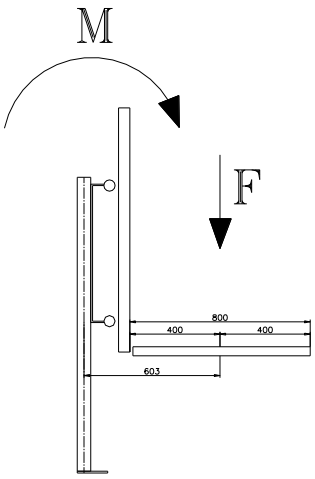
STAIRISER CR
Curved Rail Wheelchair Platform Stairlift

Loads & Fixings
For guidance only

Stannah

Loading to one pillar from lift carriage and its service load.

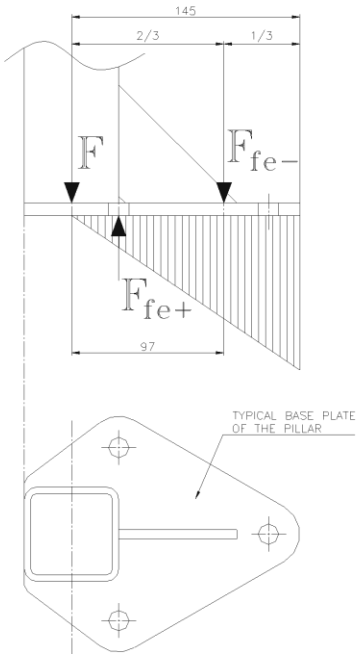


Mass of the service loading: Q = 250 kg
Mass of the lift carriage: G = 108 kg

Resultant loading force: F = (Q + G) . g = (300 + 108) . 9,81 = 4003 N

Bending moment: M = F . c = 4003 . 603 = 2 413 809 Nmm

Loading is affected to staircase through base plate of the pillar:



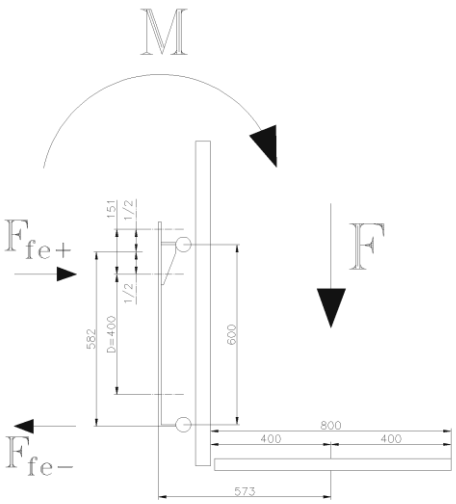
Loading force F causes continuous compressive load under base plate area. Bending moment is intercepted by couple of forces which causes tensile load to pair fixing elements and compressive load on opposite side of the base plate.

F_{fe} = M / L = 2 413 809 / 97 = 24885 N - for pair fixing elements

F_{fe1} = F_{fe} / 2 = 24885 / 2 = 12442,5 N - for one fixing element

Important note:
If is not possible fixed forces above, is necessary make additional pillar fixing somewhere on the pillar for elimination or reduction bending moment which causes greatest loading to the staircase.

Loading is affected to wall when the rail is fixing on the wall:



Mass of the service loading: Q = 250 kg
Mass of the lift carriage:G = 108 kg

Resultant loading force: F = (Q + G) . g = (300 + 108) . 9,81 = 4003 N

Bending moment: M = F . c = 4003 . 573 = 2 293 719 Nmm

Vertical force F load all three anchor screws.

Bending moment is intercepted by couple of forces which causes tensile load to pair fixing elements and compressive load on lower part of the rung.

F_{fe} = M / L = 2 293 719 / 582 = 3941 N - for upper couple of anchor screws

F_{fe1} = F_{fe} / 2 = 3941 / 2 = 1970,5 N - for one anchor screw

Important note:
The forces for anchor screws are calculated with dimension D=400mm. This dimension is the smallest for angle of the rail 60°. For smaller angles is D bigger and forces on anchor screws are smaller then calculated.

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