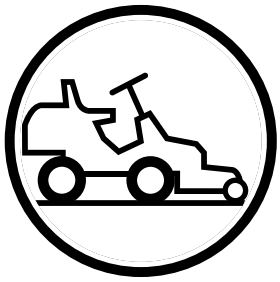
Workshop manual

Rider ProFlex 21 II



English

Workshop Manual for the

Rider ProFlex 21 II

Contents

SAFETY INSTRUCTIONS

Safety Instructions

General Instructions

This workshop manual is written for personnel with general knowledge about the repair and service of riders.

The workshop where the rider is to be repaired must be equipped with safety equipment in accordance with local bylaws.

No one may repair the rider unless they have read and understood the content of this workshop manual.

The machine is tested and approved only with the equipment originally provided or recommended by the manufacturer.

This workshop manual contains the following boxes in relevant places.

WARNING!

The warning box warns of the risk of personal injury if the instructions are not followed.

IMPORTANT INFORMATION

This box warns of material damage if the instructions are not followed.

Special Instructions

The fuel used in the rider has the following hazardous properties:

- The fluid and its vapour are poisonous.
- Can cause eye and skin irritation.
- Can cause breathing problems.
- Is highly inflammable.

When using compressed air, do not direct the jet towards the body. Air can penetrate into the blood circulation system, which entails mortal danger.

Use eye protection when working with tensioned springs.

Wear protective earplugs or earmuffs when test running.

After test running, do not touch the muffler until it has cooled. Risk for burns. This is especially true if the rider is equipped with a catalytic converter. The coatings on and in the catalytic converter element are hazardous to ingest. Use protective gloves when working with the converter/muffler.

The blades are sharp and can cause cuts and gashes. Use protective gloves when handling the blades.

Use eye protection when working with the cutting unit. The belt tensioning spring can break, fly off, and cause personal injury.

Use eye protection when working with the battery with the plugs removed. Be especially careful when handling battery acid. Acid on the skin can cause serious corrosive injuries. In the event of spillage on the skin wash immediately with water.

Acid in the eyes can cause blindness; contact a doctor immediately.

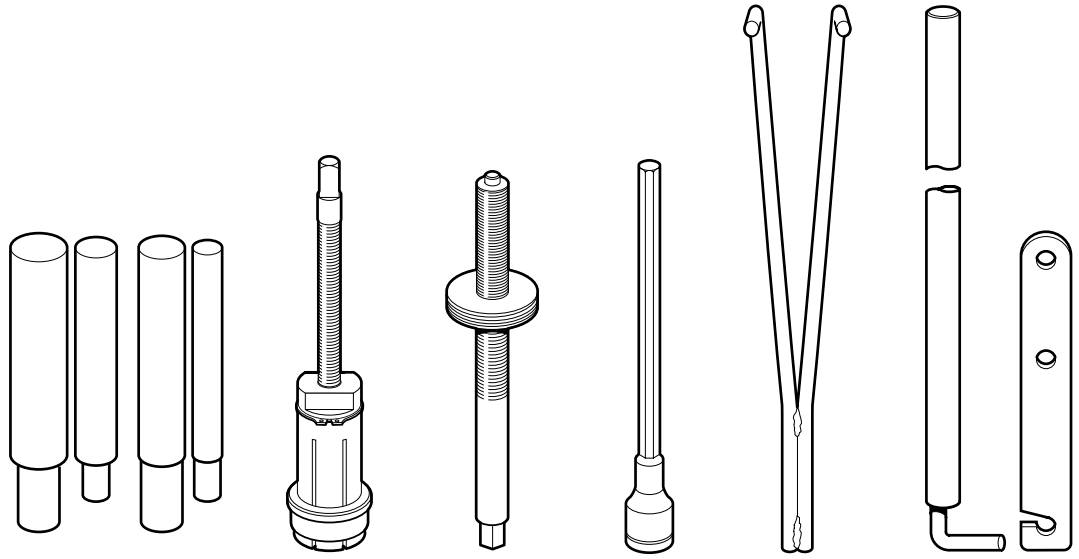
Be careful when servicing the battery. Explosive gases form in the battery. Never perform maintenance on the battery while smoking or in the vicinity of open flames or sparks. This can cause the battery to explode and cause serious injuries.

IMPORTANT INFORMATION

Waste oil and old filters shall be handled as hazardous waste.

Special Tools

The following special tools are used when working on the rider.



506 57 00-01	Wheel remover.
506 66 48-01	Engine belt pulley remover.
506 56 76-01	Allen key 5/16" for loosening the engine belt pulley's Allen screw (Kawasaki).
506 89 92-01	Counter to aid removing the engine belt pulley.
506 89 93-01	Tool for removing the steering return spring.
535 41 32-01	Punch kit for pendulum shaft bushings.

SPECIAL TOOLS

SPECIFICATIONS

Specifications

Dimensions:	**Rider ProFlex 21 II**
Length, base machine	2,120 mm/6.96 ft with tow hook
Length with Combi 122	2,550 mm/8.37 ft with tow hook
Width, base machine	900 mm/2.95 ft
Width with Combi 122	1,330 mm/52.4"
Height	1,150 mm/3.78 ft
Operating weight, base machine	309 kg/681 lb
Operating weight with Combi 122	377 kg/831 lb
Wheelbase	1,010mm/3.31 ft
Track width	720 mm/2.36 ft
Tyre dimensions	18 x 7.50 x 8
Air pressure, front and rear	60 kPa (0.6 kp/cm^2)/8.5 PSI
Max. permitted slope	15°

Engine

Manufacturer	Kawasaki
	V-Twin
Model	FH641V-AS50 (or -BS50)
Power	15.5 kW/21 hp
Displacement	675 cm^3/41.19 cu in
Fuel	at least 87 octane unleaded
Tank volume	17 litres/4.5 US Gal
Oil	SAE 10W/30, 10W/40 class SC-SH
Oil volume	1.5 litres/1.6 US qt
Oil volume incl. filter	1.7 litres/1.8 US qt
Start	Electric start

Gearbox

Manufacturer	Tuff Torq K 66
Oil	SAE 10W/30, class SF-CC
Oil volume, total	2.5 litres/2.6 US qt

Electrical System

Type	12 V, negative grounded
Battery	12 V, 24 Ah
Main fuse	Flat pin, 15 A
Spark plug	NGK BPR4ES
Electrode gap	0.75 mm/0.030"

Hydraulic System

Max. working pressure	45 bar/630 PSI

SPECIFICATIONS

Tightening Torques

Drive disc, steering	5–10 Nm/3.5-7 lbf. ft
Line pulley, steering cable	20–30 Nm/14-21 lbf. ft
Belt pulley	35–40 Nm/25-28 lbf. ft
Blades, M12 bolt	45 Nm/32 lbf. ft
Blade bearings	20–25 Nm/14-18 lbf. ft
Belt tensioning wheel	15–25 Nm/10-18 lbf. ft
Fastening screws, engine	20–25 Nm/14-18 lbf. ft
Fastening screws, gearbox	20–25 Nm/14-18 lbf. ft
Engine belt pulley	70–80 Nm/50-56 lbf. ft
Wheel axle nuts	100–150 Nm/70-105 lbf. ft

Cutting Unit	**Combi 122**
Cutting width	1,220 mm/48"
Cutting heights	40-100 mm/1.57-3.93"
Blade length	450 mm/17.7"
Guaranteed noise level	102 dB(A)
Width	1,330 mm/52.4"
Weight	60 kg/132 lb
Additional weight, ProFlex	8 kg/17.6 lb
Length with unit	2,550 mm/8.37 ft

Check List

Parallelism, cutting unit with cutting height in position 1:	± 2 mm/± 0.079"
Checking the cutting height in position 1:	40 ± 2 mm/1.57 ± 0.079"
Distance between support plate and drive belt:	3–6 mm/1/8"-1/4"
Distance between the belt adjuster lever and the belt guide, disengaged unit:	17 ± 5 mm/7/16" ± 3/16"

Play

Brake cable:	1 mm/0.040"
Differential lock cable, Rider ProFlex 21 II:	0 mm
Cable, hydrostatic pedals:	0 mm
Lock, mechanical lifting lever	2 mm/1/16"

Delivery and Dealer Service

Delivery Service

1. Fill the battery with battery acid and charge for four hours.
2. Fit the steering wheel, seat and, where applicable, other components.
3. Attach the cutting unit.
4. Adjust the cutting unit:

   Adjust the lifting springs (the cutting unit's "weight" shall be 12-15 kg/26.5-33 lb; if a brush is to be used, adjust to the maximum spring tension).

   Adjust the cutting unit so that its rear edge is about 2-4 mm/1/8" higher than its front edge.

   Adjust the cutting unit's cutting height setting so that the cutting height limit is 5 mm/3/16" above the unit frame at the lowest cutting height.
5. Check that the right amount of oil is in the engine and transmission.
6. Check and adjust the air pressure in the tyres (60 kPa/0.6 bar/8.5 PSI).
7. Connect the battery.
8. Fill the fuel tank and start the engine.
9. Check that the machine does not move in neutral.
10. Check:

    Driving forwards.

    Reversing.

    Engaging the blades.

    The safety switch in the seat.

    The safety switch in the lifting lever.

    The safety switch for the hydrostat pedals.
11. Check the engine speed: 3,000 ±75 rpm.
12. Bleed the hydraulic system, top up with oil if necessary.
13. Inform the customer about:

    The need and advantages of following the service schedule.

    The need and advantages of leaving the machine for service every 300 hours.

    The effects of service and maintaining a service journal on the machine's resale value.

    Application areas for BioClip.
14. Fill in the sales papers, etc.

After the First 8 Hours

1. Change engine oil.

DELIVERY AND DEALER SERVICE

25-Hour Service

1. Clean the air cleaner's pre-filter (Oil-foam element). (Shorter intervals for dusty operating conditions.)
2. Clean the engine's cooling air intake and the transmission's air intake.
3. Clean the fuel pump's air filter (for dusty operating conditions).

50-Hour Service

1. Perform the 25-hour service.
2. Clean/replace the air cleaner's filter cartridge (paper filter). (Shorter intervals for dusty operating conditions.)
3. Check/adjust the cutting height.
4. Check/adjust the parking brake.
5. Inspect the flame proofing/spark extinguisher (extra equipment).

100/200-Hour Service

1. Perform the 25-hour service.
2. Perform the 50-hour service.
3. Change engine oil.
4. Check whether the engine oil filter needs changing (every 200 hours).
5. Clean/replace the spark plugs.
6. Change the inline fuel filter.
7. Clean the pulse air filter.
8. Clean the cooling fins on the engine and the transmission.
9. Check whether the transmission oil or filter needs changing (every 500 hours).
10. Check whether the hydraulic oil filter needs changing (every 200 hours).
11. Clean the air filter's paper cartridge and check whether it needs changing (every 200 hours).
12. Check nuts and bolts for tightness.

300-Hour Service

1. Inspect the machine. Come to agreement with the customer as to what additional work is to be carried out.
2. Perform the 25-hour service.
3. Perform the 50-hour service.
4. Perform the 100-hour service.
5. Clean the combustion chamber and grind the valve seats.
6. Check the play in the engine valves.
7. Replace the air cleaner's pre-filter (Oil-foam).

At Least Once Each Season

1. Clean the engine's cooling air intake (25 hours).
2. Replace the air cleaner's pre-filter (Oil-foam) (300 hours).
3. Replace the air filter's paper cartridge (200 hours).
4. Change the engine oil (100 hours).
5. Replace the engine oil filter (200 hours).
6. Adjust the cutting height (50 hours).
7. Adjust the parking brake (50 hours).
8. Inspect the flame proofing/spark extinguisher, extra equipment (50 hours).
9. Clean/change the spark plugs (100 hours).
10. Change the inline fuel filter (100 hours).
11. Clean the pulse air filter (100 hours).
12. Clean the cooling fins (100 hours).
13. Check the play in the engine valves (300 hours).
14. Change the transmission oil (500 hours).
15. Change the filter in the transmission, ProFlex 21 II (500 hours).
16. Replace the hydraulic oil filter.
17. Perform the 300-hour service at an authorised service workshop.

Service Schedule

The following is a list of maintenance procedures that must be performed on the rider. Most of the points that are not described in this workshop manual are found in the operator's manual.

●= Described in this workshop manual.

❍= Not described in this workshop manual or the operator's manual.

▼= Described in the operator's manual.

Maintenance	Page	Daily maintenance before	Daily maintenance after	Weekly [3] maintenance	At least once a year	Maintenance interval in hours			
						25	50	100	300
Check for fuel and oil leaks	-	❍							
Check the parking brake	37	●							
Check the engine oil level	16	●							
Check the fuel pump's air filter.	-	▼							
Check the safety switch, seat	75	●							
Check the safety switch, lifting lever	75	●							
Check the safety switch, pedal system	75	●							
Check/clean the engine's cooling air intake	-		▼						
Check the cutting unit:	62		●						
• Attaching the blades	68		●						
• Condition of the blades (sharpness, shape, etc.)	70		●						
Check the steering cables (any play, etc.)	34		●						
Check fastenings (screws, nuts, etc.)	-		❍						
Start the engine and blades, listen for unusual sounds	-		❍						
Clean under the cutting unit	-		▼						
Clean the transmission's cooling air intake	-		▼						
Check the battery's acid level	15			●					
Check the transmission oil level	17			●					
Check the condition of V-belts, belt pulleys, etc.	-			❍					
Check for damage	-			❍					
Check the air pressure in the tyres (60 kPa/8.5 PSI)	17			●					
Check to ensure that the cable seats in the middle are undamaged	-			▼					

Maintenance	Page	Daily maintenance before	Daily maintenance after	Weekly [3] maintenance	At least once a year	Maintenance interval in hours			
						25	50	100	300
Clean thoroughly around the engine	-			❍					
Clean thoroughly around the transmission	-			❍					
Clean around all belts, belt pulleys, etc.	-			▼					
Lubricate the three-point link (nipple)	-			▼					
Lubricate the seat adjuster	-			▼					
Lubricate all cables	-			▼					
Lubricate the safety catch in the cutting unit	-			▼					
Lubricate the interior plug in the cutting unit	-			▼					
Lubricate the groove for the cutting unit's equipment frame	-			▼					
Lubricate joints in the cutting unit	-			▼					
Clean inside the frame tunnel	-			❍					
Lubricate the pedal mechanism in the frame tunnel	-			▼					
Lubricate the gear controller	-			▼					
Lubricate the parking brake cable	-			▼					
Lubricate the throttle	-			▼					
Lubricate the choke control	-			▼					
Lubricate the guide chain in the frame tunnel	-			▼					
Check the steering cables in the frame tunnel	34			●					
Clean the engine's cooling air intake	-				▼	▼			
Clean the air cleaner's pre-filter (Oil-foam)	-				▼	▼			
Change the engine oil[1])	33				●			●	
Clean the air cleaner's filter cartridge [2] (paper filter)	-				▼		▼		
Check/adjust the cutting height	62				●			●	
Check/adjust the parking brake	37				●		●		
Inspect the flame proofing/spark extinguisher (extra equipment)	-				❍		❍		
Change the engine's oil filter (every 200 hours)	-				▼			▼	
Replace the hydraulic oil filter (every 200 hours)	81				●			●	

DELIVERY AND DEALER SERVICE

Maintenance	Page	Daily maintenance before	Daily maintenance after	Weekly [3] maintenance	At least once a year	Maintenance interval in hours			
						25	50	100	300
Clean/replace the spark plugs	-				▼			▼	
Change the inline fuel filter	-				▼			▼	
Clean the pulse air filter	71				●			●	
Clean the cooling fins	-				❍			❍	
Check the play in the engine valves[4]	-				❍				❍
Check the need to change the oil and filter in the gearbox[4] (every 500 hours)	55				●			●	
Change the air cleaner's pre-filter (Oil-foam)[2]	-				▼				▼
Replace the air filter (paper filter) [2] (every 200 hours)	-				▼			▼	
Perform the 300-hour service [4]	8				●				●

[1] First change after 8 hours. When operating with a heavy load or at high ambient temperatures, replace every 50 hours. [2] In dusty conditions, maintenance and cleaning are required more often. [3] With daily use, the rider should be lubricated twice weekly. [4] Performed by an authorised service workshop.

●= Described in this workshop manual.

❍= Not described in this workshop manual or the operator's manual.

▼= Described in the operator's manual.

WARNING!

No service operations may be performed on the engine or cutting unit unless:

- **The engine is stopped.**
- **The parking brake is on.**
- **The ignition key has been removed.**
- **The cutting unit is disengaged.**
- **The ignition cables have been removed from the spark plugs.**

DELIVERY AND DEALER SERVICE

Delivery Procedures

To our dealers

A well performed delivery service is the first step towards a functioning after-sales market. An after-sales market that functions benefits everyone:

- The customer will be satisfied with their machine. They know where to turn in order to get help if problems arise.
- You gain a regular customer, who recommends you and your company to other prospective customers.
- In this way, together we build our brand, and assume joint responsibility for our products and our customers.

Be thorough with the paper work.

Fill in the guarantee and delivery documents etc. and ensure that the customer gets the right operator's manual for their machine.

Organise a customer register so that in the future, you can see which machine the customer owns, as well as the appropriate serial numbers. The register is of benefit when you order spare parts and during future marketing activities.

In conjunction with the delivery, you shall also give the customer the information required to handle and maintain their machine in a safe manner. Remember in particular to inform the customer about:

- Safety regulations.
- Manoeuvre controls.
- Checking oil levels. Topping up oil and the type of oil required.
- First oil change after the running in period.
- The need and benefit of following the service schedule and leaving the machine for regular service.
- Which fuel is to be used.
- Mowing tips to attain good results. Application areas for BioClip.
- The accessories available for the customer's type of machine.
- Guarantee rules.
- Your company and whom the customer should approach if problems arise.

DELIVERY AND DEALER SERVICE

Packaging and Unpacking

The machine is normally packed using special packaging when delivered from the factory. This packaging is comprised of a wood base with a strong cardboard top section, all held together with plastic wrapping.

WARNING!
Handle the transport box carefully.
Keep the goods as flat as possible.
Use long forks to lift from the short side.

The base is fitted with pallet feet and the goods can be handled with a normal forklift truck from the long side. In order to keep the goods as flat as possible, two people ought to help the truck driver. Lift and then drive the truck carefully.

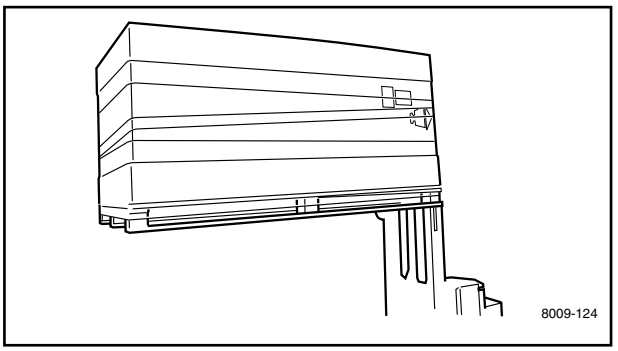
Break the plastic wrapping and remove the cardboard packaging.

The machine then stands on the base with the brakes on and is secured with wooden blocks.

Check that the machine has not been damaged during transport when the packaging is opened. Any damage should be reported to the transport company as per routine.

The packaging shall not be returned.

Lifts from the short side, see illustration, require long pallet forks.



Long pallet forks are required

Packed components

The following components are contained in the transport box:

Number	Component
1 pc	Steering wheel with steering rod
1 pc	Allen screw for steering rod
1 pc	Lock nut for steering rod
6 pcs	Battery plugs
1 pc	Operator's Manual
1 pc	Owner's Manual, Kawasaki
2 pcs	Wheel weights (Accessory, fitted to the rear wheels)
4 pcs	Wheels (certain markets)

Battery

WARNING!

Actions with acid contact

External:

Rinse thoroughly with water.

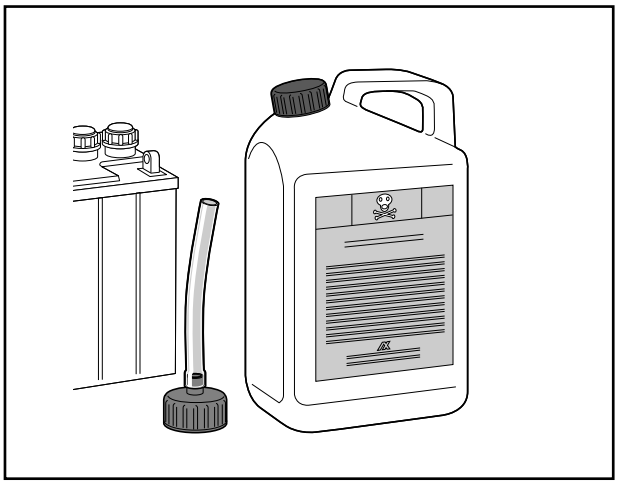
Internal:

Drink large quantities of water or milk. Contact a doctor as soon as possible.

Eyes:

Rinse thoroughly with water. Contact a doctor as soon as possible.

The battery emits explosive gases. Sparks, flames, and cigarettes must not be present in the vicinity of the battery.

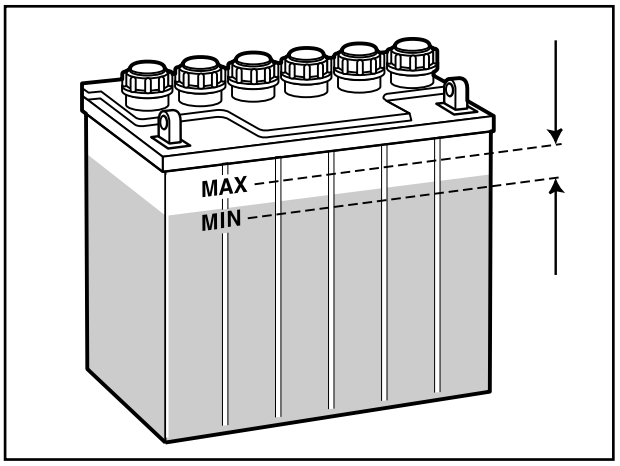


6010-007

Hazardous! Corrosive! Poisonous!

The battery is delivered dry charged from the factory. The cells are fitted with seals. The battery plugs are packed in a plastic bag.

- Slowly fill the battery cells with battery acid to the max. level mark on the battery container.
- Wait 20 minutes and then top up with battery acid as needed.
- Charge the battery with 12 V, max. 6 A, for four (4) hours.
- Check the electrolyte level and top up if necessary with distilled water to the upper level marks on the battery container.



6008-013

Level marking, battery

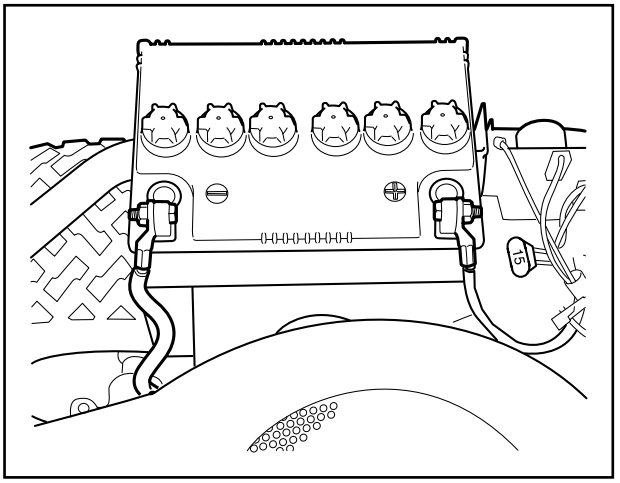
Fit the battery.

Connect the battery with the nuts and bolts that are attached to the battery. Counter the bolts when fitting so that the electrodes are not strained.

- The black cable connects to -.
- The red cable connects to +.

Ensure that the cables do not chafe against anything.

Fit the cover on the battery and tighten the strap.



8009-377

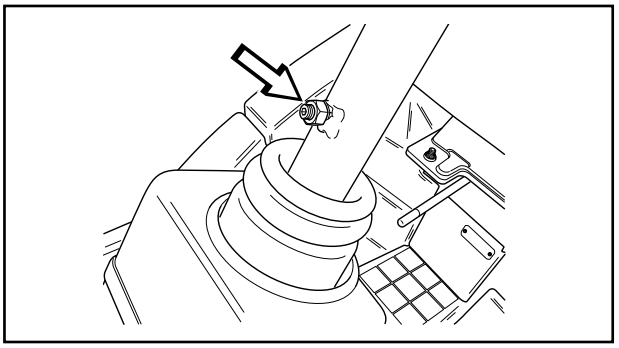
Connecting the battery

Arm Supports

In those cases where arm supports are delivered with the machine, it is the dealer's responsibility to fit them.

Steering Wheel

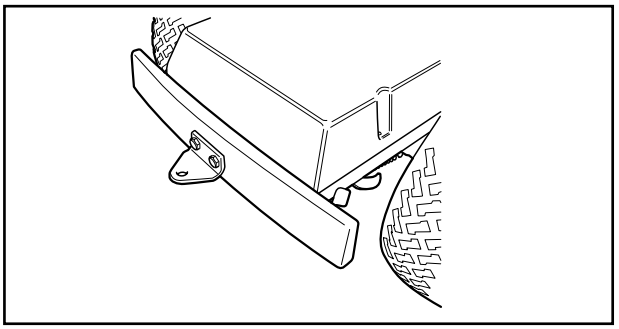
- Fit the steering wheel with the steering rod on the steering column. Choose a suitable height position.
- Thread the Allen screw into the thread of the steering column. Work the wheel and tighten the Allen screw so that it reaches the bottom of the thread.
- Fit the lock nut to the Allen screw.



Fitting the steering wheel 8009-360

Tow Hook

The tow hook is fitted the wrong way at the factory for transport reasons. Fit the tow hook to the back of the bumper as illustrated.



Fitting the tow hook 8009-112

Checking the Engine Oil Level

Check the oil level in the engine when the rider stands horizontal.

Fold up the engine cover.

Loosen the dipstick and pull it out. Wipe off the dipstick and fit it again.

The dipstick shall **not** be screwed into place.

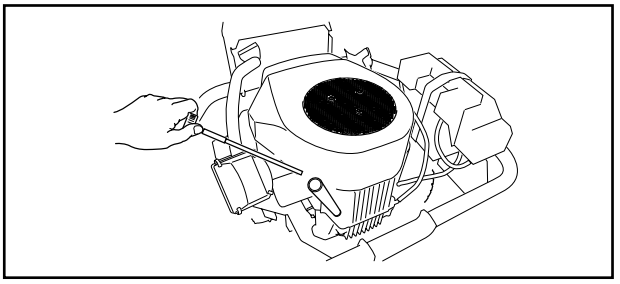
Now loosen the dipstick and pull it out again. Read the oil level.

The oil level should be between the markings on the dipstick. If the level is close to the ADD mark, fill up with oil to the FULL mark on the dipstick.

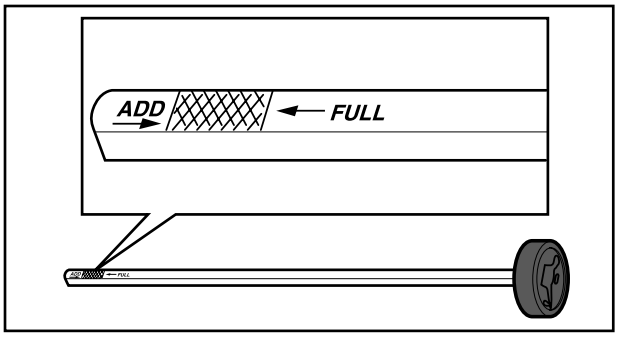
The oil is topped up through the hole the dipstick sits in.

Use an engine oil with the viscosity indicated in the chart, class SC-SH.

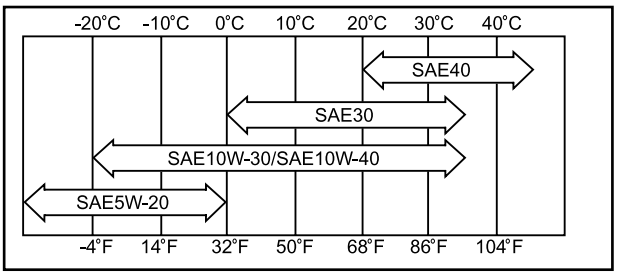
The engine takes 1.5 litres (1.6 US qt) of oil excl. the oil filter.



Dipstick 8009-158



Oil level 8009-159

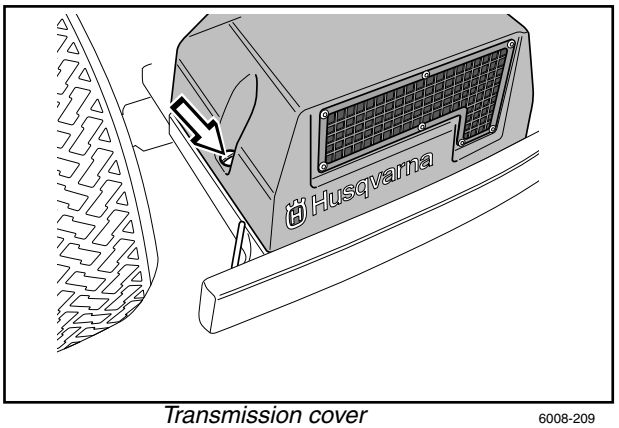


Viscosity chart 8009-140

Checking the Transmission Oil Level

Remove the transmission cover. Loosen both screws (one on each side) and lift off the transmission cover.

Leave the cover removed for now.

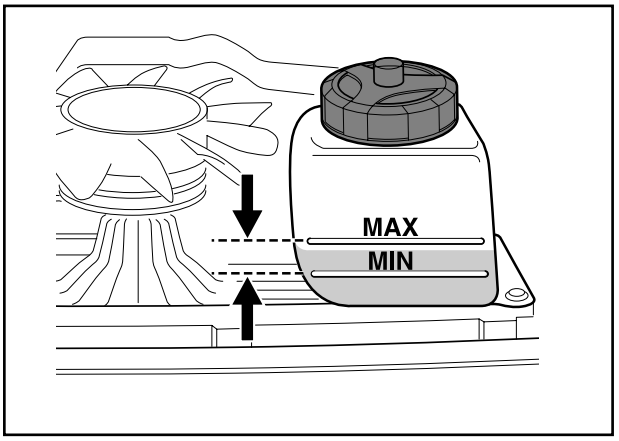


Transmission cover 6008-209

Check that there is oil in the transmission's oil tank. Top up if needed with engine oil SAE 10W/30 (class SF-CC).

IMPORTANT INFORMATION

Check and top up with oil after test running. If there are air pockets in the transmission or hydraulic system, the oil level will drop.



The transmission's oil tank 6008-210

Wheels

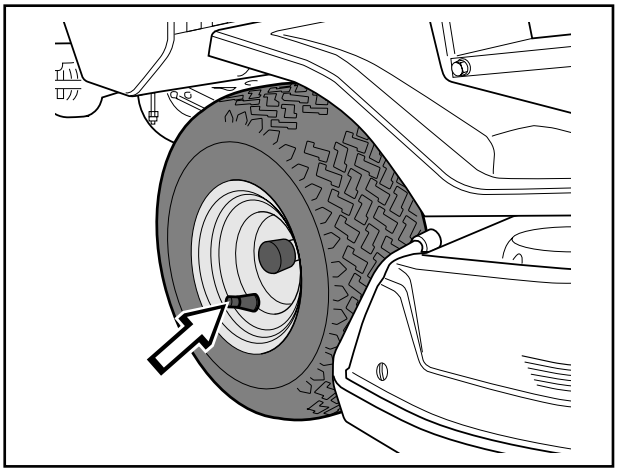
Fit the wheels (certain markets).

The air pressure should be 60 kPa/ 0.6 kp/cm^2/8.5 PSI for all wheels.

In order to improve drive power, the pressure in the rear tyres can be reduced to 40 kPa/0.4 kp/cm^2/5.6 PSI.

The highest permitted pressure is 100 kPa/ 1.0 kp/cm^2/14 PSI.

In those cases where wheel weights are delivered with the machine, it is the dealer's responsibility to fit them. Wheel weights are normally fitted to the rear wheels.



Wheels 6008-030

IMPORTANT INFORMATION

Different air pressure in the front tyres will result in the blades mowing the grass at different heights.

Checking and Adjusting the Cutting Unit

Performed after checking the tyre air pressures. See Adjusting the Unit's Parallelism and Cutting Height on page 62.

Test Running

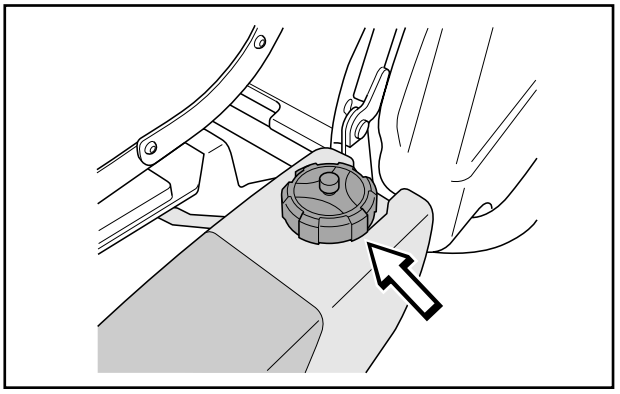
Fill with petrol. The engine should be run on a minimum of 87-octane unleaded petrol (not mixed with oil). Environmentally-adapted alkylate petrol can be used with advantage.

WARNING!

Petrol is highly flammable. Observe caution and fill the tank outdoors.

WARNING!

Never run the engine indoors, in enclosed or badly ventilated areas. Engine exhaust fumes contain poisonous carbon monoxide.

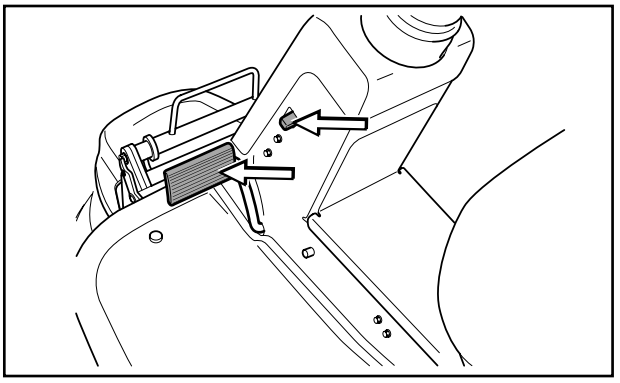


Fuel tank 8009-330

Starting the Engine

Check that the machine is in neutral and is standing still on flat ground when the parking brake is released.

Check that the parking brake works.

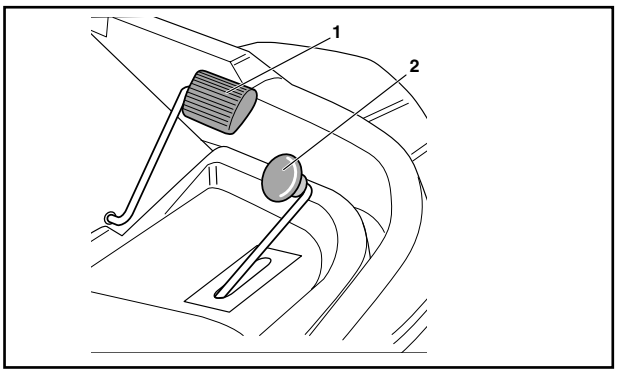


Parking Brake 8009-328

Check driving forwards (1) and in reverse (2).

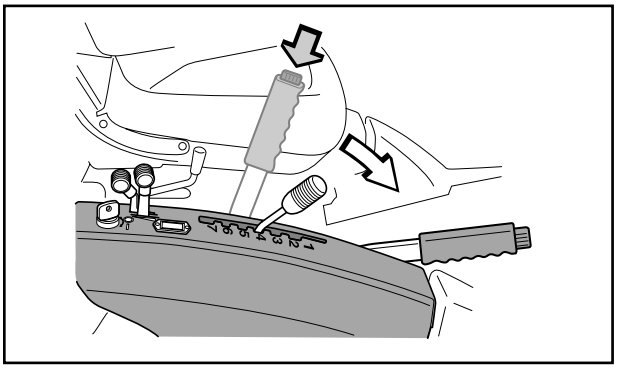
Check that the starter does not work when one of the hydrostat pedals is pressed.

Check that the engine stops if the driver stands from the seat when one of the hydrostat pedals is pressed.



Forward and reverse pedals 6007-209

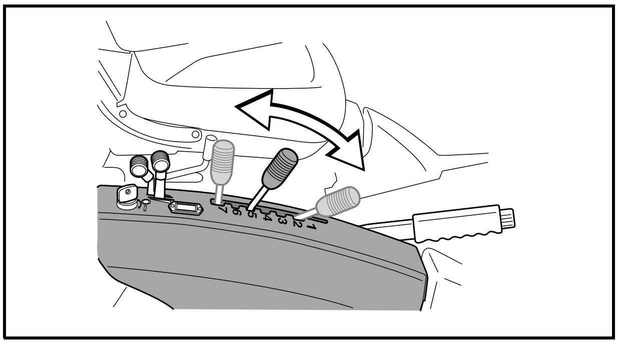
Check that the starter does not work when the cutting unit is in the lower position.



Lower the cutting unit 8009-324

Check that the cutting unit works and that no unusual sounds are heard

Using the lever, the cutting height can be adjusted in 7 different positions.



8009-327

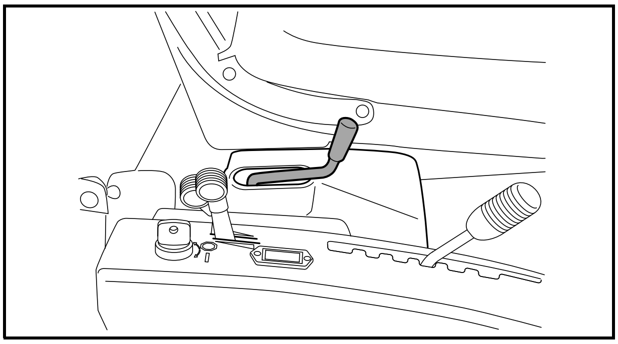
Cutting height setting

Check that the hydraulic cutting unit lift works.

Engine Speed Regulator

Check that the engine's max. speed is regulated to:

Rider ProFlex 21 II   2,925-3,075 rpm



8009-326

Hydraulic cutting unit lift

Hydraulic System

Bleed the hydraulic system of excess air after test running. Check the oil level and top up if necessary.

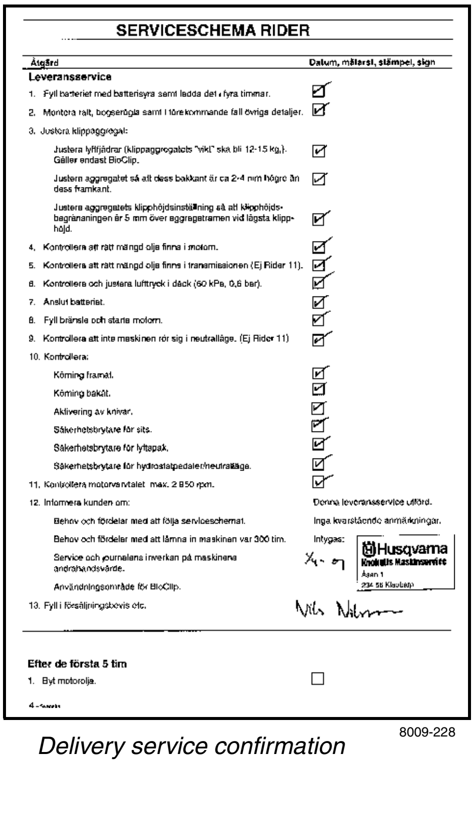
Check that there are no leaks, including engine oil and fuel leaks.

Replace the transmission cover.

Administration

Fill in the sales papers, customer register, etc.

Don't forget to fill in the serial number on page 3 in the operator's manual and to confirm that the delivery service has been performed in the service journal.



SERVICESCHEMA RIDER

Åtgärd | Datum, mätarst, stämpel, sign

Leveransservice

1. Fyll batteriet med batterisyra samt ladda det i fyra timmar.
2. Montera ratt, bogseröglа samt i förekommande fall övriga detaljer.
3. Justera klippaggregat:
   - Justera lyftfjädrar (klippaggregatets "vikt" ska bli 12-15 kg.). Gäller endast BioClip.
   - Justera aggregatet så att dess bakkant är ca 2-4 mm högre än dess framkant.
   - Justera aggregatets klipphöjdsinställning så att klipphöjdsbegränsningen är 5 mm över aggregatramen vid lägsta klipphöjd.
4. Kontrollera att rätt mängd olja finns i motorn.
5. Kontrollera att rätt mängd olja finns i transmissionen (Ej Rider 11).
6. Kontrollera och justera lufttryck i däck (60 kPa, 0,6 bar).
7. Anslut batteriet.
8. Fyll bränsle och starta motorn.
9. Kontrollera att inte maskinen rör sig i neutralläge. (Ej Rider 11)
10. Kontrollera:
    - Körning framåt.
    - Körning bakåt.
    - Aktivering av knivar.
    - Säkerhetsbrytare för sits.
    - Säkerhetsbrytare för lyftapak.
    - Säkerhetsbrytare för hydrostatpedaler/neutralläge.
11. Kontrollera motorvarvtalet max. 2 850 rpm.
12. Informera kunden om:
    - Behov och fördelar med att följa serviceschemat.
    - Behov och fördelar med att lämna in maskinen var 300 tim.
    - Service och journalens inverkan på maskinens andrahandsvärde.
    - Användningsområde för BioClip.
13. Fyll i försäljningsbevis etc.

Denna leveransservice utförd.
Inga kvarstående anmärkningar.
Intygas:

Husqvarna
Knollis Maskinservice
Åsen 1
234 56 Klasbo

Efter de första 5 tim

1. Byt motorolja.

4 – Svenska

8009-228

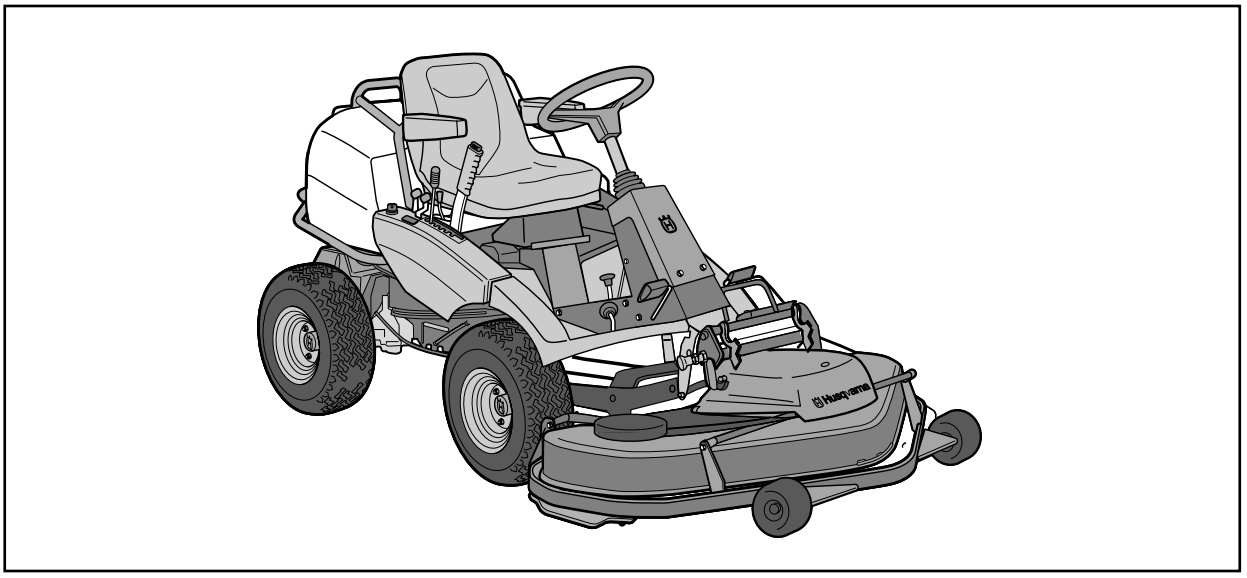
Delivery service confirmation

DELIVERY AND DEALER SERVICE

DESIGN AND FUNCTION

Design and Function

General



Rider ProFlex 21 II

8009-318

This publication describes the Husqvarna Rider ProFlex 21 II. There are special workshop manuals for older machine types.

Husqvarna Riders are a series of large capacity riders. They are available in several sizes, ranging from the smallest, the Rider 11, to the largest, the Rider ProFlex 21 II.

All Riders have articulated steering to ease mowing around trees and other obstacles. They also have front-mounted cutting units for controlled mowing and the best possible cutting result.

In addition, the Husqvarna Riders can also be equipped with various accessories, such as moss rakes and snow blades, which makes them flexible working tools throughout the year.

ProFlex models are only delivered with hydrostatic transmissions.

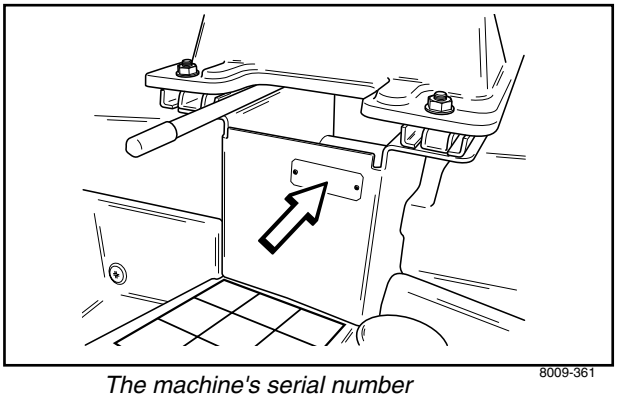
As standard, the Rider ProFlex 21 II is fitted with a Combi 122 cutting unit.

Serial Number

The machine's serial number is found on the printed plate at the front under the seat. Stated on the plate, from the top, are:

- The machine's type designation.
- The manufacturer's type number.
- The machine's serial number.

Please state the type designation and serial number when ordering spare parts.



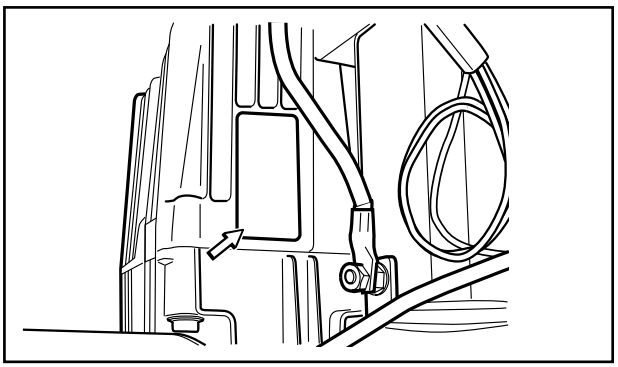
8009-361

The machine's serial number

The engine's serial number is found on a barcode sticker. This is placed on the left side of the crankcase, in front of the starter. The sticker states:

- The engine's serial number (E/NO).
- Code.

Please state these when ordering spare parts.



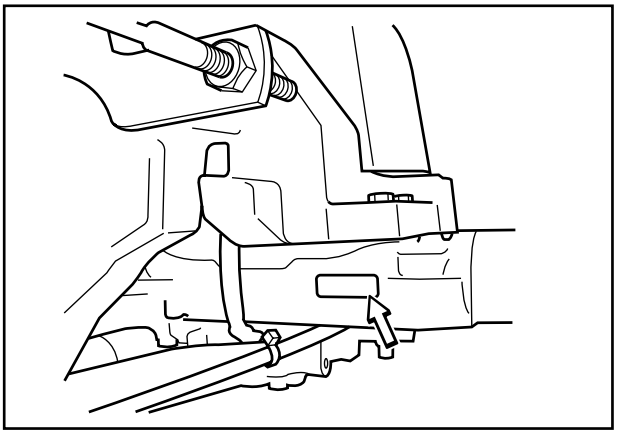
8009-205

The engine's serial number

The transmission's serial number is found on the barcode sticker located on the front of the housing on the left-hand drive shaft:

- The type designation is stated above the barcode and starts with the letter K.
- The serial number is stated above the barcode and has the prefix s/n.
- The manufacturer's type number is stated under the barcode and has the prefix p/n.

Please state the type designation and serial number when ordering spare parts.



8009-206

The transmission's serial number

Engine

The Husqvarna Rider ProFlex II series comprises professional machines with twin-cylinder, air-cooled Kawasaki engines.

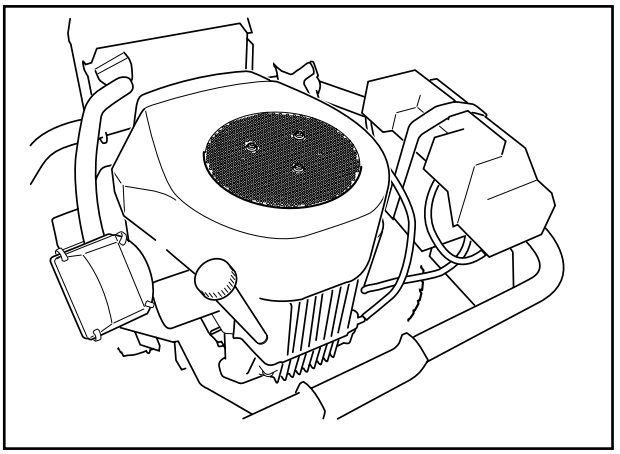
Major engine repairs are not described in this workshop manual. This information can be found in Kawasaki's manuals, which contain detailed information about adjusting and repairing the engines. These manuals can be ordered from an authorised service workshop.

The table below contains the model numbers for the different Rider models. These should be stated when ordering manuals:

Model	Kawasaki's engine type
Rider ProFlex 21 II	FH641V-AS50
or	FH641V-BS50

It is important that only original spare parts are used to repair the engines. If other parts are used, the guarantee is invalidated.

The Rider ProFlex 21 II has a twin-cylinder, top-valve engine with pressure lubrication and a separate oil filter. The engine is equipped with a catalytic converter, which reduces hydrocarbon and nitrogen oxide emissions by up to 65% and carbon monoxide emissions by up to 45%.



Kawasaki FH641V

8009-223

Steering

All mowers in the Rider series have articulated steering. The ProFlex 21 II is fitted with hydraulic power steering. The steering force from the steering wheel is transmitted to the rear carriage via a chain and cables. This makes steering the rider both easy and precise. A Rider easily cuts around all obstacles on the lawn.

The turning circle is very small thanks to the articulated steering; the uncut circle with full lock is only 20-30 cm/8"-12" depending on the model.

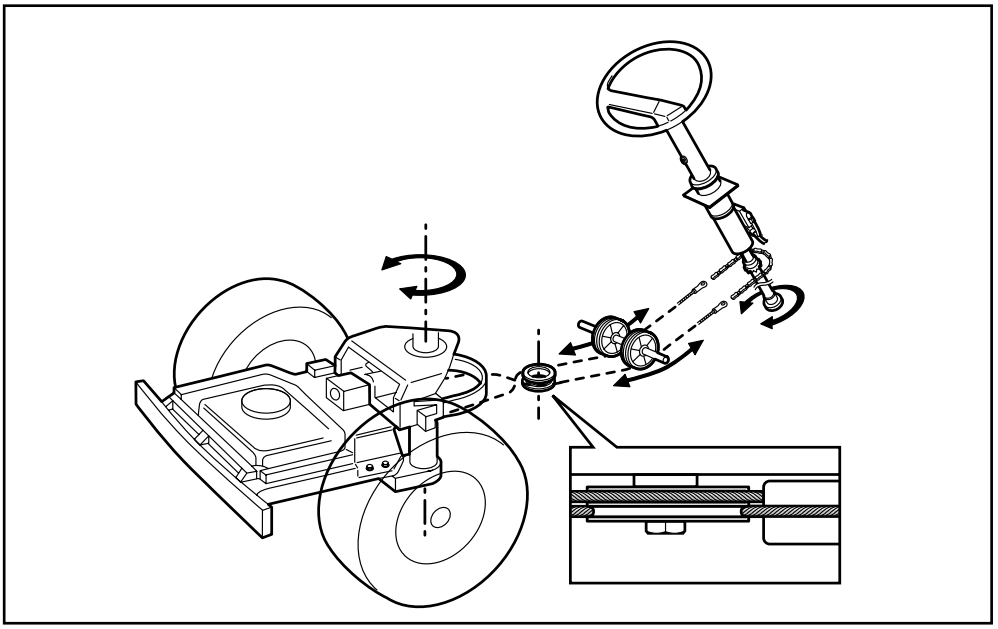


Illustration of the mechanical function of the articulated steering. 8009-362

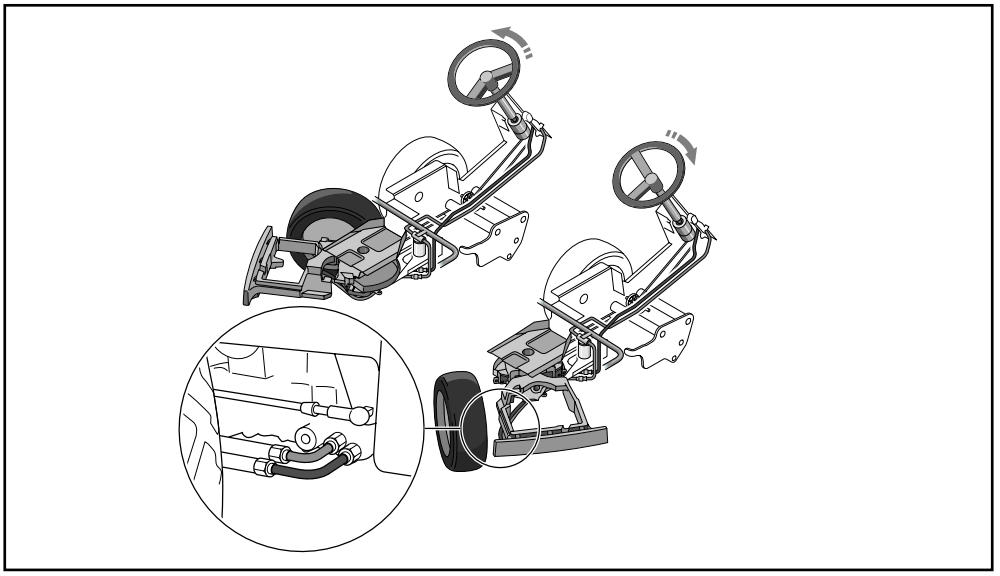


Illustration of the hydraulic function of the articulated steering. 6019-007

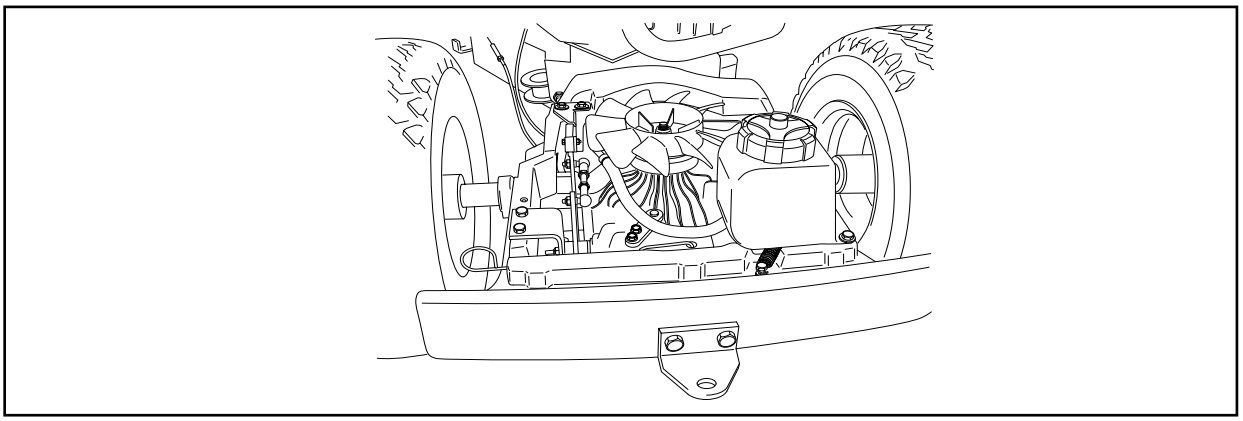
The power steering obtains its pressure from the pump in the hydrostatic transmission. The power steering is mounted in the steering column and its stator section is fitted in the power steering housing, which is the front section of the machine's frame. The power steering is, in principle, a hydraulic torque motor that is controlled by the steering wheel. When there is no hydraulic pressure, the machine can still be steered, as the steering shaft is mechanically attached to the sprocket wheel on the power steering's outgoing shaft (the rotor section). See also Component Locations on page 79.

Driving

The Rider ProFlex is equipped with a hydrostatic transmission that gives the driver complete control over driving. The speed is regulated continuously with the foot pedals, forwards and reverse.

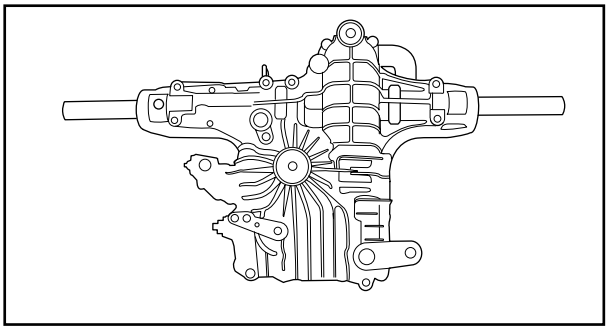
The Rider ProFlex 21 II has a differential lock that enables the rear wheels to be run locked.

The differential lock is engaged and disengaged with a pedal found on the left side of the machine.



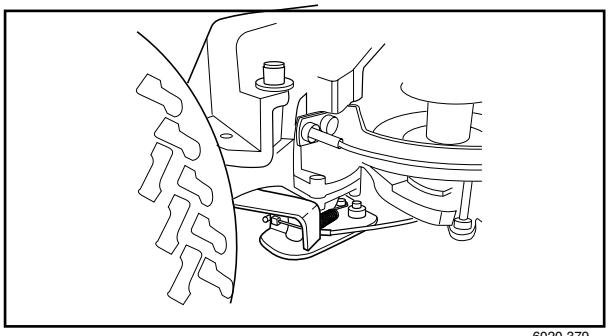
The transmission cover removed 8009-363

The Rider ProFlex 21 II's K66 hydrostatic transmission seen from above. The illustration shows the transmission without the cooling fan.



The K66 hydrostatic transmission 8009-032

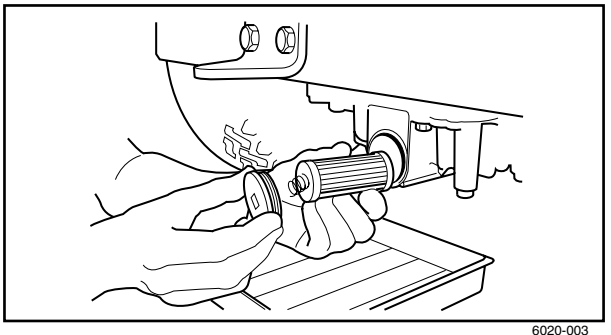
The differential lock mechanism is fitted to the underside of the hydrostatic transmission.



6020-379

The differential lock mechanism

Oil drainage with filter on the K66 hydrostatic transmission.



6020-003

The transmission's oil filter

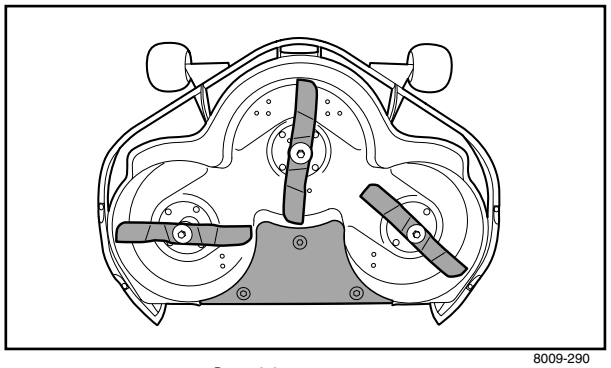
DESIGN AND FUNCTION

Cutting Unit

The entire Rider series is equipped with a front-mounted cutting unit in order to mow efficiently even in confined areas.

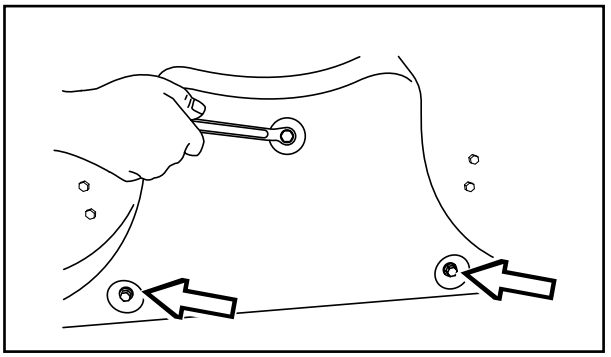
The Rider ProFlex 21 II is delivered with the Combi 122 cutting unit. Older cutting unit types cannot be attached unless the drive belt is changed.

The Combi unit functions as a BioClip unit when a BioClip plug is fitted, but can be set to rear ejection by removing the BioClip plug.



8009-290

Combi 122



8009-289

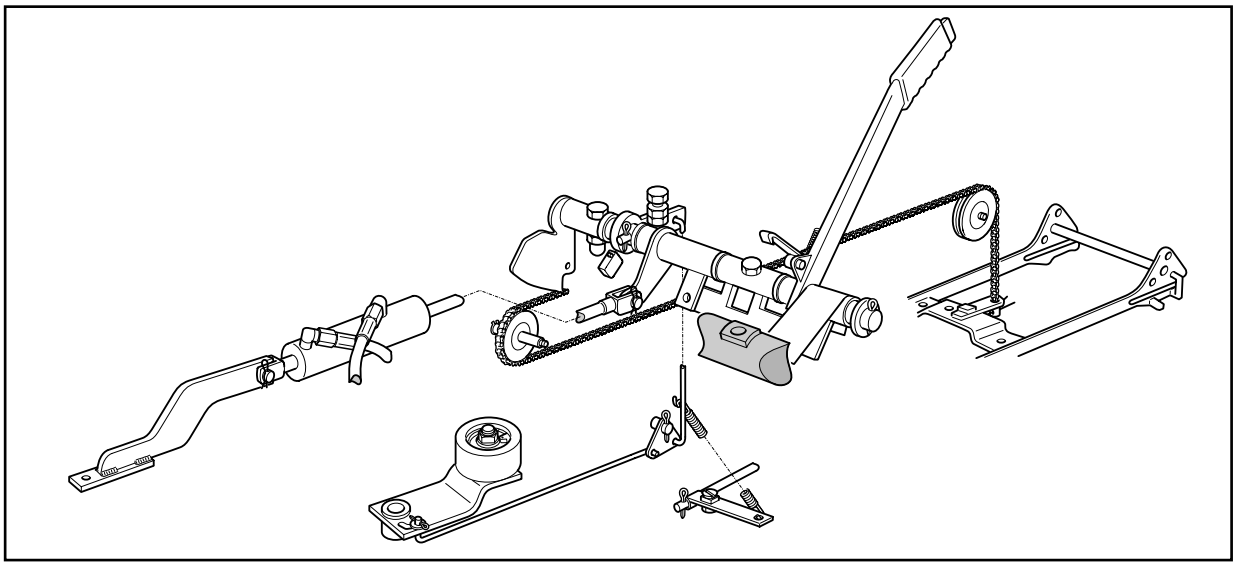
Removing the BioClip plug

The cutting unit can be raised or lowered in two different ways: with the mechanical lifting lever or with a hydraulic cylinder. Both methods work by rotating a shaft.

When the shaft is rotated, the chain attached to a segment inside the end of the shaft will raise or lower the equipment frame.

When lowering the unit, the two pulling rods, via the three-point link, will alter the belt adjuster so that the drive belt is tensioned and the blades begin to rotate. When lifting the unit, the spring, which is attached to the short pulling rod, will apply the blade brake to the belt pulley. The blades are braked and stop sooner. When the unit is raised, the domed nut attached to the chain link bolt activates the safety system microswitch.

See Adjusting the Lever Housing on page 56 for adjustment instructions.



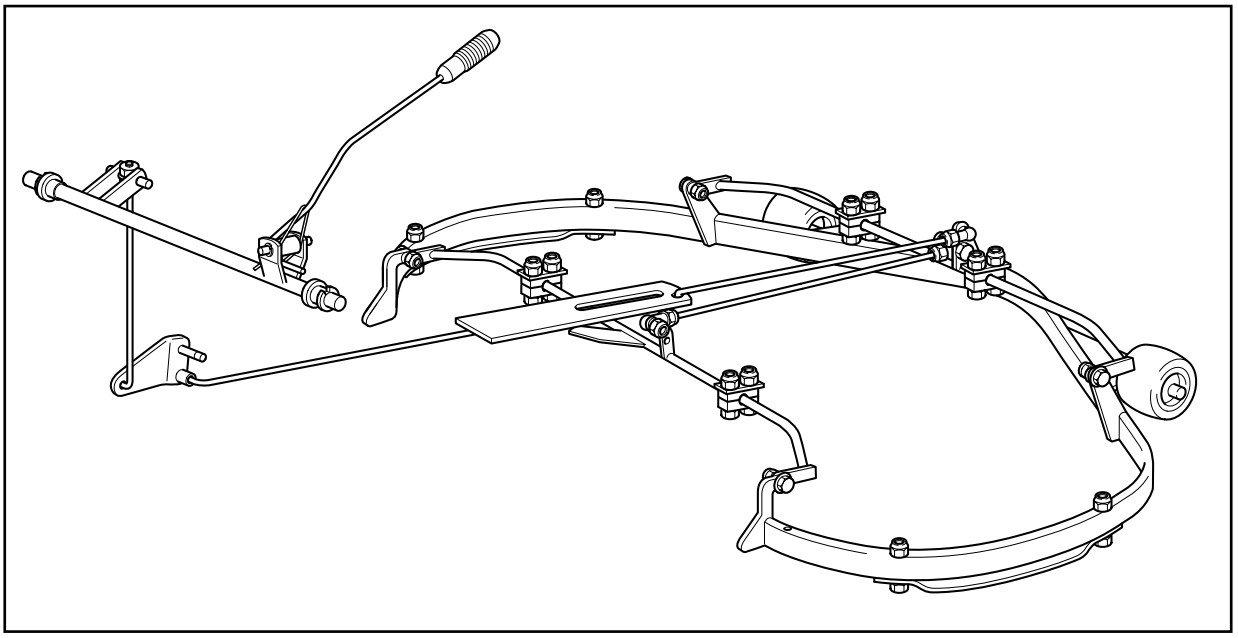
8009-301

The unit's lifting device

DESIGN AND FUNCTION

The cutting height is adjusted using the lever that is attached to the shaft with a joint and a spring. The same shaft holds the adjuster for the cutting height range. See Adjusting the Cutting Height Range on page 63. Two pulling rods, via a three-point link, activate the protective frame around the cutting unit and raise or lower the cutting unit cover within the cutting height range. The horizontal pulling rod is found in an oblong groove in the equipment frame.

There are two struts on the top of the cutting unit cover. The upper one is coupled between the horizontal pulling rod and the tongue of the forward perpendicular shaft on the top of the cutting unit cover. When the shaft is rotated, it will raise or lower the cutting unit cover in relation to the protective frame. The lower strut (the parallel strut) is coupled between the tongues on the forward and rear perpendicular shafts, so that the rear shaft is also rotated in the same way as the forward shaft. There is an adjuster on the parallel strut for setting the cutting unit cover's deviation from being parallel to the ground. See Parallelism on page 62 for adjustment instructions.



8009-377

Cutting height adjustment

Repair Instructions

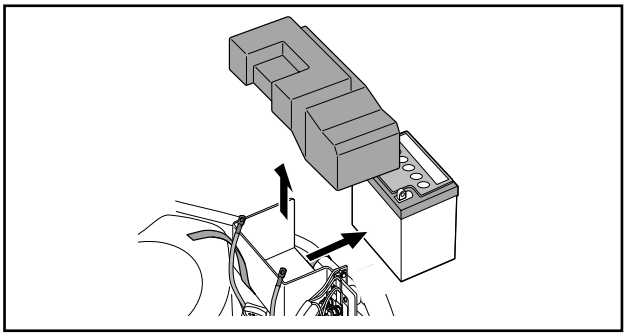
Removing the Engine

1. Remove the engine cover.
2. Loosen the battery's retaining strap. Remove the protective cover.

IMPORTANT INFORMATION

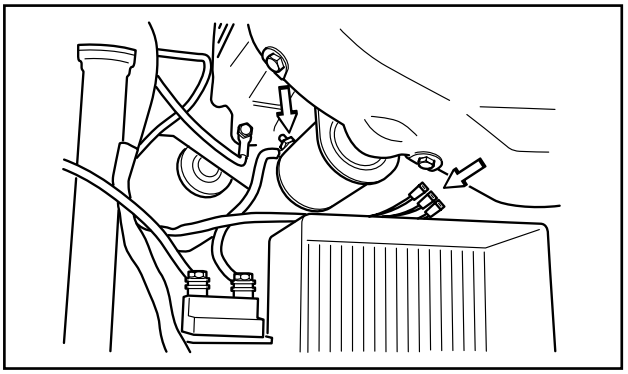
Hold the battery cable bolts in place so that the electrodes are not strained.

3. Loosen the battery cable connections. Then lift out the battery.



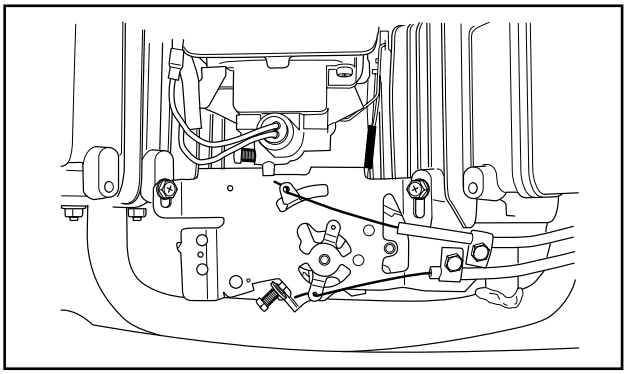
Battery installation 6012-001

4. Remove the cable connecting the starter relay to the starter from the starter.
5. Mark and remove the engine's electrical connectors.



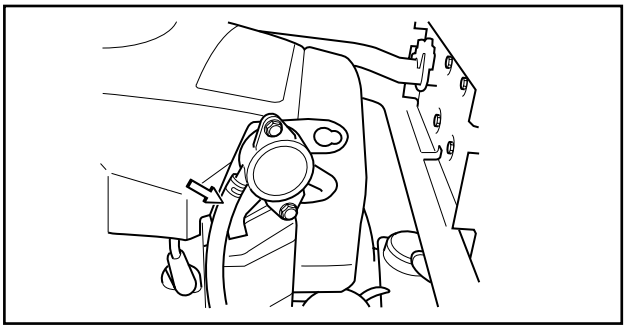
Connections, to the left of the front of the engine 8009-190

6. Remove the clips holding the throttle and choke cables. Unhook the cables from their fasteners in the carburettor.



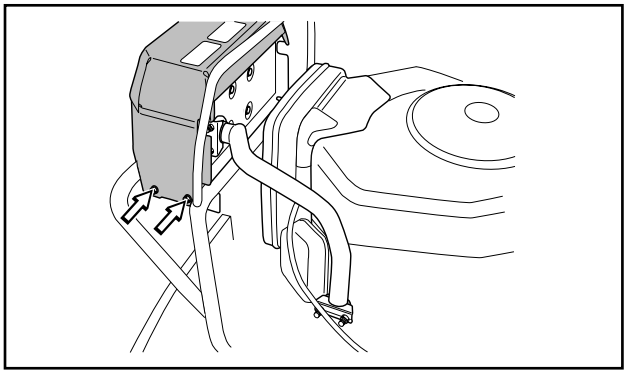
Throttle and choke cables 8009-175

7. Remove the hose clamp on the fuel hose by the fuel pump and pull the fuel hose downwards. Place the hose so that the fuel does not leak out.



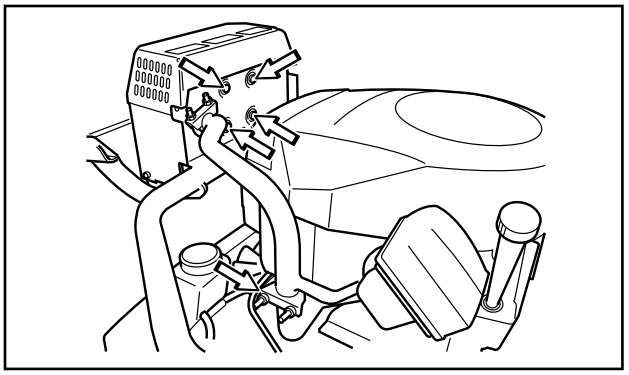
Fuel pump 8009-191

8. Loosen the cover plate over the muffler, two screws on each side of the muffler, and remove the plate.



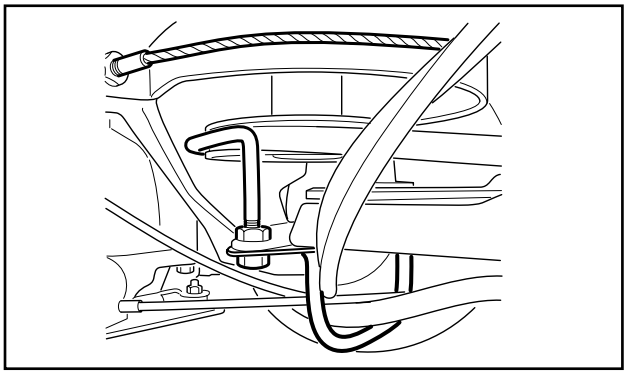
Muffler cover plate 8009-035

9. Loosen the exhaust pipe's pipe clamp and the muffler's four fastening screws. Then remove the muffler, exhaust pipe, and accompanying pulse air valve.



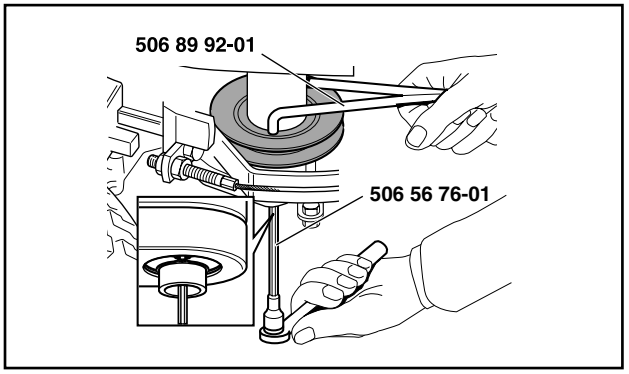
Exhaust system 8009-193

10. Remove the cable holder under the engine belt pulley.



Cable holder 8009-364

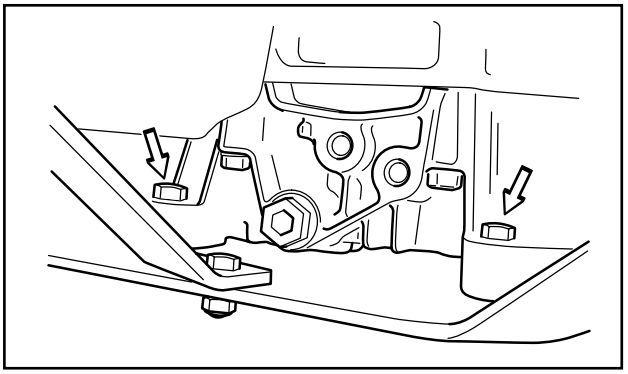
11. Push tool no. 506 56 06-01 into the centre of the engine belt pulley. Loosen and remove the Allen screw that holds the belt pulley and engine shaft together. Use tool no. 506 89 92-01 to counter. Loosen the belt pulley from the engine shaft.



Engine belt pulley 8009-194

12. Remove the engine fixtures, two on each side of the engine, and remove the engine from the rider.

    The illustration shows the right side with hydraulic cylinder fixture excluded. For the left side, see the illustration under Mounting.

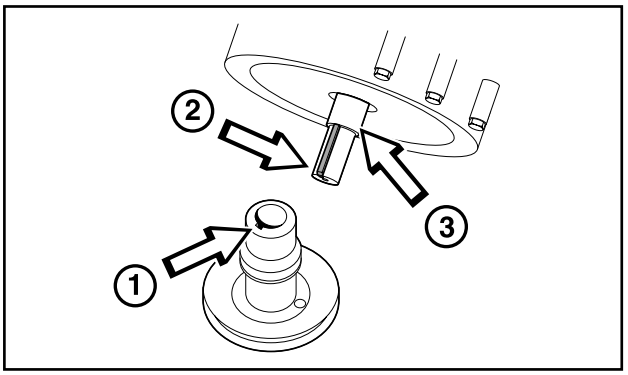


The engine's fastening screws, right side. Mount not shown 8009-192

Fitting the Engine

IMPORTANT INFORMATION

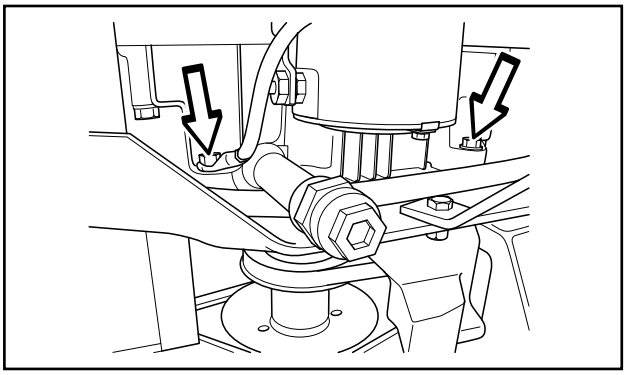
When fitting the engine, it is important that the belt pulley's groove (1) is in such a position that the outgoing shaft's key (2) fits into the groove (see illustration). Also check that both the spacing tube (3) and key (2) are well fitted to the engine shaft. Grease the engine shaft.



Engine shaft and belt pulley 6019-039

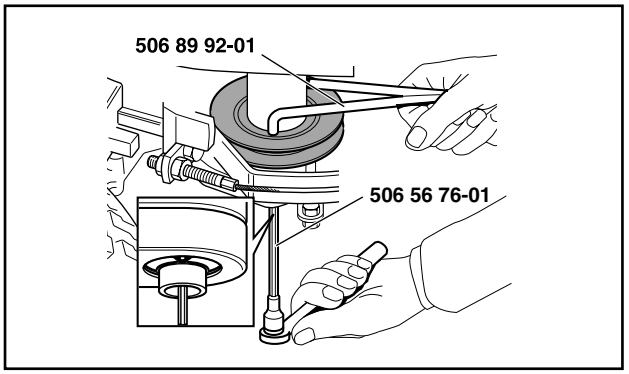
1. Lower the engine into place and tighten the engine fixtures (two on each side of the engine) with a torque of 25 Nm/18 lbf. ft.

   The battery's negative cable should be attached to the forward left screw. The hydraulic cylinder fixture should be attached to the forward right screw.



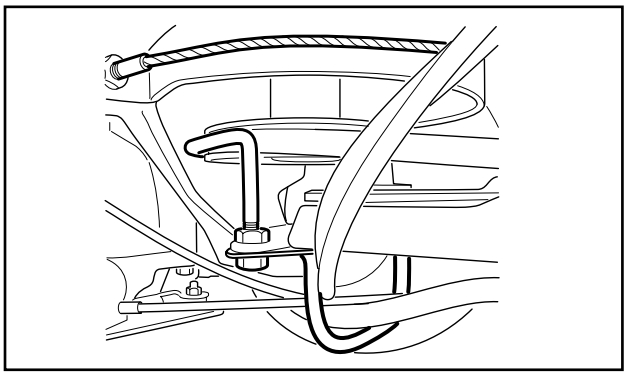
Engine mount screws and negative cable 8009-365

2. Fit the belt pulley with tool no. 506 56 06-01 and tighten with a torque of 80 Nm/56 lbf. ft. Use tool no. 506 89 92-01 to counter.
   Place both belts in place on the belt pulley.



Engine belt pulley 8009-194

3. Place the cables and hydraulic hoses in the cable holder. Fit the cable holder and belt guide. Adjust the belt guide against the lower belt in the belt pulley as needed.



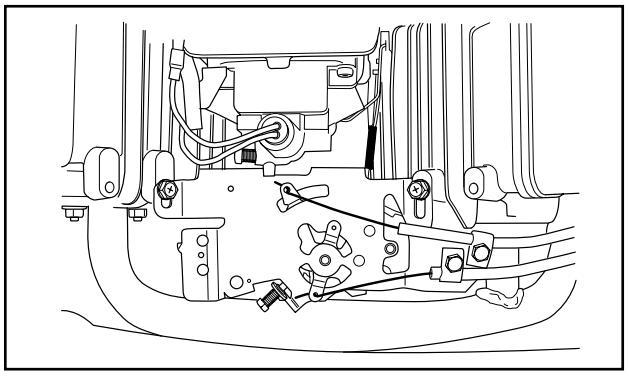
Cable holder and belt guide 8009-364

4. Attach the throttle cable to the throttle and fit the cable clip without tightening it. Make sure that it goes into the proper hole.

   Move the accelerator to the full throttle position. Push the cable's outer casing as far to the left as possible and tighten the cable clip.

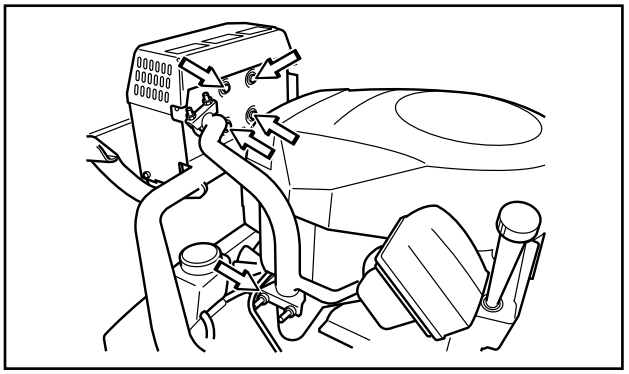
   Attach the choke cable to the carburettor and fit the cable clip without tightening it.

   Move the choke control to the full choke position. Pull the cable's outer casing as far to the right as possible and tighten the cable clip.



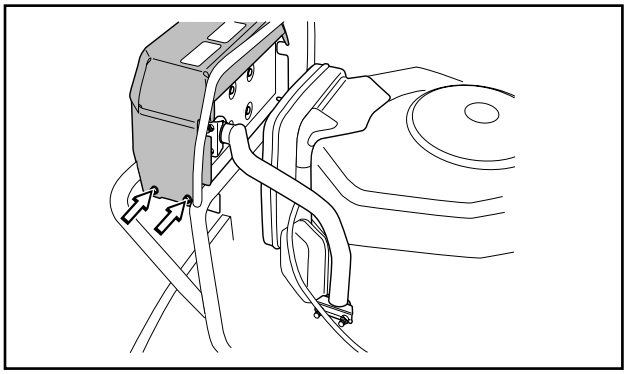
Throttle and choke cables 8009-175

5. Fit the muffler and exhaust pipe and tighten the fixing screws and pipe clamps.



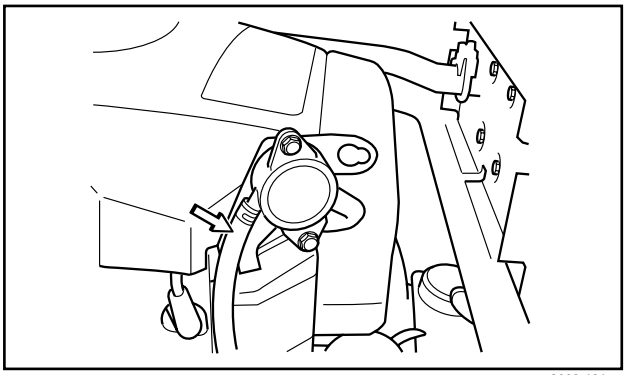
Exhaust system 8009-193

6. Attach the cover plate over the muffler, two screws on each side of the muffler.



The muffler's protective plate 8009-035

7. Press the fuel hose into place against the fuel pump and attach the hose clamp.

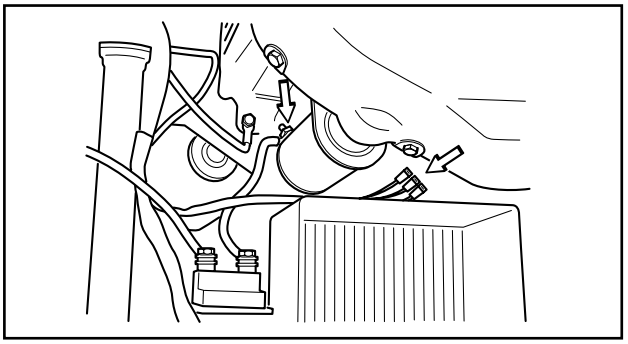


8009-191

Fuel pump

8. Screw the cable from the starter to the start relay into place.

   Attach the engine's electrical connectors.

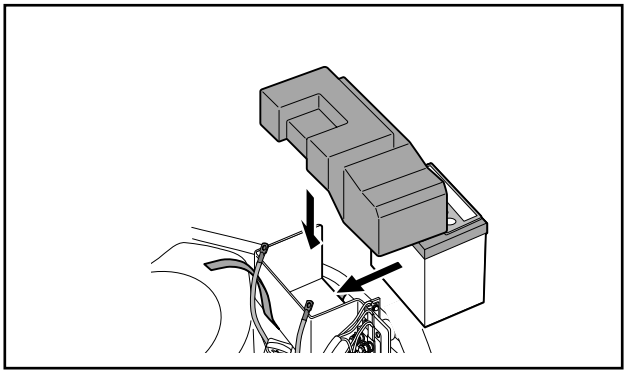


The engine's electrical connections 8009-190

IMPORTANT INFORMATION

Hold the battery cable bolts in place so that the electrodes are not strained.

9. Lift the battery into position and attach the cable connectors and cover, tighten the fastening strap.



Battery installation 6012-092

Fuel tank

Removal

WARNING!

Petrol is highly flammable and environmentally hazardous.

Exercise caution to avoid fire and spillage.

1. Place a suitable container to collect the petrol. The tank holds about 17 litres (4.5 US Gal).
2. Empty the petrol tank by removing the hose from the connector under the tank. If you do not wish to empty the tank, you can pinch the hose with lockable welding pliers and then remove the hose and hose clamp from the fuel filter's lower connector. You must then be sure to keep the hose opening higher than the fuel level in the tank.
3. Remove the three screws that fix the tank to the bracket. Lower the tank and pull out the hose through the frame of the machine (if it has been loosened at the fuel filter).

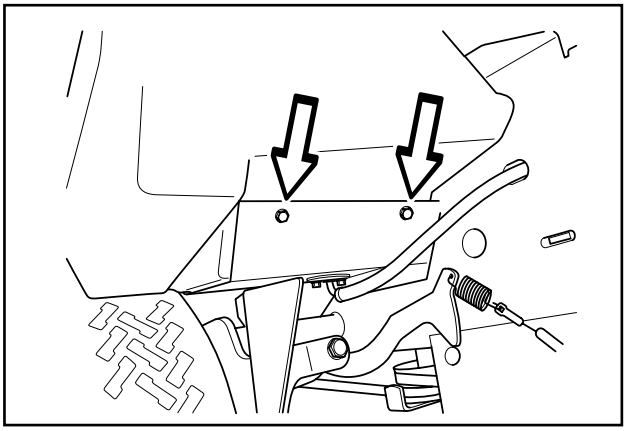
Fitting

1. It is easier to work if you empty the tank before fitting. Insert the hose into place and attach it to the fuel filter with the hose clamp. Make sure that the hose cannot be chafed or rubbed.
2. Place the tank in place on the bracket and attach it with the screws and washers.
3. Fit the fuel hose and the hose clamp to the connector under the tank as required. Fill with petrol and check for leaks.

IMPORTANT INFORMATION

Overly long screws can damage the tank and cause fuel leakage.

Only use approved screws specified in the spare parts catalogue.



The fuel tank fixture 8009-399

A screw is hidden on the front of the bracket.

Changing the Engine Oil

The engine oil should be changed the first time after 8 hours running time. It should then be changed after every 100 hours of running time.

1. Open the engine cover.
2. Place a container underneath the engine's left oil drain plug.
3. Remove the dipstick. Remove the drain plug from the engine's left side.
4. Let the oil run out into the container (1.5 l/1.6 US qt).
5. Then replace the oil drain plug and tighten it.
6. Replace the oil filter if necessary.
7. Fill with new engine oil according to the instructions on the next page.

Check the oil level in the engine when the rider stands horizontal.

Fold up the engine cover.

Remove the dipstick, wipe it clean, and then replace it.

The dipstick shall **not** be screwed into place.

Take the dipstick out again and read the oil level.

The oil level should be between the markings on the dipstick. If the level is close to the ADD mark, fill up with oil to the FULL mark on the dipstick.

Never fill above the FULL mark.

The oil is topped up through the hole the dipstick sits in.

Use engine oil SAE 30 or SAE 10W/30 or, alternately, 10W/40, class SC–SH (over 0° C/ +32°F).

Over +20°C/+68 °F SAE 40 can be used.

Use engine oil SAE 5W/20, class SC–SH (under 0° C/+32°F).

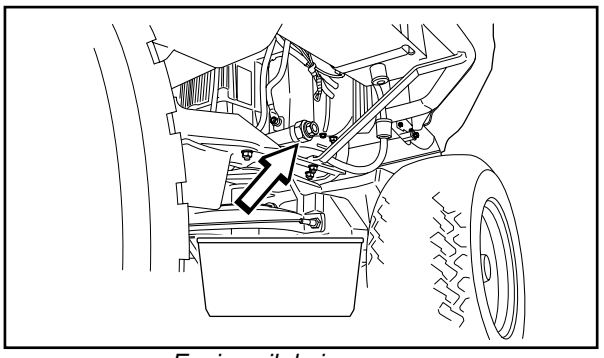
The engine holds 1.5 litres/1.6 US qt of oil excluding the filter (including filter 1.7 litres/ 1.8 US qt).

WARNING!

Engine oil can be very hot if it is drained directly after stopping the engine. Allow the engine to cool somewhat first.

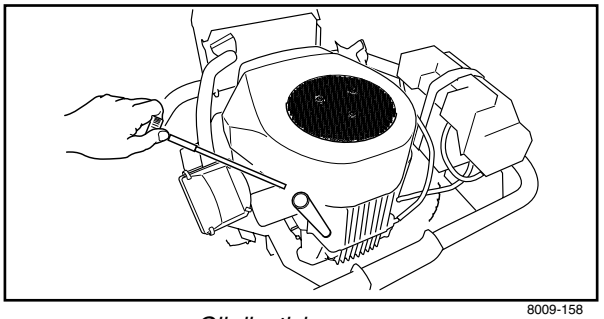
IMPORTANT INFORMATION

Used engine oil is a health hazard and must not be disposed of on the ground or in nature; it should always be disposed of at a workshop or appropriate disposal location.



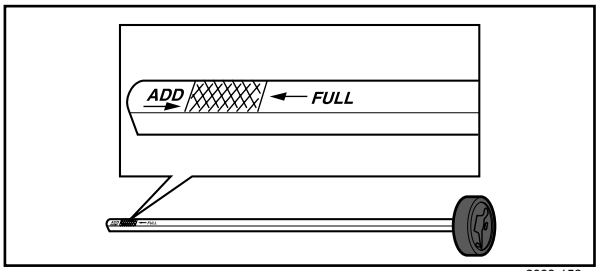
Engine oil drainage

8009-160



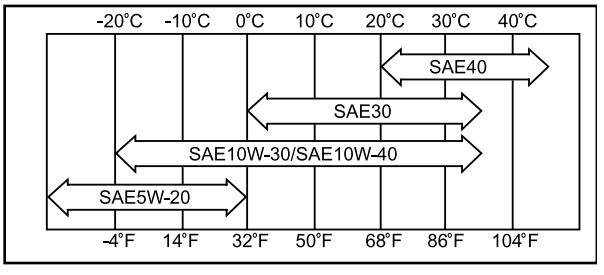
Oil dipstick

8009-158



Oil level

8009-159



Viscosity chart

8009-140

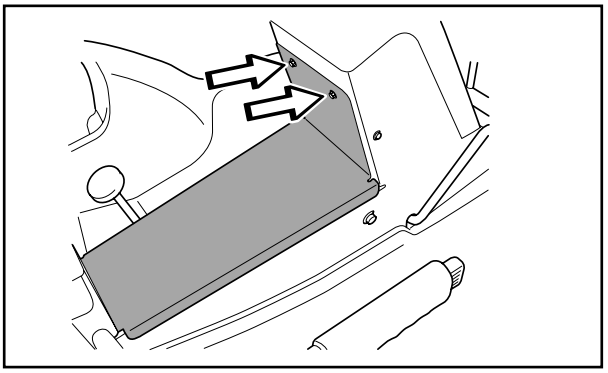
Checking and Adjusting the Steering Cables

The steering is governed by means of cables.

After a period of use these can become stretched, which means the steering setting may have changed.

Steering is checked and adjusted as follows:

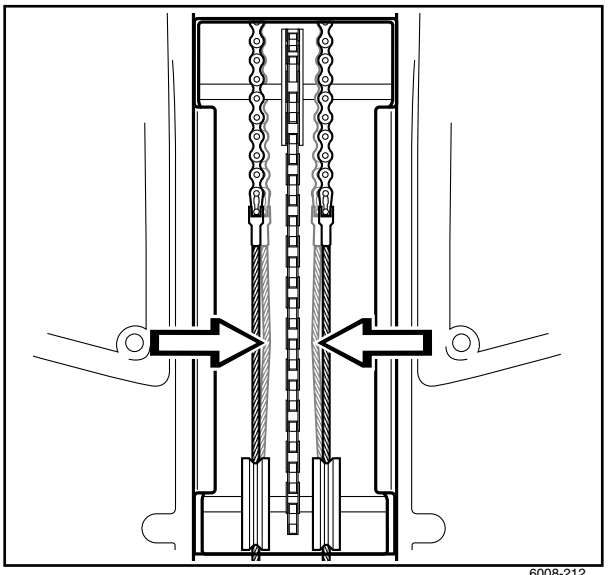
1. Remove the frame plate by loosening the screws (two on the power steering housing).



Frame plate 8009-340

2. Ensure that the cables are properly situated under the steering cable pulleys in the frame tunnel.
   Check the tension of the steering cables by squeezing the cables together (at the arrows). It should be possible to squeeze the cables so that the distance between them is half the size, without using too much force.

   Change the cable if it has a damaged strand causing loose threads to protrude.



6008-212

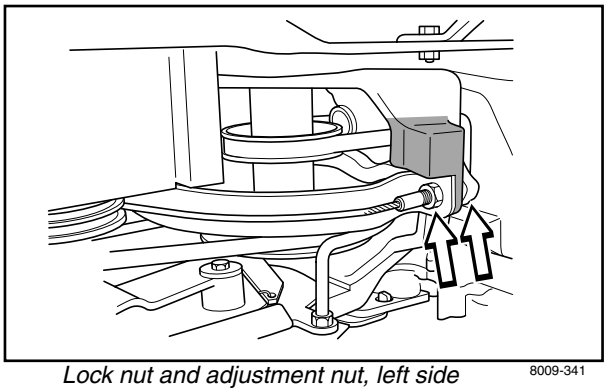
Steering cable tension

3. If necessary, the cables can be stretched by first loosening the lock nut and then tightening the adjustment nut (one cable on each side of the machine).

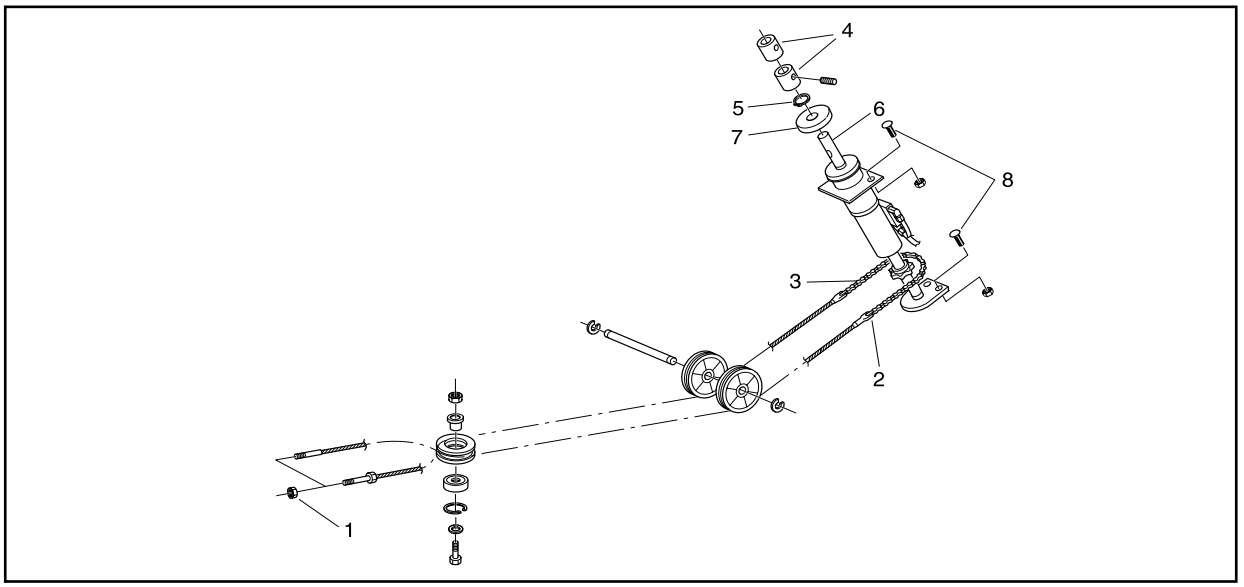
   Hold the cable with, for example, an adjustable wrench so that it does not twist. If the adjustment is only made on one side, the middle position of the steering will be affected.

   Do not over tighten the cables; they should only be drawn in towards the steering collar.

   Check the cable tension after you have made the adjustment as described in point 2.



Lock nut and adjustment nut, left side 8009-341



Power steering and steering cables 8009-300

Replacing the Steering Cables

1. Loosen the steering cables' rear fixture (1).
2. Remove the frame plate.
3. Loosen the steering cables' front fixture (2) by the steering chain (3) and pull out the steering cables through the frame.

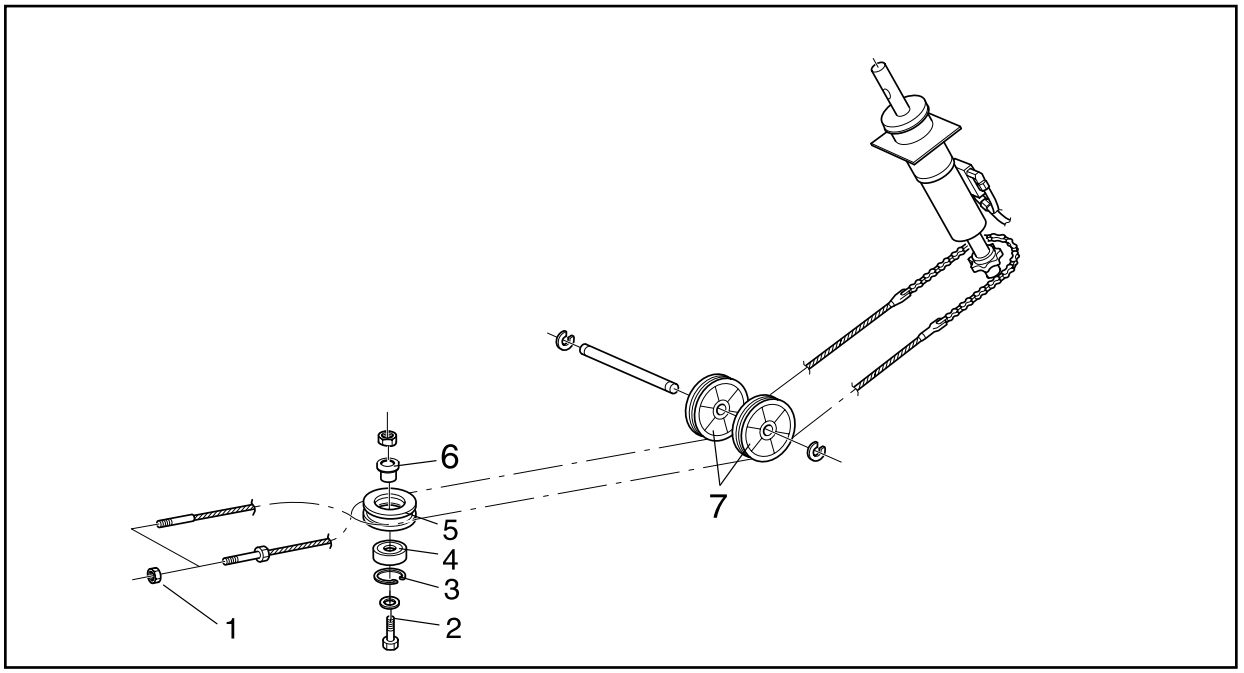
Note If the old cables are whole, the new cables can be attached to the old when they are pulled out through the frame. The new cables will then automatically sit in the proper position.

Hold the cables with, for example, a wrench when mounting so that they do not twist.

Ensure that the steering wheel is in the centre position when the rear wheels are centred. Re-set the chain on the power steering sprocket or adjust the rear fixture for the steering cables (1) as needed.

Removing/Fitting the Power Steering

1. Remove the cutting unit.
2. Loosen the steering cables' rear fixture (1).
3. Remove the frame plate.
4. Remove the steering wheel and steering rod by loosening the lock nut and unscrewing the stop screw, and then lifting the steering wheel and steering rod upwards.
5. Remove the power steering housing's protective cover and the rubber bellows.
6. Remove the circlip (5) and the bellows holder (7) on the top of the power steering.
7. Cleaning, see Working Methods on page 78. Loosen the hydraulic hoses from the power steering.
8. Remove the steering column's two drive discs (4).
9. Remove the four screws (8) that hold the power steering's brackets in the power steering housing.
10. Pull the power steering (6) upwards and move the lower section backwards in order to force off the steering chain (3).
11. To fit the power steering, follow the instructions in the reverse order. The steering column's two drive discs (4) should be tightened with a torque of 5–10 Nm/3.5-7 lbf. ft. Ensure that the steering wheel is in the centre position when the rear wheels are centred. Re-set the chain on the power steering sprocket or adjust the rear fixture for the steering cables (1) as needed.
12. Bleed the hydraulic system of excess air.



Steering cables and cable pulley

8009-358

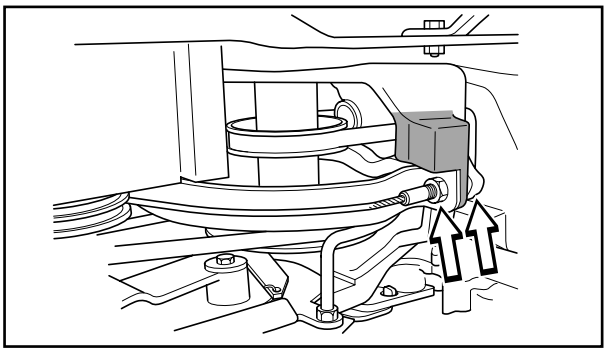
Removing/Fitting the Cable Pulley

1. Remove the frame plate.
2. Loosen the steering cables' rear mount (1).
3. Remove the screw (2) and remove the cable pulley (5).
4. Remove the bearing's circlip (3) and tap out the bearing (4).
5. To fit the cable pulley, follow the instructions in the reverse order.

   The screw (2) is to be mounted in the rear hole on the frame. The bushing (6) is to be placed between the frame and the cable pulley.

   Ensure that the cables are properly situated under the steering cable rollers (7) in the frame tunnel.

   Hold the cables with, for example, an adjustable wrench when mounting so that they do not twist.



8009-341

Steering cable's rear mount, left side

After mounting, the cable tension should be checked, see Checking and Adjusting the Steering Cables on page 34.

Ensure that the steering wheel is in the centre position when the rear wheels are centred. Re-set the chain on the power steering sprocket or adjust the rear fixture for the steering cables (1) as needed.

There is a complete assembly kit for sale for the Rider ProFlex that contains a cable pulley, bushings, and bearings.

Adjusting the Brake

Check that the brakes are correctly adjusted by placing the rider on a slight downhill slope with the clutch disengaged and activating the brake.

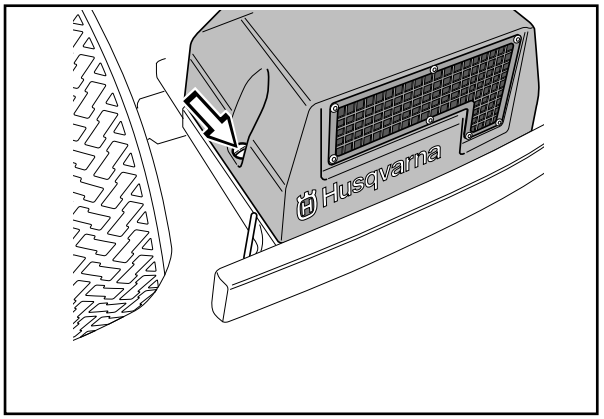
If the rider does not stand still, the brake needs adjusting.

The parking brake (on the right side) is adjusted in the following manner:

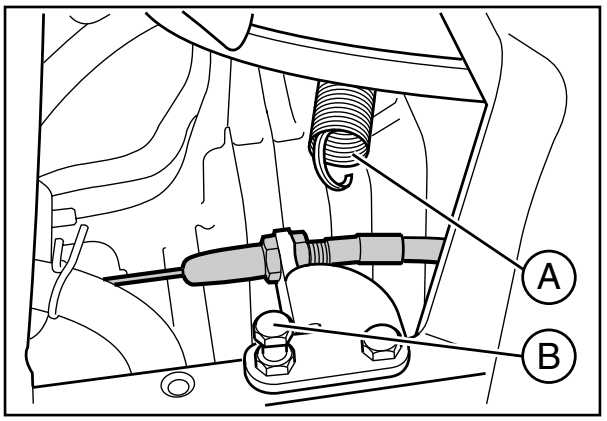
1. Remove the transmission cover. Loosen both screws (one on each side) and lift off the transmission cover.
2. Unhook the spring (A) from the screw (B).
3. Check that the parking brake is not on.
4. Adjust the play between the casing and the adjustment screw to 1 mm (0.040") when one pulls the casing.
   Adjust with the nuts on the adjustment screw.
5. Tighten the nuts moderately to avoid damaging the threads.
6. Replace the spring (A).
7. Test the brake to ensure that it works.

WARNING!

A poorly adjusted brake can result in reduced braking ability.



Transmission cover 6008-209

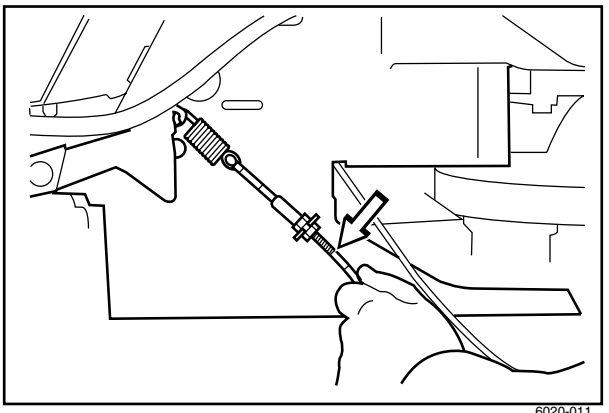


Adjusting the parking brake 6020-005

Adjusting the Differential Lock

The differential lock (on the left side) is adjusted in the following manner:

1. Check that the differential lock is disengaged; the pedal should be all the way up.
2. Adjust the zero play between the cable casing and the adjustment screw with the two nuts on the adjustment screw. You should feel no play when you pull the casing.
3. Tighten the nuts moderately to avoid damaging the threads.



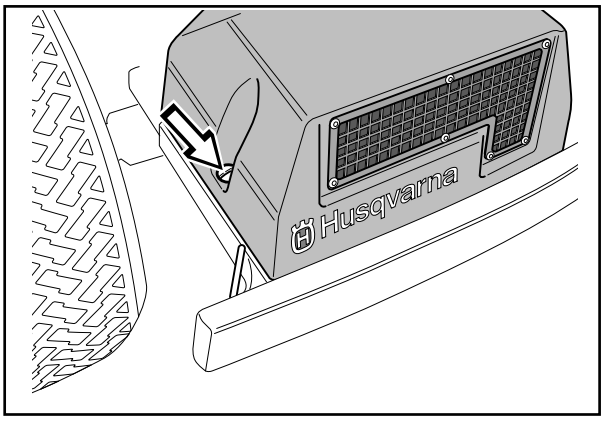
6020-011

Adjusting the differential lock

Adjusting of the Hydrostatic Transmission Cable

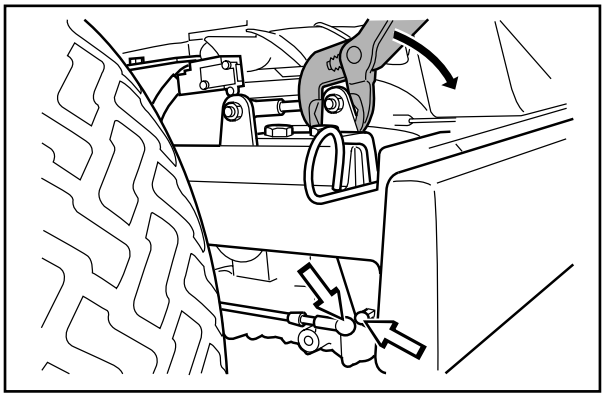
The hydrostatic transmission cable (on the left side) is adjusted in the following manner:

1. Remove the transmission cover. Loosen both screws (one on each side) and lift off the transmission cover.
2. Take apart the lower ball joint, which is locked with a locking spring.
3. Ensure that the forward drive pedal is pressed down completely.



Transmission cover 6008-209

4. Switch the vertical arm to the maximum position and check that the ball and socket in the lower ball joint are aligned.
5. Adjust the socket on the cable as needed, so that it fits precisely over the ball on the lever arm.
6. Assemble the lower ball joint.
7. Put the ball joint's locking spring in place.

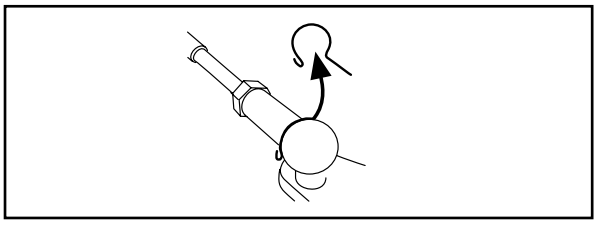


Checking the adjustment of the hydrostatic transmission cable 6020-002

8. Tighten the lock nut for the socket on the cable.

IMPORTANT INFORMATION

Make sure that the locking spring goes through the hole in the socket.



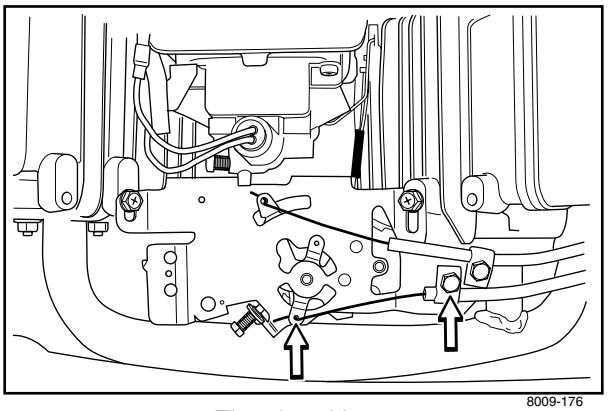
The link joint's locking spring 8009-203

Checking and Adjusting the Throttle Cable

Check that the engine responds to throttle increases and that a good engine speed is attained at full throttle.

If adjustments are necessary, they can be made as follows for the lower cable:

1. Loosen the clamping screw for the cable's outer casing and move the throttle to the full throttle position.
2. Check that the throttle cable is mounted in the correct hole in the lower lever, see illustration.
3. Push the throttle cable's outer casing as far to the left as possible and tighten the clamping screw.



8009-176

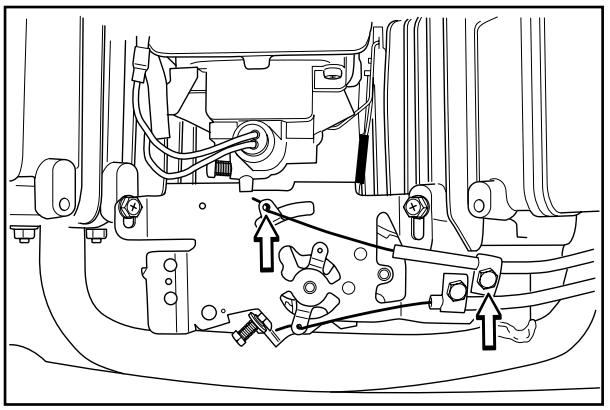
Throttle cable

Checking and Adjusting the Choke Cable

If the engine produces black smoke or is difficult to start, this can be because the choke cable is incorrectly adjusted (upper cable).

If adjustments are necessary, they can be made as follows:

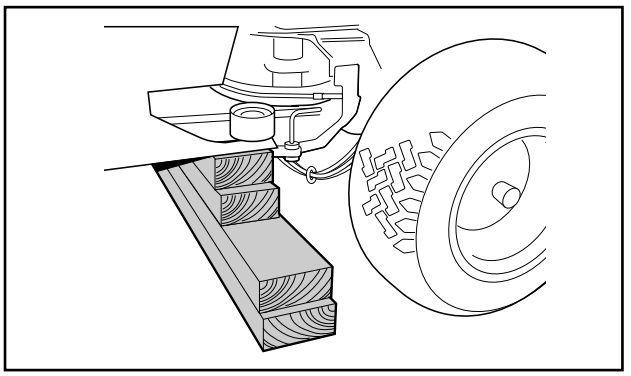
1. Loosen the clamping screw for the cable's outer casing and move the choke lever to the full choke position.
2. Check that the choke cable is mounted in the upper lever, see illustration.
3. Pull the choke cable's outer casing as far to the right as possible and tighten the clamping screw.



Choke cable 8009-177

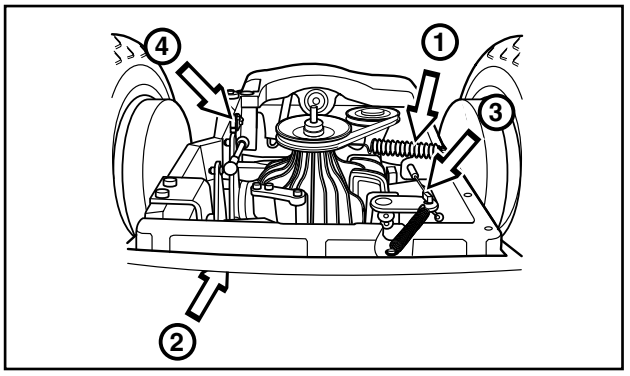
Replacing the Articulated Steering Bearings

1. Remove the engine as previously described Removing the Engine on page 27.
2. Jack up the rider in front of the articulated steering.
3. Pull off the drive belt.
4. Loosen the transmission oil tank and move it out of the way in order to access the brake cable.

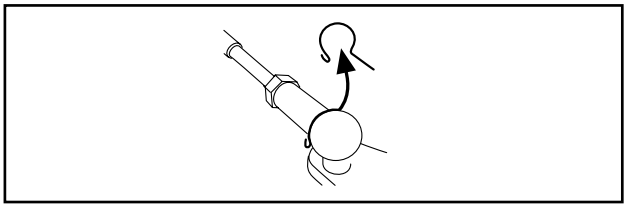


Jacking up 6012-023

5. Loosen the idler's spring (1).
6. Remove the locking spring and loosen the throttle control's link joint locking spring on the bottom side, and remove the cable from the under side of the shaft (2).
7. Loosen the brake cable's spring and nuts. Remove the cable from the brake arm (3).
8. Remove the cable from the neutral position contact (4).
9. Loosen the cable to the differential lock, see Removing/Mounting the Hydrostatic Transmission on page 43.

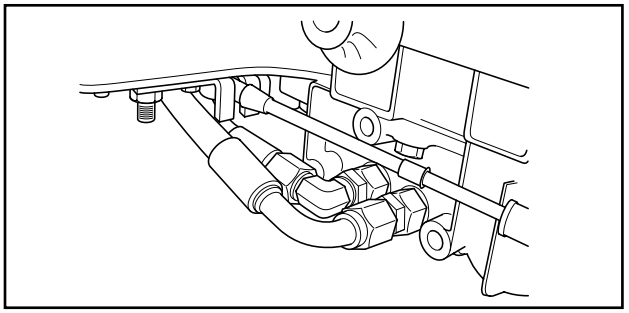


Steps 1-4 8009-047



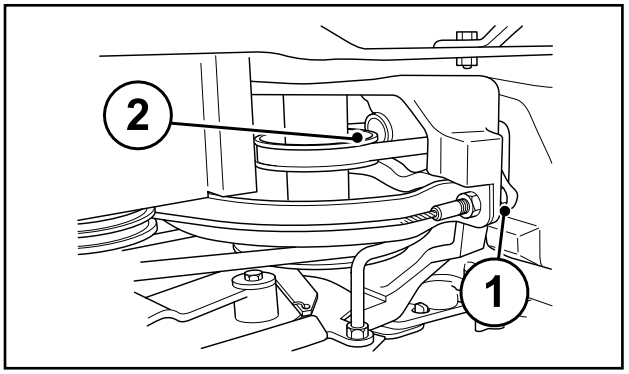
Locking spring 8009-203

10. Cleaning, see Working Methods on page 78. Loosen the hydraulic hoses from the hydrostatic transmission.



Hydraulic hoses 8009-366

11. Loosen the steering cables (1) and remove the steering collar.
12. Remove the belt pulley (B). Move the lower part forwards, the upper part backwards, and force the pulley out.

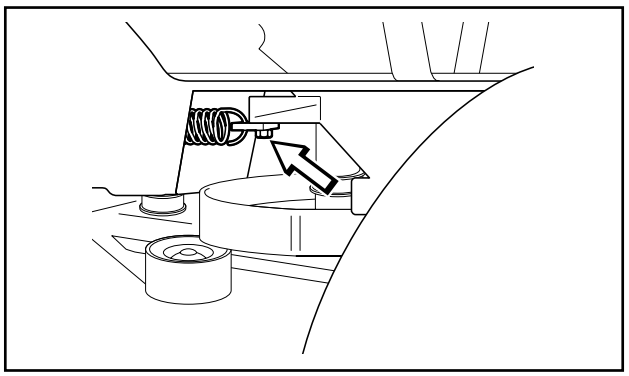


Steering cables and belt pulley 8009-367

WARNING!

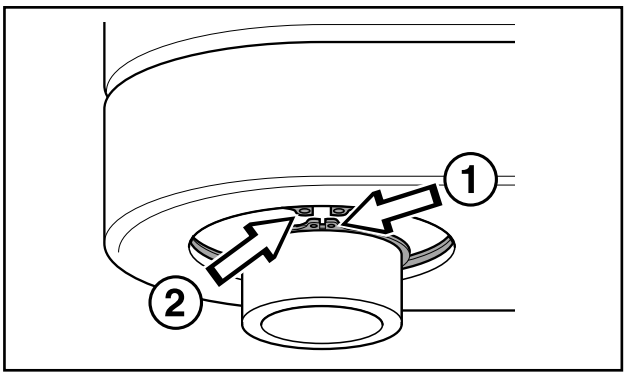
The centre spring is under extremely high tension and can cause injuries if it flies off. Wear protective eyewear and gloves when removing or fitting the spring.

13. Loosen the centre spring. This spring is under high tension and should be secured with the help of tool number 506 89 93-01 before the nut is removed.



Centre spring mount 6012-026

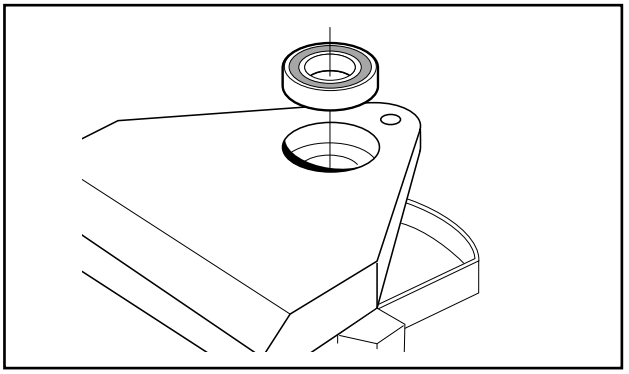
14. Remove the inner circlip (1) by the lower bearing (see illustration). The rear carriage is now loose and can be moved. Then loosen the outer circlip (2) and remove the bearings from below.



Lower bearings 6012-027

15. Remove the upper bearings from above; if they are stuck tap them from below.
16. Fit the new bearings and mount the articulated steering in the reverse order that it was removed.
17. After mounting, the cable tension should be checked, see Checking and Adjusting the Steering Cables on page 34.

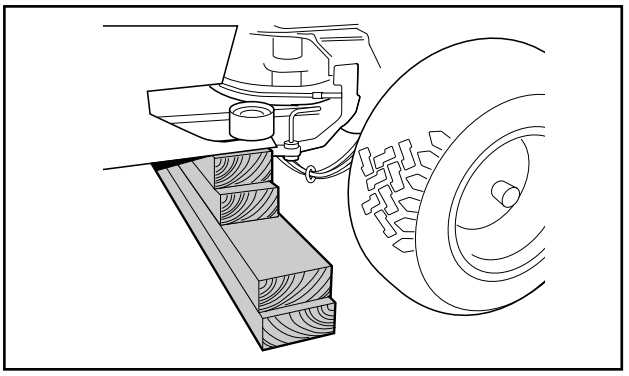
    Check that the controls and cables are properly adjusted, seeAdjusting the Brake on page 37, Adjusting of the Hydrostatic Transmission Cable on page 38, and Adjusting the Differential Lock on page 37.
18. Check the adjustment of the neutral position contact. See Microswitch: Neutral Position on page 76.
19. Bleed the hydraulic system of excess air. Top up the oil after test running.



Upper bearings 6012-028

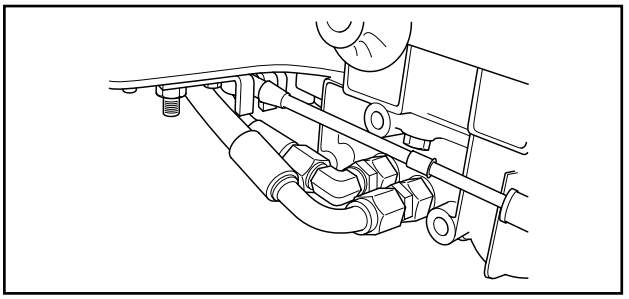
Removing the Pendulum Shaft

1. Jack up the rider in front of the rear frame.
2. Remove the transmission cover.
3. Loosen the transmission oil tank and move it out of the way in order to access the brake cables.



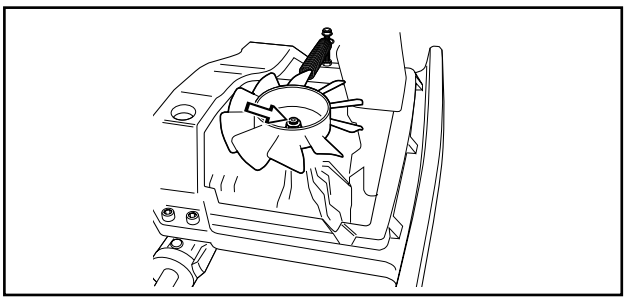
Jacking up 6012-029

4. Cleaning, see Working Methods on page 78. Loosen the hydraulic hoses from the hydrostatic transmission.



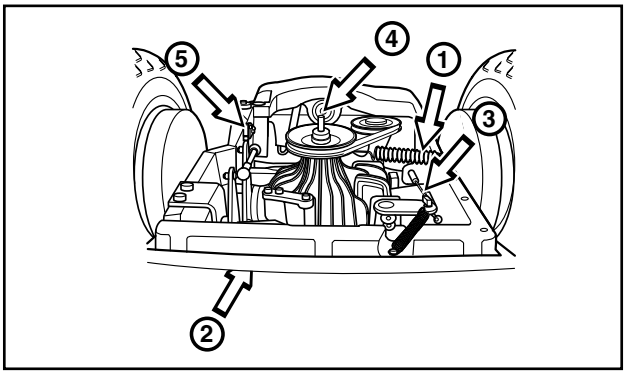
Hydraulic hoses 8009-366

5. Remove the fan; it is held in place by a nut and washer.



Cooling fan 8009-373

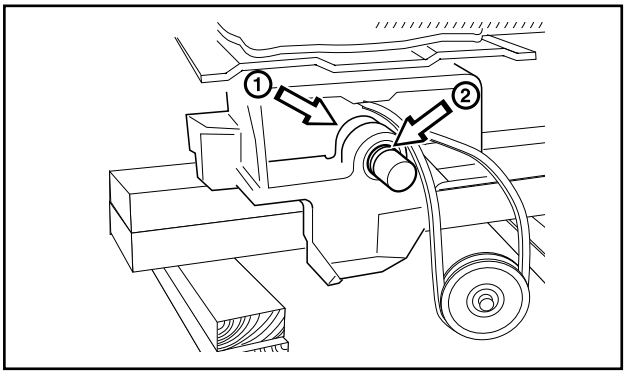
6. Loosen the idler's spring (1) and pull off the drive belt.
7. Remove the locking spring and loosen the throttle control's link joint (2) (on the underside), and remove the cable from the underside of the shaft.
8. Loosen the cable from the neutral position contact (5).
9. Loosen the brake cable's (3) spring and nuts and pull off the cable from the brake arm.
10. Loosen the cable to the differential lock, see Removing/Mounting the Hydrostatic Transmission on page 43.
11. Remove the circlip and washer from the pendulum shaft (4) and pull loose the rear frame.



Steps 1-5 8009-045

12. Remove the circlip and washer from the pendulum shaft's inner mount (1) and pull the shaft out to the rear. Use a sledgehammer or puller if needed.

If the dust cover (2) is damaged, it should be replaced with a new one.



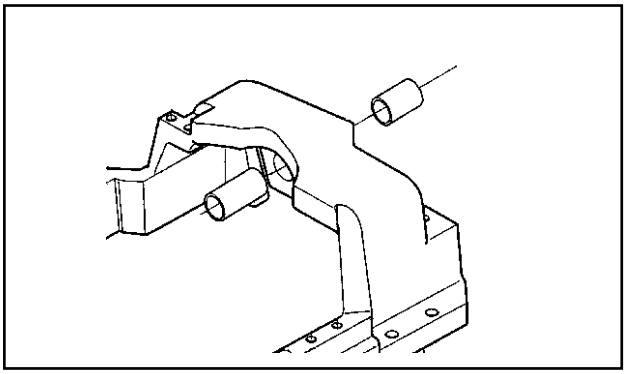
Pendulum shaft 6012-031

Replacing Bushings

Once the pendulum shaft is removed, replace the bushings in the rear frame.

Remove these with a punch, seeSpecial Tools on page 3.

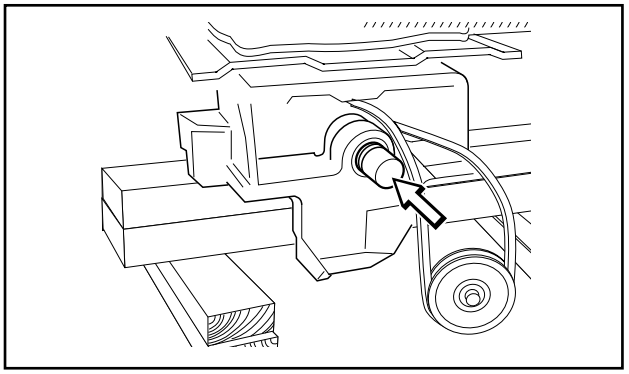
New bushings are fitted with the punch seeSpecial Tools on page 3 . Make sure that the bushing grooves are lined up horizontally. It is important that the outer bushing's outer edge is on the same level as the outer edge of the hole. The bushings should first be lubricated with a lithium-based lubricant.



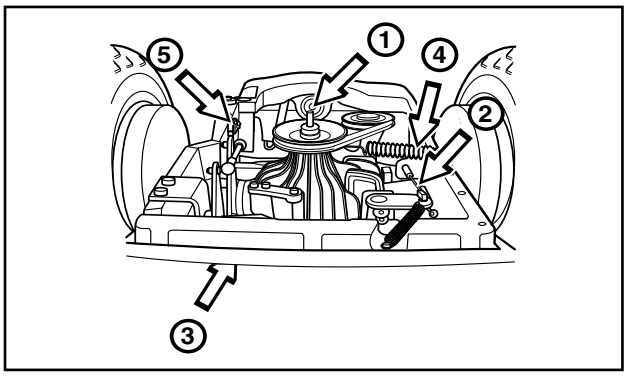
Replacing bushings 8009-044

Fitting the Pendulum Shaft

1. Lubricate half the shaft (the half that has not been lathed) and press it into the steering spindle from the rear (see illustration).
2. Fit the washer and circlip on the pendulum shaft by the inner mount.
3. Fit the dust cover (with thin lip towards the rear) approx. 2/3 of the way in on the shaft and lubricate the shaft on both sides of the dust cover.
4. Roll the rear frame forward and press it onto the pendulum shaft.
5. Fit the washer and circlip on the pendulum shaft (1).
6. Attach the cable to the differential lock, see Removing/Mounting the Hydrostatic Transmission on page 43.
7. Attach the brake cable (2) to the brake arm. Tighten the brake cable nuts.
8. Attach the throttle control's link joints (3). Attach the cable to the underside of the shaft.
9. Connect the hydraulic hoses to the hydrostatic transmission.
10. Force the drive belt on and attach the idler's spring (4).
11. Check that the controls and cables are properly adjusted, seeAdjusting the Brake on page 37, Adjusting of the Hydrostatic Transmission Cable on page 38, and Adjusting the Differential Lock on page 37.
12. Check the neutral position contact and adjust if necessary. See Microswitch: Neutral Position on page 76.
13. Fit the fan.
14. Bleed the hydraulic system of excess air. Top up the oil as needed after test running.
15. Fit the transmission cover.



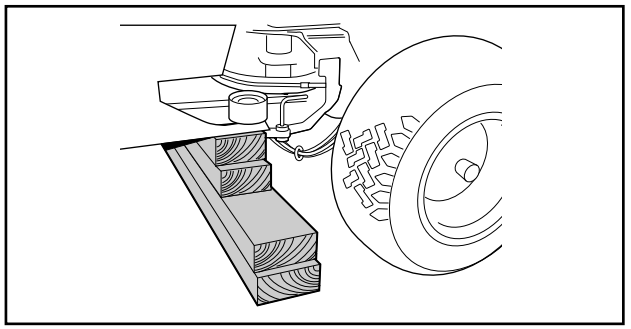
Fitting the pendulum shaft 6012-098



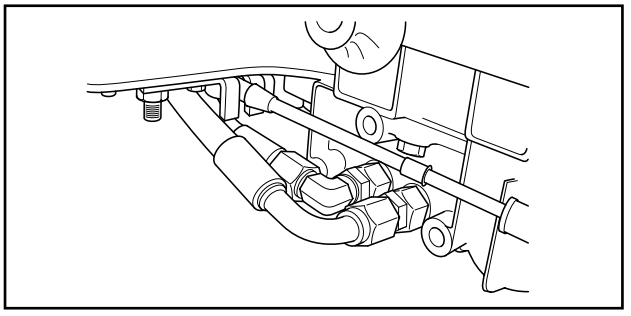
Steps 1-5 8009-046

Removing/Mounting the Hydrostatic Transmission

1. Jack up the machine in front of the rear frame and remove the rear wheels.
2. Remove the transmission cover.
3. Cleaning, see Working Methods on page 78. Loosen the hydraulic hoses from the hydrostatic transmission.

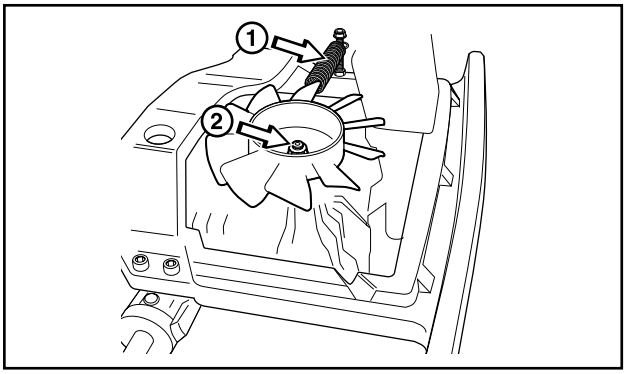


Jacking up 6012-035



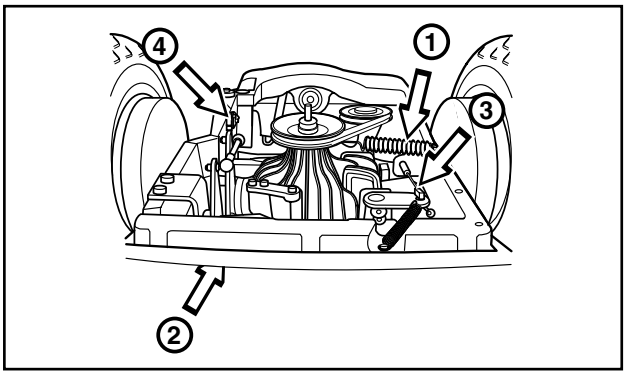
Hydraulic hoses 8009-366

4. Remove the nut (2), lift off the washer and fan from the ingoing shaft.
5. Remove the oil tank and hose from the hydrostatic transmission.
6. Remove the clutch control and its spring.



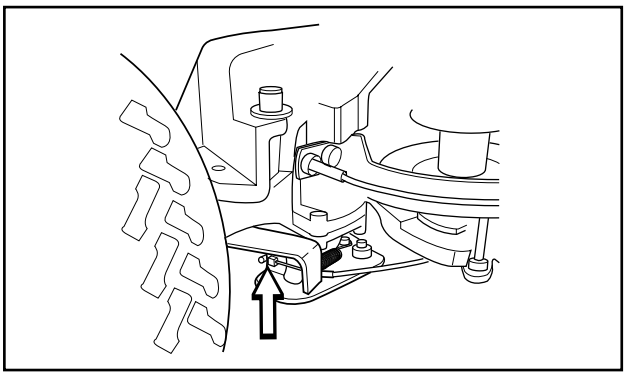
Spring and fan 6012-036

7. Loosen the idler's spring (1) and pull off the drive belt.
8. Loosen the throttle control's link joint (2) (on the underside) and remove the cable from the underside of the shaft.
9. Loosen the throttle control's link joint (on the top) from the hydrostatic transmission arm.
10. Loosen the brake cable's (3) spring and nuts. Remove the cable from the brake arm.

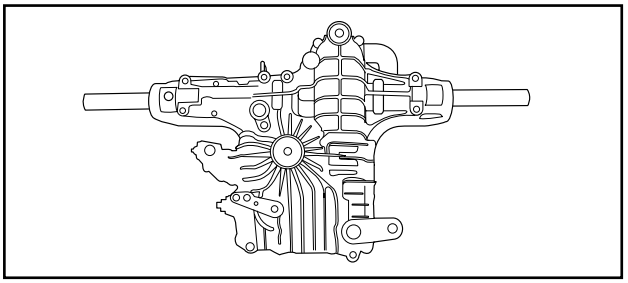


Steps 1-4 8009-047

11. Loosen the cable to the differential lock by loosening the lock nuts (at the top mount) and unhooking the cable from the rear mount.
12. Place a garage jack under the hydrostatic transmission and loosen its five fitting screws.
13. The rear fitting screw is placed on the front edge of the bumper.
14. Lower the garage jack and pull out the transmission.
15. Fit the transmission in the reverse order.
16. Check after fitting that the brake cable and throttle control are properly adjusted, seeAdjusting the Brake on page 37 and Adjusting of the Hydrostatic Transmission Cable on page 38. Also check the oil level, bleed the hydraulic system, and top up with oil as needed.
17. Check the neutral position contact and adjust if necessary. See Microswitch: Neutral Position on page 76.
18. Check and adjust the cable to the differential lock, see Adjusting the Differential Lock on page 37.
19. Bleed the hydraulic system of excess air. Top up the oil as needed after test running.



The cable's rear mount 8009-048



The K66 hydrostatic transmission 8009-032

Replacing the Hydrostatic Transmission Shaft Seals

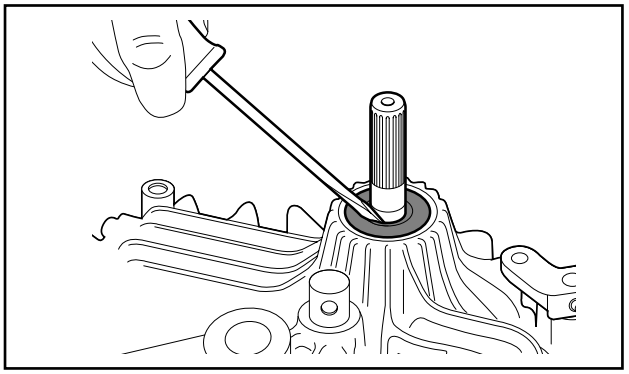
Seal Replacement, Ingoing Shaft

1. Remove the fan; it is held in place by a nut.
2. Remove the belt pulley from the ingoing shaft by pulling it outwards and then removing the circlip under the pulley.

IMPORTANT INFORMATION

The area around the seal must be absolutely clean! If the hydrostatic transmission's oil becomes contaminated by dirt it can shorten the life of the transmission.

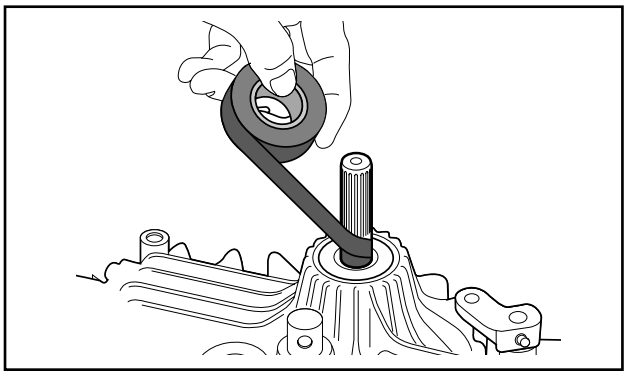
3. Clean the ingoing shaft and the area around the seal from all dirt and rust.
4. Insert a screwdriver between the seal and the shaft and pry off the seal from the shaft housing with a twisting motion.



Pry off the seal 6012-042

5. Wind the insulating tape around the ingoing shaft in order to protect the new seal from damage from splines and grooves.

   Begin winding from the bottom and continue upwards along the shaft until the entire shaft is wound in tape.
6. Lubricate the shaft and the inside of the new seal with lubricant so that the seal slips on smoothly.

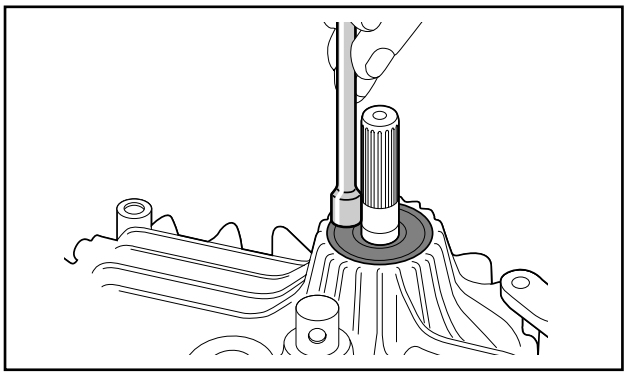


Winding the insulating tape 6012-043

7. Place the seal on the shaft with the smooth side up and press it carefully down.

   Use the thick end of a 1/4" extender to carefully tap the seal down until the top of the seal is even with the upper edge of the shaft housing.

   Move the extender in a circle around the seal so that it is pressed down evenly all around.
8. Remove the insulation tape from the shaft and fit the lower circlip and belt pulley with the hexagonal hub face up.



Carefully tap the seal in place. 6012-044

9. Fit the fan and the washer and the upper circlip.

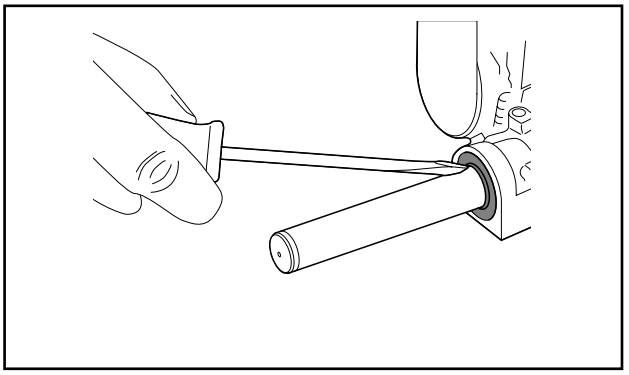
Seal Replacement, Outgoing Shafts

1. Remove the rear wheels.
2. Remove the circlips that hold the wheel hubs onto the shafts and remove the hubs by pulling them outwards. Do not lose the key that sits between the wheel/ hub and the shaft.
3. Remove spacing tube and washer.

IMPORTANT INFORMATION

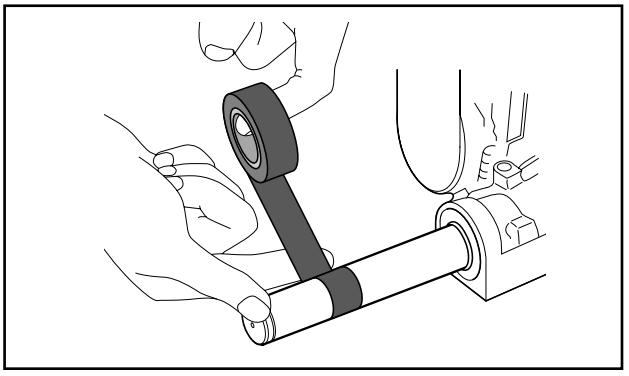
Dirt must not enter the transmission since this will shorten the transmission's life.

4. Clean the outgoing shaft and the area around the seal from all dirt and rust.
5. Insert a screwdriver between the seal and the shaft and pry off the seal from the shaft housing with a twisting motion.



Pry off the seal 6012-045

6. Wrap insulating tape around the outgoing shaft from the beginning of the key groove and outwards until even the threads of the circlip are covered with tape. This is done to protect the new seal from damage.
7. Lubricate the shaft and the inside of the new seal with lubricant so that the seal slips on smoothly.



Winding the insulating tape 6012-046

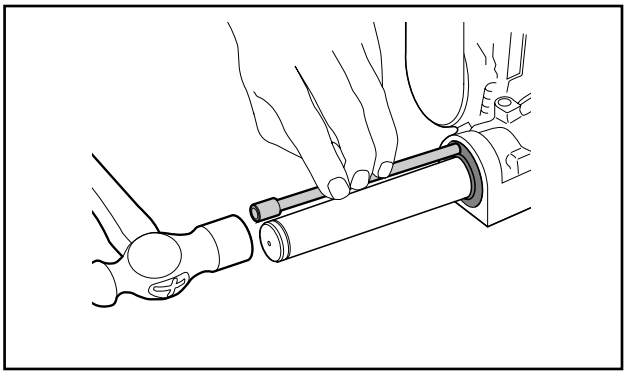
IMPORTANT INFORMATION

Make sure that the seal's metal spring strengthener is located on the side of the seal facing the transmission before the seal is fitted.

8. Place the seal on the shaft, with the metal spring facing inwards, and press it in carefully.

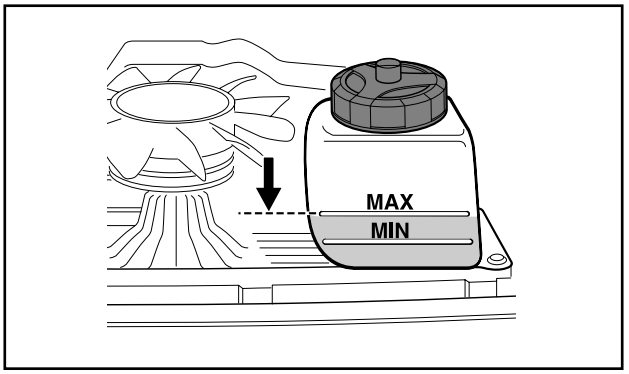
   Use the thin end of a 1/4" extender to carefully tap the seal down until it is seated in the bottom of the shaft housing. Tap only on the seal's steel casing.

   Move the extender in a circle around the seal so that it is pressed down evenly all around and is tight against the shaft.



Carefully tap the seal in place. 6012-047

9. Remove the insulation tape from the shaft and repeat the entire procedure as needed for the other shaft.
10. Replace the washer, spacing tube, key, hub, circlip, hubcap, and rear wheel.
11. Fill the transmission's oil tank with SAE 10W/30 engine oil until the level reaches the MAX mark.
12. Bleed the hydraulic system of excess air.
13. Run the rider and make sure that there are no oil leaks from the new shaft seals.
14. Check the oil level after test running and top up as needed.

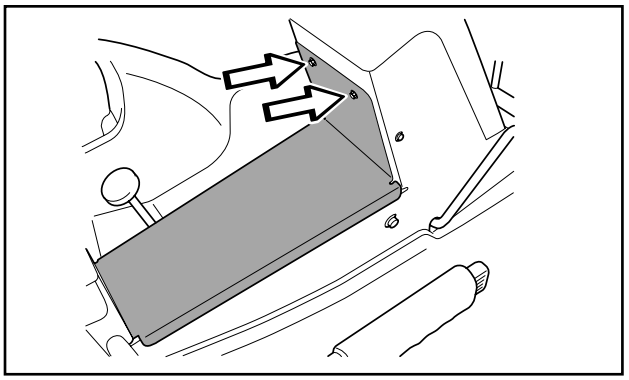


Transmission oil tank 6012-048

Replacing the Hydrostatic Transmission Cable

Removing the Hydrostatic Transmission Cable

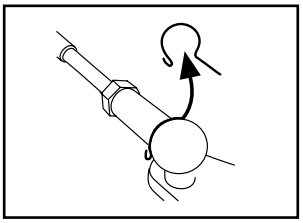
1. Remove the frame plate by loosening the screws (two on the power steering housing).



8009-340

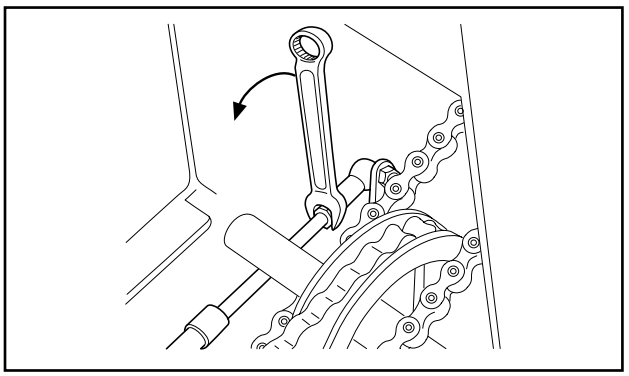
Frame plate

2. Loosen the hydrostatic transmission cable's forward lock nut a π turn and remove the locking spring.



8009-203

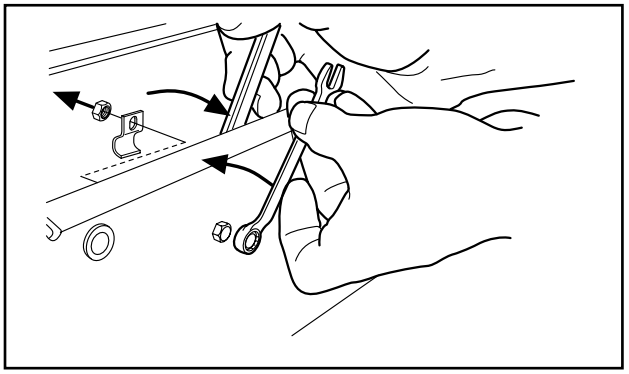
Locking spring



6019-010

Front lock nut

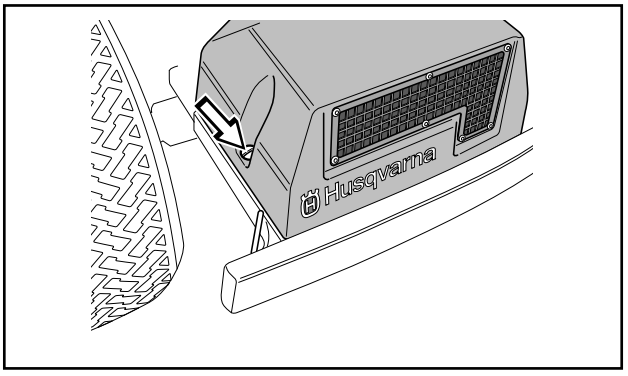
3. Remove the hydrostatic transmission cable's forward clamp, which is attached inside the centre bracket.



6019-015

Front clamp

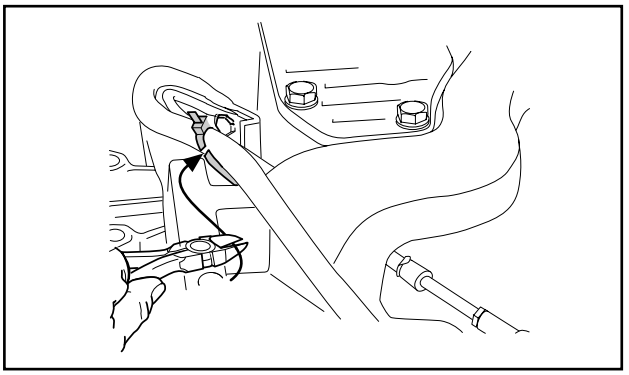
4. Remove the transmission cover.



6008-209

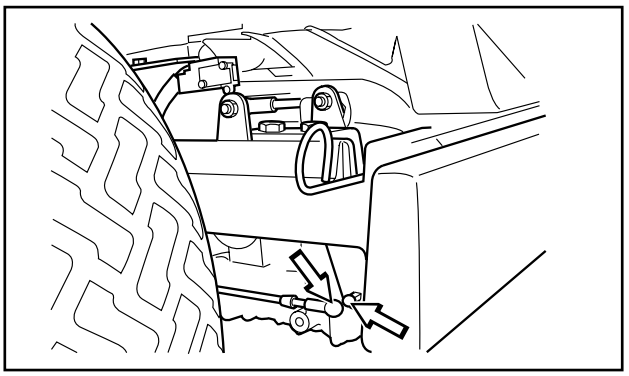
Transmission cover

5. Follow the hydrostatic transmission cable backwards towards the hydrostatic transmission and cut the plastic tie around the cable.



Cut the plastic tie 8009-204

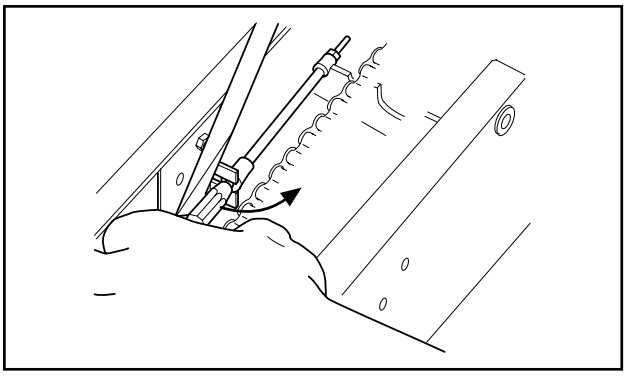
6. Remove the locking spring by the hydrostatic transmission cable's rear link joint. Loosen the clamp under the left drive shaft.



Rear link joint 8009-222

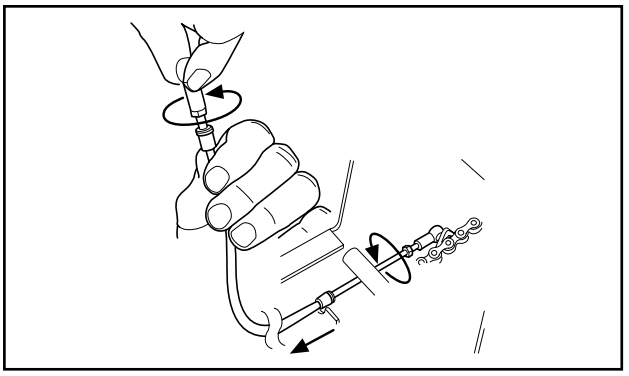
7. Lift off the link joint and pull out the cable.

8. Lift out the hydrostatic transmission cable and the accompanying link joint.



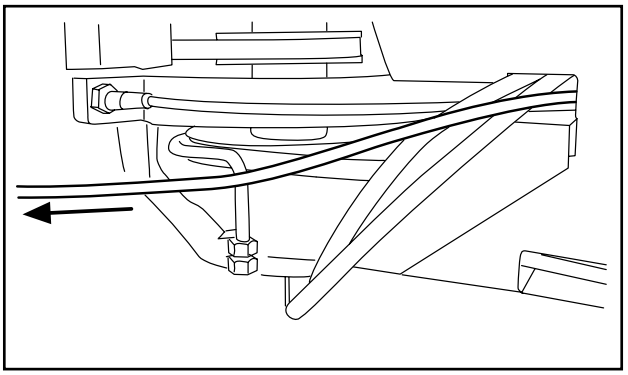
Lift off the link joint 6019-016

9. Unscrew both link joints from the hydrostatic transmission cable.



Remove the link joints. 6019-017

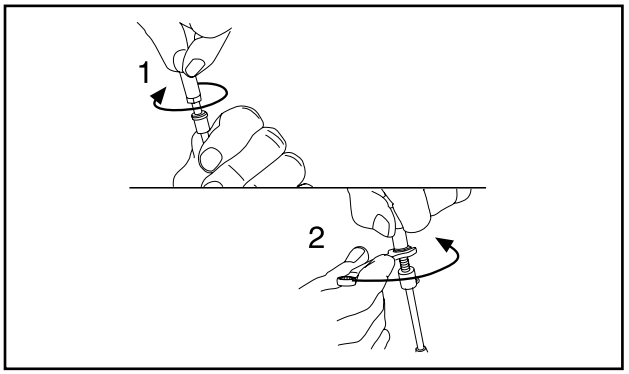
10. Remove the entire hydrostatic transmission cable.



Remove the hydrostatic transmission cable. 6019-009

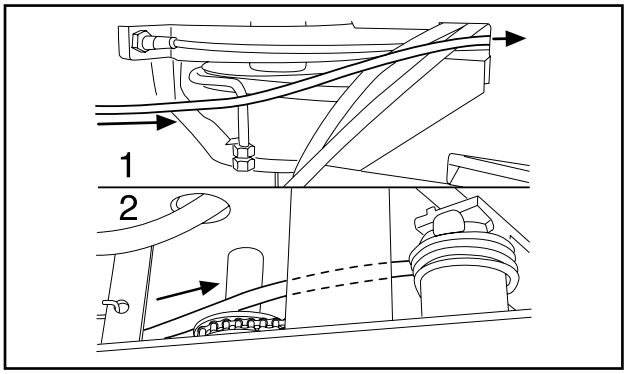
Fitting the Hydrostatic Transmission Cable

1. Screw in the front link joint on the new hydrostatic transmission cable and tighten the lock nut.



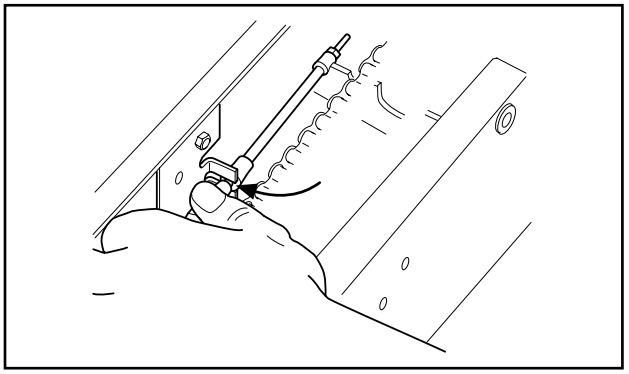
Front link joint 6019-018

2. Run the cable through the rider so that it follows the same path as the old cable did.



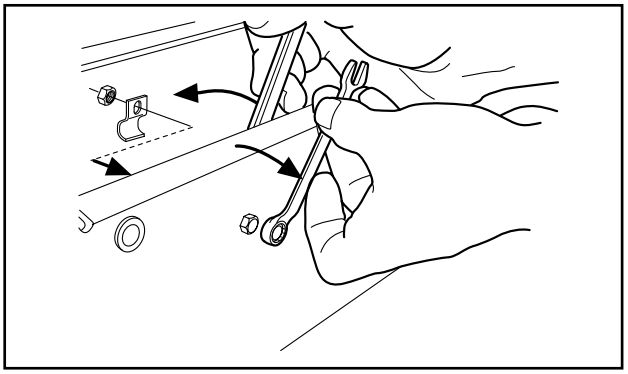
Threading the cable 6019-022

3. Press in the cable casing in the forward fastener in the centre bracket.



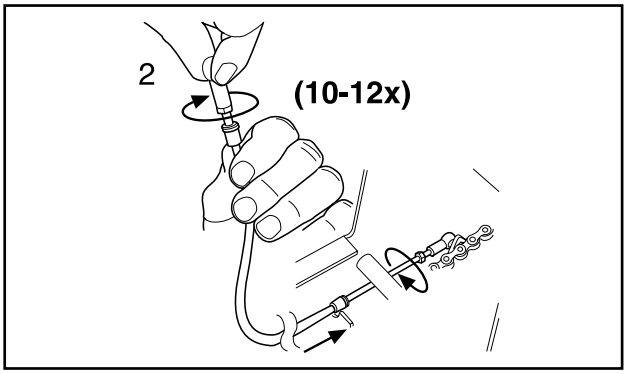
Forward mount in centre bracket 6019-023

4. Tighten the hydrostatic transmission cable clamp. Press the link joint onto its fastener and attach the locking spring.



Front clamp 6019-024

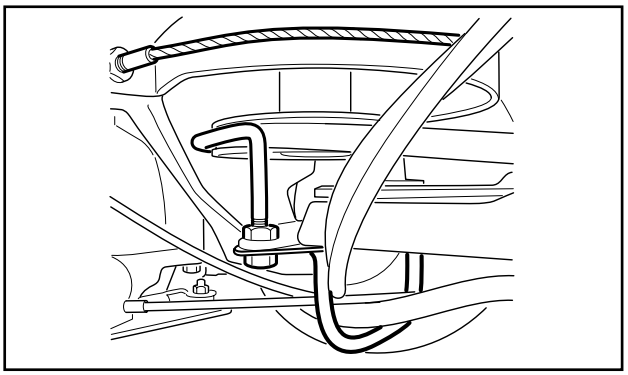
5. Attach the link joint to the rear part of the hydrostatic transmission cable. Screw 10-12 turns so that the link joint has the right length.



Rear link joint 6019-025

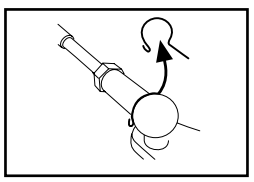
6. Run the hydrostatic transmission cable along with the other cables. Place the hydrostatic transmission cable in the cable holder under the articulated steering's bearing.

7. Place the hydrostatic transmission cable in place and screw it in place with the rear clamp under the left drive shaft.

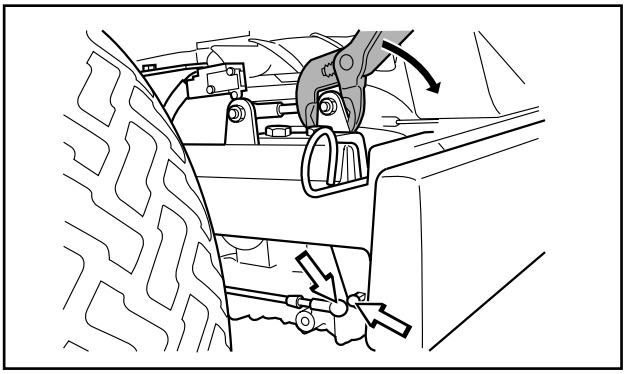


Cable holder 6019-364

8. Adjust the hydrostatic transmission cable as shown, see Adjusting of the Hydrostatic Transmission Cable on page 38.
9. Connect the rear link joint and attach the locking spring.



Locking spring 8009-203

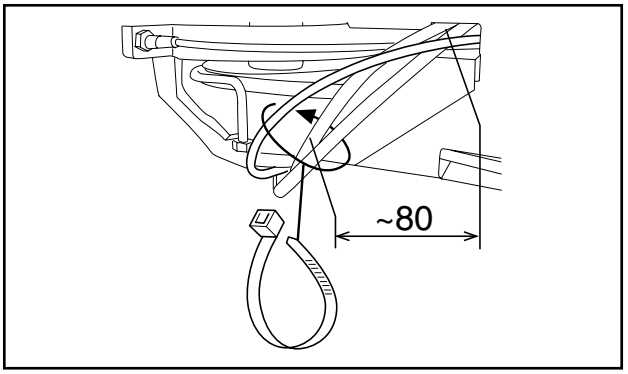


Adjusting the hydrostatic transmission cable 6020-002

10. Tighten the rear link joint's lock nut.

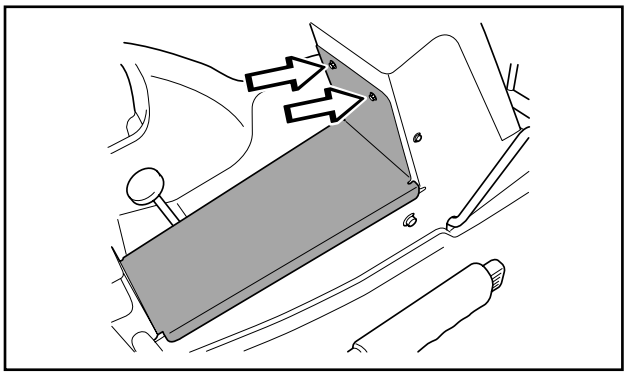
11. Check the settings of the neutral position contact. See Microswitch: Neutral Position on page 76.

12. Fasten the hydrostatic transmission cables with a plastic tie.



Fastening with a plastic tie 6019-019

13. Screw on the frame plate, two screws.



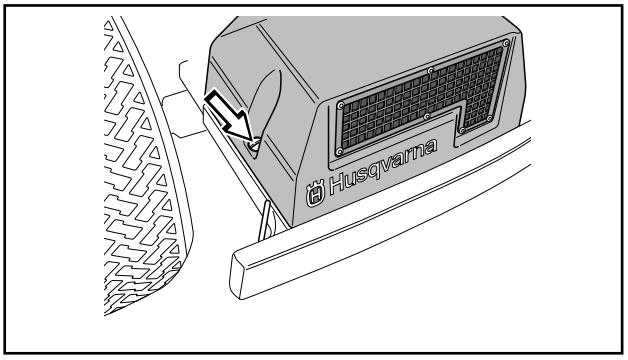
Frame plate 8009-340

Bleeding the Hydrostatic and Hydraulic Systems

1. Remove the transmission cover.

IMPORTANT INFORMATION

Ensure cleanliness.
Used oil may not be reused.
See Hydraulic Hygiene on page 77.

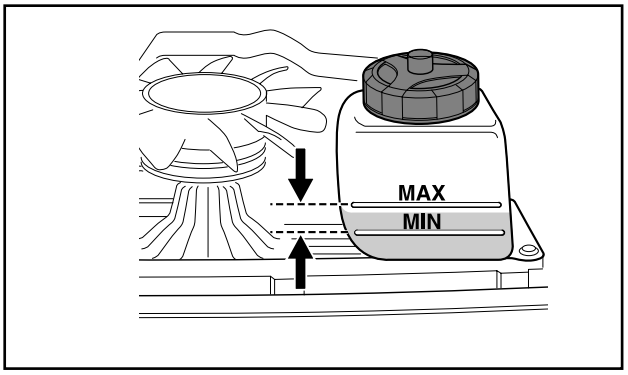


Transmission cover 6008-209

2. Check the oil level in the hydrostatic transmission. The oil tank may be, in this position, over filled.

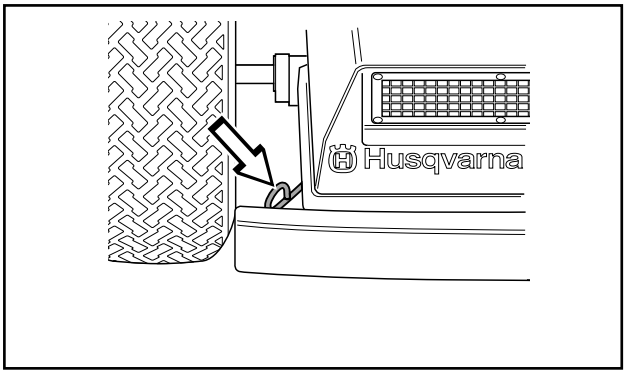
IMPORTANT INFORMATION

The tank must never be run empty while work is underway.
Risk for air penetration into the system

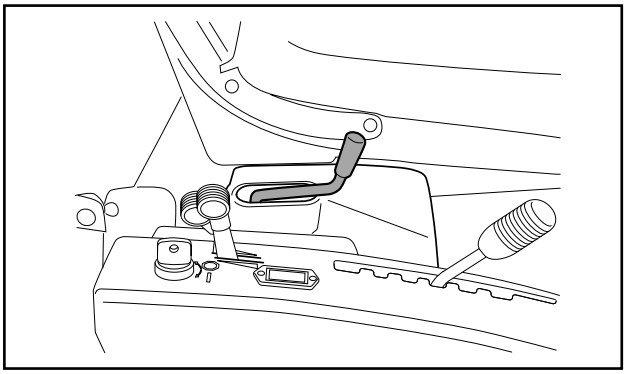


Transmission oil tank 6012-057

3. Constantly check the oil level in the hydrostatic transmission and fill as needed.
4. Start the engine and set the accelerator to idle.
5. Repeatedly engage and disengage the clutch while alternately depressing the forward and reverse pedals.
6. When the rider begins to move, the throttle should be increased to high engine speed.
7. Repeat quick starts and emergency stops until the transmission responds properly.
8. Turn the steering wheel repeatedly from one extreme position to the other until the steering works without jerks or stops.
9. Run the hydraulic cutting unit between its end positions repeatedly. Hold the lever still for 0.5-1 second to ensure that the hydraulic cylinder reaches its end position.
10. Test drive the machine.
11. Finally, check the hydrostatic transmission oil level and fill or drain the oil tank as needed.
12. Replace the transmission cover.



Clutch control 6012-058



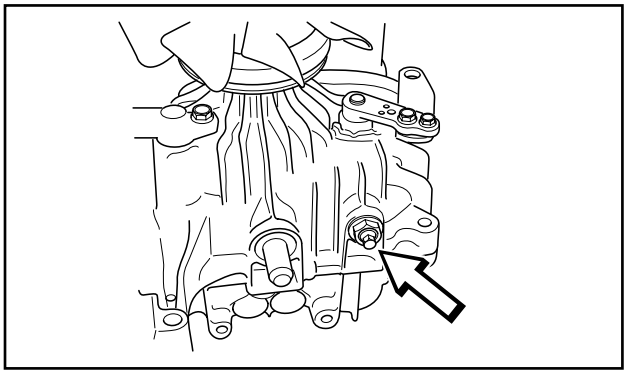
Hydraulic cutting unit lift 8009-326

Adjusting the Transmission's Neutral Position

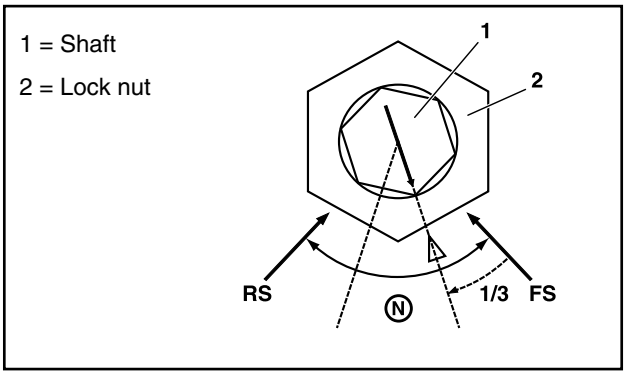
1. Bleed the hydrostatic transmission's oil system and hydraulic system.
2. Lift the rear of the rider so that the wheels spin freely and place jack stands under the machine.
3. The neutral position is adjusted by turning the hexagonal shaft on the transmission (see illustration).
4. Start the engine and turn the throttle to full.
5. Loosen the lock nut on the hexagonal shaft and turn the shaft clockwise until the drive shafts begin to rotate backwards.
6. Make a mark on the top of the shaft.
7. Turn the shaft slowly counter-clockwise until the drive shafts stop rotating backwards and make a mark on the transmission housing (RS).
8. Turn the shaft slowly counter-clockwise until the drive shafts begin rotating forwards.
9. Turn the shaft slowly clockwise until the drive shafts stop rotating forwards and make a mark on the transmission housing (FS).
10. Turn the shaft clockwise 1/3 of the distance between the two marked stop points.
11. Hold the shaft still (N=8) and tighten the lock nut (N=17).
12. Make sure that the drive shafts do not rotate in the neutral position by slowly moving the manoeuvre arm to the neutral position from the forwards and reverse positions.

If the drive shafts do not rotate backwards despite the fact that the hexagonal shaft has rotated a full revolution, the neutral position is to be adjusted in the following manner:

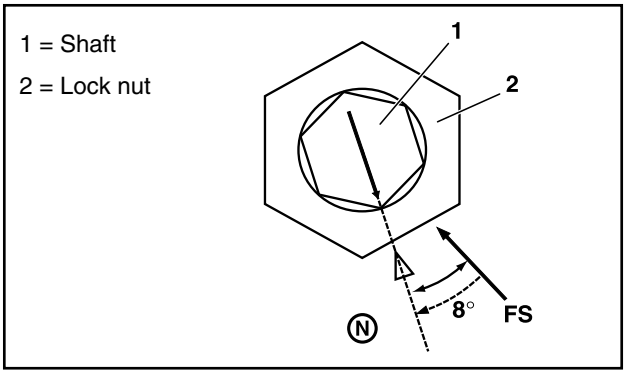
13. Turn the shaft slowly counter-clockwise until the drive shafts begin rotating forwards.
14. Turn the shaft slowly clockwise until the drive shafts stop rotating forwards and make a mark on the transmission housing (FS) and shaft.
15. Turn the shaft clockwise 8° from the mark on the transmission housing.
16. Hold the shaft still (N=8) and tighten the lock nut (N=17).



Adjusting the neutral position 8009-224



Adjustment alternative 1 6012-061



Adjustment alternative 2 6012-062

Transmission Maintenance

Oil Change

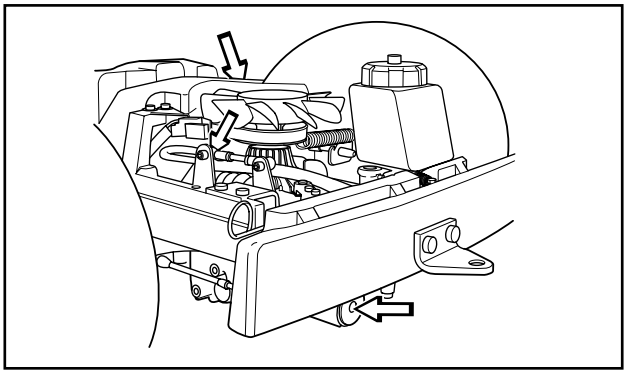
Most homeowners with gardens do not have the tools or experience needed to change the transmission oil. The transmission probably has a longer life than the rider itself, which means that being able to change the oil is not of major concern to the average consumer. The lifespan of the transmission increases, however, if the oil is changed.

If the rider is used commercially, we recommend changing the oil first after 50 hours of use and then every 500 hours or at least once per year.

IMPORTANT INFORMATION

Used oil is an environmental hazard and must not be disposed of on the ground or in nature; it should always be disposed of at a workshop or appropriate disposal location.

Avoid skin contact; wash with soap and water in case of spills.



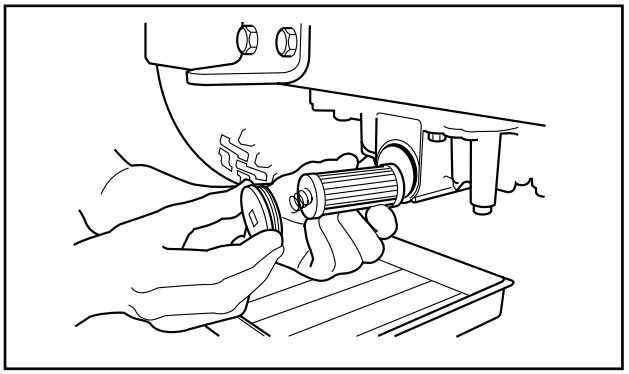
Filling and draining hole 8009-031

The K66 hydrostatic transmission

The transmission holds 2.5 litres (2.6 US qt). (SAE 10W/30 engine oil, class CD–CF).

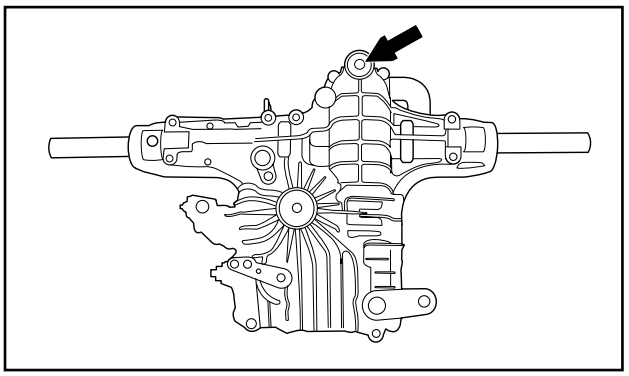
The hydrostatic transmission filter and hydraulic filter should be changed when oil changes are performed.

- Remove the drain plug from the drainage hole.
- Loosen the hose to the transmission oil tank from the hydrostatic transmission.
- Remove the hexagonal plug from the fill hole at the front of the top of the transmission.



Drainage hole with filter 6020-003

- Replace the drain plug. Fill with oil through the fill hole. Replace the hose and fill the oil tank.
  Bleed the transmission and the hydraulic system of excess air.
- Test run the machine and fill with oil to the proper level in the oil tank.

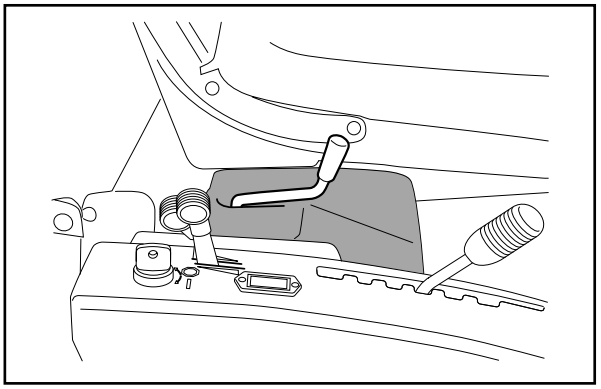


Fill hole 8009-049

Adjusting the Lever Housing

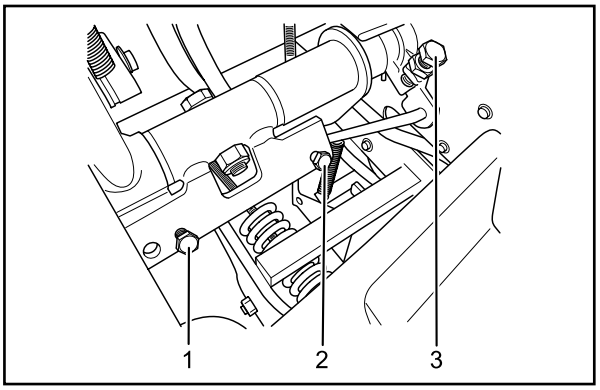
The machine and cutting unit shall be on a flat surface.

1. Remove the plastic cover over the hydraulic valve block.



Plastic cover 8009-374

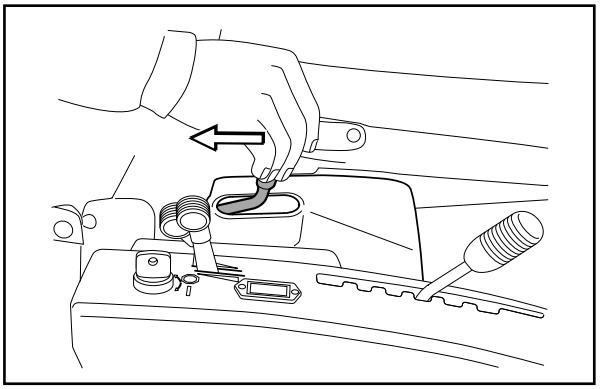
2. Set the adjustment screws (1 and 2) on the drive disc so that the ends of the adjustment screws are even with the outer edges of their lock nuts.
3. If the dome nut for the screw for the chain segment or the microswitch has been removed, make sure that the microswitch is not screwed into place so that it is damaged when the unit is lifted. It can be loosened if needed, and the engine started with bypassed safety circuitry for the next step.



Adjustment screws 1, 2, 3 8009-380

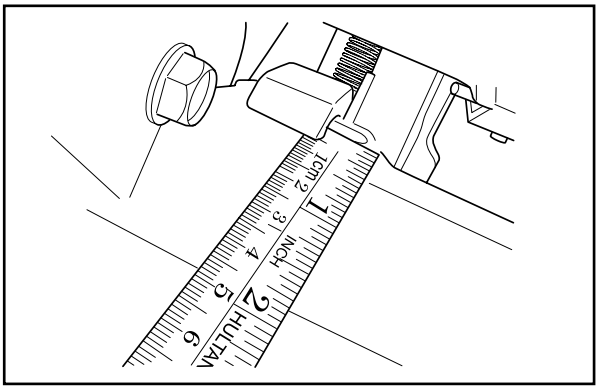
4. Lift the cutting unit with the hydraulic lifting lever.

   Hold the lever still for 0.5-1 second to ensure that the hydraulic cylinder reaches its end position.



Hydraulic lift lever 8009-323

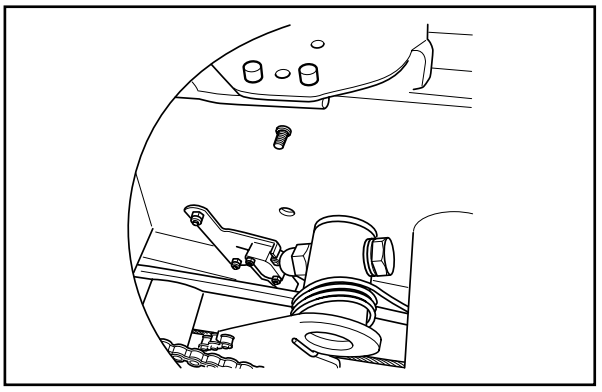
5. Make sure that the catch to the hydraulic lift lever has about 2 mm (1/16") of play in relation to its grip on the frame tubing when the lever is in its upper position. Adjust as needed with adjustment screw (1) or (2) on the drive disc.



Play 2 mm 8009-382

6. Check that the dome nut for the screw for the chain segment is in position for maximum effect on the microswitch. Adjust as needed with the adjustment screws (1+2) on the drive disc. Repeat step 5 if needed.

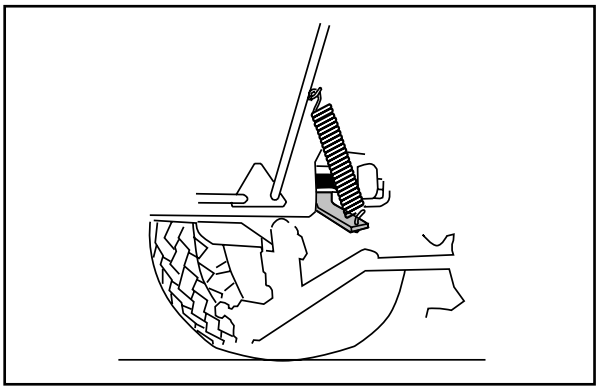
7. Adjust the microswitch so that it is definitely activated by the dome nut, but allows extra motion (it must not bottom out).



Microswitch 8009-381

8. Check that the spring places the blade brake against the belt pulley.

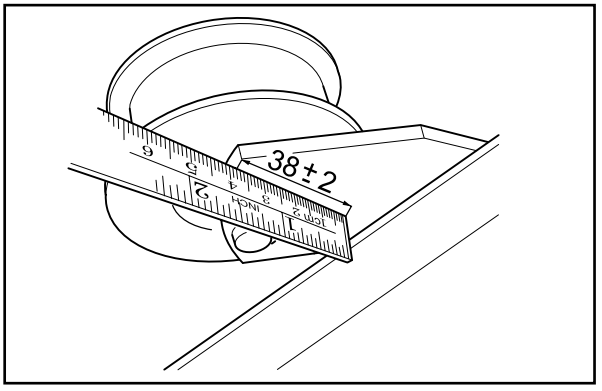
9. Raise the cutting unit completely by pulling the mechanical lifting lever.



Blade brake 8009-383

10. Adjust with the adjustment screw (3) against the cylindrical pin so that a distance of 38±2 mm is maintained between the frame structure and the outermost corner of the belt adjuster arm, see illustration. This measurement applies to new belts and as a starting point for used belts.

11. Lower the cutting unit completely to the ground.

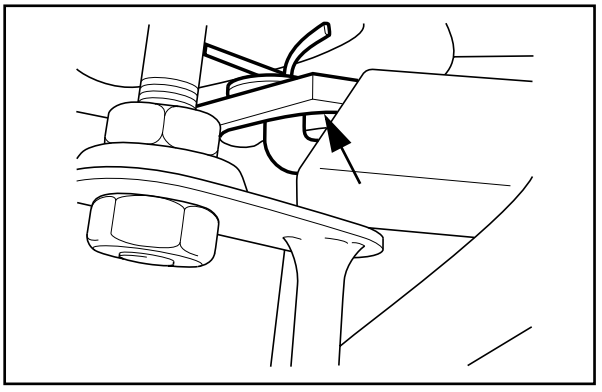


Basic measurements, belt adjuster 8009-401

12. Check that the connecting rod has play along the oblong groove in the belt adjuster. Adjust with the adjustment screw (3) against the cylindrical pin as needed (used belt).

13. Check that all lock nuts are tight.

14. Replace the plastic cover over the hydraulic valve block.



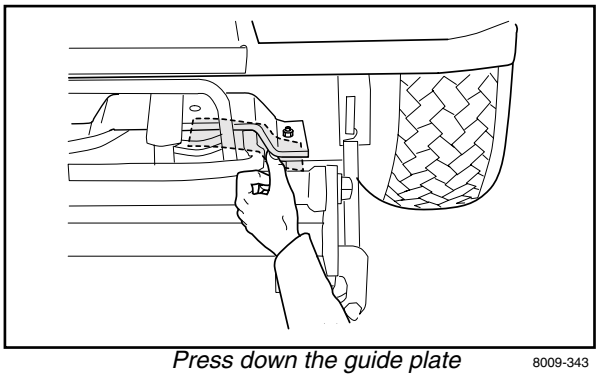
Connecting rod in the belt adjuster 8009-384

Removing the Belt

Starting position for removing the belt:

- No unit is attached to the machine.
- The belt's forward part is hung around the handle of the safety catch.

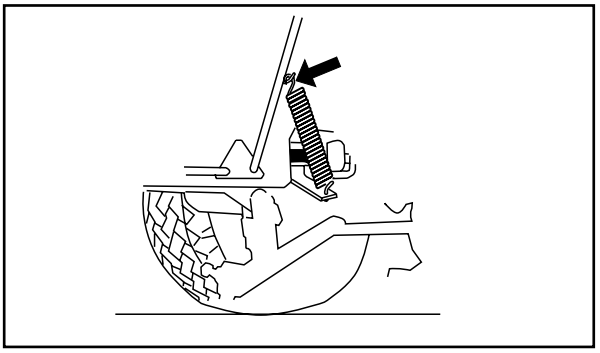
Detaching the forward part of the belt from the forward pulley is described in points 5-8 under Removing the Cutting Unit on page 65.



Press down the guide plate 8009-343

The entire belt is removed according to the following only when a snow blade is to be attached to the machine.

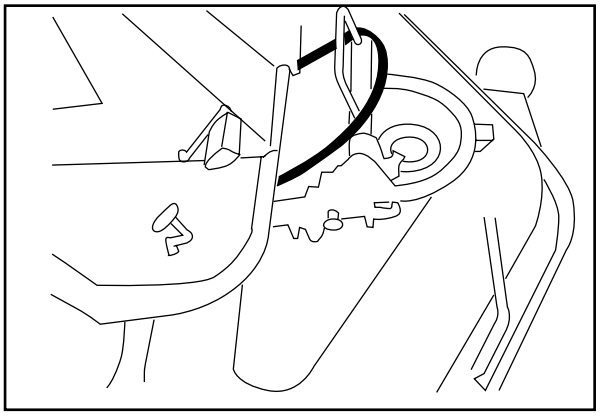
1. Press the guide plate under the anti-scalp roller.
2. Unhook the spring to the blade brake.
3. Remove the belt from the centre pulley and remove the belt.



Blade brake spring 8009-005

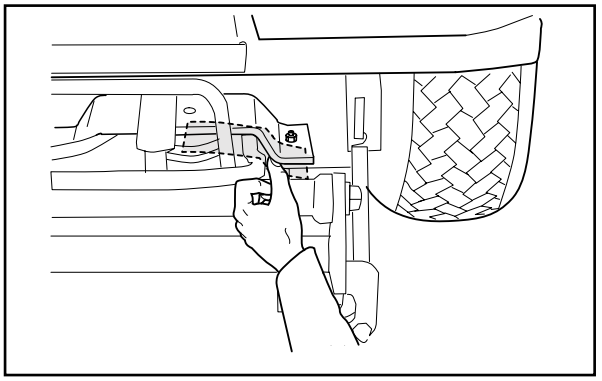
Attaching the Belt

1. Place the forward part of the belt in place and hang the forward part around the handle of the safety catch.
2. Put the belt on the centre pulley and against the anti-scalp roller.



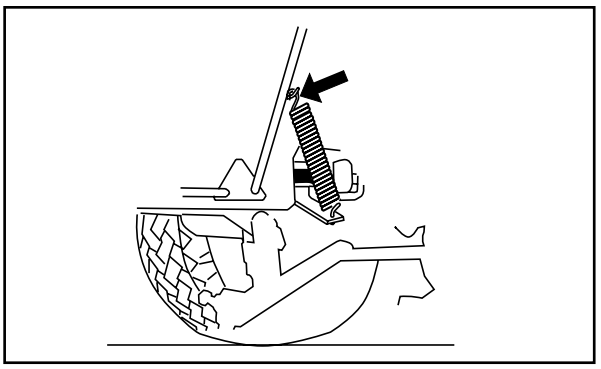
Forward part of the belt 8009-009

3. Press the guide plate down under the anti-scalp roller and push the belt into place.



Press down the guide plate 8009-343

4. Hook the spring to the blade brake.



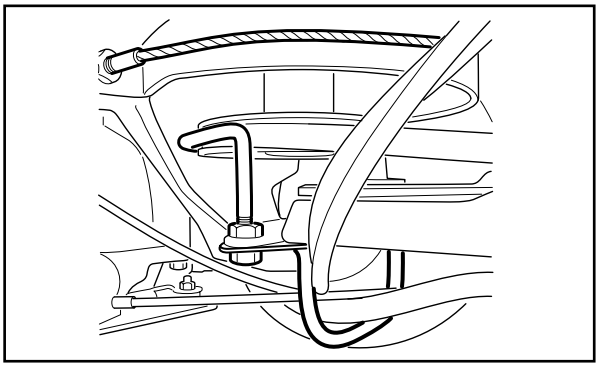
Blade brake spring

8009-005

Attaching the belt to the forward pulley is described in points 6-8 under Attaching the Cutting Unit, page 61.

Replacing the Centre Belt

1. Detach the front belt from the centre pulley as described above.
2. Remove the centre belt and mount a new belt.



Belt guide

8009-264

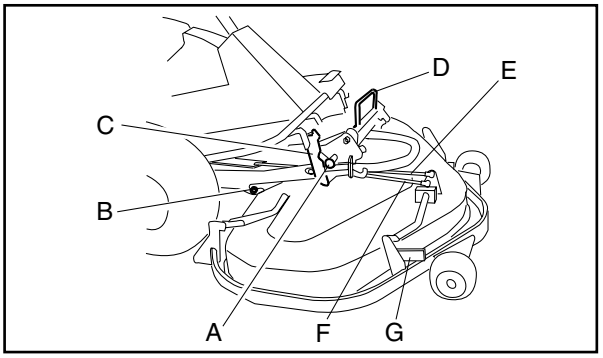
3. Adjust the belt guide against the lower belt in the belt pulley as needed.
4. Check and adjust the belt adjuster, se illustration Basic measurements, belt adjuster on page 57. This is especially important when fitting a new belt, since stretching of the old belt may have been compensated for by changing the setting of the belt adjuster.
5. Replace the front belt as described above.

The Cutting Unit Components

In the instructions below, a cutting unit with a rear ejector is shown, but the same principles apply to all cutting units unless otherwise stated.

The components mentioned are:

- A. Catch.
- B. Interior plug
- C. Safety catch
- D. Handle
- E. Height adjustment handle
- F. Parallelism handle
- G. Lowest height adjustment stop



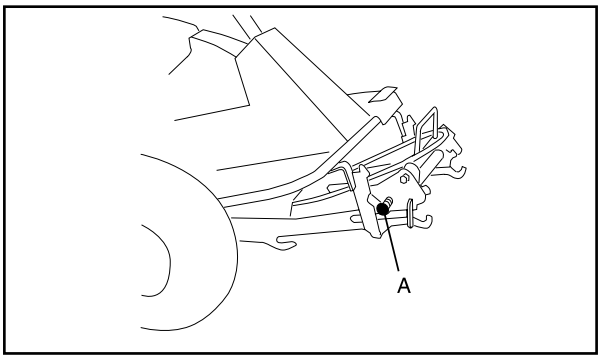
The cutting unit components 8009-188

Attaching the Cutting Unit

WARNING!
Exercise caution.
Risk of crush injuries

Starting point for attaching the cutting unit:

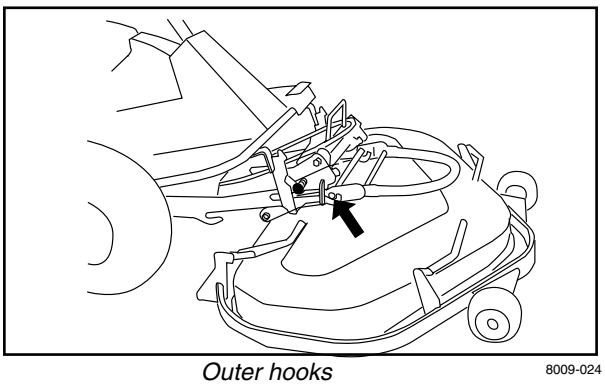
- Place the machine on a flat surface.
- Lock the brake by pressing down the pedal and locking with the push-button.
- Equipment hydraulics in the lower position.
- Equipment frame in lowered position.
- Equipment frame locked with safety catch and locks (A) in the inset position.
- Unit frame mounted on the cutting unit, see Removing the Unit Frame on page 67.



8009-022

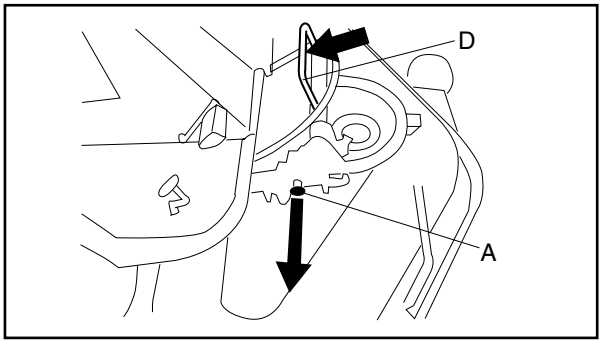
Lock A inset position

1. Attach the unit to the equipment frame's outer hooks.



Outer hooks 8009-024

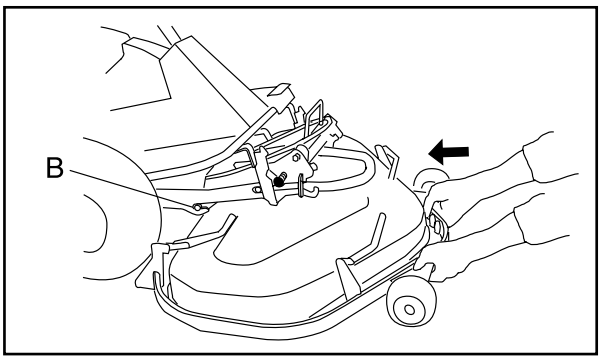
2. Pull out the catch (A) and loosen the safety catch by pushing its handle (D) back.
3. Raise the unit by pulling up the mechanical lifting lever, located on the driver's right side.



Lock and safety catch

8009-167

4. Push the unit in so that the interior plugs (B) touch the bottom of the equipment frame's grooves.



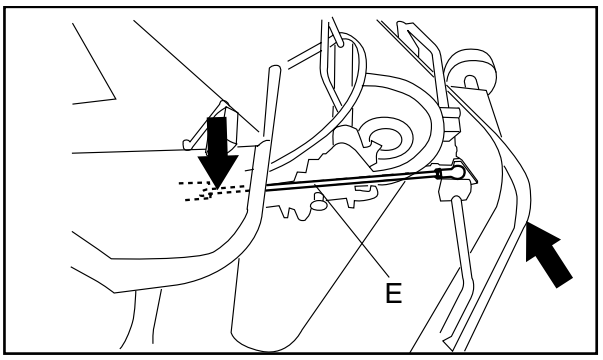
Inner pins 8009-018

5. Hook in the height adjustment handle's (E) rear fastener:

   Move the cutting height lever to the forward position. Loosen the strut by pulling the frame's forward section up or down.

WARNING!

Watch your fingers. Do not turn the blades or the belt.

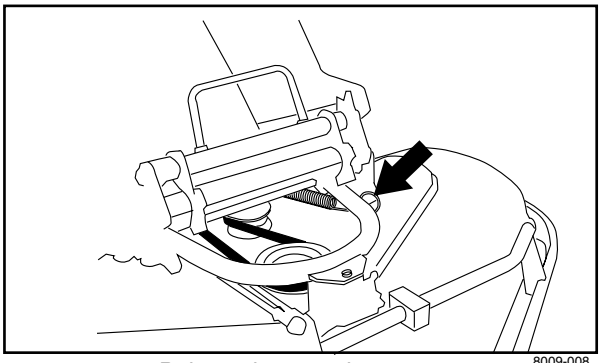


Height adjustment handle 8009-168

6. Loosen the belt tensioner spring and attach the belt to the front belt pulley. A new belt is short. Turn the forward pulley as needed with a spanner on the central bolt.
7. Re-attach the belt tensioner spring.

IMPORTANT INFORMATION

Check that the belt is around the idler.

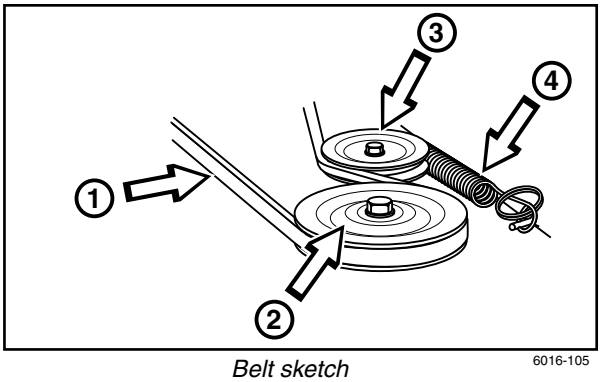


Belt tensioner spring 8009-008

Belt Sketch

- 1. Drive belt
- 2. Forward pulley
- 3. Belt idler
- 4. Belt tensioner spring

8. Attach the nose cover.



Belt sketch 6016-105

Adjusting the Unit's Parallelism and Cutting Height

When a new cutting unit is attached, you need to adjust the parallelism and cutting height.

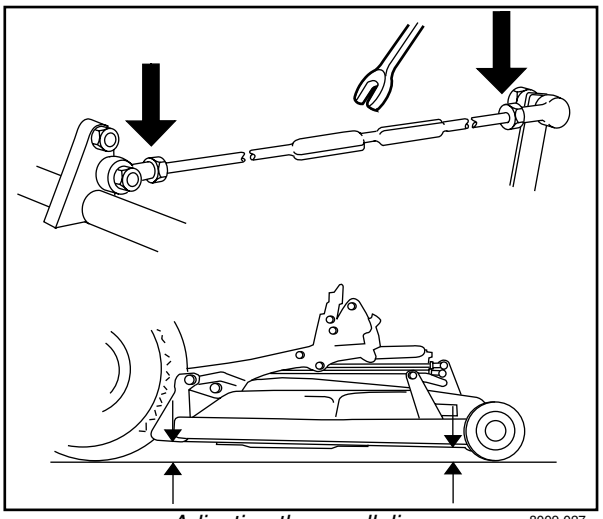
Starting position:

1. Check the air pressure in the tyres 60 kPa/0.6 bar/8.5 PSI.
2. The cutting unit shall be lowered onto a flat surface.
3. The height adjustment lever shall be set to the lowest cutting height.

Parallelism

Always start by adjusting the parallelism.

1. Loosen the two nuts on the strut.
2. Measure the distance between the ground and the front and back edges of the unit's cover.
3. Place a spanner over the bevel in the middle of the strut and tighten so that the cutting unit's rear edge is 2-4 mm /1/8" higher than its front edge.
4. Check the measurement.
5. Then tighten the two nuts on the strut.

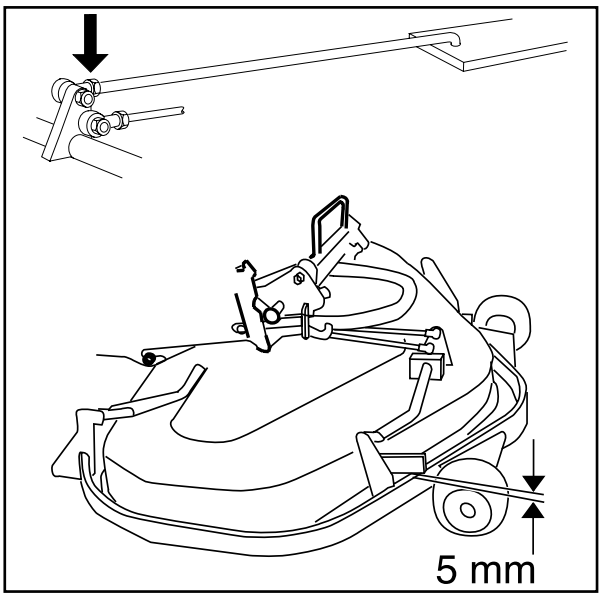


Adjusting the parallelism

8009-027
8009-026

Cutting Height

1. Loosen the nut on the height adjustment strut.
2. Adjust so that the distance between the stop for the lowest height setting and the protective frame is 5 mm/3/16".
3. Tighten the nut.
4. Recheck that the parallelism has not changed. If so, the parallelism must be readjusted.
5. Check and adjust if necessary the cutting unit's ground pressure as described in the next section.
6. Attach the nose cover.



Adjusting the cutting height

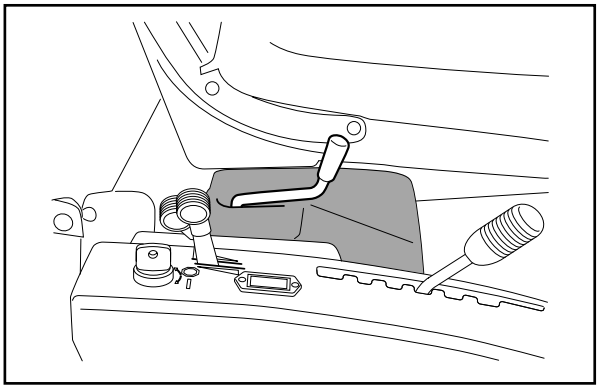
8009-028
8009-029

IMPORTANT INFORMATION

When changing the cutting unit, you must readjust the parallelism and cutting height.

Adjusting the Cutting Height Range

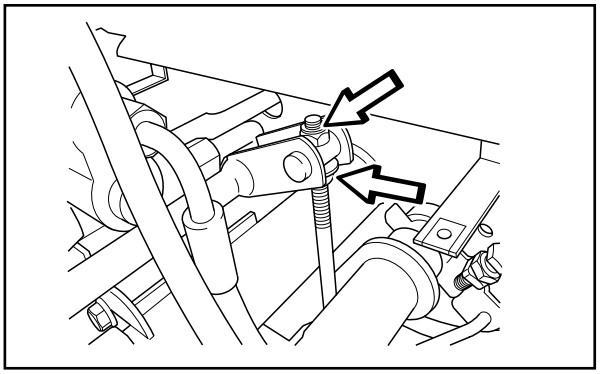
1. Remove the plastic cover over the hydraulic valve block.



Plastic cover 8009-374

2. Raise or lower the entire cutting range by screwing the nuts up or down.

If the highest cutting height is raised by 5 mm/ 3/16", the other fixed cutting heights will also be raised by the same amount.



Adjusting the cutting height range 8009-368

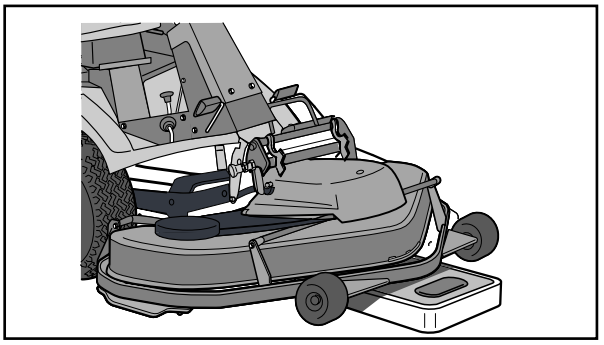
Checking and Adjusting the Ground Pressure

In order to achieve the best mowing result the cutting unit should follow the ground without touching it too heavily. Pressure is adjusted using a screw and spring on each side of the rider.

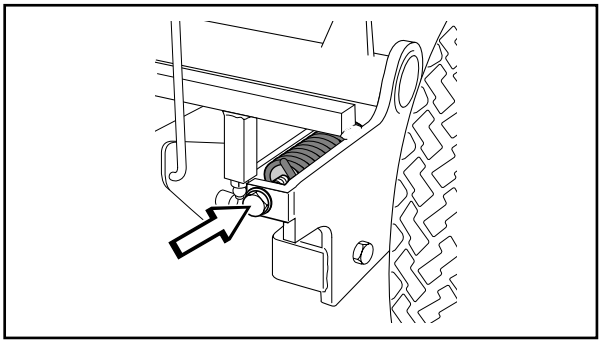
Adjust the cutting unit's ground pressure in the following manner:

1. Place a set of bathroom scales under the cutting unit's frame (on the front edge) so that the unit rests on the scales. If necessary a block can be placed between the frame and the scales so that the anti-scalp rollers do not support any weight.
2. Adjust the cutting unit's ground pressure by screwing the adjuster screws, which are located behind the front wheels on both sides, in or out.

   The ground pressure should be between 12 and 15 kg /26.5-33 lb and the springs evenly tensioned.



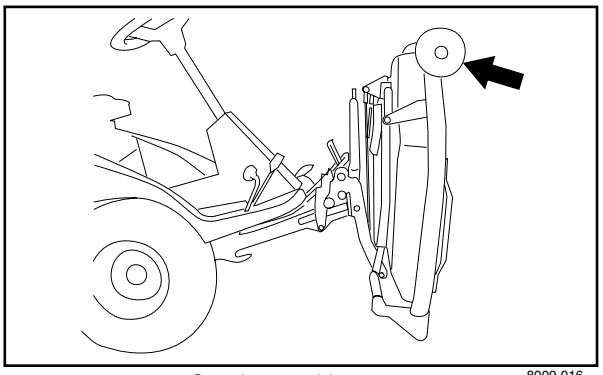
Checking the ground pressure 8009-369



Adjusting the ground pressure 6008-222

The Cutting Unit's Service Position

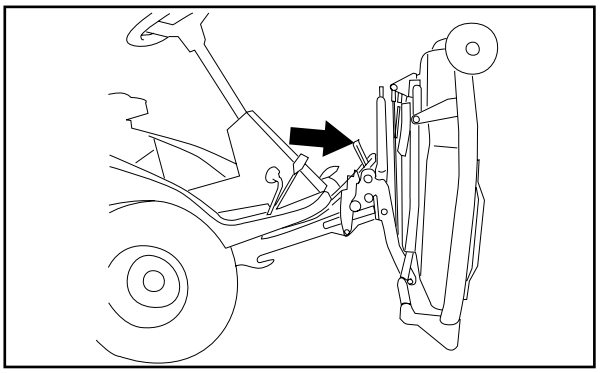
In order to provide good accessibility for cleaning, repair and servicing, the unit can be set in the service position. The service position means that the unit is raised and locked in the vertical position.



Service position

Placing in the Service Position

1. Place the unit so that it hangs on the outer hooks by carrying out steps 1-11 under Removing the Cutting Unit on page 65.
2. Take hold of the unit's front edge and lift it to a vertical position. The unit locks automatically in the vertical position.



Release handle

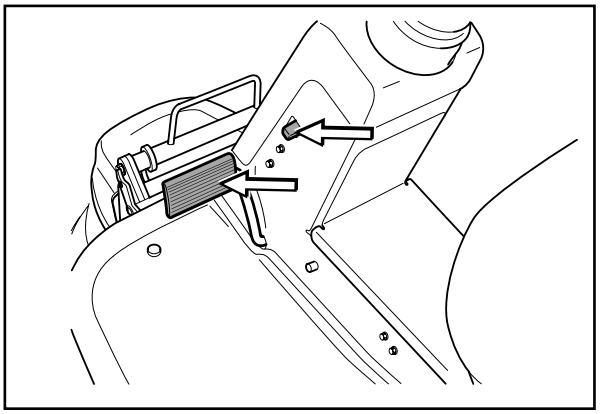
Releasing the Service Position

1. Ease up the unit's edge (tilt it back), move the handle forward and slowly lower the unit to the horizontal position.
2. Slide the unit into its operational position by carrying out points 4-8 under Attaching the Cutting Unit on page 60.

Removing the Cutting Unit

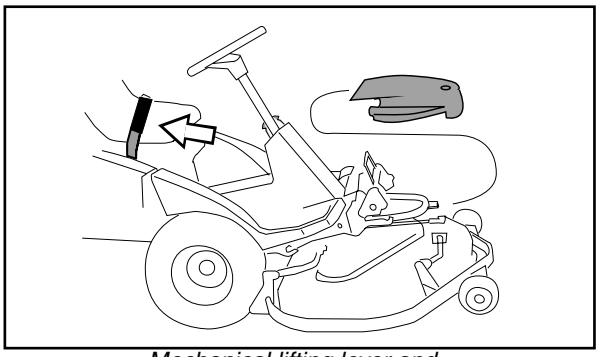
WARNING!
Exercise caution.
Risk of crush injuries

1. Place the machine on a flat surface.
2. Lock the brake by pressing down the pedal and locking with the push-button.



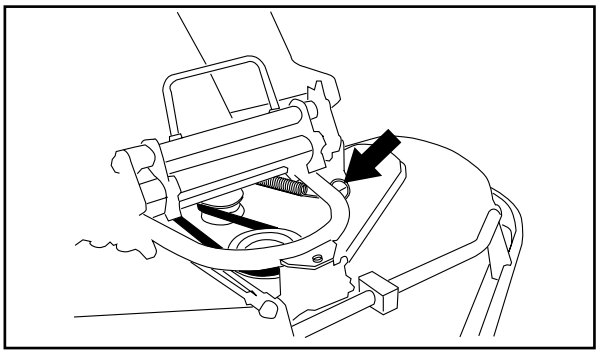
Lock the brake 8009-328

3. Lift the cutting unit with the mechanical lifting lever.
4. Remove the nose cover.



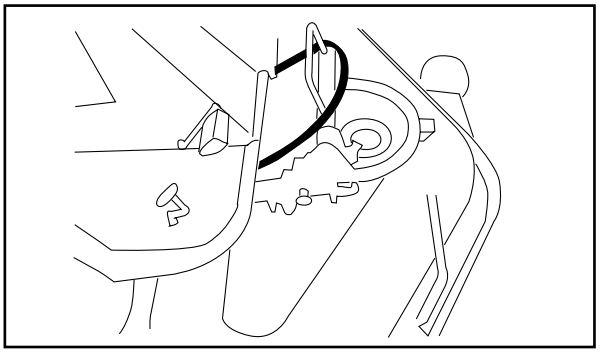
Mechanical lifting lever and nose cover 8009-007

5. Loosen the belt tensioner spring.
6. Remove the belt from the front pulley.
7. Re-attach the belt tensioner spring.



Belt tensioner spring 8009-008

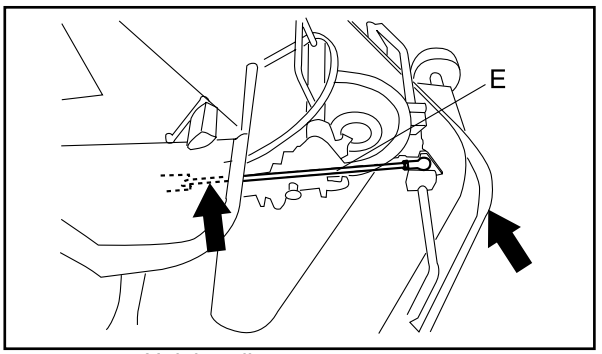
8. Hang the belt around the handle.



Placement of the belt 8009-009

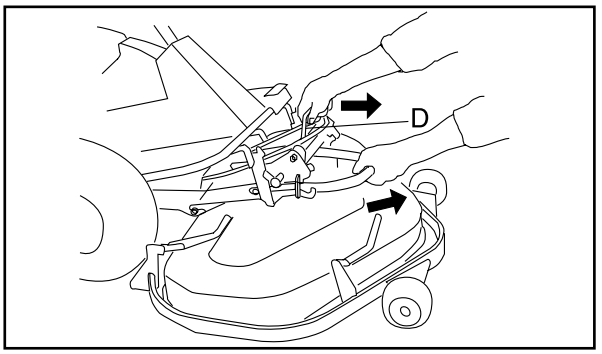
9. Unhook the height adjustment strut (E) by moving the rear part upwards:

   Unload the strut if necessary by pulling the frame's forward section up or down.



Height adjustment strut 8009-169

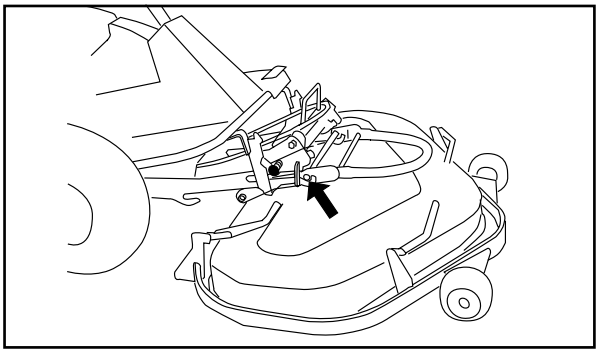
10. Pull the handle (D) and unit simultaneously. Release the handle when the unit has come out a bit.



8009-170

Pull forward

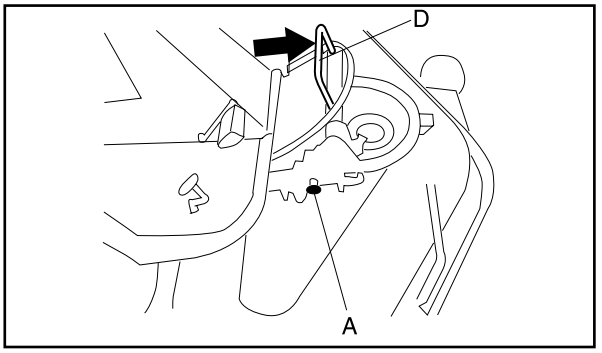
11. Pull out the unit so that it catches on the outer hooks.
12. Lower the unit with the lifting lever on the driver's right side.



8009-024

Pull to the stop position

13. Pull the handle (D) so that the safety catch locks. Check that the catch (A) is in the inset position.
14. Remove the unit from the machine.



8009-171

Locking the safety catch

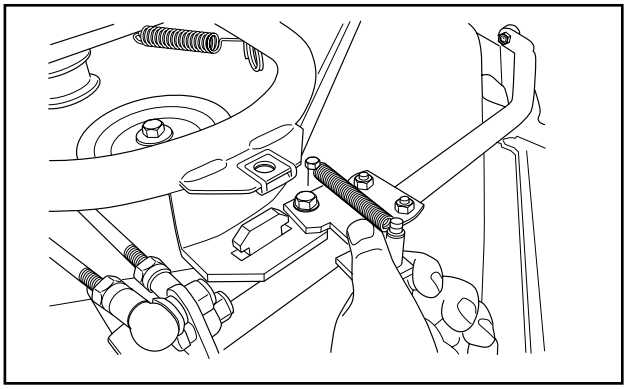
Removing the Unit Frame

WARNING!
Exercise caution.
Risk of crush injuries

Starting position for removing the cutting unit frame:

Cutting unit removed.

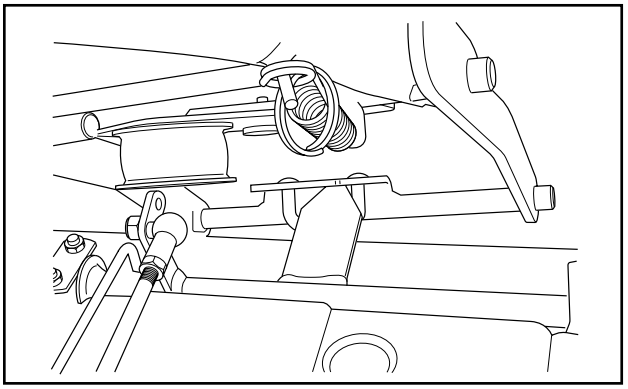
1. Twist the catch out so that the forward fastener can be lifted from the cutting unit.



Unit frame lock 8009-184

2. Move the unit frame backwards so that the tongue of the cutting unit releases its grip on the bar of the unit frame and lift the frame off.

Attach the parts in the reverse order.

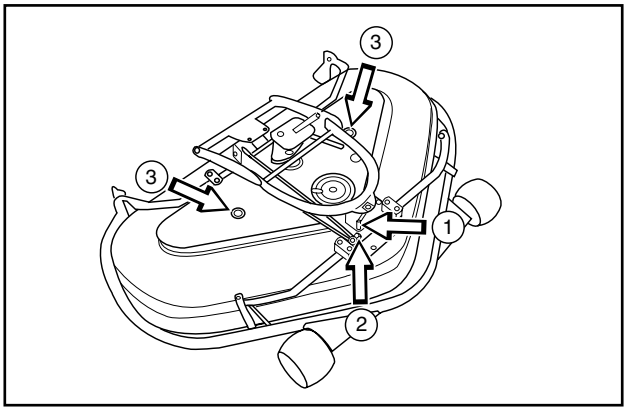


Tongue and handle 8009-185

Belt Replacement on the Combi 122 Cutting Unit

On cutting units with ”collision-proof” blades, the blades are driven by a V-belt. Do as follows to replace the V-belt:

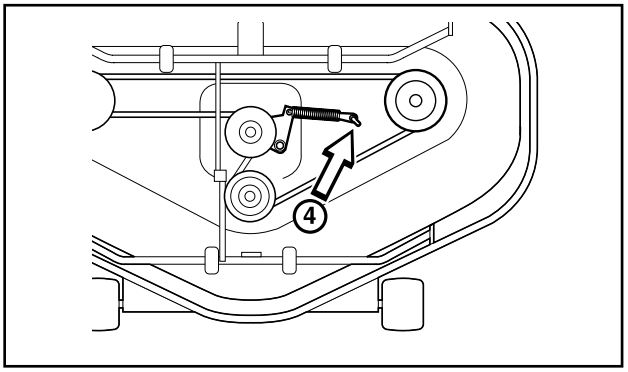
1. Loosen the unit frame (1), the bolt to the parallelism strut (2), and the two screws on the cover (3). Lift off the cutting unit cover.



Removing the cover 6016-113

2. Loosen the spring (4) that tensions the V-belt and pull the belt off.

   Attach a new belt in the reverse order.



Belt tensioner spring 8009-376

Removing Blades with Bearings

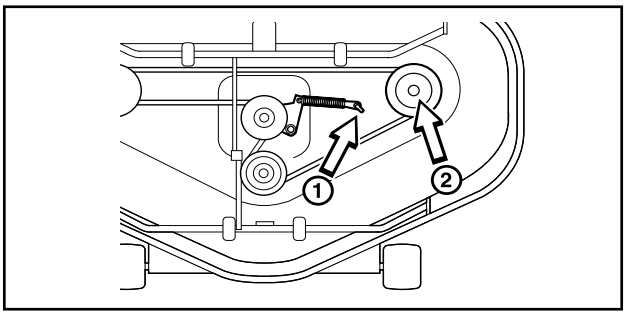
Combi 122

You can recognise this unit by the fact that the collar on the bearing housing is located on the underside of the unit's cover.

WARNING!

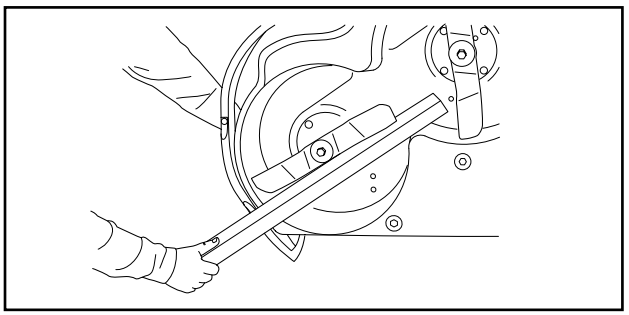
Use gloves and protective eyewear when working with the cutting unit.

1. Remove the cutting unit's upper cover, see Belt Replacement on the Combi 122 Cutting Unit on page 67.
2. Loosen the spring that tensions the V-belt (1) and pull the belt off.



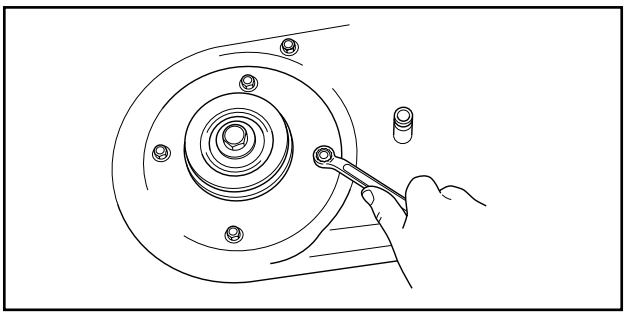
Belt tensioner spring and belt pulley 8009-303

3. Loosen the screw that holds the belt pulley (2) a few turns. Lock the blade with a wooden block or hold the belt pulley in place, with an oil filter wrench, for example.



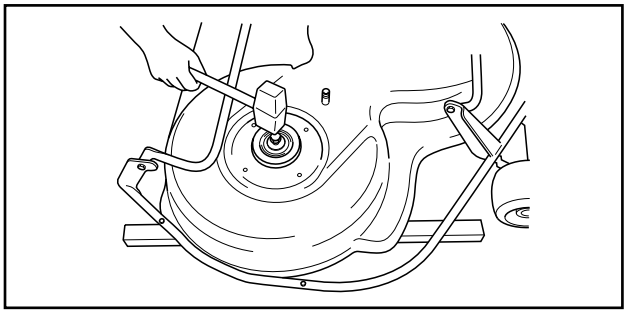
Locking the blades 8009-292

4. Remove the nuts, which hold the bearing housing in position, from the top of the cover. Make sure that the unit is positioned with the belt pulley against the unit's cover.



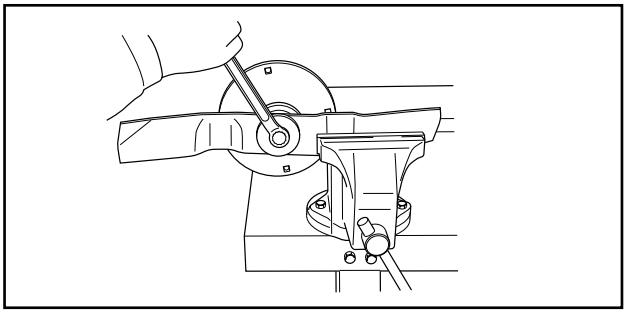
Bearing housing nuts 8009-293

5. Place a wooden block under the unit cover so that the blade is free from the supporting surface. Knock on the screws to remove the belt pulley. Do not knock hard enough to deform the cover. If the belt pulley is stuck, heat it with a hot air gun. Try not to use a puller as it can deform the belt pulley. Do not lose the key that sits between the pulley and the shaft.



Knock the underside of the cover with a wooden block 8009-294

6. Place the bearing housing in a vice and remove the blade and washers.

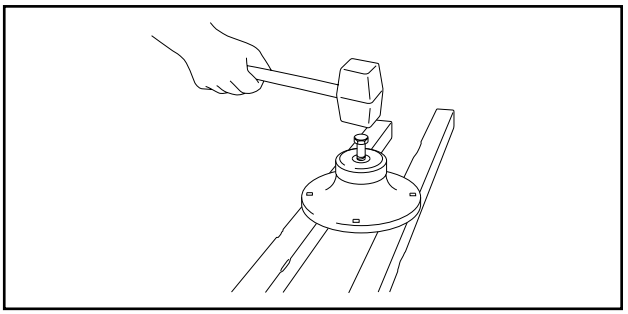


Removing blades 8009-295

7. Replace the blade bolt in the shaft. Screw it in a few turns and tap or press down the hub. Do not lose the key that sits between the hub and the shaft.
8. Mark one end of the shaft. Press or tap out the shaft.
9. Tap out the bearing and remove the spacer.

Fit in the reverse order.

Make sure that the shaft is mounted in the same direction as when it was removed, otherwise the keys will not fit the grooves. Blade bearings are tightened with a torque of 20-25 Nm/14-18 lbf. ft. Blade hubs are tightened with a torque of 45 Nm/32 lbf. ft.



Removing the hub 8009-296

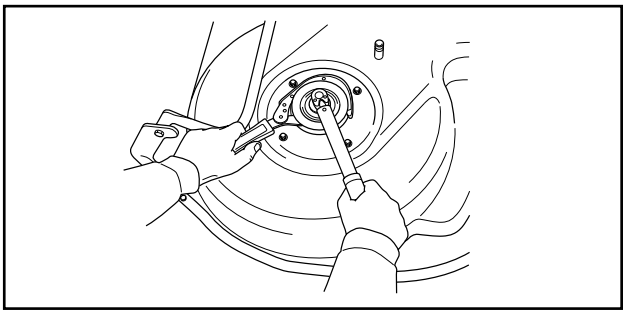
IMPORTANT INFORMATION

When tightening the blade shaft screws, the transmission side should always be tightened first and then the blade screws.

The belt pulley can be turned the wrong way, the thicker side should be turned downwards towards the blade.

The belt pulley should be tightened with a torque of 45 Nm/32 lbf. ft.

An oil filter wrench, for example, can be used to hold the pulley in place when the screw is tightened.



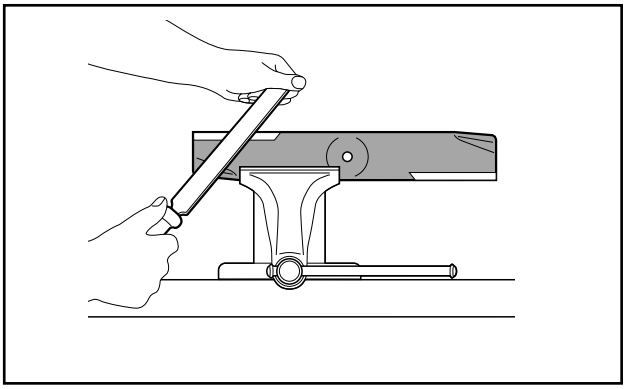
Tightening the belt pulley 8009-297

Sharpening and Balancing Blades

WARNING!

Protect your hands with gloves when working with the blades.

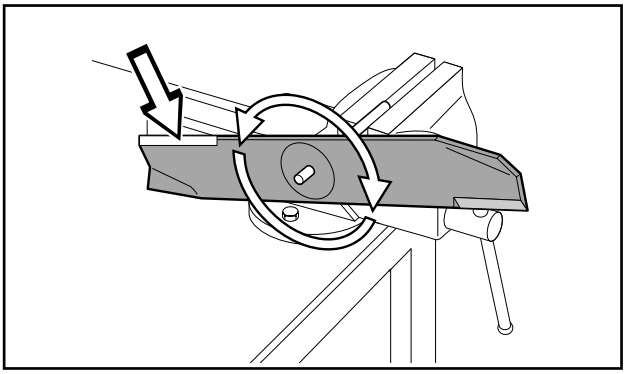
1. Remove the blades as described in the previous section.
2. Fix the blade in a vice and sharpen it with a sharpening file.'



Sharpening blades 6012-088

3. Balance the blade by:

- Attaching a punch, for example, horizontally in the vice as shown.
- Thread the hole in the centre of the blade over the punch and make sure that the blade is equally weighted. The illustration shows a blade that needs to be adjusted, it must be filed more so as to attain the right balance (at the arrow).
- Fit in the reverse order.



Balancing blades 6012-089

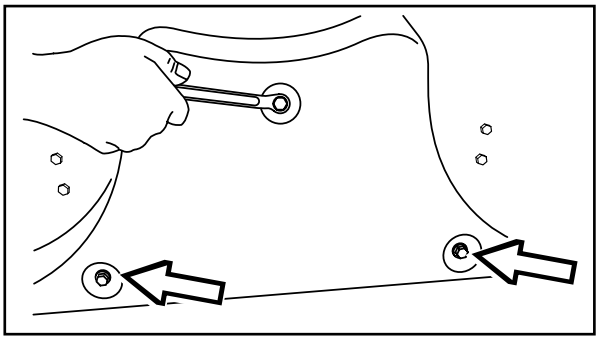
WARNING!

If the blades are cracked, whether caused by poor repair or other damage, they could break while being used. The risk increases if the blades are poorly balanced.

Removing the BioClip Plug (Combi)

To change a Combi unit from the BioClip function to a cutting unit with rear ejection, remove the BioClip plug, which is located under the unit, attached with three screws.

1. Put the unit in service position, see The Cutting Unit's Service Position on page 64.
2. Remove the three screws holding the BioClip plug, and remove the plug.
3. Tip: Fit three full-thread screws M8x15 mm in the screw holes to protect the threads.
4. Return the unit to the normal position.



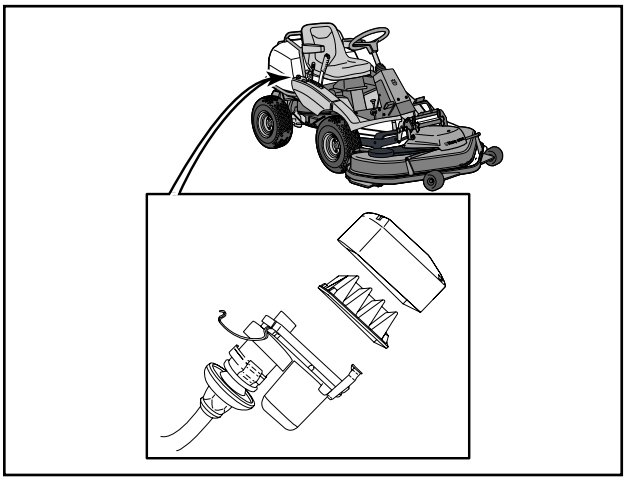
Removing the BioClip Plug 8009-289

Fit the BioClip plug in the reverse order.

Pulse Air Valve Intake Filter

Cleaning the filter

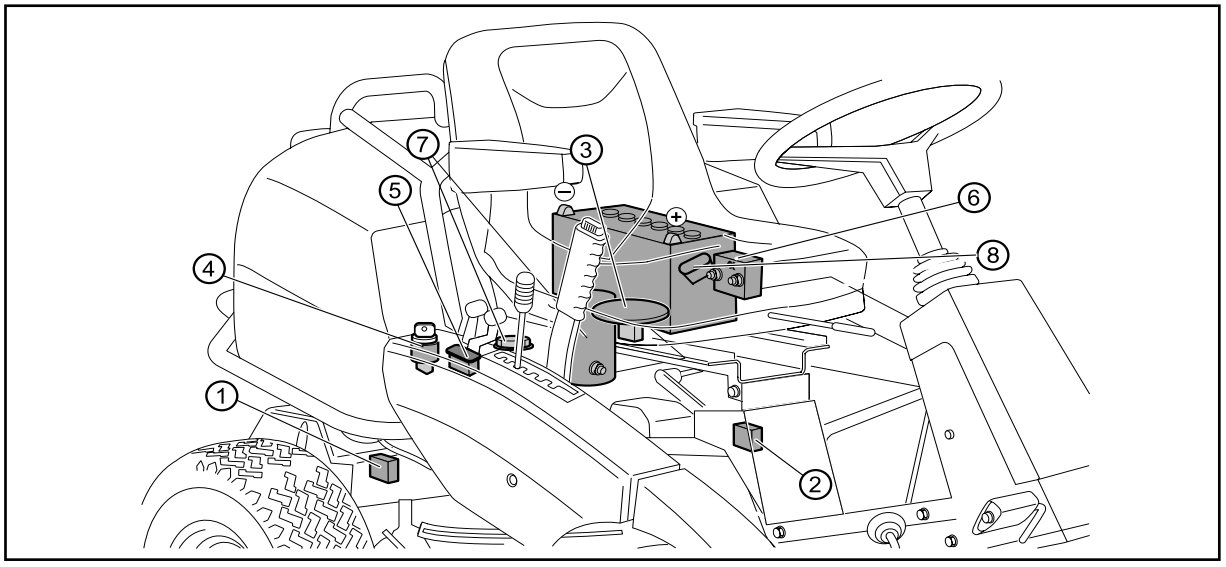
1. Fold the seat back, open the engine cover.
2. Loosen the four snap catches, remove the cover, and remove the filter.
3. Blow the filter clean with compressed air.
4. Place the filter back in the cover and fasten the cover with the snap catches. Replace the engine cover.



Pulse air valve filter 8009-342

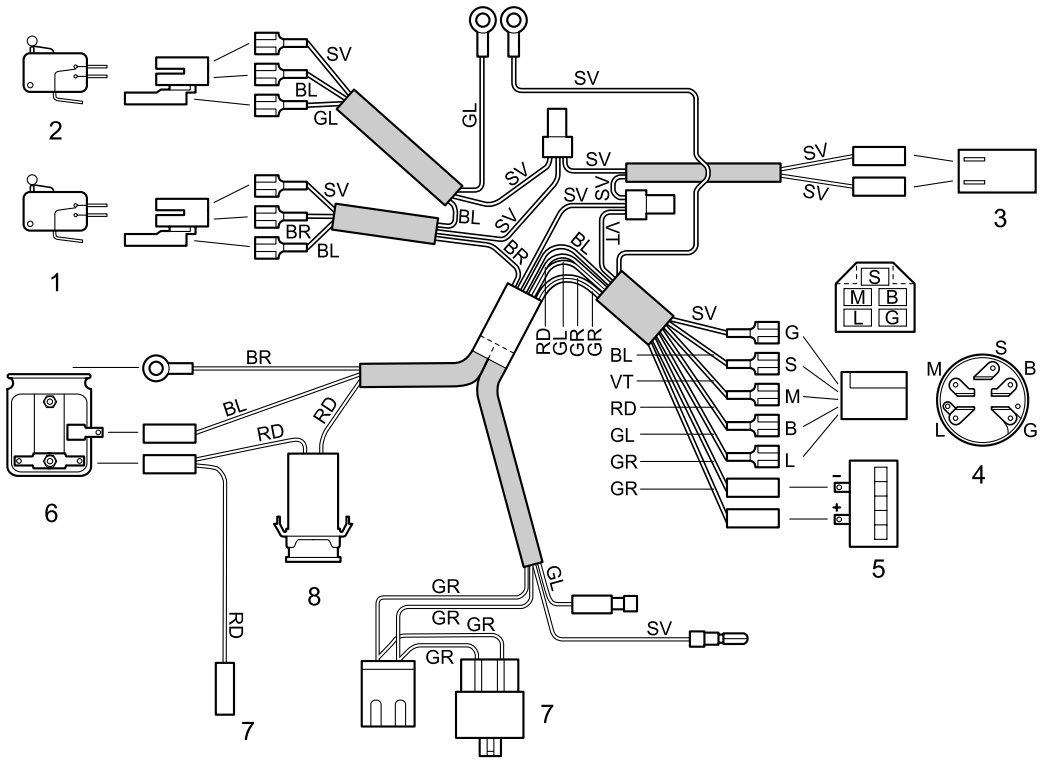
REPAIR INSTRUCTIONS

Wiring Diagram for the Rider ProFlex 21 II



8009-356

Electrical system: component locations



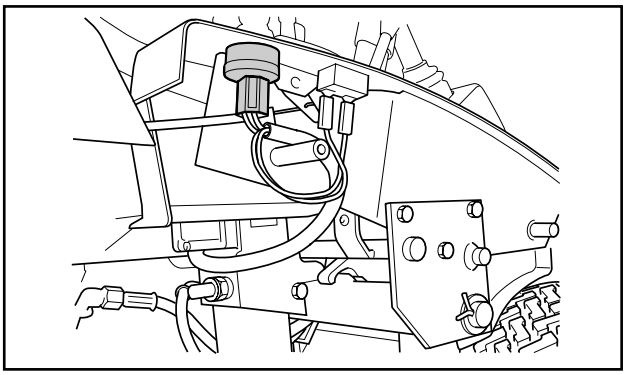
8009-186

1	Microswitch, hydrostatic transmission	Key for colour abbreviations in wiring diagram	
2	Microswitch, cutting unit	RD	=Red
3	Microswitch, seat	BL	=Blue
4	Ignition lock	VT	=White
5	Chronometer	SV	=Black
6	Start relay	GL	=Yellow
7	Engine connectors	GR	=Grey
8	Fuse, 15 A	BR	=Brown

Wiring diagram

Ignition and Starter Lock

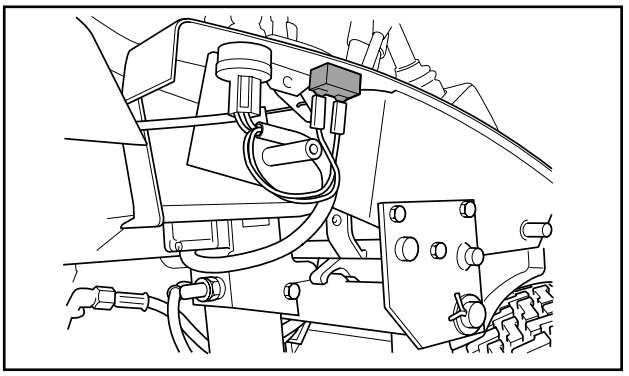
1. Remove the right-hand side cover from the lever housing.
2. Release the contact box from the ignition lock by pulling it straight down.
3. Remove the ignition key and the rubber seal.
4. Remove the nut and the ignition lock.
5. Attach the parts in the reverse order. Make sure the contact box ends up in the proper position (click-lock).



Ignition and starter lock 8009-397

Chronometer

1. Remove the right-hand side cover from the lever housing.
2. Release the cables from the chronometer.
3. Drill out the rivets attaching the chronometer from above.
4. Attach the parts in the reverse order. The chronometer may be attached with nuts, bolts, and spring washers if suitable rivets are unavailable.



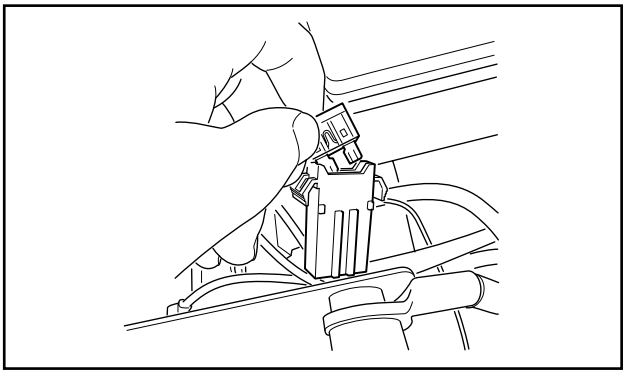
Chronometer 8009-398

Main Fuse

The fuse is placed in a detachable holder under the battery case's cover, in front of the battery.
Type: Flat pin, 15 A.
Do not use any other type of fuse when replacing.

A blown fuse needs to be replaced. Pull the fuse from the holder when replacing.

The fuse is there to protect the electrical system. If it blows again shortly after replacement, it is due to a short circuit, which must be fixed before the machine can be put into operation again.



Main fuse 8009-370

Safety System

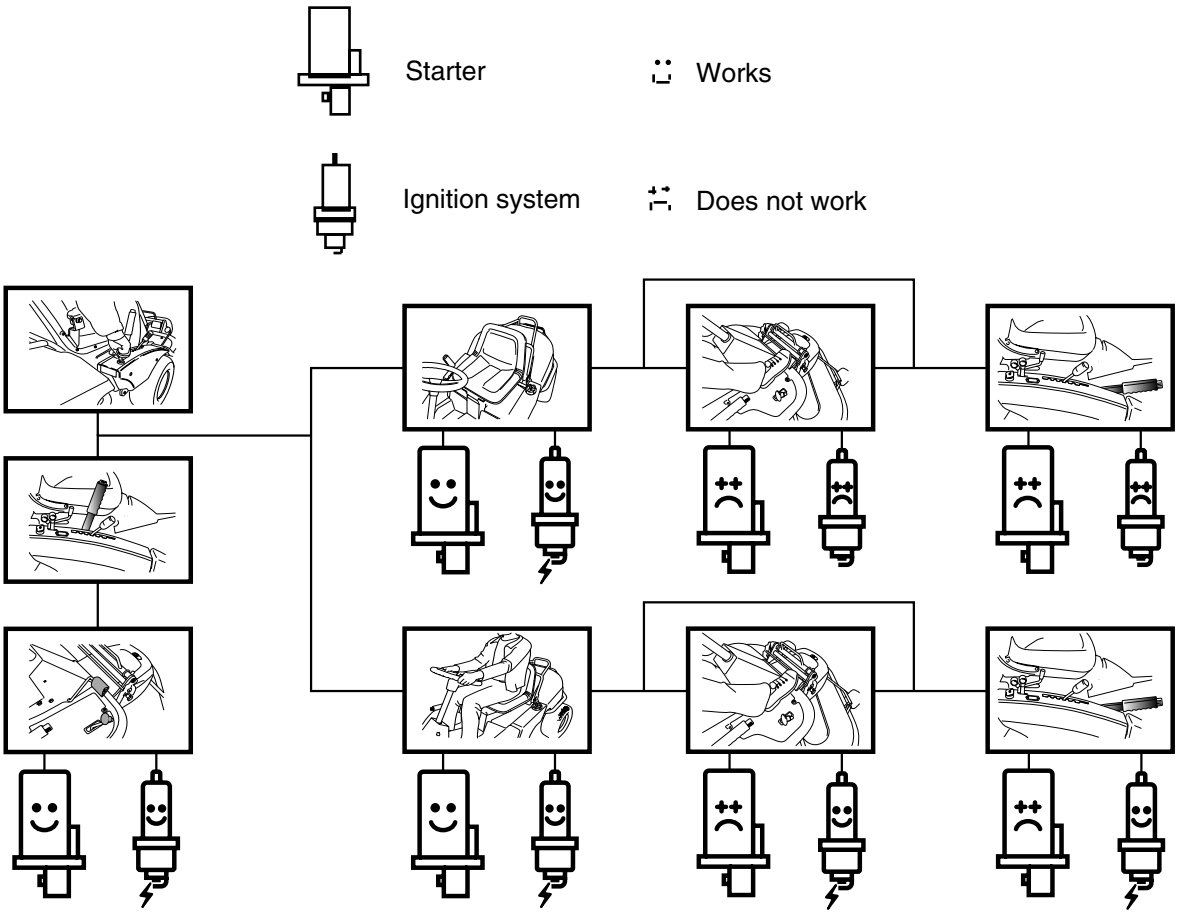
The rider is equipped with a safety system that prevents starting or driving under the following conditions.

It should only be possible to start the engine when the cutting unit is in its raised position and the hydrostat pedals are in the neutral position.

The driver does not need to be seated in the driver's seat.

Check daily to ensure that the safety system works by attempting to start the engine when one of the conditions is not met. Change the conditions and try again.

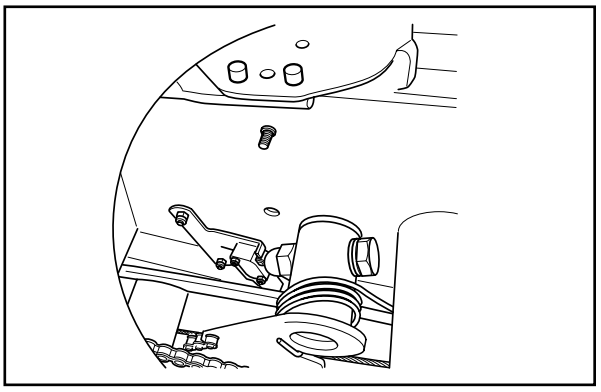
Check that the engine stops if you temporarily move out of the driver's seat while the cutting unit is lowered or the hydrostat pedals are not in the neutral position.



8009-153

Microswitch: Cutting Unit

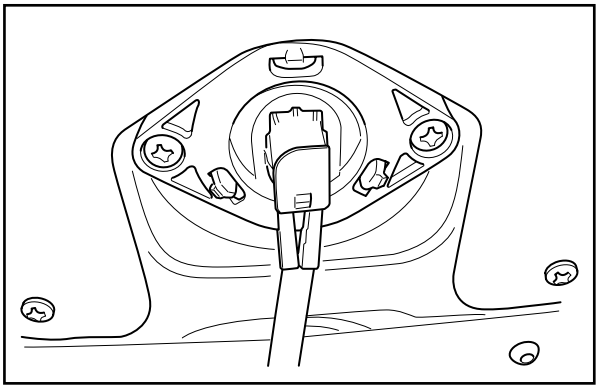
See Adjusting the Lever Housing on page 56 for adjustment instructions.



Microswitch, cutting unit 8009-381

Microswitch: Seat

The microswitch is located on the underside of the seat and can be replaced together with the holder without adjustment. The switch inside the holder cannot be replaced alone as it is glued into place.

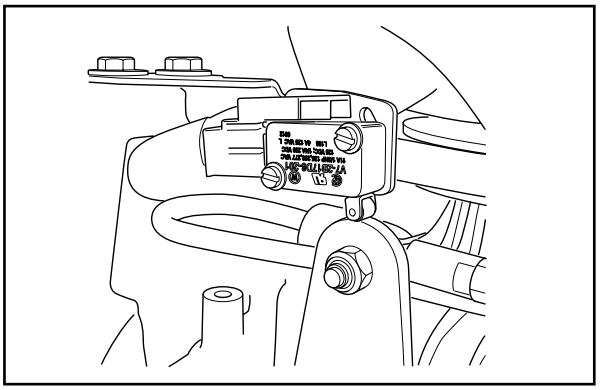


Microswitch: seat 8009-395

Microswitch: Neutral Position

1. Remove the transmission cover.
2. Check the hydrostatic cable adjustment.
3. Adjust the microswitch so that it is activated by the highest point in the hydrostatic arm's path when no driving pedal is pressed.
4. Adjust the microswitch so that it is definitely activated by the hydrostatic arm, but allows extra motion (it must not bottom out).

   Tip: Hold a feeler gauge between the switch and the arm when making the adjustment.
5. Replace the transmission cover.



Microswitch: neutral position 8009-396

Hydraulic System

Hydraulic Hygiene

Keep the hydraulic system clean. Remember to:

- Thoroughly clean before the top-up cap is opened or any connector loosened.
- Use clean containers when topping up the oil.
- Only use pure oil that has been stored in a sealed container.
- Not reuse drained oil.
- Change the oil and filter according to the intervals specified in Service Schedule on page 10

In order for a hydraulic system to function without problem, it must be free from foreign objects. When used, the system produces particles, which can cause both wear and abnormal function. In order to remove these particles, the system contains filters. The filters are sized so as to capture the produced particles, but if contaminants are introduced from outside the system, the filters can quickly become clogged and fail to function as intended. If there are contaminants in the system, further contamination will be produced in a self-propagating cycle. The result will be function disruptions and much work to clean the system.

The particles that do the most damage are of the same size as the play between the moving parts in the components. Normal play in pumps and valves is from 3-5 µm and up (1 µm = a thousandth of a mm). In this context, we can mention that a particle measuring 40 µm can be seen with the naked eye.

The particles, which are generated during operation or enter the system during repairs and service, are usually comprised of:

- Wear and tear products from components, mainly those with moving parts, such as pumps and motors.
- Dust, which enters through the hydraulic tank's vent.
- Water, which is formed through condensation. (Steam enters with the ventilation air.)
- Dirt particles, which enter the system with, for example, moving piston rods.
- Sludge etc. from the oil decomposing.
- Corrosion products from the system, which are due to the oil not being changed in time and containing water and other aggressive substances.
- Dirt particles that enter the system include:
  - Contaminants entering when topping up with oil.
  - Dust particles from the workshop.
  - Gasket and thread sealants from assembly.
  - Dirt from storage and handling before assembly.
  - Fibres from rags, filters, etc.
  - Dirt from maintenance areas due to insufficient cleaning before disassembly.
  - Dirt and dust entering the system via unclean protective plugs.

Water, even in small amounts, can cause rust build-up on sanded surfaces, especially if the system is not used, and contributes to the production of sludge products. These clog the filters, leading to circulation problems and the hydraulic pumps can begin to draw air (cavitation).

Small fibres and threads from drying cloths or clothing can build up in jets and throttles. The actual fibres do not cause much damage, but the build-up can clog the system and cause wear on system components.

Each dirt particle is an abrasive, which causes more contamination, which in turn leads to permanent damage. Each time the hydraulic system is opened, the number of particles increases. After a few hours operation, most of the particles are captured by the filters. Avoid, therefore, opening the hydraulic system unless necessary, as every action entails a risk of more contaminants entering the system, even if the work is carried out professionally.

HYDRAULIC SYSTEM

Hydraulic Oils

The oil is as important as every other part of the hydraulic system. It has been noted that about 70% of all hydraulic problems are caused by the use of unsuitable oil types, which contain dirt or other contaminants, to fill the system.

The greater part of the contaminants in the oil comprise, in general, dirt that has entered the system from the outside.

Fixing Oil Leaks

Cavitation due to penetrating air can cause internal damage to pumps and motors. Air can enter the system when there is an oil leak. It is therefore important to rectify oil leaks as soon as possible.

Keeping the Hydraulic System Clean

Dirt and contaminants are the greatest enemies of a hydraulic system. Moreover, long work sessions at high power are very dependent on whether the hydraulic oil has been able to retain its condition. Only use the type of oil specified in the lubrication schedule. Ensure that it is checked at regular intervals and kept at the right level.

All good hydraulic oils are supplied in clean containers and are filtered so that they are as free from contaminants as possible. It is when the container is opened or stored that problems occur. When a container is opened, one must be sure that the area around the cap is completely free from dust, dirt, rag fibres, and water. If a special container, funnel, or hose is required for filling the system, ensure that it is clean.

Working Methods

Cleanliness also applies to components that have been removed or shall be fitted. Keep in mind that a replaced component should probably be inspected with the aid of test equipment at a workshop. It is important that the component is in the same shape when it is inspected as it was when it was removed from the machine. Otherwise, the real reason for the malfunction cannot be established and the test equipment can be made dirty. It can also be so that the submitted component is not faulty and is therefore returned without action.

The following points should be gone through routinely when working with the hydraulic system:

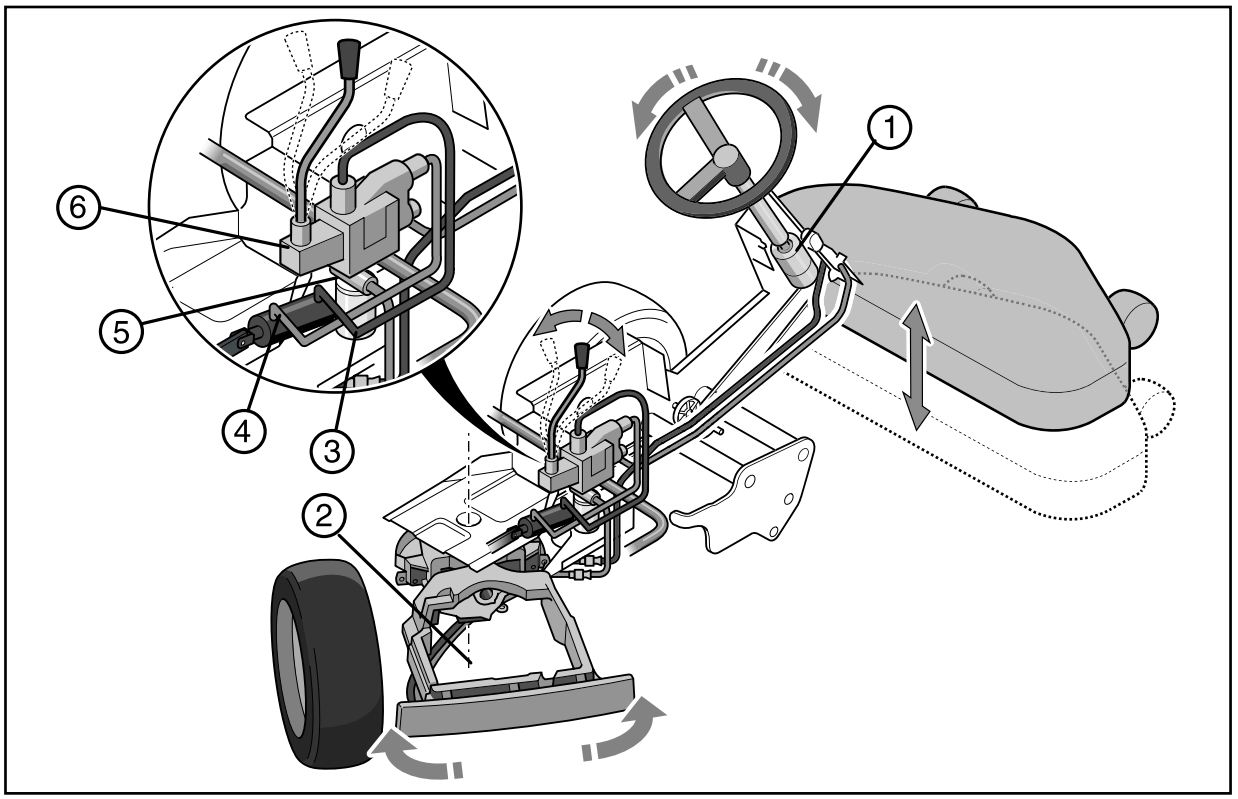
1. Clean as necessary.
2. Protect the area where the work is to be done against dust and other impurities in the air. Plastic sheets and the like may be used.
3. Clean thoroughly with white spirit or equivalent. Remember that it is not enough to clean only those parts that are directly attacked. Even areas from where dirt can fall onto the work area must be cleaned, as must the tools used. Clean with a suitable brush, dry with a cloth, and clean again if needed. Finally, rinse the dismantling area, tubing equipment, and so on with pure white spirit.
4. Apply appropriate protection immediately after all pipes and hoses have been removed. Components (even those replaced) as well as pipes and tubing are to be protected.
5. All components included in pipe fixtures shall be replaced or cleaned in pure white spirit and blown clean with compressed air before being refitted.
6. Maintain cleanliness when measuring pressure. Rinse both parts of the quick connectors with white spirit before each connection. Ensure that any protective components are clean before refitting.

IMPORTANT INFORMATION

Waste oil shall be treated as environmentally hazardous and turned in to the workshop or other designated area for disposal.

Avoid skin contact; wash with soap and water in case of spills.

Component Locations



8009-357

Hydraulic system, components

1. Power steering
2. Pump in hydrostatic transmission
3. Hydraulic oil filter
4. Lift cylinder
5. Pressure limiting valve
6. Control valve for lift cylinder

Pressure to the hydraulic system is provided by the hydrostatic pump. A pressure limiting valve limits the maximum system pressure to about 45 bar/630 PSI.

A hydraulic oil filter of the spin-on type is used to filter impurities. There is also a filter in the hydrostatic transmission. Both filters work together to keep the system as clean as possible.

The control valve is a slide valve. The lever is found in the lever housing to the rear and is connected to the slider. Pressure supply and exhaust takes place via the valve block. Hydraulic oil for the lift cylinder is provided via two hoses. The hose's nipple for the cylinder's piston side is equipped with a throttle. Between the slider and the throttle, there is a mechanically controlled return valve. The purpose of the return valve is to contain the oil so that the cutting unit doesn't lower when the lever is not activated.

The lift cylinder is a double-action hydraulic cylinder, and is connected to the lever housing's shaft.

The power steering is described under Steering on page 23.

Bleeding the Hydraulic System

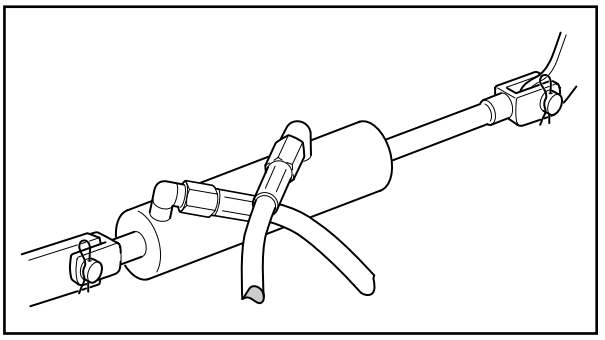
See Bleeding the Hydrostatic and Hydraulic Systems on page 53.

Power Steering

See Removing/Fitting the Power Steering on page 35.

Replacing the Lift Cylinder

1. Lower the cutting unit to the ground. Stop the engine.
2. Clean in accordance with Working Methods on page 78.
3. Remove the rear cylindrical bolt. Two washers are released. If it becomes tight, place the hydraulic lifting lever in the lowering position and twist the drive disk on the lever housing's shaft with an adjustable wrench or similar tool.
4. Hold the angle nipples with a 17 mm wrench and loosen the hydraulic connections from the cylinder. A small amount of oil will leak out.



Lift cylinder 8009-387

5. Remove the front cylindrical bolt. Two washers are released.
6. Attach the hydraulic cylinder to the forward mounting. A washer is placed on each side of the cylinder ear in the fork. Secure the cylinder bolt.
7. Connect the hydraulic connectors. Counter the angled nipples. Twist the hoses so that they do not chafe against any sharp edges. The front hose on the cylinder shall run to the upper connector on the valve block.

IMPORTANT INFORMATION

It is easy to get the hydraulic hoses switched.

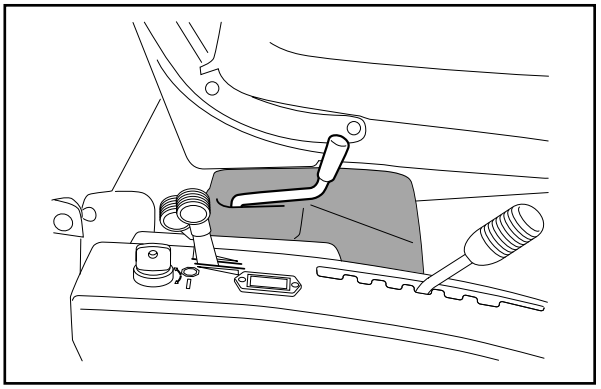
Connecting the hoses incorrectly will result in reversed lever motion.

8. Attach the hydraulic cylinder to the rear mounting. A washer is placed on each side of the cylinder ear in the fork. Secure the cylinder bolt.
9. Remove the transmission cover and top up with transmission oil. Be observant when running the engine and top up so that the tank is not emptied.
10. Test run and bleed the hydraulic system of excess air.
11. Check the lever housing's adjustment. See Adjusting the Lever Housing on page 56.
12. Replace the plastic cover over the hydraulic valve block and the transmission cover.

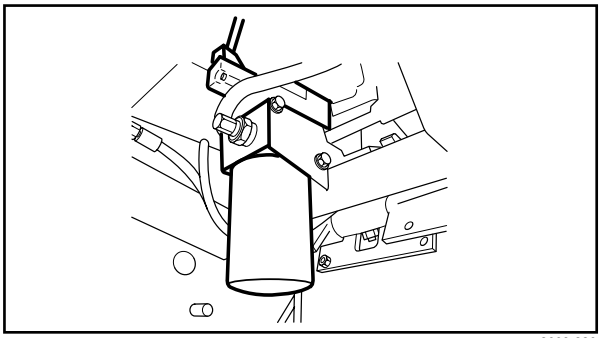
Valve Block

Removing and Refitting

1. Lower the cutting unit to the ground. Stop the engine.
2. Remove the plastic cover from the hydraulic valve block.
3. Clean in accordance with Working Methods on page 78.
4. Hold the valve block nipples in place and loosen the hydraulic connectors from the valve block. A small amount of oil will leak out.
5. Remove the fastening screws and remove the valve block in a downwards direction.
6. Hold the valve block in place and attach the fastening screws.
7. Connect the hydraulic connectors. Twist the hoses so that they do not chafe against any sharp edges. The upper hose on the valve shall run to the forward cylinder connector and be pointed forwards so that it is free from the cover.
8. Remove the transmission cover and top up with transmission oil. Be observant when running the engine and top up so that the tank is not emptied.
9. Test run and bleed the hydraulic system of excess air.
10. Replace the removed covers.



Plastic cover 8009-374

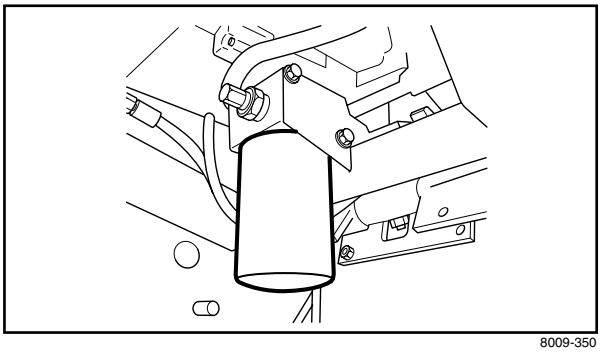


8009-386

Valve block

Hydraulic Oil Filter, Change

1. Remove the oil filter. If necessary, use a filter remover.
2. Wipe new, clean engine oil onto the seal for the new filter. Fill the filter with new, **clean** oil.
3. Mount the filter by hand with + 3/4 turn.
4. Remove the transmission cover and fill the transmission oil tank. Be observant when running the engine and top up so that the tank is not emptied.
5. Run the engine warm, manipulate the equipment lift and power steering, and then check that there are no leaks around the oil filter seal.
6. Check the oil level in the transmission, top up if necessary. The oil filter holds 0.3 litres/0.3 US qt of oil.
7. Replace the transmission cover.



8009-350

Hydraulic oil filter

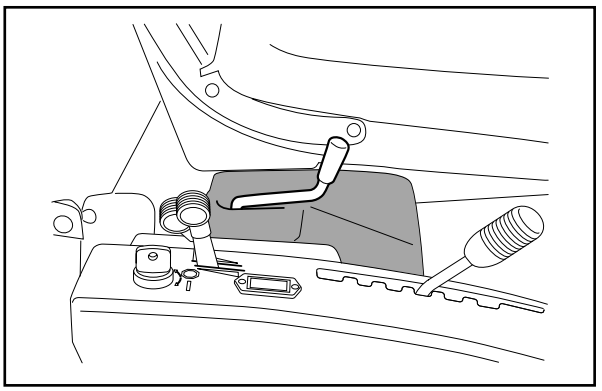
IMPORTANT INFORMATION

Used oil filters shall be treated as environmentally hazardous and turned in to the workshop or other designated area for disposal.

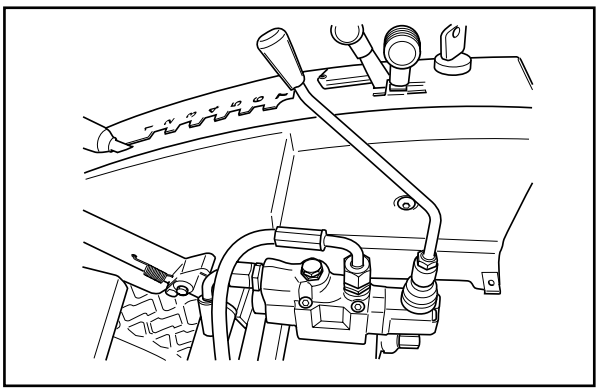
Avoid skin contact; wash with soap and water in case of spills.

Control Valve Replacement

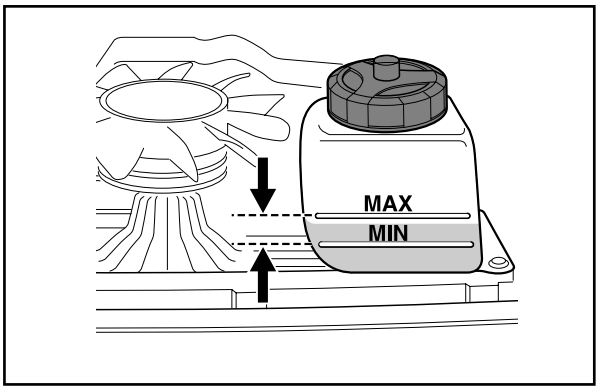
1. Lower the cutting unit to the ground. Stop the engine.
2. Remove the plastic cover from the hydraulic valve block.
3. Clean, see Working Methods on page 78.
4. Hold the valve block nipples in place and loosen the hydraulic connectors from the control valve. A small amount of oil will leak out.
5. Remove the hose nipple from the top part of the valve.
6. Remove the Allen screws and spacing tubes and remove the control valve from the valve block. Keep track of the two o-rings that are between the control valve and the valve block.
7. When replacing the control valve, move the nipple, including the rubber/steel washer for the forward hose, to the new valve. Keep in mind that this nipple is to be equipped with a throttle, which the other nipple lacks.
8. Fit the o-rings into the valve and replace the valve in the valve block with the Allen screws fitted with spacing tubes.
9. Refit the nipple without the throttle with the washer in the connector for the upper hose.
10. Connect the hydraulic connectors. Twist the hoses so that they do not chafe against any sharp edges. The upper hose on the valve shall run to the forward cylinder connector and be pointed forwards so that it is free from the cover.
11. Remove the transmission cover and top up with transmission oil. Be observant when running the engine and top up so that the tank is not emptied.
12. Test run and bleed the hydraulic system of excess air.
13. Replace the removed covers.



Plastic cover 8009-374



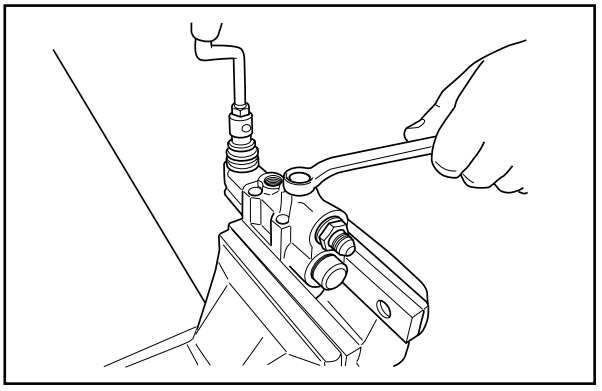
Control valve 8009-388



Oil tank 6012-057

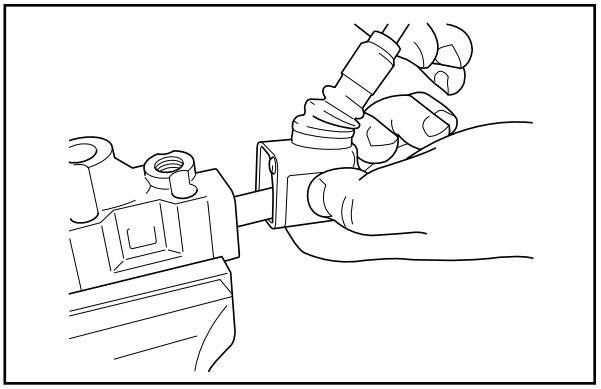
Control Valve, Disassembly/Assembly

1. Remove the control valve, see above.
2. Clean in accordance with Working Methods on page 78.
3. Place the valve in the vice. Tighten down on the lower part (under the slider hole).
4. Remove the check valve. Set the tool to the wide wrench setting, 15 mm.



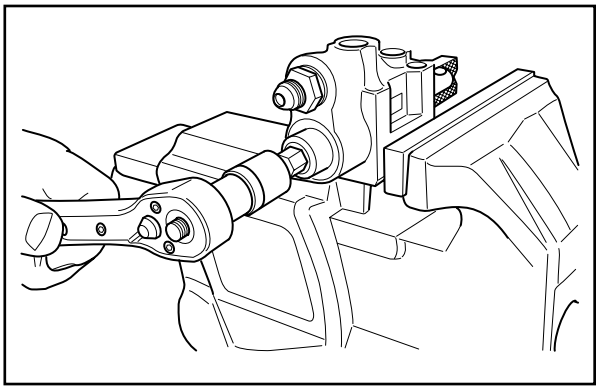
Check valve 8009-389

5. Remove the lever housing and lever. By lifting the lever housing and twisting the lever backwards, it can be unhooked from the hole in the slider.



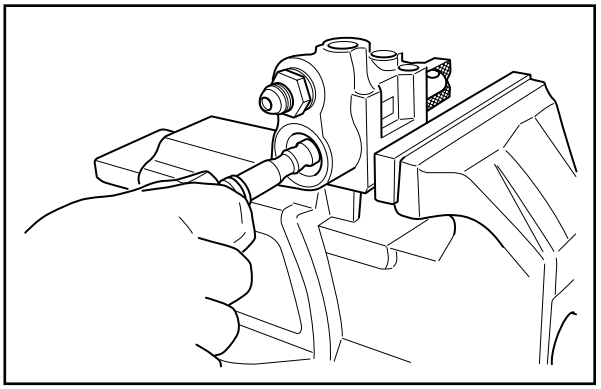
Lever housing with lever 8009-390

6. Remove the plastic plug and unscrew the spring holder with a 12 mm Allen key.



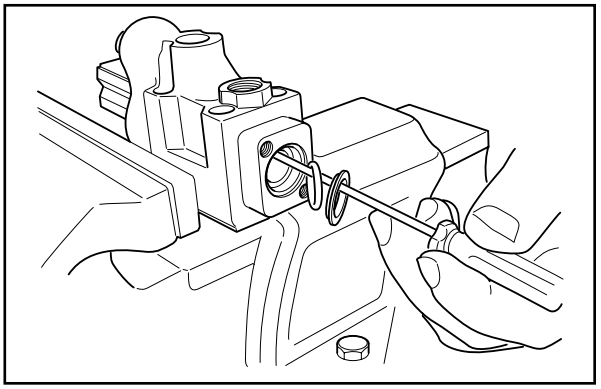
Spring holder 8009-391

7. Pull out the slider. Normally, the spring does not need to be removed, but if it does, only the hole in the slider may be used to hold it in place.



Slider with spring 8009-392

8. Remove the steel ring and o-ring from the rear section.
9. Remove the spacing ring and o-ring from the forward section.
10. Clean/replace the o-rings. Lubricate the o-rings and the slider with motor oil before assembly. The check valve can be taken apart for cleaning, if necessary.
11. Lubricate and place the o-ring in its position in the front section. Check that it is properly seated.

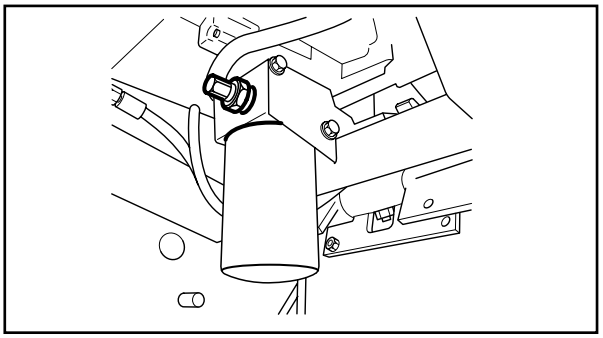


Steel ring and o-ring 8009-393

12. Thread on the spacing ring (length 7mm/0.28") on the slider.
13. Make sure that the o-ring is not damaged by lubricating the slider and coaxing the slider into place. Insert the slider completely into the valve housing.
14. Fit the spring holder and plastic plug.
15. Attach the o-ring to the rear section.
16. Attach the steel washer with the projection facing inwards towards the o-ring.
17. Risk for incorrect assembly: Twist the slider so that the lever ball enters the front section of the slider hole and attach the lever housing and lever. Tightening torque, max. 8.5 Nm.
18. Risk of damaging the seals. Lubricate them before fitting. Fit the check valve. Tightening torque, max. 20 Nm.
19. Attach the control valve to the valve block, see the instructions above. Tightening torque, max. 12 Nm.

Pressure Limiting Valve

If the hydraulic pressure is too low, it can be due to dirt trapped in the pressure limiting valve.



8009-385

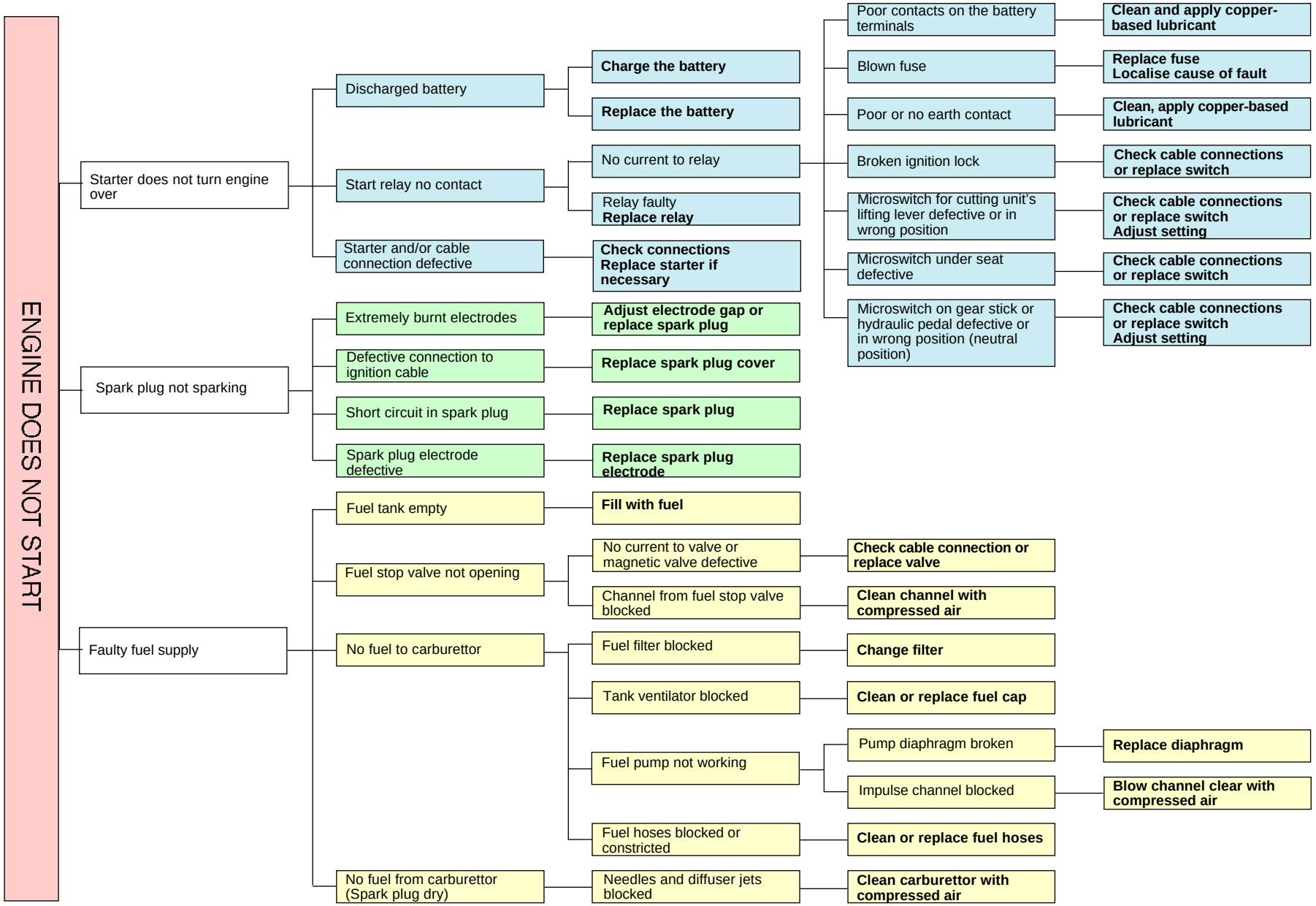
Pressure Limiting Valve

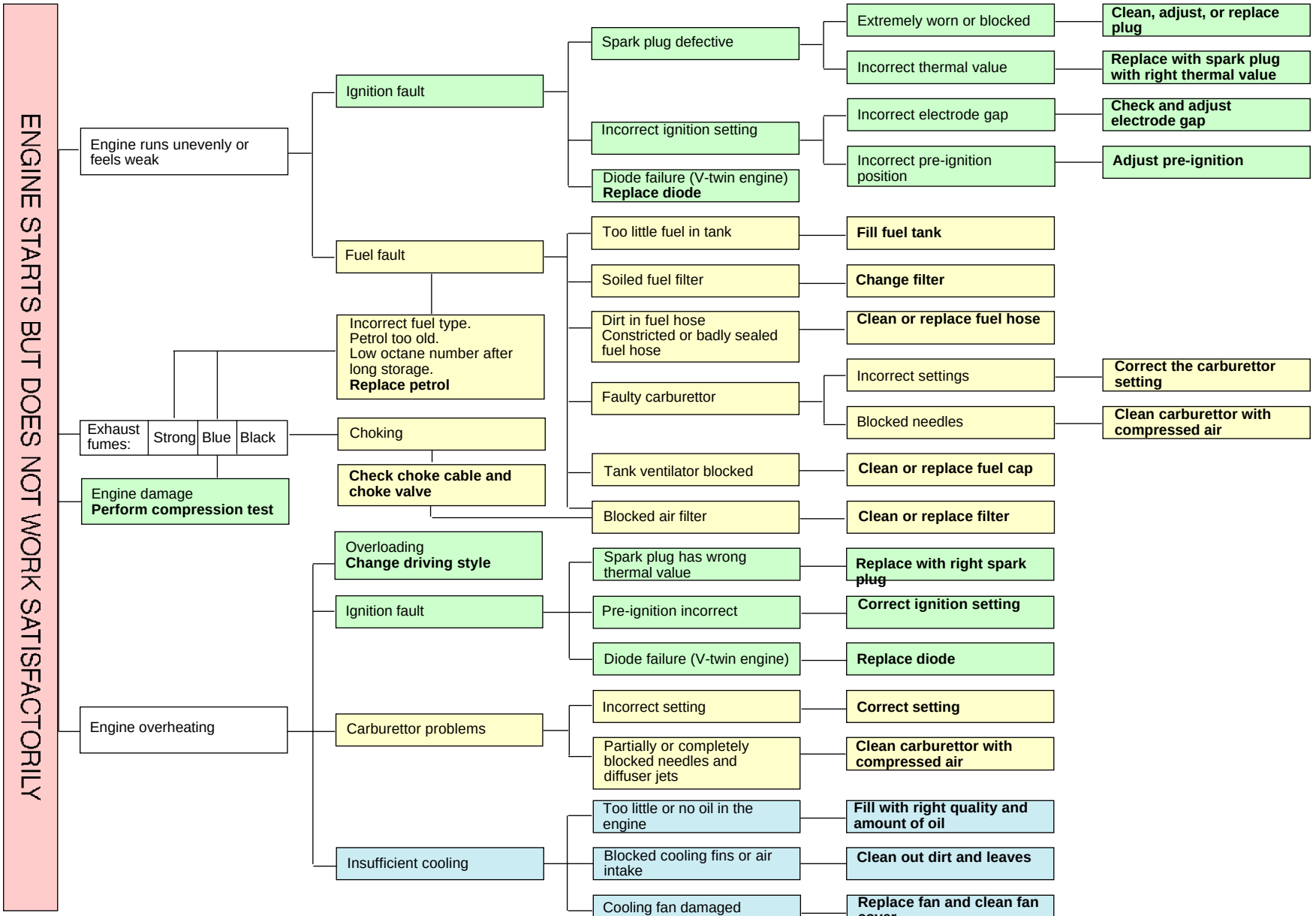
IMPORTANT INFORMATION

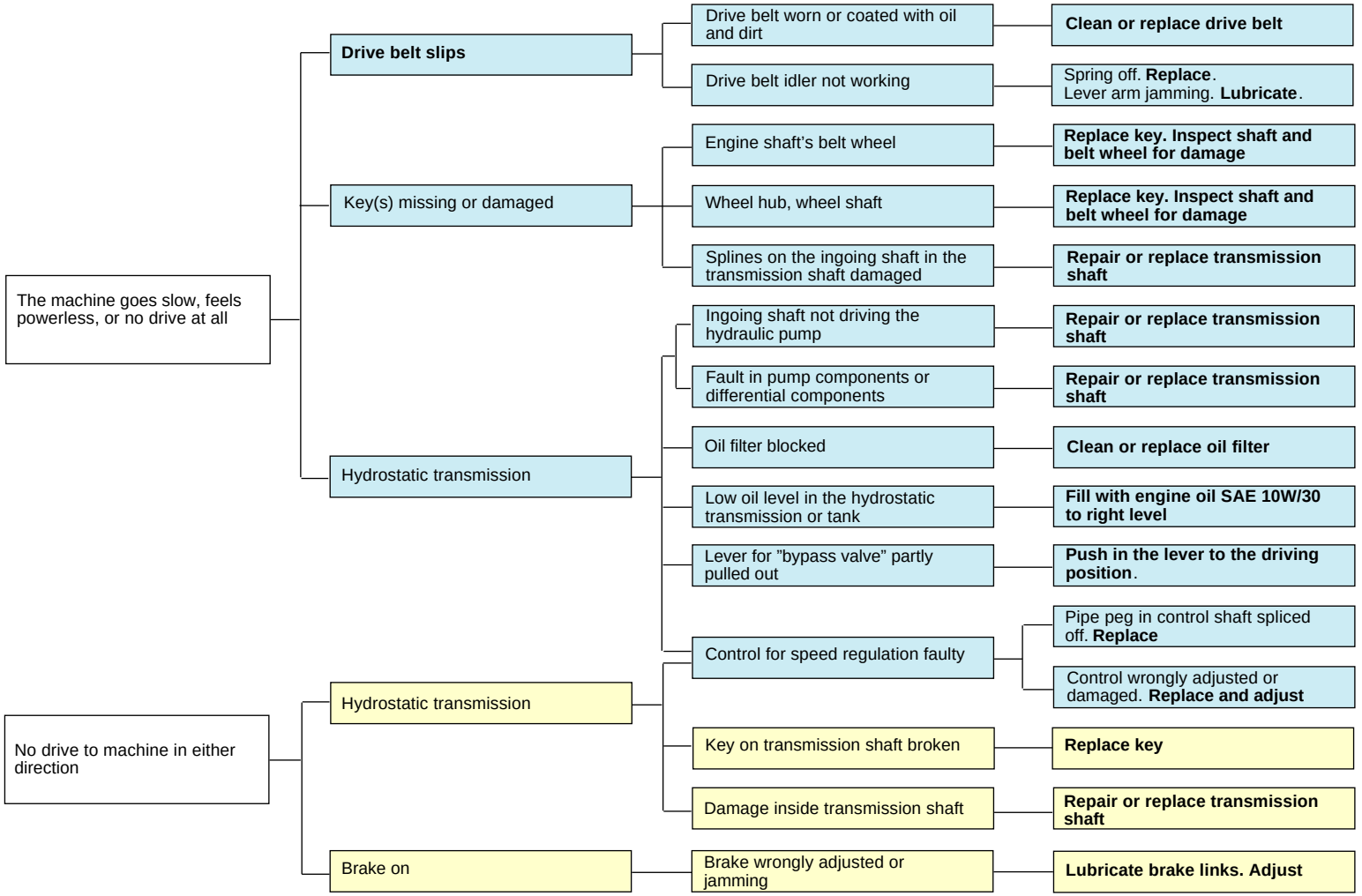
Incorrect hydraulic pressure is almost never due to an incorrectly adjusted pressure limiting valve.
Check the hydraulic system thoroughly for faults before changing the valve setting.

IMPORTANT INFORMATION

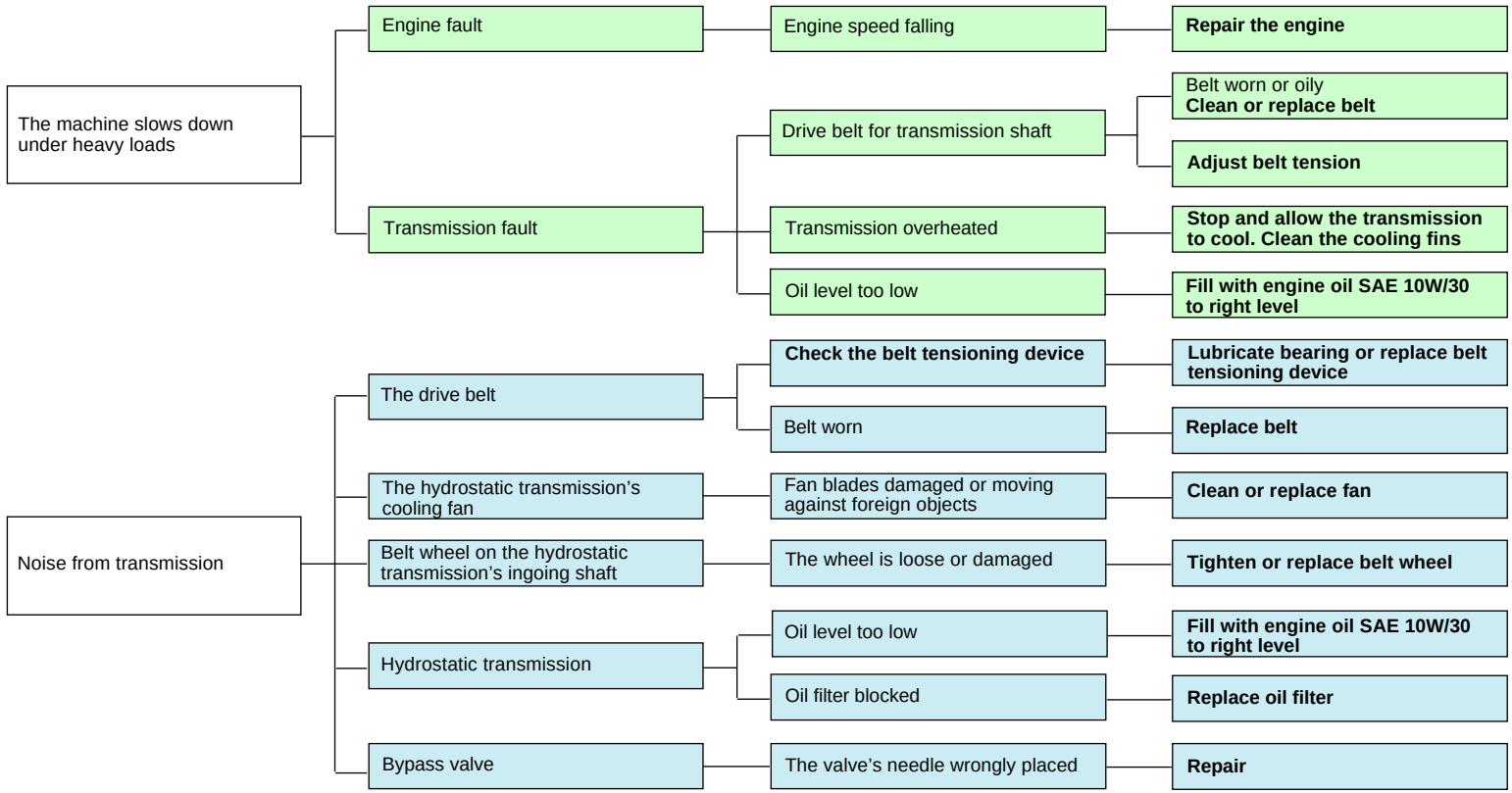
An excess flow valve that is set too high will damage the power steering.







The hydrostatic transmission must not be opened while under guarantee.



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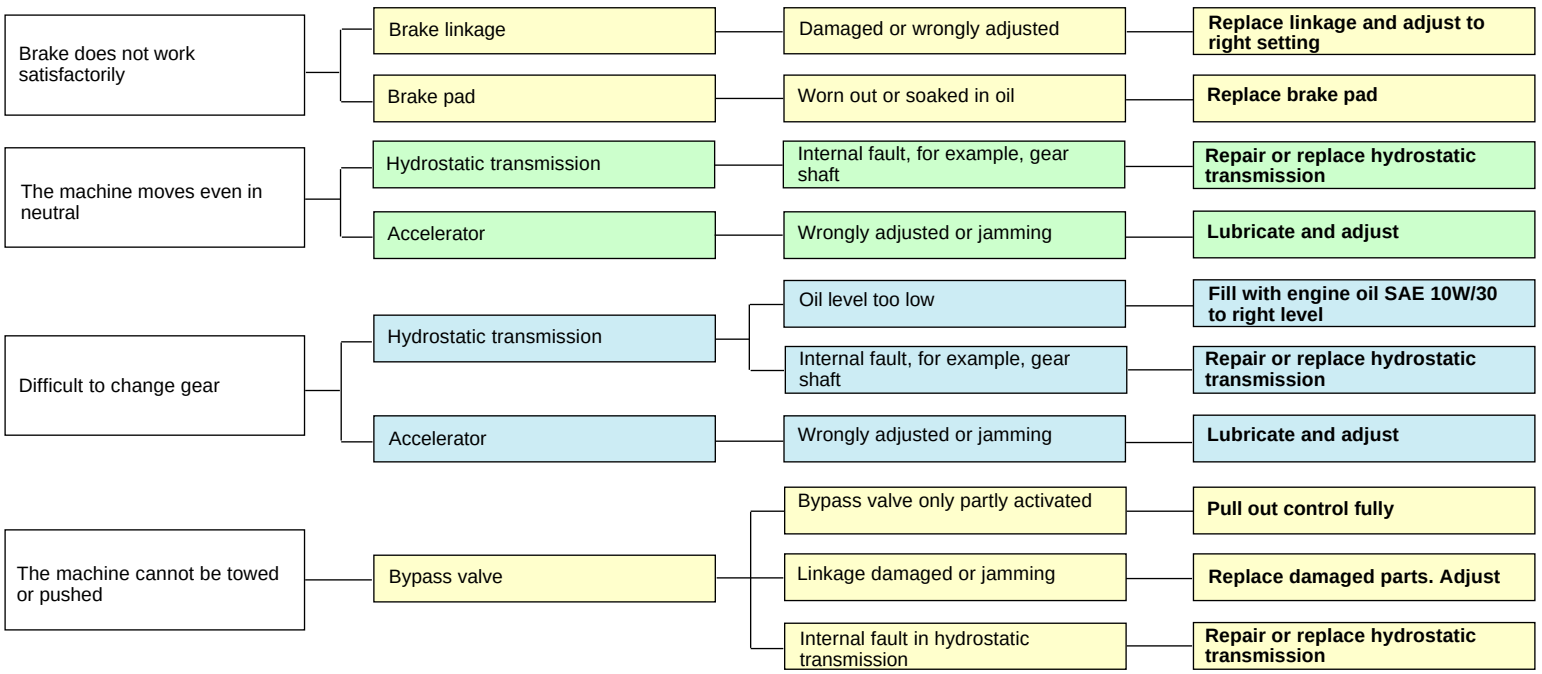

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