

MEMO 33  
TSS / RVK  
TYPICAL QUESTIONS AND ANSWERS  
  
PLANNING

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## **TYPICAL QUESTIONS AND ANSWERS ABOUT RVK AND TSS**

### ***Re.: Black steel versus hot dip galvanized :***

When galvanized, they are named: RVK 101G, RVK 41G, TSS 101, TSS 102G and TSS 41G. The galvanizing has a minimum thickness of 0.08 mm. The galvanizing is done according to the NS-EN ISO 1461. Normally the black steel version is acceptable, as the high pH value in the concrete will protect the steel.

However, there are also good reasons to use the galvanized versions; If the connections or the concrete components are stored outdoor for some time, rust and rust staining of the concrete surfaces can be avoided. Possible moisture with chloride ions in the stairway, might be another reason to use the galvanized version. Corrosion protection is recommended where the connections are exposed to the environment. Parking garages are an example of where hot dip galvanized RVK's or TSS's might be preferred.

### ***Re.: Stainless steel connections:***

Use of stainless steel in the RVK or TSS units should normally not be necessary. However, we have customers who have requested this, and we have delivered such units according to the customers wishes. The units will then be delivered in steel quality AISI 304. Remember;

\* Units in stainless steel will have a lower capacity for the steel. This must be controlled according to local codes and regulations.

\* Allow a delivery time of 3-6 weeks more than for normal units.

***Re.: Dimension of the joint between the stairway and the wall:***

This differs quite a bit between different countries. Normally we recommend 20 mm with a tolerance of plus/minus 10 mm for RVK, and a 10 mm wider joint for TSS. While it is normal to strap around the units during erection, when TSS – units are used.) Countries like Sweden and Denmark, normally use a nominal dimension of 30 mm for the joint,- plus tolerances. One of the more important reasons for this, is that the stair components often are lifted into position by strapping around the components. The joint has to be wide enough to get the strapping out. Tradition and practical considerations like this, will decide the size of the joint. From the various sites that have used RVK or TSS –connections, we have seen nominal joints from 15 to 50 mm. We also refer to MEMO 52, that gives the assumed position of forces. This must be taken into consideration to avoid too large eccentricity and an acceptable bearing area.

***Re.: Use of RVK or TSS gives faster erecting:***

The economical importance of faster erection varies quite a bit depending of building type and the site. For a tall building in a city center, sometimes costly large capacity mobile cranes are used to reduce disturbance to local traffic. We have had reports, telling that the savings in crane leasing costs using RVK - or TSS- units have been higher than the costs of the connection units.

***Re.: Avoiding impact sound transmission :***

One of the great advantages with the RVK and the TSS – system, is the possibility to reduce the transfer of impact sound from the stairway to the surrounding structure and rooms. By using rubber, neoprene or similar pads at the support, the sound transmission can be reduced considerably. The use of a JVI Masticord pad is a good solution. For details see Memo 20 (RVK) or 32 (TSS).

***Re.: Adjustment of slab elevation during erection:***

Vertical adjustments can be minimized by setting the proper bearing pocket elevation to within standard tolerances. If adjustment is needed, first determine the elevation adjustment needed. For an increase in slab elevation, add shims. For a decrease in slab elevation, the bearing pocket must be lowered. Where available, use of JVI Shimmers and JVI Masticord might be a good solution. For details, see MEMO 20.

***Re.: TSS versus RVK:***

The RVK and TSS – connections are complementary solutions, while all the external detailing, as the pocket in the wall, the reinforcement, capacities etc, are the same for both systems. Both solutions have certain advantages versus the other. The type of stairway and local traditions will decide which of the two is the right to use each time. The RVK – connection;

- makes it easier to fill the connection with mortar, if this is desired.
- can utilize smaller joint dimensions.

The TSS – connection is in particular designed for concrete components that will have a finished top surface directly from the precasting plant, as for example terrazzo.

***Re.: Special advantages with TSS , regarding other (similar) “telescope-connections”:***

We have seen other “telescope-type” connections used. The TSS – connection has some special advantages (patented);

- The “return string” to reduce trouble in case of mistakes during erection.
- The stopper to avoid overloading.
- The control marking to enable control of the telescoped part being in the right position.
- The hole for a safety stop.

***Re.: Fastening of the units to the mould during casting:***

In MEMO 20 (RVK) and 32 (TSS) are shown some details on how to do this. An alternative for the guiding piece when the TSS – connection is used, is to use the same type of plastic lid as are used in the back of the component.

***Re.: Filling the joint with mortar or not:***

Normally we would not recommend filling of mortar in the joint between the stairway components and the wall. The joint will then transmit impact sound.

Sometimes, but not often, there might be reasons to fill the joint;

- to avoid staining of the walls during washing of the stairs.
- to avoid filling of the joint with dirt over time.
- when also the stairway components are utilized in a stabilizing effort to take horizontal forces.

If the first two arguments are present, a recommendable alternative solution might be to use a compressible and flexible strip of rubber or plastic, and seal this with a joint sealant.

**Re.: The size of the support pocket in the wall.**

A major advantage with the RVK and the TSS – connections,- is that the connections are hidden, giving a clean, flat wall surface, without hindrances during erection, and with nothing to collect extra dirt during use. Consequently the pocket should be hidden by the thickness of the landing or the stairway.

***Re.: Filling of the connection units with mortar after erection.***

Normally the RVK-units should be filled with mortar after erection. We would in most cases also recommend filling the recess hole in the wall with mortar.

***Re.: Preventing the inner tube from retracting?***

We have never experienced this during practical use, but as a safety precaution, and particularly in seismic areas, we recommend to ;

- put a temporary steel or wood piece to lock the inner tube of the RVK – unit before grouting.
- use the hole for safety pin/bolt in the joint for the TSS unit.