Rider 11, Rider 13 H,
Rider 11 Bio, Rider 13 H Bio,
Rider 14 Pro, Rider 16 H

Workshop Manual

101 90 98-26

Workshop manual
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Rider 14 Pro, Rider 16 H

Contents

Safety regulations

General instructions

The workshop handbook is written for personnel who are assumed to have general ride-on mower reparation and service know-how.

The workshop where the ride-on mower is repaired should be equipped with safety devices in accordance with local regulations.

No-one should attempt to repair the ride-on mower without having first read and understood the contents of this handbook.

The machine is tested for safety and approved only for equipment supplied or recommended by the manufacturer.

The below-mentioned boxes are included in this workshop handbook, as is appropriate.

WARNING!
The warning box indicates a risk of injury to persons if the instructions are not followed.

IMPORTANT INFORMATION

This box indicates a risk of damage to the material if the instructions are not followed.

Special instructions

The fuel used in the ride-on mower has the following hazardous characteristics:

- Toxic fluid and fumes
- Can cause eye and skin complaints
- Can cause breathing difficulties
- Highly flammable

When using compressed air, do not direct the compressed air stream towards your, or anybody else's, body. Air can be forced into the blood stream, thereby constituting a danger to life .

Use hearing protectors when test driving.

After test driving, do not touch the silencer before it has cooled down. Risk of burn injuries. This especially applies if the ride-on mower is equipped with a catalytic converter. If consumed, the lining on and in the catalytic converter element is dangerous to health. Use protective gloves when working with the catalytic converter/silencer.

The blades are sharp and can cause cutting injuries. Always use protective gloves when you are handling the blades.

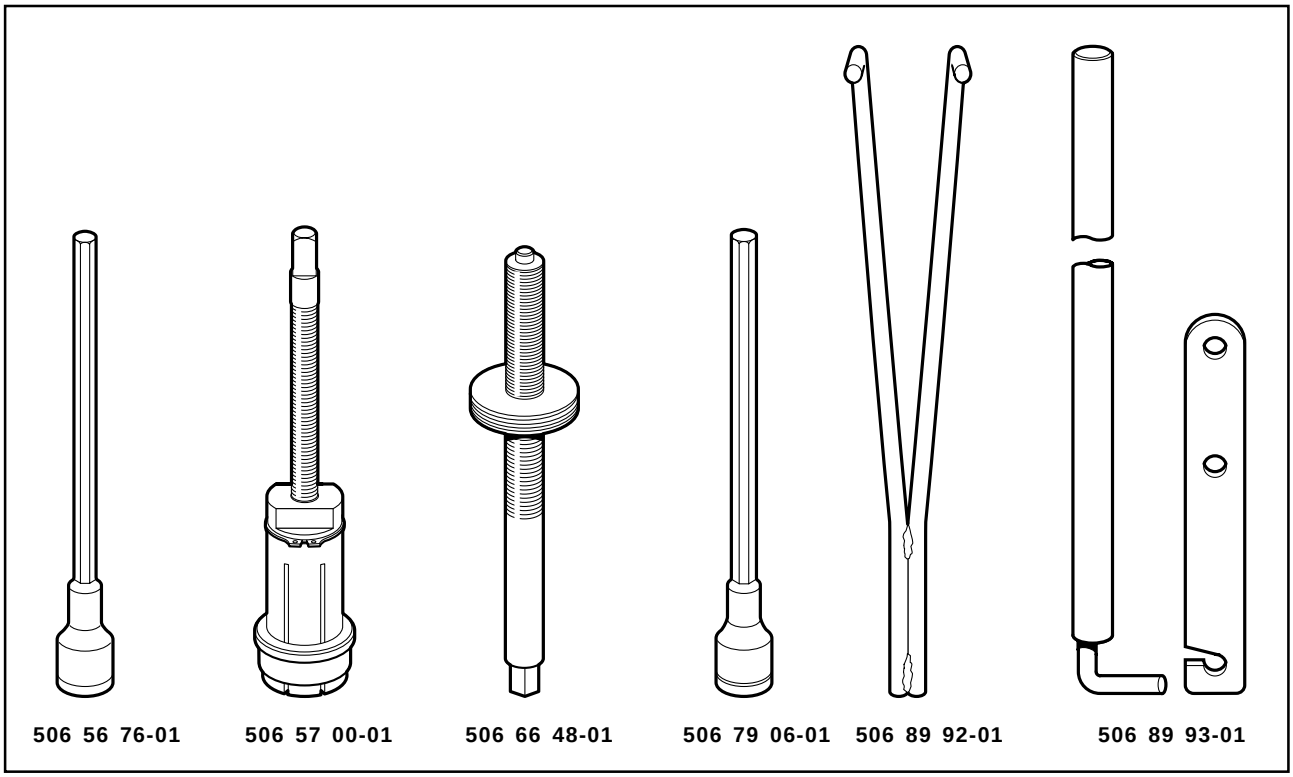
Use protective glasses when working with the mowing deck. If the belt's tension spring comes off and flies upwards, this can cause injury to persons.

Be extra careful when handling battery acid. Spilling acid on the skin can cause severe burn injuries. If acid is spilt on the skin, rinse immediately with water. If acid gets into the eyes, this can cause blindness. Contact a doctor.

Be careful with the maintenance of the battery. Explosive gas is formed in the battery. Never handle the battery when smoking or in the vicinity of naked flames or sparks. Otherwise, the battery can explode and cause severe injuries.

Special tools

The following special tools are used when working on the ride-on mower.



506 56 76-01 Ball-ended Allen key 5/16" to unscrew the engine pulley socket head cap screw (Kawazaki).

506 57 00-01 Wheel puller for Rider 11/11 Bio, Rider 13 H/13 H Bio and Rider 16 H.

506 66 48-01 Puller for engine pulley.

506 79 06-01 Ball-ended Allen key 3/8" to unscrew the engine pulley socket head cap screw (Briggs & Stratton).

506 89 92-01 Holder-on for engine pulley removal.

506 89 93-01 Tool for removing steer return spring.

Technical data

Dimensions:	**Rider 11/11 Bio**	**Rider 13 H/13 H Bio**
Length	2 090 mm	2 150 mm
Width	880 mm	880 mm
Height (over steering wheel)	1 070 mm	1 070 m
Weight	197 kg	197 kg
Track front	720 mm	720 mm
Track rear	620 mm	630 mm
Wheel base	860 mm	850 mm
Tyre size	16 x 6.50 x 8	16 x 6.50 x 8
Air pressure	60 kPa	60 kPa
Max. gradient	15°	15°

Engine:	**Rider 11/11 Bio**	**Rider 13 H/13 H Bio**
Manufacture	Briggs & Stratton model 28N707	Briggs & Stratton model 286707
Power	7,7/10,5 kW/hp	9,2/12,5 kW/hp
Displacement	362 cm^3	465 cm^3
Fuel	min. 85 octane unleaded	min. 85 octane unleaded
Tank capacity	7 litres	7 litres
Oil	SAE 30 or SAE 10W/30 class CD–F	SAE 30 or SAE 10W/30 class CD–SF
Oil capacity	1,4 litres	1,4 litres
Start	Electric start	Electric start

Gearbox:	**Rider 11/11 Bio**	**Rider 13 H/13 H Bio**
Manufacture	Peerless MST 205	Tuff Torq K55
Oil		SAE 10W/30 class CD-SF
Oil capacity		2,2 litres
Gears, forwards	5	
Gears, reverse	1	

Electrical system	**Rider 11/11 Bio**	**Rider 13 H/13 H Bio**
Type	12 V, negative earth	12 V, negative earth
Battery	12 V, 24 Ah	12 V, 24 Ah
Spark plug	Champion CJ8 or J8	Champion CJ8 or J8
Spark plug gap	0,7 - 0,8 mm	0,7 - 0,8 mm

Tightening moments

Carrier steering	5–10 Nm
Pulley steering wire	20–30 Nm
Belt wheel	35–40 Nm
Blades	45–50 Nm
Blade bearings	20–25 Nm
Belt tensioner wheel	15–25 Nm
Holder screws, engine	20–25 Nm
Holder screws, gear box	20–25 Nm
Brake drum bolts hydrostatic transmission	27 Nm
Engine pulley	70–80 Nm
Wheel axle nut	100–150 Nm

Play

Clutch wire:	8–10 mm
Brake control lever against stop bolt:	0–1 mm
Brake control lever:	7–9 mm
Brake wire hydrostatic transmission:	0 mm

Dimensions:	**Rider 14 Pro**	**Rider 16 H**
Length	2 120 mm	2 080 mm
Width	880 mm	880 mm
Height (over steering wheel)	1 070 mm	1 070 mm
Weight	234 kg	210 kg
Track front	720 mm	720 mm
Track rear	640 mm	630 mm
Wheel base	860 mm	860 mm
Tyre size	16 x 7.50 x 8	18 x 6.50 x 8
Air pressure	60 kPa	60 kPa
Max. gradient	15°	15°

Engine:	**Rider 14 Pro**	**Rider 16 H**
Manufacture	Briggs & Stratton Vanguard V-Twin model 294777	Briggs & Stratton model 28N707
Power	12/14 kW/hp	11,4/15,5 kW/hp
Displacement	480 cm^3	465 cm^3
Fuel	min 85 octane unleaded	min 85 octane unleaded
Tank capacity	7 litres	7 litres
Oil	SAE 30 or 10W/30 class CD-CF	SAE 30 or 10W/30 class CD-CF
Oil capacity	1,5 litres	1,2 litres
Start	Electric start	Electric start

Gearbox:	**Rider 14 Pro**	**Rider 16 H**
Manufacture	Tuff Torq K 61	Tuff Torq K 55
Oil	SAE 10W/30 class CD-CF	SAE 10W/30 class CD-CF
Oil capacity	3,3 litres	2,2 litres

Electrical system	**Rider 14 Pro**	**Rider 16 H**
Type	12 V, negative earth	12 V, negative earth
Battery	12 V, 24 Ah	12 V, 24 Ah
Spark plug	Champion RC12YC	Champion CJ8 or J8
Spark plug gap	0,7 - 0,8 mm	0,7 - 0,8 mm

Mowing deck:	**Rear ejector 85**	**Rear ejector 97**	**Rear ejector 120**	**Bio 90**	**Bio 103**
Cutting width	850 mm	970 mm	1 200 mm	900 mm	1 030 mm
Cutting height	40-90 mm	40-90 mm	40-90 mm	45-95 mm	45-95 mm
Blade length		350 mm	440 mm	440 mm	410 mm
Noise level	100 dB(A)	100 dB(A)	100 dB(A)	100 dB(A)	100 dB(A)
Weight	28,0 kg	40,0 kg	60,2 kg	38,0 kg	44,0 kg
Overall width	950 mm	1 075 mm	1 305 mm	1 000 mm	1 115 mm

Control points

Mowing deck parallelism with cutting height in pos. 1:	± 2 mm
Cutting height control in pos. 1:	Rider 11 = 37 ± 2 mm Bio = 45 ± 2 mm Other = 40 ± 2 mm
Synchronous transmission belt tension Bio 103 at 10 N force, impression:	7 mm
Synchronous transmission belt tension Bio 90 at 7 N force, impression:	8 mm
Dist. between support plate and drive belt:	3–6 mm
Distance belt tensioner control lever and belt guide, disengaged unit:	17 ± 5 mm

Delivery and dealer service

Pre-delivery service

1. Top up battery with acid and recharge for four hours.
2. Fit steering wheel, seat and any optional equipment.
3. Fit cutting unit.
4. Adjust cutting unit:

   Adjust lift springs (effective weight of cutting unit should be 12–15 kg, or set to maximum lift if brush is to be fitted).

   Adjust cutting unit so that rear edge is about 2–4 mm higher than front edge.

   Adjust cutting unit height setting so that cutting height limit is 5 mm above the frame of the unit at the lowest cutting height.
5. Check that engine has correct amount of oil.
6. Check and adjust tyre pressure (60 kPa, 0.6 bar).
7. Connect battery.
8. Fill with fuel and start engine.
9. Check that machine does not move in neutral.
10. Check:

    Forward drive.

    Reverse drive.

    Operation of blades.

    Seat safety switch.

    Lift lever safety switch.

    Parking brake safety switch.
11. Check engine revs 3,000–3,100 rpm.
12. Tell customer about:

    Need and benefits of following the service schedule.

    Need and benefits of having machine serviced every 300 hours.

    Servicing and the influence of this journal on the second-hand value of the machine.

    Range of applications for BioClip.
13. Complete proof of sale, etc.

After first 5 hours

1. Change engine oil.

25 hour service

1. Change engine oil (50 hours).
   (25 hours if operating conditions severe).
2. Clean/replace air pre-filter or oil-foam element if fitted (25 hours).
   (more regularly in dusty working conditions)
3. Clean/replace air filter cartridge (25 hours, 100 hours if pre-filter fitted).
   (more regularly in dusty working conditions)
4. Clean engine cooling air intake.

50 hour service

1. Change engine oil.
2. Clean/replace air pre-filter or oil-foam element if fitted.
3. Clean/replace air filter cartridge (25 hours, 100 hours if pre-filter fitted)
   (more regularly in dusty working conditions)
4. Clean engine cooling air intake.
5. Check/adjust cutting height setting.
6. Check/adjust parking brake.
7. Inspect flame guard/spark arrestor (optional equipment)

100 hour service

1. Change engine oil.
2. Clean/replace air pre-filter or oil-foam element if fitted.
3. Clean/replace air filter cartridge (25 hours, 100 hours if pre-filter fitted).
   (more regularly in dusty working conditions)
4. Check/adjust cutting height setting.
5. Check/adjust parking brake.
6. Inspect flame guard/spark arrestor (optional equipment)
7. Replace engine oil filter.
8. Clean/replace spark plug.
9. Replace fuel filter in fuel line.
10. Clean pulse-air filter.
11. Clean cooling system.
12. Check engine valve clearance.

300 hour service

1. Change engine oil.
2. Replace air filter (pre-filter).
3. Replace air filter (paper).
4. Check/adjust cutting height setting.
5. Check/adjust parking brake.
6. Inspect flame guard/spark arrestor (optional equipment)
7. Replace engine oil filter.
8. Clean/replace spark plug.
9. Replace fuel filter in fuel line.
10. Clean pulse-air filter.
11. Clean cooling system.
12. Check engine valve clearance.
13. Carry out 300 hour service at authorised dealer.

At least once a season

1. Change engine oil (50 hours).
   (25 hours in severe operating conditions).
2. Clean/replace air pre-filter or oil-foam element if fitted (25 hours).
   (more regularly in dusty working conditions)
3. Clean/replace air filter cartridge (25 hours, 100 hours if pre-filter fitted).
   (more regularly in dusty working conditions)
4. Check/adjust cutting height setting.
5. Check/adjust parking brake.
6. Inspect flame guard/spark arrestor, optional equipment
   (50 hours).
7. Replace engine oil filter (100 hours).
8. Clean/replace spark plug (100 hours).
9. Replace fuel filter in fuel line (100 hours).
10. Clean pulse-air filter.
11. Clean cooling system (100 hours).
    (more regularly in dusty working conditions)
12. Check engine valve clearance (100 hours).
13. Carry out 300 hour service at authorised dealer.

Maintenance schedule

The following is a list of the maintenance which should be conducted on the machine. Most of the points that are not covered by this workshop manual are covered by the operator's manual.

Maintenance	Page	Daily maintenance		Weekly[3] maintenance	At least once a year	Maintenance interval in hours			
		before	after			25	50	100	300
Check for fuel and oil leakage	-	❍							
Check the parking brake	23	●							
Check the engine oil level (when you refuel)	20	●							
Check the fuel pump air filter	21	●							
Check the seat safety switch	23	●							
Check the lift lever safety switch	23	●							
Check the parking brake safety switch	23	●							
Check/clean the engine cooling air intake	20		●						
Check the cutting unit:	27		●						
• blades are secure	29		●						
• condition of blades (sharpness, shape, etc.)	29		●						
• blade synchronisation (90° between BioClip)	29		●						
Check steering wires (for play, etc.)	22		●						
Check fasteners (screws, nuts, etc.)	-		❍						
Start engine and blades, listen for noise	-		❍						
Clean underside of cutting unit	29		●						
Clean transmission air intake	21		●						
Check battery acid level	23			●					
Check transmission oil level	21			●					
Check condition of V-belts, pulleys, etc.	-			❍					
Check for damage	-			❍					
Check tyre pressures (60 kPa)	39			●					
Check for damage to wire guide at articulated joint	-			❍					
Clean thoroughly around engine	-			❍					
Clean air filter (pre-filter)	24			●					
Clean thoroughly around transmission	-			❍					
Clean all belts, pulleys, etc.	-			❍					
Lubricate pivot (nipple)	37			●					
Lubricate belt tensioner (nipple)	37			●					
Lubricate triangle link (nipple)	37			●					
Lubricate seat suspension	-			❍					
Lubricate all wires	37			●					
Lubricate safety lock on cutting unit	28			●					
Lubricate inner stud on cutting unit	28			●					
Lubricate slot for cutting unit tool frame	28			●					
Lubricate bearing surfaces on cutting unit	28			●					
Clean inside frame tunnel	-			❍					
Lubricate pedal mechanism inside frame tunnel	-			❍					

Maintenance	Page	Daily maintenance before	Daily maintenance after	Weekly[3] maintenance	At least once a year	Maintenance interval in hours 25	50	100	300
Lubricate throttle control	-			❍					
Lubricate choke control	-			❍					
Smörj styrkedja i ramtunnel.	-			❍					
Lubricate steering chain inside frame tunnel	-			❍					
Clean engine cooling air intake	20				●	●			
Clean pre-filter or oil-foam element, if fitted	24				●	●			
Clean air filter cartridge[2]	24				●	●		●	
Change engine oil[1]	36				●		●		
Check/adjust cutting height setting	27				●		●		
Check/adjust parking brake	23				●		●		
Inspect flame guard/spark arrestor (optional equipment)	-				❍		❍		
Replace engine oil filter	37				●			●	
Clean/replace spark plugs	-				❍			❍	
Replace fuel filter in pipe	39				●			●	
Clean pulse-air filter	39				●			●	
Clean cooling system	-				❍			❍	
Check engine valve clearance[4]	-				❍			❍	
Replace air filter (pre-filter)[2]	24				●				●
Replace air filter (paper filter)[2]	24				●				●
Carry out 300 hour service[4]	-				❍				❍

[1] First change after 5 hours. [2]When driving with a heavy load or when the ambient temperature is high, replace every 25 hours. Clean every 25 hours if pre-filter is not fitted. Clean and replace the filter more often in dusty conditions. [3] For daily use of the machine lubrication should be conducted twice a week. [4] Conducted by authorised service workshop.

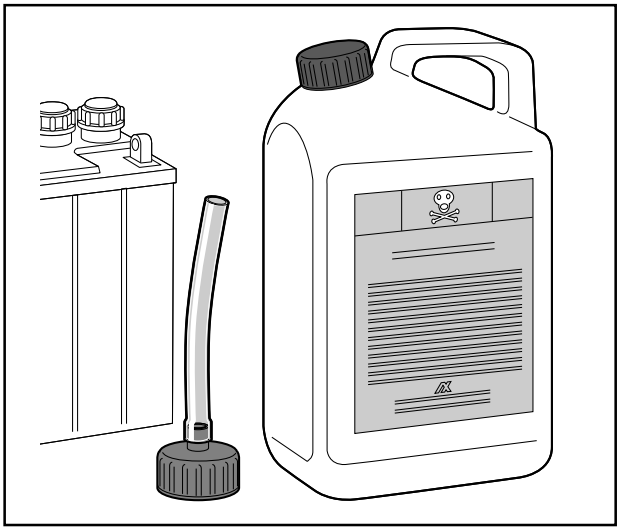
● = Covered by this workshop manual.
❍ = Not covered by this workshop manual.

WARNING!
No service procedures must be conducted on the engine or cutting unit unless:

- **The engine is switched off.**
- **The ignition key is removed.**
- **The ignition cables are removed from the plugs.**
- **The parking brake is applied.**
- **The cutting unit is disengaged.**

Delivery measures

Refilling battery acid



The battery is delivered dry from the factory.

- Slowly fill the battery acid up to the mark on the battery.
- Wait 20 minutes and fill, as is required, with more battery acid.
- Charge the battery (12 V, 6 A) for four hours.
- Check the level of acid and fill, as is required, with distilled water up to the correct level.

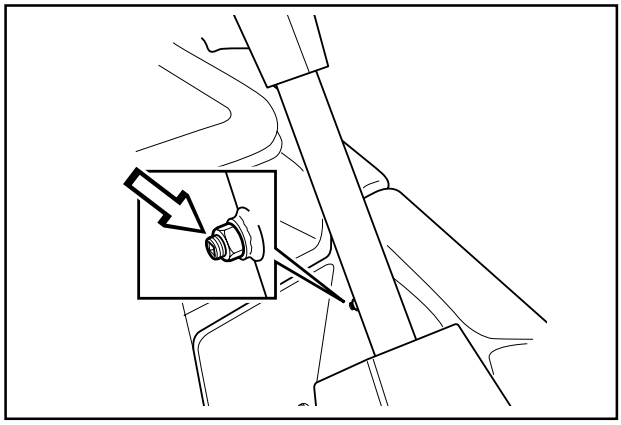
WARNING!

The battery acid is highly corrosive. Use rubber gloves and protective glasses. Avoid breathing in the acid fumes.

	Measures for contact with acid
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 asap.

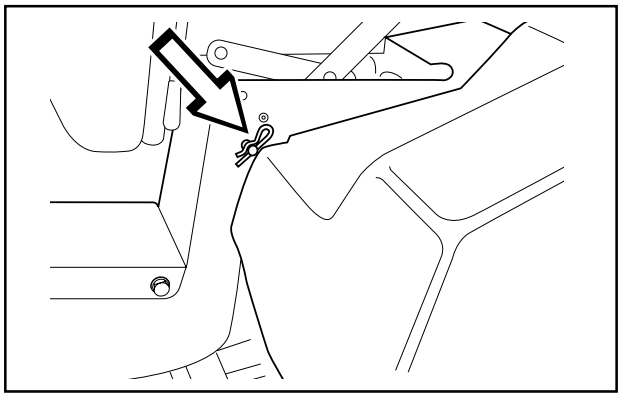
The battery gives off explosive gas. Sparks, naked flames and cigarettes must absolutely not be in the near vicinity of the battery.

Fastening steering wheel



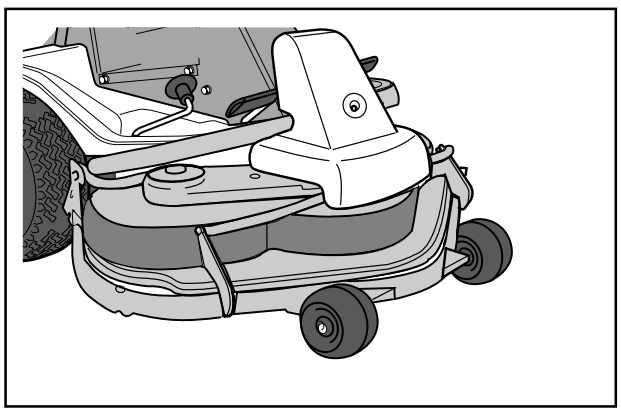
- Fasten the steering wheel with steering column on the steering shaft.
- Tighten the socket head cap screw, make sure that it sits in its groove on the steering shaft.
- Securely lock the socket head cap screw with the locking nut.

Fastening seat



Insert the seat pin through the hole in the frame and seat attachment and fasten spring pin.

Fastening support wheels



Fasten the support wheels with axles, spacers and nuts in the support wheels holder.

Design and function

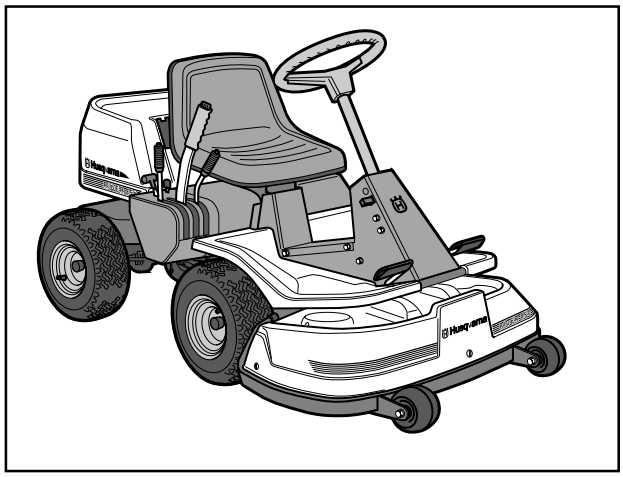
General

Husqvarna Riders is a series of ride-on mowers with a large capacity. There are six sizes, from the smallest Rider 11 to the largest Rider 20 ProFlex.

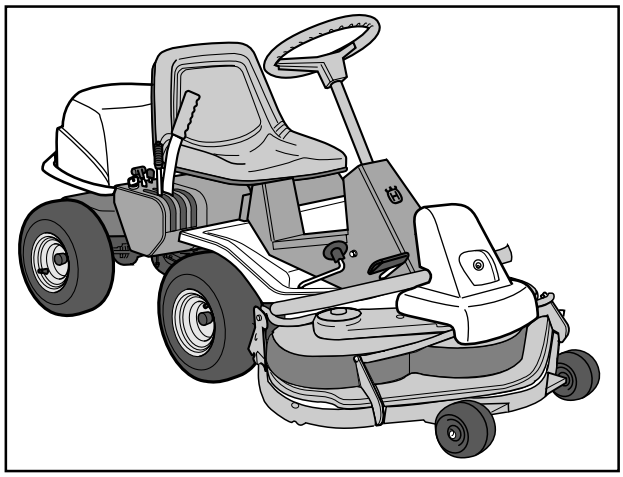
This manual refers mainly to the smaller machines; the larger ProFlex machines are covered by a separate manual. All Riders have articulated steering in order to easily cut around trees and other obstacles. Moreover, they all have front-mounted mowing decks for controlled cutting and for best possible cutting results.

Husqvarna Riders can, moreover, be equipped with various accessories such as moss rake and dozer blade which make them flexible working tools throughout the year.

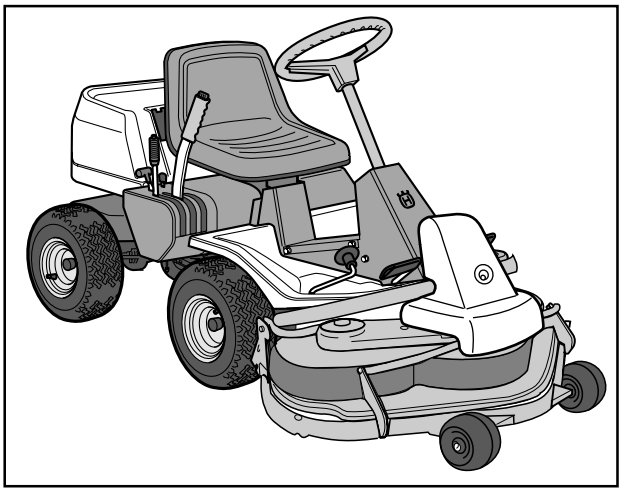
Rider 11 and Rider 11 Bio can be delivered with a manual gearbox, while the other models are only available with hydrostatic transmission.



Rider 11 and Rider 13 H have a mowing deck with rear ejection. They can also be ordered with a Bio deck, in which case they are called the Rider 11 Bio or Rider 13 H Bio.



Rider 14 Pro can be delivered with four different mowing decks.
Bak 97 (rear ejection)
Sido 97 (side ejection)
Bio 90 or Bio 103



Rider 16 H can be delivered with four different mowing decks.
Bak 97 (rear ejection)
Sido 97 (side ejection)
Bio 90 or Bio 103

Engine

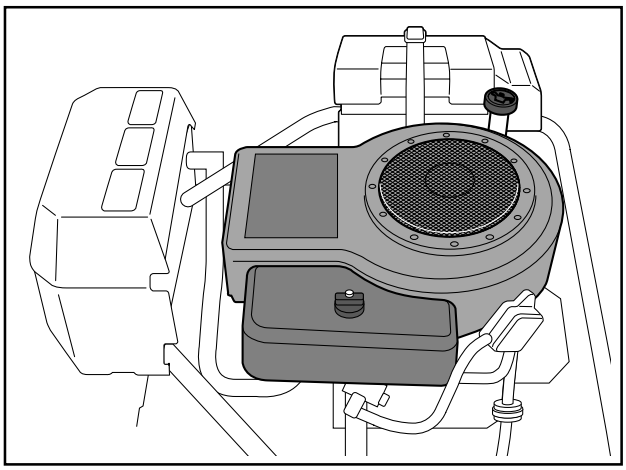
All Husqvarna Riders have engines from Briggs & Stratton. The Rider 11/11 Bio, Rider 13 H/13 H bio and Rider 16 H have single-cylinder engines, while the Rider 14 Pro has a twin-cylinder engine. Both the single and two-cylinder engines are air cooled.

More intricate engine repairs are not described in this workshop handbook, these can instead be read in Briggs & Stratton's own handbooks which contain detailed information about adjusting and repairing the engines. The handbooks can be ordered from an authorized service workshop.

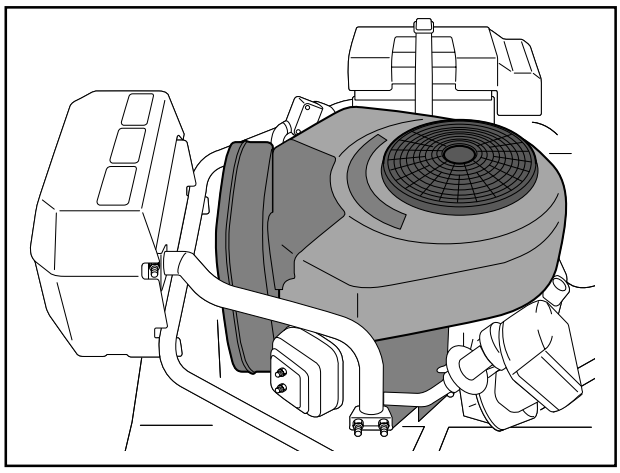
The order numbers for the respective Rider models are found in the table below. Please state these when ordering manuals:

Model	B & S model no.
Rider 11/11 Bio	28B707
Rider 13 H/13 H Bio	286707
Rider 14 Pro	294777
Rider 16 H	28N707

It is important that only original spare parts are used when repairing the engines. If other parts are used, the guarantee shall no longer be valid.



Rider 11/11 Bio and Rider 13 H/13 H Bio have a single-cylinder side valve engine with spray lubrication with power outputs of 10.5 and 12.5 hp respectively.
Rider 16 H has a 15.5 hp single-cylinder overhead valve engine.

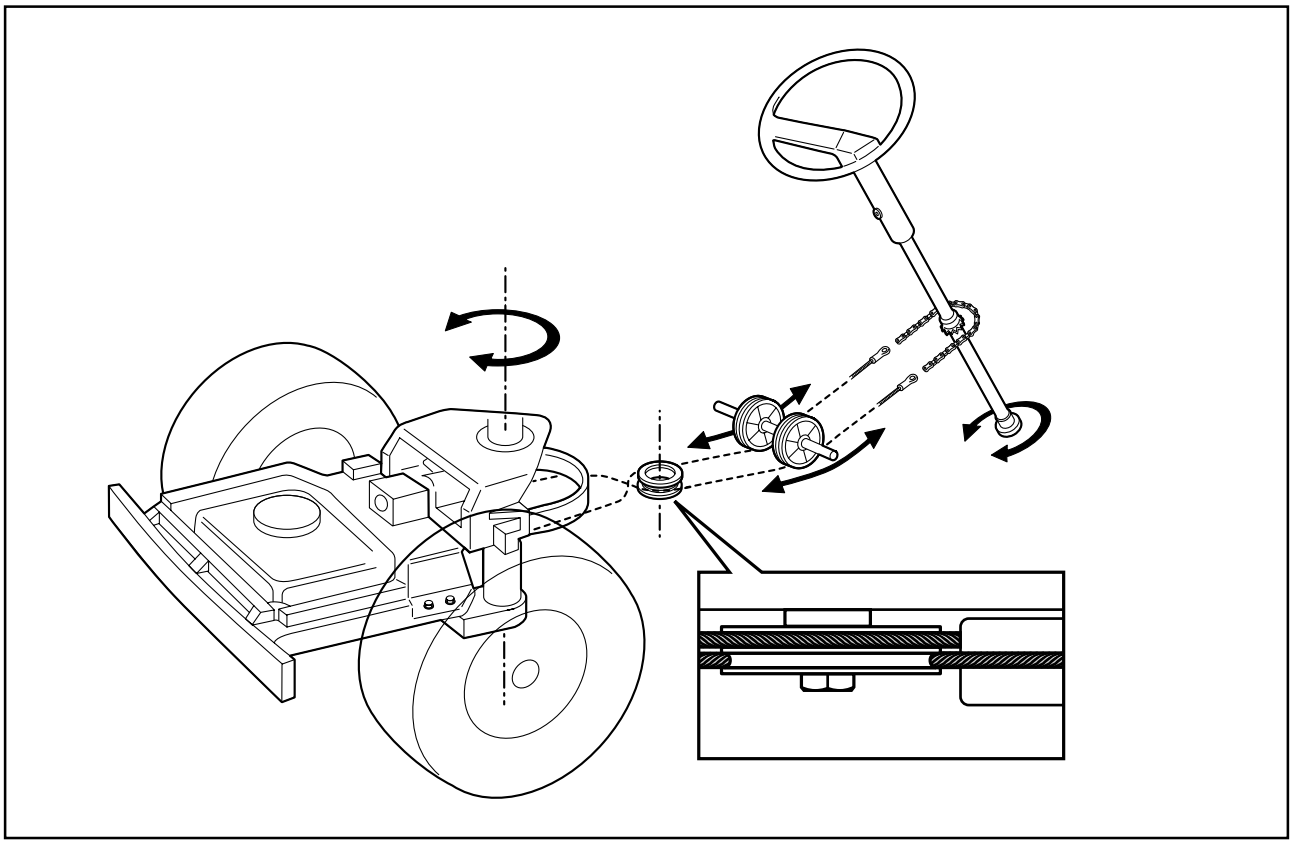


The Rider 14 Pro has a twin-cylinder overhead valve engine with pressure lubrication and a separate oil filter. This engine is equipped with a catalytic converter that reduces emissions of hydrocarbons and nitrogen oxides by up to 65% and reduces carbon dioxide by up to 45%.

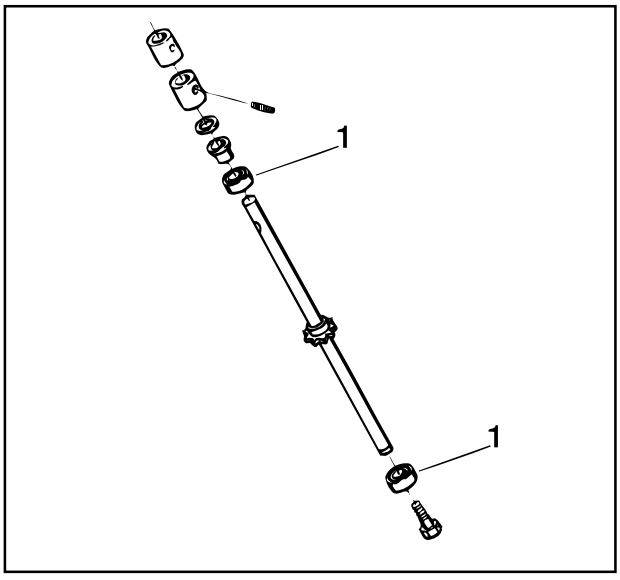
Steering

All the ride-on mowers in Husqvarna's Rider-series have articulated steering. The steering force from the steering wheel is transferred to the rear section via wires and a chain. This ensures that the ride-on mower is easy to manoeuvre, as well as having high-precision steering. A Rider easily cuts around all obstacles that may be found on the lawn.

Thanks to the articulated steering, the turning radius is extremely small, the uncut circle when the steering wheel is fully turned is just 20–30 cm depending on which model is chosen.



Outline diagram of the articulated steering function.

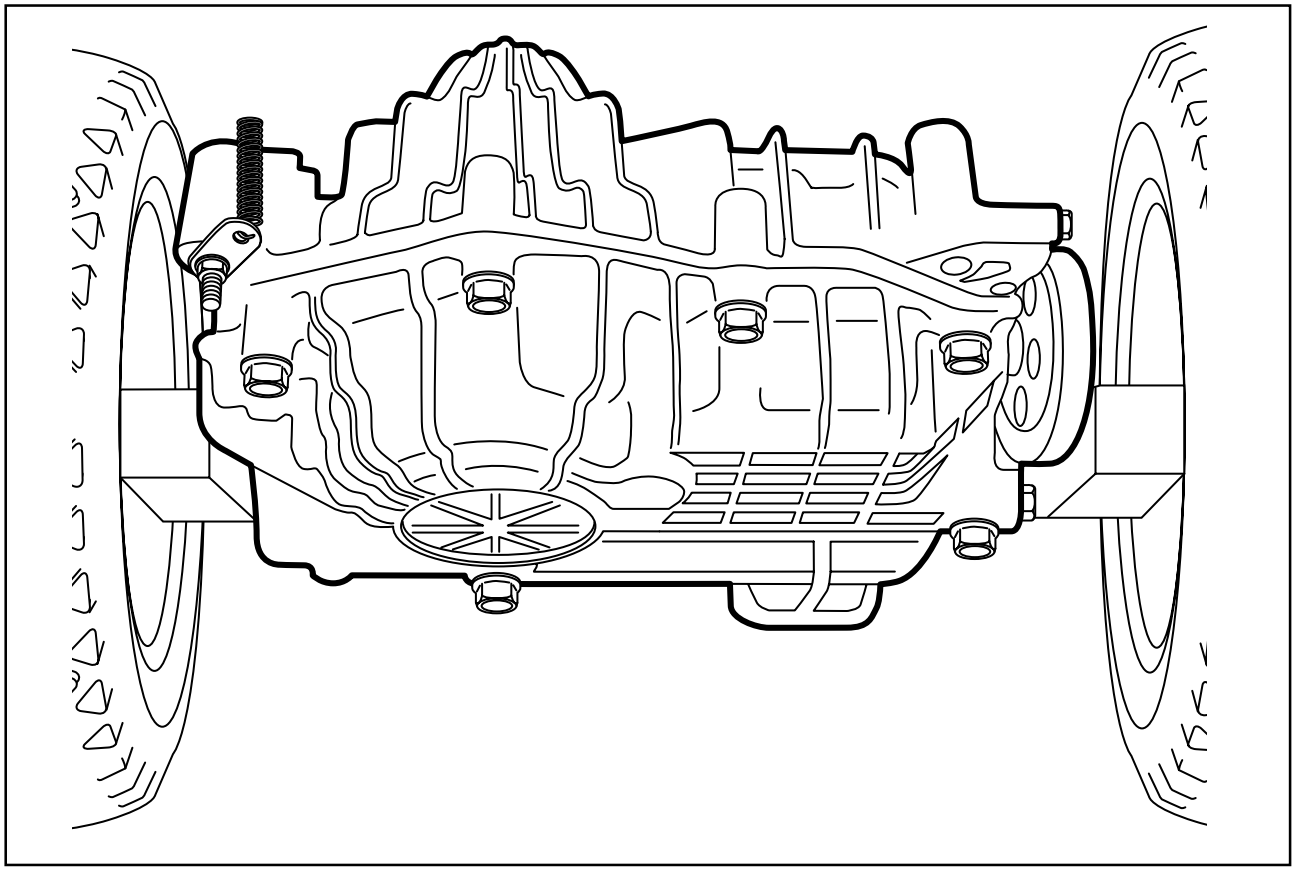


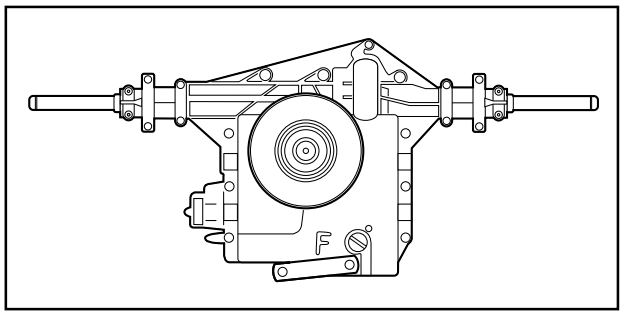
Rider machines have a sliding bearing (1) on the steering column.

Driving

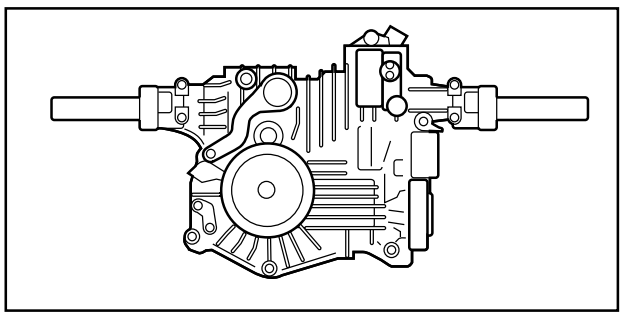
Rider 13 H/13 H Bio, Rider 16 H, Rider 14 Pro are equipped with hydrostatic transmission which provides the driver complete control. Continuously variable speed control, forwards and reverse, is by means of a foot pedal.

Rider 11 and Rider 11 Bio have a manual gear box with five forward gears, neutral and one reverse gear. This gear box is an "inline" type, which means that you can change from neutral to fifth gear without having to go through all the other gears.

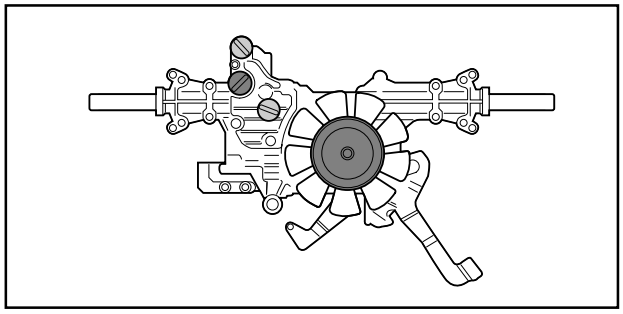




Manual gear box on Rider 11 and Rider 11 Bio.



Hydrostatic transmission on Rider 14 Pro.



Hydrostatic transmission on Rider 13 H, Rider 13 H Bio and Rider 16 H.

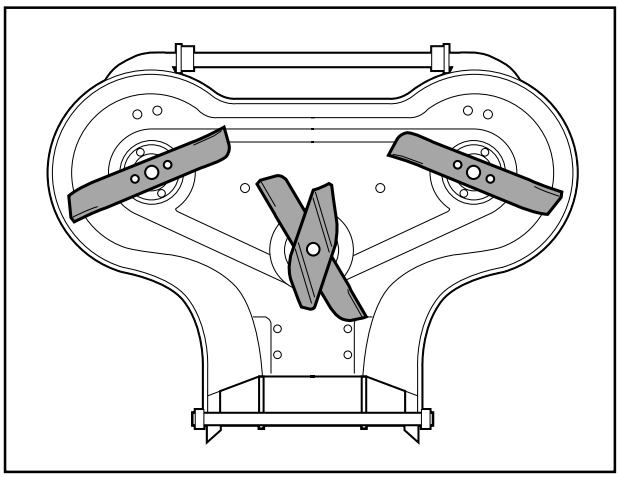
Mowing deck

The entire Rider series is equipped with front-mounted mowing decks to ensure effective cutting even in confined areas.

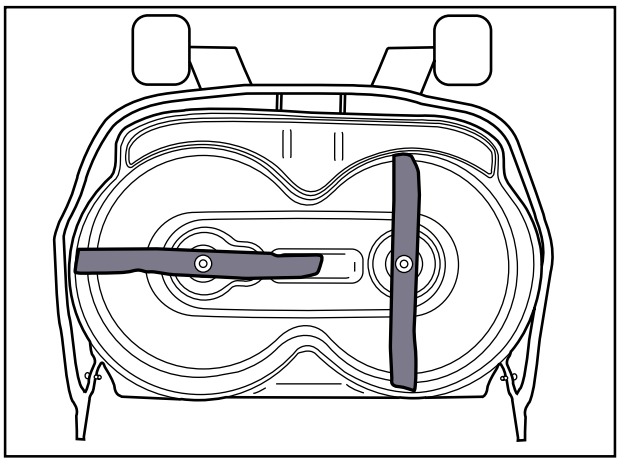
Rider 11 and Rider 13 H have a mowing deck with rear ejection and a cutting width of 850 mm.

Rider 11 Bio and Rider 13 H Bio have a Bio deck with a cutting width of 900 mm.

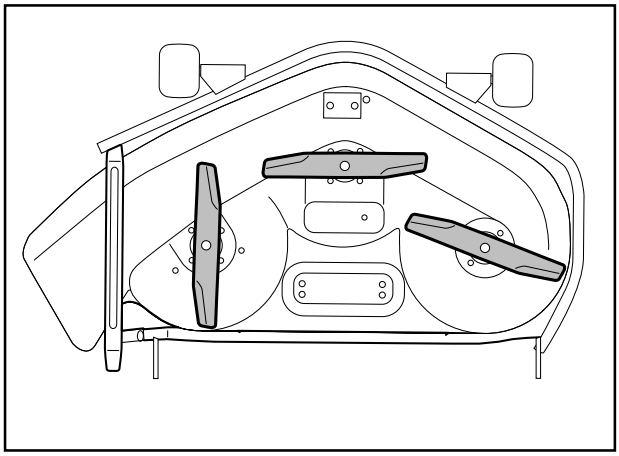
The remaining Rider machines can be delivered with a choice of mowing decks, with rear ejection, side ejection or Bio.



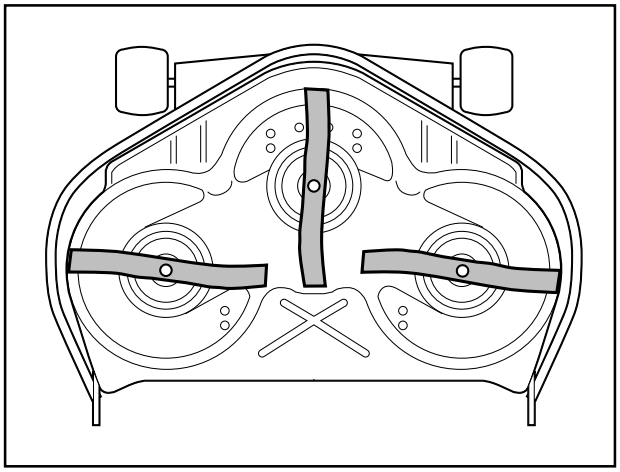
Mowing deck with rear ejection, 850 mm.



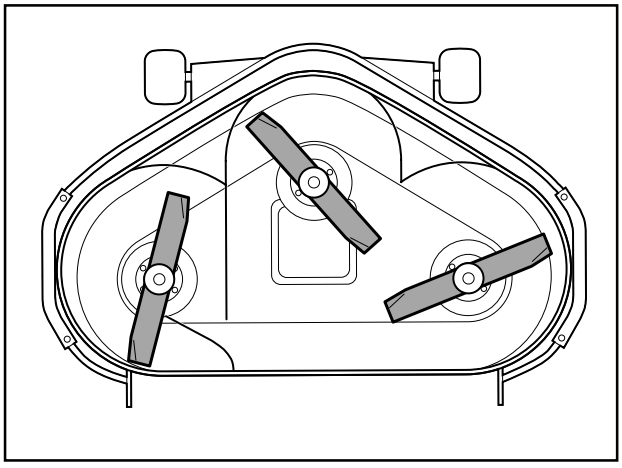
Bio 90



Mowing deck with side ejection.



Bio 103

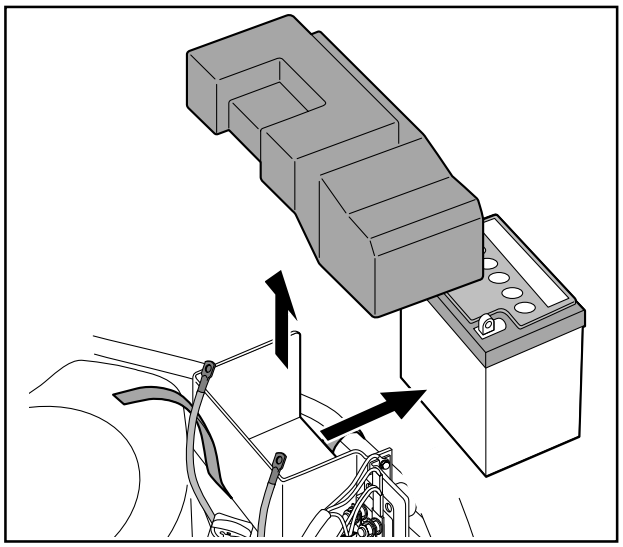


Mowing deck with rear ejection

Reparation instructions

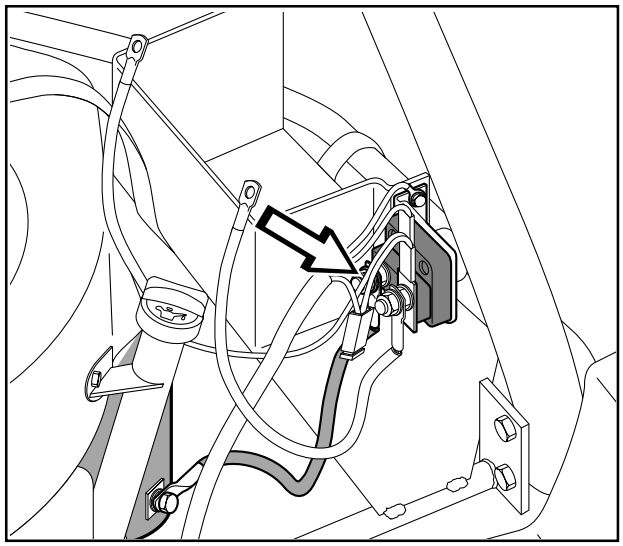
Removing engine

1



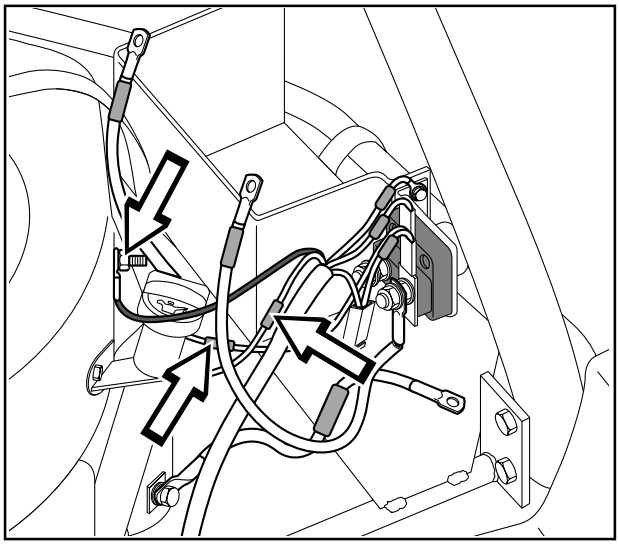
Remove the battery's fixing belt. Remove the safety guard and remove the cable connections. Then, lift out the battery.

2



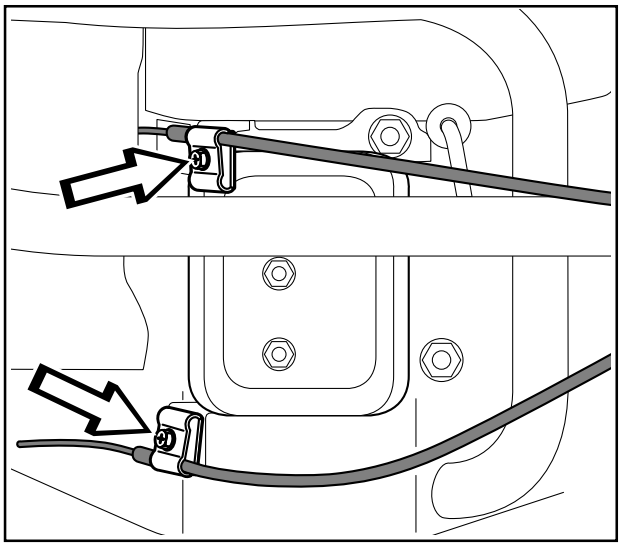
Remove the cable which leads from the starter relay to the start motor.

3



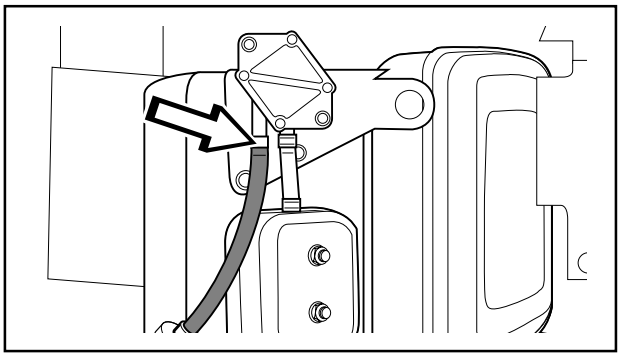
Mark up and remove the engine's electrical connections.

4



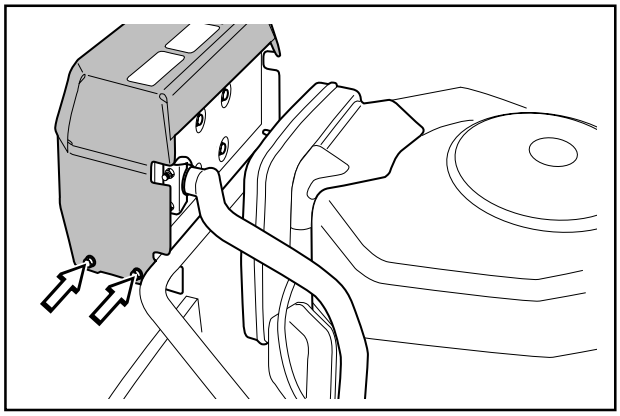
Remove the clamps which hold the throttle and choke wires. Unhook the wires from their attachment in the carburettor.
Rider 11/11 Bio, Rider 13 H/13 H Bio and Rider 16 H have just one wire which controls both the throttle and the choke.

5



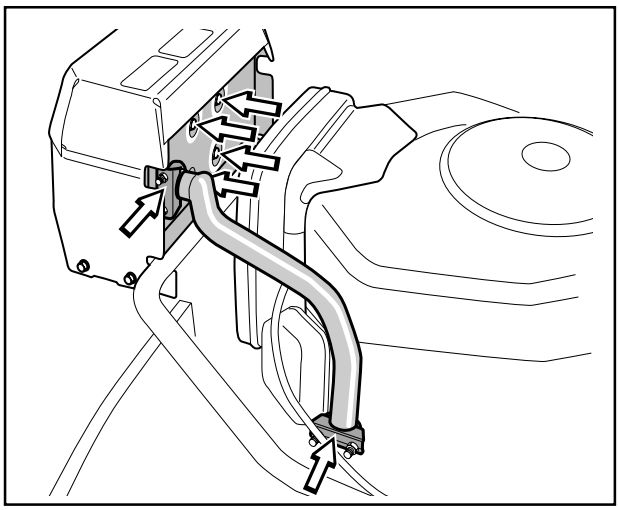
Remove the fuel line hose clamp from the fuel pump and pull the fuel line downwards.

6



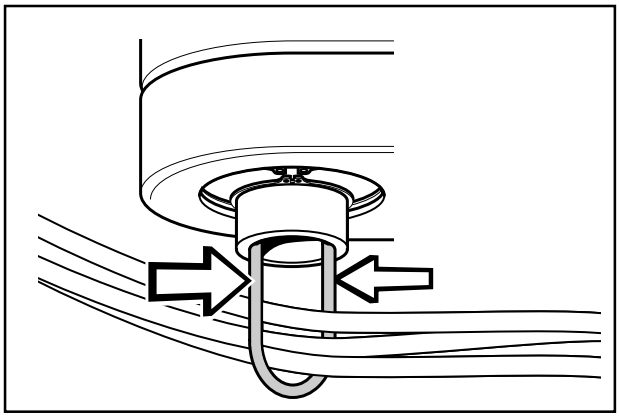
Remove the cover plate over the silencer (two screws on either side of the silencer) and lift out the plate.

7



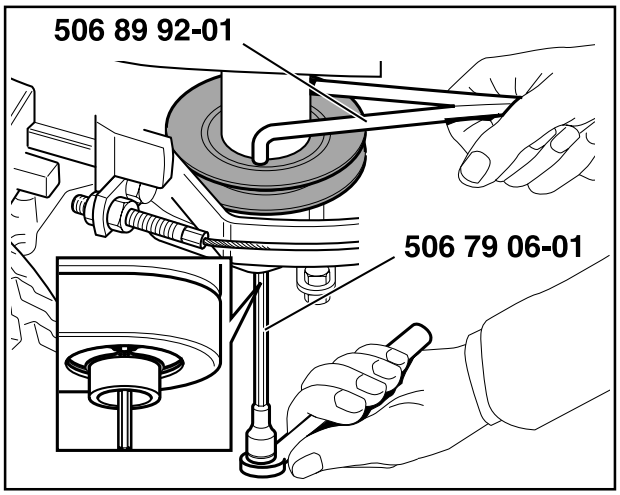
Remove the exhaust pipe clamps and the silencer's four retaining bolts. Then remove the silencer, exhaust pipe and the accompanying pulse air valve. **On Rider 11/11 Bio, Rider 13 H/13 H Bio and Rider 16 H the exhaust pipe is removed without removing the silencer.**

8



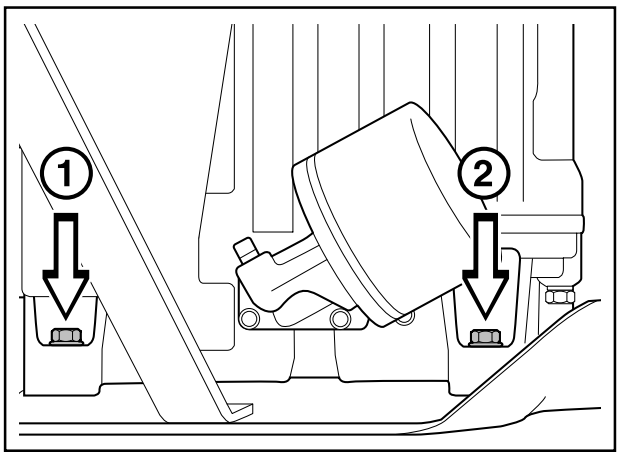
Clamp together the wire holder under the engine pulley with a pair of flat pliers and pull the wire holder downwards.

9



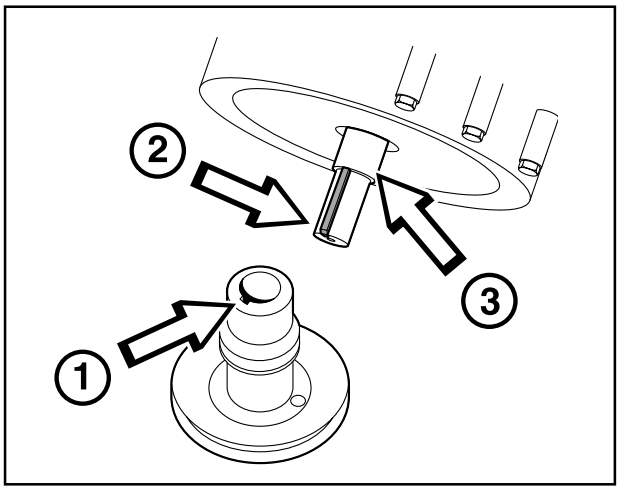
Insert tool no. 506 79 06-01 into the centre of the engine pulley. Unscrew and remove the socket head cap screw which holds the pulley and the engine axle together. Use tool no. 506 89 92-01 as a holder-on. Remove the pulley from the engine axle.

10



Remove the engine attachments, two on each side of the engine, and remove the engine from the mower.

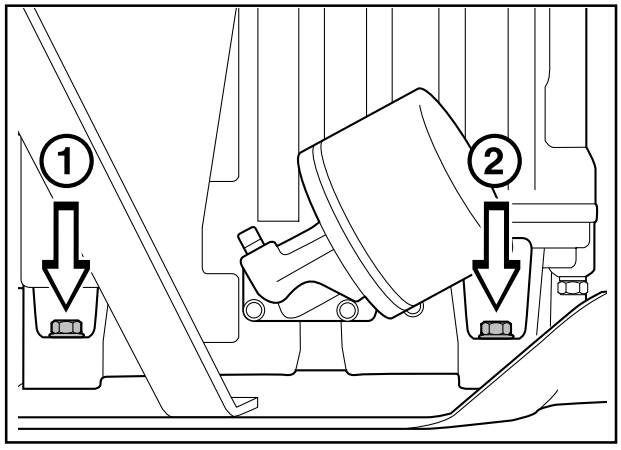
Replacing engine



IMPORTANT INFORMATION

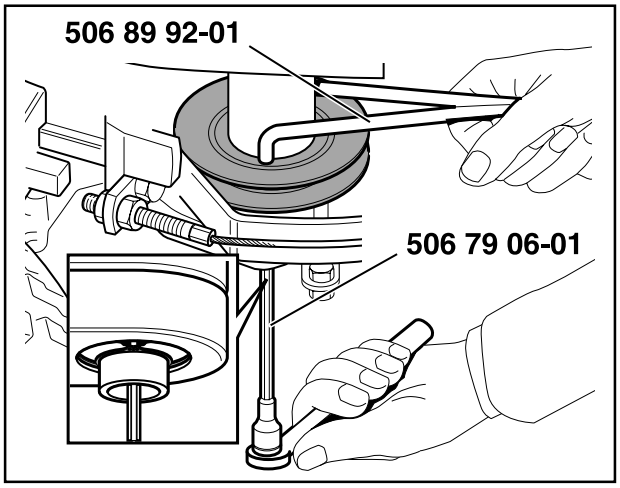
When installing the engine, it is important that the pulley groove (1) is in a position so the outgoing axle key (2) fits into the groove (see diagram). Also check that both spacing collars (3) and the key (2) are firmly attached on the engine axle. Grease the engine axle.

1



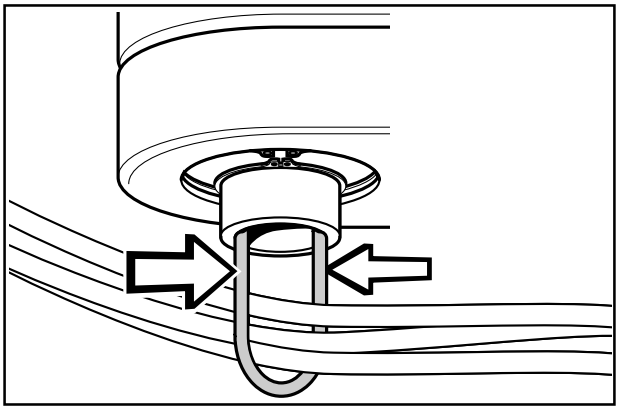
Lower the engine and tighten the engine attachments (two on each side of the engine) with moment (25 Nm).

2



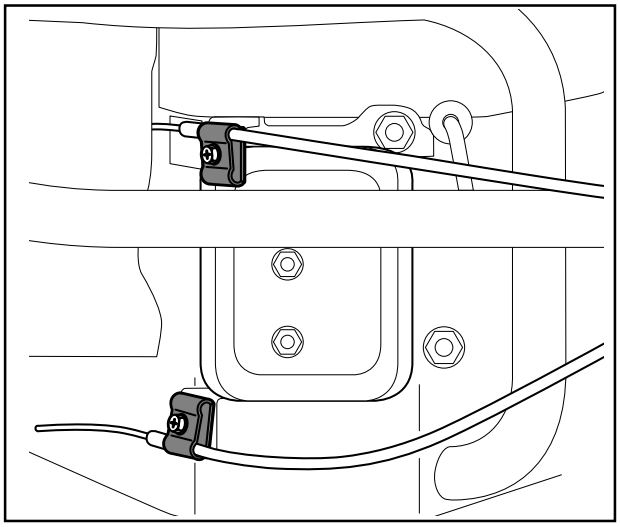
Position the pulley with tool no. 506 79 06-01 and tighten it with moment (80 Nm). Use tool no. 506 89 92-01 as a holder-on.

3



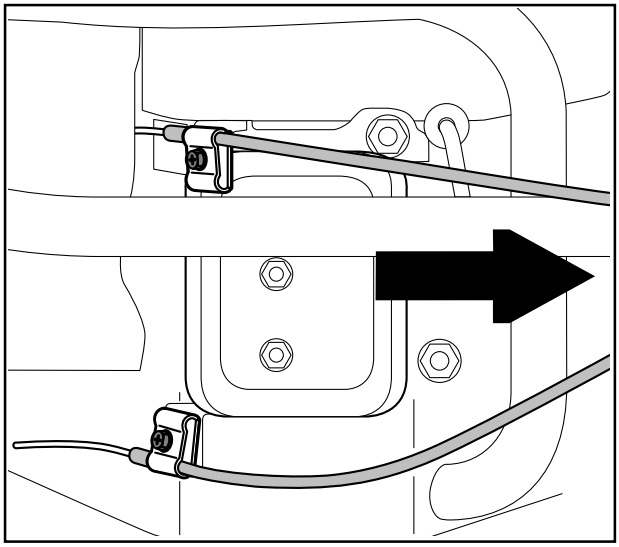
Position the wires in the wire holder, clamp the holder together and, from below, lead it up through the centre of the belt tensioner until it hooks over the tensioner's upper edge.

4



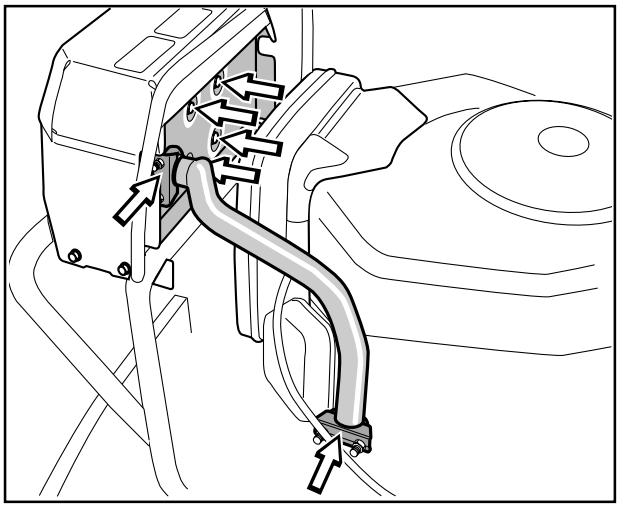
Attach the throttle and choke wires to the carburettor and position the wire clamps without tightening them.

5



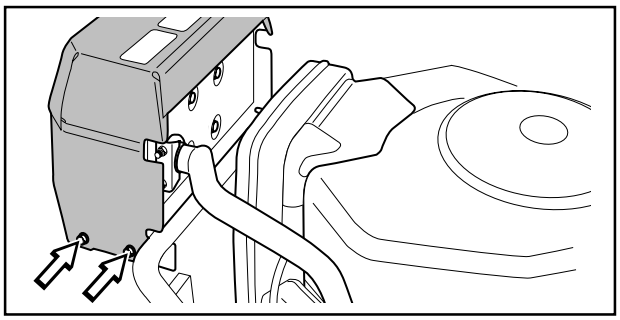
Set the throttle control to full throttle and the choke control to full choke. Pull the wires' outer cover as far as possible to the right and tighten the clamp screws.
Rider 11/11 Bio, Rider 13 H/13 H Bio and Rider 16 H have *one* wire to the gas/choke control.

6



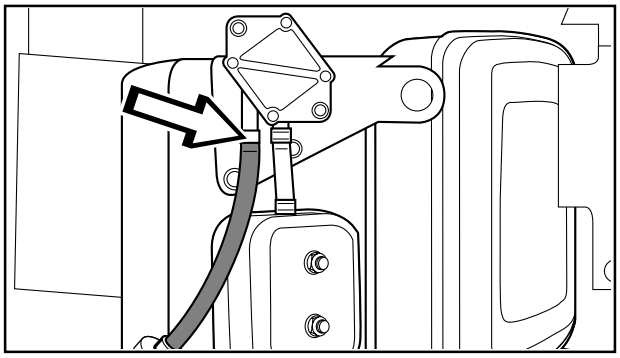
Attach the silencer and exhaust pipe and tighten the holder screws and pipe clamps.
Rider 11/11 Bio, Rider 13 H/13 H Bio and Rider 16 H: *only* exhaust pipe.

7



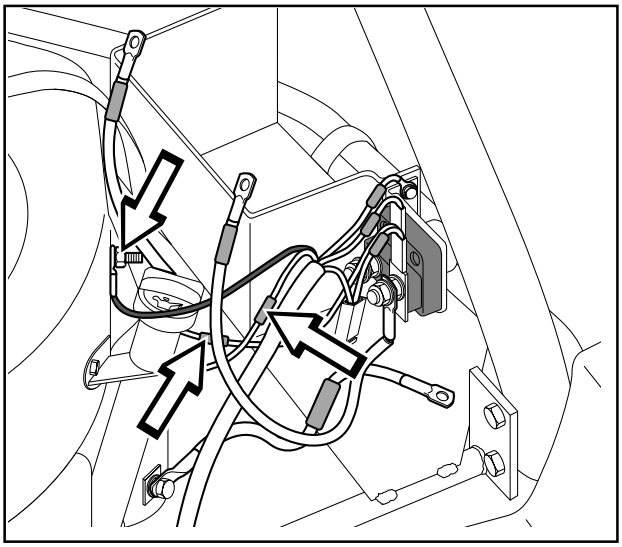
Securely fasten the protective plate over the silencer, two screws on each side of the silencer. **Only Rider 14 Pro.**

8



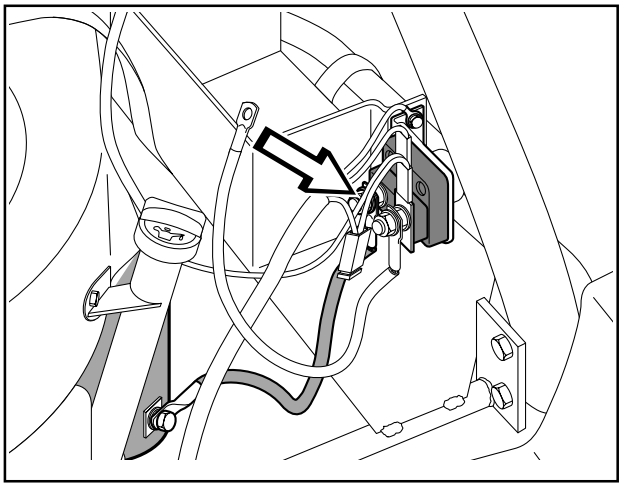
Firmly press the fuel line against the fuel pump and tightly screw the pump's upper hose clamp.

9



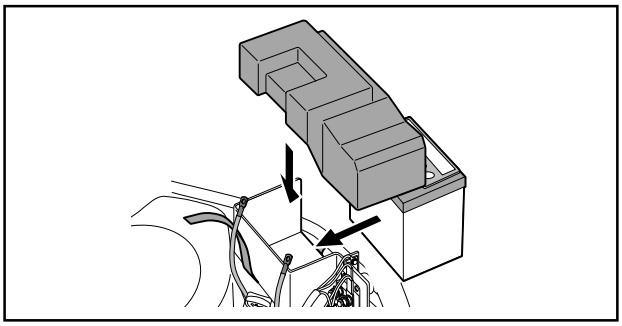
Attach the engine's electrical connections.

10



Tightly screw the cable from the start motor to the starter relay.

11

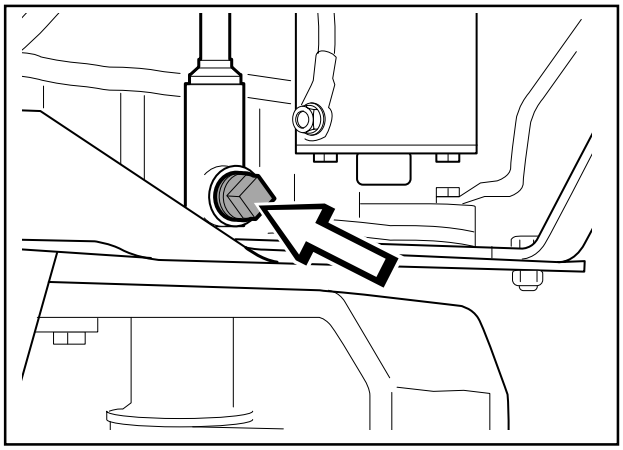


Lift the battery into place and fasten the cable connections and safety guard. Tighten the catching belt.

Changing the oil

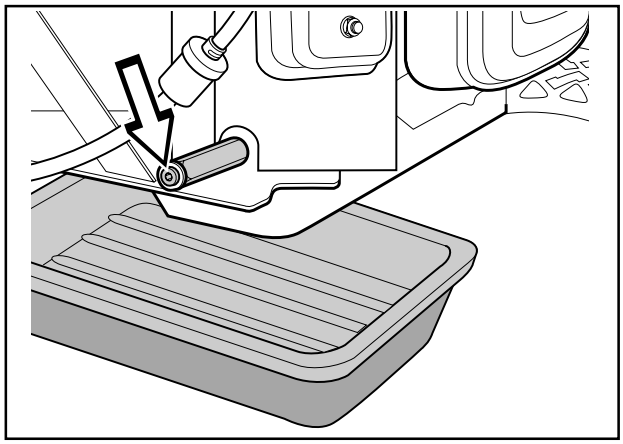
The engine oil should be replaced after the first five hours of running time, see service chart. Thereafter it should be replaced every 50 hours of running time (25 hours in harsh operating conditions).

WARNING!
Engine oil can be very hot if it is drained off directly after the engine is stopped. Therefore allow the engine to cool down first.



Drain plug on Rider 11/11 Bio, Rider 13 H/13 H Bio and Rider 16 H

Tip! When draining the engine oil use a folded piece of cardboard to funnel the oil into the container.

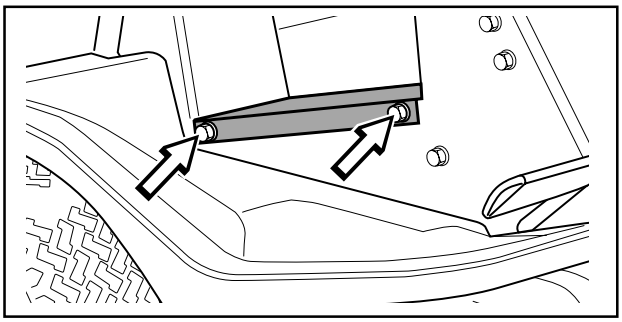


Drain plug on Rider 14 Pro

Place a container under the drain plug on the left side of the engine.
Remove the dipstick and drain plug. Let the oil drain into the container.
Refit the drain plug and tighten it.
Fill with oil up to the “FULL” mark on the dipstick.
Pour the oil into the same hole the dipstick goes in.
Use engine oil SAE 30 or SAE 10W/30, class CD-SF.
Run the engine until warm, then check that there are no oil leaks from the drain plug.

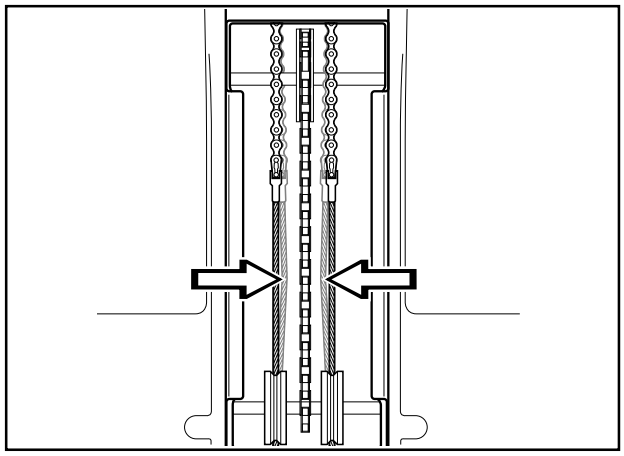
Checking and adjusting steering wires

1



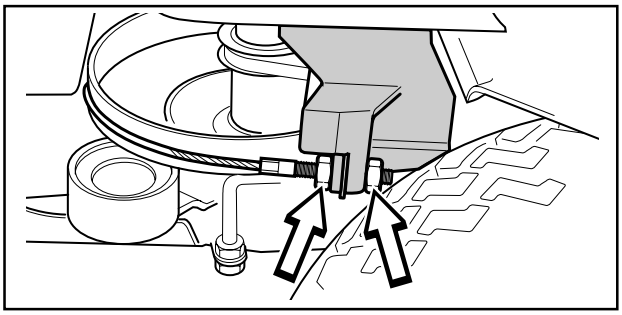
Remove the frame plate by releasing the screws (two on either side).

2

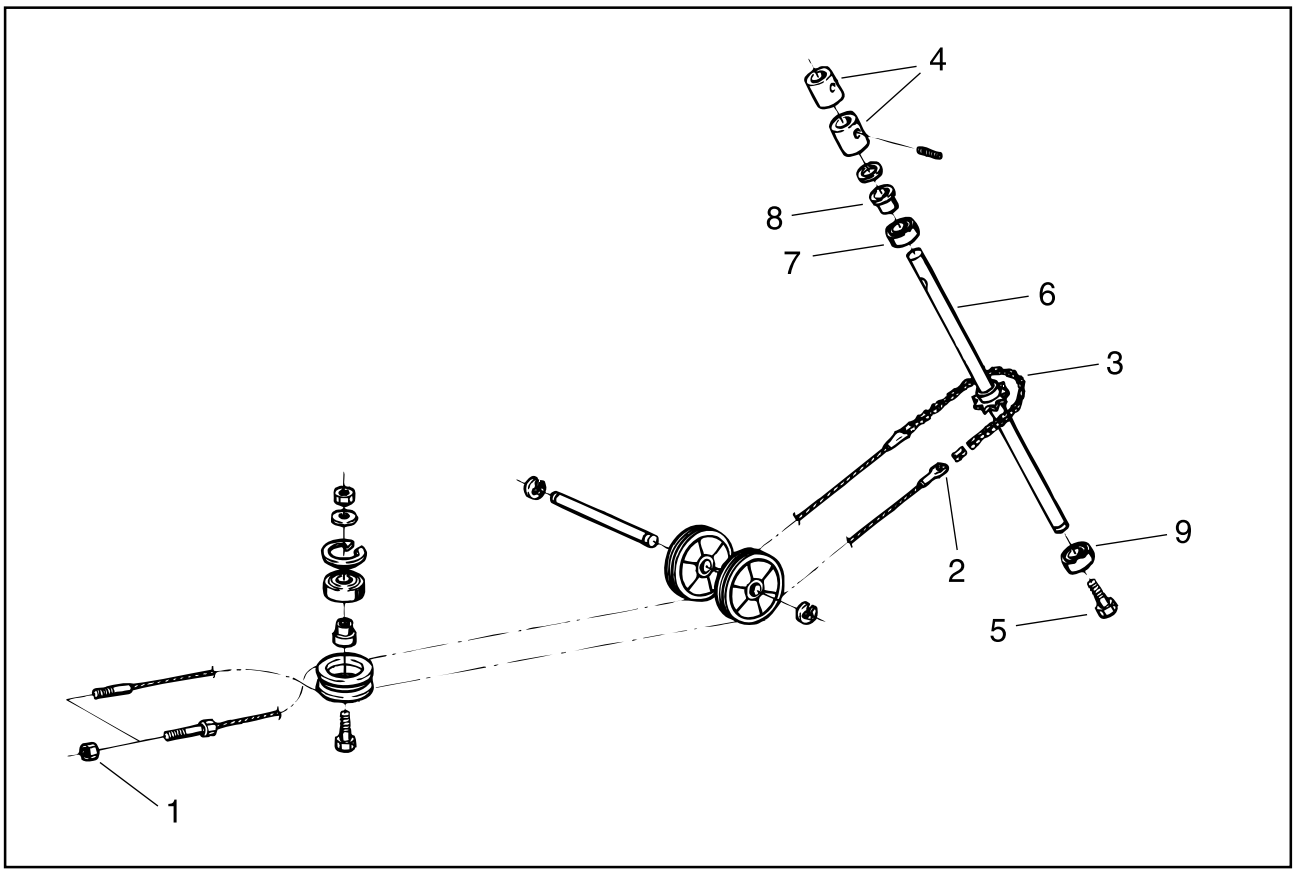


The tension is checked by squeezing together the wires (as shown in the diagram). Without having to apply too much force, the wires should be able to be squeezed to half the distance between them.

3



Stretch the wires by tightening the adjuster nuts (one wire on each side of the ride-on mower). Do not overtension them, they should only be tightened up to the steering rim. Stretch both wires equally so that the steering wheel position is not changed. Check the wire tension after adjustments have been made, in accordance with point 2.



Replacing steering wires

1

Release the steering wires' rear attachment (1).

2

Release the steering wires' front attachment (2) at the steering transmission chain (6) and pull the steering wires out throught the frame.

Note. If the old wires are still complete, the new wires can be attached to the old ones when they are pulled out through the frame, the new wires will then come automatically into place.

3

Attach the new wires. Once the new wires are in place, check the wire tension (see “Checking and adjusting steering wires”).

Removal/installation of steering axle

1

Release the steering wires' rear attachment (1). Remove the frame plate.

2

Remove the steering wheel and steering column by releasing the lock nut and unscrewing the locking screw, lift the steering wheel and steering column upwards.

3

Remove the two steering wheel rod carriers (2).

4

Unscrew the bolt (5) from the bottom end of the steering column.

5

Pull the steering axle (6) upwards and move the lower part of the axle backwards to remove the steering transmission chain (3).

6

Move the upper bearing (7) uppwards until it goes free from the steering axle (6). If the bearing is to be replaced, the bushing (8) must be knocked out of the bearing.

7

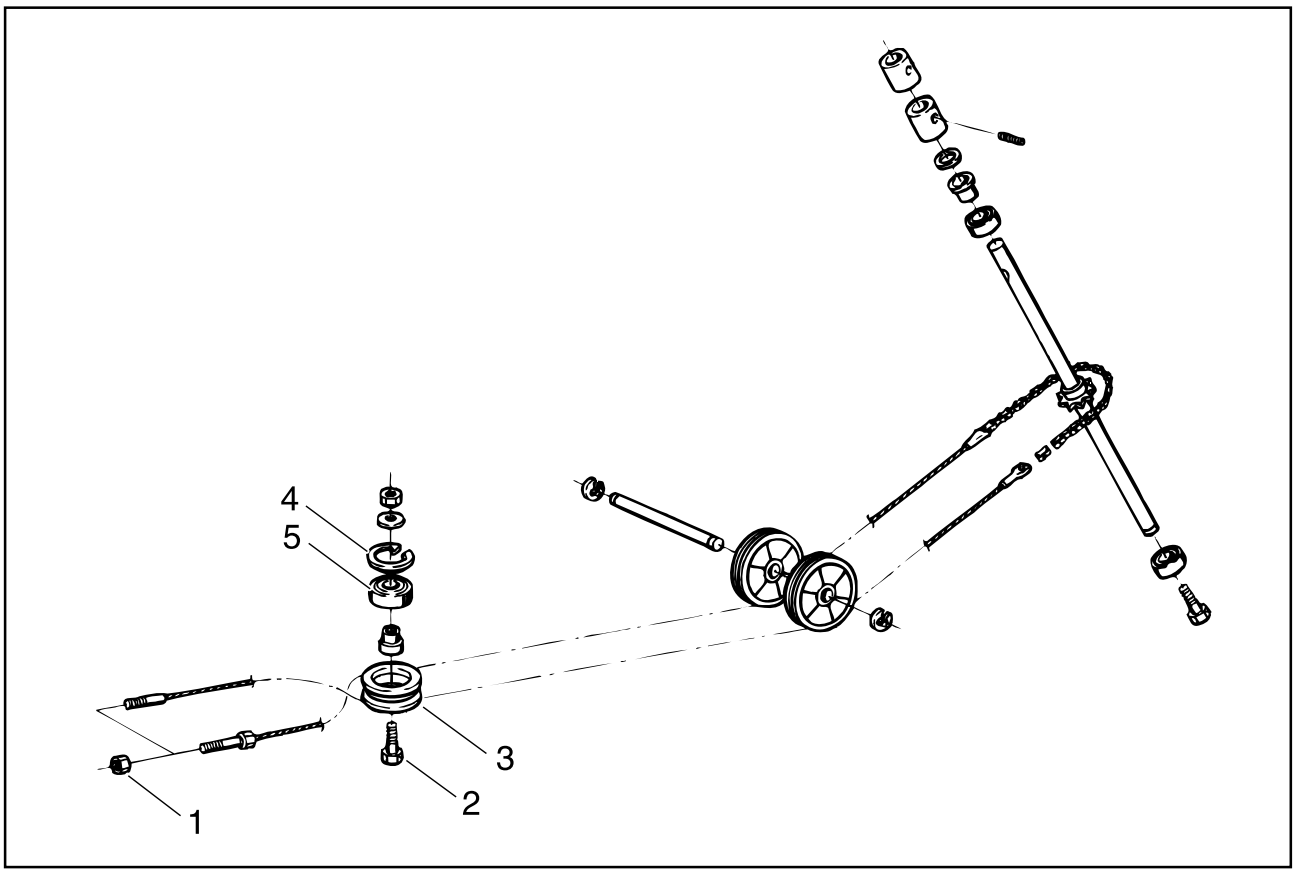
Slide the bearing (9) off the bottom end.

8

Take the steering axle out (6) downwards.

9

To assemble the steering axle, the reverse order is applied. For assembly purposes, the two steering wheel rod carriers (4), are tightened with moment (5–10 Nm).



Removal/installation of wire wheel

1
Detach the steering wires' rear attachment (1) .

2
Remove the screw (2) and detach the wire wheel (3).

3

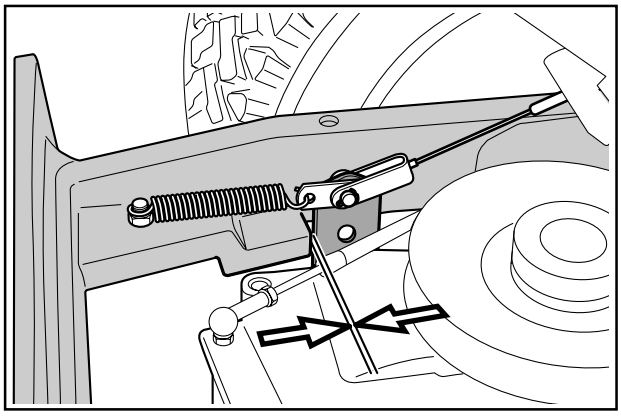
Remove the bearing's circlip (4) and knock out the bearing (5).

4
To install the wire wheel, the reverse order is applied.

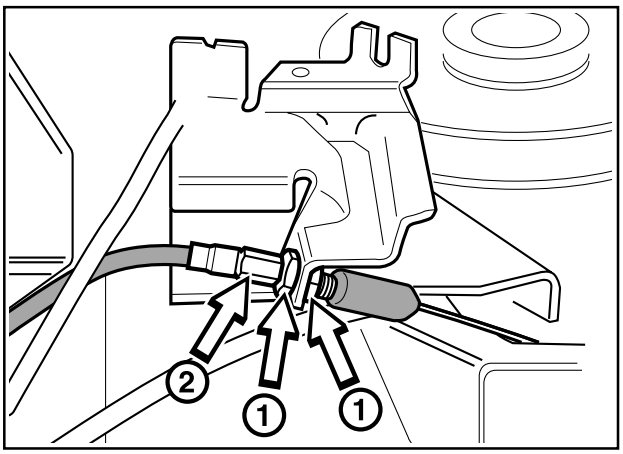
After installation, check the wire tension (see “Checking and adjusting steering wires”).

Checking and adjusting brake wire

Checking and adjusting Rider 11/11 Bio



Check that the brake is correctly adjusted by measuring the distance between the brake lever and the front edge of the recess on the chassis. The distance should be 0–1 mm when the brake is not applied.



1
Remove the lock nuts (1).

2
Stretch the wire with the adjuster screw (2) so that the distance between the brake lever and the front edge of the recess on the chassis is 1 mm.

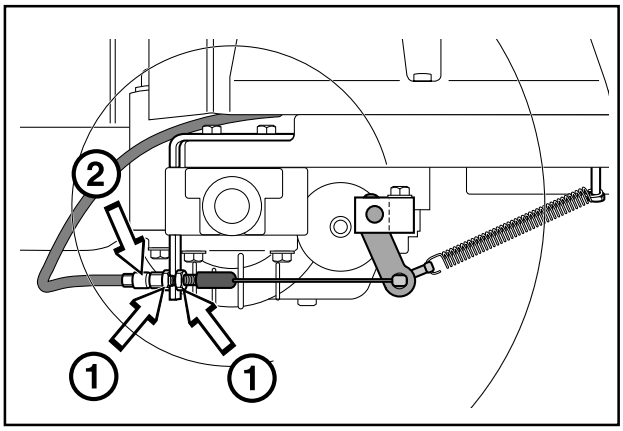
3
Tighten the lock nuts (1) after adjustment.

When the brake wire has been adjusted, check that the brake lever does not have too much movement. If the lever's free movement exceeds 9 mm, this should be adjusted by tightening the nut on the brake lever.

Checking and adjusting Rider 13 H/13 H Bio and Rider 16 H

Check that the brake is correctly adjusted by positioning the ride-on mower on a gentle slope and applying the brake.
If the ride-on mower does not stand still, the brake needs to be adjusted.

The brake is adjusted in the following way:



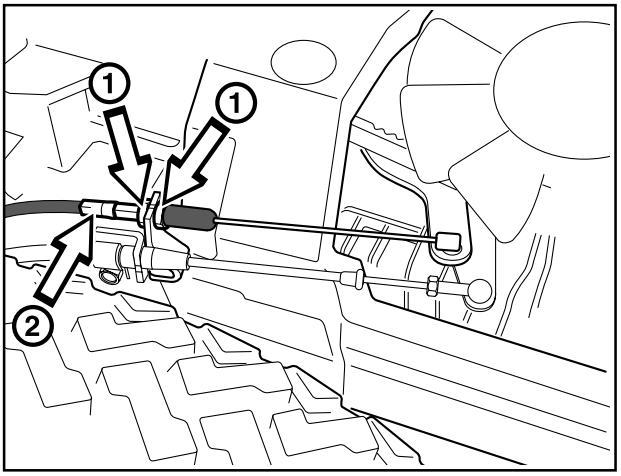
1
Release the lock nuts (1).

2
Stretch the wire with the adjuster screw (2) until all the play in the wire disappears.

3
Tighten the lock nuts (1) and finally check that the brake is correctly adjusted.

WARNING!
A badly adjusted brake can lead to reduced braking capacity.

Checking and adjusting Rider 14 Pro



Check that the brake is correctly adjusted by positioning the ride-on mower on a gentle slope and applying the brake.
If the ride-on mower does not stand still, the brake needs to be adjusted.

The brake is adjusted in the following way:

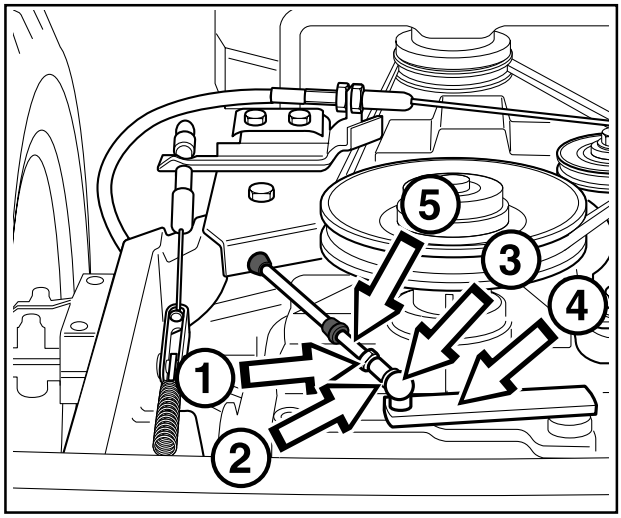
1
Release the lock nuts (1).

2
Stretch the wire with the adjuster screw (2) until all the play in the wire disappears.

3
Tighten the lock nuts (1) and finally check that the brake is correctly adjusted.

WARNING!
A badly adjusted brake can lead to reduced braking capacity.

Checking and adjusting gear control Rider 11/ 11 Bio



Check the gear control adjustment by setting the gear change lever to the ”N” position. When the lever (4) goes easily into the neutral position, the control is correctly adjusted.
In other cases, the control is adjusted in the following way:

1
Detach the lock nut (1) on the ball joint.

2
Press the locking spring (2) backwards so that the spherical socket (3) can be lifted away from the pivot on the lever (4).

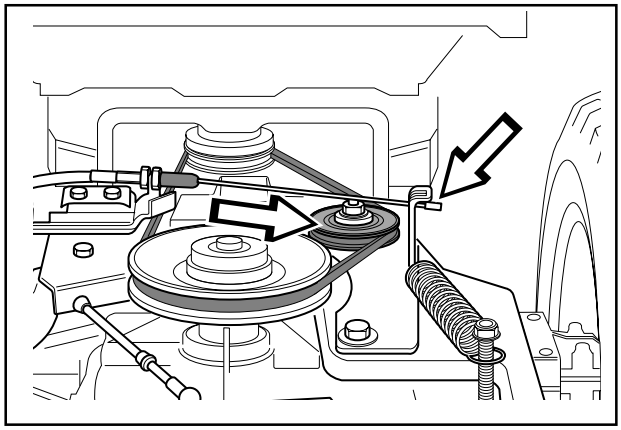
3
Adjust the spherical socket (3) position on the connecting rod (5) until the right adjustment is obtained.

4
Lock the setting with the lock nut (1) and press the locking spring (2) into position.

IMPORTANT INFORMATION
Check that the locking spring goes through the hole in the spherical socket.

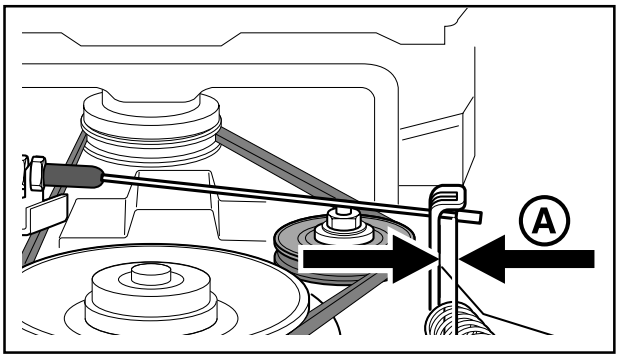
Checking and adjusting freewheel clutch Rider 11/11 Bio

1



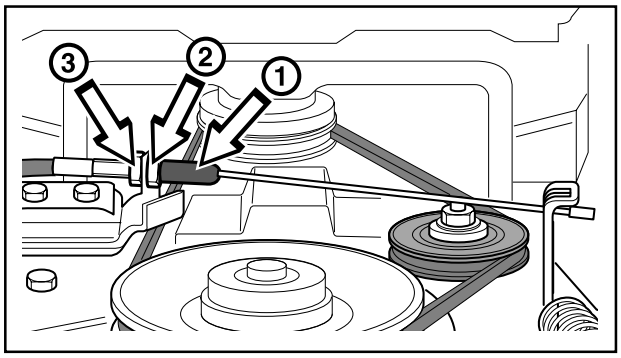
The freewheel clutch is correctly adjusted when the tensioning wheel's outward movement is stopped by the belt and not by the wire.

2



There should be a play (A) of 8-10 mm between the wire nipple and the lever.

3

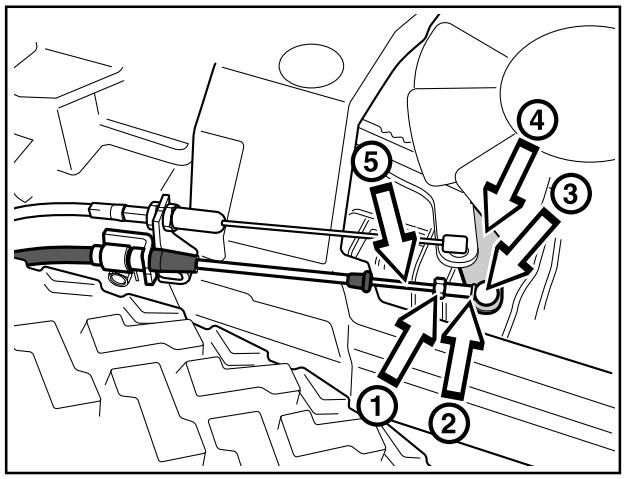


Adjust the freewheel clutch wire as follows:

- Pull off the rubber sleeve (1). Loosen the nut (2) and stretch the wire with the adjuster screw (3).
- Tighten the lock nut (2) after adjustment.

Checking and adjusting throttle control

Rider 14 Pro



1
Detach the locking nut (1) on the ball joint.

2
Press the locking spring (2) backwards so that the spherical socket (3) can be lifted away from the pivot on the lever (4).

3
Press the throttle pedal to the bottom and move the lever (4) forwards as far as it goes using a screwdriver.

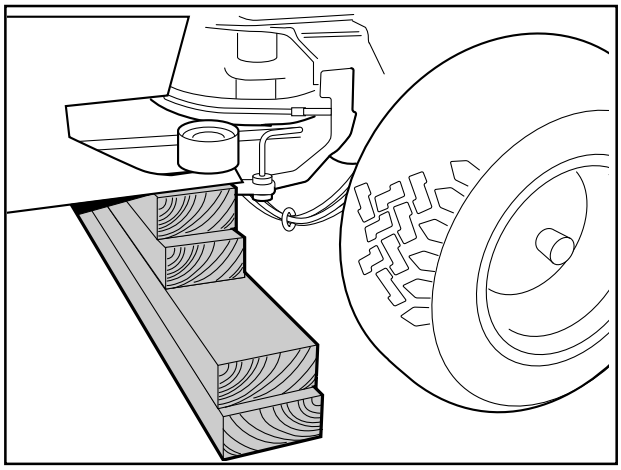
4
Adjust the spherical socket (3) position on the connecting rod (5) so that it just passes over the pivot on the lever.

5
Lock the setting with the lock nut (1) and press the locking spring (2) into position.

IMPORTANT INFORMATION
Check that the locking spring goes through the hole in the spherical socket.

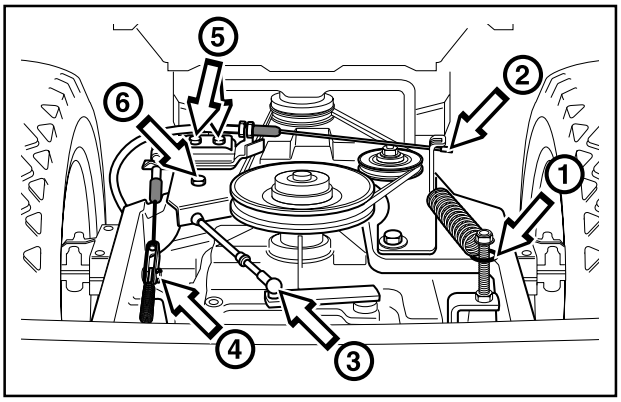
Replacing articulated steering bearing

1



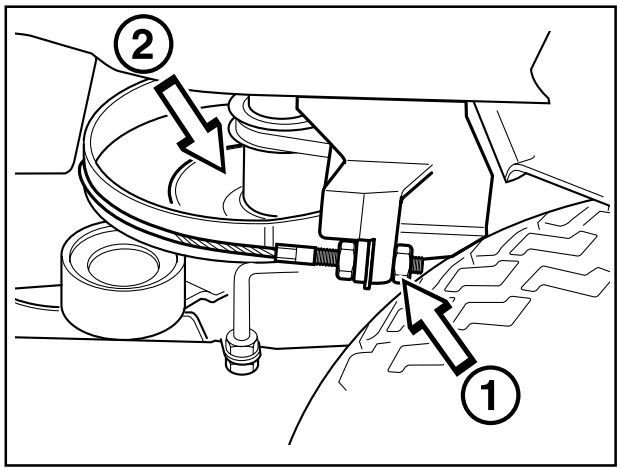
- Remove the engine according to the earlier description (see “Removing engine”).
- Block up the ride-on mower in front of the articulated steering.

2



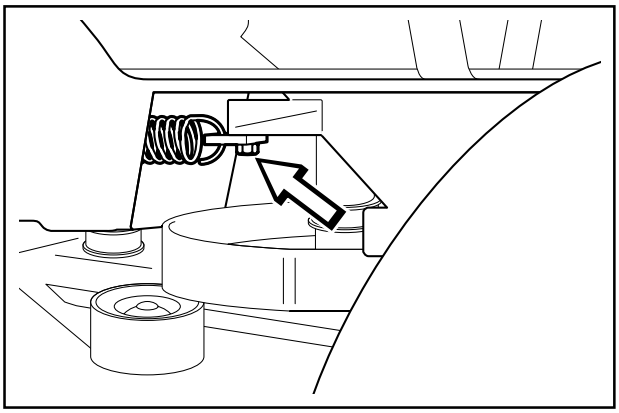
- Release the tensioning wheel spring (1).
- Release the clutch, gear and brake wire (2, 3 and 4) and remove the wires' holder plates (5 and 6).

3



- Loosen the steering wires (1) and remove the steering rim.
- Remove the pulley (2). Move the lower part forwards, the upper part backwards and detach the pulley.

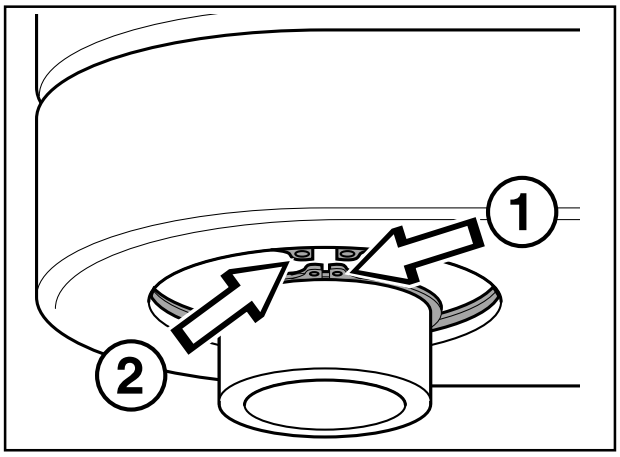
4



Detach the articulation spring. This spring is strongly tensioned and should be secured with tool no. 506 89 93-01 before the nut is removed.

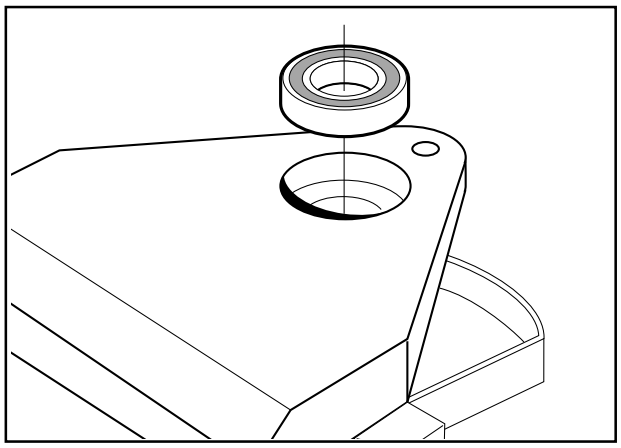
WARNING!
The articulation spring is strongly tensioned and can cause injury if it flies off. Wear safety glasses and gloves when removing/attaching the spring.

5



Remove the inner circlip (1) from the lower bearing (see diagram). The rear section is now loose and can be moved. Then detach the outer circlip (2) and take the bearing out downwards.

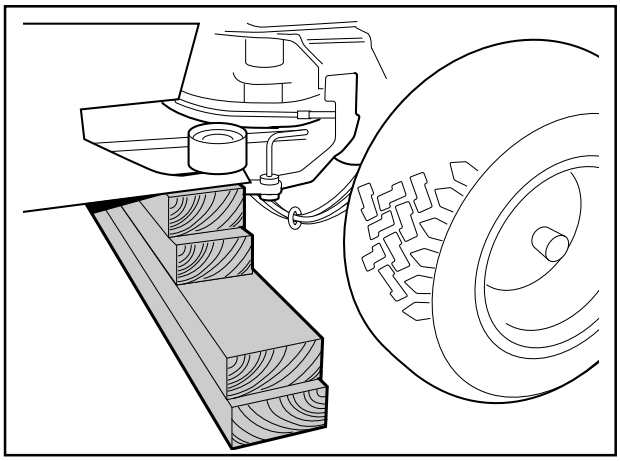
6



- Take the upper bearing out upwards, if it does not come out easily, it should be knocked out from below.
- Insert the new bearings and assemble the articulated steering in the reverse removal order.
- After re-assembly, the wire tension should be checked (see “Checking and adjusting steering wires”). Also check that the controls and wires are correctly adjusted.

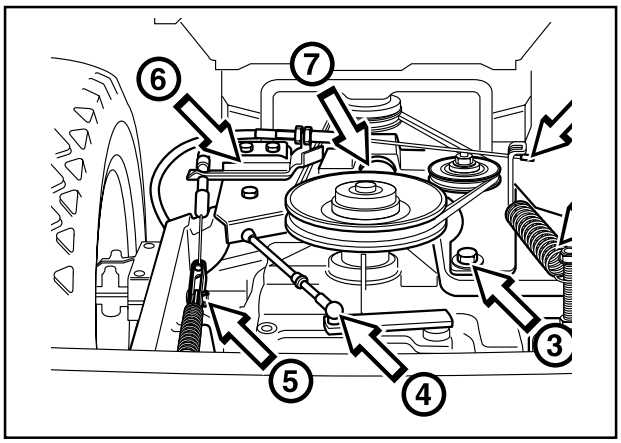
Removal of swing axle

1



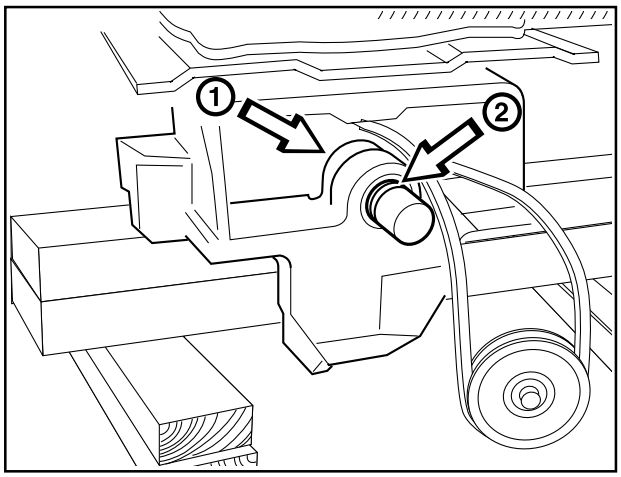
- Block-up the machine in front of the rear frame.
- Remove the transmission/gear box cover.

2



- Detach the tensioning wheel spring (1) and the clutch wire (2).
- Disconnect the tensioning wheel arm (3) from the rear frame, and detach the belt from the gear box pulley.
- Detach the gear and brake wires (4 and 5) and remove the wires' holding plates (6).
- Remove the circlip and washer from the swing axlel (7) and pull the rear frame out backwards.

3



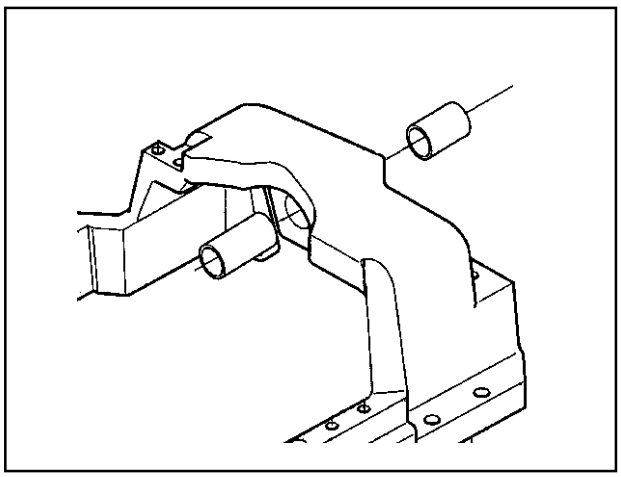
Remove the circlip and washer from the swing axle's inner holder (1) and pull the swing axle out backwards.

If the dust protection (2) is damaged, this should be replaced by a new one.

Replacing bushings Rider 14 Pro

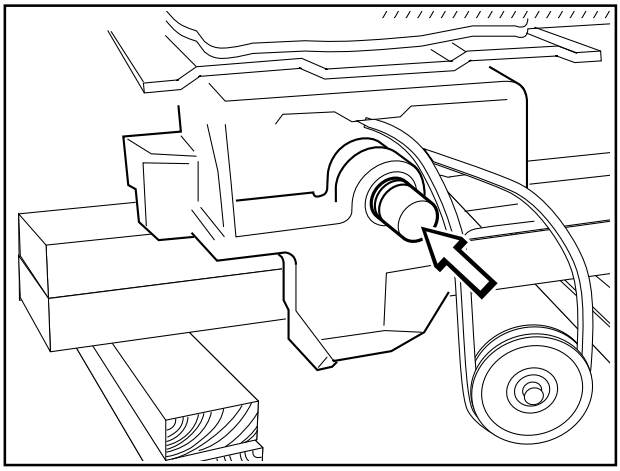
Once the swing axle has been removed the bushings fitted to the rear frame must be replaced. They can be removed with a standard drift.

Fit the new bushings with the aid of the standard drift, making sure that the channels in the bushings run horizontally. It is important that the outer edge of the outermost bushing is flush with the outer edge of the hole.
Lubricate the bushings with a lithium-based grease.



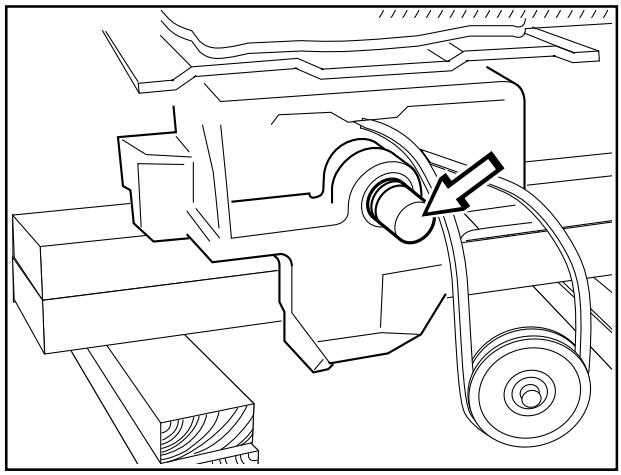
Installation of swing axle

1



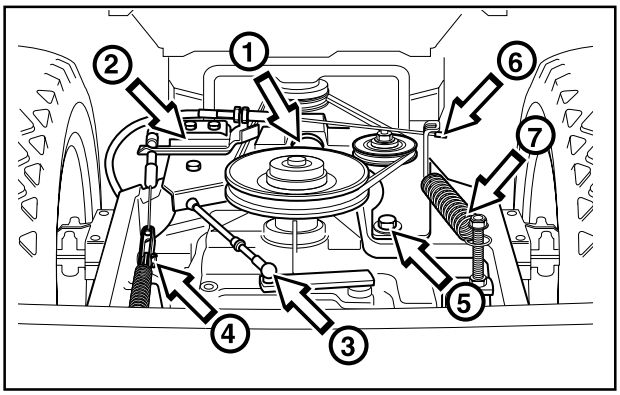
- Grease half of the axle (the half that has not been turned down) and press it from the back into the steering spindle (see diagram).
- Attach the washer and circlip on the swing axle's inner holder.
- Fix the dust guard (with a thin lip behind) approx. 2/3 of the way in on the axle and lubricate the axle on both sides of the dust guard.

2



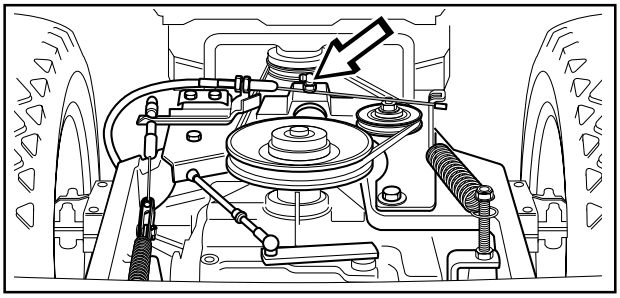
Roll the rear frame forwards and press it in on the swing axle.

3



- Attach a washer and circlip onto the swing axle (1).
- Firmly secure the wires' holder plates (2), as well as the gear and brake wires (3 and 4).
- Connect the belt onto the pulley and tightly screw the tensioning wheel arm (5) onto the rear frame.
- Attach the clutch wire (6) and the tensioning wheel spring (7).

4

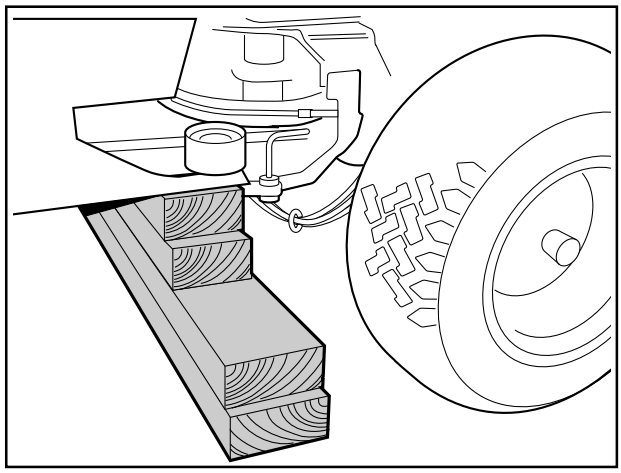


After installation of the swing axle, lubricate the lubricating area above the swing axle housing with molybdenum disulphide grease. Also check that the wires and controls are correctly adjusted justerade (see “Checking and adjusting steering wires”). Finally, attach the transmission/gear box cover.

Removal/installation of gear box

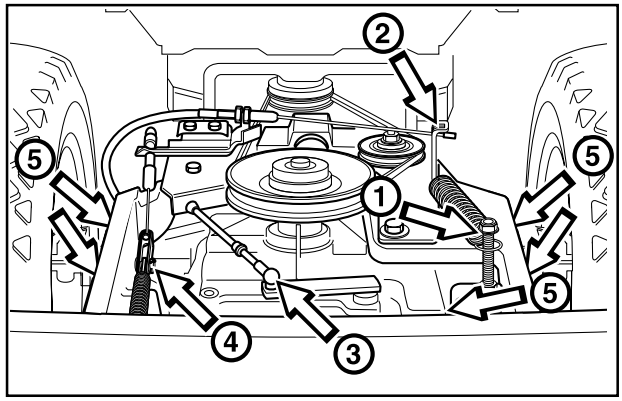
Rider 11/11 Bio

1



- Block-up the machine in front of the rear frame and dismantle the rear wheels.
- Remove the cover from over the gear box.

2



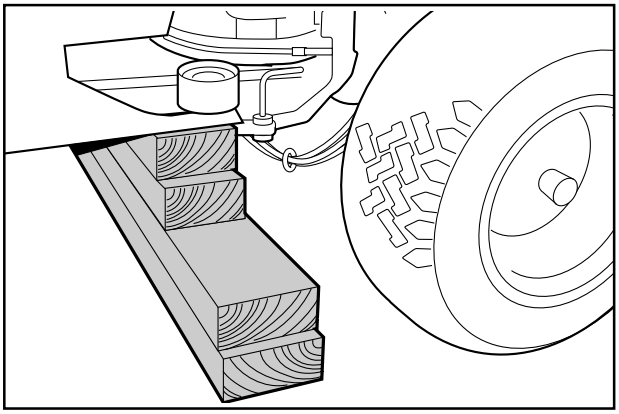
- Release the tensioning wheel spring (1).
- Unfasten the clutch wire (2), and detach the belt from the gear box pulley.
- Detach the gear and brake wires (3 and 4).
- Insert a garage jack under the gear box and unscrew the gear box's five holder screws (5).

3

- Lower the garage jack and pull out the gear box.
- Installation of the gear box is carried out in the reverse removing gear box order
- After installation, check that the clutch, brake and gear wires are correctly adjusted (see “Checking and adjusting brake wire”, “Checking and adjusting gear control” and “Checking and adjusting freewheel clutch”).

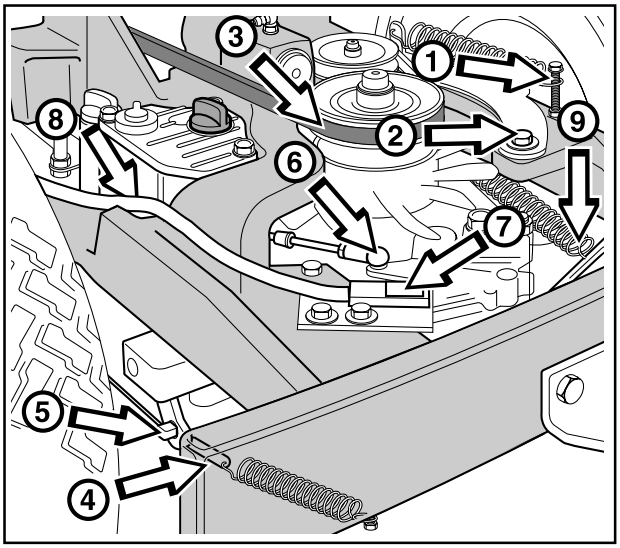
Removing/installation of hydrostatic transmission Rider 13 H/13 H Bio and Rider 16 H

1



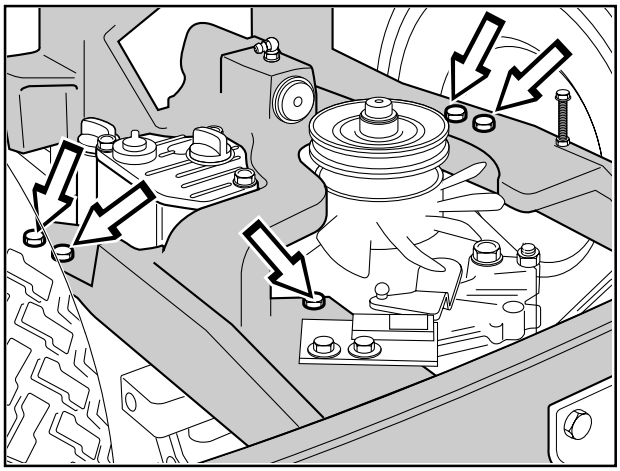
- Block-up the machine in front of the rear frame and remove the back wheels.
- Remove the transmission cover.

2



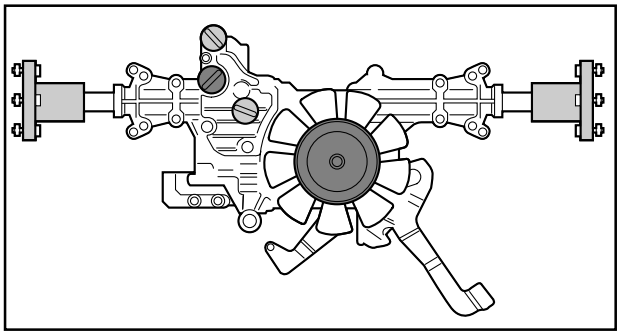
- Release the tensioning wheel spring (1) and remove the tensioning wheel arm (2).
- Dettach the drive belt (3).
- Release the brake wire spring (4) and remove the brake wire from the brake lever (5).
- Disconnect the hydrostatic transmission cable (6) and the hydrostatic transmission switch cable (7).
- Release the clamp (8) that holds the hydrostatic transmission cable and lay the wire and cable to one side.
- Release the disengaged clutch control spring (9).

3



Insert a garage jack under the hydrostatic transmission and loosen its five holder screws.

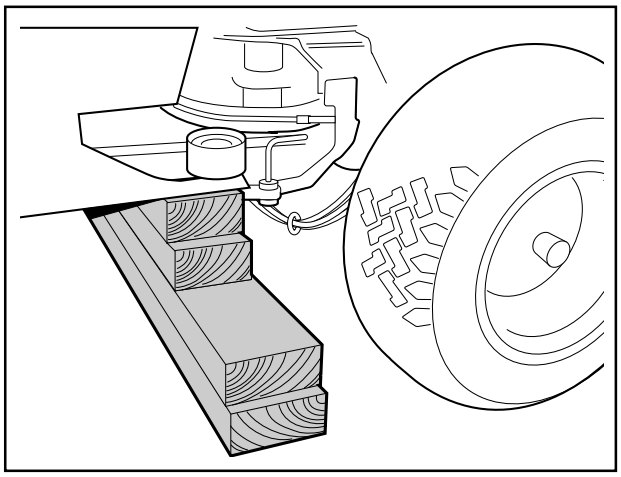
4



- Lower the garage jack and pull out the hydrostatic transmission.
- Installation of the hydrostatic transmission is carried out in the reverse hydrostatic transmission removing order
- After installation, check that the brake wire and hydrostatic transmission wire are correctly adjusted (see “Checking and adjusting brake wire” and “Replacing hydrostatic transmission wire, installation step 8”). Also check the oil level in the hydrostatic transmission and refill as necessary.

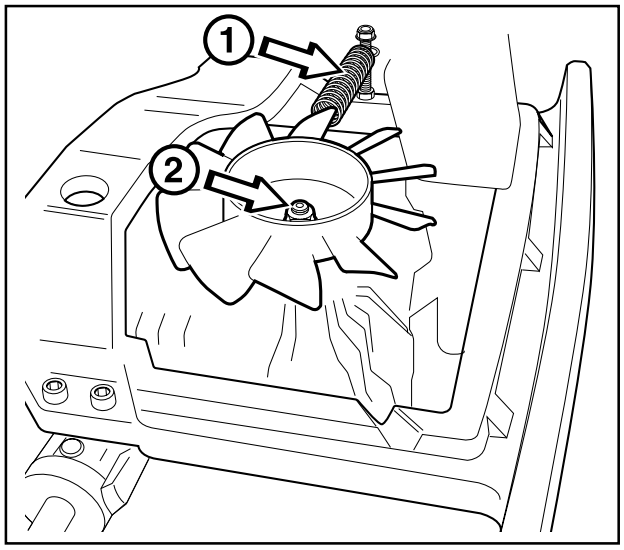
Removing/installation of hydrostatic transmission Rider 14 Pro

1



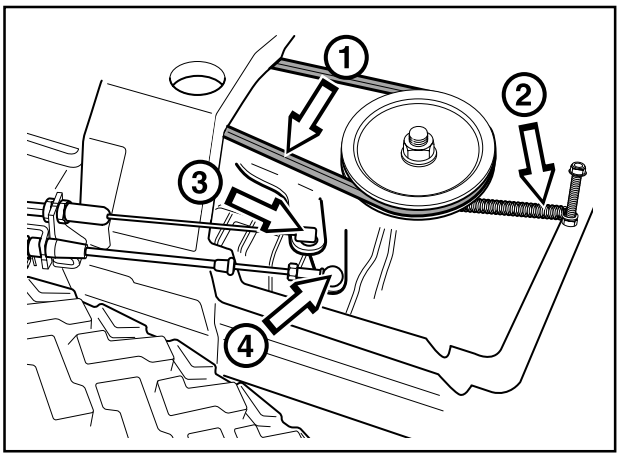
- Block-up the machine in front of the rear frame and remove the back wheels.
- Remove the transmission cover.

2



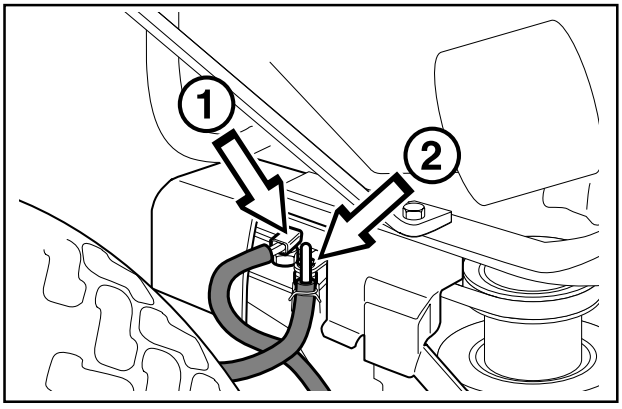
- Release the tensioning wheel spring (1).
- Remove the circlip (2), lift away the washer and fan from the input axle.

3



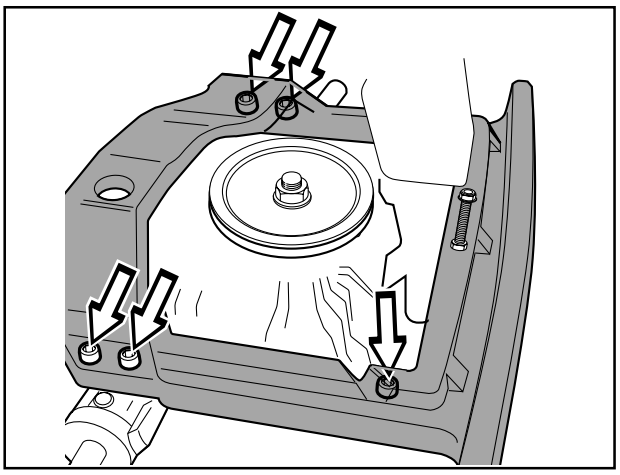
- Detach the drive belt (1) and release the brake wire spring (2).
- Disconnect the brake wire (3) and dismantle the throttle control (4).
- Remove the spring and the disengaged clutch control.

4



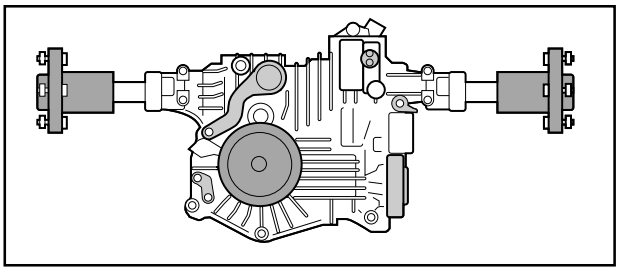
Disconnect the contact (1) and take off the hose (2). Ensure that the oil does not run out, e.g. tie up the hose higher than the oil level in the container.

5



Insert a garage jack under the hydrostatic transmission and loosen its five holder screws.

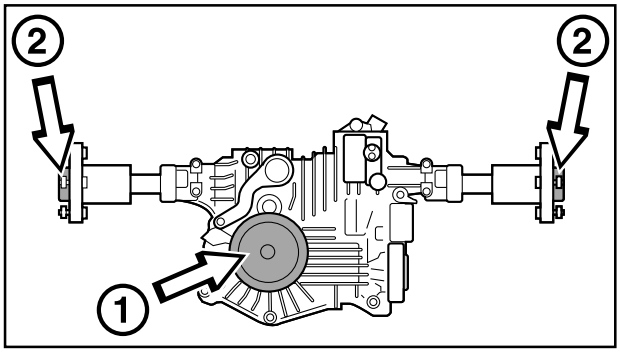
6



- Lower the garage jack and pull out the hydrostatic transmission.
- Installation of the hydrostatic transmission is carried out in the reverse hydrostatic transmission removing order
- After installation, check that the brake wire and hydrostatic transmission wire are correctly adjusted (see “Checking and adjusting brake wire” and (Checking and adjusting speed control”). Also check the oil level in the hydrostatic transmission and refill as necessary.

Replacing hydrostatic transmission axle sealing collars

1



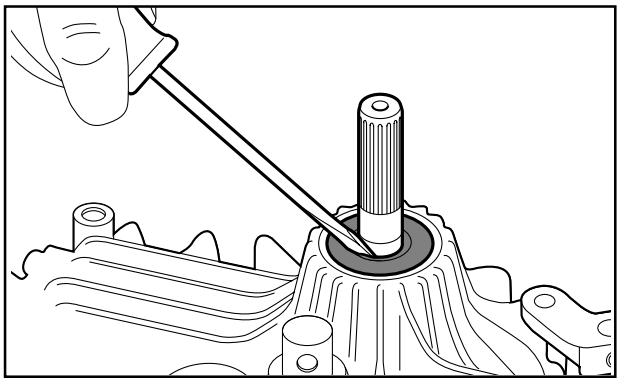
Take the hydrostatic transmission out of the ride-on mower, as indicated in previous description (see “Removal/installation of hydrostatic transmission”). Remove the pulley (1) from the input shaft by pulling it outwards. Then remove the circlip under the pulley.

2

Dismantle the circlips which hold the wheel hubs (2) at the axles and remove the hubs by pulling them outwards. Do not lose the key which sits between the hub and the axle.

Sealing collar replacement - input axle

1

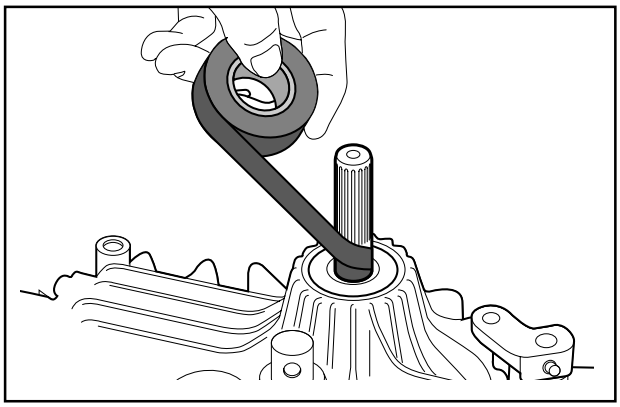


- Clean the input axle and the area around the sealing collar of all dirt and rust.
- Insert a screwdriver between the sealing collar and the axle and bend the sealing collar out of the axle housing with a twisting motion.

IMPORTANT INFORMATION

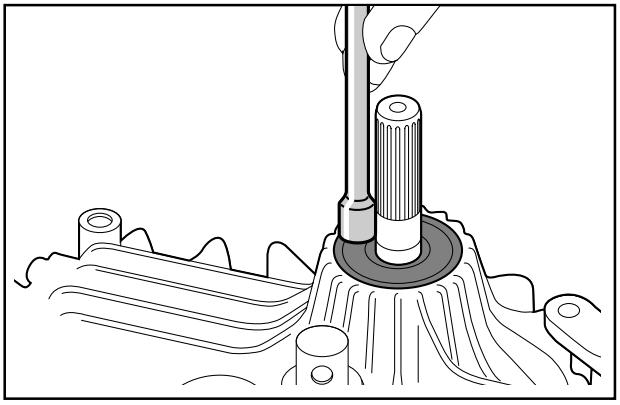
The area around the sealing collar must be absolutely clean! If the hydrostatic oil is contaminated with dirt, this can lead to a shorter hydrostatic transmission operational life.

2



- Wrap insulation tape around the input axle to protect the new sealing collar from damage to splines and grooves.
  Start by wrapping from the bottom and continue upwards over the axle until the entire axle is wrapped in tape.
- Lubricate the axle and the inside of the new sealing collar with grease so that the collar can slide easily.

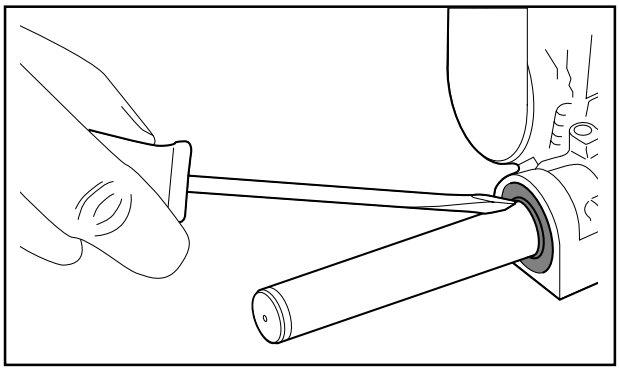
3



- Place the sealing collar on the axle with the smooth side upwards, and *carefully* press it downwards.
- Use the thick end of a 1/4" extender to *carefully* knock down the sealing collar until the upside of the collar is level with the axle housing's upper edge.
  Move the extender in a circle around the sealing collar so that it is evenly pressed down, all the way around.
- Remove the insulation tape from the axle and assemble the lower circlip and the pulley with the hexagonal hub facing upwards.
- Fasten the fan and the washer and assemble the upper circlip.
- Install the hydrostatic transmission in the ride-on mower as indicated in the previous description (see “Removal/installation of hydrostatic transmission”).

Sealing collar replacement - outgoing axles

1

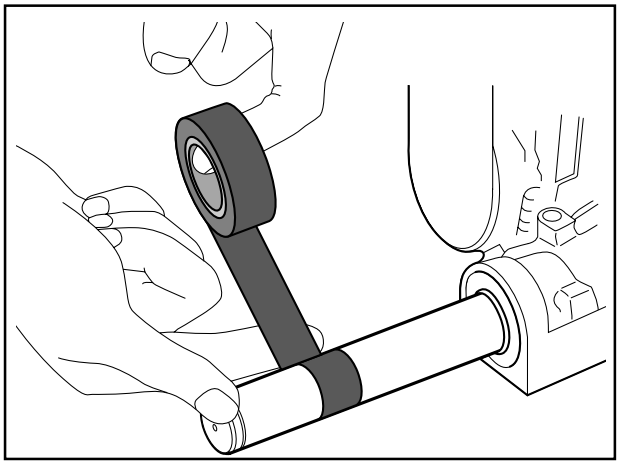


- Clean the outgoing axle and the area around the sealing collar of all dirt and rust.
- Insert a screwdriver between the sealing collar and the axle and bend the sealing collar out of the axle housing with a twisting motion.

IMPORTANT INFORMATION

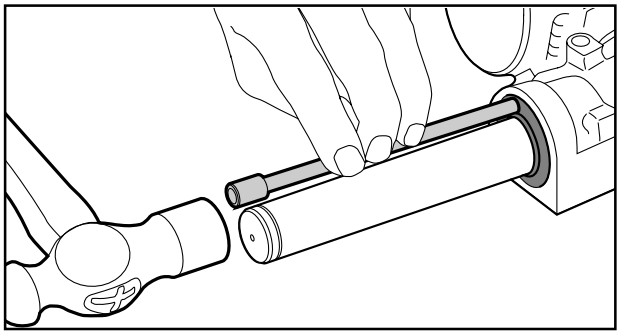
Dirt must not be allowed to get into the transmission as this can shorten its operational life.

2



- Wrap insulation tape around the outgoing axle from the start of the key-way and outwards until even the circlip's groove is covered with tape. This is done to protect the new sealing collar from damage.
- Lubricate the axle and the inside of the new sealing collar with grease so that the collar can slide easily.

3

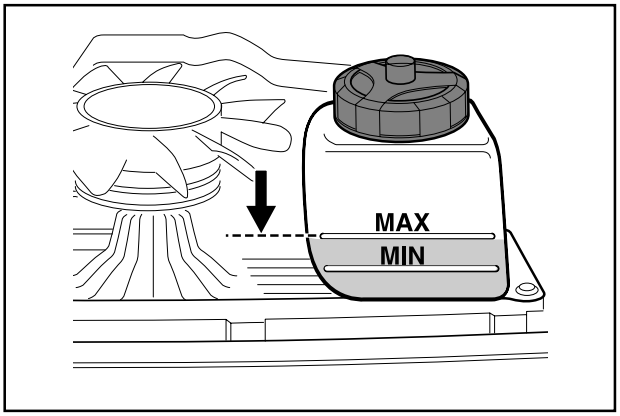


- Place the sealing collar on the axle, with the metal spring inwards, and press it in *carefully*.

IMPORTANT INFORMATION

Before the sealing collar is completely installed, check that the sealing collar's metal spring reinforcement sits on the side of the sealing collar which leads inwards towards the transmission.

- Use the narrow end of a 1/4" extender to *carefully* knock in the sealing collar until it reaches the bottom of the axle housing. Only knock on the steel cover.
  Move the extender in a circle around the sealing collar so that it is pressed in evenly all the way around and tight against the axle.
- Remove the insulation tape from the axle and repeat, as is necessary, the entire procedure for the second axle.
- Install the hydrostatic transmission in the ride-on mower as indicated in the previous description (see “Removal/installation of hydrostatic transmission”).

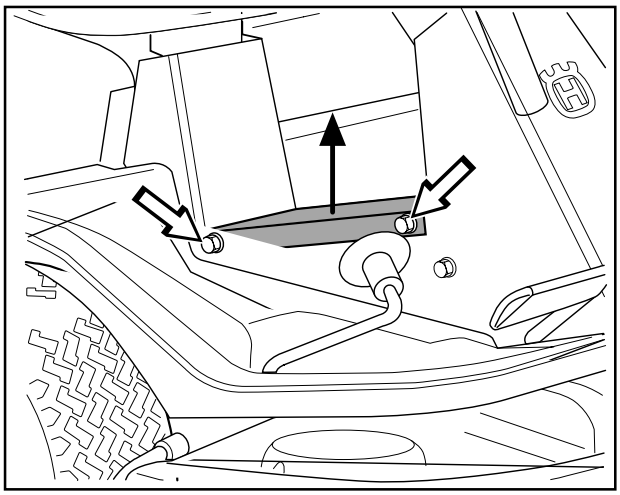


- Fill the transmission's oil container with SAE 10W30 oil until the oil level reaches the "MAX"-marking.
- Operate the ride-on mower and then check that there is no oil leaking from the new axle sealing collars.

Replacing hydrostatic transmission wire

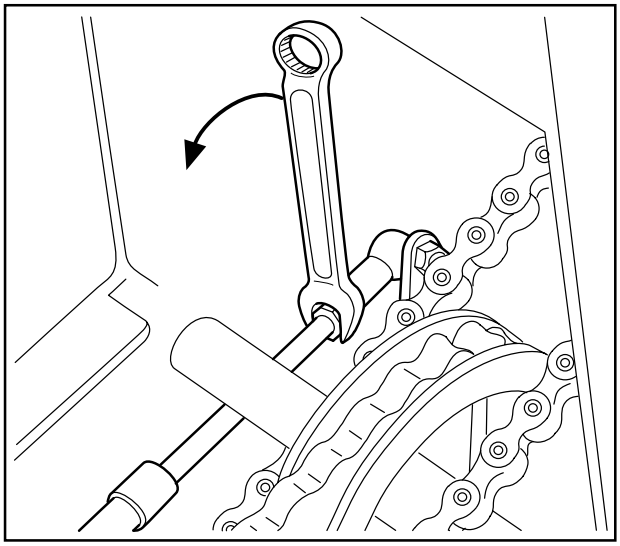
Removal of hydrostatic transmission wire

1



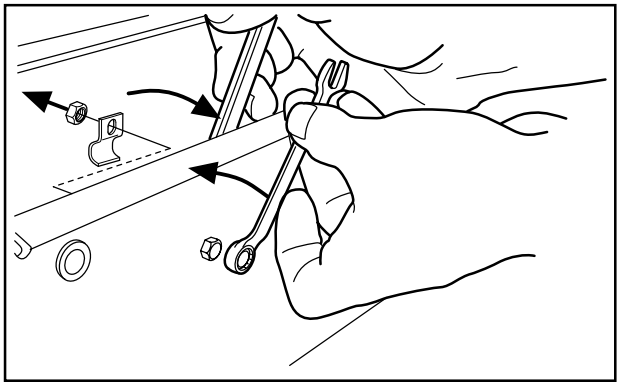
Remove the frame plate by undoing the screws (two on each side).

2



Unscrew the front end of the hydrostatic transmission wire and remove the wire clip.

3

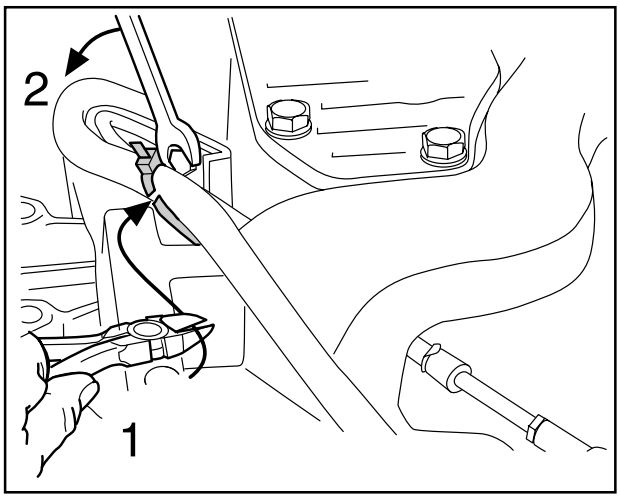


Unbolt the front wire-retaining clip from inside the tunnel.

4

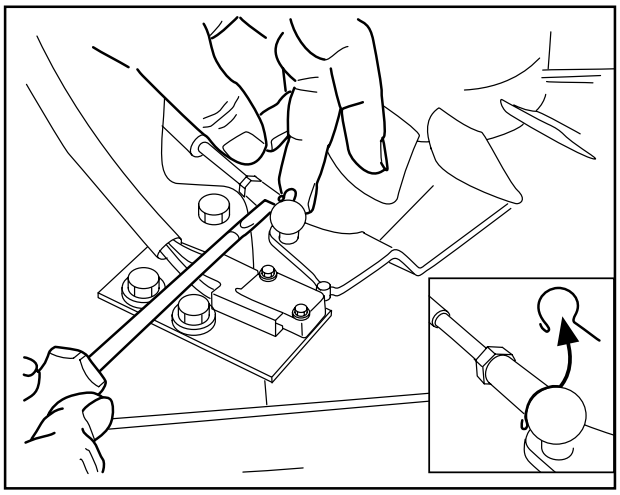
Remove the transmission cover.

5



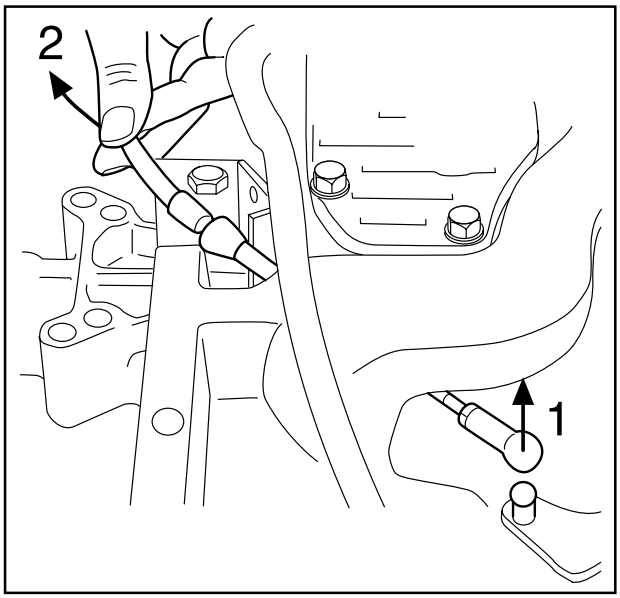
Follow the hydrostatic transmission wire back to the transmission and cut through the cable tie around the cables. Unscrew the clip that holds the transmission wire.

6



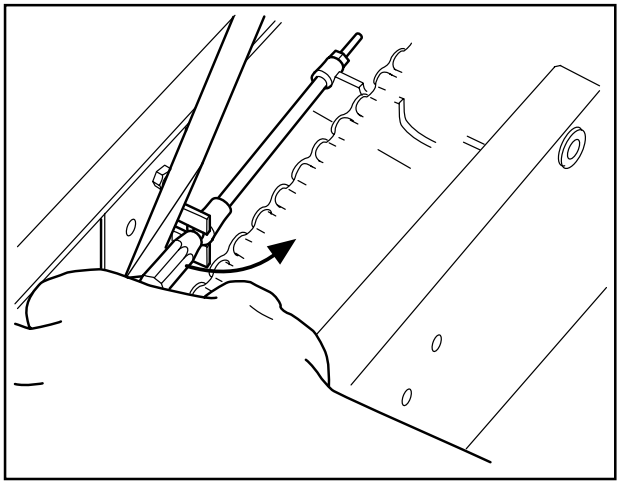
Remove the wire clip from the rear ball joint.

7



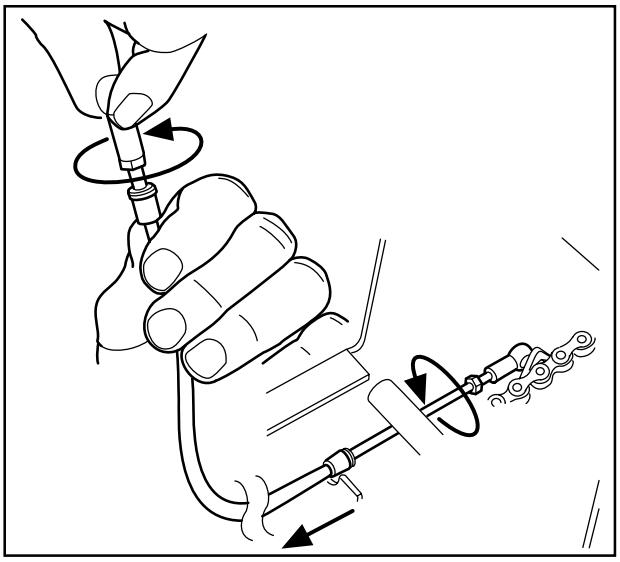
Lift off the ball joint and pull out the wire.

8



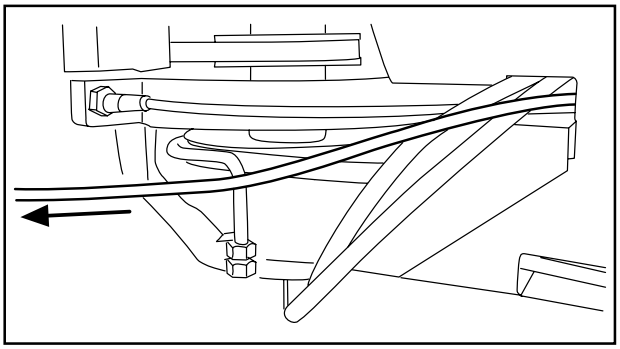
Lift out the transmission wire with the linkage attached.

9



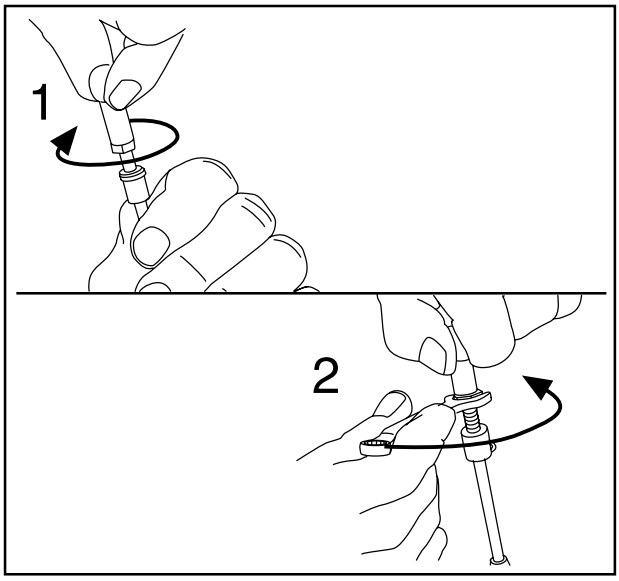
Unscrew both ball joints from the hydrostatic transmission wire.

10



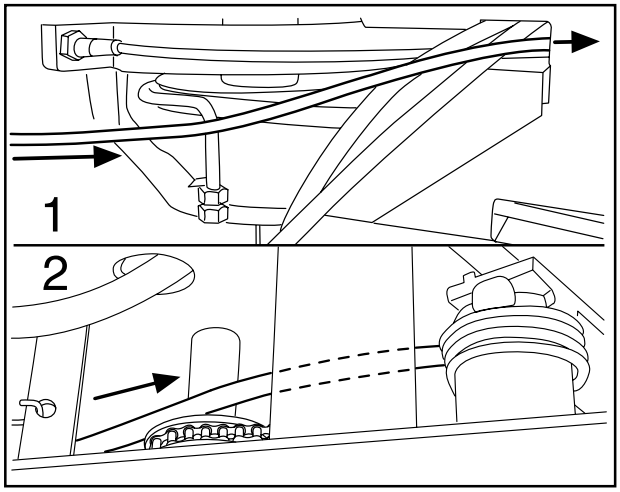
Remove the entire hydrostatic transmission wire.

Refitting hydrostatic transmission wire



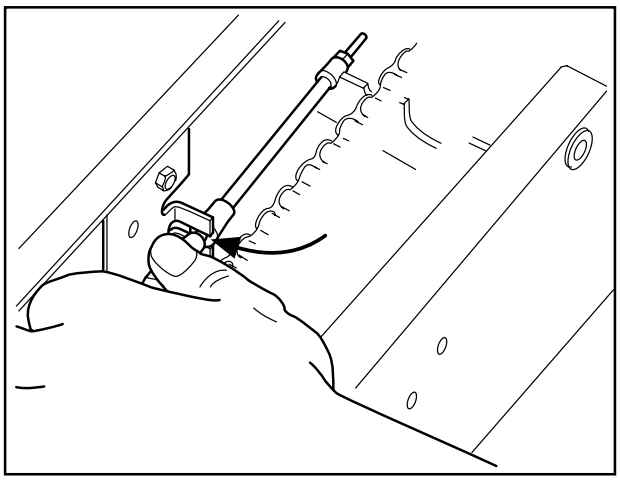
Screw the front ball joint onto the new transmission wire and tighten the lock nut.

2



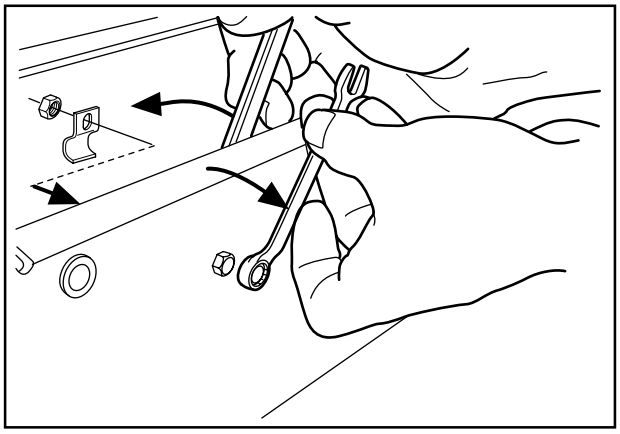
Run the wire through the mower so that it follows the same route as the old wire.

3



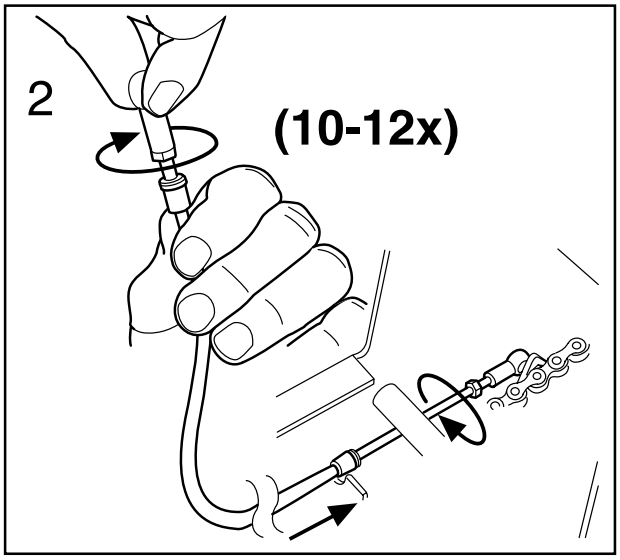
Push the linkage into the front slot in the tunnel.

4



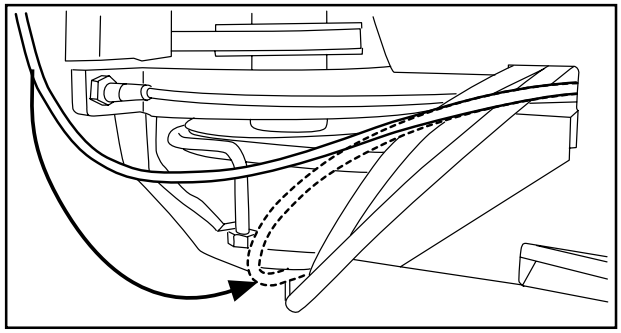
Bolt the transmission wire-retaining clip back in place. Press the ball joint onto its ball and refit the wire clip.

5



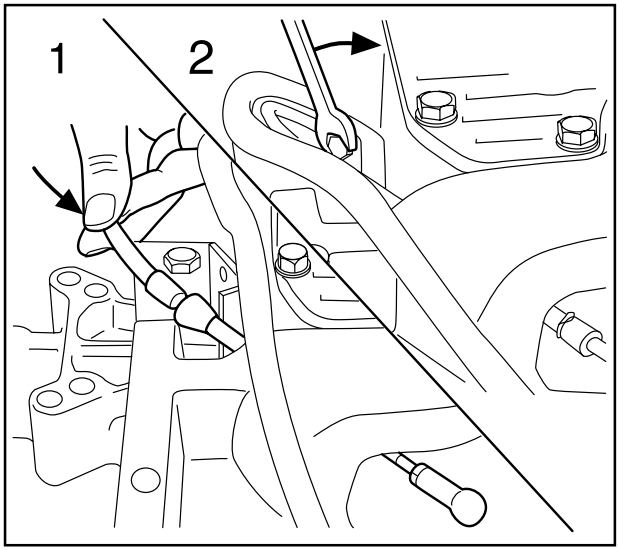
Screw the ball joint onto the lower end of the transmission wire. Tighten it 10–12 turns so that the linkage is the correct length.

6



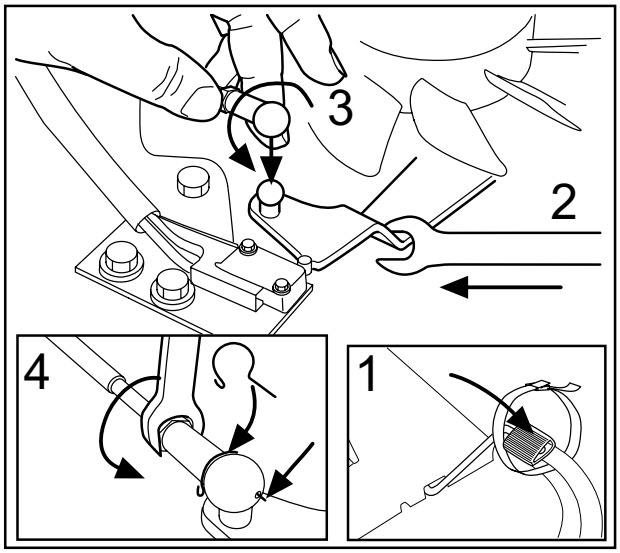
Run the transmission wire alongside the other cables.

7



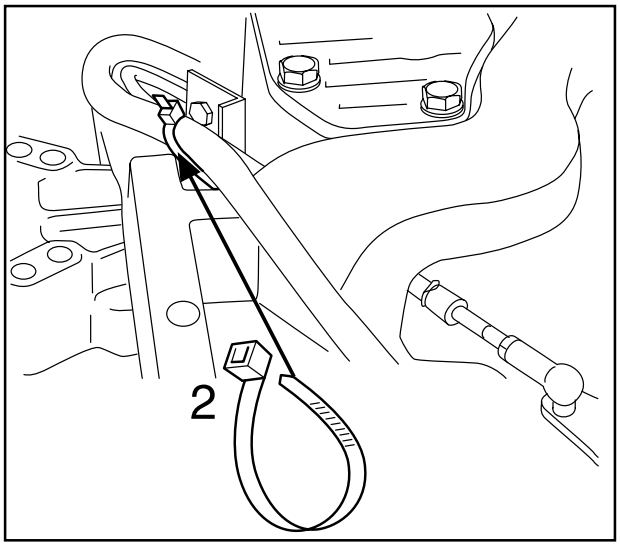
Lay the transmission wire in place and secure with the rear clip.

8



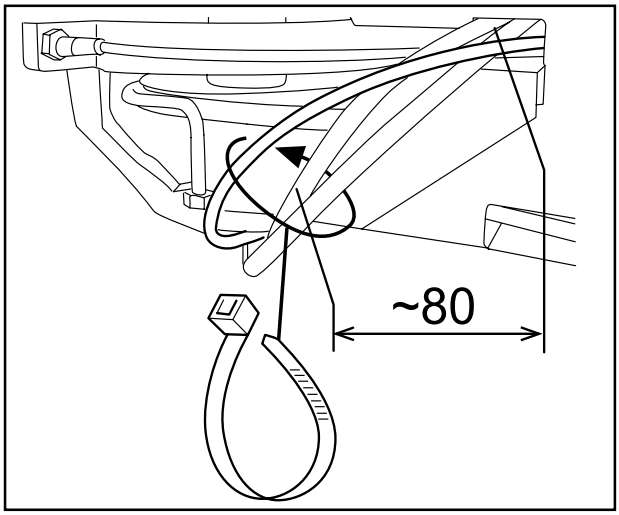
Fully depress the hydrostatic transmission pedal and secure it with a cable tie to set the correct wire tension for maximum speed.
Adjust the ball joint and press it onto the ball, with the control arm pushed in as far as it will go.
Tighten the lock nut and refit the wire clip.

9



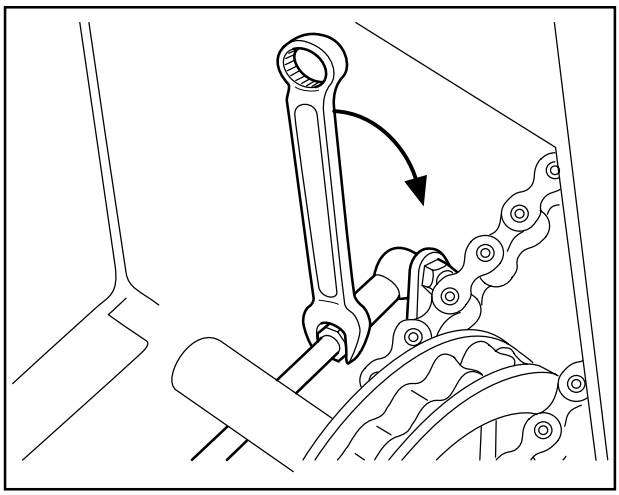
Secure the cables to the rear clip using a cable tie.

10



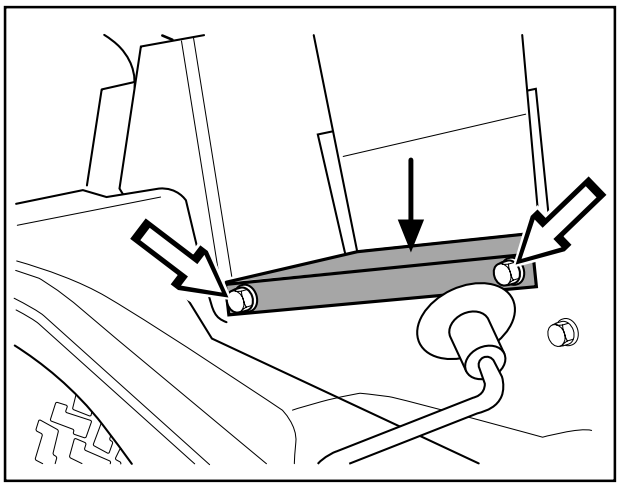
Secure the transmission wire with a cable tie.

11



Tighten the lock nut on the transmission wire front ball joint.

12

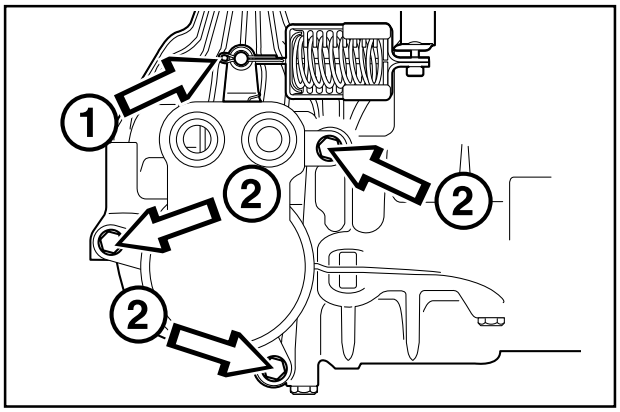


Refit the frame plate using the four screws.

Hydrostatic transmission brake

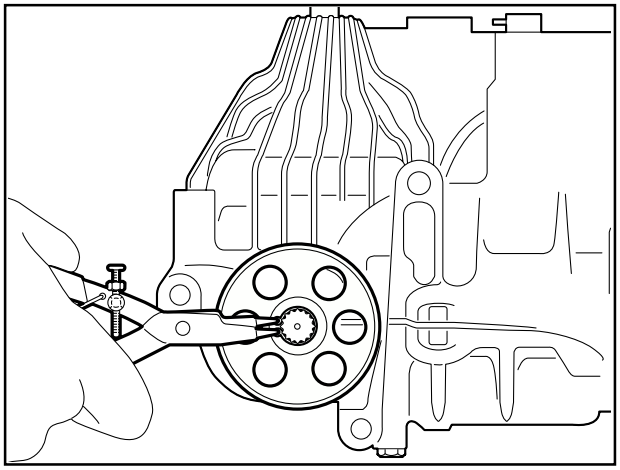
Removal of brake

1



- Place blocks in front of and behind the wheels so that the ride-on mower can not roll. Then, release the parking brake.
- Remove the split pin and the washer from the brake's connecting rod (1).
- Remove the three bolts and washers (2) from the transmission and detach the brake lining packet.

2



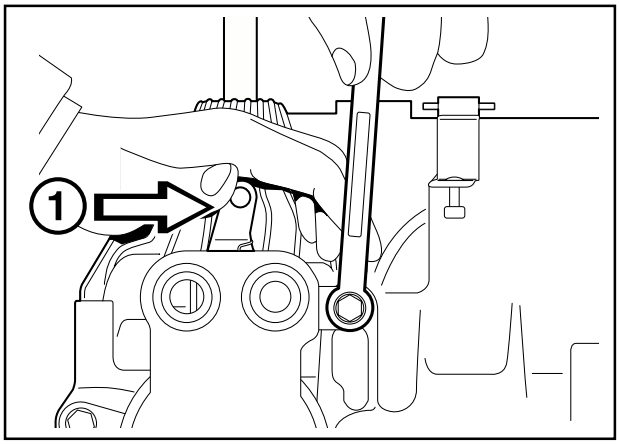
Remove the brake drum by removing the circlip and pulling the drum outwards.

IMPORTANT INFORMATION

It is seldom necessary to remove the brake drum. If, however, it needs to be removed, a puller and/or penetrating oil is needed to get it off.

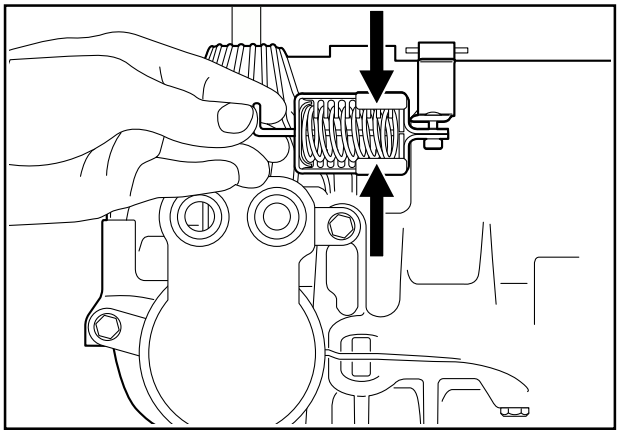
Installation of brake

1



- Put the brake drum on the axle and attach the circlip.
- Assemble the brake lining packet on the transmission and tighten the three bolts and washers *by hand*.
- Press the brake lever (1) backwards so that the brake lining locks the drum, and draw the three bolts with moment to 27 Nm (20 ft, lbs.), whilst the drum is locked.

2

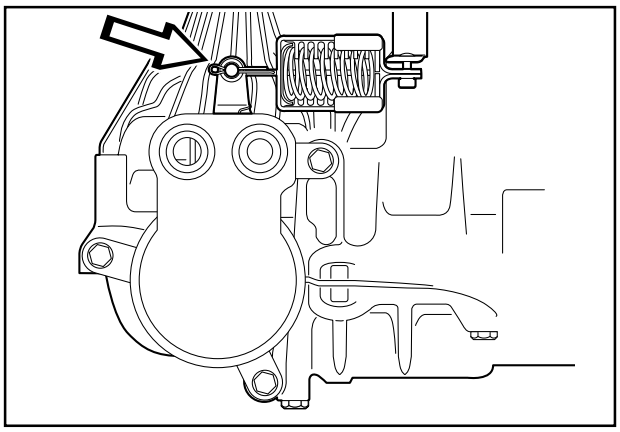


Install the brake spring with holder on the gold-coloured brake arm by passing the recesses into the holder with metal tabs on the brake arm. Then, turn the holder in towards the transmission.

IMPORTANT INFORMATION

Firmly fix the spring holder so that the holder's metal tabs (shown by the arrows) point away from the transmission.

3



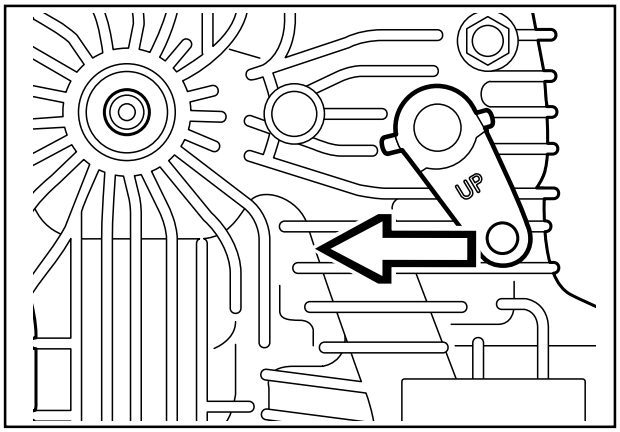
- Firmly attach the brake's connecting rod in the hole on the brake lever and assemble the washer and spring clip.
- Remove the blocks in front of and behind the wheels and continue with “Adjusting brake”.

IMPORTANT INFORMATION

Firmly attach the connecting rod so that the washer and the spring clip are on the outside of the brake lever (see diagram).

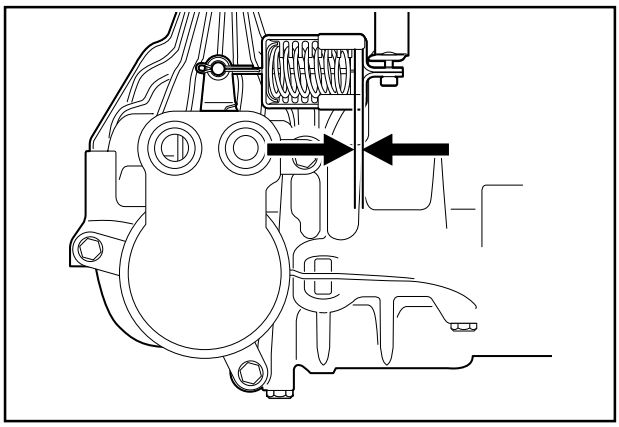
Adjustment of brake

1



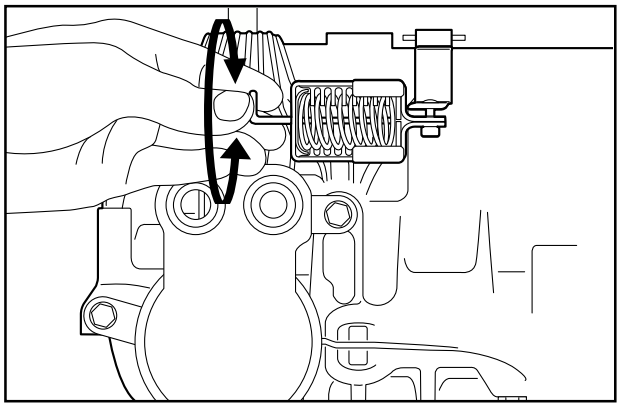
Apply the parking brake and check that the transmission's brake arm is pulled as far forwards as possible (see diagram). Adjust this with the brake wire tensioning screw (see “Checking and adjusting brake wire”).

2



When the parking brake is fully applied, the gap between the spring and the spring holder attachment (see diagram) should be 4–8 mm.

3



Adjust the gap by:

- Releasing the parking brake.
- Loosening the connecting rod by removing the spring clip and the washer.
- Turning the connecting rod in or out of the spring (see diagram) to adjust the gap.
- Firmly attach the brake's connecting rod in the hole on the brake lever and assemble the washer and spring clip. Make sure that the washer and spring clip are on the outside of the brake lever.
- Apply the parking brake and check the gap once again.
- Repeat the adjustment procedure until the correct gap is obtained.

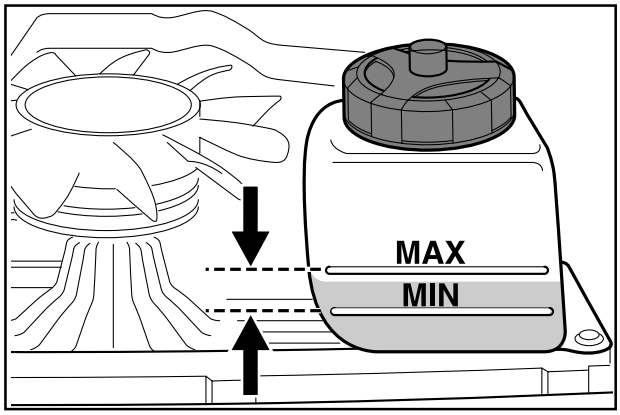
Ineffective brake power

As the brake is only used as a parking brake, wear is negligeable. If the brake power is nevertheless ineffective, this can be adjusted:

- Release the three bolts (N12) which hold the brake lining packet.
- Press on the brake lever so that the brake lining centres itself around the brake drum and tighten the three bolts with moment (27 Nm).

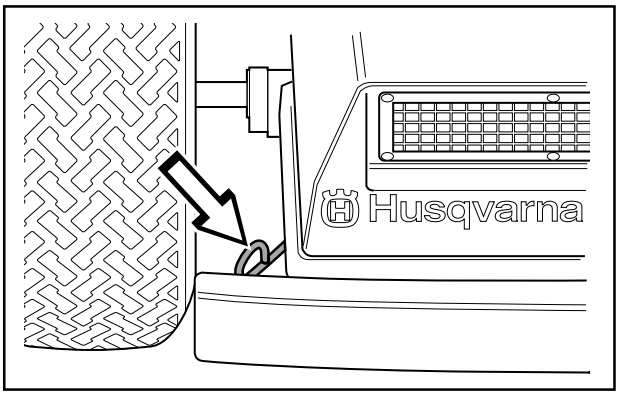
Bleeding the hydrostatic transmission oil system

1



- Check the hydrostatic transmission oil level.
- Start the engine and set the throttle control to idle.

2



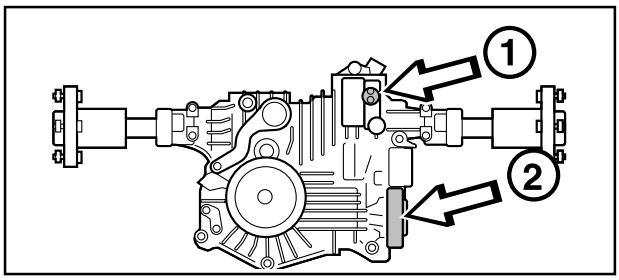
- Repeat opening and closing the disengaged clutch control whilst the front respective rear pedals are alternately pressed down.
- When the mower starts to move set the governor control lever to high idle.

On Rider 13 H/13 H bio and Rider 16 H the control is on the right side.

3

- Repeat quick starts and emergency stops until the transmission responds as it should.
- Finally, check the hydrostatic transmission oil level and fill as is required.

4



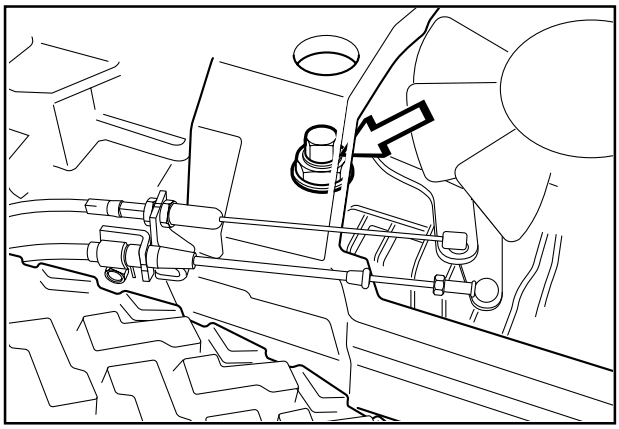
For immediate bleeding of the oil system, fill new oil directly into the transmission (1) and, at the same time, pull the pump round by hand with the brake drum (2).

Adjustment of transmission neutral position

1
Bleed the hydrostatic transmission oil system.

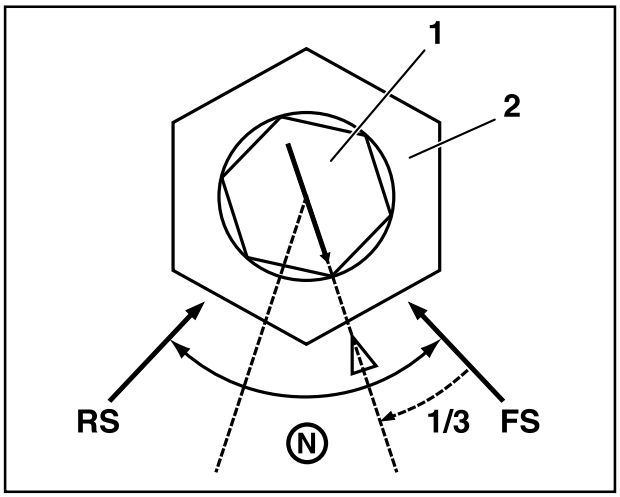
2
Lift the back of the ride-on mower up so that the wheels are off the ground and place blocks under the machine.

3



- The neutral position is adjusted by turning the hexagonal axle on the transmission (see diagram).
- Start the engine and set the throttle control to full throttle.
- Unscrew the hexagonal axle lock nut and turn the axle clockwise until the drive shafts start to rotate backwards.
- Make a mark on the top of the axle.

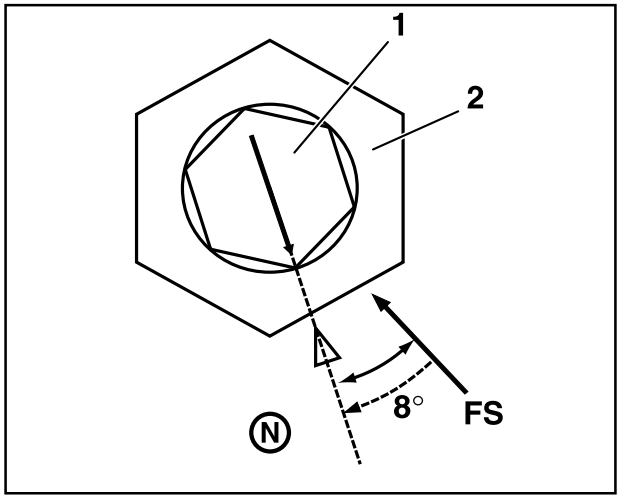
4



1 = Axle
2 = Lock nut

- Slowly turn the axle anti-clockwise until the drive shafts stop rotating backwards and make a mark on the transmission housing (RS).
- Slowly turn the axle anti-clockwise until the drive shafts start to rotate forwards.
- Slowly turn the axle clockwise until the drive shafts stop rotating forwards and make a mark on the transmission housing (FS).
- Turn the axle clockwise 1/3 of the distance between the marked stop points.
- Hold the axle (M8) firmly and tighten the lock nut (M17).
- Check that the drive shafts do not rotate in the neutral position by slowly transferring the steering arm to the neutral position from the forwards and reverse positions.

5



1 = Axle
2 = Lock nut

If the drive shafts do not rotate backwards despite the hexagonal axle having rotated a full turn, the neutral position is to be adjusted in the following way:

- Slowly turn the axle anti-clockwise until the drive shafts start to rotate forwards.
- Slowly turn the axle clockwise until the drive shafts stop rotating forwards and make a mark on the transmission housing (FS) and the axle.
- Turn the axle clockwise 8° from the mark on the transmission housing.
- Hold the axle (M8) firmly and tighten the lock nut (M17).

Transmission maintenance

Oil change

Most garden owners do not have tools for or experience of changing transmission oil. The transmission probably has a longer operational life than other ride-on mower components, this makes transmission oil changes less important for most customers. However, the transmission's operational life is increased if oil changes are made.

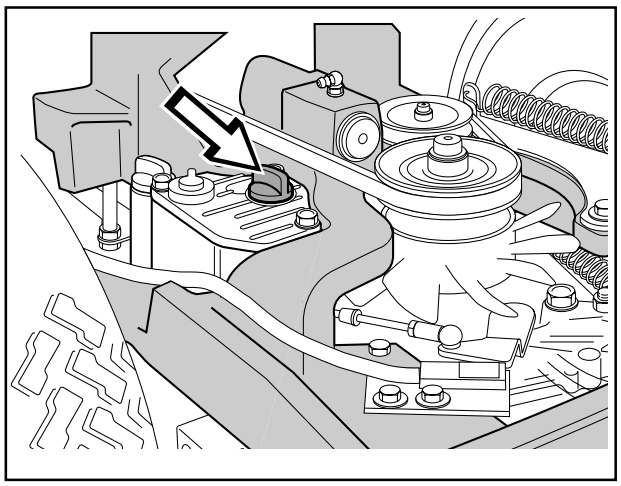
If the ride-on mower is used *professionally,* it is recommended to change the oil firstly after 50 hours use and every 300 hours use thereafter.

The oil filter only needs to be changed if the transmission is opened for repairs to be made.

Transmission K 55 holds 2.2 litres and K 61 holds 3.3 litres (SAE10W/30 engine oil, class CD–SF).

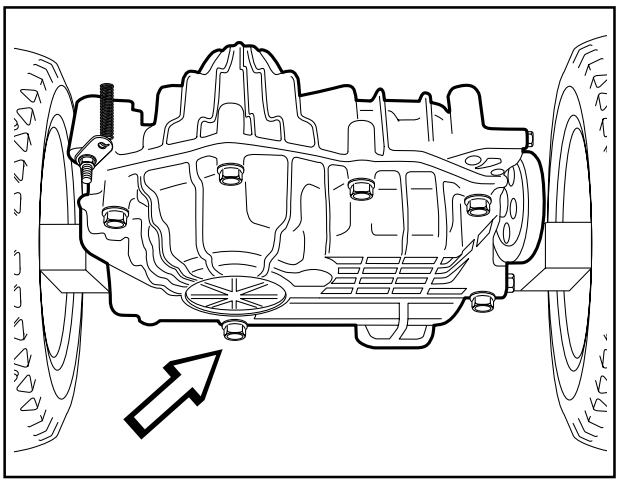
Changing oil – Rider 13 H/13 H Bio and Rider 16 H

The drain plug on transmission K 55 is in the same position as on K 61.

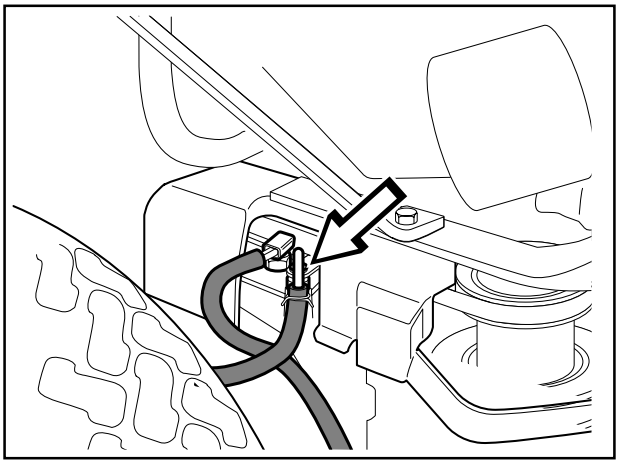


K 55, filler hole

Changing oil – Rider 14 Pro



K 61, drain plug



K 61, filler hole

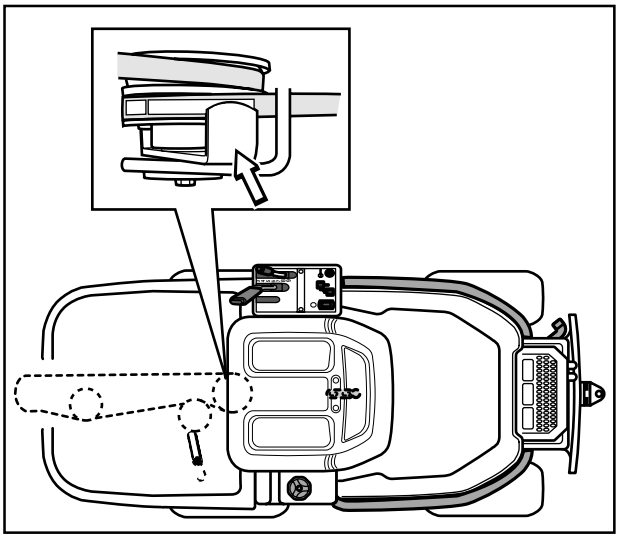
Removing the belt

Rider 11, Rider 13 H, Rider 16 H och Rider 14 Pro

Starting point when Removing the belt:

- No unit attached to the Rider.
- The front part of the belt hangs loose.

The entire belt is only dismantled as set out below, when the snow plough is fitted on the Rider.

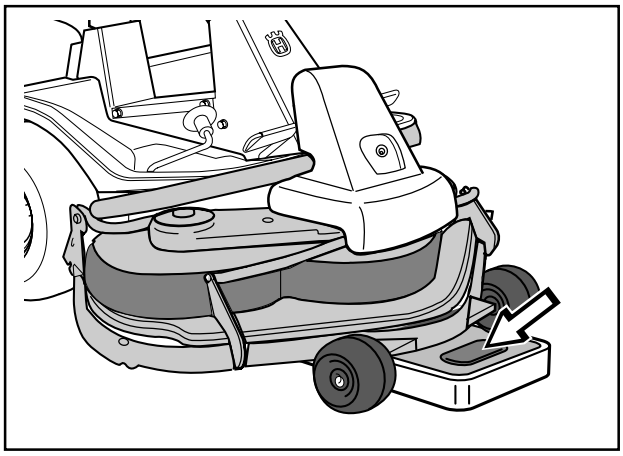


1. Loosen the belt guide and support pulley.
2. Loosen the belt tensioning pulley.
3. Prise the belt off the middle pulley and remove the belt.

Reverse the above sequence to refit the belt.

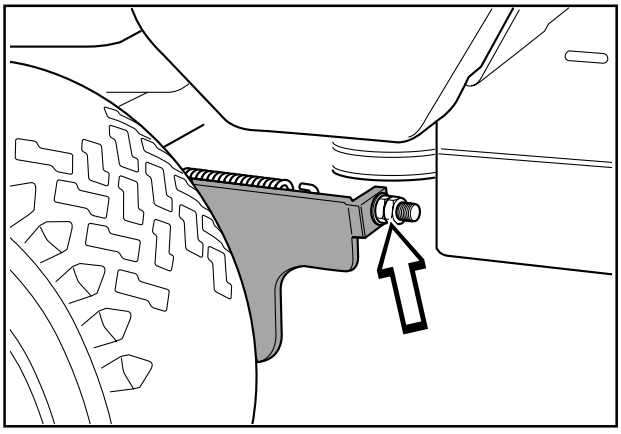
Checking and adjusting mower deck ground pressure

1



Place a set of bathroom scales under the mower deck's frame (front edge) so that the deck rests on the scales.

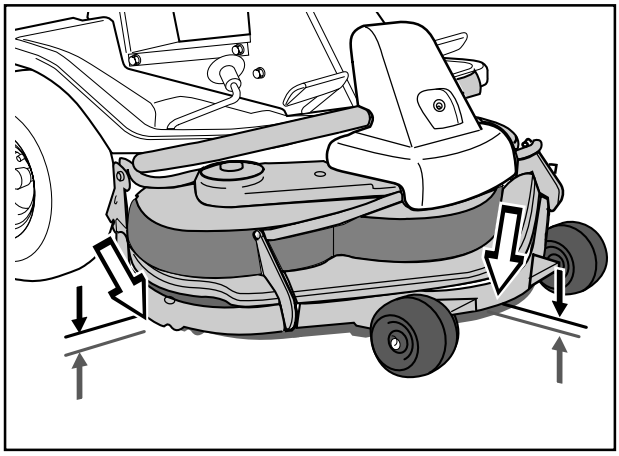
2



Adjust the mowing deck's ground pressure with the adjuster nuts placed behind the front wheels on both sides of the ride-on mower. The ground pressure should be the same on both sides, between 12 and 15 kg.

Checking and adjusting mower deck parallelism

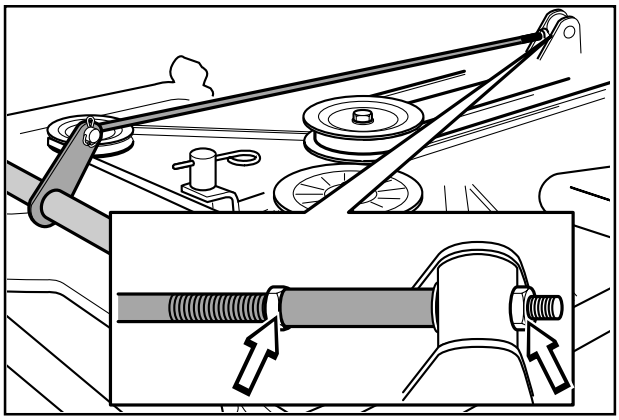
1



Place the ride-on mower on an even surface and measure the distance between the ground and the edge of the deck, at the front and rear of the cover. The cutting unit should slope forwards slightly so that the rear edge is 2-4 mm higher than the front edge.

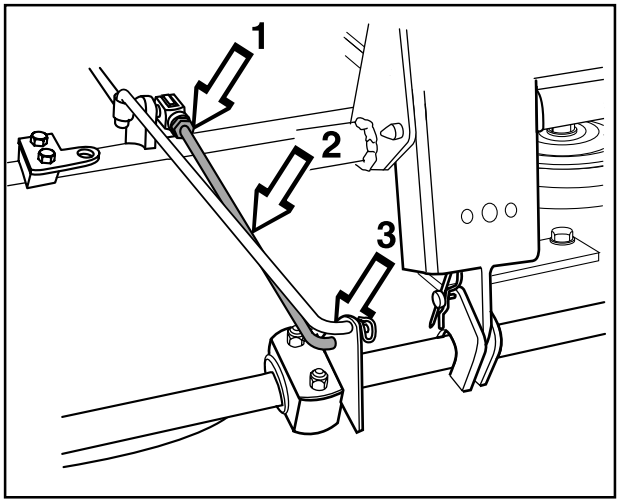
2

Adjusting Rider 11 and Rider 13 H



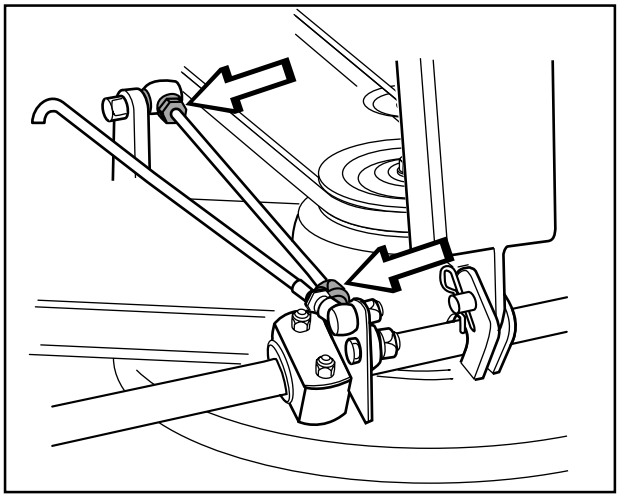
- Remove the front cover and the right-hand fender.
- Vertical adjustment of the mowing deck is made with the adjuster nuts on the back edge of the lift-strut.
- Raise the mowing deck at the front edge by shortening the lift-strut.
  Lower the mowing deck at the front edge by lengthening the lift-strut.
- Tighten the nuts against each other after the adjustment.
- On completion of the adjustment, the deck's parallelism should be re-checked.
- Fit the right-hand fender and the front cover.

2
Adjusting Rider 11 Bio and Rider 13 H Bio



- Remove the front cover and the right-hand fender.
- Unscrew the nut (1) from the parallel strut. Remove the clip (3) and the parallel strut (2).
- Turn the fork anti-clockwise to lower the rear edge of the hood, or clockwise to raise the rear edge of the hood.
- Once adjustment is complete, refit the parallel strut and clip and tighten the nut.
- Recheck the alignment of the cutting unit after adjustment.
- Refit the right-hand fender and hood.

2
Adjusting Rider 14 Pro and Rider 16 H

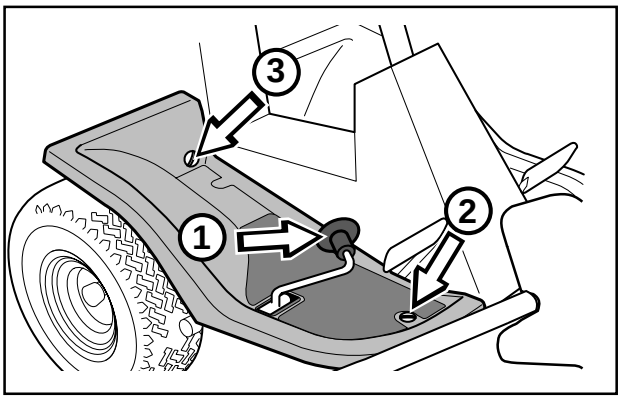


- Remove the front cover and the right-hand fender.
- Undo the nuts on the lift strut.
- Unscrew the strut (anticlockwise) to lower the rear edge of the hood.

  Screw the strut in (clockwise) to raise the rear edge of the hood.
- Tighten the nuts after adjustment.
- On completion of the adjustment the unit’s parallelism should be re-checked.
- Fit the right-hand fender and the front hood.

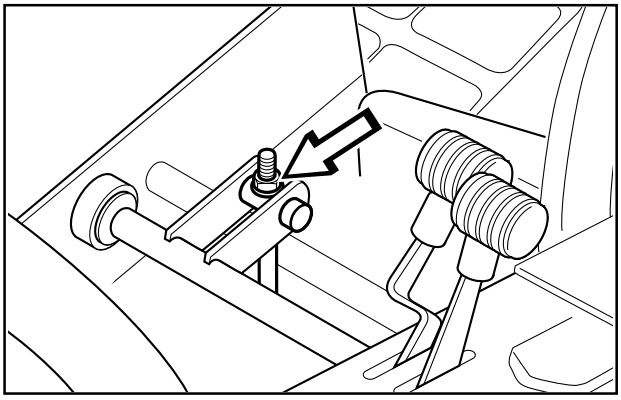
Adjusting cutting height area

1



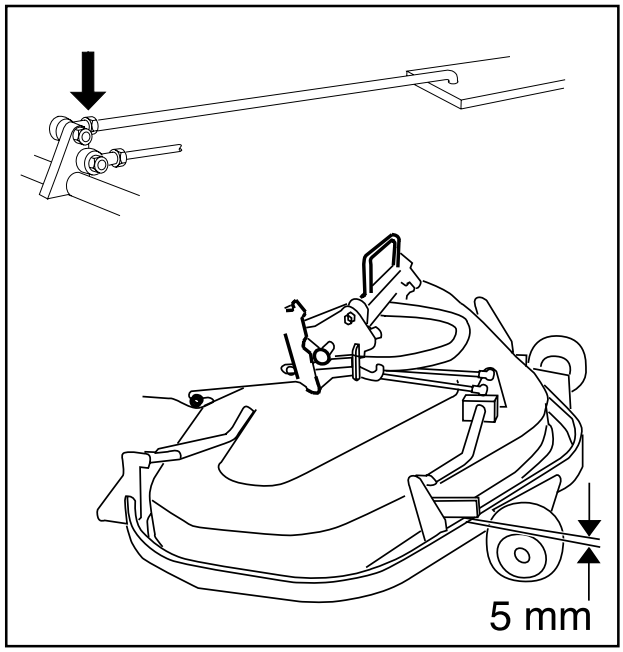
- Remove the right-hand fender.

2



Raise or lower the entire mowing deck by screwing the nuts up or down.
If the highest cutting height is raised by 5 mm the other fixed cutting heights will also be raised by the same amount.

Adjusting cutting height



- Loosen the nuts on the height setting arm.
- Adjust so that the distance between the stop for the lowest height setting and the protective frame is 5 mm.
- Tighten the nuts.
- Check that the parallelism has not changed. If it has changed, the parallelism must be readjusted again.
- Check and adjust the cutting unit's ground pressure as set out (see "Checking and adjusting cutting unit ground pressure") if necessary.
- Fit the nose.

NOTE!
The parallelism and height must be adjusted again when changing the cutting unit.

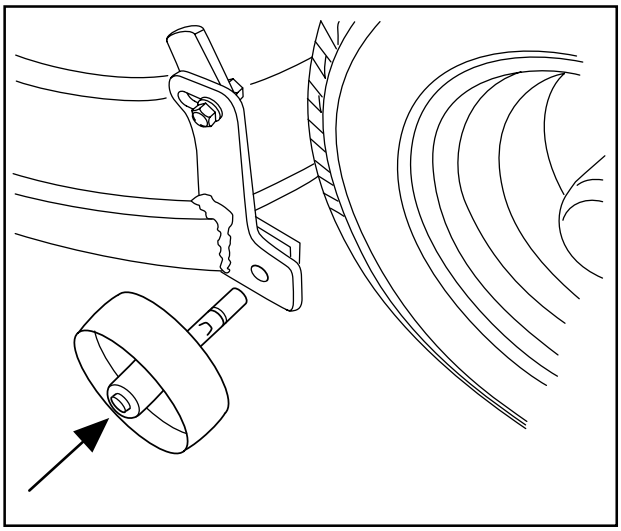
Removing the cutting unit

Rider 11 Bio, Rider 13 H Bio, Rider 14 Pro and Rider 16 H

1

- Apply the parking brake.
- Adjust the cutting height to its lowest setting.
- Remove the front cover.

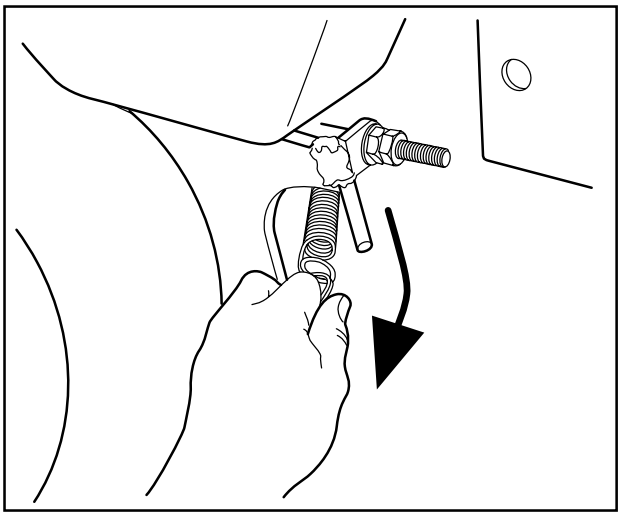
2



Fit the support wheels.

WARNING!
Wear protective glasses when removing the cutting unit. The spring which tensions up the belt can go off and cause personal injury.

3

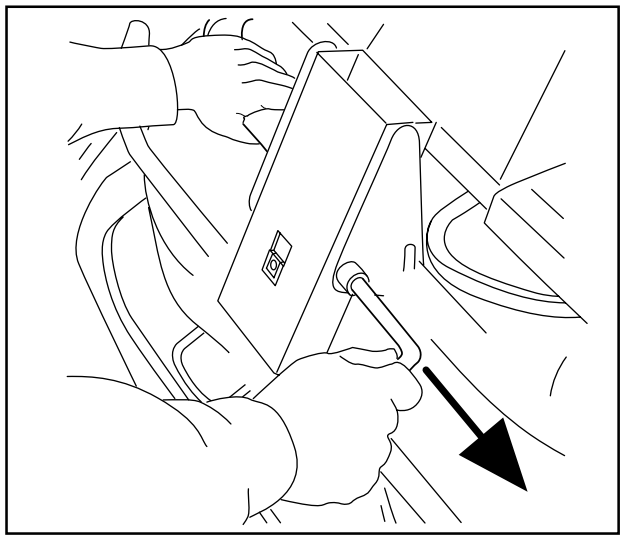


Relieve the tensioning wheel by disconnecting the spring.

4

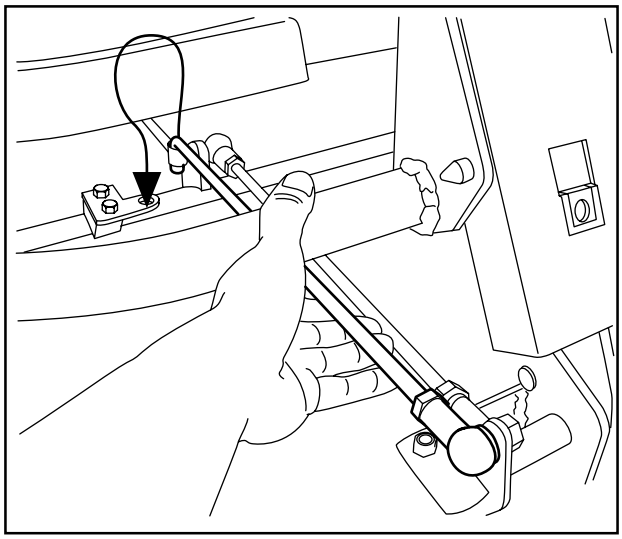
Lift the drive belt off the cutting unit drive pulley.

5



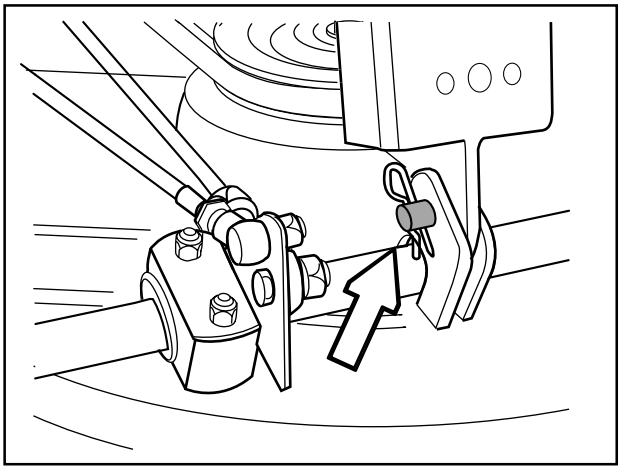
Pull out the pin.

6



Place a foot on the edge of the mowing deck. Raise the front edge of the deck slightly, unhook the height adjustment strut and insert it in the holder.

7



Remove the bolt and pull out the cutting unit.

Dismantling the cutting unit

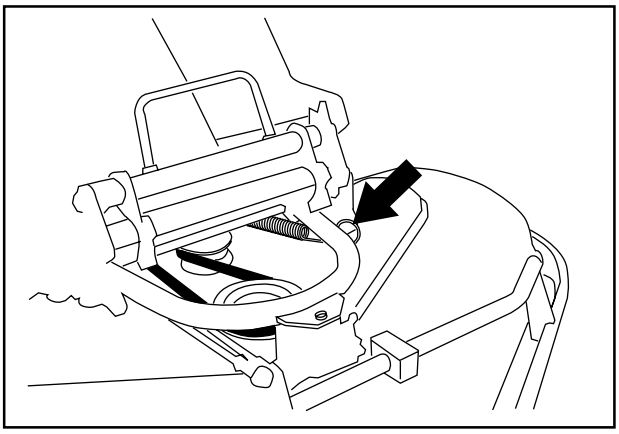
Rider 11 and Rider 13 H

1

- Place the Rider on a level surface.
- Apply the brakes by pressing down the pedal and lock using the pushbutton.
- Lift up the unit using the lifting lever.
- Remove the nose.

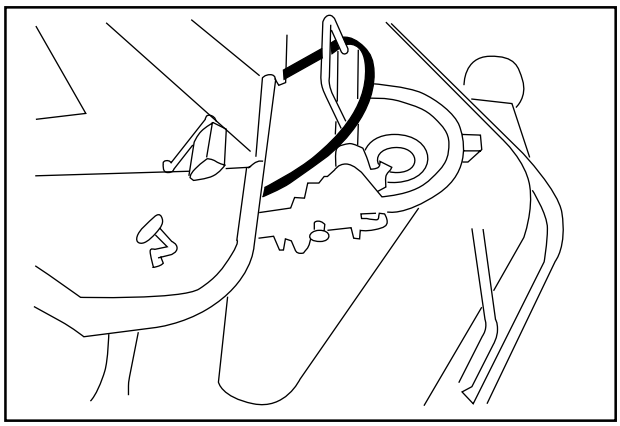
> **WARNING!**
> Wear eye protection and work gloves when working on the mowing deck.

2



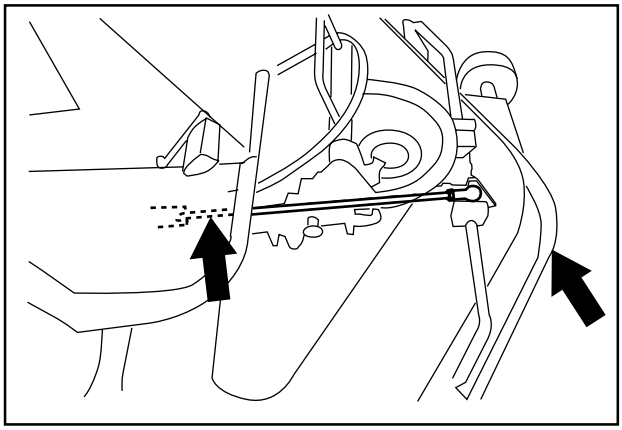
- Remove the belt adjuster's spring.
- Lift off the belt from the belt pulley.
- Hook on the belt adjuster's spring again.

3



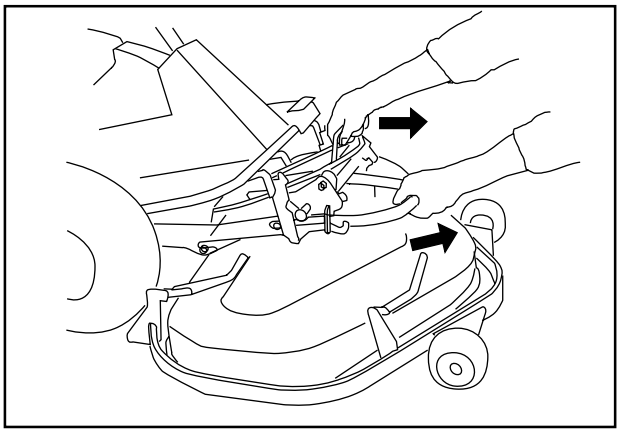
- Hang the belt around the handle.

4



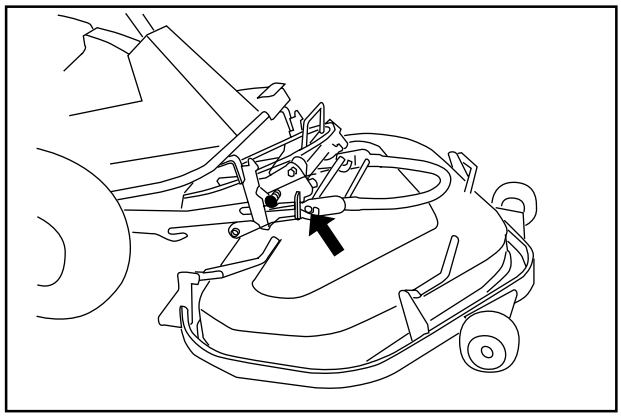
Loosen the height setting arm by moving the rear section upwards. Off-load the arm by pulling the frame's front section upwards.

5



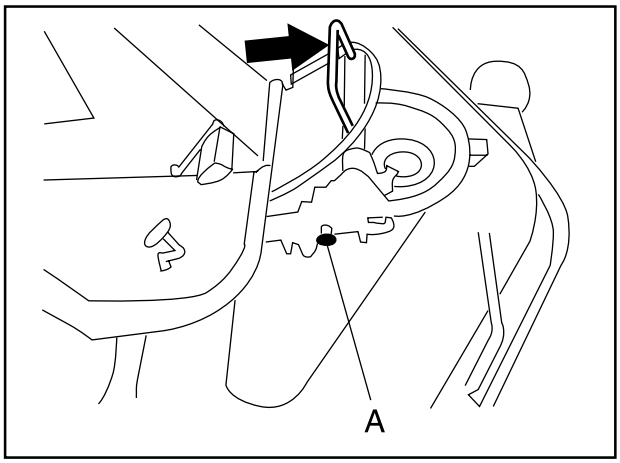
Pull the handle and unit simultaneously. Release the handle when the unit has come out a little.

6



Pull out the unit so that it engages in the outer hooks.
Lower the unit using the lever on the right-hand side of the driver.

7



- Pull the handle so that the hook guard locks.
- Check that the catch (A) is in its loaded position.
- Lift the unit off of the Rider.

Replacing mowing deck belts

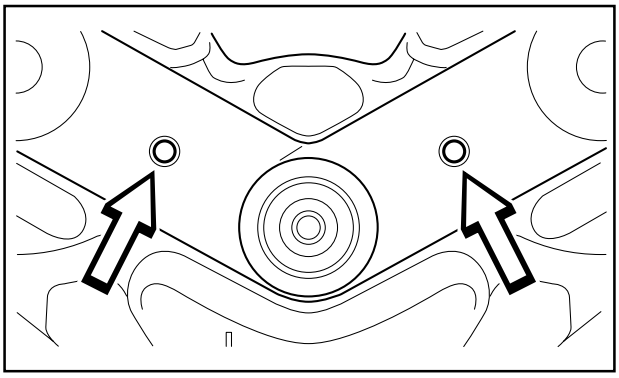
Belt replacement on Bio deck

A Bio deck is driven by two toothed belts that synchronise the rotation of the blades. The belts are located under a cover on the mowing deck. Replace the belts in the following way:

1

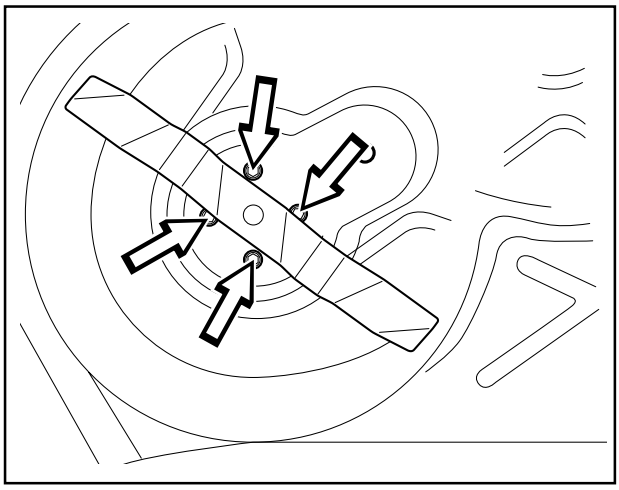
- Remove the cutting deck.
- Remove the front pin/bolt from the parallel strut and swing the strut backwards.

2



Loosen the two bolts holding the protective hood and then lift off the hood.

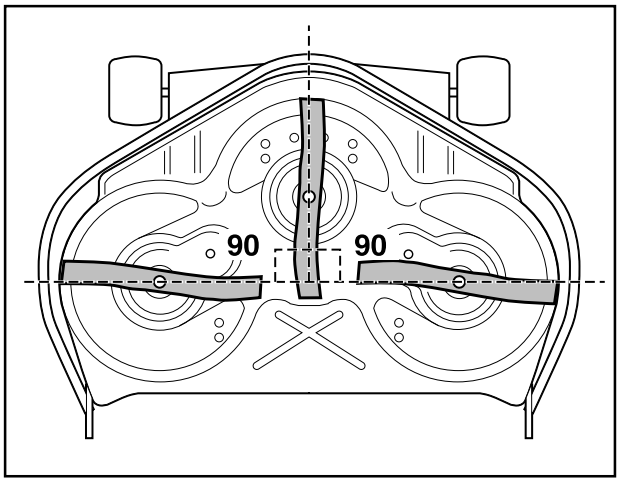
3



- Loosen the nuts on the eccentric plate and turn this away.
- Loosen the four nuts (see diagram) holding the outer blade bearing enough so that the bearing can be moved.
- Slide the blade bearing in towards the centre bearing and pry off the upper belt.
- Repeat the procedure for the lower belt.

WARNING!
Protect your hands by wearing gloves when working with the blades.

4

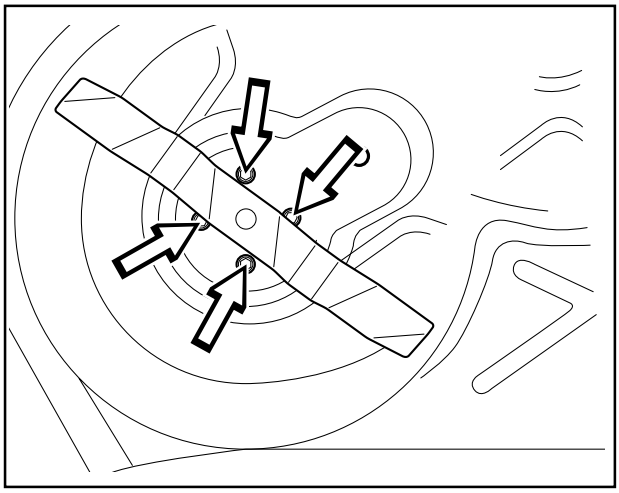


- Assembly: First fit the lower belt and then the upper belt.
- Ensure the blades are positioned as set out in the diagram, at 90 degrees to each other, otherwise the belts must be adjusted. When the blade bearings are loose the belts can be moved around to the next tooth.
- Tighten the nuts enough so that the bearings rest against the cutting hood but still can be moved.

IMPORTANT INFORMATION

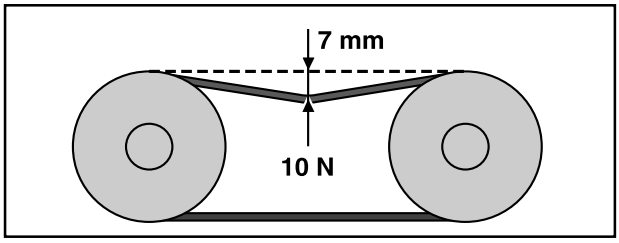
The blades on a Bio unit should be set at 90 degrees to each other. In all other cases the blades can collide and cause serious damage to the cutting unit.

5



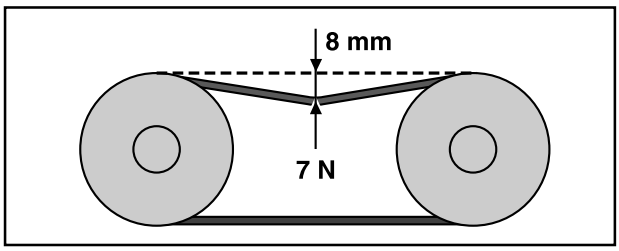
- Tension the belt by turning the eccentric adjuster on top of the cutting hood. Tighten the nut.
- Tighten all nuts on the blade bearings.

Bio 103



- When the belt can be moved 7 mm inwards using a force of 10 N ±2 the belt is adjusted correctly.
- Fit the protective cover over the belts and replace the parallelism arm.

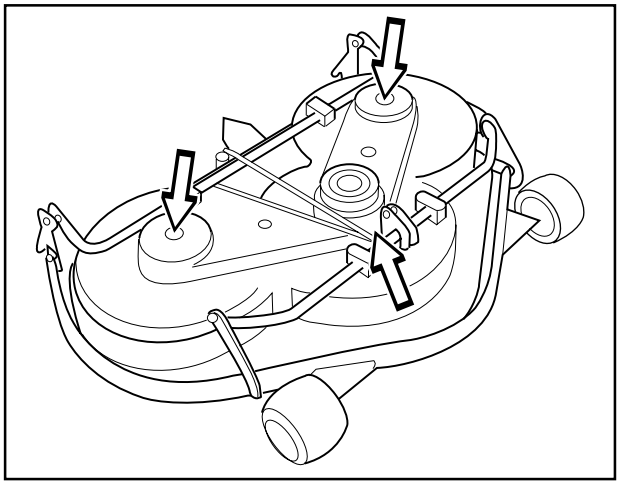
Bio 90



- When the belt can be moved 8 mm inwards using a force of 10 N ±2 the belt is adjusted correctly.
- Fit the protective cover over the belts and replace the parallelism arm.

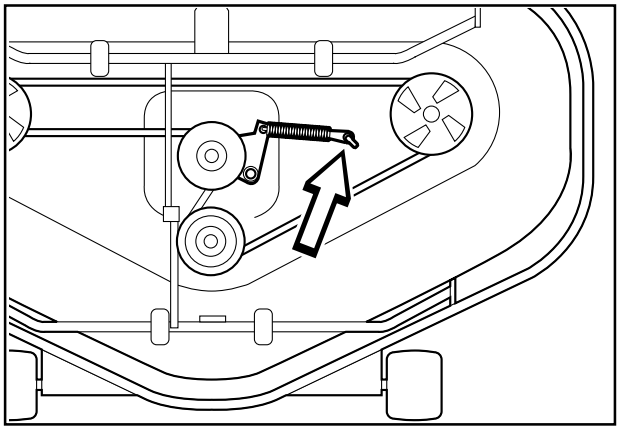
Belt replacement on cutting unit's with side or rear ejectors

1



- Remove the cutting unit.
- Remove the bolt holding the parallel strut and the two screws on the deck.

2



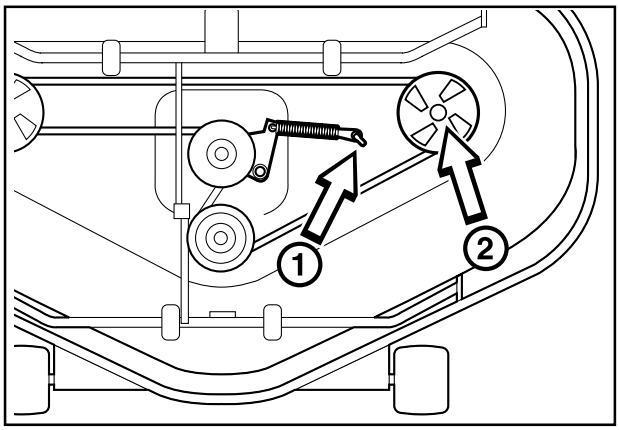
Cutting units with side or rear ejectors are powered by *one* V-belt. Proceed as follows to replace the V-belt:

- Loosen the spring that tensions the V-belt and pry off the belt.
- To fit a new belt, follow the instructions above in the reverse order.

Removal of blades with bearings

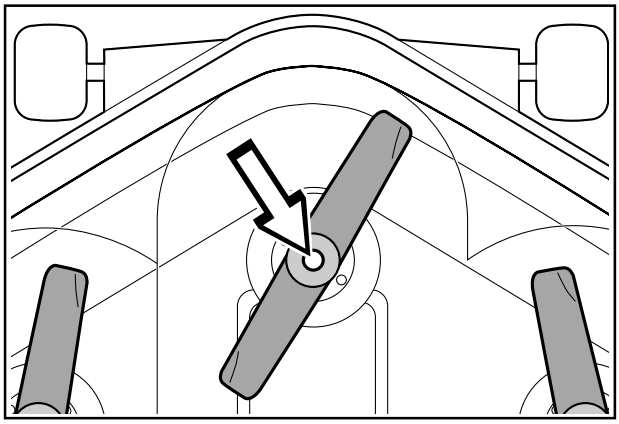
WARNING!
When working with the mowing deck, use protective glasses and gloves.

1



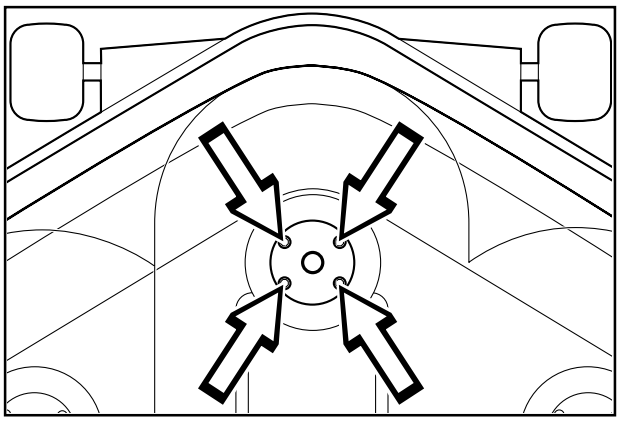
- Release the spring which tensions the V-belt and twist off the belt.
- Unscrew the screw which holds the pulley (2) and detach the pulley, a puller may be needed for this. Do not lose the key which is found between the pulley and the axle.

2



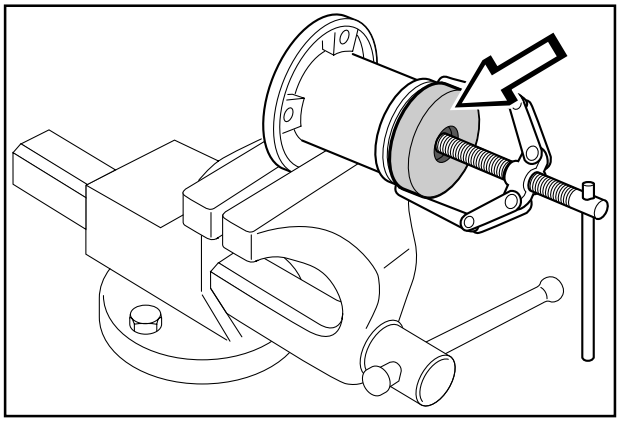
Unscrew the screw which holds the blade and remove the screw, washer and blade.

3



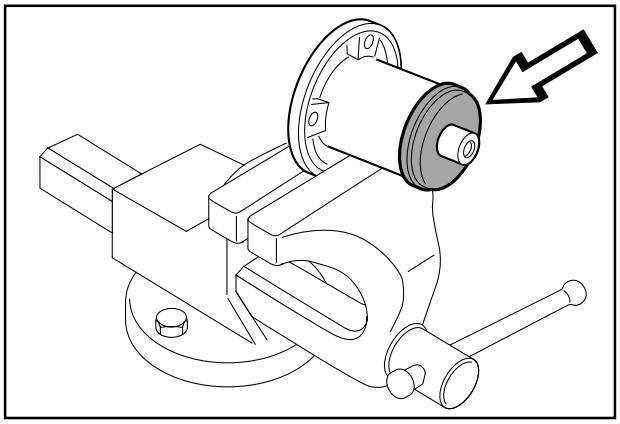
Unscrew the four screws which hold the blade bearing and remove the entire bearing packet from the mowing deck.

4



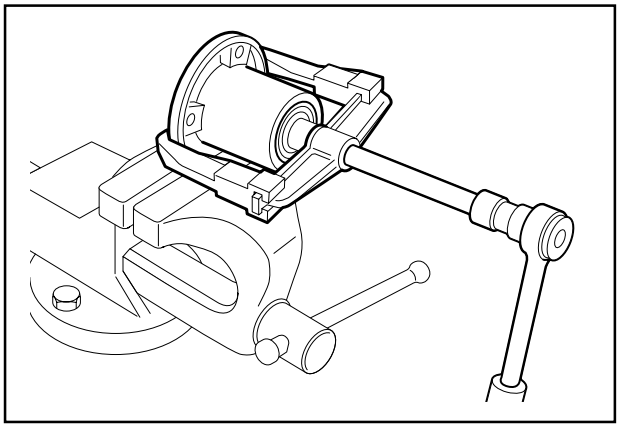
Remove the hub using a puller. Do not lose the key which is found between the pulley and the axle.

5



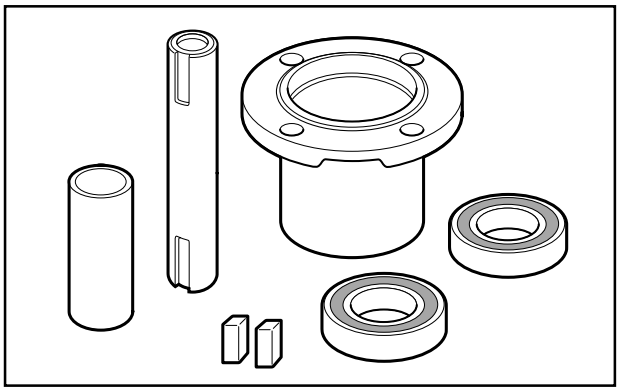
Remove the sheet metal safety washer.

6



- Press out the axle with a puller.
- Knock out the bearings and remove the spacer.

7



The entire packet can be bought as a complete set with axle housing, axle, spacer and bearing.

Model	Outer bearing	Middle bearing
Rider 11	506 53 34-01	506 53 34-02
Rider 13 H	506 75 11-01	506 75 11-04
Rider 16 H	506 75 11-05	506 75 11-04
Rider 14 Pro	506 75 11-05	506 75 11-04

Installation is carried out in the reverse removing order. Ensure that the axle is fixed in the same direction as it was removed, if not the keys will not fit into the key-way.

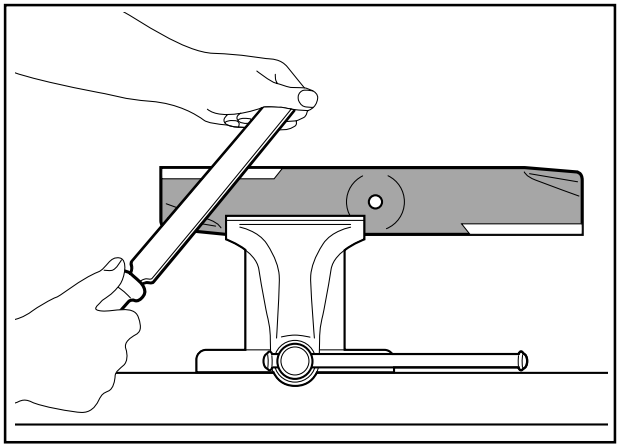
Tighten the blade bearings to a torque of 20–25 Nm.

IMPORTANT INFORMATION

When screwing on the blade axle screws, the transmission side should always be screwed first and then the blade screws.

Grinding and balancing of blades

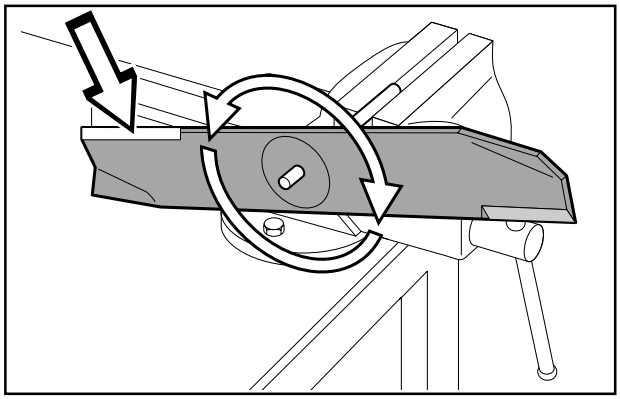
1



WARNING!
When working with the blades, use protective gloves.

- Remove the blades according to the decription in the previous section.
- Clamp the blade in a screw vice and file it so that it becomes sharp.

2



Balance the blade as follows:

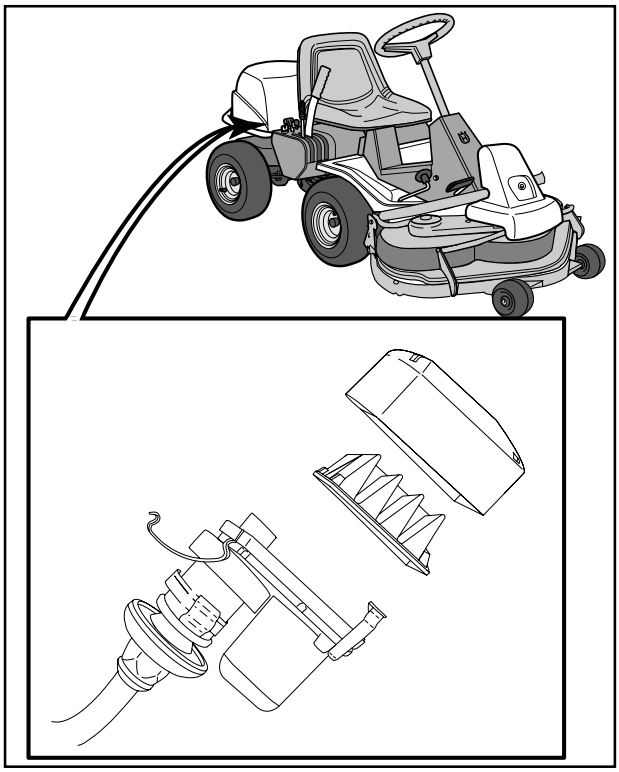
- Fix, for example, a mandrel horizontally in a screw vice according to the diagram.
- Push the blade onto the mandrel via the hole in the centre of the blade and check that the blade balances evenly. The diagram shows a blade which needs to be adjusted, it must be ground further to obtain the correct balance (at the arrow).
- Installation is carried out in the reverse removing order.

IMPORTANT INFORMATION

When the blades are removed from a Bio 90 cutting unit the spring washer that is fitted between the blades and the nut must be replaced.

Pulse air valve intake filter

Cleaning the filter



Pulse air valves are fitted to Rider 14 Pro

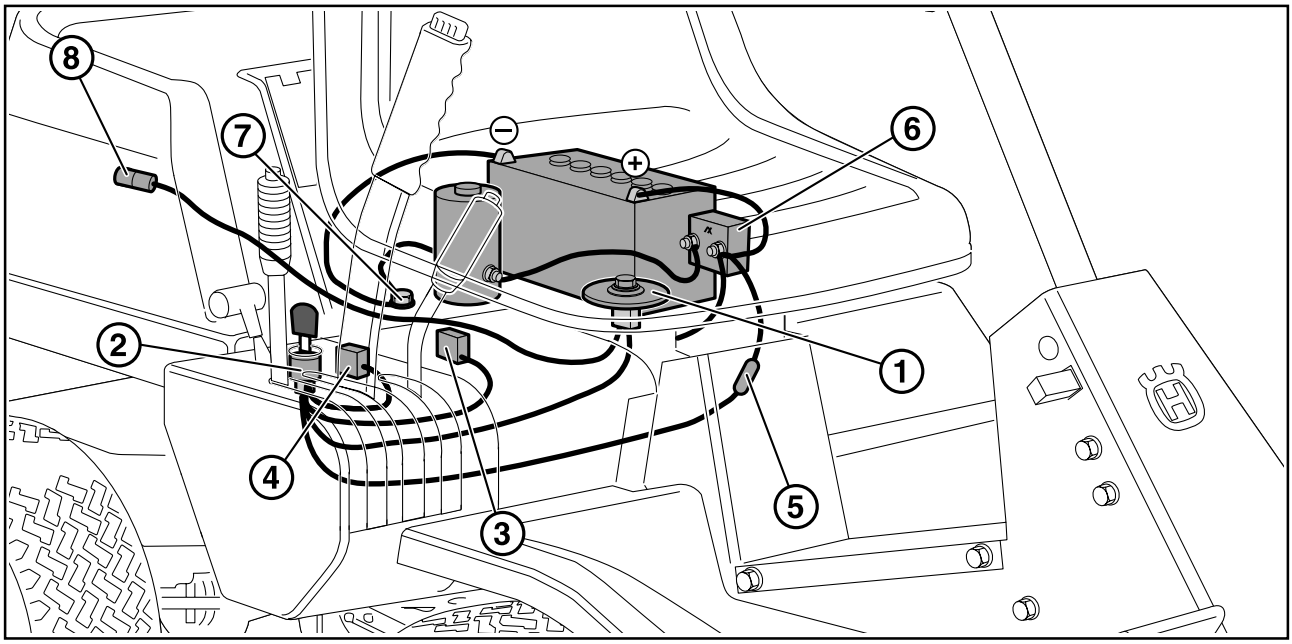
- Loosen the two rubber straps and lift off the engine hood.
- Loosen the four quick-action clips and lift off the cover and remove the filter.
- Blow out the filter using compressed air.
- Replace the filter in the cover and secure the cover using the quick-action clips. Replace the engine hood.

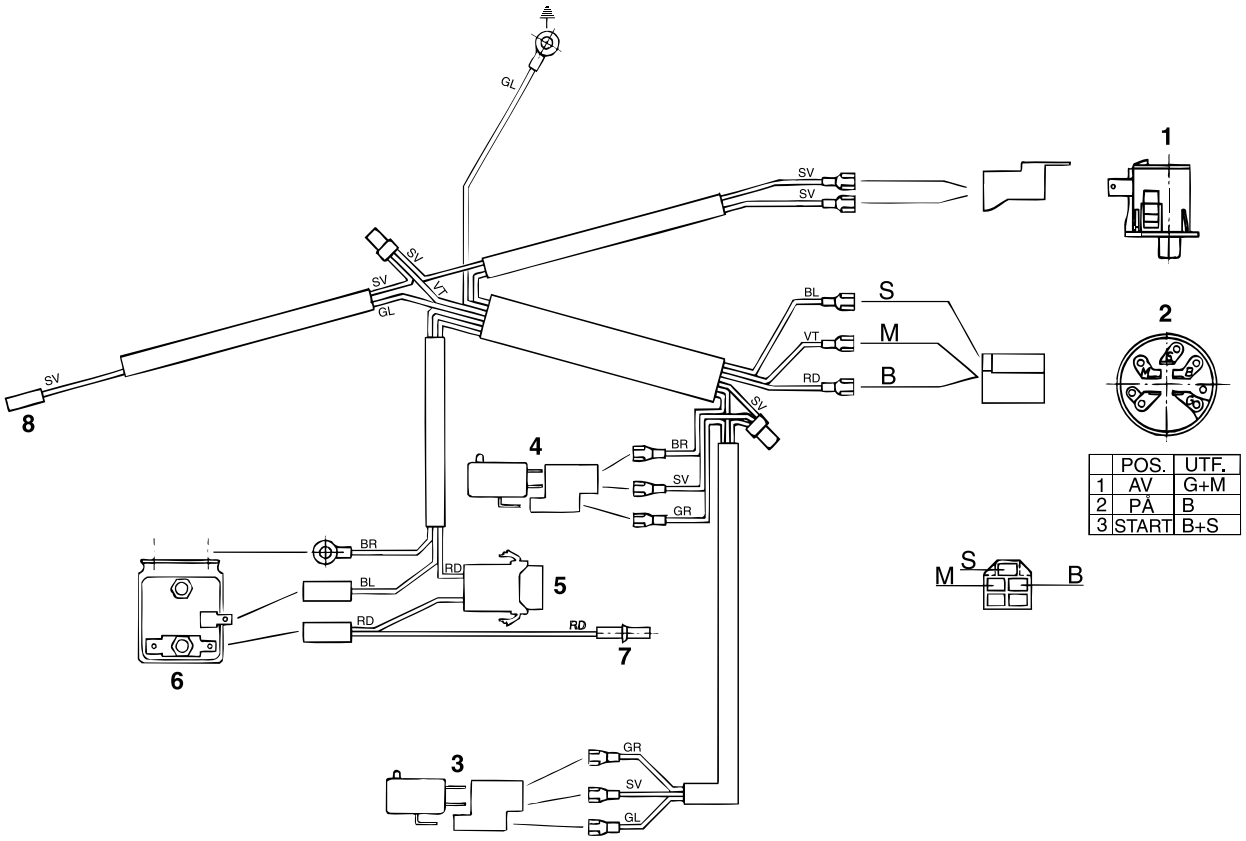
TROUBLE SHOOTING SCHEDULE

Problem	Procedure
Engine will not start.	• Fuel tank empty. • Plugs defective. • Plug connections defective. • Dirt in carburettor or fuel pipe.
Starter does not pull round engine.	• Battery flat. • Bad contact between cables and battery terminals. • Lift lever for cutting unit in wrong position. • Main fuse blown. The fuse is located in front of the battery under the battery cover. • Ignition lock faulty. • Brake not engaged • Gear shift/hydrostat pedal not in neutral.
Engine does not run smoothly.	• Plugs defective. • Carburettor incorrectly set. • Air filter clogged. • Fuel tank vent blocked. • Ignition setting defective. • Dirt in fuel pipe.
Engine seems to have no power.	• Air filter clogged. • Plug defective. • Dirt in carburettor or fuel pipe. • Carburettor incorrectly set.
Engine overheats.	• Engine overloaded. • Air intake or cooling flanges blocked. • Fan damaged. • Too little or no oil in engine. • Ignition defective. • Plugs defective.
Battery does not charge.	• One or more cells in the battery faulty. • Bad contact between battery terminals and cables.
Machine vibrates.	• Blades are loose. • Engine is loose. • Imbalance on one or more blades, resulting from damage or inferior balancing after sharpening.
Uneven mowing.	• Blades blunt. • Cutting unit set skew. • Long or wet grass. • Grass blockage under hood. • Different tyre pressures on right and left sides. • Over-speeding • Drive belts slipping.

Electrical system

Circuit diagram Rider 11 and Rider 11 Bio



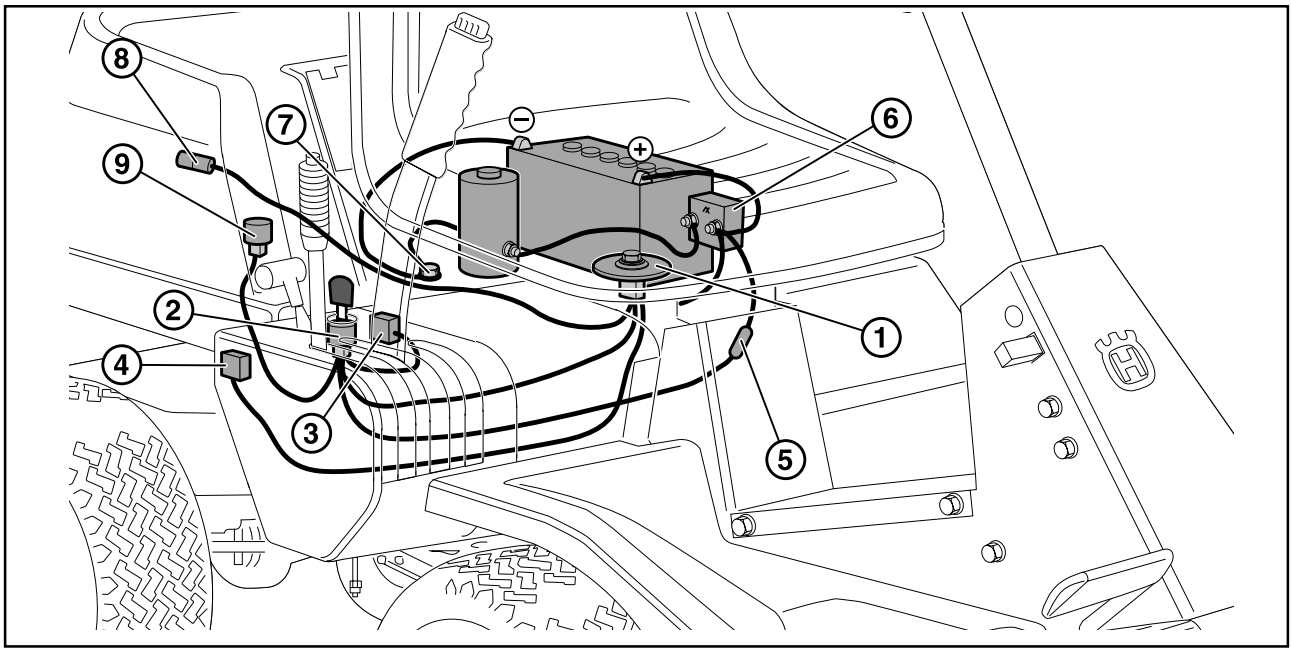


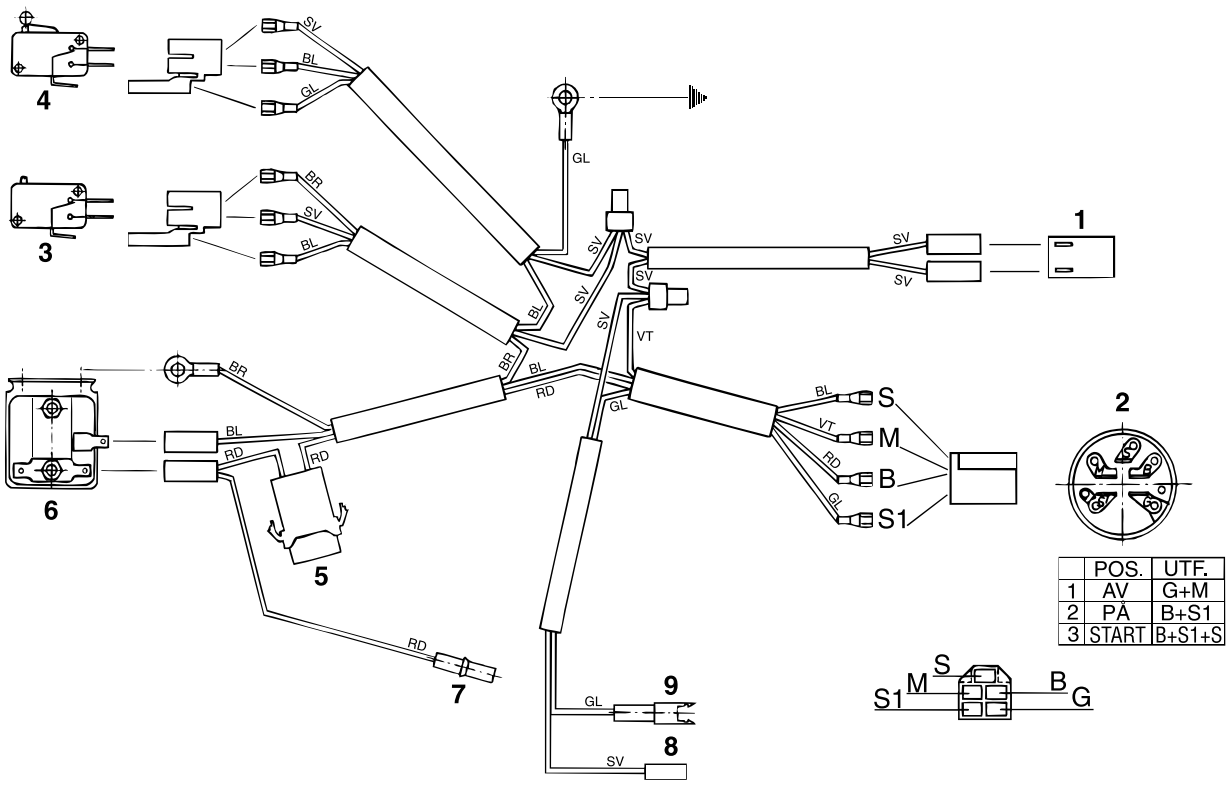
1. Microswitch, seat
2. Ignition lock
3. Microswitch, lifting lever
4. Microswitch, gear position
5. Fuse 15A
6. Starter relay
7. Engine/charging
8. Engine/stop

Key to colour abbreviations in the electrical system

SV = Black
RD = Red
BR = Brown
BL = Blue
VT = White
GR = Green

Circuit diagram Rider 13 H, Rider 13 H Bio and Rider 16 H



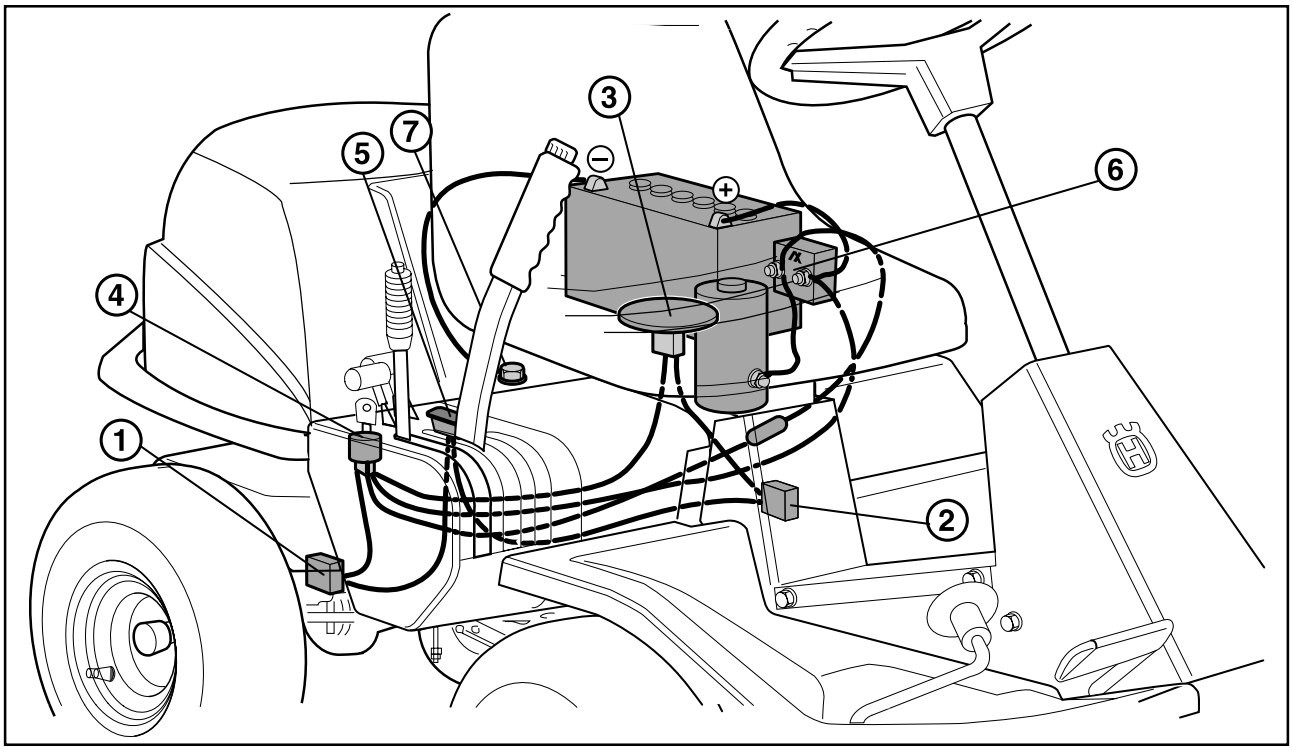


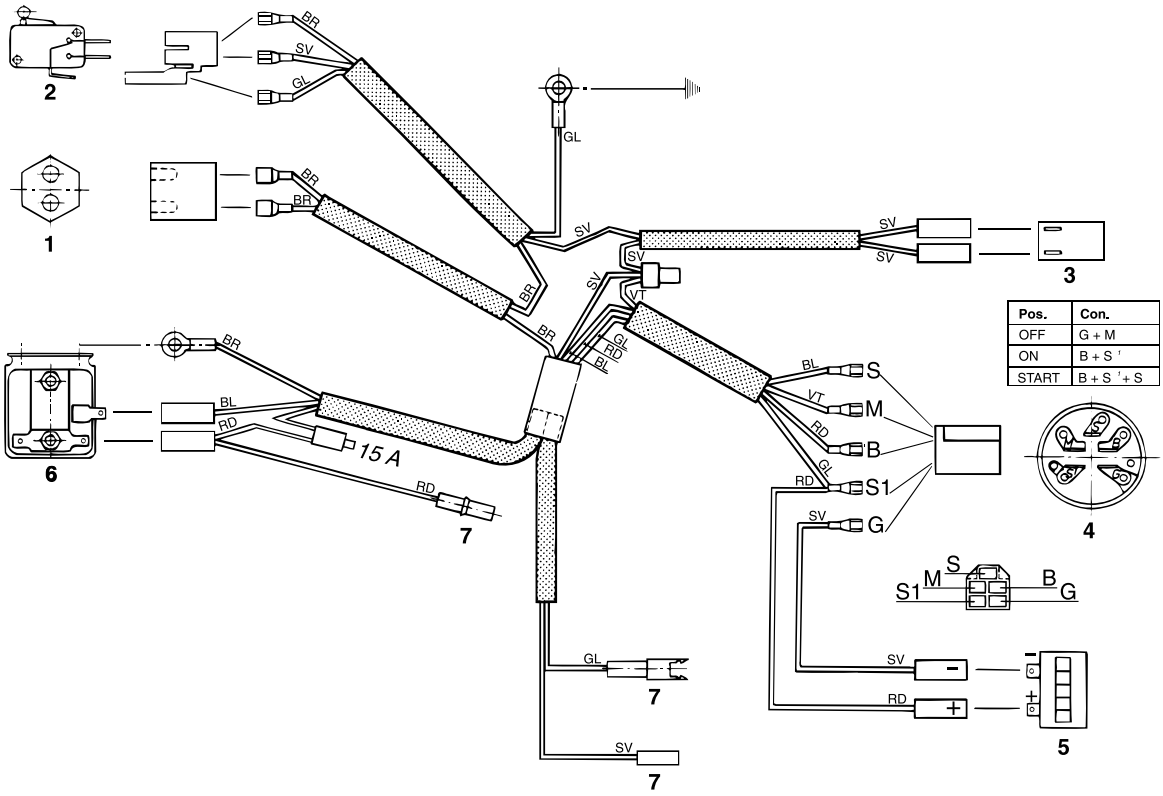
1. Microswitch, seat
2. Ignition lock
3. Microswitch, lifting lever
4. Microswitch, gear position
5. Fuse 15A
6. Starter relay
7. Engine/charging
8. Engine/stop
9. Engine/fuel valve, not on Rider 13 H/13 H Bio

Key to colour abbreviations in the electrical system

SV = Black
RD = Red
BR = Brown
BL = Blue
VT = White
GL = Yellow, not on Rider 13 H/13 H Bio

Circuit diagram Rider 14 Pro





1. Brake switch, hydrostatic transmission
2. Microswitch, mowing deck
3. Microswitch, seat
4. Ignition lock
5. Timing unit
6. Starter relay
7. Engine

Key to colour abbreviations in the electrical system

RD = Red
BL = Blue
VT = White
SV = Black
GL = Tellow
BR = Brown