SAFETY GUIDE

Relay Retrofit Program for REX 521

Cutting Tool Safety Guide

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Note
The equipment can be opened by authorized personnel only. If this practice is not followed, the warranty expires.

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Conformity

This product complies with the directive of the Council of the European Communities on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive 2014/30/EU) and concerning electrical equipment for use within specified voltage limits (Low-voltage directive 2014/35/EU). This conformity is the result of tests conducted by ABB in accordance with the product standards of the IEC 60255 series.

Safety information

Before using the cutting tool, read the instructions carefully.

Do not use this tool to other purposes than instructed in the guide. Use only cutting heads designed for the device.

Keep the documentation in a safe place.

Consider the performance data of the device.

Non-observance can result in death, personal injury or substantial property damage.

National and local electrical safety regulations must always be followed.

Always keep this manual inside the cutting tool brief case in a readable condition.

Use gloves and goggles when operating the cutting tool. Be careful with the cut edges, which may be sharp and cause injury.

When the cutting tool is in use, there should be no one in front or next to the punch because of risk for injury.

Keep your hands away from the area where the cutting tool is used.

1. Introduction

1.1 Document revision history

Document revision/date	History
A/2018-05-02	First release

1.2 Related documentation

Before taking the cutting tool into use, familiarize yourself with the applicable documents. Depending on the cutting tool, see the appropriate document.

Name of the document	Document ID
Relay Retrofit Program for REX 521 Product Guide	1MRS758962
Relay Retrofit Program for REX 521 Cutting Tool Operating Guide	1MRS758976

See the REX 521 and 615 series documentation for detailed technical information on the relays. Product series- and product-specific manuals can be downloaded from the ABB Website http://www.abb.com/mediumvoltage.

1.3 Symbols


The electrical warning icon indicates the presence of a hazard which could result in electrical shock.


The warning icon indicates the presence of a hazard which could result in personal injury.


The caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard which could result in corruption of software or damage to equipment or property.


The information icon alerts the reader of important facts and conditions.


The tip icon indicates advice on, for example, how to design your project or how to use a certain function.

Although warning hazards are related to personal injury, it is necessary to understand that under certain operational conditions, operation of damaged equipment may result in degraded process performance leading to personal injury or death. Therefore, comply fully with all warning and caution notices.

2. Cutting tool overview

2.1 Overview

The cutting tool is a hand-operated device for machining the existing panel cutout. The tool consists of a power unit and a cutting head. The power unit is a battery-operated power device for the cutting head. The cutting head comprises three main parts, a punch, a die and a gatherer. By means of the cutting head, the existing panel cutout is enlarged to the required size.

2.2 Tool kits

Table 1: Cutting tool kit

Tool kit	Product number	Components
Cutting tool kit	2RCA045405	Cutting tool power unit 2RCA032139 Cutting head for REX521RRP 2RCA044959 Additional battery for the power unit 2RCA031785 Battery charger 2RCA032140

The tool kit parts are packed in a plastic case.

Figure 1: Cutting tool kit components

1. Cutting head
2. Offcut gatherer (part of the cutting head)
3. Vent lever
4. Operating switch
5. Power unit
6. Battery
7. Battery charger

3. Assembling the cutting tool

3.1 Assembling the cutting head

1. Screw the feed rod's (2) short thread (Ø 19,0 mm) completely into the power unit (1).
2. Insert a suitable punch (3), two coil springs (5) and a die (6) on the feed rod. Both the die and the punch have slots for the springs.

The die and the punch must have equal markings on the same side.

3. Insert the nut (7) to the feed rod. Turn the nut so that its hole faces the feed rod slot correctly. Install the lock pin (8) to the nut hole.

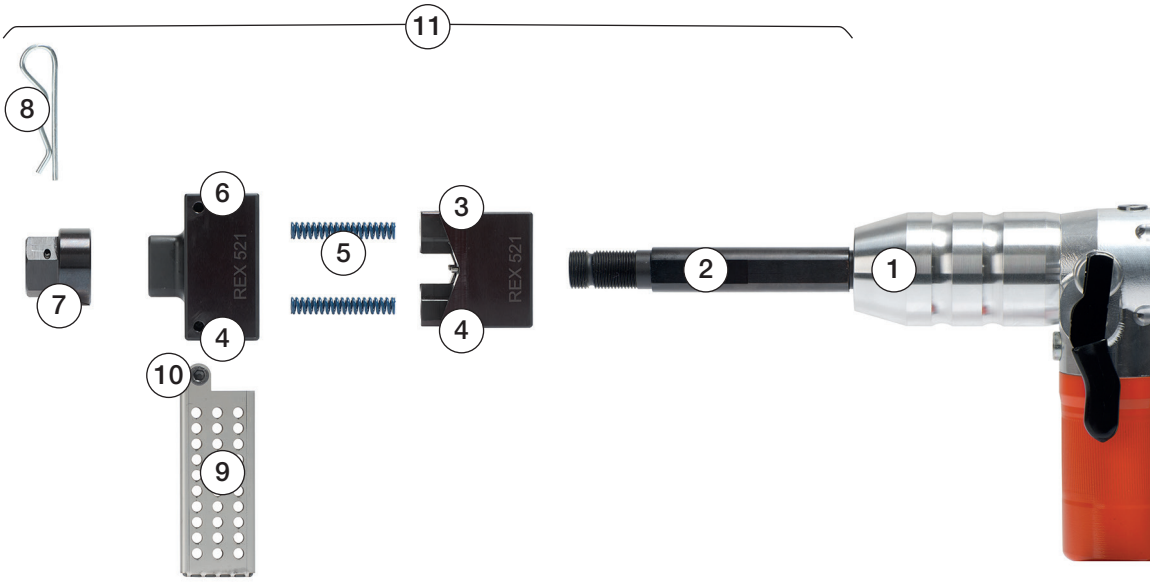

Figure 2: Assembling the cutting head

1. Power unit
2. Feed rod transmitting power to the punching head
3. Punch
4. Cutting head ID. When assembled correctly, the same text should appear in both the die and punch.
5. Coil springs (2 pcs). The punch moves backwards to the starting position when the vent lever is pressed.
6. Die
7. Nut holding the cutting head parts together
8. Lock pin for locking the nut
9. Gatherer for collecting offcuts
10. Gatherer fixing screws (2pcs).
11. Cutting head including eight parts

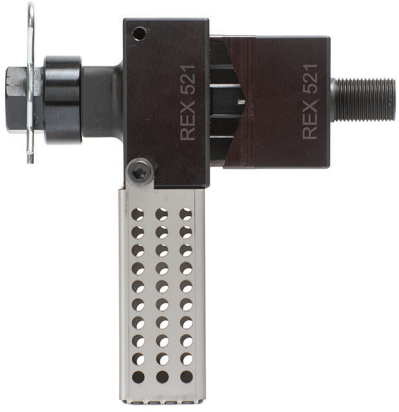

Figure 3: Assembled cutting head

3.2 Charging the battery

Charge the battery before taking the device into use. The charger is designed for 230 Volt/50 Hz.

Figure 5: Battery

Figure 6: Battery charger

Plug in the charger to the power outlet and connect the battery to the charger. The charging time for an empty battery is approximately 45 minutes.
Indication LED on the charger indicates the following circumstances:

- Green: Battery is completely charged
- Red: Battery is charging
- Blinking: Battery is not completely inserted or battery is too hot. A signal is heard.

Use only compatible batteries in the charger.

Ensure that the battery is always fully charged before starting the work. Using a worn-out or almost empty battery can halt the device during the cutting procedure, thus causing possible damages.

Recharge the battery immediately when the speed of the power unit slows down.

Do not charge a battery which is partially unloaded.

When charging two batteries one after another, wait approximately 15 minutes before loading the second battery.

The optimal working temperature for the battery packed compact hydraulic punch is 15°...25°C.

The charger charges all batteries in the range of 18...28 V and is compatible with NiCD, NiMH and Li-Ionen batteries. It observes the temperature automatically. The change between quick charges to conservation charging avoids overloading of the battery cells. A LED indicates the charging status.

3.3 Inserting the battery

After assembling the cutting head, insert the battery to the power unit. The battery can be inserted from either side.

Figure 4: Inserting the battery

4. Using the cutting tool

The cutting tool is designed for cutting of sheet metal of 1.5…3.0 mm. The tool must not be used for stainless steel or aluminum.

For your safety, keep your hands on the power unit, never on the cutting head. Beware of the sharp edges! Use safety-gloves, protective glasses, hearing protectors and a hard hat.

The punch part of the cutting head should never be driven so far that it strikes the counterpart with pressure. This might lead to severe damages. When the vent lever is pressed, the feed rod is released and the punch and the die move apart.

If the cutting tool reaches its maximum pressure limit but the cutting operation cannot be completed, higher force has to be applied to the vent lever to release the feed rod. If this does not help, remove the battery, offcut gatherer and the feed rod. See section 6 for troubleshooting.

1. When the cutting head is in the starting position, ensure that the cutting head guiding face is firmly against the edge face to be punched. Press the operating switch to start punching.

The switch must be pressed during the whole punching procedure. However, avoid pressing the operating switch after the punching procedure.

Figure 7: Cutting head in the starting position. Keep your hands away from the area where the cutting tool is used.

2. Press the vent lever once after each single cut. The punch is vented and the rod moves backwards to the starting position. Sometimes the vent lever may need additional force. That may happen if the operating switch has been pressed for a long time after the punching procedure.

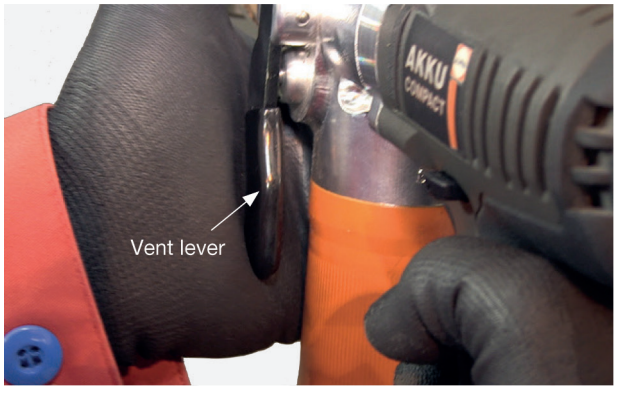

Figure 8: Pressing the vent lever

Figure 9: Releasing the operating switch

3. To stop the operation, release the operating switch.

The cutting tool is not designed for continuous operation. Do not use the device for more than 40…50 punchings. After that, let the device cool down for about 10…20 minutes.

To stop the procedure, release the operating switch and vent the device by pressing the vent lever.

Always remove the battery first before changing the cutting head.

Overheating may cause damage to the device.

The power unit must not be operated in damp conditions.

5. Maintenance

The hydraulic punching unit must be kept clean and stored in a dry place. The battery and the charger must be protected against humidity.
The power unit is maintenance free. If the device does not build up necessary hydraulic pressure, see the troubleshooting section.
The cutting head needs service if the power unit needs more power for the punching procedures. This occurs if the cutting time is considerably longer than expected and the battery needs to be recharged more often. Only the die side can be grounded. If the punch side is worn, replace the old cutting head with a new one. The ordering information is available in product guide.

The power unit must not be opened or the warranty expires.

After using the power unit, the pressure must always be released by pressing the vent lever. Leaving the power unit pressurized may damage the device.

If the cutting tool is stored for a period longer than two months, it is recommended to operate the device regularly to keep all parts lubricated. This extends the lifetime of the device.

6. Troubleshooting

Table 2: Troubleshooting power unit failures

Symptom	Action
Slight oil leakage from a new device during usage or storage.	When the cutting tool power unit is assembled, some extra oil is used to install all sealings properly. This oil leaks out from the overflow hole in the aluminum body of the power unit. Leakage should end after a few operating hours.
Oil leakage during usage or storage	Do not open the unit. Contact the supplier for further instructions.
Cutting tool reaches its maximum pressure limit, but the cutting operation cannot be completed.	Stop the punching process. First press the vent lever firmly to release the feed rod. Then press the operating switch for approximately ten seconds. If the failure persists, contact supplier for further instructions. Reasons for reaching the maximum pressure limit might be: - Broken or blunt cutting head - Offcut from earlier cutting operation has not been removed - Metal sheet thickness or material

7. Technical data

Table 3: Weight of the cutting tool

Description	Value
Case set (kit)	11.5 kg

Table 4: Battery

Description	Value
Battery	18 V; 3.0 Ah NiMH
Charging time	45 min after complete discharge
Charging cycles	~500 in normal conditions
Operating temperature range	0°...+40°C [1)]

1) Loses capacity under 0°C

Table 5: Punching time/capacity

Description	Value
Punching time	5...7 s, 150...250 punches/battery
Punching capacity	80 kN with pressure relief valve

8. Disposing of the device

- Dispose of all components separately.
- First drain the oil and then dispose it.

The device must not be disposed as a complete unit into the residual/non-recyclable waste, because it could damage the environment.

When disposing of the parts, follow the local environmental norms.

The battery must be disposed of following the battery directive.

Hydraulic oils pose a danger for ground water. Uncontrolled drain or inappropriate disposals may carry a penalty.

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