

CHAPTER 39

VENTILATION SYSTEM

39-1 GENERAL:-

Mechanical ventilation for this vessel is provided by seven motor driven ventilation sets, four of which operate exhaust systems and the other three supply systems.

39-2 FORWARD VENTILATION:-

The vessel forward of the engine space is ventilated by Mechanical Supply System #1-18 and Natural Supply through vent hood in inclined bulkhead on Superstructure Deck, frames 5-6, port and starboard, and openings in the Main Deck and by Mechanical Exhaust System #01-14.

Galley: Natural Supply through vent in inboard bulkhead, frame 14-15, port, and also from vent hood in inclined bulkhead and by Mechanical Exhaust System #01-15.

39-3 ENGINE AND BOILER ROOMS:-

Engine and boiler rooms are ventilated by Mechanical Supply System #1-19 and Natural Supply through intake on Superstructure Deck, frame 19-20, starboard, and by Mechanical Exhaust Systems #01-20 and #01-23.

39-4 AFT VENTILATION:-

The vessel aft of the engine space is ventilated by Mechanical Supply System #01-24 and Natural Exhaust through openings in the Main Deck and aft engine room bulkhead.

39-5 HEATERS:-

Two combination heaters are provided. These heaters are installed in Supply Systems #1-18 and #01-24 adjacent to and on the discharge side of the fans. The forward heater has a designed temperature range of 10° F. to 84; the after heater 10° F. to 88° F; both heaters are controlled by a thermostatically operated steam valve.

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39-6 OPERATION:-

Ventilation fans with the exception of the engine room and galley exhaust fans are fitted with two speed motors. The high speed is intended for use in warm weather when the maximum cooling effect is desired and the low speed is provided for use in cool weather. The low speed will require less power, will produce less noise, and is more than ample for maintaining the inside atmosphere at a satisfactory purity level.

It will probably be found advantageous to operate the ventilation for radio central during battle in order to keep the operating personnel physically capable of fulfilling their duties. The galley ventilation should be operated whenever cooking is in progress, even if the ship is in Condition ABLE. These spaces are above the Main Deck, and operating the ventilation does not constitute a flooding hazard, but is only dangerous in case of a gas attack. The ventilation to the steering gear room should be operated whenever the space is manned so that personnel will be physically able to do their duty.

The engine room is ventilated by "spot" cooling. The supply air is led directly to watch stations and the terminals are close enough to the personnel to provide evaporative cooling. In hot weather, the air stream should be directed against the front of the watchstander's torso, for air blown on the head or the back of a man's neck will result in discomfort even in the hottest compartment.

Ventilation requires that air be supplied to a space, circulated within the space, and exhausted from the space. The supply system provides the air, the duct arrangement and bracket fans circulate the air, and the exhaust system removes the used air thus making way for more fresh air to be delivered by the supply system. If any one of these three factors is inadequate, the ventilation will be unsatisfactory. Supply ventilation for living spaces is carried to berthing areas, is circulated through branch ducts and by bracket fans, and is exhausted through openings in the decks, passageways or directly from the

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39-7

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39-6

OPERATION:-

space. Thus, in order to keep the ventilation functioning, it is necessary to keep these exhaust systems running at all times, even though spaces such as pantries are not continuously occupied. The continuous operation of all exhaust systems becomes particularly important when ships are in the wartime cruising condition with all means of access closed.

Ventilation weather openings should be kept open as long as possible in moderately rough weather. Closing down the ventilation while cruising in warm water results in increased temperatures and sharply increased humidities.

Wetting down topside decks in way of ventilation intakes will reduce the quantity of dirt carried into the ship. Gauze is sometimes fitted over supply terminals by ship's personnel for use as filters. This expedient not only keeps the dirt out but also keeps the ventilation air from entering, and will cause overheating in warm weather. The best way to reduce the quantity of dirt entering through ventilation ducts is to keep the systems clean. This latter method will provide cleanliness and ventilation simultaneously.

39-7

MAINTENANCE:-

Ventilation systems are composed of weather openings, ducts, screens, heaters, fans and terminals. A great quantity of air passes through or over these elements, and it is inevitable that dirt will collect on these devices. Unfortunately much of this accumulation is within the ducts where it is not easily seen, and a definite system of inspection and service is necessary.

Screens and ventilation heaters collect dirt faster than other elements, and if they are not properly serviced the air quantities will be reduced to a third or fourth of their normal amounts. Ventilation screens in the galley should be given particular attention; however, all screens should be inspected at least weekly and heaters at least monthly and

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39-7 MAINTENANCE:-

cleaned as necessary.

Ducts interiors, fan blades, fan casings, and other fittings will also accumulate dirt. These should be inspected quarterly and cleaned as necessary.

Cleanout holes are provided for proper maintenance. Dirt not only reduces air quantities, but also constitutes a serious fire hazard. A clean duct is a good flame arrester because of the cooling effect of duct metal, but one that is dirty acts as a fuse and will propagate a fire by igniting successive accumulations of combustible matter along the duct's length. Also, the flame arresting properties of a screen fouled with oily dirt will be negligible.

Swabs, deck gear, and miscellaneous trash should not be stowed in fan rooms or ventilation trunks. This restricts the air flow, increases the quantity of dirt and odors that are taken inboard, and constitutes a bad fire hazard. Clothes secured to ventilation terminals for drying will restrict the air flow and increase the moisture content of the compartment air. Ventilation terminals should not be used for the stowage of clothing, shoes, toilet articles or other material. Deck stowage arrangements should be such that ventilation weather openings and forced draft blower intakes will not be restricted.

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39-8

SYSTEM
NUMBER

01-14
Exhau

01-15
Exhau

01-20
Exhau

01-23
Exhau

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TABLE 39-1

39-8 LIST OF VENTILATING SYSTEMS:-

SYSTEM NUMBER	SPACES VENTILATED	HEATED OR COLD	TYPE	CAPACITY C.F.M.	STATIC PRESS. INCHES
	DECK, COMPARTMENT NAME AND NUMBER				
01-14 Exhaust	<u>Superstructure Deck</u> Chart & Radio Room A-0101CL <u>Main Deck</u> Crew's space W.R. & W.C. space, A-103L, passage & Officer's W.R. & W.C. A-103-1/2L <u>Hold</u> Crew & Landing Force Berthing & Messing A-206L Refrig. mach'y. & dry provision stores A-211-2AE General Stores & Gyro Rm. A-211-5AC Control located in hospital space A-104EL		Axial Flow	4500	2.5
01-15 Exhaust	<u>Main Deck</u> Galley A-104-1/2EL Control located in Galley Stores A-104-1/2EL		Prop.	5000	2.5
01-20 Exhaust	<u>Hold</u> Engine Room B-1 (port side); control located in passage, B-1 (port side)		Prop.	5000	.375
01-23 Exhaust	<u>Hold</u> Engine Room B-1 (stbd. side); control located in passage, B-1 (stbd. side)		Prop.	5000	.375

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TABLE 39-1 (cont'd.)

39-8 LIST OF VENTILATING SYSTEMS:-

SYSTEM NUMBER	SPACES VENTILATED	HEATED OR COLD	TYPE	CAPACITY C.F.M.	STATIC PRESS. INCHES
	DECK, COMPARTMENT NAME AND NUMBER				
01-24 Supply	<u>Main Deck</u> General Workshop C-102 1/2A Engineers Stores C-102A <u>Hold</u> Engine Room B-1 Aux. Mach. space C-201EL P/S Landing Force Berthing C-201EL 20 M/M Magazine C-202M Steering Gear Flat C-206E Control located in pas- sage, B-1 (port side)	Heated Heated Cold Heated Heated Heated Heated	Axial Flow	4655	2.5
1-18 Supply	<u>Superstructure Deck</u> Chart & Radio Room A-0101CL <u>Hold</u> Crew & Landing Force Berthing & Messing A-208L 20 M/M Magazine A-209M Officers Berthing & Messing A-210L General Stores & Gyro Room A-211-5AC Control located in pas- sage A-103L	Heated Heated Heated Heated	Axial Flow	4500	2.5
1-19 Supply	<u>Main Deck</u> Boiler Room C-101 1/2E <u>Hold</u> Engine Room B-1 Control located in pas- sage, B-1 (stbd. side)		Axial Flow	5000	2.0

For further information concerning the Ventilation System, see PLATE XVII.

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