

TITLE:

**Final product specification**

WYDANIE: II

Side: 1 z 2

 ISSUED  
 DATE/ SIGNATURE

 07.02.2017  
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 07.02.2017  
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## 1. Purpose

1.1. This specification is to describe the requirements that are placed on the finished product. This specification is a document that describes the overall finished product, intended for sale and use by humans.

## 2. General description

- 2.1. Prodrobot, a manipulator supporting the motor skills of the lower limbs, which applies mechanical physiotherapy.
- 2.2. The device based on the design of aluminum profiles with 2 movable orthosis set in motion with electric drives and having a lifting mechanism of the patient from sitting position to an upright position.
- 2.3. Control is via the panel operates using dedicated software
- 2.4. The software allows you to perform: walking, sit-ups, swings, a bike, climbing stairs up - with different speeds and ranges. Due to the exercise in vertical position, the verticalization is carried out from a seated position.
- 2.5. Spasms and spasticity when appears, the device stops and warning message is showed on a control panel (a place of appearance is specified). Sensitivity of the device can be adjusted.
- 2.6. Patient's contractures can be defined in a dedicated module of a software. The device will work only in defined ranges of patient's contractures is safety manner.
- 2.7. The dimensions of the product allow the use of products in small spaces and it is easy to transport.
- 2.8. The size of the patient from about 120 to about 150 cm, the distance between joints 29-37cm, hip width approx. 30cm.
- 2.9. Weight of the patient no more than 50kg
- 2.10. The area of safe operation: 2m x 2m (minimum area required to work with the device)
- 2.11 Temperature of use: room temperature (18-25 C deg.).
- 2.12 Temperature of storage: 0-50 C deg.

## 3. Detailed Description

- 3.1. The structure is made of the aluminum profiles system; sheets, rods and profiles of aluminum and steel
- 3.2. Orthosis are made of aluminum sheets
- 3.3. Orthosis are equipped with textile clamps, which are in contact with the patient, giving him the comfort of long-term exercise, placed on the bent rods made of stainless steel.
- 3.4. Relative movement of the individual elements is done through the use of electric drives powered by 24V safe voltage. The drives are enclosed, with no possibility of access by the patient.
- 3.5. Movable connections are based on the bearing ring and longitudinal.
- 3.6. Moving parts, performing rotational movements, cyclic, sliding enclosures are protected with plastic covers
- 3.7. Levering system is based on the electric screw jack
- 3.8. The controller is based on a dedicated system and software based on the Linux system

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3.9. The software is protected from unauthorized use through the use of security software and physical key

3.10. Power supply is carried out with the use of medical power supplies. Power drive voltage up to 24V. Power controllers realized voltage to 5V. 12V supply to the screen.

3.11. The device equipped with safety switches available for the practitioner and the operator in 3 places (one per side of the unit and one on the control panel) and in the presence of the operator (control panel enclosure)

3.12. Overload protection installed and calibrated

3.13. Device for transport is secured by:

3.13.1. set of orthosis in a sitting position

3.13.2. control panel removal as specified in the packing diagram (option)

3.13.3. packaged in a target transport packaging (cardboard, stretch film) and placed on a dedicated box-tray (1,2x1m)

3.14. Net weight is about 140kg

3.15 Rated voltage: 230V 50Hz

3.16 Power: 1200W

#### 4. Documents relating to

4.1. Technical documentation

4.2. Assembly manual

4.3. Packing instruction

4.4 Technological documentation

4.5. Diagrams electrical / electronical

4.6. Software source code

4.7. Schema of packing

#### 5. Annexes

5.1. Drawings for the equipment dimensions

#### 6. The list of changes

6.1. Updated technical data and software details

6.2. Adapted version to be submitted to distributors and end users