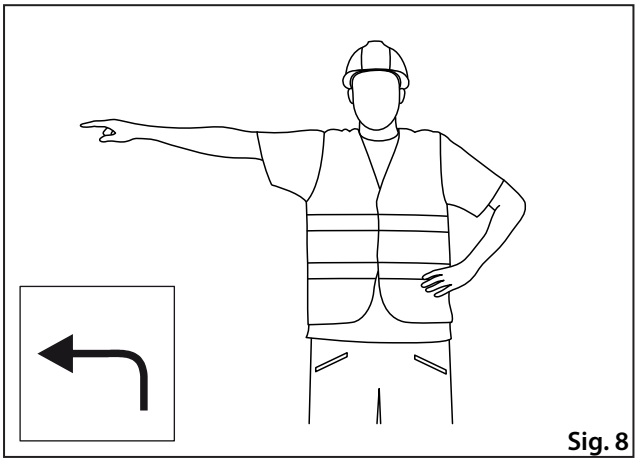
Sig. 6

Drive to the right



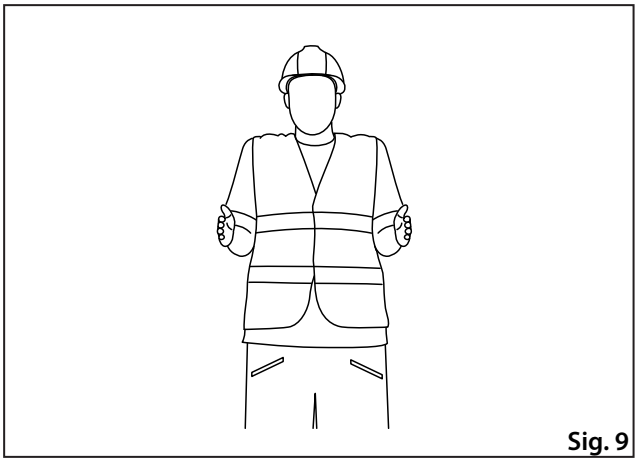
Sig. 7

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.

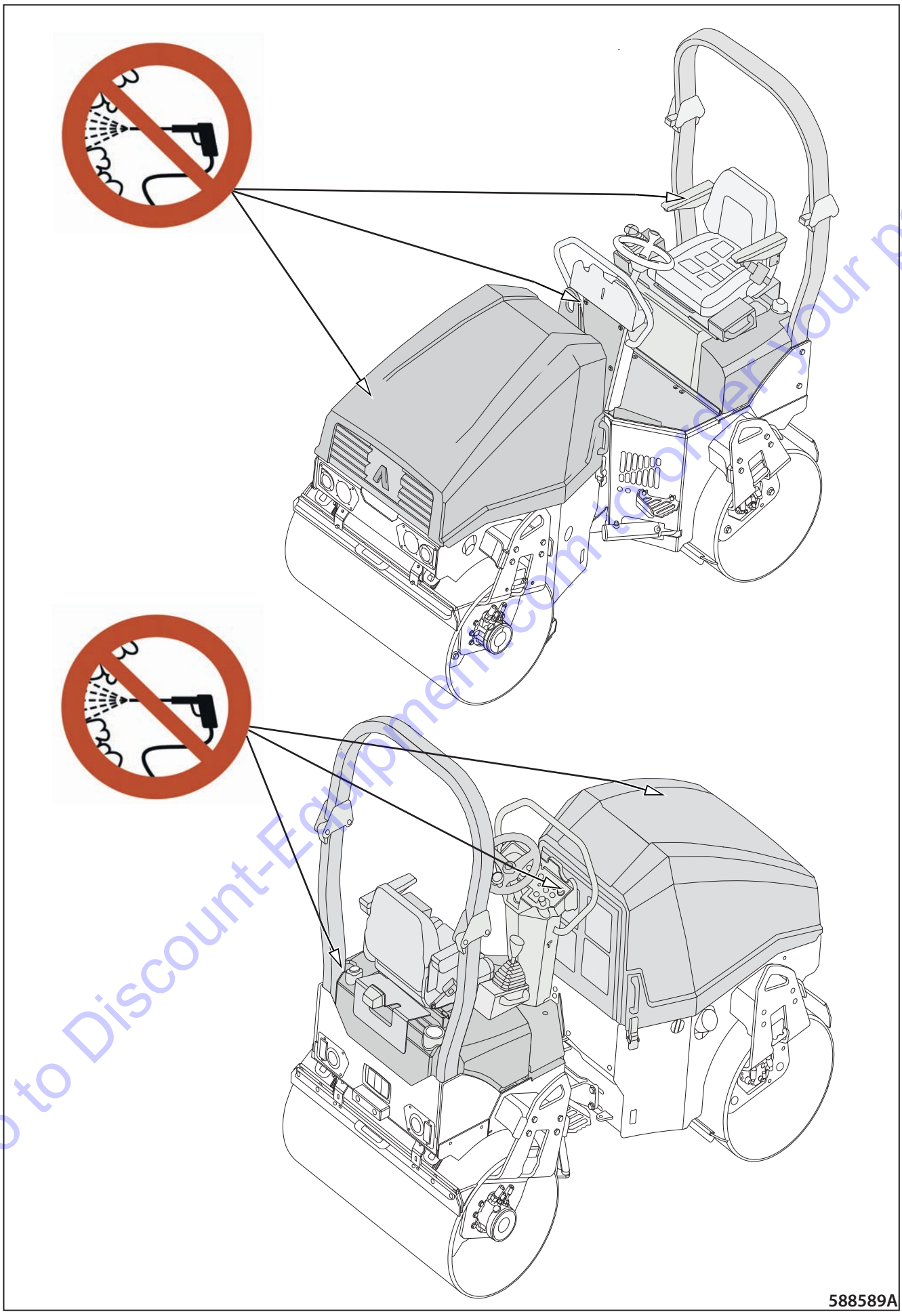
In addition it is recommended to:

- 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 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.

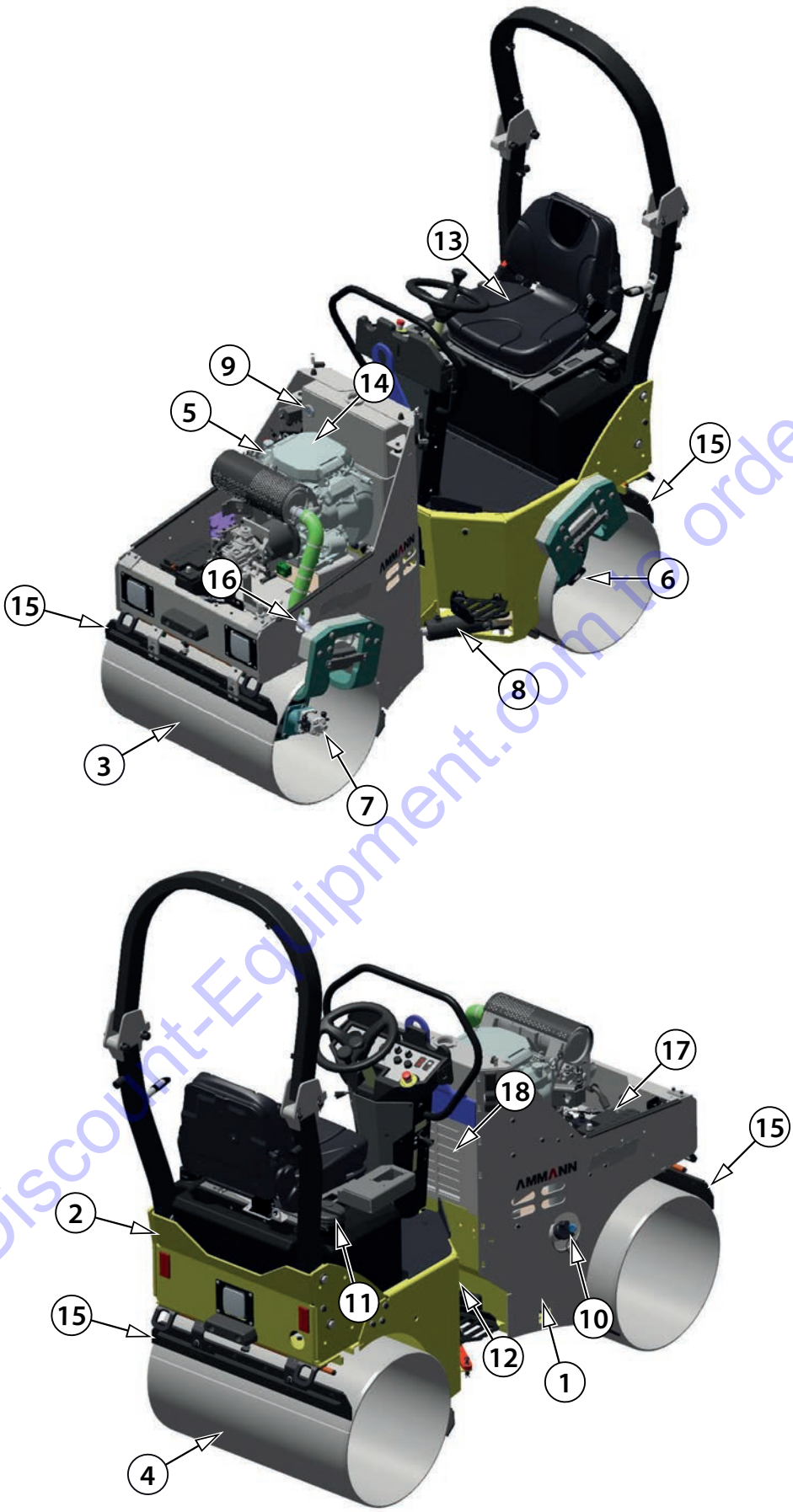
Before putting the machine into operation, check the operating fluids.

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:

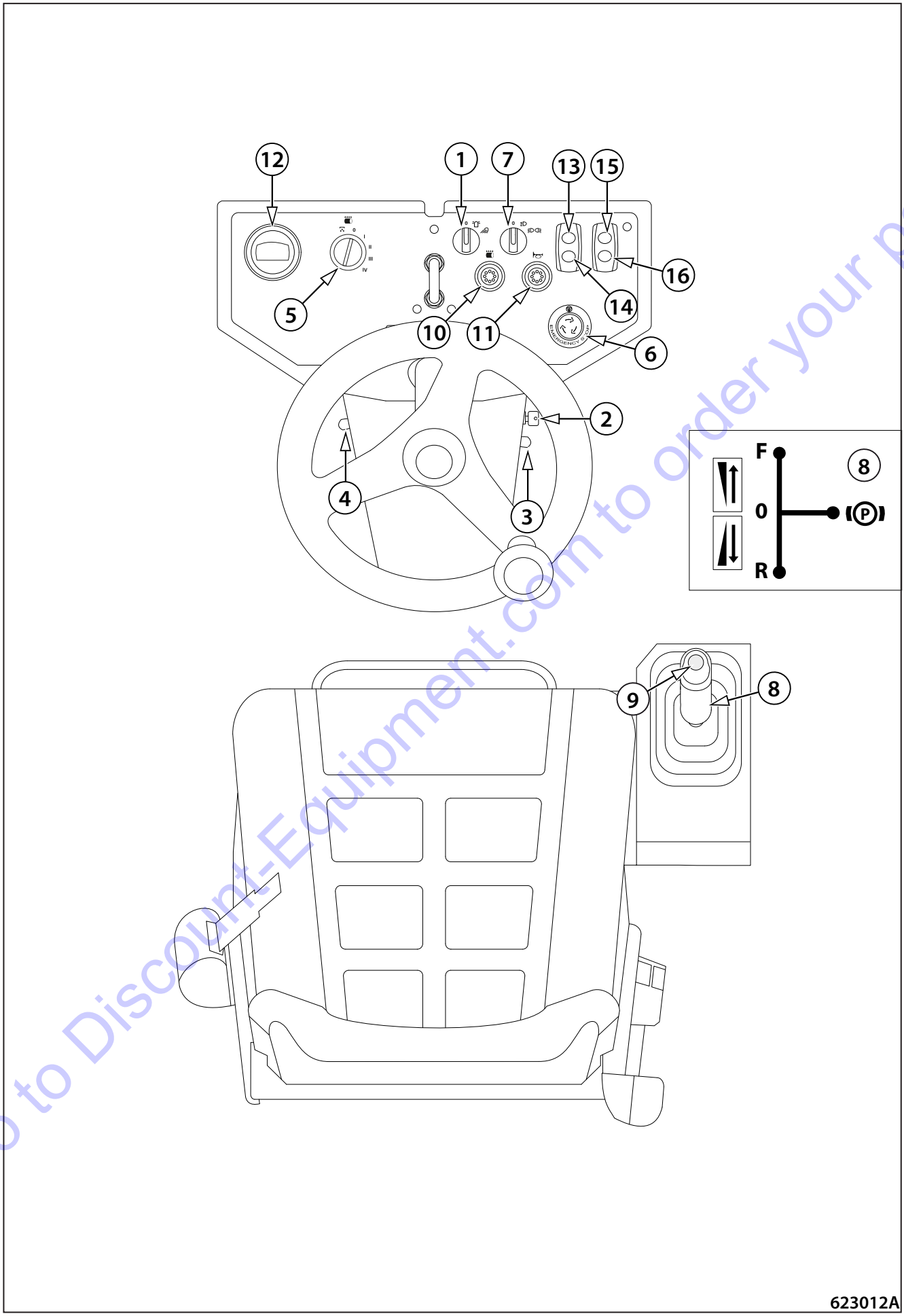
- specialized companies with a respective authorization for these operations
- the machine manufacturer or accredited contracting service organizations authorized by the manufacturer.

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:

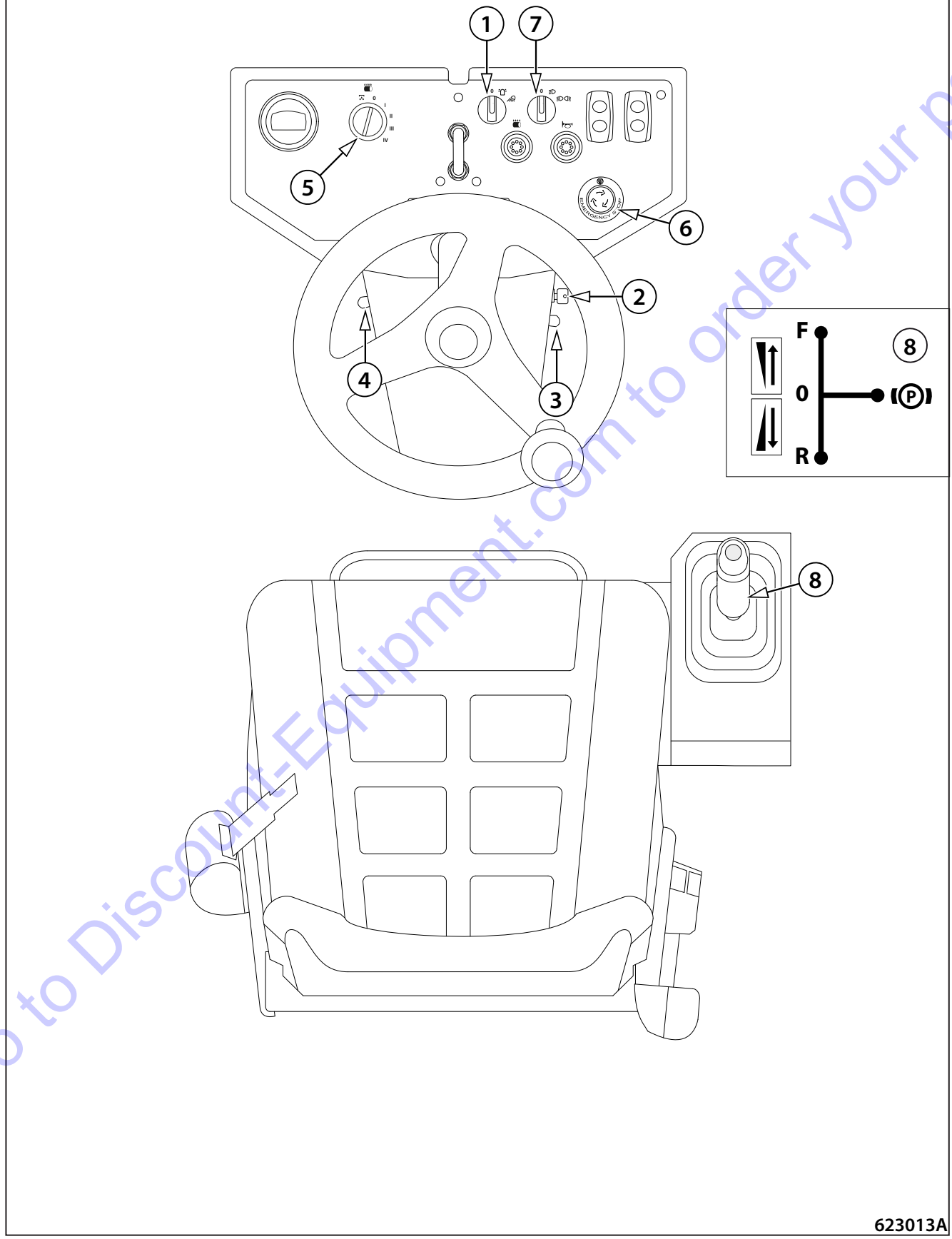
1 - Front frame
2 - Rear frame
3 - Front drum
4 - Rear drum
5 - Engine
6 - Travel hydraulic motor
7 - Vibration hydraulic motor
8 - Steering joint
9 - Hydraulic oil level indicator
10 - Fuel tank
11 - Sprinkling tank
12 - Sprinkling filter
13 - Operator's stand
14 - Air filter
15 - Drum scraper
16 -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

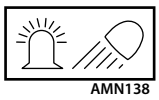


2.6.1 Dashboard and control panels

Legend:

1 - Beacon and rear light change-over switch
2 - Ignition box
3 - Engine speed control
4 - Choke
5 - Sprinkler cycling device
6 - Emergency brake button
7 - Lights switch (outline lights / front lights)
8 - Travel control
9 - Vibration button
10 - Sprinkling button
11 - Horn switch
12 - Display
13 - Battery charging indicator lamp
14 - Engine lubrication indicator lamp
15 - Error indicator lamp
16 - Indicator lamp for hydraulic oil temperature




AMN138

Beacon and ROPS change-over switch (1)

- Off
- Beacon flashing continuously
- ROPS frame lights

Ignition box (2)

0 - OFF

I - ON

II - Engine starting

Engine speed control (3)

The control setting allows you to better adjust the speed and the vibration power to the given soil conditions.

Idle speed: Set the control down.

Big working speed: Set the control to the position I (100%).

Big working speed:

100% vibration capacity

100% of the travel speed

100% engine speed

Choke (4)

Down position – choke closed

Up position – choke open


AMN83

Sprinkling cycling device (5)

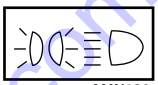
Turn the switch to the left to put the pump into continuous operation – continuous sprinkling.

Turn the switch to any of the four positions to the right to switch on a sprinkling cycle interval.


AMN142

Emergency brake button (6)

Pressing the button activates the emergency brake of the machine. The machine stops, the engine shuts down.


AMN139

Lights switch (7)

- Off
- Front working lights
- Front and rear working lights

Travel control (8)

The travel control is used for setting the parking brake, forward (F) / reverse (R) 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 deflection of the travel control. The travel control is fixed in the set position except for the zero position (0).

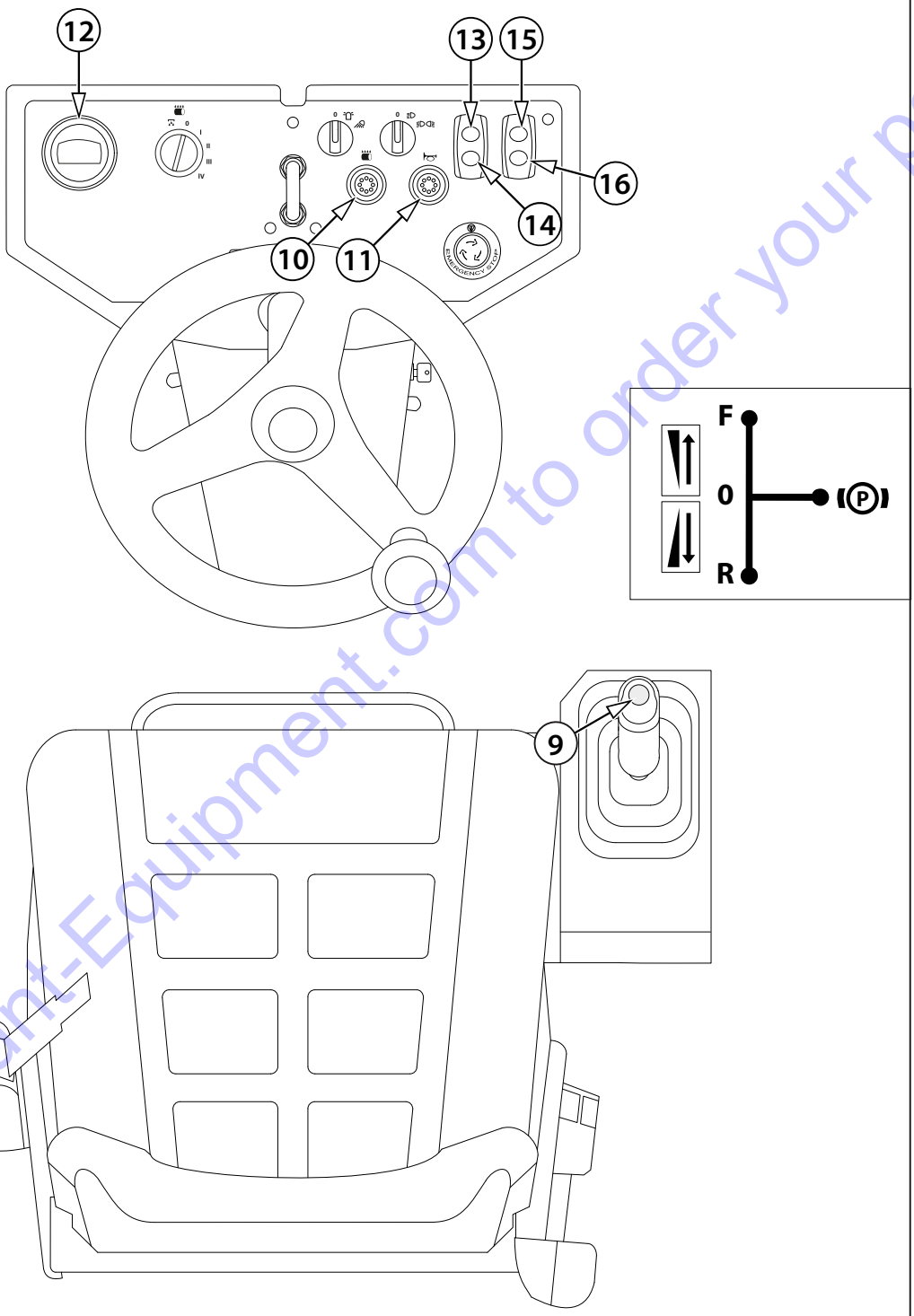
There is a vibration switch on the travel control.

P – Parking brake – parking brake of the machine enabled

0 – Zero position

F – Forward travel

R – Reverse travel




2612

Vibration button (9)

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


AMN83

Sprinkling button (10)

Pressing the button turns on the drum sprinkling function. Releasing the button turns off the sprinkling function.


2246

Warning horn button (11)

Press the button to switch on the warning horn.

Release the button to switch off the warning horn.

Display (12)

Engine hours counter and fuel level display.


2777

Battery charging indicator lamp (13)

When the battery charging indicator lamp lights up during operation or it does not go off after the engine is started, turn off the engine.

If the indicator lamp is still lit up when the engine is started, contact the service centre.


AMN113

Engine lubrication indicator lamp (14)

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!


592520

Error indicator lamp (15)

Indicator lamp continuously on – error of the emergency brake button (6). Check that the emergency brake (6) is disabled.

Indicator lamp flashing – error of the seat switch.


2635

Indicator lamp for hydraulic oil temperature (16)

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

If the indicator lights up, stop the machine at a suitable place and wait until the temperature of the hydraulic system decreases.

Operating an overheated machine will reduce the life of the hydraulic components and void the warranty. Hydraulic system components may also jam or seize.

Seat

Seat adjustment

1 Backrest inclination adjustment

2 Seat springing stiffness

3 Longitudinal seat travel

Seat springing stiffness

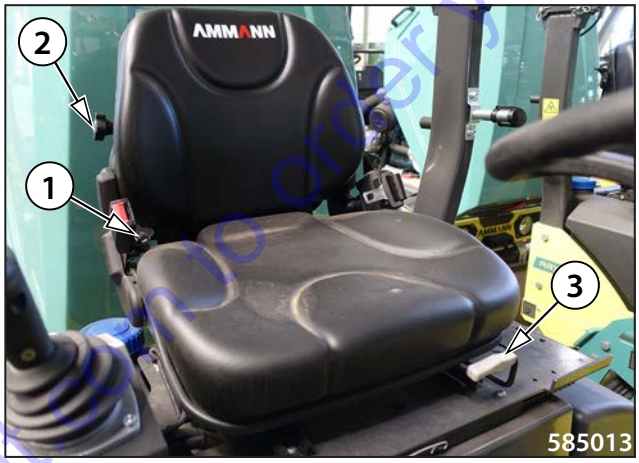
Turn the switch (2) to set stiffness according to driver's weight between 50 and 120 kg (110 - 265 lb).

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 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 immediately switches off the engine.

To enable engine start, 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 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.

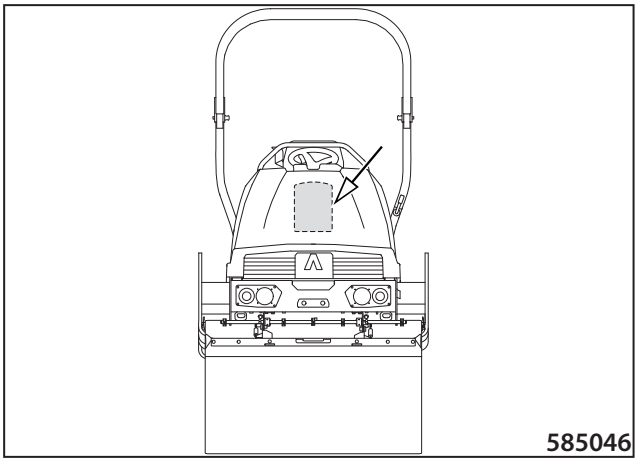
When operating the machine, the driver must always sit on the seat.

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 upper side of the bonnet is used for storing the Operating Instructions 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 – 5.....Vibration

F2 – 5.....Control unit – electronics

F3 – 2.....Emergency brake button, seat switch, parking brake microswitch in the travel control

F4 – 10.....Pressure switch oil, engine

F5 – 5.....Display, telematics

F6 – 20.....Control unit – power outputs

F7 – 7.5.....Horn, telematics – memory

F8.....Reserve

F9 – 7.5.....Working lights

F10 – 7.5.....Beacon, ROPS lights

F11 – 7.5.....Drum sprinkling

F12 – 5.....Reversing horn

F13.....Reserve

F14.....Reserve

F20 – 30.....Main fuse

Dashboard cover

The cover protects the dashboard from:

- weather effects
- vandalism
- handling by others

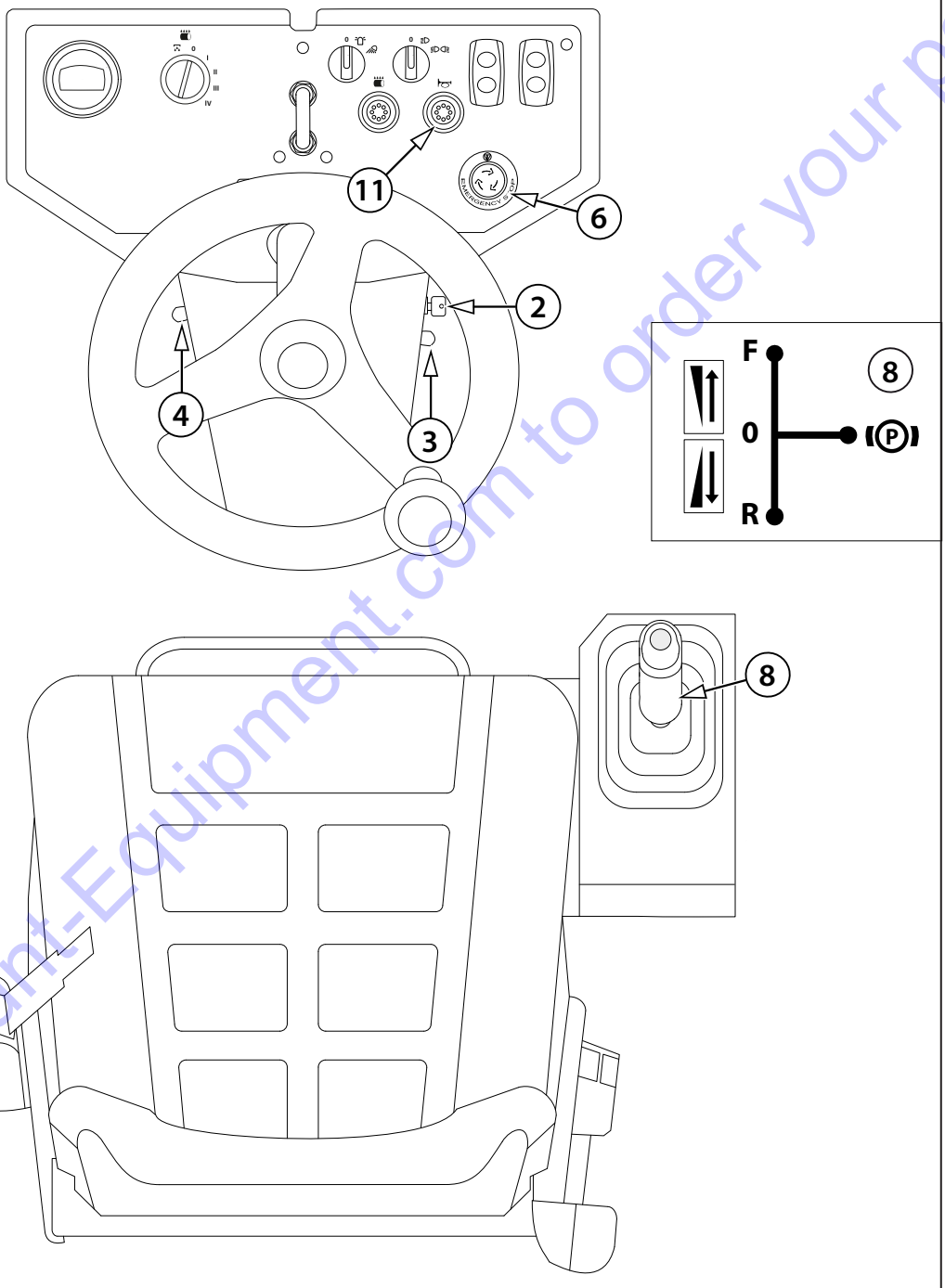
The cover of the dashboard can be locked with a padlock; the padlock is not delivered in the machine equipment.

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.



623024A

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 engine speed switch (3) to the idling speed position.

Set the travel control (8) to the brake position (P).

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

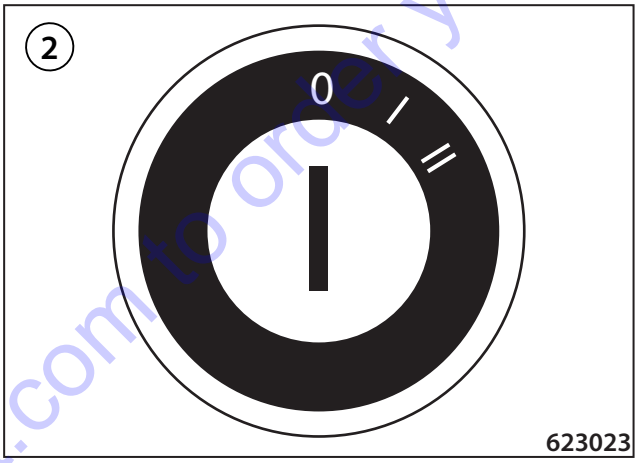
Insert the key into the ignition box (2) in the position "0" and switch over to the position "I".

Use the warning horn (11) to signal that the engine is starting.

Open the choke (4) by moving the lever upwards.

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

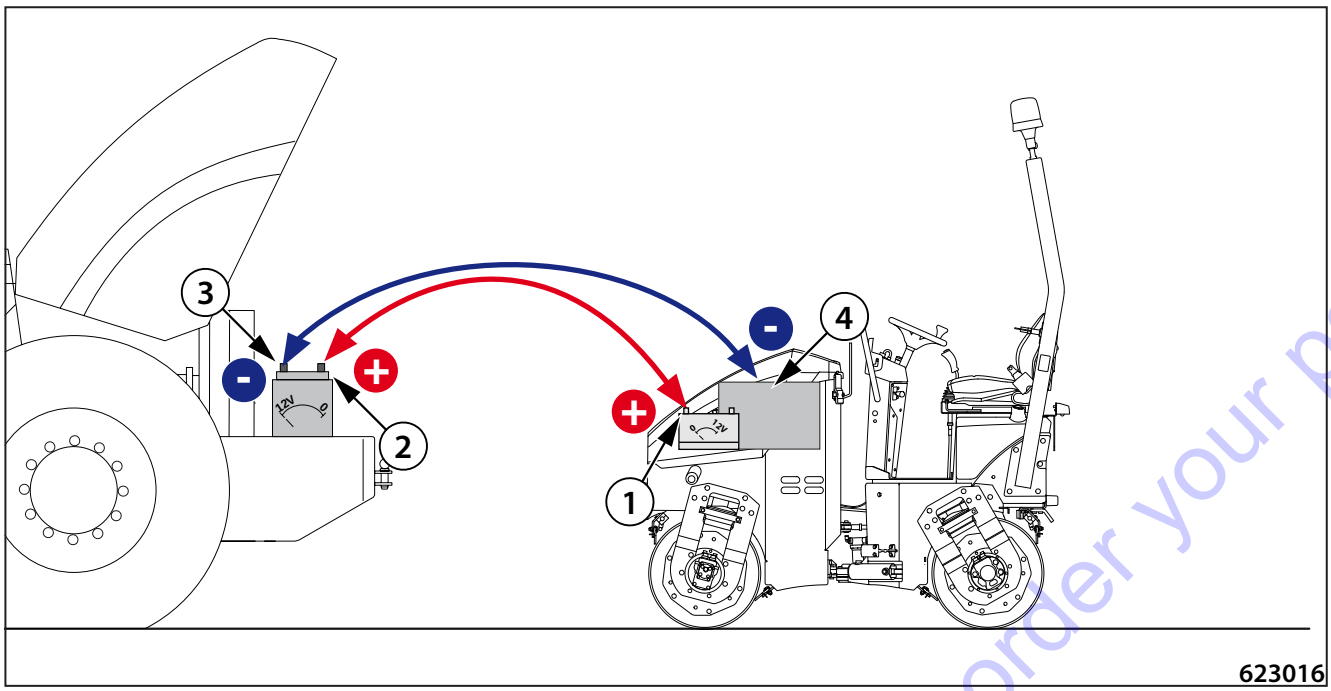
After approx. 10 seconds from engine start, close the choke (4) by setting the lever back to the down position.



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.



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 of the external battery.

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.

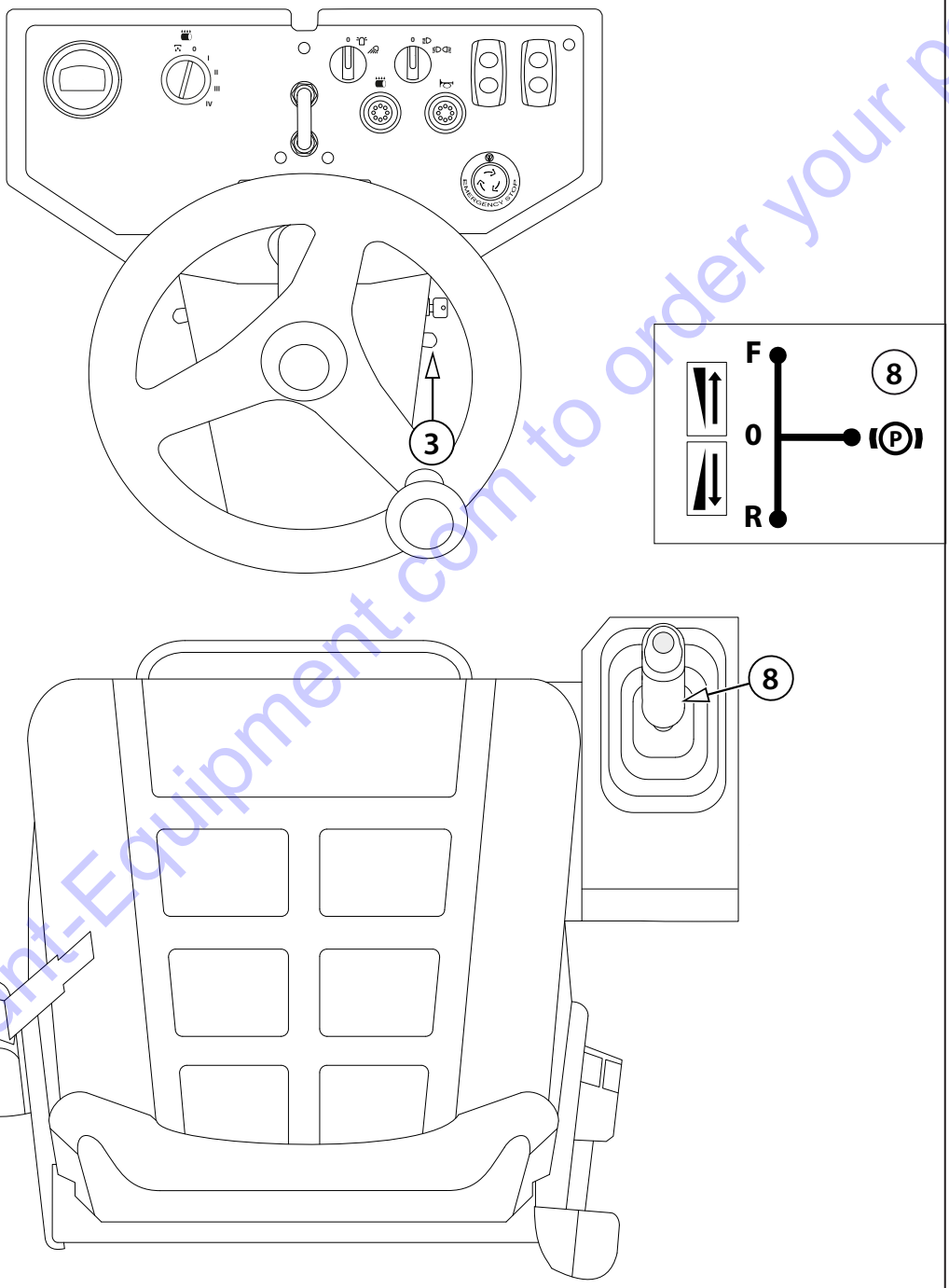
Uninsulated parts of clamps of the jump leads must not touch each other!

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!



623018A

2.7.2 Drive and reverse drive

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!

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!

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 (8) out of the parking brake position (P), the machine will not brake or start and the engine will shut down.

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 (8) is in deflected form the parking brake position (P), the machine behaves according to the seat switch description (Chapter 2.6).

Start the engine

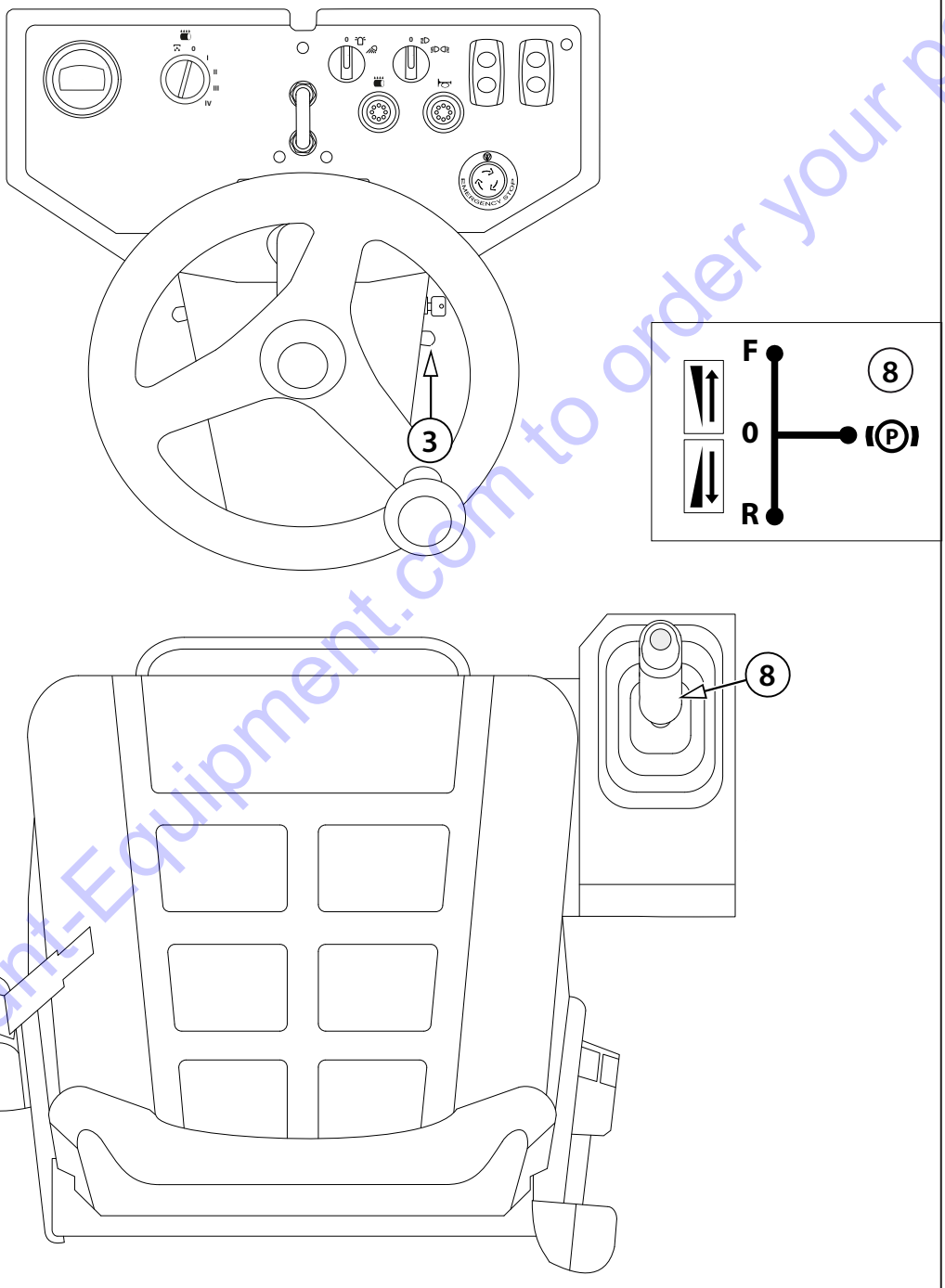
- Start the engine according to Chapter 2.7.1.
- The engine speed control (3) must be in its lower position.

Selection of the working engine speed

- Big working speed: Set the control to the position I (100%).

Big working speed:

- 100% of the travel speed
- 100% engine speed



623018A

Selection of the travel direction

- Move the travel control (8) from the parking brake (P) to position (0) and select the travel direction (F / R).

When the driver releases the travel control (8), it does not return to the zero position automatically. The travel control remains in the selected position.

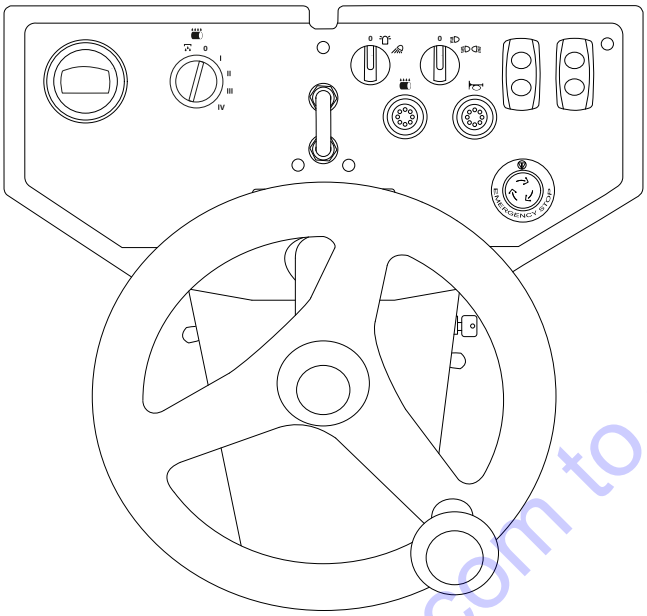
Travel speed selection

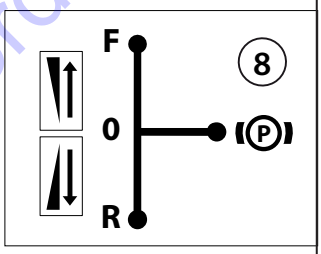
- The travel speed corresponds to the deflection of the travel control (8) from the zero position (0) at the given engine speed (3).

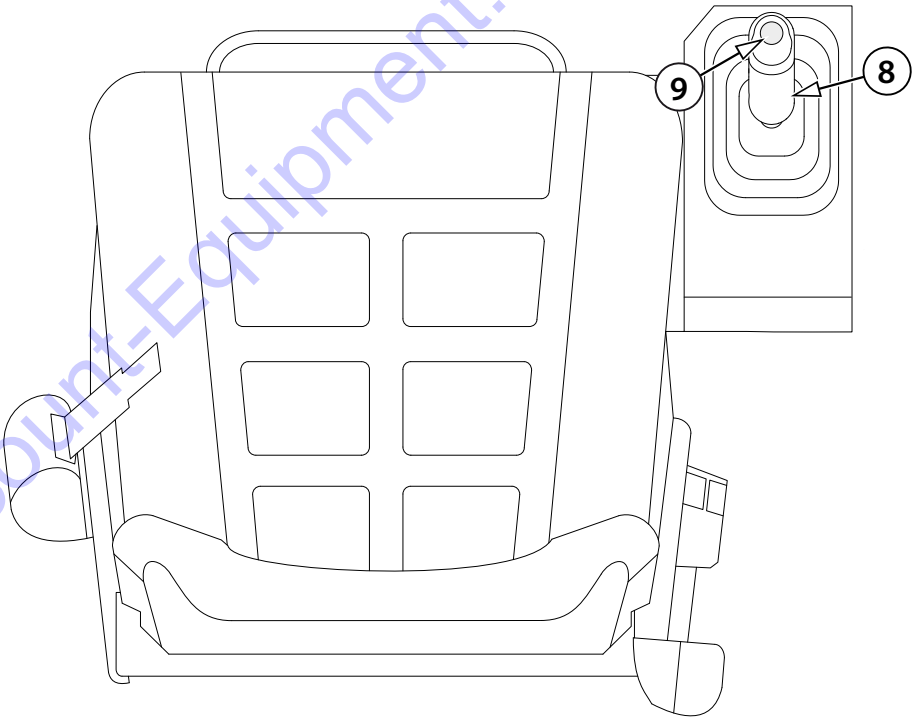
Note

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 shut down.







623019A

Machine travel and reversing with vibration

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

Using the travel control (8) select the forward (F) or reverse (R) travel direction.

Turning on

- Turn on the vibration with the vibration button (9).

Turning off

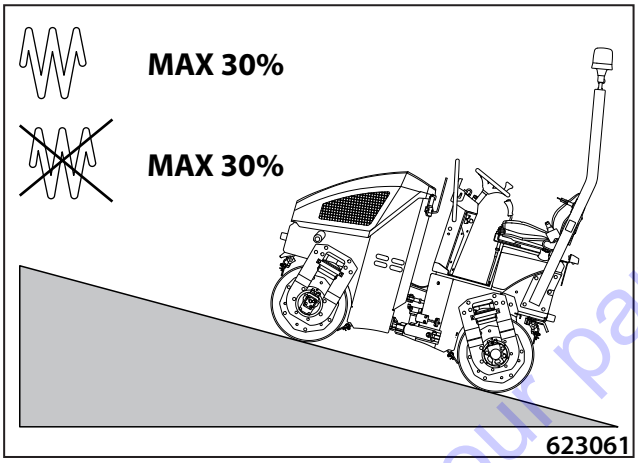
- Turn off the vibration with the vibration button (9).

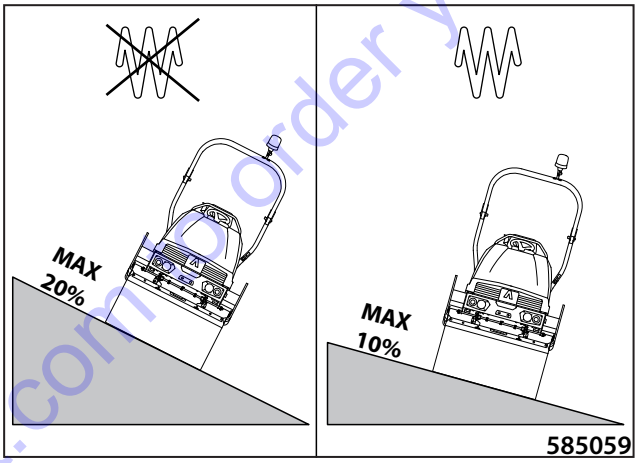
For the maximum permissible slope gradient when driving uphill and across the slope gradient, see figures.

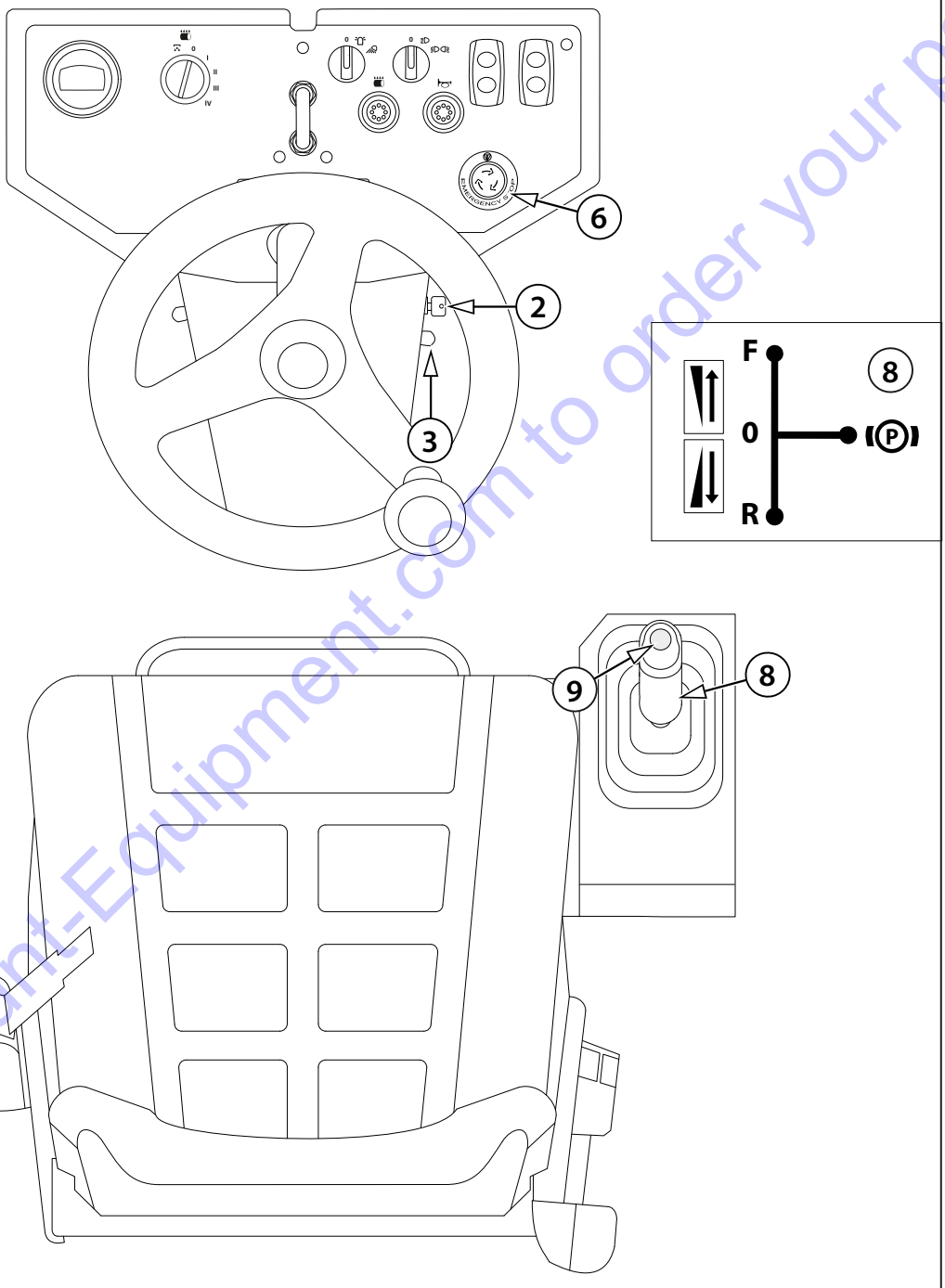
The given values will be lower depending on adhesive conditions and the instantaneous weight of the machine!

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.







623020A

2.7.3 Stopping the machine and turning off the engine

Turn off the vibration with the vibration button (9).

Turn off the sprinkling cycling device by switching to the "0" position.

Brake the machine by moving the travel control (8) to the parking brake position (P).

Set the engine speed control (3) to the idle speed.

Switch over the key in the ignition box (2) 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.

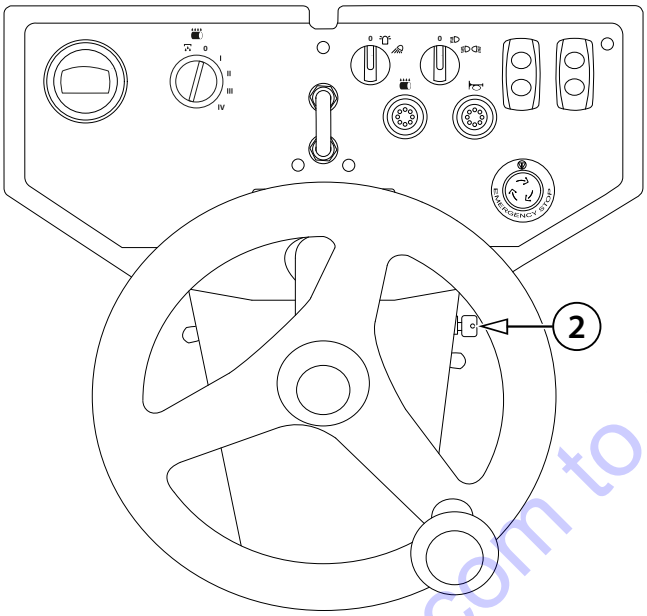
Turning on:

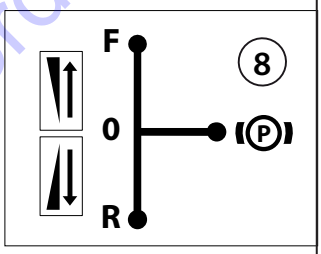
Press the emergency brake button (6) to brake the machine immediately, turn off the engine and apply the parking brake.

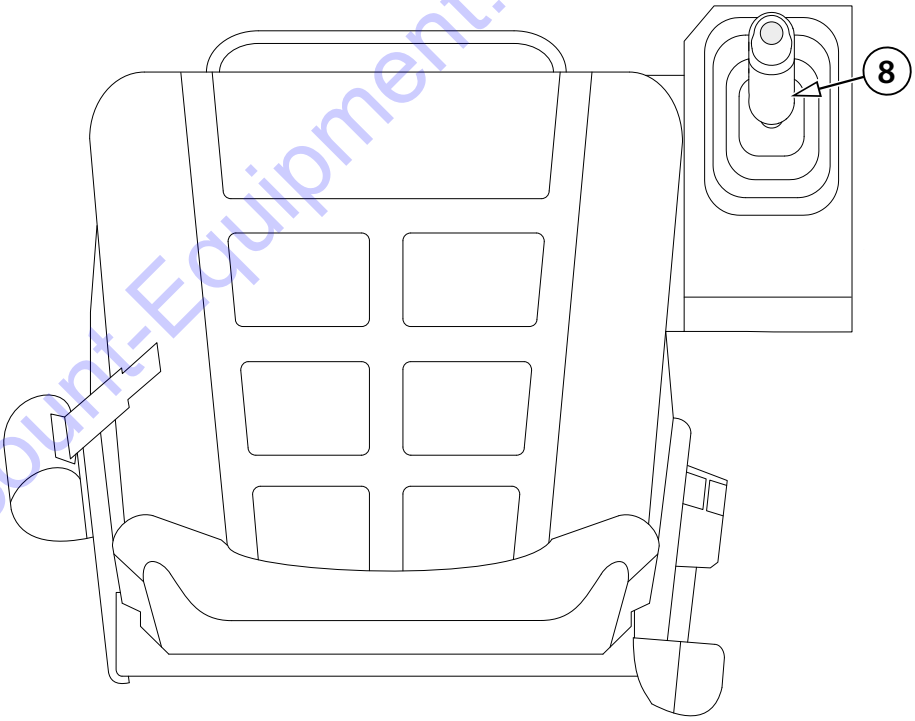
Turning off:

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

Follow the chapter 2.7.1 Engine starting to restart the engine.







623021A

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 (8) to the parking brake position (P).

Switch over the key in the ignition box (2) to the position "0", take out the key from the ignition box and close the lid.

Turn off the battery disconnector.

Clean the machine from dirt.

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

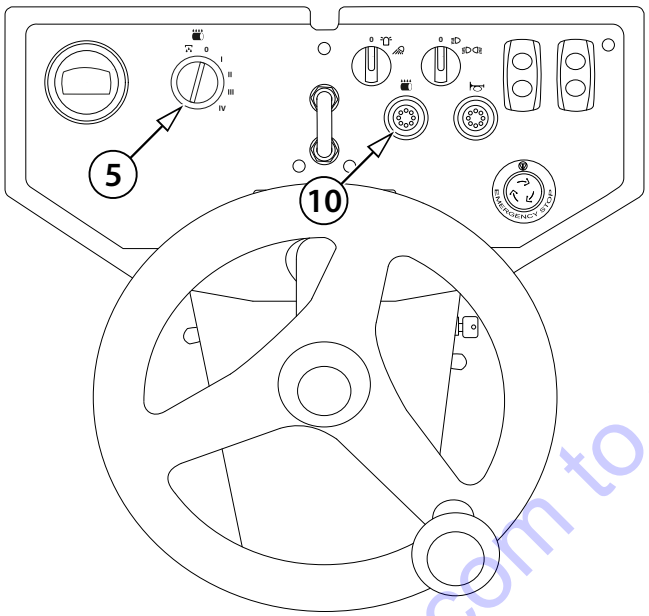
Lock the cover of the dashboard and the engine bonnet with a padlock.

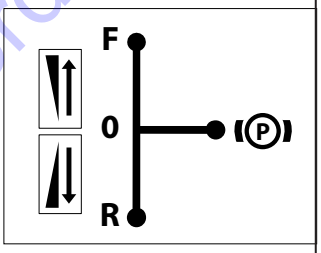
Note

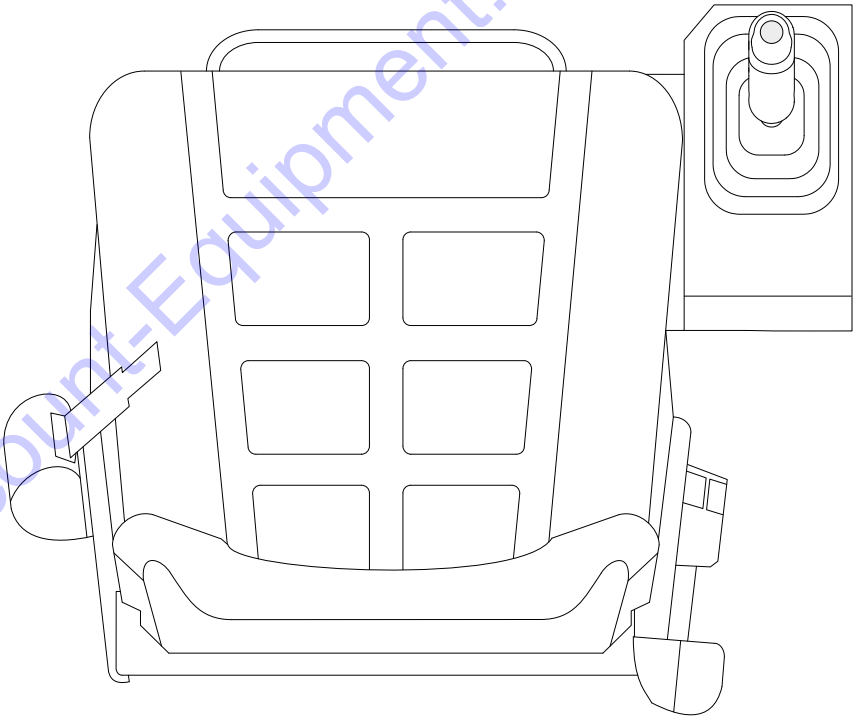
The padlock is not delivered in the machine equipment.

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

It is forbidden to use the parking brake for bringing the machine to a stop.

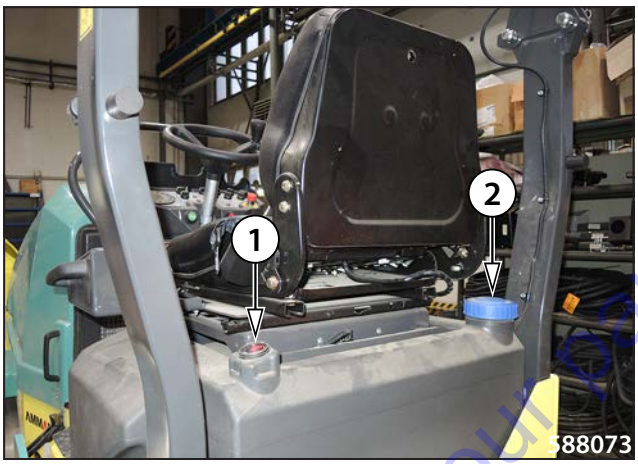






623062A

2.7.7 Sprinkling



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

Hole to fill the water tank (2).

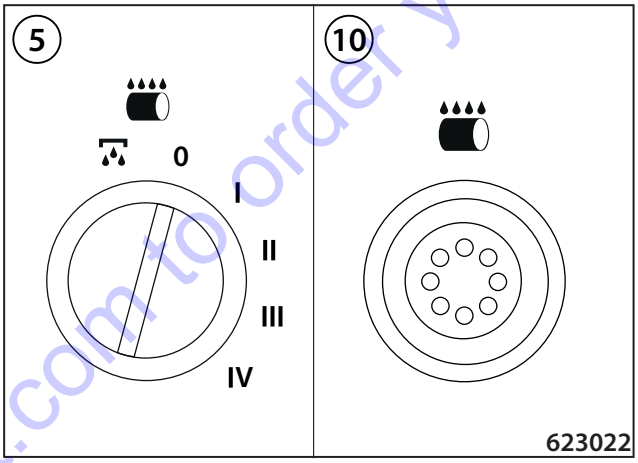
The sprinkling can be started under the conditions that:

- The engine of the machine is started,
- the emergency brake is disabled.

Note

In the interval sprinkling mode, also the conditions of the machine in motion or of active manual vibration must apply.

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



Sprinkling cycling device

Turn on the sprinkling with the sprinkling cycling device (5).

Turn the switch to the left to put the pump into continuous operation – continuous sprinkling.

Turn the switch to any of the four positions to the right to switch on a sprinkling cycle interval.

Manual sprinkling

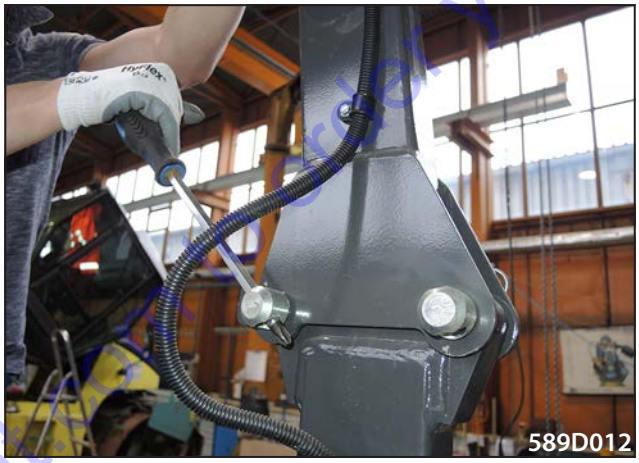
Using the sprinkling button (10), it is possible to turn on the sprinkling at any time, e.g. before driving on a compacted bitumen surface.

The sprinkling can be started for sprinkling the front and rear drum.

2.7.9 ROPS lifting and lowering

ROPS lifting

Lift the ROPS to the vertical position and mount the front screws of the ROPS on the left and right side.



Mount the cotter pins.

ROPS lowering

Remove the split pins.

Dismount the front frame screws on the left and right sides.

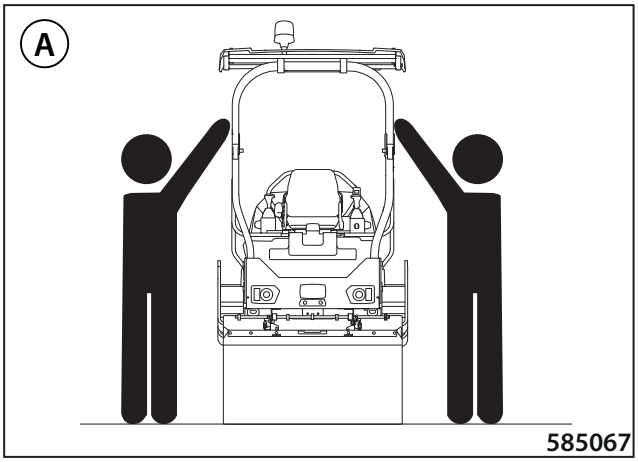
Tilt the ROPS safety frame to the back and secure it in a suitable way.

Lower and raise the ROPS with the help of another person so that both persons stand from the sides of the machine (A).

There is a risk of injury from the falling ROPS.

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

Lower the ROPS only during the transport.



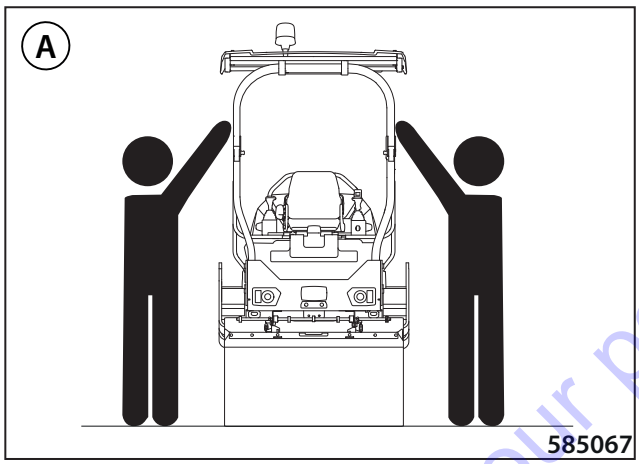
The tightening torque of the ROPS screws is 147 Nm.

2.7.9.1 Protective ROPS frame with a plastic canopy

Only lower or raise the ROPS frame with the help of another person.

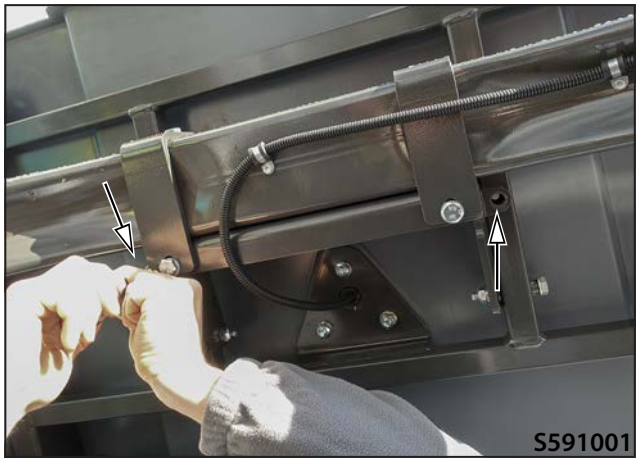
Lower and raise the ROPS with the help of another person so that both persons stand from the sides of the machine (A).

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

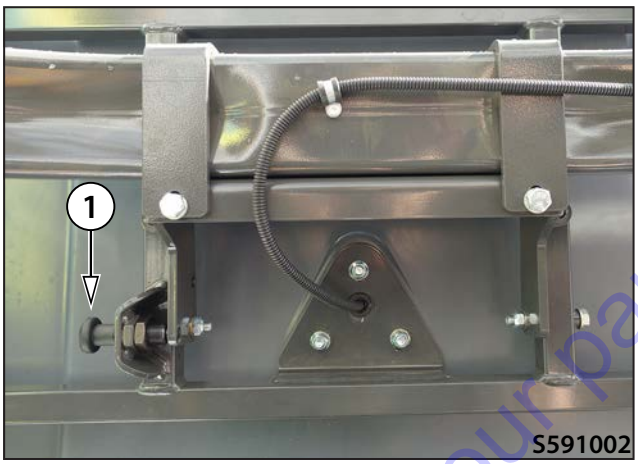


Lowering procedure

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

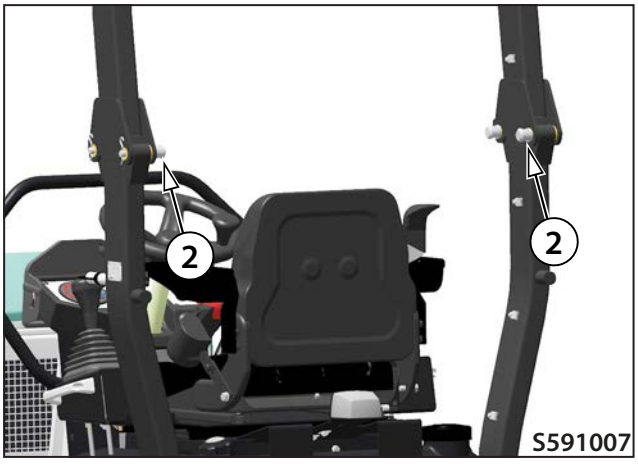


Release the canopy by pulling out the lever (1) slightly and lower the canopy.

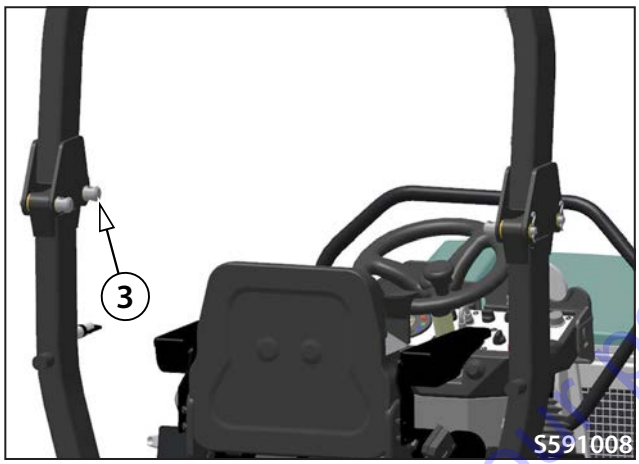


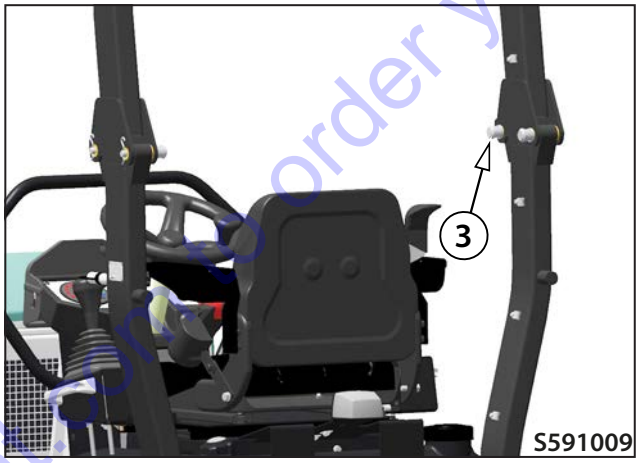
Remove the cotter pins on the left and right side of the ROPS frame.

Loosen the rear pegs (2) on the left and right side of the ROPS frame by approximately two turns.



Remove the front pegs (3) on the left and right side of the ROPS frame.

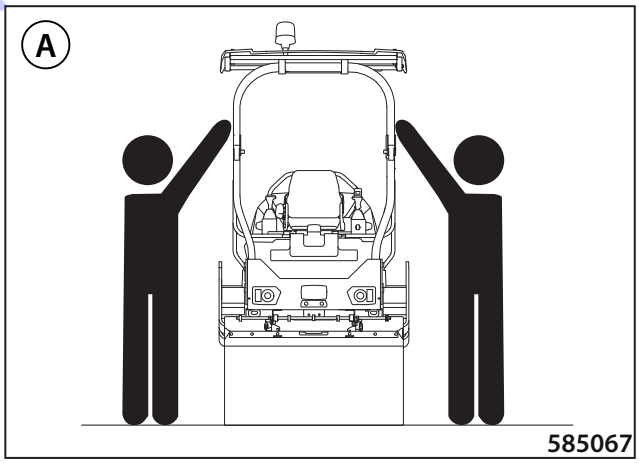




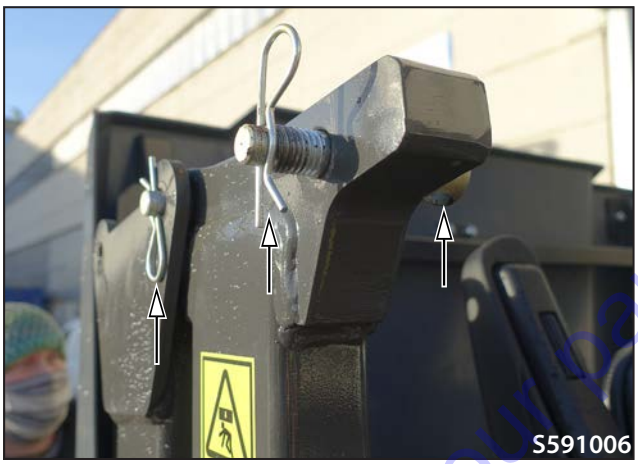
Lower the ROPS frame with the help of another person.

The frame may fall when it is being raised or lowered and cause injury.

Lower and raise the ROPS with the help of another person so that both persons stand from the sides of the machine (A).

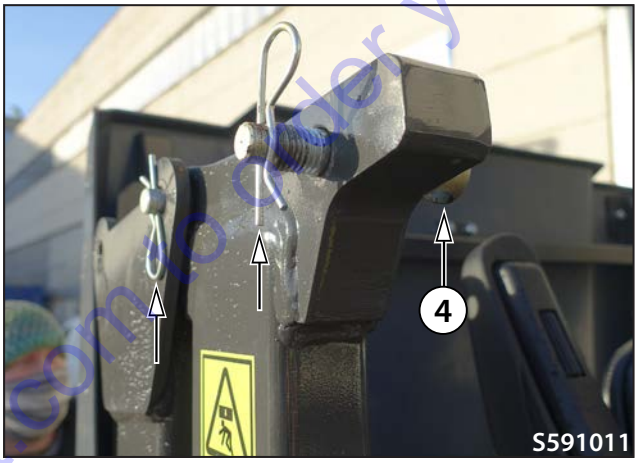


Insert the pegs at the top of the frame on the right and left side and secure them with cotter pins.

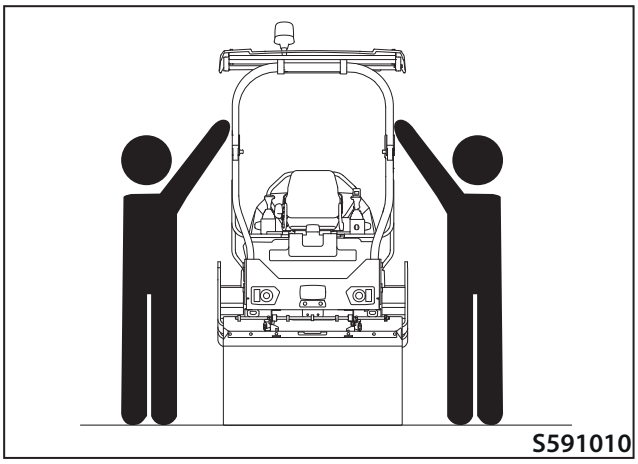


Raising procedure

Remove the cotter pins and remove the front pegs (4) on the left and right side of the ROPS frame.



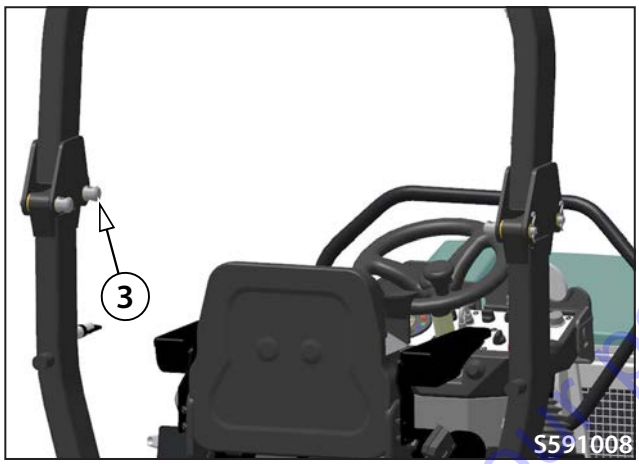
Raise the ROPS frame with the help of another person.

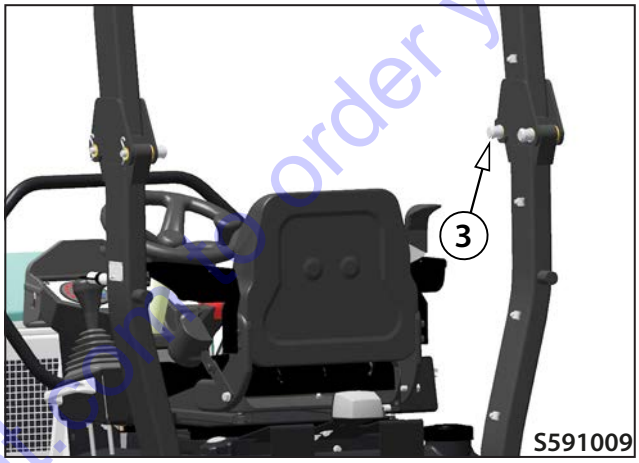


The frame may fall when it is being raised or lowered and cause injury.

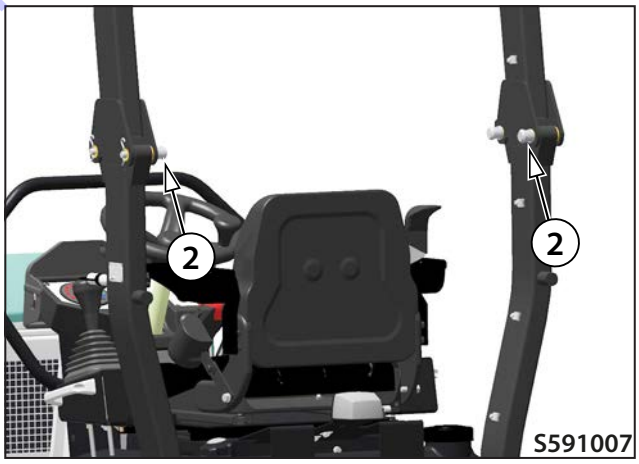
Lower and raise the ROPS with the help of another person so that both persons stand from the sides of the machine (A).

Insert the front pegs (3) on the left and right side of the ROPS frame.



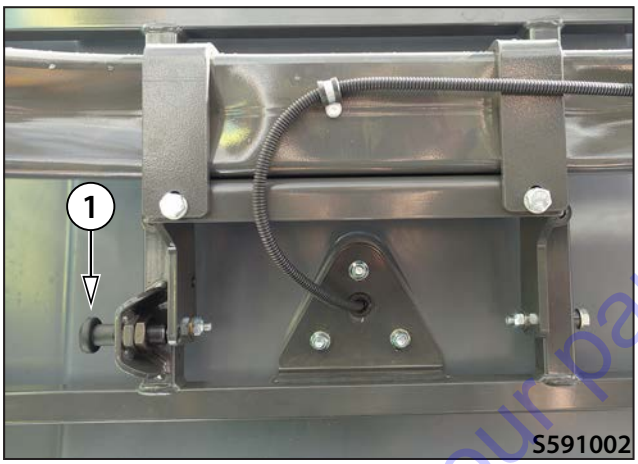


Tighten the rear pegs (2) on the left and right side of the ROPS frame.



Mount the cotter pins on the left and right side of the ROPS frame.

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.

2.7.10 Telematics readiness

Global positioning system with telemetry that monitors the machine's operating systems (machine start-up) 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.

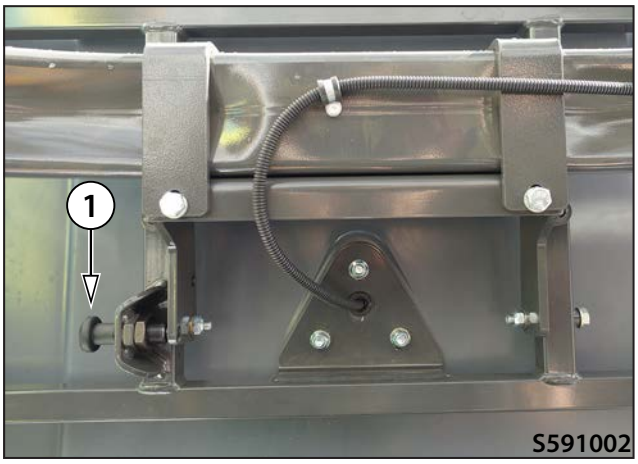
In case of a failure, contact your dealer or Ammann Technical Support.

2.7.13 Lowering and raising of the plastic canopy

Lowering procedure

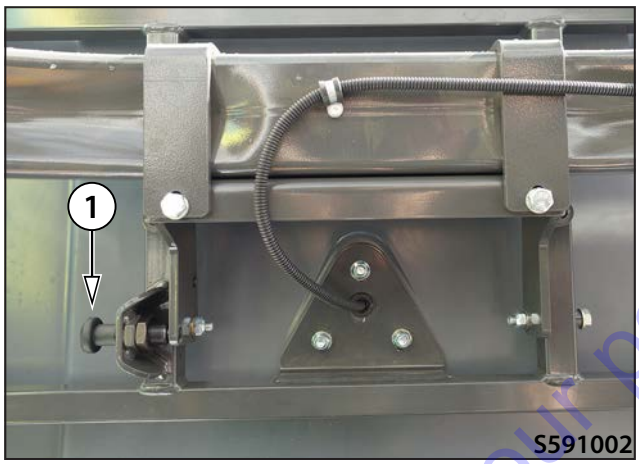
Remove the screws (2x) at the bottom of the plastic canopy.

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.

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

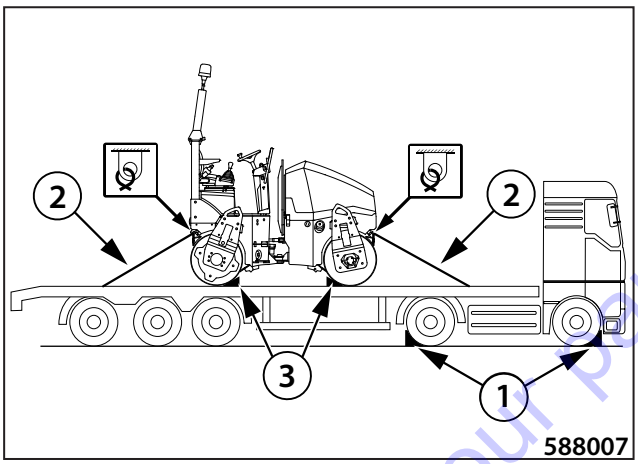
The articulation joint of the machine must be secured with a strut against tilting on the vehicle.

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).

The battery disconnector must be off.

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.



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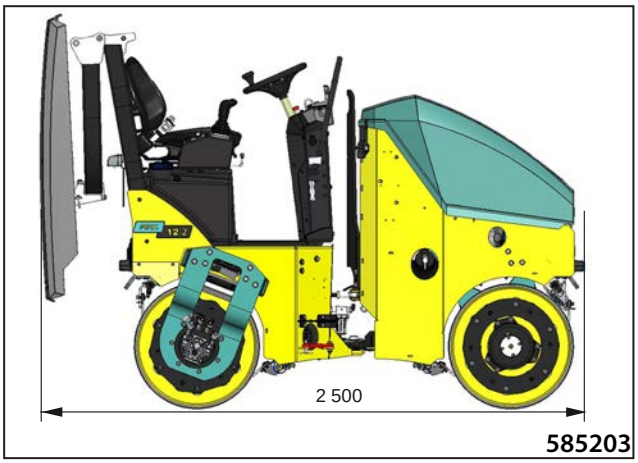

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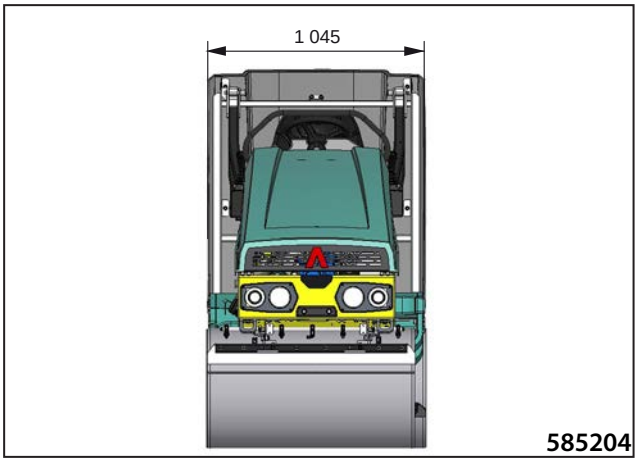

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Machine freeing and towing according to ČSN EN 10532

Maximum machine weight	1500 kg
Traction force	22 kN
Minimum rope length for forward towing	1500 mm
Minimum rope length for reverse towing	1500 mm

For freeing or towing the machine, use two ropes or chains of equal length.

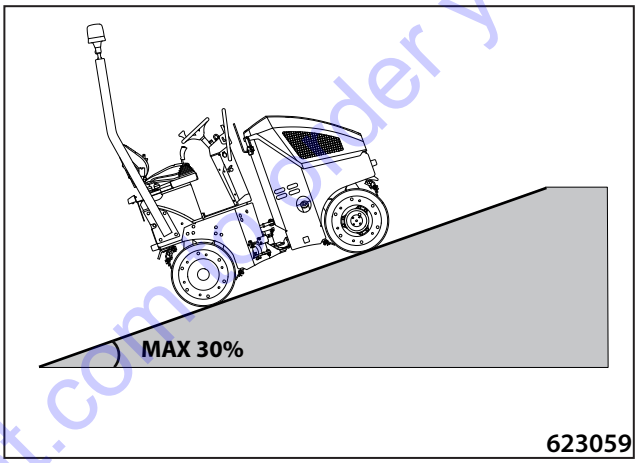
2.8.1 Loading the machine

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%.



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.

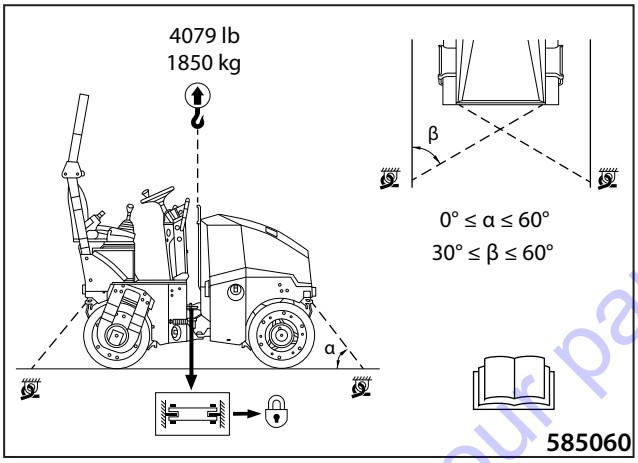
Pay increased attention when loading the machine. Improper handling can cause serious injury or death.

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

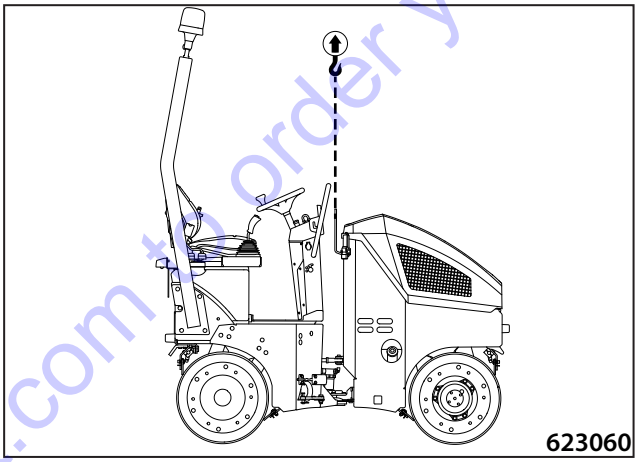
For loading with a crane, the machine is provided with a 1-point suspension.

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!

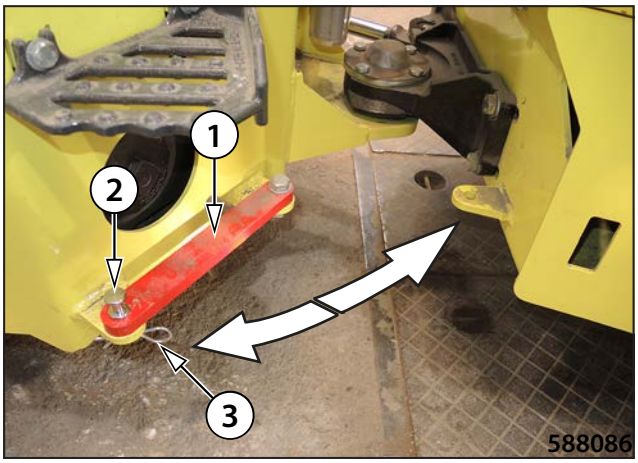
The machine must be tied to the 1-point suspension!

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!

The battery disconnector must be off when loading the machine with a crane.



2.9 Special conditions to use the machine

2.9.1 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!

2.9.2 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:

- Replace the engine oil with the oil recommended for the range of ambient temperatures.
- Use hydraulic oil of the corresponding cinematic viscosity.
- Use fuel with winter additive.
- 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.

2.9.3 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 higher ambient temperatures, we recommend replacing the oil with the ISO VG 100 oil with the cinematic viscosity of 100 mm^2/s at 40 °C (104 °F).

2.9.4 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.

2.9.5 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.

2.9.6 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 partially removed by increasing the travel speed.

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 10.1
(Honda Phase 3)

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 – petrol 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 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.

3.2.1 Engine oil

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

Performance classification according to

API (AMERICAN PETROLEUM INSTITUTE)

ACEA (ASSOTIATION DES CONSTRUCTEUERS EUROPPÉENS DE AUTOMOBILE)

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 oil that meets or exceeds API SJ grade specifications.

Note

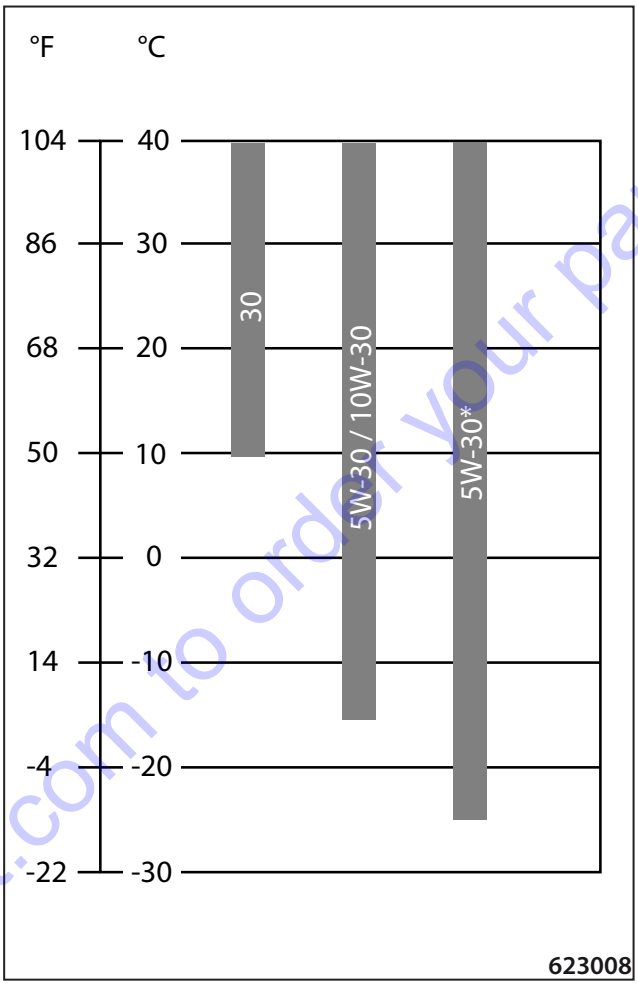
Exceeding the lower temperature limit does not result in damage to the engine; it can only cause some starting difficulties.

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

SAE 10W-30 or 5W-30 is recommended for normal use. For starting/operating temperatures of -15 °C and -25 °C, use 5W-30 full synthetic oil. Oils with other viscosities may be used if the average temperature at the point of use is within the specified range – viscosity chart.

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

Viscosity diagram



3.2.2 Fuel

The engine uses petrol:

The engine manufacturer recommends unleaded petrol:

USA	Petrol with an octane rating of PON 86 or higher.
Outside the USA	Petrol with an octane rating of RON 91 or higher
	Petrol with an octane rating of PON 86 or higher

Note

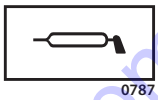
You may use regular unleaded petrol that contains no more than 10% ethanol (E10) or 5% methanol. In addition, methanol must contain solvents and corrosion inhibitors.

Using fuel with a higher ethanol or methanol content than recommended above may cause starting and/or performance problems.

Damage to metal, rubber and plastic parts of the fuel system may also occur.

Engine damage or performance problems caused by the use of fuel with a higher ethanol or methanol content than recommended above are not covered under warranty.

3.2.3 Vibrator lubricating grease



To lubricate the machine, use Valar intensive HTF 00.

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).

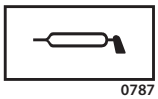
Fill the machines with hydraulic oil that has cinematic viscosity of 46 mm^2/s at 40 °C (104 °F) ISO VG 46. This oil is the most appropriate to be used within the widest range of ambient temperatures.

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

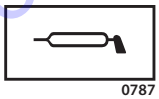


To lubricate the machine you must use plastic grease containing lithium according to:

ISO 6743/9 CCEB 2

DIN 51 502 KP2K-30

3.3 Fluids

Part	Fluid type	Fluid quantity l (gal US)	Brand
Engine	Engine oil according to Chapter 3.2.1.	1.35 (0.4)	 2412
Fuel tank	Fuel according to Chapter 3.2.2.	27 (7.1)	 4294bz
Hydraulic system	Hydraulic oil according to Chapter 3.2.4.	15 (4)	 2158
Steering joint bearings, stirrup bearings, steering swivel pins, suspensions	Lubricating grease according to Chapter 3.2.5.	as required	 0787
Sprinkling tank	Water	110 (29.1)	 AMN59

3.4 Lubrication and maintenance chart

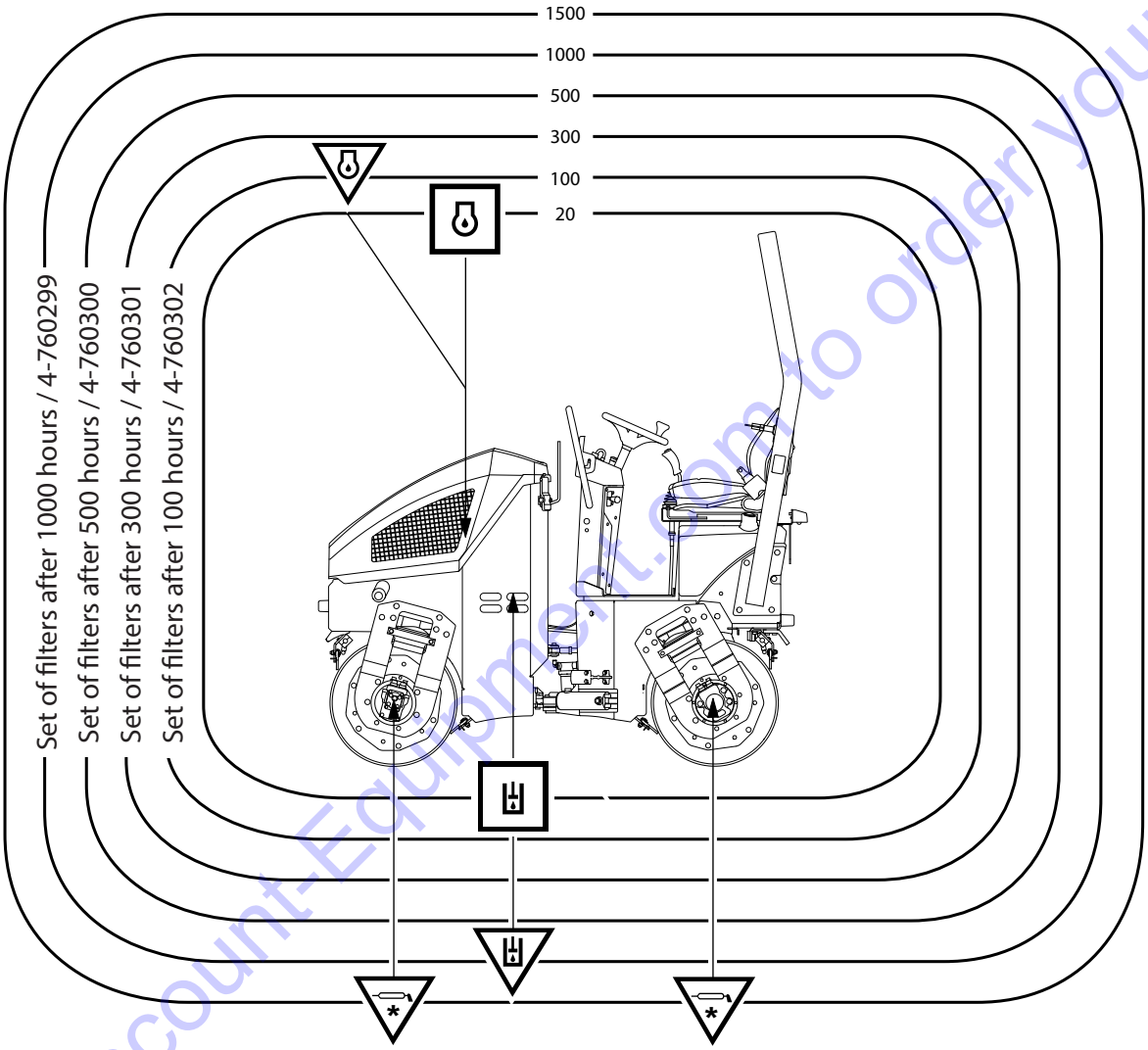
Every 20 hours of operation (daily)	
3.6.1	Fuel check
3.6.2	Checking the oil in the engine
3.6.3	Checking the oil in the hydraulic tank
3.6.4	Cleaning the hydraulic oil cooler
3.6.5	Air filter check
3.6.6	Sprinkling tank refilling
3.6.7	Scraper adjustment
3.6.8	Checking the warning and checking devices
3.6.9	Engine leakage check
3.6.10	Brake test
3.6.11	Checking the tightness of the fuel and hydraulic system
After 20 hours of operation	
3.6.14	Engine oil change
Every 50 hours of operation	
3.6.12	Battery check
After 50 hours of operation	
3.6.27	Hydraulic oil and filter replacement **
Every 100 hours of operation	
3.6.13	Air filter cleaning
3.6.14	Engine oil change*
3.6.15	Checking and adjusting the spark plug
3.6.16	Cleaning the spark arrester
Every 200 hours of operation	
3.6.17	Sprinkling filter cleaning
Every 300 hours of operation	
3.6.18	Fuel filter replacement
3.6.19	Spark plug replacement
3.6.20	Valve clearance check and adjustment
3.6.21	Checking and adjusting idle speed

After 500 hours of operation, but at least once a year	
3.6.22	Electrical installation check
3.6.23	Replacement of air filter cartridges
3.6.24	Checking the rubber-metal elements of the hydraulic oil cooler
3.6.25	Checking the fuel system hoses
Every 1000 hours of operation	
3.6.26	Cleaning the combustion chamber
3.6.27	Hydraulic oil and filter replacement **
3.6.28	Damping system check
3.6.29	Swinging support check
3.6.30	Articulation joint check
Every 1500 hours of operation	
3.6.31	Changing the vibrator lubricant
3.6.32	Checking the condition of vibrator bearings
Every 2000 hours of operation	
3.6.33	Replacing the rubber-metal elements of the hydraulic oil cooler
Maintenance as required	
3.6.34	Replacing the fuel system hoses
3.6.35	Gas strut replacement
3.6.36	Cleaning the water tank
3.6.37	Cleaning the machine
3.6.38	Draining water from the sprinkling circuit before the winter season
3.6.39	Rear-view mirrors
3.6.40	Charging of the battery
3.6.41	Checking the screw connections for tightening

*** First after 20 engine hours.**
**** First after 50 engine hours.**

LUBRICATION AND SERVICE PLAN

□	INSPECTION
○	LUBRICATION
▽	REPLACEMENT



	Engine oil:	SAE 10W/30 SAE 5W/30	API SJ
	Hydraulic oil:	ISO VG 46 HVLP	
*	Lubricating grease:	VALAR INTENSIVE HTF 00	

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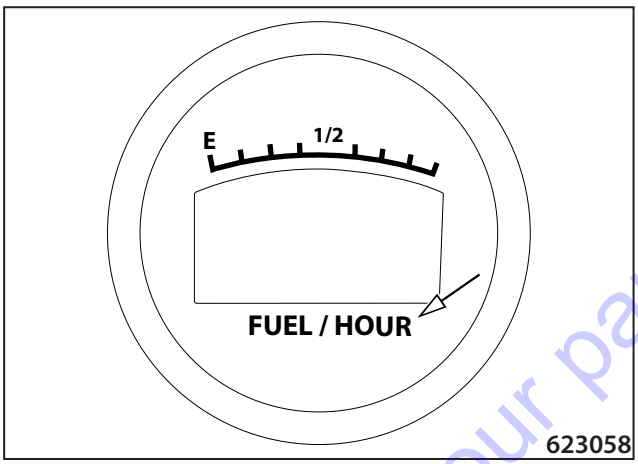
3.6 Lubrication and maintenance operations

The lubrication and maintenance chart contains tasks and instructions that must be followed at certain intervals.

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 3.6.41 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).

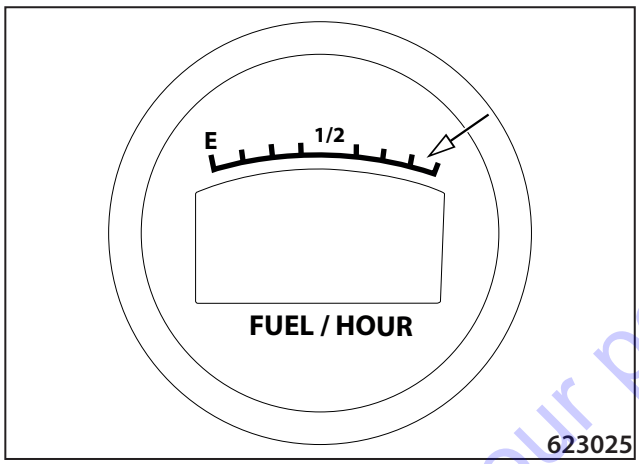
After the first 50 hours of operation of the new machine or after its general overhaul, carry out the following operations according to Chapter:

3.6.14	Engine oil change
3.6.27	Hydraulic oil and filter replacement

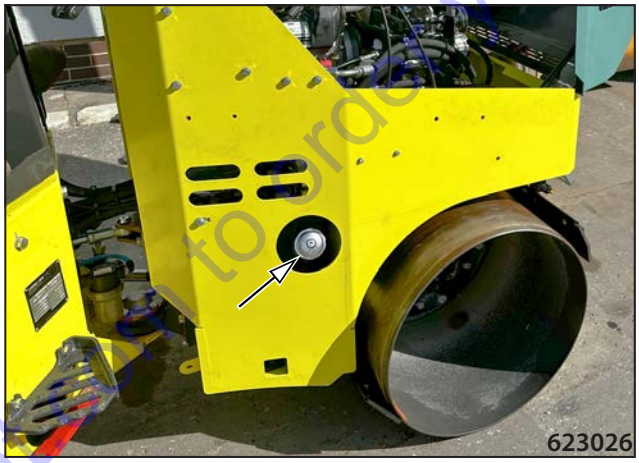
Every 20 hours of operation (daily)

3.6.1 Fuel check

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



- 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.



Note
The fuel tank volume is 27 l (7.1 gal US).

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

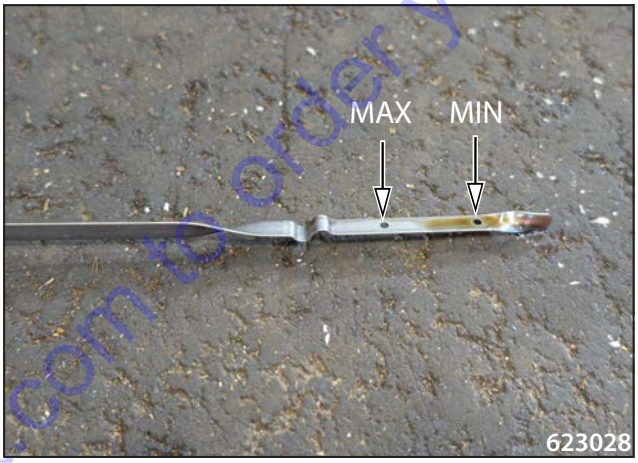
Do not smoke and do not use open flame while working.
Do not refill the fuel when the engine is running.

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.



- 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 1.35 l (0.4 gal US).

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

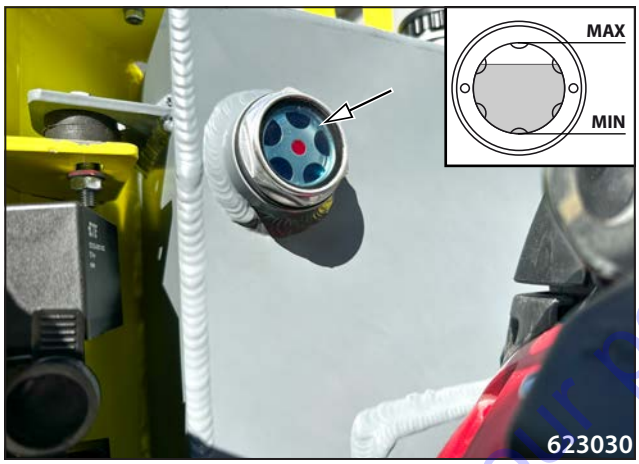
Carry out the check after the oil has been cooled down.

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

Stop the oil soaking into the ground.

3.6.3 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.
- Refill the hydraulic oil according to chapter 3.6.27 if required.



3.6.4 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. Clogged coolers result in reduced cooling effect and increased temperature 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!

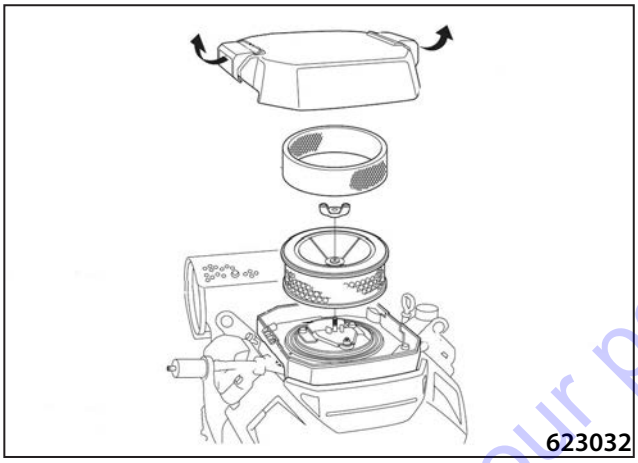
Clean the machine in a workplace equipped with a catching system of cleaning agents to avoid contamination of the soil and water resources!

Do not use forbidden cleaning agents!

3.6.5 Air filter check

Open the air cleaner cover and check the filter cartridges.

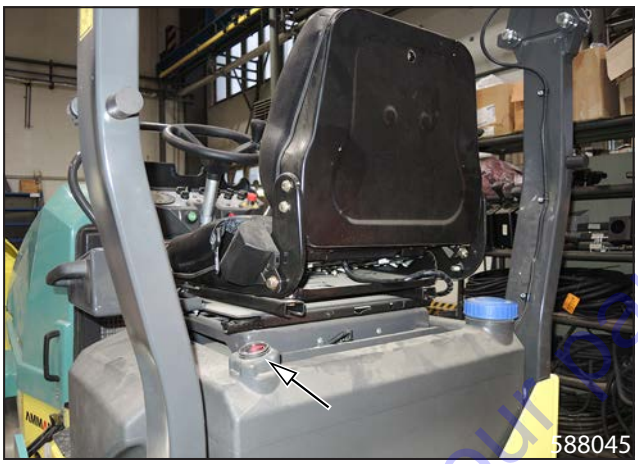
Clean or replace clogged filter cartridges.



Always replace damaged filter cartridges.

3.6.6 Sprinkling tank refilling

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



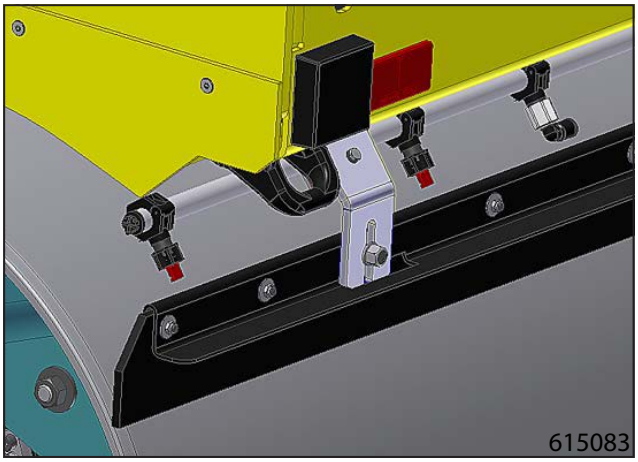
- Open the tank cap and refill with clean water.

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

3.6.7 Scraper adjustment

Fixed scrapers

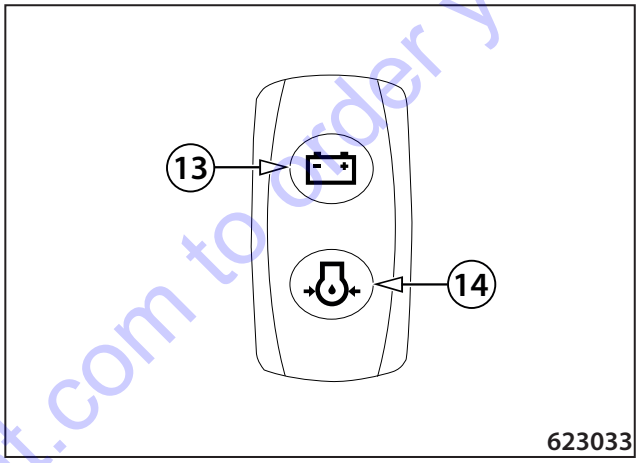
- Loosen the screws and move the scraper so that it is in contact with the drum.



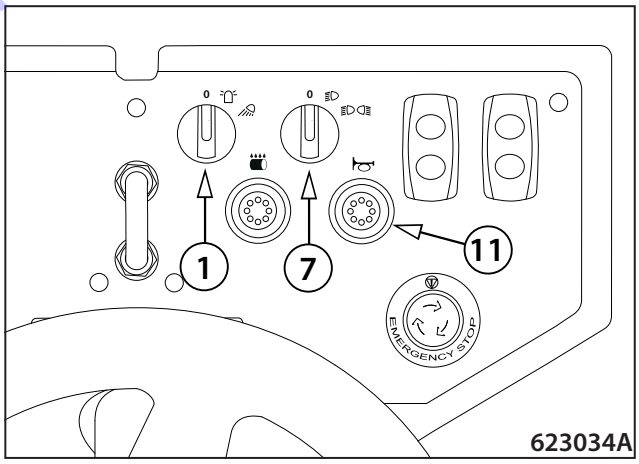
3.6.8 Inspection of warning and checking devices

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

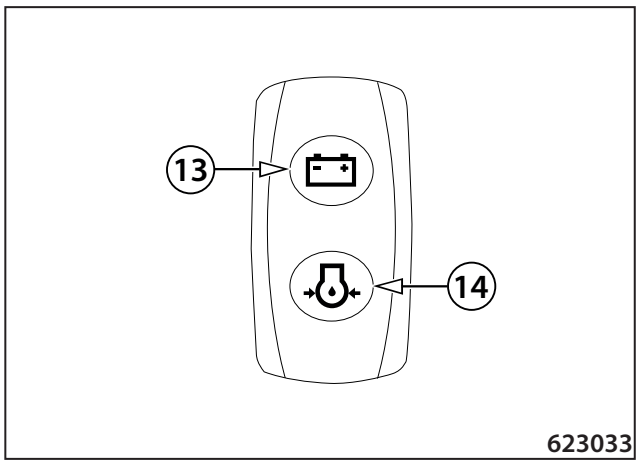
- The battery charging indicator lamp (13) and the engine lubrication indicator lamp (14) will illuminate.



- Then check the switches (1, 7, 11) for operation.



- Start the engine according to Chapter 2.7.1.
- After the start, the indicator lamps for battery charging (13) and engine lubrication (14) must go off.



3.6.9 Engine leakage check

- Visually check the engine and the engine compartment for oil leakage.
- Remove the identified defects.

3.6.10 Brake test

3.6.10.1 Check of the parking brake

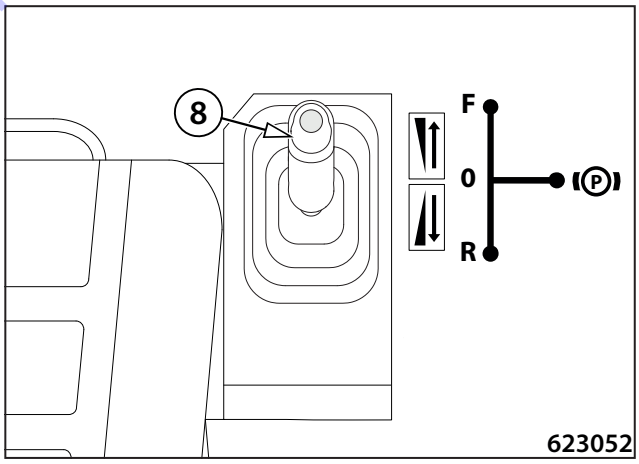
- This test verifies the function of the parking brake. If the operator does not carry out the test, further operation of the machine is the full responsibility of the owner.

Carry out the test on a non-slip test surface with a 20% slope or on a non-slip tilting platform.

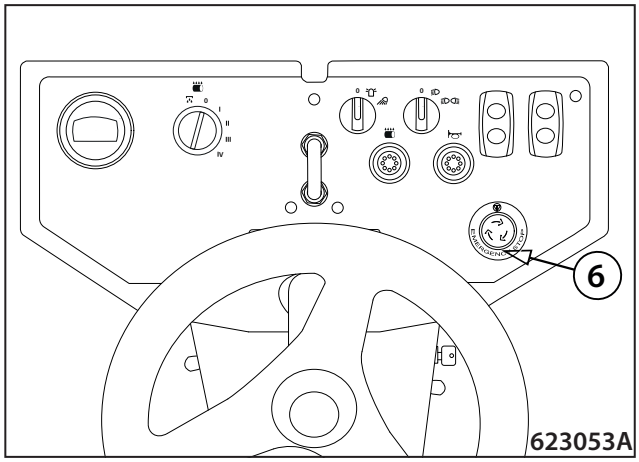
Check that the area in front of and behind the machine is empty and free of persons or obstacles.

Ensure a suitable safe distance in front of the machine, behind the machine as well as on its sides.

- Sit in the driver's position and start the engine according to Chapter 2.7.1.
- Place the machine on a non-slip test surface with a 20% slope or on a non-slip tilting platform.
- Change the travel control (8) to the parking brake position "P".



- If the machine stops, the parking brake test has been successful.
- If the machine does not stop:
  - place the machine on a level, solid surface,
  - change the travel control to the parking brake position (P),
  - turn off the engine,
  - secure the machine with chocks against unintentional movement,
  - contact service.



3.6.10.2 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.

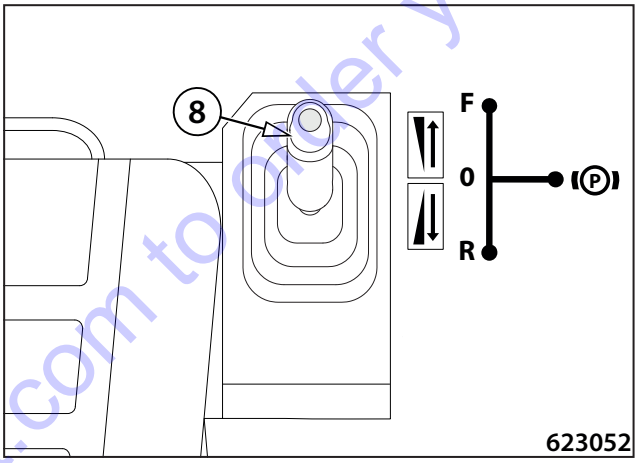
Check that the area in front of and behind the machine is empty and that there are no persons or obstacles there! Ensure a suitable safe distance in front of the machine, behind the machine as well as on its sides.

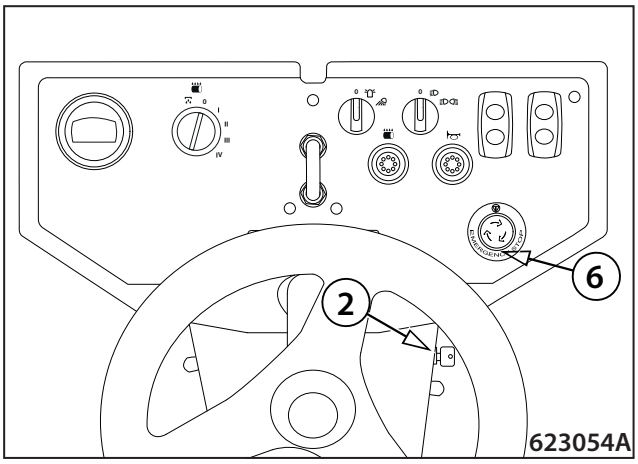
Procedure

- 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.
- Press the emergency brake button (6). The engine stops and the parking brake (P) engages.
- 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.

Note:

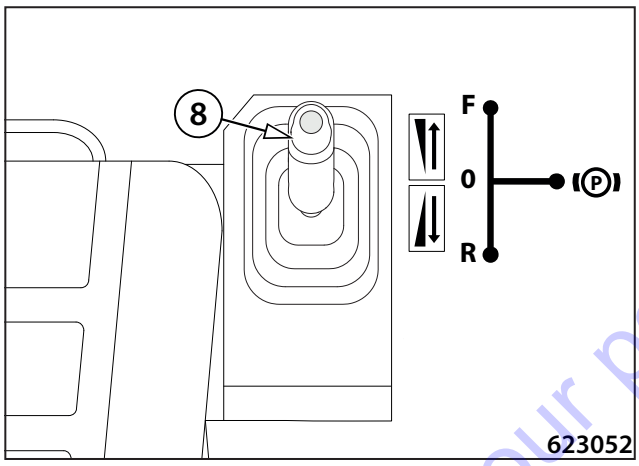
The emergency stop button (6) is only to be used to stop the machine in an emergency. Use the service brake to stop the machine normally. To turn off the engine normally, use the ignition box (2) – turn the key to the "0" position.





3.6.10.3 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 that there are no persons or obstacles there! 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 (8) to the forward travel position "F".
- Set the travel control to the zero position "0".
- 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 (8) 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.

3.6.11 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.

Every 50 hours of operation

3.6.12 Battery inspection

- Stop the engine.
- Clean the battery surface.
- 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 the old inoperative battery 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 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!

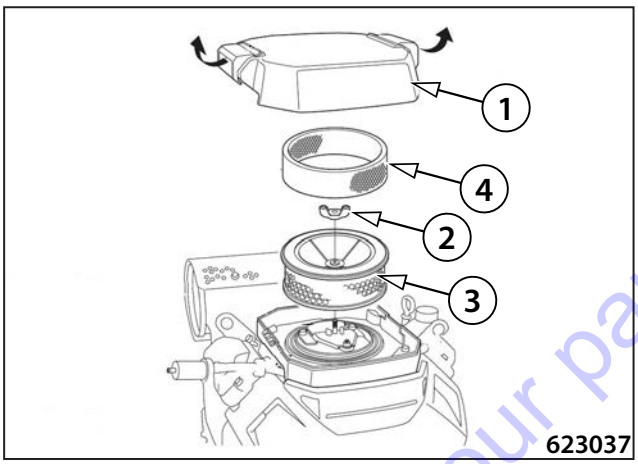
Do not check that a wire is live by touching the machine frame.

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

Every 100 hours of operation

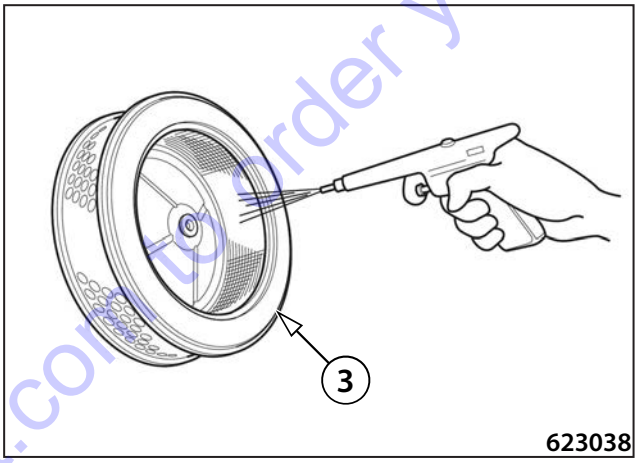
3.6.13 Air filter cleaning

- Remove the air filter cover (1).
- Remove the wing nut (2).
- Remove the paper filter cartridge (3).
- Remove the foam filter cartridge (4) from the paper filter cartridge.



Cleaning the paper filter cartridge (3):

- Tap the paper cartridge forcefully several times on a solid surface to remove dirt, or blow compressed air through the filter cartridge from the air cleaner body side. The pressure must not exceed 207 kPa (2.1 kgf/cm^2).



Do not brush the paper cartridge as this will cause dirt to enter the fibres. If it is excessively dirty, replace the paper filter cartridge.

Cleaning the foam filter cartridge (4):

- Wash the foam filter cartridge with warm soapy water, rinse and allow to dry properly.
- Soak the filter cartridge in clean engine oil and wring out the excess oil.

If too much oil is left in the foam, the engine will smoke after starting.

- Use a damp cloth to clean dirt from the inside of the housing and air filter cover.
- Take extra care to prevent dirt from entering the air chamber that leads to the carburettor.
- Place the foam filter cartridge (4) on top of the paper filter cartridge (3) and install the assembled filter cartridge.
- There must be a seal under the filter cartridge.
- Mount the wing nut (2).
- Secure the air cleaner cover latch properly.
- Mount the air filter cover (1).

If the filter cartridges are damaged, replace them.

3.6.14 Engine oil change

Carry out for the first time after 20 hours.

Beware of the risk of scalding when draining hot oil.
Let the oil cool down below 50 °C (122 °F).
Follow the fire-fighting measures.

Engine oil draining

- The total volume of oil in the engine is 1.35 l (0.4 gal US)
- Remove the drain plug and let the oil drain out.
- Remount the plug.

Engine oil filter replacement

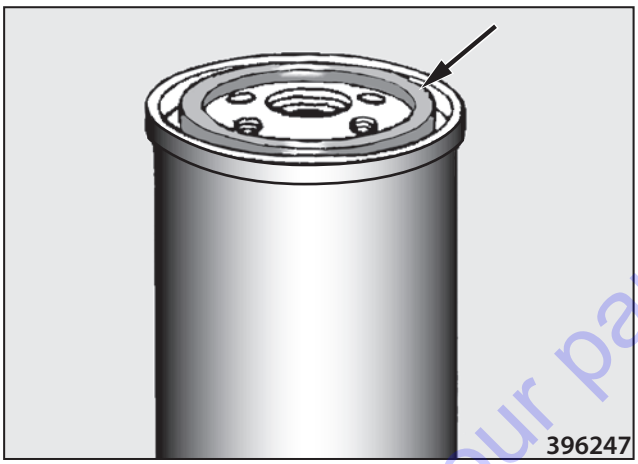
- Remove the filter and drain the oil into a suitable container.

Dispose of used engine oil according to applicable environmental regulations.

- Clean the area around the engine oil filter
- Coat the seal of the new engine oil filter with clean engine oil.

Use only a genuine Honda engine oil filter or one of equivalent quality. Using an improper filter or a non-Honda filter, if not of equivalent quality, may cause engine damage.

- Carefully install the new oil filter by hand until you feel the gasket seat against the filter mounting base, then tighten the filter another ¾ turn using a socket spanner.



Engine oil filter
Order number: 1808898

Note
Oil filter tightening torque: 12 N·m (1.2 kgf·m)

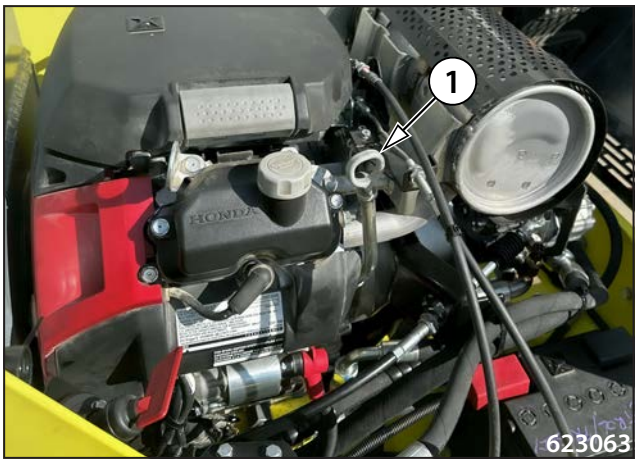
- Top up engine oil according to chapter 3.6.14.
- Start the engine and check for leaks.

Engine oil filling

- 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 1.35 l (0.4 gal US) including the oil filter volume.

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

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



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

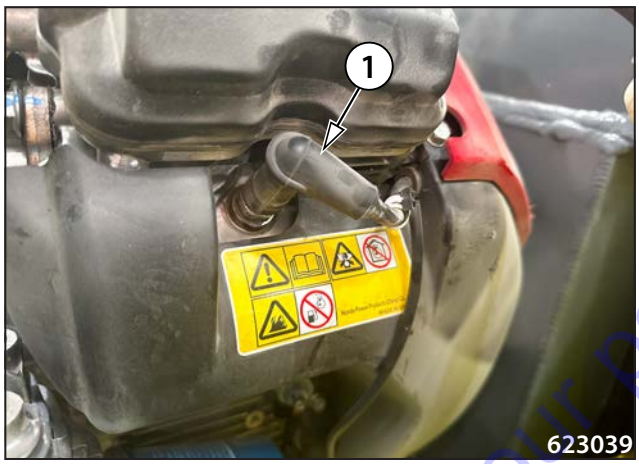
Use recommended filters only; refer to the spare parts catalogue. Use recommended oils; see Chap. 3.2.1.

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.

3.6.15 Checking and adjusting the spark plug

- Allow the engine to cool down before starting work on the spark plugs.
- The spark plugs must have the correct electrode spacing and there must be no dirt on them.



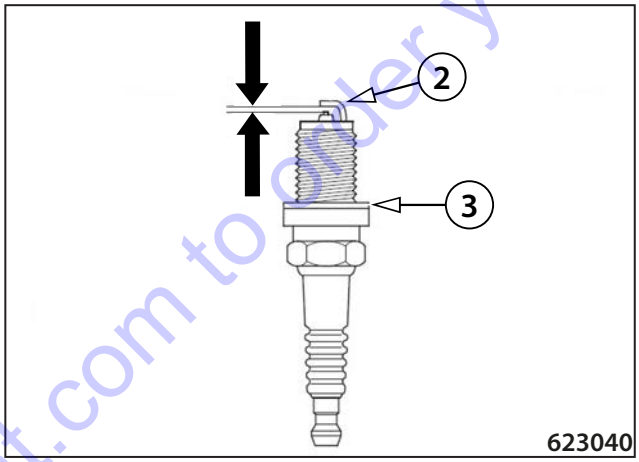
Procedure

- Disconnect the spark plug caps (1) and clean the area around the spark plug.
- Remove the spark plugs with a 5/8" spark plug spanner.

Replace the spark plugs if:

- if damaged,
- very dirty,
- if the sealing pad is defective,
- if the electrode is worn.

- If necessary, replace the spark plug according to chapter 3.6.19.
- Measure the distances of the spark plug electrodes with a feeler gauge. If necessary, correct the distance by bending the outer electrodes (2). The distance must be 0.7–0.8 mm.
- Carefully install the spark plug by hand, taking care not to damage the threads.
- Tighten the spark plug with a 5/8" spark plug spanner to compress the sealing pad (3).
- Once seated, tighten the spark plug an extra 1/8-1/4 turn to compress the pad (3).
- Fit the spark plug caps (1) to the spark plugs.



A loose spark plug can cause overheating and engine damage.

An over-tightened spark plug can damage the threads in the cylinder head.

3.6.16 Cleaning the spark arrester

In Europe and other countries where Directive 2006/42/EU applies, have the cleaning carried out by a qualified service centre.

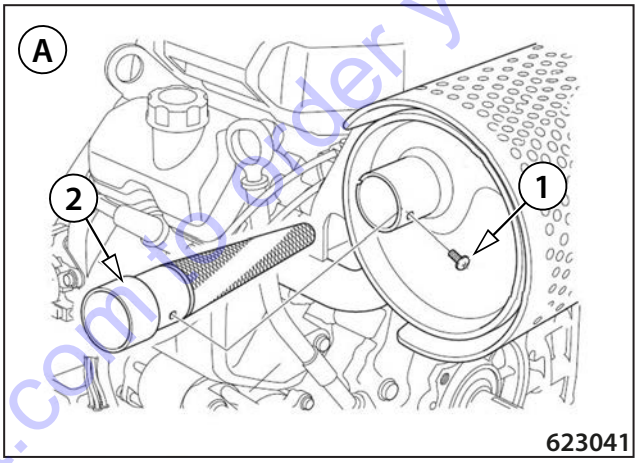
There is a risk of burns. Allow the spark arrester to cool down before cleaning and checking the spark arrester.

Remove the spark arrester:

- Upper type exhaust muffler (A).

  Remove the special spark arrester screw (1).

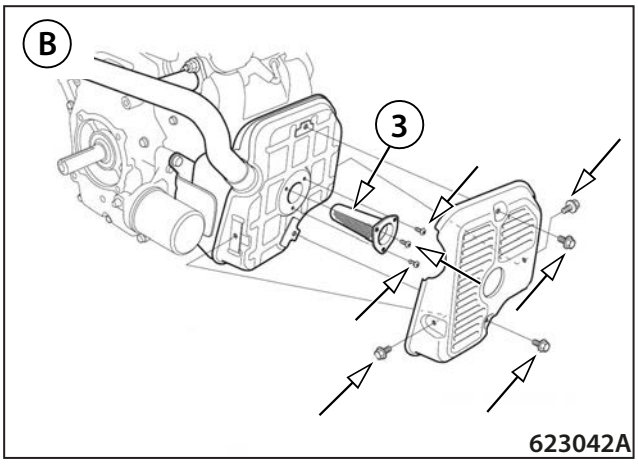
  Remove the spark arrester (2).



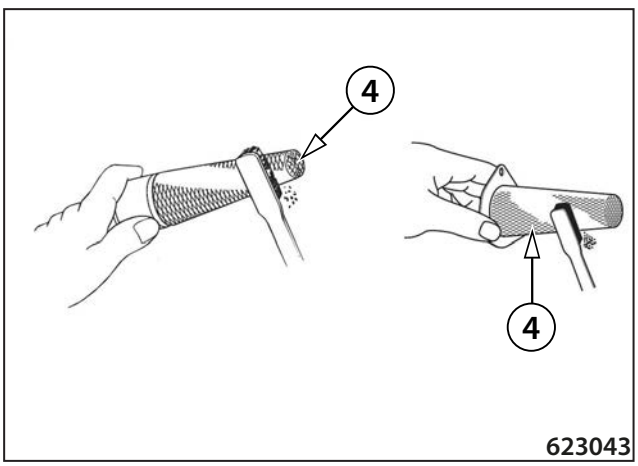
- Side type exhaust muffler (B).

  Remove the exhaust muffler cover using the screws (4x).

  Remove the spark arrester screws (3x) and remove the spark arrester (3).



- Carefully brush the carbon deposits from the spark arrester screen (4).
- The spark arrester must not be cracked and there must be no holes in it.
- If the spark arrester is damaged, replace it.
- Reinstall the spark arresters and exhaust muffler protector in reverse order of the removal procedure.

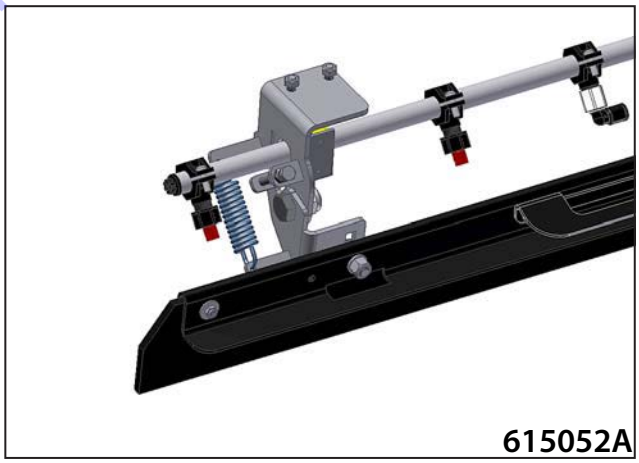


Every 200 hours of operation

3.6.17 Sprinkling filter cleaning

- Remove the sprinkling filter vessel, remove the strainer, clean it and mount back.
- Check the seal.
- Replace if damaged.

- Remove and clean the sprinkler strainers.



Every 300 hours of operation

3.6.18 Fuel filter replacement

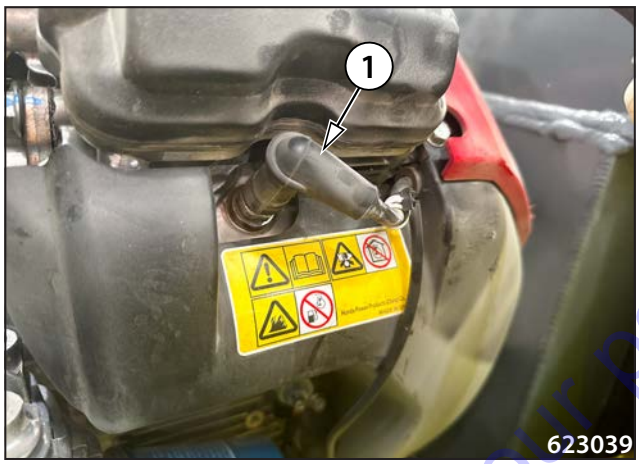
If you do not have the necessary tools and qualifications, repairs to these parts must be carried out by a qualified Honda service centre.

Fuel filter
Order number: 1808924

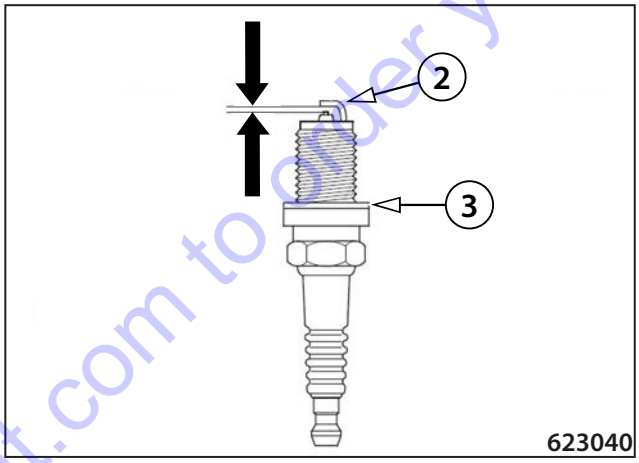
3.6.19 Spark plug replacement

- Spark plug recommended by the engine manufacturer: ZFR5F (NGK)

Incorrect spark plugs can damage the engine.



- Allow the engine to cool down before starting work on the spark plugs.
- The spark plugs must have the correct electrode spacing and there must be no dirt on them.
- Replacement procedure:
- Disconnect the spark plug caps (1) and clean the area around the spark plug.
- Remove the spark plugs with a 5/8" spark plug spanner.
- Measure the distances of the spark plug electrodes with a feeler gauge. If necessary, correct the distance by bending the outer electrodes (2). The distance must be 0.7–0.8 mm.
- Carefully install the new spark plug by hand, taking care not to damage the threads.
- Tighten the spark plug with a 5/8" spark plug spanner to compress the sealing pad (3).
- Once seated, tighten the spark plug an extra 1/2 turn to compress the pad (3).
- Fit the spark plug caps (1) to the spark plugs.



Spark plug
Order number: 1808927

A loose spark plug can cause overheating and engine damage.

An over-tightened spark plug can damage the threads in the cylinder head.

3.6.20 Valve clearance check and adjustment

If you do not have the necessary tools and qualifications, repairs to these parts must be carried out by a qualified Honda service centre.

3.6.21 Checking and adjusting the idle speed

If you do not have the necessary tools and qualifications, repairs to these parts must be carried out by a qualified Honda service centre.

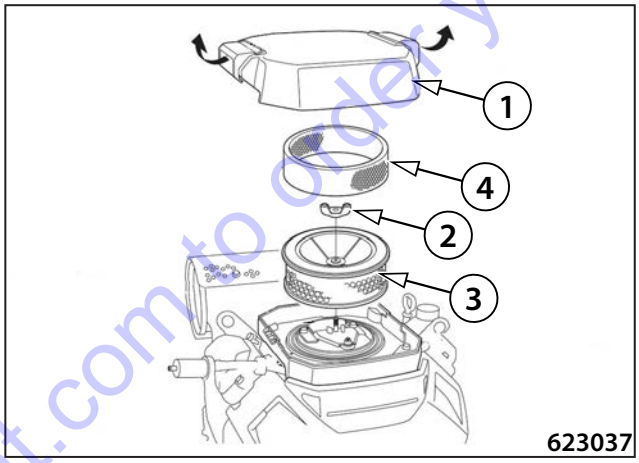
Every 500 hours of operation

3.6.22 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.

3.6.23 Replacement of air filter cartridges

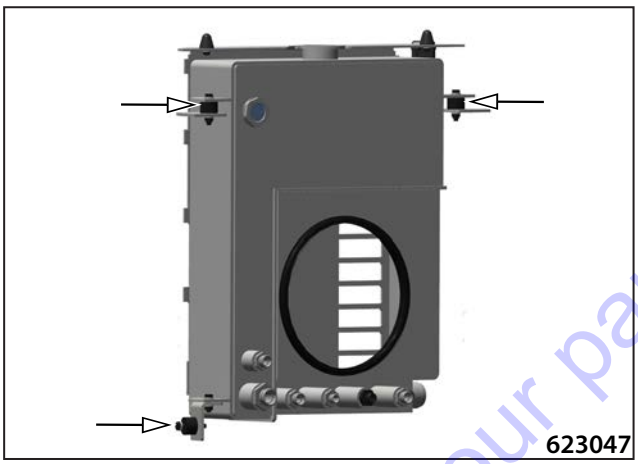
- Remove the air filter cover (1).
- Remove the wing nut (2).
- Remove the paper filter cartridge (3).
- Remove the foam filter cartridge (4) from the paper filter cartridge.
- Use a damp cloth to clean dirt from the inside of the housing and air filter cover.
- Take extra care to prevent dirt from entering the air chamber that leads to the carburettor.
- Place the foam filter cartridge (4) on top of the paper filter cartridge (3) and install the assembled filter cartridge.
- There must be a seal under the filter cartridge.
- Mount the wing nut (2).
- Secure the air cleaner cover latch properly.
- Mount the air filter cover (1).



Air filter cartridge
Order number: 1808897

3.6.24 Checking the rubber-metal elements of the hydraulic oil cooler

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



Replace if damaged.

Recheck screws and nuts for tightening.

3.6.25 Checking the fuel system hoses

Check the clips and fuel hoses visually. If clips are loosened or hoses worn out, ensure remedy.

If you do not have the necessary tools and qualifications, repairs to these parts must be carried out by a qualified Honda service centre.

Every 1000 hours of operation

3.6.26 Cleaning the combustion chamber

If you do not have the necessary tools and qualifications, repairs to these parts must be carried out by a qualified Honda service centre.

3.6.27 Hydraulic oil and filter replacement

Check for the first time after 50 hours.

Carry out the replacement always while changing oil when the oil operating temperature reaches 50–60 °C (122–140 °F).

Use only original filter cartridges according to the spare parts catalogue.

Filling and draining the hydraulic circuit

- Fill using the hydraulic unit.
- You can order the hydraulic unit from the machine manufacturer.

Hydraulic unit 230 V
Order number: 1251998

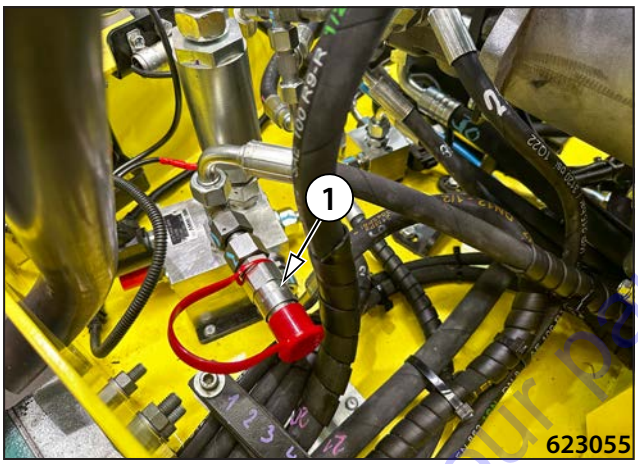
Hydraulic unit 110 V
Order number: 1255297

Note

The hydraulic unit 230 V is intended for operation in 230 Volt networks (Europe), the hydraulic unit 110 V is intended for operation in 110 Volt networks (North America).

Hydraulic oil draining

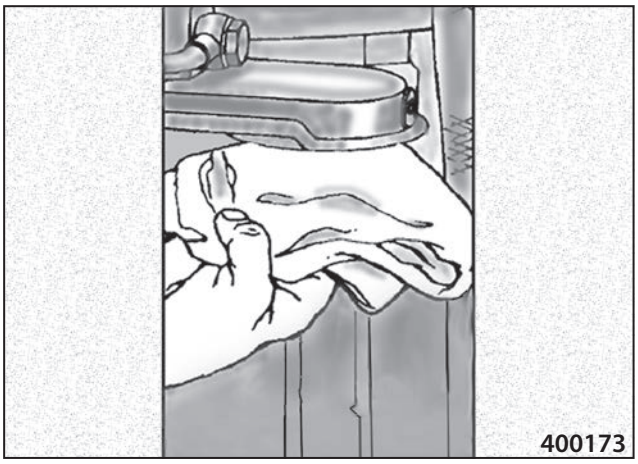
- Prepare a suitable vessel. The drained volume is about 15 l (4 gal US).
- Remove the cap of the filling end piece and put the quick-coupling of the filling device onto the quick-coupling (1).
- Drain the hydraulic oil.



Hydraulic oil filter replacement

- Remove the filter.

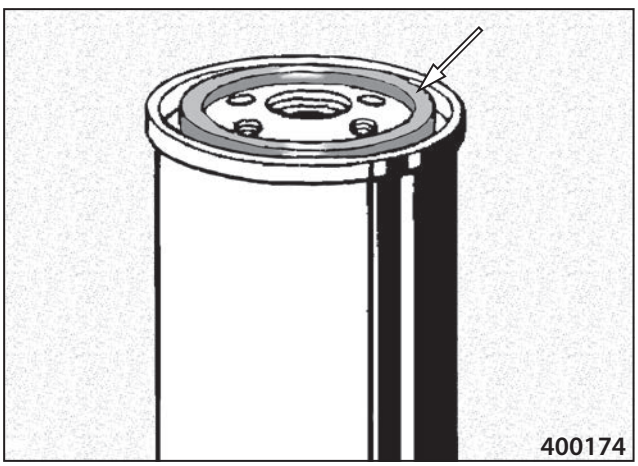
- Clean the seating surface underneath.



- Check the sealing rings for condition and apply clean oil on the rings.
- Mount the new filter.

Hydraulic oil filter
Order number: 1808926

Used filter cartridges are ecologically hazardous waste – hand them over for disposal.

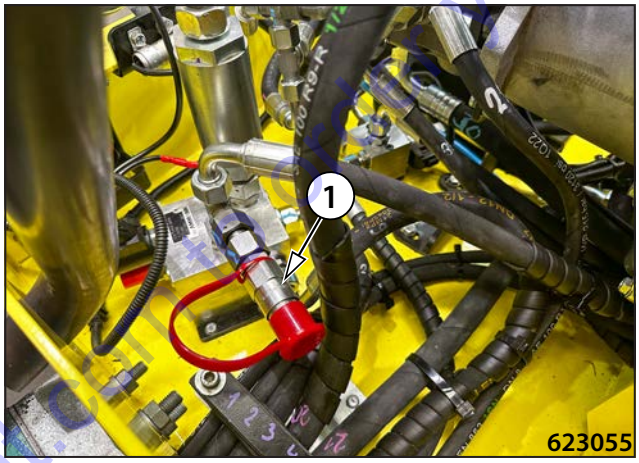


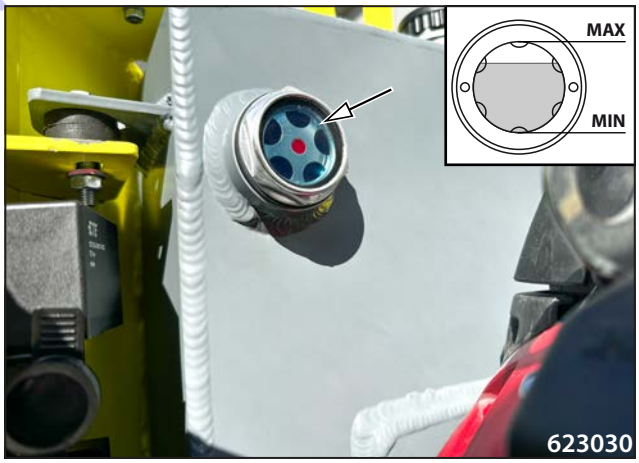
Cleaning the hydraulic filter on the vibration block

- Remove the hydraulic filter on the vibration block.
- Rinse the filter and reinstall it.

Hydraulic oil filling

- Remove the cap of the filling end piece and put the quick-coupling of the filling device onto the quick-coupling (1).
- Keep filling the hydraulic circuit until the desired amount of hydraulic oil is shown on the dipstick.
- Fill up the tank with the oil to the maximum level and disconnect the filling device.





Alternate filling through the oil tank filler neck

- With this filling method, the next change interval must be reduced by one half.
- The tank filler neck cap is sealed. If the seal is broken during the guarantee period, the guarantee will become null and void!
- Fill the tank with the specified type of oil through the filler neck.

Note

When the tank is refilled through the neck, a large portion of the old dirty oil remains in the circuit and the life cycle of the hydraulic units will be shorter.

Do not open the hydraulic tank unnecessarily!

Use the filler neck to fill the hydraulic circuit only as an emergency solution and, when using this filling method, shorten the next replacement interval to one half.

When the filler neck seal is broken during the guarantee period, the machine warranty will become null and void!

Start the engine and test the machine functions at a higher speed to fill up the circuits!

Always change the oil and replace the filter cartridge when inner parts of the units (hydraulic motors, hydraulic generators) were destroyed, or after a major repair of the hydraulic system!

Always clean and flush the hydraulic tank and replace the filter cartridge before the new unit is installed!

Maintain cleanliness while working and avoid contaminating the system with substances that can cause damage to important units!

Never use chemical cleaning agents to clean the hydraulic tank!

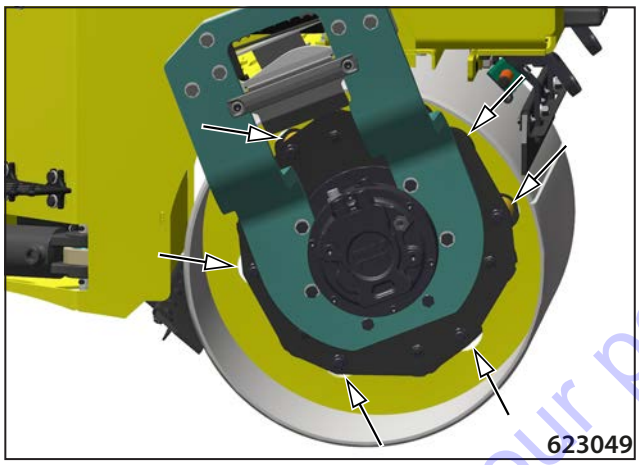
Use only lint-free materials!

Always fill the hydraulic tank with oil according to chapter 3.2.4!

Take fire-fighting and hygiene measures!

3.6.28 Damping system check

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

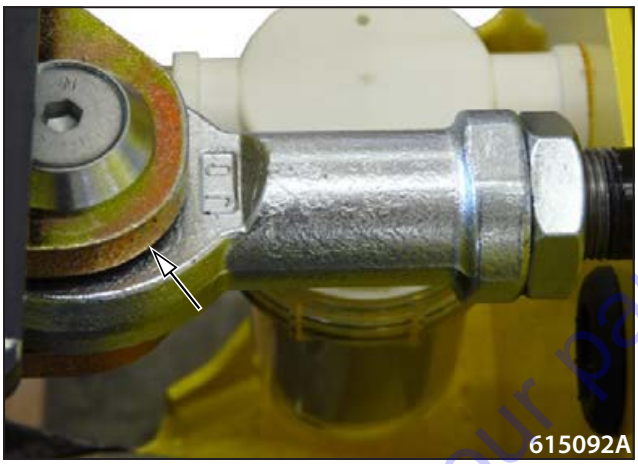


Drum rubber-metal element
Order number: 1-494045

Replace if damaged.

Recheck screws and nuts for tightening.

3.6.29 Swinging support check



- Check the swing 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.

3.6.30 Articulation joint check

- 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.

Every 1500 hours of operation

3.6.31 Changing the vibrator lubricant

- To change the vibrator lubricant, contact an authorized service centre.

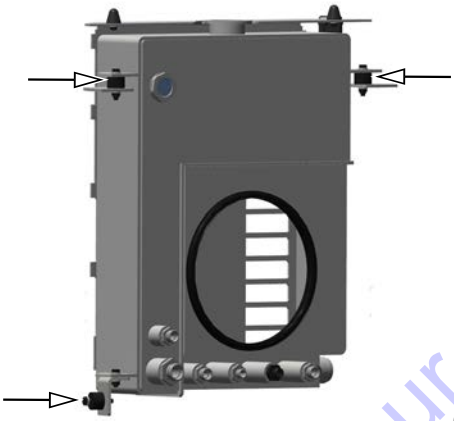
3.6.32 Checking the condition of vibrator bearings

- The condition of vibrator bearings shall be checked by an authorized service centre when changing the vibrator lubricant.

Every 2000 hours of operation

3.6.33 Replacing the rubber-metal elements of the hydraulic oil cooler

- Replace the rubber-metal elements of the hydraulic oil cooler.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Maintenance as required

3.6.34 Replacing the fuel system hoses

If you do not have the necessary tools and qualifications, repairs and replacement of these parts must be carried out by a qualified Honda service centre.

3.6.35 Gas strut replacement

- The gas struts are maintenance-free. They do not require any maintenance, such as e.g. lubrication. They are designed according to given requirements and work trouble-free for years. As soon as the struts stop performing their function, replace them with new ones.

Gas strut
Order number: 1205428

Before beginning to replace the gas strut, secure the engine bonnet against free fall.

There is a risk of injury!

Removal

- Use a screwdriver to pull out the clamps and release the struts.
- Pull out the gas strut away from the ball stud.

Installation

- Push the new gas strut on the ball stud.
- The clamp then needs to be safely seated.

Do not install the gas strut if it is damaged due to mechanical handling.

Use genuine parts only!

If you do not need the gas struts any more, dispose of them environmentally.

3.6.36 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.

3.6.37 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. 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!

3.6.38 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

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.


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3.6.39 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!

3.6.40 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.

3.6.41 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

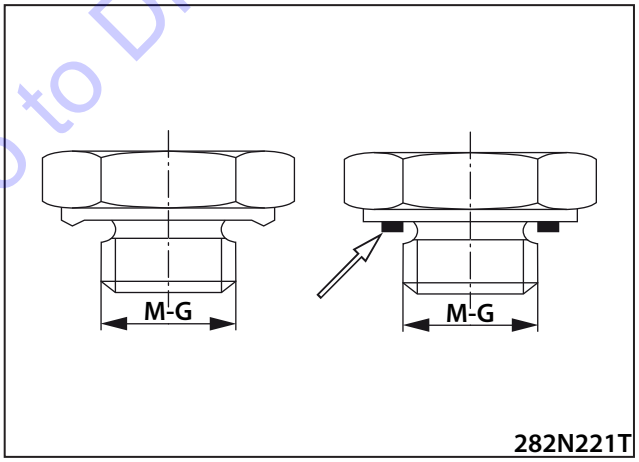
			Tightening torque values of cap nuts with O-rings – hoses					
			Nm			lb ft		
Spanner size	Thread	Pipe	Nominal	Min	Max	Nominal	Min	Max
14	12×1.5	6	20	15	25	15	11	18
17	14×1.5	8	38	30	45	28	22	33
19	16×1.5	8	45	38	52	33	28	38
		10						
22	18×1.5	10	51	43	58	38	32	43
		12						
24	20×1.5	12	58	50	65	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 ¾	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 ¾	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



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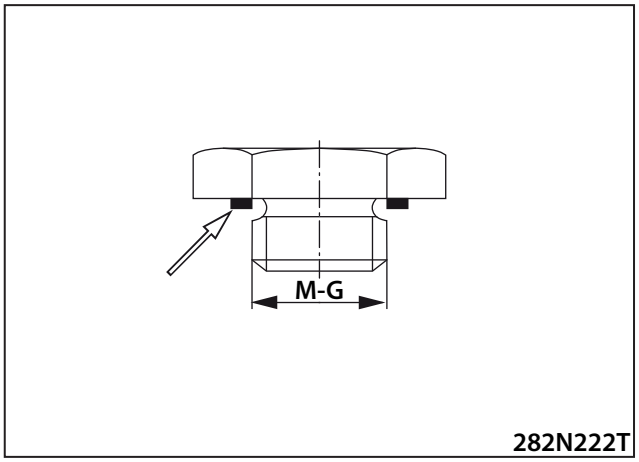

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3.7 Troubleshooting

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.

Engine errors

SPN	FMI	Error description
29	0	[ENG] Accelerator Pedal Position Sensor "B" : Above normal operational range (SAE J1843)
29	1	[ENG] Accelerator Pedal Position Sensor "B" : Below normal operational range (SAE J1843)
29	2	[ENG] Accelerator Pedal Position Sensor "B" : Intermittent fault
29	3	[ENG] Accelerator position sensor 2: High
29	4	[ENG] Accelerator position sensor 2: Low
29	8	[ENG] Accelarator Pedal Position Sensor "B" : Communication fault
29	15	[ENG] Accelerator Pedal Position Sensor "B" : Not available (SAE J1843)
91	0	[ENG] Accelerator Pedal Position Sensor "B" : Below normal operational range (SAE J1843)
91	1	[ENG] Accelerator Pedal Position Sensor "A" : Below normal operational range (SAE J1843)
91	3	[ENG] Accelerator position sensor 1: High
91	4	[ENG] Accelerator position sensor 1: Low
91	15	[ENG] Accelerator Pedal Position Sensor "A" : Not available (SAE J1843)
100	1	[ENG] Oil pressure error
100	4	[ENG] Oil Pressure Switch: Low
102	3	[ENG] Boost pressure sensor: High
102	4	[ENG] Boost pressure sensor: Low
108	2	[ENG] Barometric Pressure Sensor : Intermittent fault
108	3	[ENG] Barometric pressure sensor error (High side)
108	4	[ENG] Barometric pressure sensor error (Low side)
110	0	[ENG] Engine overheat
110	2	[ENG] Engine Coolant Temperature Sensor : Intermittent fault
110	3	[ENG] Coolant temperature sensor: High
110	4	[ENG] Coolant temperature sensor: Low
132	1	[ENG] Intake air volume: Low
132	3	[ENG] MAF sensor: High
132	4	[ENG] MAF sensor: Low
132	15	[ENG] Boost pressure low
157	0	[ENG] High rail pressure
157	3	[ENG] Rail pressure sensor: High
157	4	[ENG] Rail pressure sensor: Low
158	0	[ENG] System voltage : Too High
158	1	[ENG] System voltage : Too Low
167	1	[ENG] Charge warning
167	4	[ENG] Battery Charge Switch : Low
168	3	[ENG] Battery voltage: High
168	4	[ENG] Battery voltage: Low
171	3	[ENG] Intake air temp. built-in MAF sensor: High
171	4	[ENG] Intake air temp. built-in MAF sensor: Low
172	3	[ENG] Intake air temp. error: High
172	4	[ENG] Intake air temp. error: Low
190	0	[ENG] Engine overrun
628	2	[ENG] ECU FLASH ROM error
628	12	[ENG] E-ECU internal fault : FlashROM Check Sum Error (Main Software)
630	2	[ENG] E-ECU internal fault : EEPROM Check Sum Error (Data Set 2)
630	12	[ENG] E-ECU internal fault : EEPROM ReadWrite fault
633	7	[ENG] Rail pressure limiter emergency open
636	2	[ENG] NE sensor (Crank position sensor) pulse number error

SPN	FMI	Error description
636	7	[ENG] NE-G phase shift. NE: Crankshaft position sensor. G : Camshaft position sensor
636	8	[ENG] No input of NE sensor (Crank position sensor) pulse
638	2	[ENG] Engine : Malfunction
638	3	[ENG] Engine Fuel Rack Actuator : High
638	4	[ENG] Engine Fuel Rack Actuator : Low
638	7	[ENG] Engine Fuel Rack Actuator : Mechanical Malfunction
639	12	[ENG] High Speed CAN Communication : Communication fault
651	3	[ENG] Open circuit of harness/coil in 1st cylinder injector
652	3	[ENG] Open circuit of harness/coil in 2nd cylinder injector
653	3	[ENG] Open circuit of harness/coil in 3rd cylinder injector
654	3	[ENG] Open circuit of harness/coil in 4th cylinder injector
676	0	[ENG] Glow heater relay driving circuit overheat - F308
676	5	[ENG] Open circuit of glow relay driving circuit - F306
677	4	[ENG] Ground short of Starter relay driving circuit
679	7	[ENG] Pressure limiter not open
679	16	[ENG] Rail pressure failure after pressure limiter open
723	2	[ENG] G-sensor (Camshaft position sensor) pulse number error
723	8	[ENG] No input of G sensor (Camshaft position sensor) pulse
1077	2	[ENG] ECU CPU (Main IC) error
1077	12	[ENG] Injector drive IC error or Open circuit
1078	4	[ENG] Engine Fuel Injection Pump Speed Sensor : Low
1079	2	[ENG] Sensor 5V : Intermittent fault
1079	3	[ENG] Sensor 5V: Shorted to high source
1079	4	[ENG] Sensor 5V: Shorted to low source
1136	0	[ENG] E-ECU Internal Temperature Sensor: Too high
1136	2	[ENG] E-ECU Internal Temperature Sensor: Intermittent fault
1136	3	[ENG] E-ECU Internal Temperature Sensor: High
1136	4	[ENG] E-ECU Internal Temperature Sensor: Low
1202	2	[ENG] Immobilizer : System fault
1210	3	[ENG] Engine Fuel Rack Position Sensor : High
1210	4	[ENG] Engine Fuel Rack Position Sensor : Low
1239	1	[ENG] Fuel leak (in high pressured fuel system)
1347	3	[ENG] Batt short circuit of SCV (MPROP)
1347	4	[ENG] SCV (MPROP) drive system error
1347	5	[ENG] Open circuit of SCV (MPROP)
1347	7	[ENG] SCV(MPROP) stuck
1485	2	[ENG] Main relay is locked in closed position
1485	4	[ENG] E-ECU Main Relay : Low
3242	0	[ENG] Emergency Exhaust gas temperature sensor 1: High
3242	3	[ENG] Exhaust gas temperature sensor 1: High
3242	4	[ENG] Exhaust gas temperature sensor 1: Low
3246	0	[ENG] Emergency Exhaust gas temperature sensor 2: High - F155
3246	3	[ENG] Exhaust gas temperature sensor 2: High - F264
3246	4	[ENG] Exhaust gas temperature sensor 2: Low - F263
3251	3	[ENG] Differential pressure sensor 1: High
3251	4	[ENG] Differential pressure sensor 1: Low
3252	0	[ENG] Emission deterioration
3509	3	[ENG] Sensor supply voltage 1: High

SPN	FMI	Error description
3509	4	[ENG] Sensor supply voltage 1: Low
3510	3	[ENG] Sensor supply voltage 2: High - F211
3510	4	[ENG] Sensor supply voltage 2: Low - F210
3511	3	[ENG] Sensor supply voltage 3: High
3511	4	[ENG] Sensor supply voltage 3: Low
3701	0	[ENG] Excessive PM5
3701	15	[ENG] Excessive PM3
3701	16	[ENG] Excessive PM4
4765	0	[ENG] Emergency Exhaust gas temperature sensor 0: High - F153
4765	3	[ENG] Exhaust gas temperature sensor 0: High - F257
4765	4	[ENG] Exhaust gas temperature sensor 0: Low - F256
52317	31	[ENG] Engine overheat - coolant temperature over 110°C
522242	2	[ENG] Cold Start Device : Intermittent fault
522242	3	[ENG] Cold Start Device : Circuit fault B
522242	4	[ENG] Cold Start Device : Circuit fault A
522243	2	[ENG] Air Heater Relay : Intermittent fault
522243	3	[ENG] Air Heater Relay : Circuit fault B
522243	4	[ENG] Air Heater Relay : Circuit fault A
522251	3	[ENG] EGR Stepping Motor "A" : Circuit fault B
522251	4	[ENG] EGR Stepping Motor "A" : Circuit fault A
522252	3	[ENG] EGR Stepping Motor "B" : Circuit fault B
522252	4	[ENG] EGR Stepping Motor "B" : Circuit fault A
522253	3	[ENG] EGR Stepping Motor "C" : Circuit fault B
522253	4	[ENG] EGR Stepping Motor "C" : Circuit fault A
522254	3	[ENG] EGR Stepping Motor "D" : Circuit fault B
522254	4	[ENG] EGR Stepping Motor "D" : Circuit fault A
522314	0	[ENG] Engine Coolant Temperature : Abnormal Malfunction
522323	0	[ENG] Air Cleaner : Mechanical Malfunction
522329	0	[ENG] Oily Water Separator : Michanical Malfunction
522402	4	[ENG] Auxiliary Speed Sensor : Low
522727	12	[ENG] E-ECU internal fault : Sub-CPU Error A or Error B or Error C
522728	12	[ENG] E-ECU internal fault: Engine Map Data Version Error
522730	8	[ENG] Immobilizer : CAN Communication fault
522730	12	[ENG] Immobilizer : Pulse Communication fault
523523	3	[ENG] No.1 & 4 cylinder injector short to +B or GND
523524	3	[ENG] No. 2 & 3cylinder injector short to +B or GND
523525	1	[ENG] Injector charge voltage: Low
523527	2	[ENG] ECU CPU (Monitoring IC) error
523535	0	[ENG] Injector charge voltage: High
523538	2	[ENG] QR (IQA) data error
523538	7	[ENG] No QR (IQA) data
523543	2	[ENG] Accelerator position sensor error (CAN)
523544	3	[ENG] Batt short of glow relay driving circuit
523544	4	[ENG] Ground short of glow relay driving circuit
523547	2	[ENG] CAN2 Bus off
523548	2	[ENG] CAN-KBT Frame error
523572	4	[ENG] EGR position sensor failure
523574	3	[ENG] EGR actuator open circuit

SPN	FMI	Error description
523574	4	[ENG] EGR actuator coil short
523575	7	[ENG] EGR actuator valve stuck
523576	2	[ENG] EGR (DC motor) overheat
523577	2	[ENG] EGR (DC motor) temp. sensor failure
523578	2	[ENG] No communication with EGR
523580	2	[ENG] Intake throttle feedback error
523582	3	[ENG] Intake throttle lift sensor: High
523582	4	[ENG] Intake throttle lift sensor: Low
523589	17	[ENG] Low coolant temp. in parked regeneration
523590	16	[ENG] Parked regeneration time out
523591	2	[ENG] CAN CCVS (Parking SW and Vehicle speed) frame error
523592	2	[ENG] CAN CM1 (Regen SW) frame error
523593	2	[ENG] CAN DDC1 (Transmission) frame error
523594	2	[ENG] CAN ETC2 (Neutral SW) frame error
523595	2	[ENG] CAN ETC5 (Neutral SW) frame error
523596	2	[ENG] CAN TSC1 frame error
523598	2	[ENG] CAN EBC1 frame error
523599	0	[ENG] All exhaust temp. sensor failure
523601	0	[ENG] High exhaust gas temp. after emergency high temp. DTC.
523602	0	[ENG] High frequency of regeneration
523603	15	[ENG] Over heat pre-caution - F355
523604	2	[ENG] CAN1 Bus off
523605	6	[ENG] Internal injector drive circuit short
523700	13	[ENG] EEPROM check sum error

Errors hardware TTC

SPN	FMI	Error description
50000	31	[HW] Ecu0_Safety - Input board circuit error - supply check needed
50001	31	[HW] Ecu0_Safety - Fatal input board circuit error
50002	31	[HW] Ecu0_Safety - Input pin error - check ECU Timer-Inputs and EMI
50003	31	[HW] Ecu0_Safety - Digital pin error - check ECU hardware and EMI
50004	31	[HW] Ecu0_Safety - PWM output error - check ECU hardware and EMI
50005	31	[HW] Ecu0_Safety - CPU core error - check source code and EMI
50006	31	[HW] Ecu0_Safety - Memory error
50007	31	[HW] Ecu0_Safety - Error during watchdog startup - check watchdog timing constraints
50008	31	[HW] Ecu1_Safety - Safety switch error - check external shut-off pins and ECU hardware
50009	31	[HW] Ecu1_Safety - Application code called safe state
50010	12	[HW] CAN_BUS2 - CAN Bus off
50011	12	[HW] CAN_BUS2 - CAN warning
50012	31	[HW] Ecu1_Safety - Fatal error caused safe state - replace ECU
50013	31	[HW] Ecu1_Safety - BSP error caused safe state - replace ECU
50014	31	[HW] EcuSil - Task overload
50015	31	[HW] EcuSil - Batttery Low
50016	31	[HW] EcuSil - Battery High
50017	31	[HW] EcuSil - Temperature Low
50018	31	[HW] EcuSil - Temperature High
50019	31	[HW] SensorSupply - Sensor Supply S1 Low
50020	31	[HW] SensorSupply - Sensor Supply S1 High
50021	31	[HW] SensorSupply - Sensor Supply S2 Low
50022	31	[HW] SensorSupply - Sensor Supply S2 High
50023	31	[HW] SensorSupply - Sensor Supply 5V Low
50024	31	[HW] SensorSupply - Sensor Supply 5V High
50025	31	[HW] ErrList - List load oneset
50026	31	[HW] ErrList - List load defect
50027	31	[HW] ErrList - List store defect
50028	31	[HW] ErrList - DM_LIST_OVERFLOW
50029	12	[HW] CAN_BUS0 - CAN Bus off
50030	12	[HW] CAN_BUS0 - CAN warning
50031	31	[HW] CBUS0_HWBUF_SND0 - HW-Buffer overflow send
50032	31	[HW] CBUS0_HWBUF_SND1 - HW-Buffer overflow send
50033	31	[HW] CBUS0_HWBUF_SND2 - HW-Buffer overflow send
50034	31	[HW] CBUS0_HWBUF_SND3 - HW-Buffer overflow send
50035	31	[HW] CBUS0_HWBUF_SND4 - HW-Buffer overflow send
50036	31	[HW] CBUS0_HWBUF_SND5 - HW-Buffer overflow send
50037	31	[HW] CBUS0_HWBUF_RCV0 - HW-Buffer overflow receive
50039	31	[HW] CBUS0_HWBUF_RCV2 - HW-Buffer overflow receive
50040	31	[HW] CBUS0_HWBUF_RCV3 - HW-Buffer overflow receive
50041	31	[HW] CBUS0_HWBUF_RCV4 - HW-Buffer overflow receive
50042	31	[HW] CBUS0_HWBUF_RCV5 - HW-Buffer overflow receive
50043	31	[HW] CBUS0_HWBUF_RCV6 - HW-Buffer overflow receive
50044	31	[HW] CBUS0_HWBUF_RCV7 - HW-Buffer overflow receive
50045	31	[HW] CBUS0_CBUF_SND_1 - Software Buffer SW-Overflow
50046	12	[HW] CAN_BUS1 - CAN Bus off
50047	12	[HW] CAN_BUS1 - CAN warning

SPN	FMI	Error description
50048	31	[HW] CBUS1_HWBUF_SND0 - HW-Buffer overflow send
50049	31	[HW] CBUS1_HWBUF_SND1 - HW-Buffer overflow send
50050	31	[HW] CBUS1_HWBUF_SND2 - HW-Buffer overflow send
50051	31	[HW] CBUS1_HWBUF_SND3 - HW-Buffer overflow send
50052	31	[HW] CBUS1_HWBUF_SND4 - HW-Buffer overflow send
50053	31	[HW] CBUS1_HWBUF_SND5 - HW-Buffer overflow send
50054	31	[HW] CBUS1_HWBUF_RCV0 - HW-Buffer overflow receive
50055	31	[HW] CBUS1_HWBUF_RCV1 - HW-Buffer overflow receive
50056	31	[HW] CBUS1_HWBUF_RCV2 - HW-Buffer overflow receive
50057	31	[HW] CBUS1_HWBUF_RCV3 - HW-Buffer overflow receive
50058	31	[HW] CBUS1_HWBUF_RCV4 - HW-Buffer overflow receive
50059	31	[HW] CBUS1_HWBUF_RCV5 - HW-Buffer overflow receive
50060	31	[HW] CBUS1_HWBUF_RCV6 - HW-Buffer overflow receive
50061	31	[HW] CBUS1_HWBUF_RCV7 - HW-Buffer overflow receive
50062	31	[HW] CBUS2_HWBUF_SND0 - HW-Buffer overflow send
50063	31	[HW] CBUS2_HWBUF_SND1 - HW-Buffer overflow send
50064	31	[HW] CBUS2_HWBUF_SND2 - HW-Buffer overflow send
50065	31	[HW] CBUS2_HWBUF_SND3 - HW-Buffer overflow send
50066	31	[HW] CBUS2_HWBUF_SND4 - HW-Buffer overflow send
50067	31	[HW] CBUS2_HWBUF_SND5 - HW-Buffer overflow send
50068	31	[HW] CBUS2_HWBUF_RCV0 - HW-Buffer overflow receive
50069	31	[HW] CBUS2_HWBUF_RCV1 - HW-Buffer overflow receive
50070	31	[HW] CBUS2_HWBUF_RCV2 - HW-Buffer overflow receive
50071	31	[HW] CBUS2_HWBUF_RCV3 - HW-Buffer overflow receive
50072	31	[HW] CBUS2_HWBUF_RCV4 - HW-Buffer overflow receive
50073	31	[HW] CBUS2_HWBUF_RCV5 - HW-Buffer overflow receive
50074	31	[HW] CBUS2_HWBUF_RCV6 - HW-Buffer overflow receive
50075	31	[HW] CBUS2_HWBUF_RCV7 - HW-Buffer overflow receive
50076	31	[HW] CAN msg ACE_CM_MuruDeltaPhi Message Buffer Overflow
50078	31	[HW] CAN msg Engine_J1939_EGF1 Message Buffer Overflow
50079	31	[HW] CAN msg Engine_J1939_EGF1 Invalid Message
50080	31	[HW] CAN msg Engine_J1939_EGF1 Count Fault
50081	31	[HW] CAN msg Engine_J1939_EGF1 Timeslot
50084	31	[HW] CAN msg CM_PDO1_basic_DAQ_meas Message Buffer Overflow
50085	31	[HW] CAN msg CM_PDO1_basic_DAQ_meas Invalid Message
50086	31	[HW] CAN msg CM_PDO1_basic_DAQ_meas Count Fault
50087	31	[HW] CAN msg CM_PDO1_basic_DAQ_meas Timeslot
50089	31	[HW] CAN msg CM_PDO2_additional_ampl Message Buffer Overflow
50090	31	[HW] CAN msg CM_PDO2_additional_ampl Invalid Message
50091	31	[HW] CAN msg CM_PDO2_additional_ampl Count Fault
50092	31	[HW] CAN msg CM_PDO2_additional_ampl Timeslot
50094	31	[HW] CAN msg CM_PDO3_compaction_meas Message Buffer Overflow
50095	31	[HW] CAN msg CM_PDO3_compaction_meas Invalid Message
50096	31	[HW] CAN msg CM_PDO3_compaction_meas Count Fault
50097	31	[HW] CAN msg CM_PDO3_compaction_meas Timeslot
50099	31	[HW] CAN msg CM1_PDO4_Status Message Buffer Overflow
50100	31	[HW] CAN msg CM1_PDO4_Status Invalid Message
50101	31	[HW] CAN msg CM1_PDO4_Status Count Fault

SPN	FMI	Error description
50102	31	[HW] CAN msg CM1_PDO4_Status Timeslot
50103	31	[HW] CAN msg CM_SDO_ClientInit Message Buffer Overflow
50105	31	[HW] CAN msg CM_SDO_ServerAnsw Message Buffer Overflow
50106	31	[HW] CAN msg CM_SDO_ServerAnsw Invalid Message
50107	31	[HW] CAN msg CM_SDO_ServerAnsw Count Fault
50108	31	[HW] CAN msg CM_SDO_ServerAnsw Timeslot
50109	31	[HW] CAN msg Engine_J1939_TSC1 Message Buffer Overflow

Errors pins TTC

SPN	FMI	Error description
51000	2	[PIN_150] VibrRearDrum - Warning: a block has limited parameters
51000	3	[PIN_150] VibrRearDrum - An input signal is too high / Short circuit to power
51000	4	[PIN_150] VibrRearDrum - An input signal is too low / Short circuit to ground
51000	26	[PIN_150] VibrRearDrum - An input signal is out of valid range
51000	30	[PIN_150] VibrRearDrum - An initialization error
51001	2	[PIN_174] VibrMode - Warning: a block has limited parameters
51001	3	[PIN_174] VibrMode - An input signal is too high / Short circuit to power
51001	4	[PIN_174] VibrMode - An input signal is too low / Short circuit to ground
51001	26	[PIN_174] VibrMode - An input signal is out of valid range
51001	30	[PIN_174] VibrMode - An initialization error
51002	2	[PIN_101] VibrTypeFineLow - Warning: a block has limited parameters
51002	3	[PIN_101] VibrTypeFineLow - An input signal is too high / Short circuit to power
51002	4	[PIN_101] VibrTypeFineLow - An input signal is too low / Short circuit to ground
51002	26	[PIN_101] VibrTypeFineLow - An input signal is out of valid range
51002	30	[PIN_101] VibrTypeFineLow - An initialization error
51005	2	[PIN_125] VibrTypeRoughLow - Warning: a block has limited parameters
51005	3	[PIN_125] VibrTypeRoughLow - An input signal is too high / Short circuit to power
51005	4	[PIN_125] VibrTypeRoughLow - An input signal is too low / Short circuit to ground
51005	26	[PIN_125] VibrTypeRoughLow - An input signal is out of valid range
51005	30	[PIN_125] VibrTypeRoughLow - An initialization error
51006	0	[PIN_156] VibrFrontOn - HS Short To Power internal
51006	3	[PIN_156] VibrFrontOn - HS OpenLoad / Short To Power external
51006	4	[PIN_156] VibrFrontOn - HS Short To Ground
51006	12	[PIN_156] VibrFrontOn - Internal Driver Error
51007	0	[PIN_180] VibrRearOn - HS Short To Power internal
51007	3	[PIN_180] VibrRearOn - HS OpenLoad / Short To Power external
51007	4	[PIN_180] VibrRearOn - HS Short To Ground
51007	12	[PIN_180] VibrRearOn - Internal Driver Error
51008	0	[PIN_183] VibrRoughOn - HS Short To Power internal
51008	3	[PIN_183] VibrRoughOn - HS OpenLoad / Short To Power external
51008	4	[PIN_183] VibrRoughOn - HS Short To Ground
51008	12	[PIN_183] VibrRoughOn - Internal Driver Error
51009	0	[PIN_159] VibrHighOn - HS Short To Power internal
51009	3	[PIN_159] VibrHighOn - HS OpenLoad / Short To Power external
51009	4	[PIN_159] VibrHighOn - HS Short To Ground
51009	12	[PIN_159] VibrHighOn - Internal Driver Error
51010	3	[PIN_134] SprinkPot - Master input signal short to power
51010	12	[PIN_134] SprinkPot - Unknown internal error
51010	24	[PIN_134] SprinkPot - Parameter of input char NOT monoton
51010	27	[PIN_134] SprinkPot - Master input signal short to ground
51011	0	[PIN_179] Sprinkling - HS Short To Power internal
51011	3	[PIN_179] Sprinkling - HS OpenLoad / Short To Power external
51011	4	[PIN_179] Sprinkling - HS Short To Ground
51011	12	[PIN_179] Sprinkling - Internal Driver Error
51012	0	[PIN_158] SprinklingCutter - HS Short To Power internal
51012	3	[PIN_158] SprinklingCutter - HS OpenLoad / Short To Power external
51012	4	[PIN_158] SprinklingCutter - HS Short To Ground

SPN	FMI	Error description
51012	12	[PIN_158] SprinklingCutter - Internal Driver Error
51013	0	[PIN_182] SprinklingEmulse - HS Short To Power internal
51013	3	[PIN_182] SprinklingEmulse - HS OpenLoad / Short To Power external
51013	4	[PIN_182] SprinklingEmulse - HS Short To Ground
51013	12	[PIN_182] SprinklingEmulse - Internal Driver Error
51014	0	[PIN_157] CutterUp - HS Short To Power internal
51014	3	[PIN_157] CutterUp - HS OpenLoad / Short To Power external
51014	4	[PIN_157] CutterUp - HS Short To Ground
51014	12	[PIN_157] CutterUp - Internal Driver Error
51015	0	[PIN_181] CutterDown - HS Short To Power internal
51015	3	[PIN_181] CutterDown - HS OpenLoad / Short To Power external
51015	4	[PIN_181] CutterDown - HS Short To Ground
51015	12	[PIN_181] CutterDown - Internal Driver Error
51100	3	[PIN_153] PumpFW - Short circuit to power
51100	4	[PIN_153] PumpFW - Short circuit to ground
51100	25	[PIN_153] PumpFW - Open circuit
51100	26	[PIN_153] PumpFW - Deviation of current control
51100	30	[PIN_153] PumpFW - Internal error
51101	3	[PIN_177] PumpRW - Short circuit to power
51101	4	[PIN_177] PumpRW - Short circuit to ground
51101	25	[PIN_177] PumpRW - Open circuit
51101	26	[PIN_177] PumpRW - Deviation of current control
51101	30	[PIN_177] PumpRW - Internal error
51103	0	[PIN_186] BrakeValve - HS Short To Power internal
51103	3	[PIN_186] BrakeValve - HS OpenLoad / Short To Power external
51103	4	[PIN_186] BrakeValve - HS Short To Ground
51103	12	[PIN_186] BrakeValve - Internal Driver Error
51104	0	[PIN_152] Difflock - HS Short To Power internal
51104	3	[PIN_152] Difflock - HS OpenLoad / Short To Power external
51104	4	[PIN_152] Difflock - HS Short To Ground
51104	12	[PIN_152] Difflock - Internal Driver Error
51107	2	[PIN_151] BrakePressure - Warning: a block has limited parameters
51107	3	[PIN_151] BrakePressure - An input signal is too high / Short circuit to power
51107	4	[PIN_151] BrakePressure - An input signal is too low / Short circuit to ground
51107	26	[PIN_151] BrakePressure - An input signal is out of valid range
51107	30	[PIN_151] BrakePressure - An initialization error
51200	0	[PIN_162] StarterRun - HS Short To Power internal
51200	3	[PIN_162] StarterRun - HS OpenLoad / Short To Power external
51200	4	[PIN_162] StarterRun - HS Short To Ground
51200	12	[PIN_162] StarterRun - Internal Driver Error
51203	0	[PIN_161] FuelValve - HS Short To Power internal
51203	3	[PIN_161] FuelValve - HS OpenLoad / Short To Power external
51203	4	[PIN_161] FuelValve - HS Short To Ground
51203	12	[PIN_161] FuelValve - Internal Driver Error
51204	0	[PIN_161] EngEcuOn - HS Short To Power internal
51204	3	[PIN_161] EngEcuOn - HS OpenLoad / Short To Power external
51204	4	[PIN_161] EngEcuOn - HS Short To Ground
51204	12	[PIN_161] EngEcuOn - Internal Driver Error

SPN	FMI	Error description
51205	0	[PIN_188] PreheatRelay - HS Short To Power internal
51205	3	[PIN_188] PreheatRelay - HS OpenLoad / Short To Power external
51205	4	[PIN_188] PreheatRelay - HS Short To Ground
51205	12	[PIN_188] PreheatRelay - Internal Driver Error
51206	2	[PIN_114] PreheatingIn - Warning: a block has limited parameters
51206	3	[PIN_114] PreheatingIn - An input signal is too high / Short circuit to power
51206	4	[PIN_114] PreheatingIn - An input signal is too low / Short circuit to ground
51206	26	[PIN_114] PreheatingIn - An input signal is out of valid range
51206	30	[PIN_114] PreheatingIn - An initialization error
51207	2	[PIN_126] EngineOverheat - Warning: a block has limited parameters
51207	3	[PIN_126] EngineOverheat - An input signal is too high / Short circuit to power
51207	4	[PIN_126] EngineOverheat - An input signal is too low / Short circuit to ground
51207	26	[PIN_126] EngineOverheat - An input signal is out of valid range
51207	30	[PIN_126] EngineOverheat - An initialization error
51208	2	[PIN_102] EngineOilPressure - Warning: a block has limited parameters
51208	3	[PIN_102] EngineOilPressure - An input signal is too high / Short circuit to power
51208	4	[PIN_102] EngineOilPressure - An input signal is too low / Short circuit to ground
51208	26	[PIN_102] EngineOilPressure - An input signal is out of valid range
51208	30	[PIN_102] EngineOilPressure - An initialization error
51300	3	[PIN_103] FuelTank - Input signal short to power
51300	4	[PIN_103] FuelTank - Input signal short to ground
51300	12	[PIN_103] FuelTank - Internal Block error
51301	3	[PIN_104] Infratemperature - Master input signal short to power
51301	12	[PIN_104] Infratemperature - Unknown internal error
51301	24	[PIN_104] Infratemperature - Parameter of input char NOT monoton
51301	27	[PIN_104] Infratemperature - Master input signal short to ground
51302	2	[PIN_122] FrontParkingLights - Warning: a block has limited parameters
51302	3	[PIN_122] FrontParkingLights - An input signal is too high / Short circuit to power
51302	4	[PIN_122] FrontParkingLights - An input signal is too low / Short circuit to ground
51302	26	[PIN_122] FrontParkingLights - An input signal is out of valid range
51302	30	[PIN_122] FrontParkingLights - An initialization error
51303	2	[PIN_123] LeftDirectionLights - Warning: a block has limited parameters
51303	3	[PIN_123] LeftDirectionLights - An input signal is too high / Short circuit to power
51303	4	[PIN_123] LeftDirectionLights - An input signal is too low / Short circuit to ground
51303	26	[PIN_123] LeftDirectionLights - An input signal is out of valid range
51303	30	[PIN_123] LeftDirectionLights - An initialization error
51304	2	[PIN_124] StartT50 - Warning: a block has limited parameters
51304	3	[PIN_124] StartT50 - An input signal is too high / Short circuit to power
51304	4	[PIN_124] StartT50 - An input signal is too low / Short circuit to ground
51304	26	[PIN_124] StartT50 - An input signal is out of valid range
51304	30	[PIN_124] StartT50 - An initialization error
51305	3	[PIN_128] HydrTempR - Input signal short to power
51305	4	[PIN_128] HydrTempR - Input signal short to ground
51305	12	[PIN_128] HydrTempR - Internal Block error
51306	24	[PIN_111 PIN_135] SeatSwitch - Logical Error between pin 0 and 1
51307	3	[PIN_111 PIN_135] SeatSwitch - Vin0 > u16VolHiMax
51307	26	[PIN_111 PIN_135] SeatSwitch - u16VolLoMax < Vin0 < u16VolHiMin
51308	3	[PIN_111 PIN_135] SeatSwitch - Vin1 > u16VolHiMax

SPN	FMI	Error description
51308	26	[PIN_111 PIN_135] SeatSwitch - u16VolLoMax < Vin1 < u16VolHiMin
51309	2	[PIN_138] PreheatingLamp - Warning: a block has limited parameters
51309	3	[PIN_138] PreheatingLamp - An input signal is too high / Short circuit to power
51309	4	[PIN_138] PreheatingLamp - An input signal is too low / Short circuit to ground
51309	26	[PIN_138] PreheatingLamp - An input signal is out of valid range
51309	30	[PIN_138] PreheatingLamp - An initialization error
51310	2	[PIN_146] FrontHeadLights - Warning: a block has limited parameters
51310	3	[PIN_146] FrontHeadLights - An input signal is too high / Short circuit to power
51310	4	[PIN_146] FrontHeadLights - An input signal is too low / Short circuit to ground
51310	26	[PIN_146] FrontHeadLights - An input signal is out of valid range
51310	30	[PIN_146] FrontHeadLights - An initialization error
51311	2	[PIN_147] RightDirectionLights - Warning: a block has limited parameters
51311	3	[PIN_147] RightDirectionLights - An input signal is too high / Short circuit to power
51311	4	[PIN_147] RightDirectionLights - An input signal is too low / Short circuit to ground
51311	26	[PIN_147] RightDirectionLights - An input signal is out of valid range
51311	30	[PIN_147] RightDirectionLights - An initialization error
51312	2	[PIN_148] Immobiliser - Warning: a block has limited parameters
51312	3	[PIN_148] Immobiliser - An input signal is too high / Short circuit to power
51312	4	[PIN_148] Immobiliser - An input signal is too low / Short circuit to ground
51312	26	[PIN_148] Immobiliser - An input signal is out of valid range
51312	30	[PIN_148] Immobiliser - An initialization error
51313	0	[PIN_154] Fan - HS Short To Power internal
51313	3	[PIN_154] Fan - HS OpenLoad / Short To Power external
51313	4	[PIN_154] Fan - HS Short To Ground
51313	12	[PIN_154] Fan - Internal Driver Error
51315	0	[PIN_191] Horn - HS Short To Power internal
51315	3	[PIN_191] Horn - HS OpenLoad / Short To Power external
51315	4	[PIN_191] Horn - HS Short To Ground
51315	12	[PIN_191] Horn - Internal Driver Error
51318	0	[PIN_194] TelematicEngineRun - HS Short To Power internal
51318	4	[PIN_194] TelematicEngineRun - HS Short To Ground
51318	12	[PIN_194] TelematicEngineRun - Internal Driver Error
51319	0	[PIN_251] PumpReturn - HS Short To Power internal
51319	3	[PIN_251] PumpReturn - HS OpenLoad / Short To Power external
51319	4	[PIN_251] PumpReturn - HS Short To Ground
51319	12	[PIN_251] PumpReturn - Internal Driver Error
51320	0	[PIN_238] BrakeReturn - HS Short To Power internal
51320	3	[PIN_238] BrakeReturn - HS OpenLoad / Short To Power external
51320	4	[PIN_238] BrakeReturn - HS Short To Ground
51320	12	[PIN_238] BrakeReturn - Internal Driver Error
51321	0	[PIN_160] Edge Cutter HS Short To Power internal
51321	3	[PIN_160] Edge Cutter HS OpenLoad / Short To Power external
51321	4	[PIN_160] Edge Cutter HS Short To Ground
51321	12	[PIN_160] Edge Cutter Internal Driver Error

Safety machine errors

SPN	FMI	Error description
52000	31	[SF] SF2.1 - SafetyFunction Drive pump diagnostic (SF_PumpDiagnostics)
52001	31	[SF] SF2.2 - SafetyFunction Operator presence detection hard ramp (SF_OperatorPresenceDetection-Hard)
52002	31	[SF] SF2.3 - SafetyFunction Emergency stop (SF_EmcyStop)
52003	31	[SF] SF2.4 - SafetyFunction Parking brake monitoring (SF_ParkingBrakeMonitoring)
52004	31	[SF] SF2.5 - SafetyFunction Drive lever position validation (SF_DriveLeverPosValidation)
52005	31	[SF] SF2.6 - SafetyFunction Parking brake diagnostic (SF_ParkingBrakeDiagnostic)
52006	31	[SF] SF2.9 - SafetyFunction Drive direction (SF_DriveDirection)
52007	31	[SF] SF2.10 - SafetyFunction Seat Switch Monitoring (SF_SeatSwitchMonitoring)
52008	31	[SF] SF3.1 - SafetyFunction Drive lever crosscheck (SF_DriveLeverCrosscheck)
52009	31	[SF] SF3.2 / SF3.7 - SafetyFunction Operator presence detection soft ramp (SF_OperatorPresenceDetectionSoft)
52010	31	[SF] SF3.3 - SafetyFunction Gear switch pump limitation (SF_GearSwitchPumpLimitation)
52012	31	[SF] SF4.1 - SafetyFunction Drive lever CAN validation (SF_DriveLeverCANValidation)
52013	31	[SF] SF4.2 - SafetyFunction Drive lever Emergency Stop - panic reaction (SF_DriveLeverEMCYStop)
52014	31	[SF] SF4.7 - SafetyFunction Drive lever presence (SF_DriveLeverCount)
52015	31	[SF] SF5.1 - SafetyFunction Hydraulic oil over temperature (SF_HydrOilOverTemperature)
52016	31	[SF] SF5.2 - SafetyFunction Hydraulic temperature sensor diagnostic (SF_HydrOilTempSensorDiagnostics)
52017	31	[SF] SF6.1 - SafetyFunction Gear switch crosscheck (SF_GearSwitchCrossCheck)
52018	31	[SF] SF7.1 - SafetyFunction Drive lever autodetection (SF_DriveLeverAutodetection)

Software errors

SPN	FMI	Error description
52100	31	[SW] SafeApp module DLEVR function SetParam unsuccessful
52101	31	[SW] SafeApp module SFOM_Pump function SetParam unsuccessful
52102	31	[SW] SafeApp module SFOM_ParkBrake function SetParam unsuccessful
52103	31	[SW] SafeApp module DMGT function Init unsuccessful
52104	31	[SW] SafeApp module DLEVR function Init unsuccessful
52105	31	[SW] SafeApp module SFOM_ShutOff function Init unsuccessful
52106	31	[SW] SafeApp module SFOM_Pump function Init unsuccessful
52107	31	[SW] SafeApp module SFOM_ParkBrake function Init unsuccessful
52108	31	[SW] SafeApp module SFOM_EMCYStop function Init unsuccessful
52200	31	[SW] App module ENG SetParam unsuccessful
52201	31	[SW] App module VIBR SetParam unsuccessful
52202	31	[SW] App module DRIVE SetParam unsuccessful
52203	31	[SW] App module ECO SetParam unsuccessful
52204	31	[SW] App module REL SetParam unsuccessful
52205	31	[SW] App module COOL SetParam unsuccessful
52206	31	[SW] App module EMCY SetParam unsuccessful
52207	31	[SW] App module CANMSG SetParam unsuccessful
52208	31	[SW] App module ERR SetParam unsuccessful
52209	31	[SW] App module SPRKL SetParam unsuccessful
52210	31	[SW] App module LIGSIG SetParam unsuccessful
52211	31	[SW] App module CUT SetParam unsuccessful
52212	31	[SW] App module BTN SetParam unsuccessful
52213	31	[SW] App module TCU SetParam unsuccessful
52214	31	[SW] App module DMGT function Init unsuccessful
52215	31	[SW] App module ENG function Init unsuccessful
52216	31	[SW] App module VIBR function Init unsuccessful
52217	31	[SW] App module DRIVE function Init unsuccessful
52218	31	[SW] App module ECO function Init unsuccessful
52219	31	[SW] App module REL function Init unsuccessful
52220	31	[SW] App module COOL function Init unsuccessful
52221	31	[SW] App module EMCY function Init unsuccessful
52222	31	[SW] App module CANMSG function Init unsuccessful
52223	31	[SW] App module ERR function Init unsuccessful
52224	31	[SW] App module SPRKL function Init unsuccessful
52225	31	[SW] App module LIGSIG function Init unsuccessful
52226	31	[SW] App module CUT function Init unsuccessful
52227	31	[SW] App module BTN function Init unsuccessful
52228	31	[SW] App module TCU function Init unsuccessful
52229	31	[SW] App module HMI function Init unsuccessful
52230	31	[SW] App module CALIB function Init unsuccessful
52231	31	[SW] App module SERV function Init unsuccessful
52232	31	[SW] App module INCTRL function Init unsuccessful
52233	31	[SW] App module HMI function SetParam unsuccessful
52234	31	[SW] App module CALIB function SetParam unsuccessful
52235	31	[SW] App module SERV function SetParam unsuccessful
52236	31	[SW] App module INCTRL function SetParam unsuccessful
52237	31	[SW] Software blocks of pins initialization unsuccessful

SPN	FMI	Error description
52238	31	[SW] App module Compaction Module function Init unsuccessful
52239	31	[SW] App module Compaction Module function SetParam unsuccessful

Machine errors

SPN	FMI	Error description
52011	31	[MACH] Drive lever CAN validation external input lever right
52300	31	[MACH] Drive Joystick Right failure
52301	31	[MACH] Drive Joystick Left failure
52303	31	[MACH] Current PWM pump forward - the requested and measured currents differs more than allowed.
52304	31	[MACH] Current PWM pump backward - the requested and measured currents differs more than allowed.
52305	31	[MACH] Engine not detected
52306	31	[MACH] Engine CAN communication lost
52307	31	[MACH] Engine oil pressure low
52308	31	[MACH] Alternator error, P-terminal output not detected
52309	31	[MACH] Engine speed too high
52310	31	[MACH] Compaction module - No parameters
52311	31	[MACH] Compaction module - Invalid parameters
52312	31	[MACH] Compaction module - No calibration
52313	31	[MACH] Compaction module - No muru and Δφ
52314	31	[MACH] Compaction module - Pulse missing
52315	31	[MACH] Compaction module - Acceleration sensor error
52316	31	[MACH] Compaction module - Measurement overflow
52318	31	[MACH] ACE not calibrated
52319	31	[MACH] ACE CAN communication error

Caution

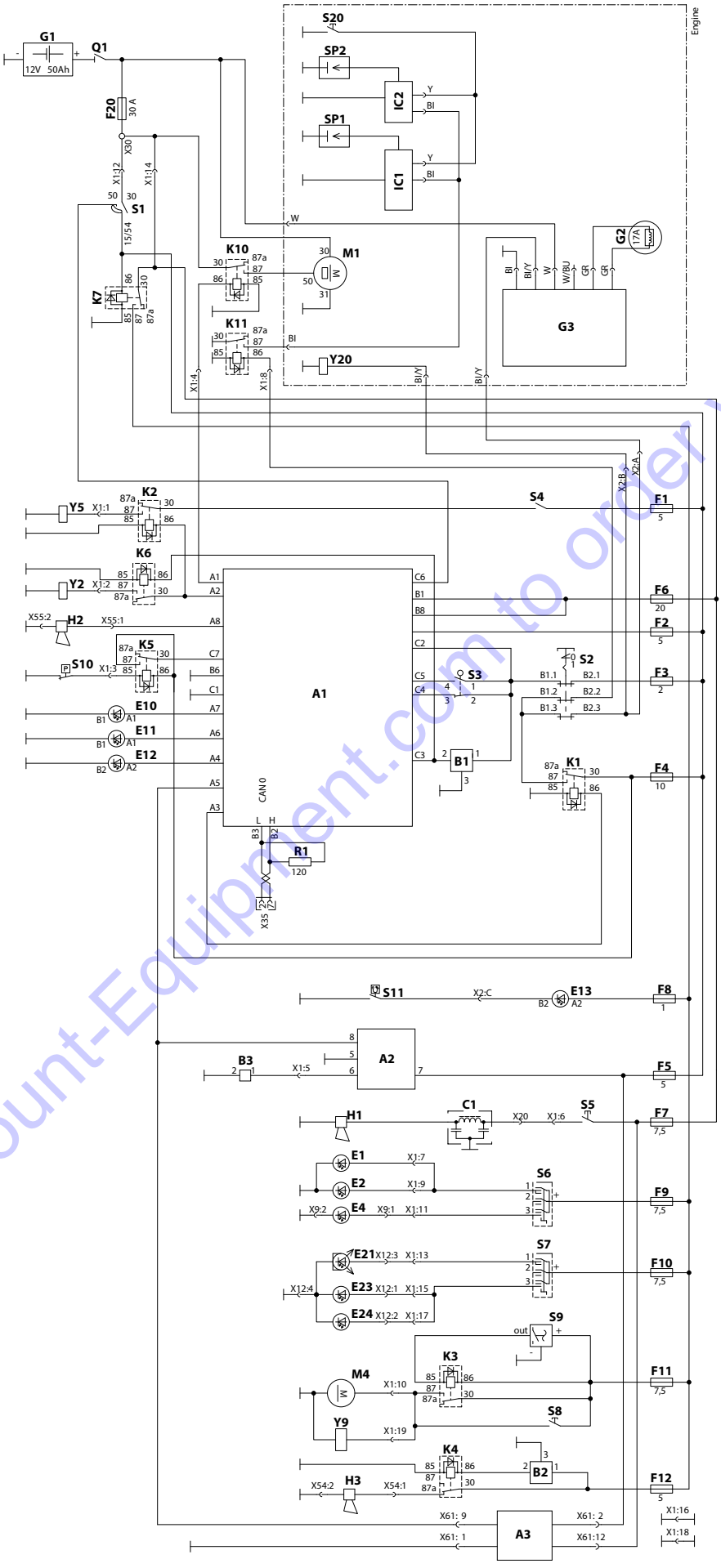
SPN	FMI	Error description
54000	31	[HINT] Seat switch open
54001	31	[HINT] Levers out of Parking Brake position
54002	31	[HINT] Immobiliser active

Wiring diagram

Legend:

A1	Machine control unit
A2	Display
A3	Telematics unit
B1	Parking brake switch
B2	Reversing horn switch
B3	Fuel level sensor
C1	Noise suppressing filter
E1	Left front main light
E2	Right front main light
E4	Rear main light
E10	Error lamp
E11	Charge lamp
E12	Oil pressure lamp
E13	Hydraulic oil temperature
E21	Beacon
E23, E24	ROPS light
F1-F13	Fuses
F20	Main fuse
G1	Battery
G2	Dynamo
G3	Regulator
H1	Horn
H2	Seat horn
H3	Reversing horn
IC1	Ignition coil
IC2	Ignition coil
K1-K6	Auxiliary relay
K10	Starter relay
K11	Auxiliary relay
M1	Starter
M4	Sprinkling pump
Q1	Battery disconnector
R1	Resistor
S1	Ignition switch
S2	Emergency button
S3	Seat switch
S4	Vibration switch
S5	Horn button
S6	Main lights switch
S7	Beacon, ROPS lights switch
S8	Sprinkling switch
S9	Sprinkling cycler
S10	Engine oil pressure switch
S11	Hydraulic oil temperature switch
S20	Oil level switch
SP1	Spark plug
SP2	Spark plug
X35	Machine diagnostics socket
X15	Mounting socket
Y2	Brake valve
Y5	Vibration valve
Y9	Sprinkling valve
Y20	Fuel cut solenoid

(*) Optional equipment
(**) not available

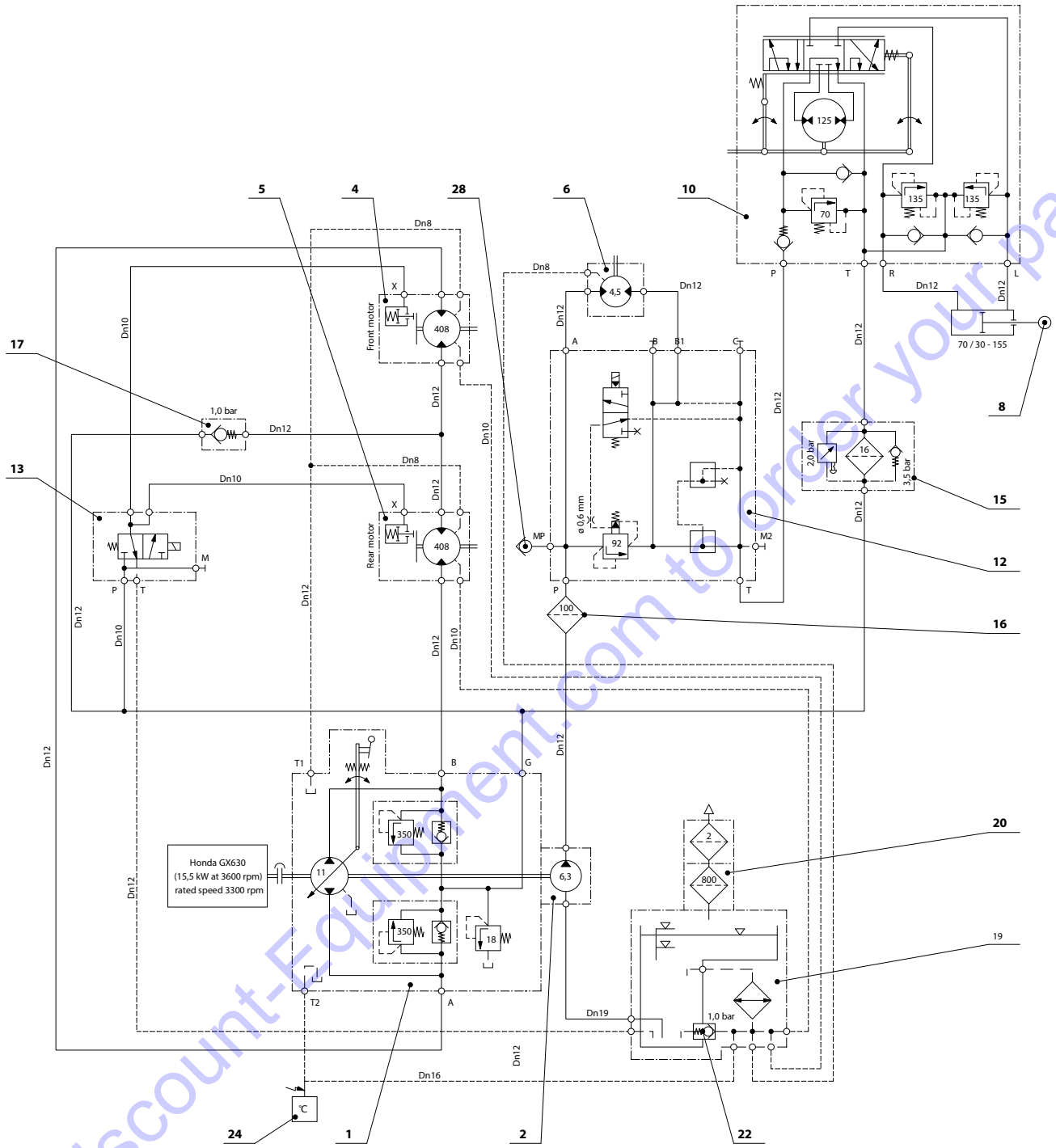


3.8 Appendix

Hydraulic diagram ARX 10.1

Legend:

1 "Propel pump"
2 Gear pump for vibration and steering
4 Propel motor
5 Propel motor
6 Vibration motor
8 Hydraulic steering cylinder
10 Steering unit
12 Hydraulic vibration block
13 Hydraulic brake block
15 Hydraulic filter
16 Hydraulic filter
17 Check valve
19 Hydraulic tank with hydraulic cooler
20 Ventilating filter
22 Check valve
24 Temperature switch
25 Filling quick coupling
27 Test coupling
28 Test coupling
29 Test coupling



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3.8 Appendix

Chapter	Spare part	Order number
3.6.14	Engine oil filter	1808898
3.6.18	Fuel filter	1808924
3.6.19	Spark plug	1808927
3.6.23	Air filter cartridge	1808897
3.6.27	Hydraulic oil filter	1808926
3.6.28	Drum rubber-metal element	1-494045
3.6.35	Gas strut	1205428

Content of the filter set after 100 hours (4-760302)

Chapter	Spare part	Number of parts	Order number
3.6.14	Engine oil filter	1	1808898

Content of the filter set after 300 hours (4-760301)

Chapter	Spare part	Number of parts	Order number
3.6.14	Engine oil filter	1	1808898
3.6.18	Fuel filter	1	1808924
3.6.19	Spark plug	2	1808927

Content of the filter set after 500 hours (4-760300)

Chapter	Spare part	Number of parts	Order number
3.6.14	Engine oil filter	1	1808898
3.6.23	Air filter cartridge	1	1808897

Content of the filter set after 1000 hours (4-760299)

Chapter	Spare part	Number of parts	Order number
3.6.14	Engine oil filter	1	1808898
3.6.23	Air filter cartridge	1	1808897
3.6.27	Hydraulic oil filter	1	1808926

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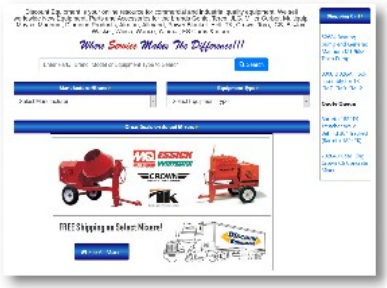

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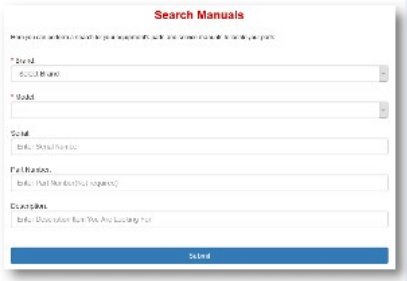

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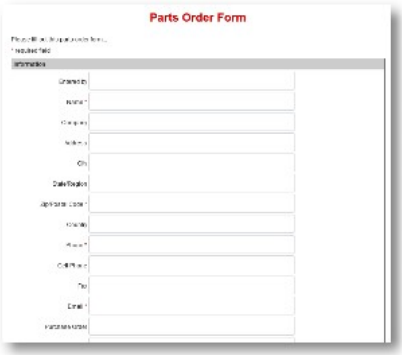

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