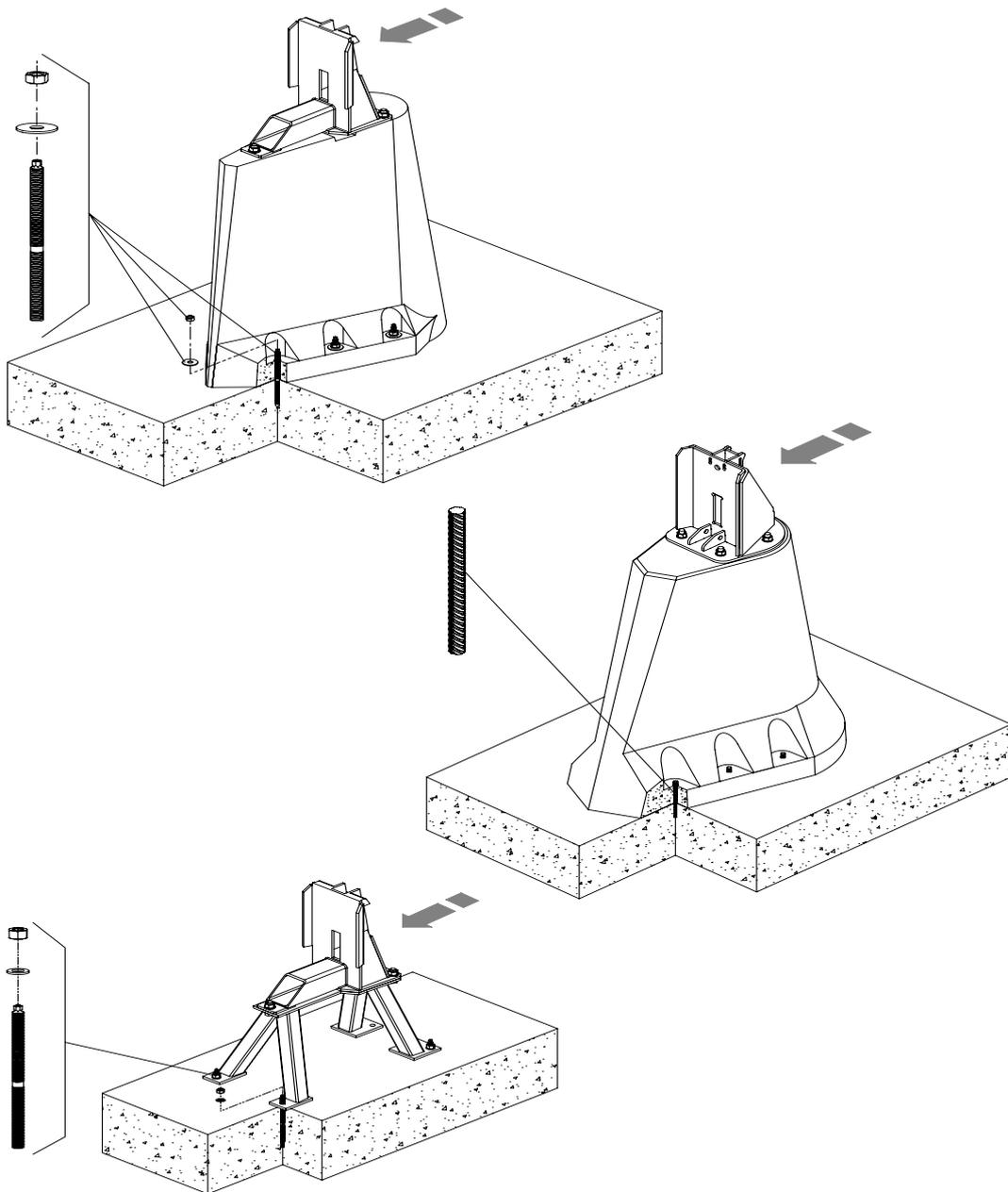


Concrete and Steel Pedestal for Flow Booster Type ABS SB 900 - 2500, XSB 900 - 2750



6005670 EN 01.2018



Installation Instructions

Translation of the Original Instructions

www.sulzer.com

Installation instructions

SB

Concrete pedestals

- for SB 900 - 1200 (version A + B), 400 mm high
- for SB 900 - 2000 (version A + B), 780 mm high
- for SB 900 - 2500 (version A + B), 1030 mm high
- for SB 900 - 2500 (version A + B), 2050 mm high

Steel pedestals

- for SB 900 - 2500 (version A + B), 380 mm high
- for SB 900 - 2500 (version A + B), 780 mm high
- for SB 900 - 2500 (version A + B), 1030 mm high

XSB

Concrete pedestals

- for XSB 900 M (version A + B), 400 mm high
- for XSB 900 - 2000 M (version A + B), 780 mm high
- for XSB 900 - 2500 M (version A + B), 1030 mm high
- for XSB 900 - 2500 M (version A + B), 2050 mm high
- for XSB 2750 LX (version A), 1200 mm high

Steel pedestals

- for XSB 900 M (version A + B), 380 mm high
- for XSB 900 - 2000 M (version A + B), 780 mm high
- for XSB 900 - 2500 M (version A + B), 1030 mm high

Contents

1	General	4
1.1	Introduction	4
2	Setup and assembly	4
2.1	Installation versions.....	4
2.2	Preparing for assembly	5
2.2.1	Shipment including concrete pedestal with M16 anchor rod (older design).....	6
2.2.2	Shipment including concrete pedestal with reinforcement D=14 mm (new design).....	7
2.2.3	Shipment including steel pedestal with HIT-V-R M16 x 200 anchor rods (new design).....	7
2.3	Concrete pedestal / steel pedestal fixing	8
2.3.1	Concrete pedestal with M16 anchor rod fixing (old design)	8
2.3.2	Concrete pedestal fixing with reinforcement D=14, L=220 (new design).....	10
2.3.3	Fixing the steel pedestal	12
3	Setup and assembly of the guide tube	14
3.1	Guide tube length.....	14
3.2	Guide tube fixing for holder	15

1 General

1.1 Introduction

These **installation instructions** and the separate **safety instructions** booklet include fundamental instructions and safety notes that must be observed during transport, setup, assembly and startup. For this reason it is essential that they are read by the fitter as well as specialist staff/operators responsible and must always be available at the location where the equipment/system is used.



Failure to observe safety notes highlighted with a general danger symbol could lead to personal danger.



Warnings for electric voltage are identified with this safety symbol.



This symbol warns of a potential explosion hazard.

ATTENTION *Refers to safety instructions where failure to observe could lead to danger to the unit and its functions.*

NOTE *Used for important information.*

References to figures, e.g. (3/2). The first digit refers to the figure number, the second digit to the item number in that figure.

2 Setup and assembly

When carrying out any maintenance or repair work, the safety rules governing work in enclosed areas of sewage treatment or pumping plants must be observed.



Observe the total weight of the unit! The lifting equipment, e.g. crane and chains, must have an adequate lifting capacity. The accident prevention regulations and general rules of engineering must be observed!



Do not stand or work in the swivel area of suspended loads!



The lifting hook height must take the total height of the unit and the length of the lifting chain into consideration!

ATTENTION *In order to ensure safe and sufficiently stable assembly of the concrete or steel pedestal, the fixing system supplied (for dynamic loading) must be used! If a different fixing system is to be used, the responsible Sulzer representation must be consulted in advance. In this case, verification from the manufacturer of the alternative fixing system must be presented and archived. Failure to observe this requirement will invalidate the warranty!*

2.1 Installation versions

The ABS flow booster is available in **two installation versions** with either a concrete or steel pedestal.

Version "A" (fixed installation)

In the case of this installation version, the guide tube and guide tube holder are firmly fixed to the structure. The coupling piece is already bolted to the pedestal. The guide tube must be assembled on site.

Version "B" (free-standing installation)

In the case of this installation version, the locking mechanism is integrated into the guide tube. The guide tube is manufactured at the factory to the correct length and fixed to the coupling piece. It is only necessary to screw the coupling piece and guide tube to the pedestal on site.

If necessary, it is also (optionally) possible to stabilise and fix **version "B"** with additional struts and holders!

NOTE *The assembly steps that apply to both versions "A" and "B" are marked with "AB". Assembly steps that are only relevant for versions "A" or "B" correspondingly with "A" or "B".*

Installation heights for ABS flow booster installations with square tube 60 x 60 x 3 mm:

In the case of greater installation depths or free lengths of the guide tubes there is a risk of vibration fatigue fractures of the guide tubes or their mountings. The resulting maximum free lengths cannot be determined purely from the static load (flow velocity). Turbulent flow components caused for example by the tank form, aerators and inlets are equally important. Additional fixing elements, struts or braces may therefore be necessary even below the maximum lengths, depending on the local installation conditions.

Version "A": Maximum free span length: **7.5 m**

Version "B": maximum guide tube length clamped on one side: **4.5 m**

These values apply for normal calculated flow velocities of 0.3 m/s.

ATTENTION *Guide tube fixing equipment must be suitable for bearing dynamic loads!*

NOTE *Larger installation depths are possible but require suitable supports on the guide tube. If in doubt, consult the responsible Sulzer representation before installation.*

2.2 Preparing for assembly

ATTENTION *For safe installation of the concrete pedestal, it must be ensured that the concrete pedestal has joint-free contact around the supporting feet.*

AB 1. Determining the position of the concrete pedestal and the tube holder. The reference dimension of **67 mm** for positioning the concrete pedestal must be determined according to *image 8/9*. Pay attention to the vertical alignment of the guide tube and the flow direction (*see arrow in image 1*).

ATTENTION *In order to ensure the proper function of the coupling system, the guide tube must always be able to slide freely inside the tubular guide of the coupling piece. This applies particularly after installation of the tube holder on the bridge or parapet of the system!*

In order to ensure safe installation, e.g. in the event of an uneven tank bottom, the following measures must be observed:

- After positioning of the concrete or steel pedestal and **before dowelling**, check (e.g. using a spirit level) whether the pedestal is aligned vertically with the tube guide of the installed coupling piece.
- If necessary, the concrete or steel pedestal or coupling piece must be correspondingly aligned **before dowelling**. If this is not possible, it may be necessary to tolerate a slight inclination of the guide tube. **The axis of the guide tube must then be aligned with the axis of the tube guide of the coupling piece!** The guide tube and tube holder must be installed so that the guide tube is not tensioned or jammed in the tube guide. This is the only way to ensure proper function

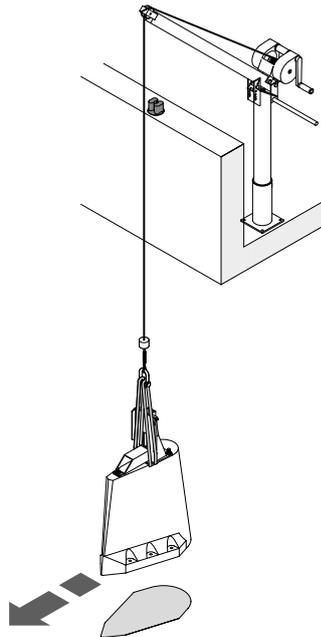
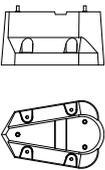
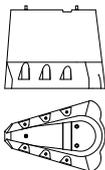
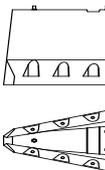
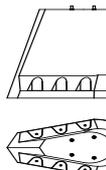


Figure 1: Flow direction

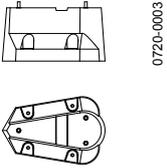
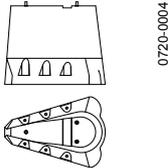
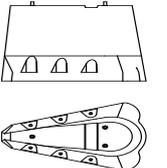
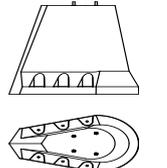
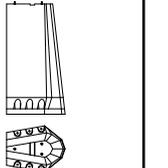


The maximum permissible loads when using the **5 kN ABS lifting unit** must be observed. (See *lifting unit rating plate and table below*). The heavy concrete pedestal may only be raised or lowered using adequately dimensioned lifting equipment! The concrete pedestal of version B (without installed coupling piece) can be lifted using (3) appropriate ring bolts or lifting shackles connected to the vacant M20 studs.

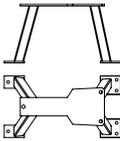
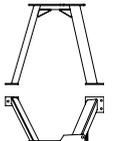
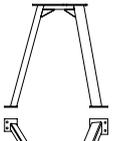
2.2.1 Shipment including concrete pedestal with M16 anchor rod (older design)

<p>XSB 900M SB 900 - 1200 h = 400 mm</p>  <p style="writing-mode: vertical-rl; transform: rotate(180deg);">0720-0003</p>	<p>XSB 900M, 1600M SB 900 - 2000 h = 780 mm</p>  <p style="writing-mode: vertical-rl; transform: rotate(180deg);">0720-0004</p>	<p>XSB 900M, 2500M SB 900 - 2500 h = 1030 mm</p> 	<p>XSB 2750 LX h = 1200 mm</p> 		<p>XSB 900M, 2500M SB 900 - 2500 h = 2050 mm</p> 
<p>Version A Fixed installation Weight: 225 kg <small>with fitted coupling piece</small></p>	<p>Version A Fixed installation Weight: 505 kg <small>with fitted coupling piece</small></p>	<p>Version A Fixed installation Weight: 655 kg <small>with fitted coupling piece</small></p>	<p>Version A Fixed installation Weight: 970 kg <small>with fitted coupling piece</small></p>		<p>Version A Fixed installation Weight: 1235 kg <small>with fitted coupling piece</small></p>
<p>Version "B": Free-standing installation Weight: 195 kg <small>without assembled coupling piece</small></p>	<p>Version "B": Free-standing installation Weight: 470 kg <small>without assembled coupling piece</small></p>	<p>Version "B": Free-standing installation Weight: 620 kg <small>without assembled coupling piece</small></p>			<p>Version "B": Free-standing installation Weight: 1200 kg <small>without assembled coupling piece</small></p>
<p>6 126 0228 8 x composite anchor cartridge 4 x anchor rod (M16) 4 x washer DIN 9021 4 x nut 1 x setting tool</p>	<p>6 126 0229 12 x composite anchor cartridge 6 x anchor rod (M16) 6 x washer DIN 9021 6 x nut 1 x M12 cylinder screw setting tool</p>				

2.2.2 Shipment including concrete pedestal with reinforcement D=14 mm (new design)

XSB 900M SB 900 - 1200 h = 400 mm 	XSB 900M, 1600M SB 900 - 2000 h = 780 mm 	XSB 900M, 2500M SB 900 - 2500 h = 1030 mm 	XSB 2750 LX h = 1200 mm 	XSB 900M, 2500M SB 900 - 2500 h = 2050 mm 
Version A Fixed installation Weight: 225 kg with fitted coupling piece	Version A Fixed installation Weight: 505 kg with fitted coupling piece	Version A Fixed installation Weight: 655 kg with fitted coupling piece	Version A Fixed installation Weight: 970 kg with fitted coupling piece	Version A Fixed installation Weight: 1235 kg with fitted coupling piece
Version "B": Free-standing installation Weight: 195 kg without assembled coupling piece	Version "B": Free-standing installation Weight: 470 kg without assembled coupling piece	Version "B": Free-standing installation Weight: 620 kg without assembled coupling piece		Version "B": Free-standing installation Weight: 1200 kg without assembled coupling piece
6 126 0324 1 x HIT-RE 500/ SD/330/1 mortar 4 x reinforcement D=14; L=220	6 126 0311 1 x HIT-RE 500/SD/330/1 mortar 6 x reinforcement D=14; L=220			

2.2.3 Shipment including steel pedestal with HIT-V-R M16 x 200 anchor rods (new design)

XSB 900 M SB 900 to 1200 h = 380 mm 	XSB 900 M; XSB 1600 M SB 900 to 2000 h = 780 mm 	XSB 900 M; XSB 2500 M SB 900 to 2500 h = 1030 mm 
Version A Fixed installation Weight: 53 kg with fitted coupling piece	Version A Fixed installation Weight: 77 kg with fitted coupling piece	Version A Fixed installation Weight: 86 kg with fitted coupling piece
Version "B": Free-standing installation Weight: 23 kg without assembled coupling piece	Version "B": Free-standing installation Weight: 47 kg without assembled coupling piece	Version "B": Free-standing installation Weight: 56 kg without assembled coupling piece
6 413 0030 1 x HIT-RE 500/SD/330/1 mortar 4 x HIT-V-R M16 x 200 anchor rods 4 x M16 nuts 4x DIN 125 washers		

Recommended tools for drilling: hammer drill \varnothing 18 mm / 250 mm long

2.3 Concrete pedestal / steel pedestal fixing

2.3.1 Concrete pedestal with M16 anchor rod fixing (old design)

- AB 2.** Check the strength of the underlying concrete (min. B25).
- AB 3.** Check the standing surface of the pedestal for flatness. If necessary, create a joint-free surface for the feet using levelling mortar (alternatively, existing joints in the concrete pedestal can be filled with liquid mortar through the mounting bores), see *Figure 2*.

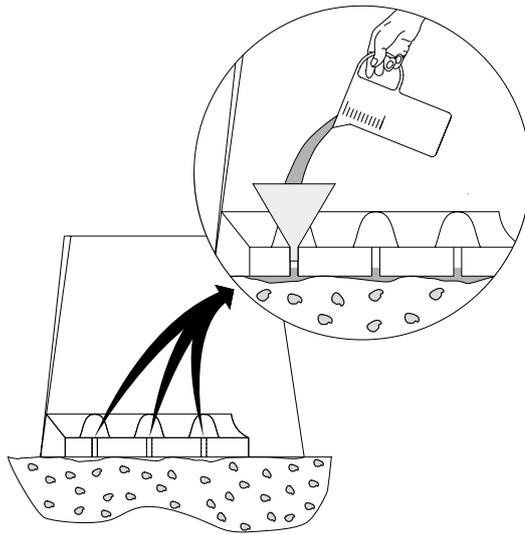


Figure 2: Concrete pedestal - create a flat standing surface

- AB 4.** Drill filling holes, brush out and blow out (see *Figure 3a,b*). For this purpose, **drill - through the holes in the concrete foot** - with the corresponding **18 mm \varnothing** hammer drill up to **depth size "T" = 215 mm**, (see *image 4*). Blow out the boreholes cleanly.

ATTENTION *If a diamond core drill is used, the walls of the borehole must be roughened using a suitable tool!*



The safety instructions on the packaging or the leaflet from the mortar cartridge manufacturer must be observed!

- AB 5.** Insert two mortar cartridges into each of the clean, dry boreholes (see *Figure 3c*).



Wear protective goggles!

- AB 6.** Screw in the M 16 anchor rod using a hammer drill (with the hammering mechanism switched on) down to the bottom of the hole and until the adhesive mortar emerges at the top of the pedestal bore (see *Figure 3d*). This ensures that the annular gap (see *Figure 4/4*) is completely filled.

ATTENTION *Make sure that the annular gap and the clearance hole of the concrete pedestal is completely filled (see *Figure 4*). Remove the setting tool carefully! Load the anchor rods only after the "t cure" curing time has elapsed (see table below). Damaged or leaking mortar cartridges must not be used. Pay attention to the "use by" date of the mortar cartridges!*

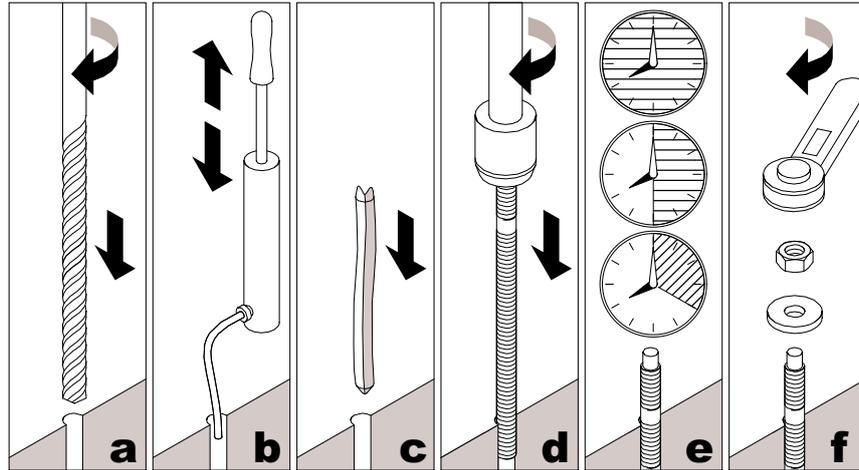


Figure 3: Pedestal assembly with M 16 anchor rod

ATTENTION The separate safety and processing instructions from the manufacturer of the fixing system used must be observed!

Temperature °F	Temperature °C	Curing time (t cure)
32 ... 50°	0 ... 10°	1 h
50 ... 68°	10 ... 20°	30'
68°	20°	20'

AB 7. Install the nuts (with washers) and tighten (see Figure 3f) only after the prescribed hardening time (see Figure 3e, t cure). **Torque: M16 = 80 Nm.**

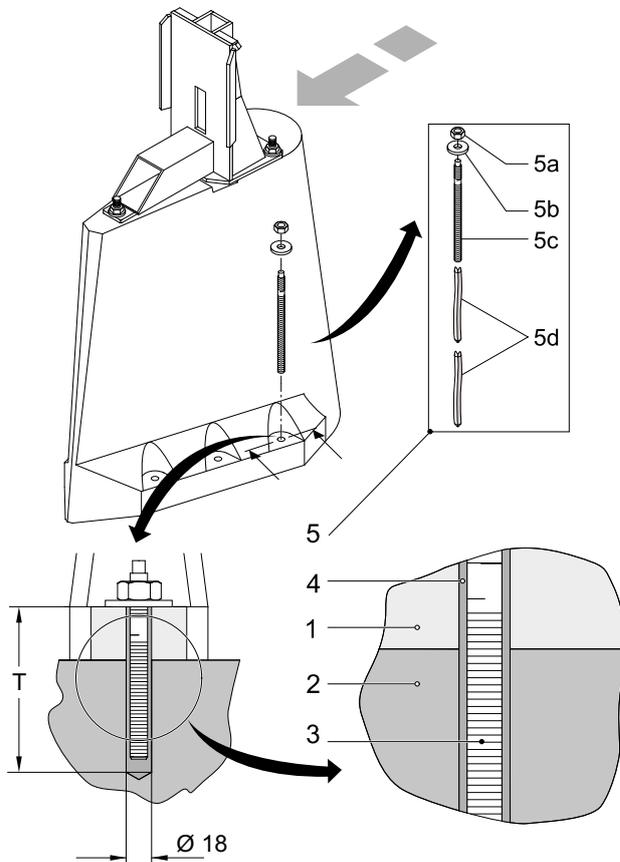


Figure 4: Annular gap filling with M16 anchor rod

0720-0012

Legend

- 1 Concrete pedestal
- 2 Pelvic floor
- 3 Anchor rod
- 4 Annular gap (completely filled with adhesive mortar)
- 5 Concrete pedestal fixing system
- 5a Self-locking nut
- 5b Large washer
- 5c M16 anchor rod
- 5d Mortar cartridge (2 pieces per concrete pedestal borehole)

2.3.2 Concrete pedestal fixing with reinforcement D=14, L=220 (new design)

- AB 8.** Check the strength of the underlying concrete (min. B25).
- AB 9.** Check the standing surface of the pedestal for flatness. If necessary, create a joint-free surface for the feet using levelling mortar (alternatively, existing joints in the concrete pedestal can be filled with liquid mortar through the mounting bores), see *Figure 2*.
- AB 10.** Set drill depth (see *Figure 5a*). Drill **Depth dimension "T" = 215 mm**, (see *Figure 7*).
- AB 11.** Drill filling holes, brush out and blow out (see *Figure 5b,c,d*). For this purpose, drill through the holes in the concrete foot - up to **depth dimension "T" = 215 mm** - with the corresponding **18 mm ø** hammer drill. Subsequently remove any standing water from the borehole. Blow out the boreholes cleanly.



Figure 5a: Set the drill depth



Figure 5b: Drill the fixing holes



Figure 5c: Blow out the borehole



Figure 5d: Brush out borehole

ATTENTION *If a diamond core drill is used, the walls of the borehole must be roughened using a suitable tool!*



The safety instructions on the packaging or the leaflet from the mortar cartridge manufacturer must be observed!

- AB 12.** Fill the clean and dry borehole with the mortar (HIT-RE 500/SD/330/1) (see *Figure 6a*) up to the lower edge of the borehole in the pedestal.



Wear protective goggles!

- AB 13.** Insert the reinforcement up to the bottom of the borehole and until the mortar leaks out of the top of the pedestal borehole (see *Figure 6b/c*). This ensures that the annular gap (see *Figure 7/4*) is completely filled.



07



Figure 6a: Fill with mortar

Figure 6b: Insert the reinforcement

Figure 6c: Reinforcement

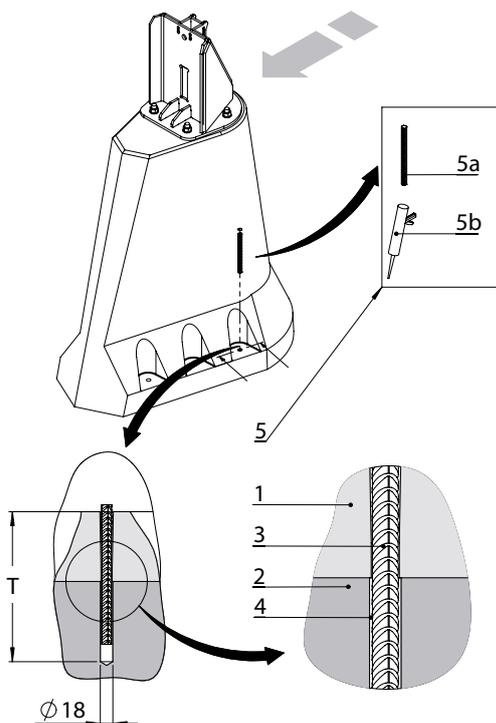
ATTENTION Make sure that the annular gap and the clearance hole of the concrete pedestal is completely filled (see Figure 7). Load the reinforcement only after the "t work" hardening time (see following table) has elapsed. Pay attention to the "use by" date of the mortar cartridges!

ATTENTION The separate safety and processing instructions from the manufacturer of the fixing system used must be observed!

Curing time "t cure" for threaded pin: HIT-RE 500

°C	°F	t work	t cure
-5...-1	23...31	0...4 h	≥ 72 h
0...9	32...49	0...3 h	≥ 50 h
10...19	50...67	0...2 h	≥ 24 h
20...29	68...85	0...20'	≥ 12 h
30...39	86...103	0...12'	≥ 8 h
40	104	0...12'	≥ 4 h

AB 14. The pedestal can only be loaded after the prescribed hardening time (t cure).



0751-0012 **Legend**

- 1 Concrete pedestal
- 2 Pelvic floor
- 3 Reinforcement D=14
- 4 Annular gap (completely filled with adhesive mortar)
- 5 Reinforcement fixing system D=14
- 5a Reinforcement D=14; L=220
- 5b HIT-RE 500/SD/330/1 mortar (330 ml)

Figure 7: Annular gap filling when reinforcement D=14

2.3.3 Fixing the steel pedestal

Assembling the steel pedestal takes place mostly in a similar way. For construction reasons, shorter anchor rods and only one mortar cartridge are used for fixing the steel pedestal. The depth of the Ø 18 mm borehole for the shorter anchor rods is 135 mm.

ATTENTION ***Wear protective clothing according to safety regulations (pay attention to the Hilti instructions for use)!***

ATTENTION ***Check that the footprint of the steel pedestal is even!***

ATTENTION ***Drilling and filling the boreholes with mortar should take place promptly.***

AB 15. Mark the boreholes (see *Figure 8a*). Clamp the hammer drill. Set the drilling depth exactly with the stopper (see *Figure 8b*).

For **M16: 18 mm Ø drill / t = Screw-in length (thread pin)+ material strength of the steel pedestal**. Lift the steel pedestal or it is also possible to drill through the fixing holes.

AB 16. Clean the boreholes blow out the 4x using a **blow-out pump** (see *Figure 8c*) according to the Hilti user instructions or blow out with compressed air. Clean the boreholes 4 x with a **circular steel brush** (see *Figure 8d*) according to Hilti user instructions.

AB 17 Use the blow-out device or compressed air once again to blow out the bore holes 4 x according to the Hilti user instructions.



Figure 8a: Mark bore holes



Figure 8b: Set bore holes



Figure 8c: Set bore holes



Figure 8d: Clean bore holes

AB 18. Prepare and assemble the glue gung according to the Hilti user instructions.

AB 19. The first three strokes from the glue gun serve to mix the glue components and cannot be used. The mixing ratio is ideal when the colour of the glue liquid is pink.

AB 20. Guide the tip of the mortar gun up to the borehole pedestal and press the gun to fill the borehole with mortar (see *Figure 9a*).

AB 21. Fill the borehole with glue up to approx. 5 mm from the upper edge of the steel pedestal.

AB 22. Turn the threaded pin lightly (to distribute the glue in the borehole) into the borehole until it stops (see *Figure 9b*). The final position is then reached!

AB 23. Remove excess mortar



Figure 9a: Fill with composite mortar



Figure 9b: Insert pin



Figure 9c: Position washer



Figure 9d: Tighten nut

ATTENTION Pay attention to the working time (*t work*) of the mortar, approx. 20 minutes.

Pay attention to the curing time, *t cure* according to the table!

ATTENTION Allow the threaded pin to cure according to the prescribed cure time "*t cure*". The threaded pin may not be moved and/or loaded during this cure time!

Curing time "*t cure*" for threaded pin: HIT-RE 500

°C	°F	<i>t work</i>	<i>t cure</i>
-5...-1	23...31	0...4 h	≥ 72 h
0...9	32...49	0...3 h	≥ 50 h
10...19	50...67	0...2 h	≥ 24 h
20...29	68...85	0...20'	≥ 12 h
30...39	86...103	0...12'	≥ 8 h
40	104	0...12'	≥ 4 h

If necessary, position the steel pedestal over the inserted and hardened threaded pin and carefully set down.

ATTENTION Do not damage the thread!

AB 24. Lay the washer over the threaded pin (see *Figure 9c*).

AB 25. Tighten the hexagonal nut with the **prescribed torque**. A **torque spanner** must be used for this (see *Figure 9d*).

Torque: M16 = ≤ 80 Nm

AB 26. Complete installation of the steel pedestal fixing system.

Remove the cartridge from the glue gun and allow to dry. The cartridge can be disposed of after it has dried (pay attention to the Hilti instructions for use).

Screw off the tip of the glue gun and clean according to the Hilti instructions for use.

3 Setup and assembly of the guide tube

3.1 Guide tube length

Applies to version A "fixed installation" only

A 27. Cut the guide tube to length and deburr. For this purpose, determine **reference length L** first (see *Figures 10 and 11*).

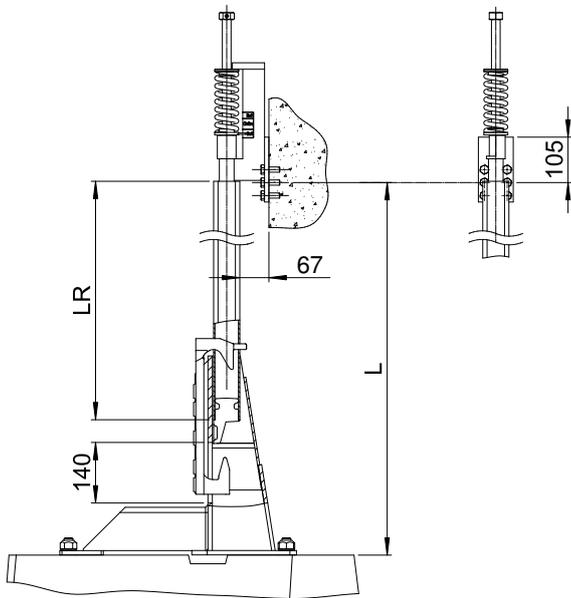


Figure 10: Determining the length of the guide tube L_R version $L + M$

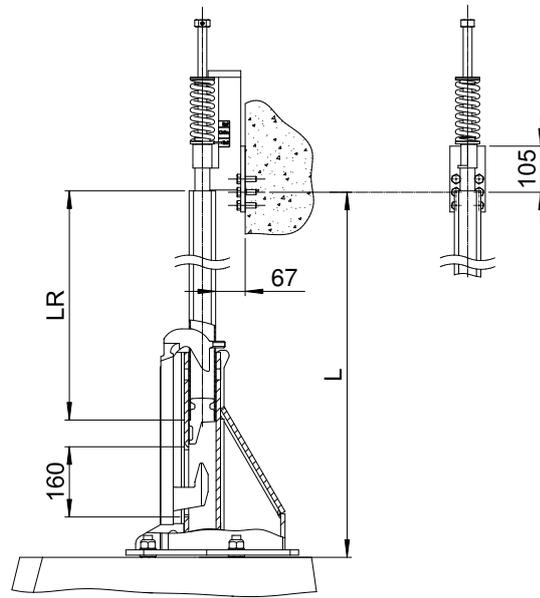


Figure 11: Determining the guide tube length L_R version LX

Guide tube length L_R is calculated as dimension L (contact of coupling piece to centre axis of middle bores on guide tube holder) minus 310 mm.

$$[L_R = L - 310 \text{ mm}]$$

Example: Determined dimension $L = 4310 \text{ mm}$.

$$L_R = 4310 \text{ mm} - 310 \text{ mm} = 4000 \text{ mm}$$

Guide tube length = 4000 mm

A 28. The guide tube end should be welded to the guide tube wedge (see *Figure 12/4a*). Dress the weld seams cleanly after welding.

3.2 Guide tube fixing for holder

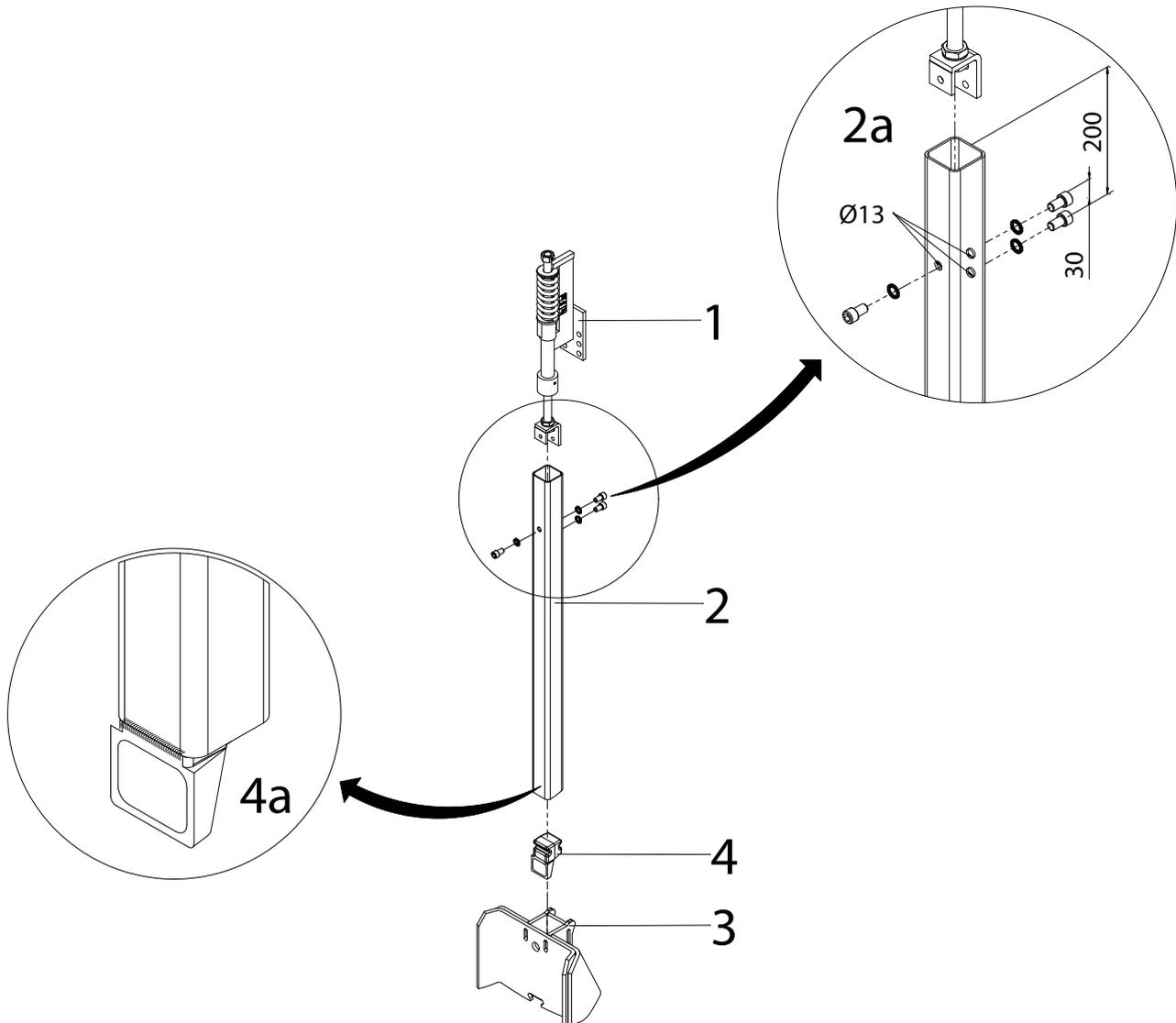


Figure 12: Guide tube fixing

Legend

- | | | | |
|---|-------------------|---|------------------|
| 1 | Guide tube holder | 3 | Coupling piece |
| 2 | Guide tube | 4 | Guide tube wedge |

A 29. Drill the three through bores (diameter 13 mm) for the tube holder in the guide tube according to the dimensions in Figure (12/2a).

A 30. Screw the guide tube holder into the guide tube (with lock washers). **Torque: M12 = 56 Nm.**

- A 31.** Turn the tube holder screw to the left as far as possible (uppermost position of the guide tube), see *Figure 13/1*. The indicator pin of the spring is then within the lower red mark of the tube holder (display for the spring pretension then shows "released")! The length of the guide tube is correct when a size of approx. 140 in the case of version L + M or 160 mm in the case of version LX, (with inserted guide tube wedge) is measured in the "released" position (see Figures 10 and 11).

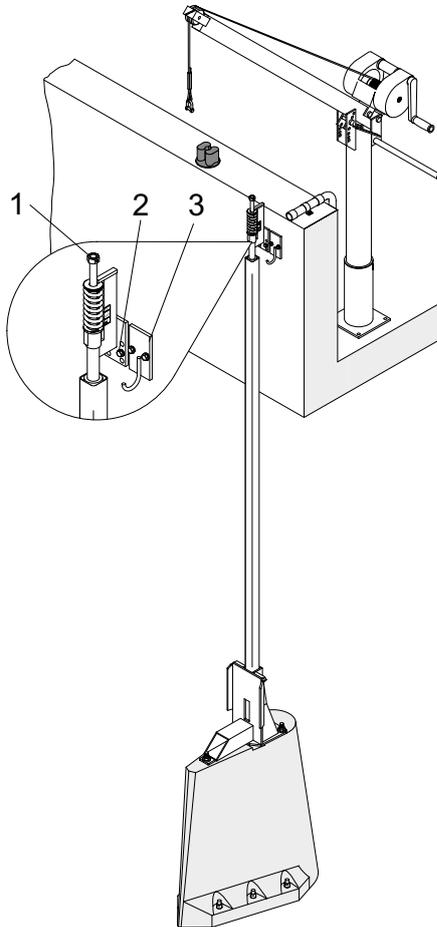


Figure 13: Tube holder / cable hook

0720-0015

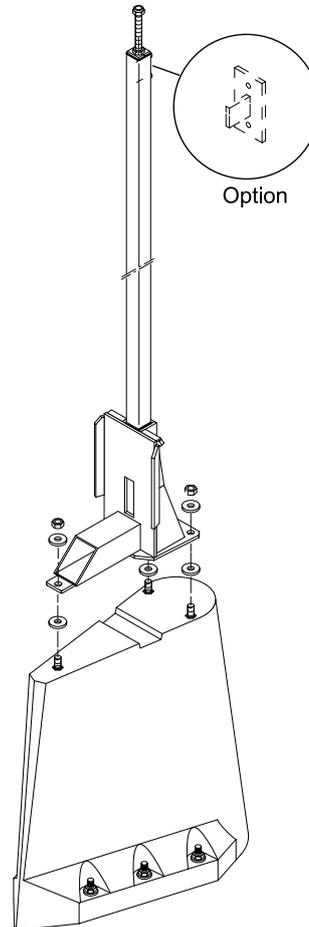


Figure 14: Screw fitting of the coupling system

0720-0016

- A 32.** Drill the mounting holes for tube holder (13/2) and cable hook (13/3) – available as an accessory – into the edge of the tank.
- A 33.** Lower the guide tube with the hoist into the tank and insert into the coupling piece.
- A 34.** Screw the tube holder to the edge of the tank using lock washer or self-locking nuts. (If secured in the concrete, use the appropriate compound anchor).
- A 35.** Screw in the cable hook (if not already welded to the tube holder).
- A 36.** Preferably use the middle two attachment points.

Applies to version B "free-standing installation" only

- B 37.** The coupling piece must be firmly screwed to the fixed guide tube on the concrete pedestal *according to figure 14*. **Torque: M20 = 267 Nm.**

