

MACHINERY AND EQUIPMENT

Learning Outcome:

After the class discussion, the students are expected to:

- Be able to know the different shipboard machinery and equipment
- Know the different types of propulsion used by the navy

1. **Ship Propulsion Engines:** Those engines used aboard ship that will enable the ship to move by rotating a propelling device such as oars, paddle, wheels or propellers.

Typical propulsion used in the Navy:

- a) Steam turbine gear drive
- b) Gas turbine gear drive
- c) Diesel engines (GM-6, GM-12, GM-16, GM-32)

2. **Auxiliary Machinery and Equipment** – Provides ship's smooth operation and personnel safety and comfort aboard ship.

- a) Refrigeration plant – primarily used for food storage, water cooling, and ice making.
- b) Air conditioning equipment – installed on naval ships for certain spaces where personnel efficiency, health, and safety on operation of equipment may be endangered by high temperatures or high humidity.
- c) Distilling plants – used to supply fresh water for shipboard uses and boiler feed water.

d) Steering gears – there are two basic types of steering mechanisms used in the navy:

1) Electromechanical steering gear – used extensively on small non-combatant ships.

2) Electro-hydraulic steering gear – used extensively on large combatant ships.

e) Anchor windlass – a piece of deck machinery used primarily for paying out and heaving in an anchor chain.

f) Capstan – spool shaped, vertically mounted drum used for heaving in heavy mooring lines.

g) Lube oil purifier – normally located in the engine room, used to remove contaminated lube oil, water, sediments and other impurities.

h) Air compressor – driven by electric motors commonly used for operating pneumatic tools, ejecting gas from ship's guns, starting diesel engines, charging and firing torpedoes, operating gun counter-recoil, providing pressures for the ship's horn.

Types:

1) Low pressure compressor – has a discharge pressure of 150 psi or less

2) Medium – has a discharge pressure of 151 psi to 1000 psi.

3) High-pressure compressor – has a discharge pressure of more than 1000 psi.

i) Cranes – are used to raise a load, lower and move it in horizontal direction. Used for handling airplanes, boats, bombs, torpedoes, minesweeping gears, missiles, trucks and stores.

j) Elevator – used to raise and lower a load. The same use as the crane, except that it cannot move in horizontal direction.

k) Winches – a piece of deck machinery that has a drum or drums on a horizontal shaft for handling loads with wire rope. In addition, cargo winches may be equipped with one or two gypsy heads fitted for handling manila rope.

l) Laundry Equipment – consists of washer, extractor combinations, dryers, various types of ironing and pressing equipment plus numerous miscellaneous items such as laundry marking machine.

m) Galley Equipment – food preparation and service equipment located in the galley and messing spaces aboard ship.

Examples:

- | | |
|-------------------------|--------------------------|
| 1) ranges | 7) coffee urns |
| 2) ovens | 8) toasters |
| 3) deep fat fryers | 9) steam jacketed kettle |
| 4) mixing machine | 10) refrigerators |
| 5) meat slicing machine | 11) dishwashing machine |
| 6) cube steak machine | 12) cooking utensils |