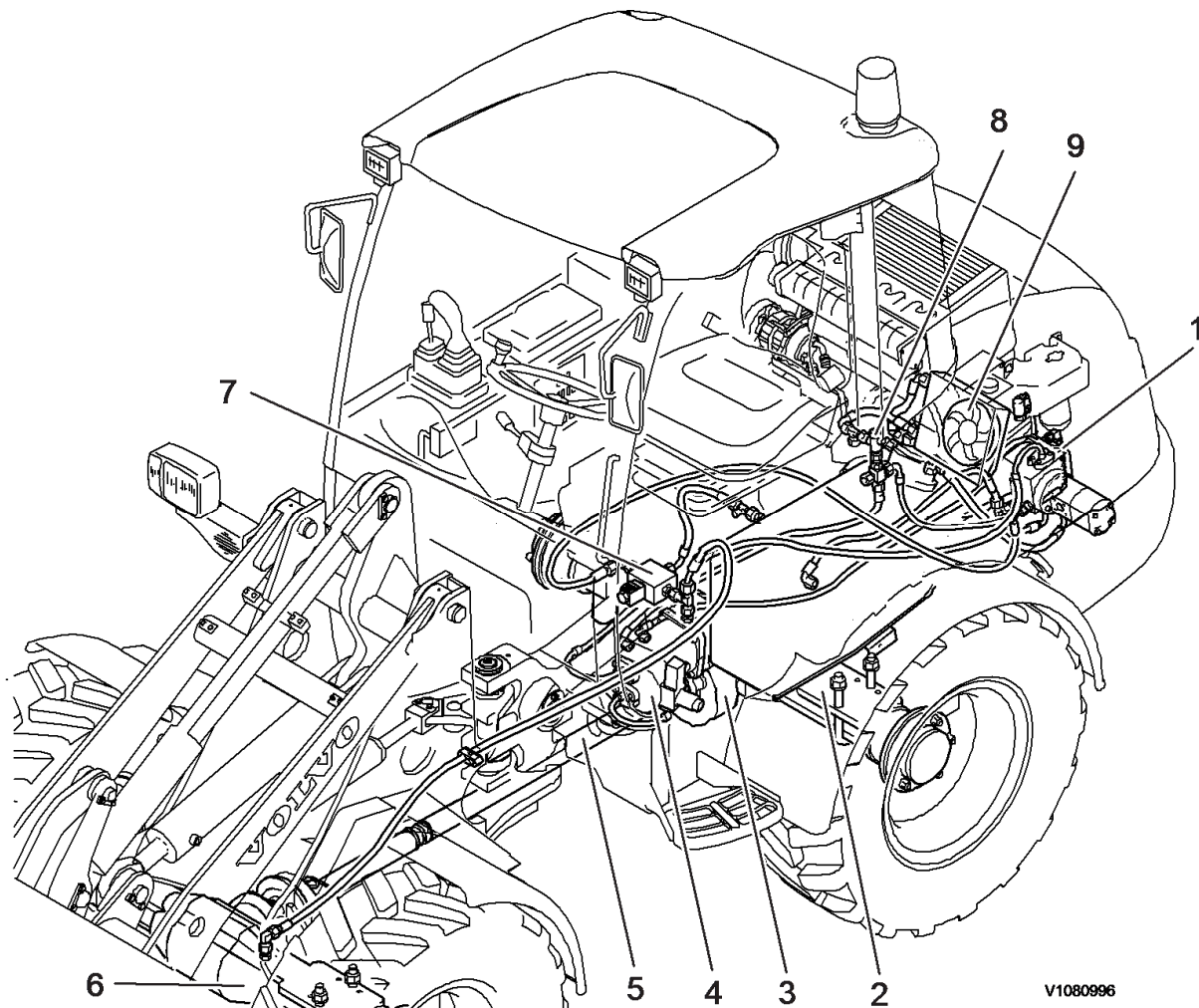


Document Title: <b>Power transmission, description</b>	Function Group: <b>400</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Power transmission, description

The machine drive power, forward and reverse, is achieved with hydrostatic drive. The hydrostatic pump is flanged to the diesel engine and driven directly. The oil flow from the hydrostatic pump passes to a hydrostatic motor flanged to the dropbox. The power from the hydrostatic motor is transferred via the dropbox to the rear axle. Via the propeller shaft joint the front axle is driven at the same time, giving permanent all-wheel drive.

The 100% differential lock integrated in the front and rear axles can be switched hydraulically. Using the inch brake function, stepless adjustment of the drive speed is guaranteed.



**Figure 1**

1. Hydrostatic pump
2. Rear axle
3. Dropbox
4. Hydrostatic motor
5. Propeller shaft
6. Front axle

7. Diff. lock solenoid valve
8. Thermostat
9. Oil cooler, drive and engine

Document Title: <b>Troubleshooting and actions to fix problems</b>	Function Group: <b>400</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## **Troubleshooting and actions to fix problems**

The table below should help operators and maintenance staff determine the possible cause of a malfunction in the drive system before damage occurs. It does not claim to be complete, but serves merely to support troubleshooting and diagnostics. The column "Malfunction/error" contains defective functions or malfunction symptoms which can occur in practice. The column "Possible malfunction cause" lists assemblies, operating media or states which may cause the malfunction.

The malfunction is located or eliminated by testing or changing the components specified in the column "Malfunction elimination".

Document Title: <b>Troubleshooting chart</b>	Function Group: <b>400</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Troubleshooting chart

Malfunction / Error	Possible cause of malfunction	Malfunction repair
Forward and reverse travel not possible	Oil level in hydraulic oil reservoir too low	Check hydraulic oil level, top up if necessary
	Suction line broken, bent or leaking	Check suction line and connections on hydraulic oil reservoir, tighten connections or replace if necessary
	Suction return filter dirty	Change filter
	Connection on hydraulic adjustment pump defective	Check pressure for forward and reverse travel, working and steering hydraulics, replace connection if necessary
	Feed pump defective or provides insufficient pressure	Check feed pressure, change pump if necessary
	High pressure valve, forward and reverse motion faulty or dirty	Check pressures at high pressure valves forward and reverse motion, adjust or replace high pressure valves if necessary
	Selector magnets for adjustment, forward and reverse motion do not select	Check current or voltage, test selector pistons mechanically
	Controller cartridge faulty	Test start up speed
	Disconnection valve faulty	Check or adjust and if necessary change disconnection valve
	Intake panel $\varnothing$ 1.8 mm (0.07 in) or outlet panel $\varnothing$ 0.8 mm (0.03 in) dirty	Check control pressure X1 and X2, where applicable remove and clean inlet and outlet panels.
	Inch device fully used	Check return spring and stop, adjust and replace if necessary
	Drive hydraulics adjustment motor faulty	Check for oil leaks
Connection of drive hydraulics adjustment motor to transmission faulty	Check connection, change if necessary	
Loader hesitates on acceleration	Oil level in hydraulic oil reservoir too low	Check oil level, top up if necessary
	Extensive foaming in hydraulic oil reservoir and air in system	Vent system and eliminate leaks
	Suction line broken, bent or leaking	Check suction line and connections on hydraulic oil reservoir, tighten connections or replace if necessary
	Suction return filter dirty	Change filter
	Feed pressure valve of adjustment pump faulty	Check feed oil pressure and change valve if necessary
	Controller cartridge incorrectly set	Check start-up engine speed and adjust if necessary
	Intake panel $\varnothing$ 1.8 mm (0.07 in) or outlet panel $\varnothing$ 0.8 mm (0.03 in) dirty	Check control pressure X1 and X2, where applicable remove and clean inlet and outlet panels.

Traction in both directions too low	Oil level in hydraulic oil reservoir too low	Check hydraulic oil level and top up if necessary
	Diesel engine does not run at nominal idle speed	Check engine power and high idle speed, adjust if necessary, check injection pump and lever stop
	Feed pressure to feed pump too low	Check feed pressure, adjust if necessary
	Disconnection valve set too low	Check and adjust disconnection valve if necessary
	Controller cartridge incorrectly installed	Check start-up engine speed and adjust if necessary
	Hydraulic oil temperature too high	Check hydraulic oil cooler for dirt, clean if necessary and check thermostat
	Drive hydraulics adjustment motor does not swing out totally	
	– Throttle pin dirty	Clean throttle pin
	– valve in cap seizes	Change drive hydraulics adjustment motor
	– adjustment pin broken	
	– high pressure valve, forward/reverse motion, set too low	Check high pressure valves, adjust if necessary
Traction in one direction too low	– Diesel engine under too much pressure	Check high pressure valves, adjust if necessary
	High pressure valve for corresponding direction set too low	Check high pressure at measurement connection, forward and reverse motion, adjust or replace if necessary
Jerky deceleration, vehicle rocks	mechanical neutral position of drive hydraulics adjustment pump incorrectly set	check mechanical neutral and adjust if necessary
	Oil level in hydraulic oil reservoir too low	Check oil level, top up if necessary
	Feed pump draws in air	Check system for leaks, seal if necessary
	Occasional interruption in control of selection magnet, drive hydraulics adjustment pump or drive hydraulics adjustment motor	Check voltage and power supply to selection magnet, drive hydraulics adjustment pump or drive hydraulics adjustment motor
	Throttle pin missing in cover of drive hydraulics adjustment motor	Check throttle pin
	Suction return filter dirty	Change filter
Loader does not reach its top speed	Direction valve does not select / mis-selects	Check control of selector magnet, if necessary change; check pistons for free movement
	Oil level in hydraulic oil reservoir too low	Check oil level, top up if necessary
	Suction return filter dirty	Change filter
	Diesel engine does not run at nominal idle speed	Check engine power and high idle speed of diesel engine, adjust if necessary; check lever stop of injection pump, adjust if necessary
	Feed pressure to feed pump too low	Check feed pressure, adjust if necessary
	Control pressure at adjustment is not built up or reduced	Check selection magnet, drive hydraulics adjustment pump, check control pressure X1 and X2.
	Intake panel Ø 1.8 mm (0.07 in) or outlet panel Ø 0.8 mm (0.03 in) dirty	Remove inlet and outlet panels, clean if necessary.
Controller cartridge incorrectly	Check start-up engine speed and adjust if necessary	

	set		
	Inch valve incorrectly set, does not go to 0 stop.	Check stop of Inch valve, adjust if necessary	
	Drive hydraulics adjustment motor does not go to small swing angle	Check valve in cap for free movement, check throttle pin in cover of drive hydraulics adjustment motor and clean if necessary	
	Selector magnet on drive hydraulics adjustment motor faulty	Check voltage and power supply to selector magnet	
	Adjustment part of drive hydraulics adjustment motor faulty	Check adjustment pressure, test function of non-return valves. Check control piston and compression spring. Replace faulty components.	
	Control start of hydromotor incorrectly set	Adjust control start of hydromotor	
Loader acceleration too low	Oil level in hydraulic oil reservoir too low	Check oil level, top up if necessary	
	Insufficient diesel engine power	Check diesel engine, add oil if necessary	
	Drive hydraulics adjustment motor does not regulate	Check throttle pin in cover of drive hydraulics adjustment motor and clean if necessary	
	Selector magnet on drive hydraulics adjustment motor faulty	Check voltage and power supply to selector magnet	
	Inch valve incorrectly set	Check stop and return spring of Inch valve	
	Control start of hydromotor incorrectly set	Adjust control start of hydromotor	
Hydraulic oil temperature too high	Oil level in hydraulic oil reservoir too low	Check oil level, top up if necessary	
	Incorrect hydraulic oil in system	Drain oil from hydraulic oil reservoir, flush system and add hydraulic oil of prescribed specification according to the Operating Media table of the Operator's Manual.	
	Suction line leaks Drive hydraulics adjustment pump draws in air	Check suction line and connections on hydraulic oil reservoir, tighten connections or replace if necessary	
	Open high pressure valves, forward/reverse motion, pump faulty	Adjust high pressure valve, if necessary change drive hydraulics adjustment pump	
	Disconnection valve set too high	Check and adjust disconnection valve if necessary	
	Hydraulic oil return does not pass through hydraulic oil cooler but runs directly to the reservoir	Check temperature regulator Solenoid faulty Power failure	
	Cooling fins of hydraulic oil cooler dirty	Clean hydraulic oil cooler	
	Drive hydraulics adjustment motor faulty	Change drive hydraulics adjustment motor	
Drive or output shaft of drive hydraulics adjustment pump leaking Housing stand pressure valve does not open correctly	Shaft sealing ring faulty or hard	Check shaft sealing ring, replace if necessary	
	Leak-off line bent	Check leak-off line and reservoir vent, adjust or change if necessary Check temperature regulator, change if necessary	
	Housing pressure too high	Check housing pressure at connection "R". Check return line and reservoir venting	
Drive or output shaft of drive hydraulics adjustment pump leaking	Shaft sealing ring faulty or hard	Check shaft sealing ring, replace if necessary	
	Leak-off line bent	Check leak-off line, adjust or change if necessary Check temperature regulator, change if necessary	
High engine compression of	Diesel engine faulty, lack of	Check power of diesel engine, service or adjust if	

diesel engine	engine power	necessary
	high pressure valve, forward/ reverse motion, set too low	Adjust high pressure valve as specified

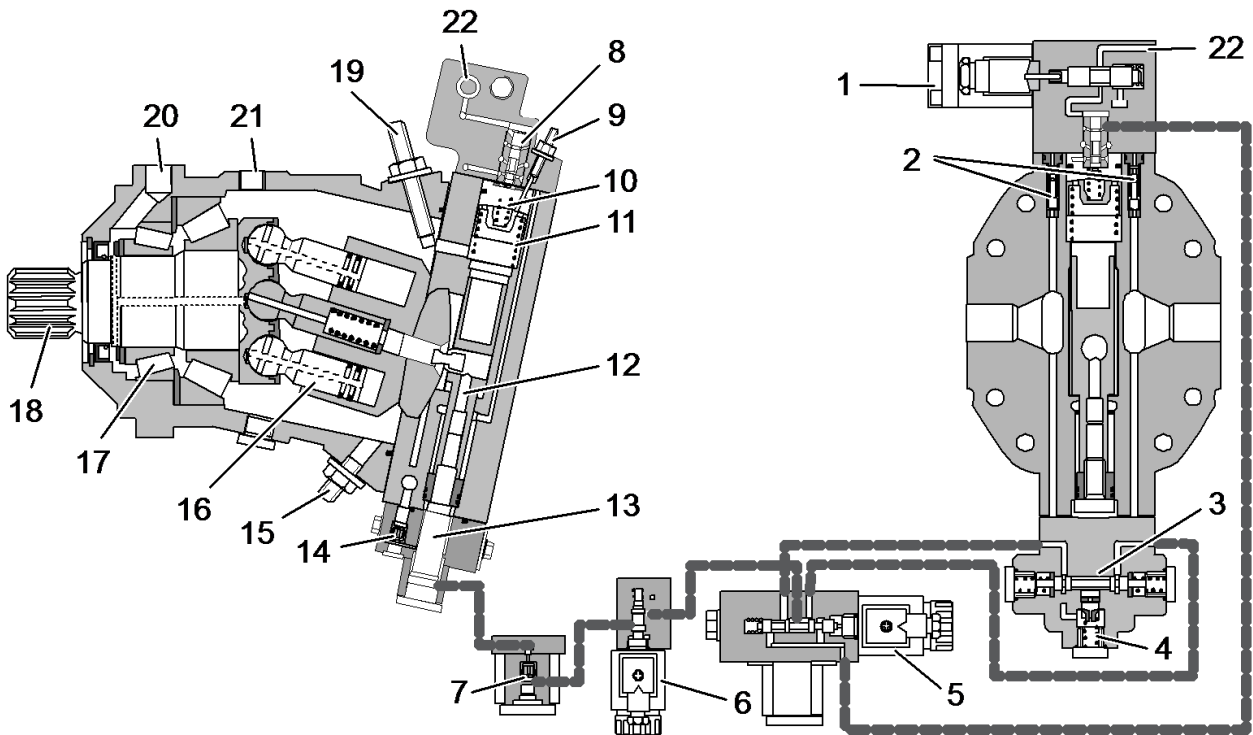
Document Title: <b>Travel motor, description</b>	Function Group: <b>440</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Travel motor, description

The hydrostatic motor is an axial piston adjustment motor with speed-dependent hydraulic adjustment. The control pressure determined by the drive speed of the hydrostatic pump and the high pressure control the slew angle of the hydrostatic motor. An increasing drive speed, i.e. rising control pressure, depending on the high pressure, causes a swivel to a smaller consumption volume i.e. lower torque and higher rotation speed. If the high pressure rises above the value set on the regulator, the hydrostatic motor swivels to a larger consumption value, i.e. higher torque and lower rotation speed.

Regulation start is the moment when the hydrostatic motor automatically regulates down to 1st gear (Q-max) to transmit maximum torque.

### Hydrostatic motor, section view



V1027309

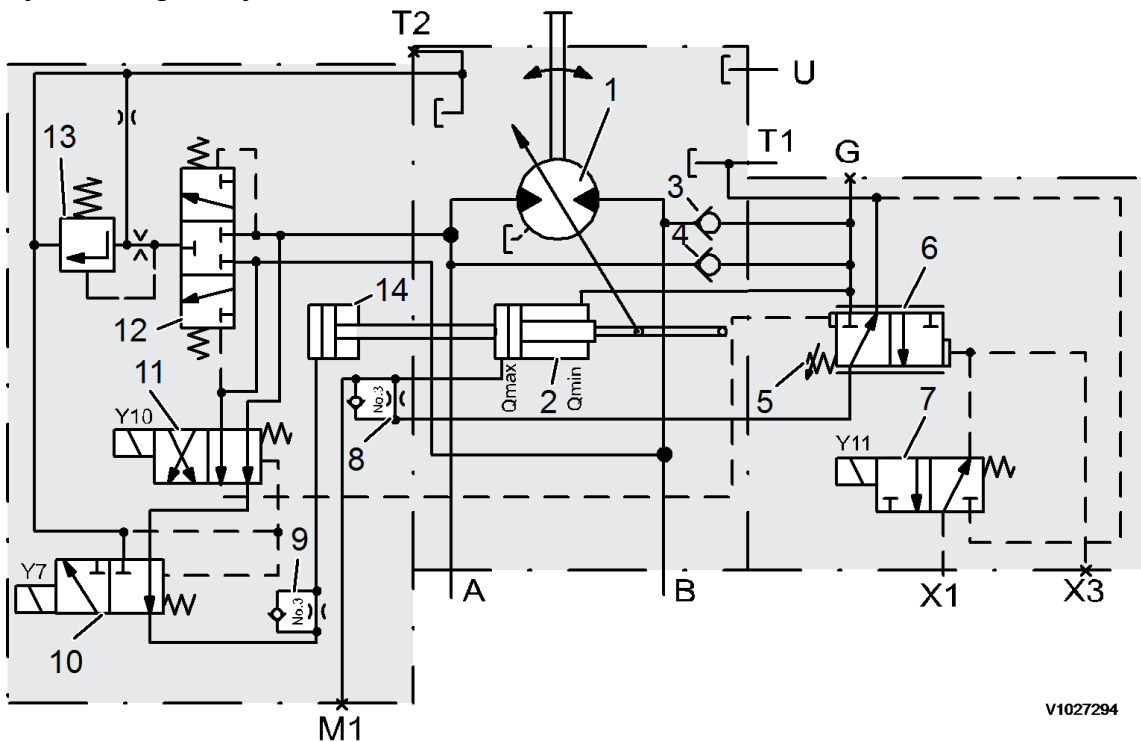
**Figure 1**  
**Hydrostatic motor, section view**

1. Solenoid valve, Q-max (Y11)
2. Non-return valves
3. Flushing valve
4. Pressure build-up valve
5. Solenoid valve direction slide (Y10)
6. Solenoid valve, Q-max 1/2 (Y7)
7. Throttle non-return valve piston Q-max. 1/2
8. Regulating valve
9. Adjustment screw, regulation start
10. Regulation start spring
11. Spring Q-max
12. Set piston



13. Piston Q-max. 1/2
14. Throttle non-return valve, set piston
15. Q-max adjusting screw
16. Piston assembly
17. Bevel roller bearing
18. Output shaft
19. Q-min adjusting screw
20. Rinsing connection "U"
21. Tank connection "T"
22. Operating pressure connection "X1"

**Hydraulic diagram, hydrostatic motor**



**Figure 2**  
**Hydraulic diagram, hydrostatic motor**

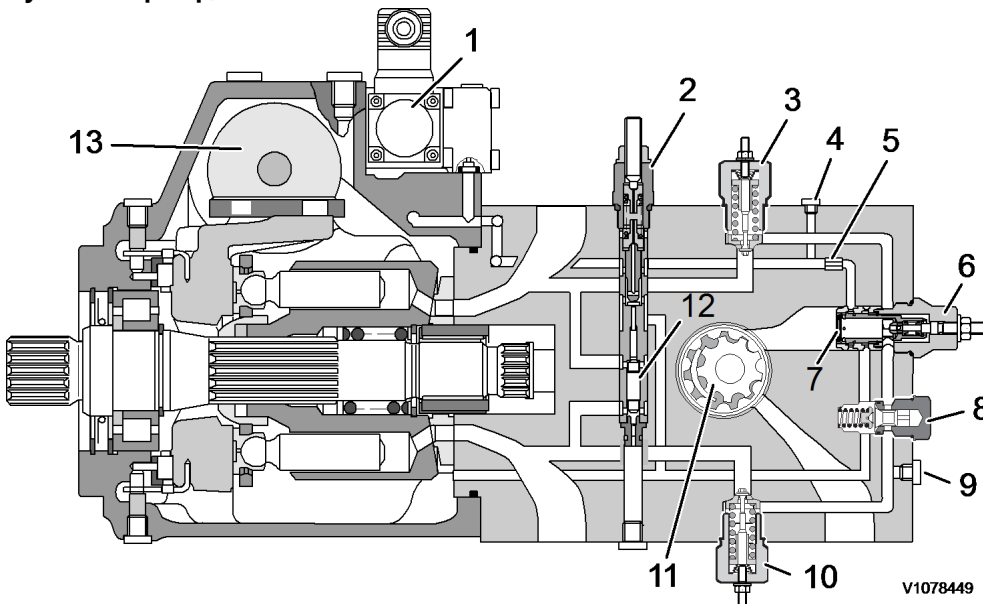
1. Piston assembly
  2. Set piston
  3. Non-return valve, forwards
  4. Non-return valve, reverse
  5. Regulation start spring
  6. Regulating valve
  7. Solenoid valve, Q-max (Y11)
  8. Throttle non-return valve
  9. Throttle non-return valve
  10. Solenoid valve, Q-max 1/2 (Y7)
  11. Solenoid valve direction slide (Y10)
  12. Flushing valve
  13. Pressure build-up valve
  14. Piston Q-max. 1/2
- A. Direction of travel, forwards  
B. Direction of travel, reverse

Document Title: <b>Hydrostatic pump description</b>	Function Group: <b>pump, 440</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Hydrostatic pump, description

The feed pump draws in oil from the tank via the hydraulic oil filter and supplies a rotation speed-dependent volume flow via the regulator cartridge to the feed pressure channel. Via connection "G" feed pressure is provided to switch the differential lock and pre-control valve. The feed pressure opens the non-return valve integrated in the secondary limiter valve and thus fills the high pressure channels. Control pressure is built up proportionally in the regulator cartridge and is available for changing direction of travel. If a direction of travel is preselected, control pressure reaches the adjustment piston and the hydrostatic pump swivels out. Via connection "Ps" the control pressure reaches the inching valve. The shutdown valve for limiting maximum high pressure is also in the control pressure channel. On a shock situation, a secondary limiting valve opens and the pressure peak is then released into the feed pressure channel. At the same time, filling takes place via the anti-cavitation function of the other secondary limiting valve. The leakage oil from the hydrostatic pump is passed via connection "T2" to the thermostatic valve in the hydraulic filter head.

### Hydrostatic pump, section view

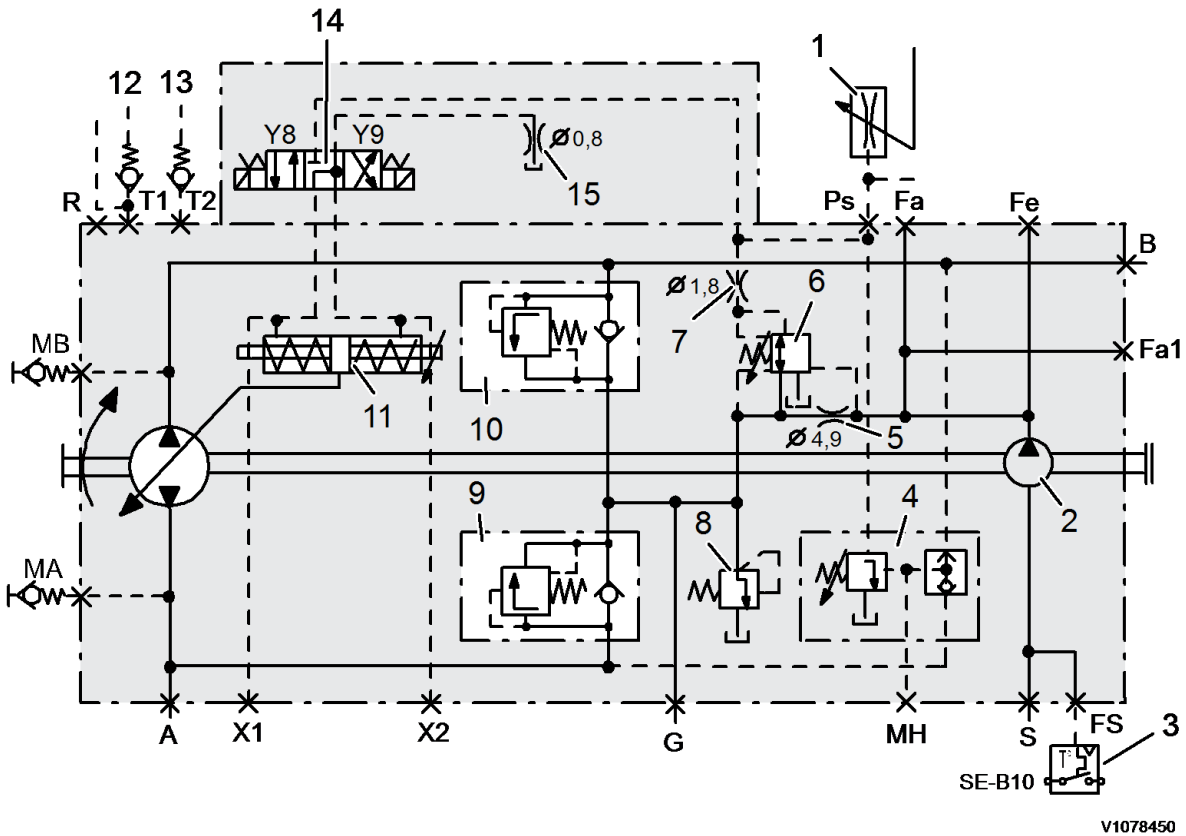


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**Figure 1**  
**Hydrostatic pump, section view**

1. 4/3 way valve
2. Shutoff valve
3. Secondary limiting valve
4. Port "Ps"
5. Inlet shutter
6. Controller cartridge
7. Measurement shutter
8. Feed pressure limiting valve
9. Connection "G"
10. Secondary limiting valve
11. Feed pump
12. Cross-over valve / shutdown valve
13. Adjustment piston

## Hydrostatic pump, hydraulic diagram



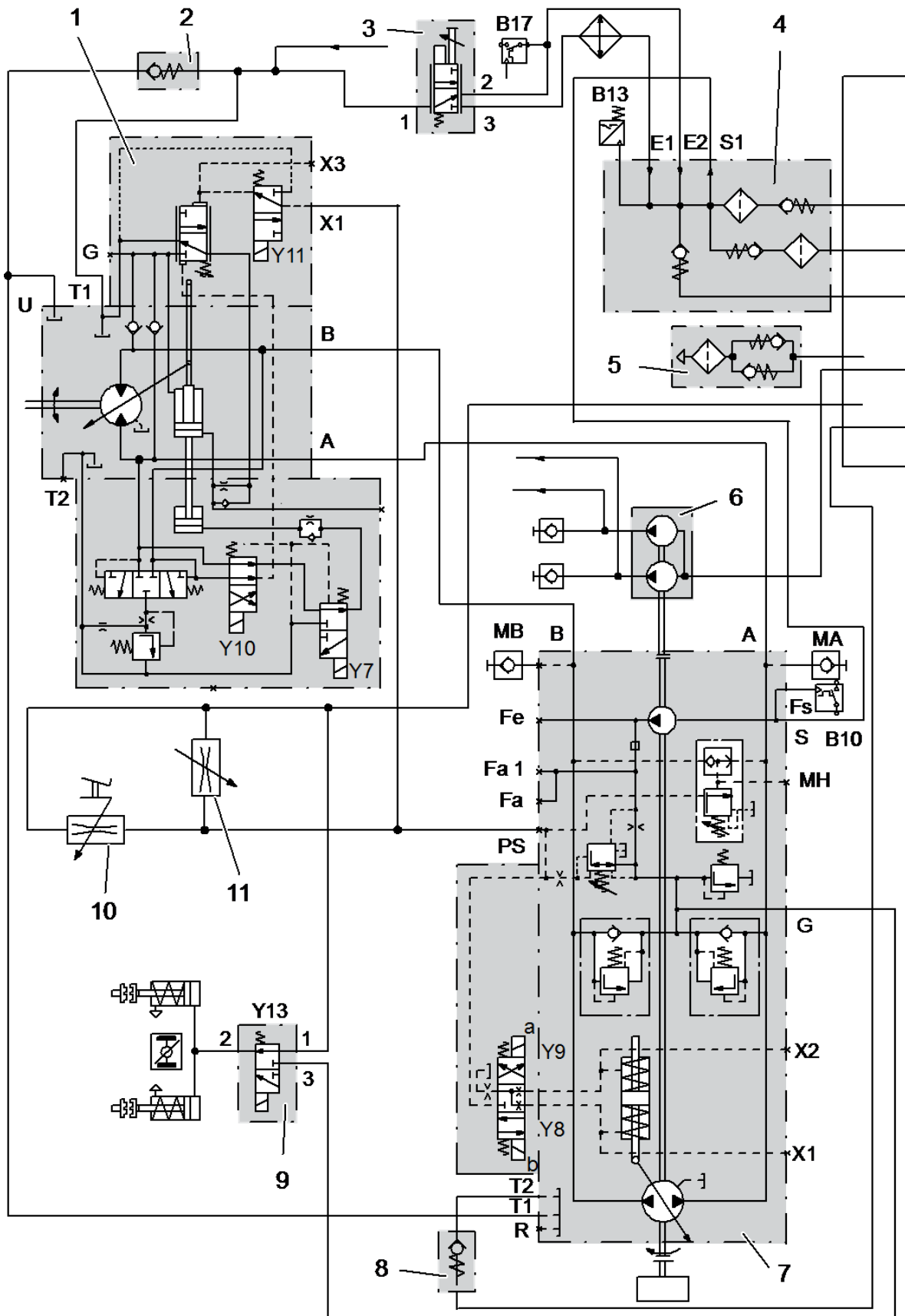
V1078450

**Figure 2**  
**Hydrostatic pump, hydraulic diagram**

1. Inch valve
2. Feed pump
3. Thermostat (B10), hydraulic oil
4. Shut-off valve with change-over valve
5. Measurement shutter
6. Controller cartridge
7. Inlet shutter
8. Feed pressure valve
9. Secondary limiting valve
10. Secondary limiting valve
11. Adjustment piston
12. Holdup pressure valve (0.5 bar / 7.3 psi)
13. Holdup pressure valve (3 bar / 43.5 psi)
14. 4/3 way valve
15. Discharge cover

Document Title: <b>Hydraulic transmission</b>	<b>diagram</b>	Function Group: <b>440</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>				

## **Hydraulic diagram transmission**



V1027319

**Figure 1**  
**Hydraulic diagram, power unit**

1. Hydrostatic motor
2. Holdup pressure valve (0.5 bar / 7.3 psi)

3. Thermostat
4. Suction return filter
5. Breather valve
6. Twin pump (working hydraulics / steering)
7. Hydrostatic pump
8. Holdup pressure valve (3 bar / 43.5 psi)
9. Diff. lock solenoid valve
10. Inch valve
11. Hand rotary inching valve (option)

Document Title: <b>Induction sensor for output shaft, changing</b>	Function Group: <b>421</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Induction sensor for output shaft, changing

Only with lifting bracket suspension option (BSS)

### Op nbr 421-061

1. Place the machine in service position.
2. Turn OFF the battery disconnect switch.
3. Separate connector for inductive sensor (1) and remove inductive sensor

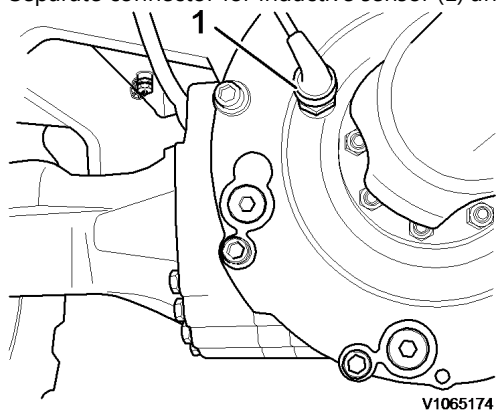
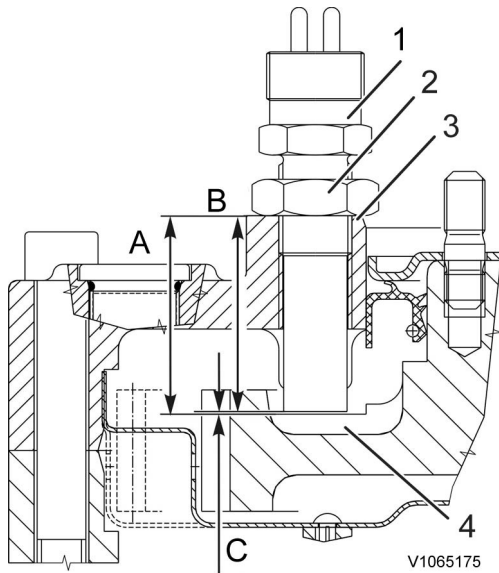


Figure 1

### Fit inductive sensor

4. Determine dimension **A** from the gearbox housing contact surface to the spur gear rib (highest rib).  
**A** = dimension measured from contact surface of gearbox housing to spur gear rib  
**B** = adjustment dimension, lock nut - inductive sensor  
**C** = necessary adjustment distance 0.55 - 0.95 mm (0.02 - 0.04 in) mean = 0.75 mm (0.03 in)



**Figure 2**  
**Fit inductive sensor, section view**

1. Inductive sensor
2. Jam nut
3. Contact surface gearbox housing
4. Spur gear rib

5. Set adjustment dimension **B** lock nut - inductive sensor



**Figure 3**  
**Set adjustment dimension lock nut - inductive sensor**

<b>Example, determine adjustment dimension</b>	
Dimension <b>A</b>	49.30 mm (1.93 in)
minus adjustment distance <b>C</b> (mean)	0.75 mm (0.03 in)
Adjustment dimension <b>B</b>	48.55 mm (1.89 in)

**NOTE!**

Set the position of the lock nut to the adjustment dimension (example: 48.55 mm / 1.89 in). When fitting the inductive sensor, ensure that this dimension does not change.

6. Fit inductive sensor. Tightening torque of lock nut **50 Nm (37 lbf ft)**. Connect connector.



Document Title: <b>Hydraulic motor, replacing</b>	Function Group: <b>441</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Hydraulic motor, replacing

Op nbr 441-002

1. Place the machine in service position.
2. Turn OFF the battery disconnect switch.



**WARNING**

Hot liquids and machine parts can cause burns. Allow the machine to cool before beginning any work.

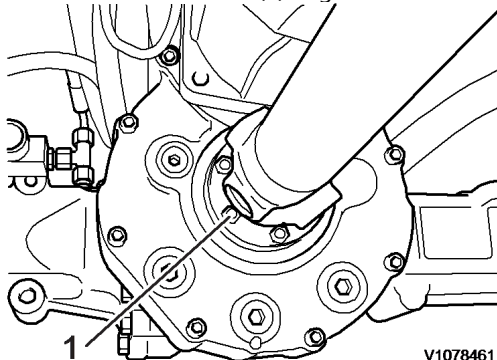


**WARNING**

The work involves handling heavy components - failure to stay alert may result in severe crushing injuries.

### Removing

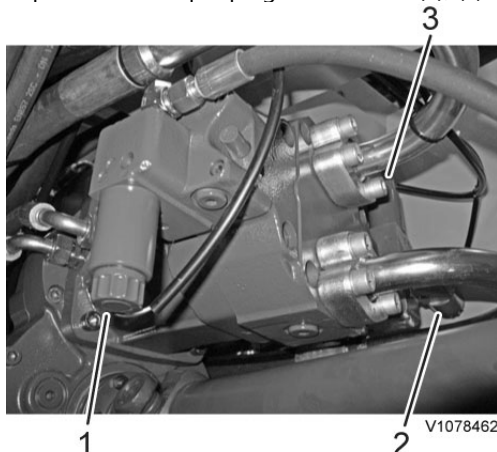
3. Remove universal shaft (1) at gearbox.



V1078461

**Figure 1**

4. Separate electric pin plug connections (1), (2) and (3) from solenoid valve hydrostatic motor.



V1078462

**Figure 2**

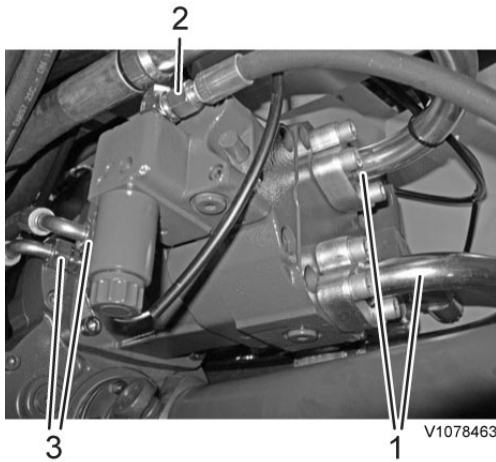
5. Remove high-pressure lines (1), control line (2) and leakage oil lines (3) on hydrostatic motor.

**NOTE!**

Place suitable catchment container below to catch escaping oil.

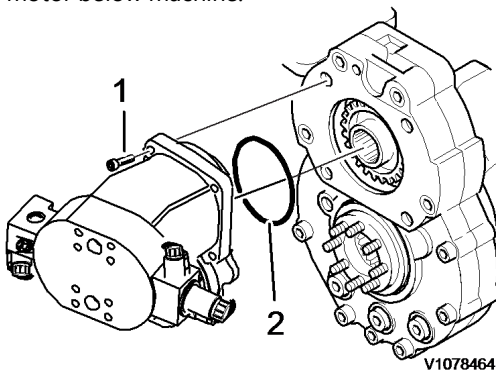
**NOTICE**

**When a hose has been disconnected, plug both the hose and the connection immediately. The hoses should be marked for correct connection.**



**Figure 3**

6. Position stand jack below hydrostatic motor.
7. Unscrew fixing bolts (1). Withdraw hydrostatic motor from gearbox. Lower stand jack and withdraw hydrostatic motor below machine.



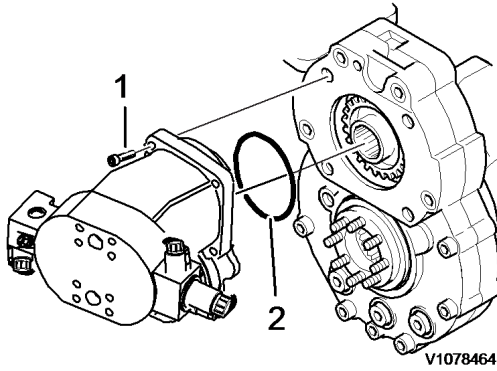
**Figure 4**

**NOTE!**

Hydrostatic motor, weight approx. 48 kg (106 lbs).

## Installation

8. Bring hydrostatic motor into position below machine using stand jack.
9. Insert hydrostatic motor in the gearbox with a new seal ring (2) and tighten bolts. Tightening torque **85 Nm (63 lbf ft)**.

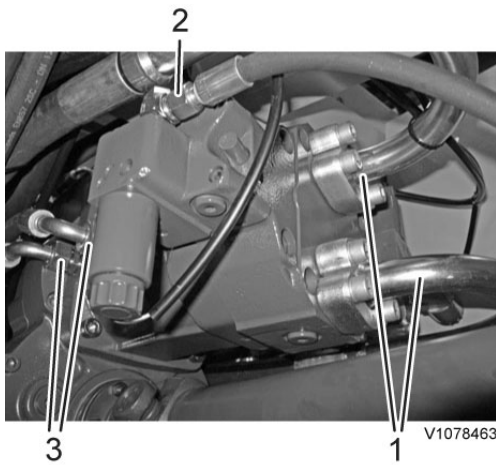


**Figure 5**

10. Install high-pressure lines (1), control line (2) and leakage oil lines (3) on hydrostatic motor.

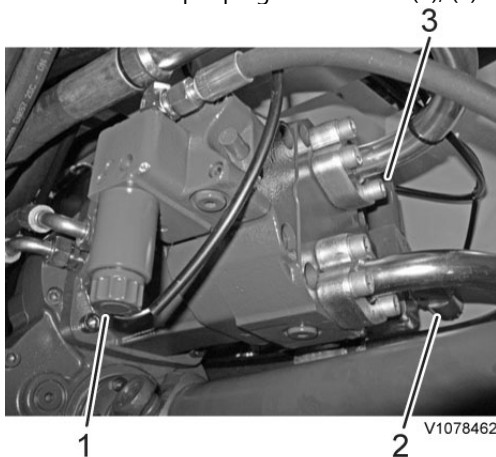
**NOTE!**

Tighten bolts on flange halves, high pressure lines, with a tightening torque of 92 Nm (68 lbf ft).



**Figure 6**

11. Connect electric pin plug connections (1), (2) and (3) of solenoid valve hydrostatic motor.

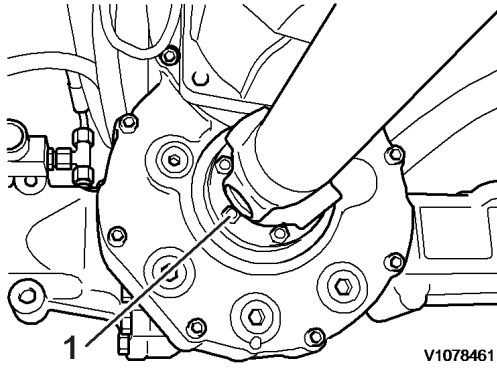


**Figure 7**

12. Mount universal shaft (1) on gearbox. Tighten lock nuts. Tightening torque **36 Nm (27 lbf ft)**.

**NOTE!**

Use new lock nuts.



**Figure 8**

13. Carry out test drive.
14. Check the hydraulic oil level and top up if necessary. See [173 Hydraulic oil level check](#).

Document Title: <b>Hydraulic pump, replacing</b>	Function Group: <b>442</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Hydraulic pump, replacing

### Op nbr 442-001

1. Place the machine in service position.
2. Turn OFF the battery disconnect switch.

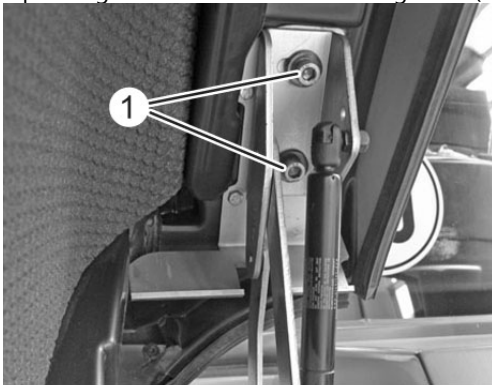


### **WARNING**

The work involves handling heavy components - failure to stay alert may result in severe crushing injuries.

### Removing

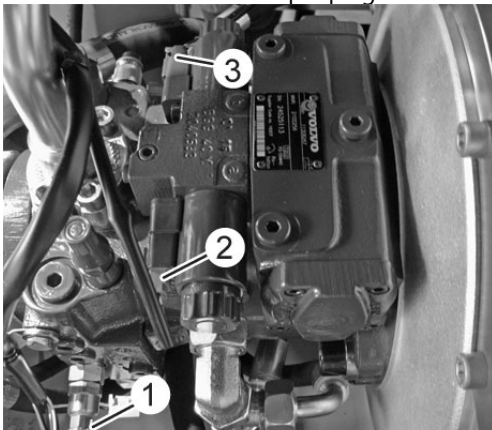
3. Open engine hood and unscrew fixing bolts (1) on both sides.



V1078472

**Figure 1**

4. Lift off the engine hood and place it on a suitable surface.  
**NOTE!**  
Engine hood , weight approx. 28 kg (62 lbs).
5. Remove cable ties. Detach pin plug connections at hydrostatic pump.

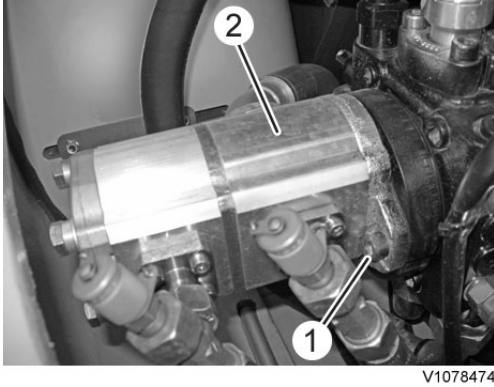


V1078473

**Figure 2**

1. Hydraulic oil thermostat (B10)
2. Solenoid valve, reverse drive (Y9)
3. Solenoid valve, forward drive (Y8)

6. Unscrew fixing bolts (1). Withdraw twin gear pump (2) from connection plate and lay on frame plate.



**Figure 3**

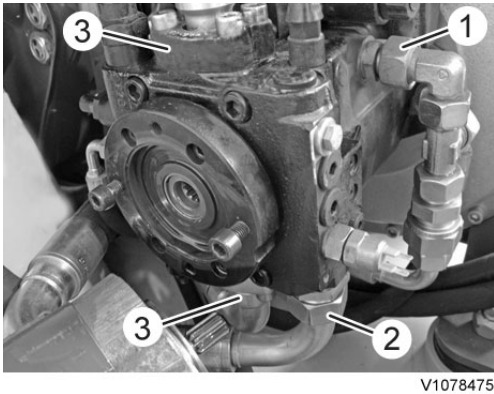
7. Connect vacuum pump. See [900 Vacuum pump connection](#)
8. Remove leak-oil line (1), suction line (2) and high-pressure lines (3) at hydrostatic pump.

**NOTE!**

Place suitable catchment container below to catch escaping oil.

**NOTICE**

**When a hose has been disconnected, plug both the hose and the connection immediately. The hoses should be marked for correct connection.**

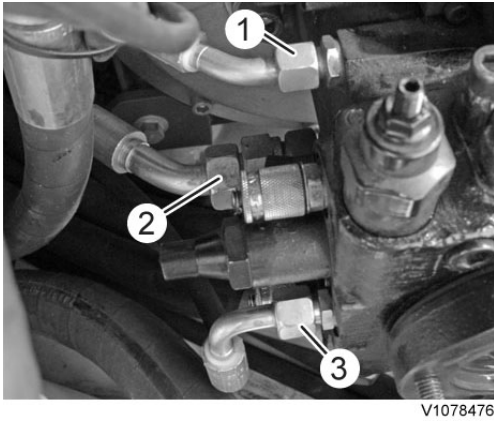


**Figure 4**

9. Remove operating pressure line (1), leak-oil line (2) and feed pressure line (3) at hydrostatic pump.

**NOTICE**

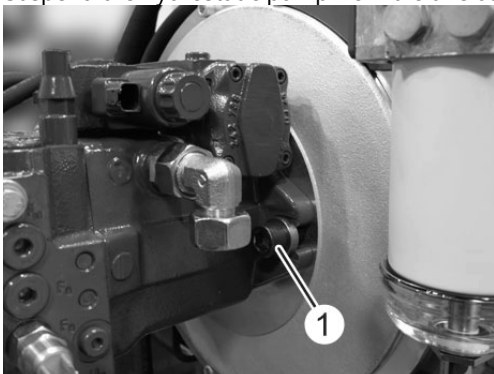
**When a hose has been disconnected, plug both the hose and the connection immediately. The hoses should be marked for correct connection.**



V1078476

**Figure 5**

10. Suspend the hydrostatic pump from a crane using suitable hoisting equipment.



V1080929

**Figure 6**

11. Withdraw fixing bolts (1). Remove hydrostatic pump from connection flange and place on suitable surface.

**NOTE!**

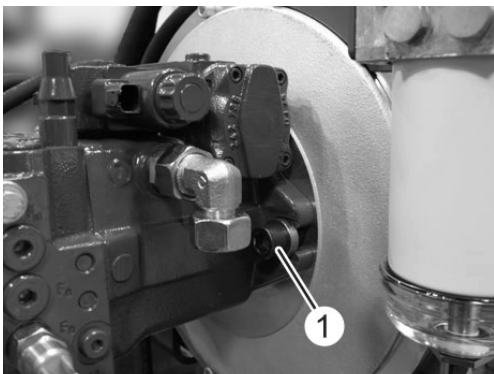
Hydrostatic pump, weight approx. 32 kg (71 lbs).

**Installation**

12. Mount the thermostat and connections for the hydraulic lines on the new hydrostatic pump.

**NOTE!**

Tighten the thermostat with a tightening torque of max. 32 Nm (24 lbf ft).



V1080929

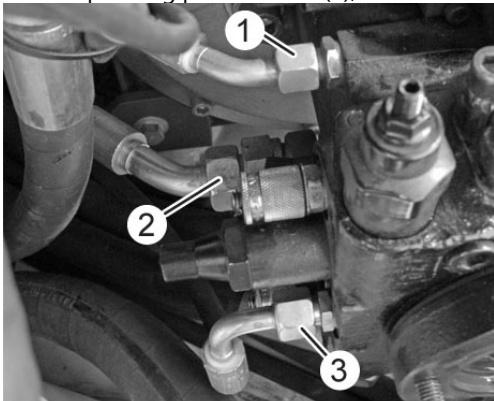
**Figure 7**

13. Suspend the hydrostatic pump from a crane using suitable hoisting equipment and insert in the connection flange.

**NOTE!**

Hydrostatic pump, weight approx. 32 kg (71 lbs).

14. Screw in the fixing bolts (1) and tighten to **210 Nm (155 lbf ft)**.
15. Install operating pressure line (1), leak-oil line (2) and feed pressure line (3) at hydrostatic pump.



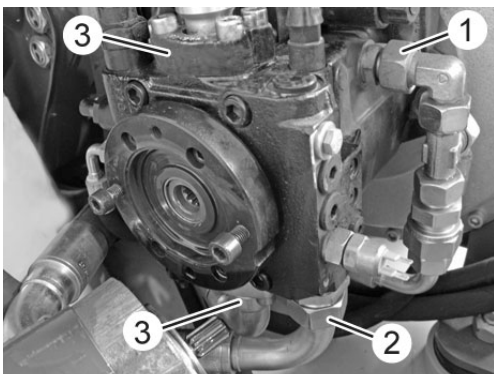
V1078476

**Figure 8**

16. Install leak-oil line (1), suction line (2) and high-pressure lines (3) at hydrostatic pump.

**NOTE!**

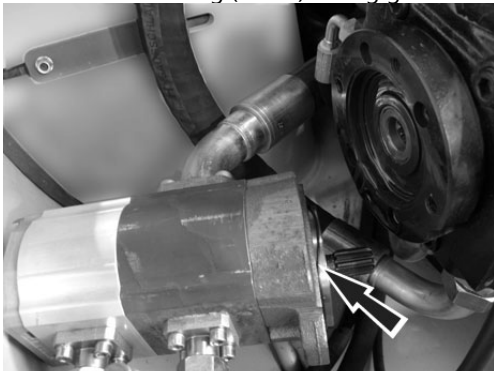
Tighten bolts on flange halves, high pressure lines, with a tightening torque of 83 Nm (61.2 lbf ft).



V1078475

**Figure 9**

17. Remove the vacuum pump; see [900 Vacuum pump connection](#).
18. Place a new seal ring (arrow) in ring groove of the pump housing, and oil.

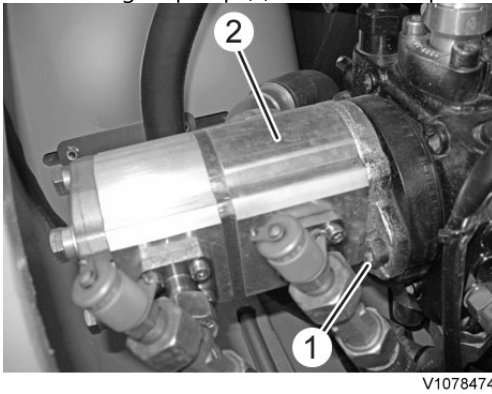


V1080930

**Figure 10**



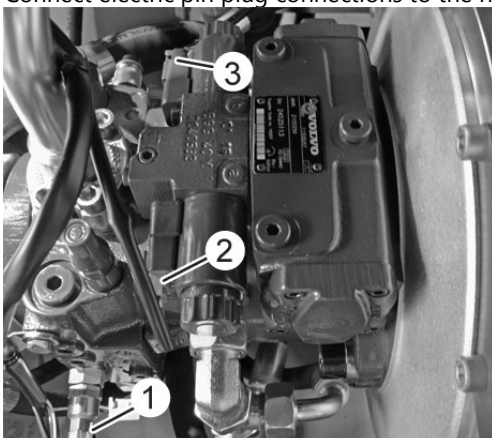
19. Insert twin gear pump (2) in connection plate and tighten fixing bolts (1).



V1078474

**Figure 11**

20. Connect electric pin plug connections to the hydrostatic pump. Attach cable ties.



V1078473

**Figure 12**

1. Hydraulic oil thermostat (B10)
2. Solenoid valve, reverse drive (Y9)
3. Solenoid valve, forward drive (Y8)

21. Install the engine hood.

**NOTE!**

Engine hood , weight approx. 28 kg (62 lbs).

**Bleed hydrostatic pump.**

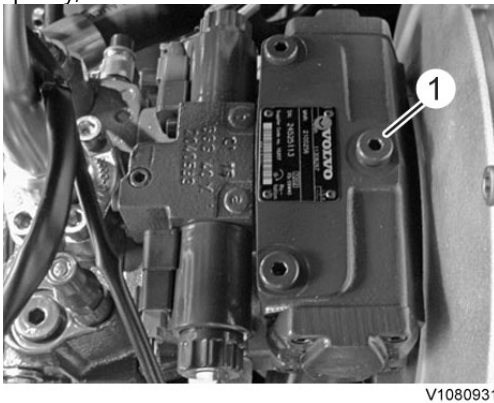
22. Unscrew bleed valve (1).



V1078470

**Figure 13**

23. Unscrew lock screw (1) at the hydrostatic pump, and prefill the pump housing with hydraulic oil. For hydraulic oil quality, see [160 Recommended lubricants](#).

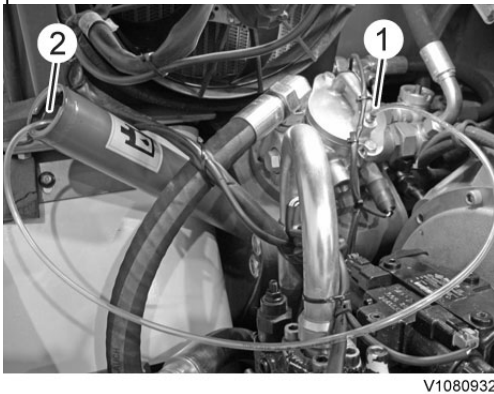


**Figure 14**

24. Via the inlet screw connection of the bleed valve, blow compressed air (max. 1 bar / 14.5 psi) into the system until oil emerges from the bore at the hydrostatic pump.
25. Screw in bleed valve. Screw lock screw into hydrostatic pump.

### **Bleed hydraulic oil filter.**

26. Remove rubber cap at bleed nipple (1) and connect a plastic hose. Open cover of the oil filler pipe (2) and insert plastic hose.



**Figure 15**

### **Bleed hydraulic oil filter.**

27. Start engine and allow to idle until the oil emerges from the plastic hose without bubbles.
28. Remove plastic hose. Close cover on oil filler pipe. Push rubber cap onto bleed nipple.
29. Carry out test drive.
30. Check the hydraulic oil level and top up if necessary. See [173 Hydraulic oil level check](#).

Document Title: <b>Hydrostatic pump charge pressure, check and adjust</b>	Function Group: <b>442</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Hydrostatic pump charge pressure, check and adjust

Op nbr 442-016

[88830055 Pressure checking set](#)

### NOTE!

Warm up the machine until the hydraulic system is at operating temperature (60°C/140°F).

### Inspection item

1. Connect pressure gauge to hydrostatic pump, connection "M<sub>B</sub>" (1).



V1078454

**Figure 1**  
**Hydrostatic pump, connection "M**

2. Start engine and run with low idle.

### NOTE!

Tighten handbrake. Do not preselect a gear or direction of travel.

3. Read display on pressure gauge. For nominal feed pressure, see [030 Power transmission, specifications](#).

### NOTE!

The feed pressure is fixed and cannot be adjusted from the outside.

### Adjust

Document Title: <b>Start hydraulic pump control, check and adjust</b>	Function Group: <b>442</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Start hydraulic pump control, check and adjust

Op nbr 442-017

[88830055 Pressure checking set](#)

[80872138 Tachometer](#)

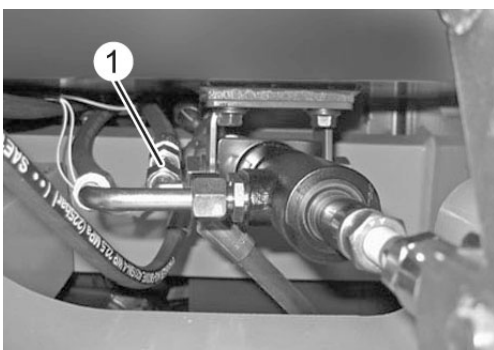
### NOTE!

Warm up the machine until the hydraulic system is at operating temperature (60°C/140°F).

1. Remove control line (1) at brake cylinder. Seal hose and connection with plugs.



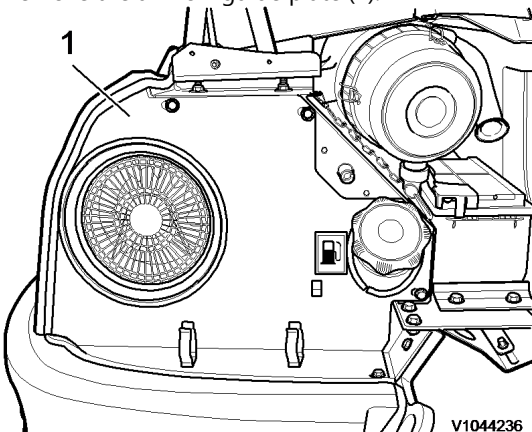
**Hot oil can cause burns. Use protective equipment and handle hot oil with great care. Collect the oil and take care of it in an environmentally friendly way.**



V1080955

**Figure 1**

2. Remove the air flow guide plate (1).

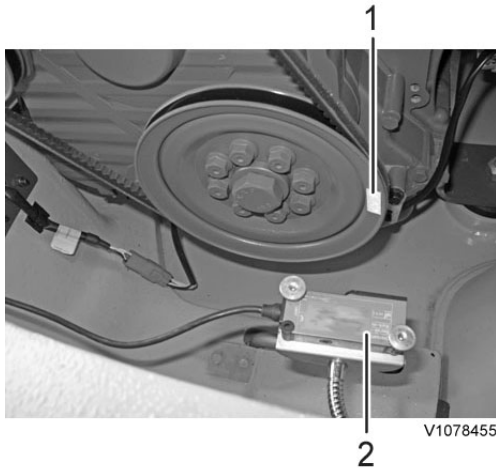


V1044236

**Figure 2**

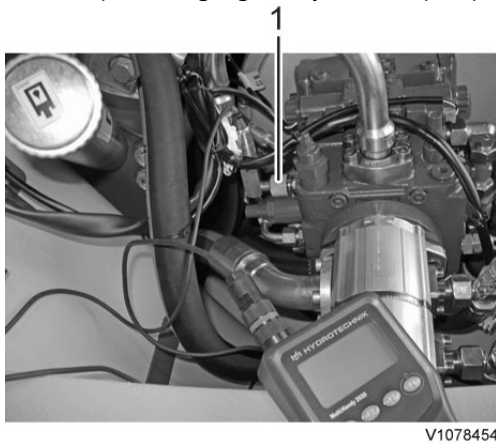
## Inspection item

3. Apply reflective sticker (1) to V-belt pulley. Fit speed sensor (2) and connect tachometer 12976108.



**Figure 3**

4. Connect pressure gauge to hydrostatic pump, connection "M<sub>B</sub>" (1).

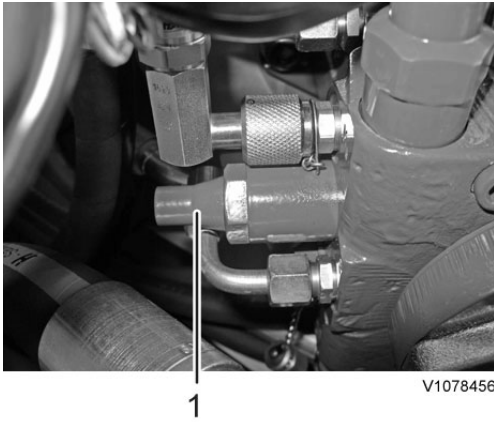


**Figure 4**  
**Hydrostatic pump, connection "M**

5. Start engine. Preselect gear "1" and direction of travel "Forwards".
6. Slowly increase engine speed until the pressure gauge shows a pressure of **50 bar (725 psi)**.
7. Read speed from tachometer. For nominal value of start engine speed, see [030 Power transmission, specifications](#).

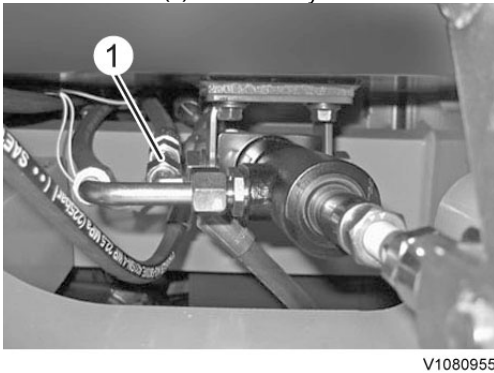
## Adjust

8. Remove plumb cap on controller cartridge (1) and release flange nut of adjustment screw.



**Figure 5**  
**Hydrostatic pump control cartridge**

9. Turn the controller cartridge adjustment screw to left or right until the pressure gauge shows a pressure of **50 bar (725 psi)**.  
Turn to right: increase pressure  
Turn to left: reduce pressure
10. Tighten flange nut, **Tightening torque 22 Nm (16.2 lbf ft)** and apply a new plumb cap.
11. Remove speed sensor and tachometer.
12. Fit the air flow guide plate.
13. Fit control line (1) on brake cylinder.



**Figure 6**

Document Title: <b>Hydrostatic pump cut off valve, check and adjust</b>	Function Group: <b>442</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Hydrostatic pump cut off valve, check and adjust

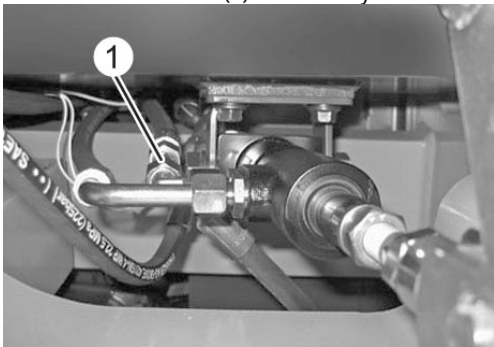
Op nbr 442-018

[88830055 Pressure checking set](#)

### NOTE!

Warm up the machine until the hydraulic system is at operating temperature (60°C/140°F).

1. Remove control line (1) at brake cylinder. Seal hose and connection with plugs.



V1080955

Figure 1



Hot oil can cause burns. Use protective equipment and handle hot oil with great care. Collect the oil and take care of it in an environmentally friendly way.

### Inspection item

2. Connect pressure gauge to hydrostatic pump, connection "M<sub>B</sub>" (1).



V1078454

Figure 2

### Hydrostatic pump, connection "M"

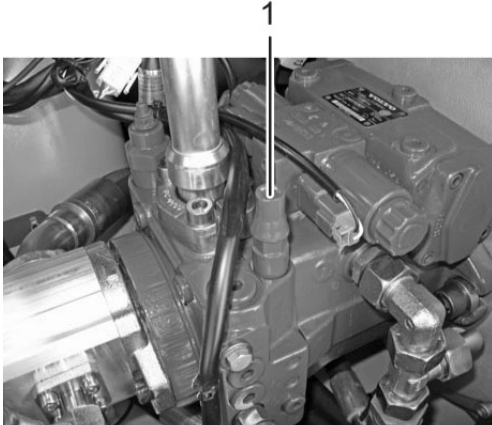
3. Block the machine to guarantee parking safety during test and adjustment work.
4. Start engine. Preselect gear "1" and direction of travel "Forwards".
5. Press throttle pedal down to stop. Read display on pressure gauge. For nominal value high pressure "Forwards" see [030 Power transmission, specifications](#).

#### NOTE!

Press "Reverse" (connection "M<sub>A</sub>) = feed pressure

### Adjust

6. Remove plumb cap on shutdown valve (1) and release flange nut of adjustment screw.



V1078457

**Figure 3**  
**Hydrostatic pump shutdown valve**

7. Turn adjustment screw to left or right.  
Turn to right: increase pressure  
Turn to left: reduce pressure

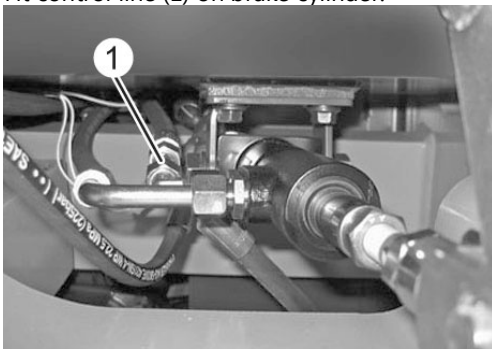
8. To check, repeat steps 4 and 5.

#### NOTE!

If the specified nominal value is not reached, check the high pressure valve.

If the high pressure valve opens before the disconnection valve, the diesel engine will be audibly under more pressure.

9. Tighten flange nut, **Tightening torque 22 Nm (16.2 lbf ft)** and apply a new plumb cap.
10. Fit control line (1) on brake cylinder.



V1080955

**Figure 4**





Document Title: <b>Hydrostatic pump mechanical zero position, check and adjust</b>	Function Group: <b>442</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Hydrostatic pump mechanical zero position, check and adjust

Op nbr 442-020

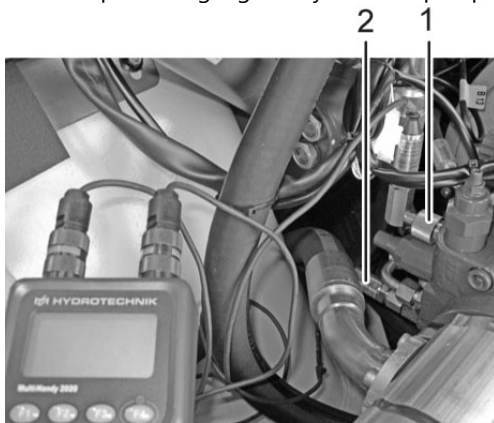
[88830055 Pressure checking set](#)

### NOTE!

Warm up the machine until the hydraulic system is at operating temperature (60°C/140°F).

### Inspection item

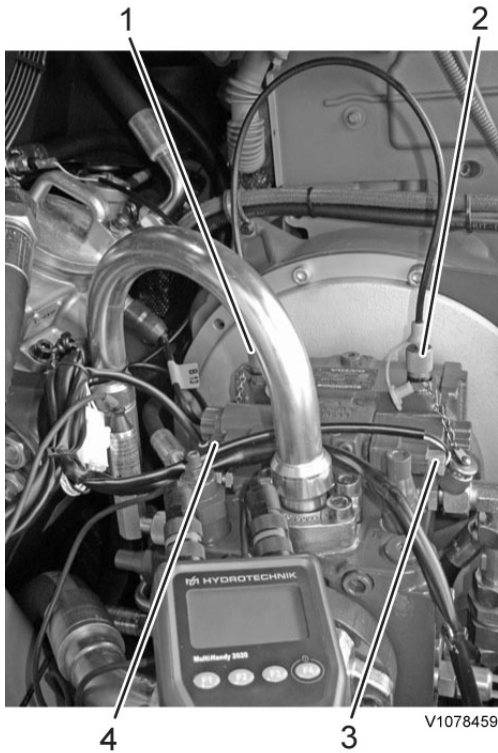
1. Connect pressure gauge to hydrostatic pump, connection "M<sub>B</sub>" (1) and connection "M<sub>A</sub>" (2).



V1078458

**Figure 1**

1. Connection "M<sub>B</sub>" Forwards
  2. Connection "M<sub>A</sub>" reverse
2. Connect set chambers "X1" (1) and "X2" (2) with a hose (at least Ø 6 mm / 0.24 in).



**Figure 2**

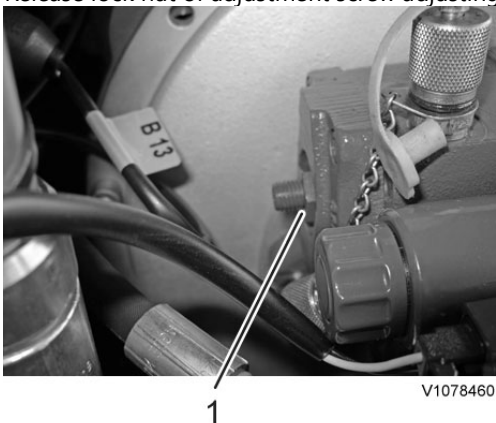
3. Start engine and preselect direction of travel "Forwards/Reverse" repeatedly.
4. Turn off the engine.
5. Remove both electric pin plug connections (3) Reverse drive and (4) Forward drive.
6. Start engine and run with low idle.
 

**NOTE!**  
Do not preselect a direction of travel
7. Read pressure gauge, both connections must show the same pressure ( $\Delta p = 0$ ).
 

**NOTE!**  
If  $\Delta p > 2$  bar (29 psi), the zero position must be set.

### Adjust

8. Release lock nut of adjustment screw adjusting cylinder (1).



**Figure 3**  
**Adjustment screw adjusting cylinder, "zero position"**

9. Set by twisting the adjustment screw until the same pressure ( $\Delta p = 0$ ) appears on the pressure gauge.
10. Tighten lock nut, **tightening torque 44 Nm (32.5 lbf ft)**.
11. Turn off the engine.
12. Remove hose and seal connections for set chambers "X1" and "X2".
13. Connect both electric pin plug connections (3) Reverse drive and (4) Forward drive.
14. Start engine and slowly increase speed to upper idle speed. Read pressure gauge, both connections must show the same pressure ( $\Delta p = 0$ ).

Document Title: <b>Drive axles, description</b>	Function Group: <b>460</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## **Drive axles, description**

The drive axles are planetary rigid axles with 100% hydraulically engageable/disengageable differential locks on both axles. The front axle is rigidly connected to the front frame. On the front axle drive flange is mounted a drum brake which as a service brake is hydraulically activated via the inching brake pedal and as a parking brake is mechanically activated. The wheel position and differential have a common oil system.

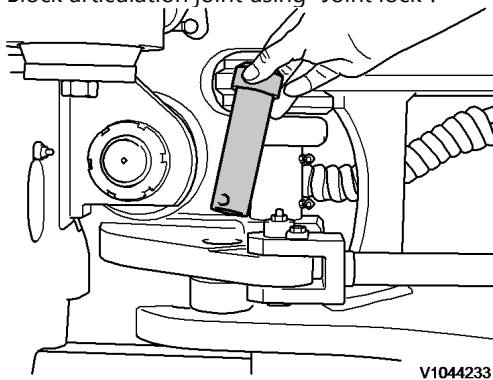
The rear axle is also rigidly connected with the rear frame. On the rear axle is the directly mounted dropbox for the hydrostatic drive. The rear axle and dropbox have a common oil system.

Document Title: <b>Axle, removing</b>	Function Group: <b>463</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Axle, removing

### Op nbr 463-002

1. Place the machine in service position.
2. Block articulation joint using "Joint lock".



**Figure 1**  
**Steering joint lock**

3. Turn OFF the battery disconnect switch.



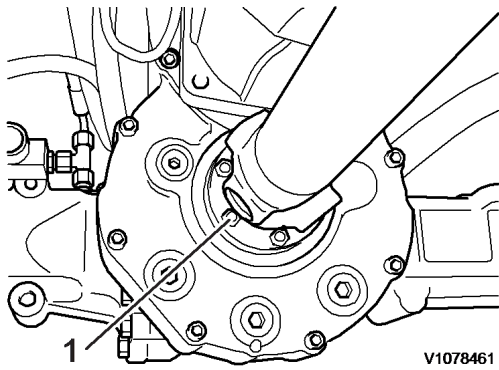
**The work involves handling heavy components - failure to stay alert may result in severe crushing injuries.**

4. Suspend machine at the lifting eyes of the rear frame using a suitable lifting tool.



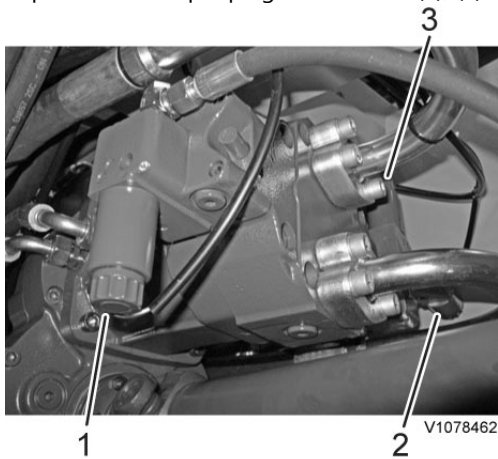
**Figure 2**

5. Remove both rear wheels.
6. Bring suitable supports into position below the rear frame and lower the machine.
7. Remove universal shaft (1) at gearbox.



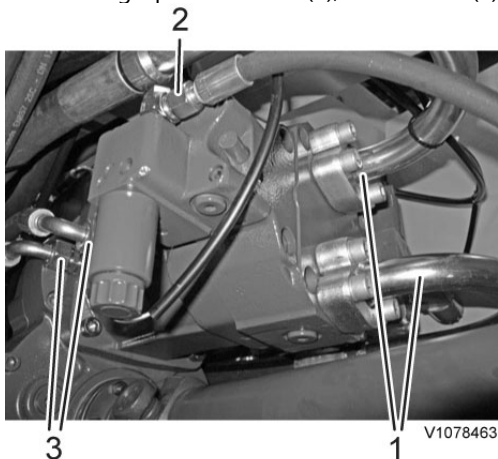
**Figure 3**

8. Separate electric pin plug connections (1), (2) and (3) from solenoid valve hydrostatic motor.



**Figure 4**

9. Remove high-pressure lines (1), control line (2) and leakage oil lines (3) on hydrostatic motor.



**Figure 5**

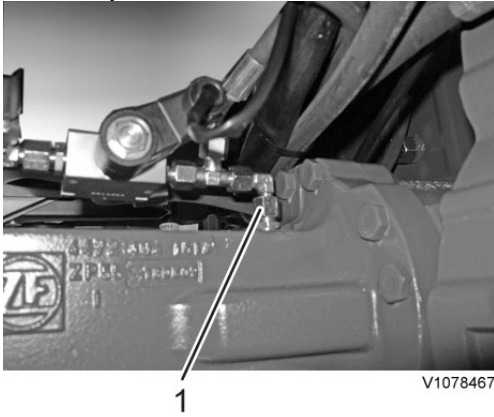
**NOTE!**

Place suitable catchment container below to catch escaping oil.

**NOTICE**

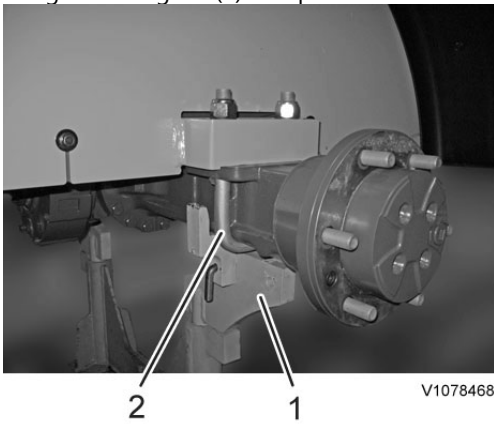
**When a hose has been disconnected, plug both the hose and the connection immediately. The hoses should be marked for correct connection.**

10. Remove hydraulic line (1) for differential lock.



**Figure 6**

11. Bring mounting aid (1) into position below axle using stand jack.



**Figure 7**

12. Remove axle retaining brackets (2) right and left.
13. Lower stand jack. Raise machine until the rear axle can be withdrawn freely below machine.  
**NOTE!**  
Weight of rear axle with gearbox and hydrostatic motor approx. 252 kg (556 lb)



Document Title: <b>Axle, installing</b>	Function Group: <b>463</b>	Information Type: <b>Service Information</b>	Date: <b>2014/3/8 0</b>
Profile: <b>CWL, L25F [GB]</b>			

## Axle, installing

Op nbr 463-003



### **WARNING**

The work involves handling heavy components - failure to stay alert may result in severe crushing injuries.

1. Suspend machine at the lifting eyes of the rear frame using a suitable lifting tool.



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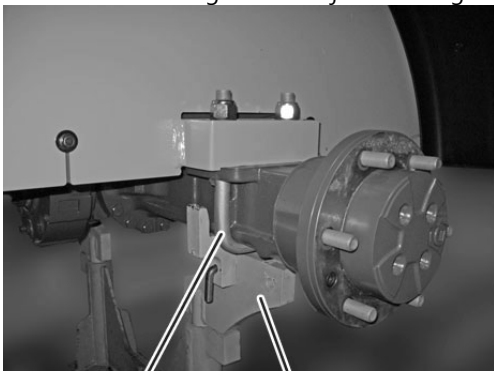
**Figure 1**

2. Bring rear axle into position below machine using stand jack.

**NOTE!**

Weight of rear axle with gearbox and hydrostatic motor approx. 252 kg (556 lb)

3. Lower machine onto support.
4. Raise rear axle using the stand jack and align to the receiver holes on the axle retaining bracket (2).



V1078468

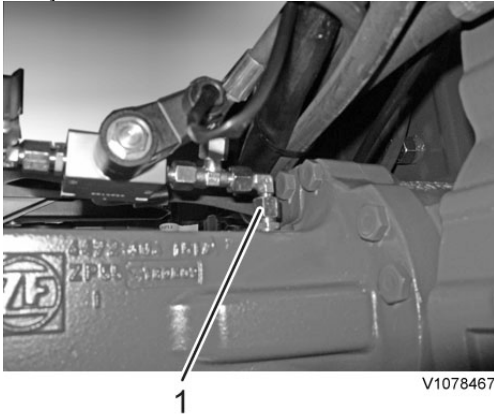
**Figure 2**

5. Mount axle retaining brackets (2) right and left. Tighten nuts with torque **800±10 Nm (590±7.4 lbf ft)**.

**NOTE!**

Tighten retaining brackets evenly down to contact surface.

6. Fit hydraulic line (1) for differential lock.

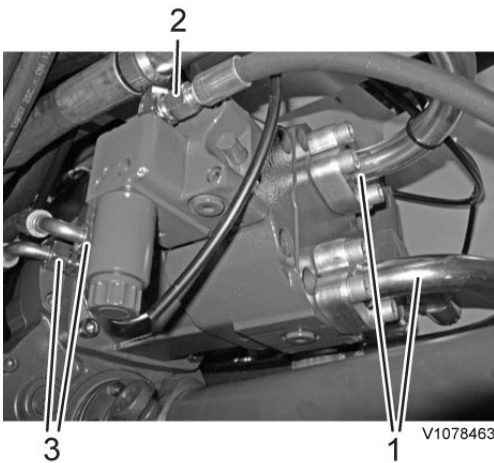


**Figure 3**

7. Install high-pressure lines (1), control line (2) and leakage oil lines (3) on hydrostatic motor.

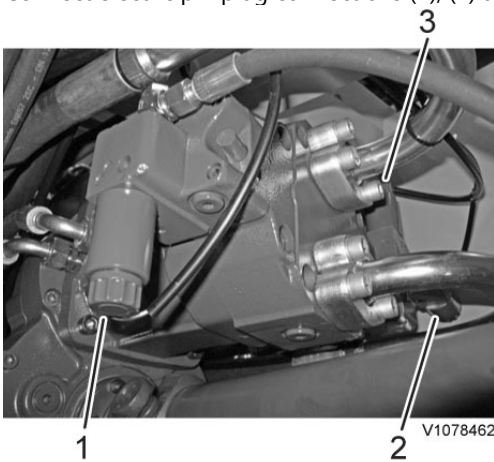
**NOTE!**

Tighten bolts on flange halves, high pressure lines, with a tightening torque of 92 Nm (68 lbf ft).



**Figure 4**

8. Connect electric pin plug connections (1), (2) and (3) of solenoid valve hydrostatic motor.

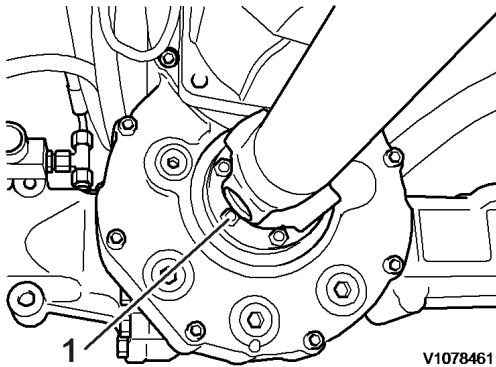


**Figure 5**

9. Mount universal shaft (1) on gearbox. Tighten lock nuts. Tightening torque **36 Nm (27 lbf ft)**.

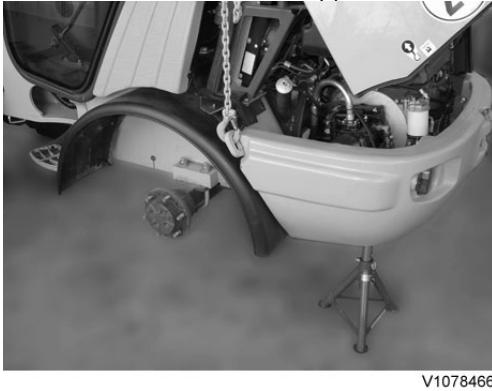
**NOTE!**

Use new lock nuts.



**Figure 6**

10. Raise machine and remove supports.



**Figure 7**

11. Fit both rear wheels. Tightening torque **290 Nm (214 lbf ft)**.
12. Add oil to axles and gearbox, see [173 Axles, changing oil](#).
13. Carry out test drive.
14. Check the hydraulic oil level and top up if necessary. See [173 Hydraulic oil level, check](#).

Many thanks for your purchase.  
Happy every day.