



Section D

Controls

Service Manual - 515-40

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Section D - Controls

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Manual Control Levers

Component Identification

Table 1. Control Levers

Item	Function
A	Joystick: Boom (Lift and Lower) Carriage (Crowd and Dump)
B	Control lever, Boom (Extend and Retract)
C	Control lever, Auxiliary controls

Table 2. Control Rod Assemblies

Item	Function
1	Boom (Extend and Retract)
2	Carriage (Crowd and Dump)
3	Boom (Lift and Lower)
4	Auxiliary controls

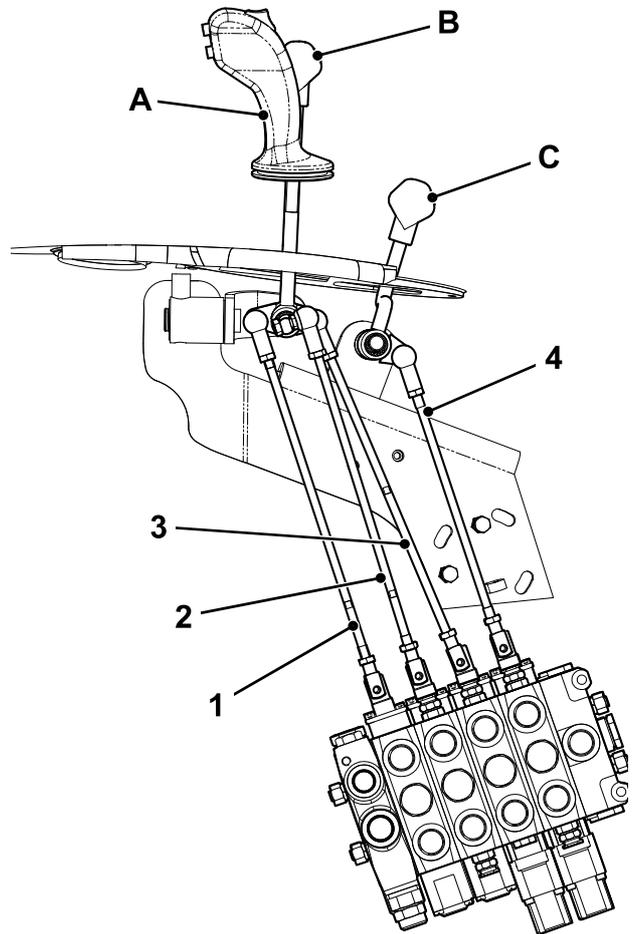


Fig 1.

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Joystick

Basic Electrical Operation

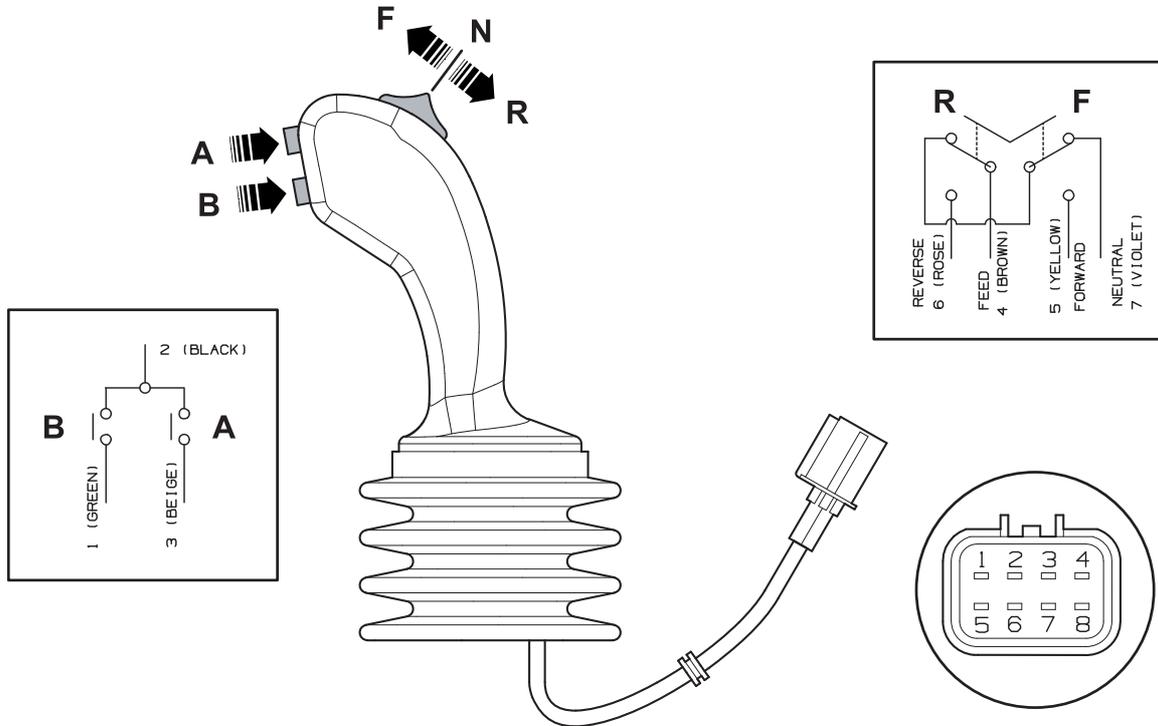


Fig 2.

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Table 3. Switch Functions

Item	Function
A	Horn
B	No function
F	Forward Drive (Forward/Reverse Switch)
N	Neutral (Forward/Reverse Switch)
R	Reverse Drive (Forward/Reverse Switch)

Table 4. Wire Identification

Pin	Colour	Function
1		No function
2	Black	Input (Horn A and Button B)
3	Beige	Output (Horn A)
4	Brown	Supply (Forward/Reverse Switch)
5	Yellow	Forward (Forward/Reverse Switch)
6	Rose	Reverse (Forward/Reverse Switch)
7	Violet	Neutral (Forward/Reverse Switch)
8		No function

Electrical Schematic

Component Key:

C007	Cab harness to cab roof harness connector
C020	Horn relay
C023	Neutral position relay
C024	Forward/reverse relay

C031	Fusebox A
C032	Fusebox B
C037	Joystick to cab panel harness connector
MA	Cab roof harness to cab connector
MJ	Horn
MR	Earth

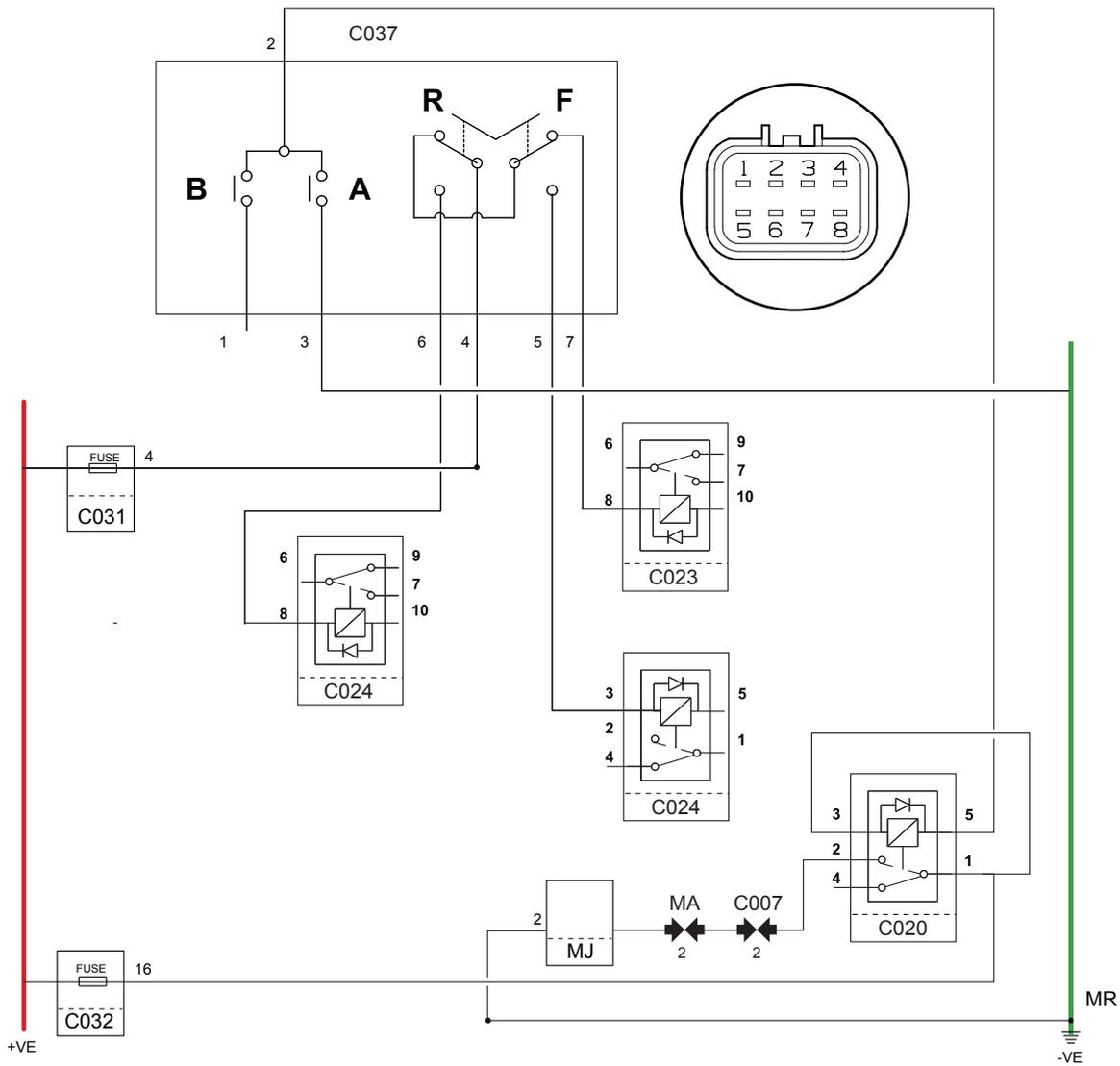


Fig 3. Electrical Schematic

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Removal and Replacement

Removal

- 1 Park the machine and make it safe with the boom lowered. Refer to **Section 3 - Routine Maintenance**.
- 2 Disconnect the battery. Refer to **Section 3 - Routine Maintenance**.
- 3 Remove the side console. Refer to **Section B - Cab**.
- 4 Disconnect the harness connector **A**.
- 5 Release the locknut **B**.
- 6 Remove the joystick **C**.

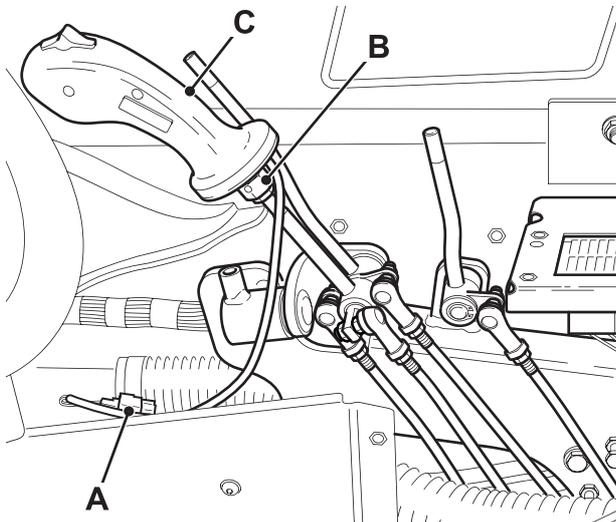


Fig 4.

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Replacement

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- Apply JCB Threadlocker and Sealant to the joystick thread.
- Do not set the joystick **C** to point to the front of the machine. Before you tighten the locknut **B** turn the joystick a small distance to the left.
- Operate the controls to make sure that they function correctly.

Control Assembly

Removal and Replacement

Removal

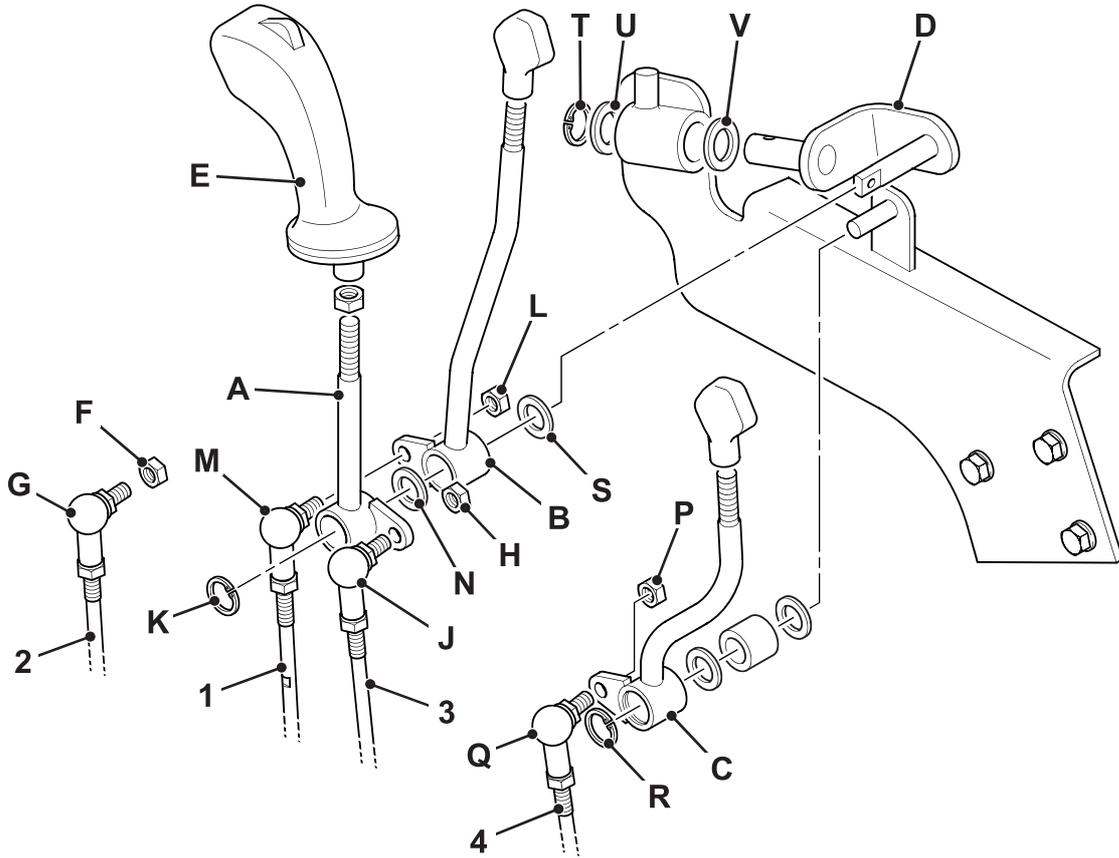


Fig 5.

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- A ⇒ [Boom \(Lift/Lower\) and Carriage Control Lever \(□ D-6\)](#)
- B ⇒ [Boom \(Extend/Retract\) Control Lever \(□ D-6\)](#)
- C ⇒ [Auxiliary Control Lever \(□ D-6\)](#)
- D ⇒ [Control Lever Pivot \(□ D-7\)](#)

Boom (Lift/Lower) and Carriage Control Lever

- 1 Park the machine and make it safe with the boom lowered. Refer to **Section 3 - Routine Maintenance**.
- 2 Disconnect the battery. Refer to **Section 3 - Routine Maintenance**.
- 3 Remove the side console. Refer to **Section B - Cab**.
- 4 Remove the joystick **E**. ⇒ [Fig 5. \(□ D-5\)](#)
- 5 Identify the control rod assembly **2** which connects to the control lever pivot **D**.
- 6 Remove the nut **F** from the ball joint **G**.
- 7 Remove the control rod assembly from the control lever assembly.
- 8 Identify the control rod assembly **3** which connects to the control lever **A**.
- 9 Remove the nut **H** from the ball joint **J**.
- 10 Remove the control rod assembly from the control lever assembly.
- 11 Remove the circlip **K**.
- 12 Remove the control lever **A**.

Boom (Extend/Retract) Control Lever

- 1 Remove the Boom (Lift/Lower) and Carriage Control Lever. ⇒ [Boom \(Lift/Lower\) and Carriage Control Lever \(□ D-6\)](#).
- 2 Identify the control rod assembly **1** which connects to the control lever **B**. ⇒ [Fig 5. \(□ D-5\)](#).
- 3 Remove the nut **L** from the ball joint **M**.
- 4 Remove the control rod assembly from the control lever assembly.
- 5 Remove the shim **N**.
- 6 Remove the control lever **B**.

Auxiliary Control Lever

- 1 Park the machine and make it safe with the boom lowered. Refer to **Section 3 - Routine Maintenance**.
 - 2 Disconnect the battery. Refer to **Section 3 - Routine Maintenance**.
- Note:** You can remove the auxiliary control lever with the side console in position. To get better access to remove the Auxiliary Control Lever remove the Side Console first.
- 3 Identify the control rod assembly **4** which connects to the control lever **C**. ⇒ [Fig 5. \(□ D-5\)](#)
 - 4 Remove the nut **P** from the ball joint **Q**.
 - 5 Remove the control rod assembly from the control lever assembly.
 - 6 Remove the circlip **R**.
 - 7 Remove the control lever **C**.

Control Lever Pivot

- 1 Remove the Boom (Lift/Lower) and Carriage Control Lever. → [Boom \(Lift/Lower\) and Carriage Control Lever \(□ D-6\)](#).
- 2 Remove the Boom (Extend/Retract) Control Lever. → [Boom \(Extend/Retract\) Control Lever \(□ D-6\)](#).
- 3 Remove the shim **S**. → [Fig 5. \(□ D-5\)](#)
- 4 Remove the circlip **T**.
- 5 Remove the shim **U**.
- 6 Remove the control lever pivot **D** and the shim **V**.

Replacement

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

→ [Fig 6. \(□ D-7\)](#)

- Before you install a control lever **A**, **B** or **C** or the control lever pivot **D**:

Do a check of the needle bearings **W**. Replace worn or damaged bearings.

Apply some grease to the needle bearings **W**.

- Operate the controls to make sure that they function correctly.

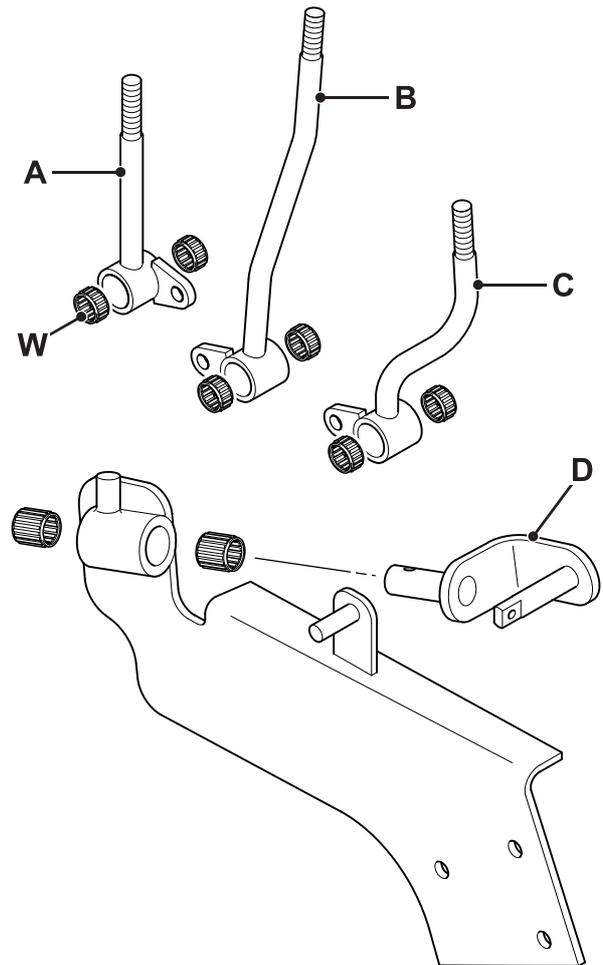


Fig 6.

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Control Rod Assembly

Removal and Replacement

Removal

Note: This procedure is for the removal of a typical control rod assembly.

- 1 Park the machine and make it safe with the boom lowered. Refer to **Section 3 - Routine Maintenance**.
- 2 Disconnect the battery. Refer to **Section 3 - Routine Maintenance**.
- 3 Remove the side console. Refer to **Section B - Cab**.
- 4 Identify the control rod assembly. → [Component Identification \(D-1\)](#).
- 5 Remove the nut **A** from the ball joint **B**.
- 6 Remove the clip **C** and pin **D** from the clevis **E**.
- 7 Remove the control rod assembly.

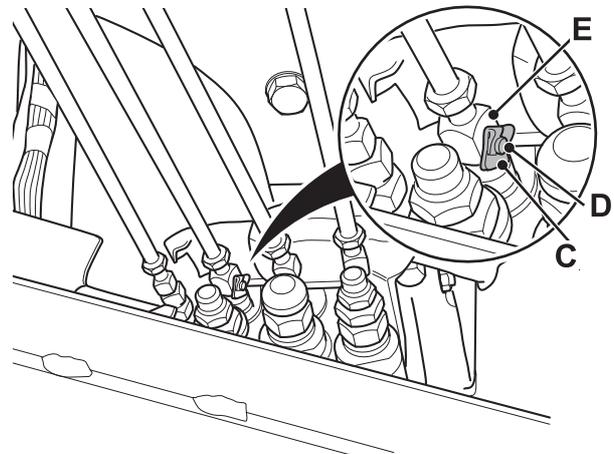


Fig 8.

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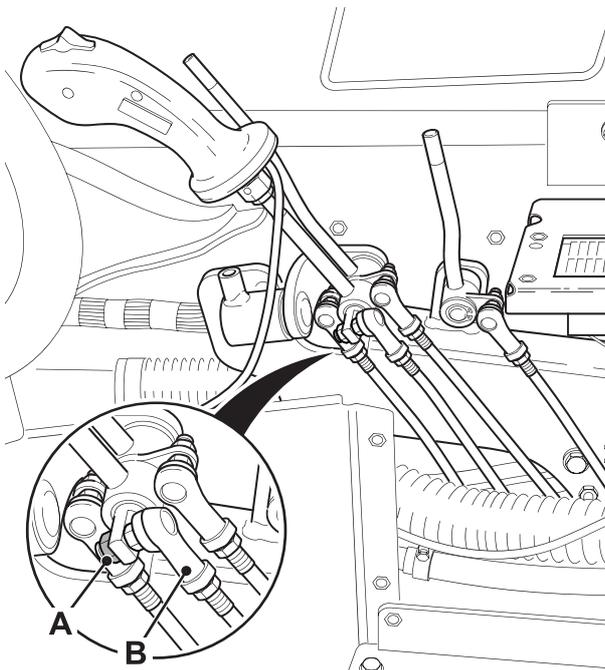


Fig 7.

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Replacement

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- If necessary, adjust the length of the control rod assembly so that the control lever is in the correct position. → [Fig 9. \(□ D-9\)](#).

Loosen the locknuts **2**.

Turn the control rod **3** as necessary to increase or decrease the length of the control rod assembly.

Tighten the locknuts **2**.

Important: To prevent damage to the control rod, hold the control rod when you tighten the locknuts.

- Operate the controls to make sure that they function correctly.

Note: Make sure that the control levers do not come into contact with other components and wiring in the same area as damage may occur.

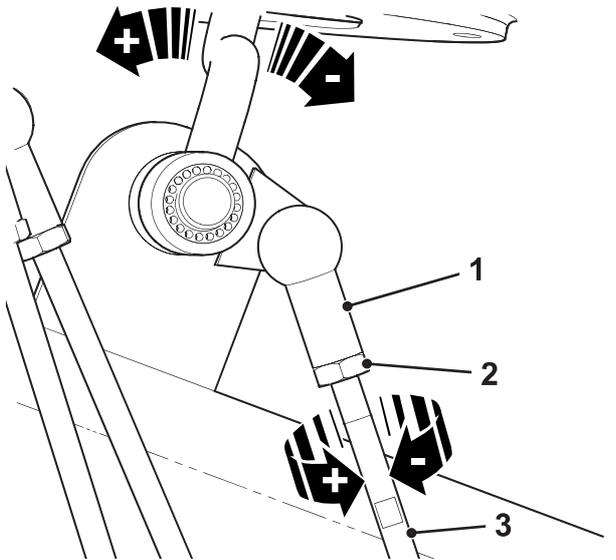


Fig 9.

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