

DDS 672-1

15 MAY 1984

CALCULATION OF STOREROOM CAPACITIES

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Figure

Figure 1: Stowage capacity

Figure 2: Typical bulk stowage

672-1-a. References

1. Drawing, NAVSHIPS No. S3000-860159 (A Bins) (Valid only for maintenance and repair)
2. Drawing, NAVSHIPS No. S3000-1250722 (A and B Drawers) (Valid only for maintenance and repair)
3. Drawing, NAVSHIPS No. 805-1749068 (Bulk Stowage Telescopic Tube Batten)
4. Drawing, NAVSHIPS No. 805-2217865 (Bulk Stowage Aluminum Grating)
5. Drawing, NAVSHIPS No. 804-4563098 (B, F, O, I, and J Racks)
6. Drawing, NAVSHIPS No. 804-4563099 (J and K Racks; E and L Counters)
7. Drawing, NAVSHIPS No. 804-4563100 (A and B Drawer Shelves; S Bins)
8. Drawing, NAVSHIPS No. 804-4563102 (C, M, and N Racks)
9. Drawing, NAVSHIPS No. 804-4563103 (Storeroom Stowage Aids-Details)
10. Drawing, NAVSEA No. 804-5184185 (R and S Racks)

672-1-b. General

The physical characteristics of the storeroom shall be calculated to ensure that an adequate stowage capacity is provided. The characteristics consist of the following items:

1. Deck area
2. Gross volume
3. Stowage capacity
4. Number and stowage capacity of each type of stowage aid in the storeroom

672-1-c. Definitions

Deck Area - The area in square meters or square feet of the storeroom compartment within the boundaries of the bulkheads and shell plating. Where floor plates are fitted in the storeroom, the area includes the exposed deck and the floor plates.

Material Net Volume - The actual volume of the material to be stowed, including packaging material if the packaging material is required for proper stowage.

Stowage Aid Utilization Factor - The ratio of the net material volume to the stowage capacity for the particular stowage aid.

Storeroom Gross Volume - The volume of the compartment within the boundaries of the bulkheads and shell plating from the deck to the stowage height.

Storeroom Net Volume - The volume of the compartment available for the material to be stowed and any required stowage aids.

Stowage Aid - Any piece of equipment or fitting used for stowage, including bins, drawer shelf units, lockers, modular drawer stowage cabinets, reels, shelving clips, jackrods, and portable or telescopic battens with gratings.

Stowage Capacity - The usable stowage volume provided by the stowage aids.

Stowage Height - The clear height to which stores are to be stacked. It is defined as 2 meters (6 feet 6 inches) above the deck or deck gratings; except for refrigerated storerooms where the height is 1.8 meters (6 feet) above the gratings. However, a minimum of 150mm (6 inches) clear space is required above bulk material and the stowage height must be reduced if necessary to meet this requirement. For cargo storerooms, the stowage height is the height which provides the required clear space of 150mm (6 inches) above bulk stowage material.

672-1-d. Detail Design

The calculations of deck area and gross volume are self-evident from the definitions.

The calculation of a storeroom's stowage capacity consists of summing the stowage of each stowage aid in that storeroom.

The stowage capacity of bins, racks, drawer shelf units, and modular drawer stowage cabinets is calculated in the following manner (see Fig. 1):

1. Calculate the area of the shelf. The area is the shelf width (B) multiplied by (A) (the shelf depth minus one-half the flange depth).
2. Multiply the shelf area by (C) (the height between shelves minus one-half the flange height) to determine the stowage capacity per shelf.

3. The stowage capacity of a particular stowage aid is the number of shelves of that aid (up to the stowage height) multiplied by the stowage capacity per shelf.

4. The material net volume for a particular stowage aid is its stowage capacity multiplied by the Stowage Aid Utilization factor (see Table I). This method was used to determine the stowage capacities of the standard stowage aids given in Table I.

The material net volume of bulk stowage is determined as follows (see Fig. 2):

1. Aisles with a clear width of 510mm (24 inches) (which requires a total aisle width of 740mm (29 inches) for telescopic tube battens and 760mm (30 inches) for portable battens) shall be provided in accordance with the following:

(a) The aisle shall extend from the door to within 915mm (36 inches) of the bulkhead opposite the door except for submarines. For submarines the aisle shall extend from the door to within 760mm (30 inches) of the bulkhead opposite the door.

(b) Access to all valves and other damage control fittings shall be provided.

(c) No portion of the storeroom shall be more than 1.5 meters (5 feet) from an aisle except in submarines.

2. The deck area for stowage shall be taken within the boundaries of the fixed battens or cooling coils minus the area of the aisles.

3. Multiply the deck area by the proper stowage height.

4. The volume of any structure, piping, ventilation, or other interference within the borders of the volume shall be deducted.

5. The resulting number is the stowage capacity of the bulk stowage area.

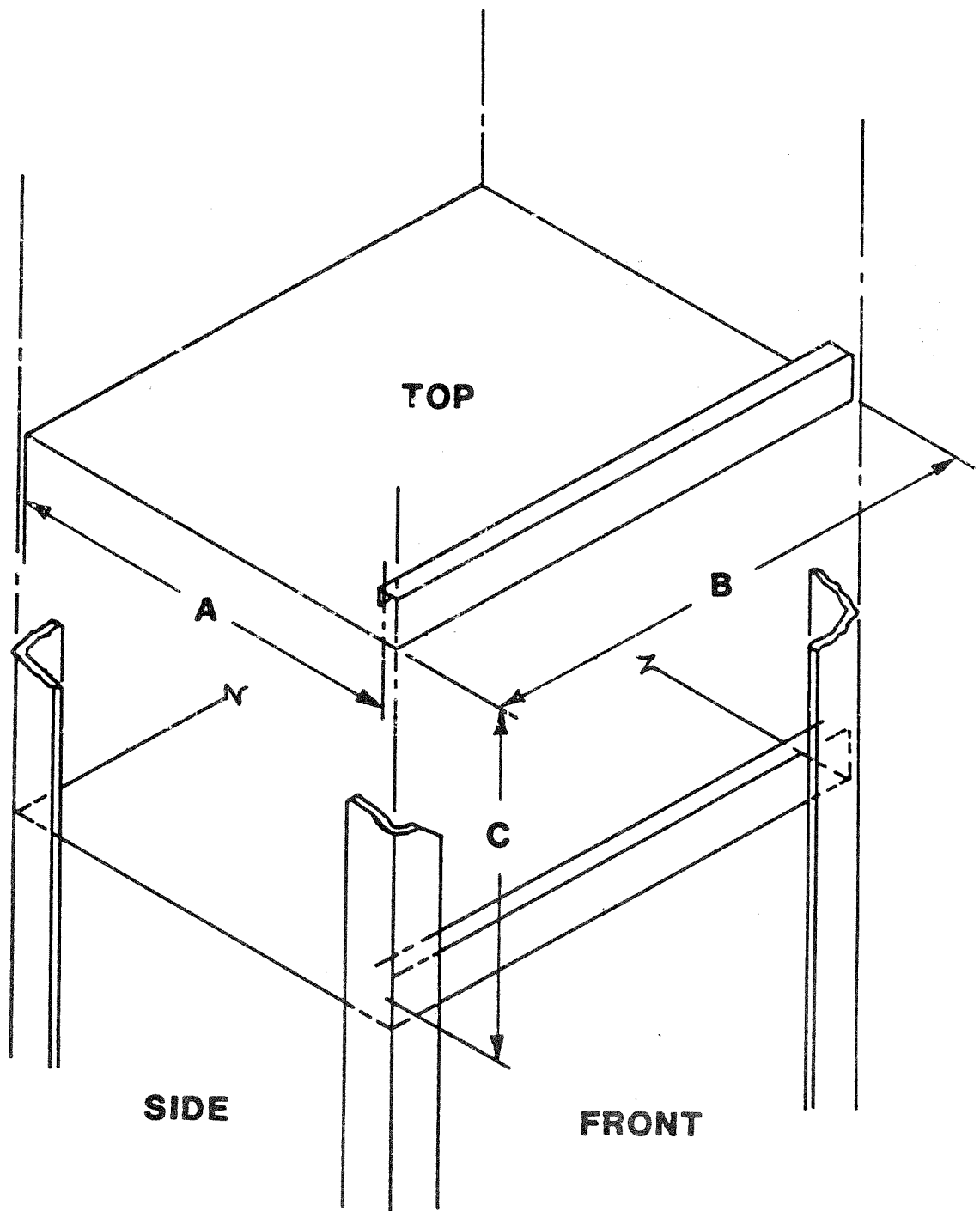
6. The material net capacity of the bulk stowage area is the stowage capacity multiplied by the stowage aid utilization factor (see Table I).

Table I

Stowage aid (1)	Stowage capacity		Stowage aid utili- zation factor	Material net volume	
	(cubic meters)	(cubic feet)		(cubic meters)	(cubic feet)
A Drawer	0.01	0.23	0.70	0.01	0.16
B Bin 610 mm (24 inches wide)	0.56	19.7	0.60	0.30	11.8
B Bin 915 mm (36 inches wide)	0.87	30.6	0.60	0.50	18.4
B Drawer	0.02	0.62	0.70	0.01	0.43
F Bin	0.57	20.0	0.60	0.57	20.0
I Bin	1.34	47.4	0.75	1.01	35.6
J Bin	0.89	31.3	0.75	0.67	23.5
J Rack	1.16	41.0	0.75	0.91	30.8
K Rack	1.62	57.3	0.75	1.21	43.0
L Counter	0.83	29.4	0.60	0.50	17.6
MDS Cabinet		(2)	0.80		
O Bin	0.55	19.5	0.60	0.30	11.7
S Bin	0.70	24.6	0.60	0.40	14.8
Bulk Stowage			0.90		

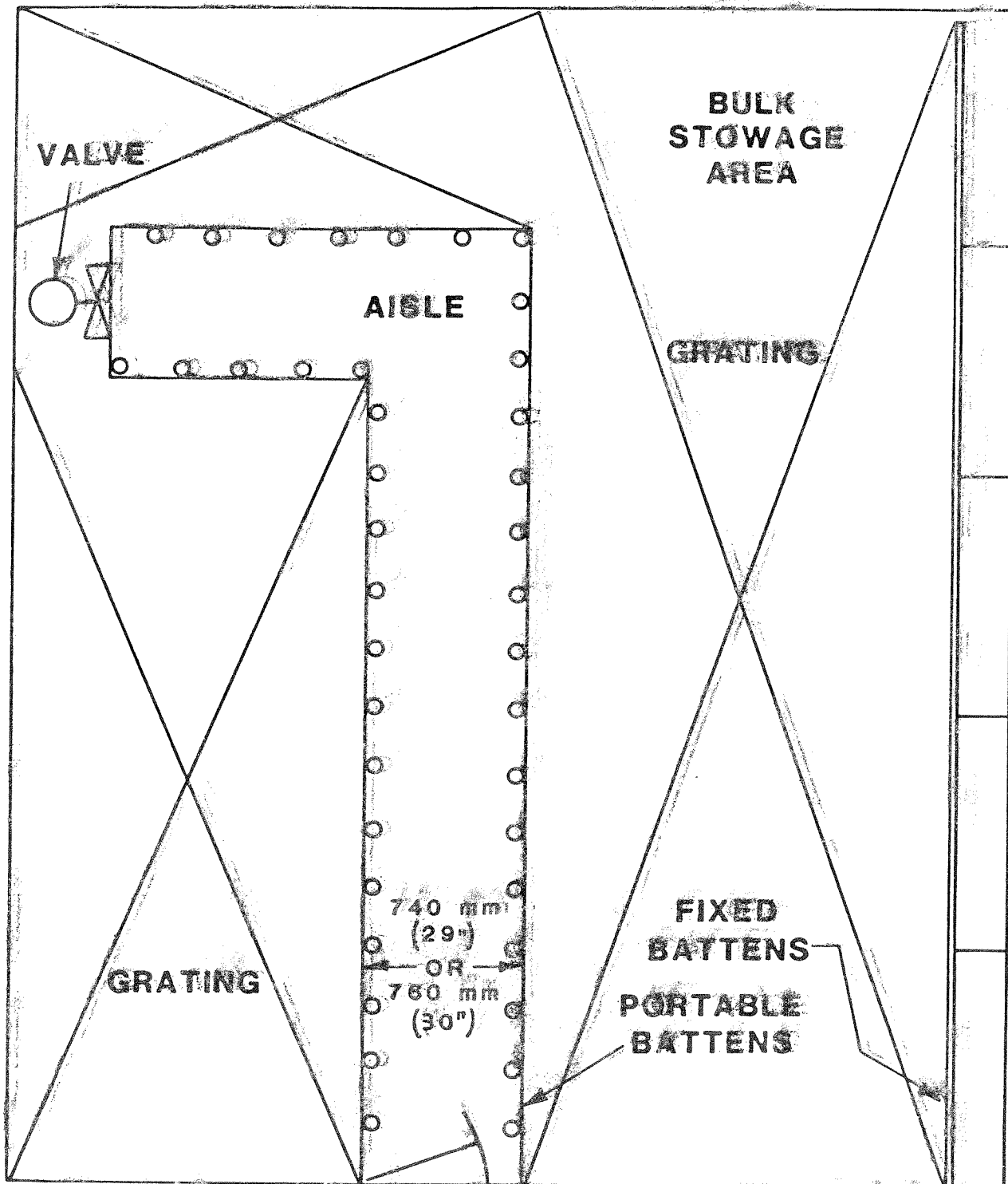
Note (1): Stowage aids are illustrated in references (1)-(10).

Note (2): Stowage capacity will vary according to model and drawer mix.



STOWAGE CAPACITY

Figure 1



TYPICAL BULK STOWAGE

Figure 2