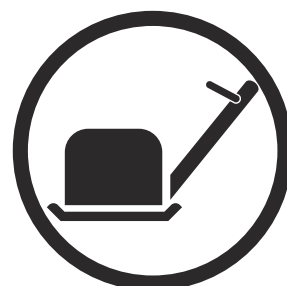


Workshop manual

LG 400



English

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8 Technical data

1 Introduction

1.1 California Proposition 65

WARNING!

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

1.2 Document description

This manual gives a full description of how to do maintenance and repair on the product. It also gives safety instructions that the personnel must obey.

1.3 Target group

This manual is for personnel with a general knowledge of how to do repair and do servicing. All personnel that do repair or do servicing on the product must read and understand the manual.

1.4 Revisions

Changes to the product can cause changes to the maintenance work and spare parts. Separate information is sent out for each change.

Read the manual together with all received information about changes to maintenance and spare parts for the product.

1.5 Safety



WARNING: All personnel that repair or do servicing on the product must read and understand the safety instructions in this workshop manual.

1.6 Servicing tools

The manual gives information about necessary servicing tools. Always use original tools from Husqvarna.

2 Safety

2.1 Safety definitions

Warnings, cautions and notes are used to point out specially important parts of the manual.



WARNING: Used if there is a risk of injury or death for the operator or bystanders if the instructions in the manual are not obeyed.



CAUTION: Used if there is a risk of damage to the product, other materials or the adjacent area if the instructions in the manual are not obeyed.

Note: Used to give more information that is necessary in a given situation.

2.2 General safety instructions



WARNING: Read the warning instructions that follow before you use the product.

The service center that repairs the product must have safety devices that obey local regulations. Warnings and cautions are used to point out specially important parts of the workshop manual.

2.3 Special safety instructions

- When you use compressed air, do not point the airflow in the direction of your body. Air can go into the blood circulation and kill you.
- Use eye protection when you do work on springs that have tension.
- Do not use accessories that are not approved by the manufacturer. Do not do changes that are not approved by the manufacturer. This can cause injury or death to the operator or other persons.
- Always use original spare parts and accessories.
- Use approved hearing protection. Noise from the product can result in permanent hearing loss.

2.4 Symbols on the product



Be careful and use the product correctly. This product can cause serious injury or death to the operator or others.



Read the manual carefully and make sure that you understand the instructions before you use the product.



Read the manual carefully and make sure that you understand the instructions before you use the product.



Use hearing protection.



Use protective boots.



Ultra-low-sulfur diesel fuel only.



Manual start.



Electrical start.



Hydraulic oil level.



Bio-Hydr.

Biological hydraulic oil.



The vibrations start. Symbol for a position of the throttle control.



The battery charges.



Hour meter.



Engine oil pressure.



Risk of injury. Be careful around the drive belt.



Risk of injury if the handle falls on you. Lock the handle in the lifted position.



Hot surface.



Lifting point on the safety frame.



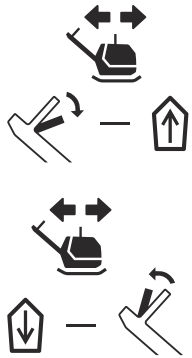
Noise emission to the environment label as per EU and UK directives and regulations, and New South Wales legislation Protection of the Environment Operations (Noise Control) Regulation 2017. The guaranteed sound power level of the product is specified in *Technical data on page 55* and on the label.



This product is in compliance with applicable EC directives.



This product conforms to the applicable UK regulations.



Move the product forward.

Move the product rearward.

Note: Other symbols/decals on the product refer to special certification requirements for some markets.

3 Prepare and do servicing on the product

3.1 Maintenance schedule

* = General maintenance done by the operator. The instructions are not given in this operator's manual.

X = The instructions are given in this operator's manual.

O = Refer to the instructions in the engine manual supplied by the engine manufacturer.

General product maintenance	Before use, each 10 h	Weekly, each 100 h	Monthly, each 250 h	Yearly, each 500 h
Make sure that there are no fuel or oil leaks.	*			
Clean the product.	X			
Make sure that nuts and screws are tightened.	*			
Examine the forward and reverse control, the throttle control and the choke control for damage.	*			
Make sure that the forward and reverse control, the throttle control and the choke control can move smoothly.	*			
Lubricate the controls and linkages.	*			
Examine the safety straps for damage. Replace if it is necessary.	X			
Examine the vibration damping units for damage.		X	X	X
Examine the tension of the V-belt and look for damages. Adjust or replace the V-belt as necessary.		X	X	X
Examine all rubber hoses and rubber elements for damage. Replace if it is necessary.			X	
Do a check of the hydraulic oil level.			X	
Do a check of the battery terminals.			*	
Replace the oil in the eccentric element.				X
Replace the hydraulic oil.				X

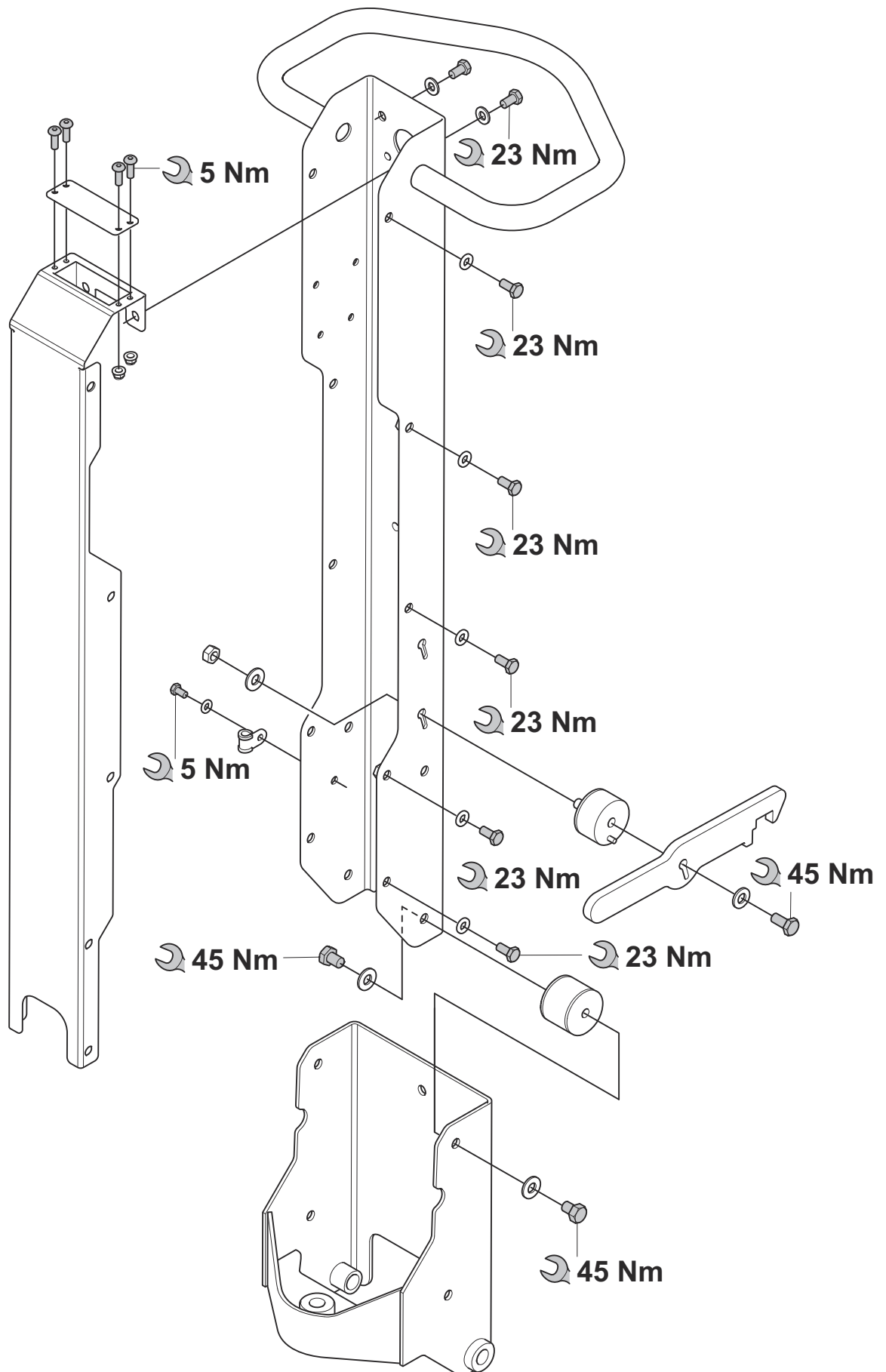
Engine maintenance,	Before use, each 10 h	After the first 20 h	Weekly, each 100 h	Yearly, each 300 h
Do a check of the fuel level and the engine oil level.	X			
Clean the cooling fins of the engine.	O			
Examine the air filter. Clean the air filter if it is necessary.	X	X		
Clean the air filter.			X	
Do a check of the drain valve for the air filter. Only applicable for engines that have a cyclone precleaner.	O			
Replace the engine oil.		X	X	X
Replace the air filter.				X
Do a check of the engine speed.		O	O	O
Examine and clean the spark plug. Replace the spark plug if it is necessary.			O	
Replace the spark plug.				O
Clean the fuel valve of the carburetor.			O	O
Clean the spark arrester screen on the muffler.			O	O
Adjust the valve head clearance for the air intake and the exhaust valves.		O		O

Engine maintenance,	Before use, each 10 h	After the first 20 h	Weekly, each 100 h	Yearly, each 300 h
Drain the fuel and clean the fuel tank and the fuel filter.				O
Clean and adjust the carburetor.				O
Replace the fuel filter.				O

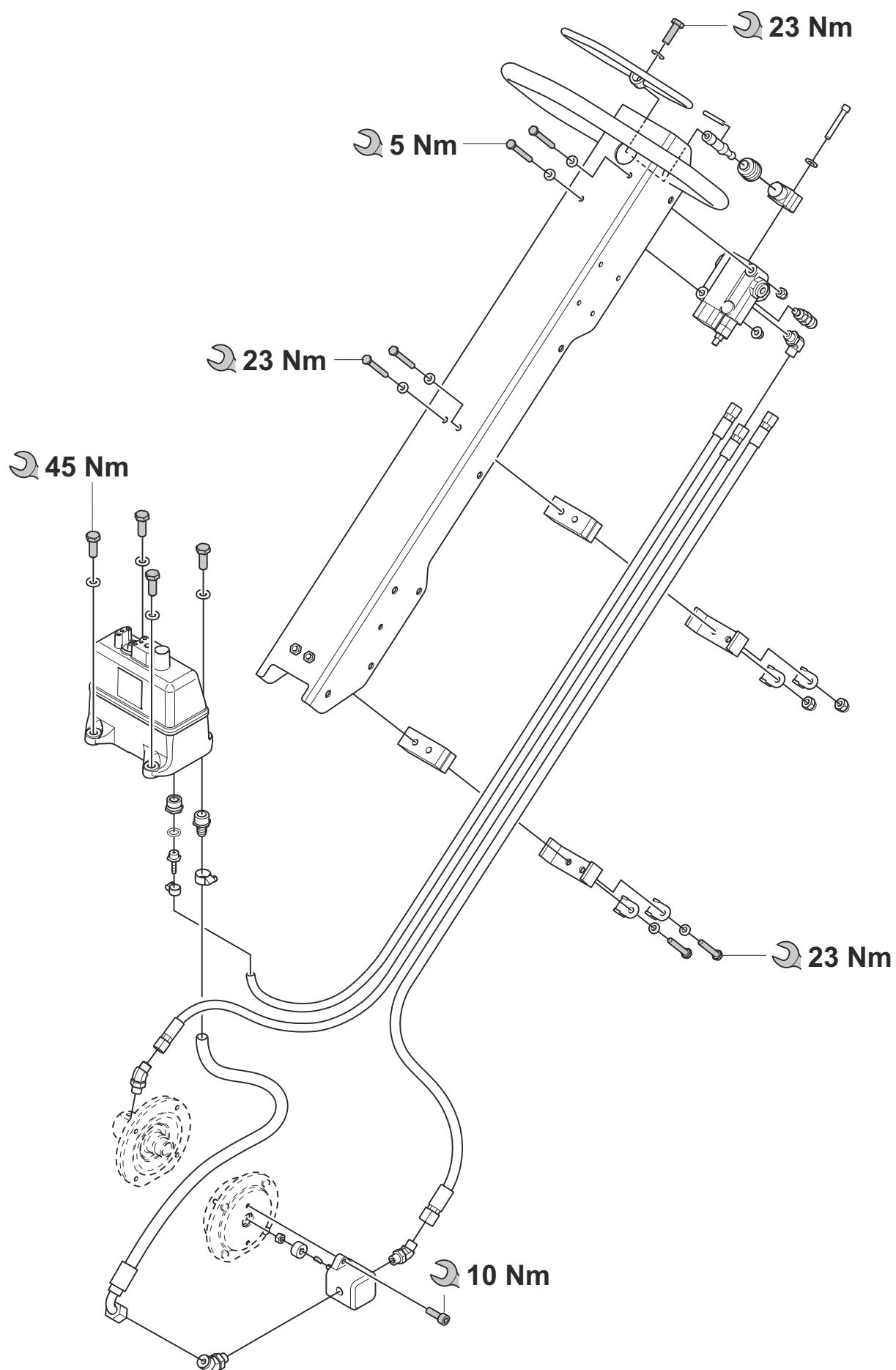
Engine maintenance,	Before use, each 10 h	After the first 20 h	Each 250 h	Yearly, each 500 h
Do a check of the fuel level and the engine oil level.	X			
Clean the cooling fins of the engine.	O		O	O
Clean the air filter.	X	X		
Replace the air filter.			X	X
Do a check of the drain valve for the air filter. Only applicable for engines that have a cyclone precleaner.	O			
Replace the engine oil.		X	X	X
Do a check of the engine speed.		O	O	O
Clean the spark arrester screen on the muffler.			O	O
Adjust the valve head clearance for the air intake and the exhaust valves.		O	O	O
Clean the oil filter.				O
Do a check of the fuel injection pump.			O	O
Do a check of the fuel injection nozzle.			O	O
Drain water from the fuel system.				O
Replace the fuel filter.				O

4 Servicing data

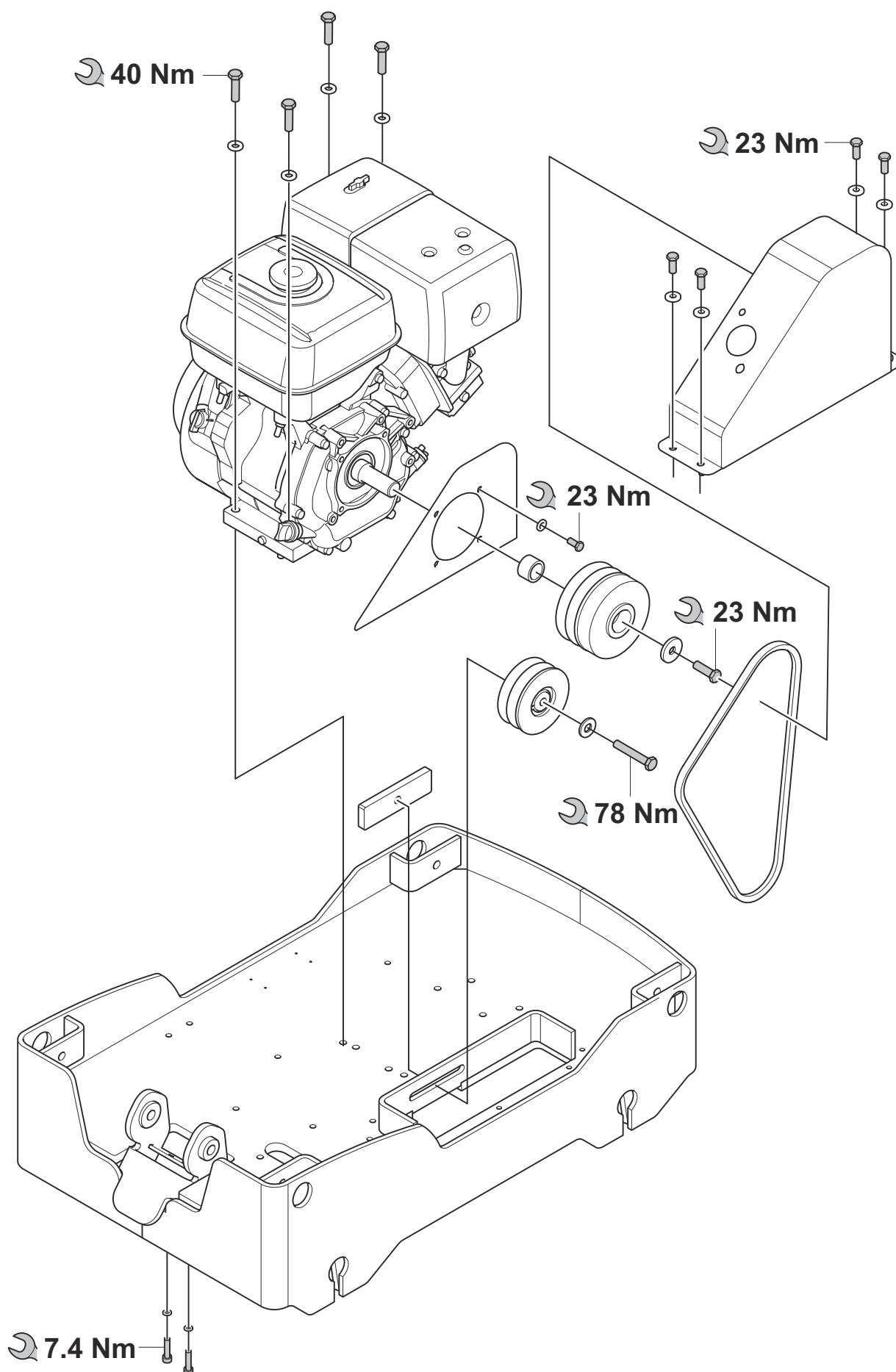
4.1 Servicing data - handle

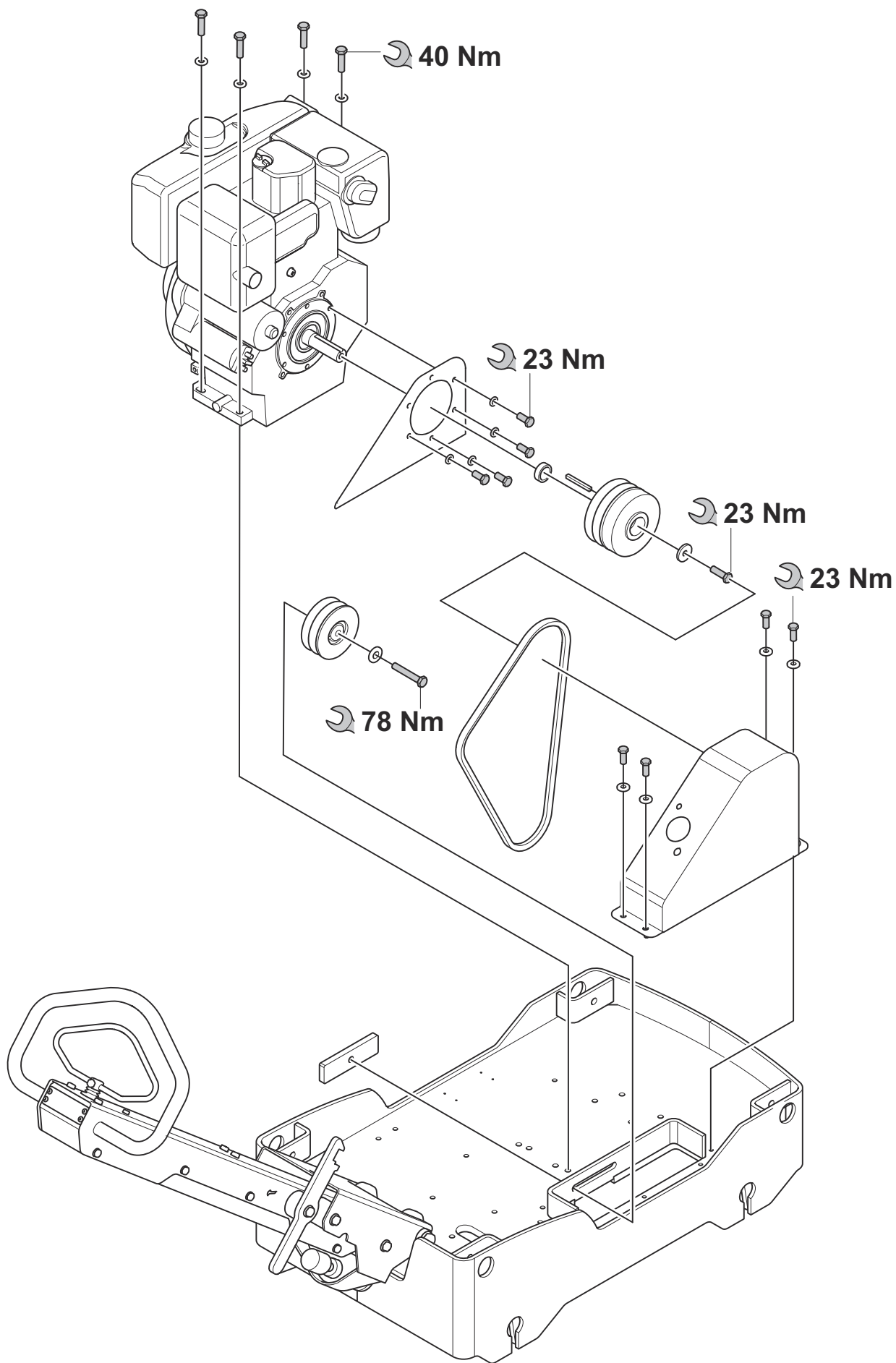


4.2 Servicing data - hydraulic system

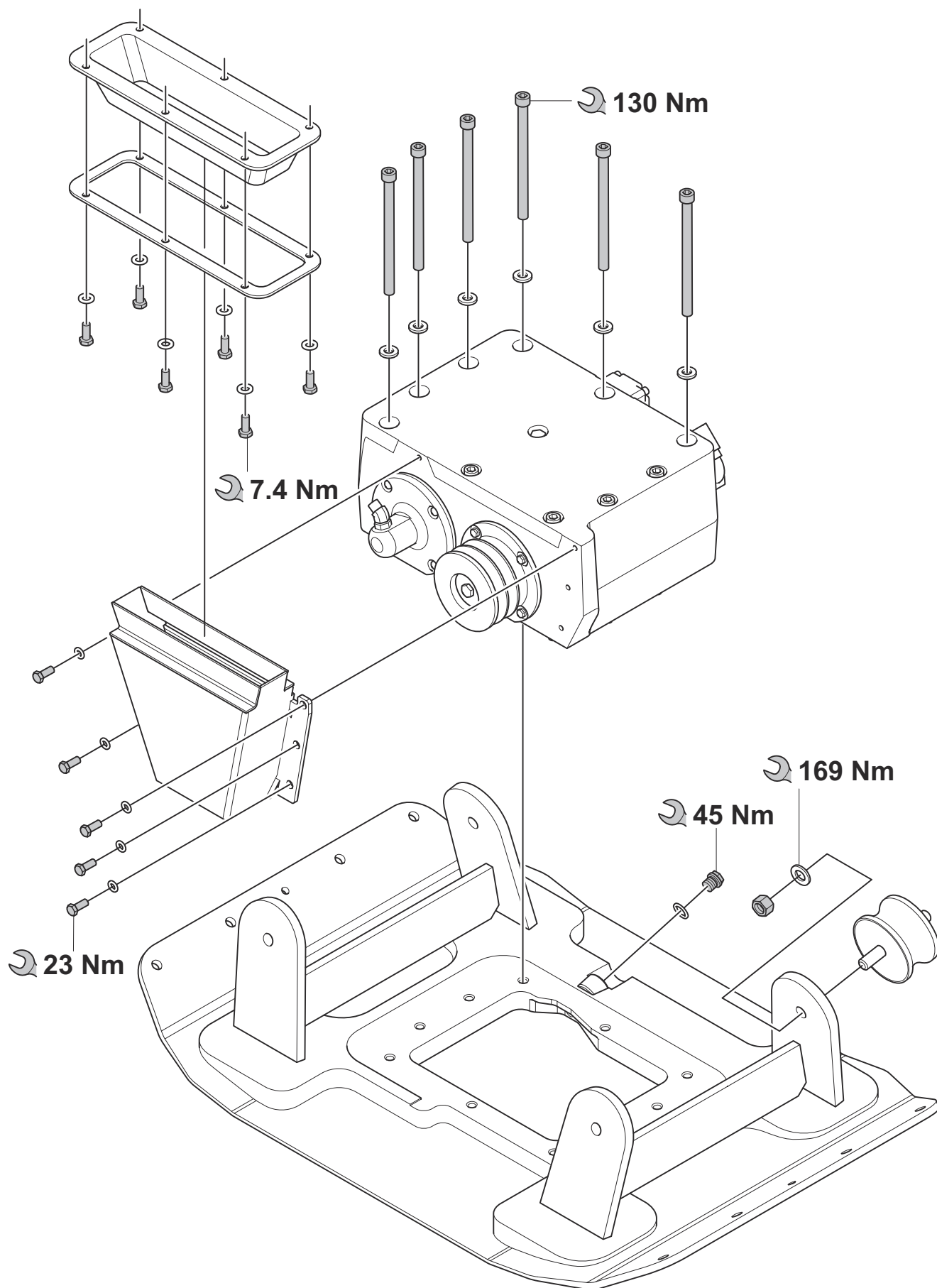


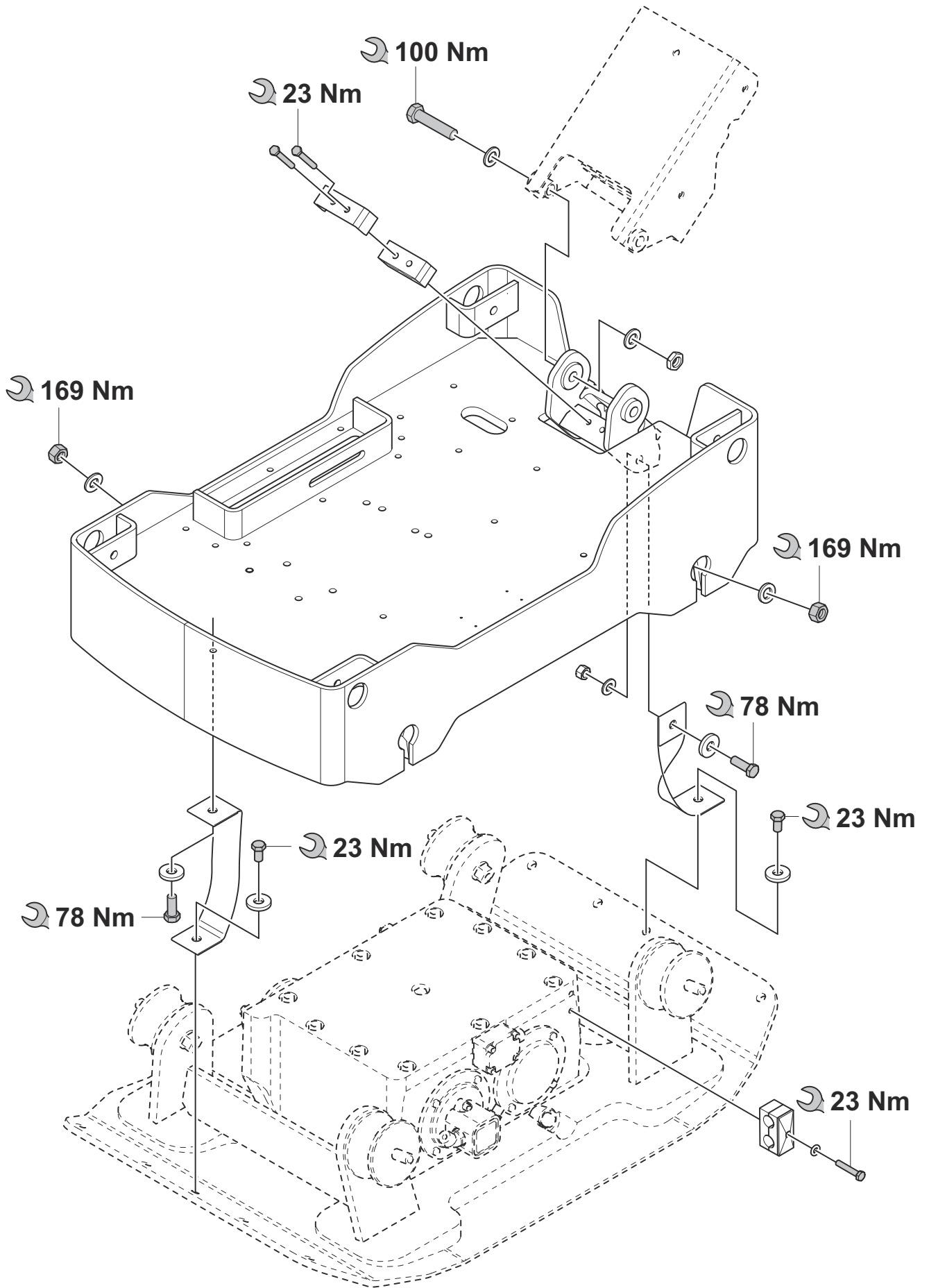
4.3 Servicing data - engine



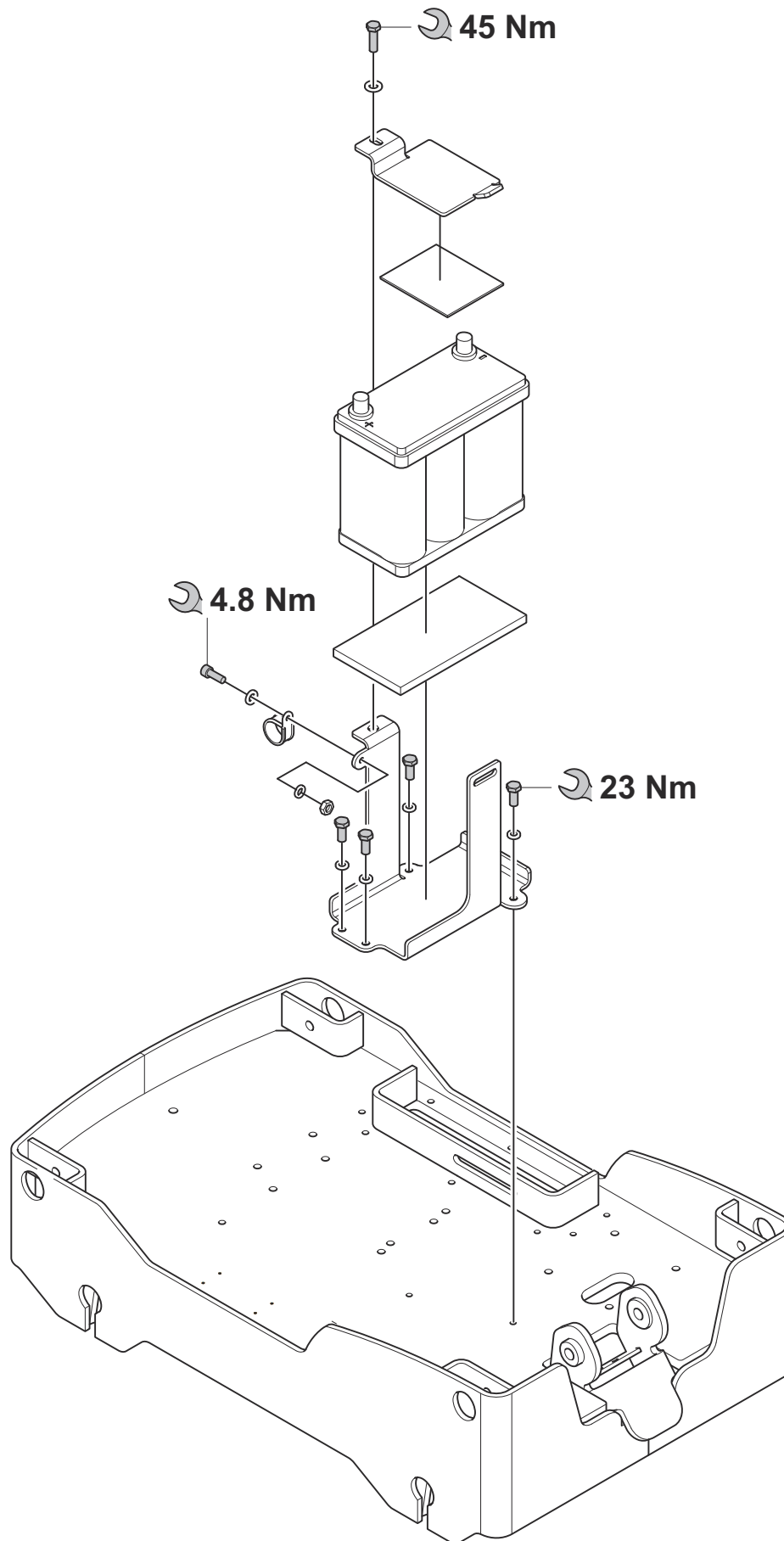


4.4 Servicing data - ground plate assembly

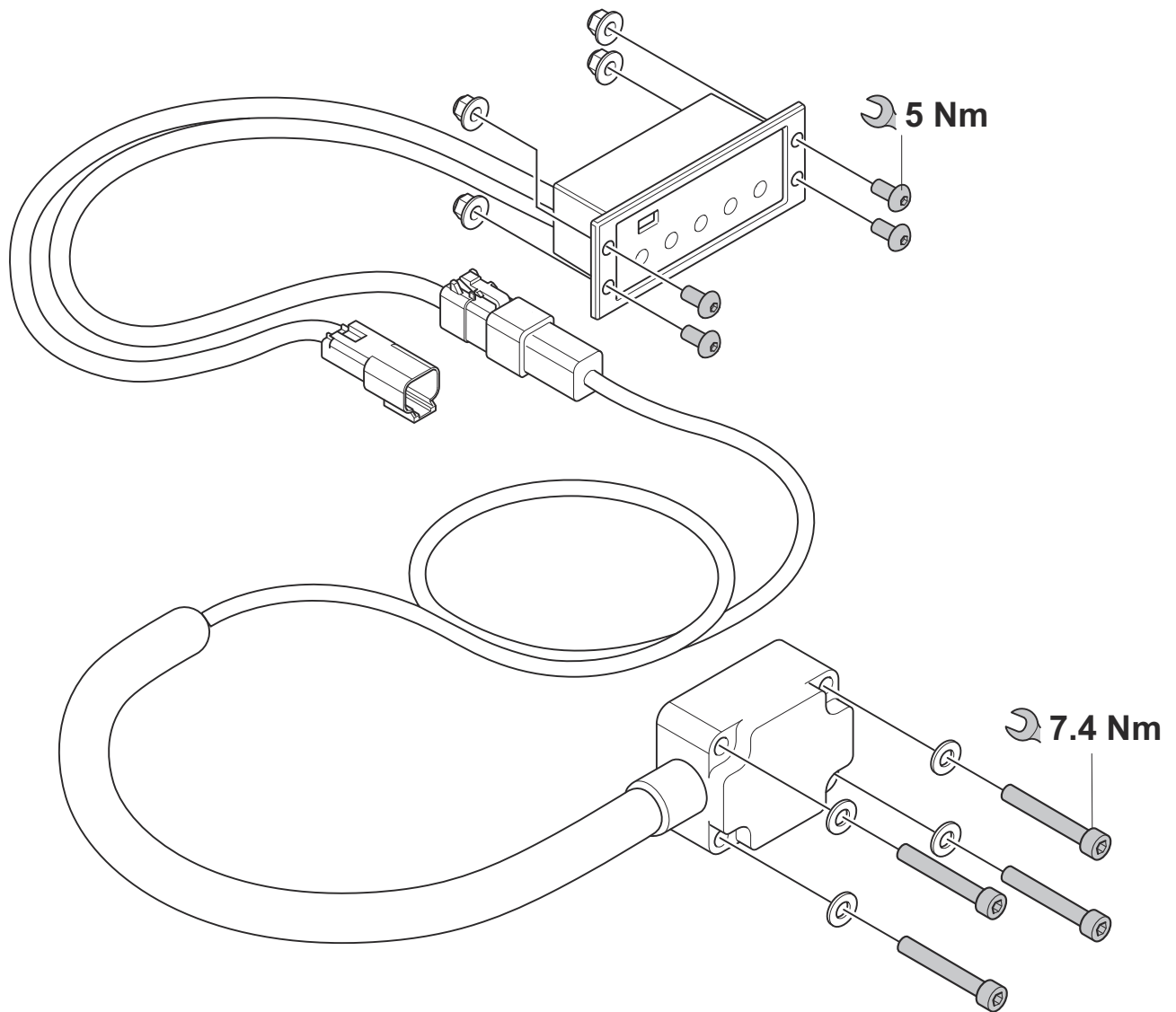




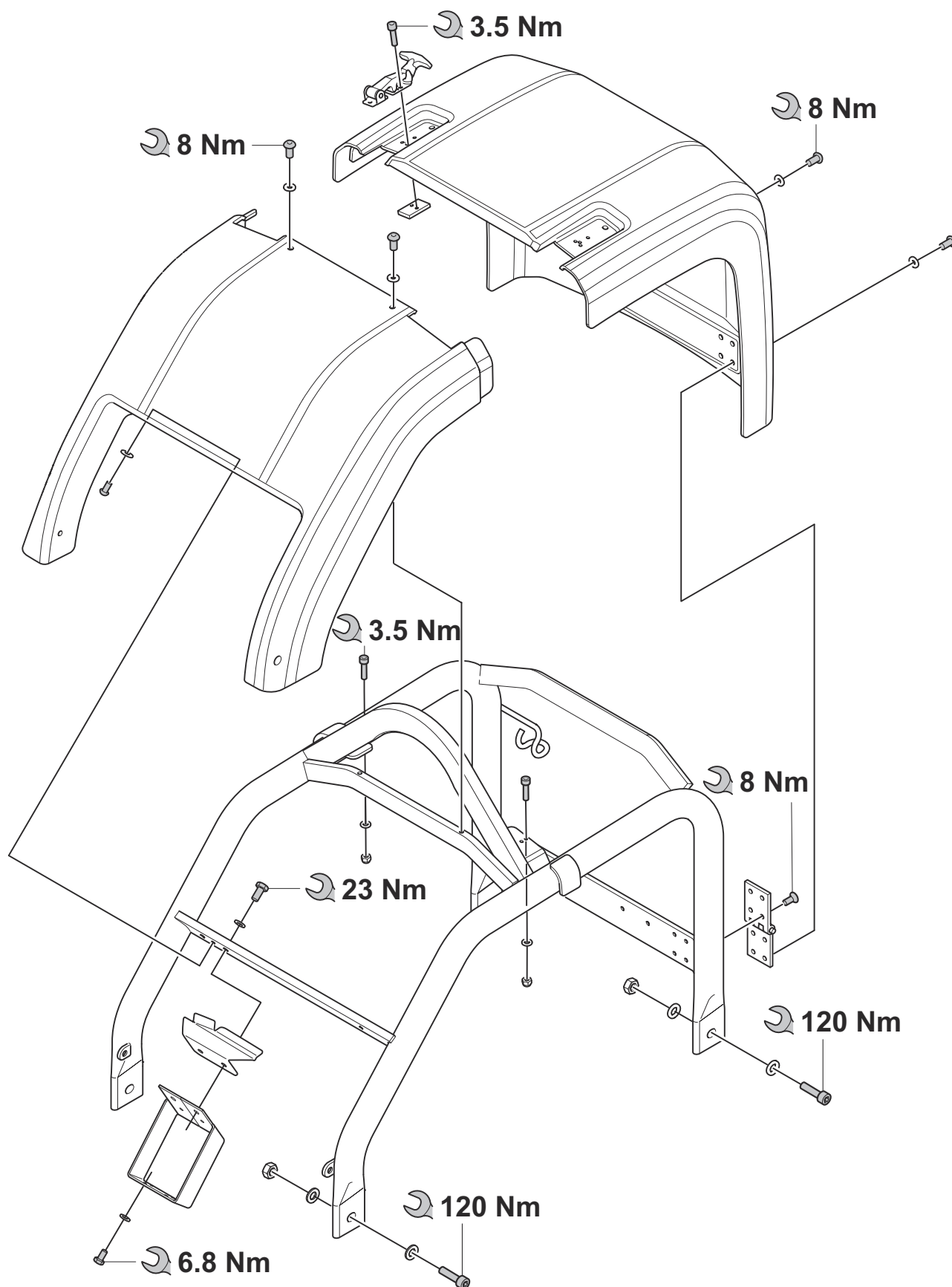
4.5 Servicing data - battery



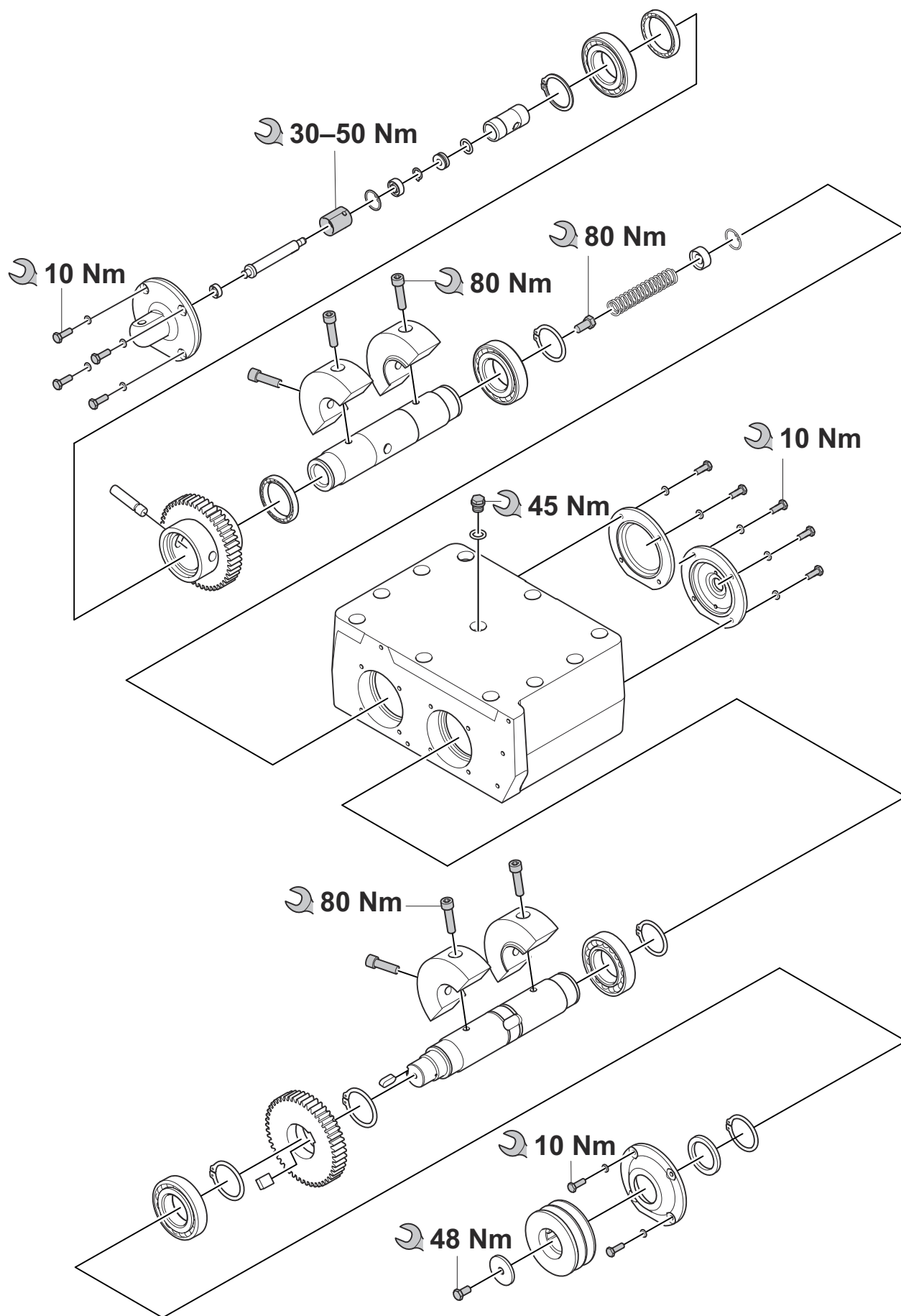
4.6 Servicing data - compaction indicator



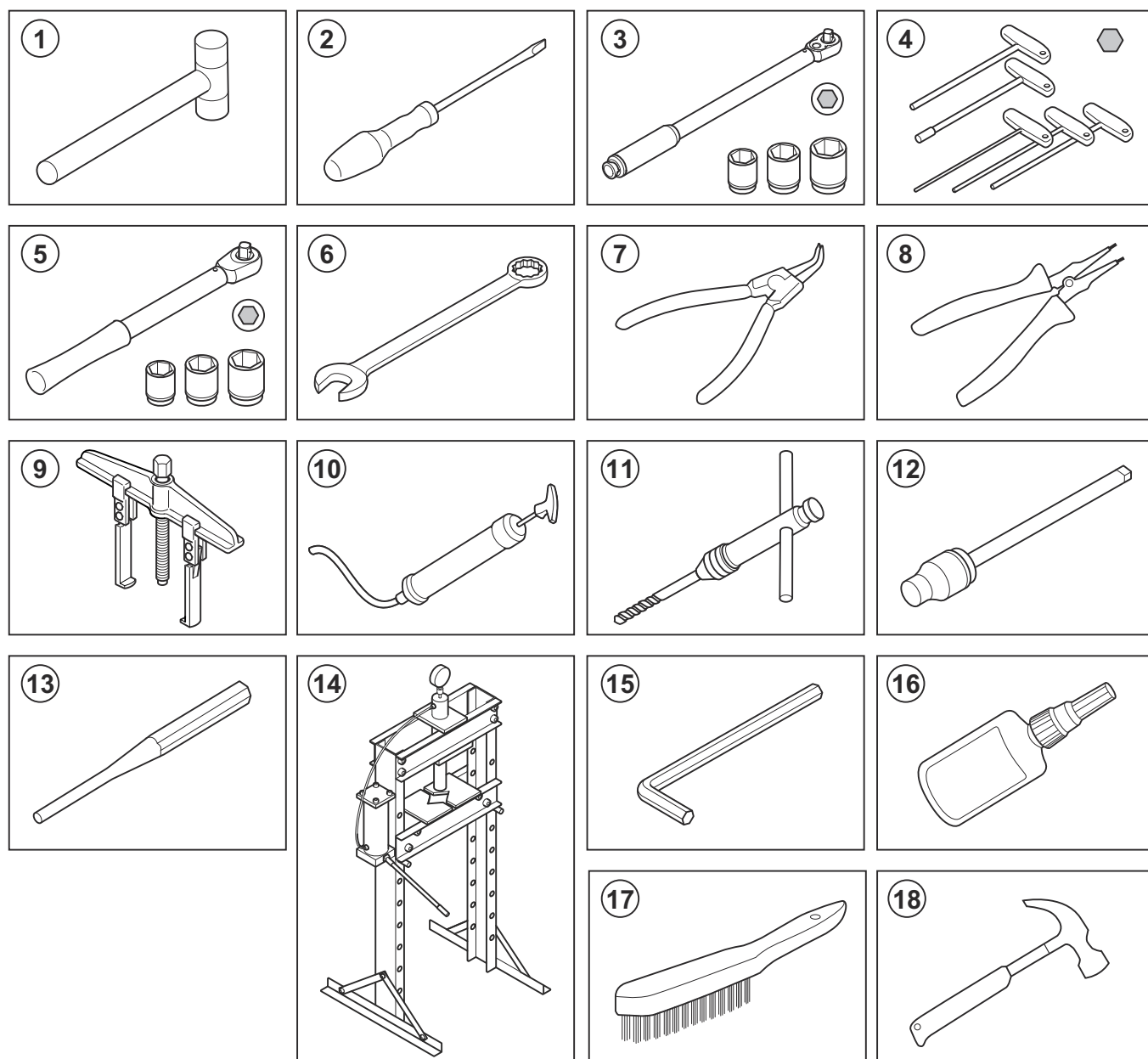
4.7 Servicing data - frame



4.8 Servicing data - eccentric element



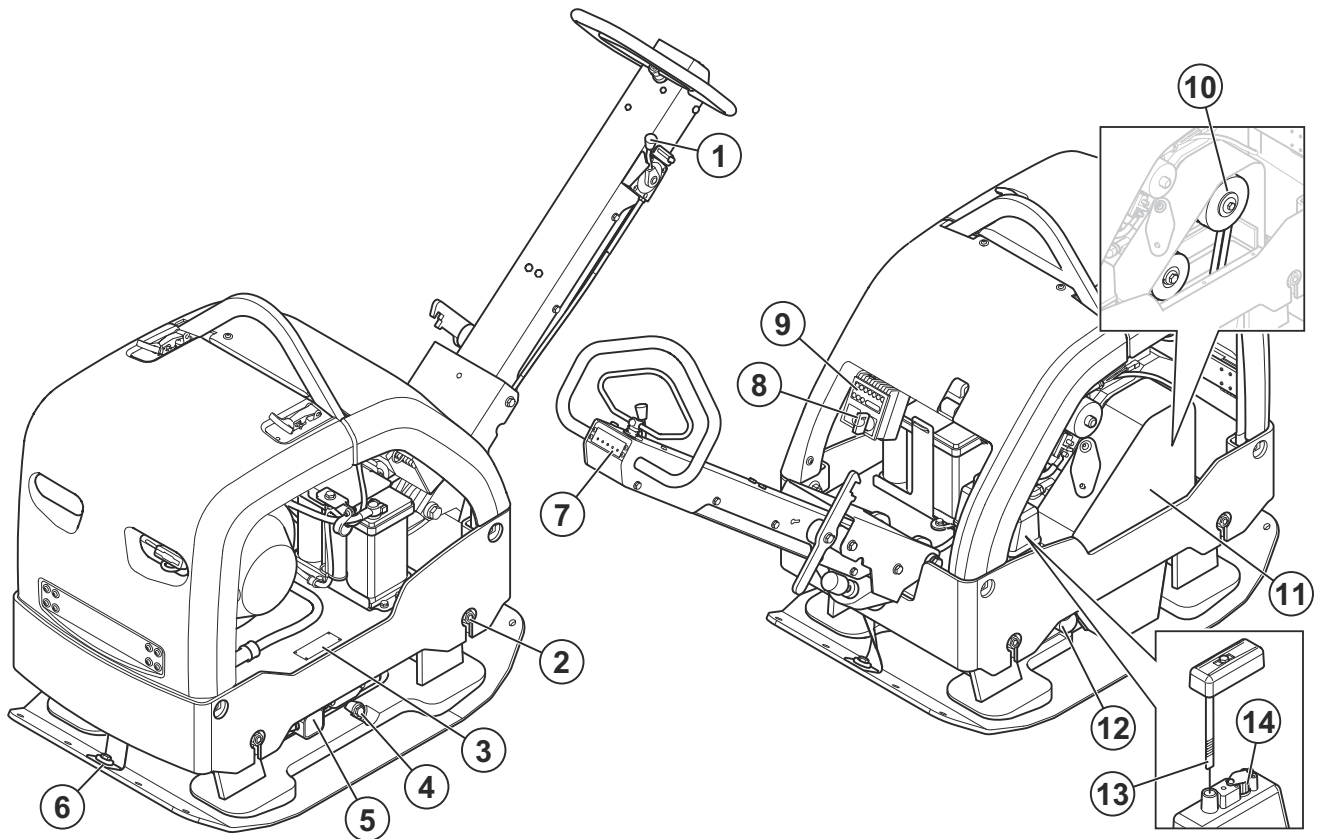
5 Servicing tools



Item	Description	Use	Article number/ Source
1	Soft hammer	General	N/A
2	Screwdriver	General	N/A
3	Torque wrench	General	N/A
4	Hex key	General	N/A
5	Socket wrench	General	N/A
6	Wrench	General	N/A
7	Snap ring pliers	To remove the snap rings.	N/A
8	Snap ring pliers	To remove the snap rings.	N/A
9	Bearing removal tool	To remove the inner bearing races.	N/A
10	Oil pump	To remove oil from the ground plate.	N/A

Item	Description	Use	Article number/ Source
11	Thread tap	To clean threaded holes.	N/A
12	Extended socket wrench with 10 mm socket	To remove and install the spring.	N/A
13	Pin punch	General	N/A
14	Hydraulic press	To remove and install the bearing races.	N/A
15	Hex key	To lock the gears.	N/A
16	Loctite 243 and Loctite 5188	To attach the screws and nuts.	N/A
17	Wire brush	To clean the threads of the screws and bolts.	N/A
18	Hammer	General	N/A

6 Product overview



1. Throttle control
2. Vibration damping units

Note: There are also 6 vibration damping units between the handle and the engine plate.

3. Type plate
4. Oil plug for the eccentric element
5. Eccentric element
6. Safety straps
7. Compaction indicator
8. Ignition key
9. LED indicators
10. Centrifugal clutch
11. V-belt cover
12. Eccentric element
13. Hydraulic oil dipstick
14. Breather filter

7 Repair and servicing

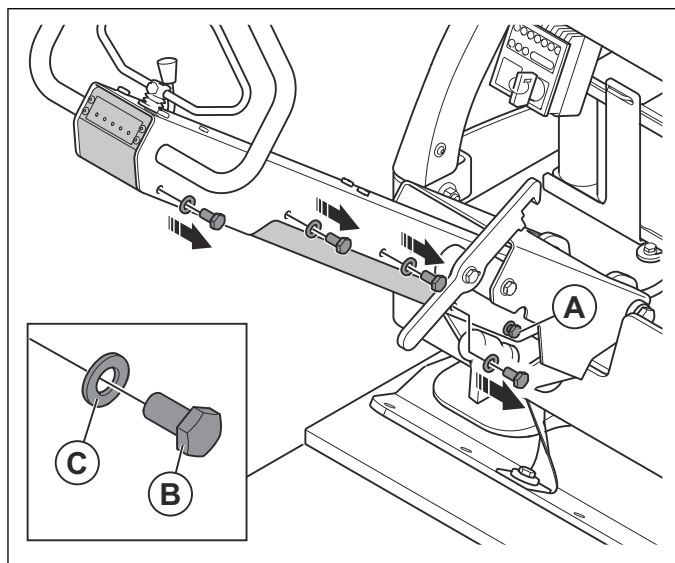
7.1 To clean and examine the product parts

- Clean and examine all parts fully. You find more instructions in the chapter for each part if special tools or procedures are necessary.
- Replace damaged or defective parts.
- Always use original spare parts.

7.2 Disassembly of the product

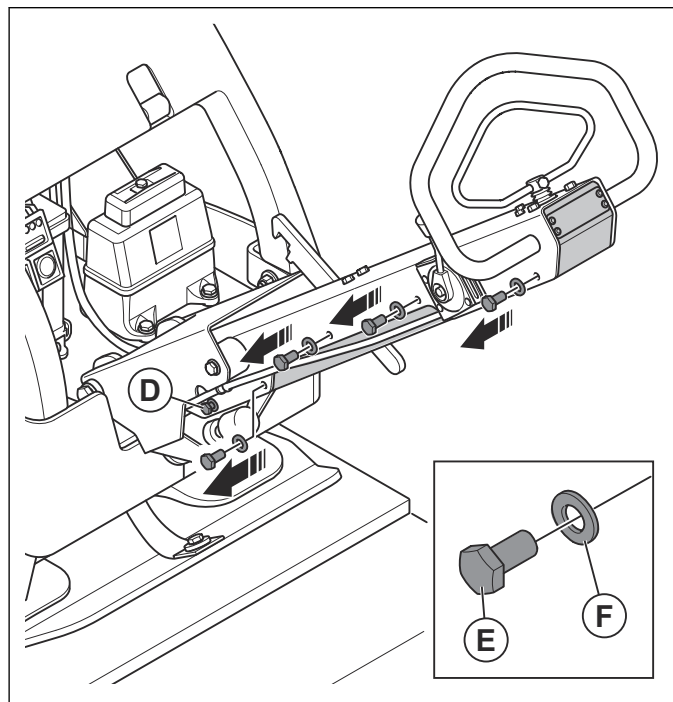
7.2.1 To remove the handle cover

1. Put the product on a workbench.
2. Loosen the screw (A) at the bottom of the handle cover.



3. Remove the 3 screws (B) and the 3 washers (C).

4. Loosen the screw (D) at the bottom of the handle cover.

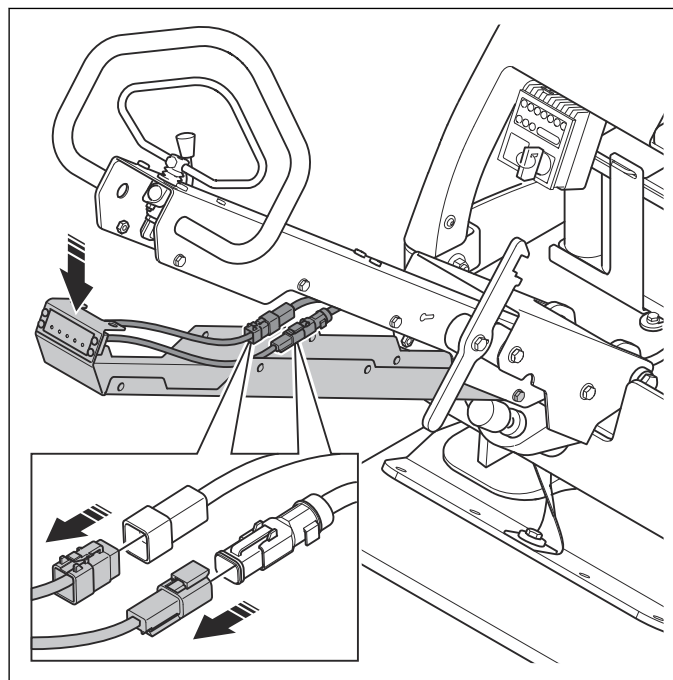


5. Remove the 2 screws (E) and the 2 washers (F).
6. Tilt the handle cover down.

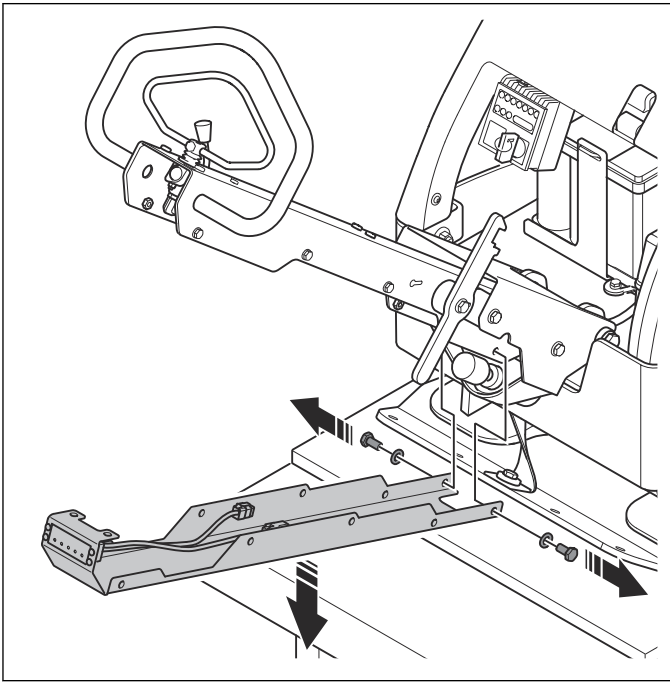


CAUTION: Do not pull the cables in the handle cover.

7. Disconnect the 2 cable connectors.

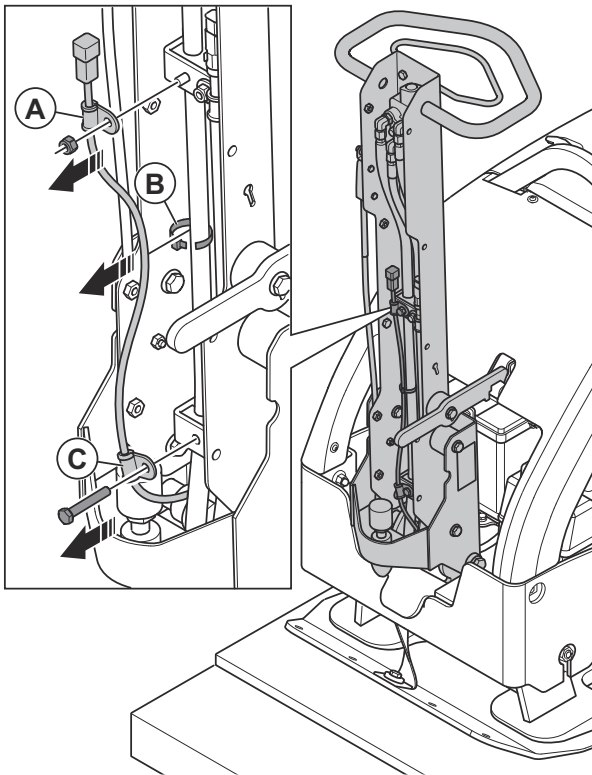


8. Remove the 2 screws, the 2 washers and the handle cover.



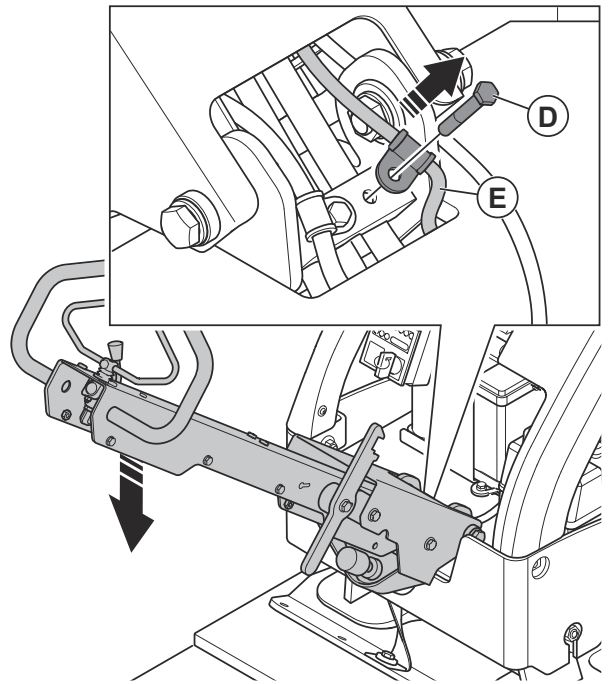
7.2.2 To remove the compaction indicator cable

1. Remove the handle cover. Refer to *To remove the handle cover on page 21*.
2. Lock the handle in upright position.
3. Remove the nut (A), cut the cable tie (B) and remove the bolt (C).



4. Lower the handle.

5. Loosen the screw (D).



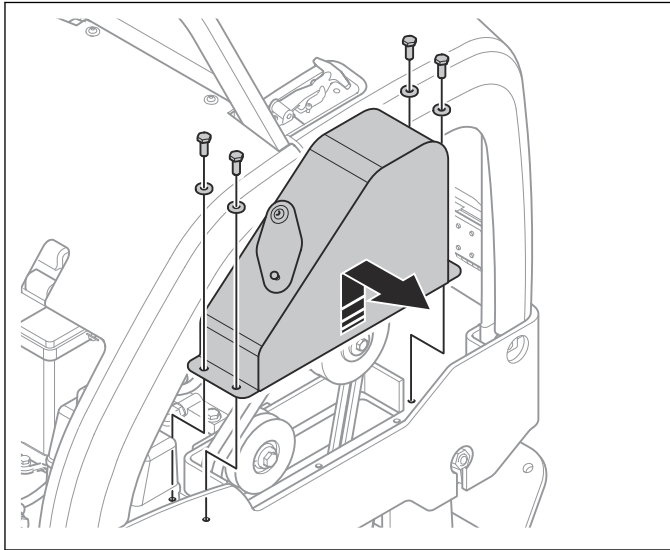
6. Pull out the compaction indicator cable of the handle (E).

7.2.3 To release the V-belts

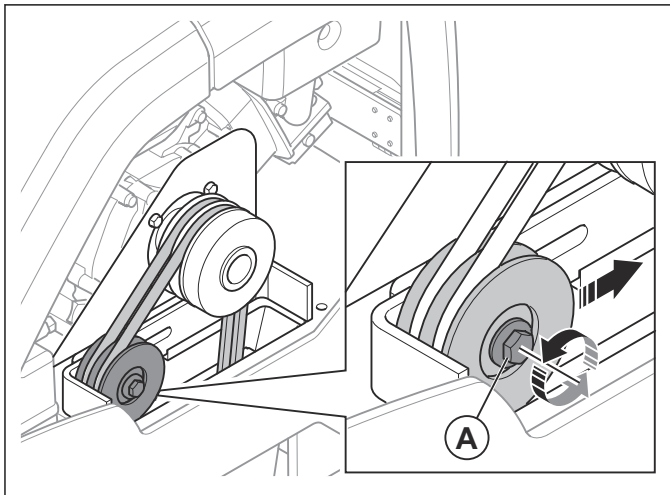


WARNING: Do not operate the product without the V-belt cover installed.

1. Remove the 4 screws, the 4 washers and the V-belt cover.

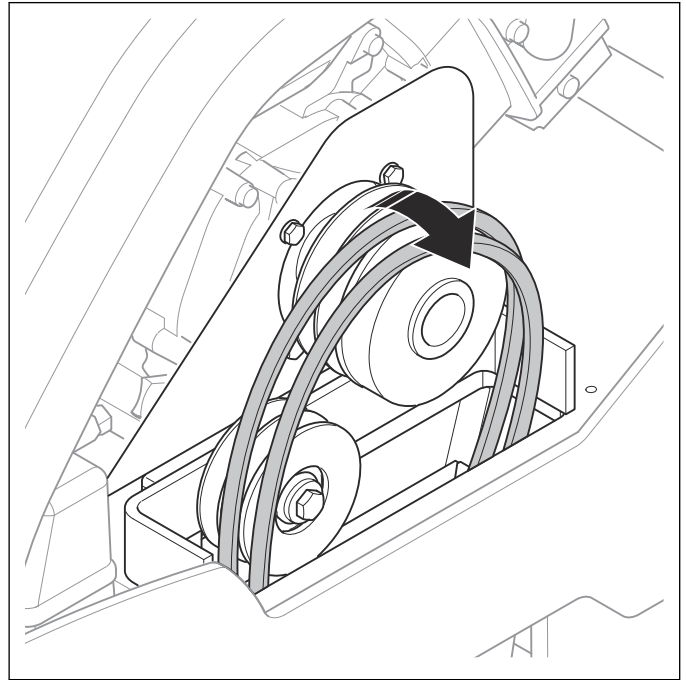


2. Loosen the screw (A) on the belt tensioner.



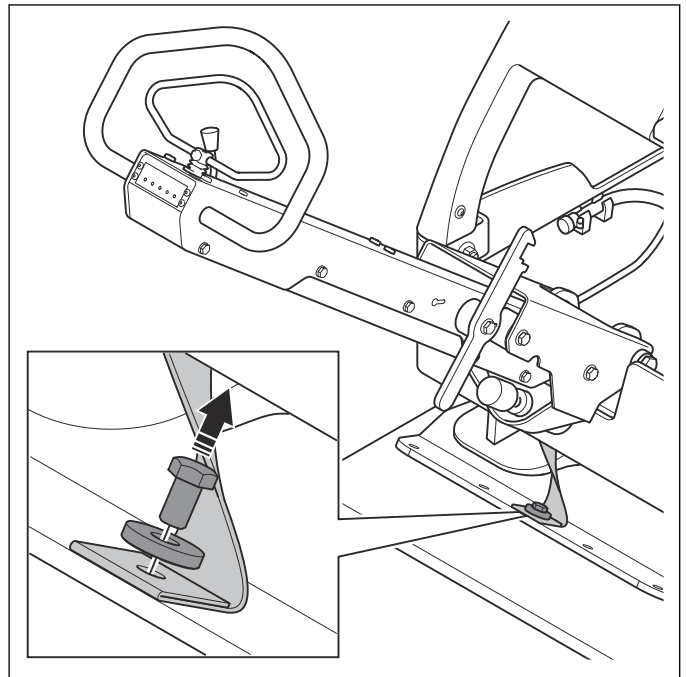
3. Move the belt tensioner to the right.

4. Remove the V-belts from the centrifugal clutch.

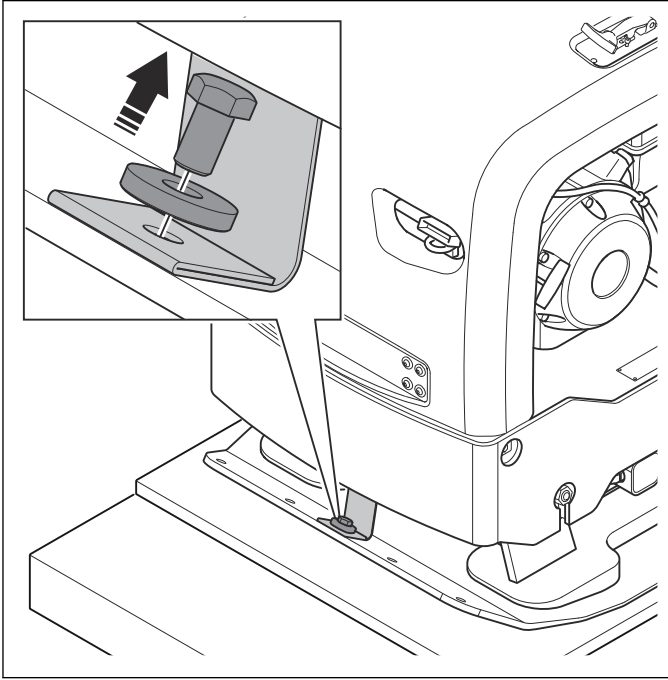


7.2.4 To remove the engine plate

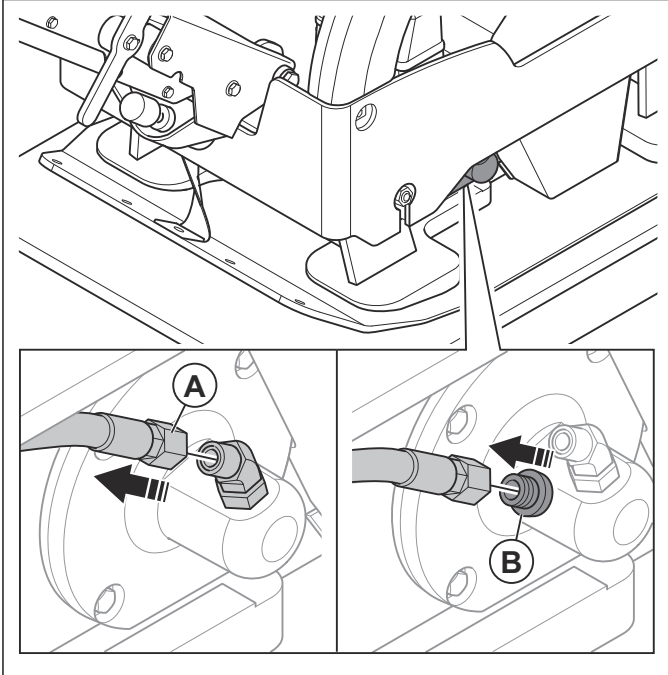
1. Remove the handle cover. Refer to *To remove the handle cover on page 21*.
2. Remove the compaction indicator cable. Refer to *To remove the compaction indicator cable on page 22*.
3. Release the V-belts. Refer to *To release the V-belts on page 23*.
4. Remove the screw and the washer.



5. Remove the screw and the washer.

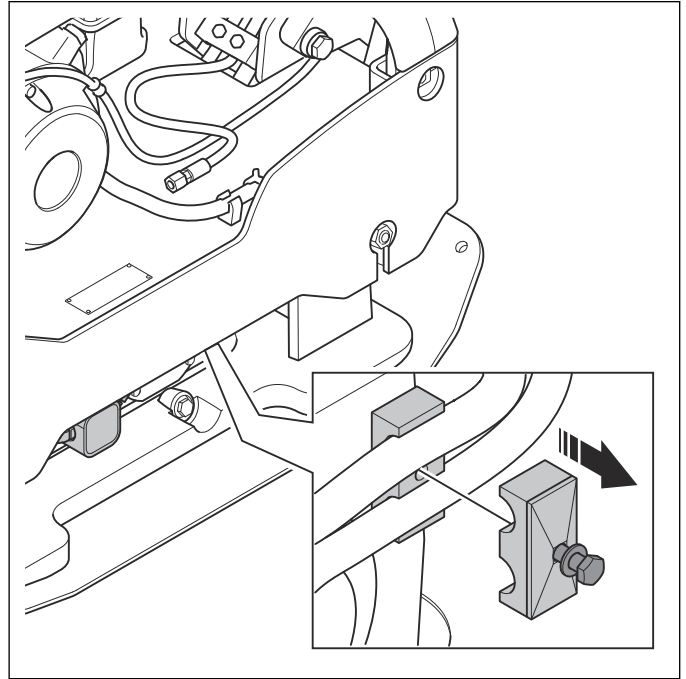


6. Disconnect the hydraulic hose (A).

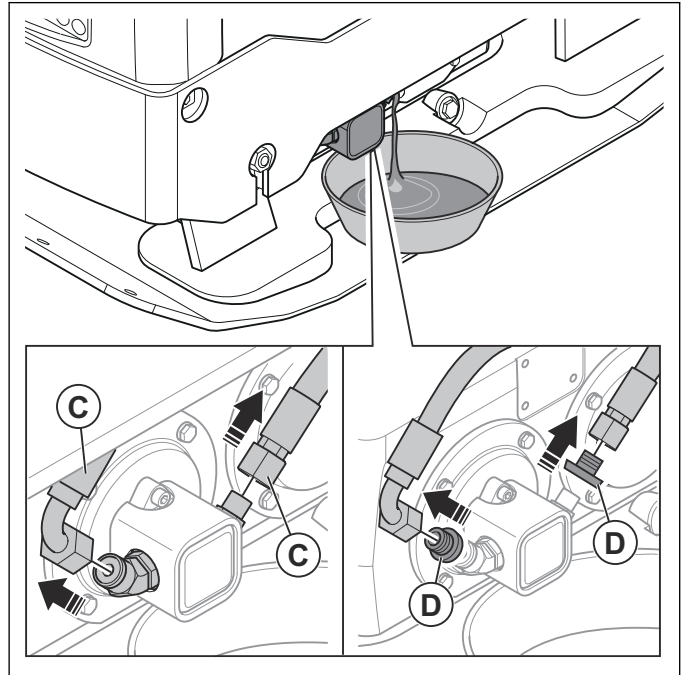


7. Install a cap (B) on the hydraulic hose to prevent oil leakage.

8. On the other side of the product, remove the rubber bracket that holds the compaction indicator cable and the hydraulic hose.

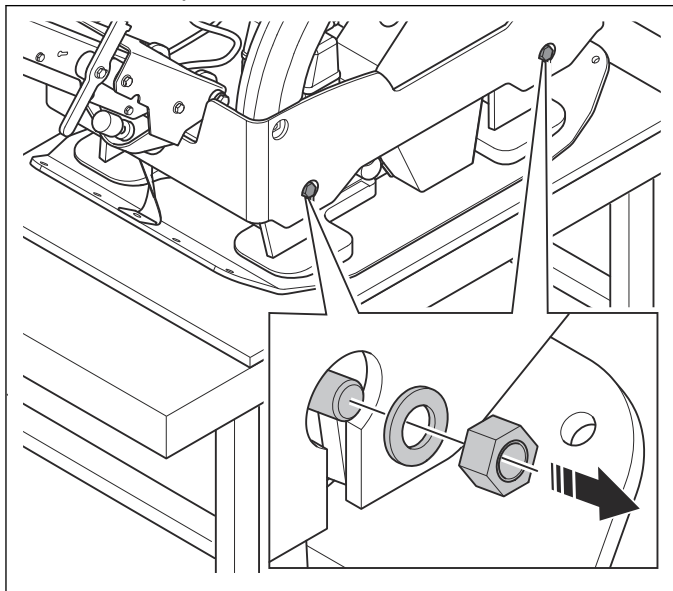


9. Put a container below the hydraulic oil tank to collect the hydraulic oil. Disconnect the 2 hydraulic hoses (C).

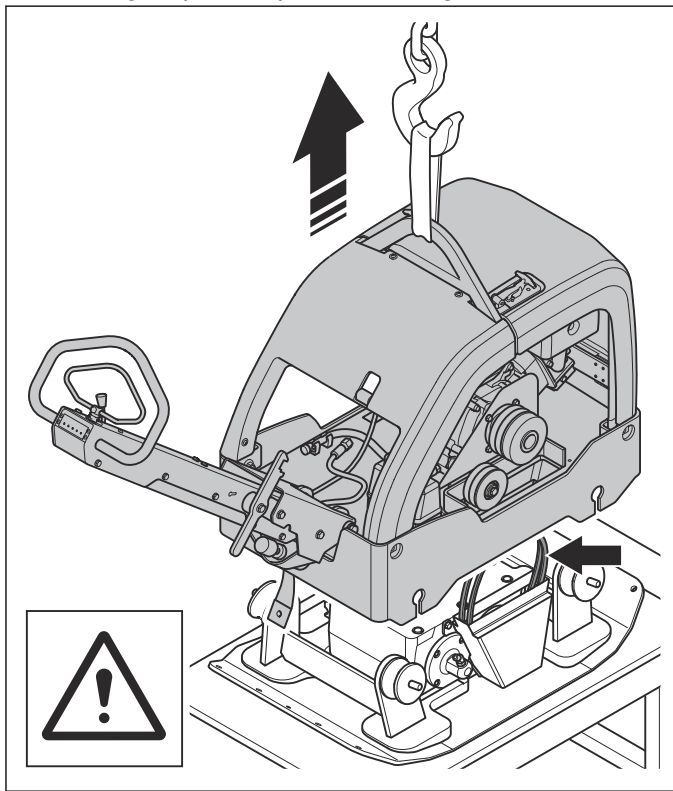


10. Install caps (D) on the hydraulic hoses to prevent oil leakage.

11. Remove the 4 nuts and the 4 washers, 2 on each side of the product.



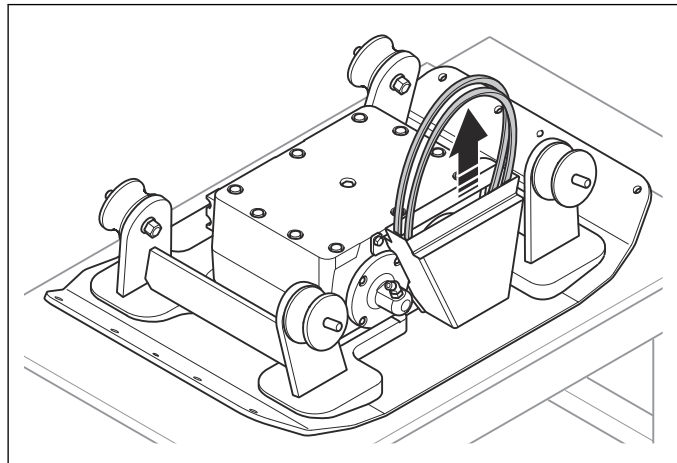
12. Attach a lifting equipment to the lifting eye on the product.
13. Use the lifting equipment to lift the engine plate. Push out the V-belts of V-belt housing while you lift the engine plate to prevent damage to the V-belts.



CAUTION: Lift the engine plate slowly. Make sure that you do not cause damage to the V-belts.

7.2.5 To remove the V-belts

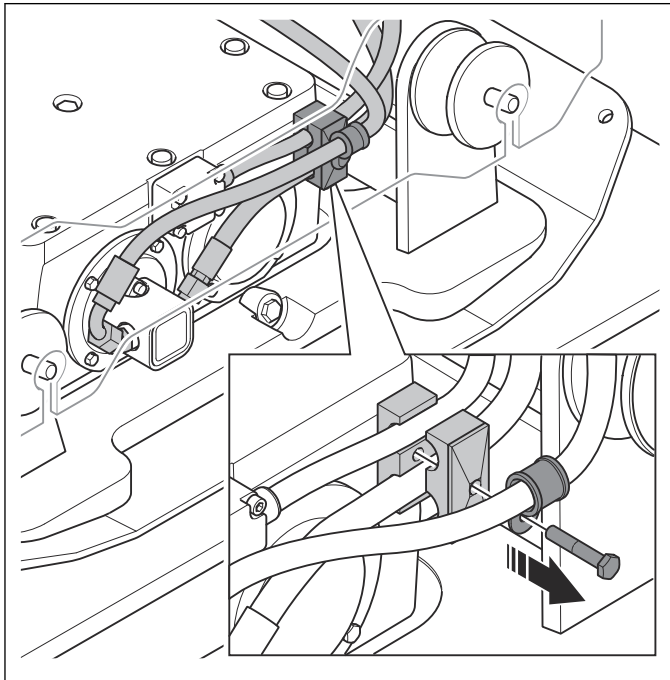
1. Remove the handle cover. Refer to *To remove the handle cover on page 21*.
2. Remove the compaction indicator cable. Refer to *To remove the compaction indicator cable on page 22*.
3. Release the V-belts. Refer to *To release the V-belts on page 23*.
4. Remove the engine plate. Refer to *To remove the engine plate on page 23*.
5. Remove the V-belts from the pulley.



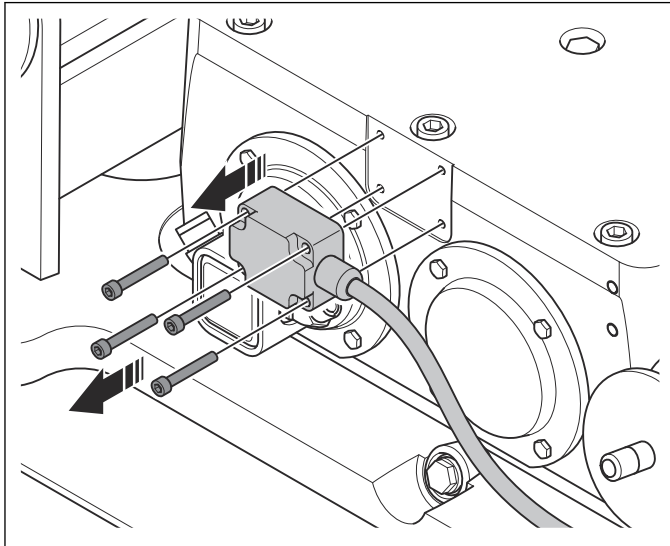
7.2.6 To remove the indicator of the eccentric element

1. Remove the handle cover. Refer to *To remove the handle cover on page 21*.
2. Remove the compaction indicator cable. Refer to *To remove the compaction indicator cable on page 22*.
3. Release the V-belts. Refer to *To release the V-belts on page 23*.
4. Remove the engine plate. Refer to *To remove the engine plate on page 23*.

5. Remove the screw. Remove the compaction indicator cable from the rubber bracket.



6. Remove the 4 screws.



7. Use a screwdriver to carefully bend to remove the indicator from the eccentric element.

7.2.7 To clean the ground plate

- Use running water from a hose or a high-pressure washer to clean the ground plate.



CAUTION: Do not point the water directly at the fuel tank cap, electrical components or the engine.

- Use compressed air to dry all surfaces.

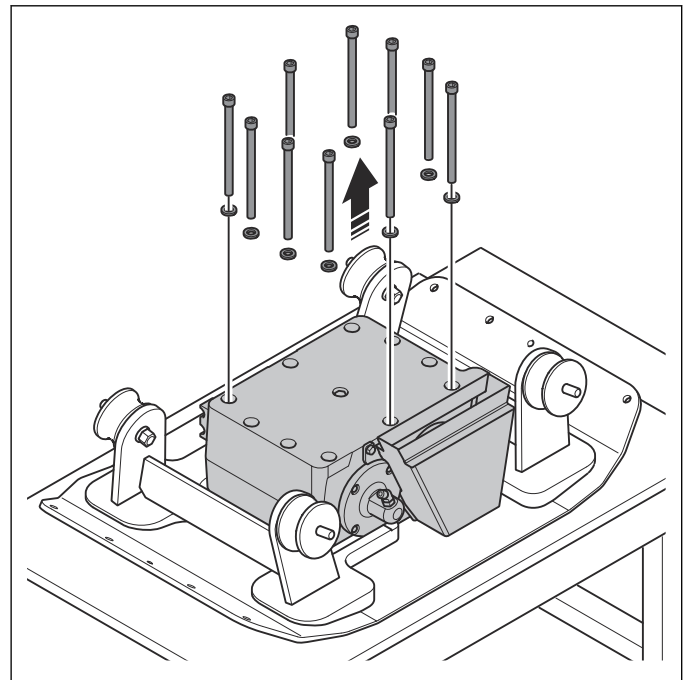
7.2.8 To get access to the eccentric element

1. Remove the handle cover. Refer to *To remove the handle cover on page 21*.
2. Remove the compaction indicator cable. Refer to *To remove the compaction indicator cable on page 22*.

3. Release the V-belts. Refer to *To release the V-belts on page 23*.
4. Remove the engine plate. Refer to *To remove the engine plate on page 23*.
5. Remove the V-belts. Refer to *To remove the V-belts on page 25*.
6. Remove the indicator of the eccentric element. Refer to *To remove the indicator of the eccentric element on page 25*.
7. Clean the ground plate. Refer to *To clean the ground plate on page 26*.

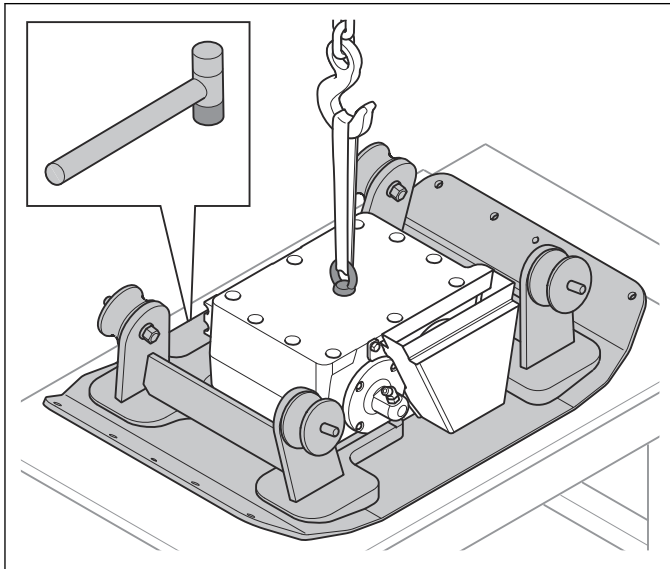
7.2.9 To remove the eccentric element

1. Get access to the eccentric element. Refer to *To clean the ground plate on page 26*.
2. Remove the 10 screws and the 10 washers.

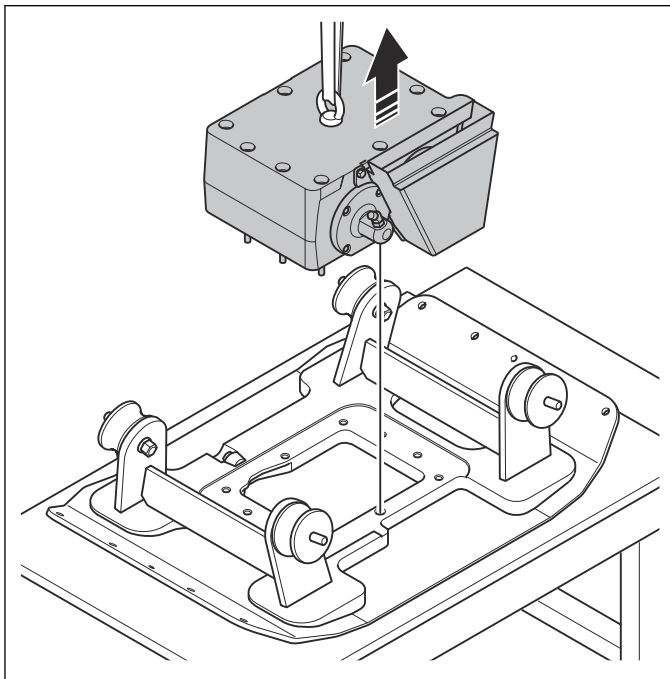


3. Attach the lifting eye and the lifting equipment to the eccentric element.

4. Hit the frame of the ground plate with a soft hammer to loosen the eccentric element.



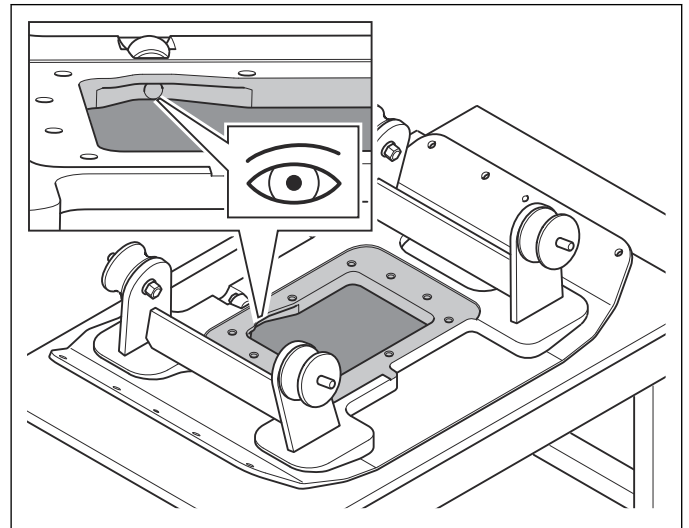
5. Use the lifting equipment to lift the eccentric element.



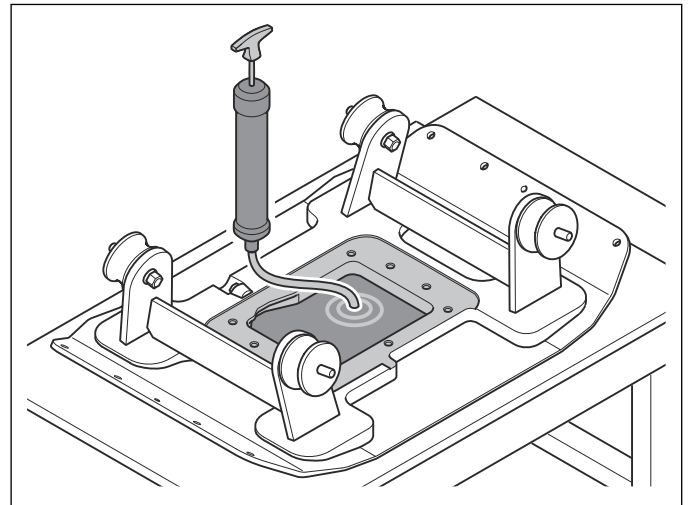
7.2.10 To do a check of the oil level in the eccentric element

1. Get access to the eccentric element. Refer to *To clean the ground plate on page 26*.
2. Remove the eccentric element. Refer to *To remove the eccentric element on page 26*.

3. Make sure that the oil level is in line with the hole.



4. Remove the oil from the ground plate.

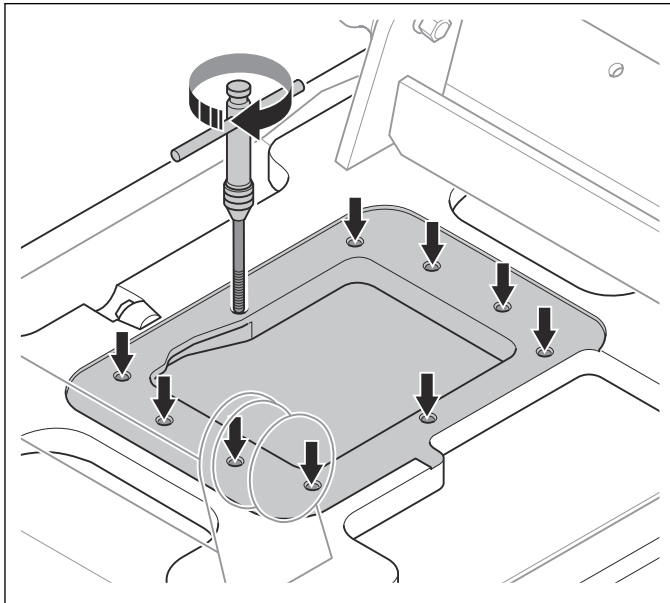


5. Measure the quantity of oil you removed. If there is less than 0.8 l of oil, there is oil leakage from the ground plate. If there is more than 0.8 l of oil, there is a leakage of hydraulic oil from the piston seal in to the ground plate.

7.2.11 To replace the oil in the eccentric element

1. Get access to the eccentric element. Refer to *To clean the ground plate on page 26*.
2. Remove the eccentric element. Refer to *To remove the eccentric element on page 26*.
3. Do a check of the oil level. Refer to *To do a check of the oil level in the eccentric element on page 27*.

4. Use a thread tap to clean the threads of the 10 screw holes.



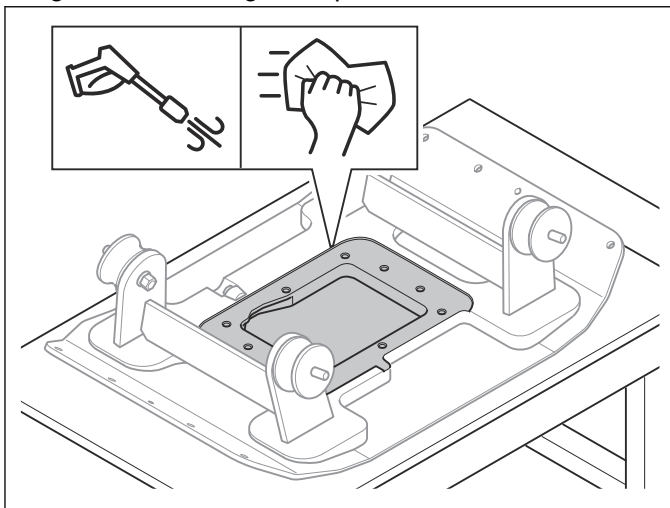
CAUTION: Be careful when you use the thread tap. The thread tap can cause damage to the threads if you do not use it correctly.

5. Remove all the remaining Loctite 5188.

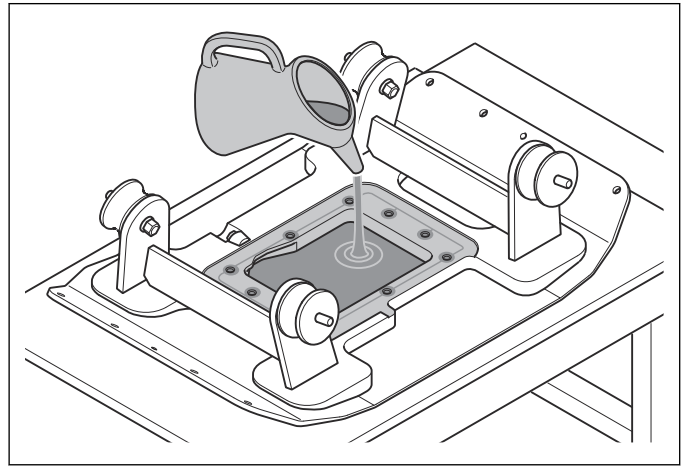


CAUTION: If you do not remove all the remaining Loctite 5188, the new Loctite 5188 will not seal correctly and oil will leak.

6. Use a cloth or paper to remove remaining oil and grease from the ground plate.

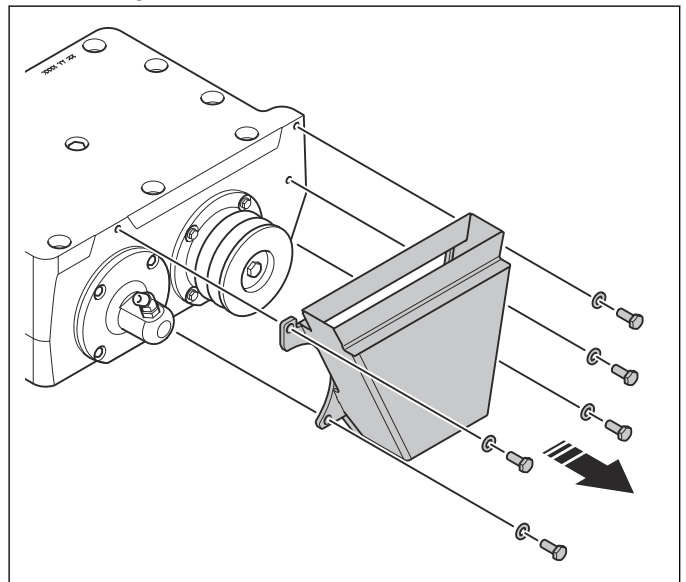


7. Put 0.8 l of oil in the eccentric element. Refer to *Technical data on page 55* for correct oil type.

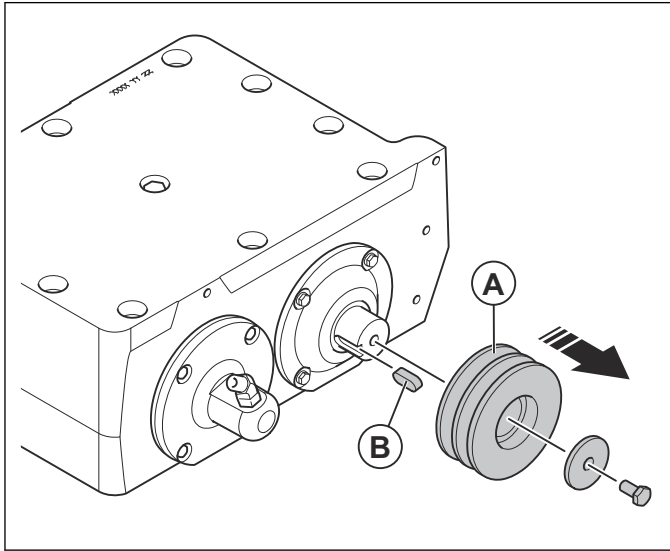


7.2.12 To remove the V-belt housing

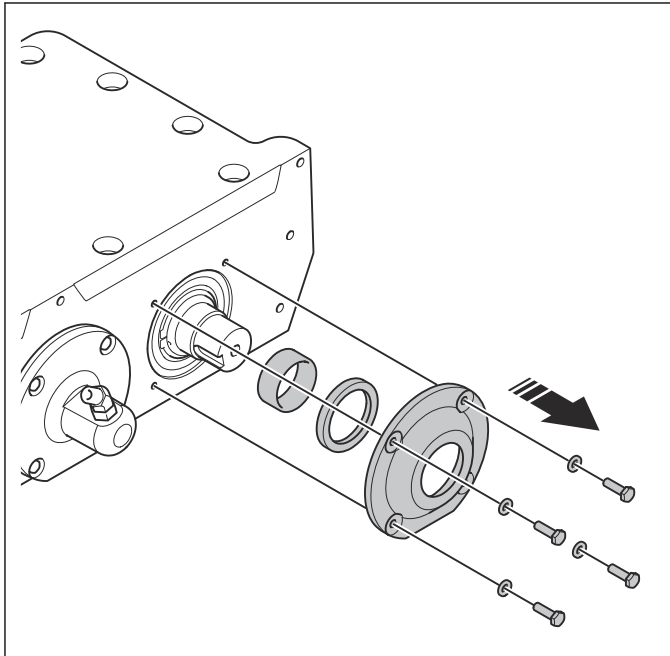
1. Get access to the eccentric element. Refer to *To get access to the eccentric element on page 26*.
2. Remove the eccentric element. Refer to *To remove the eccentric element on page 26*.
3. Remove the 5 screws, the 5 washers and the V-belt housing.



4. Remove the screw, the washer and the pulley (A).



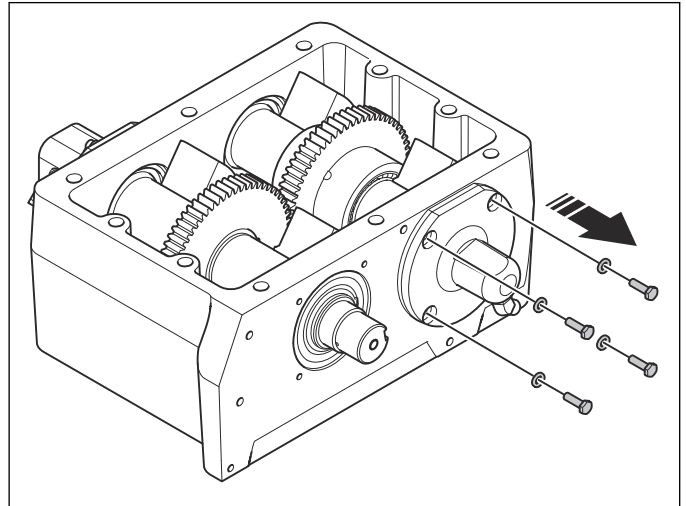
5. Remove the key (B).
6. Remove the 4 screws, the 4 washers, the bearing cover, the seal and the spacer.



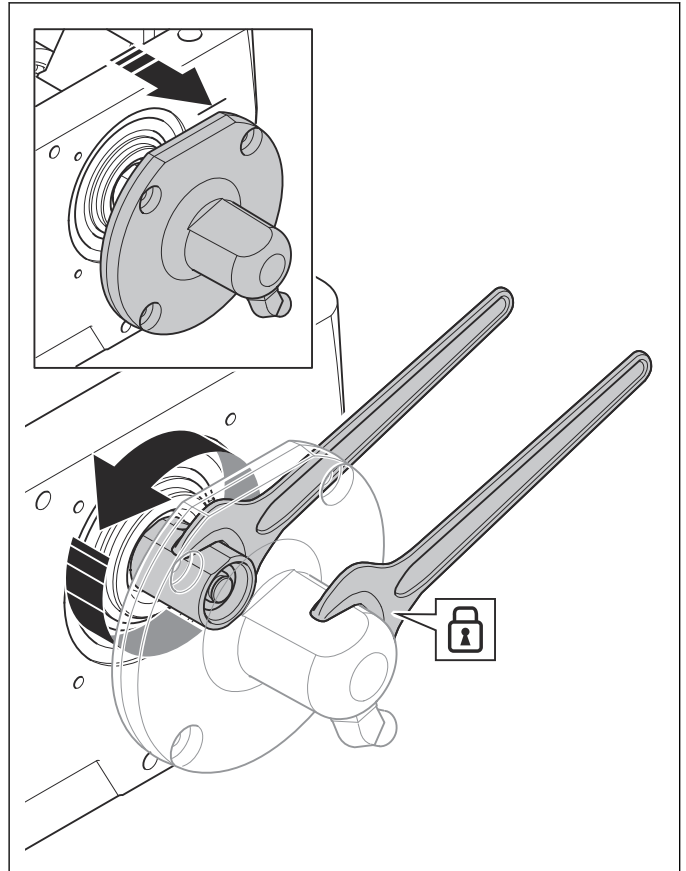
7.2.13 To remove the piston housing

1. Get access to the eccentric element. Refer to *To get access to the eccentric element on page 26*.
2. Remove the eccentric element. Refer to *To remove the eccentric element on page 26*.
3. Remove the V-belt housing. Refer to *To remove the V-belt housing on page 28*.

4. Remove the 4 screws and the 4 washers.

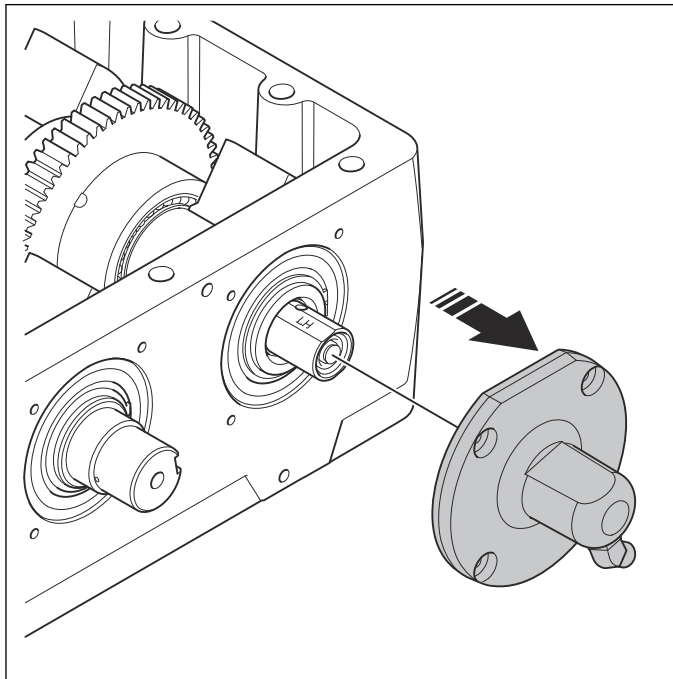


5. Pull out the piston housing.



6. Loosen the piston cap. The piston cap is left hand threaded.

7. Remove the piston housing.

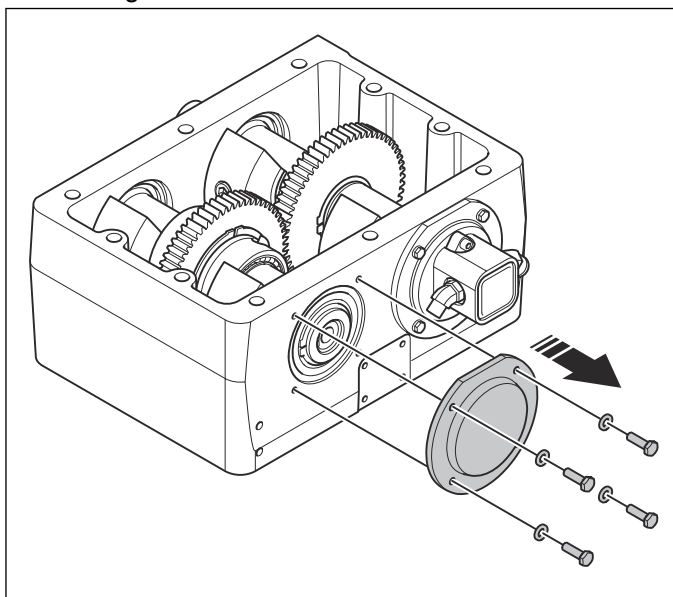


7.2.14 To remove the spring

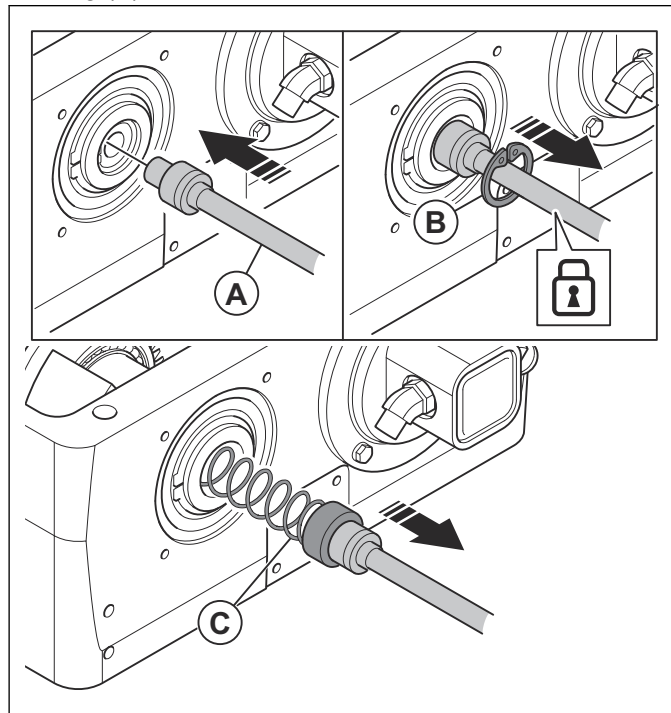


WARNING: Always use safety glasses when you remove the spring. There is a risk for eye injury.

1. Get access to the eccentric element. Refer to *To get access to the eccentric element on page 26*.
2. Remove the eccentric element. Refer to *To remove the eccentric element on page 26*.
3. Remove the V-belt housing. Refer to *To remove the V-belt housing on page 28*.
4. Remove the piston housing. Refer to *To remove the piston housing on page 29*.
5. Remove the 4 screws, the 4 washers and the bearing cover.



6. Use an extended socket wrench (A) to hold the loaded spring in position while you remove the snap ring (B).



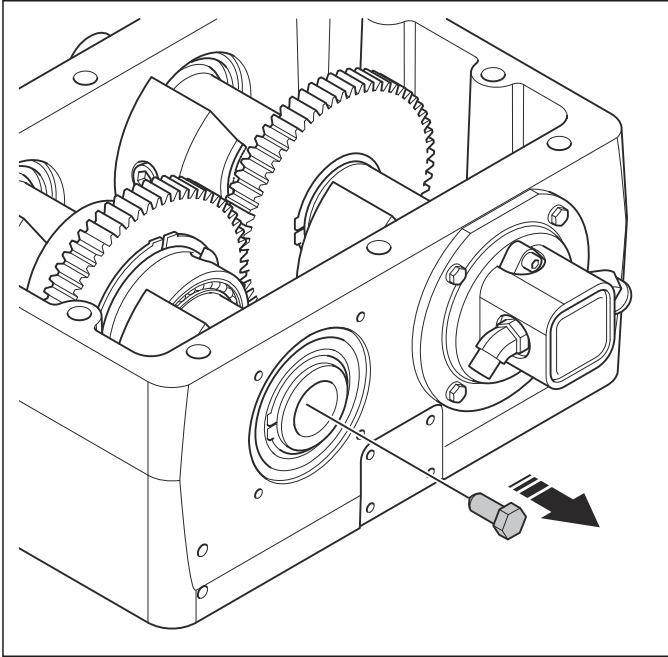
7. Slowly release the extended socket wrench to remove the spacer and the spring (C).

7.2.15 To get access to the piston

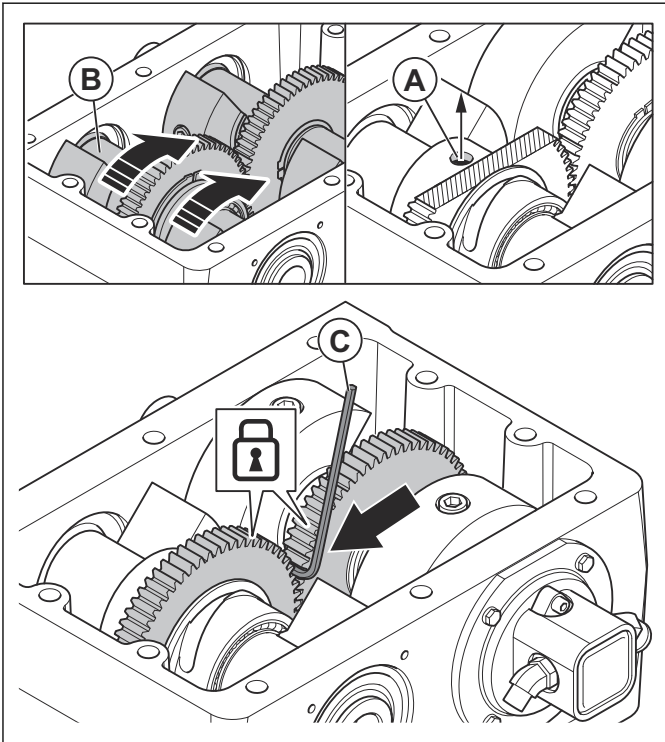
1. Remove the handle cover. Refer to *To remove the handle cover on page 21*.
2. Remove the compaction indicator cable. Refer to *To remove the compaction indicator cable on page 22*.
3. Release the V-belts. Refer to *To release the V-belts on page 23*.
4. Remove the engine plate. Refer to *To remove the engine plate on page 23*.
5. Remove the V-belts. Refer to *To remove the V-belts on page 25*.
6. Remove the indicator of the eccentric element. Refer to *To remove the indicator of the eccentric element on page 25*.
7. Clean the ground plate. Refer to *To clean the ground plate on page 26*.
8. Remove the eccentric element. Refer to *To remove the eccentric element on page 26*.
9. Remove the V-belt housing. Refer to *To remove the V-belt housing on page 28*.
10. Remove the piston housing. Refer to *To remove the piston housing on page 29*.
11. Remove the spring. Refer to *To remove the spring on page 30*.

7.2.16 To remove the piston

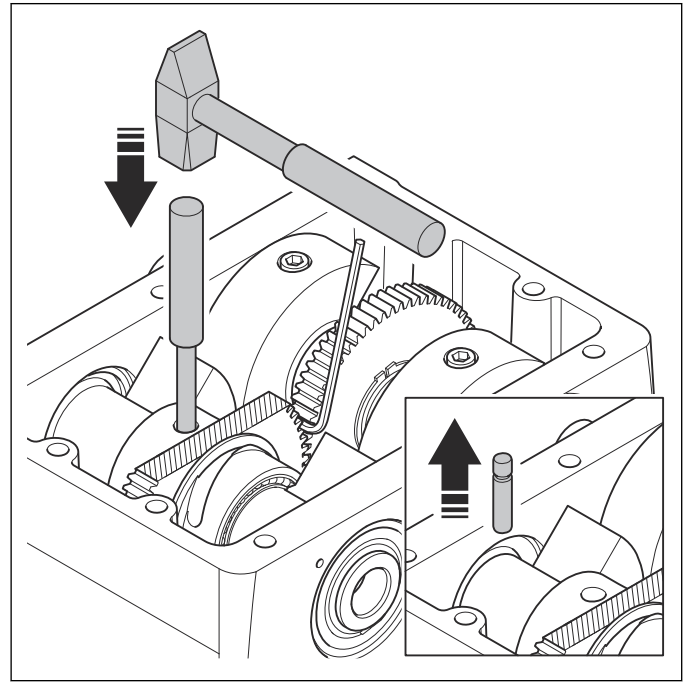
1. Get access to the piston. Refer to *To get access to the piston on page 30*.
2. Remove the stop screw.



3. To remove the stop pin, the bushing hole (A) must point straight up. Turn the shaft clockwise (B) until the bushing hole is correctly aligned. Use a hex key (C) to lock the gear.

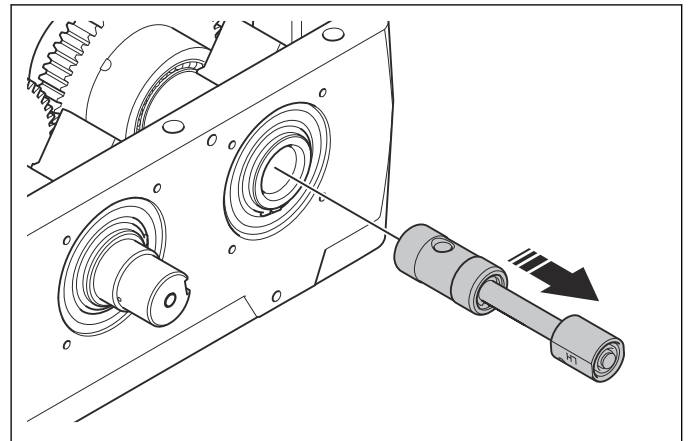


4. Use a hammer and a pin punch to remove the stop pin.



Note: You can only remove the stop pin when the bushing hole is correctly aligned.

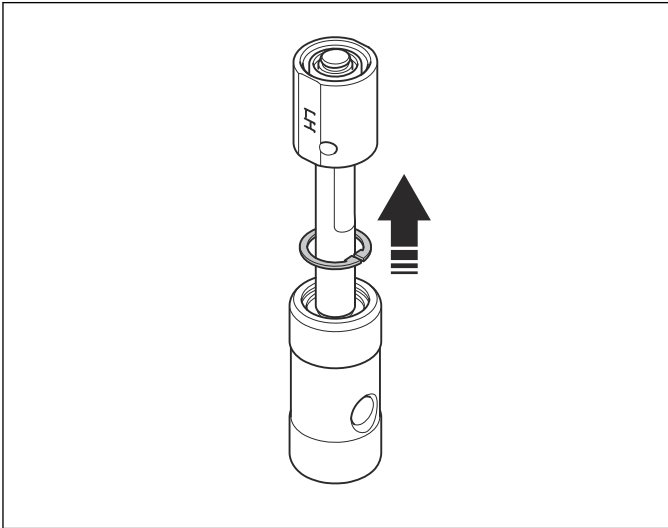
5. Turn the eccentric element around.
6. Remove the piston from the shaft.



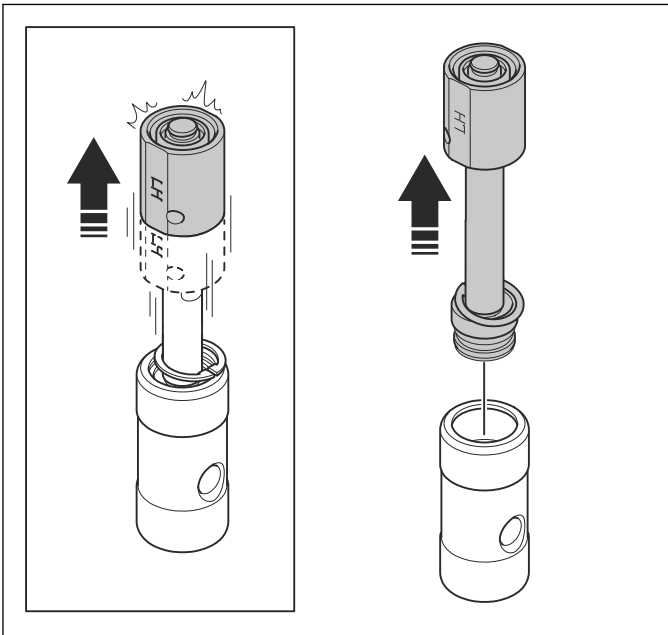
7.2.17 To disassemble the piston

1. Get access to the piston. Refer to *To get access to the piston on page 30*.
2. Remove the piston. Refer to *To remove the piston on page 31*.

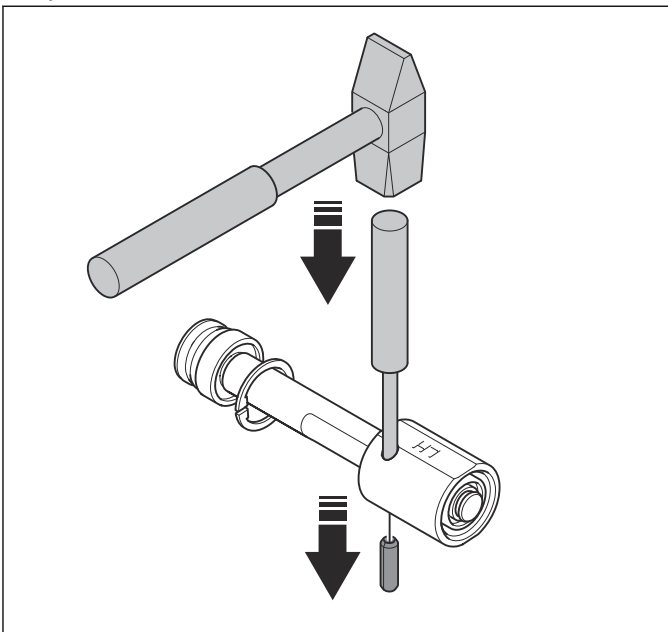
3. Release the snap ring.



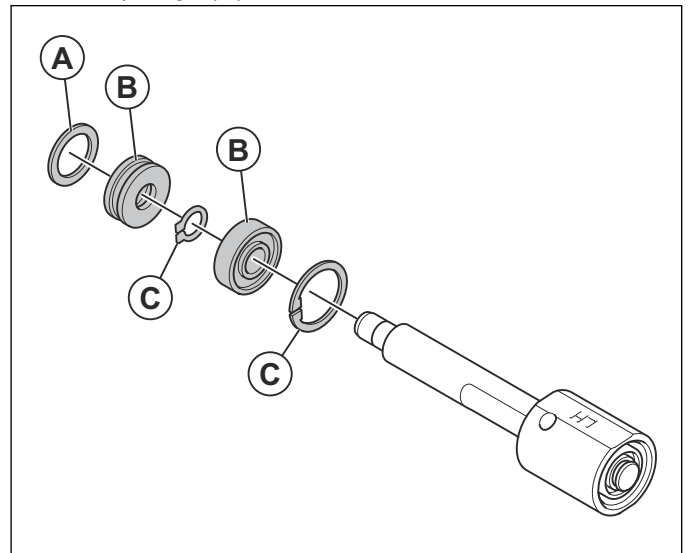
4. Pull the piston rod from the piston.



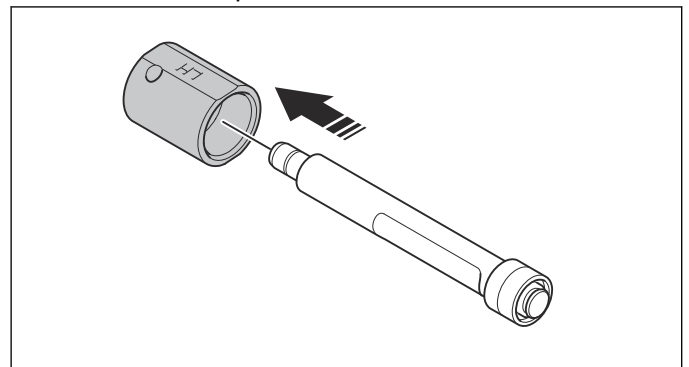
5. Use a hammer and a pin punch to remove the spring pin.



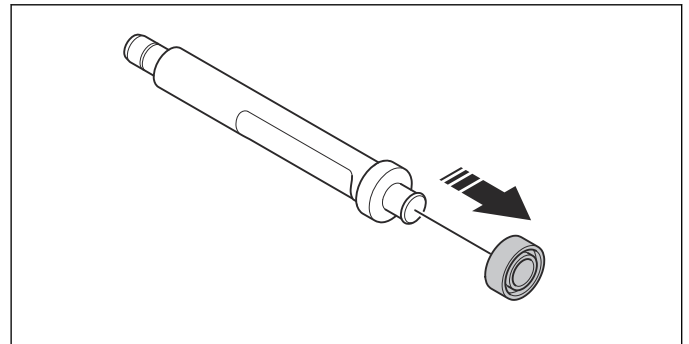
6. Remove the washer (A), the 2 bearings (B), and the 2 snap rings (C).



7. Remove the cap.



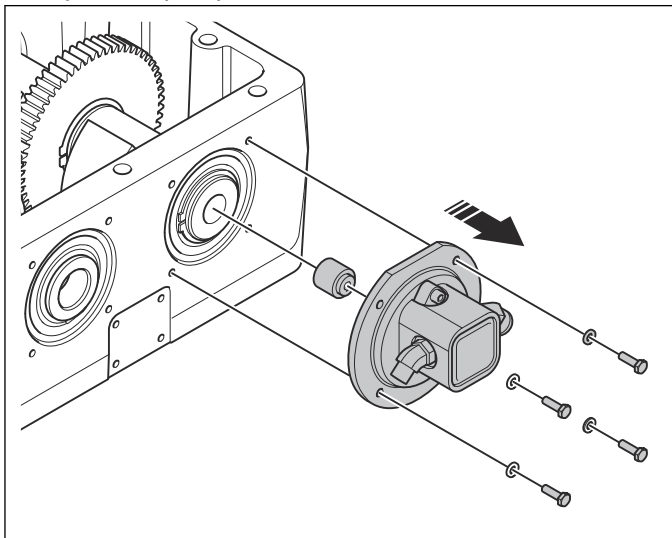
8. Remove the seal from the piston rod.



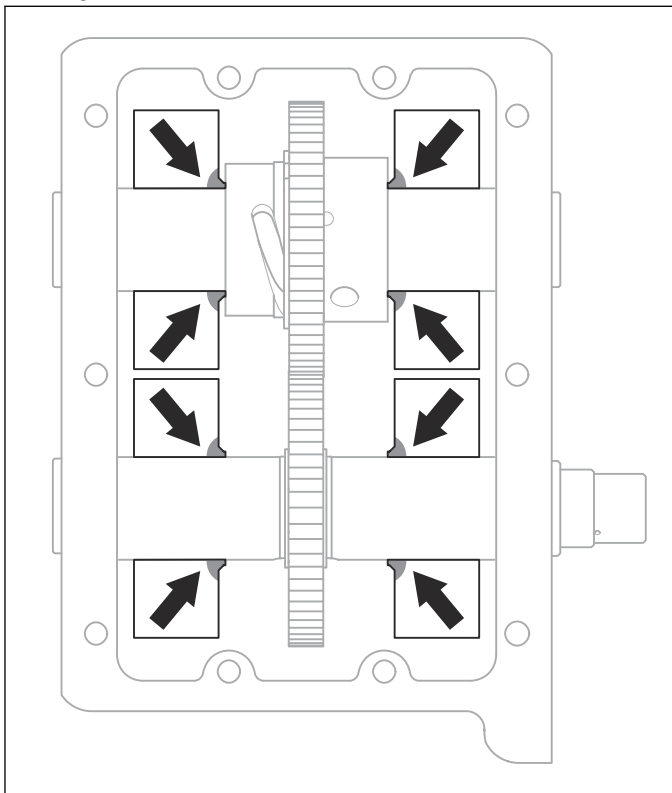
7.2.18 To remove the eccentric weights

1. Get access to the piston. Refer to *To get access to the piston on page 30*.
2. Remove the piston. Refer to *To remove the piston on page 31*.

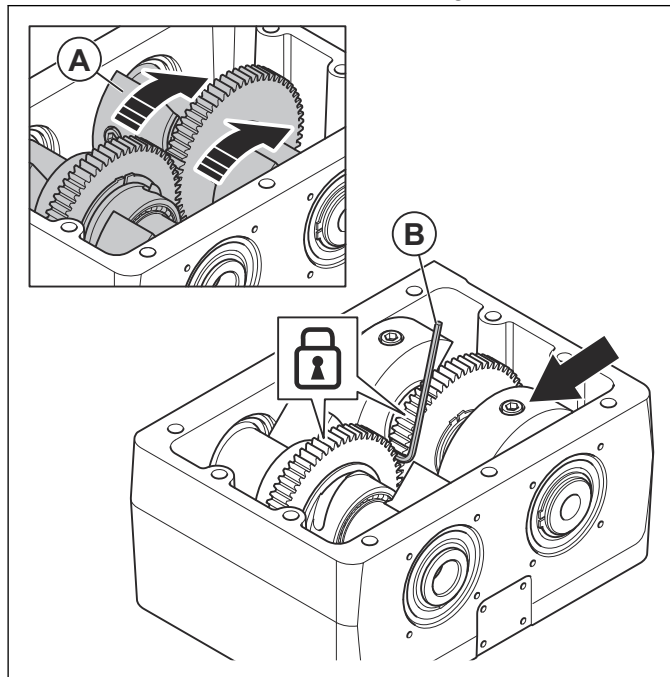
3. Remove the 4 screws, the 4 washers and the hydraulic pump.



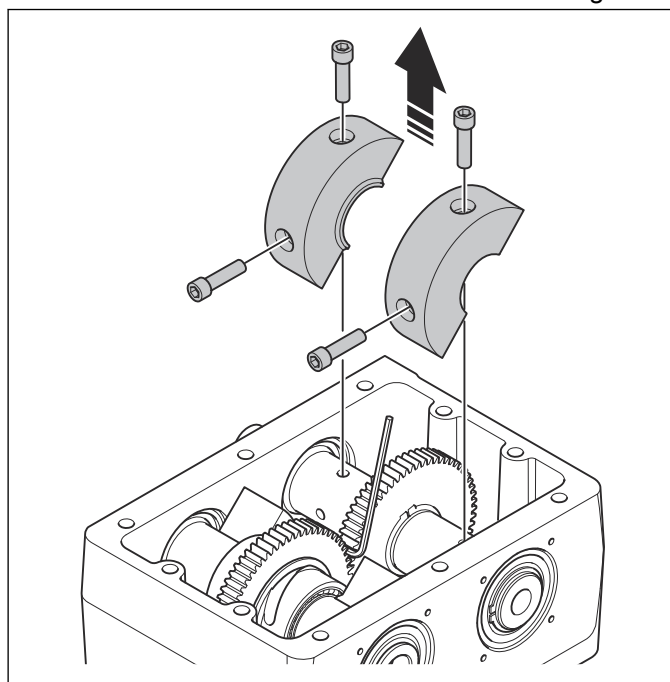
4. Make a note of how the eccentric weights are aligned on the shafts.



5. Turn the gear (A) until you can get access to the screws that hold the eccentric weights.



6. Use a hex key (B) to lock the gears.
7. Remove the 4 screws and the 2 eccentric weights.

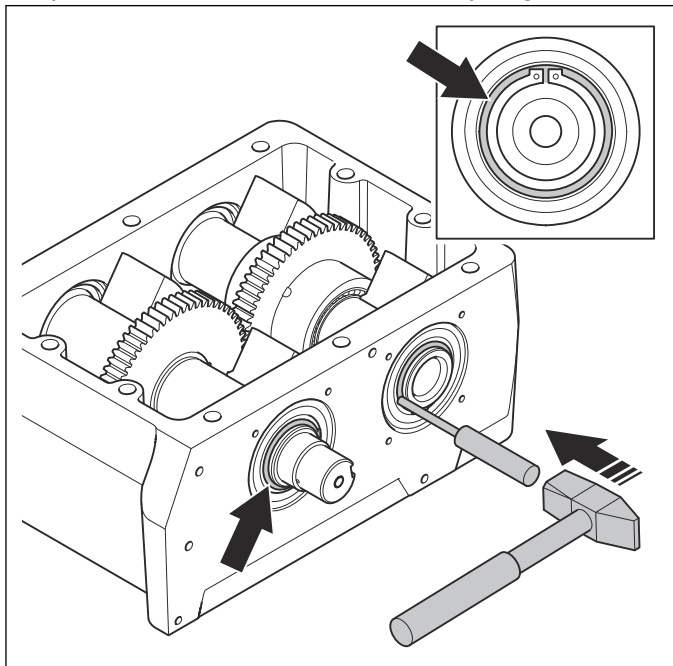


8. Remove the eccentric weights from the other shaft.

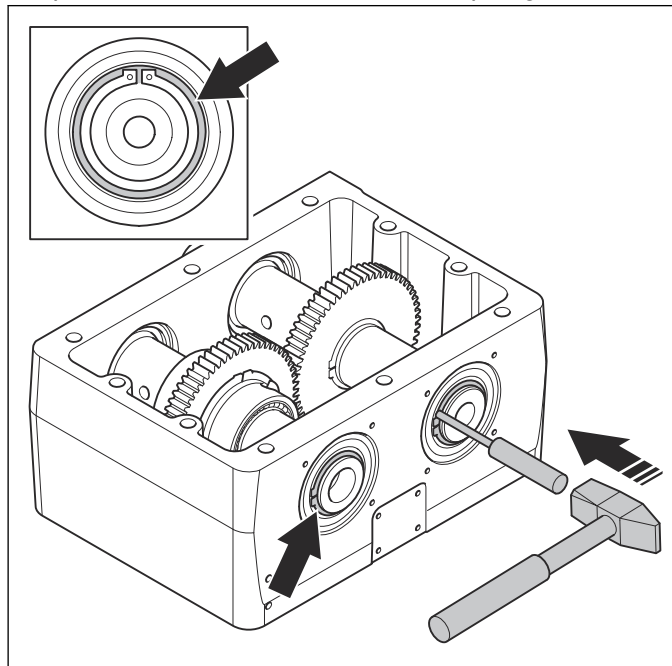
7.2.19 To disassemble the gear shaft assembly

1. Get access to the piston. Refer to *To get access to the piston on page 30*.
2. Remove the piston. Refer to *To remove the piston on page 31*.
3. Remove the eccentric weights. Refer to *To remove the eccentric weights on page 32*.

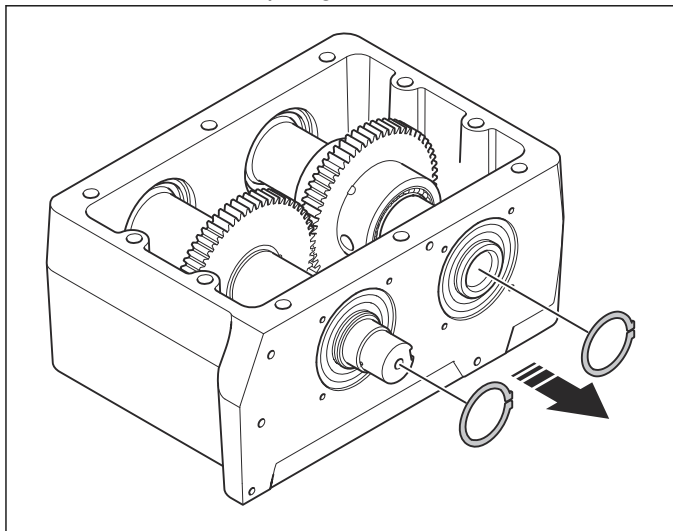
4. Hit the inner bearing races with a hammer and a pin punch for easier removal of the snap rings.



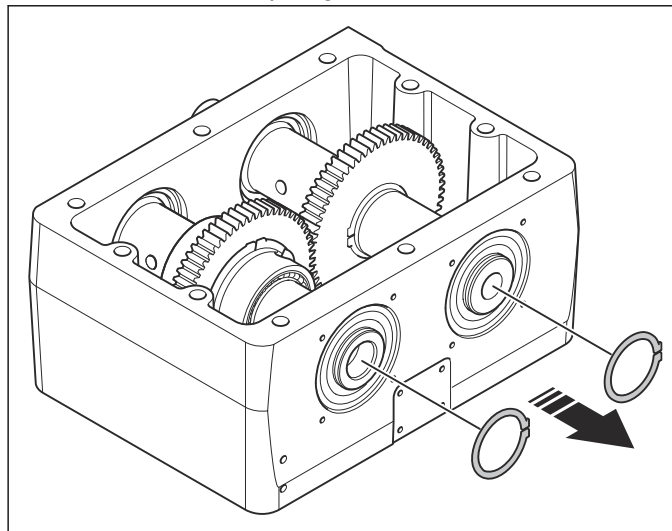
7. Hit the inner bearing races with a hammer and a pin punch for easier removal of the snap rings.



5. Remove the 2 snap rings.

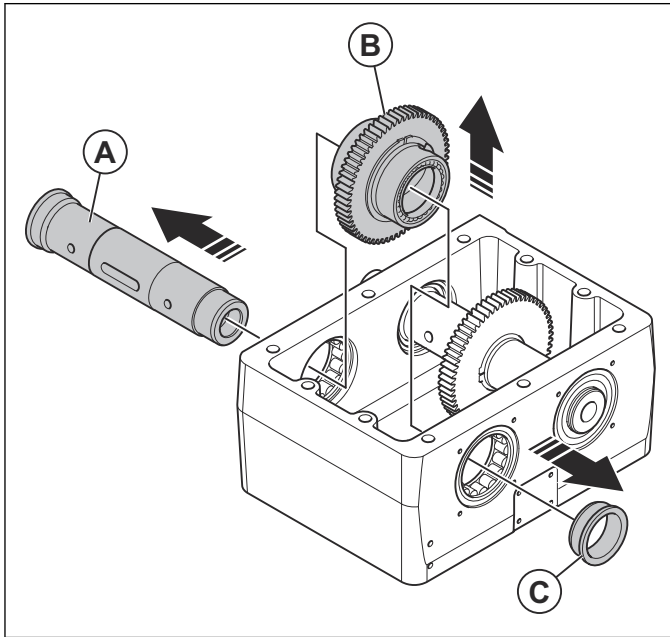


8. Remove the 2 snap rings.

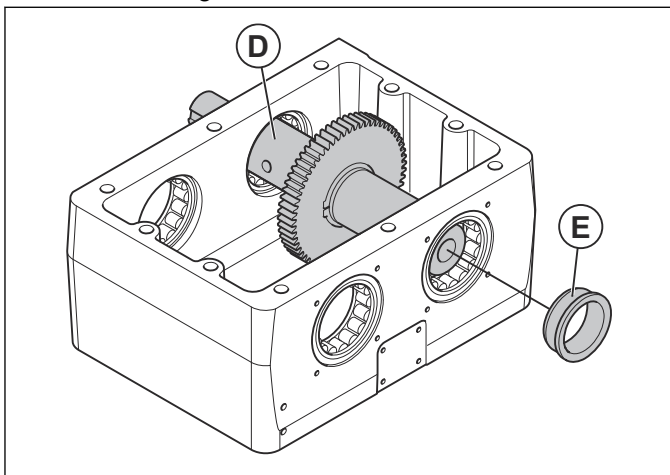


6. Turn the eccentric element around.

9. Use a hydraulic press to remove the drive shaft (A) from the eccentric element.

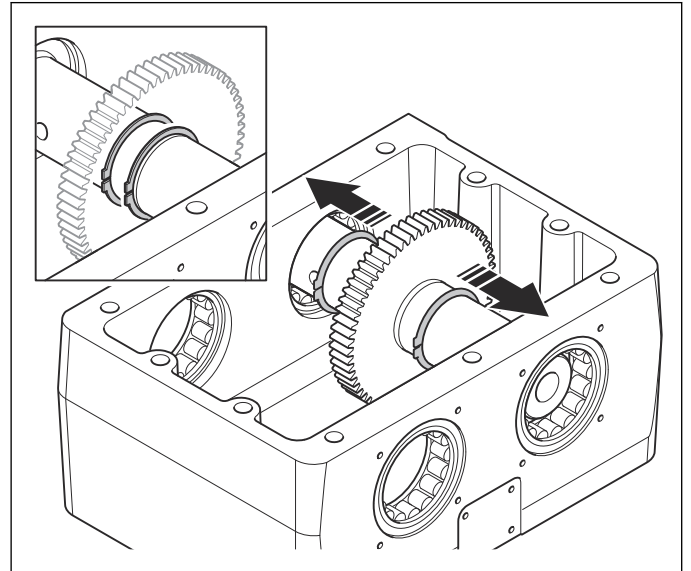


10. Remove the gear bushing assembly (B) from the drive shaft.
 11. Remove the inner bearing race (C) from the bearing.
 12. Use a hydraulic press to push out the idler shaft (D) of the bearing.

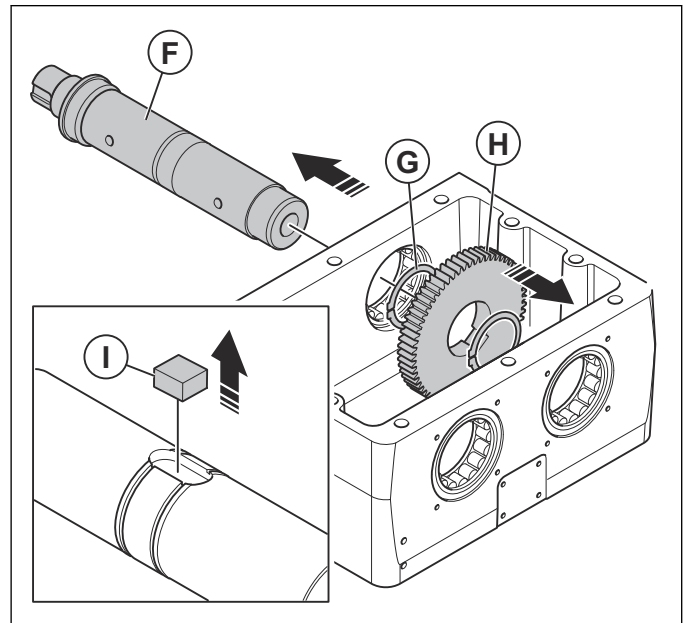


13. Remove the inner bearing race (E) from the bearing.

14. Remove the snap rings that holds the gear.

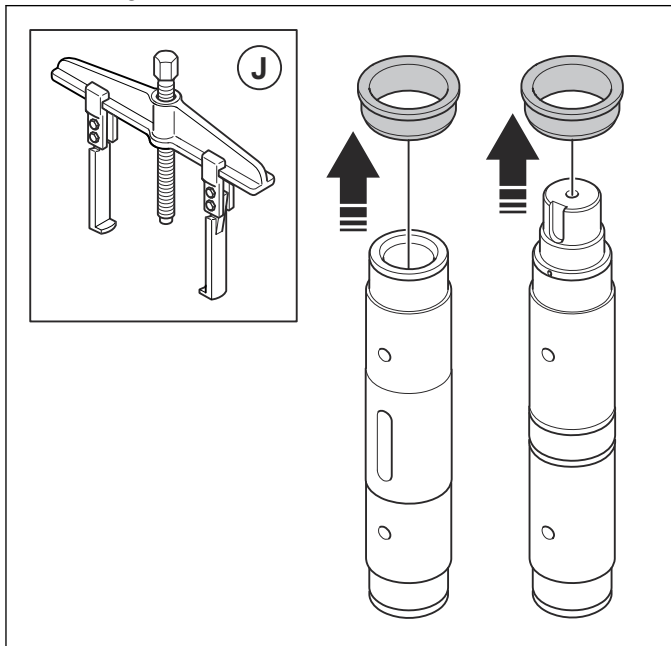


15. Use a hydraulic press to remove the idler shaft (F), the snap rings (G) and the gear (H) from the eccentric element.



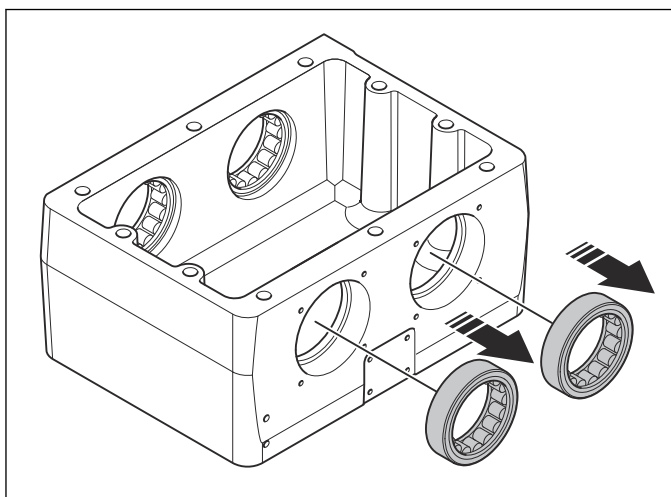
16. Remove the key (I).

17. Use a bearing removal tool (J) to remove the inner bearing races from the shafts.

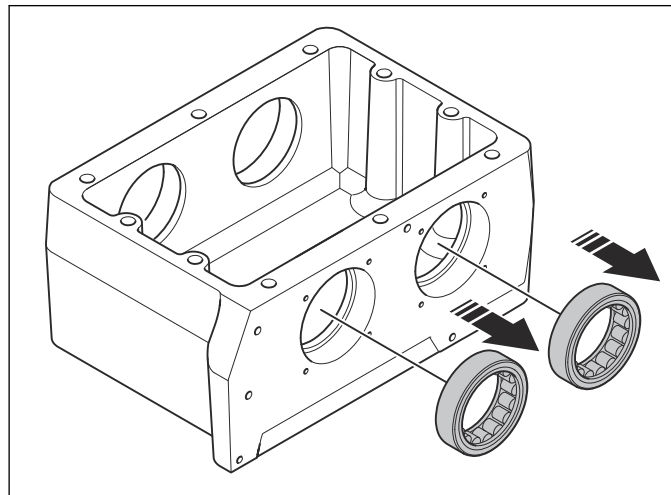


7.2.20 To remove the outer bearing races

1. Get access to the piston. Refer to *To get access to the piston on page 30*.
2. Remove the piston. Refer to *To remove the piston on page 31*.
3. Remove the eccentric weights. Refer to *To remove the eccentric weights on page 32*.
4. Disassemble the gear shaft assembly. Refer to *To disassemble the gear shaft assembly on page 33*.
5. Use a hydraulic press to remove the 2 outer bearing races.



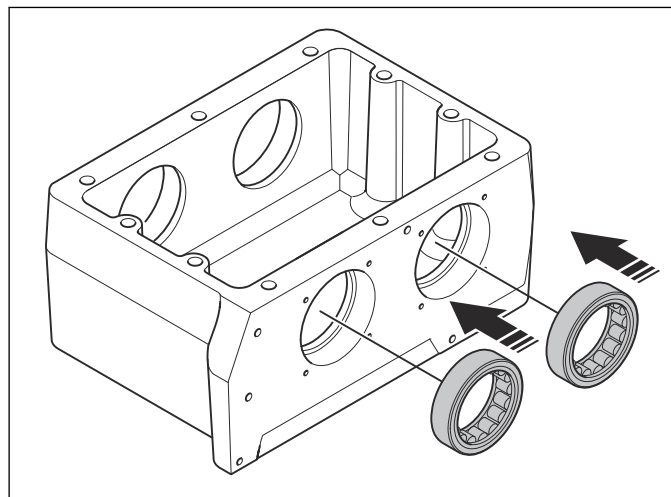
6. Use a hydraulic press to remove the 2 outer bearing races on the other side of the eccentric element.



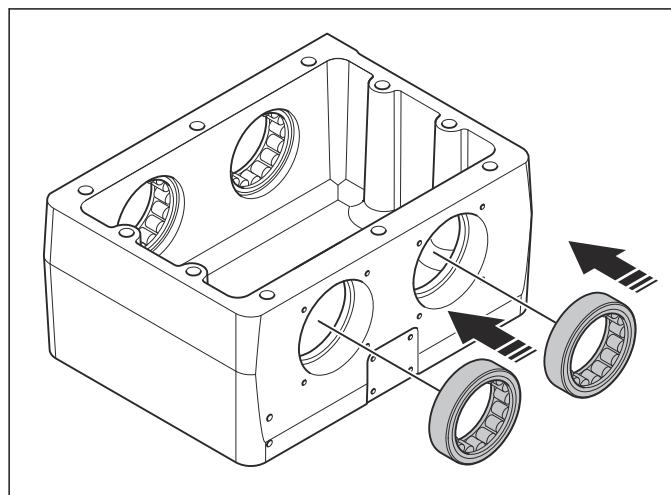
7.3 Assembly of the product

7.3.1 To install the outer bearing races

1. Use a hydraulic press to install the 2 outer bearing races.

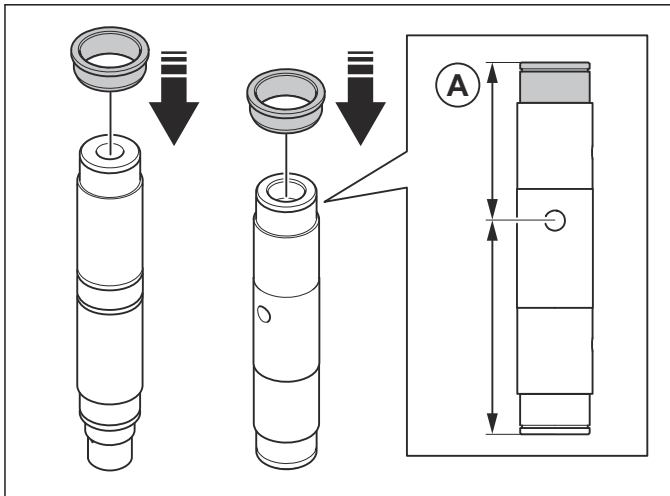


2. Use a hydraulic press to install the 2 outer bearing races on the other side of the eccentric element.

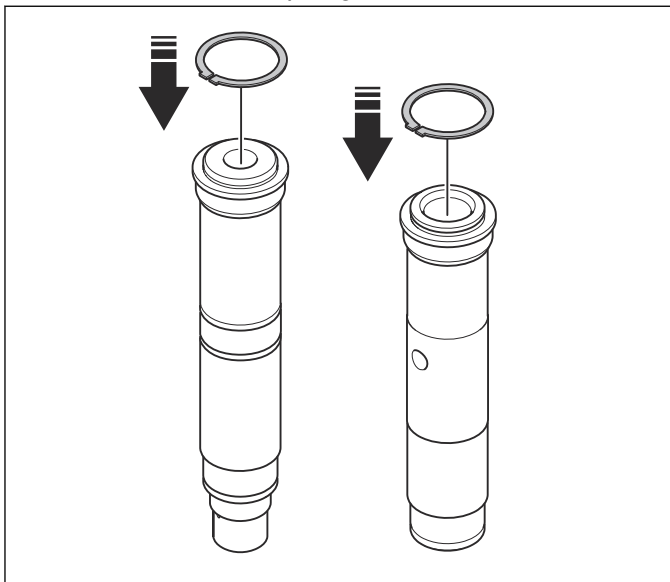


7.3.2 To assemble the gear shaft assembly

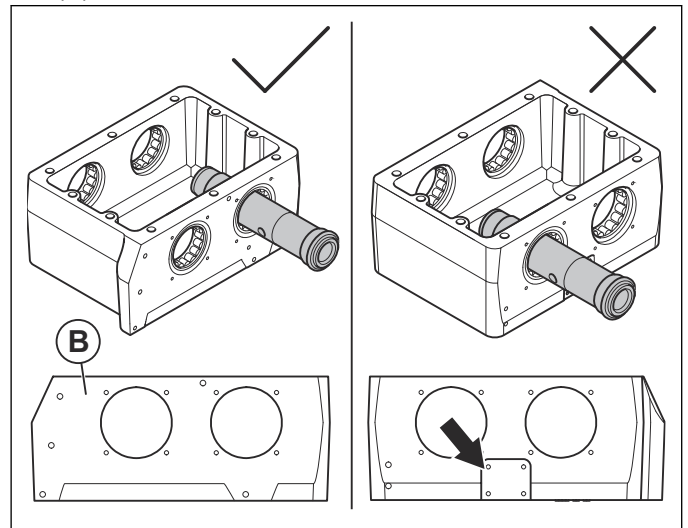
1. Install the outer bearing races. Refer to *To install the outer bearing races on page 36*.
2. Install the first 2 inner bearing races, 1 on each shaft. Make sure that you install the inner bearing race on the correct end (A) of the drive shaft.



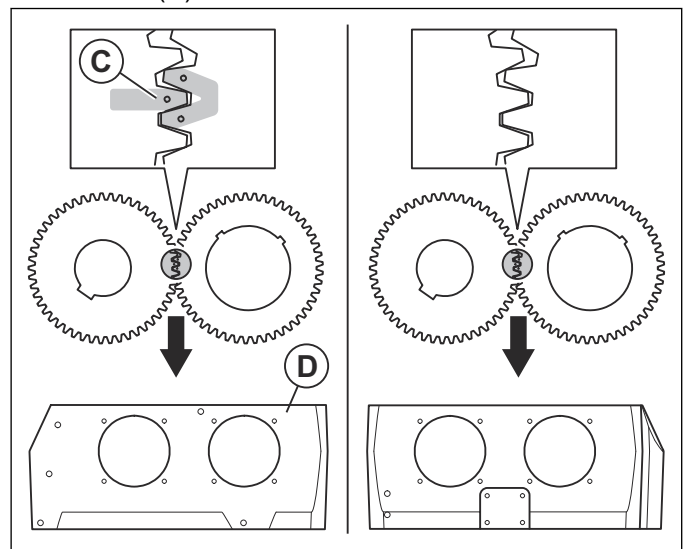
3. Install the first 2 snap rings, 1 on each shaft.



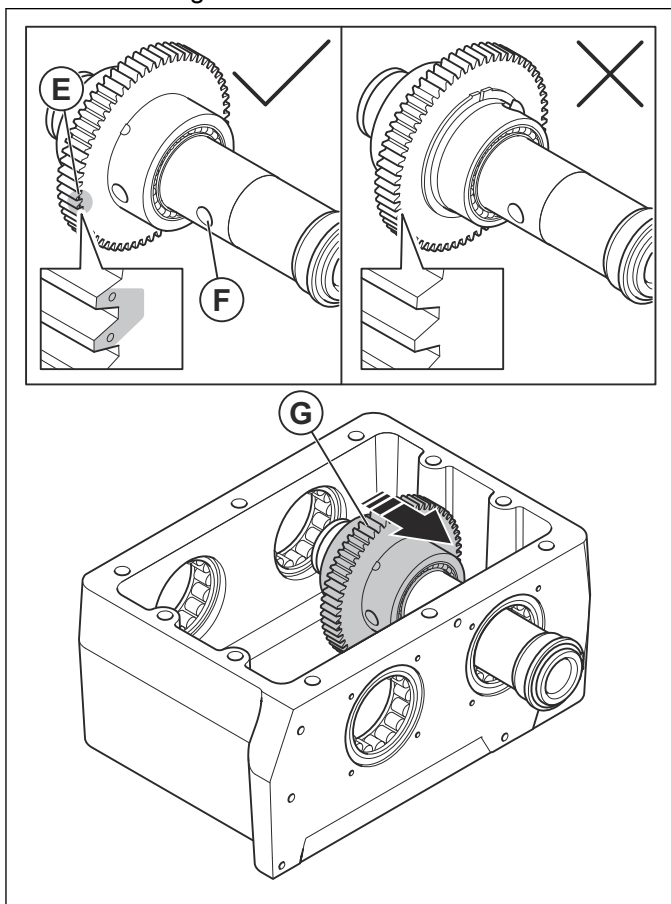
4. Install the drive shaft in the eccentric element. Make sure that you install the shaft from the correct side (B).



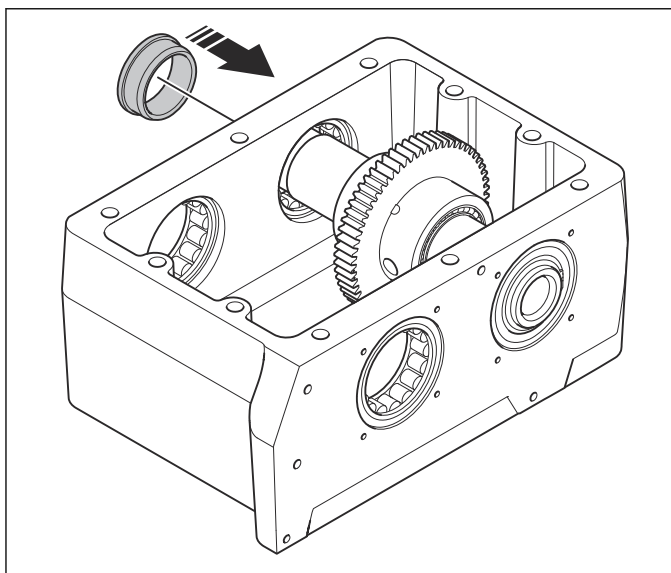
5. Put the gear bushing assembly on the drive shaft. The mark (C) on the gear must be in the direction of the side (D) of the eccentric element.



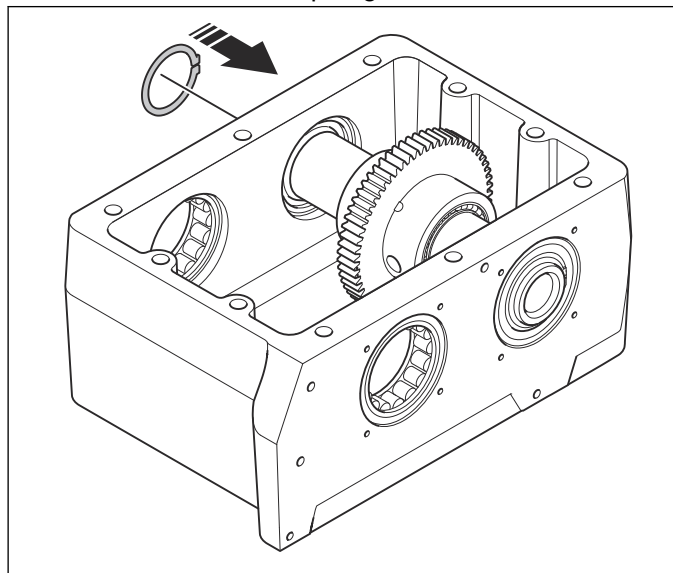
6. Make sure that the mark on the gear (E) is aligned with the pin hole on the drive shaft (F) and the pin hole on the gear.



7. Push the drive shaft through the eccentric element fully to install the gear bushing assembly (G) on the drive shaft.
8. Install the second inner bearing race on the drive shaft.

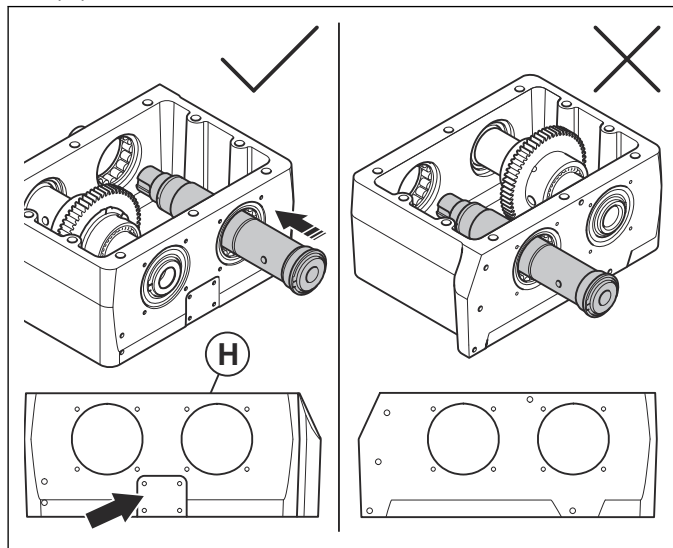


9. Install the second snap ring on the drive shaft.

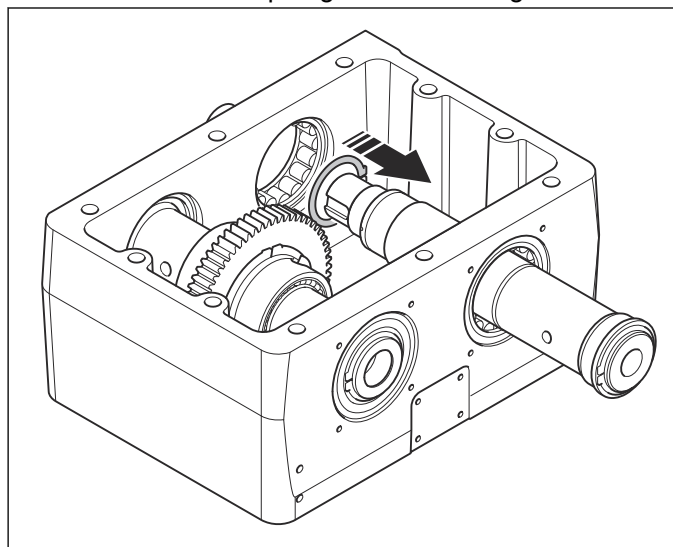


10. Turn the eccentric element around.

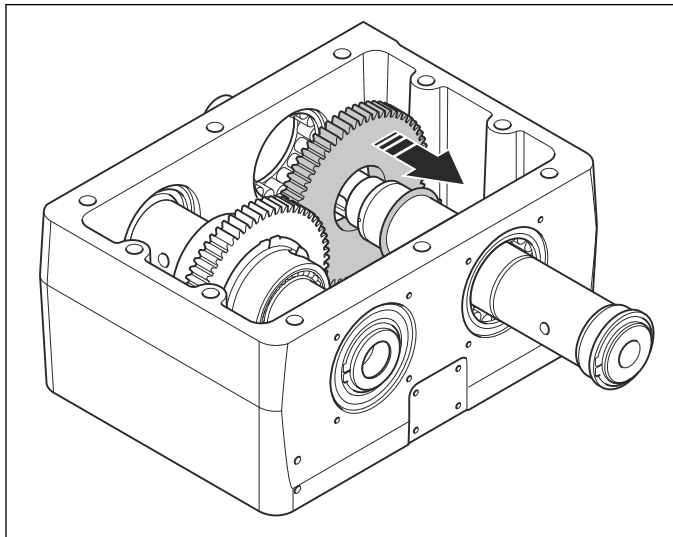
11. Install the idler shaft in the eccentric element. Make sure that you install the shaft from the correct side (H) of the eccentric element.



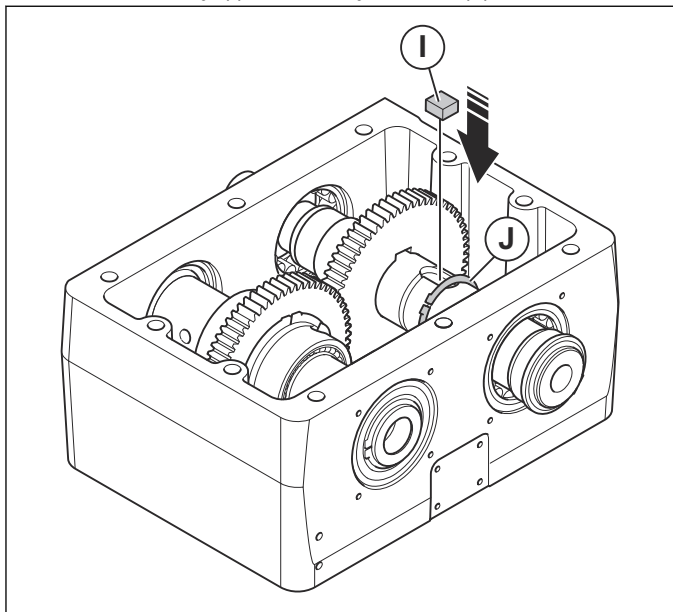
12. Install the first snap ring that holds the gear.



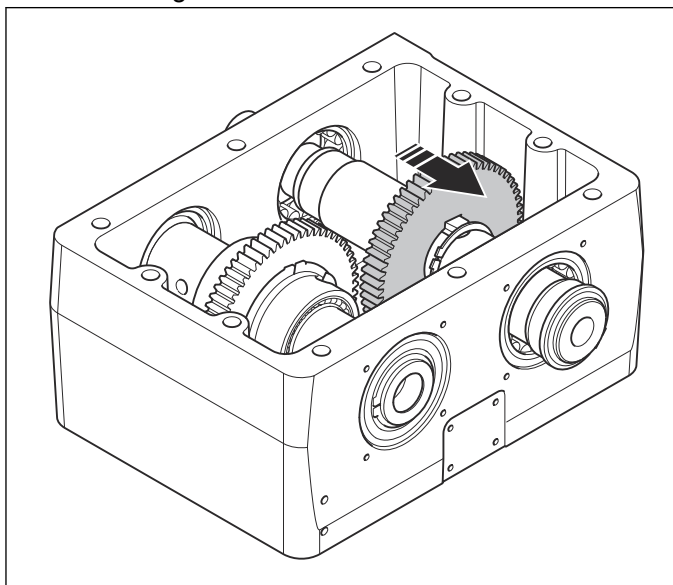
13. Put the gear on the idler shaft.



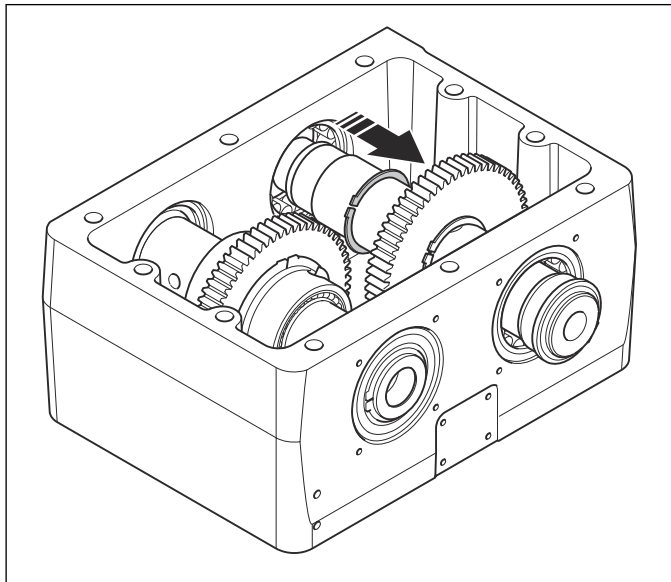
14. Install the key (I) to the key socket (J).



15. Install the gear.

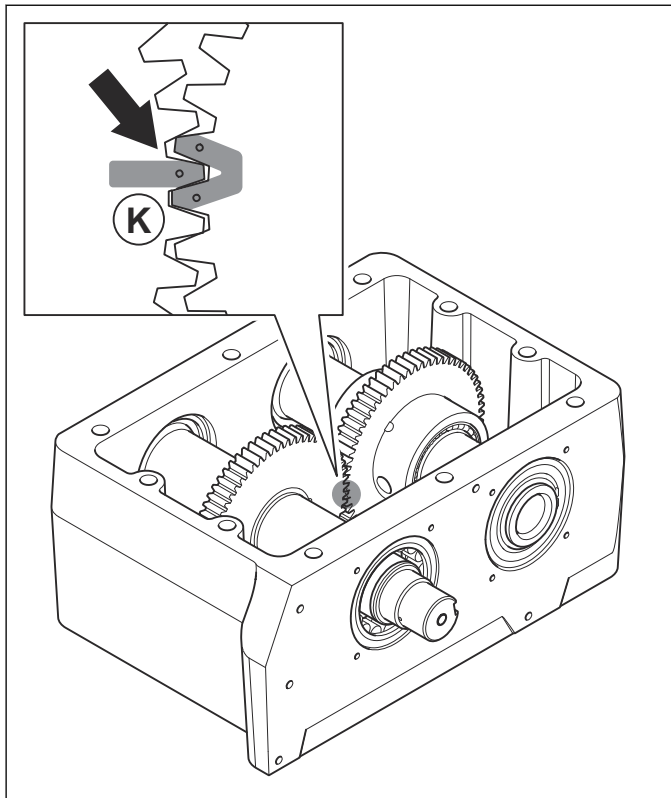


16. Install the second snap ring that holds the gear.

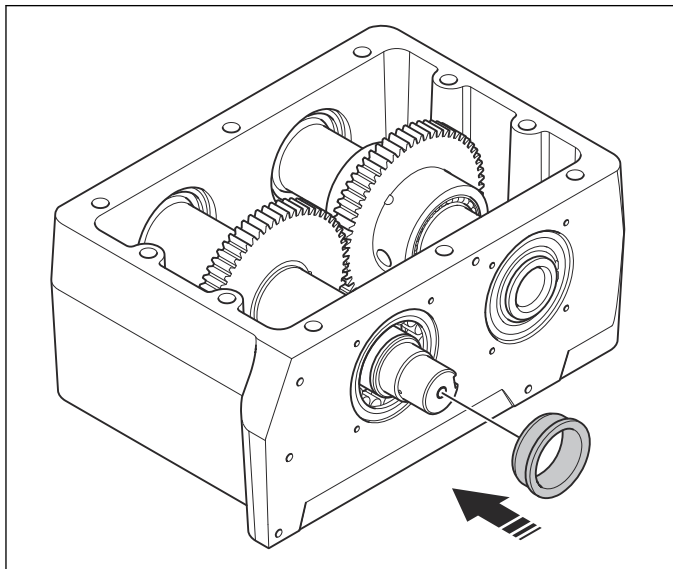


17. Turn the eccentric element around.

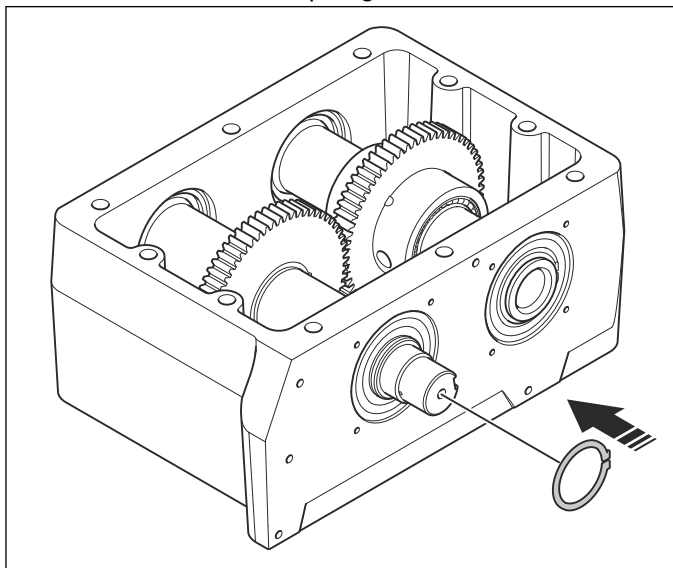
18. Do a check of the mark (K) on the gears to make sure that the gears are correctly aligned.



19. Install the second inner bearing race on the idler shaft.

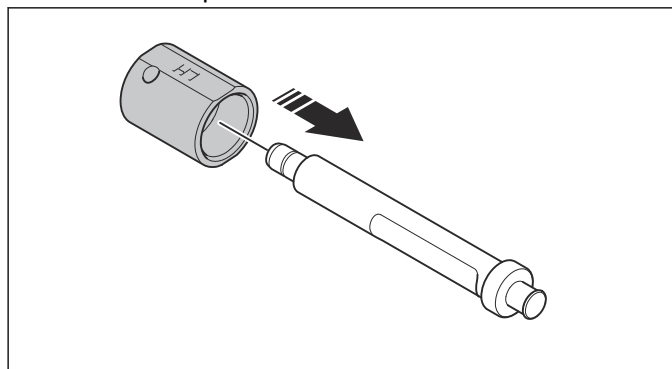


20. Install the second snap ring on the idler shaft.

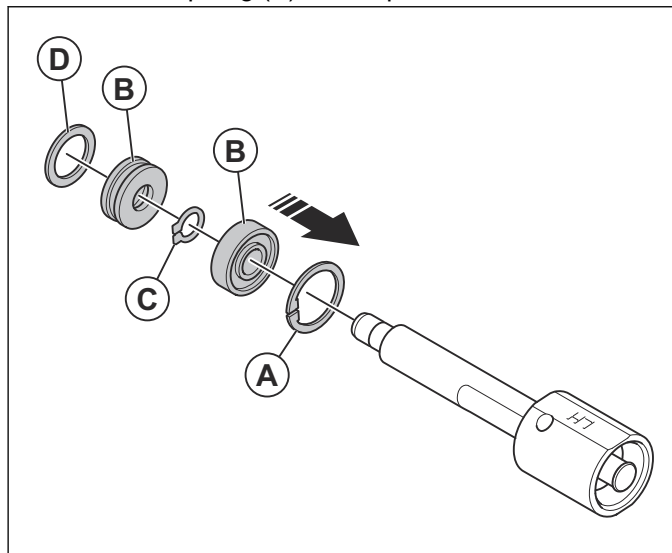


7.3.3 To assemble the piston

1. Install the cap.

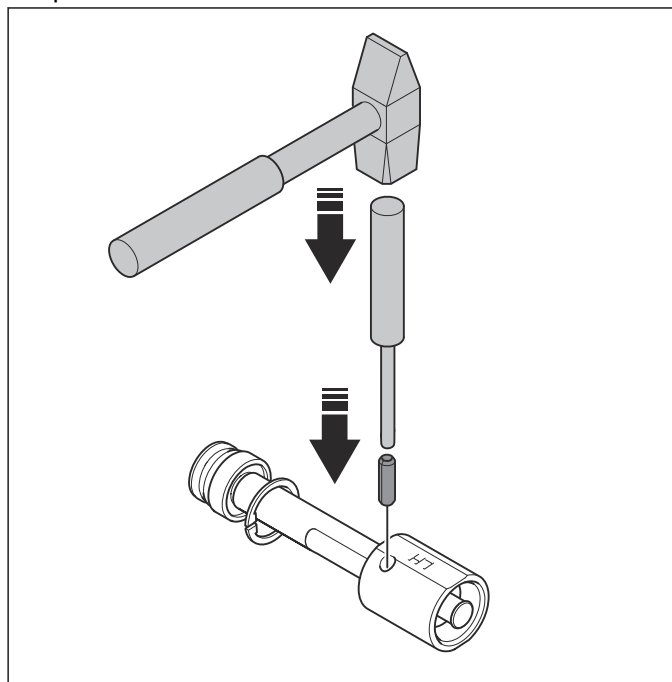


2. Put the snap ring (A) on the piston rod.

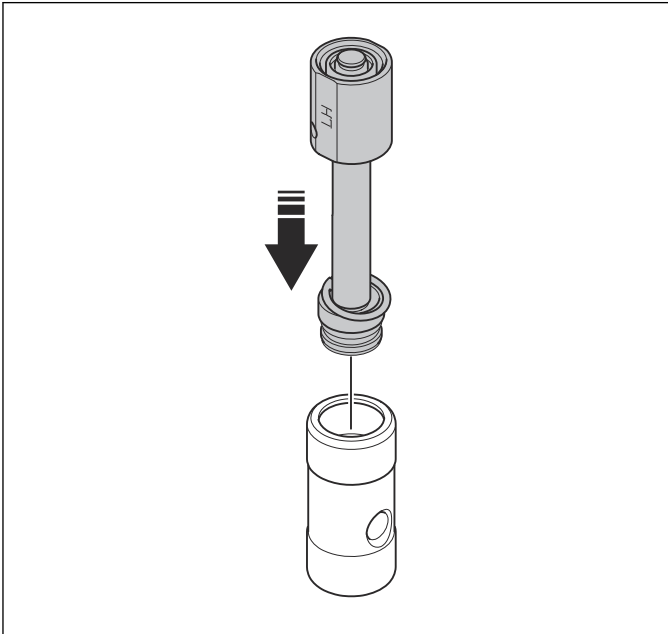


3. Install the 2 bearings (B), the snap ring (C) and the washer (D).

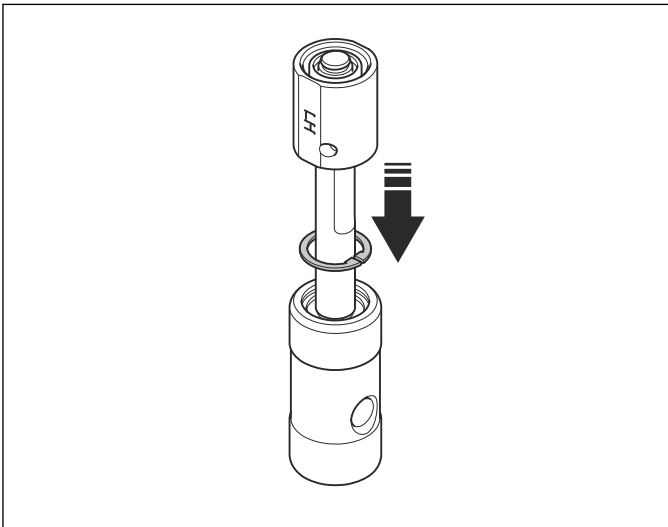
4. Use a hammer and a pin punch to install the spring pin.



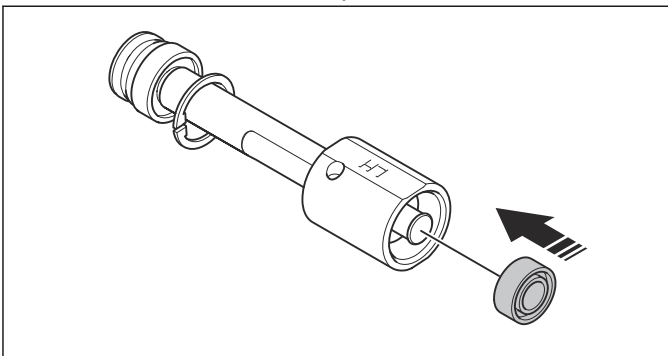
5. Install the piston rod in the piston.



6. Install the snap ring.



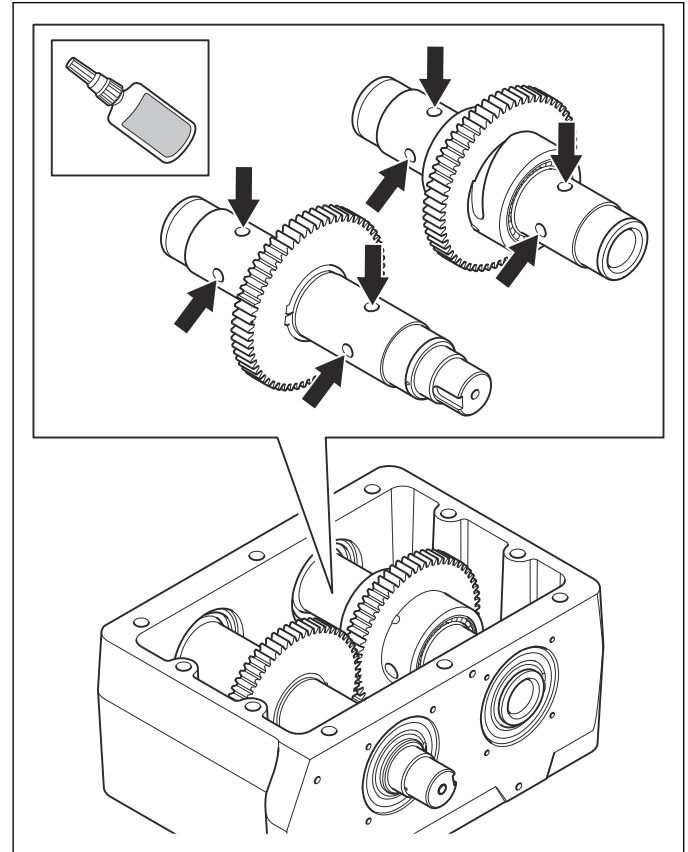
7. Install a new seal on the piston rod.



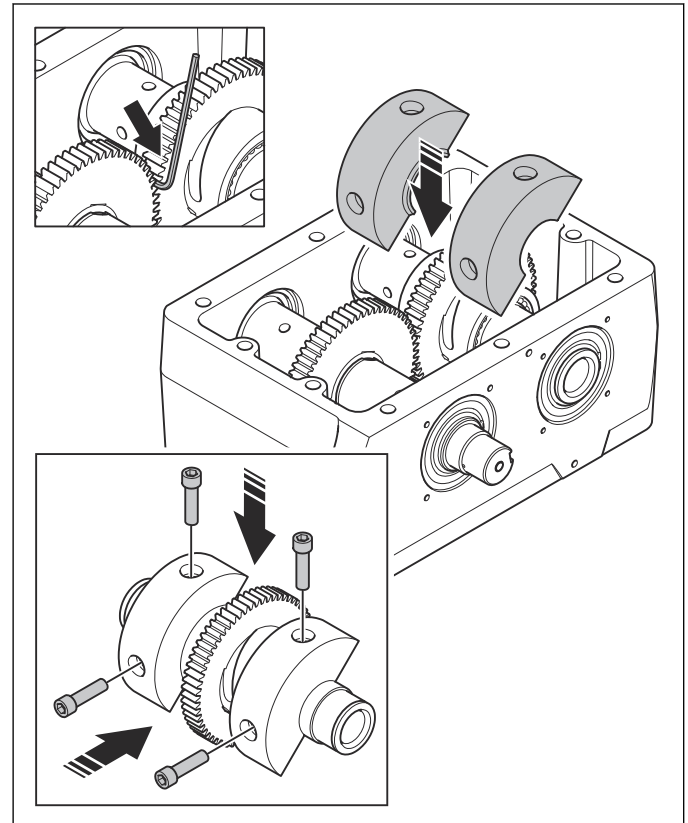
7.3.4 To install the eccentric weights

1. Install the outer bearing races. Refer to *To install the outer bearing races on page 36*.
2. Assemble the gear shaft assembly. Refer to *To assemble the gear shaft assembly on page 37*.

3. Apply Loctite 243 to the 8 holes in the shafts.

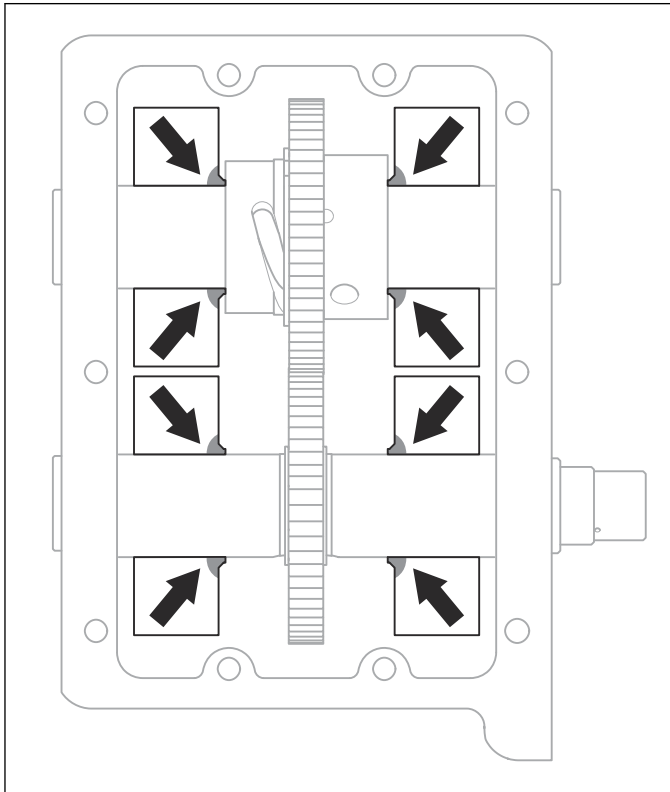


4. Use a hex key to lock the gears.

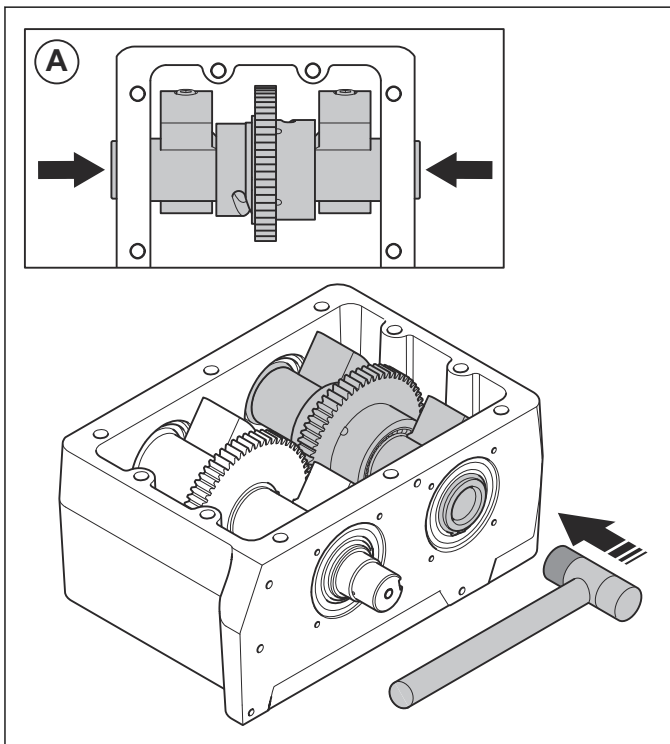


5. Install the 4 screws and the 2 eccentric weights on the drive shaft. Tighten to the correct torque. Refer to *Servicing data - eccentric element on page 17*.
6. Install the eccentric weights on the idler shaft.

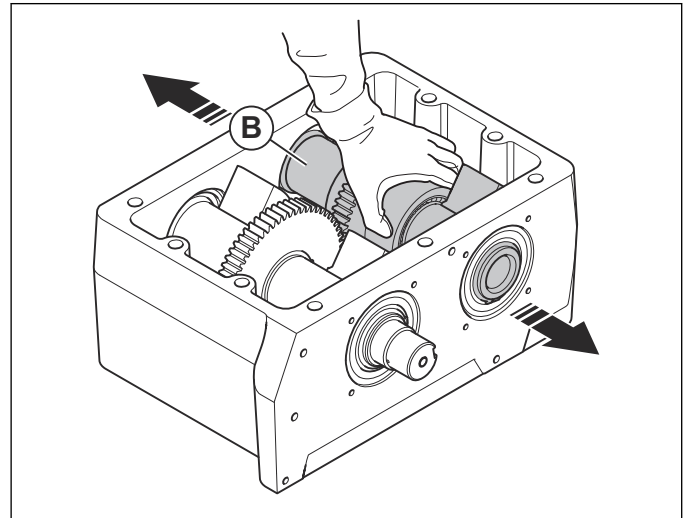
7. Make sure that the eccentric weights are correctly aligned on the shafts.



8. Hit the drive shaft on the 2 sides (A) with a soft hammer.

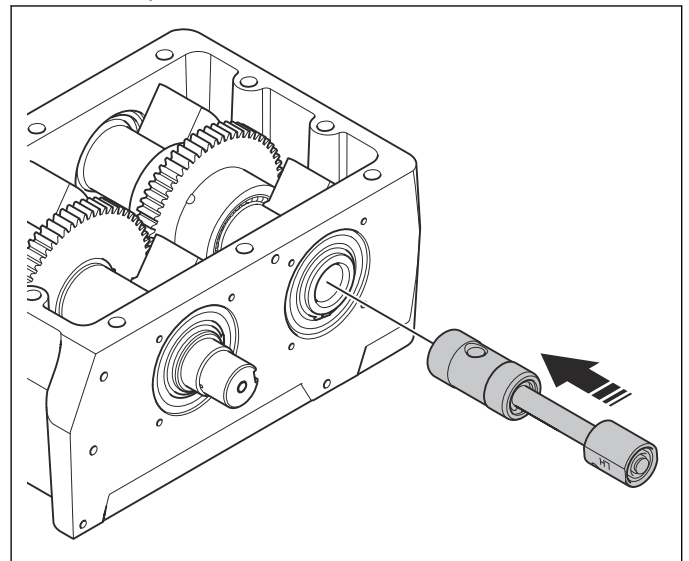


9. Do a check of the drive shaft (B) to make sure that there is play.

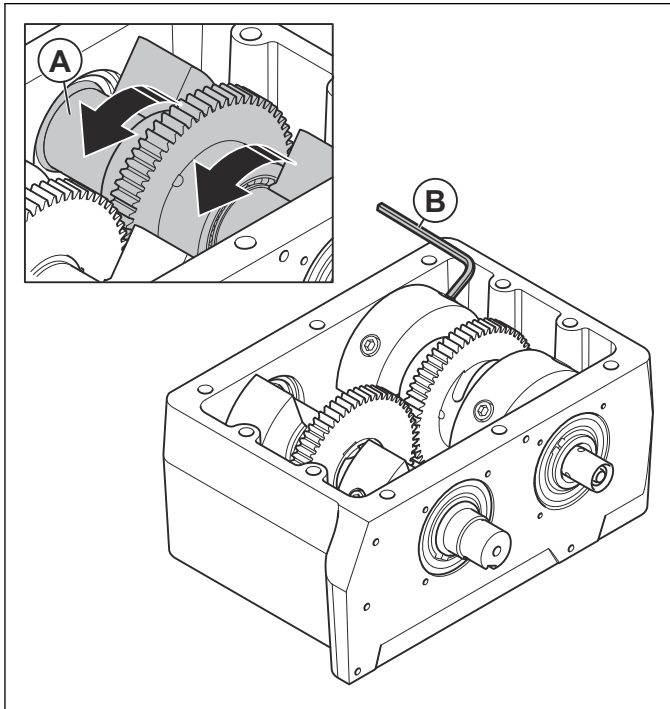


7.3.5 To install the piston

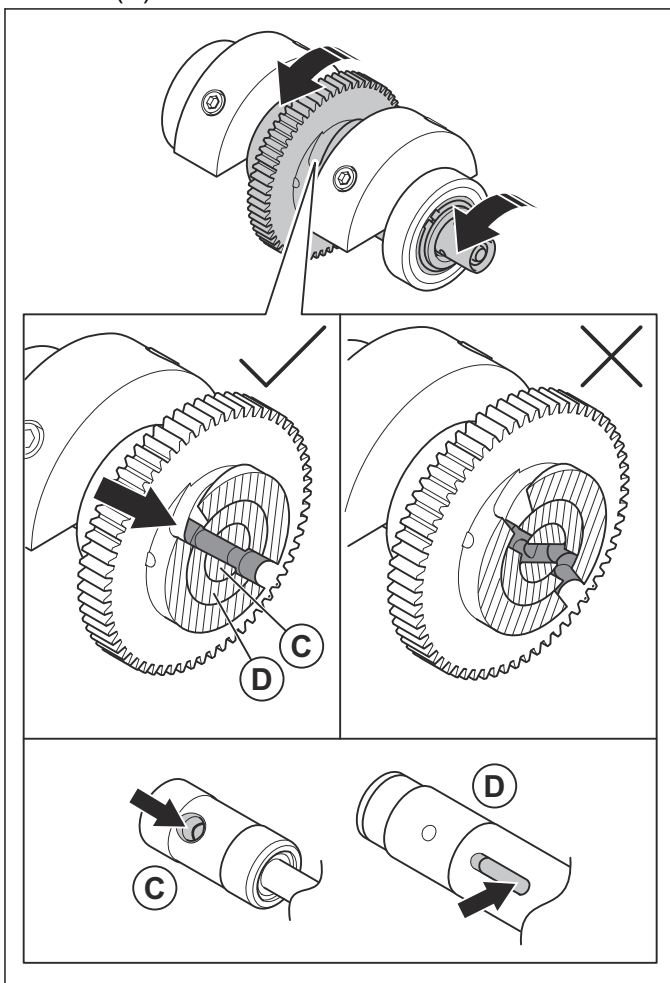
1. Install the outer bearing races. Refer to *To install the outer bearing races on page 36*.
2. Assemble the gear shaft assembly. Refer to *To assemble the gear shaft assembly on page 37*.
3. Assemble the piston. Refer to *To assemble the piston on page 40*.
4. Install the eccentric weights. Refer to *To install the eccentric weights on page 41*.
5. Put the piston in the drive shaft.



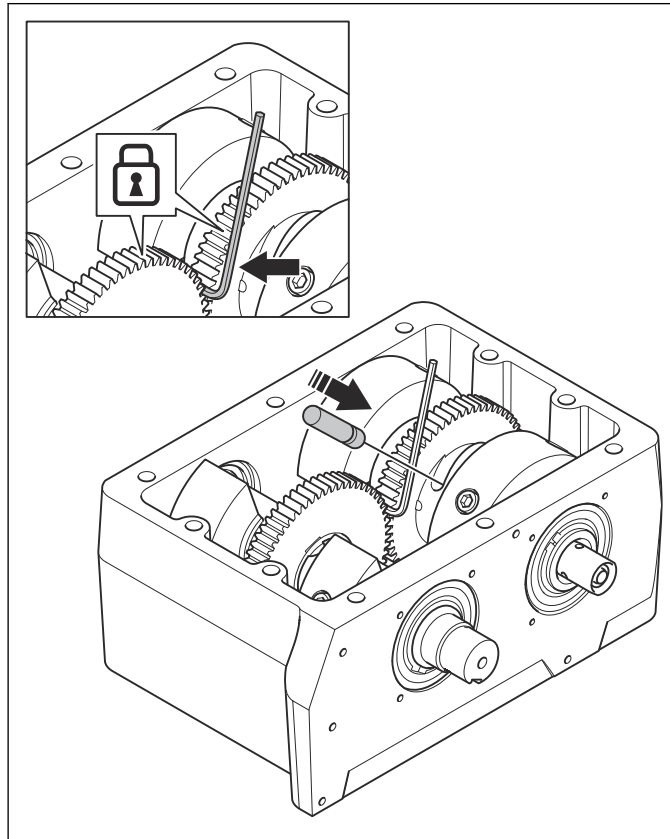
6. Turn the drive shaft (A) until the eccentric weights are in upright position.



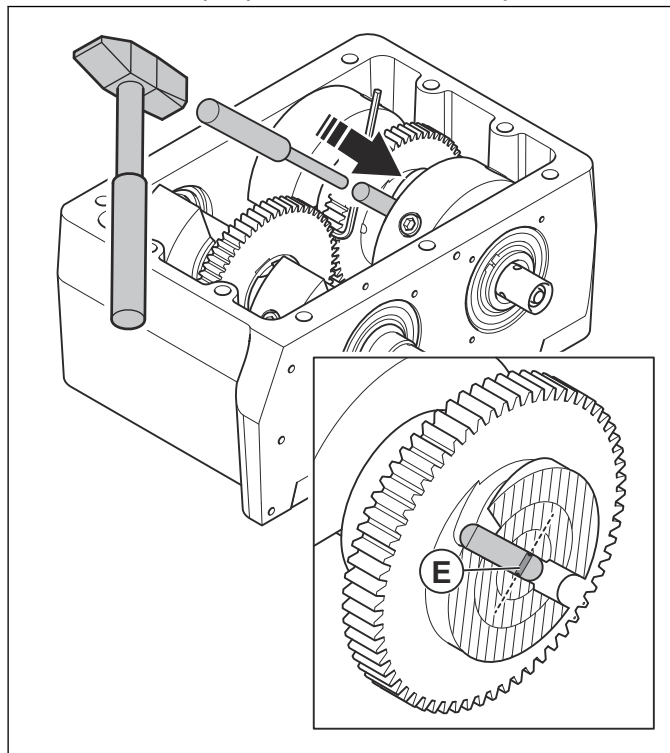
7. Use a hex key (B) to lock the eccentric weights.
8. Turn the gear until the stop pin hole is aligned with the hole in the piston (C) and the slot in the drive shaft (D).



9. Use a hex key to lock the gears. Put the stop pin in the stop pin hole.

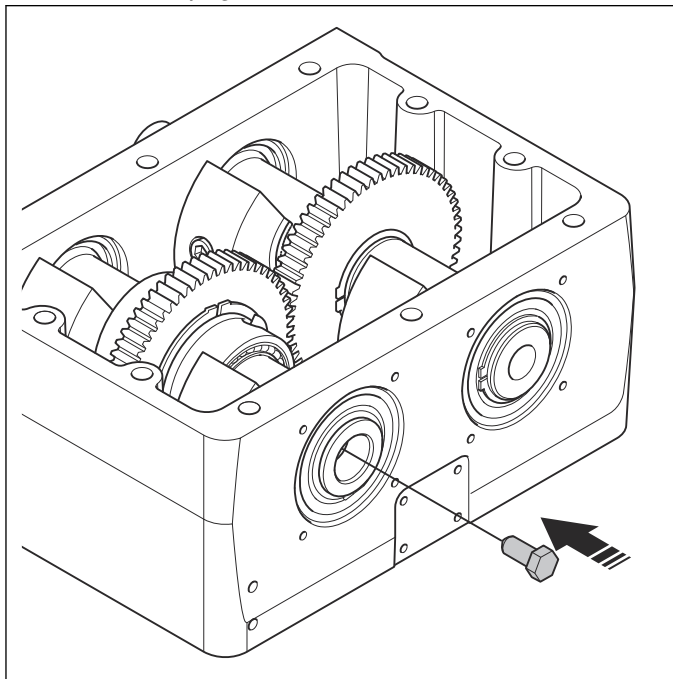


10. Hit the stop pin with a hammer to install it to the shaft. Use a pin punch if it is necessary.



11. The groove in the stop pin must be in the middle of the drive shaft (E).
12. Do a check of the stop screw. Replace if it is necessary.
13. Apply Loctite 243 to the stop screw.

14. Install the stop screw. Tighten the stop screw to the correct torque. Refer to *Servicing data - eccentric element on page 17*.



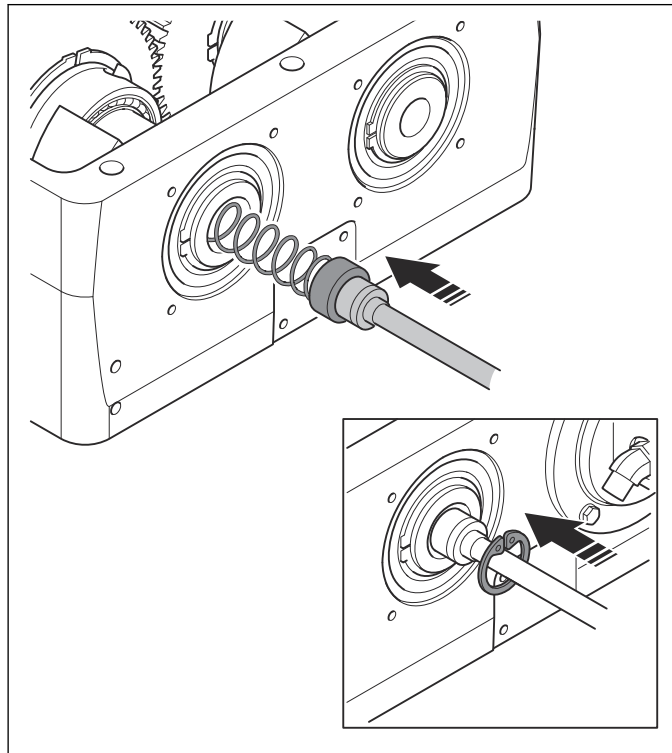
7.3.6 To install the spring



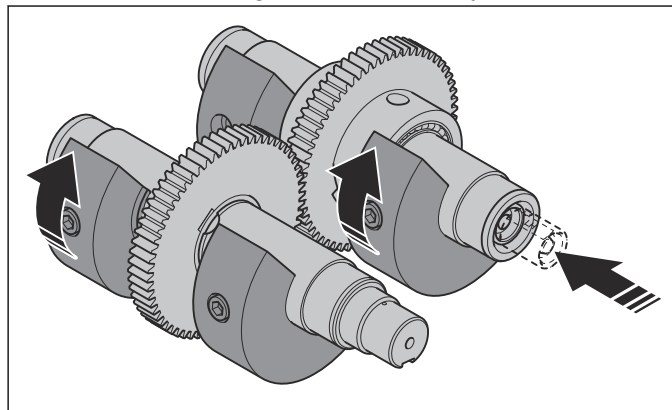
WARNING: Always use safety glasses when you install the spring. There is a risk for eye injury.

1. Install the outer bearing races. Refer to *To install the outer bearing races on page 36*.
2. Assemble the gear shaft assembly. Refer to *To assemble the gear shaft assembly on page 37*.
3. Assemble the piston. Refer to *To assemble the piston on page 40*.
4. Install the eccentric weights. Refer to *To install the eccentric weights on page 41*.
5. Install the piston. Refer to *To install the piston on page 42*.

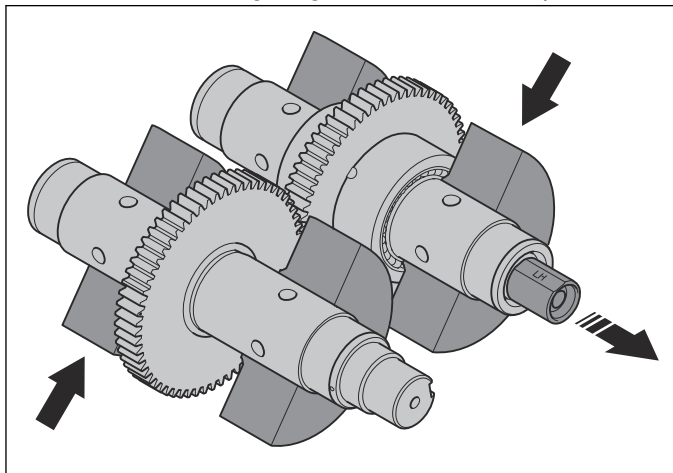
6. Put the spring in the drive shaft.



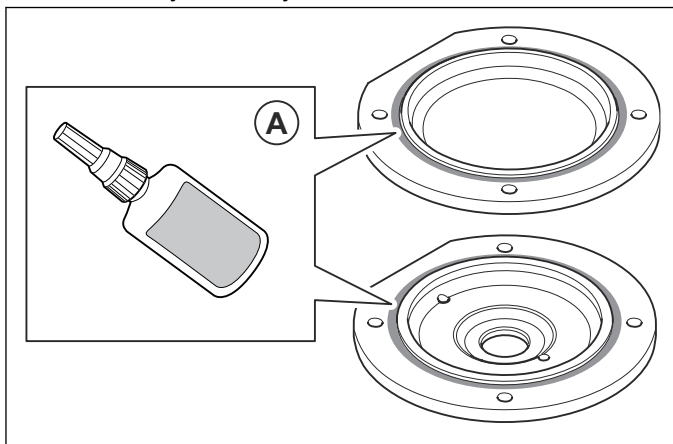
7. Use a socket wrench and a 10 mm socket to push the spring and the spacer in to the drive shaft.
8. Install the snap ring.
9. Do a check of the function of the spring. Do the steps that follow 3–4 times:
 - a) Push the piston rod. Make sure that the eccentric weights move correctly.



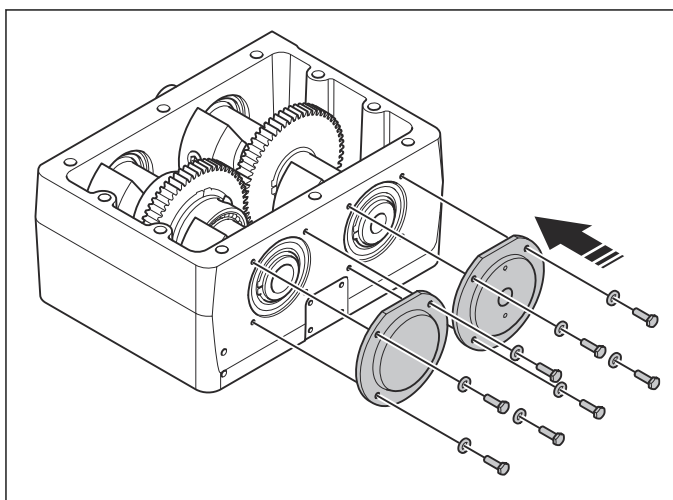
- b) Release the piston rod. Make sure that the eccentric weights go back to the start position.



10. Apply Loctite 5188 (A) around the protruding circle on the 2 hydraulic cylinders.

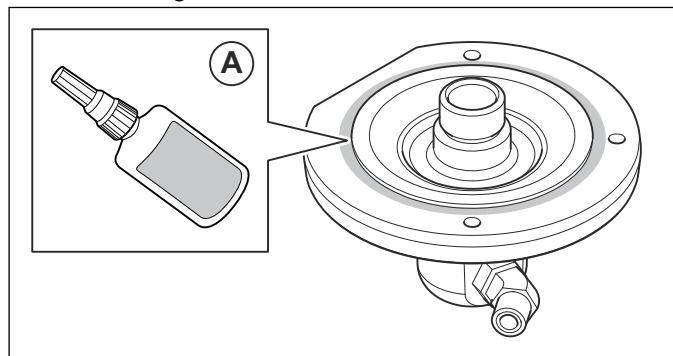


11. Apply Loctite 243 to the 8 screw holes in the eccentric housing.
12. Install the 8 washers, the 8 screws and the 2 hydraulic cylinders. Tighten to the correct torque. Refer to *Servicing data - eccentric element* on page 17.

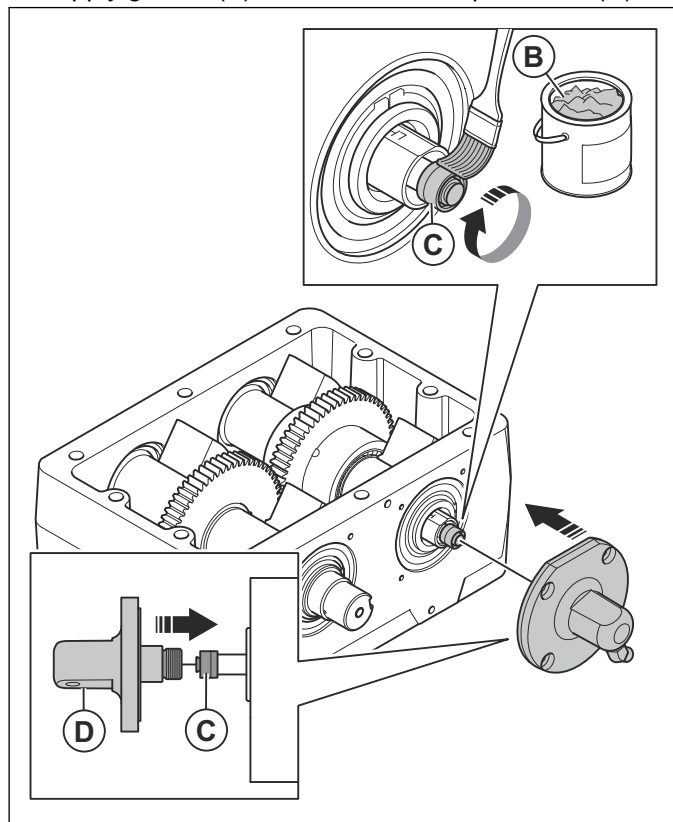


7.3.7 To install the piston housing

1. Install the outer bearing races. Refer to *To install the outer bearing races* on page 36.
2. Assemble the gear shaft assembly. Refer to *To assemble the gear shaft assembly* on page 37.
3. Assemble the piston. Refer to *To assemble the piston* on page 40.
4. Install the eccentric weights. Refer to *To install the eccentric weights* on page 41.
5. Install the piston. Refer to *To install the piston* on page 42.
6. Install the spring. Refer to *To install the spring* on page 44.
7. Apply Loctite 5188 around the protruding circle on the bearing cover.



8. Apply grease (B) to the seal on the piston rod (C).

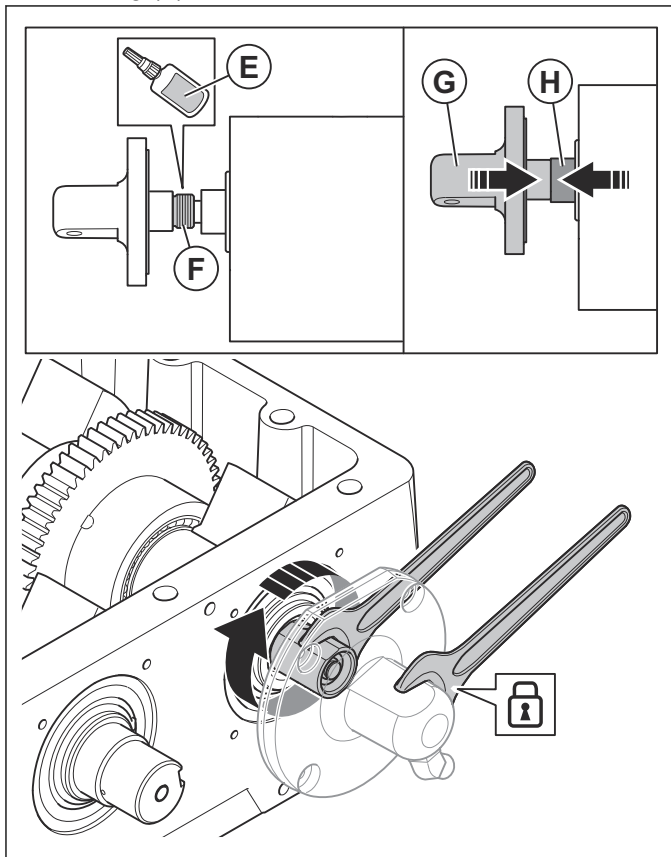


9. Put the piston housing (D) on the piston rod (C).



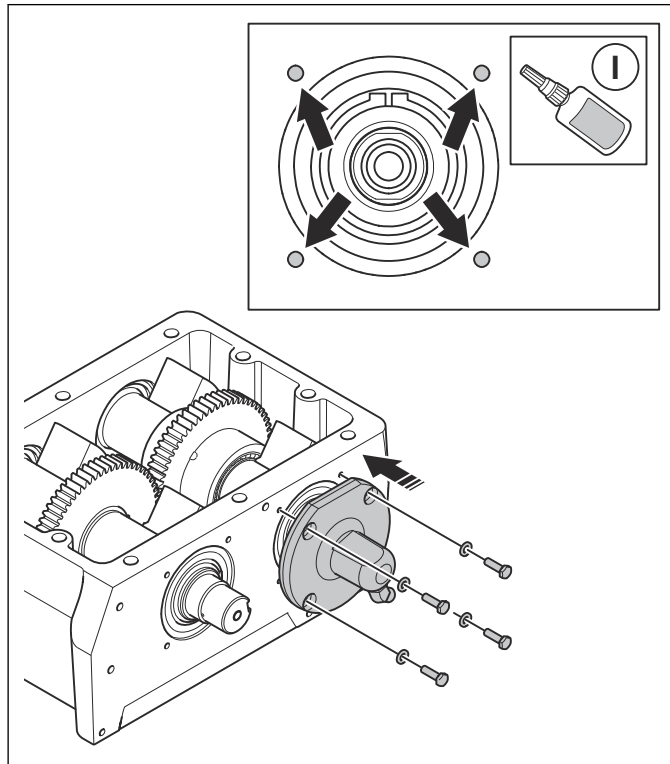
CAUTION: Be careful when you install the piston housing to prevent damage to the seal on the piston.

10. Apply Loctite 243 (E) to the threads of the piston housing (F).



11. Use 2 wrenches to install the piston housing (G) to the piston cap (H). Tighten the piston cap to the correct torque. Refer to *Servicing data - eccentric element* on page 17.

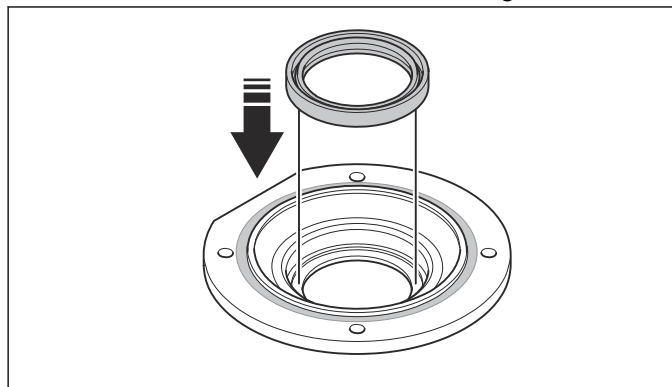
12. Apply Loctite 243 (I) to the 4 screw holes.



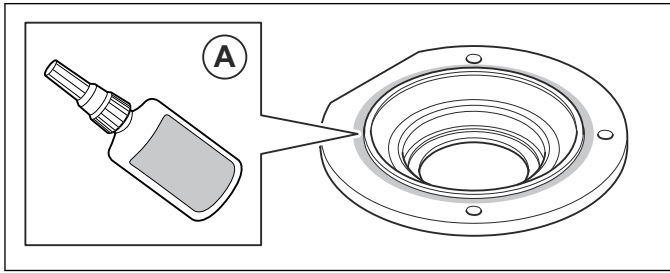
13. Install the 4 screws, the 4 washers and the piston housing.

7.3.8 To install the V-belt housing

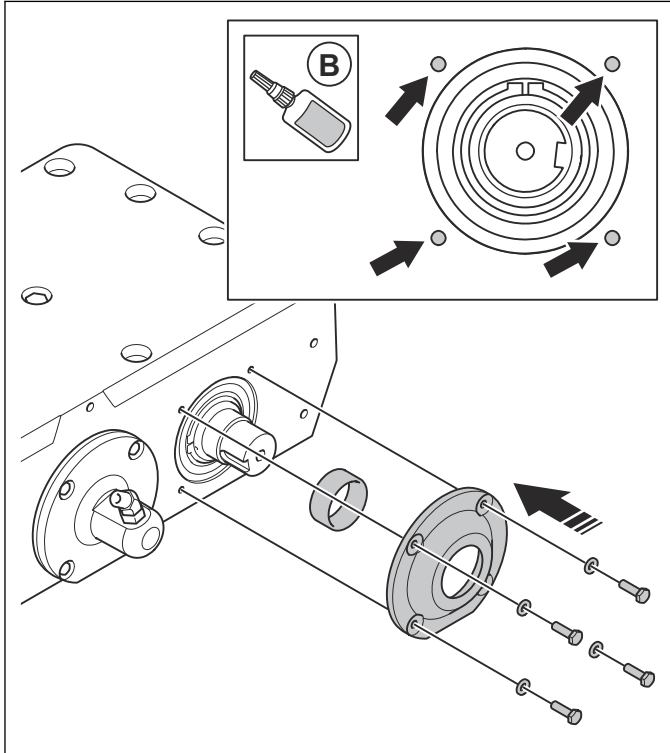
1. Install the outer bearing races. Refer to *To install the outer bearing races* on page 36.
2. Assemble the gear shaft assembly. Refer to *To assemble the gear shaft assembly* on page 37.
3. Assemble the piston. Refer to *To assemble the piston* on page 40.
4. Install the eccentric weights. Refer to *To install the eccentric weights* on page 41.
5. Install the piston. Refer to *To install the piston* on page 42.
6. Install the spring. Refer to *To install the spring* on page 44.
7. Install the piston housing. Refer to *To install the piston housing* on page 45.
8. Install the seal in the aluminum bearing cover.



9. Apply Loctite 5188 (A) around the protruding circle on the aluminium bearing cover.

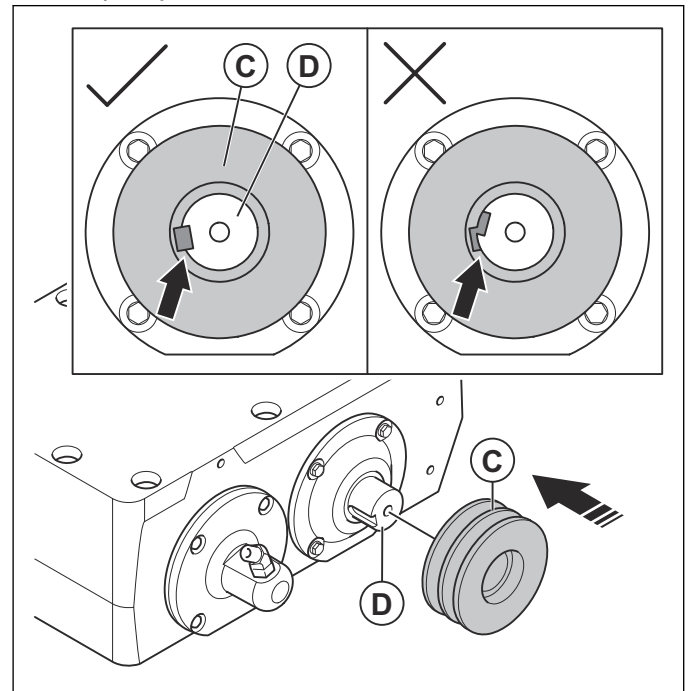


10. Apply Loctite 243 (B) to the 4 screw holes.

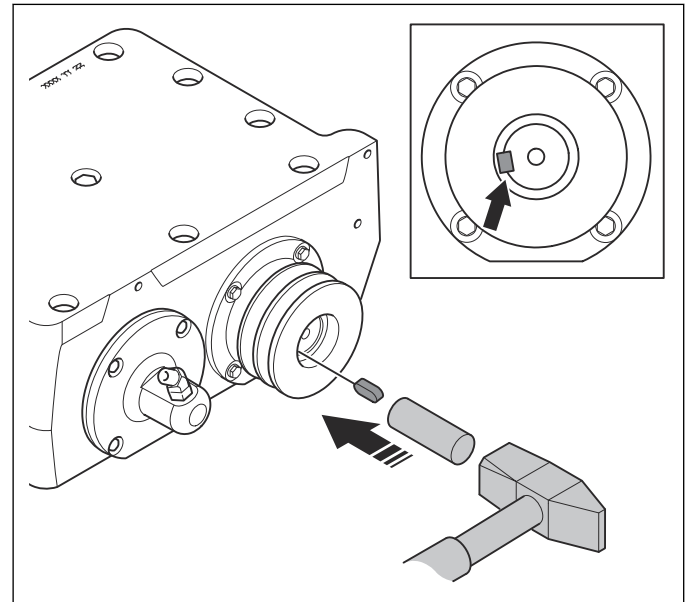


11. Install the spacer, the aluminum bearing cover, the 4 washers and the 4 screws. Tighten to the correct torque. Refer to *Servicing data - eccentric element* on page 17.

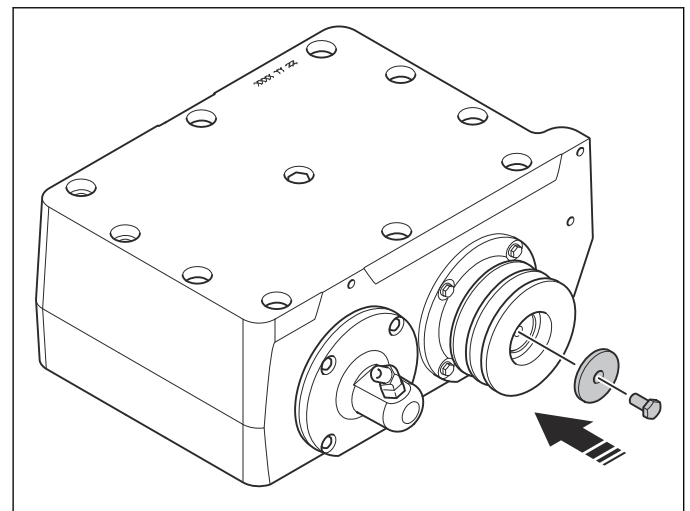
12. Install the pulley (C) on the shaft (D). Align the slot in the pulley with the slot in the shaft.



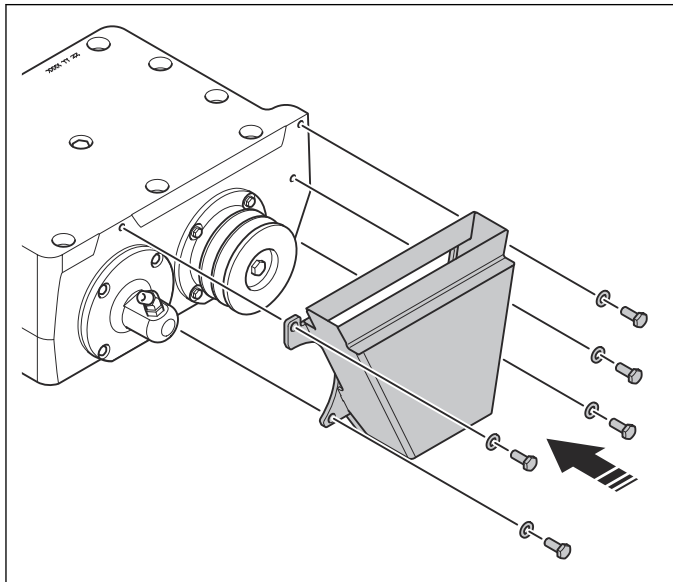
13. Install the key in the slots.



14. Install the washer and screw.



15. Apply Loctite 243 to the 5 screw holes.



16. Install the 5 washers, the 5 screw and the V-belt housing.

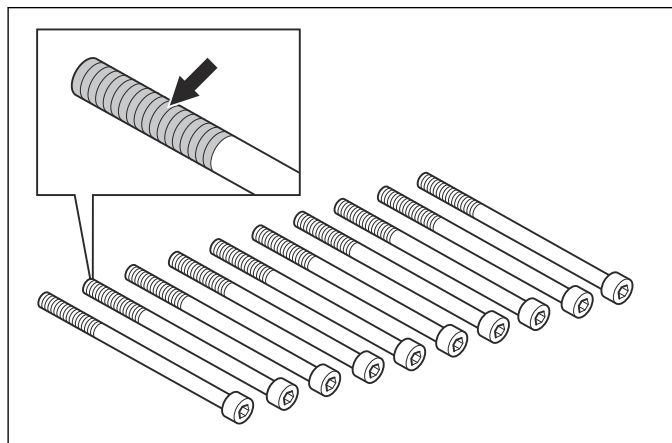
7.3.9 To assemble the eccentric element

1. Install the outer bearing races. Refer to *To install the outer bearing races on page 36*.
2. Assemble the gear shaft assembly. Refer to *To assemble the gear shaft assembly on page 37*.
3. Assemble the piston. Refer to *To assemble the piston on page 40*.
4. Install the eccentric weights. Refer to *To install the eccentric weights on page 41*.
5. Install the piston. Refer to *To install the piston on page 42*.
6. Install the spring. Refer to *To install the spring on page 44*.
7. Install the piston housing. Refer to *To install the piston housing on page 45*.
8. Install the V-belt housing. Refer to *To install the V-belt housing on page 46*.

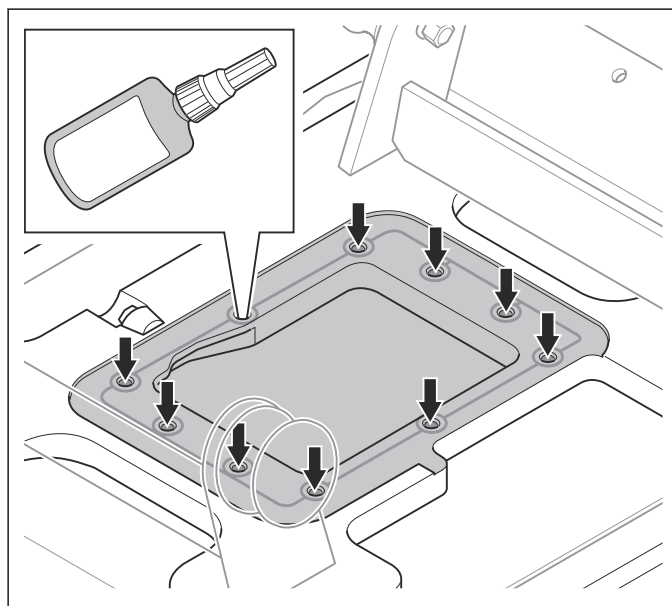
7.3.10 To install the eccentric element

1. Replace the oil in the eccentric element. Refer to *To replace the oil in the eccentric element on page 27*.
2. Assemble the eccentric element. Refer to *To assemble the eccentric element on page 48*.

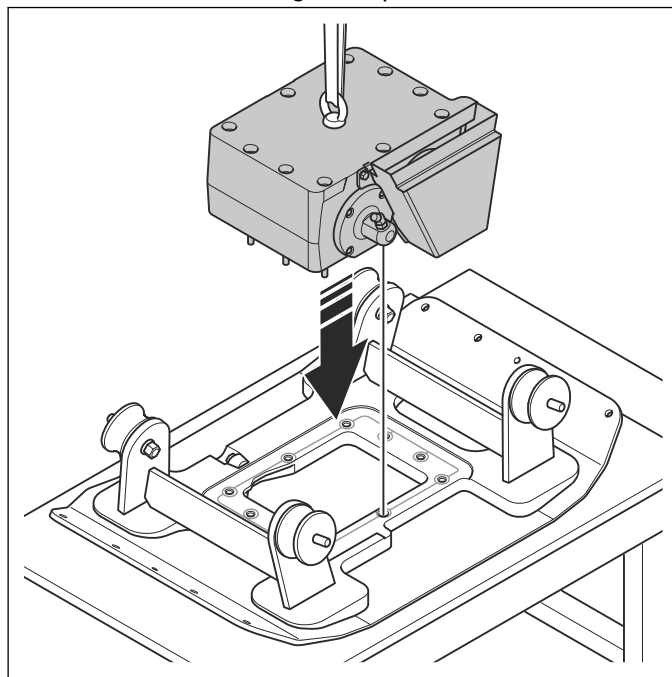
3. Use a wire brush to clean the threads of the 10 screws for the eccentric element.



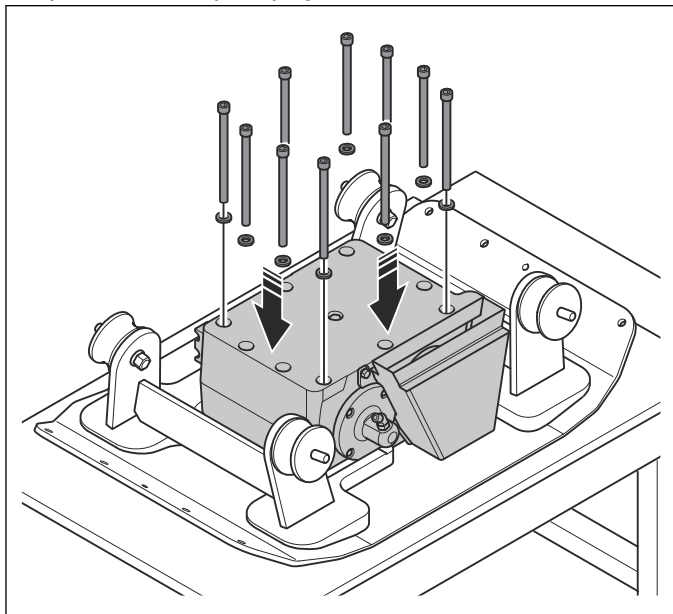
4. Apply Loctite 243 in the 10 screw holes and thick lines of Loctite 5188 between and around them.



5. Use the lifting equipment to lift the eccentric element and lower it into the ground plate.

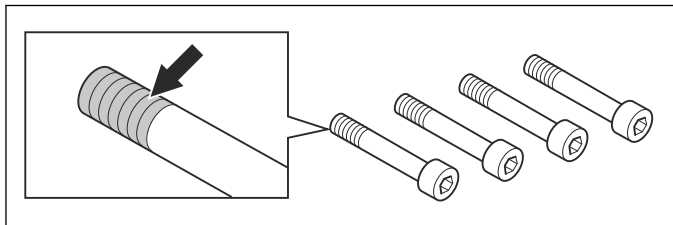


6. Install the 10 washers and the 10 screws. Tighten to the correct torque. Refer to *Servicing data - ground plate assembly on page 12*.

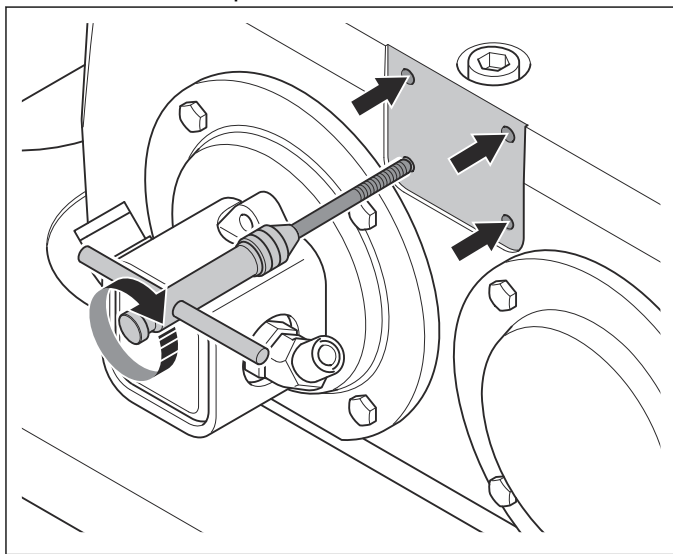


7.3.11 To install the indicator of the eccentric element

1. Assemble the eccentric element. Refer to *To assemble the eccentric element on page 48*.
2. Install the eccentric element. Refer to *To install the eccentric element on page 48*.
3. Use a wire brush to clean the threads of the 4 screws for the indicator of the eccentric element.



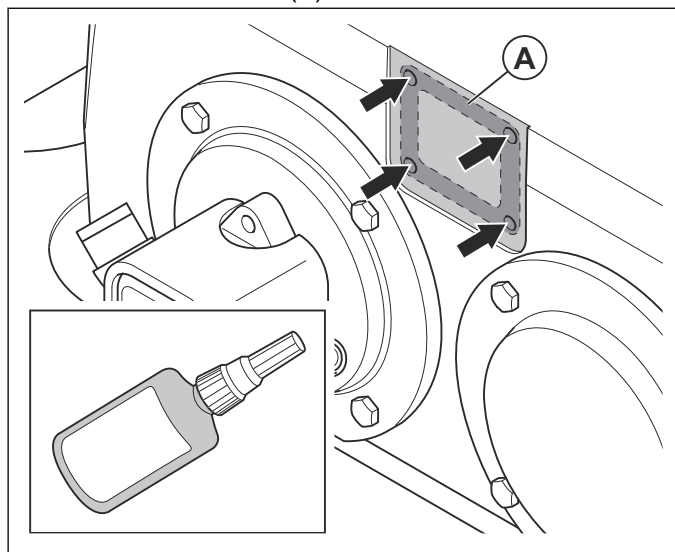
4. Use a thread tap to clean the 4 screw holes.



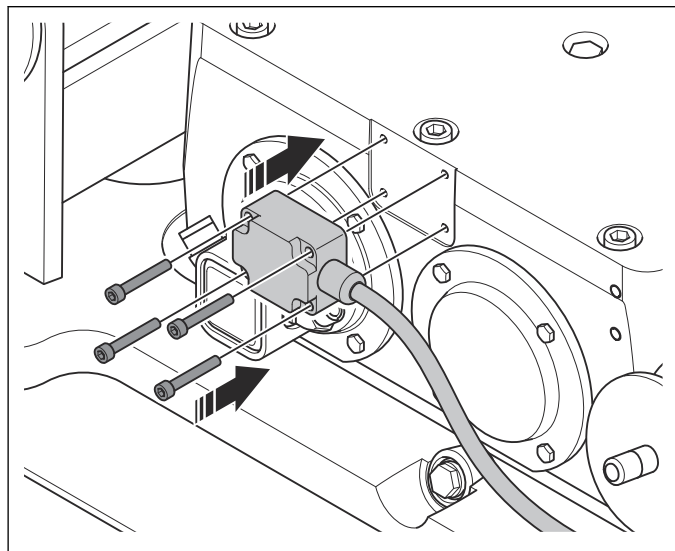
CAUTION: Be careful when you use the thread tap. The thread tap can cause

damage to the threads if you do not use it correctly.

5. Apply Loctite 243 to the 4 screw holes. Apply Loctite 5188 to the surface (A) on the eccentric element.



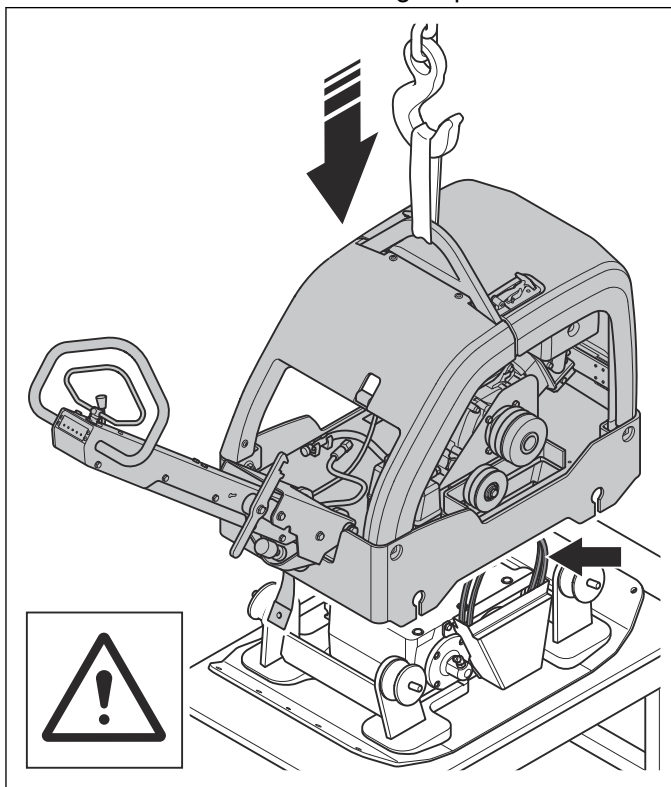
6. Install the 4 screws and the indicator of the eccentric element.



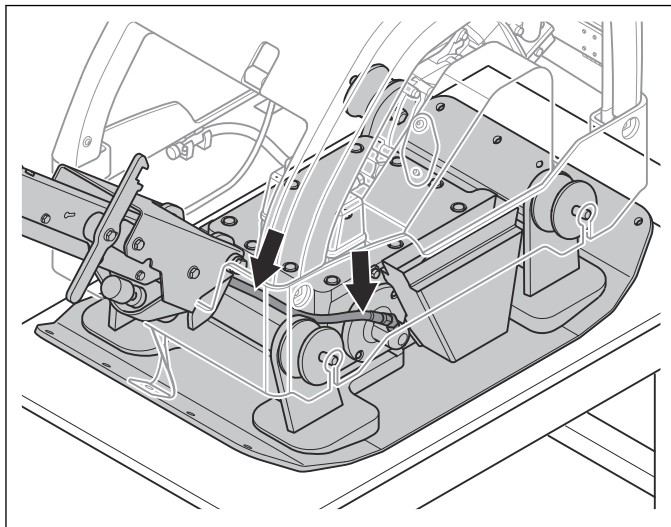
7.3.12 To install the engine plate

1. Assemble the eccentric element. Refer to *To assemble the eccentric element on page 48*.
2. Install the eccentric element. Refer to *To install the eccentric element on page 48*.
3. Use the lifting equipment to lift the engine plate.

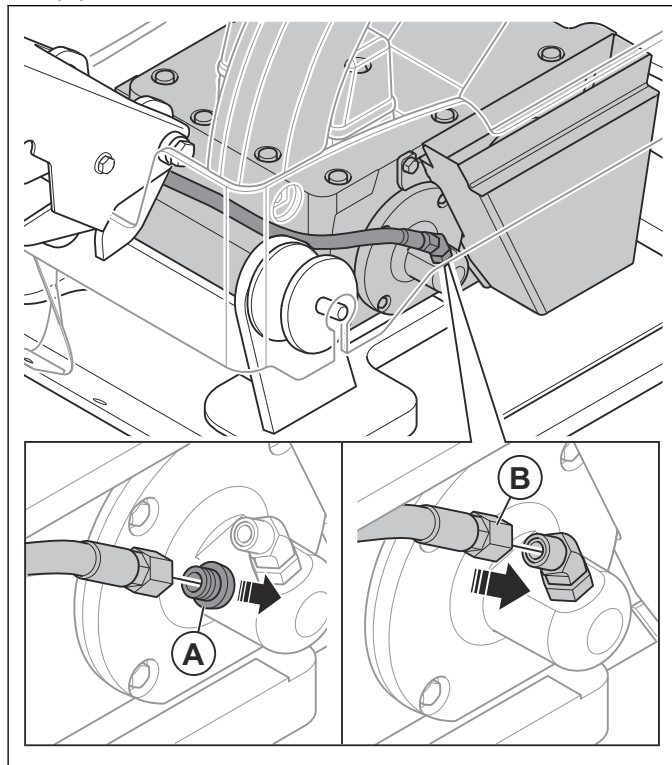
4. Lower the engine plate to put it on the ground plate. Guide the V-belts in to the engine plate.



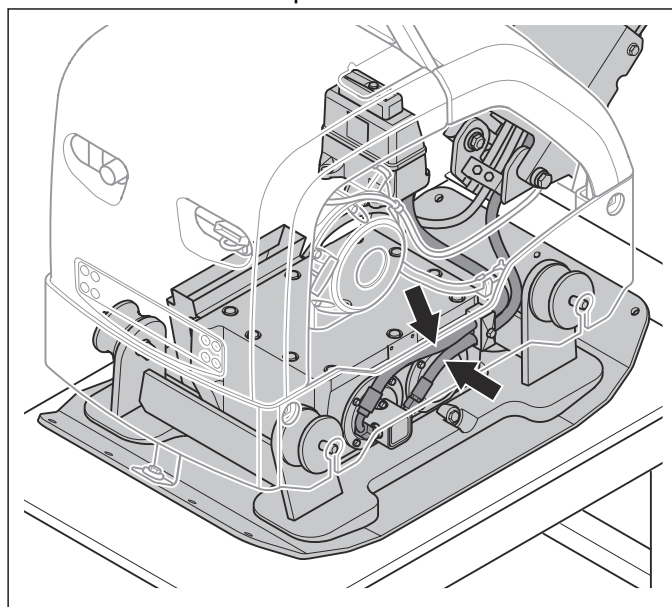
5. Put the hydraulic hose in the correct position.



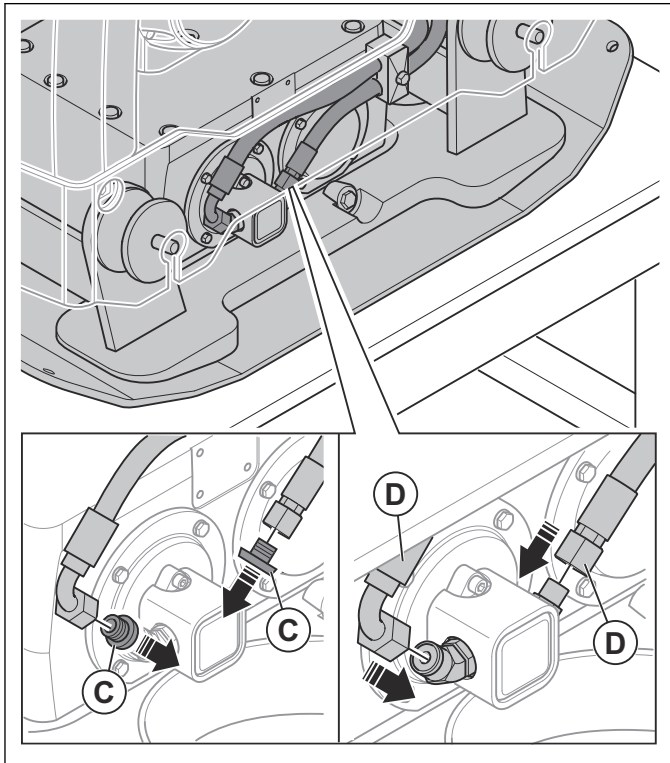
6. Remove the cap (A) and connect the hydraulic hose (B).



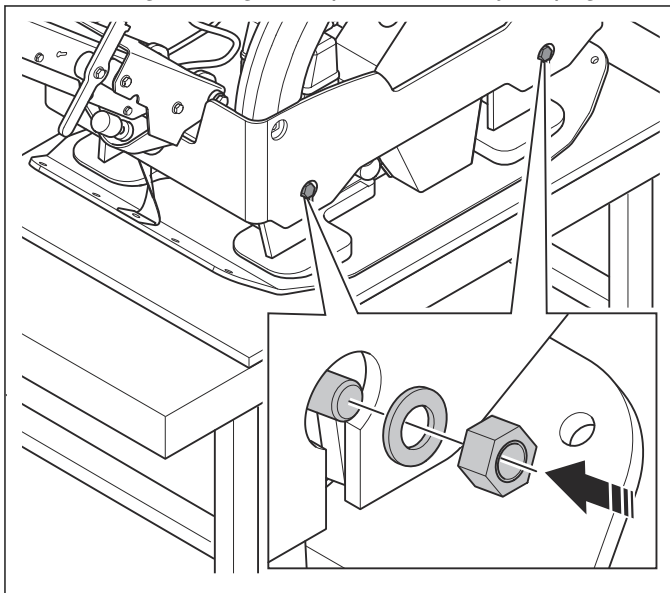
7. On the other side of the product, put the 2 hydraulic hoses in the correct position.



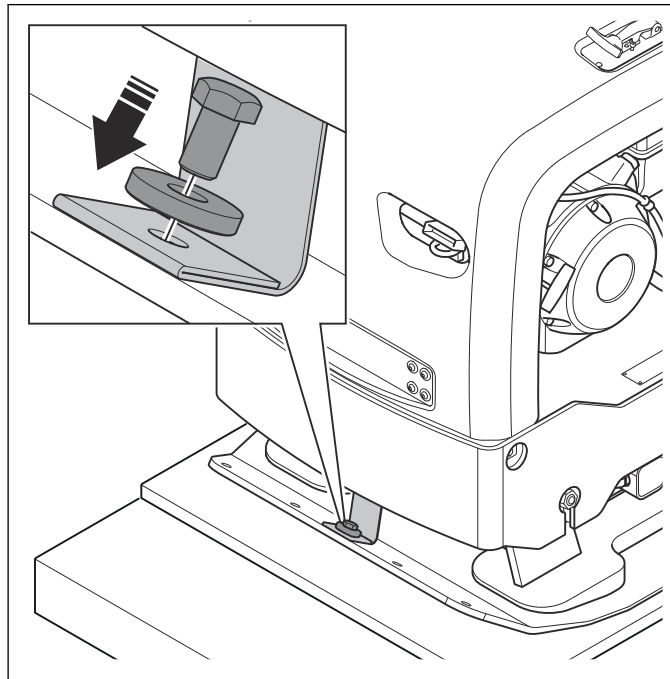
8. Remove the 2 caps (C) and connect the 2 hydraulic hoses (D).



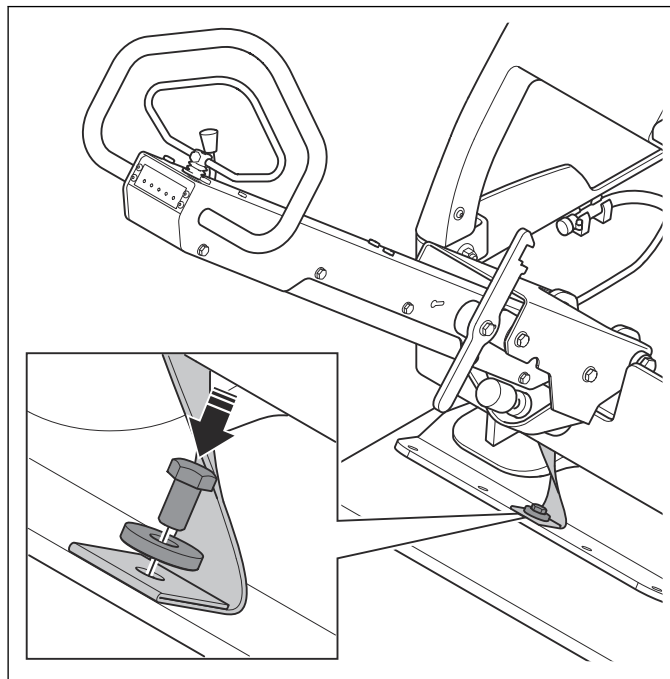
9. Install the 4 washers and the 4 nuts, 2 on each side of the product. Tighten to the correct torque. Refer to *Servicing data - ground plate assembly on page 12.*



10. Install the washer and the screw.



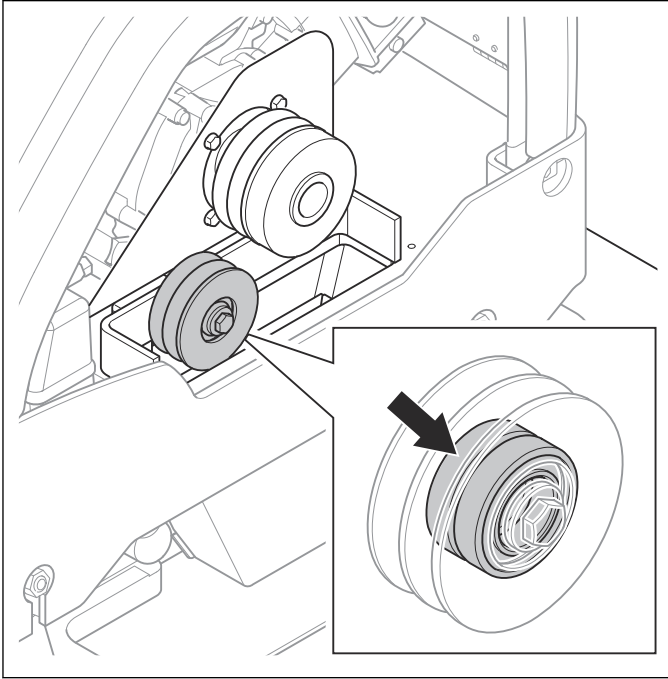
11. Install the washer and the screw.



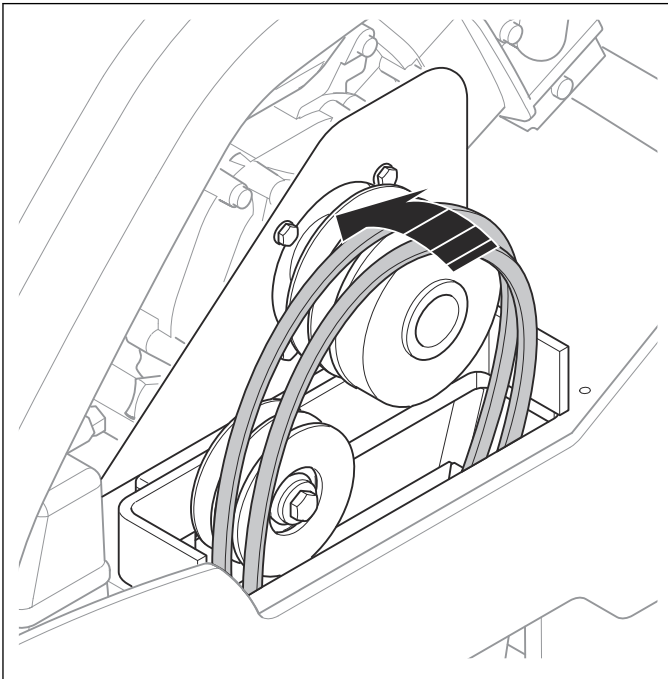
7.3.13 To install and tighten the V-belts

1. Assemble the eccentric element. Refer to *To assemble the eccentric element on page 48.*
2. Install the eccentric element. Refer to *To install the eccentric element on page 48.*
3. Install the engine plate. Refer to *To install the engine plate on page 49.*

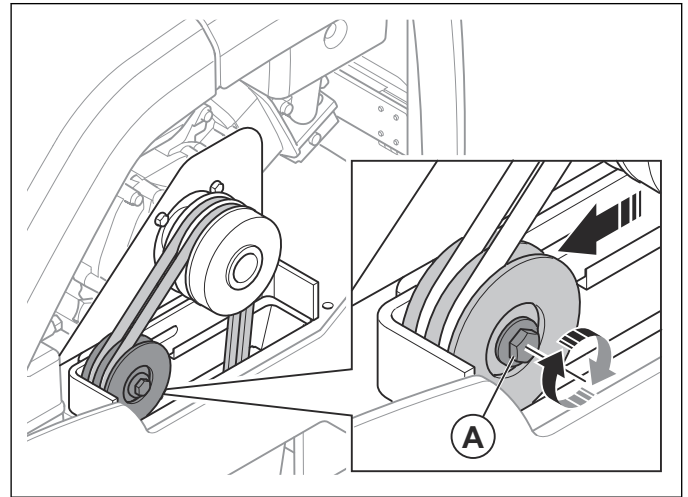
4. Do a check of the bearing on the belt tensioner.
Replace the bearing if it is necessary.



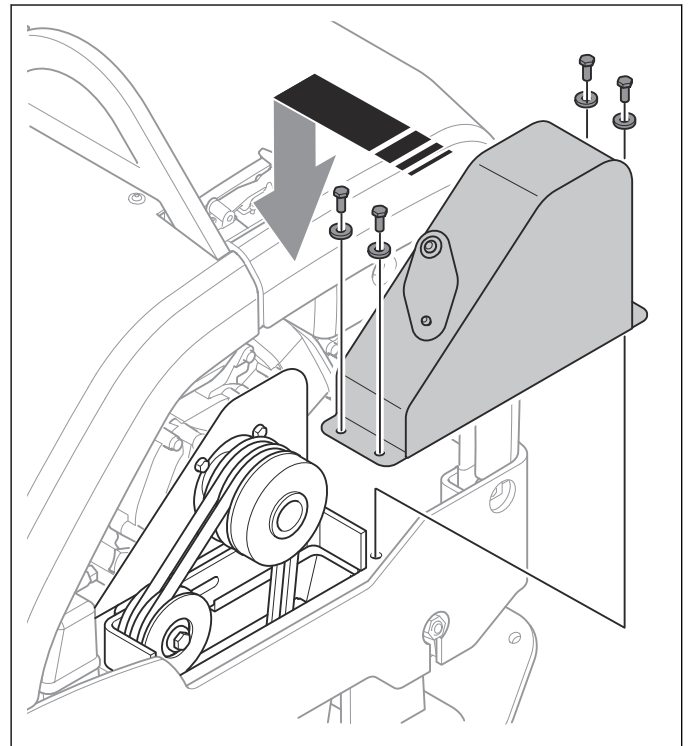
5. Put the V-belts on the centrifugal clutch and the belt tensioner.



6. Move the belt tensioner to the left until there is tension in the V-belts.



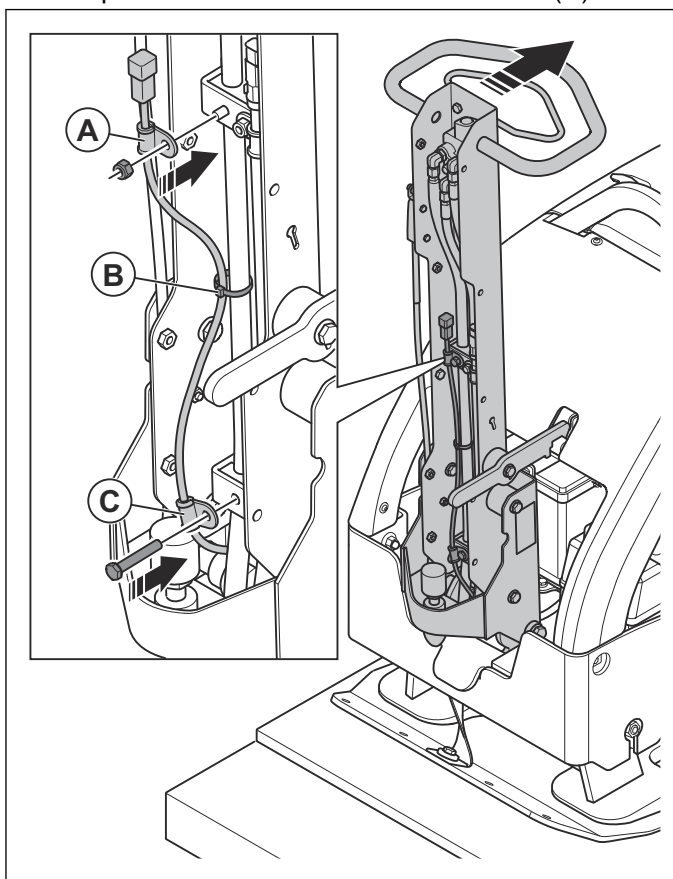
7. Tighten the screw (A) on the belt tensioner.
8. Install the V-belt cover, the 4 washers and the 4 screws.



7.3.14 To install the compaction indicator cable

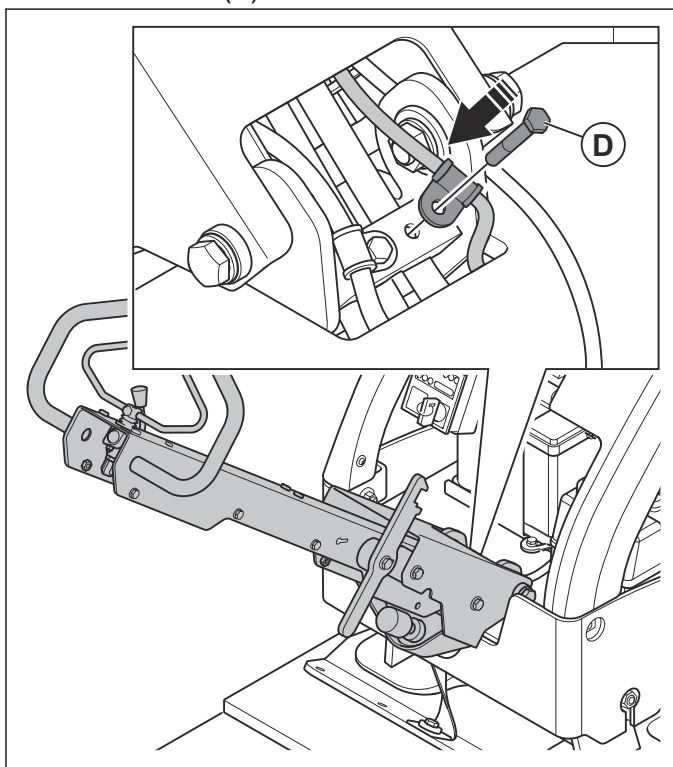
1. Assemble the eccentric element. Refer to *To assemble the eccentric element on page 48.*
2. Install the eccentric element. Refer to *To install the eccentric element on page 48.*
3. Install the indicator of the eccentric element. Refer to *To install the indicator of the eccentric element on page 49.*
4. Install the engine plate. Refer to *To install the engine plate on page 49.*
5. Install and tighten the V-belts. Refer to *To install and tighten the V-belts on page 51.*

6. Lock the handle in the upright position.
7. Install the nut (A). Use a cable tie (B) to attach the compaction indicator cable. Install the bolt (C).



Note: Do not connect the compaction indicator cable in this step.

8. Lower the handle.
9. Install the bolt (D).



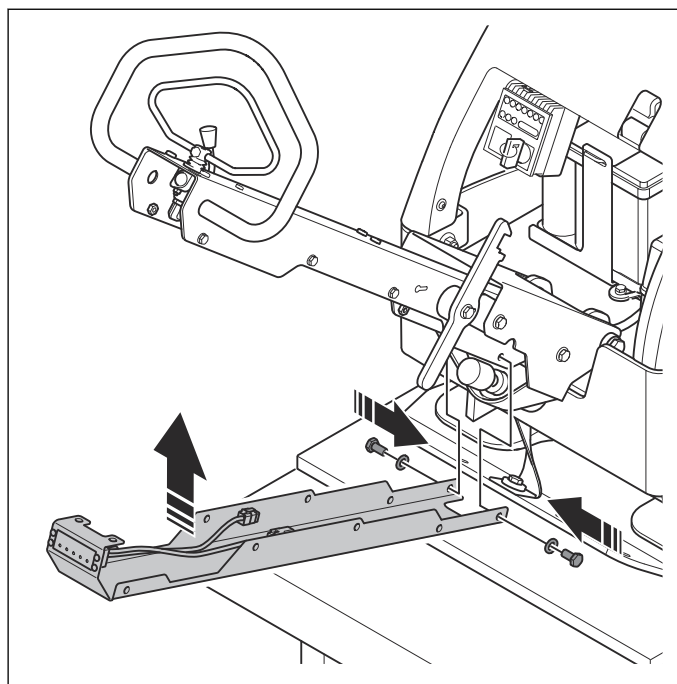
CAUTION: There must be space between the cables and space for the cables to move.



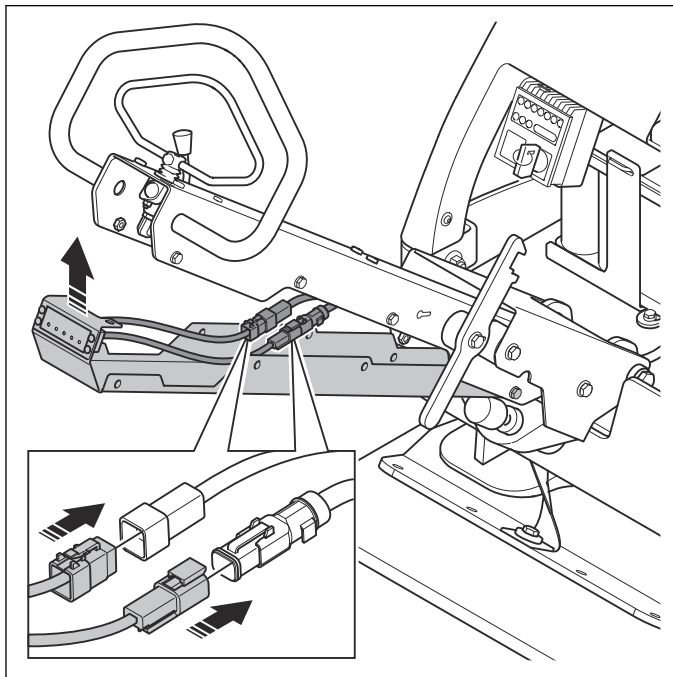
CAUTION: Make sure that the cables are not pulled when the handle is in operation position.

7.3.15 To install the handle cover

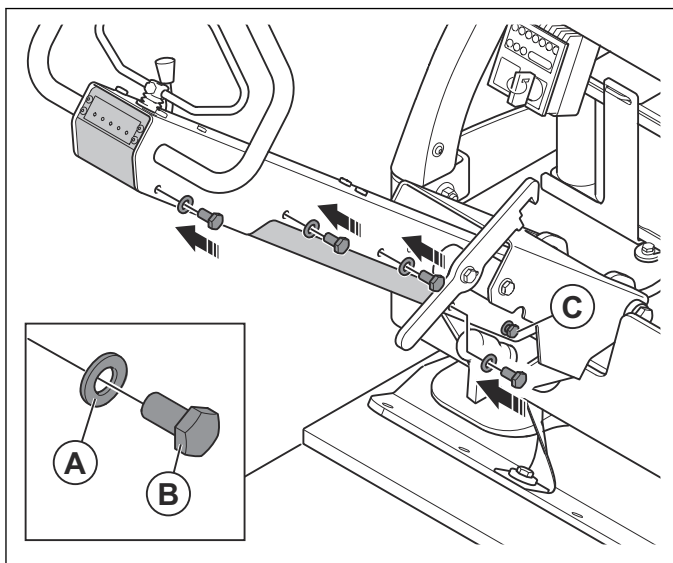
1. Assemble the eccentric element. Refer to *To assemble the eccentric element on page 48*.
2. Install the eccentric element. Refer to *To install the eccentric element on page 48*.
3. Install the indicator of the eccentric element. Refer to *To install the indicator of the eccentric element on page 49*.
4. Install and tighten the V-belts. Refer to *To install and tighten the V-belts on page 51*.
5. Install the compaction indicator cable. Refer to *To install the compaction indicator cable on page 52*.
6. Install the 2 washers, the 2 screws and the handle cover.



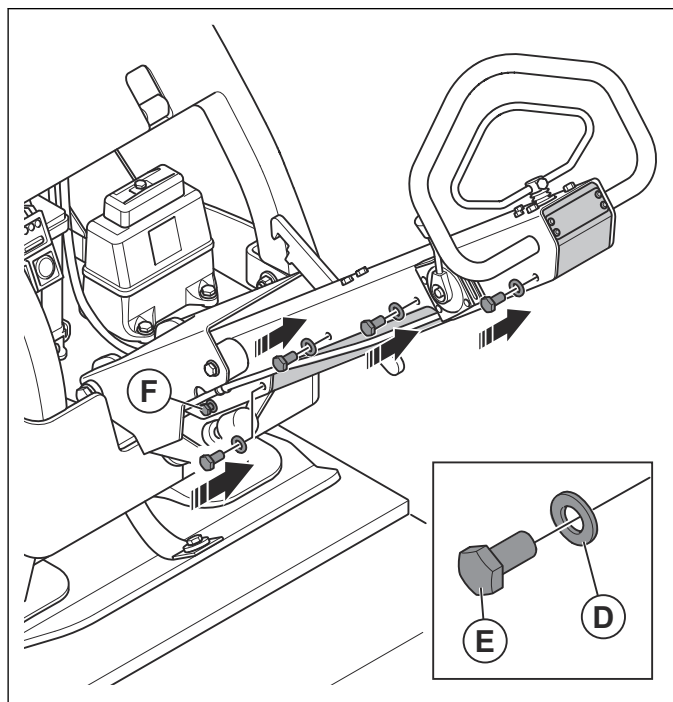
7. Connect the compaction indicator cable and the cable connector in the handle cover.



8. Tilt the handle cover up.
9. Install the 4 washers (A) and the 4 screws (B). Tighten the screw (C) at the bottom of the handle cover.



10. Install the 4 washers (D) and the 4 screws (E). Tighten the screw (F) at the bottom of the handle cover.



8 Technical data

	Honda	Kohler
Net weight, kg/lb	396/873.1	434/956.8
Operation weight (EN500, incl. oil, ½ fuel), kg/lb	398/877.5	436/956.8
Engine brand, type	Honda, GX 390	Kohler, KD15-440
Engine power, kW/hp @rpm ¹	8.2/11 @3100	7.2/9.7 @3100
Vibration frequency, Hz/rpm	60/3600	60/3600
Amplitude, mm/in.	1.8/0.07	1.8/0.07
Centrifugal force, kN/lbf	52/11690	52/11690
Operation speed, m/min or ft./min	25 or 82	25 or 82
Max. tilt, degrees/%	20/35	20/35
Battery voltage, V	–	12
Battery capacity, Ah	–	38
Fuel tank capacity, l/qts	6.1/6.4	4.3/4.5
Engine oil capacity *, l/qts	1.1/1.16	1.2/1.3
Hydraulic oil tank capacity, l/qts	1.0/1.06	1.0/1.06
Eccentric element, l/qts	0.75/0.79	0.75/0.79
Engine oil *	SAE 15W-40, API CI-4	SAE 15W-40, API CI-4
Eccentric element oil	SAE 15W-40, API CI-4	SAE 15W-40, API CI-4
Hydraulic oil	Shell Tellus S3 V 32	Shell Tellus S3 V 32
Biological hydraulic oil (optional)	Shell Naturelle HF-E 32	Shell Naturelle HF-E 32
Fuel *	Unleaded gasoline, max. 10% ethanol	Ultra-low-sulfur diesel fuel only
Fuel consumption, l/h or qts/h	–	1.7/1.80

* = For further information and questions about this specific engine, refer to the engine manual or the web site of the engine manufacturer.

Noise and vibration emissions	Honda	Kohler
Sound power level, measured dB (A)	105	107
Sound power level, guaranteed L _{WA} dB (A) ²	107	108
Sound pressure level at the operator's ear, L _P , dB (A) ³	90	93
Vibration level, a _{hv} , m/s ² ⁴	2.5	2.1

¹ As specified by the engine manufacturer. The power rating of the engine indicated is the average net output (at specified rpm) of a typical production engine for the engine model measured to SAE standard J1349/ISO1585. Mass production engines may differ from this value. Actual power output for the engine installed on the final product will depend on the operating speed, environmental conditions and other values.

² Noise emissions in the environment measured as sound power (L_{WA}) as per EN ISO 3744 in conformity with EC directive 2000/14/EC. The difference between guaranteed and measured sound power is that the guaranteed sound power also includes dispersion in the measurement result and the variations between different machines of the same model according to Directive 2000/14/EC.

³ Sound pressure level L_P according to EN ISO 11201, EN 500-4. Uncertainty K_{PA} 3.0 dB (A).

⁴ Vibration value according to EN 500-4. Reported data for vibration level has a typical statistical dispersion (standard deviation) of 1.5 m/s².



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