RESIDENTIAL CRYSTAL ELEVATOR

PLANNING GUIDE
2023 EDITION

trustram.com
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RAM ELEVATORS + LIFTS

RAM Elevators & Lifts Inc is a proud North American manufacturer of quality elevating devices for home and low-rise commercial use across the US and Canada.

Underpinned by principles of quality, reliability and safety, our products are at the convergence of practical and aspirational. Thanks to RAM's advancement in product design, flexibility and simplicity, function is no longer an aesthetic compromise, and elevators and lifts are no longer exclusive or disruptive. We have effectively harnessed vertical potential and in doing so, made beautiful accessibility more achievable than ever before.

Whether you require accessibility now, are looking to future proof your property, or looking to incorporate vertical elegance into your forever home, RAM has a solution to meet your needs today, and for years to come.

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About the Residential [Product]

Designed for luxury, the Residential Crystal represents the pinnacle of performance and style as our fastest fully customizable multi-stop elevator. Nearly every element of the Crystal can be tailored to your home, from the travel distance to the lighting and interior finishes, RAM can craft an elevator entirely unique to you. The sleek configuration and machine-room less design allow for the Crystal to be seamlessly incorporated into both existing homes and new builds.

Key Features

Counterweight Traction Drive System

RAM's Crystal has a fully counter balanced traction drive.

Machine-Room Less (MRL) Design

While other elevators may need a separate room for essential machinery, every RAM product is compact and self-contained, saving you space, time and money

Crystal Cab/Shaft Sizes	Cab (W X L)	Shaft (W X L)
Min. Product Size*	24.5" x 44.5"	42.5" x 47.5"
Min. Size for Wheelchairs	36" x 48"	55" x 54"
Standard Size**	41" x 53.5" - 55"	60" x 60"
Max. Product Capability***	48" x 79"	67" x 83"

Low Overhead Clearance

Smart space design delivers the most space-efficient traction MRL on the market. All drive components mount directly to the top of the RAM rigid guide-rail frame fitting into a standard 96" top-floor ceiling height.

All Electric Energy Efficient System

RAM's field-proven electric drive system is reliable, powerful, and whisper-quiet, offering households best-in-class energy efficiency. Plus, no hydraulic fluid = no harsh smells.

Limited or No Pit Required

Choose a pit-less build with a 3” ramp, ideal for existing spaces, or a 3” pit for flush access.

Two-Year Warranty

The RAM Crystal Elevator is covered by a two-year warranty from the date of purchase. Extended warranties available. Contact RAM for details.

Residential Crystal at a Glance

WEIGHT CAPACITY: 800-1400 lbs
TRAVEL SPEED: 30-50 ft/min
MAX TRAVEL DISTANCE: 50 ft
MAX CAB SIZE: W48” x L79”
MIN. OVERHEAD CLEARANCE: 96”
POWER REQUIREMENTS: Power Supply: 208-240V/1PH/60Hz 20A w/ Neutral
Full Load Amperage: 8.6A @ 220V * please refer to specific electrical disconnects details required.
DRIVE SYSTEM: Counter-balance traction sheave drive
REGULATORY CODES: ASME A17.1/CSA B44

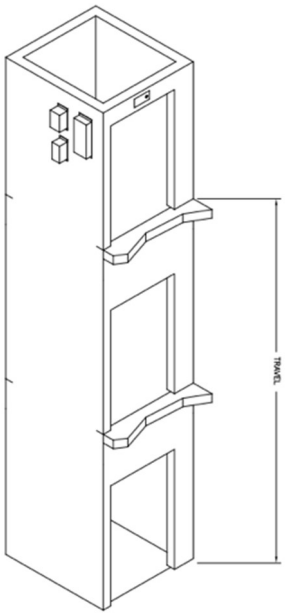
Planning and Design Basics

We recommend that when you are planning for a Crystal elevator you do the following:

1. Consult with the client about the intended use of the elevator.
2. Research your local, state/provincial, and national code requirements.
3. Verify any site or design limitations.
4. Identify the door orientation and type, the tower height requirement, cab size, and the corresponding shaft size using this guide.
5. Plan for the appropriate electrical and lighting requirements.
6. Determine the aesthetic finishings you'd like.

Travel Height

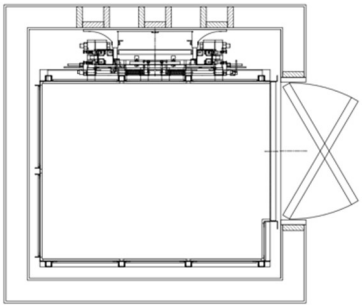
To ensure that your elevator is architecturally compatible with your residential space, you must consider the travel height, door orientation and the tower location. The distance from the pit floor and the floor level on the uppermost landing gives us the total travel height. As per ASME A17.1/CSA B44 standards, the maximum amount of travel is 50 feet.



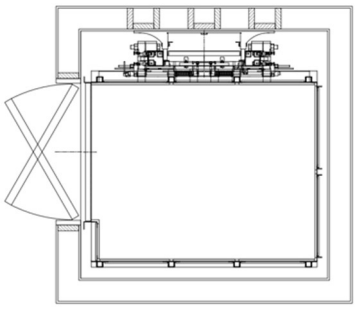
Rails and Door Location

The orientation of the door(s) in relation to the elevator rails determines how large the cab size can be, given the shaft dimensions and the necessary door returns for framing.

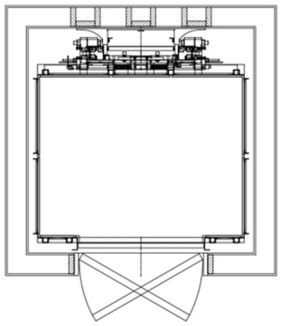
Type 1-R



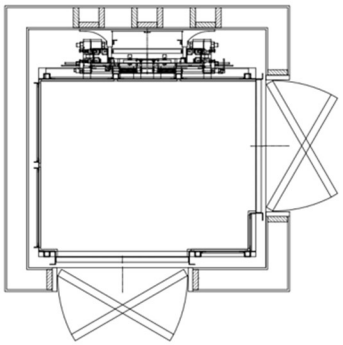
Type 1-L



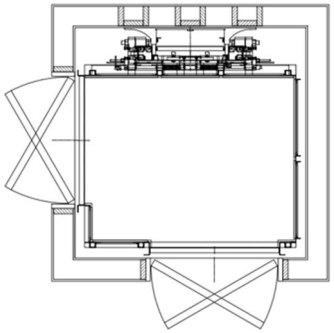
Type 2



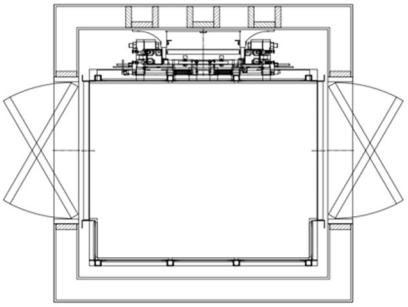
Type 3-R



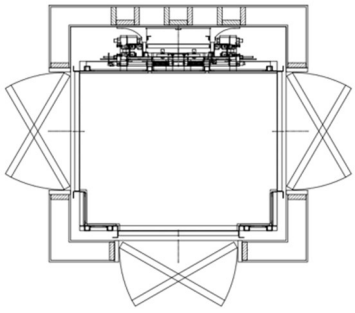
Type 3-L



Type 4

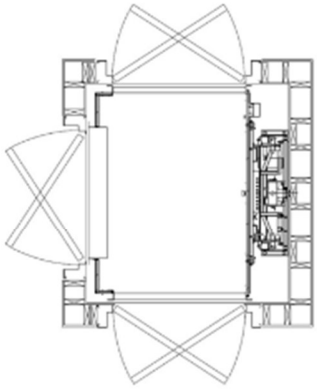


Type 5

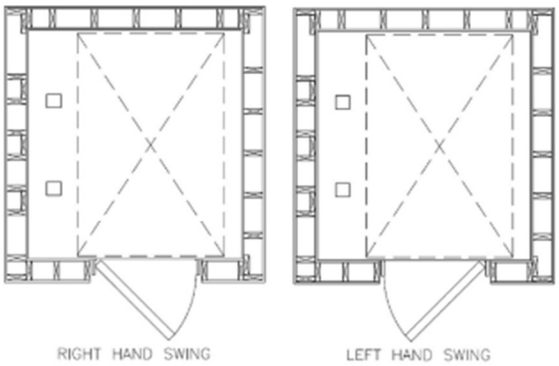


Door Swings

The flexible design of the Crystal Elevator allows for hall doors to swing either way (left or right) in any configuration.



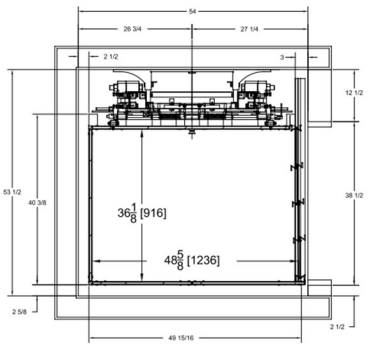
Style 5*



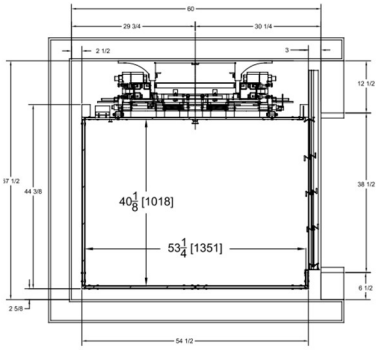
Door Swing Nomenclature

Cab Types

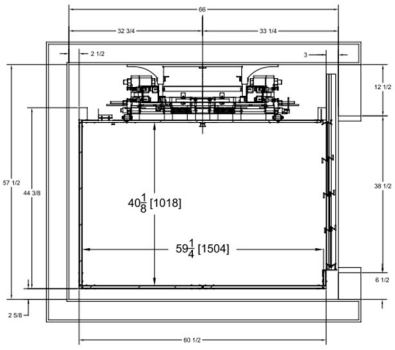
Quick Cab Crystal - 36" x 48"



Quick Cab Crystal - 40" x 54"



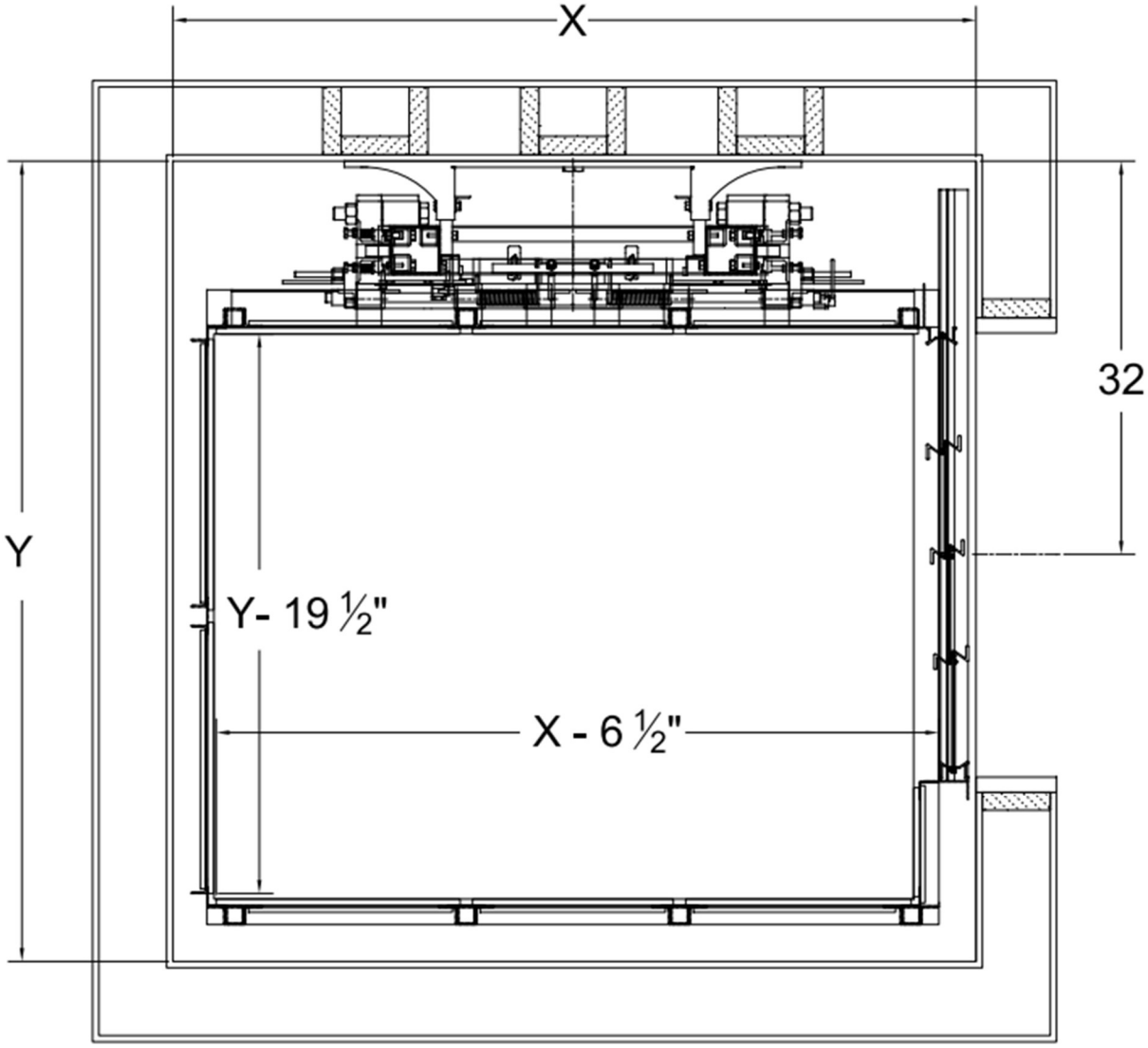
Quick Cab Crystal - 40" x 60"



Approx. Car Size	Shaft Length	Shaft Width	Return wall Size	Door Centerline
Small (36x48)	54”	53.5”	13”	32”
Med (40x54)	60	57.5	13”	32”
Large (40x60)	66	57.5	13”	32”

	Classic (Quick Cab)	Select	Estate
Cab Size	Standard (Quick Cab)	Custom	Custom
Gate type	Manual Sliding Gate	Manual Sliding Gate	Various
Finish	Standard	Standard	Custom

Select / Estate Cab



Shaft Construction

3.1 Shaft Size & Door Returns

The Crystal Select and Estate are custom built to maximize the cab floor space based on the finished shaft size. For planning, a good rule of thumb is to leave a 5'x5' finished shaft, which will allow for a 40.5"x 53.5" cab, depending on the cab doors used.

3.1.2 Smallest Possible Cab Size

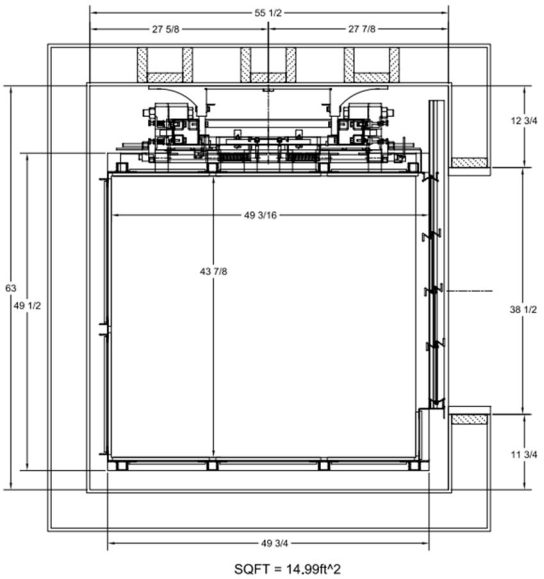
The Crystal Elevator is the only product on the market that can fit in a shaft that is less than 4'x4'. The smallest possible finished shaft size is 42.5" wide by 47.5" long which will provide a cab that is 24.5" wide and 44.5" long. Please note, this elevator size will not accommodate a wheelchair, and is only possible in a specific configuration and cabin barrier.

3.1.3 Largest Possible Size

The Crystal Elevator also offers the largest possible elevator cab* in the residential market with a cab size of 48" wide by 79".

NOTE: This size would not be compliant with ASME A17.1 2019/CSA B44:19 (Section 5.3.1.11.1) which limits net platform area to 15ft²

For example, please see the below figure showing one possible configuration of the largest ASME A17.1/B44 compliant platform.



3.1.4 Minimum Recommended Size for Wheelchairs

RAM's minimum recommended cab size for wheelchair use is 36"x48", which requires a minimum finished shaft width x depth of 55"x 54". The minimum size required by code is 31"x48" which would require a 50"x54" finished shaft.

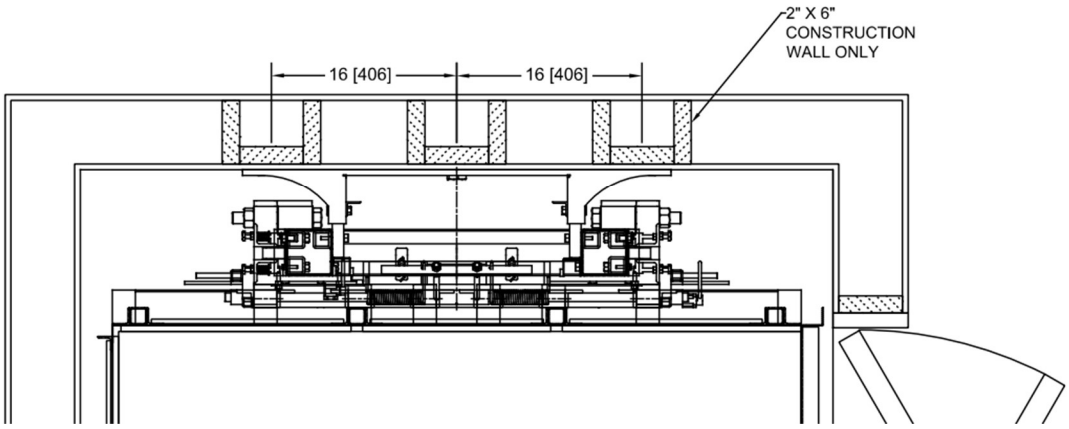
Crystal Cab/Shaft Sizes	Cab (W X L)	Shaft (W X L)
Min. Product Size*	24.5" x 44.5"	42.5" x 47.5"
Min. Size for Wheelchairs	36" x 48"	55" x 54"
Standard Size**	41" x 53.5" - 55"	60" x 60"
Max. Product Capability***	48" x 79"	67" x 83"

* Please note, this elevator size will not accommodate a wheelchair.

** This meets ASME A17.1/CSA B44

*** This does not meet ASME A17.1/CSA B44 which limits net platform area to 15ft^2

3.2 Additional Shaft Requirements

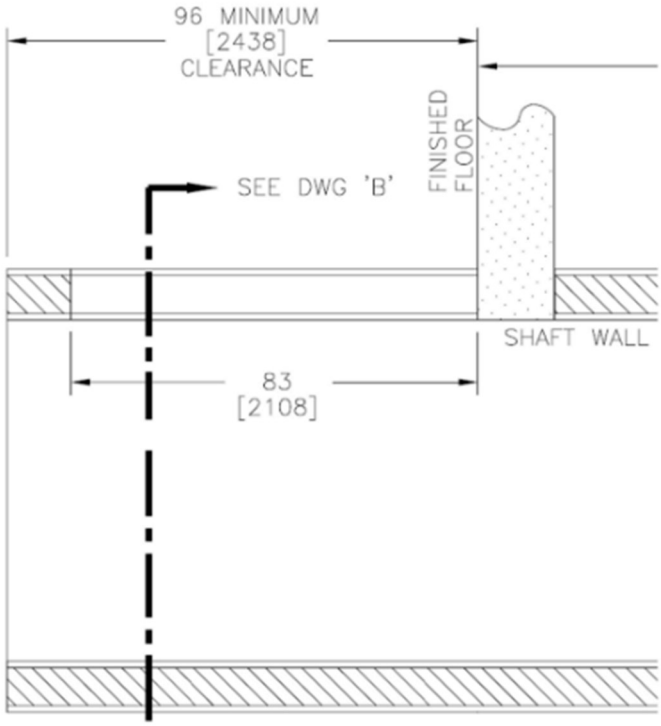


- All walls within the shaft need to be free of protrusions and square to allow for appropriate running clearances.
- Elevator guide rails are attached to a load bearing wall the full length of the shaft
- The load bearing wall should be constructed using 2 x 6 wood studs or wood filled steel stud
- A boxed configuration as shown shall run the entire height of the elevator shaft to allow securement of tower brackets.
- Please check with your local RAM representative to request drawings for alternative rail wall construction.

3.4 Overhead Clearance

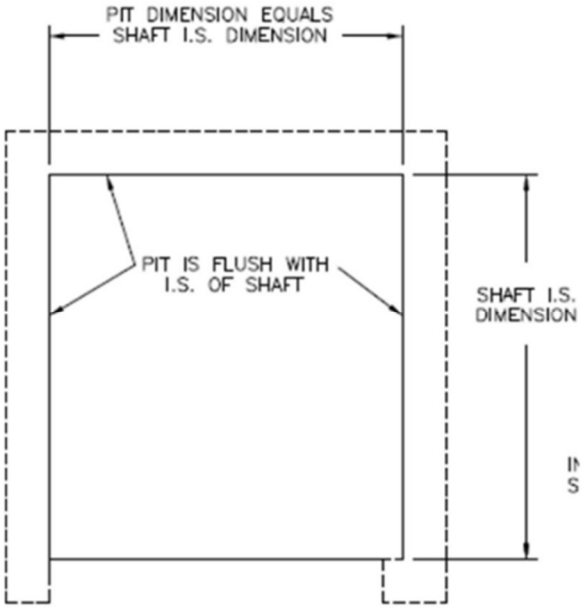
The standard inside height of a Crystal cab is 80”, requiring a minimum overhead clearance of 96” measured from the finished floor of the top landing. Every 4" of additional overhead clearance permits an additional 4” of inside cabin height. See the below table.

Inside Cab Height	Overhead Clearance
80” *	96”
84”	100”
88”	104”
92”	108”
96” **	112”



* Minimum / Standard
** Maximum

3.5 Pit Construction



The pit shall be the same width and depth as the finished shaft. This means the concrete should not be proud of the drywall.

The minimum slab thickness is 4” *.

For flush access, the Crystal requires a minimum pit depth of 3” for most cab doors and 8” with sliding doors.

Please see job specific drawings for loads and consult a structural engineer if required

Cab and Landing Doors

4.1 Cab Doors

4.1.1 4-Panel Gate (Standard)

The sleek manually operated 4-Panel Gate comes in a variety of panel finishes and is compact enough to fit any cab width. This is the entry level option for the Crystal Elevator.

4.1.2 Q-Fold Door (Upgrade)

A Q-Fold door operates much like your typical bus door. It automatically opens and closes when arriving or leaving your landing. 36” is the minimum inside cab width to accommodate a Q-Fold door.

4.1.3 Sliding Cab Door (Upgrade) – available only on Crystal Estate

Sliding cab doors are automatic and can be paired with or without sliding landing doors.

Panel Gate

Q-fold Gate

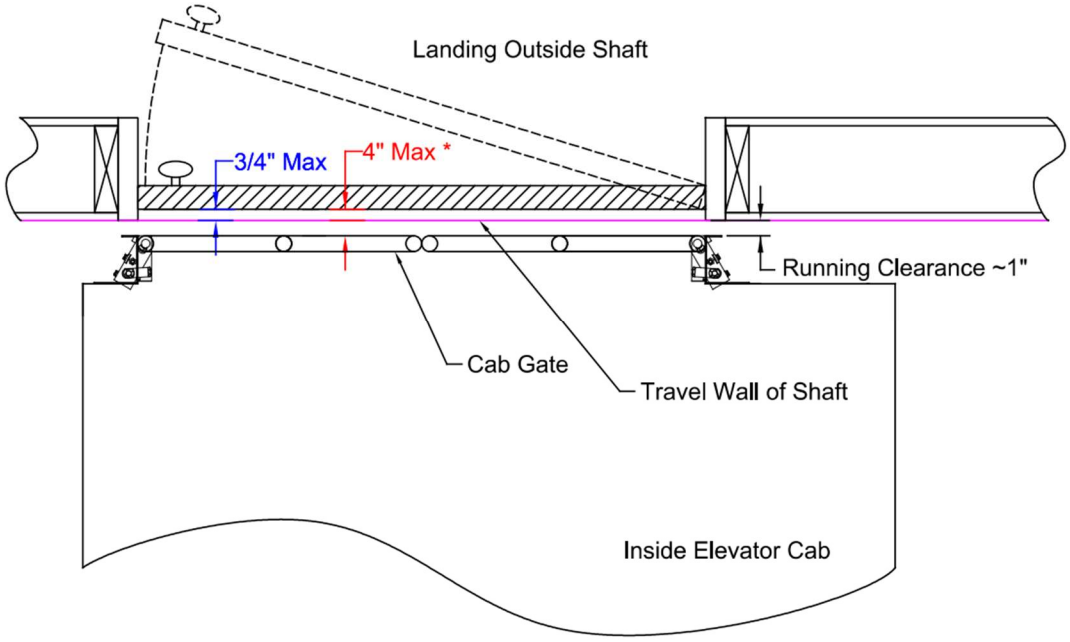
Sliding Door

4.2 Landing Doors

4.2.1 Customer Supplied Swing Doors

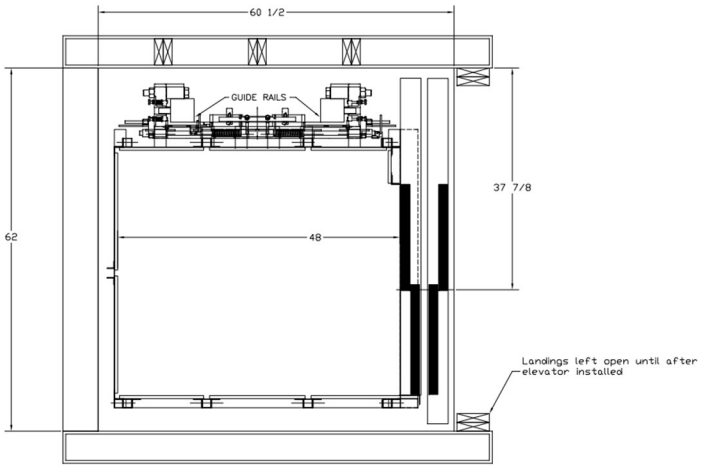
The most common option on residential elevators are swing doors supplied by the customer/contractor. Swing doors are typically 36” wide and should be solid core. Wooden doors with a glass panel are also common. ASME A17.1/CSA B44 establishes maximum distances between the landing door and shaft wall, and between the landing door and the cab door. For this reason, 2x4 framing is recommended in order to make achieving these clearances simpler. 2x6 framing may require RAM “Door Safe Space Panels” to achieve the required setback.

For code years 2016 and later, the following distances are required.



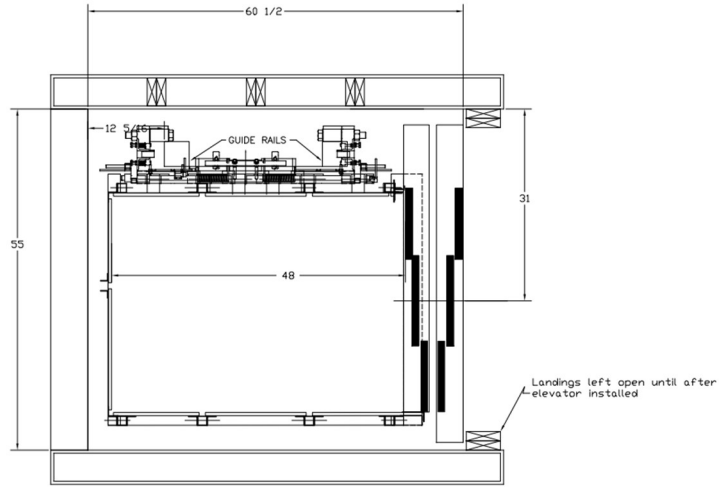
4.2.2 Sliding Landing Doors

Automatic sliding landing doors must be paired with a sliding cab door. The minimum shaft width for a **two-panel sliding door** is 62”:



MIN SHAFT SIZE

The minimum shaft width for a **three-panel door** is 55”.



MIN SHAFT SIZE

The minimum finished shaft depth for a 48” long cab is 60.5”

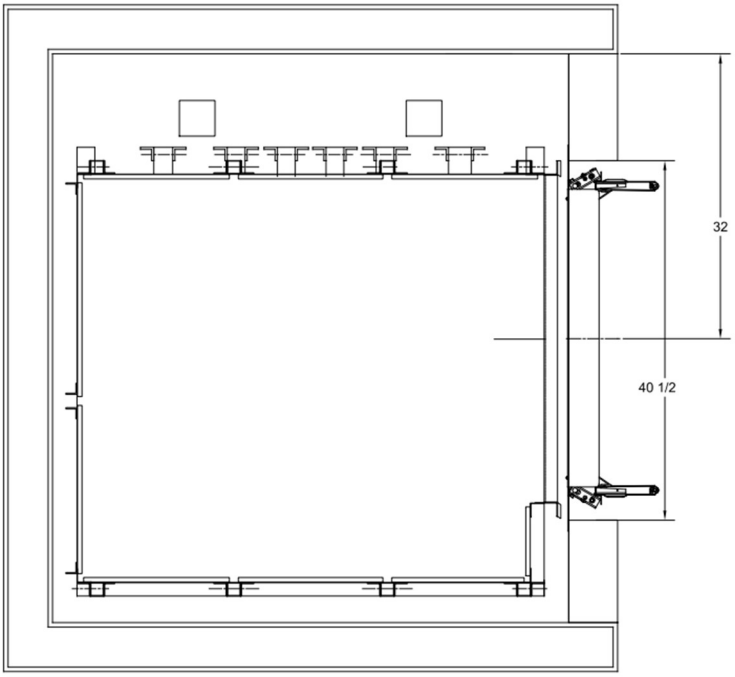
The landing must be left open until the elevator and doors are installed (see figure below).

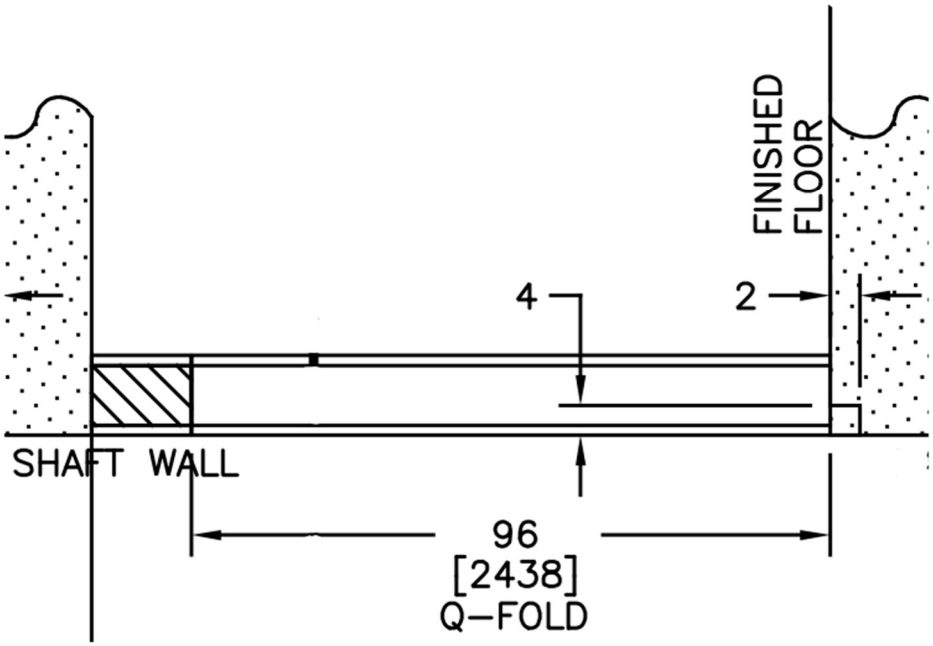
A minimum 8” pit is required for sliding doors.

There are various floor-to-floor and overhead clearance requirements depending on the height of door – contact your RAM representative for more detail.

4.2.3 Q-Fold Landing Doors

Q-Fold landing doors are an excellent choice when space is limited as they do not take up any room in the elevator shaft. The minimum rough opening for the Q-Fold landing door is 40-1/2” x 96”. Note that a 2”x4” notch is required the entire width of the rough opening for the track of the landing door.



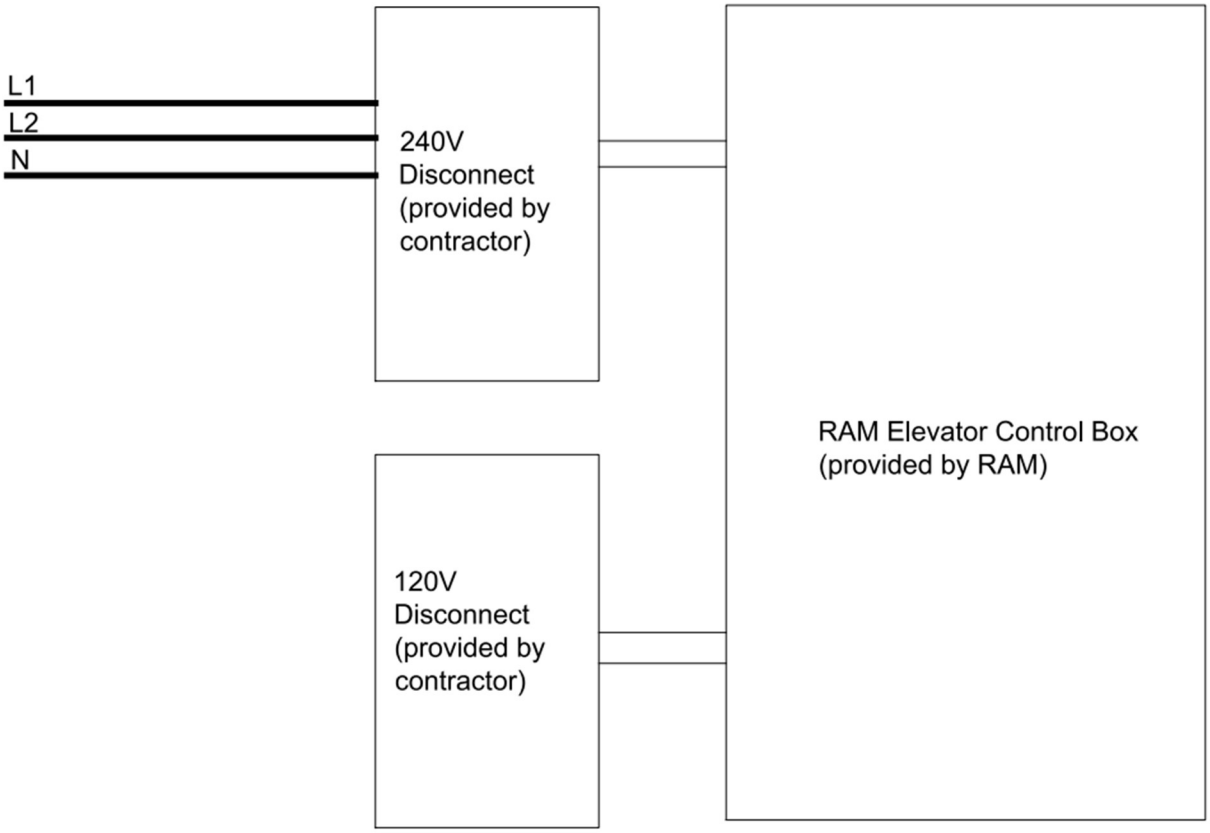


Electrical Requirements

Electrical requirements for elevators are specified in Section 38 of the Canadian Electrical Code.

Electrician to provide:

- 208-240V/20A/1Phase - 60Hz with neutral
- A fused and lockable 240V/20A disconnect with 2 sets of auxiliary contacts. The power is run to this disconnect
- A fused and lockable 120V/15A disconnect. This disconnect is for the emergency lighting

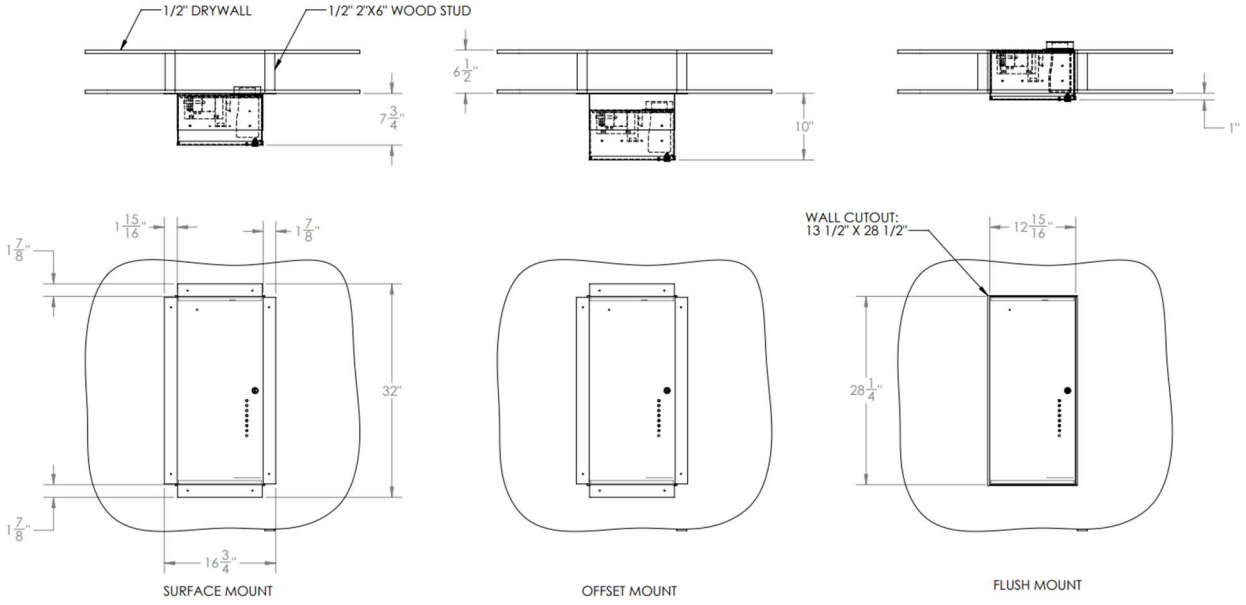


5.1 Controller

The control box is panel outside of the elevator which houses critical elevator equipment. Typically, this panel is located on the opposite side of one of the elevator walls in a closet,

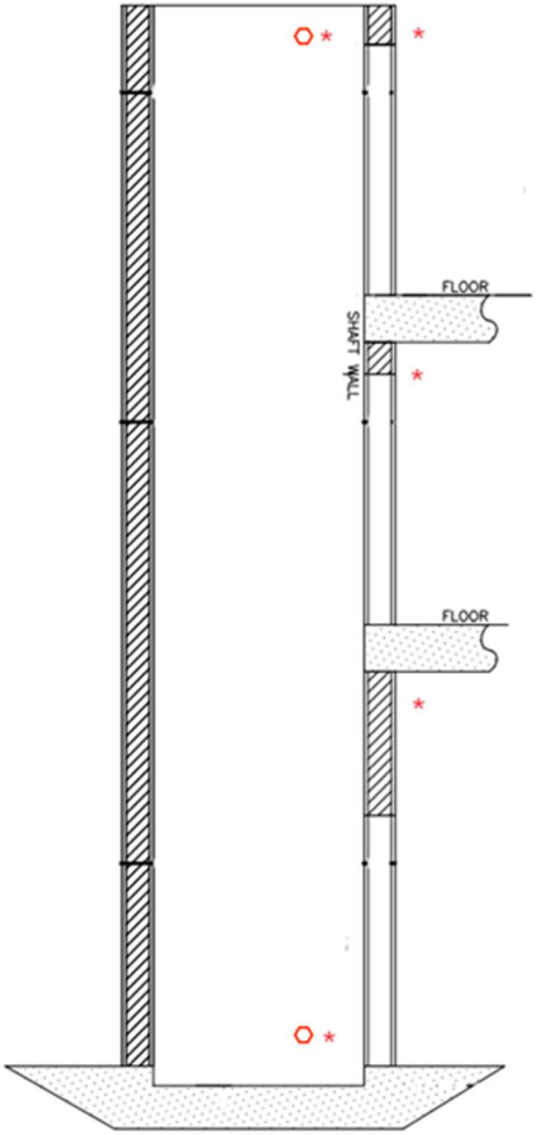
storage space, or machine room; careful consideration should be given to ensure aesthetics are not impacted. It can be mounted in a location away from the elevator if conduit to run cables between the elevator shaft and controller is provided. A minimum of two, 4” diameter conduits or chases are required, but contact your RAM representative for more information.

Options for installation include surface mount, offset mount, or flush mount.



5.2 Lighting

To perform maintenance within the shaft, lighting is required at the top of the shaft, at each landing, and in the pit area. The contractor shall provide permanent 100LX lighting at each location and this shall be on a separate circuit from the elevator.



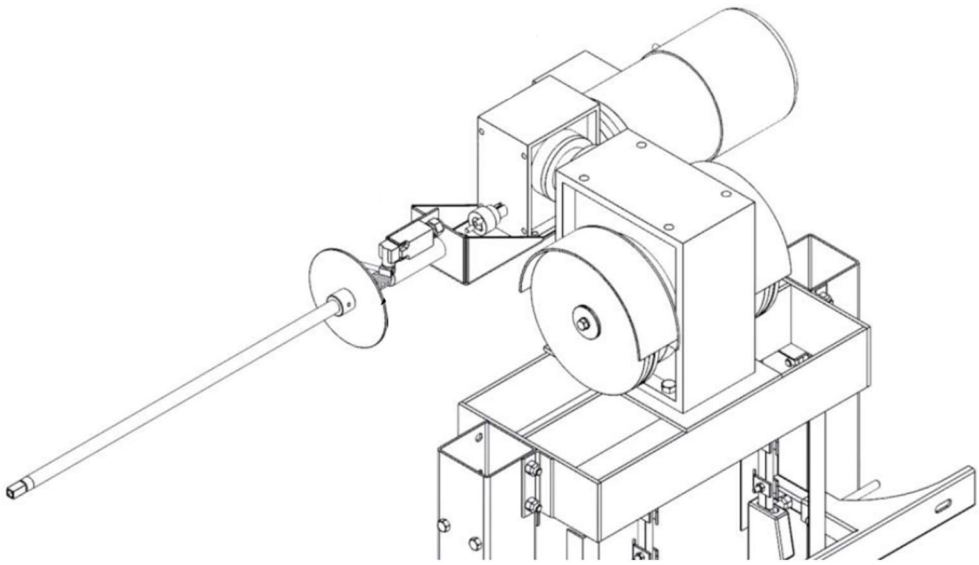
* indicates the location of lighting

⬡ indicates the GFI receptacle

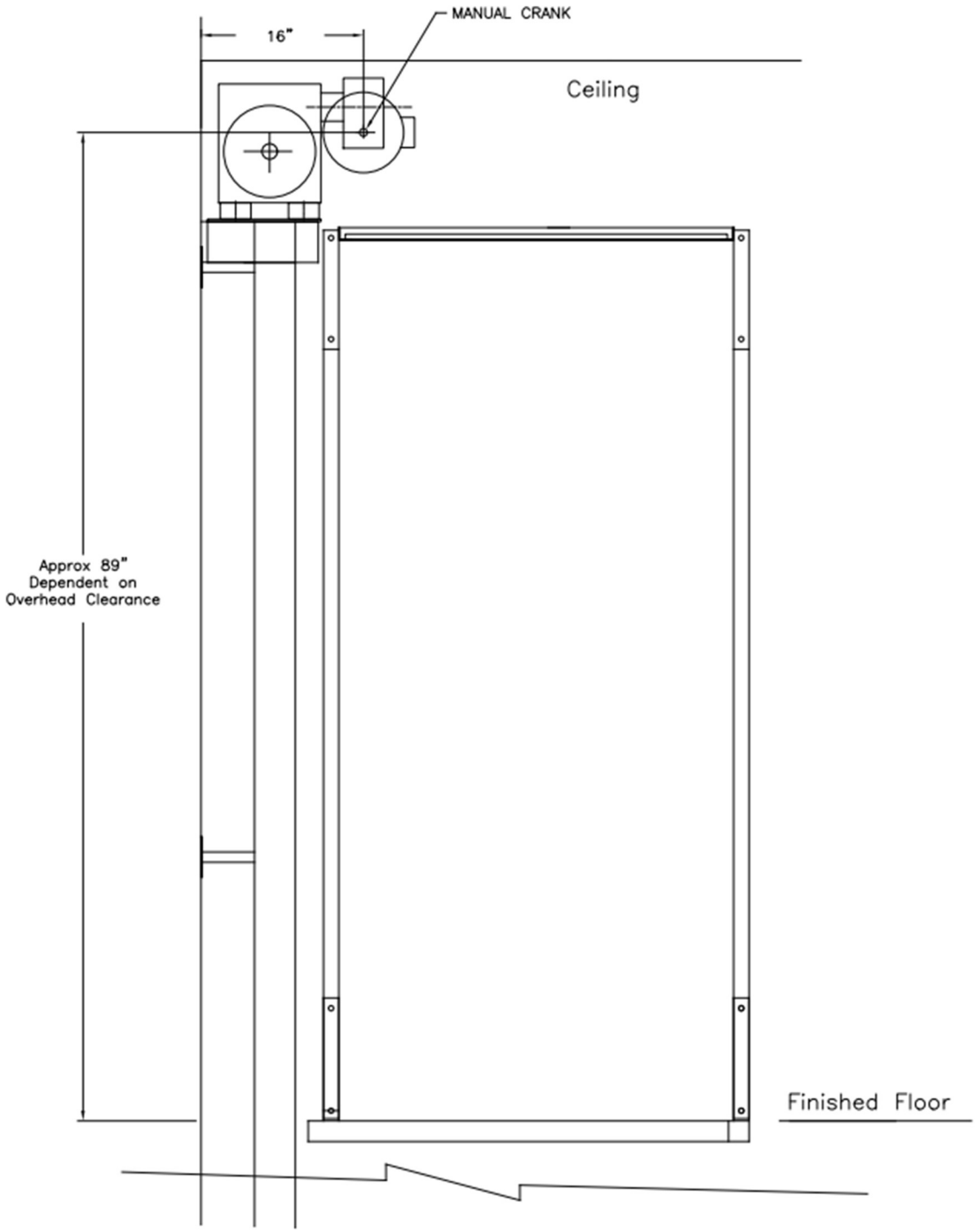
Safety Features

6.1 Manual Cranks

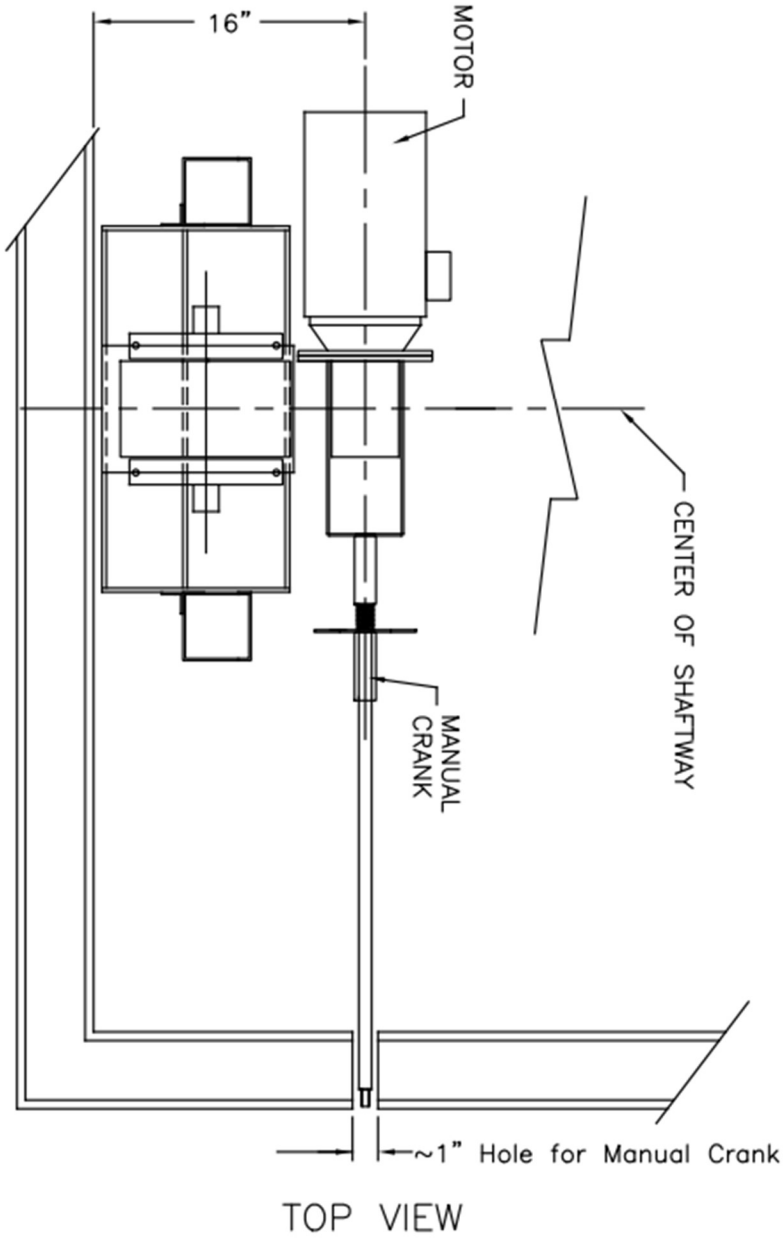
A “manual crank” is provided on all Crystal elevators. It provides a method to manually raise or lower the elevator to the nearest landing for evacuation in the case of power failure or emergency.



3D View of Manual Crank



SIDE VIEW THROUGH CAR



6.2 Interlocks

Landing doors are equipped with an interlock to prevent it from being opened unless the elevator has come to rest at that landing. The interlock also prevents the elevator from moving if it is not engaged prior to operation. On customer supplied doors, a ½" access hole will be drilled into all doors for emergency evacuation.

6.3 Uninterruptible Power Supply (UPS) * Upgrade

This option provides a battery backup to allow the rider to descend to the nearest landing in the event of a main power supply interruption. It is referred to as “Battery Lowering” .

Maintenance

RAM elevators and lifts are engineered for convenience. Our products are designed to minimize site alteration, achieve long-term reliability, and require low upkeep. However, like any element of your home or building, ongoing maintenance is required to ensure safety and to extend the life of the product.

Quality elevators that are serviced correctly will stand the test of time. Our elevators and lifts are designed for longevity and in general live the life of the building when properly cared for.

The recommended servicing schedule for the Crystal is at least once annually to perform a general inspection and check lubrication.

Recognizing that our products will be relied on for many years to come, we've developed a dependable support system that can provide timely expert guidance and assistance. Whether it's care advice, technical queries, optimizing performance, or troubleshooting, we are here to help.

Get in Touch

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