

# Relay Retrofit Program

## 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 is in conformity with the following standards or normative documents:  
DIN EN 60745-1, DIN EN 292 Part 1 and 2, EN 294, EN 349, EN 60204-1, EN 28662-1, EN 50081-1, EN 50082-2, EN 60529 in accordance with the regulations of directives 98/37/EEC, 89/335/EEC.

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## Safety information



Before using the cutting tool, read the instructions carefully.



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



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



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



Keep the documentation in a safe place.



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



Consider the performance data of the device.



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



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



National and local electrical safety regulations must always be followed.

# 1. Introduction

## 1.1 Document revision history

Document revision/date	History
A/2014-04-15	Cutting tool kit for SPACOM 100 and 300 series released
B/2014-11-19	Cutting tool kit for MCX 912 and MCX 913 released
C/2015-06-10	Troubleshooting and maintenance sections updated. Cutting head assembly corrected in figures.
D/2019-05-02	Fourth release

## 1.2 Related documentation

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

Name of the document	Document ID
Relay Retrofit Program Application Manual	1MRS757638
Relay Retrofit Program Cutting Tool Assembly Guide	1MRS757994
Relay Retrofit Program Cutting Tool Assembly Guide, video	1MRS757993
Relay Retrofit Program Cutting Tool Operating Guide SPACOM 100	1MRS757998
Relay Retrofit Program Cutting Tool Operating Guide SPACOM 100, video	1MRS758001
Relay Retrofit Program Cutting Tool Operating Guide SPACOM 300	1MRS757999
Relay Retrofit Program Cutting Tool Operating Guide SPACOM 300, video	1MRS758002
Relay Retrofit Program Cutting Tool Operating Guide BBC Std. casing size 1	1MRS758000
Relay Retrofit Program Cutting Tool Operating Guide BBC Std. casing size 1, video	1MRS758003
Relay Retrofit Program Quick Start Guide	1MRS758005
Relay Retrofit Program Product Guide	1MRS757396

Product series- and product-specific manuals can be downloaded from the ABB Website  
[abb.com/substationautomation](http://abb.com/substationautomation).

## 1.3 Symbols



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



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



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



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



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.

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 consists of two parts, a punch and a die. By means of the cutting head, the existing panel cutout is machined to the required size.

### 2.2 Tool kits

Table 1: Cutting tool kit

Tool kit	Product number	Components
Cutting tool kit for SPACOM 100 and 300 series	2RCA031784	Cutting tool power unit
		Cutting head for SPACOM 100 and 300 series
		Two batteries
		Battery charger
Cutting tool kit for MCX 912 and MCX 913	2RCA032474	Cutting tool power unit
		Cutting head for ABB MCX 912 and MCX 913
		Two batteries
		Battery charger

The tool kit parts are packed in a plastic case.




Figure 1: Cutting tool kit components

## 3. Assembling the cutting tool

### 3.1 Assembling the cutting head

1. Screw the feed rod (2) short thread ( $\varnothing$  19.0 mm) first completely into the power unit (9).
2. Insert the suitable die (3) and punch (5) on the feed rod. The die and the punch must have the same type markings.
3. Insert the springs (4; 2 pieces) between the die and the punch. Both the die and the punch have slots for the springs.
4. Insert the nut (6) and lock pin (7) to the feed rod. Install the lock pin to the slot of the feed rod. Turn the nut so that it faces the feed rod correctly.

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

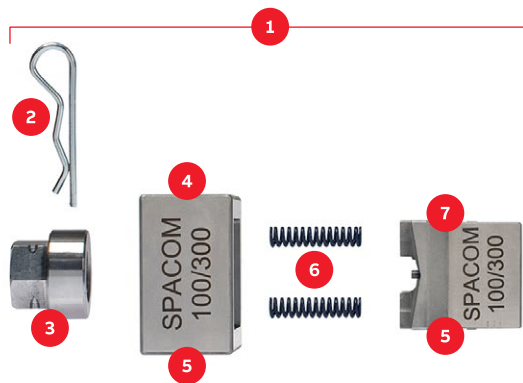


Figure 2: Assembling the cutting head

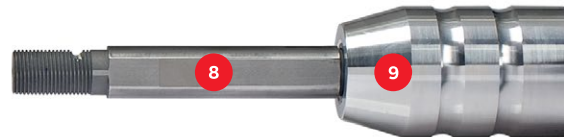


Figure 3: Cutting head assembled

- 1 Cutting head including six parts
- 2 Lock pin for locking the nut
- 3 Nut holding the cutting head parts together
- 4 Die (part of the cutting head)
- 5 Cutting head ID. When assembled correctly, same text should appear both in the die and in the punch.
- 6 Coil springs (2 pcs). Pressing vent lever the punch moves backwards to the starting position.
- 7 Punch (part of the cutting head)
- 8 Feed rod transmitting power to the punching head
- 9 Power unit

### 3.2 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



### 3.3 Charging the battery

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

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 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 a 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 2nd battery.



Figure 5: Battery



Figure 6: Battery charger

The optimal working temperature for the Battery Packed Compact Hydraulic Punch is between 15° and 25°C.

The charger charges all batteries between 18 V to 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.

## 4. Using the cutting tool

The cutting tool is designed for cutting of sheet metal of 1.5...2.5 mm. The tool must not be used for stainless steel or aluminum.

1. Press the operating switch to start the punching. The switch must be pressed during the whole punching procedure.



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. By pressing the vent lever, the feed rod releases moving the punch and die apart.



If the cutting tool reaches its maximum pressure limit, but the cutting operation cannot be completed, press the vent lever firmly to release the feed rod. If this does not help, remove the battery and then remove the nut from the feed rod releasing the punch.

Reasons for reaching the maximum pressure limit might be:

- Broken or blunt cutting head
- Cut-off from earlier cutting operation has not been removed
- Metal sheet thickness or material

Cutting head is in the starting position, see Figure 7. Press the operating switch to start the punching.

2. Press the vent lever once (see Figure 8) on the side. The punch is vented and the rod moves backwards to the starting position.
3. To shut down the device, release the switch.



The device is not appropriate for continuous operation. Do not use the device longer than for 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.



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

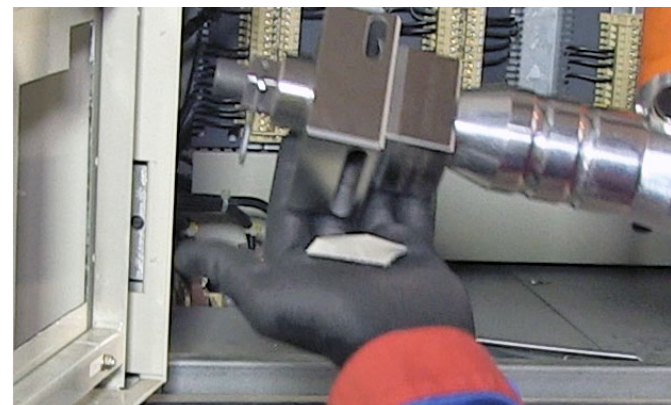


Figure 8: Pressing the vent lever



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 ground.

If the punch side is worn, replace the old cutting head with a new one. The ordering information is available in Relay Retrofit Program Product Guide.



The power unit must not be opened. Should this happen, 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.	<p>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.</p> <p>Reasons for reaching the maximum pressure limit might be:</p> <ul style="list-style-type: none"> <li>• Broken or blunt cutting head</li> <li>• Cut-off from earlier cutting operation has not been removed</li> <li>• Metal sheet thickness or material</li> </ul>

## 7. Technical data

Table 3: Weight of the cutting tool kit

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 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



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



The battery must be disposed of following the battery directive.



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



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



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For more information, please contact

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**[abb.com/mediumvoltage](http://abb.com/mediumvoltage)**

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