

Document Title: <b>Neutral centring test</b>	Function Group: <b>660</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/19</b>
Profile: <b>SSL, MC90B [GB]</b>			

## Neutral centring test

### Mechanical controls

#### Op nbr 643-084

1. Raise and block the machine, see [191 Raising and blocking](#).
2. Put the machine in service position 3, see [191 Service position 3](#).
3. Start the engine. With engine speed at low idle, stroke levers fully forward and release.
4. Stroke levers fully backward and release.
5. Stroke levers halfway forward and release.
6. Stroke levers halfway backward and release.
7. With engine speed at high idle, stroke levers fully forward and release.
8. Stroke levers fully backward and release.
9. Stroke levers halfway forward and release.
10. Stroke levers halfway backward and release.
11. With engine OFF, randomly stroke levers forward and backward. Start engine and check for wheel rotation. If wheels still rotating in either direction when releasing the levers, the steering linkage needs to be adjusted, see [660 Neutral centring and control lever adjustment](#)

#### **NOTE!**

If the machine is equipped with shock absorbers it could slow the steering control levers return to neutral position. The additional friction of the shock absorber may result in a slight tire rotation. If this rotation cannot be stopped by a very slight "jiggle" of the steering lever, the shock absorber is most likely defective and should be replaced.

12. Lower the machine from the blocks, see [191 Raising and blocking](#).

Document Title: <b>Neutral centring and control lever adjustment</b>	Function Group: <b>660</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/19</b>
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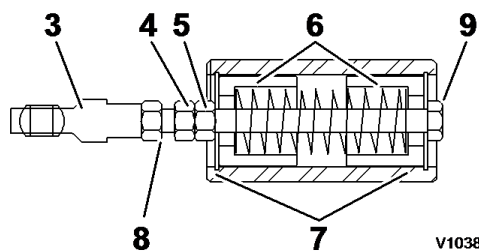
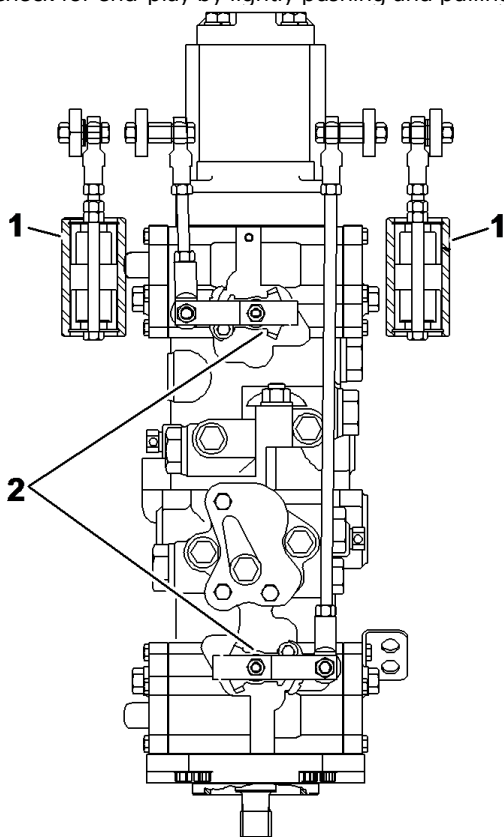
## Neutral centring and control lever adjustment

### Mechanical controls

#### MC90B, MC110B

#### Op nbr 643-083

1. Raise and block the machine, see [191 Raising and blocking](#).
2. Put the machine in service position 1, see [191 Service position 1](#).
3. Check for end-play by lightly pushing and pulling on the spring housing assembly ball joint.

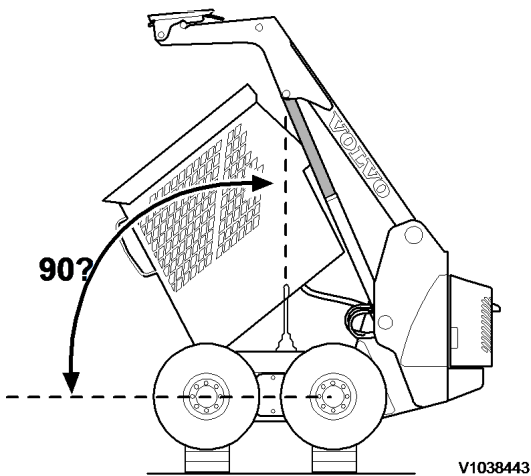


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**Figure 1**

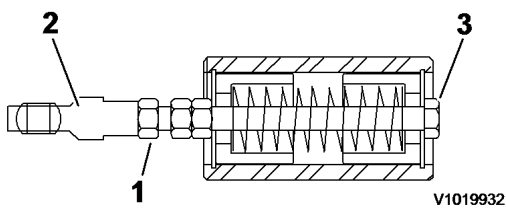
1. Centring spring assembly
2. Centring spring lever
3. Centring spring assembly ball joint
4. Ball joint jam nut
5. Adjusting nut
6. Spring guide
7. Retaining ring
8. Jam nut
9. Capscrew

4. If end-play is detected, loosen the jam nut, and adjust nut to a position where the spring guides bear against the retaining rings with minimal force. Once end-play has been eliminated, retighten the jam nut.  
If the steering levers are in a vertical (straight up) position, proceed to Step 8.



**Figure 2**  
**Steering levers in vertical (straight up) position**

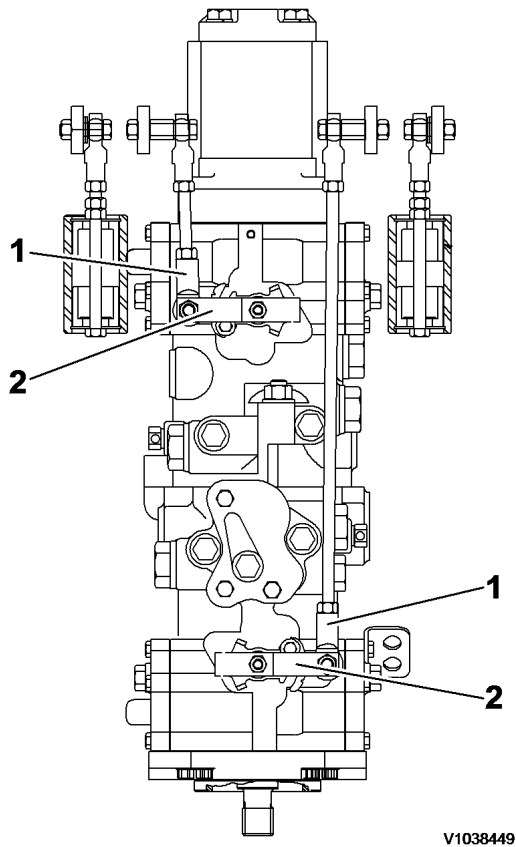
5. Loosen the jam nut on the centring spring assembly ball joint.



**Figure 3**  
**Centring spring assembly**

1. Ball joint jam nut
2. Ball joint
3. Adjusting capscrew

6. Turn the capscrew on the opposite side of the centring spring assembly to adjust the vertical position of the steering lever.
7. Tighten the ball joint jam nut against the ball joint.
8. Disconnect the steering rod ball joint from the transmission lever.



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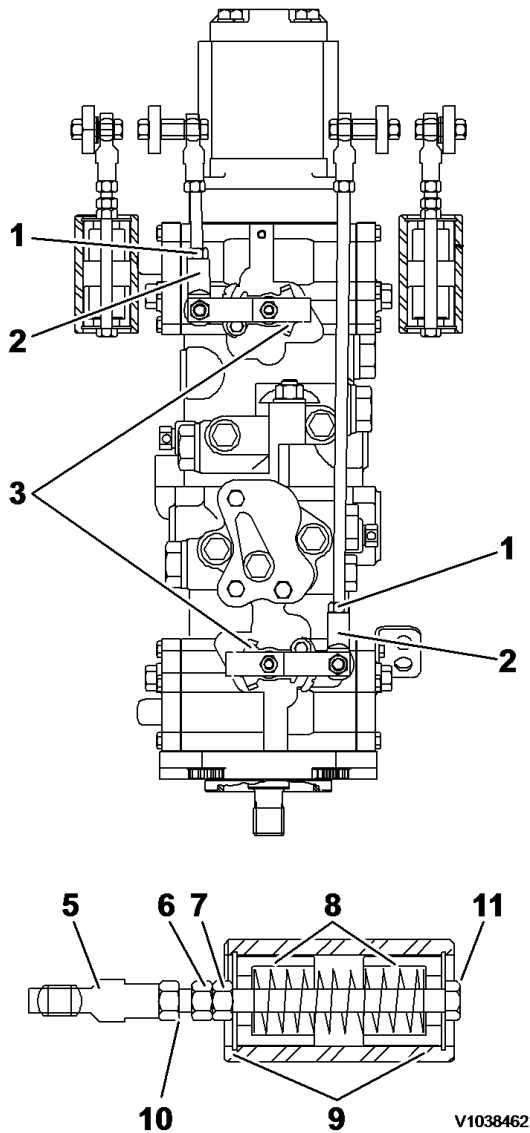
**Figure 4**

1. Steering rod ball joint
2. Transmission lever

9. Start the engine.

10. If the wheels rotate, the transmission pump's neutral centring must be checked, see [660 Transmission pump, neutral centring](#).

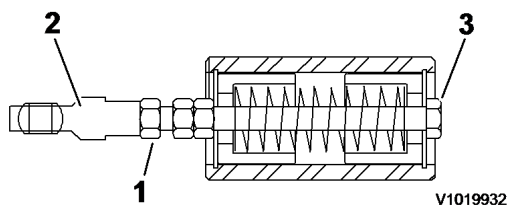
11. Loosen the steering rod ball joint jam nut and adjust the ball joint to a position where the centring spring lever comes into an unaffected position.



**Figure 5**  
**V1038462**

1. Steering rod ball joint
2. Steering rod ball joint jam nut
3. Centring spring lever

12. Start the engine. If the wheels still rotate, a fine adjustment is necessary.
13. Loosen the jam nut on the centring spring housing assembly ball joint. Turn the adjusting capscrew on centring spring assembly until the wheels stop rotating. Tighten the jam nut.



**Figure 6**  
**Centring spring fine adjustment**

1. Ball joint jam nut
2. Centring spring assembly ball joint
3. Adjusting capscrew

14. Perform a neutral centring test, see [660 Neutral centring test](#).
15. Lower the cab from the service position, see [191 Service position 1](#).
16. Lower the machine from the blocking, see [191 Raising and blocking](#).

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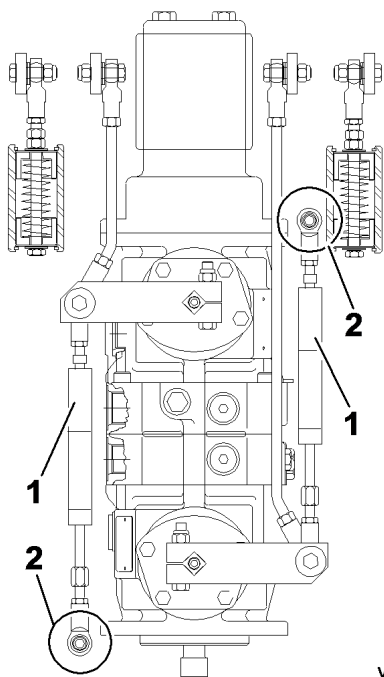
## Neutral centring and control lever adjustment

### Mechanical controls

#### Op nbr 643-083

This operation also includes required tools and times for applicable parts of the following operations:

- [191 Raising and blocking](#)
  - [191 Service position 1](#)
1. Raise and block the machine, see [191 Raising and blocking](#).
  2. Put the machine in service position 1, see [191 Service position 1](#).
  3. Disconnect the damping cylinder rod from its mounting.

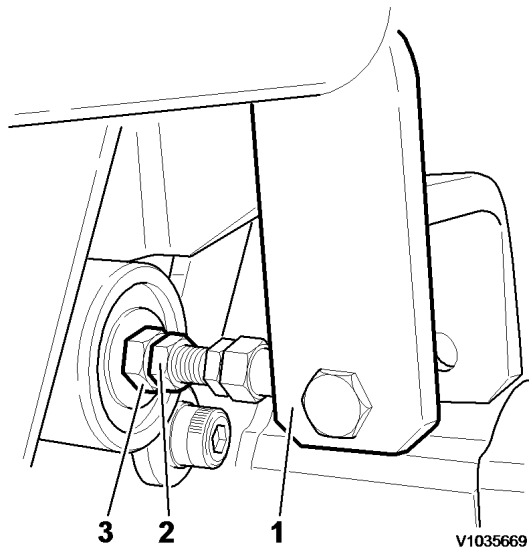


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**Figure 1**

1. Damping cylinder
2. Mounting point

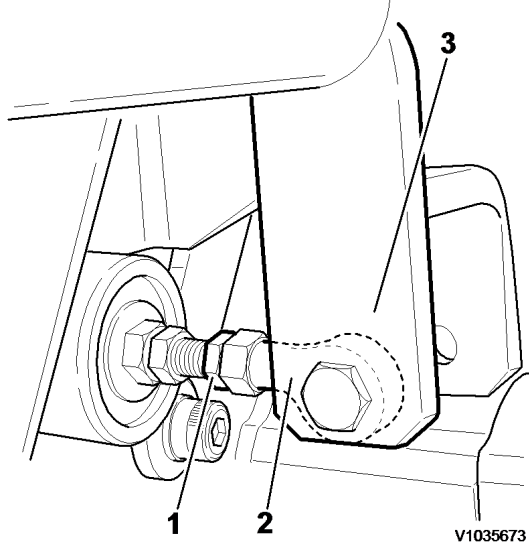
4. Check for play on the steering levers by lightly pushing and pulling the lever. If play is detected, loosen the hex jam nut on the centring spring assembly, and adjust nut to position until there is no play. Retighten the hex jam nut.



**Figure 2**

1. Steering lever
2. Hex jam nut
3. Adjust nut

5. If the angle of the control levers needs to be adjusted, follow instructions below or skip to Step 10.
6. Loosen the hex jam nut on the front linkage rod ball joint.



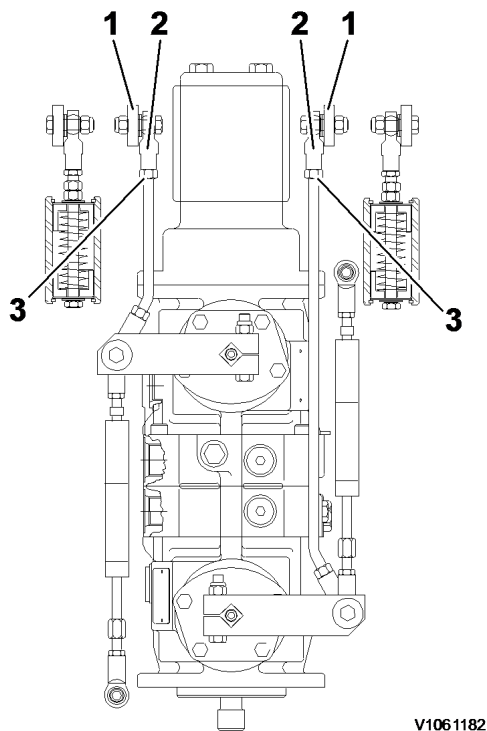
**Figure 3**

1. Hex jam nut
2. Rod ball joint
3. Steering lever

7. Disconnect the link rod ball joint from the steering lever.
8. With the steering lever held in a vertical position, adjust the linkage rod ball joint as required.
9. Fit the ball joint to the steering lever. Tighten the ball joint hex jam nut.
10. Start the engine, and set the throttle at low idle.  
If the tires on either side of the machine do turn (creep), the neutral position for the control requires readjustment.



11. Loosen the hex jam nut on the linkage rod ball joint.



**Figure 4**

1. Transmission lever
2. Linkage rod ball joint
3. Hex jam nut

12. Disconnect the linkage rod from the lever.

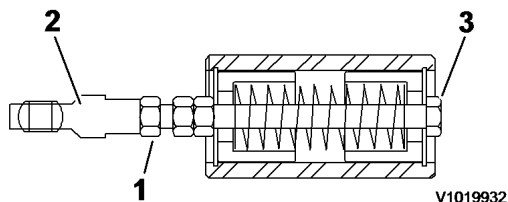
13. Adjust the ball joint as follow:

- If the tires turn rearward the ball joint should be rotated counter clockwise
- If the tires turn forward the the ball joint should be rotated clockwise

14. Reconnect the linkage rod to the lever. Tighten the jam nut against the ball joint.

15. Run the engine in varying rpm, check to see if the tires will turn in either direction. If the tires still tend to turn, the steering linkage needs to be fine adjusted.

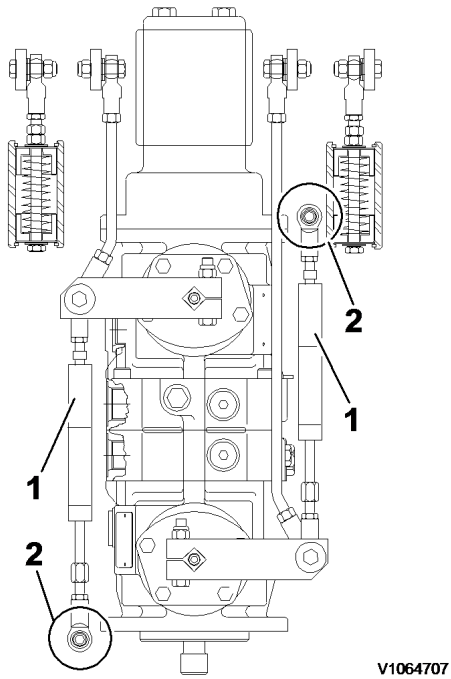
16. Loosen the jam nut on the centring spring assembly ball joint. Turn the adjusting cap screw on centring spring assembly until the wheels stop rotating. Tighten the jam nut.



**Figure 5**

1. Ball joint jam nut
2. Ball joint
3. Adjusting cap screw

17. Reconnect the damping cylinder to its mounting.



**Figure 6**

1. Damping cylinder
2. Mounting point

18. Lower the machine from the service position, see [191 Service position 1](#).

19. Lower the machine from the blocking, see [191 Raising and blocking](#).

Document Title: <b>Transmission pump neutral centering, checking and adjusting</b>	Function Group: <b>660</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/19</b>
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## **Transmission pump neutral centering, checking and adjusting**

### **Mechanical controls**

**MC90B, MC110B**

**Op nbr 660-020**

[11666051 Pressure gauge](#)

[14290266 Hose](#)

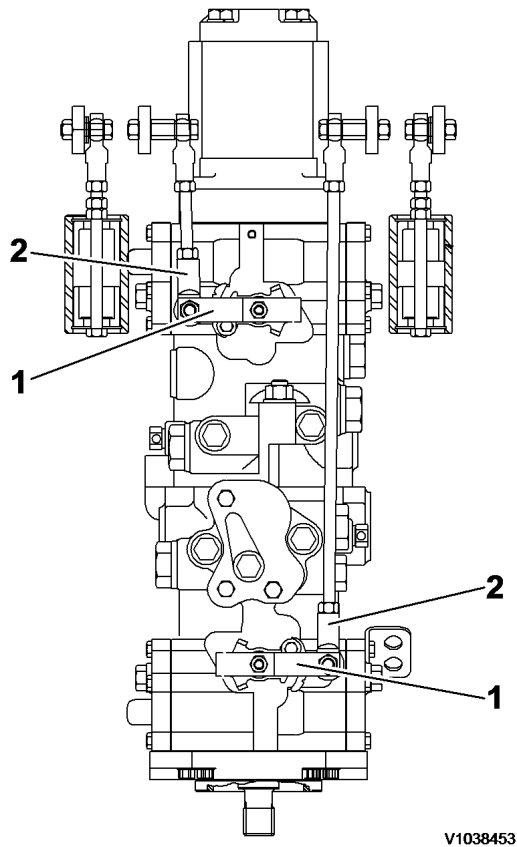
[14290266 Hose](#)

Hose, rated 40 bar (580 psi) minimum

### **NOTE!**

The hydraulic oil should be at operating temperature 40-60 °C (104-140 °F).

1. Raise and block the machine, see [191 Raising and blocking](#).
2. Put the machine in service position 1, see [191 Service position 1](#).
3. Disconnect the ball joint from the transmission lever.



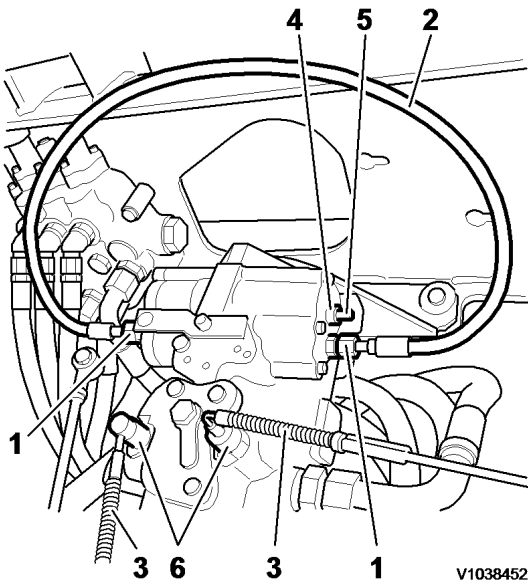
V1038453

**Figure 1**

- 1. Transmission lever
- 2. Transmission lever ball joint

**Swashplate, neutral adjustment**

- 4. Remove the plugs from the both sides of the servo housing and install a hose, rated at minimum 40 bar (580 psi) (this removes the effects of any control pressure on the servo piston).



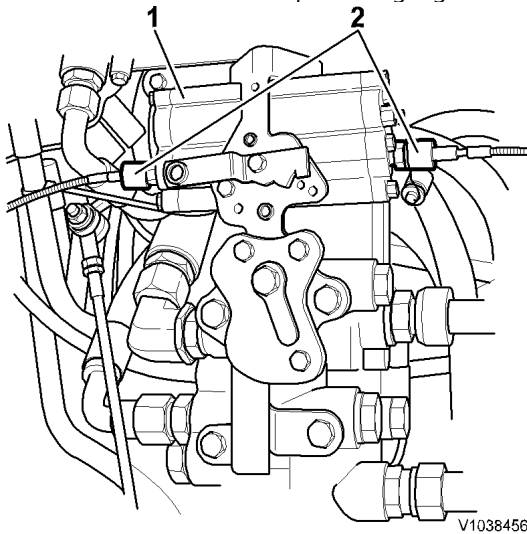
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**Figure 2**  
V1038452

1. Servo housing plug
  2. Hose, rated 40 bar (580 psi) minimum
  3. Hose 14290266
  4. Lock nut
  5. Servo adjustment screw
  6. System pressure port
5. Install pressure gauge 11666051 to the system pressure ports.
  6. Start the engine, and slowly accelerate to full throttle.
  7. Loosen the lock nut on the servo adjustment screw. Turn the adjustment screw until the two system pressure gauge readings are equal.
  8. Turn the adjustment screw clockwise until one of the system pressures starts to increase.
  9. Note the amount of rotation when turning the adjustment screw counter clockwise until the other system pressure starts to increase.
  10. Turn the adjustment screw clockwise half the amount of rotation noted above. Torque the lock nut.
  11. Stop the engine and remove the hoses from the pressure ports and the hose between the servo housing connections.
  12. Repeat the procedure on the other transmission pump.

### Neutral bracket adjustment

13. Install hoses 14290266 and pressure gauge 11666051 to the ports on both sides of the servo housing.



**Figure 3**

1. Servo housing
  2. Hose 14290266
14. Loosen the head screw to allow the neutral adjust bracket to move.

**Thank you very much for reading.**

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