



Anti-Flood Mobile Systems

INOVA AL

Assembly Instructions

Version: 012021.0046EN

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1 Introduction

The Assembly Instructions for the INOVA AL flood control system include the basic information about the product, assembly of selected fixed elements and a test installation of mobile elements. Please carefully read this manual and follow all instructions.

Information in this manual may refer to instructions included in the Use and Maintenance Instructions, Assembly Drawing and other documents (see accompanying documentation). Please adhere to the instructions provided in these documents during assembly.

Embedding or assembly of fixed elements may only be performed by assembly technicians from the manufacturer or from authorized companies, who are qualified for assembly and specifically trained for it.

The manufacturer reserves the right for technical adjustments and innovation not influencing function and security. Such changes need not be included in these instructions. All illustrations in this manual are purely indicative.



For security reasons, the system assembly and installation shall not be made by small children, minors, persons with mental or psychological disorder, persons under the influence of alcohol, addictive substances and narcotics, and persons not instructed on assembly and use.



The manufacturer/supplier shall not be held liable for any damage resulting from a failure to observe information and instructions as provided in this instructions manual and from inappropriate or unqualified product assembly!



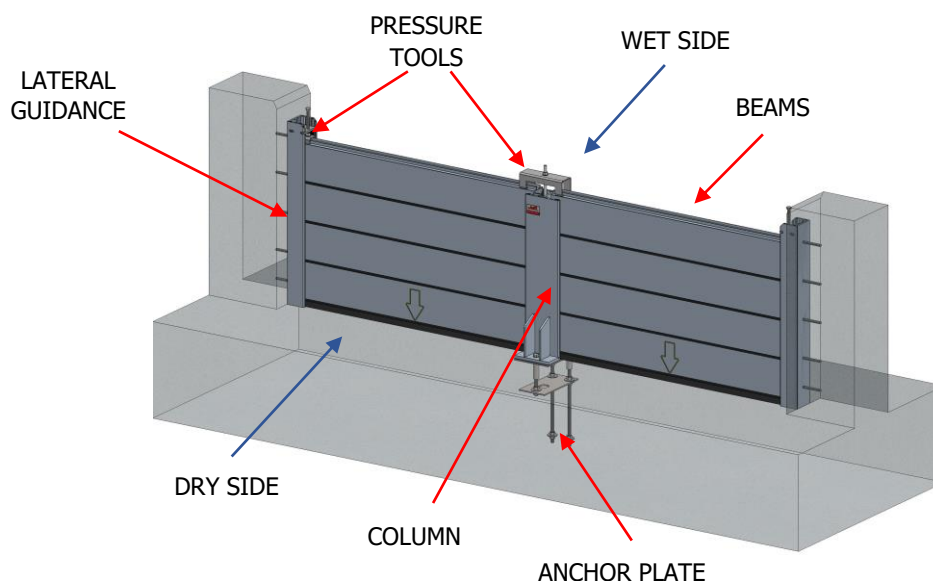
**It is prohibited to increase, in any way, the water column height, for which the system is designed!
No structural changes not approved by the manufacturer are permitted on the product.**

2 Product description

The INOVA AL flood control mobile systems are intended for protection of buildings and facilities against flooding by water caused by inundation, flood, torrential rain etc. INOVA AL flood control barriers include INOVA AL 50 and INOVA AL 80 barriers. The systems basically differ in their thickness and associated structural variations with diverse resilience levels against water loads. Both systems consist of fixed and mobile elements. Fixed parts are mounted and concreted at the facility. Mobile elements are installed on these embedded elements in case of danger from raised water level.

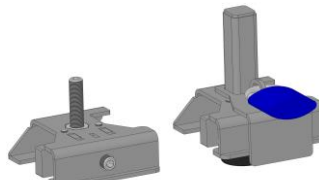
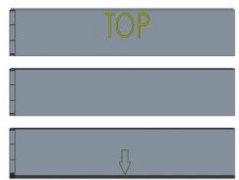
Fixed system elements include anchor plates or anchor sleeves, stainless steel strips, lateral guidances and level changes. Mobile elements include columns, beams and pressure tools.

In simple apertures, lateral guidances are fixed along the sides (designed as fixed or detachable), between which beams are inserted when required. Longer and more complex sections are divided to shorter portions by means of mobile columns to be filled with beams. The beam wall is finally compressed by installation and tightening of pressure tools. Tightness of barriers is provided by EPDM seal attached to the beams, inside U-profiles and at column bottom ends.



Any technical adaptations based on specific customer's requirements are not covered in these Assembly Instructions. Where technical modifications require particular instructions, they are provided in a separate appendix to accompanying documentation. Such modifications shall be approved or implemented by the manufacturer.

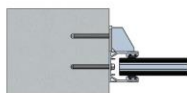
2.1 Description of parts

Lateral guidance	Lateral guidances as fixed system parts can be concreted into flood control walls, walls of buildings etc. Along sides of the opening (in front of opening, into opening, behind opening, into groove), lateral guidances can be anchored firmly by means of threaded rods and chemical mortar or in a demountable design.	 INOVA AL 50 In front of opening INOVA AL 80 In front of opening
Pressure tools	Pressure tools are mobile system parts to be installed, in case of need, on columns or lateral guidance when beams have been inserted.	
Beams	Beams are mobile system parts to be inserted between lateral guidances, between columns or between lateral guidance and column in case of need.	
Anchor plate	An anchor sleeve is drilled into the base and affixed by means of chemical mortar. Where required, mobile columns are fixed to anchor plates/sleeves. Openings for anchor screws are protected from impurities by cover screws with countersunk heads.	
Column	Columns are mobile system parts to be attached by screws onto permanently embedded anchor plates/sleeves in case of need.	

Lateral guidance - types



INTO OPENING T01



INTO REINFORCED
OPENING T02



IN FRONT OF
OPENING T03



BEHIND
OPENING T04



INTO GROOVE T05



INTO CONCRETE T06



DEMOUNTABLE
INTO OPENING
T07



DEMOUNTABLE
IN FRONT OF OPENING T08



DEMOUNTABLE
BEHIND OPENING
T09



INTO CLOSED
GROOVE T10

3 Assembly tools

The delivery may include assembly tools intended mostly for installation of mobile elements (see Use and Maintenance Instructions). Assembly tools are stored in transport crates. The required tools, numbers of pieces and lubricant volumes are determined by the manufacturer based on the project scope, number of assembly teams, flood control facility plan, customer's requirements etc.

Illustration	Tool	Application examples
	Open-end spanner 19, 22	Pressure tools
	Open-end spanner 22, 22 with ratchet ring	Pressure tools
	Hex T-key 5, 6	Pressure tools, side line/level change cover
	Flat screwdriver	
	TORX screwdriver T40	Side line/level change cover
	Ratchet 1/2, 3/4	
	Spanner socket 1/2, 3/4 hex 10, 14	Blind screws of anchor plates/sleeves
	Spanner socket 1/2, 3/4 hex 24, 36, 46	Column anchor screws
	Reduction piece 3/4 for one inch socket	Column anchor screws
	Cutter knife	Binder slings
	Hammer 300 g	
	Anti-seize lubricant	
	Silicone oil	EPDM seal
	MS polymer	Joint closing
	Chemical mortar	Anchoring

4 Preparation for assembly

1. When handling and unpacking the product, please adhere to the instructions and warnings described in the Use and Maintenance Instructions.
2. Prior to measuring and assembly, prepare your working tools and personal protective equipment (gloves, goggles etc.). Considering the size of some elements, also a supporting mounting structure may be required (scaffolding etc.), as well as a forklift for transport of delivered parts.
3. For the purpose of assembly, we recommend to prepare tools such as core drill, hammer drill, industrial vacuum cleaner, cartridge dosing gun, slip joint pliers, water level, meter and other common assembly tools.
4. Assembly should be done by at least 2 assembly technicians or the number of persons as determined by local safety regulations for assembly works.
5. The delivery always includes the Assembly Drawing to be inspected before assembly. Information indicated in the Assembly Drawing differing from information in this manual have priority and must be observed. The Assembly Drawing is conceived for each individual project.
6. The Assembly Drawing includes information about the anchoring and fastening elements used, for which corresponding holes need to be prepared. While working, please observe general engineering procedures for assembly works (drilling, tightening etc.).
7. Where the assembly requires the use of chemical preparations (mortar, sealants etc.), please exactly observe the conditions of their use according to manufacturer's instructions (refer to packaging)! Clean any excess chemicals from the surface of fastening elements.



Observe the corresponding safety instructions for working and presence at the assembly site!

Observe the corresponding safety instructions for working at heights.

Observe the safety and operating instructions by the forklift manufacturer!

Observe the safety instructions when working with chemical preparations.

Use personal protective equipment recommended for working with individual preparations, tools or devices!

5 Assembly of lateral guidance

This installation does not apply to the following type of lateral guidance: T06 – into concreted (see Chapter 7 for installation instructions).

If the lateral guidance has to be mounted visibly on the sides of the hole, proceed with care when handling to avoid scratches or damage. It is recommended to support it with e.g. packaging material (bubble wrap or paper box).

1. The building structure shall be prepared in compliance with the requirements on impermeability for the expected water column and with the assembly conditions as determined by manufacturer/supplier (particularly conditions for load bearing capacity of concrete).
2. Prior to assembly itself, check the dimensions of opening according to the required site readiness. Sill flatness for attachment of bottom beam must be ± 2.5 mm. Opening perpendicularity for mounting of lateral guidance must be ± 3.0 mm. Check sill flatness and wall perpendicularity along the entire mounting length and height. In case of a larger unevenness, an overall levelling of the opening should be made.
3. The surface of opening (lining, floors) should be clean, dry and free of dust and grease, therefore clean it thoroughly.
4. Lay the lateral guidance accurately to the corresponding place in front of/behind opening or into opening (or into groove in opening).
5. Check the position of lateral guidance using a water level and fix them, for instance with mounting clamps.



6. Mark the centres of holes for anchoring elements.



7. Release and remove lateral guidance.
8. Drill the holes for the required anchoring elements and blow them clean of dust particles. Also remove dust from the surface of lining/floor.
- Drill the holes into concrete and masonry structures for threaded rods/anchor sleeves with inner thread/anchors for heavy loads/anchor bolts etc. (refer to Assembly Drawing) and then proceed with item 9 or 10.
 - Drill the holes for screws into steel structures (refer to Assembly Drawing) and then proceed with item 11.



The types of lateral guidance T04, T07, T08 and T09 are anchored not only in the wall, but also in the ground!



9. Apply chemical mortar into the drilled holes and screw anchor threaded rods/anchor sleeves with inner thread into them. Threaded rods/sleeves must be laid in a way that, after insertion of lateral guidance, their ends do not outreach more than indicated in Assembly Drawing.



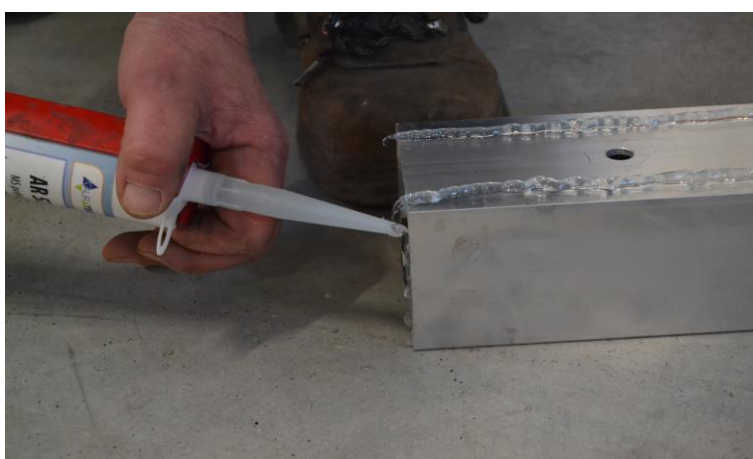
Observe the chemical mortar technological curing time! Exact conditions for use of chemical mortar are provided in the included manufacturer's technical data sheet. Clean any excess chemical mortar from the surface of fastening elements.



10. Where you do anchoring without applying chemical mortar, insert into the holes the anchors intended for heavy load/anchor bolts and tighten them following the instructions by the manufacturer of anchoring elements.
11. Apply a sealant based on MS polymer on lateral guidance. Sealant is always to be applied on the side, on which anchor holes are made. Apply sealant in strips along the sides of anchor holes, so that the strips cover the sealed line side along its entire length down to the bottom edge. Also apply sealant onto the lateral guidance bottom edge. Sealant layers along the sides and on the bottom edge must join.



Not applicable to the following types of lateral guide: T07 – demountable into opening, T08 – demountable in front of opening , T09 – demountable behind opening.



12. Place the lateral guidance back into aperture. Tighten the screws or nuts to the required tightening torque (see table below). Proceed from the bottom hole to the top hole or vice versa. The threaded rod/anchor bolt should outreach the tightened nut by at least 1.0 mm.

Assembly with chemical mortar	
M8	10 Nm
M10	20 Nm
M12	40 Nm
M16	60 Nm
M24	150 Nm

Assembly without chemical mortar	
M8	15 Nm
M10	25 Nm
M12	45 Nm



13. Seal the gap between the base and lateral guidance from inside of lateral guidance. EPDM flag seal is inserted in lateral guidance. It is particularly important to close any gaps around this seal, so that water cannot flow underneath. The sealing flag must touch the ground after assembly. Remove any superfluous sealant.



14. Impregnate the seal with the flag inside the lateral guidances and mobile posts with silicone oil (e.g. Silkal).

15. Where the delivery includes the cover, put it on and secure with screw.



6 Assembly of anchor sleeve

1. The building structure shall be prepared in compliance with the requirements on impermeability for the expected water column and with the assembly conditions as determined by manufacturer/supplier (particularly conditions for load bearing capacity of concrete).
2. Prior to assembly itself, remeasure the base according to the required site readiness. Base flatness for attachment of column flange must be ± 1 mm. In case of a larger unevenness, an overall levelling should be made.
3. Mark the staking points for column positioning. Mark barrier and column axes.
4. Place the drilling template on the indicated axes and mark the centres of holes for anchor sleeves.



Make sure the template is correctly placed with regard to orientation of dry/wet side!



5. Remove the drilling template and drill the corresponding holes (see Assembly Drawing). Blow the holes clean of dust particles.
6. Attach the anchor sleeves onto the installation template and try to insert them into the prepared holes. The installation template must touch the base. Anchor sleeves must be smoothly inserted into the hole, without obstruction, and they must be exactly flush with the concrete base attachment surface. Adjust the holes if required.



7. Fill the drilled holes with chemical mortar and insert anchor sleeves attached to the installation template into them. The installation template must touch the base.
 - Observe the chemical mortar technological curing time! Exact conditions for use of chemical mortar are provided in the included manufacturer's technical data sheet. Clean any excess chemical mortar from the surface.



Once the anchor sleeves are put onto chemical mortar, it is necessary to check whether the anchor sleeves are exactly flush with the concrete base attachment surface and do not outreach the base!



8. Blind the anchor sleeves with cover screws with countersunk heads.
 - If required, please watch the instruction video, which you'll find on Youtube channel with title: Sloupek INOVA
Videoinstruction

7 Lateral guidance to concrete

1. We take the anchor plate and place it in a predetermined place.
2. Carefully and precisely weld the bottom levelling anchor plate into the concrete reinforcement. Attention! There is no possibility of further settlement.

Lateral
guidance



8 Assembly for anchor plate

1. We take the anchor plate and place it in a predetermined place.
2. We weld the bottom levelling plate into the concrete reinforcement.
3. Level to the exact with levelling nuts.

Levelling plate



Anchor plate



9 Test installation of mobile elements

1. After attachment of fixed elements, perform a test of installation for mobile elements.
2. Remove covers from lateral guidance, if they are part of delivery.
3. Remove cover screws from anchor sleeves and attach the mobile columns according to the Use and Maintenance Instructions.
4. Impregnate the flag seal inside lateral guidance and inside mobile columns with silicone oil (e.g. Silkal).



Before insertion of beams, seal must always be impregnated, otherwise it may be damaged!

5. When inserting beams, proceed according to the Use and Maintenance Instructions.
6. Test function of pressure tools when all beams have been inserted. Proceed according to the Use and Maintenance Instructions again.
7. When testing has been done, dismantle and store all mobile parts according to the Use and Maintenance Instructions.
8. Replace cover onto lateral guidance, if they are part of delivery.
9. Blind the anchor sleeves again by cover screws.

10 Remarks and supplements

- All the information given in these installation instructions relates to the date of issue of the
- There may be different deviations during assembly. Therefore, it is necessary to follow the current installation drawing
- **The installation drawing** always has a **higher priority** than the general Use and Maintenance Instructions



Notes:

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid lines are evenly spaced both horizontally and vertically.

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FLOOD
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FIRE-PROOF
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ANTICONTAMINATION
BARRIERS



GATES
AND ATYPICAL
GATES



LOADING
TECHNIQUE



STANDARD AND
OVERSIZED GATES