OPERATOR'S MANUAL

TM320

9821/3100-6 04/2015
ENGLISH

This manual should always stay with the machine

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Safety Notices

Important Information

T1-042

The Operator Manual

⚠ WARNING

You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator Manual. You must understand and follow the instructions in the Operator Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

INT-1-4-2

Do not operate the machine without an Operator Manual, or if there is anything on the machine you do not understand.

Treat the Operator Manual as part of the machine. Keep it clean and in good condition. Replace the Operator Manual immediately if it is lost, damaged or becomes unreadable.

Safety Warnings



This safety alert system identifies important safety messages in this manual. When you see this symbol, be alert, your safety is involved, carefuly read the message that follows, and inform other operators.

In this publication and on the machine, there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

⚠ DANGER

Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.

INT-1-2-1

⚠ WARNING

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.

INT-1-2-2

⚠ CAUTION

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.

INT-1-2-3

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Identifying Your Machine

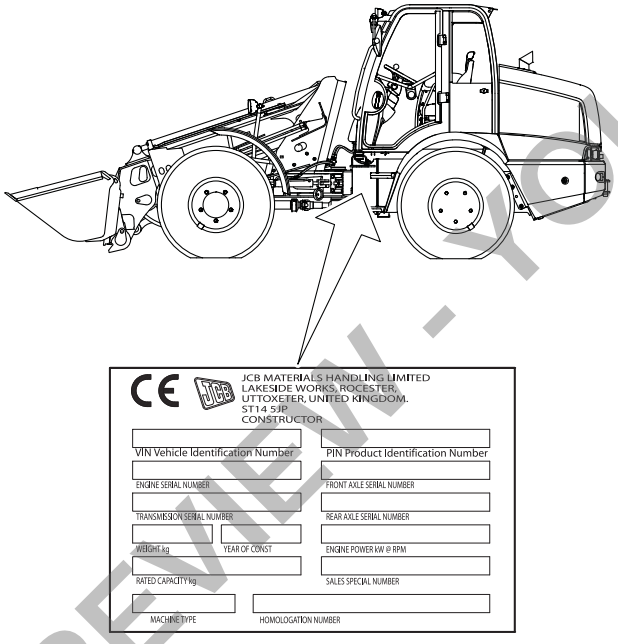
Machine Identification Plate

Your machine has an identification plate mounted as shown. The serial numbers of the machine and its major units are shown on the plate.

Note: *The machine model and build specification is indicated by the PIN. Refer to* ***Typical Product Identification Number (PIN)****.*

The serial number of each major unit is also shown on the unit itself. If a major unit is replaced by a new one, the serial number on the identification plate will be wrong. Either get a replacement identification plate from your JCB Dealer or simply remove the old number. This will prevent the wrong unit number being quoted when replacement parts are ordered.

The machine and engine serial numbers can help identify exactly the type of equipment you have.



C051170-2

Fig 4.

Typical Product Identification Number



T034220-3

Fig 5.

1 World Manufacturer Identification (3 Digits)

2 Model Number (3 Digits)

3 Loader End Type (1 Digit)

O = HT Loader End

Z = ZX Loader End

4 Designation (1 Digit)

S = Farmmaster

O = None Farmmaster

I = India

5 Check Letter (1 Digit)

The Check Letter is used to verify the authenticity of the machine's PIN.

6 Machine Serial Number (8 Digits)

Each machine has a unique serial number.

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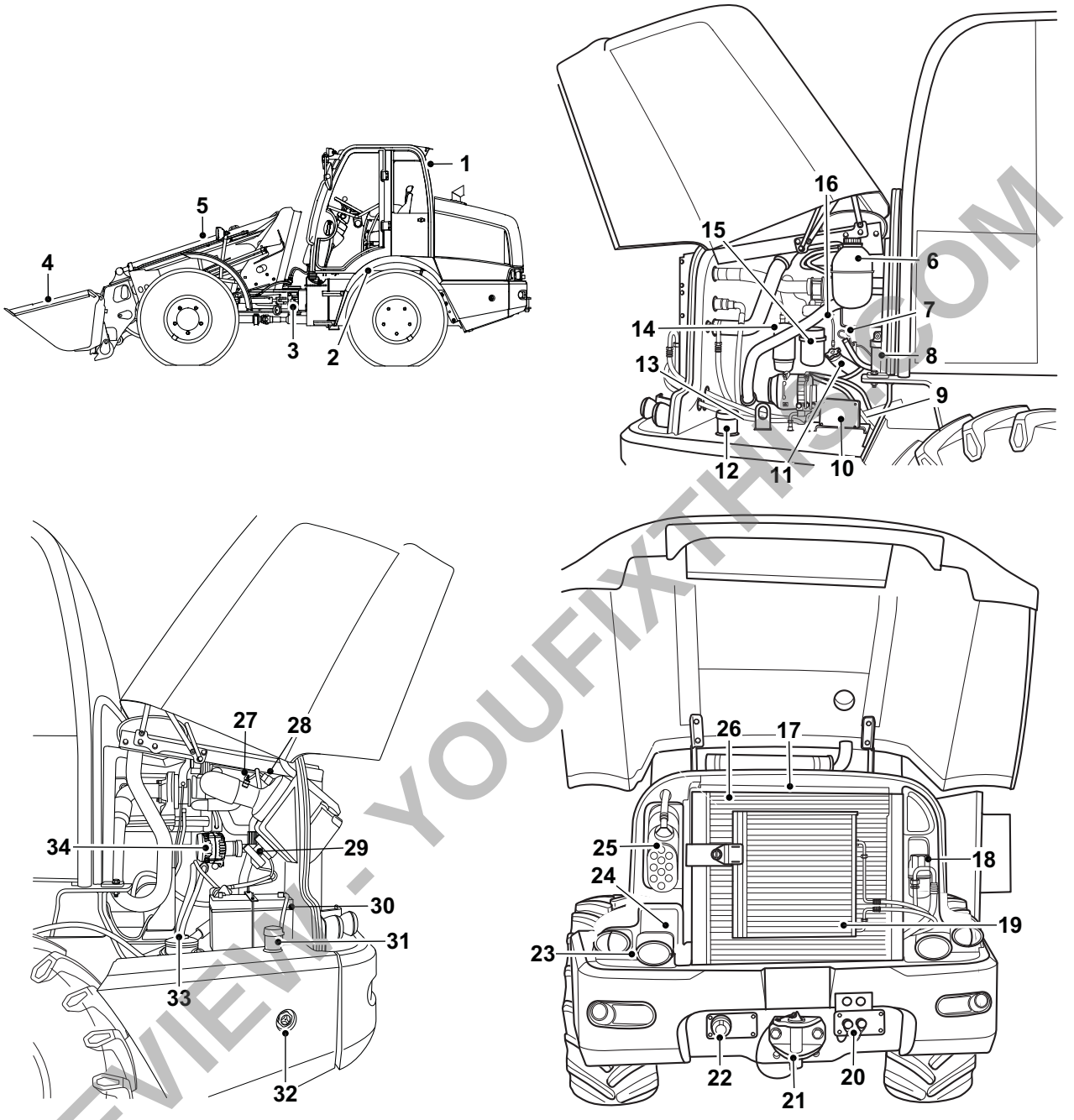


Fig 2.

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Q-Fit Attachments

Mechanical Pin Locking Option

P5-4010

Installing Attachments

⚠ WARNING

Keep other people clear of the area while you engage the attachment. If a second person is to be involved in this procedure, ensure that he keeps clear of the machine and attachment until signalled by you to proceed. The machine loading limits at different boom positions are shown on the Load Charts in the cab.

5-5-1-2_1

Read the information given in the following pages or the attachment manual. Pay particular attention to the safety notices and any specific notes about handling and installing.

1 Position the attachment:

- **a** Make sure the attachment is on firm, level ground.
- **b** Make sure the attachment will not tip over.

2 Remove existing attachment. Refer to ***Removing Attachments***.

3 Engage the Attachment.

- **a** Ensure that the carriage lock pins **A** are withdrawn.
- **b** Use the controls to line up the carriage with the attachment and just below the attachment hook plates **B**.
- **c** Engage the park brake, set the transmission to neutral.
- **d** Using the boom controls, engage the support bar on the carriage into the hook plates on the attachment. Ensure that both hook plates are engaged equally.
- **e** Lift and tilt the carriage back, to line up the locking holes in the carriage with those in the attachment.

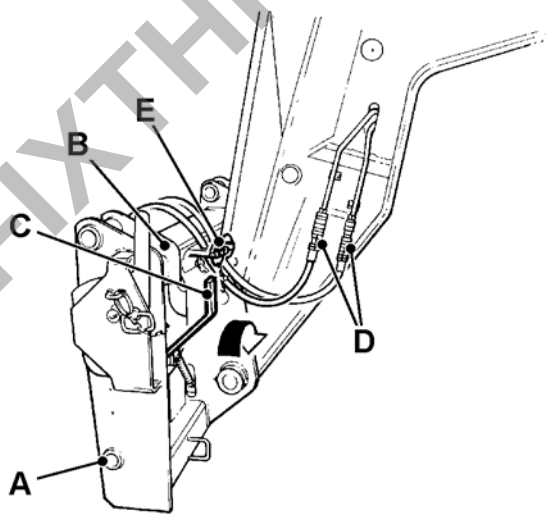
4 Lower the attachment to the ground.

5 Stop the engine. Remove the starter key.

6 At the carriage, operate the manual locking lever **C** to engage the locking pins. Ensure that the locking pins are fully engaged. If a second person is to do this job keep your hands and feet away from the controls until he is clear of the machine.

7 If the attachment is hydraulically operated read ***Connecting/Disconnecting Hydraulic Hoses***, then connect the hose(s) **D**.

8 Secure the hydraulic hose(s) to the carriage with locking pins **E**.



275191-2

Fig 138.

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3 Avoid skin contact with oil soaked clothing.

4 Don't keep oily rags in pockets.

5 Wash dirty clothing before re-use.

6 Throw away oil-soaked shoes.

First Aid - Oil

Eyes

In the case of eye contact, flush with water for 15 minutes. If irritation persists, get medical attention.

Swallowing

If oil is swallowed do not induce vomiting. Get medical advice.

Skin

In the case of excessive skin contact, wash with soap and water.

Spillage

Absorb with sand or a locally approved brand of absorbent granules. Scrape up and remove to a chemical disposal area.

Fires

⚠ WARNING

Do not use water to put out an oil fire. This will only spread it because oil floats on water.

Extinguish oil and lubricant fires with carbon dioxide, dry chemical or foam. Fire fighters should use self contained breathing apparatus.

7-3-1-3_1

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Service Schedules

Introduction

T3-036_3

⚠ WARNING

Maintenance must be done only by suitably qualified and competent persons.

Before doing any maintenance make sure the machine is safe, it should be correctly parked on level ground.

To prevent anyone starting the engine, remove the starter key. Disconnect the battery when you are not using electrical power. If you do not take these precautions you could be killed or injured.

8-3-1-1

A badly maintained machine is a danger to the operator and the people working around him. Make sure that the regular maintenance and lubrication jobs listed in the service schedules are done to keep the machine in a safe and efficient working condition.

Apart from the daily jobs, the schedules are based on machine running hours. Keep a regular check on the hourmeter readings to correctly gauge service intervals. When there is no hourmeter fitted, use the calendar equivalents to determine the service intervals. Refer to ***Calendar Equivalents***. Do not use a machine which is due for a service. Make sure any defects found during the regular maintenance checks are rectified immediately.

How to Use the Service Schedules

T3-012_4

In the example shown, **A** shows all service requirements to be carried out every 10 hours and **B** shows the requirements to be carried out every 500 hours.

Important: *Services should be carried out at either the hourly interval or calendar interval, whichever occurs first. Refer to* ***Calendar Equivalents****.*

Important: *The intervals given in the schedules must not be exceeded. If the machine is operated under severe conditions (high temperature, dust, water, etc.), shorten the intervals.*

Pre-start Cold Checks, Service Points and Fluid Levels

	Operation	A: 10	50	100[1]	B: 500	1000	2000	8000
ENGINE								
Coolant Quality and Level	- Check	□	□	□	□	□		
Cooling System	- Drain and Refill						□	□
Oil level	- Check	□	□					
Oil and Filter[2][3][4]	- Change				□	□	□	□
Air Cleaner Dust Valve[5]	- Change				□	□	□	□
Air Cleaner Outer Element[5]	- Change					□	□	□
Air Cleaner Inner Element	- Change						□	□
Pre-Cleaner (if fitted)	- Check			□				
Water Seperator	- Check for contamination and Drain		□	□	□	□	□	□
Engine Fuel Filter	- Change					□	□	□
Front End Accessory Drive (FEAD) Belt Condition	- Check				□	□	□	□
Front End Accessory Drive (FEAD) Belt	- Change							□
Engine Mounting Bolts for Tightness	- Check			□	□	□	□	□
All Hoses - Condition	- Check			□	□	□	□	□
Radiator[5]	- Clean				□	□	□	□
Crankcase Ventilation Filter	- Change					□	□	□

795390-1

Calendar Equivalents

T3-037

Every 10 Hours = Daily

Every 50 Hours = Weekly

Every 500 Hours = Six Months

Every 1000 Hours = Yearly

Every 2000 Hours = 2 Years

Every 8000 Hours = 8 Years

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Safety Equipment

Load Charts

Introduction to Load Charts

⚠ CAUTION

The Load Chart shown is only an example. Do not use it to find the loading limits on your machine. Before lifting or placing loads, refer to the Load Charts in the cab of your machine.

5-2-4-2

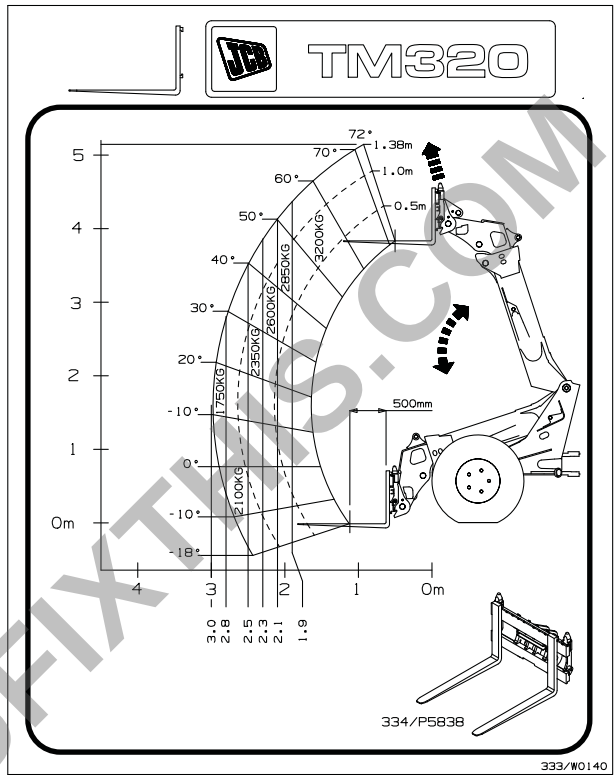
The SWL at different boom positions is shown on the load charts in the cab. An example load chart is shown.

The load charts show how far you can raise and extend a load without exceeding the safe working load. Each machine model has its own load chart for a standard fork carriage. There may be other load charts for use when a different carriage or attachment is fitted on the boom.

The limits shown on the load chart only apply to a machine installed with JCB approved tyres. To obtain the limits shown the tyres must be in good condition and inflated to the correct pressure. If you are in doubt, speak to your dealer.

Check the relevant load chart is available for any alternative carriage or attachment. If you are unsure of the correct load chart to use, contact your JCB distributor for advice.

Renew any damaged or missing charts.



333-W0140-1

Fig 44.

Using the Load Charts

P5-2016_3

⚠ CAUTION

The limits shown on the Load Charts are for a stationary level machine. Do not raise or extend the boom while the machine is moving. Retract the boom fully and lower it as far as possible before you travel with a load.

5-2-4-3_2

1 Check what boom attachment is fitted to your machine, then refer to the correct Load Chart in the cab.

2 You must know the weight of a load before picking or placing it. Check that the loads Centre of Gravity **X** will not be more than 500 mm (20 in) in front of the fork uprights.

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Changing the Fuel Filter Element

⚠ CAUTION

Do not allow dirt to enter the fuel system. Before disconnecting any part of the fuel system, thoroughly clean around the connection. When a component has been disconnected, for example a fuel pipe, always fit protective caps and plugs to prevent dirt ingress.

Failure to follow these instructions will lead to dirt entering the fuel system. Dirt in the fuel system will seriously damage the fuel injection equipment and could be expensive to repair.

ENG-1-7

1 Make the machine safe with the boom lowered. ⇨ *Prepare the Machine for Maintenance (136)*.

2 Open the engine cover. ⇨ *Engine Cover (146)*.

3 Clean the outside of the fuel filter housing and around the fuel filter head.

4 Loosen the drain tap **B** and let the water/fuel drain into a suitable container.

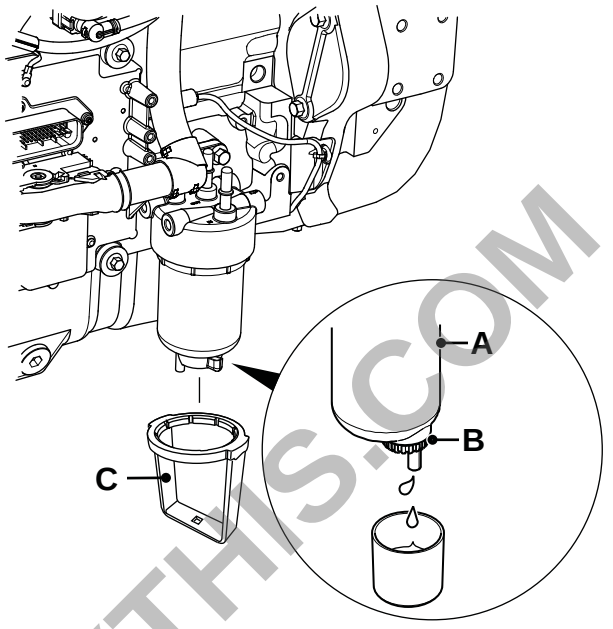
5 Remove the fuel filter element **A**. Use the special tool **C**.

6 Lightly oil the seals, then install the new fuel filter element **A**.

7 Make sure that the fuel filter flange touches the fuel filter head. Use the special tool **C**. Torque tighten to 30Nm.

8 Close and secure the engine cover.

9 Bleed the fuel system. ⇨ *Bleeding the Fuel System (167)*.



T063700-2

Fig 121.

A Fuel filter element
B Drain tap
C Special tool

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Access Panels

Engine Cover

Opening the Cover

WARNING

The engine has exposed rotating parts. Switch OFF the engine before working in the engine compartment. Do not use the machine with the engine cover open.

5-2-6-5

WARNING

Touching hot surfaces can burn skin. The engine and machine components will be hot after the unit has been running. Allow the engine and components to cool before servicing the unit.

10-1-1-40

Important: *Before you stop the engine, you must allow the engine to operate at low idle for four minutes. The delay allows the coolant temperatures to stabilise before you open the engine cover.*

1 Make the machine safe with the boom lowered. ⇨ ***Prepare the Machine for Maintenance (136)***.

2 Use the key to open the lock **A**.

3 Push and hold the button to release the cover, then lift the cover.

4 Lift the cover.

Note: *Two gas struts help to lift the cover. The gas struts also hold the cover in the fully open position.*

Important: *Do not stand on the engine cover for any reason, for example to get access to the rear number plate light or the rear screen wiper.*

Closing the Cover

CAUTION

The struts holding the engine cover can over time become weak. This will be noticed by the fact that the cover will not hold in the fully open position, but will tend to sag slightly. Do not work under an engine cover that will not retain its fully open position.

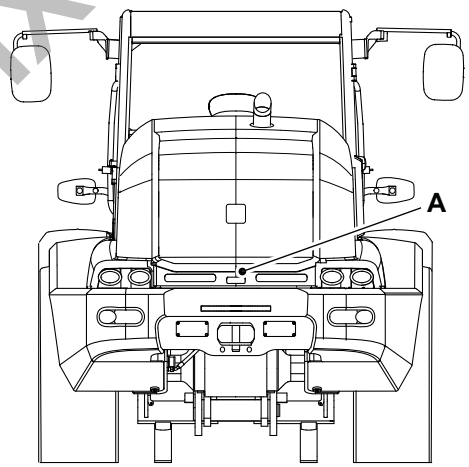
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1 Close the cover.

2 Make sure the cover is closed and latched.

3 Use the key to close the lock and secure the cover.

Important: *Make sure that the cover is securely closed before you operate the machine.*



T06688-4

Fig 98.

A Lock

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Table 6.

LLMI Code	J2012 Code	Description
	B104C-67	Calibration tip point
	B104D-67	Calibration travel point
	B104E-54	Calibration required
	B1050-29	Calibration error

End Damping

At the end of the boom lower stroke, a signal is sent from the boom angle sensor to the LLMC ECU. This signal will override the joystick command and slow the boom down to provide a cushioned stop.

At the beginning of the boom lower stroke, a signal is sent from the boom angle sensor to the LLMC ECU. This signal will override the joystick command to give a slow start of control to enhance the stability of the machine.

At the end of the boom retract stroke, a signal is sent from the boom angle sensor to the LLMC ECU. This signal will override the joystick command and slow the boom down to provide a cushioned stop.

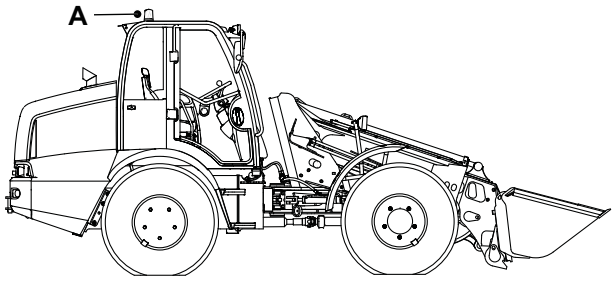
Beacon (Option)

Important: *We recommend that you install the beacon before you travel on public highways. In certain territories you will be breaking the law if you do not install the beacon before you travel on public highways, make sure you are complying with the local laws.*

The beacon **A** has a magnetic base to attach it to the cab roof.

The beacons plug connects into a socket on the cab roof.

Push the beacon switch to operate the beacon. ⇨ ***Radio Plate Panel (46)***.



T066880-2

Fig 54.

A Beacon

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