



SERVICE MANUAL

BATTERY CHAIN SAW

ECHO: DCS-3500

(Serial number : C87835000001 - C87835999999)

Reference No. 22-003-EN
ISSUED : 202409

Introduction

This manual contains description for the maintenance and repair on this product.

Technical improvement of this product can cause changes to the maintenance, repair and spare parts. All specifications, illustrations and directions in this manual are based on the latest product information available at the time of publication.

Specifications are subject to change without notice.

Safety Alert Symbols

Safety messages in this manual are identified by the words "WARNING", "CAUTION", and "NOTICE."

The meanings are as follows.

WARNING

- The safety alert symbol accompanied by the word "WARNING" calls attention to an act or condition which CAN lead to serious personal injury or death if not avoided.

NOTICE

- The enclosed message provides information necessary for the protection of the unit.

CAUTION

- The safety alert symbol accompanied by the word "CAUTION" calls attention to an act or condition which might lead to minor or moderate personal injury if not avoided.

Trademarks

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1. Basic Information

1-1 Product Specifications

Item		Unit	Details	
Dimensions*1	Length	mm (in)	471 (18.5)	
	Width	mm (in)	219 (8.6)	
	Height	mm (in)	262 (10.3)	
Weight*2		kg (lb)	2.9 (6.4)	
Motor	Type	-	Brushless motor	
	Rotation direction	-	Clockwise as viewed from the output end	
	Rated current	A	42.1	
	Rated voltage	V	50.4	
	Rated output	kW	1.79	
	Speed control	-	Variable	
Battery	Standard battery	-	LBP-560-200	LBP-50-250
	Type	-	Lithium-ion	
	Rated voltage	V	50.4	
	Capacity	Ah / Wh	3.66 / 185	4.50 / 226
	Charging time	min.	LCJQ-560:	
			45(80%) 64(100%)	60(80%) 89(100%)
Run time on a single charge*3	min.	LCJU-560:		
		22(80%) 39(100%)	30(80%) 57(100%)	
Battery charger	Standard charger	-	LCJQ-560 / LCJU-560	
	Input voltage	-	AC220 - 240V	
Guide bar / Saw chain lubrication type		-	Automatic oil pump	
Chain Oil	Tank capacity	mL (UK.fl.oz.)	370 (13.0)	
Sprocket	Type	-	Spur	
	Number of teeth	-	6	
	Pitch	inch	3/8	

*1 Without guide bar and saw chain

*2 Without battery, guide bar and saw chain

*3 Depending on battery size, charge level and operating conditions.

Guide bar				Saw chain			
Type	Nose Type	Length (cm)	Gauge (inch)	Type	Pitch (inch)	Gauge (inch)	Drive links
C35S90-52SA	Sprocket	35	0.043	90PX	3/8	0.043	52

1-2 Torque Limits

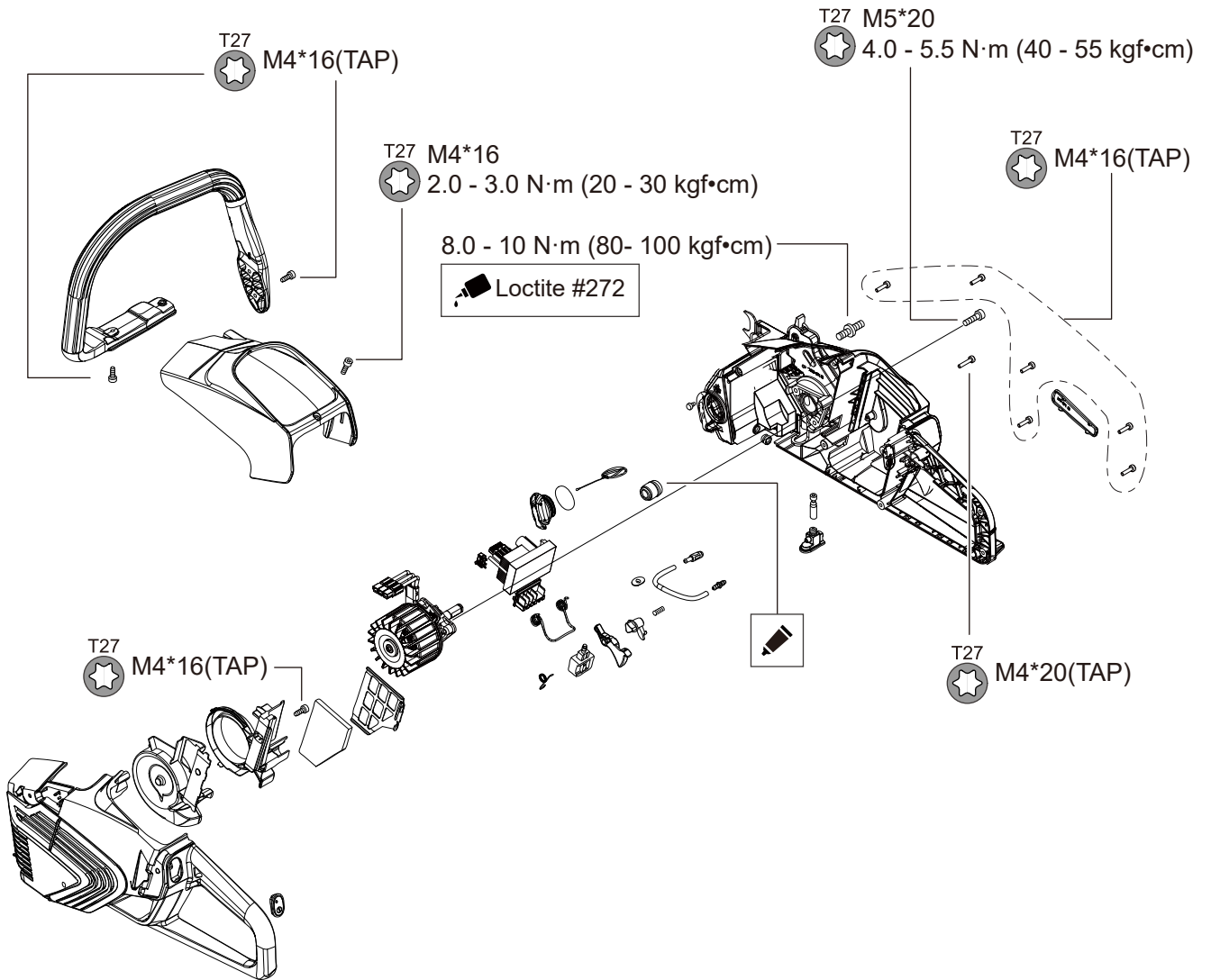


Figure : Torque Limits (1)

Remark

TAP : Tapping

 : Apply lithium-based grease to part

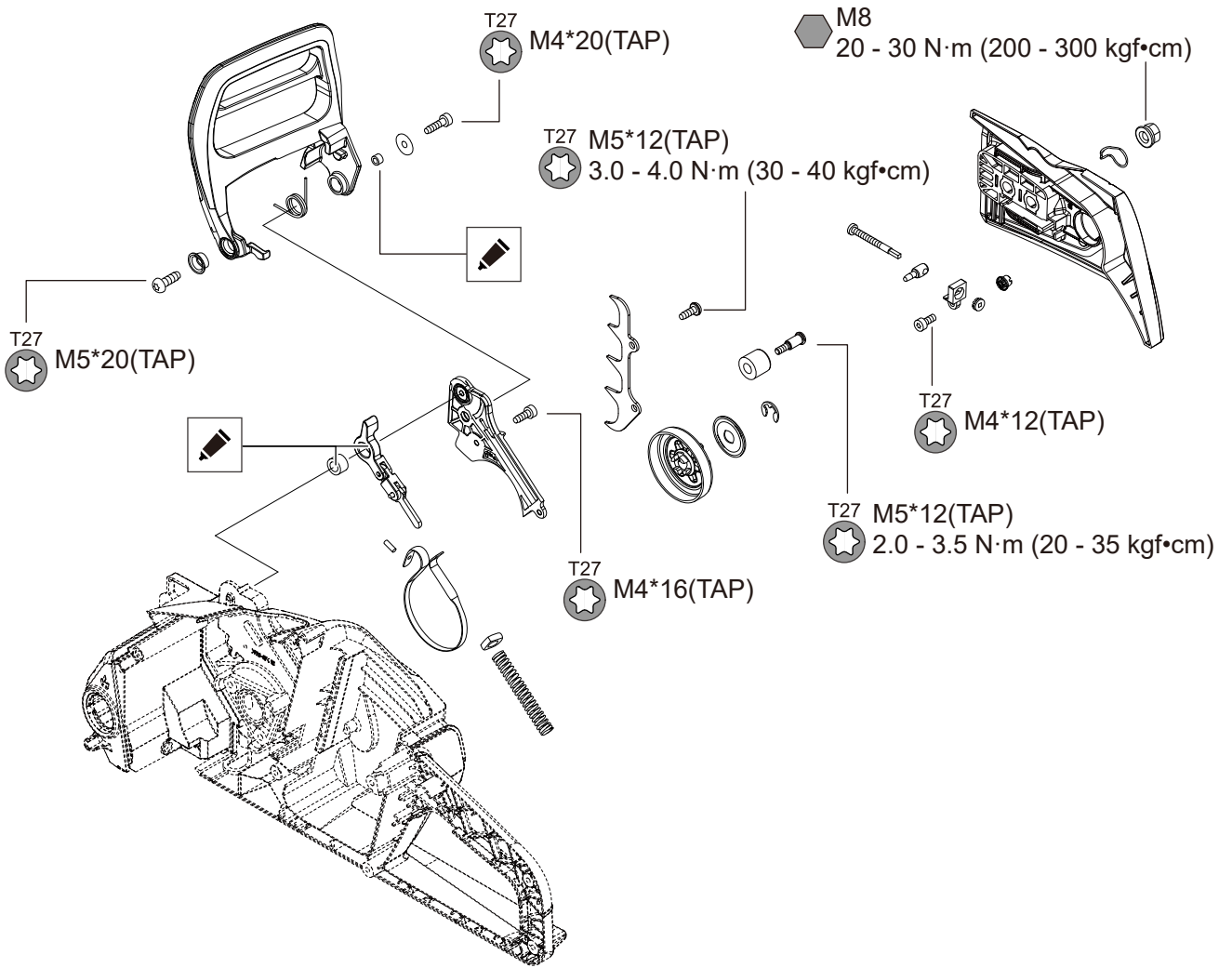


Figure : Torque Limits (2)

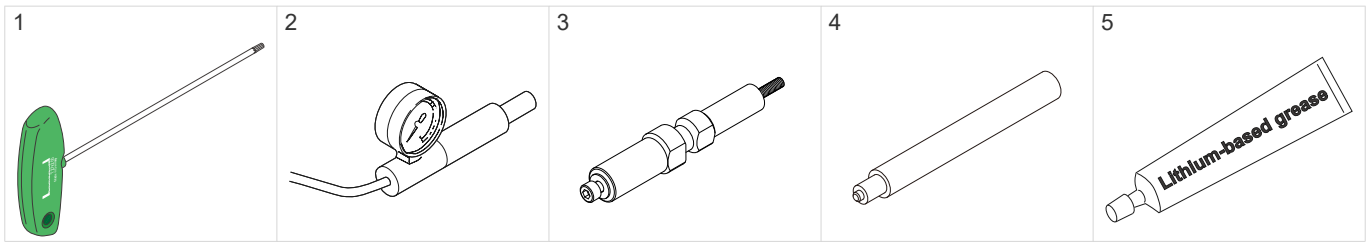
Remark

TAP : Tapping

Related Topics

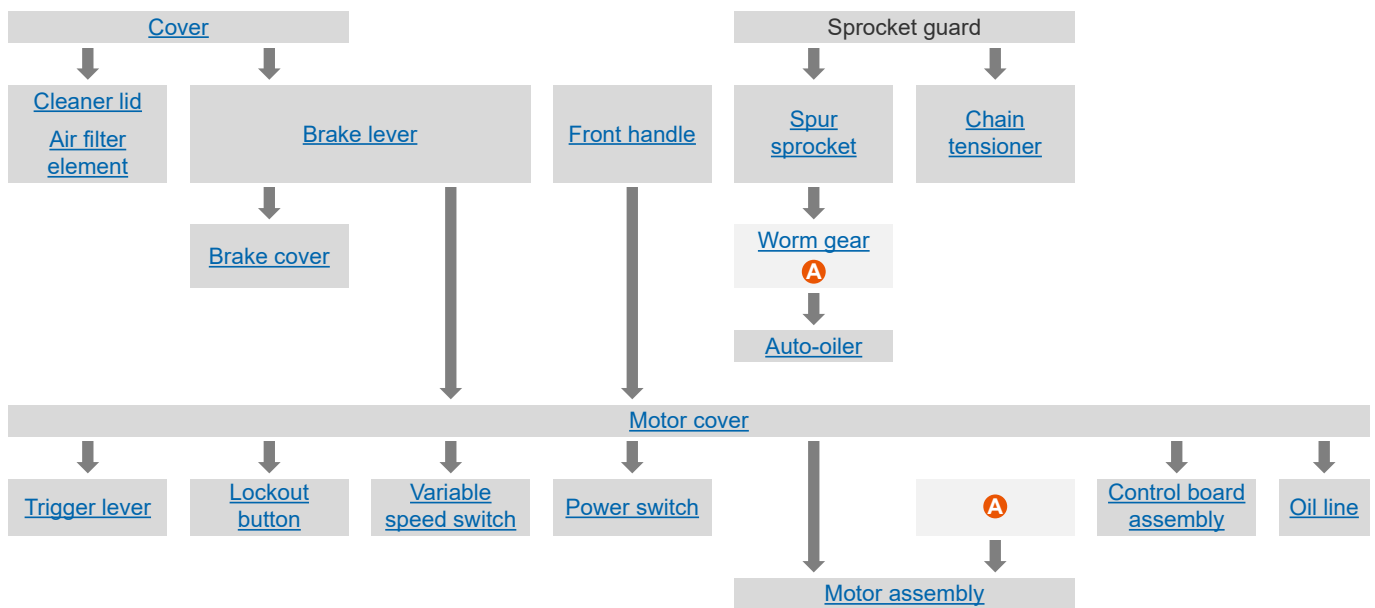
- [1-3 Required Tools and Special Maintenance Materials \(p.6\)](#)

1-3 Required Tools and Special Maintenance Materials



	Part Number	Part Name	Use
1	X602-000340	Torx wrench (T27)	To loosen/tighten Torx bolts
2	897803-30133	Pressure tester	To check oil line leakage
3	Y089-000131	Auto-oiler puller	To remove a pencil type auto-oiler
4	91073A	Auto-oiler installer	To install a pencil type auto-oiler
5	X695-000060	Lithium-based grease	To lubricate a worm gear

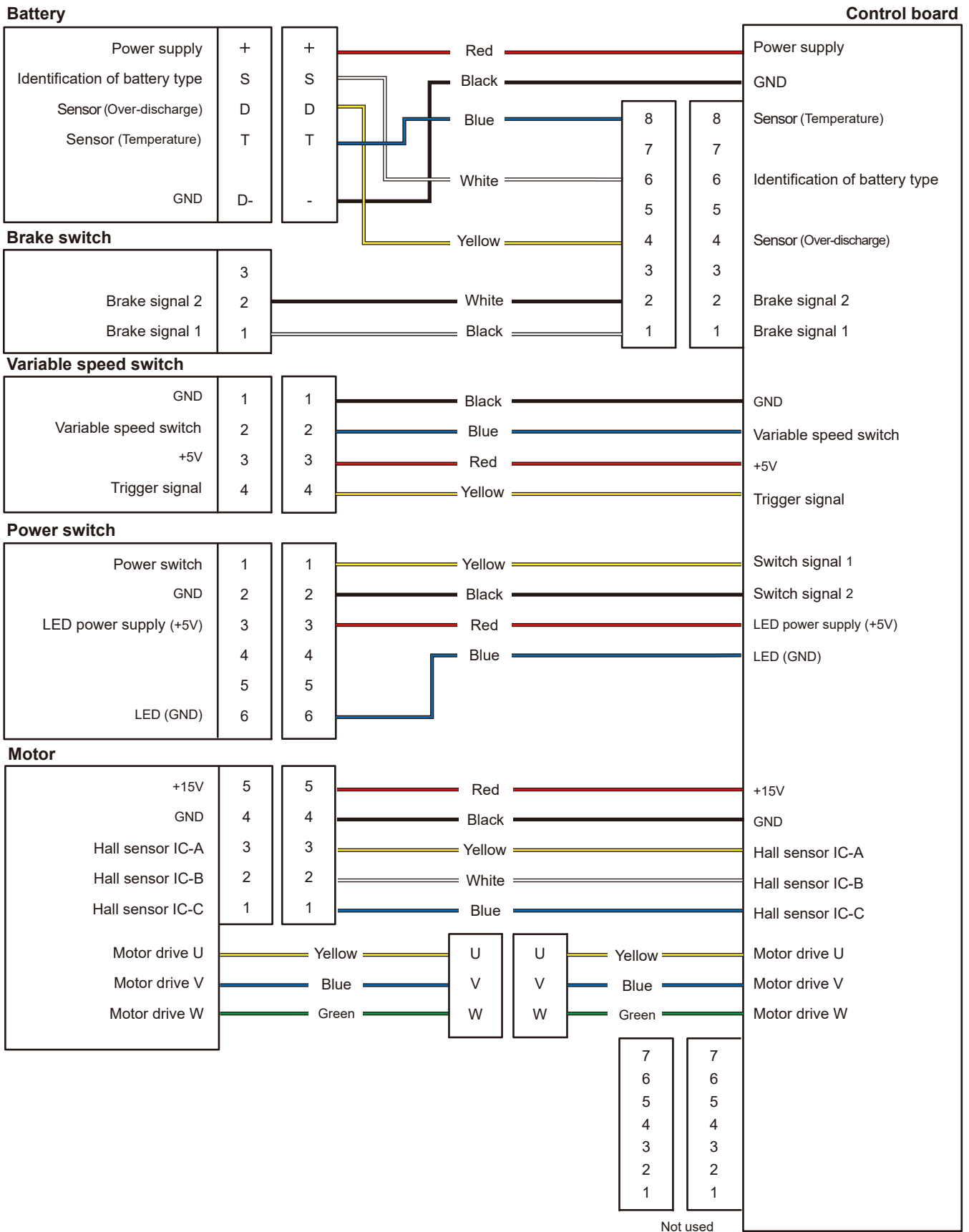
1-4 Disassembly Chart



Related Topics

- [8-2 Remove/Attach the Cover \(p.53\)](#)
- [10-6 Inspect the Air Filter \(p.64\)](#)
- [5-4 Remove/Attach the Brake Lever \(p.41\)](#)
- [7-2 Remove/Attach the Front Handle \(p.51\)](#)
- [4-5 Remove/Attach the Spur Sprocket \(p.35\)](#)
- [4-4 Remove/Attach the Chain Tensioner \(p.34\)](#)
- [5-2 Remove the Chain Brake Parts \(p.39\)](#)
- [6-5 Remove the Worm Gear \(p.45\)](#)
- [6-9 Remove the Auto-Oiler Assembly \(p.47\)](#)
- [8-3 Remove/Attach the Motor Cover \(p.53\)](#)
- [9-2 Remove the Trigger Parts \(p.57\)](#)
- [9-5 Remove/Attach the Variable Speed Switch \(p.58\)](#)
- [9-4 Remove/Attach the Power Switch \(p.58\)](#)
- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [6-7 Remove the Oil Line \(p.46\)](#)
- [8-4 Remove/Attach the Motor Assembly \(p.53\)](#)

1-5 Wiring Diagram



2. Troubleshooting

2-1 Flow of Troubleshooting

Problems with the unit may have several causes.

Perform troubleshooting according to the flow below in order to identify the cause of the problem.

(1) Checking the power indicator

The flashing of the power indicator enables you to identify possible error causes.

(2) Diagnosis with the maintenance mode

The unit has a maintenance mode that can be used for diagnosis.

You can operate the unit to check the error number indicating the most recent error.

(3) Troubleshooting flow

If you cannot solve the problem with the maintenance mode, perform troubleshooting via the flow indicated below.

Start troubleshooting from flow **STEP 0**.

STEP 0 Error diagnosis

STEP 1 Checking the battery and the charger

STEP 2 Checking the unit when battery failure occurs

STEP 3 Checking the power supply circuit

STEP 4 Checking low voltage and over-discharge

STEP 5 Checking each sensor of the battery

STEP 6 Checking the overload

STEP 7 Checking other failures

Related Topics

- [2-2 Power Indicator Error Display \(p.10\)](#)
- [2-3 Diagnosis with Maintenance Mode \(p.11\)](#)
- [2-4 List of Maintenance Mode Error Numbers and Remedies \(p.12\)](#)
- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)

2-2 Power Indicator Error Display

The flashing of the power indicator **A** enables you to identify possible error causes.

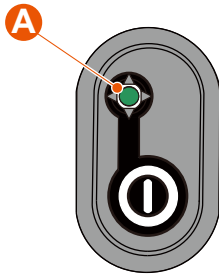


Figure : Power switch

Slow flashing (1 time/second)

- Low battery voltage.
- Battery voltage is too low to charge.
- Low motor drive voltage.

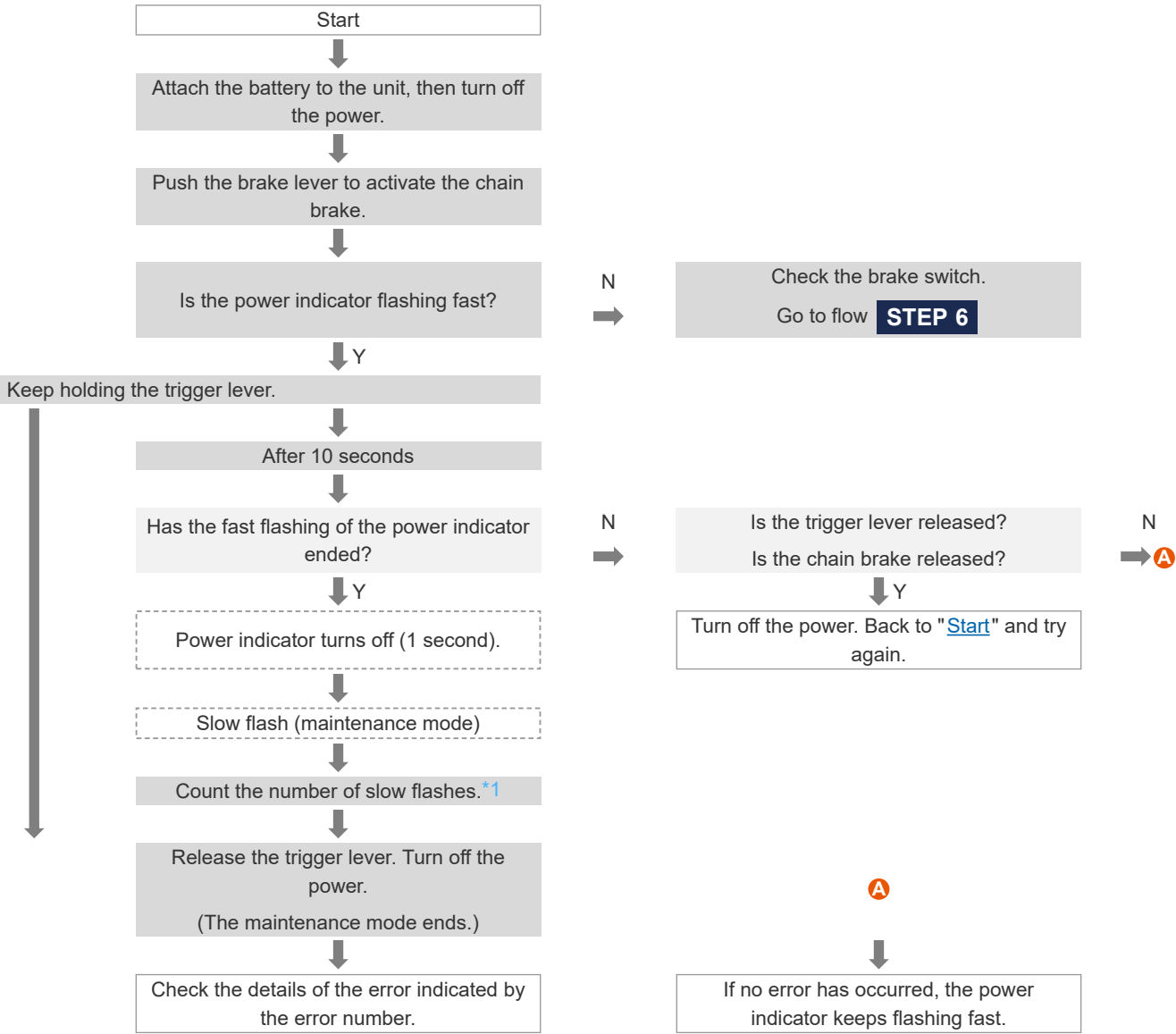
Fast flashing (4 times/second)

- The chain brake is activated.
- The brake switch is disconnected.
- The battery is too hot or too cold.
- The Motor is too hot.
- The motor driver circuit is too hot or too cold.
- High motor drive voltage.
- Overcurrent flows to the motor.
- The motor speed does not reach the set speed because a load is applied when the motor is started.
- The hall sensor is defective, or disconnected.
- The variable speed switch is defective, or disconnected.

2-3 Diagnosis with Maintenance Mode

CAUTION

- Do not pull the trigger lever when releasing the chain brake. The saw chain may run unexpectedly.



Remark

Y : Yes
N : No

*1 The power indicator alternates between slow flashes indicating the error number and fast flashes indicating a pause.

Related Topics

- [2-4 List of Maintenance Mode Error Numbers and Remedies \(p.12\)](#)
- [2-8 Troubleshooting "STEP 3" \(Check the Power Supply Circuit\) \(p.18\)](#)

2-4 List of Maintenance Mode Error Numbers and Remedies

You can identify the error number by counting the number of slow power indicator flashes in the maintenance mode.

The error number indicates the most recent error. Maintenance mode retains the last error number after the error is resolved. Error numbers are not deleted unless another error occurs.

The causes and remedies of each error number are indicated below.

Error number	Possible cause	Remedy
2	The battery is too hot.	Wait for the battery to cool down. Check the battery temperature sensor.
5	The power switch is defective.	Inspect the variable power switch.
7 to 9	The variable speed switch is defective, or disconnected.	Inspect the variable speed switch.
12	High motor drive voltage.	Inspect the motor assembly. Inspect the battery.
16	The hall sensor is defective, or disconnected.	Inspect the motor assembly.
17	The motor driver circuit is too hot.	Wait for the control board assembly to cool down. Inspect the control board assembly.

関連項目

- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-6 Attach the Control Board Assembly \(p.54\)](#)
- [3-6 Inspect the Battery Voltage \(p.30\)](#)
- [3-8 Inspect the Battery Temperature Sensor \(p.31\)](#)
- [10-2 Inspect the Motor Assembly \(p.60\)](#)
- [10-5 Inspect the Variable Speed Switch \(p.63\)](#)

2-5 Troubleshooting "STEP 0" (Error Diagnosis)

CAUTION

- Do not pull the trigger lever when releasing the chain brake. The saw chain may run unexpectedly.



Remark

Y : Yes
N : No

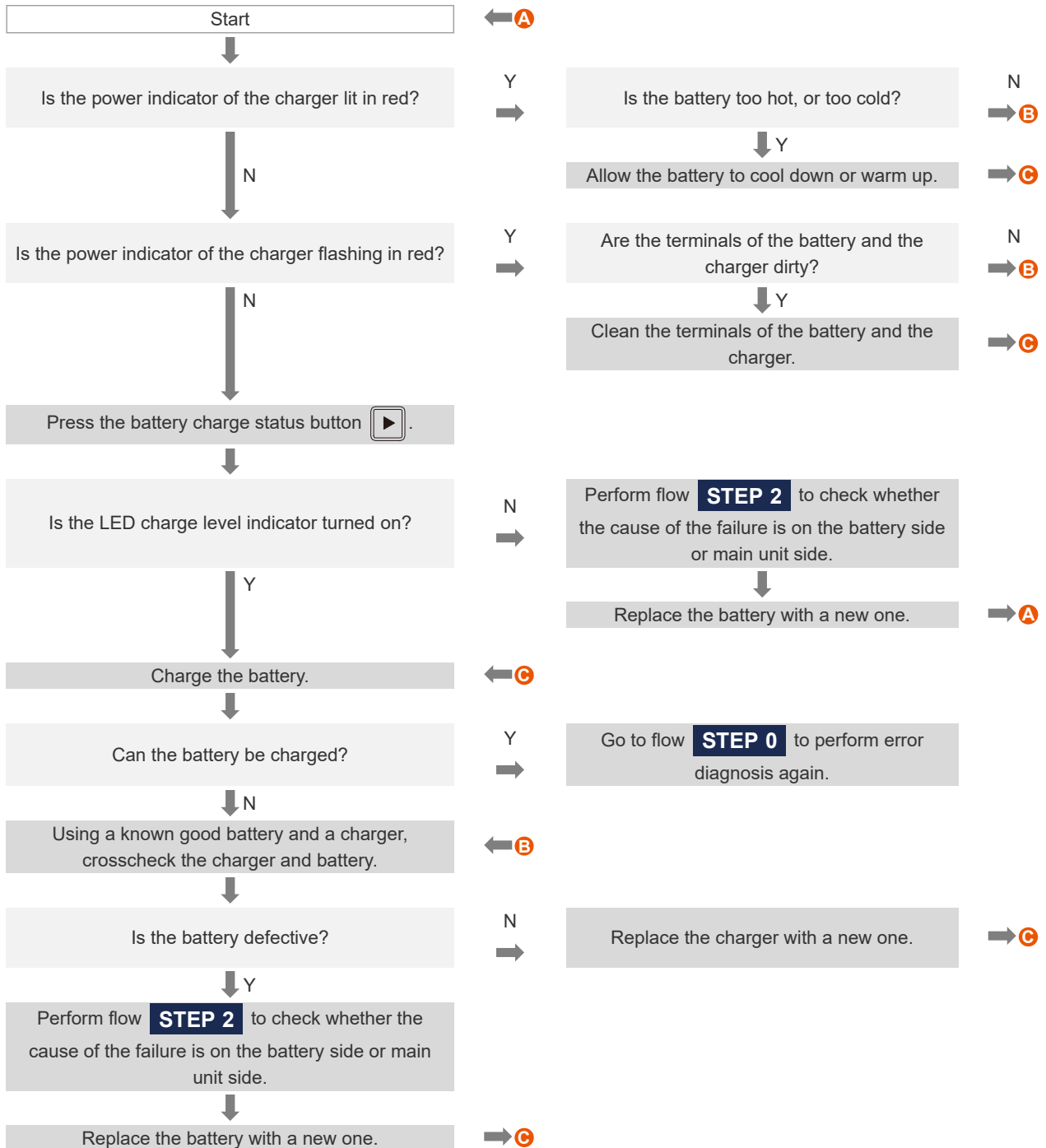
Related Topics

- [2-6 Troubleshooting "STEP 1" \(Check the Battery and Charger\) \(p.15\)](#)
- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)
- [2-8 Troubleshooting "STEP 3" \(Check the Power Supply Circuit\) \(p.18\)](#)
- [2-9 Troubleshooting "STEP 4" \(Check Low Voltage and Over-Discharge\) \(p.20\)](#)
- [2-10 Troubleshooting "STEP 5" \(Check Each Sensor of Battery\) \(p.22\)](#)
- [2-11 Troubleshooting "STEP 6" \(Check the Chain Brake Switch and Overload\) \(p.24\)](#)
- [2-12 Troubleshooting "STEP 7" \(Check Other Failures\) \(p.26\)](#)

2-6 Troubleshooting "STEP 1" (Check the Battery and Charger)

NOTICE

- If the unit is defective, it may also damage the new battery when the battery is replaced with a new one. Before replacing the battery, perform flow **STEP 2** to check the unit for problems other than the battery.



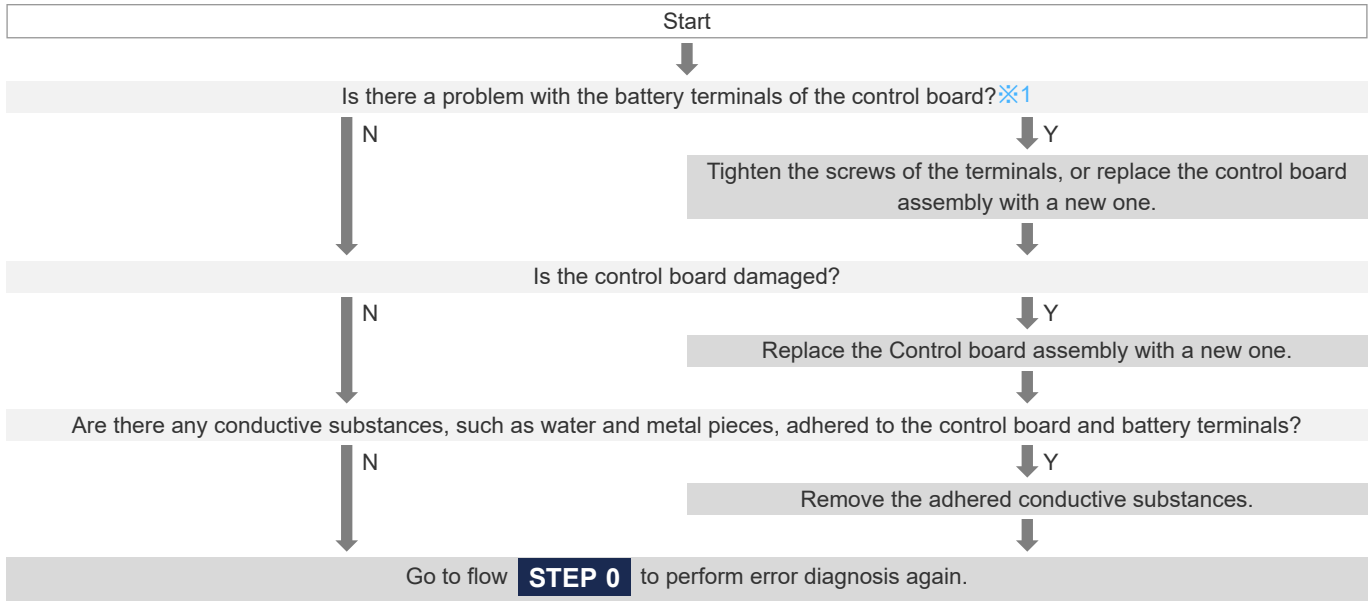
Remark

Y : Yes
 N : No

Related Topics

- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)
- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)

2-7 Troubleshooting "STEP 2" (Check the Unit When Battery Failure Occurs)



Remark

Y : Yes
N : No

※1 Inspect the battery terminals of the control board for the following problems.

- There is a short-circuit between the positive [+] terminal and the negative [-] terminal.
- The screws of the battery terminals are loose or disconnected.
- No electric current can flow in the positive [+] and negative [-] terminal wires.

関連項目

- [10-3 Inspect the Control board assembly \(p.61\)](#)
- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-6 Attach the Control Board Assembly \(p.54\)](#)
- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)

2-8 Troubleshooting "STEP 3" (Check the Power Supply Circuit)

⚠ WARNING

- Perform troubleshooting in safe, clear surroundings. The unit may run unexpectedly.

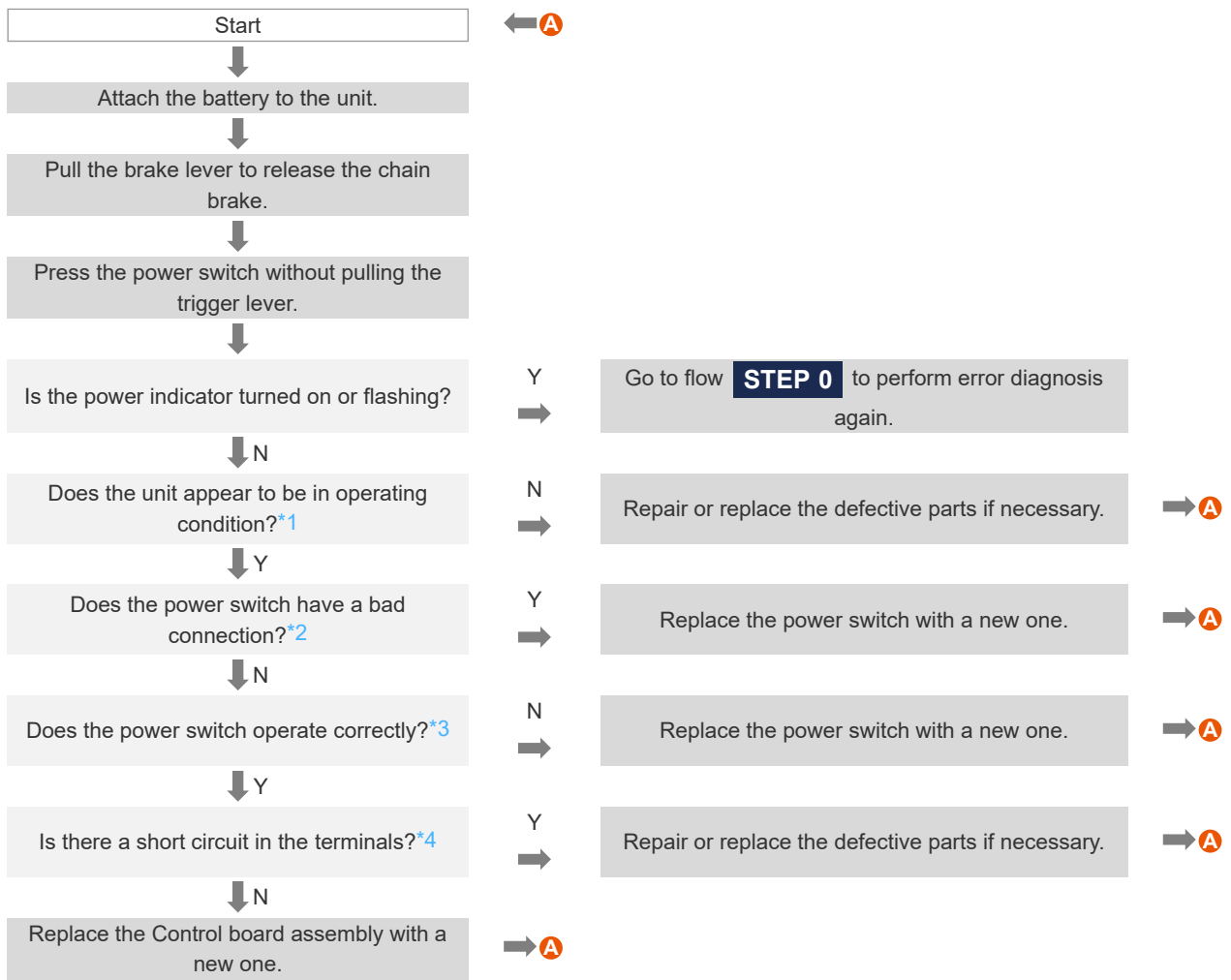
⚠ CAUTION

- Do not pull the trigger lever when releasing the chain brake. The saw chain may run unexpectedly.

NOTICE

- If the unit is defective, it may also damage the new battery when the battery is replaced with a new one.

Before replacing the battery, perform flow **STEP 2** to check the unit for problems other than the battery.



Remark

Y : Yes
N : No

*1 Inspect the unit for the following:

- Each connector is connected securely.
- Each wire is connected to each connector securely.
- All the wires are intact.

*2 Inspect the following.

- When the power switch button is pressed : An electric current flows between terminals [1] and [2].
- When the power switch button is released : No electric current flows between terminals [1] and [2].

- *3 Apply an electric current between terminals [3] and [6] of the power switch. The power indicator should turn on.
- *4 Inspect the following terminals for a short circuit.
- Between terminals [2] and [3] of the power switch
 - Between terminals [1] and [3] of the variable speed switch
 - Between terminals [4] and [5] of the motor assembly 5-pole terminal block.

Related Topics

- [3-8 Inspect the Battery Temperature Sensor \(p.31\)](#)
- [10-4 Inspect the Power Switch \(p.62\)](#)
- [10-5 Inspect the Variable Speed Switch \(p.63\)](#)
- [10-2 Inspect the Motor Assembly \(p.60\)](#)
- [9-4 Remove/Attach the Power Switch \(p.58\)](#)
- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-6 Attach the Control Board Assembly \(p.54\)](#)
- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)
- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)

2-9 Troubleshooting "STEP 4" (Check Low Voltage and Over-Discharge)

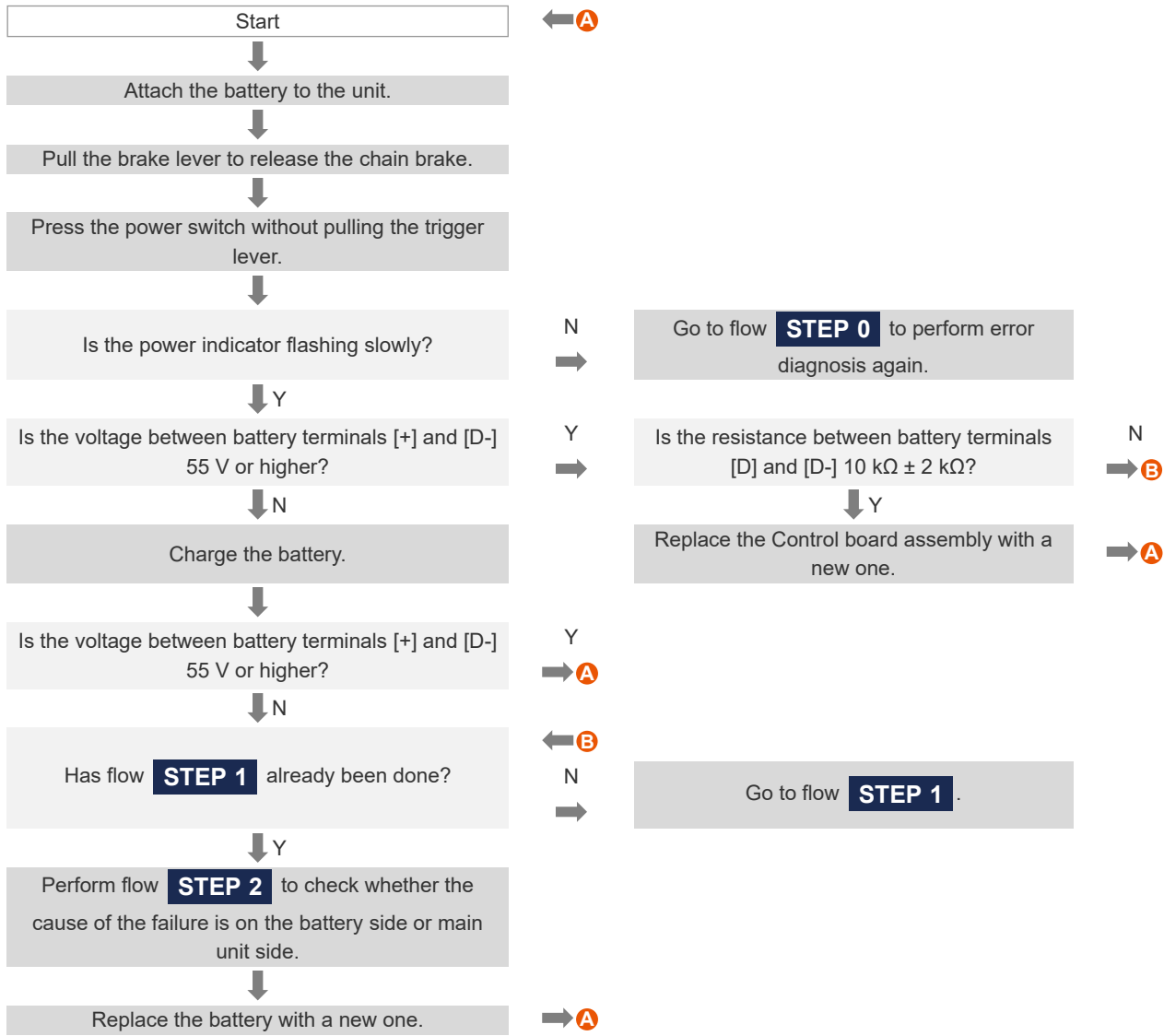
CAUTION

- Do not pull the trigger lever when releasing the chain brake. The saw chain may run unexpectedly.

NOTICE

- If the unit is defective, it may also damage the new battery when the battery is replaced with a new one.

Before replacing the battery, perform flow **STEP 2** to check the unit for problems other than the battery.



Remark

Y : Yes
N : No

Related Topics

- [3-6 Inspect the Battery Voltage \(p.30\)](#)
- [3-7 Inspect for Damage from Over-Discharging \(p.31\)](#)
- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)
- [2-6 Troubleshooting "STEP 1" \(Check the Battery and Charger\) \(p.15\)](#)
- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)

2-10 Troubleshooting "STEP 5" (Check Each Sensor of Battery)

WARNING

- Perform troubleshooting in safe, clear surroundings. The unit may run unexpectedly.

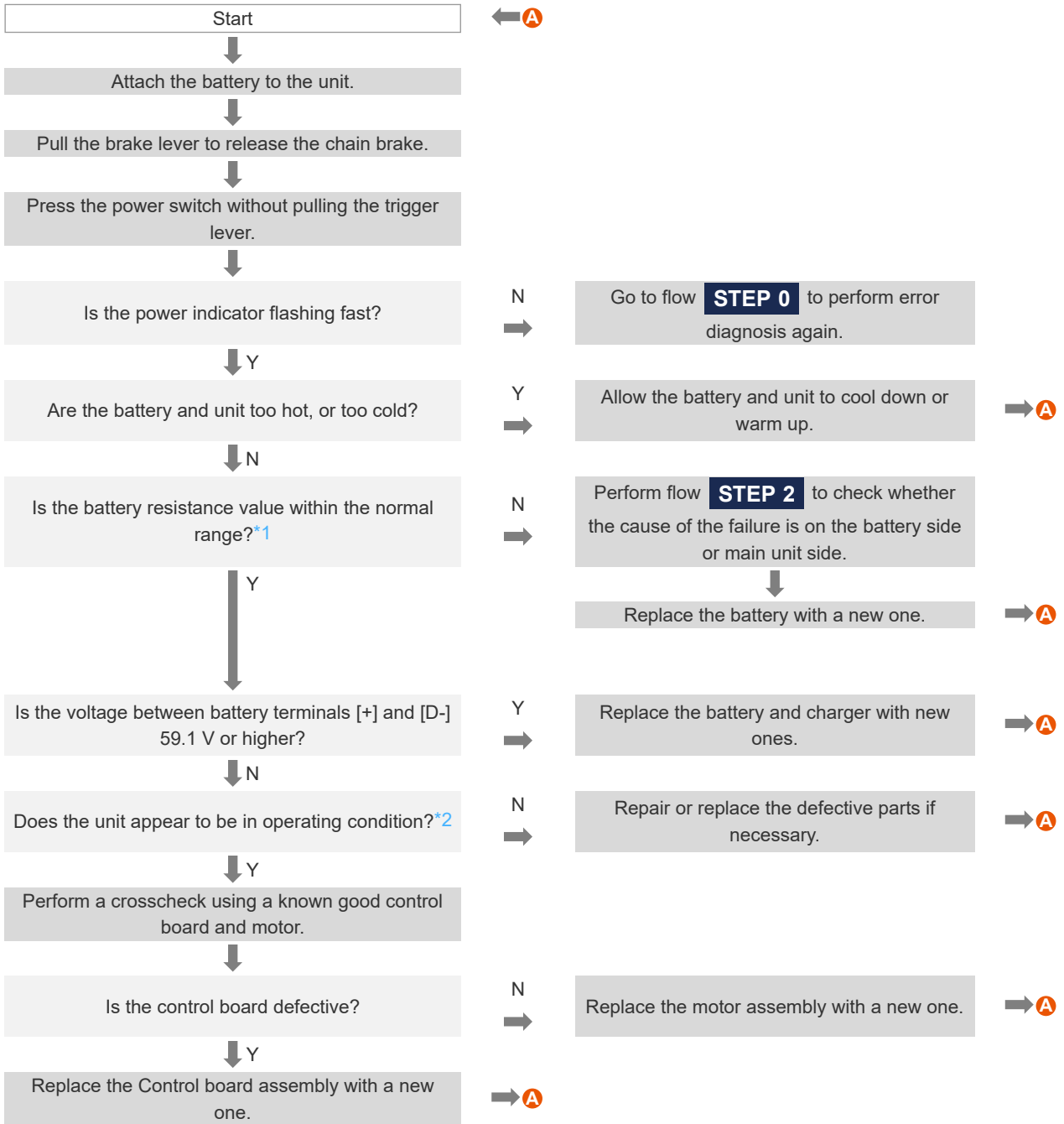
CAUTION

- Do not pull the trigger lever when releasing the chain brake. The saw chain may run unexpectedly.

NOTICE

- If the unit is defective, it may also damage the new battery when the battery is replaced with a new one.

Before replacing the battery, perform flow **STEP 2** to check the unit for problems other than the battery.



Remark

Y : Yes
N : No

- *1 The resistance between battery terminals [T] and [C-] and between battery terminals [T] and [D-] should be from 2.1 kΩ to 78.0 kΩ.
- *2 Inspect the unit for the following:
- Each connector is connected securely.
 - Each wire is connected to each connector securely.
 - All the wires are intact.
 - There are no short circuits.
 - No conductive substances, such as water and metal pieces, are adhered to the control board.

Related Topics

- [3-8 Inspect the Battery Temperature Sensor \(p.31\)](#)
- [3-6 Inspect the Battery Voltage \(p.30\)](#)
- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-4 Remove/Attach the Motor Assembly \(p.53\)](#)
- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)
- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)

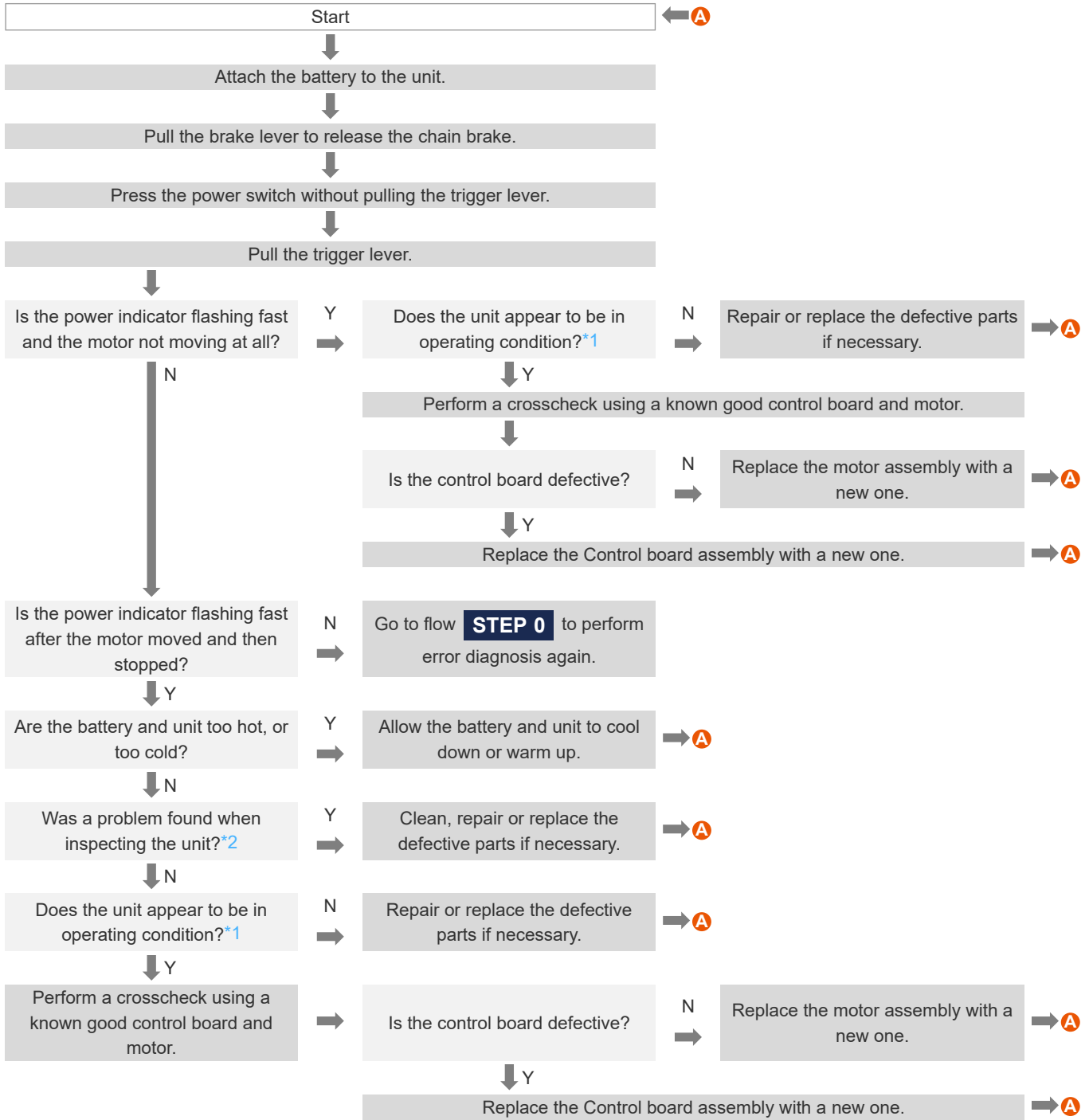
2-11 Troubleshooting "STEP 6" (Check the Chain Brake Switch and Overload)

⚠ WARNING

- Perform troubleshooting in safe, clear surroundings. The unit may run unexpectedly.

⚠ CAUTION

- Do not pull the trigger lever when releasing the chain brake. The saw chain may run unexpectedly.



Remark
 Y : Yes
 N : No

- *1 Inspect the unit for the following:
- Each connector is connected securely.
 - Each wire is connected to each connector securely.
 - All the wires are intact.
 - There are no short circuits.
- *2 Inspect the unit for the following problems:
- Sprocket clogged with saw dust or other objects
 - Non-recommended saw chain and guide bar used
 - Saw chain too tight
 - Trouble in the drive system

Related Topics

- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-4 Remove/Attach the Motor Assembly \(p.53\)](#)
- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)

2-12 Troubleshooting "STEP 7" (Check Other Failures)

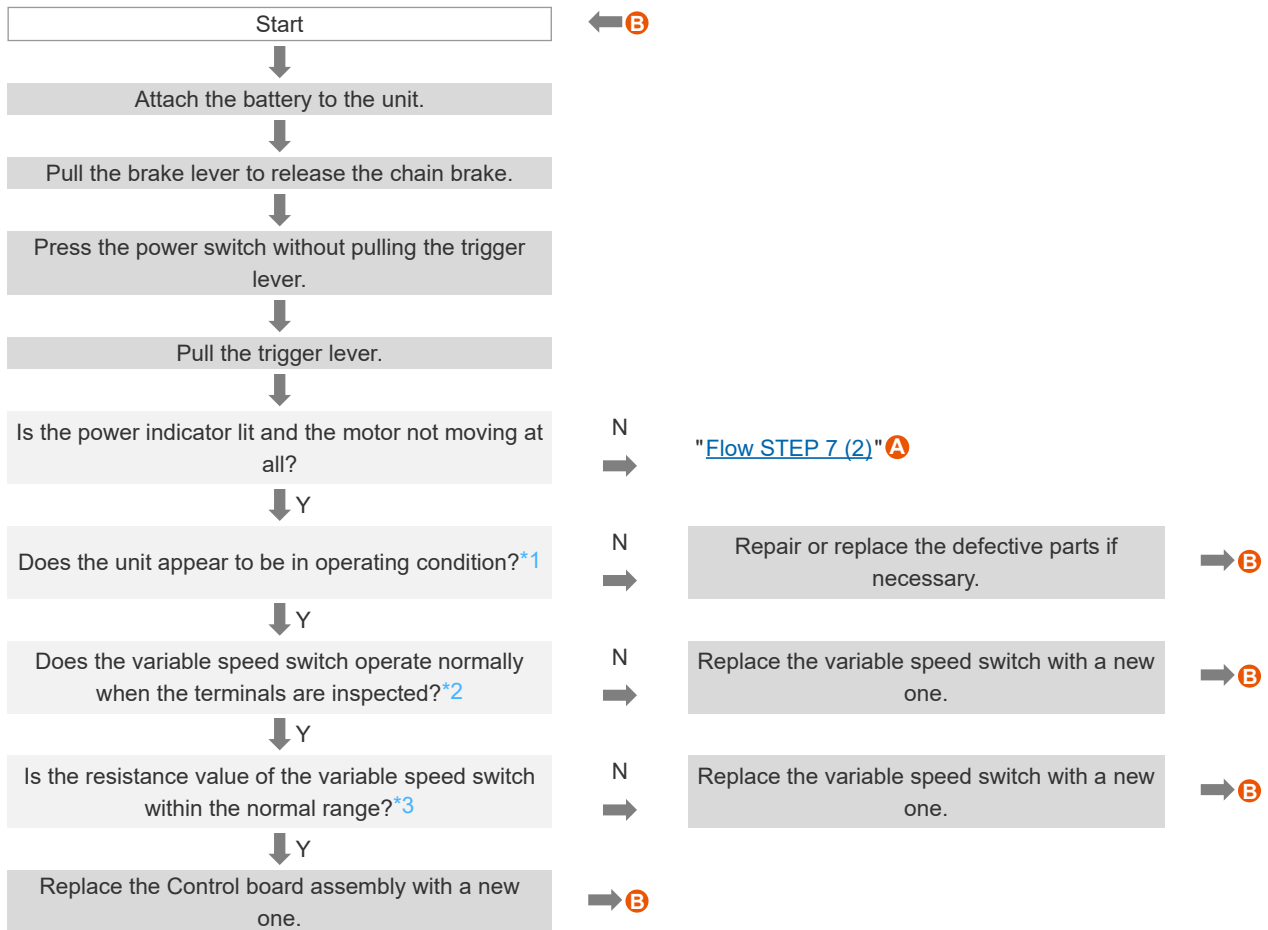
⚠ WARNING

- Perform troubleshooting in safe, clear surroundings. The unit may run unexpectedly.

⚠ CAUTION

- Do not pull the trigger lever when releasing the chain brake. The saw chain may run unexpectedly.

Flow STEP 7 (1)



Remark

Y : Yes
N : No

*1 Inspect the unit for the following:

- Each connector is connected securely.
- Each wire is connected to each connector securely.
- All the wires are intact.
- There are no short circuits.

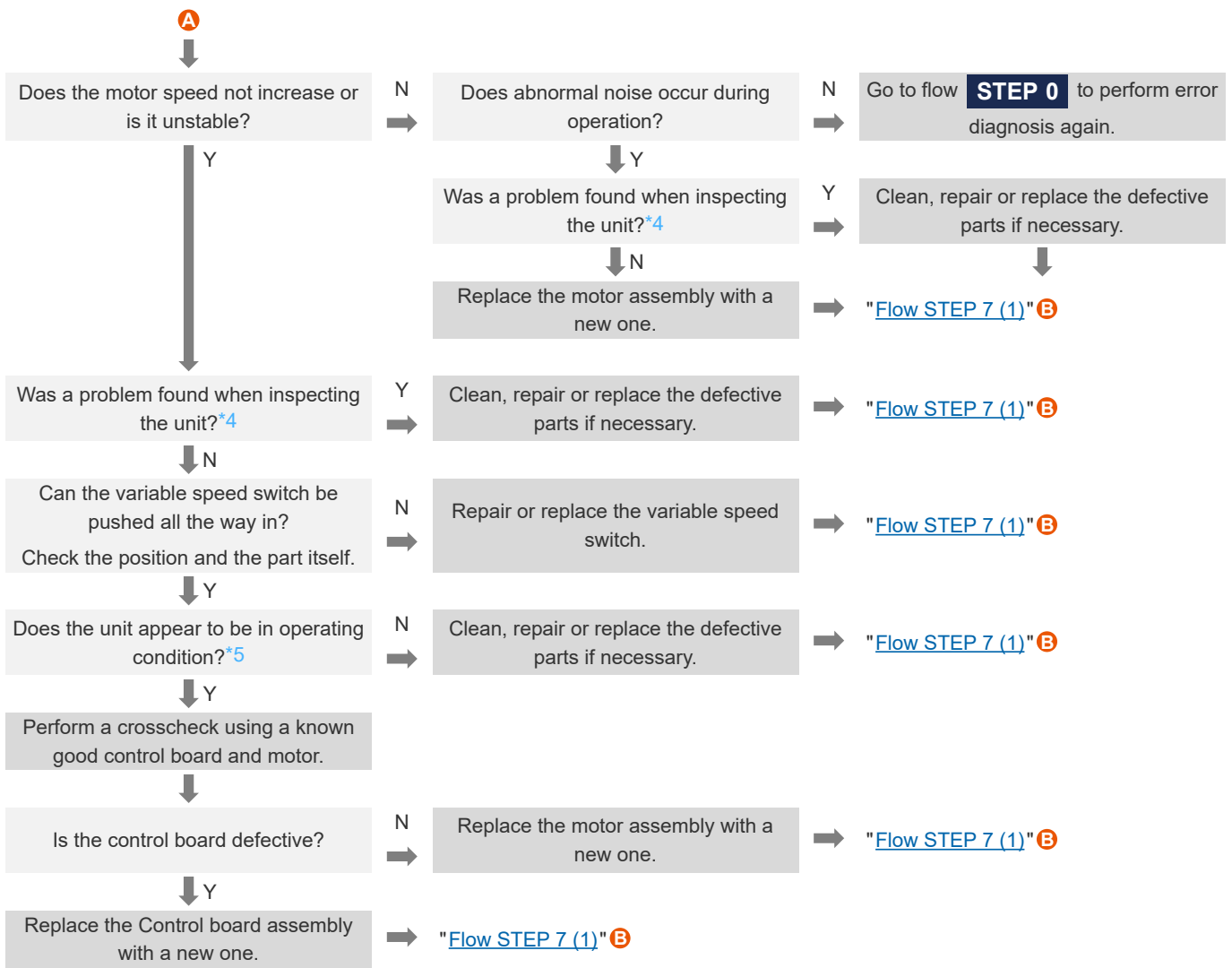
*2 Inspect the terminals of the variable speed switch for the following operation.

- When the switch is pressed : An electric current flows between terminals [1] and [4].
- When the switch is not pressed : No electric current flows between terminals [1] and [4].

*3 Inspect whether the resistance value between terminals [1] and [2] of the variable speed switch is within the following range.

- When the switch is pressed : 100 Ω or lower
- When the switch is not pressed : Between 70 kΩ and 130 kΩ

Flow STEP 7 (2)



Remark

Y : Yes
 N : No

*4 Inspect the unit for the following problems:

- Sprocket clogged with saw dust or other objects
- Non-recommended saw chain and guide bar used
- Saw chain too tight
- Trouble in the drive system

*5 Inspect the unit for the following:

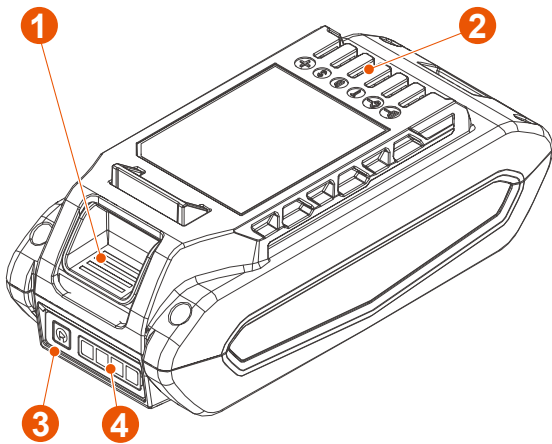
- Each connector is connected securely.
- Each wire is connected to each connector securely.
- All the wires are intact.
- There are no short circuits.

Related Topics

- [9-5 Remove/Attach the Variable Speed Switch \(p.58\)](#)
- [10-5 Inspect the Variable Speed Switch \(p.63\)](#)
- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-4 Remove/Attach the Motor Assembly \(p.53\)](#)
- [2-5 Troubleshooting "STEP 0" \(Error Diagnosis\) \(p.13\)](#)

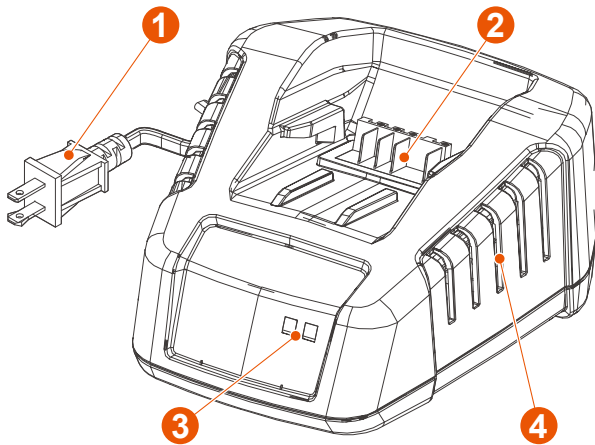
3. Inspect the Battery and Charger

3-1 Battery Components



- 1 Battery pack latch
- 2 Battery terminal
- 3 Battery charge status button
- 4 LED charge level indicators

3-2 Charger Components



- 1 Power cord
- 2 Battery terminal
- 3 Charging status indicator
- 4 Ventilation holes

3-3 Cautions for Using Battery and Charger

CAUTION

- Do not open or modify the battery. Do not use a battery that is damaged or modified.

Damaged or modified batteries may result in electric shock, fire, explosion or injury.

NOTICE

- Charge the battery in an environment where ambient temperature is within 5°C to 40°C (41°F to 104°F).
- The battery capacity may decrease due to repeated charging and discharging.

When the battery has been charged 500 times, its capacity will have decreased to about 60%, but this is not a problem. If capacity is significantly reduced, replace the battery.

3-4 LED Charge Level Indicator

To light up the LED charge level indicator, press the battery charge status button of the battery. The LED charge level indicator lights up according to the remaining battery charge.

- ▶ : 80% to 100%
- ▶ : 55% to 80%
- ▶ : 25% to 55%
- ▶ : 0% to 25%
- ▶ : 0%

Related Topics

- [3-1 Battery Components \(p.29\)](#)

3-5 Charging Status Indicator

The charging status indicator shows the current battery status. The charging status indicator lights up or flashes when the battery is inserted into the charger.



(Flashing in green)

The battery is being charged.



(Green light is on)

The battery is fully charged. Remove the battery from the charger.



(Flashing in red)

The battery or the charger is defective or there is a bad connection between the battery and the charger.



(Red light is on)

The battery is too hot or too cold.

Related Topics

➤ [3-2 Charger Components \(p.29\)](#)

3-6 Inspect the Battery Voltage

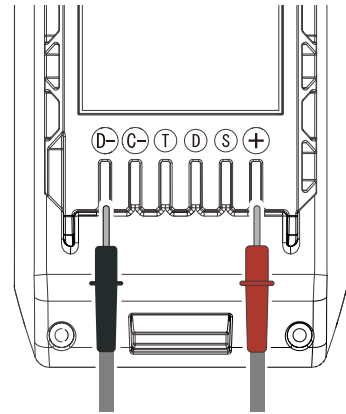
Prerequisites

- The ambient temperature should be in the range of 0 to 40°C (32°F to 104°F).
For correct measurement, check the ambient temperature in advance.
- Tools required:
 - Multimeter

Procedure

1. **Charge the battery.**
2. **Measure the voltage between battery terminals [D-] and [+] with a multimeter.**

The voltage should be from 55 V to 59 V.



3. **If the voltage is not within the normal range (55 V to 59 V), replace the battery or charger with a new one, depending on the voltage.**

NOTICE

- If the unit is defective, it may also damage the new battery when the battery is replaced with a new one.

Before replacing the battery, perform flow

STEP 2

to check the unit for problems other than the battery.

Lower than 55 V

The battery is defective. Replace the battery with a new one.

59.1 V or higher

The battery has been overcharged due to malfunction of the charger and battery. Replace both the battery and the charger with new ones.

CAUTION

- Do not use an overcharged battery. It may cause explosion or fire.

Related Topics

- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)
- [3-1 Battery Components \(p.29\)](#)
- [3-2 Charger Components \(p.29\)](#)

3-7 Inspect for Damage from Over-Discharging

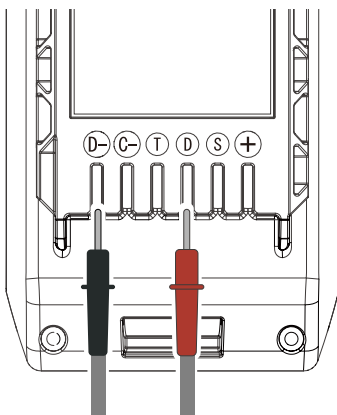
Prerequisites

- The ambient temperature should be in the range of 0 to 40°C (32°F to 104°F).
For correct measurement, check the ambient temperature in advance.
- Tools required:
 - Multimeter

Procedure

1. Charge the battery.
2. Measure the resistance between battery terminals [D-] and [D] with a multimeter.

The resistance should be within the $10\text{k}\Omega \pm 2\text{k}\Omega$. Usually, it is about 10 kΩ.



3. If the resistance is outside the $10\text{k}\Omega \pm 2\text{k}\Omega$, replace the battery with a new one.

If the resistance is greater than $0.95\text{M}\Omega$, the battery is over-discharged.

NOTICE

- If the unit is defective, it may also damage the new battery when the battery is replaced with a new one.
Before replacing the battery, perform flow **STEP 2** to check the unit for problems other than the battery.

CAUTION

- Do not use an over-discharged battery. It may cause explosion or fire.

Related Topics

- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)
- [3-1 Battery Components \(p.29\)](#)
- [3-2 Charger Components \(p.29\)](#)

3-8 Inspect the Battery Temperature Sensor

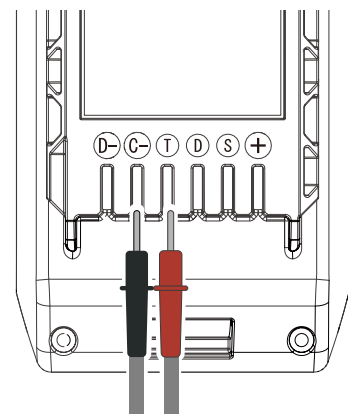
Prerequisites

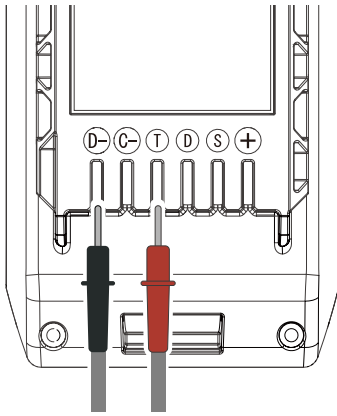
- The ambient temperature should be in the range of 0 to 40°C (32°F to 104°F).
For correct measurement, check the ambient temperature in advance.
- Tools required:
 - Multimeter

Procedure

1. Measure the resistance between battery terminals [C-] and [T] and between battery terminals [D-] and [T] with a multimeter.

Both resistance should be within the 2.1 kΩ to 78.0 kΩ.





2. If the resistance is outside the 2.1 k Ω to 78.0 k Ω , replace the battery with a new one.

The temperature sensor is damaged.

NOTICE

- If the unit is defective, it may also damage the new battery when the battery is replaced with a new one.

Before replacing the battery, perform flow

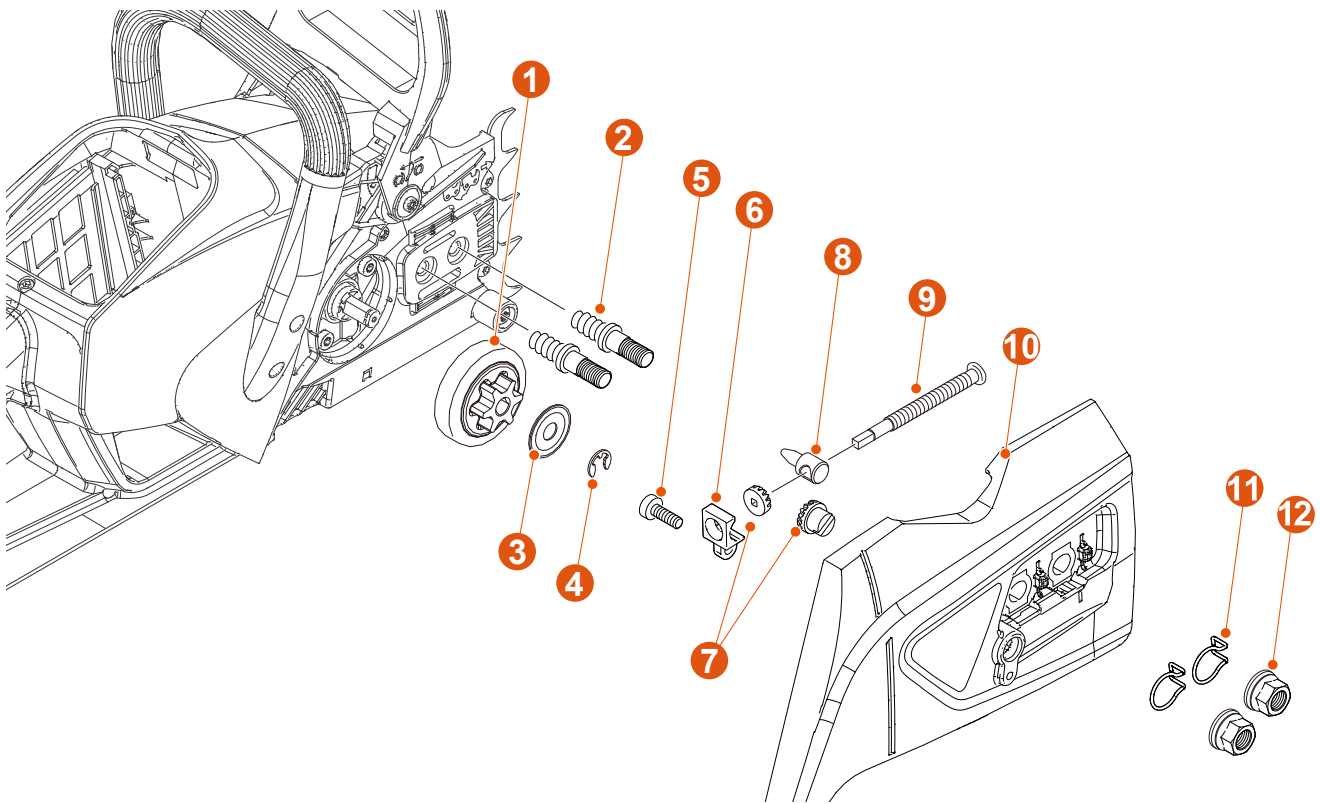
STEP 2 to check the unit for problems other than the battery.

Related Topics

- [2-7 Troubleshooting "STEP 2" \(Check the Unit When Battery Failure Occurs\) \(p.17\)](#)
- [3-1 Battery Components \(p.29\)](#)

4. Disassemble/Assemble the Guide Bar and Saw Chain Mounting

4-1 Guide Bar and Saw Chain Mounting Components



- 1** Spur sprocket
- 2** Stud bolt
- 3** Washer
- 4** Retaining ring
- 5** Torx tapping bolt (M4)
- 6** Collar

- 7** Bevel gear
- 8** Chain tensioner
- 9** Tensioner screw
- 10** Sprocket guard
- 11** Hook
- 12** Nut

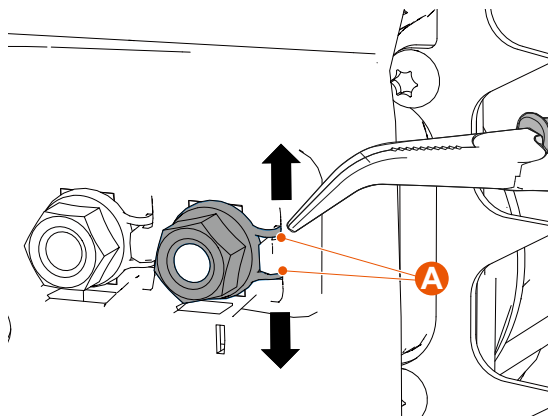
4-2 Remove the Guide Bar Nut

Prerequisites

- Tools required:
 - Longnose pliers

Procedure

1. Pinch the hook **A** with longnose pliers.
2. Remove the hook **A** from the sprocket guard together with the nut.



3. Remove the nut from the hook **A**.

Related Topics

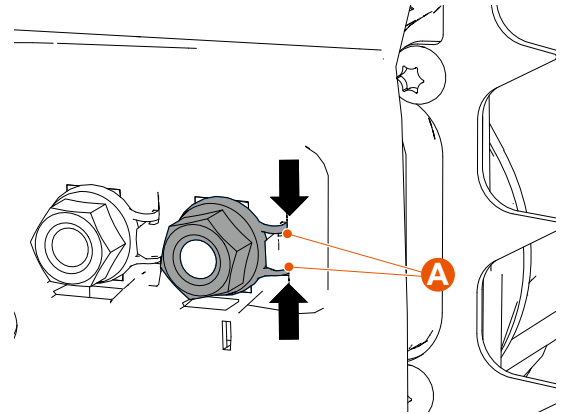
- [4-3 Attach the Guide Bar Nut \(p.34\)](#)
- [4-1 Guide Bar and Saw Chain Mounting Components \(p.33\)](#)

4-3 Attach the Guide Bar Nut

Procedure

1. Attach the nut to the hook **A**.

2. Insert both ends of the hook **A** in the holes of the sprocket guard.



Related Topics

- [4-2 Remove the Guide Bar Nut \(p.34\)](#)
- [4-1 Guide Bar and Saw Chain Mounting Components \(p.33\)](#)

4-4 Remove/Attach the Chain Tensioner

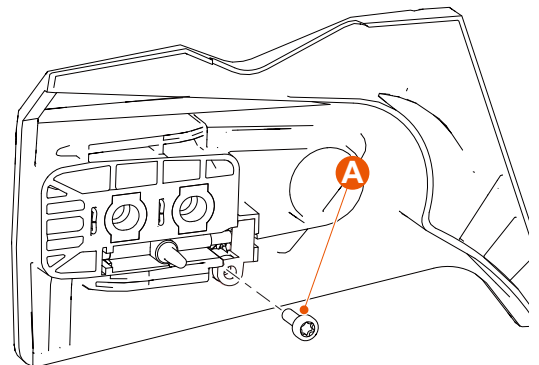
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

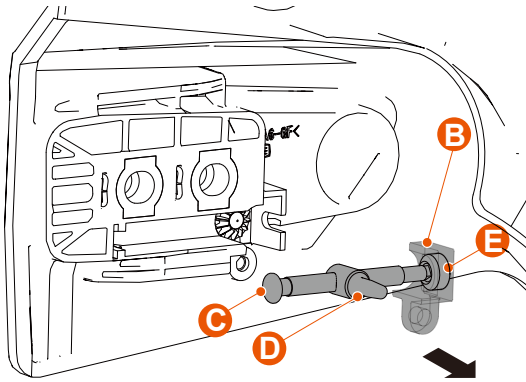
- Remove the sprocket guard.
- Tools required:
 - Torx wrench (T27)

Procedure

1. Remove the Torx bolt **A**.



2. Remove the following parts.



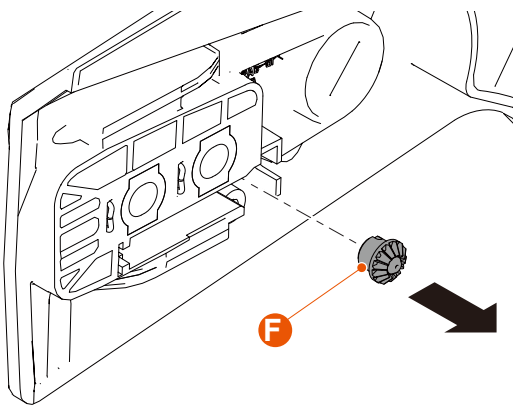
- Collar **B**
- Tensioner screw **C**
- Chain tensioner **D**
- Bevel gear **E**

3. Remove the collar **B** from the bevel gear **E**.

4. Remove the bevel gear **E** from the tensioner screw **C**.

5. Remove the tensioner screw **C** from the chain tensioner **D**.

6. Remove the bevel gear **F**.



7. Inspect the removed parts.

If any deformation, damage, or wear is found, replace the parts with new ones.

Related Topics

- [4-1 Guide Bar and Saw Chain Mounting Components \(p.33\)](#)

4-5 Remove/Attach the Spur Sprocket

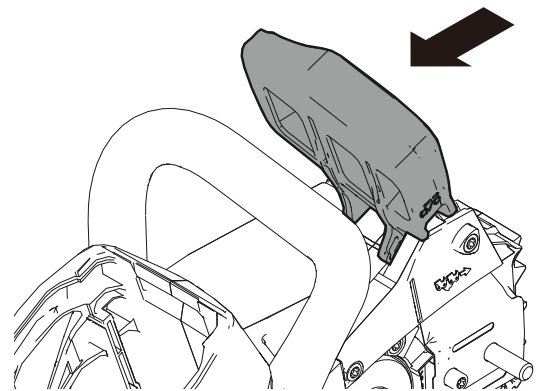
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

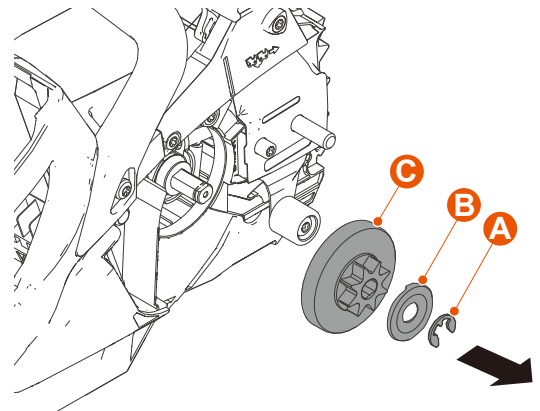
- Remove the sprocket guard.

Procedure

1. Pull the brake lever to the handle-side to release the chain brake.



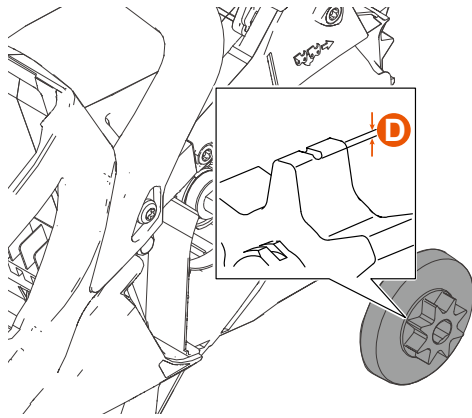
2. Remove the following parts.



- Retaining ring **A**
- Washer **B**
- Spur sprocket **C**

3. Inspect the spur sprocket.

If the sprocket **D** is worn out 0.5 mm (0.02 in.) or more, replace the spur sprocket with a new one.



Related Topics

- [4-1 Guide Bar and Saw Chain Mounting Components \(p.33\)](#)

4-6 Remove the Stud Bolt

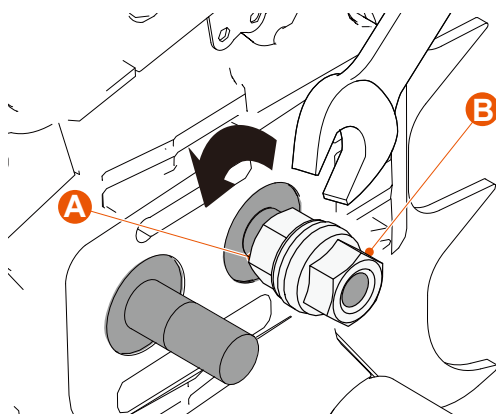
Use double nut (2 nuts) technique for removing the studs bolt.

Prerequisites

- Tools required:
 - Spanner wrench
 - Double nut (2 nuts)

Procedure

1. Attach the 2 nuts **A** and **B** to the stud bolt.
2. Tighten the 2 nuts **A** and **B** against each other.
3. Turn the nut **A** counterclockwise to remove the stud bolt.



NOTICE

If it is hard to remove the stud bolt or broken stud is too short for tightening the 2 nuts, hold the stud bolt in a vise and turn the unit body counterclockwise or use a suitable stud remover.

Related Topics

- [4-7 Attach the Stud Bolt \(p.36\)](#)
- [4-1 Guide Bar and Saw Chain Mounting Components \(p.33\)](#)

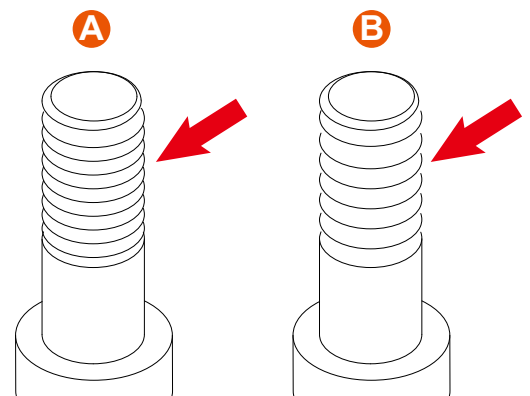
4-7 Attach the Stud Bolt

Prerequisites

- Parts required:
 - New stud bolts

NOTICE

- The stud bolts **A** for spare parts have a smaller self-tapping thread pitch than those **B** for products. By making the self-tapping thread pitch smaller, a new female thread can be created on the motor cover to increase safety.

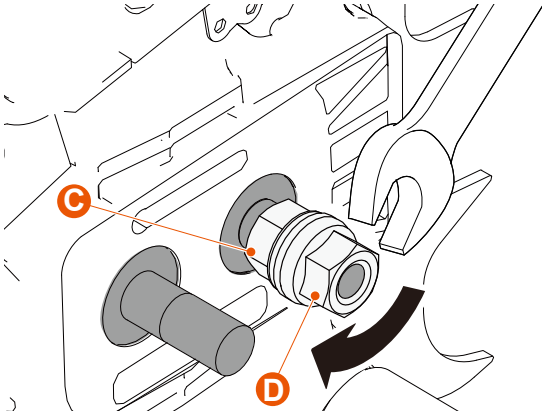


- Tools required:
 - Flat head screwdriver
 - Loctite #272 or equivalent

Procedure

1. Apply thread locking sealant (Loctite #272) to the stud bolt mounting holes in the motor cover.

2. Attach the 2 nuts **C** and **D** to the stud bolt.
3. Tighten the 2 nuts **C** and **D** against each other.
4. Turn the nut **D** clockwise to attach the stud bolt.

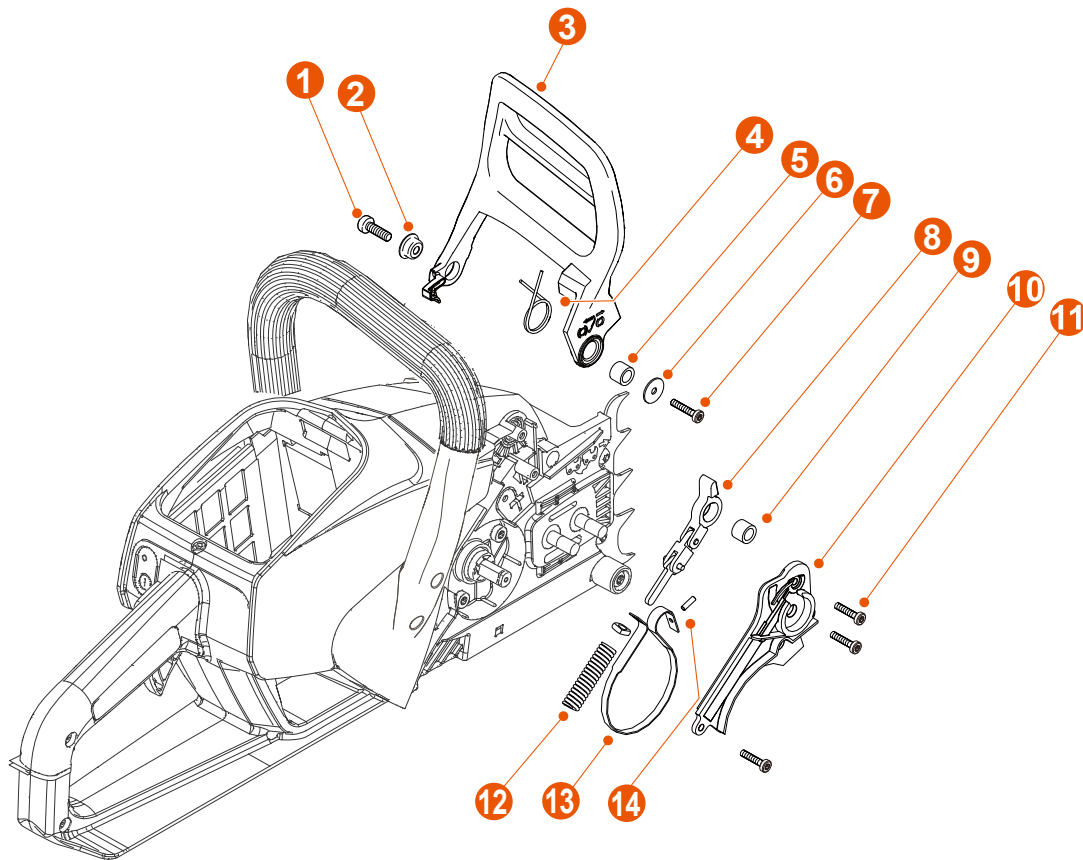


Related Topics

- [4-6 Remove the Stud Bolt \(p.36\)](#)
- [4-1 Guide Bar and Saw Chain Mounting Components \(p.33\)](#)

5. Disassemble/Assemble the Chain Brake

5-1 Chain Brake Components



- | | |
|---------------------------------|----------------------------------|
| 1 Torx tapping bolt (M5) | 8 Brake connector |
| 2 Collar | 9 Collar |
| 3 Brake lever | 10 Brake cover |
| 4 Torsion spring | 11 Torx tapping bolt (M4) |
| 5 Collar | 12 Compression spring |
| 6 Washer | 13 Brake band |
| 7 Torx tapping bolt (M4) | 14 Pin |

5-2 Remove the Chain Brake Parts

Prerequisites

- Remove the following parts.
 - (1) Spur sprocket
 - (2) Brake lever
- Prepare eye protection and safety gloves.

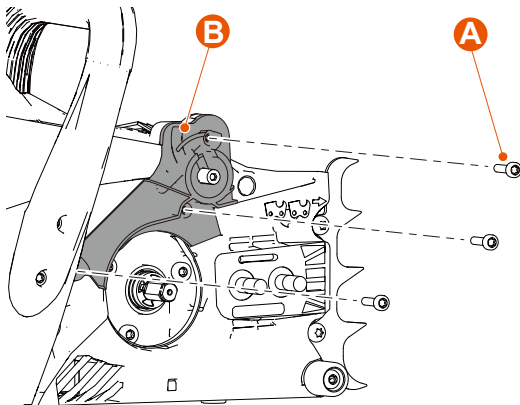
⚠ CAUTION

- Wear eye protection and safety gloves when disassembling the chain brake to protect your eyes and hands from injury.

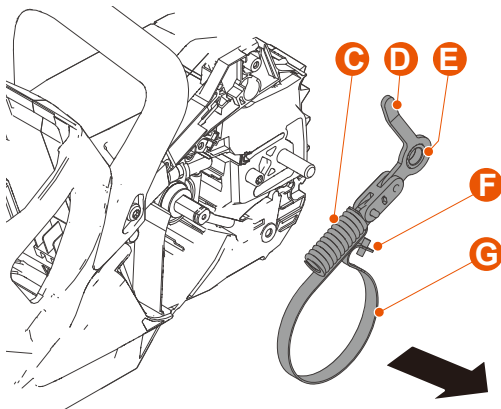
- Tools required:
 - Torx wrench (T27)

Procedure

1. Remove the 3 Torx bolts **A**.
2. Remove the brake cover **B**.



3. Remove the following parts.



- Compression spring **C**
- Brake connector **D**
- Collar **E**
- Pin **F**
- Brake band **G**

4. Inspect the removed parts.

If the removed parts are clogged with dirt and/or dust, clean them.

If any deformation, damage, or wear is found, replace the parts with new ones.

Related Topics

- [4-5 Remove/Attach the Spur Sprocket \(p.35\)](#)
- [5-4 Remove/Attach the Brake Lever \(p.41\)](#)
- [5-3 Attach the Chain Brake Parts \(p.39\)](#)
- [5-1 Chain Brake Components \(p.38\)](#)

5-3 Attach the Chain Brake Parts

Prerequisites

- Prepare eye protection and safety gloves.

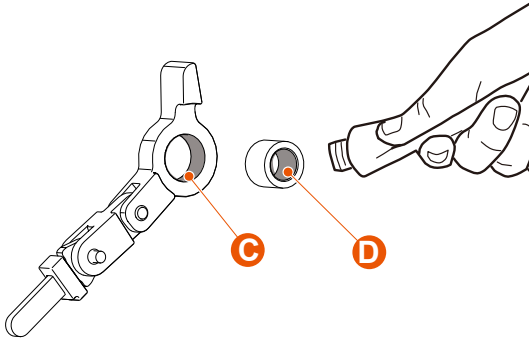
⚠ CAUTION

- Wear eye protection and safety gloves when assembling the chain brake to protect your eyes and hands from injury.

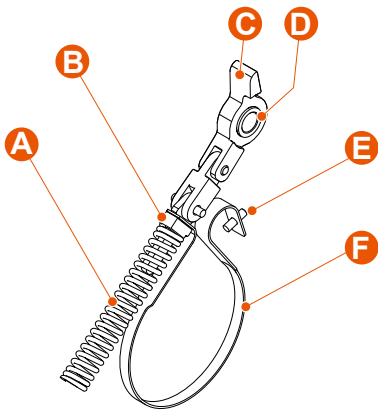
- Tools required:
 - Flat head screwdriver
 - Lithium-based grease

Procedure

1. Apply lithium based grease to the inside of the collar **D** and the brake connector **C**.



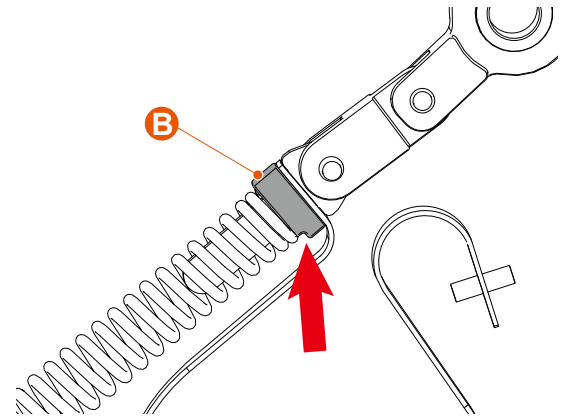
2. Assemble the following parts.



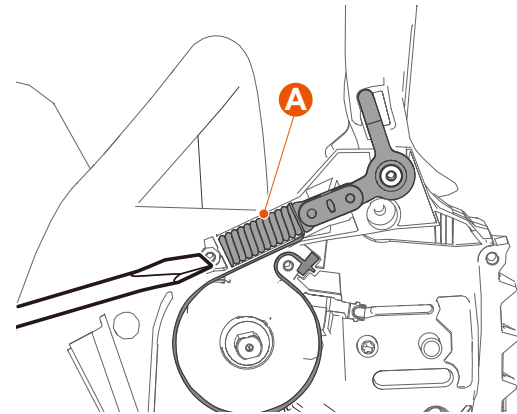
- Compression spring **A**
- Spacer **B**
- Brake connector **C**
- Collar **D**
- Pin **E**
- Brake band **F**

NOTICE

- Make sure the direction of the spacer **B**.

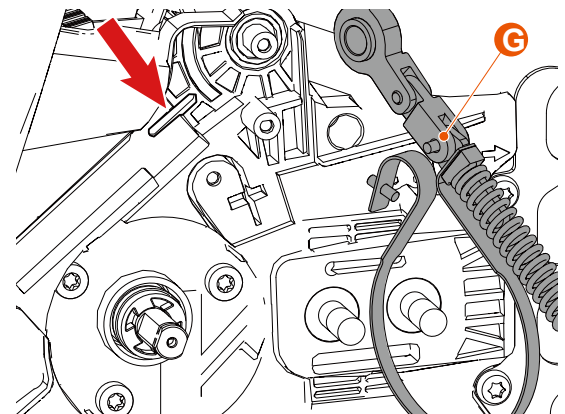


3. Set the assembled chain brake in the motor cover.
4. Using a flat head screwdriver, push the compression spring **A** into the motor cover.



NOTICE

- Make sure that the roller **G** of the brake connector is set inside the groove of the motor cover.



5. Attach the removed parts in the reverse order.

Related Topics

- [5-2 Remove the Chain Brake Parts \(p.39\)](#)
- [5-1 Chain Brake Components \(p.38\)](#)

5-4 Remove/Attach the Brake Lever

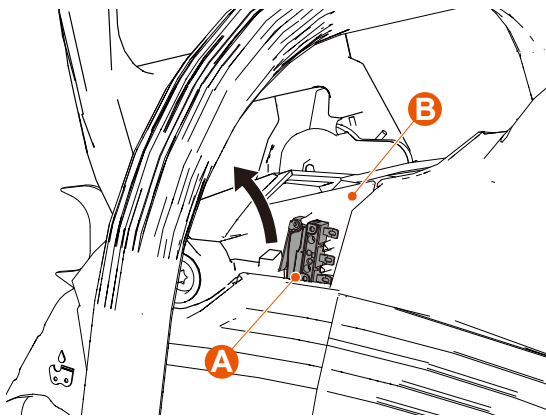
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

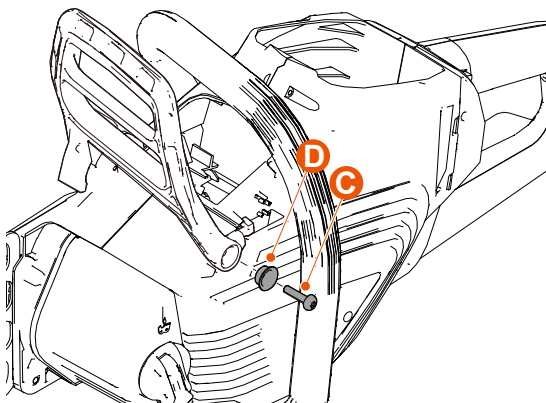
- Remove the cover.
- Tools required:
 - Torx wrench (T27)
 - Lithium-based grease

Procedure

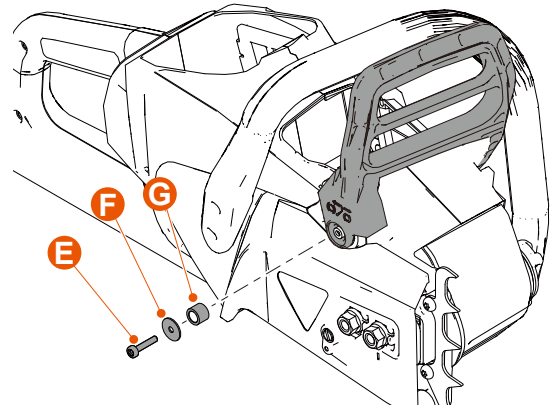
1. Move the brake lever in the direction of the arrow to easily remove the brake switch **A**.
2. Remove the brake switch **A** from the motor cover **B**.



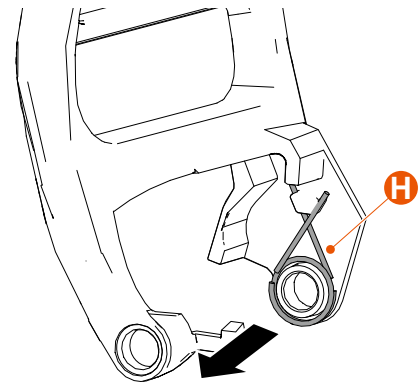
3. Remove the Torx bolt **C** and the collar **D**.



4. Remove the Torx bolt **E**, the washer **F** and the collar **G**.
5. Remove the brake lever.



6. Remove the torsion spring **H** from the brake lever.

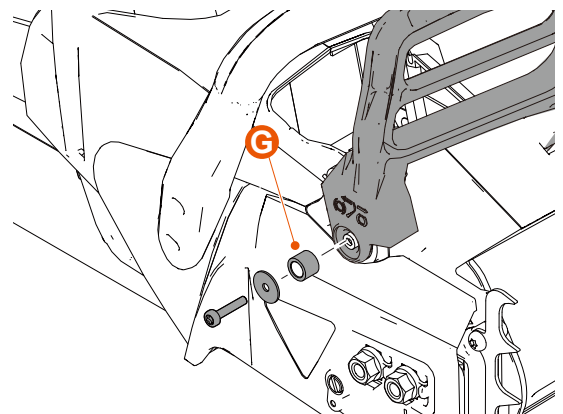


7. Inspect the removed parts.

If any deformation, damage, or wear is found, replace the parts with new ones.

NOTICE

- When reinstalling the collar **G**, apply lithium based grease to the collar **G**.

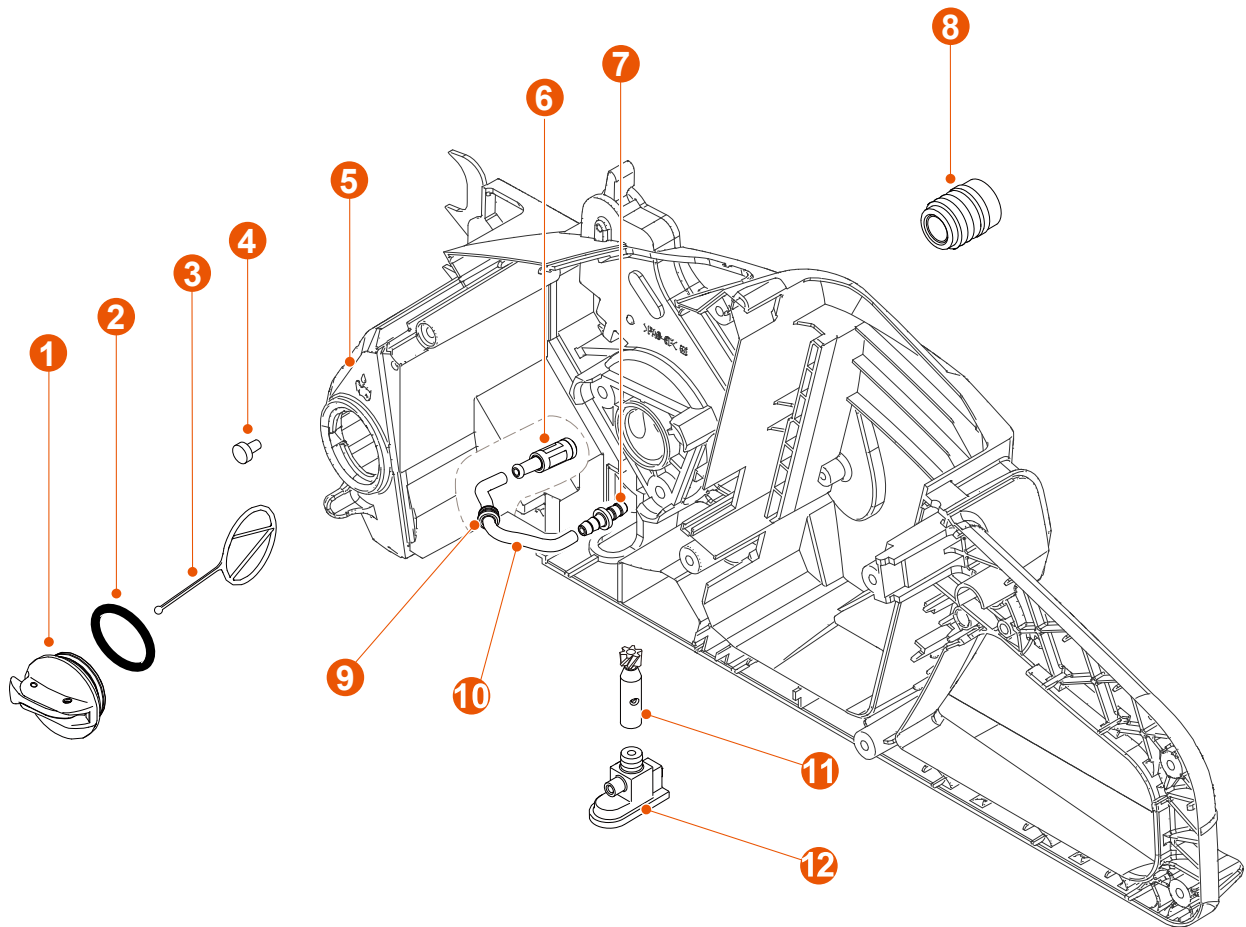


Related Topics

- [8-2 Remove/Attach the Cover \(p.53\)](#)
- [5-1 Chain Brake Components \(p.38\)](#)

6. Disassemble/Assemble the Saw Chain Lubrication System

6-1 Saw Chain Lubrication System Components



- 1 Oil cap
- 2 O-ring
- 3 Cap connector
- 4 Tank vent
- 5 Oil tank
- 6 Oil strainer

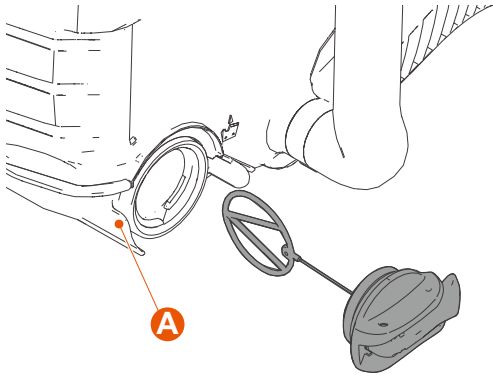
- 7 Pipe joint
- 8 Worm gear
- 9 Grommet
- 10 Oil line
- 11 Auto-oiler assembly
- 12 Oil line

6-2 Remove/Attach the Oil Cap

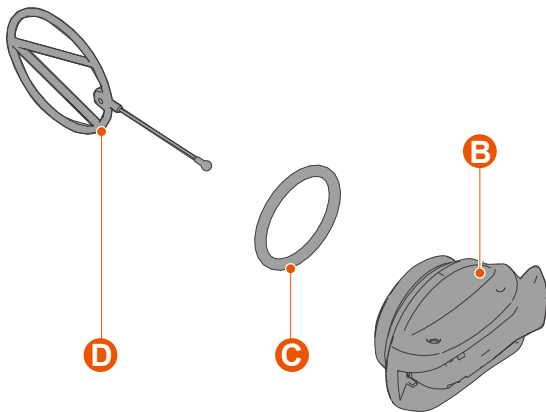
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Procedure

1. Remove the oil cap from the oil tank **A**.



2. Inspect the following parts.



- Oil cap **B**
- O-ring **C**
- Cap connector **D**

If any deformation, damage, or wear is found, replace the parts with new ones.

Related Topics

- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

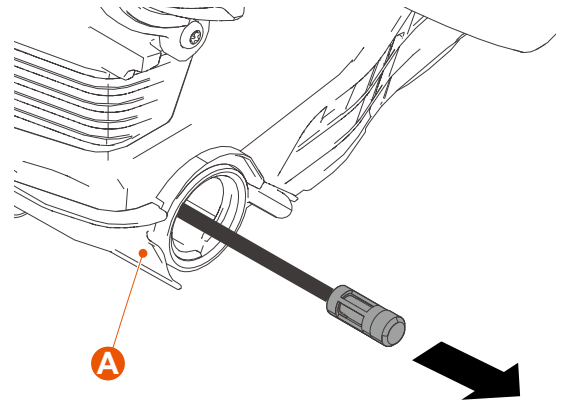
6-3 Remove the Oil Strainer

Prerequisites

- Remove the oil cap.

Procedure

1. Pull out the oil strainer from the oil tank **A**.



2. Inspect the removed parts.
3. If the oil strainer is dirty, remove it from the oil line, and clean the oil strainer with a suitable solvent.

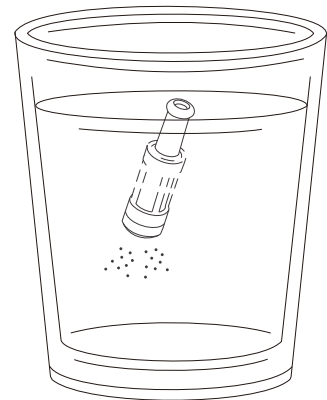


Figure : Cleaning the oil strainer

4. If the oil strainer is very dirty or any deformation, damage, or wear is found, replace it with a new one.

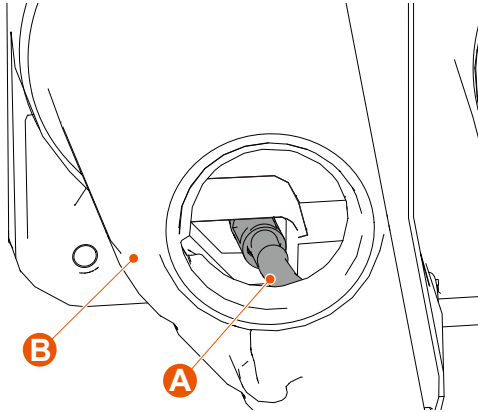
Related Topics

- [6-2 Remove/Attach the Oil Cap \(p.44\)](#)
- [6-4 Attach the Oil Strainer \(p.45\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

6-4 Attach the Oil Strainer

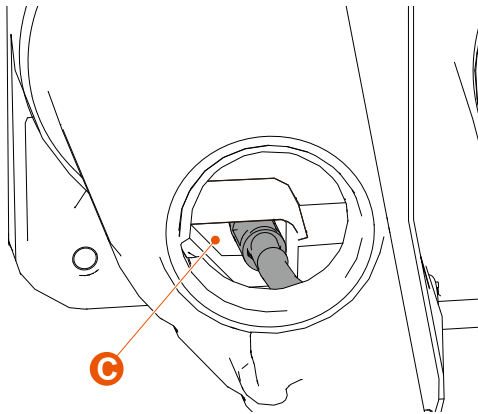
Procedure

1. Attach the oil strainer to the oil line **A**.
2. Return the oil strainer to the inside of the oil tank **B**.



3. Place the oil strainer into the pocket **C** of the oil tank.

It helps supply chain oil remaining on the bottom.



Related Topics

- [6-3 Remove the Oil Strainer \(p.44\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

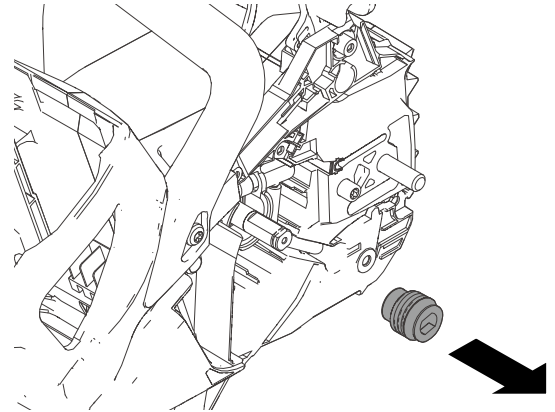
6-5 Remove the Worm Gear

Prerequisites

- Remove the spur sprocket.

Procedure

1. Remove the worm gear.



2. Inspect the removed parts.

If any deformation, damage, or wear is found, replace the parts with new ones.

NOTICE

- If the worm gear is damaged, also inspect the gear of auto-oiler.

Related Topics

- [4-5 Remove/Attach the Spur Sprocket \(p.35\)](#)
- [6-6 Attach the Worm Gear \(p.45\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

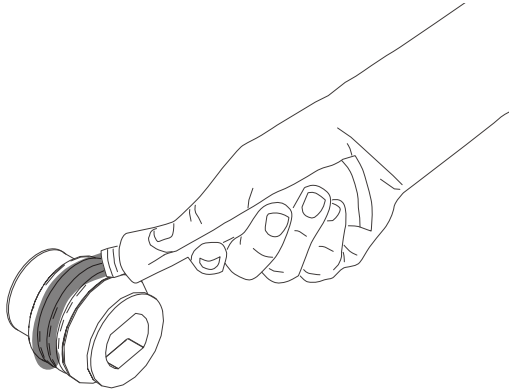
6-6 Attach the Worm Gear

Prerequisites

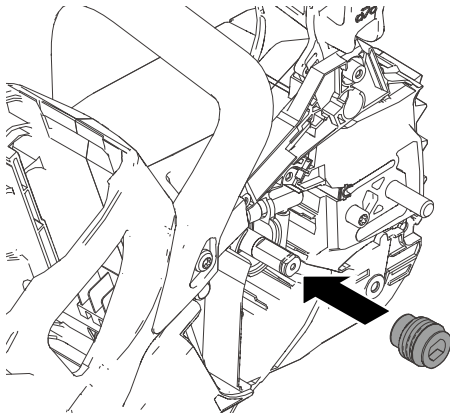
- Tools required:
 - Lithium-based grease

Procedure

1. Apply lithium-based grease to the outer surface of the worm gear.



2. Attach the worm gear.



3. Attach the spur sprocket.

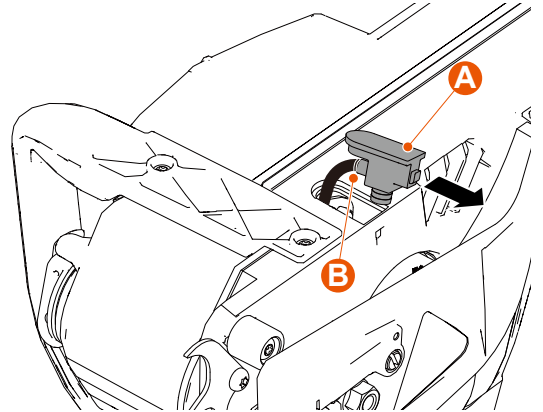
6-7 Remove the Oil Line

Prerequisites

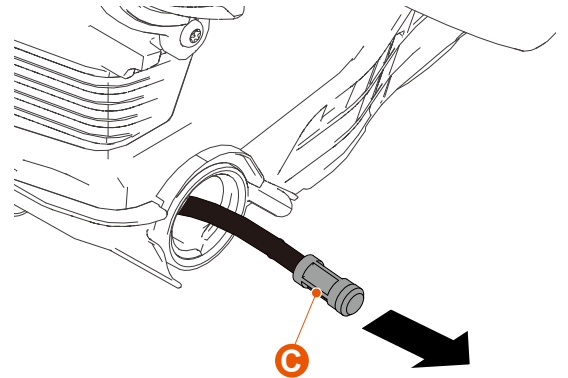
- Remove the oil cap

Procedure

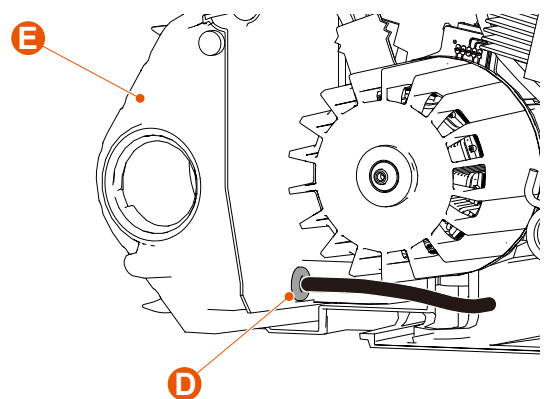
1. Remove the oil line **A** and the pipe joint **B** from the oil line.



2. Remove the oil strainer **C** from the oil line.



3. Pull out the oil line with the grommet **D** from the oil tank **E**.



4. Inspect the removed parts.

If any deformation, damage, or wear is found, replace the parts with new ones.

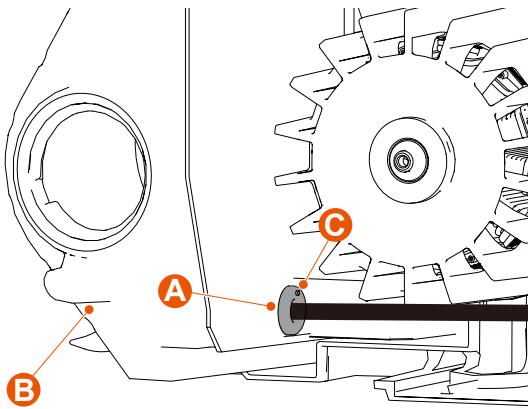
Related Topics

- [6-2 Remove/Attach the Oil Cap \(p.44\)](#)
- [6-8 Attach the Oil Line \(p.47\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

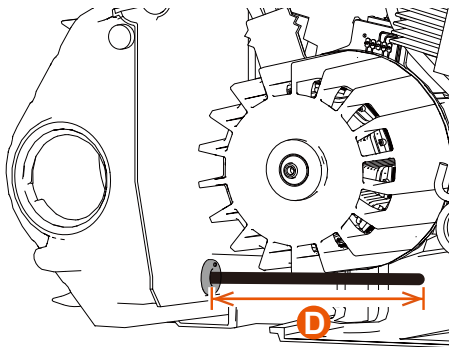
6-8 Attach the Oil Line

Procedure

1. Insert the oil line with the grommet **A** to the oil tank **B** so that the protrusion **C** of the grommet **A** is facing the outside.



2. Adjust the position of the oil line so that the length **D** is within the range of 52 mm to 60 mm (2.05 inches to 2.36 inches).



3. Attach the removed parts in the reverse order.

Related Topics

- [6-7 Remove the Oil Line \(p.46\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

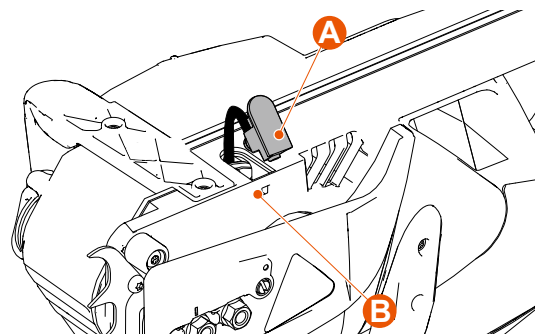
6-9 Remove the Auto-Oiler Assembly

Prerequisites

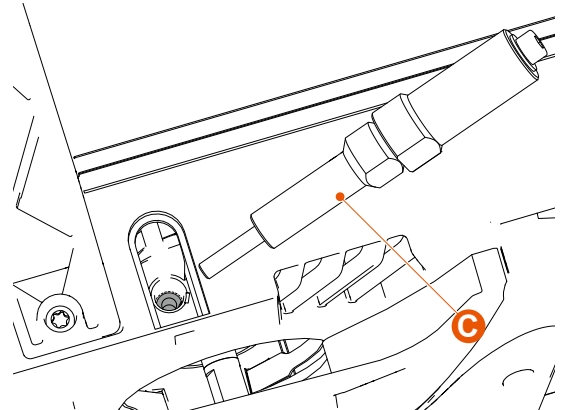
- Remove the worm gear
- Tools required:
 - Auto-oiler puller
 - Spanner wrench

Procedure

1. Remove the oil line **A** from the motor cover **B**.

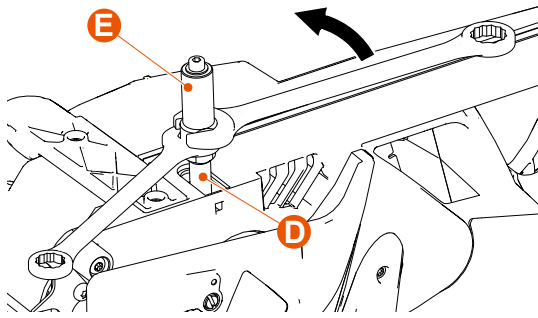


2. Screw the screw tip of the auto-oiler puller **C** into the thread of the auto-oiler assembly.



3. Holding the inner pipe **D** with a spanner wrench, rotate the outer pipe **E** counterclockwise with a spanner wrench.

4. Remove the auto-oiler assembly.



Related Topics

- [6-5 Remove the Worm Gear \(p.45\)](#)
- [6-10 Attach the Auto-Oiler Assembly \(p.48\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

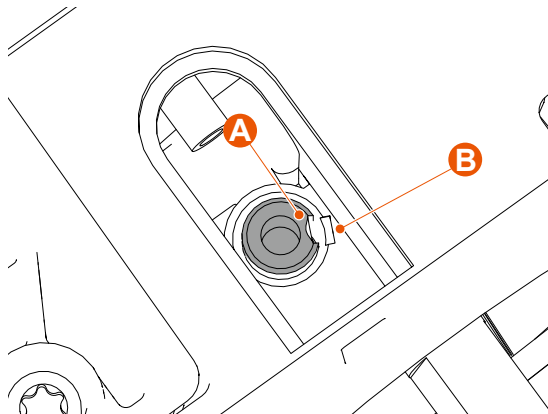
6-10 Attach the Auto-Oiler Assembly

Prerequisites

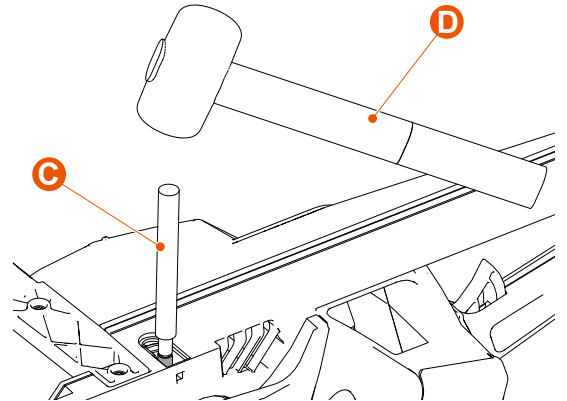
- Tools required:
 - Plastic hammer
 - Auto-oiler installer

Procedure

1. Set the auto-oiler in the hole of the motor cover so that the groove **A** of the auto-oiler aligns with the mark **B** of the motor cover.



2. Push the auto-oiler into the hole of the motor cover with the oiler installer **C** and a plastic hammer **D** until it bottoms.



Related Topics

- [6-9 Remove the Auto-Oiler Assembly \(p.47\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

6-11 Remove the Oil Tank Vent

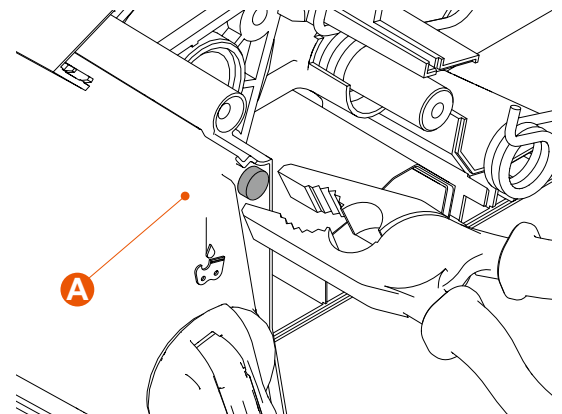
The oil tank vent prevents negative pressure from occurring in the oil tank due to the amount of oil in the oil tank decreasing.

Prerequisites

- Remove the motor cover.
- Tools required:
 - Pliers

Procedure

1. Pull out the oil tank vent from the oil tank **A** with a pliers.



Related Topics

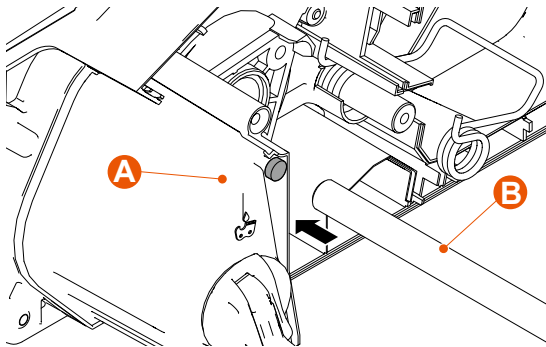
- [8-3 Remove/Attach the Motor Cover \(p.53\)](#)
- [6-12 Attach the Oil Tank Vent \(p.49\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

6-12 Attach the Oil Tank Vent

The oil tank vent prevents negative pressure from occurring in the oil tank due to the amount of oil in the oil tank decreasing.

Procedure

1. Gently seat the center portion of the tank vent in the oil tank **A** using a suitable tool **B**.

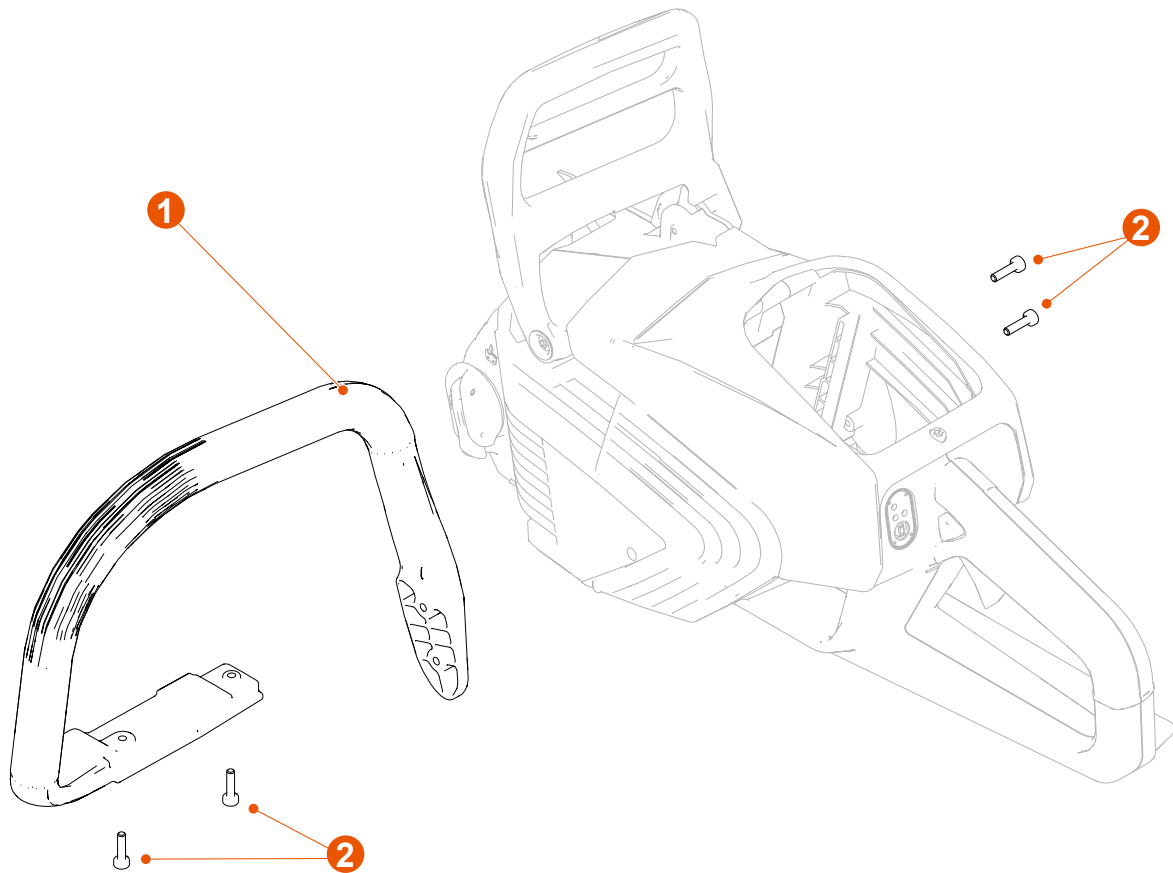


Related Topics

- [6-11 Remove the Oil Tank Vent \(p.48\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

7. Disassemble/Assemble the Front Handle

7-1 Front Handle Components



- 1 Front handle
- 2 Torx tapping bolt (M5)

7-2 Remove/Attach the Front Handle

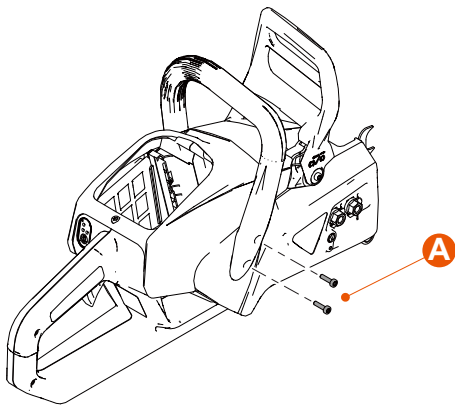
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

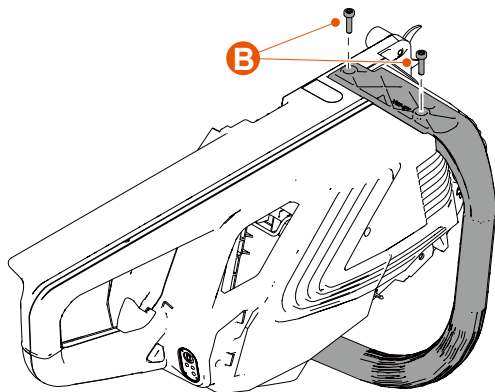
- Tools required:
 - Torx wrench (T27)

Procedure

1. Remove the 2 Torx bolts **A**.



2. Remove the 2 Torx bolts **B**.
3. Remove the front handle.



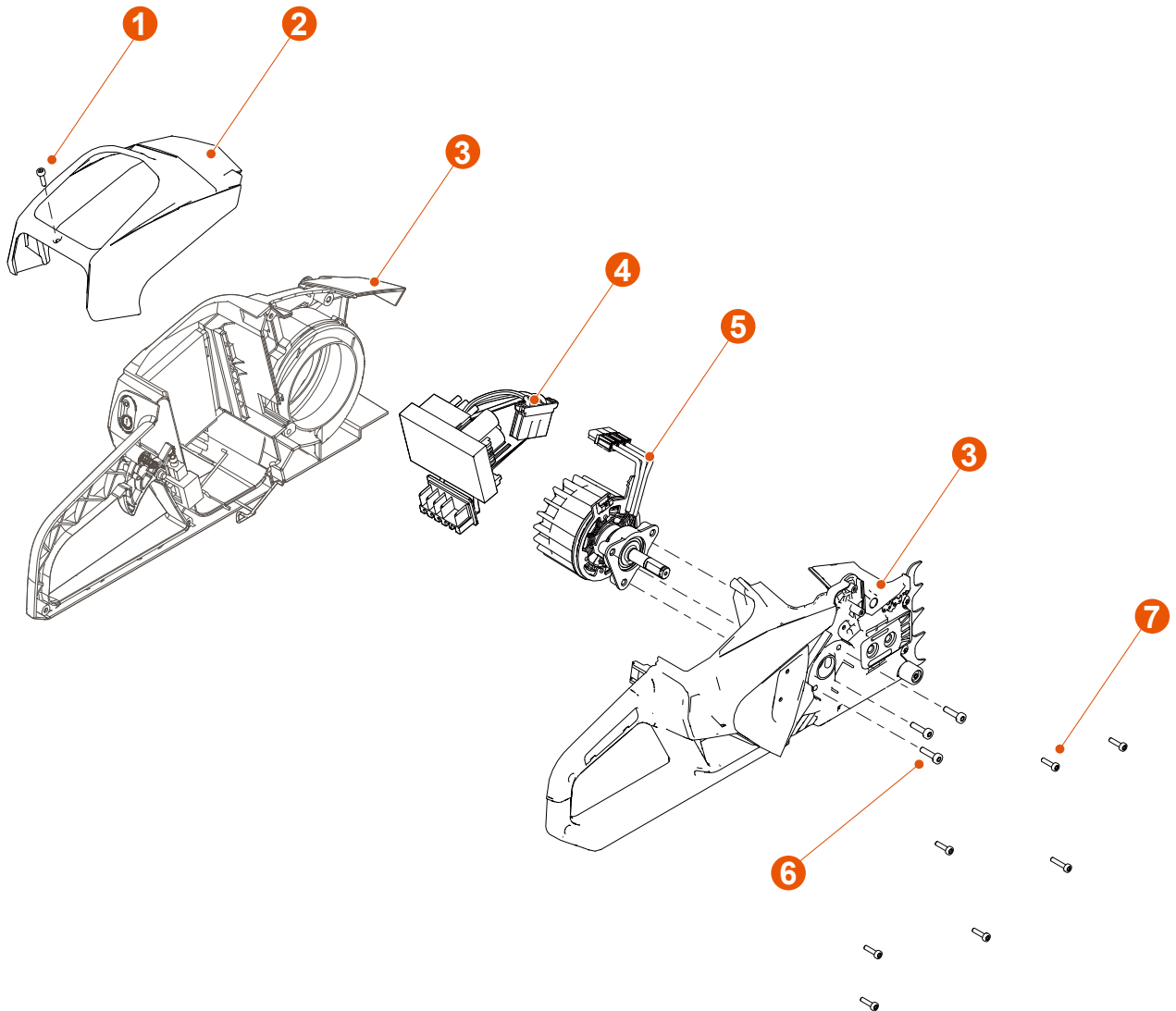
4. Inspect the removed parts.
If any deformation, damage, or wear is found, replace the parts with new ones.

Related Topics

- [7-1 Front Handle Components \(p.50\)](#)

8. Disassemble/Assemble the Motor and Control Board Assembly

8-1 Motor and Control Board Assembly Components



- 1** Torx bolt(M4)
- 2** Cover
- 3** Motor cover
- 4** Control board assembly
- 5** Motor assembly
- 6** Torx bolt(M5)
- 7** Torx tapping bolt(M4)

8-2 Remove/Attach the Cover

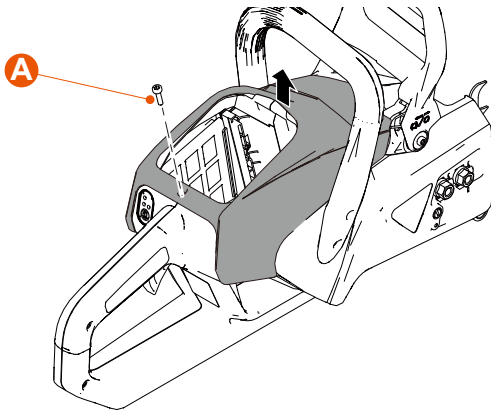
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

- Tools required:
 - Torx wrench (T27)

Procedure

1. Remove the Torx bolt **A**.
2. Remove the cover.



Related Topics

- [8-1 Motor and Control Board Assembly Components \(p.52\)](#)

8-3 Remove/Attach the Motor Cover

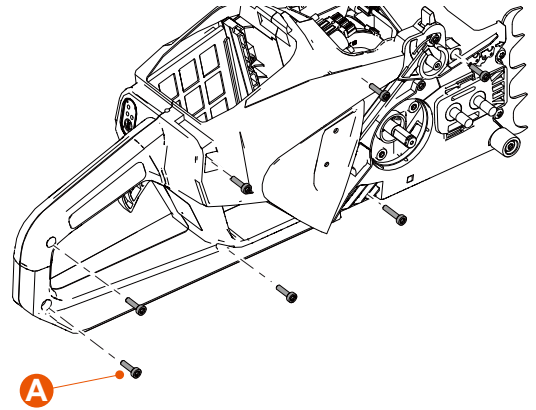
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

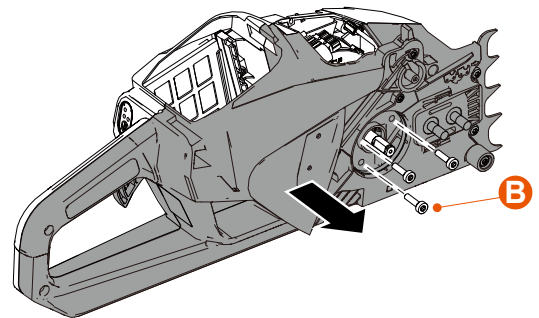
- Remove the following parts.
 - (1) Brake lever
 - (2) Front handle
 - (3) Worm gear
- Tools required:
 - Torx wrench (T27)

Procedure

1. Remove the 7 Torx bolts **A**.



2. Remove the 3 Torx bolts **B**.
3. Remove the motor cover.



Related Topics

- [5-4 Remove/Attach the Brake Lever \(p.41\)](#)
- [7-2 Remove/Attach the Front Handle \(p.51\)](#)
- [6-5 Remove the Worm Gear \(p.45\)](#)
- [8-1 Motor and Control Board Assembly Components \(p.52\)](#)

8-4 Remove/Attach the Motor Assembly

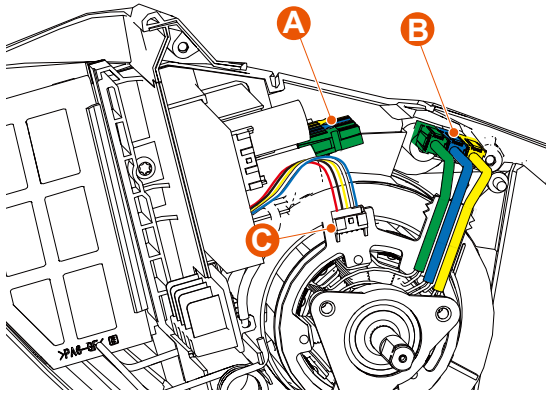
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

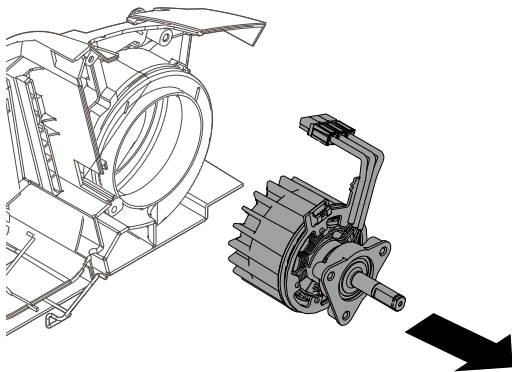
- Remove the motor cover.

Procedure

1. Disconnect the 3-pin connector **A** of the control board and the 3-pin connector **B** of the motor.
2. Disconnect the 5-pin connector **C** of the control board from the motor.



3. Remove the motor assembly from the motor cover.



Related Topics

- [8-3 Remove/Attach the Motor Cover \(p.53\)](#)
- [8-1 Motor and Control Board Assembly Components \(p.52\)](#)

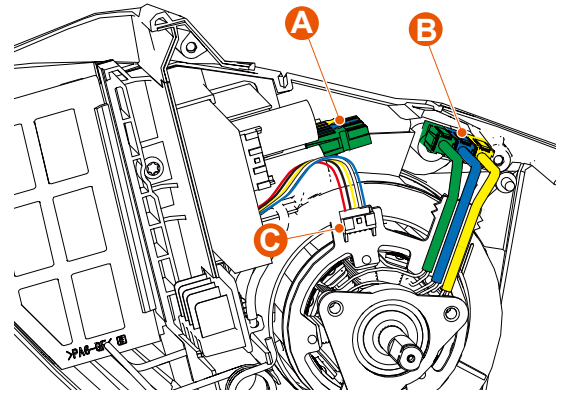
8-5 Remove the Control Board Assembly

Prerequisites

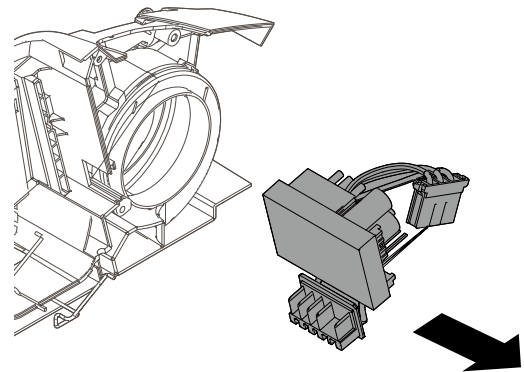
- Remove the following parts.
 - (1) Motor cover
 - (2) Variable speed switch
 - (3) Power switch

Procedure

1. Disconnect the 3-pin connector **A** of the control board and the 3-pin connector **B** of the motor.
2. Disconnect the 5-pin connector **C** of the control board from the motor.



3. Remove the control board assembly from the motor cover.



Related Topics

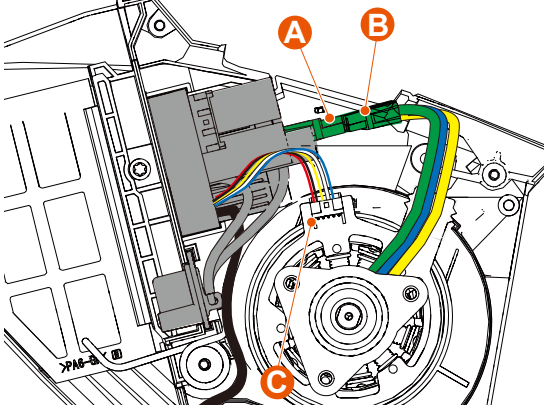
- [8-3 Remove/Attach the Motor Cover \(p.53\)](#)
- [9-5 Remove/Attach the Variable Speed Switch \(p.58\)](#)
- [9-4 Remove/Attach the Power Switch \(p.58\)](#)
- [8-6 Attach the Control Board Assembly \(p.54\)](#)
- [8-1 Motor and Control Board Assembly Components \(p.52\)](#)

8-6 Attach the Control Board Assembly

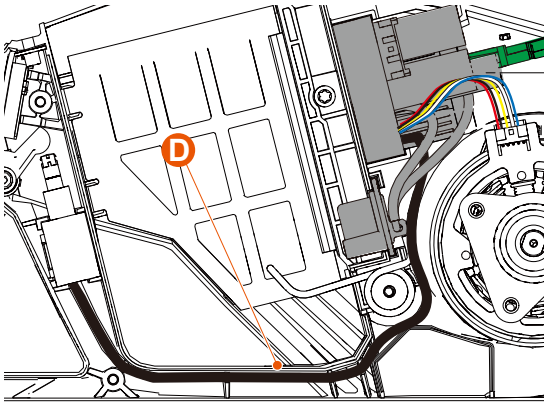
Procedure

1. Attach the control board assembly to the motor cover.

2. Connect the 3-pin connector **A** of the control board and the 3-pin connector **B** of the motor.
3. Connect the 5-pin connector **C** of the control board to the motor.

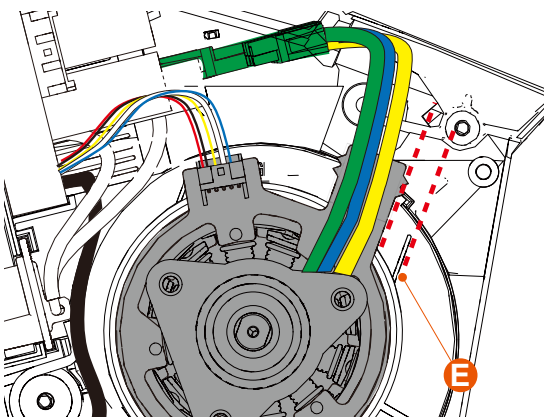


4. Route the wire harness **D** through the ribs of the motor cover, as shown.



NOTICE

Adjust the position of the motor assembly so that it is parallel to the fan case line **E**.



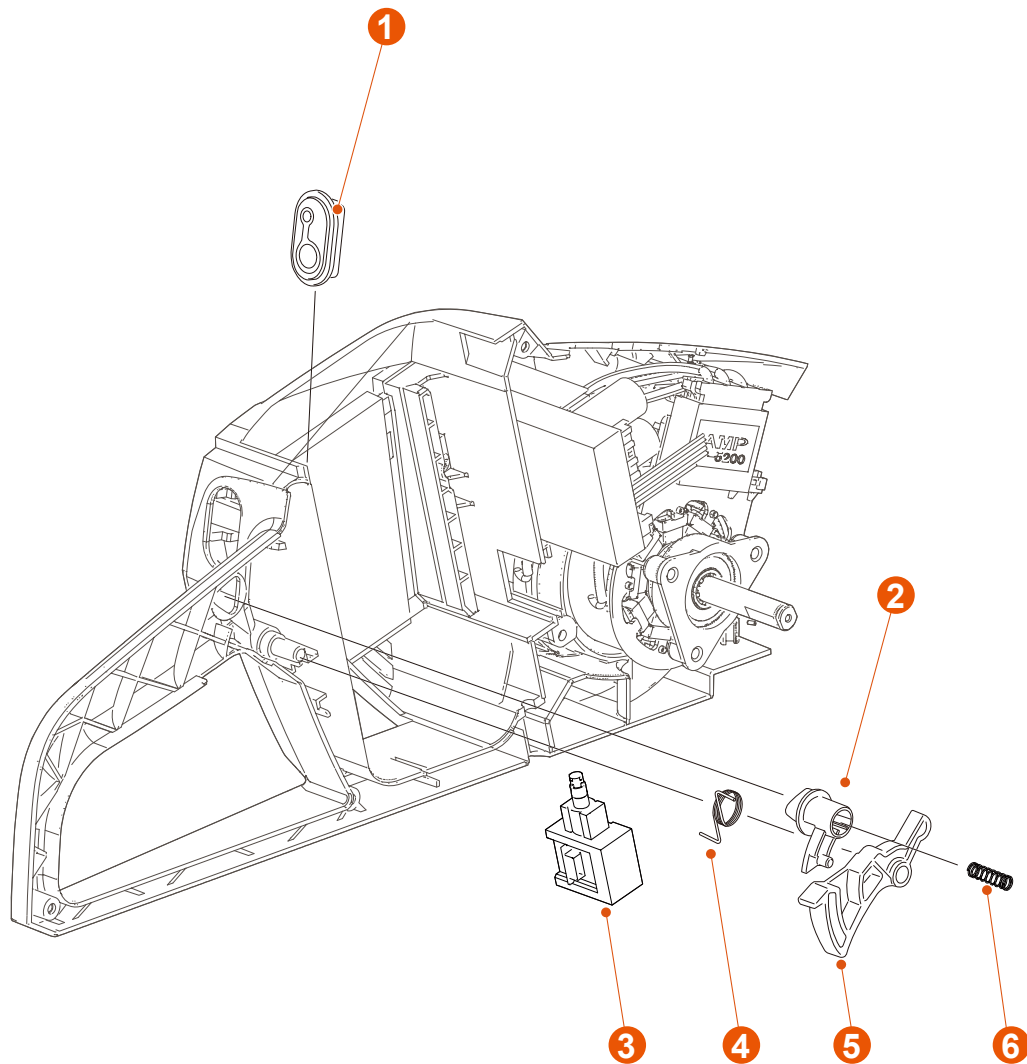
5. Attach the removed parts in the reverse order.

Related Topics

- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-1 Motor and Control Board Assembly Components \(p.52\)](#)

9. Disassemble/Assemble the Switch and Trigger

9-1 Switch and Trigger Components



- 1 Power switch
- 2 Lockout button
- 3 Variable speed switch
- 4 Torsion spring
- 5 Trigger lever
- 6 Compression spring

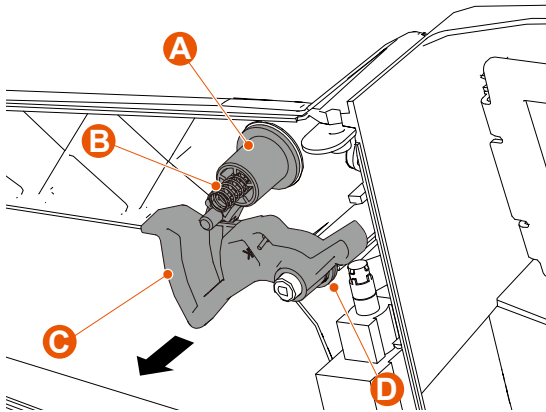
9-2 Remove the Trigger Parts

Prerequisites

- Remove the motor cover.

Procedure

1. Remove the following parts.



- Lockout button **A**
- Compression spring **B**
- Trigger lever **C**
- Torsion spring **D**

2. Inspect the removed parts.

If any deformation, damage, or wear is found, replace the parts with new ones.

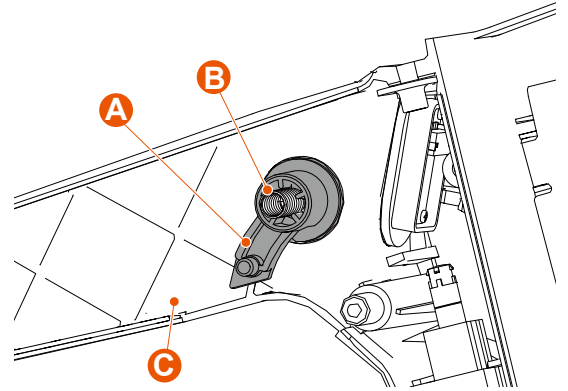
Related Topics

- [8-3 Remove/Attach the Motor Cover \(p.53\)](#)
- [9-3 Attach the Trigger Parts \(p.57\)](#)
- [9-1 Switch and Trigger Components \(p.56\)](#)

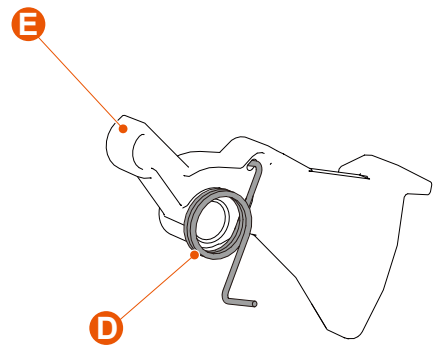
9-3 Attach the Trigger Parts

Procedure

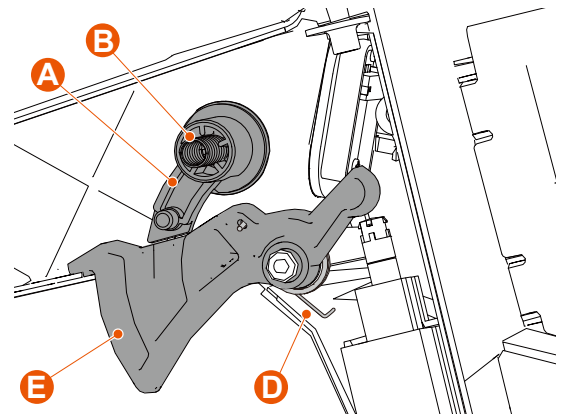
1. Attach the lockout button **A** and the compression spring **B** to the motor cover **C**.



2. Attach the torsion spring **D** to the trigger lever **E**.



3. Attach the following parts.



- Lockout button **A**
- Compression spring **B**
- Torsion spring **D**
- Trigger lever **E**

Related Topics

- [9-2 Remove the Trigger Parts \(p.57\)](#)
- [9-1 Switch and Trigger Components \(p.56\)](#)

9-4 Remove/Attach the Power Switch

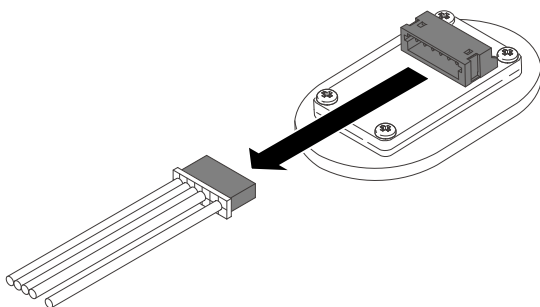
When reinstalling the removed parts, do so in the reverse order from that indicated below.

Prerequisites

- Remove the motor cover.

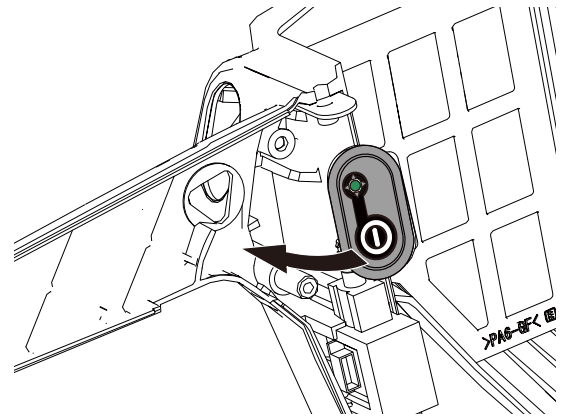
Procedure

1. Remove the power switch from the motor cover.
2. Remove the 6-pin connector of the wire harness from the power switch.



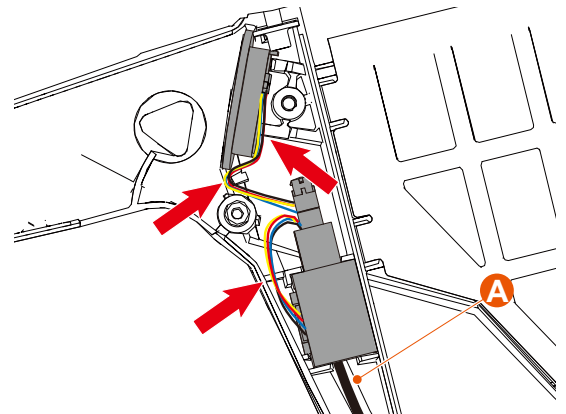
NOTICE

- When reattaching the power switch, make sure that the power switch button is on down when performing assembly.



NOTICE

- When reattaching the power switch, make sure that the wire harness **A** is routed between the ribs indicated by the arrows.



Related Topics

- [8-3 Remove/Attach the Motor Cover \(p.53\)](#)
- [9-1 Switch and Trigger Components \(p.56\)](#)

9-5 Remove/Attach the Variable Speed Switch

When reinstalling the removed parts, do so in the reverse order from that indicated below.

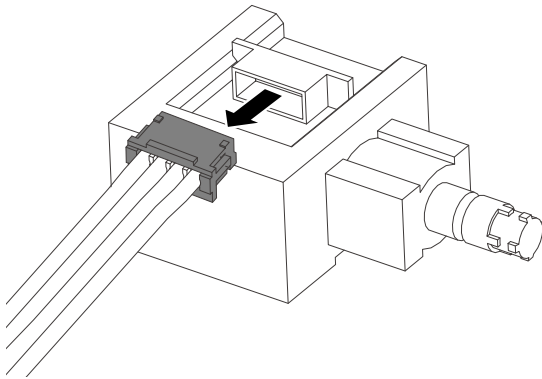
Prerequisites

- Remove the motor cover.

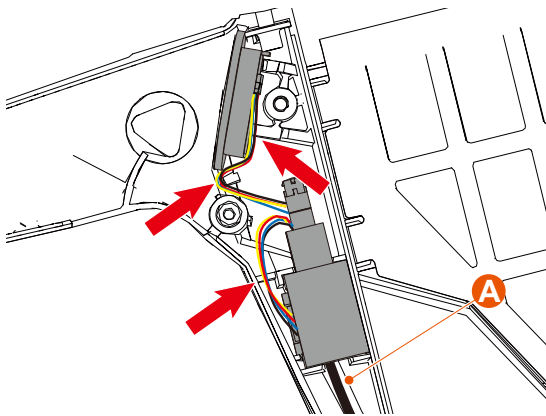
Procedure

1. Remove the variable speed switch from the motor cover.

2. Remove the 4-pin connector of the wire harness from the variable speed switch.

**NOTICE**

- When reattaching the power switch, make sure that the wire harness **A** is routed between the ribs indicated by the arrows.

**Related Topics**

- [8-3 Remove/Attach the Motor Cover \(p.53\)](#)
- [9-1 Switch and Trigger Components \(p.56\)](#)

10. Inspect the Various Parts

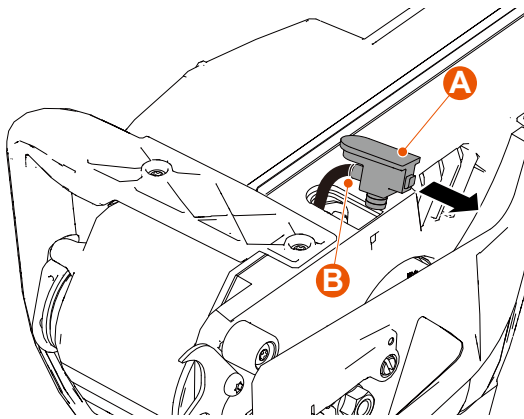
10-1 Inspect the Oil Line

Prerequisites

- Remove the oil cap.
- Tools required:
 - Pressure tester
 - Longnose pliers (wrap the ends with tape)

Procedure

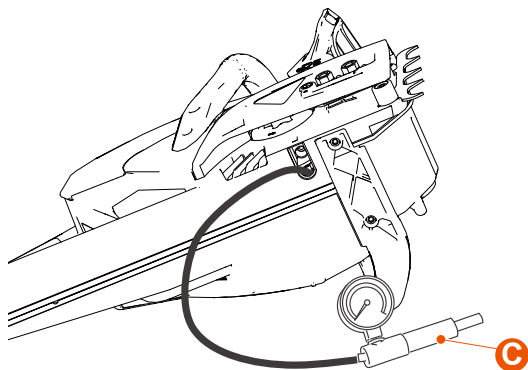
1. Remove the oil line **A** and the pipe joint **B** from the oil line.



NOTICE

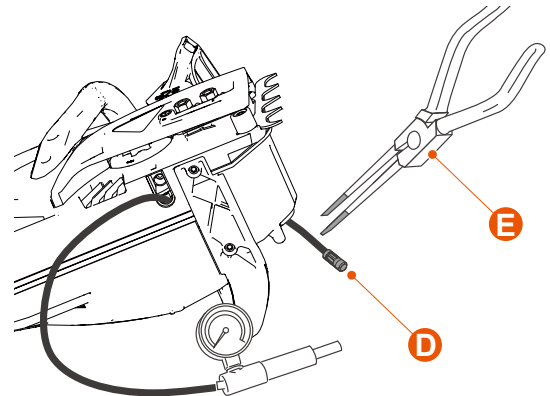
- Take care not to enter the oil line into the motor cover. It is difficult to reconnect the oil line to the oil line **A**.

2. Connect the oil line to the pressure tester **C**.



3. Pull out the oil strainer **D** from the oil tank.

4. Pinch the oil line on the oil-strainer side with longnose pliers **E**.



NOTICE

- Wrap the ends of the longnose pliers with plastic tape to protect the oil line from damage.

5. Apply air pressure of approx. 0.05 MPa (0.5kgf/cm²) (7.0 psi) with the pressure tester.

6. Check if the pressure drops.

If the pressure drops, replace the oil line with a new one.

Related Topics

- [6-2 Remove/Attach the Oil Cap \(p.44\)](#)
- [6-7 Remove the Oil Line \(p.46\)](#)
- [6-3 Remove the Oil Strainer \(p.44\)](#)
- [6-8 Attach the Oil Line \(p.47\)](#)
- [6-4 Attach the Oil Strainer \(p.45\)](#)
- [6-1 Saw Chain Lubrication System Components \(p.43\)](#)

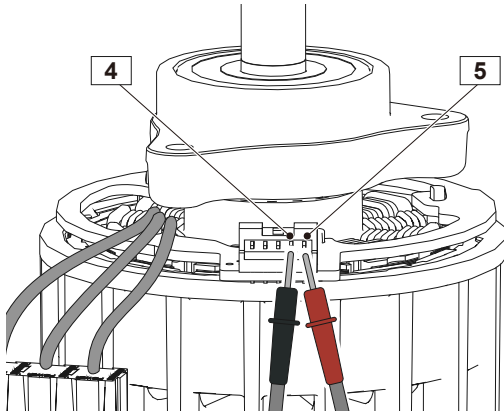
10-2 Inspect the Motor Assembly

Prerequisites

- Remove the motor assembly.
- Tools required:
 - Multimeter

Procedure

1. Confirm that there is no short-circuit between terminals [4] and [5] of the motor assembly 5-pole terminal block.



Measure the resistance between terminals [4] and [5] with a multimeter.

- If the multimeter registers infinite resistance : There is no continuity.
- If the multimeter registers zero resistance : There is continuity.

If those 2 points are short-circuited (there is continuity), replace the motor assembly with a new one.

2. Inspect the parts of the motor assembly.

If the following are found, replace the motor assembly with a new one.

- Damage to motor terminals
- Burning or disconnection of motor winding
- Non-smooth rotation or damage in the motor ball bearings

10-3 Inspect the Control board assembly

Prerequisites

- Remove the control board assembly.
- Tools required:
 - Multimeter

Procedure

1. Check that there is no short-circuit between the positive terminal screw **A** and the negative terminal screw **B** of the battery terminal.

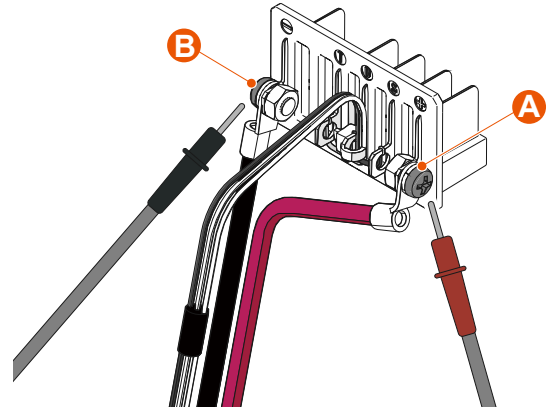


Figure : Battery terminal

Measure the resistance between the positive terminal screw **A** and the negative terminal screw **B** with a multimeter.

- If the multimeter registers infinite resistance : There is no continuity.
- If the multimeter registers zero resistance : There is continuity.

If those 2 points are short-circuited (there is continuity), replace the control board assembly with a new one.

2. Check if any conductive substances, such as water and metal pieces, adhered to the control board assembly.

If conductive substances are adhered to the control board assembly, remove them.

3. Inspect the control board assembly and control board terminals for burning or damage.

If found, replace the control board assembly with a new one.

Related Topics

- [8-5 Remove the Control Board Assembly \(p.54\)](#)
- [8-6 Attach the Control Board Assembly \(p.54\)](#)
- [8-1 Motor and Control Board Assembly Components \(p.52\)](#)

10-4 Inspect the Power Switch

Prerequisites

- Remove the power switch.
- Tools required:
 - Multimeter
- LED tester

Used for inspecting the power indicator (step 3.). If an LED tester is not available, inspect the power switch using coin batteries.

Procedure

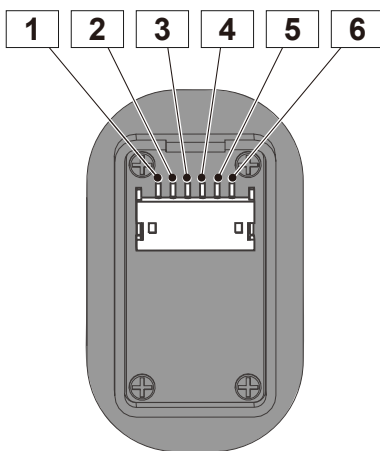


Figure : Power switch (rear)

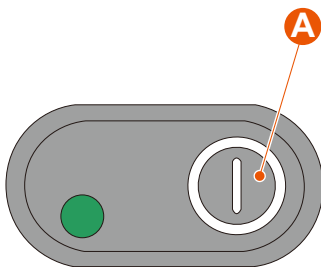


Figure : Power switch (front)

1. **Check that there is no short-circuit between terminals [2] and [3] of the power switch.**

Measure the resistance between terminals [2] and [3] of the power switch with a multimeter.

- If the multimeter registers infinite resistance : There is no continuity.
- If the multimeter registers zero resistance : There is continuity.

If those 2 points are short-circuited (there is continuity), replace the power switch with a new one.

2. **Check that there is no bad connection between terminals [1] and [2] of the power switch.**

Measure the resistance between terminals [1] and [2] of the power switch with a multimeter.

- If the multimeter registers zero resistance when the switch button **A** is pressed : There is continuity.
- If the multimeter registers infinite resistance when the switch button **A** is released : There is no continuity.

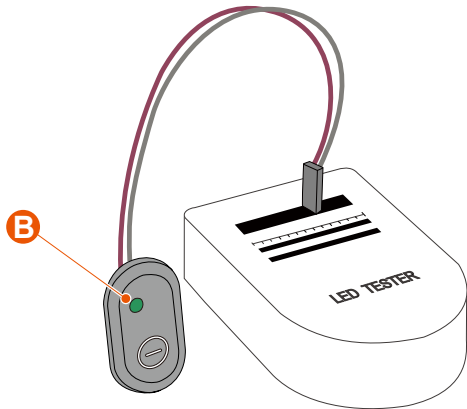
If the power switch is not in the state above, replace it with a new one.

3. **Check if the power indicator is intact.**

The power indicator can be checked using an LED tester or coin batteries.

If the power indicator does not light up, replace the power switch with a new one.

When using an LED tester

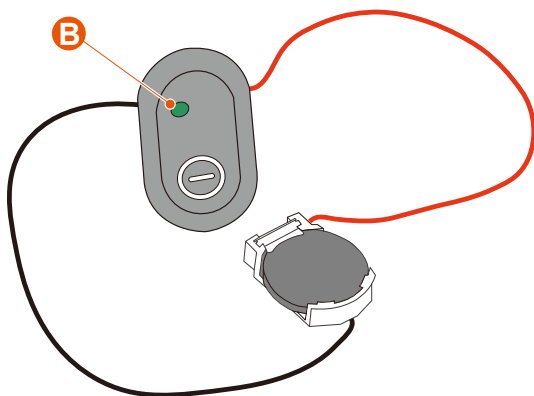


CAUTION

- When inspecting the power indicator using an LED tester, be sure not to apply electric current higher than 150 mA to the power indicator. It may damage the power indicator.

- (1) Connect the positive (+) wire of an LED tester to terminal [3] of the power switch. Likewise, connect the negative (-) wire to terminal [6].
- (2) Apply an electric current of 10 mA to 50 mA and check if the power indicator **B** lights up.

When using coin batteries



CAUTION

- When inspecting the power indicator using a coin battery, be sure to use one of the following coin battery types.
CR2032 / ECR2032 / DL2032 / SB-T51
If a battery type other than above is used, the power indicator will be damaged due to overcurrent (150 mA or higher).

- (1) Connect the positive (+) wire from the coin battery to terminal [3] of the power switch. Likewise, connect the negative (-) wire to terminal [6].
- (2) Check if the power indicator **B** lights up.
- (3) If the power indicator **B** does not light up, connect 2 coin batteries in series and check the power indicator again.

CAUTION

- When connecting 2 coin batteries in series to check the power indicator, take care to ensure that the connection of the coin batteries and power switch has the correct polarity.
If a voltage of 5 V or higher is applied to the power indicator in the opposite direction, the power indicator will be damaged.

Related Topics

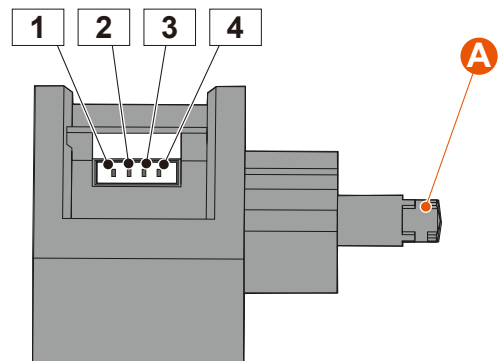
- [9-4 Remove/Attach the Power Switch \(p.58\)](#)
- [9-1 Switch and Trigger Components \(p.56\)](#)

10-5 Inspect the Variable Speed Switch

Prerequisites

- Remove the variable speed switch.
- Tools required:
 - Multimeter

Procedure



1. Check that there is no short-circuit between terminals [1] and [3] of the variable speed switch.

Measure the resistance between terminals [1] and [3] of the variable speed switch with a multimeter.

- If the resistance is 70 k Ω to 130 k Ω : Normal
- If the resistance is outside the range of 70 k Ω to 130 k Ω : Short-circuited

If short-circuited, replace the variable speed switch with a new one.

2. Check that there is no bad connection between terminals [1] and [4] of the variable speed switch.

Measure the resistance between terminals [1] and [4] of the variable speed switch with a multimeter.

- If the multimeter registers zero resistance when the switch button **A** is pressed : There is continuity.
- If the multimeter registers infinite resistance when the switch button **A** is released : There is no continuity.

If the variable speed switch is not in the state above, replace it with a new one.

3. Check that there is no abnormal change in resistance when measuring the resistance between terminals [1] and [2] of the variable speed switch.

Measure the resistance between terminals [1] and [2] of the variable speed switch with a multimeter.

- When the switch button **A** is pressed : The resistance should be 100 Ω or lower.
- When the switch button **A** is released : The resistance should be 70 k Ω to 130 k Ω .

If there is abnormal change in resistance, replace the variable speed switch with a new one.

Related Topics

- [9-5 Remove/Attach the Variable Speed Switch \(p.58\)](#)
- [9-1 Switch and Trigger Components \(p.56\)](#)

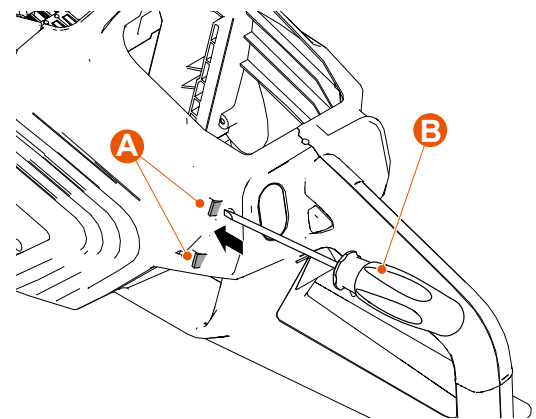
10-6 Inspect the Air Filter

Prerequisites

- Remove the cover.
- Tools required:
 - Pressure tester
 - Flat head screwdriver

Procedure

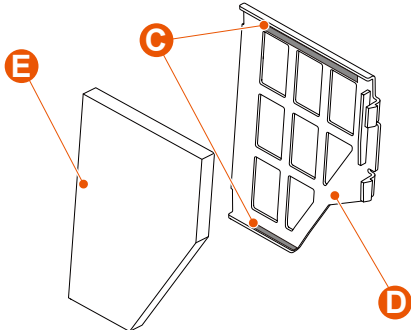
1. Push the 2 hooks **A** of the air filter with a flat head screw driver **B** to remove the air filter.
2. If the air filter is clogged with dirt or saw dust, remove it with a brush or compressed air.
3. If heavily soiled or damaged, replace with a new one.



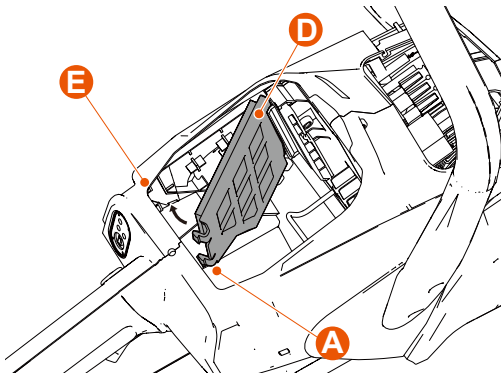
NOTICE

- Wear eye protection when working with compressed air to protect your eyes from injury.

4. If the double sided tapes **C** of the cleaner lid **D** are no longer sticky, attach new double sided tapes to the cleaner lid **D** and attach the air filter **E** to the cleaner lid **D**.



5. Attach the cleaner lid **D** to the motor cover and fit the 2 hooks **A** of the cleaner lid **D** into the holes **E** of the motor cover.



Related Topics

- [8-2 Remove/Attach the Cover \(p.53\)](#)
- [8-1 Motor and Control Board Assembly Components \(p.52\)](#)

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