

## 515-40

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## General Information

Service Manual - 515-40

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# Section 1 - General Information

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# Introduction

## About This Publication

### Machine Model and Serial Number

This manual provides information for the following model(s) in the JCB machine range:

- 515-40 from SN 1627500 to 1769999

### Using the Service Manual

T11-004  
This publication is designed for the benefit of JCB Distributor Service Engineers who are receiving, or have received, training by JCB Technical Training Department.

These personnel should have a sound knowledge of workshop practice, safety procedures, and general techniques associated with the maintenance and repair of hydraulic earthmoving equipment.

The illustrations in this publication are for guidance only. Where the machines differ, the text and/or the illustration will specify.

General warnings in Section 2 are repeated throughout the manual, as well as specific warnings. Read all safety statements regularly, so you do not forget them.

Renewal of oil seals, gaskets, etc., and any component showing obvious signs of wear or damage is expected as a matter of course. It is expected that components will be cleaned and lubricated where appropriate, and that any opened hose or pipe connections will be blanked to prevent excessive loss of hydraulic fluid and ingress of dirt.

Where a torque setting is given as a single figure it may be varied by plus or minus 3%. Torque figures indicated are for dry threads, hence for lubricated threads may be reduced by one third.

The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this publication.

Finally, please remember above all else safety must come first!

### Section Numbering

T11-005  
The manual is compiled in sections, the first three are numbered and contain information as follows:

- 1** General Information - includes torque settings and service tools.
- 2** Care and Safety - includes warnings and cautions pertinent to aspects of workshop procedures etc.
- 3** Maintenance - includes service schedules and recommended lubricants for all the machine.

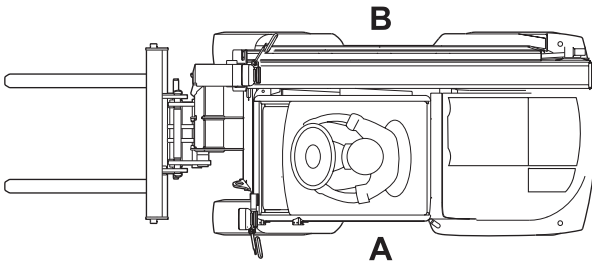
The remaining sections are alphabetically coded and deal with Dismantling, Overhaul etc. of specific components, for example:

- A** Attachments
- B** Body and Framework, etc.

Section contents, technical data, circuit descriptions, operation descriptions etc. are inserted at the beginning of each alphabetically coded section.

### Left Side, Right Side

In this manual, 'left' **A** and 'right' **B** mean your left and right when you are seated correctly in the machine.



447200-2

**Fig 1.**

### Cross References

T1-004\_2

In this publication, page cross references are made by presenting the subject title printed in bold, italic and underlined. It is preceded by the 'go to' symbol. The number of the page upon which the subject begins, is indicated within the brackets. For example: [⇒ \*\*\*Cross References\*\*\* \(1-2\)](#).

### Identifying Your Machine

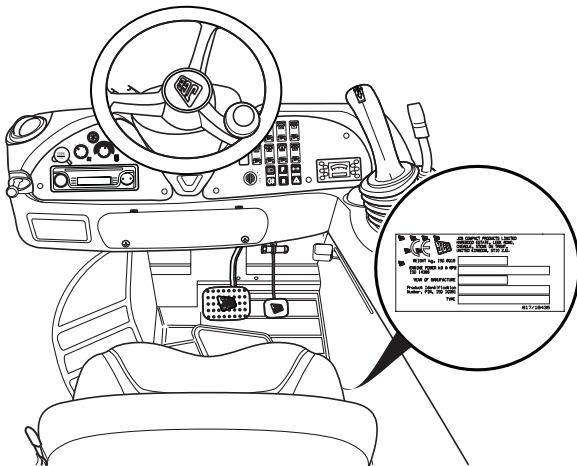
#### Machine Identification Plate

Your machine has an identification plate mounted as shown. The serial numbers of the machine and its major units are stamped 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 stamped 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 stamp the new number of the unit on the identification plate, or simply stamp out 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.

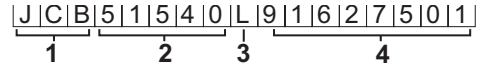


**Fig 2. Machine identification plate**

C091000

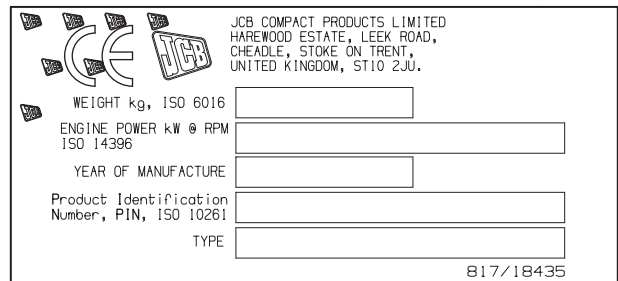
#### Typical Product Identification Number

The PIN, weight, engine power, year of manufacture and serial number of the machine are stamped on the identification plate.



- 1 World Manufacturer Identification (3 Digits)
  - 2 Machine Model (5 Digits)
  - 3 Randomly Generated Check Letter (1 Digit)
  - 4 Year of Manufacture (1 Digit)
- 9 = 2009                      A = 2010  
 B = 2011                      C = 2012
- 5 Machine Serial Number (7 Digits)

Each machine has a unique serial number.



**Fig 3.**

817-18435-2

The machine PIN is also stamped onto the fuel tank as at **A** and onto the chassis behind the fan assembly as shown at **B**.

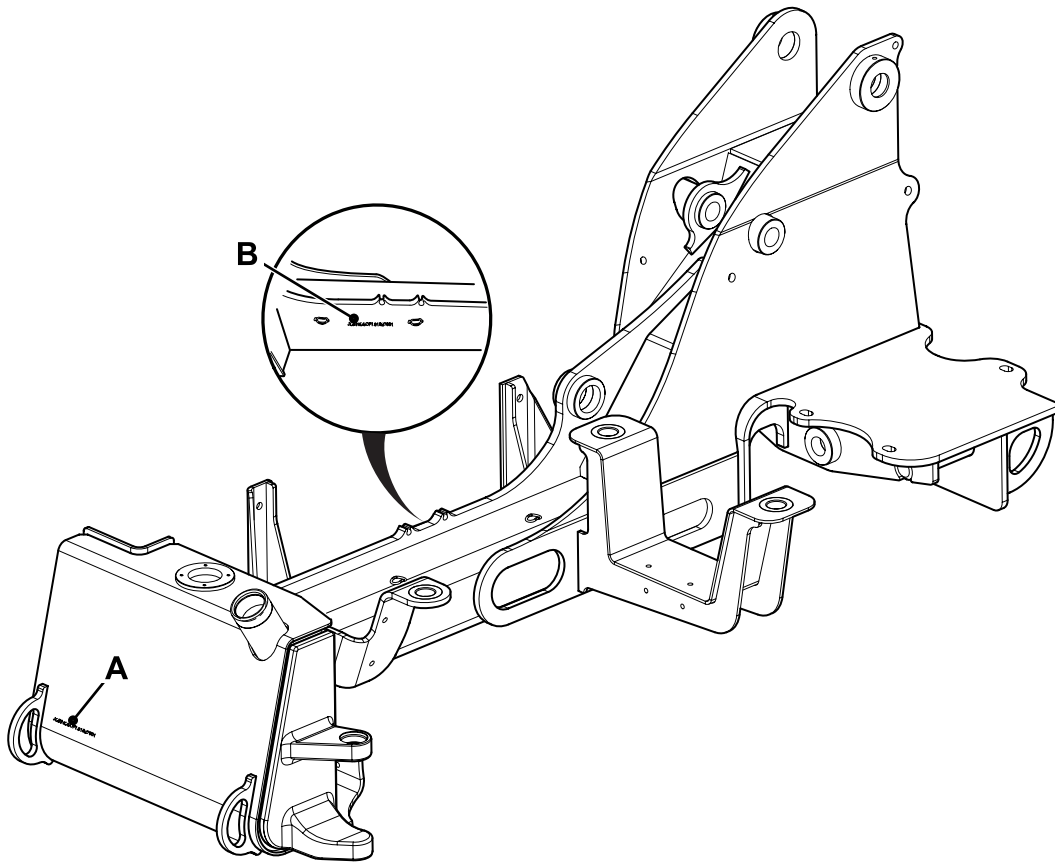


Fig 4.

C093310

## Component Identification Plates

### Typical Engine Identification Number

The engine data label is located on the top of the engine. If the engine is replaced by a new one, the data plate serial number will be wrong. Either stamp the new number on the plate or stamp out the old one. This will prevent the wrong number being quoted when you order replacement parts.

a	b	c	d	e
D	2009	L	04	9999999

- a Type (D = Diesel)
- b Series (2009)
- c Cylinder layout (L = In series)
- d Number of cylinders (04 = 4 Cylinder)
- e Engine Serial Number (7 Digits)

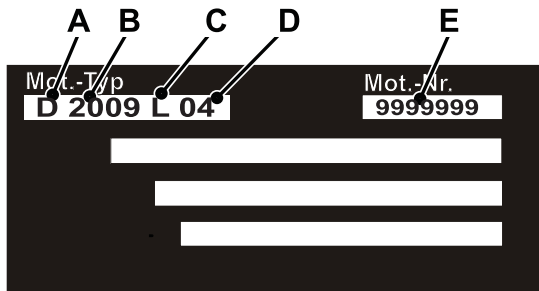


Fig 5.

C089970-C3

**Note:** The engine serial number **F** is also stamped on the engine. → [Fig 6.](#) ([□ 1-5](#)).

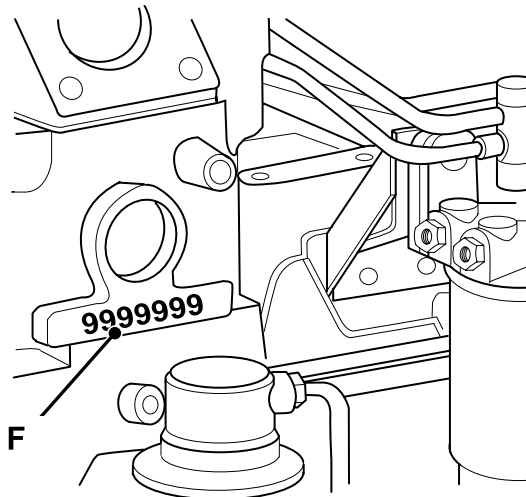


Fig 6.

C089980

### Typical Engine Identification Number - Deutz

If the engine is replaced by a new one, the data plate serial number will be wrong. Either stamp the new number on the plate or stamp out the old one. This will prevent the wrong number being quoted when you order replacement parts.

a	b	c	d	e
AB	50316	J	000001	2

- a Engine Type (AB= 4 cylinder turbo)
- b Engine Parts List
- c Country of Manufacture
- d Engine Serial Number
- e Year of Manufacture



## Kohler Engine

### Typical Engine Identification Number

The engine data label is located on the top of the engine. If the engine is replaced by a new one, the data plate serial number will be wrong.

Either stamp the new number on the plate or stamp out the old one. This will prevent the wrong number being quoted when you order replacement parts.

- a Engine Model
- b Engine Serial Number
- c EU Approval Code
- d Specification Number
- e RPM

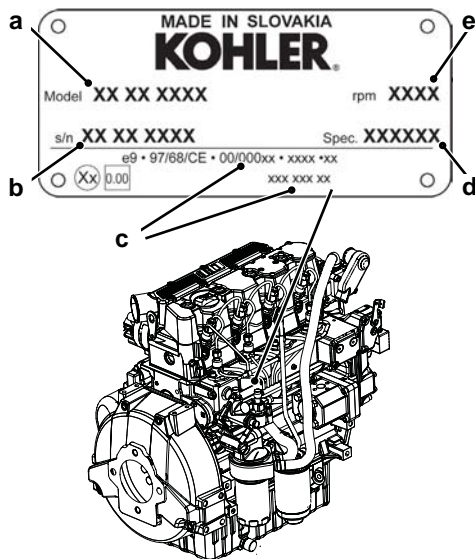


Fig 7.

C089970-C10

### Emission Control Information

The data plate which shows the EPA regulations is on the rocker arm cover.

- 1 Power Category
- 2 Engine Displacement

- 3 EPA Family ID
- 4 Tune-up Specifications: Injection Timing
- 5 Tune-up Specifications: Injection Opening Pressure
- 6 PM
- 7 Fuel Type

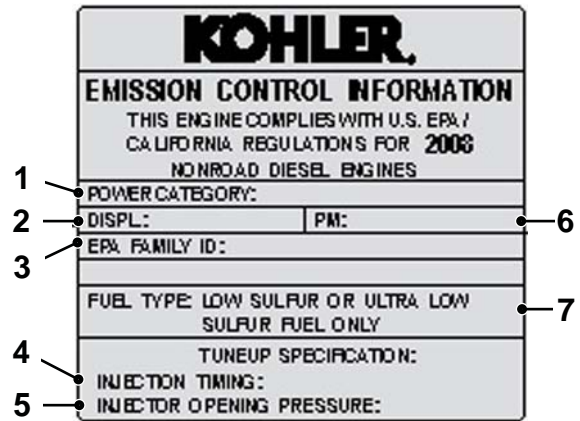


Fig 8.

C089970-C2

### FOPS Data Plate

#### WARNING

**Do not use the machine if the falling objects protection level provided by the structure is not sufficient for the application. Falling objects can cause serious injury.**

8-2-8-17

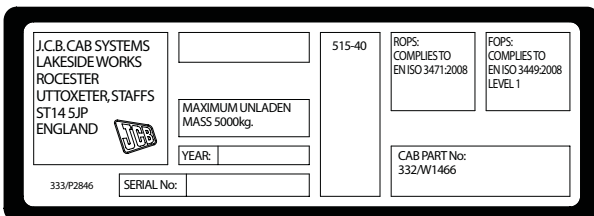
If the machine is used in any application where there is a risk of falling objects then a falling-objects protective structure (FOPS) must be installed. For further information contact your JCB Dealer

The falling objects protection structure (FOPS) is fitted with a dataplate. The dataplate indicates what level protection the structure provides.

There are two levels of FOPS:

- **Level I Impact Protection** - impact strength for protection from small falling objects (e.g. bricks, small concrete blocks, hand tools) encountered in operations such as highway maintenance, landscaping and other construction site services.
- **Level II Impact Protection** - impact strength for protection from heavy falling objects (e.g. trees, rocks) for machines involved in site clearing, overhead demolition or forestry.

For an example of the FOPS data plate, refer to [Fig 9.](#) (□ 1-7).



**Fig 9.**

C090690

### ROPS Data Plate

#### WARNING

**You could be killed or seriously injured if you operate a machine with a damaged or missing ROPS/FOPS. If the Roll Over Protection Structure (ROPS)/Falling Objects Protection Structure (FOPS) has been in an accident, do not use the machine until the structure has been renewed. Modifications and repairs that are not approved by the manufacturer may be dangerous and will invalidate the ROPS/FOPS certification.**

INT-2-1-9\_6

#### WARNING

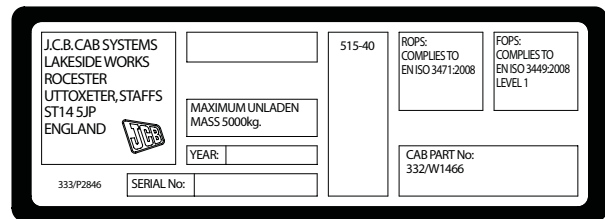
##### Seat Belts

**The ROPS/FOPS is designed to give you protection in an accident. If you do not wear your seat belt, you could be thrown out of the machine and crushed. You must wear a seat belt when using the machine. Fasten the seat belt before starting the engine.**

0153

The machine is built to the ROPS standard and has a data plate attached to the frame. [⇒ Fig 10.](#) (□ 1-7).

For an example of the ROPS data plate, refer to [Fig 10.](#) (□ 1-7).



**Fig 10.**

C090690

## Moving a Disabled Machine

**Important:** This procedure should only be carried out by a qualified engineer. If you have any queries concerning this procedure, consult your local JCB Distributor.

### CAUTION

The transmission will be damaged, if the machine is moved unless the transmission pump is prepared for towing.

4-2-5-6

### CAUTION

#### Recovery Hitch

The counterweight is fitted with a recovery hitch which must not be used for towing.

2-1-1-11\_2

### CAUTION

Towing a machine too far or too fast can damage the transmission. Do not tow the machine further than one mile. Use a trailer for greater distances. When towing do not travel faster than 6 mph (10 km/h).

Use a rigid draw-bar. If a towing chain must be used, then use two towing vehicles. One towing vehicle should be coupled to the front of the disabled machine. The other towing vehicle should be coupled to the rear of the disabled machine, to provide braking power.

The towing vehicle(s) must have enough pulling and braking power to move and stop the machine.

2-2-7-34-1

- 1 Using suitable lifting equipment, remove any payload from the machine.
- 2 Attach a rigid tow bar between a suitable connection point on the machine and the towing vehicle.
- 3 Place blocks both sides of each wheel on the disabled machine.

**Important:** If the machine is to be towed the transmission bypass valve must be adjusted as shown below. The machine should only be towed the minimum distance required to load it onto a transporter. The transporter should be positioned as close as possible to the machine.

- 4 Open the bypass valve, as follows:
  - a Remove the operators seat base to get access to the transmission pump. Refer to **Maintenance, Operators Seat Base**.
  - b Unscrew plug **A** by three full turns.
- 5 Remove the wheel chocks from each wheel and tow the machine to a place of repair at a maximum speed of 6 mph (10 kph). Tow the machine the minimum distance necessary (maximum one mile). When towing is complete, place chocks both sides of each wheel.
- 6 Tighten the plug **A** to close the bypass valve.
- 7 Remove the tow bar and wheel blocks.
- 8 Replace the operator seat base.

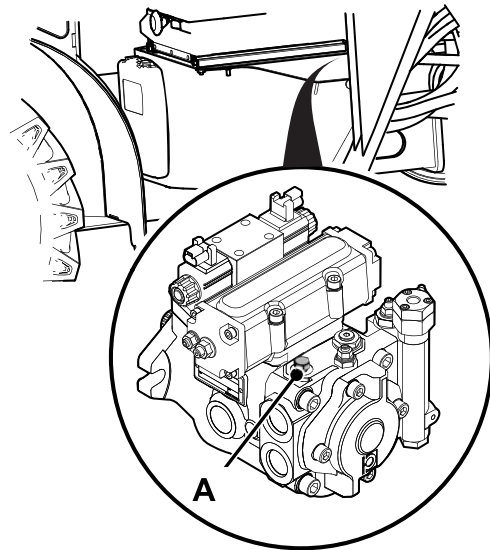


Fig 11.

C091480

### Transporting the Machine

#### WARNING

The safe transit of the load is the responsibility of the transport contractor and driver. Any machine, attachments or parts that may move during transit must be adequately secured.

5-2-5-9

**Important:** Use only the tie down anchor points specified.

**Note:** Before transporting the machine make sure you will be obeying the rules and laws of all the areas that the machine will be carried through.

Make sure that the transporting vehicle is suitable. See **Static Dimensions** (SPECIFICATIONS section) for the dimensions of your machine.

#### WARNING

Before moving the machine onto the trailer, make sure that the trailer and ramp are free from oil, grease and ice. Remove oil, grease and ice from the machine tyres. Make sure the machine will not foul on the ramp angle. See **Static Dimensions in SPECIFICATION section for the minimum ground clearance of your machine.**

2-2-7-5\_1

- 1 Place blocks at the front and rear of the trailer wheels.
- 2 Move the machine onto the trailer.

Loading a serviceable machine onto the trailer:

- a Make sure the ramps are correctly in place and secure.
- b Set the boom.
- c Carefully drive the machine onto the trailer.
- d Engage the park brake and set the drive to neutral.
- e Lower the carriage onto the trailer.
- f Check that the overall height of the load is within regulations. Adjust if necessary.

- g Switch off the engine.
- h Put blocks at the front and rear of all four tyres.
- i Secure the cab.
- j Cover the exhaust pipe.

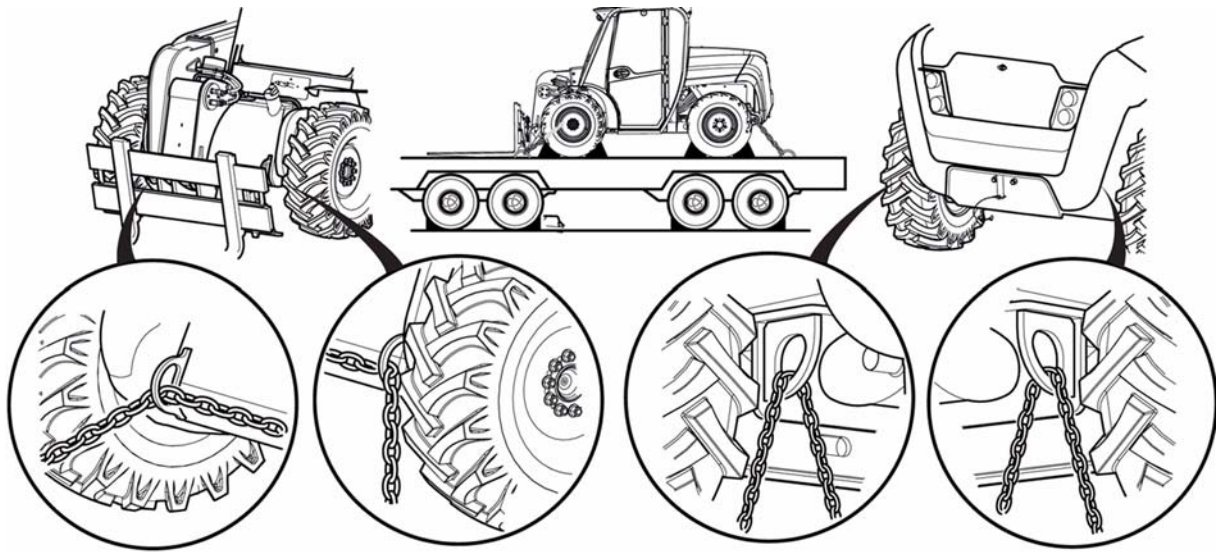
Loading a disabled machine onto the trailer:

- a Align the trailer with the rear of the machine.

**Note:** The trailer must be equipped with a winch to pull the machine aboard.

- b Make sure the ramps are correctly in place and secure.
- c Connect the winch cable onto the recovery hitch on the back of the machine.
- d Prepare the machine for recovery. → [Moving a Disabled Machine \(1-8\)](#)
- e Operate the winch and pull the machine onto the trailer until the shovel/attachment is well inside the back end of the trailer.
- f Engage the park brake.
- g Put blocks at the front and rear of all four tyres.
- h Lower the carriage onto the trailer.
- i Check that the overall height of the load is within regulations. Adjust if necessary.
- j Secure the cab.
- k Cover the exhaust pipe.

- 3 Anchor the machine to the trailer with chains. The anchor points are shown on the illustration.
- 4 Measure the maximum height of the machine from the ground. Make sure the truck driver knows the clearance height before he drives away.



**Fig 12. Hooks can be used on the anchor points**

T043110-C2

## Lifting the Machine

### Introduction

Do not use the anchor points to lift the machine. If the anchor points are used, the machine will not lift evenly and become unstable.

The lifting-eyes in the top surface of the counterweight are for the removal and installation of the counterweight only. The lifting-eyes can not support the weight of the machine.

To safely lift the machine, the Lifting Point Option (333/R3798) must be installed, refer to your JCB Dealer.

### Preparing the Machine

- 1 Stop the machine on level, solid ground.
- 2 Engage the park brake and set the drive to neutral.
- 3 Retract the boom.
- 4 Lower the boom fully, then lift it slightly.
- 5 Tilt the carriage back to keep the heel of the forks 300mm (12in.) above the ground.
- 6 Switch off the engine and remove the starter key.
- 7 Isolate the battery.
- 8 Remove all loose equipment.
- 9 Attach the D-shackles:

Attach a D-shackle **A** to the front sling-point. The front sling-point is a permanent fixture, which is welded to the steel fuel tank. The fuel tank is part of the chassis, which gives the sling-point extra strength.

Attach a D-shackle **B** to the two rear sling-points. The two rear sling-points are attached to the chassis with M16 bolts.

**Note:** The D-shackles each have a safe working load of five tonnes.

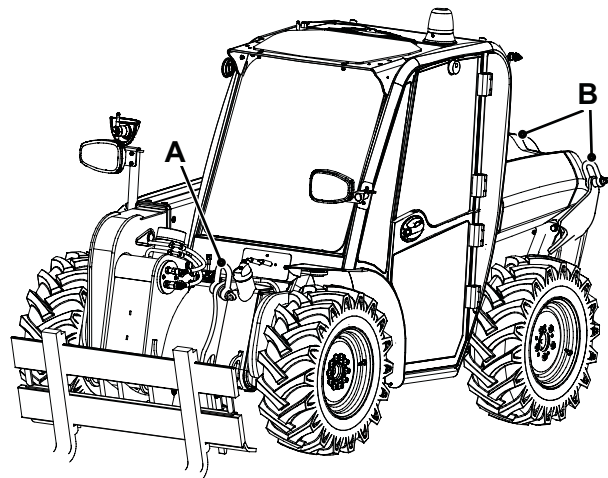


Fig 13.

333-R3798

### WARNING

#### Lifting Equipment

**You can be injured if you use incorrect or faulty lifting equipment. You must identify the weight of the item to be lifted then choose lifting equipment that is strong enough and suitable for the job. Make sure that lifting equipment is in good condition and complies with all local regulations.**

INT-1-3-7\_2

- 10 Attach the lifting equipment to the D-shackles.
- 11 Install a spreader-frame to prevent damage to the machine.

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