



# Ball-jointed handrail system

Infinitely variably  
adjustable ball joint  
from 0° to 270°

Top quality material  
and finish

Fast and simple  
installation

**KHS**  
**vormatic**





# BALL-JOINTED HANDRAIL SYSTEM

**KHS**  
**vormatic**

**Perfect in its details –  
exacting in its entirety**

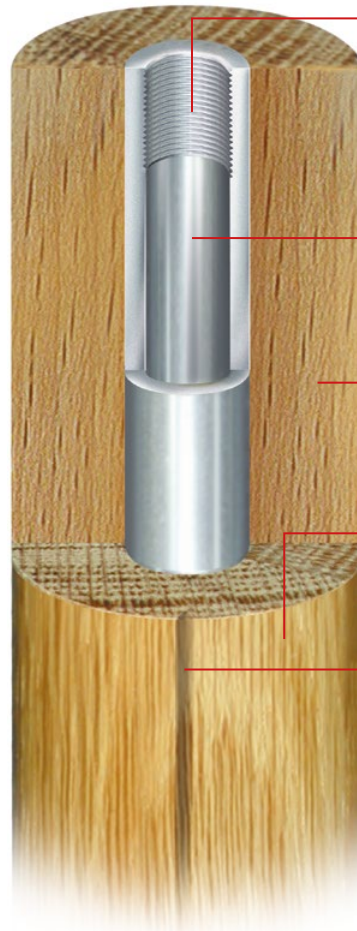
**vormatic KHS** - the high-quality hand-rail system for wall installation, featuring state-of-the-art technical characteristics that simplify the routing and installation. Precision-machined components and handrails for fitting accuracy and dimensional stability within a minimal tolerance range.

**Fascinating design options with stainless steel ball joints as system accessories for use as flexible connecting elements for wooden or stainless steel handrails, or for combining wood and stainless steel.**

**Wooden handrail with aluminium tubing as core insert.**

The aluminium core of the wooden handrail is a key element of the system that allows the handrail supports to be effortlessly and reliably connected to the handrail or routing and connecting pieces.

The wooden handrail is also stabilised and protected against deformation by the aluminium core. Greater flexural strength permits a wider spacing between the handrail supports.



**Inside thread**

for professional installation and secure fitting of the individual components.  
(For cutting threads please use our art. no. **Art.-Nr. 006047000**)

**Aluminium core**

stabilises the handrail, protects against deformation, and enables firm fitting of the handrail support.

**Wooden handrail**

made from high-quality, selected solid wood characterises the overall attractive visual impression.

**Surface sealing**

with high-resistance UV lacquer.

**Guide groove**

simplifies precise installation of the handrail supports.

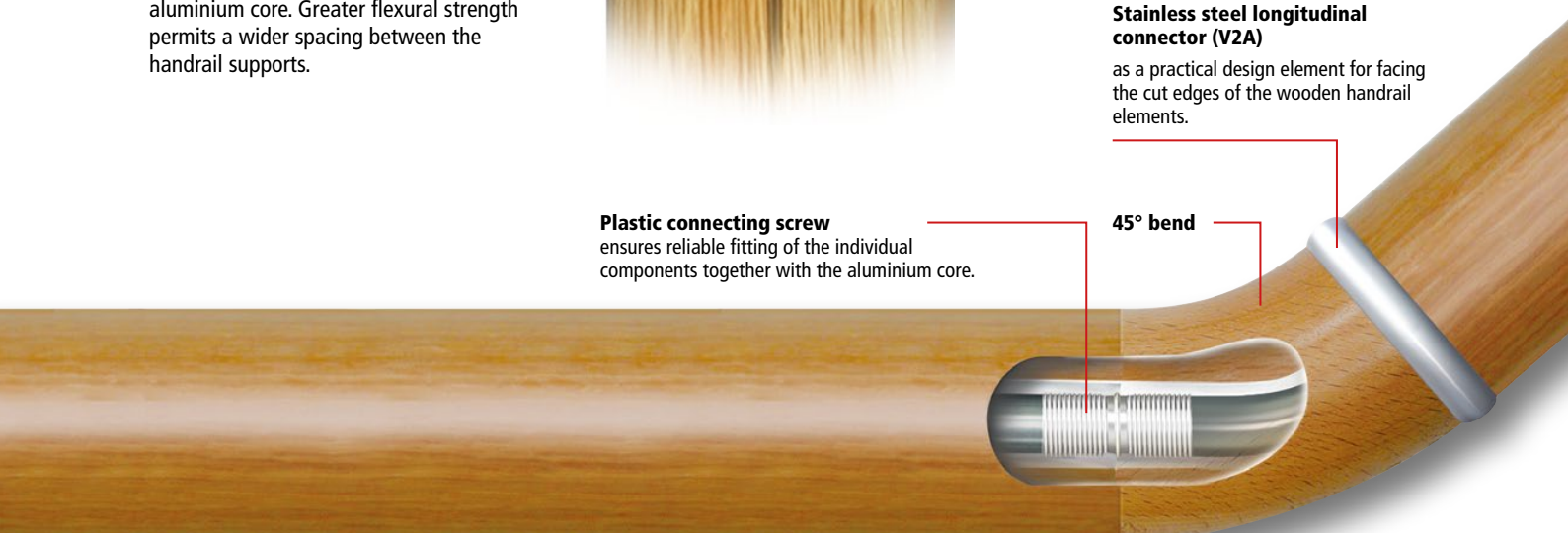
**Stainless steel longitudinal connector (V2A)**

as a practical design element for facing the cut edges of the wooden handrail elements.

**Plastic connecting screw**

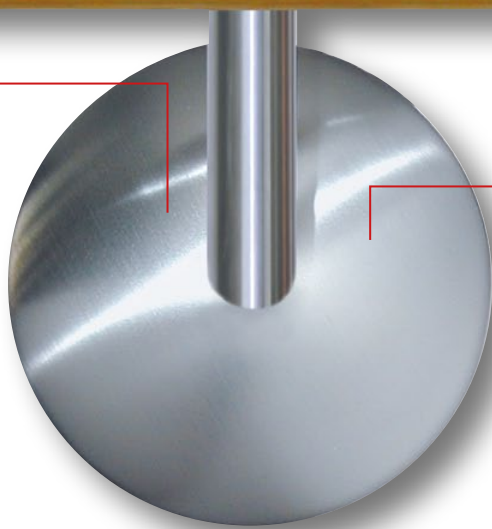
ensures reliable fitting of the individual components together with the aluminium core.

**45° bend**



**Stainless steel handrail support (V2A)**

The handrail support enables fully concealed mounting of the handrail on the underlying material.



**Wall mounting of the handrail supports for stainless steel and wooden handrails**

- Mark and drill holes for wall mounting of the handrail supports.
- Use the appropriate fastening material (screws / dowels) depending on the wall condition.

# Stainless steel joint system

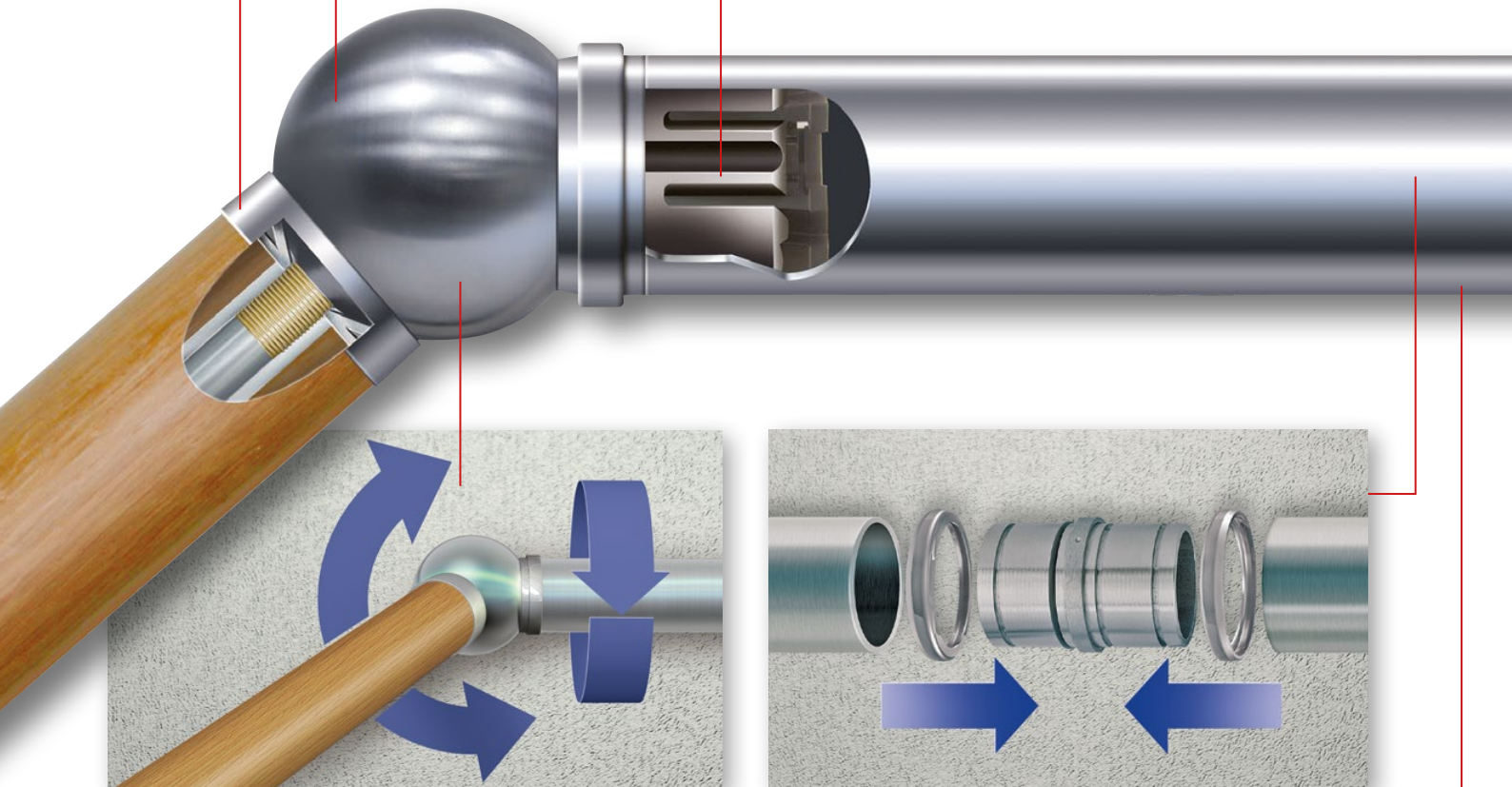
## Stainless steel rosette (V2A)

For a positive-locking connection of the wooden handrail with a ball joint or end ball.

## Coupling piece for stainless steel handrails

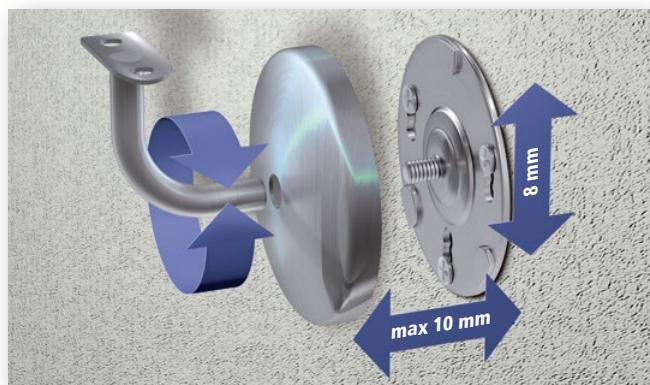
## Stainless steel joint ball (V2A)

The stainless steel ball joint enables an infinitely variable change of direction of the connected handrails in a 3D direction. This offers significant assembly benefits for the installer, especially on staircases with differing gradient angles.

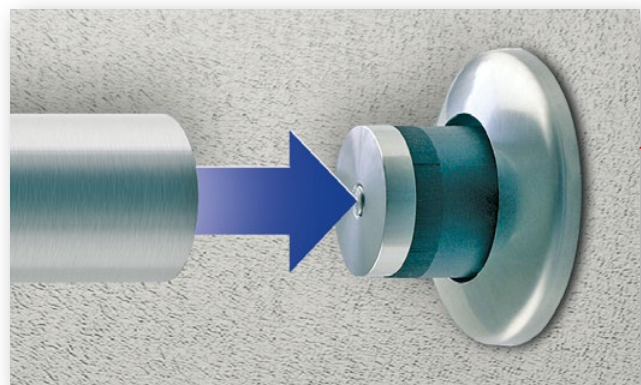


The large freedom of adjustment of the stainless steel ball joint allows for an infinitely variable adaptation to architecturally defined courses of walls and stairways from  $0^{\circ}$  -  $270^{\circ}$  - with just one component.

**Longitudinal connector plus optional cover ring for stainless steel handrails** for straight wall or stair courses as an alternative to the coupling piece plus ball joint.



**For uneven walls**, we recommend using our adjustable handrail supports. These allow imprecisions and differences to be easily readjusted (art. no. 006010090RF).



**Wall fastening for stainless steel handrails** give additional stability when the handrail ends at a wall.

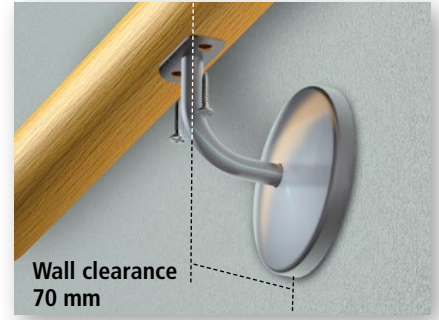


# HANDRAIL PLANNING / ASSEMBLY

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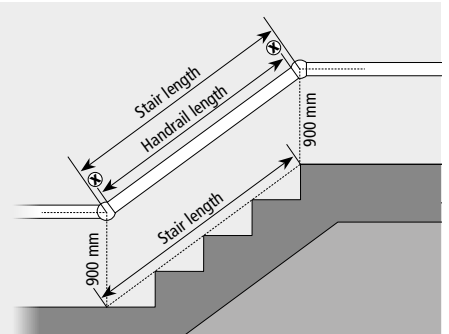
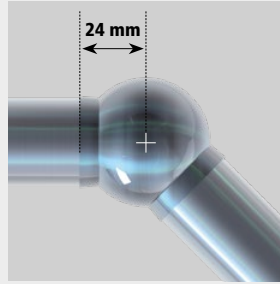
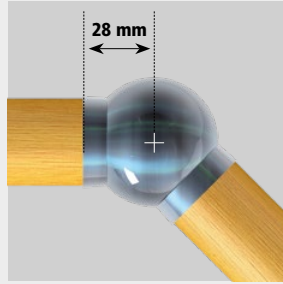
Measure the course of your wall and then sketch a floor plan.  
 Plan your handrail system with all the individual components.  
 Enter the required handrail lengths and the individual components in the parts list as a purchasing aid.  
 Plan for approx. 1.5 handrail supports per linear metre on straight sections, as well as before and after each change of direction.  
 The bends have fixed directional specifications. The stainless steel ball joint can be used universally.

When measuring and cutting the handrails to length, take into account the required wall clearance and the dimensions of the individual components.  
 The wall clearance and installation dimensions of the individual components give the length of the handrail (see illustration).  
 Please measure again after each change of direction as the slightest tolerances can add up. The length of the handrail changes depending on the degree of downward angling.



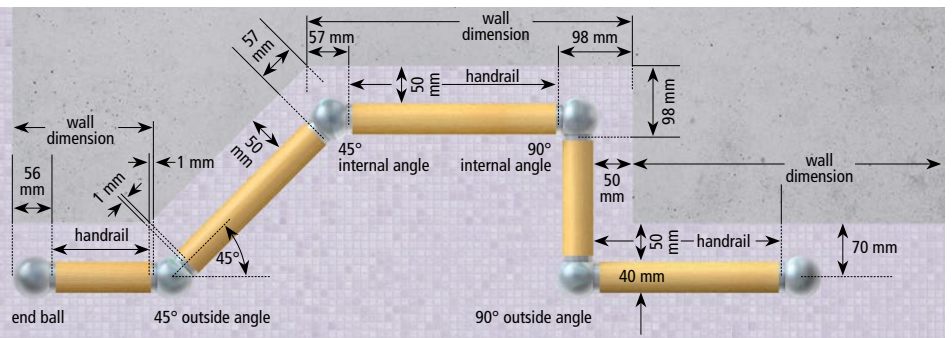
## Example of a stair course:

The dimension of the stairs from the top step edge to the floor minus dimension  $\textcircled{X}$  at both ends for the ball joint gives the length of the handrail.



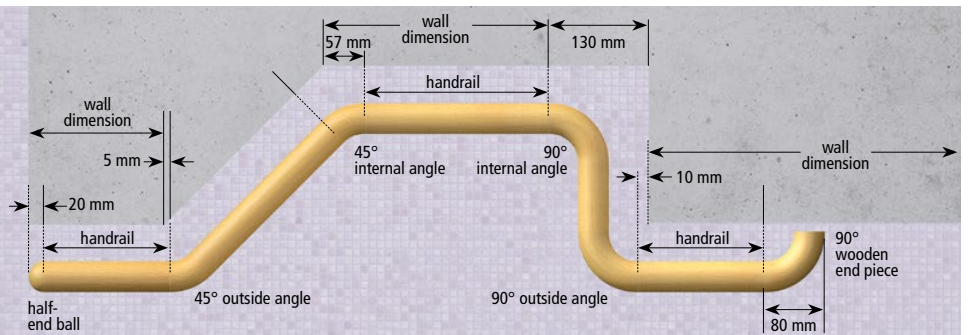
## Example of a wooden handrail:

Stairs and straight wall handrail (storey handrail) with stainless steel joint balls (V2A)



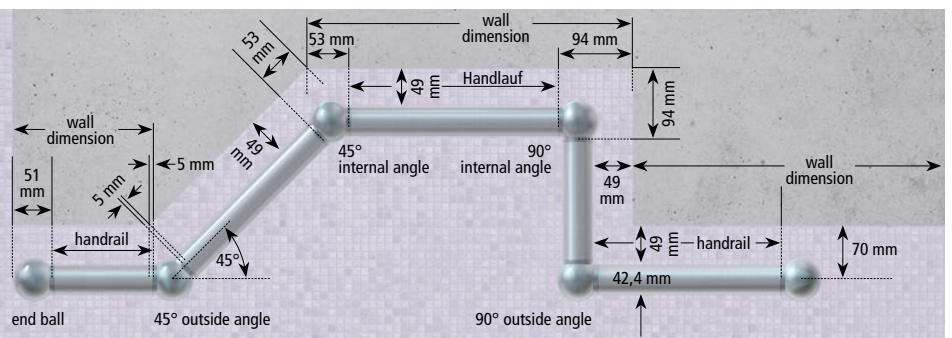
## Example of a wooden handrail:

Straight handrail (storey handrail) with wooden bends and end pieces



## Example of a stainless steel handrail:

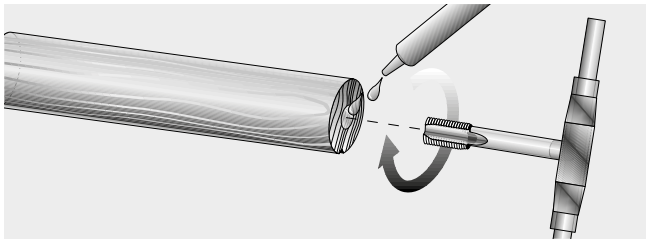
Stairs and straight wall handrail (floor handrail) with stainless steel ball joints (V2A)



**Note:** Ensure firm fitting of the construction in the wall as only a stable wall anchoring ensures optimum safety. The processing instructions of the dowel manufacturers apply here. The statutory regulations for the construction of handrails must be observed.

**Important!** Stainless steel must not be used in conjunction with normal iron. Tools with which iron or steel has been processed must not be used.

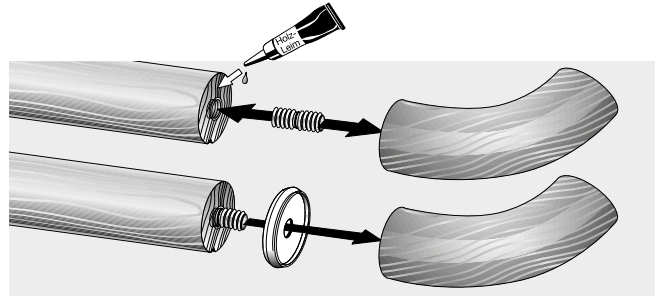
## Wooden handrail



### Wooden handrail

- Cut the handrails to length (right-angled, clean cut with a fine-toothed crosscut saw).

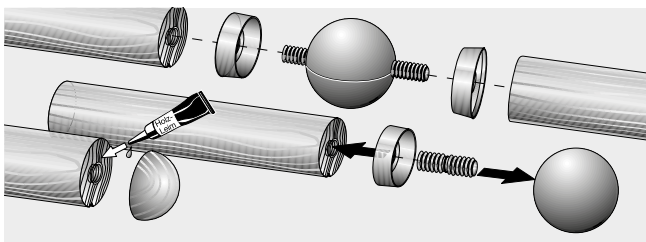
- Cut the inside threads on both handrails using a screw tap from our programme, M10 x 0.75 mm **(be sure to use cutting oil)**.



### Installation with wooden bends

Screw the plastic connecting screws into the inside threads. Coat cut surfaces with wood glue. Tighten and align the wooden bends. Sand and repaint any transitions. Alternatively,

a longitudinal connector can be used between the handrail and the bend, or between two straight handrails, to face the cut edges or as a design element (in this case, please use only the brass connecting screws).



### Stainless steel ball joint

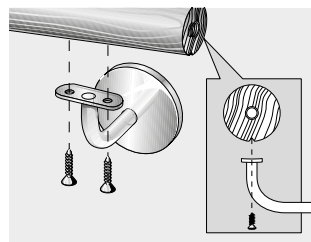
Insert a stainless steel rosette on the end of the handrail. Slightly screw in the ball joint, align and tighten it.

### Wooden half-end ball

Coat cut surfaces with wood glue and press on firmly, if necessary fix in position with adhesive tape.

### Stainless steel end ball

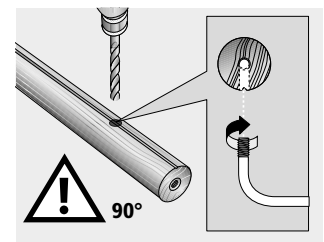
Insert a stainless steel rosette on the end of the handrail. Screw in the end ball firmly with a brass connecting screw and align it.



### Determining the mounting position on the handrail and wall

#### Method 1:

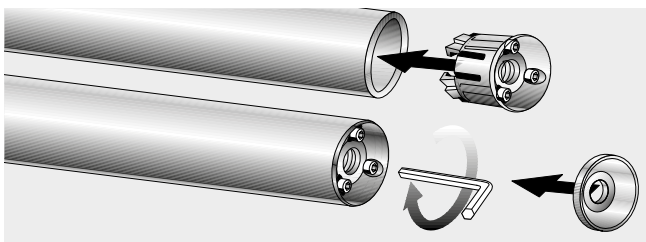
Screw the **handrail support with support** in the groove of the handrail (countersunk screw 3.5 x 25 mm).



#### Method 2:

Drill and countersink a vertical hole 7 mm deep in the groove of the handrail (recommendation: drill press). Then screw the **handrail support with threaded pin** into the hole.

## Stainless steel handrail



### Stainless steel handrail

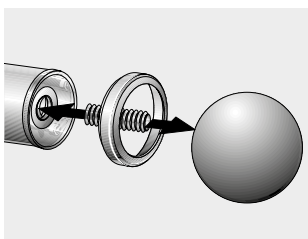
- Cut the handrails to length (right-angled, clean cut with a suitable crosscut saw).
- For a change in direction, press the coupling piece for the ball joint into the handrail as far as possible (joint tight).

- Tighten the included screws with an Allen key (4 mm)
- Fit the included ball shell

### Use a ball joint for every change of direction.

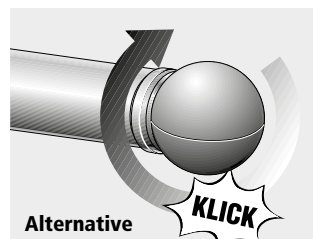
Screw in the ball joint until it makes firm, joint-tight contact. Then turn it further until the resistance stops (click) and the ball joint moves freely (it cannot be removed afterwards)

For uneven cuts, we recommend using our cover ring (**art. no. 006001045RF**), see drawing above and below.



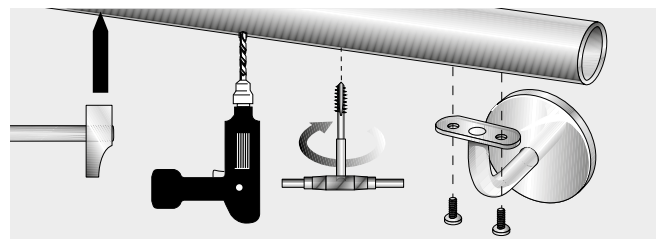
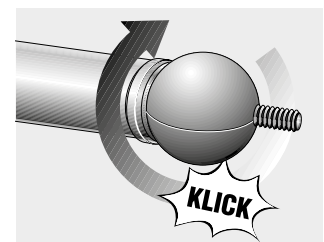
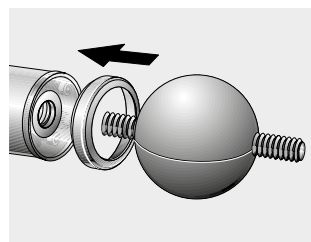
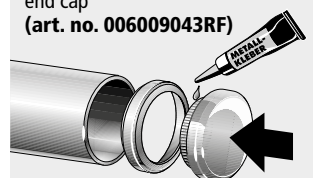
### Stainless steel end ball

- Screw a brass connecting screw into the stainless steel end ball. Otherwise, use the same assembly procedure as for stainless steel ball joints.



### Alternative to end ball:

end cap (**art. no. 006009043RF**)



### Handrail support

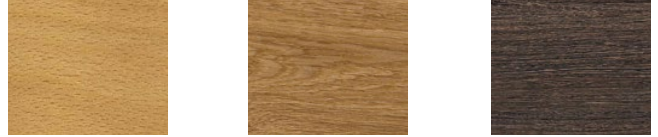
- Determining the mounting position on handrail and wall.
- Centre-punch the stainless steel handrail

- Pre-drill with 3.3 mm bit
- Cut thread (M4)
- Screw handrail support to handrail (stainless steel oval head screws M4 x 10 mm)



# HANDRAIL SYSTEM

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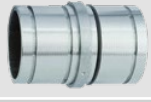







Beech

Oak

Oak, wenge-coloured

article	art. no.	quantity
<b>Handrail Ø 40 x 1500 mm</b> Beech, lacquered Oak, lacquered Oak, wenge-coloured, lacquered	(PU = 5) 006000150BU 006000150E 006000150EW	
<b>Handrail Ø 40 x 2250 mm</b> Beech, lacquered Oak, lacquered Oak, wenge-coloured, lacquered	(PU = 5) 006000225BU 006000225E 006000225EW	
		
<b>Handrail tube V2A</b> sanded, grain 240 material thickness 2.0 mm Ø 42.4 x 1500 mm Ø 42.4 x 2000 mm Ø 42.4 x 4000 mm	(PU = 5)  006000150RF 006000200RF 006000400RF	
		
<b>Rosette for wooden handrails, stainless steel, Ø 40 mm</b> for a positive connection between the wooden handrail and ball joint or end ball	(PU = 10) 006001040RF (2 pieces) 006001041RF (1 piece)	
		
<b>Longitudinal connector for wooden handrails, stainless steel, Ø 40 mm</b> for facing cut edges of wooden handrail elements or as a design element	(PU = 10) 006002040RF (2 pieces) 006002041RF (1 piece)	
		
<b>Bend, 45°, Ø 40 mm</b> Beech, lacquered Oak, lacquered Oak, wenge-coloured, lacquered	(PU = 8) 006003045BU 006003045E 006003045EW	
		
<b>Bend, 90°, Ø 40 mm</b> Beech, lacquered Oak, lacquered Oak, wenge-coloured, lacquered	(PU = 8) 006004090BU 006004090E 006004090EW	
		
<b>End piece, 90°, Ø 40 mm</b> Beech, lacquered Oak, lacquered Oak, wenge-coloured, lacquered	(PU = 8) 006008090BU 006008090E 006008090EW	
		
<b>Half end ball, Ø 40 mm, 2 pcs.</b> Beech, lacquered Oak, lacquered Oak, wenge-coloured, lacquered	(PU = 8) 006009000BU 006009000E 006009000EW	
		
<b>Coupling piece with stainless steel ball shell for stainless steel handrails, Ø 42.4 mm</b> for fixing ball joint or end ball (with unscrewing lock)	(PU = 8) 006001043RF	
		
<b>Cover rings for stainless steel handrails, Ø 45 mm, 2 pieces</b> for facing uneven cut edges in conjunction with coupling piece (art. no. 006001043RF) and as a design element	(PU = 5) 006001045RF	
		

article	art. no.	quantity
<b>Ball joint, stainless steel, Ø 55 mm</b> incl. brass screw for wooden and stainless steel handrails	(PU = 6) 006005000RF	
		
<b>End ball, stainless steel, Ø 55 mm</b> for wooden and stainless steel handrails	(PU = 5) 006009055RF	
		
<b>End stoppers</b> for stainless steel handrails	(PU = 10) 006009041RF (1 piece) 006009043RF (2 pieces)	
		
<b>Wall bracket</b> for stainless steel handrails	(PU = 1) 006025000RF	
		
<b>Longitudinal joint</b> for stainless steel handrails	(PU = 10) 006002038RF	
		
<b>Handrail support, adjustable height and depth</b> with support, stainless steel, Ø 75 mm	(PU = 8) 006010090RF	
		
<b>Handrail support, fixed</b> with support, Ø 75 mm  stainless steel  stainless steel, bulk pack  white aluminium  white  galvanized	(PU = 8) 006011090RF  (PU = 50) 006011090RG  (PU = 8) 006011090WA  (PU = 8) 006011090W  (PU = 8) 006011090Z	
		
<b>Handrail support, stainless steel, adjustable height and depth, straight</b> with support, Ø 75 mm, for mounting on balustrades or similar	(PU = 8) 006017000RF	
		
<b>Handrail support, stainless steel, fixed</b> with support, Ø 47 mm, for narrow wall supports or as an optical alternative	(PU = 16) 006012090RF	
		
<b>Handrail support 90°, stainless steel, fixed</b> with support, without cover rosette, Ø 75 mm	(PU = 8) 006111090RF	
		

Subject to changes to the technical and aesthetic design.

Wood is a natural product. Our wooden products may therefore occasionally have colour variations and growth-related irregularities.

# HANDRAIL SYSTEM



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article	art. no.	quantity
<b>Handrail support, 90°, stainless steel, adjustable height</b> with support and anchor bolt, Ø 75 mm	(PU = 8) 006013090RF	
<b>Handrail support 90°, stainless steel, fixed, with clamp</b> for wooden handrails, Ø 40mm	(PU = 8) 006030090RF	
for stainless steel handrails, Ø 42.4 mm	(PU = 8) 006032090RF	
<b>Handrail support 90°, stainless steel, fixed</b> with self-tapping threaded pin, M8, Ø 75 mm	(PU = 8) 006021090RF	
bulk pack	(PU = 50) 006021090RG	
<b>Handrail support 90°, stainless steel, adjustable height and depth</b> with self-tapping threaded pin, M8, Ø 75 mm	(PU = 8) 006020090RF	
<b>Handrail support straight, stainless steel, adjustable</b> with self-tapping threaded pin, M8, Ø 75 mm, for mounting on balustrades or similar	(PU = 8) 006027000RF	
<b>Handrail support 90°, stainless steel, fixed</b> with self-tapping threaded pin, M8, Ø 47 mm	(PU = 16) 006022090RF	
<b>Handrail support 90°, stainless steel, fixed</b> without cover rosette, with self-tapping threaded pin, M8, Ø 75 mm.	(PU = 8) 006121090RF	
<b>Handrail support (repair support), fixed, with support</b> Ø 75 mm	(PU = 10)	
galvanized	000350001Z*	
brown	000350001B*	
white	000350001W*	

\* Repair supports are not part of the handrail system!

The specified packaging units (PU) apply as retailer information

article	art. no.	quantity
<b>Extension, stainless steel, 2 pieces</b> with self-tapping threaded pin, Ø 12 x 50 mm for adjustable handrail supports	(PU = 8) 006040050RF	
<b>Connecting screws, brass</b> M10 x 0.75 x 35 mm for connecting wooden and stainless steel elements with stainless steel end ball	(PU = 8) 006043000 (4 pieces) 006043002 (2 pieces)	
<b>Connecting screws, plastic</b> M10 x 0.75 x 25 mm for connecting wooden elements	(PU = 8) 006042000 (4 pieces) 006042002 (2 pieces)	
<b>Oval head screws, stainless-steel, M4 x 10 mm, 20 pieces</b> for mounting stainless steel handrail on handrail supports	(PU = 8) 006045000RF	
<b>Countersunk screws, stainless steel, 3.5 x 25 mm, 20 pieces,</b> for mounting a wooden handrail on handrail supports	(PU = 8) 006044000RF	
<b>Screw tap, M10 x 0.75 mm</b> for cutting threads into the aluminium core of wooden handrails	(PU = 8) 006047000	
<b>Drill bit Ø 3.3 mm</b> for drilling core holes of M4 threads into stainless steel handrails, for attaching to handrail supports	(PU = 8) 006051000	
<b>Screw tap M4</b> for cutting threads into a stainless steel handrail for securing the handrail supports	(PU = 8) 006046000	

## Information about the used stainless steel:

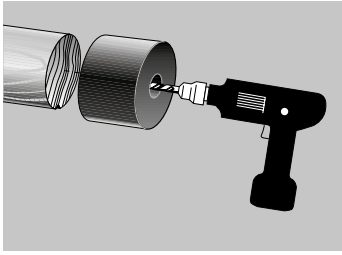
Stainless steel is one of the highest quality, most durable and eco-friendliest metals. With proper care, it will give you pleasure for many years. Our system can also be used outdoors. In this case, however, please note that it may eventually rust under certain conditions, for example due to exposure to salty air with a high humidity content in coastal areas or to severe air pollution in industrial regions, or when used near busy roads. It is therefore advisable to clean the surface more or less frequently (depending on the local ambient conditions) using either a commercially available cleaning agent for stainless steel or alternatively mild washing-up liquid.

**Important:** Do not use chlorinated water as chlorine causes corrosion! There is also a risk of corrosion if stainless steel comes into contact with iron or steel. Therefore, never use any tools for the installation that have previously been used for working with iron or steel.

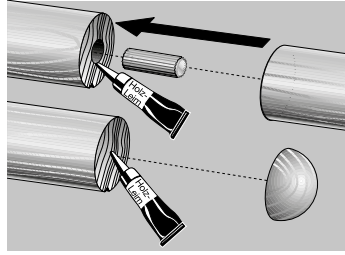
For our handrail system we use V2A steel\*\*, which we recommend primarily for indoor use.

\*\* Products made of V4A are available on request when ordering an appropriate quantity.

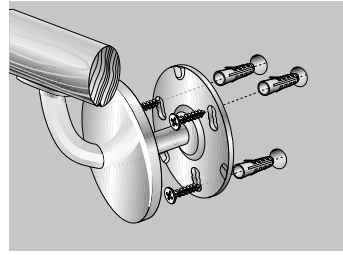
# SOLID WOOD HANDRAIL SYSTEM



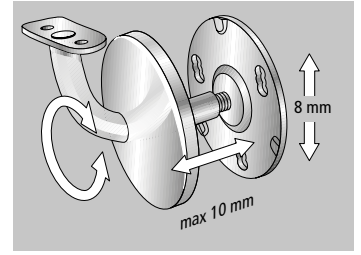
1. The holes can be precisely centred using the drilling template (art. no. 006046000)



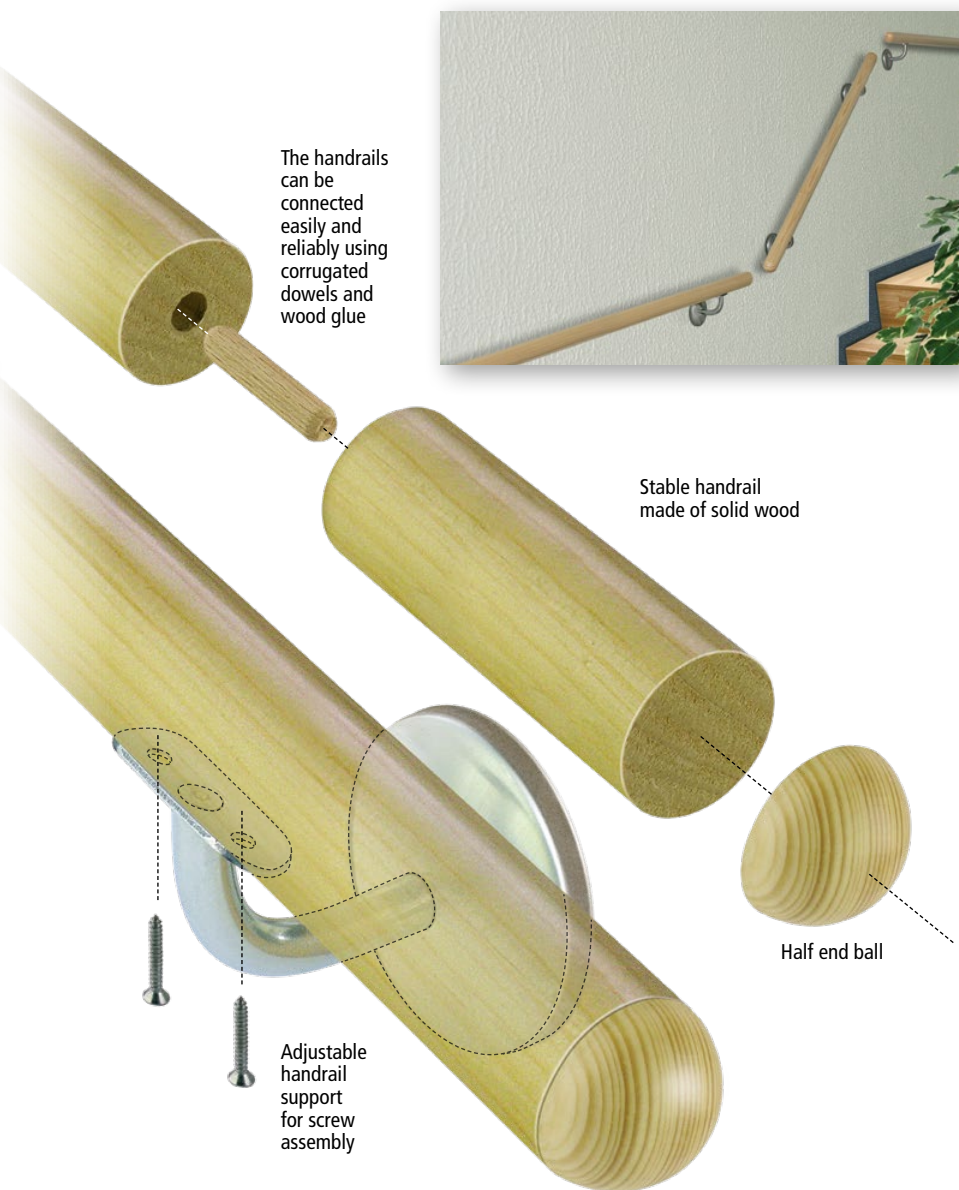
2. We recommend using commercially available wood glue for joints between two handrails or handrails and half end balls. **Additional tip: For a stable connection between two handrails, please place one handrail support respectively at a distance of about 15 cm from the joint.**



3. Mark and drill drilling points for wall mounting of the handrail supports. Use the appropriate fastening material (screws / dowels) depending on the wall condition.



4. For uneven walls, we recommend using our adjustable handrail supports. These allow imprecisions and differences to be easily readjusted (art. no. 006010090RF).



article	art. no.
<b>Handrail, beech, lacquered, Ø 40 x 1500 mm</b>	(PU = 5) 006000151BU
<b>Ø 40 x 2250 mm</b>	006000226BU
<b>Handrail, spruce, lacquered, Ø 40 x 1500 mm</b>	(PU = 5) 006000151FI
<b>Ø 40 x 2250 mm</b>	006000226FI
<b>Half end ball, beech, 2 pieces, lacquered, Ø 40 mm</b>	(PU = 8) 006009000BU
<b>Half end ball, spruce, 2 pieces, lacquered, Ø 40 mm</b>	(PU = 8) 006009000FI
<b>Wood corrugated dowel, beech, 8 pieces, Ø 10 x 50 mm</b>	(PU = 8) 006041000
<b>Drilling template for solid wood handrail Ø 40 mm, for precise centring of the drill holes</b>	(PU = 1) 006060000

