

**S9007-BZ-BIM-010/120 TR**

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**TECHNICAL MANUAL**

**BOAT INFORMATION BOOK**

**120-FOOT TORPEDO WEAPONS  
RETRIEVER, FY 85/86**



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## FOREWORD

This Boat Information Book (BIB) provides the primary source of intrasystem and intersystem information on systems and equipment of the 120 Foot Torpedo Weapons Retriever. The book is a basic reference manual for the boat crew, planning and overhaul yard, training commands and other Naval activities. The manual contains descriptive and functional information, operating instructions, safety precautions and maintenance information for the craft. Additional sources of information regarding installed equipment and systems are referenced and fully identified.

The Torpedo Weapons Retriever is utilized in support of underwater acoustic submarine operations and torpedo exercises. The craft is designed to launch and retrieve acoustic devices as well as retrieve torpedos and missiles in the ocean.

The manual is contained in a single volume consisting of eight chapters. Each chapter is further subdivided into sections and paragraphs. The general content and arrangement of the manual is given in the Table of Contents.

The text is supplemented with line drawings, diagrams and plan drawings, which are listed in the List of Illustrations. Tabular data is listed in the List of Tables. References to the illustrations and tables are given in the text as applicable.



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SAFETY SUMMARY

GENERAL SAFETY NOTICES.

The following general safety notices supplement specific warnings and cautions which are listed under specific warnings and cautions. General and specific precautions must be understood and applied during operation and maintenance. The commanding officer or other authority will issue orders as deemed necessary for any situations not covered in the general and specific safety precautions.

DO NOT REPAIR OR ADJUST ALONE.

Do not repair or adjust equipment alone under any circumstances. The immediate presence of someone capable of rendering aid is required.

RESUSCITATION.

Personnel working with or near high voltage shall be familiar with approved resuscitation methods. This information can be obtained from the Bureau of Medicine and Surgery.

MOVING EQUIPMENT.

If equipment must be repaired or adjusted while in motion, a safety watch shall be posted. The safety watch must have a full view of the operation and immediate access to controls that can stop the equipment.

ENERGIZED EQUIPMENT.

Before working on energized equipment, ensure against grounding. Where possible, make repairs or adjustments with one hand, keeping the other hand clear of equipment.

FIRST AID.

An injury, no matter how slight, should not go unattended. Always obtain first aid or medical attention immediately.

SPECIFIC WARNINGS AND CAUTIONS.

ENGINE AND SHUT-OFF.

Pulling the emergency engine shut-off controls cuts off air intake to the engines which may damage the engines. Do not use these controls except for emergency conditions. (Page 3-3)

ENGINE FUEL SHUT-OFF.

Pulling T-handles to shut off fuel to the engine can cause damage to the engines. Use only in emergency situations. (Page 3-4)

THRUSTER MOTOR OIL TEMPERATURE.

Immediate shutdown of the system must be implemented if "LOW OIL" or "HIGH TEMPERATURE" lights are illuminated to prevent damage to the thruster motor. (Page 3-19)

RADAR POWER DISCONNECT SWITCH.

The disconnect switch in the radar power circuit is normally closed to operate the radar system. This switch must be opened when maintenance is being performed on the radar, antenna or other mast components to prevent accidental injury due primarily to radar antenna movement or radiation. (Pages 3-45 and 6-30)

BOW THRUSTER OPERATION.

Operate bow thruster carefully and slowly to prevent accidental damage to the craft at dockside. Otherwise test controls after the craft is clear and underway. (Page 4-7)

ENGINE DRIVEN COMPONENTS.

Make sure no one is working on, or close to the engine or engine driven components before starting. (Page 4-11)

DIRECT THROUGH-SHIFT.

A direct through-shift will cause severe shock loads to the engine, marine transmission and hull. It may also cause the engine to reverse its rotation causing oil to be pulled from the bearings which will result in severe damage. (Page 4-11)

PROPELLER SHAFT LUBRICATION.

Turning of the propeller shaft without proper lubrication will damage the marine gear shaft bearings. (Page 4-12)

PORTABLE POLE USE.

During all recovery procedures a portable pole and finder should be used to ensure that the weapon is not struck by the craft. (Page 4-12)

LIFE JACKETS.

All personnel on deck during recovery must wear life jackets. (Page 4-12)

TORPEDO MOVEMENT.

Extreme caution must be used during movement of torpedoes to prevent injury to personnel. (Page 4-13)

#### CRANE OPERATION.

Be sure personnel are clear of work area before operating the crane. (Page 4-15)

#### FILLING FUEL TANKS.

Do not smoke while filling the fuel tanks or servicing the fuel system. Sparks or flame could cause a fire or explosion resulting in severe injury or death. (Page 4-22)

#### DISCHARGE OF OIL PROHIBITED.

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon or discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water. (Page 4-23)

#### SEA WATER PUMP OPERATION.

Do not operate this equipment in excess of its rated capacity, speed, pressure and temperature, or other than in accordance with the instructions contained in the pump manual. This seawater cooling pump has been shop tested and found satisfactory for the conditions for which it was installed. But its operation in excess of these conditions will subject it to stresses and strains which it was not designed to withstand.

Failure to heed this warning may result in an accident causing personal injury. (Page 4-25)

#### A/C REFRIGERATION SYSTEM.

Only qualified personnel should perform maintenance on the refrigeration system. Personnel shall observe all safety precautions regarding ventilation and contact with liquid refrigerant as specified in Technical Manual S9514-B5-MMC-010. (Page 4-26)

#### AIR COMPRESSOR OPERATION.

The compressor is fitted with a relief valve set at 140 PSI to protect the system. Normal operating pressure range for the air compressor is 90 PSI to 120 PSI.

Over-pressurizing the air receiver could cause the air receiver to rupture or explode. The air compressor package unit is protected from over-pressurizing by a safety valve. Do not eliminate, make adjustments, or substitute for this valve.

Occasionally, pull the ring on the safety valve to make sure that the valve operates freely. If the valve is stuck or does not operate smoothly, it must be replaced. (Page 4-28)

#### AIR COMPRESSOR OIL FILL.

Do not overfill the compressor with oil. Overfilling with oil will cause premature compressor failure. (Page 4-28)

#### SEWAGE TANK PUMP OUT.

Pump holding tanks content out at authorized pump out stations or beyond restricted waters only. Do not open the valve connecting the toilet to the overboard discharge in restricted waters. (Page 4-29)

#### SEWAGE DISCHARGE.

Failure to close the discharge valves with the pump switch in the auto position will cause the tank to be completely evacuated through normal use and will require initiation of the commissioning procedure to restore system operation. (Page 4-29)

#### SEWAGE TRANSFER HOSE.

Personnel engaged in sewage transfer hose operations shall not connect or disconnect potable water hoses. (Page 4-30)

#### SEWAGE HANDLING.

Personnel engaged in handling of sewage must wear protective rubber gloves, rubber boots and overalls. (Page 4-30)

#### SEWAGE HOSE CLEANING.

Sewage spills, sewage hose connections and solids on the hose exterior shall be washed down with warm water containing a stock detergent. (Pages 4-30 and 6-27)

#### SEWAGE HANDLING PRECAUTIONS.

Eating, drinking, or smoking is strictly prohibited during maintenance of sewage system. Do not eat, smoke, or drink until hands and facial areas have been thoroughly washed with soap and hot water. (Page 4-30)

#### DEPRESSURIZE SEWAGE HOSE.

Do not disconnect sewage hose while it is pressurized. Depressurize hose and secure discharge cut-off valve prior to disconnecting hose. (Page 4-30)

#### SUMP PUMP AND SWITCH NOT EXPLOSION PROOF.

The sump pump motor and switch are not explosion proof. Personal injury, death, and/or property damage may occur in the event of an explosion. Do not use in areas where flammable vapors are present. (Page 4-30)

#### FIRE PUMPS.

Do not run fire pumps dry. Do not overtighten gland nuts. (Pages 4-30 and 4-31)

#### HOT WATER HEATER.

Never operate the heating elements without being certain the water heater is filled with water, and a temperature and pressure relief valve is installed in the relief valve opening. (Page 4-33)

#### BOOSTER HEATER.

Do not turn on current to booster heater until the tank has been filled with water and all air has been vented through the dishwasher rinse nozzle. The heating element will burn out in seconds if operated when they are not immersed in water, unless the heater is equipped with a low-water cut-off. (Page 4-33)

#### FRESH WATER PUMP.

Do not run pump dry. (Page 4-33)

#### WINDLASS BRAKE OPERATION.

For personnel protection the brake operator must position himself alongside the motor drive gear on the opposite side of the brake in use. (Page 4-34)

#### REPAIRS IN PROGRESS SIGNS

When electrical equipment is being repaired and power is disconnected, place a warning sign on the applicable circuit breaker, disconnect switch or controller to indicate repairs are in progress so that power is not accidentally turned on with possible death or severe injury to personnel. (Page 4-40)

#### ENGINE EMERGENCY SHUTDOWN.

Shutdown of the propulsion engines with the emergency shutdown controls may cause severe damage to the propulsion engines. Use only as directed. (Page 4-41)

#### LOSS OF ONE PROPULSION ENGINE.

The craft must be operated intermittently at low speed to prevent damage to the marine gear. (Page 4-42)

#### EPOXY PAINT PRECAUTIONS.

Since solvent fumes from epoxy paint systems are potentially hazardous, suitable precautions shall be taken to prevent fires and to protect personnel from fumes and fume inhalation. (Page 5-3)

#### EPOXY COATING SKIN REACTIONS.

Epoxy coatings can cause allergic reactions when allowed

to come in contact with the skin. Prompt skin cleanup is required using soap and water, not solvent. (Page 5-3)

#### ALERT PERSONNEL OF REPAIR CONDITIONS.

To prevent accidental injury or death, notify appropriate personnel of repair work and secure electrical and/or hydraulic systems which serve the system, components or equipment being repaired. Tag controls, valves and disconnect points to alert personnel of repair condition and prevent accidental start-up of related machinery. (Page 6-14)

#### BOAT STABILITY DURING REPAIR.

Check stability of boat before attempting repair or service of any kind. (Page 6-14)

#### PROPER SHAFT ALIGNMENT.

When shaft has been removed it is necessary to align the reduction gear output flange coupling to the line shaft flange coupling or severe damage will result. (Page 6-14)

#### FUEL TANK PURGING.

If welding is required on the fuel tanks, purging of the tanks will be required to prevent the possibility of fire or explosion. (Page 6-15)

#### LUBE TANK PURGING.

Purge tanks before attempting to weld on either tank to prevent the possibility of fire. (Page 6-16)

#### BOOSTER HEATER ELEMENTS.

Do not turn on current to booster heater until tank has been filled with water and all air has been vented through the rinse nozzle. Heating elements will burn out if not immersed in water. (Page 6-17)

#### WATER HEATER ELEMENTS.

Never operate the water heater without being certain the heater is filled as damage to the elements will result. (Page 6-18)

#### LIFTING CHLORINE TANK.

Be sure to attach a lifting device of suitable capacity before removing bolts or injury may result. (Page 6-18)

#### DEPRESSURIZE BOW THRUSTER SYSTEM.

The bow thruster hydraulic system operates at 2500 PSI. Be sure the system has been depressurized before disconnecting hydraulic lines as severe injury may result. (Pages 6-20 and 6-21)

#### DEPRESSURIZE DECK CRANE SYSTEM.

The deck crane hydraulic system is a pressurized system. Be sure that the system has been depressurized before disconnecting or removing lines or other components or serious injury may result. Turn off electrical power to the system at the motor controller at frame 14, port. Tag ELECTRICAL POWER OFF. (Pages 6-21 and 6-22)

#### DEPRESSURIZE TORPEDO HANDLING SYSTEM.

The torpedo handling system is a pressurized system. Be sure system has been depressurized before removing components or serious injury may result. (Pages 6-22, 6-23, 6-24 and 6-25)

#### LIFTING HYDRAULIC POWER UNIT ELECTRIC MOTOR.

Motor is extremely heavy. Do not lift the motor unless a suitable lifting device is available. (Page 6-25)

#### WINDLASS REPAIR.

If major repairs to the windlass are required, care must be taken to assure the anchor has been hauled and the devils claw secured to prevent serious injury to personnel if chain should play out. (Page 6-25)

#### DANGEROUS GASES - PUMP ROOM.

This space may contain dangerous gases or lack of oxygen for life. Before entering, space must be certified gas free by engineer. (Page 6-26)

#### DANGEROUS VOLTAGE - SEWAGE PUMP.

Voltages dangerous to life are present when the system is operating. Use extreme caution when servicing the equipment. Do not work alone. Observe all safety precautions. Contact with live circuit may cause serious injury or death. (Page 6-26)

#### SEWAGE SYSTEM MAINTENANCE.

Do not eat, drink or smoke during maintenance of the sewage plant. (Page 6-26)

#### LIFTING SEWAGE PUMP.

The centrifugal pump weighs 200 pounds. Lifting gear is required to remove or install the pump unit, otherwise injury and/or equipment damage may result. (Page 6-26)

#### SEWAGE HANDLING.

Personnel engaged in handling of sewage must wear protective rubber gloves, rubber boots and overalls to prevent sewage from touching the skin. Infection may

result if cuts or open wounds are present on the skin. (Page 6-26)

#### PROTECTIVE CLOTHING FOR SEWAGE HANDLING.

Personnel engaged in sewage transfer or handling of sewage must wear protective rubber gloves, rubber boots and overalls to prevent the possibility of sewage contact with skin. Contact of this nature could cause serious illness. (Page 6-27)

#### DISCONNECT ELECTRICAL POWER.

Disconnect electrical power to unit(s) before attempting repair to prevent the possibility of serious injury or death. (Pages 6-27 and 6-28)

#### LIFTING ENGINE ROOM SUPPLY FAN.

Supply fan weighs approximately 425 pounds. Be sure to use a lifting device of sufficient capacity when removal is necessary. (Page 6-27)

#### AIR COMPRESSOR REPAIR.

Before repairing the air compressor be sure that electric power has been disconnected and that compressor internal system has been vented of all pressure or serious injury may result. (Page 6-29)

#### LIFTING AIR COMPRESSOR.

Air compressor weighs 190 pounds. Use a suitable lifting device to prevent injury to personnel. (Page 6-29)

#### HALON SYSTEM REPAIR.

All power to the Halon system must be shut down before proceeding with repair or serious injury may result. (Page 6-29)

#### FILLED HALON CYLINDERS.

Do not attempt any repair on a filled cylinder and valve assembly as damage to or destruction of the equipment could result. (Page 6-29)

#### DISCONNECT ELECTRICAL POWER.

To prevent accidental injury or death, disconnect electrical power to electrical wireways, components and equipment before attempting any repair. Disconnect electrical power at disconnect switch, controller and/or circuit breakers as applicable. Tag disconnect point with suitable sign to alert personnel of repair condition. (Page 6-30)

**DECK CUTOUT OBSTRUCTIONS.**

Before deck cutout removal, the main deck cutout area must be cleared of all obstructions and components. Secure torpedo handling system and remove rollers from deck. Move transfer carriage aft. All electrical, hydraulic, fuel and air lines and cables must be disconnected and removed to clear the area underneath the deck cutout area before cutout removal. Take care to prevent spills of flammable materials in the cutout area. (Page 6-31)

**CLEAN UP SPILLS.**

Clean up spills of flammable material and other foreign matter to prevent the possibility of fire or accidental injury. (Page 6-31)

**PROPULSION SHAFT DAMAGE PREVENTION.**

Before breaking propulsion shaft from reduction gear, block up shaft at reduction gear end to prevent damage to shaft. (Page 6-31)

**OXYGEN BREATHING APPARATUS.**

Carbon dioxide is dangerous to life and causes suffocation. Always wear oxygen breathing apparatus when entering a compartment that contains a dangerous concentration of carbon dioxide or any other harmful gas. (Page 7-2)

**UNDERSTAND BREATHING APPARATUS OPERATION.**

Since the Type A-1, A-2 and A-3 oxygen breathing apparatus are not exactly alike, the firefighter is cautioned to understand the construction differences, principles of operation, method of use, and limitations. Under normal conditions the wearer of the Type A-1 and A-3 oxygen breathing apparatus will return to fresh air at the end of 45 minutes to effect the necessary change of canisters. (Page 7-2)

**BREATHING APPARATUS FACEPIECE.**

Do not attempt to use any type facepiece with this apparatus other than the one furnished with the apparatus. (Page 7-2)

**CLEANING FACE MASK.**

Soap and water only are to be used in cleaning the face mask, **DO NOT USE ALCOHOL**. Alcohol will lie in the lower part of the set and cause a dangerous gas to form when the canister is punctured. **DO NOT GREASE OR OIL ANY PART OF THE APPARATUS.** (Page 7-2)

**QUICK START CANISTER.**

The bottom of the canister will be **HOT, DO NOT TOUCH WITH HANDS**. Manual check of canister is not necessary. (Page 7-3)

**CANISTER HANDLING.**

Used canister is very hot. **DO NOT** handle without suitable protection for hands. **DO NOT** allow any liquid, especially oil, grease or gasoline, etc., to enter opening of used canister and do not hold face over canister opening. Should the canister be opened, do not handle chemical without suitable care and protection to hands and body, as chemical is caustic, injurious to the skin, and should not be permitted to come in contact with the person. Do not allow unexpended or expended chemicals to spill on deck. If accidentally spilled, clean up immediately and dump overboard using a metal or nonflammable material for scoop. This chemical, due to the large percentage of oxygen it contains, will cause combustion of any flammable materials with which it is brought into direct contact, especially if such materials are moist. Expended canisters should be dumped overboard after several holes have been punched in the bottom with a clean tool. (Page 7-3)

**CANISTER EXPLOSIVE.**

Oil, gasoline or similar materials coming in contact with the chemical in either the expended or the unexpended canisters, may cause an explosion. (Page 7-3)

**CANISTER DISPOSAL.**

Canisters should not be dumped overboard where there is an oil slick present on the water. Disposal overboard should not be made until the ship is underway. Do not throw spent canisters in bilges of any space which may contain oil or oil and water. (Page 7-3)

**GALLEY FIRE EXTINGUISHING.**

If manual activation is necessary, immediate repair procedures must be performed to correct the malfunction. (Page 7-5)

**DINGHY HANDLING.**

Do not lift dinghy off the deck or out of the water with personnel loaded. If dinghy tipped, severe injury or loss of life could result. (Page 8-2)

