

## VERIFICATION OF STATIC LOAD

As you can see from pages C20 and C21, **ASN** slides can carry loads and moments in every direction. It is, however, always necessary to verify that the total external loads and/or moments end up being less than or equal to the maximum capacities in the respective directions divided by the coefficient of safety  $z$ . The safety factor  $z$  can vary from a minimum of 1 in applications without impacts or vibration, with low frequency and high mounting precision, to a maximum of 3.5 in applications with impacts and vibration, high frequency or speed, and low mounting precision.

$$\frac{P_{rad}}{C_{0rad}} \leq \frac{1}{z} \quad \frac{P_{ax}}{C_{0ax}} \leq \frac{1}{z} \quad \frac{M_1}{M_x} \leq \frac{1}{z} \quad \frac{M_2}{M_y} \leq \frac{1}{z} \quad \frac{M_3}{M_z} \leq \frac{1}{z}$$

The formula mentioned above is valid if the external load consists of only one force or moment. In applications where more than one force or moment acts on the slides (and most applications fall into this category), it is necessary to verify that:

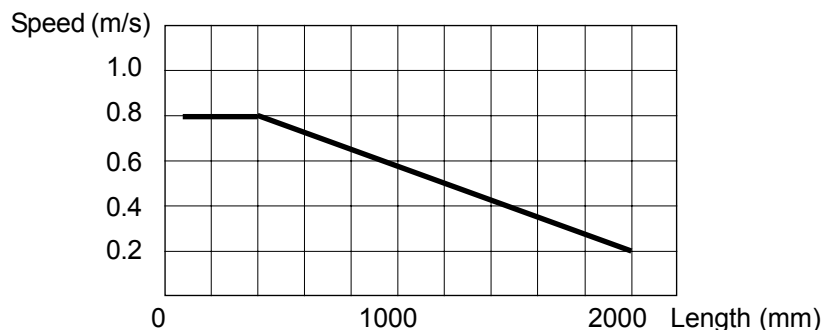
$$\frac{P_{rad}}{C_{0rad}} + \frac{P_{ax}}{C_{0ax}} + \frac{M_1}{M_x} + \frac{M_2}{M_y} + \frac{M_3}{M_z} \leq \frac{1}{z}$$

For all other telescopic slides (**DS, DE, DBN, LTF44**) where the load should be applied radially, the only result to verify is:

$$\frac{P_{rad}}{C_{0rad}} \leq \frac{1}{z}$$

## SPEED

The limits of maximum speed are determined by the mass of the intermediate member which must be pulled by the moving member. The speed diminishes with the increasing length of the slide as indicated below.



## OPENING AND CLOSING FORCE

The force necessary to open or close a telescopic rail depends on the applied load and on the deflection of the members when open. From the closed position, the opening force required is determined principally by the coefficient of friction of the ball bearing. This coefficient is equal to **0.01** when mounted and lubricated correctly. During the extraction, this force decreases in function of the elastic deformation of the loaded rails. From the open position, the force needed to close will be greater than the value determined only by the coefficient of friction of the ball bearings since the elastic deformation of the slide (even if minimal) will effectively cause the moving member to climb an inclined plane.

## LIFETIME

Lifetime is defined as the number of cycles of opening and closing that the telescopic rail is able to run without presenting wear that would substantially compromise its function. The lifetime of a telescopic slide is affected by many factors including applied loads, the working atmosphere, lubrication, speed, mounting, and the presence of impacts or vibrations, etc.

It is not possible to offer a formula that would take all of these important factors into consideration. It is possible to state that, based on experimental test results, in ideal conditions **with an applied load of 2/3 the C<sub>0rad</sub> value, more than 500,000 working cycles can be reached.**