



X3-R

Residential Inclined Wheelchair Lift

Garaventa X3-R

Design and Planning Guide

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## **Garaventa - the world's #1 choice for accessibility solutions**

Garaventa has been dedicated to developing safe and reliable accessibility solutions since 1978, and is now an industry leader worldwide. Years of hard work and an uncompromising commitment to quality have enabled us to perfect the internationally renowned Garaventa Stair-Lift. This same commitment has led Garaventa to develop the X3-R inclined platform lift for residential applications.

### **What is an Inclined Platform Lift?**

An inclined platform lift easily transports a passenger in a wheelchair or someone who has difficulty maneuvering up and down a stairway. The lift can be operated independently or by an attendant with an attendant remote control (optional item).

Compatible for indoor and outdoor applications, the Garaventa Inclined Platform Lift is a versatile, attractive and cost-effective accessibility solution.

### **Finishes**

#### **Standard Color**

The X3-R rails and loading ramps are made of champagne anodized aluminum. The non-aluminum components of the lift are finished in a durable polyester powder paint coating that is electrostatically applied and baked at 210° C (410° F). Garaventa's standard color, Satin Grey (fine textured), compliments a variety of modern and traditional decors (color samples are available upon request). The conveyance cover is made of black colored high quality ABS/PVC.

#### **Optional Colors**

Garaventa also offers a choice of colors from the internationally accepted RAL color charts (color samples are available upon request). Please note the conveyance cover is not painted.

Custom paint finishes available, contact your local Garaventa Representative.

### **How it Works**

The platform of the X3-R travels along two custom designed aluminum rails that can be mounted either directly to the wall or to support posts (towers). The upper rail houses a gear rack while the lower rail provides lateral support. The platform is propelled by means of a carriage mounted rack and pinion drive system

# Platforms

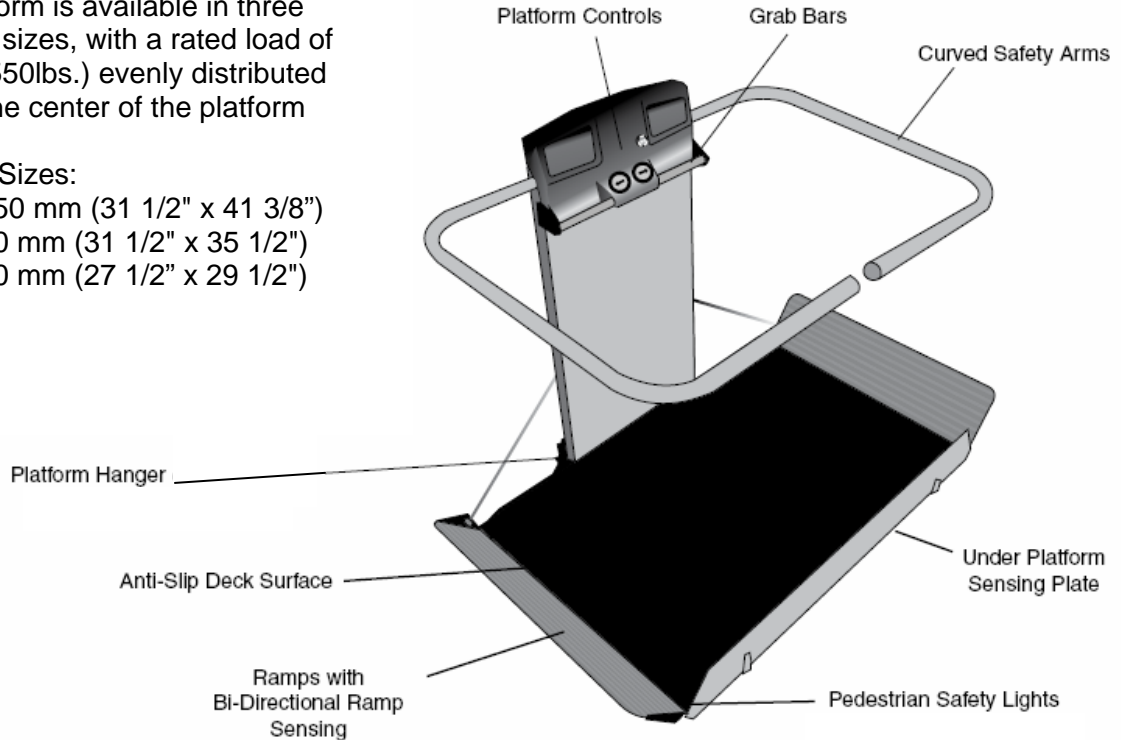
The platform is available in three standard sizes, with a rated load of 250 kg (550lbs.) evenly distributed around the center of the platform

**Platform Sizes:**

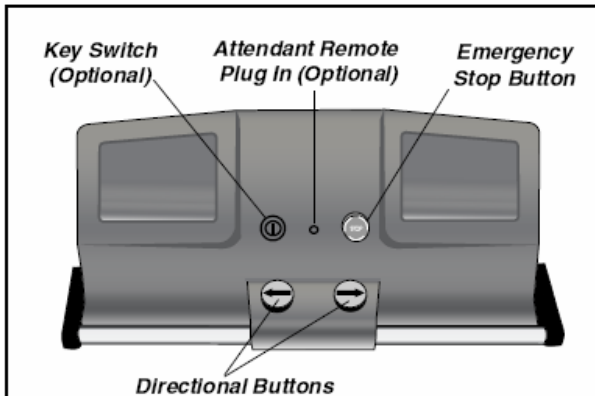
800 x 1050 mm (31 1/2" x 41 3/8")

800 x 900 mm (31 1/2" x 35 1/2")

700 x 750 mm (27 1/2" x 29 1/2")

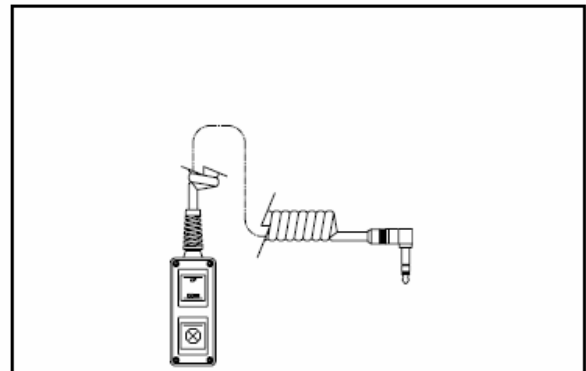


## Platform Controls



**Platform Control Panel**

The durable and vandal resistant platform control panel is mounted to the platform hanger. The standard platform controls consist of two large illuminated **Directional Buttons** for independent operation and an **Emergency Stop Button** (with illumination optional).



**Attendant Remote Control Unit**

The platform can be equipped with an optional **Attendant Remote Control** that overrides the **Directional Buttons** during attendant operation. The remote control unit can be removed when not required.

## **Standard Platform Features**

### **Emergency Stop Button**

Located on the platform control panel, this red button is used to stop the lift in an emergency.

### **Over-speed Safety**

The over speed safety which is located in the upper carriage on the platform, consists of a mechanical pawl and electrical cutout switch. In the unlikely event that the lift should descend too quickly, both the mechanical and electrical safety will activate simultaneously and stop the platform from moving.

### **Leading Ramp Sensor**

The leading ramp is sensitive to obstructions. The ramps are designed to be obstruction sensitive in the direction of travel on the outside of the ramps as well as from within the platform. The internal ramp sensor prevents a wheelchair from being off-center on the platform deck.

### **Under Platform Sensing Plate**

The under platform sensing plate detects obstacles underneath the platform.

### **Platform Grab Bar**

This safety feature increases the ease with which passengers may load and unload from the platform.

### **Emergency Fold**

In an emergency the platform is able to be manually folded and will lock in the folded position.

### **Curved Safety Arms**

Fully automatic curved safety arms further increase the safety of the X3-R inclined platform lift.

### **Hour Counter**

The hour counter enables the owner to determine the amount of time the X3-R inclined platform lift has been used. This is a helpful tool in determining times for preventive maintenance.

### **Keyless Platform**

The platform comes standard without key.

### **Manual Emergency Lowering**

Lift is equipped with manual hand wheel to allow the platform to be lowered in case of an emergency or power loss.

## Optional Platform Features

*Note: In some areas certain optional features are either not permitted or mandatory depending on local codes. Please consult your local Garaventa representative for clarification*

### Folding Seat Assembly

The folding seat is equipped with a safety belt.

### Side Load

Designed for confined lower landing areas, this feature opens a side ramp simultaneously with the end ramp. This allows the passenger to wheel onto the platform diagonally offering easier access.

### On board alarm with illuminated E-Stop button

The emergency stop button can be illuminated and activate an onboard alarm.

### Keyed platform

This option is designed for protection against unauthorized usage of the lift.

### Platform lock (manual platform) / Solenoid lock (automatic platform)

This is an additional safety feature that locks the platform and protects the unit from vandalism.

### Attendant Remote Control

The Attendant Remote Control overrides the directional buttons during attendant operation. The remote control unit can be removed when not required.

### Platform Power Fold and Unfold

Platform can be folded and unfolded from the call stations by pressing the appropriate button.

## Guide Rails

Two aluminum extrusions make up the guide rail assembly. The upper rail houses the rack that the platform's pinion gear utilizes for travel. The platform is mechanically attached to this upper rail. The lower rail is used as a guide track for the rollers of the lower carriage assembly. The upper and lower rail heights are based on the stair angle and the platform size. For more information on rail heights see page 10.

## Call Stations – Wireless (optional)

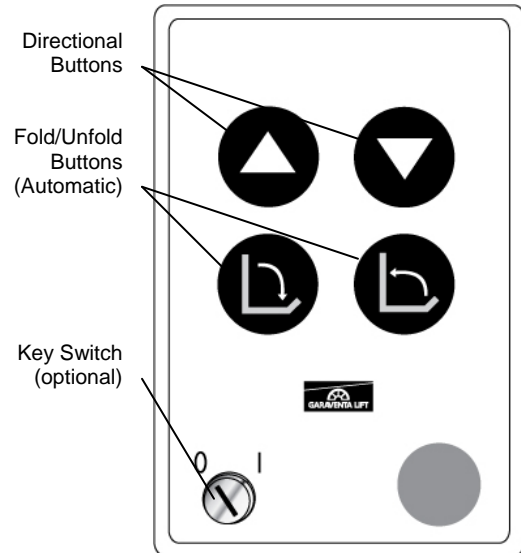
Each landing is equipped with a call station. The call station enables the user to call and send the platform with a touch of a button. Platform fold and unfold is possible with the fully automatic model.

## Keyless Call Stations (adjustable in field)

This feature allows the user to operate the lift without a key.

## Mounting Options

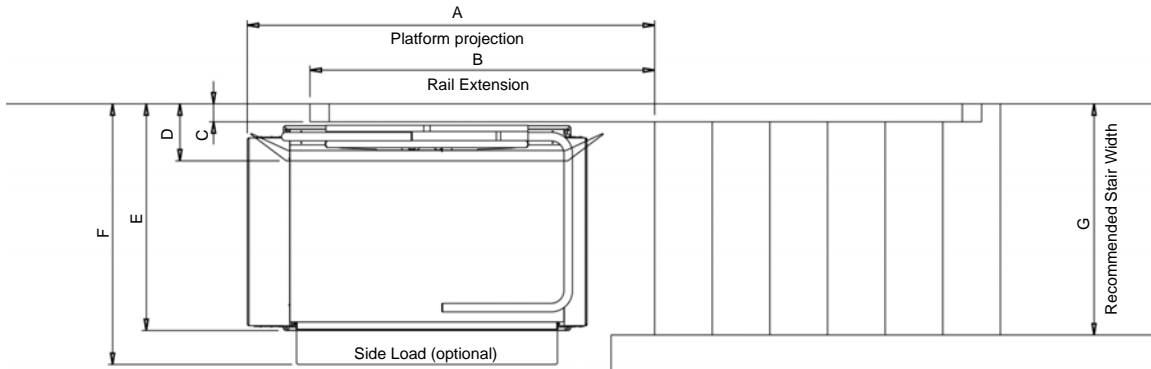
The call stations are mounted on the wall. Optional flush mount call stations are available. The optional flush call station box dimensions; Length: 185mm (7 1/4") Width: 115mm (4 1/2") and Depth: 52mm (2")



4 Button Call Station for Automatic Platform shown

## Outdoor Applications

Because most components of the X3-R are made of anodized aluminum they are already prepared for outdoor use. Any components that are not made of aluminum are zinc plated. If the X3-R is to be used outdoors or in an extreme environment (e.g. near swimming pools, hot tubs, chemicals, etc.) it is necessary to use stainless steel fasteners and support towers (if required, see Attachment Methods). An outdoor platform cover can be purchased (optional) to assist in protection in severe weather areas. Quarterly maintenance strongly recommended for outdoor units.



Note: Dimension F only applies at lower landing when the side load ramp is in the open position.

## Platform Projection and Rail Extensions

Stair Angle	15°	20°	25°	30°	35°	40°	45°
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### Dimension A - Platform Projection

800 x 1050 platform (31 1/2" x 41 3/8")	1994 78 1/2"	1807 71 1/8"	1692 66 5/8"	1614 63 1/2"	1556 61 1/4"	1511 59 1/2"	1475 58"
800 x 900 platform (31 1/2" x 35 1/2")	1844 72 5/8"	1657 65 1/4"	1542 60 3/4"	1464 57 5/8"	1406 55 3/8"	1361 53 1/2"	1325 52 1/8"
700 x 750 platform (27 1/2" x 29 1/2")	1694 66 3/4"	1507 59 3/8"	1392 54 3/4"	1314 51 3/4"	1256 49 1/2"	1211 47 5/8"	1175 46 1/4"

### Dimension B - Rail Extension

800 x 1050 platform (31 1/2" x 41 3/8")	1752 69"	1552 61"	1420 56"	1322 52"	1241 49"	1169 46"	1104 43.5"
800 x 900 platform (31 1/2" x 35 1/2")	1677 66"	1477 58 1/8"	1345 53"	1247 49"	1166 46"	1094 43 1/8"	1029 40 1/2"
700 x 750 platform (27 1/2" x 29 1/2")	1602 63"	1402 55 1/4"	1270 89 3/8"	1172 46 1/8"	1091 43"	1019 40 1/8"	954 37 1/2"

Note: These dimensions are based on a first riser height of 190mm (7 1/2"). The platform projection and rail extension will be shorter than indicated for shallow stairs below 25° as they may have shorter first risers, please consult Garaventa Lift.

## Stair Width Clearance Dimensions for Different Attachment Methods

(may require wall modification)

Clearance Width Dimensions	C	D	E	F	G
	Rail Protrusion	Platform Folded	Platform Unfolded	Side Load Ramp	Stair Width

### 800 x 1050 (31 1/2" x 41 3/8") & 800 x 900 (31 1/2" x 35 1/2") platforms

Direct Mount	81 3 1/4"	345 13 5/8"	1040 41"	1255 49 1/2"	1060 41 3/4"
Towers	146 5 3/4"	410 16 1/8"	1105 43 1/2"	1320 52"	1125 44 1/4"

### \*700 x 750 (27 1/2" x 29 1/2") platform

Direct Mount	81 3 1/4"	345 13 5/8"	940 37"	N/A	960 37 3/4"
Towers	146 5 3/4"	410 16 1/8"	1005 39 1/2"	N/A	1025 40 3/8"



## Attachment Methods

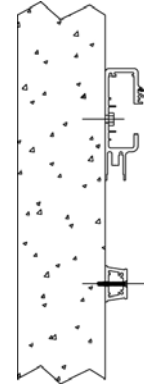
The aluminum guide and support rails can be directly mounted to the wall or attached to steel support towers. There are various attachment methods used to support the X3-R.

### Direct Mount Anchored to Solid Walls

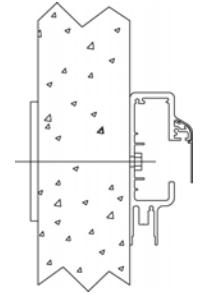
solid concrete 152mm (6") thick minimum  
 concrete block 203mm (8") minimum without reinforcement or 152mm (6") minimum with reinforcement

Wood support posts located in wall 100x150mm (4"x 6") minimum. Locations determined by Garaventa.

Steel support posts located in wall 76mm x 76mm x 6mm (3" x 3" x 1/4") wall minimum. Locations determined by Garaventa.



**Direct mount to Wall**

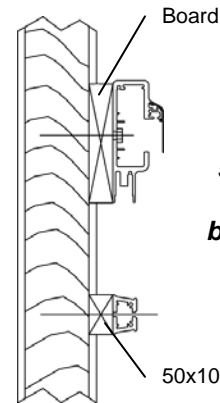


**Thin structural wall (Through-bolting maybe applied)**

### Direct Mount Anchored to Wood Stud or Thin Block Walls

The upper rail must be attached to a 50 x 200mm (2" x 8") board that is secured to the wall. For the lower rail, a 50x100mm (2" x 4") board can be used. Each board must be fastened into every available wall stud with minimum two screw fasteners.

Note: Not Suitable for Steel Stud Applications.



**Direct mount to 50x200 (2"x 8") and 50x100 (2" x 4") boards on wood stud or thin block wall**

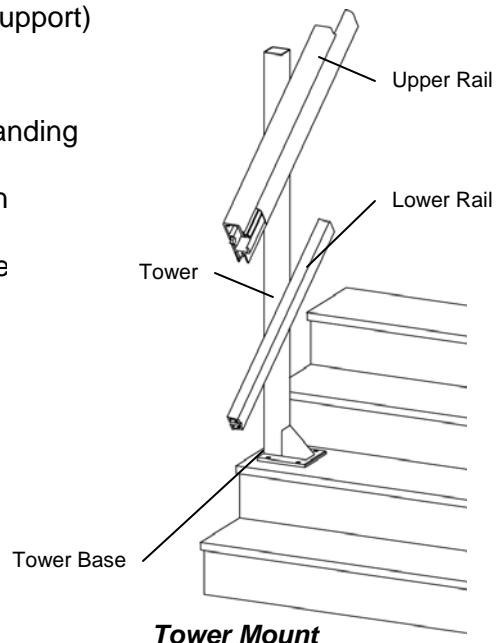
### Freestanding Support Towers

Required where no existing support walls are, or when the lift must be located away from a wall structure.

solid concrete stairs/landings  
 wood stairs/landings over 76mm (3") thick  
 concrete steel pan treads (towers must be secured back to the stringer with brackets for extra support)

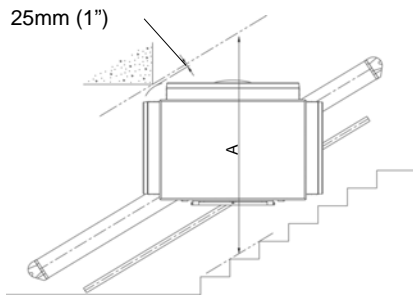
### Open Balustrade (Towers in the core)

In situations where the stairs cannot support freestanding towers and where direct mounting is not feasible, it may be possible to install support towers in the open core. This may also be a solution where there is insufficient clearance with towers on the treads. The towers are fastened to the floor and secured to walls or stringers.

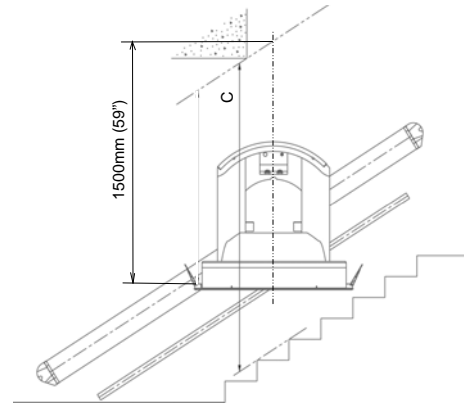
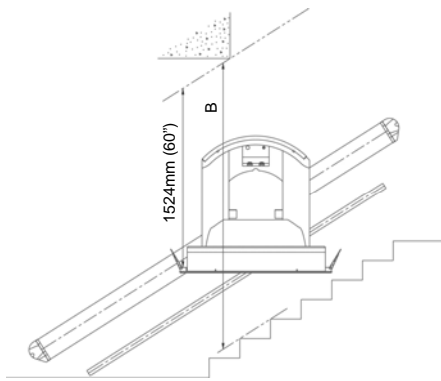


**Tower Mount**

# Overhead Clearances



Overhead Clearances required for platform folded up



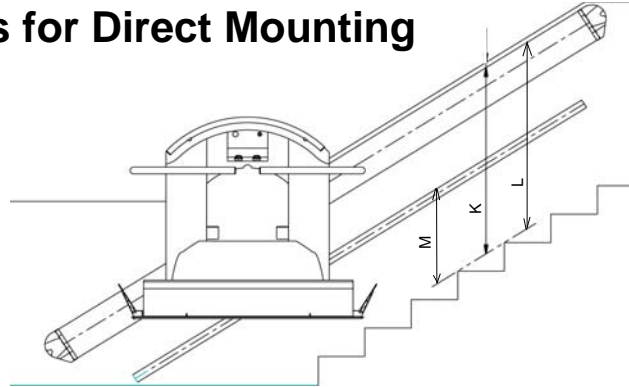
Overhead Clearances to meet US Code Requirements (ASME A18.1b)

Overhead Clearances to meet Canadian Code Requirements (CSA B355-2000)

Stair Angle	15°	20°	25°	30°	35°	40°	45°
<b>Dimension A – Platform Running Clearance</b>							
800 x 1050 platform (31 1/2" x 41 3/8")	1416 55 3/4"	1509 55 1/2"	1608 63 3/8"	1717 67 3/8"	1840 72 3/8"	2011 79 3/16"	2212 87 1/8"
800 x 900 platform (31 1/2" x 35 1/2")	1376 54 3/16"	1454 57 1/4"	1538 60 5/8"	1630 64 3/16"	1735 68 3/8"	1886 74 1/4"	2060 81 1/8"
700 x 750 platform (27 1/2" x 29 1/2")	1320 52"	1378 54 1/4"	1442 56 3/4"	1513 59 5/8"	1591 62 5/8"	1682 66 1/4"	1832 72 1/4"
<b>Dimension B – US Code Requirements</b>							
800 x 1050 platform (31 1/2" x 41 3/8")	1897 74 3/4"	1998 78 3/4"	2105 82 7/8"	2222 87 1/2"	2352 92 5/8"	2499 98 3/8"	2670 105 1/8"
800 x 900 platform (31 1/2" x 35 1/2")	1857 73 1/8"	1943 76 1/2"	2035 80 1/8"	2135 84"	2246 88 3/8"	2372 93 3/8"	2519 99 1/4"
700 x 750 platform (27 1/2" x 29 1/2")	1817 71 1/2"	1888 74 3/8"	1965 77 3/8"	2048 80 5/8"	2141 84 1/4"	2246 88 3/8"	2369 93 1/4"
<b>Dimension C – Canadian Code Requirements</b>							
800 x 1050 platform (31 1/2" x 41 3/8")	1733 68 1/4"	1783 70 1/4"	1836 72 1/4"	1895 74 5/8"	1960 77 1/8"	2034 80 1/8"	2121 83 1/2"
800 x 900 platform (31 1/2" x 35 1/2")	1712 67 3/8"	1755 69 1/8"	1801 70 7/8"	1851 72 7/8"	1907 75 1/8"	1970 77 5/8"	2045 80 1/2"
700 x 750 platform (27 1/2" x 29 1/2")	1692 68 5/8"	1728 68"	1766 69 1/2"	1808 71 1/4"	1854 73"	1907 75 1/8"	1970 77 1/2"

# Wall Height Requirements for Direct Mounting

\*True wall height is dimension K plus 35 mm (1 3/8")



Stair Angle	15°	20°	25°	30°	35°	40°	45°
<b>Dimension K - Min. Wall Height for Wall Mount</b>							
800 x 1050 platform (31 1/2" x 41 3/8")	837 33"	908 35 3/4"	989 39"	1082 42 5/8"	1190 46 7/8"	1319 52"	1475 58"
800 x 900 platform (31 1/2" x 35 1/2")	817 32 1/8"	881 34 5/8"	954 37 1/2"	1039 41"	1138 44 7/8"	1256 49 1/2"	1400 55 1/8"
700 x 750 platform (27 1/2" x 29 1/2")	797 31 3/8"	854 33 5/8"	919 36 1/8"	996 39 1/4"	1085 42 3/4"	1193 47"	1325 51 1/8"

<b>Dimension L - Upper Rail Height</b>							
800 x 1050 platform (31 1/2" x 41 3/8")	802 31 5/8"	873 34 3/8"	954 37 1/2"	1047 41 1/4"	1155 45 1/2"	1284 50 1/2"	1440 56 3/4"
800 x 900 platform (31 1/2" x 35 1/2")	782 30 3/4"	846 33 3/8"	919 36 1/8"	1004 39 1/2"	1103 43 1/2"	1221 48 1/8"	1365 53 3/4"
700 x 750 platform (27 1/2" x 29 1/2")	762 30"	819 32 1/4"	884 34 3/4"	961 37 7/8"	1050 41 3/8"	1158 45 5/8"	1290 50 3/4"

<b>Dimension M - Lower Rail Height</b>							
800 x 1050 platform (31 1/2" x 41 3/8")	181 7 1/8"	235 9 1/4"	292 11 1/2"	354 14"	423 16 5/8"	501 19 3/4"	591 23 1/4"
800 x 900 platform (31 1/2" x 35 1/2")	161 6 3/8"	208 8 1/8"	257 10 1/8"	311 12 1/4"	371 14 5/8"	438 17 1/4"	516 20 3/8"
700 x 750 platform (27 1/2" x 29 1/2")	141 5 1/2"	180 7"	222 8 3/4"	268 10 1/2"	318 12 1/2"	375 14 3/4"	441 17 3/8"

## X3-R Loading Diagram

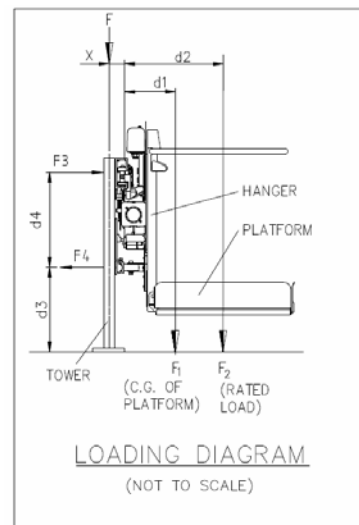
Based on 800x1050 (31 1/2" x 41 3/8") platform

- F1: 121 kg => 1179 N
- F2: 250 kg (550 lb) (max. loading capacity) => 2452 N
- d1: 350mm (13 3/4")
- d2: 565mm (22 1/4")
- x: 81.75mm (3 1/4")
- $F = F1 + F2 = 1179 + 2452 = F = 3631 \text{ N}$

**Moment over F1 & F2:**  
 $M = F1 * (d1 + x) + F2 * (d2 + x) => M = 2095 \text{ Nm}$

**Pulling Force F3:**  
 $F3 = M / (d3 + d4) => F3 = 2616 \text{ N}$

**Pushing Force F4:**  
 $F4 = M / d4 => F4 = 3492 \text{ N}$



## X3-R Technical Reference

<b><u>Application:</u></b>	Straight stairways
<b><u>Platform Sizes:</u></b>	800 x 1050 mm (31 1/2" X 41 3/8") 800 x 900 mm (31 1/2" X 35 1/2") 700 x 750 mm (27 1/2" x 29 1/2")
<b><u>Rated Load:</u></b>	250 kg (550lbs) (uniformly distributed about center of platform)
<b><u>Speed:</u></b>	Up: 4 meter (13ft) /min, down: 5 meter (16ft)/min
<b><u>Operating Controls:</u></b>	
Call Stations (optional):	Wireless, keyed (STD) call stations with encoded communication to stair lift. Powered by a regular 9 Volt battery.
Platform Controls:	Keyless (STD) with constant pressure switches, 24 VDC, equipped with emergency stop switch.
<b><u>Drive System:</u></b>	
Motor:	24 Volt PMDC Motor with 374 W and IP 54 protection.
Power requirements:	2 x 12 VDC, 7.2Ah Batteries located behind conveyance complete with out of charging station alarm.
Charger:	120 VAC, 50Hz, single phase providing 2 amp charging current to unit.
Power Transmission:	Rack & pinion
Emergency Use:	Hand wheel is provided
<b><u>Rail System:</u></b>	Champagne anodized aluminum extrusion with integrally mounted zinc plated gear.
<b><u>Over-speed Safety:</u></b>	Mechanical over speed sensor and brake with electrical drive cut-out protection
<b><u>Safety Arms:</u></b>	Curved, stainless steel arms, located 948 mm (37 3/8") above platform deck.
<b><u>Pedestrian Safety Lights:</u></b>	Illuminated tube lighting located at the base of the platform ramps.