



OPEN
Compute Project

Project Olympus Rack Specification

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2.0 Scope

This document defines the functional requirements for the server racks for fully loaded Project Olympus deployments.

3.0 Rack Configurations

Racks can be configured per Table 1: Rack Configurations.

Table 1: Rack Configurations

Configuration	Height	Security Equipment Installed
1	48U	None
1 with doors	48U	Front door, rear door(s), and side panels on each side
2	42U	None
2 with doors	42U	Front door, rear door(s), and side panels on each side

4.0 Mechanical Specifications

4.1 Tolerances

All tolerances not specified shall be within 1% for non-fastening items, and ½% for fastening items.

Frame must be welded construction and within EIA 310-D specification and proven using 6 Sigma tolerance stack analysis to $\pm 1.0\text{mm}$

4.2 Unpackaged Sizes

- Configuration 1 (“48U”): 2295mm x 600mm x 1200mm
- Configuration 2 (“42U”): 2025mm x 600mm x 1200mm

4.2.1 Height

- Height is defined as the installed height on leveling feet with casters raised off of the floor.
- Acceptable deviation: +0/-15mm

4.2.2 Width

- Acceptable deviation: +0mm, -3mm
- Width includes total width of operating footprint, and nothing shall extend outside. This includes, but is not limited to: side panels, latches, hinges, and hardware.

4.2.3 Depth

- Acceptable deviation: +0/-5mm



4.2.4 Tolerance

- Refer to EIA standards for non-specified tolerances.

4.3 Airflow

4.3.1 Inside Rack

- 4.3.1.1 With a fully populated rack (with either devices or blanking panels), airflow shall be blocked between all sides from front face of rack beyond the rail locations. This includes: above top U – to the top of the rack; below bottom U - to the bottom plate; and on sides between the EIA rails and the side panel of the rack.
- 4.3.1.2 In empty rack spaces, blanking panels shall be implemented at the front rails.
- 4.3.1.3 With recessed devices, including switches, a ducting solution shall be implemented to block airflow bypass between the front rails and the intake of the device. This includes above, below, and on either side.
- 4.3.1.4 With servers or blanking panels fully populated in all U-locations, rack shall not allow airflow through any seam or component of the rack as described above when pressure is $\leq .2$ " of water.
- 4.3.1.5 On the front, bottom castor and the front, top frame, compliant material must be placed in line with the EIA rails to serve the function of sealing the gap between the bottom enclosure to the castor plate, preventing air leaking into the hot aisle. The feature must have a prescribed interference with the unit placed in the bottom U while not interfering with the service function of the enclosure that is placed there. The feature is depicted in Figure 1 & Figure 1Figure 2 – Top U Air Gap Sealer Foam. It is recommended that this part be sourced through Rittal (PN 311190).

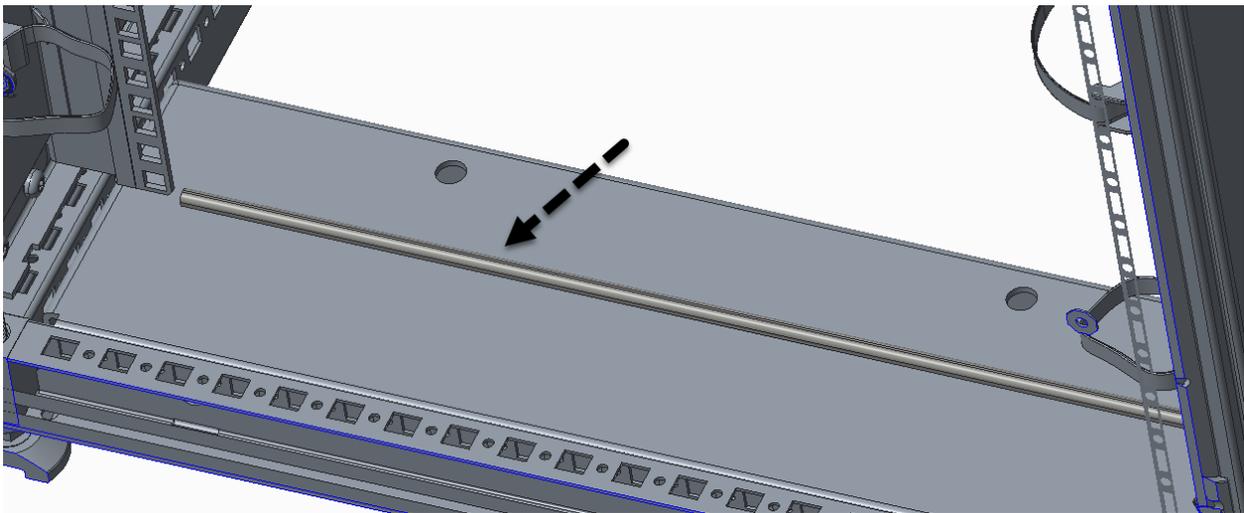


Figure 1 – Bottom U Air Gap Sealer Foam

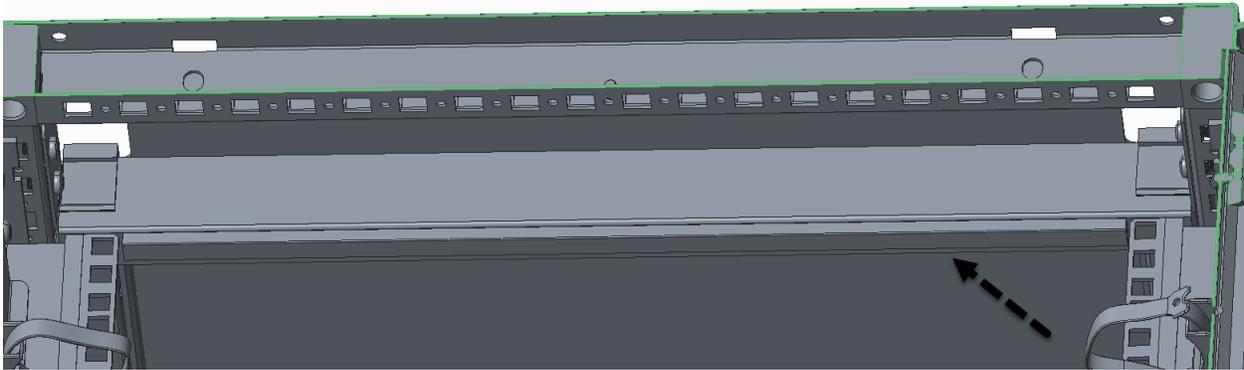
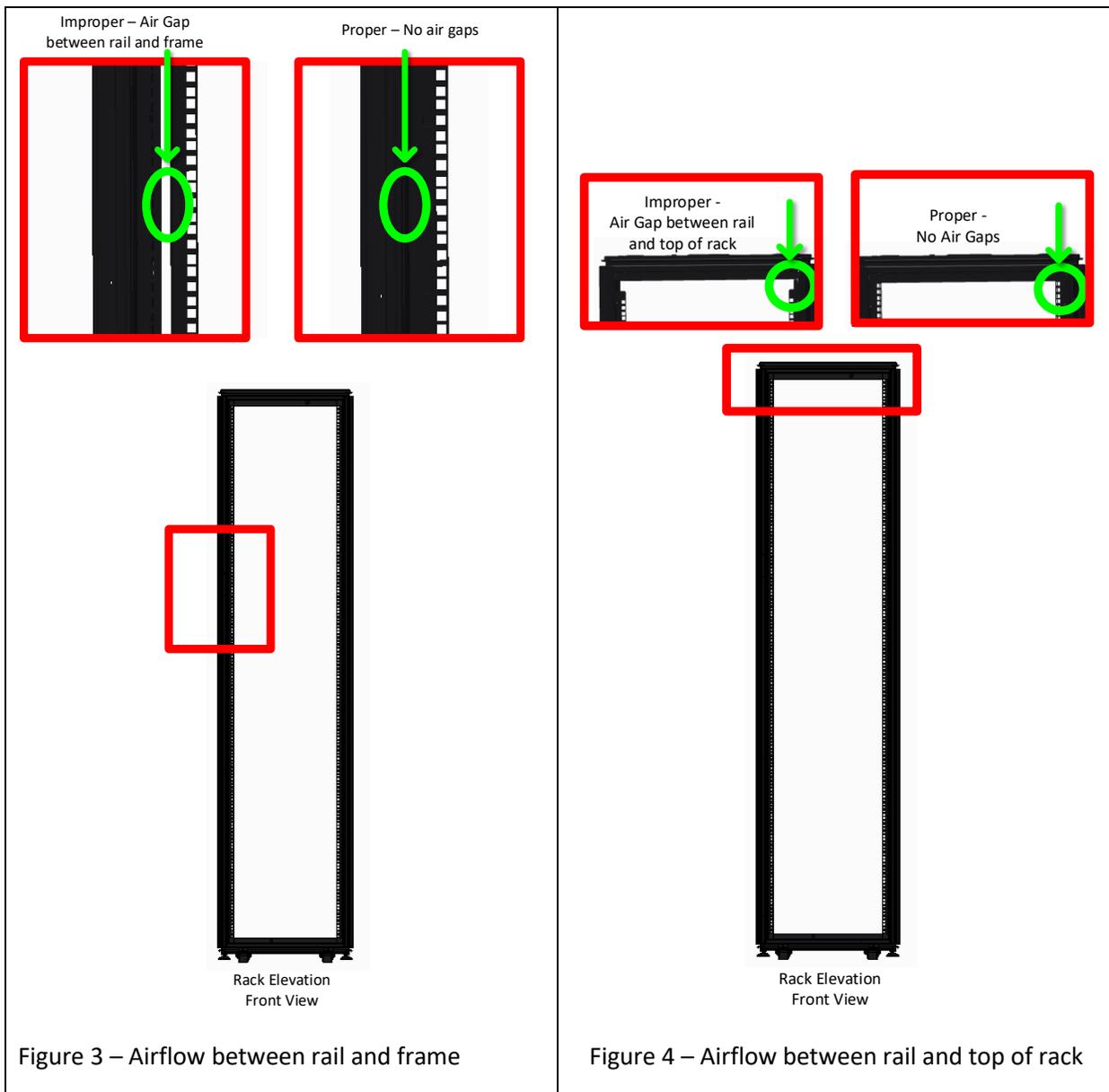


Figure 2 – Top U Air Gap Sealer Foam



4.3.2 Rack Exterior

- Airflow shall be blocked between the bottom of rack and the floor. Use of blanking accessories may be used to block airflow.
- Airflow shall be blocked between racks. Use of blanking accessories may be used to block airflow but may not interfere with operation of side panels or doors.

Improper -
Gap between racks
allows airflow bypass

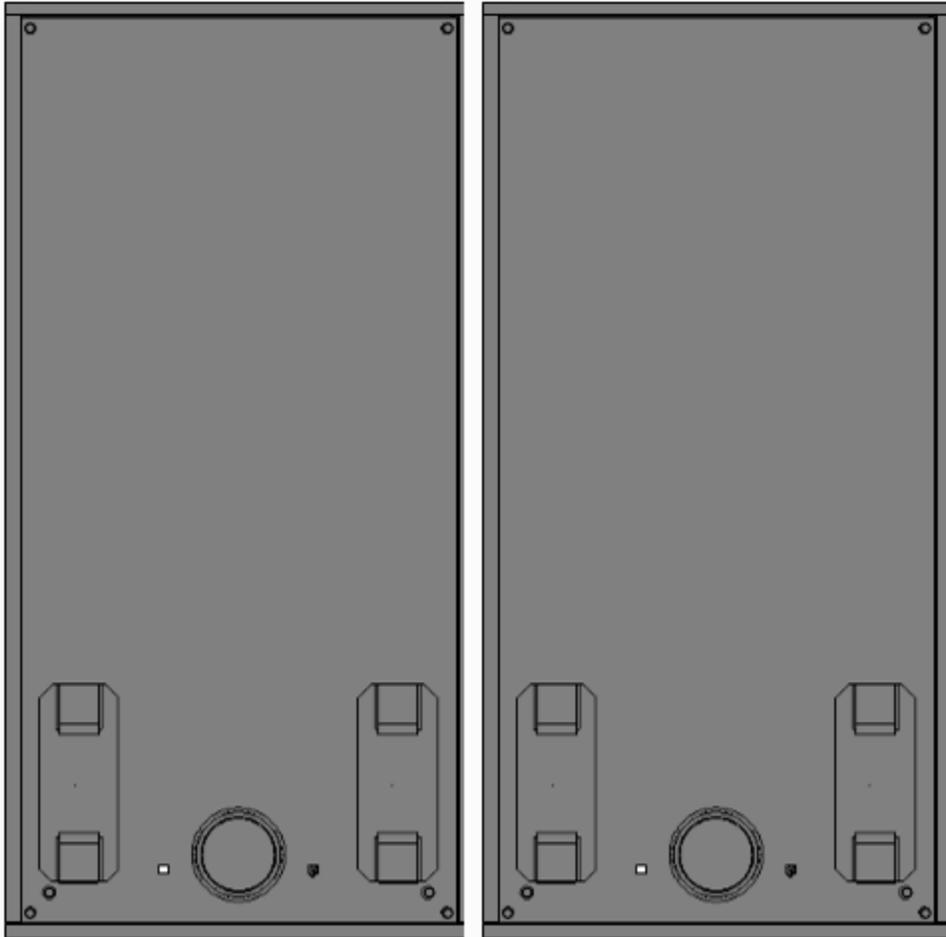


Figure 5 - Airflow between racks

4.4 Load Ratings

4.4.1 Rack Weight

4.4.1.1 Rated per size

4.4.1.1.1 42U at 1360kg (3000lbs)

4.4.1.1.2 48U at 1360kg (3000lbs)

4.4.1.2 All load ratings shall be tested for (1) Packaged Shipping, (2) Unpackaged Dynamic, and (3) Unpackaged Static.

4.4.1.3 Each of the following systems must be rated greater than or equal to the total load rating of the system:

- Rails
- Casters
- Leveling Feet
- Frame

4.5 Testing

4.5.1 Packaged Testing

4.5.1.1 Shock and Vibration testing shall consist of the following.

4.5.1.1.1 Single Container Resonance Test – Swept Sinusoidal Vibration based on ASTM D 999-07 Method B

4.5.1.1.2 Random Vibration Test based on ASTM D 4728-06, and ASTM D 4169-05

4.5.1.2 Drop/Impact Testing shall include the following:

4.5.1.2.1 8” Rotational Flat Drop (see Figure 6)

4.5.1.2.2 Flat Drop from 2” (see Figure 7)

4.5.1.2.3 Packaged Tilt Test

4.5.1.2.3.1 The packaged and palletized product should be able to be tilted 15° off vertical in all four directions without tipping over.

4.5.1.2.4 Inclined Impact Test (see Figure 8)

4.5.1.2.4.1 The test equipment shall consist of a two-rail steel track inclined 10 degrees (+/- 1 degree) to the horizontal plane. The test container shall sit on a test carriage that is free to roll along the track. There shall be a suitable means for retracting and releasing the carriage and a rigid backstop with the impact surface perpendicular to the plane of the rack.

4.5.1.2.4.2 The Inclined Impact Test should be undertaken on each vertical face of the test container with an impact velocity of 1.0 m/s (3.28 ft/s), measured to an accuracy of +/- 2%.

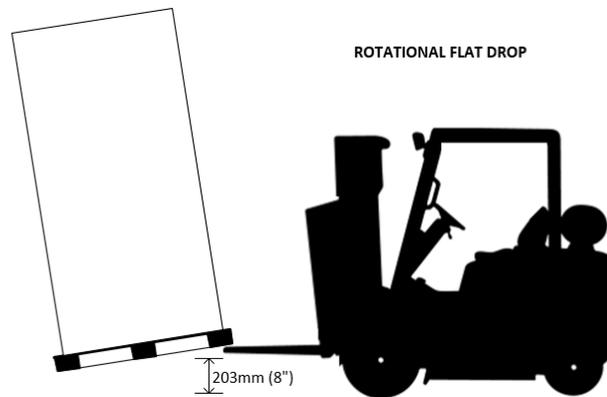


Figure 6 – Rotational Flat Drop Test

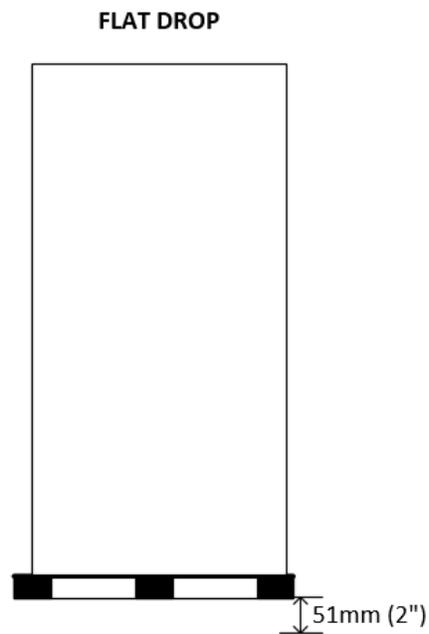


Figure 7 – Flat Drop Test

4.5.1.3 Packaged Tilt Test

- The packaged and palletized product should be able to be tilted 15° off vertical in all four directions without tipping over.

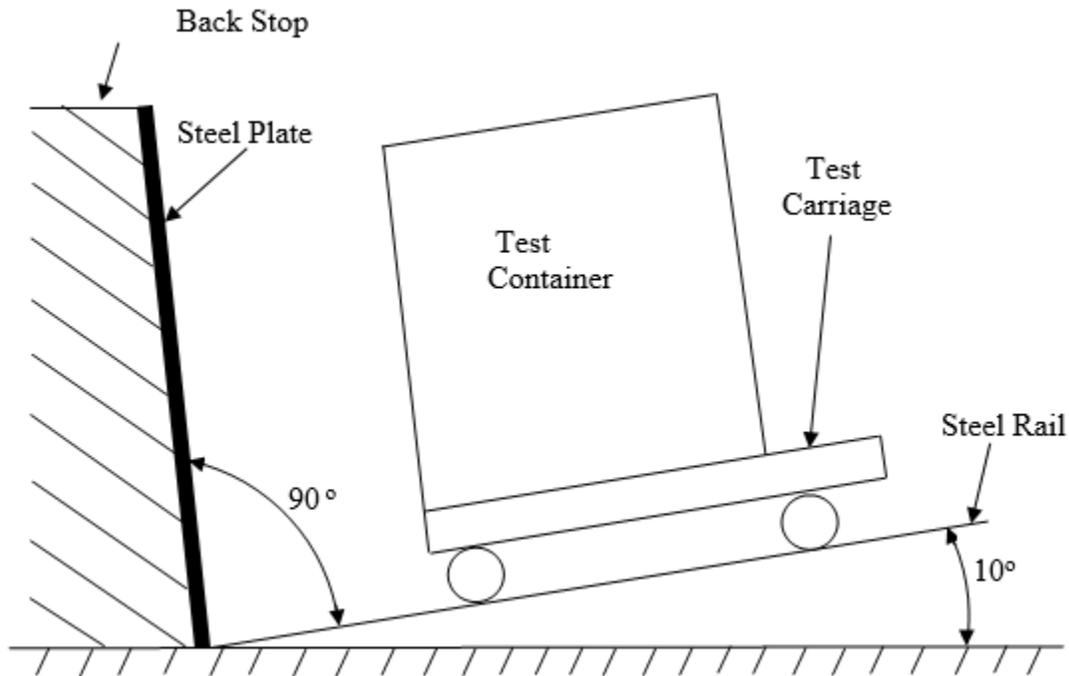


Figure 8 – Inclined Impact test

4.5.2 Unpackaged Static (Installed)

- The enclosure system shall be mounted as intended and loaded with simulated loads representing the maximum load rating of the system. The load shall be evenly distributed within the system unless specific instructions are provided for alternate loading arrangements. A system with a fixed configuration of shelves and brackets that are individually rated shall be loaded with simulated loads representing the maximum load rating of each shelf and bracket.

4.5.2.1 Seismic Testing

- Seismic testing is out of scope.

4.5.2.2 Push Force Test

- While in its normal position on a flat surface, a force equal to 20 percent of the weight of the fully loaded enclosure system, but not more than 250 N (56.2 lbf), is applied in any direction except upwards, at a height not exceeding 2 m (78.74 in) from the floor. The force is applied to the front, back and each side of the system, each for a period of 1 minute.

4.5.3 Unpackaged Dynamic (Rolling)

- The enclosure system shall be configured as intended for rolling transport and loaded with simulated loads representing the maximum load rating of the system. The load shall be evenly distributed within the system unless specific instructions are provided for alternate loading arrangements. A system with a fixed configuration of shelves and brackets that are individually rated shall be loaded with simulated loads representing the maximum load rating of each shelf and bracket.
- Exterior stabilizing mechanisms are acceptable to achieve the Unpackaged Dynamic test criteria, but they must be quick and easy to install and include maintenance and safe handling instructions. These shall be priced separately.

4.5.3.1 Tilt Test

- The enclosure system shall be tilted to an angle of 10 degrees from its normal upright position and held in this position for a period of 1 minute. The test shall be repeated for all four positions (front, back, side1, side2).
- Tilt may be accomplished by tilting onto the wheels of just one side or by tilting entire system on a tilt table.

4.5.3.2 Push Force Test

- While in its normal position on a flat surface, with casters locked into position, a force equal to 20 percent of the weight of the fully loaded enclosure system, but not more than 250 N (56.2 lbf), is applied in any direction except upwards, at a height not exceeding 2 m (78.74 in) from the floor. The force is applied to the front, back and each side of the system, each for a period of 1 minute.

4.5.4 Caster Ratings

- 4.5.4.1 Caster system shall be rated at no less than 1590kg per rack.
- 4.5.4.2 Caster rating shall meet all other testing requirements in this specification; the casters shall be rated at the highest necessary level to pass all tests.
- 4.5.4.3 Caster test shall be performed at 5km/h (4.4 ft/sec).
- 4.5.4.4 Method as follows, with pull force test after each procedure:
 - 4.5.4.4.1 400m roll
 - 4.5.4.4.2 5 x 25mm (1") gap roll over
 - 4.5.4.4.3 200m roll
 - 4.5.4.4.4 5 x 7mm (1/4") step
 - 4.5.4.4.5 200m roll
 - 4.5.4.4.6 5 x 25mm (1") drop
- 4.5.4.5 Pull force shall be performed after each procedure, measuring both static (starting) and dynamic (rolling)
- 4.5.4.6 Test shall be continuous, with no waiting period between procedure, except to measure pull force.
- 4.5.4.7 Pass criteria is as follows
 - 4.5.4.7.1 No visible damage to casters.
 - 4.5.4.7.2 Pull force never exceeds 79.5kg, or 5% of total rack load.

4.5.5 Paint Testing for Corrosion Resistance

- 4.5.5.1 Salt spray test (DIN EN ISO 9227 NSS), Test duration 168 h.
- 4.5.5.2 Condensation test (DIN EN ISO 6270-2 CH), Test duration 500 h.
- 4.5.5.3 Exceeds condensation alternating atmosphere (DIN EN ISO 6270-2 AHT), Test duration 20 cycles.
- 4.5.5.4 Adhesion tests in accordance with DIN EN ISO 2409
- 4.5.5.5 Hardness tests in accordance with DIN EN ISO 2815.
- 4.5.5.6 Cupping tests in accordance with Erichsen to DIN EN ISO 1520.
- 4.5.5.7 Mandrel bending testing in accordance with DIN EN ISO 1519.
- 4.5.5.8 Impact tested according to ASTM D 2794.
- 4.5.5.9 Paint shall be resistant to mineral oils, vegetable oils, emulsion for cutting, diesel fuel, detergents, weak acid and alkaline solutions (NAOH pH9, HCL pH5).
- 4.5.5.10 Resistance to solvents in accordance with DIN EN ISO 2812-1 and -2.
- 4.5.5.11 Weather resistance Test in accordance with DIN EN ISO 11507, lamps type 1 (UV-B (313), procedure A.

5.0 Design Specifications

5.1 Agency Approvals

5.1.1 Compliance Requirements

- 5.1.1.1 All racks shall be UL 2416 Listed before delivery.
- 5.1.1.2 Rails shall conform to EIA 310-D specifications.
- 5.1.1.3 Top and side openings in accordance with 4.6.1 of UL 60950-1 for fire enclosures,
- 5.1.1.4 Doors or covers in accordance with 4.6.3 of UL 60950-1 for fire enclosures,
- 5.1.1.5 Materials in accordance with 4.7.3.2 of UL 60950-1, “Materials for fire enclosures”

5.2 Leveling Feet

5.2.1 Location

- 5.2.1.1 Leveling feet shall be located at all four corners of rack frame under vertical frame supports.
- 5.2.1.2 No part of the leveling feet shall reside outside of width and depth requirements.

5.2.2 Size

- 5.2.2.1 Diameter or width shall be no less than 45mm.

5.2.3 Operations

- 5.2.3.1 Leveling feet shall be readily accessible for operations with rack fully populated.
- 5.2.3.2 Leveling feet that can be operated with power tool are strongly preferred.

5.3 Environmental

5.3.1 Requirements

- 5.3.1.1 All Racks shall meet RoHS and WEEE requirements.
- 5.3.1.2 Rack shall be corrosion resistant in high humidity situations and shall adhere to ASTM B117.

5.4 EIA Rails

5.4.1 Dimensions

5.4.1.1 Rack shall comply with all dimensions and clear areas described in Figure 9

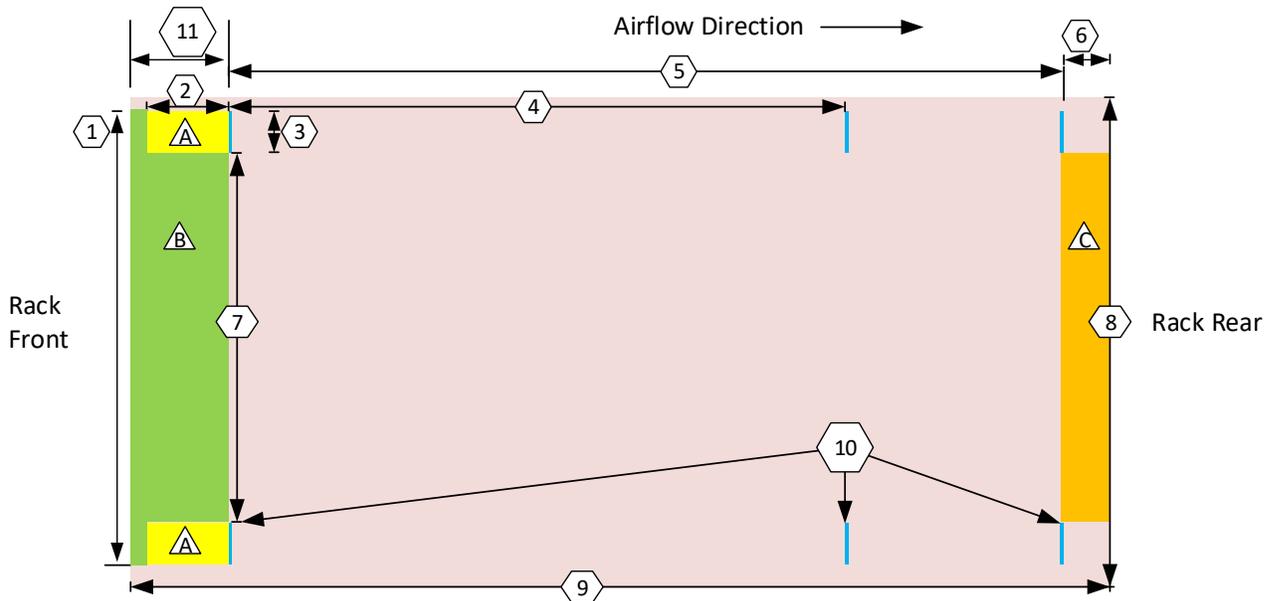


Figure 9 – Dimensions and Clear Areas

RAIL AND FRAME DIMENSIONS	CLEAR AREAS
<p>Unless otherwise stated, tolerance on all dimensions in this table shall be +/- 0.2mm. EIA tolerances may remain as stated in that standard.</p> <ol style="list-style-type: none"> 1. Clearance between inside of vertical rack frame shall be a minimum of 510mm. 2. Front of front EIA rail to inside of rack frame shall be 100mm. 3. Inside edge of EIA rail to inside of rack frame shall be 50mm. 4. Front face of front EIA rail to rear face of middle EIA rail shall be 745mm. 5. Front face of front EIA rail to rear face of rear EIA rail shall be 1020mm. 6. Rear face of rear EIA rail to outside face of rear of rack frame shall be no greater than 58mm. 7. Inside edges of EIA rails shall be spaced per EIA standard of 450mm. 8. Outside width dimensions of rack, including installed accessories (side panels, doors, etc.), shall be 600mm +0mm/-3mm. 9. Outside depth dimensions of rack without doors shall be 1200mm +0mm/-3mm. 10. All EIA rails shall be 2.5mm thick. 11. Front face of EIA rail to inside face of front door shall be a minimum of 119mm 	<ol style="list-style-type: none"> A. 100mm (#2) by 50mm (#3) clear area for vertical network cable management. Up to 5% of encroachment on lateral area, including cable management features, will be allowed. No encroachment is acceptable between the front two clear areas (A and B). B. 100mm (#2) by 450mm (#7) clear area for horizontal network cable management. Additional 511mm (#1x2 + #7) x 20mm clear area required for turn radius; doors, rack frame, etc. shall not encroach on this area. C. 450mm (#7) by 58mm (#6) clear for airflow.

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Figure 10 — Dimensions and Clear Areas

- 5.4.1.1.1 Dimension 7 is to be inspected in 15 locations, which are listed in Table 2 & Table 3. The locations highlighted in yellow are to be held to a tighter tolerance of 451mm -0.5mm/+1.0mm. The tighter dimension in this location is to account for a change in spacing during transportation.
- 5.4.1.1.2 For each manufacturing build, the first article inspections should be conducted with a set of digital calipers. Once confirmed the dimension is being held to the specification and that there is no mean shift, quality validation can continue with an approved and calibrated go-no-go gauge.

Table 2: Dimension 7 Measuring Locations 48U Rack

FRONT RAIL	MIDDLE RAIL	REAR RAIL
U3	U3	U3
U14	U14	U14
U24	U24	U24
U35	U35	U35
U45	U45	U45

Table 3: Dimension 7 Measuring Locations 42U Rack

FRONT RAIL	MIDDLE RAIL	REAR RAIL
U3	U3	U3
U10	U10	U10
U21	U21	U21
U29	U29	U29
U39	U39	U39

- 5.4.2 Weight Load Rating (See Load Ratings)
- 5.4.3 Mounting Holes
 - 5.4.3.1 Device Mounting Holes shall be 3/8" square punched holes
- 5.4.4 Acceptable Colors
 - 5.4.4.1 White
 - 5.4.4.2 Silver/Metal
 - 5.4.4.3 Other colors on Microsoft approval
- 5.4.5 Markings
 - 5.4.5.1 Color: Black
 - 5.4.5.2 Rail markings shall be printed on outside face of both front and rear rails. If a third rail exists, the middle rail shall have markings on the surface facing toward the front of the rack.
 - 5.4.5.3 Rack Unit (RU) location numbered from lowest at bottom to highest on top, beginning with 1.
 - 5.4.5.4 All numbering fonts shall be sans serif (MS Reference Sans Serif preferred)
 - 5.4.5.5 Character spacing
 - 5.4.5.5.1 Height: .16" +/-0.02 [4.0mm +/-0.5]
 - 5.4.5.5.2 Spacing on Center: tolerance between any two marks = .03 [0.8] (marks are non-cumulative.
 - 5.4.5.5.3 All RU spaces must be clearly marked and readable with both hashed spacing and RU numbering
 - 5.4.5.6 Other as approved by Microsoft
- 5.4.6 Deflection
 - 5.4.6.1 Rails shall not deflect to the point where equipment cannot be installed. If rails would be expected to deflect in a given situation where the weight in the rack is within specification, then that must be identified by vendor and approved by Microsoft.
 - 5.4.6.2 Rails shall not be reinforced with tie straps, cross members, or any other horizontally mounted device that is required to be located between the top U and bottom U between the left and right rails to tie the rails together.

5.5 Casters

- 5.5.1.1 Must be non-marking.
- 5.5.1.2 Ratings (See Load Ratings)
- 5.5.1.3 Front Casters fixed. Rear casters swiveling.
- 5.5.1.4 Shall be spaced in compliance with Figure 15.

5.6 Top Panel

5.6.1.1 Shall be permanent or secured from the inside of the rack.

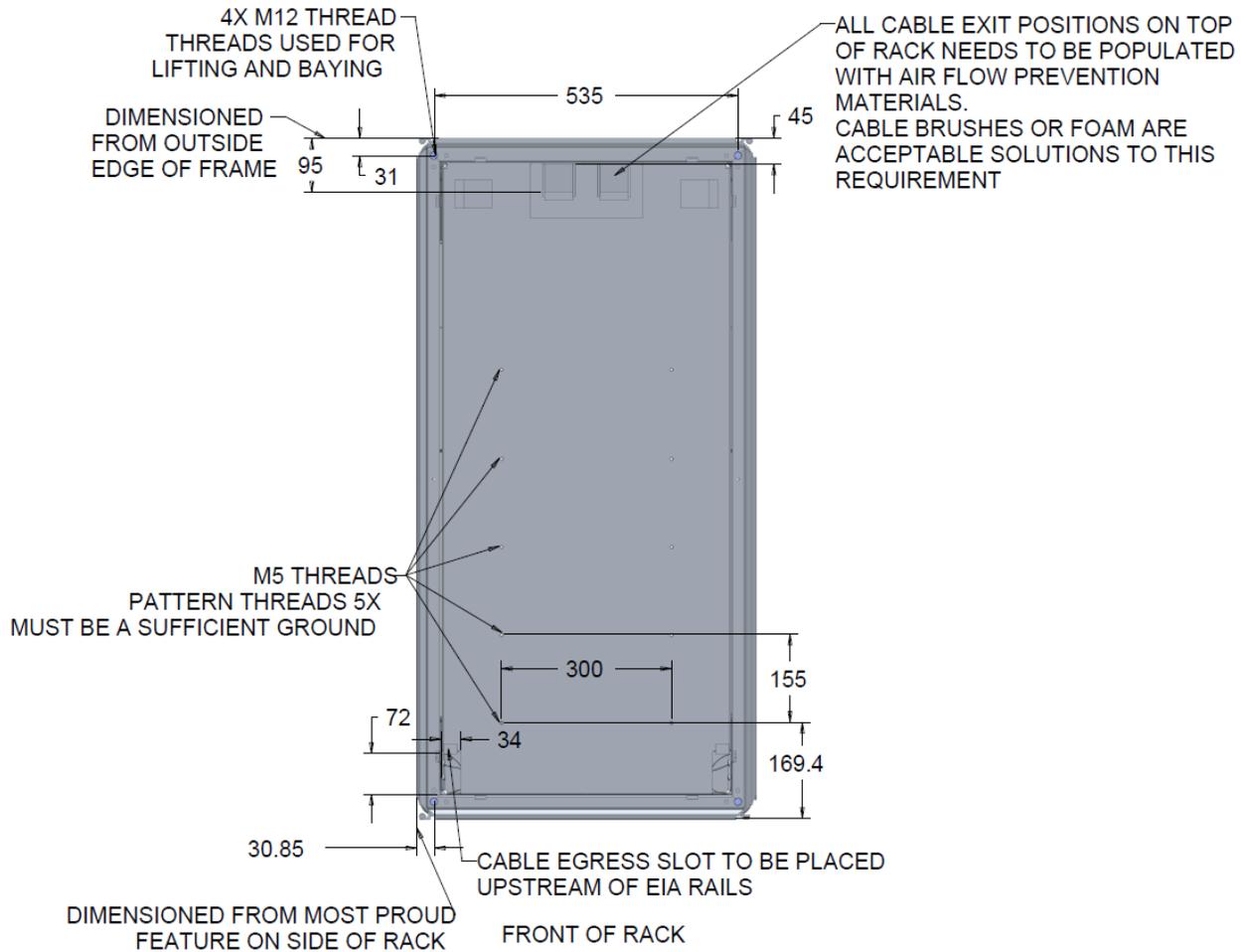


Figure 11 – Top of Rack Interface Elements

5.6.2 Rear to Front Cabling Routing Channel

5.6.2.1 Cables channel should provide access to route cable from both front of rack and rear of rack.

5.6.2.2 Retention feature needs to also allow for cables to be placed into the channel from the inside using a “tuck” action.

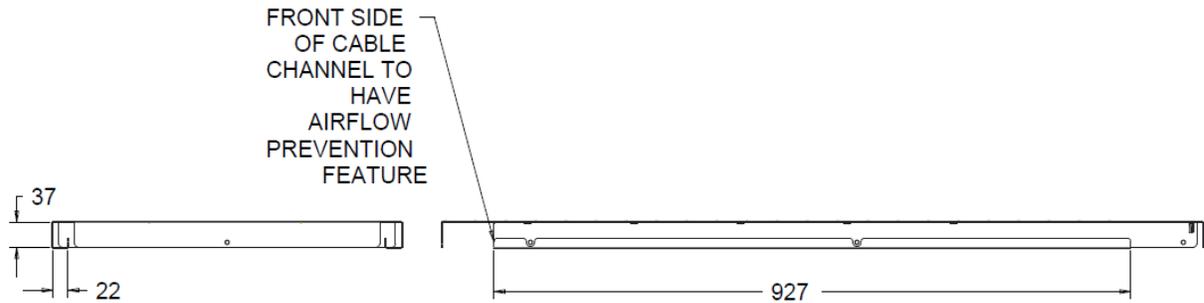


Figure 12 — Dimensional Reference for Rear to Front Cable Routing Channel

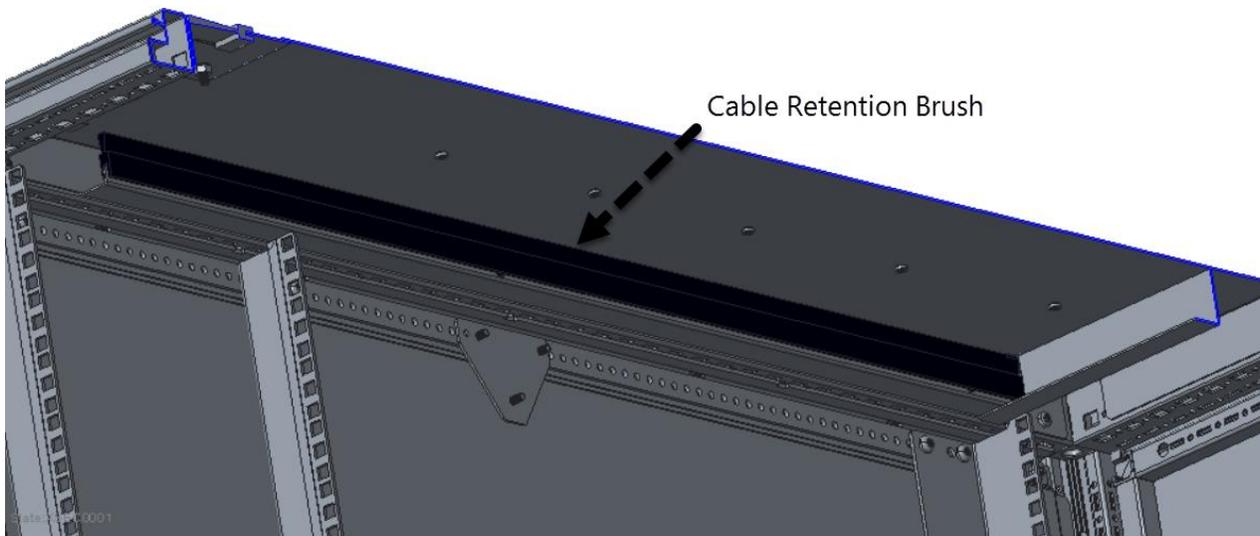
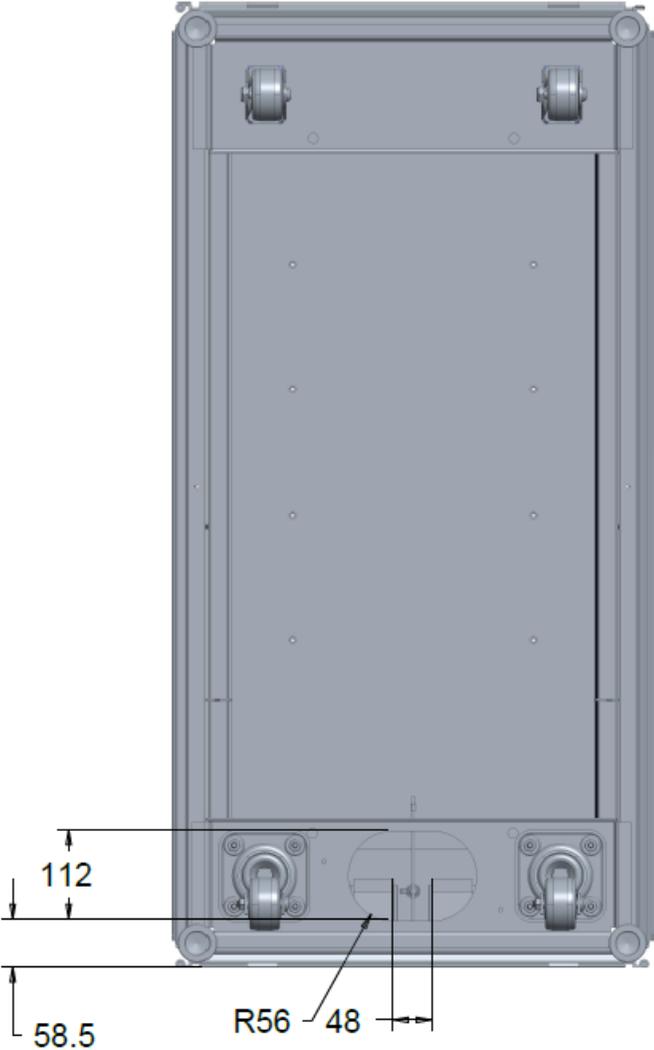


Figure 13 — Cable Retention Brush

5.7 Bottom Panel

- 5.7.1.1 Shall be permanent or secured from the inside of the rack.
- 5.7.1.2 All steel edges shall be covered to protect cables that may encounter them.



REAR OF RACK

Figure 14 – Bottom Panel Cable Egress Feature Dimensions

5.8 Supplier Requirements

5.8.1 Warranty

5.8.1.1 All Racks shall be covered by a minimum of a five (5) year manufacturer's warranty.

5.8.2 Manufacturer support

5.8.2.1 Supplier shall provide global technical support resources.

5.8.2.1.1 When issues arise and Microsoft personnel request, manufacturer shall send local support to resolve issue within 5 business days at manufacturer's expense.

5.8.2.2 All parts – both full product and accessories – shall be documented in each of the following formats

5.8.2.2.1 (PDF) Detailed Cut Sheets to show all dimensional and functional elements. These shall contain a complete Bill of Material for any multi-part system.

5.8.2.2.2 (STEP) Detailed 3D drawings, including packaged and unpackaged products.

5.8.2.3 Manufacturer shall maintain product lists on Microsoft-provided SharePoint site and shall update data within 3 business days of new releases. At a minimum, list shall contain the following:

5.8.2.3.1 Appropriate drawings, as listed in paragraph 5.8.2.2.

5.8.2.3.2 Part numbers and description.

5.8.2.4 Manufacturer shall provide all documentation necessary for RoHS and WEEE compliance for rack platform, including accessories.

5.8.2.5 Manufacturer shall provide Operations and Installation guide to provide detailed information for every item that can be added or removed. Instructions shall be clear and informative and must be complete before racks will be purchased.

5.8.3 ISO 9001

5.8.3.1 The supplier shall maintain ISO 9001 registration for all manufacturing locations.

5.9 Attachment Locations

5.9.1 Exterior rack attachments

5.9.1.1 These nuts shall be tested to confirm that they are capable of safely lifting rack at its heaviest configuration.

5.9.1.2 Two M8 threaded nuts shall be integrated into the rack frame at front and rear with attachment points as described in Figure 15 - Bottom of Frame Mounting Locations.

5.9.1.3 The face of the holes on the front frame rail shall be 1200mm +0/-3mm from the holes on the face of the rear frame rail.

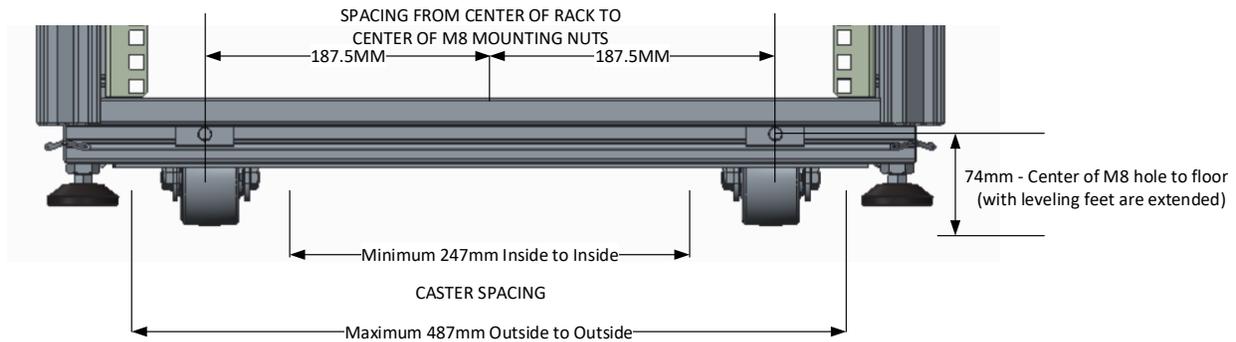


Figure 15 - Bottom of Frame Mounting Locations

5.10 Front-side Network Cable Management

5.10.1 Location

5.10.1.1 Primary network cabling is managed in the front of the rack.

5.10.2 Attachment Requirements

5.10.2.1 Trunks refer to the bundles of traveling vertically in the vertical cable management path before breaking out to go horizontally or exiting the rack.

5.10.2.1.1 Attachment points for the main trunk of cable shall run at the very front of the rack.

5.10.2.1.2 Tool-less installed cable ties are to be placed in the on the flat surface neighboring the EIA rail at the front of the rack. The cable tie is to be in line with the center of each U specified in [Table 4](#) & [Table 5](#). It is recommended that the cable tie be sourced from Rittal (PN 427947). Cable tie component is depicted in [Figure 16](#). The component is panel mounted and required a rectangular cut per the dimensions in XX

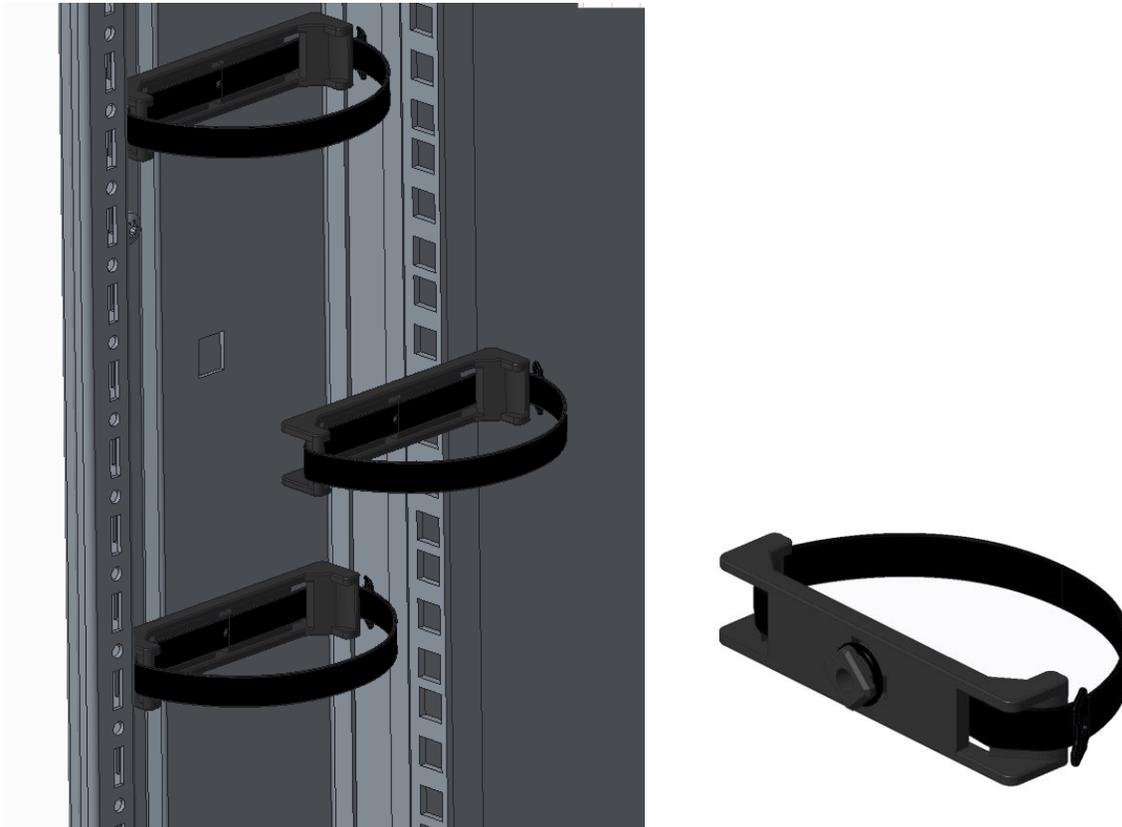


Figure 16 – Front Cable Tie Velcro Harness

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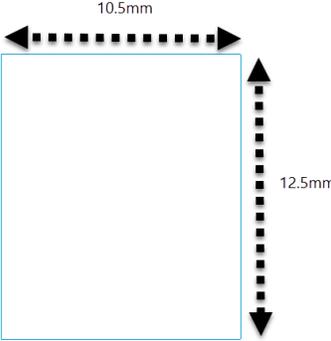


Figure 17 – Front Cable Tie Velcro Harness Mounting Hole Size

Table 4: Cable Tie Locations 48U

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48		

Table 5: Cable Tie Locations 42U

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42								



5.11 Mounting and baying accessories

5.11.1 Requirements

5.11.1.1 Floor Mounting Kit shall utilize mounting locations described in Figure 15

5.12 Security Requirements

5.12.1 Base Requirements

- 5.12.1.1 No entries or openings on the rack front, back, sides, top, or bottom shall be large enough to allow a media device or cable connection to be passed through and attached to the hardware stored in the rack. Unless otherwise defined, this shall mean:
 - 5.12.1.1.1 No opening greater than 75mm
 - 5.12.1.1.2 No opening greater than 50mm that is less than 300mm from any communications port
 - 5.12.1.1.3 Openings that exceed these dimensions shall have a means for closing them off that cannot be defeated when the rack is in its locked state.

5.13 Side Panels

5.13.1 Physical

- 5.13.1.1 Side panels shall be installed on all security racks.
 - 5.13.1.1.1 Can be welded, bolted, or snapped, as long as it meets the requirements in 5.13.2..
 - 5.13.1.1.2 No element of side panel can violate the width requirements in 4.2.2.
 - 5.13.1.1.3 Side panels shall be pre-installed on security racks from factory
- 5.13.1.2 Side panels shall completely secure all internal components while rack has no adjacent racks.

5.13.2 Operational

- 5.13.2.1 May not be opened from outside when doors are secured, but may contain attachment methods only accessible when doors are opened.
- 5.13.2.2 Must withstand 2758kPa (400 PSI) of force with less than 50mm deflection on any items which may be gripped from outside.
- 5.13.2.3 If side panel is pulled more than 50mm from frame, significant permanent deflection must occur so that evidence of deflection is substantial and noticeable. NOTE: This may supersede pressure requirement.

5.14 Accessory Parts

5.14.1 Top of Rack Cable Bracket

5.14.1.1 Rittal PN: 428054

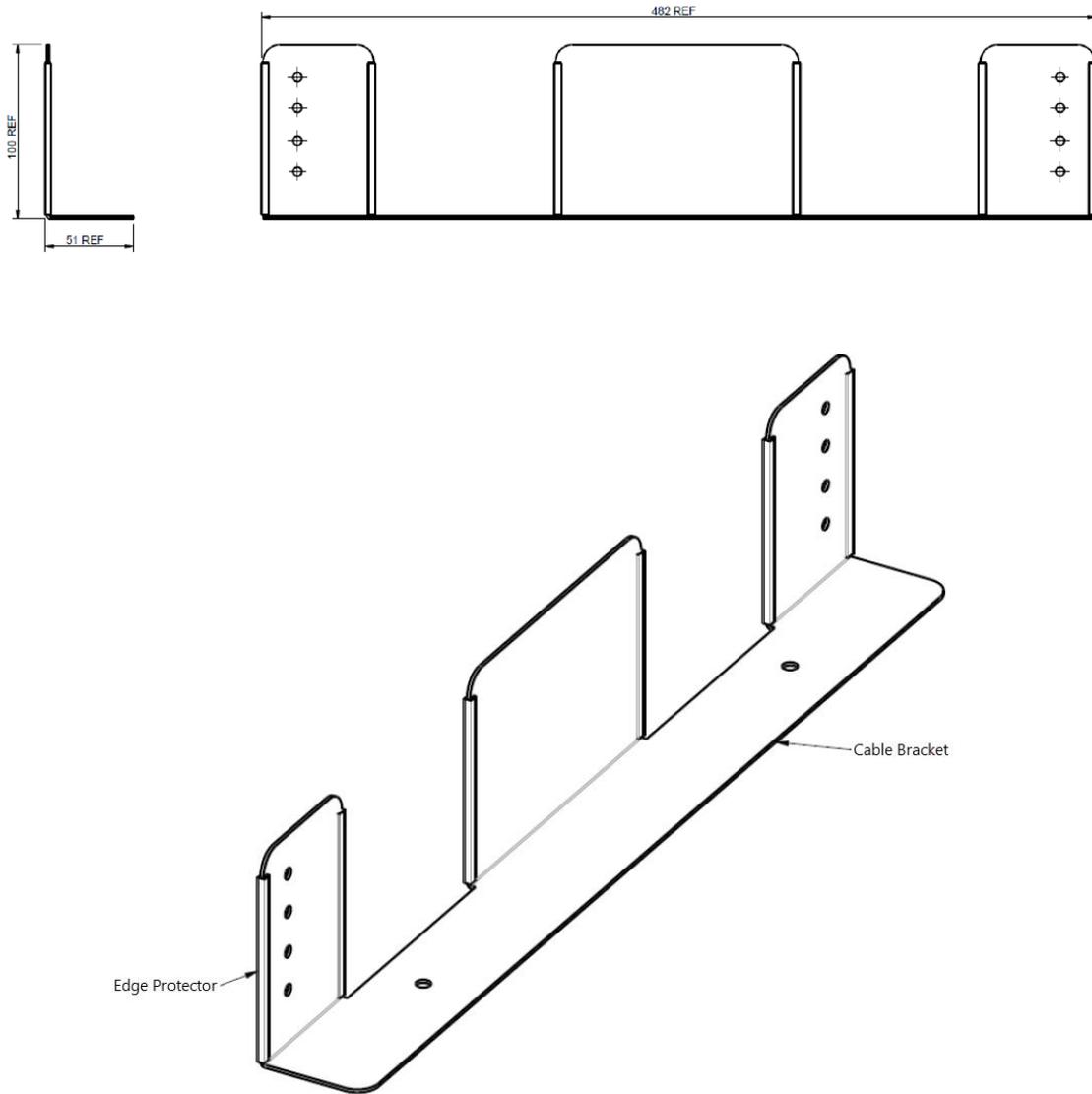


Figure 18 – Top of Rack Cable Bracket

5.14.2 HAC Interface Bracket

5.14.2.1 Rittal PN: 428059

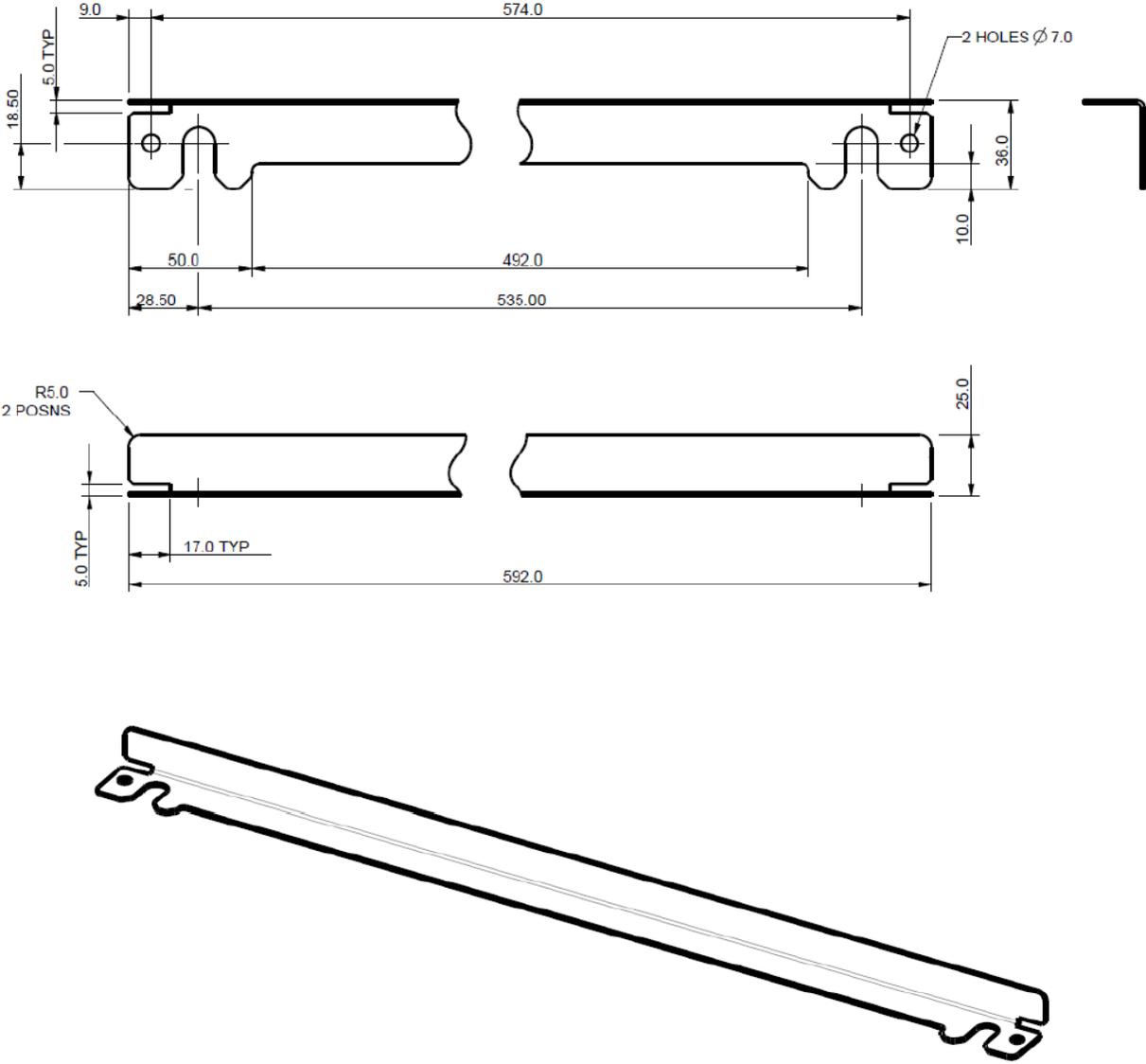


Figure 19 – HAC Interface Bracket

5.15 PMDU Securing Features

5.15.1.1 Holes to be used with self-tapping screws are to be placed per [Figure 20](#) & [Figure 21](#)

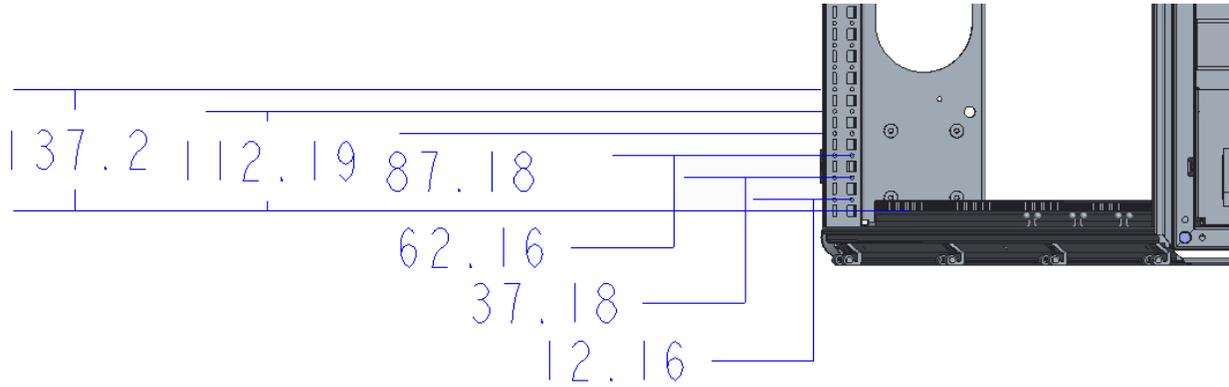


Figure 20 – PMDU Securing Holes

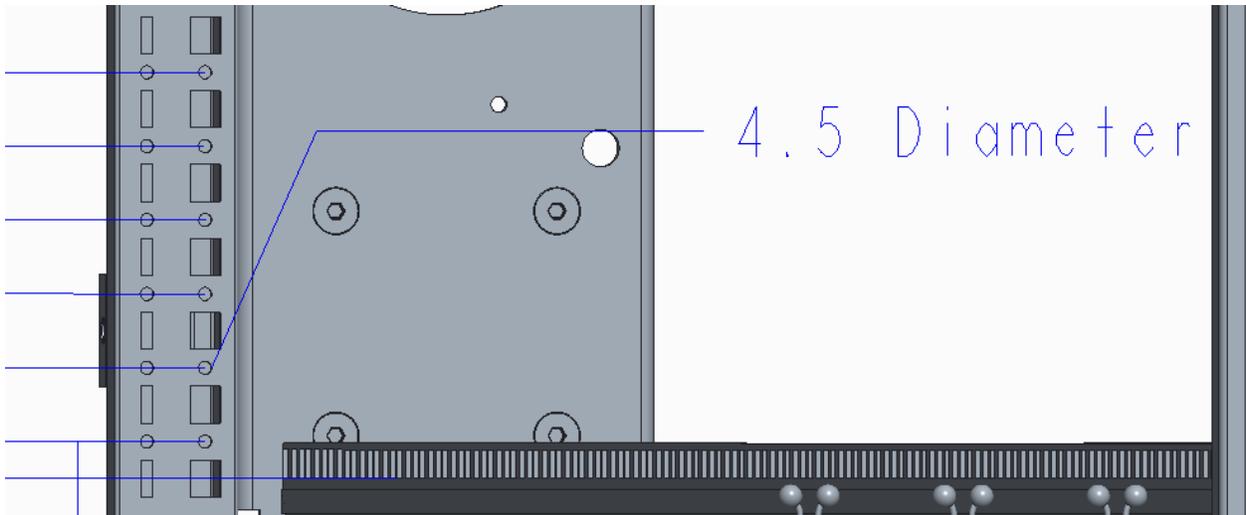


Figure 21 – PMDU Securing Holes

5.16 Doors

5.16.1 Requirements

- 5.16.1.1 Front and rear doors shall be installed on all security racks.
- 5.16.1.2 E2010 rack shall utilize existing door design and use Microsoft's current doors and hinges. The Frame Interface section details the attachment locations. If the frame of the door sits close enough to the mounting holes as described, the entire system shall maintain compliance with 5.12

5.16.2 Frame Interface.

- 5.16.2.1 Door mounting interface shall comply with the dimensions in Figure 22 & Figure 23
- 5.16.2.2 Door mounting interface shall have metal thickness of no less than 2mm.
- 5.16.2.3 If Manufacturers frames do not comply with the Frame Interface as described herein, an accessory piece shall be provided to maintain compliance and shall be priced separately.

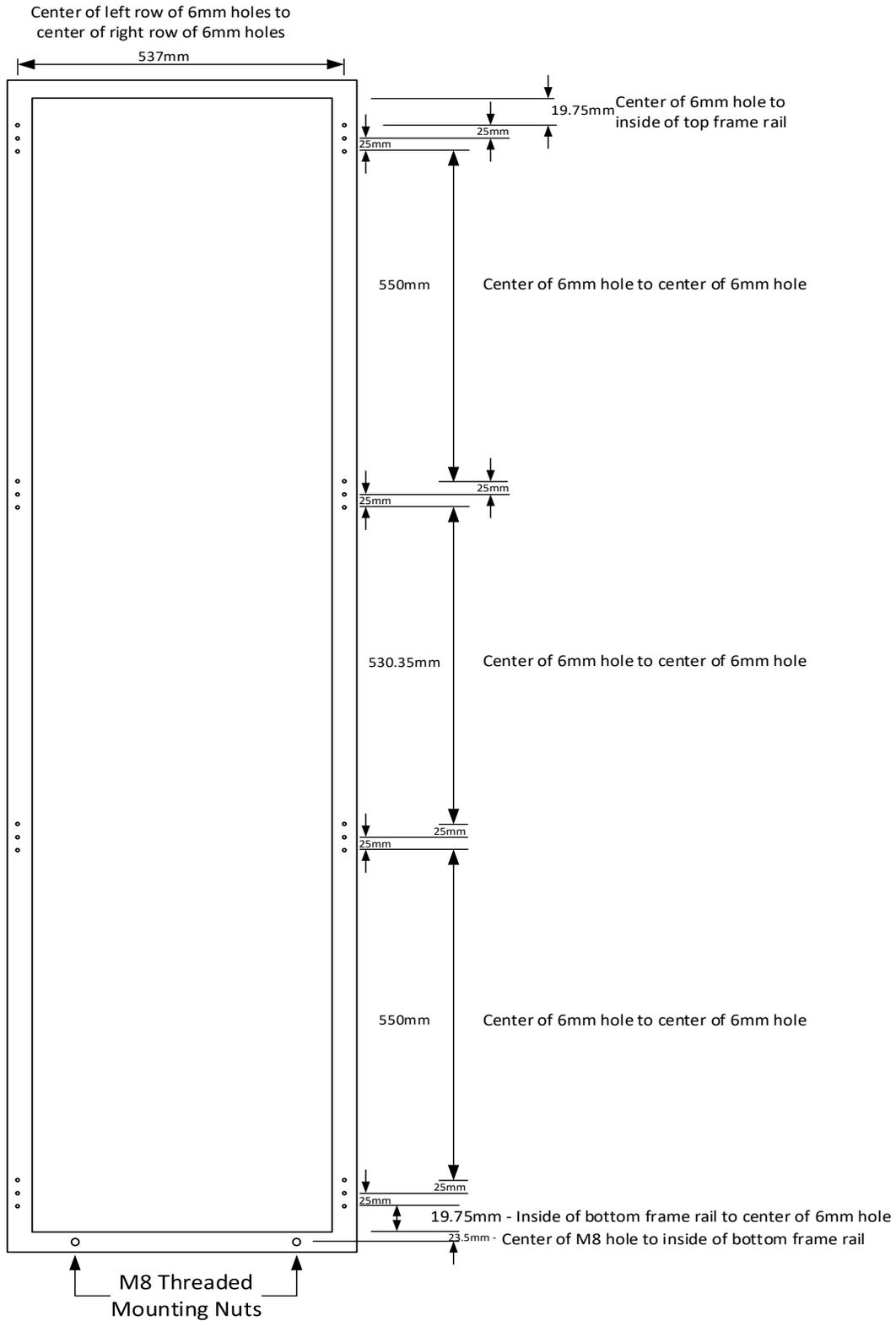


Figure 22 – 42U Door Mounting Locations

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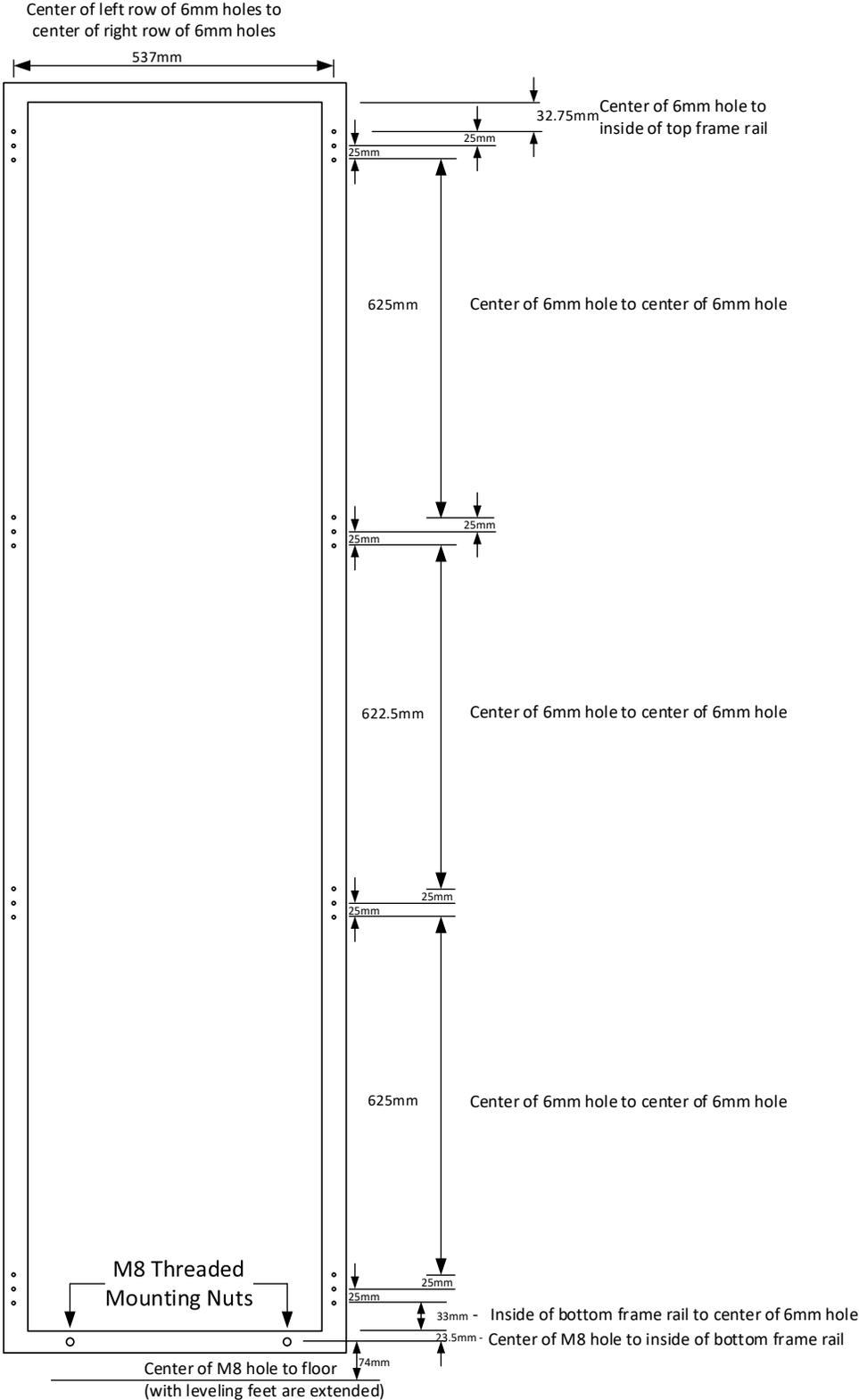


Figure 23 – 48U Door Mounting Locations

5.17 Grounding and Bonding

5.17.1 Requirements

- 5.17.1.1 All doors, accessories, panels, and other components shall be grounded per NEC standards
- 5.17.1.2 All bonds shall employ oxide paste to reduce galvanic corrosion.
- 5.17.1.3 Safety ground connection points should be free of paint and overspray.
- 5.17.1.4 Grounding Terminals shall be provided at the top rear center and the bottom rear center to bond rack to building ground.

5.17.2 Acceptable components

- 5.17.2.1 Exothermic welds at specific joints
- 5.17.2.2 Crimp lugs
- 5.17.2.3 Paint piercing washers
- 5.17.2.4 Grounding strap points for accessory panels and doors

5.18 Corrosion

- 5.18.1.1 Racks will be exposed to moist environments. All metals, including accessories must be protected against corrosion in this environment.

5.19 Seismic

- 5.19.1.1 Attachment points shall be provided on top of rack without creating airflow bypass when seismic anchoring not in use.
- 5.19.1.2 Also see section on “Mounting and Baying Accessories”
- 5.19.1.3 Also see section on “Load Ratings: Ratings and Testing”

6.0 Shipping Specifications

6.1 Maximum Height

- 6.1.1.1 Racks shall be no taller than 2470 mm when removed from shipping trailer.
- 6.1.1.2 Racks, including packaging, shall ship at no taller than 2500mm.

6.2 Packaging

6.2.1 Packaged Sizes

- Configuration 1 (“48U”): 2467mm x 1000mm x 1460mm (H x W x D)
- Configuration 2 (“42U”): 2200mm x 905mm x 1460mm (H x W x D)

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6.2.2 Packaging Requirements

6.2.2.1 *Packaging shall protect all items from damage that could be caused from truck securement elements. These include, but are not limited to:*

- Straps
- Braces

6.2.3 Pallet Requirements

6.2.3.1 *Pallet Interface shall include items according to Figure 24 and Figure 25.*

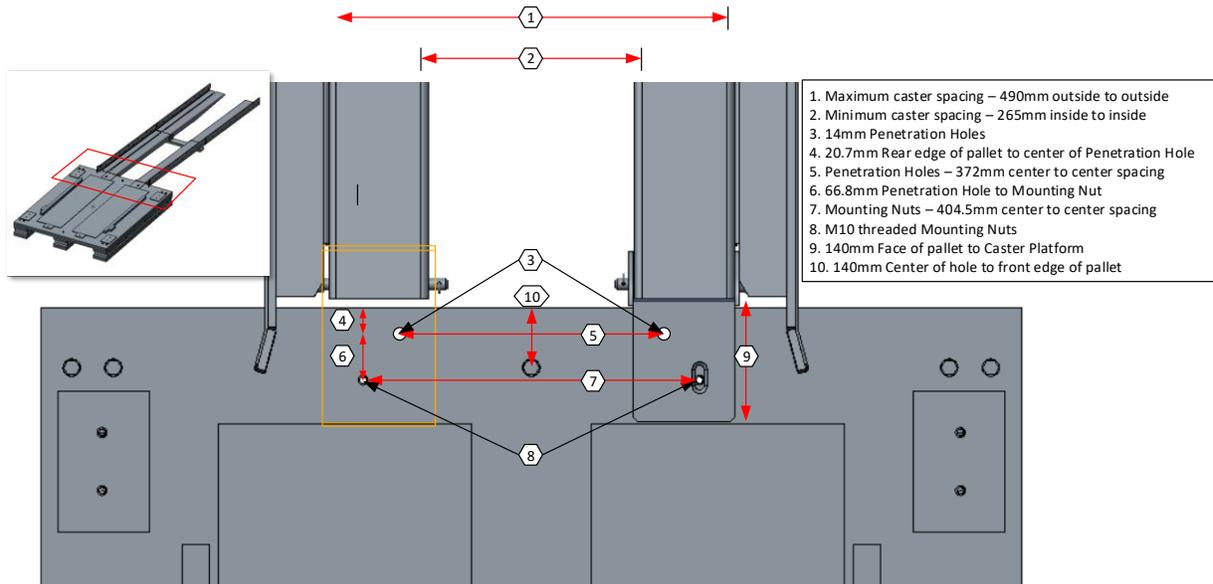


Figure 24 – Pallet Interface Plan View

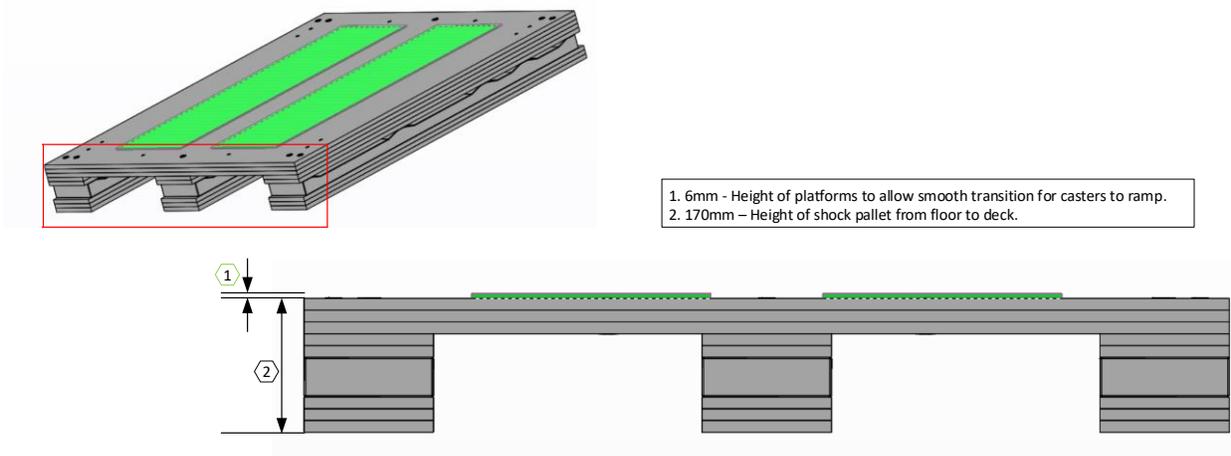


Figure 25 – Rear Pallet Elevation