SpaceRail is a spectacular marble-run coaster that guarantees high-speed action rides consisting of wild rotations, daring loop-the-loops and spectacular swivel motions. These marble-run coasters are an ultimate challenge for teenage and adult enthusiasts alike. Spacerails are available in several different sizes and levels of difficulty. Try them all!
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These images show the SpaceRail Level 9.1 from different views. They will be very useful during assembly.
**Tools for installation:**

- Pliers
- Tape measure or folding ruler

**Parts List**

Use 2 x C/LR14 batteries (not included)
Handle the components with care to prevent them from getting lost.

<table>
<thead>
<tr>
<th>[S1] 600mm</th>
<th>[S2] 391mm</th>
<th>[S3] 300mm</th>
<th>[S4] 200mm</th>
<th>[S5] 159mm</th>
<th>[S6] 65mm</th>
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<td><img src="image" alt="Arm holder B" /></td>
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<th>[B3]</th>
<th>[E4]</th>
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<th>[G2]</th>
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<td><img src="image" alt="Counterweight" /></td>
<td><img src="image" alt="Pendulum tray for steel balls" /></td>
<td><img src="image" alt="Double base plate" /></td>
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<td>1 x</td>
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</table>
Assembly of base plate & arm set B

1. Assembly of base plate

1.1 Assemble the base plate (13 pieces). Pay attention to a proper seating of the clips and slots (fig. 01-1)

1.2 Fasten the base holders (B2 + B3) in the correct positions (fig. 01-2)

1.3 Assemble the base plate [B4] of the second floor (fig. 01-3)

2. Assembly of arm set B

For this ball roller coaster 56 special arm sets are required which consist exclusively of [A4] arm holders B (fig. 02). On pages E1-65 these components are termed “Arm Set B”
Assembly of arms & seesaws

Assembly of arms
1. Assemble the arms according to Fig. 03
   Caution: Arm holder A (A2) + arm holder B (A4) are different. 107 arms are needed for the complete set-up

2. Insert the arm wrench into the arm holder A and turn it by 90 degrees to fix the arm (Fig. 04)
   Note: To modify the angle of the arm, release the fixation first

3. Attach the arm to the shaft (Fig. 05): Insert shaft into the arm holder B and turn the arm wrench by 90 degrees to fix the arm (Fig. 06)
   Note: To modify the angle of the arm, release the fixation first

Assembly of seesaw
Insert 2 x 75mm rail into the holes of the seesaw. Then attach the rail stand to the seesaw (Fig. 06)

Attach seesaw to the shaft (Fig. 07 + 08)
1. Connect seesaw with arm holder B (Fig. 07)
2. Attach arm holder B to the shaft (Fig. 08). Refer to the assembly of arms (E1-E6). Insert arm wrench into arm holder and turn it by 90 degrees (Fig. 03)
   Note: To modify the angle of the arm, release the fixation first

Refer to the assembly of arms (page E1-69)
**Assembly of pendulum and elevator**

### Installation of the pendulum

Connect attachment parts with pendulum (fg. 09)

Note: To modify the position of arm holder B, release the tension first.

1. Connect attachment parts with pendulum (fg. 09).
2. Note: To modify the position of arm holder B, release the tension first.

### Installation of the elevator

1. Insert the 300mm shaft into the gearbox (fg. 10-1).
2. Slide the elevator (12 pcs) onto the shaft (fg. 10-2). Insert shaft into base (fg. 10-1).
3. Please note the correct direction of rotation.
4. Insert 3 further 300mm shafts into the exact pre-defined positions on the gearbox (fg. 10-3).
5. Allow the 3 shafts to snap into place (pic. 10-4). Take care that the elevator rings are properly located. See page E2 for the proper locations of the elevator rings.
6. Insert the 4 shafts into the elevator cover (fg. 10-5). Take care that the shafts are properly located.

*Please refer to the assembly of arm (fg. 09)*

*Note: To modify the position of counterweight, release the tension first.*

*Please note the correct direction of rotation.*

*Make sure convex parts point up and everything is correctly seated.*
Installation of the elevator

1. Insert the 391 mm shaft into the gearbox (fig. 11-1).
2. Slide the elevator (16 pcs) onto the shaft (fig. 11-2).
3. Insert 3 further 391 mm shafts into the exact pre-defined positions on the gearbox (fig. 11-3).
4. Allow the 3 shafts to snap into place (pic. 11-4). Take care that the elevator rings are properly located. See page E1 for the proper locations of the elevator rings.
5. Insert the 4 shafts into the elevator cover (fig. 11-5). Take care that the shafts are properly located.

Avoid that there is a gap between gearbox and elevator helix. Otherwise the elevator will not operate properly.
**Assembly of the free fall helix**

**Installation of the free fall helix**

1. Attach spacer (C3) to the shaft (fg. 12-1, 12-8). Insert the shaft incl. spacer and shaft cap (C4) into the elevator cover (fg. 12-3).

2. Slide the elevator (10 pcs) onto the shaft (fg. 12-2).

3. Insert 3 further 300mm shafts into the exact pre-defined positions on the gearbox (fg. 12-3).

4. Allow the 3 shafts to snap into place (pic. 12-4). Take care that the elevator rings are properly located. See fg. 12-9 for the proper locations of the elevator rings.

5. Insert the 4 shafts into the elevator cover (fg. 12-5). Take care that the shafts are properly located.

6. Now attach rail stands (A6) to the elevator ring (fg. 12-6).

7. Insert the elevator stand (E4) into the ring (fg. 12-7).

8. Take care that the elevator rings are properly located (fig. 12-9, picture shows a scale of 1:1).

Please note the correct direction of rotation.

Take care that the spacer (C3) is properly located (fig. 12-8, picture shows a scale of 1:1).

Make sure convex parts point up and everything is correctly seated.
**Rail assembly steps**

This ball roller coaster provides 6 exits (start) and 9 entries (end). Please note fig. 25-36 and the illustrations on page 2-4 during assembly.

Install rail stands together with the rails (page 17, fig. 40)

1. From second floor elevator exit BJ3 (Start) to junction A (fig. 26, 26-1)
2. From the junction A exit (start) via the double loop tunnel to the first floor elevator entry BJ1 (end) (fig. 25-26, 26-3-26-2)

Assemble rail as shown on the right

Due to the long distance, the installation of this section is divided into 2 assembly steps (please refer to fig. 25-26)

**Notice:**
- Install 2 x 7cm rails (fig. 26-26-1)
- Install 2 x 560cm rails (fg. 26-25, 26-3-26-2)

Letters and numbers (e.g. H2) show the correct positions of shafts and arms.
Assembly of rails

Rail assembly steps

3. Please note page 64 for stairway installation
4. From stairway (part B) to seesaw A (fig. 27, 27-1 and 27-2)
5. From seesaw B to first floor elevator entry B1 (fig. 27, 27-3)

6. From seesaw A to seesaw B (fig. 28, 28-1)
7. From the "bypass slip" to first floor elevator entry B2 (fig. 28, 28-2)
   Assemble rail as shown on the right

Please note fig. 27, 27-1 and page 64 for stairway installation

Installation of stairway B

From stairway (part B) to seesaw A

From seesaw B to first floor elevator entry B1

Install 2 x 46cm rails (fig. 28-1)

Install 2 x 93cm rails (fig. 28-2)

Install 2 x 90cm rails (fig. 27-2)

Install 2 x 100cm rails (fig. 27-3)
Assembly of rails

**Rail assembly steps**

8. Please note page 64 for stairway installation
9. From shaft/arm A E-8 to stairway (fg. 29, 29-2)
10. From free fall helix (exit A) to first floor elevator entry B J2 (fg. 29, 29-3)

11. From the junction B exit to the funnel-shaped helix (fg. 30, 30-1, 30-2)
12. From the "bypass slip" to junction B entry (fg. 30, 30-3)

Assemble rail as shown on the right.

Please note fg. 29, 29-1 and page 64 for stairway installation
Install 1 x 55cm rails (fg. 29-29-2). Please note page 64 for stairway installation (fg. 24)
Install 2 x 75cm rails (fg. 29-29-3)

Install 2 x 75cm rails (fg. 30-30-1, 30-3)
Install 2 x 55cm rails (fg. 30-30-3)
Assembly of rails

**Rail assembly steps**
13. From second floor elevator exit B13 to "bypass slip" (fig. 31, 31-1, 31-2)
14. From second floor elevator exit B13 to junction C (fig. 31, 31-3)

**Assembly rail assembly**
Assemble rail as shown on the right

15. From junction C to pendulum (fig. 32, 32-1)
16. From junction C to shaft/arm AE-9 (fig. 32, 32-2, 32-3)

Install 2 x 86cm rails (fig. 31, 31-1, 31-2)
Install 2 x 16cm rails (fig. 31, 31-3)
Install 2 x 19cm rails (fig. 32, 32-1)
Install 2 x 194cm rails (fig. 32, 32-2, 32-3)
Assembly of rails

Rail assembly steps

17. From first floor elevator exit BJ3 to second floor elevator entry BI1 (fig. 33, 33-1, 33-2)
18. From first floor elevator exit BJ2 to second floor elevator entry BI2 (fig. 33, 33-3)

19. From shaft/arm F-2 to first floor elevator entry BJ2 (fig. 34, 34-1)
20. Install 1 x 7cm rail and 1 x 5cm rail to assemble exit B of free fall helix (fig. 34, 34-2, 34-3)

Caution: Outer rail should be longer than inner rail to ensure the steel balls running smoothly (fig. 34-3)

Assemble rail as shown on the right.
Assembly of rails

Rail assembly steps

21. From first floor elevator exit BJ3 to second floor elevator entry BI2 (fig. 35, 35-1)
22. From junction B via the loop to first floor elevator entry BJ1 (fig. 35, 35-2, 35-3)
   Caution: Steep downward gradient! Attach further rail stands to prevent steel balls from missing the track.
23. From junction A via the helix to entry A of the free fall helix (fig. 36, 36-1, 36-3)
24. From the tray [Ex 7] to entry B of free fall helix (fig. 36, 36-2)
   Assemble rail as shown on the right.

Install 2 x 188cm rails (fig. 35, 35-1)
Install 2 x 175cm rails (fig. 35, 35-2, 35-3)
Install 2 x 66cm rails (fig. 36, 36-2)
Install 2 x 670cm rails (fig. 36, 36-1, 36-3)
Assembly of rails and loop

17

Installation of the rails

Attachment of rails to arms and shafts (fg. 37 + 38)
Attach rail to arm (fg. 37)
Rail joining (fg. 39)
Adjust and connect the rails. Insert the rail joinings [R2] into the holes at the center of the rails (fg. 38)

Align rails in steep sections and elevator entry/exit points to ensure best stability of the rails
Steep sections (fg. 41)
Install the arms in an inclined position to each other to create steep sections, so that the steel balls can run smoothly (fg. 42)

Informations about rail stands (fg. 40)
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

Installation of a loop

Ensure the steel balls running smoothly (fg. 42)
The diameter of the outer loop should have twice the diameter of the inner loop
Important information for the assembly of loops (fg. 43)
Rails have to form a circle that remains in an upright position to ensure the steel balls running smoothly (fg. 44)
Installation of a loop (fg. 44)

When mounting loops, the second loop has to be smaller than the first loop to ensure the steel balls running smoothly
Installation of pendulum tray and junction (fg. 45-1 + 45-2)
Insert rail stands into the junction (fg. 45-2)
Simply cut the rails to the correct length (see enlarged picture on the right)
Insert rails into the pendulum tray (fg. 45-2)
Assembly of double loop tunnel and exits/entries of the free fall helix

Assembly of the double loop tunnel (fg. 46-49)
1. The looping diameters depend on the fall height of the steel balls (see the example in fig. 46-47)
2. All single loops of the loop tunnels must be round and have the same diameter to keep the steel balls running smoothly

Assembly of the free fall helix (entries & exits) (fg. 50-51)
1. Pay attention to a proper installation of the entries and exits (fg. 50)
2. Install rails of entries and exits as shown in fig. 50
Assembly of rails

**Installation of elevator (entry & exit)**

Important information for the assembly of elevator entry and exit (fig. 52)

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. 53)

Install rails as close as possible to the entry and exit of the elevator to ensure the steel balls running smoothly (fig. 53)

Pay attention to a correct angle of the rails when the steel balls enter the elevator (fig. 54-1, 54-2, 55)

Make sure the steel balls enter the elevator slowly. Otherwise, they will rebound and fall off the rails (fig. 54-2).

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. 54-2)

At the entry all rails must be at right angles to the elevator (fig. 55)

**Distance between rails**

(fig. 56)

Install the rail stand to keep rails parallel (fig. 56)

**Assembly of curves**

(fig. 57-58)

Curves need to be assembled in a certain angle to prevent steel balls from missing the turn (fig. 57). 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. 58)
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 shape 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 used.

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 waste, 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 CR14 battery 1.5 V

Inserting the battery: Use a Phillips screwdriver to open the battery compartment cover. Insert 2 x CR14 batteries with the correct polarity and replace the battery compartment cover.

Distributed by:
SpaceRail LLC - Salt Lake City, UT - www.spacerails.com - orders@spacerails.com - 801.486.3867
Assembly of elevator rings, elevator stand, gearbox socket, gearbox and arm set D

Locations of the elevator rings
- Elevators (fig. 13+14) are shown in a scale of 1:1. Attach the elevator rings to the exact predefined red positions (BI-1, BI-2, BI-3, B1-1, B1-2).

Installation of elevator stand
- Insert the elevator stand [E4] into the ring (fig. 15).

Installation of gearbox socket
- Gearbox socket (fig. 11): Attach the gearbox to provide a tight fit of the elevator to the base plate.

Installation of gearbox
- Gearbox location on base plate (fig. 17). Attach the 3 clips at the bottom of the gearbox (see red markings in fig. 16) to the exact predefined positions of the base plate (fig. 17).

Top-down view
- For this ball roller coaster 3 special arm sets are required which consist exclusively of [A4] arm holders B (see illustrations on the left). These components are termed “Arm Set D.” Attach arm set D to shaft F, BC and BD.

Top-down view
- Make sure the steel balls enter the elevator slowly. Otherwise they will rebound and fall off the rails.
Assembly of shafts, arms and arm set C

Attach the arms and seesaws to the shaft as shown on page E1-E6. Shafts are shown in a scale of 1:1. Attach the arms and seesaws to the exact predefined red positions. Please note the correct order and directions of the arms. Insert the shafts (A-Q) into the base plate (fig. 23 + 24). Please note the correct directions of the shafts.

Front
Back
Down
Up

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

Arm position

[S6] Shaft 65 mm
[S3] Shaft 300 mm

[S4] Shaft 200 mm
[S5] Shaft 159 mm

[S4] Shaft 200 mm
[S5] Shaft 159 mm

See saw (mount right hand side)

Arm set B

Arm set D

Arm set B

Location of arm set B

Location of arm set B

Location of arm set D

See saw location

Location of arm set C

[A5] Arm wrench

For this roller coaster 36 special arm sets are required which consist exclusively of [A4] arm holders B (see illustrations on the left). These components are termed “Arm Set C.” Attach arm set C to shaft D, E, F, G, B C and B D.

Top-down view

[A1] Arm holder B

[A4] Arm holder B

For this roller coaster 36 special arm sets are required which consist exclusively of [A4] arm holders B (see illustrations on the left). These components are termed “Arm Set C.” Attach arm set C to shaft D, E, F, G, B C and B D.

[19] Arm holder B

For this roller coaster 36 special arm sets are required which consist exclusively of [A4] arm holders B (see illustrations on the left). These components are termed “Arm Set C.” Attach arm set C to shaft D, E, F, G, B C and B D.
Assembly of arms

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

Attach the arms and seesaws to the shaft as shown on page E1-E6. ShafTs are shown in a scale of 1:1.

Attach the arms and see the exact predefined red positions. Please note the correct order and directions of arms. Insert the shafts (R-Z and A-B-A-F) into the base plate (fig. 23+24). Please note the correct directions of shafts.

Fr. Back

Dowu. Up

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

Location of arm set B

Location of arm set C

[Appendix: Schematic diagrams and assembly instructions for parts E2, E3, E4, E5, E6 with detailed views of the mechanics and functional components shown.]

(S5) Shaft 159mm

(S2) Shaft 391mm

(S6) Shaft 65mm

(S3) Shaft 300mm

(S1) Shaft 600mm

(S1) Shaft 600mm
Assembly of stairway

1. Install the stairway (part A) according to fig. 20.
2. Install the stairway (part B) according to fig. 22-1 (attach these components to the shaft AK) and 22-2 (attach these components to the shafts AL, AM, AN).

Attach the stairways (part A & B) to the shaft as shown on page E4-E6 (fig. 20-22-2, 24-1 + 24-2). Shafts are shown in a scale of 1:1. Attach the stairways to the exact predefined red positions.

Please note the correct order and directions of arms.

Right: Right
Left: Left
Down: Down
Up: Up

Stairway (part A): 45-degree view
Stairway (part B): 45-degree view

Caution: Attach a rail stand [A6] to the front section of the rail to form a wider width at the end of the rail. That way steel balls will fall down to the next level.

Caution: Attach a rail stand [A6] to the front section of the rail to form a wider width at the end of the rail. That way steel balls will fall down to the next level.

Install 1x 43.5cm rail (fig. 22-1).
Install 1x 34cm rail (fig. 22-2).
Install 1x 550cm rail (fig. 21). Please note page 13 (fig. 29, from shaft/arm AE-8 to stairway).
Assembly of arms

Attach the arms and seesaws to the shaft as shown on page E1-E6. Shafts are shown in a scale of 1:1. Attach the arms and seesaws to the exact pre-defined red positions. Please note the correct order and directions of arms.

Insert the shafts (A P-A Z and B C-B F) into the base plate (fig. 23+24). Please note the correct directions of shafts.

Front

Back

Down

Up

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

See saw (mount left hand side)
Positions of shafts

Attach components to the shaft as shown on page E1-E6. Shafts are shown in a scale of 1:1. Attach all components to the exact predefined positions. Please note the correct order and directions of arms. Insert the shafts into the base plate (fig. 23+24). Please note the correct directions of shaft arm position.

Arm set B

Front

Back

Down

Up

Caution: Shafts E and D must be fitted at the centre between the shafts A and K. Shafts G and F must be fitted at the centre between the shafts L and M.

Caution: Shafts E and D must be fitted at the centre between the shafts C and H. Shafts G and F must be fitted at the centre between the shafts I and J.