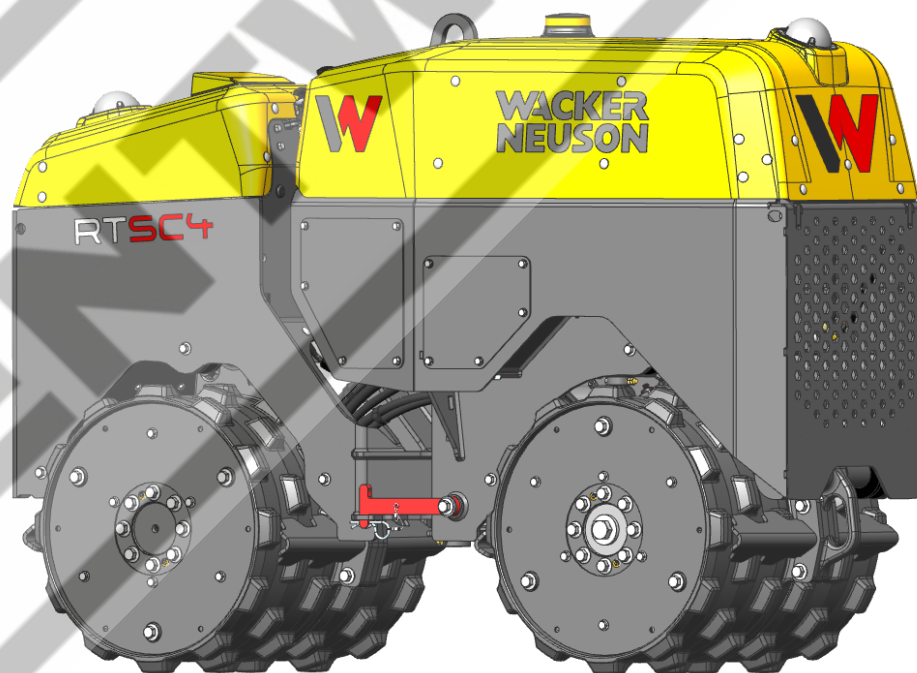


Operator's Manual

Trench Roller

RTD-SC4



Machine Type
Material Number
Version
Date
Language

RTD-SC4
5100083768 / 3300037835
03
03/2026
[en]

Imprint

Publisher and copyright holder:

Wacker Neuson America Corporation
N92W15000 Anthony Ave
Menomonee Falls, WI 53051, USA
www.wackerneuson.us

Original instructions

All rights reserved, in particular the copyright, the right of reproduction and the right of distribution applicable worldwide.

This document may be used by the recipient only for the designated purpose. It may in no way be duplicated or translated in any other language, in whole or in part, without prior permission in writing from the manufacturer.

Reproduction or translation of this publication, in whole or part, is not permitted without the written consent of Wacker Neuson America Corporation.

Violations of legal regulations, in particular of the copyright protection, will be subject to civil and criminal prosecution.

Wacker Neuson America Corporation reserves the right to change its products and their technical specifications for further technical development at any time without any claim to changes to machines already delivered. The information in the technical documentation supplied with the product applies in each case.

The machine on the cover is for illustration purposes only and may therefore have special equipment (options).

Wacker Neuson America Corporation, responsibility for errors or omissions not accepted, printed in USA
Copyright © 2026



EC Declaration of Conformity

Manufacturer

Wacker Neuson America Corporation, N92W15000 Anthony Avenue, Menomonee Falls, Wisconsin, 53051 USA

Product

Product	RTD-SC4 including G6 series micro transmitter
Product Category	Trench Roller
Product function	To compact sub-bases, backfill, and cohesive type soils
Item Number	5100083007, 5100083008, 5100083009, 5100083010, 5100083011
Net installed power	14.8 kW
Measured sound power level	102 dB(A)
Guaranteed sound power level	109 dB(A)

We hereby declare that this product meets and complies with the relevant regulations and requirements of the following directives and standards. The manufacturer bears sole responsibility for issuing this compliance statement.

Conformity Assessment Procedure: Outdoor Noise Directive 2000/14/EC

Annex VIII as amended by 2005/88/EC

Notified Body:

Number: 0197

Name: TUV Rheinland LGA Products GmbH

Address: Tillystrasse 2, 90431 Nuremberg, Germany

Conformity Assessment Procedure: Machinery Directive 2006/42/EC

Harmonized Standards: EN 474-1:2022, EN 474-13:2022, EN 13766-2:2018

Conformity Assessment Procedure: Radio Equipment Directive (RED) 2014/53/EU

Harmonized Standards: EN 13766-1:2018, ETSI EN 301 489-17 V3.2.4 (2020-09)

Authorized Person for Technical Documents

Wacker Neuson Produktion GmbH & Co. KG, Wackerstraße 6, 85084 Reichertshofen, Germany

Menomonee Falls, WI, USA, 20.8.2025

Will Wright

Vice President

Product Engineering and Purchasing for Wacker Neuson

**WACKER
NEUSON**

UKCA Declaration of Conformity

Manufacturer

Wacker Neuson America Corporation, N92W15000 Anthony Avenue, Menomonee Falls, Wisconsin, 53051 USA

Product	RTD-SC4 including G6 series micro transmitter
Product Category	Trench Roller
Product function	To compact sub-bases, backfill, and cohesive type soils
Item Number	5100083007, 5100083008, 5100083009, 5100083010, 5100083011
Net installed power	14.8 kW
Measured sound power level	102 dB(A)
Guaranteed sound power level	109 dB(A)

We hereby declare that this product meets and complies with the relevant regulations and requirements of the following directives and standards. The manufacturer bears sole responsibility for issuing this compliance statement.

Notified Body

AnP Certification Limited, Issue No.: 8500
2 Parkfield Street, Manchester, M14 4PN

Conformity Assessment Procedure: Machinery Directive 2006/42/EC

Harmonized Standards: EN 474-1:2022, EN 474-13:2022, EN 13766-2:2018

Conformity Assessment Procedure: Radio Equipment Directive (RED) 2014/53/EU

Harmonized Standards: EN 13766-1:2018, ETSI EN 301 489-17 V3.2.4 (2020-09)

Authorized Person for Technical Documents

Manufacturer:

Wacker Neuson Produktion GmbH & Co.
Wackerstraße 6
85084 Reichertshofen
Germany

Menomonee Falls, WI, USA, 20.8.2025

Local Contact:

Operations Manager
Wacker Neuson Ltd
WN Place
Beacon Way
Stafford ST18 0DG

Will Wright
Vice President
Product Engineering and Purchasing for Wacker Neuson

**UK
CA**

Table of Contents

1	Foreword	
1.1	Machine Identification	9
1.2	Machine Documentation	9
1.3	Expectations for Information in This Manual	10
1.4	Manufacturer's Approval	10
1.5	Abbreviations	10
1.6	Maintenance Items	11
1.7	Approved Attachments	11
2	Usage	
2.1	Intended Use	12
2.2	Unintended Use	12
2.3	Residual Risks	12
3	Safety	
3.1	Signal Words Used in This Manual	13
3.2	Safety Guidelines for Operating the Machine	13
3.3	Safety Guidelines for Maintenance	16
3.4	Hydraulic Oil Safety	17
3.5	Safety Guidelines for Lifting the Machine	17
3.6	Battery Safety	18
4	Description of the Machine	
4.1	Machine Description	19
4.2	Features and Controls	20
4.3	Control and Component Locations	20
4.4	Labels Overview—ANSI	22
4.5	Labels Overview—ISO	24
4.6	Safety Labels	26
4.7	Information Labels	28
5	Transportation	
5.1	Articulation Joint Locking Bar	31
5.2	Lifting the Machine	31
5.3	Tying Down and Transporting the Machine	32
5.4	Towing the Machine	35
6	Operation	
6.1	Preparing the Machine for First Use	36
6.2	Accessing the Machine Compartments	36
6.3	Wireless Controller Description	37
6.4	Using the Wireless Controller	39

6.5	Starting and Stopping the Wireless Controller	39
6.6	Display Pages	40
6.7	Pairing the Wireless Controller	48
6.8	Function of the Compatec Compaction System (if equipped).....	49
6.9	Position of the Operator	51
6.10	Range Limits	52
6.11	Communication Faults	54
6.12	Preliminary Checks	54
6.13	Operating in Extreme Temperatures.....	55
6.14	Starting, Operating, and Shutting Down the Machine	55
6.15	Engine Speeds.....	57
6.16	Travel Speeds.....	57
6.17	Parking Brake	58
6.18	Activating the Parking Brake Engage Override Feature	58
6.19	Machine Stability	60
6.20	Operating on Slopes	61
6.21	Rollovers	62
6.22	Refueling the Machine	63
6.23	Emergency Shutdown Procedure	63
6.24	Nickel-metal Hydride Battery	64
6.25	Replacing the Battery Pack.....	64
6.26	Charging the Battery Pack	64
6.27	Drum Extensions.....	66
7	Maintenance	
7.1	General Maintenance.....	72
7.2	Periodic Maintenance Schedule	73
7.3	Engine Maintenance	74
7.4	Hydraulic Oil Requirements	75
7.5	Cleaning the Wireless Controller	75
7.6	Checking the Hydraulic Oil Level	76
7.7	Checking the Engine Oil Level.....	77
7.8	Checking and Replacing the Air Filter.....	78
7.9	Inspecting the Machine for Damage	79
7.10	Checking the Engine Coolant Level.....	80
7.11	Checking the Fuel Lines	81
7.12	Checking the Hoods.....	82
7.13	Adjusting the Scraper Bars	82
7.14	Checking for Loose or Missing Fasteners.....	83
7.15	Cleaning the Machine	83
7.16	Changing the Hydraulic Oil and Filters	84

7.17	Tightening the Drum Bolts and Axle Bolts	86
7.18	Lubricating the Articulation Joint and Steering Cylinder	87
7.19	Checking the Battery Cables	88
7.20	Changing the Engine Oil and Filter	88
7.21	Checking the Fan Belt Tension	90
7.22	Replacing the Fuel Filter	91
7.23	Checking the Coolant Hoses	92
7.24	Checking the Drum Shock Mounts	92
7.25	Checking and Cleaning Oil Cooler and Radiator Fins	93
7.26	Priming the Fuel System	93
7.27	Replacing the Engine Fan Belt	94
7.28	Maintaining the Battery	96
7.29	Checking Engine Valve Clearance	97
7.30	Replacing the Hydraulic Oil Cap	98
7.31	Changing the Drum Gear Oil	98
7.32	Changing the Engine Coolant	99
7.33	Replacing Fuel Hoses	100
7.34	Cleaning and Adjusting Fuel Injectors	100
7.35	Replacing the Engine Timing Belt	101
8	Troubleshooting	
8.1	Troubleshooting	102
8.2	Troubleshooting the Wireless Controller	104
8.3	Troubleshooting the Transceiver	105
8.4	Transceiver LED Meanings	105
8.5	Wireless Controller Error Codes	106
8.6	Wireless Controller Self-test Mode	106
8.7	Diagnostic Trouble Codes	109
9	Storage	
9.1	Daily Storage	112
9.2	Long-Term Storage	112
10	Decommissioning	
10.1	Machine Disposal and Decommissioning	114
11	Technical Data	
11.1	Engine	115
11.2	Roller	115
11.3	Lubrication	115
11.4	Sound and Vibration Specifications	116
11.5	Dimensions	116
11.6	Radiation Compliance	117

Index 118

RENTWAY

1 Foreword

1.1 Machine Identification

Save these instructions

This manual contains important instructions for the machine models below. These instructions have been written expressly by Wacker Neuson America Corporation and must be followed during installation, operation, and maintenance of the machines.

The following machines and variants/options are described:

Machine	Item Number
RTD-SC4	5100083007, 5100083008, 5100083009, 5100083010, 5100083011

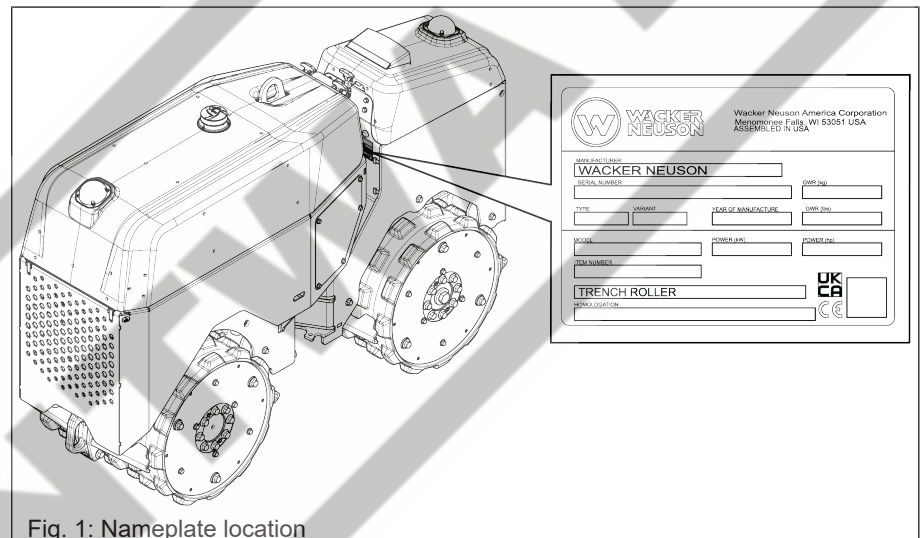


Fig. 1: Nameplate location

Serial number (S/N)

For future reference, record the serial number in the space provided below. You will need the serial number when requesting parts or service for this machine.

Serial number:

1.2 Machine Documentation

Keep a copy of the operator's manual with the machine at all times. Replace the manual immediately if it is lost, damaged, or unreadable.

From this point forward in this documentation, Wacker Neuson America Corporation will be referred to as Wacker Neuson or the manufacturer.

For spare parts information, please see your Wacker Neuson dealer, or visit the Wacker Neuson website at <http://www.wackerneuson.com/>.

When ordering parts or requesting service information, be prepared to provide the machine model number, item number, and serial number.

1.3 Expectations for Information in This Manual

This manual provides information and procedures to safely operate and maintain this machine. For your own safety and to reduce the risk of injury, carefully read, understand, and observe all instructions described in this manual.

The manufacturer expressly reserves the right to make technical modifications, even without notice, which improve the performance or safety standards of its machines.

The information contained in this manual is based on machines manufactured up until the time of publication. The manufacturer reserves the right to change any portion of this information without notice.

The illustrations, parts, and procedures in this manual refer to the manufacturer's factory-installed components. Your machine may vary depending on the requirements of your specific region.

1.4 Manufacturer's Approval

This manual contains references to approved parts, attachments, and modifications. The following definitions apply:

- Approved parts or attachments are those either manufactured or provided by the manufacturer.
- Approved modifications are those performed by an authorized service center according to written instructions published by the manufacturer.
- Unapproved parts, attachments, and modifications are those that do not meet the approved criteria.

Unapproved parts, attachments, or modifications may have the following consequences:

- Serious injury hazards to the operator and persons in the work area
- Permanent damage to the machine which will not be covered under warranty

Contact your dealer immediately if you have questions about approved or unapproved parts, attachments, or modifications.

1.5 Abbreviations

Acronym	Definition	Acronym	Definition
API	American Petroleum Institute	CARB	California Air Resource Board
DTC	Diagnostic trouble code	E-stop	Emergency stop
EPA	Environmental Protection Agency	FMI	Fault mode indicator
IR	Infrared	LDF	Limited defect warranty
LLC	Long-life coolant	MCU	Machine control unit
NiMH	Nickel-metal hydride	OAT	Organic acid technology
PIN	Personal identification number	PPE	Personal protective equipment

Acronym	Definition	Acronym	Definition
S/N	Serial number	SPN	Suspect parameter number
UWB	Ultra-wideband	—	—

1.6 Maintenance Items

Item	Part Number	Item	Part Number
Oil filter	5200015526	Fan belt	5200002703
Air filter, primary	5000160171	Battery	5000177257
Air filter, secondary	5000162184	Coolant	1000367466
Fuel filter	5000082116	Fuel cap	5100046509
Hydraulic oil filter, primary	1000459723	Hydraulic tank cap	1000340157
Hydraulic oil filter, secondary	5100040787	Grease	—
Hydraulic tank screen	1000340159	—	—

1.7 Approved Attachments

Attachment	Part Number	Use
Standard (narrow) drums	5100069699	Compacting soft materials such as mud and dense clay
Smooth drums	5100066586	Compacting granular materials, such as sand, gravel, or asphalt.
Wide drums	5100071777	Compacting soft materials such as mud and dense clay
Standard scrapers	5100066601	Cleaning standard drums
Smooth scrapers	5100071776	Cleaning smooth drums
Wide scrapers	5100071775	Cleaning wide drums
Drum covers	5100080980	Keeping debris from entering the drum
Drum cover inserts	5100080700	Keeping debris from enter the drum while using extensions

2 Usage

2.1 Intended Use

This machine is intended to be used for compacting sub-bases, backfill, and cohesive type soils.

2.2 Unintended Use

This machine has been designed and built strictly for the intended use described above. Using the machine for any other purpose could permanently damage the machine or seriously injure the operator or other persons in the area. Machine damage caused by misuse is not covered under warranty.

The following are some examples of misuse:

- Using the machine as a ladder, support, or work surface
- Operating the machine outside of factory specifications
- Operating the machine in a manner inconsistent with all warnings found on the machine and in the operator's manual

2.3 Residual Risks

This machine has been designed and built in accordance with the latest global safety standards. It has been carefully engineered to eliminate hazards as far as practicable and to increase operator safety through protective guards and labeling.

However, some risks may remain even after protective measures have been taken. They are called residual risks. On this machine, they may include exposure to:

- Heat, noise, exhaust, and carbon monoxide from the engine
- Fire hazards from improper refueling techniques
- Fuel and its fumes
- Electric shock and arc flash
- Personal injury from improper lifting techniques
- Typical hazards related to towing a trailer on roads and highways

To protect yourself and others, make sure you thoroughly read and understand the safety information presented in this manual before operating the machine.

3 Safety

3.1 Signal Words Used in This Manual

This manual contains DANGER, WARNING, CAUTION, *NOTICE*, and NOTE signal words which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.



⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

- To avoid death or serious injury from this type of hazard, obey all safety messages that follow this signal word.



⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

- To avoid possible death or serious injury from this type of hazard, obey all safety messages that follow this signal word.



⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

- To avoid possible minor or moderate injury from this type of hazard, obey all safety messages that follow this signal word.



NOTICE

NOTICE identifies a situation that causes damage if it is not observed.

- To avoid possible damage from this type of hazard, obey all safety messages that follow this signal word.

Note: A Note contains additional information important to a procedure.

3.2 Safety Guidelines for Operating the Machine

Operator and service training, knowledge, and qualifications

Before operating, maintaining, or servicing the machine:

- Familiarize yourself with the location and proper use of all controls and safety devices.
- Know the rules for the jobsite.
- Have appropriate fire fighting equipment readily available.
- Contact Wacker Neuson for additional training if necessary.

When operating this machine:

- Do not allow improperly trained people to operate the machine.
- Be alert for malfunctions.
- People operating the machine must be familiar with the potential risks and hazards associated with it.
- Follow legal and other mandatory regulations relevant to accident prevention and environmental protection. These may include handling hazardous substances, issuing and/or wearing personal protective equipment (PPE), or obeying traffic regulations.

The machine must not be accessed or operated by:

- Children
- People impaired by alcohol, drugs, or prescription drugs

Application area

Be aware of the application area.

- Keep unauthorized personnel, children, and pets away from the machine.
- Keep the area around the machine clear.
- Remain aware of changing positions and the movement of other equipment and personnel in the application area/job site.
- Use caution when operating the machine near the edges of pits, trenches, or platforms. Check to be sure that the ground surface is stable enough to support the weight of the machine and that there is no danger of the roller sliding, falling, or tipping.
- Do not operate the machine in areas that contain flammable objects, fuels, or products that produce flammable vapors.
- Keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.
- Always remain in visual contact with the machine at all times while operating the controls.

Safety devices, controls, and attachments

Only operate the machine when:

- All safety devices and guards are in place and in working order.
- The beacon is functional.
- The horn is functional.
- All controls operate correctly.
- The machine is set up correctly according to the instructions in the operator's manual.
- The machine is clean.
- The machine's labels are legible.

To ensure safe operation of the machine:

- Do not operate the machine if any safety devices or guards are missing or inoperative.
- Do not modify or defeat the safety devices.
- Only use accessories or attachments that are approved by the manufacturer.

Safe operating practices

- Position yourself safely when operating the machine, using extra caution while operating in reverse or on hills. Leave enough space between yourself and the machine so you will not be placed in a hazardous position should the machine slide or tip.
- Do not use a cellphone or send text messages while operating this machine.
- Stay clear of the articulation steering joint and the area between the front and rear frames.
- Remain aware of the machine's moving parts. Keep hands, feet, and loose clothing away from the machine's moving parts.
- Do not consume the operating fluids used in this machine. Depending on your machine model, these operating fluids may include water, wetting agents, fuel (gasoline, diesel, kerosene, propane, or natural gas), oil, coolant, hydraulic oil, heat transfer fluid (propylene glycol with additives), battery acid, or grease.

Personal protective equipment (PPE)

Wear the following PPE while operating, servicing, or maintaining this machine:

- Close-fitting work clothes that do not hinder movement
- Safety glasses with side shields
- Hearing protection
- Safety-toed footwear

In addition, before servicing or maintaining the machine:

- Tie back long hair.
- Remove all jewelry (including rings).

After use

- Stop the engine.
- Close the fuel valve on engines equipped with one.
- Turn the battery disconnect switch to OFF on machines equipped with one.
- Ensure that the machine will not tip over, roll, slide, or fall.
- Store the machine properly. The machine should be stored in a clean location out of the reach of children.



3.3 Safety Guidelines for Maintenance

Service training

Before servicing or maintaining the machine, [see Safety Guidelines for Operating the Machine on page 13](#) and follow all guidelines for operating the machine.

Precautions

- Read and understand the service procedures before performing any service to the machine.
- All adjustments and repairs must be completed before operating the machine. Do not operate the machine with a known problem or deficiency.
- All repairs and adjustments shall be completed by a qualified technician.
- Turn off the machine before performing maintenance or making repairs.
- Remain aware of the machine's moving parts. Keep hands, feet, and loose clothing away from the machine's moving parts.
- Install the safety devices and guards after repair and maintenance procedures are complete.
- Always secure the articulated steering joint using the locking bar before lifting, jacking, and servicing the machine. The machine halves could swing together unexpectedly and cause a serious injury.
- Do not remove the radiator cap when the engine is running or hot. The radiator fluid is hot and under pressure and may cause severe burns.
- Do not remove air cleaner cover, paper element, or precleaner while engine is running.
- Do not leave the wireless controller unattended while servicing the machine.

Machine modifications

- Use only accessories/attachments that are approved by the manufacturer.
- Do not disable safety devices.
- Do not modify the machine without the express written approval of the manufacturer.

Replacing parts and labels

- Replace worn or damaged components with spare parts designed and approved by the manufacturer.
- Replace all missing and hard-to-read labels.
- When replacing electrical components, use components that are identical in rating and performance to the original components.
- When replacement parts are required for this machine, use only replacement parts from the manufacturer or those parts equivalent to the original in all types of specifications, such as physical dimensions, type, strength, and material.

Cleaning the machine

- Keep the machine clean and free of debris such as leaves, paper, cartons, etc.
- Keep labels legible.
- Do not clean the machine while it is running. Rotating parts can cause severe injury.
- Clean with soapy water only.
- Never use gasoline or other types of fuels or flammable solvents to clean the machine. Fumes from fuels and solvents can become explosive.
- Do not use high pressure water jets to clean inside the machine or around the articulation joint.

3.4 Hydraulic Oil Safety



⚠ WARNING

Injury hazard

Hydraulic oil is under high pressure and becomes very hot during operation.

- To avoid injury, obey the safety instructions listed below.

Safety instructions

- Inspect the hydraulic system thoroughly before operating the machine.
- Do not touch hydraulic oil or hydraulic components while the machine is operating. Wait until the machine is cool.
- Before disconnecting hydraulic fittings or hoses, ensure that all pressure has been bled from the circuit. Set all controls to the neutral position, turn the engine off, and allow the fluids to cool before loosening hydraulic fittings or attaching test gauges.
- Hydraulic oil escaping under high pressure may penetrate the skin, causing burns, blindness, or other serious injuries or infections. Contact a physician immediately for treatment if your skin has been penetrated by hydraulic oil, even if the wound seems minor.
- Fluid leaks from small holes are often practically invisible. Do not use your bare hands to check for leaks. Check for leaks using a piece of cardboard or wood.
- Stop the engine immediately if a hydraulic leak is detected.
- After servicing the hydraulics, make sure all components are reconnected to the proper fittings. Failure to do so may result in damage to the machine and/or injury to a person on or near the machine.

3.5 Safety Guidelines for Lifting the Machine

When lifting the machine:

- Make sure slings, chains, hooks, ramps, jacks, forklifts, cranes, hoists, and any other type of lifting device used is attached securely and has enough weightbearing capacity to lift or hold the machine safely. For machine weight, [see Technical Data on page 115](#).
- Remain aware of the location of other people when lifting the machine.
- Only use the lifting points described in the operator's manual.

To reduce the possibility of injury:

- Do not stand under the machine while it is being lifted or moved.
- Do not get onto the machine while it is being lifted or moved.

3.6 Battery Safety

General battery safety

- Remove the battery from the wireless controller if it will not be used for an extended period (longer than one week).
- Only use original batteries and battery chargers made by the wireless controller manufacturer.
- Do not use or charge damaged, faulty, leaking, swollen, or corroded batteries.
- Avoid using batteries in temperatures other than specified.
- Avoid exposing the batteries to direct sunlight.
- Keep the batteries out of reach of children.
- Do not store or transport batteries in such a way that the battery terminals touch conductive materials such as keys, coins, or hand tools.
- In the interests of environmental protection, dispose of used batteries properly. Do not dispose in trash or incinerate.

Battery charger safety

Note: Some of the following applies mainly to a stand-alone charger, which is available for purchase.

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

- Charge only the batteries intended for this system.
- Do not use a damaged or faulty battery charger.
- Do not short circuit battery charger terminals.
- Avoid using the battery charger in temperatures other than specified.
- Do not use the battery charger if the connection cable is damaged or faulty.
- Do not use the battery charger in hazardous locations or near explosive substances.

4 Description of the Machine

4.1 Machine Description

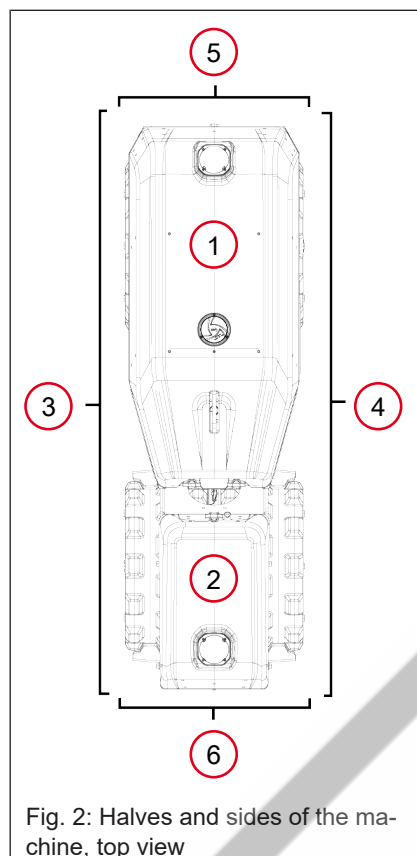


Fig. 2: Halves and sides of the machine, top view

This machine is a four-drum roller that compacts the work surface as the machine moves. The machine is split into two distinct halves. The larger of the two is the front (1), and the smaller is the rear (2). The machine halves are joined by an articulation joint, and each half includes an exciter assembly and two drums. The front half includes the diesel engine, the hydraulic oil reservoir, and pumps for the hydraulic system. The rear half includes the fuel tank, battery, battery disconnect switch, and storage for the wireless controller. The diesel engine powers the hydraulic systems that provide machine movement and drum vibration.

The operator controls all machine functions (for example speed, direction, and vibration) with the wireless controller. This protects the operator by allowing him or her to stand at a distance from the machine and the work area during operation. When used in excavations, it allows the operator to stand safely above the trench, rather than in it.

Wireless control of the machine is achieved using radio frequency and infrared (IR) control systems, as follows:

- The radio system includes the wireless controller and transceiver. The wireless controller transmits signals to the transceiver on the machine to control machine operation. A two-way, 2.4 GHz radio signal is used for machine control and status. A 6.5 GHz ultra-wideband (UWB) radio signal is used for distance/proximity detection.
- The IR system uses IR receiving eyes, one mounted to each machine half. These eyes receive signals from the IR transmitter on the wireless controller. The eyes send information to the transceiver and MCU via a CAN signal.
- This system provides wireless operation up to 20 meters (65 feet).

Each wireless controller and transceiver are paired to each other. It is not possible for other wireless controllers to operate the machine unless they are specifically paired.

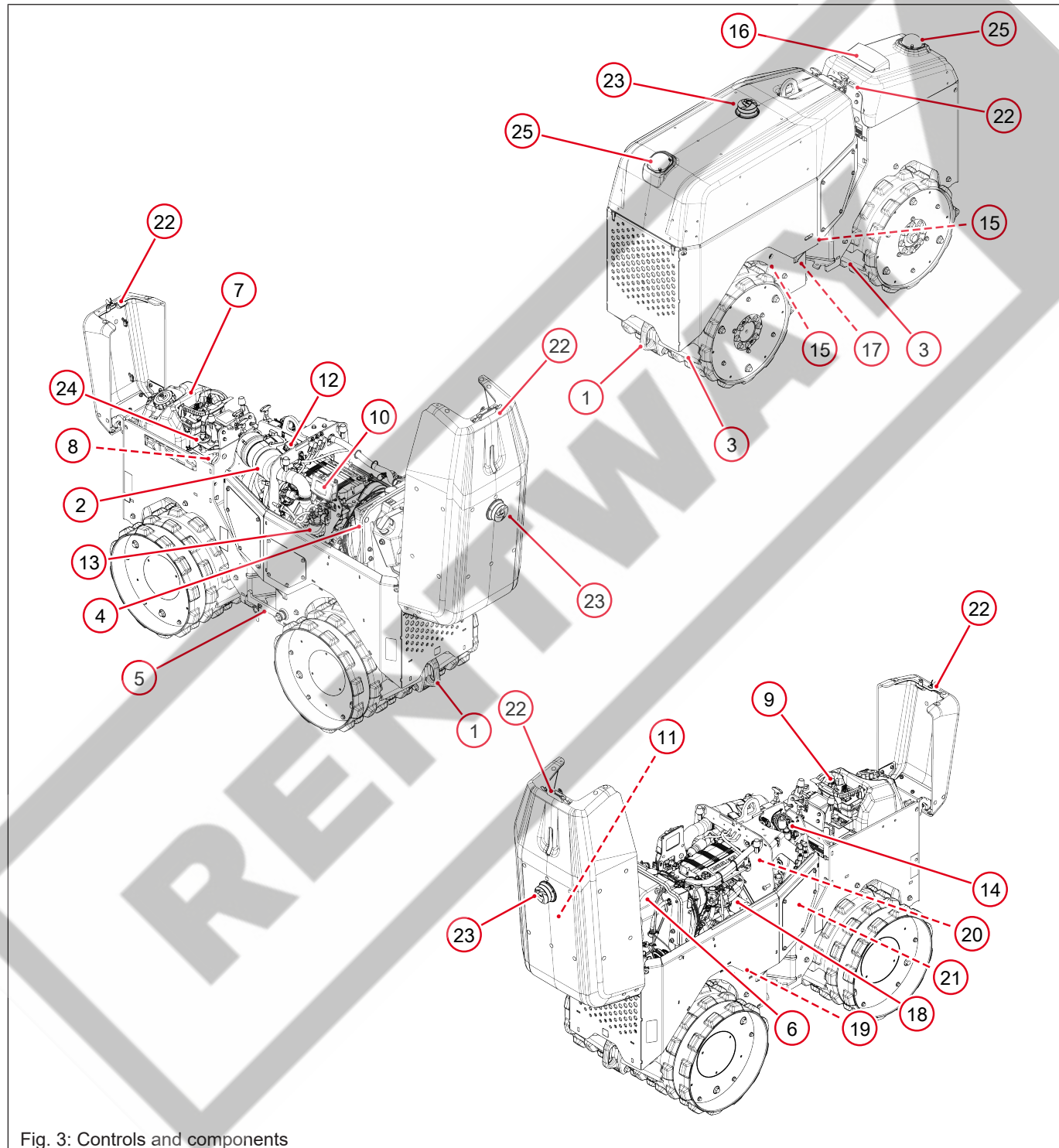
Right/left/front/rear

The following depict the sides of the machine:

- 3: Left
- 4: Right
- 5: Front
- 6: Rear

4.2 Features and Controls

4.3 Control and Component Locations



Ref	Description	Ref	Description
1	Tie-downs/towing points	2	Air cleaner
3	Scraper bar	4	Radiator/hydraulic oil cooler
5	Articulation joint locking bar	6	Hydraulic tank
7	Fuel tank	8	Battery
9	Wireless controller	10	Transceiver
11	Manual holder	12	Fuse box
13	Fuel filter	14	Hydraulic manifold
15	Steering cylinder grease fittings	16	Compatec display (if equipped)
17	Articulation joint grease fitting	18	Oil filter
19	Oil drain	20	Primary hydraulic filter
21	Secondary hydraulic filter	22	Hood handle
23	Beacon	24	Battery disconnect switch
25	Infrared receiving eye	—	—

4.4 Labels Overview—ANSI

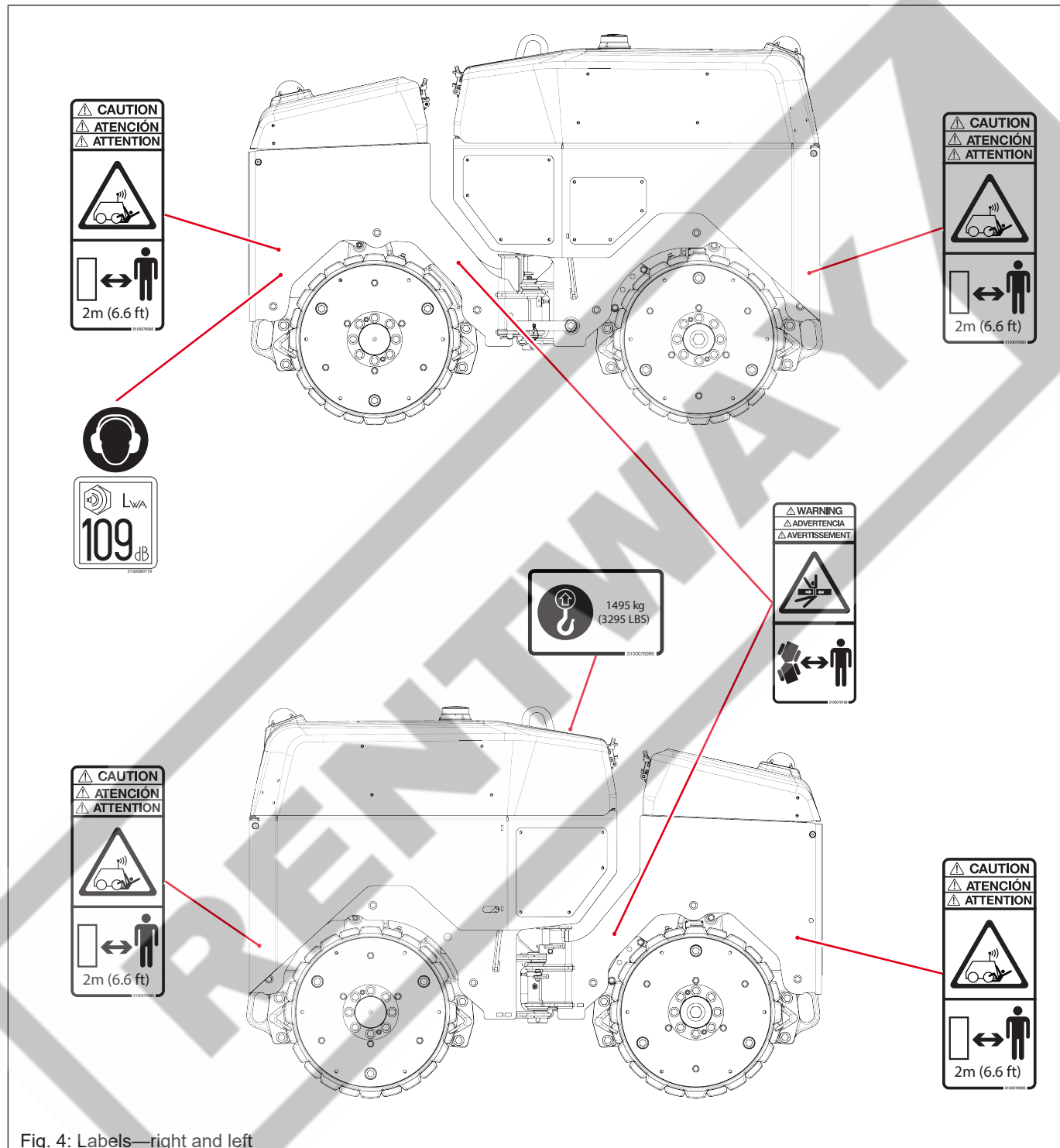


Fig. 4: Labels—right and left

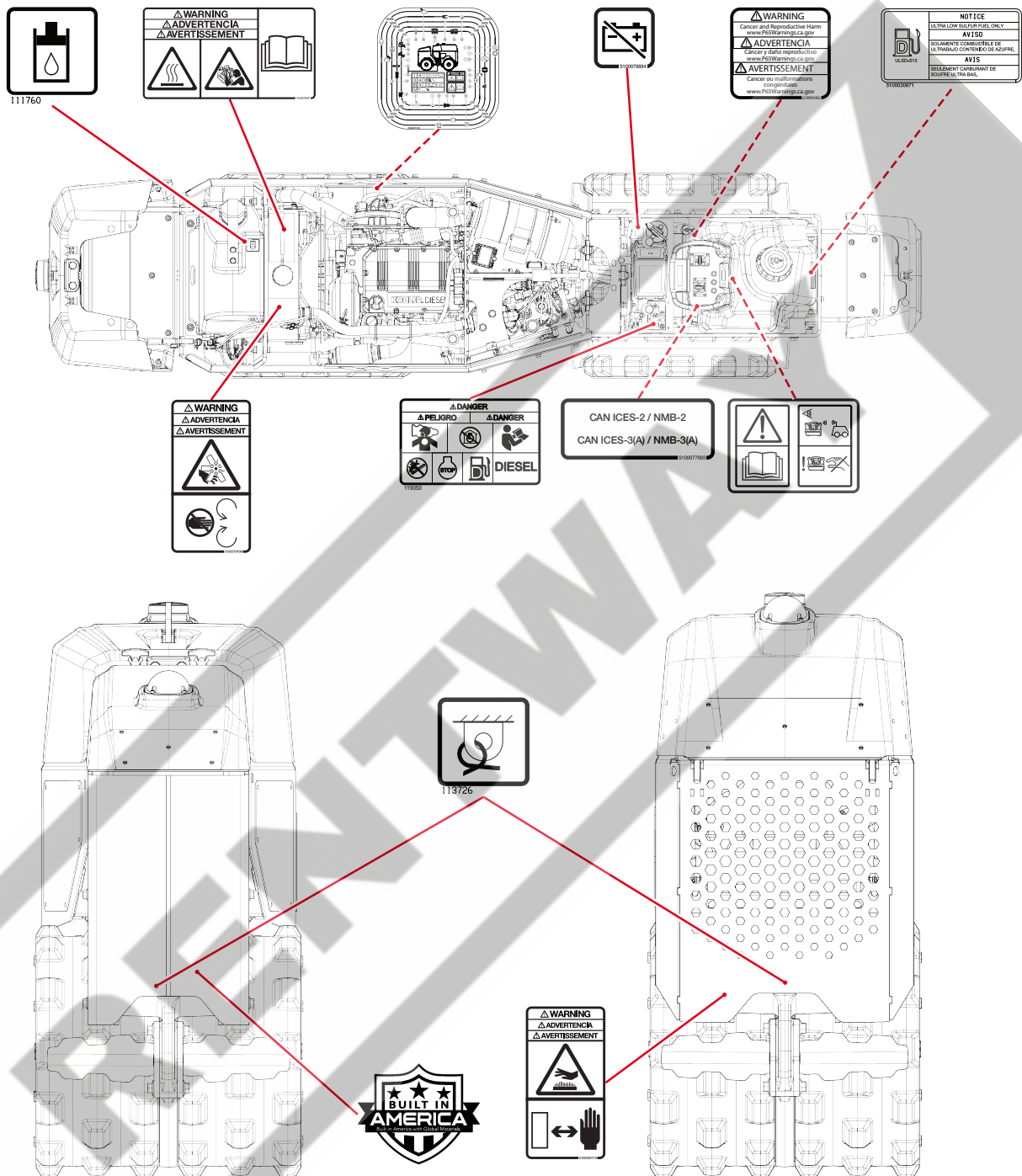


Fig. 5: Labels—top, front, and rear

4.5 Labels Overview—ISO

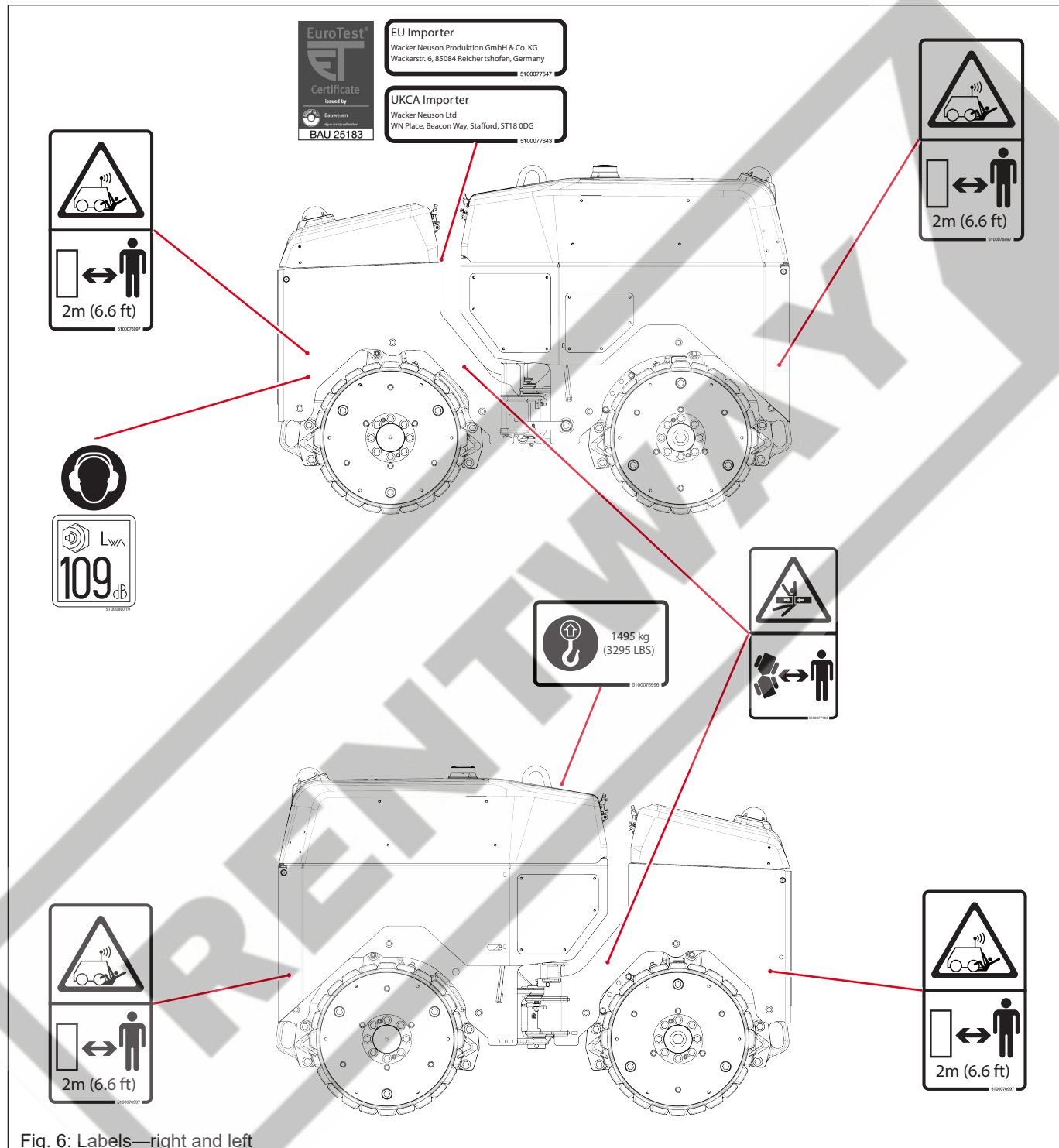


Fig. 6: Labels—right and left

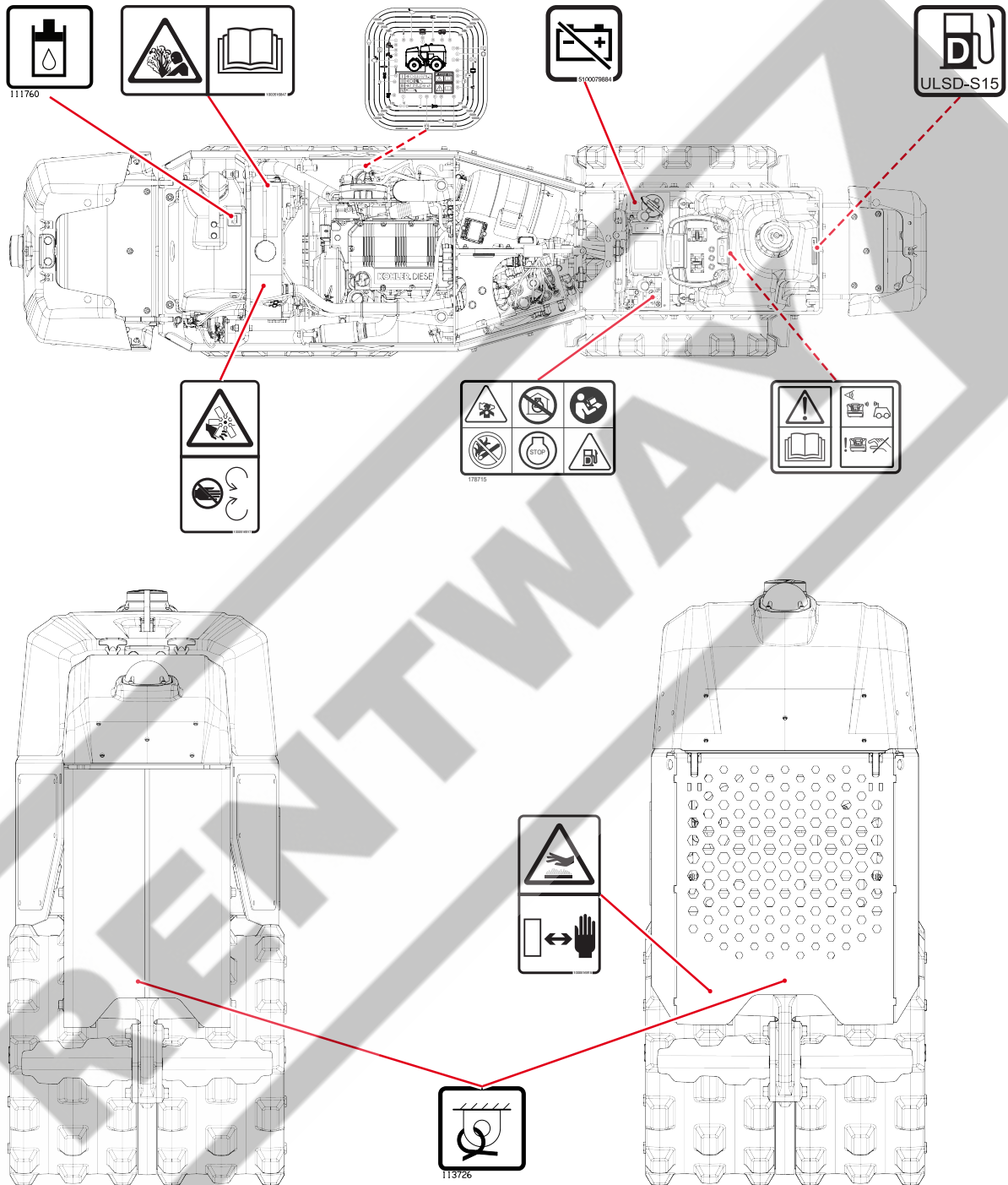
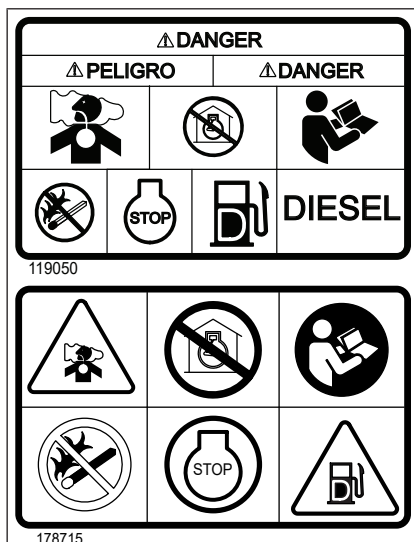


Fig. 7: Labels—top, front, and rear

4.6 Safety Labels



DANGER

Asphyxiation hazard

- Engines emit carbon monoxide.
- Do not run the machine indoors or in an enclosed area unless adequate ventilation, through such items as exhaust fans or hoses, is provided.
- Read the Operator's Manual.
- No sparks, flames, or burning objects near the machine.
- Stop the engine before refueling.



WARNING

Entanglement hazard

Avoid all moving parts while the engine is running.



WARNING

Hot surface hazard

Explosion hazard

Read the operator's manual



WARNING

Pinching hazard



WARNING

Hot surface hazard
Keep safe distance



(On the wireless controller)

WARNING

Read and fully understand operator's manual before using this machine.
Failure to follow operating instructions could result in death or serious injury.
Check the operational functionality of the remote control system prior to use.
Do not operate the machine if the remote control displays any faults.



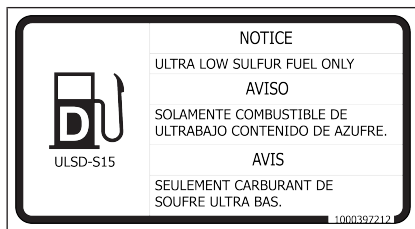
WARNING

California Proposition 65 Warning
Cancer and Reproductive Harm
www.P65Warnings.ca.gov



CAUTION

Do not stand within 2 m (6.6 ft) of the machine while it is running.



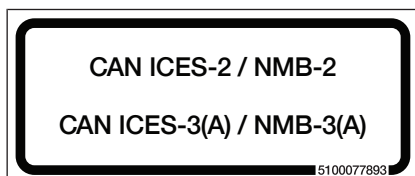
NOTICE

Ultra low sulfur fuel only

4.7 Information Labels



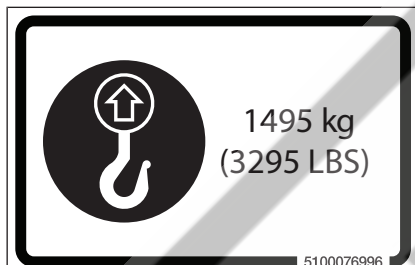
Ultra low sulfur fuel only



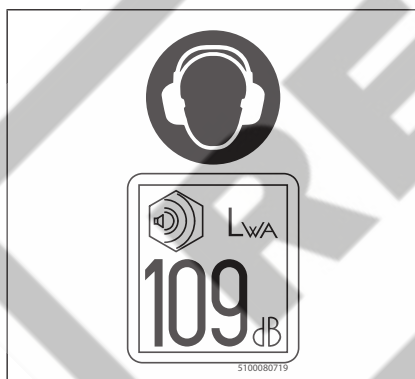
Industry Canada ICES-002 Compliance Label:

CAN ICES-2/NMB-2

CAN ICES-3(A)/NMB-3(A)



Lifting point

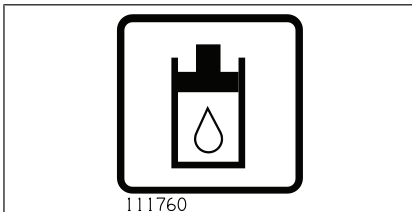


To reduce the risk of hearing loss, always wear hearing protection when operating this machine.

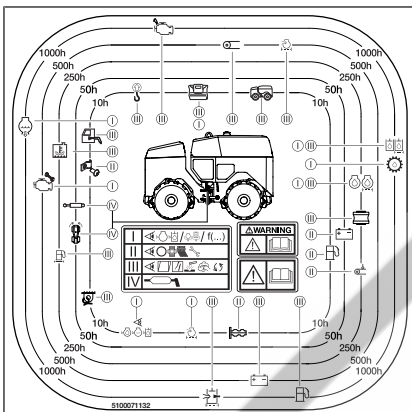
Guaranteed sound power level in dB(A)



Tie-down point



Hydraulic oil reservoir fill



Maintenance schedule



Battery disconnect switch



Importer



EuroTest® certificate issued by Bauwesen



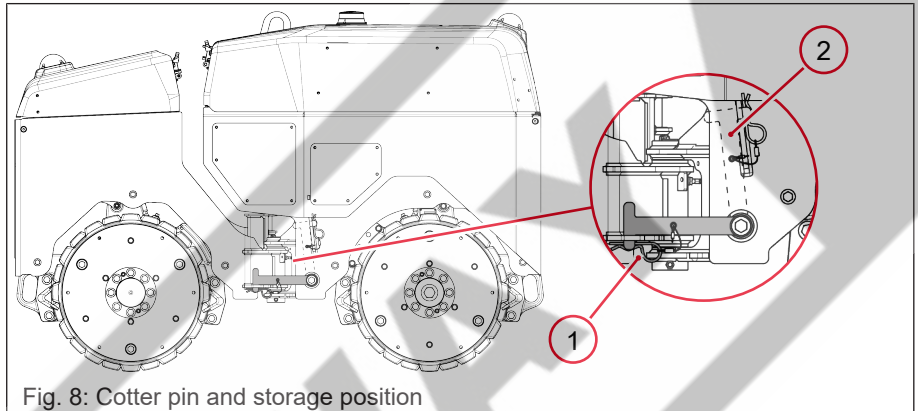
Built in America with global materials

5 Transportation

5.1 Articulation Joint Locking Bar

A bar is provided to lock the articulation joint, and prevent the two machine halves from swinging together.

When lifting or jacking up the machine, secure the articulation joint with the bar as shown. Hold the bar in position using the cotter pin **(1)** provided.



When operating the machine, place the bar in the storage position **(2)** as shown. Hold the bar in position using the cotter pin.

5.2 Lifting the Machine



⚠ WARNING

Crushing hazard

You may be crushed if the lifting devices fail.

- Do not stand under, or get onto, the machine while it is being lifted or moved.



⚠ WARNING

Crushing hazard

The machine can drop if it is lifted by any part of the frame. These components are not designed to support the weight of the machine.

- Use only the designated lifting points to lift the machine.

Overview

The following procedure is specific to this machine. For general safety requirements, [see Safety Guidelines for Lifting the Machine on page 17](#).

Requirements

- Lifting equipment (crane or hoist) capable of supporting the machine's weight
- Lifting hooks and chains capable of supporting the machine's weight
- Engine stopped

Procedure

A lifting eye is used for lifting the machine.

1. Lock the front and rear halves of the machine using the articulation joint locking bar **(1)**.

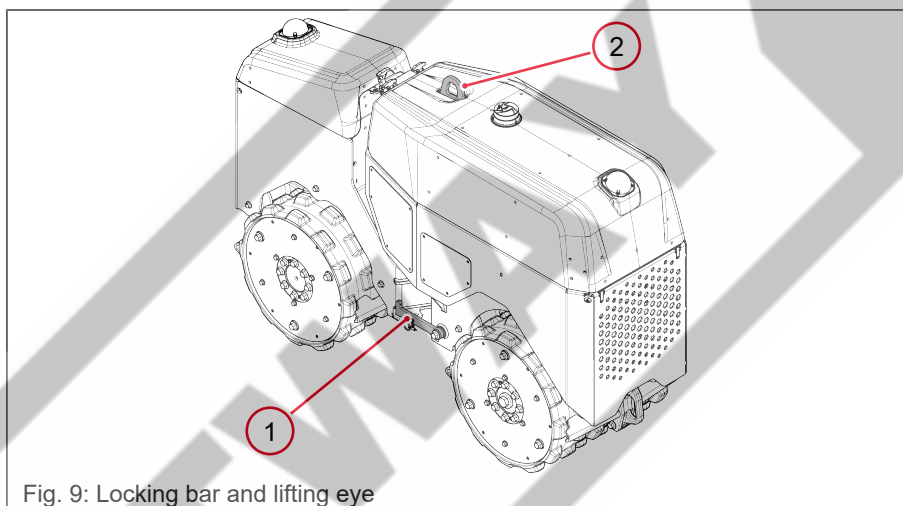


Fig. 9: Locking bar and lifting eye

2. Attach the lifting devices and equipment to the lifting eye **(2)**. Do not attach lifting devices to any other part of the machine.
3. Lift the machine a small distance.
4. Check for stability. If the machine is not stable, lower it, center the machine under the lifting device, and lift the machine a small distance again.
5. Continue lifting the machine as necessary.

5.3 Tying Down and Transporting the Machine



WARNING

Accident hazard

Tie-down points that are cracked or otherwise damaged may fail when tying down or towing the machine, thereby potentially causing injury to personnel or machine damage.

- Inspect the tie-down points before attaching any tie-down or towing equipment.

**NOTICE**

Damage may occur from not securing the machine properly.

- ▶ Do not position ropes or chains across the machine frame or the articulated steering joint.
- ▶ Do not completely compress the shock mounts.
- ▶ Do not leave the machine tied down for extended periods of time (except when transporting).

**NOTICE**

Using parts of the roller other than those specified to tie down the machine may cause severe damage.

- ▶ Only use the specified tie downs to secure the machine.

Requirements

- Machine shut down
- Chocks in place
- Properly rated nylon straps

Overview

Observe the following when tying down the machine.

- Always tie down the machine at the front and the rear.
- The specified angles must be observed.
- The fastening equipment must be designed for the specified forces.
- Apply the specified forces to tighten the fastening equipment.

Procedure

1. Make sure that the transport vehicle is capable of handling the weight and size of the machine. For dimensions and operating weight, [see Technical Data on page 115](#).
2. Lock the front and rear halves of the machine using the articulation joint locking bar (1).

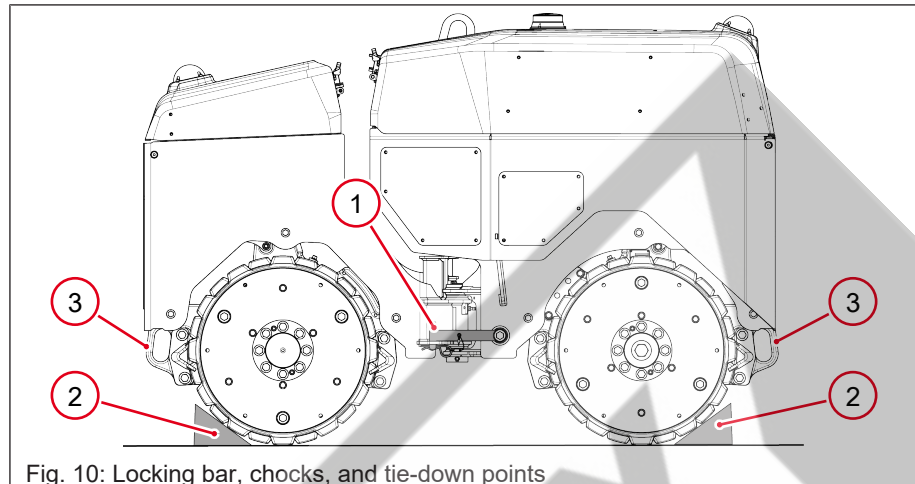


Fig. 10: Locking bar, chocks, and tie-down points

3. Place chocks (2) in front of or behind each drum as shown.
4. Attach properly rated nylon straps to the front and rear tie downs (3).
5. Attach the other end of the nylon straps to the transport vehicle.
6. Make note of the following specifications as they pertain to the graphic below:

Angle	Minimum	Maximum	Maximum Tie-down Force
α	20°	45°	13,347 (3,000) N (lb-ft)
β	20°	45°	13,347 (3,000) N (lb-ft)

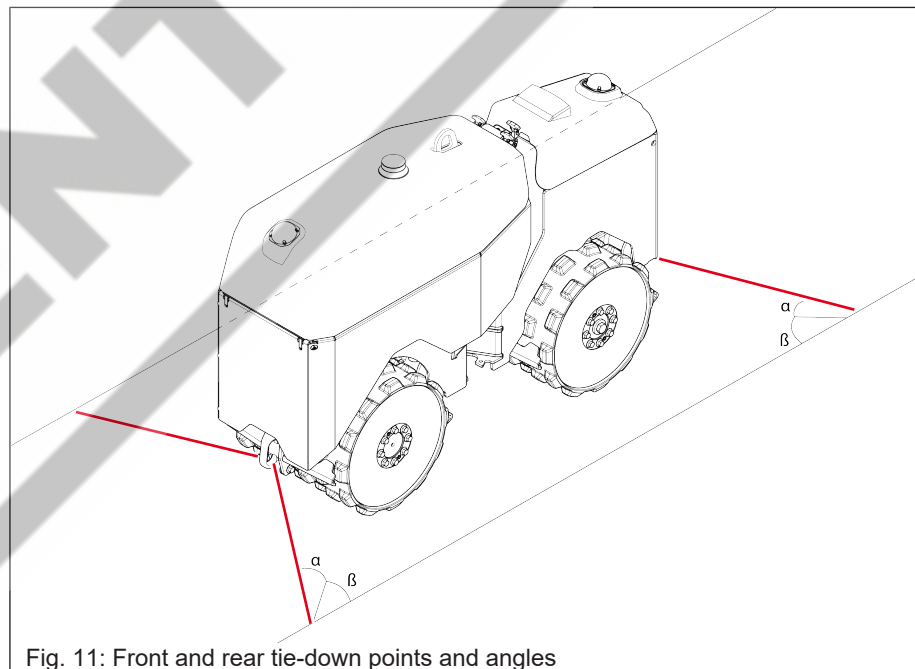


Fig. 11: Front and rear tie-down points and angles

5.4 Towing the Machine



NOTICE

Machine damage can occur during towing.

- ▶ The machine may only be towed out of the immediate risk zone. Then, load it on to a truck or trailer.
- ▶ The manufacturer's warranty shall not apply to accidents or damage caused by towing.

Requirements

- Machine of appropriate size and towing capacity
- Shielding for all machines being used

Note: The strength of the towing line should be at least 150 percent of the gross weight of the towing machine.

Limitations

- Limit towing to emergency situations only
- Limit towing to short distances
- Limit towing speed to 2 km/h (1.2 mph)
- Limit tow line angle to 30° from center

Procedure

1. Attach shielding to the machines to protect the operators if the towing equipment breaks.
2. Attach the tow line to the machine at the tow point. The tow point is the tie down closest to the towing vehicle. For information on tie downs, [see Tying Down and Transporting the Machine on page 32](#).
3. Attach the tow line to the towing vehicle(s).
4. Using the wireless controller, disengage the parking brake. The parking brake override subpage is found under the settings page. For further information, [see Display Pages on page 40](#).
5. Tow the disabled machine at a slow rate of speed to the desired location.
6. Remove the tow lines.

6 Operation

6.1 Preparing the Machine for First Use

Requirement

Machine on level surface

Procedure

1. Remove all loose packaging materials from the machine.
2. Check the machine and its components for damage. If there is visible damage, do not operate the machine. Contact the dealer immediately for assistance.
3. Take inventory of all items included with the machine and verify that all loose components and fasteners are accounted for.
4. Connect component parts not already attached.
5. Add fluids as needed and applicable, such as fuel, engine oil, engine coolant, and hydraulic oil.
6. Move the machine to its operating location.

6.2 Accessing the Machine Compartments

For information on what components are in the front and rear compartments, see [Machine Description on page 19](#).

To access the compartments:

1. Remove the lock if present.

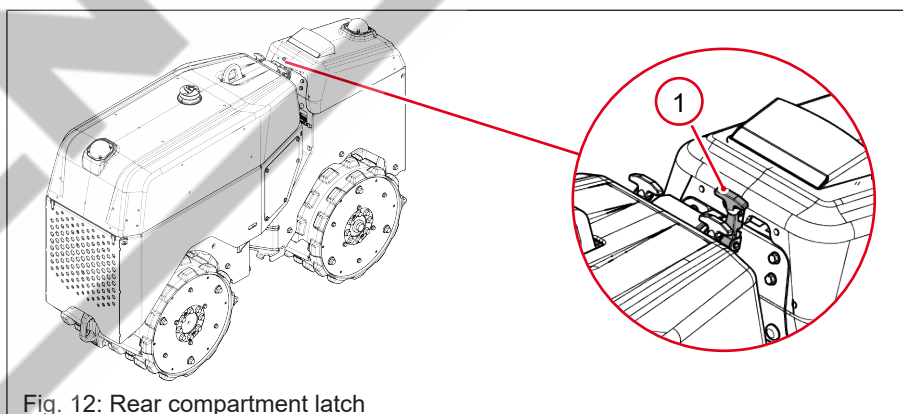


Fig. 12: Rear compartment latch

2. Pull the latch(es) (1) up and out from the retainer(s).
3. Raise the hood and place it in the open position. Use the provided handhold when opening the front hood. Use the provided cutout when opening the rear hood.
Note: Gas struts assist in opening the hoods. Make sure the hood will not close by itself before working in the compartment.
4. To close, lower the hood over the compartment.
5. Pull the latch(es) up and seat it (them) over the retainer(s).

6.3 Wireless Controller Description

- Wireless, infrared and radio frequency operation
- 64 x 120 monochrome screen
- Control channels: Infinite (paired with machine)
- Minimum range: 2 m (6.6 ft)
- Maximum range:
 - Control: 20 m (65 ft)
 - Communication: 500 m (1,640 ft)
- Transmitting time (full charge): 8 to 10 hours
- Recharge time (full charge): 2 hours
- Battery: Nickel-metal hydride (NiMH) battery pack

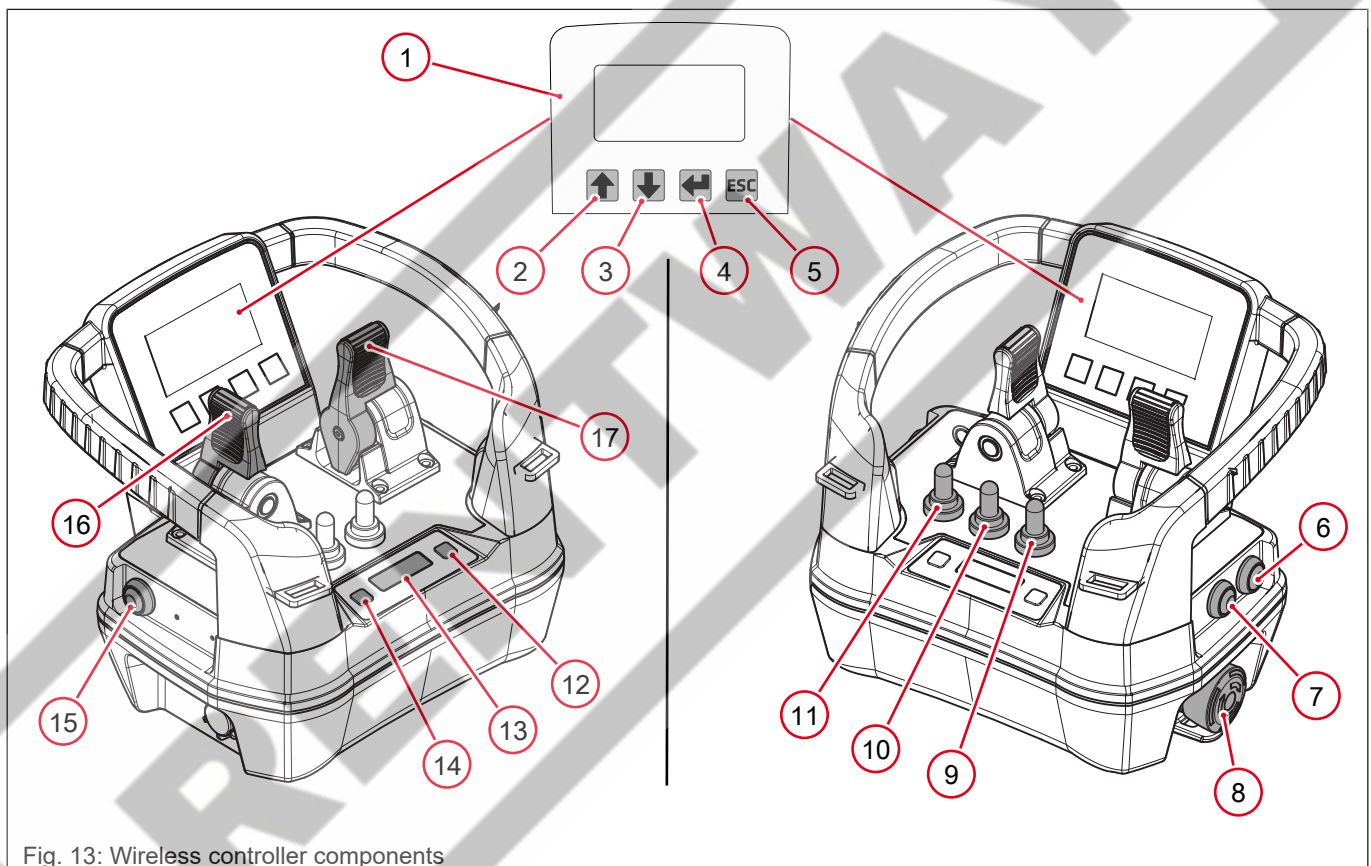


Fig. 13: Wireless controller components

Ref	Component	Description
1	Monochrome display	This provides detailed information about the operating status of the machine.
2	Next button	This navigates the user to the next display page or subpage.
3	Previous button	This navigates the user to the previous display pages or subpage.
4	Enter/select/confirm button	This takes the user from a page to the subpages. This also confirms entries, such as PINs, into the controller.
5	Escape/back/cancel button	This takes the user back to the main page from any subpage. It also cancels an active selection, such as on one of the settings subpages.
6	Horn button	This sounds the machine's horn.

Ref	Component	Description
7	Steering style button	If equipped, this switches the machine steering style between normal mode and return-to-center mode. In normal mode, the arrows on the display point out, and the machine remains at its current angle while traveling. In return-to-center mode, the arrows on the display point in, and the machine returns to a straight angle while traveling.
8	Emergency stop (E-stop) button	Pressing this removes switched power from the machine in an emergency situation where the machine needs to be stopped immediately. Pressing this also turns off the wireless controller after the engine is stopped under normal operation. Releasing this turns on the wireless controller.
9	Vibration/high travel speed switch	When toggled rearward, this allows the machine to automatically switch to high travel speed depending on joystick position. The machine cannot perform vibration functions with the switch in this position. When toggled forward, this allows vibration. The machine cannot switch to high travel speed with the switch in this position.
10	Vibration intensity switch	When toggled rearward, the vibration intensity is low. When toggled forward, the vibration intensity is high. With vibration engaged, there is a delay when switching between intensities.
11	Engine throttle switch	When toggled rearward, the engine remains in low idle. When toggled forward, the engine automatically throttles up when the operator engages high travel speed or vibration.
12	Confirm button	This confirms the selection on the information center.
13	Information center	This is a small display that gives the operator essential information about the wireless controller's operating status. It shows the following: • Wireless controller switched on • Battery level • Pairing options • Radio signal strength • Error codes • Self-test mode
14	Next button	This scrolls through the screens on the information center.
15	Engine start/stop button	Pressing this turns on the wireless controller only if the controller was not turned off using the E-stop button. Holding this for 1/2 second starts the engine. An override prevents the engine from cranking if it is already running. When the engine is running, holding this for 1 second stops the engine. Under hard-to-start conditions such as cold weather, the operator can continuously hold this button to crank the engine for up to 15 seconds.

Ref	Component	Description
16	Steering (left/right) joystick	This controls left/right motion.
17	Drive (forward/reverse) joystick	This controls forward/reverse travel. From 0 to 95 percent of joystick travel, the machine moves in low travel speed. This speed is proportional to the joystick position, meaning the machine travels slower at 25 percent of joystick movement versus 75 percent. From 96 to 100 percent of joystick travel, the machine moves in high travel speed. The machine only switches to high travel speed if vibration is off and the throttle is set to automatic.

6.4 Using the Wireless Controller

On the rear of the wireless controller is the infrared (IR) transmitter (1). It is important that this is always pointed at one of the machine's receiving eyes (2). The manufacturer recommends that instead of putting the wireless controller strap only around your neck, put the strap around your neck and put one arm through it. This has been noted to hold the IR transmitter more in line with the machine and to be more comfortable.

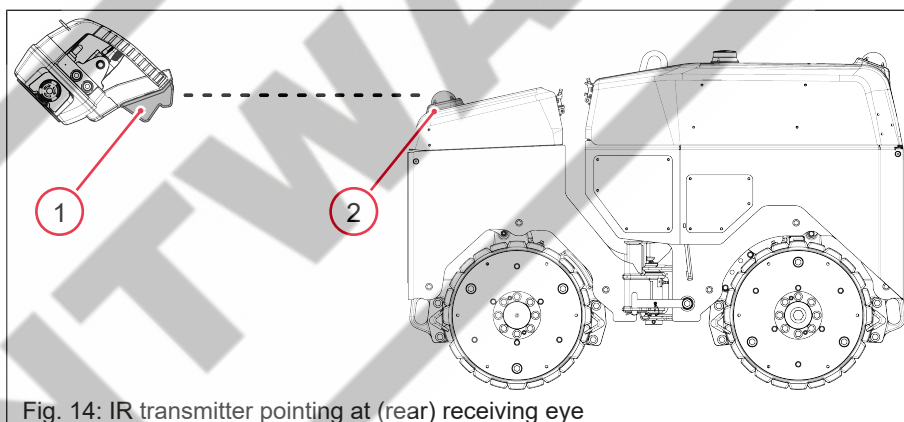


Fig. 14: IR transmitter pointing at (rear) receiving eye

6.5 Starting and Stopping the Wireless Controller



Fig. 15: Boot page

Starting

1. Turn the emergency stop (E-stop) button clockwise to release it. The button pops out when it releases, and the boot page appears on the display for about 3 seconds before transitioning to the home page.
Note: If the E-stop button is already released, press the engine start/stop button to turn on the wireless controller.
2. To start the machine, [see Starting, Operating, and Shutting Down the Machine on page 55](#).

Stopping

1. If the machine is running, press and hold the engine start/stop button to turn off the machine.
2. Press the E-stop button to turn off the wireless controller.

The wireless controller shuts off automatically if one of the following is detected:

- Battery voltage is too low
- Five minutes of idle time if the machine shuts down due to inactivity
- Ten minutes of idle time if the connection between the controller and machine is lost

6.6 Display Pages



NOTICE

Starting the machine immediately after tipping it up after a rollover can cause machine damage.

- ▶ Deactivating the rollover PIN also deactivates the rollover starter lock-out. When resetting the rollover PIN, do not leave it set at 000000.
- ▶ To avoid inadvertent starting and engine damage after a rollover, always operate the machine with a rollover PIN set.

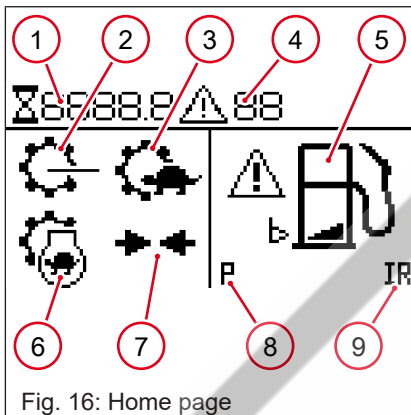


Fig. 16: Home page

Home page

The home page appears after the boot page. Information shown is as follows:

- Machine hours (1)
- Vibration intensity (off/auto vibration/low/high) (2)
- Travel speed (low/auto high/high) (3)
- Active faults (4)
- Indications and warnings (5) (low fuel alert shown)
- Engine speed (slow/auto fast/fast) (6)
- Steering style (optional) (7)
- Parking brake status (8)
- Infrared signal status (9)

The following table explains the possible home page icons and their respective meanings. The position numbers correspond to the callouts from the previous graphic.

Icon	Name	Description
Position 1—Machine hours		
This shows the total hours on the machine.		
Position 2—Vibration intensity		
	Off	Vibration is off.
	Low	Vibration is operating at low intensity.
	High	Vibration is operating at high intensity.
	Auto	Vibration is on but not currently active. Vibration turns on automatically when the machine starts moving.
Position 3—Travel speed		

Icon	Name	Description
	Low	The machine travels at low speed only.
	Auto	The machine is in low travel speed. The speed automatically changes from low to high if the operator moves the drive joystick forward to at least 95 percent and vibration is off.
		The machine is in high travel speed. The speed automatically changes from high to low if the operator moves the drive joystick below 95 percent or turns on vibration.
Position 4—Active faults		
This shows the number of active faults.		
Position 5—Indications and warnings		
	Air filter restriction	There is a restriction somewhere in the air filter.
	Battery presence	There is no wireless controller battery in the charger.
	Cold weather restriction	Below 0°C (32°F), this icon is displayed. The engine is limited to low idle, low travel speed, and no vibration until the hydraulic fluid has warmed up sufficiently.
	Engine crank	The engine is attempting to start.
	Engine stopped	This appears when the engine stops. This can be voluntary (pressing the engine stop button) or involuntary (after a rollover or malfunction).
	Glow plugs	The glow plugs are active.
	High coolant temperature	The engine coolant temperature is too high.
	High hydraulic temperature	The hydraulic oil temperature is too high.
	Hydraulic filter restriction	There is a restriction somewhere in the hydraulic filter.
	Joysticks not in neutral	One or both of the joysticks are not in the neutral position.
	Low fuel	The machine is low on fuel.
	Low hydraulic oil	The machine is low on hydraulic oil.
	Low oil pressure	The engine oil pressure is too low.
	Operating range	The operator is either too close or too far away from the machine.
	Overcrank	The starter has exceeded its maximum crank time, or the engine has otherwise failed to start.

Icon	Name	Description
	Parking brake fault	The parking brake is not operating correctly.
	Push start button	Push the engine start/stop button to start the machine.
	Start locked	The operator cannot start the engine without entering the PIN.
	12V power low	The machine battery's voltage is low.
	Malfunction indicator lamp	This is a general indicator that there are one or more active faults. Any system icons related to the fault blink when this icon is displayed.
	Active moving fault	The machine cannot drive or steer due to a fault.
	High engine speed restricted	The engine is restricted from going into high speed.
	Machine angle warning	The machine is nearing the angle at which it shuts down due to a rollover condition.
	Machine angle shutdown	The machine shut down due to a rollover condition.
	Machine angle lock	The machine is locked due to a rollover condition.
	Wireless controller lock	The wireless controller is locked due to being rotated too far from its normal orientation.
	IR signal lost	The operator cannot drive or steer the machine because the IR signal has been lost. The controller stops displaying this icon, and driving and steering functions are restored, as soon as the machine sees an IR signal.
	IR icons	Typically along with other messages, these denote which IR eye the controller is referencing—front (top) or rear (bottom).
	Maintenance reminder	This flashes if the depicted maintenance interval (250 hours here) is past due.
Position 6—Engine speed		
	Slow	The engine runs at low idle.
	Auto	The engine automatically switches between low and high idle depending on whether vibration is on or off. It is currently in low idle.
		The engine automatically switches between low and high idle depending on whether vibration is on or off. It is currently in high idle.
Position 7—Steering style		
	Return to center	The machine automatically straightens itself to continue on a straight path.
	Standard	The machine remains at the turning angle it was at when the operator let go of the joystick.
Position 8—Parking brake status		

Icon	Name	Description
P	Engaged	The parking brake is engaged.
-	Disengaged	The parking brake is disengaged under normal operation.
X	Disengaged manually	The operator has disengaged the parking brake manually with the override option.
Position 9—Infrared signal strength and status		
IR	Infrared signal seen	The machines sees an infrared signal.
—	Infrared signal not seen	The machines does not see an infrared signal.

Faults

If a machine function is disabled due to a fault, the respective icon flashes. For example, if the wireless controller is rotated beyond its functional limit, drive functionality is disabled. This causes the travel speed icon to blink. This applies to vibration intensity, travel speed, engine speed, and steering style.

Pages and subpages

The following graphic shows the flow of pages and subpages for the display. From left to right, at the top, are the following pages:

- Home
- Machine parameters
- Active fault codes
- Maintenance
- Settings
- PIN entry

When navigating the screens, remember that the button with the up arrow is the next button, and the button with the down arrow is the previous button. Press enter to go into the subpages, and then press next (↑) to navigate down through the subpages. Press previous (↓) to navigate up through the subpages.

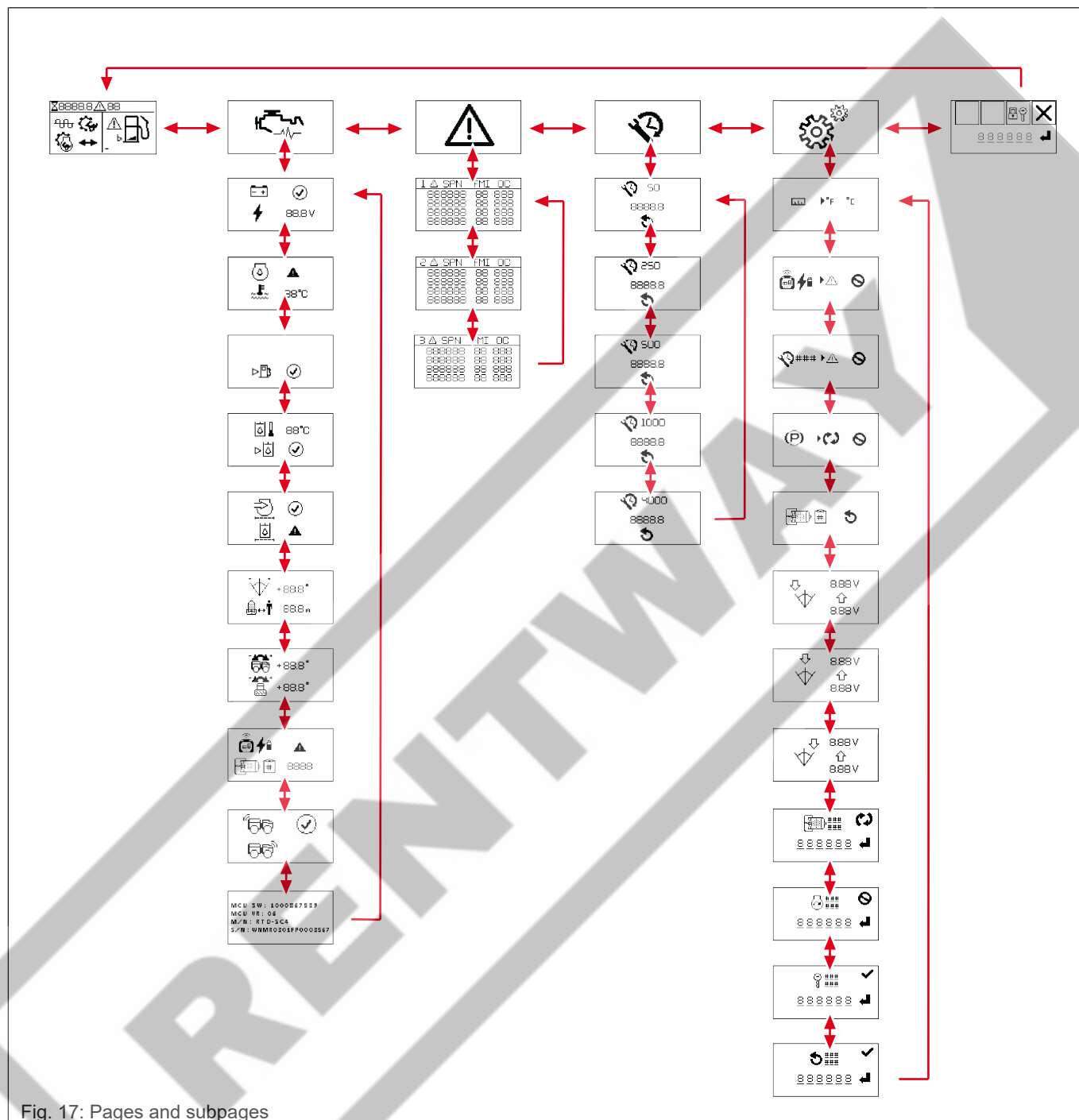


Fig. 17: Pages and subpages

Machine parameter subpages

Press enter on the machine parameter page to enter the machine parameter subpages. For most of the machine parameters subpages, the icons on the left denote the parameter. The icons on the right display the current value. Binary statuses (such as on/off or good/bad) are represented with an icon. The machine parameter subpages are as follows:

- Alternator charging and machine battery voltage
- Oil pressure and coolant temperature

- Low fuel
- Hydraulic oil temperature and level
- Engine air filter restriction switch and hydraulic oil filter switch
- Machine angle sensor and operating distance from the wireless controller to the transceiver
- Machine pitch and roll
- Wireless controller battery status and tip over count
- Infrared eye status
 - Checkmark indicates valid IR signal
 - No icon indicates no valid IR signal
 - Safety triangle indicates eye has active DTC
- MCU software version, machine model, and serial number

1	△	SPN	FMI	OC
888888		88	888	
888888		88	888	
888888		88	888	
888888		88	888	

Fig. 18: Active faults subpage

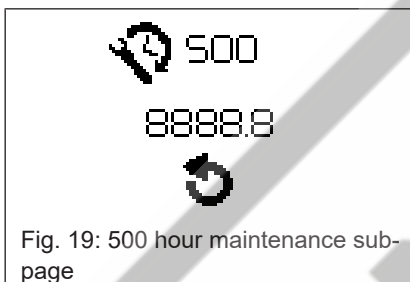


Fig. 19: 500 hour maintenance subpage

Active fault codes subpages

Press enter on the active faults page to enter the active faults subpages. Up to three subpages are displayed, depending on the number of active faults. Each subpage displays a suspect parameter number (SPN), fault mode indicator (FMI), and an occurrence count (OC).

Maintenance subpages

Press enter on the maintenance page to enter the maintenance subpages.

All maintenance subpages perform the same function in that they count down from a specified number of hours to alert the operator that service is due. After reaching 0, the numbers then go negative to show how far the machine is past the maintenance interval. The hour intervals are:

- 50
- 250
- 500
- 1,000
- 4,000

On any of these subpages, press the enter button to make the reset icon flash. Press enter again to reset the timer. Press cancel to exit and leave the timer as is.

Settings subpages

Press enter on the settings page to enter the settings subpages.

Change the temperature units between Fahrenheit and Celsius on the temperature units subpage.

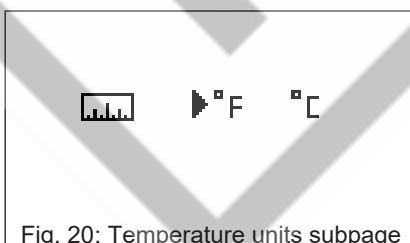


Fig. 20: Temperature units subpage

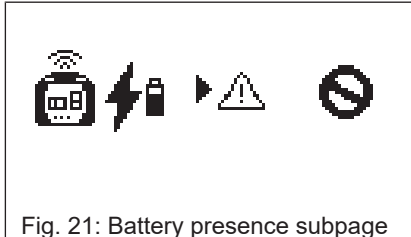


Fig. 21: Battery presence subpage

Use this screen to toggle notifications for battery presence warnings. Press enter to make the arrow flash, and press next or previous to toggle back and forth. Press enter again to confirm the selection. Press escape to maintain the current selection.

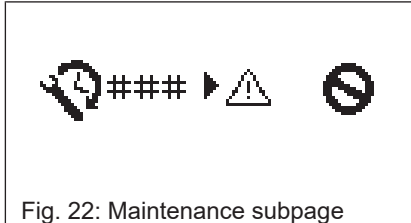


Fig. 22: Maintenance subpage

Use this screen to toggle notifications for maintenance alarm warnings. Press enter to make the arrow flash, and press next or previous to toggle back and forth. Press enter again to confirm the selection. Press escape to maintain the current selection.



Fig. 23: Parking brake override subpage

Use this screen to toggle the parking brake override function. Press enter to make the arrow flash, and press next or previous to toggle back and forth. Press enter again to confirm the selection. Press escape to maintain the current selection.

The icon on the left denotes normal operation, meaning the parking brake engages and disengages automatically. The icon on the right denotes the parking brake is disabled (overridden).

Note: The engine needs to be running to disengage the parking brake.

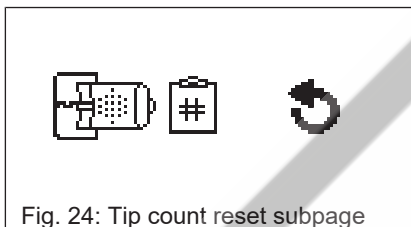


Fig. 24: Tip count reset subpage

Use this screen to reset the tip count. Press enter to make the reset button flash. Press enter again to confirm. Press escape to exit the reset mode and leave the current value as is. This feature is available as long as the machine is not locked due to being tipped over.

Note: If the owner's PIN is set and locked, the tip count cannot be reset. Enter the owner's PIN first.

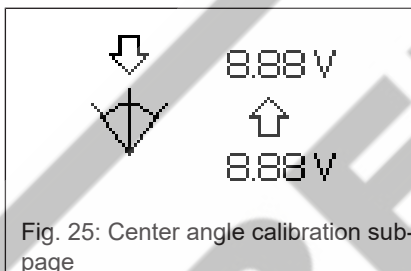


Fig. 25: Center angle calibration subpage

On each angle calibration subpage, the current stored value for the voltage read by the wireless controller from the angle sensor is displayed on top. There are three angle sensors, as follows:

Angle Sensor	Description
Left	Reads the angle at the machine's farthest left articulation
Center	Reads the angle sensor at the machine's centered position
Right	Reads the angle at the machine's farthest right articulation

On the bottom of each subpage is the present value of the angle sensor. If this is locked, the current value is shown in both the top and bottom positions. To unlock and edit this value, perform the following:

- Press and hold the steering style button for 10 seconds. The current (top) value shows the actual value, and editing is enabled.
- Articulate the machine to the appropriate position (left/center/right) to set that position as the new value.
- Press cancel to abort this action and maintain the present value.

Adjustments will not take effect until the user cycles power on the machine.

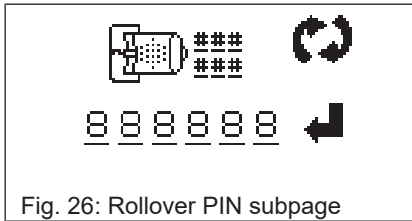


Fig. 26: Rollover PIN subpage

Use this screen to change or reset the rollover PIN. Press enter. Each digit flashes one at a time. Use the next or previous buttons to change the digit. Press enter to select a digit and move to the next one. Press escape to go back to the previous digit. Press enter when done to confirm the PIN.

Notes:

- Enter “000000” to deactivate the PIN. This also deactivates the rollover starter lockout. Always operate the machine with a rollover PIN set to enable rollover starter lockout protection.
- If the owner’s PIN is set, the operator cannot change this PIN until the owner’s PIN is entered.
- The icon at the top right indicates if editing is unlocked (↺), locked (⊘), or if the change is confirmed (✓).
- It may take the system a few minutes to save the new value. To save the value immediately, follow the procedure to turn off the wireless controller. For further information, see [Starting and Stopping the Wireless Controller on page 39](#).

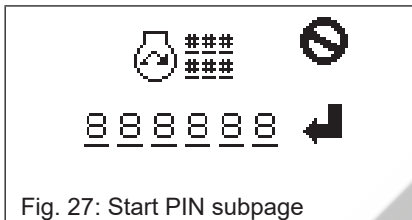


Fig. 27: Start PIN subpage

Use this screen to change or reset the start PIN. Press enter. Each digit flashes one at a time. Use the next or previous buttons to change the digit. Press enter to select a digit and move to the next one. Press escape to go back to the previous digit. Press enter when done to confirm the PIN.

Notes:

- Enter “000000” to deactivate the PIN.
- If the owner’s PIN is set, the operator cannot change this PIN until the owner’s PIN is entered.
- The icon at the top right indicates if editing is unlocked (↺), locked (⊘), or if the change is confirmed (✓).

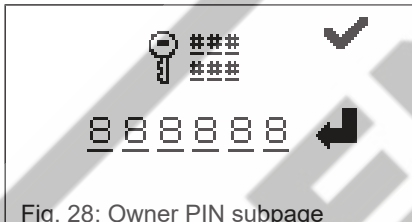


Fig. 28: Owner PIN subpage

Use this screen to change or reset the owner’s PIN. Press enter. Each digit flashes one at a time. Use the next or previous buttons to change the digit. Press enter to select a digit and move to the next one. Press escape to go back to the previous digit. Press enter when done to confirm the PIN.

Notes:

- Enter “000000” to deactivate the PIN.
- If the owner’s PIN is set, the operator cannot change this PIN until the owner’s PIN is entered.
- The icon at the top right indicates if editing is unlocked (↺), locked (⊘), or if the change is confirmed (✓).

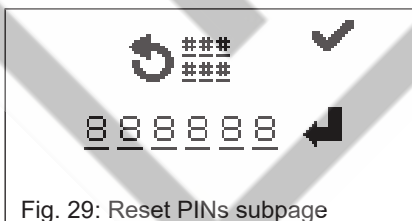
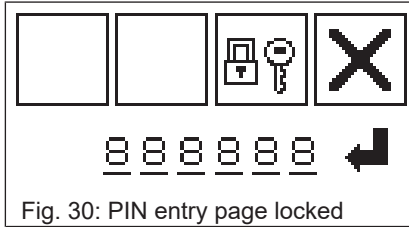


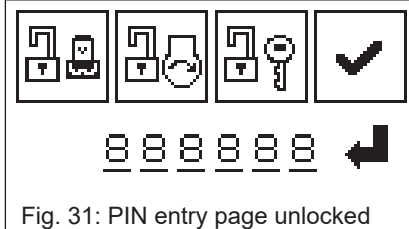
Fig. 29: Reset PINs subpage

Use this screen to reset all PINs. Contact Wacker Neuson Service to obtain the master PIN. Press enter. Each digit flashes one at a time. Use the next or previous buttons to change the digit. Press enter to select a digit and move to the next one. Press escape to go back to the previous digit. Press enter when done to confirm the PIN.



PIN entry page

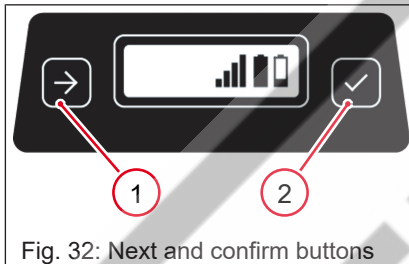
Use this screen to enter PINs. Press enter. Each digit flashes one at a time. Use the next or previous buttons to change the digit. Press enter to select a digit and move to the next one. Press escape to go back to the previous digit. Press enter when done to confirm the PIN. When a PIN is not configured for a given function, the space for that function is blank.



The graphic to the left shows examples of all icons from left to right, as follows:

- Rollover lockout status: This icon is either upright and unlocked, or tipped and locked. Entering the valid PIN moves it from tipped to unlocked.
- Starter interlock status: The starter icon changes from locked to unlocked, and indicates if the engine start command is ignored or respected.
- Status of the owner lock/unlock: The owner icon indicates whether or not the owner's PIN has been entered, which unlocks changing of the PINs in the respective screens.
- Feedback on the entered PIN: This shows for 3 to 5 seconds when a PIN is entered. It shows whether the PIN is valid (✓) (seen at the left) or not valid (X) (shown in the first PIN entry graphic).

6.7 Pairing the Wireless Controller



Note: A special pairing magnet is needed to pair the wireless controller with the machine. This magnet is located in the operator's manual holder under the front hood.

The operator needs to pair the wireless controller with the machine every time it is started. If it is properly paired, there are signal bars shown in the LCD display, and there is a green flashing light on the transceiver.

Perform the following to pair the wireless controller with the machine:

1. Simultaneously press and release the next (1) and confirm (2) buttons.
2. Navigate to option 2 (2. ) and press the confirm button.
Note: The option to cancel pairing (× ) is available on this screen. To cancel the pairing process, press the next button. Otherwise, continue with the following steps to complete the pairing process.
3. Press and hold the next and confirm buttons for 3 seconds. The wireless controller searches for transceivers ().

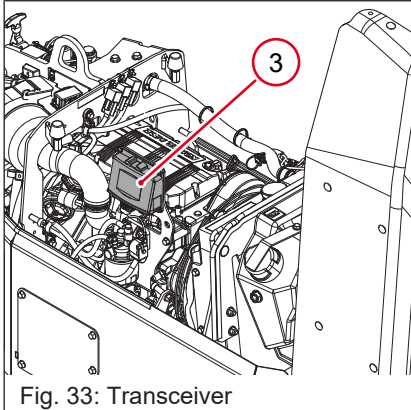


Fig. 33: Transceiver

4. Start the pairing mode on the transceiver (3) by switching the battery disconnect to OFF. This turns off the transceiver.
5. Switch the battery disconnect to ON to turn on the transceiver.
6. Within 5 seconds after turning the transceiver on, place the pairing magnet on the magnet symbol () on the bottom of the transceiver.
Notes:
 - ⇒ The LED on the transceiver flashes orange with fast pulses, indicating that pairing is pending.
 - ⇒ If the pairing magnet that came with the system is not available, you can use any magnet with a force greater than 1 kg.
7. Immediately remove the magnet after the LED starts flashing. The transceiver's serial number (~ ^{SN} 24678943 ~) shows on the information center.
8. Make sure the serial number (found on the product label) matches the intended transceiver's serial number.
9. If the serial numbers do not match, find the transceiver with the non-matching serial number, switch it off, and follow these steps:
 - ⇒ Switch off the wireless controller and switch it on again.
 - ⇒ Restart the pairing process.
10. If the serial numbers match, press the confirm button.
 - ⇒ The pairing confirmation symbol () shows for 2 seconds.
 - ⇒ The off symbol shows.
11. Turn off the wireless controller and the transceiver.
12. Turn on the transceiver and the wireless controller.

6.8 Function of the Compatec Compaction System (if equipped)

The function of the Compatec compaction system is to indicate:

- Compaction progress
- When the machine has achieved the maximum soil density it can achieve
- If the machine is operating on too hard of a substrate and runs the risk of being damaged

The Compatec compaction system is suitable for all mixed (well-graded) soils.

Note: The Compatec compaction system only serves to assist in soil compaction and does not replace professional measurement of soil density.

System components

The major Compatec system components are as follows:

- **Sensor:** The sensor **(1)** is mounted on the rear drum support. It signals to the processing module the level of soil compaction.
- **Processing module:** The processing module **(2)** is mounted in the rear half of the machine, under the battery charger bracket. It receives signals from the sensor. It processes the signals and communicates with the LED display unit.
- **LED display unit:** The LED display unit **(3)** is mounted on the hood. The LED display unit consists of eight LEDs **(4)**. The LEDs illuminate to communicate the information received from the processing module.

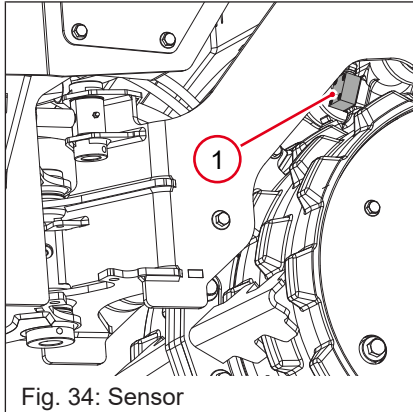


Fig. 34: Sensor

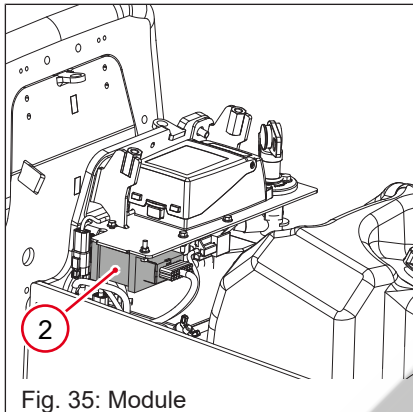


Fig. 35: Module

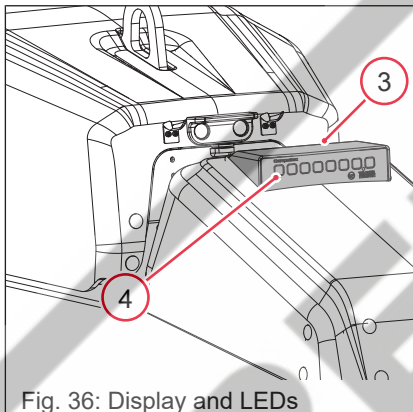


Fig. 36: Display and LEDs

LED operation

The number of LEDs illuminated is proportional to the density of the soil, the more illuminated LEDs, the greater the density of the soil.

When the number of illuminated LEDs stops increasing, no more compaction is obtainable. The maximum number of illuminated LEDs varies greatly depending on the type of soil being compacted. For example, a soft clay material may only reach a maximum of three lit LEDs.

When all LEDs flash rapidly, there is a hazard of over compaction or the machine is on a substrate that is too hard.

Note: Non-compactable material or flaws in the substrate are detectable by the system if they are more than one meter in length. With sudden changes from high to low compacted soil (or vice versa), there is a slow rise or fall in the LEDs.

Testing

Test the Compatec compaction system upon machine startup.

1. Start the wireless controller. For further information, [see Starting and Stopping the Wireless Controller on page 39.](#)

2. Observe the LED display. During the first few seconds after starting the controller, the eight LEDs illuminate from left to right.
 - ⇒ If all LEDs illuminate, the system is fault free and the LEDs switch off in succession. Then, all eight LEDs flash briefly with reduced brightness.
 - ⇒ If all LEDs illuminate and remain illuminated after initialization, the sensor is not functioning properly.

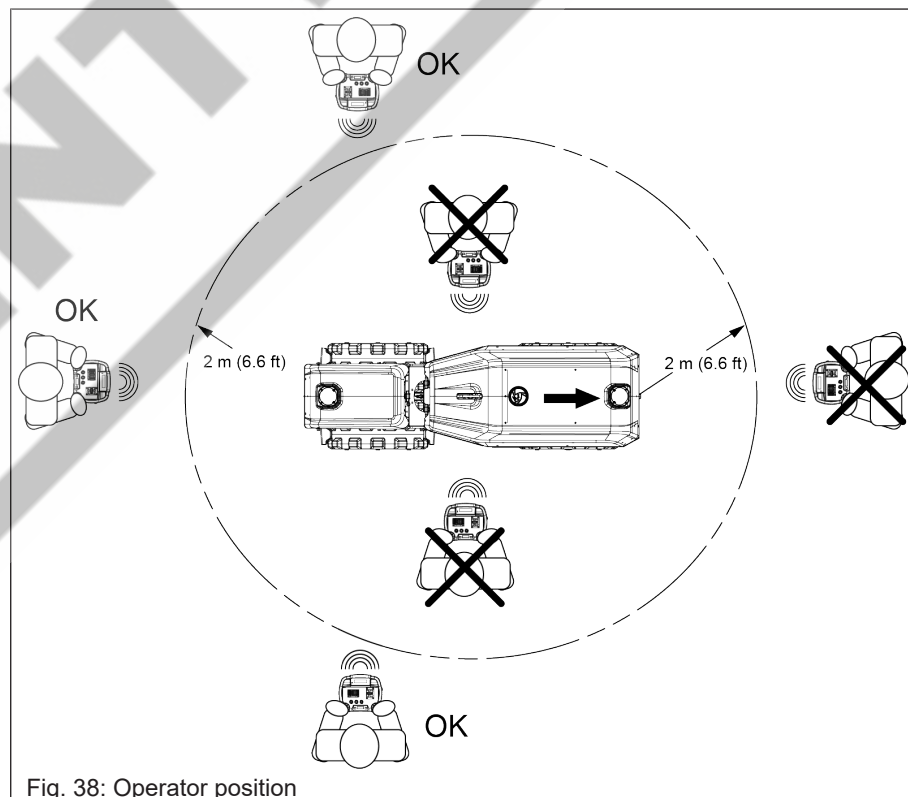
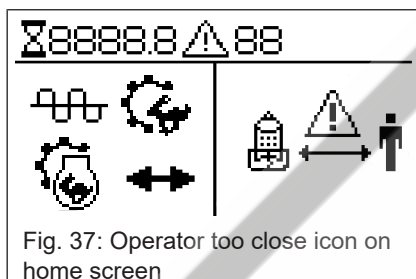
6.9 Position of the Operator

Although the transceiver on the machine can receive signals from any direction, the switches on the wireless controller are positioned so that they correspond to the movements of the machine with the operator standing behind it.

As the operator changes positions in the work area, it is important that he or she understands the changes that occur in the control of the machine. If the operator stands in front of the machine, it responds in a direction opposite in relation to the operator. That is, pushing forward causes the machine to move toward the operator; pushing left results in the machine turning to the operator's right. Operating the machine while standing in the direction of travel is not recommended.

If the operator is standing too close to the machine, the wireless controller does not respond to most input until the operator moves a safe distance away.

See the following graphic for acceptable operator positions.



6.10 Range Limits



⚠ WARNING

Injury hazard

Personnel may be injured if they are within 2 m (6.6 ft) of the machine while it is in operation.

- ▶ When operating the machine, always maintain a distance of at least 2 m (6.6 ft).
- ▶ Do not let others within 2 m (6.6 ft) of the machine.
- ▶ Stop the machine immediately if someone enters the work area of the machine.

The wireless controller signal remains in contact with the machine at distances up to 20 m (65 ft). Between 20 m (65 ft) and 30 m (98 ft), the machine reacts as if the joysticks are in neutral. Navigate to the machine angle sensor and operating distance subpage under the machine parameters page to view the distance from the machine. On the same subpage, an icon pops up to show a disconnected signal if the machine moves too far away from the operator or if the signal is severely obstructed. For further information on pages and subpages, [see Display Pages on page 40](#).

As the distance between the wireless controller and machine increases, the intensity of the signal diminishes. If the machine moves out of range, it immediately stops moving. Vibration stops after 20 seconds. There is an indication on the wireless controller that the machine is out of range. This indication is the same as if the operator is too close. For further information, [see Position of the Operator on page 51](#). The operator must then move closer to the machine to reestablish contact. If contact is not made within 1 minute, the engine shuts off.

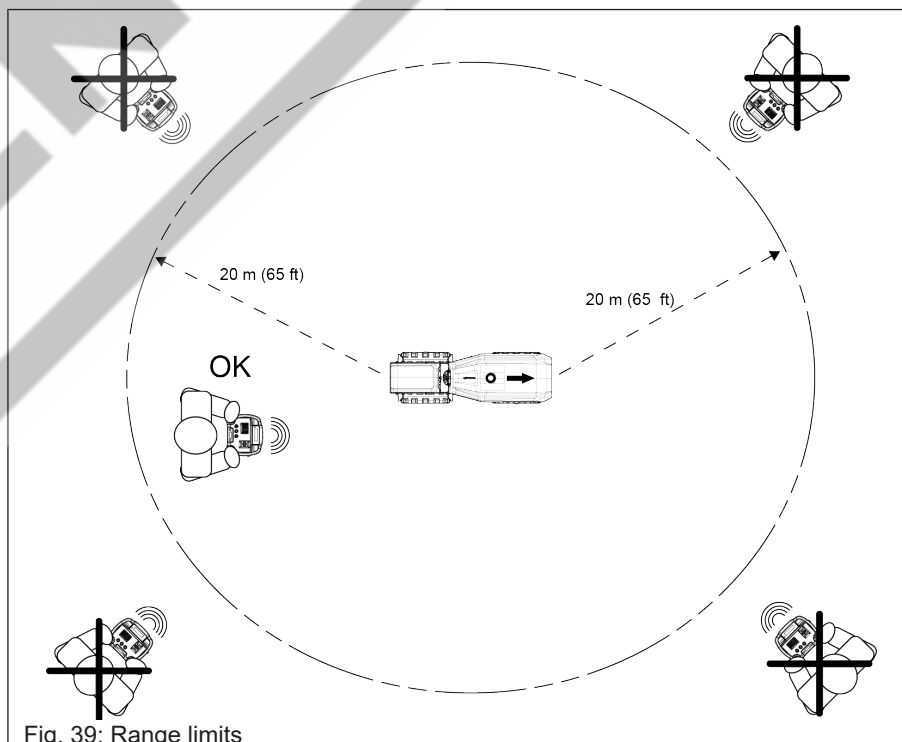
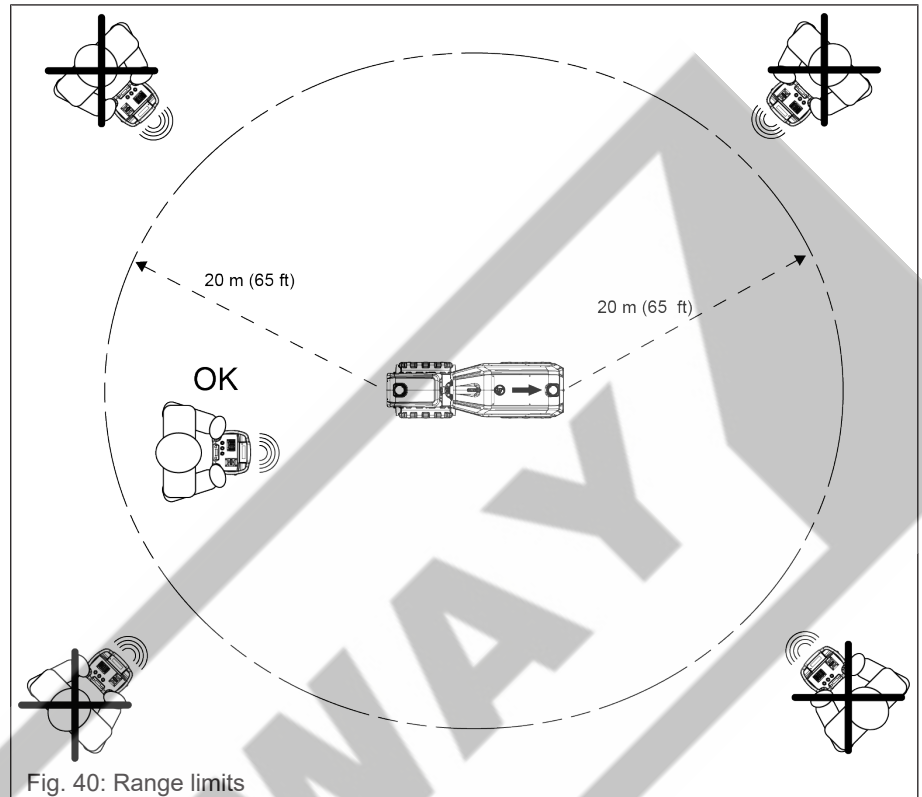


Fig. 39: Range limits



The radio signal strength is indicated on the information center with radio signal bars. The different radio signal states are indicated, also, as seen below:

Radio Signal States	Symbol
No radio link	
Radio signal strength 1 to 25 percent	
Radio signal strength 26 to 50 percent	
Radio signal strength 51 to 75 percent	
Radio signal strength 76 to 100 percent	
Radio standby	

Note: The standby symbol indicates something is preventing the wireless controller from operating. Make sure joysticks, levers, and switches are in the zero position during wireless controller startup and the engine start/stop button is not activated.

6.11 Communication Faults

Description

The machine has built-in diagnostics that continuously check for a faulty signal. If a faulty signal is detected, the machine stops moving and shuts down.

Fault correction

One common communication fault involves no connection with the machine. If the operator turns on the wireless controller but does not turn on the machine (by rotating the battery disconnect switch to the ON position), the controller shows COMMUNICATION ERROR. To remedy this, simply turn on the machine, or pair the controller with a different machine.

Other communication faults are rare, and they vary in frequency and duration. When a normal signal is restored, the user can restart the machine.

If communication faults occur regularly, there may be faulty or damaged components. Replace components as needed.

For a list of error codes and their meanings, see [Wireless Controller Error Codes on page 106](#).

6.12 Preliminary Checks



⚠ WARNING

Injury hazard

When the beacon on the hood of the machine is rotating, the machine is capable of receiving a signal from the wireless controller that could cause the machine to start or move. This can potentially cause injury to the operator and any bystanders.

- ▶ All personnel should maintain a distance of 2 m (6 ft) from the machine whenever the beacon is rotating.



NOTICE

Contaminated oil can cause machine damage.

- ▶ When topping off the lubricating and hydraulic oil levels, use clean containers, funnels, etc., to avoid contamination.

Requirement

Machine on level surface

Overview

All items listed below must be performed on a daily basis before starting and operating the machine.

Before starting

Perform all daily maintenance tasks. For further information, refer to the Periodic Maintenance Schedule topic in the Maintenance chapter of this manual.

Perform the following:

- Check the fuel level.
- Check the condition of oil cooler and radiator cooling fins.
- Clean the scraper bars.
- Clean the wireless controller.
- Clean the receiver eyes.
- Make sure the articulation joint locking bar is in the storage position.
- Turn the battery disconnect switch to the ON position and make sure the beacon rotates.
- Make sure the wireless controller and transceiver are paired. There should be signal bars on the wireless controller and a green flashing light on the transceiver. For further information on pairing the components, see [Pairing the Wireless Controller on page 48](#).
- Check the work area for obstructions. Remove all obstructions.

After starting but before operating

- Check the machine for fluid leaks.
- Allow the engine to warm up according to the following schedule:

Ambient Temperature	Time (Minutes)
Above 0°C (32°F)	5
Below 0°C (32°F)	15 ¹⁾

1) More time may be required if hydraulic controls are sluggish

Note: Below 0°C (32°F), the machine is limited to low idle, low travel speed, and no vibration. A snowflake icon appears on the display until the hydraulic fluid has warmed up enough for full machine use.

6.13 Operating in Extreme Temperatures

Do not operate the machine in temperatures below -30°C (-22°F) or above 50°C (122°F). Damage to electronics and other systems may occur.

6.14 Starting, Operating, and Shutting Down the Machine



⚠ WARNING

Explosion hazard

Evaporative starting fluids can cause unexpected explosions.

- Do not use evaporative starting fluids, such as ether, on this engine.



⚠ WARNING

Injury hazard

Personnel may be injured if they are within 2 m (6.6 ft) of the machine while it is in operation.

- ▶ When operating the machine, always maintain a distance of at least 2 m (6.6 ft).
- ▶ Do not let others within 2 m (6.6 ft) of the machine.
- ▶ Stop the machine immediately if someone enters the work area of the machine.



⚠ WARNING

Injury, damage, and accident hazard

Due to the nature of the connectivity between the machine and the wireless controller, it is possible to operate the machine while simultaneously not being able to see it. The machine can inadvertently run into or over bystanders or other equipment.

- ▶ Maintain line of sight with the machine at all times while operating.

Requirements

Machine is in operable condition and has been properly maintained

Starting the machine

To review the controls before starting, [see Wireless Controller Description on page 37](#).

1. Open the rear hood.
2. Turn the battery disconnect switch to the ON position, and make sure the beacon rotates.
3. Remove the wireless controller, and close and latch the hood.
4. Turn the emergency stop (E-stop) button clockwise to release the button and turn on the controller.
Note: If the E-stop is already released, press the engine start/stop button to turn on the controller.
5. Check the radio signal bars to make sure there is a connection between the controller and the transceiver.
6. Make sure there is no one within 2 m (6 ft) of the machine.
7. Press and hold the engine start/stop button for ½ second to start the engine.
⇒ Under hard-to-start conditions such as cold weather, the operator can continuously hold this button to crank the engine for up to 15 seconds. If the operator lets go in between the 1/2 second and the 15 seconds, the machine follows the normal starting procedure as if the button was only pressed for 1/2 second.

Operating the machine

- Always wear the neck strap provided by the manufacturer while operating the machine.
- When standing behind the machine, push forward on the drive joystick to move the machine away from the operator, push left on the steering joystick to turn the machine left, etc. It is not recommended that the operator stand to the front of the machine while operating. For further information, [see Position of the Operator on page 51](#).

The wireless controller maintains power, but the machine overrides control if the controller experiences one of the following:

- A hard impact
- Rotation of about 45 degrees or more either front to back or left to right

In these instances, machine operations stop, but the engine continues to run. An icon () appears telling the operator the wireless controller is locked. Reset the controller by returning it to an upright position. Another icon () may also appear. This icon tells the operator to return the joysticks to neutral.

Shutting down the machine

Note: If the wireless controller is within range (30 m (98 ft)) of the machine, the machine shuts off after 5 minutes with no input from the operator. If the wireless controller is out of range, the machine shuts down after 1 minute.

1. Toggle the vibration/high travel speed switch rearward.
2. Place the throttle switch in the low (turtle) position.
3. Press and hold the engine start/stop button for at least 3 seconds to shut down the machine.

6.15 Engine Speeds

With the engine throttle switch toggled rearward (low idle), the engine is held in low idle. The operator cannot turn on vibration with the engine throttle switch in this position.

With the engine throttle switch toggled forward (auto idle), engine RPMs increase automatically when vibration is turned on or when the operator moves the drive joystick forward or backward. For further information, [see Travel Speeds on page 57](#).

Also in auto idle, the engine throttles down when there is no travel input from the operator, as follows:

- If vibration is off, the engine throttles down after 5 seconds.
- If vibration is on, the engine throttles down after 20 seconds. Vibration also turns off at this time.

6.16 Travel Speeds

The machine has two travel speeds that are automatically selected based on operator input. The machine selects the travel speed according to the following table:

Speed	Criteria
Low—requires any of the criteria	Engine in low idle
	Vibration is on
	Drive joystick is pressed partially forward or backward
High—requires all of the criteria	Engine in auto idle
	Vibration is off
	Drive joystick is pressed most or all of the way forward or backward

6.17 Parking Brake

The parking brake is located in the rear drum. The brake is connected to the hydraulic system through the brake valve of the control manifold. The brake assembly is a spring-activated, pressure release system.

The parking brake automatically engages and disengages. When the engine is not running or the parking brake valve is closed, a spring automatically engages the parking brake. Once there is input from the operator that requests machine movement, the parking brake disengages by allowing hydraulic oil to flow to the brake.

The parking brake status (1) is shown on the home screen with the following three icons:

- P = Engaged
- — = Disengaged
- X = Disengaged manually (with the override option)

If vibration is off, engine speed is in low idle, and there is no input from the operator for 10 seconds, the parking brake engages.

If vibration is on and there is no input from the operator, engine speed drops to low idle, and vibration stops after 20 seconds. The parking brake engages 10 seconds later as described above.

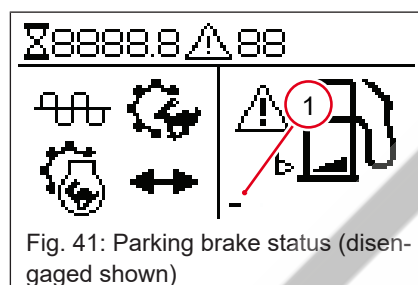


Fig. 41: Parking brake status (disengaged shown)

6.18 Activating the Parking Brake Engage Override Feature

Overview

This allows the operator to manually engage the parking brake to make sure it is functional.

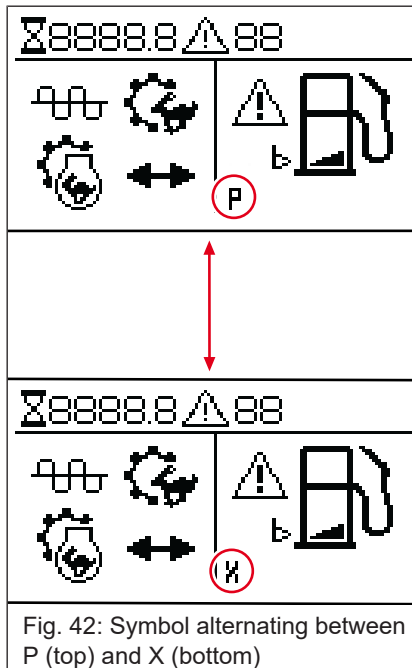


Fig. 42: Symbol alternating between P (top) and X (bottom)

When the parking brake engage override is active, the brake is engaged but drive and steer functionality are also active. The P symbol on the wireless controller display alternates between P and X every 1 second.

Requirements

- Wireless controller and transceiver paired and connected
- Parking brake override mode activated
- Drive joystick in neutral at the start and throughout the 10-second time period
- Steering joystick in neutral at the start and throughout the 10-second time period
- Engine throttle switch in low idle (not auto)

Notes:

- With the engine in low idle, the exciters and two-speed travel are disabled.
- The vibration intensity switch can be in low or high.
- The vibration/high travel speed switch can be in auto or two-speed.

Procedure

1. On the wireless controller, navigate to the parking brake override function subpage under the settings page. For further information, [see Display Pages on page 40](#).
2. Toggle the selection to override the parking brake.
3. Press and hold the horn button for 10 seconds. The horn stops after 500 milliseconds as normal. It beeps for 200 milliseconds at the end of 10 seconds to confirm the parking brake engage override is active.
4. When desired, release the horn button to disengage the override.
5. If desired, return to the parking brake override function subpage and exit the override mode. The override mode resets on its own after power is cycled via the battery disconnect switch.

Note: The following also disengage the override:

- Exiting parking brake engage override mode
- Moving the engine throttle switch from low to auto
- Cycling the wireless controller power
- Cycling the transceiver or machine control unit (MCU) power
- Loss of pairing

6.19 Machine Stability



⚠ WARNING

Crushing hazard

Certain job site conditions or operating practices may adversely affect machine stability.

- Follow the instructions below to reduce the risk of tipping or falling incidents.

Surface conditions

Pay attention to changing surface conditions while operating the machine. Adjust speed and travel direction as necessary to maintain safe operation.

- Machine stability and traction may be severely reduced when operating on uneven or rough terrain, rocky soils, or wet or loosely packed surface material.
- The machine may suddenly tip, sink, or fall when moved onto surfaces that have been newly filled with earth.

Steering angle

An articulated roller is more likely to tip when moving off an elevated surface if the machine is turned away from the edge.

Turn the machine toward the edge when moving off an elevated surface, as shown in the following illustration.

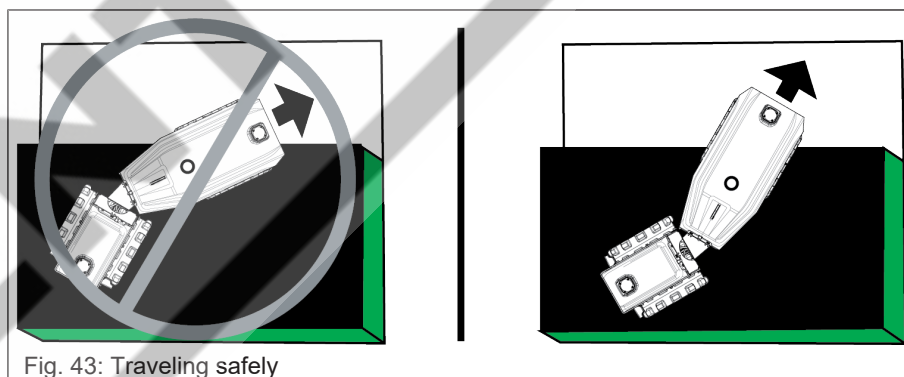


Fig. 43: Traveling safely

Travel speed

Reduce travel speed before turning the machine. A fast moving machine is more likely to tip or fall over while making turns or changing direction.

Drum overhang

The machine can tip suddenly if more than half of the drum width extends beyond the edge of the elevated surface.

- Reduce travel speed and watch the drum position carefully when operating along the edge of an elevated surface.
- Keep as much of the drum on the elevated surface as possible.

Vibrating on a compacted surface

Activating the vibration system on a fully compacted surface may cause the drums to rebound and momentarily lose contact with the ground. If this occurs while the machine is on an incline, the machine may slide.

6.20 Operating on Slopes



⚠ WARNING

Crushing hazard

Do not operate the machine sideways on slopes. The machine may tip or roll over even on stable ground.

- Operate the machine straight up and down on slopes.

Overview

When operating on slopes or hills, special care must be taken to reduce the risk of personal injury or damage to the machine.

Procedure

Operate the machine up and down slopes rather than from side to side. Note the following:

- The maximum recommended operating angles are as follows:

	Pitch (degrees)	Roll (degrees)
Narrow drums (no extensions)	35	30
Narrow drums (with extensions)		35
Wide drums		

- The machine is equipped with safety switches which shut down the engine should the front-to-back (pitch) or side-to-side (roll) angles exceed the following:
 - For pitch, a pre-alarm appears on the display at 40 degrees. An alarm occurs at 50 degrees and shuts down the engine.
 - For roll, a pre-alarm appears on the display at 30 degrees. An alarm occurs at 45 degrees and shuts down the engine.
- These angles decrease significantly when considering other factors, such as traveling (including acceleration, deceleration, and steering), vibration, and loose soil. Avoid travel across slopes unless absolutely necessary.

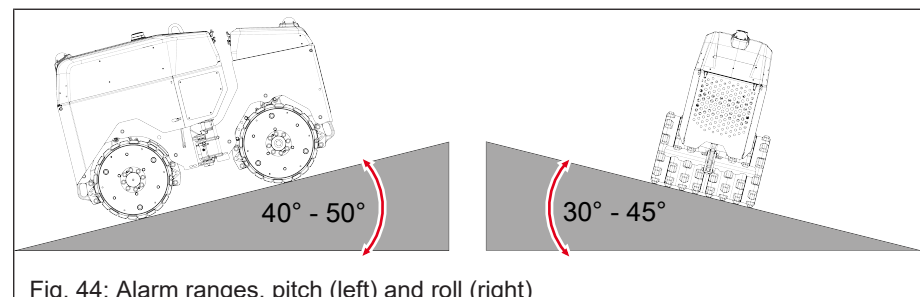


Fig. 44: Alarm ranges, pitch (left) and roll (right)

6.21 Rollovers



NOTICE

After a rollover, engine damage may occur if it is not serviced appropriately before being started.

- ▶ Do NOT start the machine after a rollover.
- ▶ Service the engine to remove any oil that may have been trapped in the combustion chambers.
- ▶ Contact your local dealer for instructions or servicing.

Proper operation of the machine on slopes will prevent rollovers. Read and follow the safety instructions. For further information, [see Operating on Slopes on page 61](#). If a machine rollover does occur, press the emergency stop button immediately. Care must be taken to prevent damage to the engine. If the machine has rolled over, oil from the engine crankcase can flow into the combustion chamber, which can severely damage the engine the next time it is started. If the machine has rolled on its side, immediate steps should be taken to safely position the machine upright.

Inspect the entire machine for damage after a rollover. Some of the most commonly damaged components are as follows:

- Hoods (and beacon)
- Lifting eye
- Chassis
- Hydraulic cooler and radiator
- Hydraulic tank
- Hydraulic manifold
- Fuel tank
- Air filter
- Transceiver

A rollover is indicated on the home page on the wireless controller. An indication of whether the machine is locked out also appears. If the machine is locked out, navigate to the PIN entry page to unlock the machine. For further information, [see Display Pages on page 40](#).

6.22 Refueling the Machine



⚠ WARNING

Fire hazard

Fuel and its vapors are extremely flammable. Burning fuel can cause severe burns.

- ▶ Keep all sources of ignition away from the machine while refueling.
- ▶ Do not refuel if the machine is positioned in a truck fitted with a plastic bed liner. Static electricity can ignite the fuel or fuel vapors.
- ▶ Refuel only when the machine is outdoors.
- ▶ Clean up spilled fuel immediately paying particular attention to rubber and plastic components.

Requirements

- Machine shut down
- Machine and fuel tank level with the ground
- Fresh, clean fuel supply (For the fuel specification, [see Technical Data on page 115.](#))

Procedure

1. Open the rear machine compartment.
2. Remove the fuel cap.
3. Fill the fuel tank up to the base of the neck.
4. Install the fuel cap.

6.23 Emergency Shutdown Procedure

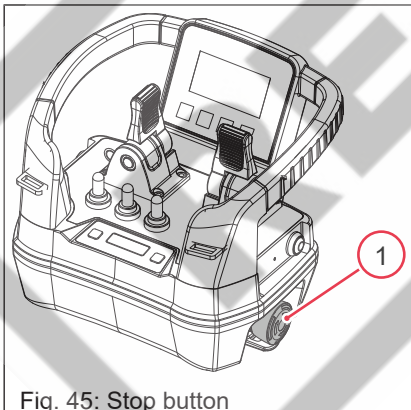


Fig. 45: Stop button

There may be an instance when the operator needs to shut down the machine immediately, such as interference from an uncontrollable outside force, unintended operation, a breakdown, or an accident. If a situation like this occurs while the machine is operating:

1. Press the E-stop button (1) on the side of the wireless controller to stop the engine and close the fuel valve.
2. Return the machine to an upright position if tipped over. Do not try to start the machine in this case. For further information on rollovers, [see Rollovers on page 62.](#)
3. If the machine has tipped over or has been damaged in some way, contact the machine owner for further instructions.

6.24 Nickel-metal Hydride Battery

The battery used to power the wireless controller is a high capacity nickel-metal hydride (NiMH) cell rated at 2,000 mAh and is capable of accepting hundreds of charging cycles. If the machine fails to operate for the full operating period, even after the battery has been fully discharged and recharged, the battery pack may need to be replaced.

Charging characteristics:

- Time to fully charge: 2 hours
- Full-charge operating time: 6 to 23 hours*
- Operating time after 1 hour charge: 10 hours*
- Battery charging temperature range is between 10°C (50°F) and 45°C (113°F)
- 70 percent nominal capacity after 500 charge cycles

* Operating time decreases at severely cold temperatures.

6.25 Replacing the Battery Pack

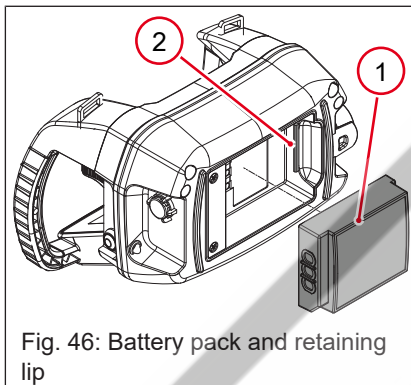


Fig. 46: Battery pack and retaining lip

Switch out the wireless controller battery pack (1) with a fully charged battery pack when it is low on charge. Replace the battery pack once a year or when it no longer holds a full charge.

To switch out the battery pack, grasp the pack and slide it to the left of the wireless controller, making sure the edge of the pack clears the retaining lip (2), and then tilt the pack out. Installation is the reverse of removal.

Notes

- A new battery may not be fully charged. After replacing the battery, charge it for approximately one hour to ensure it is at full capacity.
- In the interests of environmental protection, dispose of used batteries properly. Do not dispose in trash, or incinerate.

6.26 Charging the Battery Pack



NOTICE

The battery charger has the potential to overheat if there are many power cycles when the battery is already fully charged.

- ▶ Turn off the machine and wait for the battery to cool.
- ▶ Do not cycle the battery disconnect switch.

Background

The battery charger is mounted to a bracket inside the machine's rear compartment. The battery pack has enough capacity to provide 10 hours (depending on configuration and number of options) of continuous operation. A second battery is provided with the machine. To avoid uninterrupted productivity during long hours of operation, make sure to keep the second battery on the charger while the first one is being used.

Notes:

- There is no need to run the battery completely down before recharging. The battery can be recharged from any state of discharge with no loss in performance or life.
- The battery charger in the machine has power only when the machine's battery disconnect switch is on.
- A stand-alone charger is available for purchase.

Procedure

To charge the battery:

1. Open the rear hood.
2. Press the button (1) on the battery charger and flip open the cover.
3. Orient the battery to the charger by making sure the battery connection points are down and facing the right side of the machine.
 - ⇒ When correctly oriented, the positive marking (2) should be toward the front of the machine, and the negative marking (3) should be toward the rear of the machine.
4. With the battery correctly oriented, insert the battery directly down into the charger. The status LED flashes green when the battery is charging.

Note: There is not a lip to retain the battery in the charger like there is in the wireless controller.
5. Close the cover.

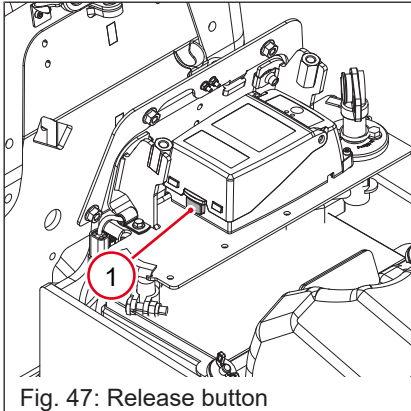


Fig. 47: Release button

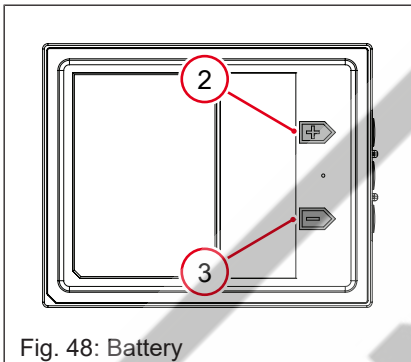


Fig. 48: Battery

Charging time

Approximately two hours is required to bring the wireless controller battery up to full charge. This is the most efficient way to use the battery. The wireless controller will operate with a partially charged battery; however, its operating time will be reduced accordingly.

Charging status

Two LEDs on the battery charger indicate the status of the battery's charge. The power LED is red, and the status LED is green. Refer to the following table:

Power LED	Status LED	Meaning
Red	Off	The charger has power. No battery is present.
Red	Green	The charger has power. The battery is fully charged.

Power LED	Status LED	Meaning
Red	Green flashing	The charger has power. The battery is charging.
Red flashing	Off	There is an error on the battery or charger, or the temperature is out of the charging span.

Battery status indicators

Symbols are visible on the information center that indicate the status of the batteries' charge and condition. Refer to the following table:

Status	Symbol
Battery 0%	
Battery 25%	
Battery 50%	
Battery 75%	
Battery 100%	
Battery faulty	

6.27 Drum Extensions

The overall width of the drums on this machine is 600 mm (23 5/8 in.). By installing drum extensions, the user can increase the overall width of the drums to 820 mm (32 in.) as needed to accommodate specific job requirements.

6.27.1 Installing Drum Extensions



WARNING

Injury and damage hazard

When the machine is placed on jack stands, there is an increased risk of it tipping and causing injury and damage to the machine.

- ▶ Make sure the machine is stabilized before installing or removing drum extensions.
- ▶ Do not allow untrained personnel to install or remove drum extensions.



NOTICE

Unapproved attachments may cause damage to the machine.

- Only use Wacker Neuson–approved attachments.

Requirements

- Engine stopped; machine cool to the touch
- Hand tools (sockets, wrenches, etc.)
- Torque wrench
- Drum extensions and mounting hardware
- Two sets of jack stands
- Wide scrapers (optional)

Installing the drum extensions

1. Lock the articulation joint. For further information, [see Articulation Joint Locking Bar on page 31](#).
2. Remove the bolts **(1)** securing the narrow scrapers **(2)** to the front drum, front and rear.
3. Place the scrapers in storage for future use, but keep the bolts to reuse when installing the wide scrapers.
4. Lift the front of the machine 25 mm (1 in.) to 50 mm (2 in.).
5. Place jack stands **(3)** in the notches at the locations shown on the left in the following graphic.

Note: When lifting the rear of the machine, place jack stands **(4)** at the locations shown on the right in the graphic.

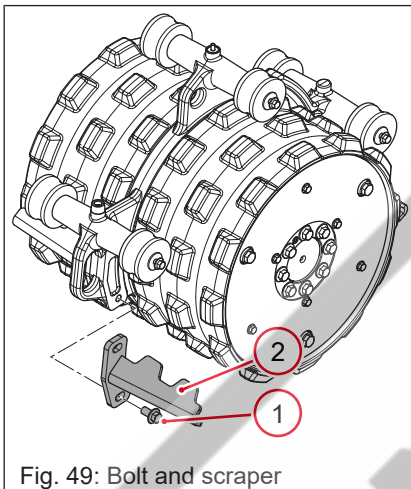


Fig. 49: Bolt and scraper

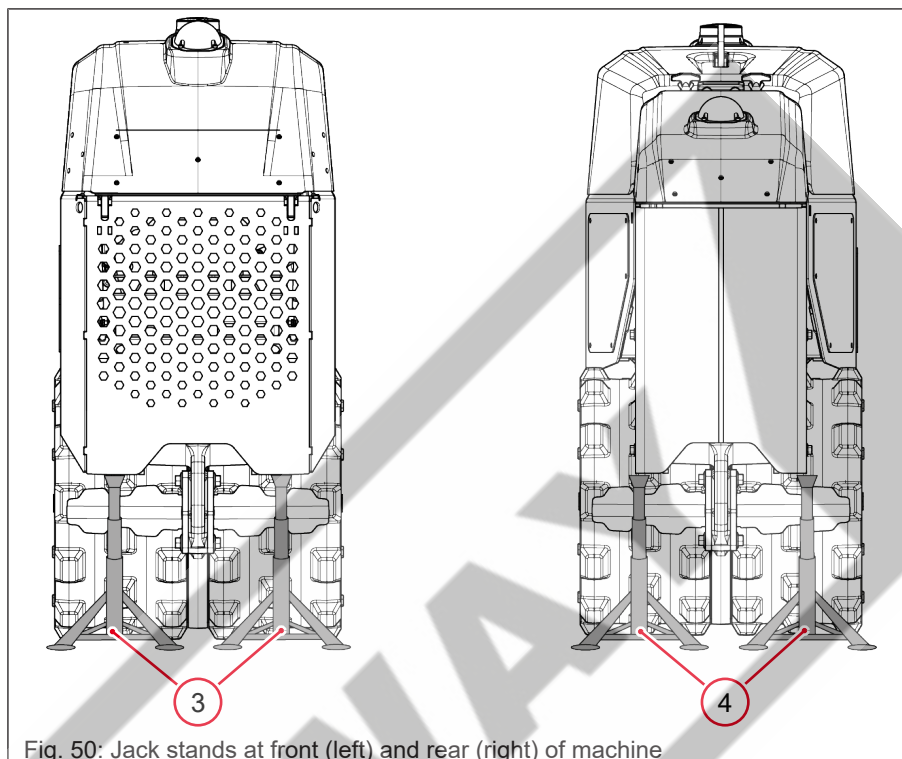


Fig. 50: Jack stands at front (left) and rear (right) of machine

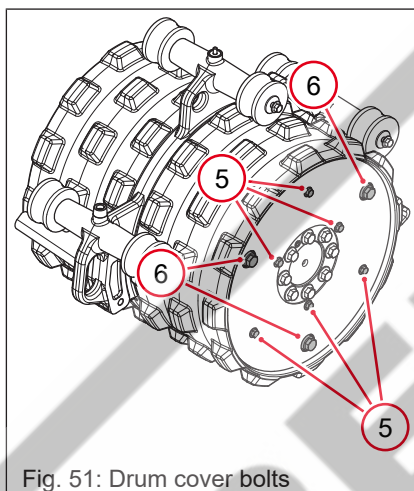


Fig. 51: Drum cover bolts

6. Remove the six bolts **(5)** securing the drum cover to the machine, and set the bolts aside.
7. Remove the drum cover.
8. Remove the three outside bolts **(6)** and keep them with the drum cover.

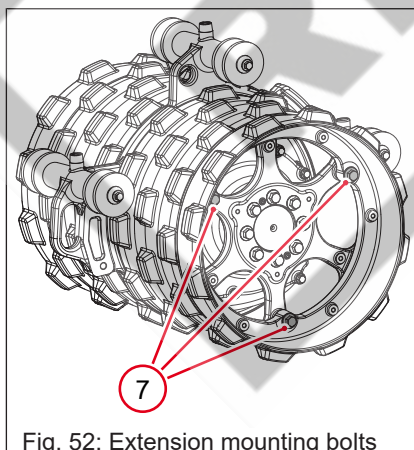


Fig. 52: Extension mounting bolts

9. Lift a drum extension into place and align the mounting holes.
10. Secure the drum extension using three M16 x 60 bolts **(7)**.
11. Tighten the bolts to 195 Nm (144 lb-ft).

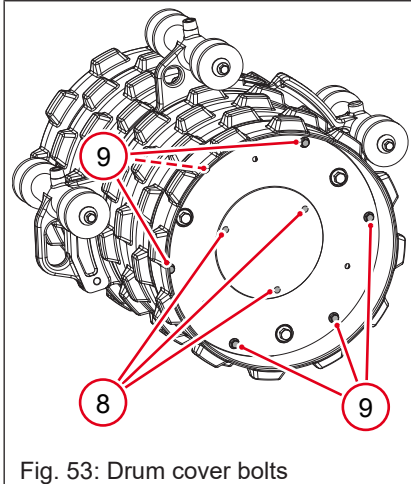


Fig. 53: Drum cover bolts

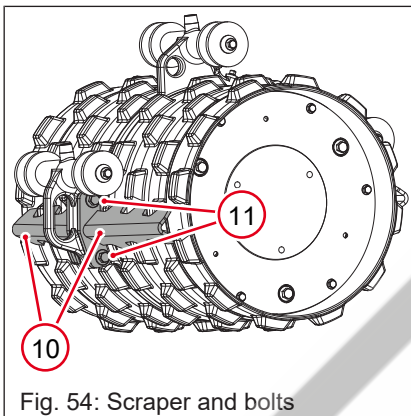


Fig. 54: Scraper and bolts

12. Install the drum cover and center plate, if not already attached, as follows:
 - ⇒ Install the center plate to the drum cover using three M8 x 25 bolts **(8)** and nuts.
 - ⇒ Using the six bolts **(9)** removed earlier, install the drum cover.
 - ⇒ Tighten the bolts to 46 Nm (34 lb-ft).
13. Repeat steps 6 through 12 for the other side of the machine.
14. Using Loctite® 243 or equivalent on the bolts, install wide scrapers **(10)**, front and rear, using the bolts **(11)** from step 2.
15. Tighten the bolts to 195 Nm (144 lb-ft).
16. Raise the machine and remove the jack stands.
17. Lower the machine to the ground.
18. Repeat the installation procedure for the rear drum extensions, beginning with step 2.

6.27.2 Removing the Drum Extensions



⚠ WARNING

Injury and damage hazard

When the machine is placed on jack stands, there is an increased risk of it tipping and causing injury and damage to the machine.

- Make sure the machine is stabilized before installing or removing drum extensions.
- Do not allow untrained personnel to install or remove drum extensions.

Requirements

- Engine stopped; machine cool to the touch
- Hand tools (sockets, wrenches, etc.)
- Torque wrench
- Narrow scrapers

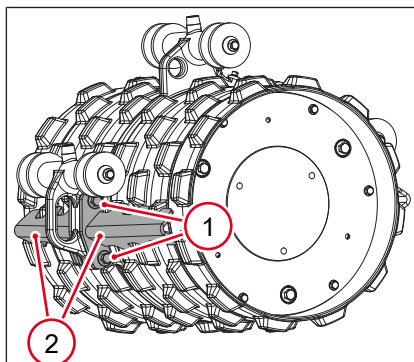


Fig. 55: Bolts and scrapers

Procedure

1. Lock the articulation joint. For further information, see [Articulation Joint Locking Bar](#) on page 31.
2. Remove the bolts (1) securing the wide scrapers (2) to the front drum, front and rear.
3. Place the scrapers in storage for future use, but keep the bolts to reuse when installing the narrow scrapers.
4. Lift the front of the machine 25 mm (1 in.) to 50 mm (2 in.).
5. Place jack stands (3) in the notches at the locations shown on the left in the following graphic.

Note: When lifting the rear of the machine, place jack stands (4) at the locations shown on the right in the graphic.

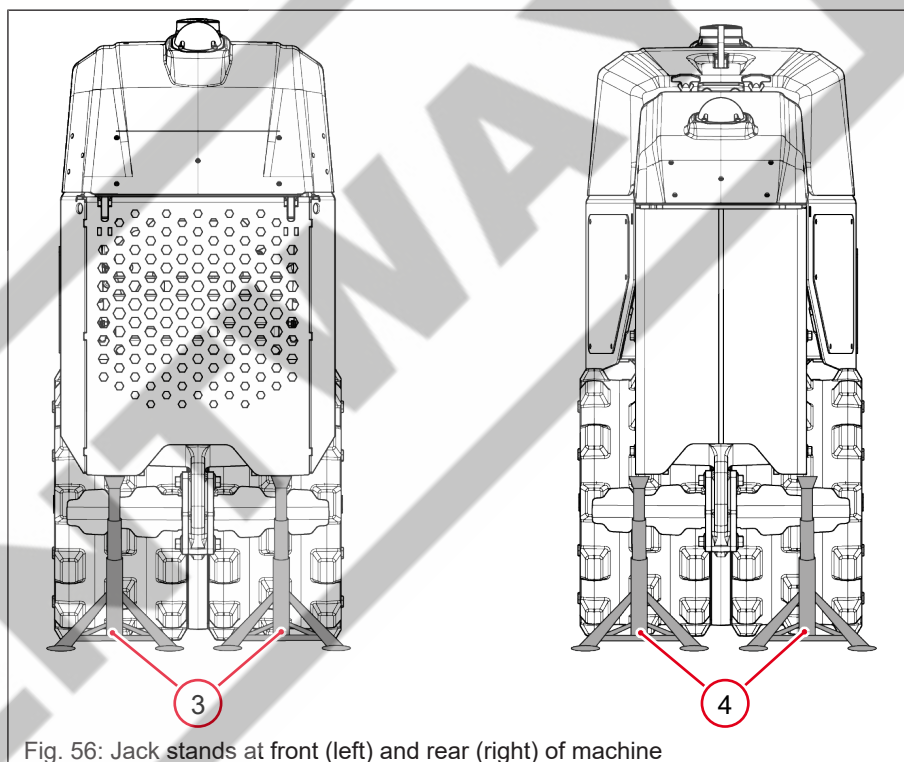


Fig. 56: Jack stands at front (left) and rear (right) of machine

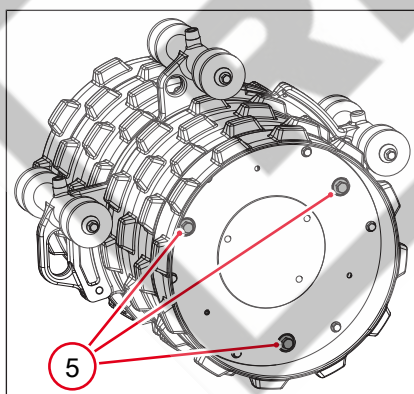


Fig. 57: Extension mounting bolts

6. On one side of the machine, while supporting the drum extension, remove the three bolts (5), and remove the extension with the drum cover.

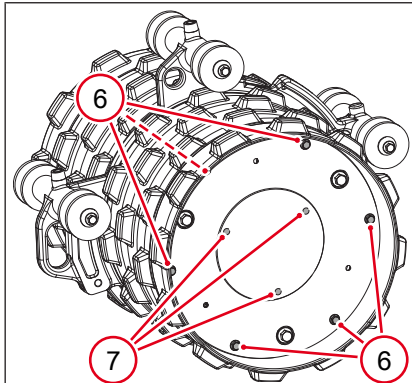


Fig. 58: Cover and center plate bolts

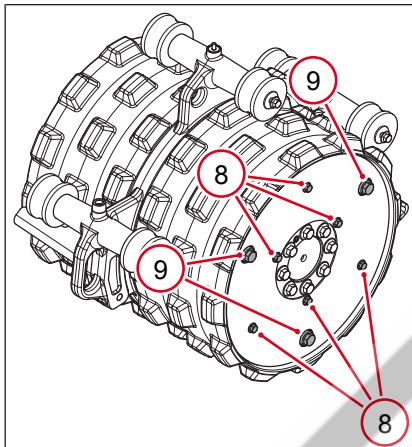


Fig. 59: Bolts

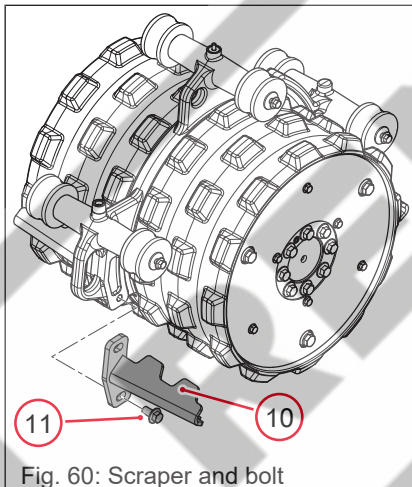


Fig. 60: Scraper and bolt

7. If reusing the drum cover for the standard drums:
 - ⇒ Remove the six bolts **(6)** securing the cover to the extension.
 - ⇒ Remove the three nuts and bolts **(7)** securing the center plate to the cover.
8. Install the drum cover using the same bolts **(8)** that held the cover to the extension.
9. Tighten the bolts to 46 Nm (34 lb-ft).
10. Install the bolts **(9)** in the drum extension mounting holes.
11. Repeat steps 6 through 10 for the other side of the machine.
12. Install the narrow scrapers **(10)** with Loctite 243 or equivalent on the bolts **(11)** from step 1.
13. Tighten the bolts to 195 Nm (144 lb-ft).
14. Raise the machine and remove the jack stands.
15. Lower the machine to the ground.
16. Repeat the removal procedure for the rear drum extensions, beginning with step 1.
17. Place the drum extensions in storage for future use.

7 Maintenance

7.1 General Maintenance



⚠ WARNING

Injury and machine damage hazard

A poorly maintained machine can malfunction, causing injuries or permanent damage to the machine.

- ▶ Keep the machine in safe operating condition by performing periodic maintenance and making repairs as needed.
- ▶ Do not make unauthorized modifications to the machines. This includes structural, hydraulic, engine, and electrical systems.
- ▶ Before returning the machine to service, make sure all covers and parts are installed, check for any fluid leaks, check all fluid levels, operate all controls, and test the loader interlock system functionality.



NOTICE

Deviating from or altering the maintenance schedule provided by the manufacturer may cause machine damage, which may void the warranty.

- ▶ Follow the maintenance schedule provided.



Environment

Machine fluids may be harmful to the environment.

- ▶ In the interests of environmental protection, place a plastic sheet and a container under the machine to collect any liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.

Preparing for maintenance

Do not perform even routine service (oil/filter changes, cleaning, etc.) unless all electrical components are shut down. Use the checklist below to prepare this machine for maintenance:

- Press the start/stop button to shut the engine off.
- Engage the Emergency Stop button (push in).
- Turn the battery disconnect switch to OFF and remove the key.
- Attach a "DO NOT START" sign to the wireless controller.

- Do not open the wireless controller or transceiver to try to repair or replace internal parts. This must be done by authorized service workshops. Opening the wireless controller or transceiver voids any warranty and product liability.
- Always perform maintenance with the machine on a solid, level, clean surface.
- Service the equipment periodically.
- Clean the wireless controller and transceiver regularly with a damp cloth.
- Never use steam cleaners for cleaning.
- Do not use sharp or pointed objects to clean.
- Do not use solvents or flammable/corrosive materials for cleaning.
- Check the rubber bellows and rubber seals of the switches, buttons, levers, and joysticks for damage. Immediately replace any broken rubber bellows and/or rubber seals.
- Only use tested and approved original parts.
- Do not allow materials such as concrete, sand, grease, dirt, or dust to collect on the transceiver, wireless controller, or battery charger because it can impair the functions or damage the components.
- When welding on the machine, switch off the radio control system and disconnect the transceiver AMPSEAL connector.
- Make sure the machine is stable when removing the drums. If in doubt, use additional stabilization tools/techniques to make sure the machine does not tip over.

7.2 Periodic Maintenance Schedule

Maintenance cycle	Personnel	For further information	
Daily	Operating personnel	[▶ 75]	Cleaning the Wireless Controller
		[▶ 76]	Checking the Hydraulic Oil Level
		[▶ 77]	Checking the Engine Oil Level
		[▶ 78]	Checking and Replacing the Air Filter
		[▶ 79]	Inspecting the Machine for Damage
		[▶ 80]	Checking the Engine Coolant Level
		[▶ 81]	Checking the Fuel Lines
		[▶ 82]	Checking the Hoods
		[▶ 82]	Adjusting the Scraper Bars
		[▶ 83]	Checking for Loose or Missing Fasteners
		[▶ 83]	Cleaning the Machine
First 50 hours	Operating personnel	[▶ 86]	Tightening the Drum Bolts and Axle Bolts
		[▶ 88]	Changing the Engine Oil and Filter
50 hours	Operating personnel	[▶ 87]	Lubricating the Articulation Joint and Steering Cylinder
		[▶ 88]	Checking the Battery Cables
250 hours	Operating personnel	[▶ 88]	Changing the Engine Oil and Filter
		[▶ 90]	Checking the Fan Belt Tension

Maintenance cycle	Personnel	For further information	
		[▶ 91]	Replacing the Fuel Filter
		[▶ 92]	Checking the Coolant Hoses
		[▶ 92]	Checking the Drum Shock Mounts
		[▶ 93]	Checking and Cleaning Oil Cooler and Radiator Fins
500 hours	Operating personnel	[▶ 78]	Checking and Replacing the Air Filter
		[▶ 94]	Replacing the Engine Fan Belt
		[▶ 96]	Maintaining the Battery
1,000 hours	Operating personnel	[▶ 97]	Checking Engine Valve Clearance
		[▶ 84]	Changing the Hydraulic Oil and Filters
		[▶ 98]	Replacing the Hydraulic Oil Cap
		[▶ 98]	Changing the Drum Gear Oil
		[▶ 99]	Changing the Engine Coolant
	Service personnel	[▶ 100]	Replacing Fuel Hoses
		[▶ 100]	Cleaning and Adjusting Fuel Injectors
4,000 hours	Service personnel	[▶ 101]	Replacing the Engine Timing Belt
As needed	Operating personnel	[▶ 78]	Checking and Replacing the Air Filter
		[▶ 84]	Changing the Hydraulic Oil and Filters
		[▶ 91]	Replacing the Fuel Filter
		[▶ 93]	Priming the Fuel System
	Service personnel	[▶ 114]	Machine Disposal and Decommissioning

7.3 Engine Maintenance



⚠ WARNING

Health hazard

Most liquids from this machine contain small amounts of materials that can cause cancer and other health problems if inhaled, ingested, or left in contact with skin for prolonged periods of time.

- ▶ Take steps to avoid inhaling or ingesting these liquids.
- ▶ Wash skin thoroughly after exposure to any of these liquids.

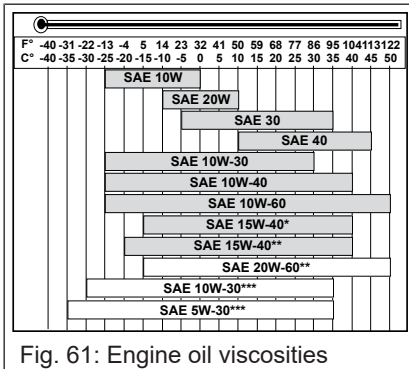


Fig. 61: Engine oil viscosities

The viscosity of the engine oil is an important factor when determining the correct engine oil to use in your machine. Use an engine oil of appropriate viscosity based on the expected outside air temperature. See the table on the left.

Note:

- * = Mineral base
- ** = Semi-synthetic base
- *** = Synthetic base

For additional information, see the engine owner's manual.

7.4 Hydraulic Oil Requirements

The use of a good petroleum-based, anti-wear hydraulic oil in the hydraulic system of this equipment is recommended. Good anti-wear hydraulic oils contain special additives to reduce oxidation, prevent foaming, and provide for good water separation.

When selecting hydraulic oil for your machine, be sure to specify anti-wear properties. Most hydraulic oil suppliers can provide assistance in finding the correct hydraulic oil for your machine.

Avoid mixing different brands and grades of hydraulic oils.

Most hydraulic oils are available in different viscosities.

The SAE number for an oil is used strictly to identify viscosity—it **does not** indicate the type of oil (engine, hydraulic, gear, etc.).

When selecting a hydraulic oil be sure it matches the specified SAE viscosity rating and is intended to be used as a hydraulic oil. For further information, see [Lubrication on page 115](#).

7.5 Cleaning the Wireless Controller

When

Every 10 hours or daily

Requirements

- Can of compressed air
- Damp cloth

Procedure

1. Before beginning any cleaning procedures, see [General Maintenance on page 72](#).
2. Use a can of compressed air to remove dirt and dust trapped around the switches.
3. Wipe the controller with a clean, damp cloth.
4. Allow the controller to air dry.

7.6 Checking the Hydraulic Oil Level



NOTICE

Low levels of hydraulic oil may cause damage to hydraulic components.

- ▶ If hydraulic oil continually needs to be added, inspect the hoses and connections for possible leaks. Repair any leaks immediately.
- ▶ Do not attempt to remove the vent cover from the hydraulic reservoir.

When

Every 10 hours or daily

Requirements

To prepare for maintenance, [see General Maintenance on page 72](#).

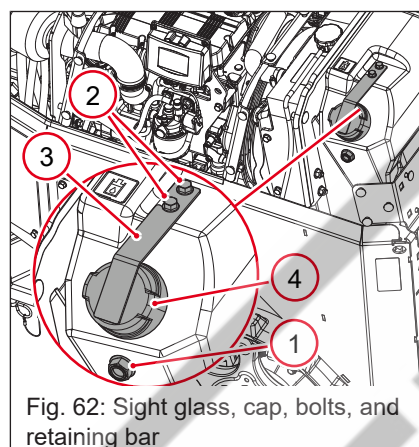
For specific information on hydraulic oil requirements, [see Hydraulic Oil Requirements on page 75](#).

Overview

A hydraulic oil level sight glass (1) is located on the side of the hydraulic fluid reservoir inside the front section of the machine. There is also a warning icon () on the wireless controller that illuminates if the hydraulic oil level is low.

Procedure

1. Open the front hood.
2. Observe the hydraulic oil level through the sight glass. The level should be half full in the sight glass.
3. If needed, add hydraulic oil as follows:
 - ⇒ Loosen the two bolts (2) securing the hydraulic oil cap retaining bar (3).
 - ⇒ Rotate the retaining bar out of the way.
 - ⇒ Thoroughly clean the top of the filler cap (4). Take care to prevent small dirt particles from entering the system.
 - ⇒ Remove the hydraulic oil cap.
 - ⇒ Fill the hydraulic oil until the level is between the minimum and the maximum levels in the sight glass.
 - ⇒ Install the hydraulic oil cap.
 - ⇒ Rotate the retaining bar so it is centered over the oil cap and tighten the bolts to 7 Nm (5 lb-ft).
4. Close the hood.



7.7 Checking the Engine Oil Level



⚠ WARNING

Health hazard

Most liquids from this machine, such as oil, gasoline, grease, etc., contain small amounts of materials that can cause cancer and other health problems if inhaled, ingested, or left in contact with skin for prolonged periods of time.

- ▶ Take steps to avoid inhaling or ingesting these liquids.
- ▶ Wash skin thoroughly after exposure to these liquids.



NOTICE

Engine damage can occur if the oil level is too low, too high, or if the incorrect oil is used.

- ▶ Oil must be added to the engine if the oil level is below the minimum mark on the dipstick.
- ▶ Oil must be removed from the engine if the oil level is above the maximum mark on the dipstick.
- ▶ Use only the recommended oil.



NOTICE

Damage can occur from using contaminated oil or the wrong oil type.

- ▶ Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap, dipstick, and the surrounding area before removing the cap.
- ▶ Do not mix different types of engine oil. This can adversely affect the lubricating properties of the engine oil.



Environment

Machine fluids and lubricants can be harmful to the environment.

- ▶ Use a suitable container to collect, store, and dispose of drained fluids and lubricants in accordance with current environmental protection regulations.

When

Every 10 hours or daily

Requirements

- Machine parked on a level surface
- Machine shut down and cool to the touch
- Recommended oil (for oil specifications, [see Lubrication on page 115](#))
- A clean, soft cloth

Overview

Maintaining the appropriate engine oil level prevents excessive engine wear.

Procedure

1. Open the front hood.
2. Clean the area around the engine oil dipstick (1).
3. Carefully remove the dipstick and wipe it clean.
4. Fully insert the dipstick into the dipstick tube and remove it again to check the engine oil level.
5. If the engine oil level is between the minimum (2) and maximum (3) marks, the level is acceptable. Do not add or remove engine oil.
6. If the oil level is below the minimum mark, remove the engine oil cap (4) and add enough oil to raise the level within the acceptable range. If it is above the maximum mark, drain a little oil from the engine. For further information on draining oil, [see Changing the Engine Oil and Filter on page 88](#).
 - ⇒ Repeat steps 2 and 3 to check the engine oil level.
 - ⇒ Install the engine oil cap when the engine oil level is sufficient.
7. Install the dipstick and close the hood.

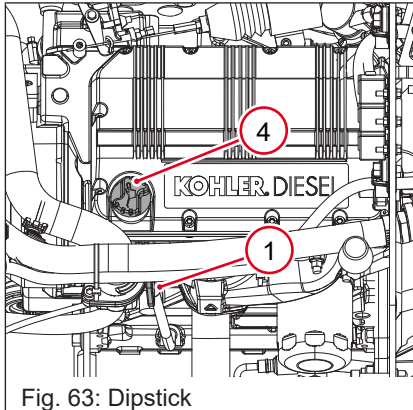


Fig. 63: Dipstick

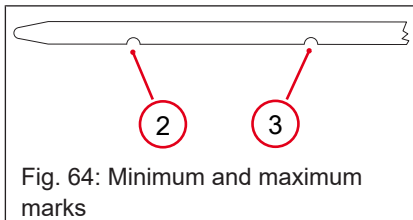


Fig. 64: Minimum and maximum marks

7.8 Checking and Replacing the Air Filter



NOTICE

Foreign material entering the engine may damage it.

- Do not operate the engine with the air cleaner elements removed.

When

- Every 10 hours or daily—check
- Every 500 hours—replace
- When indicated on the wireless controller

Requirements

- Machine parked on a level surface
- Machine shut down and cool to the touch
- Damp cloth

Overview

The air filter is located under the front hood on the right side of the machine.

An icon () appears on the wireless controller display if the air filter becomes clogged. Replace the filter immediately when this icon appears.

If the outer air filter element is excessively dirty, replace it. Replace the inner air filter element every third time the outer air filter element is replaced. Check for any signs of leaks or damaged components throughout this process.

Procedure

1. Pull up on the air cleaner housing retaining latch (1) to release the air cleaner strap.
2. Release the clips (2) that secure the air cleaner cap (3), and remove the cap.

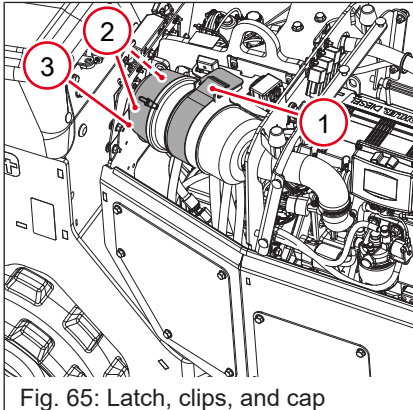


Fig. 65: Latch, clips, and cap

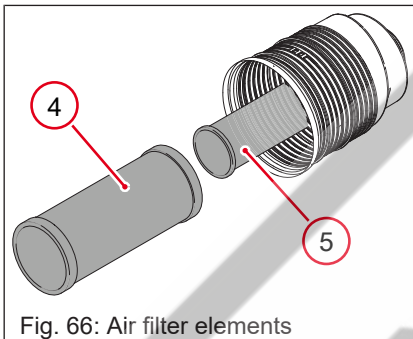


Fig. 66: Air filter elements

3. Remove the outer air filter element (4) from the air cleaner housing. If necessary, also remove the inner air filter element (5).
4. Clean the inside of the air cleaner housing components with a damp cloth.
5. Install the air filter elements, using new ones if necessary per the maintenance interval.
6. Install the air cleaner cap, making sure it is oriented the correct way and that nothing is pinching, binding, or rubbing in a way that will cause damage.
7. Secure the clips that hold the cap to the air cleaner.
8. Making sure not to kink the hose, push down on the air cleaner housing retaining latch to secure the air cleaner strap.

7.9 Inspecting the Machine for Damage

When

Every 10 hours or daily

Overview

Inspect the machine before each use. A thorough inspection helps to identify mechanical faults or potentially unsafe operating conditions. Correct these problems before operating the machine.

Procedure

External inspection

Perform an external inspection of the machine. Check for:

- External damage (dents, cracks, broken latches, etc.)
- Loose or missing fasteners
- Loose or missing parts
- Cut or worn insulation on wires and the harness across the articulation joint and under the machine
- Damaged light fixtures or lamps
- Fluid leaks
- Worn hoses above the articulation joint
- Restricted air flow at the engine exhaust

Internal inspection

Open the hoods. Check for:

- Loose or missing fasteners
- Loose or missing parts
- Loose or damaged hoses
- Loose or damaged wires
- Fluid leaks
- Rags, containers, or other debris inside either machine half

7.10 Checking the Engine Coolant Level



⚠ WARNING

Burn hazard

Engine coolant is hot and under pressure at operating temperature. It can cause severe personal injury.

- ▶ Check the engine coolant level only after the engine has been shut down and is cool.
- ▶ Do not add engine coolant directly to the radiator when hot.
- ▶ Check the coolant level at the radiator and add coolant as needed.
- ▶ Wear eye protection when handling the engine coolant.
- ▶ Tighten the radiator cap securely after checking the radiator. Steam can escape during engine operation if the cap is loose.



⚠ WARNING

Burn hazard

Engine coolant can contain alkali.

- ▶ Avoid engine coolant contact with skin and eyes.



NOTICE

Using coolant additives or improper coolants can damage the cooling system.

- ▶ Use organic acid technology (OAT) coolant.
- ▶ Never use automotive-type coolants. These coolants do not contain the correct additives to protect heavy duty diesel engines.

When

Every 10 hours or daily

Requirements

- Machine parked on a level surface
- Machine shut down and cool to the touch
- If needed, an equal mix (50/50) of distilled water and OAT coolant concentrate (see [Lubrication on page 115](#))

Overview

The radiator is located in the front half of the machine. Open the front hood to access the radiator cap.

Because there is no overflow tank, there is a hose attached to the top of the radiator that runs down to about the top of the front right drum. Excess coolant flows out this hose, and there may be some residual coolant seen during inspection.

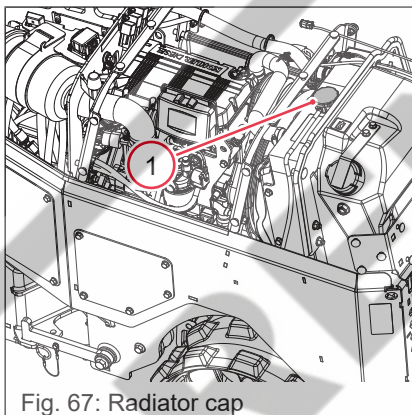


Fig. 67: Radiator cap

Procedure

1. Clean any dirt and debris off the radiator cap (1) and in the area around the cap.
2. Slowly rotate the cap counterclockwise to release any remaining system pressure.
3. Unscrew and remove the radiator cap after the pressure is released.
4. If needed, fill the radiator with fresh coolant until the pipes inside the radiator are covered by about 5 mm (0.25 in.).
5. Install the radiator cap.

7

7.11 Checking the Fuel Lines



⚠ WARNING

Fire hazard

Leaking fuel can ignite and cause a fire and/or explosion.

- ▶ Check all fuel lines and connections daily.
- ▶ Make any necessary repairs before operating the machine.

When

Every 10 hours or daily

Overview

Damaged or otherwise faulty fuel lines are a major safety hazard. Check all fuel lines daily.

Procedure

Check for the following in or on the fuel lines:

- Leaks
- Cracks
- Corrosion
- Loose fittings or clamps

7.12 Checking the Hoods

When

Every 10 hours or daily

Requirements

To prepare for maintenance, [see General Maintenance on page 72](#).

Overview

Check both hoods—front and rear—on a daily basis for any signs of damage or failure. Replace any items that are damaged.

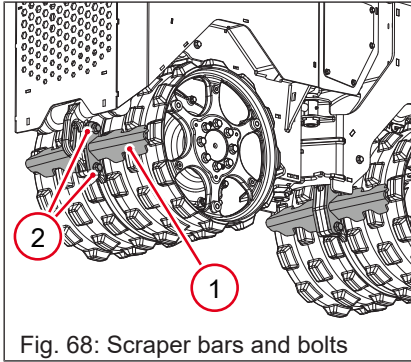
Procedure

1. Inspect the hoods for any cracks.
2. Inspect the latches for any damage such as cracked rubber or bent retainers.
3. Inspect the support brackets, hinges, and gas springs under the hoods for any signs of damage such as bending or tearing.
4. Inspect the shoulder bolts supporting the hoods for failure.

7.13 Adjusting the Scraper Bars

When

Every 10 hours or daily



Overview

Scraper bars (1) are provided on all four drums to prevent dirt from building up on the drum surfaces. These scrapers should be inspected and adjusted as required to remove as much dirt from the drums as possible.

Procedure

1. Loosen the two bolts (2) holding the scraper to the drum casting.
2. Position the scraper 3 to 6 mm (1/8 to 1/4 in.) from the drum.
3. Tighten the bolts to 195 Nm (144 lb-ft).
4. Repeat this procedure for all of the scrapers.
5. Run the machine to check that the scraper does not rub against the drum surface.

7.14 Checking for Loose or Missing Fasteners

When

Every 10 hours or daily

Procedure

Check for loose or missing fasteners daily. Replace as needed. For further information on daily checks, [see Preliminary Checks on page 54](#).

7.15 Cleaning the Machine



⚠ CAUTION

Injury hazard

Using compressed air or high-pressure water may cause eye injuries due to flying debris, dust, and steam.

- ▶ Wear eye protection when using compressed air or high-pressure water.



NOTICE

Direct, high water pressure at close range will damage certain components on the machine. The following components should be wiped clean by hand using a damp, clean cloth. Do not apply high pressure spray to these components:

- ▶ Hydraulic manifold
- ▶ Fuse boxes
- ▶ Electronic parts (controller, connectors, etc.)
- ▶ Wires and hoses around the articulation joint
- ▶ Labels

When

Every 10 hours or daily

Requirements

- Machine shut down and cool to the touch
- Clean water supply
- Pressure washer or water hose
- Clean, soft cloths

Overview

Regular cleaning is essential for keeping the machine in serviceable condition. It is important to remove dust and dirt from the machine as soon as possible after work has been completed.

Procedure

1. Use a pressure washer or water hose to remove dirt and debris from the machine's exterior.
2. To wash areas with labels, direct the water stream at a 90° angle to the machine surface with the spray nozzle at least 1/3 m (1 ft) away.
3. Keeping a minimum distance of 1 m (3 ft) away, use the pressure washer to rinse the machine.
4. Clean interior and electronic machine components using a damp, clean cloth.

7.16 Changing the Hydraulic Oil and Filters

**NOTICE**

Machine damage can occur if foreign materials are dropped into the reservoir housing.

- Be extremely careful to avoid dropping anything into the reservoir housing while the filler cap is off.

**Environment**

Machine fluids may be harmful to the environment.

- In the interests of environmental protection, place a plastic sheet and a container under the machine to collect any liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.

When

- After the first 50 hours
- Every 1,000 hours
- As indicated by the display

Requirements

- Engine and fluids cool
- Container of suitable size to collect oil
- Fresh hydraulic oil and new filter elements
- To prepare for maintenance, [see General Maintenance on page 72](#).

Overview

All oils eventually shear or thin out with use, reducing their lubricating ability. In addition, heat, oxidation, and contamination may cause the formation of sludge, gum, or varnish in the system. For these reasons, it is important to change the hydraulic oil at specified intervals. For further information, [see Maintenance on page 72](#).

If the hydraulic oil filter restriction icon () appears on the display, the filter needs to be changed. The machine operates as normal for a short period of time. Eventually, however, if the filter is not changed, the machine derates and does not allow compaction.

Procedure

1. Open the front hood.
2. Thoroughly clean the top of the filler cap. Take care to prevent small dirt particles from entering the system.
3. Loosen the two bolts (1) securing the hydraulic oil cap retaining bar (2).
4. Rotate the retaining bar out of the way and remove the hydraulic oil cap (3).
5. Set the cap on the tank opening to prevent contaminants from entering the system.
6. Remove the bolts (4) securing the access panel (5) on the left side of the machine and remove the panel.

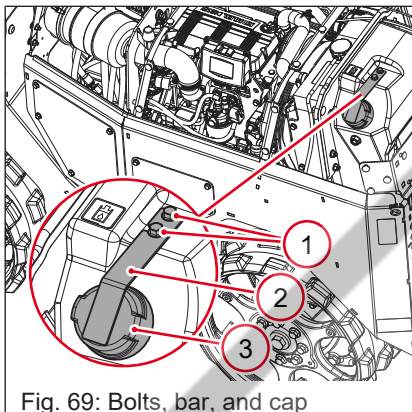


Fig. 69: Bolts, bar, and cap

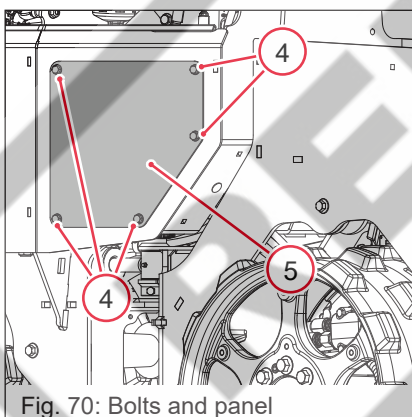


Fig. 70: Bolts and panel

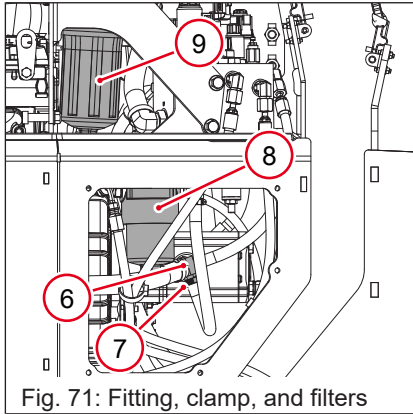


Fig. 71: Fitting, clamp, and filters

7. Place a container and rags under the hydraulic pump inlet port fitting (6) and both hydraulic oil filters.
8. Loosen the hose clamp (7) securing the hydraulic inlet hose to the fitting.
9. Remove the hose and allow the oil to drain into the container.
Note: Removing the hydraulic oil cap from the tank opening may allow the oil to drain faster.
10. Remove the case drain filter (8).
Note: As you remove the filter elements, take care to note the proper location of all sealing O-rings.
11. Remove the primary hydraulic oil filter (9).
12. Install a new primary hydraulic oil filter.
13. Install a new case drain filter.
14. Install the hydraulic inlet hose to the inlet port fitting and tighten the clamp.
15. Fill the hydraulic oil until the level is between the minimum and the maximum levels in the sight glass.
16. Install the hydraulic oil cap.
17. Rotate the retaining bar so it is centered over the oil cap, and tighten the bolts to 7 Nm (5 lb-ft).

7.17 Tightening the Drum Bolts and Axle Bolts

When

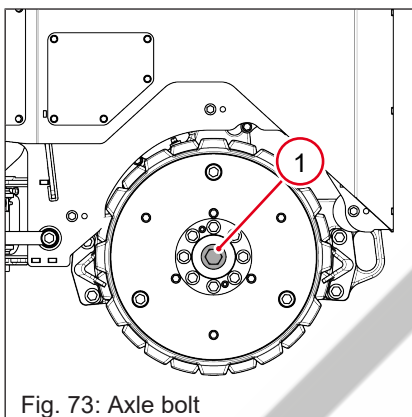
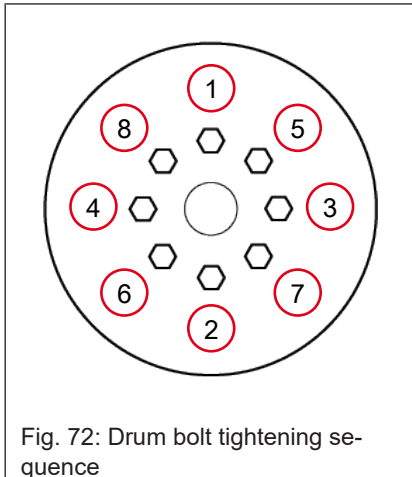
- After the first 50 hours
- After 50 hours when drums (drum bolts) or axles (axle bolts) are installed

Requirements

- Machine parked on a flat, level surface
- Machine shut down

Overview

Fasteners that secure wheels to machines can work loose after being retightened. It is important to check the tightness of these fasteners within 50 hours of installing them to make sure they are holding to the specified torque specification.



Procedure

Drum bolts

While following the sequence shown, tighten the drum bolts to 195 Nm (144 lb-ft).

Note: It may be necessary to remove the drum cover to access the drum bolts. For further information, see [Removing the Drum Extensions on page 69](#).

Axle bolts

Tighten the axle bolt(s) (1) to 904 Nm (667 lb-ft).

Note: It may be necessary to remove the drum cover to access the axle bolt. For further information, see [Removing the Drum Extensions on page 69](#).

7.18 Lubricating the Articulation Joint and Steering Cylinder

When

Every 50 hours

Requirements

- Engine shut down
- Chocks in place
- Handheld grease gun
- Mobil® SHC 220 or an equivalent No. 2 general-purpose grease

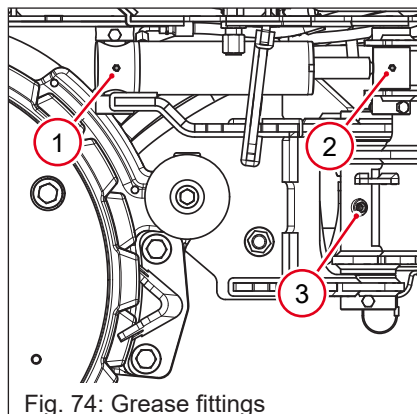


Fig. 74: Grease fittings

Procedure

1. Place chocks in front of and behind each drum.
2. On the left side of the machine, use a grease gun to lubricate the grease fittings at the front **(1)** and rear **(2)** of the steering cylinder.
3. Lubricate the grease fitting **(3)** at the main articulation joint.

7.19 Checking the Battery Cables

When

Every 50 hours

Overview

Faulty battery cables can cause hard starting and/or battery charging issues.

Procedure

1. Check the battery cables for the following:
 - ⇒ Tight connections
 - ⇒ Corrosion at the terminals
 - ⇒ Cracking on the cable sheathing
 - ⇒ Worn protective sleeves above the articulation joint
2. Make any necessary repairs based on the inspection.

7.20 Changing the Engine Oil and Filter



⚠ WARNING

Health hazard

Most liquids from this machine contain small amounts of materials that can cause cancer and other health problems if inhaled, ingested, or left in contact with skin for prolonged periods of time.

- ▶ Take steps to avoid inhaling or ingesting these liquids.
- ▶ Wash skin thoroughly after exposure to any of these liquids.



NOTICE

Engine damage can occur if the oil level is too high or if the incorrect oil is used.

- ▶ Oil must be removed from the engine if the oil level is above the max line.
- ▶ Use only the recommended oil.



NOTICE

Damage can occur from using contaminated oil or the wrong oil type.

- ▶ Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap, dipstick, and the surrounding area before removing the cap.
- ▶ Do not mix different types of engine oil. This can adversely affect the lubricating properties of the engine oil.



Environment

Machine fluids and lubricants can be harmful to the environment.

- ▶ Use a suitable container to collect, store, and dispose of drained fluids and lubricants in accordance with current environmental protection regulations.

When

- After the first 50 hours
- Every 250 hours

Requirements

- Machine parked on a flat, level surface
- Machine shut down
- Replacement oil filter
- Container of sufficient volume to collect drained fluid
- Recommended oil (for oil specifications, [see Engine Oil Viscosity on page 90](#) and [see Fluids on page 127 on page 115](#))
- Filter wrench

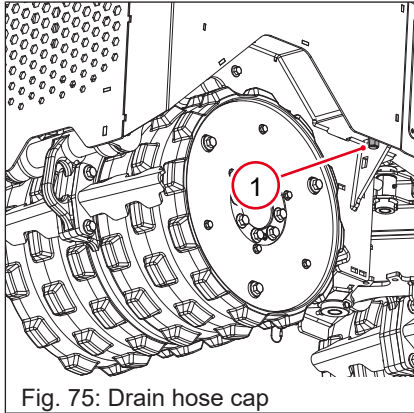


Fig. 75: Drain hose cap

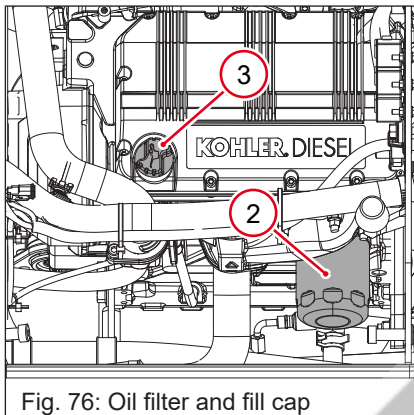


Fig. 76: Oil filter and fill cap

Procedure

1. Locate the drain hose cap **(1)** on the left side of the machine.
2. Place a suitable container under the drain hose.
3. Drain the oil into a suitable container by removing the cap from the oil drain hose.
4. Place a suitable container under the oil filter **(2)** to catch used oil.
5. Clean the area where the filter mounts to the adapter.
6. Remove the oil filter.
7. Install a new oil filter.
8. Install the cap on the oil drain hose.
9. Remove the oil fill cap **(3)** from the engine.
10. Fill the engine with the required amount of oil.
11. Install the oil fill cap.
12. Start the engine and check for leaks.
13. Stop the engine.
14. Check the oil level and top off if needed.

7.21 Checking the Fan Belt Tension

When

Every 250 hours

Requirements

Machine shut down and cool to the touch

Procedure

1. Apply a force of approximately 10 kg (22 lb) on either side of the belt halfway between the pulleys.
⇒ The belt should not move more than 10 mm (0.4 in.).
2. If the tension is not within specification, tighten or replace the belt. For further information, [see Replacing the Engine Fan Belt on page 94](#).

7.22 Replacing the Fuel Filter



⚠ WARNING

Explosion and fire hazard when handling fuel!

Can cause serious burns or death.

- ▶ Bleed the fuel system only if the engine is cold.
- ▶ Wear protective equipment.
- ▶ Never perform work on the fuel system near open flames or sparks.
- ▶ Do not smoke.
- ▶ Keep the maintenance area clean.



Environment

Machine fluids and lubricants can be harmful to the environment.

- ▶ Use a suitable container to collect, store, and dispose of drained fluids and lubricants in accordance with current environmental protection regulations.

When

Every 250 hours

Requirements

- Machine parked on a level surface
- Engine shut down and cool to the touch
- Container of sufficient volume to collect drained fluid
- Replacement fuel filter

Overview

The fuel filter is located on the right side of the engine.

Procedure

1. Open the front hood.
2. Place a container under the fuel filter **(1)**.
3. Clean the area where the fuel filter mounts to the adapter.
4. Loosen and remove the filter.
5. Lubricate the gasket on the new filter.
6. Fill the new filter with fuel.
7. Install the filter to the fuel filter adapter.

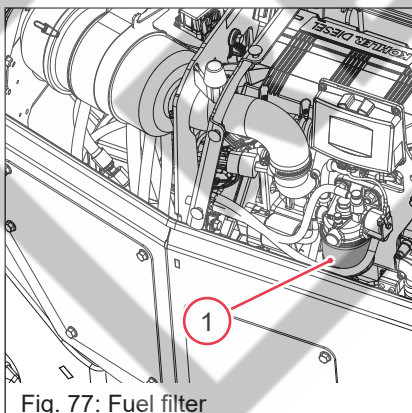


Fig. 77: Fuel filter

7.23 Checking the Coolant Hoses

When

Every 250 hours

Procedure

Inspect the coolant hoses for signs of wear. Observe the following:

- Look for leakage or seepage along the entire length of the hose, especially at the ends.
- Check hose clamps for damage.
- Hoses should be firm and springy. Hoses that are cracked, soft, covered in oil, or otherwise obviously damaged should be replaced.

Note: Because there is no overflow tank, there is a hose attached to the top of the radiator that runs down to about the top of the front right drum. Excess coolant flows out this hose, and there may be some residual coolant seen during inspection.

7.24 Checking the Drum Shock Mounts



NOTICE

Other machine parts can be damaged if the machine is operated with damaged shock mounts.

- ▶ Do not operate the machine with damaged shock mounts for an extended period of time.

When

Every 250 hours

Requirements

- Machine parked on a level surface
- Machine shut down and cool to the touch

Procedure

1. Inspect the drum shock mounts **(1)** for cracking, splitting, or tearing. Make sure to check both sides of the machine, front and rear.
2. Have an authorized dealer or service center replace the shock mounts as needed.

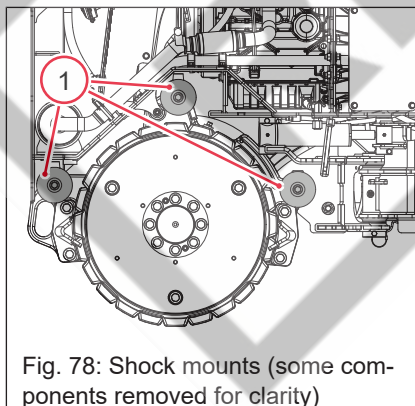


Fig. 78: Shock mounts (some components removed for clarity)

7.25 Checking and Cleaning Oil Cooler and Radiator Fins



⚠ CAUTION

Injury hazard

Using compressed air or high-pressure water may cause eye injuries due to flying debris, dust, and steam.

- ▶ Wear eye protection when using compressed air or high-pressure water.



NOTICE

Cleaning the radiator improperly will damage the radiator fins.

- ▶ Do not use high-pressure water or compressed air at a pressure greater than 28 psi (193 kPa).
- ▶ Do not use a wire brush.

When

Every 250 hours

Procedure

1. Stop the engine.
2. Open the front hood.
3. Use compressed air to clean loose dirt and debris from the oil cooler and radiator fins.
4. Use a low pressure water stream to clean dirt from the surface of the cooler and radiator.

7.26 Priming the Fuel System

When

As needed

Requirements

- Engine and fluids cool
- Rags or towels to wipe up fuel

Overview

If the fuel tank has been run completely dry, or drained for service, it may be necessary to manually prime the fuel system.

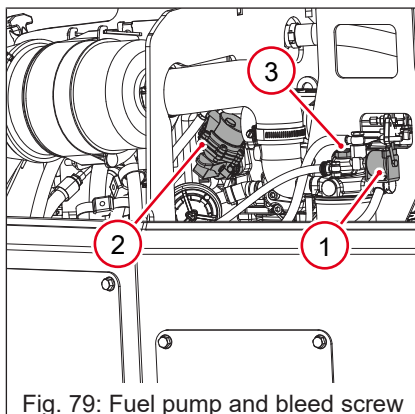


Fig. 79: Fuel pump and bleed screw

Procedure

1. Remove the fuel filter.
2. Fill the filter with fuel.
3. Install the fuel filter.
4. Fill the fuel tank.
5. Apply 12 volts of power to the fuel solenoid (1) to open the fuel valve.
6. Loosen one of the banjo bolts on the fuel filter and pump the lever on the fuel pump (2) until fuel flows freely from the opening in the banjo bolt. Tighten the banjo bolt.
7. Wipe up any leaked fuel.
8. Repeat this procedure for the fuel line bleed screw (3).
9. Wipe up any leaked fuel.

7.27 Replacing the Engine Fan Belt

When

Every 500 hours

Requirements

- Machine shut down and cool to the touch
- Containers of sufficient volume to catch drained fluids

Procedure

1. While supporting the fan guard (1), remove the four bolts (2) securing the fan guard to the fan shroud (3).
2. Carefully remove the fan guard from the engine bay.

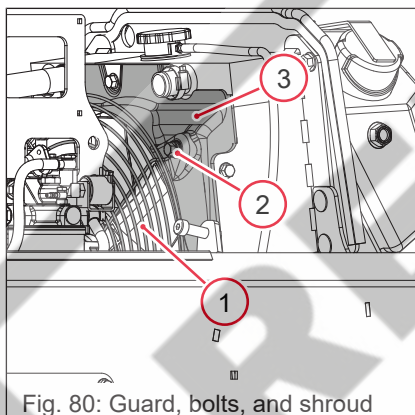
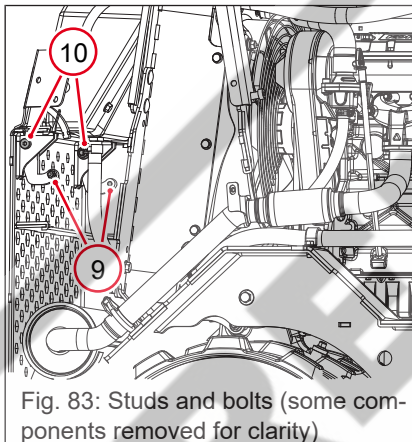
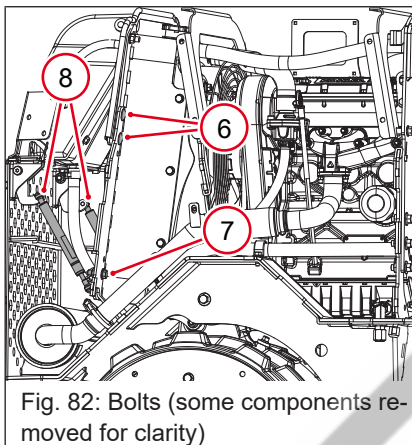
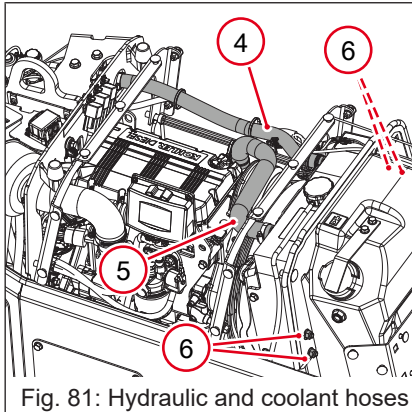


Fig. 80: Guard, bolts, and shroud



3. Place a container under the top hydraulic oil hose (4).
4. Loosen the clamp and remove the hose.
5. Place a container under the top coolant hose (5).
6. Loosen the clamp and remove the hose.
7. Remove or disconnect any remaining components attached to the top of the oil cooler and radiator assembly.
8. Remove the bolts (6) securing the hydraulic oil tank bracket to the chassis.
9. Remove the bolts (7) securing the oil cooler and radiator assembly to the chassis.
10. Carefully tilt the oil cooler and radiator assembly and the hydraulic tank toward the front of the machine in order to access the front of the fan.
11. If extra clearance is needed, remove the hood, as follows:
 - ⇒ Disconnect the pneumatic struts (8) at the hood hinges.
 - ⇒ Remove the pneumatic strut ball studs (9).
 - ⇒ Remove the bolts (10) securing the hood hinges to the chassis.
 - ⇒ Disconnect the beacon connector on the side of the hydraulic tank.
 - ⇒ Carefully remove the hood.
12. Remove the bolts securing the fan assembly to the front of the engine.
13. Remove the front half of the fan belt pulley and any shims between the halves of the pulley.
14. Remove the fan belt.
15. Install the new fan belt.
16. Along with all shims that were removed, hold the front half of the fan pulley in place and check the belt tension.
17. Install or remove shims to adjust belt tension as follows:
 - ⇒ Install shims to decrease tension.
 - ⇒ Remove shims to increase tension.
18. Assemble the machine to its original state by reversing this procedure starting at step 12.
 - ⇒ Tighten the fan guard bolts to 22 Nm (16 lb-ft).
19. Top off the hydraulic oil and engine coolant. For further information, see [Checking the Hydraulic Oil Level on page 76](#) and see [Checking the Engine Coolant Level on page 80](#).

7.28 Maintaining the Battery



DANGER

Explosion hazard

Batteries can emit explosive hydrogen gas.

- ▶ Keep all sparks, flames, and other ignition sources away from the battery.
- ▶ Do not short circuit battery posts.
- ▶ If the electrolyte is frozen, slowly warm the battery before recharging.



WARNING

Poisoning hazard

Battery fluid is poisonous and corrosive.

- ▶ In the event of ingestion or contact with skin or eyes, wash skin or eyes with water and seek medical attention immediately.

When

Every 500 hours

Overview

To prevent serious damage to the electrical system:

- Do not disconnect the battery while the machine is running.
- Do not reverse the positive (+) and negative (-) ends of the battery cable.
- Do not attempt to run the machine without a battery.
- Wear gloves and eye protection when working with batteries.
- When handling the battery, follow the battery manufacturer's safety instructions. Batteries contain caustic acids.
- A potentially combustible oxygen-hydrogen mixture forms in batteries during normal operation and especially when charging. Keep flames and sparks away from the battery.
- In the event that the machine has a discharged battery, either replace the battery with a fully charged battery or charge the battery using an appropriate battery charger.
- Dispose of discharged batteries in accordance with local environmental regulations.
- Agricultural or other chemicals, especially those with a high sulfur content, can adhere to the IC regulator. This has the potential to corrode the conductor and result in battery over-charging (boiling) and charging malfunctions.

Procedure

Maintaining

- Keep battery terminals clean and connections tight.
- When necessary, tighten the cables and grease the cable clamps with battery terminal grease or petroleum jelly.
- Maintain the battery at full charge to improve cold weather starting.

Disconnecting and removing

1. Stop the machine and shut down the engine.
2. Place all electrical switches in the OFF position.
3. Place the battery disconnect switch in the OFF position.
4. Remove the four bolts (1) securing the battery charger bracket (2) to the chassis.
Note: There are many components connected to the bottom of the bracket.
5. Carefully move the battery charger bracket up and away from the battery.
6. Securely support the battery charger bracket.
7. Remove the battery holddown bracket.
8. Disconnect the negative battery cable from the battery.
9. Disconnect the positive battery cable from the battery.
10. Remove the battery.

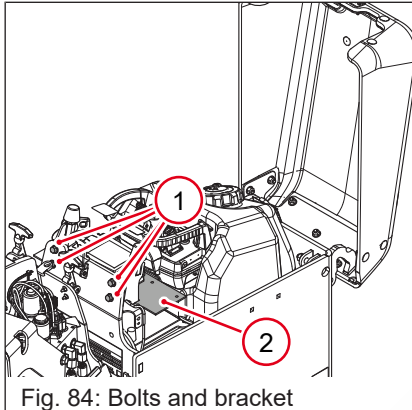


Fig. 84: Bolts and bracket

Installing and connecting

The following procedure assumes the battery charger bracket is already removed. If it is not, follow the previous procedure to remove the bracket.

1. Place the battery in the machine in the appropriate location making sure to note the orientation.
2. Install the battery holddown bracket.
3. Connect the positive battery cable to the battery.
4. Connect the negative battery cable to the battery.
5. Being careful not to bridge the battery terminals, install the battery charger bracket using the four bolts.

7.29 Checking Engine Valve Clearance

When

Every 500 hours

Overview

This maintenance task should be performed by a qualified technician. Contact an authorized dealer or service center for assistance.

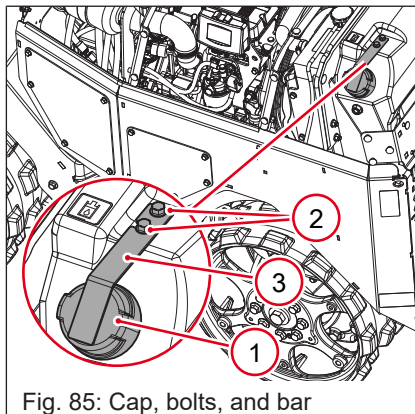
7.30 Replacing the Hydraulic Oil Cap

When

Every 1,000 hours

Requirements

- Machine parked on a flat, level surface
- Machine shut down
- Replacement hydraulic tank filler cap



Procedure

1. Open the front hood.
2. Thoroughly clean the top of the hydraulic oil cap (1). Take care to prevent small dirt particles from entering the system.
3. Loosen the two bolts (2) securing the hydraulic oil cap retaining bar (3).
4. Rotate the retaining bar out of the way and remove the hydraulic oil cap.
5. Install the new hydraulic oil cap.
6. Rotate the access plate back into place, and tighten the bolts to 7 Nm (5 lb-ft).

7.31 Changing the Drum Gear Oil



⚠ WARNING

Injury hazard

Hydraulic oil is under high pressure and becomes very hot during operation.

- To avoid injury, obey the safety instructions listed below.



Environment

Machine fluids and lubricants can be harmful to the environment.

- Use a suitable container to collect fluids and lubricants as they flow out and dispose of them in an environmentally friendly manner.

When

Every 1,000 hours

Requirements

- Machine parked on a flat, level surface
- Machine shut down and cool to the touch
- Container of sufficient volume to collect drained fluid
- Replacement SAE 75W-90 GL-4 full synthetic gear oil

Overview

To change the gear oil on the front drum transmission, remove the front right drum. To change the oil on the rear drum transmission, remove the rear left drum.

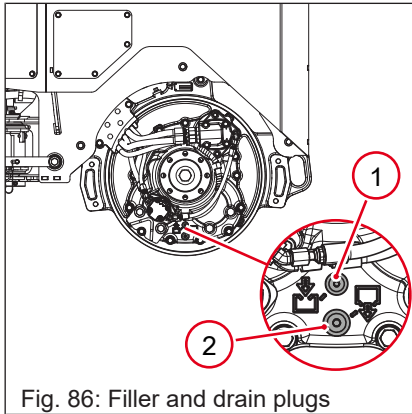


Fig. 86: Filler and drain plugs

Procedure

1. Jack up the machine and place it on jack stands.
2. Remove the appropriate drum to change the oil in the desired drum transmission. For further information on removing drums, [see Drum Extensions on page 66](#).
3. Place a suitable container under the drum transmission.
4. Clean the areas around the plugs.
5. Crack open the filler plug (1) and allow the pressure inside to equalize.
6. Remove the drain plug (2).
7. Remove the filler plug.
8. When the oil has stopped flowing, install the drain plug and tighten it to 29 Nm (22 ft-lb).
9. Fill the transmission with 75W-90 GL-4 gear oil up to the bottom of the fill port.
10. Install the filler plug and tighten it to 17 Nm (13 ft-lb).
11. Install the drum. For further information, [see Drum Extensions on page 66](#).
12. If necessary, repeat this procedure for the other transmission.
13. Lower the machine to the ground, and run the exciter(s) for about 5 minutes.
14. Skipping the draining process, repeat steps 1 through 9.

7.32 Changing the Engine Coolant

When

Every 1,000 hours

Requirements

- Machine parked on a flat, level surface
- Machine shut down and cool to the touch
- Containers of sufficient volume to collect drained fluid
- Plastic sheeting
- Replacement coolant

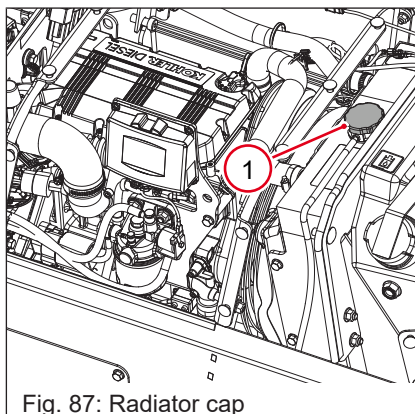


Fig. 87: Radiator cap

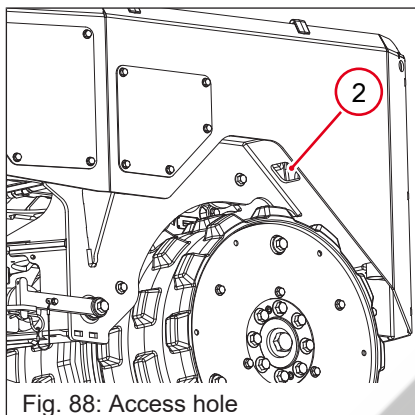


Fig. 88: Access hole

Procedure

1. Jack up the machine and place it on jack stands.
2. Slowly remove the radiator cap (1) to relieve any remaining pressure.
3. Place plastic sheeting under the machine to catch any coolant that may miss the containers.
4. Place suitable containers along the underside of the front of the machine.
5. Using the access hole (2), loosen the hose clamp at the bottom of the lower radiator hose.
6. Remove the hose from the radiator.
7. Once all the coolant has drained, install the hose and secure it with the clamp.
8. Add replacement coolant to the radiator until it is near full.
9. Run the engine until the coolant level drops.
10. Add coolant until the pipes inside the radiator are covered by about 5 mm (0.25 in.).
11. Install the radiator cap.
12. Shut down the machine.
13. Remove the machine from the jack stands.

7.33 Replacing Fuel Hoses

When

Every 1,000 hours

Overview

This maintenance task should be performed by a qualified technician. Contact an authorized dealer or service center for assistance.

7.34 Cleaning and Adjusting Fuel Injectors

When

Every 1,000 hours

Overview

This maintenance task should be performed by a qualified technician. Contact an authorized dealer or service center for assistance.

7.35 Replacing the Engine Timing Belt

When

Every 4,000 hours

Overview

This maintenance task should be performed by a qualified technician. Contact an authorized dealer or service center for assistance.

8 Troubleshooting

8.1 Troubleshooting

Problem / Symptom	Reason	Remedy
Engine does not start	Fuel tank empty	Fill with No. 2 diesel fuel and prime fuel lines.
	Wrong type of fuel	Drain tank, change fuel filter, and fill with fresh fuel.
	Water in fuel	Drain water from fuel filter.
	Old fuel	Drain tank, change fuel filter, and fill with fresh fuel.
	Fuel system not primed	Prime fuel system.
	Fuel filter restricted or clogged	Replace fuel filter.
	Battery disconnect switch is off	Turn battery disconnect switch to the ON position.
	Battery connections loose or corroded	Check connections. Tighten or clean as needed.
	Discharged battery	Charge or replace battery.
	Engine oil level too low	Add engine oil.
	Air cleaner element clogged	Maintain air cleaner.
	Faulty starter motor	Repair or replace.
	Faulty starter button on control box or wireless controller	Repair or replace.
	Inoperative fuel valve solenoids on engine	Repair or replace.
	Inoperative starter relay	Repair or replace.
	Electrical connections loose or broken	Check connections; repair or replace.
	Machine out of radio signal range	Move wireless controller closer to machine.
	Wireless controller and transceiver are not paired.	Pair the wireless controller and transceiver. See topic <i>Pairing the Wireless Controller</i> . ▶ 48
	Communication fault	See topic <i>Communication Faults</i> . ▶ 54
	One or both joysticks are not in the neutral position	Make sure nothing is restricting the joysticks from springing back to neutral.
Engine starts, then stops	Starter interlock PIN is configured but not entered.	Enter the starter interlock PIN.
	Machine is in lockout due to a tilt occurrence	Make sure the machine is upright on a flat surface. Enter the unlock PIN if necessary.
	Fuel tank empty	Fill with No. 2 diesel fuel and prime fuel lines.
	Fuel filter restricted or clogged	Replace fuel filter.
	Fuel lines broken or loose	Check fuel lines; tighten, repair or replace as needed
	Machine out of radio signal range	Move wireless controller closer to machine.
	Wireless controller automatically powered off due to inactivity	Turn on wireless controller.

Problem / Symptom	Reason	Remedy
No vibration	Machine in high speed travel mode	Reduce machine speed. Make sure the vibration/high travel speed switch is in vibration, and make sure the engine throttle switch is in auto idle.
	Faulty vibration switch or poor connection inside wireless controller	Check connection; repair or replace as needed.
	Inoperative solenoid on vibration valve	Repair or replace.
	Damaged exciter assembly	Repair or replace.
	Damaged exciter motor coupling	Repair or replace.
	Damaged exciter motor	Repair or replace.
	Damaged exciter pump	Repair or replace.
	Machine out of radio signal range	Move wireless controller closer to machine.
	Operator too close to machine	Move away from machine.
	Communication fault	See topic <i>Communication Faults</i> . ▶ 54
No travel, or travel only in one direction	Debris buildup inside drum(s)	Remove drum covers and check for debris buildup inside the drums. Clean as necessary.
	Faulty forward/reverse switch or poor connection inside wireless controller	Check connection; repair or replace as needed.
	Inoperative solenoid on travel valve	Repair or replace.
	Damaged drive gearcase assembly	Repair or replace.
	Loose, broken or corroded wire connections inside control panel or wireless controller	Repair or replace.
	Damaged drive motor	Repair or replace.
	Damaged drive pump	Repair or replace.
	Machine out of radio signal range	Move wireless controller closer to machine.
	Operator too close to machine	Move away from machine.
	Parking brake pin may not be disengaging	Check parking brake functionality and circuit pressure.
	No valid IR signal	Maintain line of sight with the machine. Check the infrared eye status subpage under the machine parameters page. ▶ 40
	Communication fault	See topic <i>Communication Faults</i> . ▶ 54
No high speed travel	Faulty forward/reverse switch or poor connection inside wireless controller	Check connection; repair or replace as needed.
	Inoperative solenoid on manifold	Repair or replace.
	Loose, broken or corroded wire connections inside control panel or wireless controller	Repair or replace.
	Damaged exciter pump	Repair or replace.
	Vibration is turned on	Turn off vibration.
	Engine throttle is in low idle	Move engine throttle switch to auto idle.
	Machine out of radio signal range	Move wireless controller closer to machine.
	Operator too close to machine	Move away from machine.
	Communication fault	See topic <i>Communication Faults</i> . ▶ 54

Problem / Symptom	Reason	Remedy
No steering	Faulty steering joystick switch or poor connection inside wireless controller	Check connection; repair or replace as needed.
	Inoperative solenoid on steering valve	Repair or replace.
	Loose, broken or corroded wire connections inside control panel or wireless controller	Repair or replace.
	Damaged steering cylinder	Repair or replace.
	Locking bar engaged	Disengage locking bar.
	Machine out of radio signal range	Move wireless controller closer to machine.
	No valid IR signal	Maintain line of sight with the machine. Check the infrared eye status subpage under the machine parameters page. ▶ 40
	Operator too close to machine	See topic <i>Communication Faults</i> . ▶ 54
Compatec compaction system LEDs permanently flashing (if equipped)	Sensor failure	Repair or replace. Contact your authorized dealer/service center.

8.2 Troubleshooting the Wireless Controller

Problem/Symptom	Reason	Remedy
The wireless controller does not start.	The battery is discharged.	Replace with fully charged battery.
	The emergency stop (E-stop) button is pressed.	Release the E-stop on the side of the wireless controller.
	The wireless controller is damaged.	Contact an authorized service center to inspect the wireless controller.
The wireless controller is switched on, but no commands function.	The transceiver is powered off. (The wireless controller shows COMMUNICATION ERROR.)	Make sure the transceiver is powered on.
	The wireless controller and transceiver are not paired.	Pair the units.
	The wireless controller is out of range.	Take the wireless controller back into the range of the transceiver.
	Radio communication between the units is intermittent due to radio interference.	Turn off all other radio equipment that may cause interference.

Problem/Symptom	Reason	Remedy
Some commands do not function.	The actuators were not in neutral (zero) position during startup.	Restart the wireless controller: • Push the emergency stop (E-stop) button. • Set the actuator(s) in neutral position. • Rotate the E-stop to release it.
	The actuators are faulty or not correctly connected.	Activate the self-test mode to check if the actuators are working. If any actuator does not appear in the information center when activated in this mode, contact the point of purchase.
	System logic does not allow the operation due to safety reasons.	Check the manual from the system installer or machine producer.
	There are damaged or loose cables that connect the transceiver to the machine	Check the transceiver connector and cables.
The information center lights up in red.	The system performed a safety shut down due to error.	See topic <i>Wireless Controller Error Codes</i> . [▶ 106]

8.3 Troubleshooting the Transceiver

Problem / Symptom	Reason	Remedy
No functionality from the wireless controller	The wireless controller is off.	Turn on the wireless controller.
	The emergency stop (E-stop) button is pressed.	Turn the E-stop button clockwise to unlock it.
	There is no power to the transceiver.	Turn the power supply on in the machine.
	The battery in the wireless controller is discharged, faulty, or old.	Replace the battery with a fully charged unit.
	There are faulty radio circuit boards in the wireless controller or the transceiver.	Contact the point of purchase.
	The transceiver is not paired with the correct wireless controller.	Pair the transceiver with the correct wireless controller.

8.4 Transceiver LED Meanings

There is an LED on the transceiver that indicates the status of errors, pairing, and connection. Refer to the following table for the different meanings:

LED	Meaning
Off	No power supply
Red continuous	Major error
Red fast flashing	Minor error
Red slow flashing	Power supplied, no application
Orange continuous	Refuse link with wireless controller
Orange fast flashing	Pairing pending
Orange slow flashing	Pairing
Green continuous	Power supplied, no link to wireless controller and no CAN communication
Green fast flashing	Linked with wireless controller

LED	Meaning
Green slow flashing	Power supplied, No link to wireless controller CAN in operational mode
Alternating green and orange	Technical error; contact your dealer

8.5 Wireless Controller Error Codes

The information center lights up in red when a system error occurs. A four-digit error code is visible on the display. If there are multiple errors, the error codes are shown cyclical. Only troubleshoot error codes that start with "11" or "81" and follow the guide below.

If the troubleshooting steps do not work, or if the error codes start with numbers other than "11" or "81", write down the error code and contact the point of purchase or an authorized service workshop.

Error Code	Reason	Remedy
11xx	One or both joysticks are not in zero-position.	Make sure that joysticks are in zero-position during startup of the wireless controller.
81xx	An external CAN bus communication error between the transceiver and the machine has occurred.	Troubleshoot the machine before sending the radio remote control system for repair.

8.6 Wireless Controller Self-test Mode

Use self-test mode to diagnose errors in actuators on the wireless controller. Self-test mode is started from the information center. The purpose is to either identify a broken actuator or rule out errors in actuators. If no errors are found, further troubleshooting is required.

When starting the self-test mode, all digital and analog data are visible on the information center. The display allows users to monitor data in real-time during testing. There are also several screens that display different kinds of data. To switch between them, press the confirm button.

1. Press the two buttons next to the information center, next (left side) and confirm (right side), at the same time.
2. Press the next button to navigate between options in the information center menu.
3. Navigate to option 1, self-test mode, indicated by this symbol: ~ 1. 
4. Press the confirm button to enter self-test mode.
 - ⇒ When self-test mode is entered, all communication is stopped, preventing link-up with the transceiver.
5. The information center displays the following three different self-tests to choose from:
 - ⇒ Analog actuators (~ 1.1 )
 - ⇒ Digital actuators (~ 1.2 )
 - ⇒ Pitch and roll angle of the wireless controller (~ 1.4 )

6. Navigate to the test that you want to do.
 - ⇒ Press the confirm button to start the test.
 - ⇒ Manually test the actuators one by one.
 - ⇒ Press the next button to exit the test and return to the menu.
7. Repeat steps 6 through 7 to select and start another test.
8. Switch off the wireless controller to exit self-test mode.
9. Switch on the wireless controller to resume normal operation.

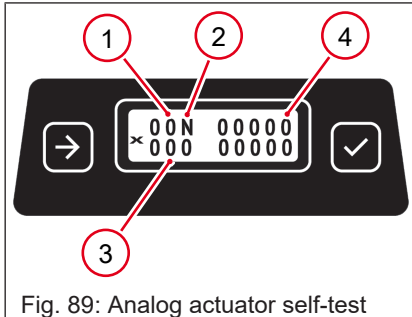


Fig. 89: Analog actuator self-test

Testing the analog actuators

The analog actuators are joysticks, levers, and potentiometers. A set of numbers shows on the display when the analog actuator self-test is started. The numbers shown refer to the following:

- **(1)** The analog actuator that is being moved. If multiple actuators are moved at the same time, the actuator with the lowest number is displayed.
- **(2)** The type of analog actuator that is being moved.
 - N = Non-safety classified actuator
 - S = Safety classified actuator
- **(3)** The direction the analog actuator is being moved in. When moved in an opposite direction the colors of the numbers shown are inverted (white text on a black background). Values range between 0 and 127. These numbers **(4)** are not detailed here since they are only used for advanced factory troubleshooting.

Note: If the numbers shown on the display do not change and remain zero when moving the actuator, one of the following has occurred:

- The analog actuator has broken.
- The analog actuator has not been implemented or activated in the software setting.

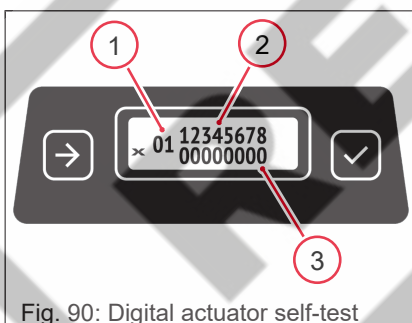


Fig. 90: Digital actuator self-test

Testing the digital actuators

The digital actuators are push buttons, toggle switches, and rotary switches. A set of numbers shows on the display when the digital actuator self-test is started. The numbers shown refer to the following:

- **(1)** The last activated (moved or pushed) digital actuator. If another digital actuator is activated during the test, the numbers change.
- **(2)** The number of safety classified digital actuators. The numbers one through eight always show on the display. This is because eight is the maximum number of safety classified digital actuators that can be configured.
- **(3)** The status of the safety classified digital actuator, as follows:
 - 0 = Not present or inactive
 - 1 = Activated
 - 2 = Invalid
 - 3 = Faulty

Note: If the numbers shown on the display do not change when activating a digital actuator during the self-test, one of the following has occurred:

- The digital actuator has broken.
- The digital actuator has not been implemented or activated in the software setting.

Depending on the configuration of the wireless controller, the number of safety classified digital actuators can vary. To find out how many safety classified digital actuators the wireless controller has, see the technical specification for your configuration.

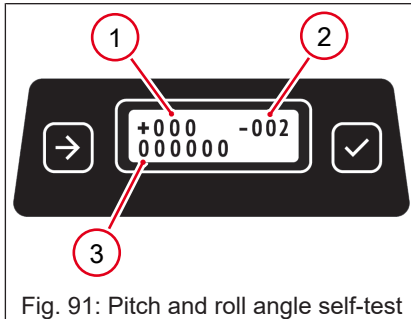


Fig. 91: Pitch and roll angle self-test

Testing the pitch and roll angle of the wireless controller

The wireless controller can be configured with a tilt-sensor that measure the tilt of the wireless controller in the x- and y-directions. A set of numbers shows on the display when the pitch and roll angle self-test is started. The numbers show the output from the tilt-sensor.

The numbers shown on the display refer to the following:

- **(1)** The roll angle of the wireless controller.
 - A minus sign shows the left roll angle.
 - A plus sign shows the right roll angle.
- **(2)** The pitch angle of the wireless controller.
 - A minus sign shows the left pitch angle.
 - A plus sign shows the right pitch angle.
- **(3)** The events that are triggered. Triggered events are indicated by the number one, and no triggered events by the number zero. The triggered events are counted from left to right, as follows:
 - Roll event
 - Pitch event
 - Freefall event (momentary)
 - Impact event (momentary)
 - Freefall event (static)
 - Impact event (static)

Notes:

- The tilt-sensor is broken if the numbers shown on the display do not change when tilting the wireless controller during the self-test.
- Depending on the configuration, the wireless controller can be switched off automatically if it is tilted too much in a certain direction. To find out if the wireless controller is configured with this feature, see separate technical specification.
- The wireless controller pitch and roll functionality is optional to implement. The values from the sensor are presented as raw data via the CAN bus protocol.

8.7 Diagnostic Trouble Codes

SPN	FMI	Function	Description	Priority
519388	03	High speed enable	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519392	03	Park brake release	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519354	03	Drive forward	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519353	03	Drive reverse	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519526	03	Steer right	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519527	03	Steer left	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519382	03	Exciter high F	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519383	03	Exciter low R	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
517930	—	CAN lo	Heartbeat error	1
	—	CAN hi	Heartbeat error	1
519350	03	Electric fuel check valve	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519912	03	Throttle hold (solenoid)	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
519940	03	Throttle pull (relay)	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
521006	03	Starter crank (relay)	Short to power	1
	04		Short to ground	1
	05		Open circuit	1

SPN	FMI	Function	Description	Priority
519754	03	Glow plugs relay	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
517001	03	Horn	Short to power	3
	04		Short to ground	3
	05		Open circuit	3
517006	03	Hydraulic oil temperature sensor	Short to power	2
	04		Short to ground	2
	05		Open circuit	2
N/A	03	Scanreco charger battery status	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
517550	03	Alternator charging switch	Short to power	2
	04		Short to ground	2
	05		Open circuit	2
N/A	03	Analog ground	Short to power	1
N/A	03	Sensor supply output +5 V, 100 mA	Short to power	1
518954	03	Hydraulic oil filter switch	Short to power	2
	04		Short to ground	2
	05		Open circuit	2
518956	03	Hydraulic oil level switch	Short to power	3
	04		Short to ground	3
	05		Open circuit	3
518953	03	Air filter restriction switch	Short to power	2
	04		Short to ground	2
	05		Open circuit	2
517000	03	Low fuel level switch	Short to power	3
	04		Short to ground	3
	05		Open circuit	3
516800	03	Receiver STOP_OUT switch	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
516801	03	Receiver ACT_MOVE switch	Short to power	1
	04		Short to ground	1
	05		Open circuit	1
517005	03	Engine coolant temperature sensor	Short to power	2
	04		Short to ground	2
	05		Open circuit	2
518951	03	Engine oil pressure switch	Short to power	2
	04		Short to ground	2
	05		Open circuit	2

SPN	FMI	Function	Description	Priority
517191	03	Switched power ignition	Short to power	—
517191	03	Machine angle sensor primary	Short to power	2
	04		Short to ground	2
	05		Open circuit	2
517267	02	Front IR eye interlock	Front eye identification fault	1
	09		Front eye communication fault	1
	13		Front eye initialization fault	1
517277	02	Rear IR eye interlock	Rear eye identification fault	1
	09		Rear eye communication fault	1
	13		Rear eye initialization fault	1

9 Storage

9.1 Daily Storage

- Do not allow the roller to sit overnight in a ditch, trench or other low-lying area which might fill with water during a heavy rain.
- Park the roller on a flat level surface, out of the way of traffic patterns and congestion.
- Chock the drums if the roller must be parked on an incline.
- Turn the battery disconnect switch to the OFF position.
- Lock the front and rear hoods.

9.2 Long-Term Storage



NOTICE

Allowing the battery to freeze or completely discharge is likely to cause permanent damage.

- ▶ Charge the battery every one to two weeks while the machine is not in use.
- ▶ In climates where temperatures regularly drop below freezing, store and charge the battery indoors or in a warm location.

When

Prepare your machine for extended storage if it will not be operated for 30 days or more.

Overview

Extended storage of equipment requires preventive maintenance. Performing these steps helps to preserve machine components and ensures the machine will be ready for future use. While not all of these steps necessarily apply to this machine, the basic procedures remain the same.

Preparing for storage

Perform the procedures below to prepare your machine for storage.

- Complete any needed repairs.
- Replenish or change oils (engine, exciter, hydraulic, and gearcase) per the intervals specified in the periodic maintenance schedule table.
- Grease all fittings and, if applicable, repack bearings.
- Inspect engine coolant. Replace coolant if it appears cloudy, is more than two seasons old, or does not meet the average lowest temperature for your area.
- If your machine has an engine equipped with a fuel valve, start the engine, close the fuel valve, and run the engine until it stops.
- Consult the engine owner's manual for instructions on preparing the engine for storage.

Stabilizing the fuel

After completing the procedures listed above, fill the fuel tank completely and add a high-quality stabilizer to the fuel.

- Choose a stabilizer that includes cleaning agents and additives designed to coat/protect the cylinder walls.
- Make sure the stabilizer you use is compatible with the fuel in your area, fuel type, grade, and temperature range. Do not add extra alcohol to fuels which already contain it (for example, E10).
- For engines with diesel fuel, use a stabilizer with a biocide to restrict or prevent bacteria and fungus growth.
- Add the correct amount of stabilizer per the manufacturer's recommendations.

Storing the machine

Perform these remaining steps to store your machine.

- Wash the machine and allow it to dry.
- Move the machine to a clean, dry, secure storage location. Block or chock the wheels to prevent machine movement.
- Use touch-up paint as needed to protect exposed metal against rust.
- If the machine has a battery, either remove or disconnect it.
- Cover the machine. Exposed rubber items should be protected from the weather. Either cover them or use a protectant.
- Store the machine in a location where the temperature is between -40°C (-40°F) and 85°C (185°F). Damage to electronics and other system components may occur outside this range.
- Remove the wireless controller batteries from the controller and the charger, and store the batteries in a location where the temperature is between -20°C (-4°F) and 35°C (95°F).

10 Decommissioning

10.1 Machine Disposal and Decommissioning

Introduction

This machine must be properly decommissioned at the end of its service life. Responsible disposal of recyclable components, such as plastic and metal, ensures that these materials can be reused which conserves landfill space and valuable natural resources.

Responsible disposal prevents toxic chemicals and materials from harming the environment. This machine contains several components that may be considered hazardous waste in many areas:

- Operating fluids, including fuel, engine oil, grease, and hydraulic oil
- Batteries
- Electronic components, such as circuit boards, control panels, LEDs, and joysticks

Before decommissioning this machine, read and follow local safety and environmental regulations pertaining to the disposal of construction equipment.

Preparation

- Move the machine to a protected location where it will not pose any safety hazards and cannot be accessed by unauthorized individuals.
- Ensure that the machine cannot be operated from the time of final shut-down to disposal.
- Drain all fluids, including fuel, engine oil, and coolant.
- Seal any fluid leaks.
- Remove the battery.

Disposal

- Disassemble the machine and separate all parts by material type.
- Dispose of recyclable parts as specified by local regulations.
- Dispose of all non-hazardous components that cannot be recycled.
- Dispose of waste fuel, oil, and grease in accordance with local environmental protection regulations.

11 Technical Data

11.1 Engine

Item	Unit	Specification
Engine type	—	3-cylinder, 4-cycle, liquid-cooled, diesel engine
Engine make	—	Kohler
Engine model	—	KDW 1003
Rated power ¹⁾	kW (hp)	14.8 (19.8) @ 3,000 rpm
Emission standard category	—	US Tier 4F/EU Stage V
CO ₂ emissions ²⁾	g/kWh	933.3
Engine speed – high idle	rpm	2,700
Engine speed – low idle	rpm	1,450
Air cleaner	type	Dry pleated paper elements
Battery	V / ccA	12V - Sealed / 650
Fuel	type	No. 2 Diesel, ultra-low sulfur fuel only
Fuel tank capacity (useable)	L (gal)	35.87 (9.47)
Fuel consumption	L (gal) / hr	2.7 (0.7)
Radiator capacity	L (gal)	4.8 (1.3)

1) Net power rating per ISO 3046/1. Actual power output may vary due to conditions of specific use.

2) Determined value of the CO₂ emission during engine certification without consideration of the applications on the machine.

11.2 Roller

Component	Unit	Specification
Operating weight (with all options)	kg (lb)	1,456 (3,210)
Area capacity	m ² (ft ²) / hr	986.4 (10,617.5)
Inside turning radius	m (in.)	1.55 (61)
Travel speed (forward and reverse)	m (ft) / min	44.8 (147)
Vibration frequency	Hz	42
Gradeability with vibration	%	45
Gradeability without vibration	%	50

11.3 Lubrication

Item	Unit	Specification
Engine crankcase	type / L (qt)	SAE 10W30 Class CK-4 rated or synthetic oil / 2.6 (2.75)
Hydraulic system	type / L (gal)	Premium grade, anti-wear hydraulic fluid SAE 10W30 ISO 4406 class 19/17/13 or better / 10.7 (2.83)
Articulation joint	type (qty)	NLGI #2 grease (as required)
Steering cylinder	type (qty)	NLGI #2 grease (as required)
Radiator	type / qty %	OAT coolant and deionized water / 50/50
Exciter / drive bearings	type	75W-90 API GL-4 full synthetic gear oil
Drive gear / seals	type	75W-90 API GL-4 full synthetic gear oil

11.4 Sound and Vibration Specifications

Products are tested for sound pressure level in accordance with EN ISO 11204. Sound power level is tested in accordance with European Directive 2000/14/EC - Noise Emission in the Environment by Equipment for use outdoors.

Note: In some specific operating conditions of the machine, the actual noise emission may be different from the values determined using the noise test code.

The sound pressure level at operator's location (L_pA) = 75 dB(A).

The guaranteed sound power level (LWA) = 109 dB(A).

Because this machine is operated using remote control, the operator is not exposed to vibration.

These measurements were carried out in accordance with the requirements of EN 474 and the Directive 2000/14 EC, as amended by Directive 2005/88 EC!

11.5 Dimensions

mm (in.)

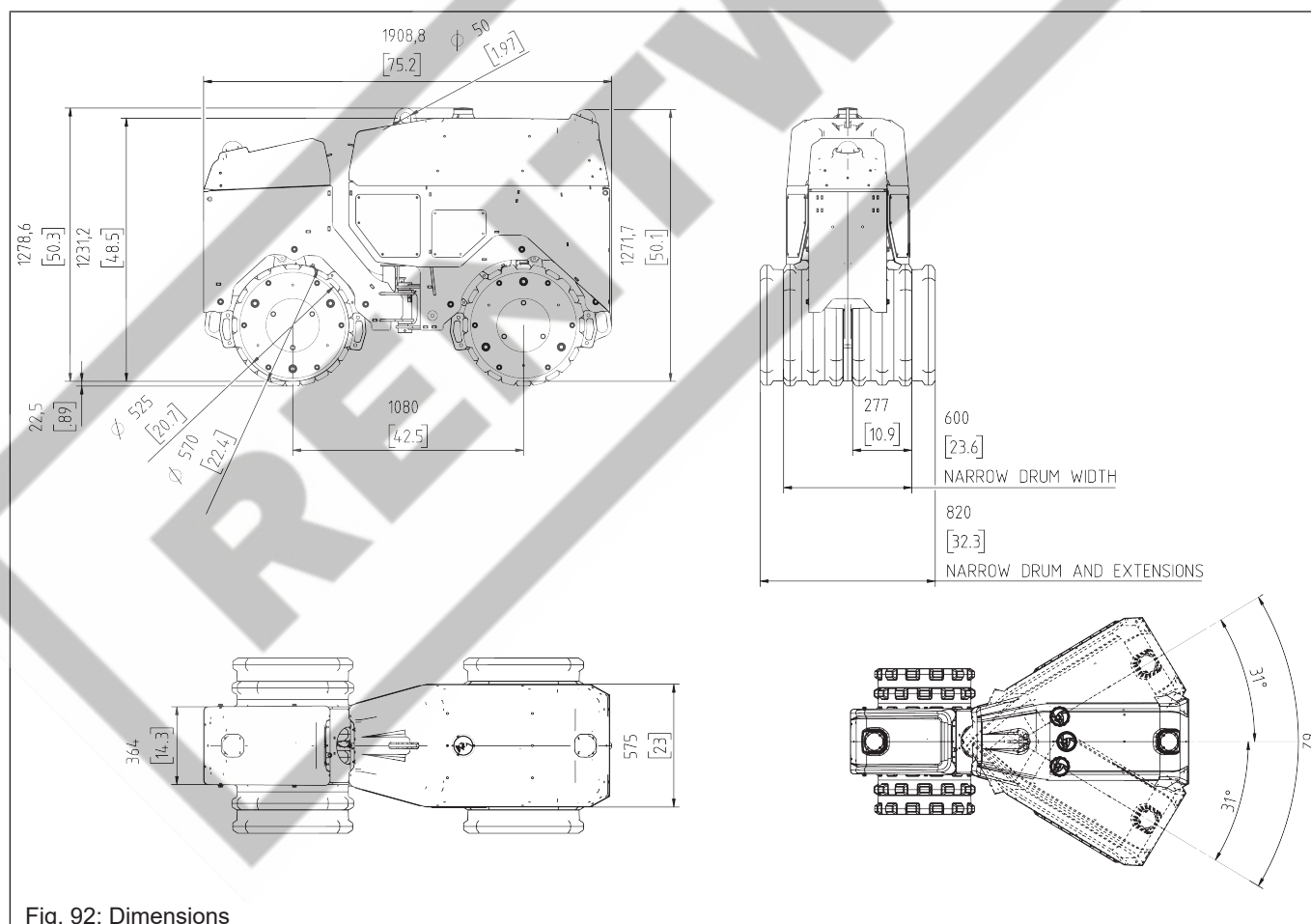


Fig. 92: Dimensions

11.6 Radiation Compliance

This machine meets the following radio interference radiated emission requirements:

- EN ISO 13766-1
- RED 2014/53/EU
- ICES/NMB-002
- ICES/NMB-003(A)
- ICES/NMB-005(A)

RENTWAY

Index

A

Abbreviations	11
Active faults	40, 41
Adjusting the scraper bars	82
Air filter	
checking and replacing	78
Angle calibration	46
Application area	14
Articulation joint	
locking bar	21, 31
lubrication	87
Attachments	10, 14, 16
approved	11

B

Battery	
checking the cables	88
location	21
maintaining	96
Battery pack	
charger safety	18
charging	64
charging status	65
description	64
presence	46
replacing	64
safety	18
status	66
storage	113

C

Changing drums	66
Compatec compaction system	49
Control and component locations	20

D

Diagnostic trouble codes	111
Dimensions	116
Display page navigation	43
Display pages	40
Disposal and decommissioning	114
Drums	
changing	66
gear oil, changing	98
installing extensions	67
removing extensions	69
shock mounts, checking	92

E

Emergency shutdown	63
Engine	
checking and replacing the air filter	78
coolant hoses, checking	92
coolant, changing	99
coolant, checking and adding	81
maintenance	74
specifications	115
speed	40, 42, 57
Engine oil	
checking the level	77
Extreme temperatures	
operating in	55

F

Fan belt	
replacing	94
tension	90
Faults	
codes	45
communication	54
general	43
Fuel	
checking the lines	82
filter replacement	91
priming the system	93
refueling the machine	63
stabilizing	113
Fuse box	
location	21

H

Home page	40
Hoods	
checking	82
Hydraulic oil	
cap, replacing	98
changing (with filters)	84
checking the level	76
cooler, checking and cleaning fins	93
requirements	75
safety	17

I

Indications and warnings	40, 41
Information center	38

Infrared	19, 39
eye status	45
signal status	40, 43

L

Labels	
information	28
locations	22, 24
replacing	16
safety	26
Lifting the machine	31
safety guidelines	17
Lubrication	115

M

Machine	
accessing the compartments	36
cleaning	17
description	19
disposal and decommissioning	114
documentation	9
features and controls	19
hours	40
identification	9
inspecting for damage	79
intended use	12
lifting	17, 31
modifications	16
number	9
operation	57
parameters subpages	44
preparing for first use	36
range limits	52
residual risks	12
shutting down	57
stability	60
starting	56
storage (daily)	112
storage (long-term)	112
towing	35
transporting	33
unintended use	12
Maintenance	
alarms	46
engine	74
engine oil	75
general	72
intervals subpages	45
preparing for	72
safety guidelines	16
Maintenance items	11
Misuse	12

Modifications	10
---------------------	----

N

Navigating the display pages	43
------------------------------------	----

O

Operation	57
in extreme temperatures	55
on slopes	61
preliminary checks	54
range	52
travel speed	60
Operator	
positioning	51
training	13
Options	
Compatec compaction system	49
steering style	38, 40, 42
Owner PIN	47

P

Pages and subpages	43
Pairing the wireless controller	48
Parking brake	58
override	46
status	40, 42, 58
Parts	10
replacing	16
Personal protective equipment (PPE)	15
PIN	
entry	48
owner	47
reset	47
rollover	47
start	47
Preparing machine for first use	36

R

Radiation compliance	117
Radiator	
checking and cleaning fins	93
Radio signal	53
Range limits	52
Refueling	63
Risk	
residual risks	12
Rollover PIN	47
Rollovers	62
tip count	46

S

Safety	
after use	15
battery pack	18
devices, controls, and attachments	14
emergency shutdown	63
guidelines for operating the machine	13
hydraulic oil	17
lifting	17
maintenance	16
operating the machine	13
operator training	13
personal protective equipment (PPE)	15
residual risks	12
service	16
signal words and symbols	13
Scraper bars	
adjustment	82
Shutting down	57
in an emergency	63
Slopes	
operation on	61
Sound	
specifications	116
Specifications	
dimensions	116
engine	115
engine coolant	81
lubrication	115
roller	115
Start PIN	47
Starting	56
Steering	
angle	46, 60
style	40, 42
Storage	
daily	112
long-term	112
System settings	45

T

Training	
operator	13
service	16
Transceiver	
LED meanings	105
location	21
troubleshooting	105
Transportation	
lifting the machine	32

Transporting	
towing the machine	35
tying down the machine	33
Travel speed	40, 57
Troubleshooting	
diagnostic trouble codes	111
general	102
transceiver	105
wireless controller	105

V

Vibration	
intensity	40
on a compacted surface	61
specifications	116

W

Wireless controller	19
cleaning	75
description	37
error codes	106
indications and warnings	40, 41
location	21
pages	40
pages and subpages	43
pairing	48
self-test mode	106
starting and stopping	39
using	39



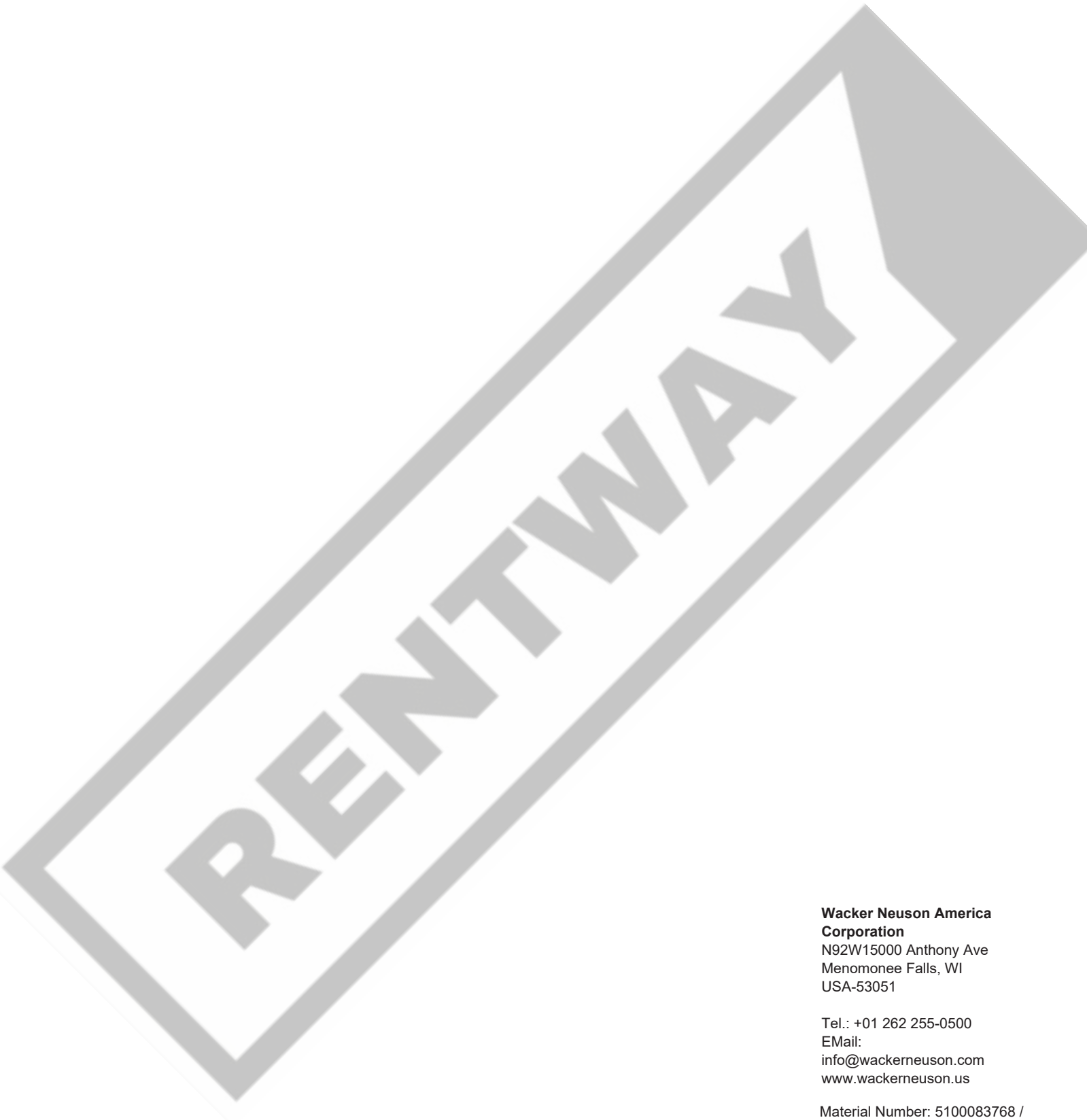
RENTWAY



RENTWAY



RENTWAY



RENTWAY

**Wacker Neuson America
Corporation**

N92W15000 Anthony Ave
Menomonee Falls, WI
USA-53051

Tel.: +01 262 255-0500

EMail:

info@wackerneuson.com
www.wackerneuson.us

Material Number: 5100083768 /
3300037835

Language: [en]