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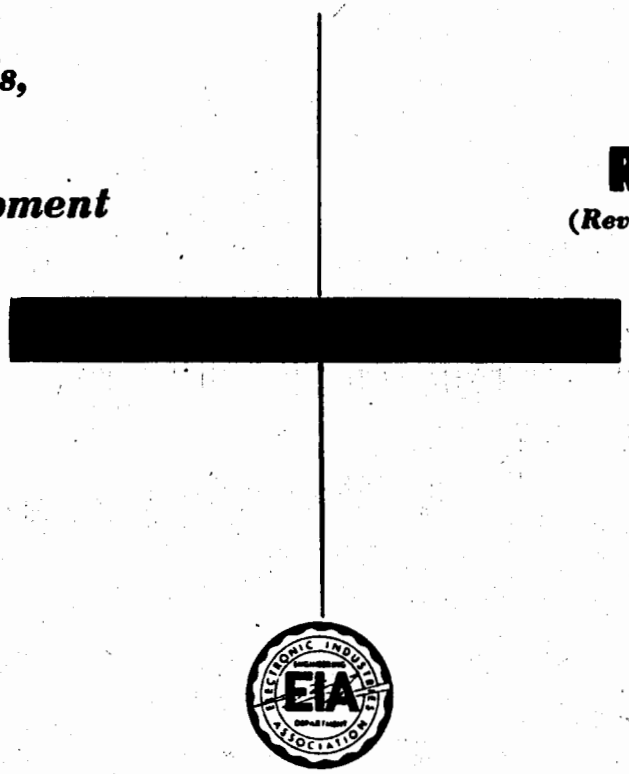
USA STANDARDS INSTITUTE

EIA STANDARD

Racks, Panels,
and
Associated Equipment

RS-310
(Revision of SE-102)



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Engineering Department

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RACK, PANELS, AND ASSOCIATED EQUIPMENT

(From EIA Standard SE-102 and Standards Proposal No. 814 formulated under the cognizance of Working Group P-5.6 on Racks, Panels, and Enclosures, and Committee P-5 on Electromechanical Devices)

1. SCOPE

1.1 This Standard establishes those dimensions which are critical in ensuring compatibility between racks (open and enclosed), panels, and the equipment or apparatus installed thereon. It is intended as a guide to equipment manufacturers and designers.

1.2 The illustrations contained herein shall not be construed to be Standards for construction details.

1.3 Classification

Three cabinet and rack widths to accommodate each of three standard panel widths 19″, 24″, and 30″ are covered by this Standard. 19″ is the preferred width.

2. DEFINITIONS

2.1 Rack — A rack, as defined for the purposes of this Standard, is a floor standing structure primarily designed for, and capable of supporting equipment. All racks described herein provide for the mounting of panels. (See 4.2)

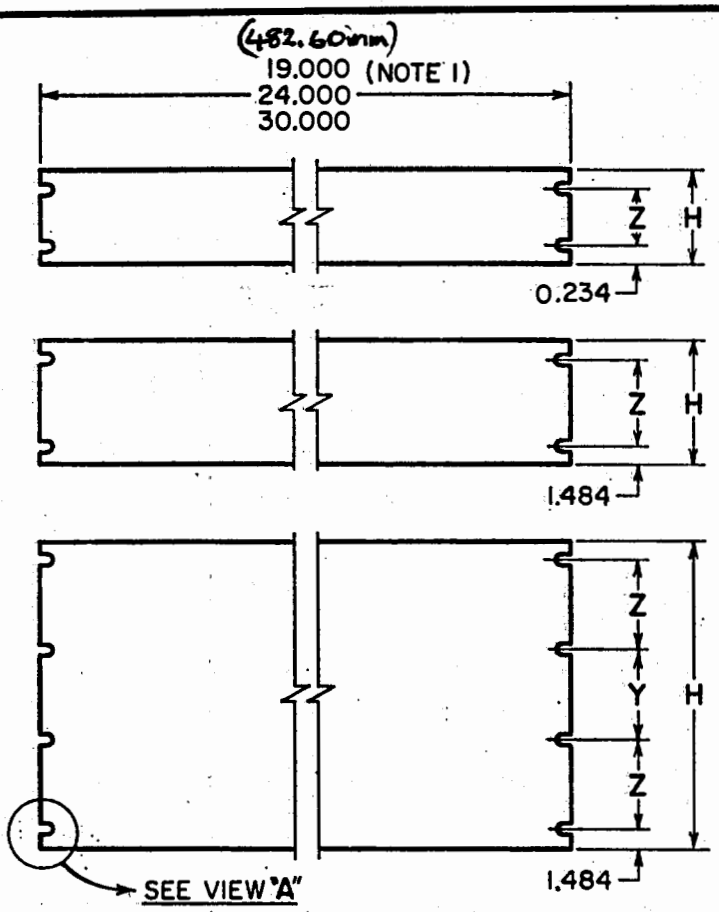
2.1.1 ***Open Rack*** — An open rack, as defined for the purposes of this Standard, consists only of the structural members necessary for supporting of equipment and is not intended to be enclosed. The vertical members provide mounting surfaces with holes for the mounting of panels. (See 4.3)

2.1.2 ***Enclosed Rack*** — An enclosed rack, as defined for the purposes of this Standard, is constructed to have the capability of being completely enclosed. (See 4.4)

2.2 Panels — Panels as defined for the purposes of this Standard are fabricated to be mounted on the mounting surfaces of racks. They are generally used for mounting controls, data presentation, apparatus, or equipments. (See 3.1)

3. PANELS

3.1 Panels shall be standard when they are fabricated to conform with the dimensional requirements shown in Figure 1.



n	NOTE 2 H	Metric	Z
1	1.719	43.66mm	1.250
2	3.469	88.11 mm	3.000

	H		Z
3	5.219	132.56mm	2.250
4	6.969	177.00	4.000
5	8.719	221.46	5.750

	H	Y	Z
6	10.469	3.000	2.250
7	12.219	2.250	3.500
8	13.969	3.000	4.000
9	15.719	4.750	4.000
10	17.469	6.500	4.000
11	19.219	5.750	5.250
12	20.969	7.500	5.250

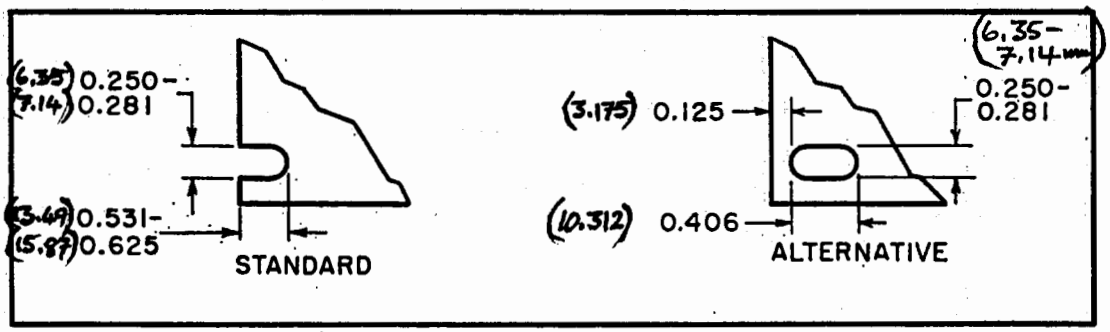
H Metric
265.91
310
354.81
399.2
443.71
488.16
532.6

NOTES: 1. PREFERRED WIDTH

2. DIMENSION $H = 1.750n^{+0}_{-0.031}$ $\left(^{+0}_{-0.787\,mm}\right)$

3. TOLERANCE TO BE ±0.015 UNLESS OTHERWISE SPECIFIED. TOLERANCES TO BE NON-CUMULATIVE. TOLERANCE BETWEEN ANY TWO SLOTS ±0.015 (±0.381mm)

4. PANEL THICKNESS AND NO. OF SLOTS MAY VARY WITH LOAD REQUIREMENTS.



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SLOT SHAPE

FIGURE 1

4. RACKS

4.1 Panel Mounting Holes — Mounting holes shall be standard when spacing conforms to the dimensional requirements as shown in Figure 2, Universal Spacing or Alternative Spacing.

0.281 clearance hole or tap 10-32 Class UNC-2B, with 12-24 Class UNC-2B as an alternative.

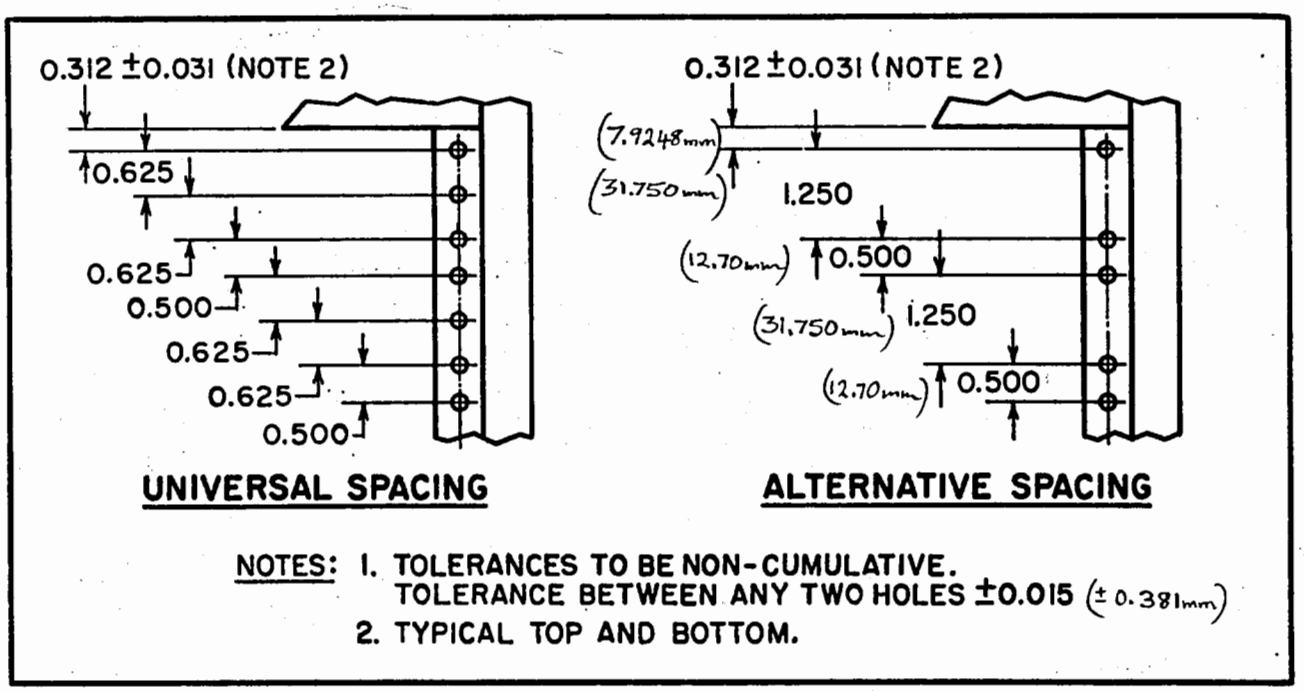


FIGURE 2

4.1.1 ***Clearance Holes*** — If the panel mounting holes are punched or drilled to accept threaded receptacles which are attachable to the mounting surface, they shall be 0.281 ± 0.003.

4.1.2 ***Threaded Holes*** — If the panel mounting holes are threaded in the mounting surface, the threads shall be 10-32 Class UNC-2B, with 12-24 Class UNC-2B as an alternative.

4.2 Rack and Cabinet Vertical Panel Space and Overall Height

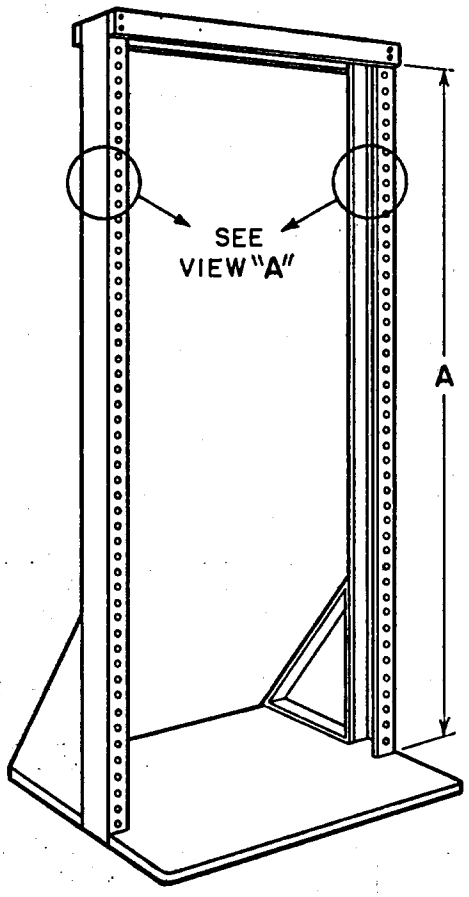
4.2.1 This standard is based on a module of 1.75" and multiples thereof. For purposes of *vertical panel space* and *overall height* standardization, larger modules, each a multiple of 1.75" are recommended, for example, 5.25", 7", and 8.75".

4.2.2 It is recognized that overall cabinet heights for certain functional uses may result which are not multiples of 1.75", when multiples of 1.75" for vertical panel space are used.

4.3 Open Rack Standard Type — Open racks shall be standard when they conform to the dimensional requirements as shown in Figure 3.

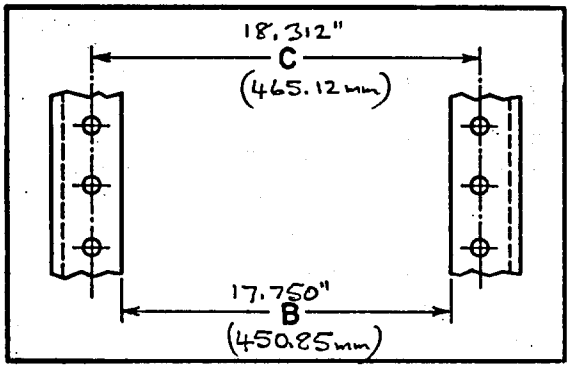
WIDTH		
PANEL	B	C
19.000[1]	17.750 MIN	18.312
24.000	22.750 MIN	23.312
30.000	28.750 MIN	29.312

	VERTICAL PANEL SPACE
n^2	A
12	21.125
16	28.125
18	31.625
21	36.875
38	66.625
41	71.875
44	77.125



NOTES:

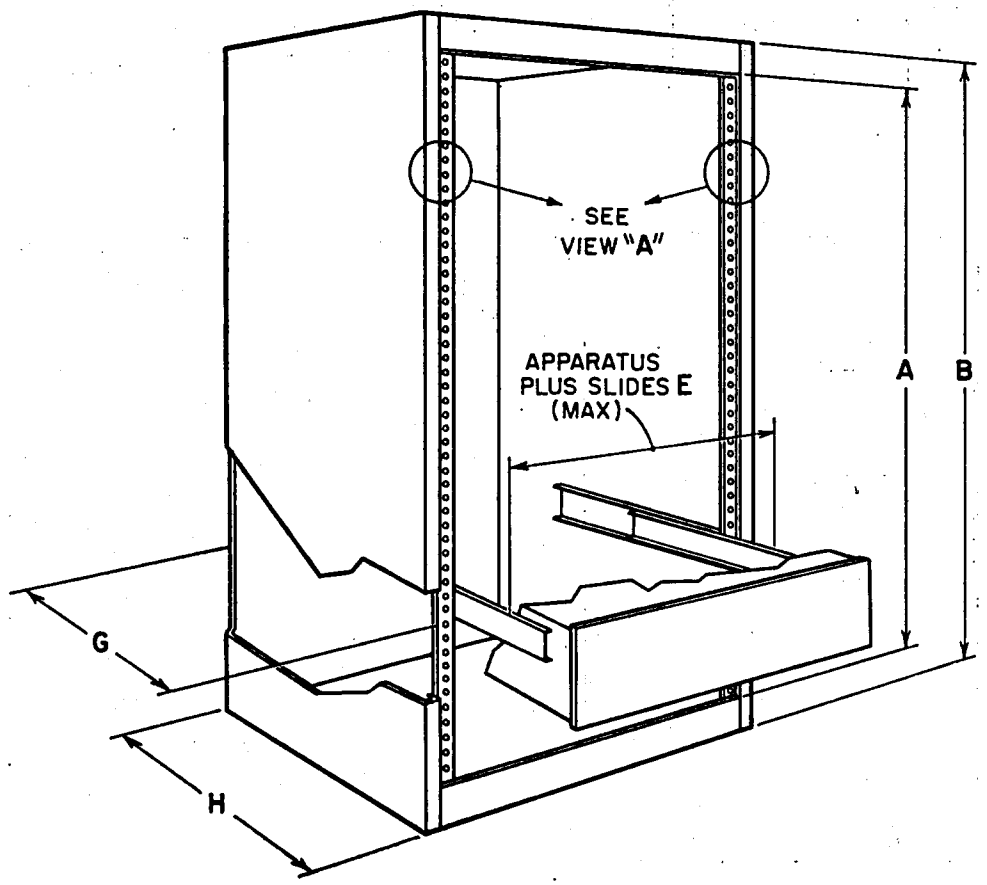
1. PREFERRED WIDTH.
2. NUMBER OF 1.750 MODULES.
3. TOLERANCE TO BE ±.062 (±1.575mm) UNLESS OTHERWISE SPECIFIED. TOLERANCES TO BE NON-CUMULATIVE.

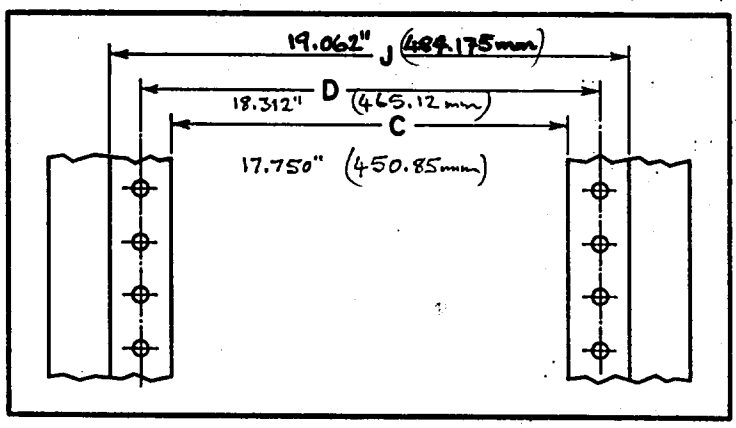


VIEW "A"

FIGURE 3

4.4 Enclosed Rack — Enclosed racks shall be standard when they conform to the dimensional requirements as shown in Figure 4.





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NOTE: 1. TOLERANCE TO BE ± .062 UNLESS OTHERWISE SPECIFIED. TOLERANCES TO BE NON-CUMULATIVE.

(DIMENSIONAL TABLES ON NEXT PAGE)

FIGURE 4

DEPTH	
H[5] ± .500	G[4]
15.250	13.750
18.00	16.50
24.00	22.50
30.00	28.50

WIDTH				
PANEL	C	D	E	J ± .032
19.000[1]	17.750 Min.	18.312	17.625	19.062
24.000	22.750 Min.	23.312	22.625	24.062
30.000	28.750 Min.	29.312	28.625	30.062

484.174

	VERTICAL PANEL SPACE	RESULTING OVERALL HEIGHT
N[2] NAME	A	B[6] ± .500
12 DESK	21.125	30.000
16 BENCH	28.125	36.000
20 COUNTER	35.125	42.000
30 LOOKOVER	52.625	60.00
N[2] NAME	A	B[6]
35	61.375	See Note 3
40 BUILDING DOOR	70.125	80" Max.
44	77.125	See Note 3
45	78.875	See Note 3

NOTES:
1. PREFERRED PANEL WIDTH.
2. MINIMUM NUMBER OF 1.750 MODULES FOR VERTICAL PANEL SPACE.
3. IN ACCORDANCE WITH STRUCTURAL NEEDS.
4. MINIMUM CLEARANCE DEPTH BEHIND PANEL MOUNTING FLANGES APPLIES ONLY WHEN PANELS ARE MOUNTED FLUSH WITH THE FRONT OF THE CABINET. (APPLICABLE OVER FULL PANEL WIDTH.)
5. OVERALL DEPTH.
6. HEIGHT WITHOUT CASTERS.