

HEATING VENTILATING AIR CONDITIONING GUIDE 1944

TABLE 1. TYPICAL HEATING AND VENTILATION PRACTICES FOR SHIPS

SPACE	TYPE OF VENTILATION		TYPE OF HEATING	AIR CHANGE MINUTES	REMARKS
	Sup.	Exh.			
Crews Quarters.....	Mech.	Mech. or Nat.	H.B. ^a or D.R. ^b	5-6	
Toilets and Showers.....	Nat.	Mech.	D.R.	3-4	
Chart House.....	Mech.	Mech. or Nat.	H.B. or D.R.	5-6	
Passenger & Officers Qtrs.	Mech.	Mech. or Nat.	H.B. or D.R.	4-6	
Office & Similar Spaces.....	Mech.	Mech. or Nat.	H.B. or D.R.	5-6	May be exhausted through galleys and Pantries.
Mess Rooms.....	Mech.	Mech. or Nat.	H.B. or D.R.	4-6	
Dining Salons.....	Mech.	Mech. or Nat.	H.B. or D.R.	3-6	May be exhausted through galleys and Pantries.
Galley and Pantry.....	Mech. & Nat.	Mech.	H.B. or D.R.	1-2	Tempered air Sup.
Deck Pantries (No cooking Equipment).....	Mech. & Nat.	Mech.	H.B. or D.R.	3-6	
Stores Spaces (Adjacent to Living Quarters).....	Mech. or Nat.	Nat. or Mech.		15-20	
Stores Spaces (Isolated Locations).....	Mech. or Nat.	Nat. or Mech.		15-30	
Hospital Spaces.....	Mech.	Mech.	H.B. or D.R.	4	
Soiled Linens and Oilskin Lockers.....	Nat.	Mech.	H.B. or D.R.	15-20	
Shops.....	Mech.	Mech. or Nat.	H.B. or D.R.	6-10	
Group Berthing Spaces.....	Mech.	Mech. or Nat.	H.B. or D.R.	3-6	
CO ₂ Bottle Space.....	Nat.	Mech.	D.R.	10	
Battery Room.....	Nat.	Mech.	H.B.	2	Tempered air Sup.
Laundry.....	Mech.	Mech.	H.B.	1-4	
Dry Cargo Holds.....	Mech. or Nat.	Nat. or Mech.		20-30	
Steering Gear Space.....	Mech. or Nat.	Mech. or Nat.	H.B. or D.R.	2-6	Unit Heater if desired.
Dry Stores.....	Mech.	Nat. or Mech.		6-10	
Gyro Room.....	Mech.	Nat. or Mech.		3-6	
Theaters and Halls.....	Mech.	Nat. or Mech.	H.B. or D.R.	6-8	
Passageways.....	Nat.	Nat.	D.R.		Exhausting or Supplying adjacent Quarters.
Engine & Boiler Rooms.....	Mech. or Nat.	Mech. or Nat.		1-2	
Misc. Machinery.....	Mech. or Nat.	Mech. or Nat.		2-4	
Resistor Spaces.....	Nat.	Mech.		10	
Stair Wells.....	Nat.	Nat.	D.R.		Same as passageways. Exh. at top.

^aH. B.—Hot Blast System.
^bD. R.—Direct Radiation.

CHAPTER 49. MARINE HEATING AND VENTILATION

during periods while in port. Such spaces should be equipped so as to heat them to about 50 F during such periods.

Living Spaces

The minimum quantity of air required for any space which is fitted for sleeping or office work, including hospital spaces, should be that which will limit the temperature rise over the outside air conditions to not more than 10 F (a rise of 7 F is more satisfactory if practicable), or a minimum of 30 cfm per person, whichever is the greater. For spaces fitted for eating, recreation, or manual work the rise may be taken at 10 F with not less than 20 cfm per person.

It will be noted that the quantities thus obtained are minimum and should be supplied by mechanical means. This is especially important if the spaces are located inside of the ship and have no direct weather exposures with ample openings, such as portholes or windows, which may remain open even in inclement weather. The same requirement applies to the necessity for mechanical exhaust, although natural exhaust may be used where only a short run of duct is required.

If the air to these spaces is supplied by mechanical ventilation it should enter through registers or diffusing type terminals. The installation of bracket fans within these compartments at proper locations and of sufficient number will aid materially in providing proper distribution for comfort.

Heat should be furnished to these spaces to maintain the following temperatures when operating in the minimum winter conditions:

Staterooms, Berthing, Messing and Office spaces.....	70 F
Working spaces and Shops.....	60 F
Hospital spaces.....	75 to 78 F

Toilets, Washrooms, Showers and Baths

Spaces for this purpose should be fitted with mechanical exhaust ventilation for odor and steam removal. They should have one or more well located exhaust terminals overhead; one will usually suffice for the average size space. The supply may be taken naturally. Generally, the surrounding living or working spaces are exhausted through them. The minimum total quantity exhausted should be that which would change the air within the compartment in 6 min, plus 25 cfm for each fixture, plus 50 cfm for each shower head. Air requirements on merchant vessels are commonly estimated on the basis of a 4-min rate of change.

Heating should be obtained by use of convection-type heaters which should maintain 70 to 80 F for bathing or washing spaces and 70 F for toilet spaces when the outside winter temperature is at the design condition.

Galleys, Bakeries, and Food Handling Spaces

The problem of the ventilation of spaces fitted for cooking and food preparation is primarily one of heat and smoke or fume removal. Mechanical exhaust is always required for this purpose. The supply may be natural, but the required exhaust capacity will be most satisfactory if arranged for 50 per cent mechanical and 50 per cent natural.

The exhaust quantities are generally large and may be predicated on restricting the ambient temperature rise to about 15 F over the outside