

Side Engine Loadalls

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Removal and Replacement

Front Wheels

Important: The wheel and tyre assembly is heavy. Get the aid of one more person to remove and replace a wheel.

WARNING

A raised and badly supported machine can fall on you. Position the machine on a firm, level surface before raising one end. Ensure the other end is securely chocked. Do not rely solely on the machine hydraulics or jacks to support the machine when working under it.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-1-1

Removal (one wheel)

- 1 Park the machine and make it safe. Fit the boom safety strut. Obey the care and safety procedures. [→ Related Topics \(F2-2\)](#)
- 2 Make sure that the engine cannot be started.
- 3 Put chocks **A** under the rear wheels.
- 4 Loosen the five wheel nuts **B** by half a turn.
- 5 Put a jack **C** under the axle arm. Use the correct jack.
- 6 Use the jack to lift the machine until the front wheel **D** is off the ground.
- 7 Put chocks **E** under the axle arm.
- 8 Hold the wheel **D** and remove the wheel nuts **B**.
- 9 Remove the wheel.

Replacement

Note: Make sure that the mating surfaces of the wheel and axle hub are clean.

WARNING

If, for whatever reason, a wheel stud is renewed, all the studs for that wheel must be changed as a set, since the remaining studs may have been damaged.

2-3-2-8

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- Torque tighten the nuts **B**.

When the replacement procedure is complete:

- Check the wheel nut torques are correct after every two hours of machine operation until they stay correct.

Table 3. Torque Settings

Item	Nm	kgf m	lbf ft
B ⁽¹⁾	650	66	480
B ⁽²⁾	680	69	500

(1) 550-80 machines

(2) Other machines

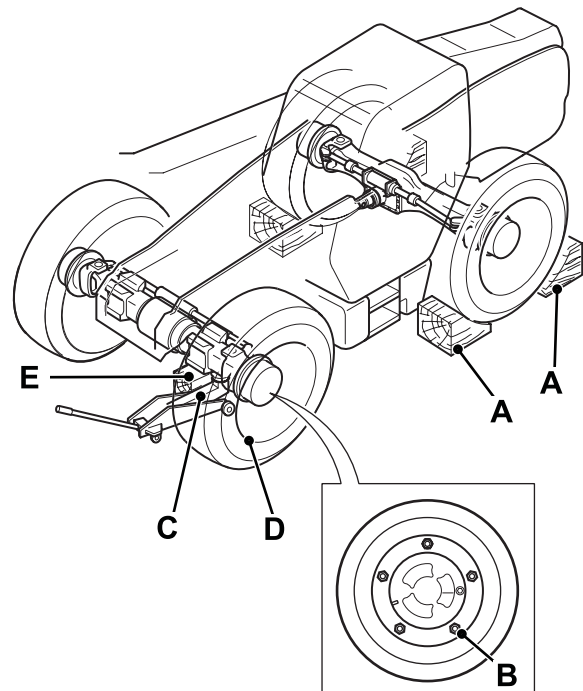


Fig 1.

C045590

Rear Wheels

Important: The wheel and tyre assembly is heavy. Get the aid of one more person to remove and replace a wheel.

WARNING

A raised and badly supported machine can fall on you. Position the machine on a firm, level surface before raising one end. Ensure the other end is securely chocked. Do not rely solely on the machine hydraulics or jacks to support the machine when working under it.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-1-1

Removal (one wheel)

- 1 Park the machine and make it safe. Fit the boom safety strut. Obey the care and safety procedures. [⇒ Related Topics \(□ F2-2\)](#)
- 2 Make sure that the engine cannot be started.
- 3 Put chocks **A** under the front wheels.
- 4 Loosen the five wheel nuts **B** by half of one turn.
- 5 Put a jack **C** under the centre of the rear axle. Use the correct jack.
- 6 Use the jack to lift the machine until both rear wheels are off the ground.
- 7 Put chocks **E** under each end of the rear axle.
- 8 Hold the wheel **D** and remove the wheel nuts.
- 9 Remove the wheel.

Replacement

Note: Make sure that the mating surfaces of the wheel and axle hub are clean.

WARNING

If, for whatever reason, a wheel stud is renewed, all the studs for that wheel must be changed as a set, since the remaining studs may have been damaged.

2-3-2-8

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- Torque tighten the nuts **B**.

When the replacement procedure is complete:

- Check the wheel nut torques are correct after every two hours of machine operation until they stay correct.

Table 4. Torque Settings

Item	Nm	kgf m	lbf ft
B ⁽¹⁾	650	66	480
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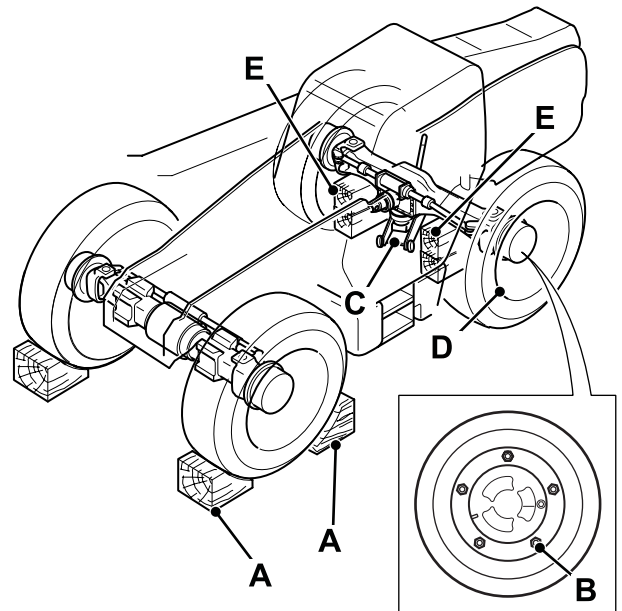


Fig 2.

C045590

Wheel Studs

Removal and Replacement

The procedures that follow are for one wheel stud. The procedures are the same for all the wheel studs.

WARNING

If, for whatever reason, a wheel stud is renewed, all the studs for that wheel must be changed as a set, since the remaining studs may have been damaged.

2-3-2-8

Removal

- 1 Remove the wheel from the hub. [⇒ Front Wheels \(□ F2-4\)](#) [⇒ Rear Wheels \(□ F2-5\)](#)
- 2 Push out the wheel stud 3-A.

Important: Remove all the wheel studs 3-A and discard them.

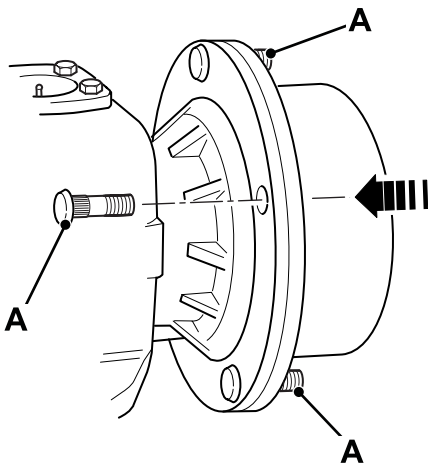


Fig 3.

C045650

Replacement

Important: Examine the wheel stud holes 4-B in the hub carrier 4-C. If the holes are defective do not use the hub carrier. Replace the hub carrier with a new one. Refer to **Applications** for related axle topics. [⇒ Related Topics \(□ F2-2\)](#)

- 1 Put the stud 4-A into the hub carrier hole.
- 2 Use a nut and washer to pull in the stud 4-A into the hub carrier 4-C.
- 3 Examine the stud and make sure it is correctly installed. If the stud is loose replace the hub carrier 4-C. Refer to **Applications** for related axle topics. [⇒ Related Topics \(□ F2-2\)](#)

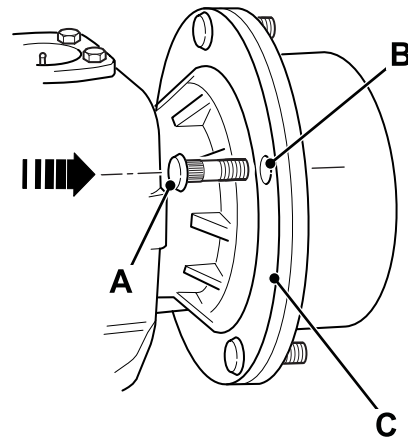


Fig 4.

C045650-C1

Front Axles

Introduction

This topic contains information about a machine DEVICE. Make sure you are referring to the correct device. Refer to the applications table.

Descriptions and procedures relate to the device and not related systems. For information about the systems refer to the relevant topics.

This topic is intended to help you understand what the device does and how it works. Where applicable it also includes procedures such as removal and replacement and dismantle and assemble.

⇒ [Related Topics \(□ F3-2\)](#)

⇒ [Specifications \(□ F3-3\)](#)

⇒ [SD80 3 Piece Steer Drive Axle \(□ F3-3\)](#)

⇒ [Component Identification \(□ F3-4\)](#)

⇒ [Renewing the Pinion Oil Seal \(□ F3-6\)](#)

⇒ [Removal and Replacement - SD80 Fixed Axle \(□ F3-7\)](#)

⇒ [Removal and Replacement - SD80 Pivot Sway Axle \(□ F3-9\)^{\(1\)}](#)

⇒ [Removal and Replacement - SD80 Trunnion Sway Axle \(□ F3-12\)^{\(1\)}](#)

⇒ [Dismantle, Inspection and Assembly \(□ F3-15\)](#)

(1) Procedure variant. Make sure you refer to the correct procedure.

Table 1. Procedure and Specification Variants

Procedures, Specifications ⁽¹⁾	Machine Model Application						
	540-170 5AF	550-140 5AG	540-140 5AL	550-170 5AM	535-125 HiViz 5AN	535-140 HiViz 5AP	540-200
⇒ Removal and Replacement - SD80 Pivot Sway Axle (□ F3-9)	●	●	●	●			●
⇒ Removal and Replacement - SD80 Trunnion Sway Axle (□ F3-12)					●	●	

(1) The table lists procedure and specification variants and the applicable machine models. Use the table to make sure you refer to the correct information.

Related Topics

Table 2. Related Topics in This Publication

<p>The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to <i>Section 1 - Applications</i>.</p>		
Sections	Topic Titles	Sub Titles
1	<i>Applications</i>	ALL
2	ALL (Care and Safety) ⁽¹⁾	ALL
3	<i>Maintenance</i>	<i>ALL</i>
F	<i>Applications</i>	<i>ALL</i>
F	<i>Rear Axles</i>	<i>Renewing the Pinion Oil Seal</i>
G	<i>Service Brakes SYSTEM</i>	<i>Bleeding</i>
H	<i>Steering SYSTEM</i>	<i>Bleeding</i>
H	<i>Steering SYSTEM</i>	<i>Re-Phasing</i>

(1) You must obey all of the relevant care and safety procedures.

Table 3. Related Topics in Publication 9803/8610, Transmissions

<p>The table lists topics in another manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topics, refer to <i>Designations</i>. → Specifications (F3-3)</p>		
Sections	Section Titles	Topic Titles
A	Axle Hubs	<i>80 Series Hub</i>
B	Axle Hub Swivels and Driveshafts	<i>55 Series Hub Swivel and Driveshaft</i>
C	Axle Integral Brakes	<i>70 Series Integral Brakes (3 Piece Axles)</i>
D	Axle Drive Heads	<i>80 Series Drive Heads (3 Piece Axles)</i>

Specifications

The axle serial number is stamped on the unit identification plate **A** as shown.

Note: It is essential that the correct ratio axle in relationship to the gearbox ratio is fitted to the machine. Do not fit a new axle with a different ratio to the axle being replaced.

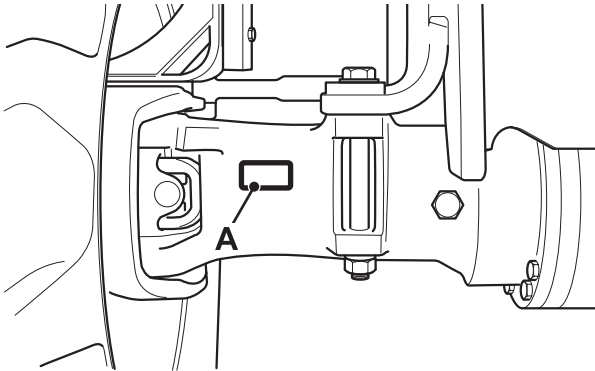


Fig 1.

Table 4. SD80 3 Piece Steer Drive Axle

Designations	
Hubs	80 Series
Hub swivels and drive shafts	55 Series
Drive head	80 Series 3 piece
Brakes	70 Series Integral Brakes (3 Piece Axles)
Type	JCB spiral bevel input with epicyclic hub reduction
Brakes	Oil immersed multi-plate discs, located in centre section
Steering	Steer rams or power track rod

Component Identification

The illustration shows a typical 3 piece steer drive front axle. → [Fig 2.](#) ([□ F3-5](#))

The front axle consists of a centre casing (drivehead) and two axle arms and swivel wheel hubs.

The drivehead houses the differential gearing and two oil-immersed disc brake units.

The axle arms house the driveshafts. Specially shaped spider gears in the differential provide 'torque proportioning'. This means that drive power will be kept on one wheel if the other is slipping.

The wheel hubs are connected to the halfshafts through universal joints which drive sun-and-planet gears inside the hubs.

A	Yoke connection to propshaft
B	Pinion
C	Crownwheel
D	Differential unit
Note: Items A, B, C and D form the 'drive head' part of the axle.	
E	Drive shaft
F	Universal coupling
G	Reduction gear hub
H	Steer swivel trunnion bearings
L	Inboard oil-immersed multi-plate disc brakes
M	Brake actuating piston
N	Hydraulic brake lines

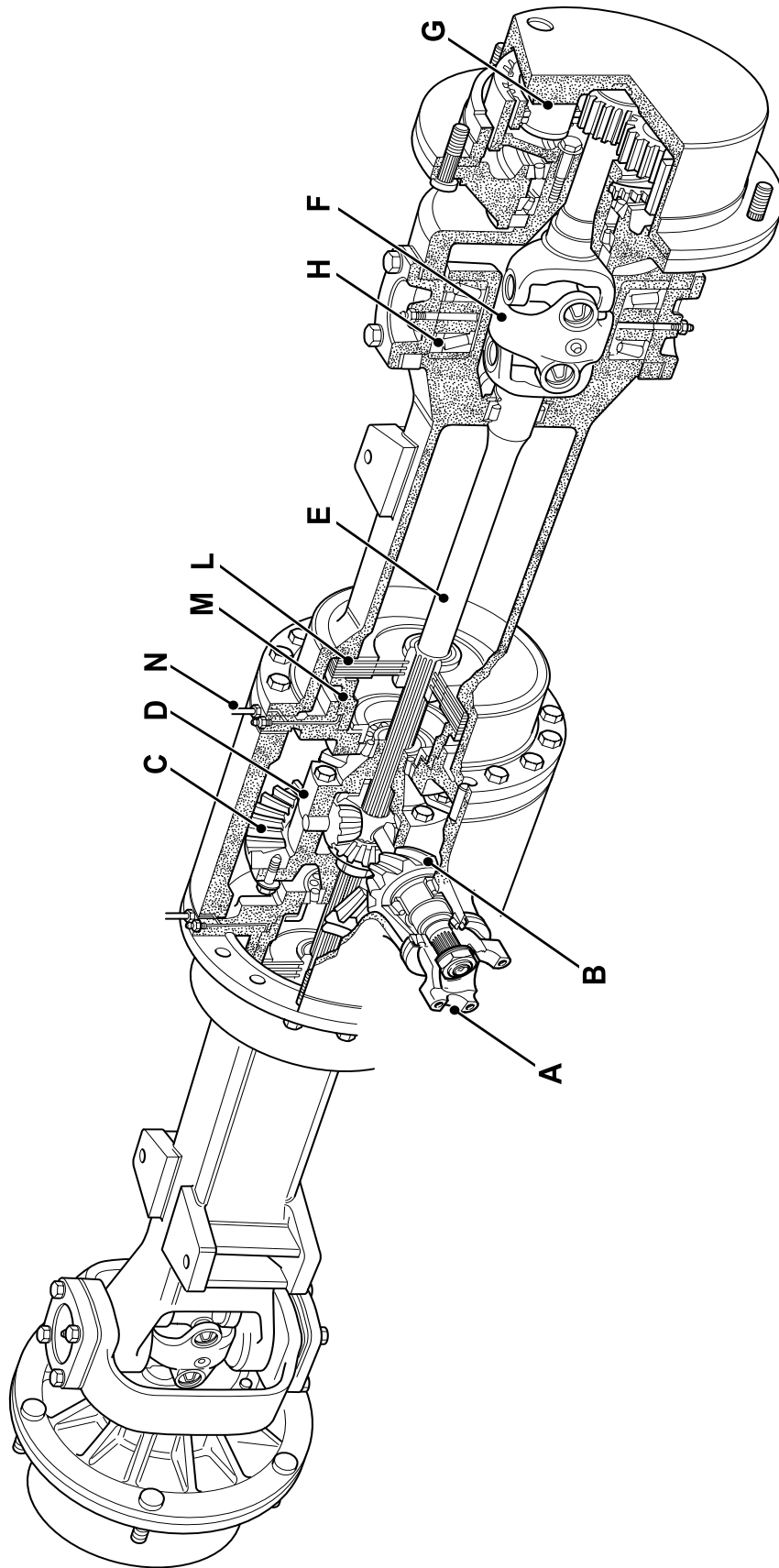


Fig 2. Typical Steer Drive Front Axle



Renewing the Pinion Oil Seal

The front axle pinion oil seal is renewed using the same procedure as described for the rear axles. → [Related Topics](#) ([F3-2](#))

Removal and Replacement - SD80 Fixed Axle

WARNING

A raised and badly supported machine can fall on you. Position the machine on a firm, level surface before raising one end. Ensure the other end is securely chocked. Do not rely solely on the machine hydraulics or jacks to support the machine when working under it.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-1-1

If the boom is raised, make sure the maintenance strut is fitted. Obey the care and safety procedures. [⇒ Related Topics \(□ F3-2\)](#)

[⇒ Fig 3. \(□ F3-8\)](#)

Note: Some machines may have shims installed on the axle mounts. Make sure to note the position and quantity of these shims before removal. Make sure to retain the shims and replace them in the correct position when replacing the axle. There may be an uneven number of shims between each side of the axle as the shims are used to adjust the machine height and make it level.

Removal

- 1 Disconnect the propshaft coupling from the axle by unscrewing bolts **A**.

WARNING

When the driveshaft is disconnected the park brake will no longer function. The machine must be securely blocked to prevent any machine movement before disconnecting the driveshaft.

TRANS-1-3

- 2 Disconnect and plug the hydraulic hoses to the steer rams/ power track rod.
- 3 Slacken off the roadwheel retaining nuts **C** then raise and support the front end of the machine on axle stands or blocks positioned under the chassis. Remove the front roadwheels.
- 4 Remove the front mudguards. Undo the bracket retaining nuts **E** at the steering trunnions.

- 5 Disconnect the brake hose at the axle. Blank off the exposed connections.
- 6 Uncouple the steer proximity switch electrical connector (if fitted).
- 7 Support the axle on a trolley jack.
- 8 Unscrew axle mounting nuts **D** and remove the bolts and washers.
- 9 Lower the axle down from the machine.
- 10 Remove the axle from the machine.

Replacement

Replacement is the opposite of the removal procedure.

During replacement do this work also:

- Bleed the brake system, see **Section G - Brakes**. [⇒ Related Topics \(□ F3-2\)](#)
- Refit the road wheels and carry out the tightness checks as detailed in **Section 3 - Routine Maintenance**. [⇒ Related Topics \(□ F3-2\)](#)
- Bleed the steering system, see **Section H - Steering**. [⇒ Related Topics \(□ F3-2\)](#)
- Re-phase the steering system, see **Section H - Steering**. [⇒ Related Topics \(□ F3-2\)](#)
- Grease the axle pivot trunnions.

Table 5. Torque Settings

Item	Nm	kgf m	lbf ft
A	78	8	57
B	56	5.7	41
C	680	69	500
D ⁽¹⁾	969	99	715
D ⁽²⁾	600	60	440
E	98	10	72

(1) Dry nuts.

(2) Nuts with special dry lubricating film.

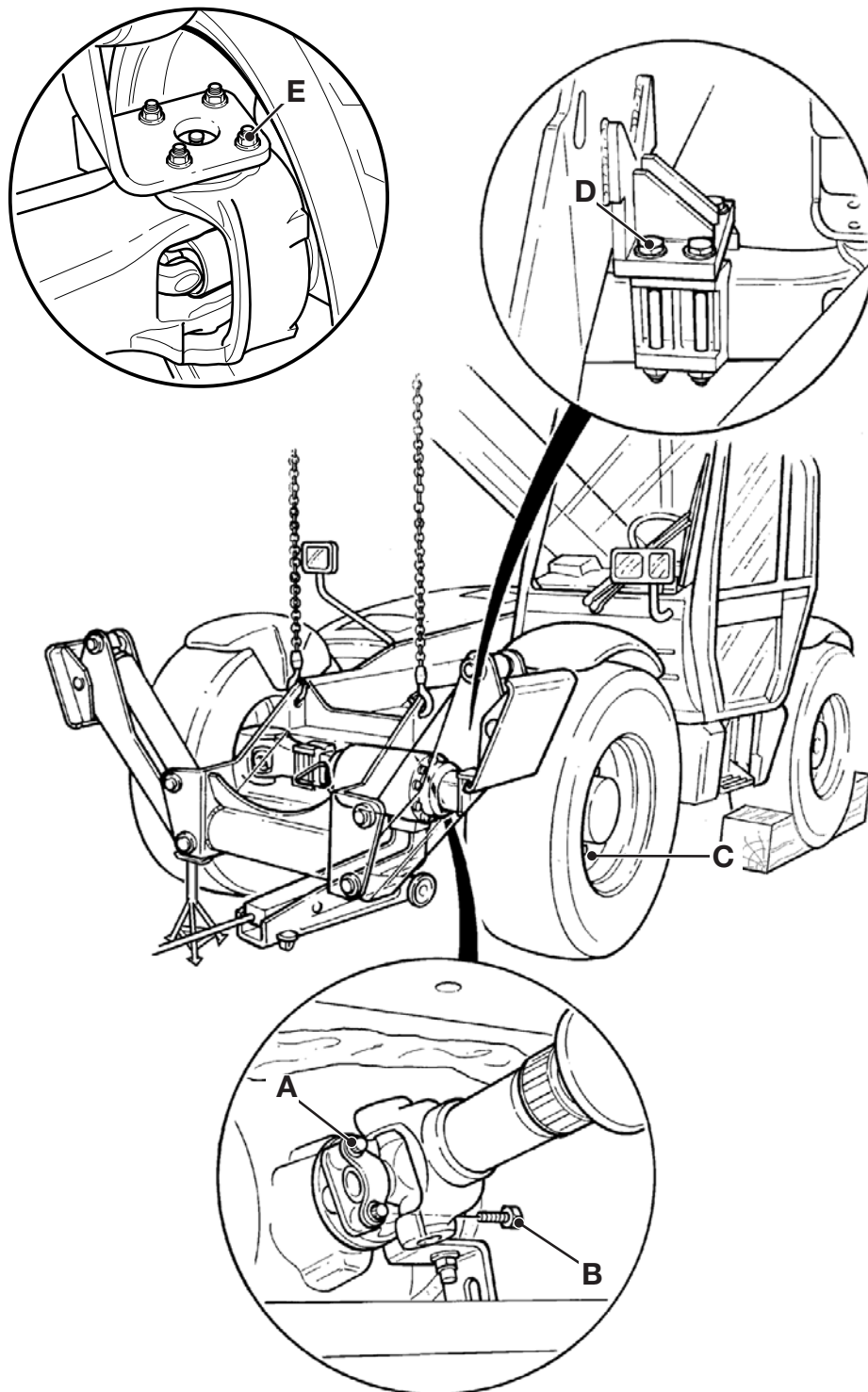


Fig 3. SD80 Fixed Axle

Removal and Replacement - SD80 Pivot Sway Axle

WARNING

A raised and badly supported machine can fall on you. Position the machine on a firm, level surface before raising one end. Ensure the other end is securely chocked. Do not rely solely on the machine hydraulics or jacks to support the machine when working under it.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-1-1

If the boom is raised, make sure the maintenance strut is fitted. Obey the care and safety procedures. [→ Related Topics \(□ F3-2\)](#)

Removal [→ Fig 5. \(□ F3-11\)](#)

Removal

- 1 Disconnect the propshaft coupling from the axle by unscrewing bolts **A**.

WARNING

When the driveshaft is disconnected the park brake will no longer function. The machine must be securely blocked to prevent any machine movement before disconnecting the driveshaft.

TRANS-1-3

- 2 Disconnect and plug the hydraulic hoses to the steer rams.
- 3 Slacken off the roadwheel retaining nuts **C** then raise and support the front end of the machine on support stands or blocks positioned under the chassis. Remove the front roadwheels.
- 4 Remove the front mudguards. Undo the bracket retaining nuts **K** at the steering trunnions.
- 5 Disconnect the brake hose at the axle. Blank off the exposed connections.
- 6 Uncouple the steer proximity switch electrical connector (if fitted).
- 7 Undo bolt **D** and remove pivot pin **E**.

- 8 Undo the sway ram pivot bracket mounting bolts **H**. Lift away the bracket.
- 9 Support the axle on a trolley jack.
- 10 Undo bolt **F** and remove pivot pin **G**.
- 11 Remove the axle from the machine.

Replacement

Replacing is generally the reverse of the removal sequence.

Replacement is the opposite of the removal procedure.

During replacement do this work also:

- Bleed the brake system, see **Section G - Brakes**. [→ Related Topics \(□ F3-2\)](#)
- Adjust the sway sight rod **M** so that the top of the rod is in line with the top of the tube **L** when the machine is horizontal. To adjust this slacken the locknuts **N** and screw the sight rod up or down to the correct position. Tighten the locknuts when the position is correct. [→ Fig 4. \(□ F3-10\)](#)
- Refit the road wheels and carry out the tightness checks as detailed in **Section 3 - Routine Maintenance**. [→ Related Topics \(□ F3-2\)](#)
- Bleed the steering system, see **Section H - Steering**. [→ Related Topics \(□ F3-2\)](#)
- Re-phase the steering system, see **Section H - Steering**. [→ Related Topics \(□ F3-2\)](#)
- Grease the axle pivot trunnions.

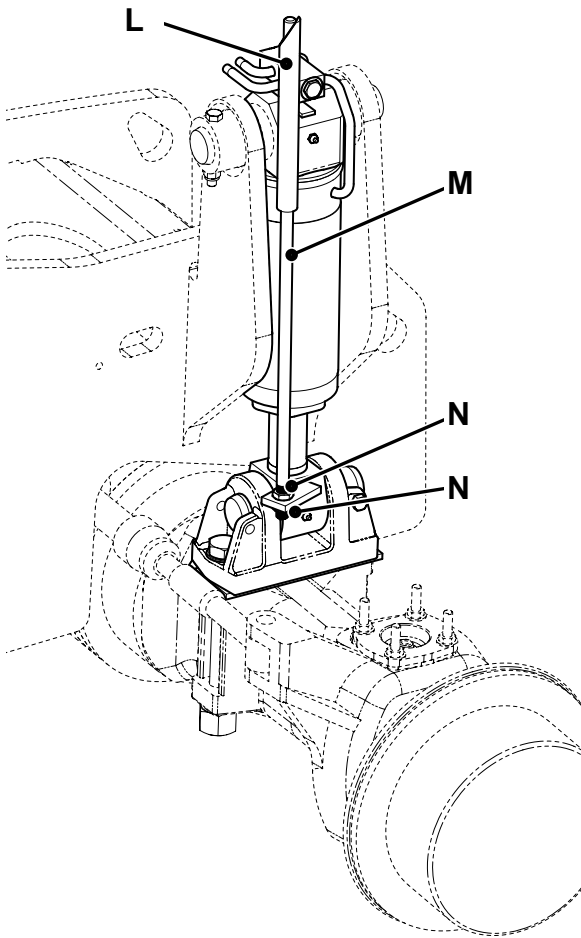


Fig 4.

C127500

Table 6. Torque Settings

Item	Nm	kgf m	lbf ft
A	78	8	57
B	56	5.7	41
C	680	69	500
H	969	99	715
K	98	10	72

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