The figure below represents the two components which are usually equipped with way systems with either rollers, balls or needles.
The structure onto which the rails have been mounted must be sturdy enough so as to prevent rails from taking particular positions, when stressed by the preload, which may jeopardize the ideal geometry between rollers and raceways.

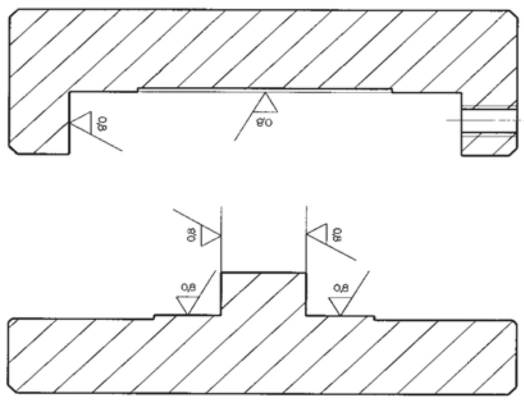

Fig. 2

For a properly executed mounting, the following condition should be verified:

1) The supporting surfaces should be ground or, in the worst case, milled, paying particular attention to the process.
2) The planarity and parallelism of the system are directly affected by the precision of the surfaces indicated to be ground. The deviation allowance for such surfaces should be within the values indicated on the graph on Page 7.
3) The included angle between the two adjacent surfaces should be 90°.
4) The holes for the retention screws should be carefully deburred to guarantee the surface quality of the supporting face.

It should be noted that all rails have threaded holes.
This allows for two different mounting methods.

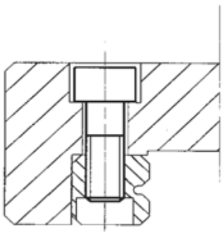

Fig. 3

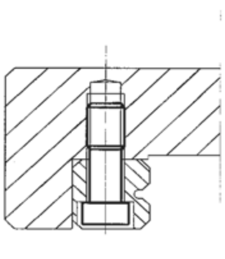

Fig. 4

Mounting of rails

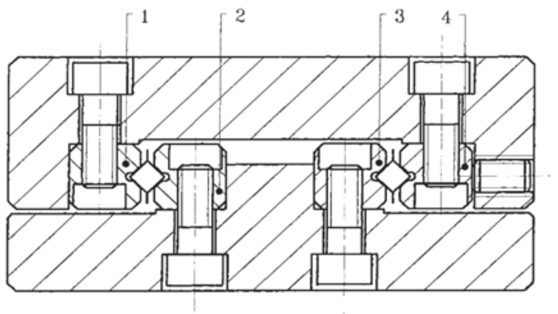

Fig. 5

Independently from any assembly method, we recommended to follow these steps:

01) Assembly of rails 2 and 3, which should be carafully pressed against the supporting surfaces before tightening of the screws.
02) Checking of the planarity, parallelism of the rails installed.
03) Installation of the rail 1, following the same steps as for rails 2 and 3.
04) Installation of the rail 4, without tightening the retaining screws.
05) Installation of th relative cages.
06) Installation of end pieces and/or wipers.
07) Slide the moving portion of the system to the end of the travel/stroke to allow the centering of the cages.
08) Tighten the preloanding screws sufficiently to eliminate the clearance. The preloading value should be selected according to the application requirement (rail type, rigidity, etc.). Such a value may very between 2% and 20% of the rated dynamic capacity. In alla cases the smoothness of the system must be preserved.
09) Tighten the retaining screws of rail 4.
10) To ensure a proper mounting of the rail, the marking should be visible at all times.
11) For a mounting as indicated in Figure 6, the height A and A1 can be matched, at extra cost, to a maximum variation of ± 0.01 mm.
12) After the assembly, make sure that the limit switch trips before the cages hit the screws or the end pieces.

Fig. 6

Note: During the preloading phase the cage must always be behind the preloading screw that is adjusted. Also, in case of heavy mobile portion, provision must be taken to neutralize the weight. If this is not done, the preloading operation will be more complex and the correct setting of preload very difficult to achieve.

Determination of cage length

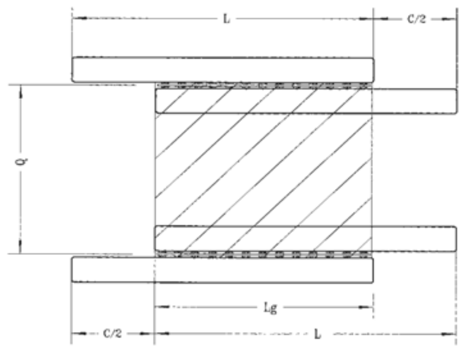

Fig. 7

Assuming to choose the rail type GR9 400 with a stroke length C = 250 mm. The cage length is determined by the following relationship: $L_g = L - 1/2\ C$

Thus, $L_g = 400 — (250/2) = 275$ mm

Note: The selection of a specific rail length, as a function of given stroke, should satisfy the following requirements:

1) If the rail length will be up to 400 mm, all strokes between 1 mm and 2/3 of the rail length will be possible.
2) If the rail length will be more than 400 mm, all strokes between 1 mm and the length of the rail will be possible.

Based on the above, in a system riding on four rails of equal length (500 mm) the moving portion could overhand 1/2 of its length (condition limit) Fig. 8.

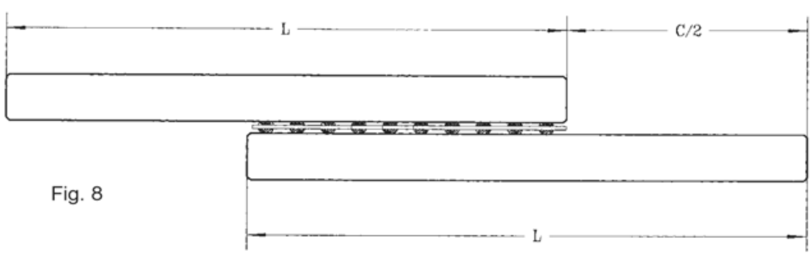

Fig. 8

Determination of the number of rolling elements and the load rating of cage

From the previous example, L_g = 275 mm
Rail type GR9
Roller diameter 9mm

Examining the table on Page 20 to obtain the value of the pitch relative to the cage/roller in exam.
t = 18 mm thus, the number of roller will be NR = L_g/t = 15

The number of supporting rollers for a cross roller cage will be NR/2. However, the usual assembly requires two rail systems, thus the total capacity will be a function of NR or the number of rollers in one cage, being P = 1300N the load carrying capacity of a roller, (See dimension table on Page 20) the system load rating will be: P = PxNR thus, for the previously selected cage: P = 1300x15 = 19500N.