

LH52

Small Diameter Mower Unit

Service Manual

Serial No. LH52 : 10001-

BARONESS[®]
Quality on Demand

Ver.1.0

Introduction

This document outlines maintenance procedures, fault diagnosis and other details for the Baroness product. Details have been categorized systematically in accordance with the main types of maintenance.

For repairs, please contact your sales dealer or Kyoisha.

For information on operation, handling and maintenance instructions, please refer to the Baroness Owner's Operating Manual.

Refer to the Parts Catalog for required parts.

Kyoisha Co., Ltd.


Suitable Baroness Main Vehicles

Baroness Main Vehicles that can be equipped with Small Diameter Mower Units are listed below.


	LH52	Remarks
LM551	○	
LM551A	○	

Warning Symbols

This manual uses the following warning symbols for handling precautions that are important for your safety.

 <small>696cq5-001</small>	Warning symbol
<p>This symbol indicates the articles regarding “Danger,” “Warning,” or “Caution.” Those articles describe important safety precautions and so read them carefully to understand completely before operating the machine.</p> <p>Failure to adequately follow these safety precautions may cause an accident.</p>	
<p>⚠ Danger</p> <p>This symbol indicates that serious injury or death will occur if the warning is ignored.</p>	
<p>⚠ Warning</p> <p>This symbol indicates that serious injury or death may occur if the warning is ignored.</p>	
<p>⚠ Caution</p> <p>This symbol indicates that injury or damage to property may occur if the warning is ignored.</p>	
<p>Important</p> <p>This symbol indicates precautions on the mechanism of the machine.</p>	

Maintenance Precautions

 Caution

The information described in this manual is subject to change for improvement without prior notice.

When replacing parts, be sure to use genuine Baroness parts or parts designated by Kyoisha.

Note that the Baroness product warranty may not apply to defects caused by the use of parts from other companies.

Refer to the following manual when servicing this product.

- Baroness Owner's Operating Manual
- Baroness Service Manual

Refer to the Parts Catalog for parts.

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Safety

Failure to adequately follow these safety precautions may cause an accident resulting in injury or death.

Danger

This product is designed to ensure safe operation and has been tested and inspected thoroughly before shipment from the factory. The product is equipped with safety devices to prevent accidents.

However, whether the product demonstrates its original performance level depends on the manner in which it is operated and handled, as well as the manner in which it is managed on a daily basis.

Inappropriate use or management of the product may result in injury or death.

Observe the following safety instructions to ensure safe operation.

Safety Precautions

Read Safe Operating Practices described in the Owner's Operating Manual of Baroness main vehicle equipped with this mower unit thoroughly.

Safety Signs and Instruction Signs

About Safety Decals and Instruction Decals

Important

Safety decals and instruction decals are attached to this mower unit.

Make sure that decals are preserved in their entirety. If they are damaged, become dirty, or peel off, replace them with new ones.

Part numbers for decals that need to be replaced are listed in the parts catalog. Order them from a Baroness dealer or Kyo-eisha.

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Disposal

Disposal

Recycle and Waste Disposal

About Recycle

Recycling battery etc. is recommended for environmental conservation and economical use of resources.

It may be required by local laws.

About the Waste disposal

Make sure that waste generated when servicing or repairing the machine is disposed of in accordance with local regulations. (e.g. waste oil, antifreeze, rubber products, and wires etc.)

Maintenance standards and maintenance

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Maintenance standards and maintenance

Unit conversion

Inch-millimeter conversion table

1 mm = 0.03937 in

1 in = 25.4 mm

Fractions		Decimals	mm	Fractions		Decimals	mm
	1/64	0.015625	0.397		33/64	0.515625	13.097
	1/32	0.03125	0.794		17/32	0.53125	13.494
	3/64	0.046875	1.191		35/64	0.546875	13.891
1/16		0.0625	1.588	9/16		0.5625	14.288
	5/64	0.078125	1.984		37/64	0.578125	14.684
	3/32	0.09375	2.381		19/32	0.59375	15.081
	7/64	0.109275	2.778		39/64	0.609375	15.478
1/8		0.1250	3.175	5/8		0.6250	15.875
	9/64	0.140625	3.572		41/64	0.640625	16.272
	5/32	0.15625	3.969		21/32	0.65625	16.669
	11/64	0.171875	4.366		43/64	0.671875	17.066
3/16		0.1875	4.762	11/16		0.6875	17.462
	13/64	0.203125	5.159		45/64	0.703125	17.859
	7/32	0.21875	5.556		23/32	0.71875	18.256
	15/64	0.234375	5.953		47/64	0.734375	18.653
1/4		0.2500	6.350	3/4		0.7500	19.050
	17/64	0.265625	6.747		49/64	0.765625	19.447
	9/32	0.28125	7.144		25/32	0.78125	19.844
	19/64	0.296875	7.541		51/64	0.796875	20.241
5/16		0.3125	7.938	13/16		0.8125	20.638
	21/64	0.328125	8.334		53/64	0.828125	21.034
	11/32	0.34375	8.731		27/32	0.84375	21.431
	23/64	0.359375	9.128		55/64	0.859375	21.828
3/8		0.3750	9.525	7/8		0.8750	22.225
	25/64	0.390625	9.922		57/64	0.890625	22.622
	13/32	0.40625	10.319		29/32	0.90625	23.019
	27/64	0.421875	10.716		59/64	0.921875	23.416
7/16		0.4375	11.112	15/16		0.9375	23.812
	29/64	0.453125	11.509		61/64	0.953125	24.209
	15/32	0.46875	11.906		31/32	0.96875	24.606
	31/64	0.484375	12.303		63/64	0.984375	25.003
1/2		0.5000	12.700	1		1.000	25.400

Maintenance standards and maintenance

US unit-SI unit conversion table

To Convert			Into		Multiply By
Linear Measurement	Miles	mi	Kilometers	km	1.609
	Yards	yd	Meters	m	0.9144
	Feet	ft	Meters	m	0.3048
	Feet	ft	Centimeters	cm	30.48
	Inches	in	Meters	m	0.0254
	Inches	in	Centimeters	cm	2.54
	Inches	in	Millimeters	mm	25.4
Area	Square Miles	mile ²	Square Kilometers	km ²	2.59
	Square Feet	ft ²	Square Meters	m ²	0.0929
	Square Inches	in ²	Square Centimeters	cm ²	6.452
	Acre	ac	Hectare	ha	0.4047
Volume	Cubic Yards	yd ³	Cubic Meters	m ³	0.7646
	Cubic Feet	ft ³	Cubic Meters	m ³	0.02832
	Cubic Inches	in ³	Cubic Centimeters	cm ³	16.39
Weight	Tons (Short)	sh tn	Metric Tons	ton	0.9078
	Pounds	lb	Kilograms	kg	0.4536
	Ounces (Avdp.)	oz	Grams	g	28.3495
Pressure	Pounds/Sq. In.	psi	Kilopascal	kPa	6.895
	Pounds/Sq. In.	psi	Bar	mdyn/cm ²	0.069
Work	Foot-pounds	lb-ft	Newton-Meters	N-m	1.356
	Foot-pounds	lb-ft	Kilogram-Meters	kgf-m	0.1383
	Inch-pounds	lb-in	Kilogram-Centimeters	kgf-cm	1.152144
Liquid Volume	Quarts	qt (US)	Liters	L	0.9463
	Gallons	gal (US)	Liters	L	3.785
Liquid Flow	Gallons/Minute	gal/min	Liters/Minute	L/min	3.785
Temperature	Fahrenheit	°F	Celsius	°C	1. Subtract 32 ° 2. Multiply by 5/9

Maintenance standards and maintenance

Maintenance standards

List of Maintenance Specifications

Item	Specified Value	Remarks
Adjustment of Cutter Spring	50.0 mm (1.97 in)	Spring coil length
Front roller spring clearance	1.0 - 3.0 mm (0.039 - 0.118 in)	Front roller spring length
Front roller Assy total length	593.5 mm (23.366 in)	Front roller Assy total length adjustment
CR brush drive belt (type with only CR brush installed) tension adjustment	10.0 N (1.0 kgf) 5.0 - 6.0 mm (0.197 - 0.236 in)	Slack when the belt is pressed lightly by finger around the center section between the belt pulleys
Adjustment of CR brush	0 - 1.0 mm (0 - 0.039 in)	Brush and rear roller clearance
Front scraper adjustment	2.0 - 3.0 mm (0.079 - 0.118 in)	Scraper and roller outer diameter surface clearance
Rear scraper adjustment	1.0 - 2.0 mm (0.039 - 0.079 in)	Scraper and roller clearance
Reel cutter usage limit (outer dimensions)	118 mm (4.65 in)	Replace if below standard values

Maintenance standards and maintenance

Tightening torques

Important

Refer to the Tightening Torque table.
Note that the Baroness product warranty may not apply to defects caused by incorrect or overtorque tightening, etc.

Standard tightening torques

Bolts and Nuts

Important

A number of bolts are used in each part of this machine.
Be sure to re-tighten the bolts and nuts, because they may be loosened at the earlier stage of the use.

As to the bolts and nuts without any special instruction, tighten them in appropriate tightening torque with proper tool.

Too much tightening may cause the looseness or damage of the screw.

The strength of tightening is determined by types of screws, strength, the friction of thread face or base face and others.

The table below is for the galvanized or parkerized bolts.

In case that the strength of internal thread is weak, it is not applied.

Do not use rusty or sand attached "screw."

Otherwise, it may cause insufficient tightening even if you apply the specified tightening torque.

The friction of the screw face becomes higher and the tightening torque is canceled out by the friction, therefore sufficient tightening cannot be applied.

If "screw" is wet by water or oil, do not tighten it with normal tightening torque.

If the screw is wet, the torque coefficient will get smaller and it may result in too much tightening.


Too much tightening may cause looseness by the screw stretched or result in damage.

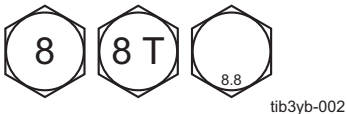
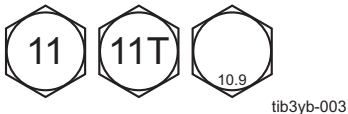
Do not use a bolt experienced too much burden.

Using the impact wrench requires the skill.

Do exercise as much as possible for steady tightening.

Maintenance standards and maintenance

Nominal diameter	General bolt		
	Strength classification 4.8		
			
	N-m	kgf-cm	lb-in
M5	3 - 5	30.59 - 50.99	26.55 - 44.26
M6	7 - 9	71.38 - 91.77	61.96 - 79.66
M8	14 - 19	142.76 - 193.74	123.91 - 168.17
M10	29 - 38	295.71 - 387.49	256.68 - 336.34
M12	52 - 67	530.24 - 683.20	460.25 - 593.02
M14	70 - 94	713.79 - 958.52	619.57 - 831.99
M16	88 - 112	897.34 - 1142.06	778.89 - 991.31
M18	116 - 144	1,182.85 - 1,468.37	1,026.72 - 1,274.54
M20	147 - 183	1,498.96 - 1,866.05	1,301.10 - 1,619.73
M22	295	3,008.12	2,611.05
M24	370	3,772.89	3,274.87
M27	550	5,608.35	4,868.05
M30	740	7,545.78	6,549.74

Nominal diameter	Heat-treated bolt					
	Strength classification 8.8			Strength classification 10.9		
						
	N-m	kgf-cm	lb-in	N-m	kgf-cm	lb-in
M5	5 - 7	50.99 - 71.38	44.26 - 61.96	7 - 10	71.38 - 101.97	61.96 - 88.51
M6	8 - 11	81.58 - 112.17	70.81 - 97.36	14 - 18	142.76 - 183.55	123.91 - 159.32
M8	23 - 29	234.53 - 295.71	203.57 - 256.68	28 - 38	285.52 - 387.49	247.83 - 336.34
M10	45 - 57	458.87 - 581.23	398.30 - 504.51	58 - 76	591.43 - 774.97	513.36 - 672.68
M12	67 - 85	683.20 - 866.75	593.02 - 752.34	104 - 134	1,060.49 - 1,366.40	920.50 - 1186.03
M14	106 - 134	1,080.88 - 1,366.40	938.21 - 1,186.03	140 - 188	1,427.58 - 1,917.04	1,239.14 - 1,663.99
M16	152 - 188	1,549.94 - 1,917.04	1,345.35 - 1,663.99	210 - 260	2,141.37 - 2,651.22	1,858.71 - 2,301.26
M18	200 - 240	2,039.40 - 2,447.28	1,770.20 - 2,124.24	280 - 340	2,855.16 - 3,466.98	2,478.28 - 3,009.34
M20	245 - 295	2,498.27 - 3,008.12	2,168.50 - 2,611.05	370 - 450	3,772.89 - 4,588.65	3,274.87 - 3,982.95
M22	-	-	-	530	5,404.41	4,691.03
M24	-	-	-	670	6,831.99	5,930.17
M27	-	-	-	1,000	10,197.00	8,851.00
M30	-	-	-	1,340	14,628.78	11,860.34

Note:

The same values are applied to "fine screw thread."

Maintenance standards and maintenance

Principal tightening torques

Tightening Torque by Model

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Tighten the following bolts and nuts at the torque specified in the table.

For thread locking adhesive, apply a middle strength thread locker (ThreeBond 1322 or equivalent anaerobic sealant).

Location	Code	Part name	Tightening torque			Thread locking adhesive
			N-m	kgf-cm	lb-in	
Bed knife	K0071000222	SCREW, HT FLAT HEAD M6-12	7 - 9	71.38 - 91.77	61.96 - 79.66	-

Maintenance standards and maintenance

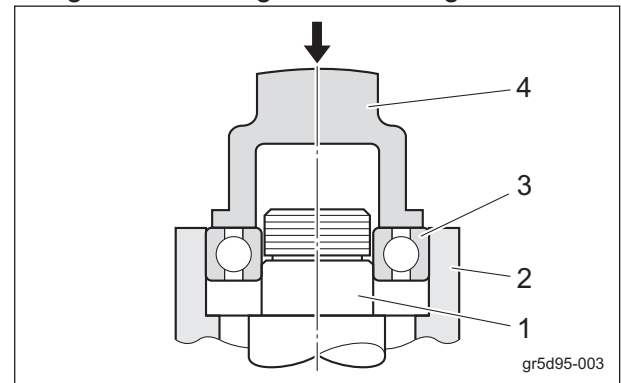
General precautions

Bearing

The bearing is a precision machine part. Handle the bearing in an appropriate work environment so that dust does not enter the interior, and be extremely careful not to subject the bearing to strong impact. To install the bearing correctly, use a bearing driver.

1	Housing
2	Bearing
3	Bearing driver

- When pressing the bearing into the shaft and housing evenly, apply pressure evenly with the bearing driver in contact with the inner ring and outer ring of the bearing.



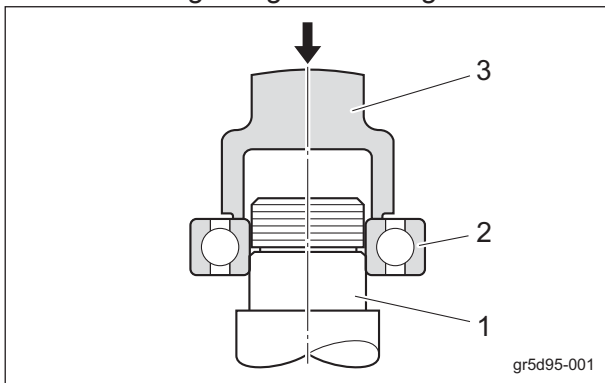
Bearing_003

1	Shaft
2	Housing
3	Bearing
4	Bearing driver

⚠ Caution

Be careful not to hit your hand with a hammer etc.

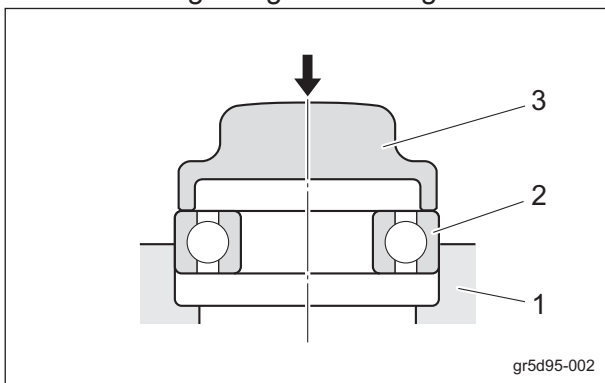
- When pressing the bearing into the shaft, apply pressure evenly around the inner ring of the bearing using the bearing driver.



Bearing_001

1	Shaft
2	Bearing
3	Bearing driver

- When pressing the bearing into the housing, apply pressure evenly around the outer ring of the bearing using the bearing driver.



Bearing_002

Maintenance standards and maintenance

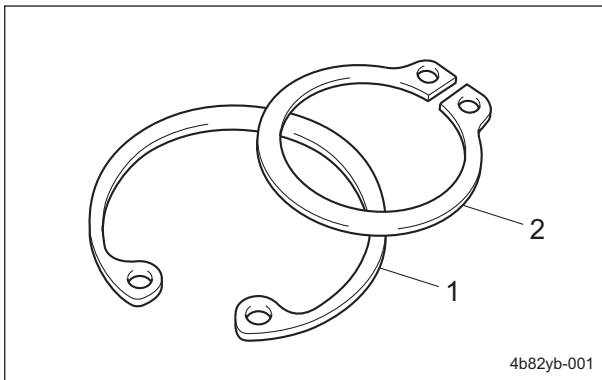
Stop Ring

⚠ Caution

When installing the stop ring to a hole or a shaft, the stop ring may become disengaged from the dedicated pliers, fly off, and cause injury. Take extra precautions to ensure that the stop ring does not become disengaged from the pliers.

⚠ Caution

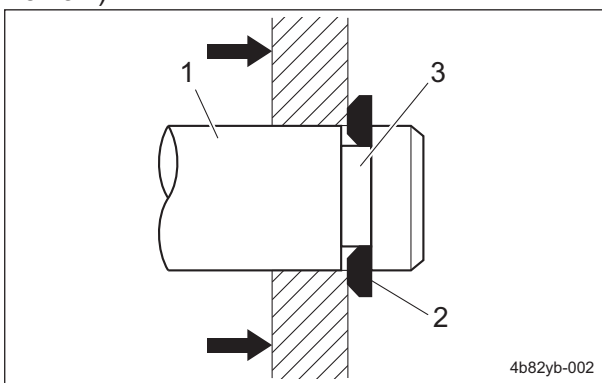
When installing the stop ring to a hole or shaft, do not contract or expand the stop ring more than necessary. Excessive contraction or expansion of the stop ring may cause increased deformation, which may lead to play and disengagement from the groove.



Stop Ring_001

1	Stop ring for hole
2	Stop ring for shaft

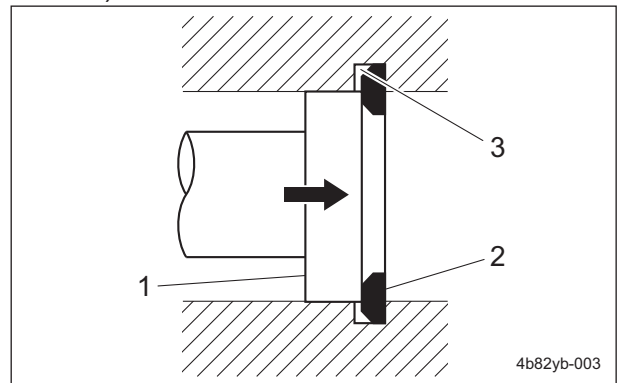
1. When installing the stop ring for a shaft, assemble the stop ring so that the sharp edge side receives the load (indicated by an arrow).



Stop Ring_002

1	Shaft
2	Stop ring (sharp edge side)
3	Stop ring groove

2. When installing the stop ring for a hole, assemble the stop ring so that the sharp edge side receives the load (indicated by an arrow).



Stop Ring_003

1	Shaft
2	Stop ring (sharp edge side)
3	Stop ring groove

Maintenance standards and maintenance

Greasing

About Greasing

Since there may be adhesion or damage due to lack of grease on moving parts, they must be greased.

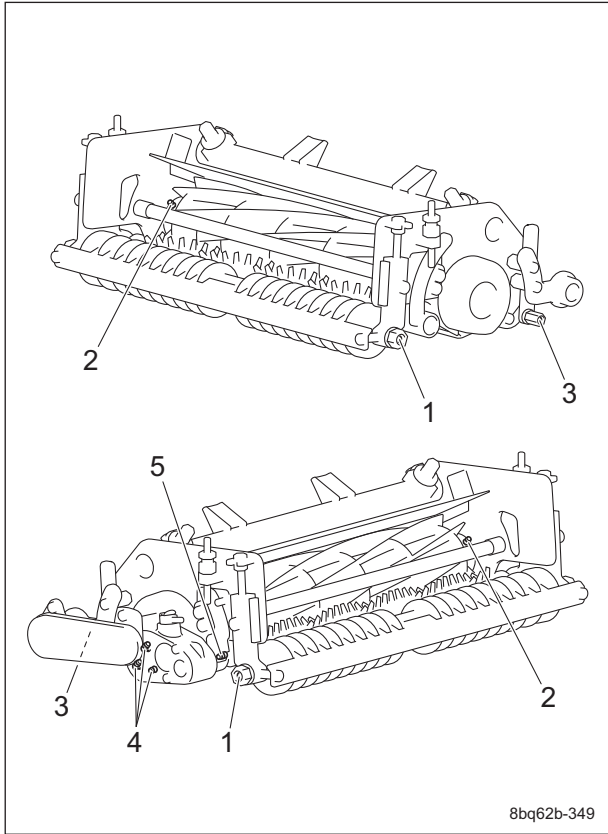
Add urea-based No. 2 grease in accordance with the Maintenance Schedule.

Other locations where the specified grease or lubricant is used are indicated in "Greasing Points".

Add grease using the specified grease or lubricant.

Greasing Points

Grease nipples are installed in the following locations.



Greasing Points_001

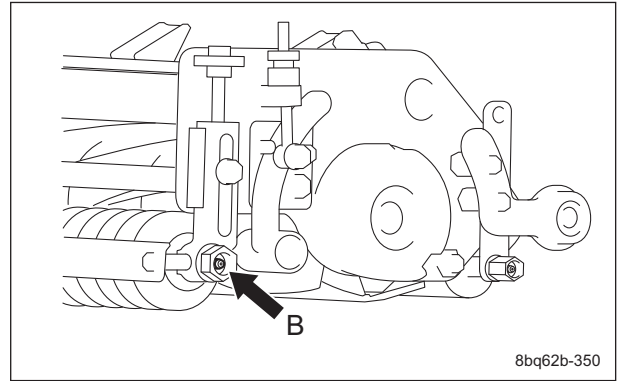
	Location	No. of greasing points	Greasing period	
1	Front roller shaft	2	-	B
2	Reel housing	2	-	B
3	Rear roller shaft	2	-	B
4	Groomer case	3	A	-
5	Groomer shaft	1	-	B

Add grease to A every 10 hours and B every 50 hours.

1. Front roller shaft

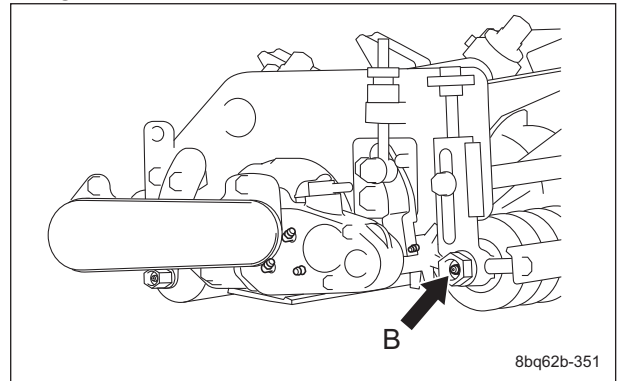
There is one point each on the left and right of the front roller shaft.

Left end of front roller



Greasing Points_002

Right end of front roller

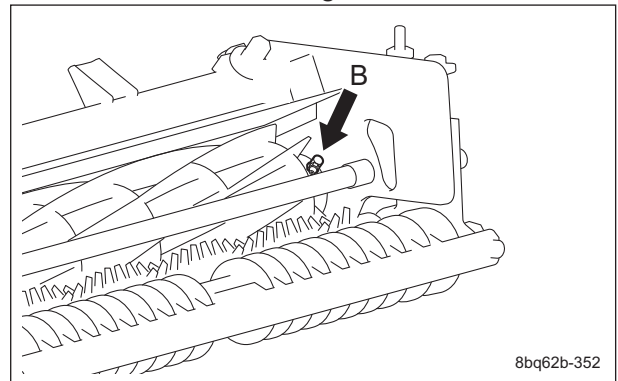


Greasing Points_003

2. Reel housing

There is one point each on the left and right of the reel housing.

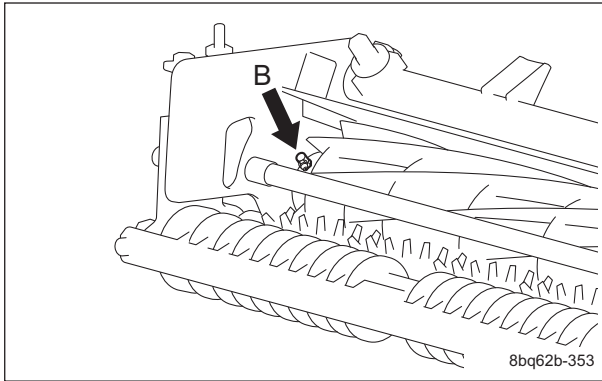
Left end of reel housing



Greasing Points_004

Maintenance standards and maintenance

Right end of reel housing

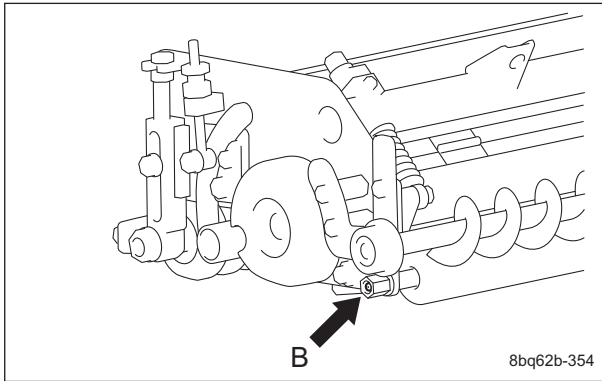


Greasing Points_005

3. Rear roller shaft

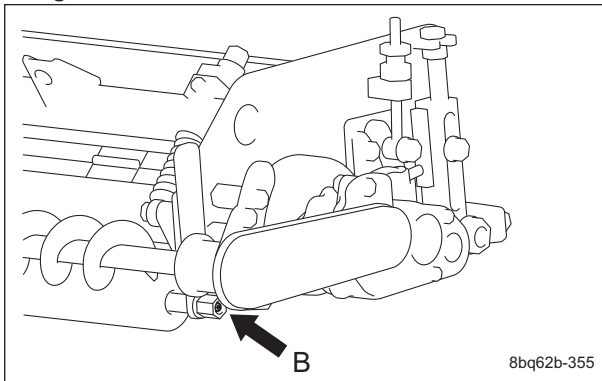
There is one point each on the left and right of the rear roller shaft.

Left end of rear roller



Greasing Points_006

Right end of rear roller



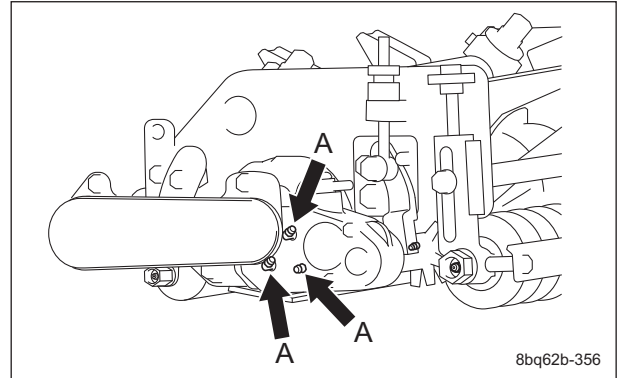
Greasing Points_007

4. Groomer case

Note:

Depending on the specifications, this function may not be available.

There are three points on the groomer case.



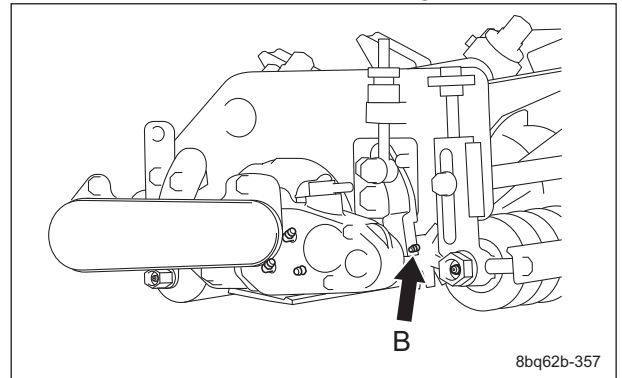
Greasing Points_008

5. Groomer shaft

Note:

Depending on the specifications, this function may not be available.

There is one point beside the groomer case.



Greasing Points_009

Maintenance

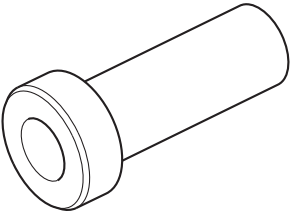
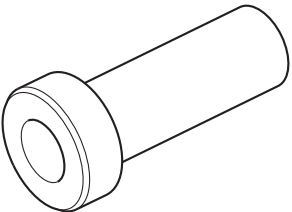
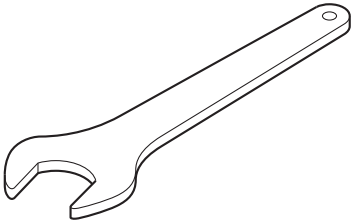
About Maintenance

This chapter describes primary checking and maintenance operations for this machine. For information on daily checks, maintenance and handling of the machine, please refer to the separate Owner's Operating Manual and Parts Catalog of this machine.

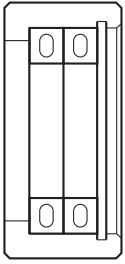
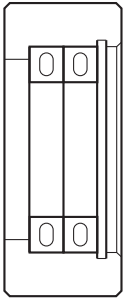
Maintenance standards and maintenance

Special Tool

List of Special Tools

<p>6205 Bearing driver</p>  <p style="text-align: right;">q9c6v6-009</p>	<p>K4802000822</p>	<p>Used when installing bearings with outer $\varnothing 52$ and inner $\varnothing 25$.</p>
<p>6303 Bearing driver</p>  <p style="text-align: right;">q9c6v6-009</p>	<p>K4802000752</p>	<p>Used when installing bearings with outer $\varnothing 47$ and inner $\varnothing 17$.</p>
<p>46 Single head wrench</p>  <p style="text-align: right;">q9c6v6-032</p>	<p>K480200081D</p>	<p>Used to disassemble or assemble the front roller.</p>

Maintenance standards and maintenance

<p>Holder Assy φ52</p>  <p>q9c6v6-051</p>	<p>LH52---9001Z0</p>	<p>Used when mounting the reel cutter in the grinding machine. Holder outer diameter φ52</p>
<p>Holder Assy φ60</p>  <p>q9c6v6-052</p>	<p>LH52---9003Z0</p>	<p>Used when mounting the reel cutter in the grinding machine. Holder outer diameter φ60</p>

Maintenance standards and maintenance

Maintenance standards and maintenance

Adjustment

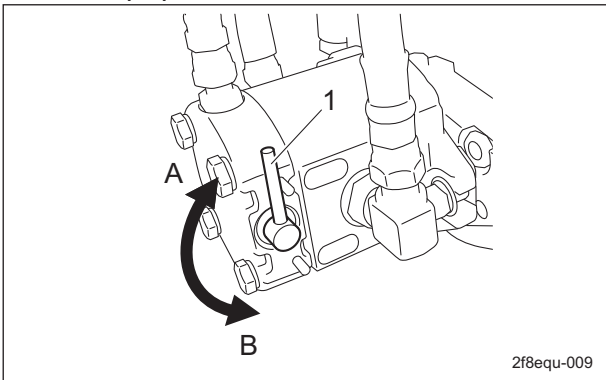
Adjustment of Blade Engagement

⚠ Danger
Firmly apply the parking brake before adjustment work.

⚠ Caution
Do not adjust with any other persons.

⚠ Caution
When handling the reel cutter or bed knife, wear gloves to protect your hands. Pay attention not to let the reel cutter catch your gloves while rotating it. Otherwise, you may injure your hand or fingers.

1. Stop the engine.
2. Set the reel rotation/stop switching lever to the "Stop" position.



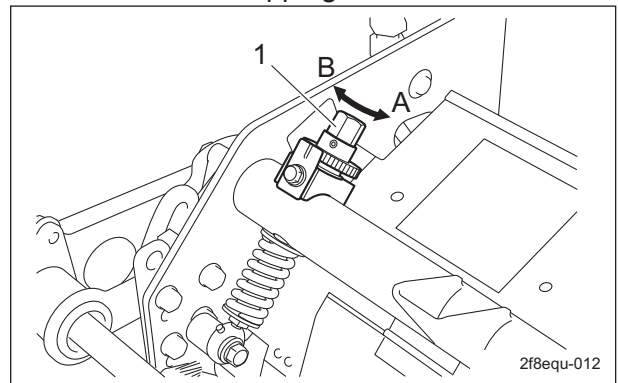
Adjustment of Blade Engagement_001

1	Reel rotation/stop switching lever
A	Rotation
B	Stop

3. With the cutter adjustment nut, adjust the engagement between the reel cutter and the bed knife so that newspaper (two to three sheets) will be cut by the edge of both blades when the blades in their entirety come slightly into contact with each other.

4. Insert two or three strips of newspaper into the space between the reel cutter and the bed knife at an angle of 90 degrees. Then, rotate the reel cutter counterclockwise (as seen from the left side of the mower unit) by hand to check the sharpness. Check the sharpness along the entire reel cutter surface (around 3 to 4 positions).

- If there is clearance along the edge
Loosening the cutter adjustment nut increases contact between the reel cutter and bed knife.
- If the reel cutter is stiff and does not rotate easily
Tightening the cutter adjustment nut decreases contact between the reel cutter and bed knife.
- If cutting is not possible even with adjustment
Perform back lapping on the reel cutter.



Adjustment of Blade Engagement_002

1	Cutter adjustment nut
A	Loosen
B	Tighten

Maintenance standards and maintenance

Adjustment of Cutting Height

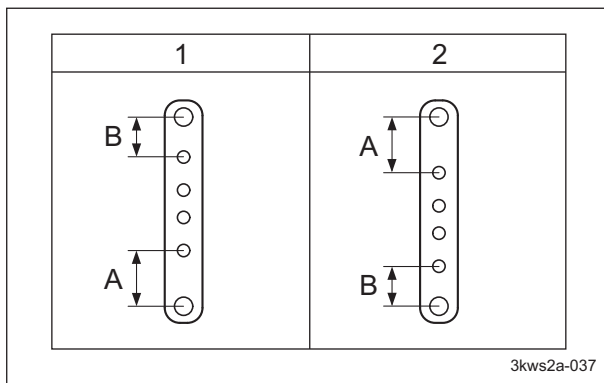
Adjustment of Rear Roller

The rear roller can be adjusted to 4 levels. Install the rear roller to the position with a cutting height range that is suitable for the required operation.

Important

The installation orientation of the roller bracket differs depending on the set cutting height.

- For a cutting height between 5.0 - 14.0 mm, install the roller bracket in the low cutting orientation.
- For a cutting height between 7.0 - 20.0 mm, install the roller bracket in the high cutting orientation.

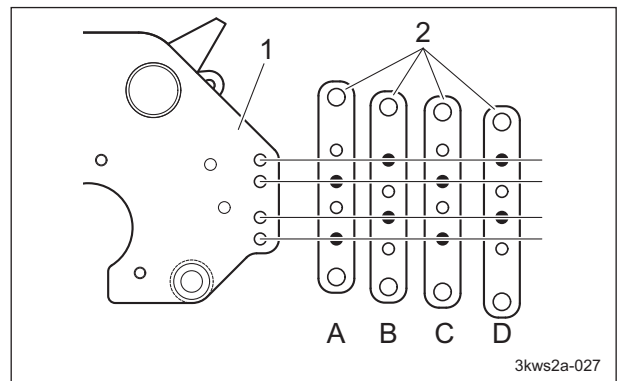


Adjustment of Rear Roller_001

1	High cutting orientation
2	Low cutting orientation
A	Long
B	Short

Important

The illustration below shows the installation holes on the frame and the roller bracket installation hole bolt positions. Install the bolts in the correct installation hole positions.

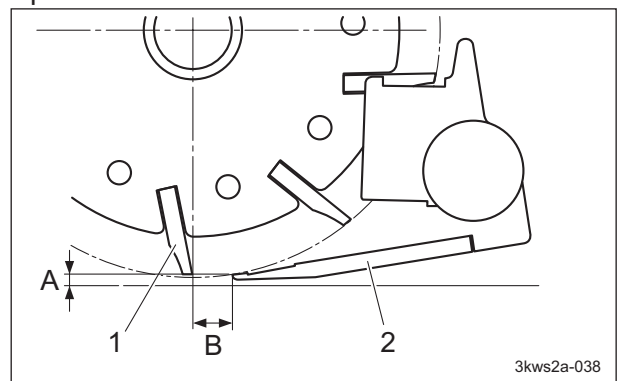


Adjustment of Rear Roller_002

1	Frame
2	Roller bracket
A	5.0 - 10.0 mm (0.197 - 0.394 in)
B	5.0 - 14.0 mm (0.197 - 0.551 in)
C	7.0 - 16.0 mm (0.276 - 0.630 in)
D	12.0 - 20.0 mm (0.472 - 0.787 in)

Note:

When the same cutting height is used, the difference between A and B settings results in B having a longer offset distance than A. The offset distance refers to the horizontal distance from the reel cutter center line to the tip of the bed knife.



Adjustment of Rear Roller_003

1	Reel cutter
2	Bed knife
A	Cutting height
B	Offset distance

Maintenance standards and maintenance

The same goes for settings B and C and settings C and D.
 If the roller bracket is not installed in a position in the desired cutting height range, follow the steps below to install the rear roller.

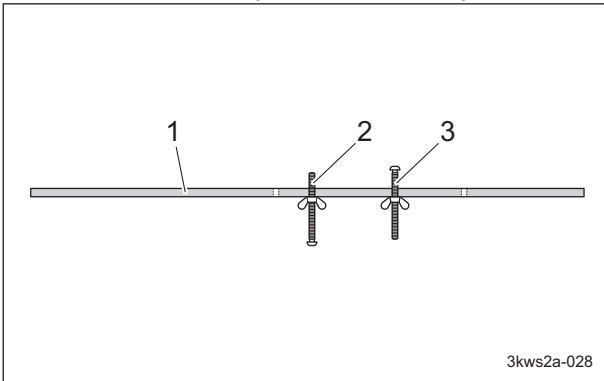
1. Remove the rear roller.
2. Position the left and right roller brackets in the orientation and at the installation holes for the desired cutting height, and then install them.
3. Install the rear roller.

Adjustment of Front Roller

Important

For adjustment, be sure to use the cutting height gauge so that the right and left sides can be parallel.

1. Attach the rear roller within the cutting height range at a position that suits your work requirements.
2. Set the slide caliper to the required cutting height, adjust the position of the bottom of the head of the small screw for cutting height setup in the cutting height gauge, and then securely lock it with a fly nut.



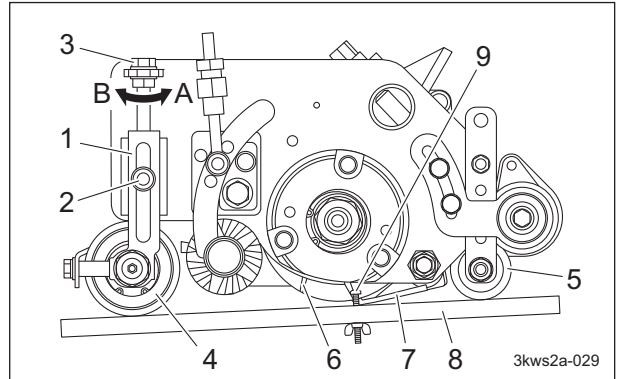
Adjustment of Front Roller_001

1	Cutting height gauge
2	Small screw for groomer setup
3	Small screw for cutting height setup

3. Loosen the nuts of the left and right front roller brackets.
4. Position the cutting height gauge against the front roller and rear roller at the edge on the left and right sides of the mower unit.

5. Adjust the cutting height with the left and right cutting height bolts on the front roller brackets.

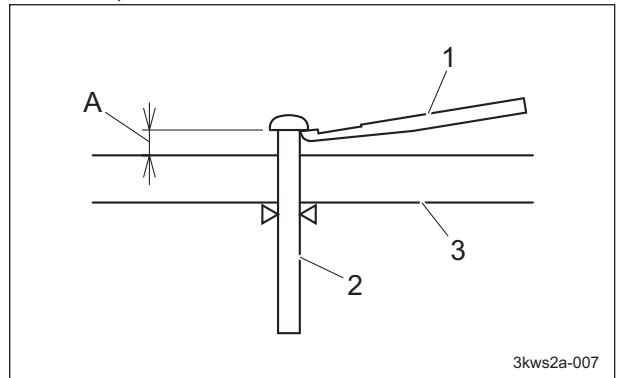
- To increase the cutting height:
Turn the cutting height bolt in direction A to lower the front roller.
- To decrease the cutting height:
Turn the cutting height bolt in direction B to raise the front roller.



Adjustment of Front Roller_002

1	Front roller bracket
2	Nut
3	Cutting height bolt
4	Front roller
5	Rear roller
6	Reel cutter (Cutting cylinder)
7	Bed knife (bottom blade)
8	Cutting height gauge
9	Small screw for cutting height setup

6. Move the front roller up or down with the cutting height bolt to position the front roller so that there is no gap between the cutting edge and the small screw for cutting height setup in the cutting height gauge at the left and right edges of the bed knife (bottom blade).



Adjustment of Front Roller_003

Maintenance standards and maintenance

1	Bed knife (bottom blade)
2	Small screw for cutting height setup
3	Cutting height gauge
A	Cutting height

- Follow the same steps to adjust the cutting height on the opposite side.
- Tighten the nuts that secure the left and right front roller brackets to secure them firmly.
- Again, make sure that the cutting height is set at the required position by positioning the cutting height gauge against the front roller and rear roller at the edge on the left and right sides of the mower unit.

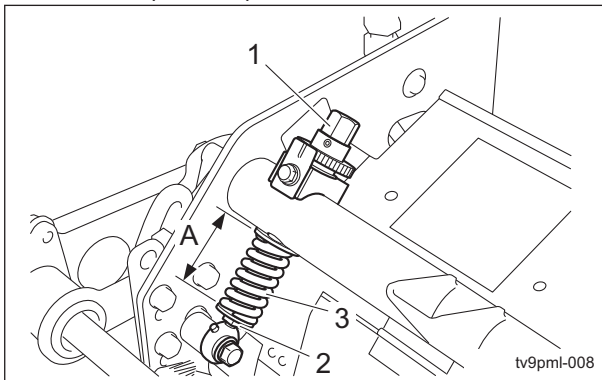
Adjustment of Cutter Spring

Adjust the cutter spring when the diameter of the reel cutter becomes small.

- Adjust the blade engagement.
- Adjust the nut so that the length of the spring coil of the cutter spring is approximately 50.0 mm (1.97 in).

If the length of the spring coil is longer than 50.0 mm (1.97 in), tighten the nut.

If the length of the spring coil is shorter than 50.0 mm (1.97 in), loosen the nut.



Adjustment of Cutter Spring_001

1	Blade engagement adjustment nut
2	Nut
3	Spring coil
A	50.0 mm (1.97 in)

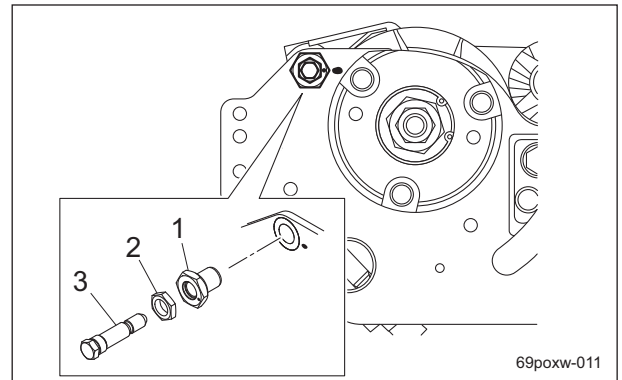
Adjusting CAM

Turn the cam bush on both sides of the bed knife (bottom blade), and the blade can be raised and lowered respectively by maximum 0.3 mm (0.012 in).

The above method is used when the edges of the reel cutter (cutting cylinder) and the bed knife (bottom blade) are not in parallel.

Check for the gap between the reel cutter (cutting cylinder) and the bed knife (bottom blade).

Loosen the locknut when adjusting the cam bush.



Adjusting CAM_001

1	Cam bush
2	Locknut
3	Cutter pin

When the gap appears on the left side.:

- Turn the left cam bush clockwise to eliminate only the gap distance.

When you raise the bed knife (bottom blade) by 0.1 mm (0.004 in), turn the left cam bush clockwise 30 degrees.

- Once the adjustment completed, tighten the locknut securely.

When the gap appears on the right side.:

- Turn the right cam bush counterclockwise to eliminate only the gap distance.

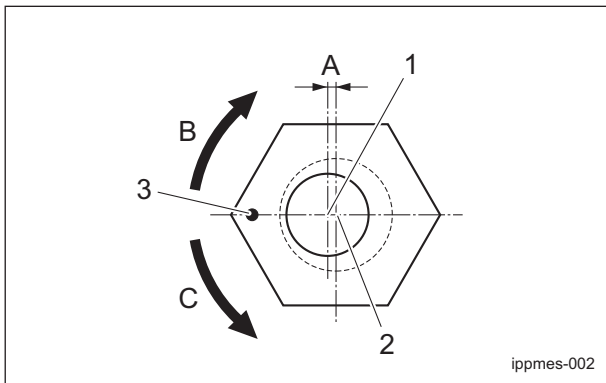
- Once the adjustment completed, tighten the locknut securely.

Note:

The figure below shows the situation when you see from the left side.

The right side is mirror reversed.

Maintenance standards and maintenance

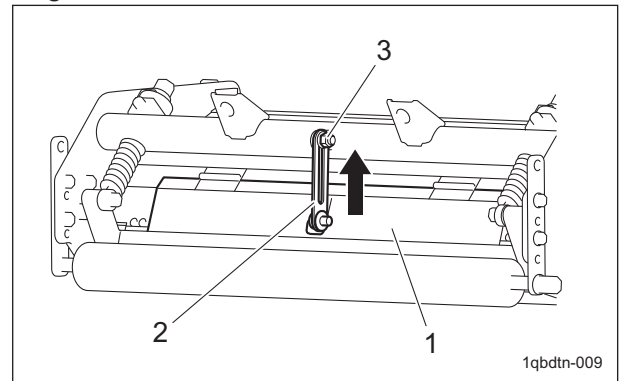


Adjusting CAM_002

1	Center of cutter pin
2	Center of cam bush
3	Punch mark
A	0.3 mm (0.012 in)
B	Raising the bed knife
C	Lowering the bed knife.

To open the reel cover:

Loosen the nut, slide the plate upwards and tighten.



Adjustment of Reel Cover (Variable Type)_002

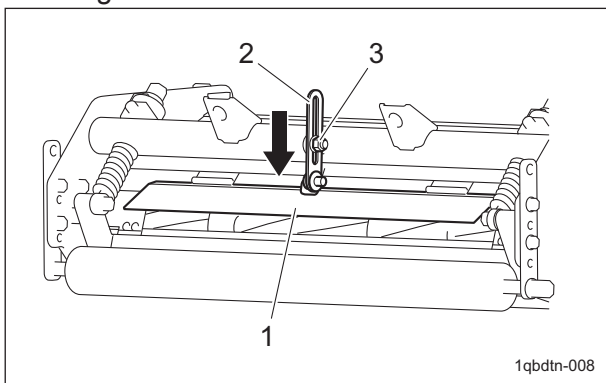
1	Reel cover
2	Plate
3	Nut

Adjustment of Reel Cover (Variable Type)

The angle of the reel cover can be adjusted. Raise or lower the reel cover open/close plate to adjust the angle of the reel cover.

To close the reel cover:

Loosen the nut, slide the plate downwards and tighten.



Adjustment of Reel Cover (Variable Type)_001

1	Reel cover
2	Plate
3	Nut

Close the reel cover when mounting the grass catcher.

Maintenance standards and maintenance

Adjustment of Groomer

Note:

Depending on the specifications, this function may not be available.

Important

Always use a cutting height gauge for adjustment, and adjust it so the left and right are parallel.

Important

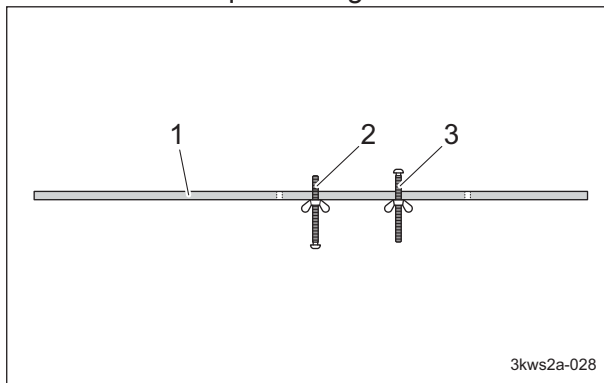
Set the groomer to a height of 5.0 mm (0.2 in) or more above the ground. Using it lower than this height may damage the groomer shaft, bearings, gears or other parts.

Adjust the operating height to suit grooming work.

Note:

When the groomer is not in use, raise the groomer operating height.

1. Set the cutting height gauge groomer setting screw to the required height.

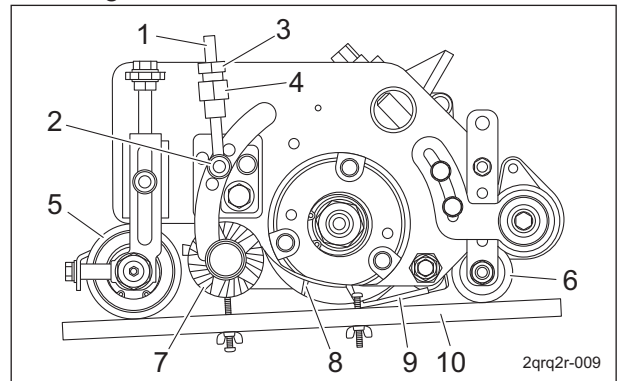


Adjustment of Groomer_001

1	Cutting height gauge
2	Groomer setting screw
3	Cutting height setting screw

2. Loosen the left and right groomer adjustment screw nut A.
3. Loosen the left and right nut B and nut C.

4. Bring the cutting height gauge into contact with the front roller and rear roller at the left and right ends of the mower unit.

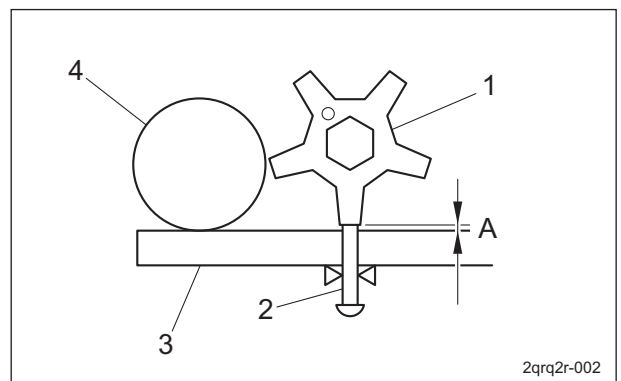


Adjustment of Groomer_002

1	Groomer adjustment screw
2	Nut A
3	Nut B
4	Nut C
5	Front roller
6	Rear roller
7	Dethatching blade
8	Reel cutter
9	Bed knife
10	Cutting height gauge

Important

Adjust the position so that the groomer setting screw can contact the dethatching blades.



Adjustment of Groomer_003

1	Dethatching blade
2	Groomer setting screw
3	Cutting height gauge
4	Front roller
A	Operating height

5. Adjust nut C by raising or lowering it so the left and right are parallel.

Maintenance standards and maintenance

6. Follow the same steps to adjust the operating height of the groomer on the opposite side.
7. Firmly tighten nut B and nut C.
8. Tighten groomer adjustment screw nut A.
9. Bring the cutting height gauge into contact with the front roller and rear roller at the left and right ends of the mower unit again, and check that the groomer is at the desired operating height.

Adjustment of CR brush

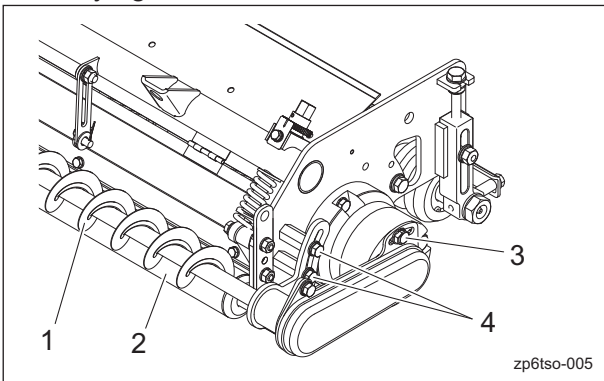
Adjustment of CR Brush (CR Brush Only Installation)

Note:
Depending on the specifications, this function may not be available.

Important
If the contact between the brush and rear roller is too tight, the belt may slip or break.

Important
The rotating CR brush prevents grass clippings, etc., from attaching to the rear roller.

1. Loosen bolt A.
2. Loosen the left and right bolts B.
3. Adjust the CR brush so that there is a clearance of 0 to 1.0 mm (0 to 0.039 in) between it and the rear roller, and then firmly tighten loosened bolt A and bolts B.



Adjustment of CR Brush (CR Brush Only Installation)_001

1	Brush
2	Rear roller
3	Bolt A
4	Bolt B

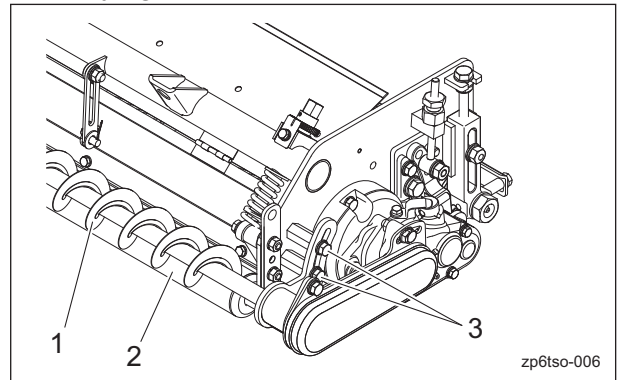
Adjustment of CR Brush (installed together with Groomer)

Note:
Depending on the specifications, this function may not be available.

Important
If the contact between the brush and rear roller is too tight, the belt may slip or break.

Important
The rotating CR brush prevents grass clippings, etc., from attaching to the rear roller.

1. Loosen the left and right bolts.
2. Adjust the CR brush so that there is a clearance of 0 to 1.0 mm (0 to 0.039 in) between it and the rear roller, and then firmly tighten the bolts.



Adjustment of CR Brush (installed together with Groomer)_001

1	Brush
2	Rear roller
3	Bolt

Maintenance standards and maintenance

Adjustment of Scraper

Adjustment of Front Scraper

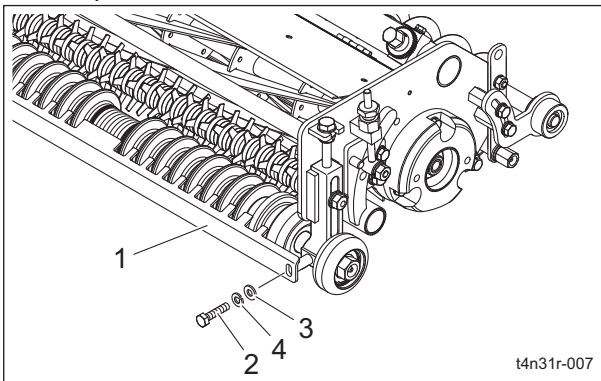
Note:
Depending on the specifications, this function may not be available.

Important

If the contact between the scraper and the front roller is too tight, the scraper may become deformed or the front roller may be shaved.

The scraper prevents grass clippings, etc., from attaching to the front roller.

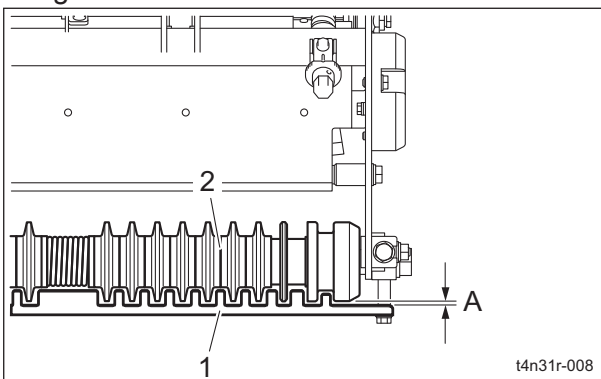
1. Loosen the left and right bolts of the scraper.



Adjustment of Front Scraper_001

1	Scraper
2	Bolt
3	Washer
4	Spring washer

2. Adjust the scraper so that there is a clearance of 2.0 to 3.0 mm (0.079 to 0.118 in) between it and the outer diameter surface of the front roller, and then firmly tighten the loosened bolts.



Adjustment of Front Scraper_002

1	Scraper
2	Front roller
A	2.0 - 3.0 mm (0.079 - 0.118 in)

Adjustment of Rear Scraper

Note:
Depending on the specifications, this function may not be available.

Important

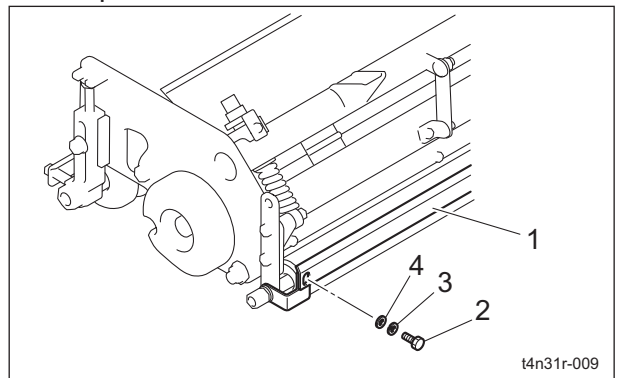
Make sure that the scraper does not contact the rear roller. Otherwise, the scraper may become deformed or the rear roller may be damaged.

Important

The rear scraper cannot be installed together with the CR brush.

The scraper prevents grass clippings, etc., from attaching to the rear roller.

1. Loosen the left and right bolts of the scraper.

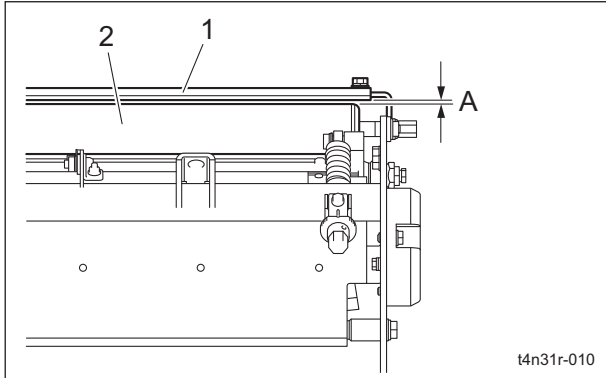


Adjustment of Rear Scraper_001

1	Scraper
2	Bolt
3	Spring washer
4	Washer

Maintenance standards and maintenance

- Adjust the scraper so that there is a clearance of 1.0 to 2.0 mm (0.039 to 0.079 in) between it and the outer diameter surface of the rear roller, and then firmly tighten the loosened bolts.



Adjustment of Rear Scraper_002

1	Scraper
2	Rear roller
A	1.0 - 2.0 mm (0.039 - 0.079 in)

Adjustment of Belt Tension

Warning

Be sure to stop the engine before adjusting the belts.

Important

Make sure that the belt has the specified amount of tension. Before making sure of its specified tension, rotate the belt several times.

If the belt becomes slack due to frequent use, it may jump or slip. In addition, if it is overtightened, it may wear prematurely. If necessary, adjust it, and always check the belt for appropriate tension.

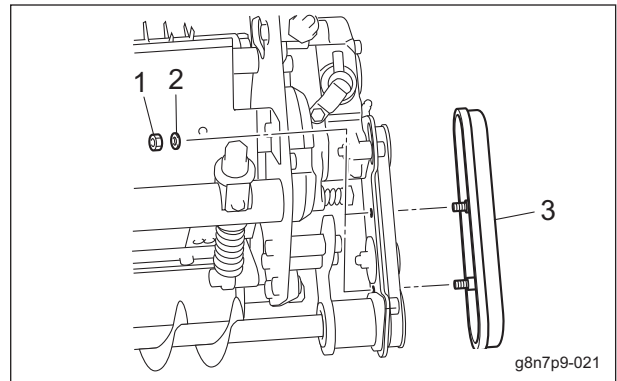
CR Brush Drive Belt

Note:

Depending on the specifications, this function may not be available.

- Remove the nut and spring washer.

- Remove the belt cover.

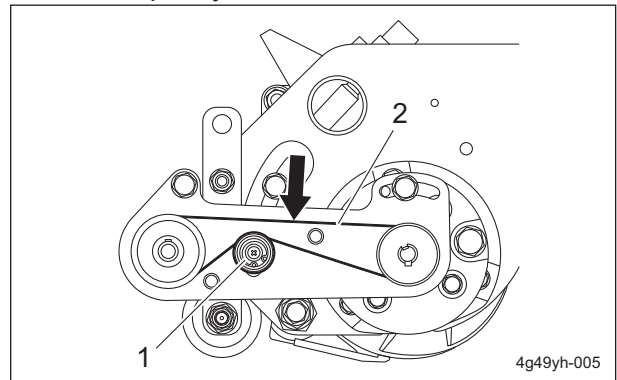


CR Brush Drive Belt_001

1	Nut
2	Spring washer
3	Belt cover

- Check the belt tension.

- If the belt tension is inappropriate, adjust the tension pulley adjustment bolt. The belt tension is appropriate when there is 5.0 - 6.0 mm (0.197 - 0.236 in) of slack when the belt is pressed lightly by finger at 10.0 N (1.0 kgf) around the center between the belt pulleys.



CR Brush Drive Belt_002

1	Tension pulley adjustment bolt
2	Belt

- Install the belt cover.

Maintenance standards and maintenance

Removal and installation of each section

Mower Arm

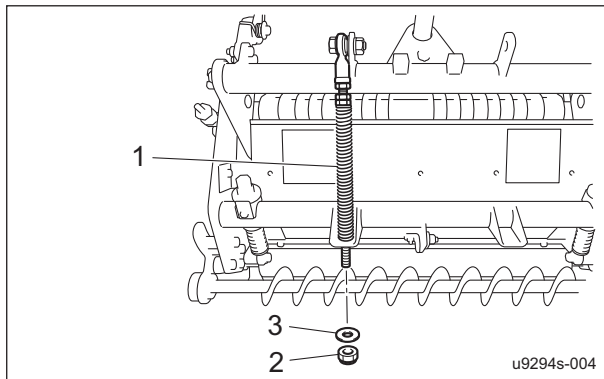
Removal of Mower Arm

Caution

The reel cutter (cutting cylinder), bed knife (bottom blade) and groomer blades are all edged tools. Handle them carefully, since they could cut your hands and feet.

1. Follow the steps below to remove the mower arm.

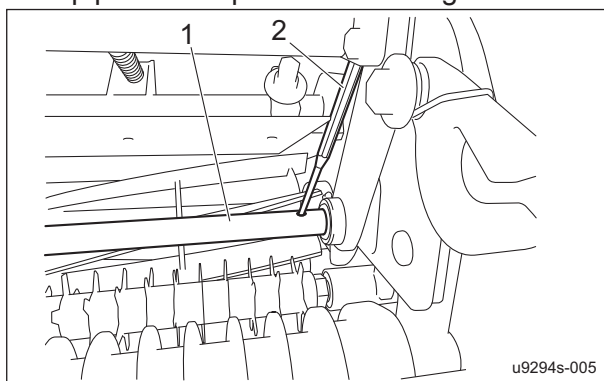
[1] Remove the nut and washer from the mower stabilizer section.



Removal of Mower Arm_001

1	Mower stabilizer
2	Nut
3	Washer

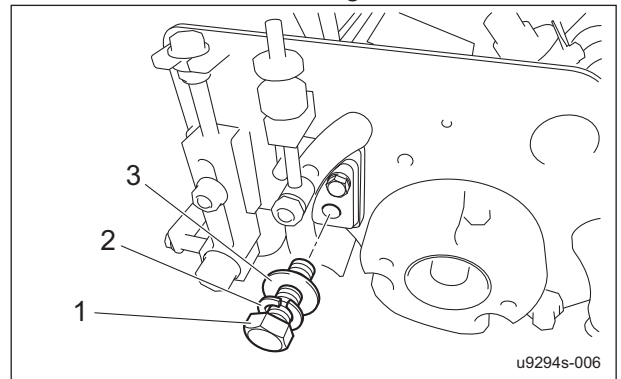
[2] When loosening the stay pipe bolt, insert a locking rod or similar tool into the stay pipe hole to prevent it rotating.



Removal of Mower Arm_002

1	Stay pipe
2	Locking rod

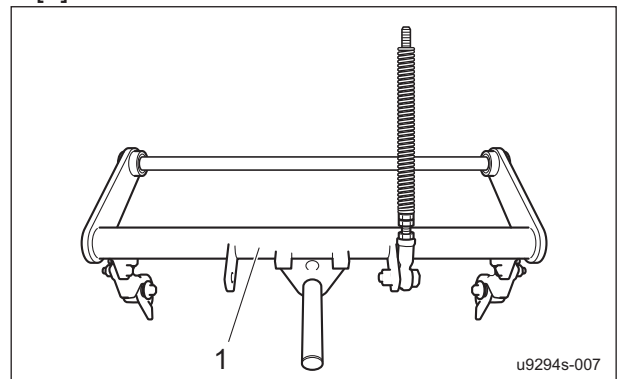
[3] While securing the locking rod, remove the left and right bolts, spring washers and washers securing the mower arm.



Removal of Mower Arm_003

1	Bolt
2	Spring washer
3	Washer

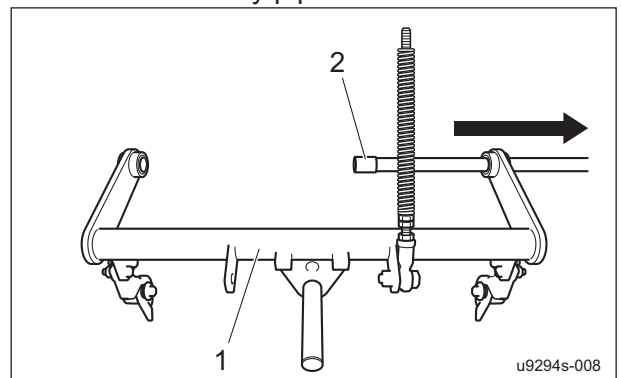
[4] Remove the mower arm.



Removal of Mower Arm_004

1	Mower arm
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2. Remove the stay pipe from the mower arm.



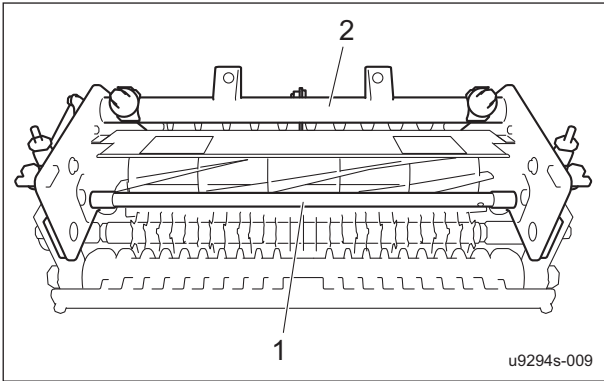
Removal of Mower Arm_005

1	Mower arm
2	Stay pipe

Maintenance standards and maintenance

Maintenance standards and maintenance

3. Install only the stay pipe in the original position of the mower frame.
Re-use the removed bolt, spring washer and washer.



Removal of Mower Arm_006

1	Stay pipe
2	Mower frame

Installation of Mower Arm

Caution

The reel cutter (cutting cylinder), bed knife (bottom blade) and groomer blades are all edged tools. Handle them carefully, since they could cut your hands and feet.

For installation, reverse the removing procedure.

Important

Adjust the mower stabilizer.
Reference:
Main Vehicle's Owner's Operating Manual - Adjustment of Mower Stabilizer

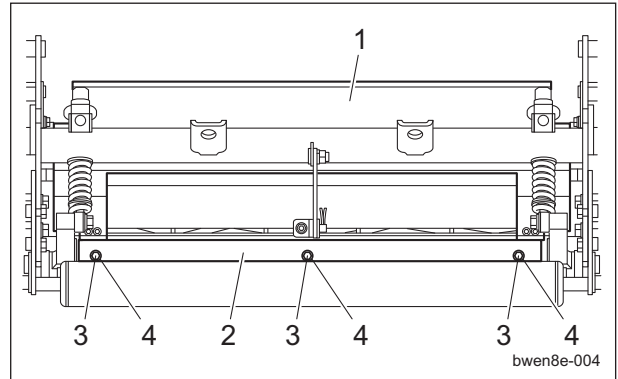
Reel cover

Removal of Reel Cover

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

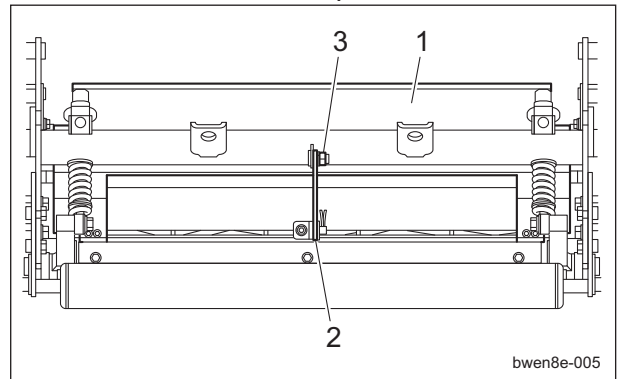
1. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
2. Remove the reel cover clamber bolts and spring washers, and then remove the clamber.



Removal of Reel Cover_001

1	Reel cover
2	Clamber
3	Bolt
4	Spring washer

3. Loosen the reel cover plate nut.

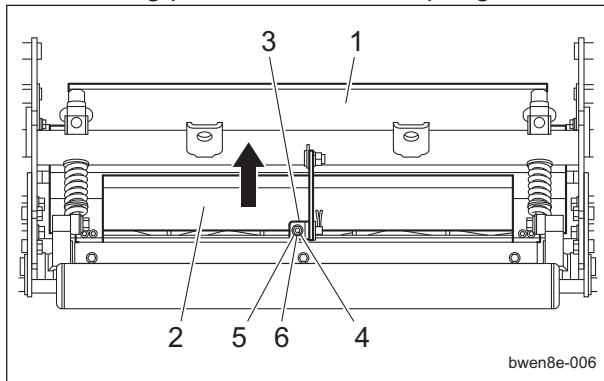


Removal of Reel Cover_002

1	Reel cover
2	Plate
3	Nut

Maintenance standards and maintenance

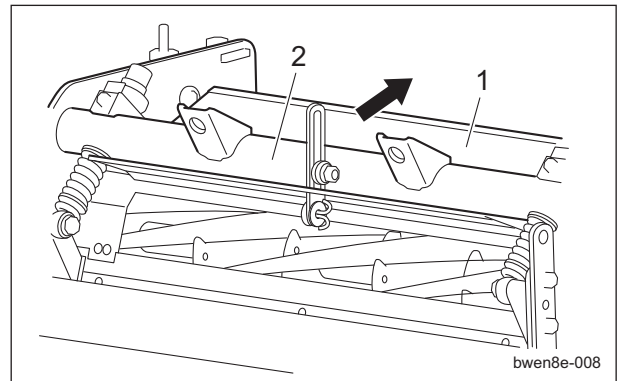
4. Open the variable cover of the reel cover in the direction of the arrow, and remove the mounting plate bolt, nut and spring washer.



Removal of Reel Cover_003

1	Reel cover
2	Variable cover
3	Mounting plate
4	Bolt
5	Nut
6	Spring washer

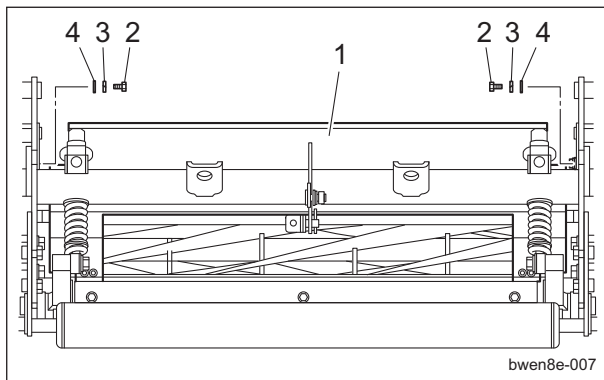
6. Slide the reel cover horizontally in the direction of the arrow and remove it from the mower frame.



Removal of Reel Cover_005

1	Reel cover
2	Mower frame

5. Remove the left and right bolts, spring washers and washers of the reel cover.



Removal of Reel Cover_004

1	Reel cover
2	Bolt
3	Spring washer
4	Washer

Installation of Reel Cover

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

For installation, reverse the removing procedure.

Maintenance standards and maintenance

Bed Knife Mounting Assy

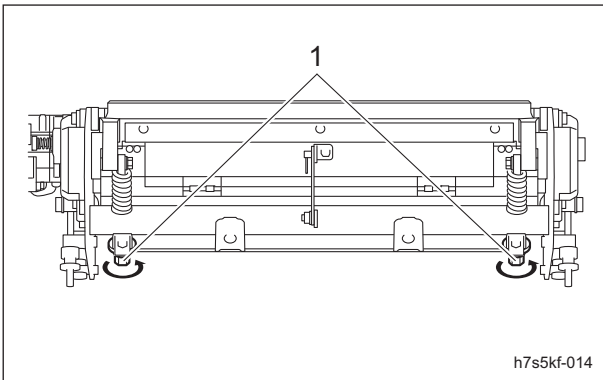
Removal of Bed Knife Base Assy

1	Bed knife base assy
2	Bolt
3	Spring washer
4	Washer

⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

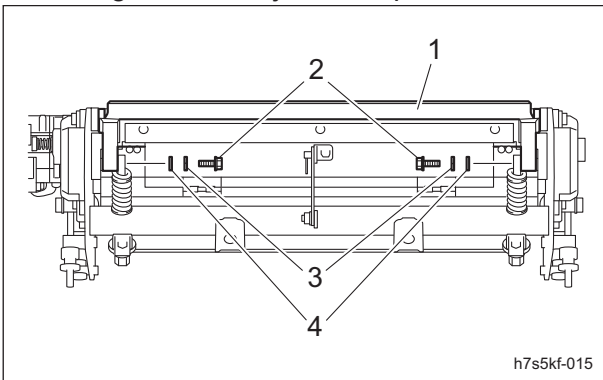
1. Remove the mower unit.
2. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
3. Turn the mower unit upside-down.
4. Remove the rear roller assy.
5. Tighten the cutter adjustment nut in the direction of the arrow, and make some space between the reel cutter and the bed knife.



Removal of Bed Knife Base Assy_001

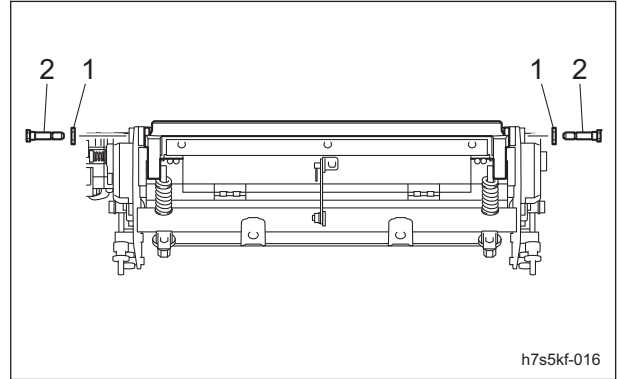
1	Cutter adjustment nut
---	-----------------------

6. Remove the bolts, spring washers and washers from the bed knife base assy left and right cutter adjustment parts.



Removal of Bed Knife Base Assy_002

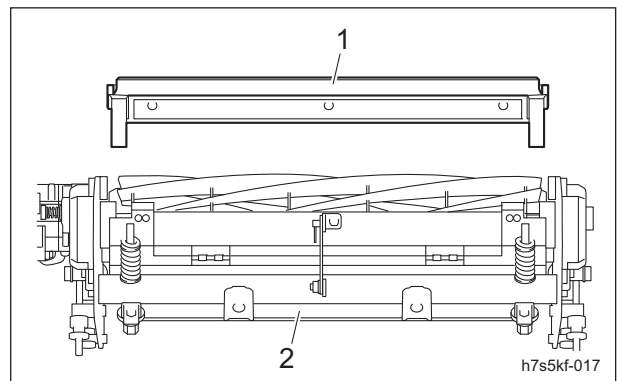
7. Loosen the lock nut on the left and right frame and remove the cutter pins.



Removal of Bed Knife Base Assy_003

1	Lock nut
2	Cutter pin

8. Remove the bed knife base Assy from the mower frame.



Removal of Bed Knife Base Assy_004

1	Bed knife base assy
2	Mower frame

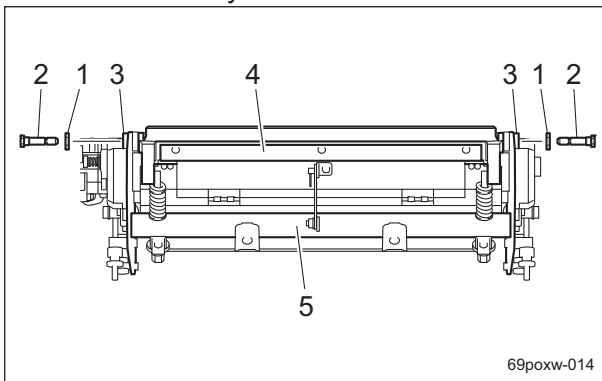
Maintenance standards and maintenance

Installation of Bed Knife Base Assy

⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. Follow the steps below to install the bed knife base assy to the mower frame.



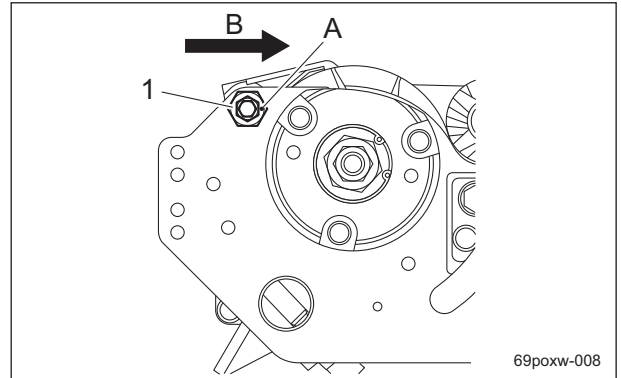
Installation of Bed Knife Base Assy_001

1	Lock nut
2	Cutter pin
3	Cam bush
4	Bed knife base assy
5	Mower frame

- [1] Check that the cam bushes are installed on the left and right sides of the frame.
- [2] Install the bed knife base assy to the mower frame.
- [3] Install the lock nuts to cutter pins.
- [4] Insert the cutter pins from the left and right sides of the frame to temporarily tighten.

2. Follow the steps below for collimating the reel cutter and bed knife.

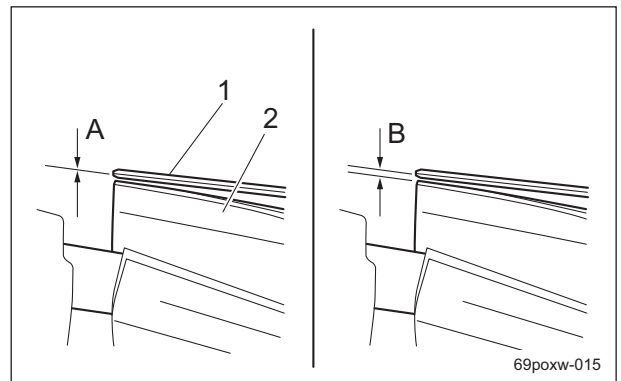
- [1] Position the punch marks of both left and right cam bushes to face toward the traveling direction.



Installation of Bed Knife Base Assy_002

1	Cam bush
A	Punch mark
B	Traveling direction

- [2] Check that the bed knife is making contact with the reel cutter.



Installation of Bed Knife Base Assy_003

1	Bed knife
2	Reel cutter
A	No clearance
B	Some clearance

Maintenance standards and maintenance

Maintenance standards and maintenance

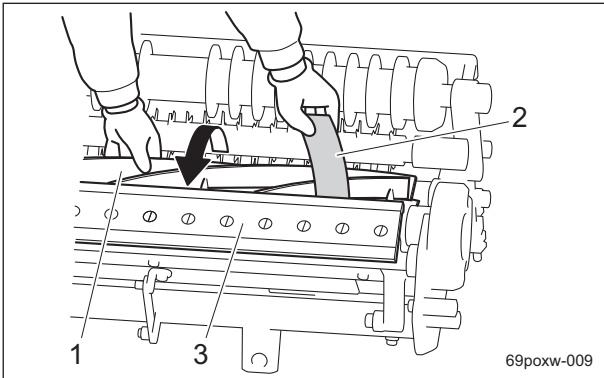
Caution

When cutting newspaper as a test, always wear gloves to protect your hands. Pay attention not to let the reel cutter (cutting cylinder) catch your gloves. Otherwise, your hand or fingers may be injured.

Important

The reel cutter and bed knife are yet to be collimated so do not rotate them too quickly.

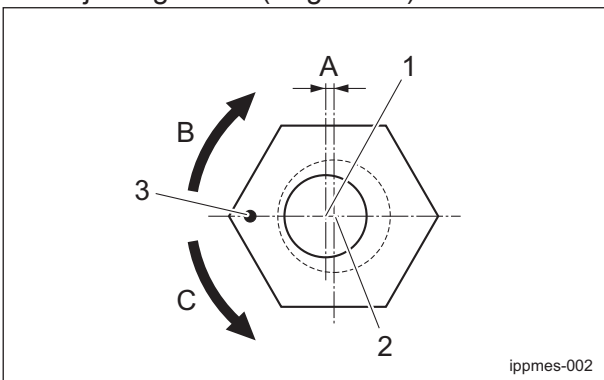
3. Follow the steps below to check the sharpness for the entire reel cutter.
 - [1] Insert a strip of newspaper at a right angle to the bed knife and cut it by rotating the reel cutter slowly with hands.
 - [2] Check the sharpness along the entire reel cutter surface (around 3 to 4 positions).



Installation of Bed Knife Base Assy_004

1	Reel cutter
2	Newspaper
3	Bed knife

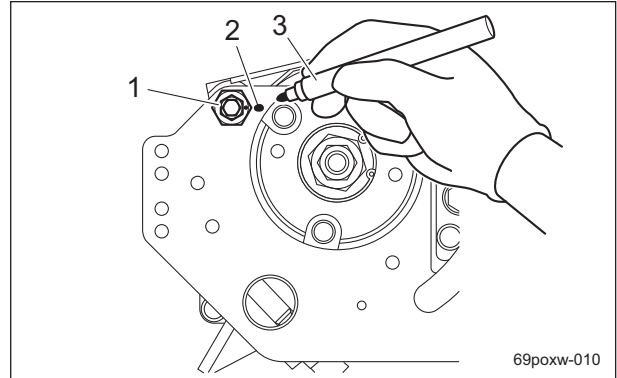
4. Adjust the position of the cam bushes so that newspaper is cut at both ends of the reel cutter.
"Adjusting CAM" (Page 3-17)



Installation of Bed Knife Base Assy_005

1	Center of cutter pin
2	Center of cam bush
3	Punch mark
A	0.3 mm (0.012 in)
B	Raise bed knife
C	Lower bed knife

5. Mark the position of the punch mark on the mower frame with a permanent marker.



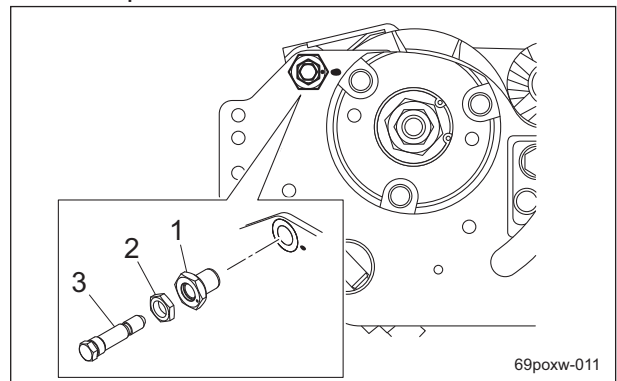
Installation of Bed Knife Base Assy_006

1	Cam bush
2	Marking position
3	Permanent marker

Important

Make sure that the cam bush does not move from the marking position when tightening the lock nut.

6. Tighten the lock nuts of the left and right cutter pins.

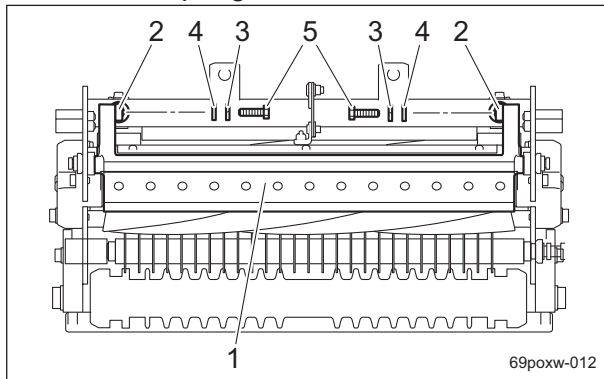


Installation of Bed Knife Base Assy_007

1	Cam bush
2	Lock nut
3	Cutter pin

Maintenance standards and maintenance

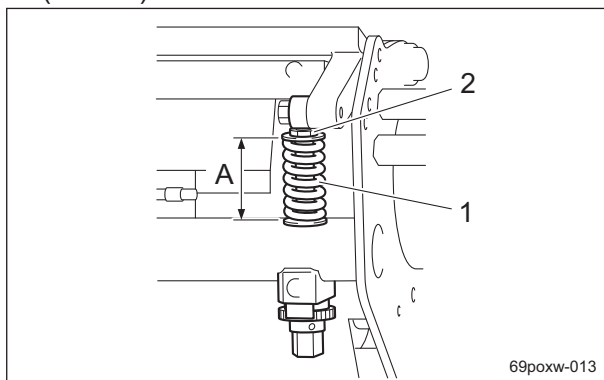
7. Install the left and right cutter adjustment parts to the bed knife base assy with the washers, spring washers and bolts.



Installation of Bed Knife Base Assy_008

1	Bed knife base
2	Cutter adjustment parts
3	Washer
4	Spring washer
5	Bolt

8. Adjust blade engagement.
"Adjustment of Blade Engagement" (Page 3-14)
9. Adjust the nut so that the length of the spring coil of the cutter spring is 50.0 mm (1.97 in).



Installation of Bed Knife Base Assy_009

1	Spring coil
2	Nut
A	50.0 mm (1.97 in)

10. Install the rear roller assy.
11. Adjust the cutting height.
"Adjustment of Cutting Height" (Page 3-15)

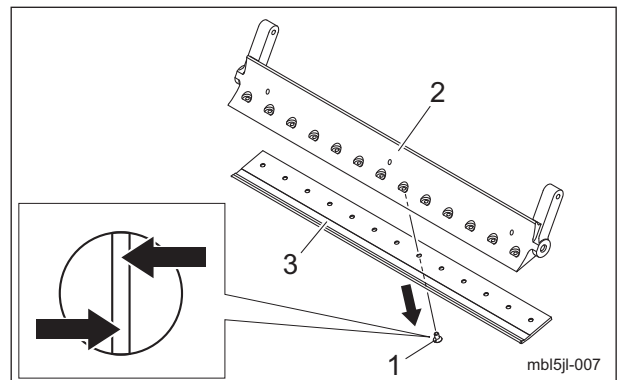
Bed knife

Removal of Bed Knife

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. Remove the bed knife base assy.
"Removal of Bed Knife Base Assy" (Page 3-26)
2. Place the bed knife base assy on a stable platform.
3. Remove the screws using an impact driver or punch, and then remove the bed knife from the bed knife base.



Removal of Bed Knife_001

1	Screw
2	Bed knife base
3	Bed knife

Maintenance standards and maintenance

Installation of Bed Knife

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

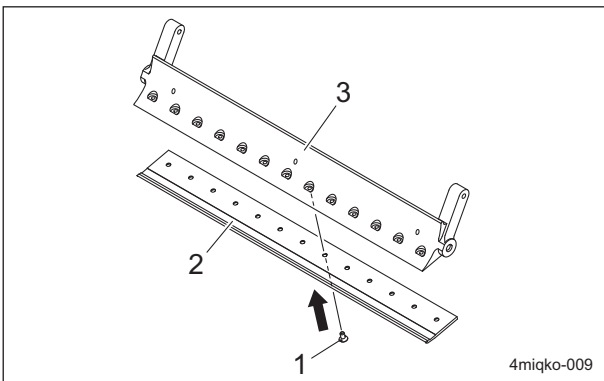
Important

Be careful not to damage the knife mounting surface of bed knife base. Clean off any rust or dirt.

Important

Replace the screws with new ones.

1. Tighten the screws evenly using an impact driver, and install the bed knife to the bed knife base.

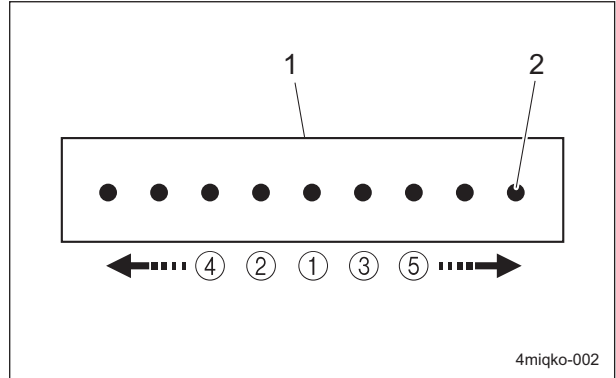


Installation of Bed Knife_001

1	Screw
2	Bed knife
3	Bed knife base

Note:

When installing the bed knife, first tighten the center screw, and then tighten from center outwards, alternating between left and right sides.



Installation of Bed Knife_002

1	Bed knife
2	Screw

Reel Cutter

Removal of Reel Cutter

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

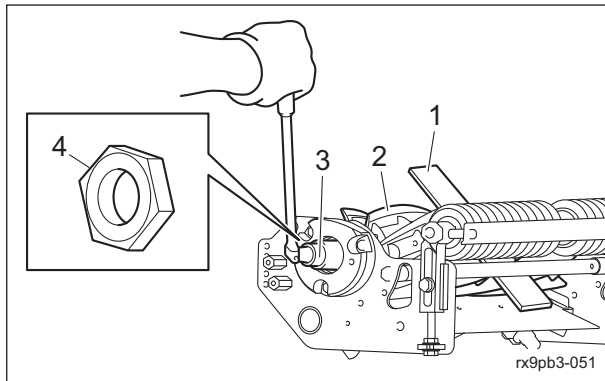
1. Remove the mower unit.
2. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
3. Turn the mower unit upside-down.
4. Install the rear roller.
5. Remove the bed knife base assy.
6. Secure the reel cutter with a wooden board.

Maintenance standards and maintenance

7. Remove the left and right nuts with a socket wrench or similar tool.

Note:

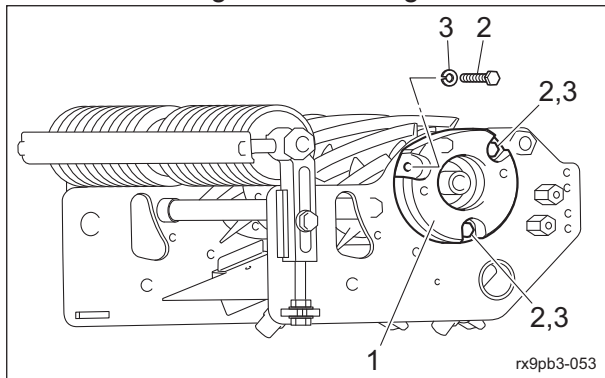
Socket wrench size 36 mm



Removal of Reel Cutter_001

1	Wood board
2	Reel cutter
3	Socket wrench
4	Nut

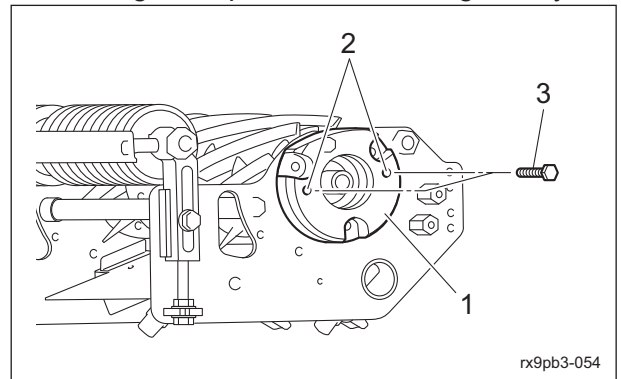
8. Remove all the bolts and spring washers of the left and right reel housings.



Removal of Reel Cutter_002

1	Reel housing
2	Bolt
3	Spring washer

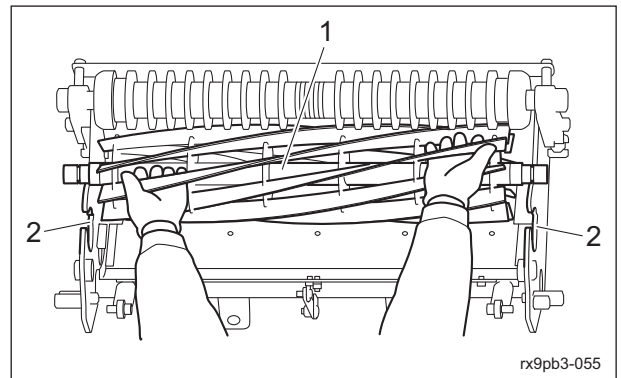
9. Screw in M10-70 bolts into the 2 tapped M10 holes on the left and right reel housings and pull off the housing evenly.



Removal of Reel Cutter_003

1	Reel housing
2	Tapped M10 hole
3	Bolt, M10-70

10. Hold the reel cutter with both hands and remove it through the left and right notches of the mower frame.



Removal of Reel Cutter_004

1	Reel cutter
2	Notch

Important

The reel housing is equipped with a grease nipple. When removing the reel housing, slide the grease nipple to where the notch in the frame is and remove it.

Maintenance standards and maintenance

Installation of Reel Cutter (Cutting Cylinder)

Caution

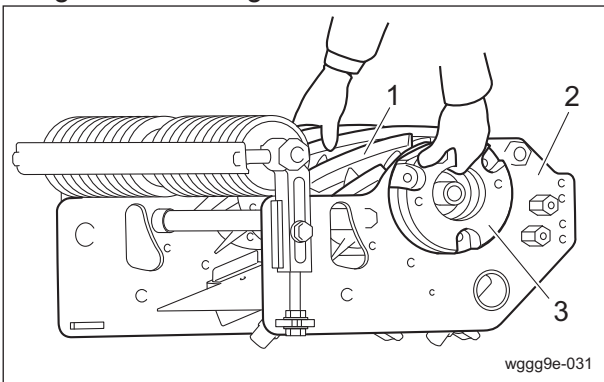
Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. Place the reel cutter in the mower frame in the correct direction.

Important

The reel housings on the left side of all mower frames are equipped with stop rings on the outside of the bearings. When installing the reel housing to the reel cutter, make sure to use the correct reel housing installation side.

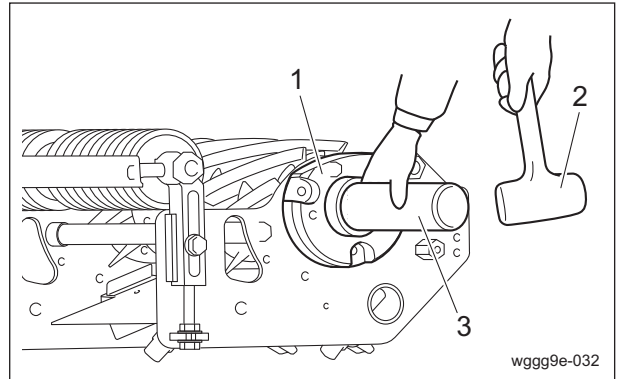
2. Lift the reel cutter up and install the left and right reel housings to the mower frame.



Installation of Reel Cutter (Cutting Cylinder)_001

1	Reel cutter
2	Mower frame
3	Reel housing

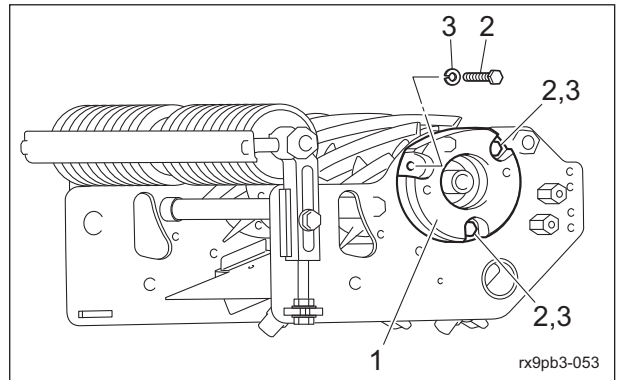
3. Use the bearing driver to tap the left and right reel housings with a plastic hammer until there is no play between the housings and frame.



Installation of Reel Cutter (Cutting Cylinder)_002

1	Reel housing
2	Plastic hammer
3	Bearing driver

4. Install the left and right reel housings to the mower frame with the bolts and spring washers.



Installation of Reel Cutter (Cutting Cylinder)_003

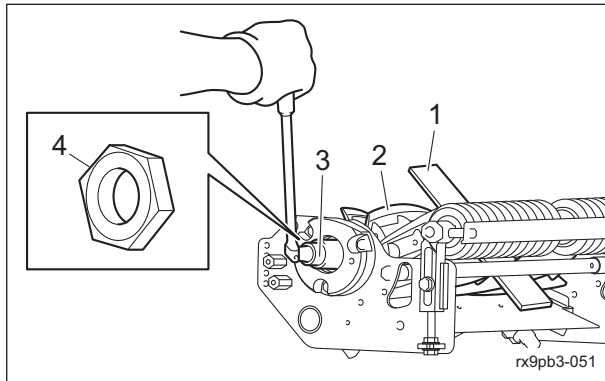
1	Reel housing
2	Bolt
3	Spring washer

5. Install the left and right nuts.
6. Secure the reel cutter with a wooden board.
7. Tighten the left and right nuts with a socket wrench or similar tool.

Note:

Socket wrench size 36 mm

Maintenance standards and maintenance



Installation of Reel Cutter (Cutting Cylinder)_004

1	Wood board
2	Reel cutter
3	Socket wrench
4	Nut

8. Install the bed knife base assy.
9. Install the rear roller.

Front Roller Assy

Removal of Front Roller Assy

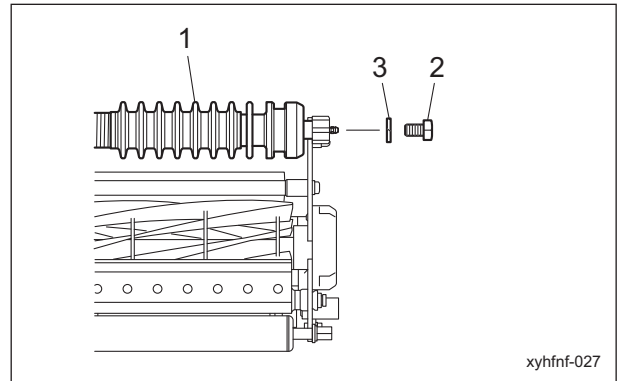
⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

Important

If a CR brush is installed, remove it as the brush may become damaged.

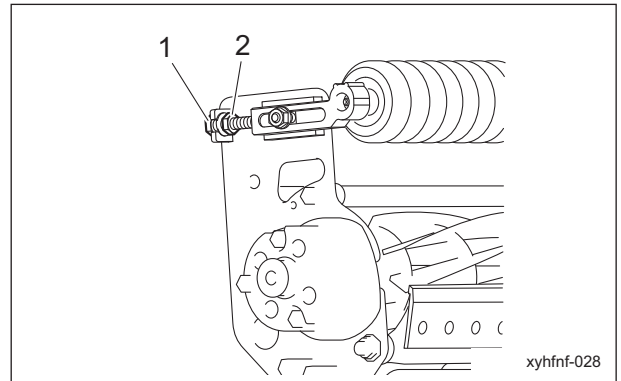
1. Remove the mower unit.
2. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
3. Stand the mower unit up with the front roller facing upward.
4. Remove the front scraper.
5. Remove the left and right bolts and spring washers from the front roller assy.



Removal of Front Roller Assy_001

1	Front roller assy
2	Bolt
3	Spring washer

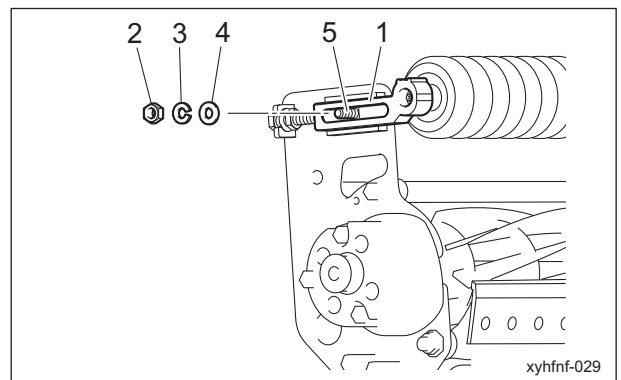
6. Loosen the left and right cutting height bolt U nuts.



Removal of Front Roller Assy_002

1	Cutting height bolt
2	U nut

7. Remove the nuts, spring washers, washers and bolts securing the left and right roller brackets.

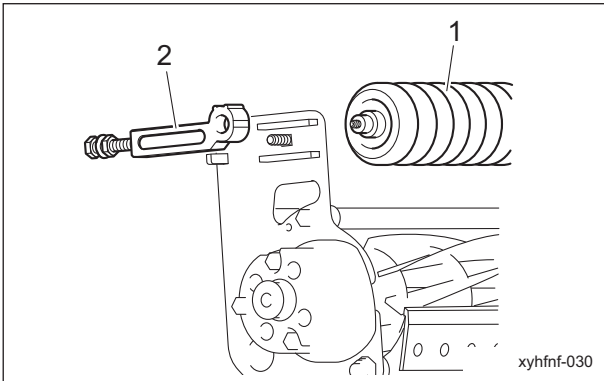


Removal of Front Roller Assy_003

Maintenance standards and maintenance

1	Roller bracket
2	Nut
3	Spring washer
4	Washer
5	Bolt

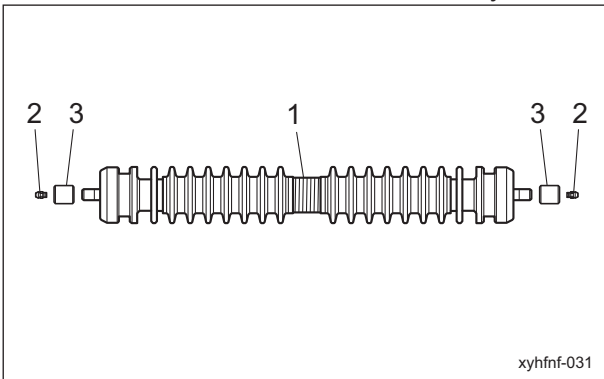
8. While supporting the front roller assy by hand, remove the left and right roller brackets.



Removal of Front Roller Assy_004

1	Front roller assy
2	Roller bracket

9. Remove the left and right grease nipples and collars from the front roller assy.



Removal of Front Roller Assy_005

1	Front roller assy
2	Grease nipple
3	Collar

Installation of Front Roller Assy

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. For installation, reverse the removing procedure.

2. Rotate the front roller by hand to check the rotation state.
3. Adjust the gap between the scraper and front roller.
"Adjustment of Scraper" (Page 3-21)
4. Adjust the cutting height.
"Adjustment of Cutting Height" (Page 3-15)

Rear Roller Assy

Removal of the Rear Roller Assy

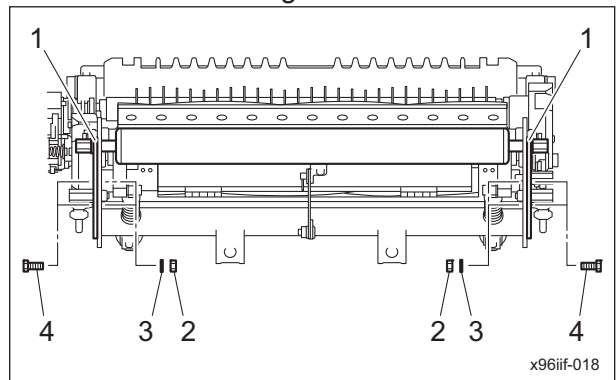
Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

Important

When the rear scraper is mounted, remove the rear roller shaft scraper bracket.

1. Remove the mower unit.
2. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
3. Turn the mower unit upside-down.
4. Remove the rear scraper.
5. Remove the nuts, spring washers, and bolts from the left and right roller brackets.

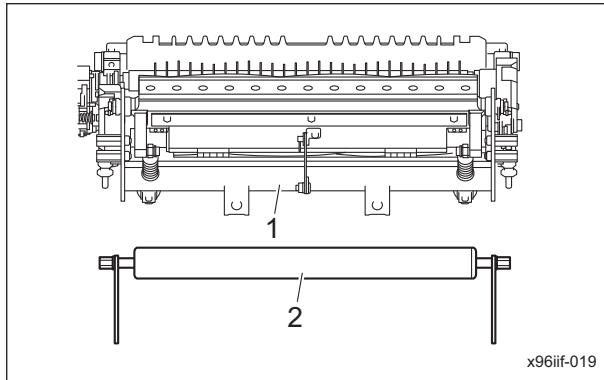


Removal of the Rear Roller Assy_001

1	Roller bracket
2	Nut
3	Spring washer
4	Bolt

Maintenance standards and maintenance

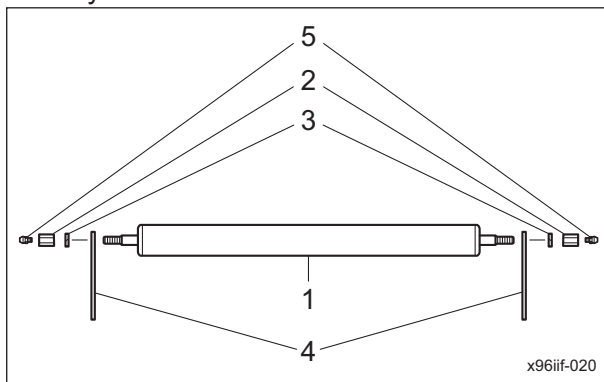
6. Remove the rear roller assy from the mower frame.



Removal of the Rear Roller Assy_002

1	Mower frame
2	Rear roller assy

7. Remove the nuts, spring washers, brackets and grease nipples from the rear roller assy.



Removal of the Rear Roller Assy_003

1	Rear roller assy
2	Nut
3	Spring washer
4	Roller bracket
5	Grease nipple

Installation of Rear Roller Assy

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. For installation, reverse the removing procedure.
2. Rotate the rear roller by hand to check the rotation state.
3. Adjust the cutting height.
"Adjustment of Cutting Height" (Page 3-15)

Groomer Assy

Removal of Groomer Assy

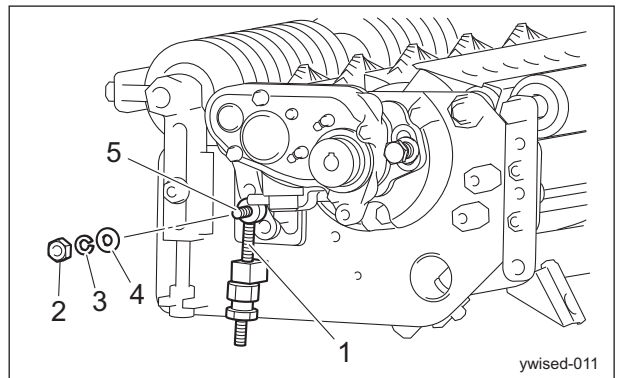
Note:

Depending on the specifications, this function may not be available.

Caution

The reel cutter (cutting cylinder), bed knife (bottom blade) and groomer blades are all edged tools. Handle them carefully, since they could cut your hands and feet.

1. Remove the mower unit.
2. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
3. Turn the mower unit upside-down.
4. Remove the CR brush assy.
5. Remove the nuts, spring washers, washers and bolts of the left and right adjustment screws.

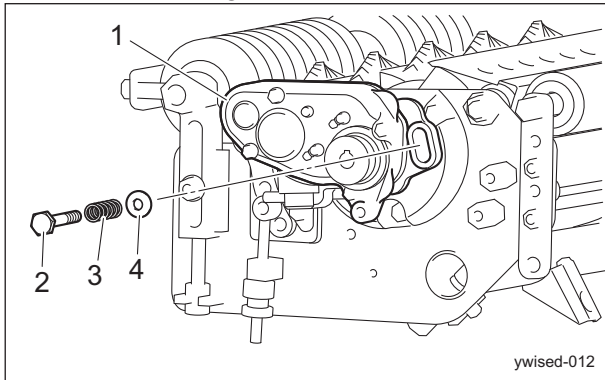


Removal of Groomer Assy_001

1	Adjustment screw
2	Nut
3	Spring washer
4	Washer
5	Bolt

Maintenance standards and maintenance

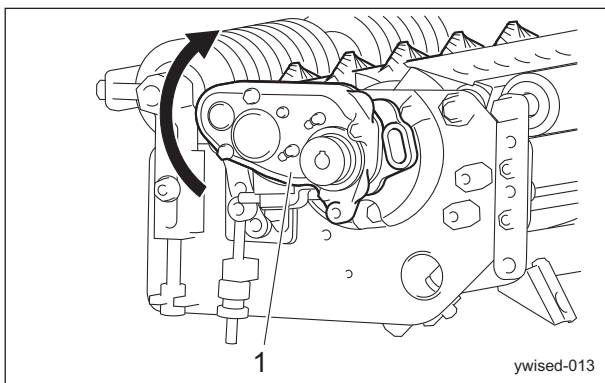
6. Remove the case fixing bolt, spring and washer of the groomer case.



Removal of Groomer Assy_002

1	Groomer case
2	Case fixing bolt
3	Spring
4	Washer

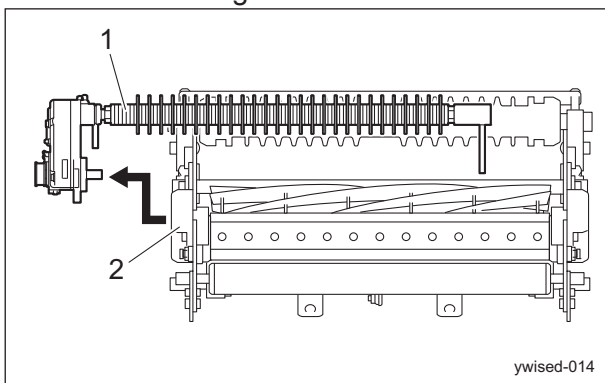
7. Rotate the groomer assy in the direction of the arrow.



Removal of Groomer Assy_003

1	Groomer assy
---	--------------

8. Slide the groomer assy in the direction of the arrow, and pull out and remove it from the reel housing.



Removal of Groomer Assy_004

1	Groomer assy
2	Reel housing

Installation of Groomer Assy

Note:

Depending on the specifications, this function may not be available.

⚠ Caution

The reel cutter (cutting cylinder), bed knife (bottom blade) and groomer blades are all edged tools. Handle them carefully, since they could cut your hands and feet.

1. For installation, reverse the removing procedure.
2. Adjust the groomer.

CR Brush Assy

Removal of CR Brush Assy (type with only CR brush installed)

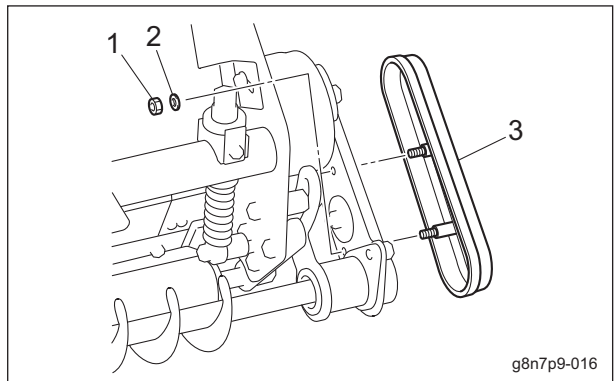
Note:

Depending on the specifications, this function may not be available.

⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. Remove the mower unit.
2. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
3. Remove the nut and spring washer.
4. Remove the belt cover.

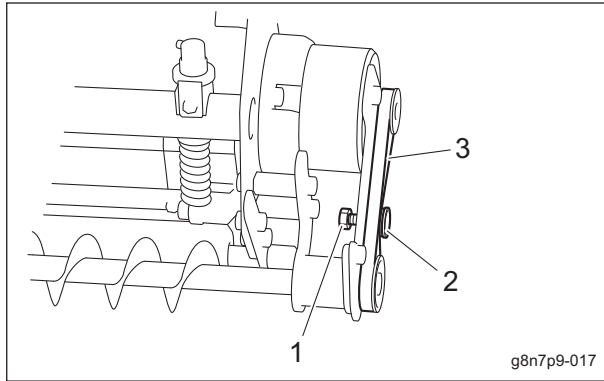


Removal of CR Brush Assy (type with only CR brush installed)_001

1	Nut
2	Spring washer
3	Belt cover

Maintenance standards and maintenance

5. Loosen the nut and remove the belt.

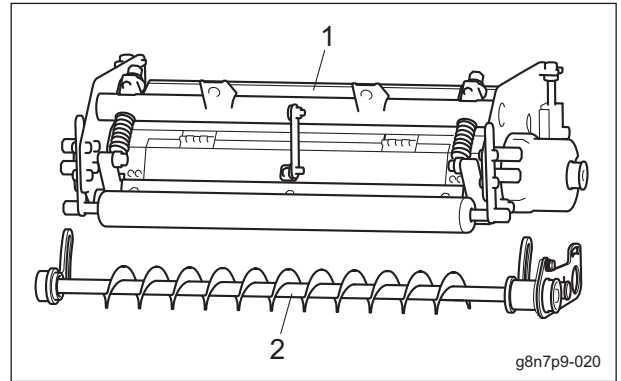


Removal of CR Brush Assy (type with only CR brush installed)_002

1	Nut
2	Tension pulley
3	Belt

1	Brush mounting plate
2	Bolt
3	Spring washer
4	Washer

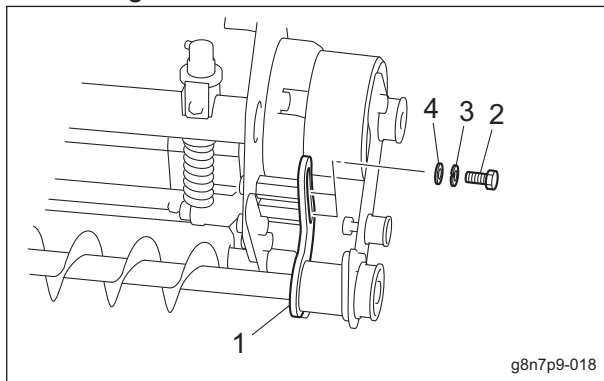
8. Remove the CR brush assy from the mower frame.



Removal of CR Brush Assy (type with only CR brush installed)_005

1	Mower frame
2	CR Brush assy

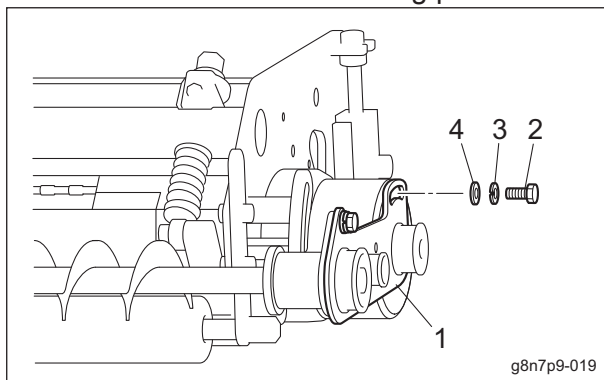
6. Remove the bolts, spring washers and washers securing the left and right brush housings.



Removal of CR Brush Assy (type with only CR brush installed)_003

1	Brush housing
2	Bolt
3	Spring washer
4	Washer

7. Remove the bolt, spring washer and washer of the brush mounting plate.



Removal of CR Brush Assy (type with only CR brush installed)_004

Maintenance standards and maintenance

Removal of CR Brush Assy (type with groomer + CR brush installed together)

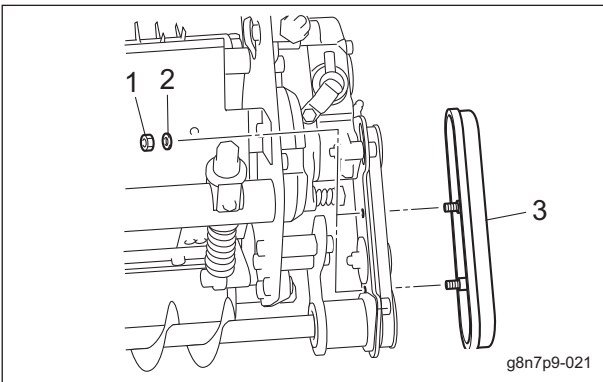
Note:

Depending on the specifications, this function may not be available.

Caution

The reel cutter (cutting cylinder), bed knife (bottom blade) and groomer blades are all edged tools. Handle them carefully, since they could cut your hands and feet.

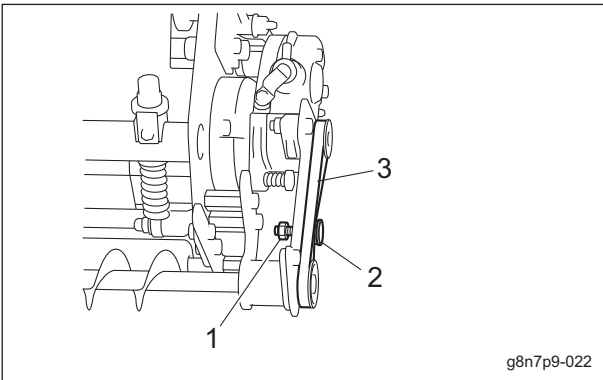
1. Remove the mower unit.
2. Remove the mower arm.
"Removal of Mower Arm" (Page 3-23)
3. Remove the nut and spring washer.
4. Remove the belt cover.



Removal of CR Brush Assy (type with groomer + CR brush installed together)_001

1	Nut
2	Spring washer
3	Belt cover

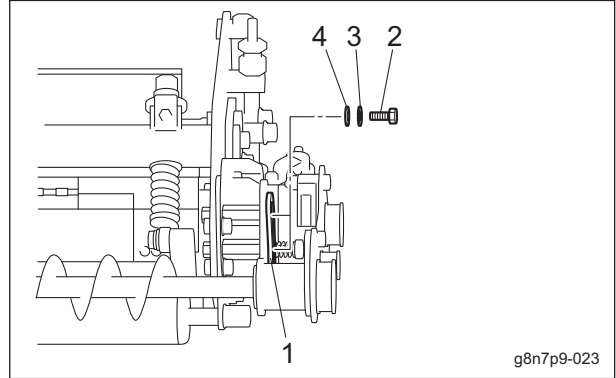
5. Loosen the nut and remove the belt.



Removal of CR Brush Assy (type with groomer + CR brush installed together)_002

1	Nut
2	Tension pulley
3	Belt

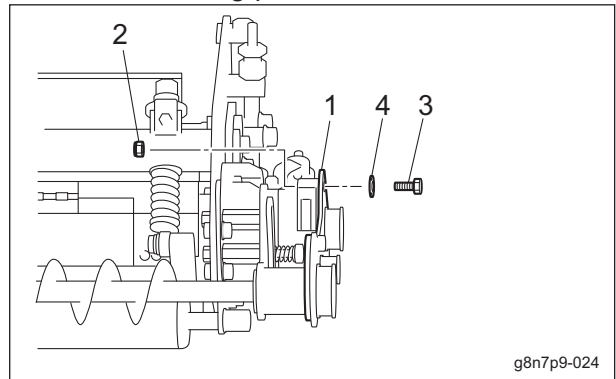
6. Remove the bolts, spring washers and washers securing the left and right brush housings.



Removal of CR Brush Assy (type with groomer + CR brush installed together)_003

1	Brush housing
2	Bolt
3	Spring washer
4	Washer

7. Remove the nut, bolt and washer of the brush mounting plate.

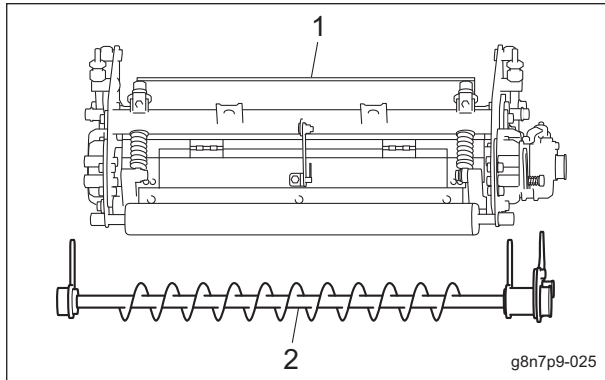


Removal of CR Brush Assy (type with groomer + CR brush installed together)_004

1	Brush mounting plate
2	Nut
3	Bolt
4	Washer

Maintenance standards and maintenance

8. Remove the CR brush assy from the mower frame.



Removal of CR Brush Assy (type with groomer + CR brush installed together)_005

1	Mower frame
2	CR Brush assy

Installation of CR Brush Assy

Note:

Depending on the specifications, this function may not be available.

Danger

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. For installation, reverse the removing procedure.
2. Adjust the CR brush.
"Adjustment of CR brush" (Page 3-20)

Front Scraper

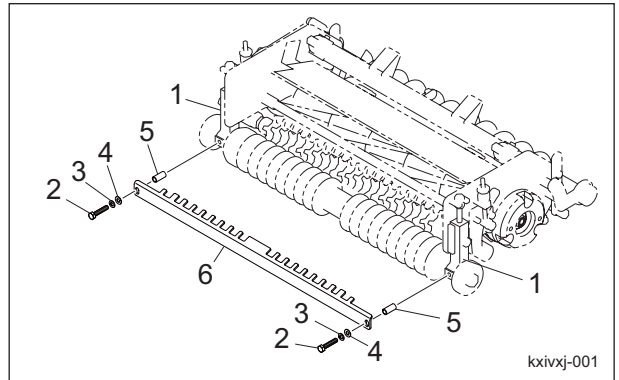
Removal of Front Scraper

Note:

Depending on the specifications, this function may not be available.

1. Remove the bolts, spring washers and washers from the left and right roller brackets.

2. Remove the left and right collar and scraper.



Removal of Front Scraper_001

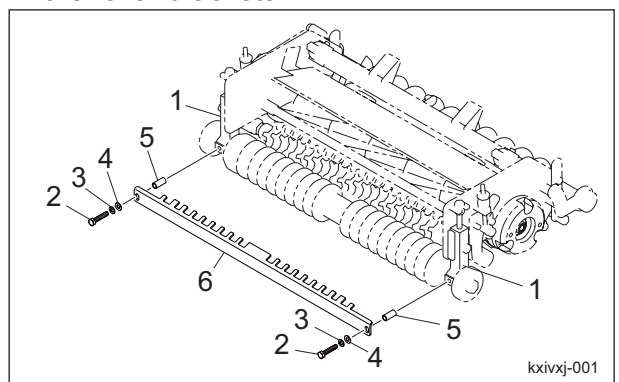
1	Roller bracket
2	Bolt
3	Spring washer
4	Washer
5	Collar
6	Scraper

Installation of Front Scraper

Note:

Depending on the specifications, this function may not be available.

1. Temporarily install the bolts, spring washers and washers to the left and right of the scraper.
2. Install the collars to the left and right bolts.
3. Temporarily install the left and right bolts to the roller brackets.



Installation of Front Scraper_001

1	Roller bracket
2	Bolt
3	Spring washer
4	Washer
5	Collar
6	Scraper

Maintenance standards and maintenance

Important

If the contact between the scraper and the front roller is too tight, the scraper may become deformed or the front roller may be shaved.

4. Adjust the scraper.
Reference:
"Adjustment of Front Scraper" (Page 3-21)
5. After adjusting the scraper, tighten the bolts firmly.

Rear Scraper

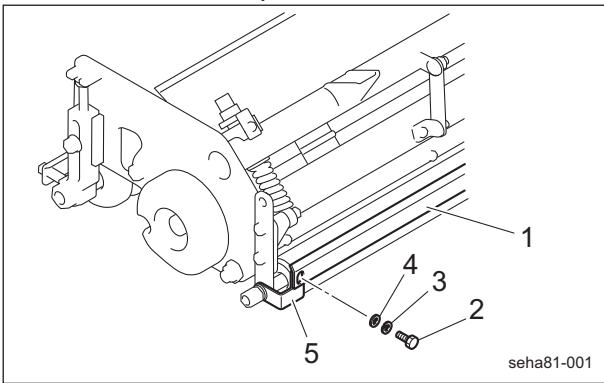
Removal of Rear Scraper

Note:
Depending on the specifications, this function may not be available.

Important

The rear scraper cannot be mounted at the same time as the CR brush.

1. Remove the bolts, spring washers and washers from the left and right scraper adjustment brackets.
2. Remove the scraper.



Removal of Rear Scraper_001

1	Scraper
2	Bolt
3	Spring washer
4	Washer
5	Scraper adjustment bracket

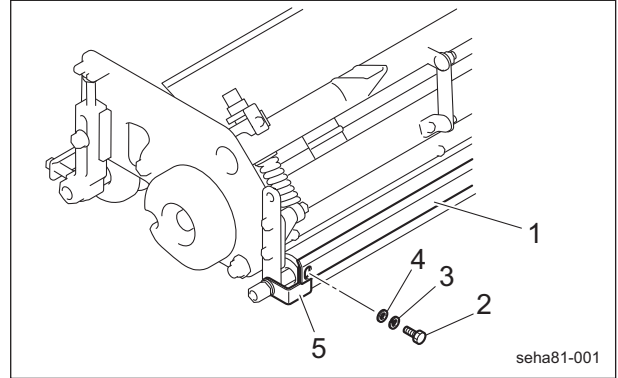
Installation of Rear Scraper

Note:
Depending on the specifications, this function may not be available.

Important

The rear scraper cannot be mounted at the same time as the CR brush.

1. Install the scraper to the scraper adjustment bracket.
2. Temporarily install the left and right bolts, spring washer and washer to the scraper.



Installation of Rear Scraper_001

1	Scraper
2	Bolt
3	Spring washer
4	Washer
5	Scraper adjustment bracket

Important

Keep the scraper away from the rear roller. Failure to do so may cause the scraper to deform or damage the rear roller.

3. Adjust the scraper.
Reference:
"Adjustment of Rear Scraper" (Page 3-21)
4. After adjusting the scraper, tighten the bolts firmly.

Maintenance standards and maintenance

Inspection and repair of each section

Reel Cover

Due to frequent use, corrosion, or damage during use or transportation, the reel cover may be caught in the reel cutter. Inspect it, and if necessary, replace the parts.

- Check if the safety decals or instruction decals are not peeled off.
- Check if there is no crack, change in shape, etc. on the reel cover.

Refer to "Installation of Reel Cover" (Page 3-25) and "Removal of Reel Cover" (Page 3-24) for information on attaching and removing the reel cover.

Reel cutter

Important

Be sure to replace the oil seals and bearings with new ones.

The reel cutter (cutting cylinder) may become dull due to frequent use, objects crushed during mowing, or damage caused during transportation.

Inspect it, and if necessary, grind or replace the reel cutter.

- Make sure that the welding between the reel cutter (cutting cylinder) and the disc has not come off.
- Make sure that the reel cutter is not cracked.
- Check to see whether or not the "relief" surface remains at the point of reel cutter (cutting cylinder).
- Check to see whether or not grinding burn and color change have occurred on the reel cutter.
- Check to see how much the reel cutter is worn.

Refer to "Removal of Reel Cutter" (Page 3-30) and "Installation of Reel Cutter (Cutting Cylinder)" (Page 3-32) for information on attaching and removing the reel cutter.

Back Lapping of Reel Cutter

Back lapping is work similar to sharpening a cooking knife. If the edges of the reel cutter (cutting cylinder) and the bed knife (bottom blade) become blunt and make cutting difficult, both the reel cutter (cutting cylinder) and the bed knife (bottom blade) should be simultaneously sharpened by reversing the reel cutter (cutting cylinder) with an abrasive paste applied.

However, back lapping is a temporary measure and would not restore the sharpness completely.

If the edges of the reel cutter (cutting cylinder) and the bed knife (bottom blade) become blunt and make cutting difficult, perform back lapping in the following procedure.

Warning

The reel cutter rotates during back lapping work. Keep hands and feet away from moving parts.

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

Caution

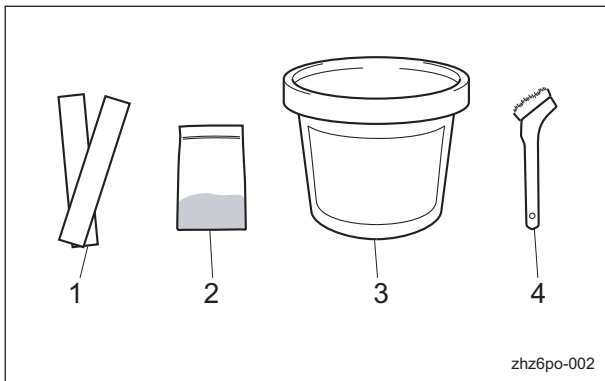
Be careful not to inhale exhaust gas during back lapping.

Caution

Do not perform back lapping work with any other persons.

1. Prepare newspaper cut into strip, abrasive with back lapping powder mixed with oil or gel compound (Baroness genuine abrasive), and a brush.

Maintenance standards and maintenance



Back Lapping of Reel Cutter_001

1	Newspaper
2	Back lapping powder
3	Gel compound
4	Brush

Note:

The mixture ratio of the abrasive is 1 part back lapping powder (#150 - #200) : 3-4 parts oil.

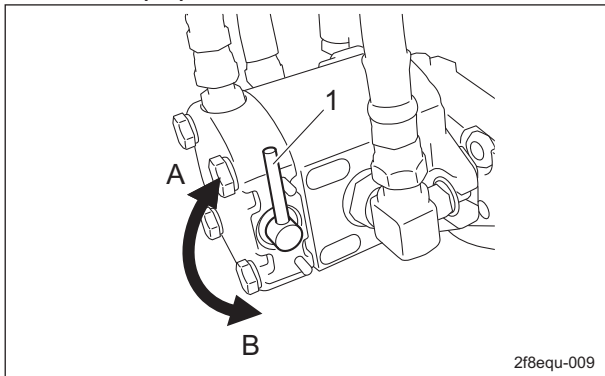
Caution

When handling the reel cutter or bed knife, wear gloves to protect your hands. Pay attention not to let the reel cutter catch your gloves, etc. Otherwise, your hand or fingers may be injured.

Important

Check sharpness with the blade engagement condition after cutting.

2. Stop the engine.
3. Set the reel rotation/stop switching lever to the "Stop" position.



Back Lapping of Reel Cutter_002

1	Reel rotation/stop switching lever
A	Rotate
B	Stop

4. Insert two or three strips of newspaper into the space between the reel cutter and the bed knife at an angle of 90 degrees. Then, rotate the reel cutter counterclockwise (as seen from the left side of the mower unit) by hand to check the sharpness.
5. Check the sharpness along the entire reel cutter surface (around 3 to 4 positions).
6. Check the sharpness and mark areas that are sharp with chalk or similar.
7. Set the reel rotation/stop switching lever of the hydraulic motors for the mower units that require back lapping to the "Rotation" position.
For mower units that do not require back lapping, set the lever to the "Stop" position.
8. Sit on the seat, apply the parking brake and then start the engine.
Note:
The engine will not start if the reel rotation switch is to the "Rotation" side.
9. Lower all mower units to the ground.
10. Move the reel reverse switch to the "Reverse" side.
11. Run the engine at low speed.
12. Move the reel rotation switch to the "Rotation" side and rotate the reel cutter for back lapping.
13. Adjust the rotation speed of the reel cutter with the reel rotation/stop switching lever.
14. Apply abrasive to a brush, and apply evenly to areas of the reel cutter that are sharp using the chalk markings as a guide. (Never apply it to areas that have poor sharpness.)
15. Keep the engine rotating for a while until there is no contact noise, and move the reel rotation switch to the "Stop" side to stop the rotation of the reel cutter.
16. Stop the engine.
17. Wash off the abrasive applied to the reel cutter or wipe it clean with waste cloth or similar, and check the sharpness.
18. Repeat the procedures from 3 through 17 for back lapping until the entire reel cutter surface (around 3 to 4 positions) is even.
19. Next, apply abrasive across the entire reel cutter blade edge for final back lapping.
20. Move the reel rotation switch to the "Stop" side, stop the reel rotation, stop the engine, and carefully wash off all the remaining abrasive completely until it is clean.

Maintenance standards and maintenance

21. Move the reel reverse switch to the "Normal" side.
22. Return the reel rotation/stop switching lever to the "Stop" position.
23. Adjust the blade engagement while checking the sharpness.

Sharpening of Reel Cutter (Cutting Cylinder)



Caution
Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.



Caution
Wear gloves when touching edged tools to avoid cutting your hands.

The sharpening of the reel cutter (cutting cylinder) consists in maintaining its roundness and creating a relief (second edge face). This work should be performed if the sharpness cannot be restored, even after back lapping, or if the relief (second edge face) has worn away.

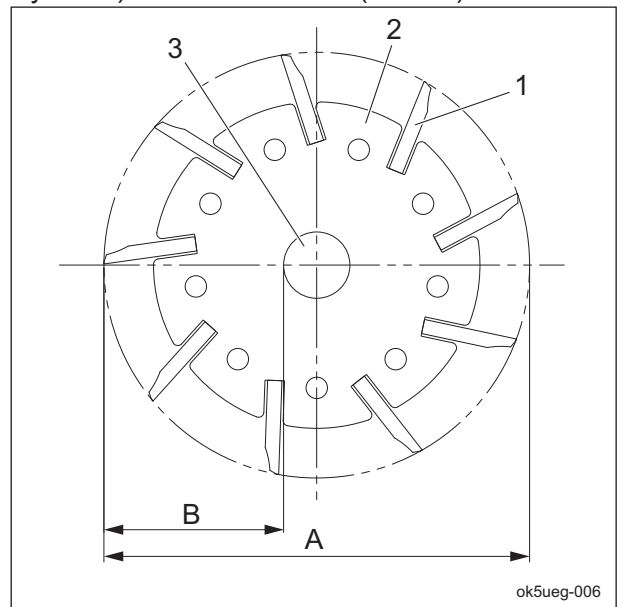
Sharpen the reel cutter (cutting cylinder) when the sharpness cannot be restored, even after back lapping, or when the relief (second edge face) has worn away, there is full contact or back lapping takes too much time.

In addition, if the reel cutter (cutting cylinder) becomes worn and its shape conical, perform cylindrical grinding to return it to a cylindrical shape.

For sharpening the reel cutter (cutting cylinder), contact your dealer or Baroness. If the outer diameter of the reel cutter (cutting cylinder) after sharpening is more than the usage limit, the reel cutter (cutting cylinder) can be sharpened.

New		Usage limit	
Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)	Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)
128 mm (5.04 in)	51.3 mm (2.02 in)	118 mm (4.65 in)	46.3 mm (1.82 in)

Note:
The outer diameter of the reel cutter (cutting cylinder) shaft is 25.4 mm (1.00 in).



Sharpening of Reel Cutter (Cutting Cylinder)_001

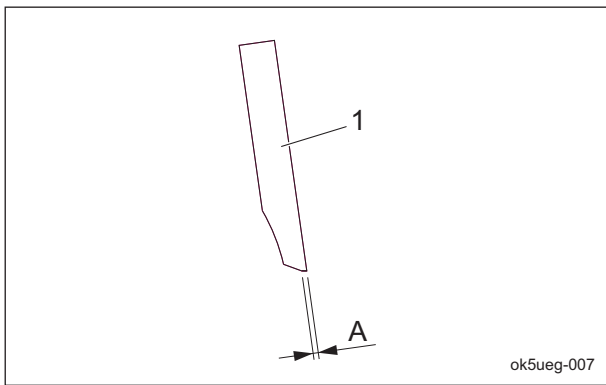
1	Reel cutter (cutting cylinder) blade
2	Reel cutter (cutting cylinder) disc
3	Reel cutter (cutting cylinder) shaft
A	Outer diameter of reel cutter (cutting cylinder)
B	Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft

Maintenance standards and maintenance

Sharpening is necessary when the reel cutter (cutting cylinder) reaches a condition described below.

1. When the sharpening width (length of contacting surface of bed knife (bottom blade)) for the outer diameter of the reel cutter (cutting cylinder) is greater than the usage limit.

Outer diameter of reel cutter (cutting cylinder) (new part)	Usage limit of sharpening width for outer diameter of reel cutter (cutting cylinder)
128 mm (5.04 in)	2.5 mm (0.10 in) (factory-recommended)



Sharpening of Reel Cutter (Cutting Cylinder)_002

1	Reel cutter (cutting cylinder) blade
A	Sharpening width for outer diameter of reel cutter (cutting cylinder)

2. When the edges become blunt or the blade edge cannot be formed with back lapping
3. When the reel cutter (cutting cylinder) becomes worn and its shape conical, or when blade engagement adjustment cannot be performed

■ Bearing/Holder for Grinding Machine

These are used for the types of grinding machines which performs centering of the reel cutter with using bearings.

Important

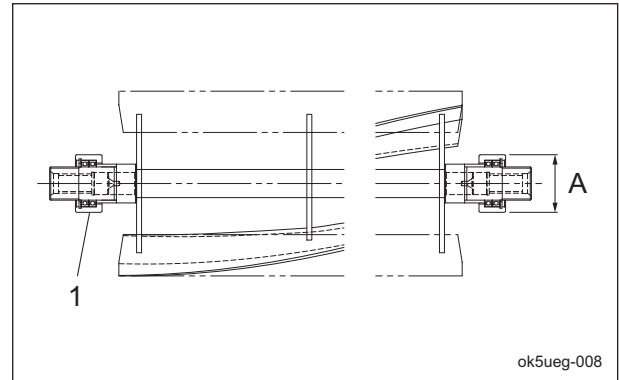
Be sure to confirm how to receive the bearings because that method varies among grinding machines.

1. Holder Assy $\phi 52$

The bearing holder assy is used on the both sides of the shaft in the case of the bearing holder of the grinding machine of inner $\phi 52$.

2. Holder Assy $\phi 60$

The bearing holder assy is used on the both sides of the shaft in the case of the bearing holder of the grinding machine of inner $\phi 60$.



Bearing/Holder for Grinding Machine_001

1	Holder Assy
A	Bearing holder assy outer diameter

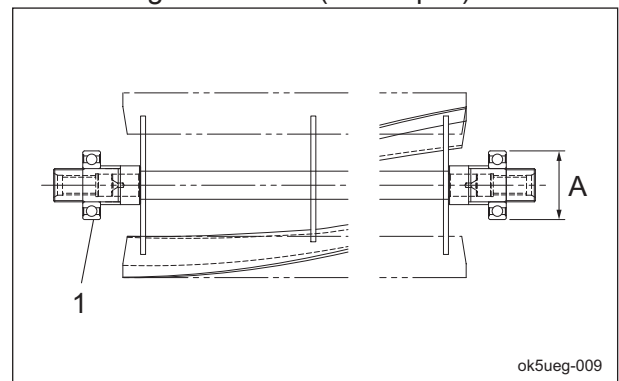
Important

Use a double-sealed bearing, because dust, dirt, etc. adversely affect the movement of bearings.

3. The bearing is used on the both sides of the shaft if the bearing holder of the grinding machine is V type.

Note:

Bearing #63052RS (Outer $\phi 52$)



Bearing/Holder for Grinding Machine_002

1	Bearing
A	Bearing outer diameter

Maintenance standards and maintenance

Replacement of Reel Cutter (Cutting Cylinder)

⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

⚠ Caution

Wear gloves when touching edged tools to avoid cutting your hands.

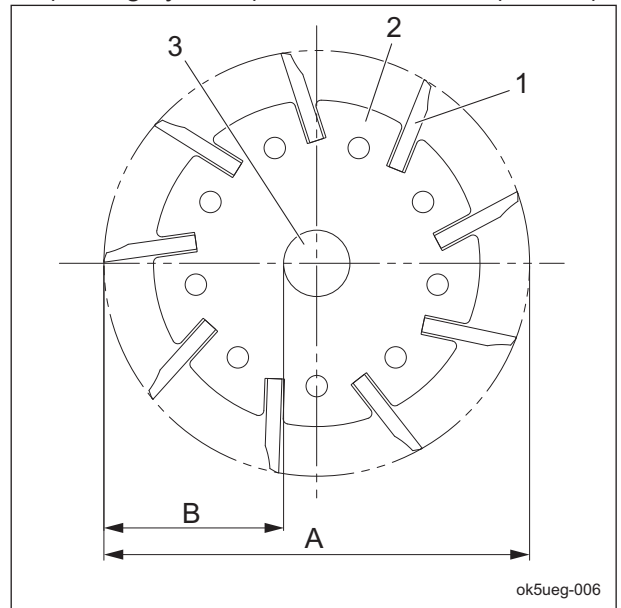
The criteria for replacing the reel cutter (cutting cylinder) are described below. However, these criteria are only a reference and do not guarantee performance like that of a new reel cutter (cutting cylinder).

1. When the outer diameter of the reel cutter (cutting cylinder) is less than the usage limit

New		Usage limit	
Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)	Dimension A (Outer diameter of reel cutter (cutting cylinder))	Dimension B (Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft)
128 mm (5.04 in)	51.3 mm (2.02 in)	118 mm (4.65 in)	46.3 mm (1.82 in)

Note:

The outer diameter of the reel cutter (cutting cylinder) shaft is 25.4 mm (1.00 in).



Replacement of Reel Cutter (Cutting Cylinder)_001

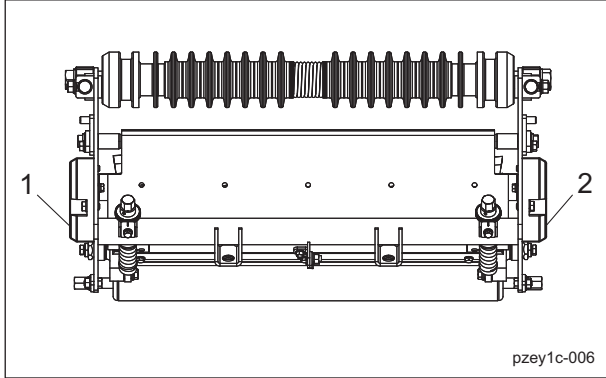
1	Reel cutter (cutting cylinder) blade
2	Reel cutter (cutting cylinder) disc
3	Reel cutter (cutting cylinder) shaft
A	Outer diameter of reel cutter (cutting cylinder)
B	Distance from blade edge to outer edge of reel cutter (cutting cylinder) shaft

Maintenance standards and maintenance

Reel Housing (A)

Note:

This reel housing is installed on the left side of the mower unit.



Reel Housing (A)_001

1	Reel housing A
2	Reel housing B

Wear of bearings due to frequent use and/or damage of bearings, etc. caused by water penetration may prevent smooth rotation of the reel cutter.

Inspect and replace the parts such as the bearings.

- Make sure that the reel housing does not have any crack.
- Make sure that the bearing receptacle is not shaky.

⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

Important

The bearing and oil seal have a specific installation orientation. Confirm its direction.

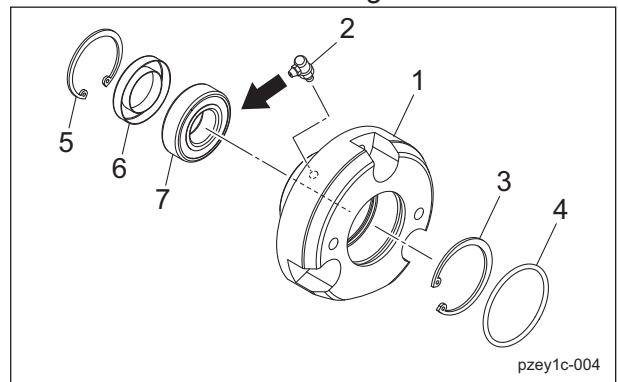
Important

The stop ring has a specific installation orientation. Confirm its direction.

Important

The grease nipple of the reel housing has a specific installation direction. Confirm its direction.

1. Remove the reel housing from the reel cutter.
2. Remove the O ring.
3. Remove the grease nipple.
4. Remove stop ring A.
5. Remove stop ring B, oil seal and bearing in order from the reel housing.



Reel Housing (A)_002

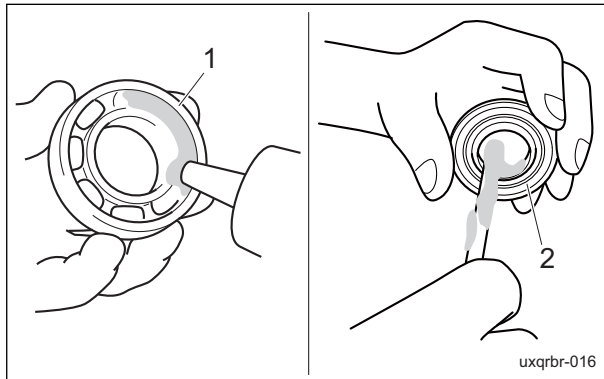
1	Reel housing
2	Grease nipple
3	Stop ring A
4	O-ring
5	Stop ring B
6	Oil seal
7	Bearing

Important

Be sure to replace the bearings and oil seals with new ones.

6. Apply a profuse amount of grease on new bearings and oil seals. Apply a profuse amount of grease to the lip of the oil seal.

Maintenance standards and maintenance



Reel Housing (A)_003

1	Bearing
2	Oil seal

Important

The stop ring has a specific installation orientation.
Install it in the correct orientation.

7. Install stop ring A.

Important

The bearing and oil seal have a specific installation orientation.
Install it in the correct orientation.

Important

Use a bearing driver to drive in the oil seal and bearing.

8. Tap the bearing and oil seal in order into the reel housing evenly.

9. Install stop ring B.

10. Install the O ring.

Important

The grease nipple has a specific installation direction.
Install it in the correct orientation.

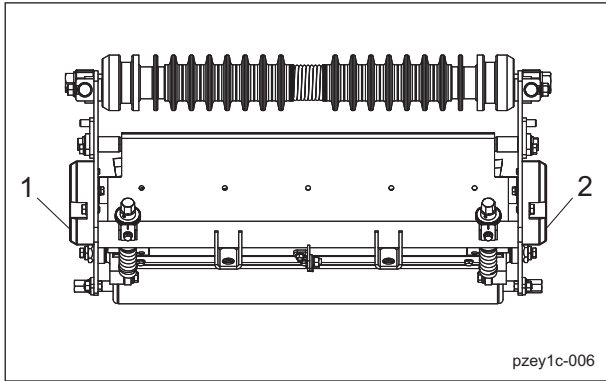
11. Install the grease nipple.

Maintenance standards and maintenance

Reel Housing (B)

Note:

This reel housing is installed on the right side of the mower unit.



Reel Housing (B)_001

1	Reel housing A
2	Reel housing B

Wear of bearings due to frequent use and/or damage of bearings, etc. caused by water penetration may prevent smooth rotation of the reel cutter.

Inspect and replace the parts such as the bearings.

- Make sure that the reel housing does not have any crack.
- Make sure that the bearing receptacle is not shaky.

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

Important

The bearing and oil seal have a specific installation orientation. Confirm its direction.

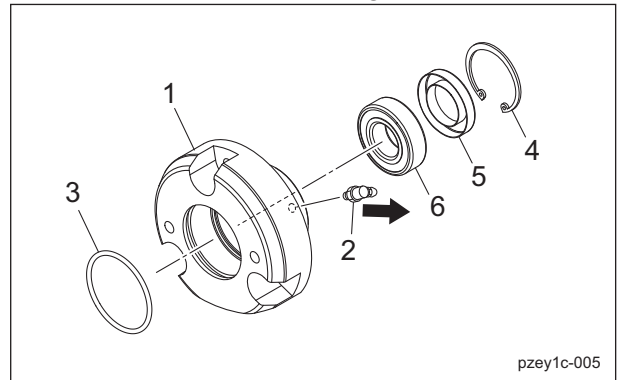
Important

The stop ring has a specific installation orientation. Confirm its direction.

Important

The grease nipple of the reel housing has a specific installation direction. Confirm its direction.

1. Remove the reel housing from the reel cutter.
2. Remove the O ring.
3. Remove the grease nipple.
4. Remove the stop ring, oil seal and bearing in order from the reel housing.



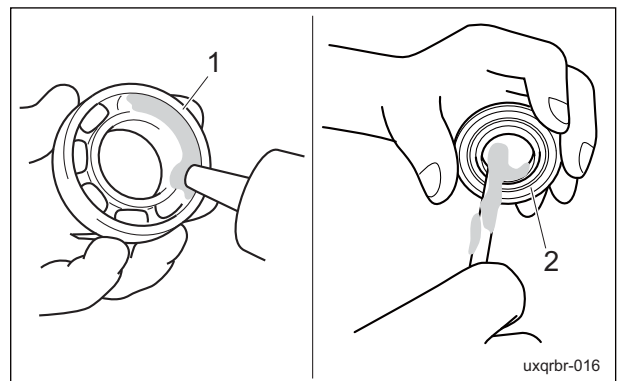
Reel Housing (B)_002

1	Reel housing
2	Grease nipple
3	O-ring
4	Stop ring
5	Oil seal
6	Bearing

Important

Be sure to replace the bearings and oil seals with new ones.

5. Apply a profuse amount of grease on new bearings and oil seals. Apply a profuse amount of grease to the lip of the oil seal.



Reel Housing (B)_003

Maintenance standards and maintenance

1	Bearing
2	Oil seal

Important

The bearing and oil seal have a specific installation orientation. Install it in the correct orientation.

Important

Use a bearing driver to drive in the oil seal and bearing.

6. Tap the bearing and oil seal in order into the reel housing evenly.

Important

The stop ring has a specific installation orientation. Install it in the correct orientation.

7. Install the stop ring.
8. Install the O ring.

Important

The grease nipple has a specific installation direction. Install it in the correct orientation.

9. Install the grease nipple.

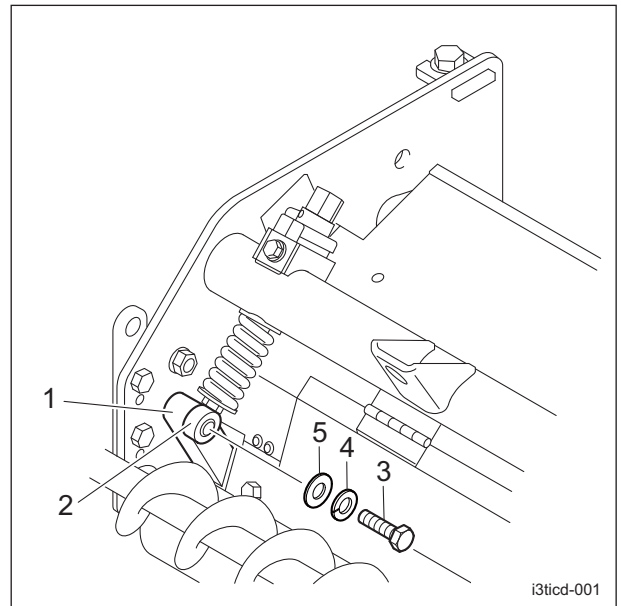
Cutter Adjustment Part

There may be wear of the pillow ball due to frequent use, or damage caused by water/dust penetration or insufficient lubrication. Inspect it, and replace the pillow ball.

⚠ Caution

The reel cutter (cutting cylinder), bed knife (bottom blade) and groomer blades are all edged tools. Handle them carefully, since they could cut your hands and feet.

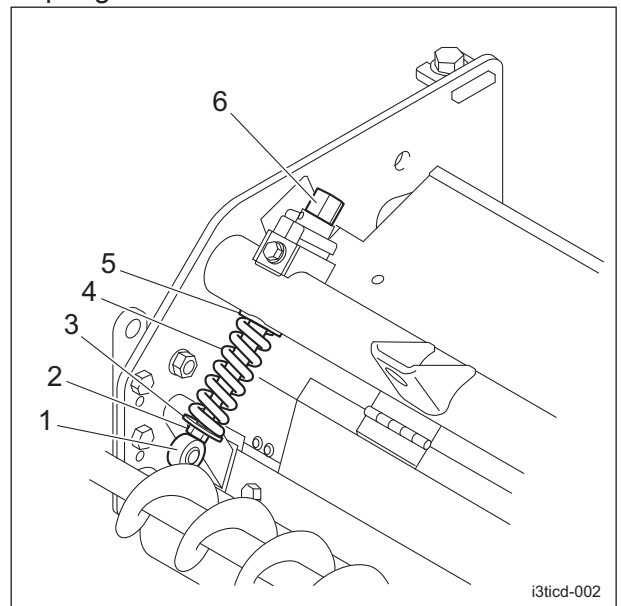
1. Remove the bolt, spring washer and washer securing the pillow ball from the bed knife base.



Cutter Adjustment Part_001

1	Bed knife base
2	Pillow ball
3	Bolt
4	Spring washer
5	Washer

2. Loosen the adjustment nut top and remove the pillow ball, then remove the nut, washer, spring and washer.

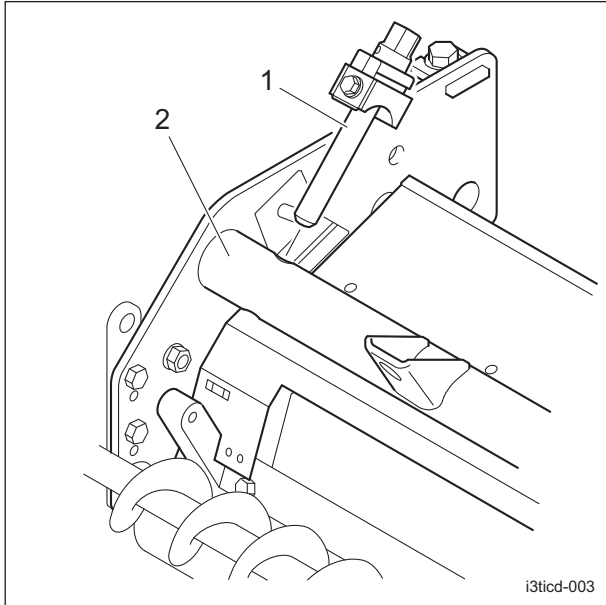


Cutter Adjustment Part_002

Maintenance standards and maintenance

1	Pillow ball
2	Nut
3	Washer
4	Spring
5	Washer
6	Adjustment nut top

3. Remove the adjustment nut top from the mower frame.



Cutter Adjustment Part_003

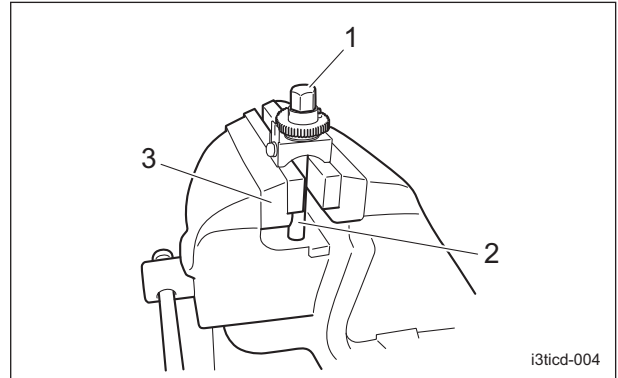
1	Adjustment nut top
2	Mower frame

4. Follow the steps below to disassemble the adjustment nut top.

Important

When securing the blade engagement shaft in a vice or similar mount, do not tighten it more than necessary. Doing so may cause scratches, deformation or damage to the shaft.

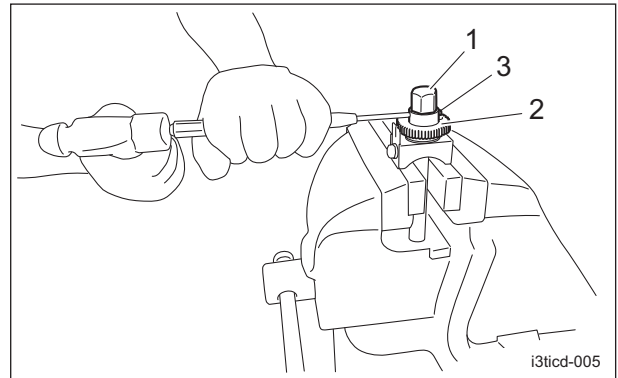
[1] Mount the adjustment nut top blade engagement shaft in a vice or similar tool to secure it.



Cutter Adjustment Part_004

1	Adjustment nut top
2	Blade engagement shaft
3	Vice

[2] Remove the spring pin securing the adjustment nut and knife adjustment bracket.



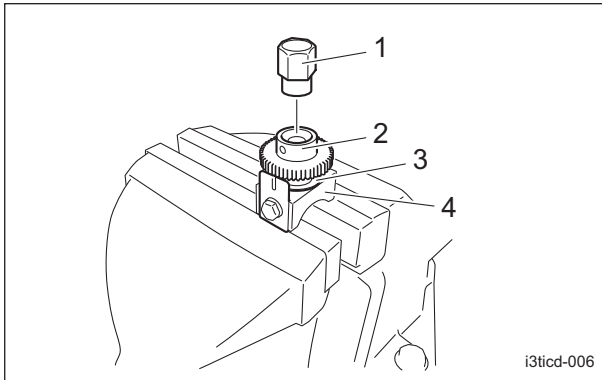
Cutter Adjustment Part_005

1	Adjustment nut
2	Knife adjustment bracket
3	Spring pin

[3] Remove the adjustment nut, knife adjustment bracket, washer and mounting base in order.

Maintenance standards and maintenance

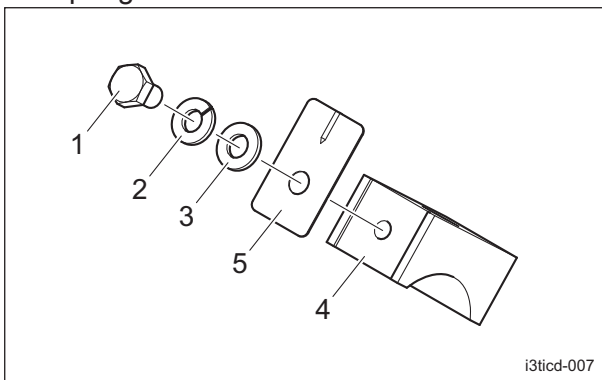
[4] Remove the blade engagement shaft from the vice.



Cutter Adjustment Part_006

1	Adjustment nut
2	Knife adjustment bracket
3	Washer
4	Mounting base

[5] Remove the bolt, spring washer and washer, and then remove the mounting base and blade engagement adjustment spring.



Cutter Adjustment Part_007

1	Bolt
2	Spring washer
3	Washer
4	Mounting base
5	Blade engagement adjustment spring

Important

Replace with a new pillow ball if it is worn or deformed, or if there is adhesion.

Important

The pillow ball has an oil filling port. When installing the pillow ball, install it so that the oil filling port is facing up.

5. Fill the oil in the pillow ball.

6. For installation, reverse the removing procedure.

Note:

When installing the pillow ball to the blade engagement shaft, fully tighten the nut to the pillow ball side.

7. Adjust the cutter adjustment spring.

"Adjustment of Cutter Spring" (Page 3-17)

Bed knife

Replacement of Bed Knife (Bottom Blade)

Caution

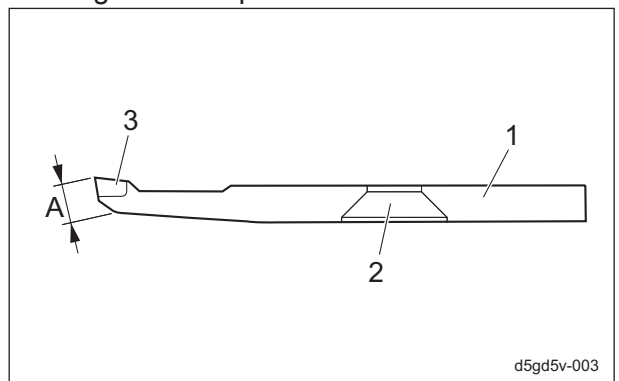
Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

Caution

Wear gloves when touching edged tools to avoid cutting your hands.

The criteria for replacing the bed knife (bottom blade) are described below.

1. When the reel cutter (cutting cylinder) is ground
2. When the reel cutter (cutting cylinder) is replaced
3. When the bed knife (bottom blade) is worn High-speed-steel-tipped blade
Replace the bed knife (bottom blade) before it no longer has a tip.



Replacement of Bed Knife (Bottom Blade)_001

1	Bed knife (bottom blade)
2	Mounting hole
3	Tip
A	Front face

Maintenance standards and maintenance

Roller

Front Roller

Wear of bearings due to frequent use and/or damage of bearing, etc. caused by water penetration may prevent smooth rotation of the roller.

Inspect and replace the parts such as the oil seal and bearings.

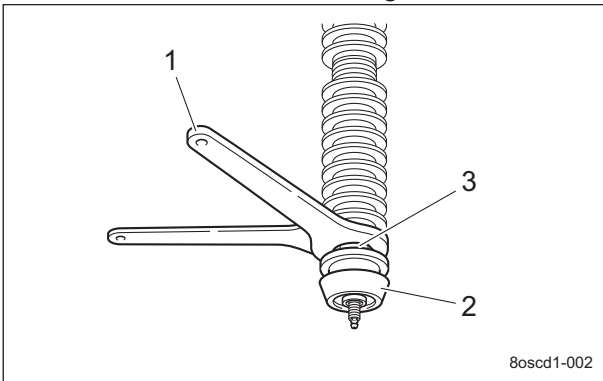
- Make sure that there is no abrasion or adhesion of the roller.
- Make sure that there is no abrasion of the collars nor nuts on both ends.
- Make sure that there is no wear or rust of the bearing or play of the housing or bearing.

⚠ Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. Remove the front roller assy from the mower frame.
2. Follow the steps below to disassemble the front roller.

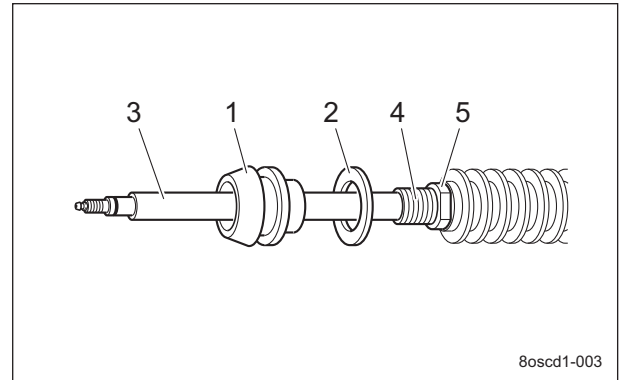
[1] Use the special wrench to loosen the roller housing and nuts of one side, and remove the roller housing.



Front Roller_001

1	Special wrench
2	Roller housing
3	Nut

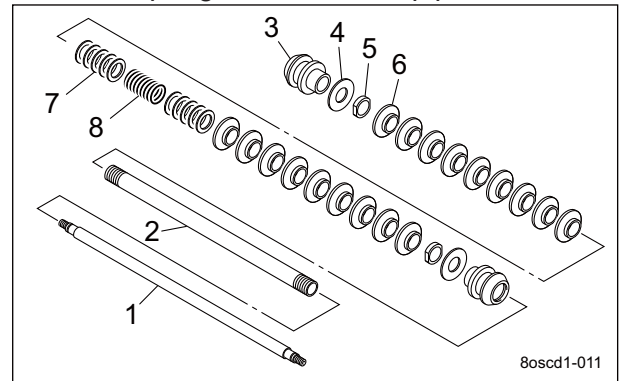
[2] Pull out the roller shaft, and then remove the plate and nut.



Front Roller_002

1	Roller housing
2	Plate
3	Roller shaft
4	Roller pipe
5	Nut

[3] Remove the rollers, adjustment washers and spring from the roller pipe.

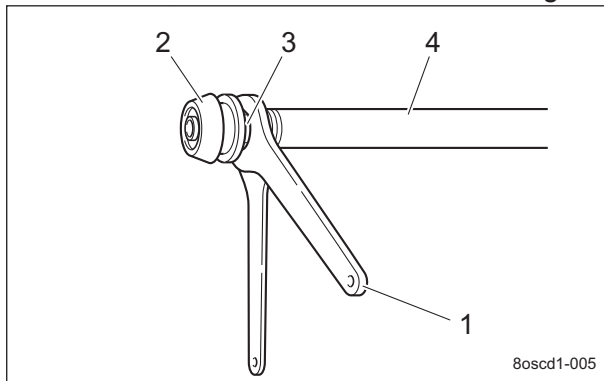


Front Roller_003

1	Roller shaft
2	Roller pipe
3	Roller housing
4	Plate
5	Nut
6	Roller
7	Adjustment washer
8	Spring

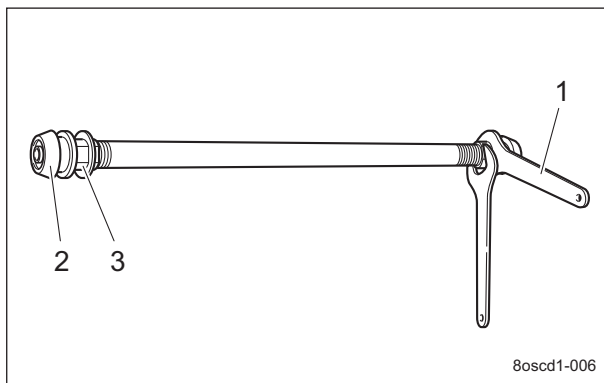
Maintenance standards and maintenance

[4] Use the special wrench to loosen the roller housing and nut on the other side, and remove the roller housing, plate, and nut from the roller pipe.
When disassembling the roller pipe, only the nut may be loosened and the roller housing and roller pipe may not be loosened.
In such a case, lock the nut and roller housing of the other side with the special wrench, and loosen the roller housing.



Front Roller_004

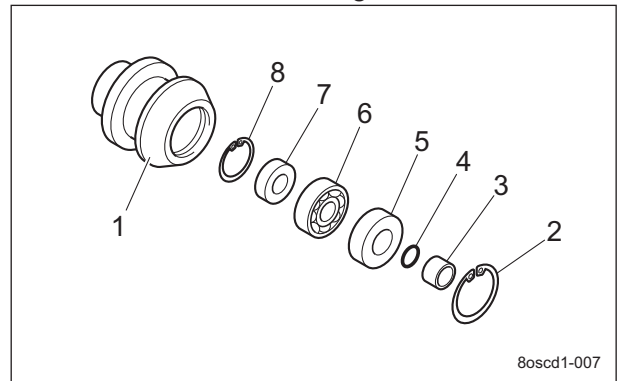
1	Special wrench
2	Roller housing
3	Nut
4	Roller pipe



Front Roller_005

1	Special wrench
2	Roller housing
3	Nut

[5] Remove stop ring A, collar, O-ring, oil seal A, bearing, oil seal B and stop ring B from the roller housing.



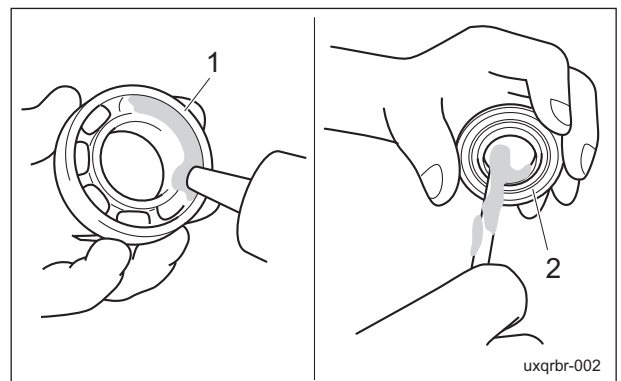
Front Roller_006

1	Roller housing
2	Stop ring A
3	Collar
4	O-ring
5	Oil seal A
6	Bearing
7	Oil seal B
8	Stop ring B

Important

Be sure to replace the bearing, oil seal and O-ring with new ones.

3. Apply a profuse amount of grease on new bearings and oil seals.
For bearings, apply the grease until it overflows from the opposite side.
Apply a profuse amount of grease to the lip of the oil seal.



Front Roller_007

1	Bearing
2	Oil seal

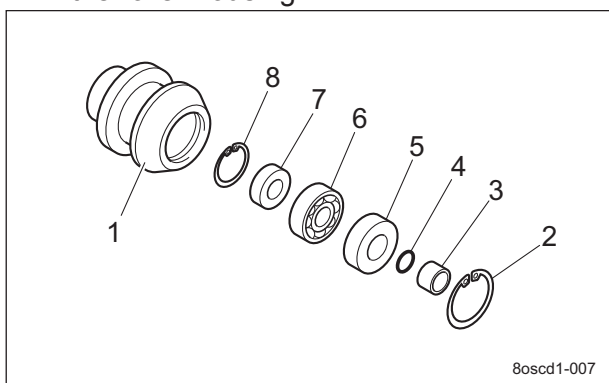
Maintenance standards and maintenance

4. Follow the steps below to assemble the front roller.

Important

The stop ring has a specific installation orientation. Install it in the correct orientation.

[1] Install stop ring B, oil seal B, bearing, oil seal A, O-ring, collar and stop ring A onto the roller housing.



Front Roller_008

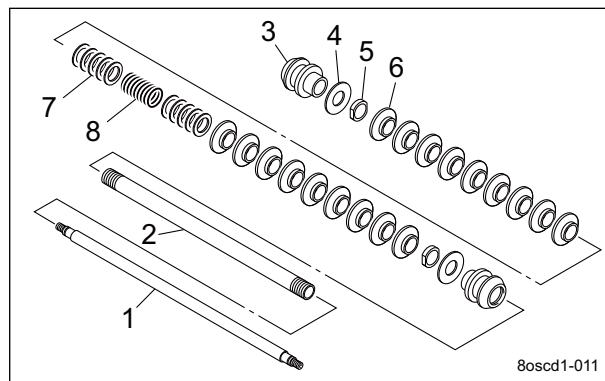
1	Roller housing
2	Stop ring A
3	Collar
4	O-ring
5	Oil seal A
6	Bearing
7	Oil seal B
8	Stop ring B

Important

The roller housing to be installed first must be screwed in all the way into the roller pipe.

[2] Install the nut, plate and roller housing in order onto one side of the roller pipe, and lock them with a nut.

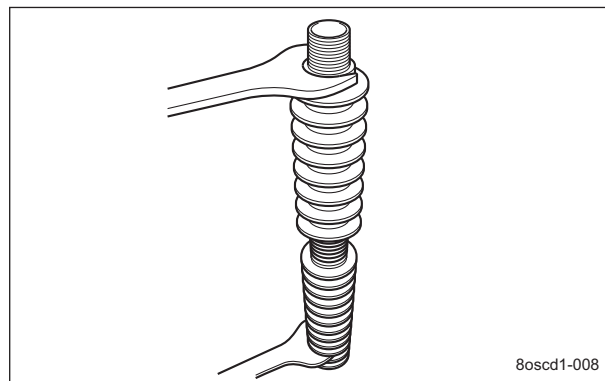
[3] Install the roller shaft, rollers, adjustment washers and spring onto the roller pipe.



Front Roller_009

1	Roller shaft
2	Roller pipe
3	Roller housing
4	Plate
5	Nut
6	Roller
7	Adjustment washer
8	Spring

[4] Install the nuts and tighten them to the maximum extent.

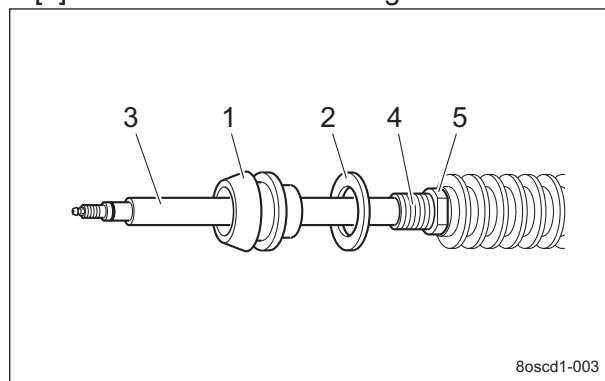


Front Roller_010

[5] Install the plate to the roller pipe.

[6] Tighten the roller housing to the roller pipe.

[7] Secure the roller housing with nut.



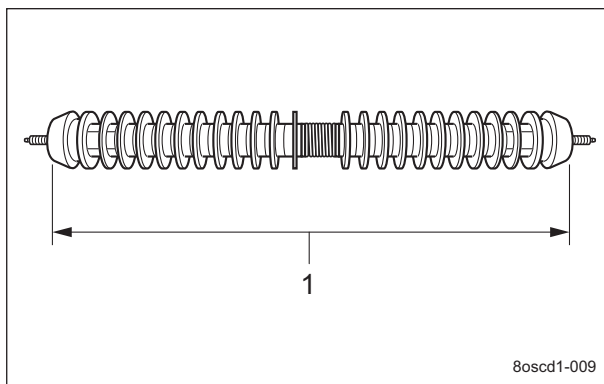
Front Roller_011

Maintenance standards and maintenance

1	Roller housing
2	Plate
3	Roller shaft
4	Roller pipe
5	Nut

5. Check the total length of the front roller assy.
If the total length is longer than the standard dimension, the tightening of the roller housing is insufficient so increase the tightening.

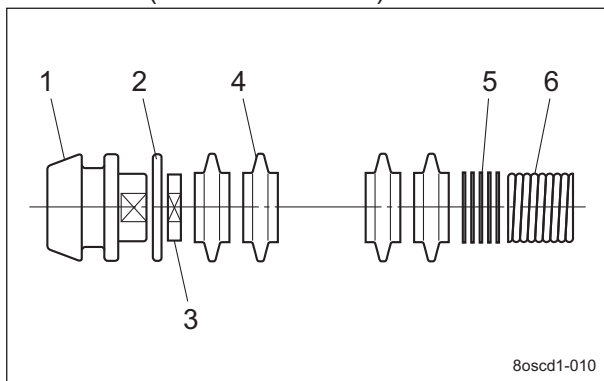
22-inch specification	593.5 mm (23.36 in)
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Front Roller_012

1	Total length
---	--------------

6. Make sure that the roller rotates smoothly with no play when the roller shaft is fixed.
If the roller does not rotate, the spring has play, or the roller has a backlash, adjust the clearance of the spring with the adjustment washers.
When the roller is pushed toward the spring, the clearance of the spring is 1.0 to 3.0 mm (0.039 to 0.118 in).



Front Roller_013

1	Roller housing
2	Plate
3	Nut
4	Roller
5	Adjustment washer
6	Spring

7. Apply grease.
"Greasing Points" (Page 3-10)
8. Install the front roller assy to the mower frame.
"Installation of Front Roller Assy" (Page 3-34)

Rear Roller

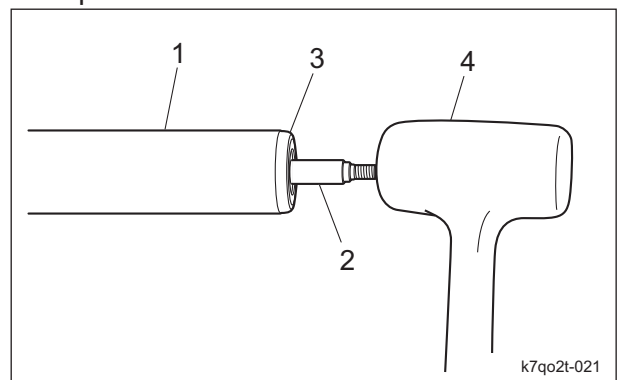
Wear of bearings due to frequent use and/or damage of bearing, etc. caused by water penetration may prevent smooth rotation of the rear roller.
Inspect and replace the parts such as the oil seal and bearings.

- Make sure that there is no abrasion or adhesion of the roller.
- Make sure that there is no wear or rust of the bearing or play of the housing or bearing.

Caution

Both the reel cutter (cutting cylinder) and the bed knife (bottom blade) are edged tools. Handle them carefully, since they could cut your hands and feet.

1. Remove the rear roller assy from the mower frame.
"Removal of the Rear Roller Assy" (Page 3-34)
2. Knock the roller shaft with a plastic hammer to push out the shaft.

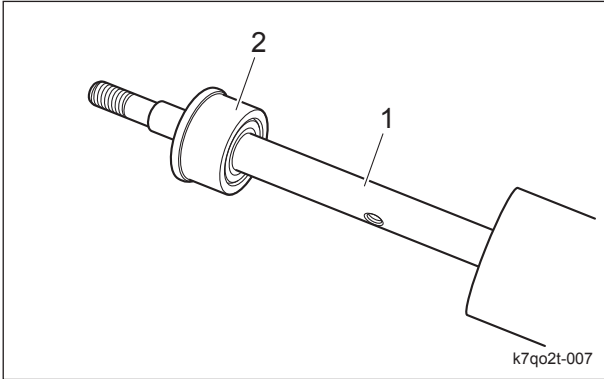


Rear Roller_001

Maintenance standards and maintenance

1	Roller
2	Roller shaft
3	Roller housing
4	Plastic hammer

3. Remove the roller housing from the roller shaft.



Rear Roller_002

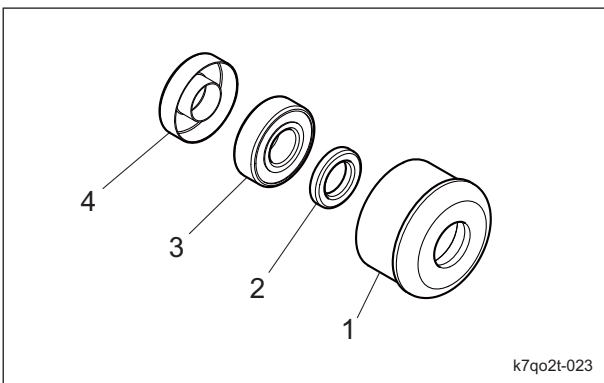
1	Roller shaft
2	Roller housing

4. Follow the same steps again to insert the roller shaft into the roller and remove the roller housing on the opposite side.

5. Remove oil seal A, bearing and oil seal B from the roller housing.

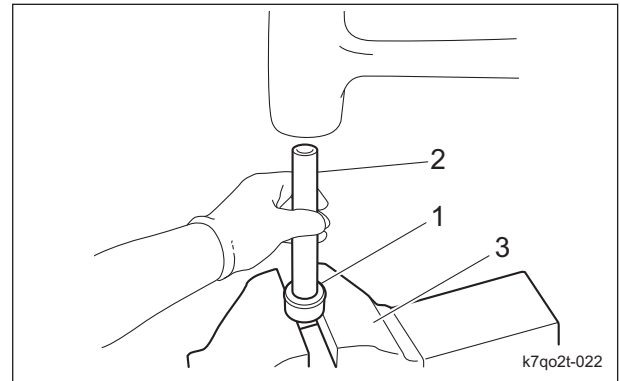
Important

When using the vise, open it a little wider than the outer diameter of the bearing.



Rear Roller_003

1	Roller housing
2	Oil seal A
3	Bearing
4	Oil seal B



Rear Roller_004

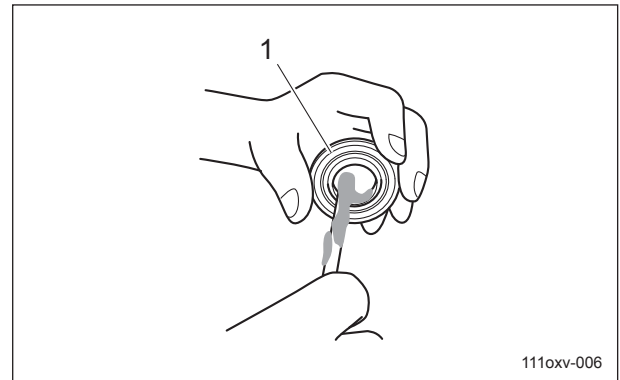
1	Roller housing
2	Pipe
3	Vice

Important

Be sure to replace the bearings and oil seals with new ones.

6. Apply a profuse amount of grease to new oil seals.

Apply a profuse amount of grease to the lip surface.

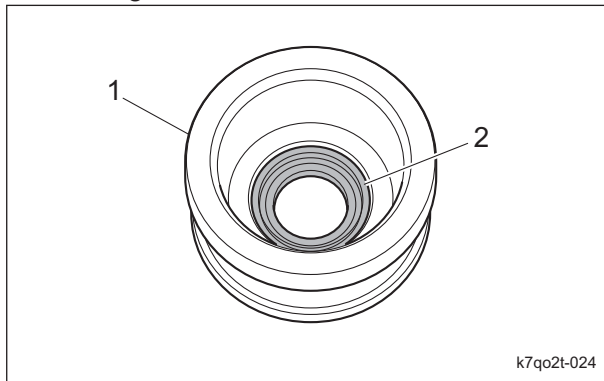


Rear Roller_005

1	Oil seal
---	----------

Maintenance standards and maintenance

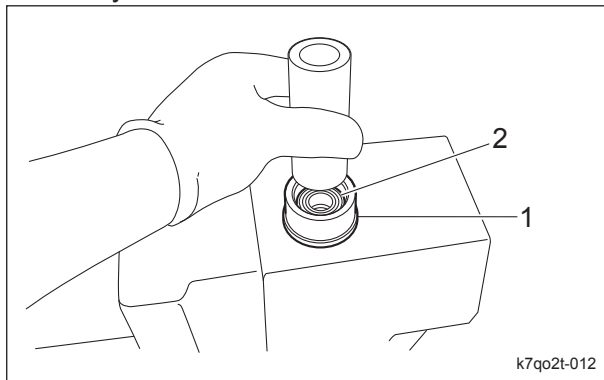
7. Position the rib of oil seal A facing toward the bearing and install it onto the roller housing.



Rear Roller_006

1	Roller housing
2	Oil seal A

8. Tap the bearing into the roller housing evenly.

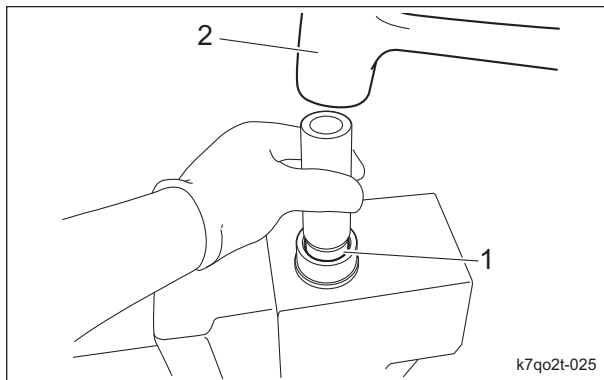


Rear Roller_007

1	Roller housing
2	Bearing

9. Tap oil seal B into the roller housing evenly.

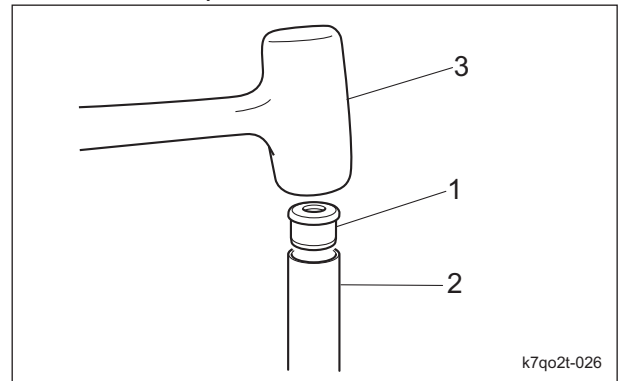
Note:
Use the bearing driver to drive in the oil seals.



Rear Roller_008

1	Oil seal B
2	Plastic hammer

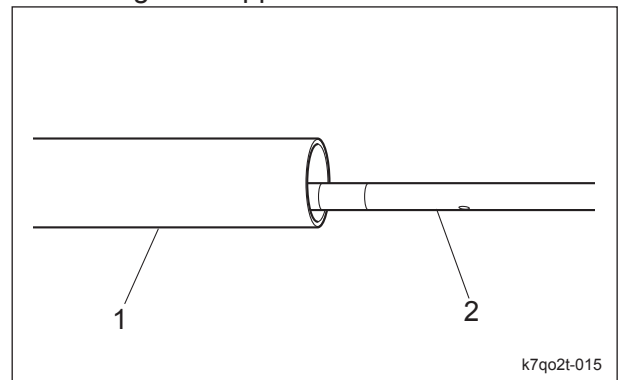
10. Tap the roller housing on one side of the roller with a plastic hammer.



Rear Roller_009

1	Roller housing
2	Roller
3	Plastic hammer

11. Insert the roller shaft into the roller from the opposite side to the side where the roller housing was tapped.



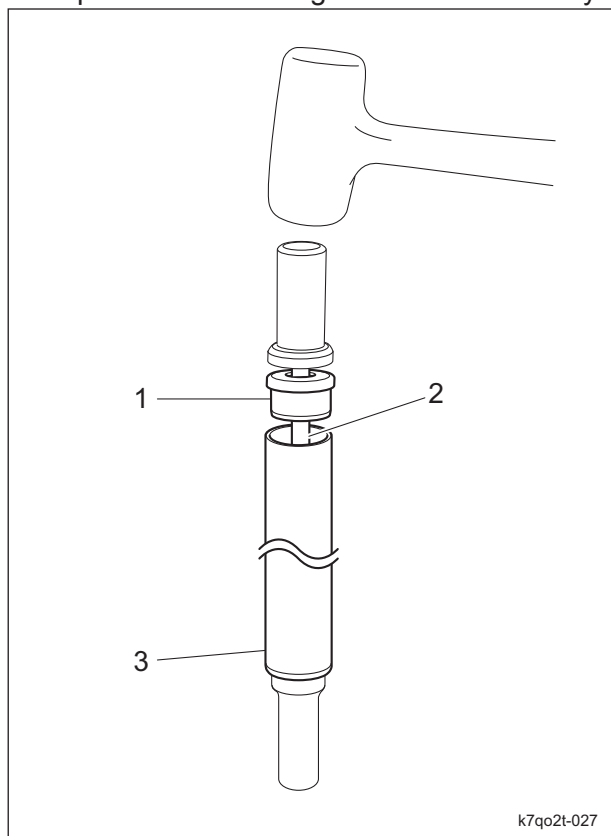
Rear Roller_010

1	Roller
2	Roller shaft

Maintenance standards and maintenance

Maintenance standards and maintenance

12. Tap the roller housing into the roller evenly.



Rear Roller_011

1	Roller housing
2	Roller shaft
3	Roller

13. Make sure that the roller rotates smoothly with no play when the roller shaft is fixed.

14. Install the rear roller assy to the mower frame.

"Installation of Rear Roller Assy" (Page 3-35)

Auxiliary Roller

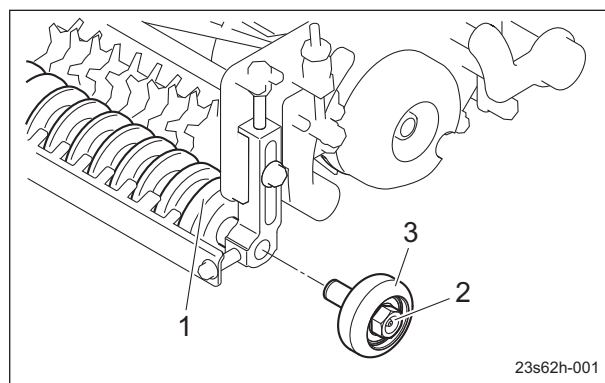
Note:

Depending on the specifications, this function may not be available.

Wear of bearings, auxiliary roller and auxiliary roller shaft due to frequent use and/or damage etc. caused by water penetration may prevent smooth rotation of the auxiliary roller.

Inspect and replace the parts.

1. Loosen and remove the auxiliary roller shaft of the front roller, and remove the auxiliary roller.



Auxiliary Roller_001

1	Front roller
2	Auxiliary roller shaft
3	Auxiliary roller

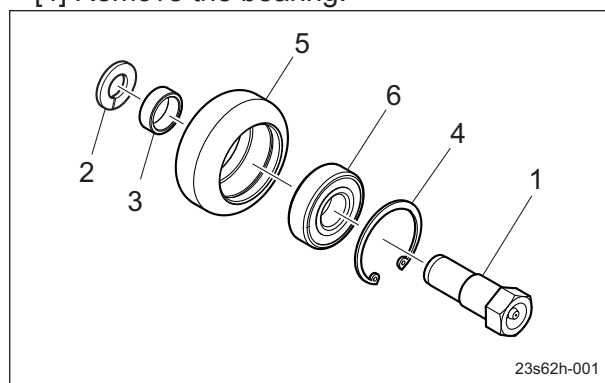
2. Follow the steps below to disassemble the auxiliary roller.

[1] Remove the spring washer.

[2] Tap the end of the auxiliary roller shaft with a plastic hammer or similar tool, and remove the auxiliary roller shaft.

[3] Remove the stop ring.

[4] Remove the bearing.



Auxiliary Roller_002

1	Auxiliary roller shaft
2	Spring washer
3	Collar
4	Stop ring
5	Auxiliary roller
6	Bearing

Maintenance standards and maintenance

Important

Replace deteriorated, deformed, or worn parts with new ones.

Important

The stop ring has a specific installation orientation. Install it in the correct orientation.

For installation, reverse the disassembly steps.

Important

When installing the auxiliary roller to the front roller, install the collar and spring washer to the auxiliary roller shaft before tightening firmly.

Groomer Assy

Note:

Depending on the specifications, this function may not be available. Wear of bearings due to frequent use and/or damage of bearing, etc. caused by water penetration may prevent smooth rotation of the groomer.

Inspect and replace the parts such as the oil seal and bearings.

- Make sure that there is no change in shape, breakage, etc. on the groomer blades.
- Make sure that the groomer shaft is not bent nor worn.
- Make sure that there is no crack on the groomer case and groomer cover.
- Make sure that the intermediate shaft of the groomer cover has no play.
- Make sure that the bearings and shaft receptacle of the groomer case have no play.
- Make sure that the shifter receptacle of the groomer case has no play.

⚠ Caution

The reel cutter (cutting cylinder), bed knife (bottom blade) and groomer blades are all edged tools. Handle them carefully, since they could cut your hands and feet.

Important

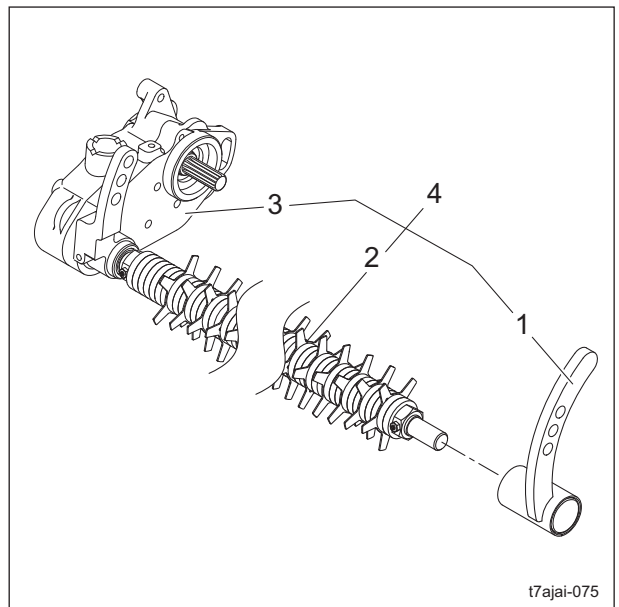
The mower unit has motors with a right installation position and left installation position.

The shape and installation orientation of groomer assy installation parts differs depending on whether the installation position on the motor is right or left.

1. Remove the groomer assy.
2. Remove the groomer housing.

Note:

The illustration below is for the groomer assy that has the motor installation position on the left.



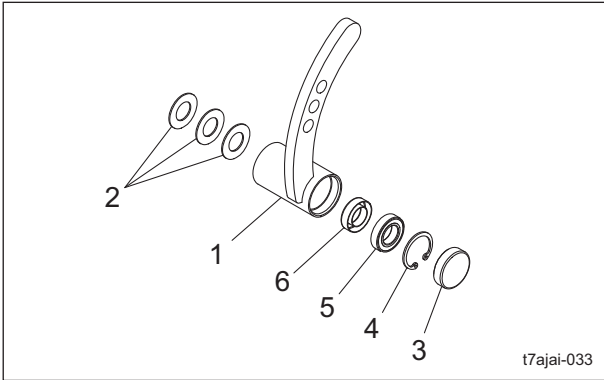
Groomer Assy_001

1	Groomer housing
2	Groomer shaft
3	Groomer case
4	Groomer assy

Maintenance standards and maintenance

3. Follow the steps below to disassemble the groomer housing.

- [1] Remove the 3 washers.
- [2] Remove the plug.
- [3] Remove the stop ring.
- [4] Remove the bearing.
- [5] Remove the oil seal.



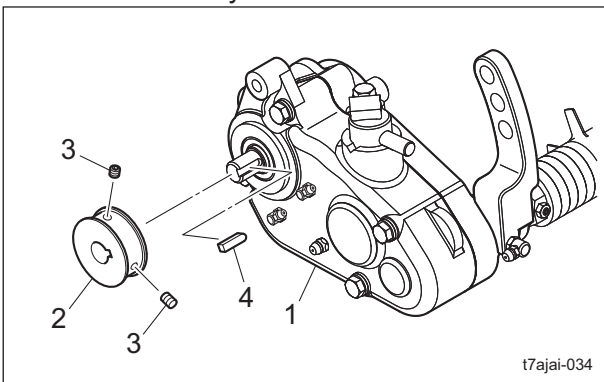
Groomer Assy_002

1	Groomer housing
2	Washer
3	Plug
4	Stop ring
5	Bearing
6	Oil seal

4. Remove the groomer case driving pulley hollow screws, and remove the driving pulley and key.

Note:

Depending on driving pulley specifications, this function may not be available.

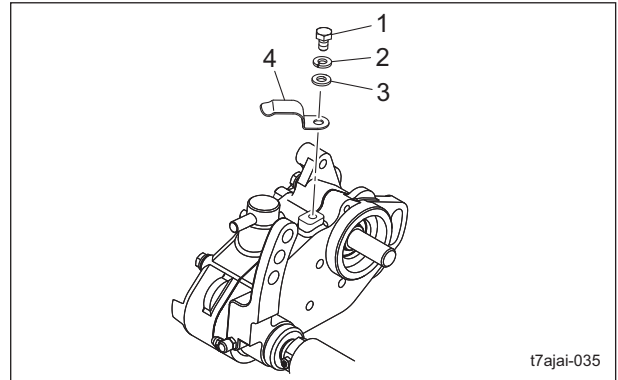


Groomer Assy_003

1	Groomer case
2	Driving pulley
3	Hollow screw
4	Key

5. Follow the steps below to disassemble the groomer case.

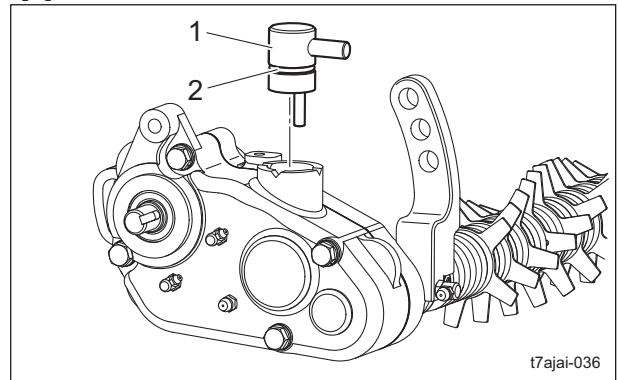
- [1] Remove the bolt, spring washer and washer, and then remove the clutch holding spring.



Groomer Assy_004

1	Bolt
2	Spring washer
3	Washer
4	Clutch holding spring

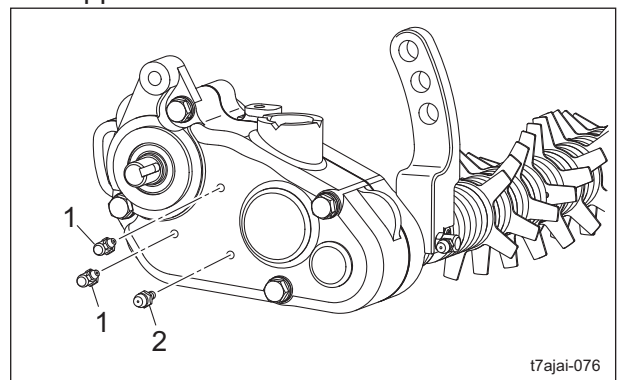
[2] Remove the clutch lever.



Groomer Assy_005

1	Clutch lever
2	O-ring

[3] Remove grease nipple A and grease nipple B.

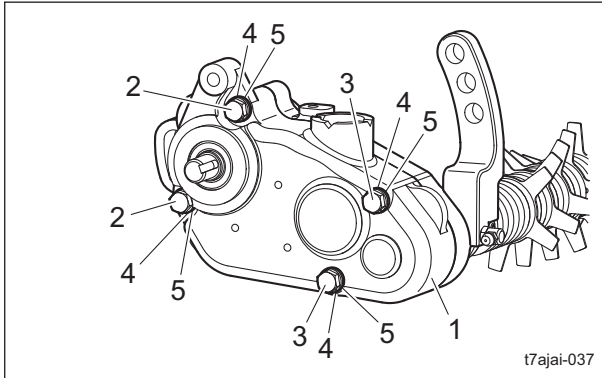


Groomer Assy_006

Maintenance standards and maintenance

1	Grease nipple A
2	Grease nipple B

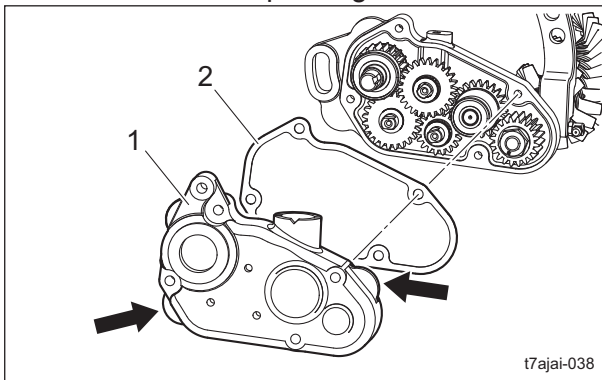
[4] Remove bolt A, bolt B, spring washers and washers of the gear case cover.



Groomer Assy_007

1	Gear case cover
2	Bolt A
3	Bolt B
4	Spring washer
5	Washer

[5] Gently tap the two sections marked with arrows alternatively with a plastic hammer or similar tool, remove the gear case cover and remove the packing.



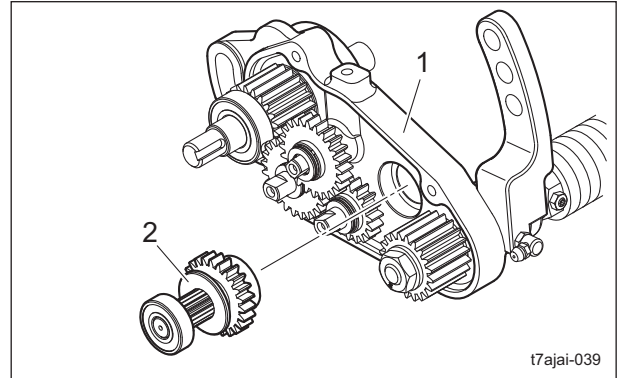
Groomer Assy_008

1	Gear case cover
2	Packing

Important

The gear has a specific installation direction. Take note of the direction when removing it.

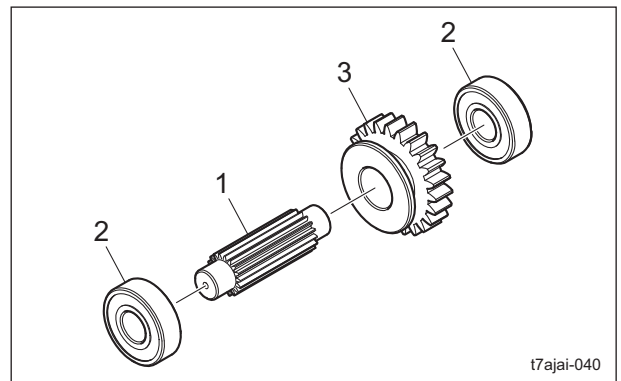
6. Remove the clutch shaft assy from the groomer case.



Groomer Assy_009

1	Groomer case
2	Clutch shaft assy

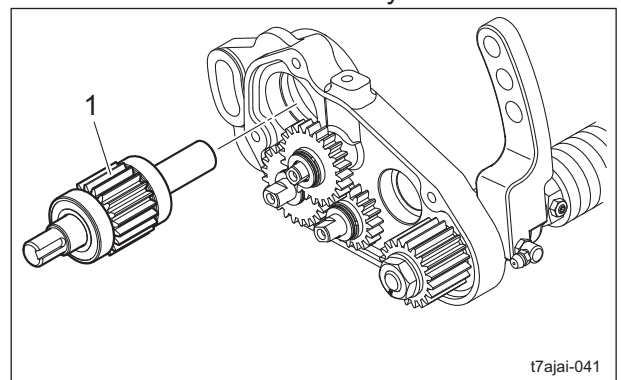
7. Remove the bearing and clutch gear from the clutch shaft.



Groomer Assy_010

1	Clutch shaft
2	Bearing
3	Clutch gear

8. Remove the drive shaft assy.



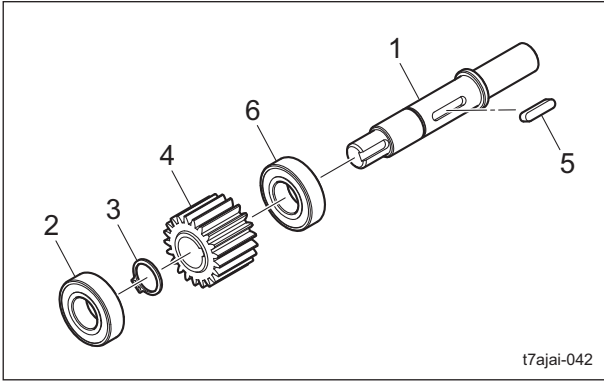
Groomer Assy_011

1	Drive shaft assy
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Maintenance standards and maintenance

Maintenance standards and maintenance

9. Remove bearing A, stop ring, gear, key and bearing B from the drive shaft.



Groomer Assy_012

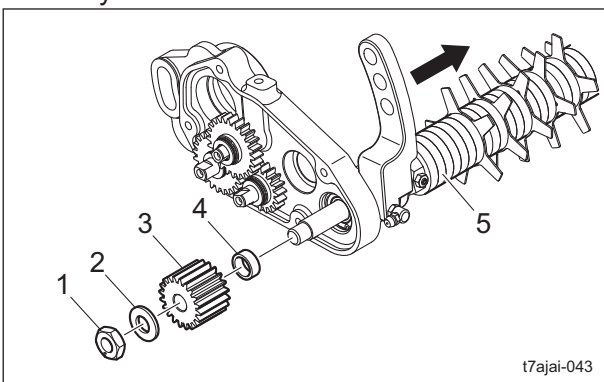
1	Drive shaft
2	Bearing A
3	Stop ring
4	Gear
5	Key
6	Bearing B

10. Follow the steps below to remove the groomer shaft assy.

Important

The nut securing the vertical gear is a left-handed screw.

- [1] Secure the groomer-side nut with a wrench, and then remove the nut and disc spring washer securing the vertical gear.
- [2] Remove the vertical gear and collar.
- [3] Pull out and remove the groomer shaft assy in the direction of the arrow.

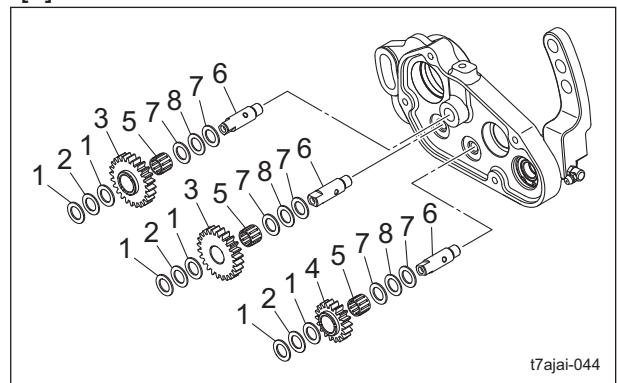


Groomer Assy_013

1	Nut
2	Disc spring washer
3	Vertical gear
4	Collar
5	Groomer shaft assy

11. Follow the steps below to remove the parts attached to the groomer case.

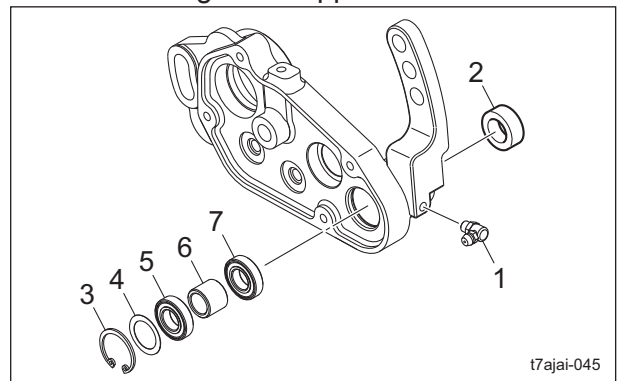
- [1] Remove washer A and washer B attached to the gear.
- [2] Remove gear A, gear B and the needle bearing.
- [3] Remove washer C and washer D.
Note:
Washer A (copper) and washer C (copper) are the same washer.
Washer B (steel) and washer D (steel) are the same washer.
- [4] Remove the intermediate shaft.



Groomer Assy_014

1	Washer A
2	Washer B
3	Gear A
4	Gear B
5	Needle bearing
6	Intermediate shaft
7	Washer C
8	Washer D

12. Remove the grease nipple.

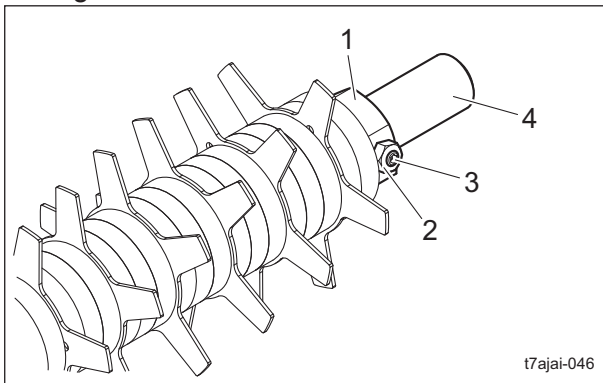


Groomer Assy_015

Maintenance standards and maintenance

1	Grease nipple
2	Oil seal
3	Stop ring
4	Wave washer
5	Bearing A
6	Collar
7	Bearing B

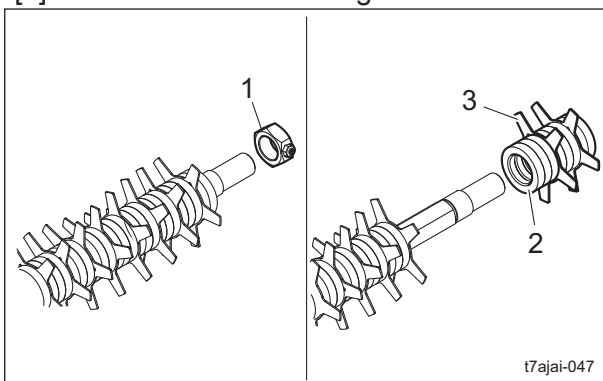
13. Remove the oil seal.
14. Remove the stop ring.
15. Remove the wave washer, bearing A, collar and bearing B.
16. Remove the lock nut securing the special nut on the groomer shaft on the opposite side of the groomer case.



Groomer Assy_016

1	Special nut
2	Lock nut
3	Hollow screw
4	Groomer shaft

17. Remove the hollow screw.
18. Follow the steps below to remove the groomer blade from the groomer shaft assy.
 - [1] Secure the special nut on the groomer case side with a wrench, and then remove the special nut on the opposite side.
 - [2] Remove the collar and groomer blade.



Groomer Assy_017

1	Special nut
2	Collar
3	Groomer blade

19. Remove the lock nut securing the special nut on the groomer shaft on the groomer case side.
20. Remove the hollow screw.
21. Secure the groomer shaft with a wrench and remove the special nut.

Important

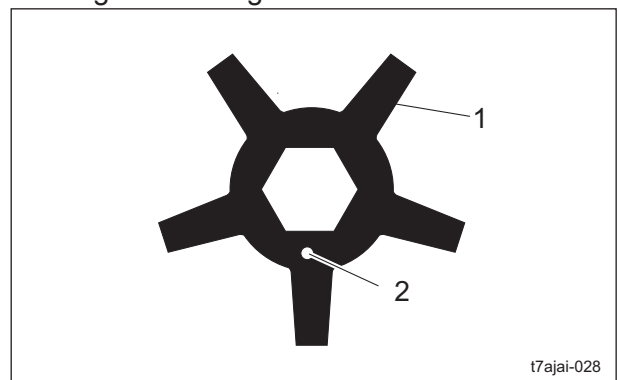
Replace deteriorated, deformed, or worn parts with new ones.

Important

Tightening the special nut too much may cause deflection of the groomer blade. Be careful not to tighten it too much. (Tightening torque: 5 - 10 N-m)

22. Follow the steps below to assemble the groomer shaft assy.
 - [1] Install the special nut to the groomer case side.
 - [2] Turn up the groomer shaft with the groomer case side down.
 - [3] Install the 7 collars.
 - [4] Install the 1 groomer blade and 3 collars.

Note:
Place the groomer blade so that the punch mark is facing the front.
After inserting each groomer blade onto the groomer shaft, rotate the groomer shaft clockwise by one surface of the six shaft surfaces.
Assemble the blade so that it has a spiral shape by assembling them offset by an angle of 60 degrees.

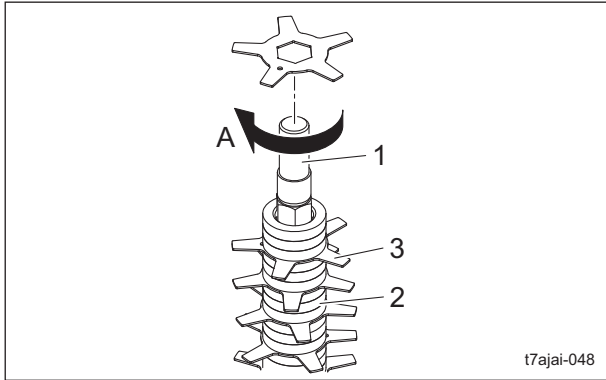


Groomer Assy_018

Maintenance standards and maintenance

1	Groomer blade
2	Punch mark

[5] Repeat installation of another groomer blade and 3 collars.



Groomer Assy_019

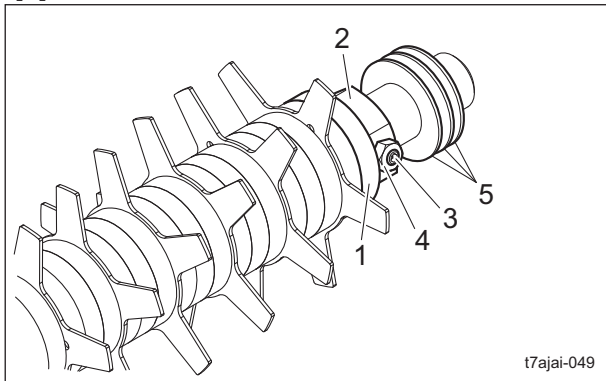
1	Groomer shaft
2	Collar
3	Groomer blade
A	Clockwise direction

[6] After installing all groomer blades, install the 2 collars.

[7] Tighten the special nut.

[8] Tighten the hollow screw, and then lock it with the lock nut.

[9] Install the 3 washers.



Groomer Assy_020

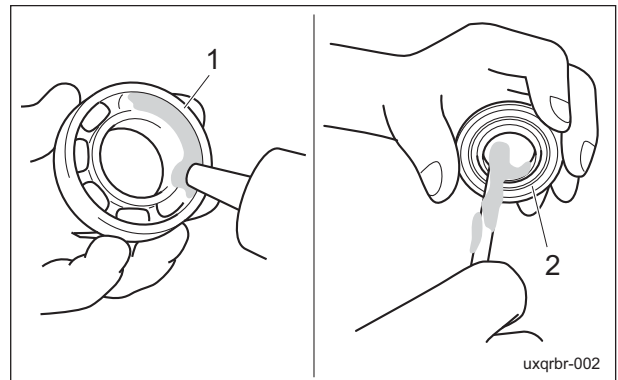
1	Collar
2	Special nut
3	Hollow screw
4	Lock nut
5	Washer

23. Check that the twist of the groomer blades is the same as that of the reel cutters.

Important

Be sure to replace the bearings and oil seals with new ones.

24. Apply a profuse amount of grease on new bearings and oil seals.
Apply a profuse amount of grease to the lip surface.



Groomer Assy_021

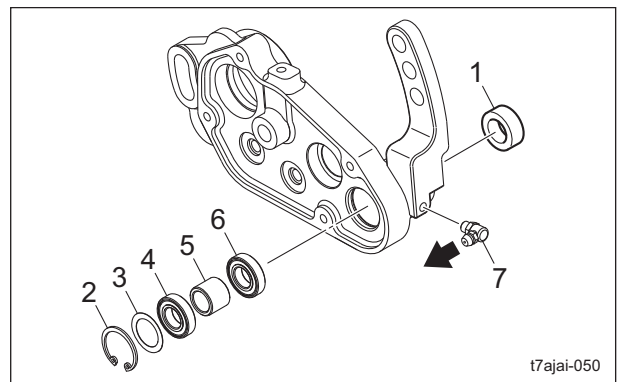
1	Bearing
2	Oil seal

25. Install the oil seal.

26. Install bearing B, collar, bearing A and the wave washer.

27. Install the stop ring.

28. Install the grease nipple so that the oil filling port faces the direction of the arrow shown in the illustration.



Groomer Assy_022

Maintenance standards and maintenance

1	Oil seal
2	Stop ring
3	Wave washer
4	Bearing A
5	Collar
6	Bearing B
7	Grease nipple

Important

The gear has a specific installation direction. Do not install it facing the wrong direction.

29. Follow the steps below to install the parts to the groomer case.

Note:

Washer A (copper) and washer C (copper) are the same washer.

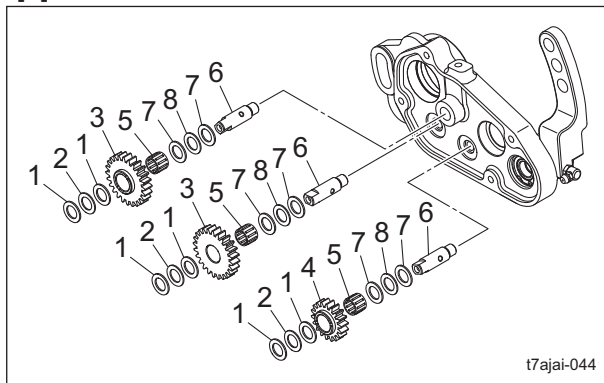
Washer B (steel) and washer D (steel) are the same washer.

[1] Install the intermediate shaft.

[2] Install washer C and washer D.

[3] Install the needle bearing, gear A and gear B.

[4] Install washer A and washer B.



Groomer Assy_023

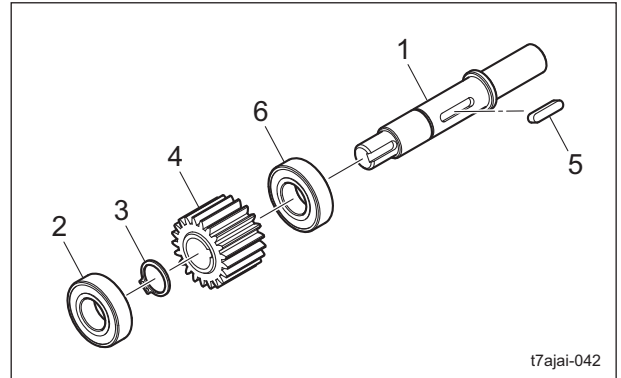
1	Washer A
2	Washer B
3	Gear A
4	Gear B
5	Needle bearing
6	Intermediate shaft
7	Washer C
8	Washer D

Important

The nut securing the vertical gear is a left-handed screw.

30. For installing the groomer shaft assy onto the groomer case, reverse the removing procedure.

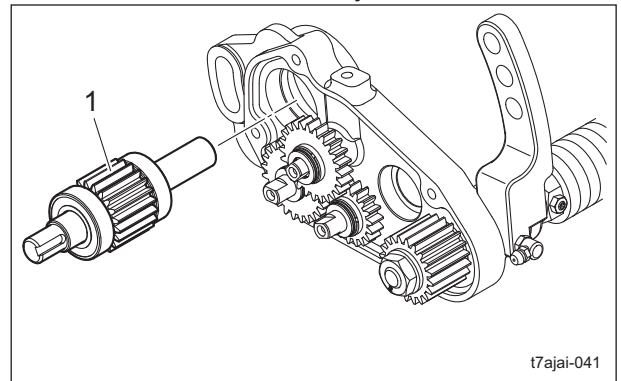
31. Install bearing B, key, gear, stop ring and bearing A to the drive shaft.



Groomer Assy_024

1	Drive shaft
2	Bearing A
3	Stop ring
4	Gear
5	Key
6	Bearing B

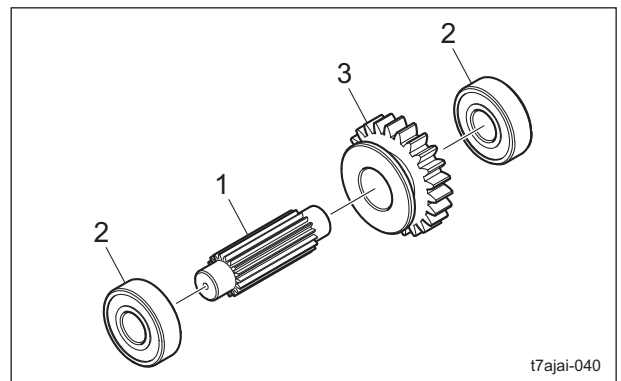
32. Install the drive shaft assy.



Groomer Assy_025

1	Drive shaft assy
---	------------------

33. Install the bearing, clutch gear and bearing to the clutch shaft.



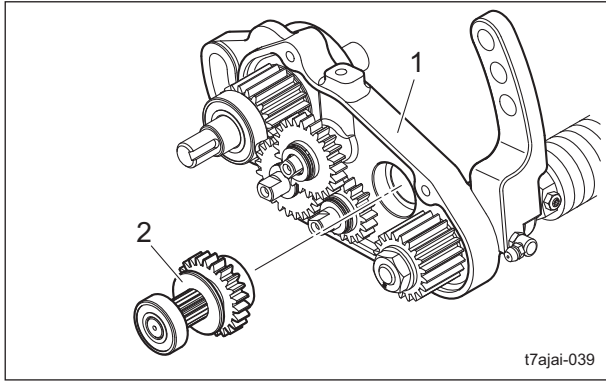
Groomer Assy_026

Maintenance standards and maintenance

Maintenance standards and maintenance

1	Clutch shaft
2	Bearing
3	Clutch gear

34. Install the clutch shaft assy to the groomer case.



Groomer Assy_027

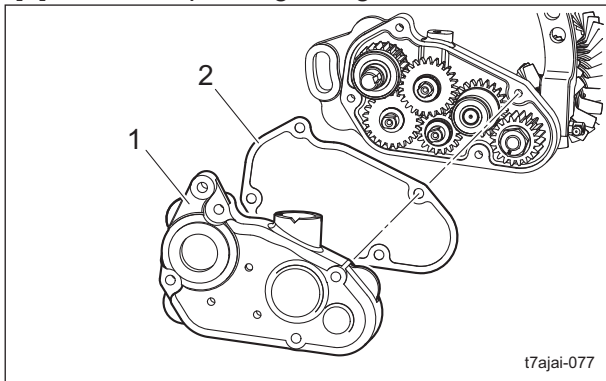
1	Groomer case
2	Clutch shaft assy

35. Follow the steps below to install the gear case cover.

Important

Be sure to replace the packing with a new one.

[1] Install the packing and gear case cover.



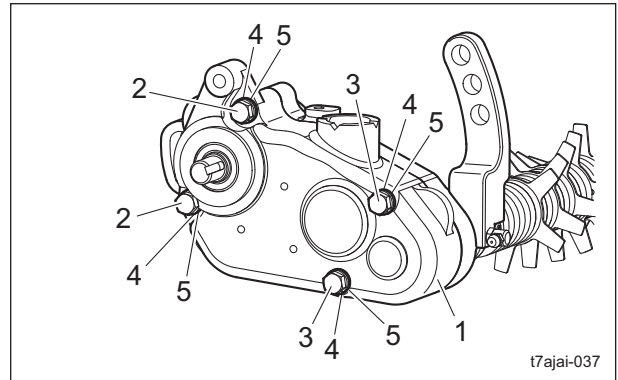
Groomer Assy_028

1	Gear case cover
2	Packing

Important

When installing the bolts of the gear case cover, tighten them diagonally so that the bolts are tightened evenly.

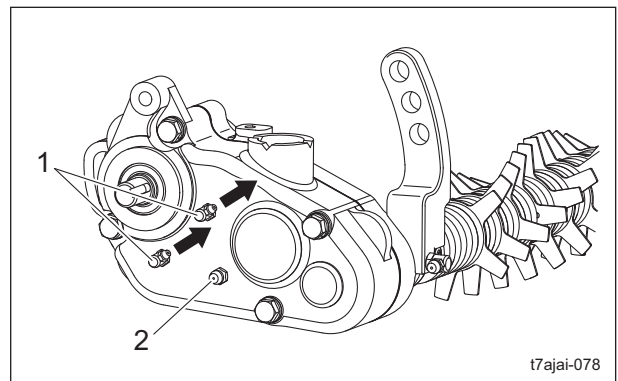
[2] Install bolt A, bolt B, spring washers and washers.



Groomer Assy_029

1	Gear case cover
2	Bolt A
3	Bolt B
4	Spring washer
5	Washer

[3] Install grease nipple A and grease nipple B so that the oil filling port faces the direction of the arrow shown in the illustration.



Groomer Assy_030

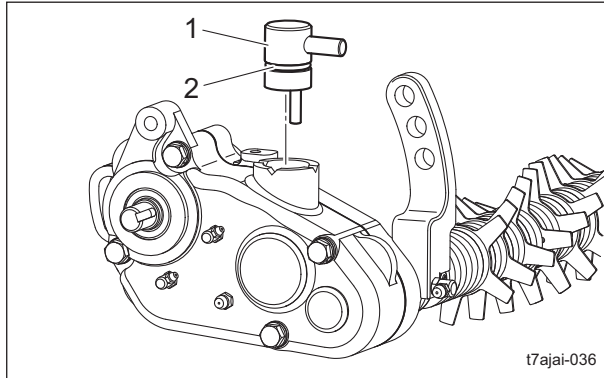
1	Grease nipple A
2	Grease nipple B

Maintenance standards and maintenance

Important

Check that the clutch lever shaft fits into the groove of the clutch gear.

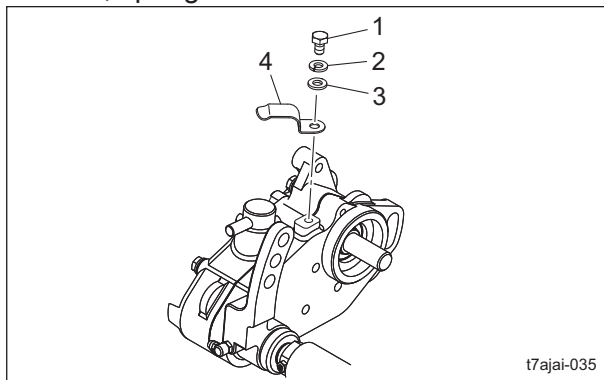
[4] Install the clutch lever.



Groomer Assy_031

1	Clutch lever
2	O-ring

[5] Install the clutch holding spring with the bolt, spring washer and washer.



Groomer Assy_032

1	Bolt
2	Spring washer
3	Washer
4	Clutch holding spring

36. Apply additional grease to the groomer case.

Note:

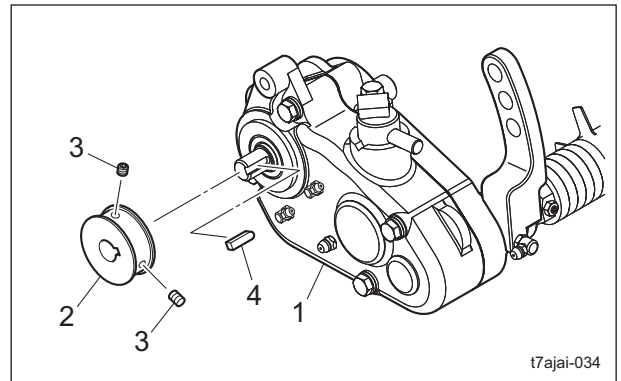
The grease quantity is approximately 70 g (0.15 lb).

37. Install the key and driving pulley to the groomer case.

Note:

Depending on driving pulley specifications, this function may not be available.

38. Install the hollow screw.

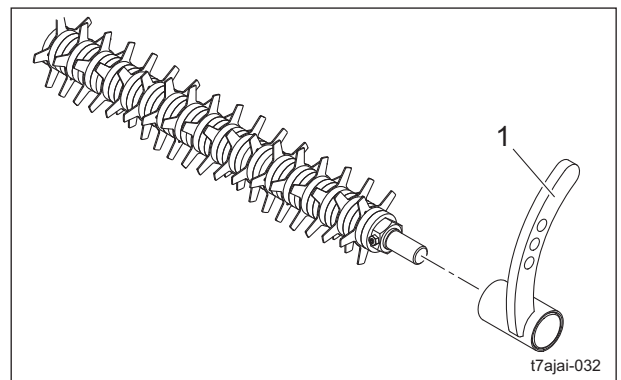


Groomer Assy_033

1	Groomer case
2	Driving pulley
3	Hollow screw
4	Key

39. For installing the groomer housing, reverse the removing procedure.

40. Install the groomer housing to the groomer shaft.



Groomer Assy_034

1	Groomer housing
---	-----------------

41. Adjust the operating height of groomer. "Adjustment of Groomer" (Page 3-19)

Maintenance standards and maintenance

CR Brush Assy

Note:

Depending on the specifications, this function may not be available.
 Wear of bearings due to frequent use and/or damage of bearing, etc. caused by water penetration may prevent smooth rotation of the CR brush.
 Inspect and replace the parts such as the oil seal and bearings.

- Make sure that there is no deformation or damage on the brush.
- Make sure that the brush shaft is not bent nor worn.
- Make sure that the brush mounting plate and brush housing do not have any cracks.
- Make sure that there is no play in the tension pulley.
- Make sure that there is no play in the bearing receptacles of the brush mounting plate and brush housing.
- Make sure that there is no wear or damage of the belt.

Important

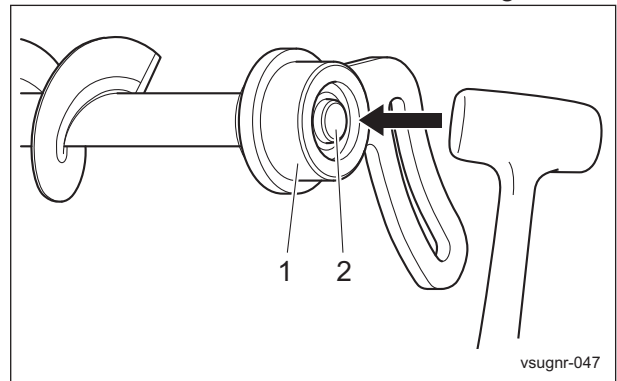
The mower unit has motors with a right installation position and left installation position.
 The shape and installation orientation of groomer assy installation parts differs depending on whether the installation position on the motor is right or left.

Note:

The illustration below is for the CR brush assy that has the motor installation position on the left.

1. Remove the CR brush assy.

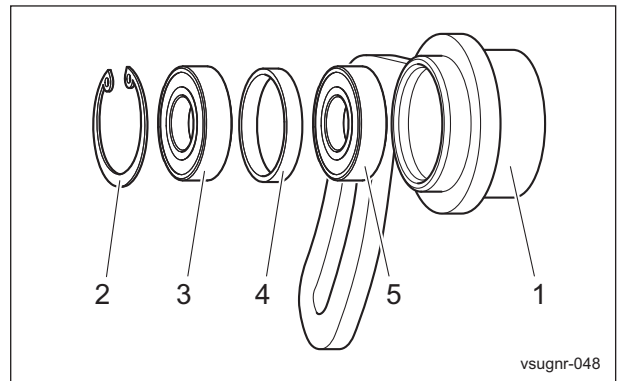
2. Secure the housing, tap the end of the brush shaft with a plastic hammer or similar tool, and remove it from the brush housing.



CR Brush Assy_001

1	Housing
2	Brush shaft

3. Follow the steps below to disassemble the housing.
 - [1] Remove the stop ring.
 - [2] Remove bearing A, collar and bearing B in order.

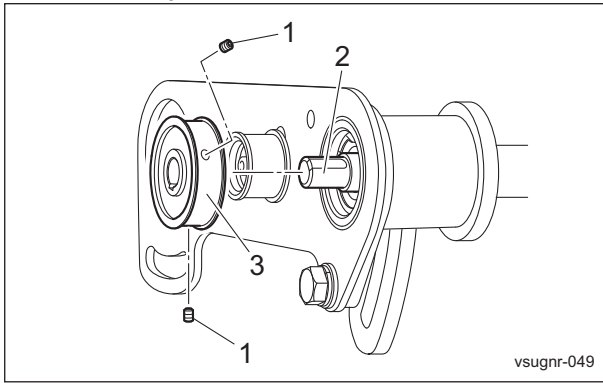


CR Brush Assy_002

1	Housing
2	Stop ring
3	Bearing A
4	Collar
5	Bearing B

Maintenance standards and maintenance

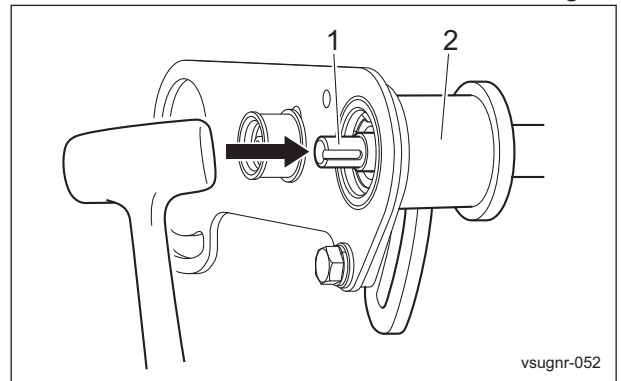
4. Remove the hollow screw, and remove the brush pulley from the brush shaft.



CR Brush Assy_003

1	Hollow screw
2	Brush shaft
3	Brush pulley

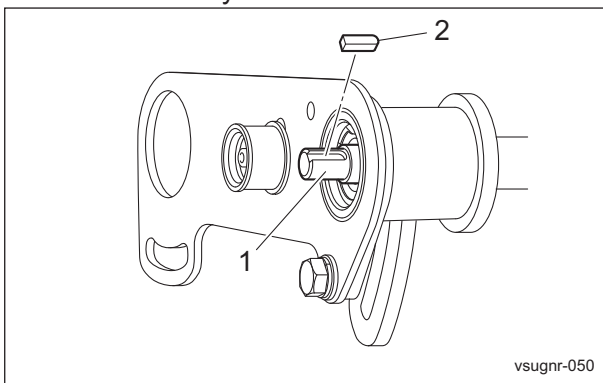
7. Secure the brush housing, tap the end of the brush shaft with a plastic hammer or similar tool, and remove it from the brush housing.



CR Brush Assy_006

1	Brush shaft
2	Brush housing

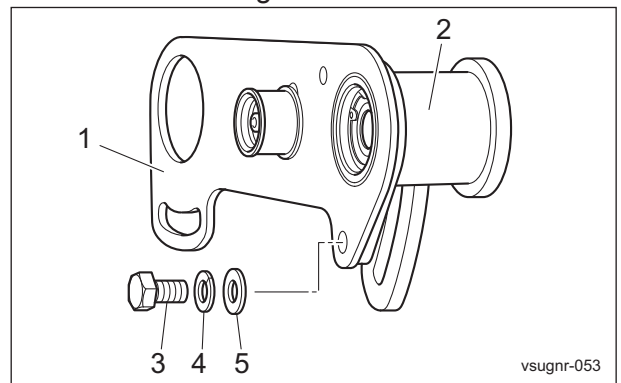
5. Remove the key from the brush shaft.



CR Brush Assy_004

1	Brush shaft
2	Key

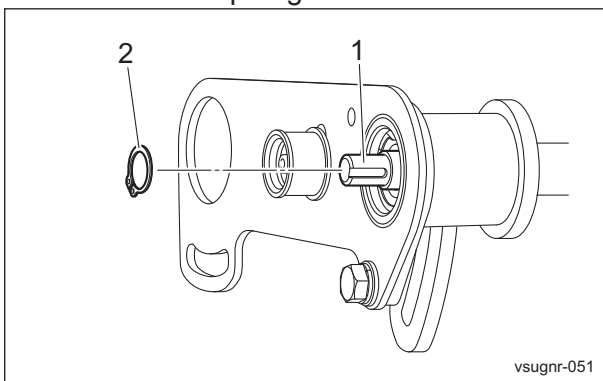
8. Remove the bolts, spring washers and washers securing the brush mounting plate and brush housing.



CR Brush Assy_007

1	Brush mounting plate
2	Brush housing
3	Bolt
4	Spring washer
5	Washer

6. Remove the stop ring from the brush shaft.



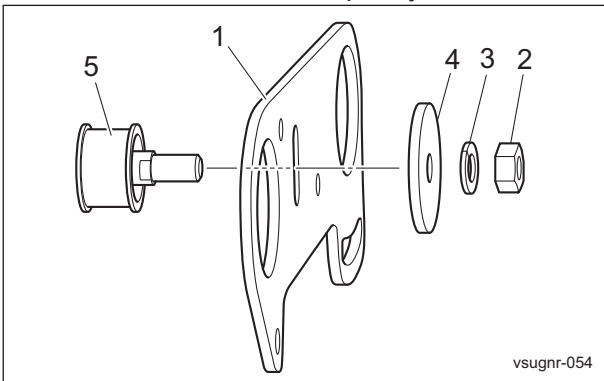
CR Brush Assy_005

1	Brush shaft
2	Stop ring

Maintenance standards and maintenance

Maintenance standards and maintenance

9. Remove the nuts, spring washers and washers from the brush mounting plate, and then remove the tension pulley.

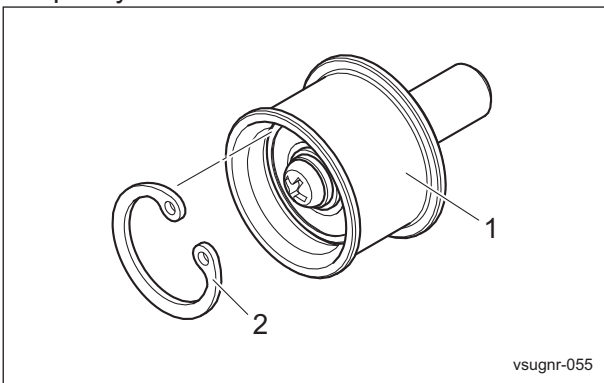


CR Brush Assy_008

1	Brush mounting plate
2	Nut
3	Spring washer
4	Washer
5	Tension pulley

10. Follow the steps below to disassemble the tension pulley.

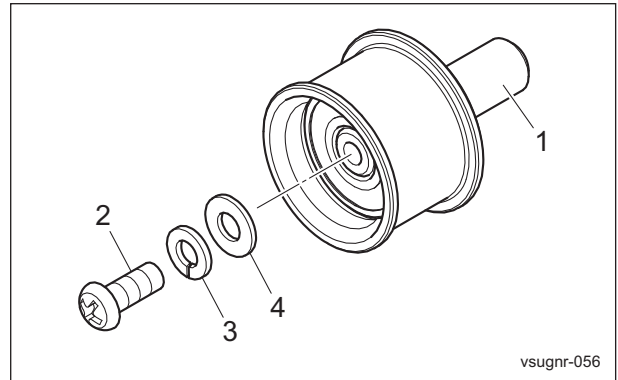
[1] Remove the stop ring from the tension pulley.



CR Brush Assy_009

1	Tension pulley
2	Stop ring

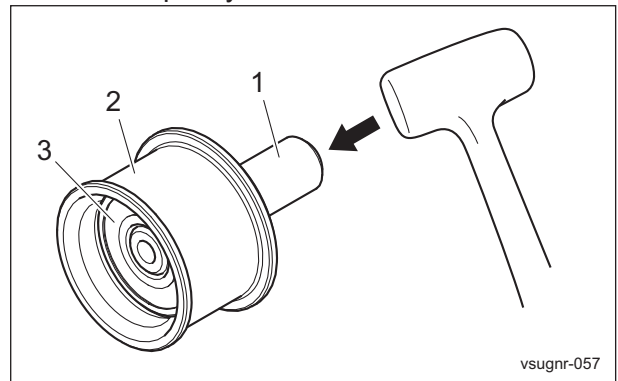
[2] Remove the roundhead screw, spring washer and washer from the tension shaft.



CR Brush Assy_010

1	Tension shaft
2	Roundhead screw
3	Spring washer
4	Washer

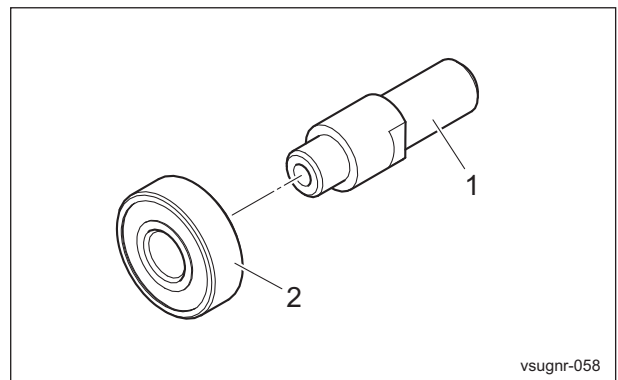
[3] Secure the tension pulley, tap the tension shaft with a plastic hammer, and remove the tension shaft and bearing from the tension pulley.



CR Brush Assy_011

1	Tension shaft
2	Tension pulley
3	Bearing

[4] Remove the bearing from the tension shaft.



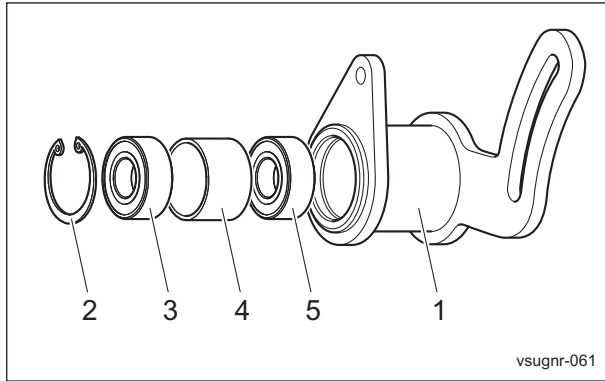
CR Brush Assy_012

Maintenance standards and maintenance

1	Tension shaft
2	Bearing

11. Follow the steps below to disassemble the brush housing.

[1] Remove the stop ring.



CR Brush Assy_013

1	Brush housing
2	Stop ring
3	Bearing A
4	Collar
5	Bearing B

[2] Remove bearing A, collar and bearing B in order.

Important

Replace deteriorated, deformed, or worn parts with new ones.

Important

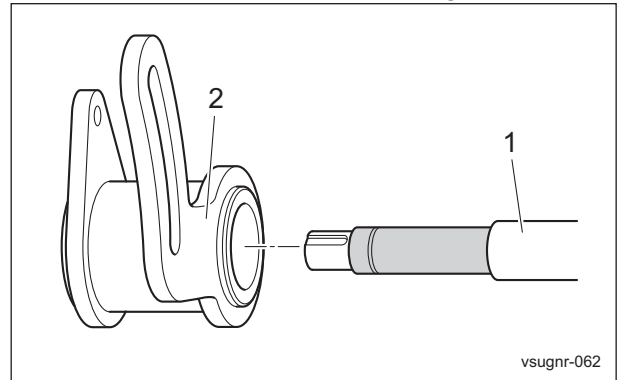
Be careful not to cause damage or deformation to the brush.

Important

The stop ring has a specific installation orientation. Install it in the correct orientation.

12. Assemble the brush housing in the reverse order to the disassembly steps.

13. Apply grease to the end of the brush shaft, and install it to the brush housing.



CR Brush Assy_014

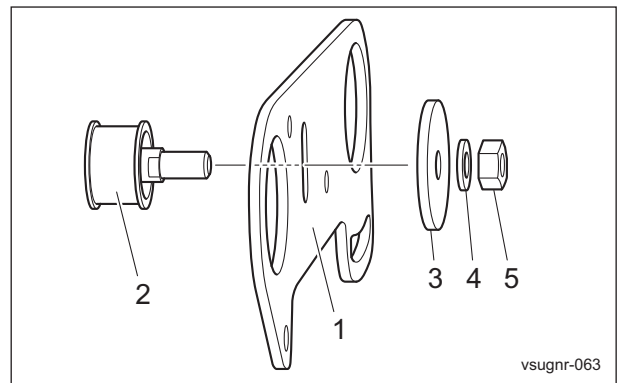
1	Brush shaft
2	Brush housing

14. Assemble the tension pulley in the reverse order to the disassembly steps.

Important

Install the tension pulley shaft so that the flat section on the shaft is fully inserted into the elongated hole of the brush mounting plate.

15. Temporarily install the tension pulley to the brush mounting plate with the washer, spring washer and nut.



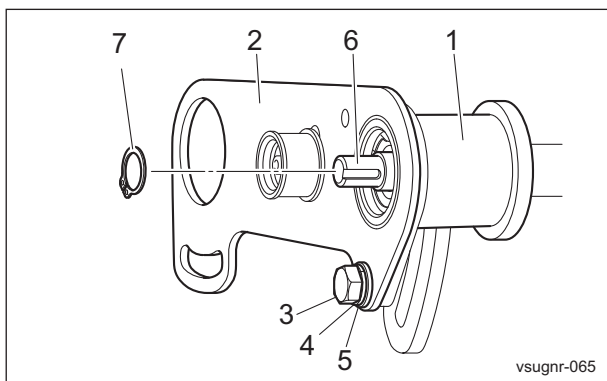
CR Brush Assy_015

1	Brush mounting plate
2	Tension pulley
3	Washer
4	Spring washer
5	Nut

Maintenance standards and maintenance

Maintenance standards and maintenance

16. Install the brush mounting plate to the brush housing with the bolt, spring washer and washer.

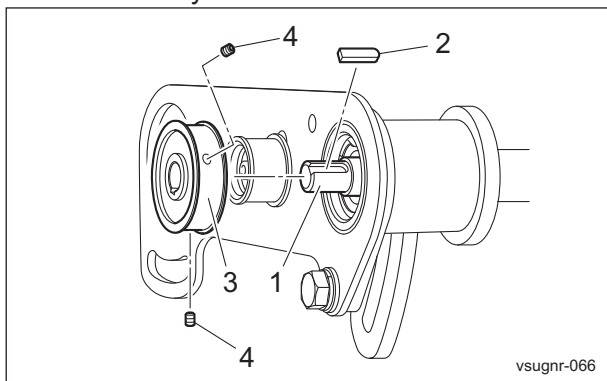


CR Brush Assy_016

1	Brush housing
2	Brush mounting plate
3	Bolt
4	Spring washer
5	Washer
6	Brush shaft
7	Stop ring

17. Install the stop ring to the brush shaft.

18. Install the key to the brush shaft.



CR Brush Assy_017

1	Brush shaft
2	Key
3	Brush pulley
4	Hollow screw

19. Install the brush pulley to the brush shaft.

20. Install the hollow screws to the brush pulley.

21. Adjust the CR brush.

"Adjustment of CR brush" (Page 3-20)

Relating to Mower Unit Page 4-2

Troubleshooting

Relating to Mower Unit

Problem	Cause	Reference
Blade engagement gets out of order	Lack of tension of the cutter adjustment spring	Adjustment - Adjustment of Cutter Spring
	Malfunction of the reel bearing	Inspection of Each Part, Repair - Reel Housing
	Wear of the reel shaft	Inspection of Each Part, Repair - Reel Cutter
	Insufficient tightening of the reel nuts	Removal and Installation of Each Part - Reel Cutter
Cutting height adjustment gets out of order	Insufficient tightening of the mounting bolts of the bed knife base	Removal and Installation of Each Part - Bed Knife
	Malfunction of the roller bearing	Inspection of Each Part, Repair - Roller
	Loose cutting height bolt	Adjustment - Adjustment of Cutting Height - Adjustment of Front Roller
Mowed face is not flat	Abrasion of the roller shaft	Inspection of Each Part, Repair - Roller
	The cutting heights of the mower units are not consistent	Adjustment - Adjustment of Cutting Height
	The edge is rounded	Inspection of Each Part, Repair - Reel Cutter
Mower units moves irregularly	The operating speed is too fast	Operate at an appropriate speed
	Malfunction of the roller part	Inspection of Each Part, Repair - Roller
	The operating speed is too fast	Operate at an appropriate speed
	Insufficient adjustment of mower unit flat spring	Main Vehicle Owner's Operating Manual
The groomer does not rotate	Insufficient adjustment of the mower stabilizer	Main Vehicle Owner's Operating Manual
	The groomer clutch lever is OFF	Turn the groomer clutch lever ON
The CR brush does not rotate	Malfunction inside the groomer gear case	Inspection of Each Part, Repair - Groomer assy
	Insufficient or severed drive belt tension	Inspection of Each Part, Repair - CR Brush assy
	The brush contacts the roller with too strong pressure	Adjustment - Adjustment of CR Brush
Clippings do not enter the grass catcher smoothly	Faulty CR brush	Inspection of Each Part, Repair - CR Brush assy
	Insufficient adjustment of the reel cover	Adjustment - Adjustment of Reel Cover
	Insufficient rotation of the reel cutter	Main Vehicle Owner's Operating Manual
	Wrong installation of the grass catcher	Main Vehicle Owner's Operating Manual

Specifications list Page 5-2
LH52 Page 5-2
Maintenance Schedule Page 5-3

Specifications list

LH52

Model		LH52			
Type		Base unit (incl. one weight)		With groomer	
Dimensions	Total length	14.13 in	359 mm	14.13 in	359 mm
	Total width	27.83 in	707 mm	28.50 in	742 mm
	Total height	8.66 in	220 mm	8.82 in	224 mm
Weight	Mower Unit	90.39 lb	41.0 kg	97.00 lb	44.0 kg
	Weight (one piece)	4.41 lb	2.0 kg	—	—
	Groomer	—	—	11.02 lb	5.0 kg
	CR brush	—	—	—	—
	Groomer + CR brush	—	—	—	—
Operating height (Mowing height)		0.197 - 0.787 in	5.0 - 20.0 mm	0.197 - 0.787 in	5.0 - 20.0 mm
Operating width (Mowing width)		22 in	557.5 mm	22 in	557.5 mm
Diameter of the reel cutter		5 in	128 mm	5 in	128 mm
Blades		7 • 9 • 11		7 • 9 • 11	

Model		LH52			
Type		With CR brush type B		With groomer and CR brush type B	
Dimensions	Total length	15.79 in	401 mm	15.79 in	401 mm
	Total width	30.12 in	765 mm	30.12 in	765 mm
	Total height	8.66 in	220 mm	8.82 in	224 mm
Weight	Mower Unit	99.21 lb	45.0 kg	105.82 lb	48.0 kg
	Weight (one piece)	—	—	—	—
	Groomer	—	—	—	—
	CR brush	13.23 lb	6.0 kg	—	—
	Groomer + CR brush	—	—	19.84 lb	9.0 kg
Operating height (Mowing height)		0.197 - 0.787 in	5.0 - 20.0 mm	0.197 - 0.787 in	5.0 - 20.0 mm
Operating width (Mowing width)		22 in	557.5 mm	22 in	557.5 mm
Diameter of the reel cutter		5 in	128 mm	5 in	128 mm
Blades		7 • 9 • 11		7 • 9 • 11	

Maintenance Schedule

Follow the maintenance schedule below.

○ . . . Inspect, adjust, supply, clean

● . . . Replace (first time)

△ . . . Replace

Maintenance Item	Before Work	After Work	Every 10 hrs.	Every 50 hrs.	Every 250 hrs.	Every 500 hrs.	When Required	Remarks
Check blade condition (Reel cutter and Bed knife)	○							
Check cover condition	○							
Check roller condition	○							
Check support roller condition	○							
Check groomer condition	○							
Check CR brush condition	○							
Check scraper condition	○							
Check belt condition	○							
Check damaged parts	○							
Check tightening bolts and nuts	○							
Engage blades	○							
Check mowing height	○							
Adjust reel cover (Variable type)	○							
Adjust groomer	○							
Adjust CR brush	○							
Adjust scraper	○							
Clean mower unit		○						
Backlap blades							○	
Grease				○				Maintenance schedules differ according to greasing points
Clean inside of CR brush belt cover				○				
Grease hydraulic motor shaft of mower unit					○			
Grease cam bush						○		
Adjust cutter adjustment spring							○	
Adjust belt tension of CR brush							○	
Regrind blades (Reel cutter and Bed knife)							○	Grind/Replace blades as and when required

· The values for consumables are not guaranteed.

Reference

BARONESS[®]
Quality on Demand

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