

Workshop manual

CRT 36-26A



English

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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

- Read and obey this workshop manual.
- Obey the local safety regulations when you repair or do servicing of the product.
- The safety equipment you use must obey local regulations.
- Use only the equipment that the manufacturer recommends.
- Use personal protective equipment.
- Use protective gloves and safety glasses. The safety glasses must obey the ANSI Z87.1 for US or EN166 for EU countries.
- Use hearing protection when the product is in operation.
- Always stop the product before you repair or do servicing of the product.
- Remove flammable materials from the work area. The product can cause sparks.
- Do not point compressed air to your body. Compressed air can go into the blood stream.
- Always tighten the nuts and the bolts on the product correctly.
- Do checks of the product for warning labels that are damaged. Replace the warning labels that are damaged.
- Always read the warning labels of product supplies.
- Obey the local waste regulations.
- Gasoline and its fumes are poisonous.
- Gasoline can cause damage to the eyes and the skin.
- Gasoline can cause breathing problems.
- Gasoline is flammable.

2.3 Symbols on the product



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



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



Use hearing protection and eye protection.



Keep sparks and flames away from the product. Risk of fire.



Stop the engine before you fill fuel.



Use clean, filtered fuel.



Risk of injury. Be careful around the drive belt.



Hot surface.



Keep your hands away from the blades.



Keep your feet away from the blades.



Lifting point.



Ignition key position OFF.



Ignition key position ON.



Ignition key position, start the engine.



Oil level indicator.



Tie-down bracket.



Water tank.



This product is in compliance with applicable EC directives.



The exhaust fumes from the engine contain carbon monoxide, an odorless, poisonous and very dangerous gas. Do not run the product indoors or in closed spaces.

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

	Daily	Each 20 h	Each 50 h	Each 100 h	Each 200 h	Each 300 h	Yearly
Lubricate the blade shafts.	X						
Do a check of the fuel level.	X						
Do a check of the engine oil level each 4 hours of operation.	X						
Examine the air filter. Replace the air filter if it is necessary.	X						
Make sure that nuts and screws are tightened.	X						
Clean the product immediately after the operation. Use a high-pressure washer.	X						
Do a check of the oil level in the gearboxes.		X					
Lubricate the drive system, the gearboxes and the blade pitch controls.		X					
Lubricate the control linkages.		X					
Examine the drive belt for damage.			X				
Replace the engine oil after the first 20 h of operation, then at this interval.				X			
Do a check of the fuel filter.				X			
Examine and clean the spark plug. Replace the spark plug if it is necessary.					X		
Replace the oil filter.					X		
Replace the spark plug.						X	
Replace the fuel filter.						X	
Replace the pressure relief valve on the gearboxes.						X	
Replace the oil in the gearboxes.						X	
Clean the fuel tank.							X

3.2 Air filter



WARNING: Use approved respiratory protection when you clean or replace the air filter. Discard used air filters correctly. The dust in the air filter is dangerous to your health.



CAUTION: Always replace a damaged air filter, or the dust will go into the engine and cause engine damage.

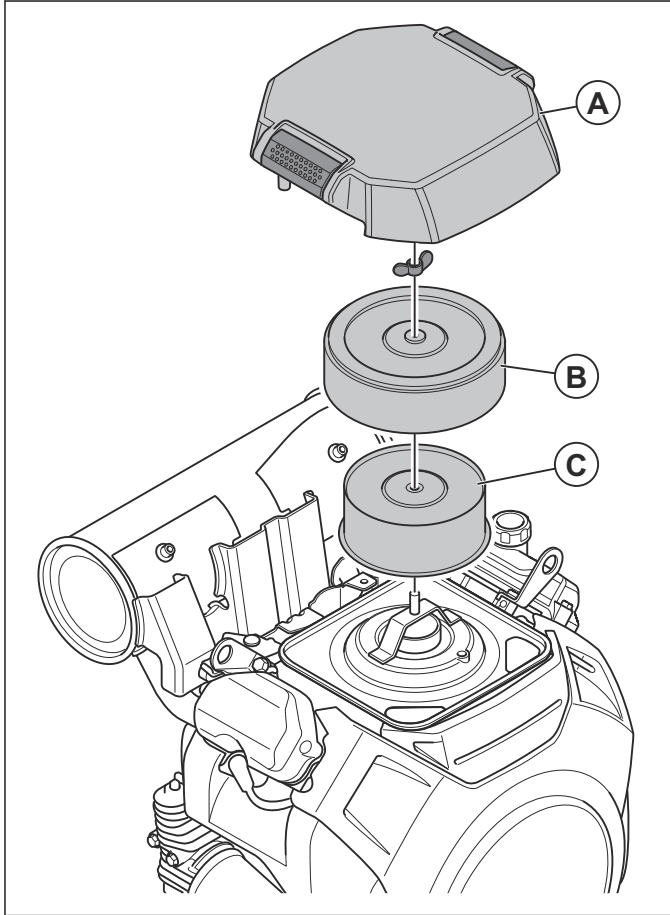
3.2.1 To clean or replace the air filter



WARNING: Do not clean the air filter with compressed air. This causes damage to the air

filter and the risk increases that you breathe the dangerous dust.

1. Remove the air filter cover (A).



2. Remove the foam filter element (B) and the paper filter element (C).
3. Clean the air filter housing with a brush.
4. Examine the air filter elements for damage.
5. Tap the paper filter element against a hard surface or use a vacuum cleaner to remove the particles.



CAUTION: Do not let the nozzle of the vacuum cleaner touch the surface of the paper filter element. Keep a small distance. The sensitive surface of the paper filter element becomes damaged if objects touch it.

6. Clean the foam filter element with a solution of soap and water.
7. Flush the foam filter element in clean water.
8. Compress the foam filter element to remove the water and let the foam filter element dry fully.



CAUTION: Do not put oil on the foam filter element.

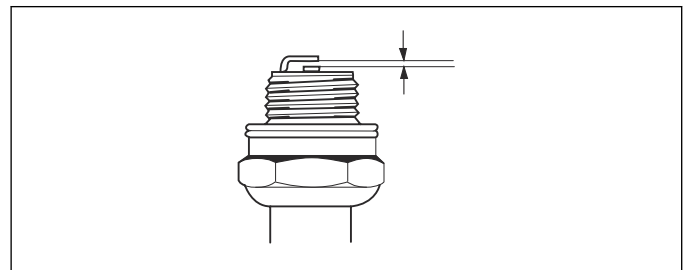
9. Install the air filter in the opposite sequence.

3.3 To examine the spark plug



CAUTION: Always use the recommended spark plug type. Incorrect spark plug type can cause damage to the product.

- Examine the spark plug if the engine is low on power, is not easy to start or does not operate correctly at idle speed.
- To decrease the risk of unwanted material on the spark plug electrodes, obey these instructions:
 - a) Make sure that the idle speed is correctly adjusted.
 - b) Make sure that the fuel mixture is correct.
 - c) Make sure that the air filter is clean.
- If the spark plug is dirty, clean it and make sure that the electrode gap is correct. Refer to the engine manual.



- Replace the spark plug, if necessary.

3.4 To replace the engine oil

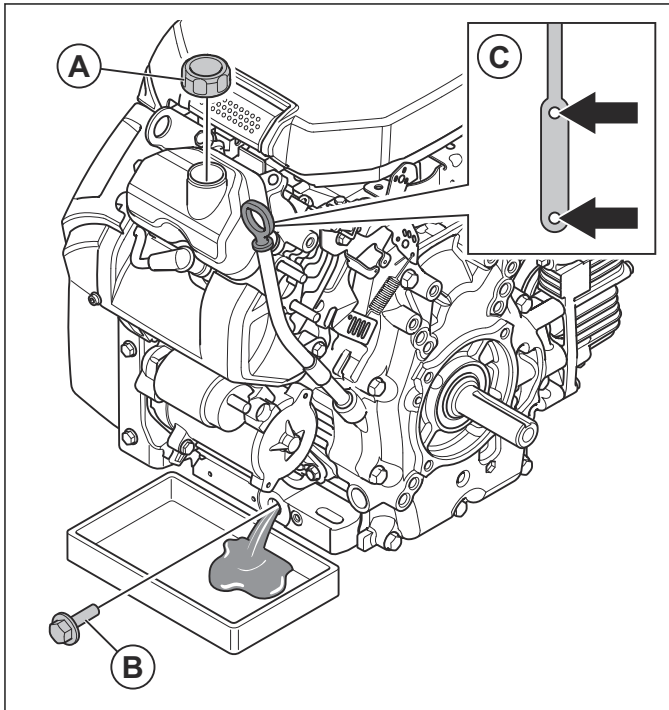
If the engine is cold, start the engine for 1–2 minutes before you drain the engine oil. This makes the engine oil warm and easier to drain.



WARNING: Engine oil is very hot directly after the engine stops. Let the engine become cool before you drain the engine oil. If you spill

engine oil on your skin, clean with soap and water.

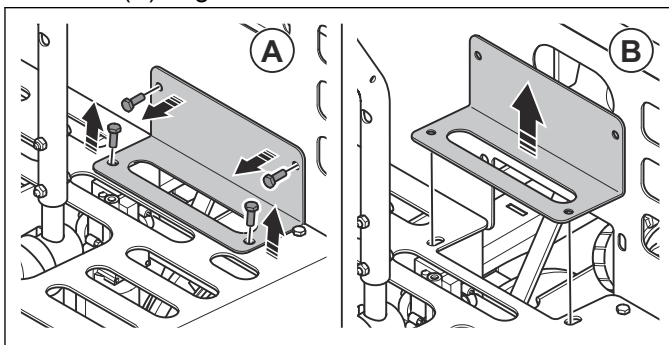
1. Put a container below the drain plug for the engine oil.
2. Remove the oil tank cap (A) and the oil drain plug (B).



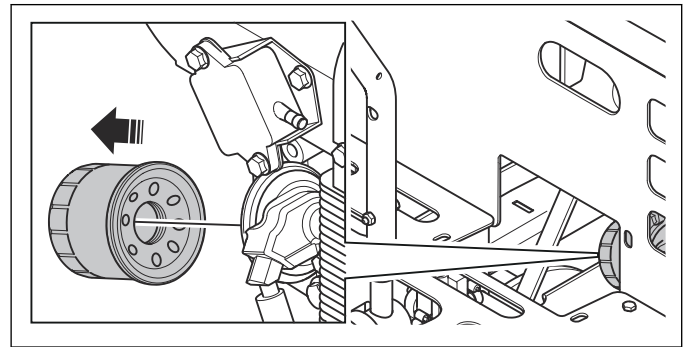
3. Let the oil run out into the container.
4. Install the oil drain plug (B) and tighten it.
5. Fill with new engine oil until the oil level is at the top mark on the dipstick (C). Refer to the engine manual for the correct type of oil.
6. Tighten the oil tank cap and put the dipstick back.
7. Do a check of the engine oil level.

3.5 To replace the oil filter

1. Drain the engine oil. Refer to *To replace the engine oil on page 7*.
2. Install the oil drain plug and tighten it.
3. Remove the 4 screws (A) and remove the front cover (B) to get access to the oil filter.



4. Remove the oil filter and discard it.

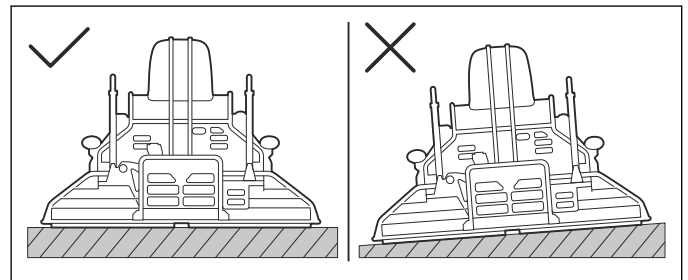


5. Apply a thin layer of engine oil on the rubber gasket of the new oil filter.
6. Install the new oil filter. Torque the oil filter to 22 Nm/16 lb-ft.
7. Fill with new engine oil until the oil level is at the top mark on the dipstick. Refer to the engine manual for the correct type of oil.
8. Tighten the oil tank cap and put the dipstick back.
9. Do a check of the engine oil level.

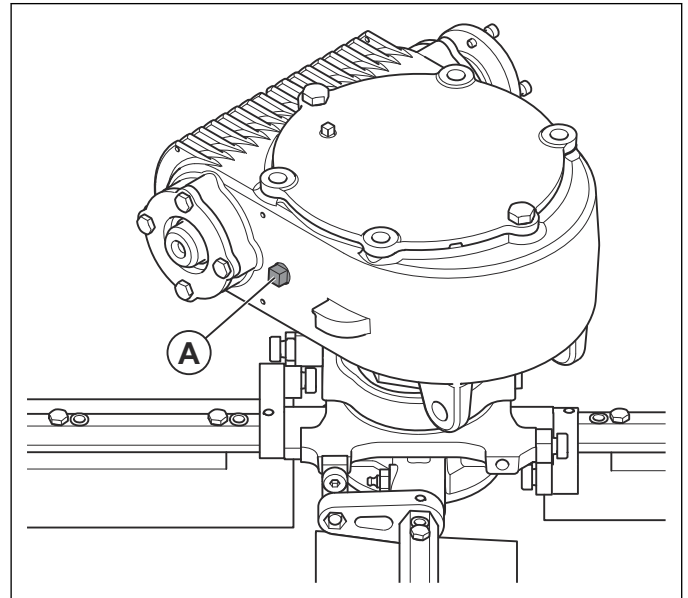
3.6 To do a check of the gearbox oil level

There are 2 gearboxes on the product. Do this procedure for each gearbox.

1. Put the product on a flat, level surface with the blades flat.



2. Remove 1 of the oil fill plugs (A).



3. Examine the gearbox oil level. The oil level is correct when it is at the bottom of the threads in the hole for the oil fill plug.
4. If the oil level is low, fill with ISO 460 gear oil.



CAUTION: Do not fill too much and do not mix different types of gearbox oil. The gearbox can become damaged.

5. Dry the threads of the oil fill hole in the gearbox and the threads of the oil fill plug.
6. Apply LOCTITE® 545™ or similar to the threads of the oil fill plug.
7. Install the oil fill plug.
8. Torque the oil fill plugs to 16–20 Nm/12–15 lb-ft.

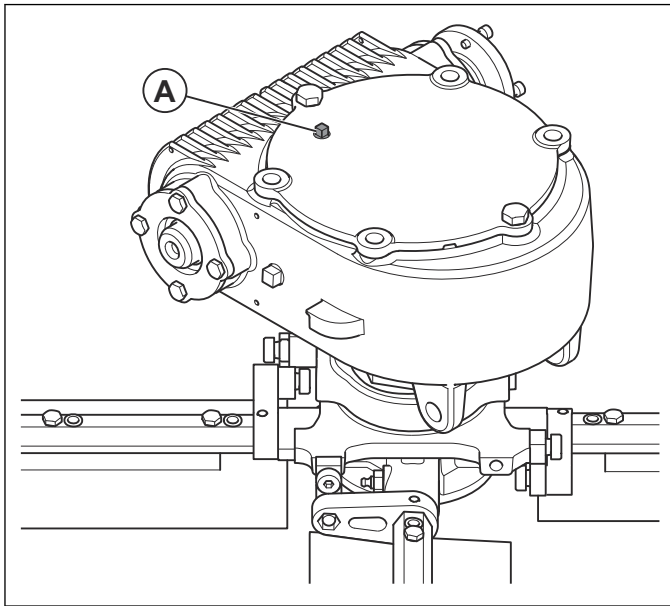
3.7 To do a check of the pressure relief valve on the gearbox

Do this procedure each time that you do a check of the oil level in the gearbox.



CAUTION: If the pressure relief valve is clogged, there is a risk of oil leakage from the gearbox shaft seals.

1. Examine the pressure relief valve (A).

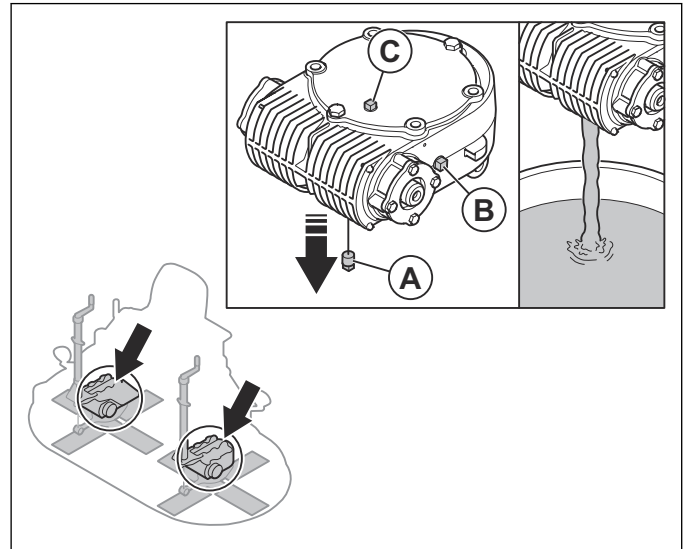


2. If it is clogged, clean it.
3. If the pressure relief valve cannot be cleaned, replace it.

3.8 To replace the oil in the gearbox

It is easy to drain the gearbox oil when it is warm. If possible, operate the product before you drain the oil.

1. Put a container of a minimum 3.8 l/4.0 qts below the gearbox.
2. Remove the oil drain plug for the gearbox (A) and let the oil run out into the container.



3. Remove the oil fill plugs (B) on the gearbox to make it easier to drain the oil.
4. Dry the threads of the oil drain hole in the gearbox and the threads of the oil drain plug.
5. Apply LOCTITE® 545™ or equivalent to the threads of the oil drain plug.
6. Install the oil drain plug for the gearbox (A).
7. Fill with ISO 460 gear oil through 1 of the holes for the oil fill plugs (B).
8. Fill until the oil level is at the bottom of the threads in the hole for the oil fill plug.
9. Dry the threads of the oil fill hole in the gearbox and the threads of the oil fill plug.
10. Apply LOCTITE® 545™ or equivalent to the threads of the oil fill plug.
11. Install the oil fill plug.
12. Torque the oil drain plug and oil fill plugs to 16–20 Nm/12–15 lb-ft.

3.9 To replace the blades

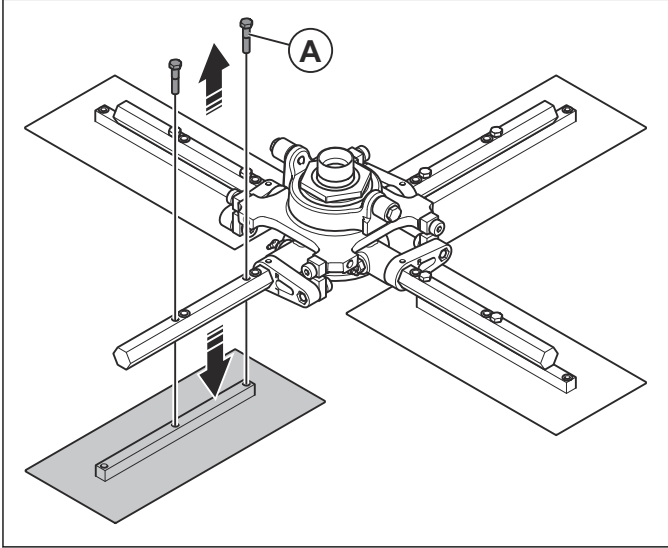


WARNING: Before you replace the blades, stop the product, let the engine become cool and disconnect the battery.

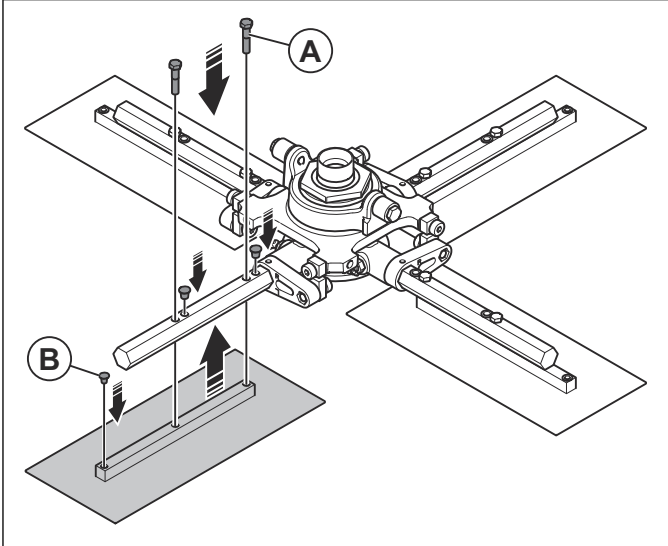


WARNING: Use protective gloves.

1. Do 1 of these procedures to get access to the blade assembly:
 - a) Lift the product with lifting equipment. Refer to *To remove and install the wheel kit on page 26.*
 - b) Lift the product with the built-in transport wheels.
2. Put supports below the frame of the product.
3. Remove the screws (A) and remove the blades.



4. Align the screw holes of the blade shafts with the screw holes of the new blades.
5. Apply grease to the threads of the screws to make the removal of the screws easier the next time.
6. Install the new blades with the lubricated screws (A).

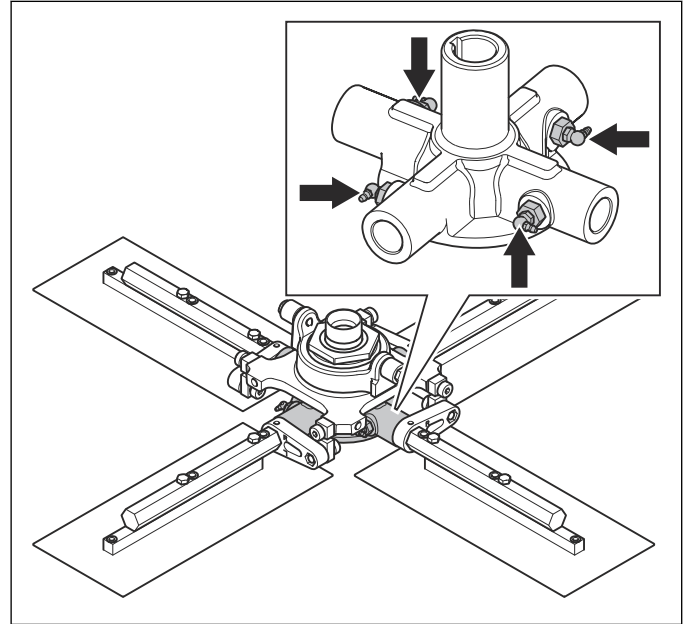


7. Put plastic plugs (B) in the remaining holes in the blades. This is to make sure that the holes are not filled with concrete during operation.

3.10 To lubricate the blade shafts

Use a general type of grease.

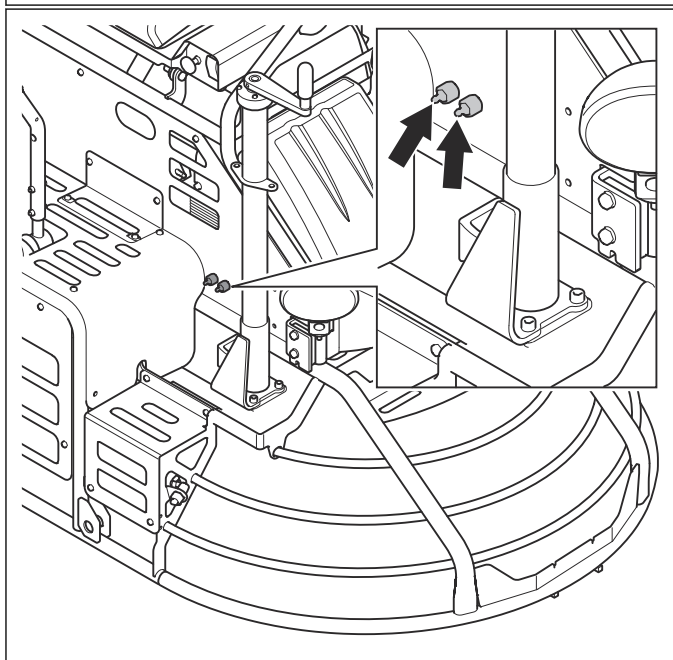
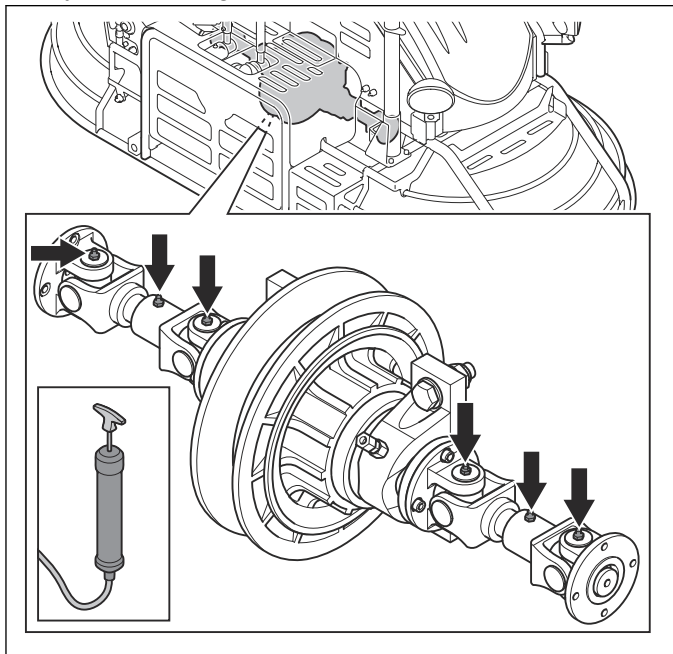
1. Put the product on a flat, level surface with the blades flat.
2. Stop the engine and disconnect the battery.
3. Increase the blade pitch to the maximum angle. This makes it easier to get access to the grease nipples.
4. Replace broken or blocked grease nipples.
5. Push grease through the grease nipples until grease comes out around the blade shafts.



3.11 To lubricate the control linkages, universal joints and the drive system bearings

- Use a general type of grease.

- Lubricate the grease nipples of the drive system, the gearboxes, the blade pitch controls and the drive system bearings.



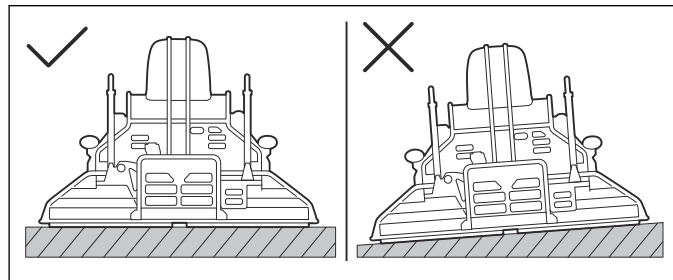
- Replace broken or blocked grease nipples.

3.12 To remove the drive belt

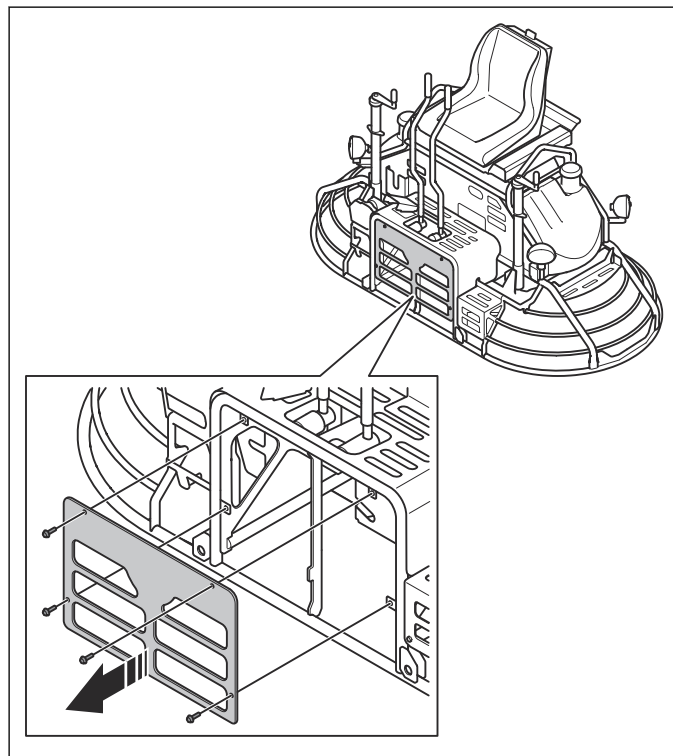


WARNING: Do not operate the product without the drive belt cover installed.

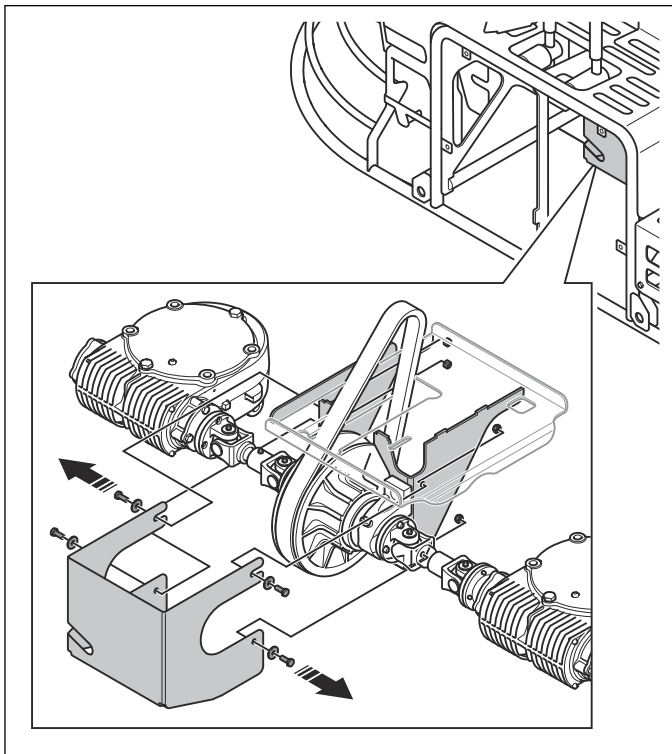
1. Put the product on a flat, level surface with the blades flat.



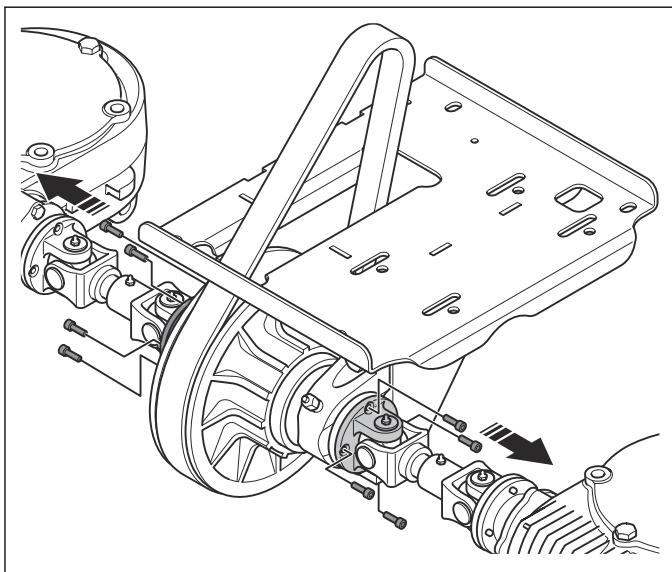
2. Stop the engine and disconnect the battery.
3. Remove the 4 screws and the front cover.



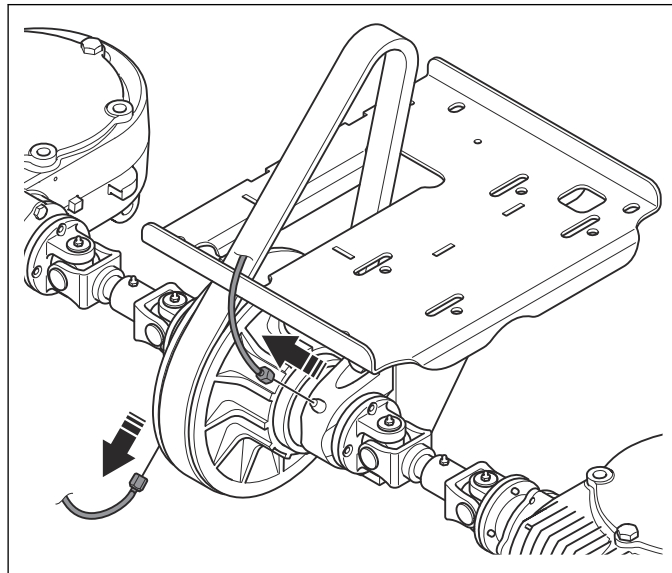
4. Remove the 4 screws, the 4 washers and the 4 nuts. Remove the drive belt cover.



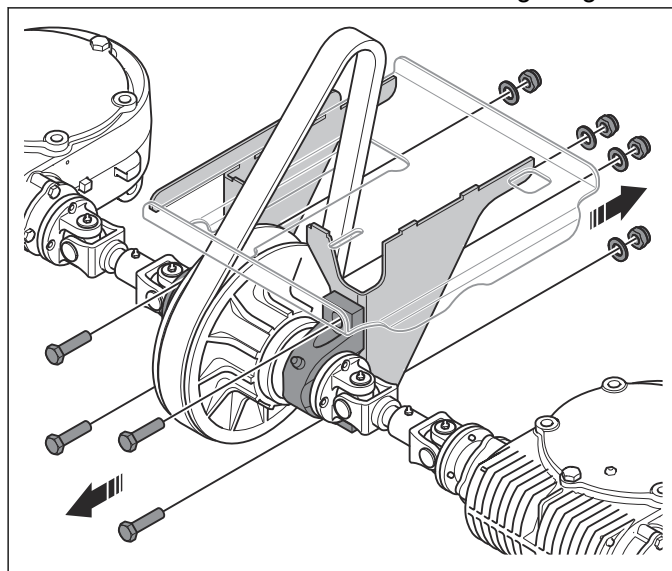
5. Remove the 8 screws that hold the universal joint to the shaft.



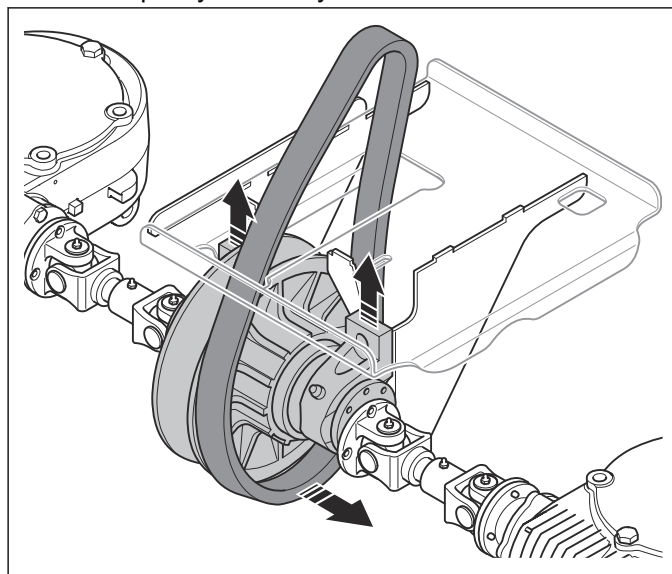
6. Disconnect the 2 hoses at the grease nipples.



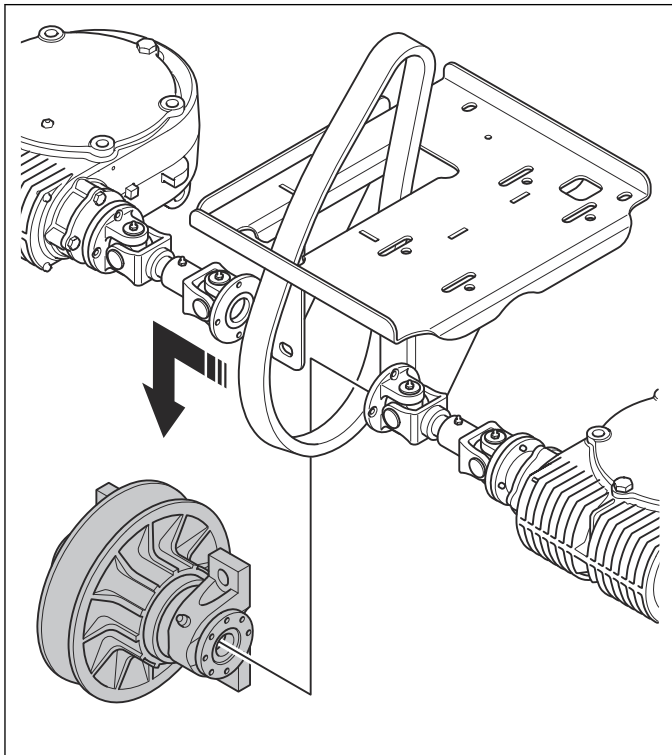
7. Remove the 4 screws from each bearing flange.



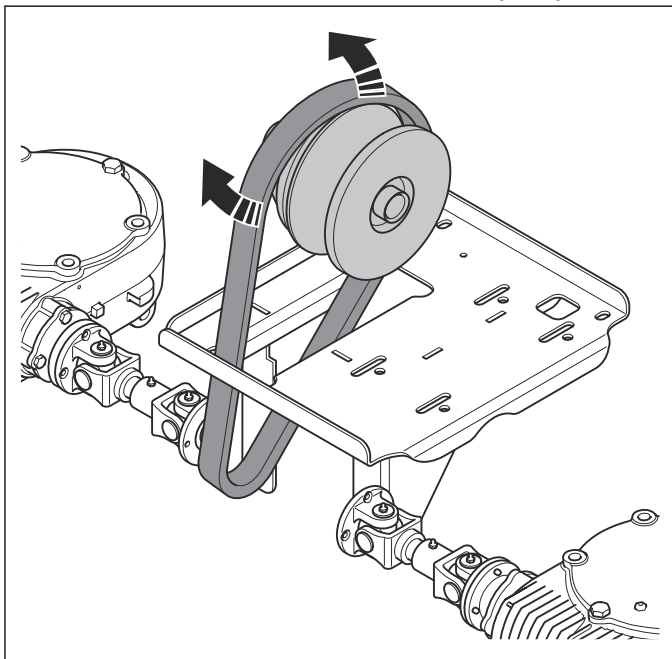
8. Lift the pulley assembly and remove the drive belt.



9. Remove the pulley assembly.



10. Remove the drive belt from the clutch pulley.

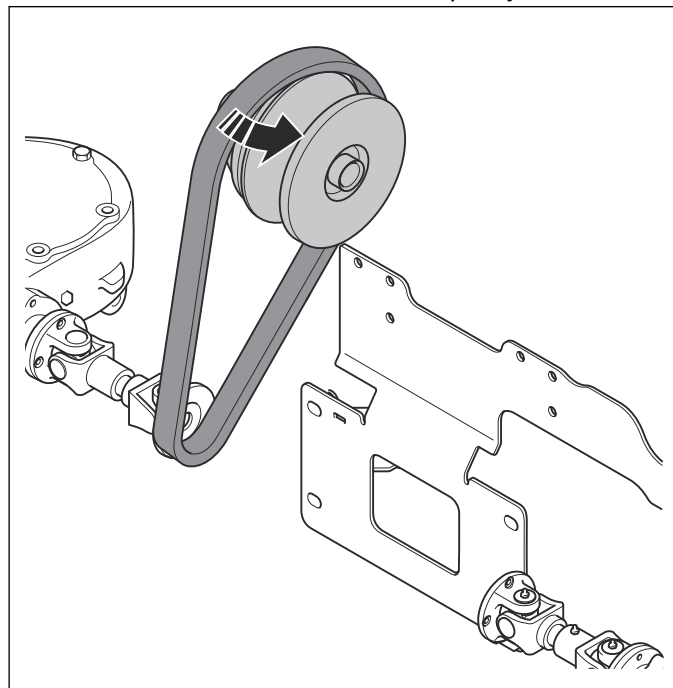


3.13 To install the drive belt



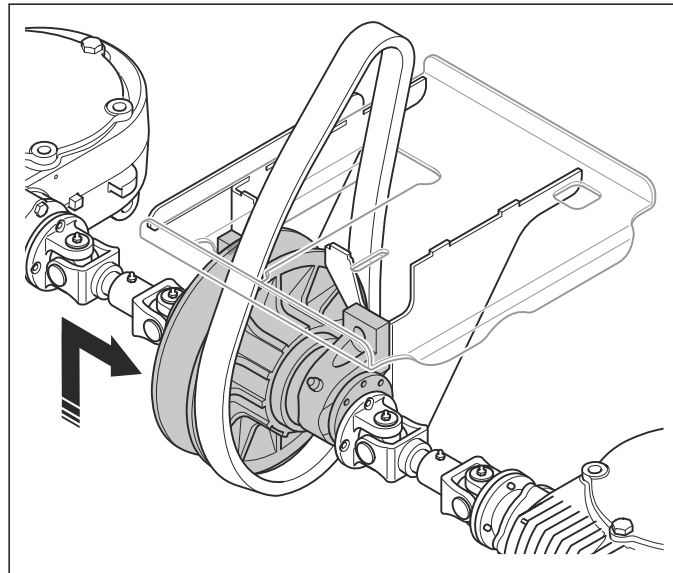
WARNING: Do not operate the product without the drive belt cover installed.

1. Install the drive belt on the clutch pulley.

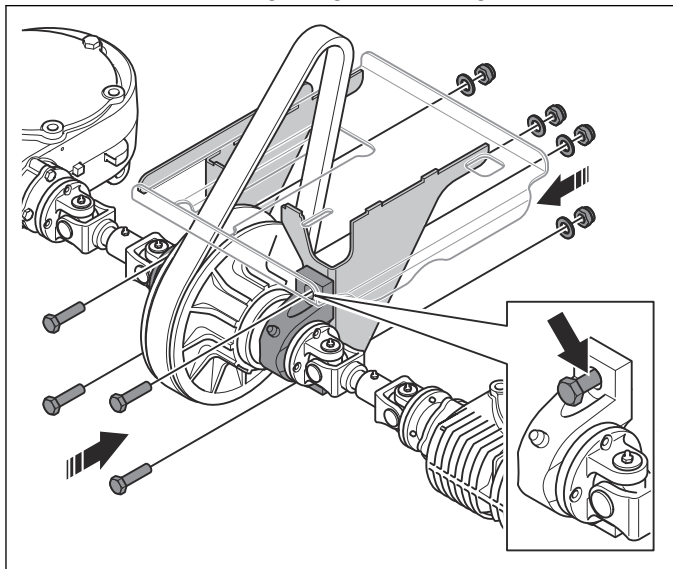


2. Install the pulley assembly, do the procedure that follows.

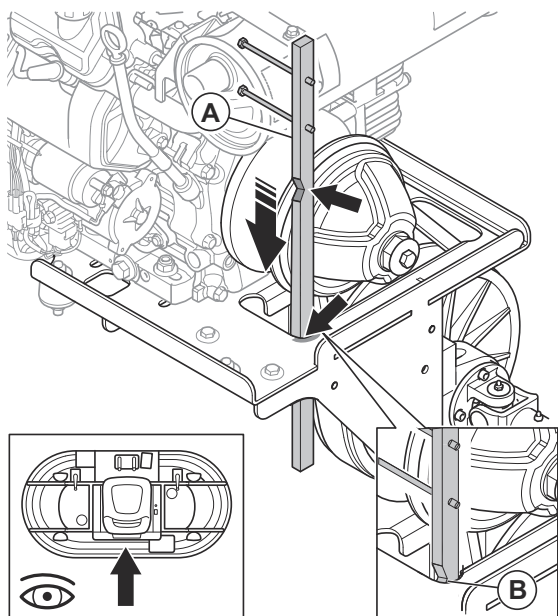
- Put the pulley assembly between the shafts.
- Install the drive belt.



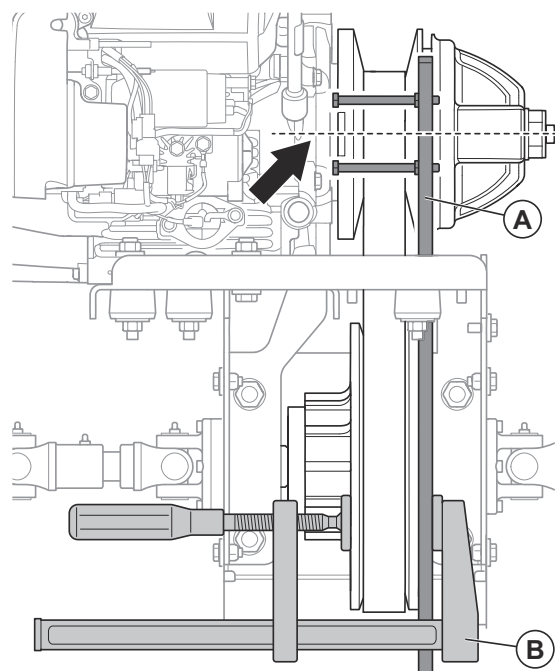
- c) Install the 4 bolts, the 4 washers and the 4 nuts to each bearing flange. Do not tighten the bolts.



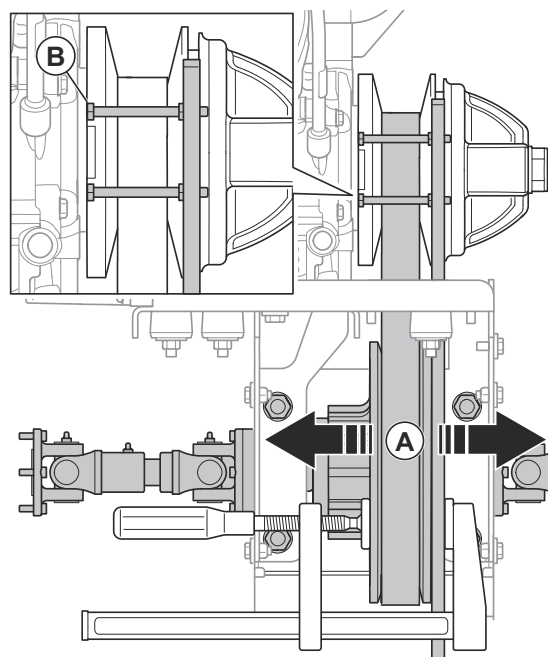
- d) Make the service tool. Refer to *Service tool assembly on page 80*.
- e) Put the service tool (A) through the slot in the engine bracket. Make sure that the notch in the service tool does not touch the plate (B).



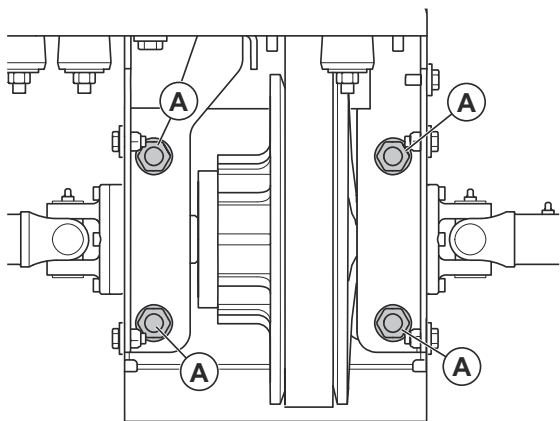
- f) Attach the service tool to the drive shaft pulley with a clamp (B). Align the middle points between the bolts of the service tool with the shaft for the clutch pulley (A).



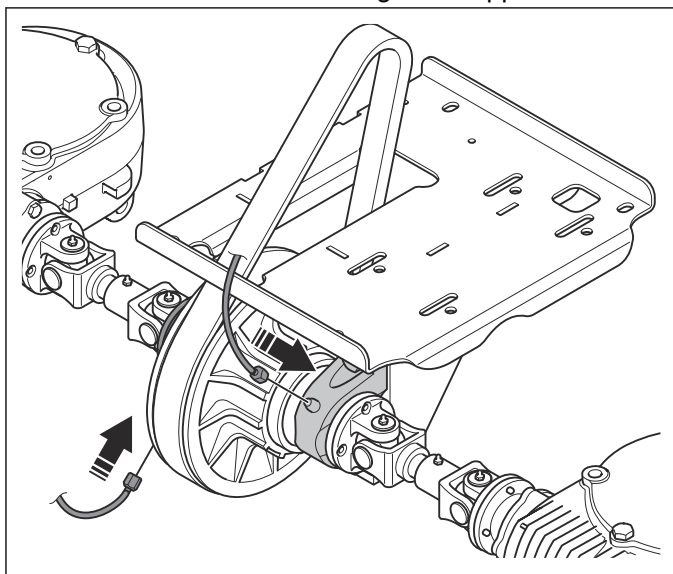
- g) Adjust the drive shaft pulley (A) so the heads of the bolts line up with the inner edge of the CVT pulley (B).



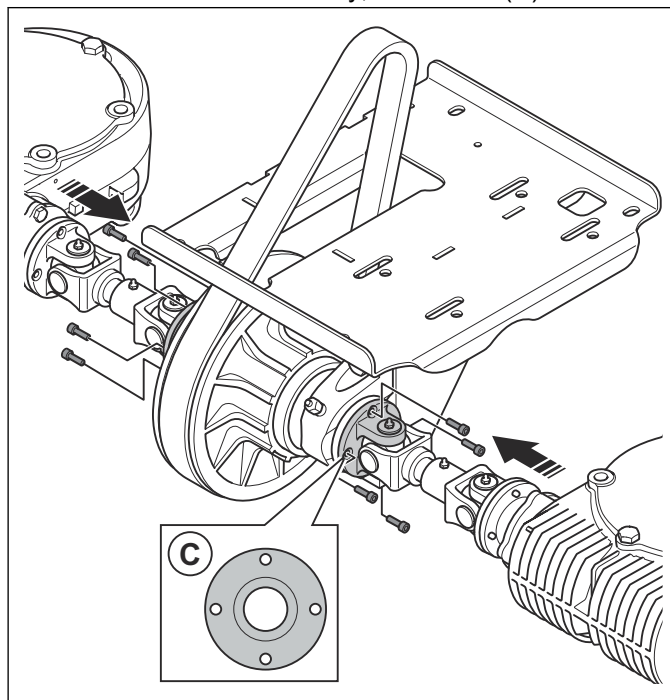
h) Tighten the bolts for each bearing flange.



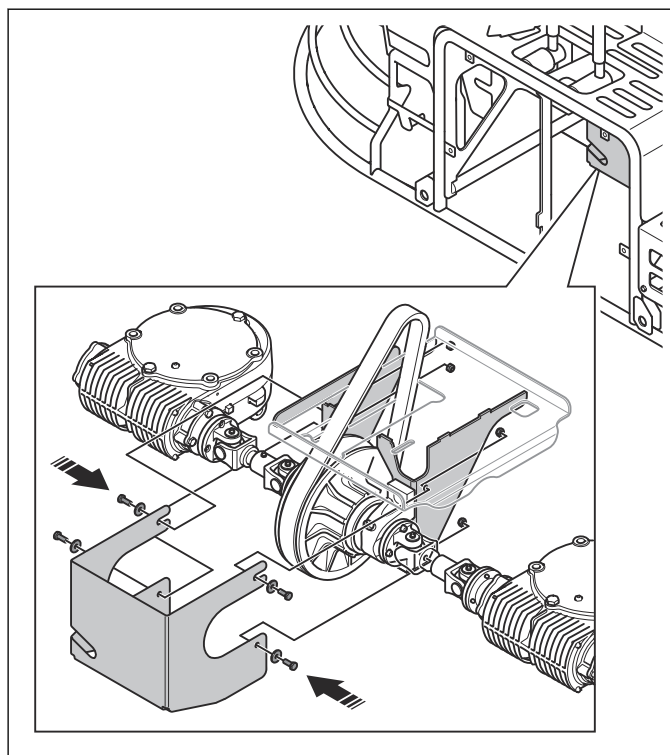
3. Connect the 2 hoses at the grease nipples.



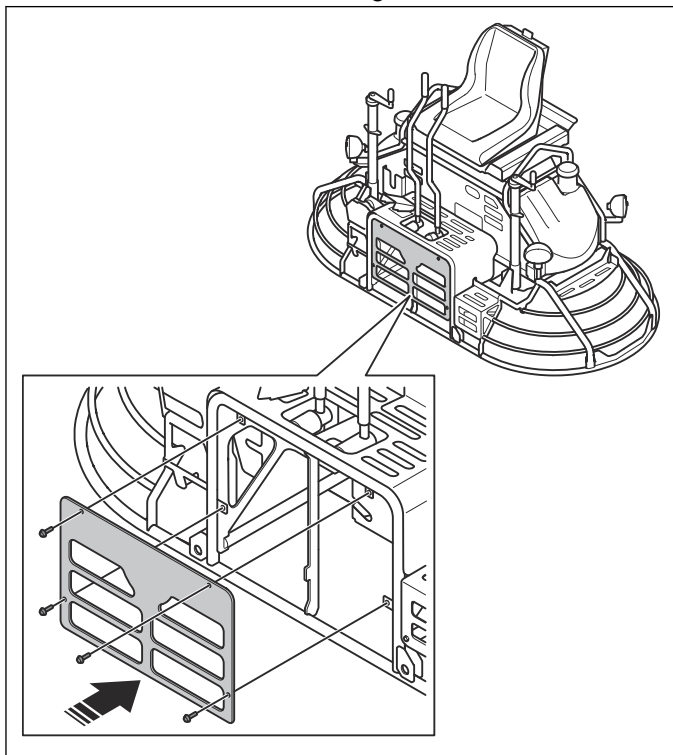
4. Install the 8 screws that hold the universal joint to the shaft. If it is necessary, use shims (C).



5. Install the drive belt cover and tighten the 4 bolts, the 4 washers and the 4 nuts.



6. Install the front cover and tighten the 4 screws.



3.14 To move the product

- For transportation information, refer to operator's manual of the product.

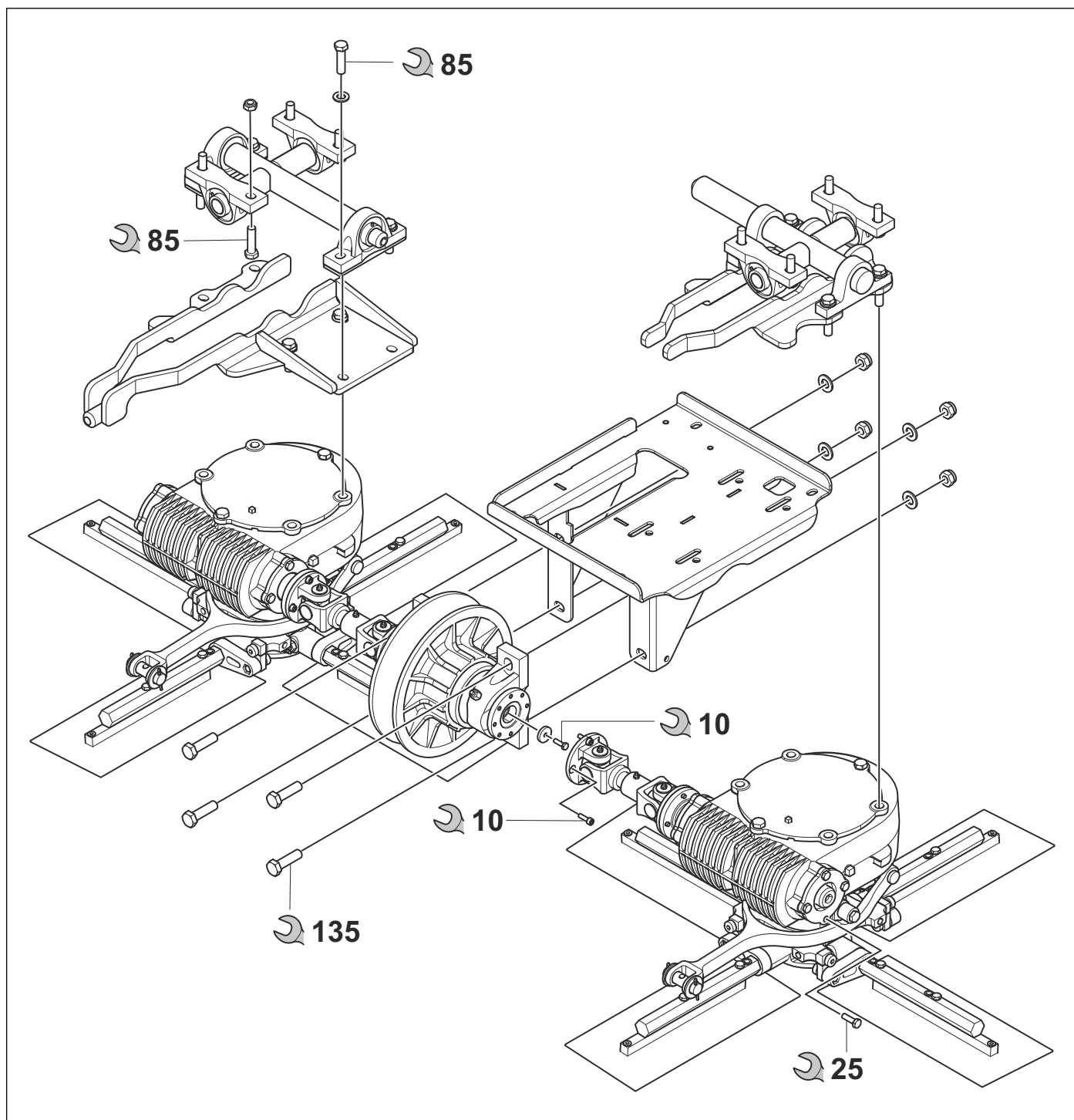
4 Servicing data

4.1 Symbols in the diagrams

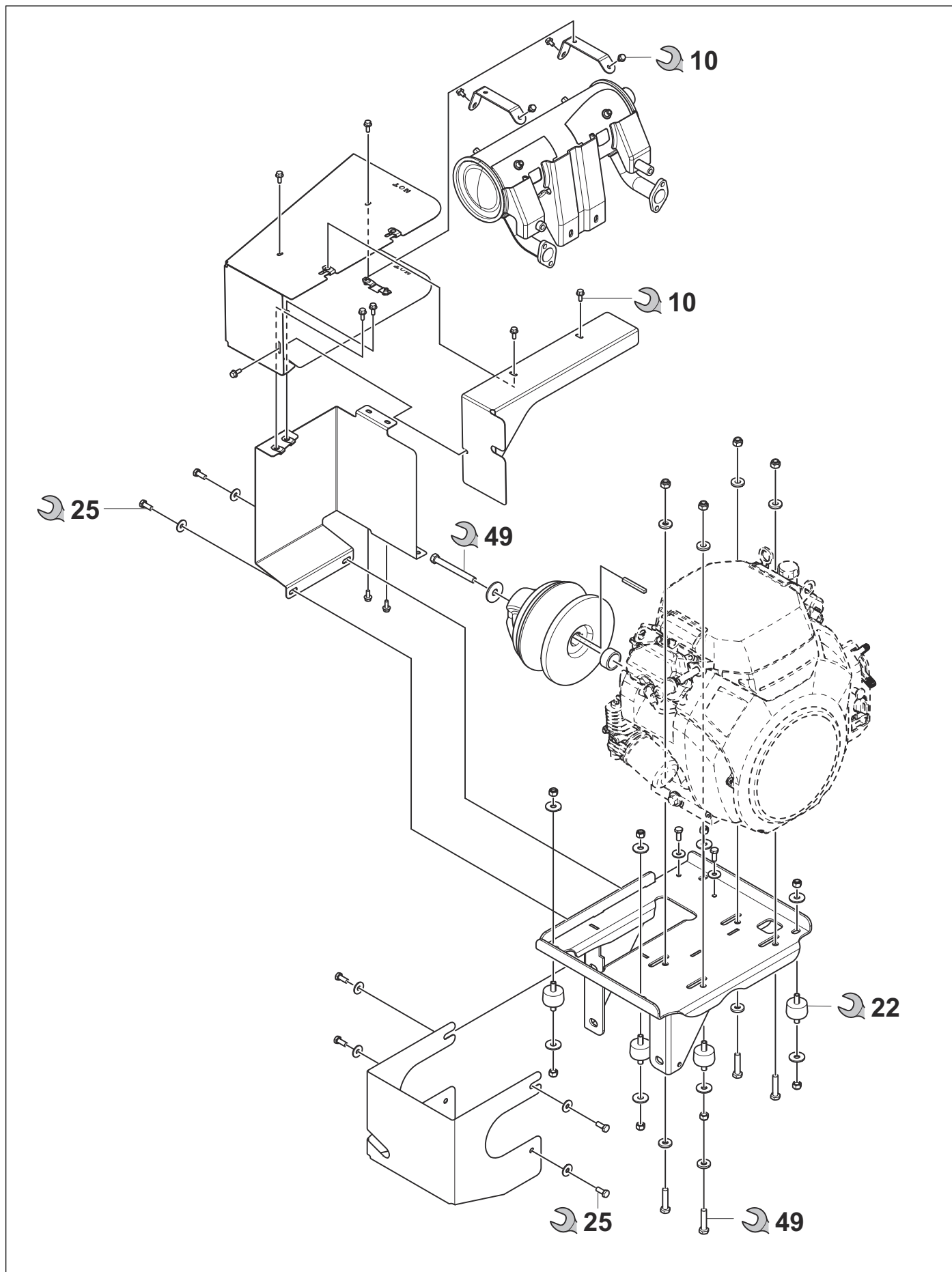


Tightening torque, Nm

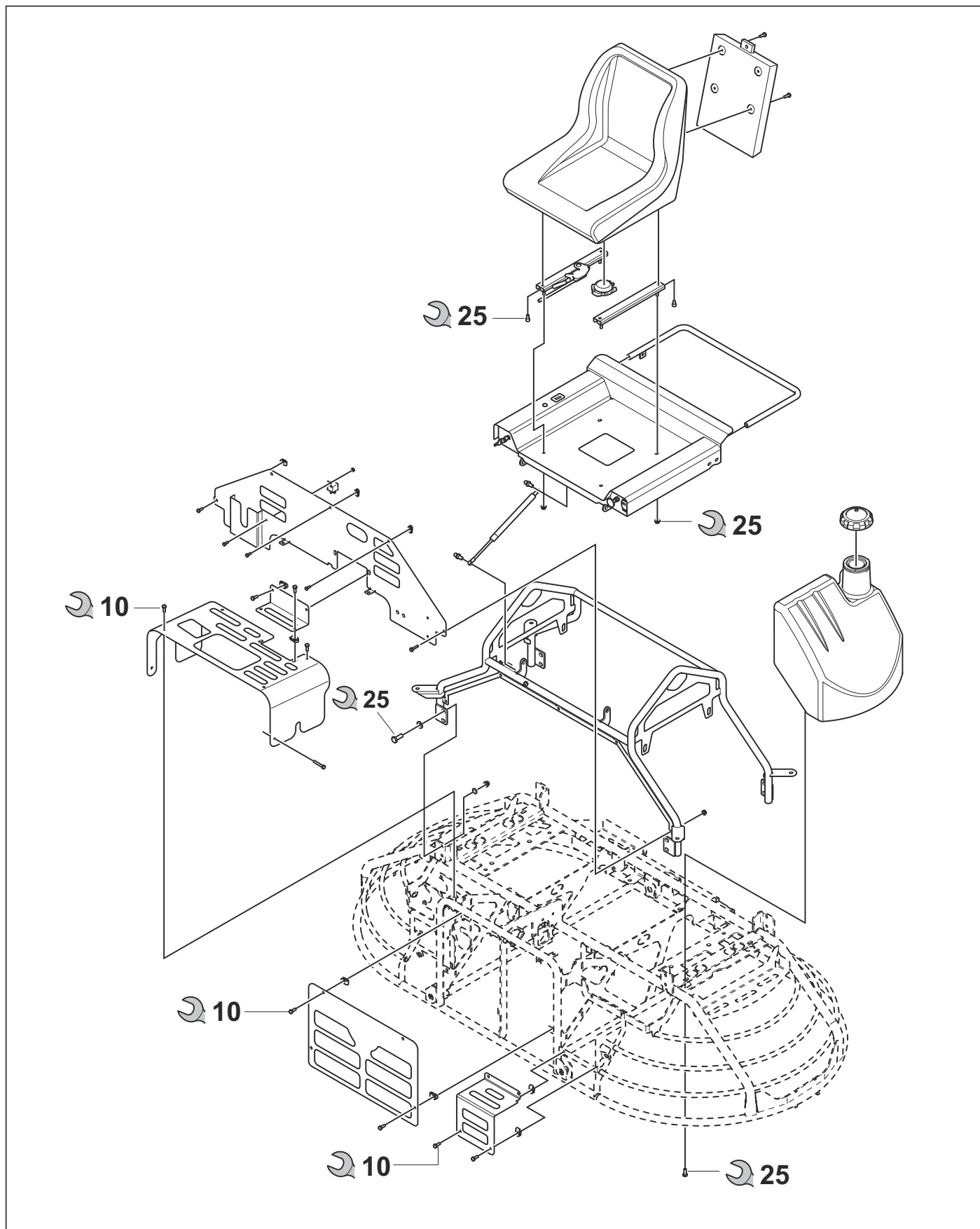
4.2 Tightening torques, drive and gearbox



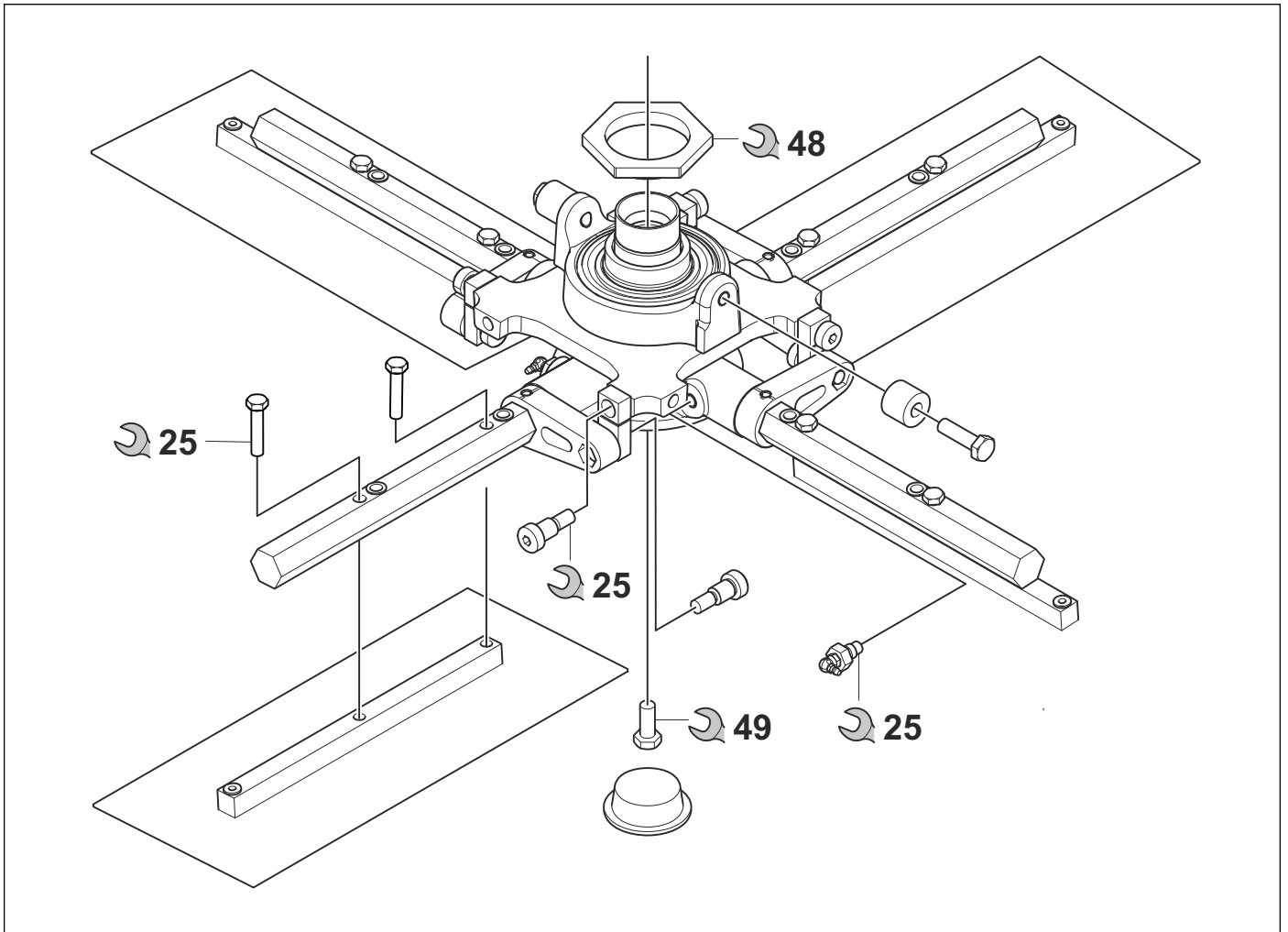
4.3 Tightening torques, engine plate and muffler



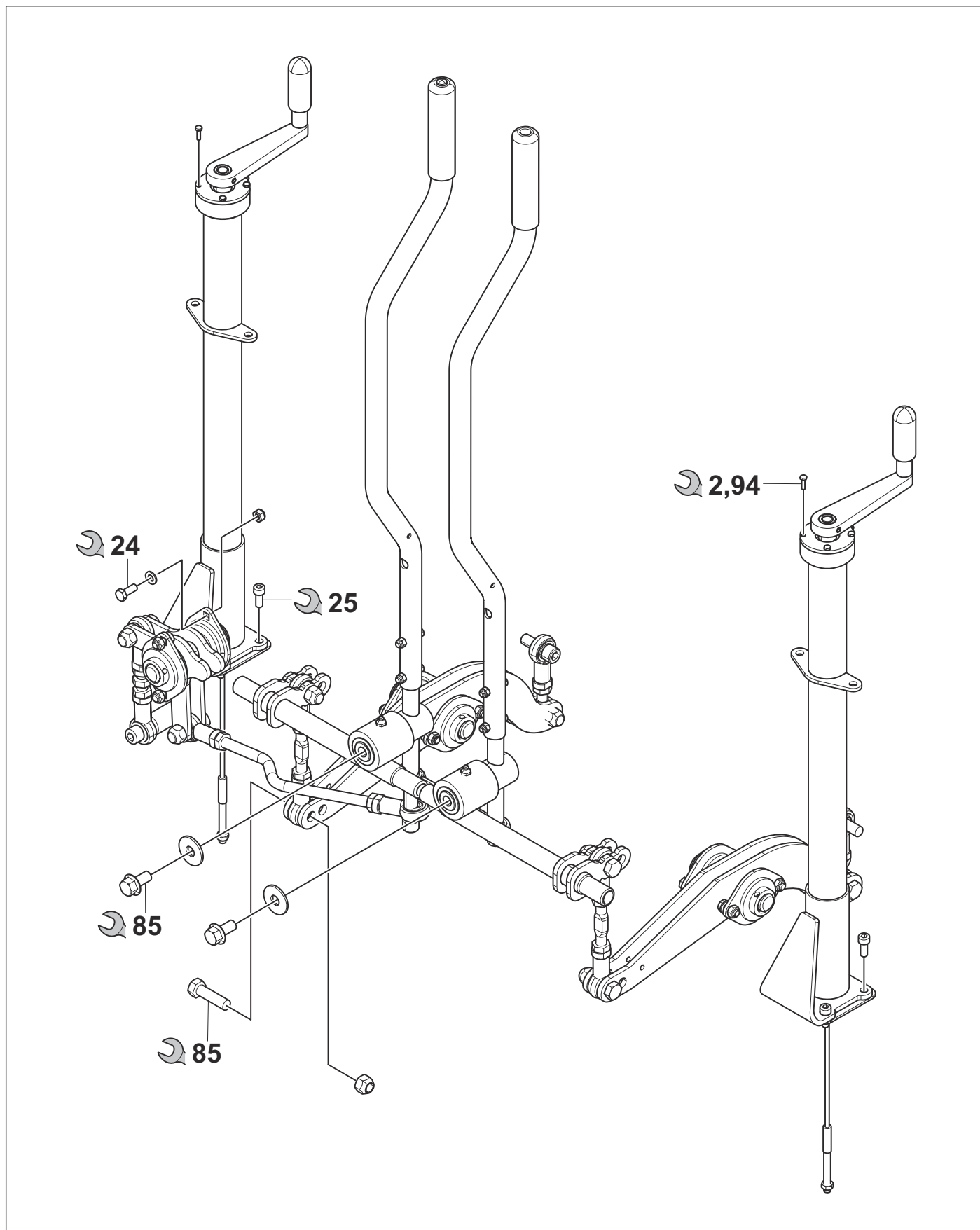
4.4 Tightening torques, frame seats and panel



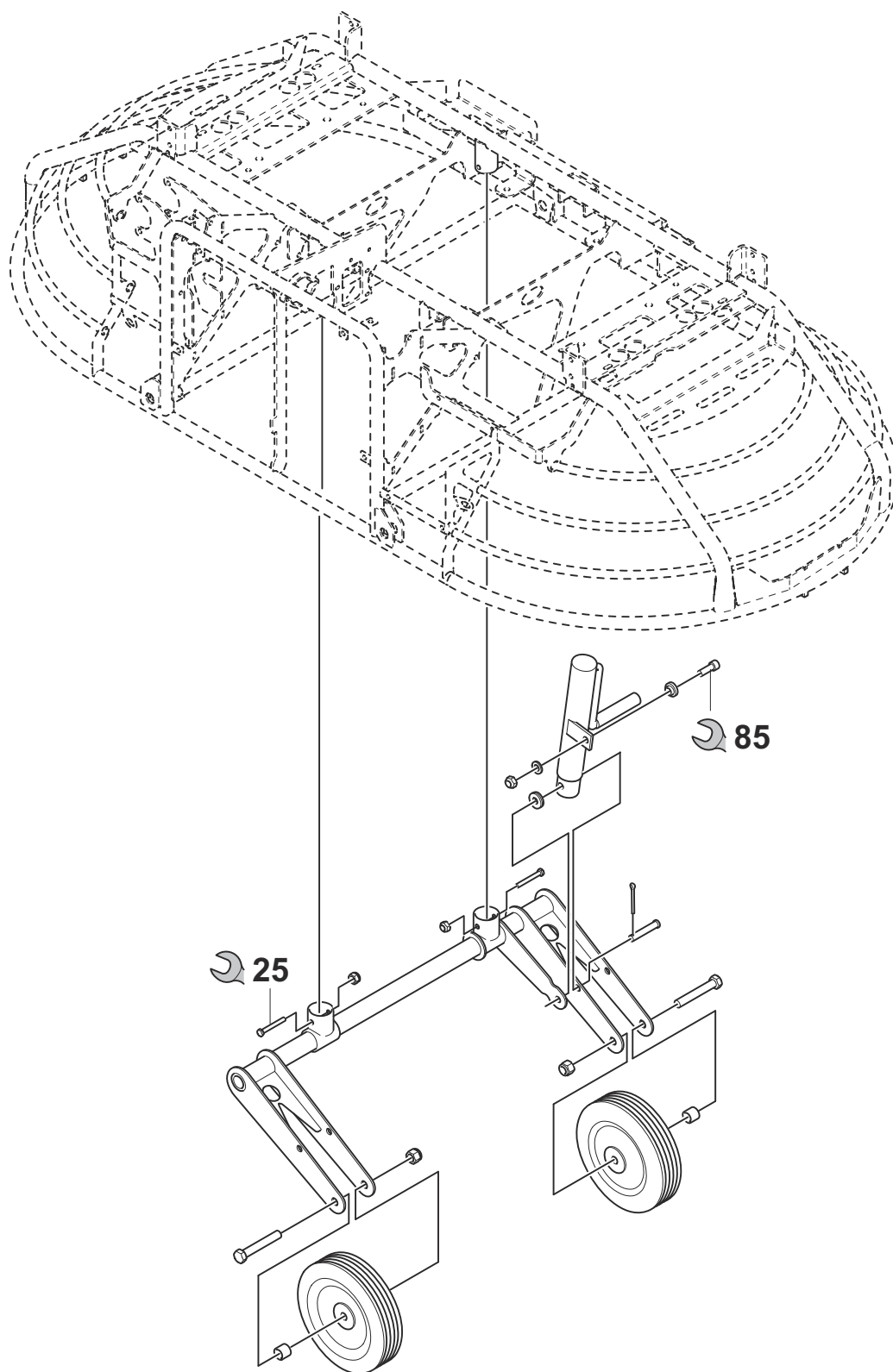
4.5 Tightening torques, spider and blades



4.6 Tightening torques, steering



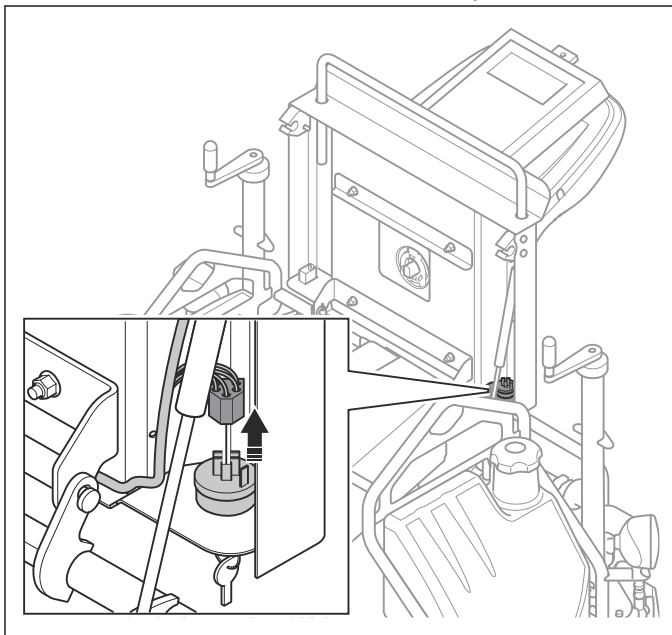
4.7 Tightening torques, wheel kit



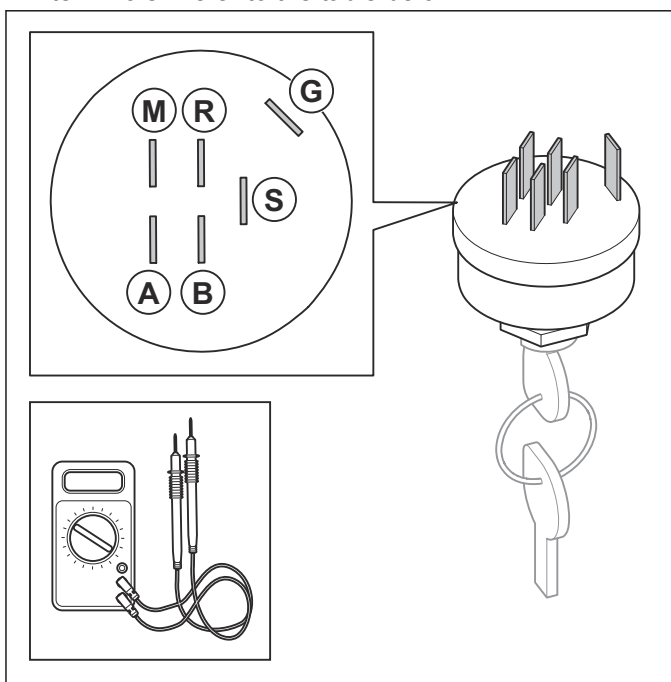
5 Troubleshooting

5.1 To do a check of the ignition switch

1. Lift the seat and the operator presence control.
2. Remove the connectors from the key switch.

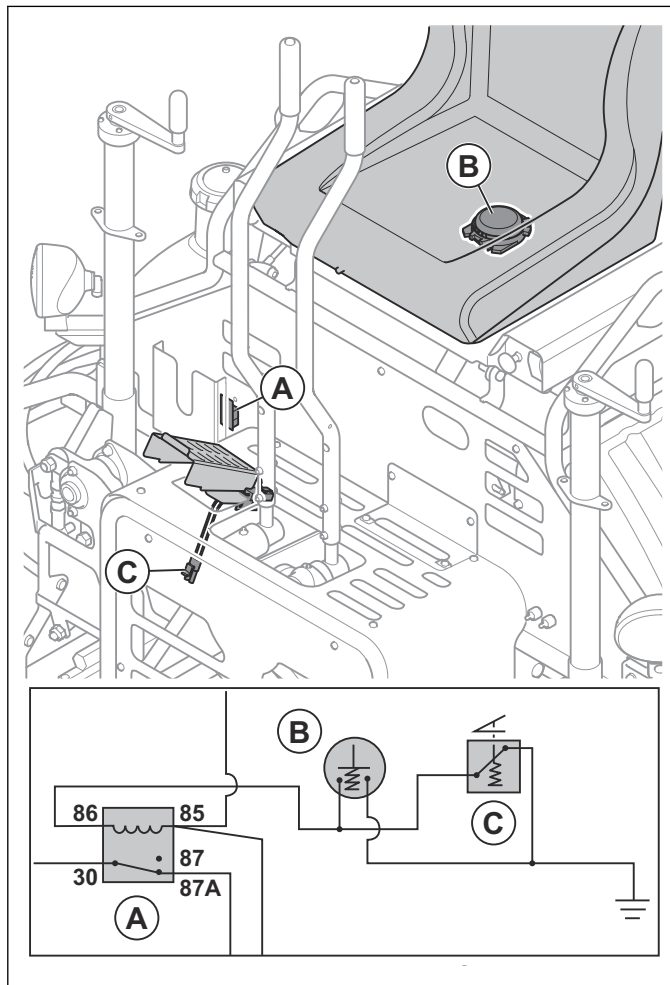


3. Turn the ignition key in the positions OFF, ON and START. Do a check of the connection between the terminals. Refer to the table below.



Ignition key position	Terminal
OFF	M-G, M-A, G-A
ON	R-B, R-A, B-A
START	S-B

(terminals 85 and 86) is closed. This is controlled by the switch (B) for the operator presence control or the throttle control switch (C). When an operator is in the seat or the throttle control is in idle position, the switches are closed. The product can then be operated.

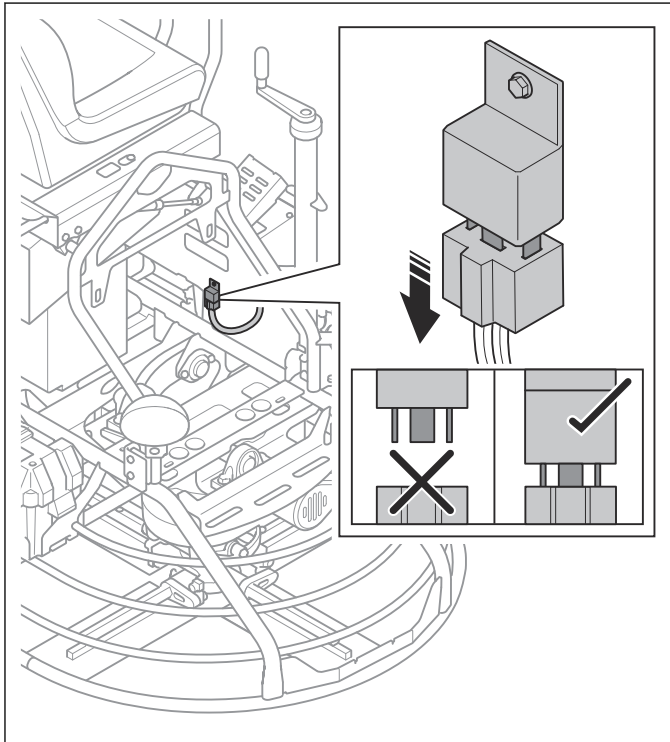


5.2 Operator presence control

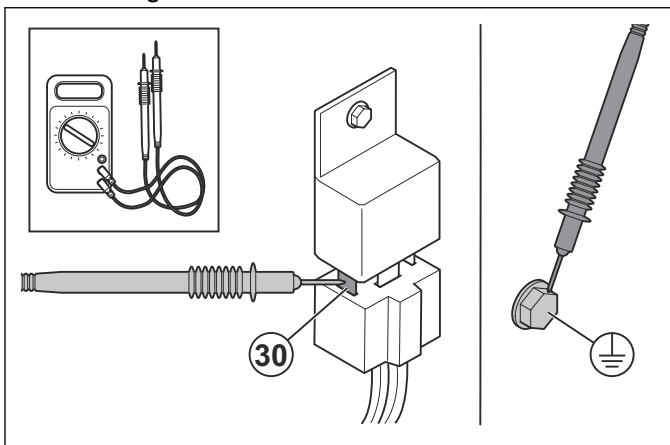
The relay (A) for the operator presence control lets the product operate when the circuit through the coil

5.2.1 To do a check of the relay for the operator presence control

1. Move the connectors until you can touch them with a multimeter.

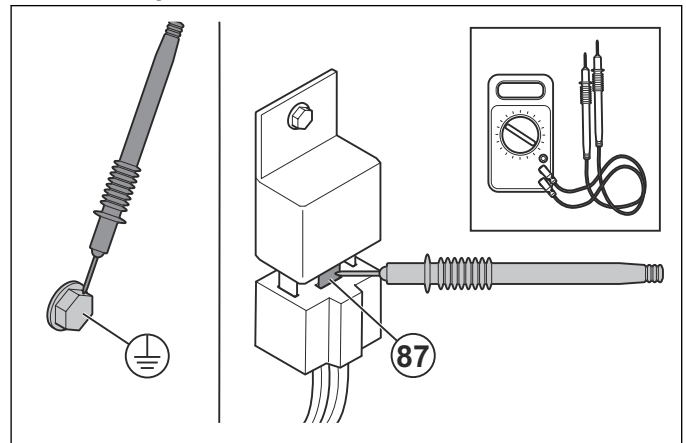


2. Turn the ignition key to ON position.
3. Do a check for battery voltage between terminal 30 and the ground.



- a) If there is battery voltage, the relay for the operator presence control receives power.
- b) If there is no battery voltage, do a check of the connection of the wires between the relay for the operator presence control and ignition switch. Replace wires, if it is necessary.

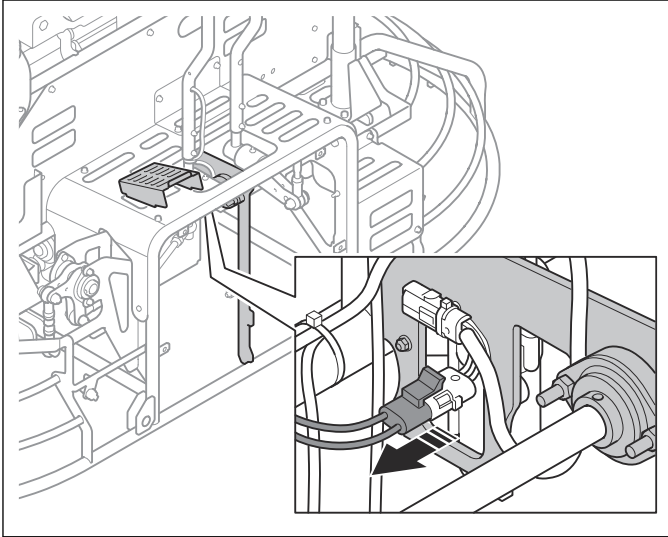
4. Do a check for battery voltage between terminal 87 and the ground.



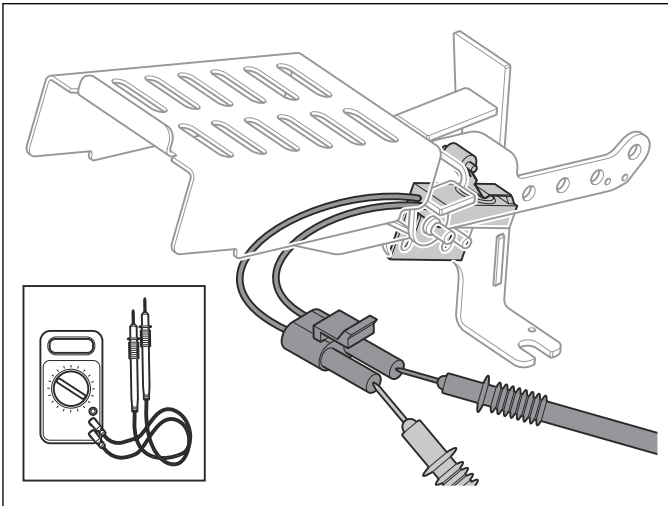
- a) If there is battery voltage, the relay for the operator presence control operates correctly.
- b) If there is no battery voltage, the relay for the operator presence control does not operate correctly. Do a check of the throttle control and the wires to the throttle control.

5.2.2 To do a check of the switches for throttle control and the operator presence control

1. Disconnect the wires to the throttle control switch.

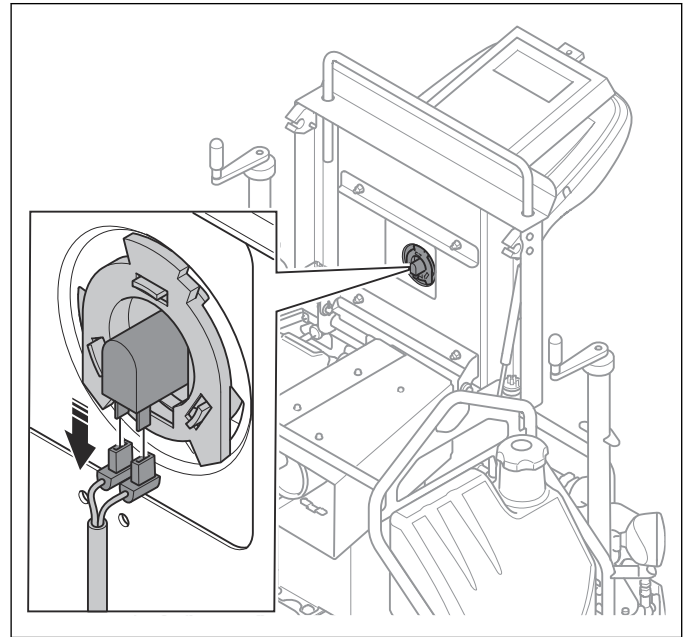


2. Connect a multimeter to the wires from the throttle control switch.

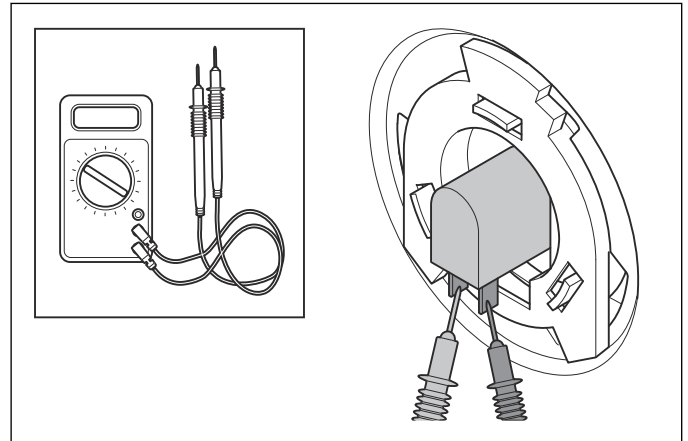


- a) Make sure that the circuit is closed when the throttle control, foot pedal, is in idle position. The circuit must be open when the foot pedal is pushed.

3. Disconnect the wires for the switch for the operator presence control.



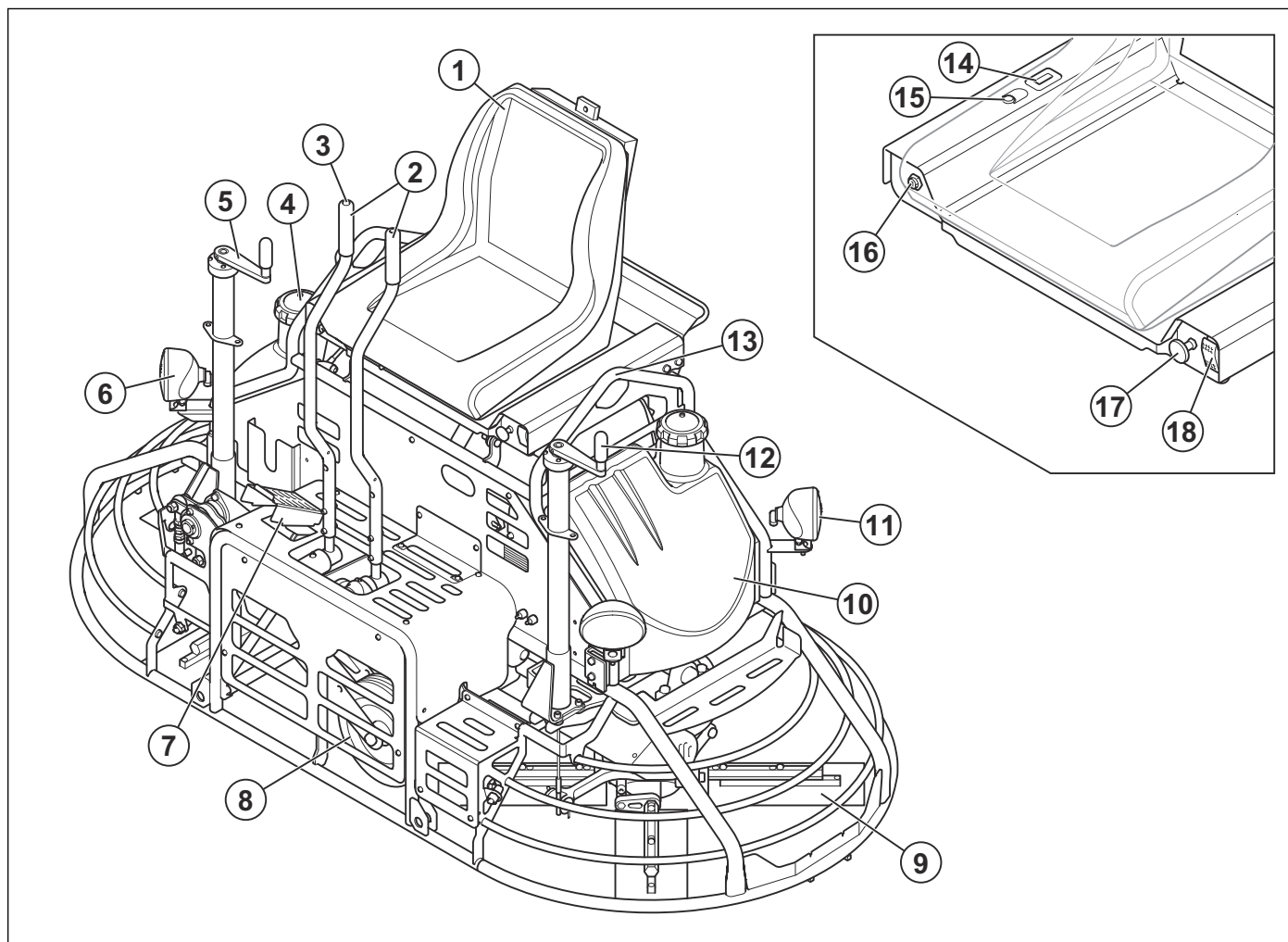
4. Connect a multimeter to the wires from the switch for the operator presence control.



- a) Make sure that the circuit is closed when the switch for the operator presence control is closed. The circuit must be open when the switch for the operator presence control is opened.

6 Repair and servicing

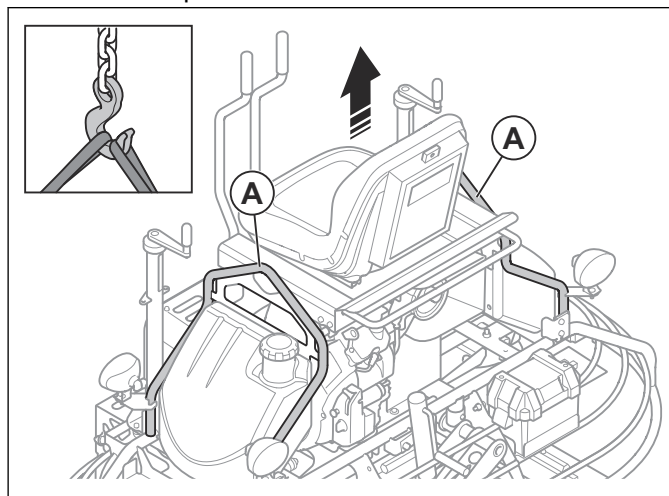
6.1 Product overview



1. Seat with operator presence control
2. Movement controls
3. Retardant spray control
4. Fuel tank cap
5. Right blade pitch control
6. Front work light
7. Throttle control, foot pedal
8. Built-in transport wheels (optional)
9. Blade
10. Water tank
11. Rear work light
12. Left blade pitch control
13. Lifting point, 1 on each side
14. Hour meter
15. Oil pressure indicator
16. Ignition key
17. Choke
18. Work light switch

lift the product to decrease the risk of damage and injury.

1. Remove the drive belt and the pulley assembly. Refer to *To remove the drive belt on page 11*.
2. Attach the lifting equipment to the lifting points (A) and lift the product.



6.2 To remove and install the wheel kit

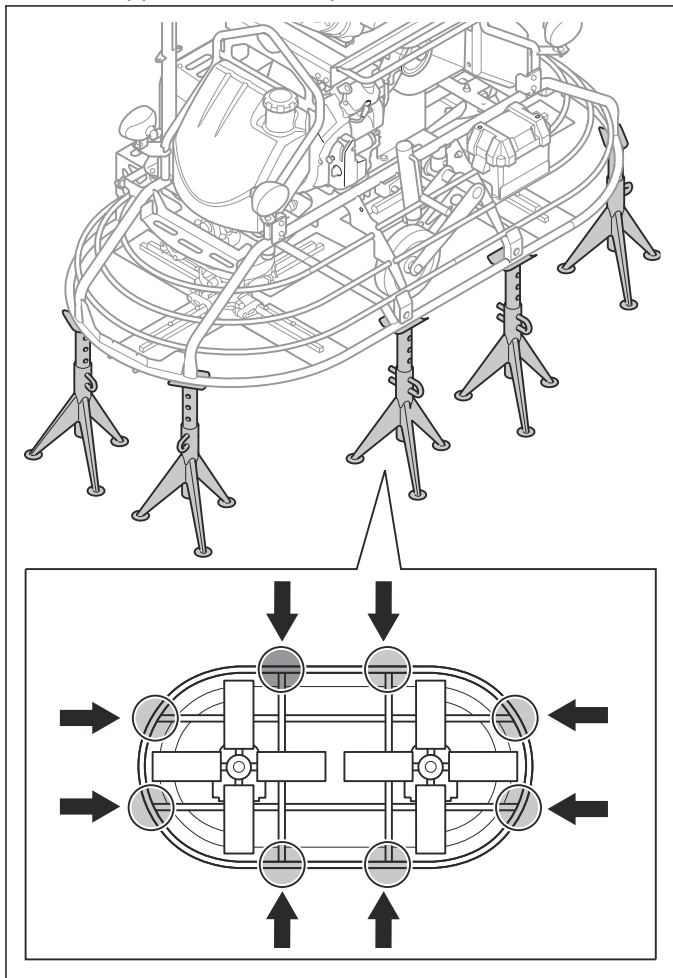


WARNING: Use a lifting equipment with capacity of minimum 562 kg/1240 lbs when you

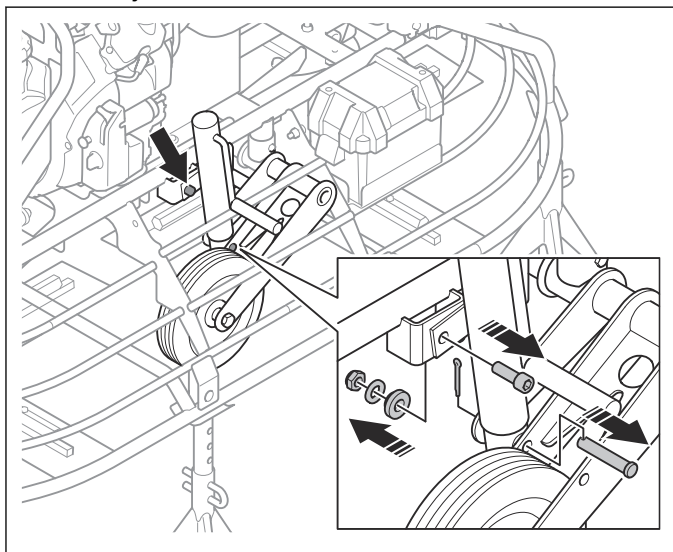


CAUTION: Let a bystander help you keep the product balanced. A product that is not balanced when you lift it can become damaged.

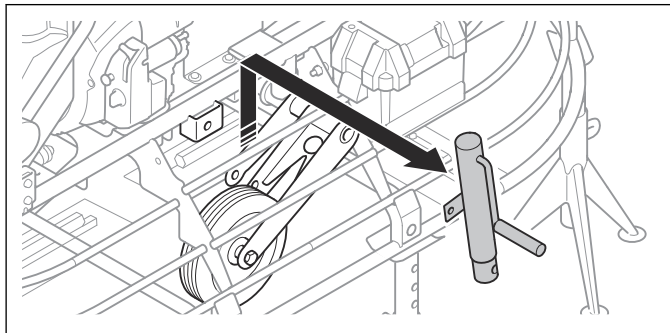
3. Put supports below the product.



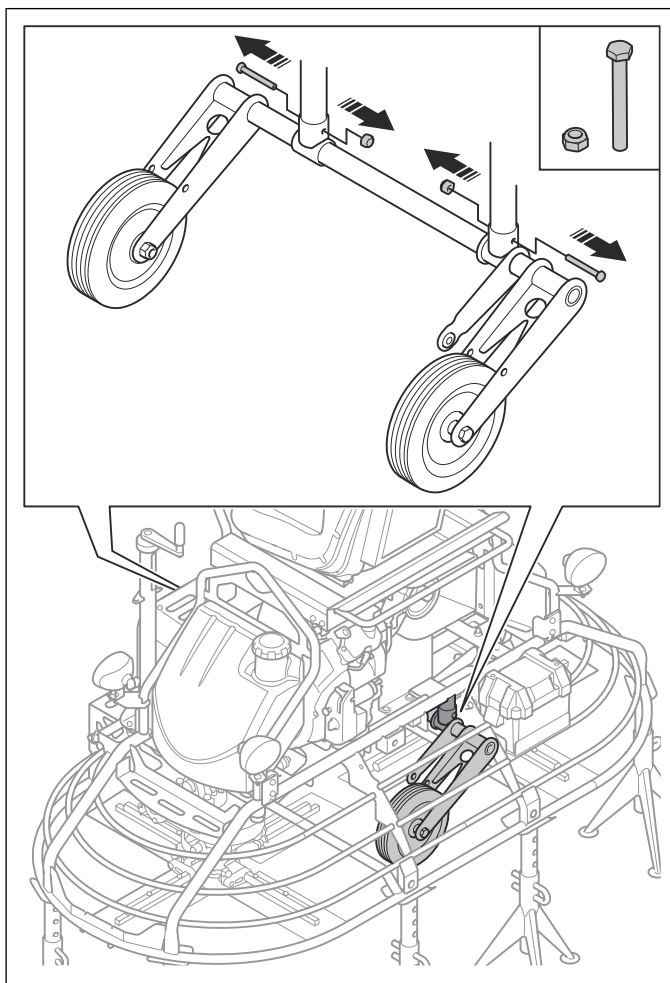
4. Remove the bolt, the 2 washers, the nut and the pin for the jack.



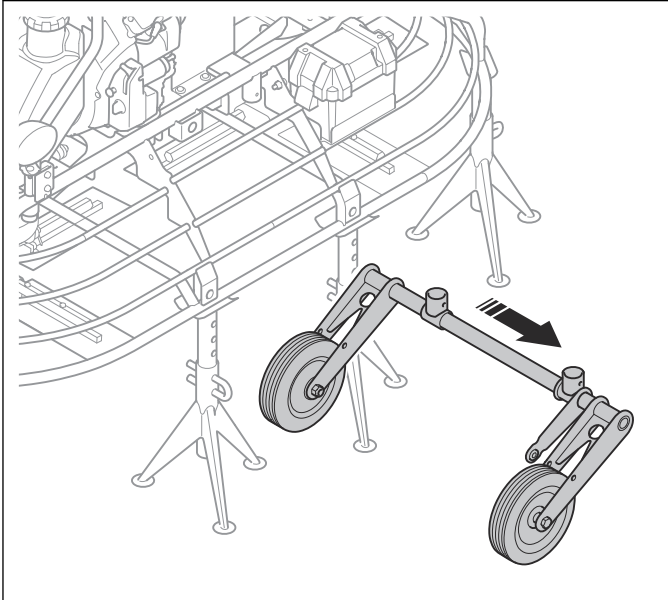
5. Remove the jack.



6. Remove the 2 bolts and 3 nuts on each side of the wheel kit.



7. Remove the wheel kit.



8. Install the wheel kit in the opposite sequence.

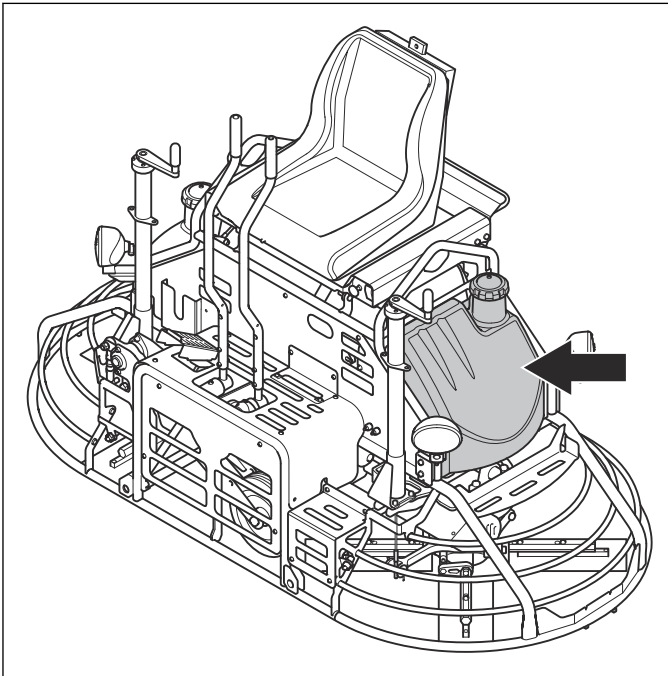
6.3 To remove the gearboxes



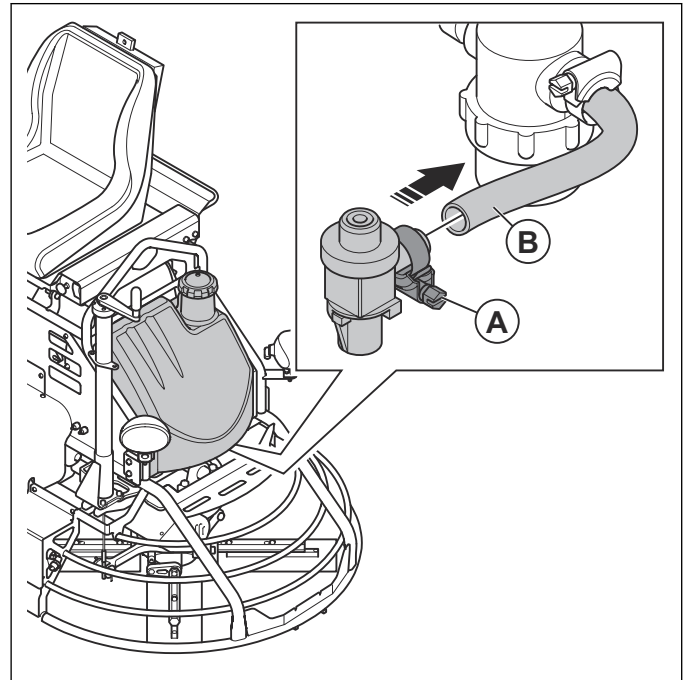
WARNING: Use a lifting equipment with capacity of minimum 562 kg/1240 lbs when you lift the product to decrease the risk of damage and injury.

1. Stop the engine and disconnect the battery.

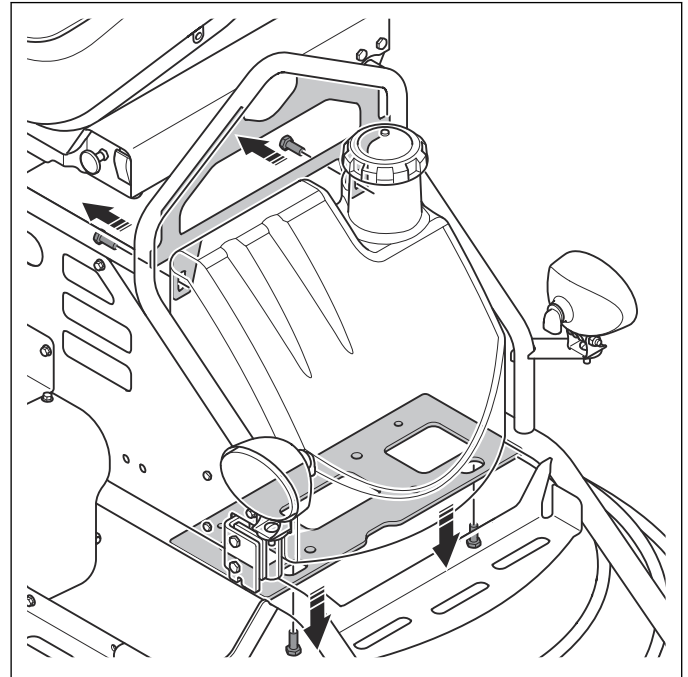
2. Drain the water tank.



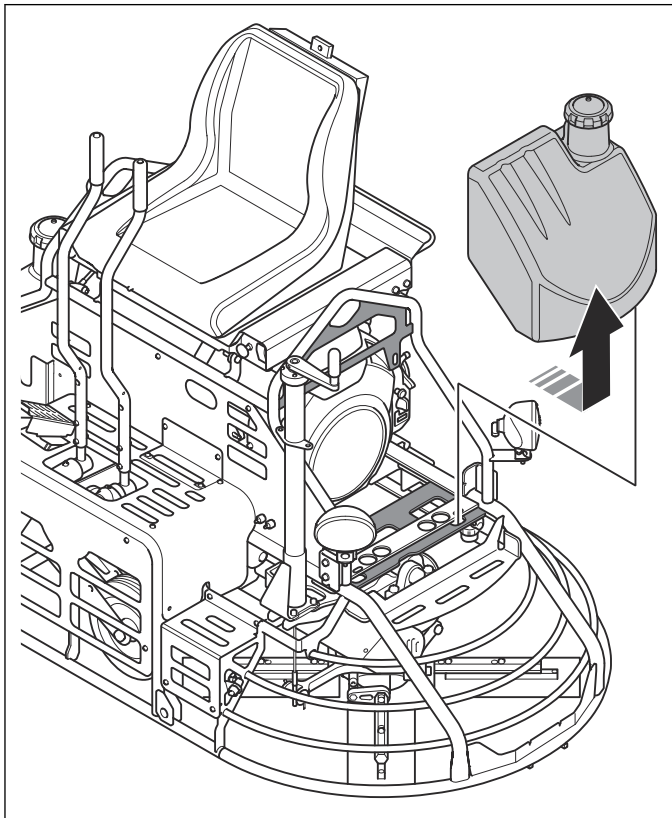
3. Loosen the hose clamp (A) and disconnect the water hose (B).



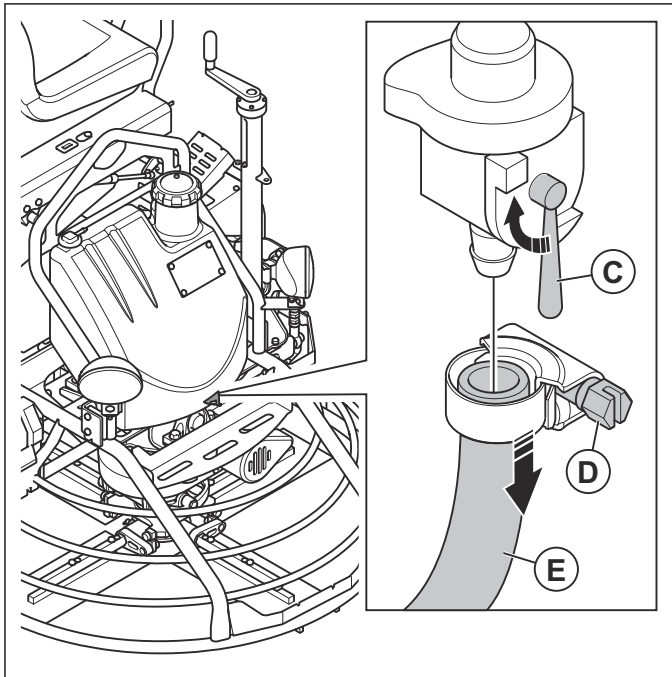
4. Remove the 4 screws for the water tank.



5. Remove the water tank.

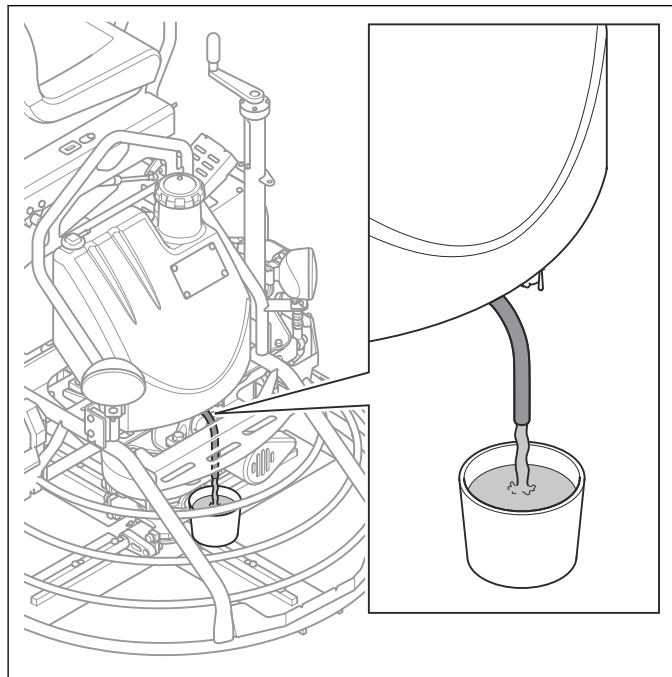


6. Close the fuel valve (C).

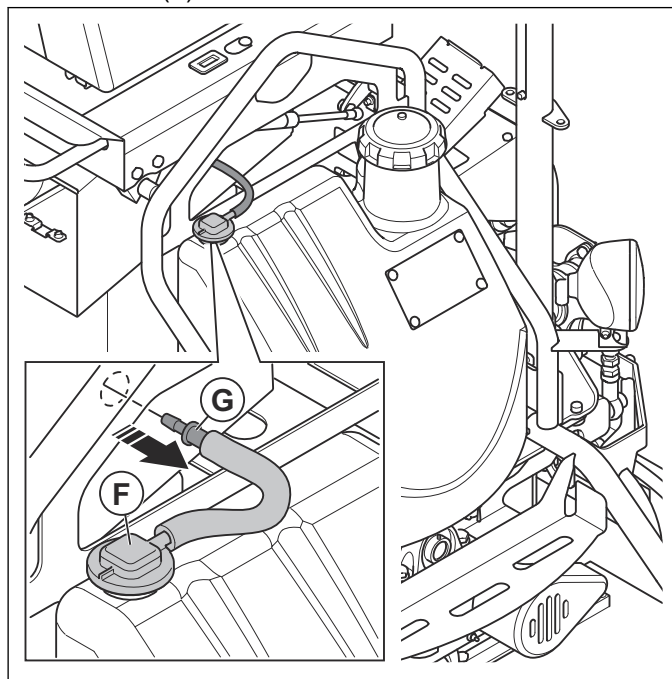


7. Loosen the hose clamp (D) and disconnect the fuel hose (E).

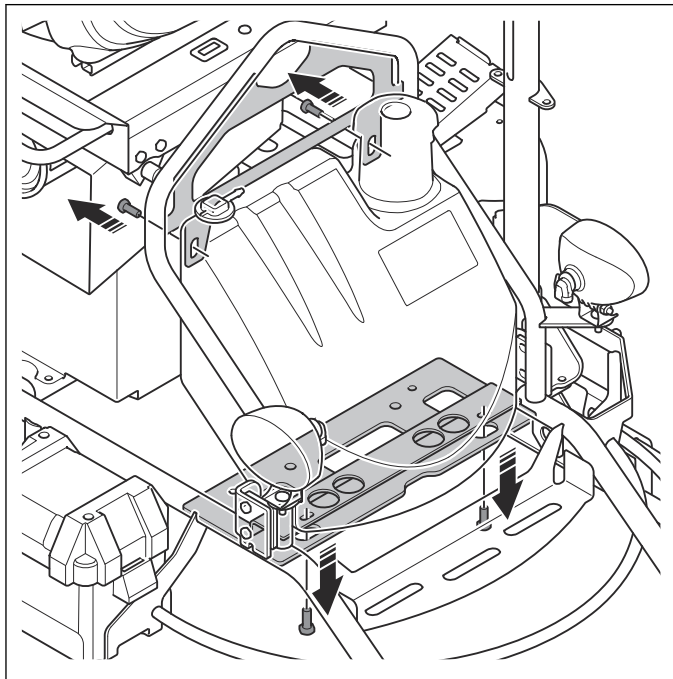
8. Drain the remaining fuel from the fuel hose into a container.



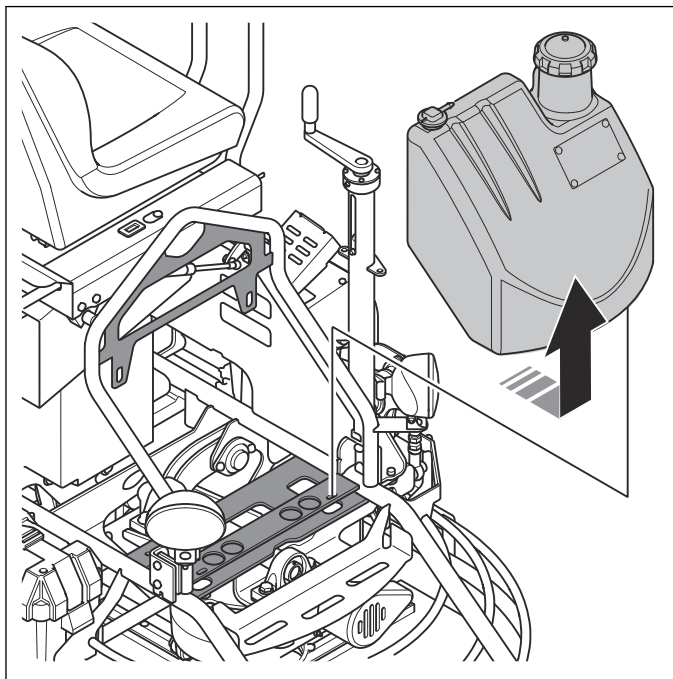
9. Remove the hose (G) for the ventilation valve of the fuel tank (F).



10. Remove the 4 screws for the fuel tank.

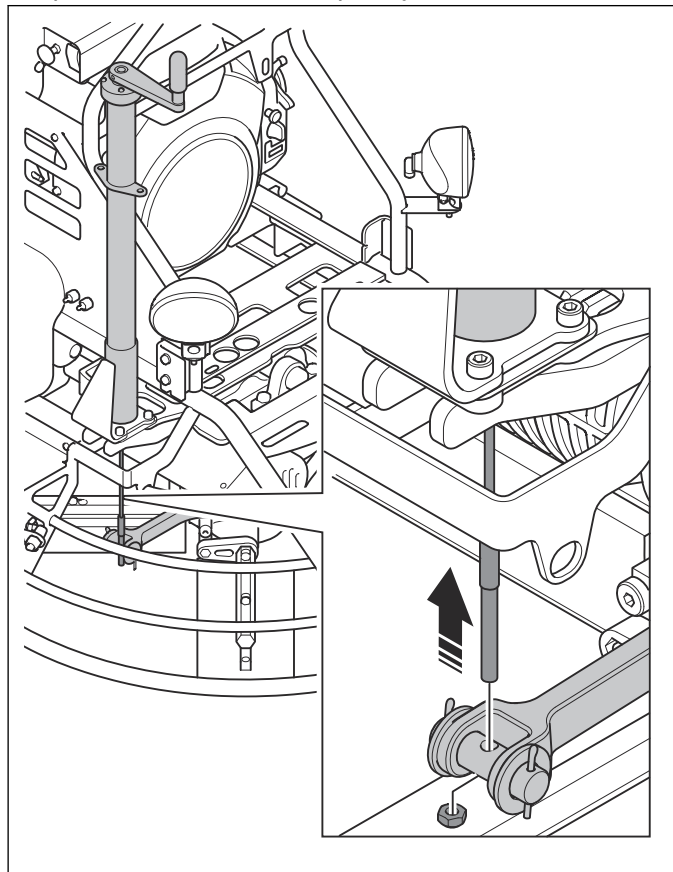


11. Remove the fuel tank.

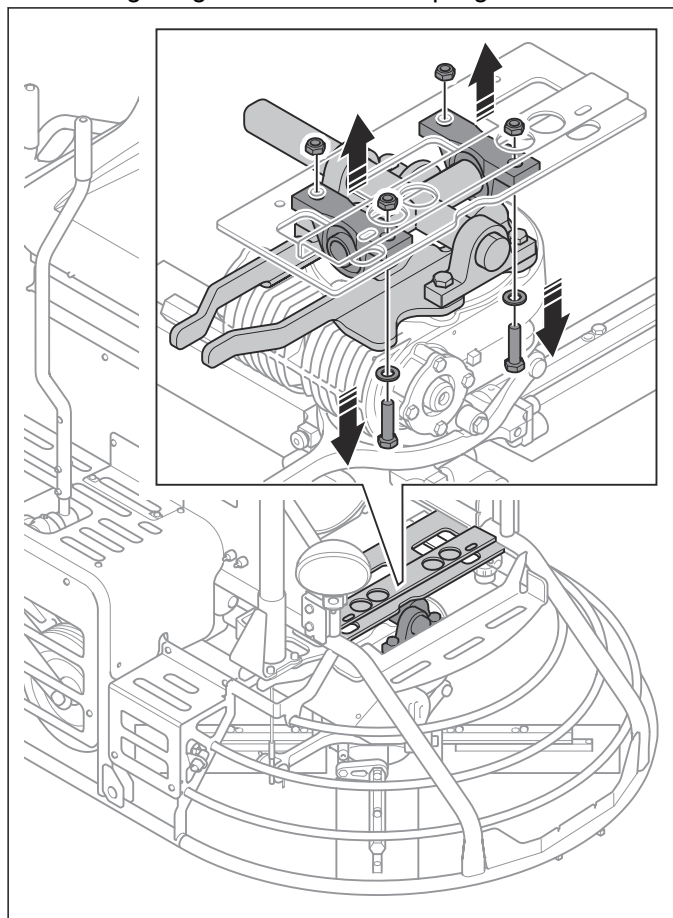


12. Remove the drive belt. Refer to *To remove the drive belt on page 11*.

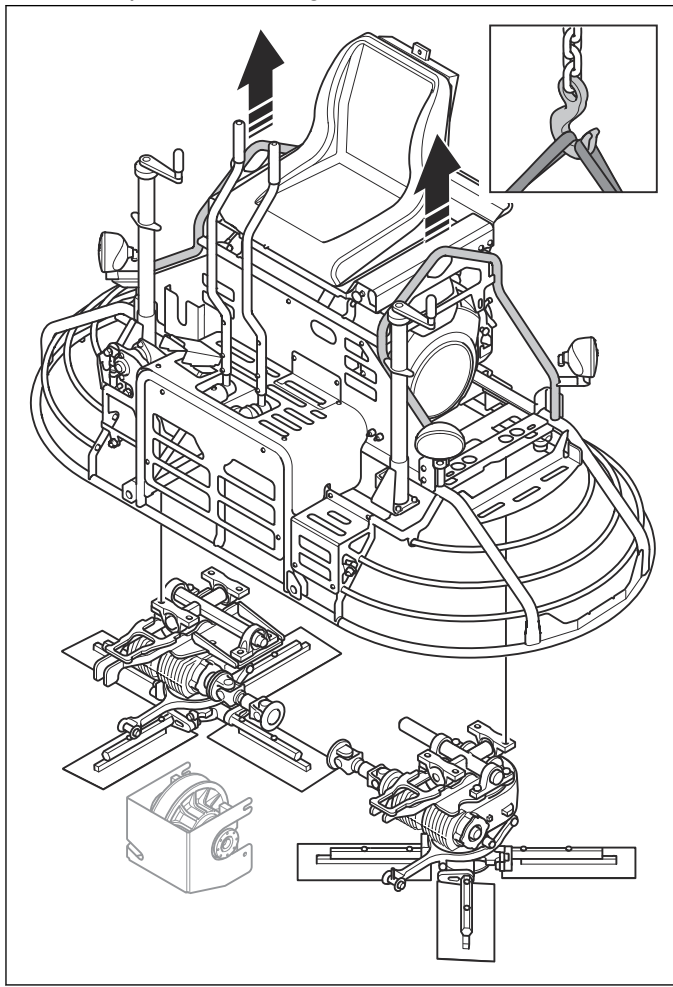
13. Remove the nut from each pitch cable and pull the pitch cable out from the pitch yoke.



14. Remove the bolts, the washers and the nuts for the bearing flanges on the lever couplings on each side.



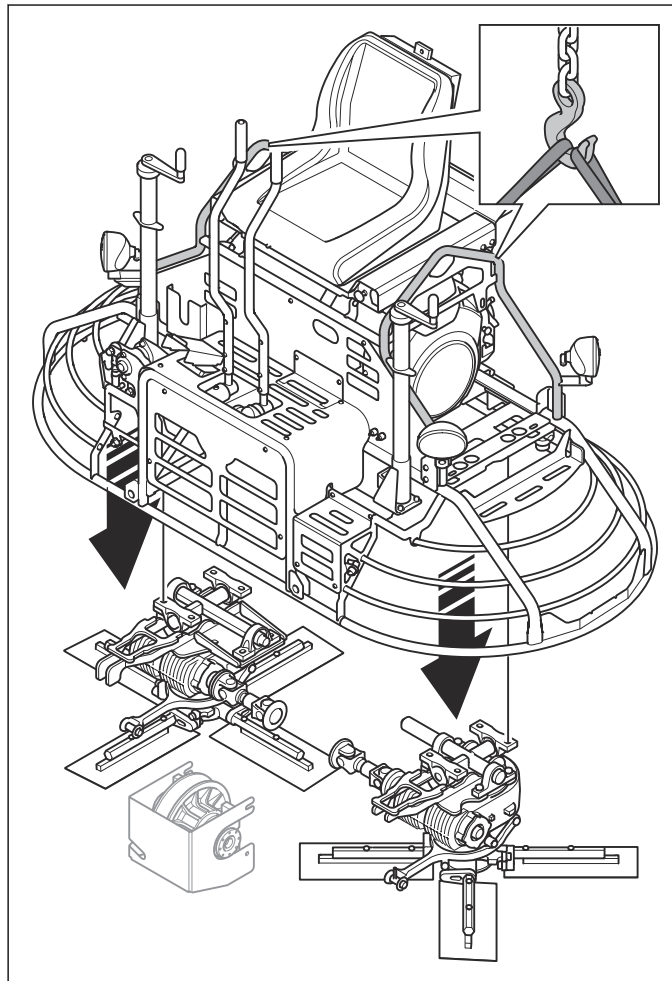
15. Attach the lifting equipment to the lifting points and lift the product off the gearboxes.



CAUTION: Let a bystander help you keep the product balanced. A product that is not balanced when you lift it can become damaged.

lift the product to decrease the risk of damage and injury.

1. Use lifting equipment to lower the product onto the gearboxes, the pulley assembly and the drive belt guard.

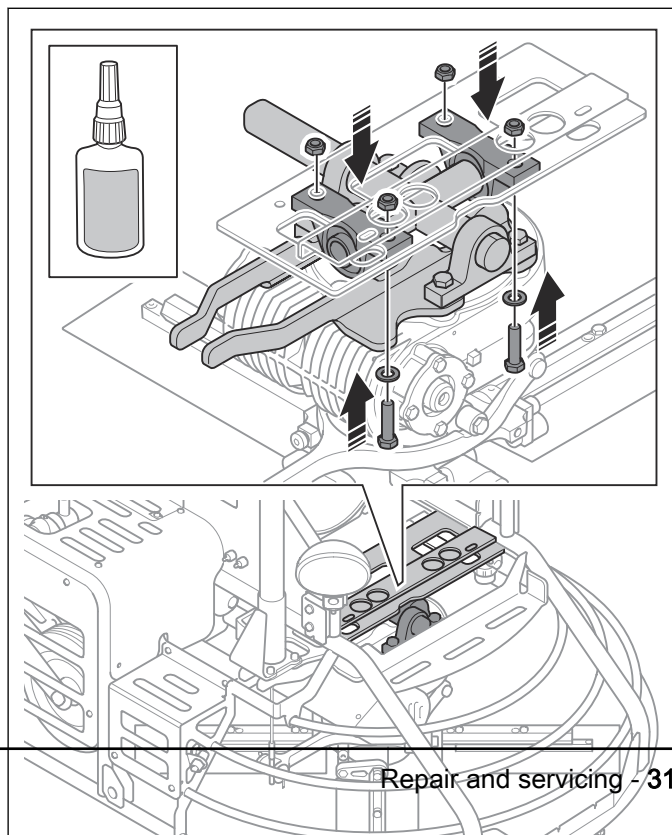


6.4 To install the gearboxes

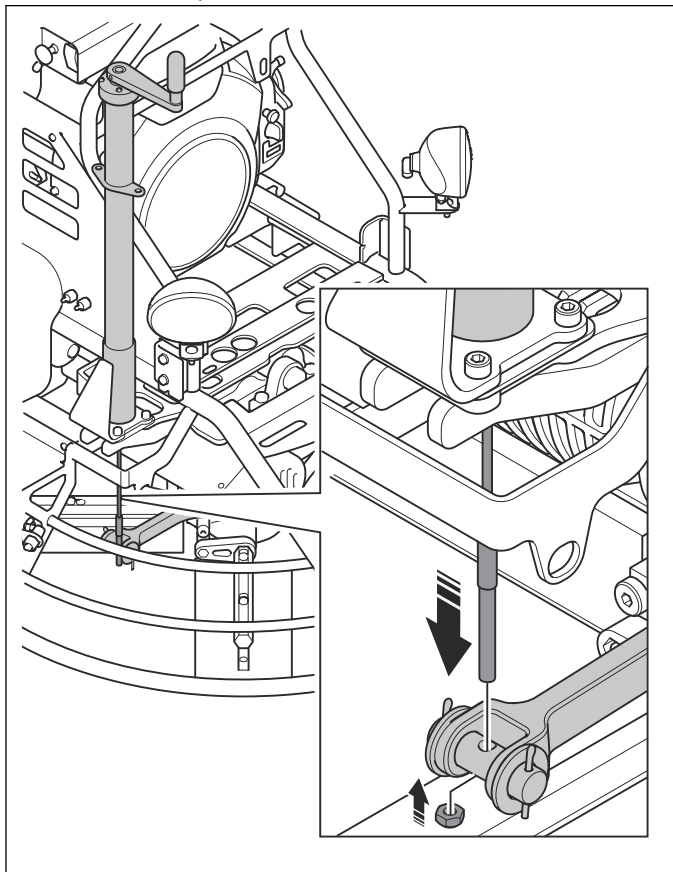


WARNING: Use a lifting equipment with capacity of minimum 562 kg/1240 lbs when you

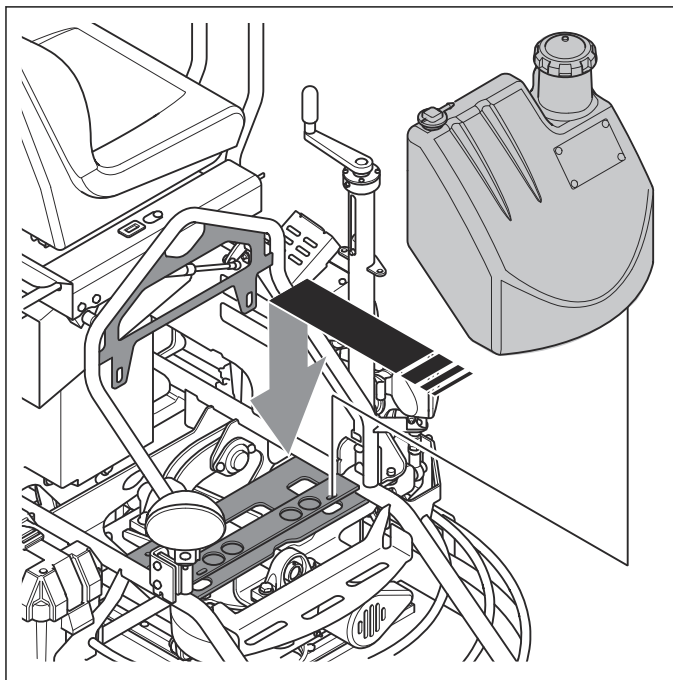
2. Align the holes of the bolts with the bearing flanges on the lever couplings. Put LOCTITE® 243 or equivalent on the threads. Install the bolts, the washers and the nuts.



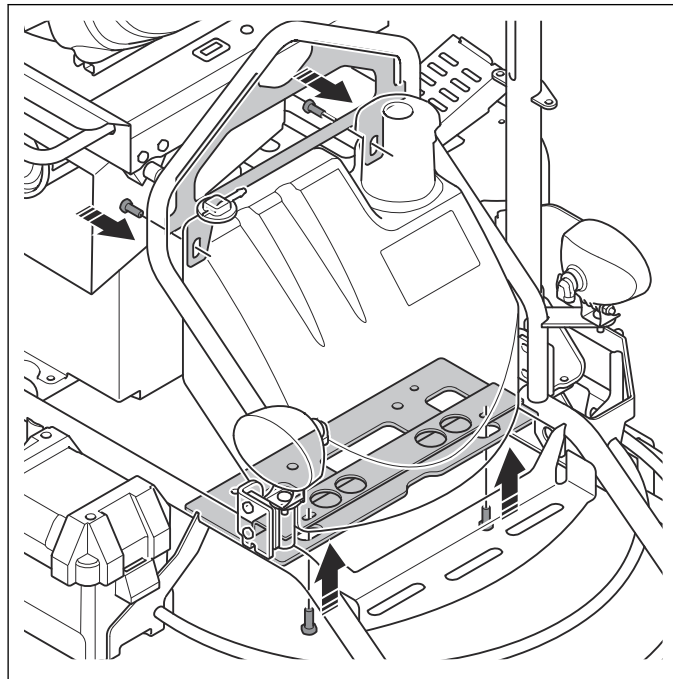
3. Install the pitch cables to pitch yokes and tighten the nut on each pitch.



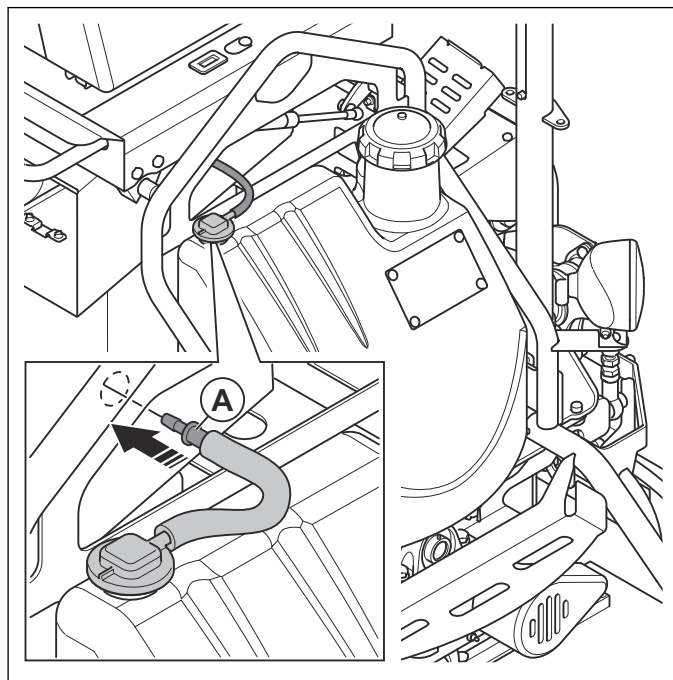
4. Install the fuel tank.



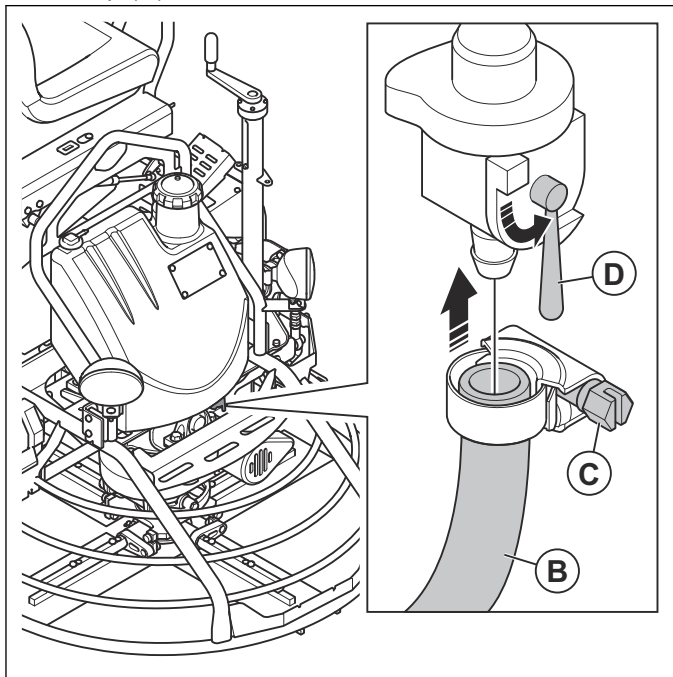
5. Tighten the 4 screws for the fuel tank.



6. Install the hose (A) for the ventilation valve of the fuel tank.

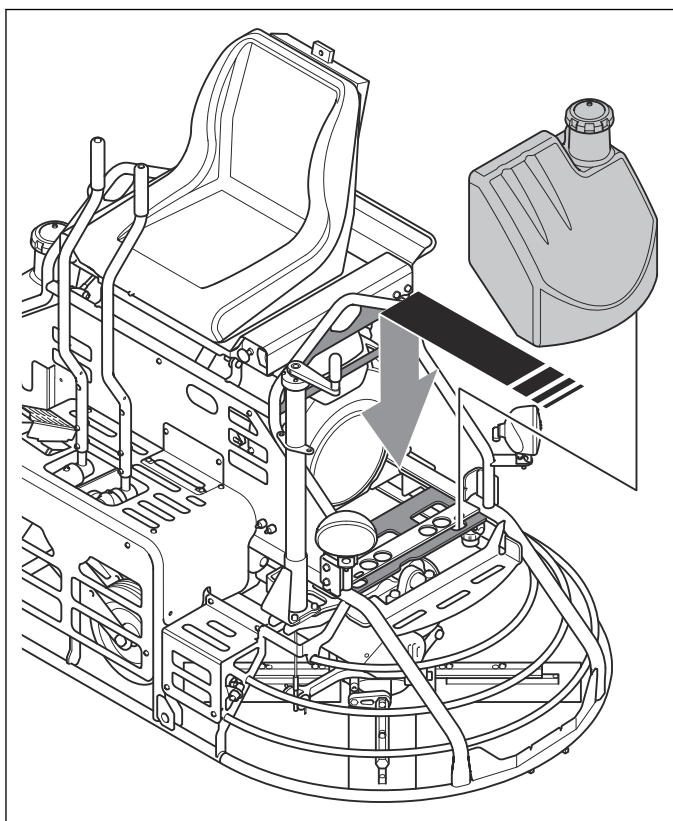


7. Connect the fuel hose (B) and tighten the hose clamp (C).

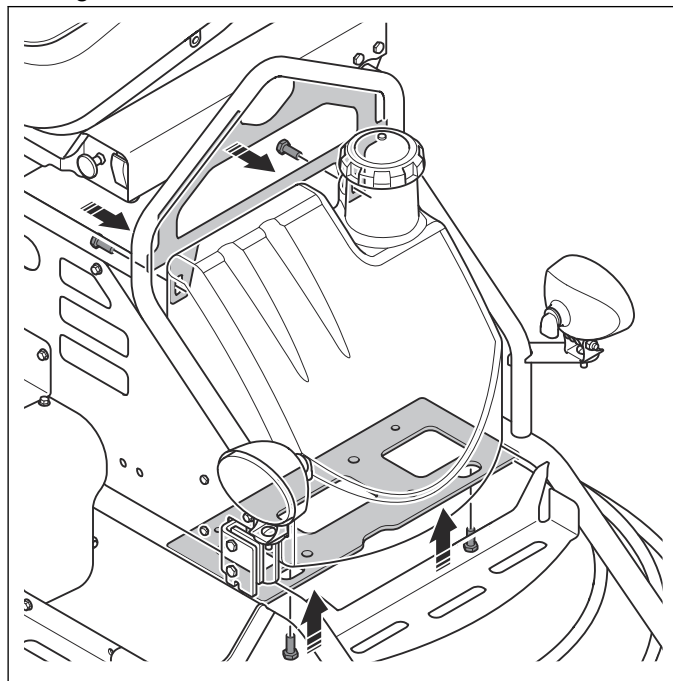


8. Open the fuel valve (D) and check for leaks.

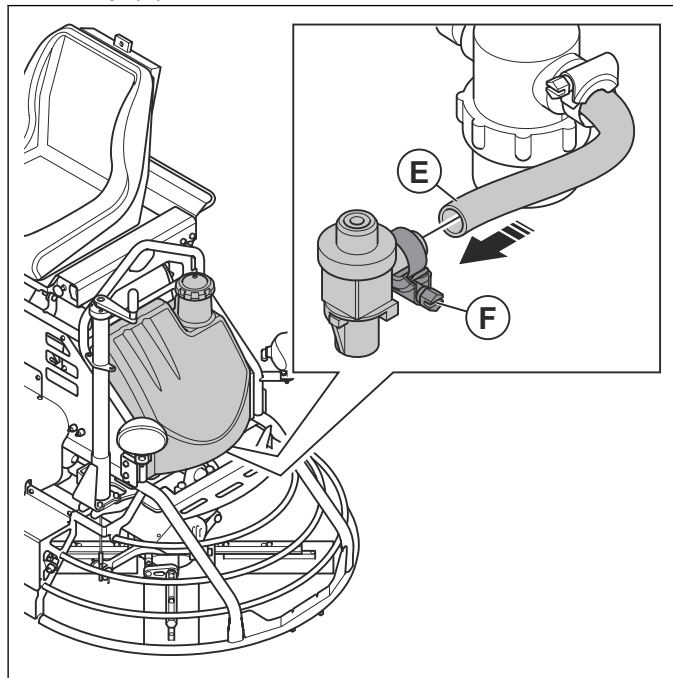
9. Install the water tank.



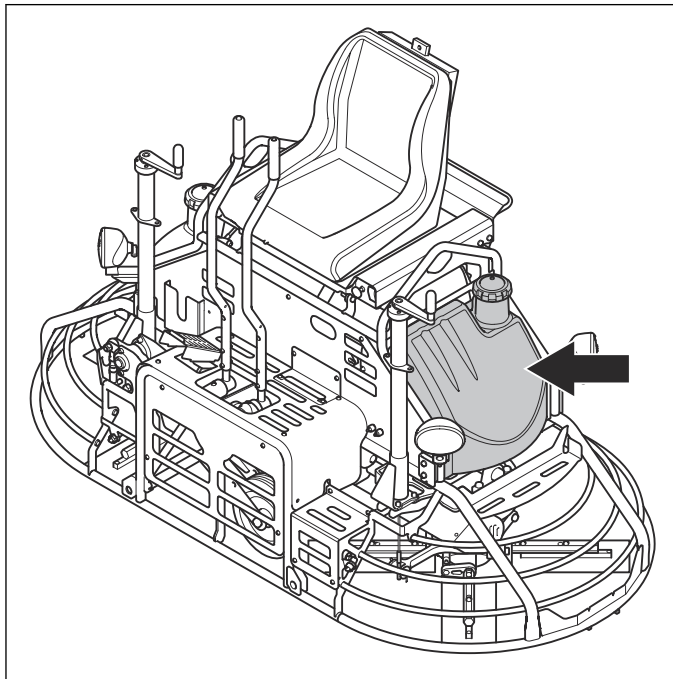
10. Tighten the 4 screws for the water tank.



11. Connect the water hose (E) and tighten the hose clamp (F).



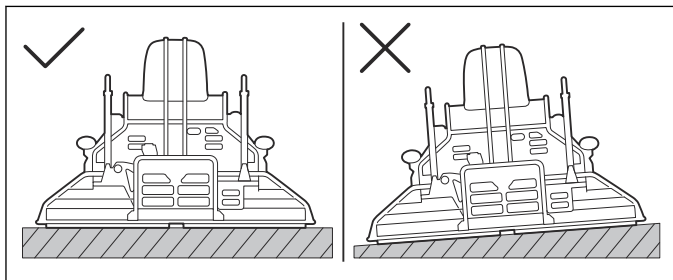
12. Fill the water tank and check for leaks.



13. Install the drive belt. Refer to *To install the drive belt on page 13*.

6.5 To disassemble the drive system

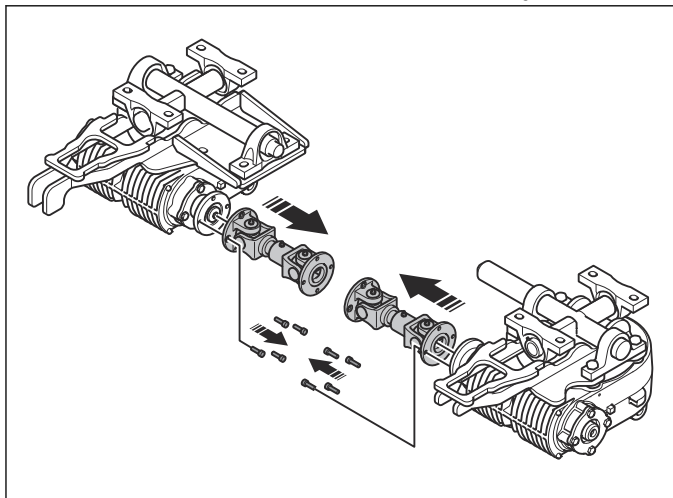
1. Put the product on a flat, level surface with the blades flat.



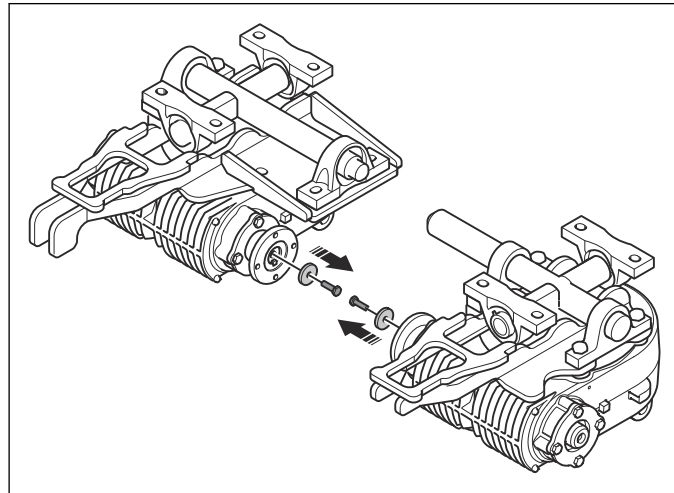
2. Stop the engine and disconnect the battery.

3. Remove the drive belt. Refer to *To remove the drive belt on page 11*.

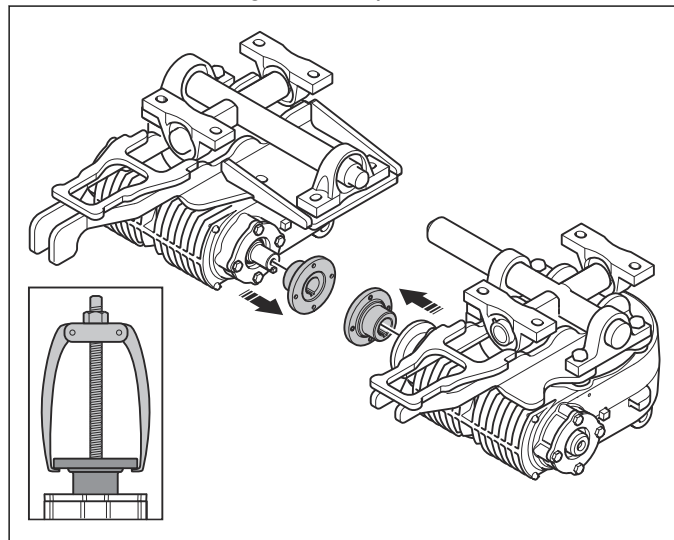
4. Remove the 8 screws and the universal joints.



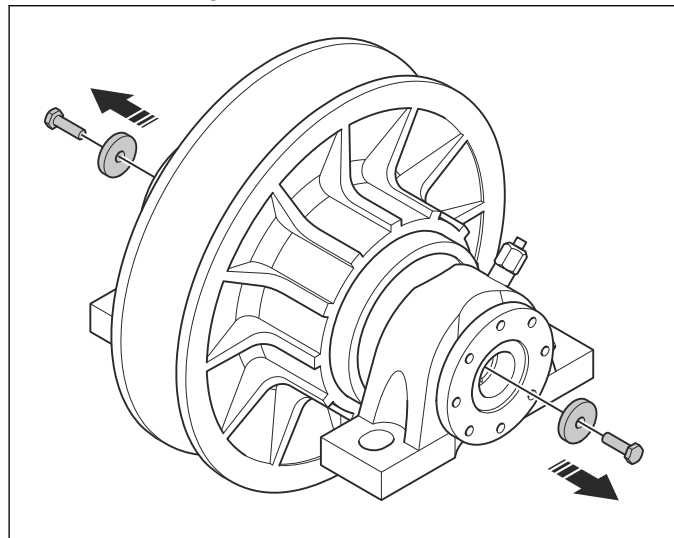
5. Remove the 2 center bolts and the 2 washers from the gearbox flanges.



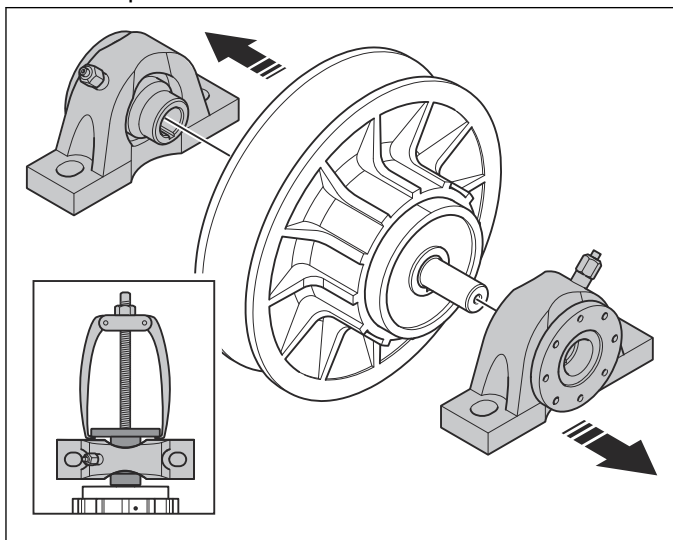
6. Remove the flanges with a puller.



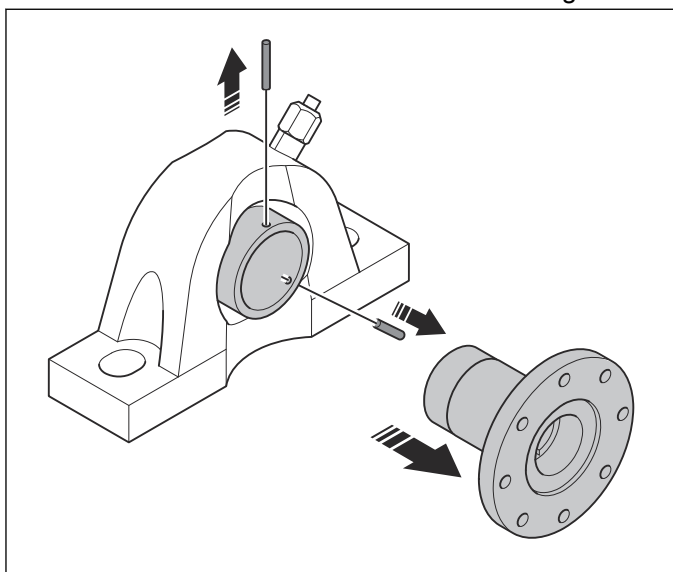
7. Remove the 2 center bolts and the 2 washers from the shaft flanges.



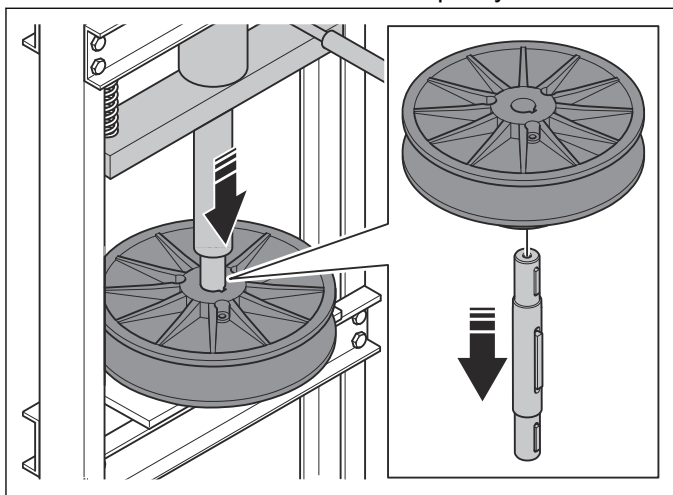
8. Remove the bearing flanges and the shaft flanges with a puller.



9. Remove the 2 set screws and the shaft flanges.

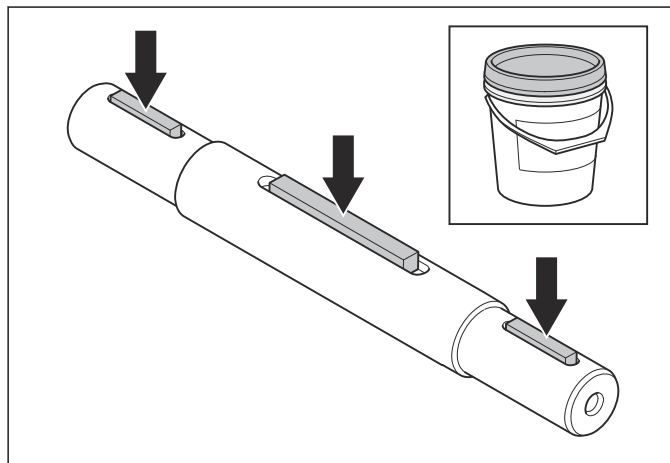


10. Remove the drive shaft from the pulley wheel.

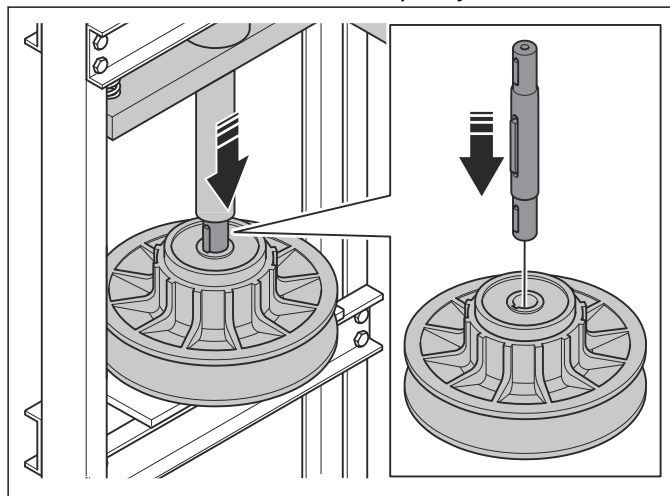


6.6 To assemble the drive system

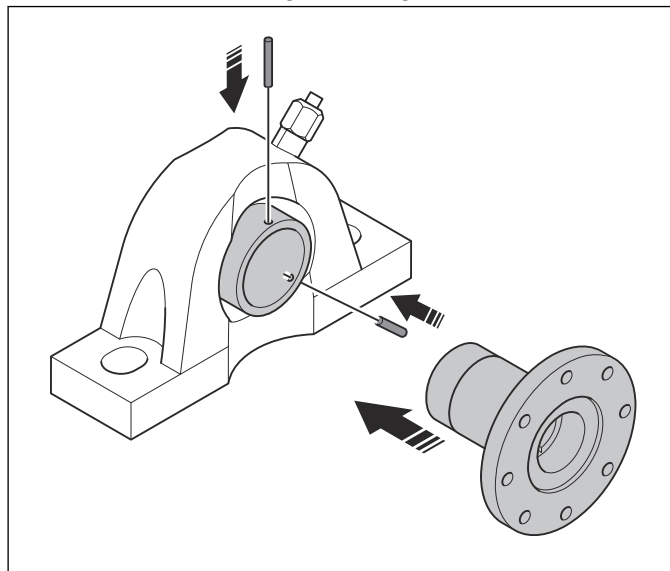
1. Put anti-seize lubricant to the 3 areas of the drive shaft.



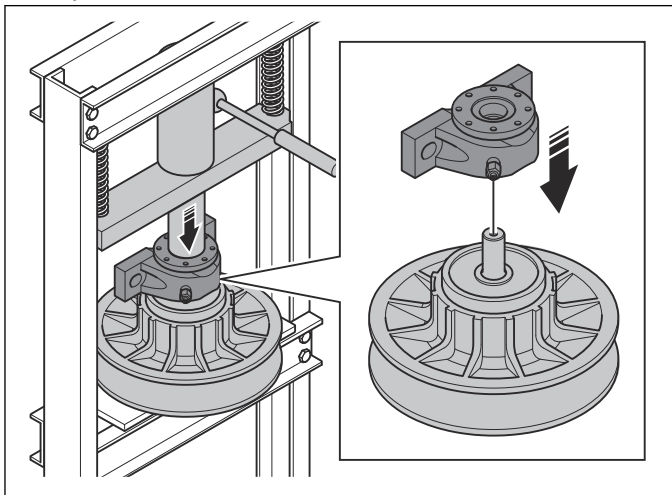
2. Install the drive shaft into the pulley wheel.



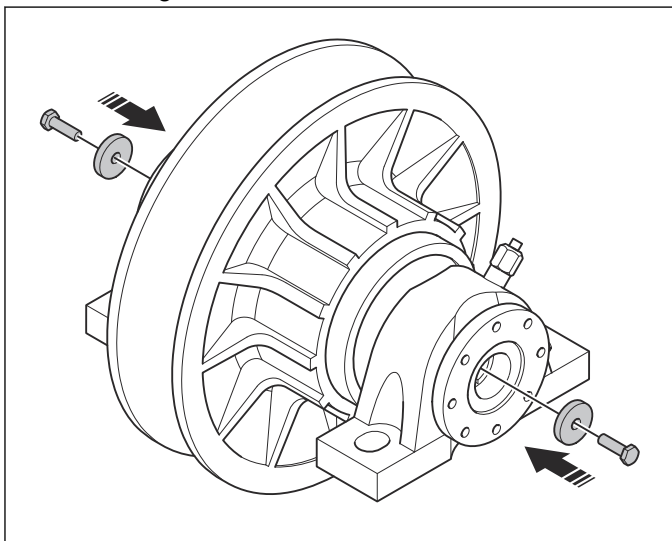
3. Install the shaft flanges and tighten the 2 set screws.



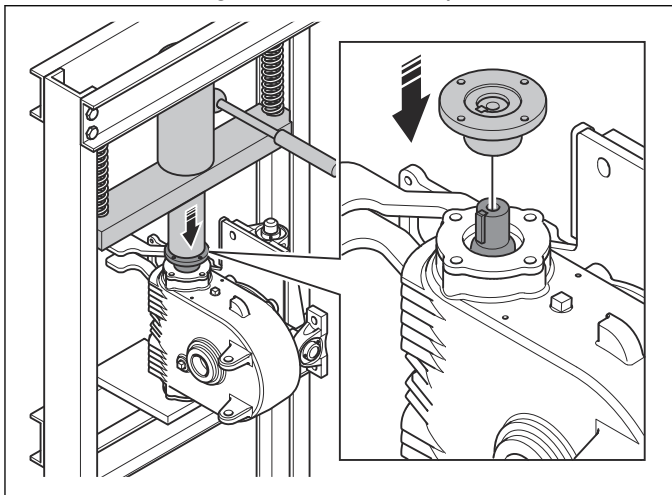
4. Install the bearing flanges and the shaft flanges with a press.



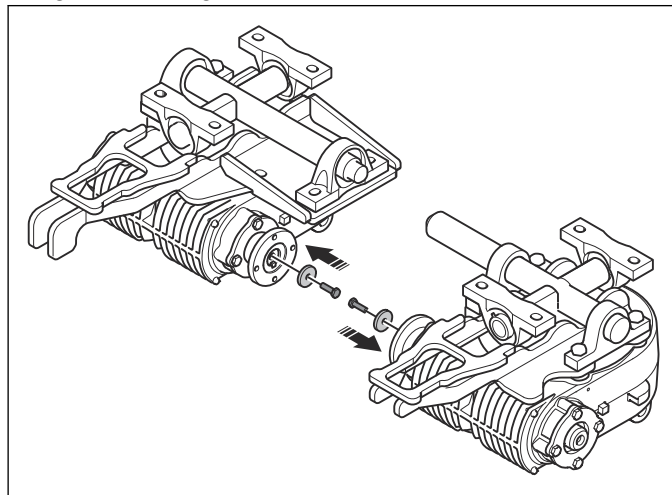
5. Install the 2 washers and the 2 center bolts on the shaft flanges.



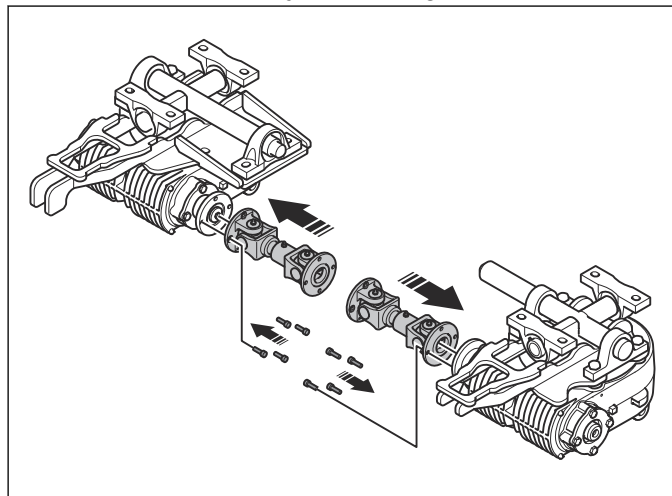
6. Install the flanges with a mandrel press.



7. Install the 2 washers and the 2 center bolts on the gearbox flanges.



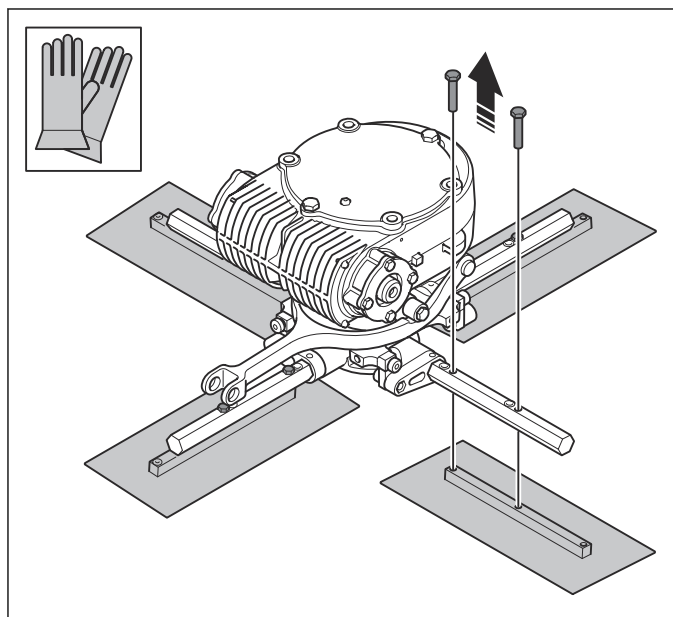
8. Install the universal joints and tighten the 8 screws.



9. Install the drive belt. Refer to *To install the drive belt on page 13.*

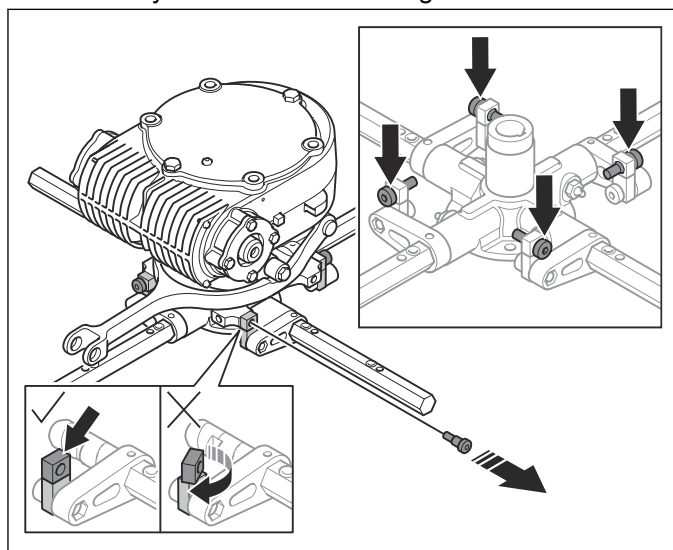
6.7 To disassemble the lower unit

1. Remove the gearboxes from the product. Refer to *To remove the gearboxes on page 28*.
2. Remove the screws and remove the blades.

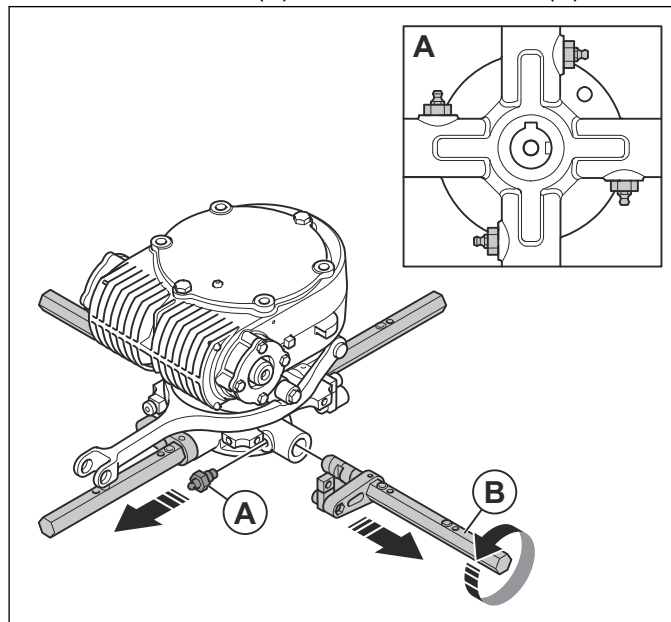


WARNING: Use protective gloves.

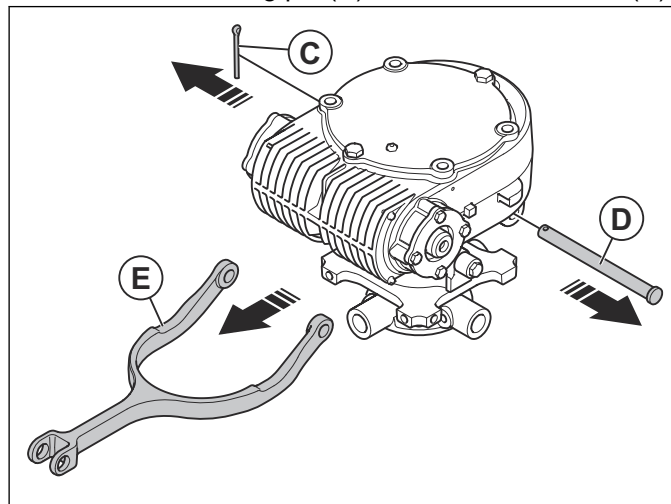
3. Remove the 4 shoulder bolts from the ring assembly. Do not turn the linkages.



4. Remove the bolt (A) and the blade shafts (B).

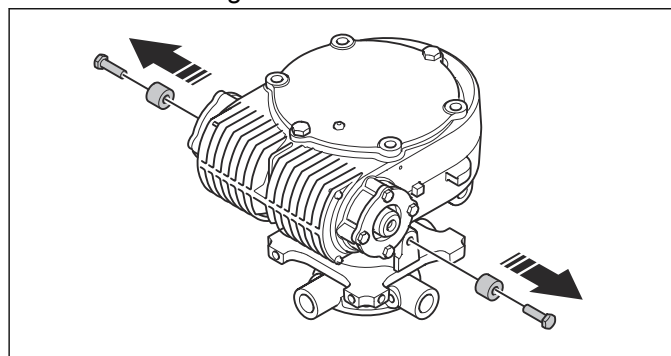


5. Pull out the locking pin (C) and remove the shaft (D).

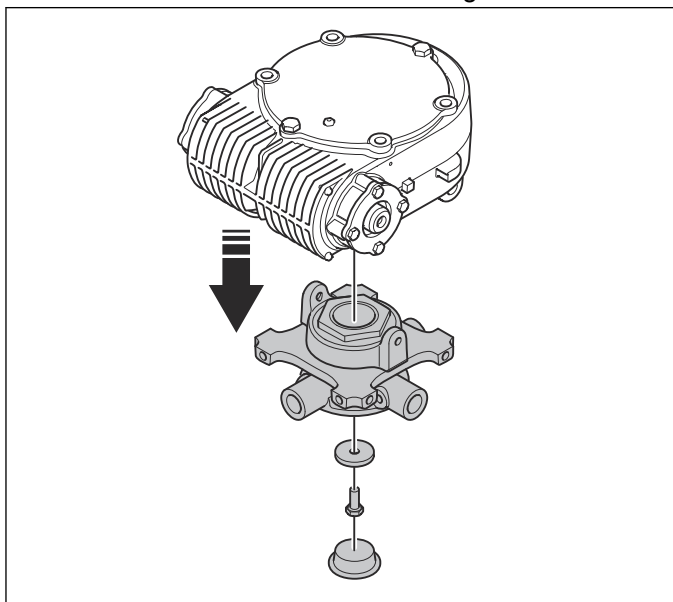


6. Remove the blade yoke (E).

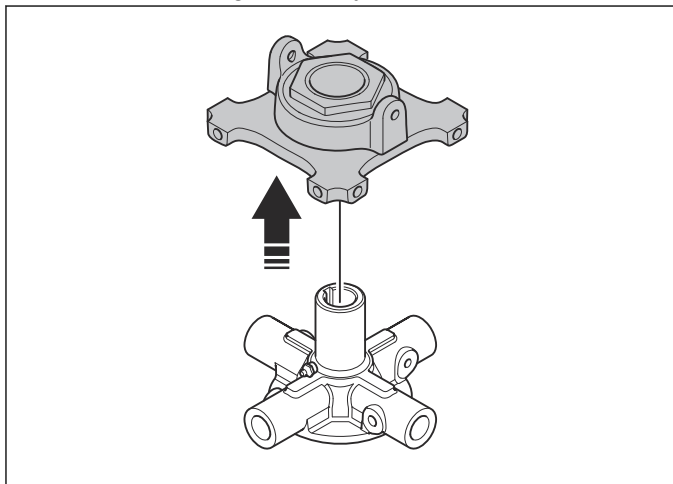
7. Remove the 2 guide rollers.



8. Remove the plug, the screw and the washer from the hub. Remove the hub from the gearbox.



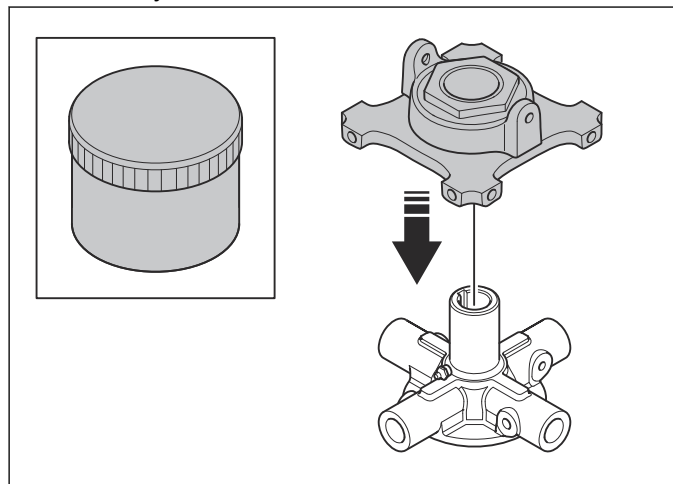
9. Remove the ring assembly.



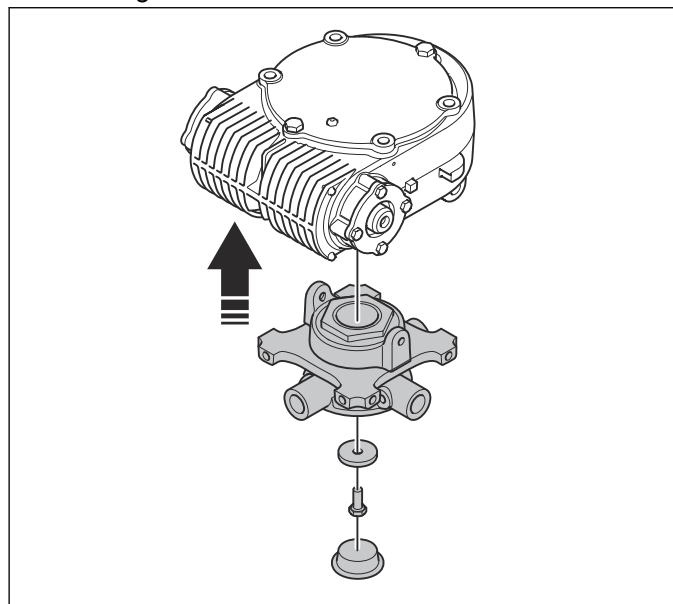
10. Do the procedure for the opposite lower unit.

6.8 To assemble the lower unit

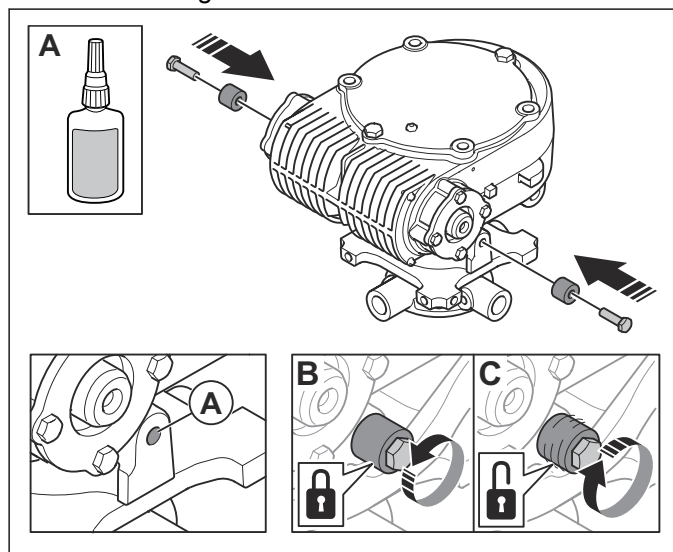
1. Apply anti-seize lubricant and install the ring assembly on the hub.



2. Install the hub, the washer, the screw and the plug on the gearbox.

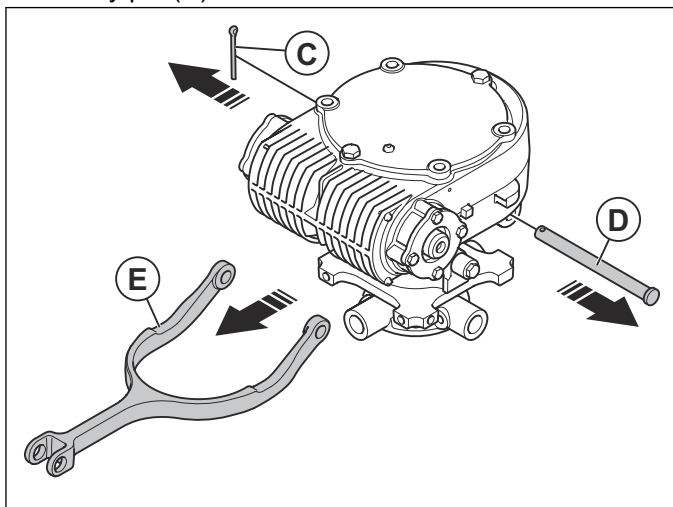


3. Install the 2 guide rollers.

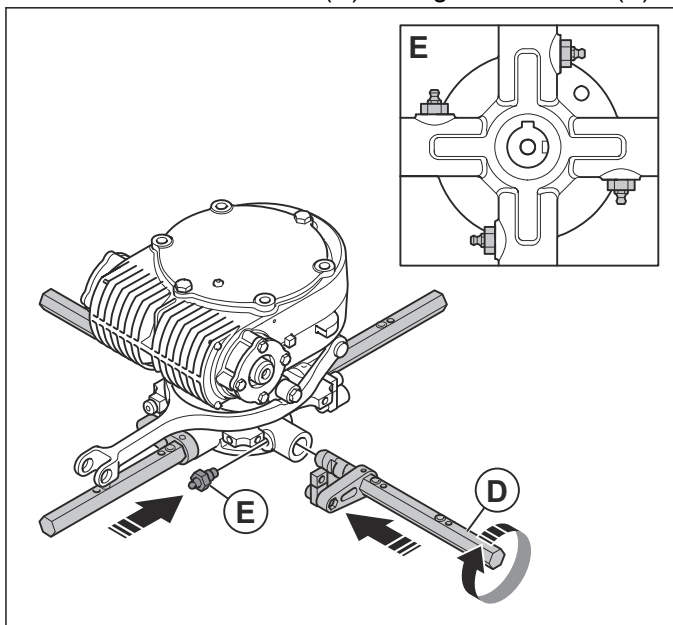


- a) Put LOCTITE® 271 or equivalent in the holes for the bolts (A).

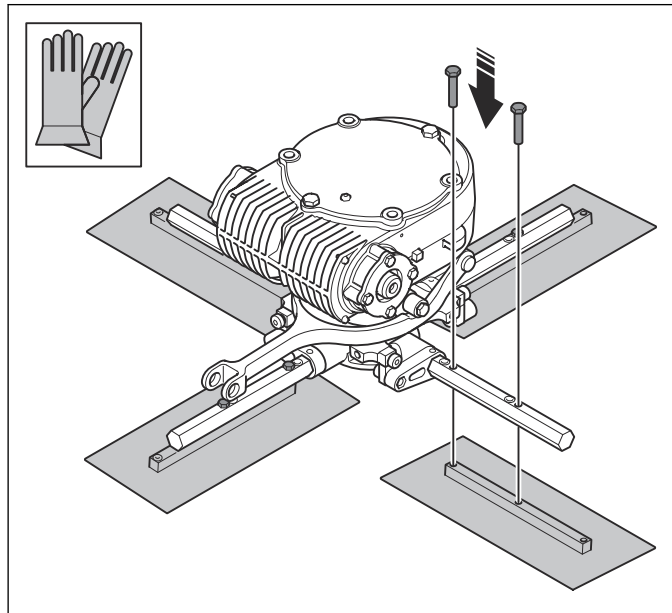
- b) Install the guide rollers and tighten the bolts until the guide roller cannot turn (B).
 - c) Loosen the bolt until the guide roller can turn (C).
4. Install the blade yoke (E), the shaft (D), and the safety pin (C).



5. Install the blade shafts (D) and tighten the bolts (E)

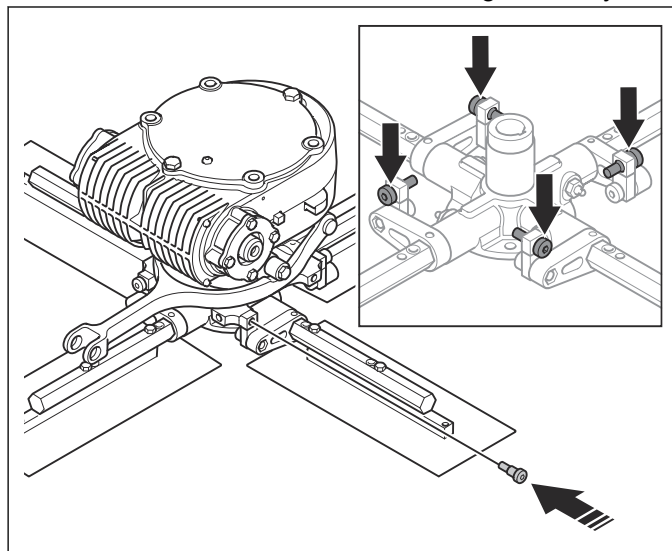


6. Install the blades and tighten the screws.



WARNING: Use protective gloves.

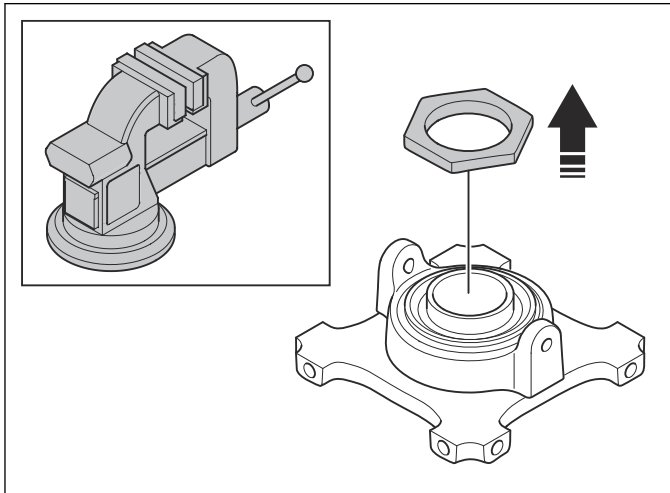
7. Install the 4 shoulder bolts on the ring assembly.



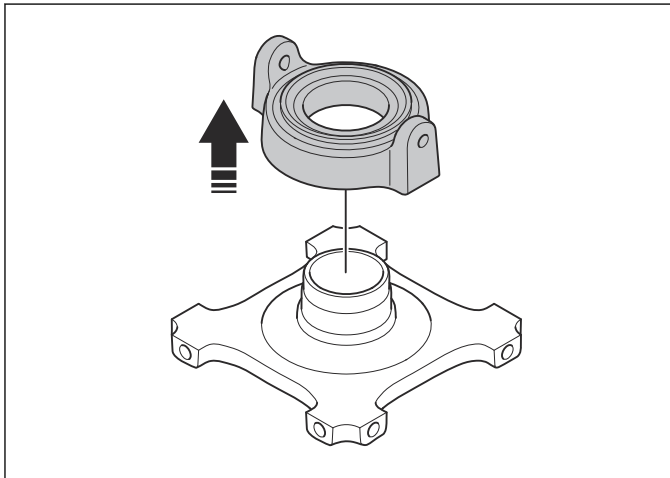
6.9 To disassemble the ring assembly

1. Remove the gearbox. Refer to *To remove the gearboxes on page 28*.
2. Remove the ring assembly from the hub. Refer to *To disassemble the lower unit on page 37*.

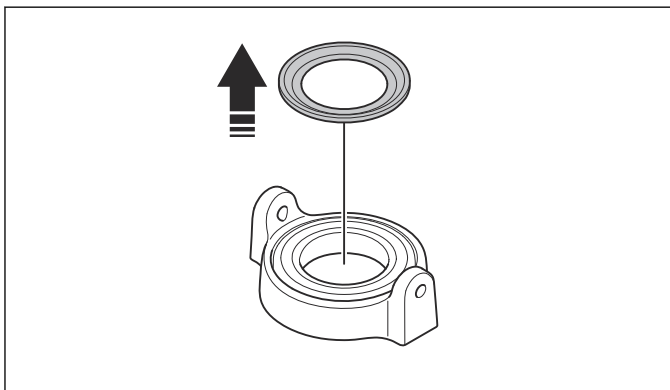
3. Put the ring assembly in a vise and remove the ring cap.



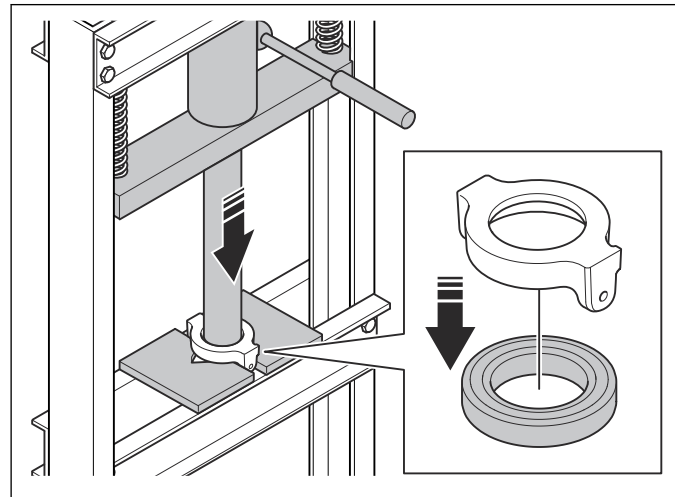
4. Remove the bearing holder.



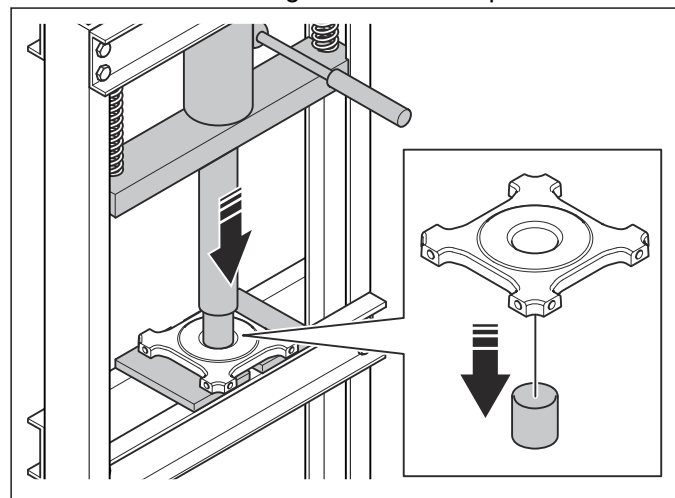
5. Remove the seal.



6. Remove the bearing with a mandrel press.

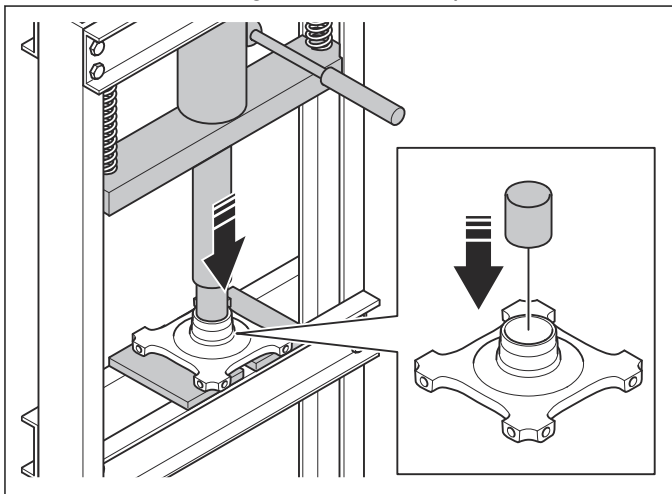


7. Remove the bushing with a mandrel press.

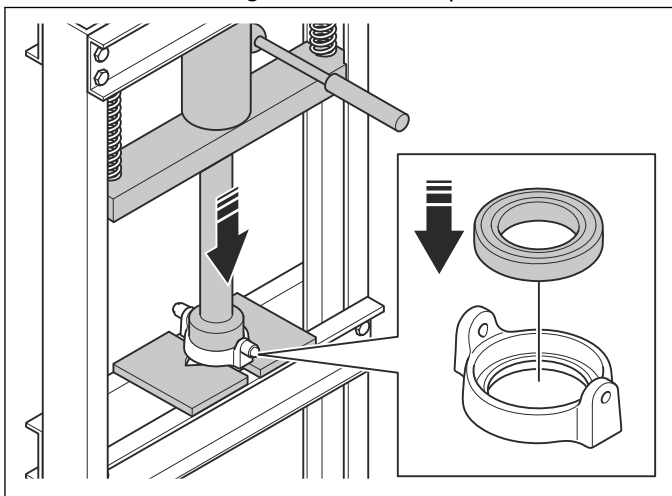


6.10 To assemble the ring assembly

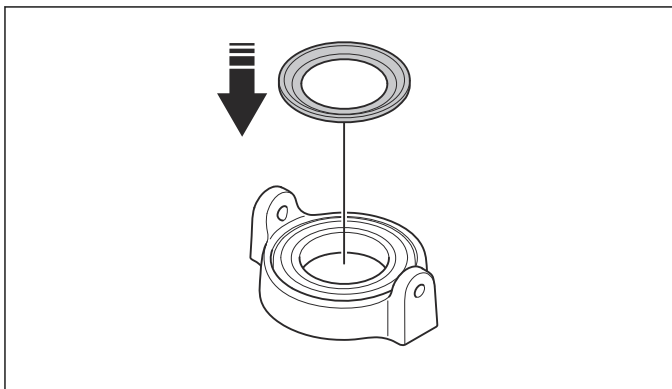
1. Install the bushing with a mandrel press.



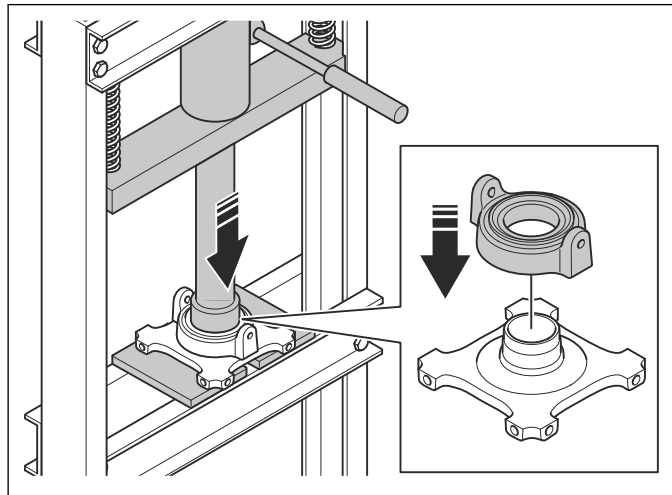
2. Install the bearing with a mandrel press.



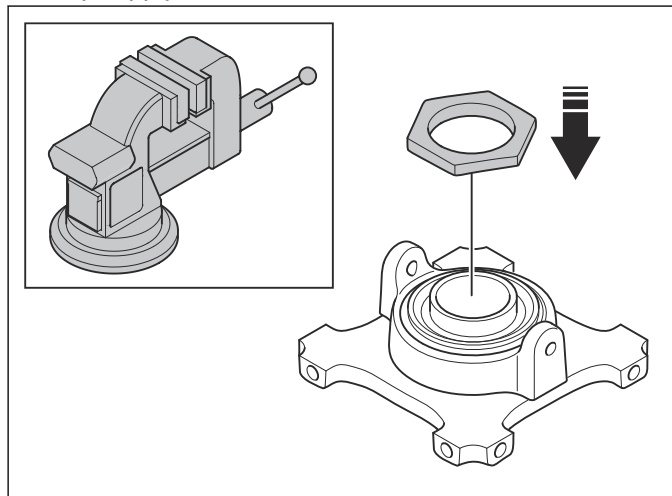
3. Install the seal.



4. Install the bearing.



5. Put the ring assembly in a vise and install the ring cap. Apply LOCTITE® 263.

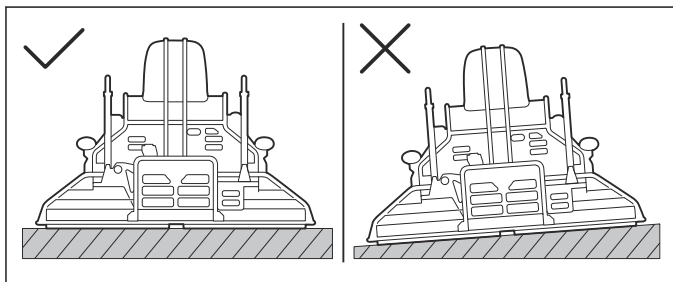


6. Install the the ring assembly on the hub. Refer to *To assemble the lower unit on page 38*.

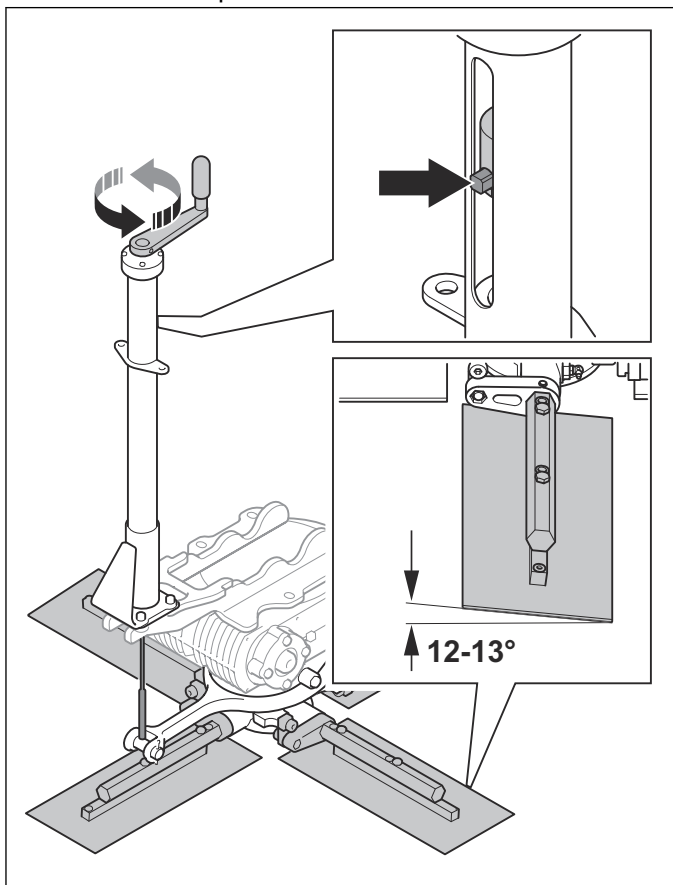
7. Install the gearbox. Refer to *To install the gearboxes on page 31*.

6.11 To adjust the blade pitch

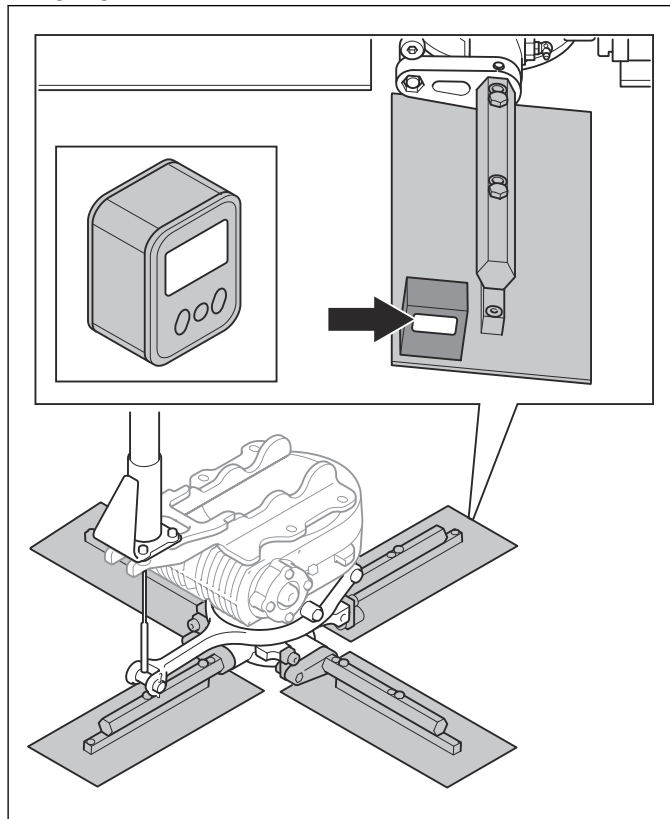
1. Put the product on a flat, level surface and install the new blades.



2. Turn the blade pitch controls to set the blades at half the maximum pitch.

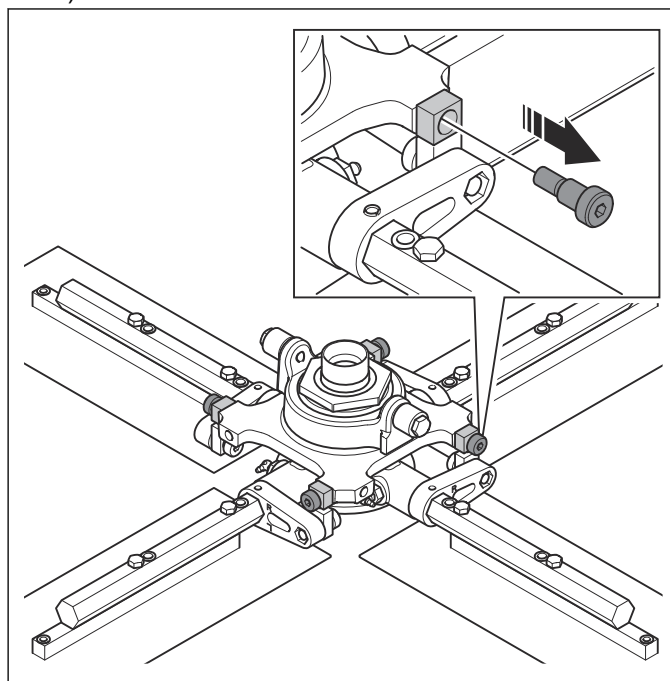


3. Do a check of the angle of each blade with an angle gauge.

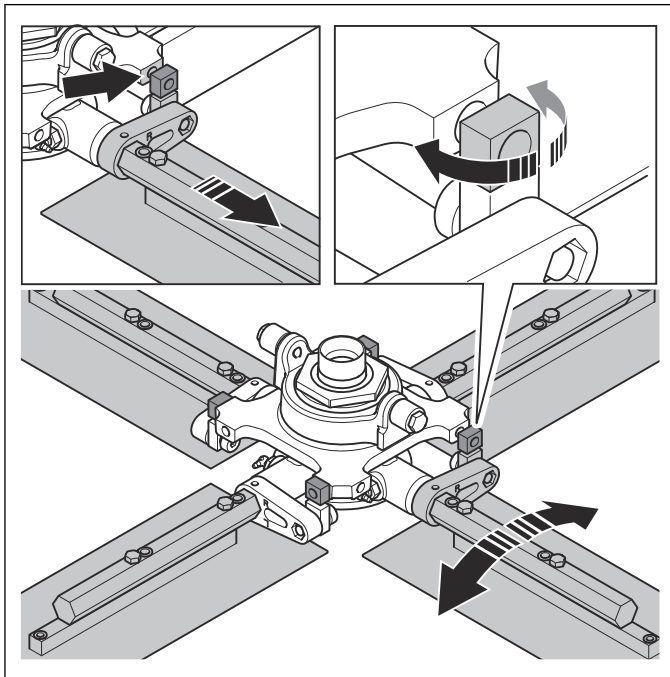


4. Adjust the blade shafts so they have the same angle.

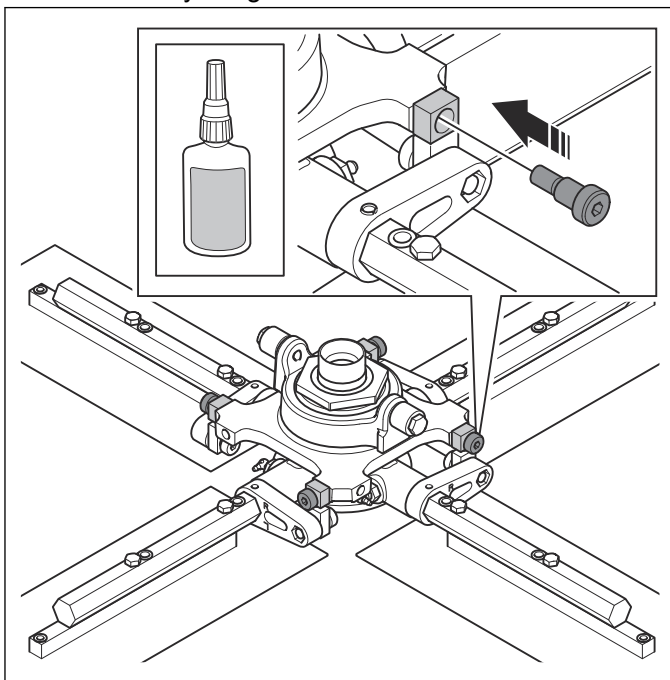
- a) Remove the shoulder bolt.



b) Turn the linkage.



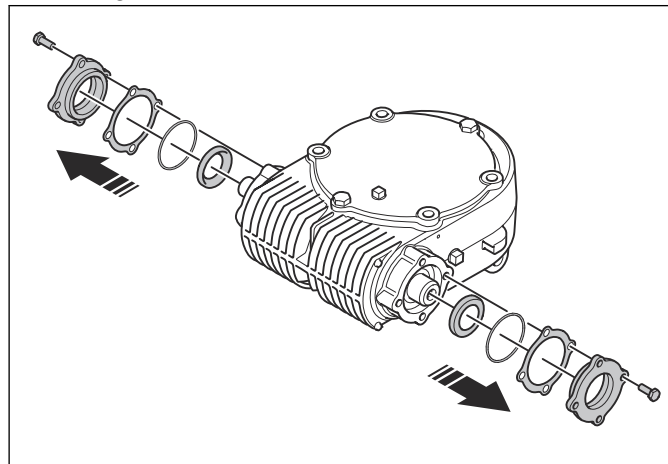
5. Put medium strength threadlocker on each shoulder bolt before you tighten them.



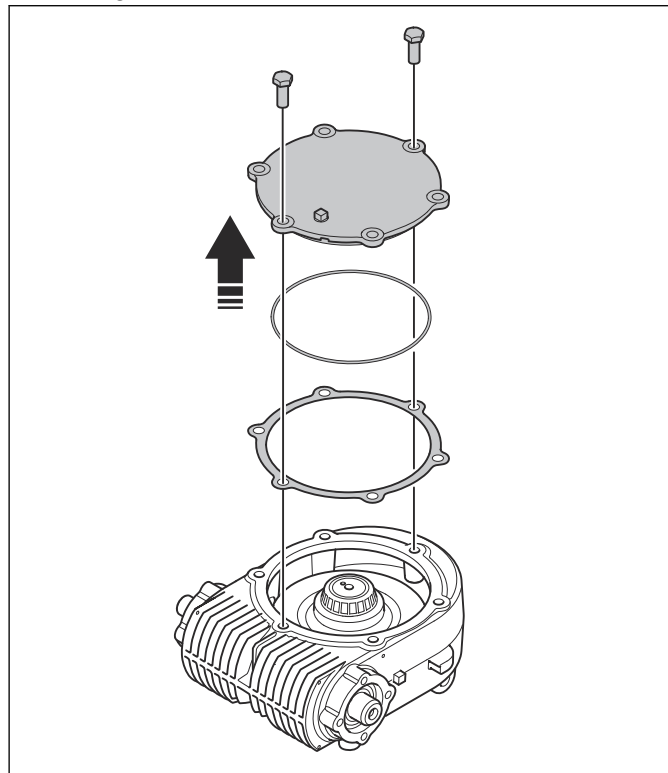
6.12 To disassemble the gearbox

1. Drain the oil in the gearbox. Refer to *To replace the oil in the gearbox on page 9*.
2. Remove the gearbox. Refer to *To remove the gearboxes on page 28*.
3. Remove the lower unit. Refer to *To disassemble the lower unit on page 37*.

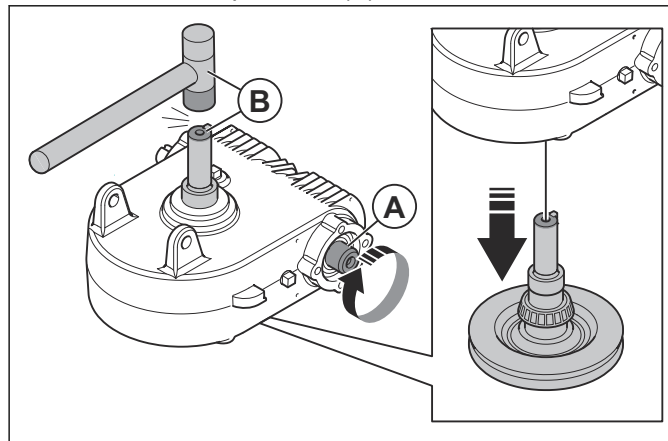
4. Remove the screws, the seal covers, the shims, the O-rings and the seals.



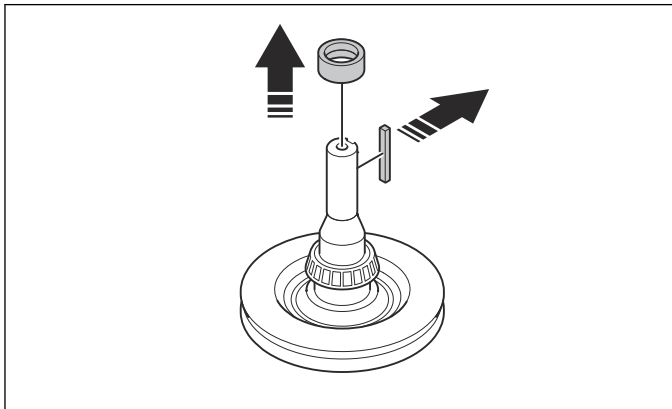
5. Remove the screws, the top cover, the shim and O-ring.



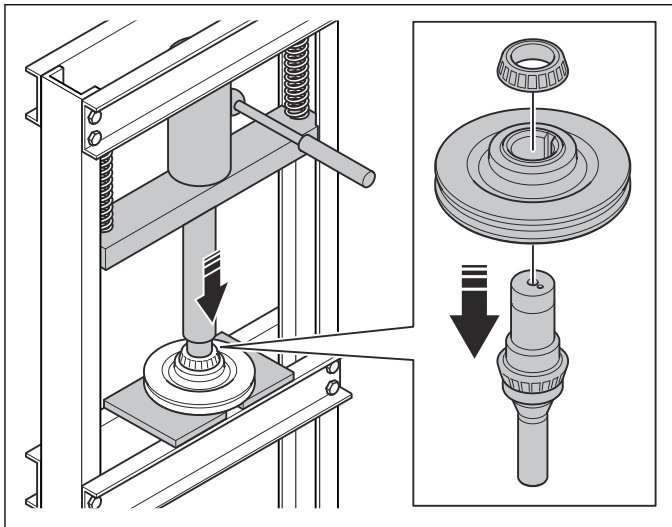
6. Turn the input shaft (A) and at the same time remove the output shaft (B) with a rubber hammer.



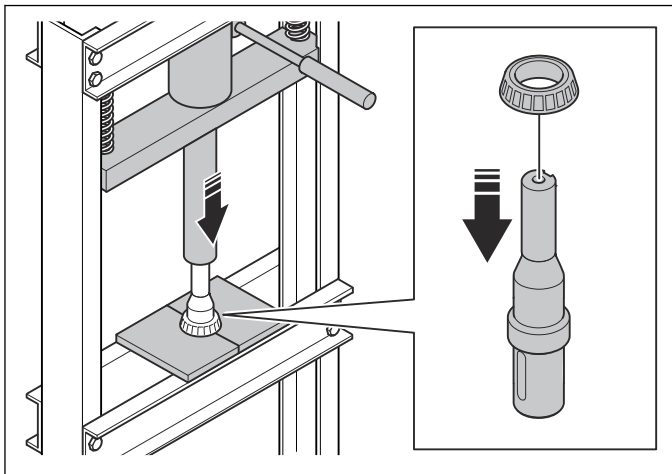
7. Remove the key and the thrust bushing.



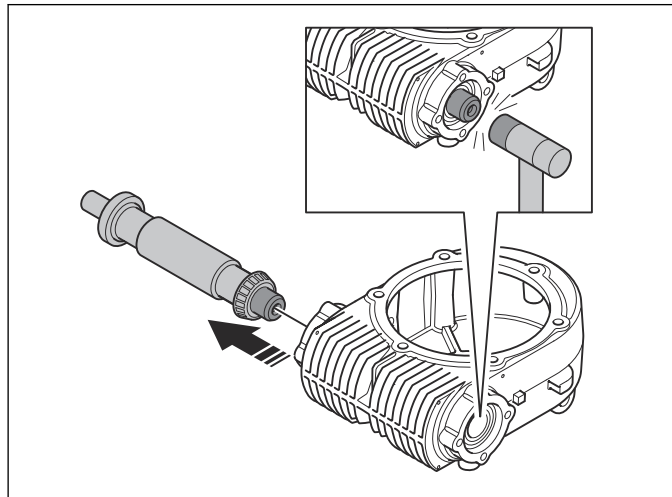
8. Remove the output gear and the top bearing from the output shaft with a mandrel press.



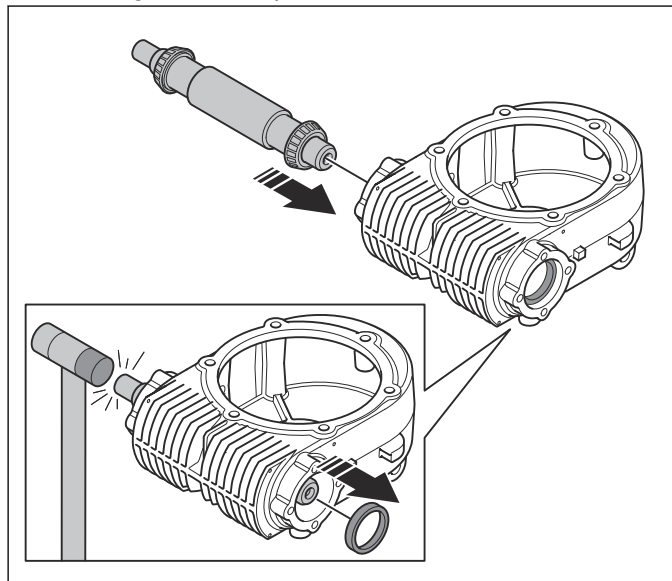
9. Remove the lower bearing from the output shaft.



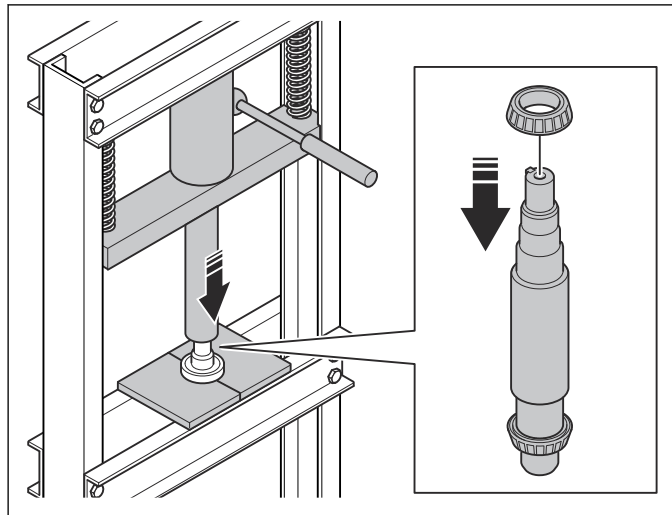
10. Remove the input shaft with a rubber hammer.



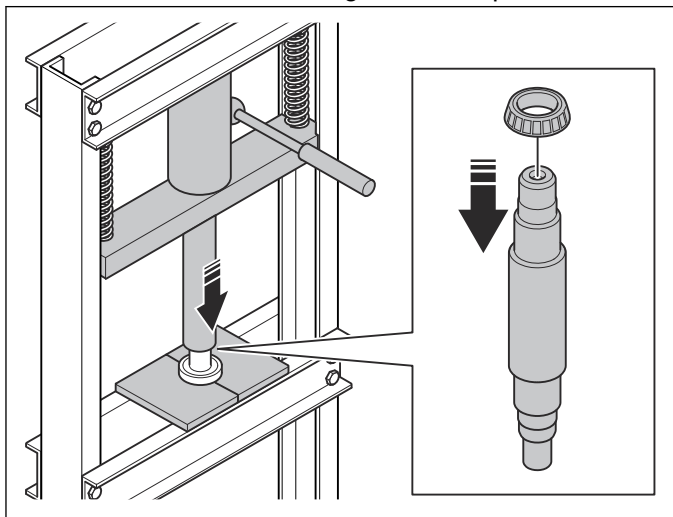
11. Remove the outer bearing race from the gearbox housing with the input shaft and a rubber hammer.



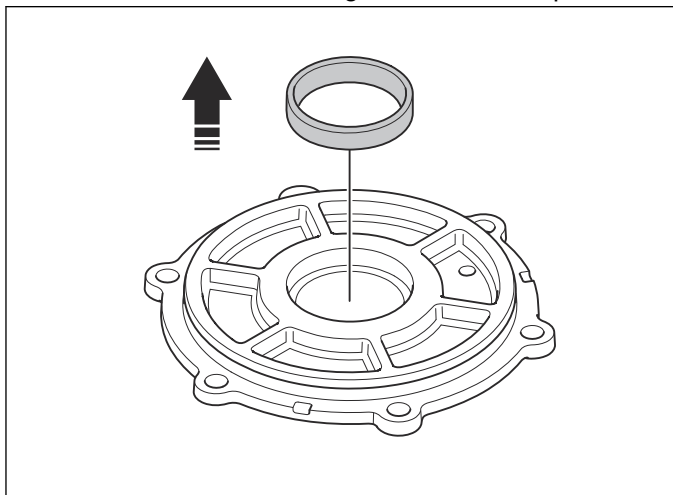
12. Remove a bearing from the input shaft.



13. Remove the other bearing from the input shaft.

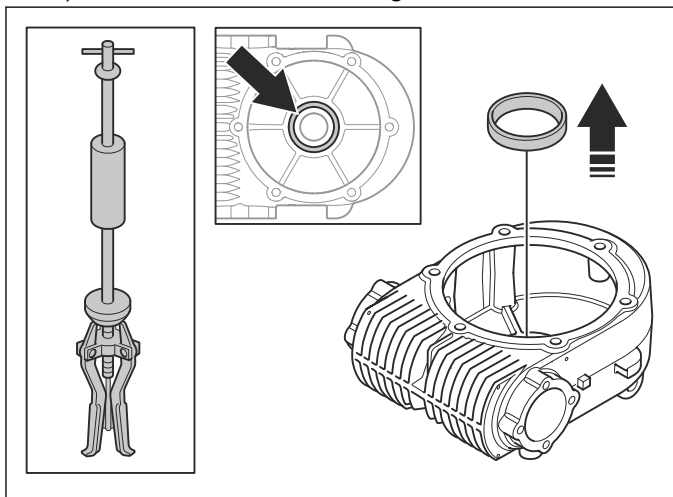


14. Remove the outer bearing race from the top cover.

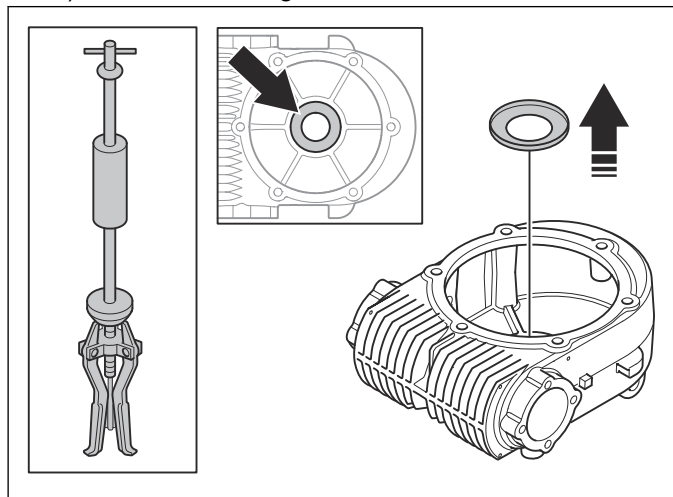


15. Remove the outer bearing race from the gearbox housing with an inner puller.

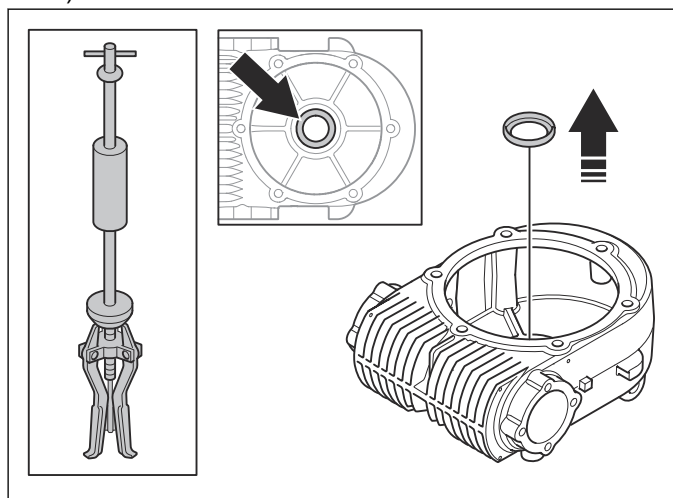
a) Remove the outer bearing race.



b) Remove the large seal.

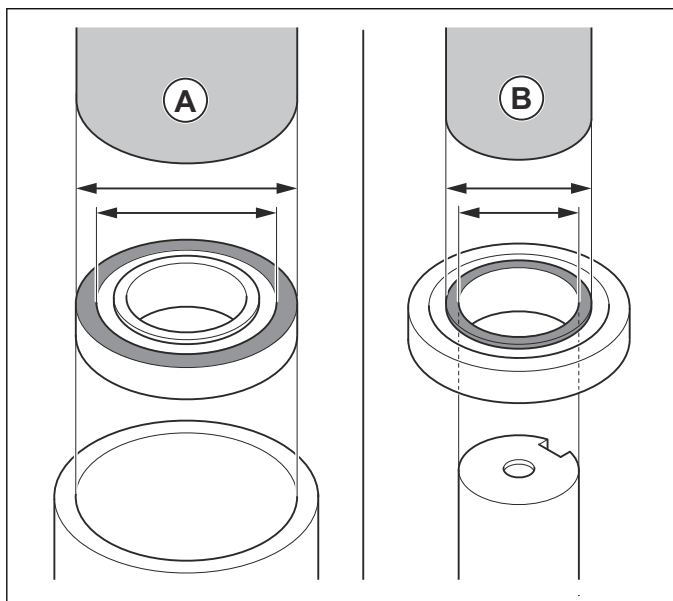


c) Remove the small seal.



6.13 To select correct mandrel dimension

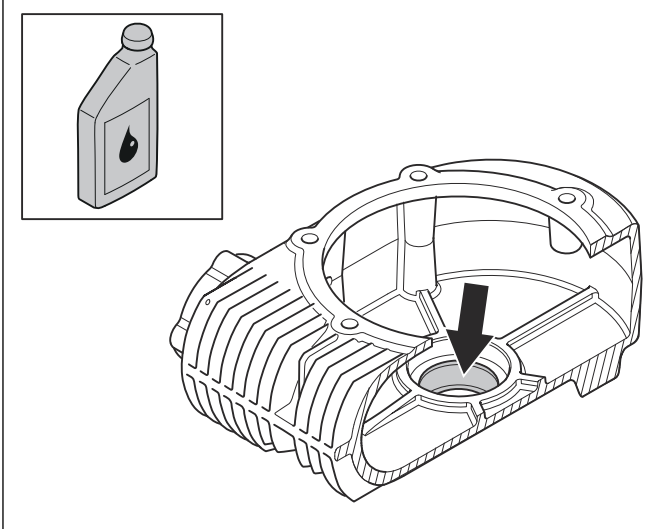
When you install the bearings with a press, use mandrels of the correct dimension.



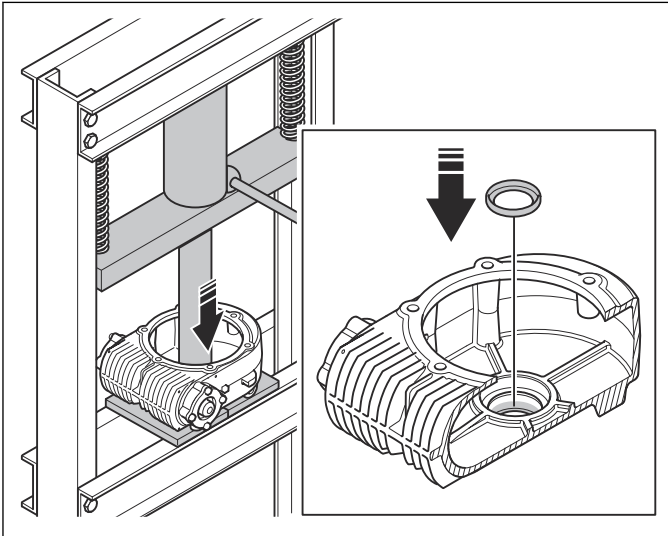
1. Put pressure with the mandrel on the outer bearing ring (A) when you do cylinder press.
2. Put pressure with the mandrel on the inner bearing ring (A) when you do shaft press.

6.14 To assemble the gearbox

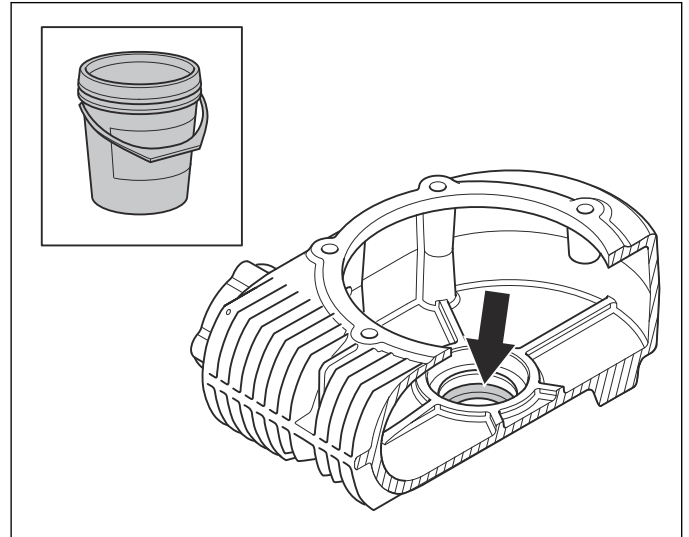
1. Assemble the top cover, refer to *To assemble the top cover of the gearbox on page 50.*
2. Assemble the seal covers, refer to *To assemble the seal covers of the gearbox on page 50.*
3. Assemble the input shaft, refer to *To assemble the input shaft of the gearbox on page 51.*
4. Assemble the output shaft, refer to *To assemble the output shaft of the gearbox on page 51.*
5. Apply ISO 460 gear oil in the bottom of the gearbox.



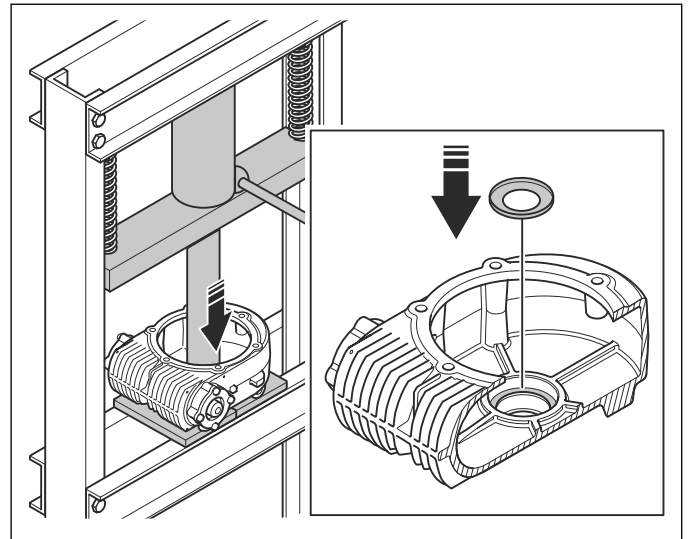
6. Install the small seal into the gearbox housing.



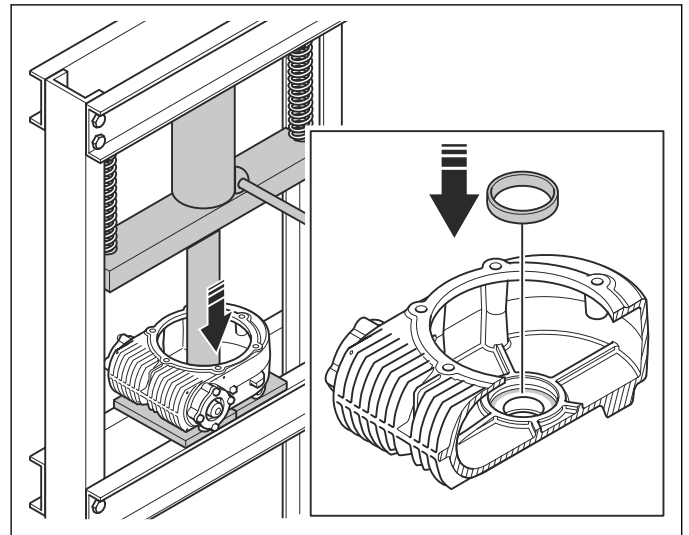
7. Apply Gadus grease on top of the small seal.



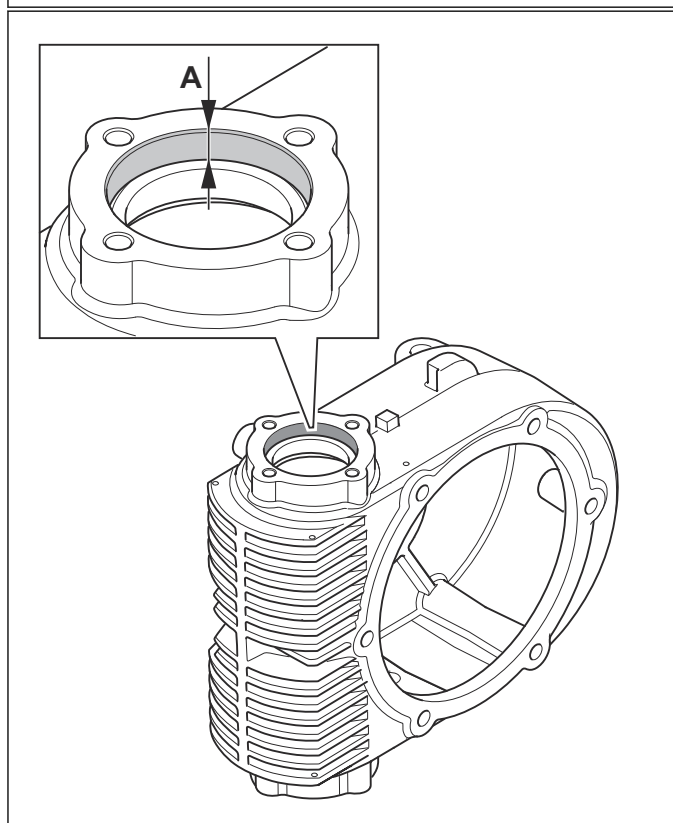
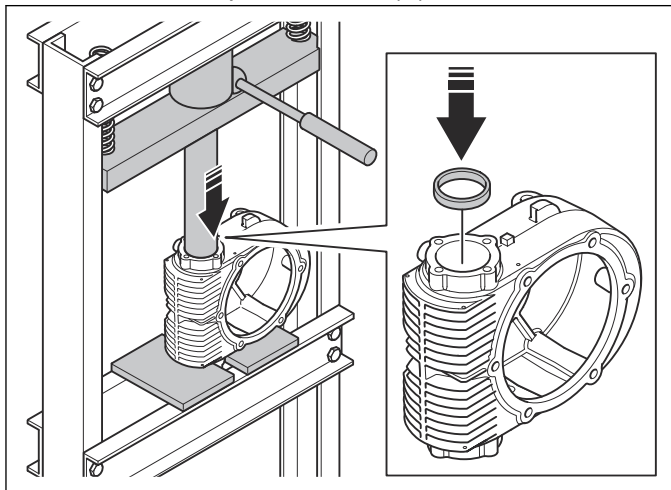
8. Install the large seal into the gearbox housing.



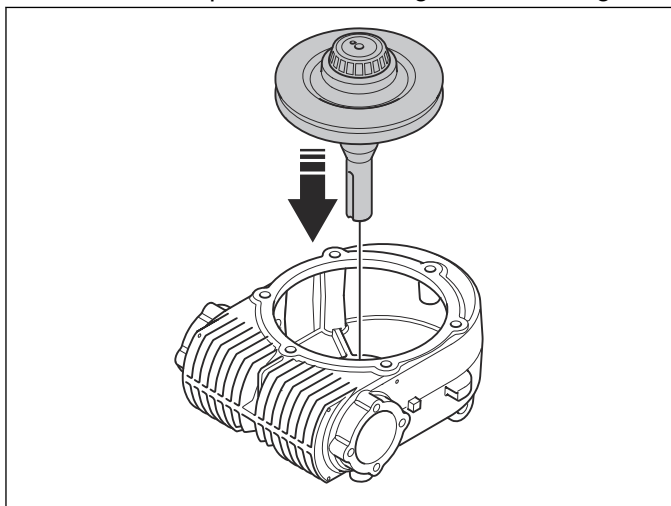
9. Install the outer bearing race into the gearbox housing.



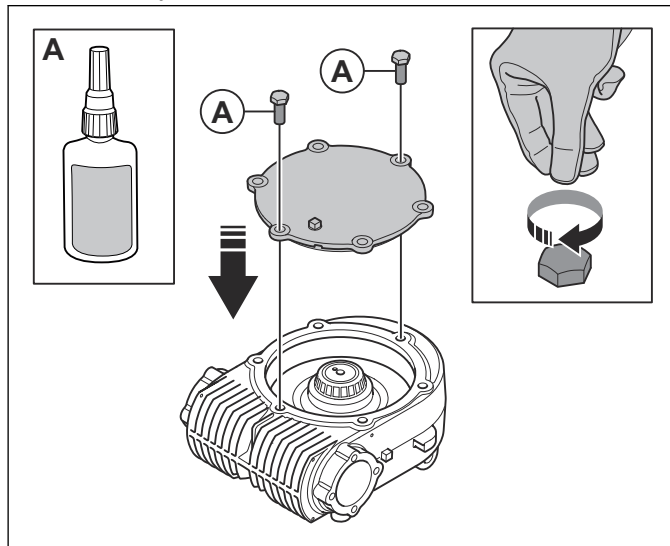
10. Install 1 of the outer bearing races on the input shaft. Press it to a depth of 10 mm (A).



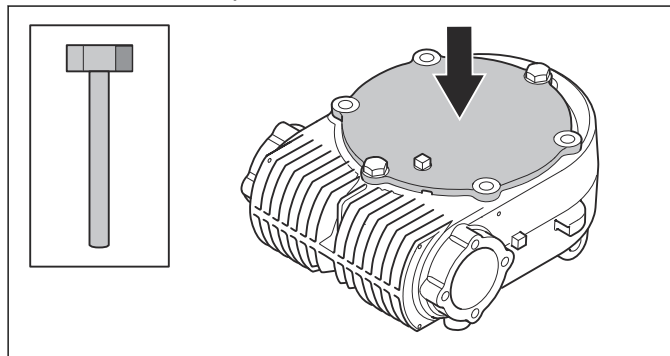
11. Install the output shaft into the gearbox housing.



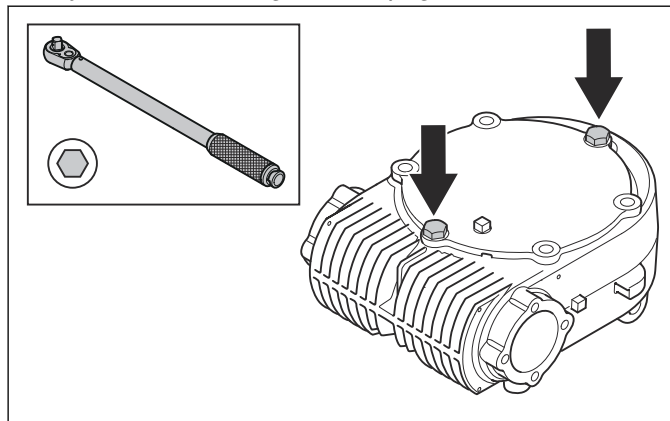
12. Install the top cover. Apply LOCTITE® 243 or equivalent on the 2 screws (A) and tighten the screws by hand.



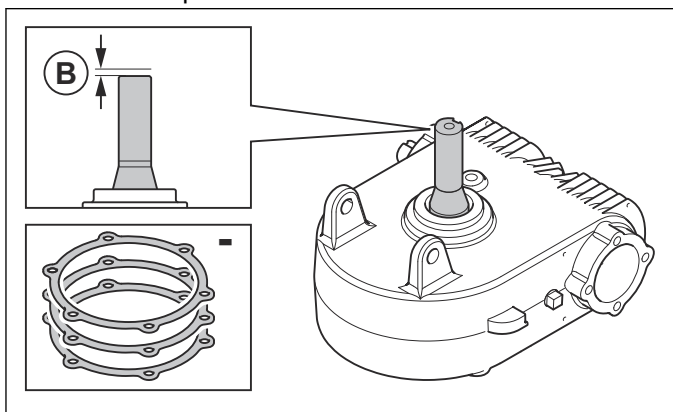
13. Hit the cover top with a rubber hammer.



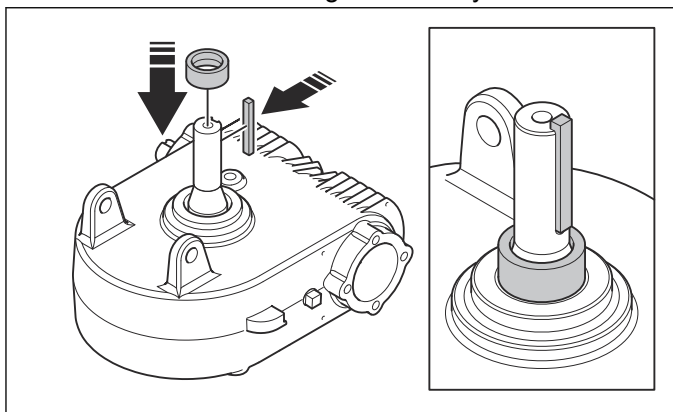
14. Tighten the 2 screws with a torque wrench. Refer to *Symbols in the diagrams on page 17.*



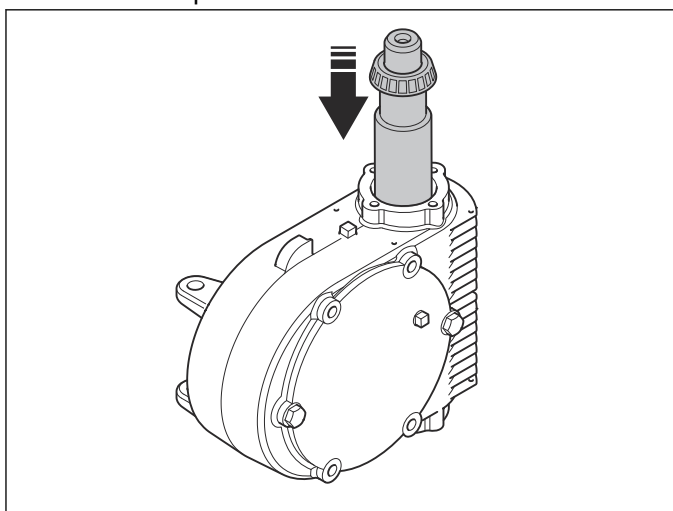
15. Make sure that the axial play (B) on the output shaft is less than 0.55 mm. If it is necessary, remove the shims or replace them with thinner shims.



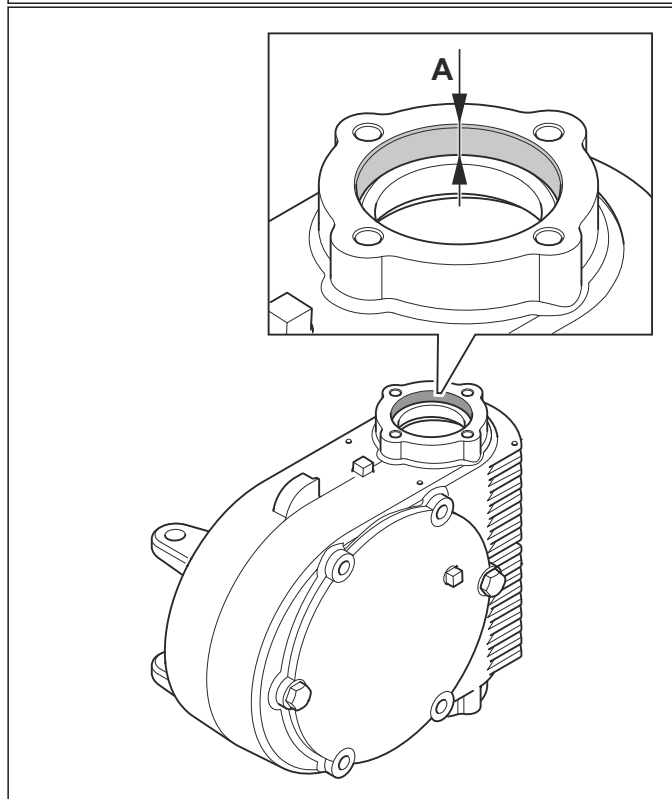
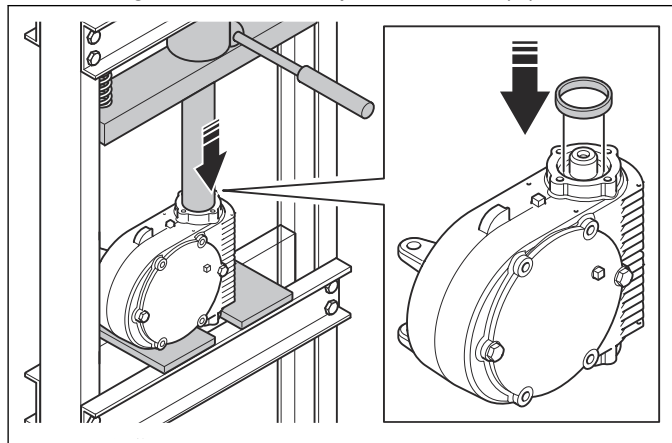
16. Install the thrust bushing and the key.



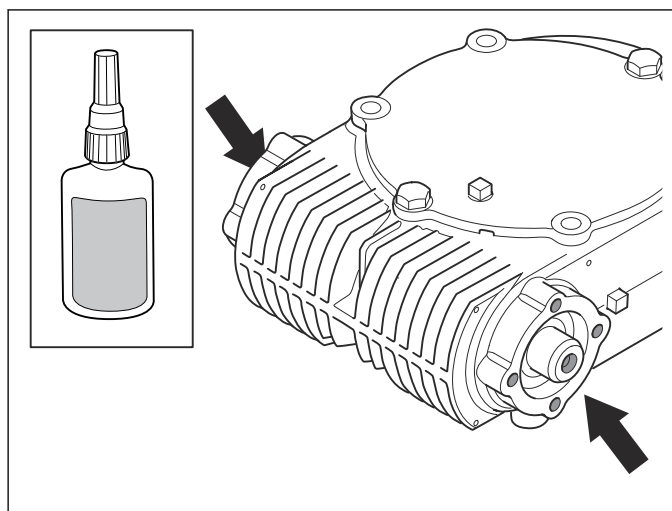
17. Install the input shaft.



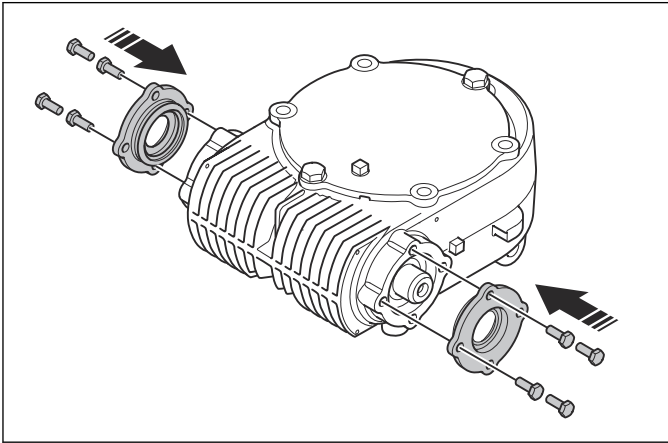
18. Install the outer bearing race on the gearbox housing. Press it to a depth of 10 mm (A).



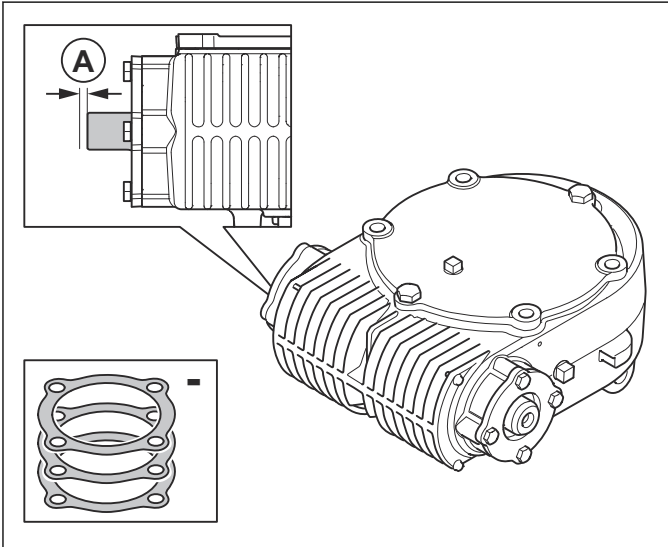
19. Apply LOCTITE® 243 or equivalent in the 4 holes for the screws and at the end of the input shaft on each side.



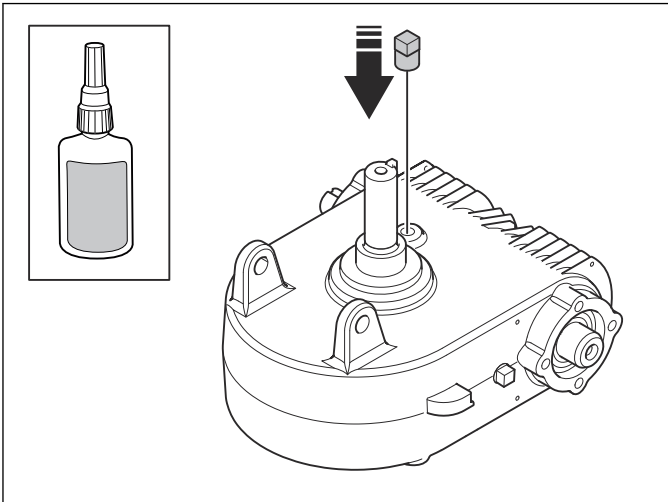
20. Install the seal covers and tighten the screws.



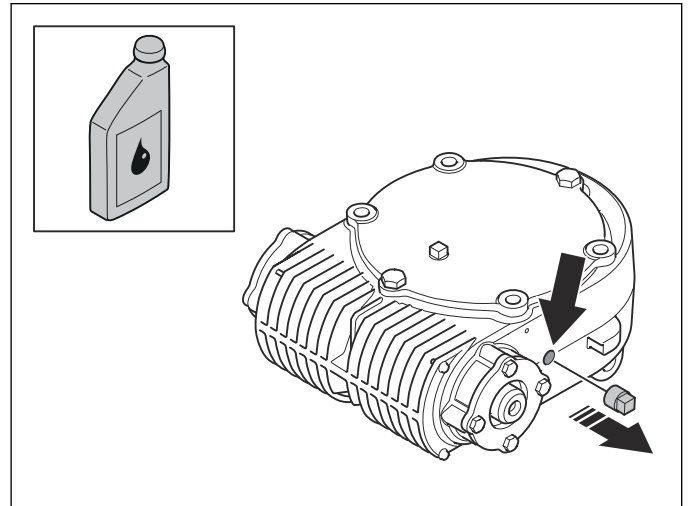
21. Make sure that the axial play (A) on the input shaft is less than 0.55 mm. If it is necessary, remove the shims or replace them with thinner shims.



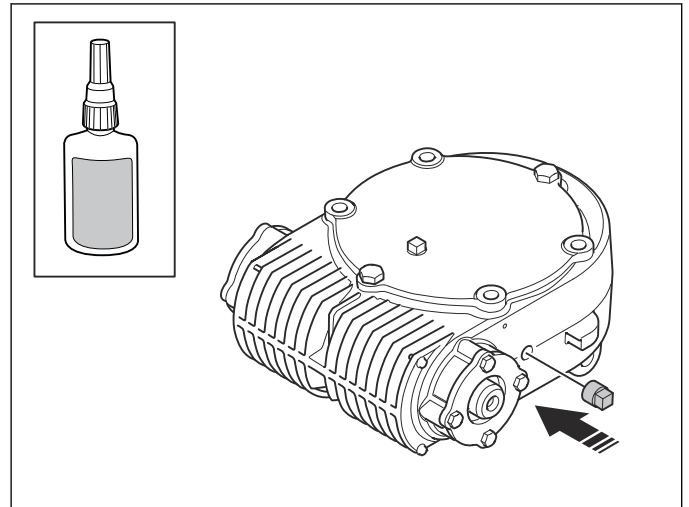
22. Apply LOCTITE® 545™ or equivalent to the threads of the oil drain plug and install the oil drain plug.



23. Fill with 1.5 l of ISO 460 gear oil through the hole for the oil fill plug.



24. Apply LOCTITE® 545™ or equivalent on the threads of the oil fill plug and install the oil fill plug.

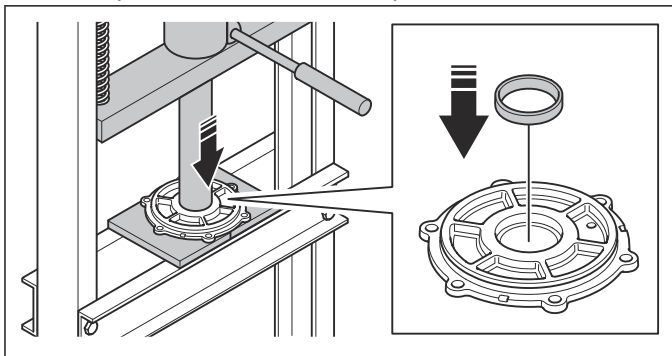


25. Install the lower unit. Refer to *To assemble the lower unit on page 38*.

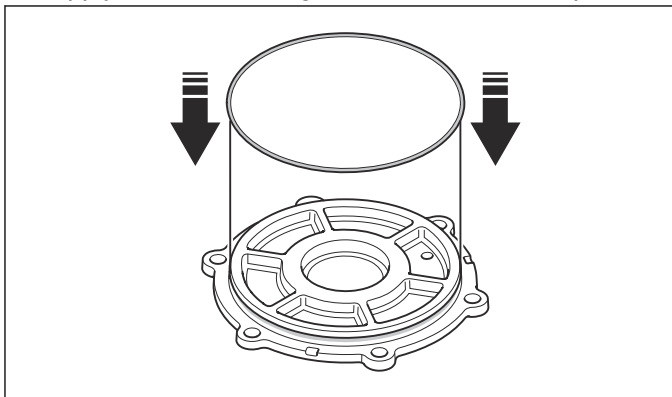
26. Install the gearbox. Refer to *To install the gearboxes on page 31*.

6.14.1 To assemble the top cover of the gearbox

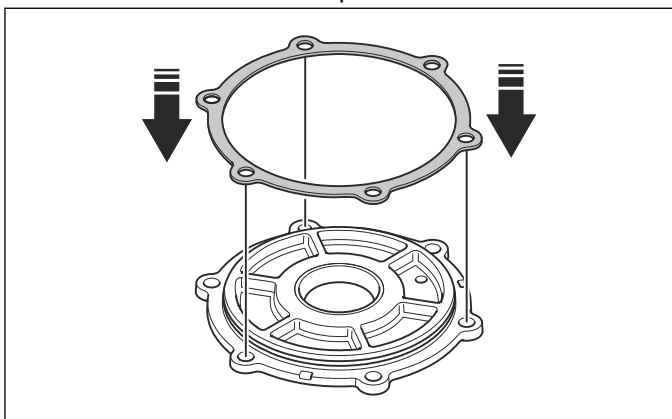
1. Install the outer bearing race for the output shaft into the top cover with a mandrel press.



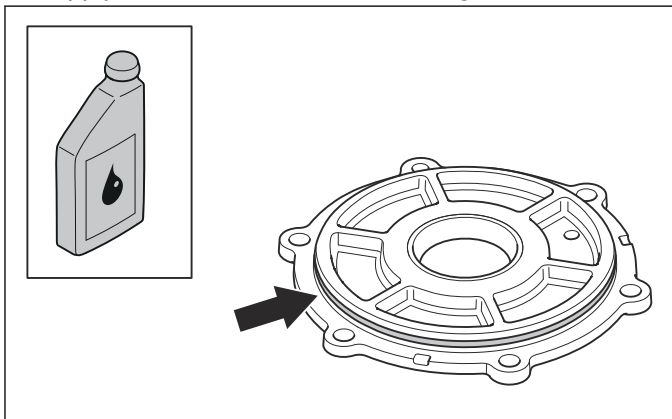
2. Apply oil on the O-ring and install it on the top cover.



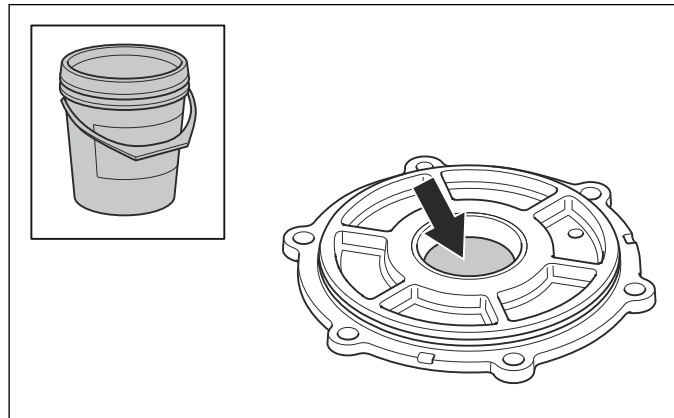
3. Install the shim on the top cover.



4. Apply ISO 460 oil around the O-ring.

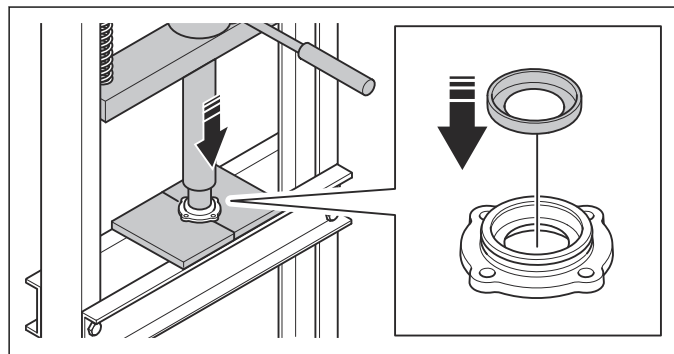


5. Apply Gadus grease in the middle of the top cover.

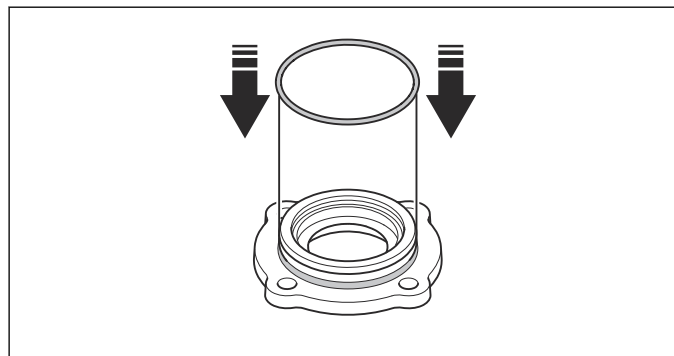


6.14.2 To assemble the seal covers of the gearbox

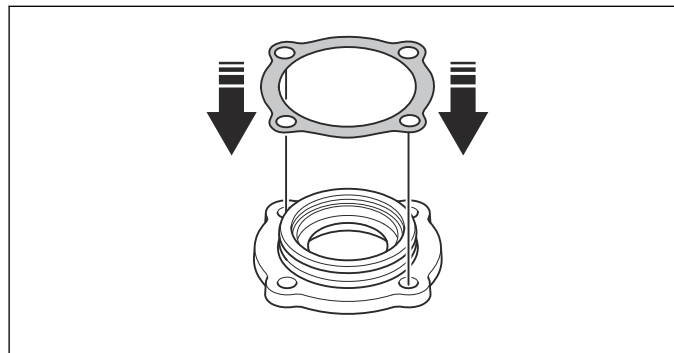
1. Install the seals on the seal covers.



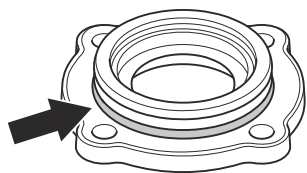
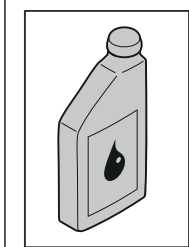
2. Apply oil on the O-rings and install them on the seal cover.



3. Install the shims on the seal cover.

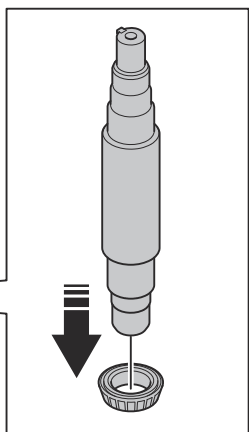
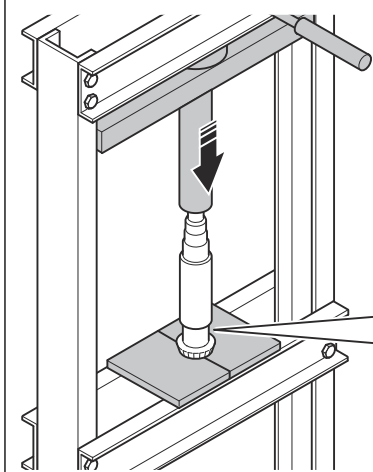


4. Apply ISO 460 gear oil around the O-rings.

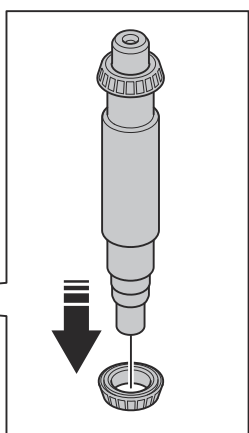
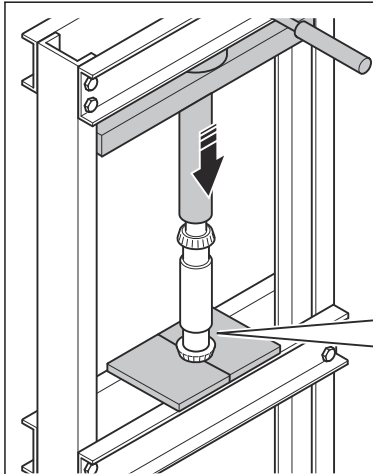


6.14.3 To assemble the input shaft of the gearbox

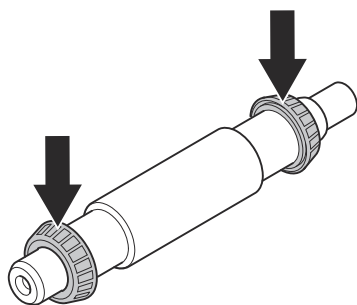
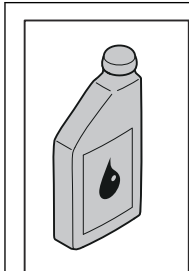
1. Install 1 of the bearings on the input shaft.



2. Install the other bearing on the input shaft.

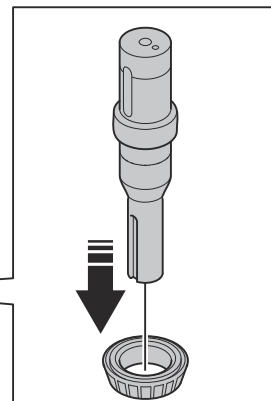
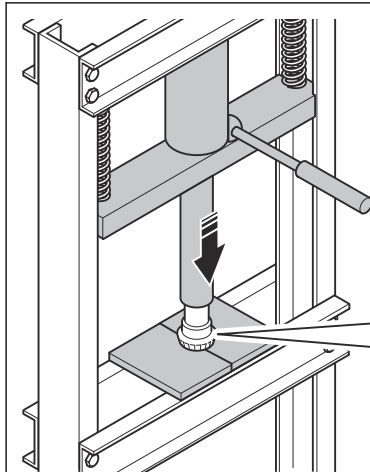


3. Apply ISO 460 gear oil on the bearings on the input shaft.

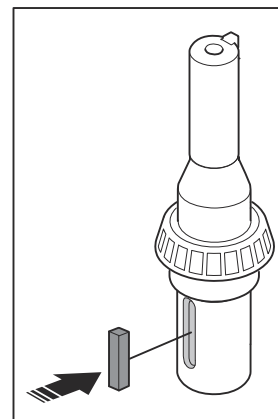
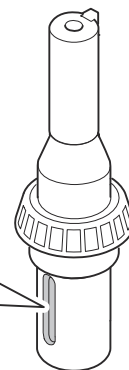
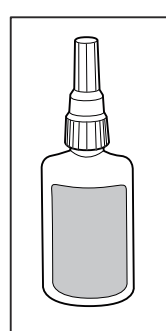


6.14.4 To assemble the output shaft of the gearbox

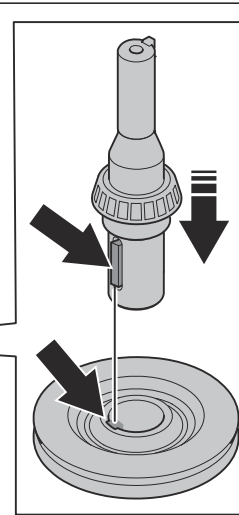
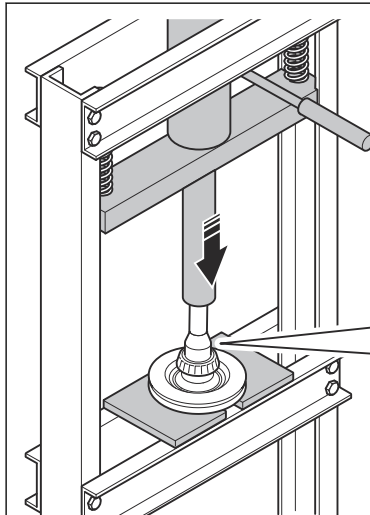
1. Install the lower bearing on the output shaft.



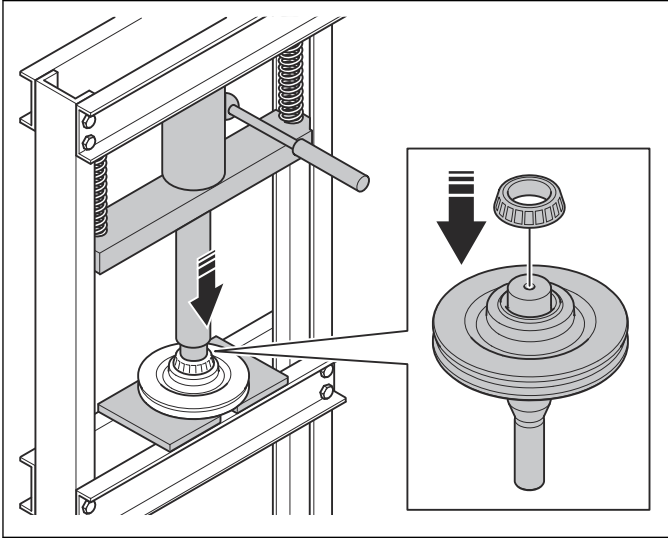
2. Apply LOCTITE® 243 and install the key.



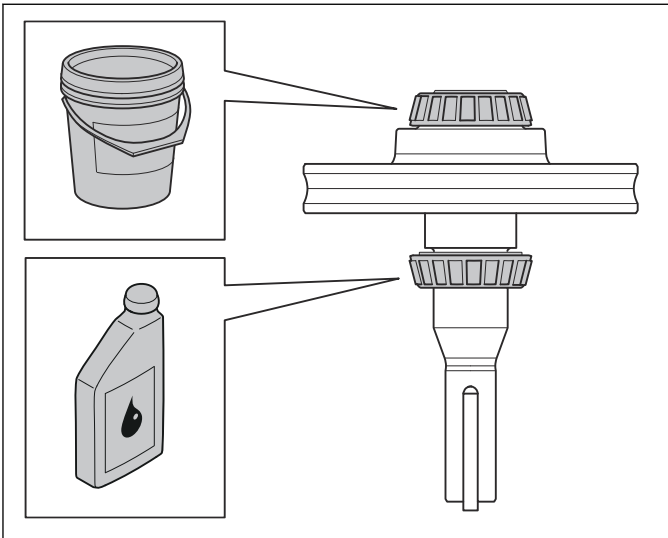
3. Align the hole for the key with the notch in the output gear. Install the output gear on the output shaft.



4. Install the top bearing on the output shaft.

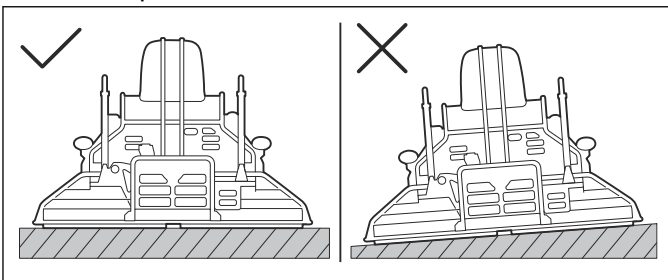


5. Apply Gadus grease on the top bearing and ISO 460 gear oil on the lower bearing.



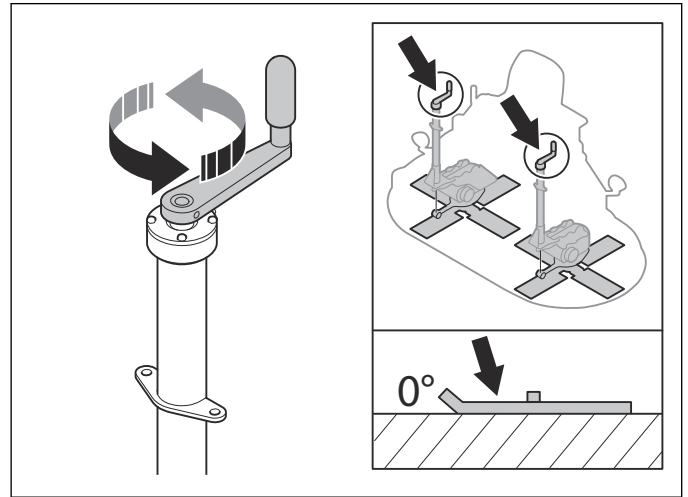
6.15 To disassemble the blade pitch control

1. Put the product on a flat, level surface.



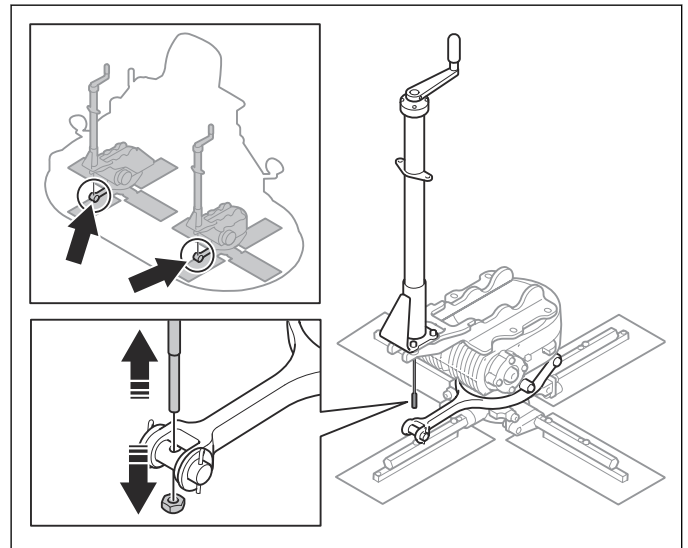
2. Stop the engine and disconnect the battery.

3. Adjust the blade pitch controls until the blades are flat.

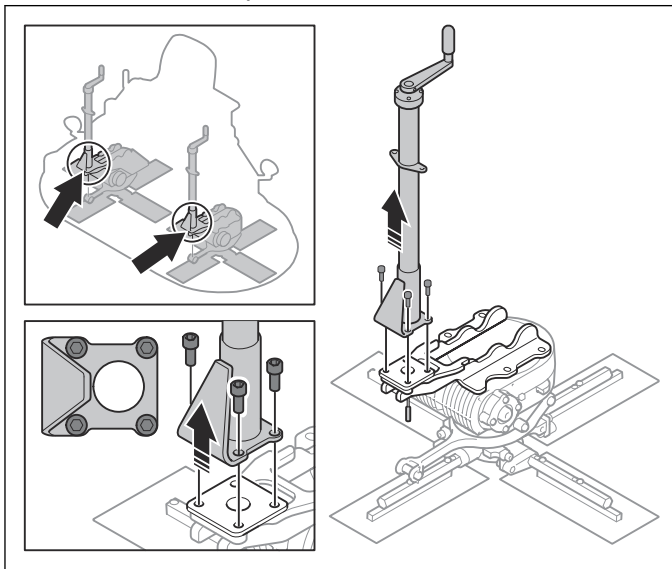


- a) To increase the blade pitch, turn the left blade pitch control clockwise and the right blade pitch control counterclockwise.
- b) To decrease the blade pitch, turn the left blade pitch control counterclockwise and the right blade pitch control clockwise.

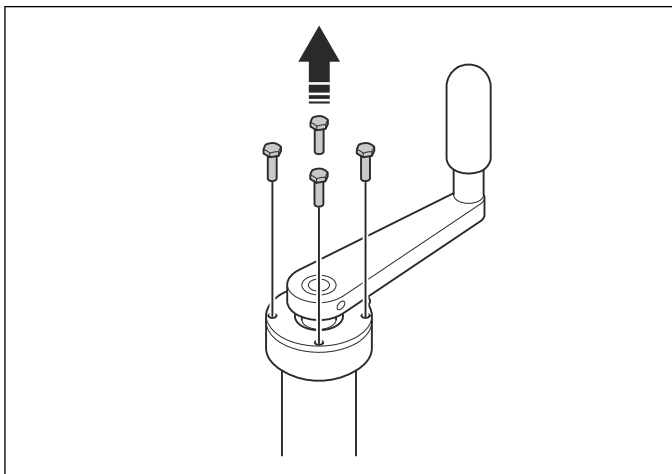
4. Remove the locknuts.



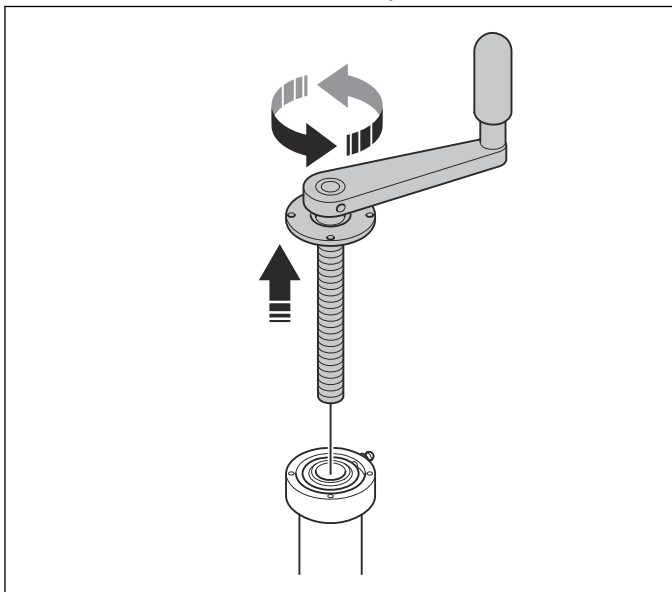
5. Remove the 4 screws and the blade pitch control on each side of the product.



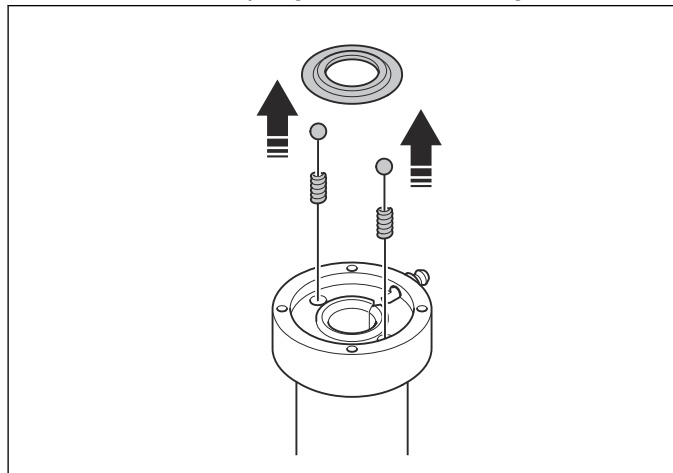
6. Remove the 4 screws.



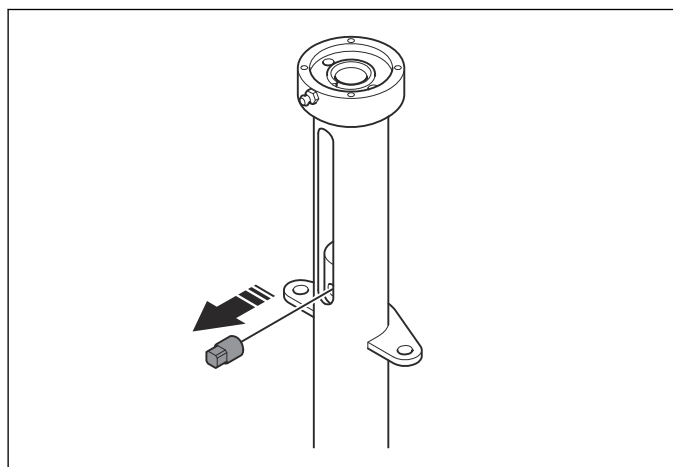
7. Remove the handle assembly.



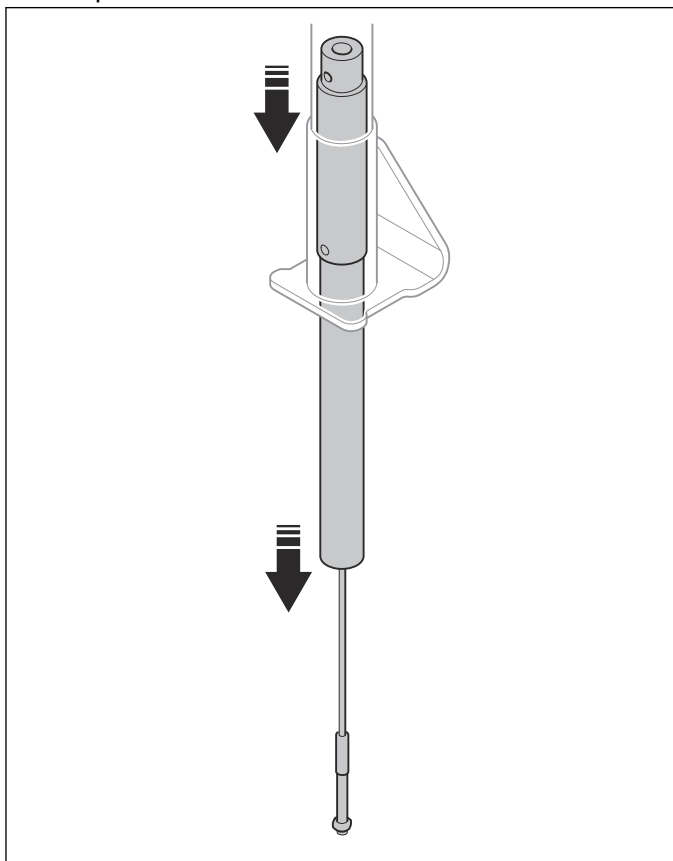
8. Remove the washer, the 2 spring-loaded bearing balls and the 2 springs from the housing.



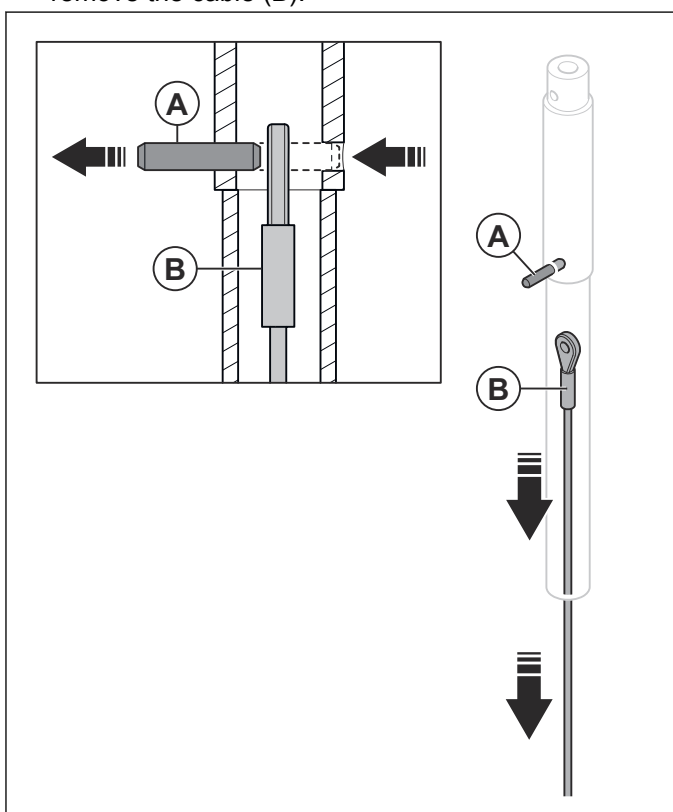
9. Remove the index bolt.



10. Move the rod, the cable tube and the cable out of the pitch control tube.

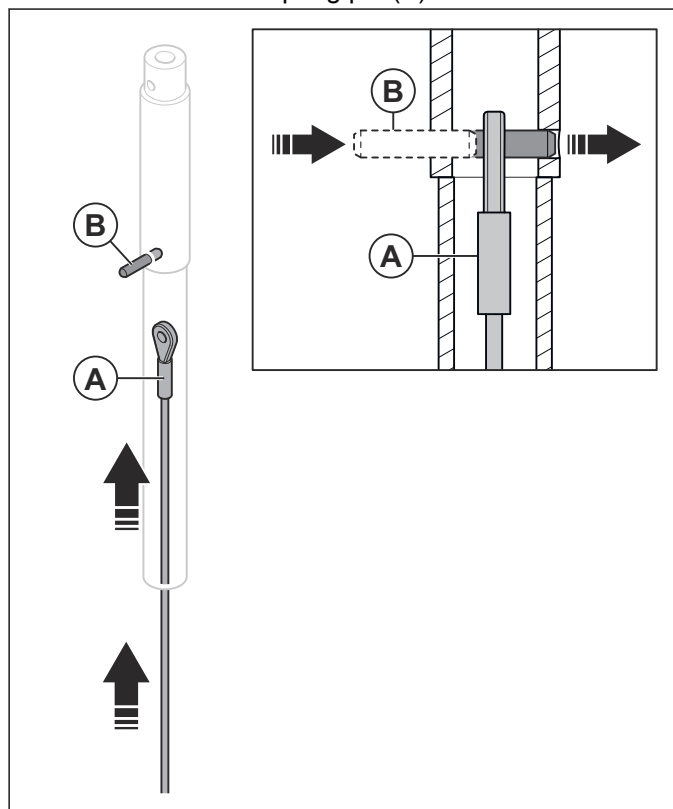


11. Push the pin (A) half through the pitch control and remove the cable (B).

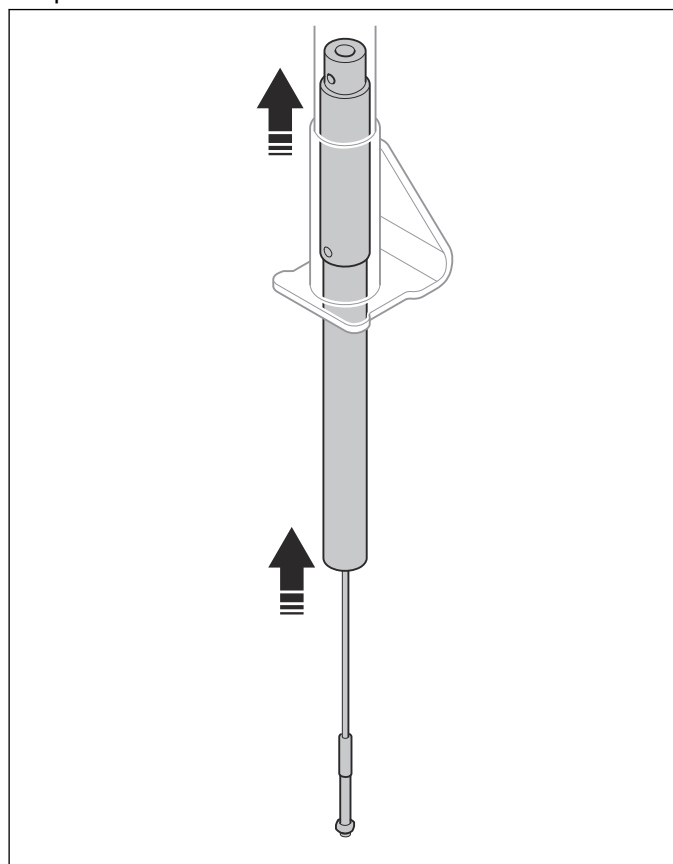


6.16 To assemble the blade pitch control

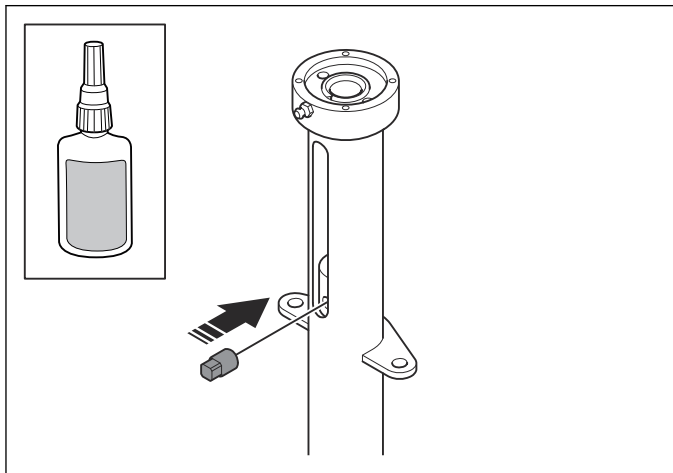
1. Install the cable into the cable tube (A) and attach the cable with the spring pin (B).



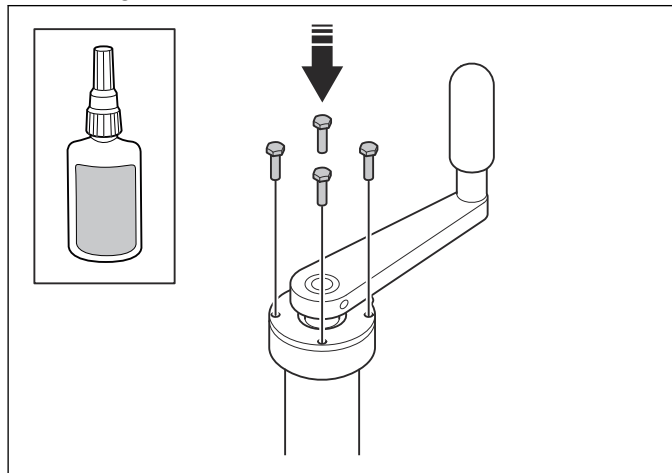
2. Install the rod, the cable tube and the cable into the pitch control tube.



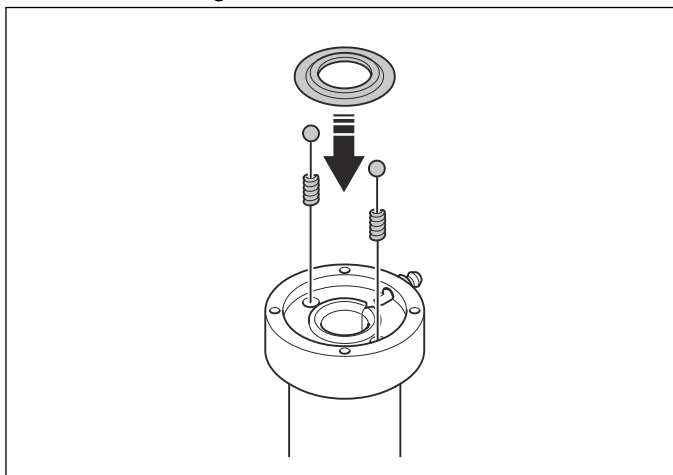
3. Apply LOCTITE® 243 to the threads of the index bolt and install the index bolt.



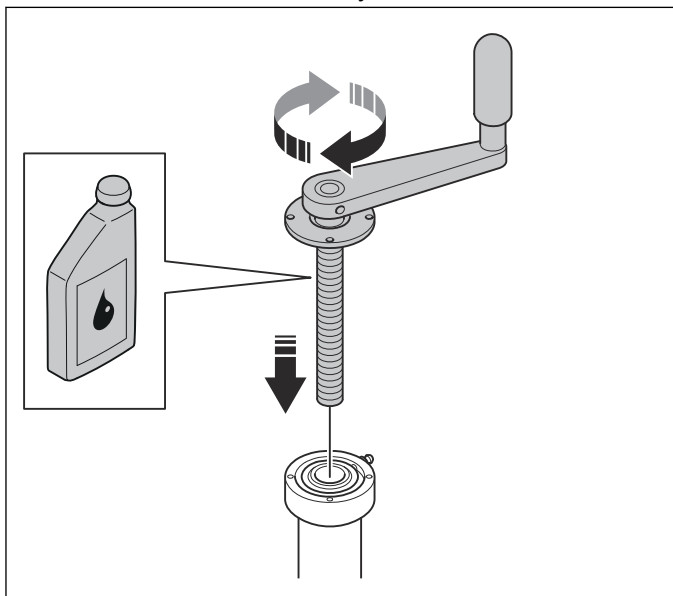
6. Apply LOCTITE® 243 to the threads on the 4 screws and tighten the screws.



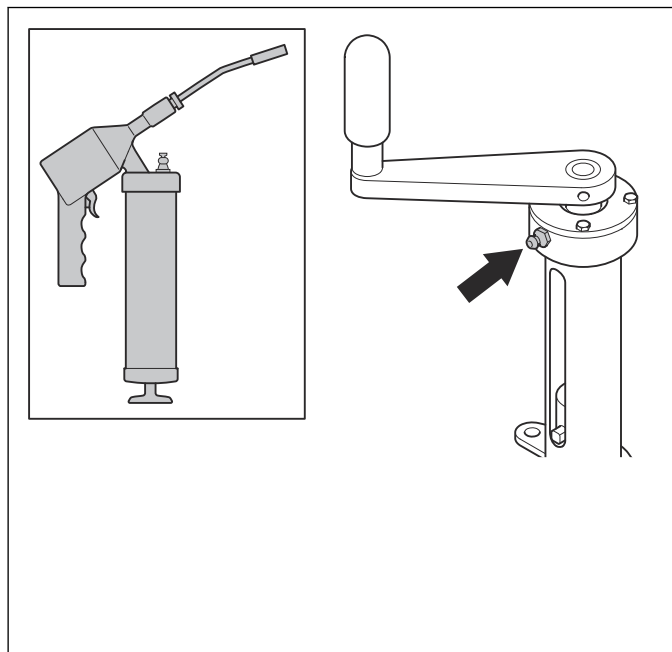
4. Install the washer, the 2 springs and the 2 spring-loaded bearing balls.



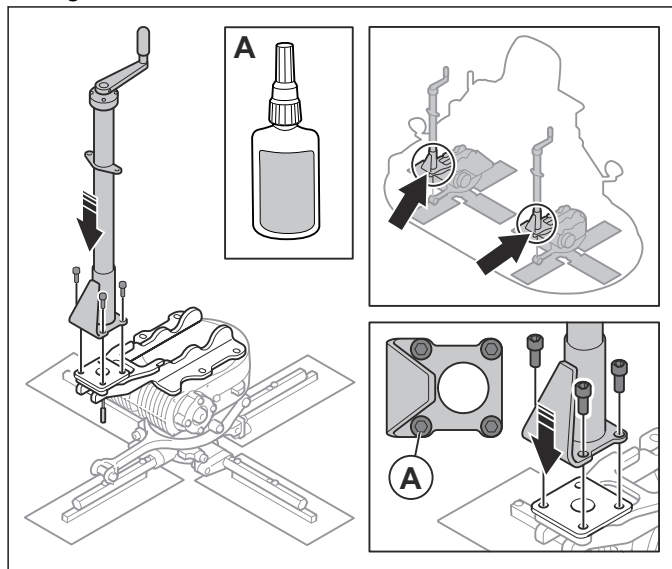
5. Apply oil to the threads of the handle assembly and install the handle assembly.



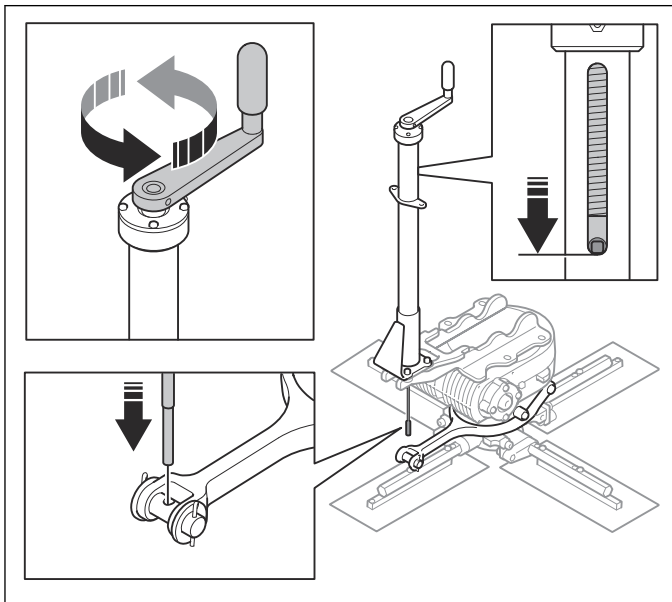
7. Lubricate the housing through the grease nipple. Use Alvania RL 2.



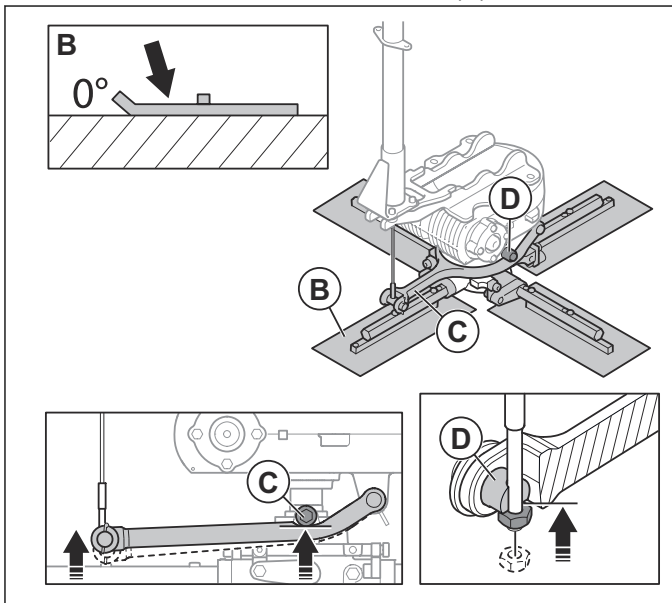
8. Apply LOCTITE® 243 to the threads on the 4 screws (A). Install the blade pitch control on the product and tighten the screws.



9. Turn the handle to its lowest position and put the cable into the cable holder.



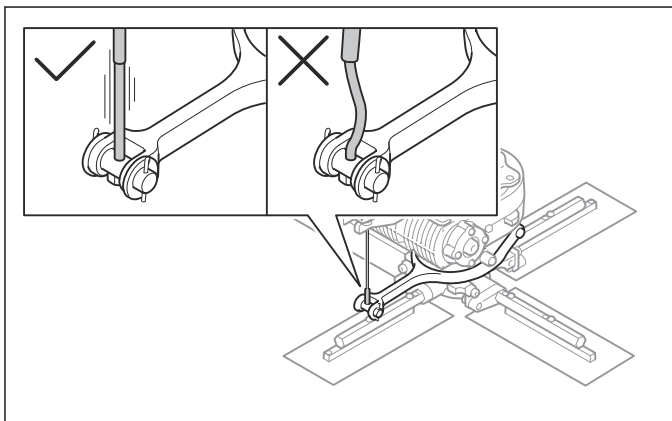
10. Make sure that the blades are flat (B).



11. Lift the yoke until it touches the rollers (C).

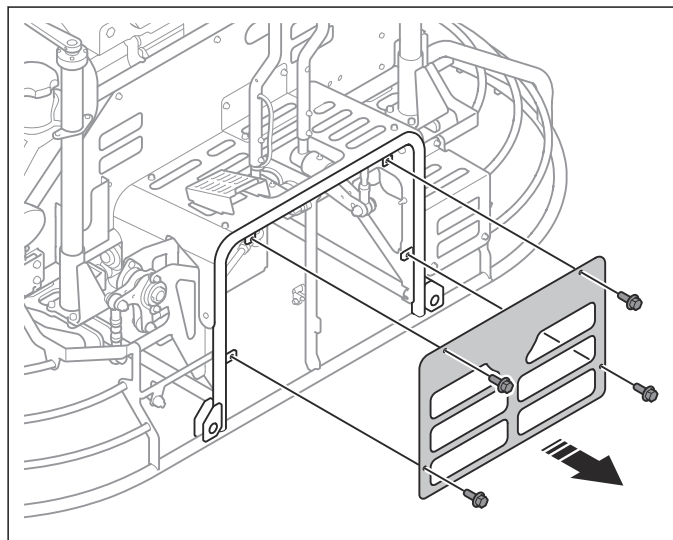
12. Turn the locknut until it touches the cable holder (D).

13. Make sure that the cable is tensioned.

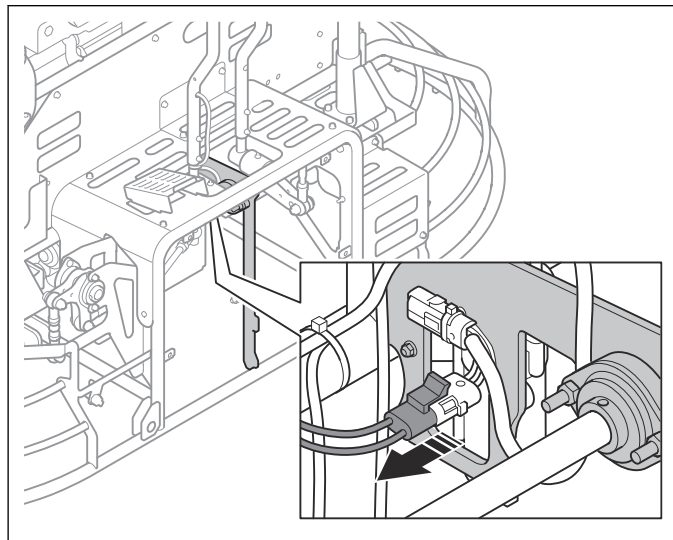


6.17 To remove the steering system

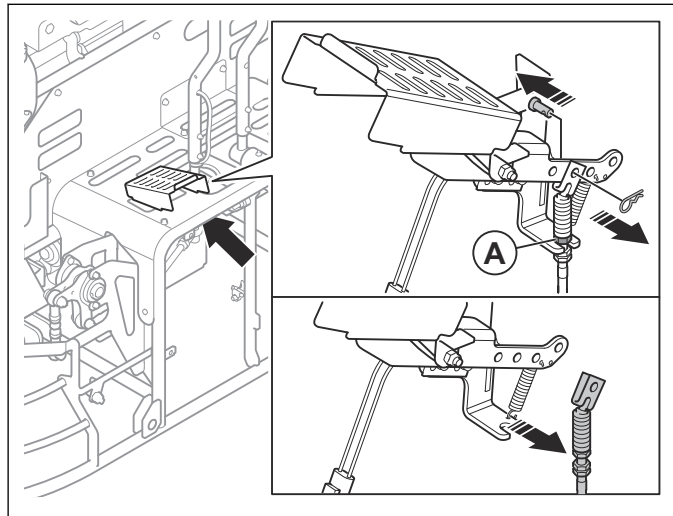
1. Remove the 4 screws and washers. Remove the front cover.



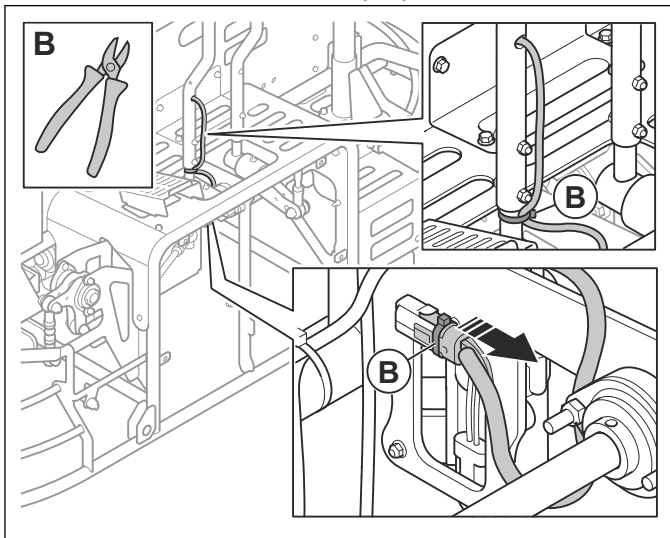
2. Remove the connector to the throttle control.



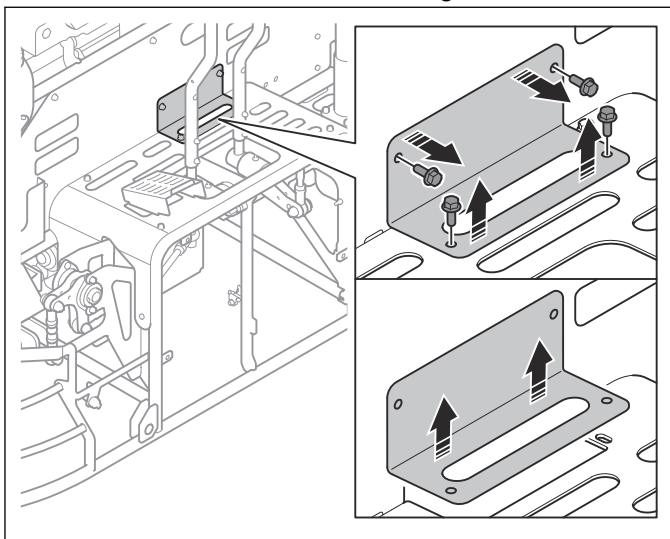
3. Disconnect the wire to the throttle control (A).



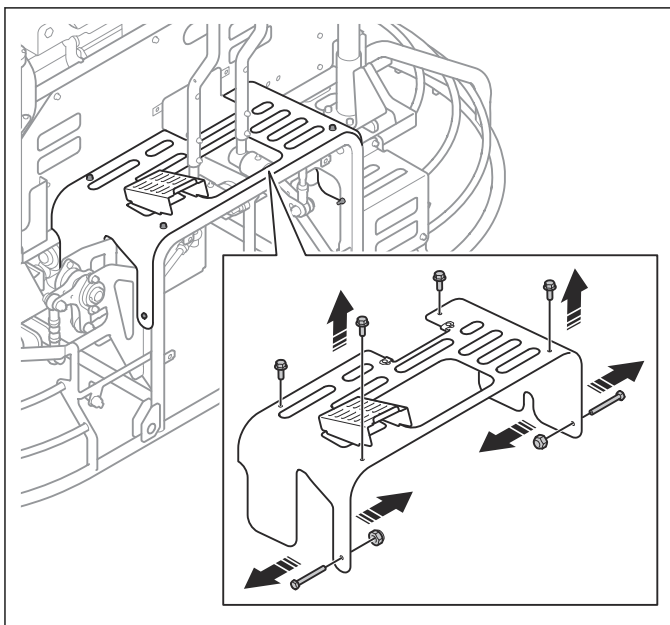
4. Cut the cable ties (B) and disconnect the wire harness for the retardant spray switch.



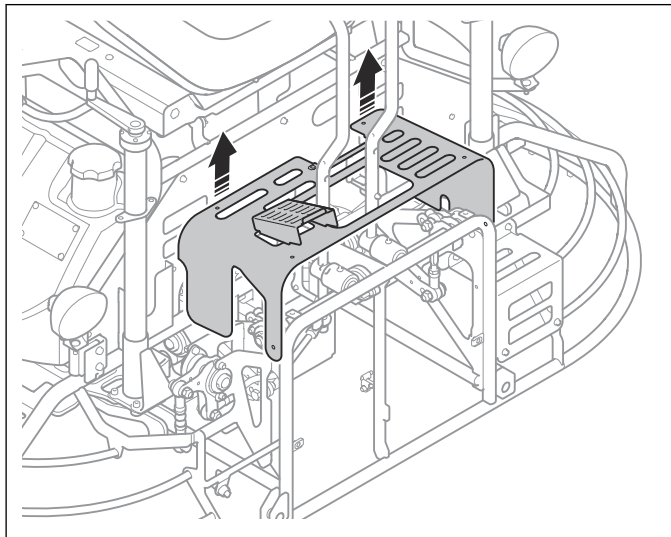
5. Remove the 4 screws and the angle bracket.



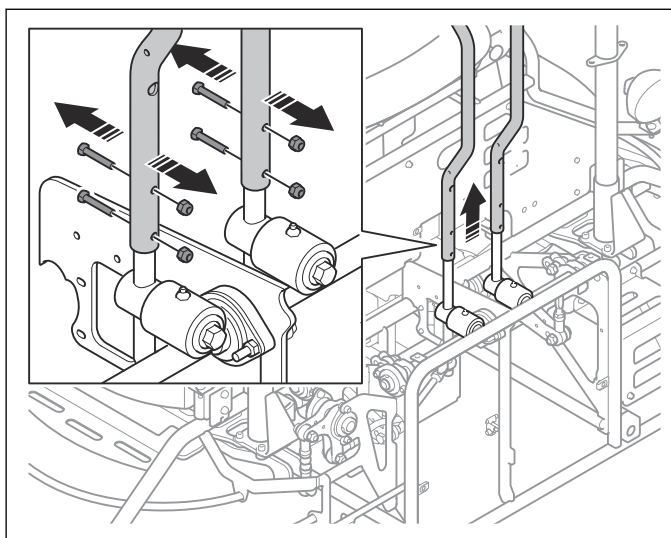
6. Remove the 2 side bolts, 2 side nuts and the 4 top screws.



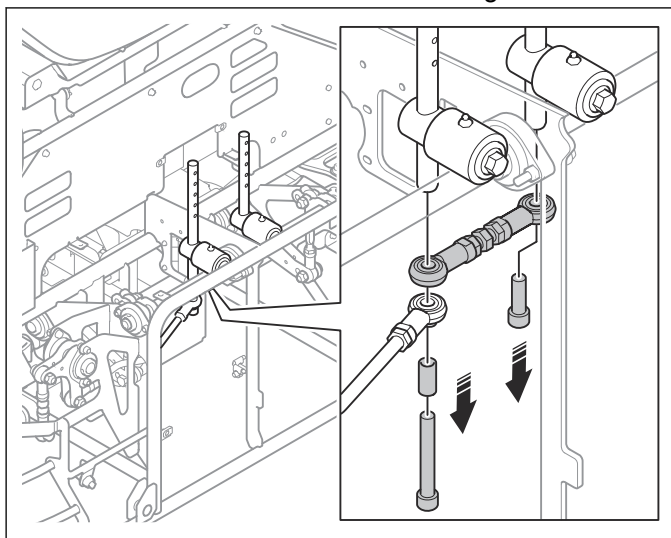
7. Remove the foot plate.



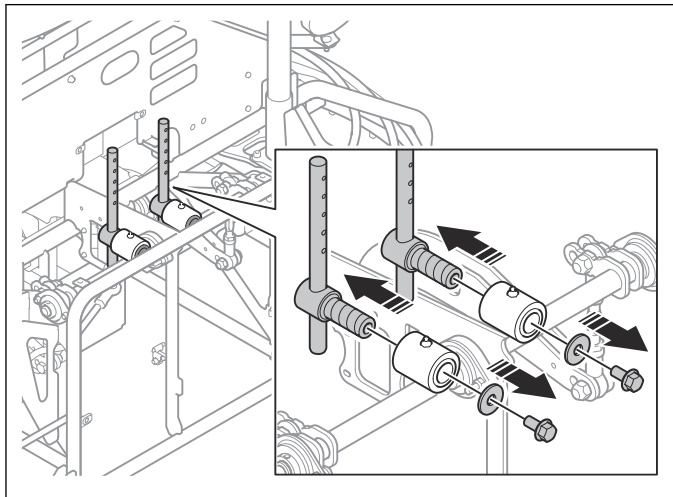
8. Remove the 4 bolts, the 4 nuts and the 2 steering levers.



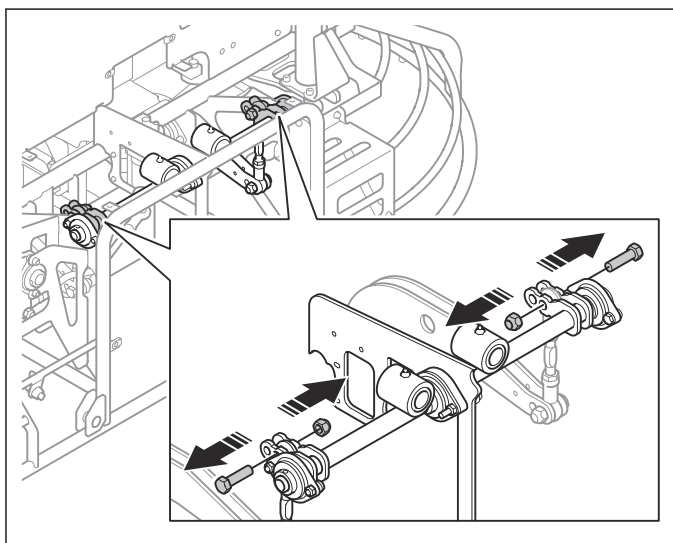
9. Remove the 2 bolts, the spacer and the pivot bracket at the bottom of each steering lever holder.



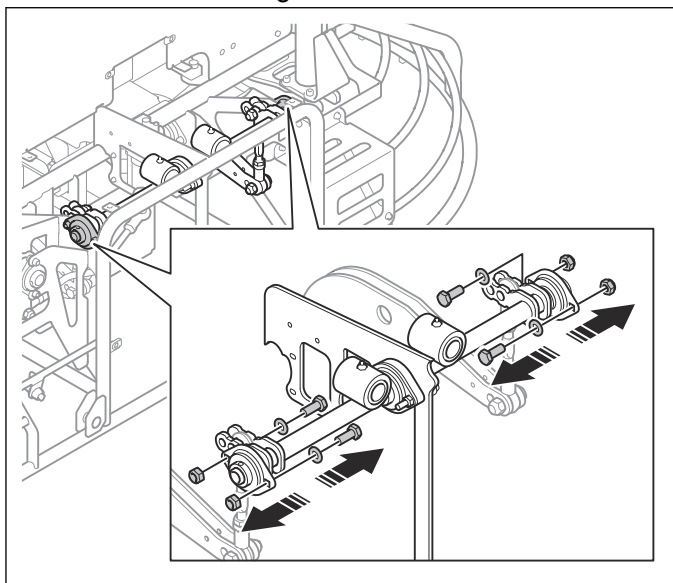
10. Remove the 2 screws, 2 washer and the pivots.



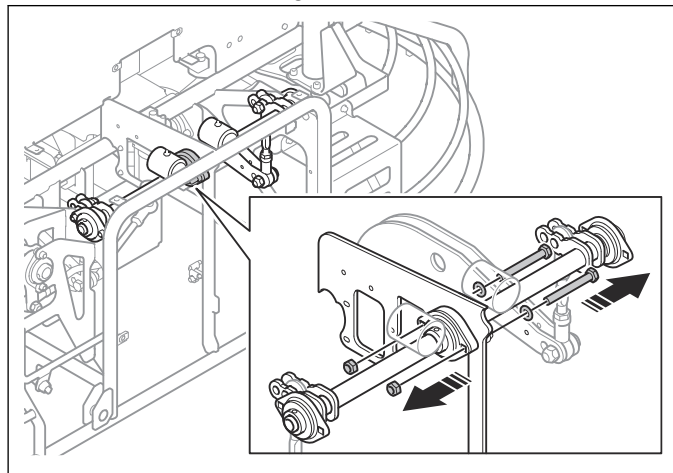
11. Remove the 2 bolts and the 2 nuts from the pivot brackets.



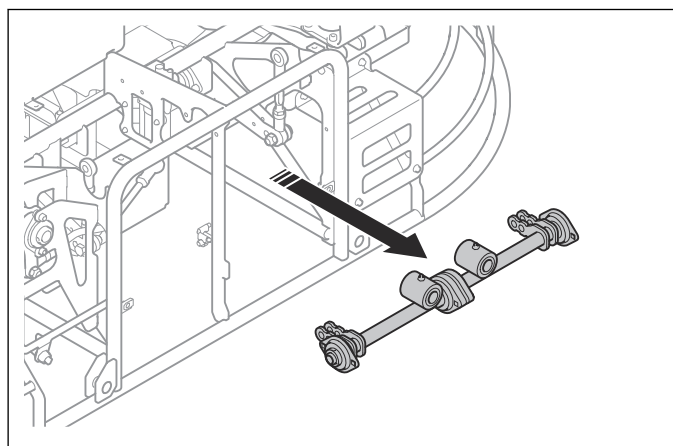
12. Remove the 4 bolts, the 4 washers and the 4 nuts for the outer bearings.



13. Remove the 2 bolts, the 2 washers and the 2 nuts for the center bearings.

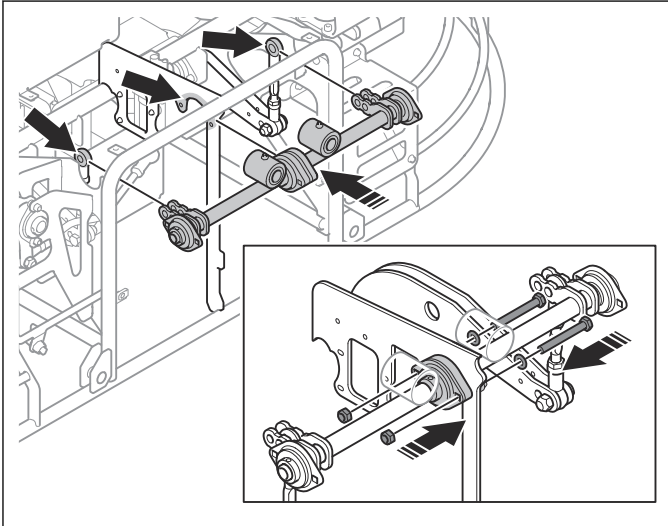


14. Remove the control shaft.

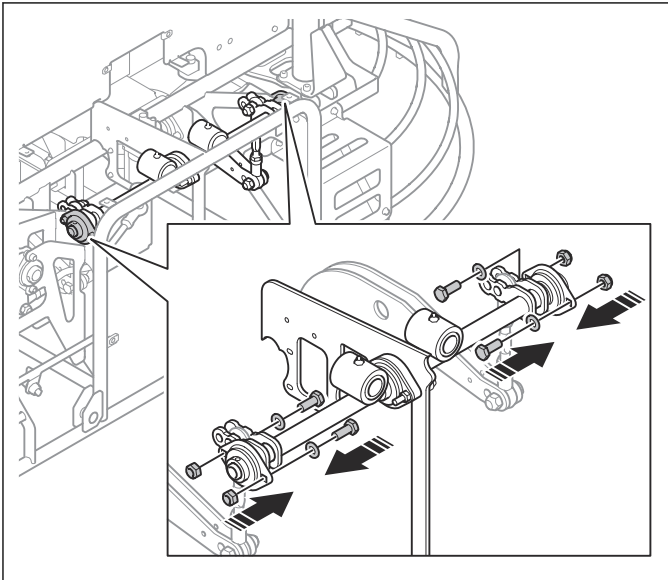


6.18 To install the steering system

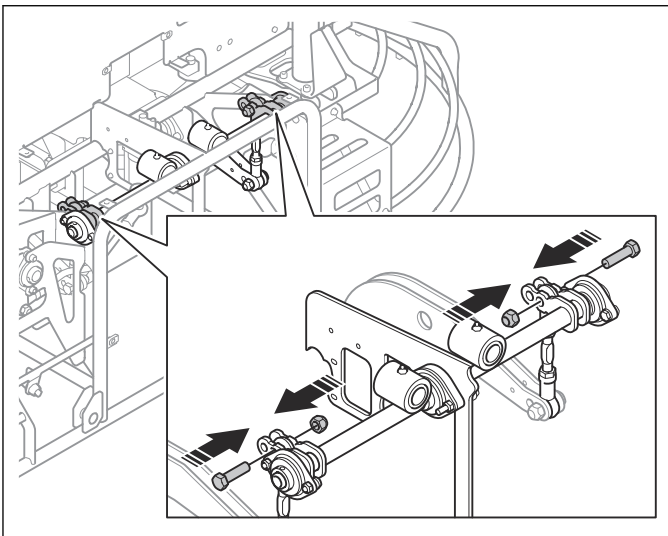
1. Apply grease to the center bearings and the outer bearings. Install the control shaft, the 2 bolts, the 2 washers and the 2 nuts on the center bearings.



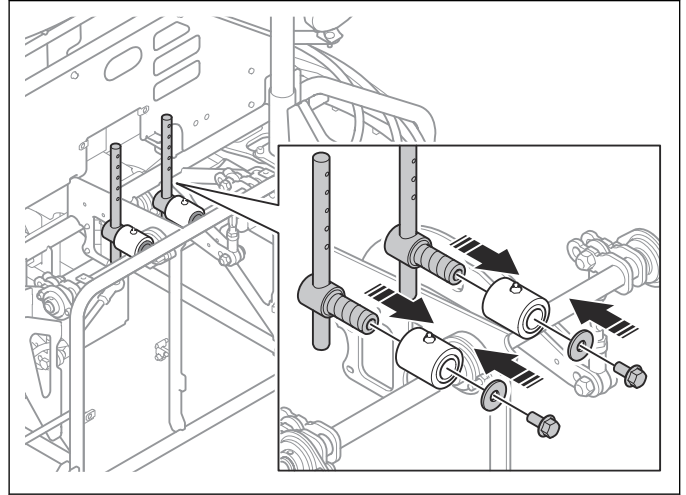
2. Install the 4 bolts, the 4 washers and the 4 nuts on the outer bearing.



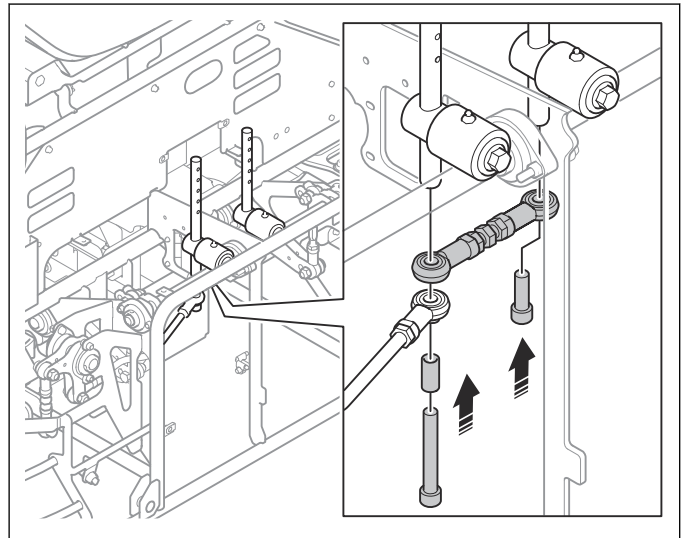
3. Install the 2 bolts and the 2 nuts on the pivot brackets.



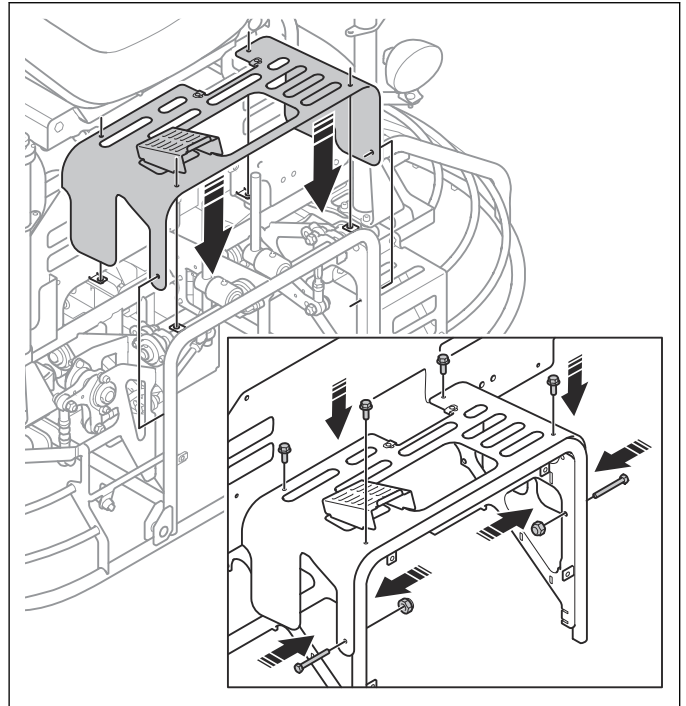
4. Install the pivots, the 2 screws and the 2 washer.



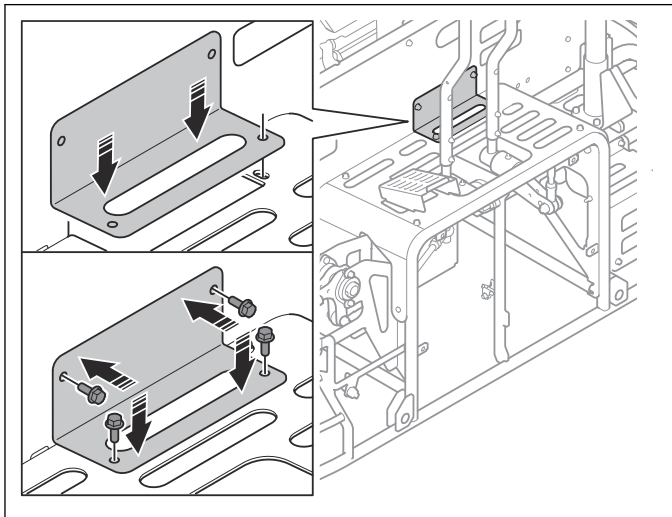
5. Install the pivot bracket, the spacer and the 2 bolts at the bottom of each steering lever holder.



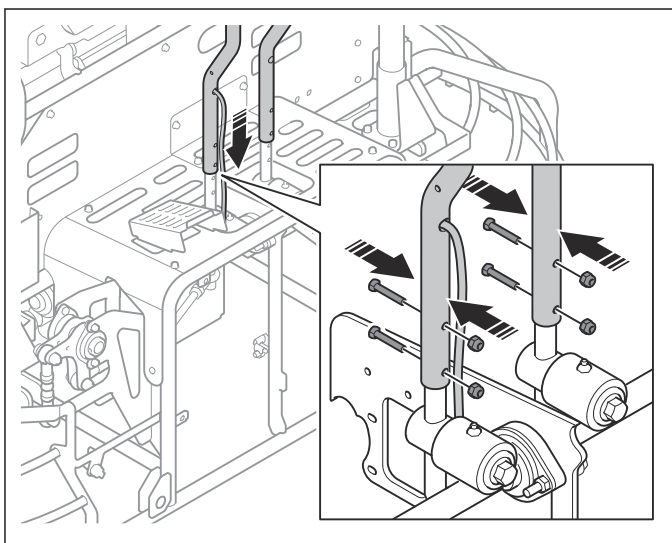
6. Install the foot plate, the 2 side bolts, 2 side nuts and 4 top screws.



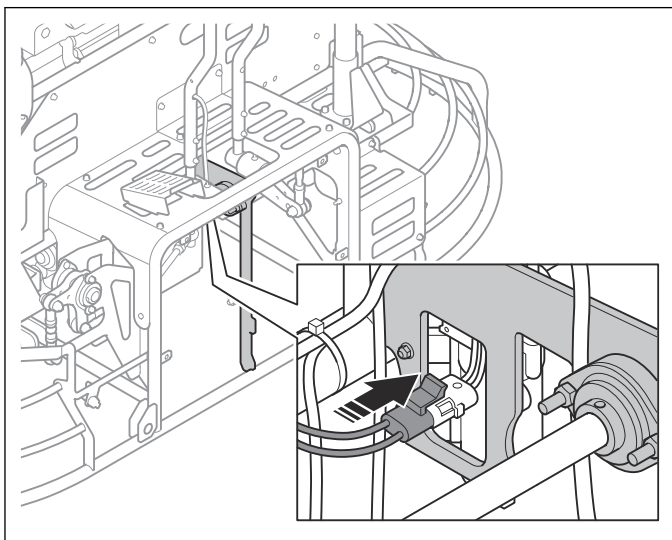
7. Install the angle bracket and the 4 screws.



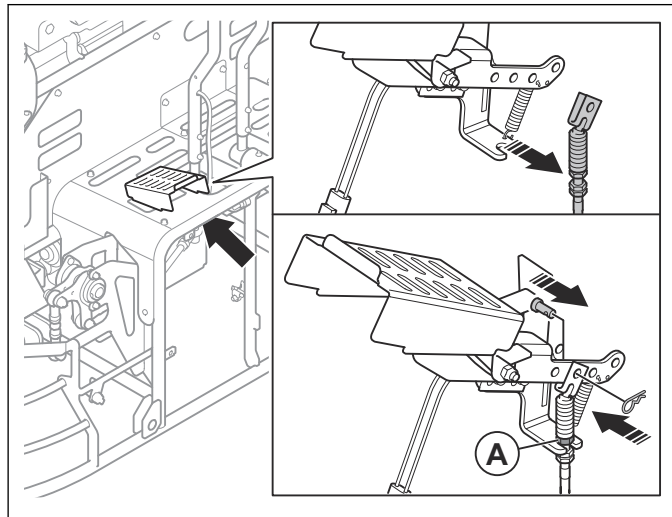
8. Install the 2 steering levers, the 4 bolts and the 4 nuts.



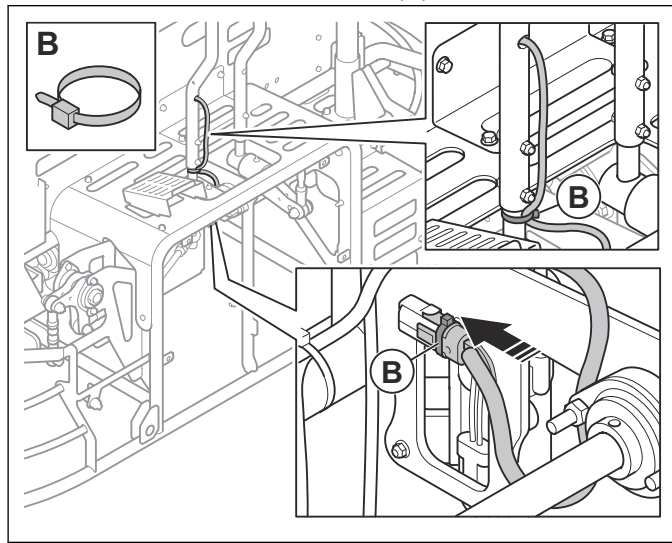
9. Install the connector to the throttle control.



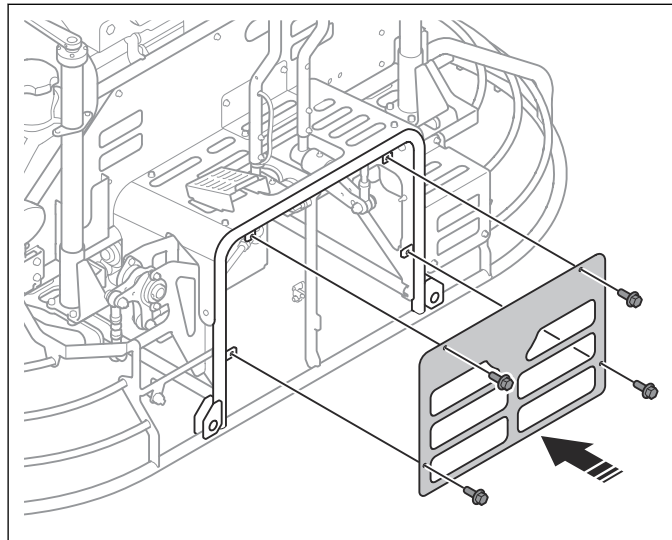
10. Connect the wire for the throttle control (A).



11. Connect the wire harness for the retardant spray switch. Install new cable ties (B).



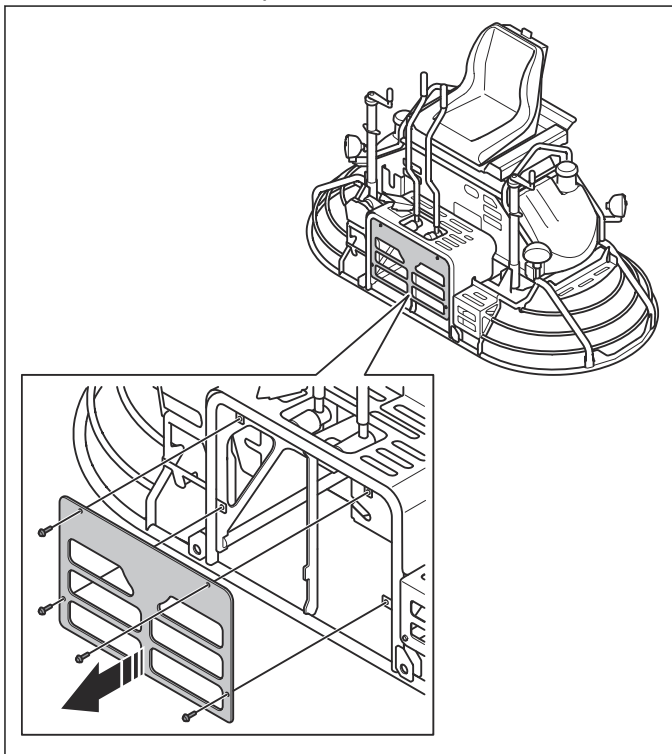
12. Install the front cover, the 4 washers and 4 screws.



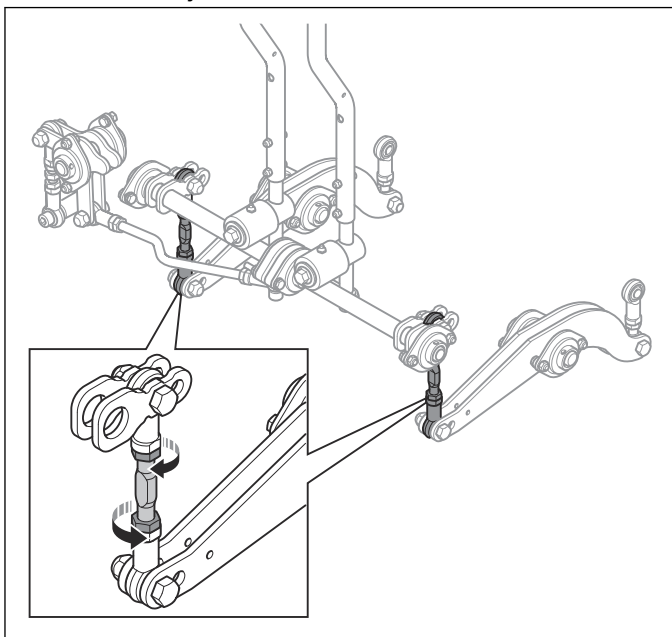
6.19 To adjust the steering levers, forward and rearward

For most operators, the best position for the steering levers is approximately a 5° forward lean.

1. Remove the front plate.

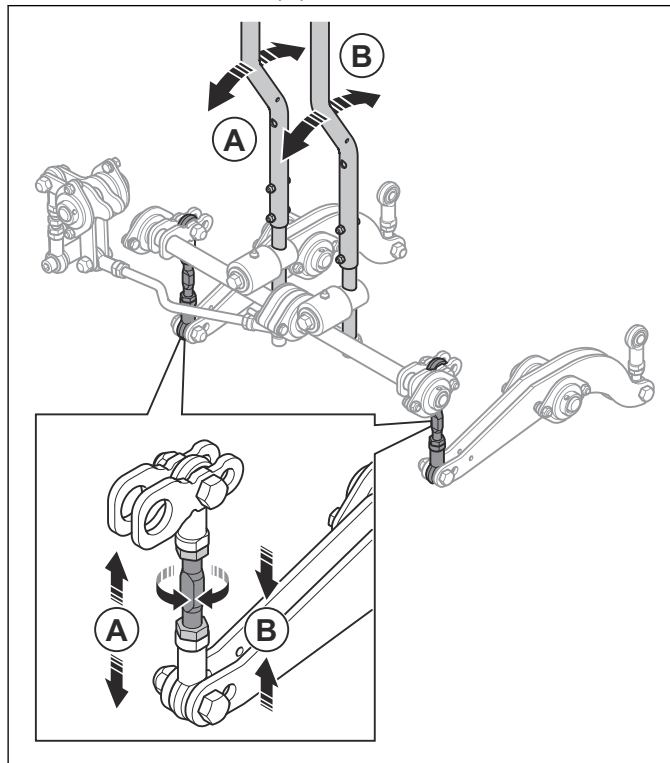


2. Loosen the jam nuts.



3. Turn the linkage.

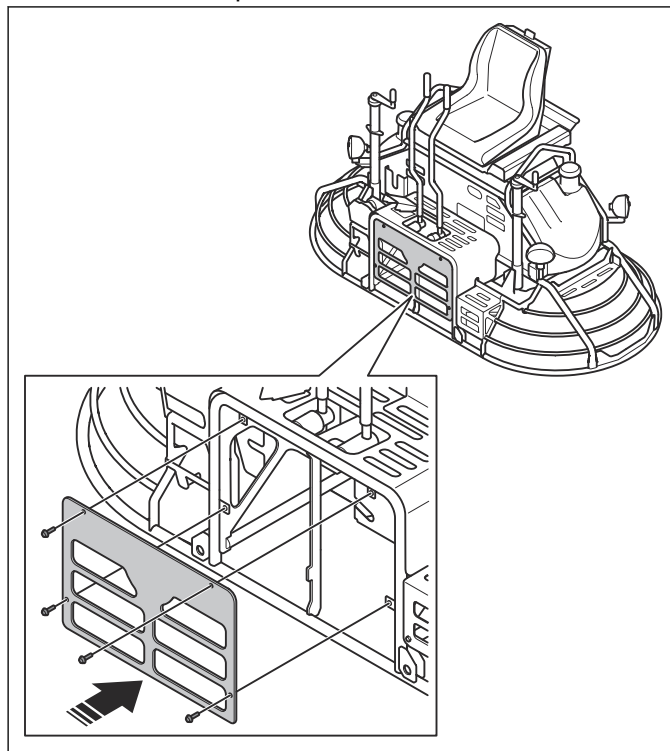
- a) Extend the linkage length to adjust the steering levers forward (A).



- b) Decrease the linkage length to adjust the steering levers rearward (B).

4. Tighten the jam nuts.

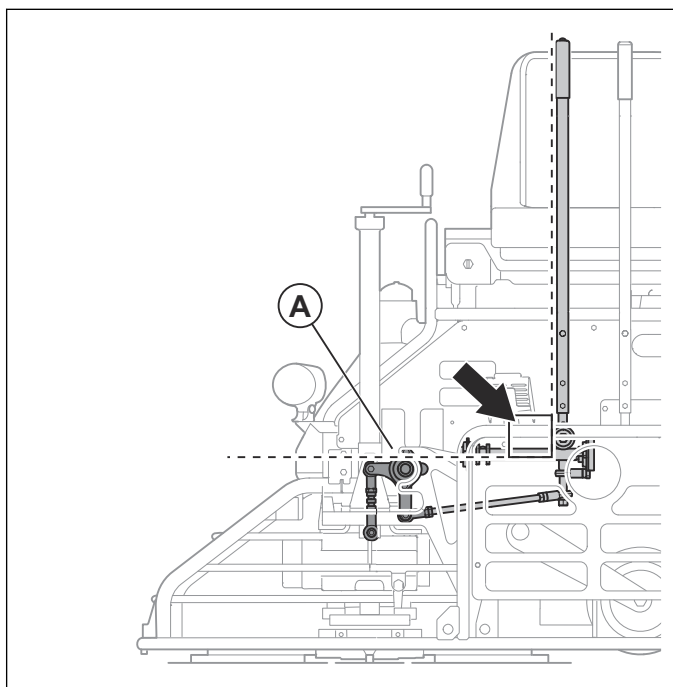
5. Install the front plate.



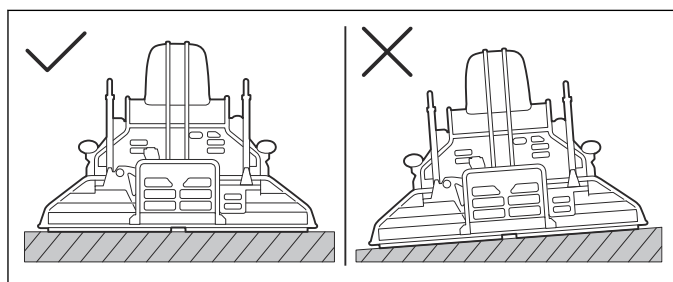
6.20 To set the steering levers in center position

The pivot bracket (A) must be in a horizontal position when the product is not in operation. The right steering

lever must be in a vertical position when the product is not in operation.

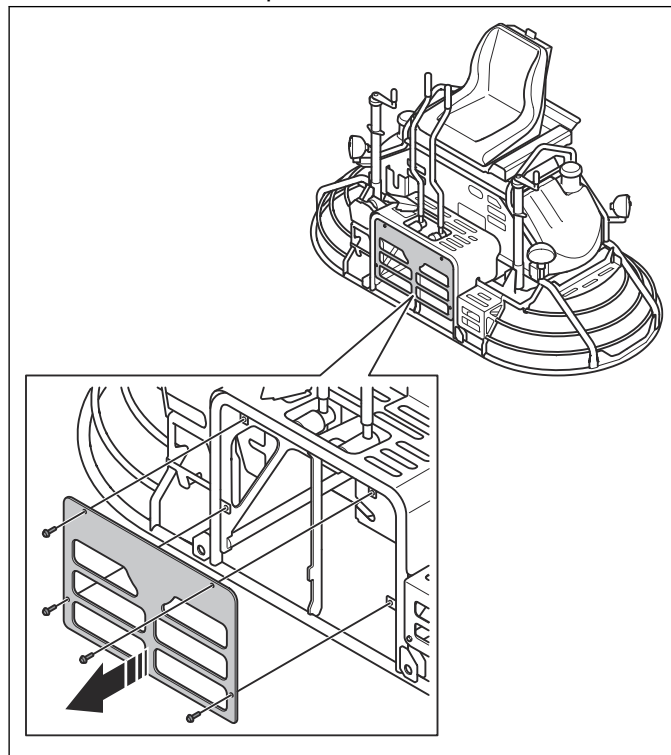


1. Put the product on a flat, level surface with the blades flat.

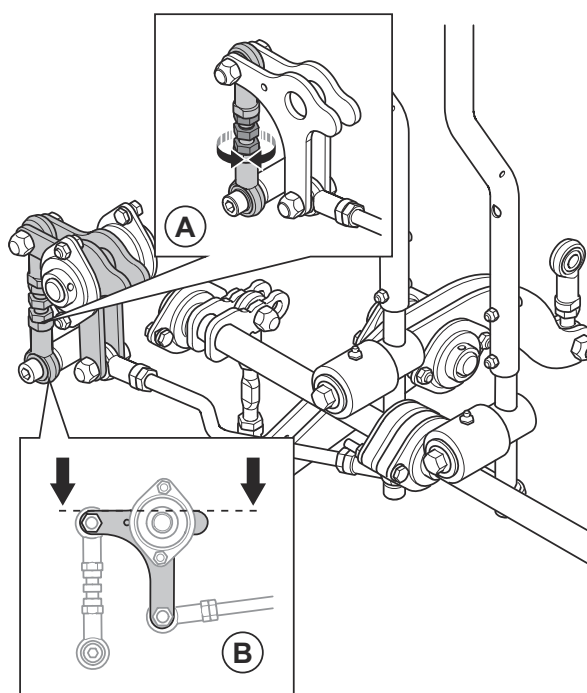


2. Make sure that the movement control levers are in a vertical position and parallel to each other.

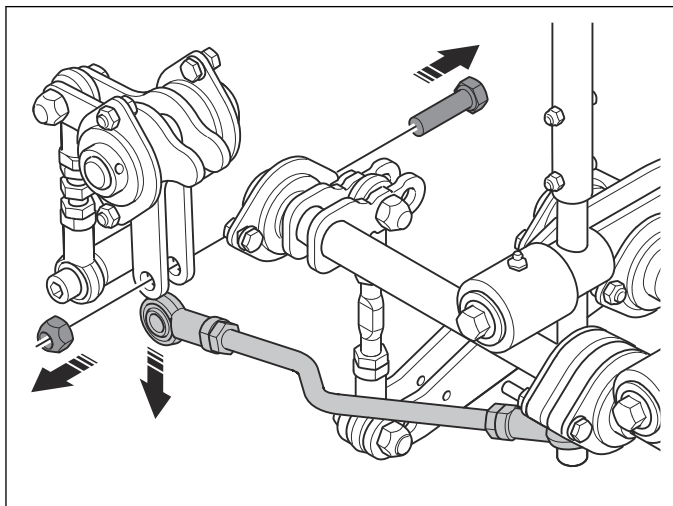
3. Remove the front plate.



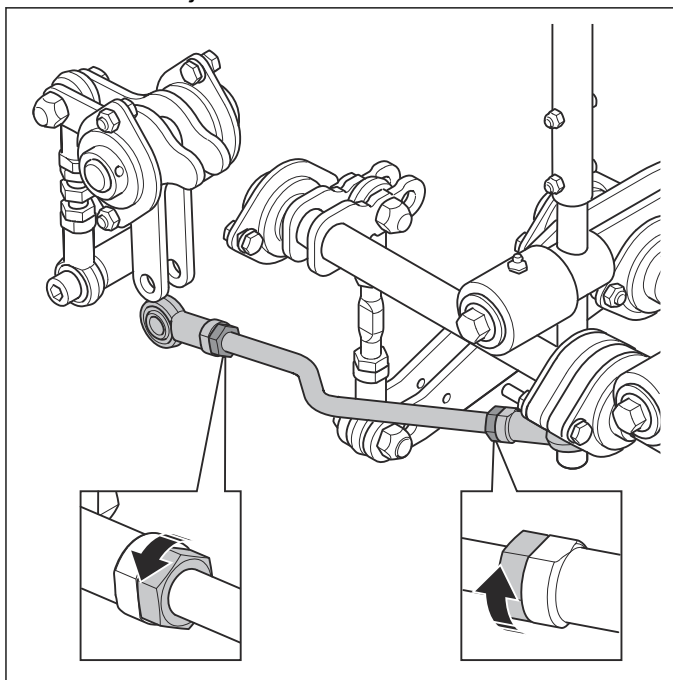
4. Adjust the linkage (A) until the bracket (B) is in a horizontal position.



5. Remove the nut and the bolt.

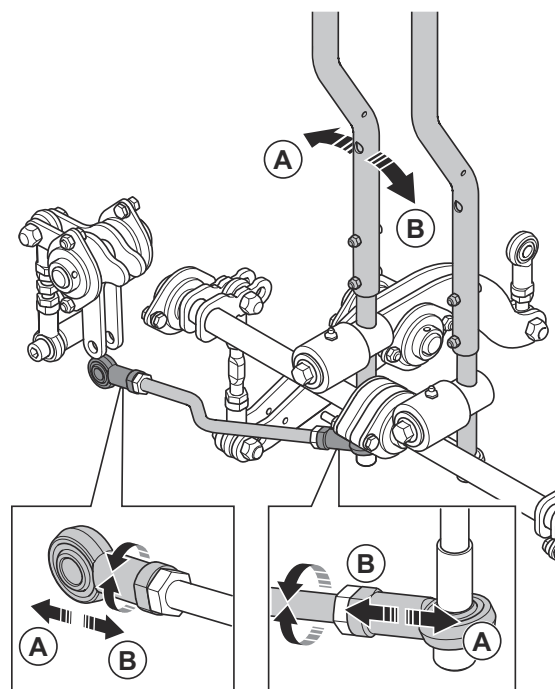


6. Loosen the jam nuts.



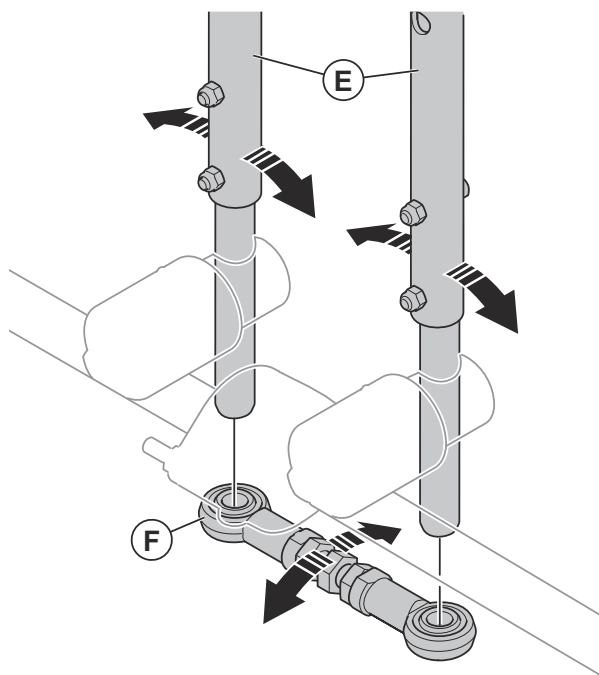
7. Turn the linkage.

a) Extend the linkage length to adjust the right steering lever to the right (A).

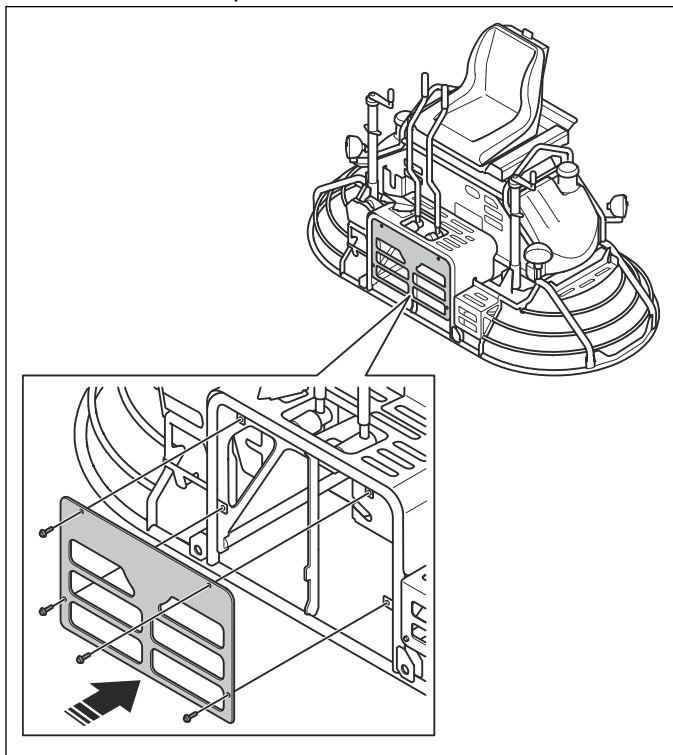


b) Decrease the linkage length to adjust the right steering lever to the left (B).

8. Adjust the link (F) to make the steering levers (E) parallel to each other.



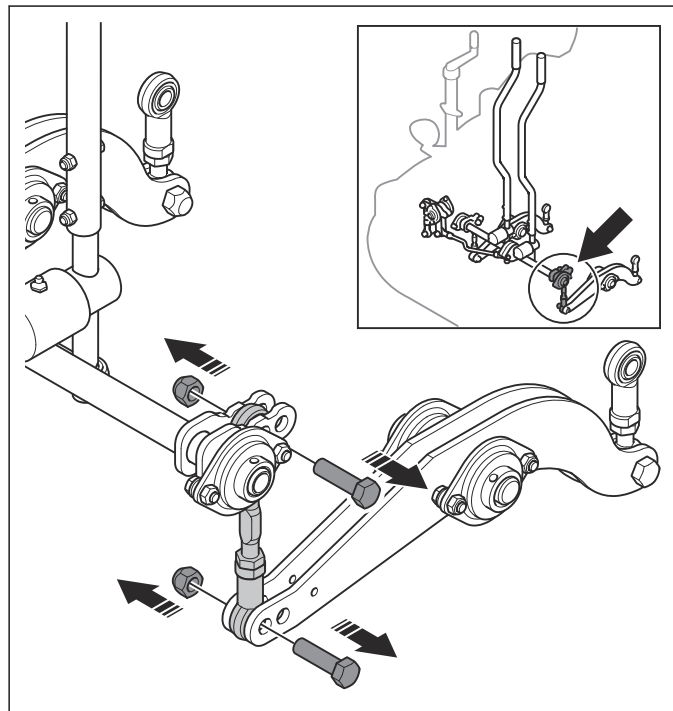
9. Install the front plate.



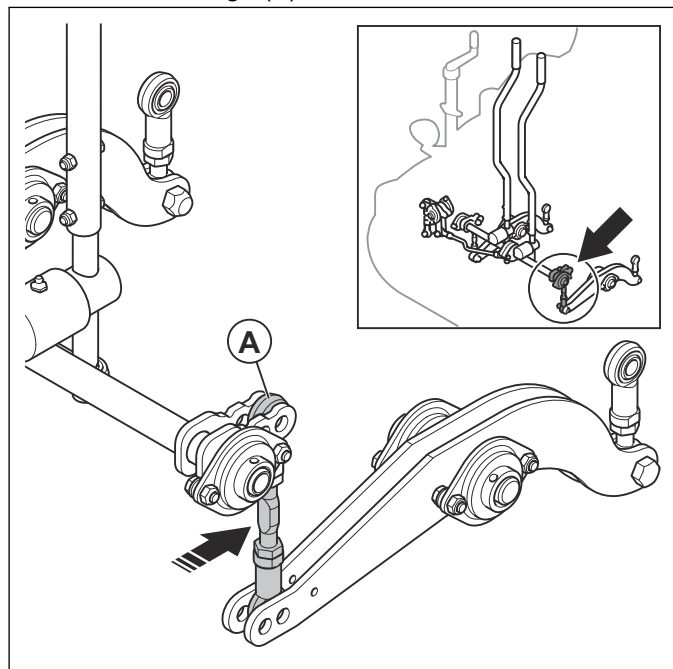
6.21 To adjust the reaction of the steering levers

Adjustment of the connection points on the steering pivots sets how sensitive the reaction of the steering levers is.

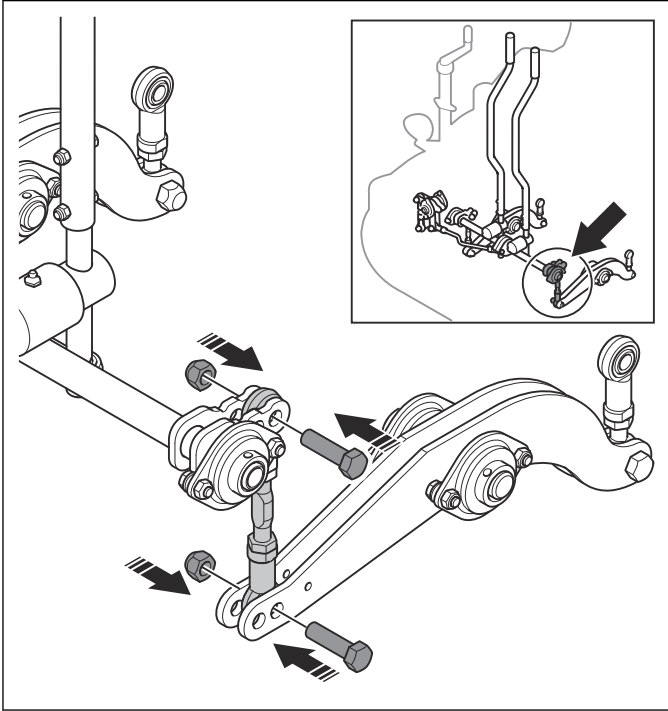
1. Remove the 2 bolts and 2 nuts.



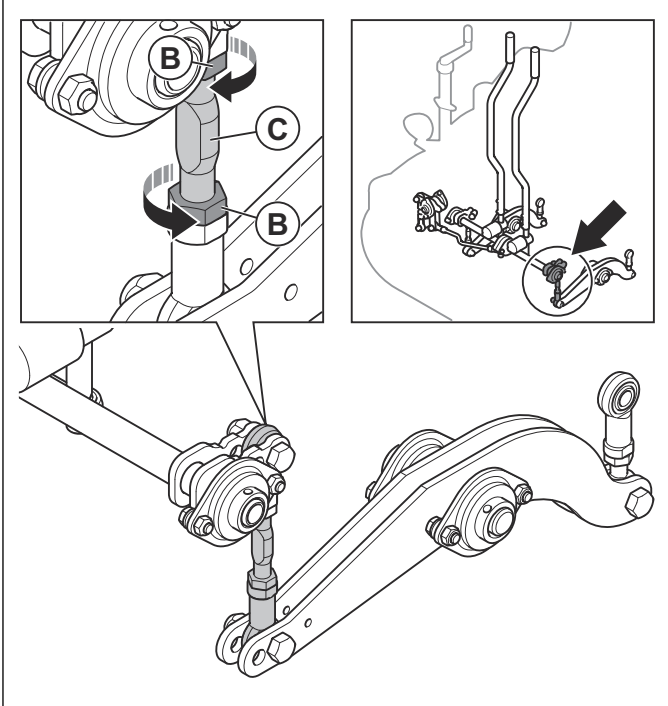
2. Move the linkage (A).



3. Install the 2 bolts and 2 nuts.



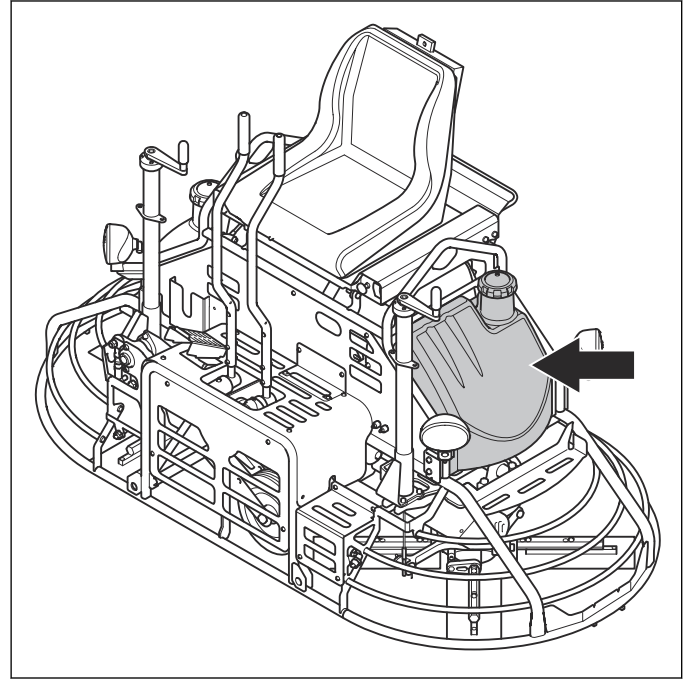
4. If it is necessary, adjust the links.



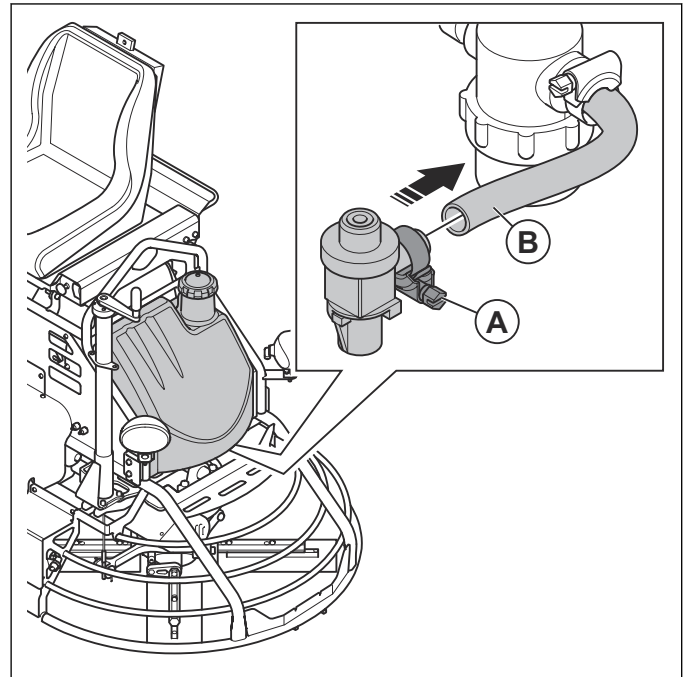
- a) Loosen the jam nuts (B).
- b) Turn the linkage (C).
- c) Tighten the jam nuts.

6.22 To remove the engine

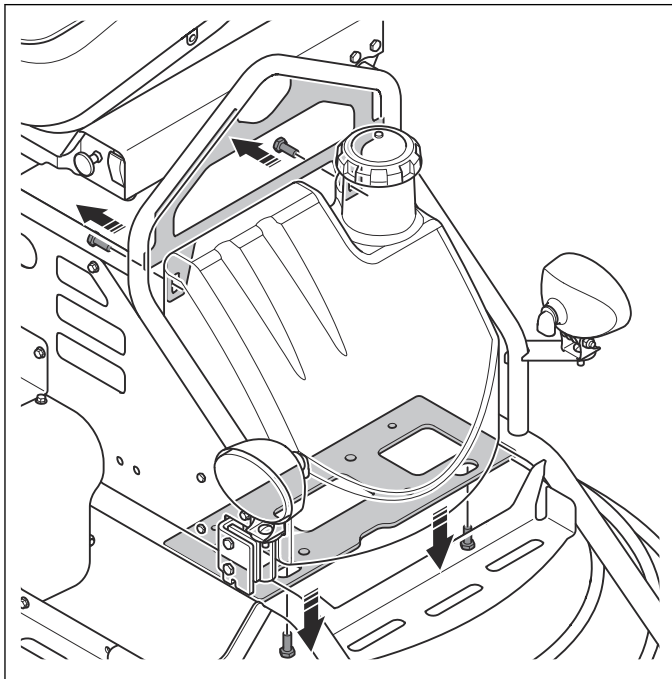
1. Stop the engine and disconnect the battery.
2. Drain the water tank.



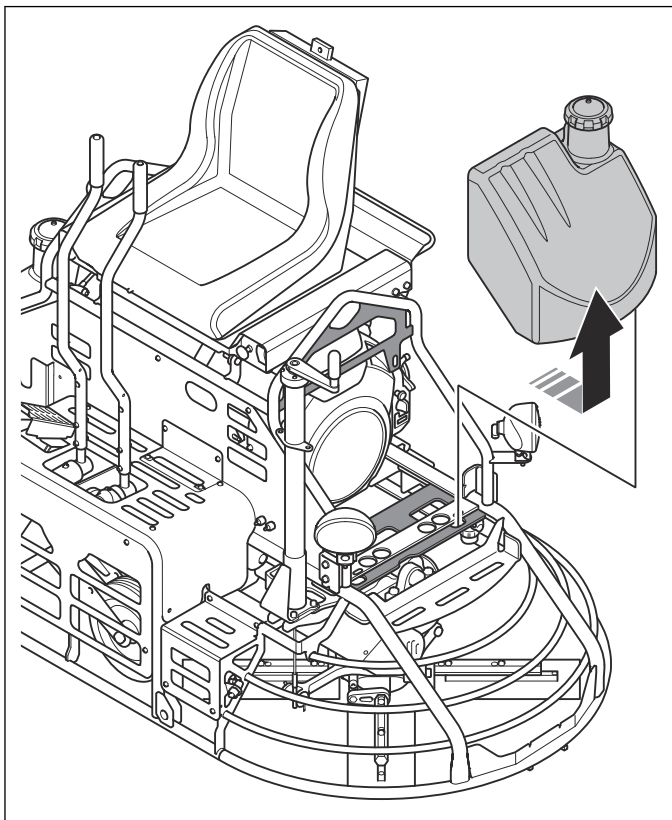
3. Loosen the hose clamp (A) and disconnect the water hose (B).



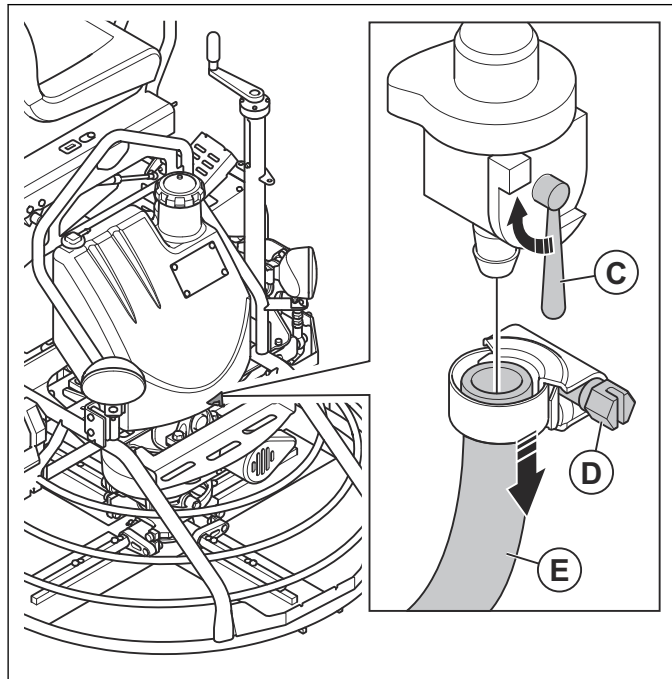
4. Remove the 4 screws for the water tank.



5. Remove the water tank.

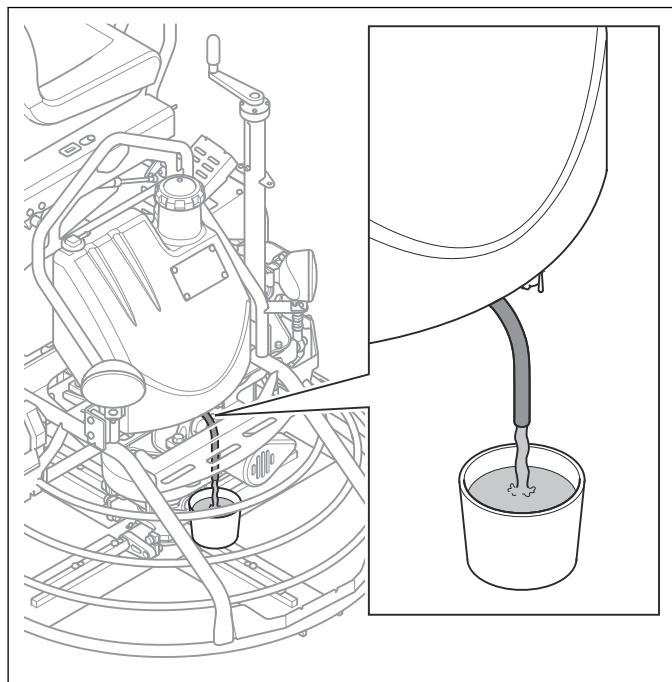


6. Turn the fuel valve (C) to close the fuel valve.

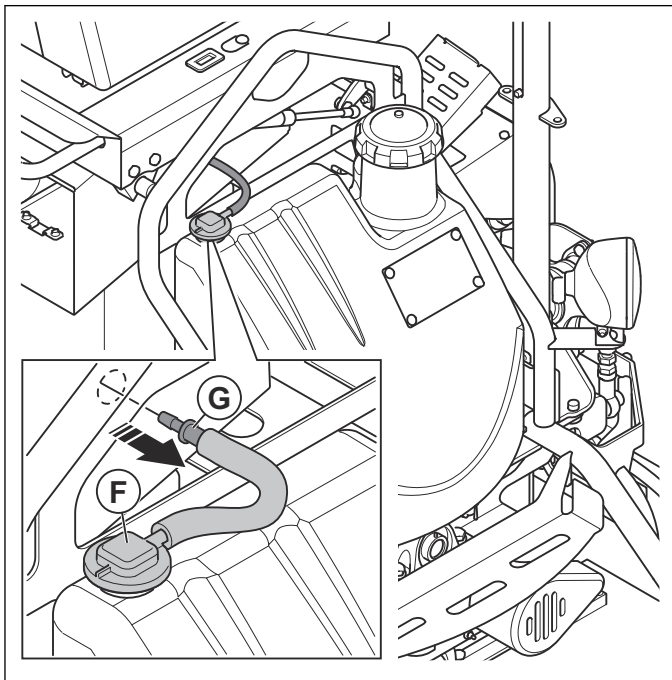


7. Loosen the hose clamp (D) and disconnect the fuel hose (E).

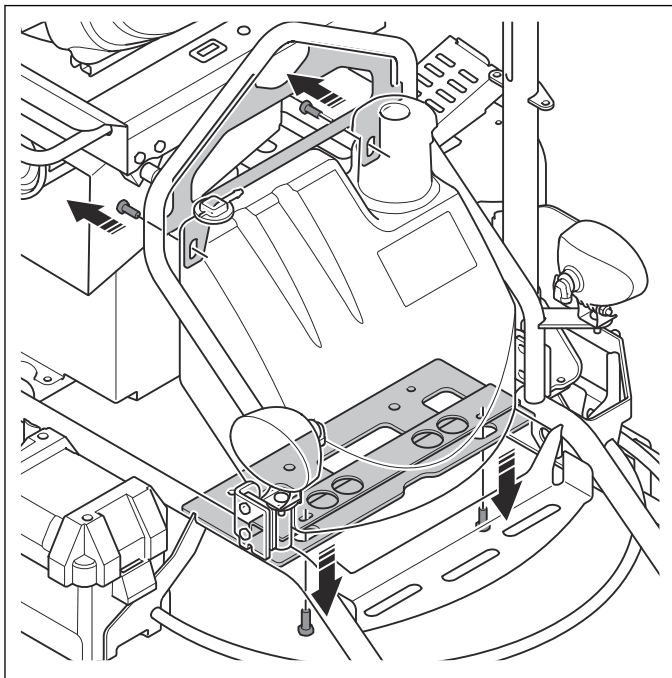
8. Drain the remaining fuel from the fuel hose into a container.



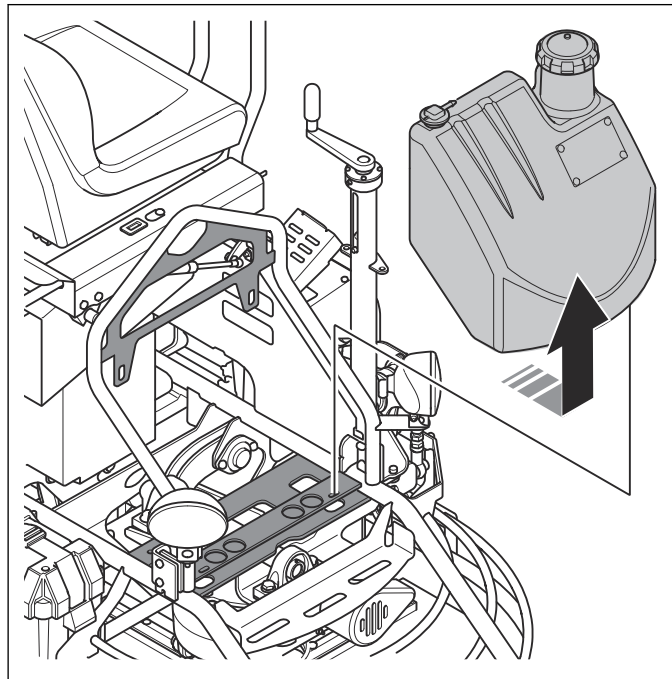
9. Loosen the hose (G) for the ventilation valve (F) of the fuel tank.



10. Remove the 4 screws for the fuel tank.

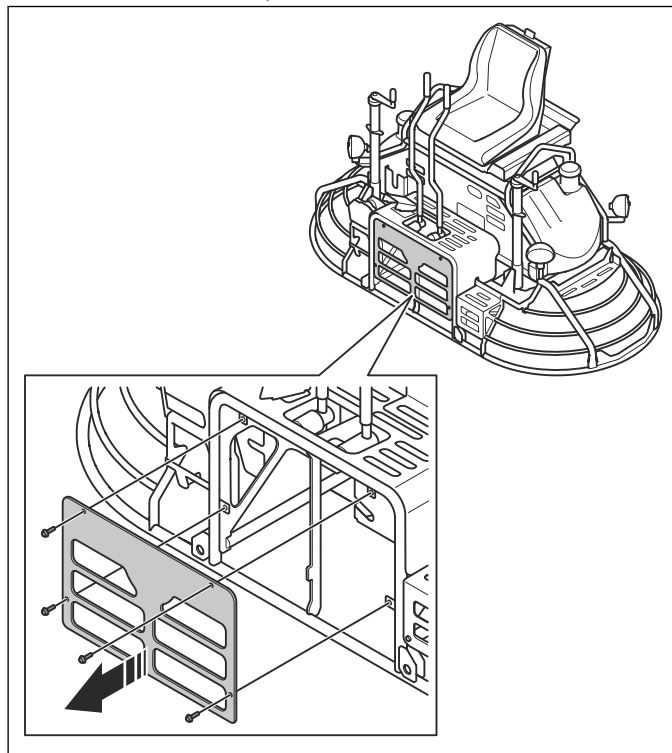


11. Remove the fuel tank.

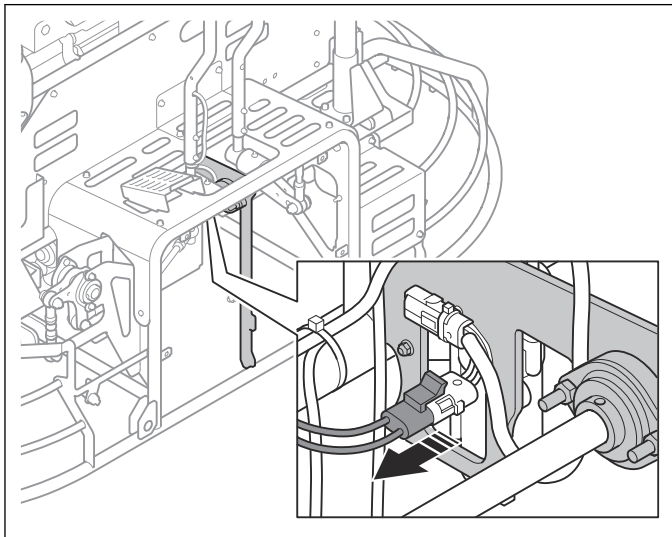


12. Remove the drive belt. Refer to *To remove the drive belt on page 11.*

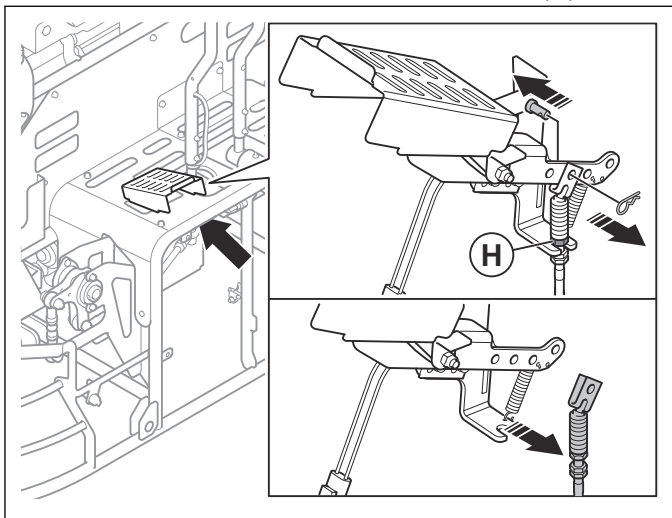
13. Remove the front plate.



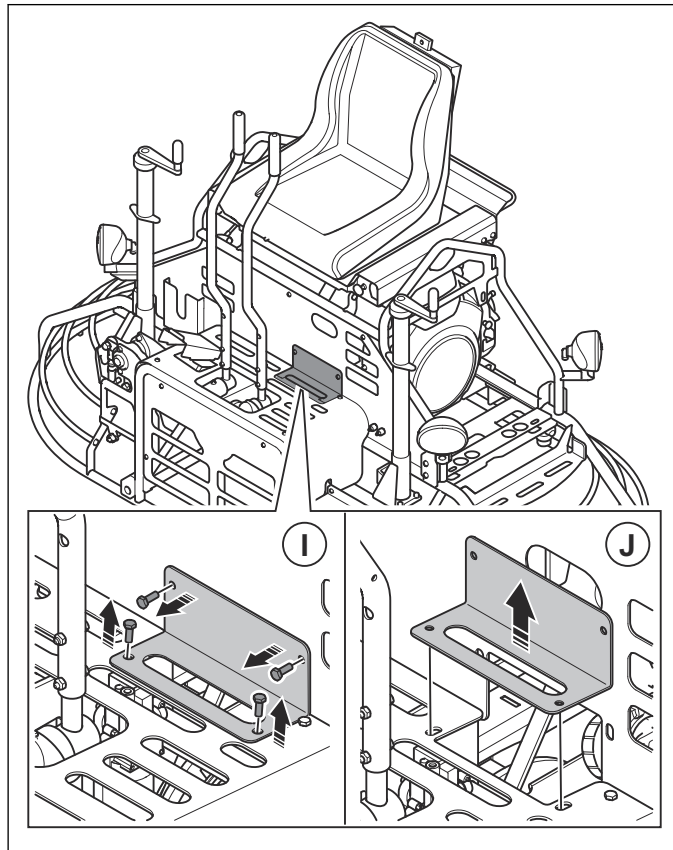
14. Remove the connector to the throttle control.



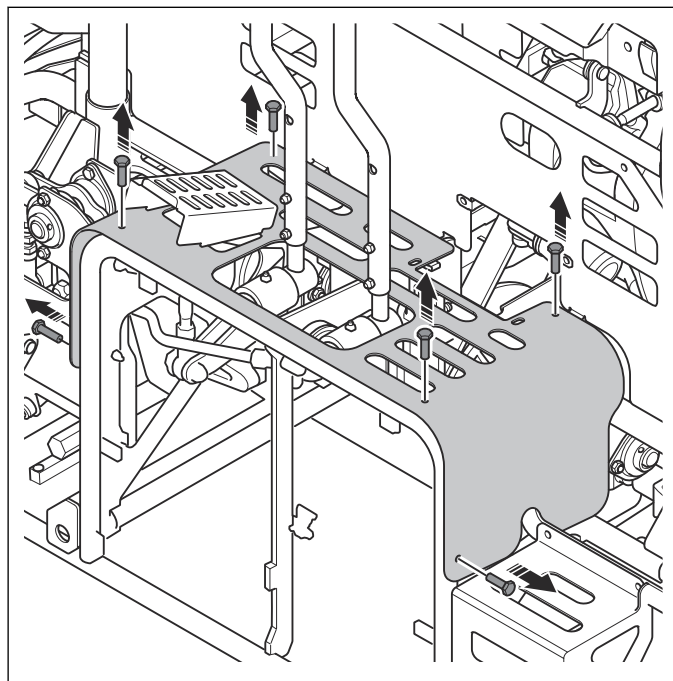
15. Disconnect the wire to the throttle control (H).



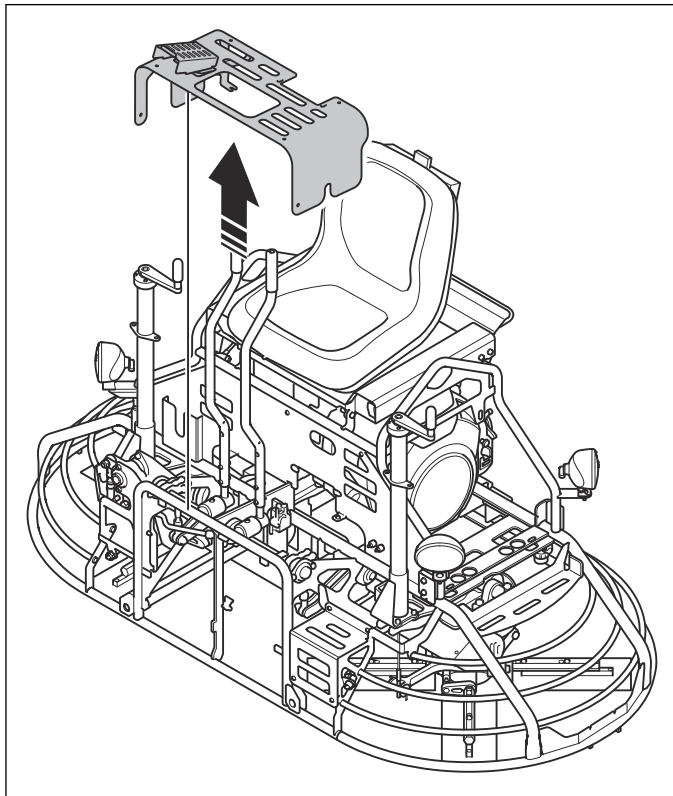
16. Remove the 4 screws (I) and the angle bracket (J).



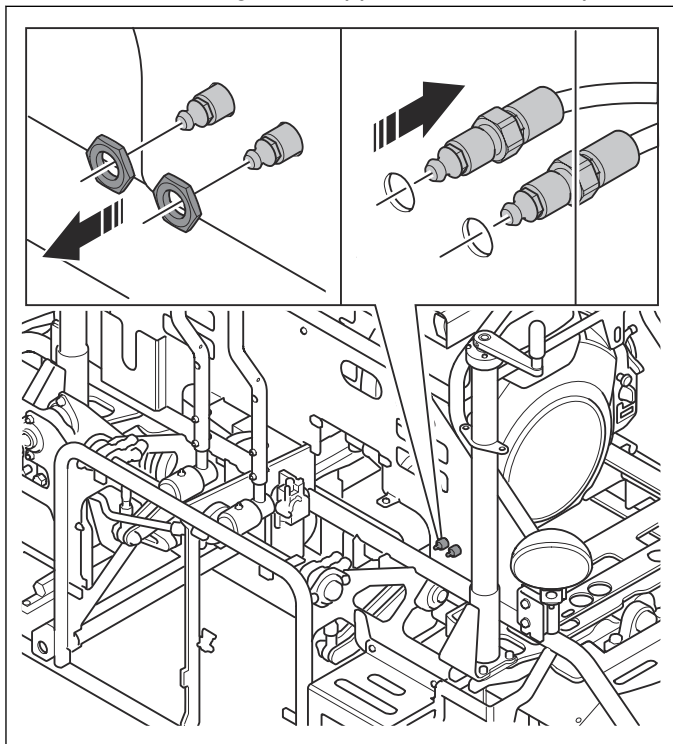
17. Remove the 2 side bolts, 2 side nuts and the 4 top screws.



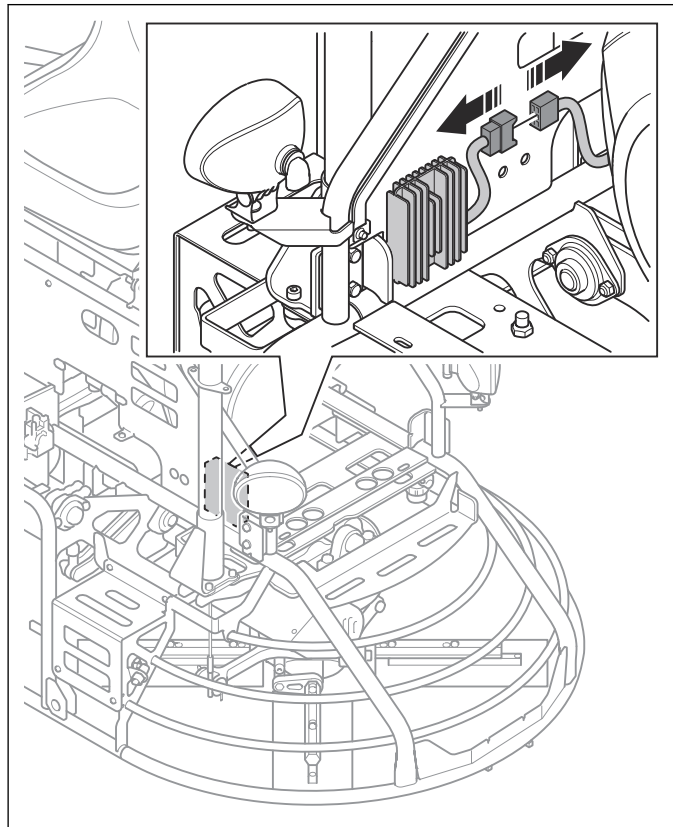
18. Remove the foot plate.



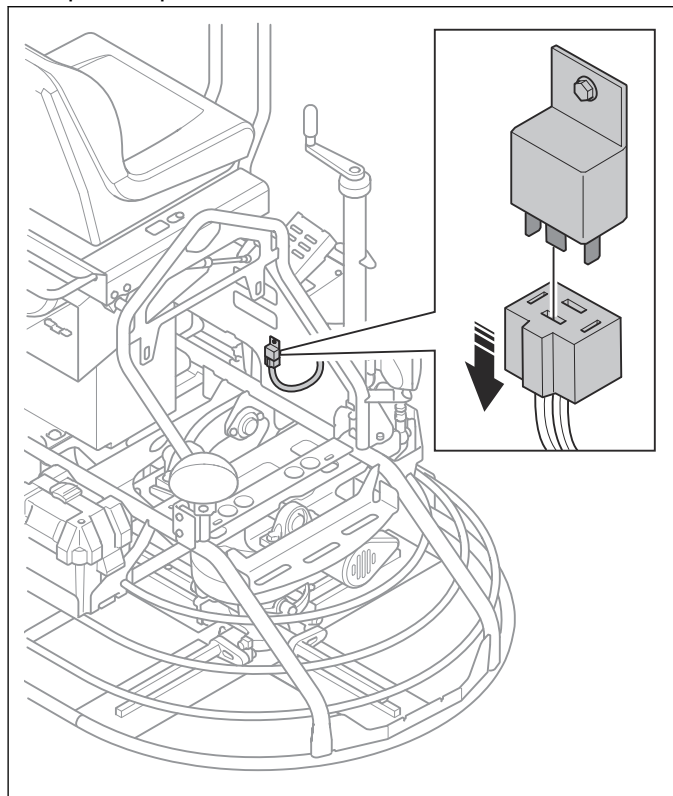
19. Disconnect the grease nipples from the front plate.



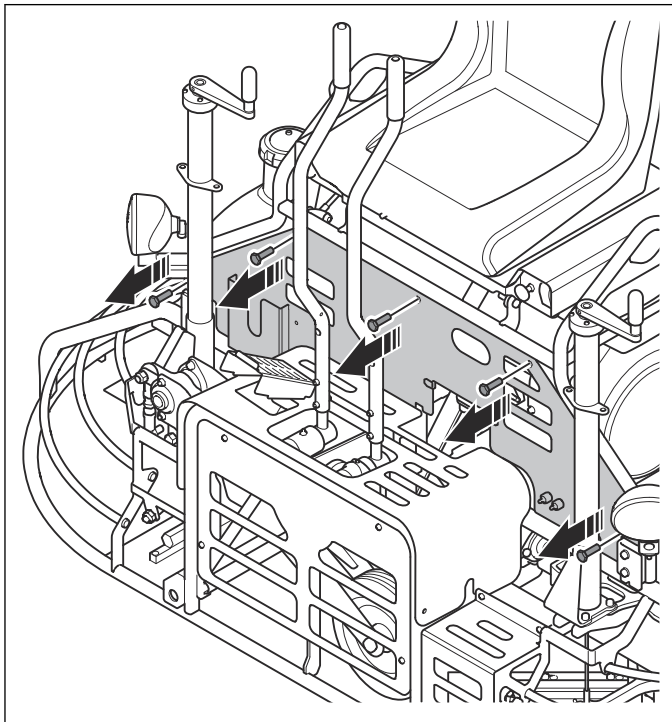
20. Disconnect the connection to the regulator.



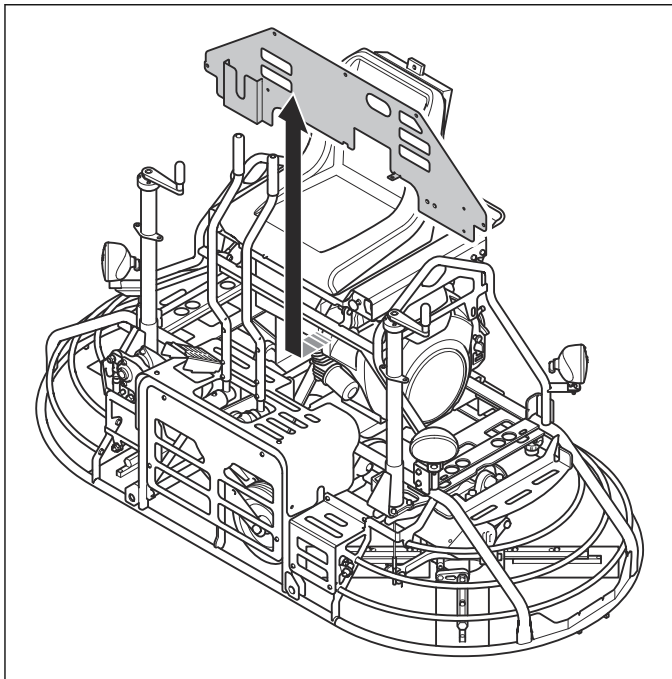
21. Disconnect the connection to the relay of the operator presence control.



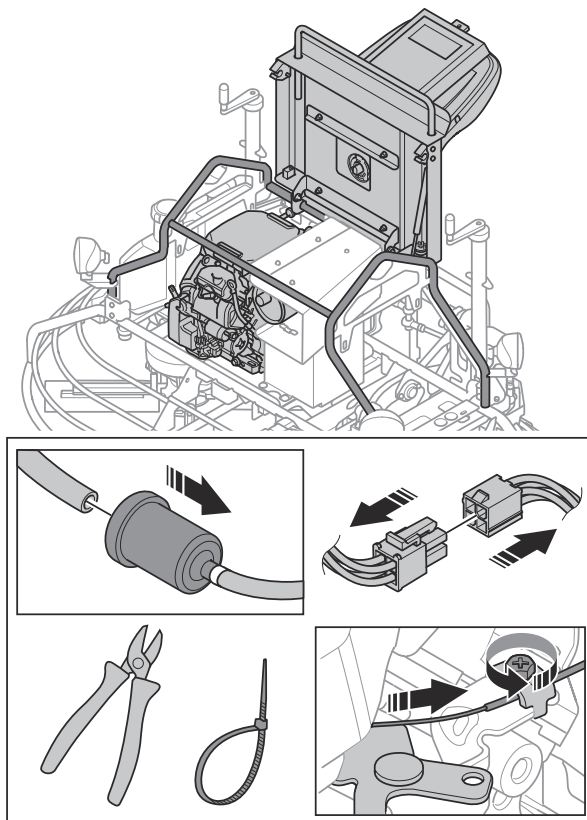
22. Remove the 5 screws for the front plate.



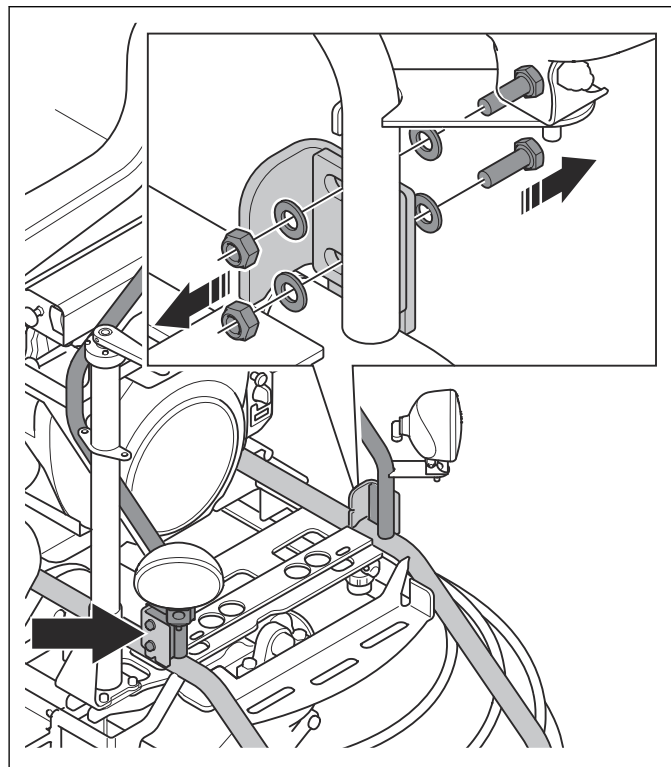
23. Remove the front plate.



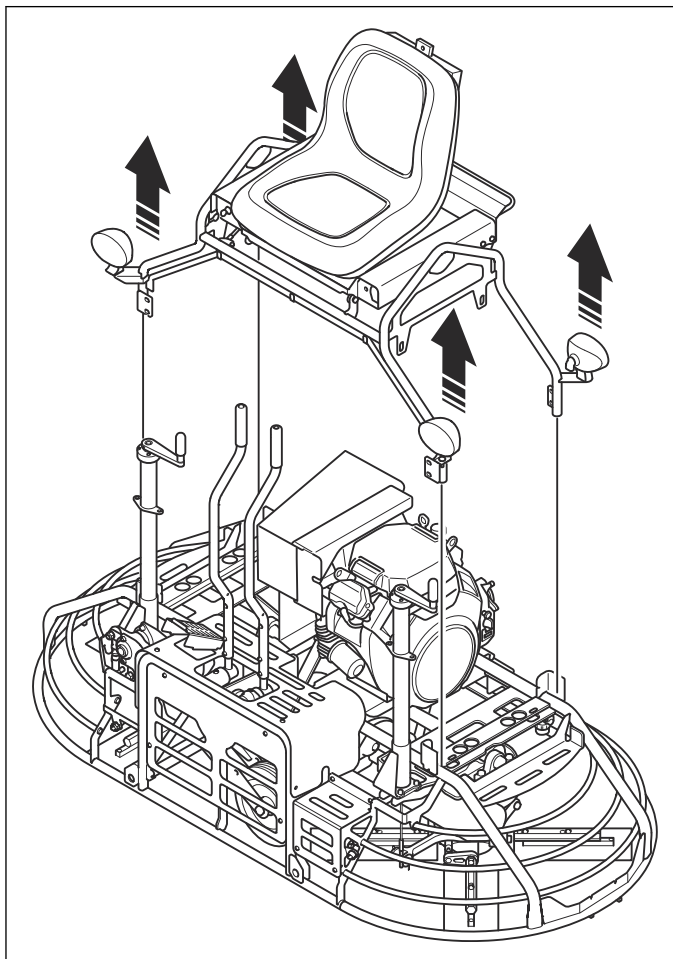
24. Disconnect the cables, wires and hoses and remove the cable ties on the cross brace.



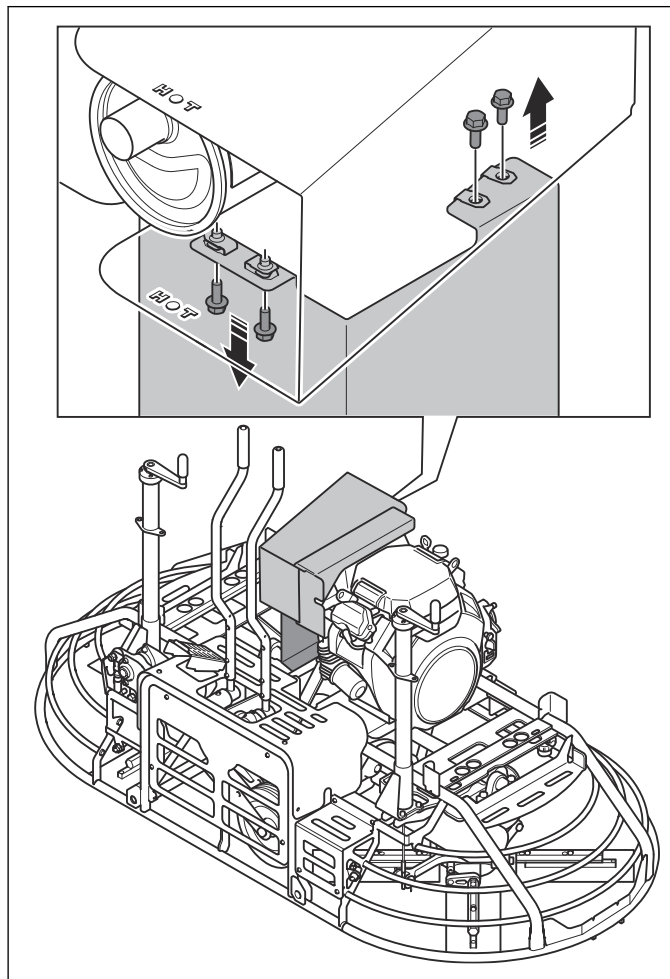
25. Remove the 2 bolts, 2 washers and the 2 nuts for the cross brace.



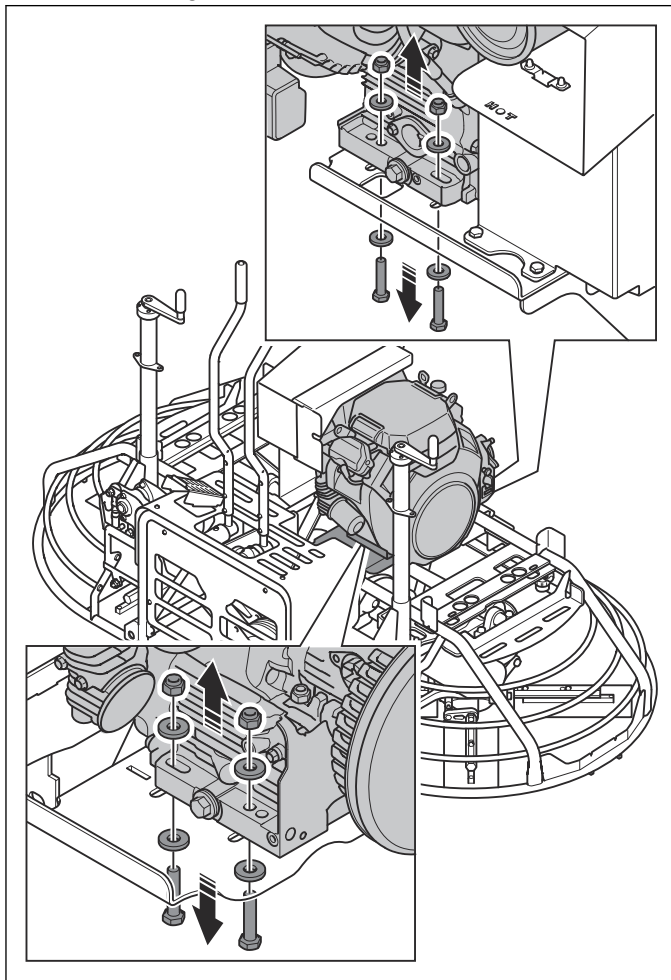
26. Remove the cross brace.



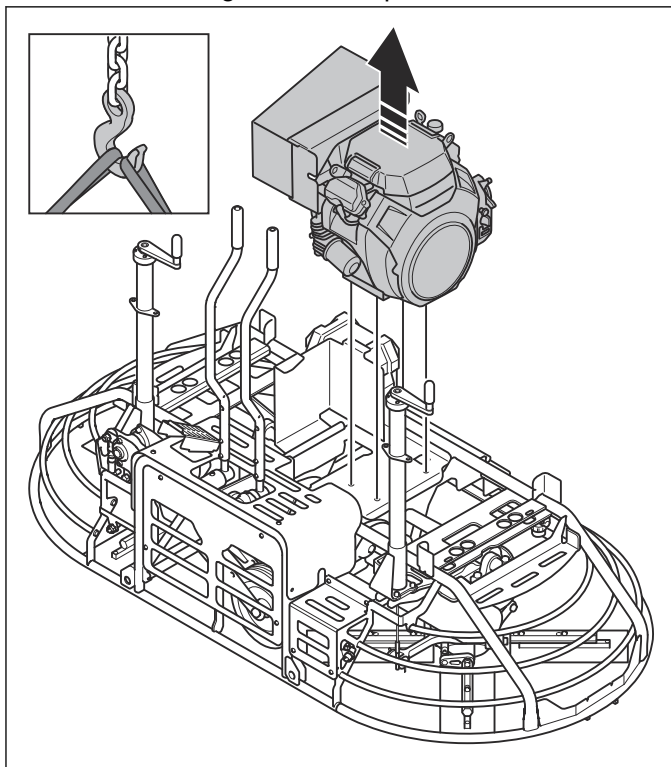
27. Remove the 4 screws for the heat shield.



28. Remove the 4 bolts, the 4 washers and the 4 nuts from the engine.

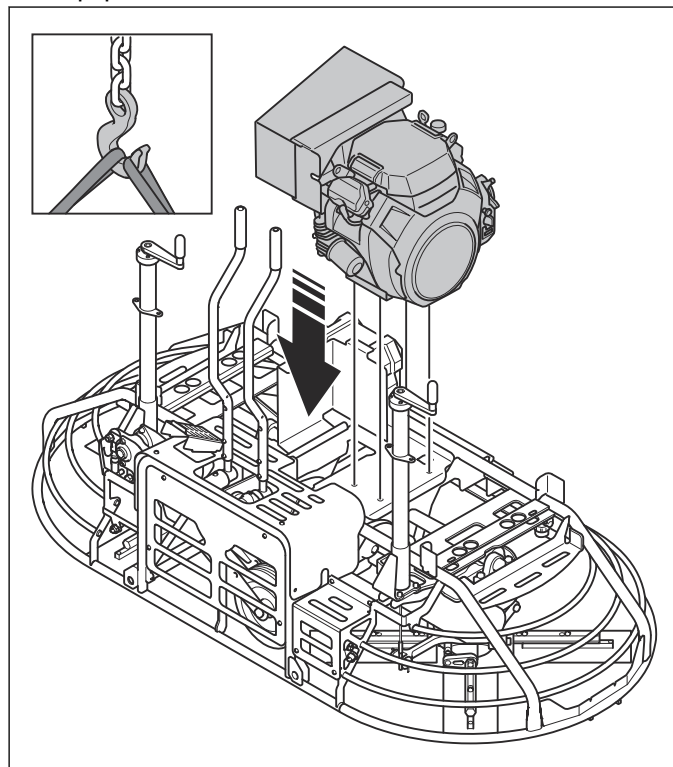


29. Attach the lifting equipment to the engine and remove the engine from the product.

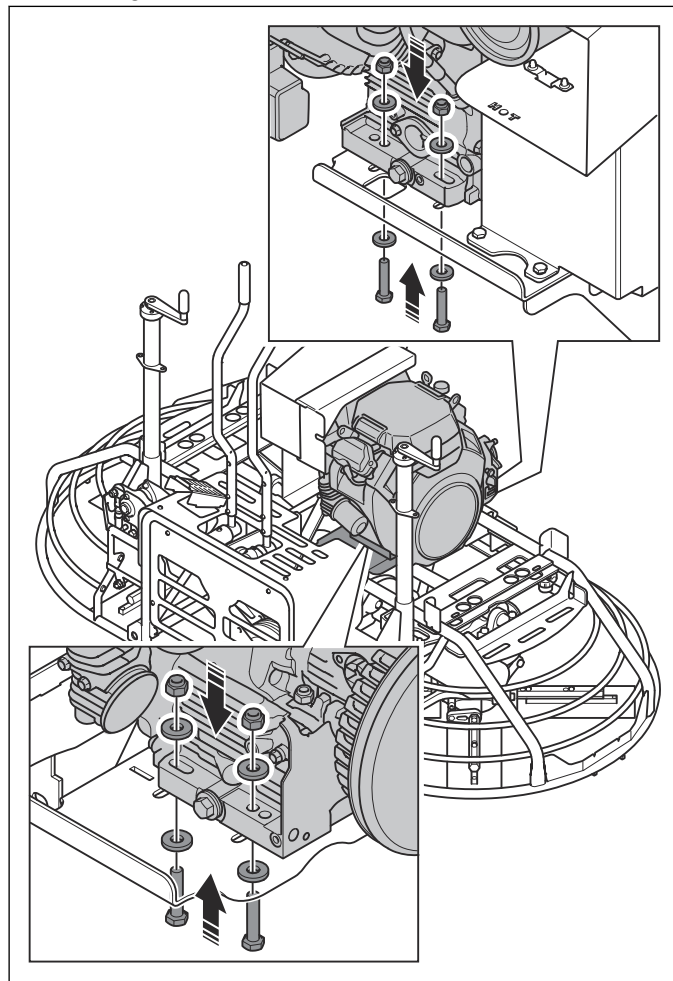


6.23 To install the engine

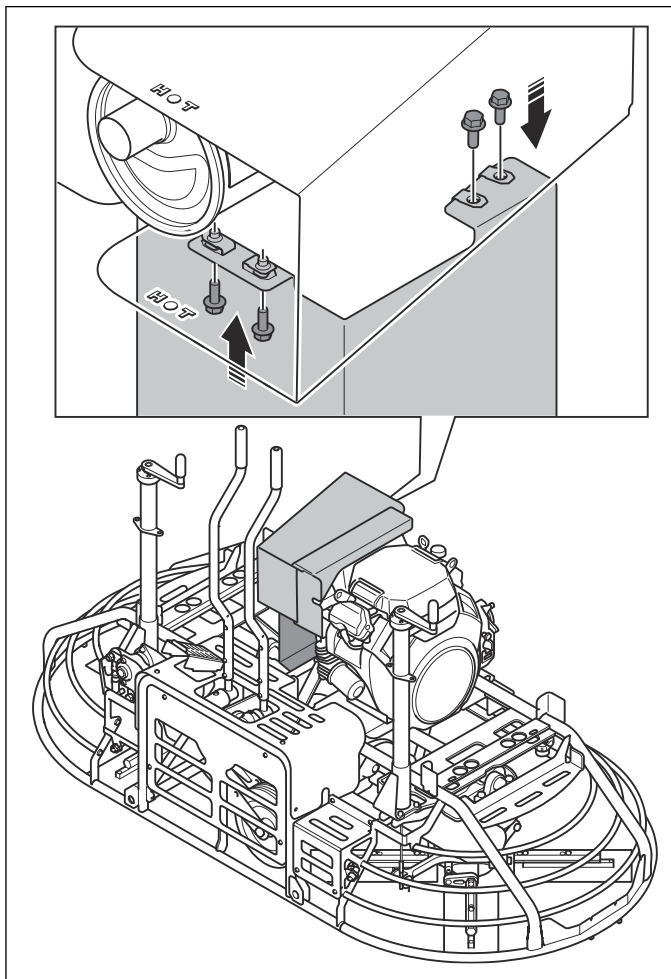
1. Put the engine in position on the product with lifting equipment.



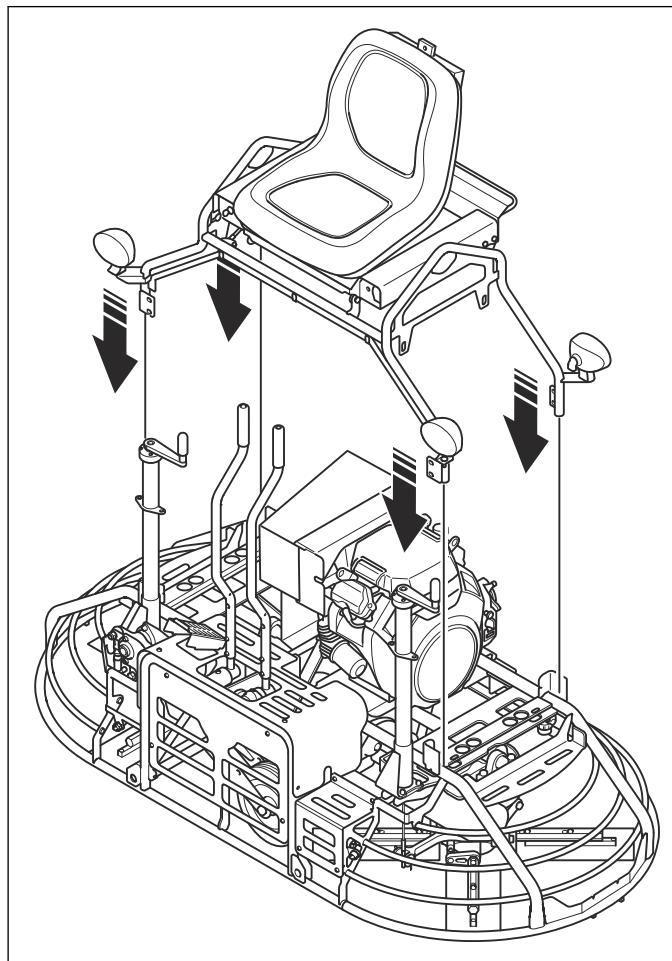
2. Install the 4 bolts, the 4 washers and the 4 nuts for the engine.



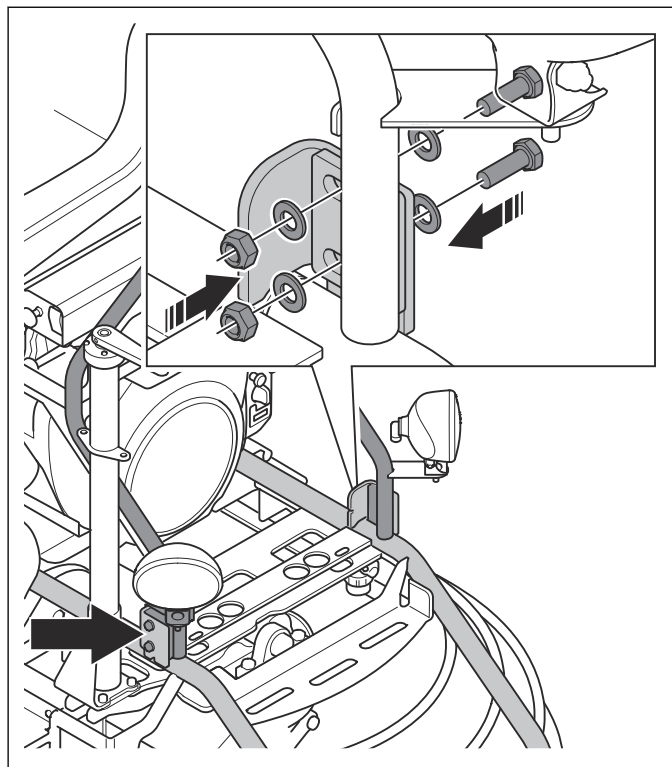
3. Install the 4 screws for the heat shield.



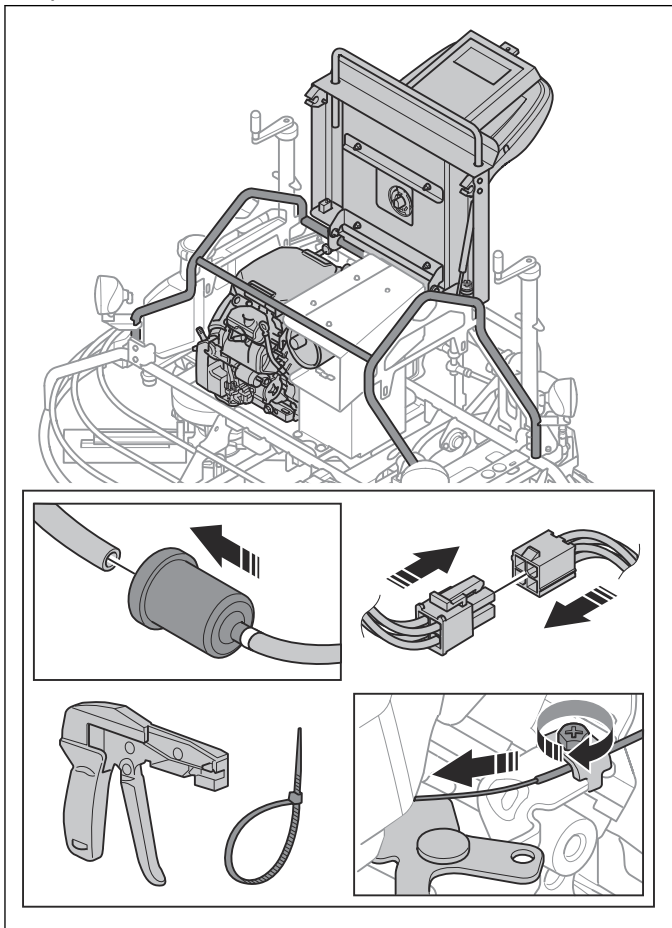
4. Install the cross brace.



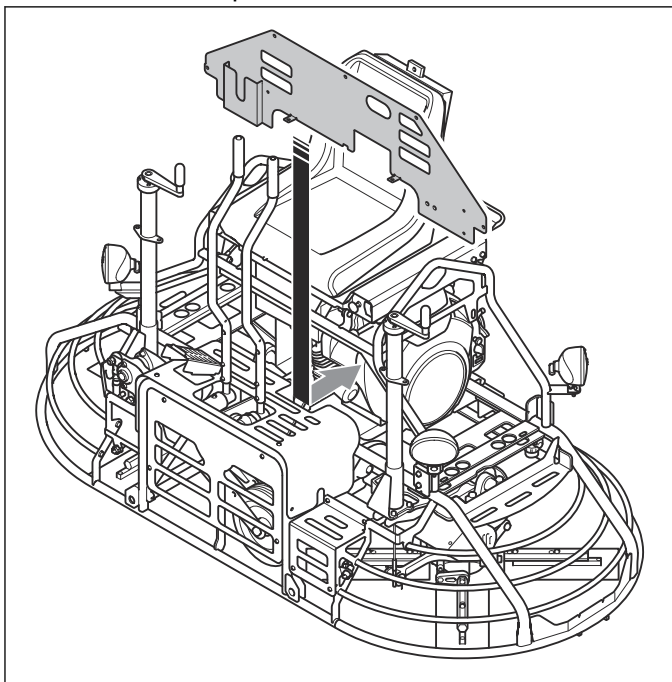
5. Install the 2 bolts, 2 washers and the 2 nuts for the cross brace.



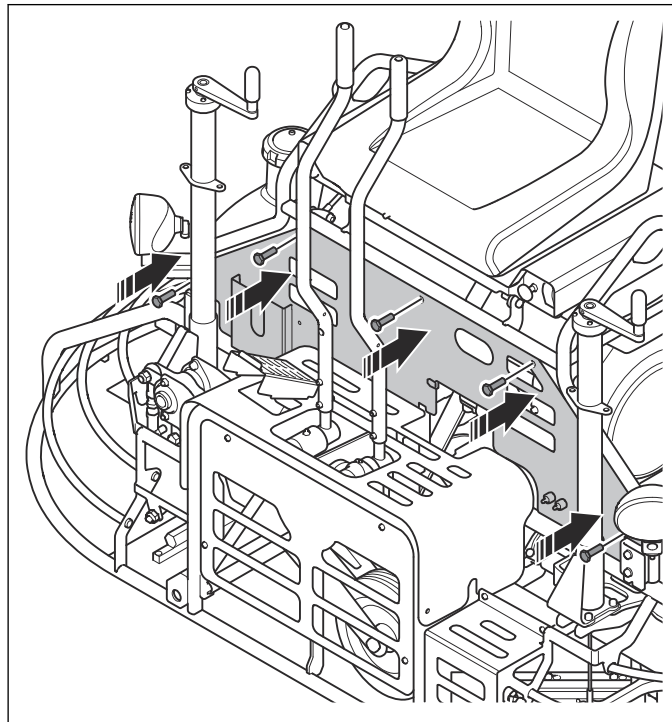
6. Connect the cables, wires, hoses to the engine and put cable ties on the cross brace.



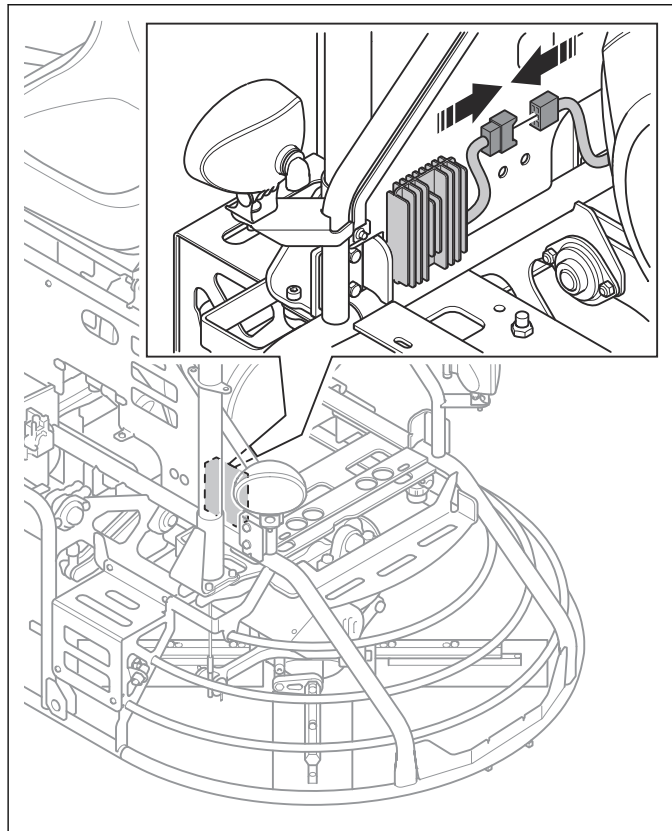
7. Install the front plate.



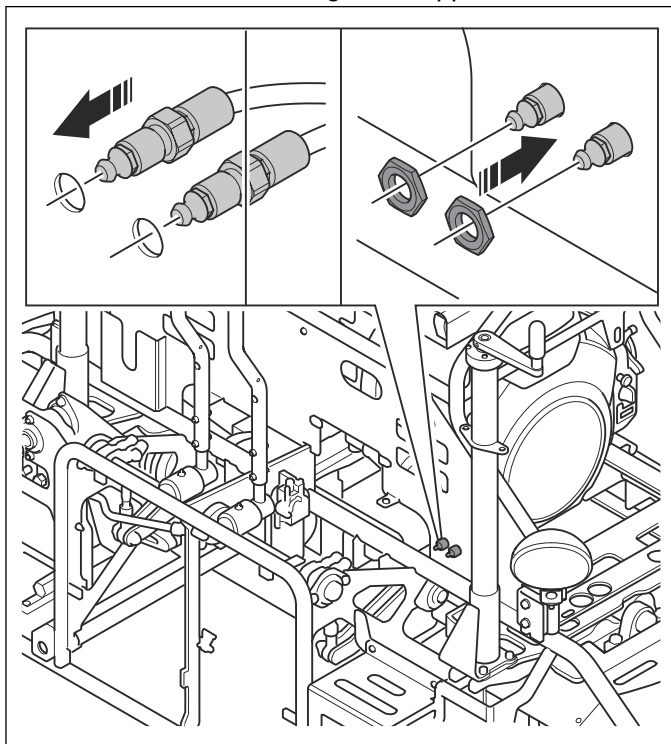
8. Install the 5 screws for the front plate.



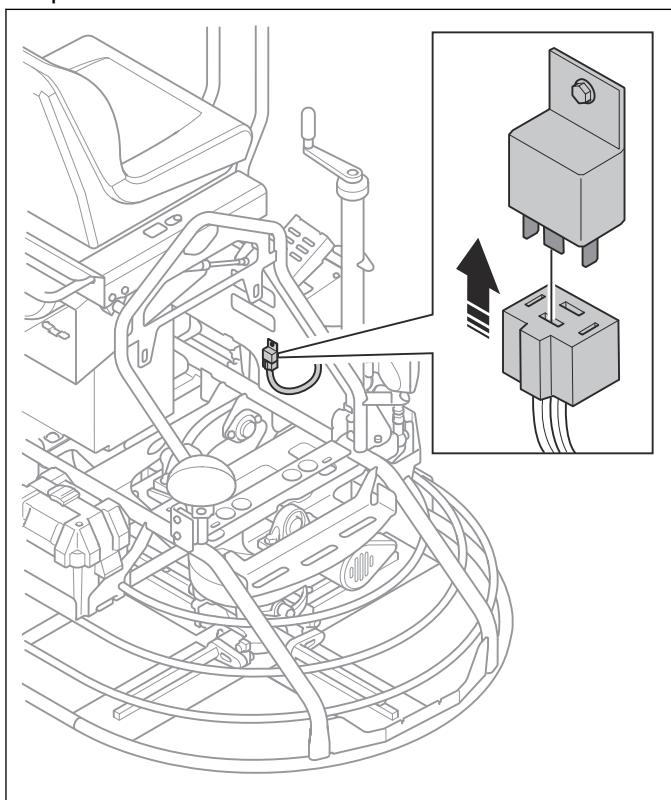
9. Connect the connection to the regulator.



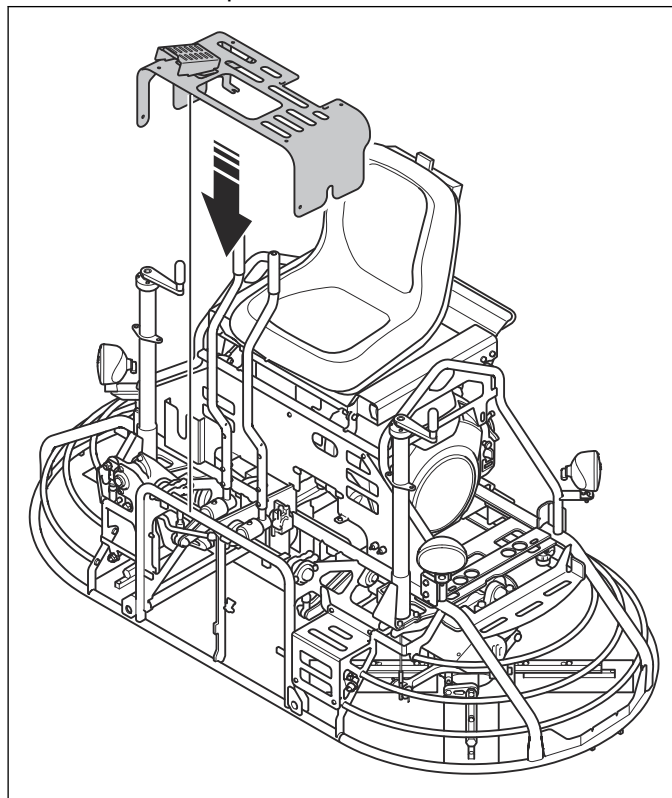
10. Install the nuts and the grease nipples.



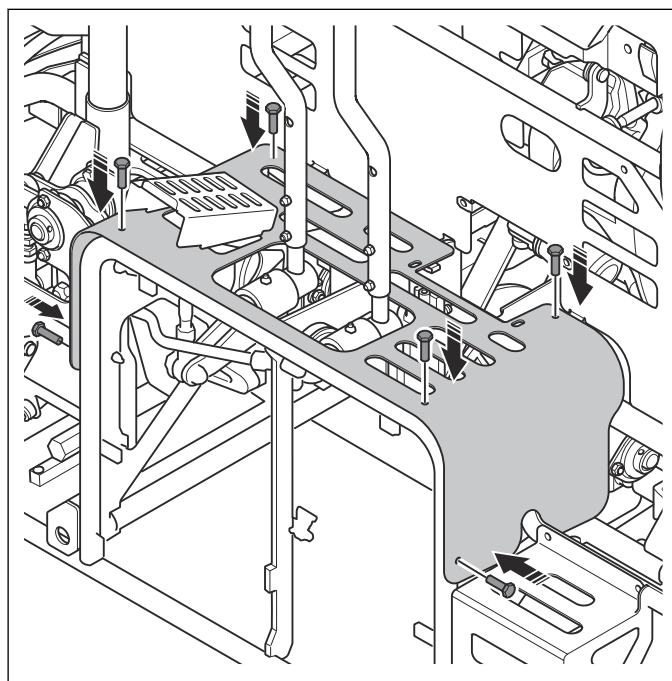
11. Connect the connection to the relay of the operator presence control.



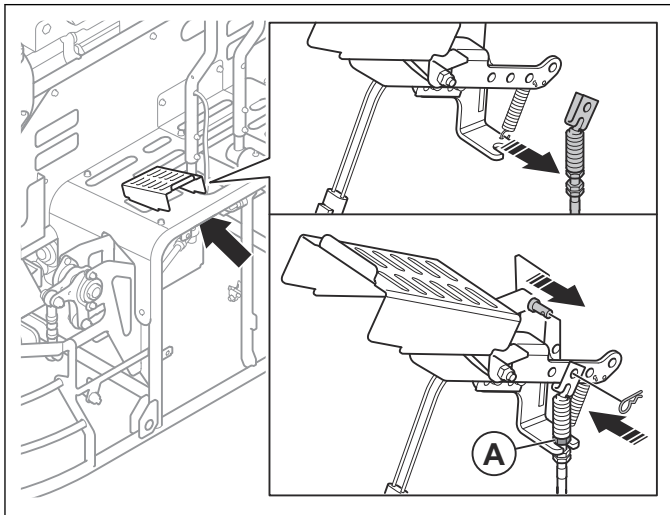
12. Install the foot plate.



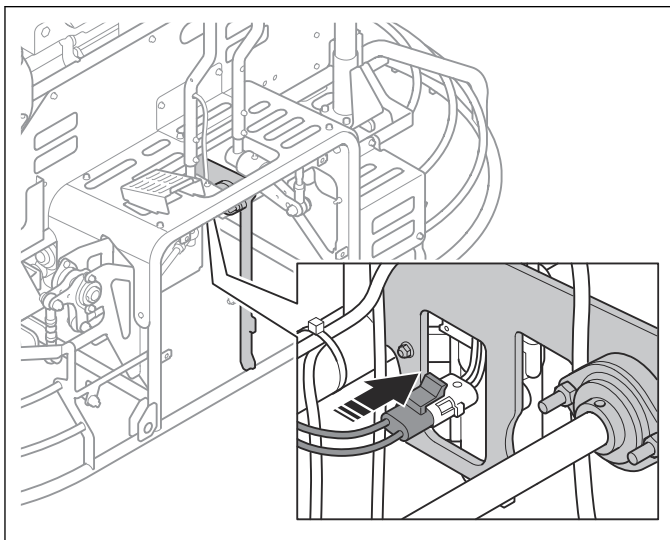
13. Install the 2 side bolts, 2 side nuts and the 4 top screws.



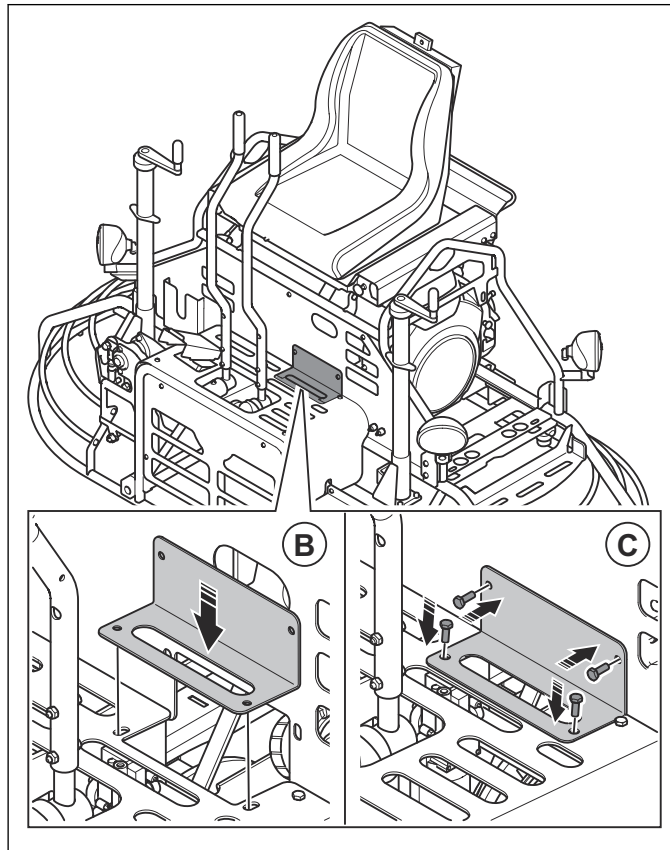
14. Connect the wire for the throttle control (A).



15. Connect the connector to the throttle control.

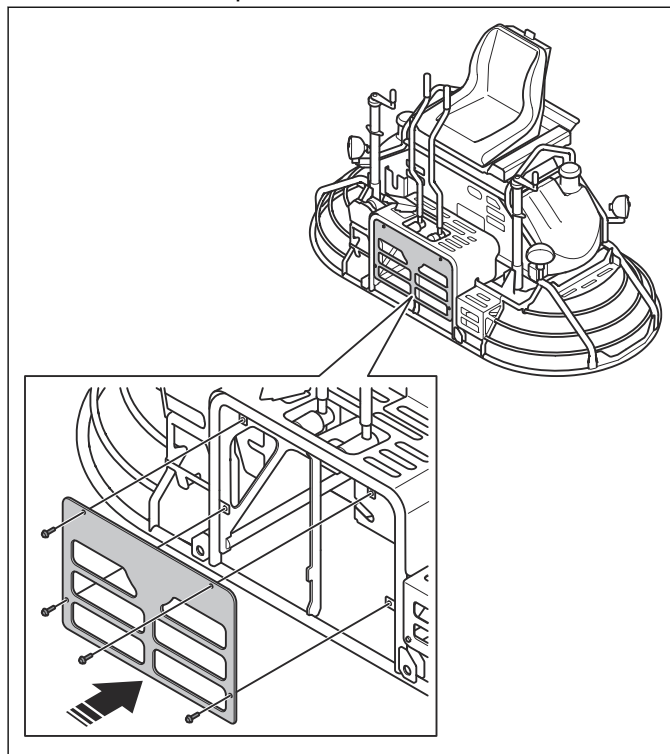


16. Install the angle bracket (B) and the 4 screws (C).

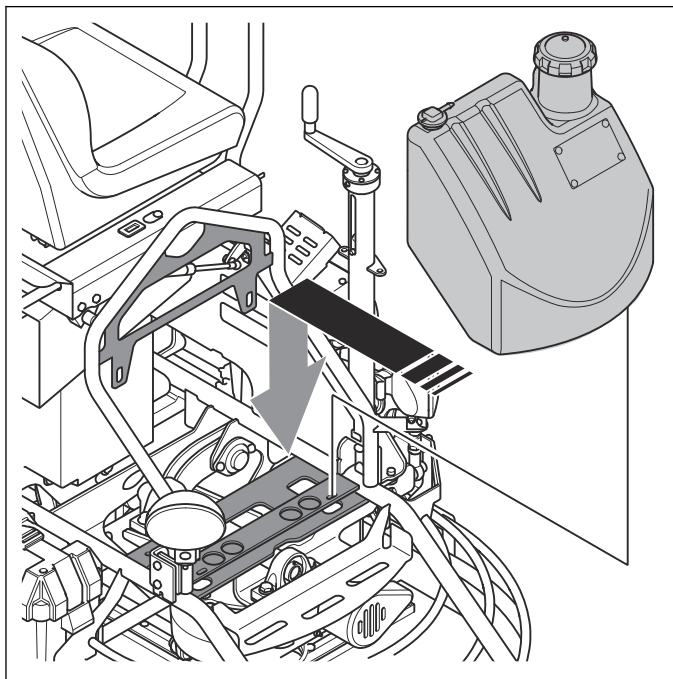


17. Install the drive belt. Refer to *To install the drive belt on page 13*.

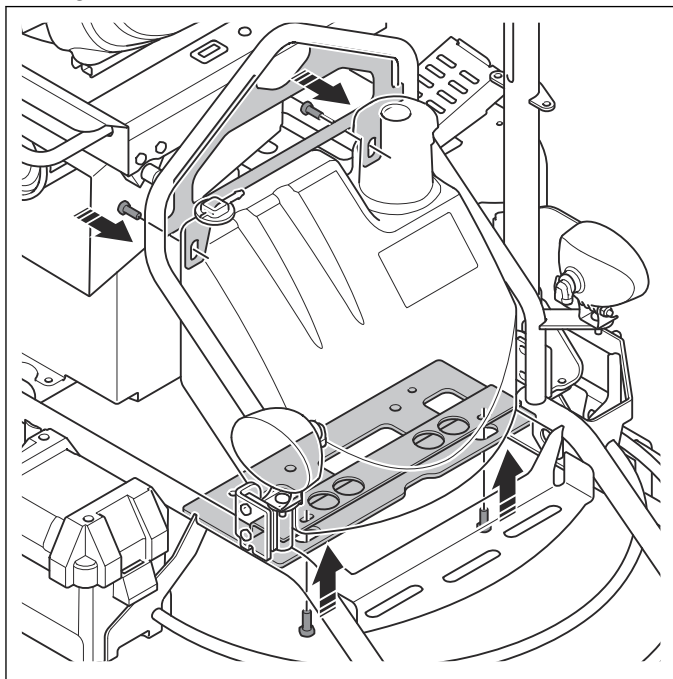
18. Install the front plate.



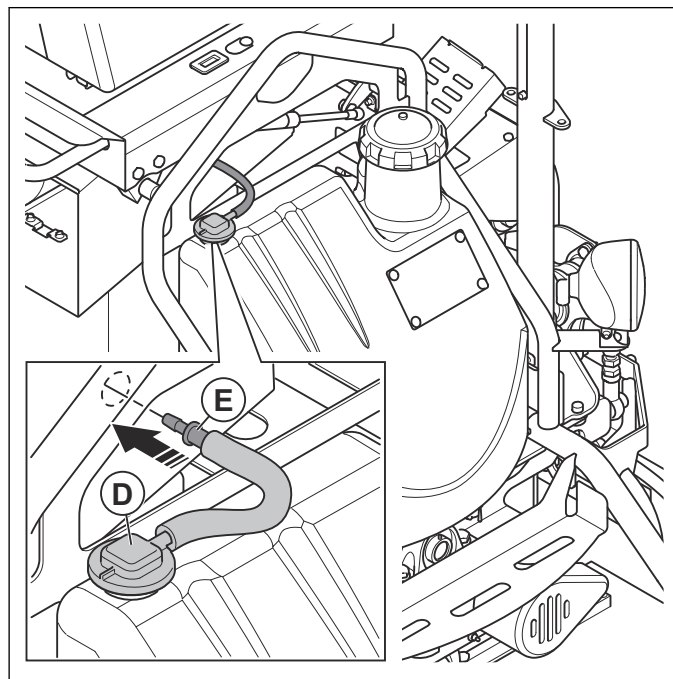
19. Install the fuel tank.



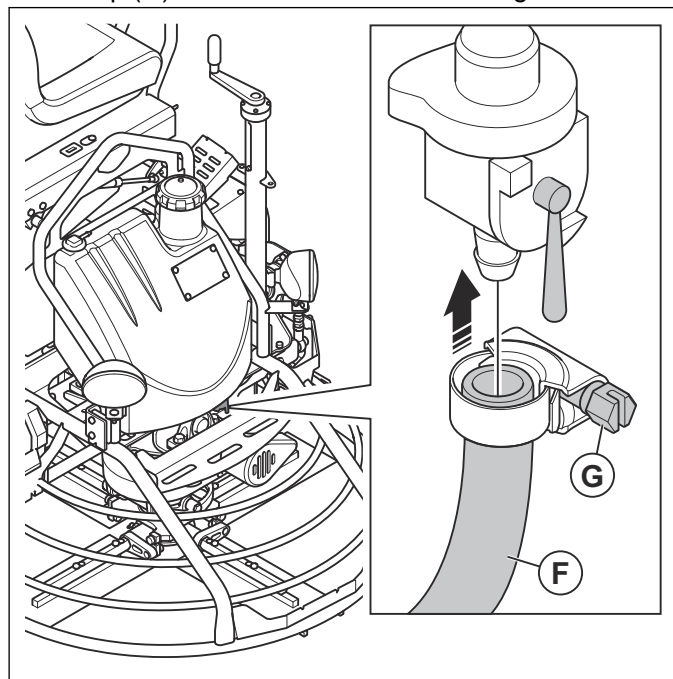
20. Tighten the 4 screws for the fuel tank.



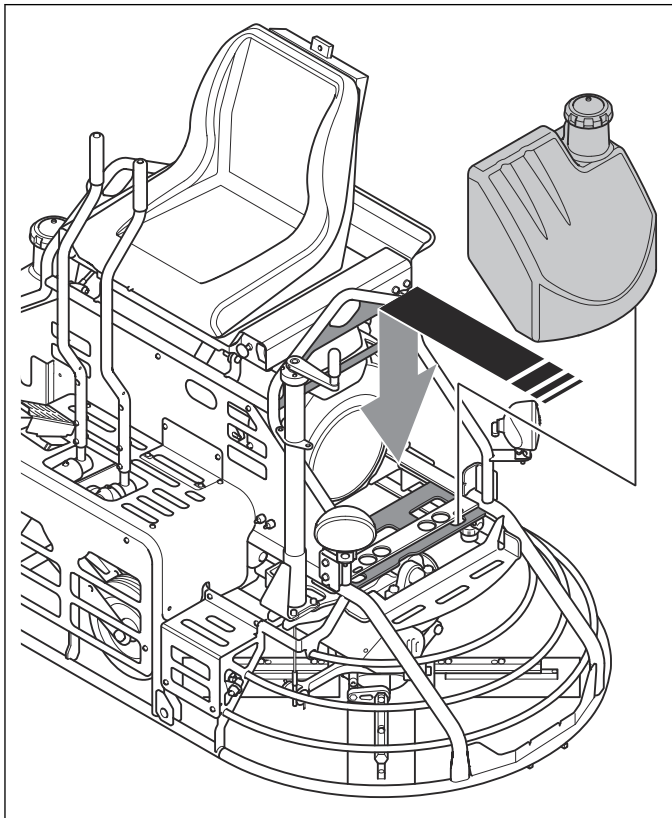
21. Install the hose (E) for the ventilation valve (D) of the fuel tank.



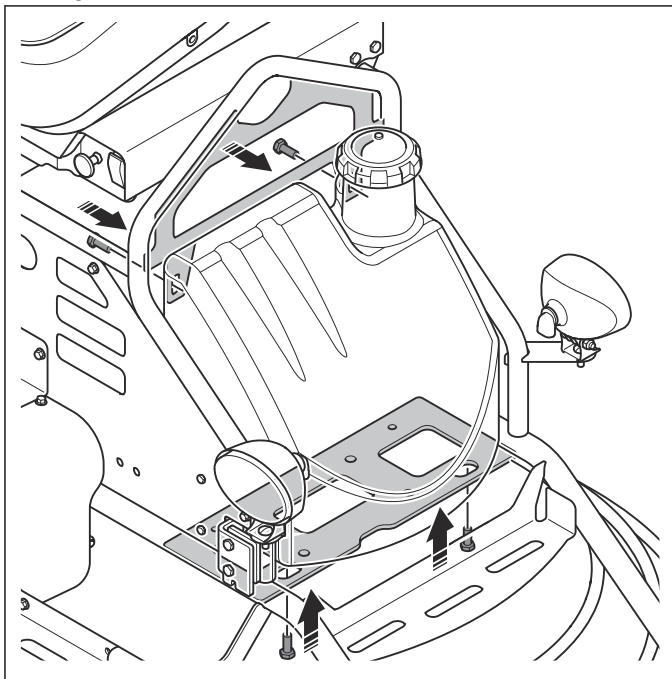
22. Connect the fuel hose (F) and tighten the hose clamp (G). Make sure there is no leakage.



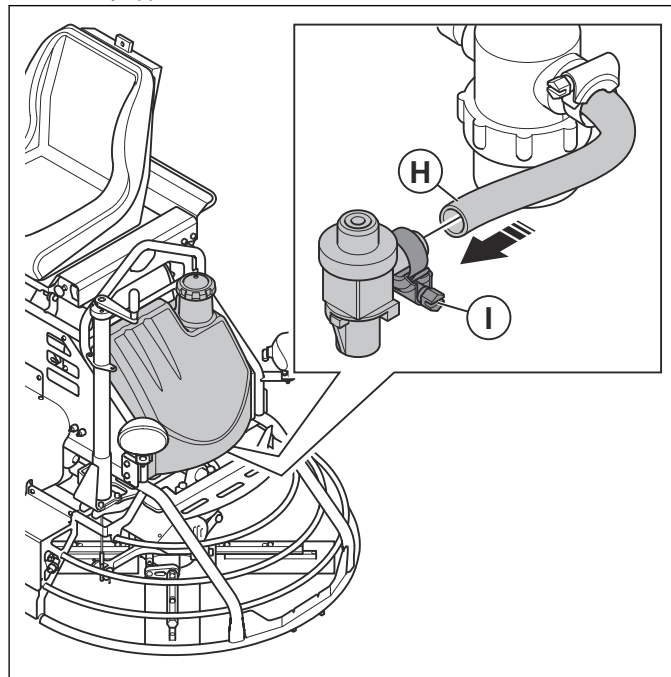
23. Install the water tank.



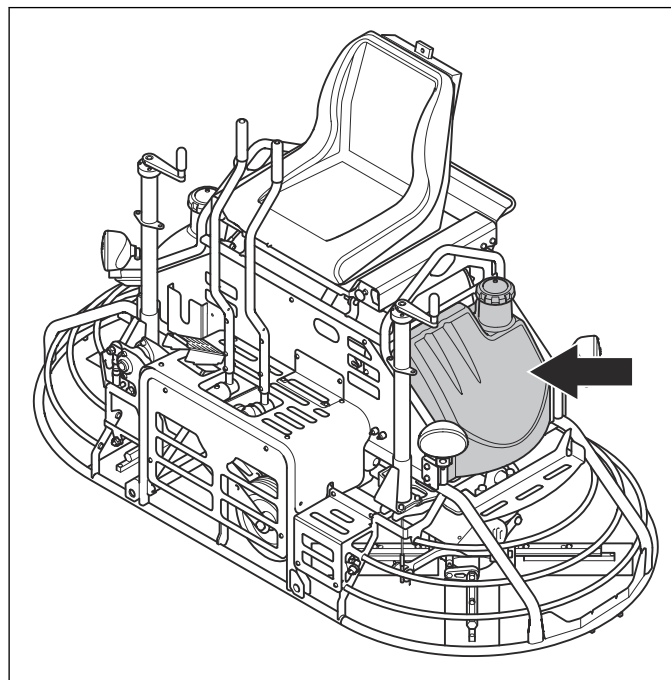
24. Tighten the 4 screws for the water tank.



25. Connect the water hose (H) and tighten the hose clamp (I).

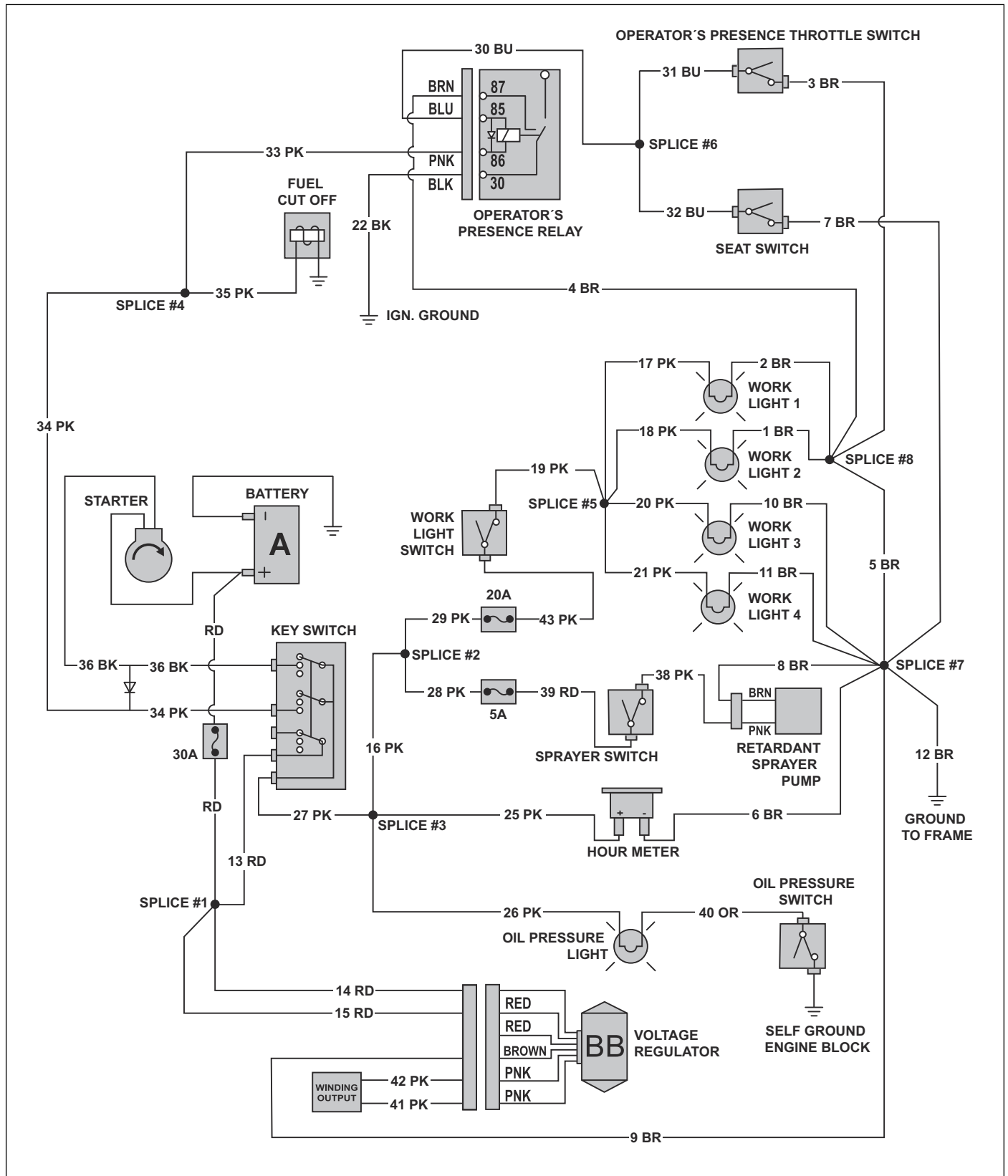


26. Fill the water tank.

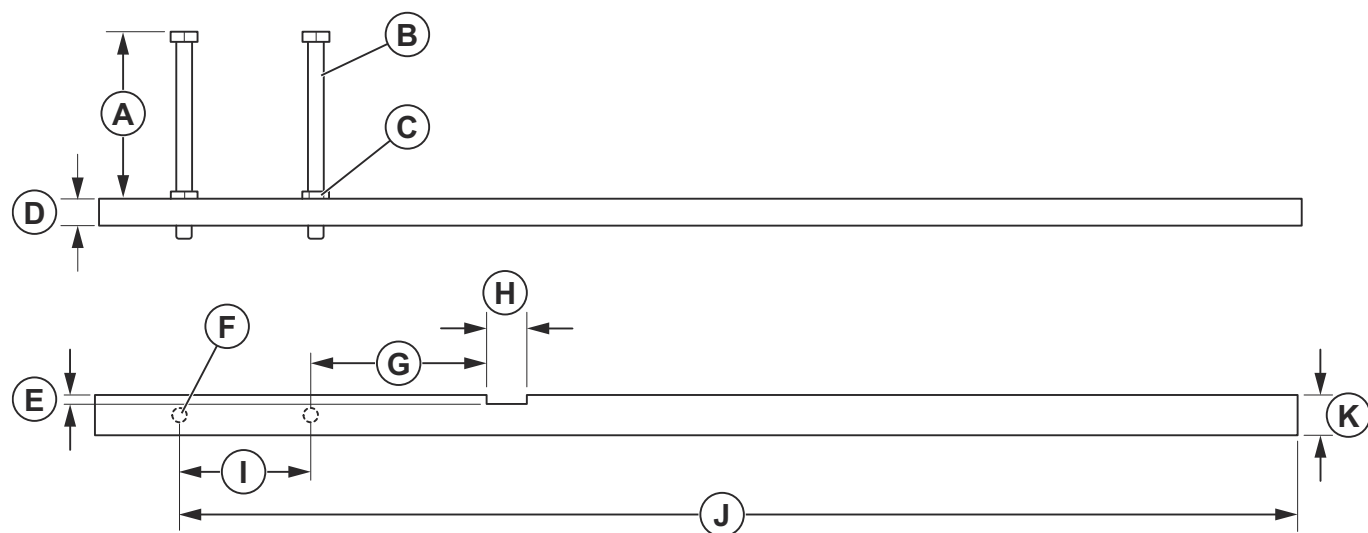


7 Diagrams

7.1 Wiring diagram



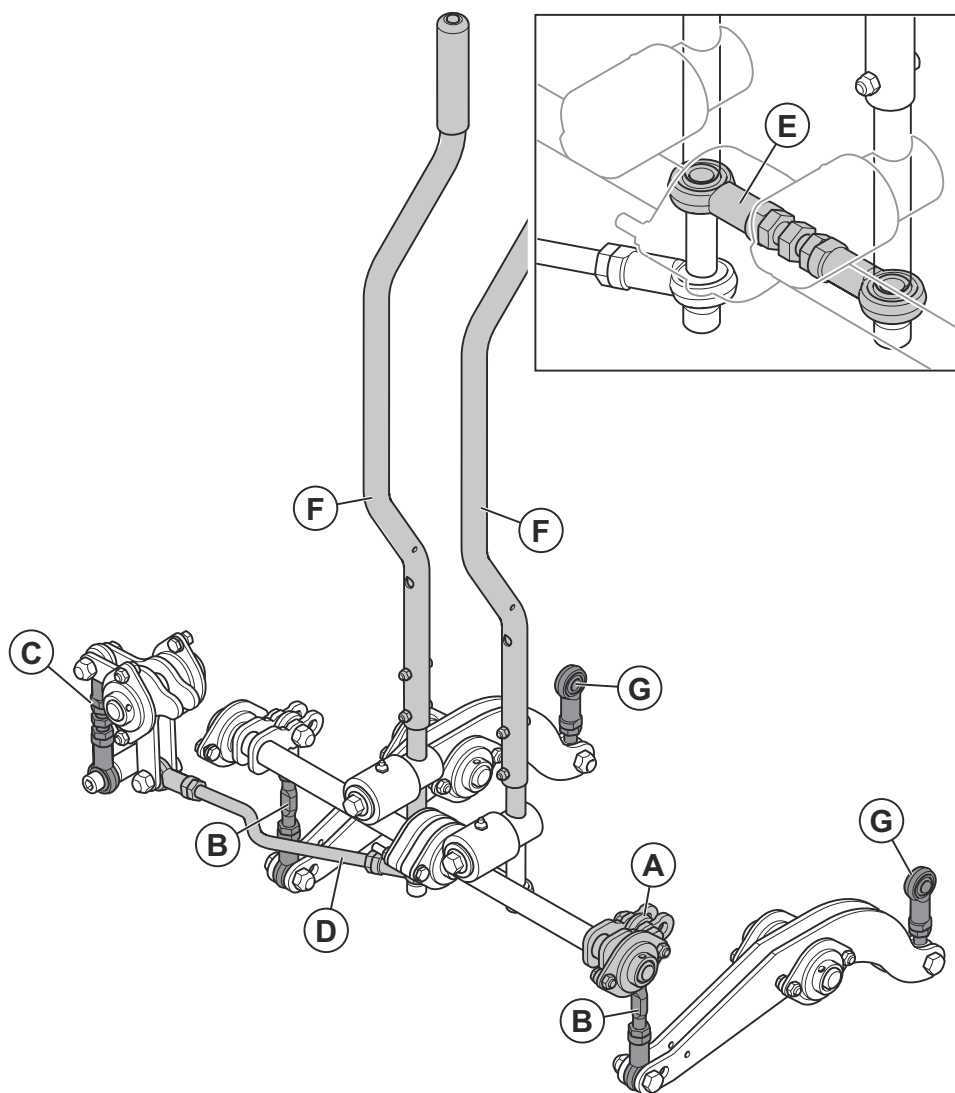
7.2 Service tool assembly



A	64.5 mm	G	67 mm
B	M6 × 1.0 × 75 mm	H	15 mm
C	M6 Jam Nut	I	50 mm
D	10 mm	J	425 mm
E	4 mm	K	16 mm
F	M6 × 1.0 × 2 mm		

8 Technical data

8.1 Adjustment values for the steering system



A	Tilts down 5°, when movement controls are tilted in the direction of the seat.	E	12.7 cm / 5 in. between center lines of tie rods.
B	16.83 cm / 6 ⁵ / ₈ in. between center lines of tie rods.	F	Tilt the movement controls 5° in the direction of the seat. The gap of the movement controls in the direction of the rotors is 4-5°.
C	15.88 cm / 6 ¹ / ₄ in. between center lines of tie rods.	G	19.37 cm / 7 ⁵ / ₈ in. between center lines of tie rods.
D	35.88 cm / 14 ¹ / ₈ in. between center lines of tie rods.		

