MARINE AIR CONDITIONING

Marine air conditioning Climate Zones

This map and the following air conditioning, heating & ventilation system schematics are taken from a Thermotank Ltd publication of the 1950's.
CENTRAL AIR CONDITIONING SYSTEM

Key to Numbers

1. Air Conditioning Unit.
2. Warm Brine Calorifier.
3. Evaporator/Brine Cooler.
4. Warm/Chilled Brine Circulating Pump.
5. Refrig. Compressor.
8. Temperature Regulating Valves (manual or automatic).
9. Condensate Drain Connection.
10. Recirculated Air Duct.
11. Recirculating/Fresh Air Regulating Valve.
12. Air Filtering Equipment and Fresh Air Inlet.

Key to Colouring

- Fresh Air at Atmospheric Temperature.
- Heated Air, Warm Brine Calorifier.
- Cooled Air.
- Air Supply to Cabins, etc., conditioned to requirements.
- Recirculated Air.
- Recirculated/Fresh Air Mixture.
- Refrigerating Plant.
- Warm/Chilled Brine Circulating Pump and associated piping.
TWIN DUCT AIR CONDITIONING SYSTEM

Key to Numbers

1. Air Conditioning Unit.
2. Warm Brine Calorifier.
2a. Warm Water Calorifier.
3. Evaporator/Brine Cooler.
4a. Warm/Chilled Brine Circulating Pump.
5. Refrig. Compressor.
8a. Automatic Warm Water Temperature Controller.
9. Recirculating/Fresh Air Regulating Valve.
10. Recirculated Air Duct.
11. Air Mixing Terminal giving Air Temperature and Direction Control.
12. Air Filtering Equipment and Fresh Air Inlet.
15. Warm Water Return.

Key to Colouring

Heated Air, Warm Water/Brine Calorifier Circulating Pump and associated piping.
Cooled Air.
Twin Ducts, one carrying heated air the other cooled air.
Refrigerating Plant Chilled Water/Brine Circulating Pumps and associated piping.
Fresh Air at Atmospheric Temperature.
Recirculated Air.
Recirculated/Fresh Air Mixture.
Key to Numbers:
1. Air Conditioning Unit.
2. Warm Brine Calorifier.
3a. Warm Water Calorifier.
3. Evaporator/Brine Cooler.
4. Warm/Chilled Brine Circulating Pump.
5. Warm Water Circulating Pump.
8. Condensate Drain Connection.
9a. Automatic Warm Water Temperature Controller.
10. Recirculating/Fresh Air Regulating Valve.
11. Recirculated Air Duct.

Key to Colouring:
- **Yellow**: Fresh Air at Atmospheric Temperature.
- **Red**: Heated Air, Hot Water Calorifier, Pump and associated piping.
- **Blue**: Cooled Air.
- **Magenta**: Air Supply to Cabins, etc., conditioned to requirements.
- **Brown**: Recirculated Air.
- **Green**: Recirculated/Fresh Air Mixture.
- **Gray**: Refrigerating Plant.
- **Gold**: Warm/Chilled Brine Circulating Pump and associated piping.
INDIVIDUAL UNIT SYSTEM

Key to Numbers

1. Central Fresh Air Conditioning Unit.
2. Heater for Non-Conditioned Spaces (if required).
3. Warm Water Calorifier.
5. Automatic Warm Water Temperature Control.
9. Individual Room Conditioners.
10. Air Filtering Equipment and Fresh Air Inlet.
11. Condensate Drain Connection.

Key to Colouring

- Fresh Air at Atmospheric Temperature.
- Heated Air, Warm Water Calorifier.
- Cooled Air.
- Air Supply to Cabins, etc., conditioned to requirements.
- Refrigerating Plant.
- Chilled/Warm Water Circulating Pump and associated piping.
AIR CONDITIONING WITH DIRECT EXPANSION REFRIGERATION

Key to Numbers

1. Air Conditioning Unit, incorporating an Evaporator Coil for Air Cooling and a Steam Heater.
2. Refrigerator Compressor.
3. Refrigerator Condenser.
5. Recirculating/Fresh Air Regulating Valve.
6. Recirculated Air Duct.
7. Air Filtering Equipment and Fresh Air Inlet.
8. Condensate Drain Connection.
9. Humidifier (if fitted).

Key to Colouring

- Fresh Air at Atmospheric Temperature.
- Heated Air.
- Cooled Air.
- Recirculated Air.
- Air Supply to Cabins, etc., conditioned to requirements.
- Recirculated/Fresh Air Mixture.
- Refrigerating Plant.
CONVERSION OF EXISTING HEATING AND VENTILATING OR VENTILATING SYSTEM TO AIR CONDITIONING

The conversion unit, which is shown in solid blue, is connected to the existing air heating unit and utilizes the existing ducting system. In the above diagram no recirculation ducting is illustrated but this can readily be fitted to economise in refrigerating capacity.

**Key to Colouring**
- **Cooled or Atmospheric Air.**
- **Heated or Cooled Air.**
- **Air Supply to Cabin, etc., conditioned to requirements.**
INDIVIDUAL UNIT SYSTEM WITH EXISTING VENTILATION SYSTEM

Key to Numbers
1. Individual Unit Room Conditioners.
2. Evaporator/Water Cooler.
5. Chilled Water Circulating Pump

Key to Colouring

- **Yellow:** Fresh Air at Atmospheric Temperature.
- **Blue:** Cooled Air.
- **Green:** Refrigerating Plant, Chilled Water Circulating Pump and associated piping.
STANDARD HEATING AND VENTILATING SYSTEM

Key to Colouring:

- **Yellow**: Fresh Air at Atmospheric Temperature.
- **Red**: Heated Air.

AIR FILTER UNIT (IF FITTED)
TWIN DUCT AIR HEATING AND VENTILATING SYSTEM

Key to Colouring

- **Yellow**: Fresh Air at Atmospheric Temperature.
- **Red**: Heated Air.
- **Yellow and Red Stripes**: Twin Ducts, one carrying heated air, the other at atmospheric temperature.

Steam Supply
Condensate Return
RE-HEAT HEATING AND VENTILATING SYSTEM

Key to Numbers:
1. Pre-Heater.
2. Individual Space Re-Heaters.
5. Warm Water Calorifier.
7. Motorised Air Temperature Mixing Valve.

Key to Colouring:
- Fresh Air at Atmospheric Temperature.
- Mixture of Atmospheric and Heated Air before passing through Cabin Re-Heater.
STANDARD MECHANICAL VENTILATION SYSTEM
Air Changes to Normal Cargo Ship Practice

Fresh Air at Atmospheric Temperature.