Workshop manual

Rider ProFlex 18
Rider ProFlex 21

English

Workshop manual for

Rider ProFlex 18 and ProFlex 21

Contents

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 of 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 could 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.

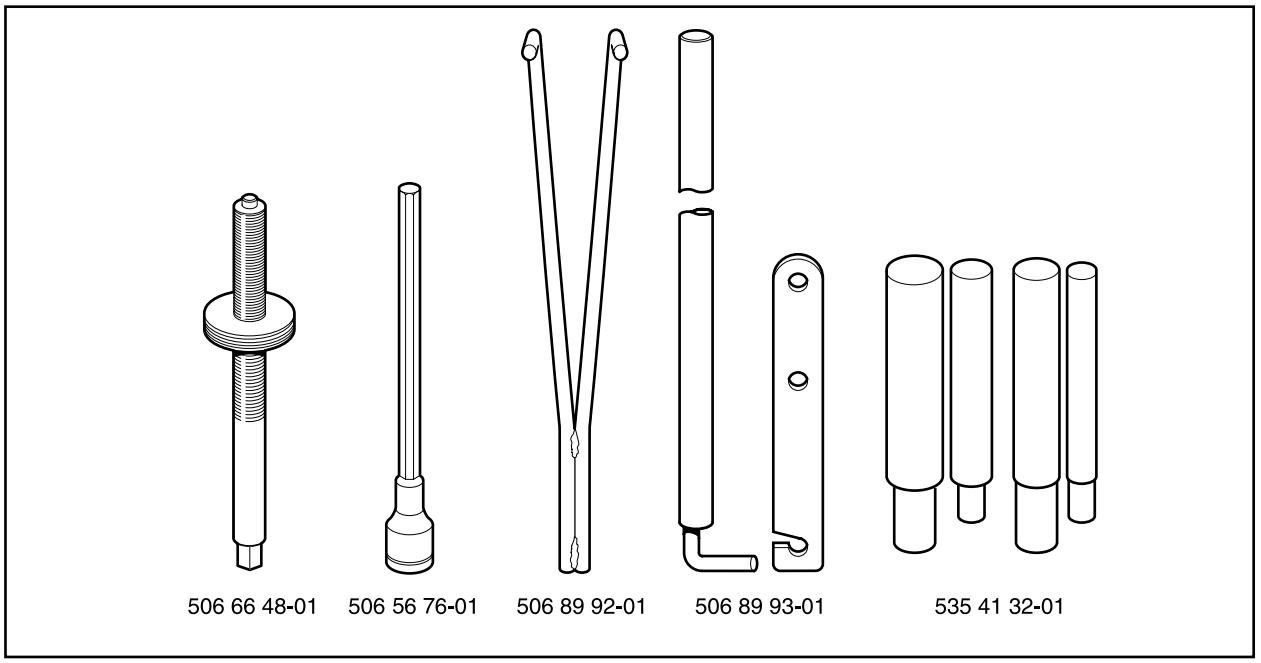
IMPORTANT INFORMATION

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

Special Tools

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

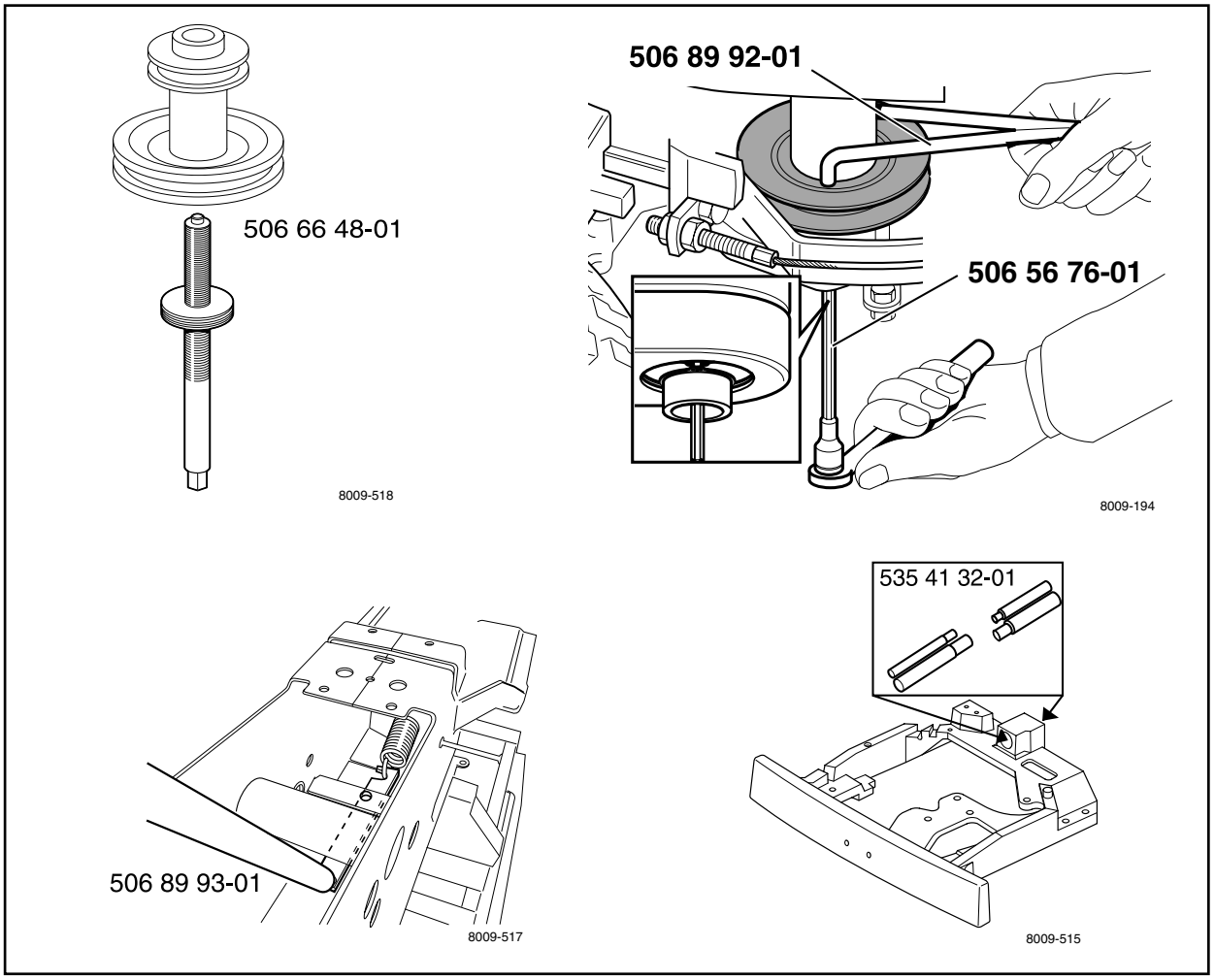
Special tools for the engine and transmission are specified in the relevant Workshop Manuals.



8009-519

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 the centre spring.
535 41 32-01	Punch kit for pendulum shaft bushings.

SPECIAL TOOLS



The figures show how the special tools are used.

SPECIFICATIONS

Specifications

	Rider ProFlex 18	Rider ProFlex 21
Dimensions and weight		
Length, base machine	2,080 mm/207.87 cm with tow hook	2,080 mm/207.87 cm with tow hook
Length with Combi 112	2,450 mm/245.06 cm with tow hook	2,450 mm/245.06 cm with tow hook
Length with Combi 122	2,550 mm/255.12 cm with tow hook	2,550 mm/255.12 cm with tow hook
Width, base machine	900 mm/89.92 cm	900 mm/89.92 cm
Width with Combi 112	1,230 mm/48.4"	1,230 mm/48.4"
Width with Combi 122	1,330 mm/52.4"	1,330 mm/52.4"
Height	1,160 mm/115.82 cm	1,160 mm/115.82 cm
Operating weight, base machine	309 kg/308.90 kg	309 kg/308.90 kg
Operating weight with Combi 112	367 kg/366.96 kg	367 kg/366.96 kg
Operating weight with Combi 122	377 kg/376.94 kg	377 kg/376.94 kg
Wheelbase	1,000mm/99.97 cm	1,000mm/99.97 cm
Track width	710 mm/70.71 cm	710 mm/70.71 cm
Max. permitted slope	15°	15°
Wheels		
Tyre dimensions	18 x 7.50 x 8	18 x 7.50 x 8
Air pressure, front and rear	60 kPa (0.6 kp/cm^2)/8.5 PSI	60 kPa (0.6 kp/cm^2)/8.5 PSI
Engine		
Manufacturer	Kawasaki	Kawasaki
	V-Twin	V-Twin
Model	FH531V-BS50	FH641V-BS50 (or -AS50)
Power	13.2 kW/18 hp	15.5 kW/21 hp
Displacement	494 cm^3/30.1 cu in	675 cm^3/41.19 cu in
Fuel	at least 87 octane unleaded	at least 87 octane unleaded
Tank volume	17 litres/4.5 US Gal	17 litres/4.5 US Gal
Oil	SAE 10W/30, 10W/40, API SF-SJ	SAE 10W/30, 10W/40, API SF-SJ
Oil volume	1.5 litres/1.6 US qt	1.5 litres/1.6 US qt
Oil volume incl. filter	1.7 litres/1.8 US qt	1.7 litres/1.8 US qt
Start	Electric start	Electric start
Gearbox		
Manufacturer	Tuff Torq K 62F	Tuff Torq K 66M
Oil	SAE 10W/30, class SF-CC	SAE 10W/30, class SF-CC
Oil volume, total	2.5 litres/2.6 US qt	2.5 litres/2.6 US qt
Electrical system		
Type	12 V, negative grounded	12 V, negative grounded
Battery	12 V, 24 Ah	12 V, 24 Ah

SPECIFICATIONS

	Rider ProFlex 18	Rider ProFlex 21
Main fuse	Flat pin, 15 A	Flat pin, 15 A
Spark plug	Champion RCJ8Y	NGK BPR4ES
Electrode gap	0.75 mm/0.030"	0.75 mm/0.030"
Bulbs Philips Brilliant Pro	2x12V 20W, type 14613	2x12V 20W, type 14613
Hydraulic System	-	
Max. working pressure	-	45 bar/630 PSI
Tightening Torques		
Drive disc steering	5–10 Nm / 3.5-7 lbf. ft.	5–10 Nm / 3.5-7 lbf. ft.
Line pulley steering cable	20-30 Nm / 14-21 lbf. ft.	20-30 Nm / 14-21 lbf. ft.
Belt pulley	35-40 Nm / 25-28 lbf. ft.	35-40 Nm / 25-28 lbf. ft.
Blades M10 bolt	45-50 Nm / 32-36 lbf. ft.	45-50 Nm / 32-36 lbf. ft.
Blades M12 bolt	75-80 Nm / 53-56 lbf. ft.	75-80 Nm / 53-56 lbf. ft.
Blade bearings	20-25 Nm / 14-18 lbf. ft.	20-25 Nm / 14-18 lbf. ft.
Belt tensioning wheel	15-25 Nm / 10-18 lbf. ft.	15-25 Nm / 10-18 lbf. ft.
Fitting screws, engine	20-25 Nm / 14-18 lbf. ft.	20-25 Nm / 14-18 lbf. ft.
Fitting screws, gearbox	20-25 Nm / 14-18 lbf. ft.	20-25 Nm / 14-18 lbf. ft.
Engine belt pulley	70-80 Nm / 50-56 lbf. ft.	70-80 Nm / 50-56 lbf. ft.

Cutting Unit

	Combi 112	Combi 122
Cutting width	1,120 mm/44"	1,220 mm/48"
Cutting heights	40-100 mm/1.57-3.93"	40-100 mm/1.57-3.93"
Blade length	420 mm/16.5"	450 mm/17.7"
Guaranteed noise level	100 dB(A)	102 dB(A)
Width	1,230 mm/48.4"	1,330 mm/52.4"
Weight	50 kg/49.90 kg	60 kg/59.87 kg
Additional weight, ProFlex	8 kg/7.98 kg	8 kg/7.98 kg

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, ProFlex 21:	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' should 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 mulching.
14. Fill in the sales papers, etc.

After the First 8 Hours

1. Change engine oil.

25-Hour Service

1. Clean the air filter's pre-cleaner (foamed plastic). (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 arrestor (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/replace 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 on the PF21 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 screws for tightness.

DELIVERY AND DEALER SERVICE

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 filter's pre-cleaner (foamed plastic).

At least once each season

1. Clean the engine's cooling air intake (25 hours).
2. Replace the air cleaner's pre-filter (foamed plastic) (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 arrestor, extra equipment (50 hours).
9. Clean/replace the spark plugs (100 hours).
10. Change the inline fuel filter (100 hours).
11. Clean/replace 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 (500 hours).
16. Replace the hydraulic oil filter ProFlex 21 (200 hours).
17. Perform the 300-hour service at an authorised service representative.

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	●							
Checking the Engine Oil Level	15	●							
Check the fuel pump's air filter.	-	▼							
Check the safety switch, seat	79	●							
Check the safety switch, lifting lever	79	●							
Check the safety switch, pedal system	79	●							
Check/clean the engine's cooling air intake	-		▼						
Check the cutting unit:	64		●						
• Attaching the blades	70		●						
• Condition of the blades (sharpness, shape, etc.)	74		●						
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	14			●					
Check the transmission oil level	16			●					
Check the condition of V-belts, belt pulleys, etc.	-			❍					
Check for damage	-			❍					
Check the air pressure in the tyres (60 kPa/8.5 PSI)	16			●					
Check to ensure that the cable seats in the middle are undamaged	-			▼					
Clean thoroughly around the engine.	-			❍					

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 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 filter's pre-cleaner (foamed plastic).	-				▼	▼			
Change the engine oil[1]).	33				●			●	
Clean the air cleaner's filter cartridge [2] (paper filter).	-				▼		▼		
Check/adjust the cutting height.	64				●			●	
Check/adjust the parking brake.	37				●		●		
Inspect the flame proofing/spark arrestor (extra equipment).	-				❍		❍		
Change the engine's oil filter (every 200 hours)	-				▼			▼	
Change the hydraulic oil filter on the PF21 (every 200 hours).	85				●			●	

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/replace the pulse air filter.	32				●			●	
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).	56				●			●	
Replace the air filter's pre-cleaner (foamed plastic)[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 pre delivery service is the first step towards an active after-sales market.
An active after-sales market 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 mulching.
- 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.

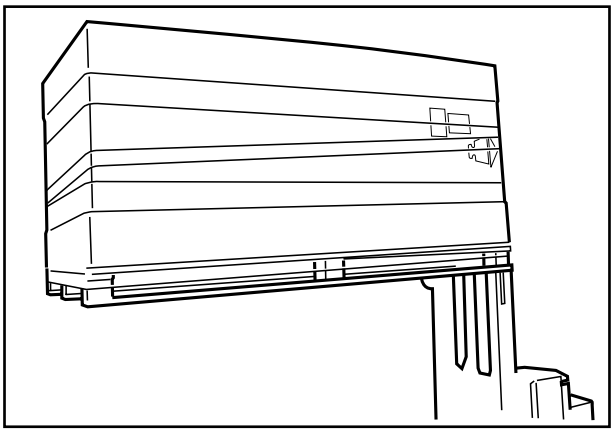
Check that the machine has not been damaged during transport when the packaging is opened. Any damage should be reported to the transport company as per routine.

The packaging shall not be returned.

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

Packed components:

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
4 pcs	Wheels (certain markets)



8009-124

Long pallet forks are required

Battery

WARNING!

Actions with acid contact

External:

Rinse thoroughly with water.

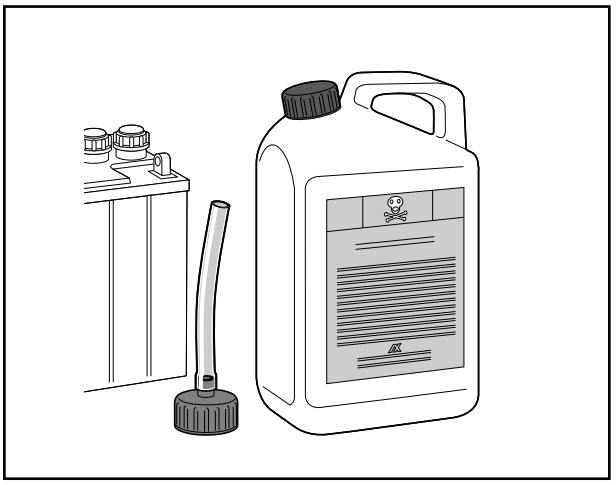
Internal:

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.

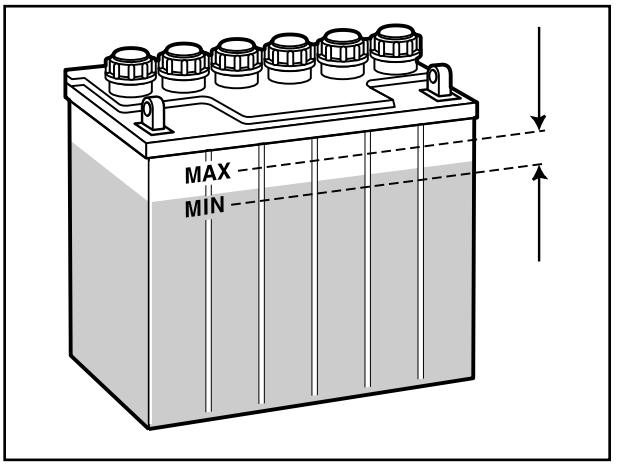


6010-007

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

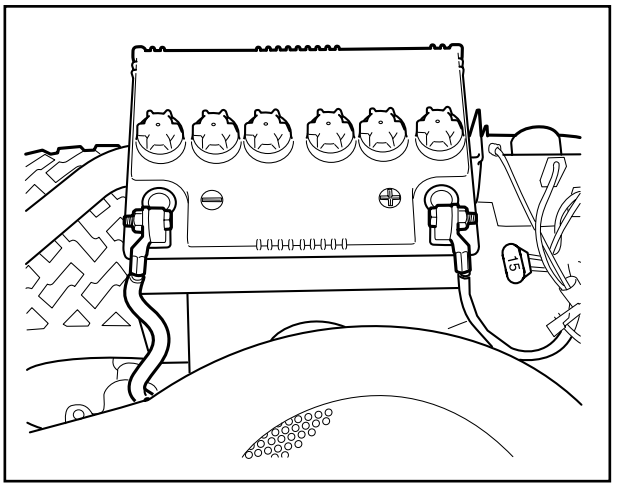
Fit the battery.

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

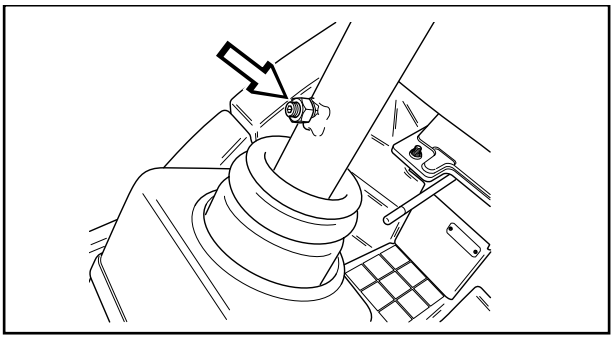
Connecting the battery

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.

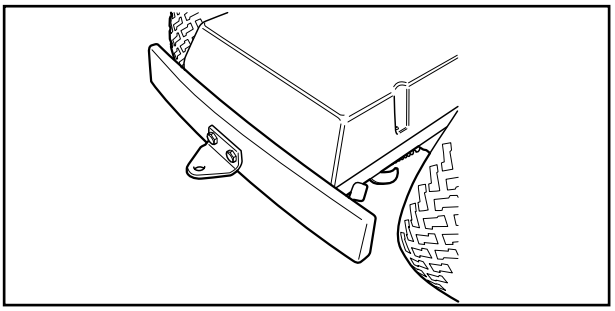


8009-360

Fitting the steering wheel

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.



8009-112

Fitting the tow hook

Checking the Engine Oil Level

Check the oil level in the engine when the Rider stands horizontal with the engine switched off.

Open 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.

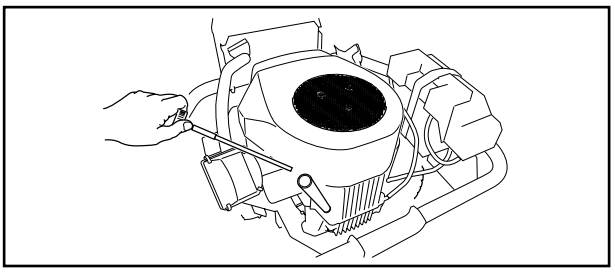
Pull out the dipstick and read the oil level.

The oil level should be between the markings on the dipstick. If the level is approaching the 'ADD' mark, top up the oil to the 'FULL' mark on the dipstick.

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

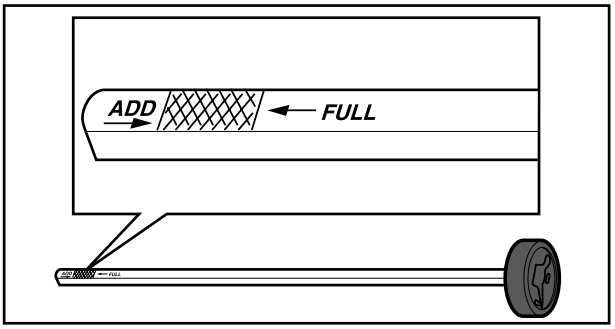
Use an engine oil with a viscosity indicated in the chart, class SF-SJ.

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



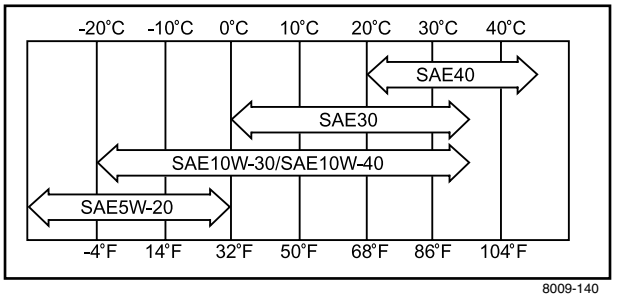
8009-158

Dipstick



8009-159

Oil level



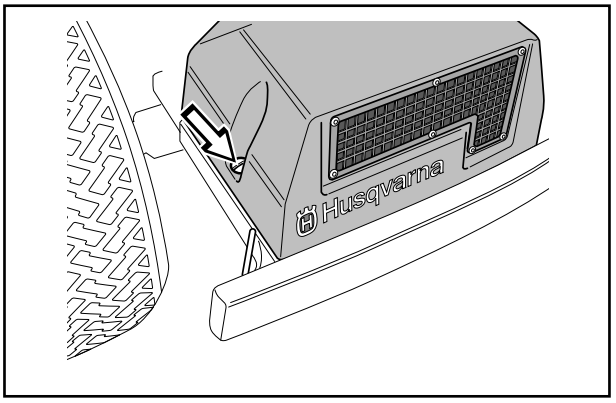
8009-140

Viscosity chart

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.



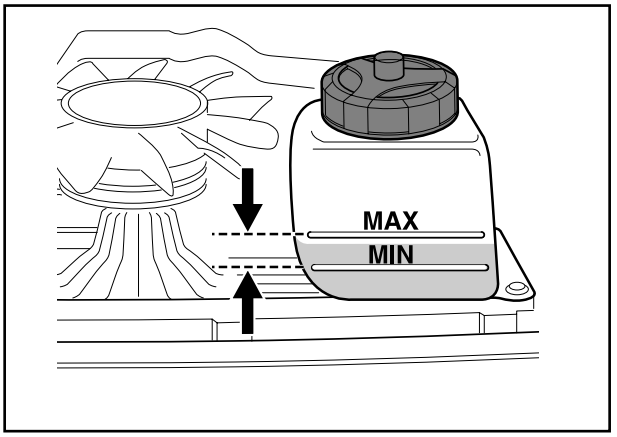
6008-209

Transmission cover

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.



6008-210

The transmission's oil tank

Wheels

Fit the wheels (certain markets).

The tyre 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.

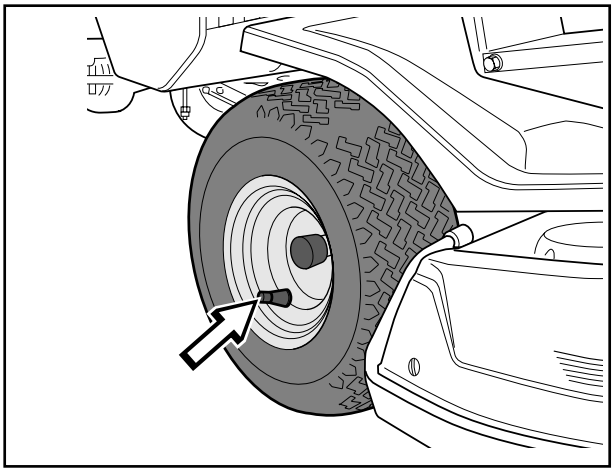
The highest permitted pressure is 100 kPa/1.0 kp/cm^2/14 PSI.

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.

.

IMPORTANT INFORMATION

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



6008-030

Wheels

Checking and Adjusting the Cutting Unit

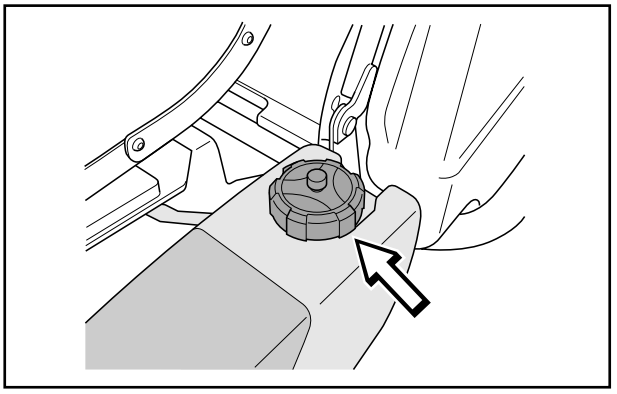
Performed after checking the tyre air pressures. See “Adjusting the Unit’s Parallelism and Cutting Height” on page 64.

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 to advantage.

WARNING!

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

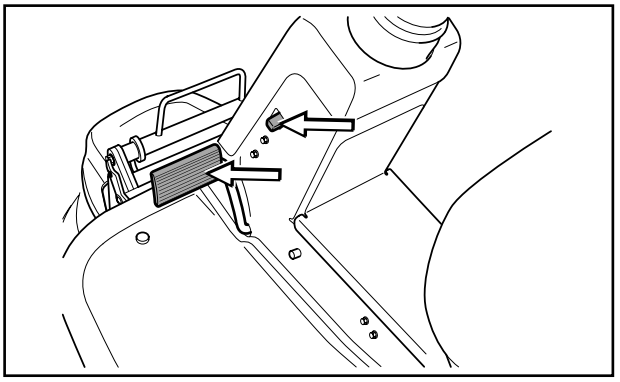


8009-330

Fuel tank

WARNING!

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



8009-328

Parking Brake

Starting the Engine

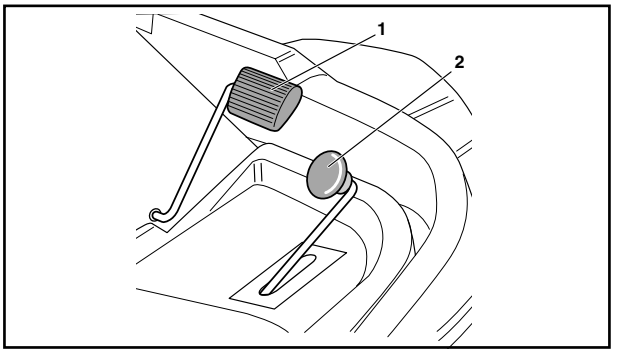
Check that the machine is in neutral and is standing still on flat ground when the parking brake is released.

Check that the parking brake works.

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

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

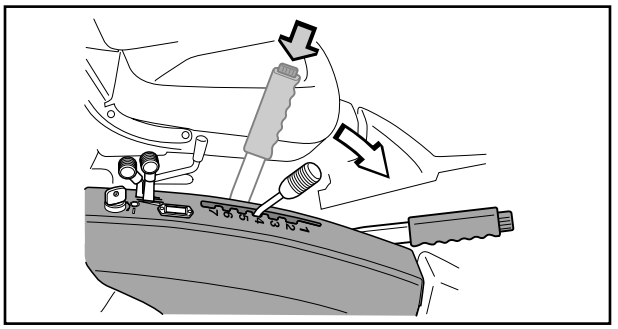
Check that the engine stops if the driver stands from the seat when one of the hydrostat pedals is pressed.



6007-209

Forward and reverse pedals

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



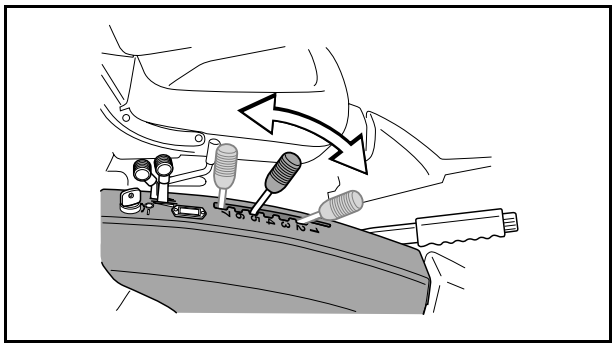
8009-324

Lower the cutting unit

DELIVERY AND DEALER SERVICE

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

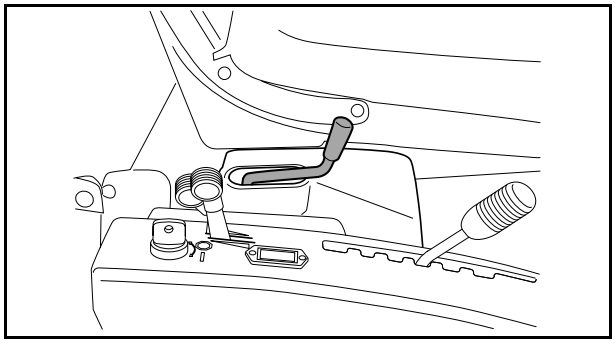
Using the lever, the cutting height can be adjusted in 7 different positions.



8009-327

Cutting height setting

Check that the hydraulic cutting unit lift is functioning on the ProFlex 21.



8009-326

Hydraulic cutting unit lift

Engine Speed Regulator

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

Rider ProFlex 18	2,925-3,075 rpm
Rider ProFlex 21	2,925-3,075 rpm

Final inspection

Bleed the hydraulic system on the ProFlex 21 after test running.

Check the oil level in the transmission and top up if necessary.

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

Replace the transmission cover.

Clean the machine if necessary, wipe up spilled oil, finger marks (on steering wheel and controls), dust, etc.

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 pre 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, bogserögla 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 klipphöjds-begränsningen är 5 mm över aggregatramen vid lägsta klipp-höjd.	☑
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 lyftspak.	☑
Säkerhetsbrytare för hydrostatpedaler/neutralläge.	☑
11. Kontrollera motorvarvtalet max. 2 950 rpm.	☑
12. Informera kunden om:	Denna leveransservice utförd.
Behov och fördelar med att följa serviceschemat.	Inga kvarstående anmärkningar.
Behov och fördelar med att lämna in maskinen var 300 tim.	Intygas: Husqvarna Knoholts Maskinservice Åsen 1 234 56 Klabbarp
Service och journalens inverkan på maskinens andrahandsvärde.	
Användningsområde för BioClip.	
13. Fyll i försäljningsbevis etc.	
Efter de första 5 tim	
1. Byt motorolja.	☐

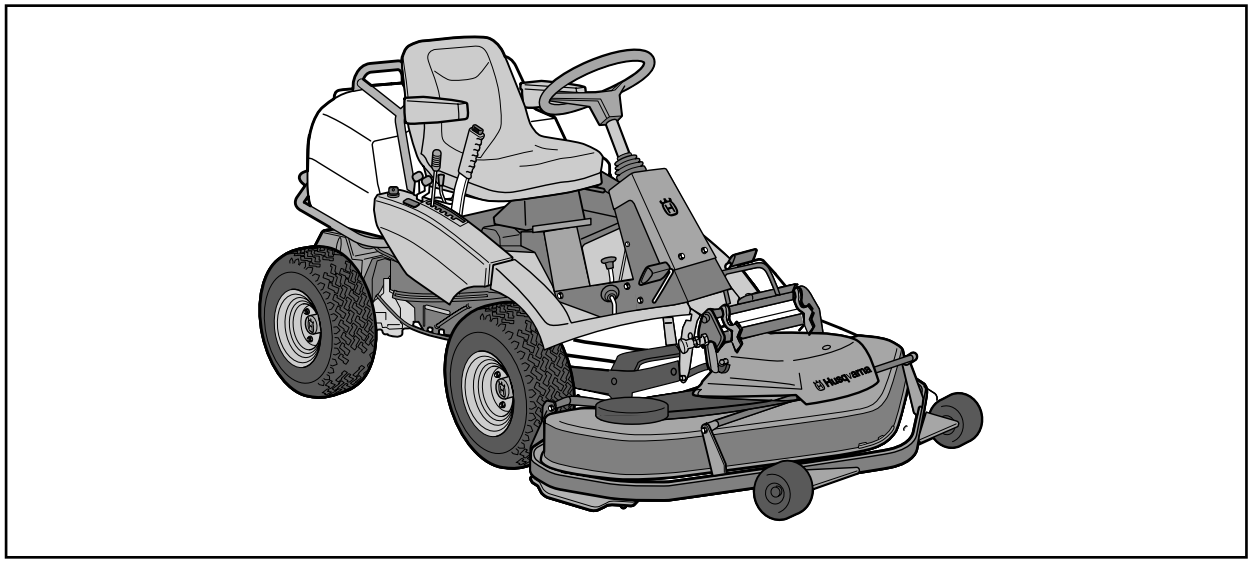
4 – Svenska

8009-228

Pre delivery service confirmation

Design and Function

General



8009-318

Rider ProFlex

This publication describes the Husqvarna Rider ProFlex 18 from the 2003 model and the ProFlex 21 from the 2002 model. There are special workshop manuals for older machines.

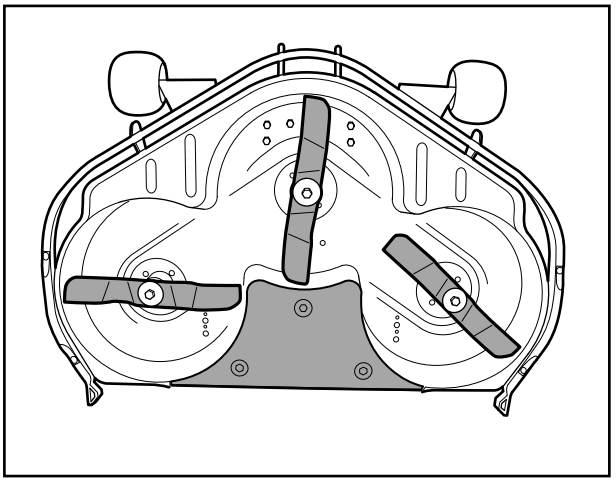
Husqvarna Riders are a series of large capacity riders. It is available in several sizes, from the smallest Rider 11 to the largest Rider ProFlex 21.

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.

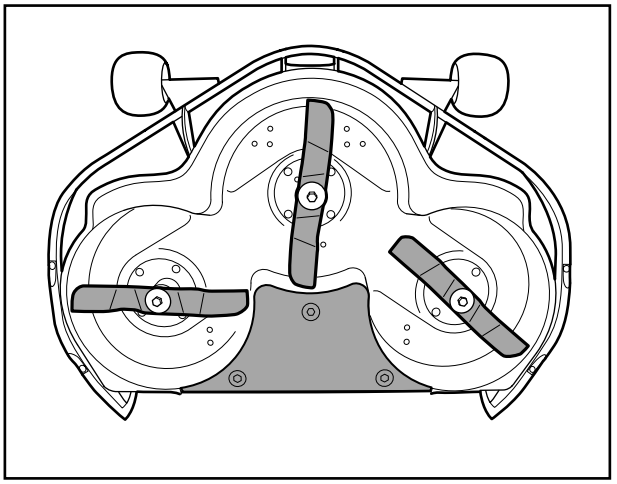
ProFlex models are only delivered with hydrostatic transmissions.

The Rider ProFlex is fitted with a Combi 112 or Combi 122 cutting unit as standard.



8009-288

Combi 112



8009-290

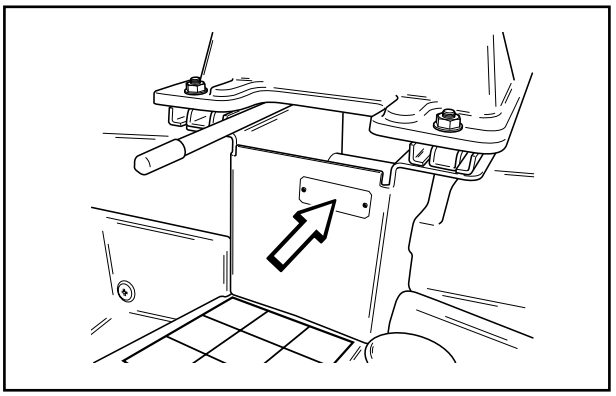
Combi 122

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.



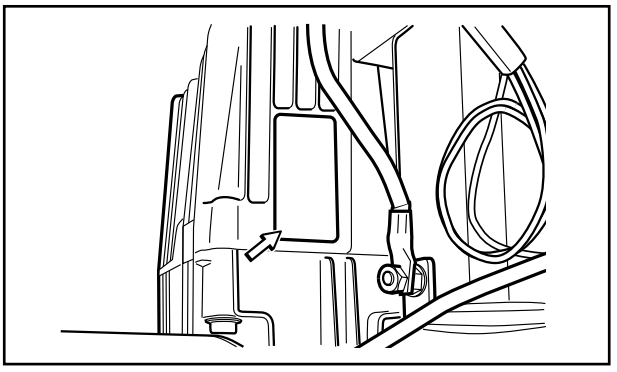
8009-361

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.



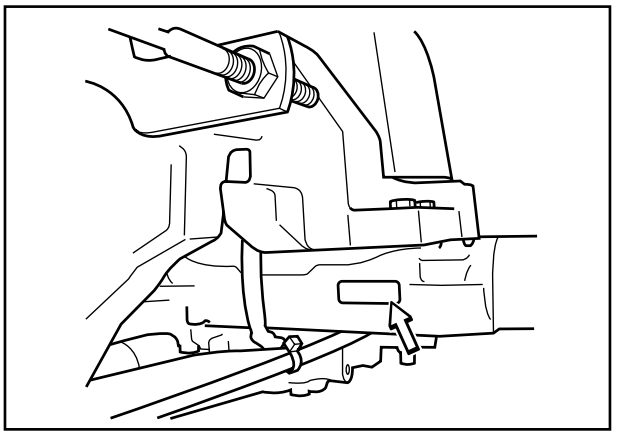
8009-205

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:

- 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 series comprises professional machines with twin-cylinder, air-cooled Kawasaki engines.

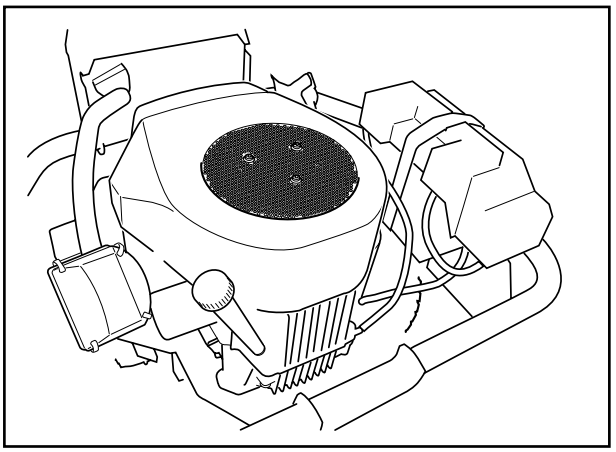
Major engine repairs are not described in this workshop manual. This information can be found in Kawasaki's manuals, which contain detailed information about adjusting and repairing the engines. These manuals can be ordered from an authorised service workshop.

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 18	FH531V-BS50
Rider ProFlex 21 or	FH641V-AS50 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 18 and ProFlex 21 have twin-cylinder, overhead valve engines with pressure lubrication and separate oil filters. 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%.



8009-223

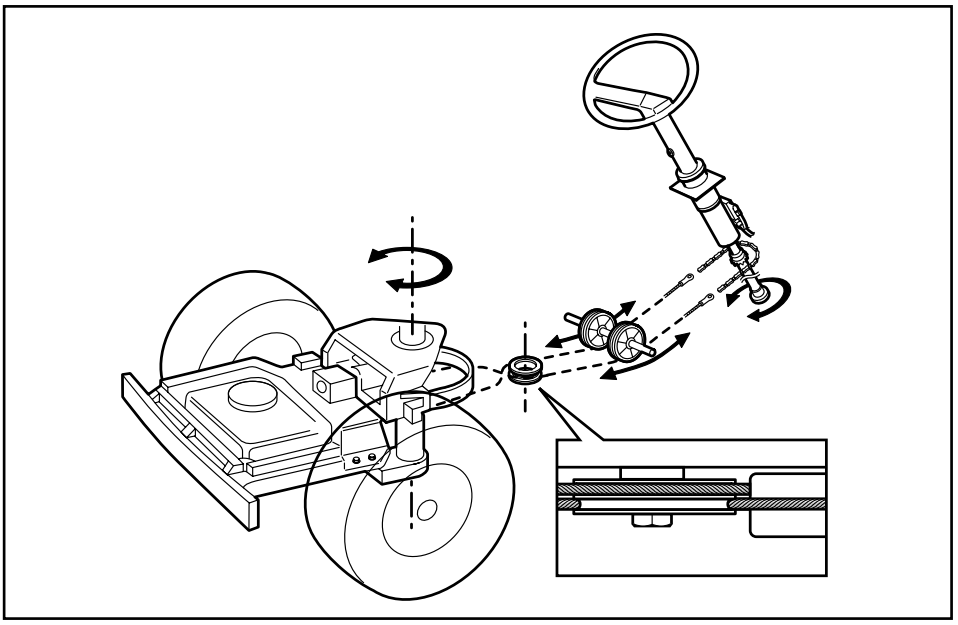
Kawasaki FH641V

Steering

All mowers in the Rider series have articulated steering. The ProFlex 21 is fitted with hydraulic servo 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.

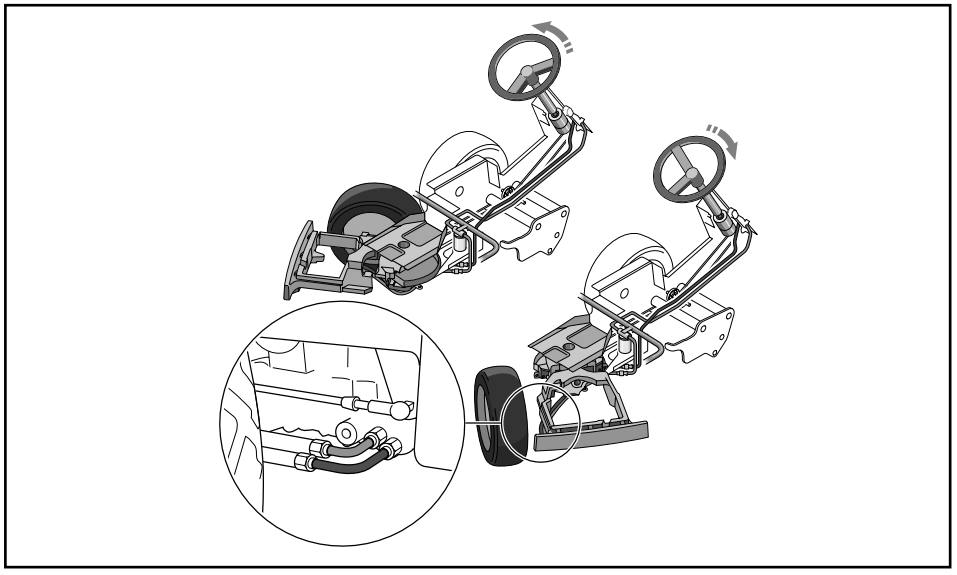
A Rider easily cuts around all obstacles on the lawn.

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 model.



8009-362

Illustration of the mechanical function of the articulated steering.



8009-359

Illustration of the hydraulic function of the articulated steering.

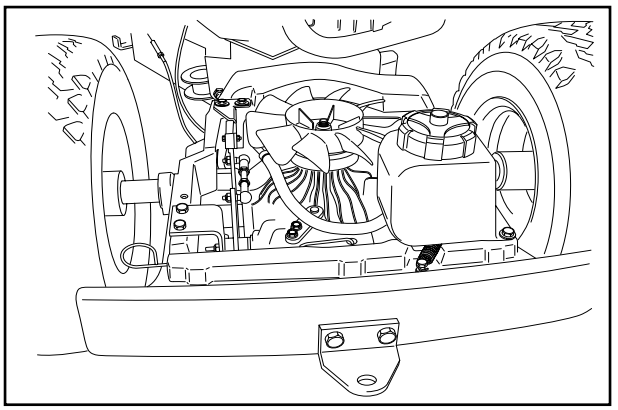
The servo steering on ProFlex 21 obtains its pressure from the pump in the hydrostatic transmission. The steering servo is mounted in the steering column and its stator section is fitted in the steering servo housing, which is the front section of the machine’s frame. The steering servo is, in principle, 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 steering servo’s outgoing shaft (the rotor section). See also “Component Locations” on page 83.

Driving

The Rider ProFlex is equipped with a hydrostatic transmission that gives the driver complete control over driving. The speed is controlled variably using the pedals, forward or back.

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

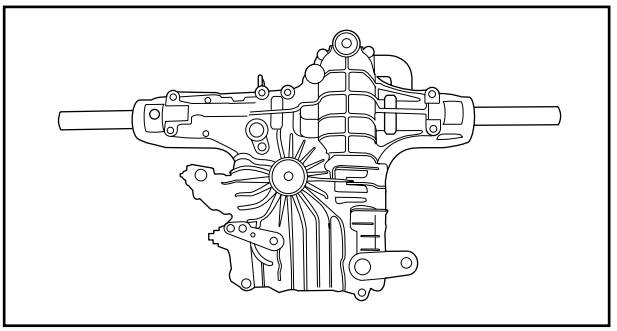
The differential lock is engaged and disengaged with a pedal found on the left side of the machine.



8009-363

The transmission cover removed

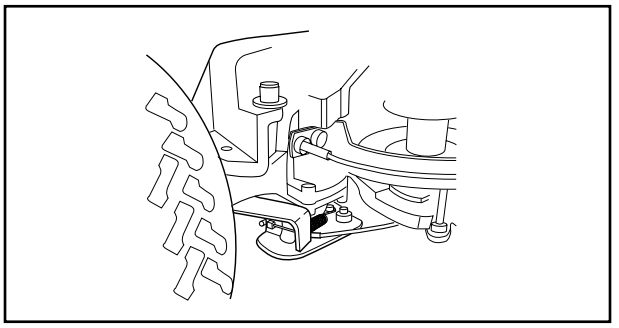
The Rider ProFlex 21's K66 hydrostatic transmission seen from above. The illustration shows the transmission without the cooling fan.



8009-032

The K66 hydrostatic transmission

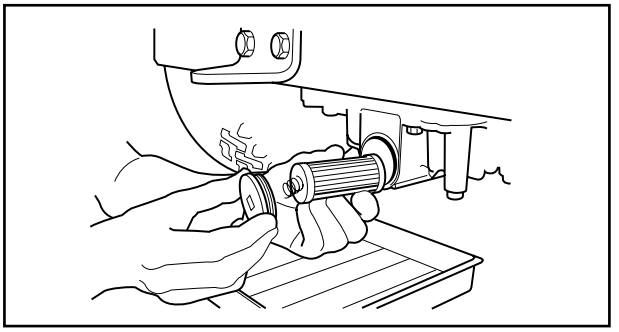
The differential lock mechanism on the ProFlex 21 is fitted to the underside of the hydrostatic transmission.



6020-379

The differential lock mechanism

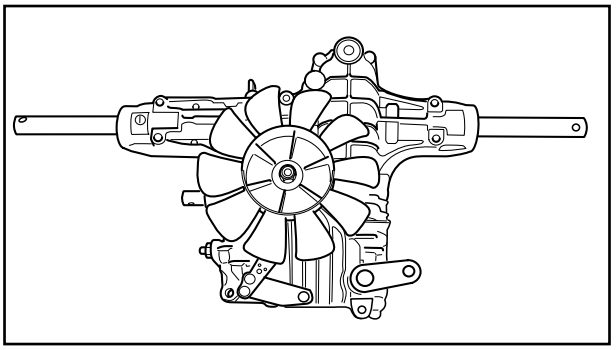
Oil drainage with filter on the K66 hydrostatic transmission for ProFlex 21 is placed at the rear of the hydrostatic transmission.



6020-003

The transmission's oil filter

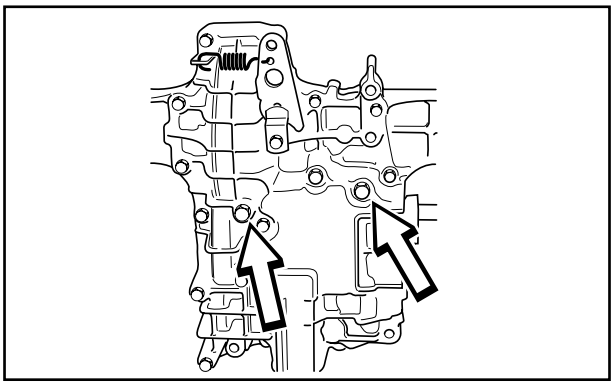
Hydrostatic transmission K62 for Rider ProFlex 18 with fitted cooling fan. The difference can be seen externally in that K62 has no differential lock controls and that the oil drainage is at the rear of the K66.



6020-220

Hydrostatic transmission K62

Oil drainage on the K62 is carried out using two plugs on the underside of the hydrostatic transmission. These plugs have a larger key size (14 mm / 9/16”) than other screws.

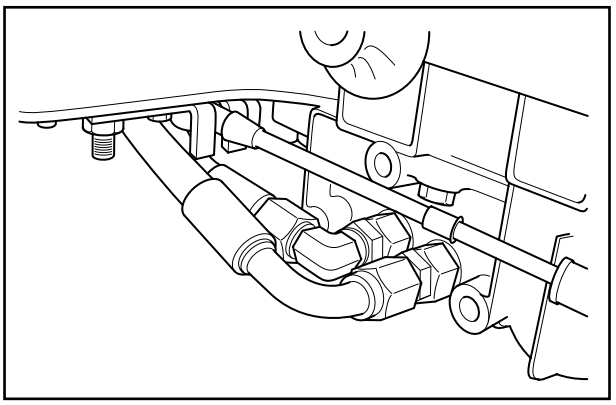


6020-225

Oil drainage K62

On the ProFlex 21, the hydraulic system is pressurised by a pump built into the hydrostatic transmission.

Hydrostatic transmission K62 does not have this pump, which is why aftermarket installation of hydraulic systems or power steering is not possible on the ProFlex 18.



8009-366

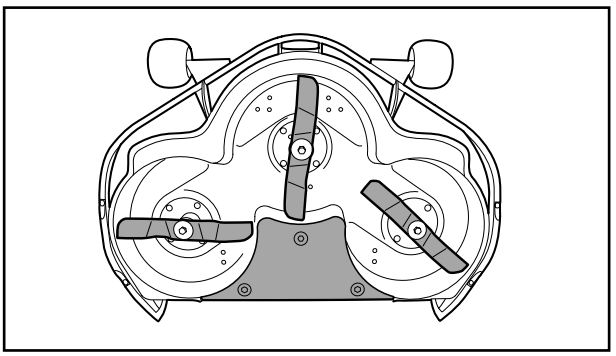
Hydraulic lines K66

Cutting Unit

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

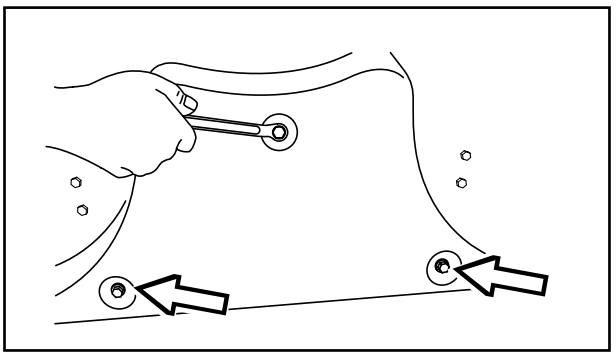
Rider ProFlex can be supplied with the Combi 122 cutting unit. Combi 112 or older types of cutting unit cannot then be attached without changing the drive belt. If you want to change from a Combi 112 to a Combi 122, the drive belt must also be replaced with a longer one.

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

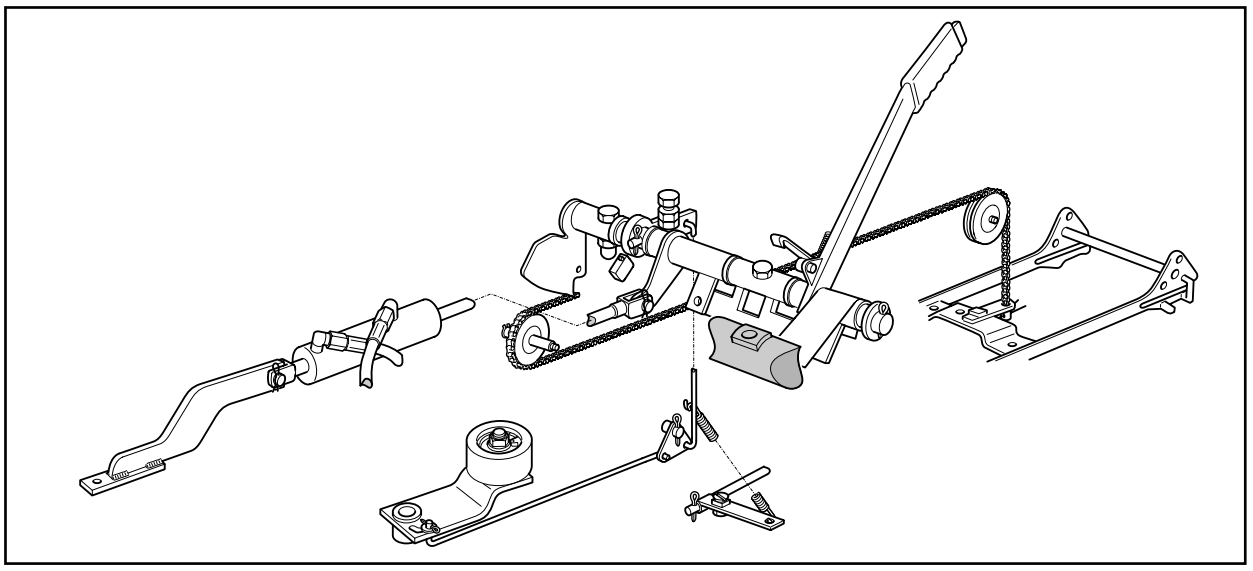
Removal of BioClip Plug

ProFlex 18 only has a mechanical attachment lifter while ProFlex 21 has both mechanical and hydraulic lifters.

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 connecting 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 connecting 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 58 for adjustment instructions.

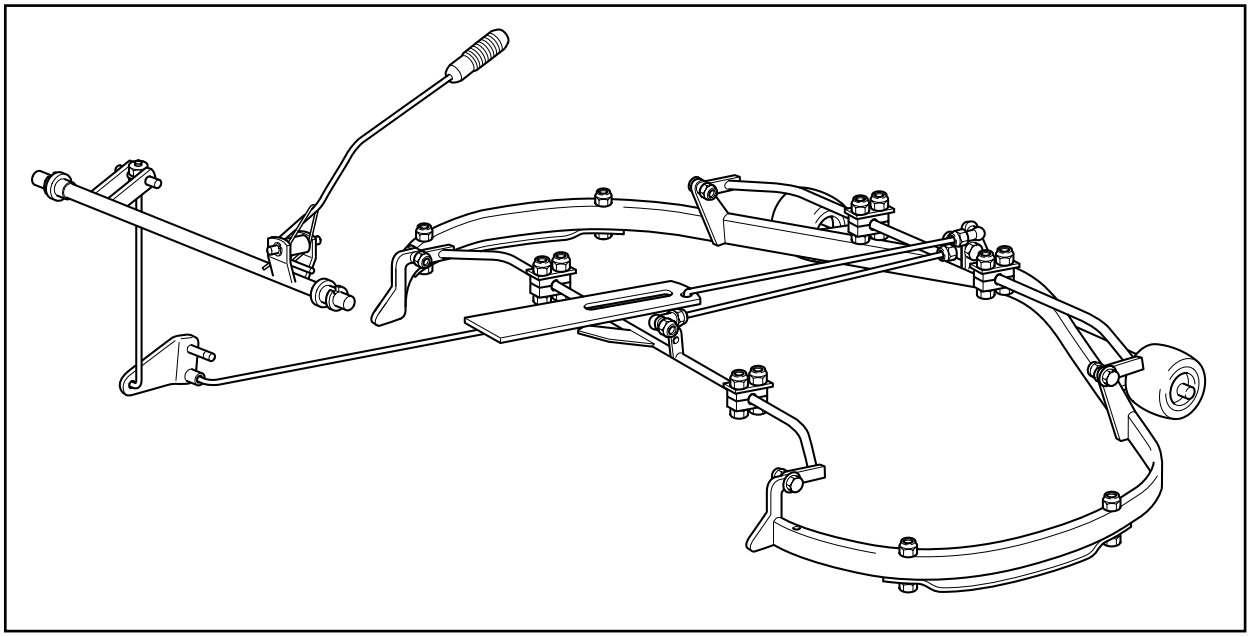


8009-301

The attachment’s lifting device on ProFlex 21

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 65. Two connecting 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 connecting rod is housed 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 connecting rod and the tongue of the forward perpendicular shaft on the top of the mowing deck 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 to adjust the mowing deck cover's parallelism with the ground. See “Parallelism” on page 64 for adjustment instructions.



8009-377

Mowing height manoeuvring

Repair Instructions

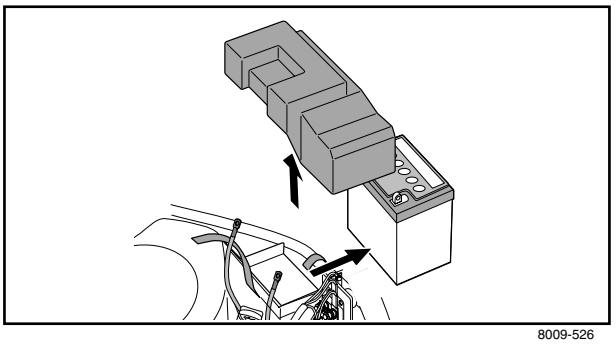
Removing the Engine

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.

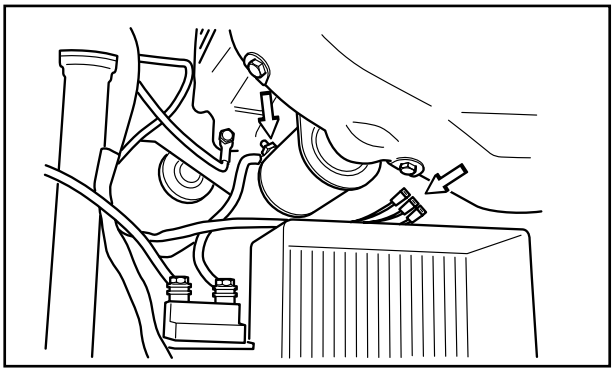
3. Loosen the battery cable connections. Then lift out the battery.



8009-526

Battery installation

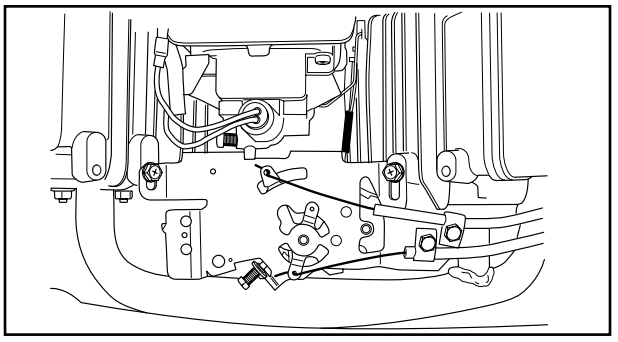
4. Remove the cable connecting the starter relay to the starter from the starter.
5. Mark and remove the engine's electrical connectors.



8009-190

Connections, to the left of the front of the engine

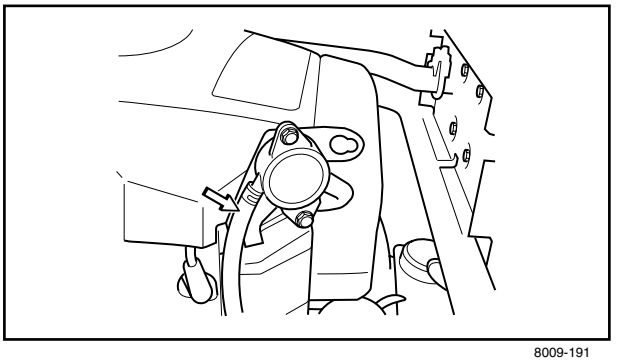
6. Remove the clips holding the throttle and choke cables. Unhook the cables from their fasteners in the carburettor.



8009-175

Throttle and choke cables

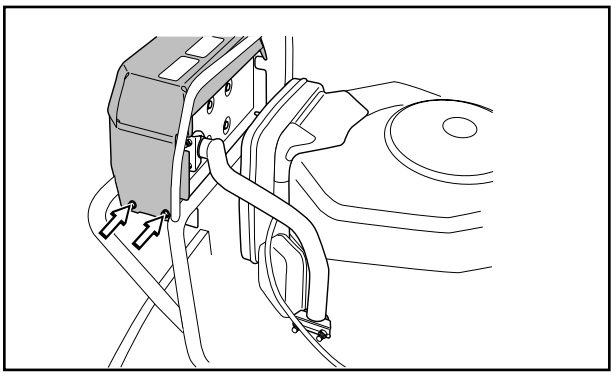
7. Remove the hose clamp on the fuel hose by the fuel pump and pull the fuel hose downwards. Place the hose so that the fuel does not leak out.



8009-191

Fuel pump

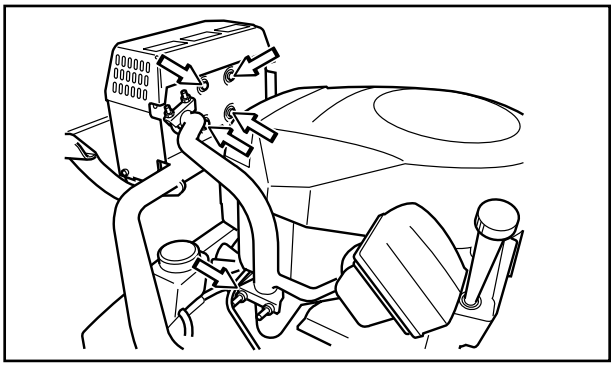
8. Loosen the cover plate over the muffler, two screws on each side of the muffler, and remove the plate.



8009-035

Muffler cover plate

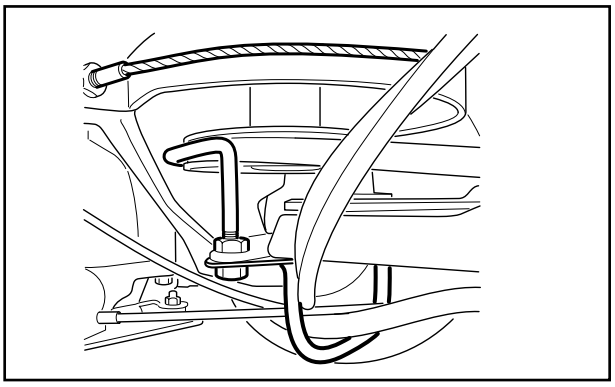
9. Loosen the exhaust pipe's pipe clamp and the muffler's four fastening screws. Then remove the muffler, exhaust pipe, and accompanying pulse air valve.



8009-193

Exhaust system

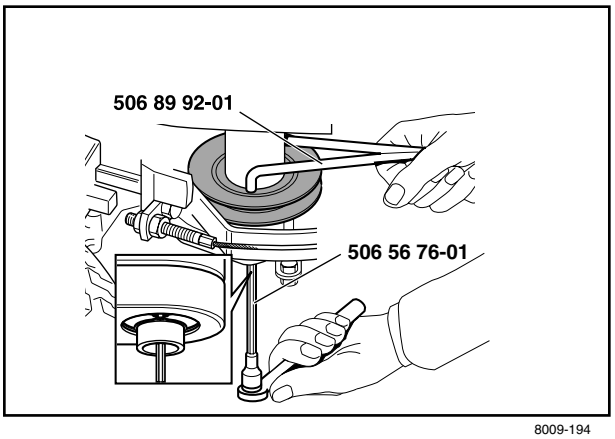
10. Remove the cable holder under the engine belt pulley.



8009-364

Cable holder

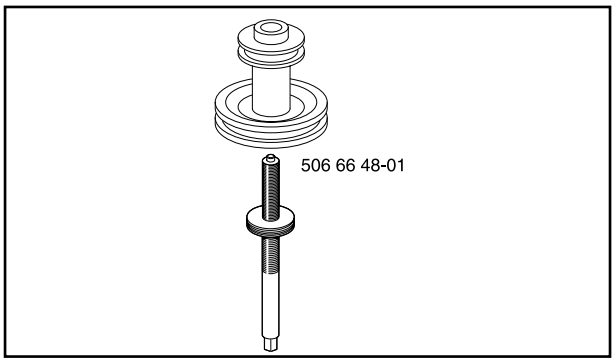
11. Push tool no. 506 56 06-01 into the centre of the engine belt pulley. Loosen and remove the Allen screw that holds the belt pulley and engine shaft together. Use tool no. 506 89 92-01 to counter. Loosen the belt pulley from the engine shaft.



8009-194

Engine belt pulley

12. Use the 506 66 00 48-01 puller if necessary.

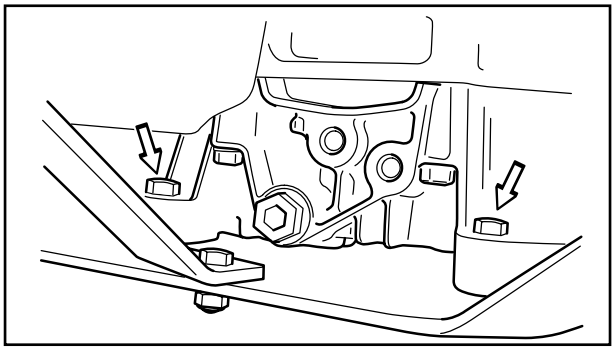


8009-518

Engine belt pulley remover

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

    The picture shows the right-hand side without the hydraulic cylinder fixture (ProFlex 18). For the left-hand side, see the illustration under 'Fitting'



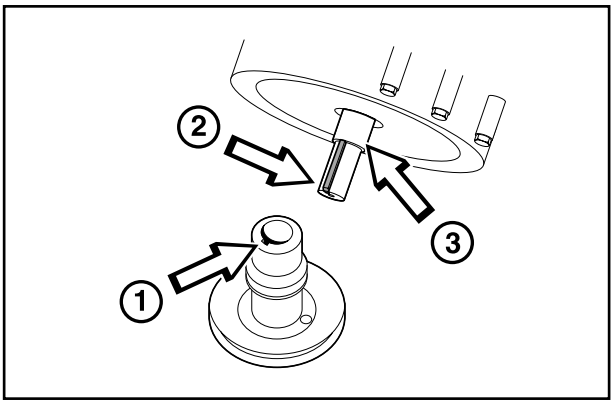
8009-192

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

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.

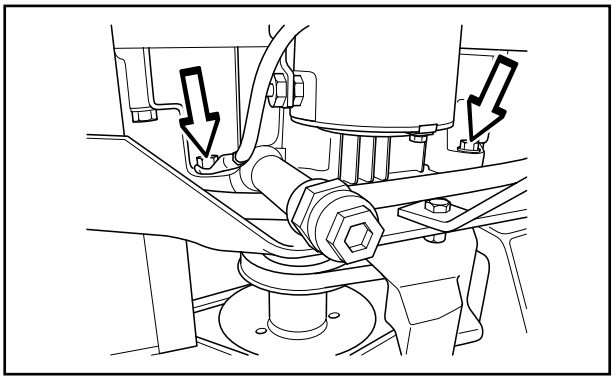


6019-039

Engine shaft and belt pulley

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.

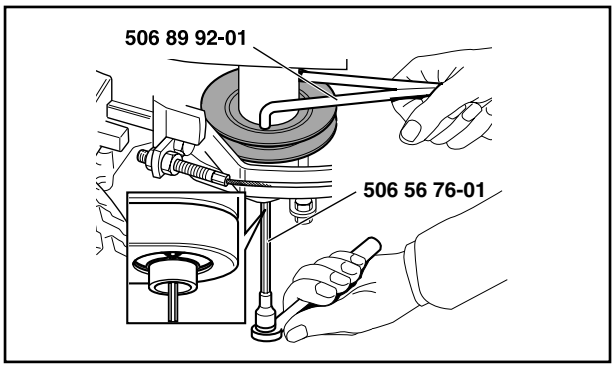
   The battery's negative cable should be attached to the forward left screw. The hydraulic cylinder fixture should be attached to the forward right screw on the ProFlex 21.



8009-365

Engine mount screws and negative cable

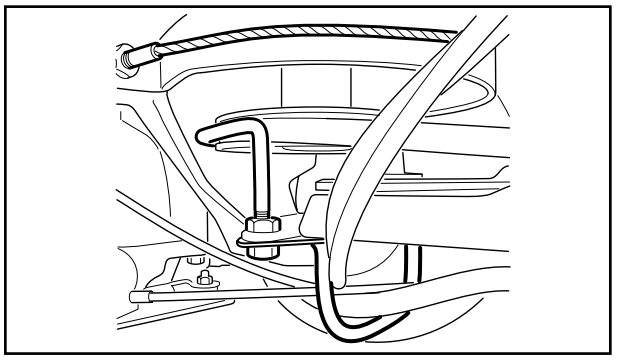
2. Fit the belt pulley with tool no. 506 56 06-01 and tighten with a torque of 80 Nm/56 lbf. ft. Use tool no. 506 89 92-01 to counter.
   Place both belts in place on the belt pulley.



8009-194

Engine belt pulley

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.



8009-364

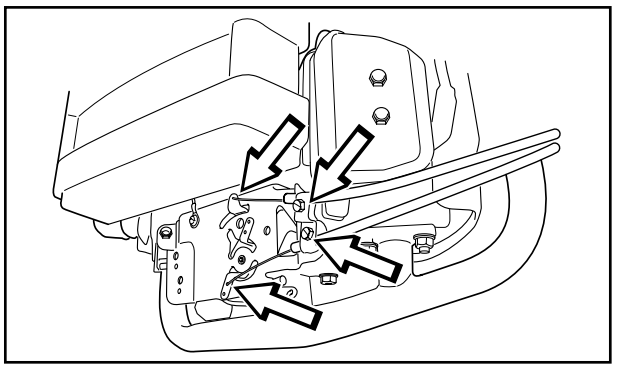
Cable holder and belt guide

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.

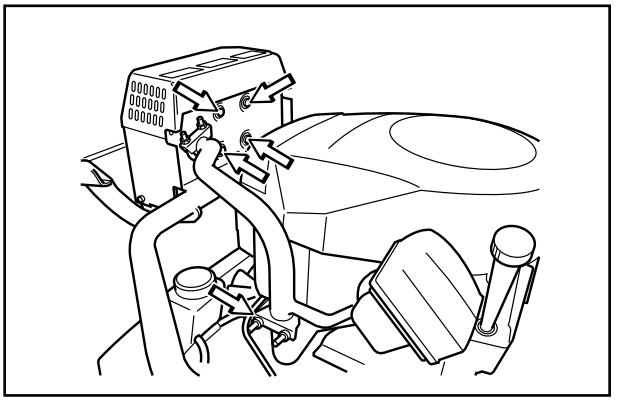
   Move the choke control to the full choke position. Pull the cable's outer casing as far to the right as possible and tighten the cable clip.



8009-527

Throttle and choke cables

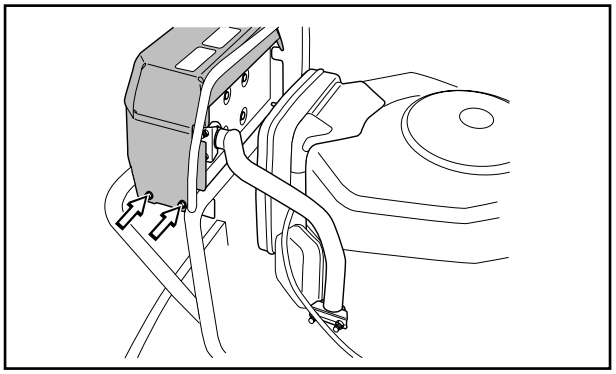
5. Fit the muffler and exhaust pipe and tighten the fixing screws and pipe clamps.



8009-193

Exhaust system

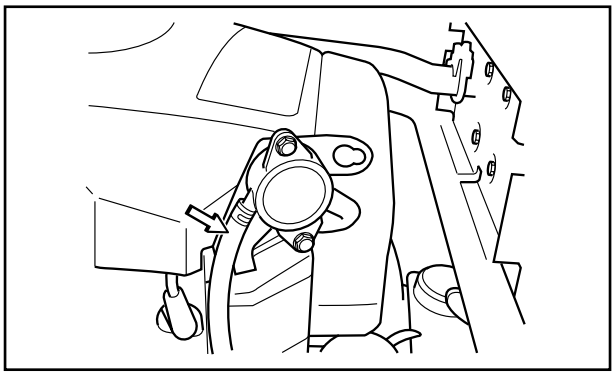
6. Attach the cover plate over the muffler, two screws on each side of the muffler.



8009-035

The muffler's protective plate

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

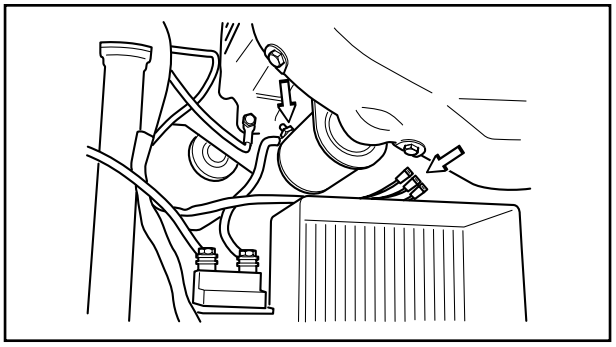


8009-191

Fuel pump

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

   Attach the engine's electrical connectors.



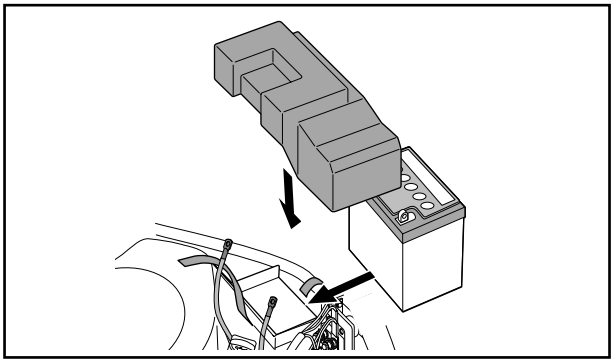
8009-190

The engine's electrical connections

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.



8009-427

Battery installation

REPAIR INSTRUCTIONS

Fuel tank

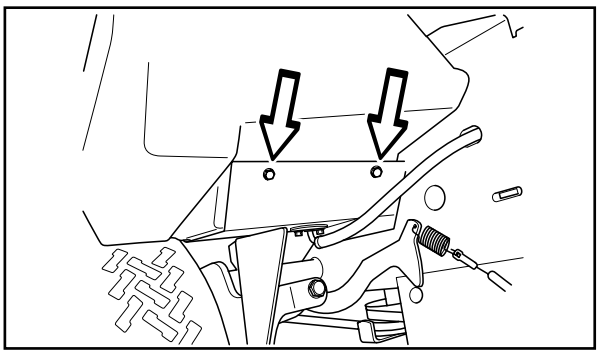
Removal

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. A screw is hidden on the front of the bracket. Lower the tank and pull out the hose through the frame of the machine (if it has been loosened by the fuel filter).



8009-399

The fuel tank fixture

Fitting

IMPORTANT INFORMATION

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

Only use approved screws specified in the spare parts catalogue.

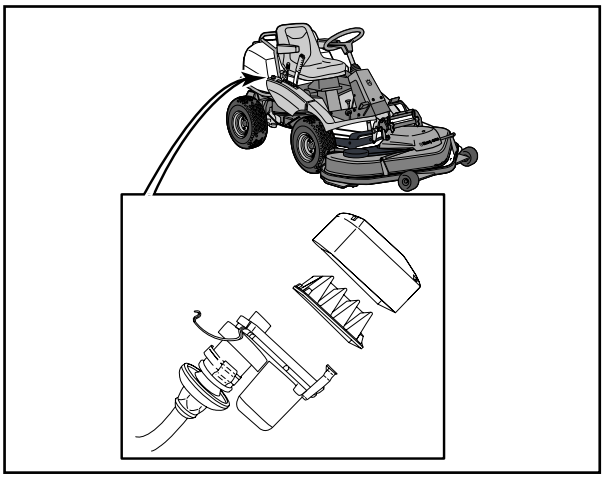
1. It is easier to work if you empty the tank before fitting. Insert the hose into place and attach it to the fuel filter with the hose clamp. Make sure that the hose cannot be chafed or rubbed.
2. Place the tank in place on the bracket and attach it with the screws and washers.
3. Fit the fuel hose and the hose clamp to the connector under the tank as required. Fill with petrol and check that there are no leaks.

Pulse Air Valve Intake Filter

Cleaning the pulse air 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. Replace the filter if it is damaged or cannot be blown clean.

Place the filter back in the cover and fasten the cover with the snap catches. Replace the engine cover.



8009-342

Pulse air valve filter

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.

Open 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 approaching the 'ADD' mark, top up the 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, SAE 10W/30 or 10W/40, class SF-SJ (over 0° C/+32°F).

Over +20°C/+68 °F SAE 40 can be used.

Use engine oil SAE 5W/20, class SF-SJ (under 0° C/+32°F).

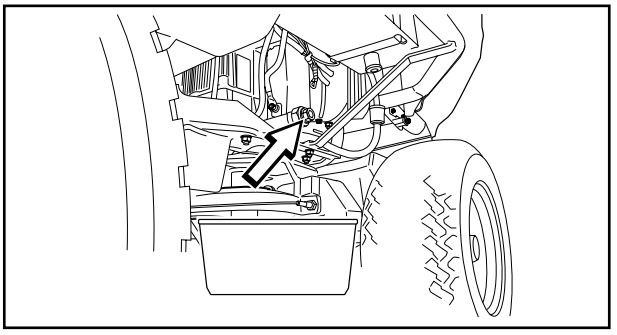
The engine holds 1.5 litres/1.6 US qt of oil excluding the filter (including filter 1.7 litres/1.8 US qt).

WARNING!

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

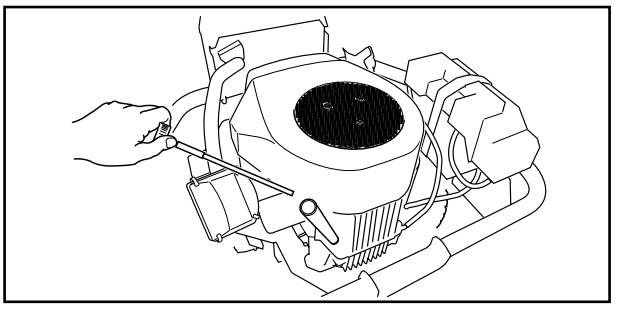
IMPORTANT INFORMATION

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.



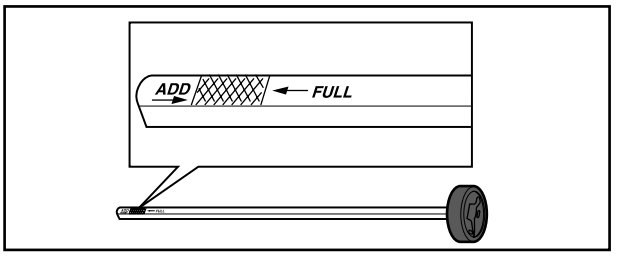
8009-529

Engine oil drainage



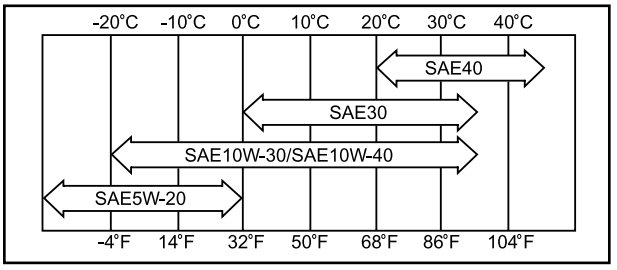
8009-158

Oil dipstick



8009-159

Oil level



8009-140

Viscosity chart

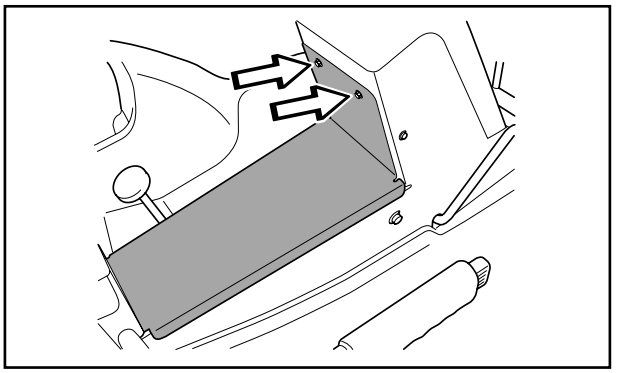
Checking and Adjusting the Steering Cables

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).

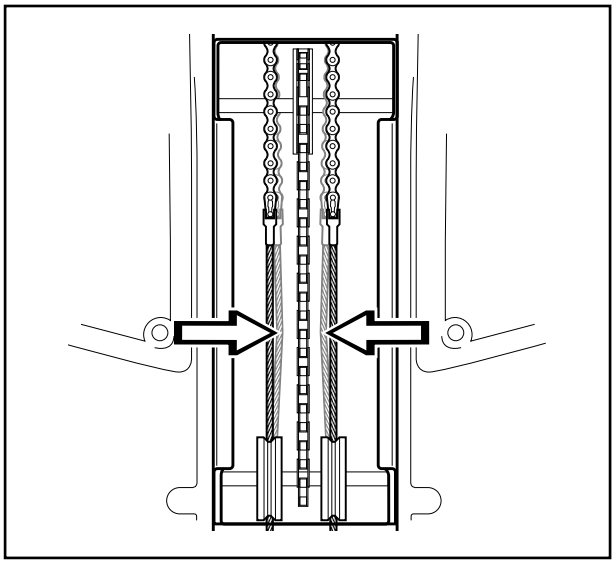


8009-340

Frame plate

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

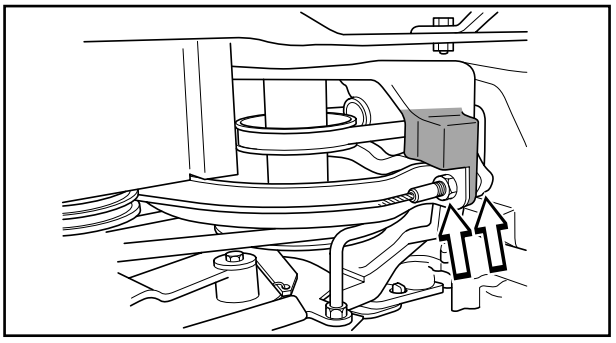
Steering cable tension

3. If necessary, the cables can be adjusted 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.

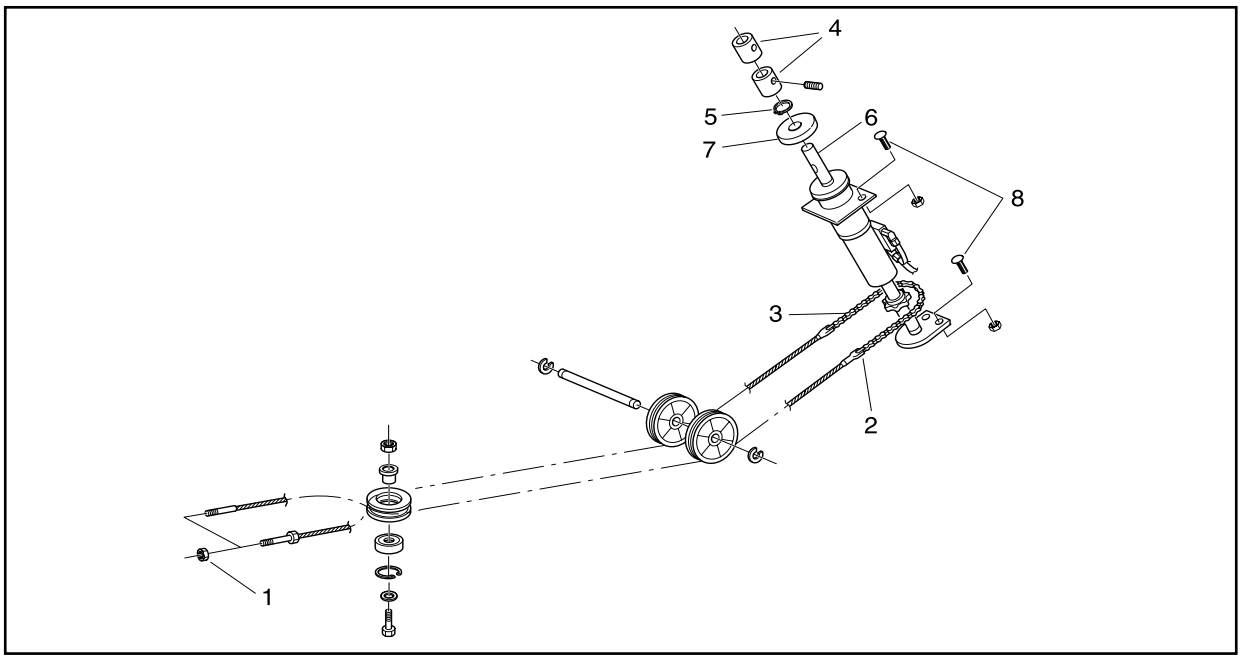
   Do not over tighten the cables; they should only be drawn in towards the steering collar.

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



8009-341

Lock nut and adjustment nut, left side



Power steering and steering cables

Replacing the Steering Cables

1. Loosen the steering cables' rear mount (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 Steering Shaft

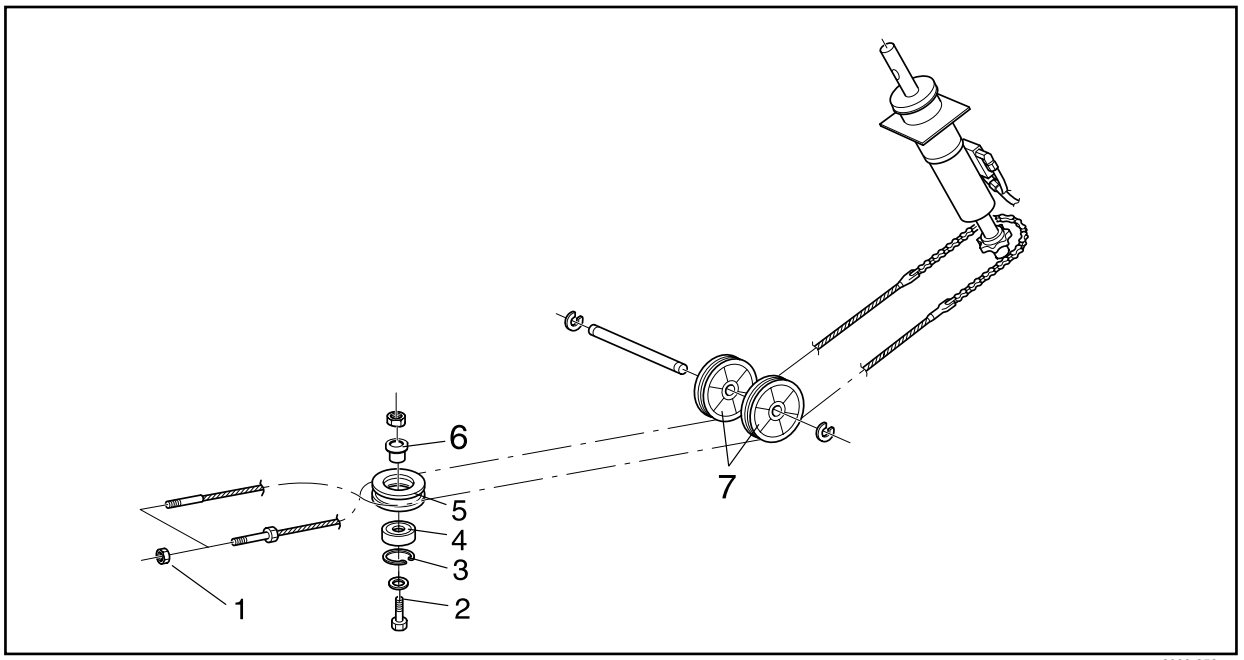
ProFlex 18

Follow the instructions for removing/fitting the power steering for ProFlex 21 where applicable.

Removing/Fitting the Power Steering

ProFlex 21

1. Remove the cutting unit.
2. Loosen the steering cables' rear mount (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. Disconnect the electrical cables for the lighting.
7. Remove the circlip (5) and the bellows holder (7) on the top of the power steering.
8. Clean, see "Working Methods" on page 82. Loosen the hydraulic hoses from the power steering.
9. Remove the steering column's two drive discs (4).
10. Remove the four screws (8) that hold the power steering's brackets in the power steering housing.
11. Pull the power steering (6) upwards and move the lower section backwards in order to force off the steering chain (3).
12. 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.
13. Bleed the hydraulic system of excess air.



8009-358

Steering cables and cable pulley

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.

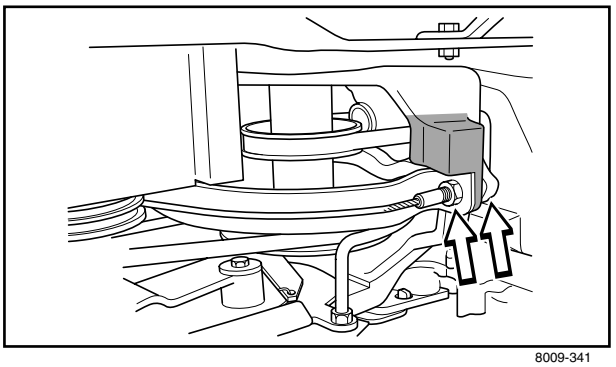
   Ensure that the cables are properly situated under the steering cable rollers (7) in the frame tunnel.

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

After mounting, the cable tension should be checked, see "Remove the frame plate by loosening the screws (two on the power steering housing)." on page 34.

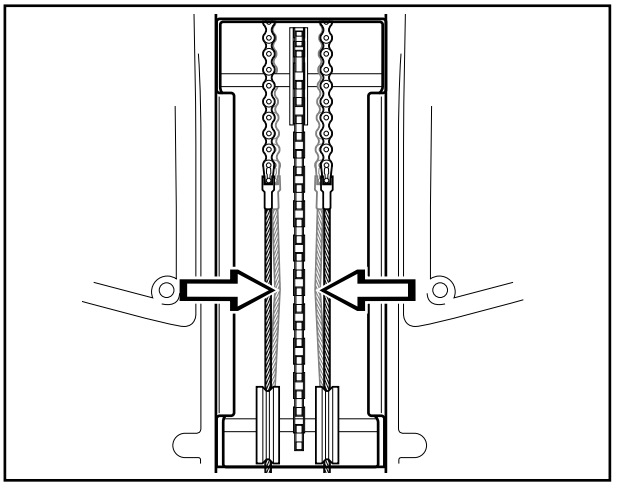
Ensure that the steering wheel is in the centre position when the rear wheels are centred. Reset the chain on the power steering sprocket or adjust the rear fixture for the steering cables (1) as needed.

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



8009-341

Steering cable's rear mount, left side



6008-212

Steering cable tension

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.

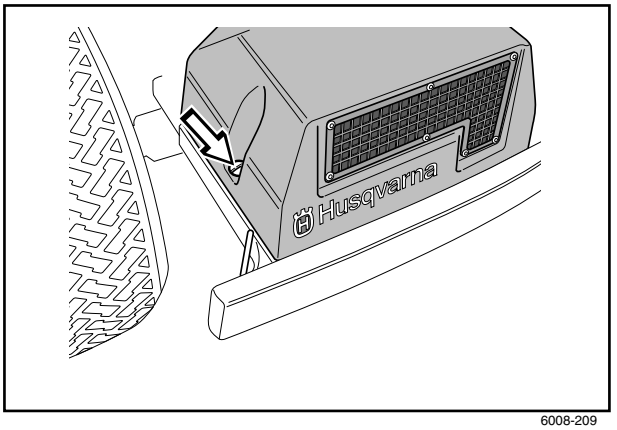
If the rider does not stand still, the brake needs adjusting.

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 pulling 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.

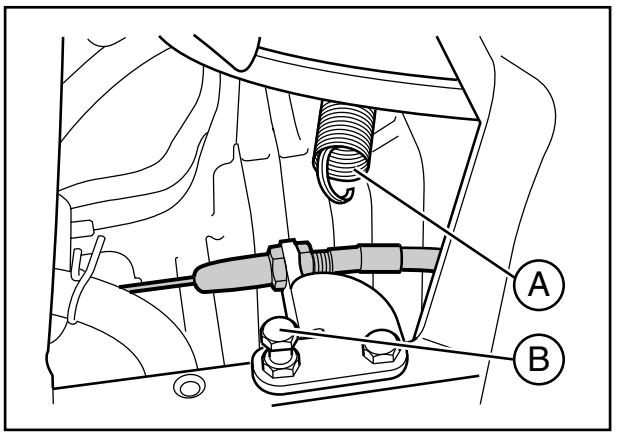
WARNING!

A poorly adjusted brake can result in reduced braking ability.



6008-209

Transmission cover



6020-005

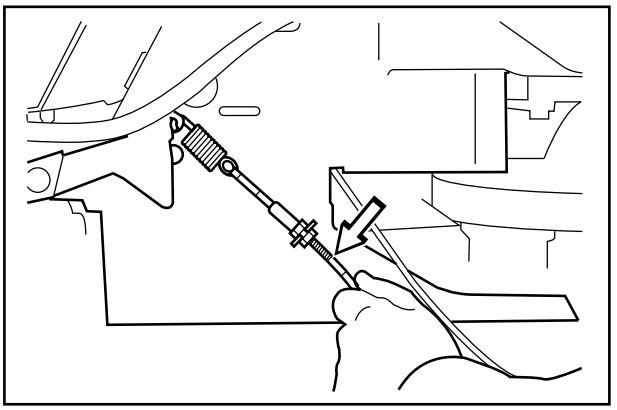
Adjusting the parking brake

Adjusting the Differential Lock

Rider ProFlex 21

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.



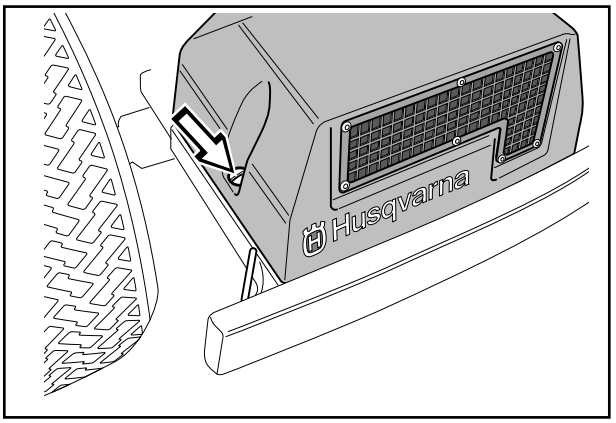
6020-011

Adjusting the differential lock

Adjusting of the Hydrostatic Transmission Cable

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

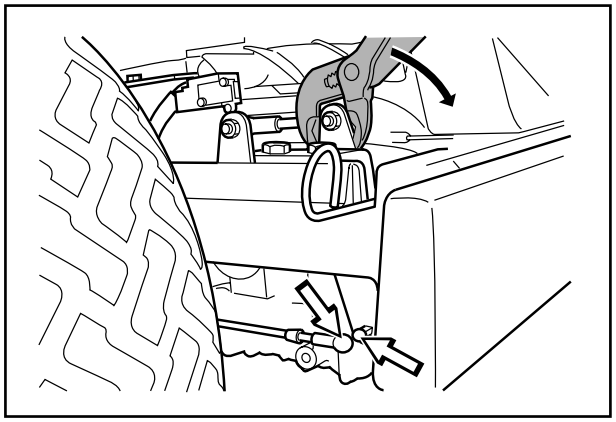
1. Remove the transmission cover. Loosen both screws (one on each side) and lift off the transmission cover.
2. Take apart the lower ball joint, which is locked with a locking spring.
3. Ensure that the forward drive pedal is pressed down completely.



6008-209

Transmission cover

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.



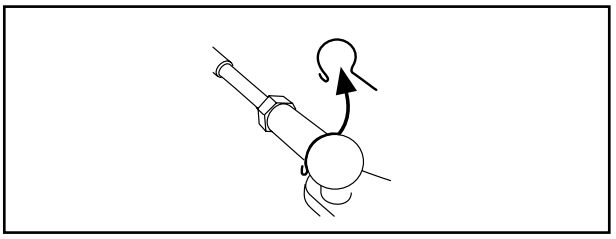
6020-002

Checking the adjustment of the hydrostatic transmission cable

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.



8009-203

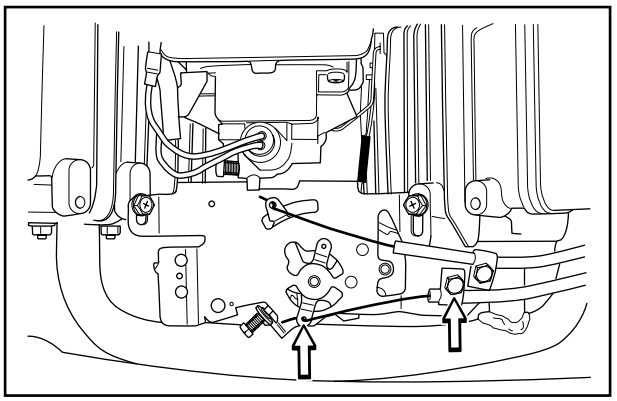
The link joint's locking spring

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

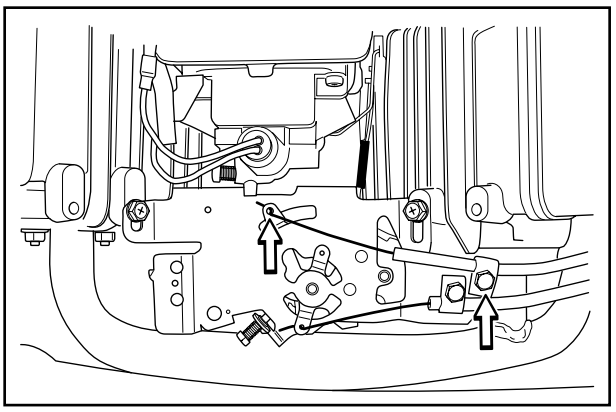
Throttle cable

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.

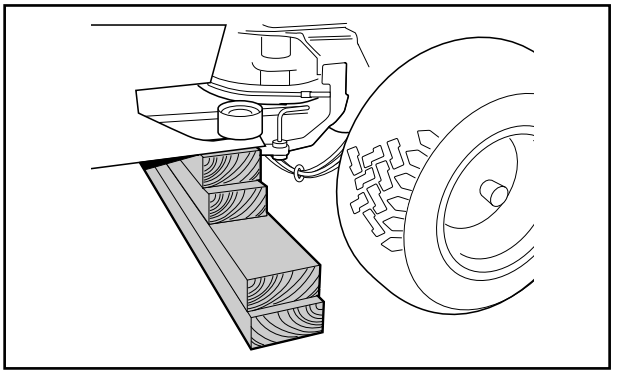


8009-177

Choke cable

Replacing the Articulated Steering Bearings

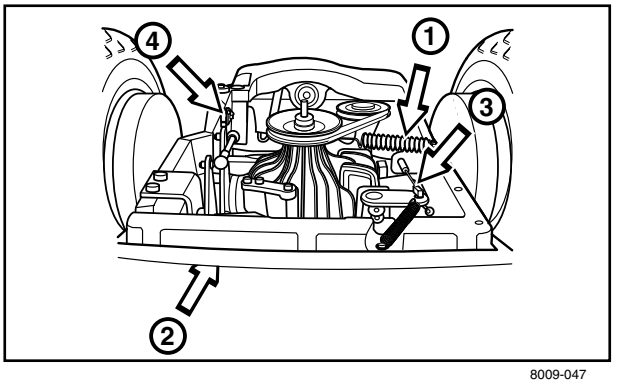
1. Remove the engine as previously described "Removing the Engine" on page 27.
2. Jack up the rider in front of the articulated steering.
3. Pull off the drive belt.
4. Loosen the transmission oil tank and move it out of the way in order to access the brake cable.



6012-023

Jacking up

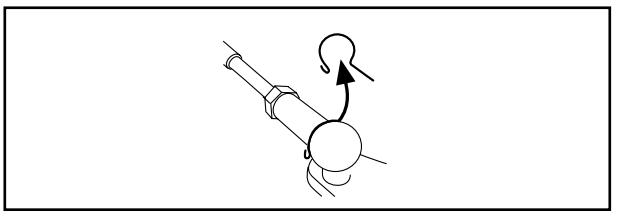
5. Loosen the idler's spring (1).
6. Remove the locking spring and loosen the throttle control's link joint locking spring on the bottom side, and remove the cable from the under side of the shaft (2).



8009-047

Steps 1-4

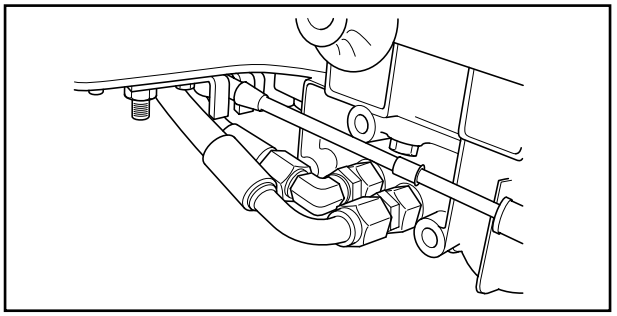
7. Loosen the brake cable's spring and nuts. Remove the cable from the brake arm (3).
8. Remove the cable from the neutral position contact (4).
9. Loosen the cable to the differential lock on ProFlex 21, see "Removing/Mounting the Hydrostatic Transmission" on page 44.



8009-203

Locking spring

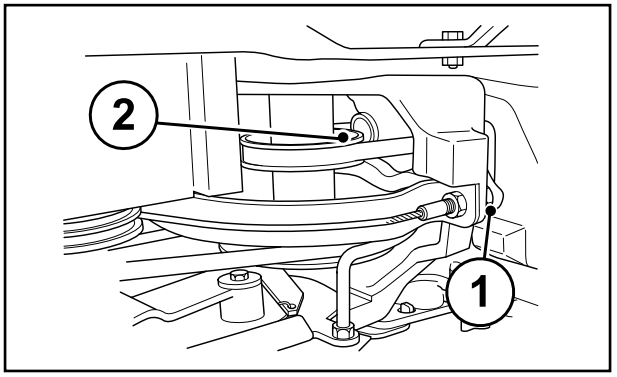
10. **ProFlex 21**
    Clean, see “Working Methods” on page 82. Loosen the hydraulic hoses from the hydrostatic transmission.



8009-366

Hydraulic hoses

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.



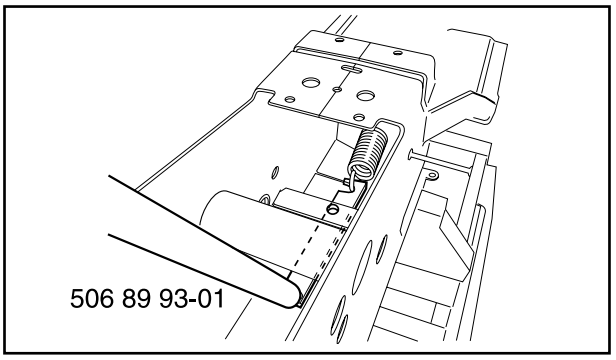
8009-367

Steering cables and belt pulley

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.

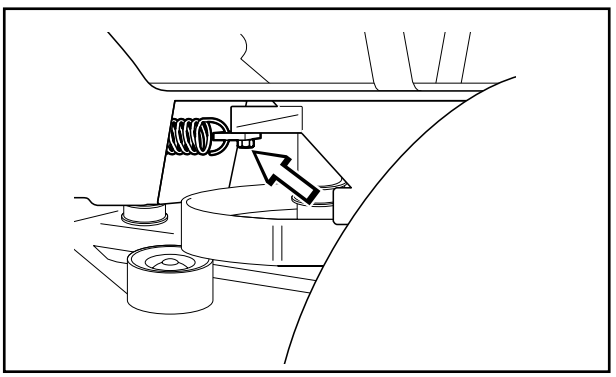
13. Loosen the centre spring. This spring is under high tension and the load should be relieved with the help of tool number 506 89 93-01.



8009-517

Relieving load on centre spring.

14. Remove the screw for the centre spring’s rear mounting **after** the load on the spring has been relieved.

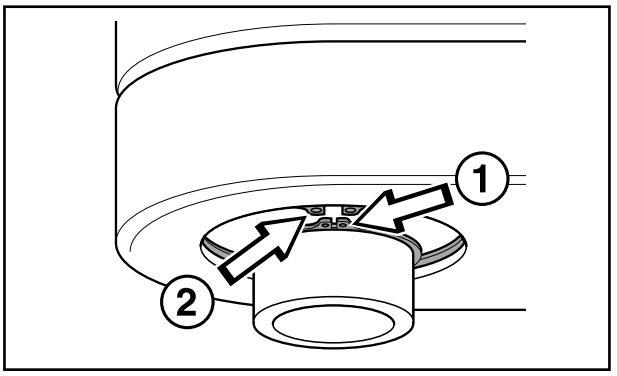


6012-026

The centre spring’s rear mounting

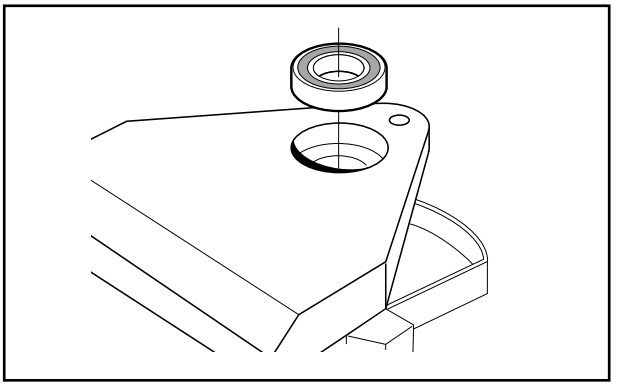
15. Remove the inner circlip (1) by the lower bearing (see illustration). The rear carriage is now loose and can be moved. Then loosen the outer circlip (2) and remove the bearing from below
16. Remove the upper bearings from above; if they are stuck tap them from below.
17. Fit the new bearings and mount the articulated steering in the reverse order that it was removed.
18. After mounting, the cable tension should be checked, see “Remove the frame plate by loosening the screws (two on the power steering housing).” on page 34.

    Also check that the controls and cables are properly adjusted, see “Adjusting the Brake” on page 37, “Adjusting of the Hydrostatic Transmission Cable” on page 38, and for ProFlex 21 “Adjusting the Differential Lock” on page 37.
19. Check the adjustment of the neutral position contact. See “Microswitch: Neutral Position” on page 80.
20. **ProFlex 21**
    Bleed the hydraulic system. Top up the oil after test running.



6012-027

Lower bearings

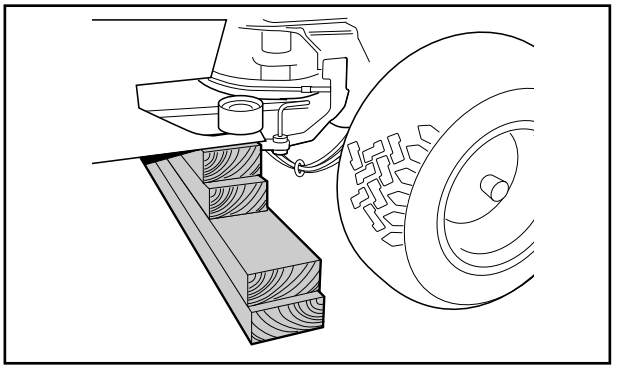


6012-028

Upper bearings

Removing the Pendulum Shaft

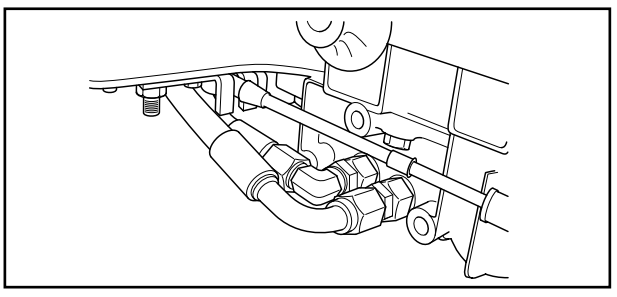
1. Jack up the rider in front of the rear frame.
2. Remove the transmission cover.
3. Loosen the transmission oil tank and move it out of the way in order to access the brake cables.



6012-029

Jacking up

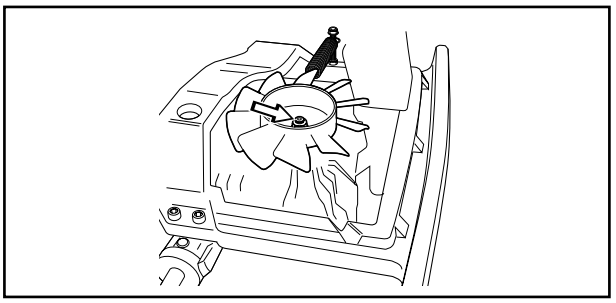
4. **ProFlex 21**
   Clean, see “Working Methods” on page 82. Loosen the hydraulic hoses from the hydrostatic transmission.



8009-366

Hydraulic hoses

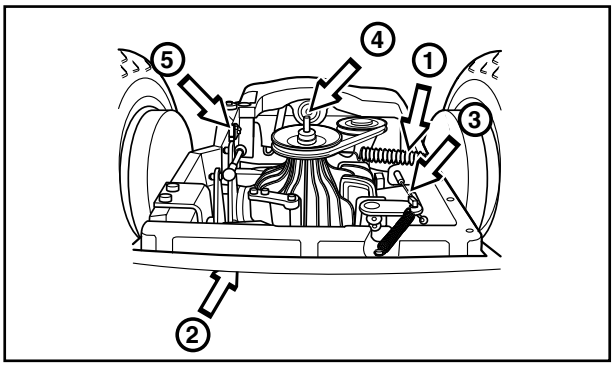
5. Remove the fan; it is held in place by a nut and washer.



8009-373

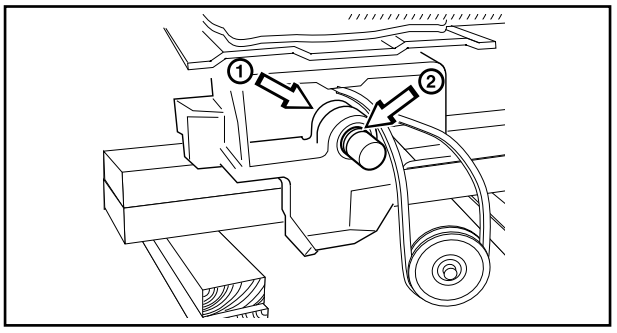
Cooling fan

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 on ProFlex 21, see "Removing/Mounting the Hydrostatic Transmission" on page 44.
11. Remove the circlip and washer from the pendulum shaft (4) and pull loose the rear frame.
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.



8009-045

Steps 1-5



6012-031

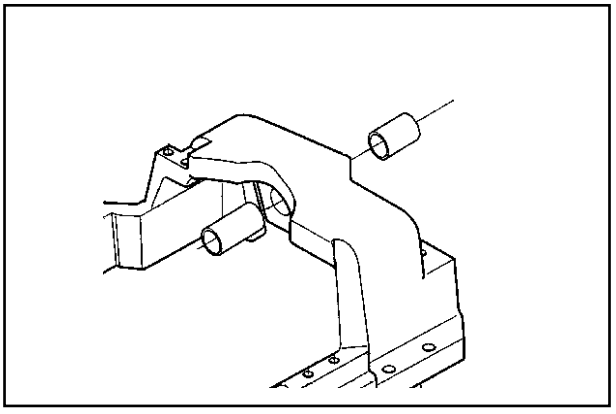
Pendulum shaft

Replacing Bushings

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

Remove these with a punch, see "Special Tools" on page 3.

New bushings are fitted with the punch see "Special 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.

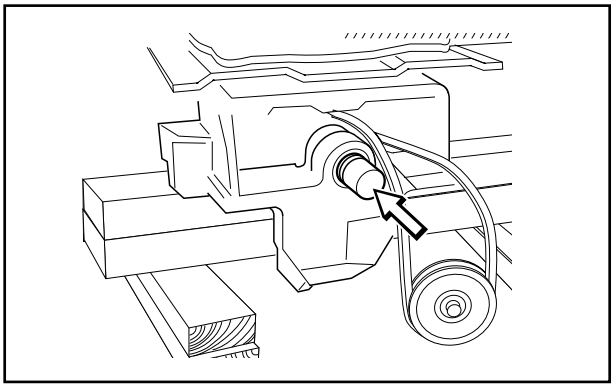


8009-044

Replacing bushings

Fitting the Pendulum Shaft

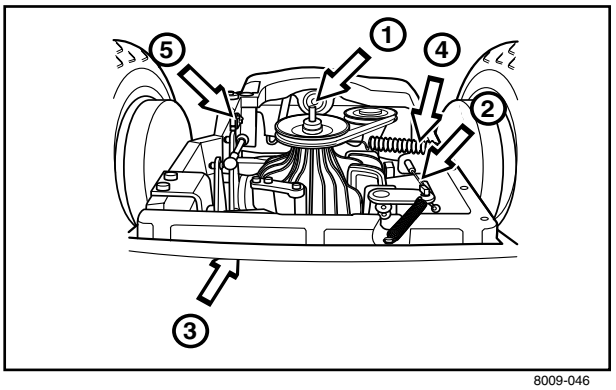
1. Lubricate half the shaft (the half that has not been lathed) and press it into the steering spindle from the rear (see illustration).
2. Fit the washer and circlip on the pendulum shaft by the inner mount.
3. Fit the dust cover (with thin lip towards the rear) approx. 2/3 of the way in on the shaft and lubricate the shaft on both sides of the dust cover.



6012-098

Fitting the pendulum shaft

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. Fit the cable to the differential lock on ProFlex 21, see “Removing/Mounting the Hydrostatic Transmission” on page 44.
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 cables and controls are properly adjusted, see “Adjusting the Brake” on page 37, “Adjusting of the Hydrostatic Transmission Cable” on page 38, and for ProFlex 21 “Adjusting the Differential Lock” on page 37.
12. Check the neutral position contact and adjust if necessary. See “Microswitch: Neutral Position” on page 80.
13. Fit the fan.
14. **ProFlex 21**
    Bleed the hydraulic system. Top up the oil as needed after test running.
15. Fit the transmission cover.

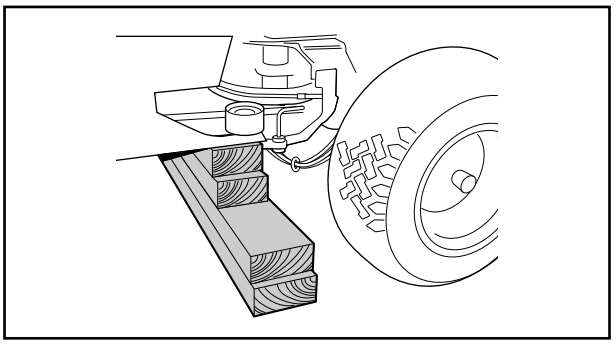


8009-046

Steps 1-5

Removing/Mounting the Hydrostatic Transmission

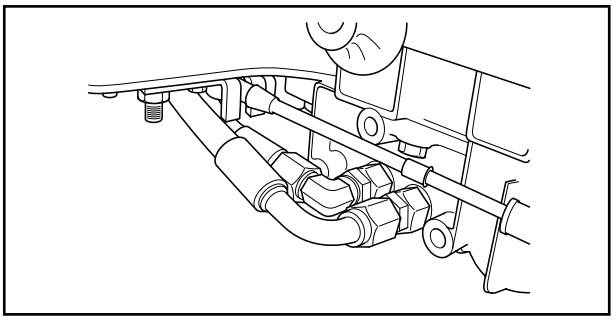
1. Jack up the machine in front of the rear frame and remove the rear wheels.
2. Remove the transmission cover.



6012-035

Jacking up

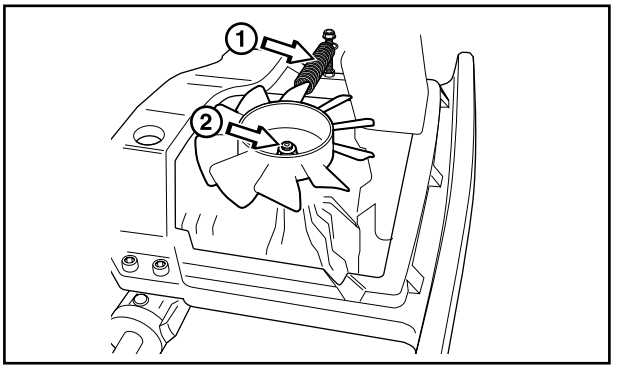
3. **ProFlex 21**
   Clean, see “Working Methods” on page 82.
   Loosen the hydraulic hoses from the hydrostatic transmission.



8009-366

Hydraulic hoses

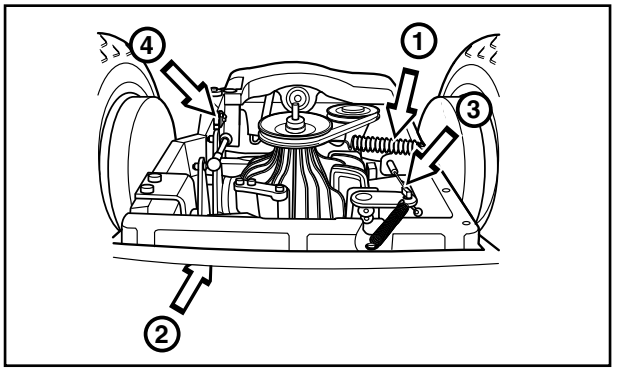
4. Remove the nut (2), lift off the washer and fan from the ingoing shaft.
5. Remove the oil tank and hose from the hydrostatic transmission.
6. Remove the clutch control and its spring.



6012-036

Spring and fan

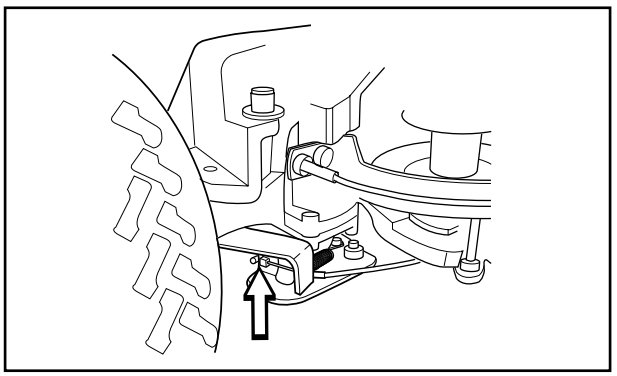
7. Loosen the idler’s spring (1) and pull off the drive belt.
8. Loosen the throttle control’s link joint (2) (on the underside) and remove the cable from the underside of the shaft.
9. Loosen the throttle control’s link joint (on the top) from the hydrostatic transmission arm.
10. Loosen the brake cable’s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



8009-047

Steps 1-4

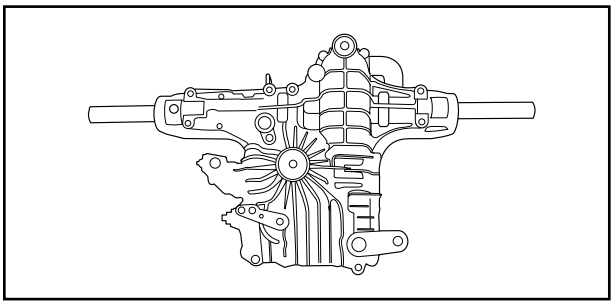
11. Loosen the cable to the differential lock by loosening the lock nuts (at the top mount) and unhooking the cable from the rear mount.
12. Place a garage jack under the hydrostatic transmission and loosen its five fitting screws.
13. The rear fitting screw is placed on the front edge of the bumper.
14. Lower the garage jack and pull out the transmission.



8009-048

The cable's rear mount

15. Fit the transmission in the reverse order.
16. Check after fitting that the brake cable and throttle control are properly adjusted, see "Adjusting 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 80.
18. Check and adjust the cable to the differential lock on ProFlex 21, see "Adjusting the Differential Lock" on page 37.
19. **ProFlex 21**
    Bleed the hydraulic system. Top up the oil as needed after test running.



8009-032

The K66 hydrostatic transmission

Replacing the Hydrostatic Transmission Shaft Seals

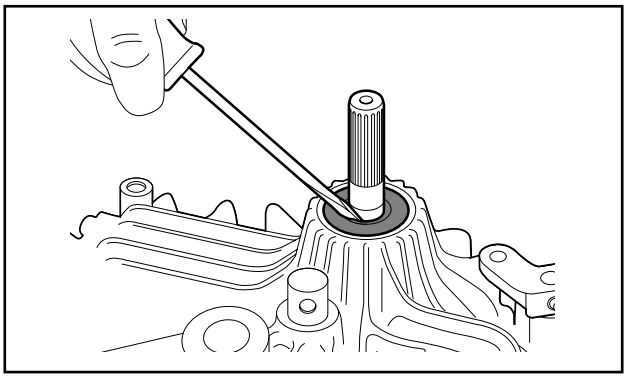
Seal Replacement, Ingoing Shaft

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.

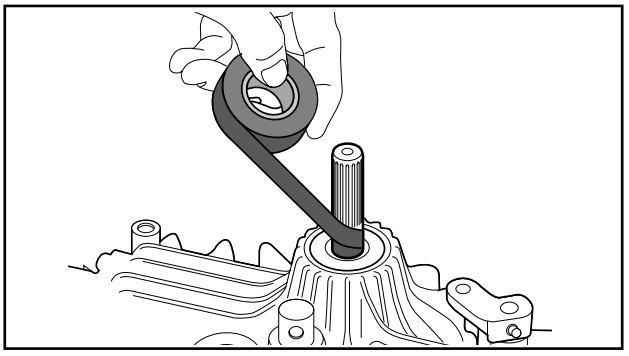


6012-042

Pry off the seal

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.



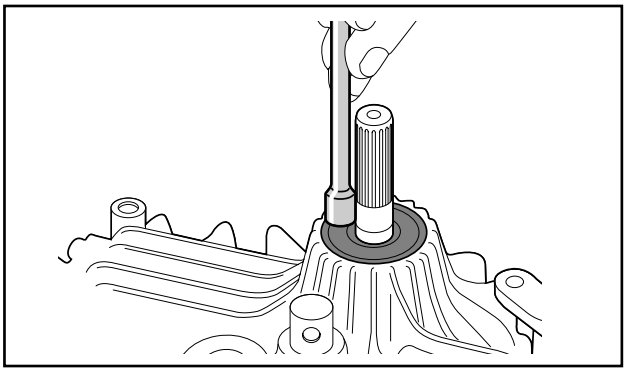
6012-043

Winding the insulating tape

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



6012-044

Carefully tap the seal in place.

Seal Replacement, Outgoing Shafts

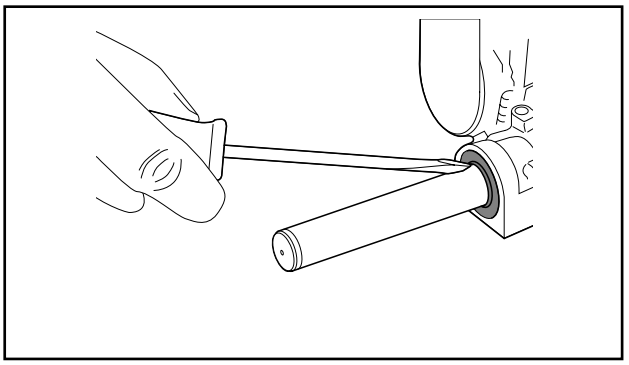
1. Remove the rear wheels.
2. Remove the circlips that hold the wheel hubs onto the shafts and remove the hubs by pulling them outwards. Do not lose the key that sits between the wheel/ hub and the shaft.
3. Remove spacing tube and washer.

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.

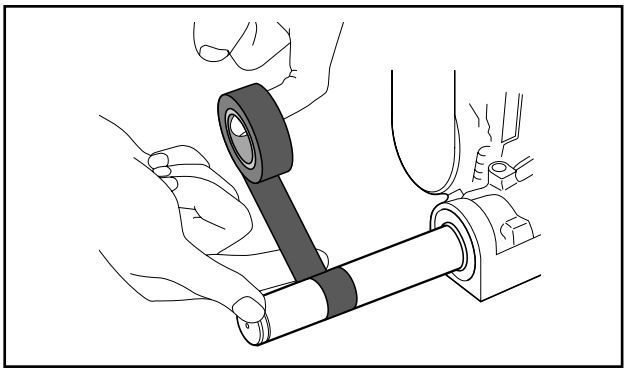
5. Insert a screwdriver between the seal and the shaft and pry off the seal from the shaft housing with a twisting motion.



6012-045

Pry off the seal

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.



6012-046

Winding the insulating tape

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.

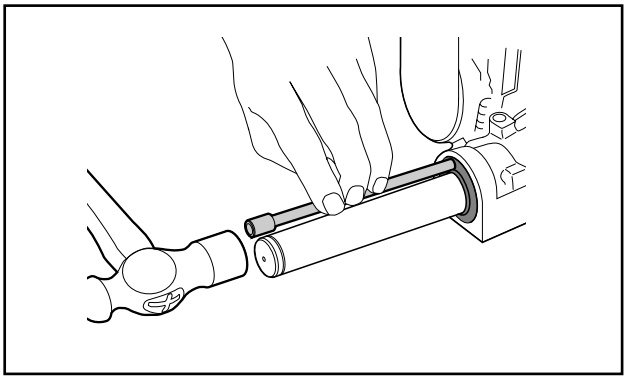
8. Place the seal on the shaft, with the metal spring facing inwards, and press it in carefully.

   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.

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.



6012-047

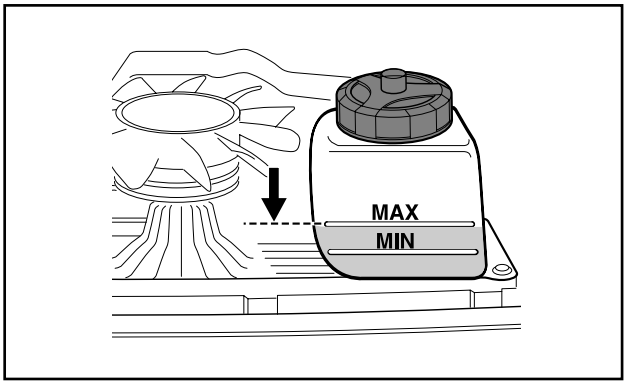
Carefully tap the seal in place.

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 on ProFlex 21.

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.



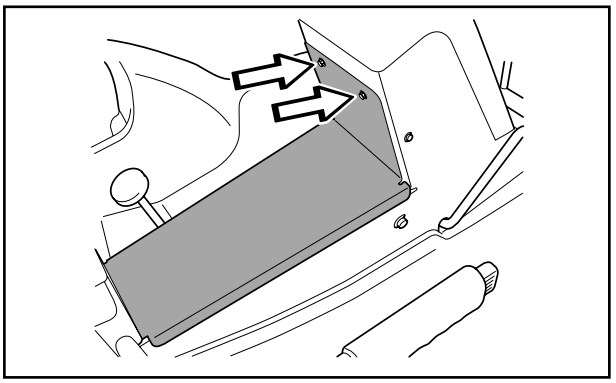
6012-048

Transmission oil tank

Replacing the Hydrostatic Transmission Cable

Removing the Hydrostatic Transmission Cable

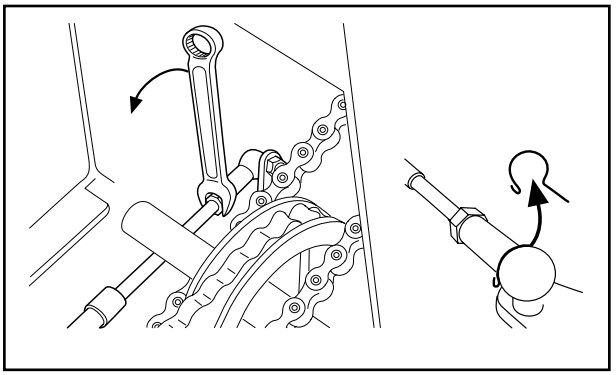
1. Remove the frame plate by loosening the screws (two on the power steering housing).



8009-340

Frame plate

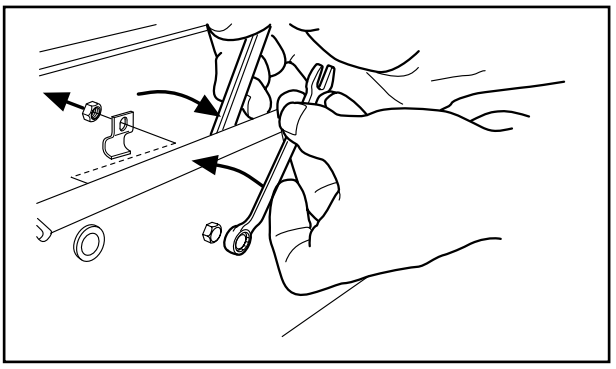
2. Loosen the hydrostatic transmission cable's forward lock nut a π turn and remove the locking spring.



6019-010
8009-203

Front locking nut and locking spring

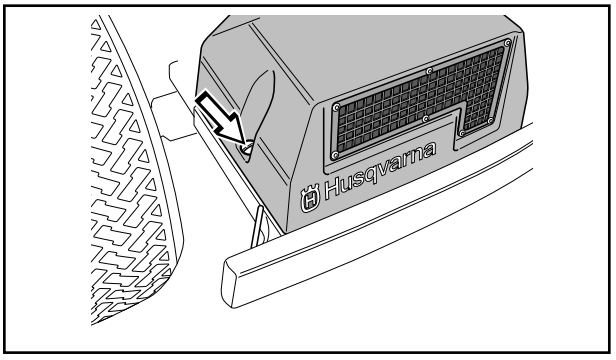
3. Remove the hydrostatic transmission cable's forward clamp, which is attached inside the centre bracket.



6019-015

Front clamp

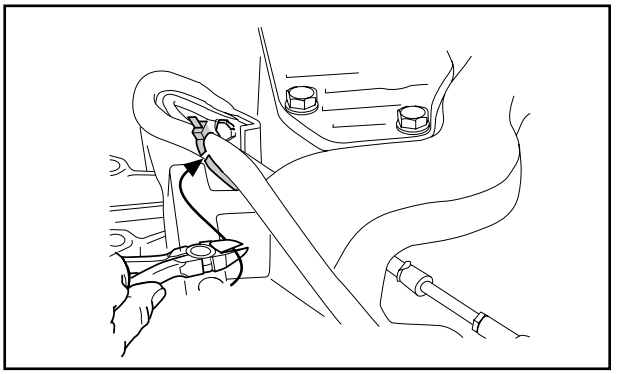
4. Remove the transmission cover.



6008-209

Transmission cover

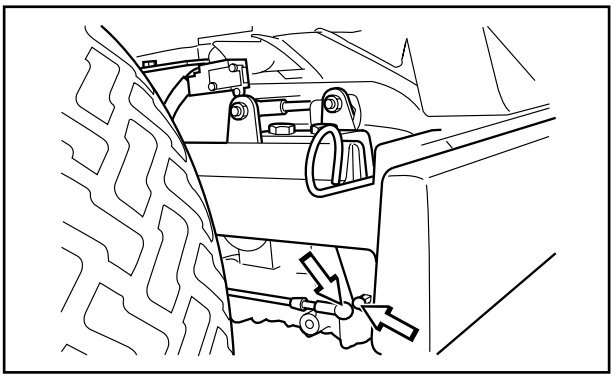
5. Follow the hydrostatic transmission cable backwards towards the hydrostatic transmission and cut the plastic tie around the cable.



8009-204

Cut the plastic tie

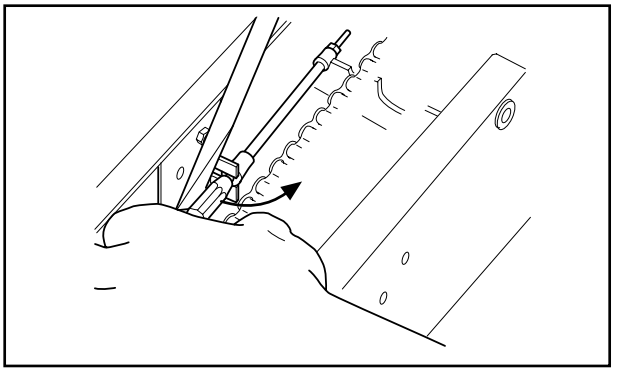
6. Remove the locking spring by the hydrostatic transmission cable's rear link joint. Loosen the clamp under the left drive shaft.



8009-222

Rear link joint

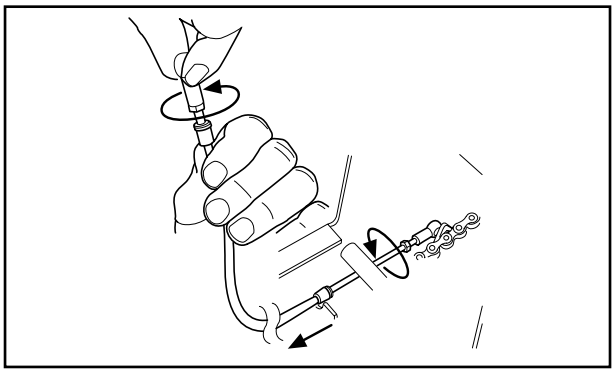
7. Lift off the link joint and pull out the cable.
8. Lift out the hydrostatic transmission cable and the accompanying link joint.



6019-016

Lift off the link joint

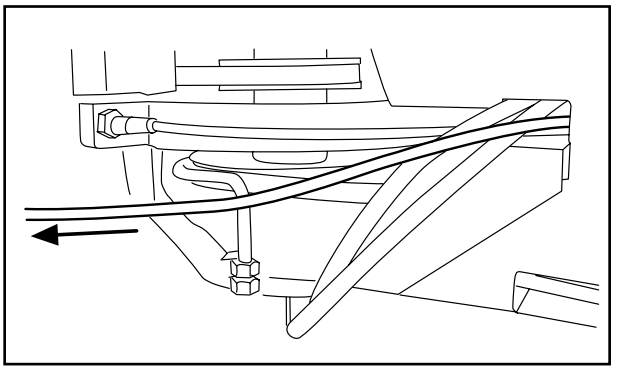
9. Unscrew both link joints from the hydrostatic transmission cable.



6019-017

Remove the link joints

10. Remove the entire hydrostatic transmission cable.

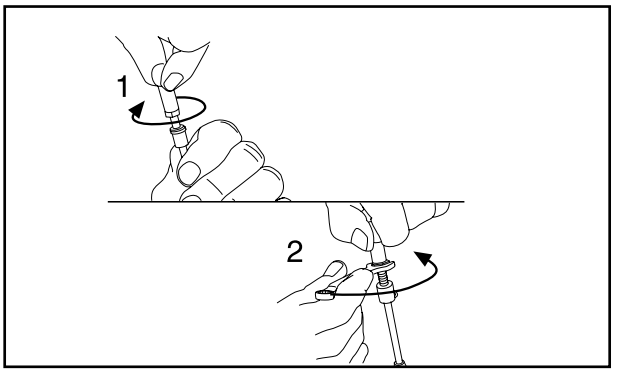


6019-009

Remove the hydrostatic transmission cable.

Fitting the Hydrostatic Transmission Cable

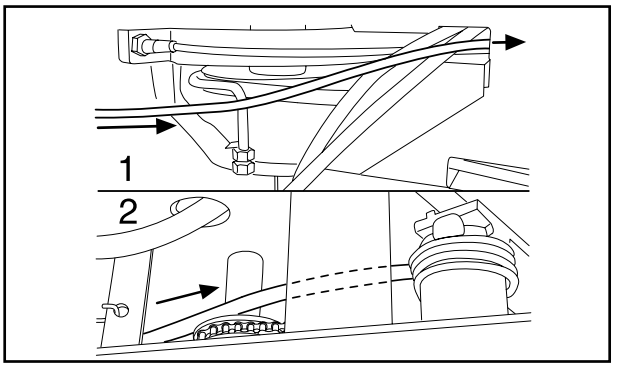
1. Screw in the front link joint on the new hydrostatic transmission cable and tighten the lock nut.



6019-018

Front link joint

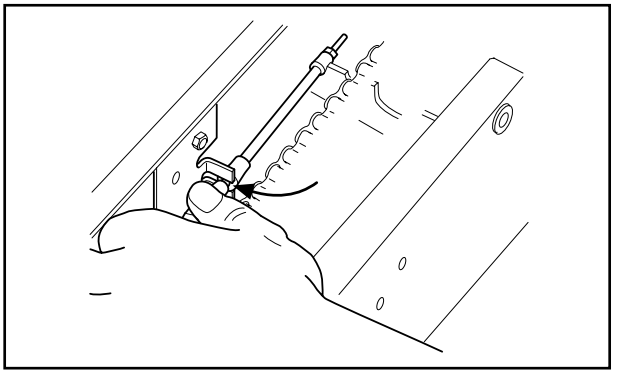
2. Run the cable through the rider so that it follows the same path as the old cable did.



6019-022

Threading the cable

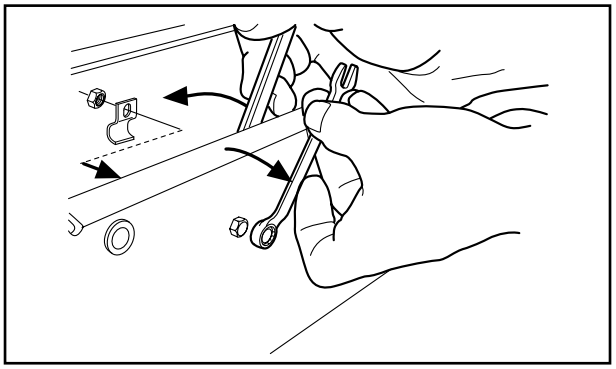
3. Press in the cable casing in the forward fastener in the centre bracket.



6019-023

Forward mount in centre bracket

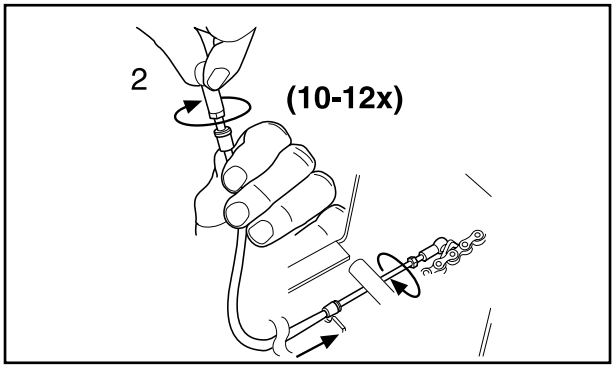
4. Tighten the hydrostatic transmission cable clamp. Press the link joint onto its fastener and attach the locking spring.



6019-024

Front clamp

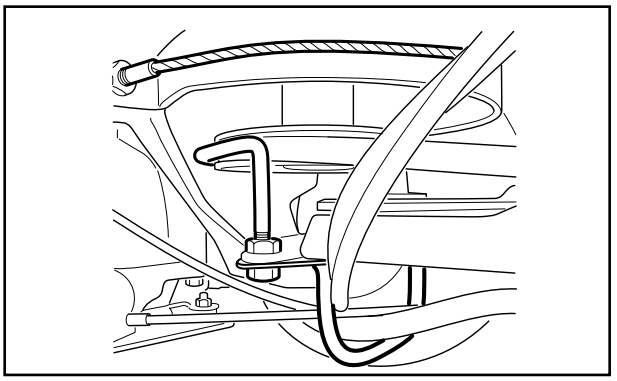
5. Attach the link joint to the rear part of the hydrostatic transmission cable. Screw 10-12 turns so that the link joint has the right length.



6019-025

Rear link joint

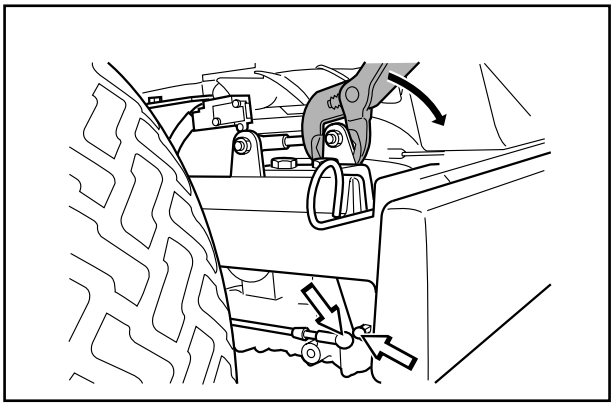
6. Run the hydrostatic transmission cable along with the other cables. Place the hydrostatic transmission cable in the cable holder under the articulated steering's bearing.
7. Place the hydrostatic transmission cable in place and screw it in place with the rear clamp under the left drive shaft.



6019-364

Cable holder

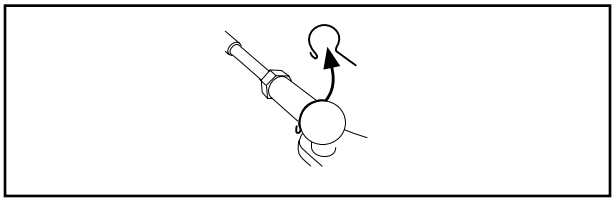
8. Adjust the hydrostatic transmission cable as shown, see "Adjusting of the Hydrostatic Transmission Cable" on page 38.



6020-002

Adjusting the hydrostatic transmission cable

9. Connect the rear link joint and attach the locking spring.

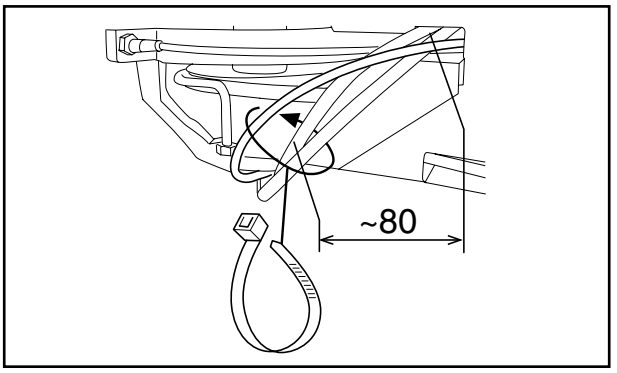


8009-203

Locking spring

10. Tighten the rear link joint's lock nut.
11. Check the settings of the neutral position contact. See "Microswitch: Neutral Position" on page 80.

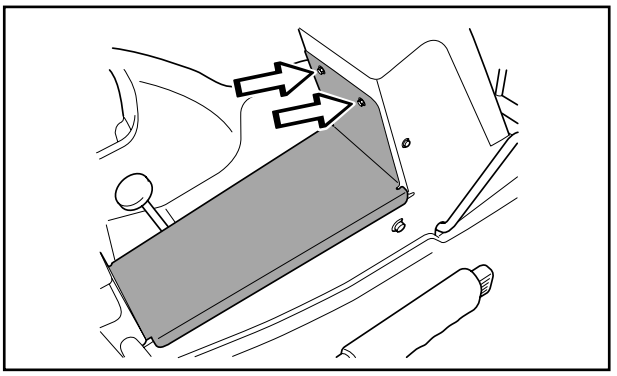
12. Fasten the hydrostatic transmission cables with a plastic tie.



6019-019

Fastening with a plastic tie

13. Screw on the frame plate, two screws.



8009-340

Frame plate

Bleeding the Hydrostatic and Hydraulic Systems

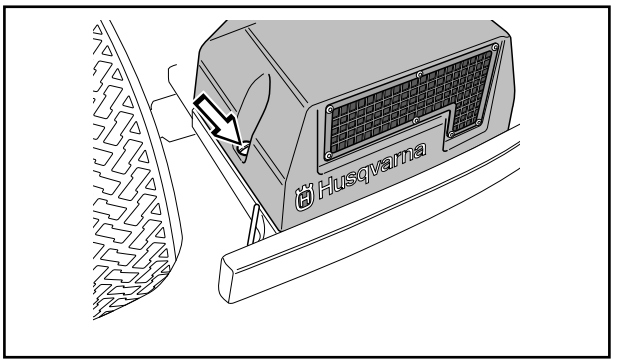
1. Remove the transmission cover.

IMPORTANT INFORMATION

Ensure cleanliness. Used oil may not be reused. See "Hydraulic Hygiene" on page 81.

IMPORTANT INFORMATION

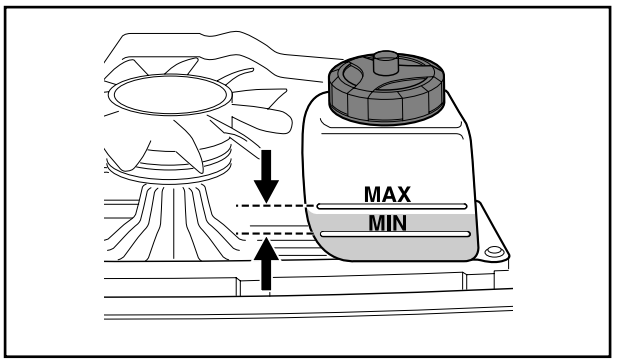
The tank must never be run empty while work is underway. Risk of air penetration into the system.



6008-209

Transmission cover

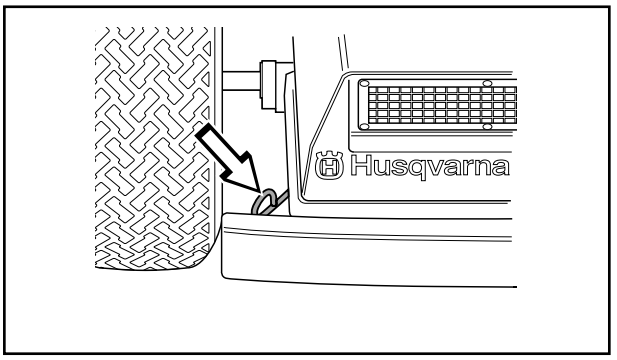
2. **PF18, PF21** Check the oil level in the hydrostatic transmission. The oil tank may be, in this position, over filled.
3. **PF18, PF21** Constantly check the oil level in the hydrostatic transmission and fill as required.
4. **PF18, PF21** Start the engine and set the accelerator to idle.



6012-057

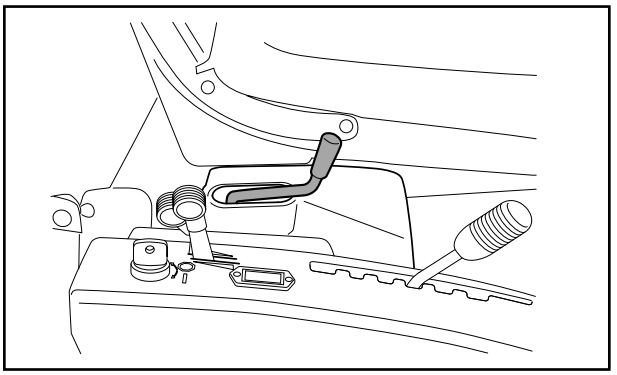
Transmission oil tank

5. **PF18, PF21** Repeatedly engage and disengage the clutch while alternately depressing the forward and reverse pedals.
6. **PF18, PF21** When the rider begins to move, the throttle should be increased to high engine speed.
7. **PF18, PF21** Repeat quick starts and emergency stops until the transmission responds properly.
8. **PF21** Turn the steering wheel repeatedly from one extreme position to the other until the steering works without jerks or stops.
9. **PF21** 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. **PF18, PF21** Test run the machine.
11. **PF18, PF21** Finally, check the hydrostatic transmission oil level and fill or drain the oil tank as needed.
12. **PF18, PF21** Replace the transmission cover.



6012-058

Clutch control

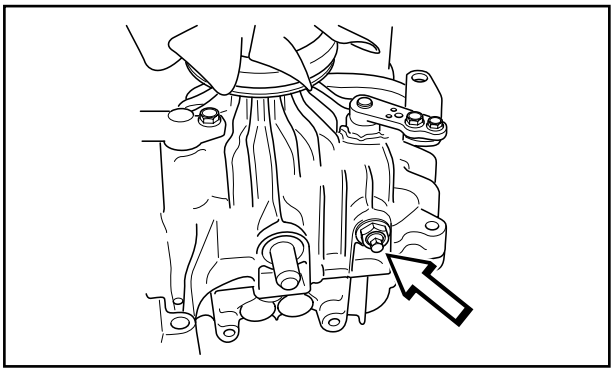


8009-326

Hydraulic cutting unit lift

Adjusting the Transmission's Neutral Position

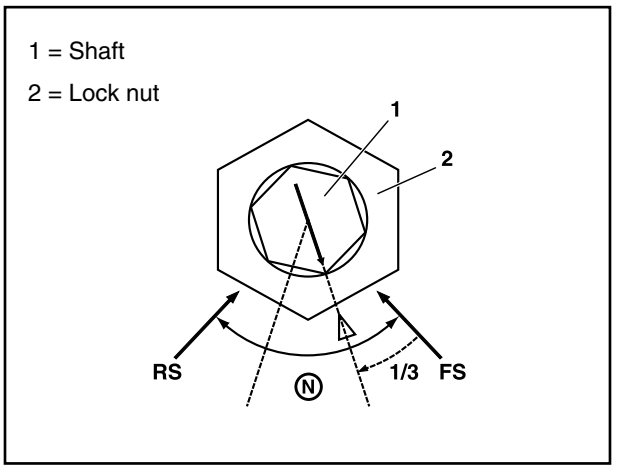
1. Bleed the hydrostatic transmission's oil system and for ProFlex 21 also the hydraulic system.
2. Lift the rear of the rider so that the wheels spin freely and place jack stands under the machine.
3. The neutral position is adjusted by turning the hexagonal shaft on the transmission (see illustration).
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.



8009-224

Adjusting the neutral position

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.

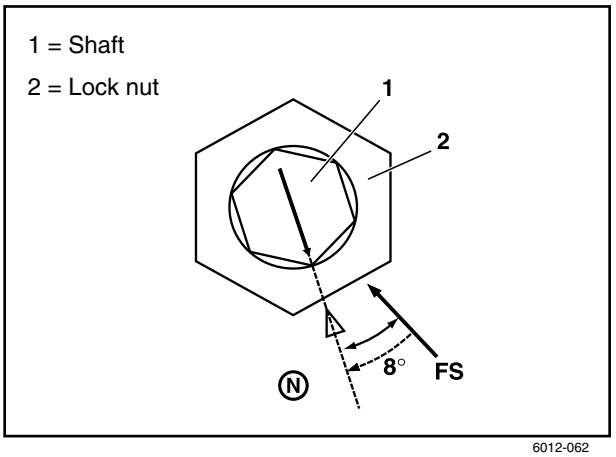


6012-061

Adjustment alternative 1

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).



6012-062

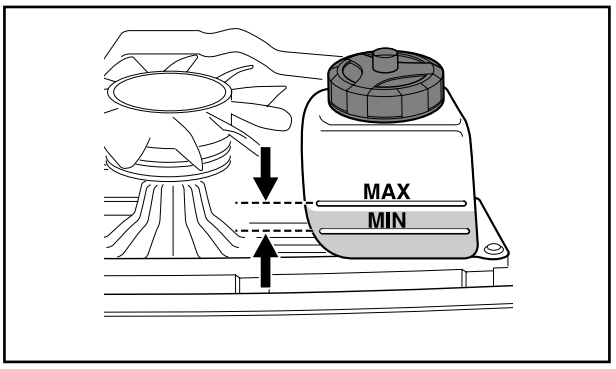
Adjustment alternative 2

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.

When 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 a year.



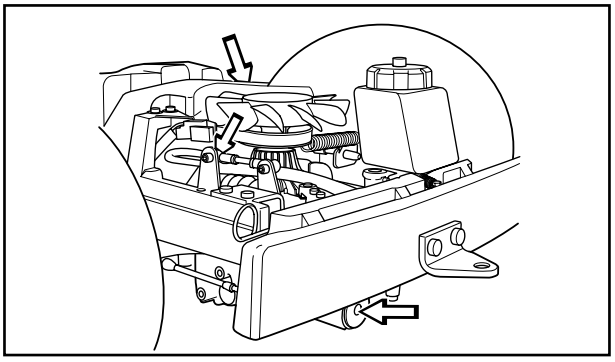
6012-057

Transmission oil tank

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.



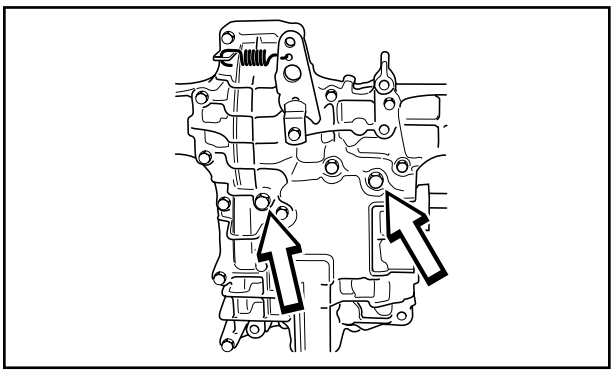
8009-031

Filling and draining hole ProFlex 21

Hydrostatic transmission type K62 ProFlex 18

The transmission holds 2.5 litres (2.6 US qt) (SAE 10W/30 engine oil, class SF-CC).

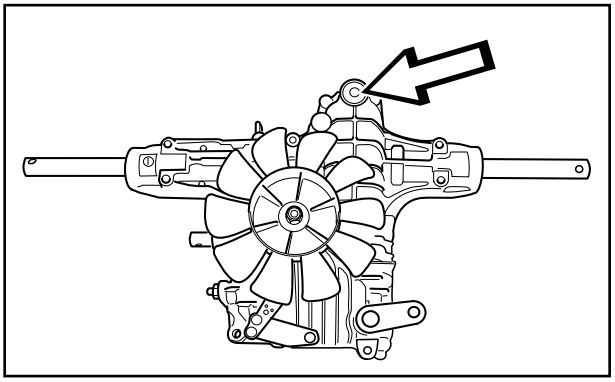
- Empty the hydrostatic transmission by means of the two 14 mm plugs, the other screws are smaller in size.
- Loosen the hose to the transmission oil tank from the hydrostatic transmission.
- Remove the hexagonal plug from the fill hole at the front of the top of the transmission.



8009-225

Drain plugs K62

- Refit the drain plugs. Fill with oil through the fill hole. Replace the hose and fill the oil tank.
  Bleed the transmission, see “Bleeding the Hydrostatic and Hydraulic Systems” on page 54.
- Test run the machine and fill with oil to the proper level in the oil tank.



8009-528

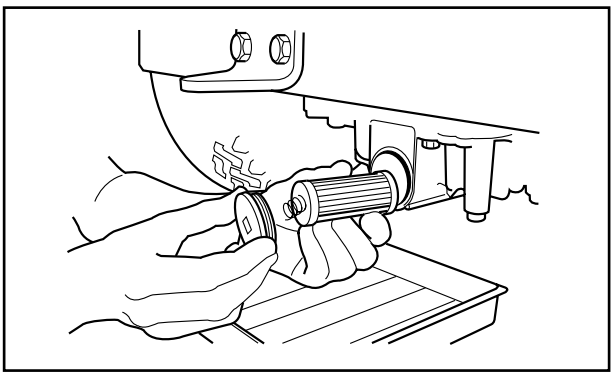
Fill hole K62

Hydrostatic transmission type K66 ProFlex 21

The transmission holds 2.5 litres (2.6 US qt) (SAE10W/30 engine oil, class SF-CC).

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

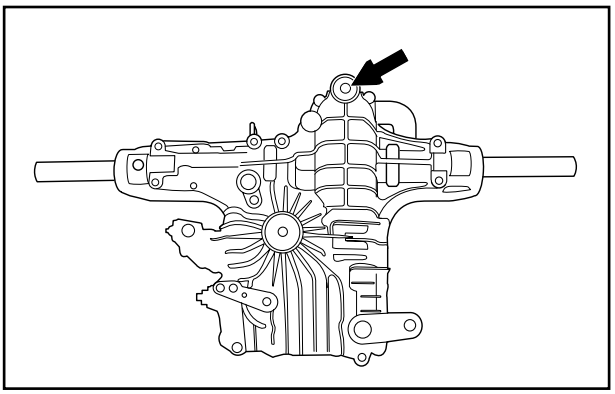
- Remove the drain plug from the drainage hole and the filter.
- Loosen the hose to the transmission oil tank from the hydrostatic transmission.
- Remove the hexagonal plug from the fill hole at the front of the top of the transmission.



6020-003

Drainage hole with filter

- Refit the filter and 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, see “Bleeding the Hydrostatic and Hydraulic Systems” on page 54.
- Test run the machine and fill with oil to the proper level in the oil tank.



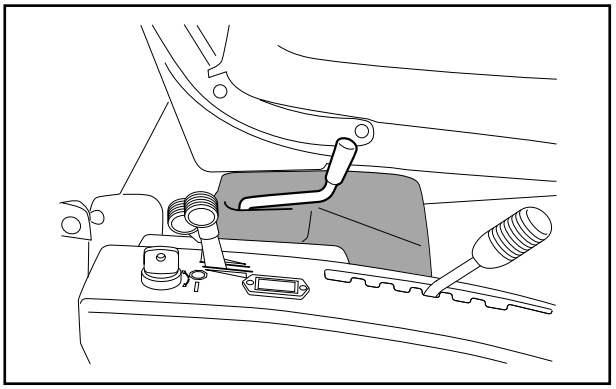
8009-049

Fill hole

Adjusting the Lever Housing

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

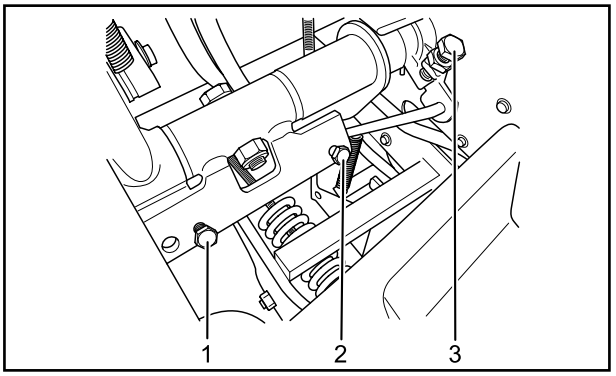
1. **PF 18** Remove the plastic cover between the seat and the lever housing.
   PF 21 Remove the plastic cover from the hydraulic valve block.



8009-374

Plastic cover

2. **PF18, PF 21** Set the adjustment screws (1) and on PF 21 also (2) on the drive disk so that the ends of the adjustment screws are even with the outer edges of their locking nuts.
3. **PF18, PF 21** 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.



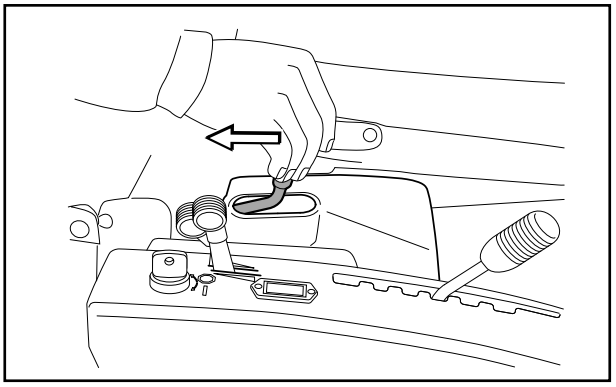
8009-380

Adjustment screws 1, 2, 3

4. **PF 21** Lift the unit fully with the hydraulic lifting lever.

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

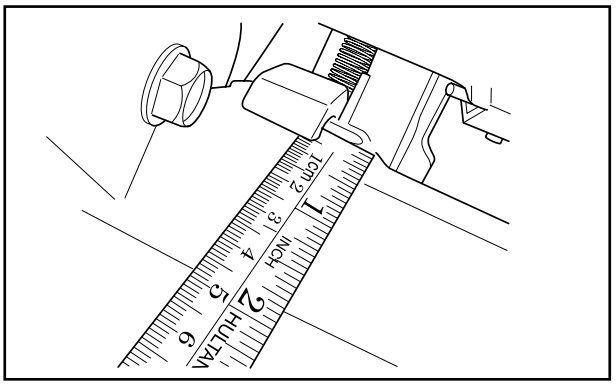
   PF18 Hold up the unit with the mechanical lifting lever as high as possible.



8009-323

Hydraulic lift lever

5. **PF18, PF 21** Make sure that the catch for 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.

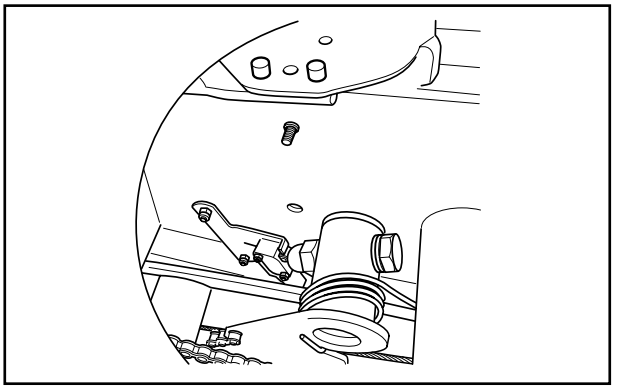


8009-382

Play 2 mm

6. **PF18, PF 21** 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. **PF18, PF 21** Adjust the microswitch so that it is definitely activated by the dome nut, but allows extra motion (it must not bottom out).

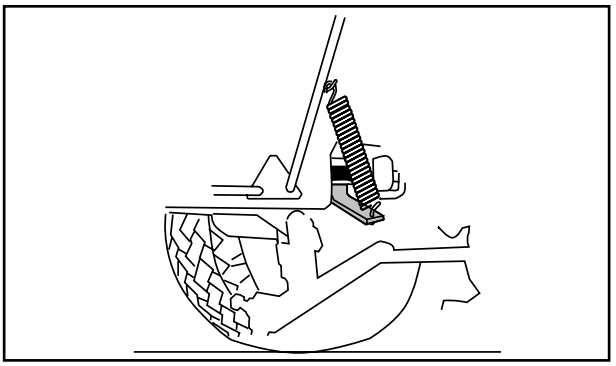


8009-381

Microswitch

8. **PF18, PF 21** Check that the spring places the blade brake against the belt pulley.

9. **PF18, PF 21** Raise the cutting unit completely by pulling the mechanical lifting lever.

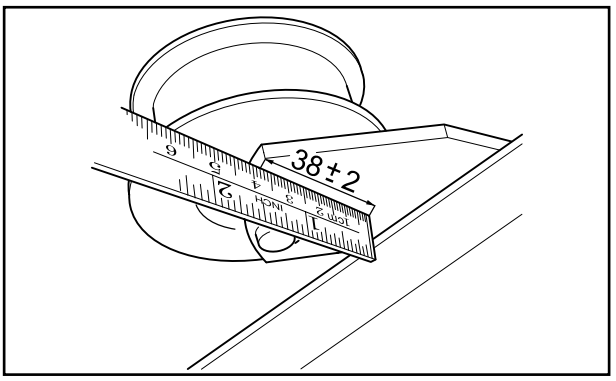


8009-383

Blade brake

10. **PF18, PF 21** 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. **PF18, PF 21** Lower the cutting unit completely to the ground.



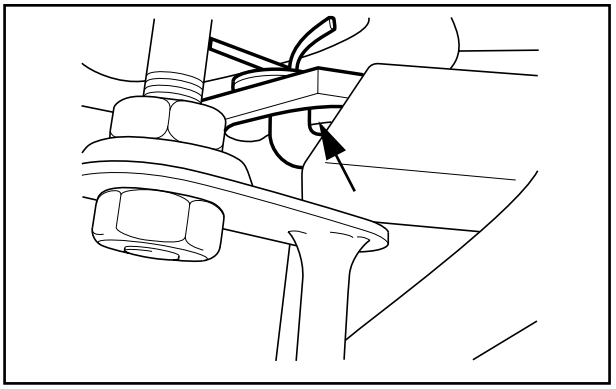
8009-401

Basic measurements, belt adjuster

12. **PF18, PF 21** 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. **PF18, PF 21** Check that all locking nuts are tight.

14. **PF18, PF 21** Replace the plastic cover.



8009-384

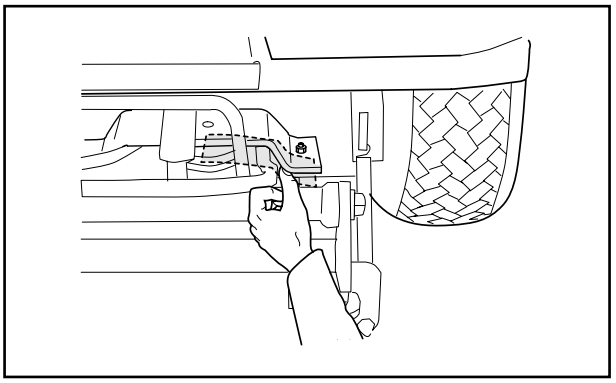
Connecting rod in the belt adjuster

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 67.

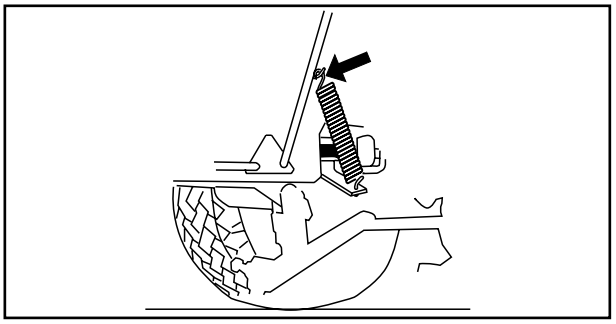


8009-343

Press down the guide plate

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.

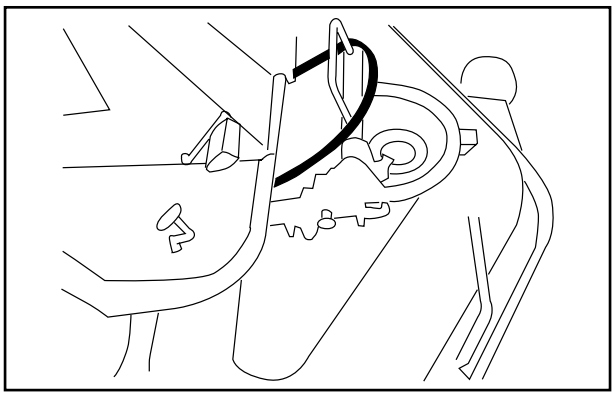


8009-005

Blade brake spring

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.

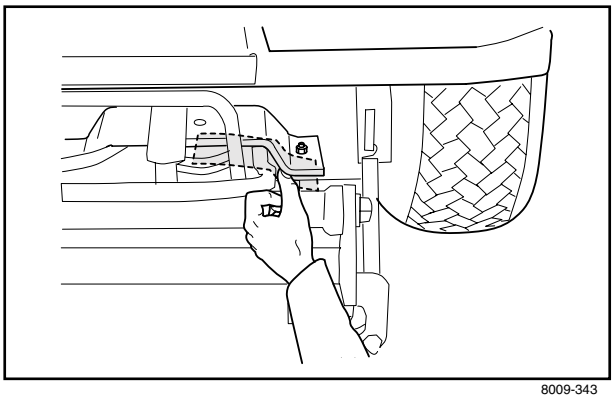


8009-009

Forward part of the belt

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

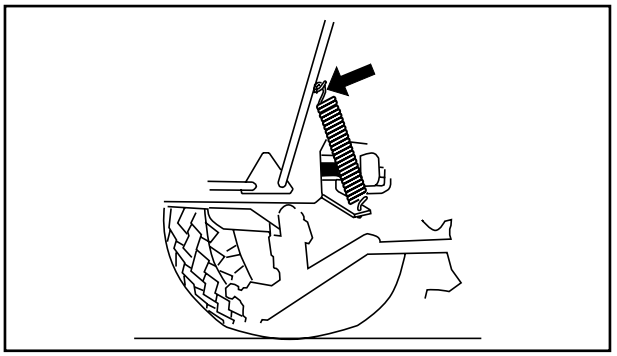
‘



8009-343

Press down the guide plate

4. Hook the spring to the blade brake.



8009-005

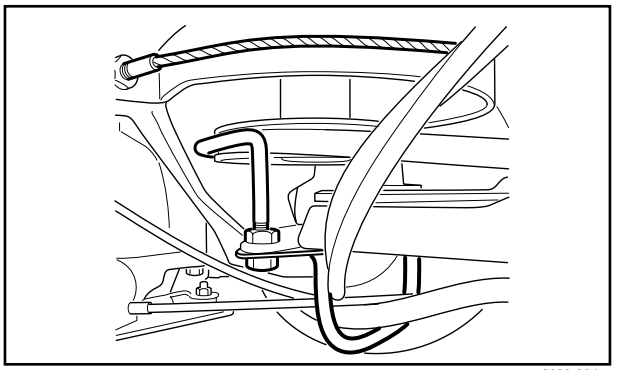
Blade brake spring

Attaching the belt to the forward pulley is described in points 6-8 under Attaching the Cutting Unit, page 63.

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.

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 59. 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.



8009-264

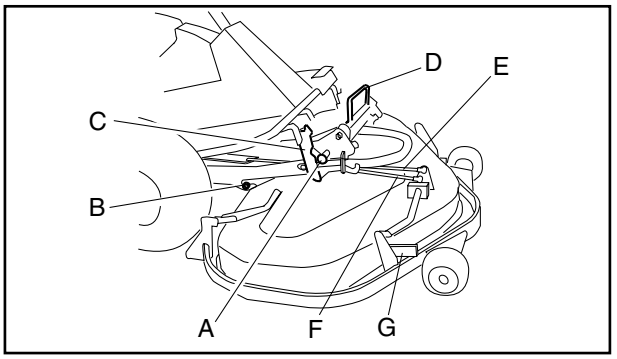
Belt guide

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



8009-188

The Cutting Unit Components

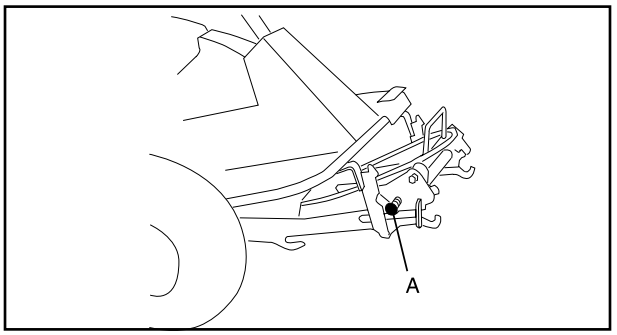
Attaching the Cutting Unit

WARNING!
Exercise caution.
Risk of crush injuries

Starting point for attaching the cutting unit:

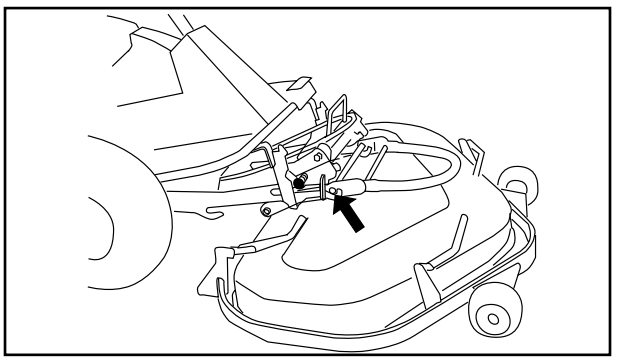
- Place the machine on a flat surface.
- Lock the brake by pressing down the pedal and locking with the push-button.
- Equipment hydraulics in the lower position on ProFlex 21.
- Equipment frame in lowered position.
- Equipment frame locked with safety catch and locks (A) in the inset position.
- Unit frame mounted on the cutting unit, see “Removing the Unit Frame” on page 69.

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



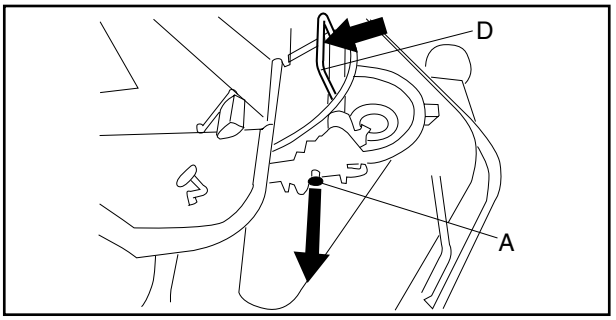
8009-022

Lock A inset position



8009-024

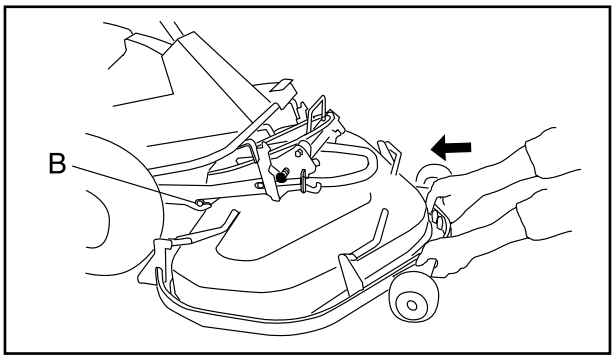
Outer hooks



8009-167

Lock and safety catch

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



8009-018

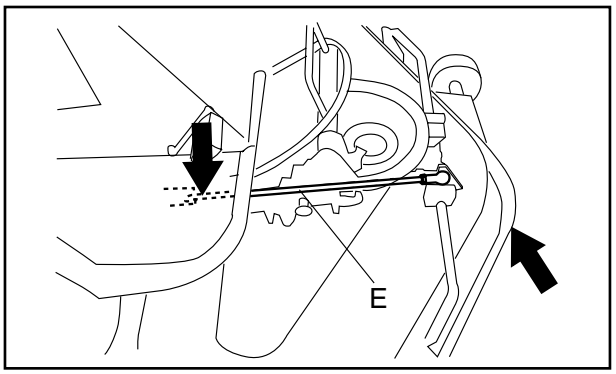
Inner pins

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.



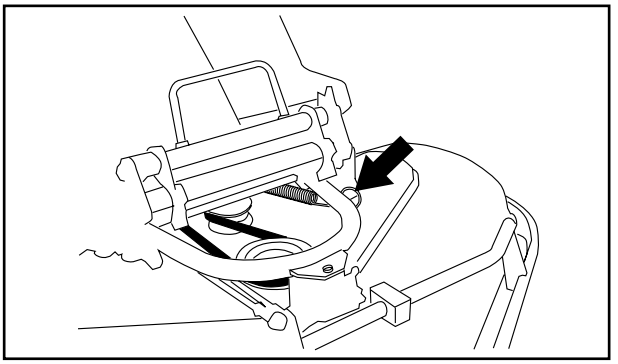
8009-168

Height adjustment handle

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.



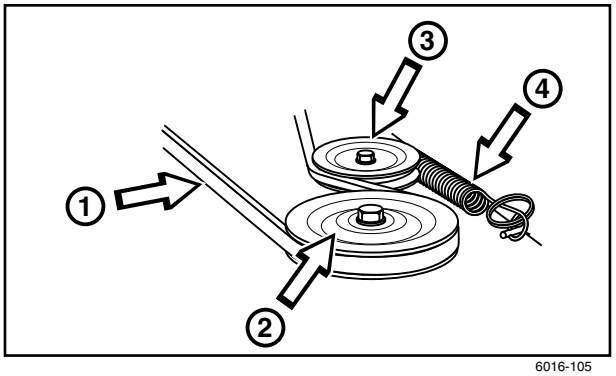
8009-008

Belt tensioner spring

Belt Sketch

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

8. Attach the nose cover.



6016-105

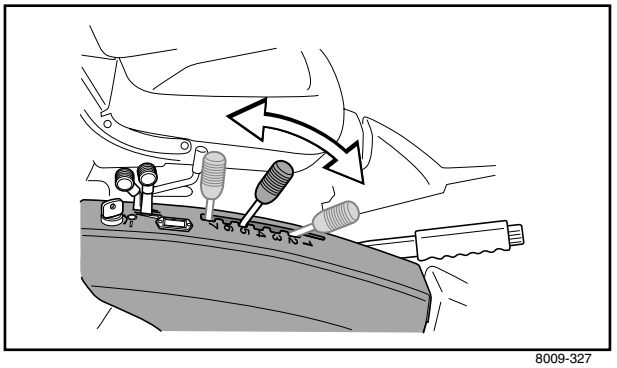
Belt Sketch

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.



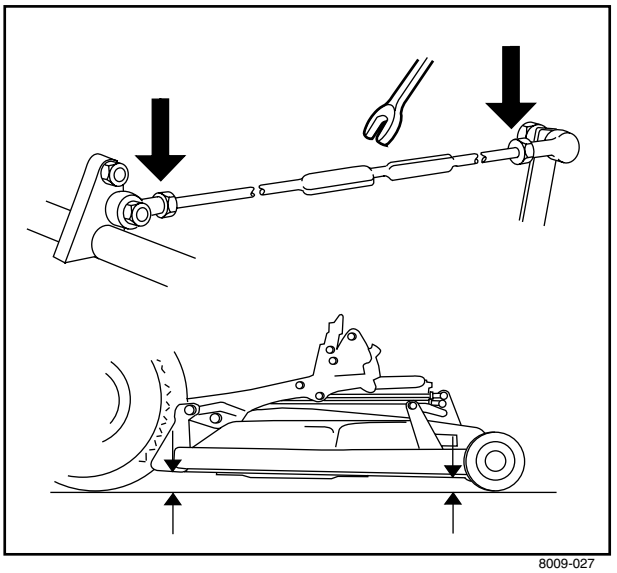
8009-327

Height adjustment lever

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.



8009-027
8009-026

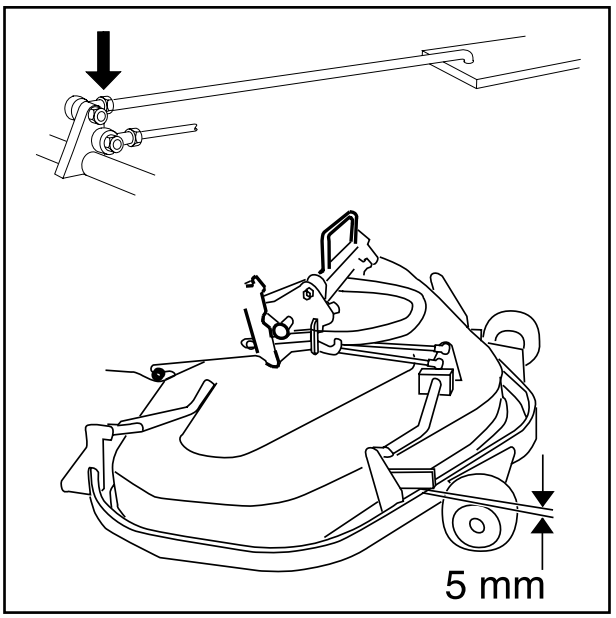
Adjusting the parallelism

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.

IMPORTANT INFORMATION

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

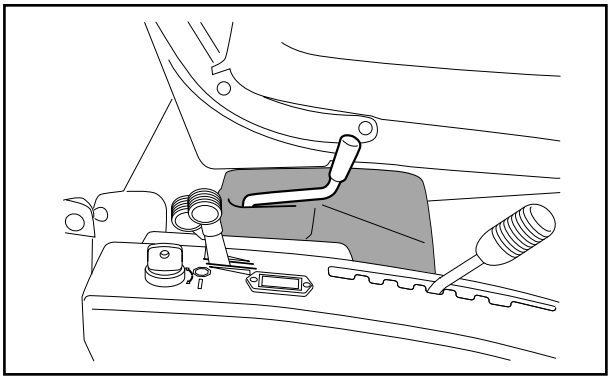


8009-028
8009-029

Adjusting the cutting height

Adjusting the Cutting Height Range

1. Remove the plastic cover over the hydraulic valve block on ProFlex 21 or the plastic cover between the seat and the lever housing on ProFlex 18.

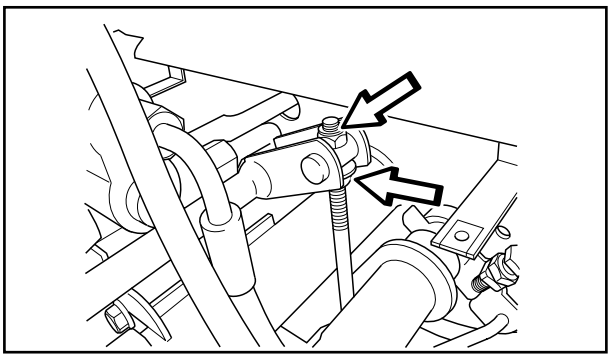


8009-374

Plastic cover

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.

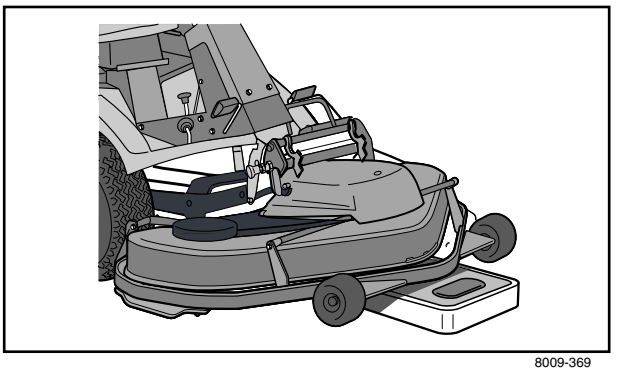


8009-368

Adjusting the cutting height range

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.



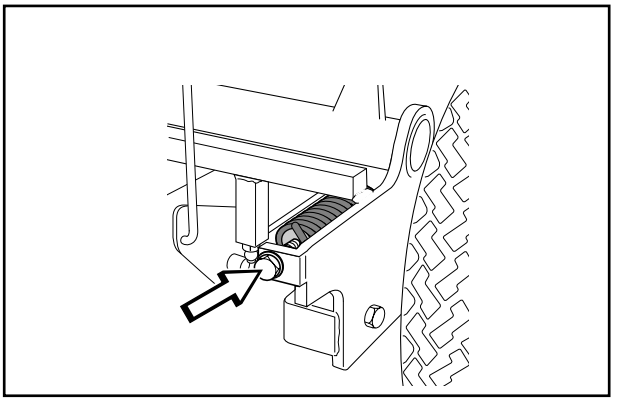
8009-369

Checking the ground pressure

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.

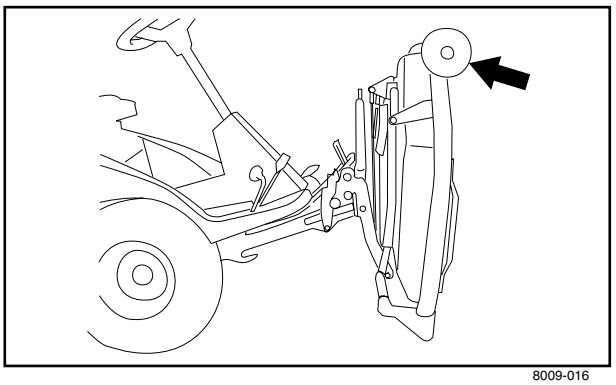


6008-222

Adjusting the ground pressure

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.

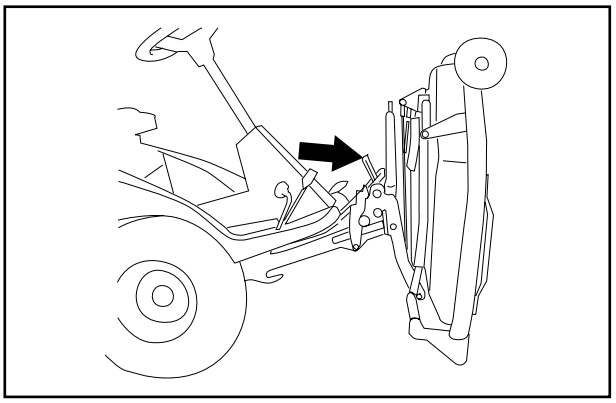


Service position

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 67.

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

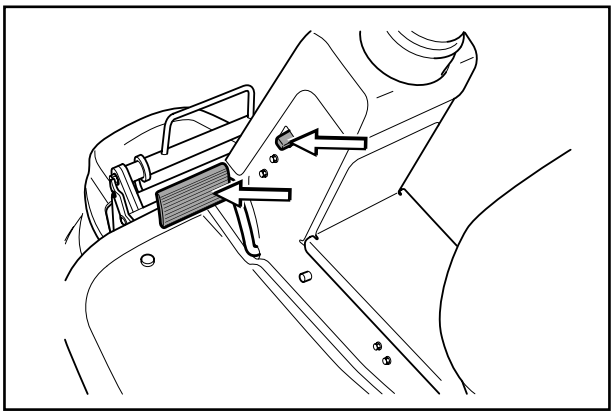
Releasing the Service Position

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 62.

Removing the Cutting Unit

WARNING!
Exercise caution.
Risk of crush injuries

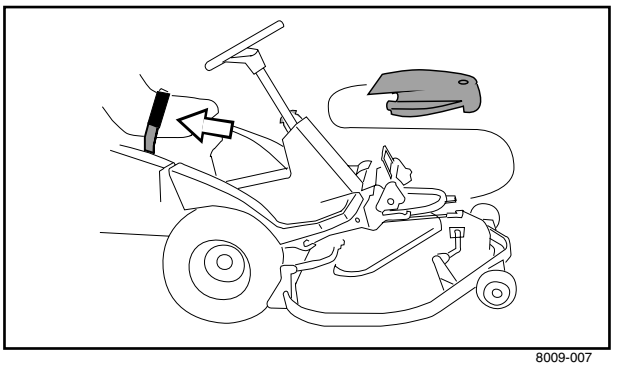
1. Place the machine on a flat surface.
2. Lock the brake by pressing down the pedal and locking with the push-button.



8009-328

Lock the brake

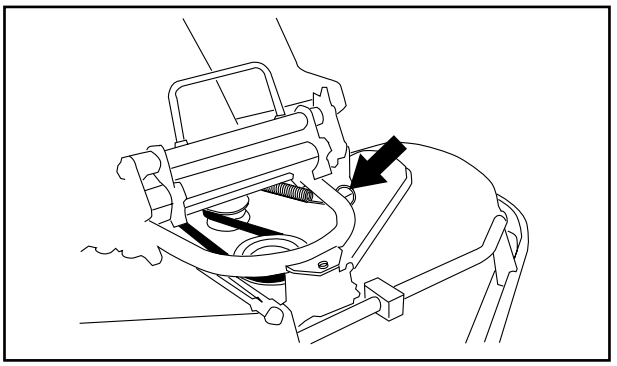
3. Lift the cutting unit with the mechanical lifting lever.
4. Remove the nose cover.



8009-007

Mechanical lifting lever and nose cover

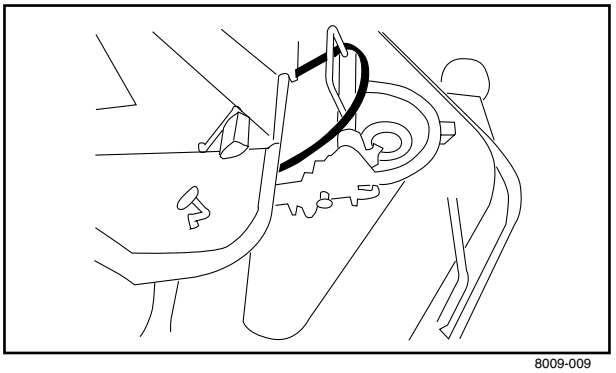
5. Loosen the belt tensioner spring.
6. Remove the belt from the front pulley.
7. Re-attach the belt tensioner spring.



8009-008

Belt tensioner spring

8. Hang the belt around the handle.

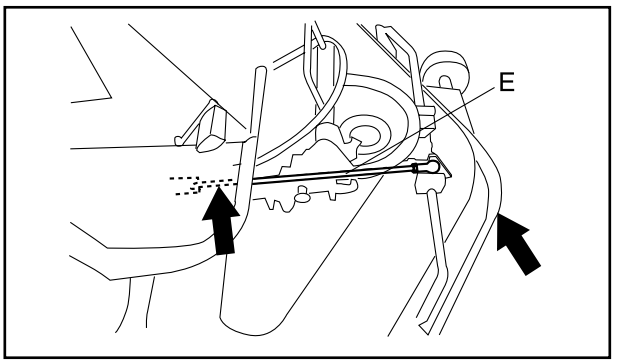


8009-009

Placement of the belt

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

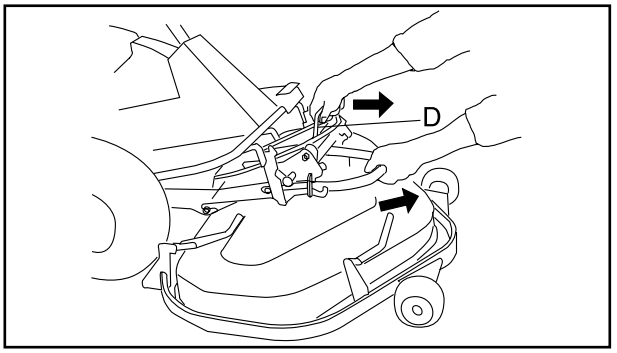
   Unload the strut if necessary by pulling the frame's forward section up or down.



8009-169

Height adjustment strut

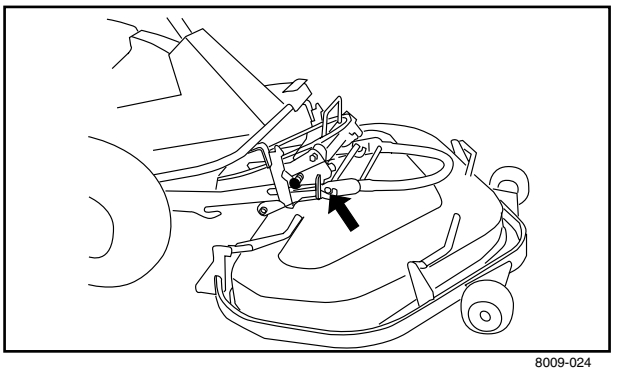
10. Pull the handle (D) and unit simultaneously. Release the handle when the unit has come out a bit.



8009-170

Pull forward

11. Pull out the unit so that it catches on the outer hooks.
12. Lower the unit with the mechanical lifting lever.

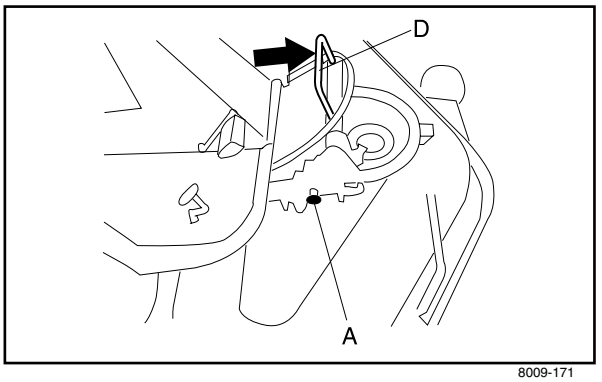


8009-024

Pull to the stop position

Pull the handle (D) so that the safety catch locks. Check that the catch (A) is in the inset position.

13. Remove the unit from the machine.



8009-171

Locking the safety catch

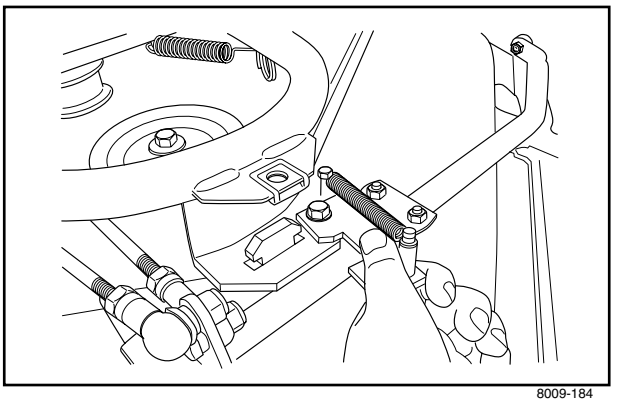
Removing the Unit Frame

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.

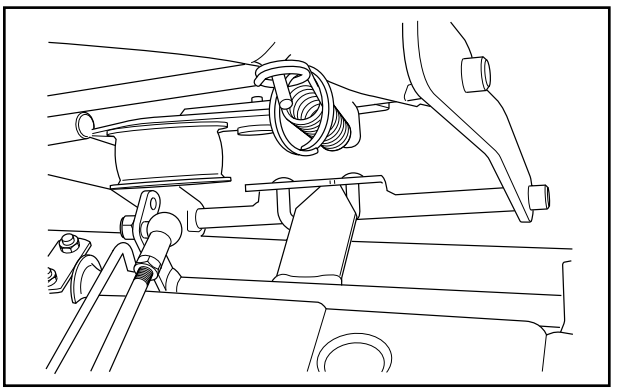


8009-184

Unit frame lock

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.

Assemble the parts in the reverse order.



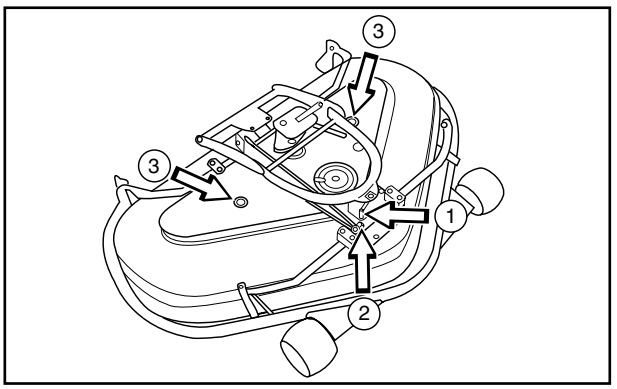
8009-185

Tongue and handle

Belt replacement on cutting units Combi 112 and Combi 122

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

1. Loloosen 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.

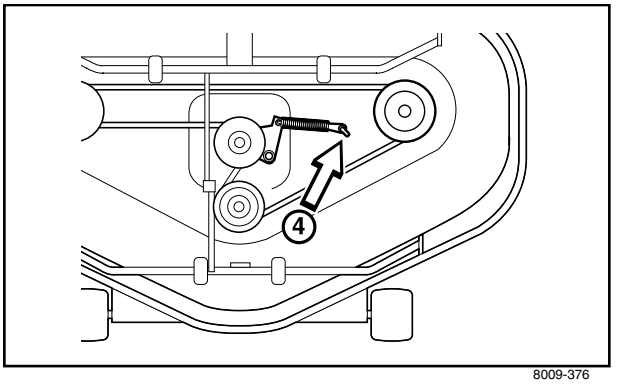


6016-113

Removing the cover

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

   Attach a new belt in the reverse order.



8009-376

Belt tensioner spring

Removing Blades with Bearings

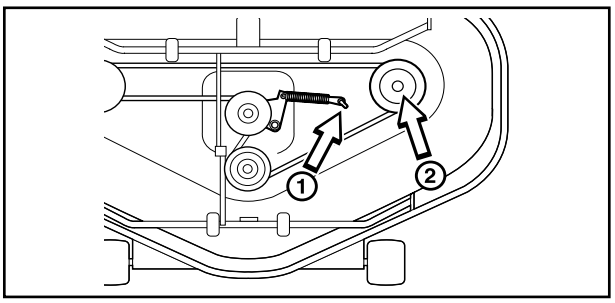
WARNING!

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

Combi 112

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

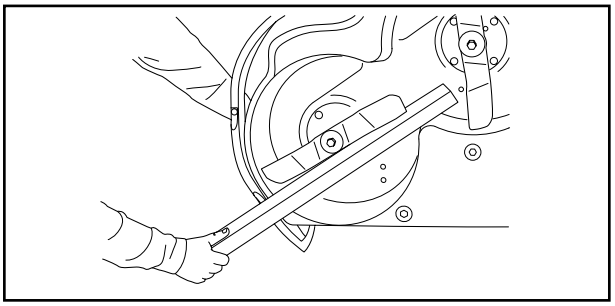
1. Remove the cutting unit's upper cover, see "Belt replacement on cutting units Combi 112 and Combi 122" on page 69.
2. Loosen the spring (1) that tensions the V-belt and pull the belt off.



8009-303

Belt tensioner spring and belt pulley

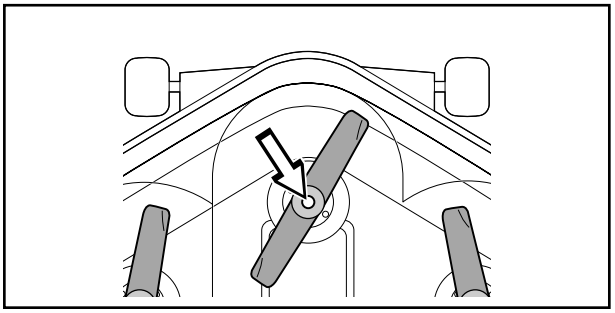
3. Remove the screws holding the pulley (2). Lock the blade with a wooden block or hold the belt pulley in place, with an oil filter wrench, for example.
   Do not lose the key that sits between the pulley and the shaft. Remove the pulley. A puller may be required for this.



8009-292

Locking the blades

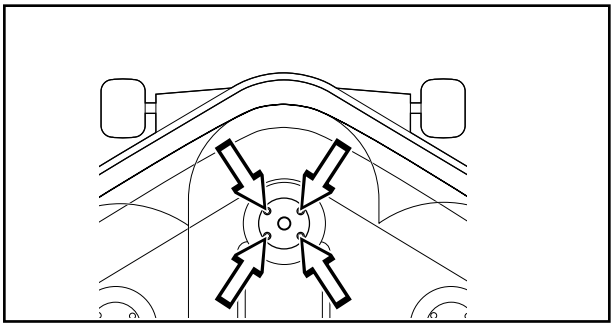
4. Loosen the blade bolt and remove the blade bolt, washer and blade.



6012-082

Blade bolt

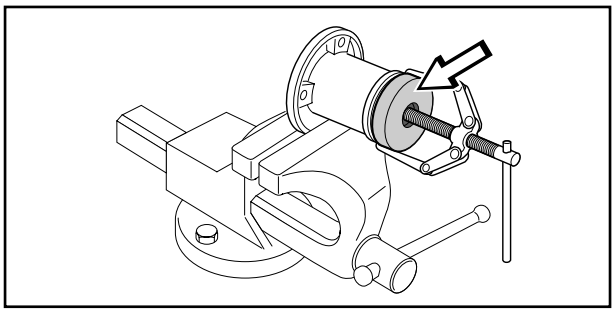
5. Loosen the four screws that hold the blade bearing and remove the entire bearing assembly from the cutting unit.



6012-083

Screws, blade bearing

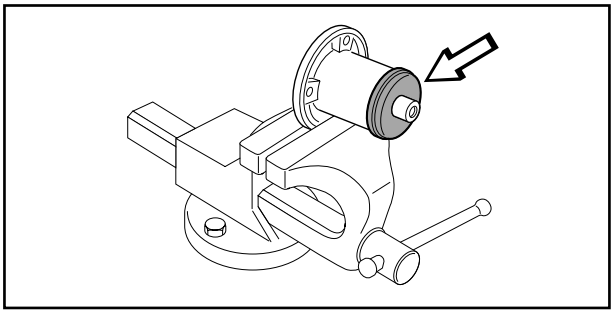
6. Remove the hub using a puller. Do not lose the key that sits between the hub and the shaft.



6012-084

Removing the hub

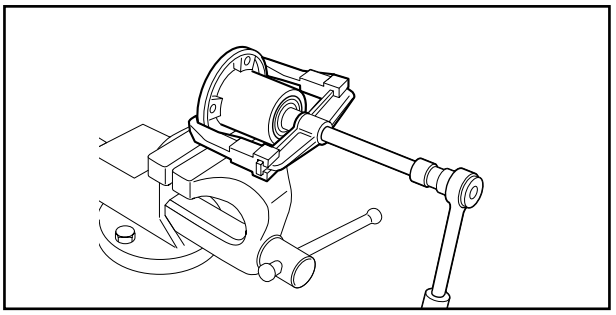
7. Remove the protective metal washer.



6012-085

Removing the protective washer

8. Mark one end of the shaft. Push out the shaft with a puller. Tap out the bearings and remove the spacer.

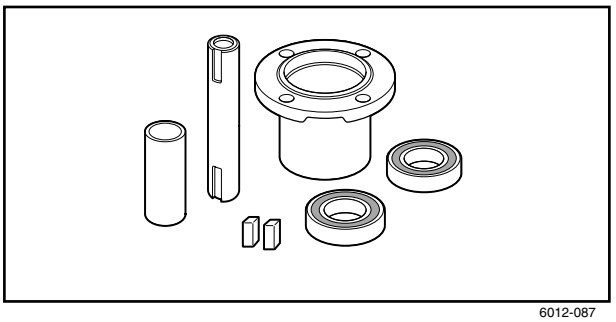


6012-086

Removing the shaft

You can purchase the entire assembly, complete with shaft housing, shaft, spacer, and bearings.

Fit in the reverse order to removal. Make sure that the shaft is mounted in the same direction as when it was removed, otherwise the keys will not fit the grooves.



6012-087

Repair kit

IMPORTANT INFORMATION

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

Tighten the blade bearings with a torque of 20-25 Nm (14-18) lbf. ft.

Tighten the blade bearings with a torque of 45-50 Nm (32-36) lbf. ft.

REPAIR INSTRUCTIONS

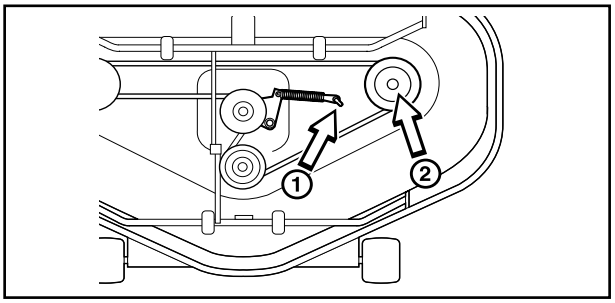
Combi 122

WARNING!

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

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.

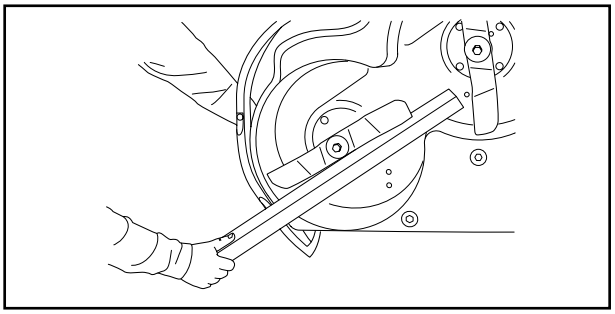
1. Remove the cutting unit's upper cover, see "Belt replacement on cutting units Combi 112 and Combi 122" on page 69.
2. Loosen the spring (1) that tensions the V-belt and pull the belt off.



8009-303

Belt tensioner spring and belt pulley

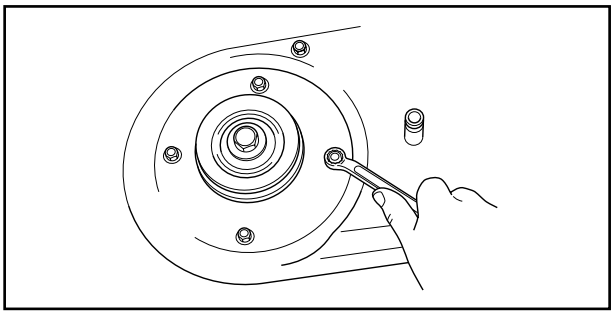
3. Loosen the screw that holds the belt pulley (2) a few turns. Lock the blade with a wooden block or hold the belt pulley in place, with an oil filter wrench, for example.



8009-292

Locking the blades

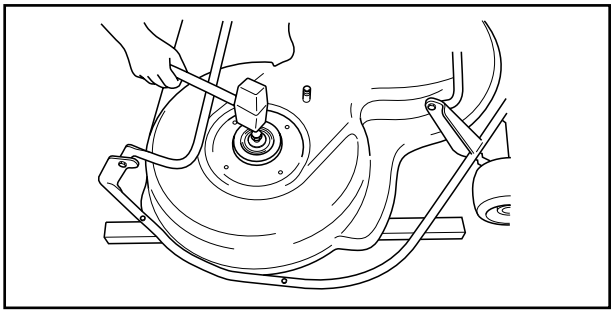
4. Remove the nuts, which hold the bearing housing in position, from the top of the cover. Make sure that the unit is positioned with the belt pulley against the unit's cover.



8009-293

Bearing housing nuts

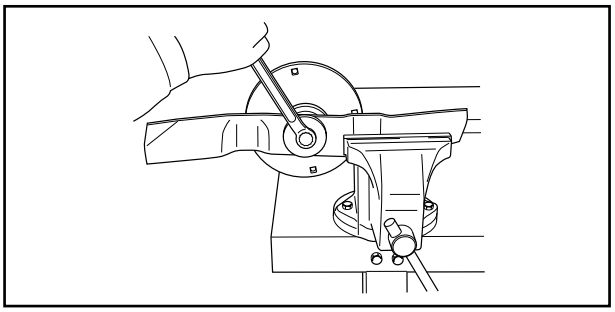
5. Place a wooden block under the unit cover so that the blade is free from the supporting surface. Knock on the screws to remove the belt pulley. Do not knock hard enough to deform the cover. If the belt pulley is stuck, heat it with a hot air gun. Try not to use a puller as it can deform the belt pulley.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



8009-294

Knock the underside of the cover with a wooden block

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



8009-295

Removing blades

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.

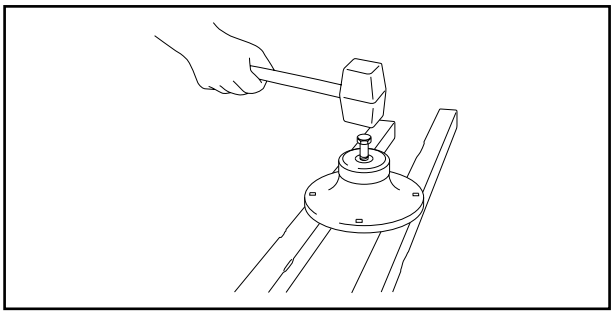
Fit in the reverse order.

Make sure that the shaft is mounted in the same direction as when it was removed, otherwise the keys will not fit the grooves.

Tighten the blade bearings with a torque of 20-25 Nm (14-18) lbf. ft.

Tighten the belt pulley with a torque of 45 Nm (32) lbf. ft.

Tighten the blade bearings with a torque of 75-80 Nm (53-56) lbf. ft.



8009-296

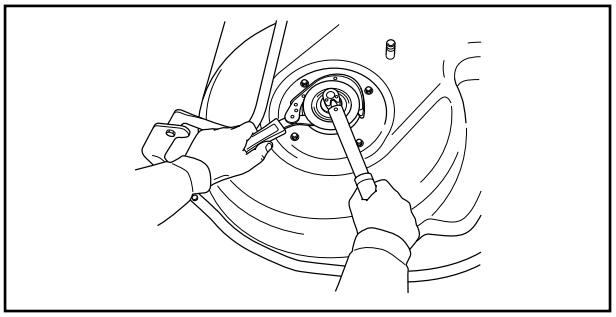
Removing the hub

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.

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



8009-297

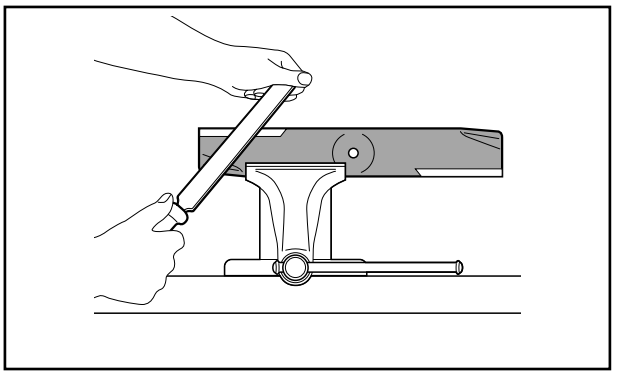
Tightening the belt pulley

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.

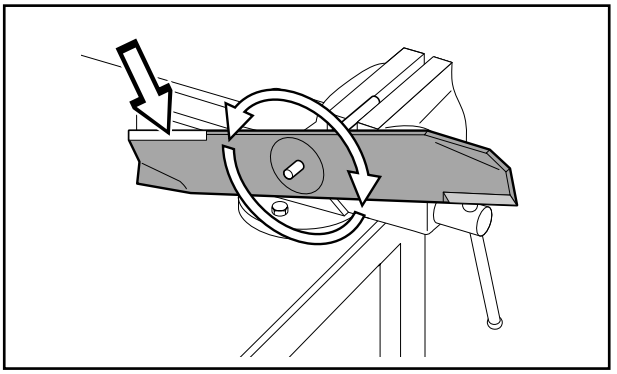


6012-088

Sharpening blades

3. Balance the blade by:

- Attaching a punch, e.g. 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.



6012-089

Balancing blades

WARNING!

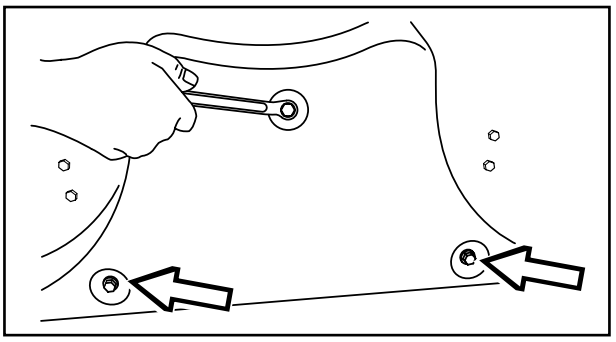
If the blades are cracked, whether caused by poor repair or other damage, they could break while being used. The risk increases if the blades are poorly balanced.

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 66.
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.

Fit the BioClip plug in the reverse order.

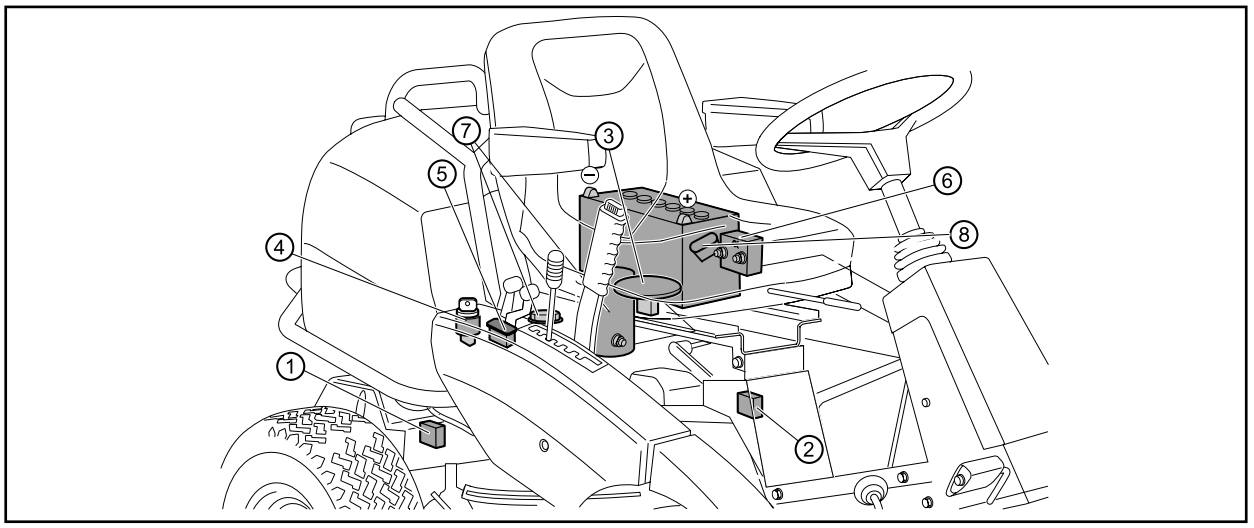


8009-289

Removing the BioClip plug

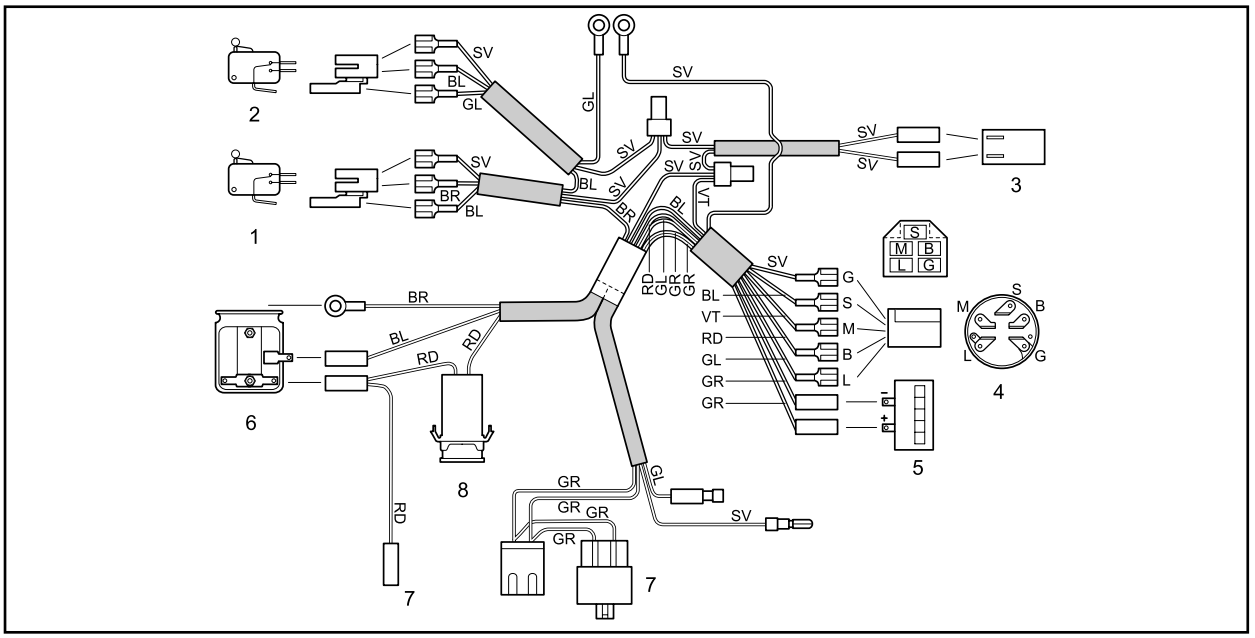
Electrical System

Wiring Diagram Rider ProFlex 21 2002



8009-356

Electrical system: component locations



8009-186

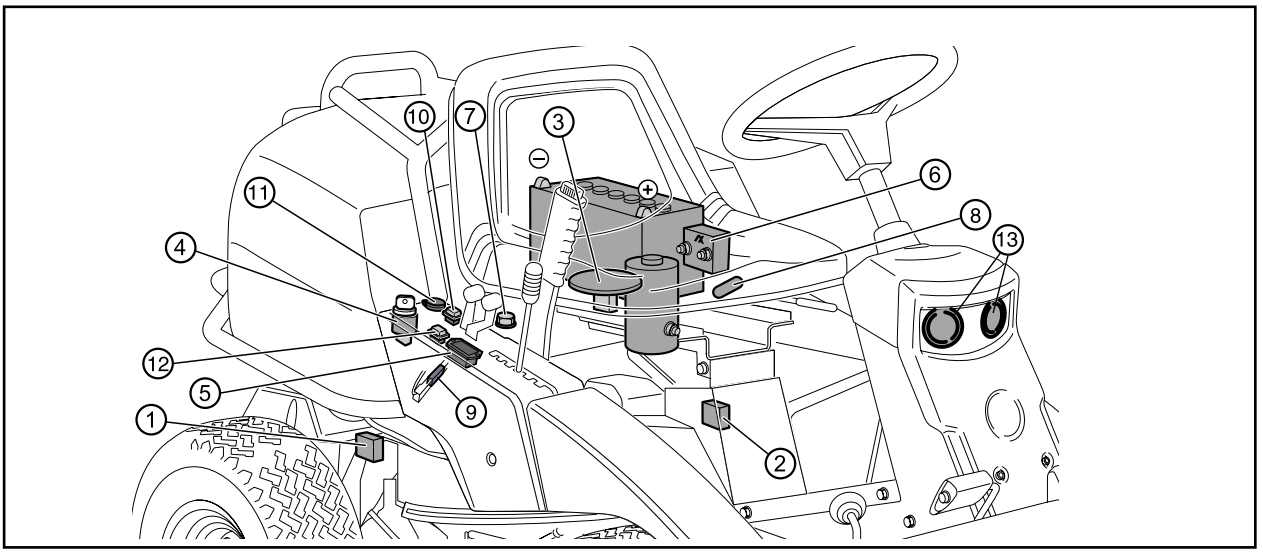
Wiring diagram

1 Microswitch, hydrostatic transmission
2 Microswitch, cutting unit
3 Microswitch, seat
4 Ignition lock
5 Hour meter
6 Start relay
7 Engine connectors
8 Fuse, 15 A

Key for colour abbreviations in wiring diagram

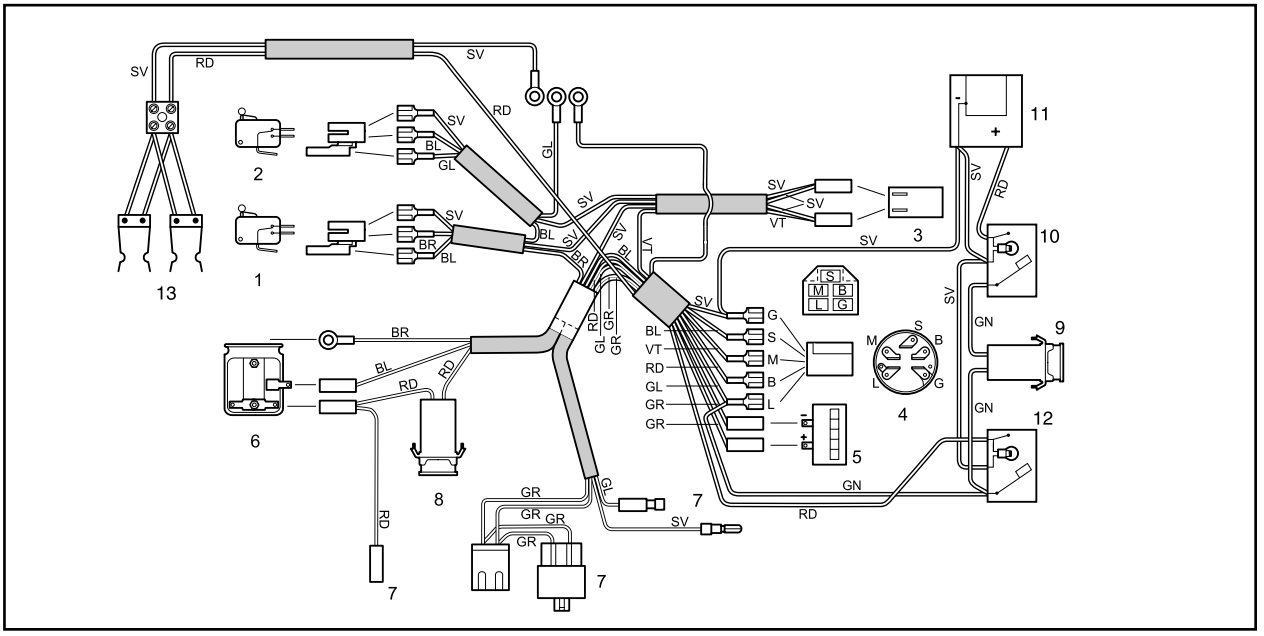
RD =Red
BL =Blue
VT =White
SV =Black
GL =Yellow
GR =Grey
BR =Brown

Wiring diagram Rider ProFlex 2003



8009-549

Electrical system: component locations



8009-571

Wiring diagram

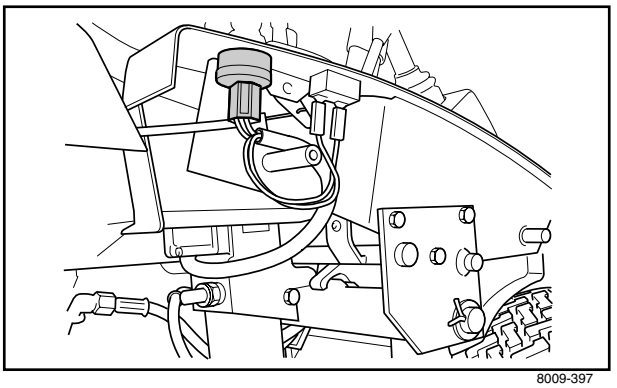
1 Microswitch, hydrostatic transmission
2 Microswitch, cutting unit
3 Microswitch, seat
4 Ignition lock
5 Hour meter
6 Start relay
7 Engine connectors
8 Fuse, 15 A
9 Fuse power outlet
10 Mains switch power outlet
11 Power outlet
12 Mains switch lighting
13 Headlight

Key for colour abbreviations in wiring diagram

RD =Red
BL =Blue
VT =White
SV =Black
GL =Yellow
GR =Grey
BR =Brown

Ignition and Starter Lock

1. Remove the right-hand side cover from the lever housing.
2. Release the connector 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. Assemble the parts in the reverse order. Make sure the connector ends up in the proper position (click-lock).

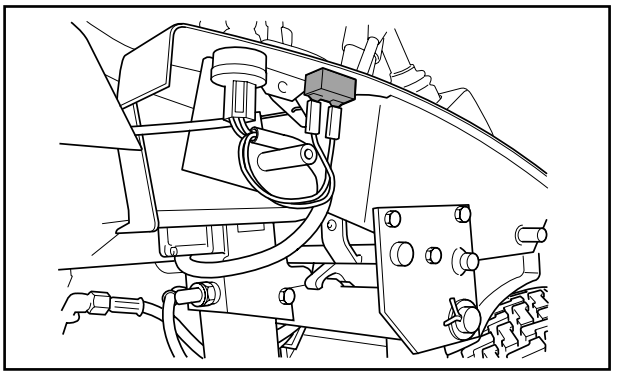


8009-397

Ignition and Starter Lock

Hour meter

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



8009-398

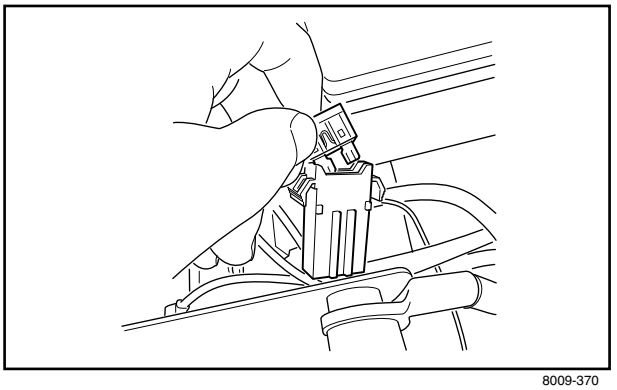
Hour meter

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 is indicated by a burnt connector. 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.



8009-370

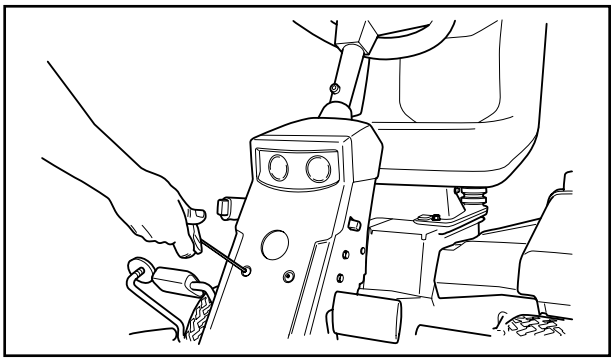
Main fuse

Replacing the light bulbs

For information about the bulb type, see “Electrical system” on page 5.

1. Unscrew the two screws holding the cover on the power servo housing.

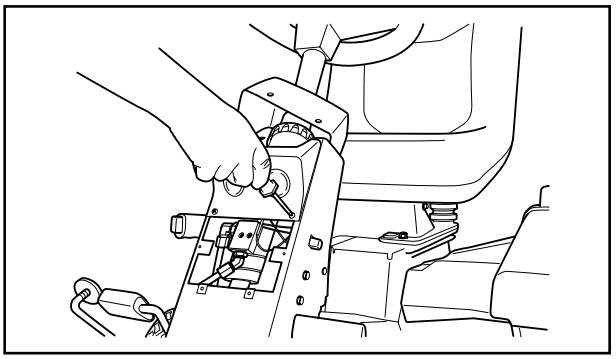
   Lift up the cover and turn it around the steering shaft.



8009-511

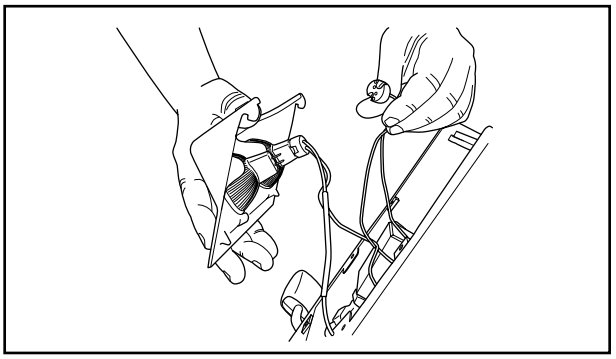
2. Unscrew the two screws holding the lamp insert.

   Lift out the lamp insert.



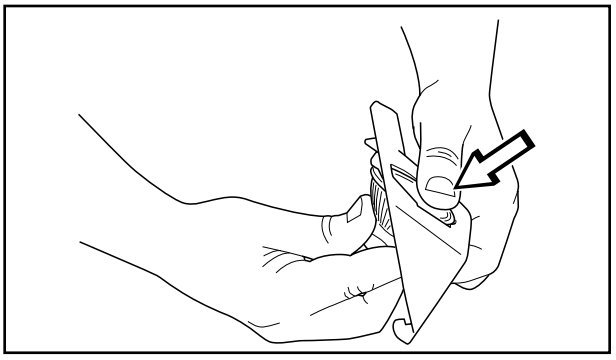
8009-512

3. Disconnect the cables from the bulbs.
4. Lift out the bulbs from the insert.



8009-513

5. Insert the new bulbs. Make sure you use your thumb to support the front.



8009-522

6. Refit the cables, lamp insert and the cover on the power servo housing.

Safety System

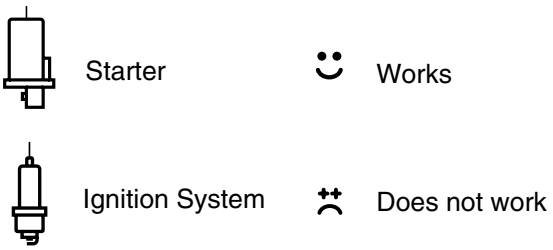
The rider is equipped with a safety system that prevents starting or driving under the following conditions.

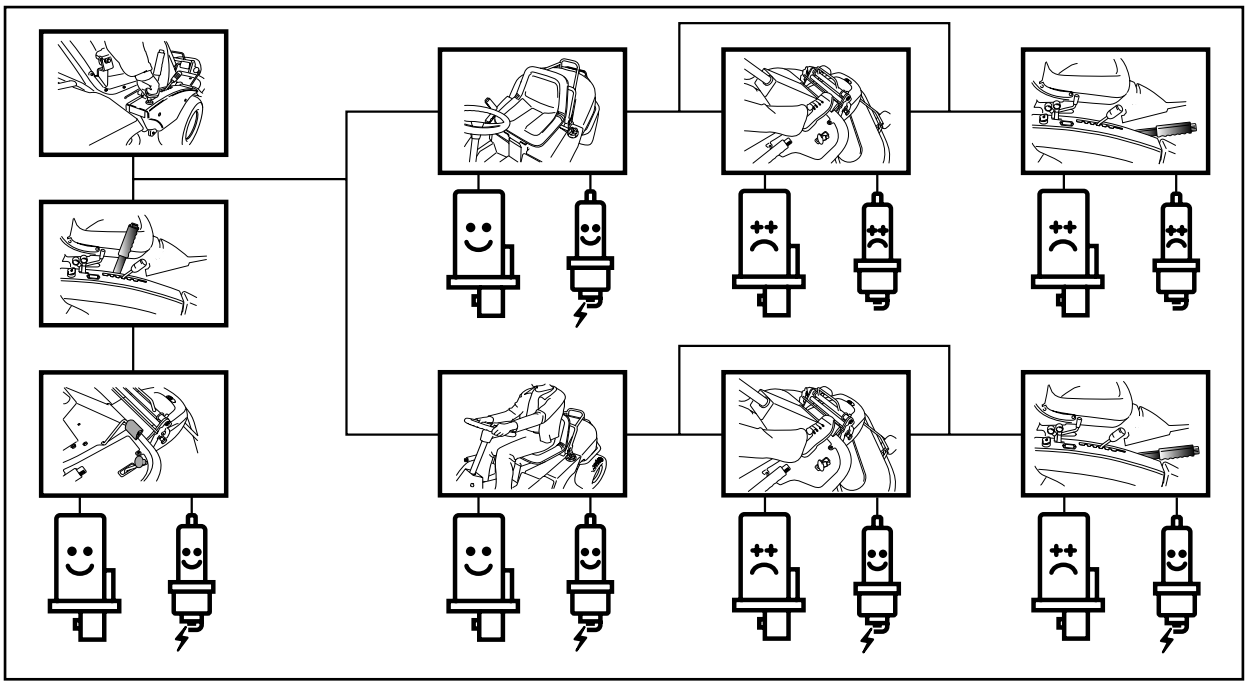
It should only be possible to start the engine when the cutting unit is in its raised position and the hydrostat pedals are in the neutral position.

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.

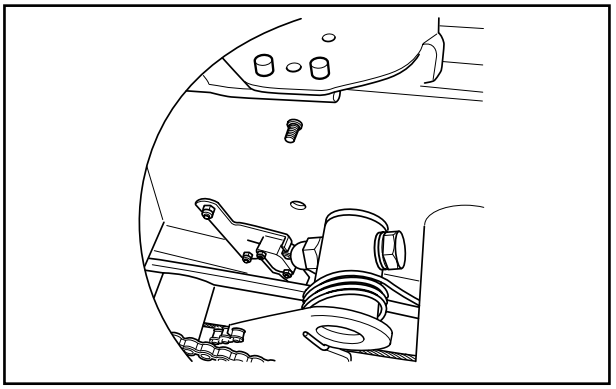




8009-153

Microswitch: Mowing Deck

See “Adjusting the Lever Housing” on page 58 for adjustment instructions.

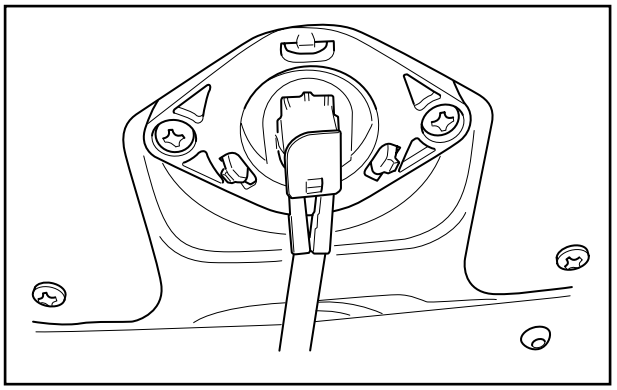


8009-381

Microswitch: Mowing Deck

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.



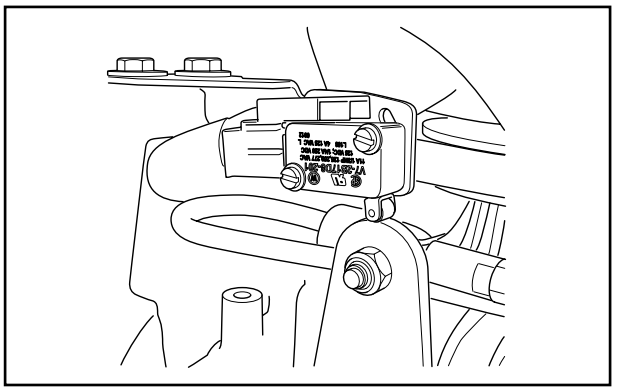
8009-395

Microswitch: Seat

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.



8009-396

Microswitch: Neutral Position

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.
- Do not reuse drained oil.
- Change the oil and filter according to the intervals specified in “Service Schedule” on page 9.

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 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.

HYDRAULIC SYSTEM

Keep the hydraulic oil 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.

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.

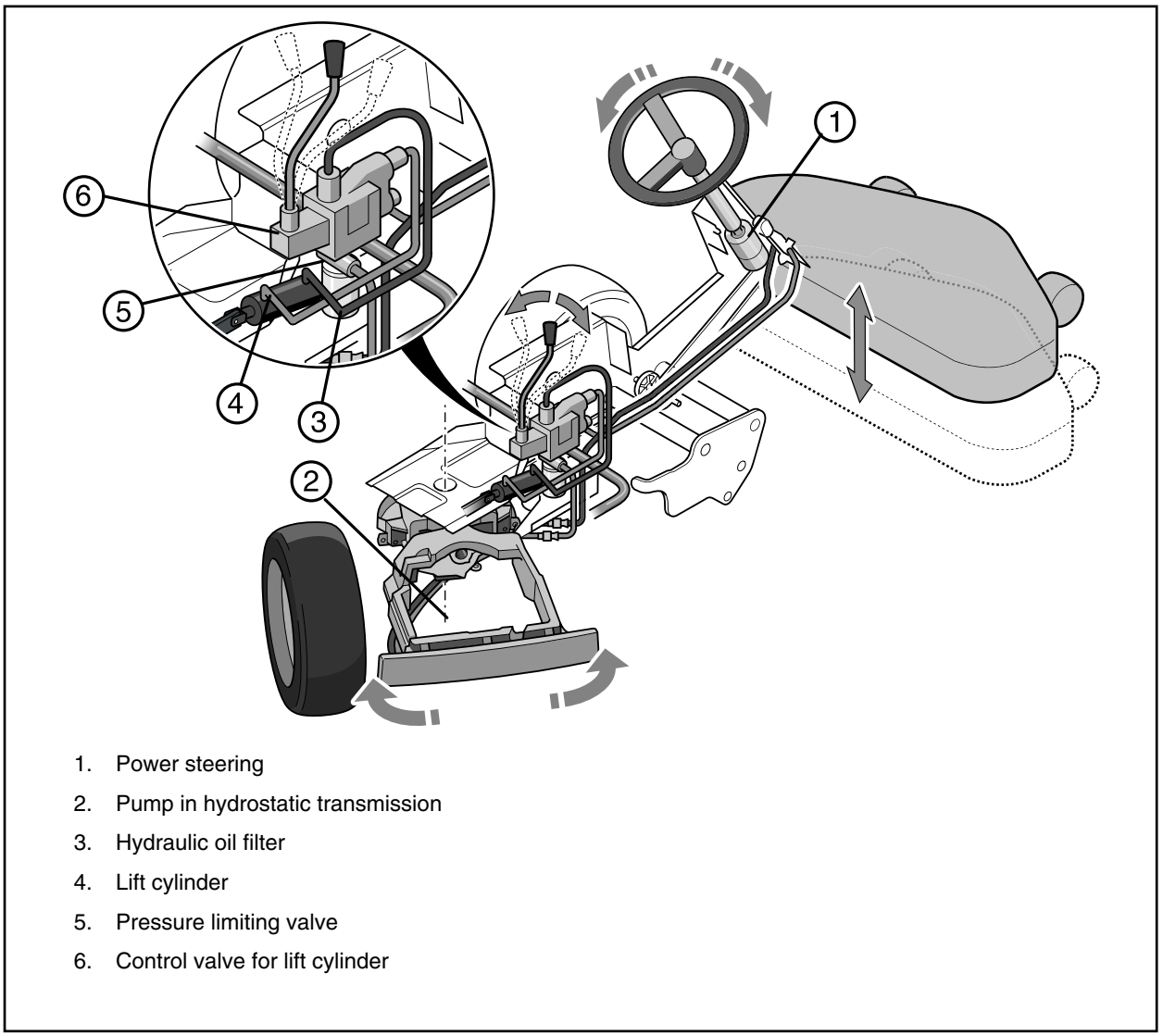
Working Methods

Cleanliness also applies to components that have been removed or are to be installed. 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 must 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.

Component Locations



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

8009-357

Hydraulic system, components

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 rear 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 22.

Bleeding the Hydraulic System

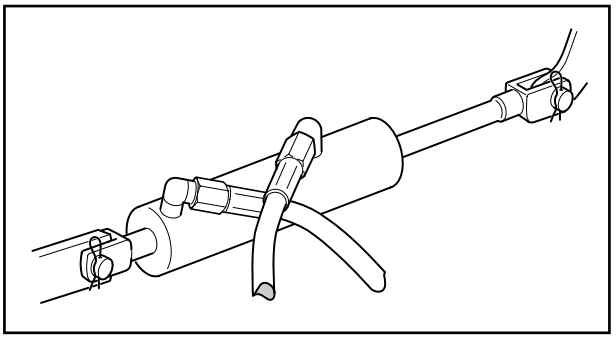
See “Bleeding the Hydrostatic and Hydraulic Systems” on page 54.

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 82.
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.
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.
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 58.
12. Replace the plastic cover over the hydraulic valve block and the transmission cover.



8009-387

Lift cylinder

IMPORTANT INFORMATION

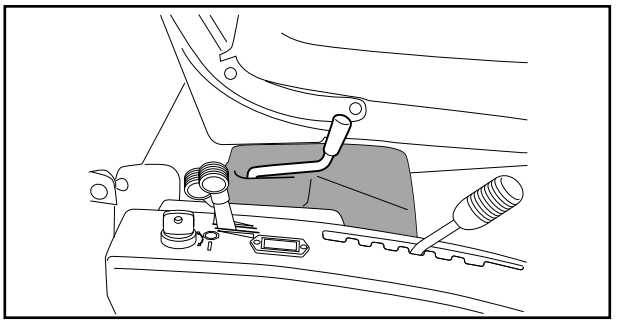
It is easy to get the hydraulic hoses switched.

Connecting the hoses incorrectly will result in reversed lever motion.

Valve block

Removing and Refitting

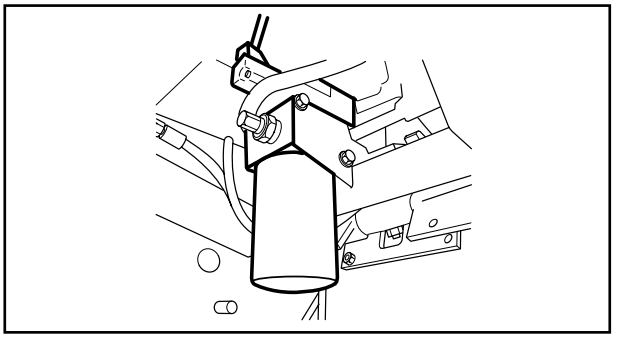
1. Lower the cutting unit to the ground. Stop the engine.
2. Remove the plastic cover from the hydraulic valve block.
3. Clean in accordance with “Working Methods” on page 82.
4. Hold the valve block nipples in place and loosen the hydraulic connectors from the valve block. A small amount of oil will leak out.



8009-374

Plastic cover

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.

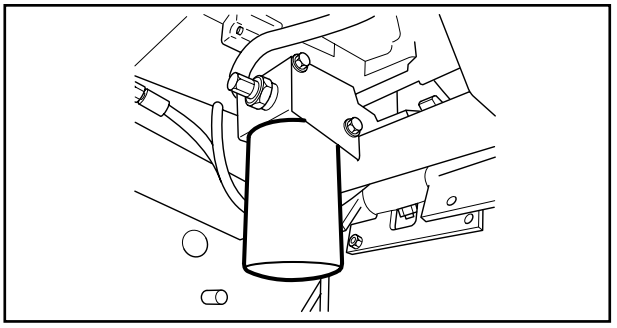


8009-386

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, operate 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.

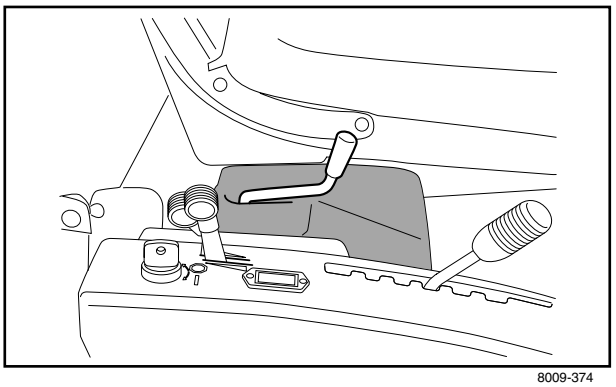
Avoid skin contact; wash with soap and water in case of spills.

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 82.
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 refit 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.

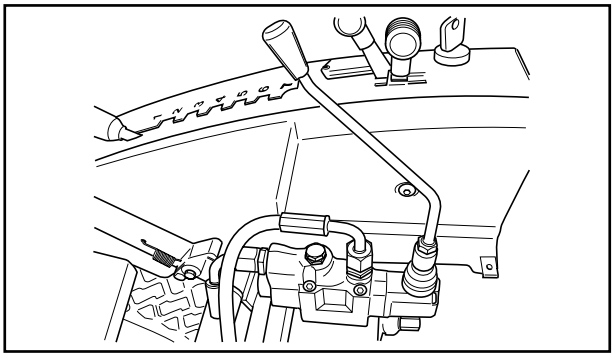
Control Valve, Disassembly/Assembly

1. Remove the control valve, see above.
2. Clean in accordance with “Working Methods” on page 82.
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.



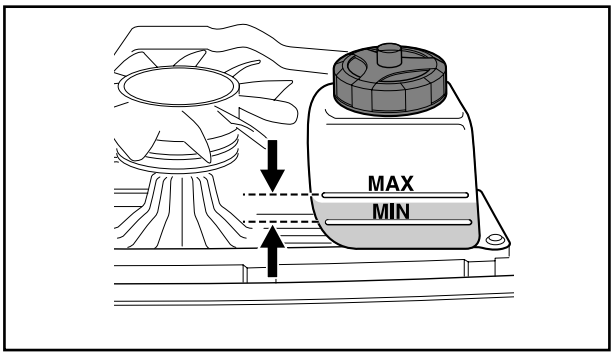
8009-374

Plastic cover



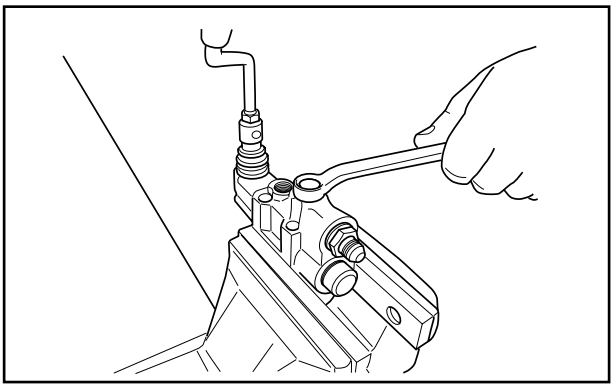
8009-388

Control valve



6012-057

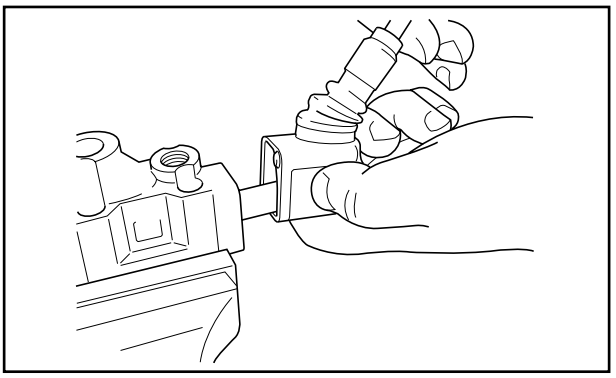
Oil tank



8009-389

Check valve

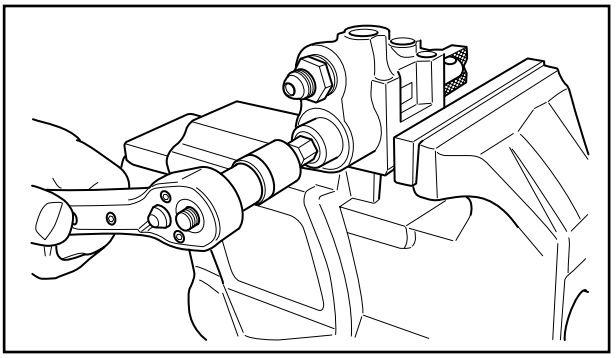
5. Remove lever housing and lever. By lifting the lever housing and twisting the lever backwards, it can be unhooked from the hole in the slider.



8009-390

Lever housing with lever

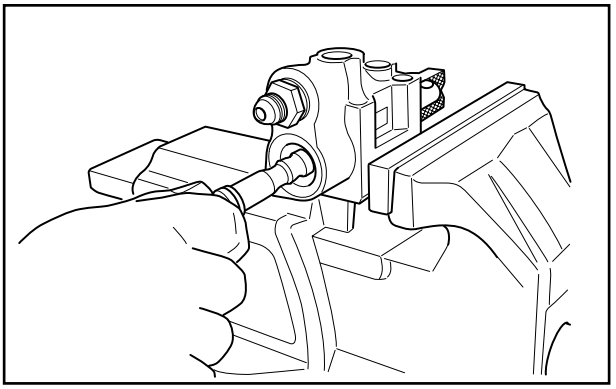
6. Remove the plastic plug and unscrew the spring holder with a 12 mm Allen key.



8009-391

Spring holder

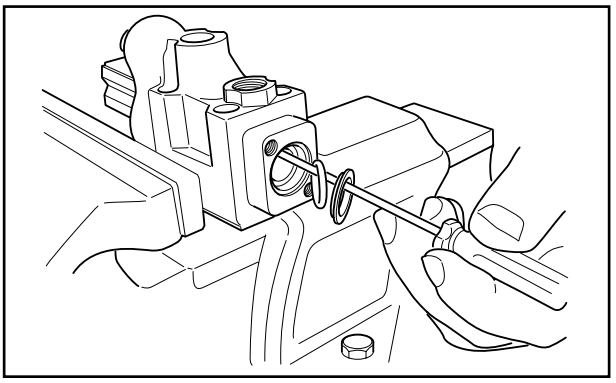
7. Pull out the slider. Normally, the spring does not need to be removed, but if it does, only the hole in the slider may be used to hold it in place.



8009-392

Slider with spring

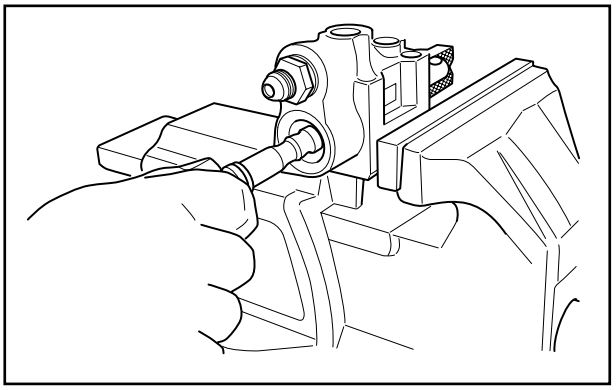
8. Remove the steel ring and o-ring from the rear section.
9. Remove the spacing ring and o-ring from the front section.
10. Clean/replace the o-rings. Lubricate the o-rings and the slider with motor oil before assembly. The check valve can be taken apart for cleaning, if necessary.
11. Lubricate and place the o-ring in its position in the front section. Check that it is properly seated.
12. Thread on the spacing ring (length 7 mm/ 0.28”) on the slider.



8009-393

Steel ring and o-ring

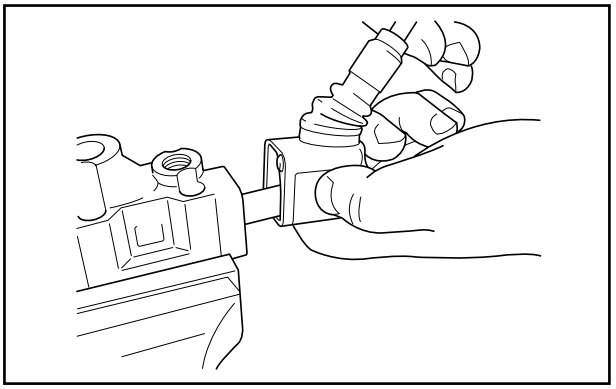
13. Make sure that the o-ring is not damaged by lubricating the slider and coaxing the slider into place. Insert the slider completely into the valve housing.
14. Fit the spring holder and plastic plug.
15. Attach the o-ring to the rear section.
16. Attach the steel washer with the projection facing inwards towards the o-ring.



8009-392

Coax the slider into place

17. Risk of 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 “Control Valve Replacement” on page 86. Tightening torque, max. 12 Nm.



8009-390

Assembling the lever housing and lever

Pressure Limiting Valve

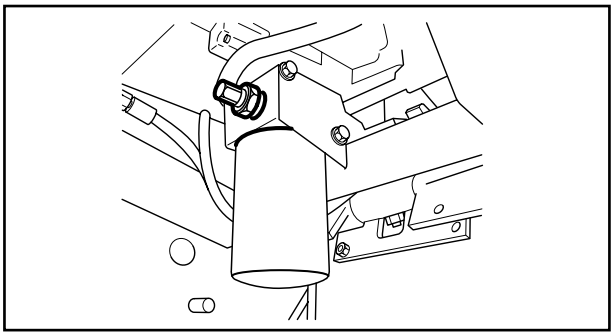
If the hydraulic pressure is too low, it can be due to dirt trapped in the pressure limiting valve.

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

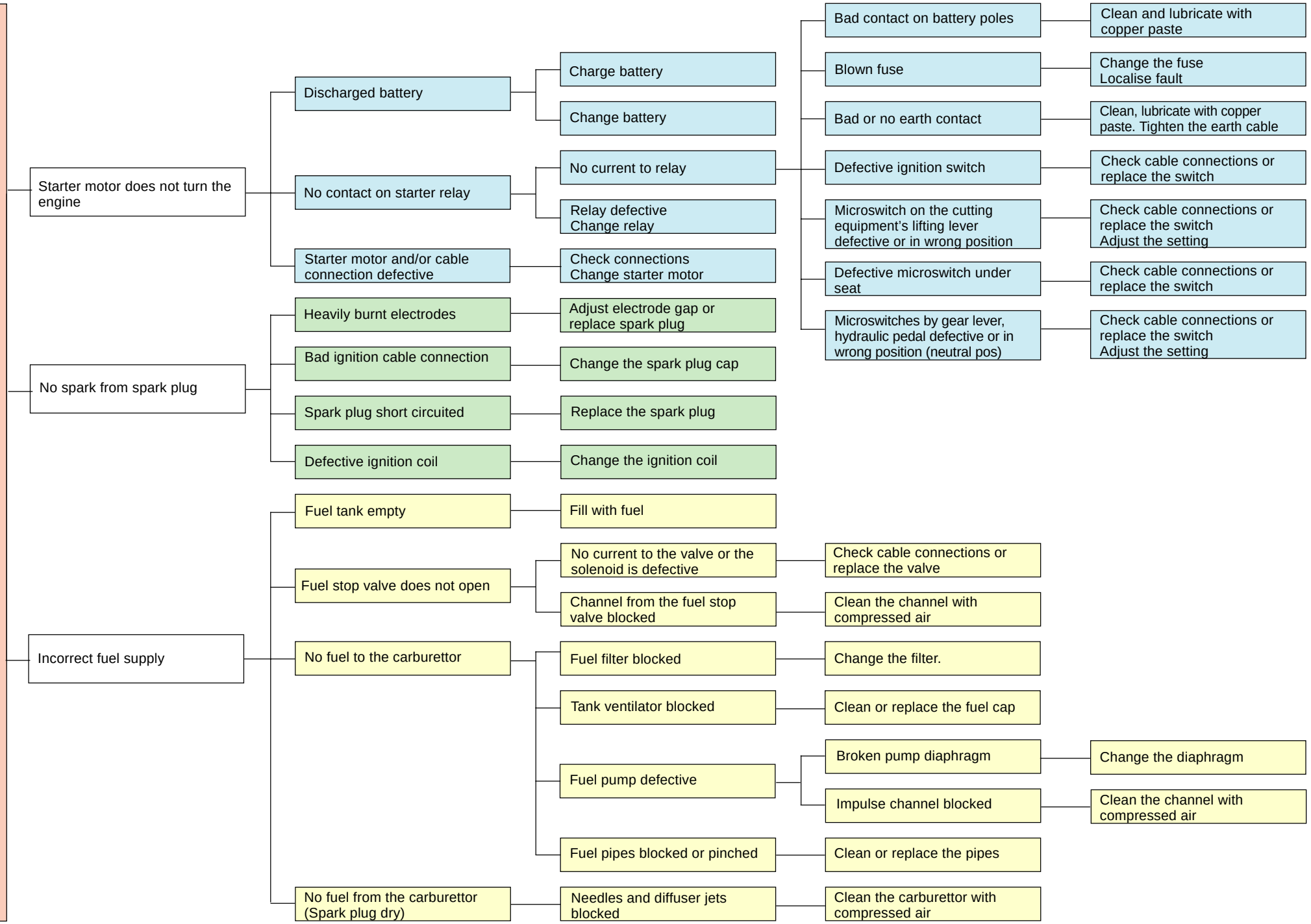
An excess flow valve that is set too high will damage the power steering.



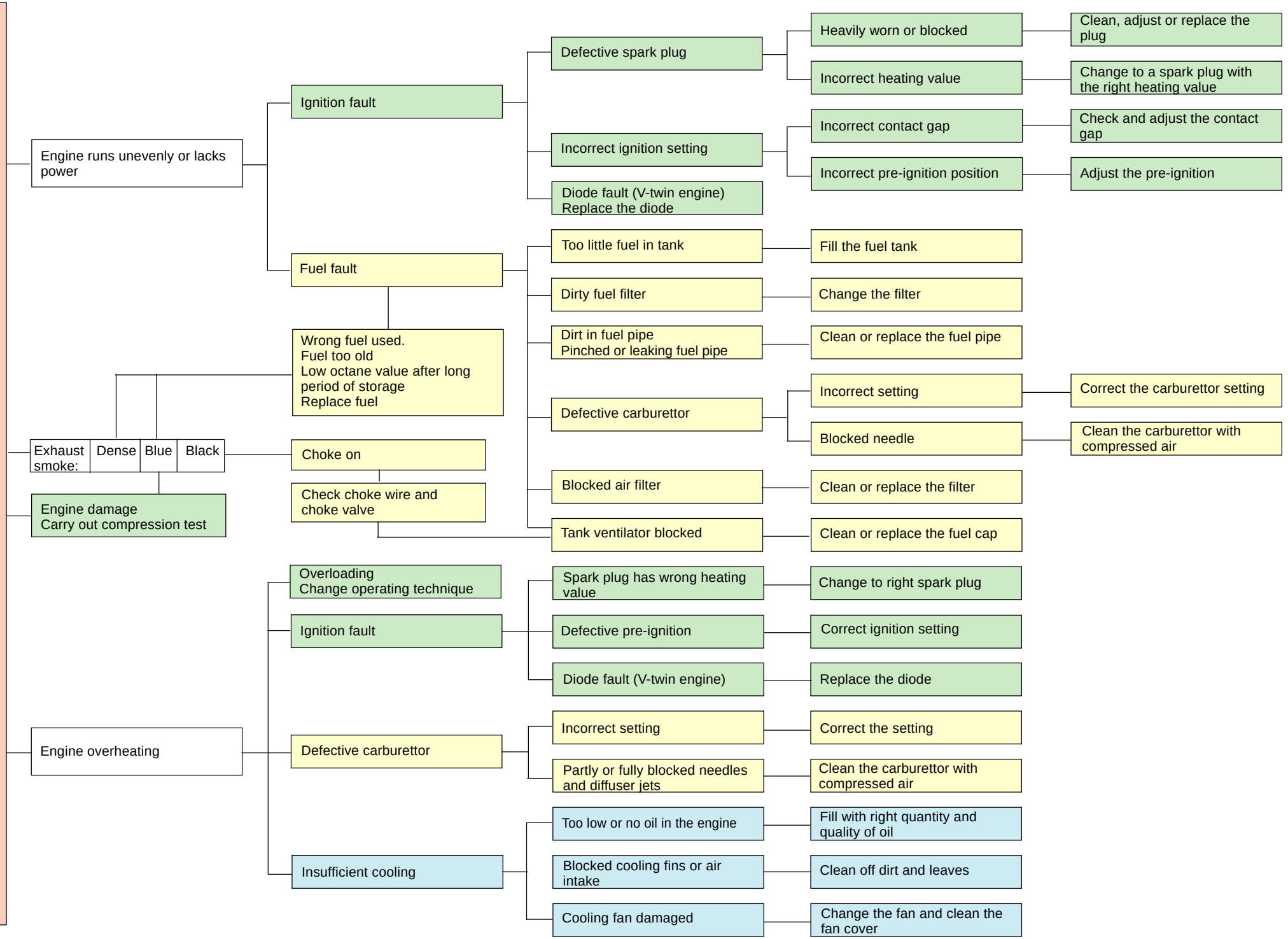
8009-385

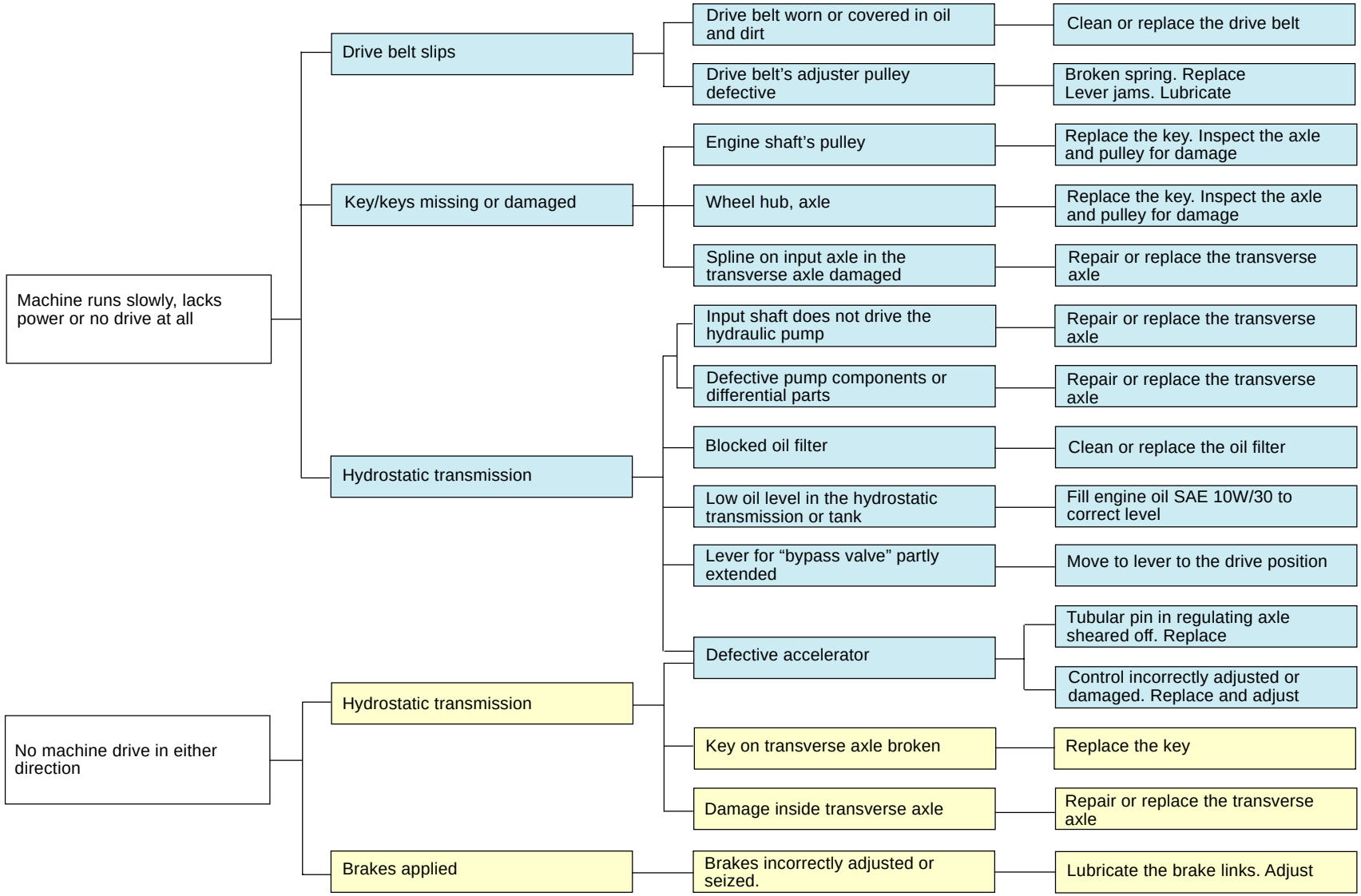
Pressure Limiting Valve

ENGINE WILL NOT START

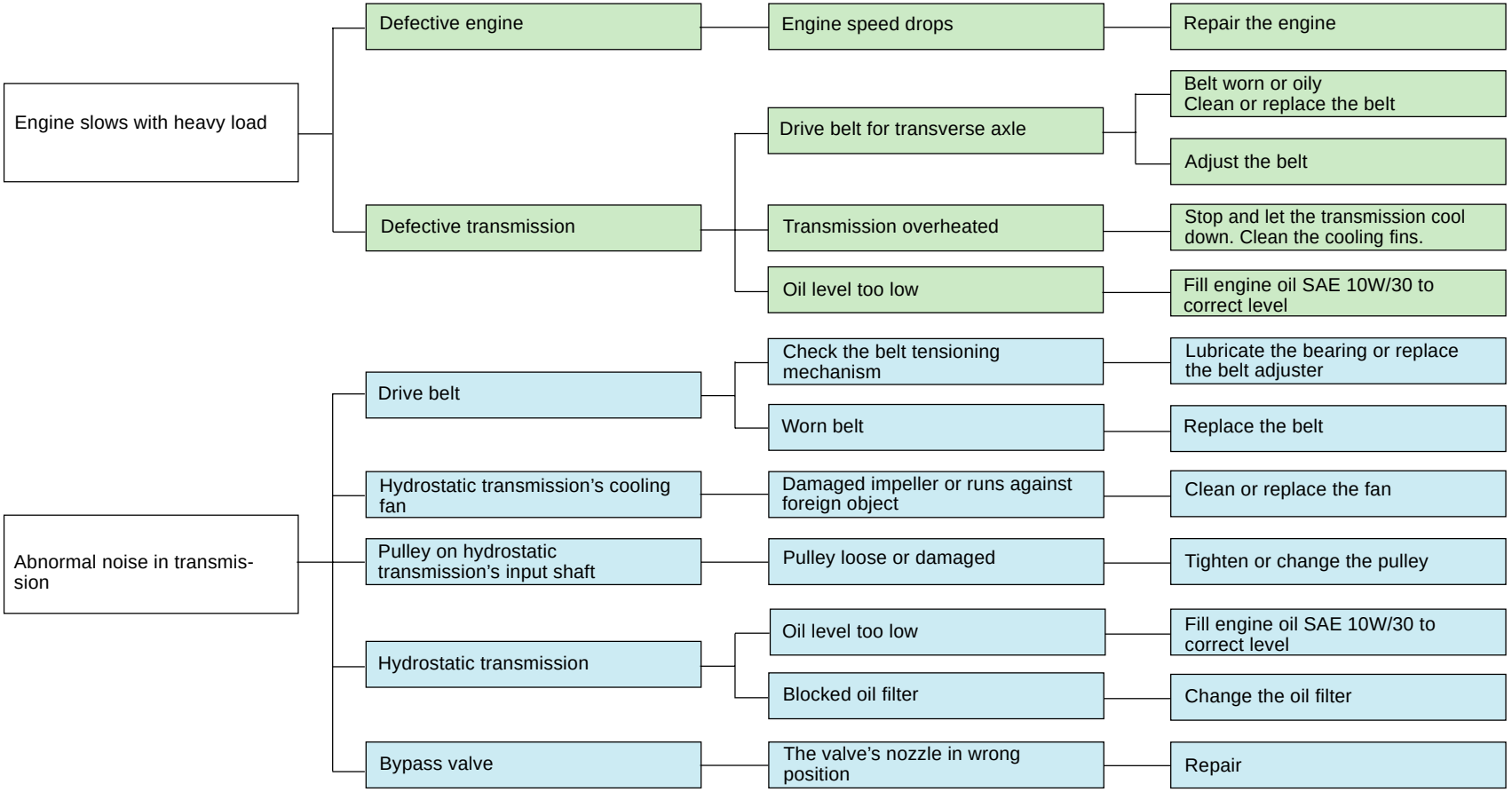


ENGINE STARTS BUT DOES NOT RUN SATISFACTORILY

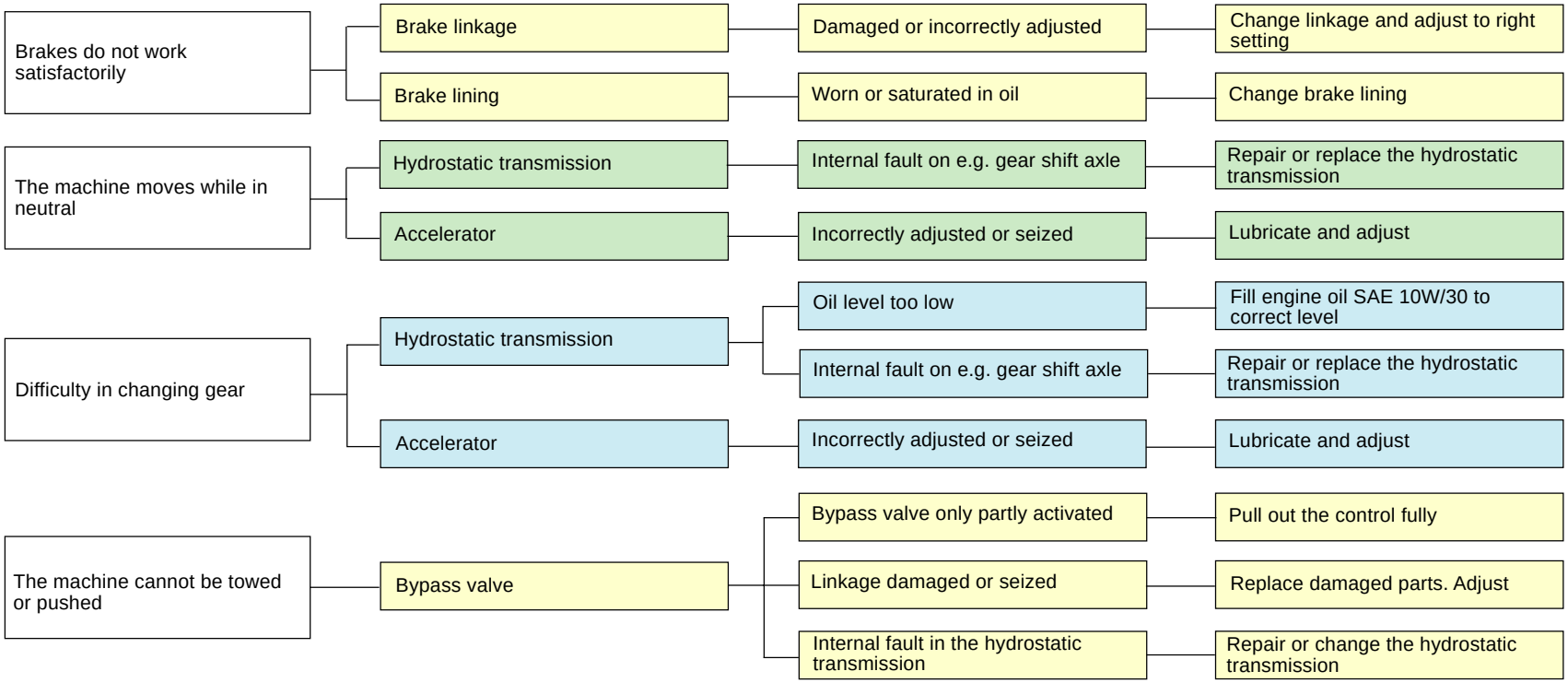




The hydrostatic transmission must not be opened during the warranty period.



The hydrostatic transmission must not be opened during the warranty period.



The hydrostatic transmission must not be opened during the warranty period.

114 01 88-26

2003W14