



Comparison in between the previous and the new models of the K.K. NAG latrine slabs

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This comparison has been based on the MSF-B observations made in September 2005 on the previous K.K. NAG latrine slab, to which we've added comments for the new model. Most of the points made in the previous observation have been improved, but there are still some problems to resolve: some are minor, others are essential. The observations have been marked with 😊 / 😐 / 😞 to indicate our level of satisfaction.

Previous models	New model
	
<p>😊 The size of the slabs corresponding to a Euro pallet will ease the transport considerably.</p>	<p>😊 Idem</p>
<p>😊 The footrests locking into each other when stacked.</p>	<p>😊 Idem</p>
<p>😊 The dimensions of the water pan are similar to these found back in the literature. The pan is just some 50 mm deeper and the siphon is about 10 mm less in diameter, but this shouldn't be a problem. The inside of the pan is very smooth which eases the flushing and cleaning.</p>	<p>😊 Idem. (The size and form of the pan seem to depend on the ease of flushing and also on the manufacturing).</p>
<p>😊 Although somewhat bigger in size overall, the keyhole falls within acceptable limits in comparison to other approved slab designs.</p>	<p>😊 Idem</p>
<p>😊 The slabs being self supportive and not needing an additional reinforcement frame will accelerate latrine construction in emergencies.</p>	<p>😊 Idem</p>

☺ The position of the foot opened lid for the African model is OK. It is also possible to open and close it when wearing big boots (some would have preferred to see the "handle" a little longer however). It is also nice that the "handle fits nicely in the above laying slab when stacked.

☹ With the increase in size of the lid, the "handle" falls outside the slab dimensions, making it a lot more difficult to get the foot under the lid to close it again. Certainly with big boots, a lot of side force was put on the lid, thus putting its hinge under a lot of strain. The "handle should fall inside the slab (as with the previous model); if not it is believed that the hinge will break sooner.



The hand washing sign on the inside of the lid is perceived as a very good idea, but it is unfortunately nearly invisible. Contrasting colours might help, if technically possible.

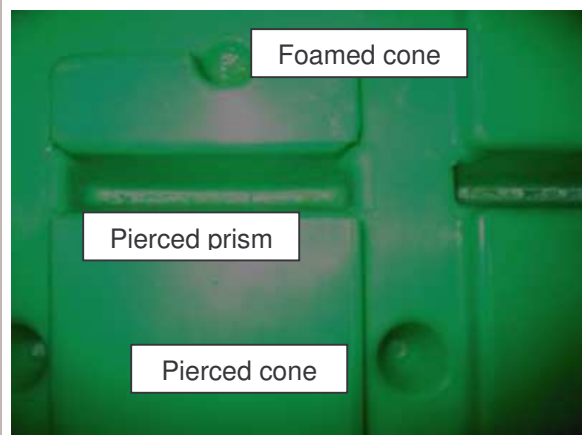
☹ The "wall" thickness of the plastic at the reinforcement cones and prisms is so thin that you can push easily through them with a pen. Some of the reinforcement cones were already pierced at arrival in Brussels, leading to following inconveniences:

☺ The "wall" thickness of the plastic at some of the reinforcement cones and prisms is still that thin that you can push easily through them with a pen, where others are filled with the foam. Some of the reinforcement cones were again pierced at arrival in Brussels.

- Quiet some water (some liters) has entered inside the slabs, leaking now all over and difficult to remove all the water. Main problem however is that this potentially increases the weight of the slabs considerably. This increase in weight will become unacceptable for aerial transportation costs when several slabs are stacked together.

- However, this time, no water was found within the slabs. It isn't really that the objective of making them completely watertight is reached, but the packaging might have improved.

Comment of K.K. NAG: We did not realize that making the slabs watertight was a requirement. We can definitely make them generally watertight (although the walls in the cones and prisms will always be thinner than the general wall thickness).



- The metal reinforcement bars inside the slab are exposed to humidity and corrosive gasses and might start to corrode, which might reduce its strength over time.

☹️ The footrests seem to be located too much towards the back of the slab in comparison to the key hole or water pan. This will probably lead to soiling of the slab with excreta, especially for larger people with long femurs. We've checked with several other latrine slab designs, and there the footrests are up to 50 mm more forward.



☹️ The anti-slip profile of the footrests is difficult to clean. It is suggested to have only wide lines perpendicular on the position of the feet, which will still provide enough anti-slip but eases the maintenance.



- The metal reinforcement bars seem to have disappeared, thus resolving the problem of corrosion.

☺️ The size of the footrests have increased a lot in size, far beyond the spacing needed for children. Their dimensions are exaggerated and the footrests lose their main purpose: **the right positioning of a person's excretory opening over the keyhole when squatting.**



On top of that, the area most exposed to soiling becomes very difficult to clean as there are a lot of edges around the drop hole which aren't very accessible with a broom anymore (e.g. very narrow space in between raised footrests and drop hole).

☺️ The anti-slip profile of the footrests has been improved: the spacing in between the diamond anti-slip shape has been enlarged which eases considerably the cleaning. However, it's a pity that the diagonal direction of the anti-slip is not oriented towards the drop hole as this would have permitted to push the dirt and wastewater directly in the pit / pan.



☹️ The NAGMAGIC logo interferes with keeping the slab clean. A better position for the logo for hygienic reasons would be the backside of the slabs – sorry for that.



☹️ The water pan lays loosely in the slab. Shouldn't they be blocked in the slab (glue, adhesive tape, click system). We had some small problems with the models we received in India to fit the water pan, but after some determination, we've succeeded anyway.

☹️ The NAGMAGIC logo is still located at both sides of the footrests, which interferes with keeping the slab clean. We suggest to put the logo at the back of the upper face of the slab, thus getting less dirty and even more visible when entering the latrine.



☹️ The idea of having one slab for “African” (drop hole) as well as “Asian” (pour flush) purposes is very interesting. However, when the water pan is fixed, there is a gap of about 2 cm in between the slab and the rim of the pan. Therefore, the advantages of the water seal are completely lost: no smell and no access to flies.



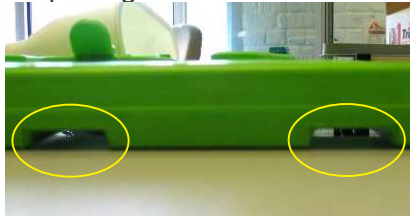
On top of that, the size of the holes in the pan rim are inadequate for the bolts delivered with the slab, which in term are too long for the pan to be tightened correctly.

☹️ The 4 corners of the slab should have watertight holes in order to avoid the slabs slipping away and falling into the pit when somebody steps on them. The watertight holes could be:

- about 5mm in diameter to introduce tent pegs. These holes are a must as a safety factor or
- about 32 mm in diameter that would not only provide the possibility to lock the slabs, but could at the same time also be used to introduce poles for a rapid construction of a superstructure with plastic sheeting.

☹️ When you step on the slabs, they feel fluffy in between the reinforcement cones. Would it be possible to replace the cones that support the top layer of the slab by prisms (and increase their number as well along the slabs width and length), in order to add to their rigidity (less fluffy feeling)?

☹️ The reinforcement bands cover the whole length of the slabs, leaving openings via which flies can enter the pit. These openings should be avoided.



☹️ The lid of the African model isn't rigid enough. If one steps on it when it is still closed, it bends that much that it is pushed through the keyhole together with the persons foot getting trapped. This might lead to accidents as the keyhole itself is relatively big.



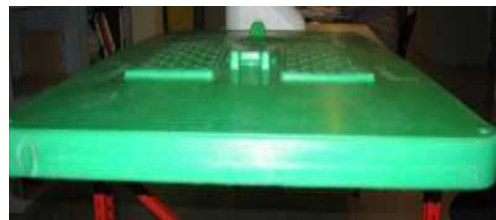
☺️ The 4 corners of the slab have received small water tight holes in order to avoid the slabs slipping away and falling in the pit.

☺️ Pegs have been delivered along with the slab and are nicely integrated in the reinforcement slots on the underside of the slab.



☺️ The foamed model and certainly its footrests feels more stable (less fluffy), although that the foam isn't spread over the whole surface of the slab, not even over the whole surface of the footrests.

☺️ This problems is completely resolved with the new model as there aren't any openings anymore at that level.



☺️ The lid has been increased in size with its edge resting on the slab, therefore it becomes very difficult to be pushed through the keyhole. However, the hinge of the lid seems to be quite weak and we doubt if it will last long under field conditions (see also before).



We were wondering if it would be possible to have the top plate of the slabs slightly inclined towards the keyhole / water pan in order for cleaning water to find its way towards the pit as it is the case for most slabs on the market presently.

Comment of K.K. NAG: I am afraid this is the only one of your suggestions which is technically not possible. This is because it is not possible to get completely flat surfaces using rotational moulding.

Apart from these positive and negative observations, we suggest also to include some explicative notes:

- How to install the slabs.
- Suggestions on how to make superstructures.

As it is understood that creating a slight slope inwards is technically impossible with rotational moulding, we drop this demand. This feature would have made the maintenance easier, but it is not an essential demand.

This request remains and was accepted by K.K. NAG as a good idea.

Additional suggestions:

In order to avoid odours and/or vectors passing in between two installed slabs (e.g. in an emergency situation), it is suggested to seal the potential gap with silicones. Hence, it is proposed to include a tube of silicone (with silicone gun if required) per pallet of slabs.

As already discussed verbally before, the colour of the slab is important to us. Colours with a political and/or religious connotation should be avoided (e.g. green in Muslim countries). Also colours that attract vectors (e.g. blue / black as in Tsetse flies trap) should be banned. We prefer a neutral colour such as (light) grey.