Animal Care | Systems

Handbook for Architects, Engineers, and Building Managers
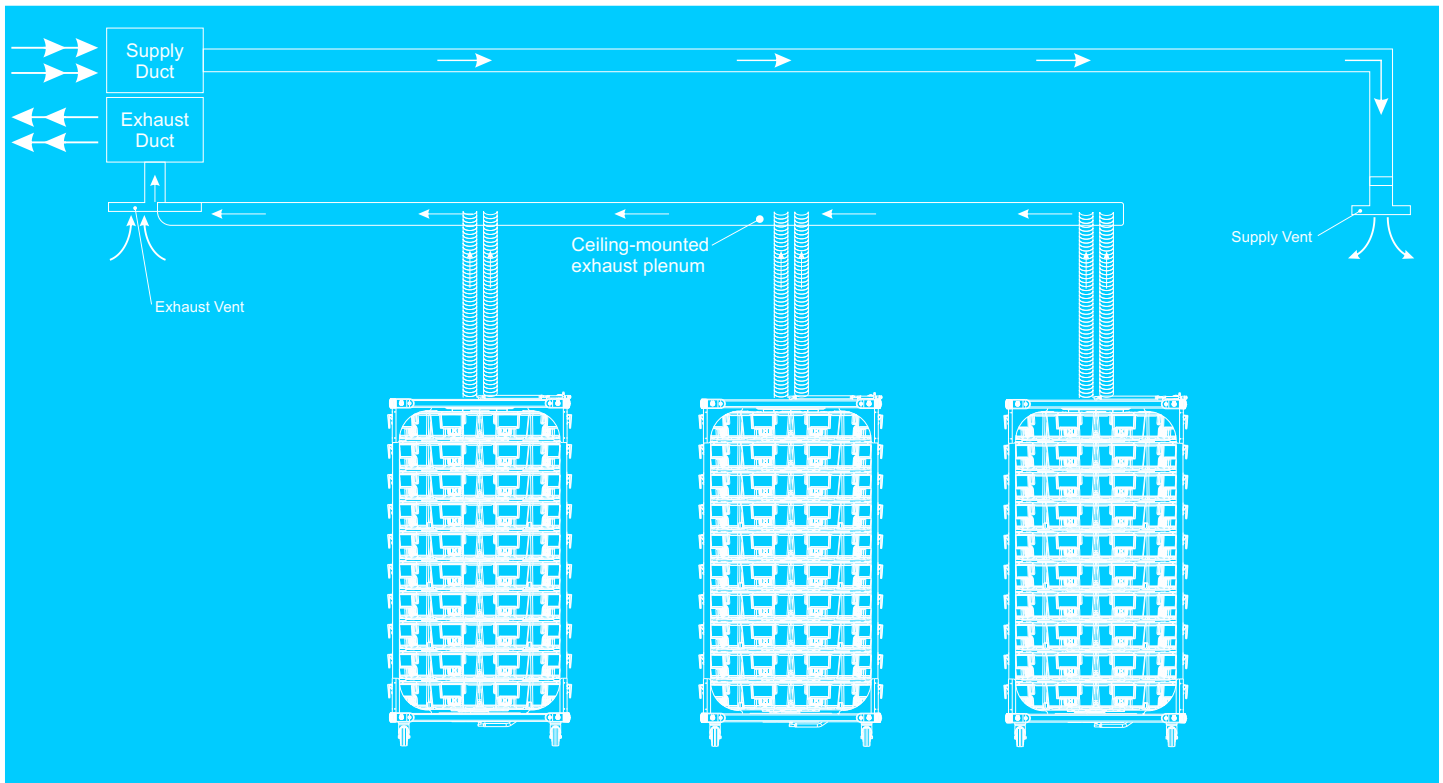
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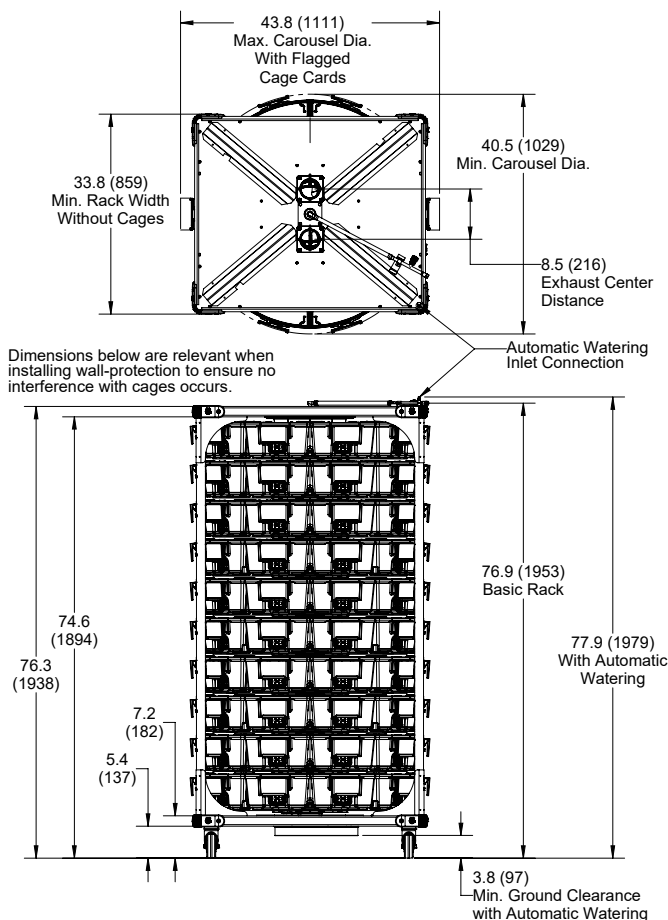
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Introduction

This guide will assist architecture firms designing buildings tailored to our technology. It provides detailed physical dimensions of the major components of Animal Care Systems racks. It also covers the requirements of air flow, air pressure, and workspace.

Animal Care Systems technology is unique within the animal research industry. Vivaria erected 25 years ago or more were designed around library-style racks with rectangular cages. But our systems are unique.

The slim carousel design fits 30 percent more cages in a given room than other manufacturers' racks, and because Animal Care Systems technology requires no electricity, and animal-generated heat is exhausted immediately, there is no heat load limit for rooms with our racks.

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Optimice

43.8 (1111)
Max. Carousel Dia.
With Flagged
Cage Cards

40.5 (1029)
Min. Carousel Dia.

33.8 (859)
Min. Rack Width
Without Cages

8.5 (216)
Exhaust Center
Distance

Automatic Watering
Inlet Connection

Dimensions below are relevant when
installing wall-protection to ensure no
interference with cages occurs.

76.9 (1953)
Basic Rack

77.9 (1979)
With Automatic
Watering

74.6
(1894)

76.3
(1938)

7.2
(182)

5.4
(137)

3.8 (97)
Min. Ground Clearance
with Automatic Watering

The rack frame is 304 stainless steel.

	Optimice Rack					
	Dimensions *Inches (cm)*				Weight *Pounds (kg)*	
	Depth	Width	Height	Auto-Water Height	Basic	Auto-Water
Full rack with card holders	40.5 (102.9)	40.5 (102.9)	76.9 (195.3)	77.9 (197.8)	613 (278)	659 (299)
Full rack no card holders	39.8 (101.1)	39.8 (101.1)			604 (274)	650 (295)
Empty rack	33.8 (85.9)	39.8 (101.1)			326 (148)	366 (166)

Racks arrive on standard 48-by-40-inch pallets. Other equipment ships on pallets of up to 52 inches long and 44 inches in wide.

Contact Animal Care Systems for dimensions of Optimice cage components.

Animal Care Systems provides
Revit files upon request.

Sample Room Layout
37 feet 9 inches by 30 feet 2 inches
50 Optimice Racks
4 Change Stations
5,000 Mouse Cages

Optirat GenII

39.7 (1008)

39.4 (1001) Carousel Dia.

8.5 (216) Exhaust Centers

Autowater Inlet Connection

Dimensions below are relevant when installing wall-protection to ensure no interference with cages occurs.

74.6 (1894)

76.3 (1938)

78.0 (1981)

76.9 (1953)

7.2 (182)

5.4 (137)

3.8 (97) Min. Ground Clearance with Automatic Watering
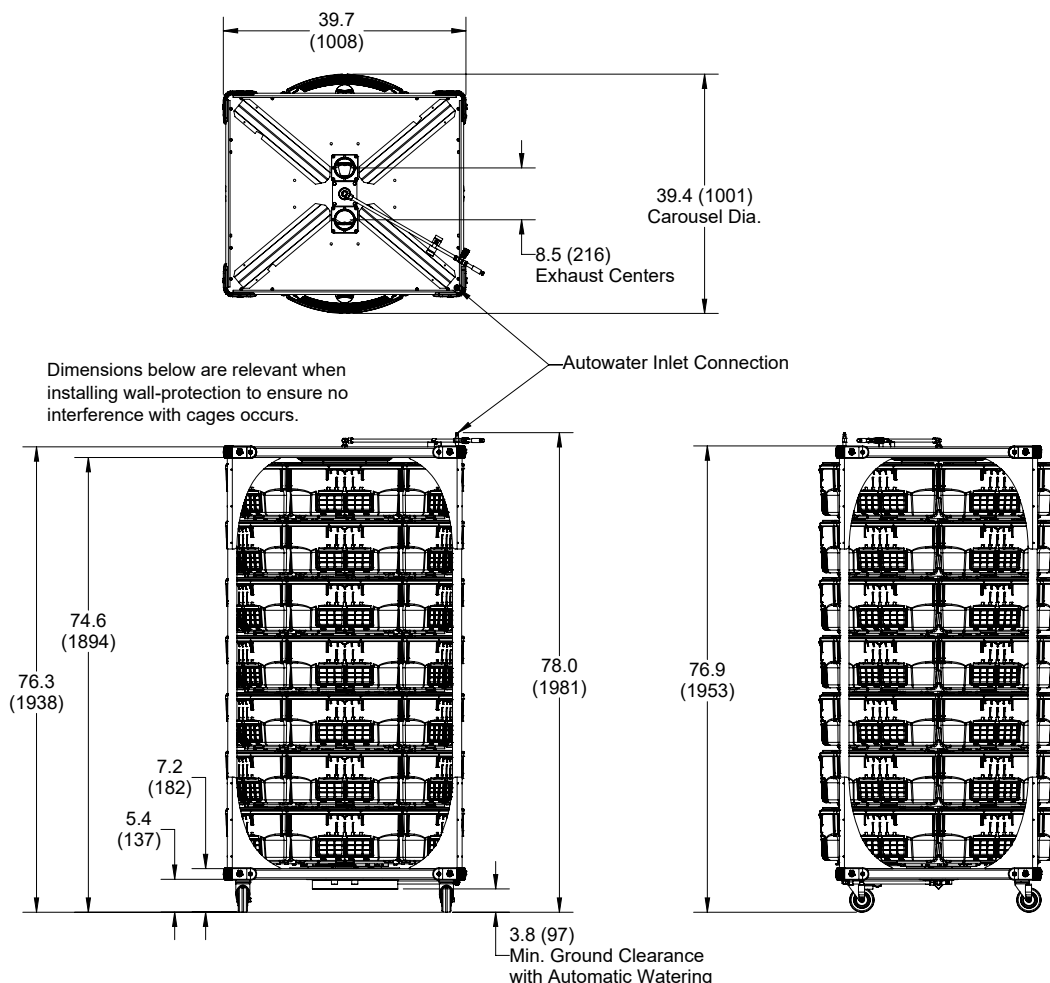
The rack frame is 304 stainless steel.

	Optirat GenII Rack					
	Dimensions *Inches (cm)*				**Weight** *Pounds (kg)*	
	Depth	**Width**	**Height**	**Auto-Water Height**	**Basic**	**Auto-Water**
Full rack	39.4 (100.1)	39.7 (100.8)	76.3 (193.8)	78 (198.1)	534 (242)	524 (238)
Empty rack	33.8 (85.8)	39.7 (100.8)			311 (141)	296 (134)

Racks arrive on standard 48-by-40-inch pallets. Other equipment ships on pallets of up to 52 inches long and 44 inches in wide.
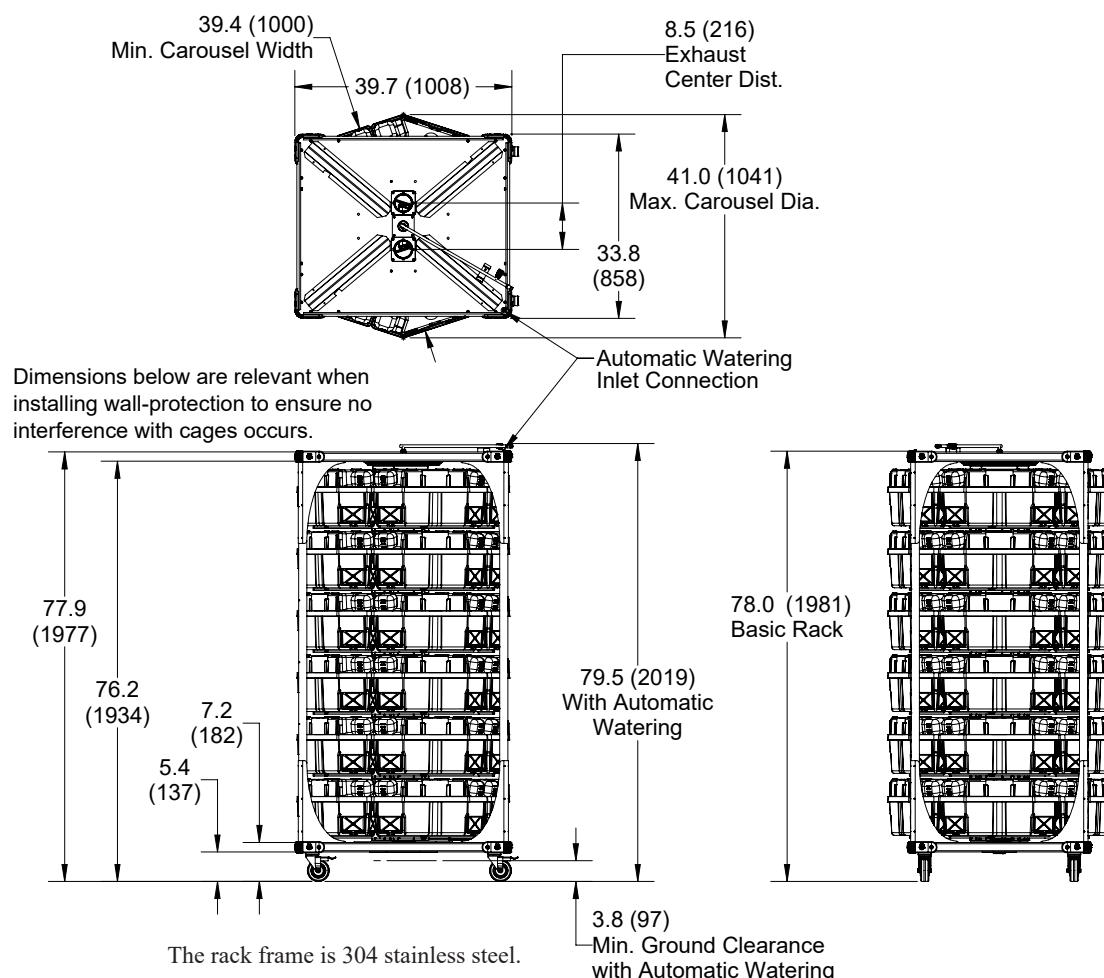
Contact Animal Care Systems for dimensions of Optirat GenII cage components.

Animal Care Systems provides Revit files upon request.
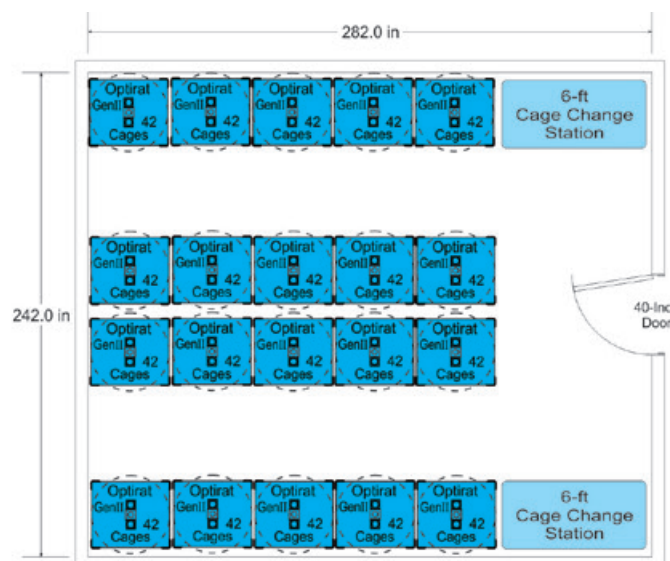
Sample Room Layout
23 feet 6 inches by 20 feet 2 inches
20 Optirat GenII Racks
2 Change Stations
840 Rat Cages

Optirat Plus

39.4 (1000)
Min. Carousel Width

8.5 (216)
Exhaust
Center Dist.

39.7 (1008)

41.0 (1041)
Max. Carousel Dia.

33.8
(858)

Automatic Watering
Inlet Connection

Dimensions below are relevant when installing wall-protection to ensure no interference with cages occurs.

77.9
(1977)

76.2
(1934)

7.2
(182)

5.4
(137)

79.5 (2019)
With Automatic
Watering

78.0 (1981)
Basic Rack

3.8 (97)
Min. Ground Clearance
with Automatic Watering

The rack frame is 304 stainless steel.

	Optirat Plus Rack					
	Dimensions *Inches (cm)*				Weight *Pounds (kg)*	
	Depth	Width	Height	Auto-Water Height	Basic	Auto-Water
Full rack	41.0 (104.1)	39.7 (100.8)	78 (198.1)	79.5 (201.9)	503 (228)	500 (227)
Full rack, carousel rotated for precise entryways	39.4 (1000)	39.7 (100.8)	78 (198.1)	79.5 (201.9)	503 (228)	500 (227)
Empty rack	33.8 (85.8)	39.7 (101)			269 (122)	284 (129)

Racks arrive on standard 48-by-40-inch pallets. Other equipment ships on pallets up to 52 inches long and 44 inches wide.
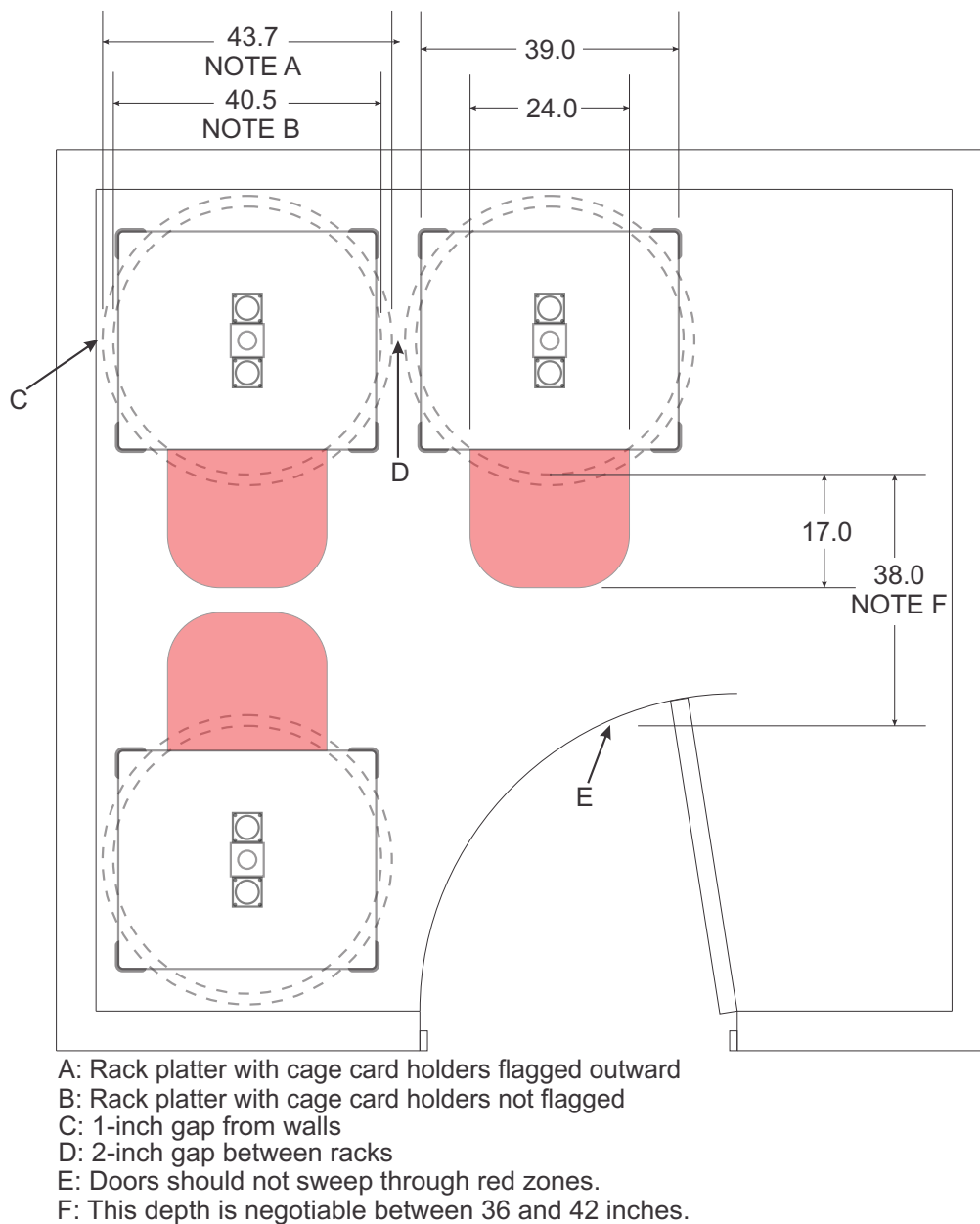
Contact Animal Care Systems for dimensions of Optirat Plus cage components.

Animal Care Systems provides Revit files upon request.

122.0 in

Optirat Plus 30 Cages — Optirat Plus 30 Cages — Optirat Plus 30 Cages — Optirat Plus 30 Cages

6-ft
Cage Change
Station

40-Inch Door

Optirat Plus 30 Cages — Optirat Plus 30 Cages — Optirat Plus 30 Cages — Optirat Plus 30 Cages — Optirat Plus 30 Cages — Optirat Plus 30 Cages

248.0 in
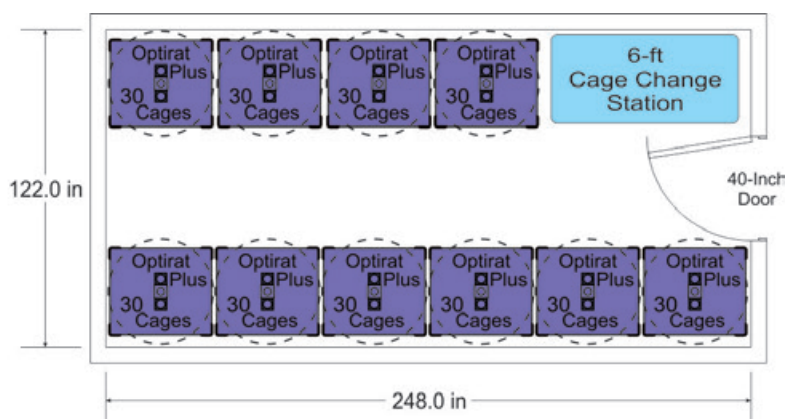
Sample Room Layout
20 feet 8 inches by 10 feet 2 inches
10 Optirat Plus Racks
1 Change Station
300 Rat Cages

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Workspace Requirements

A: Rack platter with cage card holders flagged outward
B: Rack platter with cage card holders not flagged
C: 1-inch gap from walls
D: 2-inch gap between racks
E: Doors should not sweep through red zones.
F: This depth is negotiable between 36 and 42 inches.

The rack becomes inaccessible if a stationary object enters a red zone.

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Airflow Requirements

Animal Care Systems racks use buildings' HVAC systems to provide negative pressure airflow. Two hoses are recommended, but one hose is viable.
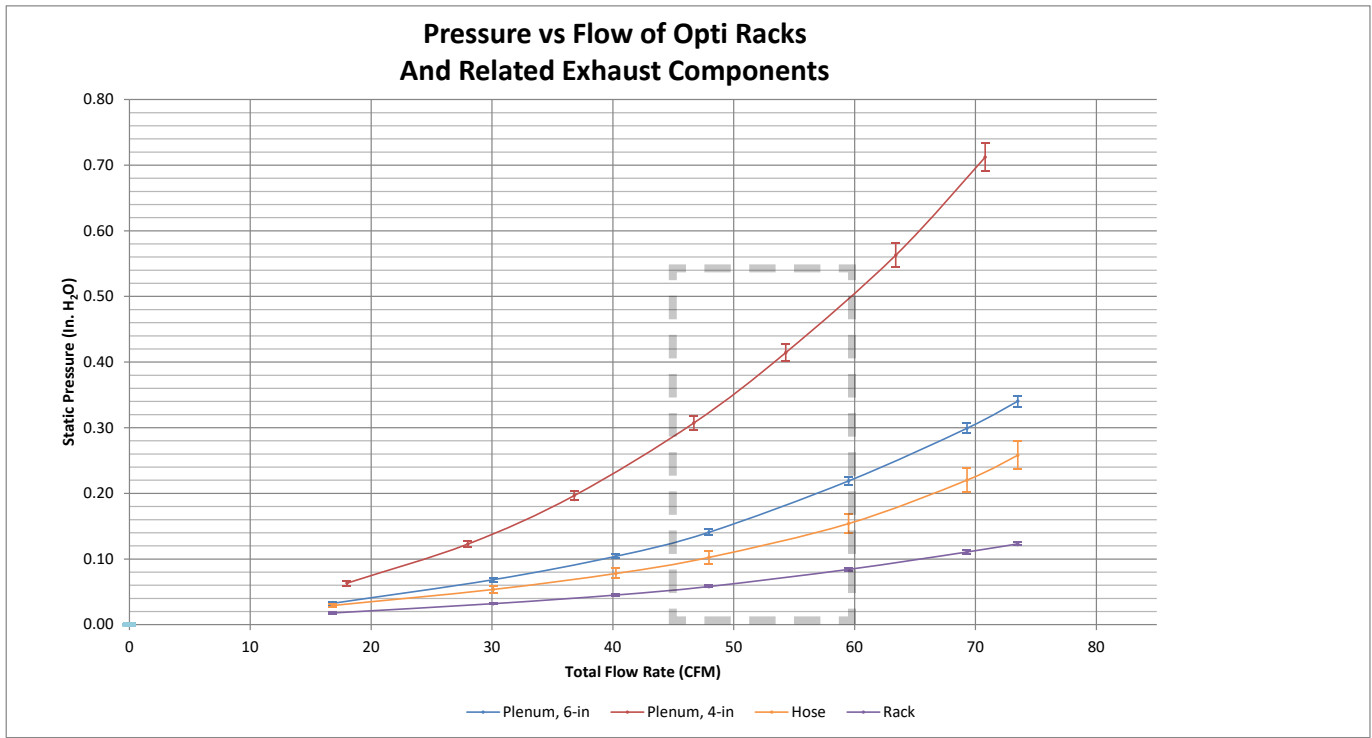
Airflow Requirements for Opti Racks and Cages			
Rack Type	Functional Exhaust Airflow Range, CFM	Anemometer Measurement Range, Per Hose, m/s	
		Two Hoses	One Hose
Optimice	45 - 60	4.0 - 5.25	8.0 - 10.5
Ergo80	38 - 50	3.4 - 4.5	6.8 - 9.0
Ergo70	34 - 45	3.0 - 3.9	6.0 - 7.8
Ergo50	25 - 33	2.2 - 2.9*	4.3 - 5.7
Optirat/GenII/Plus	55 - 82	4.8 - 7.2	11 - 14.4

*A single hose is standard for Ergomice 50

Airflow Requirements for Single-use Caging Within Optimice and Ergomice Racks			
Rack Type	Functional Exhaust Airflow Range, CFM	Anemometer Measurement Range, Per Hose, m/s	
		Two Hoses	One Hose
Optimice	60 - 75	5.3 - 6.6	10.6 - 13.2
Ergo80	51 - 64	4.5 - 5.6	9.0 - 11.2
Ergo70	45 - 56	3.9 - 4.9	7.8 - 9.8
Ergo50	33 - 41	5.7 - 7.1*	11.4 - 14.2

*A single hose is standard for Ergomice 50

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Static Pressure Requirements

Pressure vs Flow of Opti Racks And Related Exhaust Components

The dashed box in the line graph represents the 45 to 60 CFM range.

Static pressure was measured in the following locations:
Plenum, 6 in.: Inside the central plenum immediately before the transition to the 6-inch universal box.

Plenum, 4 in.: Inside the central plenum immediately before the transition to the 4-inch universal box.

Hose: Inside the exhaust hoses at the point where they connect to the universal box.

Rack: Inside the exhaust hoses at the point where they connect to the Opti racks.

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Sterilization Requirements

Animal Care Systems racks are compatible with steam, dry, and cold sterilization methods.

Contact Animal Care Systems about information on dry heat sterilization options.

Rack Sterilization Temperature Limit
250 F (121 C)

Cage Sterilization Temperature Limit		
	Sterilization Temperature	Maximum Duration
Polycarbonate	up to 250 F (121 C)	20 minutes
Polysulfone	up to 285 F (141 C)	30 minutes

Exhaust Connections

Animal Care Systems racks are compatible with any exhaust connection, including exhaust plates, underceiling structures, and dedicated exhaust drops; however we recommend dedicated exhaust drops.

To achieve the recommended cubic feet per minute, Animal Care Systems recommends ceiling drop diameters of 6 inches or 4 inches; however if two racks are going to be connected to a single drop, we recommend only 6-inch drops instead of 4-inch drops because they impose a smaller load on the HVAC system. The fittings can connect to the building's HVAC system in multiple ways: Universal boxes are used for connecting two racks per drop, while V boxes are recommended for a single rack per drop.

Animal Care Systems racks ship with two 6-foot-long, 3-inch hoses, each with a quick-disconnect fitting on both ends. We also supply the mating connectors used with the hoses.

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Auto-Water Systems

The auto-water racks' water inlet is located at the rear top corner of the rack. The ideal rack placement along an auto-water-lined wall would be with the inlet corner against the wall. The connections are plug-and-play compatible with the industry's leading auto-water systems and are compatible with auto-flush lines.

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Doorways

Animal Care Systems racks will fit through 42-inch doorways fully equipped. However, the racks also can fit through 34-inch doorways with minimal adjustments (Figure 1).
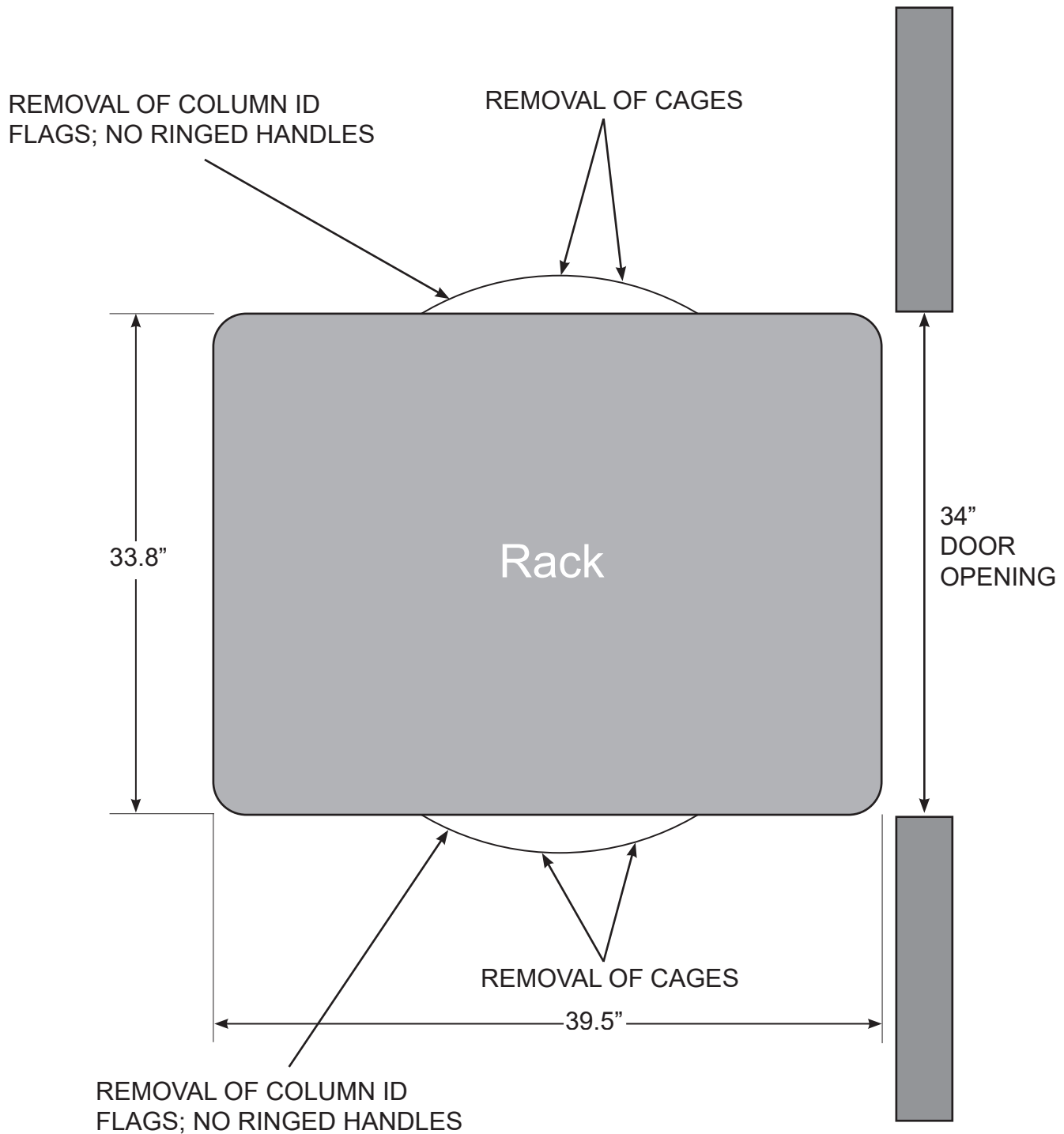
REMOVAL OF COLUMN ID FLAGS; NO RINGED HANDLES

REMOVAL OF CAGES

33.8"

Rack

34"
DOOR
OPENING

REMOVAL OF CAGES

39.5"

REMOVAL OF COLUMN ID FLAGS; NO RINGED HANDLES

Figure 1

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