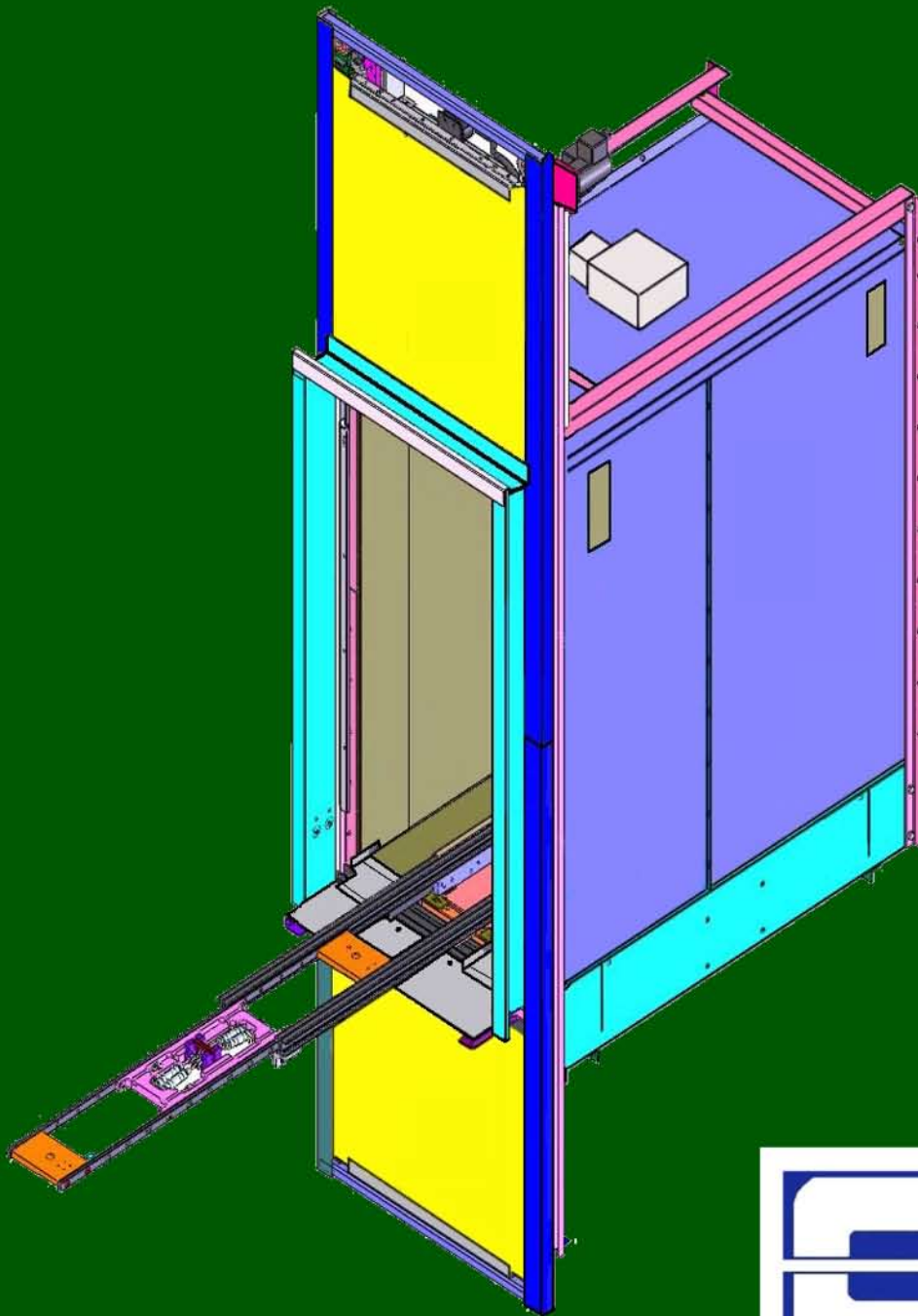


Cart-Matic

Automatic Material Distribution Systems



ONE COMPANY
So Many Options



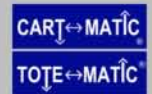
Freight Door Systems



Freight Car Enclosures



IUEC Installation



Material Handling
Systems



Service Parts



Service Parts



Service Parts

ENERGY.

Service Parts



Opening Quality Doors Around The World



Automatic Distribution System

Where You Want It, When You Want It!

For over 40 years, Courion has provided Health Care Institutions and Office Buildings with the Courion CART-MATIC® Cart System. The Courion CART-MATIC® Cart System offers a programmed floor-to-floor material distribution solution for low, medium, and high-rise applications that need to convey different types of materials efficiently throughout a building. Courion's CART-MATIC® Cart System maximizes your material payload and minimizes the personnel required for material transportation.

Customize Your System

With careful planning and layout, an effective material handling system can add value to your operation and facility. Courion recognizes that to reach the most effective material flow pattern, it must be tailored to the needs and design of the individual user. Courion engineers are available to consult with architects and facility administration to help them set and reach their material distribution objectives.

Courion's Ultimate Goal

Transport Your Material Where You Want It, When You Want It!



Automatic Dispatch

Automatic Return



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Features and Benefits

Maximize Pay Load Per Cycle

Courion's CART-MATIC® Cart System maximizes your delivered payload. Our lifts are rated at 1000 lbs. capacity with a typical payload in excess of 800 lbs. Typical carts allow for up to 75 square feet of load area.

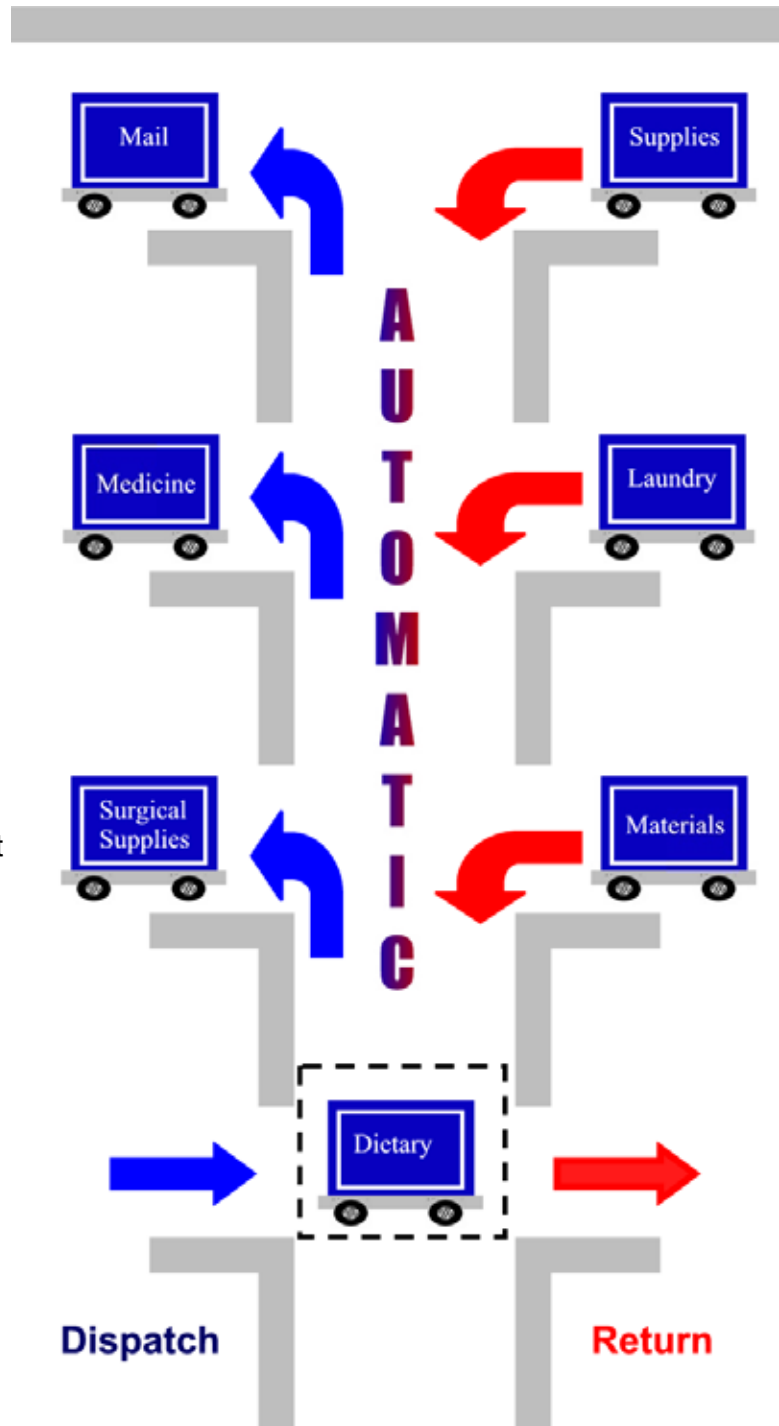
Courion's CART-MATIC® Cart System can transport a wide range of materials including - supplies, meals, mail, surgical instruments, and laundry. In other words, just about anything your operation requires.

Modernize

Expanding or retrofitting existing systems is both feasible and cost effective. Courion's CART-MATIC® Cart System is compatible with all other brands of material handling systems. If you have an existing cart lift or dumbwaiter system that no longer meets your requirements, Courion has a solution. Courion can modernize or replace your existing AMSCO/Guilbert Cargomaster*, Security, or Peelle Magicart** Lift Systems. Let Courion assist you in revitalizing your vertical material delivery system today.

*AMSCO/Cargomaster is a registered name of American Sterilizer Co.

**Magicart is a registered name of The Peelle Co.



Features and Benefits



The CART-MATIC Benefit

■ **Economy Through Automation:** How much expensive manpower is wasted waiting for the elevator, riding the elevator, and then visiting with the personnel at the Dispatch Floor? Let Courion's CART-MATIC Automatic Cart System SAVE YOU MONEY!



VS.



WBCE - Rule Calendar, July 2005

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
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■ **24/7 Performance:** Courion's CART-MATIC Cart System can be operated 24 hours per day, 7 days per week. Delivery Schedules are programmed to meet your needs without being restricted by your peak loading requirements on your passenger and service elevators. Key management personnel have total control of the material distribution system.

■ **Strong, Durable, and Dependable.** Courion's CART-MATIC Cart System is built to last. When routine maintenance is required, all parts are easily accessible and readily available.





Multiple Standard Features

Cart-Matic Transfer Unit

Courion's CART-MATIC® Transfer Unit is designed to load and eject carts consistently and automatically. After the entrance doors and car gate open, the CART-MATIC® Transfer Unit's telescoping assembly extends past the opening and mechanically couples to the underside of the cart. The cart is then automatically pulled into the car and transported to the designated Receiving Floor. Upon arrival, the cart is automatically ejected and the car is ready for its next load.

Talk about saving on manpower! Courion's CART-MATIC® Transfer Unit eliminates the need for an employee to manually transport a cart from the Service Floor to the Receiving Floor, **SAVING THE OWNER BOTH TIME AND MONEY.**

Car Enclosure

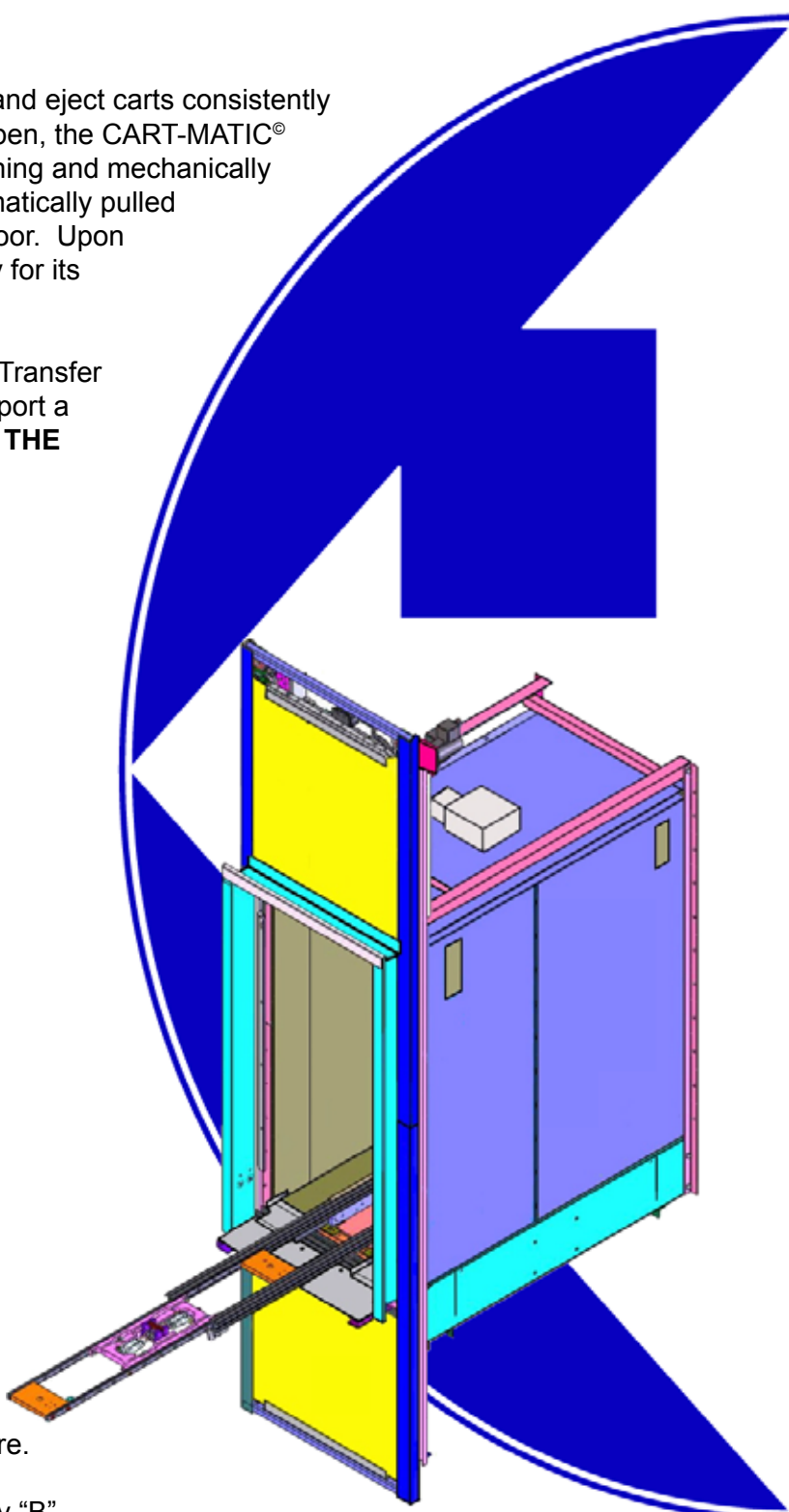
Courion's CART-MATIC® car enclosure consists of #16 gauge, #304 stainless steel, #4 finish, with a recessed light fixture. A structural steel reinforced platform is integral with the car enclosure.

All Courion CART-MATIC® car enclosures are fabricated to allow for easy clean-out. There are no unnecessary seams or pockets for dirt to hide. In addition, each car enclosure is factory prepared to receive Courion's CART-MATIC® entrance doors and car gate, cart guidance roller system, cart sensors, and Courion's CART-MATIC® Transfer Unit.

Entrances Door & Car Gate

Courion's CART-MATIC® hoistway entrance units are completely factory assembled and consist of bi-parting roomside stainless steel insulated doors, guides, and entrance frame. Sills on the Courion CART-MATIC® hoistway entrances have recessed cart caster dimples to receive carts. Door jambs are equipped with cart guidance roller assemblies to help guide the cart into the car enclosure.

Courion entrances bear a 1-1/2 hour Underwriters Laboratory "B" label and can be used with either drywall or masonry wall construction.



Multiple Standard Features



Cart Guidance Assemblies

Courion's Cart Guidance System starts with the cart caster dimples in the entrance sill plates, moves to the jamb roller guides, and ends with the cart roller assemblies on the side walls of the car enclosure. All are designed to coordinate with one another to insure the consistent and automatic loading and unloading of the material carts.

Door Protection

All Courion CART-MATIC® hoistway entrances are protected by the Courion CARE Automatic Reversing Edge which is attached between the hoistway entrance doors and car gate. The Courion CARE Automatic Reversing Edge is a non-contact light curtain that fills the opening with infra-red light beams. The CARE is an effective solution for reducing damage caused by the movement of the cart.

Courion's CARE Unit is easy to install and can be added to almost any existing automatic or manual cart system.

CART-MATIC Controller

Courion's CART-MATIC® Door and Transfer Unit Control is built around an industry proven programmable PLC. Each Courion Controller is customized to your facility's unique operational procedures. Courion's controller provides the "smarts" to fully operate the doors, transfer unit, and other operations needed for proper performance of the Courion CART-MATIC® Cart System.

Audio-Visual Signal System

OPTIONAL - Available on all CART-MATIC® Cart Systems.

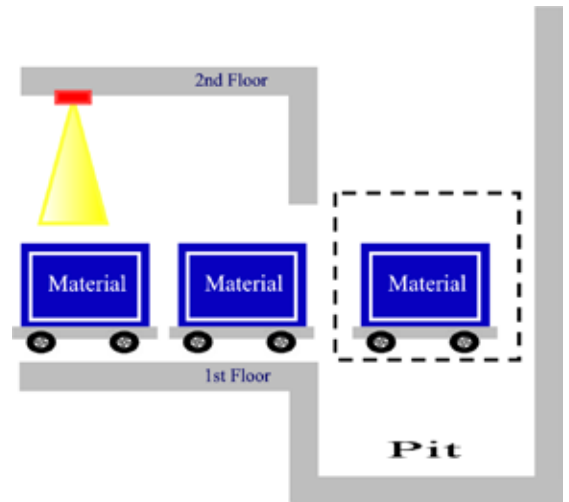
With the AV Signal System installed, a buzzer and light are automatically activated at the Receiving Floor, providing advanced notice of a dispatched cart. The receiving personnel then presses a button at the Receiving Floor acknowledging the dispatch signal. If the dispatch signal is not acknowledged by the Receiving Floor, the cart dispatcher may continue to press the Dispatch Button in order to gain the attention of the personnel at the Receiving Floor. This system is very helpful in eliminating Lobby-Full conditions and when cart contents need to be under constant supervision.



Multiple Standard Features

Lobby Full Sensor

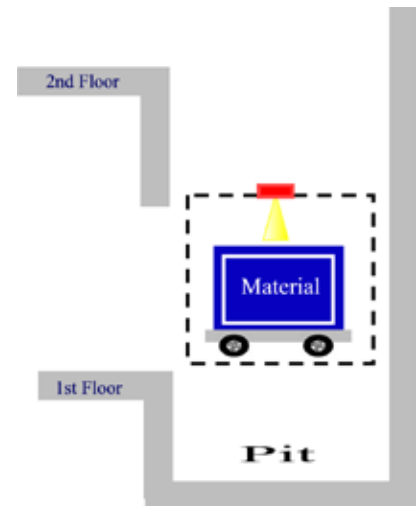
Lobby Full Sensors prevent cart gridlock. Courion's CART-MATIC® Cart System utilizes information from the Lobby Full Sensors to determine whether there is adequate space at the destination floor for the dispatched cart. If the Lobby Full Sensors indicate sufficient room, the dispatched cart is automatically ejected. On the other hand, if the Lobby Full Sensors indicate that the destination floor is full, a Lobby Full warning is sounded and the cart will not be ejected until the condition is remedied.



Lobby Full Sensor

Cart ON Sensor

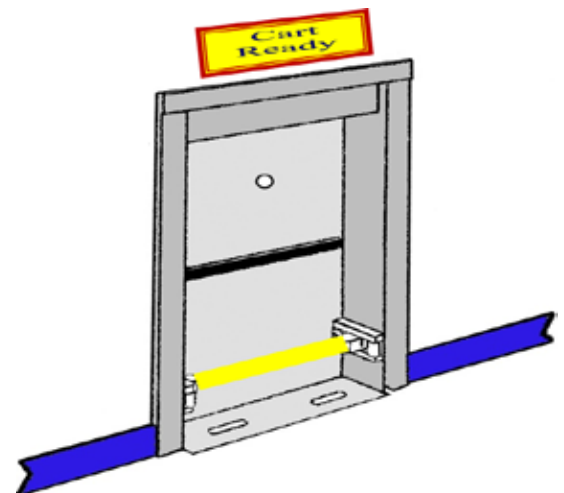
Courion's Cart ON Sensors ensure that the CART-MATIC® Cart System runs efficiently and with the maximum payload. When a dispatch or return call is registered, the Cart ON Sensors will prevent the lift from leaving the designated floor until the cart is on board and ready for travel.



Cart ON Sensor

Cart READY Sensor

Courion's Cart READY Sensors perform two important tasks. First, they reduce cart loading problems by indicating to the users that the cart has been properly positioned and is "READY" for dispatch or return. Second, the Cart READY sensors may be set up to act as the automatic call button for the CART-MATIC® Cart System.



Cart READY Sensor

Cycle of Operation - Clean Lift

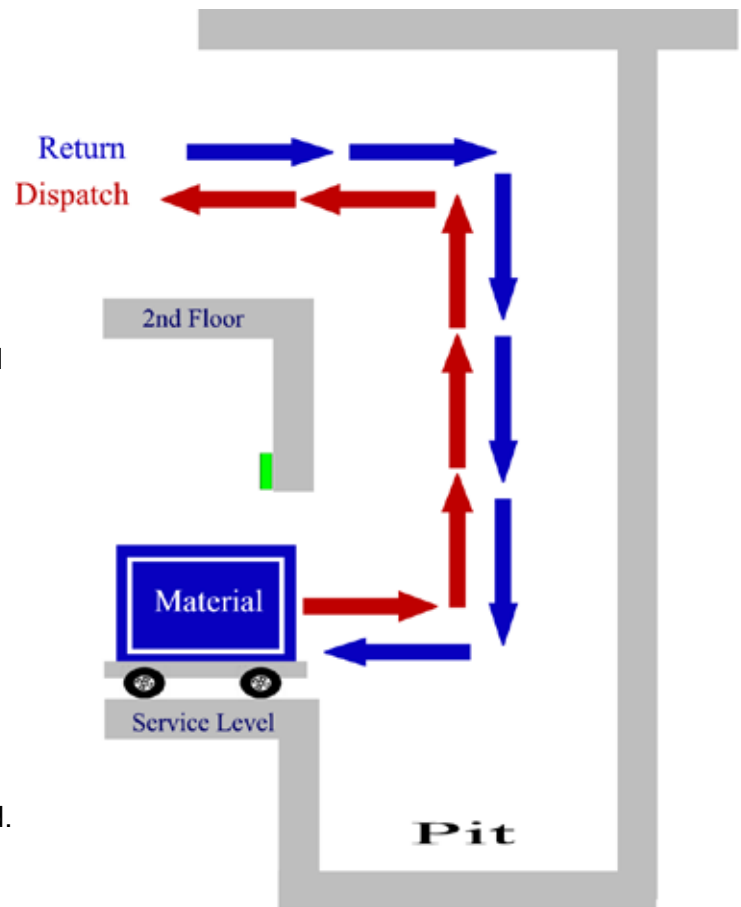
(typical)



Automatic Load & Unload

Automatic Load & Unload (typical)

1. When a cart is in the proper position at the Service Level, a light above the door entrance will illuminate the "Cart READY" light and automatically enter a call for the lift.
2. Upon arrival of the car a flashing light and audible signal will sound and the hoistway doors and car gate will automatically open simultaneously.
3. The Cart-Matic® unit will automatically extend from the car, engage the cart, and pull the cart into the car.
4. When the cart is in the proper position inside the Car as determined by the Cart ON Sensor, a flashing light and audible signal will sound prior to and during the automatic sequential closing of hoistway doors and car gate.
5. Upon arrival of the car at the dispatch level a flashing light and audible signal will sound and the hoistway doors and car gate will automatically open simultaneously.
6. The Cart-Matic® unit will automatically extend from the car and unloads the cart.
6. Lobby Full Sensors are used to detect the presence of more than two (2) additional carts in the Lobby. If the Lobby is full, an audible and light warning will be activated. The hoistway doors and car gate will remain open and the Cart-Matic® unit will not extend until the Lobby Full condition is remedied.
7. After ejecting the cart, a flashing light and audible signal will sound as the Cart-Matic® unit retracts into the car and during the automatic sequential closing of the hoistway doors and car gate.
8. The arrival lantern remains lighted until the car leaves the dispatch floor.
9. The car automatically returns to the Service Level, ready to begin the next dispatch cycle. The next dispatch may be registered as soon as (but not before) the loaded car leaves the Service Level.



"Clean" Cart Lift
Dispatch & Return Programs



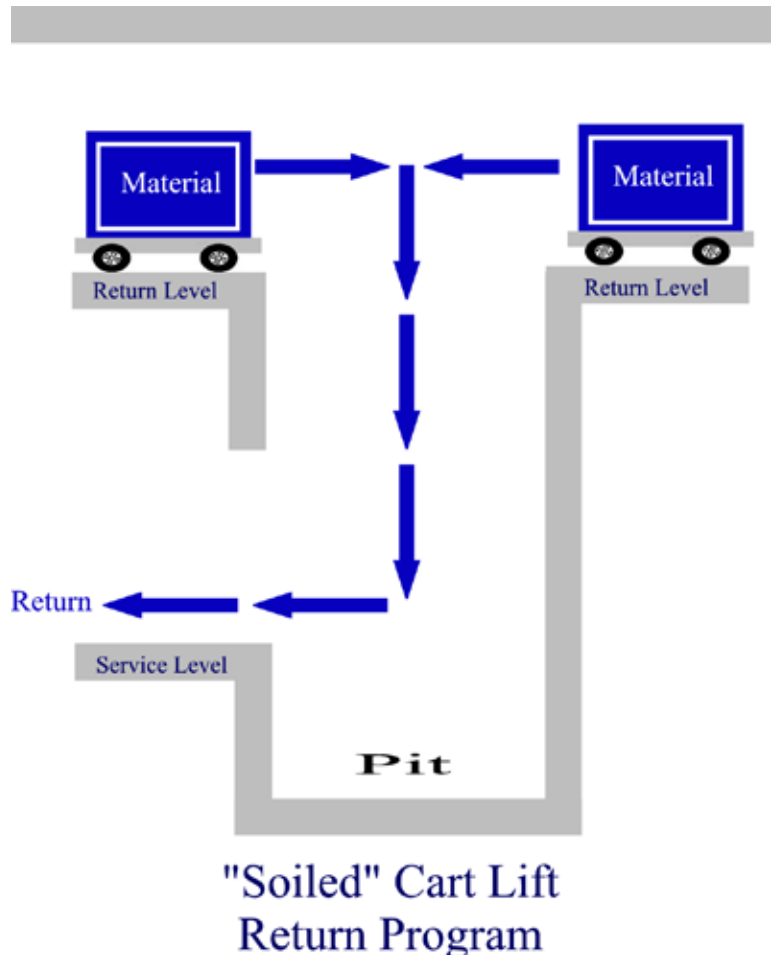
Cycle of Operation - Soiled Lift

(typical)

Automatic Return

Automatic Return (typical)

1. When a cart is in the proper position at a Level other than the Service Level, a light above the door entrance will illuminate the "Cart READY" light and automatically enter a call for the lift.
2. Upon arrival of the car a flashing light and audible signal will sound and the hoistway doors and car gate will automatically open simultaneously.
3. The Cart-Matic® unit will automatically extend from the car, engage the cart, and pull the cart into the car.
4. When the cart is in the proper position inside the Car as determined by the Cart ON Sensor, a flashing light and audible signal will sound prior to and during the automatic sequential closing of hoistway doors and car gate.
5. Upon arrival of the car at the Service Level a flashing light and audible signal will sound and the hoistway doors and car gate will automatically open simultaneously.
6. The Cart-Matic® unit will automatically extend from the car and unload the cart.
6. Lobby Full Sensors are used to detect the presence of more than two (2) additional carts in the Lobby. If the Lobby is full, an audible and light warning will be activated. The hoistway doors and car gate will remain open and the Cart-Matic® unit will not extend until the Lobby Full condition is remedied.
7. After ejecting the cart, a flashing light and audible signal will sound as the Cart-Matic® unit retracts into the car and during the automatic sequential closing of the hoistway doors and car gate.
8. The arrival lantern remains lighted until the car leaves the dispatch floor.
9. The car automatically returns to the Return Level ready to begin the next Return cycle. The next return may be registered as soon as (but not before) the loaded car leaves the Return Level.



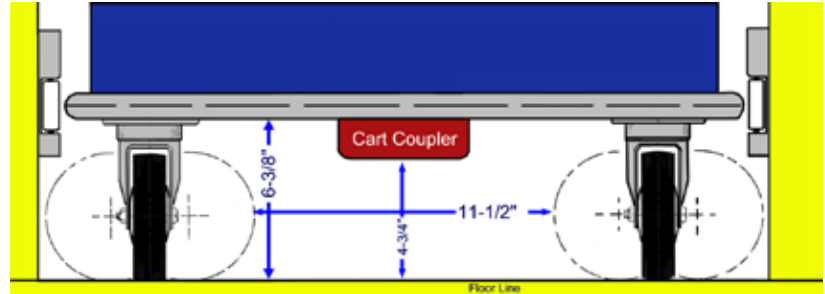
Cart Requirements



Cart Coordination

Cart coordination consists of interfacing an Owner's new or existing carts with Courion's CART-MATIC® Cart System. A COURION CART COUPLER is **REQUIRED** on each new or existing cart. The COURION CART COUPLER is attached beneath the cart for coupling with the CART-MATIC transfer device during the load and unload cycle.

- The distance from floor to underside of Cart is to be no less than 6-3/8" (16mm).
- The distance from floor to underside of the CART COUPLER is to be 4-3/4" (12mm).

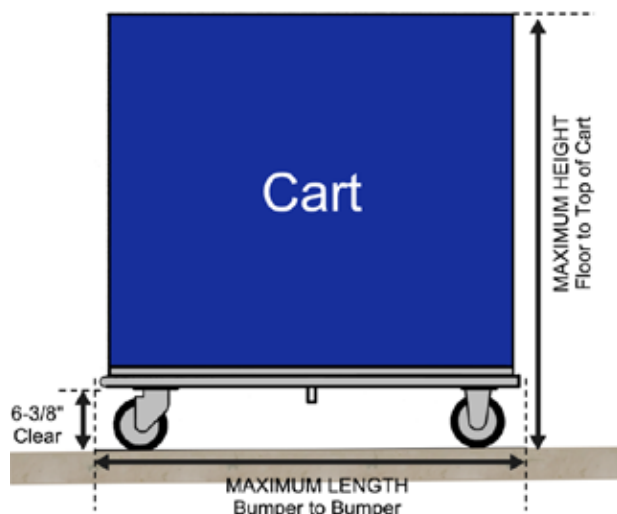


Cart Requirements

- Carts for the CART-MATIC® Cart System must be furnished with straight, continuous, parallel bumpers along each side.
- The cart body or items attached to the cart body must be a minimum of 1/2" (13mm) inboard from the Cart Bumpers.
- The cart casters must be 5" or 6" in diameter. Two (2) of the casters should swivel and two (2) should be rigid.

Cart Dimensions

Although sizes of carts and containers may vary according to material handling requirements, Courion recommends the following minimum/maximum cart sizes for the CART-MATIC® Cart System. Larger or smaller carts can be accommodated. Please contact Courion for additional information.



Cart	Width	Length	Height	Floor to Base	Floor to Coupler
MC 49	28"	51"	46"	6-3/8"	4-3/4"
	71cm	130cm	117cm	16cm	12cm
MC 75	32"	68"	70"	6-3/8"	4-3/4"
	81cm	173cm	178cm	16cm	12cm

Please note there are three (3) dimensions that are marked "MAXIMUM" that are to be interpreted as follows: **MAXIMUM WIDTH:** This shows the maximum bumper width of any cart to be used with the system. After a bumper width is established ALL BUMPER WIDTHS ON THE SYSTEM MUST BE THE SAME. **MAXIMUM LENGTH:** This shows the maximum length cart which can be placed inside the car. Carts may vary in length from a minimum 38" (97mm) long to the maximum dimension. **MAXIMUM HEIGHT:** This shows the maximum height which can be placed inside the car. Carts may vary in height from a simple cart base of 8" (20mm) to the maximum.



Fixture Requirements

Suggested Fixtures

CENTRAL CONTROL STATION AT SERVICE LEVEL: At the Service Level there shall be a central control station for each car containing the following:

Push Buttons

- One (1) with register light marked with floor numbers for each dispatch/return floor.
- One (1) marked "Cancel" (non-illuminated) for canceling a registered dispatch.
- One (1) marked "Reset" (non-illuminated) for resetting automatic transfer equipment and doors.
- One (1) marked "Door Open" (non-illuminated).
- One (1) marked "Door Closed" (non-illuminated)

Key Operated Switches

- One (1) titled "CART-MATIC" and marked "Auto / Manual" (two position key).
- One (1) titled "Program" and marked "Dispatch / Return" (two position key).
- One (1) titled "Maintenance" and marked "ON / OFF" (two position key).
This switch, when in the "ON" position, activates "Door Open" and "Door Close" push buttons at the Service Level and shuts down the automatic operation while the car is being serviced.
- One (1) titled "Access" and marked "Up / Off / Down" (3 position key)



Indicator Lamps

- One (1) marked "Dispatch" to indicate Program Switch is in Dispatch mode and to remain lit after Program Switch has been set from Dispatch to Return, until all previous dispatch calls have been completed.
- One (1) marked "Return" to indicate Program Switch is in Return mode and to remain lit after Program Switch has been set from Return to Dispatch, until all previously registered return calls have been answered.
- One (1) marked "Cart-On" to indicate presence of cart on car.
- One (1) marked "Non-operating".
- One (1) marked "Lobby Full" for each floor serviced by CART-MATIC System.

RETURN STATION FIXTURES: At each remaining opening there shall be a station containing One (1) push button with register light marked "Call"; one (1) indicator lamp marked "Manual" to indicate Cart-Matic Switch is in Manual mode, one (1) indicator lamp marked "Return" to indicate Program Switch is in the Return mode; one (1) indicator lamp marked "Lobby Full"; and one (1) three position key operated switch titled "Access" and marked "Up / Off / Down".

IN-CAR FIXTURES: For each open end of the Car Enclosure there shall be an In-Car Push Button Station consisting of the following: One (1) push/pull switch marked "Emergency Stop"; One (1) push button marked "Alarm"; and One (1) two position key operated switch titled "Access Enable" and marked "On / Off". If the car has a rear opening, a second fixture shall be furnished in close proximity to the rear opening.

TOP OF CAR INSPECTION FIXTURE: Each car shall have a single operating fixture located on top of the car consisting of One (1) switch marked "Stop" and "Run"; One (1) two-position key operated switch titled "Operation" and marked "Normal / Top of Car"; One (1) push button with registered light marked "Up"; and One (1) push button with registered light marked "Down".

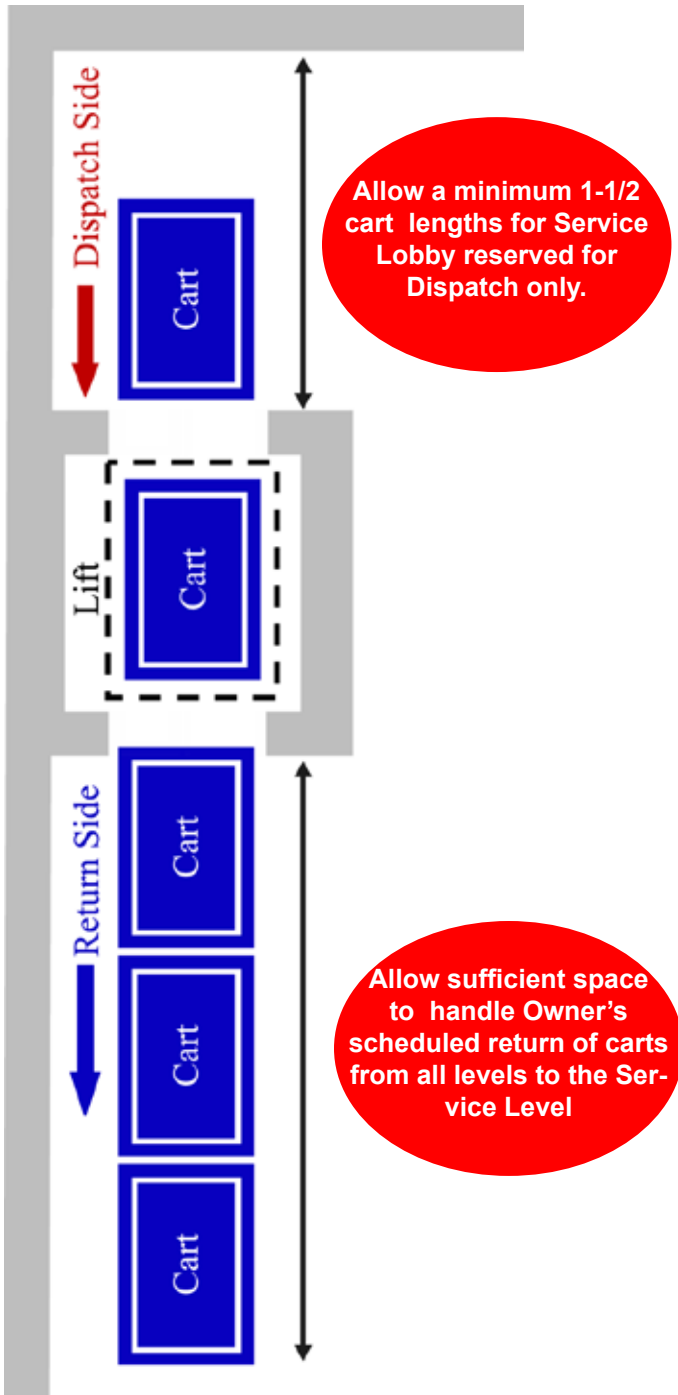
Dimensional Requirements

Lobby Space



Lobby Space Requirements

Service Level
Plan View

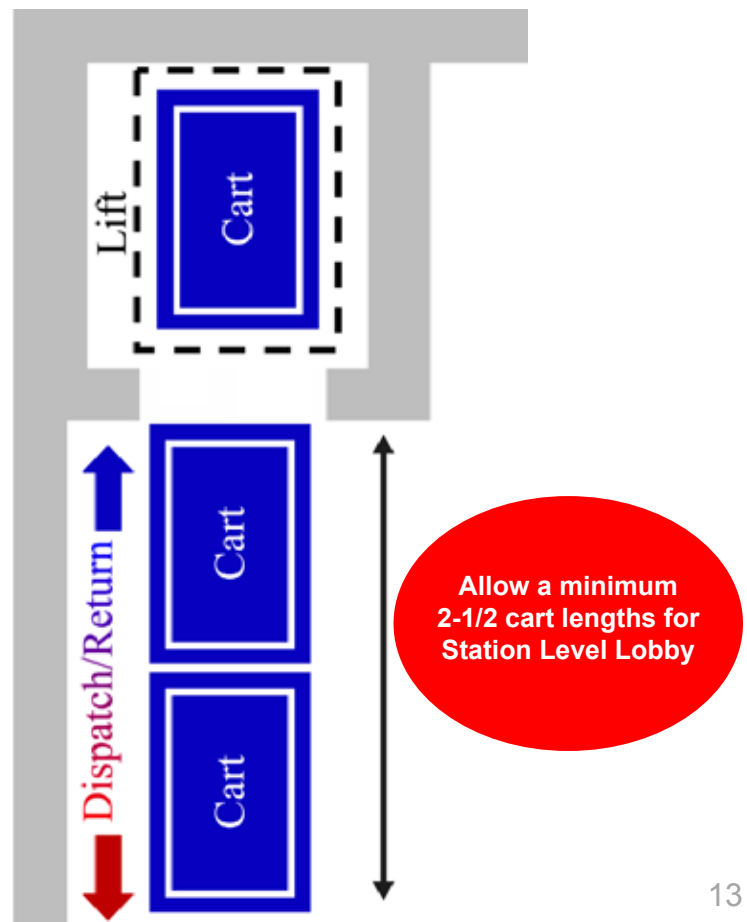


IDEAL PLAN FOR MAXIMUM EFFICIENCY ON LOAD AND UNLOAD CART LOBBY STATIONS

The preferred CART-MATIC architectural layout provides ample space on both the Dispatch and Return sides of the Service Level. Generous space on the Return side is particularly desirable since a large number of carts are often returned simultaneously.

The ideal arrangement is an adequate open area restricted to personnel using the CART-MATIC Cart System.

Typical Dispatch/Return Station Level Plan
Plan View



ASME A17.1a-2005 requires that where a transfer of load is in a nonrestricted area, there shall be a clearance of not less than 48" (1 220mm) between the end of the transferred load and any fixed obstruction in line with the end of the load. ASME A17.1a-2005 7.7.2



Dimensional Requirements

Hoistway Door, Car and Shaft Standards

The following tables contain the minimum dimensional requirements for Courion's CART-MATIC Cart System. If you are in the planning stages, please use these dimensions for the layout of your CART-MATIC Cart System. If you are modernizing an existing hoistway, please contact one of Courion's Sales Engineers and we will be glad to help you reach your objectives.

Table of Standards - Hydraulic Lifts

Model #	Capacity	Hoistway Door Frame Dimensions		Inside Car Dimensions			Inside Shaft Dimensions		Pit	Over-head
	lbs.	Width	Height	Width	Depth	Height	Width	Depth	Depth	Height
CM 49	1,000	32"	48"	32"	55"	48"	56"	65"	60"	12'-6"
		81cm	122cm	81cm	140cm	122cm	142cm	165cm	152cm	381cm
CM 75	1,000	36"	72"	36"	72"	72"	60"	82"	60"	12'-6"
		91cm	183cm	91cm	183cm	183cm	152cm	208cm	152cm	381cm
These dimensions are based on the minimum and maximum cart dimensions provided on Page 11 of this brochure. If your cart dimensions are different than those on Page 11, please contact a Courion Sales Engineer for additional information.										

The above Shaft, Pit, and Overhead dimensions are for a direct or holeless jack hydraulic lift. Depending on the lift manufacturer selected, the shaft, pit, and overhead dimensions may vary slightly from those noted above.

Table of Standards - Traction Lifts

Model #	Capacity	Hoistway Door Frame Dimensions		Inside Car Dimensions			Inside Shaft Dimensions		Pit	Over-head
	lbs.	Width	Height	Width	Depth	Height	Width	Depth	Depth	Height
MC 49	1,000	32"	48"	32"	55"	48"	58"	65"	60"	14'-4"
		81cm	122cm	81cm	140cm	122cm	147cm	165cm	152cm	437cm
MC 75	1,000	36"	72"	36"	72"	72"	62"	82"	60"	17'-4"
		91cm	183cm	91cm	183cm	183cm	157cm	208cm	152cm	528cm
These dimensions are based on the minimum and maximum cart dimensions provided on Page 11 of this brochure. If your cart dimensions are different than those on Page 11, please contact a Courion Sales Engineer for additional information.										

The above Shaft, Pit, and Overhead dimensions are for a traction lift. Depending on the lift manufacturer selected, the shaft, pit, and overhead dimensions may vary slightly from those noted above.

Dimensional Requirements

Traction Lifts

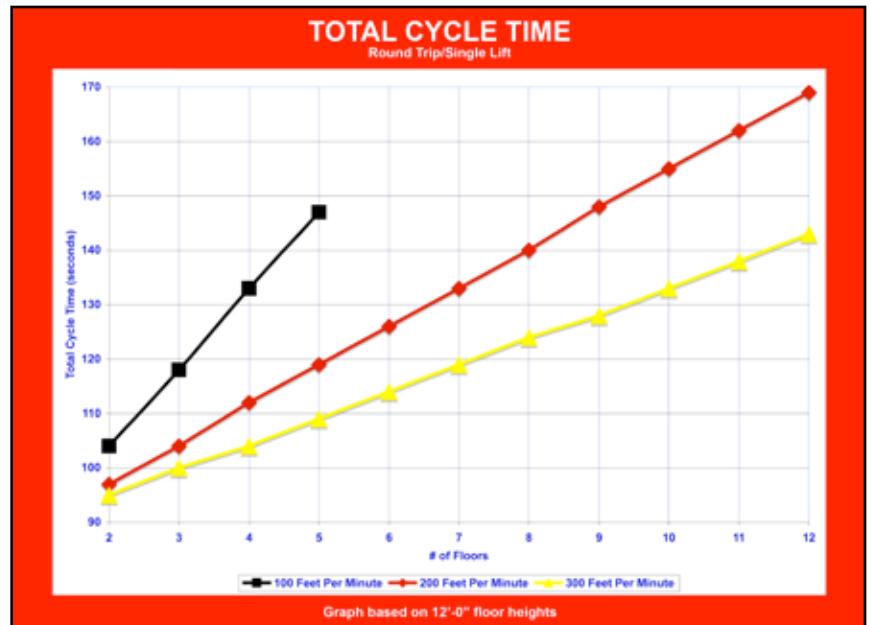


Vertical Transportation Speed

The selection of vertical transportation equipment is a function of many variables, including the physical space available for the CART-MATIC Cart System, the nature of material to be moved by the CART-MATIC Cart System, the number of landings to be served, and the total travel required between floor levels.

The tables below provide the suggested Feet Per Minute and the total cycle time for a round trip of the CART-MATIC lift assuming a 12'-0" floor height. The efficient movement of materials must be tailored to the needs and design of the individual owner. Courion's sales engineers are available to consult with architects and owners to help them set and reach their objectives.

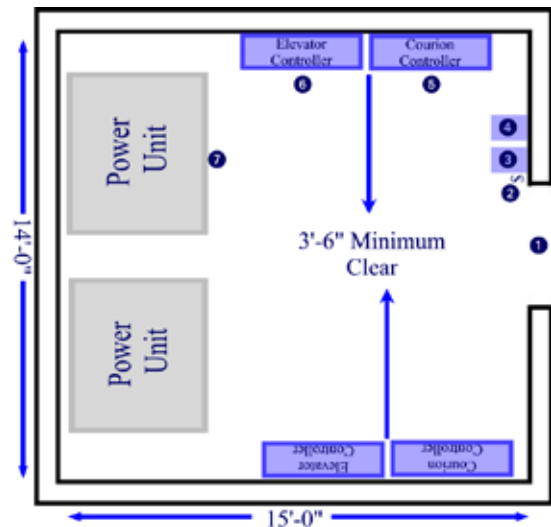
Suggested Vertical Transportation Speed	
# of Landings	Minimum Feet Per Minute (FPM)
1	50
2	50
3	100
4	100
5	200
6	200
7	200
8	200
9	200
10	200
11	300
12	300



Machine Room Dimensions

Machine Room dimensions vary based on the size and type of building. Courion suggests that a machine room for a CART-MATIC Cart System provide the minimum space: **One Car** = 11'-0" x 12'-0" or **Two Cars** = 15'-0" x 14'-0".

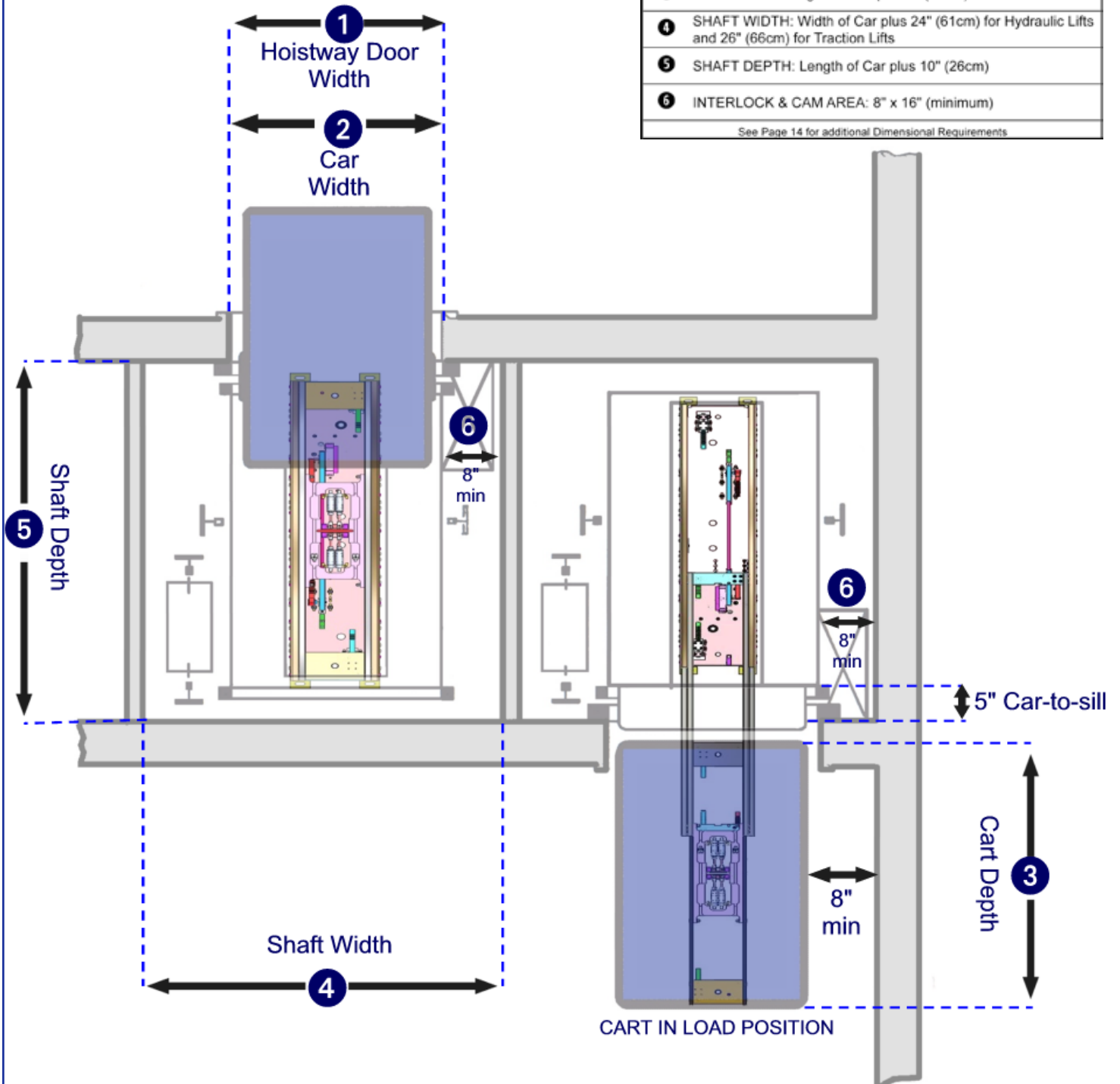
- ① - 4'-0" x 6'-8" Door self closing and locking
- ② - Light switch & conventional outlet
- ③ - Disconnect & Fusing
- ④ - 120 VAC Light supply - dedicated circuit
- ⑤ - Courion Door & CART-MATIC Controller
- ⑥ - Elevator Controller
- ⑦ - Hydraulic or Traction Power Unit



Two Car Machine Room

Plan View

Minimum Space Requirements	
❶	HOISTWAY DOOR WIDTH: Width of Cart plus 4" (10cm)
❷	CAR WIDTH: Width of Cart plus 4" (10cm)
❸	CAR DEPTH: Length of Cart plus 4" (10cm)
❹	SHAFT WIDTH: Width of Car plus 24" (61cm) for Hydraulic Lifts and 26" (66cm) for Traction Lifts
❺	SHAFT DEPTH: Length of Car plus 10" (26cm)
❻	INTERLOCK & CAM AREA: 8" x 16" (minimum)
See Page 14 for additional Dimensional Requirements	

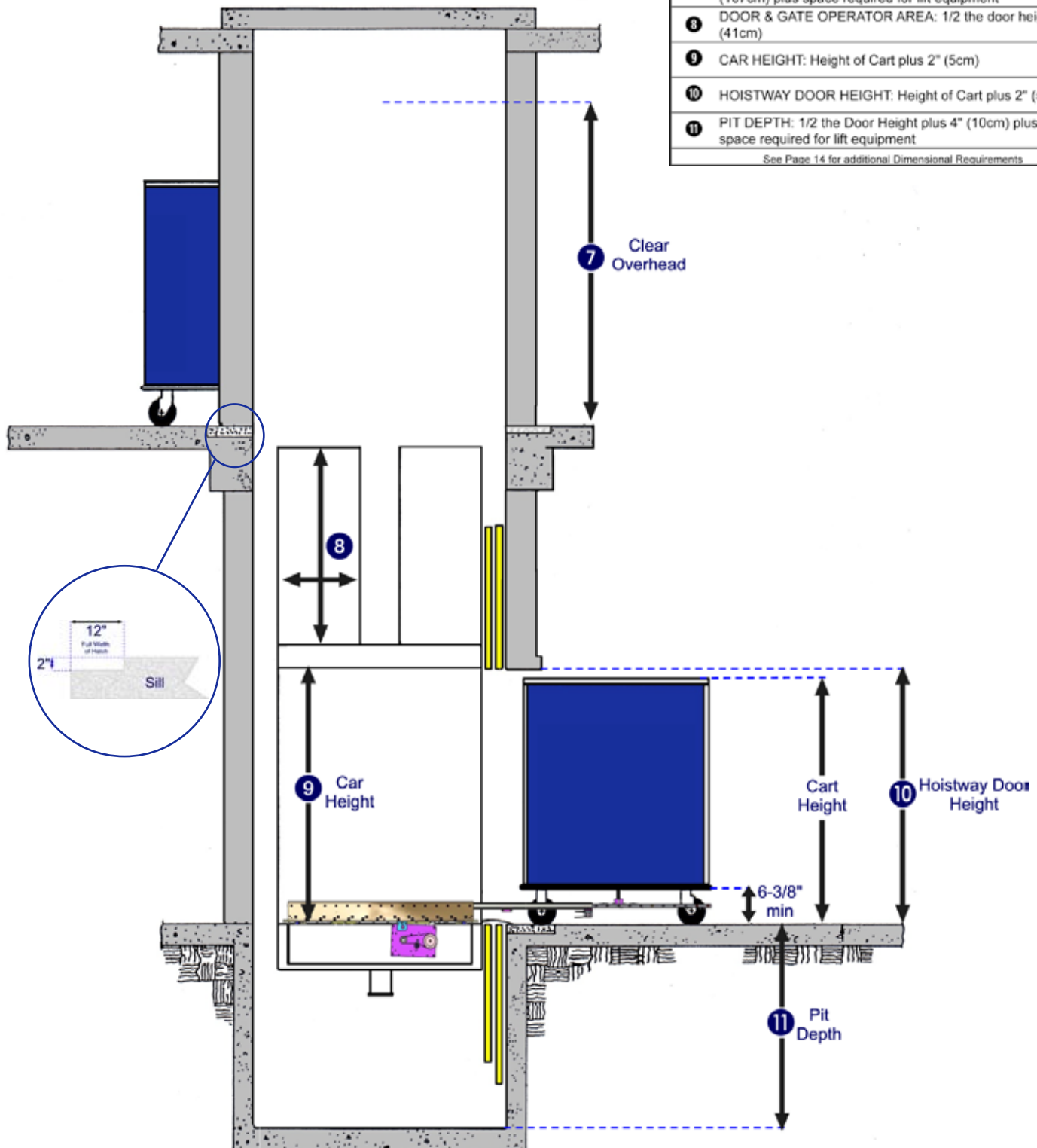


Section View



Section View

Minimum Space Requirements	
7	CLEAR OVERHEAD: 1-1/2 times the door height plus 3'-6" (107cm) plus space required for lift equipment
8	DOOR & GATE OPERATOR AREA: 1/2 the door height plus 16" (41cm)
9	CAR HEIGHT: Height of Cart plus 2" (5cm)
10	HOISTWAY DOOR HEIGHT: Height of Cart plus 2" (5cm)
11	PIT DEPTH: 1/2 the Door Height plus 4" (10cm) plus additional space required for lift equipment
See Page 14 for additional Dimensional Requirements	



Specifications

COURION CART-MATIC Cart System Specifications

These Specifications cover the furnishing and installation of Courion's standard CART-MATIC Cart System equipment. A complete set of Material Lift with Transfer Device Specifications can be obtained from Courion upon request.

PRODUCTS

Manufacturer

Courion shall provide the Car Enclosure, Car Gate, Hoistway Doors, Door Operators, CART-MATIC Transfer Device, and Door & Transfer Device Controller

Product Type

- A. Model shall be the Courion CART-MATIC Cart Transfer System
- B. Overall lift capacity shall be 1,000 lbs and the CART-MATIC Cart Transfer Device shall be a maximum of 500 lbs.
- C. CART-MATIC Cart System to serve _____ stops and _____ openings located on [] front, [] rear of the hoistway. The travel distance shall be _____ feet. Power supply shall be _____ volts, 3-phase, _____ Hz. Minimum travel speed shall be _____ F.P.M.
- D. All equipment shall be manufactured in accordance with the latest edition of the ASME A17.1 code for dumbwaiters and material lifts.

Fabrication

- A. **Car Enclosure:** Car dimensions shall be _____ wide x _____ deep x _____ high, clear inside, constructed of 16 gauge, Type 304, #4 satin finished stainless steel with integral steel platform and recessed lights. The steel platform shall be reinforced for cart wheel positions, and arranged to receive and support a CART-MATIC Transfer Device. Open areas in the floor shall be covered with solid flooring, and openings in such material shall reject a ball 2" (50mm) in diameter. Car Enclosure shall be equipped with pivoting bridges to span the distance from car to hoistway sill.
- B. **Car Gate:** Car shall be equipped with motorized, vertical slide bi-parting car gates constructed of 16 gauge, Type 304, #4 satin finished stainless steel. Gates shall be provided with a reversing edge on the bottom of the upper panel.
- C. **Hoistway Doors:** Hoistway doors shall be power operated vertical slide bi-parting doors measuring _____ wide x _____ high. The hoistway doors shall guard the full height and width of the opening. The combination hoistway door and frame units shall be construct of 16 gauge, Type 304, #4 satin finished stainless steel on the room side and 16 gauge primed mild steel on the

hoistway side and shall include stainless steel sills designed to accommodate the capacity indicated for floor loading. Each hoistway door shall bear the Underwriters 1-1/2 hour "B" label and shall be rated for application in (a) masonry shaft, or (b) metal stud drywall shaft. Hoistway doors to be shipped complete with approved true interlocks to work in conjunction with motor operated retiring cam. Sills to have recess to receive cart wheels.

- D. **CART-MATIC Transfer Device:** Each lift shall have one (1) plug-in, stainless steel, CART-MATIC Transfer Unit capable of loading and unloading carts at each required opening. The CART-MATIC Transfer Unit shall be designed to be fully automatic and to engage a service cart as specified, located in front of the hoistway doors. Carts may be manually unloaded from the car by means of a foot lever located at the front of the CART-MATIC Transfer Unit. The CART-MATIC Transfer Unit shall be easily removed from the car enclosure. The CART-MATIC Transfer unit shall be designed that the kinetic energy of the load during discharge shall not exceed 30 ft-lbf (40 J) and the speed shall not exceed 1.5 ft/s (0.5m/s). The CART-MATIC Transfer Unit shall stop the load at the completion of a discharge operation.
- E. **Guidance System:** Door jambs and car enclosure shall be equipped with CART-MATIC cart roller guidance assemblies. These cart roller guidance assemblies shall be designed to insure the proper guidance of the carts during the pick-up and discharge operation. The jamb roller guidance assemblies shall contain a cart sensing device capable of detecting a properly positioned cart for automatic loading. The cart sensing device shall activate a "Cart Ready" light above the entrance once a cart has been correctly positioned for pick-up. Cart sensing devices shall not be mounted in the sill.
- F. **Door and CART-MATIC Transfer Device Controller:** CART-MATIC Door and Transfer Unit Controller to provide selective automatic operations of the CART-MATIC Cart System equipment, and to be interconnected to lift program controller. The lift program controller shall be designed to provide the necessary control signals to initiate, as required, door opening and door closing cycles, CART-MATIC discharge and load cycles, as well as retiring of the cam to lock and unlock the hoistway doors, and additional necessary interfacing contacts to secure specific operation of the CART-MATIC Cart System.
- G. **Operational Control:** Central Station Control from Service Level [] with automatic loading and unloading at all openings; automatic return to Service Level; automatic or manual operation of transfer unit; "Cart Ready" automatic call; "Dispatch and Return" program. Car # [] "Dispatch and Return. Car # [] Dispatch only. Car # [] Return only.
- H. **Operating Fixtures:** Operating fixtures shall be as follows:

Central Control Station at Service Level: For each car at the Service Level there shall be a Central Control Station consisting of the following - PUSH BUTTONS: One (1) with register light marked with floor numbers for each dispatch/return floor; One (1) marked "Cancel" (non-illuminated) for canceling a registered dispatch; One (1) marked "Reset" (non-illuminated) for resetting

Specifications



automatic transfer equipment and doors; One (1) marked "Door Open" (non-illuminated); and One (1) marked "Door Closed".

KEY OPERATED SWITCHES: One (1) two position key titled "Cart-Matic" and marked "Auto / Manual"; One (1) two position key titled "Program" and marked "Dispatch / Return"; One (1) two position key titled "Maintenance" and marked "ON / OFF" that activates the "Door Open" and "Door Closed" push buttons at the Service Level and shuts down automatic operation when turned to "On"; and One (1) 3 position key titled "Access" and marked "Up / Off / Down". **INDICATOR LAMPS:** One (1) marked "Dispatch" to indicate Program Key Switch in Dispatch mode; One (1) marked "Return" to indicate Program Key Switch in Return mode; One (1) marked "Cart-On" to indicate presence of cart on car; One (1) marked "Non-Operating"; and One (1) marked "Lobby Full" for each floor serviced by CART-MATIC System.

Return Station: For each car at the Return Levels there shall be a Return Station consisting of the following: One (1) push button with register light marked "CALL"; One (1) indicator light marked "MANUAL" to indicate that the CART-MATIC Key Switch is in manual mode; One (1) indicator light marked "RETURN" to indicate Program Key Switch is in the Return mode; One (1) indicator light marked "LOBBY FULL"; and One (1) three position key switch titled "ACCESS" and marked "UP / OFF / DOWN".

In-Car Station: For each open end of the Car Enclosure there shall be an In-Car Push Button Station consisting of the following: One (1) push/pull switch marked "EMERGENCY STOP"; One (1) push button marked "ALARM"; and One (1) two position key switch titled "ACCESS ENABLE" and marked "ON / OFF". The In-Car Station shall stop the operation of the lift and stop the door operation and transfer device operation.

Top of Car Station: For each car enclosure there shall be a Top of Car Station consisting of the following: One (1) two position key switch marked "STOP" & "RUN"; One (1) selector switch marked "OPERATE" - "INSPECT"; One (1) push button marked "SAFE"; One (1) push button marked "UP"; and One (1) Push button marked "DOWN".

I. **Signals** shall be as follows:

A combination car arrival light and chime shall be located over hoistway entrances at []

A Cart Ready indicator shall be located over hoistway entrances at [].

Each car shall have a flashing light and audible signal which will automatically sound on the start of the door opening prior to transfer, and for five (5) seconds before the start of the door closing.

J. **Carts.** Carts shall be ___ wide, by ___ long bumper to bumper dimensions, and ___ high. Cart configuration drawings to be reviewed and approved by Courion before carts are released for fabrication. Four (4) Carts to be at job site before installation of CART-MATIC Cart System is completed. Each cart shall have a cart coupler that meets the requirements of the CART-MATIC

Transfer Unit for pick-up and discharge.

- K. **Lobby Full Sensors:** There shall be ultrasonic cart presence detectors, or other suitable devices, located over [] cart position at each hoistway opening at Service Level and Return Levels []. Such cart presence detectors shall be furnished and installed to sense a "Lobby Full" condition and shall prevent the dispatching of a cart to an upper landing or prevent the return of a cart to the Service Level if the detector is actuated by a cart indicating a full lobby. These detectors shall be capable of continuous detection of slow moving or stopped objects and shall not require installation in or on the station floor. They shall have an adjustable range and sensitivity control so they can be set to detect both an empty or a full cart in a specific position while ignoring background objects and carts in adjacent positions.
- L. **Cart-On Sensor:** There shall be an infra-red detector or other suitable sensor located in the Car Enclosure canopy. Such sensor shall detect a cart loaded into the Car Enclosure. In floor sensing devices are not acceptable.
- M. **Re-opening Device:** Car Gate shall be provided with an infra-red light curtain re-opening device which will cause both the car gate panels and adjacent hoistway door panels to re-open in the event that either car gate or hoistway door panel is obstructed while closing.
- N. **Manuals.** Provide required instruction manuals, diagrams and parts lists necessary for operation and maintenance of CART-MATIC Cart System. Continued maintenance furnished by the elevator contractor as indicated in elevator section of Job Specifications.

2.04 Performance

- A. Rated load 1,000 lbs capacity.
- B. Minimum travel speed shall be ___ F.P.M.
- C. Leveling Accuracy: Car floor shall be no more than 1/4" above or below the level of the hoistway door sill.



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