

Fig. 22 - Self Destroying Exploder,
for Use in Circling Torpedo

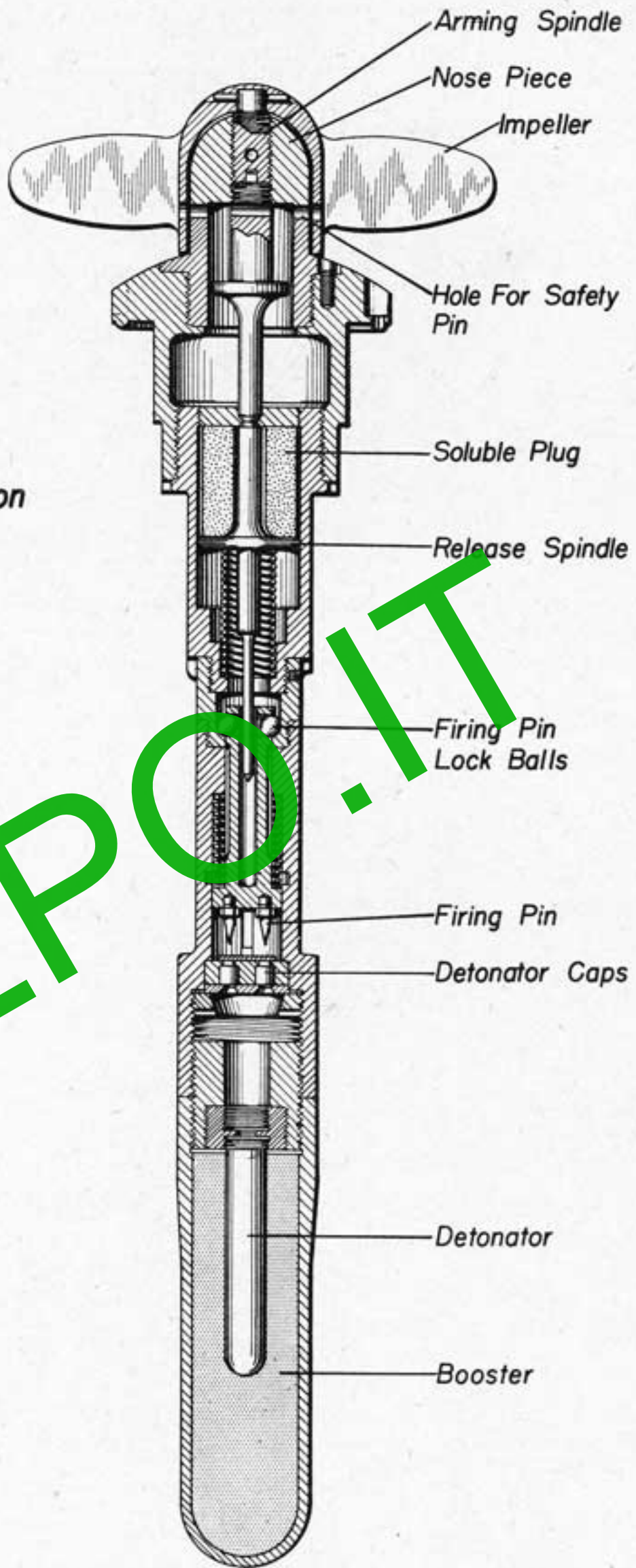


Fig. 23 - Self Destroying Exploder,
for Use in Circling Torpedo,
Sectional View

(Self-Destroying Exploder, Cont'd.)

- (1) The impeller which is attached to an arming spindle which in turn screws into the nose piece.
- (2) The spring-loaded firing pin assembly.
- (3) The spring-loaded release spindle, the after end of which protrudes into the forward end of the firing pin and restrains the firing pin lock balls. Its forward end is held by the after end of the arming spindle and its forward movement is also restrained by a soluble plug.

3. Method of Mounting

- (a) The exploder is screwed into the warhead.

Operation

1. A safety pin through the impeller and nose piece is removed prior to launching. When the torpedo is launched, air and water travel rotate the impeller, thereby unscrewing the impeller and arming spindle from the nose piece and leaving the release spindle restrained only by the soluble plug. The impeller and arming spindle drop free and the exploder is armed.
2. Gradual dissolution of the soluble plug permits the spring-loaded release spindle to move forward until it clears the firing pin lock balls, releasing the lock balls and allowing the spring-loaded firing pins to impinge on the detonator caps which in turn fire the detonator.

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MINE DISPOSAL HANDBOOK

PART V

ITALIAN UNDERWATER ORDNANCE

TALPO.IT

CHAPTER 3

ITALIAN DEPTH CHARGES

JUNE 1, 1945

CONFIDENTIAL

Depth
Charges

ITALIAN DEPTH CHARGES

Introduction

1. No Italian depth charges have ever been made available for examination by the U.S. Navy and the following information, being drawn almost entirely from captured documents, may not be entirely reliable and should be accepted with reserve. The Tactical Depth Charge, which has been recovered and examined, is not a depth charge in the usual sense but is included herein because of its similarity in appearance.
2. This chapter contains information on two standard depth charge cases, each of which is made in two sizes, and two depth charge pistols. Both the pistols operate on direct hydrostatic pressure in a manner similar to U.S. pistols. The depth charge cases incorporate a unique design feature wherein a small electrolytic cell may be used to flood the charge if it fails to detonate as designed during descent.
3. The following precautions should generally be observed when dealing with Italian depth charges:
 - (a) Do not move or jar the charge except from a safe distance.
 - (b) Do not change the depth setting while rendering safe.
 - (c) If the charge is found underwater, raise it to the surface before rendering safe.

1927 Model Depth Charge

General

1. Launched by surface craft.
2. Italian designation, "Bombe Torpedine da Getto 50/1927 (or 100/1927) I. A.". (The numbers 50 and 100 above refer to the weight of charge in kilograms cast in the respective cases which differ only in diameter.)

Description

1. Case

Shape	Cylindrical, enclosed at each end by welded steel heads.
Color	Gray
Material	Steel
Diameter	11" (50 kg) or 15" (100 kg).
Length	20" approx.
Charge	110 lb. or 220 lb. cast TNT.
Total weight in air	Unknown
2. External fittings

Lifting eyes	Two, 90° apart, on pistol end.
Filling holes	Two, 90° apart, on pistol end, 90° from lifting eyes.
3. Standard Accessories for Case

Pistol - Type B.
Booster - Type A with booster extender.
Standard flooder.

Rendering Safe Procedure

1. Using an adjustable wrench or other suitable tool, remove the pistol from the case.
2. Remove the booster extender.
3. Dispose of detonator, booster and charge.

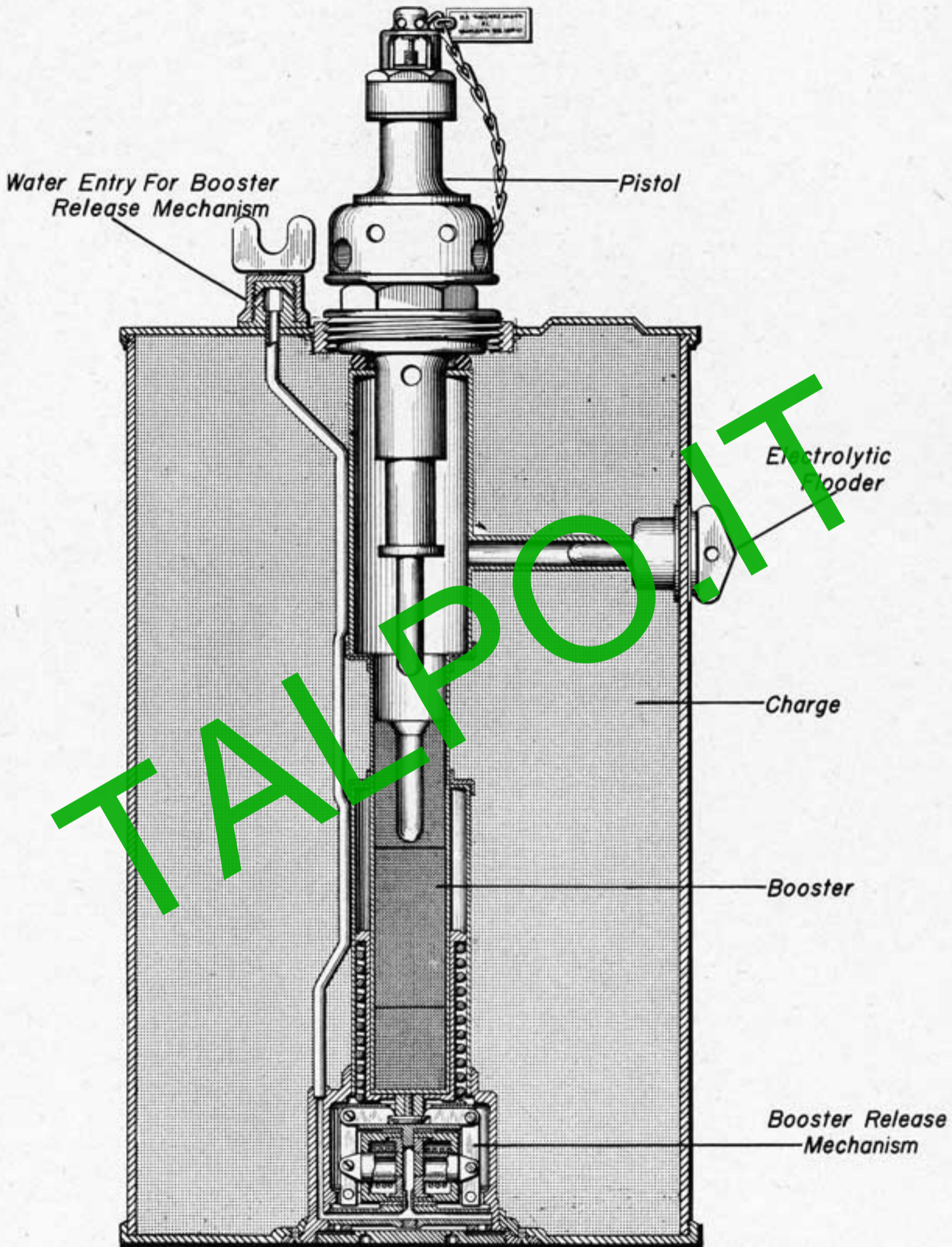


Fig. 1 - 1936 Model Depth Charge, Sectional View.

ITALIAN DEPTH CHARGES

1936 Model Depth Charge

General

1. Launched from surface craft.
2. Italian designation, "Bombe Torpedine da Getto 50/1936 (or 100/1936) I. A., I. B.". (The numbers 50 and 100 above refer to the weight of charge in kilograms cast in the respective cases which differ only in diameter.)

Description

1. Case

Shape	Cylindrical, enclosed at each end by welded steel heads.
Color	Gray
Material	Steel
Diameter	11" (50 kg) or 15" (100 kg).
Length	20" approx.
Charge	110 lb. or 220 lb.
Total weight in air	Unknown

2. External fittings

Lifting eyes	Two, 90° apart, on pistol end.
Filling holes	Two, 90° apart, on pistol end, 90° from lifting eyes.
Water inlet	Adjacent to pistol, covered by screw cap prior to launching.

3. Standard Accessories for Case

Pistol - Type A.
Booster - Type B with booster release mechanism.
Standard flooders.

Rendering Safe Procedure

1. Same as 1927 Model.

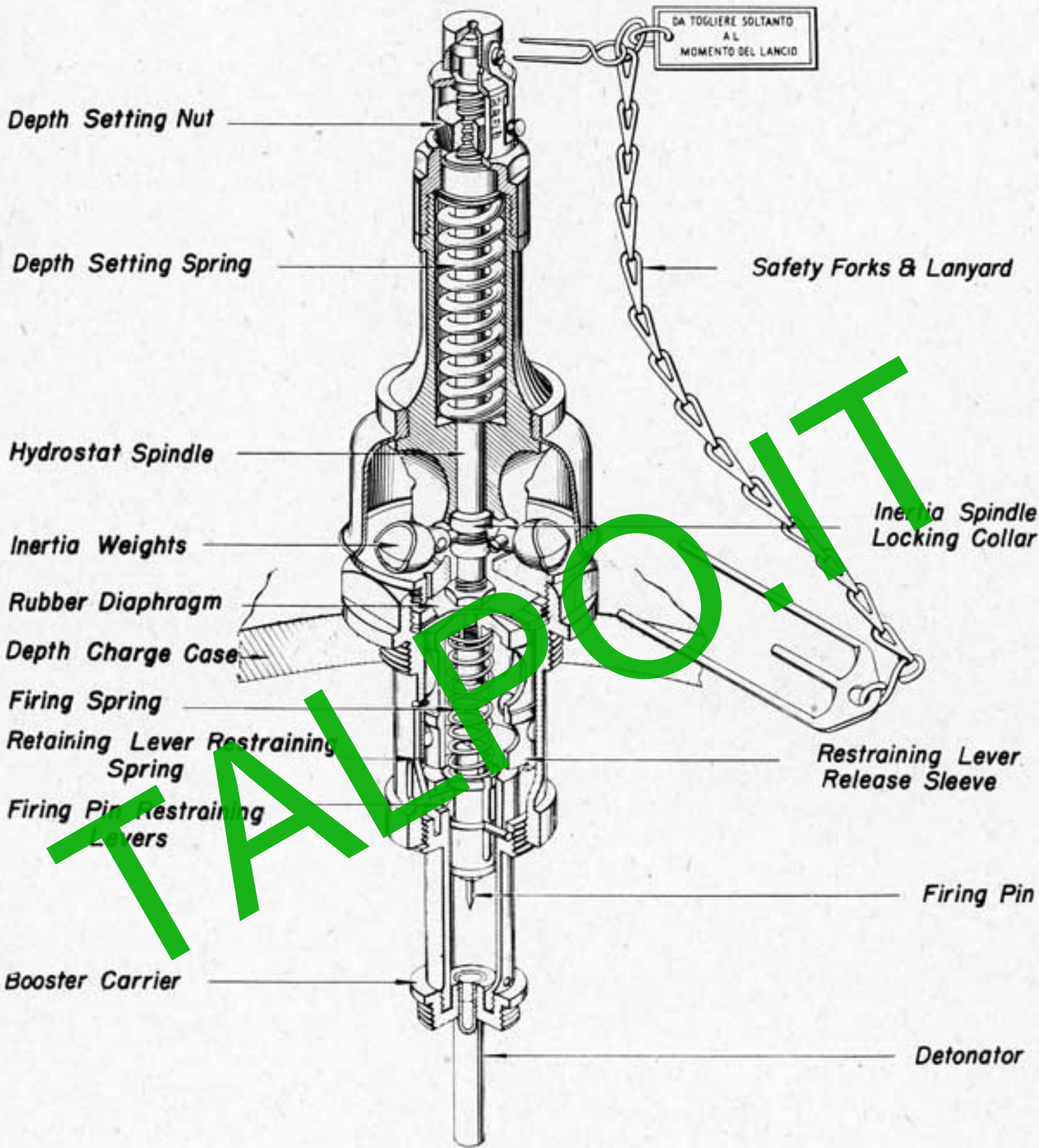


Fig. 2 - Depth Charge Pistol Type A, Sectional View.

ITALIAN DEPTH CHARGES

Type A Pistol

General

1. Hydrostatic, direct action type, used in depth charges launched from surface craft.

Description

1. External

- (a) The pistol is 12 3/4" long, 3 1/4" in diameter at its center flange, and is composed of the following main parts:
 - (1) An upper section which protrudes about 7 1/2" from the depth charge case and which houses the pistol depth-setting gear. Depth settings of 25, 50, 75 and 100 (meters) are inscribed at the top. Two safety forks are fitted prior to launching, one at the top to lock the hydrostatic spindle and one at the base near the flange to lock the inertia weights.
 - (2) A lower section which is housed in the depth charge and which contains the firing mechanism and the detonator.
- (b) The two sections are joined at a flange about midway on the pistol body.

2. Internal

- (a) The main working parts of the pistol are as follows:
 - (1) A hydrostatic spindle, the lower end of which protrudes through and is controlled by a rubber diaphragm. The spindle contains an annular groove on its lower portion just above the diaphragm.
 - (2) A depth-setting spring encloses the hydrostatic spindle and tends to force the spindle upward.
 - (3) A depth-setting nut screws to the upper end of the hydrostatic spindle and adjusts tension on the depth-setting spring.
 - (4) Three pivoted inertia weights are mounted around the inside of the pistol housing and are so arranged that their inner edges will engage the annular groove on the hydrostatic spindle upon actuation.
 - (5) A firing pin housing, screwed into the lower pistol body, contains a spring-loaded firing pin assembly which is held in the unfired position by two triangular pivoted restraining levers. The levers are held against the spindle by two leaf springs on the outside of the pistol body and are so attached that they can pivot only in one direction.
 - (6) A restraining lever release sleeve is attached to the hydrostatic spindle directly below the diaphragm.

3. Method of Mounting

- (a) The pistol is screwed into the central tube of the depth charge case.

Operation

1. The depth setting is made manually prior to launching by screwing down on the depth-setting nut until its top is flush with the mark at the desired setting. Removal of the safety forks unlocks the hydrostatic spindle and inertia weights. When the charge is launched, hydrostatic pressure depresses the diaphragm, thereby depressing the hydrostatic spindle against the tension of the depth-setting spring. This depresses the restraining lever release sleeve and compresses the firing spring and, when the depth charge reaches the firing depth, the lever release sleeve pivots the levers upward until they clear a small flange on the firing spindle and allow the spring-loaded firing pin to impinge on the detonator.
2. If the depth charge is subjected to a sudden shock of considerable magnitude at any time after launching, the ends of the inertia weight arms engage the annular groove on the hydrostatic spindle, locking the spindle.

Type B Pistol

1. This pistol differs from the Type A only in that no inertia weights are fitted.



Fig. 3 - Depth Charge Pistol Type A



Fig. 5 - Depth Charge Pistol Type B.



Fig. 4 - Depth Charge Pistol Type A, Shroud Covering Removed.

ITALIAN DEPTH CHARGES

Boosters

Type A

1. This booster consists of three cylinders of pressed TNT enclosed in a metal case. The upper cylinder contains a detonator envelope. A threaded ring is welded to the lower end of the booster container and screws to the inner end of the booster extender spindle.

Type B

1. This booster consists of four cylinders of pressed TNT enclosed in a metal case. One of the upper cylinders contains a detonator envelope. The lower end of the booster container is fitted with a mushroom-headed disc which is engaged by pawls on the booster release mechanism.

Booster Extender Mechanism

1. This mechanism, housed in a cylindrical case, consists of a hydrostatically-operated diaphragm attached to a spring-loaded spindle. The spindle spring tension opposes hydrostatic pressure and tends to force the diaphragm outward.
2. When the depth charge is launched, hydrostatic pressure acting against the tension of the spindle spring forces the diaphragm, and thereby the spindle and booster, in toward the detonator until, at a depth of about 12 ft., the detonator is completely housed in the booster.

Booster Release Mechanism

1. This mechanism, housed in a cylindrical case, consists of two pistons held against two hydrostatically-operated diaphragms. The inner end of each piston is attached to the mid-point of an L-shaped lever, one end of which engages the mushroom head on the booster can.
2. When the depth charge is launched, water enters the mechanism through the water inlet on the top of the depth charge case and flows down to the booster end through a special channel. Hydrostatic pressure then forces the diaphragms apart, causing the pistons to pivot the L-shaped levers and release the spring-loaded booster to house over the detonator.

Flooder Device

1. This device, designed to flood the depth charge case if the charge fails to detonate as designed, consists of a zinc-copper electrolytic cell fitted at the outer end of a small channel which runs from the central tube to the side of the mine case. Use of the device is optional.
2. If the flooder is to be used, a plug is removed from the outer end of the channel on the side of the case and the tinfoil seal is punctured to admit water to the cell. If the depth charge fails to fire properly, the admission of water to the cell corrodes a watertight zinc plug within 48 hours after immersion, admitting water to the central tube of the depth charge. This equalizes the pressure inside and outside and thereby disarms the pistol and separates the booster and detonator if the booster extender is used.

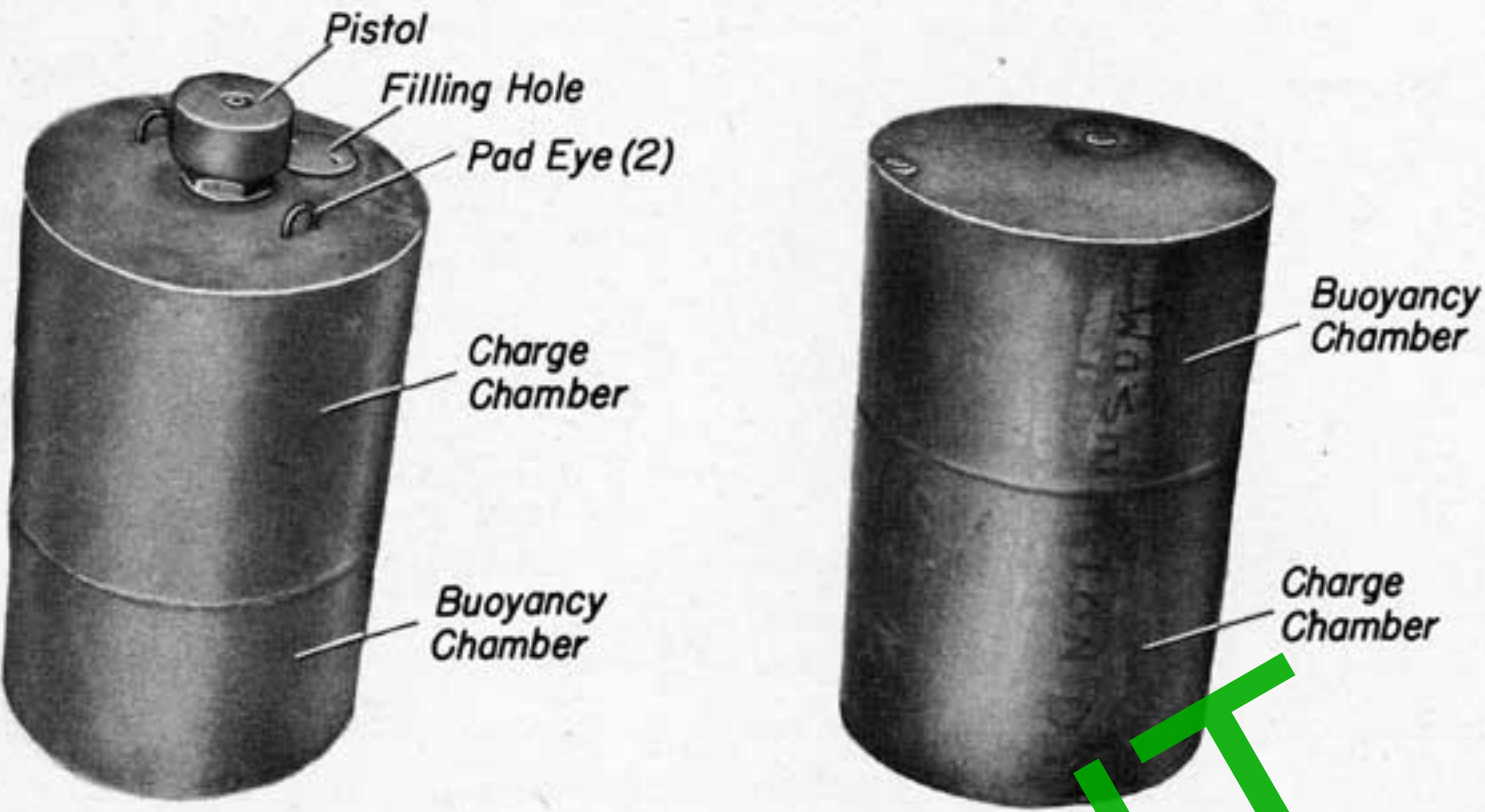


Fig. 6 - Tactical Depth Charge



Fig. 7 - Pistol for Tactical Depth Charge.

ITALIAN DEPTH CHARGES
Italian Tactical Depth Charge

General

1. Buoyant, tactical explosive charge, launched from surface craft.
2. Italian designation unknown.
3. Used defensively by surface craft to harass pursuing surface units. Designed to force pursuing ships to keep at a safe distance from the charges and thus give the pursued ship a tactical advantage.

Description

1. Case

Shape	Cylindrical
Color	Brown
Material	Steel
Diameter	14"
Length	21 3/4"
Charge	120 lb. Hexanite (approx)
Total weight in air	157 lb. approx.

2. External fittings

Lifting eyes	Two, 90° apart on pistol end, 3 3/4" from center.
Filling hole	1 1/4" diam. on pistol end, 9" from lifting eyes, 4" from center.

3. The pistol fitted is very similar to the Type 1 pistol, the main difference being that an 8 1/2 lb. lead weight and weight release mechanism are fitted to the outer end of the hydrostatic spindle of the pistol. It is assumed that a delay detonator is fitted in place of the standard instantaneous detonator.

Operation

1. When the charge is launched, its slight negative buoyancy causes it to sink slowly. At a set depth, believed to be about 18 ft., hydrostatic pressure depresses the spindle fully, performing the following functions:
 - (a) It operates the weight release mechanism, releasing the weight and thereby giving the case a slight positive buoyancy.
 - (b) It releases the firing pin, thereby firing the delay detonator.
2. The positive buoyancy then causes the case to rise and, at the end of its set delay period, the detonator fires the charge. It is believed that the charge case is 3-5 ft. below the surface when the charge fires.

Precautions

1. Check the condition of the pistol.
 - (a) If the lead weight is still attached, the pistol may be assumed to be safe.
 - (b) If the lead weight is not attached, the detonator must be assumed to have fired and the charge is in a dangerous condition.

Rendering Safe Procedure

1. Using an adjustable wrench or other suitable tool, remove the pistol from the case.
2. Unscrew the detonator from the pistol.
3. Remove the booster.
4. Dispose of detonator, booster and charge.

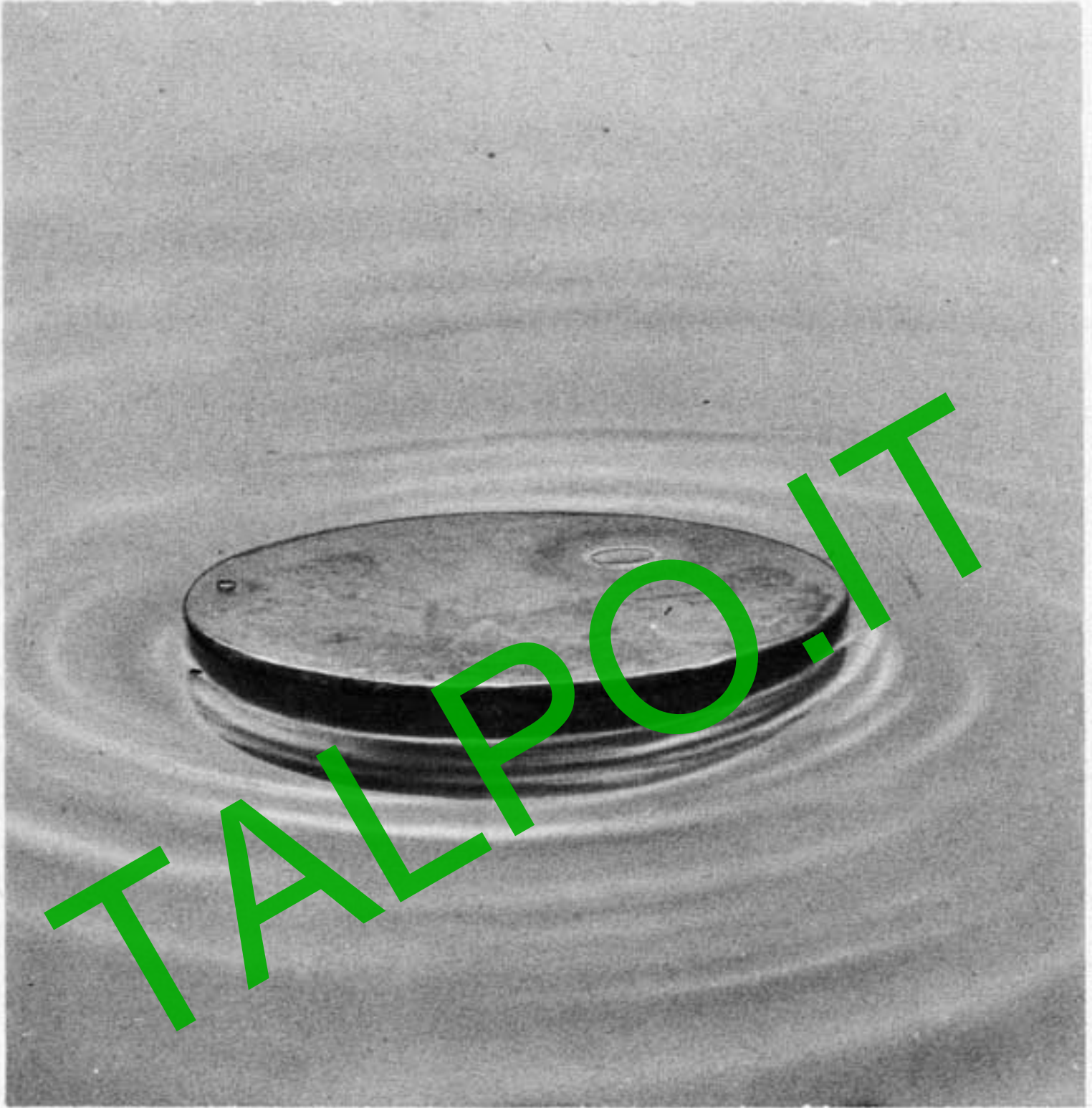


Fig.8 - Tactical Depth Charge Floating.

MINE DISPOSAL HANDBOOK

PART V

ITALIAN UNDERWATER ORDNANCE

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CHAPTER 4

ITALIAN MISCELLANEOUS

JUNE 1 1945

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Misc.

ITALIAN MISCELLANEOUS

Controlled Mine Type O

General

1. Controlled ground mine, laid by surface craft.
2. Italian designation, "Controlled Mine Type O".
3. Defensive mine, for use in maximum depth of water of 165 ft.

Description

1. Case

Shape	Spherical
Color	Black
Material	Steel
Diameter	33"
Charge	880 lb. cast Trotyl.
Total weight in air	3256 lb. (includes anchor)

2. External fittings

Cover plate	In center of upper hemisphere, fitted with arming hydrostat.
Firing cable stuffing box	On upper hemisphere.
Lifting lugs	Two on upper hemisphere, 180° apart.

Operation

1. When the mine is launched, dissolution of a soluble plug allows the arming hydrostat to depress the detonator carrier which then performs the following arming functions:
 - (a) It completes the firing circuit.
 - (b) It operates the booster release mechanism.
2. The mine is fired electrically by an observer.
3. The only self-disarming device is the arming hydrostat which is designed to disarm the mine by opening the firing circuit if the mine rises above a depth of 165 ft.

Precautions

1. See Introduction.

RMS

1. Slit the firing cable; cut and tape each lead separately.
2. Unscrew the keep ring and remove the arming hydrostat; the detonator is attached thereto.
3. Press back the booster latch and remove the booster.
4. Dispose of detonator, booster and charge.

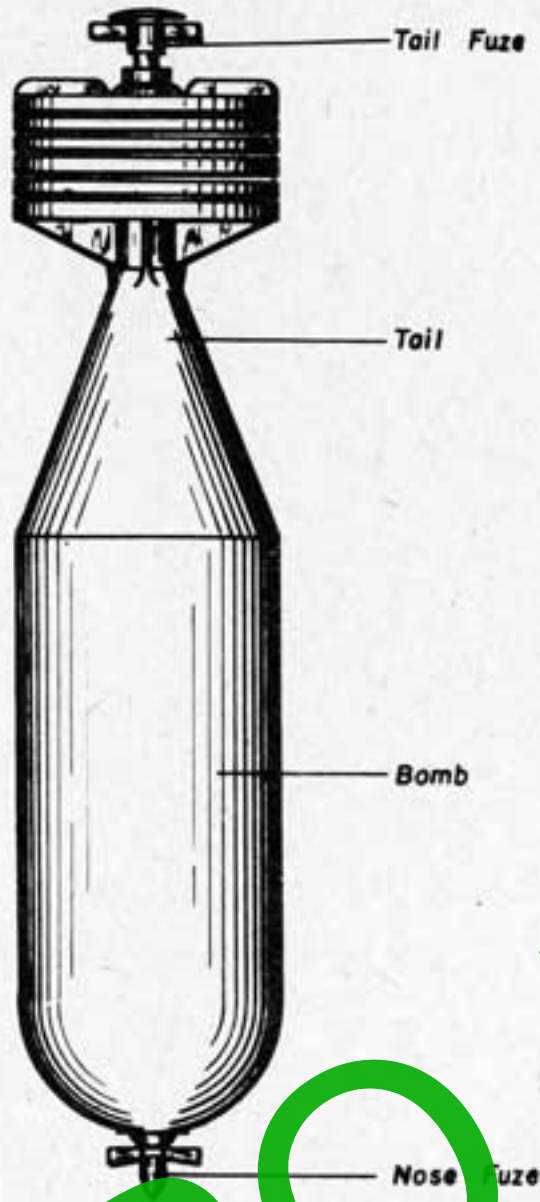


Fig. 1 - 100/C.S. Depth Bomb

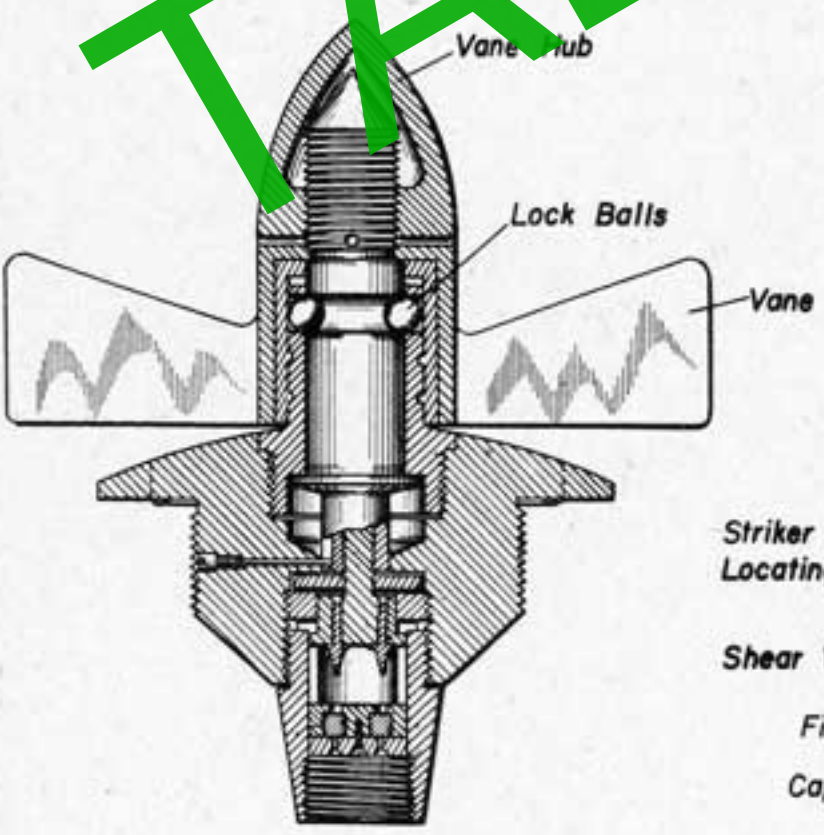


Fig. 2 - Type B Nose Fuze Sectional View

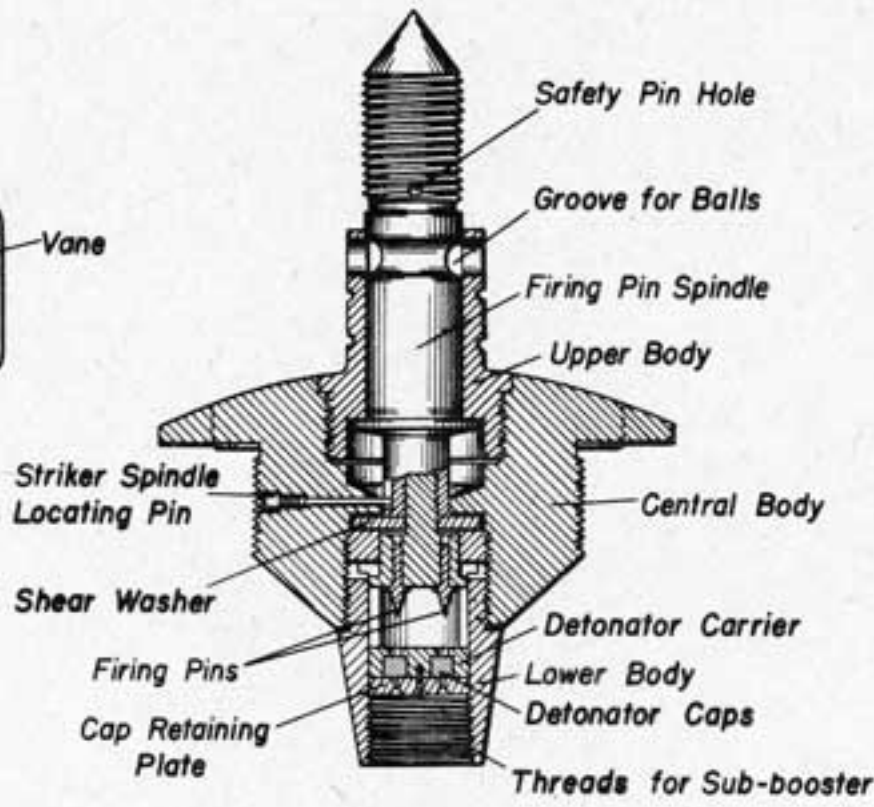


Fig. 3 - Type B Nose Fuze, Arming Vane Removed, Sectional View

ITALIAN MISCELLANEOUS

160/C. S. Depth Bomb

General

1. Anti-submarine bomb, fitted with nose and tail fuzes for impact of under-water firing.
2. Italian designation, "Bomba 160 C. S."

Description

1. Case

Shape	Cylindrical with rounded nose and tapered tail. Tail is fitted with four fins enclosed by a shroud ring 1573 in diameter.
Material	Steel
Diameter	1373
Length	
Overall	6978
Body	3672
Tail	2772
Charge	TNT (weight unknown)
Total weight in air	396 lb.

2. The bomb is fitted with nose and tail pockets to receive an impact, direct action nose fuze and an impact-armed, mechanically-fired tail fuze.

Type B Nose Fuze

Description

1. Instantaneous, impact fuze, mechanically armed.
2. The fuze is 778 long, 674 in maximum diameter and protrudes about 374 from the pocket. The span of the impeller is 674.
3. If the arming vane is missing from the nose, the fuze must be assumed to be armed.

Operation

1. Armed by the arming vane which screws forward on its stem until it drops free, thereby releasing locking balls and freeing the firing pin. A blow of sufficient force on the firing pin spindle forces the firing pin down onto the detonator. The fuze is designed to fire upon land impact but not upon impact with water.

Rendering Safe Procedure

1. Tape the fuze vane securely to the fuze body. If the vane is not present, secure the firing pin spindle so as to prevent any movement.
2. Unscrew the fuze from the pocket.
3. Unscrew the sub-booster from the lower fuze body.
4. Dispose of all explosive elements without further disassembly.

Tail Fuze

Description

1. Mechanical fuze, armed by inertia on impact, fired by vane rotation.
2. The fuze is 3376 long, protrudes 5 1/4" from the pocket, and is fitted with a three-bladed arming vane. A cap, fitted over the hub of the arming vane, contains a setting disc with graduations from 0-90 (meters). A metal pressure plate, held prior to impact by a safety pin, washer and shear wire, fits flush against the vane cap.
3. If the fuze is armed, the small pressure plate on the vane cap will not be present.

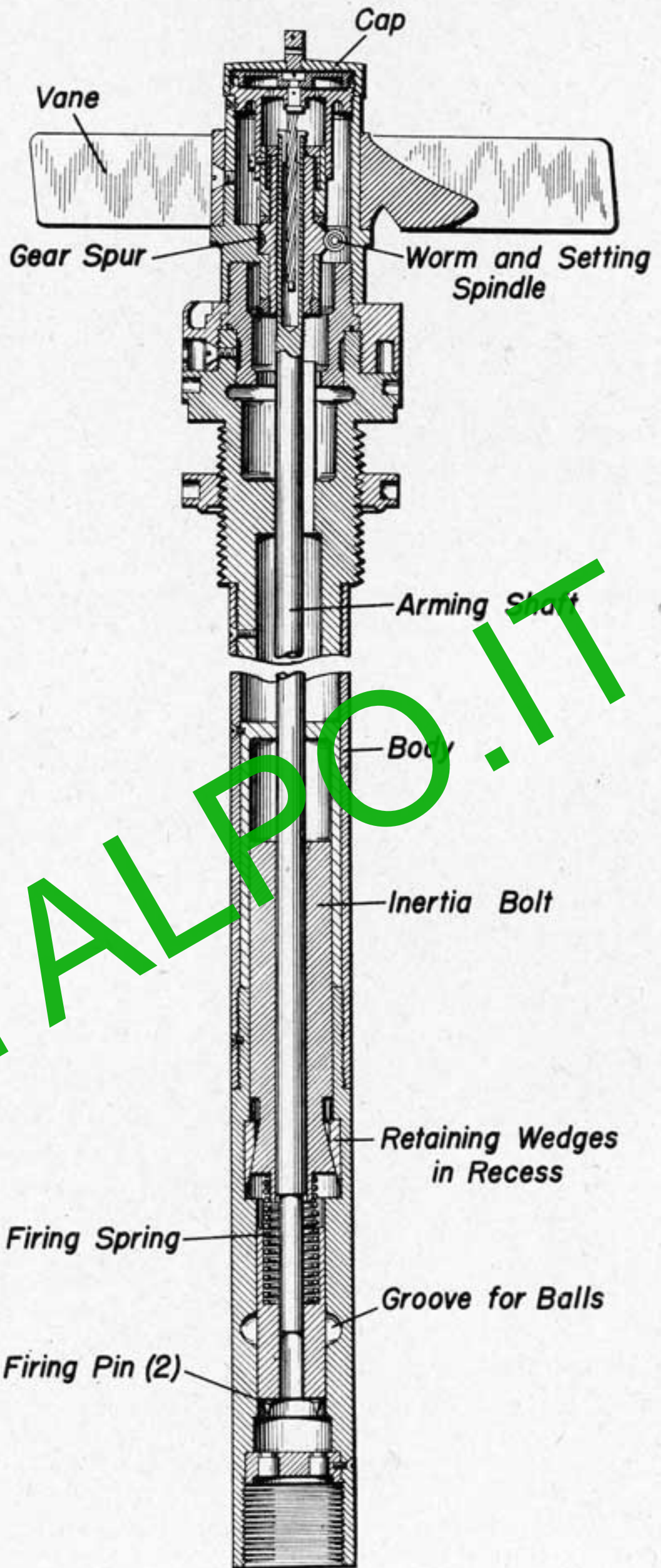


Fig. 4 - 160/C.S. Depth Bomb, Tail Fuze, Armed Position, Sectional View

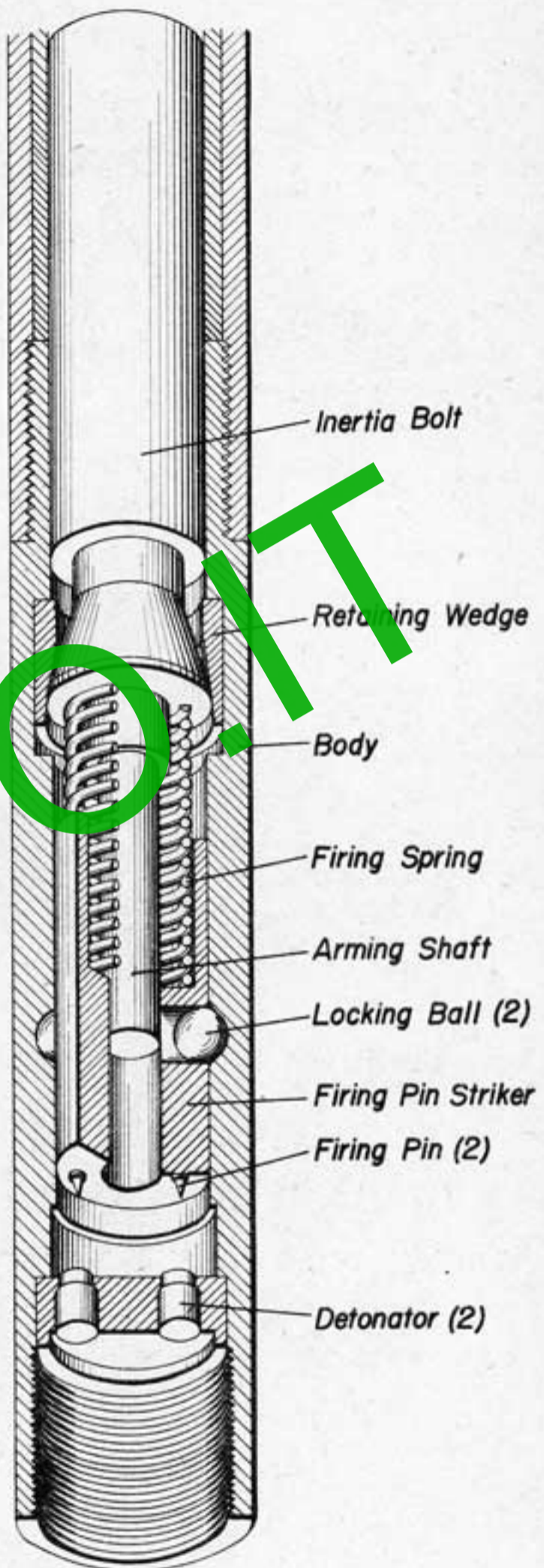
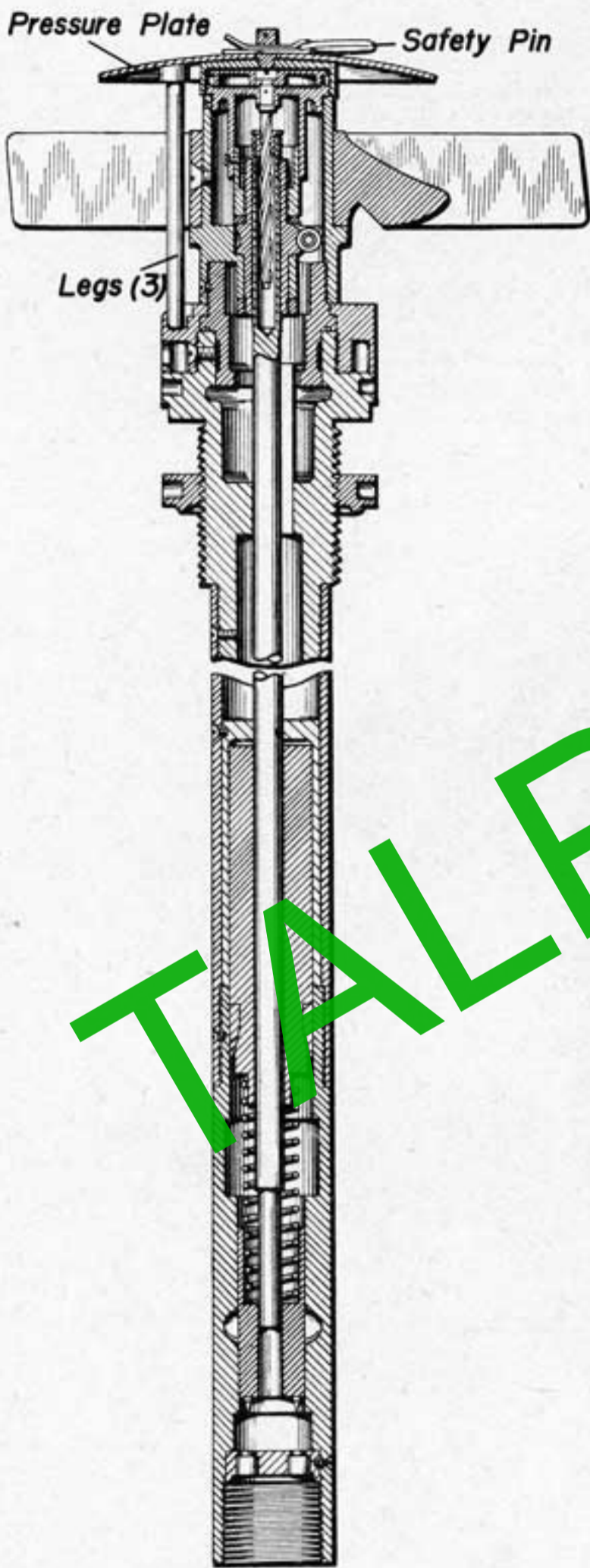


Fig. 5 - 160/C.S. Depth Bomb, Tail Fuze, Unarmed Position, Sectional View

Fig. 5a - 160/C.S. Depth Bomb, Tail Fuze, Perspective View

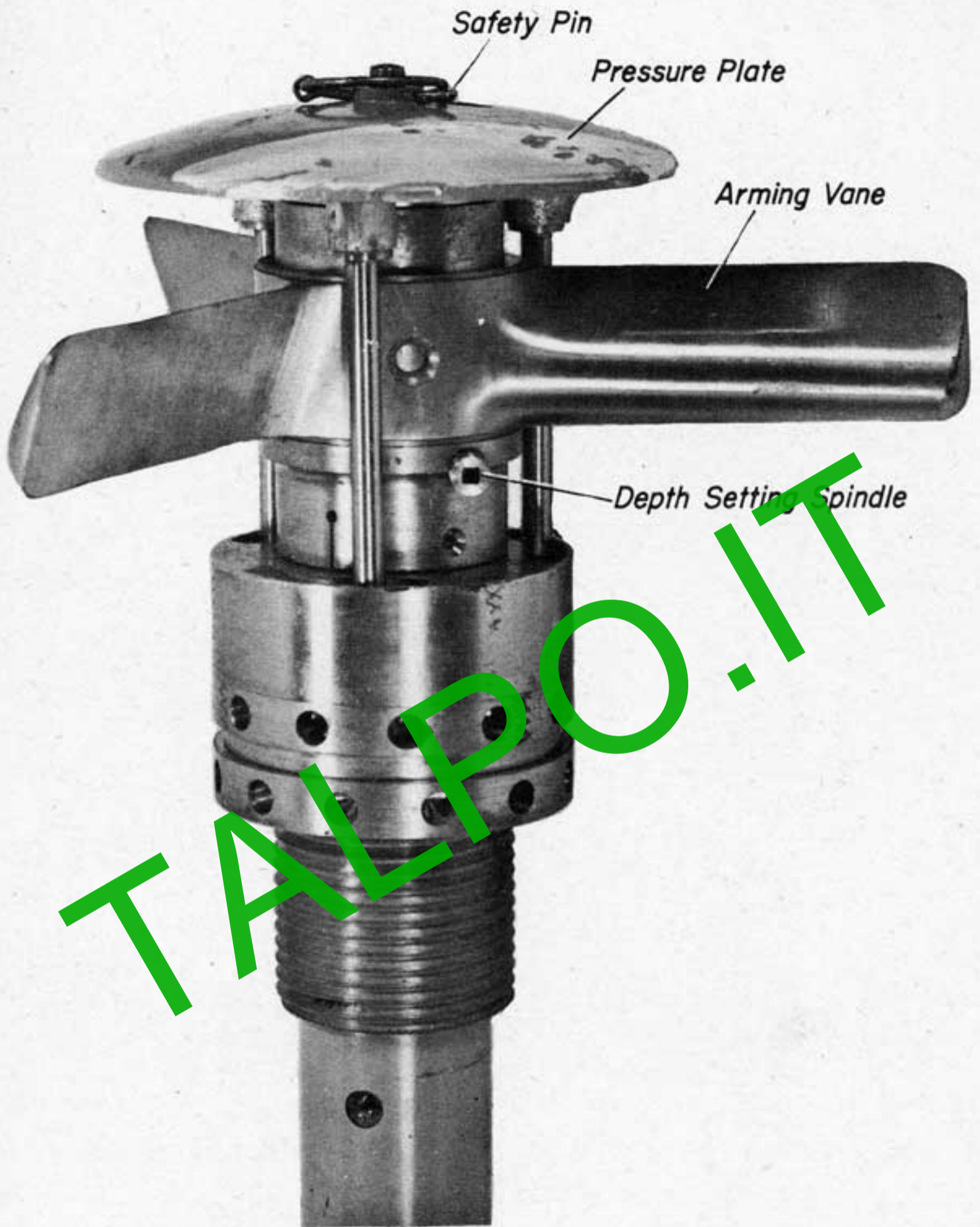


Fig.6 - 160/C.S. Depth Bomb, Tail Fuze

(Tail Fuze, Cont'd.)

Operation

1. The depth setting is made manually. Inertia upon impact with water moves an inertia bolt downward, thereby compressing the firing pin spring. As the bomb sinks, water travel rotates the vane, retracting an arming spindle until, at the set depth, two lock balls are freed to move into a recess, releasing the spring-loaded firing pin to impinge on the detonator.

Rendering Safe Procedure

1. Tape the fuze vane securely to the fuze body.
2. Unscrew the fuze from the pocket.
3. Unscrew the sub-booster from the lower fuze body.
4. Remove the set screw at the lower end of the fuze body. This screw secures the detonator carrier.
5. Dispose of all explosive elements.



Fig. 7- 160/C.S. Depth Bomb, Tail Fuze, End View Showing Pressure Plate

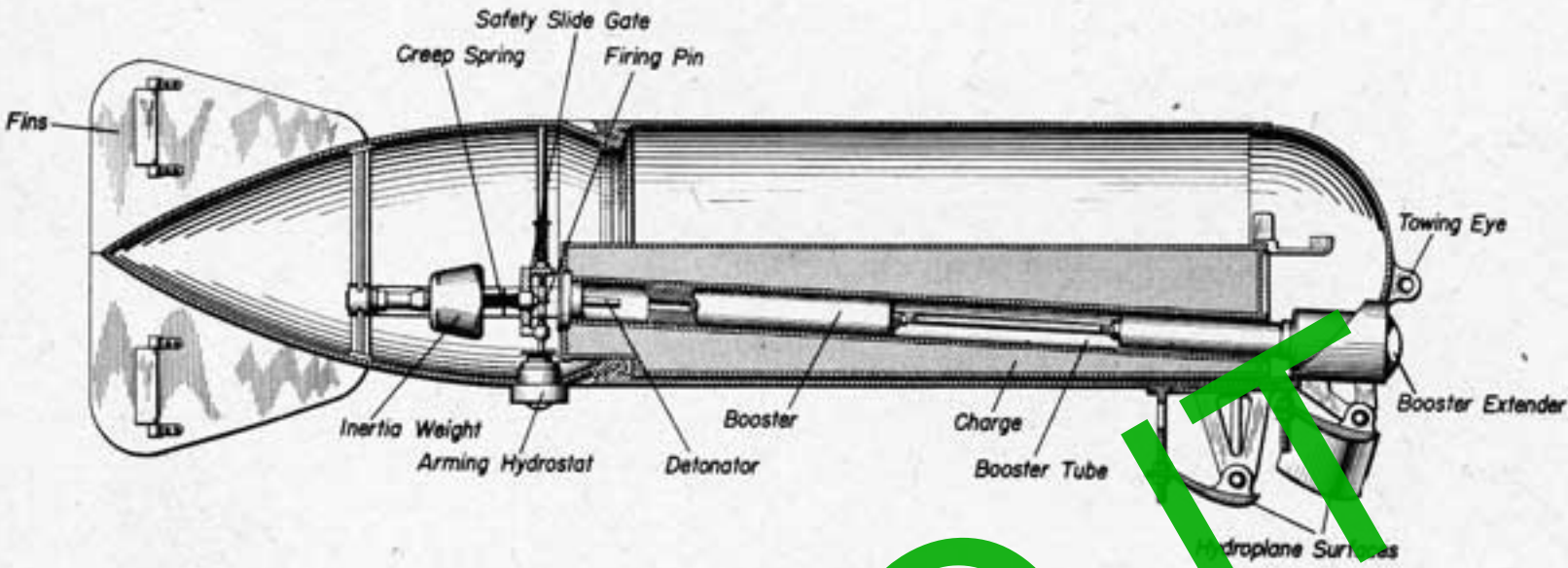


Fig. 8 - Explosive Paravane, Sectional View
("Torpedine da Rimorchio T.R. 30/1916 I.A.")

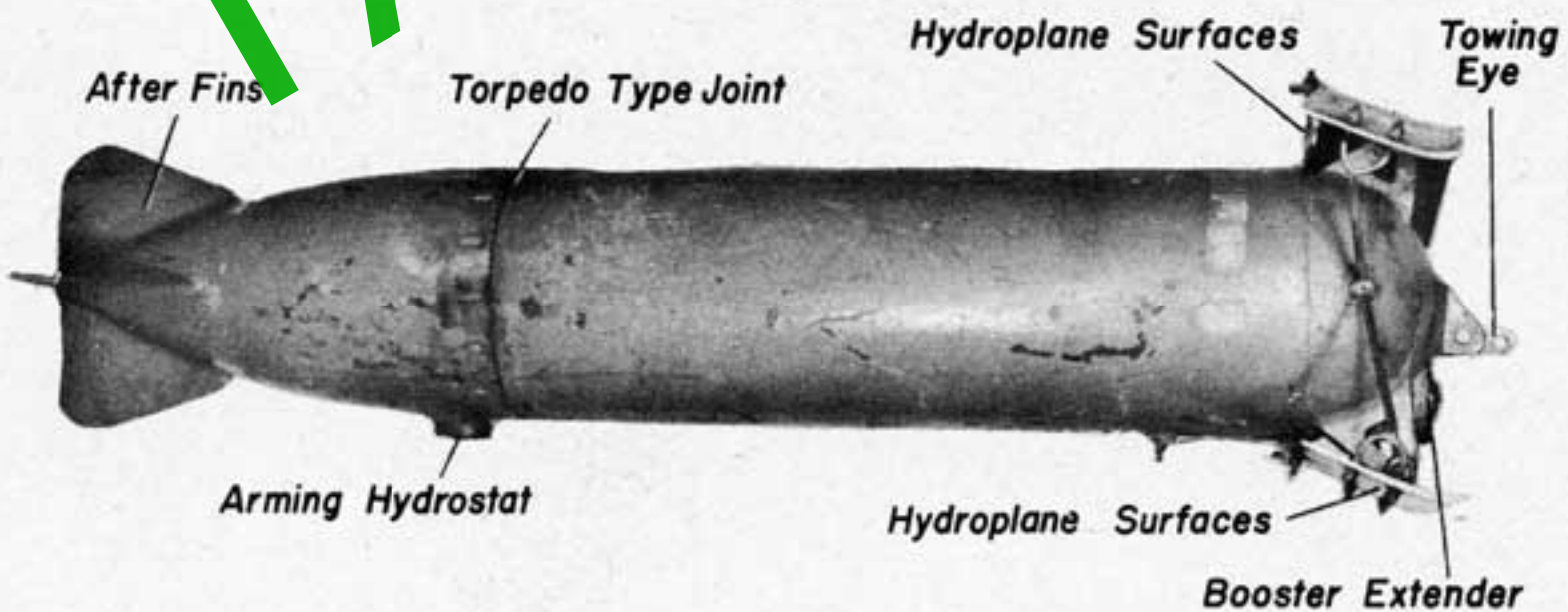


Fig. 9 - Explosive Paravane
("Torpedine da Rimorchio T.R. 30/1917 I.A.")

Explosive Paravane

General

1. Towed, inertia-fired, anti-submarine weapon, streamed from patrol craft.
2. Italian designation, "Torpedine da Rimorchio T. R. 30/1917 I. A."
3. Designed to be streamed between 50 and 120 ft. below the surface at speeds from 4-20 knots at a maximum distance of 360 ft. from the towing vessel.

Description

1. Case

Shape	Cylindrical with rounded nose and faired tail. Fitted with two hydroplane surfaces forward, and horizontal and vertical fins aft.
Color	Gray
Material	Steel
Diameter	11"
Length	6'5"
Charge	66 lb. cast TNT
Total weight in air	170 lb. approx.

2. External fittings

Booster extender	2 1/2" diam., on nose, secured by keep ring.
Arming hydrostat	2 1/2" diam., on lower surface of tail.
Towing eye	In center of nose.

Operation

1. When the paravane is launched, water travel causes it to submerge due to the hydroplane surfaces forward. The arming hydrostat unlocks the firing mechanism at a depth of 20 ft. and the booster extender houses the booster over the detonator at a depth between 20 and 30 ft. The paravane is now armed.
2. The paravane fires upon striking an object with sufficient force to cause an inertia weight to overcome a creep spring and force a firing pin into a detonator cap.
3. The booster extender and arming hydrostat are designed to withdraw the booster from the detonator and lock the firing device, respectively, if the paravane rises to a depth less than 20 ft.

Precautions

1. Do not move or jar the paravane except from a safe distance.

Rendering Safe Procedure

1. Remove the keep ring and booster extender. The booster is attached thereto.
2. Remove the detonator from the tail (exact method of assembly unknown).
3. Dispose of detonator, booster and charge.

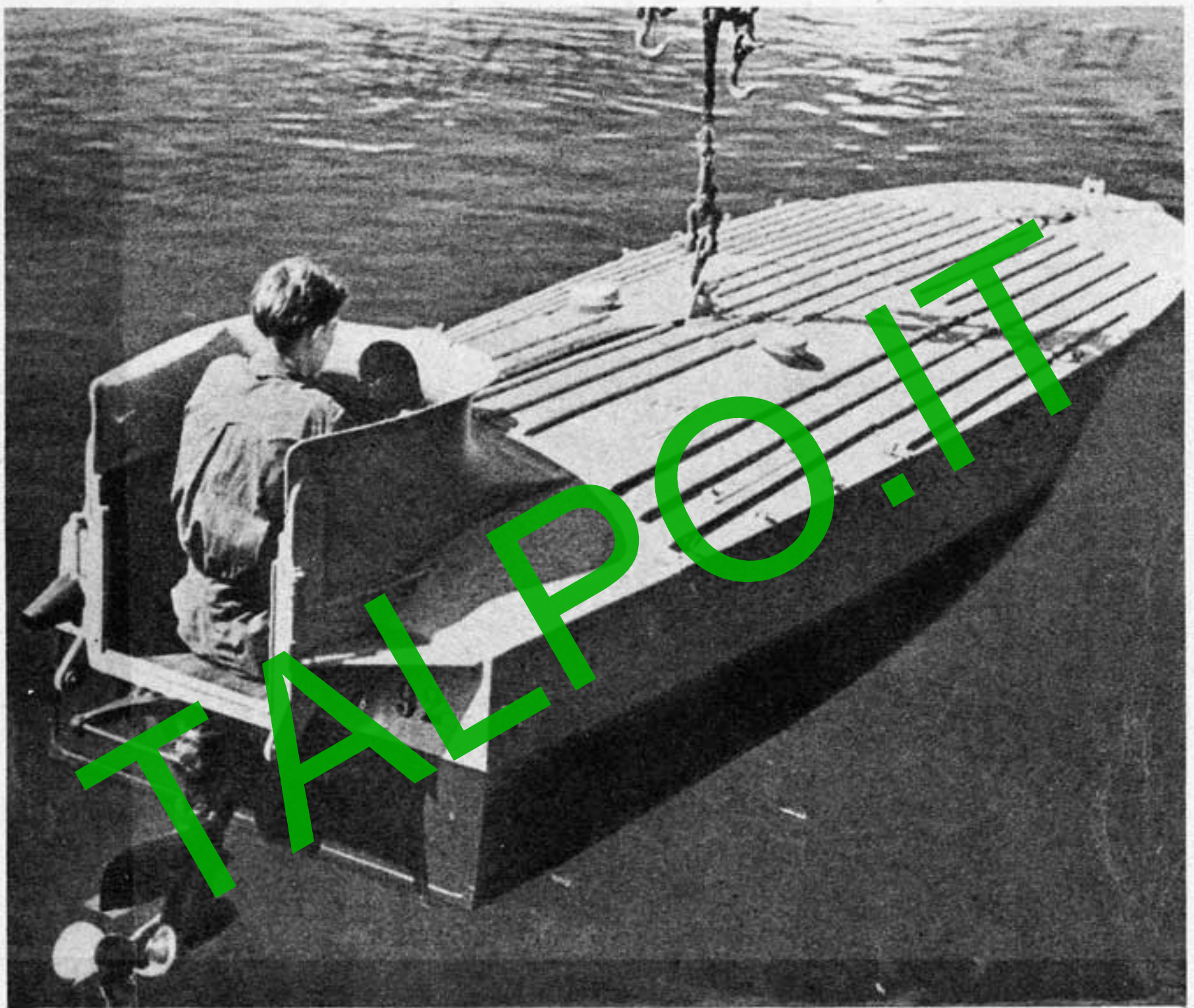


Fig. 10 - Explosive Motorboat