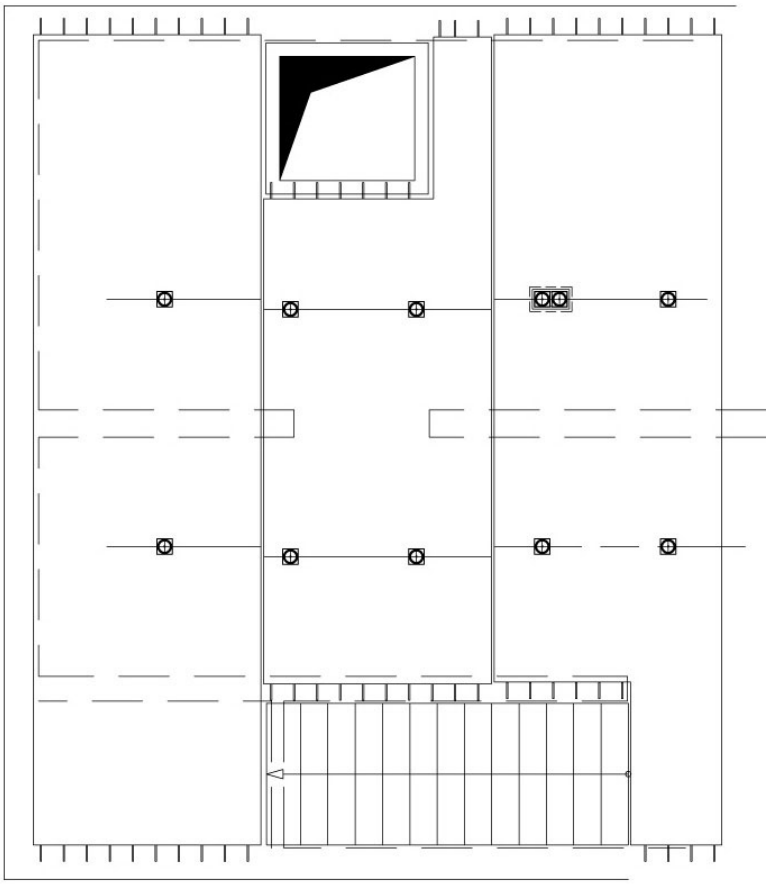
Dimensions and Tolerances in plane

Design-luminaires impress with their good design and a remarkable exact and clean installation. This is a clear expectance for all matters of the installation and relates both, the single luminaire and a figure or a group of luminaires. Installation-rows and lines-of-sight have to be “in line” and without bigger deviations. Luminary trims have to be recessed perfectly even in the ceilings surface and with no waves or corrugated plaster finish. This is not an easy exercise even in so called “in-situ concrete” works.
If precast concrete ceiling elements are used, or trimless luminaires are about to be installed, things become even more difficult.

Precast concrete components, so-called „filigree ceilings“, are subject to bigger tolerances and deviations. First of all in their production, and afterwards when installing them on the building site. During the building process it is reasonable important that elevators and staircases match in vertical positions. Subordinate Installations and openings in ceiling panels have to follow up with this. For this reason all openings are allowed to have a considerable tolerance in position, depth and size. Deviations of about +/- 50mm in floor plan position are tolerable for these openings. But this is of course not tolerable for your client when installed luminaires “jump out of line” after installation.

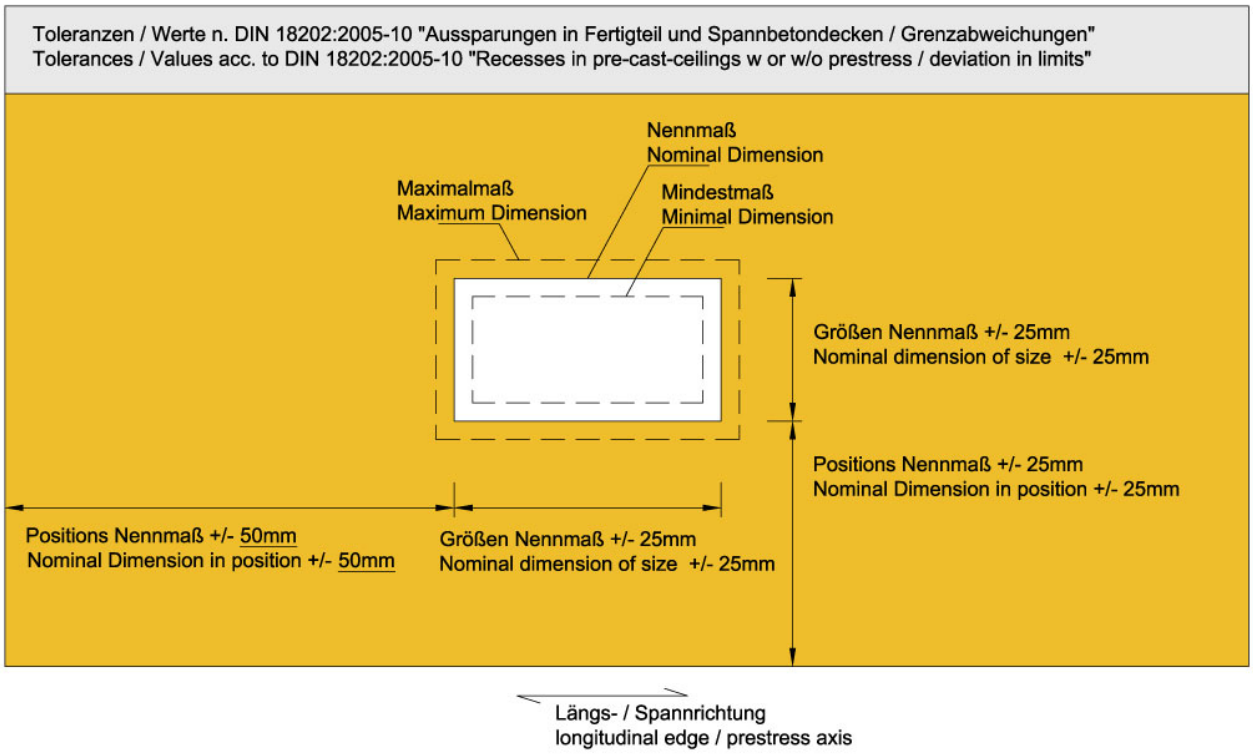


A typical layout of ceiling elements may look like this:

The middle element had to be fitted between staircase and elevator when placed. Remaining elements line up with the building outside walls and supporting walls. Recess openings in middle positions are slightly out of axis. Maximum here would be 2x50mm=100mm. That would be surprisingly much in such a small area. A reasonable deviation would be about 20 to 40 mm.

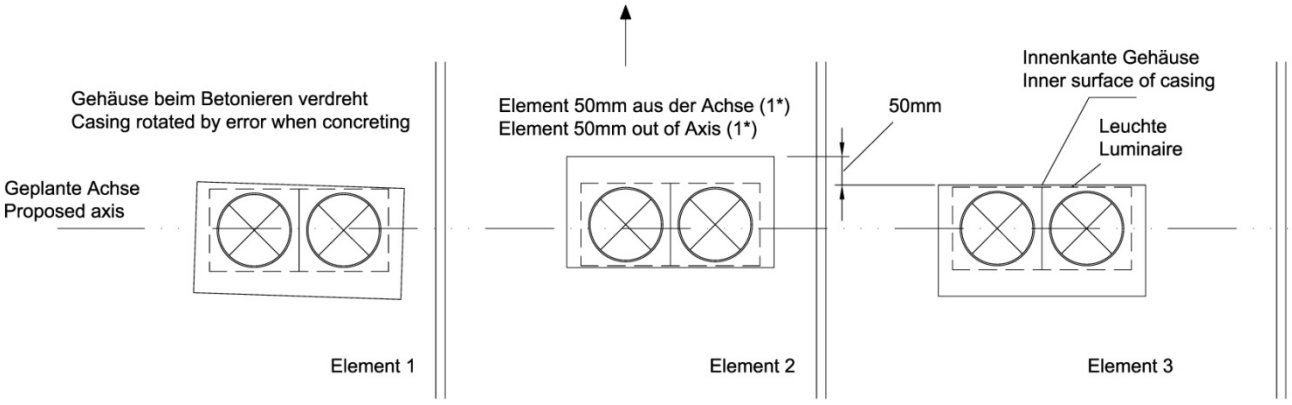
Concrete recessing of design-luminaires

The basis for these “deviations in position” can be found in DIN 18202:2005-10
(Tolerances in building construction: - “Recesses in pre-cast-ceilings w or w/o prestress / deviation in limits”)



The concept of the Römerboxx® offers possibility to adjust luminaire position even after completion of the concrete casting process. Adjustments of about +/-20mm can be done easily in two directions. (40mm adjustment – in a series of luminaires. See below). In addition the luminaire can be rotated by up to 8° to compensate for rotational errors caused by bad placement of the casing on the shuttering.

Here some typical errors and possible compensations:



1* Beim Ausgleich eines solchen maximalen Fehlers müssen alle Rahmen neu gefluchtet werden.
1* When compensating such a "maximum error" all frames have to be realigned.

Concrete recessing of design-luminaires

This is the reason why „design luminaires in concrete“ are often seen as a risky adventure in building business. Even though several manufacturers offer concrete installation casings, the problem is not solved because none of them has a “built in system tolerance”. Some architects and engineers are skilful in “styrofoam castings”, but this is not a generally applicable method at all and certainly not a standard approach for all clients.

Although a single styrofoam block seems to be a cost effective solution. The ruling price for one block is about 15-25€, the cost of such unsatisfactory patchwork is spread over all the following crafts companies on the building site.
From structural works contractor to the electrician, plasterer and even the painter. Each contractor has to do some touching-up on the recess openings to fulfil his share of work. That will of course lead to a surcharge from different sides.

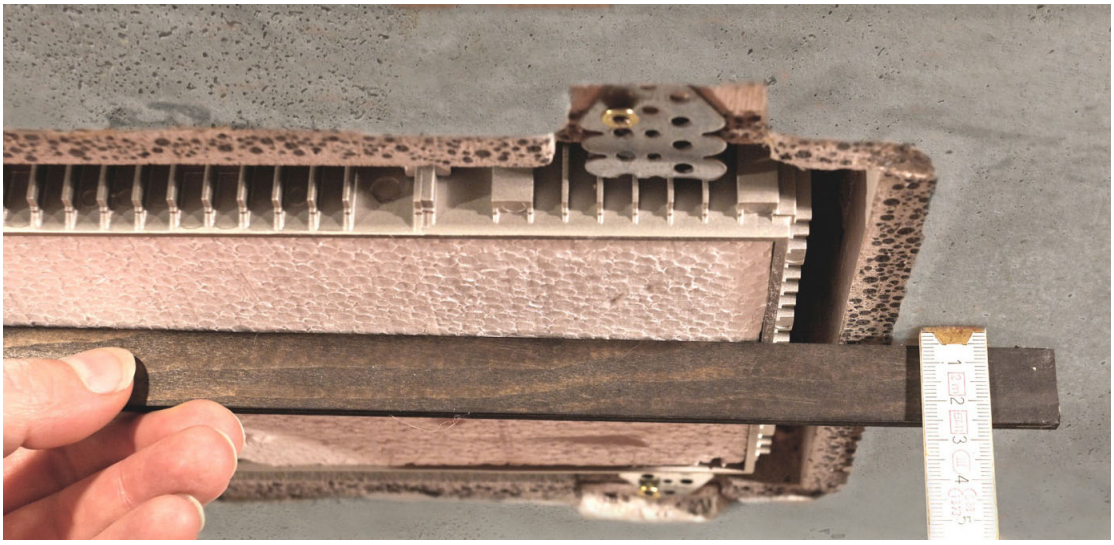
This picture shows a typical styrofoam casting block in-situ. This one is for the installation of heating pipes.

Luminaire recesses are casted the same way.

If you take a look at the installation instructions of a Römerboxx® , you will notice the differences between a “free approach” and working with the well prepared advantages of our system. All working steps and parts are lined up in order to match the methods of work for each technical crew.

Dimensions and Tolerances in height:

It occurs that a specified thickness of plaster is planned, but after stripping the ceiling, a look from the bottom side shows that quality is insufficient or the surface has faults that need to be covered up with a thicker layer of plaster.



Checking of:

Frame-tilt and Plaster thick-ness

The concept of the Römerboxx® offers you possibility to easily adjust the mounting frame in a floating range of 0-50 mm.

50 mm or more are usually used for a soundproofing plaster or to bring the luminaire front into the level of an acoustic panel, mounted tight below the concrete ceiling. The achievable exact heights depend on the parts and mounting frame supplied by the luminaire manufacturer.

In case that the ceiling plasterer is advised to put on a thicker layer than the formerly planned, he can even wait and leave this work open until plastering thicknesses are finally fixed. Adjusting and correcting the frames in height is so fast and easy done, that working on these parts can be suspended until the very last moment. That is a really remarkable advantage in overall working process.

There are certain bigger casings and luminaire housings on the market for installation of electrical equipment. These systems are configured for installation of speakers or compact fluorescent luminaires and often have no clearance for halogen lamps >50W. Most of them are simply oversized (h=200mm) for installation in private building projects. Sometimes the installation of a luminaire fails because some minor parts of the luminaire e.g. installation clamps don't fit.

Concrete recessing of design-luminaires

These casings are all equipped with moulded PVC front-plates or a fibre reinforced drywall board. All these parts cut down the luminaires usable clamping span to a small amount and reduce the applicable plasterthickness drastically.

To give you an example of the most common trouble when installing a universally applicable case:

After stripping down the shuttering boards the architect decides that the surface of the casted ceiling is faulty or segments are uneven. The ceiling needs some more plaster to hide buckles and corrugations. Let's say 10 mm. This brings mounting clamps for most of the available luminaires to a tolerance of zero. Installation of luminaires will then be tight.

Why ? : - PVC front-plates and parts usually have a thickness of about 15 mm + 10 mm plaster = 25 mm.
Lots of luminaires can only hold themselves in a thin construction area of less or equal to 25 mm.

The conceptual design of our „Römerboxx® " is adjusted to selected luminaire manufacturer's mounting frames. Therefore all adjustment and tuning parts provided with the luminaire and frames can be used to a maximum degree. We supply special fitted mounting parts, as slotted mounting brackets with different hole-patterns for installation.

Specials and preview:

Due to our just-in-time production we are able to meet special requirements on request.
E.g. additional bigger or more "flex-duct connectors" DN 15/20/25/30/35 for additional circuits, control wiring loops, speaker systems, sensors .....

Even bigger transformer compartments are possible to carry "silent line" transformers, which are usually used in HIFI amplifiers. These are very quiet even on minimal load when dimmed to 5% or less. Normally these transformers don't fit into luminaire housings because they are a bit bulkier than the regular electronic micro devices which are very small. But these modern devices also tend to a noticeable humming or buzzing, when dimmed to minimal load.
In a rapidly growing LED market the halogen illumination will still remain and evolve to a high-class illumination system with a high lighting comfort and characteristics. Halogen light is our biological correct equivalent to a relaxing "beam of sunlight".
Nevertheless halogen systems will have to get rid of all negative aspects. And humming and buzzing certainly is a negative aspect. No one wants to listen to the "sounds of electrical installations" while relaxing in a private audio-room, gallery or even at the splendidly decorated dinner table on a wedding day. Do you ?

More about custom modifications or changes in design on our website under FAQ/Service.