

Installation of PVL® Connecting Loop

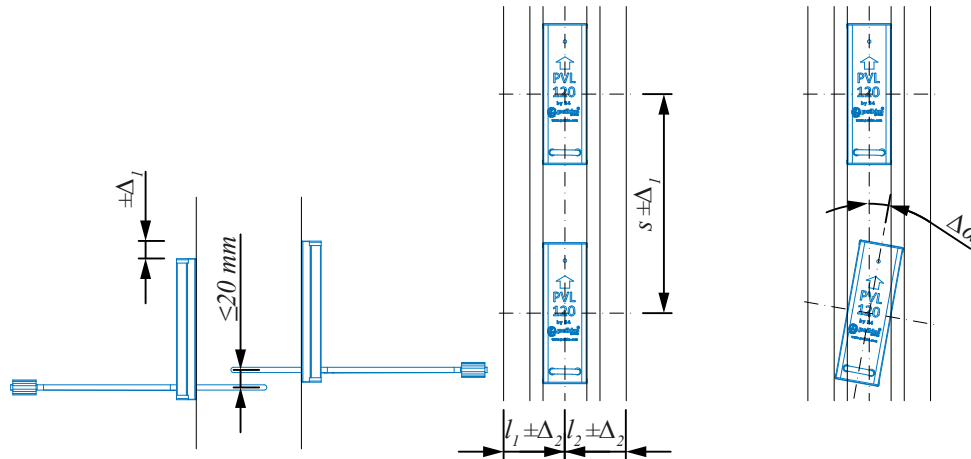
INSTALL THE PRODUCT – PRECAST FACTORY

The PVL® Connecting Loops are placed into the reinforcement of the wall and fixed through recess boxes to formwork according to the installation drawing. The wall edge is reinforced by additional reinforcement according to Annex A. Installation tolerances of PVL® Connecting Loops must fulfil requirements according to *Table 10*.

Profiled shape of the formwork can be created either by plywood channel or steel channel. The connection of the recess boxes to the formwork channel depends on the used material. In the case of wood or plywood use, the PVL® Connecting Loops can be attached by nails through holes in recess boxes. In the case of steel formwork use, PVL® Installation magnets can be used to attach the PVL® Connecting Loops to the surface.

After casting the wall and loops, and when the concrete has achieved the required strength, the formwork and protective tapes can be removed. Loops can then be bent out and straightened by using a hammer claw. Due to the structure of the wire, loops will remain in the opened horizontal position.

Table 10. Installation tolerances for PVL® Connecting Loop.



Δ_1	Δ_2	$\Delta \alpha$
$\pm 10 \text{ mm}$	$\pm 3 \text{ mm}$	$\pm 0 \text{ deg}$

Figure 15. Installation of the PVL® Connecting Loop to wooden formwork: a) directly to side of formwork; b) to the wooden recess channel.



INSTALLING

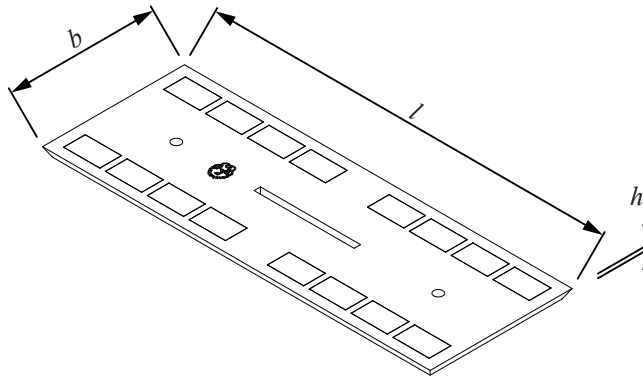
Accessories

PVL® Magnetic plate

If a steel formwork is used, PVL®'s recess box can be attached by a magnetic plate. Magnetic plates are available in two models:

- **PVL® Installation magnet** – available for PVL®60 – PVL®120
- **PVL® Installation magnet 140-SOLO** – available for PVL®140

Table 11. Dimensions of PVL® Installation Magnets.



	Length l [mm]	Width b [mm]	Thickness h [mm]	Weight [kg]	Magnetic force [kN]
PVL® Installation magnet	178	67.5	5	0.41	1.0
PVL® Installation magnet 140-SOLO	213	73	5	0.54	1.3



Due to strong magnetic forces, it is highly possible that sudden attachment of metal objects or two magnetic plates could occur, which can lead to severe injury.



The strong magnetic field can lead to damage of electronic devices, like cell phones, computers, credit cards, or data storage devices. Also, hearing aids and pacemakers may be interfered when they are in close proximity to a magnetic plate.

Operating instructions

Metal and other covers should be removed before the introduction of the magnet. The slot in the installation magnet for the removal tool should be covered with tape from both sides to ensure no concrete gets in the joint during casting. The alignment of the magnets should be as accurate as possible from the very start (*Figure 16*). Moving the magnet to correct position by hitting or impact of hammer can cause damage to the formwork or welded joints of steel formwork. Fixing of the PVL® Installation magnet should follow installation tolerances according to *Table 10*.



Weakening of magnets may occur when they are in direct contact with a foreign magnetic field, such as electric welding, electric cables, or other strong magnetic fields, and in temperature of over 80°C.

Figure 16. Attaching PVL® Installation magnets to steel formwork.

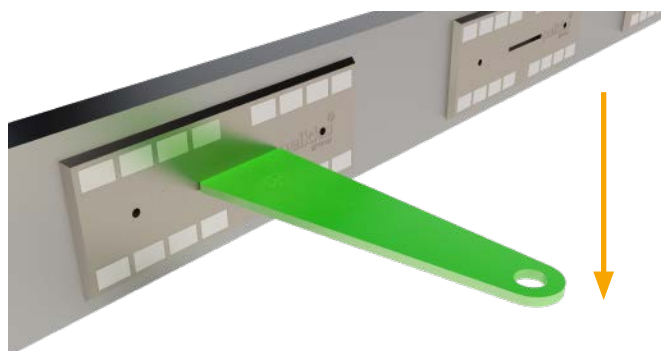


Figure 17. Connecting PVL® recess box to installation magnet.



The magnets can be removed from the steel surface by using a removal tool (Figure 18). The tool should be placed in the PVL® installation magnet slot, and the magnet is removed by levering. Debris should be removed, and the surface of the magnets should be cleaned from all concrete particles. Magnets should be stored clean and dry but also away from each other, min. 15 mm distance.

Figure 18. Removing installation magnet from formwork.



Magnet maintenance

Magnets are more sensitive to corrosion than plain steel parts. Especially moisture (including road salt) accelerates corrosion. Steel and rubber magnet moldings must be removed, cleaned and oiled at regular intervals to prevent corrosion.

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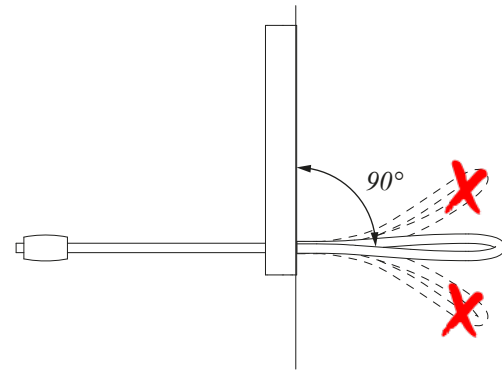
INSTALL THE PRODUCT – CONSTRUCTION SITE

Wall panels are installed according to plan drawings and erection sequence, always with the existence of a temporary bracing system which provides stability (*Figure 19*). The wire loops in the joint are adjusted to be perpendicular to the surface of the joint (*Figure 20*) and to fulfill the installation tolerances according to *Table 9*. Vertical reinforcement (*Table 10*) is placed through all wire loops (see *Figure 21* and *Figure 22*). The length of the reinforcement must be equal to the height of the joint.

Figure 19. Precast wall installed at final position and secured by temporary bracing.



Figure 20. Wire loop with correct installation angle to wall joint.



NOTE: The wire maintains its full strength in normal use, where a maximum of 3 open-close bindings take place.

Table 12. Diameter of the transverse reinforcement for PVL® Connecting Loops.

	PVL®60 – PVL®120	PVL®140; PVL® SOLO
Min. diameter of transverse reinforcement B500B	Ø 12	Ø 16

Figure 21. Incorrect installation of wire loops.

Spacing between loops is bigger than 20mm



Wrong position of the loop, outside of rebar, short transverse bar



Figure 22. Correct installation of wire loops.



Position of wire loops before placement of the longitudinal rebar

INSTALLING

Based on the dimensions of the joint, formwork can be created, and concrete grout is poured or pumped in to joint (Figure 23). Concrete grout shall have at least the same compression strength as the concrete of the wall panels, minimum C25/30. Non-shrinking grouting material must be used with maximum aggregate size according to dimensions of the joint. The environmental conditions like temperature and humidity must be considered in accordance with EN 13670-1 during casting of the grouting material to the joints.

Figure 23. Casting of the joint.



Figure 24. Finished wall joint.

