SpaceRail Level 2.1

SpaceRail is a spectacular marble roller coaster that guarantees high-speed action rides consisting of wild rotations, daring loops and seesaw swivel stunts. These marble roller coasters are an ultimate challenge for teenagers and adult enthusiasts alike. They are available in different sizes and with different levels of difficulty.

SpaceRail
Level 2.1

These images show the fully built model of Spacerail Level 2.1. Correct fitting and interaction of all components and connections has a significant influence on the stability and strength of the complete construction.
These images show the SpaceRail Level 2.1 from multiple angles. They will be helpful while you are building.
## Parts List

**Tools for installation**
- Pliers
- Tape Measure

**Parts list**

<table>
<thead>
<tr>
<th></th>
<th>[B1]</th>
<th>[S1] 300mm</th>
<th>[S2] 200mm</th>
<th>[R1] 10,000mm</th>
<th>[A1]</th>
<th>[A2]</th>
<th>[A3]</th>
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<th>[A4]</th>
<th>[A5]</th>
<th>[A6]</th>
<th>[G1]</th>
<th>[E1]</th>
<th>[E2]</th>
<th>[E3]</th>
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<th>[B2]</th>
<th>[B3]</th>
<th>[S3]</th>
<th>[G2]</th>
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<td>2 x</td>
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### Assembly of base plate

1. Assemble the base plate (6 pieces).
   - Pay attention to a proper seating of the clips and slots (Fig. 01).
2. Fasten the base holders (B2 + B3) in the correct positions (Fig. 02).

### Assembly of arms

1. Assemble the arms according to Fig. 02.
   - Cautions: Arm holder A (A2) + arm holder B (A4) are different. 17 arms are needed for the complete set-up of "Star Coaster Level 2".
2. Insert the arm wrench into the arm holder A and turn it by 90 degrees to fix the arm (Fig. 03). 
   - Note: To modify the angle of the arm, release the fixation nut.

### Assembly of seesaw

1. Insert the seesaw into the rail stand (Fig. 04).
2. Insert the seesaw into arm holder B, then attach the complete component to the shaft (Fig. 05). Refer to the assembly of arms (Fig. 02-03).
   - Note: To modify the angle of the arm, release the fixation nut.

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*Note: When turning the arm wrench, make sure not to change the right position of the arm.

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Assembly of the elevator

1. Insert the 300mm shaft into the gearbox (fg. 06-1)
2. Slide the elevator (12 pcs) onto the 300mm shaft (fg. 06-2)
   Please note the correct direction of rotation
3. Insert 3 further 300mm shafts into the exact pre-defined positions on the gearbox (fg. 06-3)
4. Allow the 3 shafts to snap into place (pic. 06-4). Take care that the elevator rings are properly located
   See pages 6-7 for the proper locations of the elevator rings
5. Insert the 4 shafts into the elevator cover (fg. 06-5). Take care that the shafts are properly located
6. Now attach 3 rail stands [A6] to the elevator ring (fg. 06-6)
Installation of shafts and arms
Attach the arms to the shaft (fig. 07 shows a scale of 1:1)
Positions of arms (fig. 07):
Shafts are shown in a scale of 1:1. Attach the arms to the exact pre-defined red positions.
Please note the correct order and directions of arms.
Insert the shaft into arm holder B. Insert the arm wrench into the arm holder B and turn it by 90 degrees to fix the arm (fig. 08)
Note: To modify the angle of the arm, release the fixation first.
Attach the connecting pieces [S3] to the shafts (fig. 09)
Please note the exact pre-defined positions of the shafts on the base plate (fig. 11)

Installation of base plate, shafts and gearbox
Insert the shafts (fig. 07) into the base plate (fig. 11, A-E)
Please note the correct directions of shafts.
Attach the 3 clips at the bottom of the gearbox (see red markings in fig. 10) to the exact pre-defined positions of the base plate (fig. 11)

Note: When turning the arm wrench, make sure not to change the right position of the arm.
Assembly of shafts, arms, gearbox and base plate

Please note the correct positions and directions of arms (see above)

Connect with holes on base plate

Position for connecting piece [S3]
Assembly of the rails

Rail assembly steps
This ball roller coaster provides 2 elevator exits (start) and 2 elevator entries (end). Please note fig. 12-1 and the pictures on page 2-3 during assembly. Install rail stands together with the rails (page 9).

Due to the long distance, the installation of this section is divided into 2 assembly steps (please refer to fig. 12-1 + 12-2).

Fig. 12-1 and 12-2 show the upper and lower track layout.
Fig. 12-1: From elevator exit (start) to the loop entry.
Fig. 12-2: From loop entry to lower elevator entry.
Install 2 x 245cm rails for the complete distance in fig. 12-1 + 12-2.

The enlarged picture provides further information regarding loop installation.

From elevator exit (start) to seesaw entry: Install 2 x 105cm rails (fig. 13-2).

Fig. 13-1 and 13-2 show the upper and lower track layout. Note: Fig. 27 on page 11 provides further assistance if the steel balls do not run smoothly into the elevator.

Assembly of the rails

Rail connection marks
Release arm tube [A3] before mounting the rails.
Letters and numbers (e.g. D2) show the correct positions of shafts and arms described on page 6-7.

Installation of the rails

Rail stands at the end of the rail to ensure best seesaw stability.
**Assembly of the rails**

**Installation of the rails**

Insert the rails into the arms (fg. 15-16)

Rail joining (fg. 17)

Adjust and connect the rails.

Insert the rail joinings (R2) into the holes at the center of the rails (fg. 17)

Insert rails into arm

**Information about rail stands** (fg. 18)

The distance between the arms should be between 8 to 10cm to ensure best stability.

When the distance is larger, rail stands [A6] have to be installed

Use rail stands like railway ties

The distance between the arms should be between 8 to 10cm

When the distance is larger, rail stands [A6] have to be installed

Attach rail stands in steep sections and elevator entry/exit points to ensure best stability of the rails

Steep sections (fg. 19)

Install the arms in an inclined position to each other to create steep sections, so that the steel balls can run smoothly (fg. 19)

Install the arms in an inclined position to each other to create steep sections
Assembly of the rails

Installation of the rails

Distance between rails (fig. 20)
Install the rail stand to keep rails parallel.

Curves (fig. 21-22)
Curves need to be assembled in a certain angle to prevent steel balls from missing the turn (fig. 21). If steel balls miss the turn, speed has to be reduced right before the curve.

Adjust rails to reduce speed of the steel balls (fig. 22)
Installation of a loop
Ensure the steel balls running smoothly (Fig. 23)
The diameter of the outer loop should have twice the diameter of the inner loop
Important information for the assembly of loops (Fig. 24)
Rails have to form a circle that remains in an upright position to ensure the steel balls running smoothly (Fig. 24)
When mounting loops, the second loop has to be smaller than the first loop to ensure the steel balls running smoothly

Importation information for the assembly of elevator entry and exit (Fig. 25)
Steel balls will not run correctly if entry and exit point in the same direction
Pay attention to a proper installation of the entry and exit (Fig. 26)
Install rails as closely as possible to the entry and exit of the elevator to ensure the steel balls running smoothly (Fig. 26)

Pay attention to a correct angle of the rails when the steel balls enter the elevator (Fig. 27-1, 27-2, 28)
Make sure the steel balls enter the elevator slowly. Otherwise they will rebound and fall off the rails (Fig. 27-1)
Steel balls that enter the elevator may rebound and thrown back onto the rails after hitting the helix. Pay particular attention here to the correct seating of the rails. Otherwise the steel balls will stop and cannot re-enter the elevator (Fig. 27-2)

At the entry all rails must be at right angles to the elevator (Fig. 28)

All rails must be at right angles to the elevator
### General Safety Instructions

This ball roller coaster is **NOT A TOY** and only suitable for persons 14 years and older!

**Warning:** Read the manual carefully before using the ball roller coaster. Keep the manual after reading.

Always follow exactly the recommendations given in the instructions.

Errors and negligence in operating your ball roller coaster can result in injuries and damage to property. As manufacturers and vendors have no influence on the operation and maintenance of your ball roller coaster, we bring these hazards expressly to your attention but deny all further liability.

Keep away from children. The ball roller coaster contains small parts. Choking hazard.

**Warning:** Sharp edges - watch your fingers.

**Warning:** Do not drape the rail around your neck, as this could result in suffocation or injury.

Strangulation hazard.

Keep the packaging for future reference as it contains important information.

### Safety Instructions During Operation

Moving parts are a constant source of injury. Never touch moving parts.

Keep hands, hair, loose clothing and further objects away from moving parts.

Persons (including children) with reduced physical, sensory or mental capabilities or lack of experience are not allowed to use this ball roller coaster, unless they are supervised by a person responsible for their safety and able to give professional advice how the product should be used.

Do not bend the shafts and other parts to avoid injury and ensure safe operation.

Keep fingers away from the moving elevator to avoid injury.

Only use original steel balls to prevent damage of the ball roller coaster.

**Caution:** Violent jamming (stopping) during operation may damage the motor. Do not cumber the elevator.

Always store and operate the ball roller coaster at a safe place.

Be sure to check battery regularly to ensure a proper operation of the elevator.

Check rails regularly for a firm seating and adjust if necessary!

Protect the ball roller coaster from heat and sun.

**Caution:** To protect motor from damage and overheating, do not operate the ball roller coaster for more than 5 hours at a time.

### Safety Instructions For Batteries

Only batteries of the same or equivalent type as recommended are to be reused.

Exhausted batteries should be removed from the ball roller coaster.

Do not dispose batteries in fire - batteries will explode or leak.

Battery is to be inserted with the correct polarity.

Non-rechargeable batteries are not to be recharged.

Remove battery if the ball roller coaster is not to be used for an extended period of time.

Be sure to check battery regularly to ensure a proper operation of the elevator.

### Disposal Restrictions (WEEE)

Electrical and electronic equipment should be disposed separately from the household waste. Take your unwanted equipment to your local community collection point. This requirement applies to member countries of the European Union as well as other non-European countries with a separate waste collection system. Never throw batteries into normal household wastes, but dispose of discharged batteries at the collection points provided for that purpose (e.g. your local toxic waste disposal centre).

**Recommended Accessories:** 1 x C/LR14 battery 1.5 V

**Inserting the battery:** Use a Phillips screwdriver to open the battery compartment cover. Insert 1 x C/LR14 battery with the correct polarity and replace the battery compartment cover.

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