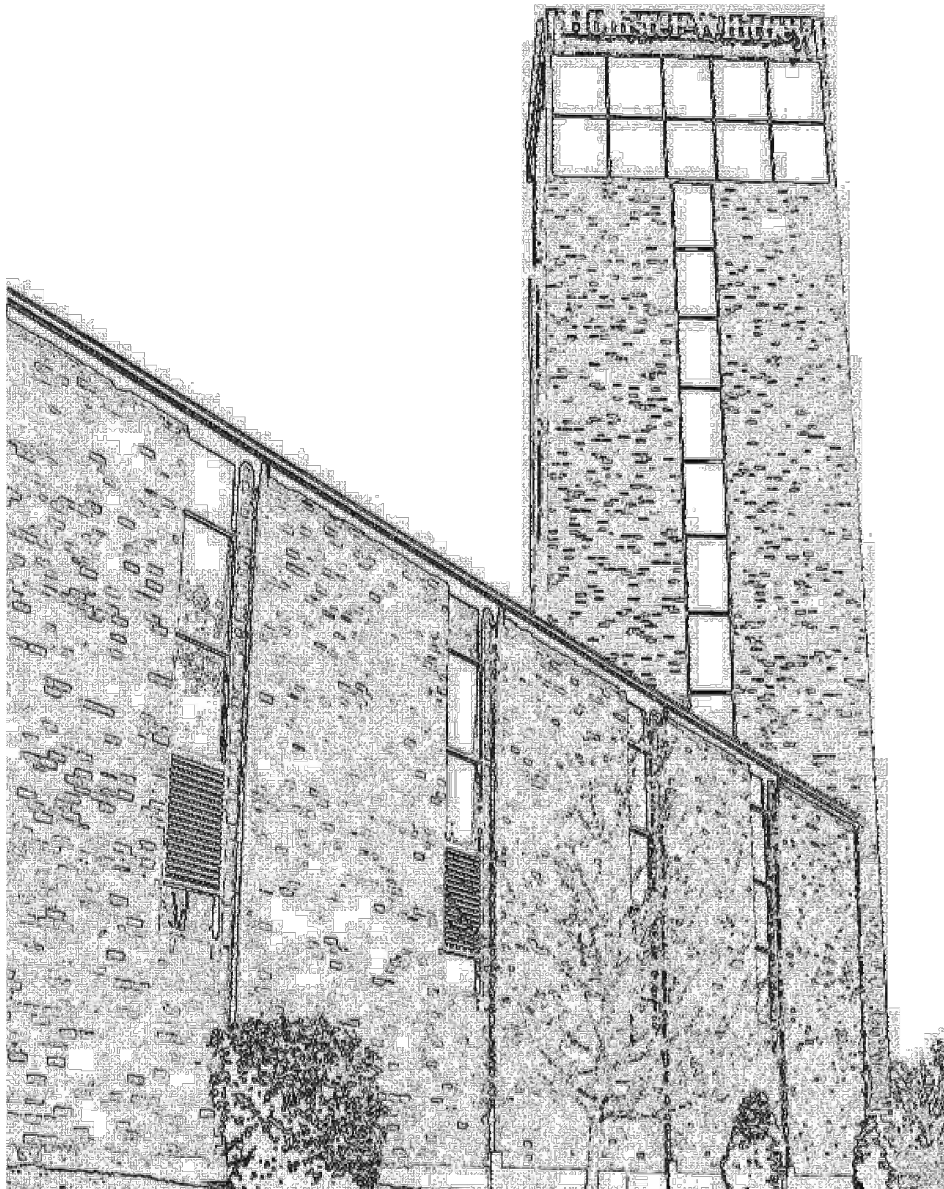




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## ***MRL DESIGN GUIDE***





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## MRL DESIGN GUIDE Special Notes

### **PMAC GEARLESS MACHINE MODEL SELECTION:**

1. Each PMAC gearless machine model used in the MRL application has a maximum permissible system load based on 50% counterbalance and 2:1 roping. The overall system load is calculated by adding together the following items: (Total empty car weight + Total counterweight + Capacity + Total hoist rope weight + Total compensation weight + Total traveling cable weight). The maximum system loads vary according to the car speed and are shown in tables found in H-W Bulletin #1146.
2. The PMAC gearless machines can utilize a traction sheave of 15" [381mm] diameter with maximum capacity of 5,000# [2268 kg] or a traction sheave of 20" [508mm] diameter with a maximum capacity of 3,750# [1701kg].

### **MACHINE SPACE ENVIRONMENT:**

1. Hollister-Whitney PMAC gearless machines are designed to perform in a tolerant machine space. The machine space working temperature should be held between 35°F and 104°F (1.7°C and 40°C), and humidity should be held to an average of 90% non-condensing.

### **MACHINE MOUNTING:**

1. The PMAC gearless machine used in the MRL application is typically mounted on a steel machine beam weldment that has been reinforced and gusseted to resist torsional forces. Contact H-W if you wish to receive a quotation for the "Overhead Steel Structure Assembly".

### **MACHINE MAINTENANCE ACCESS:**

1. MRL Plans 101, 111, 112, and 131 require a machine access door in the overhead to provide maintenance access to either the brakes and/or the encoder connection at the rear of the machine. The access door is also required if the machine is physically encroaching into the hoistway wall area.
2. MRL Plans 121, 122, 201, 202, 211, 212, 221, 222, 231, AND 232 do not require a machine access door in the overhead. For these plans the machine can be accessed from the top of the cab, and an elevated maintenance platform (by the elevator contractor) is recommended to safely access the machine. Check with your local authorities having jurisdiction (AHJ) to confirm if an elevated maintenance platform is permitted and if there are any special restrictions.
3. Some locations such as New York City may require a grating platform for full-body access to facilitate machine maintenance in the overhead. Additional overhead is required to accommodate grating floors and supports if they are used, as they have not been accounted for in the dimensions shown in this Design Guide.

### **GOVERNOR ACCESS:**

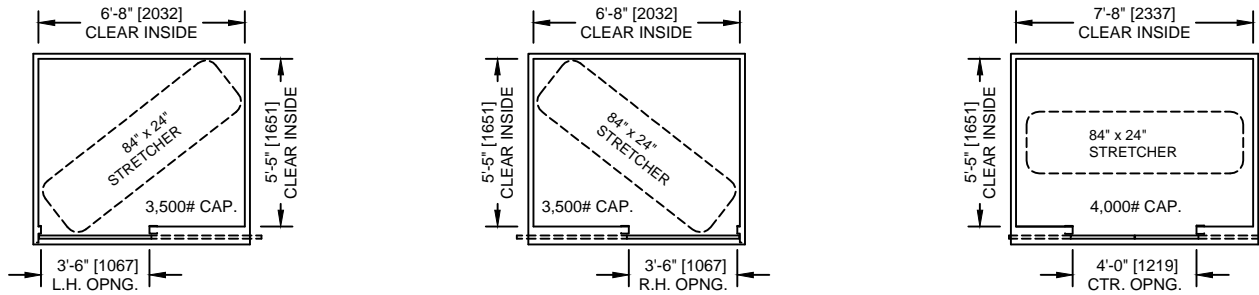
1. The H-W remote reset/remote trip governor is supplied as a standard for H-W MRL applications.
2. If the project must adhere to the New York City building code Appendix K4 and the governor(s) are located at the top of the hoistway with no additional grating in the overhead, then an outside access door is required for each governor for access to reset switches by elevator personnel.
3. If adhering to the NYC Appendix K4 and the governor(s) are located at the interior of a multi-car hoistway or if it is not structurally feasible to install access doors at the outer walls, then H-W recommends that a grating floor and full-body access door be installed. Additional overhead is required to accommodate grating floors and supports if they are used, as they have not been accounted for in the dimensions shown in this Design Guide.
4. If the available hoistway space permits, then a pit-mounted governor may be used as an alternate to the remote reset/remote trip type governor in the overhead.



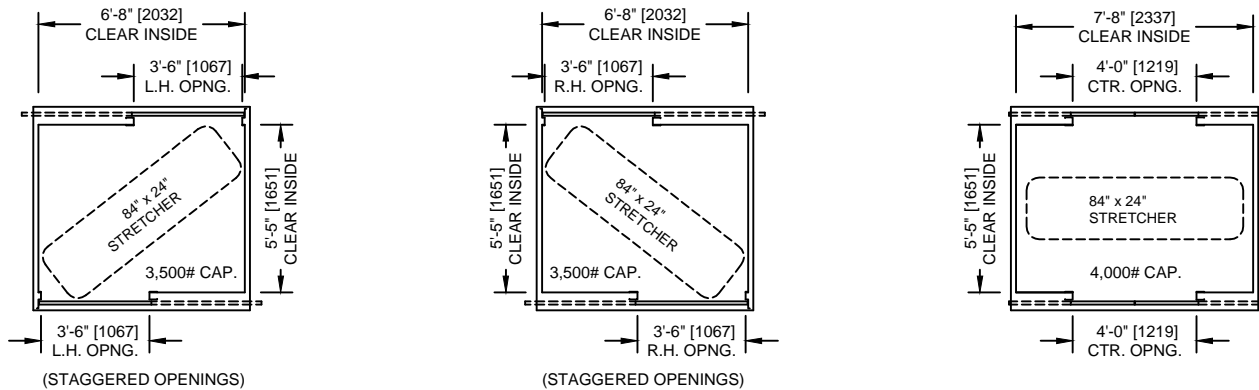
MRL DESIGN GUIDE  
IBC Stretcher Access

**STRETCHER REQUIREMENTS:**

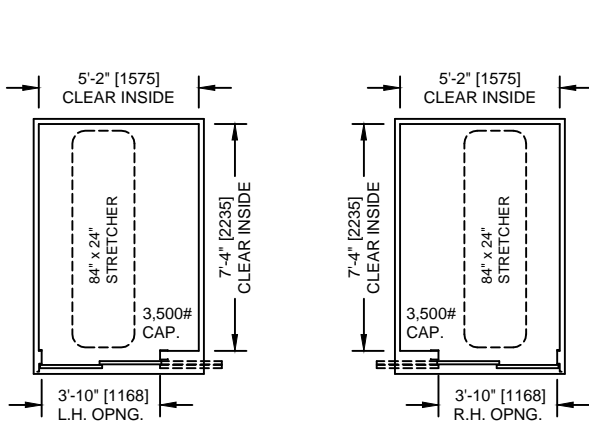
Section 3002.4 of the International Building Code (IBC) states that "where elevators in buildings four or more stories above, or four or more stories below grade plane, at least one elevator shall be provided for Fire Department emergency access to all floors". According to the IBC Code, the elevator should accommodate an open stretcher in the horizontal position 84-inches x 24-inches with not less than 5-inch radius corners. The following configurations and minimum dimensions comply with these IBC requirements:



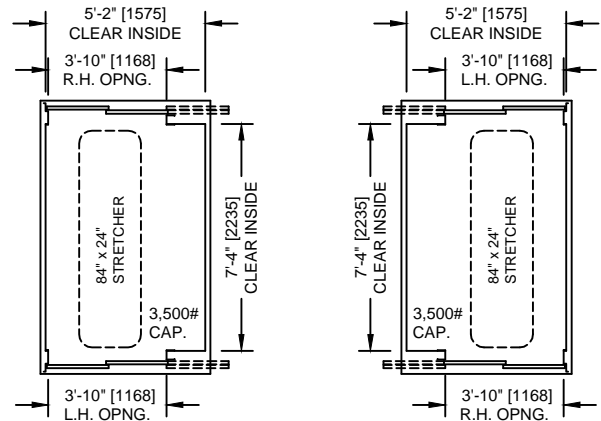
PASSENGER ELEVATORS WITH FRONT OPENING DOOR



PASSENGER ELEVATORS WITH FRONT & REAR OPENING DOORS



HOSPITAL / SERVICE ELEVATORS WITH FRONT OPENING DOORS



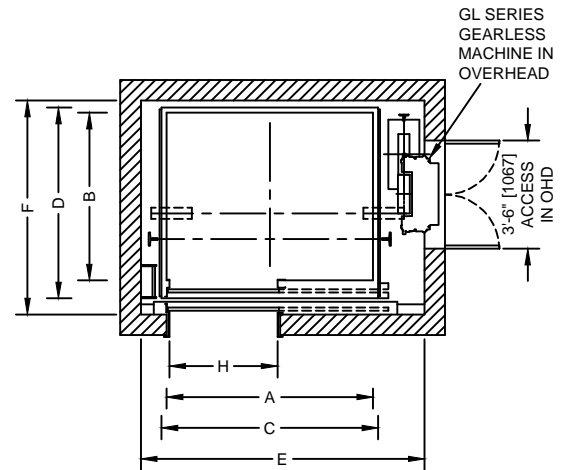
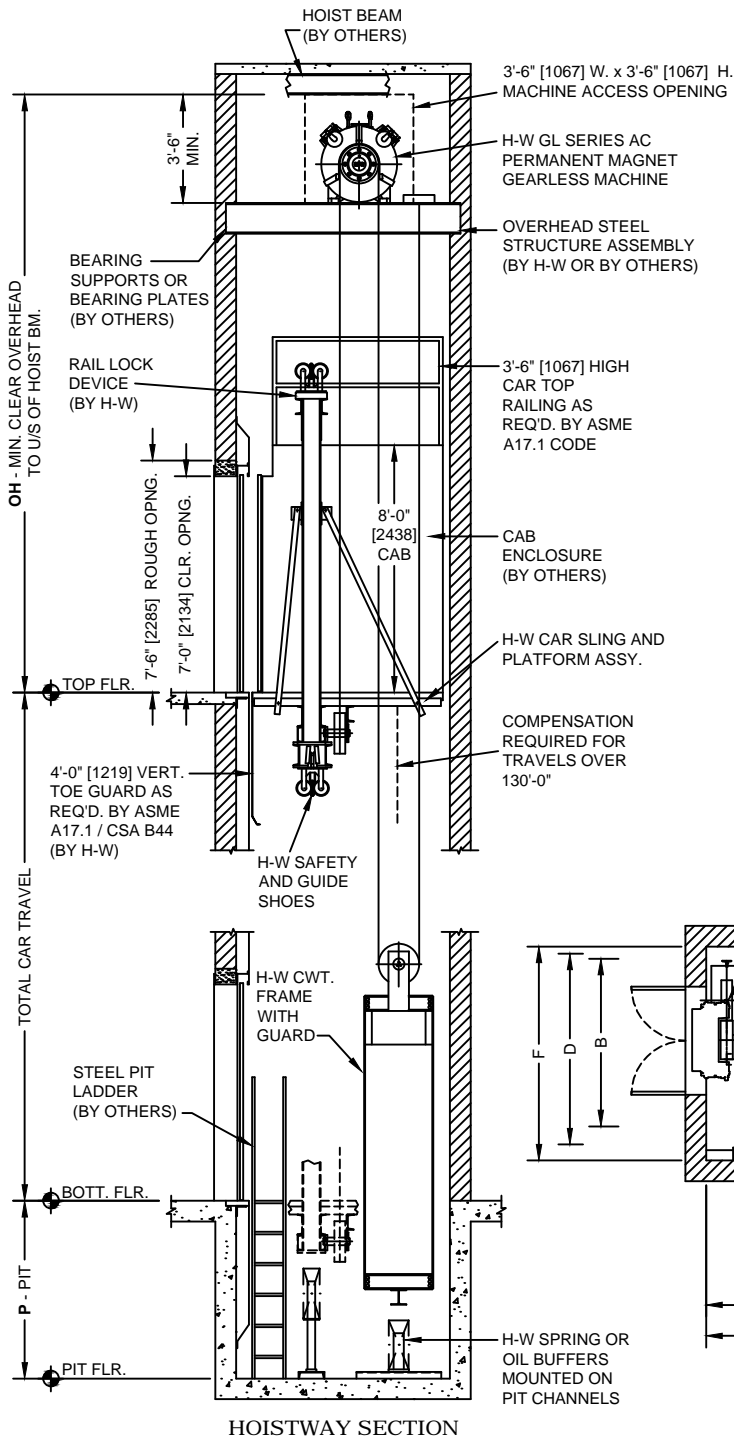
HOSPITAL / SERVICE ELEVATORS WITH FRONT & REAR OPENING DOORS



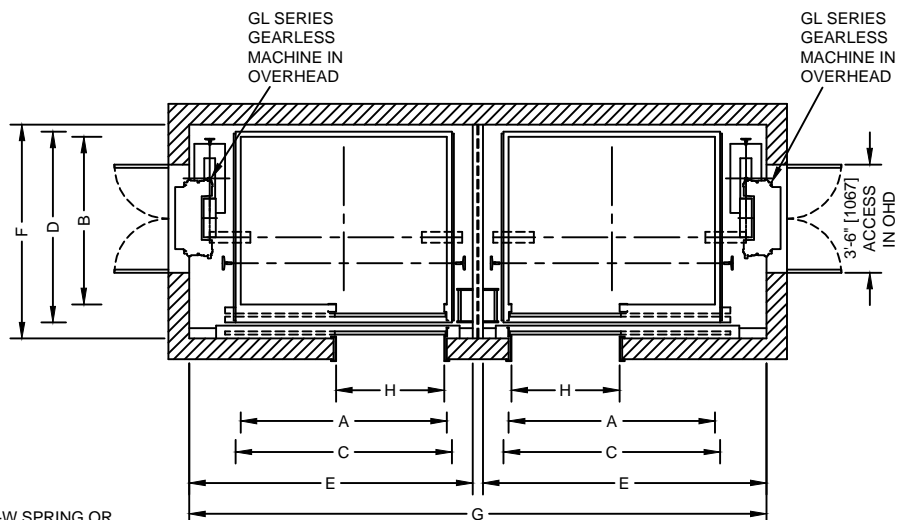
# MRL DESIGN GUIDE

## Plan 101 (Underslung Car Sheaves, Passenger, Side CWT, Front Opening)

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20



**PASSENGER - SIMPLEX**  
FRONT OPENING, SIDE CWT.



**PASSENGER - DUPLEX**  
FRONT OPENING, SIDE CWT.



**MRL DESIGN GUIDE**

**Plan 101** (Underslung Car Sheaves, Passenger, Side CWT, Front Opening)

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
3,000 [1361]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9" [1448]	7'-0" [2134]	5'-6" [1676]	10'-3" [3124]	6'-9" [2057]	20'-10" [6350]	10'-3" [3124]	6'-9" [2057]	20'-10" [6350]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5" [1651]	7'-0" [2134]	6'-2" [1880]	10'-3" [3124]	7'-2" [2184]	20'-10" [6350]	10'-3" [3124]	7'-2" [2184]	20'-10" [6350]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5" [1651]	8'-0" [2438]	6'-2" [1880]	11'-3" [3429]	7'-2" [2184]	22'-10" [6960]	11'-3" [3429]	7'-2" [2184]	22'-10" [6960]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
3,000 [1361]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
3,500 [1588]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
4,000 [1814]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 3'-2" allowance for grating + support framing + headspace to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum full-body access door in addition to the machine access door.

**GENERAL NOTES:**

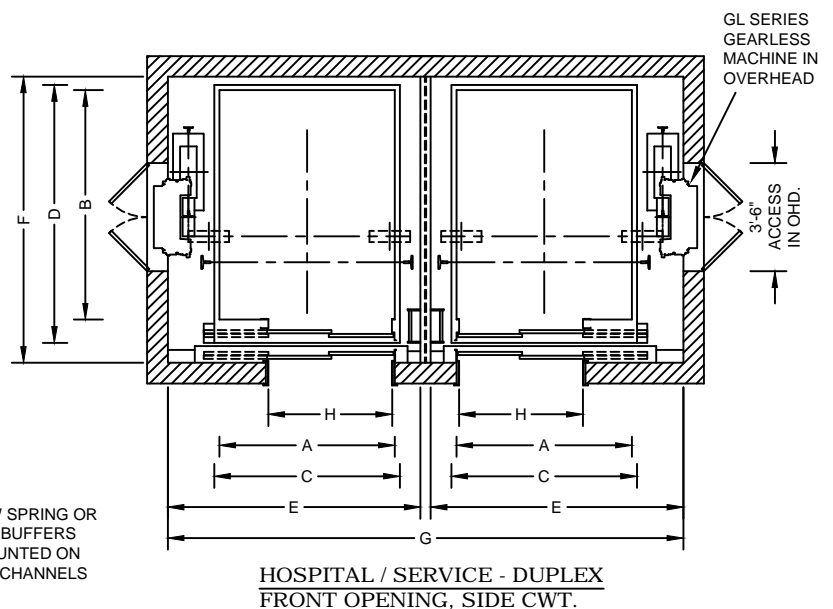
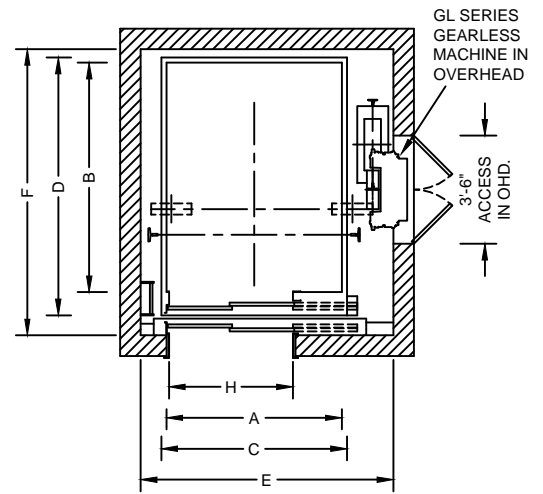
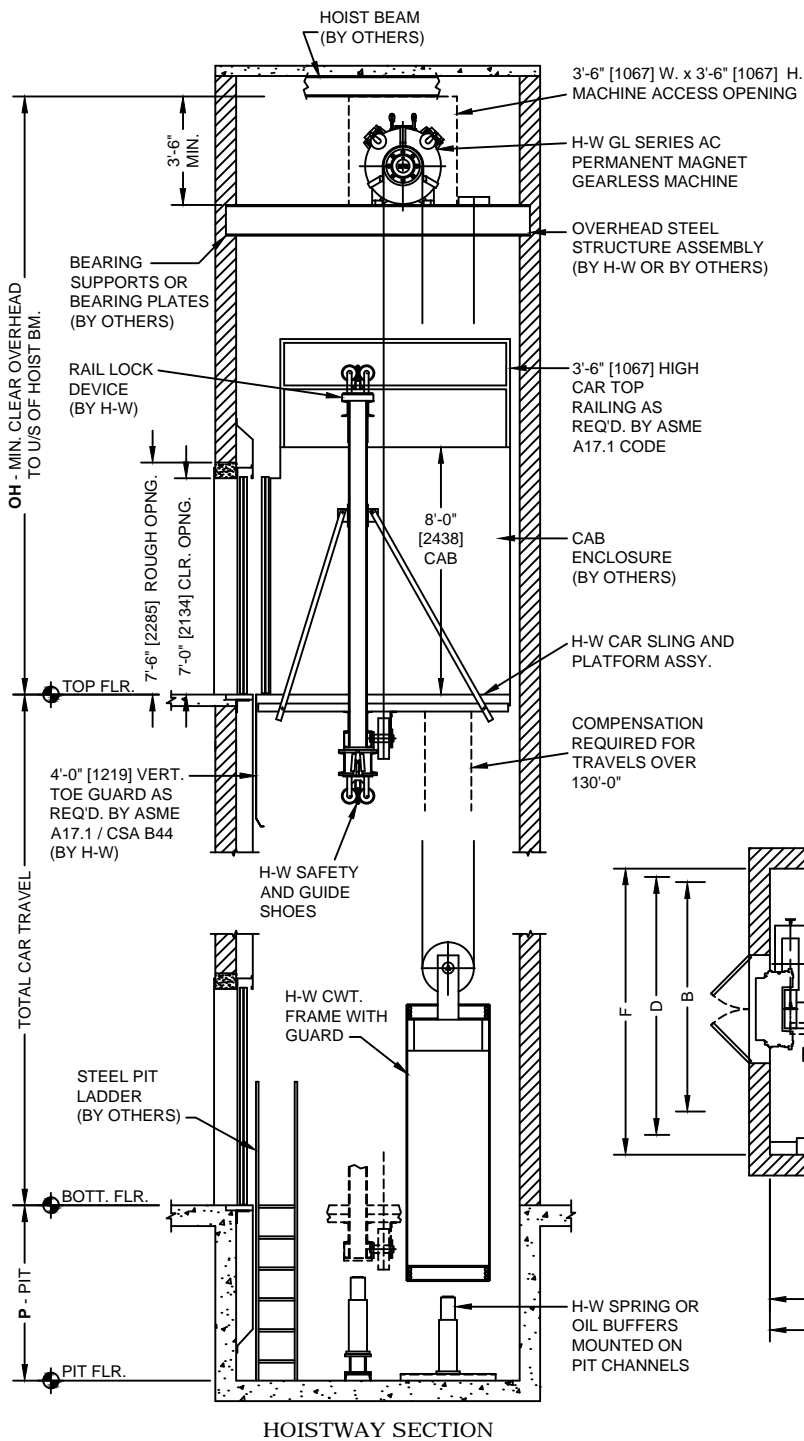
- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
- Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
- Single speed side opening (SSSO) doors are available with left or right hand configuration.
- Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
- Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
- Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
- Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
- Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
- Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
- A hoist beam (by others) is required for installation (by others).
- Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
- Counterbalance of 50% required.
- Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
- Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
- See page 33 for control room specifications.
- Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



**MRL DESIGN GUIDE**

**Plan 111 (Underslung Car Sheaves, Hospital / Service, Side CWT, Front Opening)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20





**MRL DESIGN GUIDE**

**Plan 111** (Underslung Car Sheaves, Hospital / Service, Side CWT, Front Opening)

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
3,500# [1588]	15" [381]	3'-6" [1067]	TSSO	5'-2" [1775]	7'-4" [2235]	5'-6" [1676]	8'-4" [2540]	8'-7" [2616]	9'-3" [2819]	17'-6" [5334]	8'-7" [2616]	9'-3" [2819]	17'-6" [5334]
4,000 [1814]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-4" [2235]	6'-0" [1829]	8'-4" [2540]	9'-1" [2769]	9'-3" [2819]	18'-6" [5639]	9'-1" [2769]	9'-3" [2819]	18'-6" [5639]
4,500 [2041]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-10" [2388]	6'-0" [1829]	8'-10" [2692]	9'-1" [2769]	9'-9" [2972]	18'-6" [5639]	9'-1" [2769]	9'-9" [2972]	18'-6" [5639]
5,000 [2268]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	8'-6" [2591]	6'-0" [1829]	9'-6" [2896]	9'-1" [2769]	10'-5" [3175]	18'-6" [5639]	9'-1" [2769]	10'-5" [3175]	18'-6" [5639]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
3,500# [1588]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
4,000 [1814]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
4,500 [2041]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
5,000 [2268]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 3'-2" allowance for grating + support framing + headspace to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum full-body access door in addition to the machine access door.

**GENERAL NOTES:**

1. Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
2. Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
3. Single speed side opening (SSSO) doors are available with left or right hand configuration.
4. Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
5. Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
6. Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
7. Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
8. Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
9. Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
10. A hoist beam (by others) is required for installation (by others).
11. Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
12. Counterbalance of 50% required.
13. Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
14. Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
15. See page 33 for control room specifications.
16. Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.

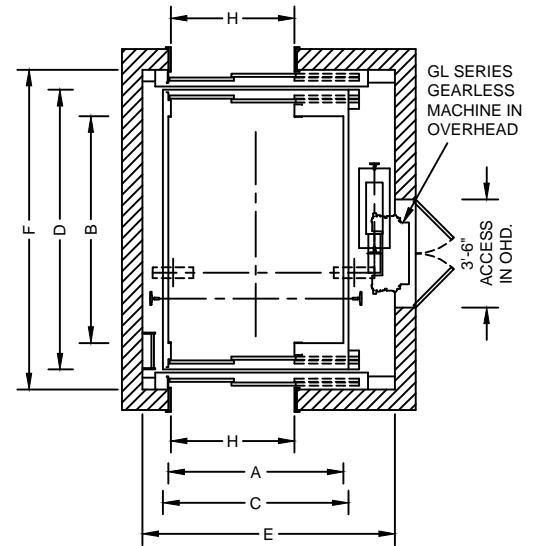
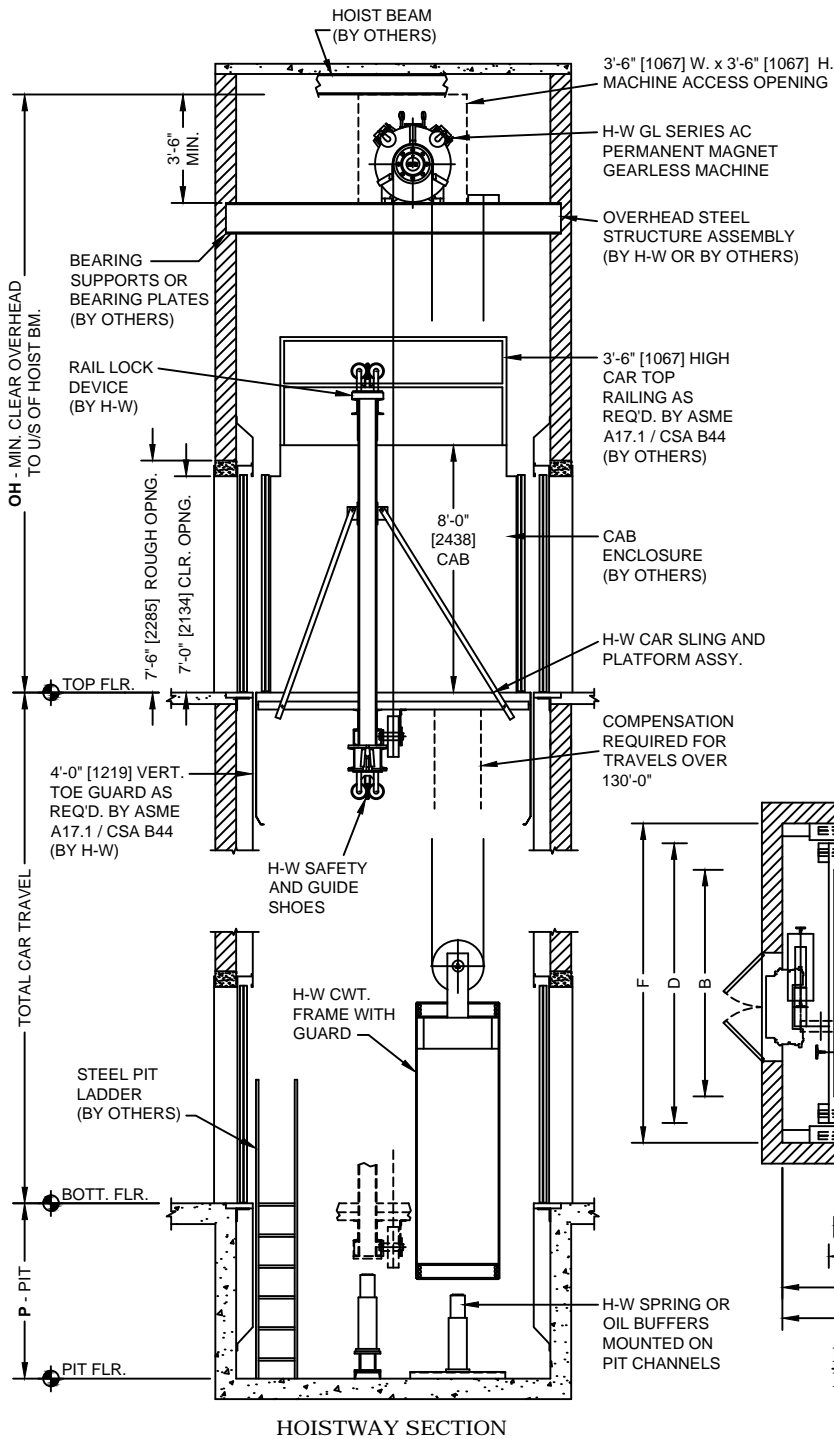




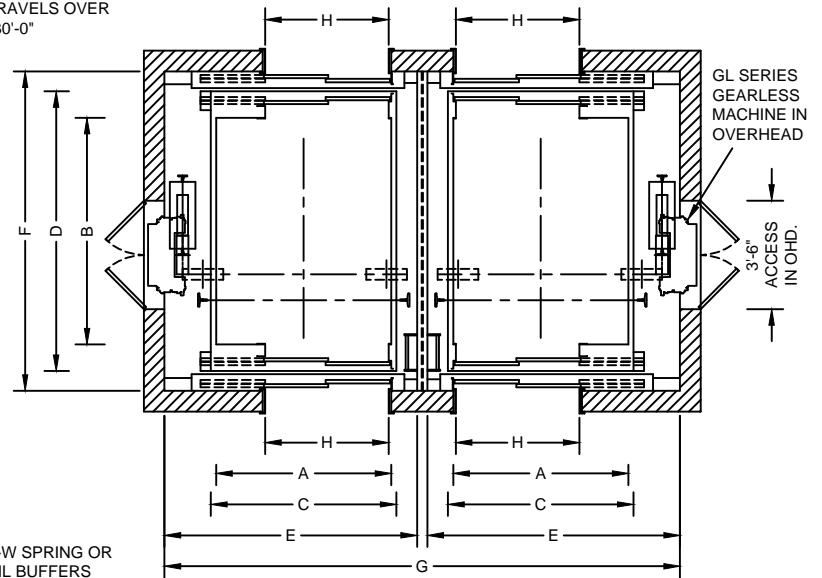
**MRL DESIGN GUIDE**

**Plan 112 (Underslung Car Sheaves, Hospital / Service, Side CWT, Front & Rear Opening)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20



**HOSPITAL / SERVICE - SIMPLEX  
FRONT & REAR OPENING, SIDE CWT.**



**HOSPITAL / SERVICE - DUPLEX  
FRONT & REAR OPENING, SIDE CWT.**



**MRL DESIGN GUIDE**

**Plan 112** (Underslung Car Sheaves, Hospital / Service, Side CWT, Front & Rear Opening)

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]
3,500# [1588]	15" [381]	3'-6" [1067]	TSSO	5'-2" [1775]	7'-4" [2235]	5'-6" [1676]	9'-0 1/2" [2756]	8'-7" [2616]	10'-4" [3150]	17'-6" [5334]	8'-7" [2616]	10'-4" [3150]	17'-6" [5334]
4,000 [1814]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-4" [2235]	6'-0" [1829]	9'-0 1/2" [2756]	9'-1" [2769]	10'-4" [3150]	18'-6" [5639]	9'-1" [2769]	10'-4" [3150]	18'-6" [5639]
4,500 [2041]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-10" [2388]	6'-0" [1829]	9'-6 1/2" [2908]	9'-1" [2769]	10'-10" [3302]	18'-6" [5639]	9'-1" [2769]	10'-10" [3302]	18'-6" [5639]
5,000 [2268]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	8'-6" [2591]	6'-0" [1829]	10'-2 1/2" [3112]	9'-1" [2769]	11'-6" [3505]	18'-6" [5639]	9'-1" [2769]	11'-6" [3505]	18'-6" [5639]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
3,500# [1588]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
4,000 [1814]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
4,500 [2041]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]
5,000 [2268]	7'-0" [2134]	7'-0" [2134]	7'-10" [2388]	9'-6" [2896]	15'-4" [4674]	15'-4" [4674]	15'-11" [4851]	17'-0" [5182]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 3'-2" allowance for grating + support framing + headspace to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum full-body access door in addition to the machine access door.

**GENERAL NOTES:**

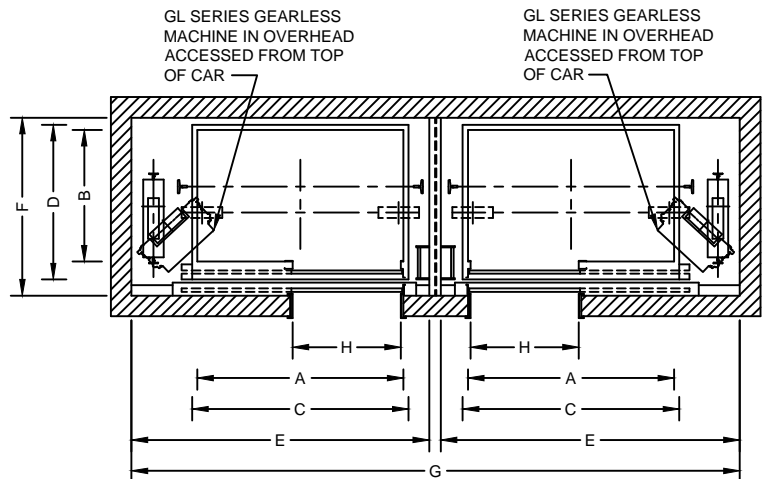
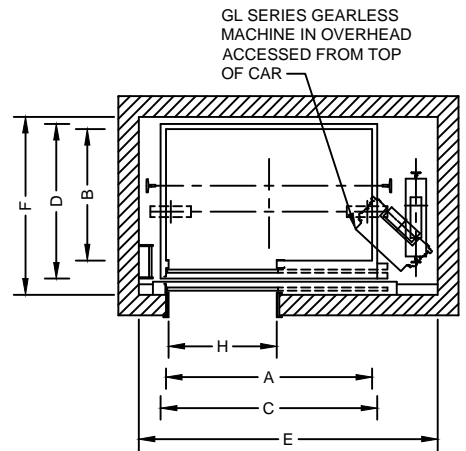
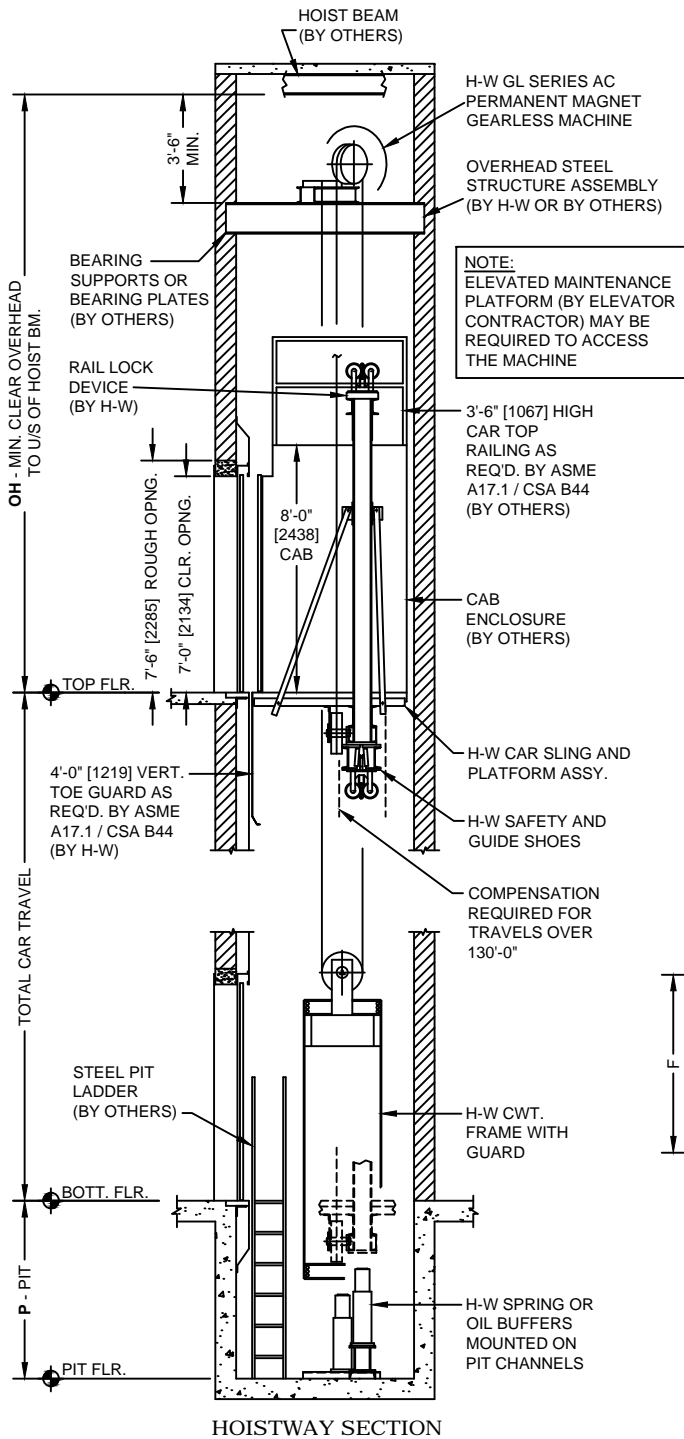
1. Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
2. Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
3. Single speed side opening (SSSO) doors are available with left or right hand configuration.
4. Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
5. Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
6. Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
7. Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
8. Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
9. Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
10. A hoist beam (by others) is required for installation (by others).
11. Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
12. Counterbalance of 50% required.
13. Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
14. Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
15. See page 33 for control room specifications.
16. Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



**MRL DESIGN GUIDE**

**Plan 121 (Underslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front Opening)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20





**MRL DESIGN GUIDE**

**Plan 121 (Underslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front Opening)**

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
2,000 [907]	15" [381]	3'-0" [914]	SSSO SSCO	5'-8" [1727]	4'-3" [1295]	6'-0" [1829]	5'-0" [1524]	8'-8" [2642]	5'-10" [1778]	18'-4" [5588]	8'-10" [2692]	5'-10" [1778]	18'-4" [5588]
2,500 [1134]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-3" [1295]	7'-0" [2134]	5'-0" [1524]	9'-8" [2946]	5'-10" [1778]	20'-4" [6198]	9'-10" [2997]	5'-10" [1778]	20'-4" [6198]
3,000 [1361]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9" [1448]	7'-0" [2134]	5'-6" [1676]	9'-8" [2946]	6'-4" [1930]	20'-4" [6198]	9'-10" [2997]	6'-4" [1930]	20'-4" [6198]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5" [1651]	7'-0" [2134]	6'-2" [1880]	9'-8" [2946]	7'-0" [2134]	20'-4" [6198]	9'-10" [2997]	7'-0" [2134]	20'-4" [6198]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5" [1651]	8'-0" [2438]	6'-2" [1880]	10'-8" [3251]	7'-0" [2134]	22'-4" [6807]	10'-10" [3302]	7'-0" [2134]	22'-4" [6807]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
2,500 [1134]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
3,000 [1361]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
3,500 [1588]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
4,000 [1814]	5'-6" [1676]	5'-10" [1778]	6'-2" [1880]	7'-2" [2185]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

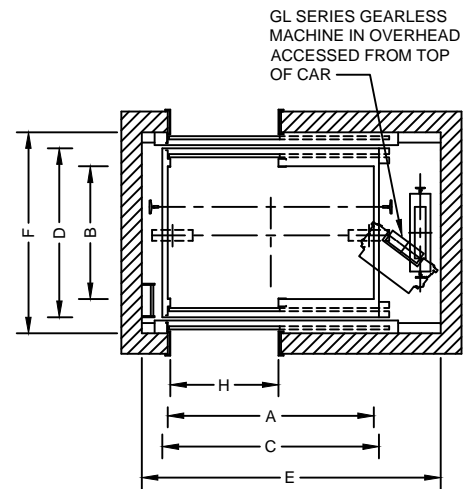
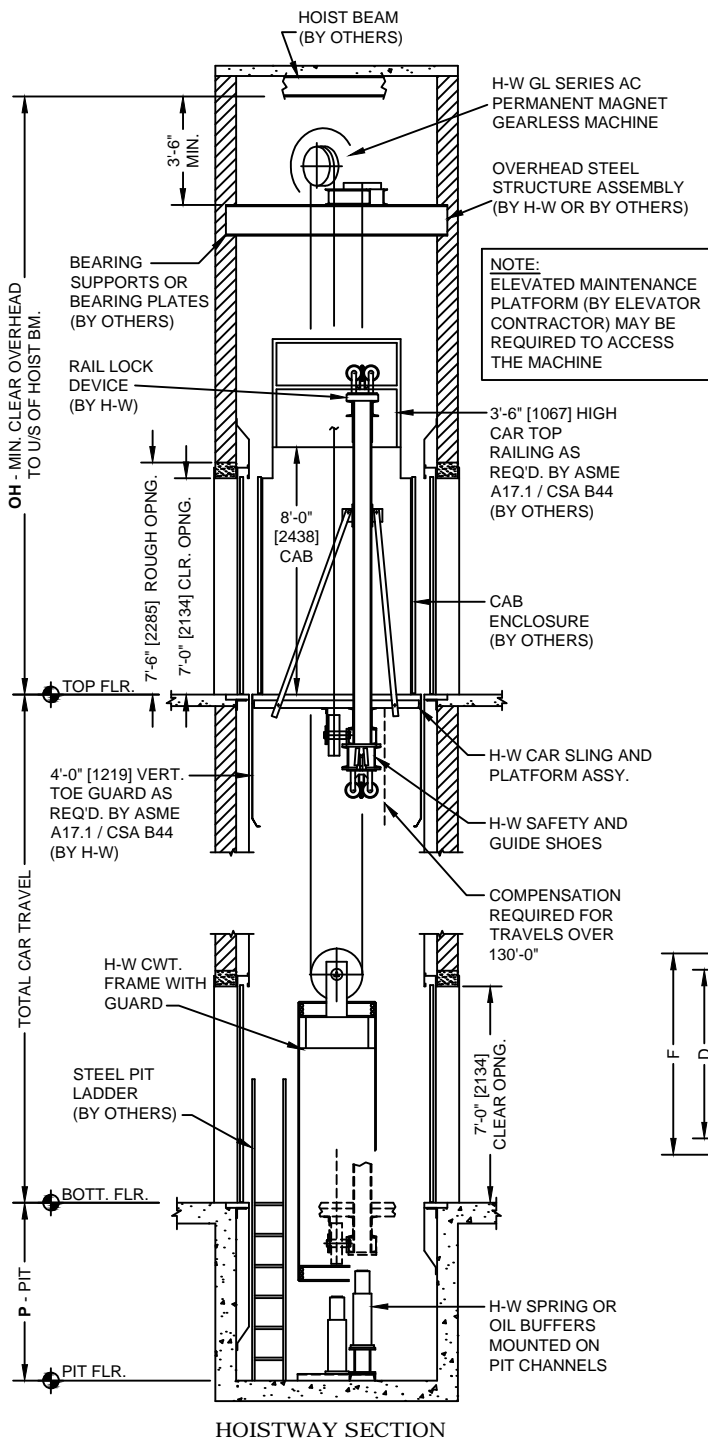
1. Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
2. Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
3. Single speed side opening (SSSO) doors are available with left or right hand configuration.
4. Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
5. Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
6. Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
7. Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
8. Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
9. Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
10. A hoist beam (by others) is required for installation (by others).
11. Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
12. Counterbalance of 50% required.
13. Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
14. Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
15. See page 33 for control room specifications.
16. Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



**MRL DESIGN GUIDE**

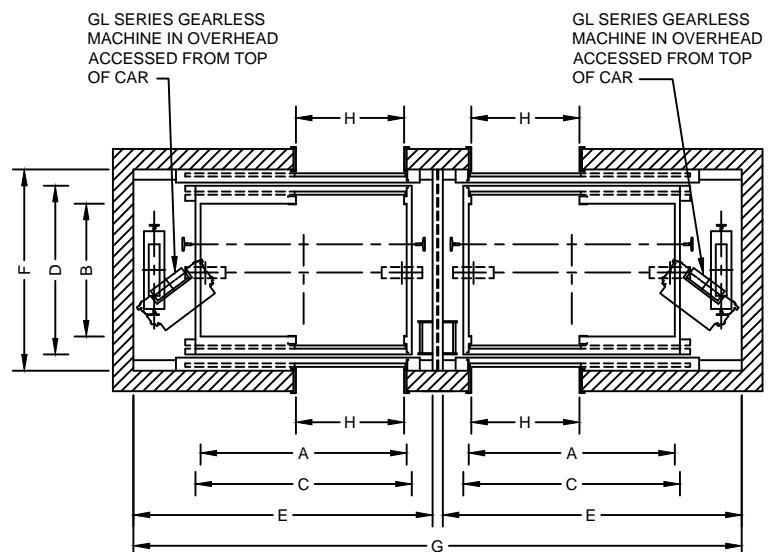
**Plan 122 (Underslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front & Rear Opng.)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20



**PASSENGER - SIMPLEX**  
FRONT & REAR OPENING, SIDE CWT.

NOTE: DOORS MUST BE "STAGGERED" ON THE 3,500# CAPACITY IF REQUIRED TO ACCOMMODATE AN 84"x 24" STRETCHER.



**PASSENGER - DUPLEX**  
FRONT & REAR OPENING, SIDE CWT.



**MRL DESIGN GUIDE**

**Plan 122 (Underslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front & Rear Opng.)**

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]
2,000 [907]	15" [381]	3'-0" [914]	SSSO SSCO	5'-8" [1727]	4'-3 1/2" [1308]	6'-0" [1829]	5'-5 1/2" [1664]	8'-8" [2642]	6'-6" [1981]	17'-8" [5385]	8'-10" [2692]	6'-6" [1981]	18'-0" [5486]
2,500 [1134]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-3 1/2" [1308]	7'-0" [2134]	5'-5 1/2" [1664]	9'-8" [2946]	6'-6" [1981]	19'-8" [5994]	9'-10" [2997]	6'-6" [1981]	20'-0" [6096]
3,000 [1361]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9 1/2" [1460]	7'-0" [2134]	5'-11 1/2" [1816]	9'-8" [2946]	7'-0" [2134]	19'-8" [5994]	9'-10" [2997]	7'-0" [2134]	20'-0" [6096]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5 1/2" [1664]	7'-0" [2134]	6'-7 1/2" [2019]	9'-8" [2946]	7'-8" [2337]	19'-8" [5994]	9'-10" [2997]	7'-8" [2337]	20'-0" [6096]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5 1/2" [1664]	8'-0" [2438]	6'-7 1/2" [2019]	10'-8" [3251]	7'-8" [2337]	21'-8" [6604]	10'-10" [3302]	7'-8" [2337]	22'-0" [6706]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
2,500 [1134]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
3,000 [1361]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
3,500 [1588]	5'-6" [1676]	5'-8" [1727]	6'-0" [1829]	7'-0" [2134]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
4,000 [1814]	5'-6" [1676]	5'-10" [1778]	6'-2" [1880]	7'-2" [2185]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

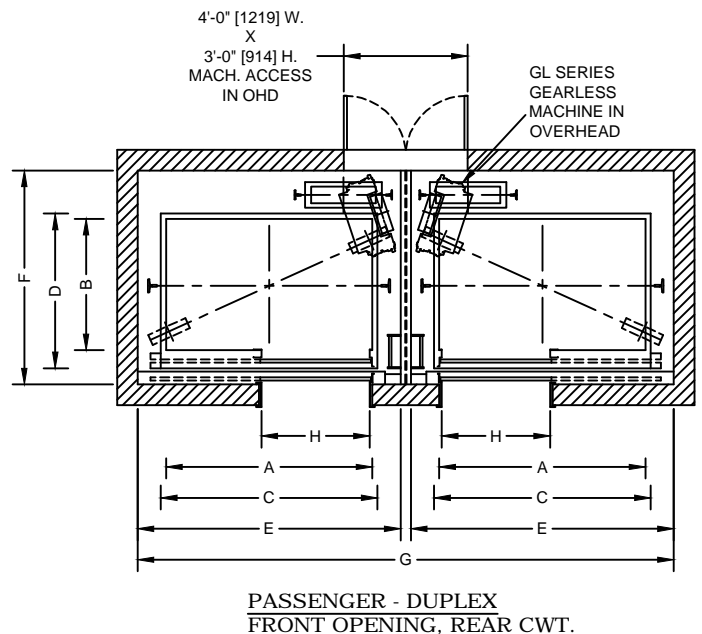
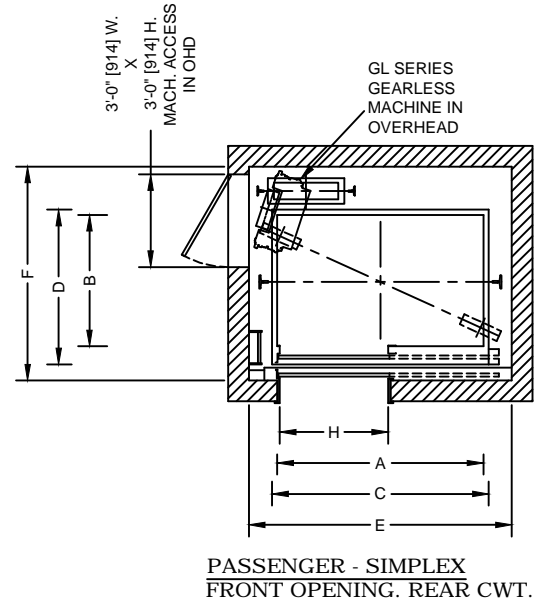
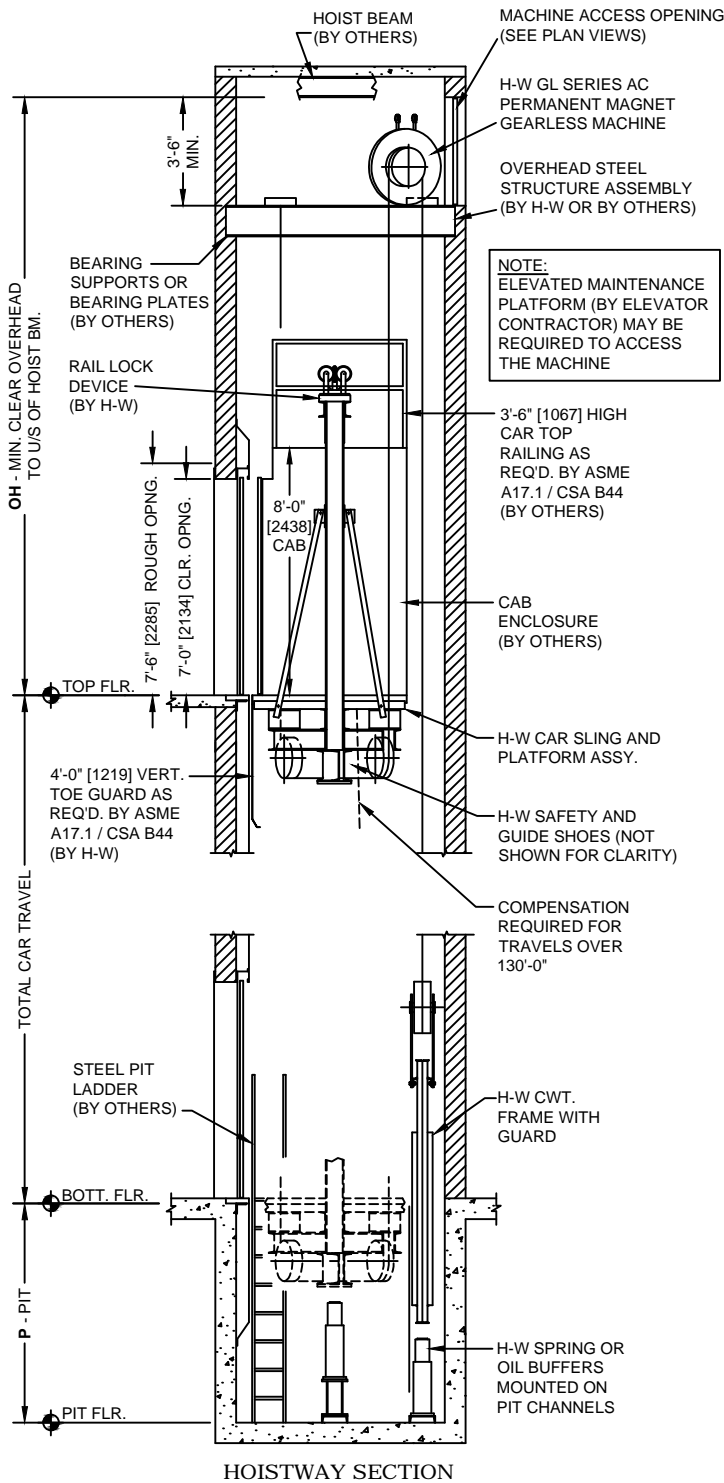
- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
- Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
- Single speed side opening (SSSO) doors are available with left or right hand configuration.
- Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
- Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
- Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
- Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
- Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
- Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
- A hoist beam (by others) is required for installation (by others).
- Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
- Counterbalance of 50% required.
- Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
- Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
- See page 33 for control room specifications.
- Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



**MRL DESIGN GUIDE**

**Plan 131 (Underslung Car Sheaves, Passenger, Rear CWT, Front Opening)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20





**MRL DESIGN GUIDE**

**Plan 131 (Underslung Car Sheaves, Passenger, Rear CWT, Front Opening)**

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
2,000 [907]	20" [508]	3'-0" [914]	SSSO SSCO	5'-8" [1727]	4'-3" [1295]	6'-0" [1829]	5'-0" [1524]	7'-8" [2337]	6'-10" [2083]	15'-8" [4775]	7'-8" [2337]	6'-10" [2083]	15'-8" [4775]
2,500 [1134]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-3" [1295]	7'-0" [2134]	5'-0" [1524]	8'-8" [2642]	6'-10" [2083]	17'-8" [5385]	8'-8" [2642]	6'-10" [2083]	17'-8" [5385]
3,000 [1361]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9" [1448]	7'-0" [2134]	5'-6" [1676]	8'-8" [2642]	7'-4" [2235]	17'-8" [5385]	8'-8" [2642]	7'-4" [2235]	17'-8" [5385]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5" [1651]	7'-0" [2134]	6'-2" [1880]	8'-10" [2692]	8'-2" [2489]	18'-0" [5486]	8'-10" [2692]	8'-2" [2489]	18'-0" [5486]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5" [1651]	8'-0" [2438]	6'-2" [1880]	9'-10" [2997]	8'-2" [2489]	20'-0" [6096]	9'-10" [2997]	8'-2" [2489]	20'-0" [6096]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	6'-2" [1880]	6'-2" [1880]	7'-0" [2134]	7'-10" [2388]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
2,500 [1134]	6'-2" [1880]	6'-2" [1880]	7'-0" [2134]	7'-10" [2388]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
3,000 [1361]	6'-2" [1880]	6'-2" [1880]	7'-0" [2134]	7'-10" [2388]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
3,500 [1588]	6'-2" [1880]	6'-2" [1880]	7'-0" [2134]	7'-10" [2388]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]
4,000 [1814]	6'-4" [1930]	6'-4" [1930]	7'-2" [2184]	8'-0" [2438]	17'-7" [5359]	17'-7" [5359]	18'-2" [5537]	19'-3" [5867]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

1. Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
2. Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
3. Single speed side opening (SSSO) doors are available with left or right hand configuration.
4. Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
5. Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
6. Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
7. Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
8. Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
9. Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
10. A hoist beam (by others) is required for installation (by others).
11. Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
12. Counterbalance of 50% required.
13. Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
14. Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
15. See page 33 for control room specifications.
16. Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.

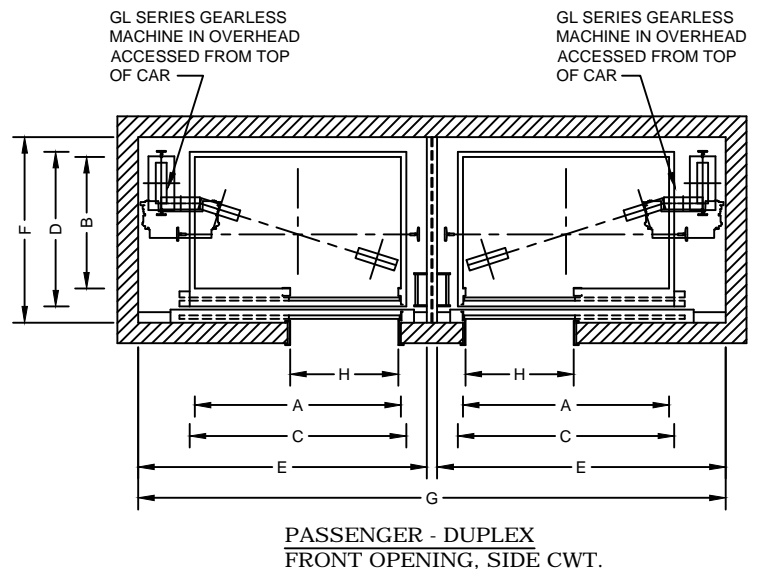
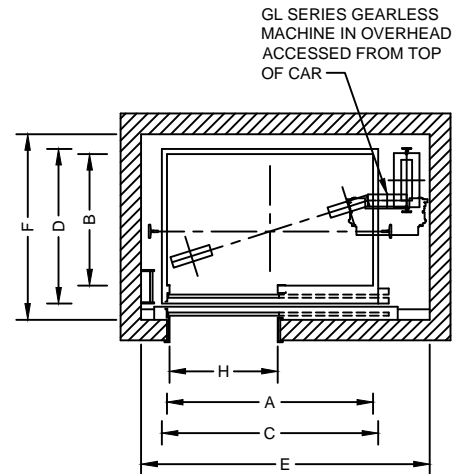
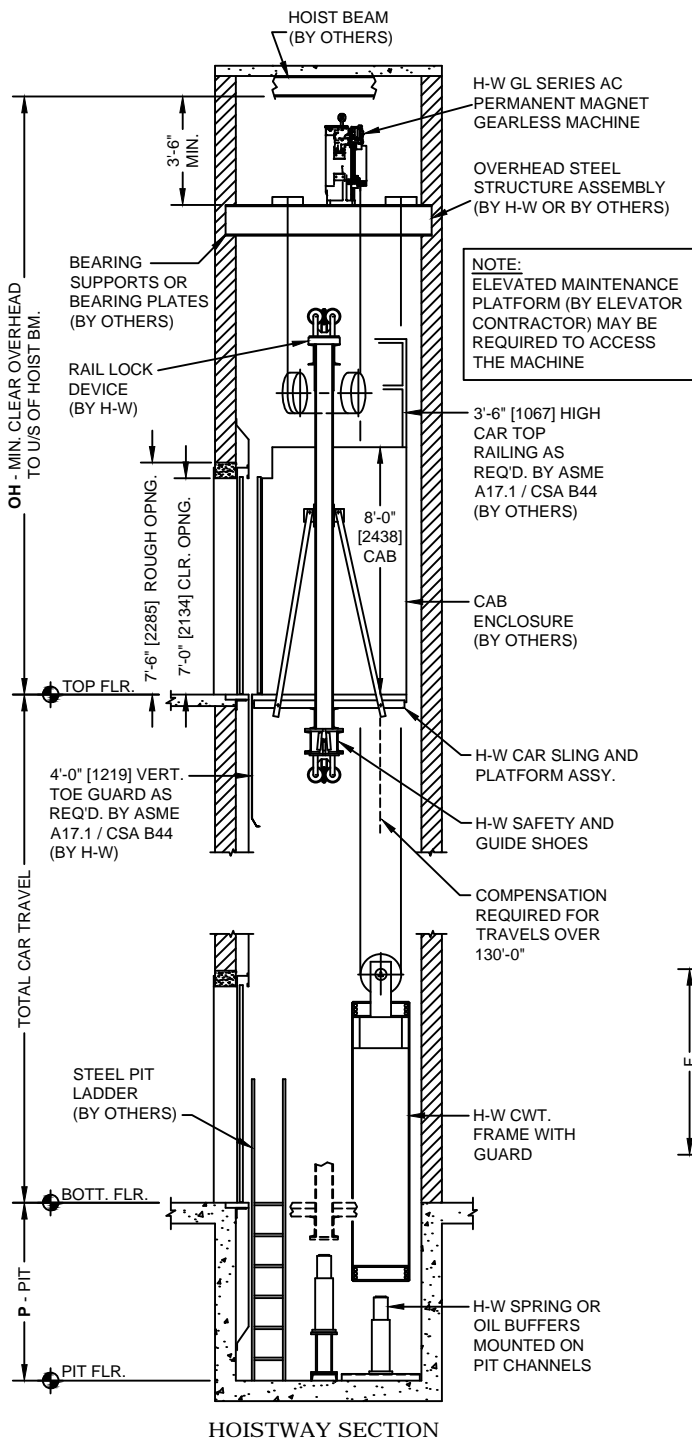




# MRL DESIGN GUIDE

## Plan 201 (Overslung Car Sheaves, Passenger, Side CWT, Front Opening)

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20





**MRL DESIGN GUIDE**

**Plan 201 (Overslung Car Sheaves, Passenger, Side CWT, Front Opening)**

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
2,000 [907]	20" [508]	3'-0" [914]	SSSO SSCO	5'-8" [1727]	4'-3" [1295]	6'-0" [1829]	5'-0" [1524]	8'-1" [2464]	5'-10" [1778]	16'-6" [5029]	8'-3" [2515]	5'-10" [1778]	16'-10" [5131]
2,500 [1134]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-3" [1295]	7'-0" [2134]	5'-0" [1524]	9'-1" [2769]	5'-10" [1778]	18'-6" [5639]	9'-3" [2819]	5'-10" [1778]	18'-10" [5740]
3,000 [1361]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9" [1448]	7'-0" [2134]	5'-6" [1676]	9'-1" [2769]	6'-6" [1981]	18'-6" [5639]	9'-3" [2819]	6'-6" [1981]	18'-10" [5740]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5" [1651]	7'-0" [2134]	6'-2" [1880]	9'-4" [2845]	7'-0" [2134]	19'-0" [5791]	9'-6" [2896]	7'-0" [2134]	19'-4" [5893]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5" [1651]	8'-0" [2438]	6'-2" [1880]	10'-4" [3150]	7'-0" [2134]	21'-0" [6401]	10'-6" [3200]	7'-0" [2134]	21'-4" [6502]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
2,500 [1134]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,000 [1361]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

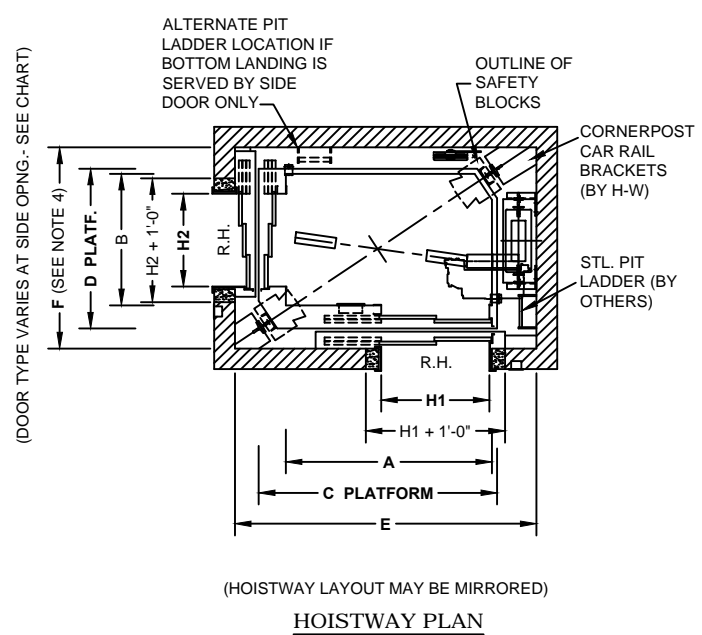
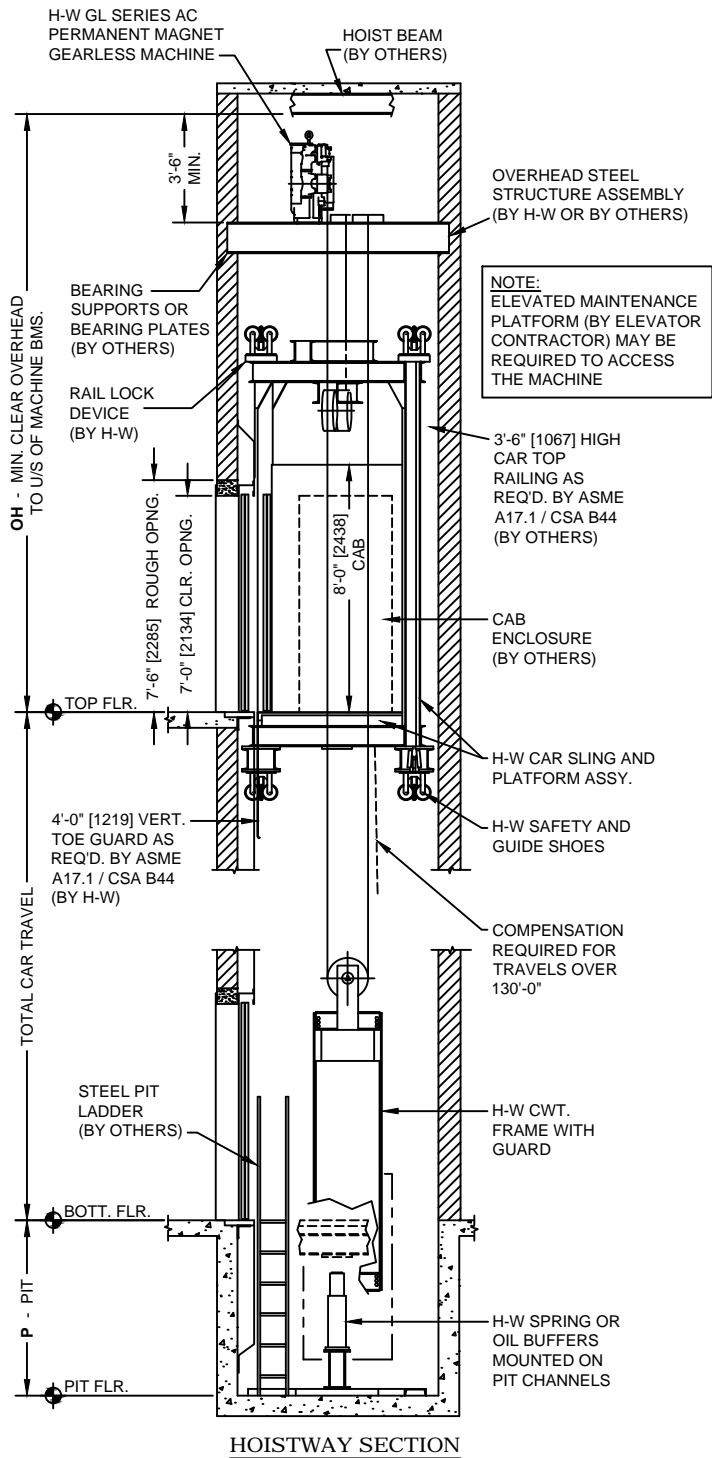
1. Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
2. Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
3. Single speed side opening (SSSO) doors are available with left or right hand configuration.
4. Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
5. Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
6. Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
7. Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
8. Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
9. Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
10. A hoist beam (by others) is required for installation (by others).
11. Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
12. Counterbalance of 50% required.
13. Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
14. Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
15. See page 33 for control room specifications.
16. Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



**MRL DESIGN GUIDE**

**Plan 202 (Overslung Car Sheaves, Passenger, Side CWT, Front & Side Opening, Cornerpost Rails)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20





MRL DESIGN GUIDE

Plan 202 (Overslung Car Sheaves, Passenger, Side CWT, Front & Side Opening, Cornerpost Rails)

CAPACITY lb [kg]	INSIDE AREA (MAX. SF ALLOWED PER CODE)	H1 CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	H2 CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC & SEISMIC)	
						A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]
2,000 [900]	24.2 [2.25]	3'-0" [914]	TSSO (a)	3'-0" [914]	3SSO (a)	5'-8" [1727]	4'-3" [1295]	6'-8 1/2" [2045]	5'-2" [1575]	8'-9" [2667]	6'-6" [1981]
2,500 [1160]	29.1 [2.70]	3'-6" [1067]	TSSO (b)	3'-0" [914]	3SSO (b)	6'-8" [2032]	4'-3" [1295]	7'-8 1/2" [2350]	5'-2" [1575]	9'-9" [2972]	6'-6" [1981]
3,000 [1380]	33.7 [3.13]	3'-6" [1067]	TSSO (b)	3'-0" [914]	TSSO (b)	6'-8" [2032]	4'-9" [1448]	7'-7" [2311]	5'-8" [1727]	9'-6" [2896]	7'-0" [2134]
3,500 [1600]	38.0 [3.53]	3'-6" [1067]	TSSO (c)	3'-6" [1067]	TSSO (c)	6'-8" [2032]	5'-5" [1651]	7'-7" [2311]	6'-4" [1930]	9'-9" [2972]	7'-9" [2362]
4,000 [1815]	42.2 [3.92]	4'-0" [1219]	TSSO (c)	3'-6" [1067]	TSSO (c)	7'-8" [2337]	5'-5" [1651]	8'-7" [2616]	6'-4" [1930]	10'-9" [3277]	7'-9" [2362]

a. These car dimensions and entrance types provide wheelchair accessibility.  
b. These car dimensions and entrance types provide wheelchair accessibility and accommodate an ambulance type stretcher of (76"x24") in the horizontal position.  
c. These car dimensions and entrance types provide wheelchair accessibility and accommodate an ambulance type stretcher of (84"x24") in the horizontal position as required by the IBC.

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-7" [5969]	19'-7" [5969]	20'-2" [6147]	21'-3" [6477]
2,500 [1134]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-7" [5969]	19'-7" [5969]	20'-2" [6147]	21'-3" [6477]
3,000 [1361]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-7" [5969]	19'-7" [5969]	20'-2" [6147]	21'-3" [6477]
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	20'-1" [6121]	20'-1" [6121]	20'-8" [6299]	21'-9" [6629]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	20'-1" [6121]	20'-1" [6121]	20'-8" [6299]	21'-9" [6629]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

GENERAL NOTES:

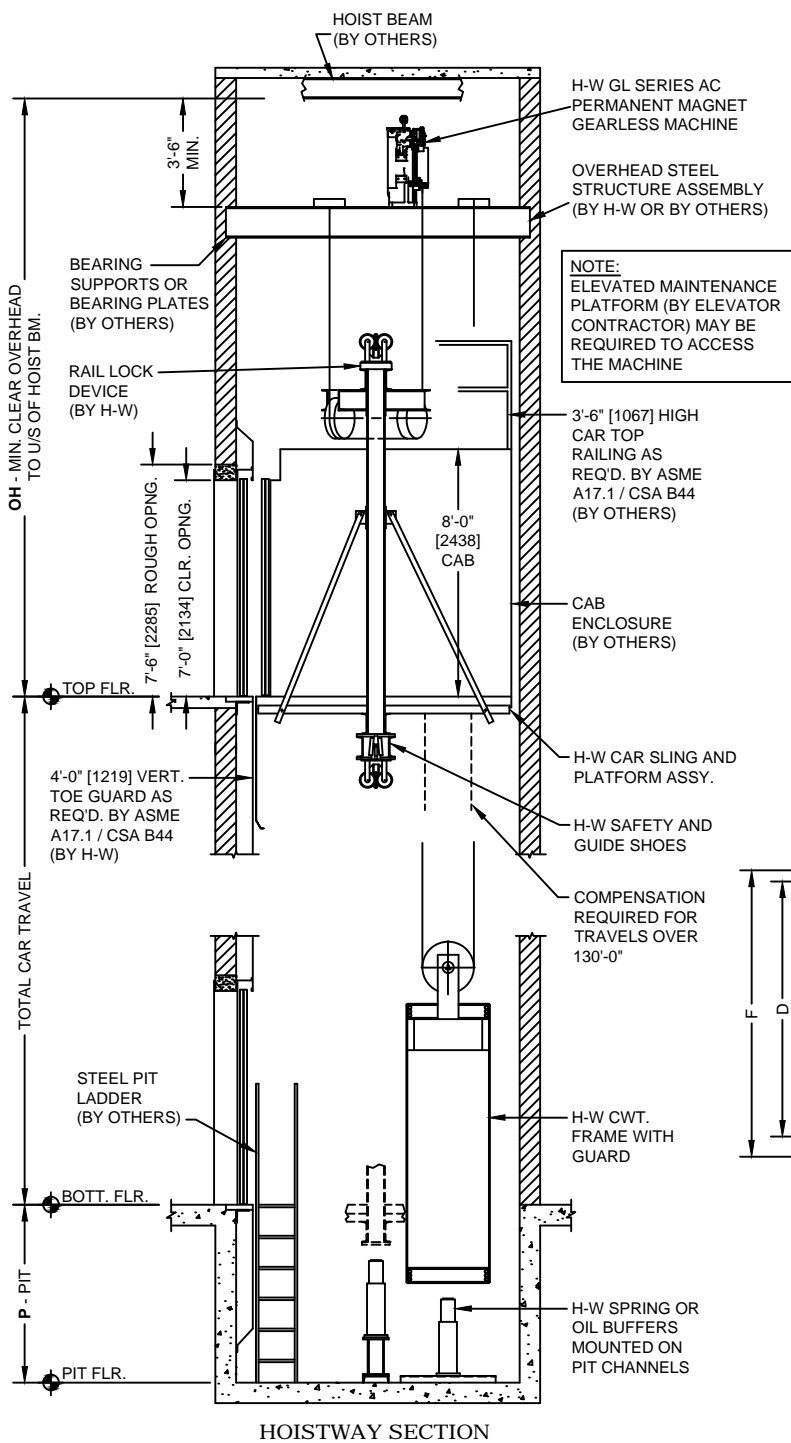
- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
- Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
- Single speed side opening (SSSO) doors are available with left or right hand configuration.
- Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
- Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
- Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
- Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
- Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
- Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
- A hoist beam (by others) is required for installation (by others).
- Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
- Counterbalance of 50% required.
- Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
- Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
- See page 33 for control room specifications.
- Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



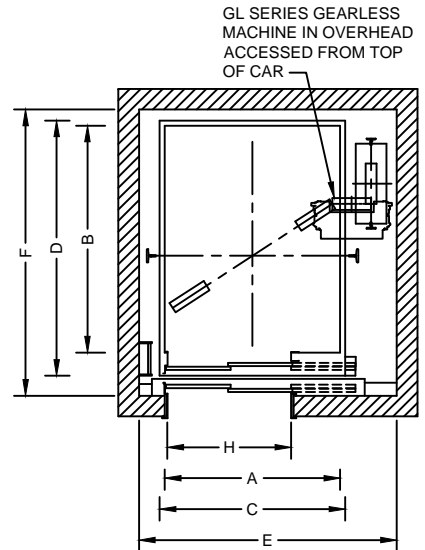
**MRL DESIGN GUIDE**

**Plan 211 (Overslung Car Sheaves, Hospital / Service, Side CWT, Front Opening)**

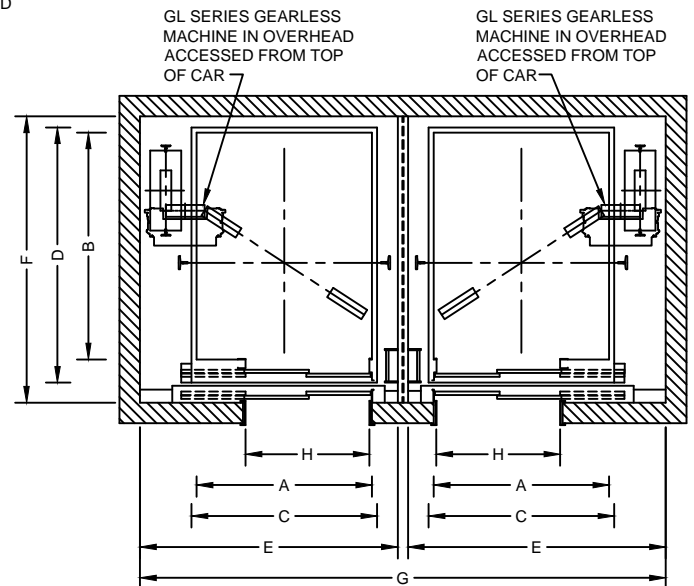
Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20



**NOTE:**  
 ELEVATED MAINTENANCE PLATFORM (BY ELEVATOR CONTRACTOR) MAY BE REQUIRED TO ACCESS THE MACHINE



**HOSPITAL / SERVICE - SIMPLEX  
 FRONT OPENING, SIDE CWT.**



**HOSPITAL / SERVICE - DUPLEX  
 FRONT OPENING, SIDE CWT.**



MRL DESIGN GUIDE

Plan 211 (Overslung Car Sheaves, Hospital / Service, Side CWT, Front Opening)

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
3,500 [1588]	15" [381]	3'-10" [1169]	TSSO	5'-2" [1575]	7'-4" [2235]	5'-6" [1677]	8'-4" [2540]	8'-0" [2438]	9'-3" [2820]	16'-4" [4978]	8'-2" [2489]	9'-3" [2820]	16'-8" [5080]
4,000 [1814]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-4" [2235]	6'-0" [1829]	8'-4" [2540]	8'-6" [2591]	9'-3" [2820]	17'-4" [5283]	8'-8" [2642]	9'-3" [2820]	17'-8" [5385]
4,500 [2041]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-10" [2388]	6'-0" [1829]	8'-10" [2693]	8'-6" [2591]	9'-9" [2972]	17'-4" [5283]	8'-8" [2642]	9'-9" [2972]	17'-8" [5385]
5,000 [2268]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	8'-6" [2591]	6'-0" [1829]	9'-6" [2896]	8'-6" [2591]	10'-5" [3175]	17'-4" [5283]	8'-8" [2642]	10'-5" [3175]	17'-8" [5385]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,500 [2041]	5'-6" [1676]	5'-6" [1676]	5'-10" [1778]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]
5,000 [2268]	5'-6" [1676]	5'-6" [1676]	5'-10" [1778]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

GENERAL NOTES:

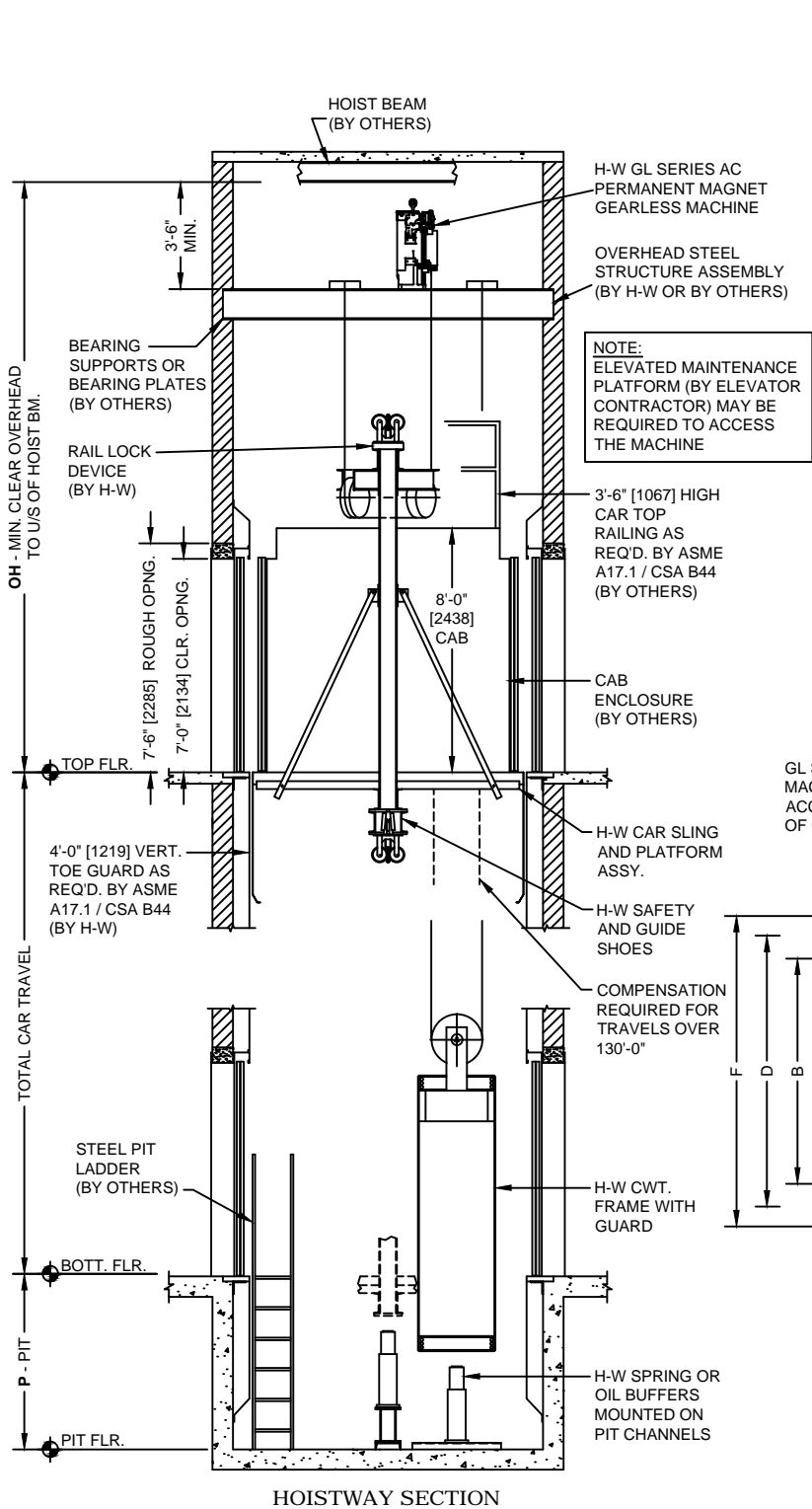
- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
- Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
- Single speed side opening (SSSO) doors are available with left or right hand configuration.
- Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
- Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
- Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
- Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
- Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
- Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
- A hoist beam (by others) is required for installation (by others).
- Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
- Counterbalance of 50% required.
- Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
- Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
- See page 33 for control room specifications.
- Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



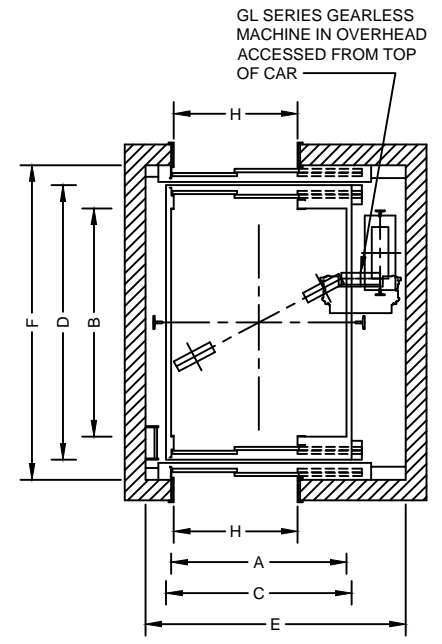
**MRL DESIGN GUIDE**

**Plan 212 (Overslung Car Sheaves, Hospital / Service, Side CWT, Front & Rear Opening)**

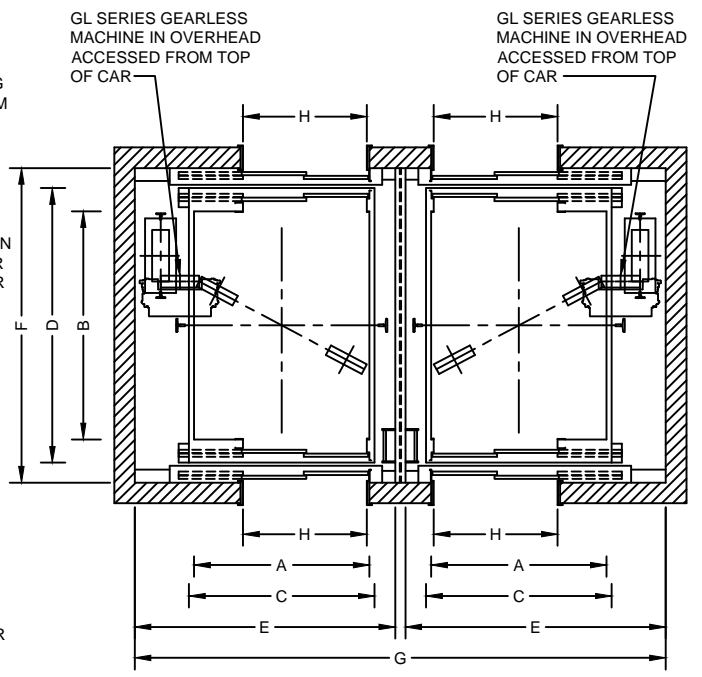
Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20



**NOTE:**  
ELEVATED MAINTENANCE PLATFORM (BY ELEVATOR CONTRACTOR) MAY BE REQUIRED TO ACCESS THE MACHINE



**HOSPITAL / SERVICE - SIMPLEX**  
FRONT & REAR OPENING, SIDE CWT.



**HOSPITAL / SERVICE - DUPLEX**  
FRONT & REAR OPENING, SIDE CWT.



**MRL DESIGN GUIDE**

**Plan 212** (Overslung Car Sheaves, Hospital / Service, Side CWT, Front & Rear Opening)

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
3,500 [1588]	15" [381]	3'-10" [1169]	TSSO	5'-2" [1575]	7'-4" [2235]	5'-6" [1677]	9'-0 1/2" [2756]	8'-0" [2438]	10'-4" [3150]	16'-4" [4978]	8'-2" [2489]	10'-4" [3150]	16'-8" [5080]
4,000 [1814]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-4" [2235]	6'-0" [1829]	9'-0 1/2" [2756]	8'-7" [2616]	10'-4" [3150]	17'-6" [5334]	8'-9" [2667]	10'-4" [3150]	17'-10" [5436]
4,500 [2041]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	7'-10" [2388]	6'-0" [1829]	9'-6 1/2" [2908]	8'-7" [2616]	10'-10" [3302]	17'-6" [5334]	8'-9" [2667]	10'-10" [3302]	17'-10" [5436]
5,000 [2268]	15" [381]	4'-0" [1219]	TSSO	5'-8" [1727]	8'-6" [2591]	6'-0" [1829]	10'-2 1/2" [3112]	8'-7" [2616]	11'-6" [3505]	17'-6" [5334]	8'-9" [2667]	11'-6" [3505]	17'-10" [5436]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,500 [2041]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]
5,000 [2268]	5'-6" [1676]	5'-6" [1676]	5'-10" [1778]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
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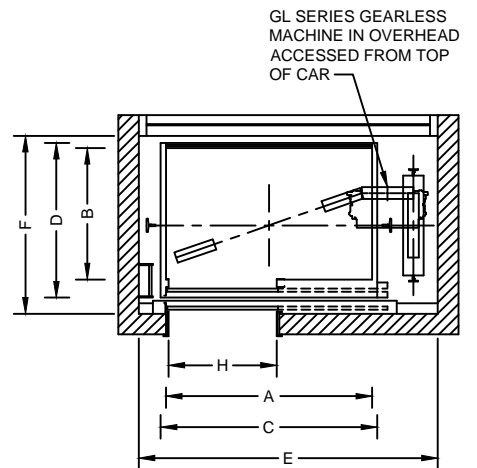
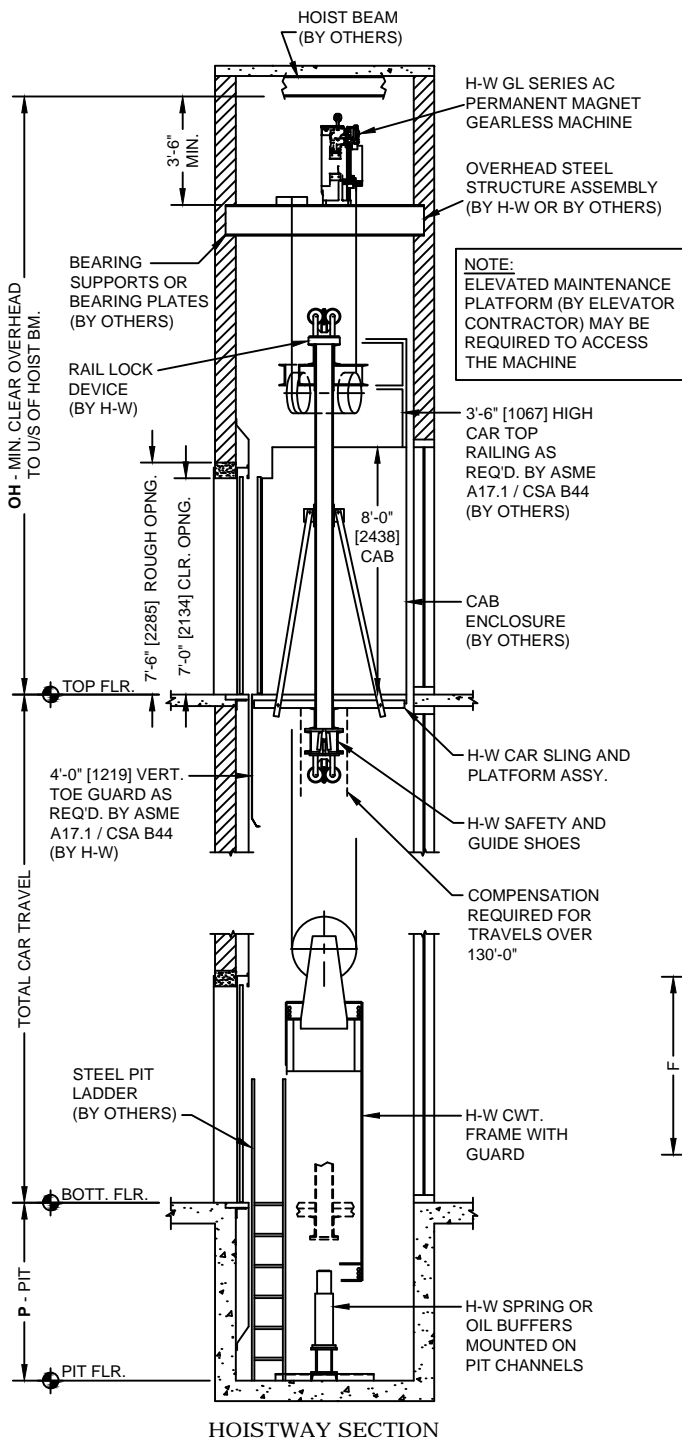




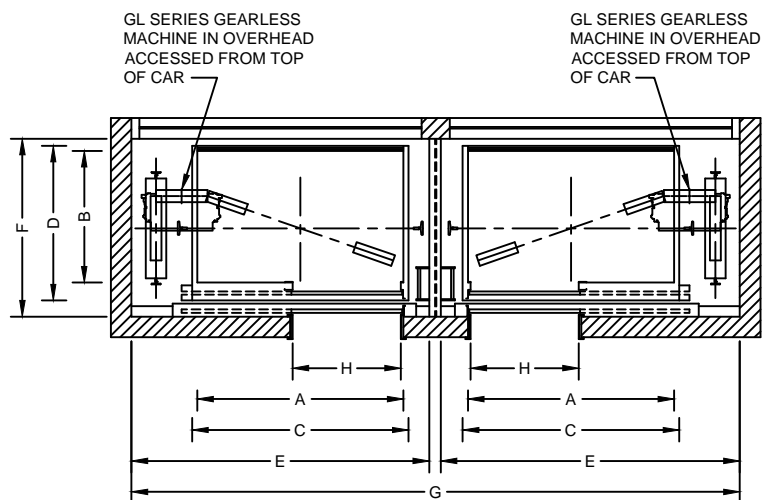
**MRL DESIGN GUIDE**

**Plan 221 (Overslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front Opening)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20



**PASSENGER - SIMPLEX**  
FRONT OPENING, SIDE CWT.



**PASSENGER - DUPLEX**  
FRONT OPENING, SIDE CWT.



**MRL DESIGN GUIDE**

**Plan 221 (Overslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front Opening)**

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLEX) WALL TO WALL ft [mm]
2,000 [907]	20" [508]	3'-0" [914]	SSSO SSCO	5'-8" [1727]	4'-3" [1295]	6'-0" [1829]	5'-0" [1524]	8'-6" [2591]	5'-10" [1778]	17'-4" [5283]	8'-8" [2642]	5'-10" [1778]	17'-8" [5385]
2,500 [1134]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-3" [1295]	7'-0" [2134]	5'-0" [1524]	9'-6" [2896]	5'-10" [1778]	19'-4" [5893]	9'-8" [2946]	5'-10" [1778]	19'-8" [5994]
3,000 [1361]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9" [1448]	7'-0" [2134]	5'-6" [1676]	9'-6" [2896]	6'-4" [1930]	19'-4" [5893]	9'-8" [2946]	6'-4" [1930]	19'-8" [5994]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5" [1651]	7'-0" [2134]	6'-2" [1880]	9'-8" [2946]	7'-0" [2134]	19'-8" [5994]	9'-10" [2997]	7'-0" [2134]	20'-0" [6096]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5" [1651]	8'-0" [2438]	6'-2" [1880]	10'-8" [3251]	7'-0" [2134]	21'-8" [6604]	10'-10" [3302]	7'-0" [2134]	22'-0" [6706]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
2,500 [1134]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,000 [1361]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

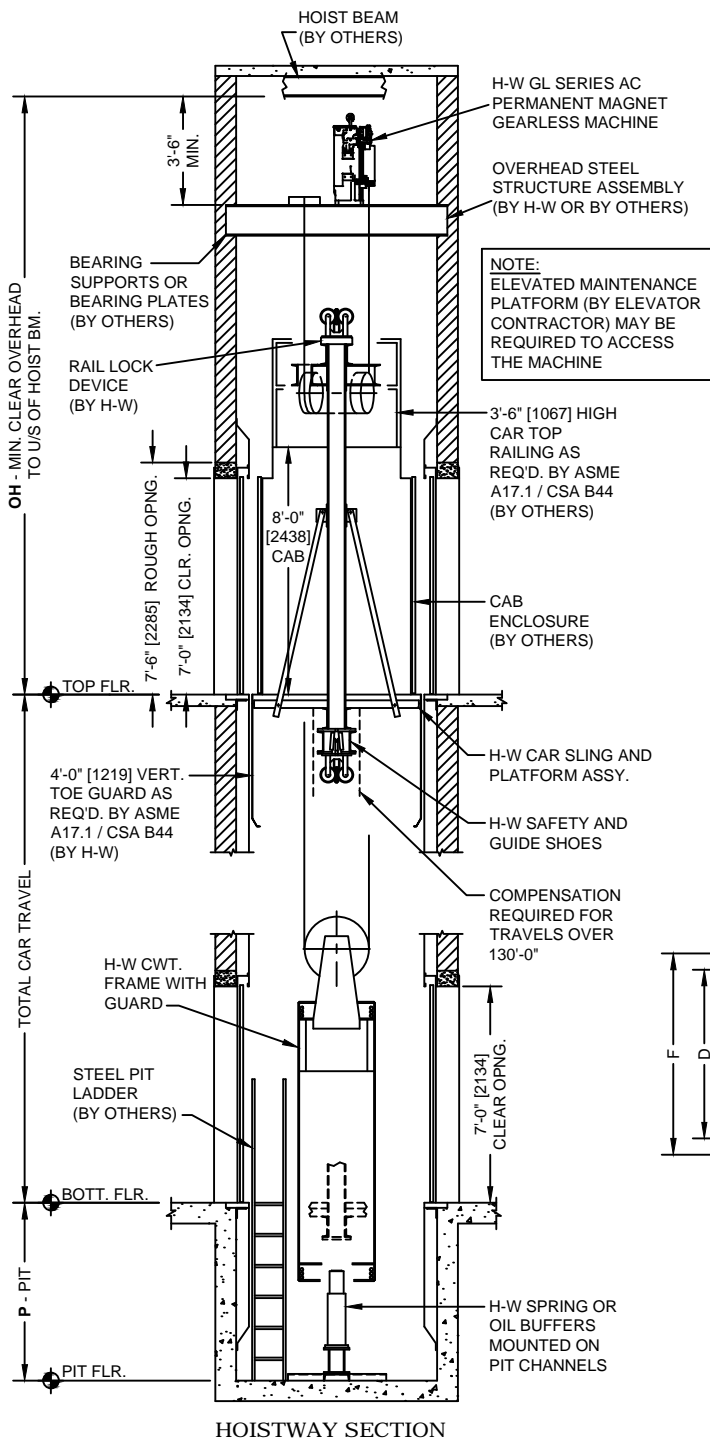
1. Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
2. Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
3. Single speed side opening (SSSO) doors are available with left or right hand configuration.
4. Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
5. Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
6. Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
7. Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
8. Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
9. Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
10. A hoist beam (by others) is required for installation (by others).
11. Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
12. Counterbalance of 50% required.
13. Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
14. Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
15. See page 33 for control room specifications.
16. Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



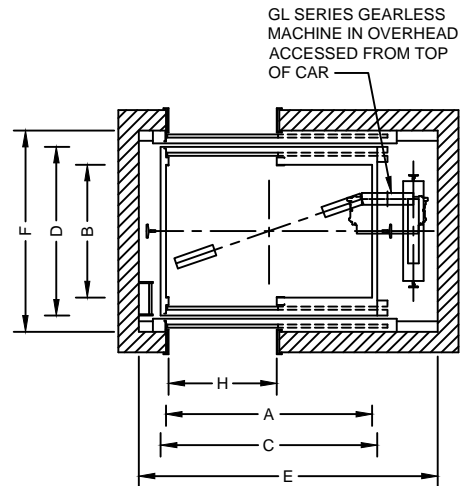
**MRL DESIGN GUIDE**

**Plan 222 (Overslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front & Rear Opng.)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20

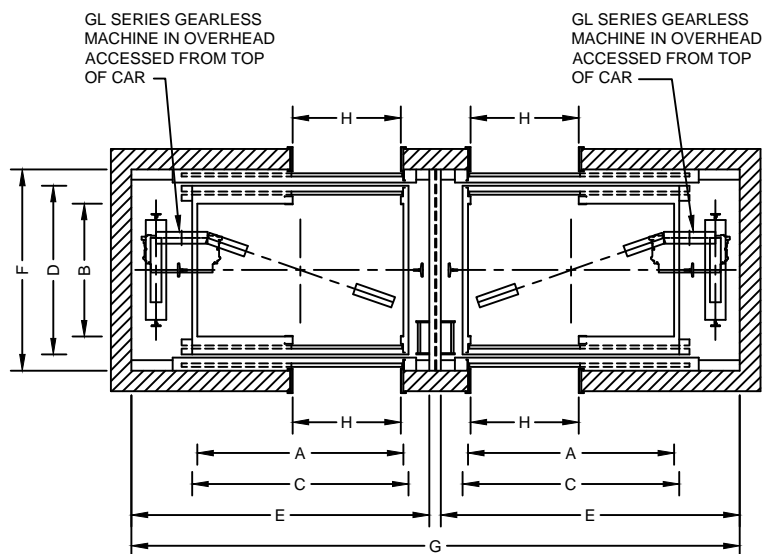


**NOTE:**  
 ELEVATED MAINTENANCE PLATFORM (BY ELEVATOR CONTRACTOR) MAY BE REQUIRED TO ACCESS THE MACHINE



**PASSENGER - SIMPLEX**  
**FRONT & REAR OPENING, SIDE CWT.**

**NOTE:** DOORS MUST BE "STAGGERED" ON THE 3,500# CAPACITY IF REQUIRED TO ACCOMMODATE AN 84"x 24" STRETCHER.



**PASSENGER - DUPLEX**  
**FRONT & REAR OPENING, SIDE CWT.**



**MRL DESIGN GUIDE**

**Plan 222 (Overslung Car Sheaves, Passenger, Side CWT With Combo Bracket, Front & Rear Opng.)**

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]
2,000 [907]	20" [508]	3'-0" [914]	SSSO SSCO	5'-8" [1727]	4'-3 1/2" [1308]	6'-0" [1829]	5'-5 1/2" [1664]	8'-6" [2591]	6'-6" [1981]	17'-4" [5283]	8'-8" [2642]	6'-6" [1981]	17'-8" [5385]
2,500 [1134]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-3 1/2" [1308]	7'-0" [2134]	5'-5 1/2" [1664]	9'-6" [2896]	6'-6" [1981]	19'-4" [5893]	9'-8" [2946]	6'-6" [1981]	19'-8" [5994]
3,000 [1361]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9 1/2" [1460]	7'-0" [2134]	5'-11 1/2" [1816]	9'-6" [2896]	7'-0" [2134]	19'-4" [5893]	9'-8" [2946]	7'-0" [2134]	19'-8" [5994]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5 1/2" [1664]	7'-0" [2134]	6'-7 1/2" [2019]	9'-8" [2946]	7'-8" [2337]	19'-8" [5994]	9'-10" [2997]	7'-8" [2337]	20'-0" [6096]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5 1/2" [1664]	8'-0" [2438]	6'-7 1/2" [2019]	10'-8" [3251]	7'-8" [2337]	21'-8" [6604]	10'-10" [3302]	7'-8" [2337]	22'-0" [6706]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
2,500 [1134]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,000 [1361]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

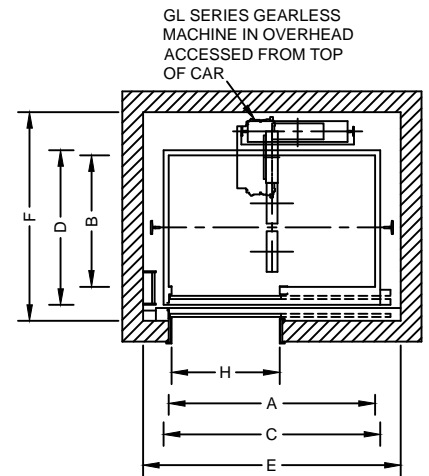
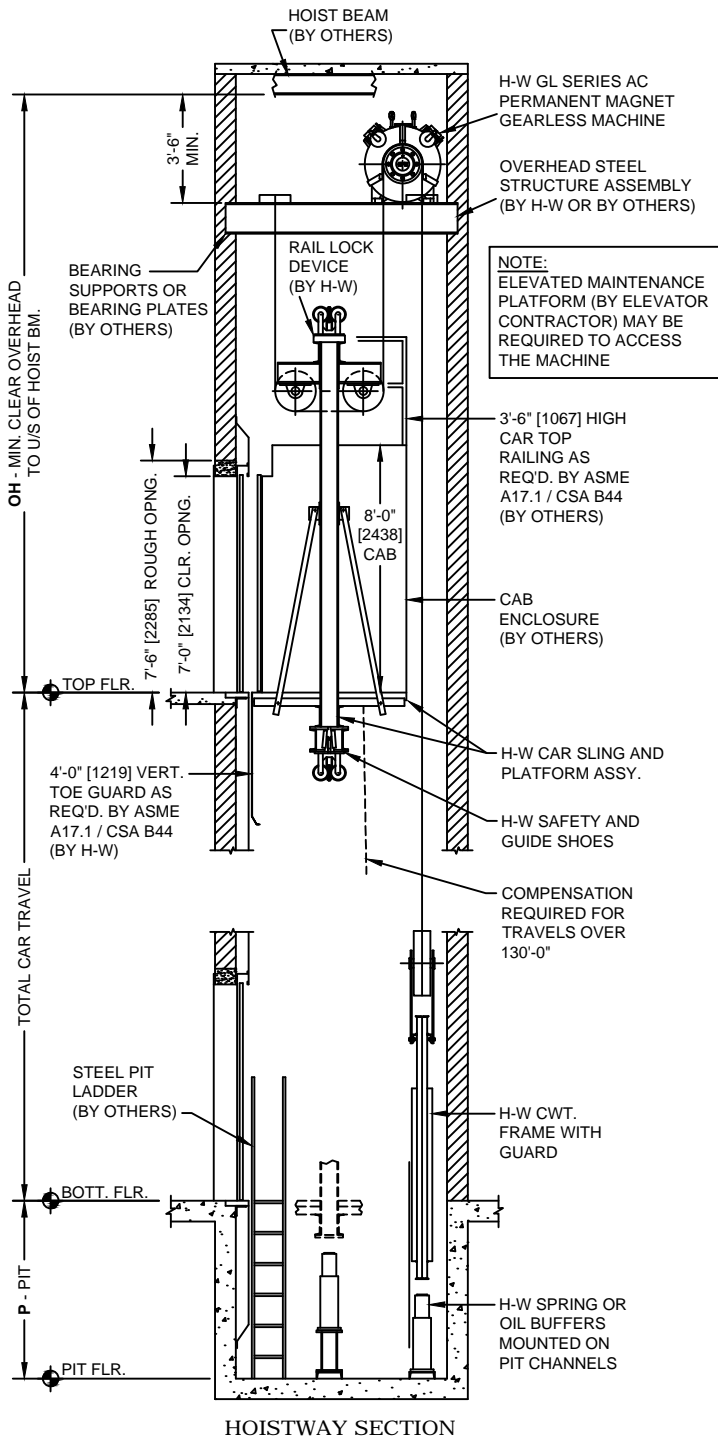
- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
- Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
- Single speed side opening (SSSO) doors are available with left or right hand configuration.
- Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
- Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
- Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
- Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
- Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
- Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
- A hoist beam (by others) is required for installation (by others).
- Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
- Counterbalance of 50% required.
- Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
- Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
- See page 33 for control room specifications.
- Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



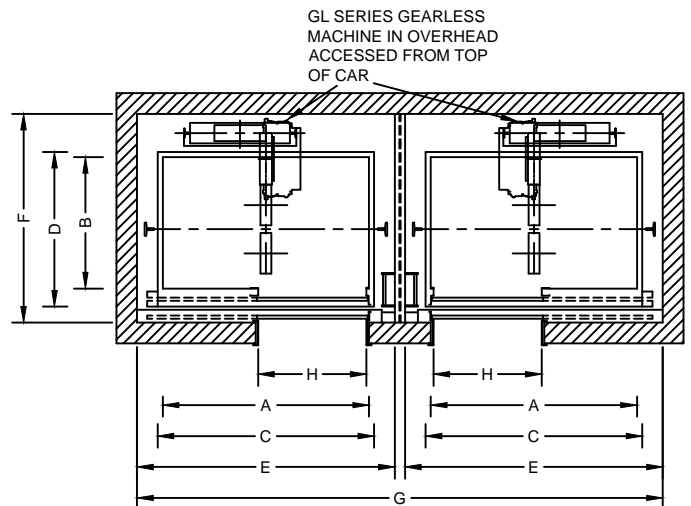
**MRL DESIGN GUIDE**

**Plan 231 (Overslung Car Sheaves, Passenger, Rear CWT, Front Opening)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20



**PASSENGER - SIMPLEX  
FRONT OPENING, REAR CWT.**



**PASSENGER - DUPLEX  
FRONT OPENING, REAR CWT.**



**MRL DESIGN GUIDE**

**Plan 231 (Overslung Car Sheaves, Passenger, Rear CWT, Front Opening)**

CAPACITY lb [kg]	MACHINE TRACTION SHEAVE DIA. in [mm]	H CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC)			HOISTWAY SIZE (SEISMIC ZONE 2 OR GREATER)		
				A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]	G (DUPLX) WALL TO WALL ft [mm]
2,000 [907]	20" [508]	3'-0" [914]	SSSO SSCO	5'-8" [1727]	4'-3" [1295]	6'-0" [1829]	5'-0" [1524]	7'-4" [2235]	6'-9" [2057]	15'-0" [4572]	7'-8" [2337]	6'-9" [2057]	15'-8" [4775]
2,500 [1134]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-3" [1295]	7'-0" [2134]	5'-0" [1524]	8'-4" [2540]	6'-9" [2057]	17'-0" [5182]	8'-8" [2642]	6'-9" [2057]	17'-8" [5385]
3,000 [1361]	20" [508]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	4'-9" [1448]	7'-0" [2134]	5'-6" [1676]	8'-4" [2540]	7'-3" [2210]	17'-0" [5182]	8'-8" [2642]	7'-3" [2210]	17'-8" [5385]
3,500 [1588]	15" [381]	3'-6" [1067]	SSSO SSCO	6'-8" [2032]	5'-5" [1651]	7'-0" [2134]	6'-2" [1880]	8'-4" [2540]	8'-2" [2489]	17'-0" [5182]	8'-8" [2642]	8'-2" [2489]	17'-8" [5385]
4,000 [1814]	15" [381]	4'-0" [1219]	SSSO SSCO	7'-8" [2337]	5'-5" [1651]	8'-0" [2438]	6'-2" [1880]	9'-4" [2845]	8'-2" [2489]	19'-0" [5791]	9'-8" [2946]	8'-2" [2489]	19'-8" [5994]

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
2,500 [1134]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,000 [1361]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	18'-11" [5766]	18'-11" [5766]	19'-6" [5944]	20'-7" [6274]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-3" [5867]	19'-3" [5867]	19'-10" [6045]	20'-11" [6375]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

**GENERAL NOTES:**

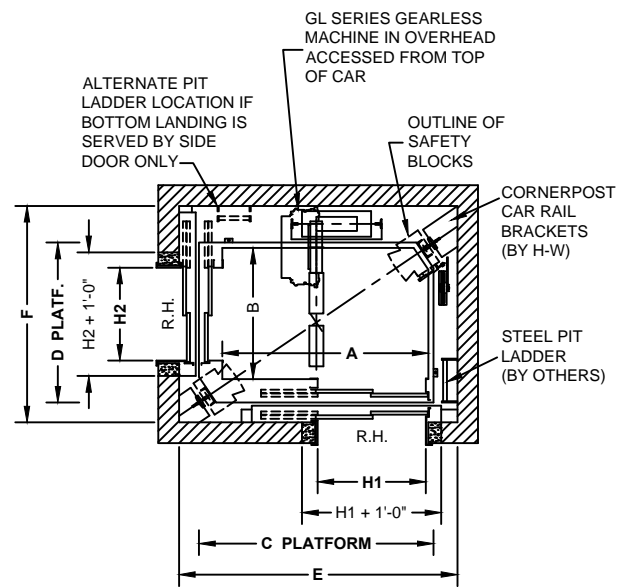
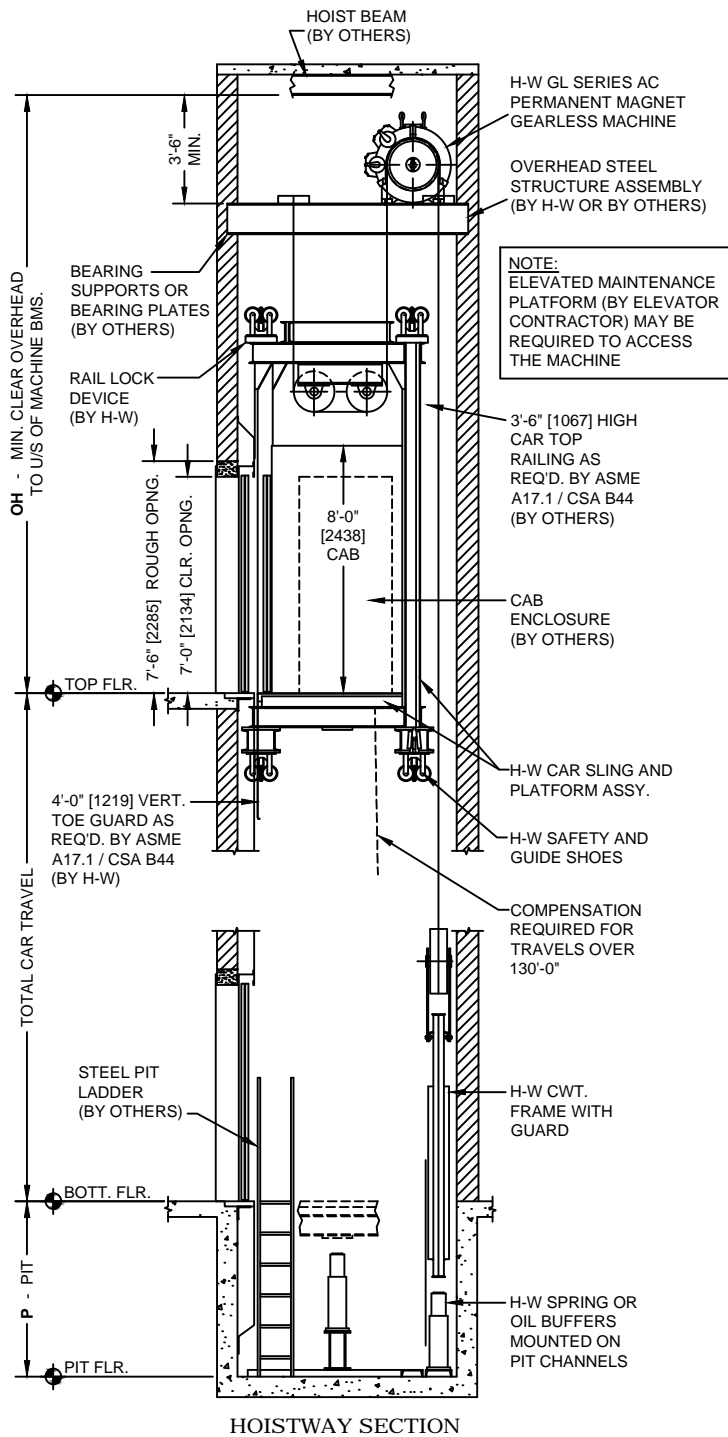
- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
- Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
- Single speed side opening (SSSO) doors are available with left or right hand configuration.
- Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
- Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
- Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
- Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
- Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
- Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
- A hoist beam (by others) is required for installation (by others).
- Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
- Counterbalance of 50% required.
- Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
- Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
- See page 33 for control room specifications.
- Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.



**MRL DESIGN GUIDE**

**Plan 232 (Overslung Car Sheaves, Passenger, Rear CWT, Front & Side Opng, Cornerpost Rails)**

Standard Speeds: 150, 200, 350, 500 fpm [.75, 1.0, 1.75, 2.5 m/s]  
 Maximum Travel: 200'-0" [61 m]  
 Maximum Stops: 20





MRL DESIGN GUIDE

Plan 232 (Overslung Car Sheaves, Passenger, Rear CWT, Front & Side Opng, Cornerpost Rails)

CAPACITY lb [kg]	INSIDE AREA (MAX. SF ALLOWED PER CODE)	H1 CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	H2 CLEAR OPENING WIDTH ft [mm]	OPENING TYPE (1)	MINIMUM CLEAR CAB INSIDE		PLATFORM SIZE		HOISTWAY SIZE (NON-SEISMIC & SEISMIC)	
						A WIDTH ft [mm]	B DEPTH ft [mm]	C WIDTH ft [mm]	D DEPTH ft [mm]	E CLR. WIDTH ft [mm]	F CLR. DEPTH ft [mm]
2,000 [900]	24.2 [2.25]	3'-0" [914]	TSSO (a)	3'-0" [914]	TSSO (a)	5'-8" [1727]	4'-3" [1295]	6'-7" [2007]	5'-2" [1575]	8'-0" [2438]	7'-1" [2159]
2,500 [1160]	29.1 [2.70]	3'-6" [1067]	TSSO (b)	3'-0" [914]	TSSO (b)	6'-8" [2032]	4'-3" [1295]	7'-7" [2311]	5'-2" [1575]	9'-0" [2743]	7'-1" [2159]
3,000 [1380]	33.7 [3.13]	3'-6" [1067]	TSSO (b)	3'-0" [914]	TSSO (b)	6'-8" [2032]	4'-9" [1448]	7'-7" [2311]	5'-8" [1727]	9'-0" [2743]	7'-7" [2311]
3,500 [1600]	38.0 [3.53]	3'-6" [1067]	TSSO (c)	3'-6" [1067]	TSSO (c)	6'-8" [2032]	5'-5" [1651]	7'-7" [2311]	6'-4" [1930]	9'-0" [2743]	8'-6" [2591]
4,000 [1815]	42.2 [3.92]	4'-0" [1219]	TSSO (c)	3'-6" [1067]	TSSO (c)	7'-8" [2337]	5'-5" [1651]	8'-7" [2616]	6'-4" [1930]	10'-0" [3048]	8'-6" [2591]

a. These car dimensions and entrance types provide wheelchair accessibility.  
b. These car dimensions and entrance types provide wheelchair accessibility and accommodate an ambulance type stretcher of (76"x24") in the horizontal position.  
c. These car dimensions and entrance types provide wheelchair accessibility and accommodate an ambulance type stretcher of (84"x24") in the horizontal position as required by the IBC.

CAPACITY lb [kg]	PIT DEPTH (P)				OVERHEAD (OH)			
	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s	150 fpm .75 m/s	200 fpm 1.0 m/s	350 fpm 1.75 m/s	500 fpm 2.5 m/s
2,000 [907]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-7" [5969]	19'-7" [5969]	20'-2" [6147]	21'-3" [6477]
2,500 [1134]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-7" [5969]	19'-7" [5969]	20'-2" [6147]	21'-3" [6477]
3,000 [1361]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	19'-7" [5969]	19'-7" [5969]	20'-2" [6147]	21'-3" [6477]
3,500 [1588]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	20'-1" [6121]	20'-1" [6121]	20'-8" [6299]	21'-9" [6629]
4,000 [1814]	5'-6" [1676]	5'-6" [1676]	5'-8" [1727]	6'-10" [2083]	20'-1" [6121]	20'-1" [6121]	20'-8" [6299]	21'-9" [6629]

NOTE: If "full-body access" is desired to facilitate machine maintenance in the overhead, add an additional 8" [204mm] allowance for grating + support framing to the overhead dimensions listed above and provide a 3'-6"W. x 3'-6"H. minimum access door.

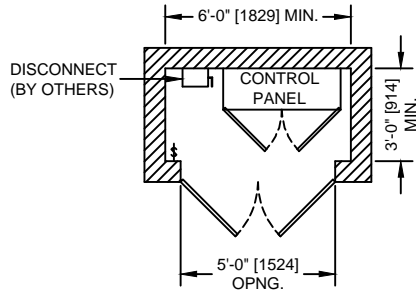
GENERAL NOTES:

- Dimensions shown are based on standard sizes and capacities for typical building installations and should only be used for preliminary planning. Custom sizes for existing hoistways are also possible. Contact H-W for additional information before proceeding with construction or for assistance with special conditions such as occupied space below pits.
- Dimensional data complies with the ASME A17.1 / CSA B44 Safety Code for Elevators and Escalators. State or local codes must be used if they differ from national codes.
- Single speed side opening (SSSO) doors are available with left or right hand configuration.
- Outside platform dimensions are based on a nominal 2" [51mm] side wall thickness and 7" [178mm] door return thickness for single speed doors or 9" [229mm] door return thickness for two-speed doors.
- Interior cab dimensions may vary depending on the interior finishes. The platform and hoistway sizes should be increased accordingly for extra thick cab finishes.
- Buffer service platforms (by others) are required when pit depth exceeds 8'-6" [2590mm].
- Overhead (OH) dimensions are based on an 8'-0" [2438mm] cab height with a 7'-0" [2134mm] door. Taller cab and door heights can be accommodated with increased overhead.
- Overhead (OH) and pit depth (P) dimensions may be effected by tall counterweight frames due to heavy cab enclosure weights.
- Clear overhead is defined as the lowest point below any obstruction such as a hoist beam or the roof structure.
- A hoist beam (by others) is required for installation (by others).
- Hoistway dimensions are based on after pit waterproofing, with no plumb tolerance, and no occupied space below pit.
- Counterbalance of 50% required.
- Required equipment includes rail locking device, manual brake release, and remote reset / remote trip governor.
- Extra high strength independent wire rope core (IWRC) hoist ropes may be required.
- See page 33 for control room specifications.
- Passenger or Passenger/Class A loading classification only. Class C type loadings are not permitted with the MRL application.

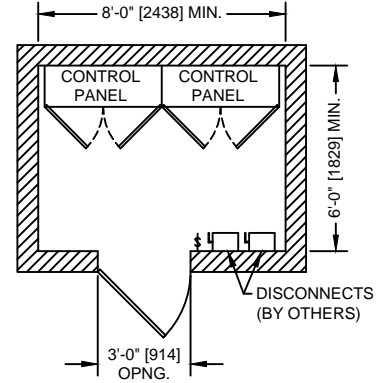




MRL DESIGN GUIDE  
Control Rooms



CONTROL ROOM - SIMPLEX



CONTROL ROOM - DUPLEX

CONTROL EQUIPMENT:  
GAL GALAXY CONTROLLER  
45-1/2" W. x 16"D. x 67" H. [1156 W. x 406 D. x 1702 H]

ENVIRONMENT:  
35° F to 110° F ambient  
12,000 ft altitude  
90% humidity

ROOM HEIGHT:  
7'-6" [2286] MIN. CEILING HEIGHT

ROOM LOCATION:  
The preferred location of the control room is adjacent to the hoistway. However, the control room may also be located remotely from the hoistway, or at any floor level as long as the wire-run distance from the machine to the controller does not exceed the maximum available length that can be provided by the encoder cable manufacturer. Contact H-W for specific information and distance restrictions.

**NOTE:**

The control room sizes shown above are based on the minimum space requirement for the G.A.L. Galaxy controller only. Additional equipment may be required depending on the specific job requirements and the control room would then need to be enlarged accordingly. Other control manufacturers may have different space requirements.



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