



# Home Elevator

## Design and Planning Guide



**Please note:**

Dimensions provided in this Guide are for **REFERENCE ONLY** and should not be used for site preparation or construction.

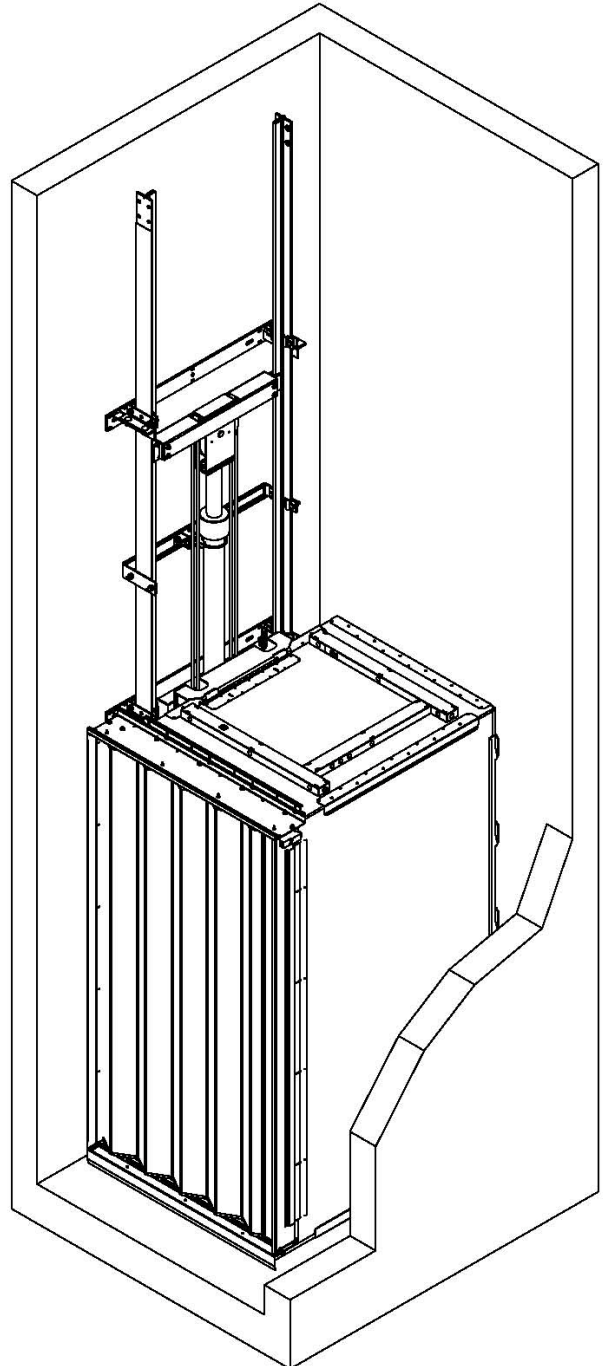
## Table of Contents

<b>Elvoron Home Elevator</b> .....	<b>4</b>
<b>Hoistway Construction</b> .....	<b>5</b>
Wood Construction .....	6
Masonry Construction .....	6
Door Openings .....	6
<b>Construction of Pit:</b> .....	<b>7</b>
Pit Lighting .....	7
Overhead Clearance .....	7
<b>Car/Gate Door &amp; Hoistway Doors</b> .....	<b>8</b>
Hoistway Door Interlock .....	8
<b>Standard Door Package</b> .....	<b>8</b>
Automatic Cab Gate (Optional) .....	8
Hall Door Operator (Optional).....	8
<b>Upgrade Door Package</b> .....	<b>8</b>
Hall Door Operator (Optional).....	8
<b>Premium Door Package</b> .....	<b>8</b>
<b>Codes regarding residential elevator entrances</b> .....	<b>9</b>
<b>Hoistway Dimensions - standard door package</b> .....	<b>10</b>
<b>Hoistway Dimensions - upgrade door package</b> .....	<b>12</b>
<b>Hoistway Dimensions - premium door package</b> .....	<b>14</b>
<b>3-Speed Door Details</b> .....	<b>16</b>
<b>Flush Frame and Door Details</b> .....	<b>17</b>
<b>Flush Frame Details</b> .....	<b>18</b>
<b>Hydraulic Drive System</b> .....	<b>19</b>
<b>Hydraulic Drive System - Technical Reference</b> .....	<b>20</b>
General.....	20
Equipment .....	20
Controls .....	20
Safety Features .....	20
Options .....	20
<b>Hydraulic Drive System - Machine Room &amp; Electrical Requirements</b> .....	<b>21</b>
Electrical Disconnects .....	22
Ventilation Requirements .....	22
Mains Power Requirements .....	22
Lighting Power Requirements.....	22
Emergency Battery Lowering .....	22
Emergency Manual Lowering.....	22
Hydraulic Drive System - Machine Room Layout .....	23
<b>In-line Drive System</b> .....	<b>24</b>
<b>In-line Drive System - Technical Reference</b> .....	<b>25</b>
General.....	25
Equipment .....	25
Controls .....	25
Safety Features .....	25
Options .....	25
<b>In-line Drive System - Electrical Controller Box Details &amp; Locations</b> .....	<b>26</b>
Electrical Disconnects .....	27
Ventilation Requirements .....	27
Mains Power Requirements .....	27
Lighting Power Requirements.....	27
Battery Lowering - Optional .....	27
Battery Backup - Optional .....	27
Emergency Manual Lowering.....	28
<b>Loading Diagram</b> .....	<b>29</b>

## Elvoron - Home Elevator

The Elvoron is a sophisticated elevating system designed specifically for use in private residences. The system fits within a vertical elevator hoistway connecting the floors to be serviced. Two different drive systems are available with your elevator, the Hydraulic Drive and the In-line Drive.

This Design Guide is intended to assist architects, contractors, home owners and elevator professionals in planning for the Elvoron Home Elevator installation. We strongly recommend that you contact your local Garaventa Lift representative to discuss and become familiar with the code requirements in your area. It is extremely important for you to know and adhere to all local codes and regulations pertaining to the installation and use of residential elevators.



**Hydraulic Drive System Shown**

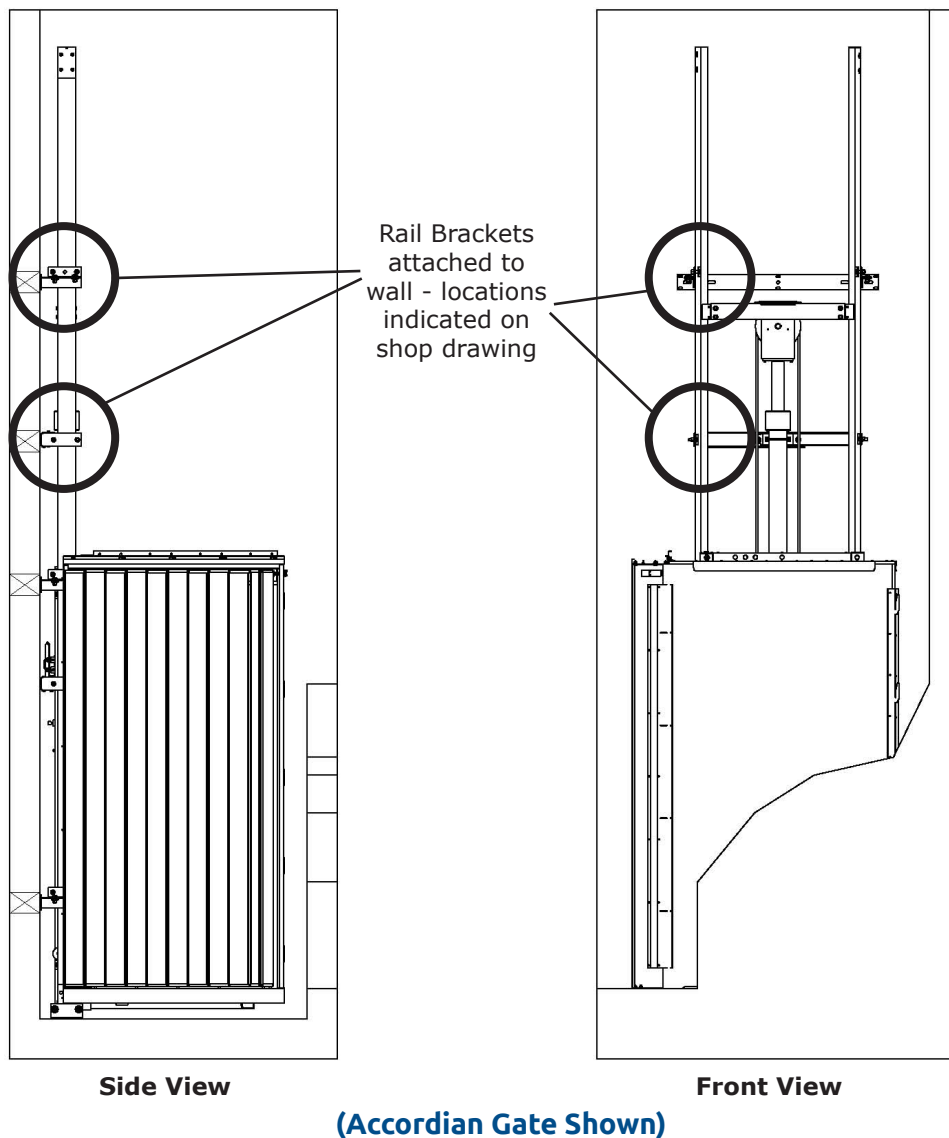
## Hoistway Construction

The elevator rails are attached to a load bearing wall using rail brackets. The rail bracket spacing is determined during the design phase. The rail brackets are generally 4' to 8' apart, measured vertically, depending on the load capacity, size of cab and travel height. Hoistway construction shown is suitable for both the Hydraulic Drive system and the In-line Drive system. Please see final elevator shop drawings for actual rail bracket locations and job specific dimensions.

All the walls of the hoistway, especially the supporting wall, need to be smooth, square and plumb from the bottom of the pit to ceiling. This is to allow for the required running clearances.

No light is required at the top of the hoistway. A light is required in the pit (see Construction of Pit for details).

### Hydraulic Drive System Shown



## Wood Construction

2" x 4" wood studs should be used, 2" x 12"s laid flat are then fastened between the studs. Consult with your local Garaventa Lift representative if you plan on using wood studs larger than 2" x 4", as this can affect clearances controlled by code.

The hoistway dimensions indicate the clear inside finished hoistway. Please ensure you allow for wall finishing (plywood/drywall) on top of the studs.

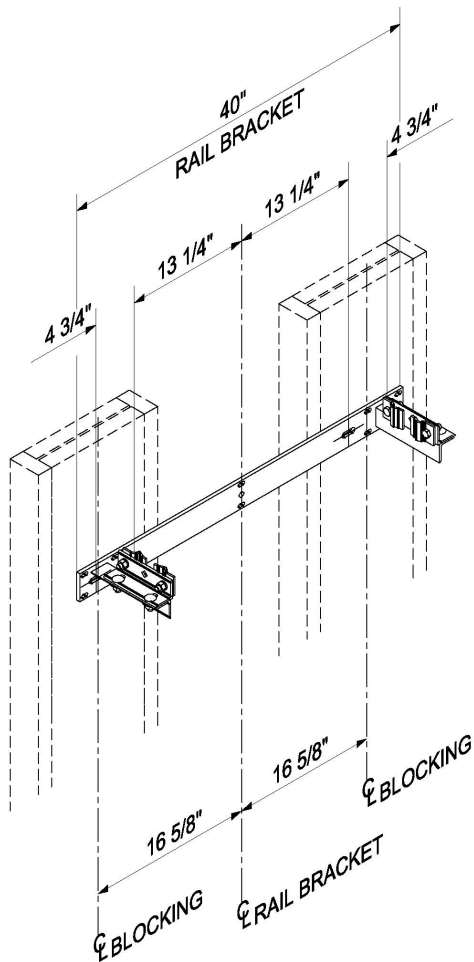
## Masonry Construction

It is not necessary to make the return walls on either side of the doors in concrete. More flexibility in door positioning during the installation can be achieved with wood framing around hoistway entrances.

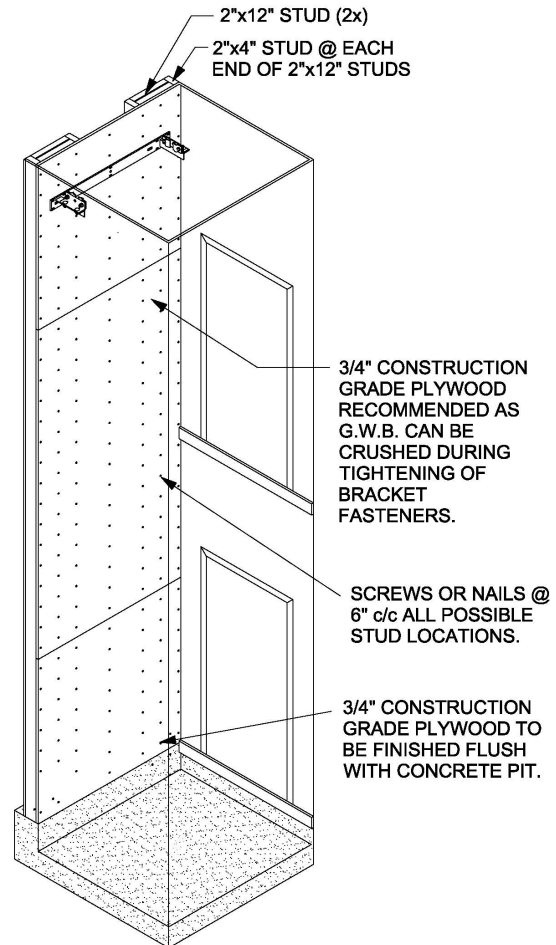
## Door Openings

Garaventa Lift recommends that the walls on either side of the hoistway entrances be framed and finished after the doors and frames have been aligned on site. However a header frame above the door will be required to mount the door in place.

During installation the rails system and floor of the cab are installed, then the doors are aligned to the center-line of the cab opening.



Wood Blocking Guidelines



Rail Bracket in Hoistway

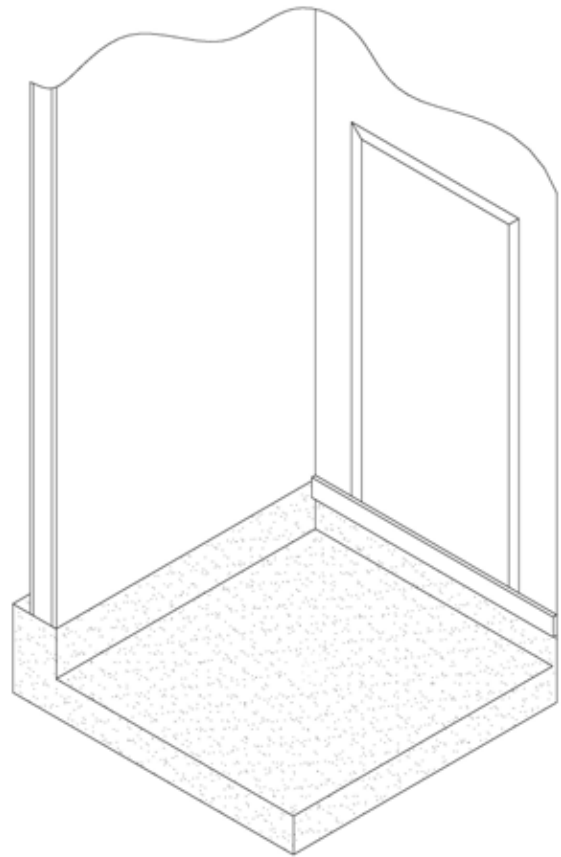
## Construction of Pit

The pit must be the same width and length as the hoistway, and should have a minimum 4" thick concrete floor. Reactions are indicated on each project's shop drawings. Pit depths range from 8" to 12" depending on car size, load capacity and car door/gate style.

A pit ladder is required only if the pit depth exceeds 36" (915 mm). Be aware that the addition of a pit ladder may affect the finished hoistway size required.

## Pit Lighting

A pit light is required if the lighting is less than 50 lx at the pit floor with the lowest door open. The general contractor can install a light in the hoistway pit or provide a separate 110v duplex receptacle outside the hoistway, within 10' (3000 mm) of either side of the lowest landing door.



## Overhead Clearance

	Hydraulic Drive	In-Line Drive w/ Controller outside Hoistway	In-Line Drive w/ Controller at top of Hoistway
<b>84" Cab Height</b>			
Standard Door Package	96" (2438 mm)	96" (2438 mm)	108" (2743 mm)
Upgrade or Premium Door Package	96" (2438 mm)	96" (2438 mm)	114" (2896 mm)
<b>96" Cab Height</b>			
Standard Door Package	108" (2743 mm)	108" (2743 mm)	120" (3048 mm)
*Upgrade or Premium Door Package	108" (2743 mm)	108" (2743 mm)	126" (3200 mm)

\*Glass doors are not available for 96" high cabs.

## Car Gate/Door & Hoistway Doors

### Hoistway Door Interlocks

Swinging hoistway doors are fitted with an interlock that ensures the car can not be moved from a landing unless the hall door is closed and locked. Doors will not open unless the elevator is at the same landing.

### Standard Door Package

The Standard Door Package includes a swinging hall door and an accordion car gate. Swinging hall doors are hung in special door frames which are substantially flush to the inside of the hoistway wall. Swinging doors and/or frames are available from Garaventa Lift or can be provided by others. Residential solid core doors or steel doors must be used as the hoistway doors. The doors are equipped with an electrical interlock during installation. This lock prevents the doors from opening when the elevator is not present. Recommended door width is 36". The minimum door thickness is 1-3/4".

Hall doors must comply with local elevator codes which reference the positioning of doors in relation to the elevator hoistway and cab. (see drawings on page 9).

### Automatic Cab Gate (Optional)

The cab gate(s) can be equipped with a power operator for automatic gate opening and closing when the cab arrives at a landing or the landing door is opened.

### Hall Door Operator (Optional)

Each hall door may be supplied with a power door operator. This feature will open the landing door when the cab arrives at a landing or when the hall station is pressed. The operator is mounted above the door frame and requires extra support or blocking. A separate 120 ± 5% VAC power supply may be required.

### Upgrade Door Package

The Upgrade Door Package uses swinging hall doors (optionally supplied with the elevator) and a 3-speed side sliding elevator car door. Photo-electric obstruction sensors ensure that there are no obstructions as the sliding elevator car door is closing. If an obstruction is sensed while the door is closing, it will automatically re-open.

Residential solid core doors or steel doors must be used as the hoistway doors. The doors are equipped with an electrical interlock. This lock prevents the doors from opening when the elevator is not present. Recommended door width is 36". The minimum door thickness is 1-3/4".

Swinging hall doors must comply with local elevator codes which reference the positioning of doors in relation to the elevator hoistway and cab. (see drawings on page 9).

### Premium Door Package

The Premium Door Package includes sliding elevator car doors and tandem sliding elevator hall doors. This option is available with both 84" and 96" height cabs.

The car door engages with the hall door as the elevator approaches the landing. Once the elevator has reached the landing, the automatic sliding elevator doors operate in tandem, similar to the familiar sliding door entrances for commercial passenger elevators.

Photo-electric obstruction sensors ensure that there are no obstructions as the doors are closing. If an obstruction is sensed while the doors are closing, they will automatically re-open.

With the Premium Door Package, there is no need to be concerned with conformance to door clearance codes. Choosing this option guarantees compliance with safety codes regarding elevator entrance clearances.



## Codes regarding residential elevator entrances

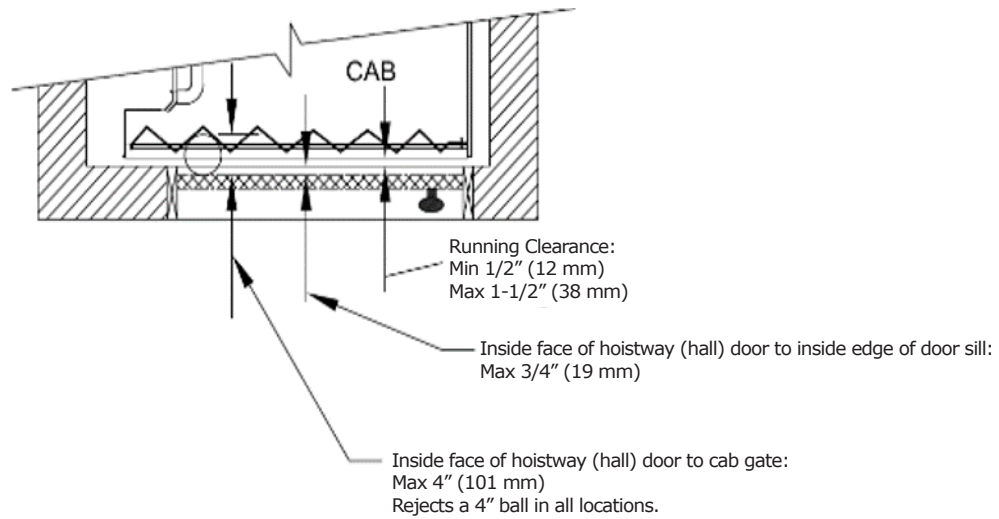
The code requirements governing swinging hallway entrance doors for private residence elevators may differ from jurisdiction to jurisdiction. Check with local authorities or residential elevator contractors to determine the requirements in your area while planning your elevator installation.

In North America, requirements are based on The Safety Code for Elevators and Escalators, ASME A17.1/CSA B44.

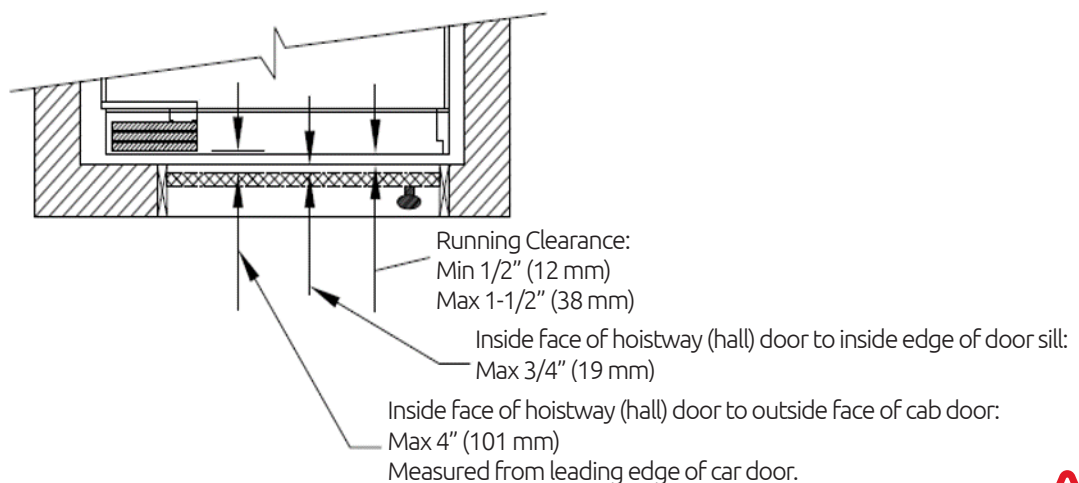
Swinging hallway elevator doors are now required to be positioned substantially flush to the inside of the hoistway wall, while opening out. This requires the use of a special door frame. The use of sliding hallway doors, available with the Premium Door Package, eliminates this issue.

Flush swinging door frames are available from Garaventa Lift. These are paint-ready 16 gauge steel door frames which can be ordered with or without door closers or automatic door operators. The flush frames include a certified elevator interlock, three 4-1/2" ball bearing hinges with non-removable pins (brushed stainless steel 26D finish), a flush door pull for the hoistway side of the door (aluminum), and a roller latch & strike (26D).

### Standard Door Package - Swinging Hall Door with Accordion Gate



### Upgrade Door Package - Swinging Hall Door with Sliding Elevator Car Door



# Dimensions

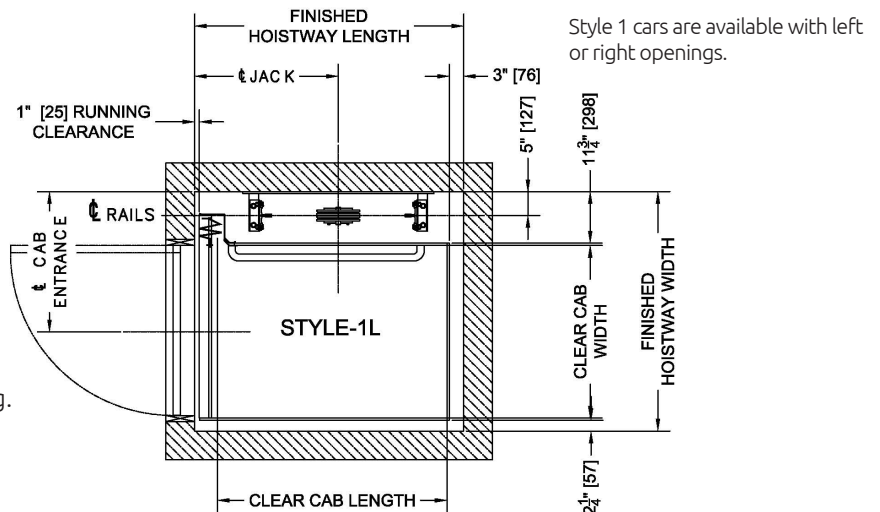
Standard Door Package - swinging hall door with accordion car gate

Style 1				
clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
36" x 48"	51-1/2"	56-1/2"	29-1/2"	30-1/2"
36" x 54"	51-1/2"	62-1/2"	32-1/2"	30-1/2"
36" x 60"	51-1/2"	68-1/2"	35-1/2"	30-1/2"
40" x 54"	55-1/2"	62-1/2"	32-1/2"	34-1/2"
42" x 60"	57-1/2"	68-1/2"	35-1/2"	36-1/2"
48" x 60"	63-1/2"	70-3/4"	37"	42-1/2"
minimum	48-1/2"	46-1/2"		

Style 2				
clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
36" x 48"	51-1/2"	54-3/4"	27-3/8"	30-1/2"
36" x 54"	51-1/2"	60-3/4"	30-3/8"	30-1/2"
36" x 60"	51-1/2"	66-3/4"	33-3/8"	30-1/2"
40" x 54"	55-1/2"	60-3/4"	30-3/8"	34-1/2"
42" x 60"	57-1/2"	66-3/4"	33-3/8"	36-1/2"
48" x 60"	63-1/2"	74"	37"	42-1/2"
minimum	48-1/2"	44-3/4"		

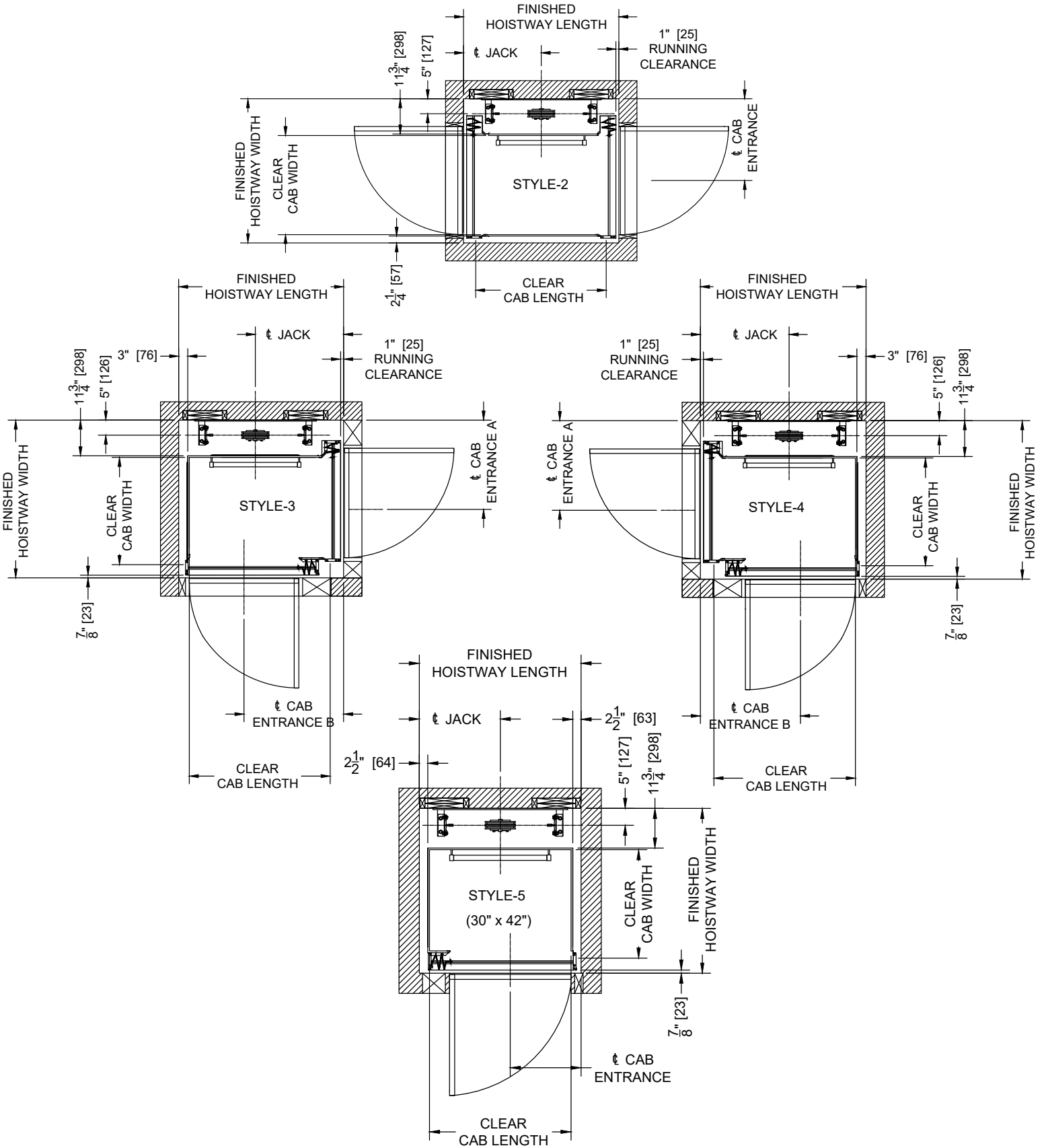
Styles 3 & 4					
clear cab size	hoistway width	hoistway length	jack centerline	entrance A centerline	entrance B centerline
36" x 48"	55-3/8"	56-1/2"	29-1/2"	30-1/2"	34-3/4"
36" x 54"	55-3/8"	62-1/2"	32-1/2"	30-1/2"	40-3/4"
36" x 60"	55-3/8"	68-1/2"	35-1/2"	30-1/2"	46-3/4"
40" x 54"	59-3/8"	62-1/2"	32-1/2"	34-1/2"	40-3/4"
42" x 60"	61-3/8"	68-1/2"	35-1/2"	36-1/2"	46-3/4"
48" x 60"	67-3/8"	70-3/4"	37"	42-1/2"	49"
minimum	52-3/8"	54-1/2"			

Style 5				
clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
36" x 48"	55-3/8"	54-3/4"	27-3/8"	27-7/8"
36" x 54"	55-3/8"	60-3/4"	30-3/8"	30-3/8"
36" x 60"	55-3/8"	66-3/4"	33-3/8"	33-3/8"
40" x 54"	59-3/8"	60-3/4"	30-3/8"	30-3/8"
42" x 60"	61-3/8"	66-3/4"	33-3/8"	33-3/8"
48" x 60"	67-3/8"	66-3/4"	33-3/8"	33-3/8"
minimum	49-3/8"	48-1/2"		



\* Minimum hoistway sizes often require hydraulic drive systems and custom rail spacing. Contact Garaventa Lift for more information.

Standard Door Package - swinging hall door with accordion car gate



# Dimensions

Upgrade Door Package - swinging hall door with sliding elevator car door

## Style 1

clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
40" x 50"	57-1/4"	62-3/4"	33"	33-1/2"
40" x 54"	57-1/4"	66-3/4"	35"	33-1/2"
42" x 60"	59-1/4"	72-3/4"	38"	35-1/2"
48" x 60"	65-1/4"	72-3/4"	38"	41-1/2"
minimum*	57-1/4"	49-3/4"		

## Style 2

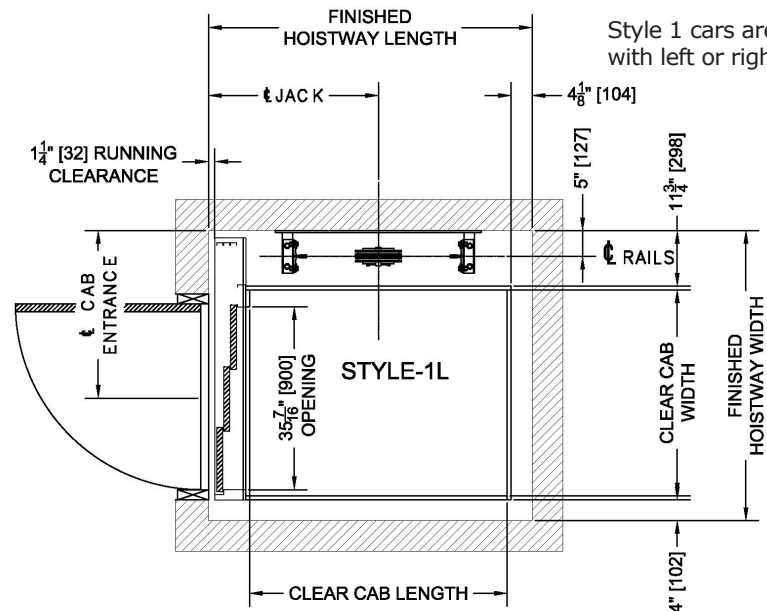
clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
40" x 50"	57-1/4"	66"	33"	33-1/2"
40" x 54"	57-1/4"	70"	35"	33-1/2"
42" x 60"	59-1/4"	76"	38"	35-1/2"
48" x 60"	65-1/4"	76"	38"	41-1/2"
minimum*	57-1/4"	53"		

## Styles 3 & 4

clear cab size	hoistway width	hoistway length	jack centerline	entrance A centerline	entrance B centerline
40" x 50"	60-1/2"	62-3/4"	33"	33-1/2"	39"
40" x 54"	60-1/2"	66-3/4"	35"	33-1/2"	43"
42" x 60"	62-1/2"	72-3/4"	38"	35-1/2"	49"
48" x 60"	68-1/2"	72-3/4"	38"	41-1/2"	49"
minimum*	60-1/2"	62-3/4"			

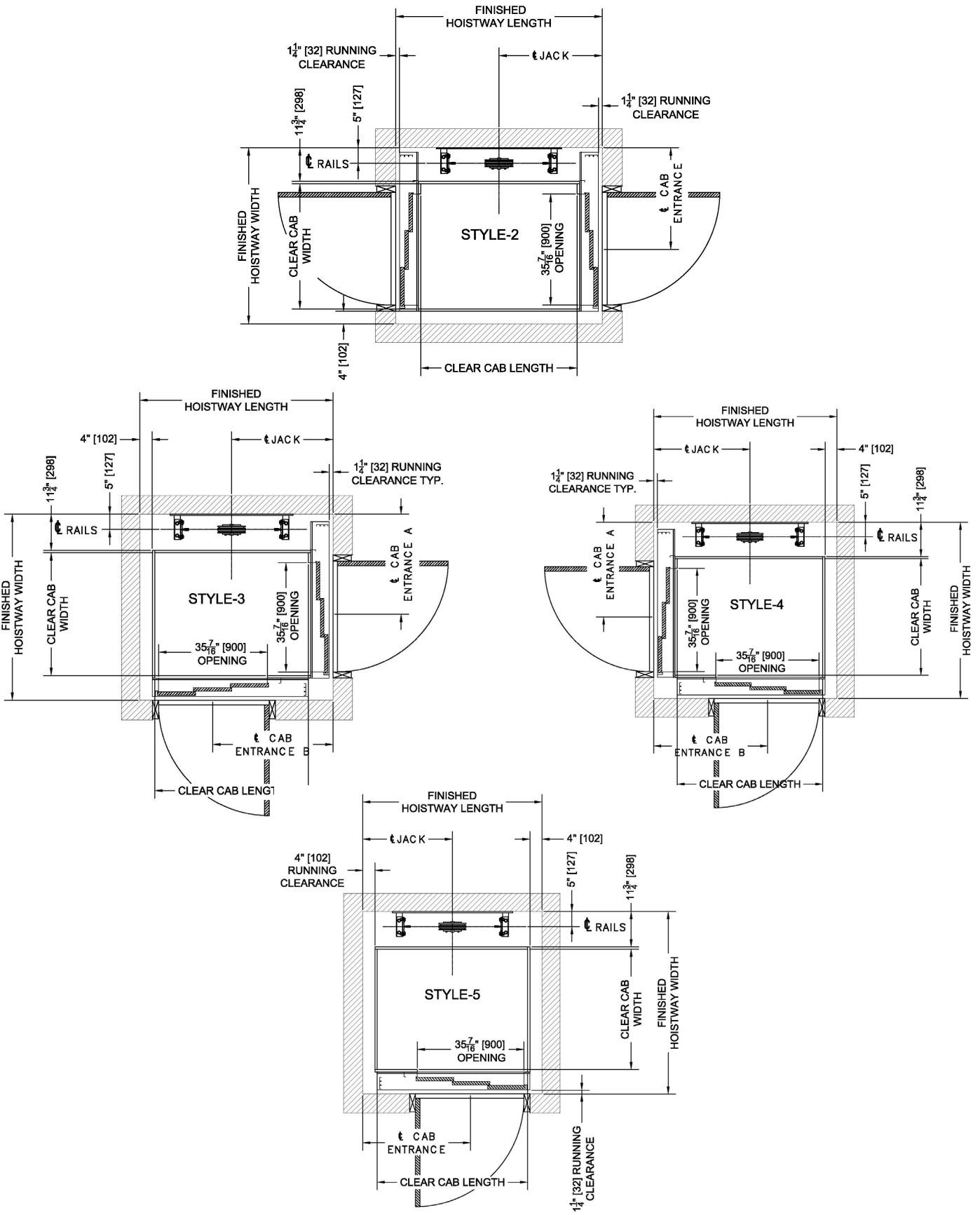
## Style 5

clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
40" x 50"	60-1/2"	59-1/2"	29-3/4"	35-3/4"
40" x 54"	60-1/2"	63-1/2"	31-3/4"	39-3/4"
42" x 60"	62-1/2"	69-1/2"	34-3/4"	45-3/4"
48" x 60"	68-1/2"	69-1/2"	34-3/4"	45-3/4"
minimum*	54-1/2"	59-1/2"		



\* Minimum hoistway sizes often require hydraulic drive systems and custom rail spacing. Contact Garaventa Lift for more information.

Upgrade Door Package - swinging hall door with sliding elevator car door



# Dimensions

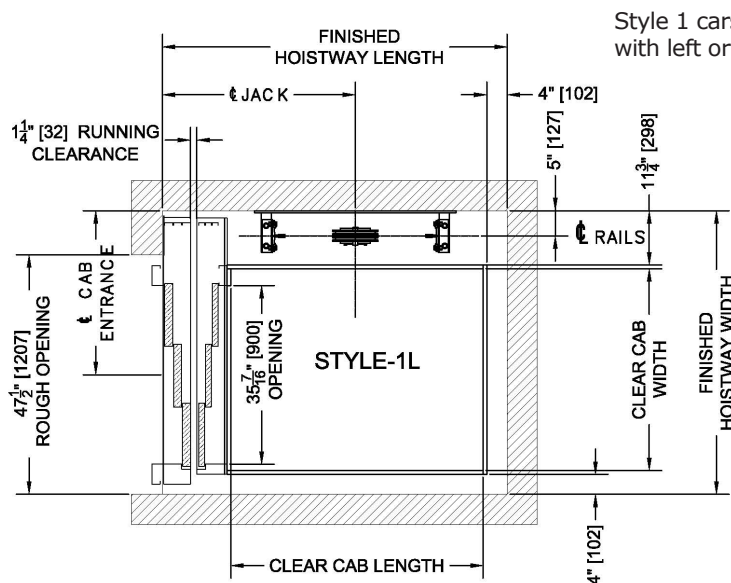
Premium Door Package - sliding elevator hall door with tandem sliding elevator car door

Style 1				
clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
40" x 50"	57-1/4"	68-1/4"	38-1/2"	33-1/2"
40" x 54"	57-1/4"	72-1/4"	40-1/2"	33-1/2"
42" x 60"	59-1/4"	78-1/4"	43-1/2"	35-1/2"
48" x 60"	65-1/4"	78-1/4"	43-1/2"	41-1/2"
minimum*	57-1/4"	55-1/4"		

Style 2				
clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
40" x 50"	57-1/4"	77"	38-1/2"	33-1/2"
40" x 54"	57-1/4"	81"	40-1/2"	33-1/2"
42" x 60"	59-1/4"	87"	43-1/2"	35-1/2"
48" x 60"	65-1/4"	87"	43-1/2"	41-1/2"
minimum*	57-1/4"	64"		

Styles 3 & 4					
clear cab size	hoistway width	hoistway length	jack centerline	entrance A centerline	entrance B centerline
40" x 50"	66"	68-1/4"	38-1/2"	33-1/2"	44-1/2"
40" x 54"	66"	72-1/4"	40-1/2"	33-1/2"	48-1/2"
42" x 60"	68"	78-1/4"	43-1/2"	35-1/2"	54-1/2"
48" x 60"	74"	78-1/4"	43-1/2"	41-1/2"	54-1/2"
minimum*	66"	68-1/4"			

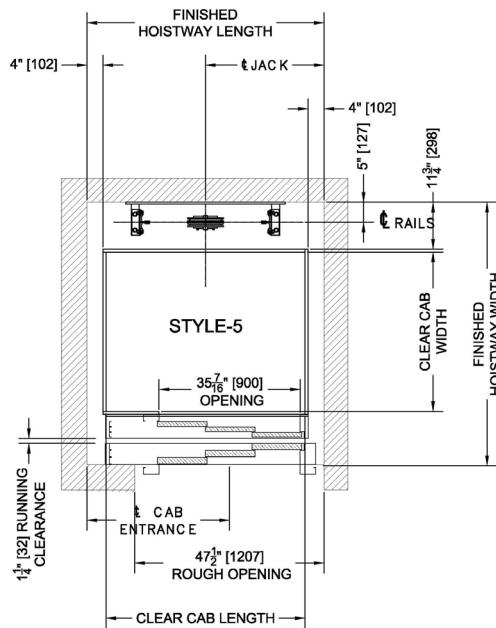
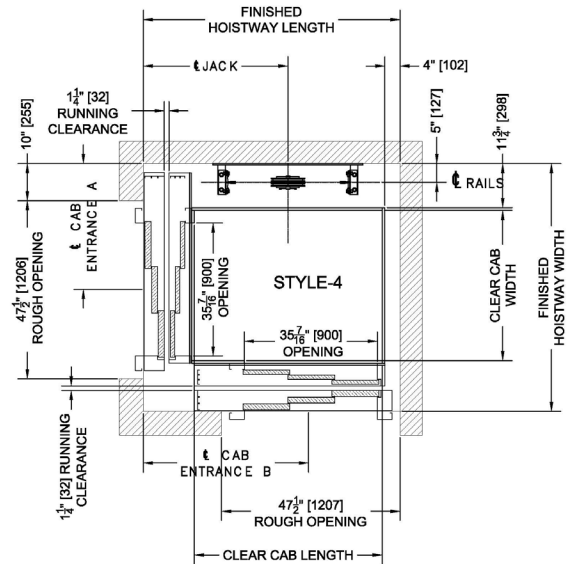
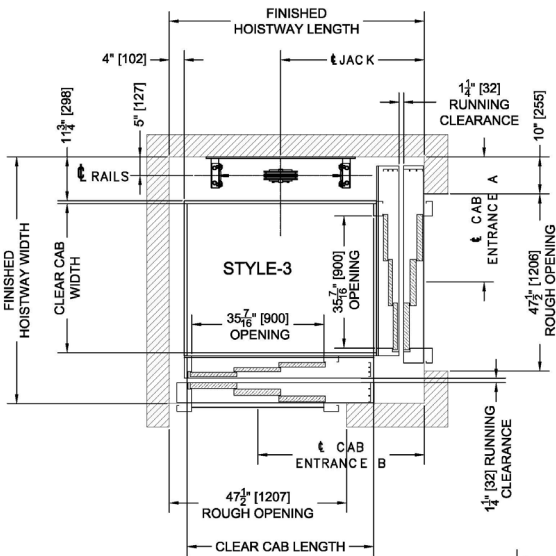
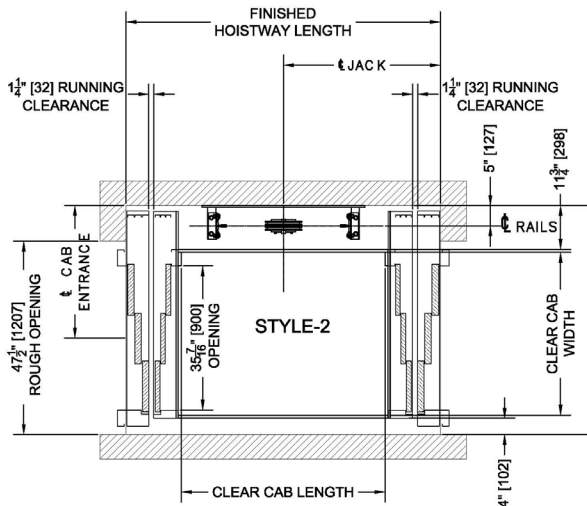
Style 5				
clear cab size	hoistway width	hoistway length	jack centerline	entrance centerline
40" x 50"	66"	59-1/2"	29-3/4"	35-3/4"
40" x 54"	66"	63-1/2"	31-3/4"	39-3/4"
42" x 60"	68"	69-1/2"	34-3/4"	45-3/4"
48" x 60"	74"	69-1/2"	34-3/4"	45-3/4"
minimum*	60"	59-1/2"		



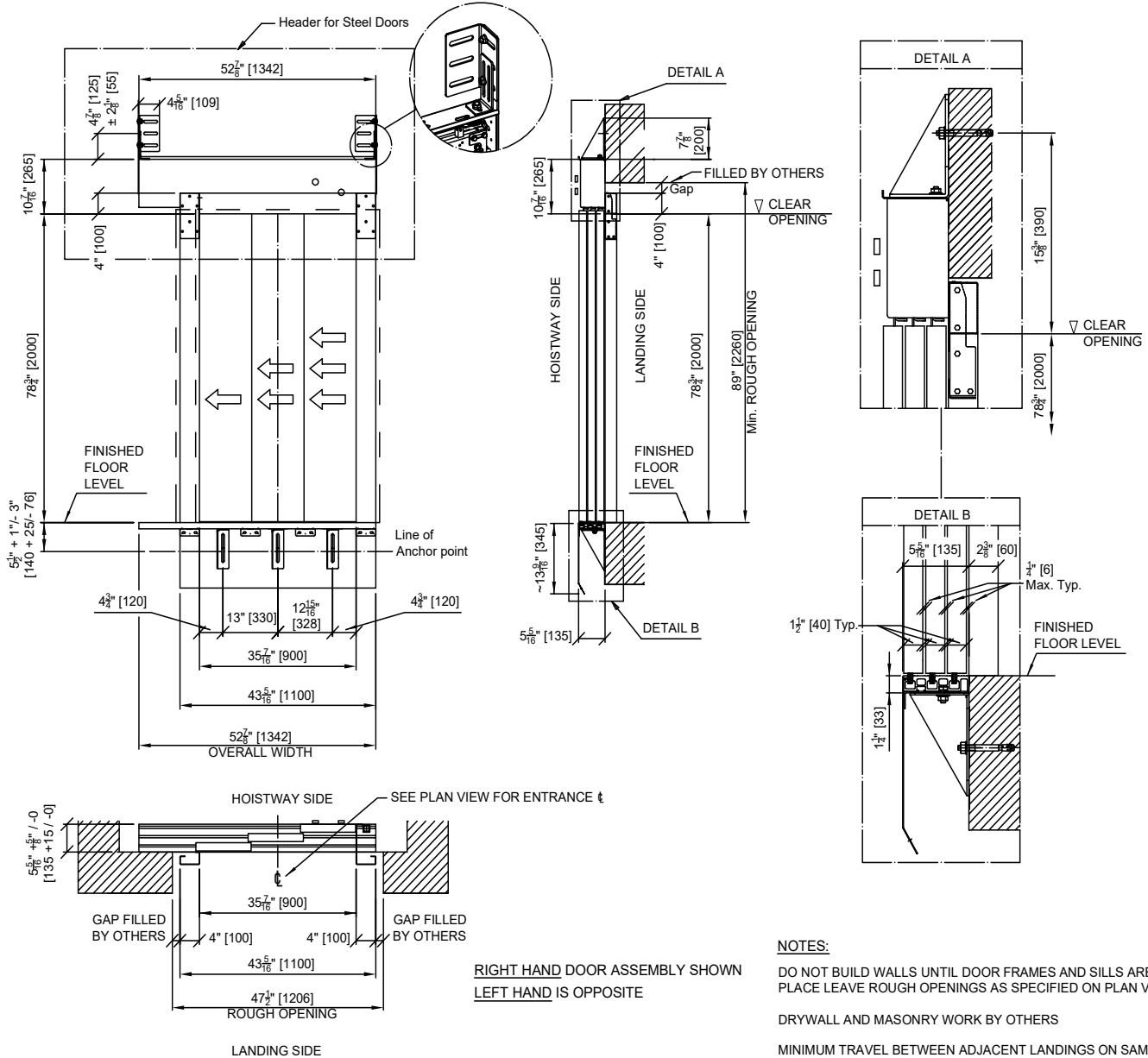
Style 1 cars are available with left or right openings.

\* Minimum hoistway sizes often require hydraulic drive systems and custom rail spacing. Contact Garaventa Lift for more information.

Premium Door Package - sliding elevator hall door with tandem sliding elevator car door



### 3-Speed Door Details



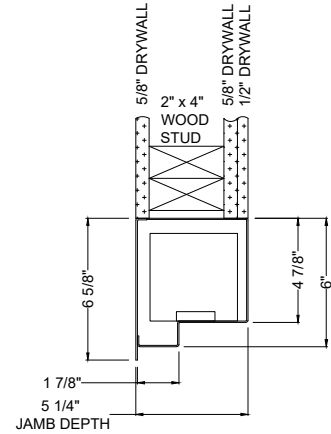
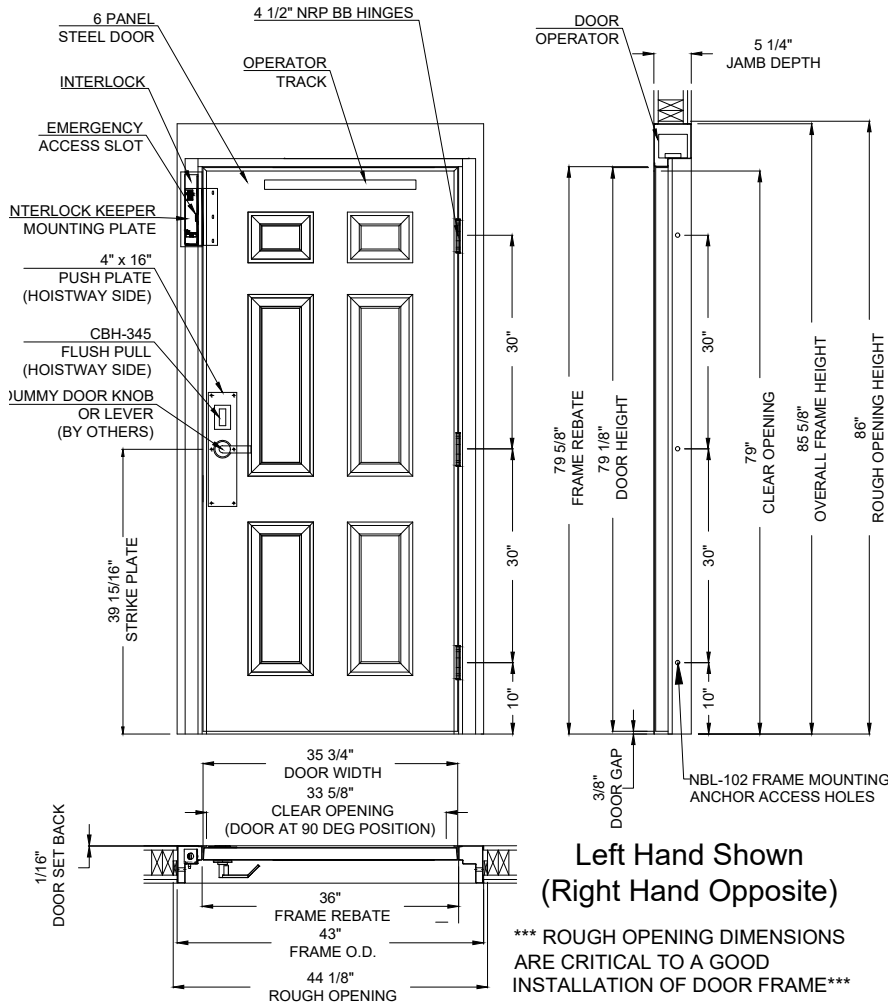
RIGHT HAND DOOR ASSEMBLY SHOWN  
LEFT HAND IS OPPOSITE

**NOTES:**

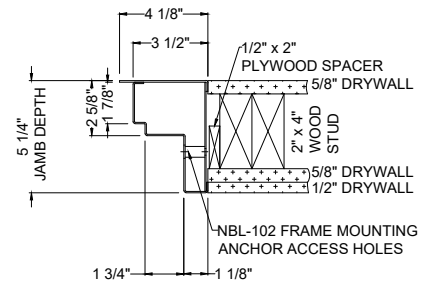
- DO NOT BUILD WALLS UNTIL DOOR FRAMES AND SILLS ARE IN PLACE LEAVE ROUGH OPENINGS AS SPECIFIED ON PLAN VIEW.
- DRYWALL AND MASONRY WORK BY OTHERS
- MINIMUM TRAVEL BETWEEN ADJACENT LANDINGS ON SAME SIDE OF HOISTWAY IS :
  - 100" [2540] for 84" high cab
  - 112" [2845] for 96" high cab



## Flush Frame and Door Details

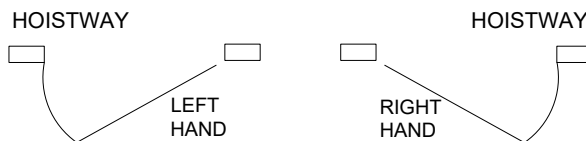


**HEAD JAMB DETAILS (SIDE VIEW)**



**SIDE JAMB DETAILS (TOP VIEW)**

### SWING NOMENCLATURE



#### Garaventa Flush Residential Frame Specifications:

- \* 36" x 79 5/8" Rebate
- \* (3) 4 1/2" NRP BB Hinges (US26D)
- \* Push Plate (Brushed Aluminum) - Hoistway Side
- \* CBH-345 Flush Pull Handle (Aluminum) - Hoistway Side
- \* Interlock Keeper Mounting Plate (Brushed SS)
- \* Roller Latch In Door
- \* Roller Strike Plate
- \* Removable Shipping Sill
- \* NBL-102 Frame Mounting Method (Ø3/8" x 2" Lag Bolts Supplied)
- \* 16 Ga. Frame (5 1/4" Jamb Depth)
- \* Finish: Galvanneal, Paint Ready

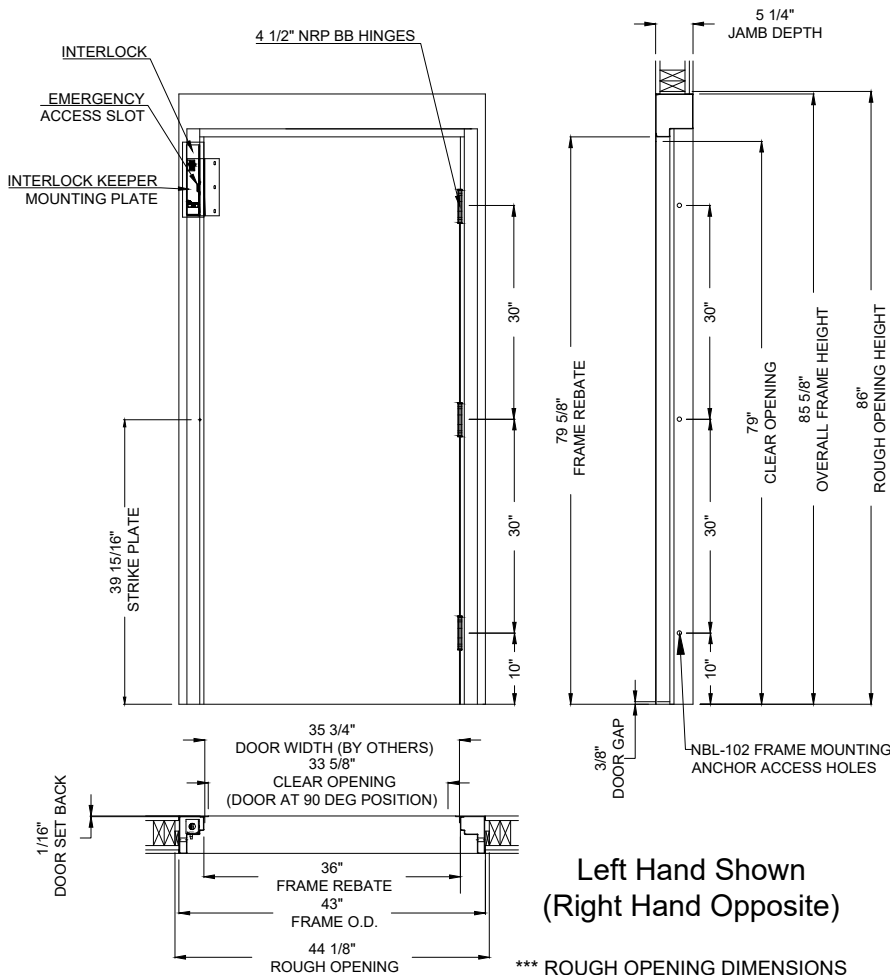
#### Door Specifications:

- \* 18 Ga. 6-Panel Steel Door
- \* 79 1/8" Door Height x 35 3/4" Door Width x 1 3/4" Door Thickness
- \* Finish: Galvanneal, Paint Ready

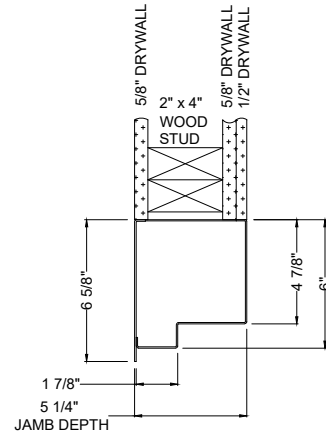
#### Interlock Selections:

- \* Honeywell RDI

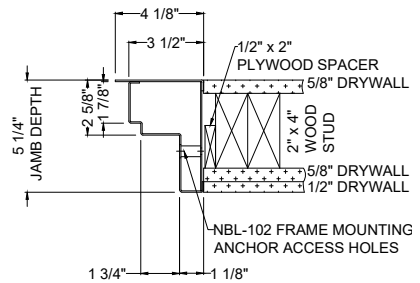
## Flush Frame Details



\*\*\* ROUGH OPENING DIMENSIONS ARE CRITICAL TO A GOOD INSTALLATION OF DOOR FRAME\*\*\*

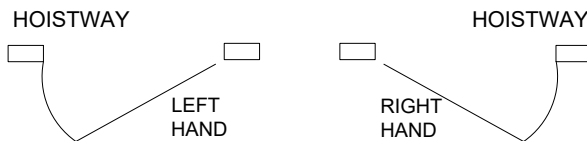


HEAD JAMB DETAILS (SIDE VIEW)



SIDE JAMB DETAILS (TOP VIEW)

### DOOR SWING NOMENCLATURE



#### Garaventa Flush Residential Frame Specifications:

- \* 36" x 79 5/8" Rebate
- \* (3) 4 1/2" NRP BB Hinges (US26D)
- \* CBH-345 Flush Pull (Aluminum) - Hoistway Side
- \* Interlock Keeper Mounting Plate (Brushed SS)
- \* Roller Latch
- \* Roller Strike Plate
- \* Removable Shipping Sill (11 Ga. Steel Plate)
- \* NBL-102 Frame Mounting Method (Ø3/8" x 2" Lag Bolts Supplied)
- \* 16 Ga. Frame (5 1/4" Jamb Depth)
- \* Finish: Galvanneal, Paint Ready

#### Door Specifications - Supplied by Others:

- \* 79 1/8" Door Height x 35 3/4" Door Width x 1 3/4" Door Thickness

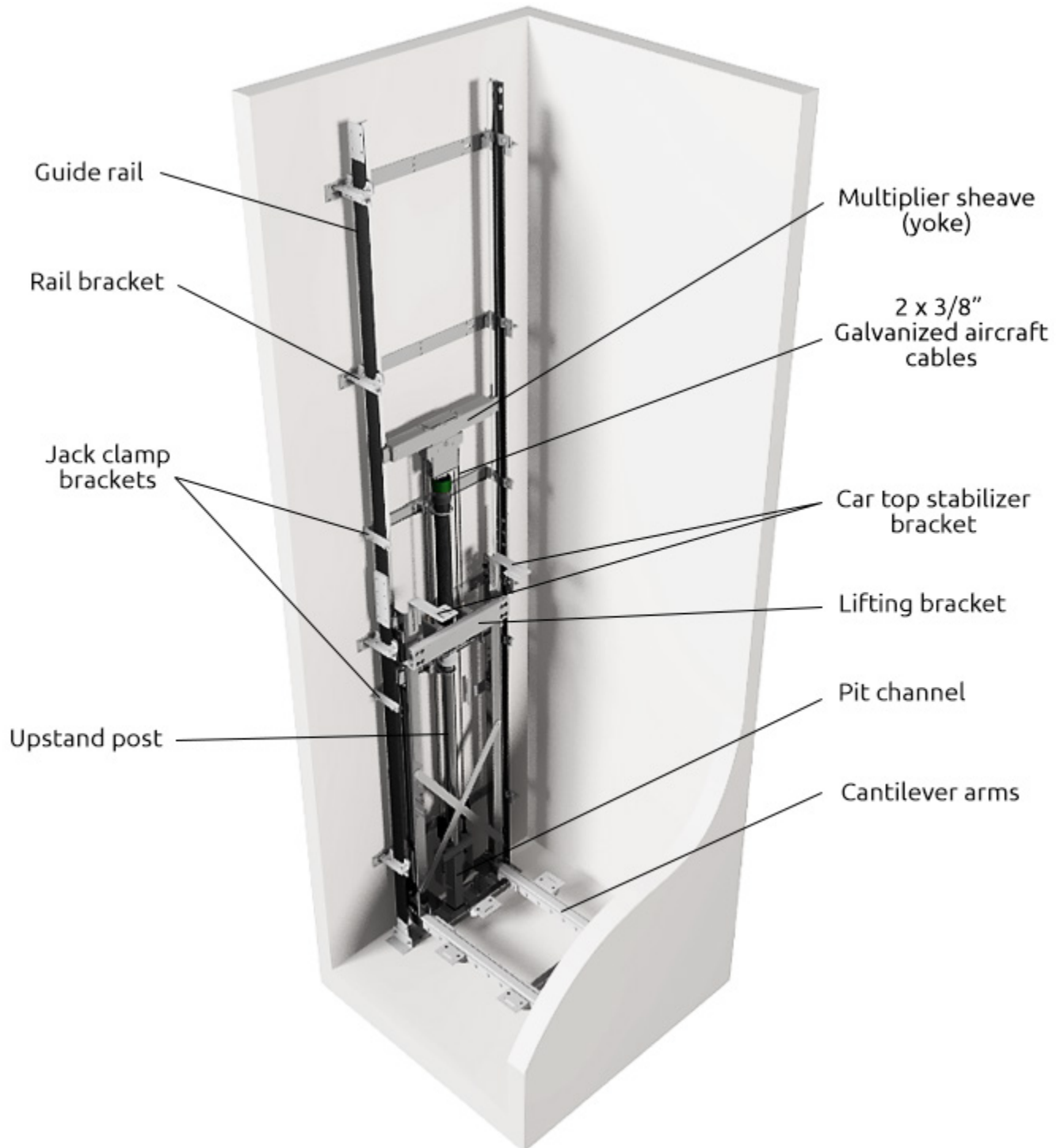
#### Interlock Selections:

- \* Honeywell RDI

#### Additional Options:

- \* Surface mount door closers.
- \* Concealed automatic door operators (surface mount track)

## Hydraulic Drive System



## Hydraulic Drive System - Technical Reference

### General

- Capacity - 1000 lbs
- 40 ft. per minute (0.2 m/sec) nominal car speed
- Up to 6 stops, Maximum 6 landing doors
- Maximum floor total travel of 42' 6" (12950 mm)
- Pit depth of 8" (200 mm) is recommended for units with standard swing doors. 12" (356 mm) pit required for units with automatic sliding car doors
- Overhead clearance of 96" (2440 mm) from upper landing with standard 84" (2135 mm) cab height
- Minimum distance between floors is 10" (255 mm)

### Equipment

- Two speed control valve with soft start and stop
- 1:2 cable hydraulic drive
- Single stage Hydraulic drive with two 3/8" diameter aircraft cables
- Heavy duty cantilever design utilizing 8 lbs per foot steel elevator guide rail system
- Submersible pump and motor assembly for quiet operation
- Standard power supply is 240 VAC (MAX), single phase, 60 Hz. Optional 208 ± 5% VAC, three phase

### Controls

- Collective automatic operation with illuminated push buttons
- PLC (Programmable Logic Controller) with backup system for elevator descent, lights, locks and gate and/or door operator(s) where equipped
- Digital position indicator in cab
- Automatic cab lighting
- Low oil protection timer circuit
- Emergency stop / alarm

### Standard Safety Features

- Emergency manual lowering
- Slack/broken cable instantaneous safety device
- Upper and lower terminal limit switches and a final limit at top and bottom of travel
- Hoistway door interlocks ensure the car does not move unless all hall doors and cab gate(s) are closed and locked
- Emergency battery backup light and alarm
- Certified electrical control system
- Automatic bi-directional leveling (Encoder)

### Options

- Upgrade Door Package (swinging hall door with a sliding elevator car door)
- Premium Door Package (sliding elevator hall door with tandem sliding elevator car door)
- Pipe rupture valve
- Keyed hall stations
- Recessed telephone box or integrated telephone in cab control panel
- Automatic cab gate operator(s)
- Automatic hoistway door operator(s)
- Custom cab sizes
- Buffer Springs – required for hoistways with habitable space under the pit
- 96" car height

### Daily Cycles

The elevator is designed based on the following daily cycles:

- |                        |    |
|------------------------|----|
| • Normal               | 20 |
| • Heavy                | 50 |
| • Excessive            | 75 |
| • Max. starts per hour | 10 |

Consult your Sales Representative if there is a chance you may exceed these amounts.

## Hydraulic Drive System - Machine Room & Electrical Requirements

In order to satisfy code requirements, the hydraulic pump unit and fused disconnect switches must be located in a room or area which is lockable. A lockable cabinet is acceptable. However, to meet electrical code, Service Personnel must have the following clearance in front of the electrical box:

US - 36" x 36" x 7' (915 x 915 x 2135mm)

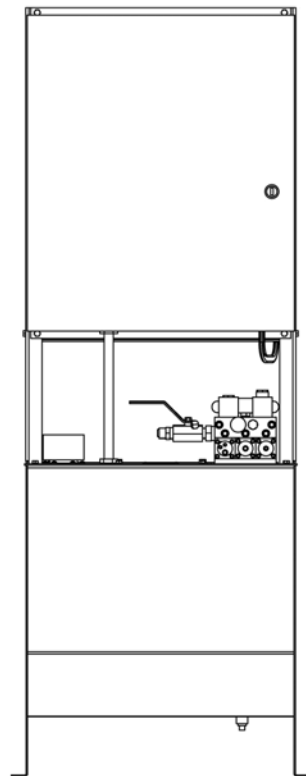
Canada - 39<sup>3/8</sup>" x 39<sup>3/8</sup>" x 7' (1000 x 1000 x 2135mm)

The machine room does not have to be a separate, dedicated room. The machinery could be located in a closet or under the stairs, as long as the above requirements are met. The optimum location is at the lowest level, adjacent to the hoistway, preferable on the same side as the guide rails. The dimensions of the pump unit are 23" wide x 16 1/2" deep x 59 1/4" high (585 x 420 x 1505 mm).

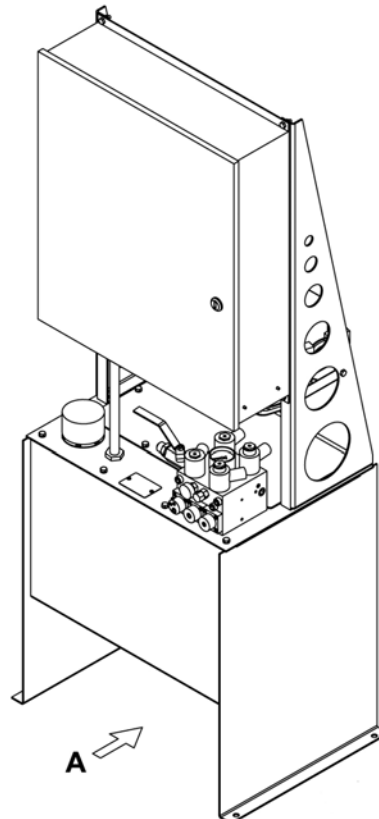
To save space the electrical control box can be disconnected from the tank. They can be separated up to 10' (3048 mm) away. The control box is 23" wide x 6" deep x 30" high (585 x 155 x 765 mm). The tank for the pump and motor is 23" wide x 16 1/2" deep x 31" high (585 x 420 x 790 mm). You will need 4" (155 mm) above the pump and motor tank for servicing purposes.

Two PVC sleeves, at least 4" (105 mm) in diameter, will be required between the hoistway and the machinery. One for the hydraulic hose and another for the electrical conduit. This is to enable the installers to make the connection between the cylinder and the pumping unit. The sleeves should enter the hoistway at either corner of the support wall.

Please contact your local Garaventa Lift representative for specific local code requirements.



**VIEW - A**



## Hydraulic Drive System - Machine Room & Electrical Requirements

### Lighting

You must provide at least 200 lx lighting over the controller/tank unit and disconnect switches.

### Electrical Disconnects

In the machine room, you will need to provide two separate lockable fused disconnects – one 15 amp for cab lighting and one 30 amp for the controller/tank unit. Disconnect switches should be located on the lock jamb side of the machine room door. In accordance to the electrical code, you must provide a minimum of 36" (915 mm) square in the US and 39 3/8" (1000 mm) square in Canada of working space in front of each disconnect switch.

The fused disconnect switch rating and fuse rating for the lift will be shown on the shop drawings for your project.

At least one GFCI duplex receptacle connected to a dedicated 15 amp branch circuit must be installed in the machine room.

### Ventilation Requirements

There are no special requirements for ventilation. The elevator pump unit will generate approximately 3200 BTU per hour under normal operating conditions. Recommended temperature for elevator equipment is 50° – 90° F (15° – 32° C) and 5% – 90% non-condensing. Please contact your local Garaventa Lift representative for possible local code variations.

### Mains Power Requirements

The standard motor on the pump unit is 3 HP and it can be ordered to suit either single or three phase power.

- 240 VAC (MAX) Single phase 30 amps
- 208 ± 5% VAC Three phase 20 amps

### Lighting Power Requirements

- 120 ± 5% VAC, Single phase, 15 amps

### Uninterruptable Power Supply (UPS)

In case of a power outage the elevator is provided with a second power source that allows the car to be lowered to the lowest landing. While descending, the car can stop and the passenger can exit the car at any landing along the way. This feature is sometimes referred to as "Emergency Battery Lowering".

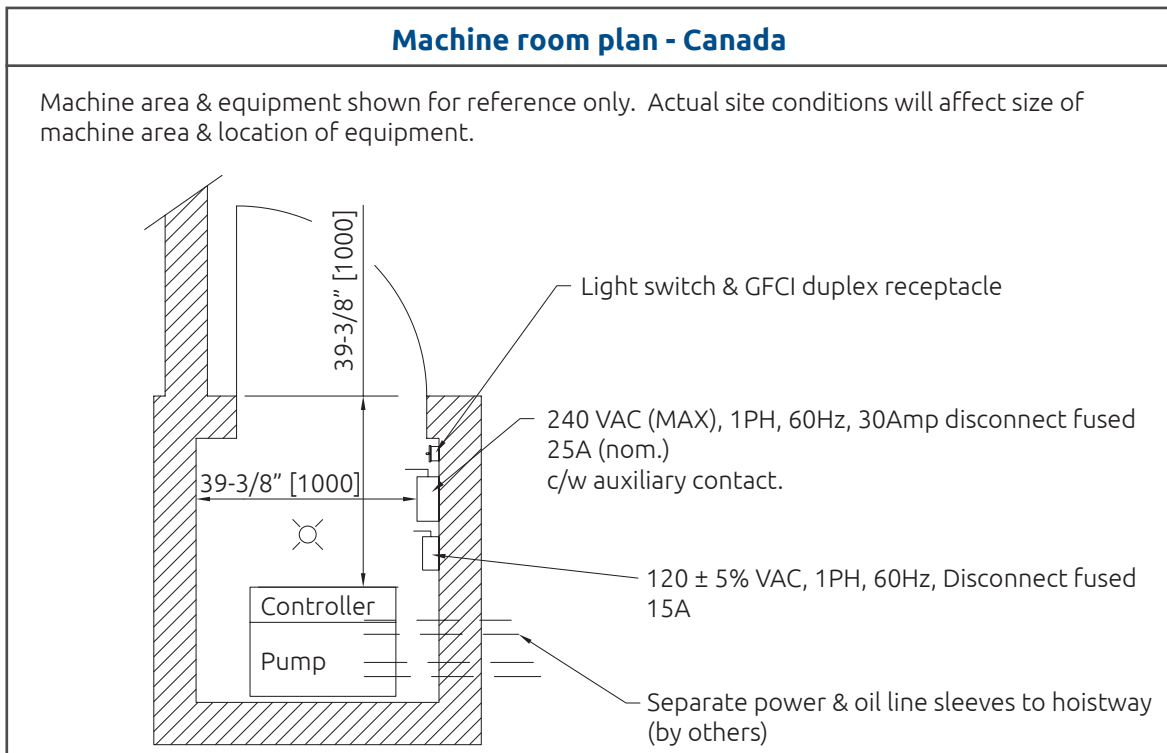
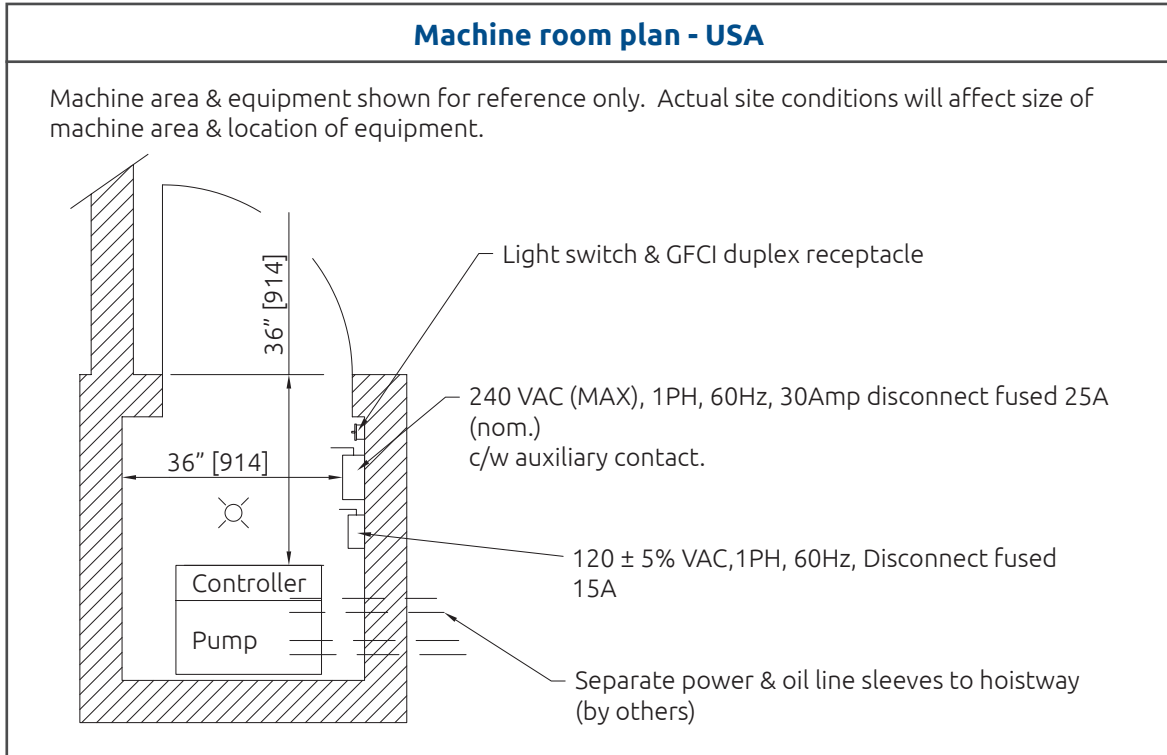
### Emergency Manual Lowering

The elevator can be manually lowered from the release valve located on the top of the Control assembly tank.



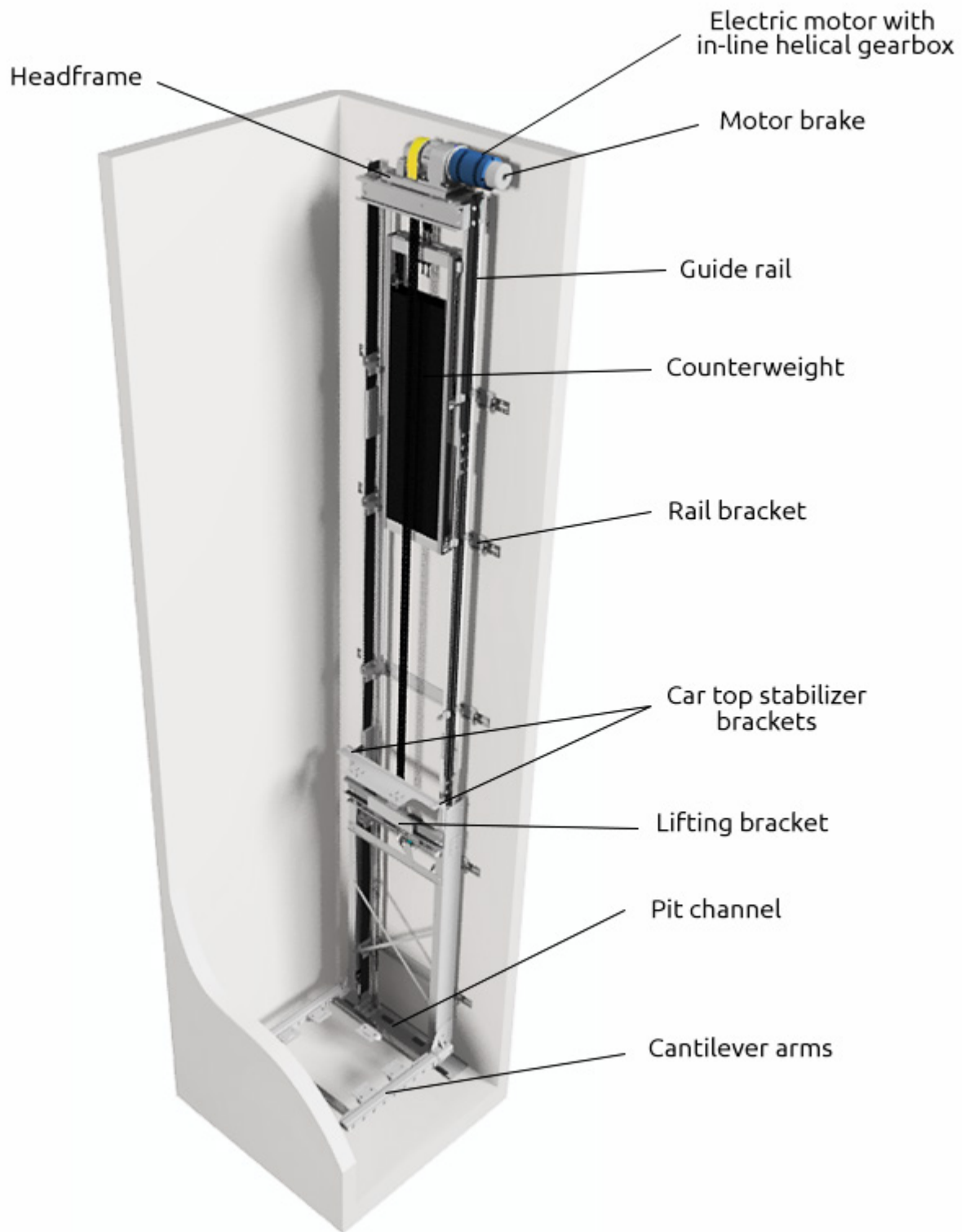
**Electrical Disconnects**

## Hydraulic Drive System - Machine Room & Electrical Requirements



Please contact your local Garaventa Lift representative for specific Machine Room Code Requirements.

## In-line Drive System





## In-line Drive System - Technical Reference

### General

- Capacity - 1000 lbs
- 40 feet per minute nominal car speed (0.2 m/sec)
- Up to 6 stops, Maximum 6 landing doors
- Maximum floor total travel of 50' (15240 mm)
- Pit depth of 8" (200 mm) is recommended for units with standard swing doors. 9-1/4" (235 mm) pit required for units with automatic side sliding car doors.
- Minimum distance between floors is 10" (255 mm)

### Equipment

- Variable frequency drive for smooth start and stop
- Suspension: Two #60 ANSI Heavy Duty Roller Chains
- Heavy duty cantilever design utilizing 8 lbs per foot steel elevator guide rail system
- High Efficiency Helical reduction gear
- Standard power supply is 240 VAC (MAX), single phase, 60/50 Hz

### Controls

- Collective automatic operation with illuminated push buttons
- PLC (Programmable Logic Controller) with backup system for elevator descent, lights, locks and gate and/or door operator(s) where equipped.
- Digital position indicator in cab
- Automatic cab lighting
- Emergency stop / alarm

### Standard Safety Features

- Emergency manual lowering
- Slack/broken chain instantaneous safety device
- Upper and lower terminal limit switches and a final limit at top and bottom of travel
- Hoistway door interlocks ensure the car does not move unless all hall doors and cab gate(s) are closed and locked
- Emergency light and alarm
- Certified electrical control system
- Mechanical Overspeed Governor with electronic detection
- Car and Counterweight Over Travel Bumpers
- Mechanically integrated fail safe brake system
- Uninterruptable Power Supply (UPS) ensures the ability to lower the car and descend to an exit landing, even in the event of a power outage.

### Options

- Upgrade Door Package (sliding elevator car door, may include swinging hall door or frame)
- Premium Door Package (sliding elevator hall door with tandem sliding elevator car door)
- Keyed hall stations
- Automatic cab gate operator(s)
- Automatic hoistway door operator(s)
- Custom cab sizes
- Emergency Battery Back Up
- 96" Cab height

### \* Daily Cycles

The elevator is designed based on the following daily cycles:

- |                        |    |
|------------------------|----|
| • Normal               | 20 |
| • Heavy                | 50 |
| • Excessive            | 75 |
| • Max. starts per hour | 10 |

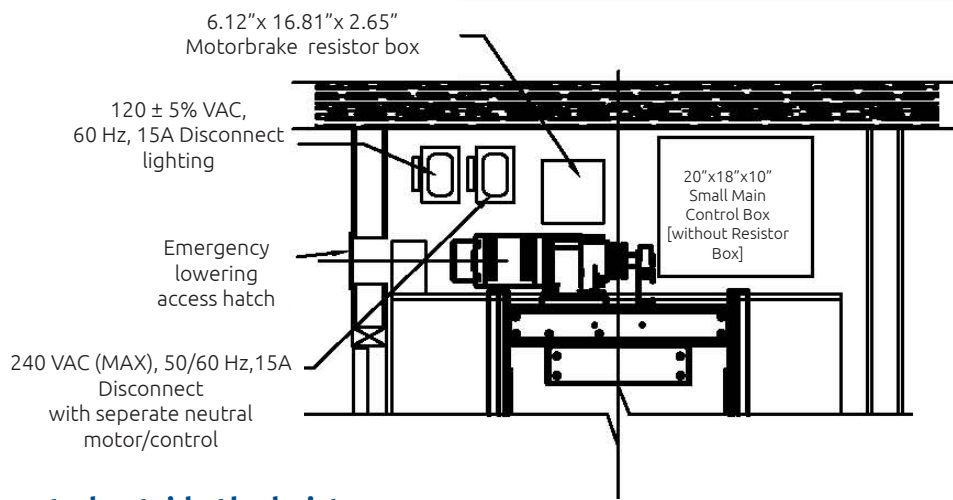
\*Consult your Sales Representative if there is a chance you may exceed these amounts.

## In-line Drive System - Electrical Control Box

With the In-line Drive the Electrical Control box can be located inside or outside the hoistway. When placed within the hoistway it is mounted on the wall next to the motor at the top of the rail system. Locating the Control box outside of the hoistway provides better access for installation and servicing.

If located inside the hoistway, the electrical control box will require 12" (305mm) of extra overhead clearance, distance from the upper landing level to the ceiling of the hoistway. The electrical control box, if located remotely must be within 50' (15.2m) of the motor at the top of the hoistway.

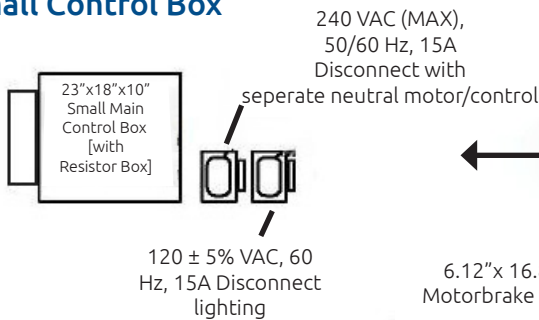
### Controller located at the top of the hoistway



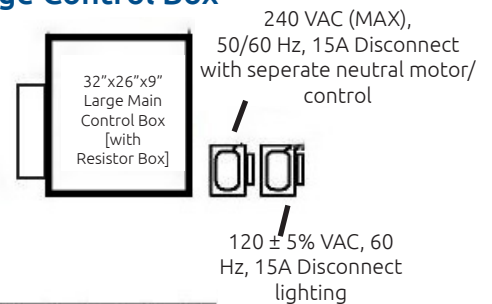
### Controller located outside the hoistway

The Controller generates heat. Maintain 3" of clearance all around. There are two Control Boxes, as shown in the figure below.

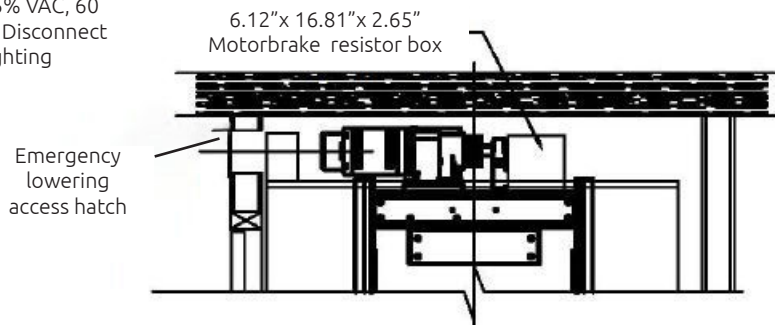
#### Small Control Box



#### Large Control Box



OR



Note: Left hand motor shown

## Electrical Disconnects

Two separate 15 amp lockable fused disconnects are required and they must be located within reach of the electrical control box. One is for lighting and one will be for the control box.

In accordance with the electrical code, you must provide a minimum of 30" (762 mm) x 36" (914 mm) x 39<sup>3/8</sup>" (1000mm) in the US and 30" (762 mm) x 39<sup>3/8</sup>" (1000mm) in Canada of working space in front of each disconnect switch and control box.

Specific requirements for the fused disconnect switch and fuse rating of your elevator will be shown on the shop drawings.

## Ventilation Requirements

No special requirements needed. The elevator drive unit will generate approximately 3200 BTU per hour under normal operating conditions. Recommended temperature for elevator equipment is 50° – 90° F (15° – 32° C) and 5% – 90% non-condensing. Please contact your local Garaventa Lift representative for possible local code variations.



**Electrical Disconnects**

## Mains Power Requirements

- 240 VAC (MAX), 50/60 Hz, Single phase, 15A

## Lighting Power Requirements

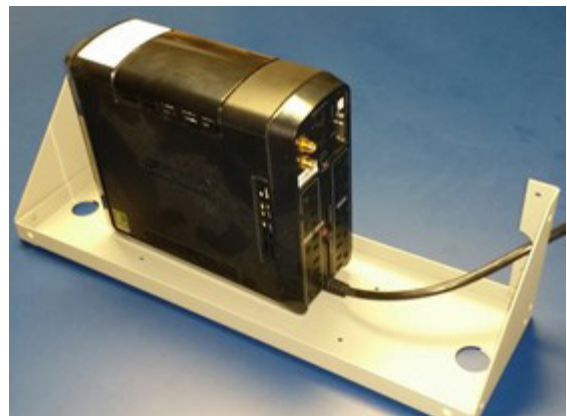
- 120 ± 5% VAC, 60 Hz, Single phase, 15A

## Uninterruptable Power Supply (UPS)

In case of a power outage the UPS allows the car to be lowered, making stops at desired floors on its way. A shelf to mount the UPS unit is included.

UPS Size: 10-1/2" wide x 9" high x 4" deep  
(267 x 229 x 102 mm)

Mounting Shelf: 20" x 5" (508 x 127 mm)



**UPS with Mounting Shelf**

## Battery Backup – Optional

This feature ensures that the elevator continues to operate up and down during a power outage. The self-contained auxiliary power source is housed within a cabinet and can be located up to 15' (4.5 M) away from the control box.

Cabinet Size: 547 mm (21 1<sup>7</sup>/<sub>32</sub>" ) wide x 25 2<sup>1</sup>/<sub>2</sub>" (652 mm) tall x 7 5<sup>8</sup>/<sub>16</sub>" (193 mm) thick.

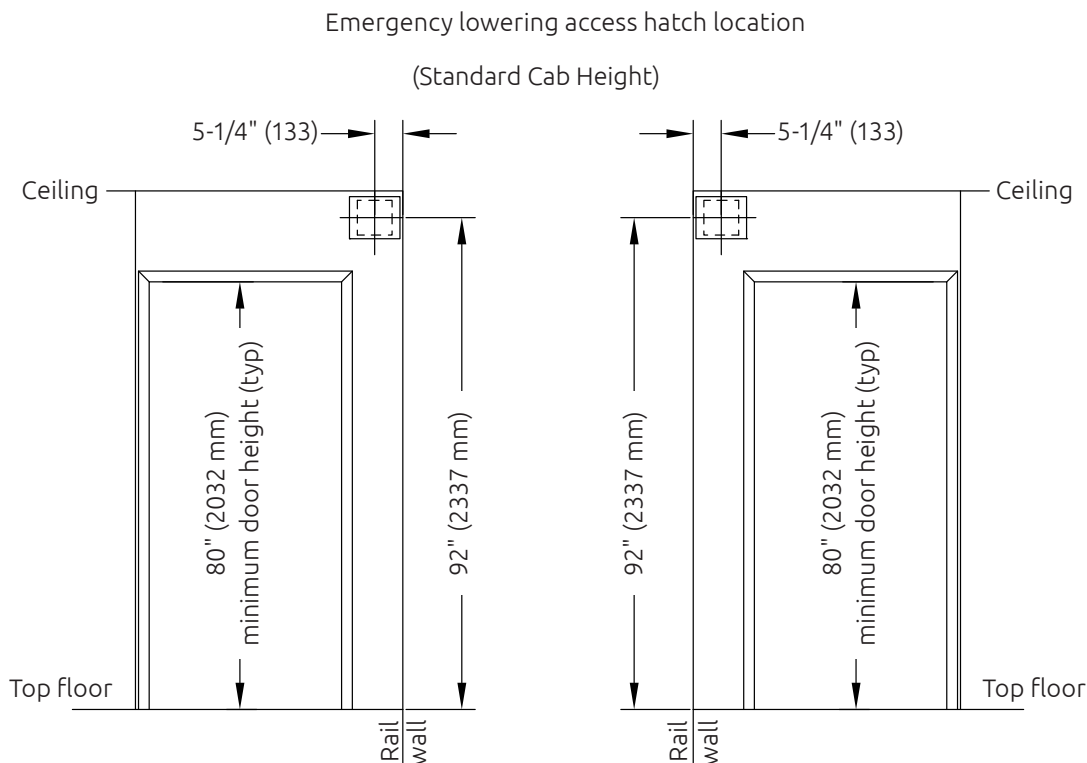
## Emergency Manual Lowering

The cab can be manually lowered in case of emergency by inserting a handwheel into the end of the motor and turning to lower the cab. The elevator must be turned off either through the electrical disconnect or the home's main electrical panel before the elevator cab be lowered.

To insert this handwheel a small access door must be located at the upper landing. A white painted access door is supplied, which can be flush mounted in the wall.

## Dimensions

- Access door: 5 1/8" x 5 1/8" (130 x 130 mm)
- Outside dimensions of the cover plate: 8" x 9 1/2" (203 x 240 mm)
- Required opening in the wall: 6 1/2" x 6 1/2" (165 x 165 mm)



\* - 96" (2438 mm) TALL ELEVATOR CABS: THE VERTICAL DIMENSION IS 104" (2642 mm)

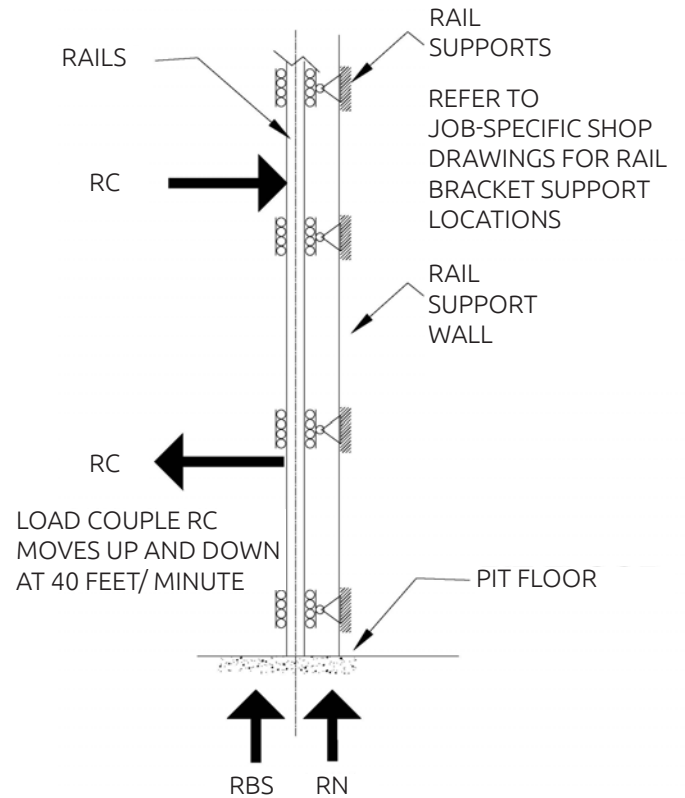
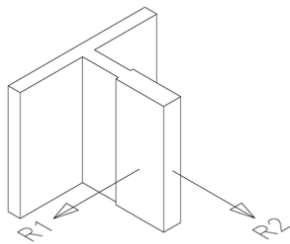
## Note

- Emergency lowering access hatch locations shown in the drawing above are suitable for elevators with the upper landing door located adjacent to the rail wall.
- For elevators with the upper landing door not adjacent to the rail wall, the emergency lowering access hatch must be located on the hoistway wall adjacent to the motor and not beside the upper door.

## Loading Diagram

The walls of the elevator hoistway can be constructed of wood, poured concrete or concrete block. The wall behind the rails must be load bearing and able to withstand the loads imposed by the elevator.

The guide rails are mounted to the wall with steel brackets. These rail brackets are fastened to the load bearing wall at regular intervals. See job-specific shop drawings for locations.



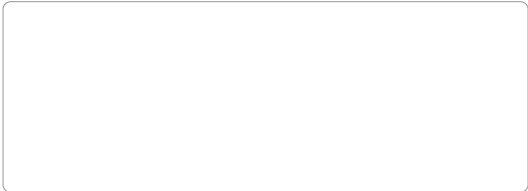
Load	Description	lbf [N]
RBS	Reaction due to buffer safety engagement	6643 [29551]
RN	Reaction due to normal operation	4343 [19320]
RC	Load imposed during normal or emergency operation maximum pull-out force on rail support	920 [4092]
R1	Rail Reaction	460 [2046]
R2	Rail Reaction	94 [420]



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