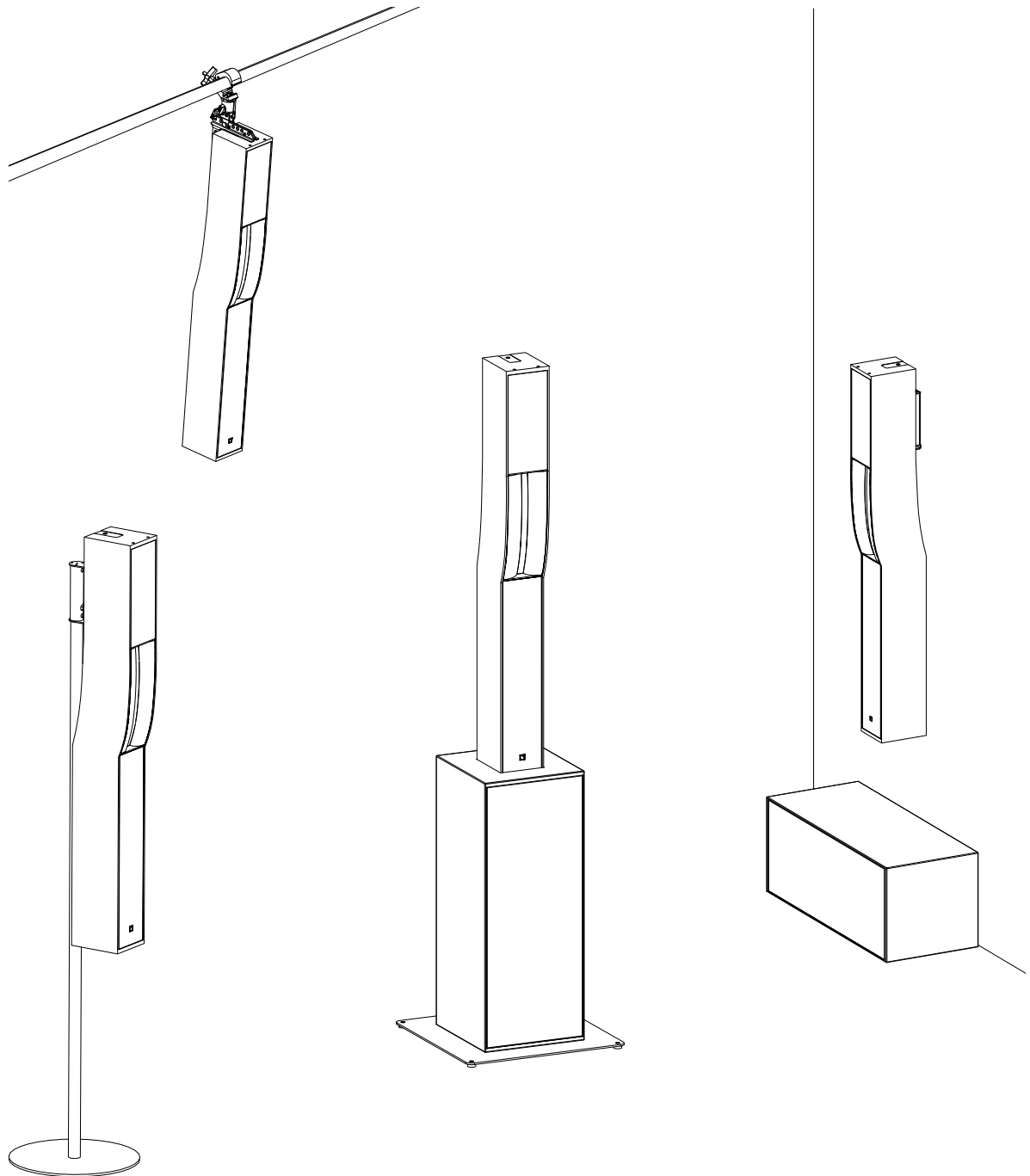


# SYVA



## rigging manual (EN)



Document reference: Syva rigging manual (EN) version 1.1

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# Safety

## Instructions

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### **Inspect the product before operation.**

If any sign of defect or damage is detected, immediately withdraw the product from use for maintenance.



### **Never incorporate equipment or accessories not approved by L-Acoustics.**

**Read all the related PRODUCT INFORMATION documents shipped with the products before exploiting the system.**



**Do not store the product on an unstable cart, stand, tripod, bracket, or table.**



### **Work with qualified personnel for rigging the system**

Installation should only be carried out by qualified personnel that are familiar with the rigging techniques and safety recommendations outlined in this manual.

### **Ensure personnel health and safety**

During installation and set-up personnel must wear protective headgear and footwear at all times. Under no circumstances is personnel allowed to climb on a loudspeaker assembly.

### **Respect the Working Load Limit (WLL) of third party equipment.**

L-Acoustics is not responsible for any rigging equipment and accessories provided by third party manufacturers. Verify that the Working Load Limit (WLL) of the suspension points, chain hoists and all additional hardware rigging accessories is respected.

### **Respect the maximum configurations and the recommended safety precautions.**

For safety issue, respect the maximum configurations outlined in this manual. To check the conformity of any configuration in regards with the safety precautions recommended by L-Acoustics, model the system in Soundvision and refer to the warnings in Mechanical Data section.

### **Be cautious when flying a loudspeaker configuration.**

Always verify that no one is standing underneath the loudspeaker array when it is being raised. As the array is being raised, check each individual element to make sure that it is securely fastened to the adjacent element. Never leave the array unattended during the installation process.

As a general rule, L-Acoustics recommends the use of safety slings at all times.

### **Be cautious when ground-stacking a loudspeaker array.**

Do not stack the loudspeaker array on unstable ground or surface. If the array is stacked on a structure, platform, or stage, always check that the latter can support the total weight of the array.

As a general rule, L-Acoustics recommends the use of safety straps at all times.

### **Risk of falling objects**

Verify that no unattached items remain on the array.

### **Risk of tipping**

Remove all rigging accessories before transporting an array.

### **Take into account the wind effects on dynamic load.**

When a loudspeaker assembly is deployed in an open air environment, wind can produce dynamic stress to the rigging components and suspension points.

If the wind force exceeds 6 bft (Beaufort scale), lower down and/or secure the loudspeaker array.



**This system is intended for professional use.**



**Read the USER MANUAL before operating the system.**

Use the loudspeaker system components described in the user manual and follow the operating instructions.

**Do not expose the product to extreme conditions.**

Do not expose the product to rain or sea spray.

Do not expose the product to moisture (mist, steam, humidity, condensation...) or excessive heat (direct sun, radiator...) for a long period of time.

**Contact L-Acoustics for advanced maintenance.**

Any unauthorized maintenance operation will void the product warranty.

## Symbols

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The following symbols are used in this document:



This symbol indicates a potential risk of harm to an individual or damage to the product.

It can also notify the user about instructions that must be strictly followed to ensure safe installation or operation of the product.



This symbol notifies the user about instructions that must be strictly followed to ensure proper installation or operation of the product.



This symbol notifies the user about complementary information or optional instructions.

## Welcome

Thank you for purchasing the L-Acoustics Syva.

This document contains essential information on rigging the system properly.

**As part of a continuous evolution of techniques and standards, L-Acoustics reserves the right to change the specifications of its products and the content of its document without prior notice.** Please check [www.l-acoustics.com](http://www.l-acoustics.com) on a regular basis to download the latest document and software updates.

## System components

### Loudspeaker enclosures

Syva	2-way-passive enclosure: 6 x 5" LF + 3 x 1.75" HF diaphragm
Syva Low	High power low frequency subwoofer: 2 x 12" LF
Syva Sub	Infra low frequency subwoofer: 1 x 12" LF

### Rigging elements

CLAMP250	Clamp certified for 250 kg
Syva Wall	Wall-mount for Syva
Syva Base	Baseplate for Syva system
Syva Pole	Pole-mount adapter for Syva
Syva Bar	Rigging bar for Syva
Syva Cov	Protective cover for Syva enclosure
SyvaLF Cov	Protective cover for Syva Low or Syva Sub enclosure

### Software applications

Soundvision	3D acoustical and mechanical modeling software
-------------	--



Refer to the **Soundvision** help.

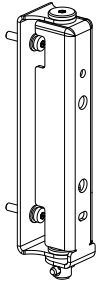


#### **Other Syva system components**

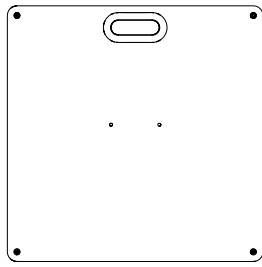
Other components of the system are presented in the Syva user manual along with the enclosure configurations and connection schemes.

## Rigging elements

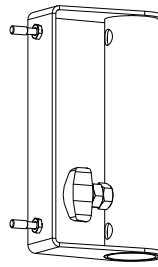
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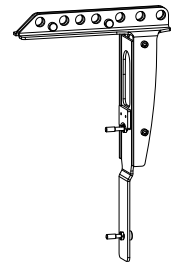
**Syva Wall**



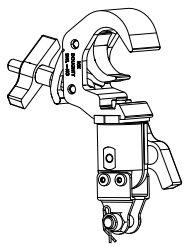
**Syva Base**



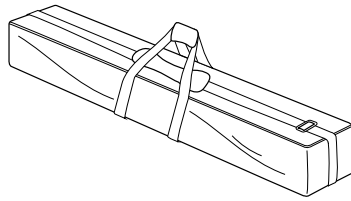
**Syva Pole**



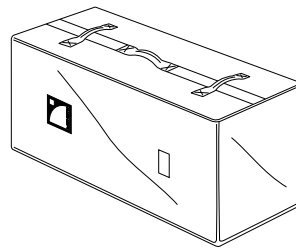
**Syva Bar**



**CLAMP250**



**Syva Cov**



**SyvaLF Cov**



# Mechanical safety

## Flown configurations

The Syva rigging system complies with 2006/42/EC: Machinery Directive. It has been designed following the guidelines of BGV-C1.

2006/42/EC: Machinery Directive specifies a safety factor of 4 against the rupture. The flown deployments described in this manual achieve a safety factor of **5**.

Refer to Soundvision for the safety factor of a specific deployment.

The **safe limit** gives the maximum number of elements for which the safety factor is always compliant with the 2006/42/EC: Machinery Directive, regardless of the other deployment parameters (site angles, inter-enclosure angles, etc.)

The **maximum limit** gives the maximum number of elements for which the safety factor can be compliant with the 2006/42/EC: Machinery Directive, when the other deployment parameters provide the best mechanical conditions.

## Syva

Configuration	Rigging accessory	Maximum / Safe limit
Flown	Syva Bar	1
Wall-mounted	Syva Wall	1

## Other configurations

For other configurations, respect the recommended maximum limit for optimal stability.

## Syva

Configuration	Rigging accessory	Maximum / Safe limit
Ground-stacked	Syva Base	1
Pole-mounted	Syva Pole	1

## Syva Low / Syva Sub

Configuration	Rigging accessory	Maximum / Safe limit
Ground-stacked	Syva Base	1
Ground-stacked	No rigging accessory	1

## Syva on Syva Low

Configuration	Rigging accessory	Maximum / Safe limit
Ground-stacked	Syva Base	1



### Mechanical safety of the rigging system

Before any installation, always model the system in Soundvision and check the **Mechanical Data** section for any stress warning or stability warning.

## Assessing mechanical safety

In order to assess the actual safety of any array configuration before implementation, refer to the following warnings:



### **Rated working load limit (WLL) is not enough**

The rated WLL is an indication of the element resistance to tensile stress. For complex mechanical systems such as loudspeaker arrays, WLLs cannot be used per se to determine the maximum number of enclosures within an array or to assess the safety of a specific array configuration.

### **Maximum pullback angle**

If a pullback accessory is available, the pullback angle must not exceed a 90° negative site angle.

### **Mechanical modeling with Soundvision**

The working load applied to each linking point, along with the corresponding safety factor, will depend on numerous variables linked to the composition of the array (type and number of enclosures, splay angles) and the implementation of the flying or stacking structure (number and location of flying points, site angle). This cannot be determined without the complex mechanical modeling and calculation offered by Soundvision.

### **Assessing the safety with Soundvision**

The overall safety factor of a specific mechanical configuration always corresponds to the lowest safety factor among all the linking points. Always model the system configuration with the Soundvision software and check the **Mechanical Data** section to identify the weakest link and its corresponding working load. By default, a stress warning will appear when the mechanical safety goes beyond the recommended safety level.

### **Safety of ground-stacked arrays in Soundvision**

For ground-stacked arrays, a distinct stability warning is implemented in Soundvision. It indicates a tipping hazard when the array is not secured to the ground, stage or platform. It is the user's responsibility to secure the array and to ignore the warning.

### **Additional safety for flown arrays**

When flying an array, use available holes to implement a secondary safety.

### **Considerations must be given to unusual conditions**

Soundvision calculations are based on usual environmental conditions. A higher safety factor is recommended with factors such as extreme high or low temperatures, strong wind, prolonged exposition to salt water, etc. Always consult a rigging specialist to adopt safety practices adapted to such a situation.

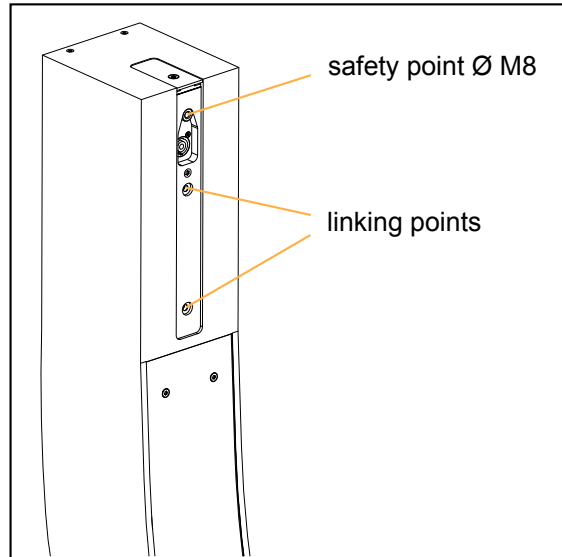
## Rigging system description

### Syva

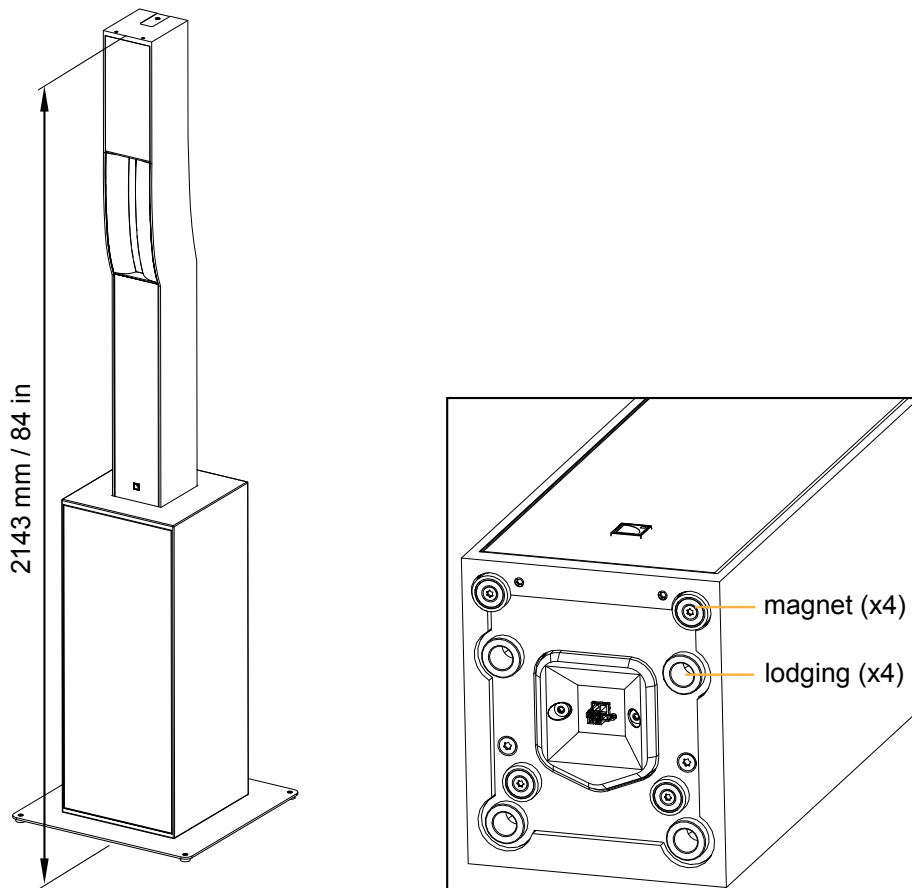
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Syva features two threaded inserts on the rear side to connect dedicated rigging accessories.

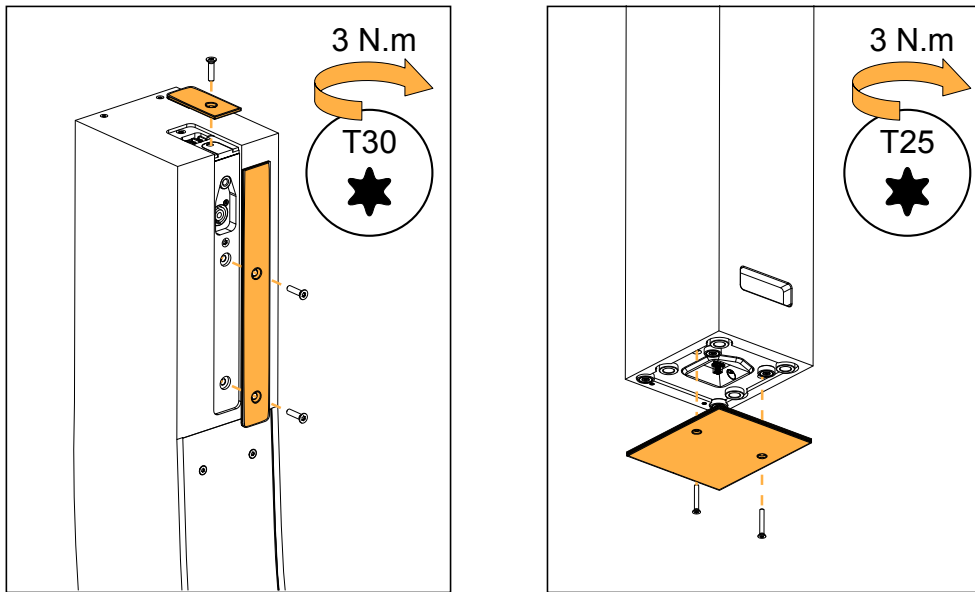
At the top, an M8 insert can be fitted with a DIN-580 eye bolt to implement a secondary safety.



Syva can be stacked on top of Syva Low. Four magnets and lodgings on the bottom of the enclosure ensure stability.



A back plate, a top plate and a bottom plate conceal and protect the rigging elements and connectors when they are not in use.

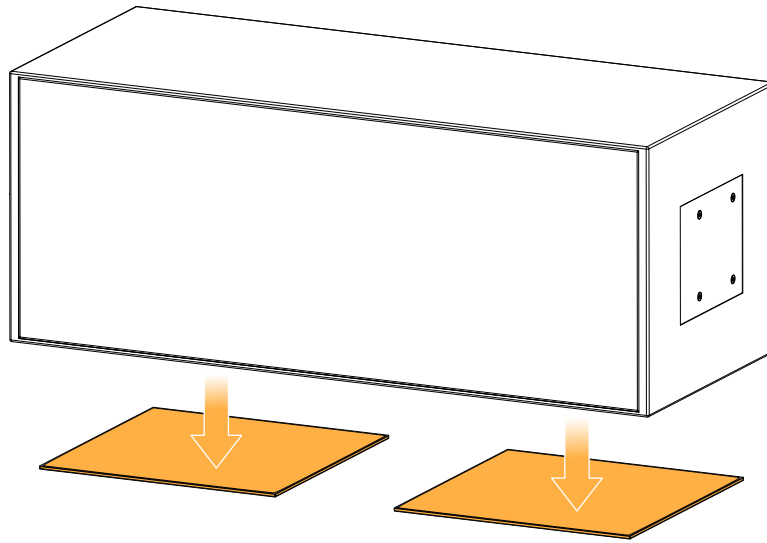


**!** Always put the bottom plate screws back in place to avoid leaks.

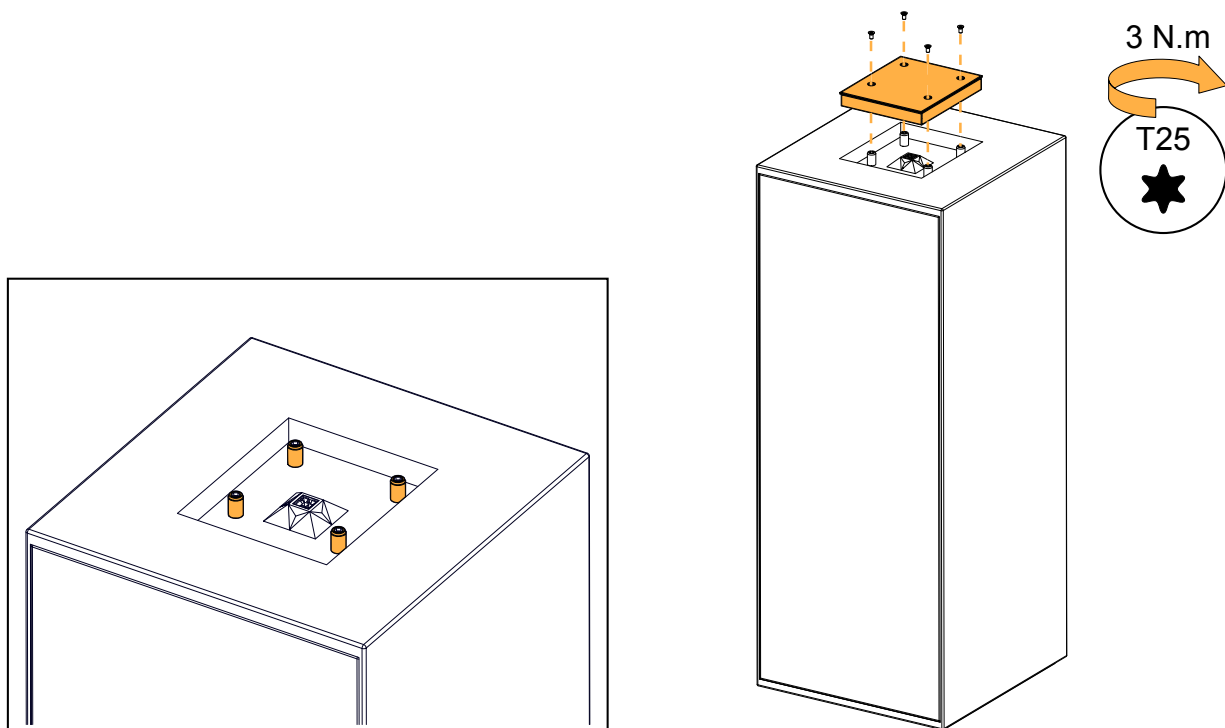
**i** Remove the bottom plate to stack Syva on Syva Low or Syva Base.

## Syva Low and Syva Sub

Two anti-vibration mats are provided to ground-stack the subwoofers.



Syva Low features four studs on top to ensure stability when stacking Syva. A top plate conceals them.



## Syva Wall



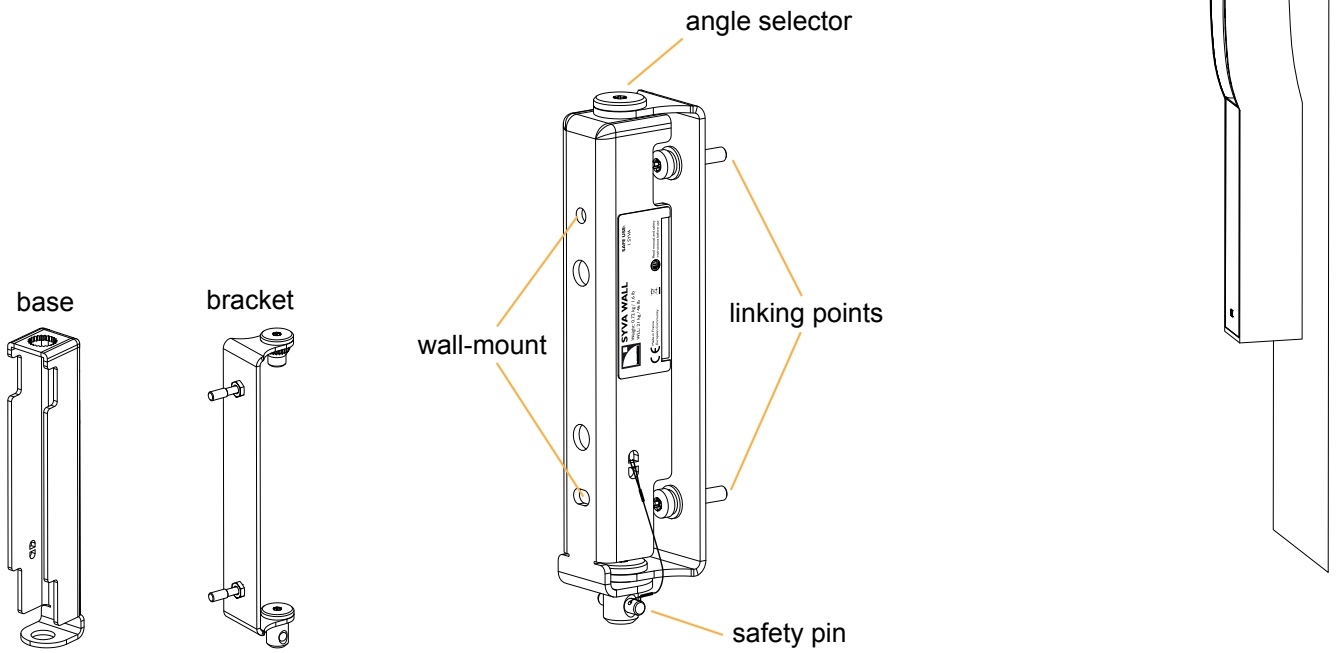
Syva on Syva Wall applies a load of **350 N** on the anchoring points.

Syva Wall is a wall-mount for Syva. It consists in two parts, a base and a bracket:

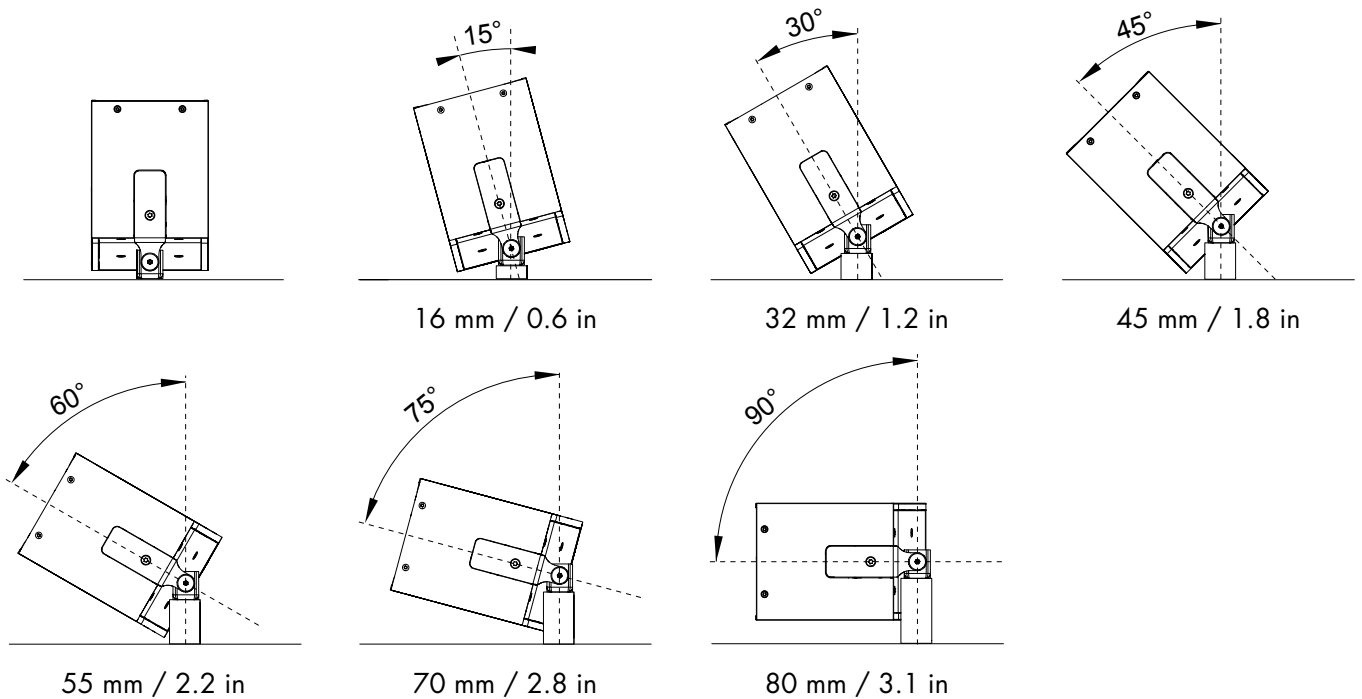
- The base is mounted on a wall or a wedge.
- The bracket is secured to the enclosure.

It features a toothed wheel to set the azimuth angle up to 90° by steps of 15°.

A safety pin secures the assembly.



To set an azimuth angle, use a wedge. The wedge depth limits the maximum angle.

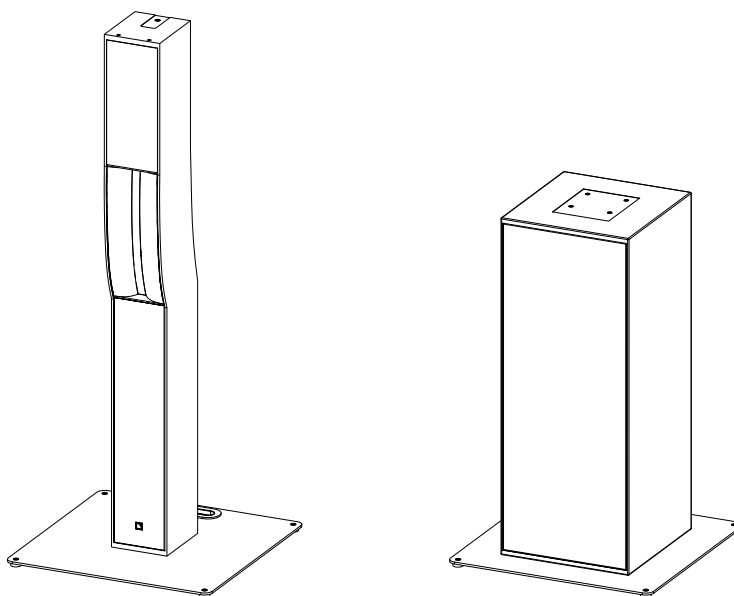


## Syva Base

Syva Base is a base plate for Syva, Syva Low and Syva Sub. It must be secured to the bottom of the enclosure and features four runners for stability. These can be removed to secure the base plate to the floor.

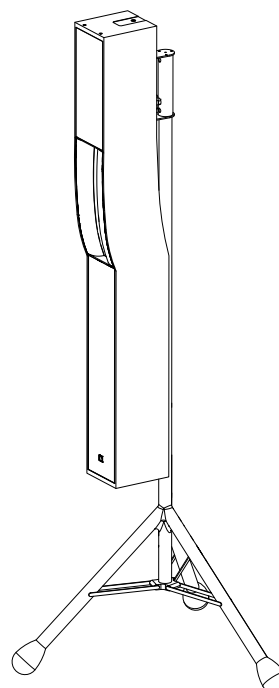
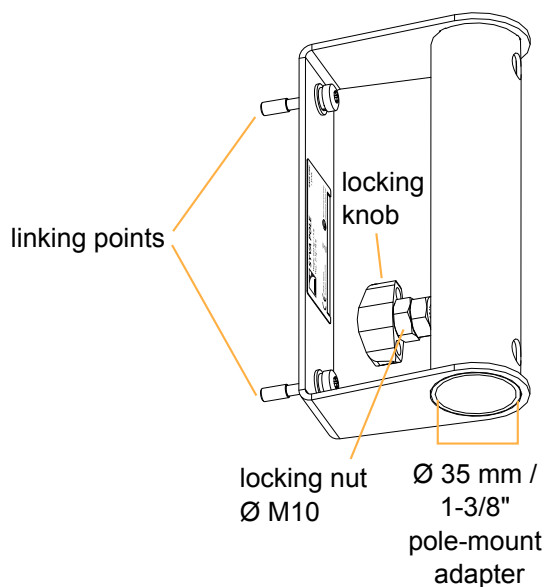
**! Risk of crushing injury**  
Always hold Syva Base by the handle.

**! Ground-stacking Syva**  
Do not ground-stack Syva without Syva Base.



## Syva Pole

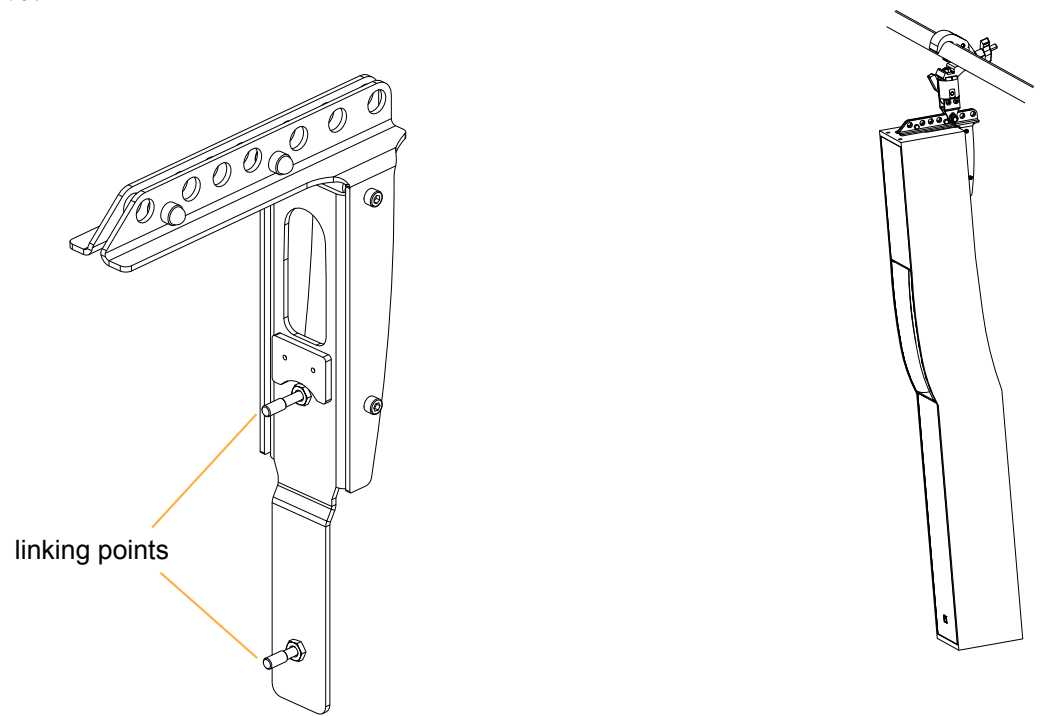
Syva Pole is a 35 mm / 1-3/8" pole mount adapter for Syva.



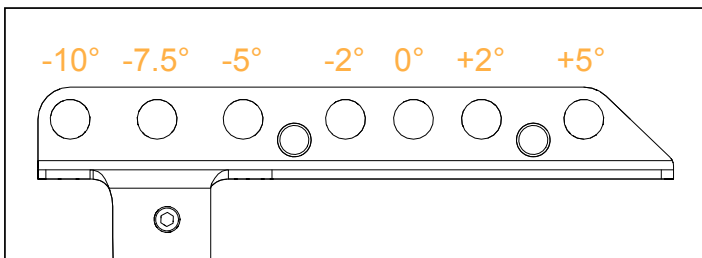
## Syva Bar

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Syva Bar is a lifting bar for Syva.



Seven pickup points provide site angle settings between  $-10^\circ$  and  $+5^\circ$ .

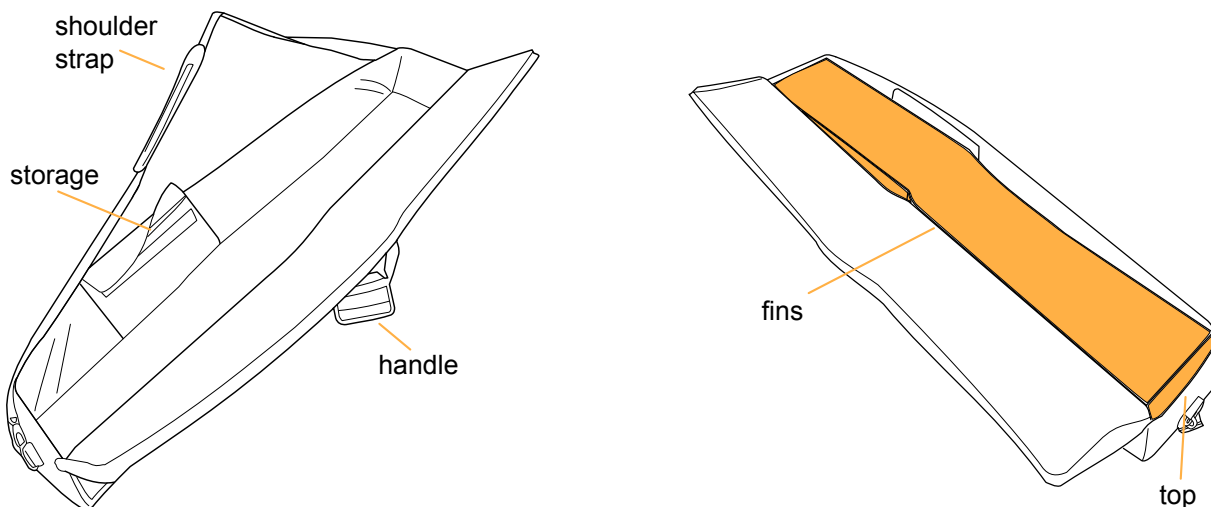


Syva Bar and Syva can be flown with the provided  $\text{Ø}12$  mm shackle WLL 1 t or secured to a structure with CLAMP250.



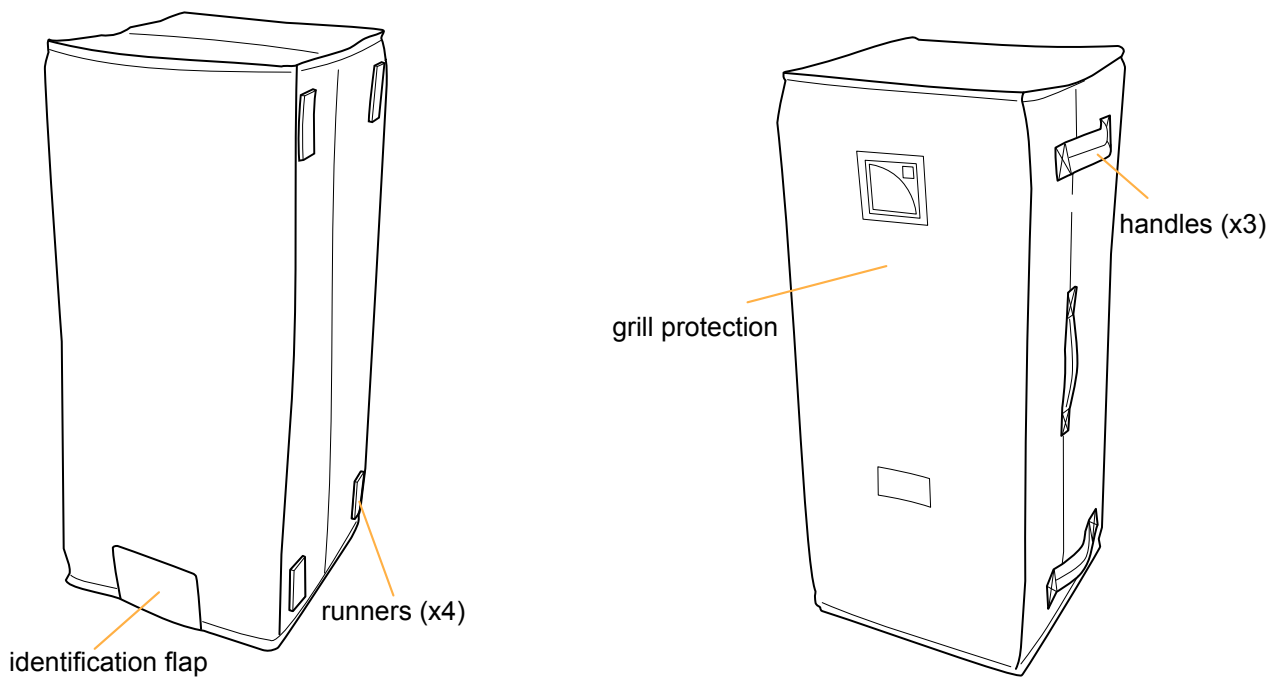
## Syva Cov and SyvaLF Cov

Syva Cov is the reference cover for Syva. The front face (with the logo) is reinforced to protect the fins and the grill. The rear side features a pouch to store the enclosure protection plates.



SyvaLF Cov is the reference cover for Syva Low and Syva Sub. The front face (with the logo) is reinforced to protect the grill. A flap covers the connector at the rear and allows to check the label.

Refer to [APPENDIX B: Storing Syva Low / Syva Sub in SyvaLF Cov](#) (p.26).



# Rigging procedures

## Wall-mounting Syva

type of deployment	wall-mount
rigging accessories	Syva Wall
tools	torque screwdriver
	T30 Torx bit
additional material	2 x M6 screws and anchors (depending on wall material)
min number of operators	1

**⚠ Secondary safety** Secure a DIN-580 eye bolt to the dedicated insert on the enclosure to implement a secondary safety.

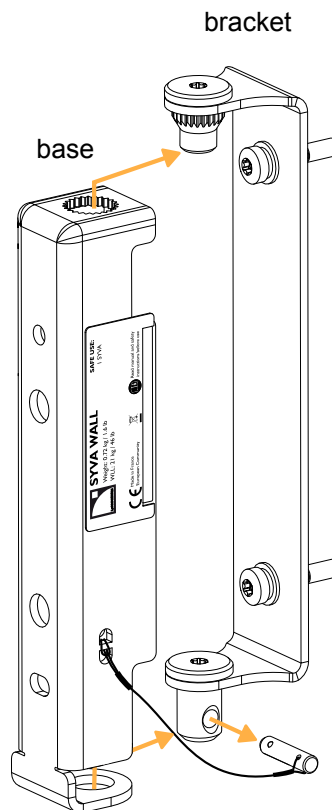
**!** The speakON connector is only accessible if Syva Wall is used with a wedge.

**i** Syva Wall can be mounted on a truss bridge.  
Refer to [APPENDIX A: Mounting a truss clamp on Syva Wall](#) (p.25).

## Assembly

### Procedure

1. Remove the safety pin and divide Syva Wall into base and bracket.



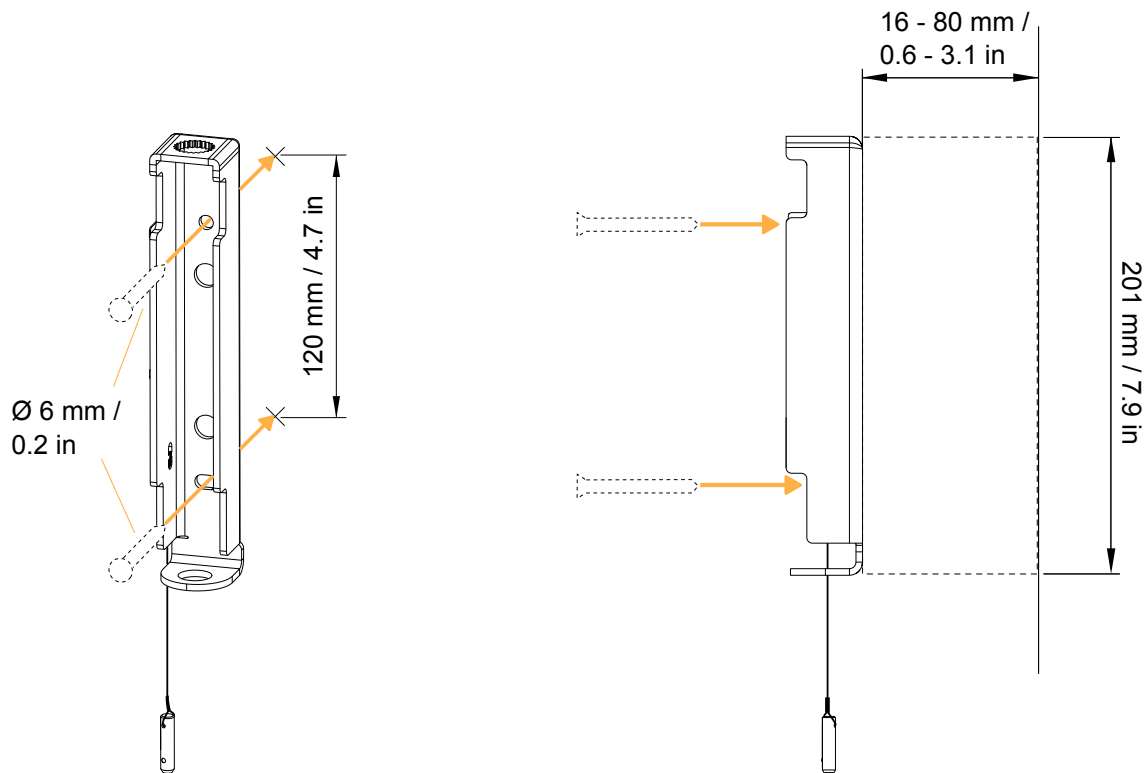


Syva on Syva Wall applies a load of **350 N** on the anchoring points.

**2.** Secure the base to the wall.

Use a wedge to allow an azimuth angle.

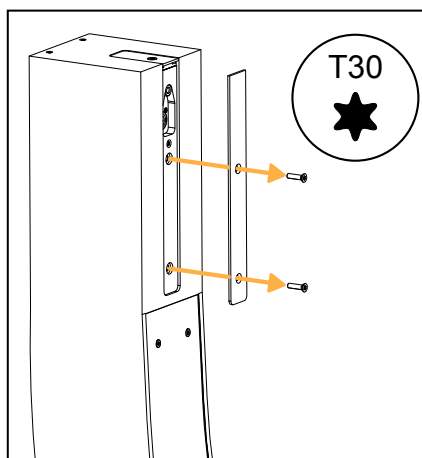
Azimuth angle	15°	30°	45°	60°	75°	90°
Wedge depth	16 mm / 0.6 in	32 mm / 1.2 in	45 mm / 1.8 in	55 mm / 2.2 in	70 mm / 2.8 in	80 mm / 3.1 in



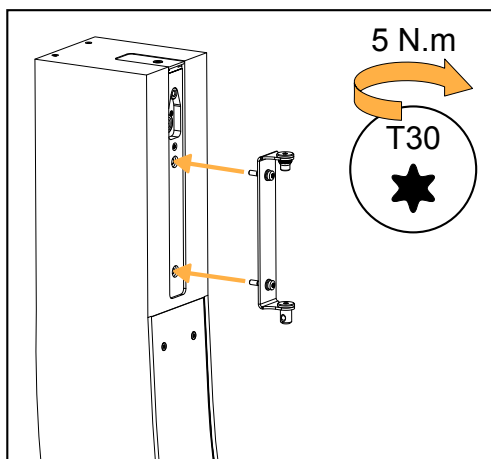
**3.** Remove the backplate from Syva



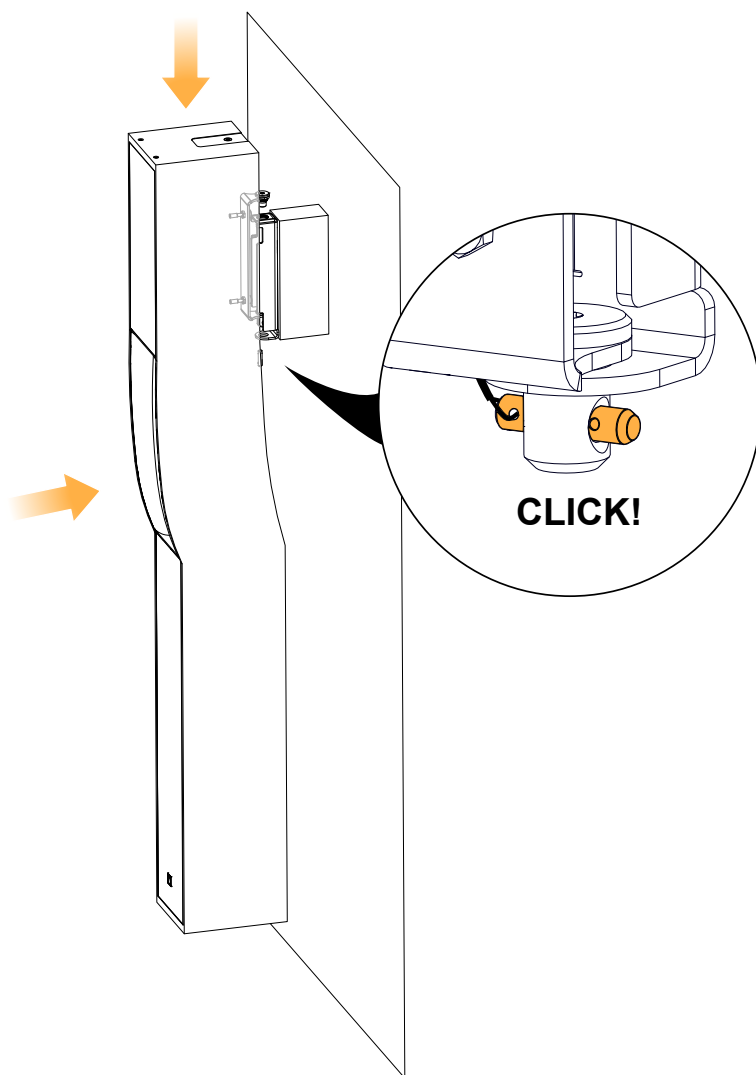
**Store plates and unused screws in Syva Cov.**



4. Secure the Syva Wall bracket to the enclosure.



5. Install the enclosure on the base and secure the safety pin.

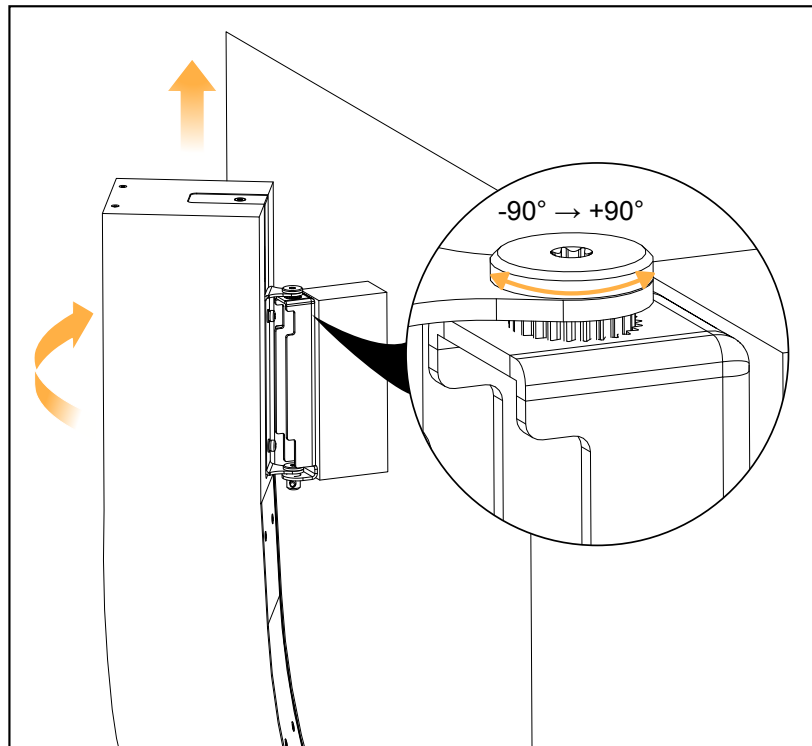


**Risk of injury**

Secure the safety pin before changing the azimuth angle with Syva Wall.

Do not touch Syva Wall while changing the azimuth angle.

6. Lift the enclosure by the bottom and rotate it to change the azimuth angle.



## Flying Syva

type of deployment	flown
rigging accessories	Syva Bar
	CLAMP250 (optional)
tools	torque screwdriver
	T30 Torx bit
additional material	1 Ø12 mm shackle WLL 1 t (provided)
min number of operators	1



### Secondary safety

Secure a DIN-580 eye bolt to the dedicated insert on the enclosure to implement a secondary safety.

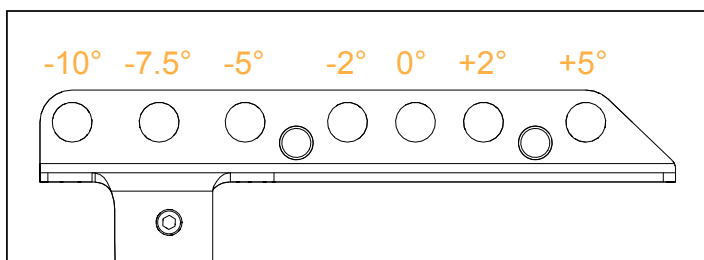


### Access to the screw terminal is limited after rigging.

Prepare the cabling before rigging the system.

### About this task

Available site angles:

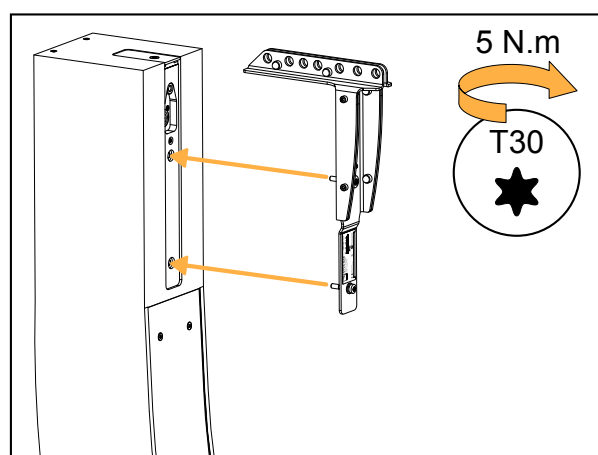
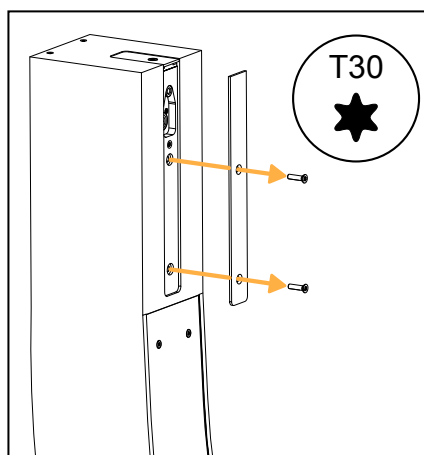


### Procedure

Remove the backplate from Syva and secure Syva Bar on the enclosure.



**Store plates and unused screws in Syva Cov.**



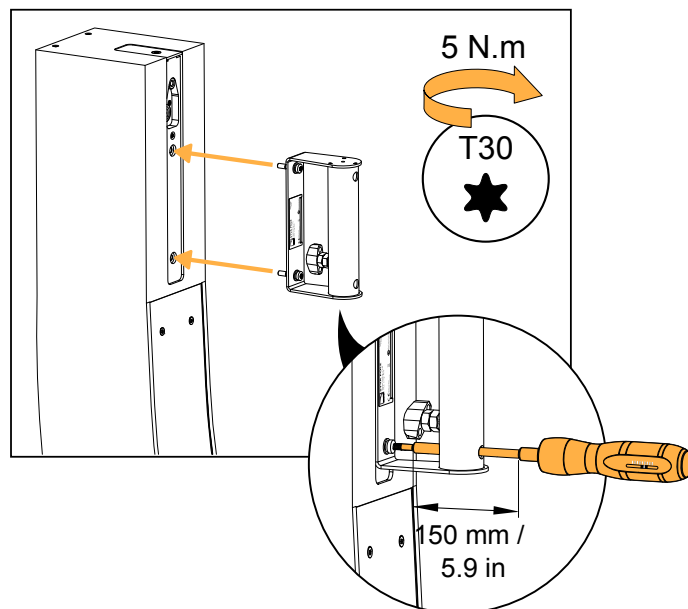
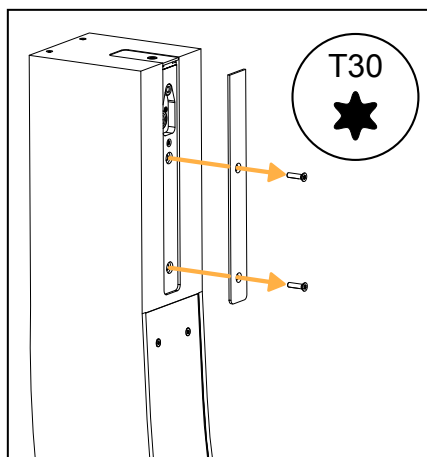
## Pole-mounting Syva

type of deployment	pole-mount
rigging accessories	Syva Pole
tools	torque screwdriver
	15 mm (5.9 in) screwdriver extension
	T30 Torx bit
	17 mm wrench
additional material	35 mm pole mount
min number of operators	1

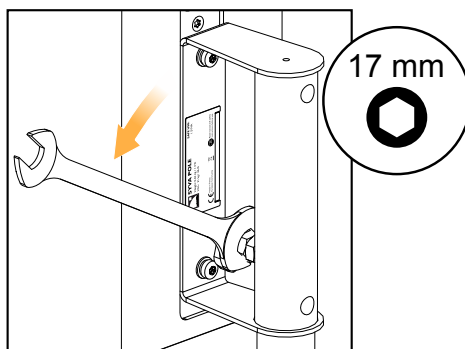
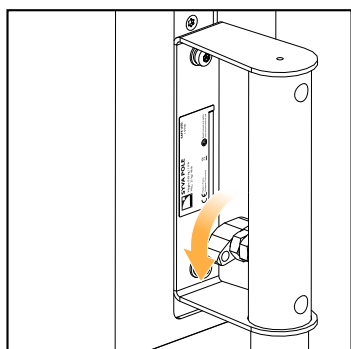
### Procedure

1. Remove the backplate from Syva and secure Syva Pole on Syva.

**! Store plates and unused screws in Syva Cov.**



2. Mount the assembly on a pole.
3. Tighten the locking knob and the nut.



## Stacking Syva on Syva Low

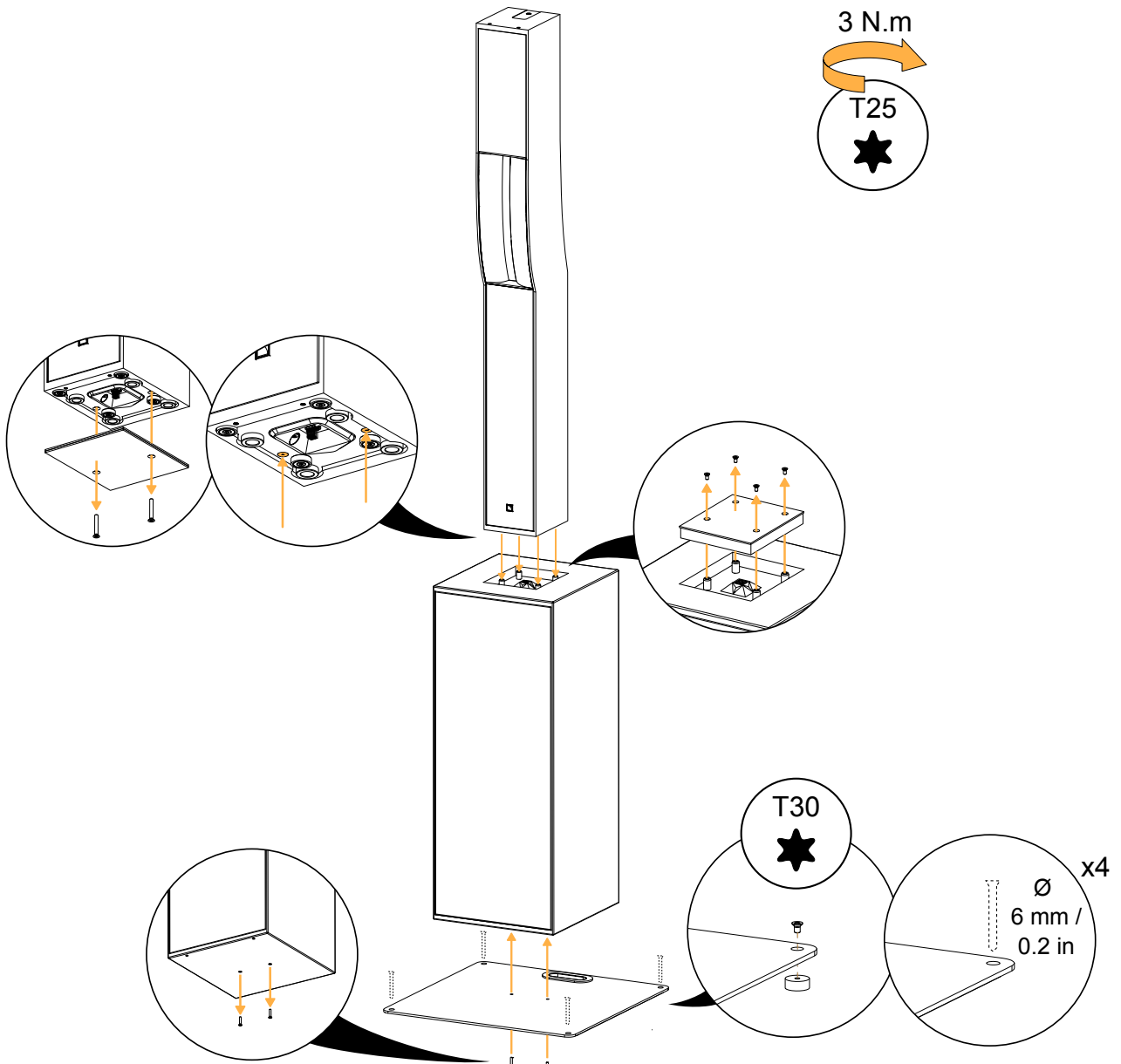
type of deployment	stacked
rigging accessories	Syva Base
tools	torque screwdriver
	T25 Torx bit
	T30 Torx bit
additional material	4 x 6 mm (0.2 in) screws depending on floor material (optional)
min number of operators	1

### Procedure

**! Risk of crushing injury**  
Always hold Syva Base by the handle.

Secure Syva Base on the bottom of Syva Low and stack Syva on top.

**! Store plates and unused screws in Syva Cov.**





## APPENDIX A: Mounting a truss clamp on Syva Wall

type of deployment	flown
rigging accessories	Syva Wall
tools	wrench
additional material	Truss clamp
	M10 bolt with thread-locking device or sealant
min number of operators	1

### About this task

Syva Wall can be fitted with a truss clamp to mount Syva on a truss bridge.

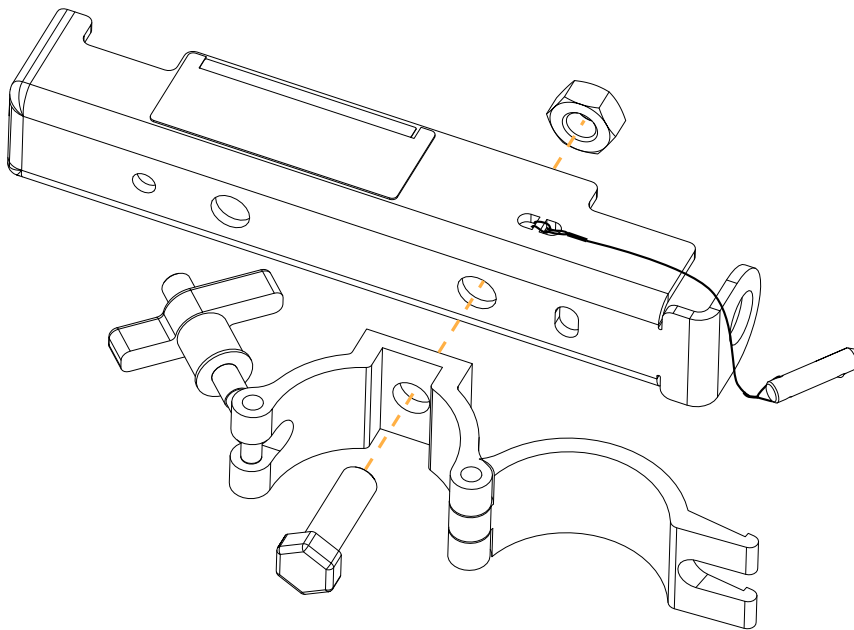
### Exploded view



Follow the clamp manufacturer's recommendations on maximum torque.

Mount the truss clamp on the base using one of the two M10 holes.

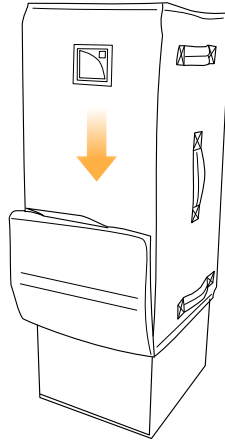
Refer to [Wall-mounting Syva](#) (p. 18) for subsequent steps.



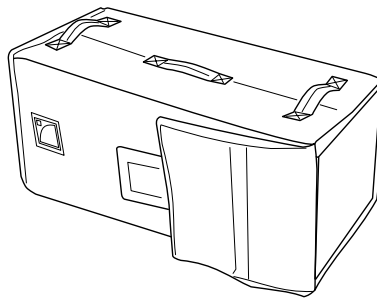
## APPENDIX B: Storing Syva Low / Syva Sub in SyvaLF Cov

### Procedure

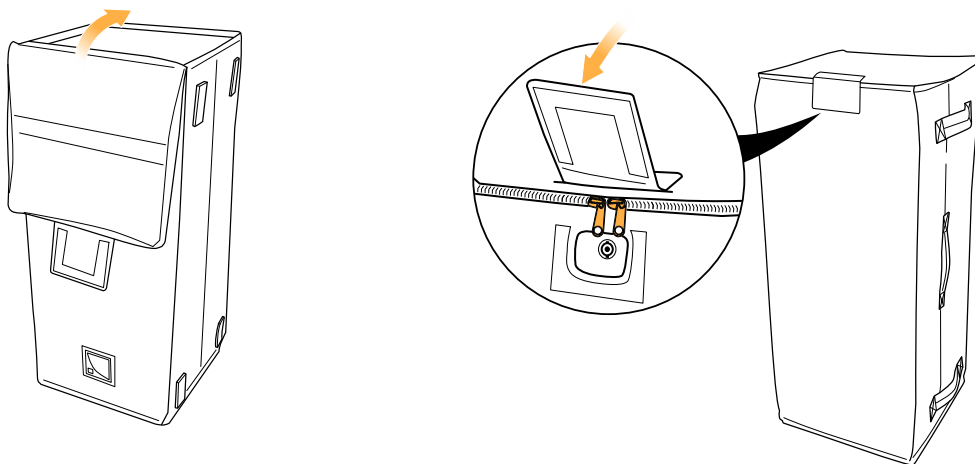
1. Put the cover on the upright subwoofer with the logo on the front.



2. Tilt the subwoofer to the side using the handles.



3. Tilt the subwoofer upside-down and close the zipper and the flap.  
Cover the zipper tabs with the flap.



# Specifications

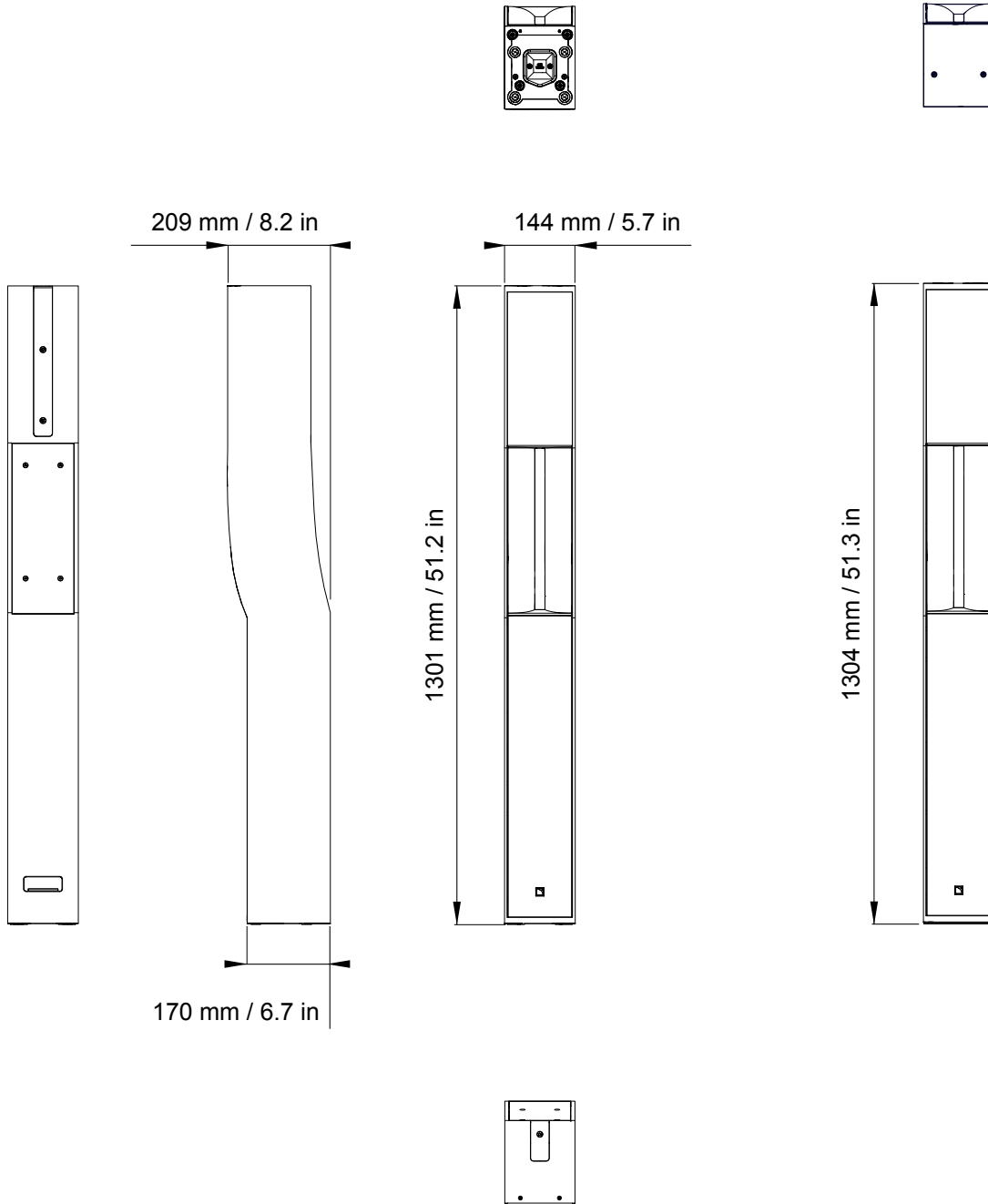
## Syva specifications

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<b>Description</b>	2-way-passive enclosure: 6 x 5" LF + 3 x 1.75" HF diaphragm, amplified by LA4X / LA8 / LA12X
<b>Usable bandwidth (-10 dB)</b>	87 Hz - 20 kHz ([SYVA])
<b>Maximum SPL<sup>1</sup></b>	137 dB ([SYVA])
<b>Nominal directivity</b>	vertical: +5°/-21° in J shape (> 1 kHz) horizontal: 140° (>1 kHz)
<b>Transducers</b>	MF: 6 x 5" HF: 3 x 1.75", compression driver
<b>Acoustical load</b>	MF: bass-reflex, L-Vents HF: DOSC, L-Fins
<b>Nominal impedance</b>	8 Ω
<b>Connectors</b>	IN: 4-point speakON and screw terminal AutoConnect
<b>Rigging and handling</b>	DIN580-compatible M8 threaded insert for secondary safety 2 integrated inserts for rigging accessory
<b>Weight (net)</b>	21 kg / 46 lb
<b>Cabinet</b>	first grade Baltic beech and birch plywood
<b>Front</b>	steel grill with anti-corrosion coating acoustically neutral 3D fabric
<b>Finish</b>	fine grain dark grey brown Pantone 426C pure white RAL 9010 custom RAL code on special order
<b>IP</b>	IP54

<sup>1</sup> Peak level measured at 1 m under free field conditions using pink noise with crest factor 4 (preset specified in brackets).

## Syva dimensions

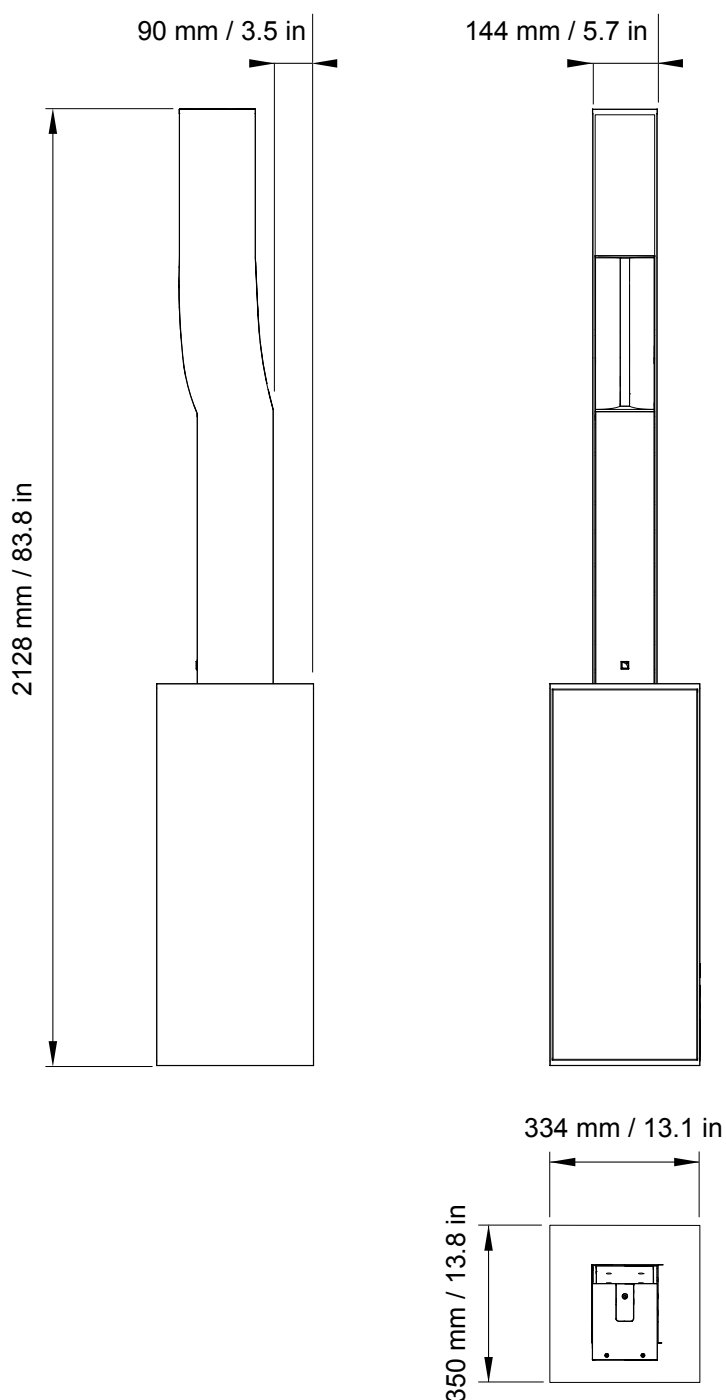


## Syva on Syva Low specifications

<b>Description</b>	hybrid configuration, amplified by LA4X / LA8 / LA12X
<b>Usable bandwidth (-10 dB)</b>	40 Hz - 20 kHz ([SYVA LOW SYVA])
<b>Maximum SPL<sup>1</sup></b>	142 dB ([SYVA LOW SYVA])
<b>Connectors</b>	IN: 4-point speakON
<b>Weight (net)</b>	50 kg / 110 lb

<sup>1</sup> Peak level at 1 m under half space conditions using pink noise with crest factor 4 (preset specified in brackets).

## Syva on Syva Low dimensions

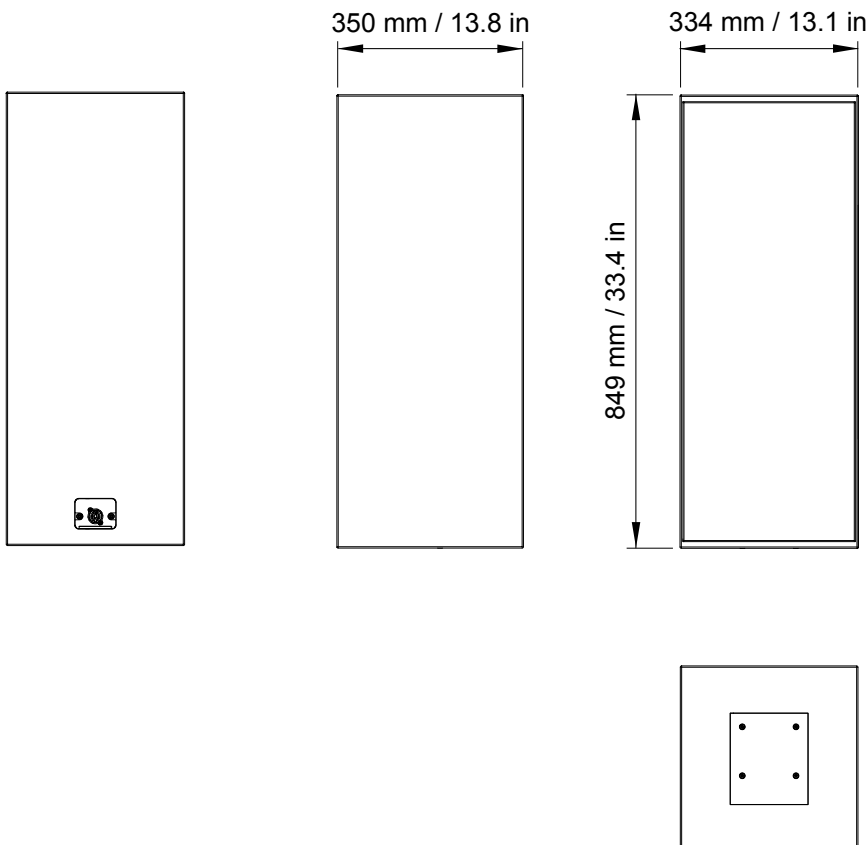


## Syva Low specifications

<b>Description</b>	High power low frequency subwoofer: 2 x 12" LF, amplified by LA4X / LA8 / LA12X
<b>Low frequency limit (-10 dB)</b>	40 Hz ([SYVA LOW_100])
<b>Maximum SPL<sup>1</sup></b>	137 dB ([SYVA LOW_100])
<b>Transducers</b>	LF: 2 x 12"
<b>Acoustical load</b>	bass-reflex, L-Vents
<b>Nominal impedance</b>	4 Ω
<b>Connectors</b>	IN: 4-point speakON AutoConnect
<b>Weight (net)</b>	29 kg / 64 lb
<b>Cabinet</b>	first grade Baltic beech and birch plywood
<b>Front</b>	steel grill with anti-corrosion coating acoustically neutral 3D fabric
<b>Finish</b>	fine grain dark grey brown Pantone 426C pure white RAL 9010 custom RAL code on special order
<b>IP</b>	IP55

<sup>1</sup> Peak level at 1 m under half space conditions using pink noise with crest factor 4 (preset specified in brackets).

## Syva Low dimensions

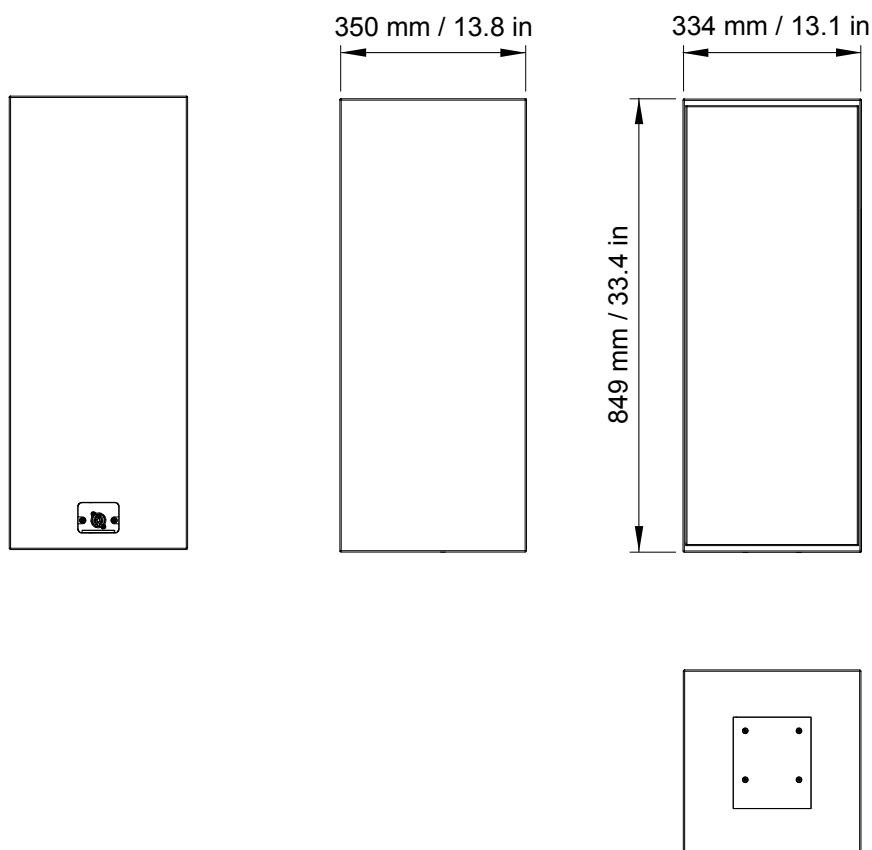


## Syva Sub specifications

<b>Description</b>	Infra low frequency subwoofer: 1 x 12" LF, amplified by LA4X / LA8 / LA12X
<b>Low frequency limit (-10 dB)</b>	27 Hz ([SYVA SUB_100])
<b>Maximum SPL<sup>1</sup></b>	128 dB ([SYVA SUB_100])
<b>Transducers</b>	LF: 1 x 12"
<b>Acoustical load</b>	bass-reflex, L-Vents
<b>Nominal impedance</b>	8 $\Omega$
<b>Connectors</b>	IN: 4-point speakON AutoConnect
<b>Weight (net)</b>	27 kg / 60 lb
<b>Cabinet</b>	first grade Baltic beech and birch plywood
<b>Front</b>	steel grill with anti-corrosion coating acoustically neutral 3D fabric
<b>Finish</b>	fine grain dark grey brown Pantone 426C pure white RAL 9010 custom RAL code on special order
<b>IP</b>	IP55

<sup>1</sup> Peak level at 1 m under half space conditions using pink noise with crest factor 4 (preset specified in brackets).

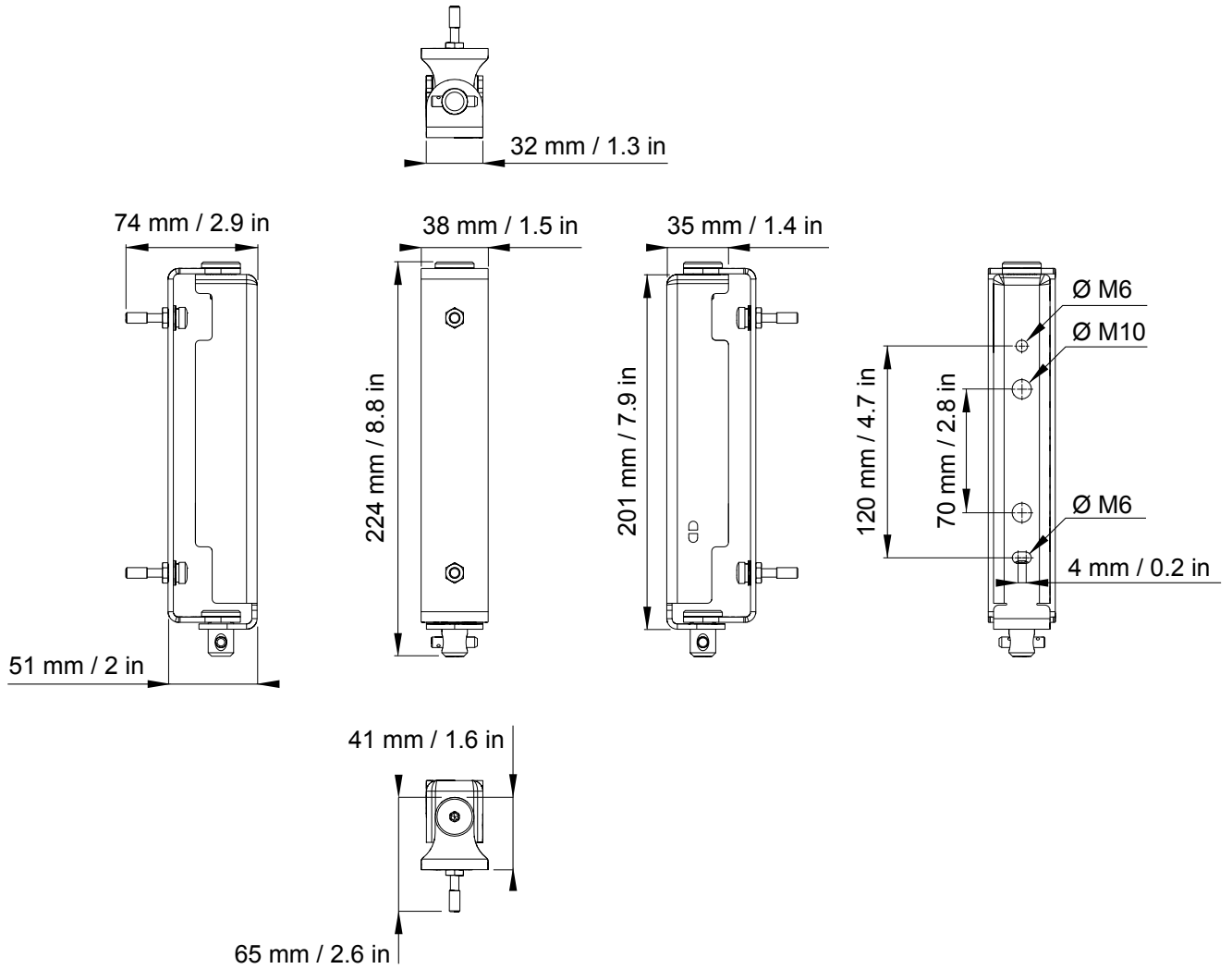
## Syva Sub dimensions



## Syva Wall specifications

<b>Description</b>	Wall-mount for Syva
<b>Weight (net)</b>	0.72 kg / 1.6 lb
<b>Material</b>	high grade steel with anti-corrosion coating

### Syva Wall dimensions



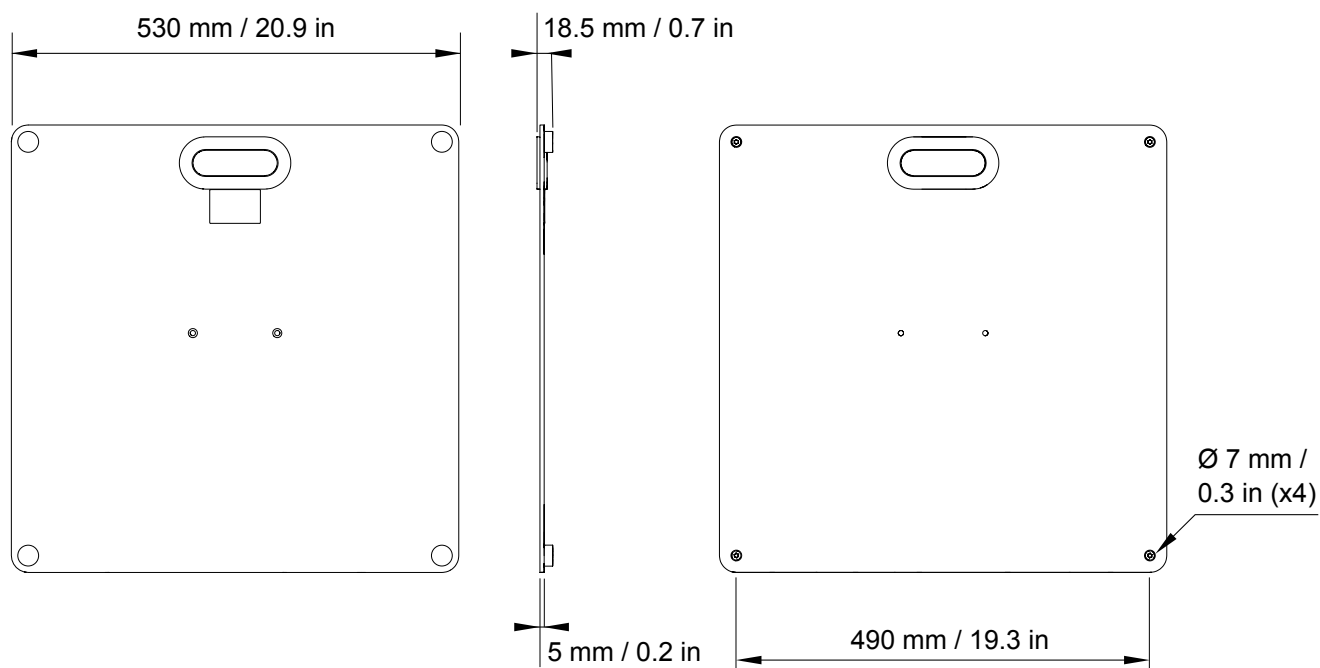


## Syva Base specifications

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<b>Description</b>	Baseplate for Syva system
<b>Weight (net)</b>	11 kg / 24 lb
<b>Material</b>	high grade steel with anti-corrosion coating

## Syva Base dimensions

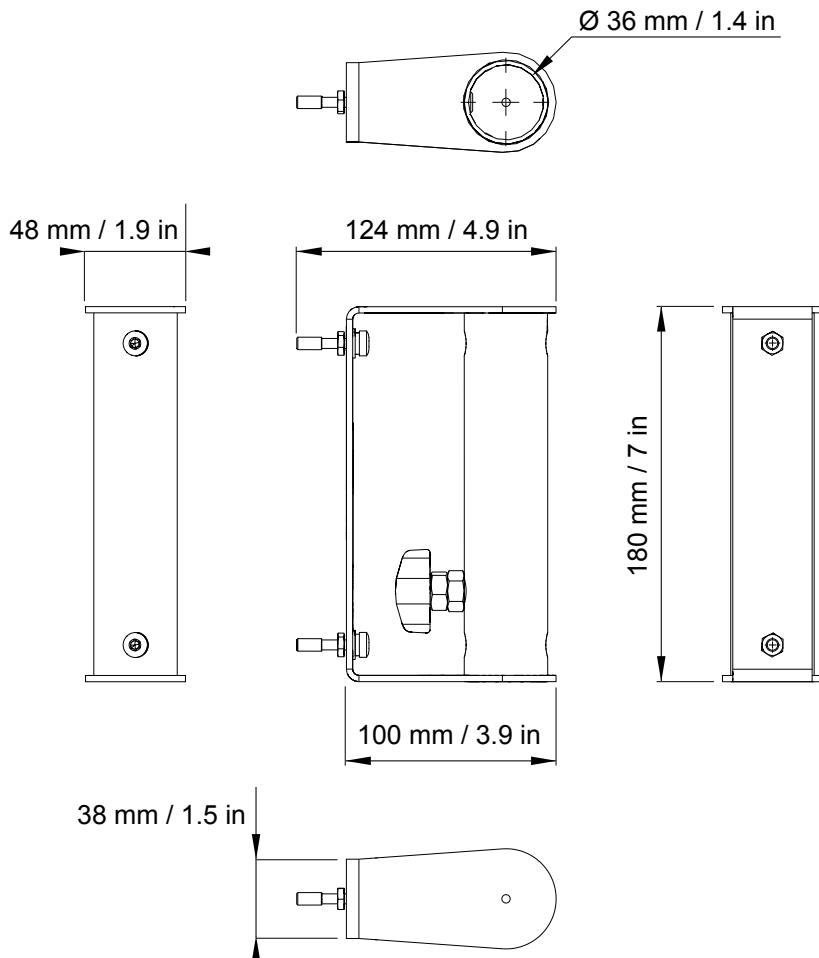


## Syva Pole specifications

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<b>Description</b>	Pole-mount adapter for Syva
<b>Weight (net)</b>	0.8 kg / 1.8 lb
<b>Material</b>	high grade steel with anti-corrosion coating

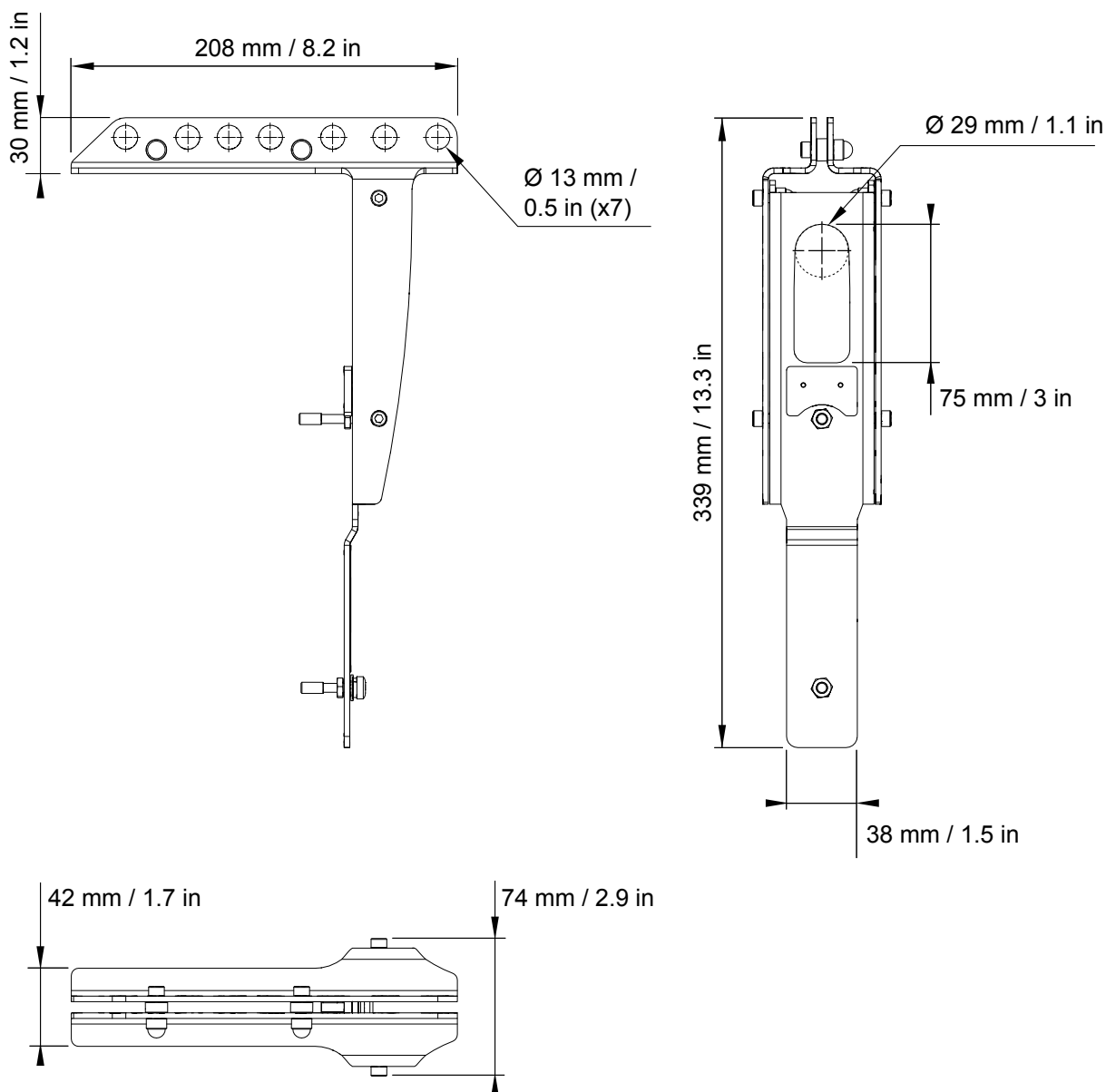
## Syva Pole dimensions



## Syva Bar specifications

<b>Description</b>	Rigging bar for Syva 1 x Ø12 mm shackle WLL 1 t
<b>Weight (net)</b>	1.3 kg / 2.9 lb
<b>Material</b>	high grade steel with anti-corrosion coating

## Syva Bar dimensions





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