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## ReJoyce User Manual

SC007-EN  
Revision I  
2022-10

## **User Assistance Information**

For maintenance or assistance with the device, contact Rehabtronics, Inc. at:

**International:**  
**(+1) 780-701-5167**

**Toll Free (US & Canada):**  
**1-800-481-3214**

For health-related concerns, contact your health care professional. Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the appropriate regulatory authority in which the user and/or patient is established.

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## Customer Support

*NOTE: On the back of the ReJoyce Base is the device serial number. Please refer to this number when contacting customer support.*



**MANUFACTURED BY:**  
**Rehabtronics Inc.**  
#4350, 10230 Jasper Ave.  
Edmonton, AB  
Canada T5J 4P6

Contact ReJoyce customer support via any of the following channels:

Phone: (+1) 780-701-5167 (International)  
1-800-481-3214 (Toll Free, US & Canada)

Email: support@rehabtronics.com

Website: www.rehabtronics.com

## European Union

The manufacturer declares that the CE marked device meets the provision of Regulation (EU) 2017/745 for Medical Devices (MDR), Directive 2014/30/EU, and Directive 2011/65/EU.



**CMC Medical Devices & Drugs S.L.**  
C/ Horacio Lengo Nº18,  
CP29006,  
Málaga-Spain

## Recycling Information

Rehabtronics considers the environment in all aspects of the product lifecycle, from design and engineering to packaging and recycling. We recommend that customers dispose of their used ReJoyce in an environmentally sound manner. Potential methods include reuse of parts or whole products and recycling of products, components, and /or Materials.

## Waste Electrical and Electronic Equipment (WEEE) Directive



In the European Union, this symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste

equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

## General Safety & Device Information

### Symbol Conventions

Symbol	Meaning
	Warning
	Caution
	Pinching Hazard
	Read Instructions
	Do not dispose with household waste
	European Authorized Representative
	Type B Applied Part (Patient-Contacting)
	Manufacturer Information
	USB Input
	Medical Device

### ReJoyce Safety Information

#### Warnings

Safety warnings are important instructions that, if not followed, may lead to irreparable damage to the ReJoyce, or severe injury. The following warnings should always be followed:

- Do not use other cables other than those supplied with the ReJoyce.
- Do not operate the device near water or other liquids.

- ⚠ To avoid risk of electrical shock, the ReJoyce computer should always be connected to an outlet with a protective earth.
- ⚠ Never attempt to disassemble or service the ReJoyce or any of its components.

### Precautions

Safety precautions are instructions that should be followed in order to avoid minor injury or damage to the ReJoyce.

- ⚠ Exercise caution when unpacking – The arm is spring-loaded.
- ⚠ Do not lean or hang anything on the ReJoyce arm - The ReJoyce arm is not intended to support weight.
- ⚠ Use only under clinician supervision – Overuse can result in physical exhaustion or injury.
- ⚠ Ensure that the ReJoyce is properly installed prior to each use:
  - Always check that the table clamp is tight before use.
  - Ensure that the table surface is flat, stable, and sturdy enough to support the weight of the ReJoyce.
- ⚠ Exercise caution while using and handling the ReJoyce.
  - Ensure adequate space when operating to avoid collisions with other objects or bystanders.
  - Do not place your hands or fingers in the ReJoyce arm joints.

## Technical Specifications

### General Specifications

<b>ReJoyce Model</b>	1.0 (RV10)
<b>Medical Device Class</b>	Class I Medical Device
<b>Weight</b>	5.53 kg (Arm, Base & Manipulandum only)
<b>Storage and Transport Conditions</b>	-18°C to ~60°C (32°F to ~140°F) 15% to 90% Relative Humidity (non-condensing)
<b>Operating Conditions</b>	5°C to 35°C (41°F to 95°F) 25% to 90% Relative Humidity (non-condensing) 101kPa to 81kPa (approximate altitude pressures between sea-level and 1,950m (6,398 feet))

### EMC Compliance

- This device complies with the Canadian Interference-Causing Equipment Standard #3 (ICES-003).
- This device complies with the EMC Directive of the European Union.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Note that FCC regulations provide that changes or modifications not expressly approved by Rehabtronics could void authority to operate.

2. Ensure that the Manipulandum is securely attached to the ReJoyce arm. The threaded metal sleeve should be tightened such that no threads are visible.
3. From within the ReJoyce application, run the Debug Tool, and check to see if moving the ReJoyce results in the appropriate movement of the on-screen 3D model.
4. If not, run the Calibration Utility to re-calibrate the system.
5. If the problem persists, there may be an issue with the hardware. In this case, please contact our customer support as detailed in the following section.

## Purpose of the Device

The ReJoyce is a rehabilitation device intended to evaluate and increase the strength of muscles and the range of motion of joints of the upper extremities.

The ReJoyce helps patients with reduced upper mobility to retrain and condition their muscles by using their hands and arms to play interactive computer games.

The activities required by the computer games are similar to tasks used in everyday life, such as pouring a drink or opening a jar. Practicing these motions will help patients to replicate them in real life.

*NOTE: The ReJoyce is intended to be used only under clinician supervision.*

## System Components

The ReJoyce System has four parts (see Figure 1 on the following page):

1. The Base:
  - Clamps to your computer desk or table
  - Attaches to the USB cable
2. The Arm:
  - Supports the Manipulandum
  - Provides resistance to motion in all directions
3. The Manipulandum:
  - Consists of the peg, coins, jar lid, doorknob, key, gripper, and handles used to play the computer games

## Troubleshooting

This section lists common questions and issues that can arise when using the ReJoyce system. In case the answers given are insufficient, or you experience other issues, please contact our support staff (see Contact Information in the following section).

***Issue: I already have my own personal computer. Can I use it with the ReJoyce?***

You may only use your personal computer if all the following conditions are met:

- The personal computer adheres to local regulations for safety
- The personal computer is used with a certified power supply
- The personal computer meets the minimum specifications listed in the “System Requirements” section

If any of the above conditions are *not* met, then **no**, you may **not** use that computer.

***Issue: The hardware is not responding or is behaving unpredictably.***

Do the following:

1. Ensure that the USB cable is securely connected to both the computer and to the ReJoyce.

- ⚠ **WARNING: DO NOT immerse the device when cleaning. DO NOT use water to clean the device.**
- ⚠ Remember to unplug the USB cord before cleaning.

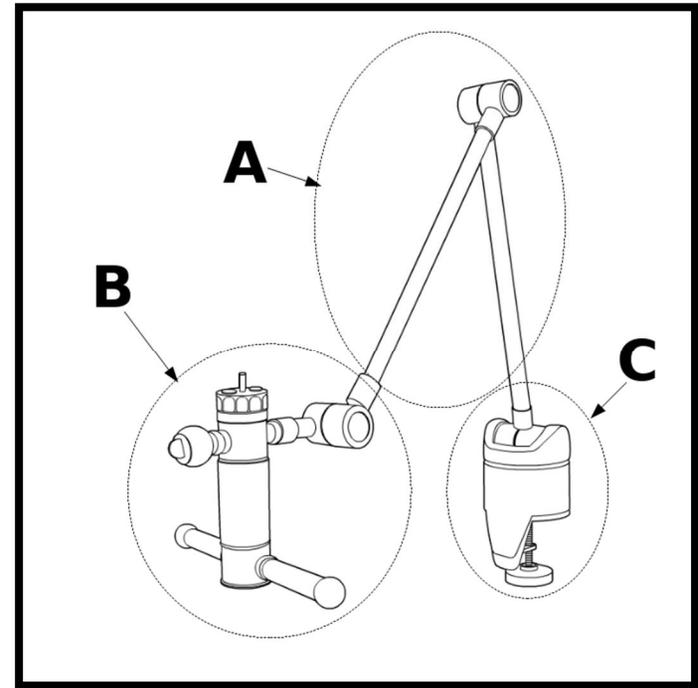


Figure 1: ReJoyce Hardware Components

- A = ReJoyce Arm
- B = ReJoyce Manipulandum
- C = ReJoyce Base

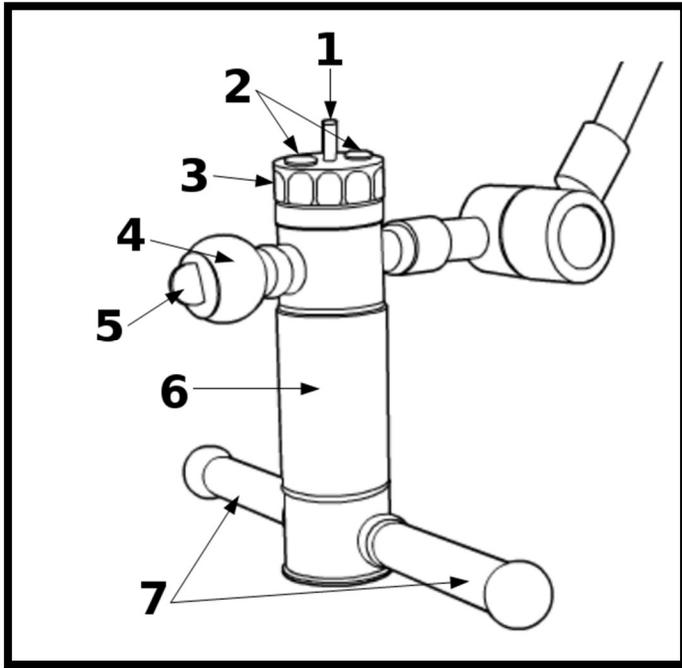


Figure 2: Manipulandum Components

- 1 = Peg
- 2 = Coins
- 3 = Jar Lid
- 4 = Doorknob
- 5 = Key
- 6 = Gripper
- 7 = Handles

See “Guide to the Manipulanda” section of this manual for more information on each of the Manipulandum components.

## Maintenance

### Moving the ReJoyce

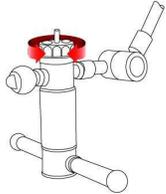
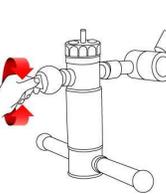
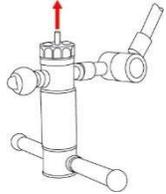
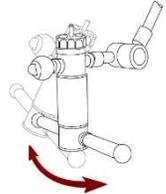
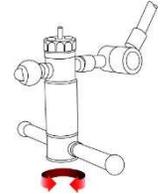
*NOTE: While the ReJoyce system is designed to be portable, it is recommended that physical relocation of the device is minimized.*

1. Turn off the computer and unplug the USB cable and power-supply.
2. Re-apply the Velcro safety-strap around the tubes of the arm.
3. Loosen the clamp securing the base to the table-top.
4. Move the ReJoyce using two hands and supporting it at the base.

### Cleaning

Regular cleaning of the ReJoyce ensures that no bacteria or viruses are transmitted during use of the device. If the device is used daily, it is recommended that cleaning be done at least once a week. If the ReJoyce is to be used by multiple people, it should be cleaned between uses.

An alcohol-based cleaning solution, similar to that used in sterilization pads, is ideal for cleaning your ReJoyce.

	<p><b>Jar</b></p> <ul style="list-style-type: none"> <li>- Spherical grasp</li> <li>- Grasp and release</li> </ul>
	<p><b>Key</b></p> <ul style="list-style-type: none"> <li>- Later "key" Pinch</li> <li>- Pronation and supination</li> </ul>
	<p><b>Peg</b></p> <ul style="list-style-type: none"> <li>- Tip-to-tip pinch</li> </ul>
	<p><b>Swing</b></p> <ul style="list-style-type: none"> <li>- Pronation and supination</li> </ul>
	<p><b>Swivel</b></p> <ul style="list-style-type: none"> <li>- Wrist flexion and extension</li> <li>- Functional range-of-motion</li> </ul>

## Operating Instructions

### System Requirements

- A sturdy table or desk between .75 inches to 1.5 inches (2cm and 4cm) thick is required to mount the ReJoyce.
- The ReJoyce is intended for use in indoor environments between 40°F and 95°F (5°C and 35°C). Operation outside this temperature range may affect hardware performance.
- The ReJoyce must be used with an appropriate computer. The ReJoyce device and accompanying software have been validated against Windows 10 and Windows 11 personal computers with at least 1 functional USB plug, 8 GB of memory, and 2.33 GHz or faster x986-compatible processor. The computer used with ReJoyce must satisfy all regulatory requirements for your region and utilize a certified power supply.
- Only the supplied USB cable should be used to connect the ReJoyce to the computer. The supplied USB cable ensures adequate data transfer rates and electromagnetic shielding.

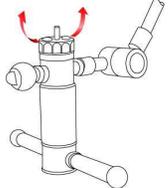
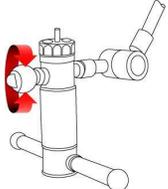
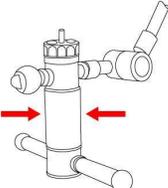
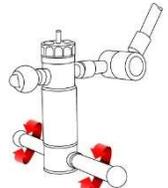
## Setup Instructions

*NOTE: Ensure adequate space around the table where the ReJoyce is to be installed. At least 28" (70cm) of space is required behind and to the left and right of the edge of the table. There should be at least 40" (1m) of unobstructed space in front of where the ReJoyce is to be mounted.*

1. Clear the desk or table of any loose objects or obstructions other than the supplied computer.
2. Remove the Base/Arm assembly from its packaging.
  - ▲ Do not unfasten arm retainer strap until installation is complete.
  - ▲ Always use 2 hands when moving and/or installing the ReJoyce. Always support the ReJoyce at the base.
3. Slide the Base/Arm assembly onto the table so that the table is between the bottom of the base and the top of the clamp screw.
4. Tighten the clamp by rotating the black handle clockwise until it cannot be easily loosened.
5. Remove the Manipulandum from its packaging.
6. Insert the threaded part of the Manipulandum into the connector at the end the arm.

## Guide to the Manipulanda

The following table lists the various manipulanda used in the ReJoyce games, and the types of exercises to which they are conducive.

	<p><b>Coins</b></p> <ul style="list-style-type: none"> <li>- Fine motor tasks</li> <li>- Pinch grip</li> <li>- Small object manipulation</li> </ul>
	<p><b>Doorknob</b></p> <ul style="list-style-type: none"> <li>- Spherical or tripod grasp</li> <li>- Pronation and supination</li> <li>- Grasp and release</li> </ul>
	<p><b>Gripper</b></p> <ul style="list-style-type: none"> <li>- Grip strength</li> <li>- Grasp and release</li> </ul>
	<p><b>Handles</b></p> <ul style="list-style-type: none"> <li>- Cylindrical Grasp</li> <li>- Wrist flexion and extension</li> <li>- Grasp and release</li> </ul>

- Large object manipulation tasks – Example:  
undoing a jar lid or practicing a pouring motion  
by swinging the gripper

Manipulanda ideally suited for this training include the handles, the gripper, the jar lid and the doorknob.

### Fine Motor Tasks

These exercises involve the careful manipulation of small objects in order to improve skilled reaching and manipulation.

Manipulanda ideally suited for this training include the coins, peg and key.

- ▲ Ensure that the yellow guides on the Manipulandum connector align with the ones on the arm connector, and that the red marks are aligned.
7. Turn the threaded metal sleeve at the end of the arm clockwise until it cannot be easily loosened, and the Manipulandum is secured to the end of the arm.
  8. Unfasten the Velcro strap from the arm.
  9. Start the computer and wait for the operating system to load.
  10. If the ReJoyce software is not installed, obtain the installation media from your distributor or download it from <https://www.rehabtronics.com/downloads/rejoyce/> and install the software.
  11. Use the supplied USB cable to connect the computer to the back of the base of the ReJoyce.
  12. Double-click on the ReJoyce icon on the screen to launch the ReJoyce application.

## Patient Orientation

*NOTE: Patients should undergo clinician examination prior to beginning use of the ReJoyce. Patients with trunk weakness, balance impairments, or other stability issues may be at risk of falling. If necessary, make sure patients have sufficient support such as chair straps BEFORE using ReJoyce.*

Position the patient in a stable, armless chair in front of the ReJoyce such that the patient's affected shoulder and arm is in-line with the ReJoyce, and that the Manipulandum is suspended just above the patient's leg, half-way between the patient's knee and hip.

## Exercises with the ReJoyce

The ReJoyce can be used for a variety of functional uni-manual and bi-manual upper extremity exercises including balance, trunk stability training, functional range of motion exercises, gross motor training and practicing fine motor tasks.

### Balance and Trunk Stability

The ReJoyce can be used to train reaching and movement abilities by having the patient extend one or both arms away from the body, thereby forcing the individual to stabilize the movement with his or her trunk muscles. Difficulty can be increased by having the patient sit on an exercise ball.

Manipulanda ideally suited for this include the handles and the gripper.

### Range-of-Motion and Gross Motor Tasks

These exercises involve combining gross motor movements with functional tasks in the following categories:

- Reaching and grasping objects – Example: reaching for and moving the handles, rotating and moving the doorknob
- Placement tasks – Example: repositioning and squeezing and releasing the gripper