



# Residential Elevator Design Guide

ASME A17.1, Section 5.3



Inline Gear Drive



Hydraulic Drive

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Please note that this guide is for planning purposes only, applies exclusively to national code, and should not be used for construction. Prior to construction, please contact your local Morning Star Elevator sales representative and request a job-specific set of elevator plans to ensure that you obtain the accurate dimensions and requirements for your project.

Your representative will also assist you to identify resources to ensure that your project plans will comply with the applicable state and local codes and the permitting authorities.

# Residential Elevator Safety

Depending on the version of code that is enforced in your local jurisdiction, the hoistway door and car gate/door space requirements differ.

If your jurisdiction enforces ASME A17.1 (year 2013 & prior) Elevator and Escalator Safety Code, the rule was referred to as the 3" x 5" rule and is depicted in the image below, on the left.

In 2016, the ASME A17.1 code was revised, with the new  $\frac{3}{4}$ " x 4" rule being adopted. The requirements for A17.1 (year 2016) are depicted in the image below, on the right.

This rule was amended after it was determined that utilizing a standard residential hoistway door, installed under ASME A17.1 (year 2013 & prior), allows a space between the hoistway door and car gate/door large enough for a child to hide, thus subjecting the child to a potentially unsafe scenario, which could result in serious injury **if said space is not protected by some other means**.

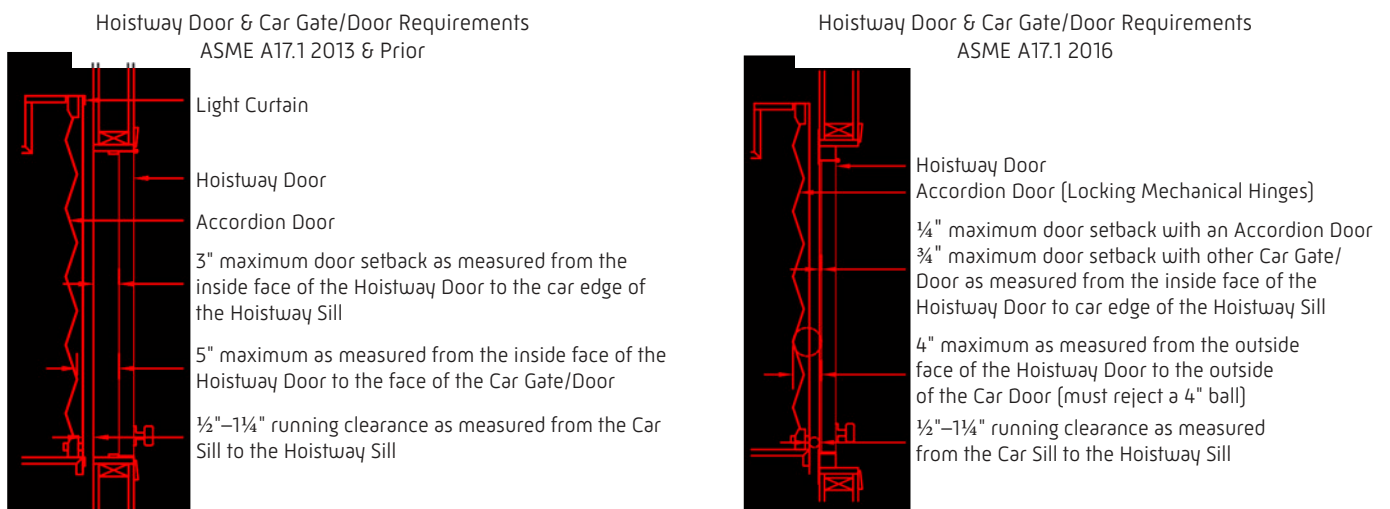
**NOTE: Morning Star residential elevators have an added security features that protect this space.**

All MSE residential elevators are provided with a standard, enhanced gate switch bypass monitor that continuously monitors the elevator control system to detect a scenario where someone may enter the space between the hoistway and the car, without ever entering the car. The enhanced gate switch bypass monitor will keep the elevator from leaving the landing should it detect the aforementioned event.

Additionally, should you live in a jurisdiction that still enforces the ASME A17.1 (year 2013 & prior) code, your elevator will also be equipped with a light curtain that projects a crisscross pattern of 94 infra-red beams to keep the elevator from leaving the landing should an obstruction be detected.

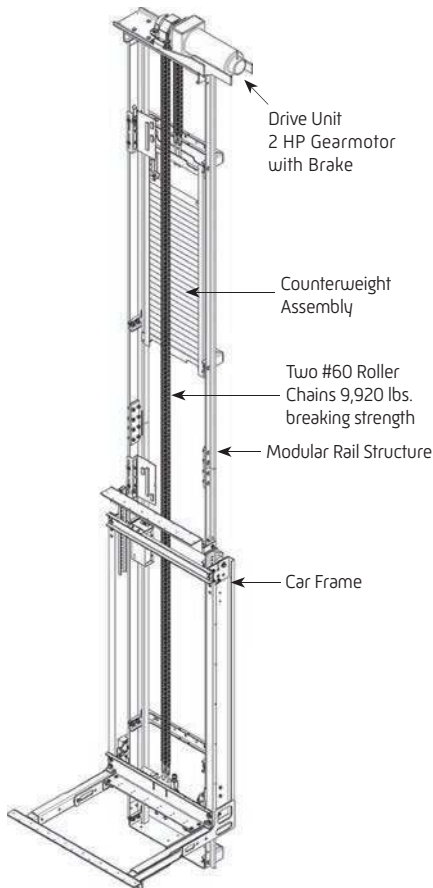
Your safety is our number one priority. Thus, rest assured that regardless of the version of Elevator and Escalator Safety Code that is enforced in your jurisdiction, your Morning Star residential elevator safely protects the space between the hoistway door and car gate/door.

Please consult your local Morning Star Elevator sales representative regarding door and hoistway safety code recommendations.



# Elevator Drive System

## Inline Gear Drive System



### Standard Features

- Overhead minimum of 8'0" [96 inches] with remote controller; minimum of 9'0" with controller in hoistway with a 7'0" interior car height

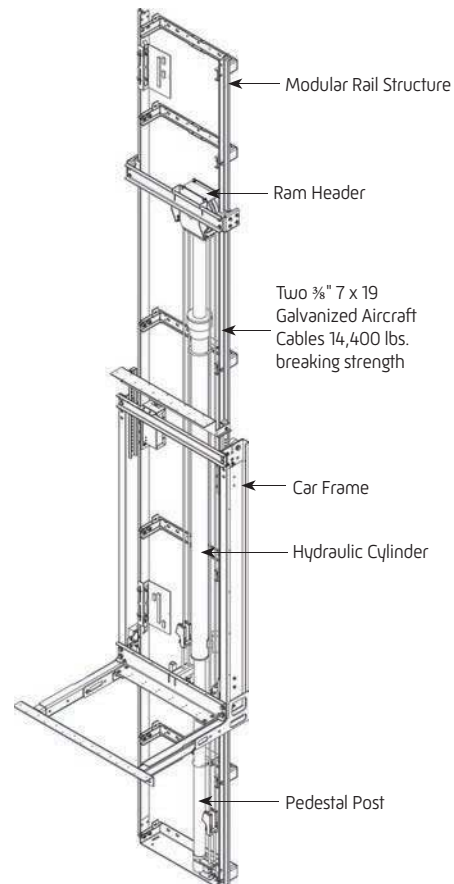
### Equipment

- 208/230 VAC, 60 Hz, 20 amp, single-phase power supply for motor controller
- Two #60 roller chains [9,920 lbs. breaking strength]
- Inverter-controlled variable speed Inline Gear Drive unit with counterweight and 2 HP motor
- Manual lowering device

### Safety Features

- Slack chain safety device
- Two upper and one lower final limit
- Machine stop switch

## Hydraulic Drive System



### Standard Features

- Overhead minimum of 7'10" [94 inches] with a 7'0" interior car height

### Equipment

- 208/230 VAC, 60 Hz, 30 amp, single-phase power supply for motor controller
- Two  $\frac{3}{8}$ " 7 x 19 galvanized aircraft cables [14,400 lbs. breaking strength] with wedge rope shackles
- 80 mm diameter piston/102 mm diameter cylinder including  $\frac{3}{4}$ " reducer bushing
- 3 HP submersed motor with 2-speed valve assembly
- Manual down valve for emergency lowering

### Safety Features

- Slack rope safety device
- Line rupture valve

# Common Specifications

## Standard Features

- Travel: maximum of 50'0" (minimum 12 inches between stops)
- Speed: 40 fpm
- Rated capacity: 1,000 lbs.
- Pit depth: 6" minimum (8 inches preferred)
- Two stops
- Single opening
- Three-year limited parts warranty

## Safety Features

- Motor controller supply disconnects (located in controller)
- Car light supply disconnects (located in controller)
- Pit stop switch
- Car-top stop switch
- In-car emergency stop switch and alarm
- Safety switch for car gate[s]
- Battery backup emergency car lights and alarm
- Electromechanical hoistway door interlocks (doors by others)
- Light curtain monitoring the car entrance†

## Controls

- Programmable Logic Controller (PLC)
- Non-selective collective automatic operation
- S.M.A.R.T. system (Self-Monitoring Alert Response Technology)\*
- Car Operating Panel (COP) with LED floor position indicator§
- Recessed phone box (phone jack included)§
- Hall stations with call button and LED floor position indicator§
- Automatic car lighting
- Single floor designated car homing
- Uninterruptible Power Supply (UPS) for car lowering and automatic car gate/door operation (if provided) in the event of a power failure\*

## Car Features

- Car size up to 15 square feet
- 7'0" interior car height
- Birch, Oak or Maple flat veneer interior walls with flat ceiling\*
- Matching wood handrail
- Matching wood car sill
- Unfinished plywood floor with sill set for ¾" (flooring by others)
- Two energy-saving recessed LED lights with Black trim rings
- 7'0" vinyl laminate accordion door (Light Oak, Dark Oak, Birch, White, Chalk or Antique White)

## Equipment

- Modular 6¼ lb. T-rail structure
- Car frame assembly
- Power supply for motor controller (see each drive for specifics)
- 120 VAC, 60 Hz, 15 amp, single-phase power supply
- Code-compliant electrical disconnects included\*

## Optional Features

- Up to six stops
- Single automatic push-button operation
- Custom car size up to 18 square feet\*\*
- Custom car heights
- Shaker or Recessed panel car with flat ceiling
- Shaker, Recessed or Raised panel car with matching ceiling
- Four recessed LED lights with Black, Polished Brass, Brushed Nickel or Bronze trim rings
- Factory-finished car
- Polished Stainless Steel, Polished or Brushed Brass, Black, Vintage Bronze and Oil-Rubbed Brass fixtures (including COPs, phone boxes, hall calls and handrails)
- COP with integrated keypad phone
- Custom wood interiors
- Custom factory finish, Distressed\*
- "Green" material alternatives and finishes for car interiors\*
- ¾" finished or unfinished installed hardwood car flooring
- Factory flooring insert for ¼" flooring by others
- Buffer springs (require minimum of 8¼ inch pit depth)
- Key switch for COP and/or hall stations
- Rated capacity: 750 lbs.

## Car Gate/Door Options

- Symmetry Safety 3-Panel car door
- Two and three speed car door or car and landing doors
- Wrap around car door†
- Enterprise collapsible gate
- Hardwood veneer accordion door
- Clear acrylic panel accordion door
- Automatic car gate/door operator (not available on the Enterprise collapsible gate)

**NOTE:** *Accordion doors will have Bronze hardware except on White, Chalk or Antique White doors. Acrylic accordion doors will have Clear hardware when Stainless Steel or Black fixtures are provided.*

\* Denotes exclusive features

\*\* May require approval from the local authority having jurisdiction

† Depends upon the package ordered

‡ Availability depends on the code year

§ Standard finish is Brushed Stainless Steel, but multiple finishes available

# Elevator Door & Gates

## Symmetry Safety 3-Panel Car Door



*Our exclusive Safety 3-Panel Door is one of the safest residential elevator car doors on the market. Panels shown in black with vision panel, Brushed Stainless Steel and Vintage Bronze.*

### Standard Features

- Manual Car Door Operation: The trailing panel of the car door measures 2" from edge of the car sill and is restricted to a maximum hoistway door setback of 1¾" under the 3" x 5" rule; designed to fit within requirements of the ¾" x 4" rule, with maximum running clearance and maximum hoistway door setback of ¾"
- Height of Opening: 7'0"
- Car Door Opening: 33" clear opening (fits in a "typical" hoistway with a 36"-wide car)
- Standard finish is Black

### Options

- Light Curtain: Standard as secondary protective device if unit installed under the 3" x 5" rule; optional if installed under the ¾" x 4" rule
- Power Car Door Operation: The leading panel of the car doors measures ½" from the edge of the car sill and is restricted to a maximum hoistway door setback of 3" under the 3" x 5" rule; designed to fit within the requirements of the ¾" x 4" rule with the maximum hoistway door setback of ¾"
- Height of Opening: 7'11"; custom heights available
- Car Door Opening: 36" clear opening (fits in a "typical" hoistway with a 40"-wide car)
- Vision Panels: Available with Clear or Smoked acrylic
- Available in Stainless Steel or powder-coated steel

## Enterprise Collapsible Gate



*The Enterprise Collapsible Gate is always designed and manufactured to comply with current codes. Shown in Black.*

### Standard Features

- Nylon "Quiet Glide" wheels for smooth operation when opening and closing gate
- Low profile handles
- Rejects a ball 3" in diameter
- Every third vertical member guided at the top
- Every vertical member guided at the bottom
- Standard finish is Black

### Options

- Light Curtain: Standard as a secondary protective device if installed under the 3" x 5" rule; optional if installed under the ¾" x 4" rule
- Available in Solid Brass (brushed or polished), Stainless Steel (brushed or polished) or powder-coated steel
- Selection of attractive standard and premium finishes available; custom colors also available upon request
- 75D Option is available to meet the deflection requirements of ASME A17.1 2016
- Available configurations include Classic, Pearl and Diamond and Pearl

NOTE: Brass is not available with the 75D option



# Elevator Door & Gates

## Accordion Door



*The Accordion Door is one of our most popular door choices. Shown in Antique White with Vision Panels.*

### Standard Features

- Laminate panels in Light Oak, Dark Oak, Birch, White, Antique White or Chalk
- Height of Opening: From 6'8" up to 7'11"
- Vinyl hinging [ASME A17.1 2013 and prior]

### Options

- Light Curtain: Standard as a secondary protective device if installed under the 3" x 5" rule; optional if installed under the ¾" x 4" rule
- Mechanical hinging [ASME A17.1 2013 and prior]
- Locking hinging is available to meet the deflection requirements of ASME A17.1 2016. [This allows for ¼" maximum hoistway door setback]
- Vision Panels available with Clear or Smoked acrylic
- Additional Panel Options:
  - Laminate panels in Cherry, Walnut or Black
  - Unfinished or finished matching hardwood veneer
  - Clear or Smoked acrylic
  - Solid or perforated aluminum

## Two or Three Speed Doors



*Automatic commercial-style doors optimize ease of use for passengers. Car door only or car and landing door packages available. Three Speed Car Door shown in Brushed Stainless Steel.*

### Standard Features

- Light Curtain
- Power-operated
- Clear Openings: 31½", 35½" or 36"
- Clear Heights: 78¾", 84¾" or 94½"
- Standard finish is Beige

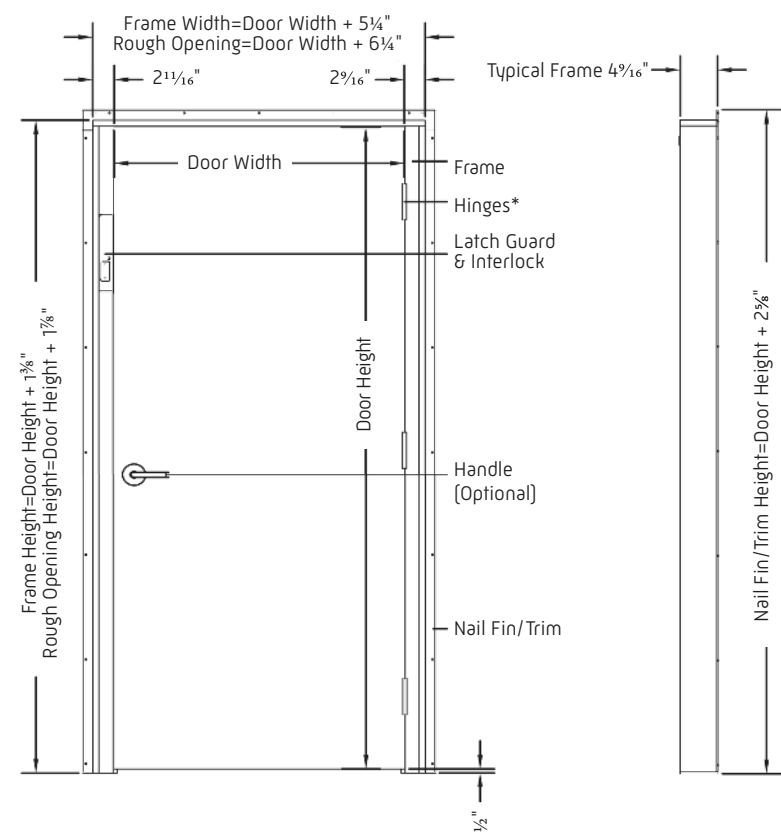
### Overhead Requirements

- Two Speed Doors
  - Car and landing doors: 98"
  - Car door only: 97"
- Three Speed Doors
  - Car and landing doors/car door only: 101"

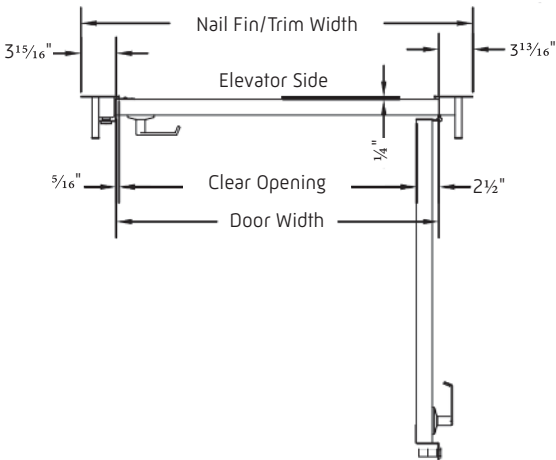
### Options

- Framed Glass Panels: Available with clear safety glass; not currently offered on hoistway doors; standard finish for framed glass panels is Black
- Available in Brushed Stainless or powder-coated steel

# Flush Door and/or Frames



Flush Door



Latch Guard  
(Exterior View)



Electro-Mechanical  
Interlock (EMDL)



Roller Ball Catch & Recessed Pull  
(Optional)



Dummy Handle  
(Optional)

## Notes:

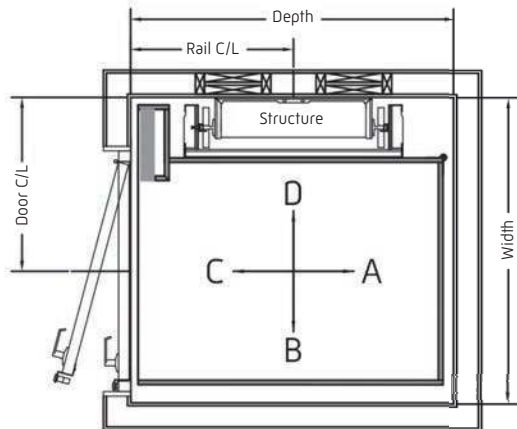
- 1) The door/frame is suitable for installation in masonry or wood frame construction.
- 2) The door/frame is installed with the door flush to the inside of the hoistway.
- 3) The interior hoistway wall should be finished up to the rough opening.
- 4) Available as a frame only or complete door with frame.

\*Hinges provided only with complete door package



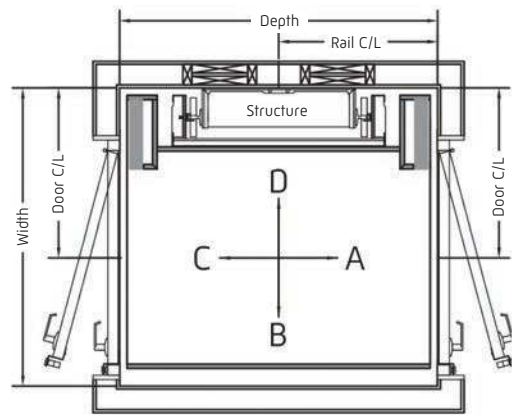
# Typical Hoistway Configurations

All hoistway dimensions reference interior dimension – finished wall to finished wall



Single Opening  
Rail Left, Right-Hand Door (shown)  
Rail Right, Left-Hand Door (opposite)

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Accordion or Collapsible <sup>[2]</sup>	36X48	50½"	54¼"	27½"	28¾"	33½"
	36X60	50½"	66¼"	33½"	28¾"	33½"
	40X54	54½"	60¼"	32"	32¾"	33½" <sup>[3]</sup>
Symmetry Safety 3-Panel	36X48	52"	55"	31"	30¼"	33"
	36X60	52"	67"	33½"	30¼"	33"
	40X54	54½"	61"	31"	32¾"	33" <sup>[3]</sup>



Opposite Opening  
Rail Right, Left-Hand Door, Right-Hand Door  
Rail Left, Right-Hand Door, Left-Hand Door

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Accordion or Collapsible <sup>[2]</sup>	36X48	50½"	54"	27"	28¾"	33½"
	36X60	50½"	66"	33"	28¾"	33½"
	40X54	54½"	60"	30"	32¾"	33½" <sup>[3]</sup>
Symmetry Safety 3-Panel	36X54	52"	61¾"	31"	30¼"	33"
	36X60	52"	67¾"	34"	30¼"	33"
	40X54	54½"	61¾"	31"	32¾"	33" <sup>[3]</sup>

[1] Inline Gear Drive motor extends into the access hatch

[2] Collapsible gates will have a clear opening approximately 1" less than shown

[3] 36" clear opening available—door centerlines may change

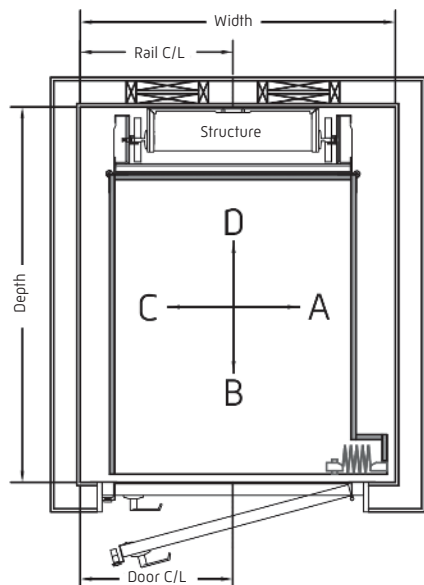
[4] 2'8" doors

Door centerlines apply to 3'0" doors, except where otherwise noted

Car sizes over 15 square feet may require approval from the local authority having jurisdiction

# Typical Hoistway Configurations

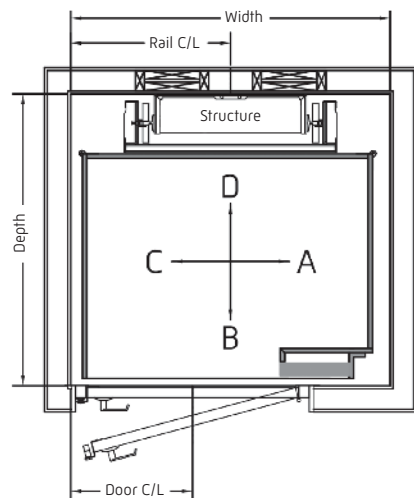
All hoistway dimensions reference interior dimension – finished wall to finished wall



## Single Opening

Rail Front, Left-Hand Door (shown)  
Rail Front, Right-Hand Door (opposite)

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Accordion or Collapsible <sup>(2)</sup>	36X48	48"	62¼"	23½" <sup>(1)</sup>	23¼"	32¼"
	36X60	48"	74¼"	23½" <sup>(1)</sup>	23¼"	32¼"
	40X54	48"	68¼"	24" <sup>(1)</sup>	21¾"	33½"
Symmetry Safety 3-Panel	36X48	52¼"	63⅛"	22" <sup>(1)</sup>	21¾"	33"
	36X60	52¼"	75⅛"	22" <sup>(1)</sup>	21¾"	33"
	40X54	54½"	69⅛"	24½"	21¾"	33"



## Single Opening

Rail Front, Left-Hand Door (shown)  
Rail Front, Right-Hand Door (opposite)

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Accordion or Collapsible <sup>(2)</sup>	48X36	55"	50¼"	27½"	21¾"	33½" <sup>(3)</sup>
	60X36	67"	50¼"	33½"	21¾"	33½" <sup>(3)</sup>
	54X40	61"	54¼"	30½"	21¾"	33½" <sup>(3)</sup>
Symmetry Safety 3-Panel	48X36	55"	51⅛"	27½"	21¾"	33"
	60X36	67"	51⅛"	33½"	21¾"	33" <sup>(3)</sup>
	54X40	61"	55⅛"	30½"	21¾"	33" <sup>(3)</sup>

(1) Inline Gear Drive motor extends into the access hatch

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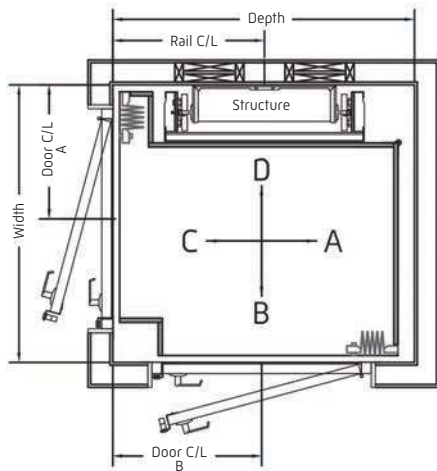
(4) 2'8" doors

Door centerlines apply to 3'0" doors, except where otherwise noted

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# Typical Hoistway Configurations

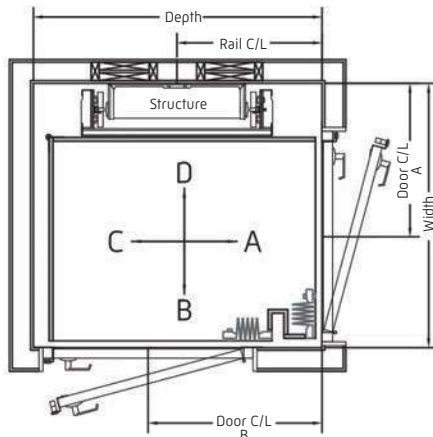
All hoistway dimensions reference interior dimension – finished wall to finished wall



## 90° Opening

Rail Left, Right-Hand Door, Left-Hand Door or  
 Rail Front, Left-Hand Door, Right-Hand Door (shown)  
 Rail Right, Left-Hand Door, Right-Hand Door or  
 Rail Front, Right-Hand Door, Left-Hand Door (opposite)

Car Gate/ Door	Car Size	Width	Depth	Rail C/L	Door C/L A	Clear Opening A	Door C/L B	Clear Opening B
Accordion or Collapsible <sup>(2)</sup>	36X48	50¼"	54¾"	31"	24¼"	31"	27"	33½"
	36X60	50¼"	66¾"	33½"	24¼"	31"	39"	33½" <sup>(3)</sup>
	40X54	54¼"	60¾"	31"	28¼"	33½"	33"	33½" <sup>(3)</sup>
Symmetry Safety 3-Panel	40X48	55⅞"	55⅝"	31"	30¾"	33"	25⅞"	33"
	40X54	55⅞"	61⅝"	31"	30¾"	33"	31⅞"	33" <sup>(3)</sup>



## 90° Opening

Rail Right, Right-Hand Door, Left-Hand Door or  
 Rail Front, Left-Hand Door, Right-Hand Door (shown)  
 Rail Left, Left-Hand Door, Right-Hand Door or  
 Rail Front, Right-Hand Door, Left-Hand Door (opposite)

Car Gate/ Door	Car Size	Width	Depth	Rail C/L	Door C/L A	Clear Opening A	Door C/L B	Clear Opening B
Accordion or Collapsible <sup>(2)</sup>	36X48	50¼"	54¾"	27½"	29¼"	28½"	33"	33½"
	36X60	50¼"	66¾"	33½"	29¼"	28½"	45"	33½" <sup>(3)</sup>
	40X54	54¼"	60¾"	30½"	29¼"	32½"	39"	33½" <sup>(3)</sup>
Symmetry Safety 3-Panel	44X48	59⅞"	55⅝"	28"	29¼"	33"	33⅞"	33"
	44X54	59⅞"	61⅝"	31"	29¼"	33"	39⅞"	33" <sup>(3)</sup>

[1] Inline Gear Drive motor extends into the access hatch

[2] Collapsible gates will have a clear opening approximately 1" less than shown

[3] 36" clear opening available—door centerlines may change

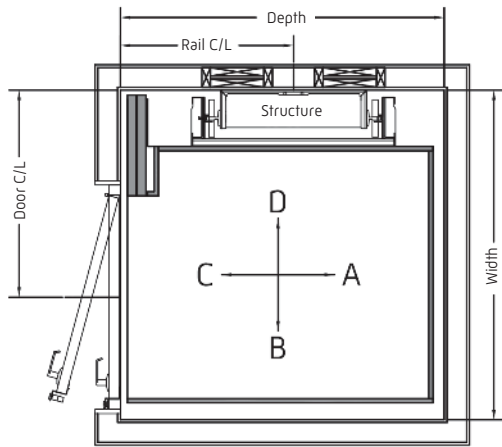
[4] 2'8" doors

Door centerlines apply to 3'0" doors, except where otherwise noted

Car sizes over 15 square feet may require approval from the local authority having jurisdiction

# Typical Hoistway Configurations

All hoistway dimensions reference interior dimension – finished wall to finished wall

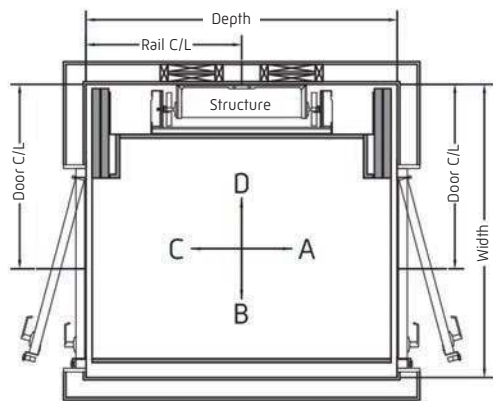


## Single Opening

Rail Left, Right-Hand Door (shown)

Rail Right, Left-Hand Door (opposite)

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Two Speed Car Doors (shown)	44X48	59"	57½"	31"	37¼"	35½"
	44X54	59"	63½"	32"	37¼"	35½"
Three Speed Car Doors	36X48	50½"	58¼"	31½"	30¾"	31½" (4)
	36X60	50½"	70¼"	35"	30¾"	31½" (4)
	38X48	53½"	58¼"	31½"	31¾"	35½"
	38X60	53½"	70¼"	35"	31¾"	35½"
	40X54	54½"	64¼"	32"	32¾"	35½"



## Opposite Opening

Rail Left, Right-Hand Door, Left-Hand Door

Rail Right, Left-Hand Door, Right-Hand Door

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Two Speed Car Doors (shown)	44X48	59"	61½"	31"	37¼"	35½"
	44X54	59"	67½"	34"	37¼"	35½"
Three Speed Car Doors	36X48	50½"	63"	32"	30¾"	31½" (4)
	36X60	50½"	75"	38"	30¾"	31½" (4)
	38X48	53½"	63"	32"	31¾"	35½"
	38X60	53½"	75"	38"	31¾"	35½"
	40X54	54½"	69"	35"	32¾"	35½"

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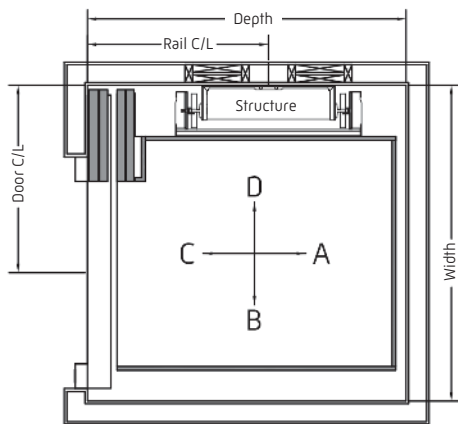
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# Typical Hoistway Configurations

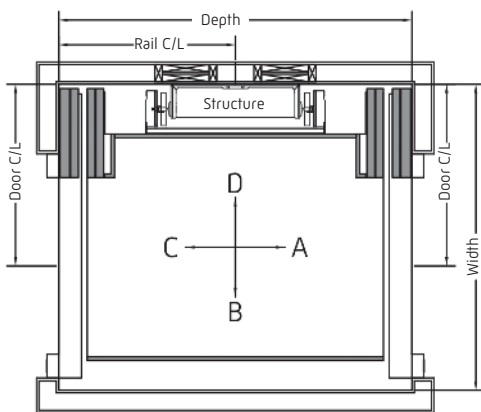
All hoistway dimensions reference interior dimension – finished wall to finished wall



## Single Opening

Rail Left, Right-Hand Door (shown)  
Rail Right, Left-Hand Door (opposite)

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Two Speed Car Doors (shown)	44X48	62"	62"	35½"	37¾"	35½"
	44X54	62"	68"	37"	37¾"	35½"
Three Speed Car Doors	36X48	52¾"	63"	36½"	30½"	31½" (4)
	36X60	52¾"	75"	42½"	30½"	31½" (4)
	38X48	55¾"	63"	36½"	31½"	35½"
	38X60	55¾"	75"	42"	31½"	35½"
	40X54	56¾"	69"	39½"	32½"	35½"



## Opposite Opening

Rail Left, Right-Hand Door, Left-Hand Door  
Rail Right, Left-Hand Door, Right-Hand Door

Car Gate/Door	Car Size	Width	Depth	Rail C/L	Door C/L	Clear Opening
Two Speed Car Doors (shown)	44X48	62"	70½"	35½"	37¾"	35½"
	44X54	62"	76½"	38½"	37¾"	35½"
Three Speed Car Doors	36X48	52¾"	72⅜"	36½"	30½"	31½"
	36X60	52¾"	84⅜"	42½"	30½"	31½"
	38X48	55¾"	72⅜"	36½"	31½"	35½"
	38X60	55¾"	84⅜"	42½"	31½"	35½"
	40X54	56¾"	78⅜"	39½"	31½"	35½"

[1] Inline Gear Drive motor extends into the access hatch

[2] Collapsible gates will have a clear opening approximately 1" less than shown

[3] 36" clear opening available—door centerlines may change

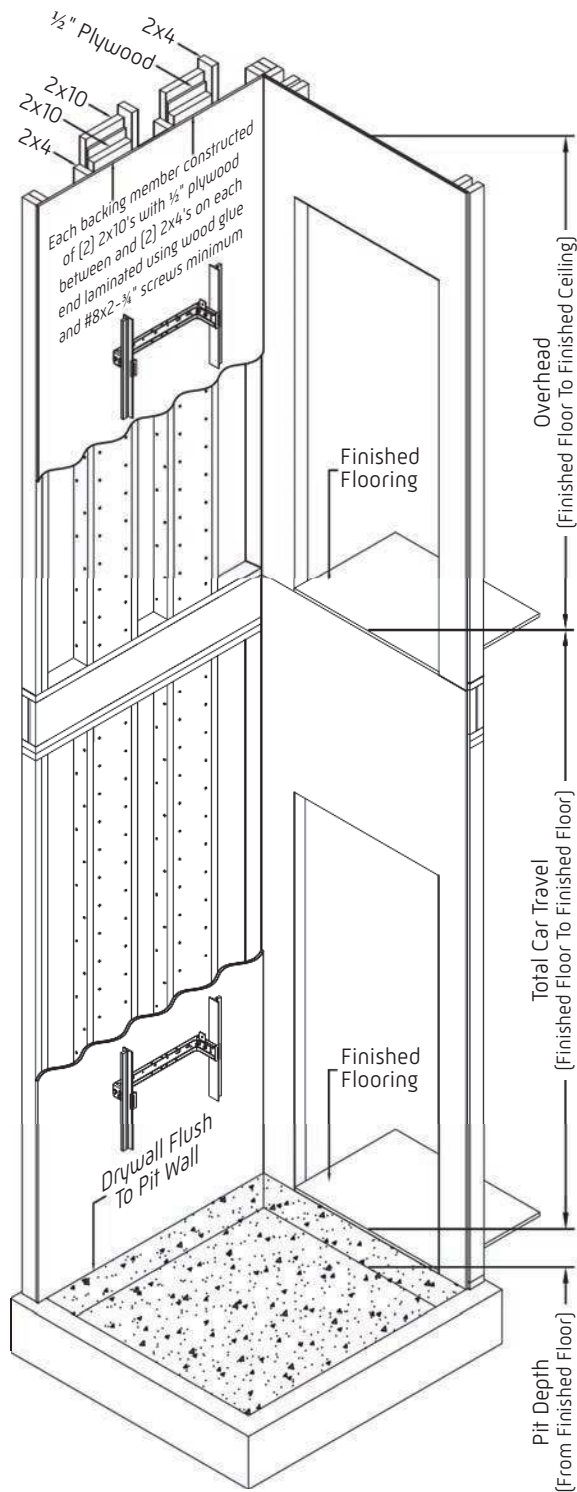
[4] 2'8" doors

Door centerlines apply to 3'0" doors, except where otherwise noted

Car sizes over 15 square feet may require approval from the local authority having jurisdiction

# Hoistway

## Typical Backing Construction



Each backing member constructed of (2) 2 x 10's with 1/2" plywood between and (2) 2 x 4's on each end laminated using wood glue and #8 x 2 3/4" screws, 2 per row minimum, spaced on 6" vertical centers.

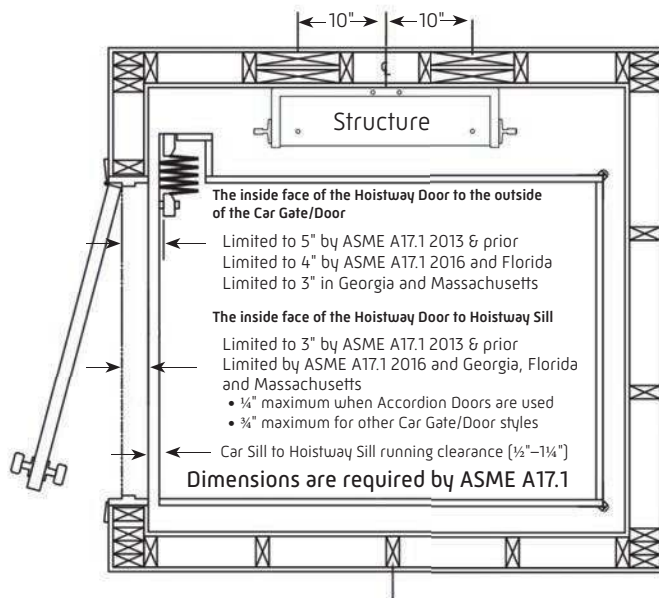
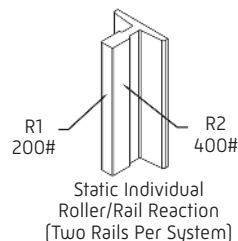
Please note that Winding Drum Drives with greater than 30' of travel require 2 x 12's in lieu of the 2 x 10's and the centerline spacing increases from 10" to 12".

Installing 1/2" plywood behind the drywall will improve the sound deadening and strengthen the hoistway.

The specified loads are based on the worst case load condition of 1,000 lb. capacity, 925 lb. car and frame weight and a 60" cantilever car.

The assumptions made relative to the standard backing arrangement are a maximum span of 10', a minimum wood modulus of elasticity of 1.95 x 10<sup>6</sup> psi (Douglas Fir) and stiffening factor from the elevator's rail structure based on the bracket spacing.

If the backer span exceeds 10' or if the backing construction and/or materials are not as specified, please consult a structural engineer.



Typical Framework with Drywall Construction



# Hoistway

## Construction Outline

### Rail Backing & General Hoistway

- Provide adequate rail backing per drawings. For vertical spans between floor systems that exceed 10'0", please consult a structural engineer. The wall must be capable of supporting the static roller/rail loads without deflecting more than  $\frac{1}{8}$ ".
- The hoistway must be constructed square and plumb within  $\frac{1}{8}$ " tolerance throughout.
- The hoistway must be free of any obstructions not related to the operation of the elevator. (i.e. sprinklers, pipes, ducts, etc.)
- The structure of the hoistway must allow for installation of a chain hoist to transfer materials during installation.
- Provide hoistway doors that are a minimum of 3'0" x 6'8" and solid core construction.

### Pit Floor

- Provide a pit floor at a minimum of 6" (8" preferred) from the top of the finished floor to the highest point in the pit. (Note: Three speed car and landing doors require a minimum 8" pit depth.)
- Provide a pit floor capable of withstanding the impact load of 6,766 lbs. and the static load of 3,840 lbs.

### Overhead

- Inline Gear Drive
  - Provide a minimum overhead of 8'0" for a 7'0" interior car height with a remote mounted controller.
  - Provide a minimum overhead of 9'0" for a 7'0" interior car height with an in-the-shaft controller.
- Hydraulic or Winding Drum Drive
  - Provide a minimum overhead of 7'10" for a 7'0" interior car height.
- If a Shaker, Recessed or Raised panel ceiling is used, an additional half-inch of overhead is required.

### Drive-Specific Items

- Inline Gear Drive
  - Provide a minimum 8" x 8" access hatch at or near the top of the hoistway for manual lowering. (See Access Hatch Detail on page 17.)
- Winding Drum Drive
  - Provide a framed window between the machine room and the hoistway for passing of the suspension means. (See page 19.)

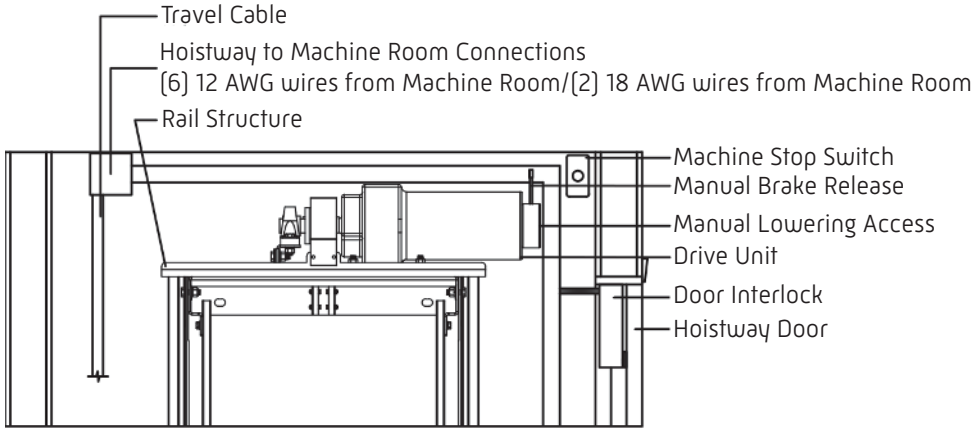
***Please note that this guide is for planning purposes only, applies exclusively to national code, and should not be used for construction.***

*Prior to construction, please contact your local Morning Star Elevator representative and request a job-specific set of elevators plans to ensure that you obtain the accurate dimensions and requirements for your project.*

*Your representative will also assist you to identify resources to ensure that your project plans will comply with the applicable state and local codes and the permitting authorities.*

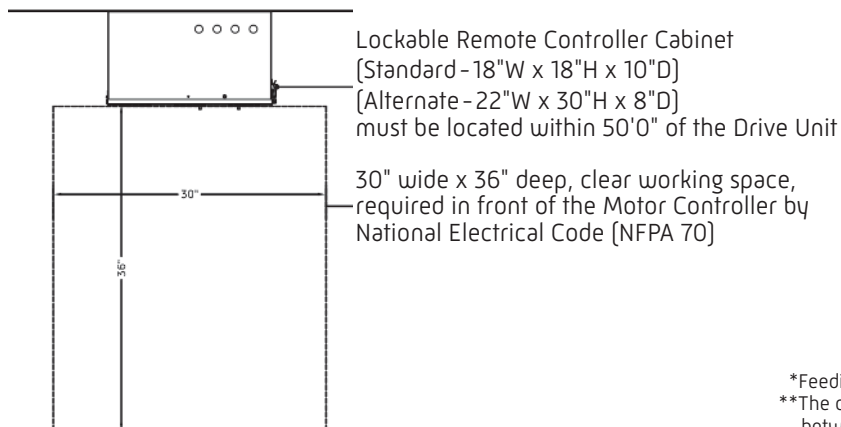
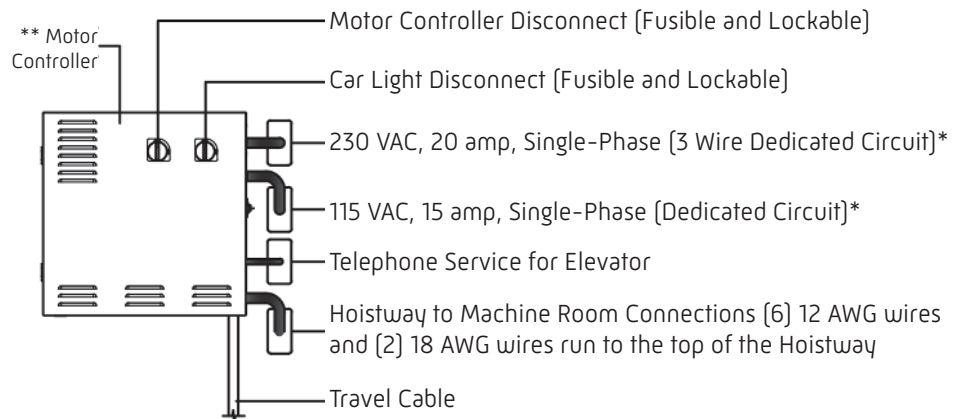
# Inner Gear Drive

## Remote Controller



### Notes:

- 1) The minimum overhead clearance as measured from the top of the upper landing sill to the bottom of the shaft ceiling is 8'0" for a standard 7'0" car.
- 2) This layout is shown for manual lowering access at the top right of the view. The drive unit can be mounted opposite to accommodate access.



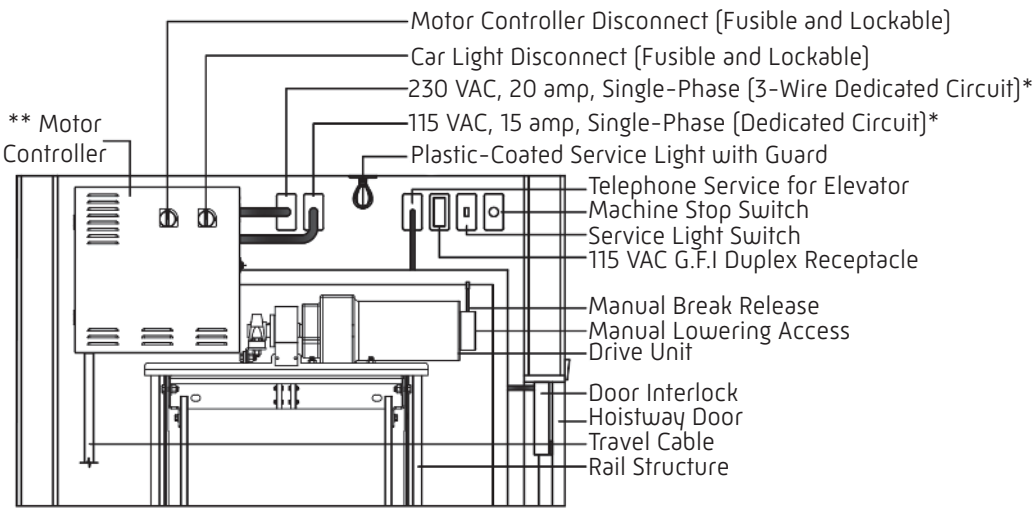
\*Feeding breaker must not be a G.F.I.

\*\*The control space temperature must be maintained between 32°F and 80°F.

# Inner Gear Drive

## MRL Controller & Access Hatch Detail

### MRL Controller

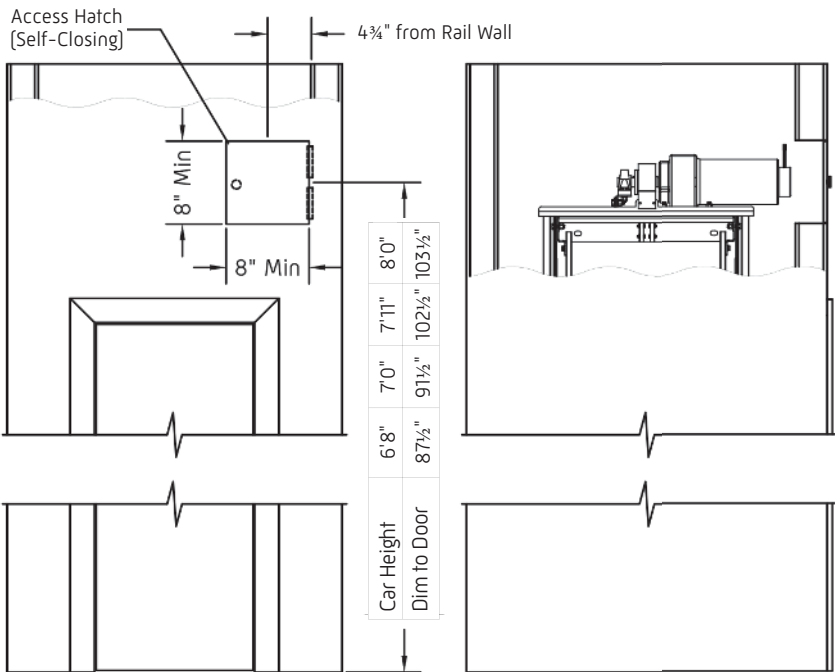


#### Notes:

- 1) The minimum overhead clearance as measured from the top of the upper landing sill to the bottom of the shaft ceiling is 9'0" for a standard 7'0" car.
- 2) This layout is shown for manual lowering access at the top right of the view. The drive unit can be mounted opposite to accommodate access.
- 3) The MRL Controller option is not available in all jurisdictions, please contact your local Symmetry Elevating Solutions representative or local authority to confirm acceptance.

\*Feeding breaker must not be a G.F.I.  
 \*\*The control space temperature must be maintained between 32°F and 80°F.

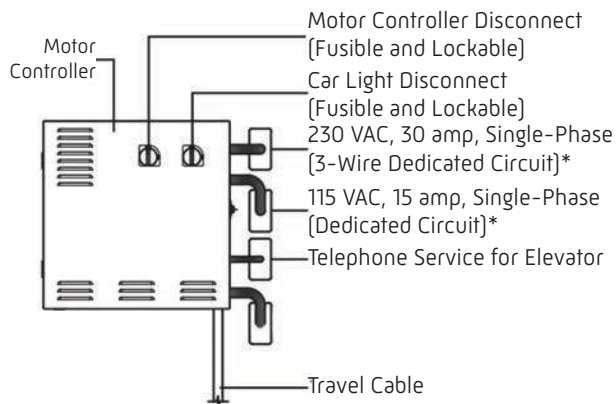
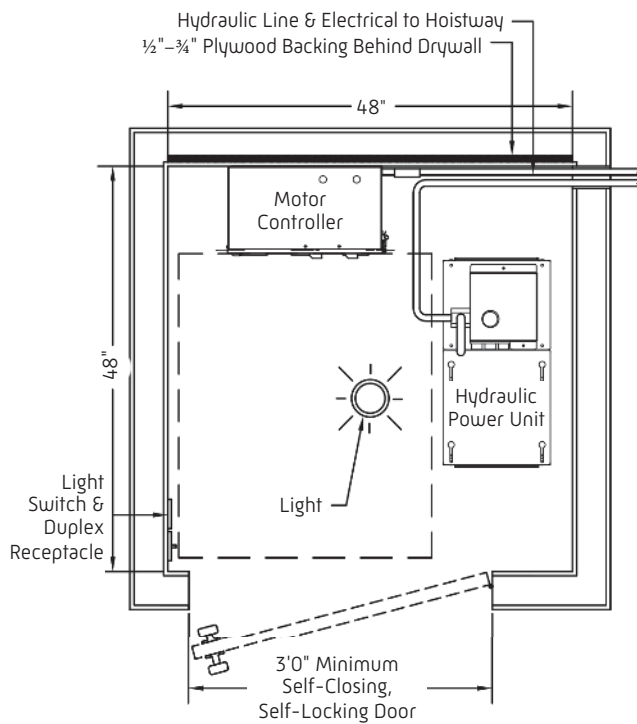
### Access Hatch Detail



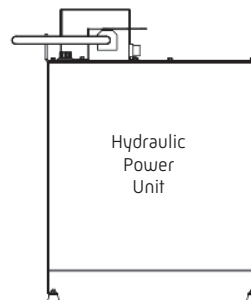
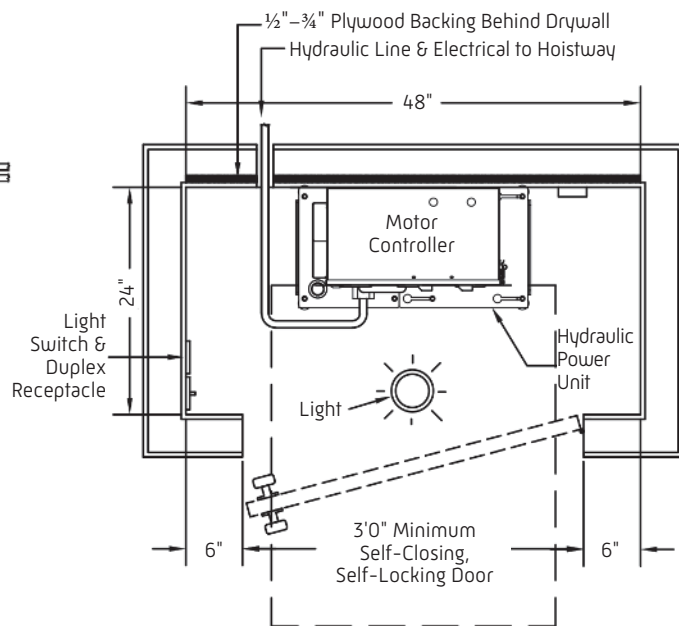
# Hydraulic Drive

## Machine Room

### Standard Machine Drive



### Compact Machine Room



**Motor Controller**  
Standard - 18"W x 18"H x 10"D  
Alternate - 22"W x 30"H x 8"D

**Hydraulic Power Unit**  
24 1/4"W x 33 1/2"H x 12 3/4"D

### Notes:

- 1) The elevator machine room location and layout must meet the code requirements defined by the local authority having jurisdiction.
- 2) 30" wide x 36" deep clear working space in front of the motor controller as required by National Electrical Code [NFPA 70].
- 3) The light switch must be located on the strike side of the machine room door.
- 4) The hydraulic power unit must be located within 40'0" of the cylinder.
- 5) The machine room must be free of all equipment not related to the elevator.
- 6) The machine/control room temperature must be maintained between 50°F and 80°F.

\*Feeding breaker must not be a G.F.I.





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