MINE GUIDE

There are many different mines in the mid-east from many countries, including a mix of western and Soviet bloc. A full suite of AT and AP mines may be available. Delivery systems could include hand, air, rocket, or artillery. This booklet describes a selection of representative mines which might be encountered in mid-east potential conflict areas. This booklet should not be interpreted as all inclusive or definitive in nature.

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POC'S AT BELVOIR RD&E CENTER ARE:

PAMELA M. JACOBS & DAVID POOLE

COMM: 703-664-6873
AV : 354-6873

COMMANDER
BELVOIR RESEARCH, DEVELOPMENT & ENGINEERING CENTER
ATTN: STRBE-NAA (P. JACOBS)
FT. BELVOIR, VA 22060-5606

WE HAVE FURTHER INFORMATION ON SOME MINES AND
A SECURE LINE IF REQUIRED.

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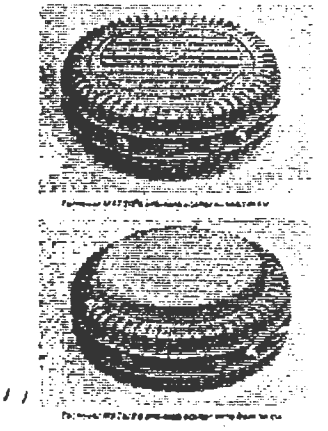
Italy	Anti-Tank	MATS/2.6
Mechanism	Blast	
Case Material	Plastic	
Total Weight	5kg	
Main Charge	T4 or Comp B	
Booster Charge		
Height	9cm	
Diameter	26cm	
Main Charge Wt	2.4kg	
Booster Charge Wt		
Anti - Disturbance Features		
Mine Counter-Counter Measures		
Emplacement	Scatterable or Buried	

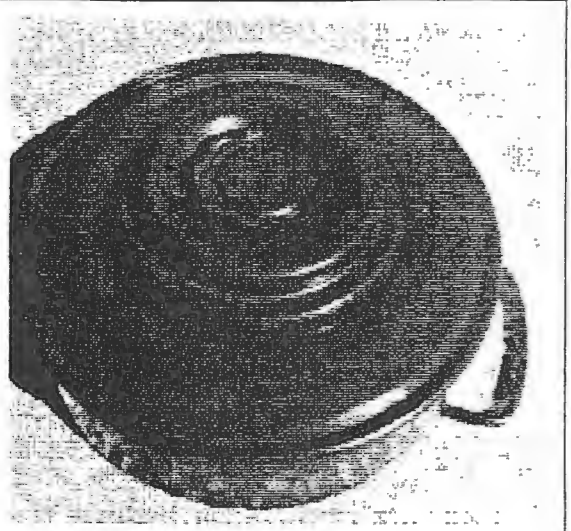


Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	180 - 310 kg	-31 °C up to 70 °C

Functioning:
Designed to destroy vehicle tracks.

Mine's Operational Employment:
Waterproof mine designed for laying from helicopters flying at speeds of up to 200km/hr and altitudes up to 100 meters. The Technovav DAT dispenses this mine. This mine can also be machine or hand buried at up to 75mm depth.

Comments:
There are two versions available, the larger is described here. The smaller version has a diameter of 22cm, weight of 3.6 kg and explosive weight 1.5 kg. except for size, they look alike.

China	Anti-Tank	Type 72
Kill Mechanism	Blast	
Case Material	Metallic	
Main Charge	RDX/TNT 50/50	
Booster Charge		
Main Charge Wt	5kg	
Booster Charge Wt		
Total Weight	8.13kg	
Height	9.3cm	
Diameter	27.9cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	300 - 700 kg	
Double Impulse		

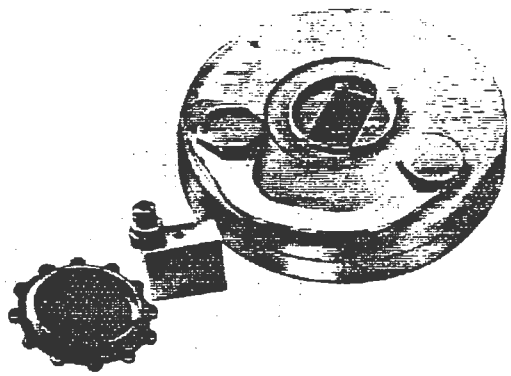
Functioning:

Mine's Operational:

Comments:

(RDA-TRf-Mn.110) The type 72 anti-tank mine is a Chinese copy of the Soviet TM-46 and differs from the original in few details. For transportation the Type 72 mine is packed in wooden boxes, each containing two mines and two fuzes. Each box weighs 21kg. The type 72 uses a Type 72-A blast resistant fuze but a double impulse fuze may be used as an alternative. The matallic mine case is sealed to allow for use under water to a depth of 1.2m.

Czechoslovakia	Anti-Tank	PT-Mi-Ba
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	TNT	
Booster Charge	TNT	
Main Charge Wt	6kg	
Booster Charge Wt	208g	
Total Weight	7.83kg	
Height	11.5cm	
Diameter	32.4cm	
Anti - Disturbance Features	Not Present, Present(25)	
Mine Counter-Counter		
Emplacement		



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	200 - 450 g	

Functioning:

(RDA-TRf-Mn.108) Disarmament/Safing: Remove fuze well cover and remove fuze. Force on procedure plate reptures the shear groove, puts pressure on the fuze which, when activated, starts firing chain.

Mine's Operational:

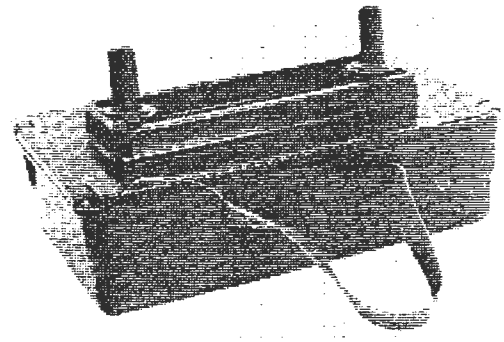
(RDA-TRf-Mn.108) Can be hand or machine laid, to reduce detextability, the fuze is placed in the base of the mine. Used in minefields and as obstacles.

(RDA-TRf-Mn.110) Force on the pressure plate ruptures the shear groove, puts pressure on the fuze, which activates the detonator and starts the firing chain. No provision is made for booby-trapping. It can be laid by hand or mechanically.

Comments:

(RDA-TRf-Mn.110) The PT-Mi-Ba circular non-metallic anti-tank mine was introduced into the Czechoslovakian Army in the 1950s and is also known as the PT-Mi-Ba-53. It is similar in physical appearance to the German Second World War Tellermines 42 and 43. It consists of two bakelite mouldings cemented together, and can be laid by hand or mechanically. The fuze-well is in the bottom of the mine and is closed by a threaded cover plate. The two filler holes are also in the bottom of the mine and are closed by lugs. These lugs also hold either end of the carrying handle.

Czechoslovakia	Anti-Tank	PT-Mi-Ba-II
Kill Mechanism	Blast	
Case Material	Bakelite Plastic	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	6kg	
Booster Charge Wt		
Total Weight	9.6kg	
Height	13.5cm	
Width: 23cm	Length: 39.5cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	200 - 450 g	

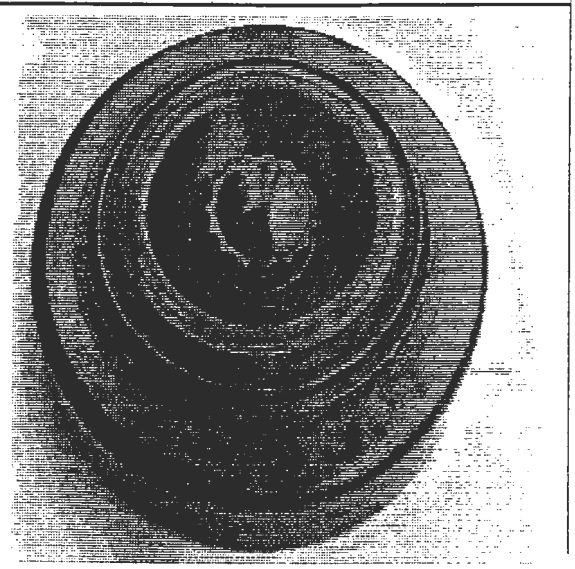
Functioning:
(RDA-TRf-Mn.110) When a vehicle travels over the mine, pressure is exerted on the two protruding extension rods, which then shear off downwards to apply pressure to the tops of the two Ro-7-11 pressure fuzes.

Mine's Operational:
(RDA-TRf-Mn.110) For laying the lid of the wooden carrying case is removed and discarded and the plastic lid is removed and replaced upside down onto the mine. Internal cross supports hold the lid in position above the main charge and the fuzes. The two pressure switch extension rods are then placed into wells in the lid and the mine is ready for laying, often complete with the base and sides of the wooden carrying case.

Comments:
(RDA-TRf-Mn.110) The PT-Mi-Ba-II anti-tank mine is a rectangular nonmetallic mine made almost entirely from a bakelite-type plastic. The mine is transported inside a wooden case in such a way that an internal plastic lid covers two Ro-7-11 fuzes inserted in the varnished main charge and two pressure switch extension rods.

Czechoslovakia	Anti-Armor	PT-Mi-Ba-III

Kill Mechanism	Blast
Case Material	Bakelite Plastic
Main Charge	TNT
Booster Charge	
Main Charge Wt	7.2kg
Booster Charge Wt	
Total Weight	9.9kg
Height	10.8cm
Diameter	33cm
Anti - Disturbance Features	None
Mine Counter-Counter	
Emplacement	Buried (Hand or Machine)



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	200 - 450 g	

Functioning:

(RDA-TRf-Mn.108) Disarmament/Safing: Countermine analysis shows presence of tilt (Blast resistant) pressure plate used in mines like LI-11(Sweden).Force applied to pressure plate ruptures shear groove and allows pressure to actuate fuze which initiates firing chain and detonates mine.

Mine's Operational:

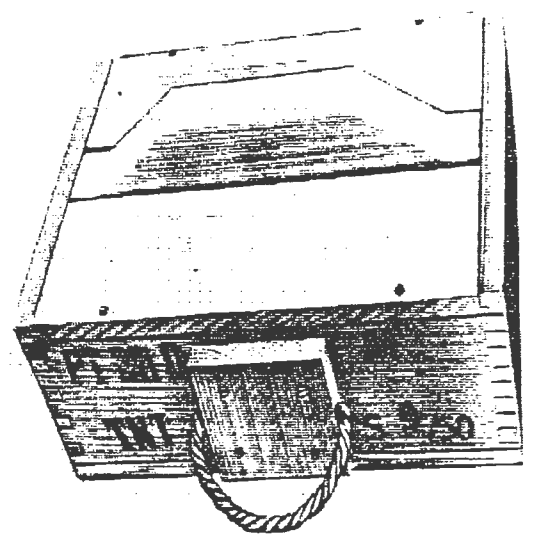
(RDA-TRf-Mn.108) Can be either hand or machine laid. Training version available.

(RDA-TRf-Mn.110) The mine operates as follows: force on the pressure plate ruptures the shear groove, puts pressure on the fuze, which activates the detonator and starts the firing chain. No provision is made for booby-trapping.

Comments:

(RDA-TRf-Mn.110) The fuze contains some metallic components. This mine is resistant to short duration clearing methods. A training version is available. The PT-Mi-Ba-III bakelite non-metallic anti-tank mine is circular and can be laid by hand or mechanically. A carrying handle slides into the mine for storage purposes. No provision is made for booby-trapping.

Czechoslovakia	Anti-Tank	PT-Mi-D
Kill Mechanism	Blast	
Case Material	Wood	
Main Charge	TNT	
Booster Charge	Two (2) TNT Blocks	
Main Charge Wt	5kg	
Booster Charge Wt	200g	
Total Weight	7.8kg	
Height	14cm	
Width: 23cm	Length: 32cm	
Anti - Disturbance Features	Attach anchor wire to fuze	
Mine Counter-Counter		
Emplacement		



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	200 - 450 kg	

Functioning:
(RDA-TRf-Mn.108) Mine has wooden shear dowels at each end to increase or decrease activation pressure. Similar to TMD-B but more comlicated.

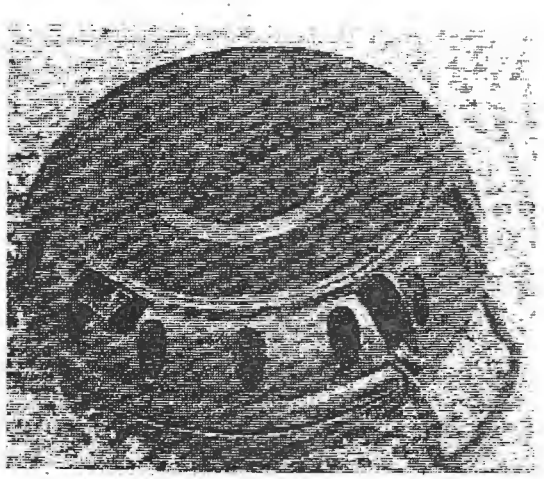
(RDA-TRf-Mn.110) To prepare the mine for use a central wooden cross-piece on top of th emine is removed and replaced upside down. The cross-piece is shaped so that the upper portion protrudes above the surface by about 30mm. Pressure on this cross-piece exetts pressure on two wooden

Mine's Operational:
(RDA-TRf-Mn.108) Rectangular shape limits mine to hand laying.

(RDA-TRf-Mn.110) The mine can be booby-trapped by passing an anchor wire through one of two holes in the bottom of the box container to one of the Ro-1 fuzes.

Comments:
(RDA-TRf-Mn.110) The PT-Mi-D wooden anti-tank mine resenbles a rectangular wooden box. The Ro-1 fuzes are each connected to a 200g TNT block, each of which acts as a primary charge for its own 2.5kg main charge.

East Germany	Anti-Tank	PM-60 or K-1
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	TNT	
Booster Charge	Tetryl	
Main Charge Wt	7.5kg	
Booster Charge Wt	499g	
Total Weight	11.35kg	
Height	11.7cm	
Diameter	32cm	
Anti - Disturbance Features	Anti-disturbance fuze provisio	
Mine Counter-Counter		
Empiacement	Hand or Machine	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	200 - 500 kg	

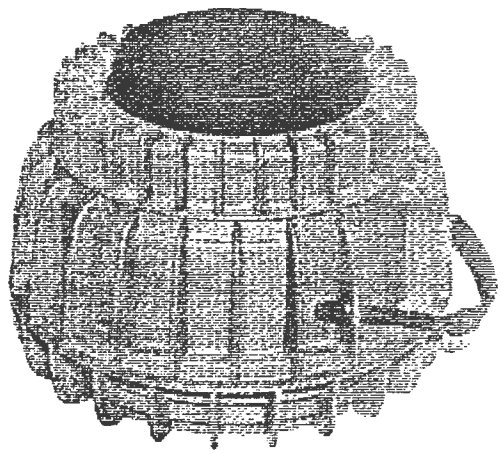
Functioning:
(RDA-TRf-Mn.108) Pressure applied to the pressur eplate is transmitted to fuze driving a firing pin into the primer initiating the firing chain and detonating the mine.

Mine's Operational:
(RDA-TRf-Mn.108) Can be hand or machine laid.

(RDA-TRf-Mn.110) The mine is operated as follows: Pressure applied to the pressure plate is transmitted to the fuze, driving the firing pin into the primer which initiates the detonator-booster main charge firing chain and ignites the mine. If required, a blasting cap and firing device may be installed in the booby-trap well in the base of the mine, which initiates the secondary booster and main charge.

Comments:
(RDA-TRf-Mn.110) Developed in 1958 the PM-60 (or K-1) plastic anti-tank mine has a two-part circular body with two fuze-wells. The body contains the pressure plate (on top), filler shield, filler seal, spacer, booster assembly, detonator and fuze. The fuze is threaded into the booster assembly. The detonator is installed in the booster well cap, below the fuze, and is contained by a closing plug. Two models of the PM-60 are known to be in service, one with a mechanical fuze which has a small number of metal components, and a second with a chemical fuze. Both have a bottom fuze for booby-trapping and can be laid by hand or mechanically.

Italy	Anti-Tank	TC-6
Kill Mechanism	Blast	
Case Material	Plastic-resins	
Main Charge	Comp B	
Booster Charge		
Main Charge Wt	6kg	
Booster Charge Wt		
Total Weight	9.6kg	
Height	18.5cm	
Diameter	27cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Buried	



Tecnovar TC/6 anti-tank mine; the TCE/6 is visually similar

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	180 - 310 kg	-31 °C up to 70 °C

Functioning:

(RDA-TRf-Mn.110) Actuation is by the application of force to a pressure plate. The mine is capable of destroying the tracks and severely damaging the suspension of armoured vehicles. Training versions are available.

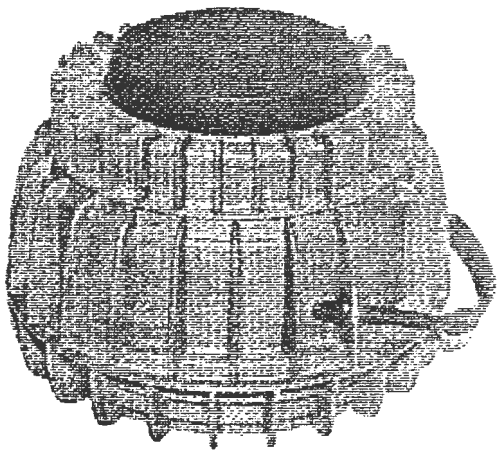
Mine's Operational:

(RDA-TRf-Mn.110) It can be layed by hand, to a depth of between 7.5 and 15cm in soil and up to 1m in snow, or mechanically from a vehicle.

Comments:

(RDA-TRf-Mn.110) The Tecnovar TC/6 is a circular resin based plastic anti-tank mine that is fully waterproof and nonbuoyant. Training versions are available. The TC/6 is produced in Eqypt as the Anti-tank Plastic Mine T.C.6. It is also produced in Portugal by Explosivos da Trafaria S.A.R.L. of Lisbon.

Italy	Anti-Tank	TCE-6
Kill Mechanism	Blast	
Case Material	Plastic-resins	
Main Charge	Comp B	
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight	9.6kg	
Height	18.5cm	
Diameter	27cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Buried	



Tecnovar TC/6 anti-tank mine; the TCE/6 is visually similar

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	180 - 310 kg	-31 °C up to 70 °C

Functioning:

(RDA-TRf-Mn.110) Actuation is by the application of force to a pressure plate. The mine is capable of destroying the tracks and severely damaging the suspension of armoured vehicles. Training versions are available.

Mine's Operational:

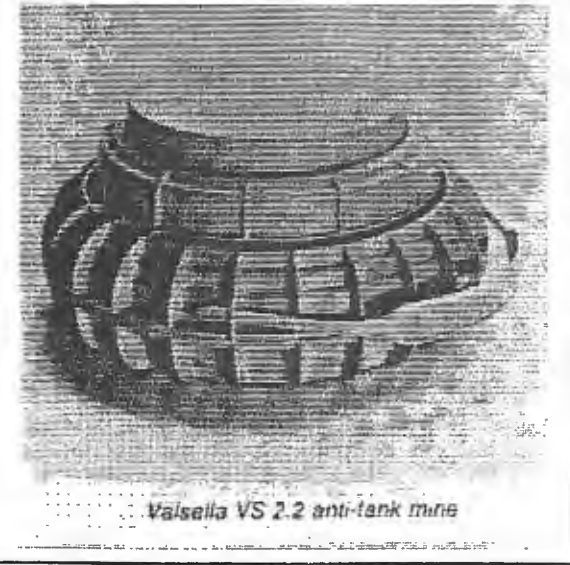
(RDA-TRf-MN.110) The mine is a circular resin-based plasic anti-tank mine that is fully waterproof and non-buoyant. It can be layed by hand, to a depth of between 7.5 and 15cm in soil, or mechanically from a vehicle.

Comments:

(RDA-TRf-Mn.110) The TCE-6 is physically similar to the TC-6 mine, and is fitted with an electronic arming/disarming device that can be used to activate or deactivate a minefield or minefield sector composed of these mines on receipt of a command signal.

Italy	Anti-Tank	VS 2.2

Kill Mechanism	Blast
Case Material	Plastic
Main Charge	Comp B
Booster Charge	RDX
Main Charge Wt	2.13kg
Booster Charge Wt	
Total Weight	3.5kg
Height	12cm
Diameter	24cm
Anti - Disturbance Features	
Mine Counter-Counter	Shock Proof, Claim Undetectable by Standard detectors.
Emplacement	Buried



Valsella VS 2.2 anti-tank mine

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	180 - 220 kg	-32 °C up to 60 °C

Functioning:

(RDA-TRf-Mn.110) The VS-N fuze is provided with a pneumatic anti-shock evice. This device prevents the mine from being triggered when an impulsive load is applied onto the pressure plate, caused wither by an accidental drop, when scattered by a helicopter dispenser, by th edetonation of a nearby or suspended explosive charge, or by the action of fuel-air explosive mine clearing systems.

(RDA-TRf-Mn.106) Pressure applied to the top of the mine, (a pressure membrane and spring)

Mine's Operational:

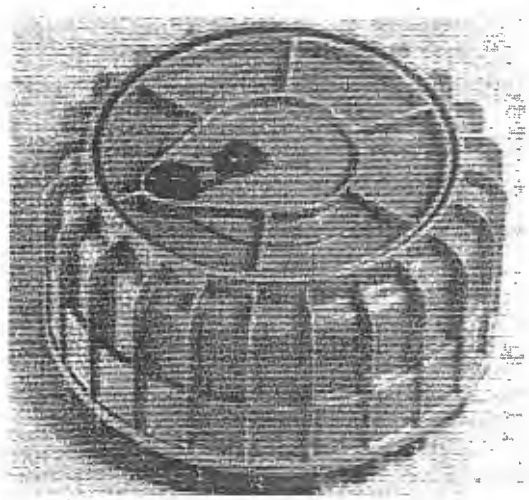
(RDA-TRf-Mn.106) Designed to be laid by hand or machine. Practice mine available.

(RDA-TRf-Mn.110) The mine can be employed in flooded areas and being all-plastic, apart from a few small metal components. A typical planting depth is from 500 to 700mm below ground surface.

Comments:

(RDA-TRf-Mn.110) Water-proof, Non-bouyant. Max-Depth of 10cm. Is undetectable by standard metal detectors.

Italy	Anti-Tank	VS-HCT
Kill Mechanism	Shape Charge	
Case Material	Plastic	
Main Charge	Comp B	
Booster Charge		
Main Charge Wt	2.05kg	
Booster Charge Wt		
Total Weight	4kg	
Height	11cm	
Diameter	22.2cm	
Anti - Disturbance Features	Has anti-disturbance provision	
Mine Counter-Counter	Dual Sensors	
Emplacement	Buried to 10cm	



Valsella VS-HCT anti-tank mine

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic & Seismic		-32 kg up to 49 °C

Functioning:

(RDA-TRf-Mn.110) In operation a magnetic sensor detects the change in the local magnetic field when a tank approaches. The sensor's signal is processed by an electronic circuit for optimum discrimination of the target, and for correct timing of the firing pulse. The explosive is primed by an electrical device which initiates a composite percussion detonator.The detonator includes the first stage to ingnite the clearing charge and a delayed detonator, the delay being determined by the degree to which uncovering is required.

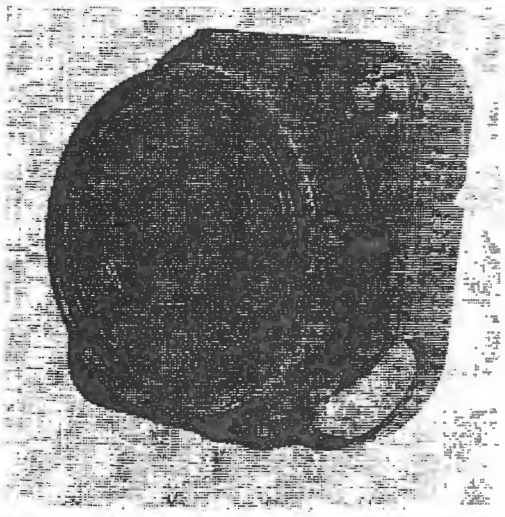
Mine's Operational:

(RDA-TRf-Mn.110) Has selectable self destruct. Practice mine available.

Comments:

(RDA-TRf-Mn.110) Powered by a militay quality lithium battery.
Self-neutralization capability; it has 10 settings, ranging from 1 to 128 days.
Status of mine can be checked remotely.
May be turned on or off remotely.

Italy	Anti-Tank	VS-HCT2
Kill Mechanism	Shaped Charge	
Case Material	Plastic	
Main Charge	Comp B	
Booster Charge	RDX	
Main Charge Wt	2.3kg	
Booster Charge Wt	0.011kg	
Total Weight	6.8kg	
Height	12.8cm	
Width: 26cm	Length: 26cm	
Anti - Disturbance Features	Anti-lift found in VS-HCT	
Mine Counter-Counter	Purports High immunity against mine clearing counter-measures.	
Emplacement	Buried (Hand or Machine)	



Valsella VS-HCT2 full-width anti-tank mine

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic & Seismic		-32 °C up to 49 °C

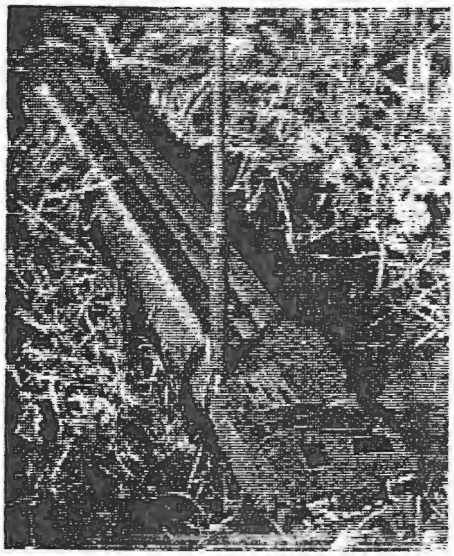
Functioning:
(RDA-TRf-Mn.106) Has an electronic combined magnetic and seismic influence fuze. Purports Full-width kill against any MBT or APC. Mobility kill under tracks, and total kill under the belly. Increase of internal pressure is well above crew survival level for under belly attacks.

Mine's Operational:
(RDA-TRf-Mn.106) May be buried either manually or mechanically using a chute minelayer. Self-Neutralization time is preset just before laying using a portable electronic programmer. The programmed value may be altered any number of times. The status of the mine can be checked using a special stand-off detector before a self-neutralized mine is recovered.
The fuze may have a self-neutralizing or a self-destruct capability. The self-neutralization delay is programmable in steps of 0.1 day from 0.1 dat up to 90 days.

Comments:
(RDA-TRf-Mn.110) Water-proof. The main features of the VS-HCT2 are: optimised full width effectiveness, good target discrimination (independent of speed), a dual-safety arming device which interrupts the pyrotechnic and detonating trains, a self neutralizing (or self-destruct) capability which is electrically programmable in the field and a high immunity against mine clearing countermeasures.

United Kingdom	Anti-Tank	Bar Mine L8A1, L9A1

Kill Mechanism	Blast
Case Material	Plastic
Main Charge	RDX/TNT 55/45
Booster Charge	
Main Charge Wt	
Booster Charge Wt	
Total Weight	11kg
Height	8.1cm
Width: 10.8cm	Length: 120cm
Anti - Disturbance Features	Has Anti-Disturbance features
Mine Counter-Counter	Double-impulse fuzed possible. Sustained impulse required.
Emplacement	Buried (Hand or Machine)



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic & Seismic		
Pressure		
Tilt-Rod		

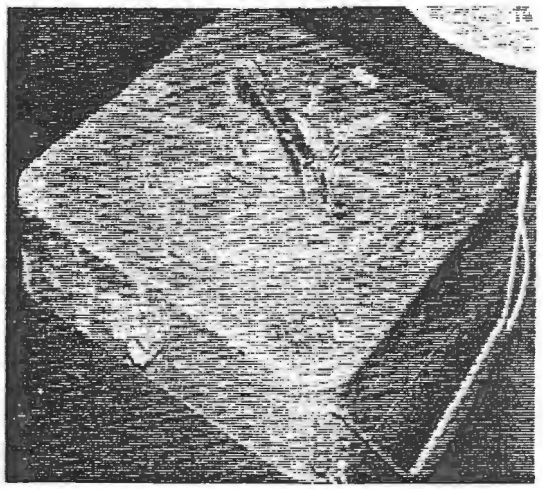
Functioning:
(RDA-TRf-Mn.106) Various fuzes can be attached before emplacement either singly or integrated (requires hand laying). Fuze types include single and double impulse pressure, and tilt rod (FWAM)

Mine's Operational:
(RDA-TRf-MN.110) The mine is stored ocmplete with its fuze, which saves time and man power in fitting the fuze before the mine can be laid.
(RDA-TRf-Mn.106) The bar mine's long length serves three purposes: To facilitate laying; to reduce number of mines required in a minefield; and, offers an increased potential for actuation. Designed to be laid with the bar mine layer (600-700 per hour) or by hand. Practice mne is available.

Comments:
(RDA-TRf-Mn.110) The L9 Bar Mine is plastic with only a few metal components in the fuze and is difficult to detect using current electro-magnetic mine detectors.

United States	Anti-Tank	M19

Kill Mechanism	Blast
Case Material	Plastic
Main Charge	Comp B
Booster Charge	RDX
Main Charge Wt	9.53kg
Booster Charge Wt	0.052kg
Total Weight	12.56kg
Height	9.4cm
Width: 33.2cm	Length: 33.2cm
Anti - Disturbance Features	Anti-Lift provision
Mine Counter-Counter	
Emplacement	Buried



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	136 - 227 kg	-40 °C up to 51.5 °C

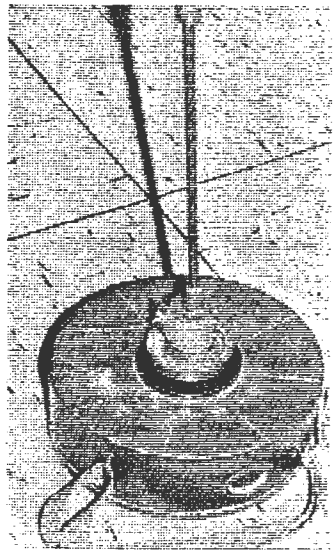
Functioning:
(RDA-TRf-Mn.110) When sufficient pressure is applied to the top of the mine, the pressure plate is depressed thus depressing the belleville spring of the fuze which snaps into reverse driving the firing pin into the detonator. This explodes the mine.

Mine's Operational:
(RDA-TRf-Mn.110) Designed for hand emplacement about 3cm deep and 5m apart. Training mine is available AT:training,M80. Sympathetic detonation can be avoided if the mine is buried 3.8cm deep, with a 45 degree slope of holes and 5.5m center-to-center between adjacent mines.

Comments:
(RDA-TRf-Mn.110) Water-proof, Non-bouyant. The M19 non-metallic anti-tank mine is square and has an all-plastic case. a carrying handle is provided on one side of the mine. The main fuze well is in the center of the mine and there are also two anti-lifting fuze wells, one in the side of the mine and the second in its base.

United States	Anti-Tank	M21

Kill Mechanism	Plate Charge
Case Material	Steel
Main Charge	Comp H-6
Booster Charge	RDX
Main Charge Wt	4.9kg
Booster Charge Wt	0.011kg
Total Weight	7.9kg
Height	20.6cm
Diameter	23cm
Anti - Disturbance Features	
Mine Counter-Counter	
Emplacement	Buried



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure, Single Imp	132 kg	-40 °F up to 125 °F
Tilt-Rod	2 kg	
Magnetic Influence		

Functioning:

(RDA-TRf-Mn.110) When fitted with the extension rod the mine is operated as follows: when the rod is tilted with a minimum horizontal force of 1.7kg through an angle of 20 degrees or more the plastic collar in the fuze is broken. When used with the rod, a minimum force of 132 kg applied to the top of the mine will shatter or break the plastic collar. Once this plastic collar is shattered or broken, the tilt rod in the fuze presses against the bearing cap, forcing it downward causing the Belleville spring to snap into the reverse position, driving the firing pin assembly into the M46

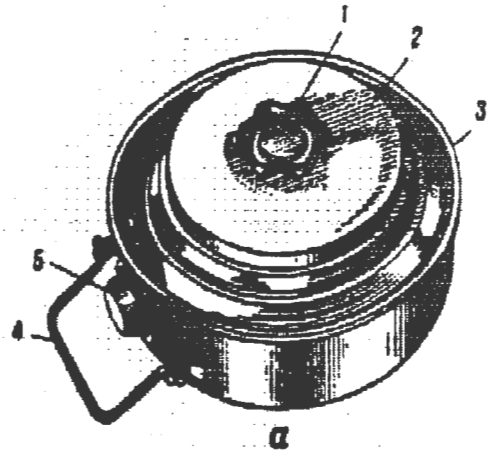
Mine's Operational:

(RDA-TRf-Mn.106) Hand emplaced under ground. Usually placed 13cm below ground level with only fuze uncovered.

Comments:

(RDA-TRf-Mn.110) The M21 anti-tank mine is circular and has a sheet steel case. An adjustable carrying strap attached to the side of the mine can also be used for lifting the mine into position. The top cover of the mine contains a charge cap assembly which has a threaded hole in the centre into whcih the fuze is screwed. For traveling this is covered by a plug assembly. Under the charge cap assembly is the black powder expelling charge and under this is the concave steel plate, beneath which is the high explosive charge. The M21 mine has an M607 fuze which can be fitted with an extension rod adaptor and an extension rod which is actuated when it comes into contact with the tracks or belly of the tank. With the extension rod and adaptor removed, the fuze may be used as a pressure type fuze. The 81.3cm height is with tilt rod. Mine body is 20.6cm

USSR	Anti-Tank	TM-46
Kill Mechanism	Blast	
Case Material	Metal	
Main Charge	TNT	
Booster Charge	TNT	
Main Charge Wt	5.3kg	
Booster Charge Wt	198.45g	
Total Weight	8.4kg	
Height	9.1cm	
Diameter	30.4cm	
Anti - Disturbance Features	None	
Mine Counter-Counter		
Emplacement	Buried (Hand or Machine)	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	210 kg	
Pressure	210 kg	
Tilt-Rod		

Functioning:

(RDA-TRf-Mn.108) When using the MV-5 or MVM pressure fuze.

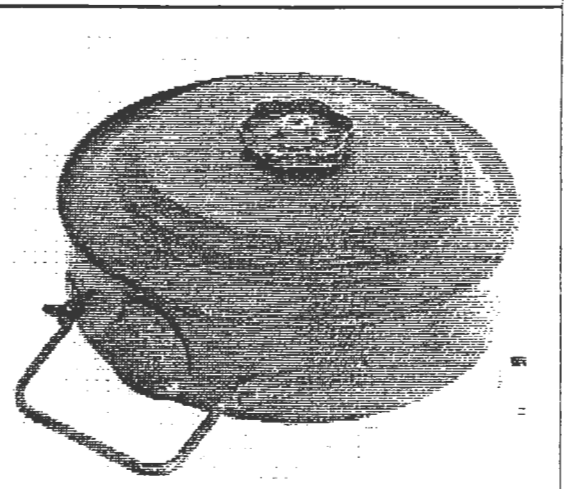
(RDA-TRf-MN.110) Pressure applied to the pressure plate compresses the striker spring pushing the retaining balls into a recess and releasing the striker detonating the mine. With the MVSH-46 tilt rod fuze, pressure in any direction lifts the striker retaining rod releasing rod releasing the striker retaining balls allowing the striker to drive into the precussion cap exploding the mine.

Mine's Operational:

(RDA-TRf-Mn.108) The mine is designed to be laid in minefields by hand or machine. Mine can be also placed in water.

Comments:

(RDA-TRf-Mn.110) In appearance the TM-46 is almost identical to the TMN-46, which however has a fuze-well in the bottom of the mine for booby trapping. The Israeli-No6 anti-tank mine is an exact copy of the TM-46. A version product in China is known as the Type 72 and one produced in Egupt is known as the M/71. The TM-46 is also produced in Bulgaria.

USSR	Anti-Tank	TMN-46
Kill Mechanism	Blast	
Case Material	Metal	
Main Charge	TNT	
Booster Charge	Tetryl	
Main Charge Wt	5.95kg	
Booster Charge Wt	0.07654k	
Total Weight	8.98kg	
Height	11cm	
Diameter	30.4cm	
Anti - Disturbance Features	Anti-Lift	
Mine Counter-Counter		
Emplacement	Buried (Hand or Machine)	

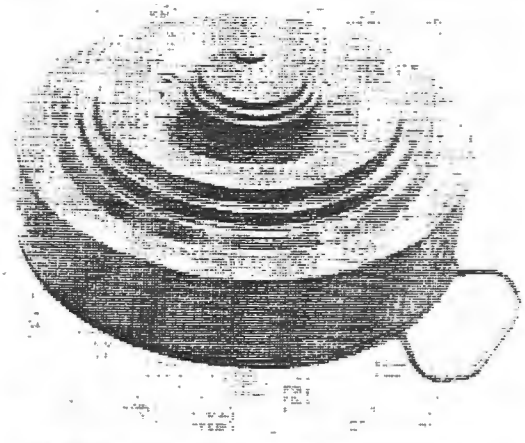
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	210 kg	
Pressure	210 kg	

Functioning:
(RDA-TRf-Mn.108) Pressure forces the pressure plate downward to the head of the fuze. As the fuze is depressed the striker is released detonating the mine. (See TM-46 for full description).

Mine's Operational:
(RDA-TRf-Mn.108) Mine is machine laid with MVM fuze and hand laid with MV-5 and MVSh-46 fuze. May be emplaced under water, in creek and river beeds, or in minefields.

Comments:
(RDA-TRf-Mn.108) Disarmament/Safing: Advise destroy in place.
Second fuze well used for booby trapping.
(RDA-TRf-Mn.110) There is a fuze well in the bottom of the mine for booby-trapping. In appearance, the TMN-46 is almost identical to the TM-46, which does not have the fuze well in the bottom of the mine for booby-trapping.

USSR	Anti-Tank	TM-57
Kill Mechanism	Blast	
Case Material	Metal	
Main Charge	Cast TNT	
Booster Charge		
Main Charge Wt	7kg	
Booster Charge Wt		
Total Weight	9.5kg	
Height	11.5cm	
Diameter	31.5cm	
Anti - Disturbance Features	Anti-Lift provision	
Mine Counter-Counter		
Emplacement	Buried	



TM-57 anti-tank mine fitted with MVZ-57 fuze

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	200 - 300 kg	
Tilt-Rod		

Functioning:

(RDA-TRf-Mn.108) MVZ-57 fuze pressure applied to a plate compresses the striker spring pushing retaining ball into a recess releasing the striker and detonating the mine.
(RDA-TRf-Mn.110) A button on the fuze is thenpressed and 45s later the detonator tilts upright into the operating position.

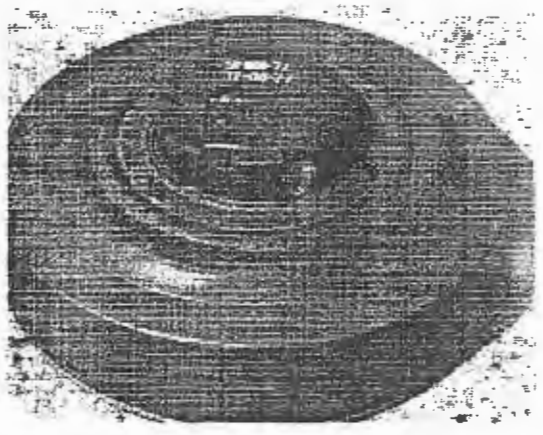
Mine's Operational:

(RDA-TRf-Mn.108) With MUZ-57 fuze the mine can be hand laid and with MVSh-57 the mine is machine laid. Also, employment by helicopter via a chute. Mine is not camouflaged but is painted green to blend with grassy areas. The machine laying fuze has an adjustable delay 20-80 seconds.

Comments:

(RDA-TRf-Mn.110) 9.5 cm height is without fuze, mine is 11.5 cm in height with MVZ-57 fuze. In appearance, the TM-57 metallic anit-tank mine is very similar to the TM-46 and TMN-46 anti-tank mines. The TM-57 has a larger charge and improved fuzing, and can be laid by hand or mechanicly. It can be recognised as it has no well in the bottom for an anti-lift device (although it does have one in the side) and has seven ribs underneath (the TMN-46 has five ribs) along with a carrying handle. Some TM-57 mines have two filling plugs in the base. The MVSh-57 tilt-rod fuze may be used with the TM-57.

USSR	Anti-Tank	TM-62
Kill Mechanism	Blast	
Case Material	Diff for ea Varient	
Main Charge		
Booster Charge		
Main Charge Wt	7kg	
Booster Charge Wt		
Total Weight	9.65kg	
Height	11.5cm	
Diameter	31.5cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Buried	

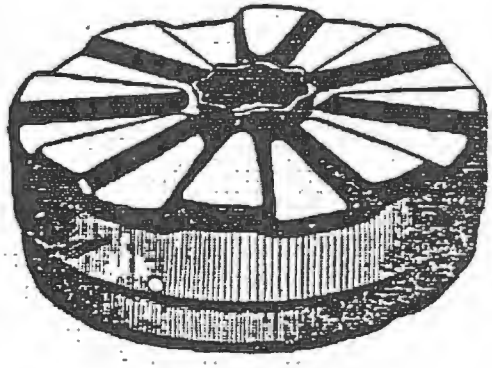


Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure w/Time delay	175 - 600 kg	

Functioning:
(RDA-TRf-Mn.110) These mines all appear to have a built-in firing delay of approximately two seconds to ensure that the tank is well over the mine before it detonates.

Mine's Operational:
(RDa-TRf-Mn.110) The TM-62M uses a sheet metal casing, is similar in appearance to the TM-57 and has provision for a tilt-rod detonator. The central fuze well of the TM-62 has a diameter of 12.5cm and a depth of 8cm.
8.3cm height is without fuze. 11.5cm height is with MVCh-62 fuze.

Comments:
(RDA-TRf-Mn.110) The TM-62 is a prgressive development of the TM-57, but it is also used as the "family" name for a group of mines that differ in there construction. These are:
TM-62M - metal casing
TM-62P - plastic casing
TM-62D - rectangular wooden case
TM-62B - water proof cardboard casing
The plastic-boodied TM-62 P2 and P3 both have a body diameter of 30.8cm. The TM-62 has a height of 8.2cm unfuzed while the TM-62 P3 has a height of 8.4cm also unfuzed.

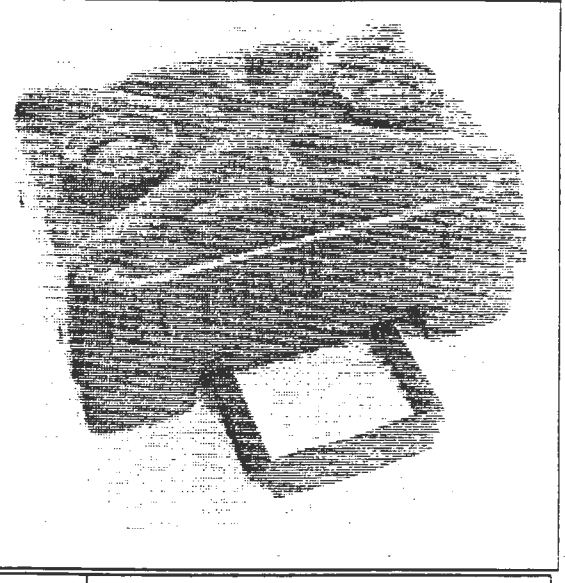
Yugoslavia	Anti-Tank	TMA-1A
Kill Mechanism		
Case Material	Plastic	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	5.4kg	
Booster Charge Wt		
Total Weight	6.5kg	
Height	10cm	
Diameter	31.5cm	
Anti - Disturbance Features	Anti-Lift provision	
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		

Functioning:
(RDA-TRf-Mn.110) The downward pressure breaks the fuze cap, which causes friction to ignite the incendiary mixture which in turn ignites the No8 detonator. This initiates the primer and the main explosive charge. Operating force to activate this mine with the UTMAH-1 fuze is 100kg.

Mine's Operational:
(RDA-TRf-Mn.110) This plastic circular anti-tank mine has two fuze wells, one in the top center of the pressure plate for the main fuze, and the second in the bottom of the mine for booby-trapping.

Comments:
(RDA-TRf-Mn.110) The TMA-1A has a very distinctive corrugated top pressure plate. Along the body circumference are four openings set crosswise for the insertion of joints which are designed to regulate the treding force. The practice version of this mine is the VTMA-1A.

Yugoslavia	Anti-Tank	TMA-2
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	6.5kg	
Booster Charge Wt		
Total Weight	7.5kg	
Height	14cm	
Width: 20cm	Length: 26cm	
Anti - Disturbance Features	Anti-disturbance provisions	
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		

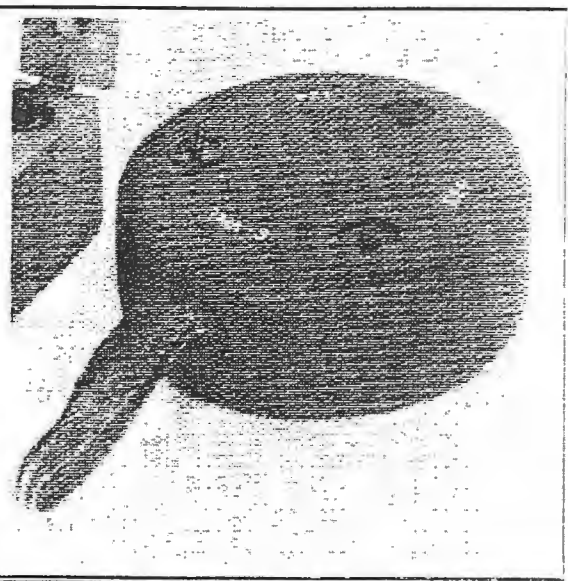
Functioning:

(RDA-TRf-Mn.110) When pressure is applied to any part of the mine's upper surface the flexible top of the mine moves downwards until one or both of the fuze well caps come into contact with the pressure fuzes and detonate the mine. Operating force to activate this mine with the UTMAH-1 fuze is 120-320kg.

Mine's Operational:

Comments:

(RDA-TRf-Mn.110) This plastic anti-tank mine is rectangular and has two fuze wells each of which covers a pressure fuze. The base of the mine has a small hole to which a drawstring for an anti-lift device can be attached. The practice version of the TMA-2 is the VTMA-2A.

Yugoslavia	Anti-Tank	TMA-3
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	TNT or Trotyl	
Booster Charge		
Main Charge Wt	6.5kg	
Booster Charge Wt		
Total Weight	6.6kg	
Height	8cm	
Diameter	26.5cm	
Anti - Disturbance Features	Anti-disturbance provisions	
Mine Counter-Counter	Resistant to Blast overpressure - 20kt	
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		

Functioning:

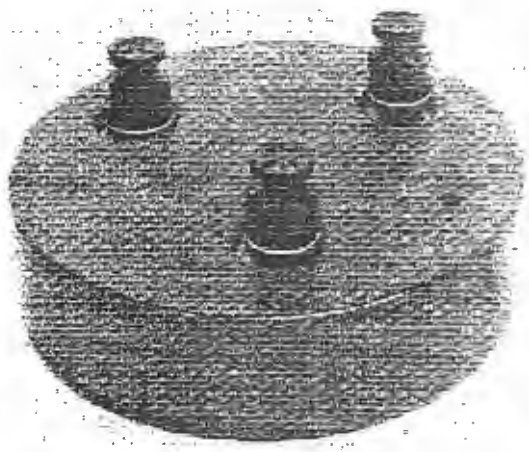
(RDA-TRf-Mn.109) Waterproof, air tight. One side of the TMA-3 has three detonator wells set near the edges of th circumference of the mine. These are approximately 1.9cm in diameter and three plastic detonator assemblies are screwed into them. a single detonator well is centrally situated on the opposite face and is generally believed to have an antihandling device. Operating force to activate this mine with the UTMAH-1 fuze is 180-350kg.

Mine's Operational:

(RDA-TRf-Mn.109) The TMA-3 mine is used to destroy armored vehicles and other vehicles. The mine is suitable for nuclear warfare, being resistant to blast overpressure from nuclear explosion.

Comments:

(RDA-TRf-Mn.110) The TMA-s circular plastic anti-tank mine is blast and water resistant. All parts of the mine are non-metallic and the canvas carrying handle is embedded in the cast explosive of the mine. The three fuze wells in the top of the mine casing each accept a UTMAH-1 fuze, which are left exposed after they have been screwed into position. The bottom fuze well is used for an anti-handling device. The practice version of this mine is the hard rubber VTMA-3.

Yugoslavia	Anti-Tank	TMA-4
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	Cast TNT	
Booster Charge		
Main Charge Wt	5.5kg	
Booster Charge Wt		
Total Weight	6.3kg	
Height	11cm	
Diameter	28.5cm	
Anti - Disturbance Features	Anti-Lift provision	
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	200 kg	

Functioning:

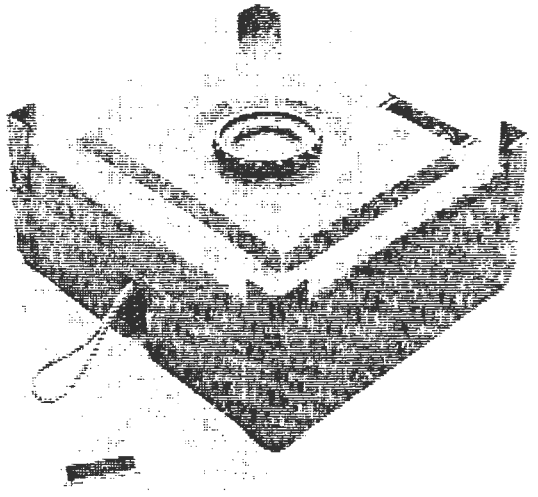
(RDA-TRf-Mn.109) Same basic design as TMA-3 (Yugoslavia), slightly improved. Due to absence of metal parts detection with metallic mine detectors is impossible.

Mine's Operational:

Comments:

(RDA-TRf-Mn.110) The TMA-4 is a circular plastic anti-tank mine which is larger than the TMA-3, and also has multiple fuze wells. The top three wells take the UTMAH-4 fuze and the bottom well is used for a booby-trapping device. The mine is fitted with a canvas carrying handle on the side. The practice version of this mine is the VTMA-4.

Yugoslavia	Anti-Tank	TMA-5
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	Cast TNT	
Booster Charge		
Main Charge Wt	5.5kg	
Booster Charge Wt	0.15kg	
Total Weight	6.6kg	
Height	11.3cm	
Width: 27.5cm	Length: 31.2cm	
Anti - Disturbance Features	Anti-disturbance provisions	
Mine Counter-Counter		
Emplacement		



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	100 - 300 kg	

Functioning:

Mine's Operational:
(RDA-TRf-Mn.110) The mine may be laid in any type of ground within a 60 x 60 x 60 cm space which must be clear to ensure the correct functioning of the UANU-1 fuze which requires a pressure of 100 to 300 kg to operate. There are four holes in the base to which drawstrings for various anti-lift devices can be secured. A small cord carrying handle is also secured to the base.

Comments:
(RDA-TRf-Mn.110) The TMA-5A differs only in detail from the TMA-5. The TMA-5 is a square plasic bodied anti-tank mine with a central fuze well. The four corners of the plastic outer casing have been reinforced and elongated to allow several mines to be stacked on top of each other. A carrying handle is included as an integral part of the body. The practice version of the TMA-5 is the VTMA-5 which has a hard rubber body.

Yugoslavia	Anti-Tank	TMM-1

Kill Mechanism	Blast
Case Material	Metal
Main Charge	Trotyl
Booster Charge	
Main Charge Wt	5.6kg
Booster Charge Wt	
Total Weight	8.6kg
Height	10cm
Diameter	31cm
Anti - Disturbance Features	Anti-Lift provision
Mine Counter-Counter	
Emplacement	Hand or Machine

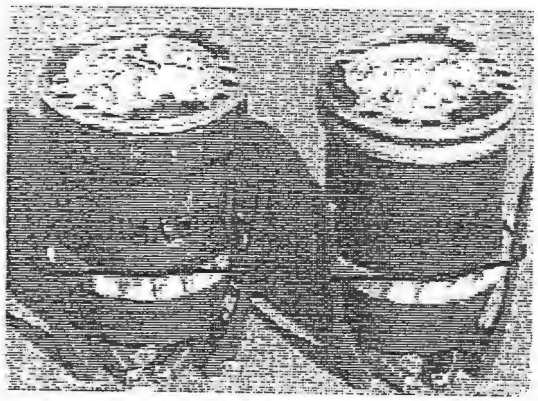
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	130 - 420 kg	

Functioning:
(RDA-TRf-Mn.110) Downward pressure on the pressure plate crushes the walls and forces the head of the striker down igniting the mine.

Mine's Operational:
(RDA-TRf-Mn.110) Mine can be laid by hand or mechanically, for example by a PMR-3 minelayer.

Comments:
(RDA-TRf-Mn.110) This mine is a direct copy of German WWII Tellermine *43. The TMM-1 has two anti-lifting wells, one in the bottom and one in the side. The practice version of the TMM-1 is the VTMM-1 which has a hard rubber body and a useful life of at least 30 operations.

China	Anti-Tank	CH-MRL-AT
Kill Mechanism		
Case Material		
Total Weight		
Main Charge		
Booster Charge		
Height		
Main Charge Wt		
Booster Charge Wt		
Anti - Disturbance Features		
Mine Counter-Counter Measures		
Emplacement		



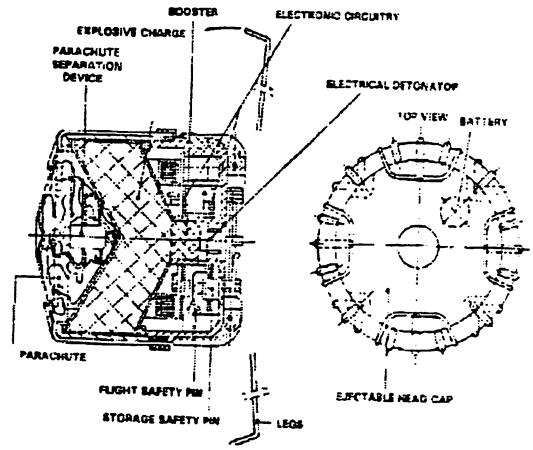
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits

Functioning:

Mine's Operational Employment:
Full-width attack scatterable anti-tank.
Multiple Rocket Launcher Delivered.

Comments:
Two versions are shown, one all brown and the other is orange from the lower band up. They are shown with the legs folded and held with a wire band.

Italy	Anti-Tank	IT-S-AT
Kill Mechanism	Shaped Charge	
Case Material		
Main Charge		
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight		
Height		
Diameter		
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Scatterable	



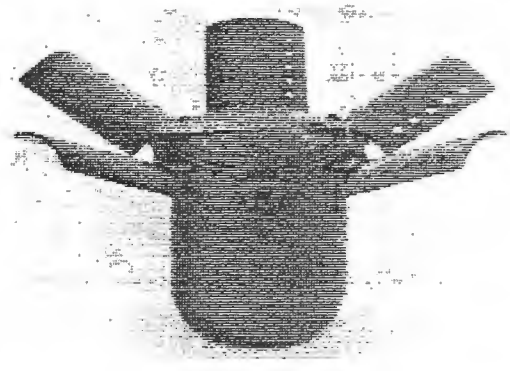
(U) ITALIAN SCATTERABLE MINE

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic Influence		

Functioning:
When mine reaches the ground 4 spring legs snap out for stability.

Mine's Operational:
Mines are deployed using a rocket and are dispersed using parachutes for ground landing. Seven mines are deployed with one rocket.

Comments:

Italy	Anti-Tank	SATM
Kill Mechanism	Shaped Charge	
Case Material	Metal	
Main Charge		
Booster Charge		
Main Charge Wt	0.4kg	
Booster Charge Wt		
Total Weight	1.4kg	
Height	10.6cm	
Diameter	9.6cm	
Anti - Disturbance Features		
Mine Counter-Counter	Claim high immunity to mine clearing measures.	
Emplacement	Scatterable	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic Influence		-32 °C up to 60 °C

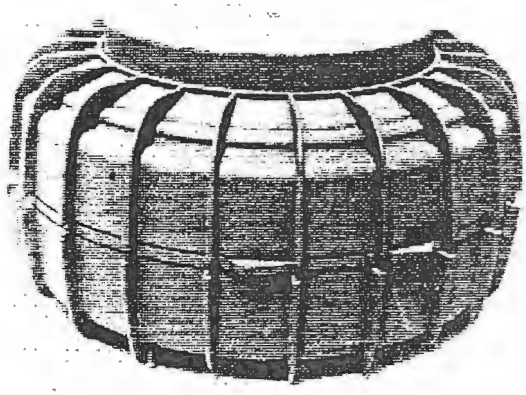
Functioning:
(RDA-TRf-Mn.110) There is a dual action inertial safety arming device. The dual-sensor integral fuze features target discrimination. There is a self distruct capability that is electrically programed at launch. Once in position the SATM can use its shaped charge to attach the belly armour of a target MBT.

Mine's Operational:
(RDA-TRf-MN.110) Can be launched from the Istrice land mine scattering system.

Comments:
(RDA-TRf-Mn.110) The SATM has a cylindrical body and is fitted with deployable fins which provide stablization during flight and maintain the correct orientation for landing.

Italy	Anti-Tank	SB-81

Kill Mechanism	Blast
Case Material	Plastic
Main Charge	HE
Booster Charge	
Main Charge Wt	2kg
Booster Charge Wt	
Total Weight	3.2kg
Height	9cm
Diameter	23.2cm
Anti - Disturbance Features	Anti-disturb features provided
Mine Counter-Counter	Blast resistant
Emplacement	Scatterable or Buried



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	150 - 310 kg	

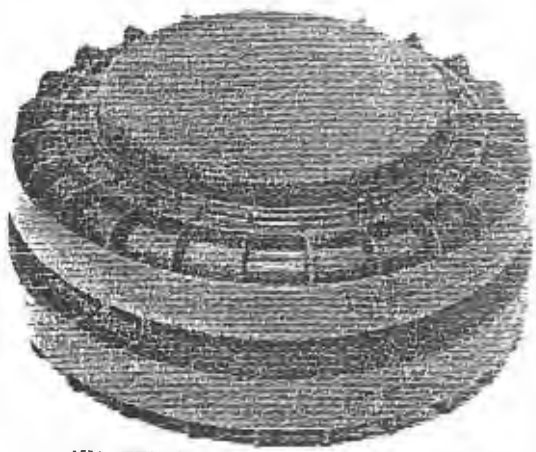
Functioning:

Mine's Operational:
(RDA-TRf-Mn.110) The SB-81 can be scattered from helicopters with MISAR SY-AT system, scattered from ground vehicles with the MISAR SY-IT system or laid manually. The mine can be buried to a depth of 100mm. Has self destructing mechanism. Air dropping does not impede its ability to destroy tank tracks or irreparable damage tank running gear.

Comments:
(RDA-TRf-Mn.106) Water-proof, Non-buoyant
Self distruct on some versions.
(RDA-TRf-Mn.110) the mine is circular and has a plastic case available in any colour. It is pressure-activated and will function whether it lands on its top or its bottom. A magazine containing 5 mines weighs 19.5kg.

Italy	Anti-Tank	VS-1.6.

Kill Mechanism	Blast
Case Material	Plastic
Main Charge	HE
Booster Charge	Comp A3
Main Charge Wt	1.85kg
Booster Charge Wt	
Total Weight	3kg
Height	9.2cm
Diameter	22.2cm
Anti - Disturbance Features	VS-1.6-AR has Anti-Lift Fuze
Mine Counter-Counter	Claim undetectable by standard detctors,Double anti-shock
Emplacement	Scatterable or Buried



(U) ITALIAN VS-1.6 ANTITANK MINE

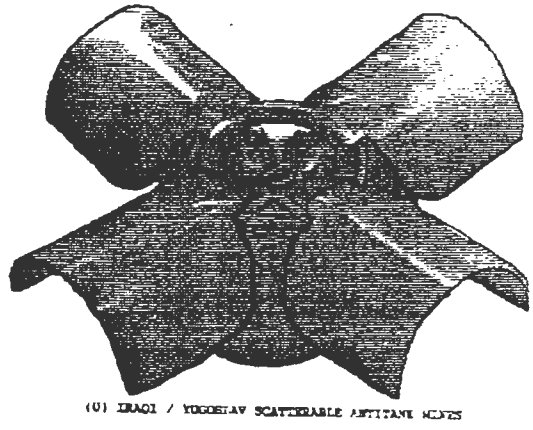
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	180 - 220 kg	-32 °C up to 60 °C

Functioning:
(RDA-TRf-Mn.110) The mine is provided with a double anti-shock device operating mechancially and pneumatically.

Mine's Operational:
(RDA-TRf-Mn.106) Designed for rapid laying from helicopters flying at an altitude of 100m and 200km/hr. Mine can also be scattered from trucks or by hand. Usually laid on surface but can be buried to 7.5cm.
(RDA-TRf-Mn.110) Either surface laid or buried down to 77cm below the ground surface, the VS-1.6 can cause an immobilising "kill" by cutting tank tracks or causing major damage to MBT suspensions.

Comments:
(RDA-TRf-Mn.106) Is available with a self-neutralizing device.
(RDA-TRf-Mn.110) The bottom cover of the mine is provided with a plug housing the detonator. During transport and storage this plug is replaced by a dummy plug, coloured blue, for extra safety.

Yugoslavia	Anti-Tank	YU-S-AT
Kill Mechanism	Shaped Charge	
Case Material		
Main Charge		
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight		
Height		
Diameter		
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Scatterable	



(U) IRAQI / YUGOSLAV SCATTERABLE ANTITANK MINES

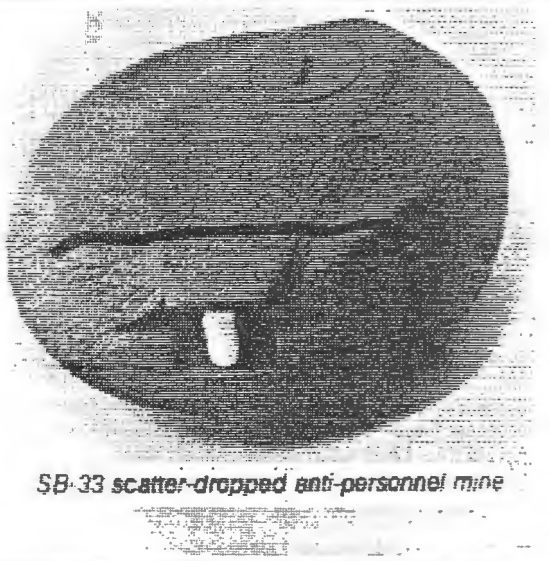
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic Influence		

Functioning:
Mines are intended for belly attack on armour.

Mine's Operational:
These anti-tank mines are delivered by Yugoslav-Iraqi 262mm LRSV M-87 multiple rocket launcher system. The system fires rockets containing 30 mines each. The mines are dispensed while the rocket is still in flight. As each mine is scattered four flip-out curved vanes are deployed to provide flight stabilisation and to ensure correct orientation once the mines land.

Comments:
Probable Yugoslavian origin.

Italy	Anti-Personnel	SB-33
Kill Mechanism	BLAST	
Case Material	Plastic	
Main Charge	HE	
Booster Charge		
Main Charge Wt	0.035kg	
Booster Charge Wt		
Total Weight	0.14kg	
Height	3.2cm	
Diameter	8.8cm	
Anti - Disturbance Features	Anti-disturbance features	
Mine Counter-Counter	Anti-shock fuze, Anti IR paint	
Empiacement	Scatterable or Buried	



SB-33 scatter-dropped anti-personnel mine

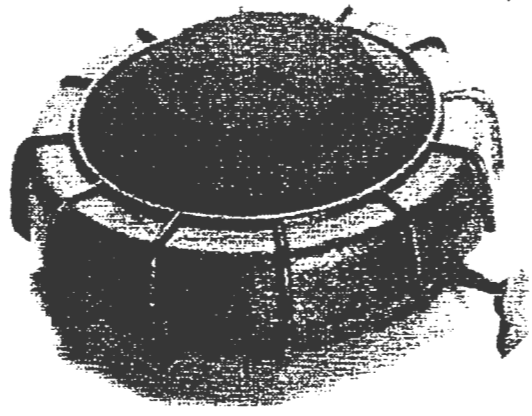
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	5 - 20 kg	

Functioning:
(RDA-TRf-Mn.110) When the mine is scattered with the SY-AT system its safety pin remains in positin until the mine leaves the magazine.

Mine's Operational:
(RDA-TRf-Mn.110) SB-33 mine can be scattered from helicopters (Magazine contains 78 mines) with the MISAR SY-AT system, by the MISAR Raider portable launching system, laid by hand, or buried just under the ground surface.

Comments:
(RDA-TRf-Mn.106) Water-proof, Non-buoyant. Produced by other countries with different model numbers. The Greek version is called the EM-20.
(RDA-TRf-Mn.110) The main features are: irregular shape and small size that can make it difficult to locate on the ground; low weight which increases the quantity of mine sthat can be carried by a helicopter; wide pressure plate which allows the mine to function either upright or upside down; an anti-shock device which makes it insensitive to countermeasures such as fuel air explosives.

Italy	Anti-Personnel	VS-Mk2
Kill Mechanism	Blast	
Case Material	Non-Metallic	
Main Charge	RDX	
Booster Charge		
Main Charge Wt	0.033kg	
Booster Charge Wt		
Total Weight	0.135kg	
Height	3.2cm	
Diameter	9cm	
Anti - Disturbance Features		
Mine Counter-Counter	Double Anti-shock	
Emplacement	Scatterable	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	10 kg	-32 °C up to 60 °C

Functioning:
(RDA-TRf-Mn.110) The mine is activated by pressure applied to both the pressure plate on the mine's top face and on its bottom face.

Mine's Operational:
(RDA-TRf-Mn.106) This mine is designed to be air-scattered or manually laid to a maximum depth of 2cm. The VS-MK2 mine can have a self-destruct feature and also has a training model.

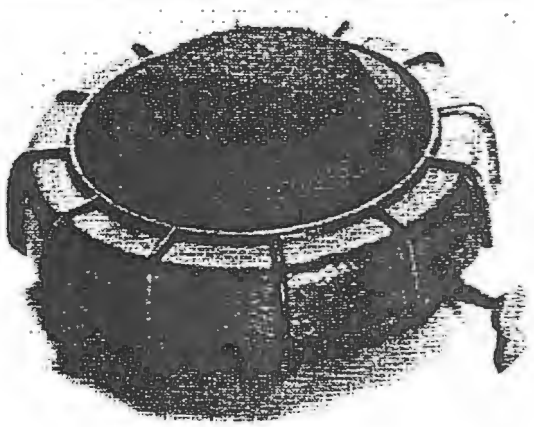
(RDA-TRf-Mn.110) The VS-Mk2 non-metallic mine was designed for scatter-laying from helicopters using the Valsella helicopter-mounted mine-dropping system. It can also be scattered from vehicles or by hand. It is non-magnetic and fully waterproof.

Comments:
(RDA-TRf-Mn.106) Water-proof

(RDA-TRf-Mn.110) The VS-Mk2 has a disc-shaped resin-based plastic case available in various camouflage colours. The mine is provided with a double anti-shock device operating mechanically and pneumatically. The anti-shock device prevents the mine from being triggered when an impulsive load is applied onto th epressure plate caused by an accidental drop, when scattered by helicopter dispenser, by the explosion of a nearby or suspended charge, or by the action of fuel-air explosive mine clearing systems. A model fitted with an electrical anti-lift device is known as the VS-Mk-2-E.

Italy	Anti-Personnel	VS-Mk2-E

Kill Mechanism	Blast
Case Material	Non-Metallic
Main Charge	RDX
Booster Charge	
Main Charge Wt	0.022kg
Booster Charge Wt	
Total Weight	0.135kg
Height	3.2cm
Diameter	9cm
Anti - Disturbance Features	Anti-Lift
Mine Counter-Counter	Double anti-shock
Emplacement	Scatterable



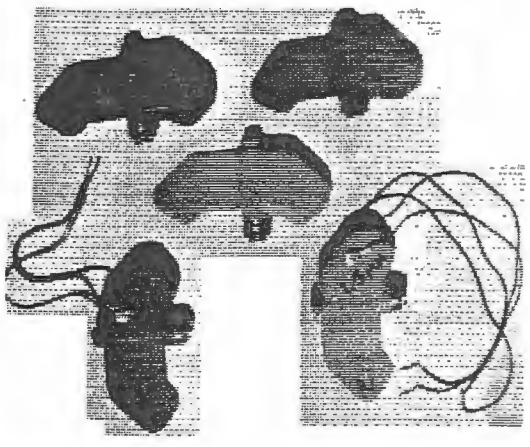
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	10 kg	-32 °C up to 60 °C

Functioning:

Mine's Operational:
This mine is designed to be air-scattered or manually laid to a maximum depth of 2cm. The VS-MK2 mine can have a self-destruct feature and also has a training model.

Comments:
Water-proof

USSR	Anti-Personnel	PFM-1
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	Liquid Explosive	
Booster Charge		
Main Charge Wt		
Booster Charge Wt	40g	
Total Weight	70g	
Height	6cm	
Width: 11.2cm	Length: 1.5cm	
Anti - Disturbance Features	Detonation by accumulated hand	
Mine Counter-Counter		
Emplacement	Scatterable	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure w/Time delay		

Functioning:
(RDA-TRf-MN.110) When released a safety/arming plug is released from one side of the central part of the body. As the mine falls to the ground a piston is then allowed to travel under spring pressure through a silicon based viscous liquid.

Mine's Operational:
(RDA-TRf-Mn.108) Air-deployed in large numbers by either helicopter or aircraft along border areas, infiltration routes and ambush sites. The PFM-1 is visually detectable. The mine has a wing which aids both stabilization and dispersion.
(RDA-TRf-Mn.110) The PFM-1 can also be scattered from 24cm mortar bombs fired to a range of betwen 12,000 to 15,000m.

Comments:
(RDA-TRf-Mn.110) The liquid explosive has four components and has a density of 1.57 g/ml. The device is designed to maim rather than kill and has no self-destruct or neutralising capability. The mine has an arming delay that dows not arm the weapon until after it is on the ground. The weight of the booster charge ranges from 35 to 40 grams.

USSR	Anti-Personnel	KhF-2

Kill Mechanism	Chemical (Mustard H)
Case Material	Metal
Total Weight	15kg
Main Charge	Toluol or Melinite
Booster Charge	
Height	28cm
Diameter	18.5cm
Main Charge Wt	0.01kg
Booster Charge Wt	
Anti - Disturbance Features	
Mine Counter-Counter Measures	
Emplacement	Buried

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Command Detonated		

Functioning:
The detonator ignites the propellant and this hurls the mine upwards out og the container and ignites the delay fuze. After a delay of 1 to 1.5 seconds, the delay fuze sets off the explosive charge, shattering the mine and spreading the liquid contaminant. If the charge detonates at a height of 4 to 8 meters above the ground, the agent can cover an area of 250 to 300 sq. meters with an average concentration of 15 to 20 grams per sq. meter.

Mine's Operational Employment:
This mine is fired electrically by an observer who can be up to 300 meters away. Often placed in groups of 10 to 12 wired together for simultaneous detonation. This particular model may be obsolete, however, the outward appearance of newer versions may be similar.

Comments:
Propellant charge - Black powder.
Quantity of agent - 4.5 liters.
Differs from KhF-1 in size only.

USSR	Anti-Personnel	KhF-1

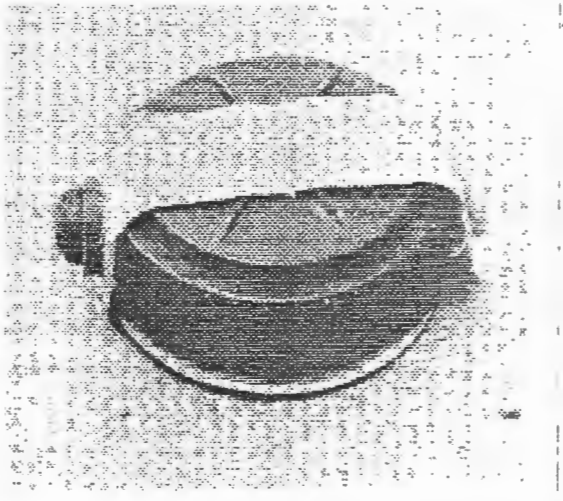
Kill Mechanism	Chemical (Mustard H)
Case Material	Metal
Total Weight	15kg
Main Charge	Toluol or Melinite
Booster Charge	
Height	34.5cm
Diameter	15cm
Main Charge Wt	0.01kg
Booster Charge Wt	
Anti - Disturbance Features	
Mine Counter-Counter Measures	
Emplacement	Buried

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Command Detonated		

Functioning:
The detonator ignites the propellant and this hurls the mine upwards out og the container and ignites the delay fuze. After a delay of 1 to 1.5 seconds, the delay fuze sets off the explosive charge, shattering the mine and spreading the liquid contaminant. If the charge detonates at a height of 4 to 8 meters above the ground, the agent can cover an area of 250 to 300 sq. meters with an average concentration of 15 to 20 grams per sq. meter.

Mine's Operational Employment:
This mine is fired electrically by an observer who can be up to 300 meters away. Often placed in groups of 10 to 12 wired together for simultaneous detonation. This particular model may be obsolete, however, the outward appearance of newer versions may be similar.

Comments:
Propellant charge - Black powder.
Quantity of agent - 4.5 liters.
Differs from KhF-2 in size only.

Argentina	Anti-Personnel	FMK-1
Kill Mechanism		
Case Material	Non-Metal	
Main Charge		
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight		
Height	4.3cm	
Diameter	8.2cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits

Functioning:

Mine's Operational:
(RDA-TRf-Mn.110) In its storage and transport form it is carried with two safety and arming pins held in place by a length of yellow tape. The same tape also holds in place a steel washer and a small shaped collar. When the tape is removed the washer can fall away or be kept manually in place for later detection.

Comments:
(RDA-TRf-Mn.110) In Practice the washers are not retained. The shaped collar is placed in position in the pressure detonator train in such a way that the mine can be used either as an anti-personnel mine or as the igniter for the FMK-3 anti-tank mine.

These mines were encountered in the Falkland Islands.

China	Anti-Personnel	TYPE 72
Kill Mechanism		
Case Material	Plastic	
Main Charge		
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight		
Height		
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits

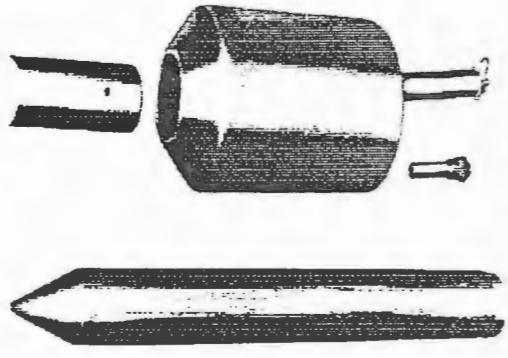
Functioning:

Mine's Operational:

Comments:

Czechoslovakia	Anti-Personnel	PP-Mi-Sb

Kill Mechanism	Fragmentation
Case Material	Concrete & Metal
Main Charge	TNT
Booster Charge	
Main Charge Wt	75g
Booster Charge Wt	
Total Weight	2.1kg
Height	14cm
Diameter	7.5cm
Anti - Disturbance Features	None
Mine Counter-Counter	
Emplacement	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull	1 kg	
Pressure		

Functioning:

(RDA-TRf-Mn.108) Pull from tripwire activates fuze which detonates mine. Fragments are released when case brakes up.

(RDA-TRf-Mn.110) When the striker-retaining pin is removed, the spring-loaded striker falls on and fires the percussion cap and detonator that set off the main charge.

Mine's Operational:

(RDA-TRf-Mn.108) A wooden stake is driven into the ground and the cylinder containing explosives is placed on top. The mine can also be taken off the stake and buried. In this case an Ro-2 pressure fuze is used.

Comments:

(RDA-TRf-Mn.110) The PP-Mi-Sb anti-personnel stake mine is very smilar in appearance the the German Second World War concrete ball mine, and also has a body of concrete with steel scrap fragments. It uses the UPM-1 pull fuze. Its external recognition feature is its smooth surface.

Czechoslovakia	Anti-Personnel	PP-Mi-Sk

Kill Mechanism	Fragmentation
Case Material	Cast Iron
Main Charge	TNT
Booster Charge	
Main Charge Wt	75g
Booster Charge Wt	
Total Weight	1.6kg
Height	13.7cm
Diameter	6cm
Anti - Disturbance Features	
Mine Counter-Counter	
Emplacement	

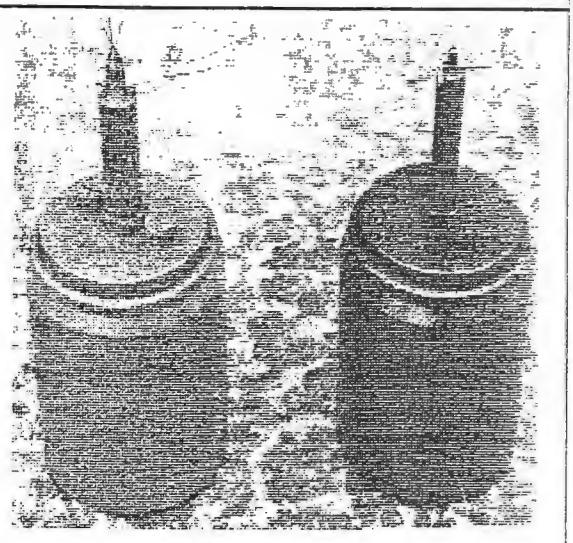
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull		

Functioning:
(RDA-TRf-Mn.110) When the striker-retaining pin is removed, the spring-loaded striker falls on and fires the percussion cap and detonator that set off the main charge.

Mine's Operational:

Comments:
(RDA-TRf-Mn.110) The PP-Mi-Sk is almost identical to the Soviet POMZ-2M stake mine but uses the Ro-2 pull fuze. This mine has six rows of fragments, the same as the Soviet POMZ-2. The Ro-1 Pull fuze uses 1kg operating force.

Czechoslovakia	Anti-Personnel	PP-Mi-Sr
Kill Mechanism	Bounding Fragmentation	
Case Material	Metal	
Main Charge	TNT	
Booster Charge	Black Powder	
Main Charge Wt	325g	
Booster Charge Wt	37g	
Total Weight	3.2kg	
Height	15.2cm	
Diameter	10.2cm	
Anti - Disturbance Features	Not Present	
Mine Counter-Counter		
Emplacement		



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	3 - 6 kg	
Pull		

Functioning:
(RDA-TRf-Mn.108) To Disarm/Safing: Cut tripwires or remove RO-8 fuze. When the RO-8 fuze is activated by pressure from contact, a bursting charge is propelled from the case (acting as a mortar) to a present height of 1m controled by a tether wire. The main fuze, RO-1, is activated by the tether detonating the mine. The mine can also be used in non-bounding or remote control modes.

Mine's Operational:
(RDA-TRf-Mn.108) Hand laid along possible enemy routes or in minefields. May be buried with fuze exposed or outer container removed and a tripwire attached to the RO-1 fuze.
(RDA-TRf-Mn.110) There are three other ways of employing this mine: (1) By inserting the Ro-1 pull fuze into the detonator well with the detonator upside down which converts the mine into a non-bounding anti-personnel mine. (2) Using the Ro-1 pull fuze in the normal fuze-well and retaining the bounding feature. (3) Using the P-1 or P-2 electric squibs for remote control.

Comments:
(RDA-TRf-Mn.110) The PP-Mi-Sr metallic bounding anti-personnel mine has a central fuze-well with a transit cap. On opposite sides of the fuze-well are the filler and the detonator well plugs. The body of the mine fits into an outer casing that also contains the propelling charge. The space between the inner and outer walls of the mine body is filled with shrapnel made of short pieces of steel rod. The mine has an effective fragmentation radius of 20m. The mine can be fitted with the RO-8 pressure fuze or the RO-1 pull fuze: in both cases the fuze ignites a delay train. The Ro-1 pull fuze uses 1kg of operational force.

Hungary	Anti-Personnel	Gyata-64
Kill Mechanism	Blast	
Case Material	Phenolic moulding	
Main Charge	Cast TNT	
Booster Charge		
Main Charge Wt	0.4kg	
Booster Charge Wt		
Total Weight	0.45kg	
Height	6.1cm	
Diameter	10.6cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		

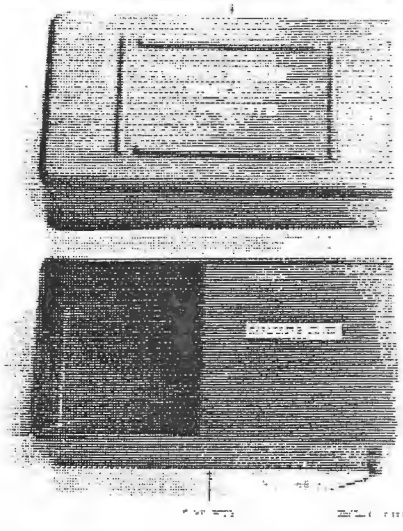
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits

Functioning:

Mine's Operational:

Comments:
(RDA-TRf-Mn.110) The Gyata-64 is a small, non-metallic anti-personnel mine which uses approximately 0.4 kg of explosive packed into a dark brown phenolic moulding covered with a black rubber shroud. The main charge is two blocks of cast TNT.

Israel	Anti-Personnel	No.4
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	200g	
Booster Charge Wt	20g	
Total Weight	350g	
Height	5.5cm	
Width: 7cm	Length: 16cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Laid on ground or buried	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Force on Pressure Plate	8 kg	

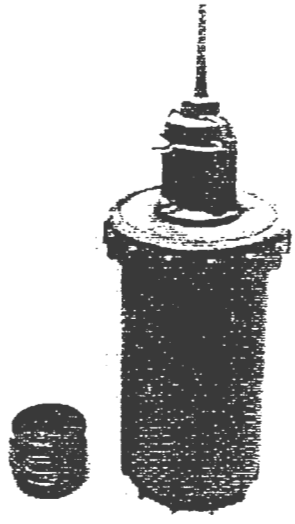
Functioning:

(RDA-TRf-Mn.109) When pressure is applied the lid pivots about a hinged end and the free end of the lid pushes the winged pin down and out of the firing pin. With winged pin removed the firing pin is driven forward, striking the primer and setting off the explosive train detonating the mine. (RDA-TRf-Mn.110) The No4 is activated by an 8kg force on a pressure plate.

Mine's Operational:

Comments:

(RDA-TRf-Mn.110) This is a rectangular plastic anit-personnel mine fitted with a hinged cover. It is activated by an 8kg force on a pressure plate. The length of the mine unarmed is 13.5cm.

Italy	Anti-Personnel	MISAR P40
Kill Mechanism	Bounding Fragmentation	
Case Material	Plastic	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	0.48kg	
Booster Charge Wt		
Total Weight	1.5kg	
Height	20cm	
Diameter	9cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Buried	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull (Trip Wire)	2 - 10 kg	

Functioning:

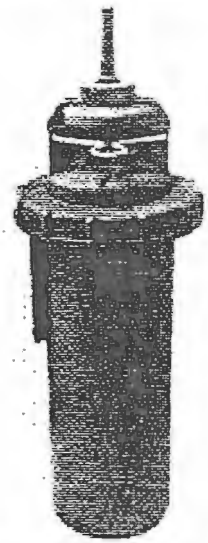
(RDA-TRf-Mn.110) The mine operates as follows: when the tripwire is pulled the inside container is ejected into the air and when it reaches a pre-determined height it explodes and scatters the fragments in a radical path.

Mine's Operational:

(RDA-TRf-Mn.110) The mine is buried with just the fuze showing above the ground. The fuze is attached to two tripwires which extend 15m from the mine.

Comments:

(RDA-TRf-Mn.110) The MISAR P-40 anti-personnel mine was developed from early 1977 and entered production in 1978. It consists of a cylindrical casing, which can be made in any colour, inside which is another container holding the high explosive and fragments. The fuze is attached to the two tripwires which can be up to 15m from the mine. Trials conducted by MISAR have shown that this mine will cause injury to at least 55 per cent of men standing within a radius of 15m of the mine when it is ignited. The mine is waterproof, will not float and has a minimum maintenance-free life of 10 years. Smoke-producing and inert training models are available. The 20cm Height is with Fuze. Casing Height is 12cm. Packing: case of 8 mines weighs 16kg.

Italy	Anti-Personnel	P-25
Kill Mechanism	Fragmentation	
Case Material	Plastic	
Main Charge	TNT or T4	
Booster Charge		
Main Charge Wt	0.18kg	
Booster Charge Wt		
Total Weight	0.7kg	
Height	18cm	
Diameter	7.5cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Stake or Buried	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull (Trip Wire)	2 - 10 kg	

Functioning:

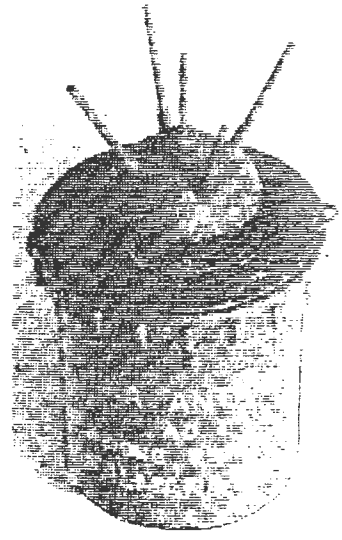
(RDA-TRf-Mn.106) The mine is activated by two tripwires which extended 15m away from the mine. When activated, the main charge explodes and splinters are scattered in a radial path
(RDA-TRf-Mn.110) The effective range of the P-25 mine is 15m.

Mine's Operational:

(RDA-TRf-Mn.106) The mine can be buried but for maximum effect, should be placed on a stake planted in the ground. A slot for the stake is provided on the side of the mine.
(RDA-TRf-Mn.110) The mine can be buried but for maximum effect should be staked to the ground.

Comments:

(RDA-TRf-Mn.106) Waterproof, Non-buoyant.
(RDA-TRf-Mn.110) The MISAR P-25 anti-personnel mine was developed from early 1977 and entered production in 1978. It consists of a cylindrical plastic casing which can be delivered in any colour, with the fuze mounted on top. The effective range of the P-25 mine is 15m. The mine has a maintenance-free life of at least ten years. Smoke-producing and inert models are available for training. A case of 15 mines weighs 14kg.

Italy	Anti-Personnel	VALMARA 69
Kill Mechanism	Bounding Fragmentation	
Case Material	Plastic	
Main Charge	Comp B	
Booster Charge	RDX	
Main Charge Wt	0.42kg	
Booster Charge Wt	13g	
Total Weight	3.2kg	
Height	20.5cm	
Diameter	13cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Buried	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull (Trip Wire)	6 - 8 kg	-32 °C up to 60 °C
Pressure	10.8 kg	-32 °C up to 60 °C

Functioning:

(RDA-TRf-Mn.106) Pressure or lateral pull on one of the antenna tilts the fuze dome, which raises the ball retention cage freeing the striker to strike the detonator. The fragmentation canister is then propelled into the air to a height of 45cm when a tether wire becomes taut. The canister ther explodes and scatters 1200 5x5x5cm fragements of metal.

Mine's Operational:

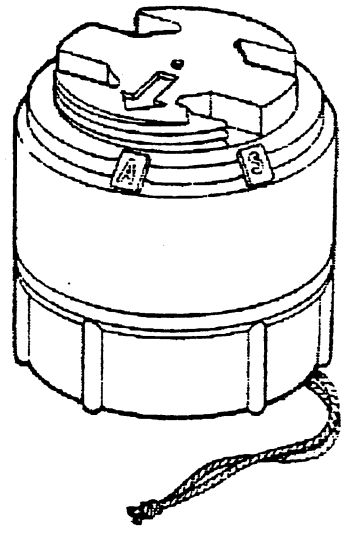
(RDA-TRf-Mn.106) This mine is laid for securitiy of foot troops and in mixed minefields to make removal difficult. Mine is laid manually and tripwires can be used which extend to 15m.

Comments:

(RDA-TRf-Mn.106) Water-proof Bounds to 0.45 Meters before detonation.

(RDA-TRf-Mn.110) This cylindrical anti-personnel bounding mine has a plastic case with a removable fuze mounted on the top. The lethal casuality radius is at least 25m. The explosive train of the mine consists of a percussion igniter cap, a propelling charge, a percussion detonator, a booster detonating charge and a main explosive charge. The mine is fitted with a tripwire fuze. The traction load on the tripwire required to activate the fuze is 6 to 8kg. The fuze can also be activated by direct pressure on one or more of the fuze prongs. When activated the fuze primes the igniter cap which fires the propelling charge. The internal body of the mine, consisting of the main charge surrounded by the splinters, the booster, the detonator and a striker mechanism, is

United States	Anti-Personnel	M14
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	Tetryl	
Booster Charge		
Main Charge Wt	0.0284kg	
Booster Charge Wt		
Total Weight	99g	
Height	4cm	
Diameter	5.6cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Buried	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	9 - 16 kg	-40 °C up to 51.5 °C

Functioning:

(RDA-TRf-Mn.106) Force applied to the pressure plate depresses a belleville spring and drives the firing pin into the detonator exploding the main charge.

(RDA-TRf-Mn.110) The mine opperates as follows: pressure applied to the top of the mine depresses the pressure plate and this depresses the lock key, forcing the lock ring to slide through notches in th einner ring of the spider and depreess the Belleville spring. This snaps into reverse

Mine's Operational:

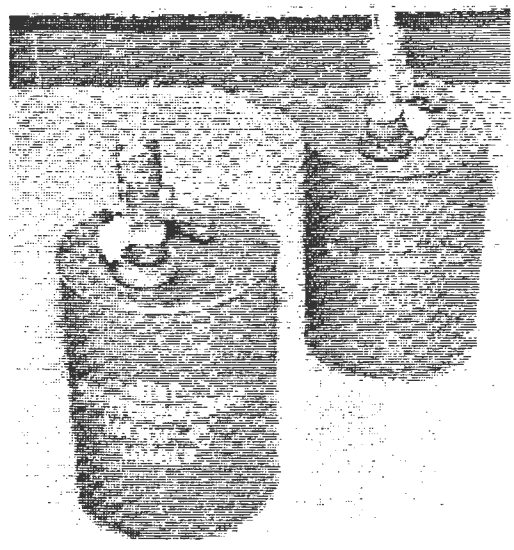
(RDA-TRf-Mn.106) Designed for hand emplacement.

Comments:

(?) Danish equivalent (Fodfolksmine M/56). Also produced in India.

(RDA-TRf-Mn.110) This small circular blast type anti-personnel mine consists of an all plastic body with an integral plastic fuze which has a steel firing pin, and a main charge. The plug-type plastic detonator holder with the M46 detonator is packaged separately and is installed in the base of the mine when required. The pressure plate on the top of the mine has a yellow indicating arrow which points to the letter "S" for safe or "A" for armed. Slots are provided in the pressure plate for the insertion of a steel, U-shaped safety clip which is removed by pulling the pull cord. There is also a training version called the Mine, Anti-Personnel Practice: NM, M17.

United States	Anti-Personnel	M16
Kill Mechanism	Bounding Fragmentation	
Case Material	Steel	
Main Charge	TNT	
Booster Charge	Tetryl	
Main Charge Wt	0.521kg	
Booster Charge Wt	0.054kg	
Total Weight	3.74kg	
Height	19.9cm	
Diameter	10.3cm	
Anti - Disturbance Features	None	
Mine Counter-Counter	Blast Resistant	
Emplacement	Buried	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	3.6 - 20 kg	-40 °F up to 125 °F
Pull (Trip Wire)	1.6 - 3.8 kg	-40 °C up to 51.5 °C

Functioning:

(RDA-TRf-Mn.106) Pressure applied to either pressure prongs or tripwire will release the firing pin igniting the fuze delay and expelling charge. A cast iron shell containing the main charge is expelled upwards and is exploded approximately 1m above ground.

(RDA-TRf-Mn.110) Pressure applied to one of the three prongs or the fuze compresses the pressure spring and forces the trigger downwards, forcing the release pin outwards and the firing pin is released. This ignites the firing chain and the casst iron projectile is propelled into

Mine's Operational:

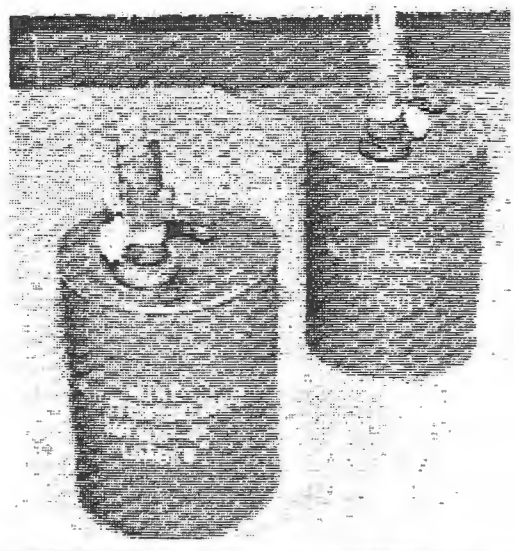
(RDA-TRf-Mn.106) Designed for hand emplacement. Mine is buried only with fuze and pressure prongs exposed. Since the pressure prongs can be difficult to camouflage in sparsely covered ground, tripwires are used.

Comments:

(RDA-TRf-Mn.110) See also M16A1 and M16A2, this mine and the ariants are produced by Greece (SA, M16A2) : India (M16A1), South Korea(KM16A2).

United States	Anti-Personnel	M16A1

Kill Mechanism	Bounding Fragmentation
Case Material	Metal
Main Charge	TNT
Booster Charge	Tetryl
Main Charge Wt	0.513kg
Booster Charge Wt	0.033kg
Total Weight	3.74kg
Height	19.9cm
Diameter	10.3cm
Anti - Disturbance Features	None
Mine Counter-Counter	Blast Resistant
Emplacement	Buried



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	3.6 - 20 kg	-40 °F up to 125 °F
Pull (Trip Wire)	1.6 - 3.8 kg	-40 °C up to 51.5 °C

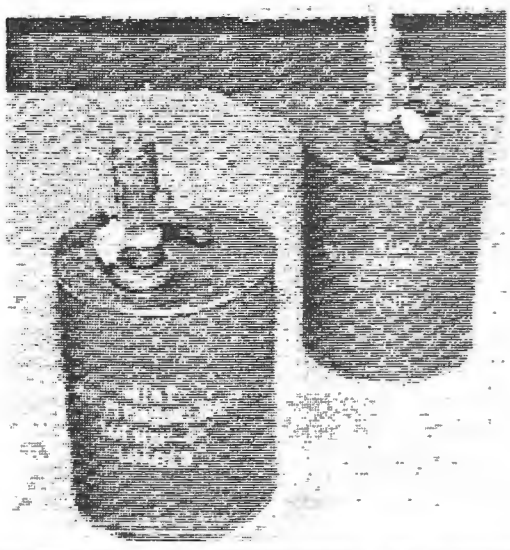
Functioning:
(RDA-TRf-Mn.110) Pressure applied to either pressure prongs or tripwire will release the firing pin igniting the fuze delay and expelling charge. A cast iron shell containing the main charge is expelled upwards and is exploede approximately 1m above ground.

Mine's Operational:
(RDA-TRf-Mn.110) Designed for hand emplacement. Mine is buried only with fuze and pressure prongs exposed. Since the pressure prongs can be difficult to camouflage in sparsely covered ground, tripwires are used.

Comments:
(RDA-TRf-Mn.110) See also M16 and M16A2, this mine and the ariants are produced by Greece (SA, M16A2) : India (M16A1), South Korea(KM16A2). The M1A1 is an inert version of the M16, inert with fuze, M605 inert.

United States	Anti-Personnel	M16A2

Kill Mechanism	Bounding Fragmentation
Case Material	Metal
Main Charge	TNT
Booster Charge	Comp A5
Main Charge Wt	590g
Booster Charge Wt	11g
Total Weight	2.83kg
Height	19.9cm
Diameter	10.3cm
Anti - Disturbance Features	
Mine Counter-Counter	Blast resistant
Emplacement	Buried



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	3.6 - 20 kg	-40 °F up to 125 °F
Pull (Trip Wire)	1.6 - 3.8 kg	-40 °C up to 51.5 °C

Functioning:

(RDA-TRf-Mn.106) Pressure applied to either pressure prongs or tripwire will release the firing pin igniting the fuze delay and expelling charge. A cast iron shell containing the main charge is expelled upwards and is exploded approximately 1m above ground.

(RDA-TRf-Mn.110) The mine operates as follows: pressure applied to one of the three prongs or the fuze compresses the pressure sporng and forces the trigger downwards, forcing the release

Mine's Operational:

(RDA-TRf-Mn.106) Designed for hand emplacement. Mine is buried only with fuze and pressure prongs exposed. Since the pressure prongs can be difficult to camouflage in sparsely covered ground, tripwires are used.

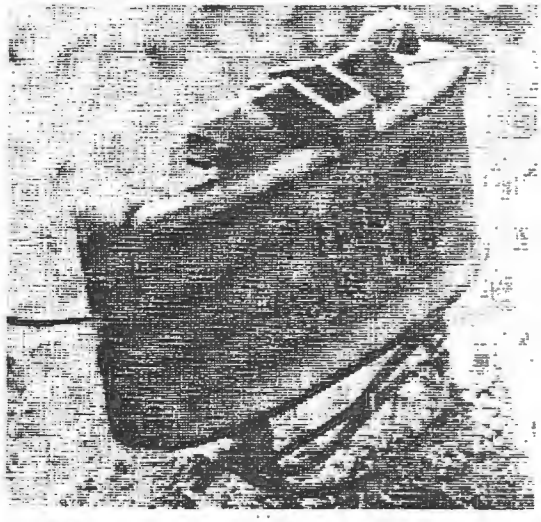
Comments:

(?) Booster charge changed to increase main charge weight.

(RDA-TRf-Mn.110) There is an inert training version of this mine. The M16A2 is an advanced version of the M16 series and incorporates only one booster detonator and delay instead of two of each. This allows for a greater explosive charge. See also M16 and M16A1, this mine and the ariants are produced by Greece (SA, M16A2) : India (M16A1), South Korea(KM16A2). The type of propelling charge is black powder and the weight of the propelling charge is 70grams.

United States	Anti-Personnel	M18A1

Kill Mechanism	Directional Fragmentation
Case Material	Fiber Glass/Plastic
Main Charge	C4
Booster Charge	
Main Charge Wt	0.628kg
Booster Charge Wt	
Total Weight	1.58kg
Height	8.3cm
Width: 21.6cm	Length: 35cm
Anti - Disturbance Features	Manual overwatch
Mine Counter-Counter	
Emplacement	Hand



M18A1 anti-personnel mine in position (US Army)

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Command Detonated		-40 °C up to 51.5 °C
Pull (Trip Wire)		

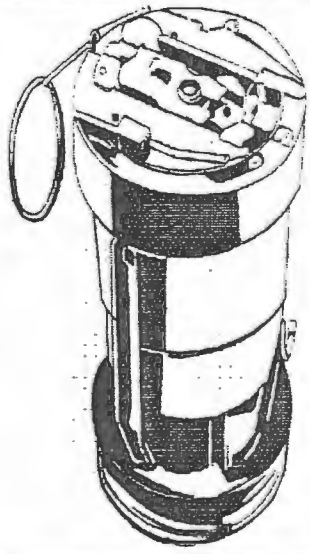
Functioning:

(RDA-TRf-Mn.110) The mine is normally fired from a distance by an M57 firing device. This is a hand-held pulse generator which by a single actuation of the handle produces a double electrical pulse. The M57 is attached to 30 meters of wire which is connected to an M4 blasting cap in the mine. The M7 bandolier contains the mine, firing device, M40 test set and electric blasting cap assembly M4. There is a practice version of the M18A1 designated the M68.

Mine's Operational:

Comments:

(RDA-TRf-Mn.110) Widely license-produced and copied. The M18A1, or Claymore as it is uaually known, is a directional, fixed fragmentation mine which is used for defensive and ambush purposes. The original model was designated the M18 and was slightly lighter than the current model.

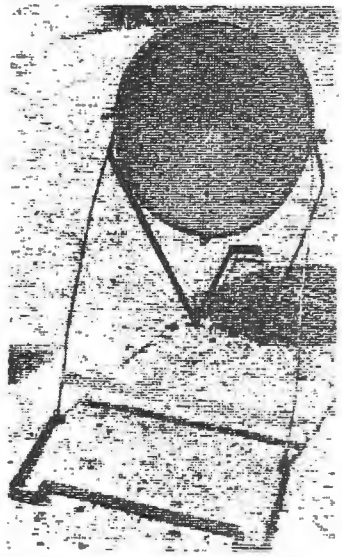
United States	Anti-Personnel	M26
Kill Mechanism	Bounding Fragmentation	
Case Material	Alumimum	
Main Charge	Comp B	
Booster Charge	Tetryl	
Main Charge Wt	170g	
Booster Charge Wt	1.5g	
Total Weight	1kg	
Height	14.5cm	
Diameter	7.9cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Hand	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull (Trip Wire)	6.4 - 12.7 kg	-40 °C up to 51.5 °C

Functioning:
(RDA-TRf-Mn.106) Upon activation by pressure or pull an expelling charge and a delay charge are ignited. The fragmenting ball is expelled 1-3m and the fragmenting ball detonates.
(RDA-TRf-Mn.110) Actuation may be either by directly applying a force to the mine top or by a pull on one or more of four 6.1m long tripwires that may be attached to the mine top via a trip lever. The propelling charge then ejects the fragmenting steel ball assembly to a height of about 2m where the delay and booster charge detonates the main charge to shatter the steel ball.
Mine's Operational:
(RDA-TRf-Mn.106) Hand emplaced in ground with top flush with surface.

Comments:
(RDA-TRf-Mn.106) Practice mine available (M35).

(RDA-TRf-Mn.110) The M26 mine is a small integrally fuzed anti-personnel bounding mine. The main body is made of die-cast aluminum and is cylindrical, tapering towards the bottom where there are four vertical ribs ont eh outside of the mine body. Inside the body is the fragmentation ball assembly whcih consists of a steel ball containing an explosive charge and a delay and booster unit recessed within the charge. At the base of the ball is the propelling charge. The training version of this mine is the M35 whcih is reloadable and uses a blank .32 pistol cartridge to fire a capsule of blue dye.

USSR	Anti-Personnel	MON 100/200
Kill Mechanism	Directional Fragmentation	
Case Material	Metal	
Main Charge		
Booster Charge		
Main Charge Wt	5kg	
Booster Charge Wt		
Total Weight		
Height		
Diameter	22cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Ground or secured to supports	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits

Functioning:

(RDA-TRf-Mn.108) The mine shape is cylindrical. Detonation chain can be initiated via tripwire.
(RDA-TRf-Mn.110) Both models can be detonated by trip wires or similar means, or by a seismic remote control device known as the UMK (upravlyaemoye minnoye kompleks).

Mine's Operational:

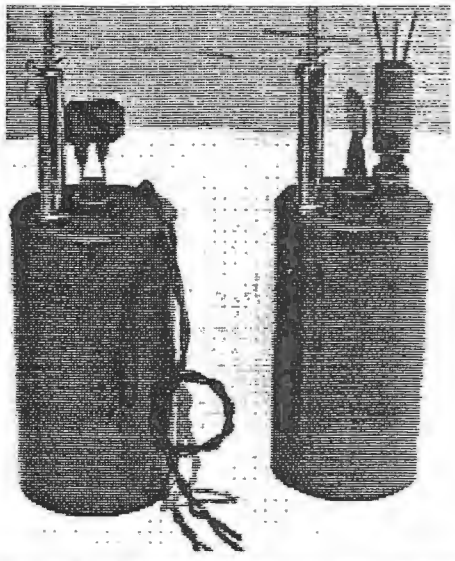
(RDA-TRf-Mn.110) They both can be mounted on a flat steel tripod or attached to a tree. The MON-100 is a cylindrical dished plate mine, with the concave face mounted towards the target. The mine is 220mm in diameter with a 5kg main charge of plastic explosive containing 450 steel fragments. The MON-200 is an enlarged MON-100, 520mm in diameter. It weighs 25kg of which 12kg is the main charge of plastic explosive. A MON-500 has been reported.

Comments:

(RDA-TRf-Mn.108) The MON-100 weight is 5kg and the MON-200 weight is 25kg. MON-100 and MON-200 differ only by weight, amount of explosive and effect.

(RDA-TRf-Mn.110) The MON-100 and MON-200 are directional anti-personnel mines with the numerals in their designation intended to reflect their effective range in metres. The UMK is the central processing unit of a system that has four remote sensor units connected to it by wires; it is possible that the wires also have a sensor function. The cylindrical central processing unit is connected to a series of directional fragmentation mines. The processing unit can sense exactly what sector is being actuated and fire only the mine(s) in that sector. MON stands for minnoye

USSR	Anti-Personnel	OZM-3
Kill Mechanism	Bounding Fragmentation	
Case Material	Metal	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	75g	
Booster Charge Wt		
Total Weight	3kg	
Height	12cm	
Diameter	7.5cm	
Anti - Disturbance Features	None	
Mine Counter-Counter		
Emplacement	Buried	



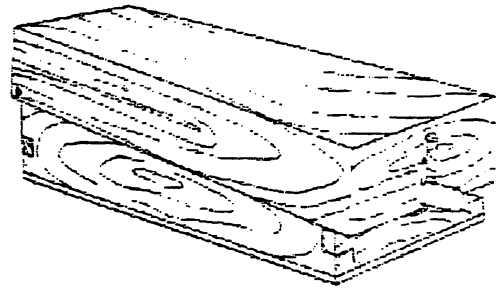
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull		
Command Detonated		
Pressure		

Functioning:
(RDA-TRf-Mn.108) Following firing chain ignition, the mine base explodes expelling the main charge which attains a height of 1.5 TO 2.4 meter determined by a tether after which the main charge explodes. Pull, pressure, and pull-tension fuzes are also used.

Mine's Operational:
(RDA-TRf-Mn.108) The bounding mine is unusual in that the hole in which it is placed acts as its outer pot.

Comments:
(RDA-TRf-Mn.108) The similar looking OZM-4 cannot be electrically fired, has a tether height of .8 m and the body is not prefragmented.
(RDA-TRf-Mn.110) This mine has an effective radius of 25m. During the Second World War the Soviets used the improvised OZM (fragmentation obstacle mines). These consisted of an artillery shell (12.2cm or 15.2cm) or a mortar (12cm) shell buried in the ground, nose down. Under the nose was a UVK-1 propellant assembly and a flash tube running to the surface.

USSR	Anti-Personnel	PMD-6
Kill Mechanism	Blast	
Case Material	Wood	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	0.2kg	
Booster Charge Wt		
Total Weight	0.4kg	
Height	6.4cm	
Width: 20cm	Length: 8.9cm	
Anti - Disturbance Features	Not Present	
Mine Counter-Counter		
Emplacement	Buried	



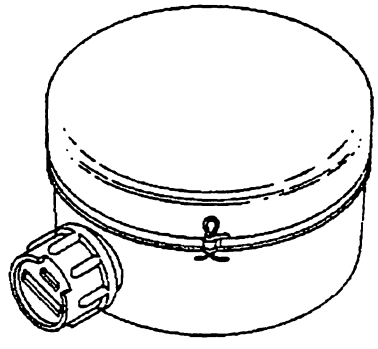
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		

Functioning:
(RDA-TRf-Mn.110) Pressure on lid forces a winged retaining pin from striker and detonates mine.

Mine's Operational:
(RDA-TRf-Mn.108) Used in anti-personnel minefields around outposts and gun positions along trail and in grassy areas.

Comments:
(RDA-TRf-Mn.110) The PMD-6 wooden anti-personnel mine was developed before the Second Worl War and was first used operationally in the Soviet/Finnish Winter War of 1939/40. A deep groov is cut in the front end of the lid so that it may fit over the fuze and rest on the striker retaining pin. some miness have a safety rod which prevents the lid from actuating the fuze prematurely.

USSR	Anti-Personnel	PMN
Kill Mechanism	Blast	
Case Material	Plastic	
Main Charge	TNT	
Booster Charge	Tetryl	
Main Charge Wt	0.24kg	
Booster Charge Wt	0.009kg	
Total Weight	0.6kg	
Height	5.6cm	
Diameter	11.2cm	
Anti - Disturbance Features	Not Present/cocked firing pin	
Mine Counter-Counter		
Emplacement	Buried	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure	0.23 kg	

Functioning:

(RDA-TRf-Mn.110) When pressure is applied to the top of the case, the spring loaded striker is released which in turn hits a percussion cap capsule, which sets off the main charge.

(RDA-TRf-MN.108) Equipped with a lead strip delay-arming fuze containing a safety pin and a compressed spring. When the safety pin is withdrawn, pressure from the firing pin's compressed spring shears the lead strip in approximately 20 minutes arming the mine. When pressure is applied to top of mine the cylinder step is lowered allowing the firing pin to initiate strike.

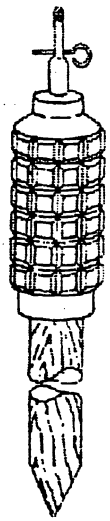
Mine's Operational:

(RDA-TRf-Mn.110) After the mine has been laid and the safety pin removed, there is a 15 to 20 min delay in arming. After the 15 to 20 min period the wire cuts through the lead striip and releases the pin, which moves forward into a cavity of the pressure cylinder.

(RDA-TRf-Mn.108) As with the PMK-40, this mine in intended to be left strewn around in areas abandoned to the enemy, detonation occurring (with rather more severe results than the PMK-40 when a soldier (or civilian) indavertently treads on one.

Comments:

(RDA-TRf-Mn.110) Widely used in Afghanistan. (est.25-30k). The case is made of duroplastic ar has a side hole for the firing mechanism and primer charge, opposite which is the initiator adapt plug. The top half of the mine has a rubber cover which covers the pressure plate, which is secured to the case by a thin matal band.

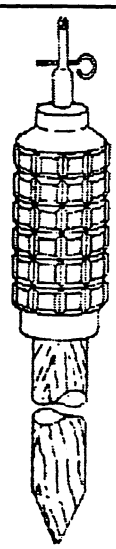
USSR	Anti-Personnel	POMZ-2
Kill Mechanism	Fragmentation	
Case Material	Cast Iron	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	75g	
Booster Charge Wt		
Total Weight	2kg	
Height	13.5cm	
Diameter	6.4cm	
Anti - Disturbance Features	Striker can be held by taut tripwire	
Mine Counter-Counter		
Emplacement	Stake	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		
Pull (Trip Wire)		

Functioning:
(RDA-TRf-Mn.110) Pull on tripwire releases a safety pin activating the fuze which detonates the mine. POMZ-2 has an iron body and is made of 6 rows of fragmentation, POMX-2M has 5 rows of fragmentation.

Mine's Operational:
(RDA-TRf-Mn.108) A 30cm wooden stake is pressed or driven into the ground. The mine is then slipped over the upright end of the stake, fuze is inserted and a tripwire is fastened to the safety pin of the fuze. Usually emplaced in clusters of four or more.

Comments:
(RDA-TRf-Mn.108) Similar to POMZ-2M. The operational force for the MUV fuze is 1kg.

USSR	Anti-Personnel	POMZ-2M
Kill Mechanism	Fragmentation	
Case Material	Cast Iron/Wood Stake	
Main Charge	TNT	
Booster Charge		
Main Charge Wt	75g	
Booster Charge Wt		
Total Weight	1.7kg	
Height	11.1cm	
Diameter	6.4cm	
Anti - Disturbance Features	Striker held by taut tripwire	
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		
Pull (Trip Wire)		

Functioning:

(RDA-TRf-Mn.110) Using the MUV fuze, a pull on the tripwire removes the striker retaining pin, which releases the spring driven striker against the percussion cap and detonates the mine. Using the VPF fuze, when the tripwire is pulled it removes the pull ring from round the head of the striker bolt, releasing the spring loaded striker against the percussion cap and detonating the mine.

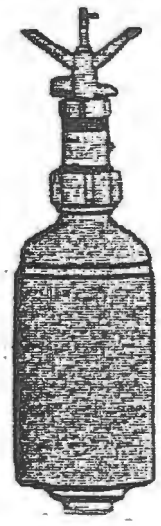
Mine's Operational:

(RDA-TRf-Mn.108) A 30cm wooden stake is pressed or driven into the ground. The mine is then slipped over the upright end of the stake, fuze is inserted and a tripwire is fastened to the safety pin of the fuze.

(RDA-TRf-Mn.110) These mines are normally laid in clusters of four or more and are equipped with tripwires.

Comments:

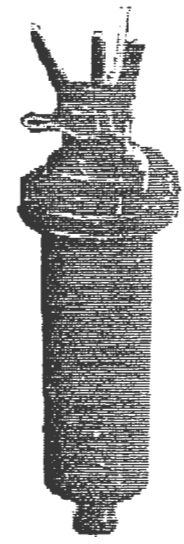
(RDA-TRf-Mn.110) Late Models are designated the POMZ-2M. These have a threaded fuze-well and five rows of fragmentation whereas the POMZ-2 has six.

Yugoslavia	Anti-Personnel	PROM-1
Kill Mechanism	Bounding Fragmentation	
Case Material		
Main Charge	TNT	
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight	3kg	
Height	47cm	
Diameter	7.5cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull (Trip Wire)	3 - 5.5 kg	
Pressure	9 - 16 kg	

Functioning:
(RDA-TRf-Mn.109) Waterproof to 50m.
(RDA-TRf-Mn.110) Pressure pushes the cylinder down, freeing the retaining balls which allow th striker to hit the percussion cap which explodes igniting the bouncing charge, whcih ejects the mine 0.7 to 1.5 meters above the surface of the ground (as limited by a tether wire). The main charge then explodes and causes fragmentation which is lethal to a radius of 50m and dangerous a radius of 100m.
Mine's Operational:
(RDA-TRf-Mn.109) Mine is probably buried with pressure prongs exposed and used against foot troops.

Comments:
(RDA-TRf-Mn.110) The training version is designated VPROM-1.

Italy	Illumination	VS-T
Kill Mechanism	Warning	
Case Material	Resins	
Main Charge	Illumination	
Booster Charge		
Main Charge Wt	0.24kg	
Booster Charge Wt		
Total Weight	0.5kg	
Height	22cm	
Diameter	16cm	
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Stake or Buried	

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull (Trip Wire)	8 kg	-32 °C up to 49 °C
Pressure	11 kg	

Functioning:
Manually emplaced. Fastened to a picket, if tactically required. Direct external pressure, on turret(11kg) or trip-wire pull(8kg) will initiate mine.

Mine's Operational:
A tactical number of VS-T mines in a minefield of critical geography or any protected perimeter, enhance the protection of the minefield from night-clearing teams. Designed to provide both acoustic and visual warning.

Comments:
The flare illuminates an average radius of 57 meters for a minimum of 40 seconds. Intensity in excess of 15 Lux (50,000 candlepower).

USSR	Signal	SM
Kill Mechanism	Warning	
Case Material		
Main Charge		
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight		
Height		
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pull (Trip Wire)		

Functioning:
Visual and audible effects.

Mine's Operational:
Manual emplacement.

Comments:
Soviet SM signal mines come in red or white.

Italy	Anti-Landing Craft	MAL-17
Kill Mechanism	Blast	
Case Material		
Main Charge	HE	
Booster Charge		
Main Charge Wt	17kg	
Booster Charge Wt		
Total Weight		
Height		
Diameter		
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Moored shallow water	

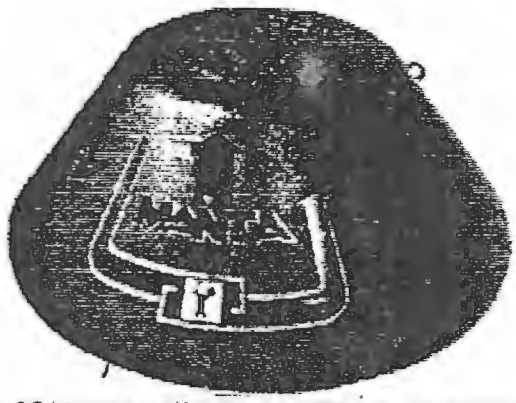
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		

Functioning:

Mine's Operational:
The MAL-17 is a shallow water blast effect mine. Anti-Invasion mines are designed to protect coastal areas and rivers in shallow water.

Comments:
Has three pressure fuzes mounted.
Painted light blue.

Italy	Anti-Landing Craft	MANTA
Kill Mechanism	Blast	
Case Material		
Total Weight	220kg	
Main Charge	TNT or HBX-3	
Booster Charge		
Height	47cm	
Diameter	98cm	
Main Charge Wt		
Booster Charge Wt		
Anti - Disturbance Features		
Mine Counter-Counter Measures		
Emplacement		



(U)ITALIAN MANTA MINE

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic & Seismic		

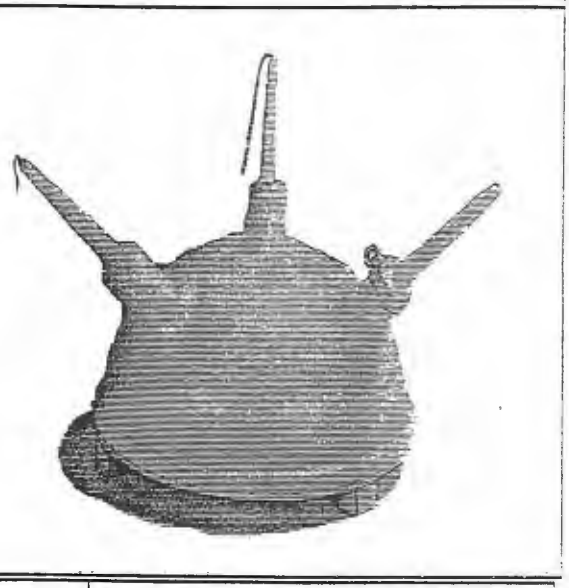
Functioning:
The MANTA is an influence-fuzed, anti-invasion mine equiped with dual sensor, both acoustic and seismic.

Mine's Operational Employment:

Comments:
This heavy mine has a main explosive charge of either 140kg TNT or 170kg HBX-3.
It has a total weight of approximately 220kg and dimentions of 98cm in diameter and 47cm in height.

WATER - 2

Italy	Anti-Landing Craft	MAS-22
Kill Mechanism	Blast	
Case Material		
Main Charge	HE	
Booster Charge		
Main Charge Wt	17kg	
Booster Charge Wt		
Total Weight		
Height		
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement	Very Shallow water	



Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Pressure		

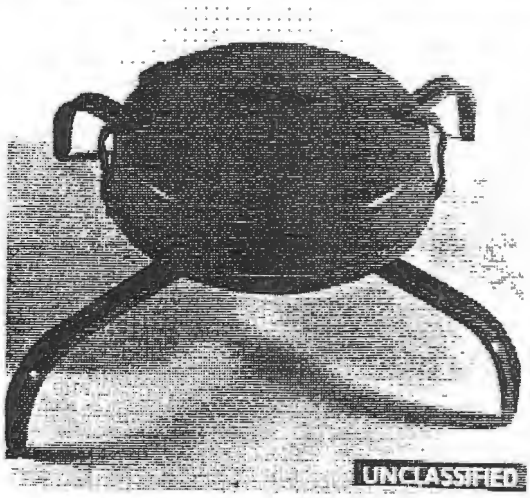
Functioning:

Mine's Operational:
The MAS-22 is a very shallow water blast effect mine. Anti-Invasion mines are designed to protect coastal areas and rivers in shallow water.

Comments:
Has three pressure fuzes mounted.
Painted light blue.

Italy	Anti-Landing Craft	VS-RM-30

Kill Mechanism	Blast
Case Material	
Main Charge	
Booster Charge	
Main Charge Wt	30kg
Booster Charge Wt	
Total Weight	
Height	
Anti - Disturbance Features	Built-in
Mine Counter-Counter	Remote activation
Emplacement	Hand - Shallow water



(U) ITALIAN VS-RM-30 SHALLOW-WATER MINE

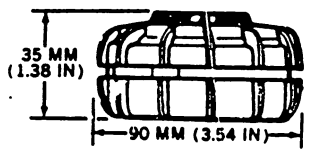
Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits
Magnetic Influence		

Functioning:
The magnetic sensor has a built-in capability for anti-disturbance and for remote activation. Safety features include an "out-of-line" detonator and a safety/transport pin.

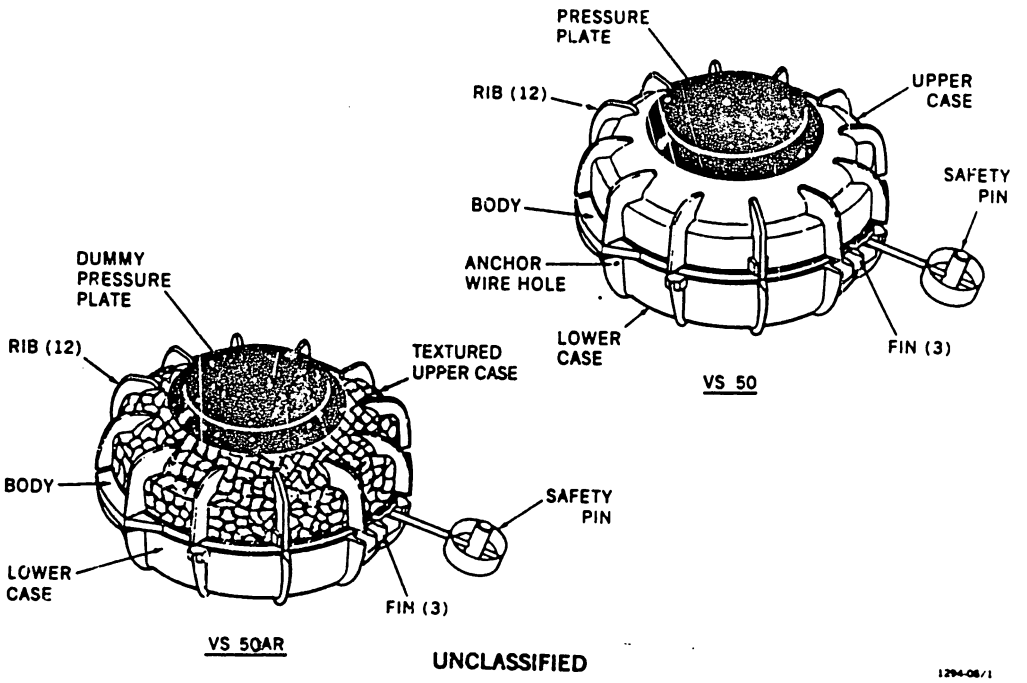
Mine's Operational:
The VS-RM-30 is an influance-fuzed anti-invasion mine designed to protect coastal areas and rivers in the shallow water. The operational depth for this mine is in the range of 2 to 10 meters. The 30kg mainexplosive charge is adequate for destroying a wide range of targets.

Comments:

ITALIAN MODEL VS-50 and VS-50AR ANTI-PERSONNEL MINES



VS 50 AND VS 50AR



1. Type. The mine is a high-explosive (blast) anti-personnel mine.

2. Paintings and Markings. The mine has a gray body, tan cases, a black pressure plate and a gray detonator plug.

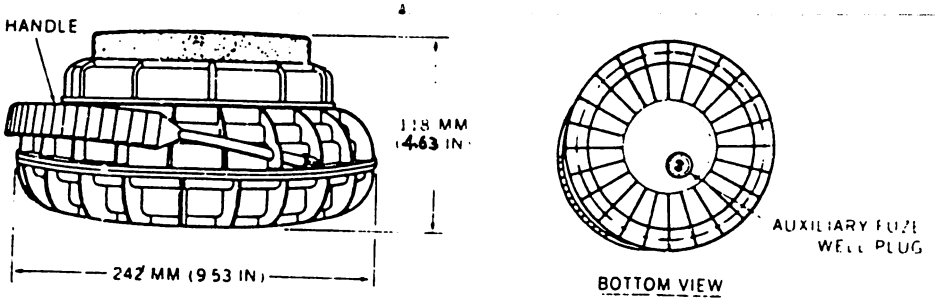
3. Material. The mines have plastic bodies, rubber pressure plates and plastic or metal lower cases. (The mines may have an additional metal plate installed to aid in detection).

4. Weight. The weight is : 6.2 oz for the VS-50
7.2 oz for the VS-50AR

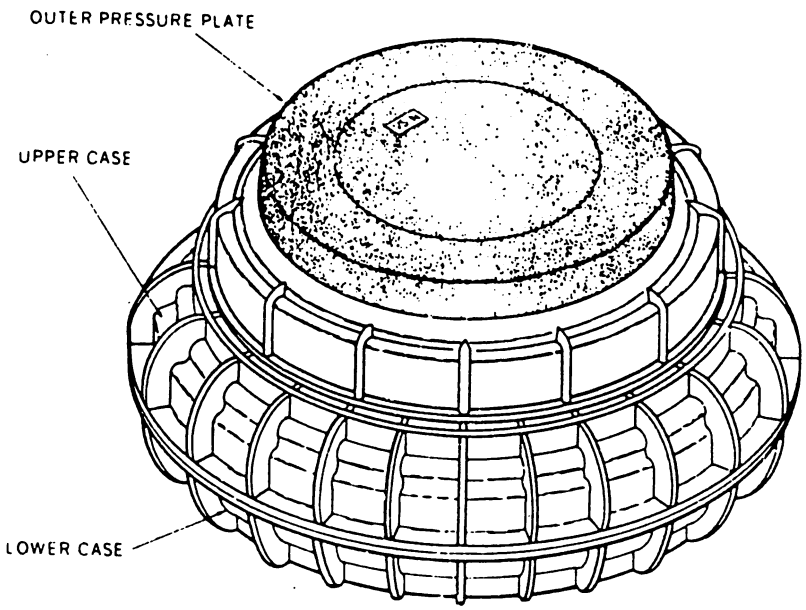
5. Filler. The mines contain: 1.3 oz for the VS-50
22 g for the VS-50AR

6. Functioning. The mine requires a sustained pressure for .12 seconds.

ITALIAN MODEL VS-2.2 ANTI-TANK MINE



NOTE VS-N EMBOSSING MAY OR MAY NOT BE PRESENT



UNCLASSIFIED

1. Type. The mine is a high-explosive (blast) anti-tank mine. It may be fitted with either an electric anti-disturbance or a pneumatic fuze. ** The electric fuze may contain either a self-destruct or self-neutralization feature.**

2. Paintings and Markings. The mine may be either khaki or green. The letters "VS-N" may be embossed in the outer pressure plate.

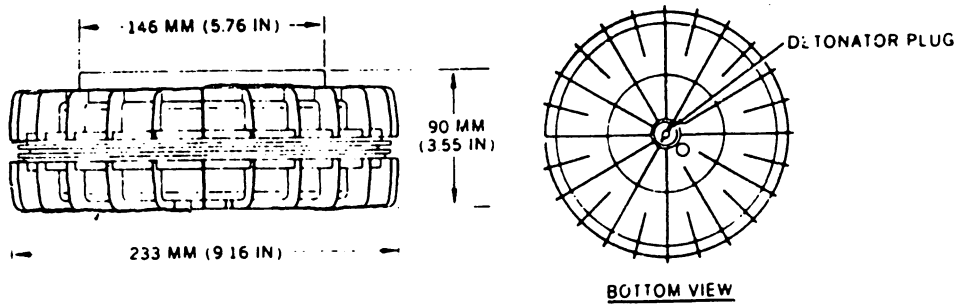
3. Material. The mine is plastic.

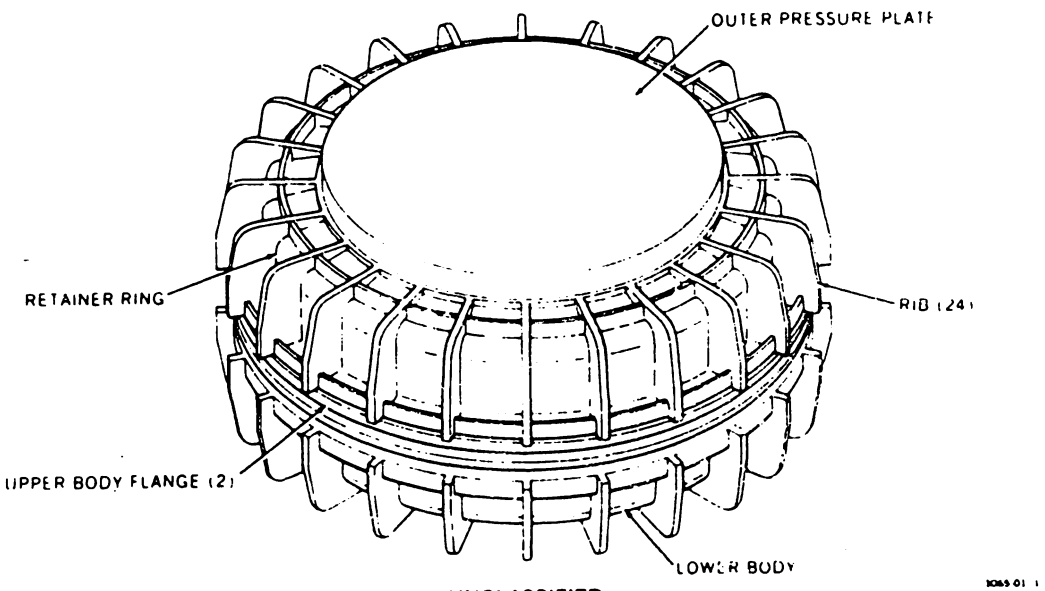
4. Weight. The mine weighs 7.8 lb.

5. Filler. The mine contains a main charge of 4.2 lb of cast TNT/RDX.

6. Functioning. The mine is fired by the pneumatic fuze when pressure is applied to the pressure plate.

ITALIAN MODEL VS-1.6 ANTI-TANK MINE





UNCLASSIFIED

1. Type. The mine is a pressure actuated, scatterable anti-tank landmine.

2. Paintings and Markings. The mine is olive drab with an olive drab detonator plug and a blue shipping plug.

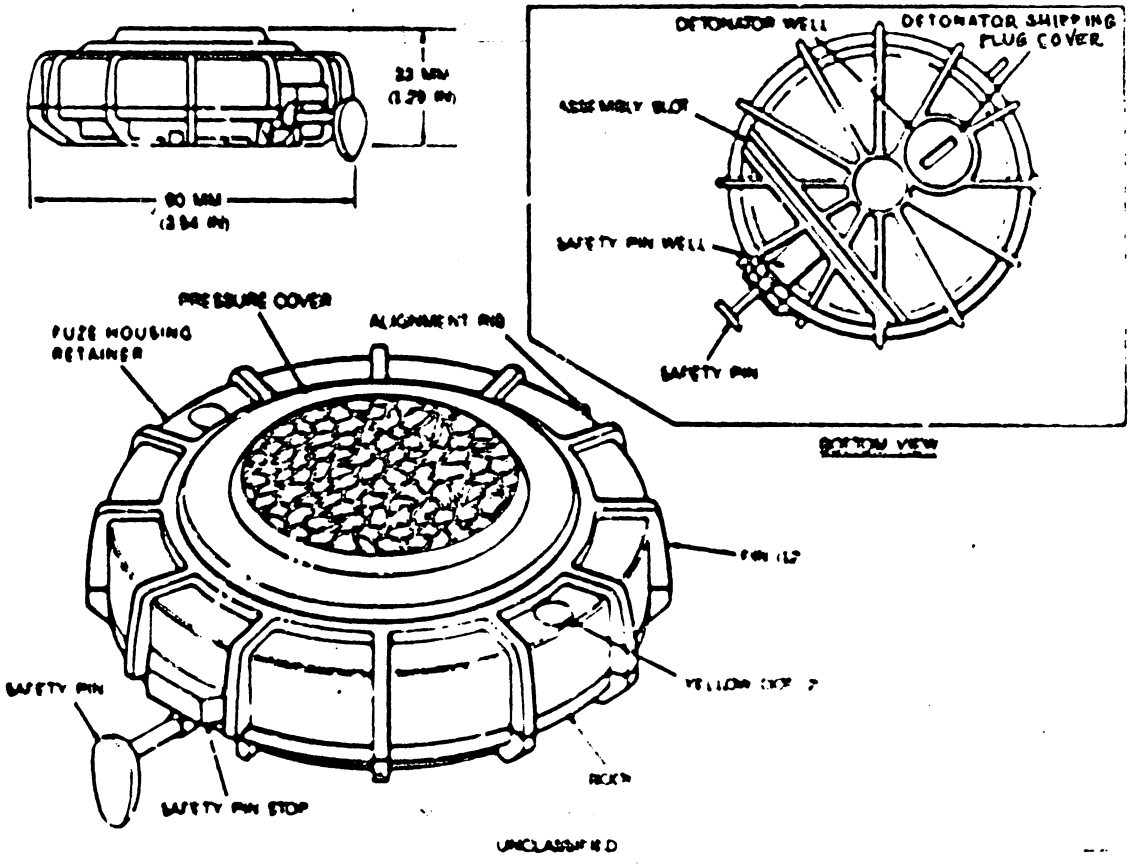
3. Material. The mine is constructed of plastic.

4. Weight. The mine weighs 6.4 lb.

5. Filler. The main charge weighs 3.8 lb of TNT/RDX.

6. Functioning. The mine is fired when pressure on the outer pressure plate is applied.

ITALIAN MODEL VS-MK2



1. Type. The mine is an anti-personnel blast resistant landmine.

2. Paintings and Markings.

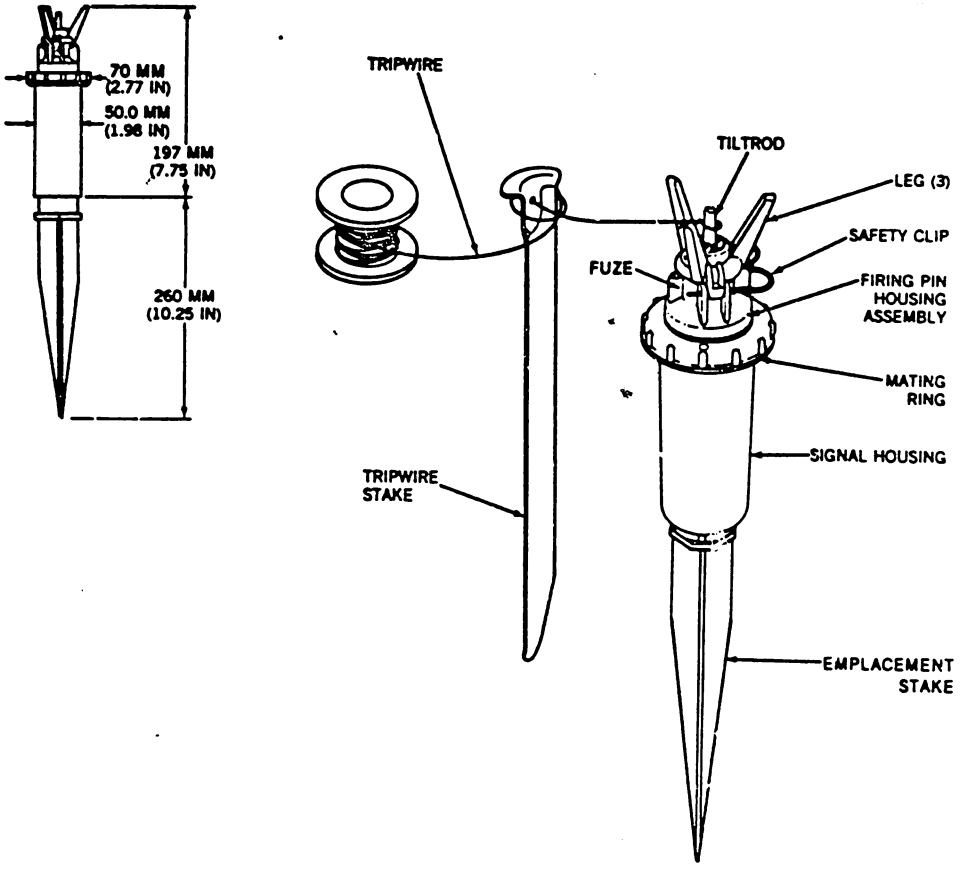
3. Material.

4. Weight.

5. Filler.

6. Functioning.

ITALIAN MODEL VS-T ILLUMINATION LANDMINE



UNCLASSIFIED

1. Type. This is a tilt-rod actuated illumination mine.

2. Paintings and Markings. The mine is beige in color and has two white dots on the mating ring.

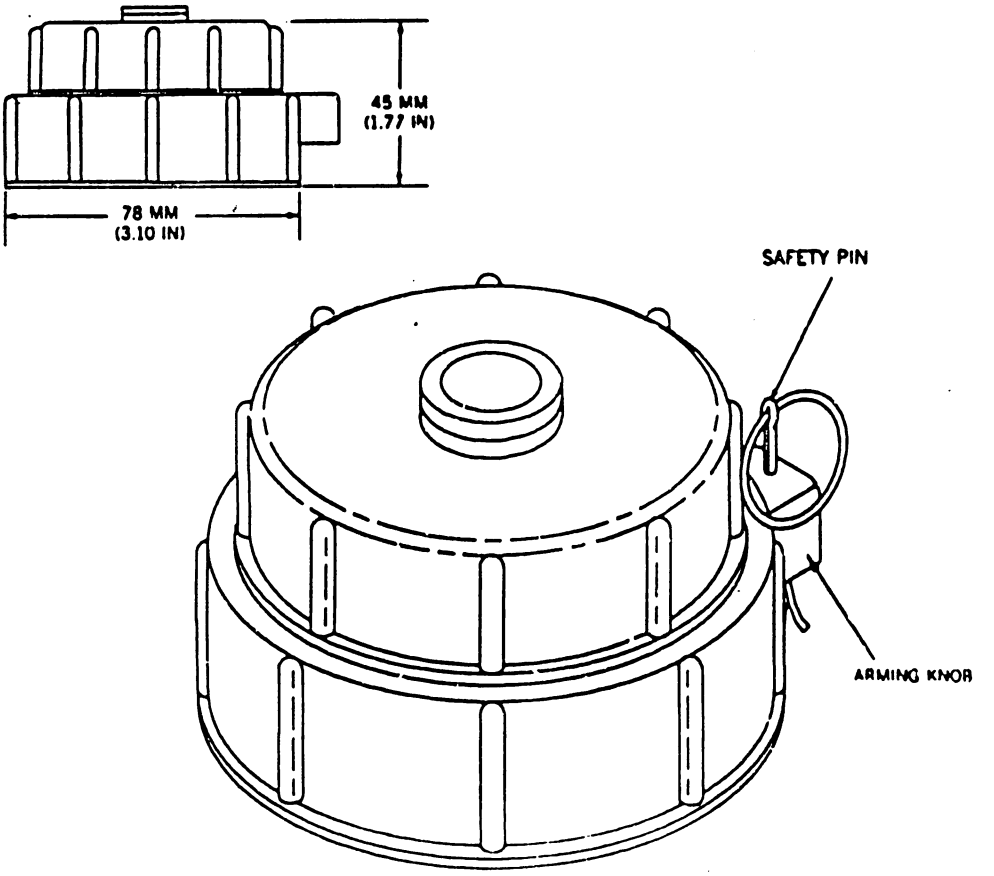
3. Material. The mine and emplacement stake are plastic.

4. Weight. Mine with emplacement stake: 1.1 lb.

5. Filler. The mine contains a main charge of 11.2 oz of pyrotechnic mixture.

6. Functioning. The mine is functioned when the tripwire attached to the tilt rod is pulled.

ITALIAN MODEL VS-AR4 ANTI-LIFT DEVICE



1. Type. The device is both electrically and mechanically armed.** NOTE ** The VS-AR4 is known to be used with the VS-50, Valmara-69, VS-1.6 and the VS-2.2 mines.

2. Paintings and Markings. Unknown.

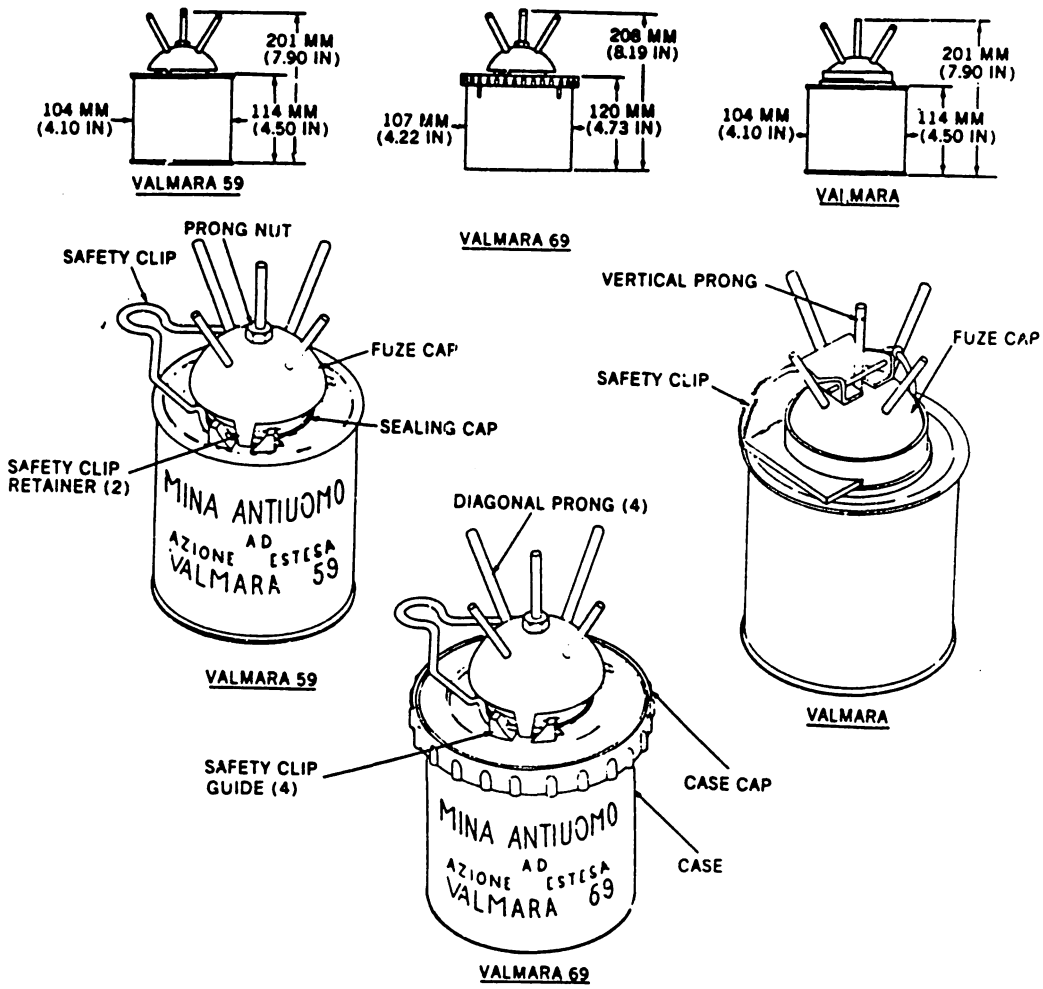
3. Material. Unknown.

4. Weight. 4.8 oz.

5. Filler. N/A

6. Functioning. It is attached to the mine by removing the detonator from the mine. The device is functioned by tilting it.

ITALIAN VALMARA-69 ANTI PERSONNEL MINE



1. Type. The mine is a bounding fragmentation anti personnel mine.

2. Paintings and Markings. The mine and fuze are gray and may or may not have markings.

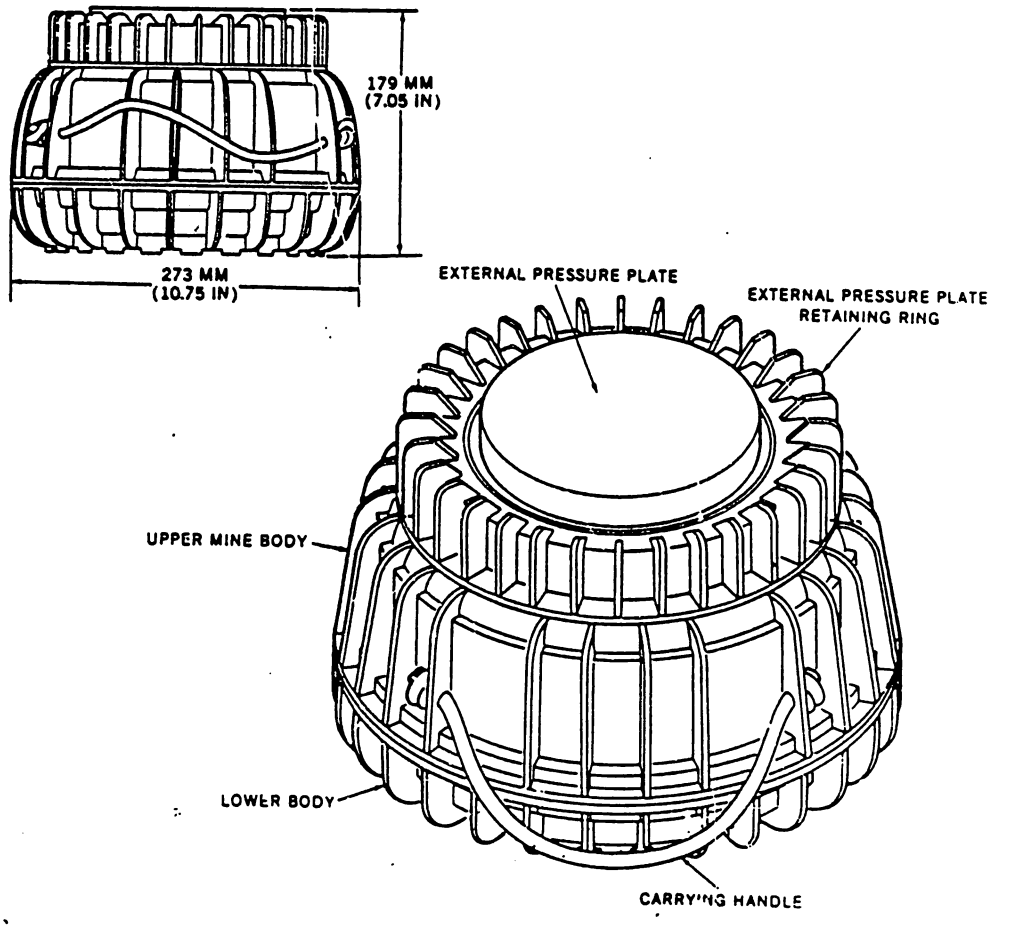
3. Material. The mine is constructed of plastic, the fuze cap is aluminum and the frag liner is steel.

4. Weight. The mine weighs 7.2 lb.

5. Filler. The main charge contains 1.3 lb of TNT/RDX.

6. Functioning. The mine is fired when pressure is applied to the prongs or can be pull actuated when a tripwire is attached to the prong.

ITALIAN MODEL TC-6 ANTI-TANK MINE



UNCLASSIFIED

1. Type. The mine is a pressure fired anti-tank mine.

2. Paintings and Markings. The mine is Buff colored.

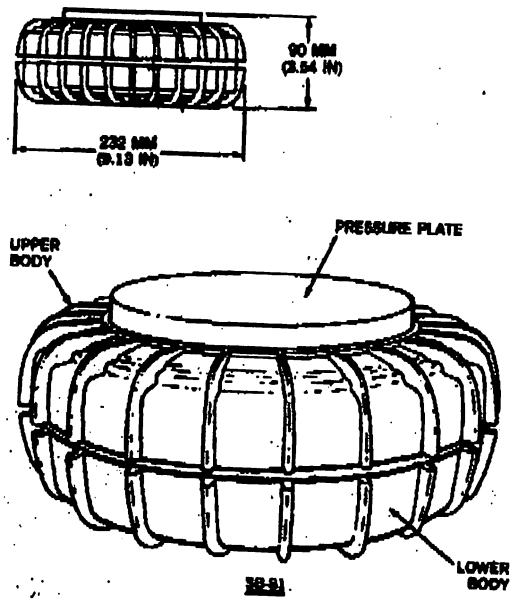
3. Material. The mine is constructed of plastic with a rubber coated pressure plate.

4. Weight. The mine weighs 20.4 lb.

5. Filler. The mine contains a main charge of 12.5 lb of RDX/TNT.

6. Functioning. The mine is fired when 408 lb is applied to the pressure plate.

ITALIAN SB-81 ANTI-TANK MINE



1. Type. Pressure fired with a self-destruct/anti-handling feature.** NOTE ** Mechanical and Electric fuzed versions are identical in appearance.

2. Paintings and Markings. The mine is painted olive drab.

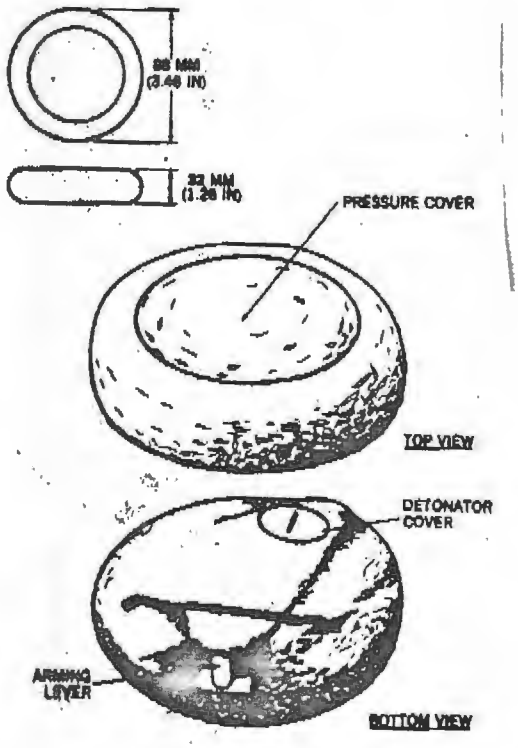
3. Material. The mine is made of mostly plastic with a minimal metallic content.

4. Weight. Unknown.

5. Filler. The mine contains a main charge of 4.41b of high-explosive.

6. Functioning. The mine is fired when a pressure of 6831b is applied to the pressure plate. ** NOTE ** The SB-81AR version is pressure, anti-removal and self neutralizing.

ITALIAN MODEL SB-33 and SB-33AR ANTI-PERSONNEL MINES



1. Type. Anti-disturbance, self destruct, non-metal blast resistant anti-personnel mine.

2. Paintings and Markings. Unknown

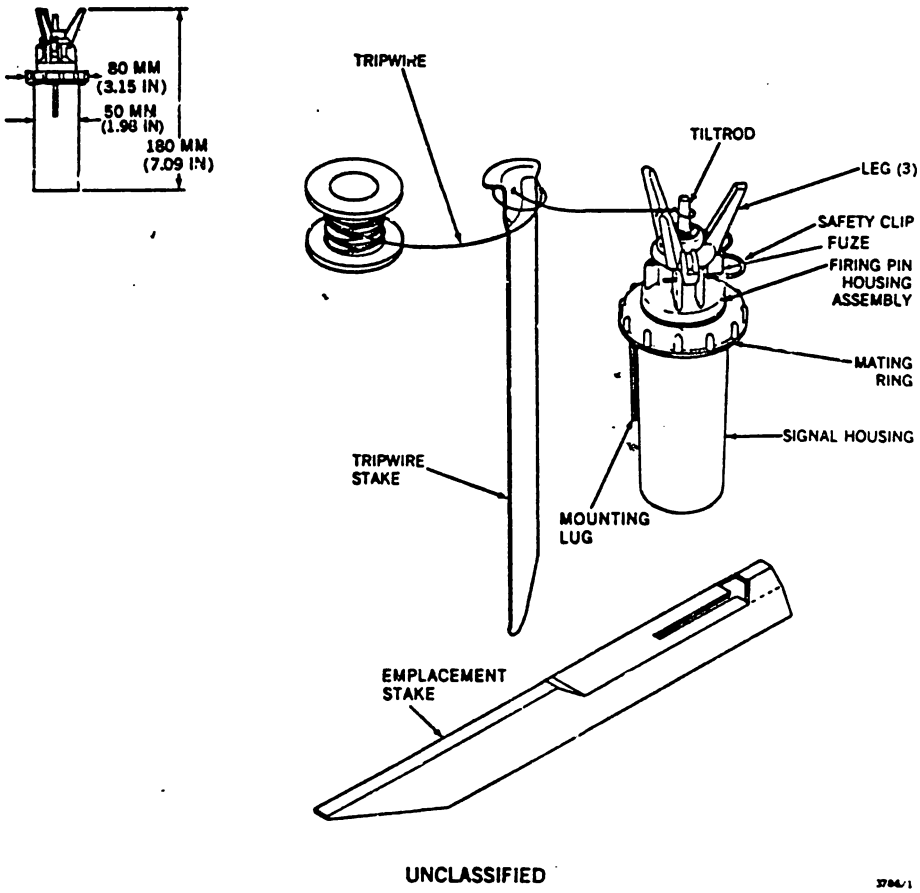
3. Material. The mine is assumed to be made of plastic.

4. Weight. Unknown

5. Filler. The mine contains 1.23 oz of Comp A3 as a main charge.

6. Functioning. The mine is fired when 44lb of pressure is applied to the pressure plate. ** NOTE ** The SB-33AR version contains a anti-handling electric fuze.

ITALIAN MODEL P-25 ANTI-PERSONNEL MINE



1. Type. The mine is a tilt rod actuated anti personnel mine

2. Paintings and Markings. Unknown.

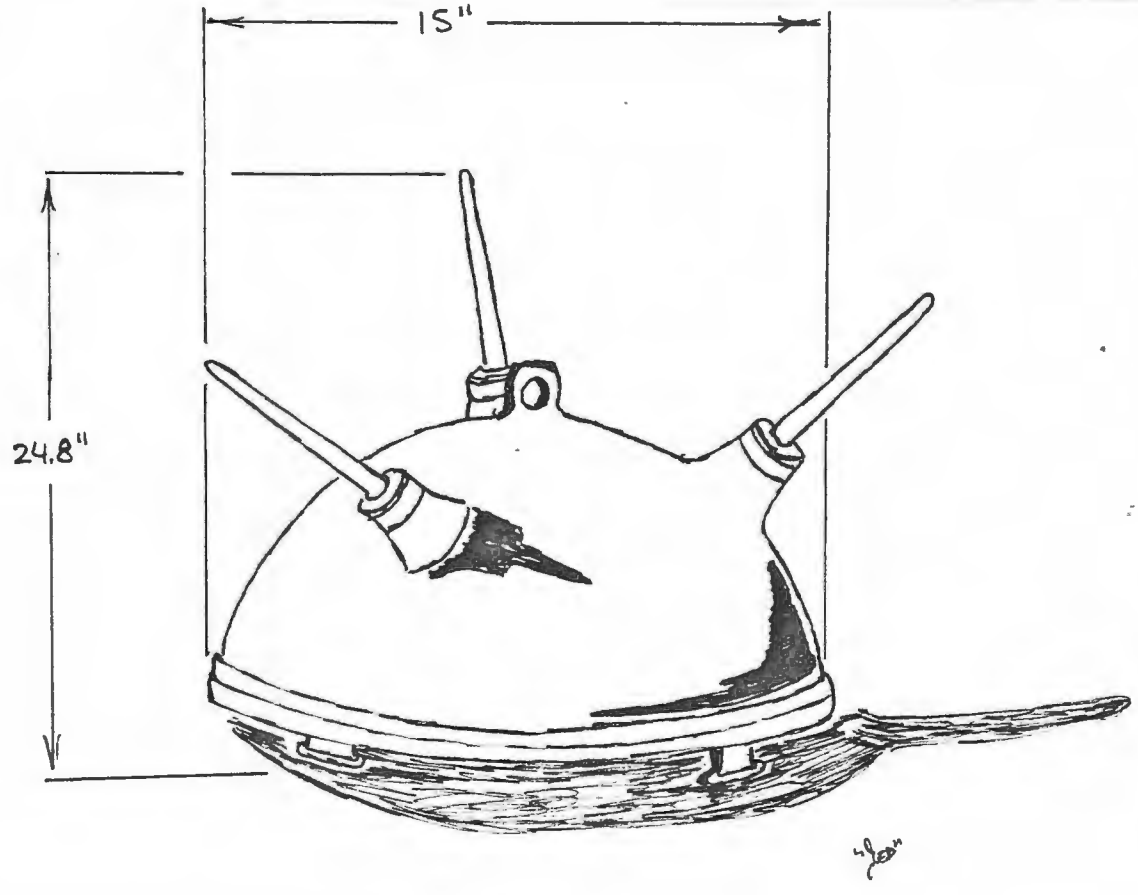
3. Material. It is believed to be plastic.

4. Weight. The mine weighs 1.4 lb.

5. Filler. Main charge weighing 1.9 oz.

6. Functioning. It is functioned when the tripwire attached to the tilt-rod
is pulled.

ITALIAN MODEL MAS-22 SHALLOW WATER ANTI-INVASION MINE



MAS/22

1. Type. The mine is a pressure/contact fired shallow water mine.

2. Paintings and Markings.

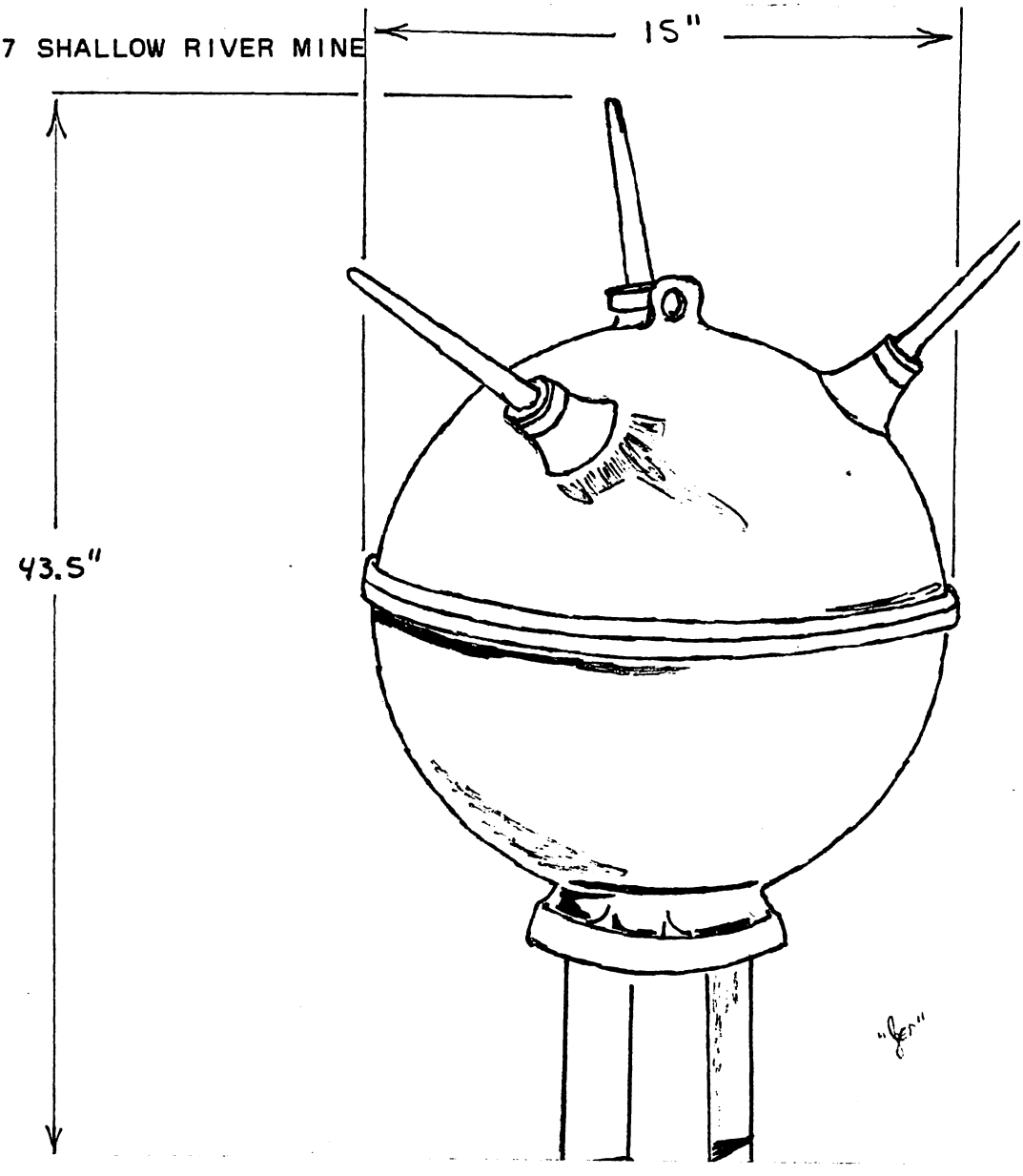
3. Material.

4. Weight. The mine weighs 48.5lb.

5. Filler. The mine contains a main charge of 37.5lb of unknown high explosive.

6. Functioning.

ITALIAN MODEL MAL-17 SHALLOW RIVER MINE



1. Type. The mine is a pressure/contact fired shallow river mine. The mine is intended as a bottom moored anti-landing mine.

2. Paintings and Markings. Unknown.

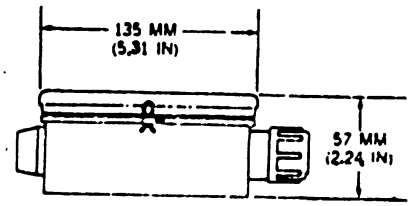
3. Material.

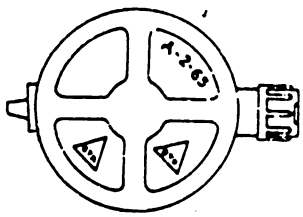
4. Weight. The mine weighs 48.5lb

5. Filler. The mine contains a main charge weighing 37.5lb of unknown high explosive.

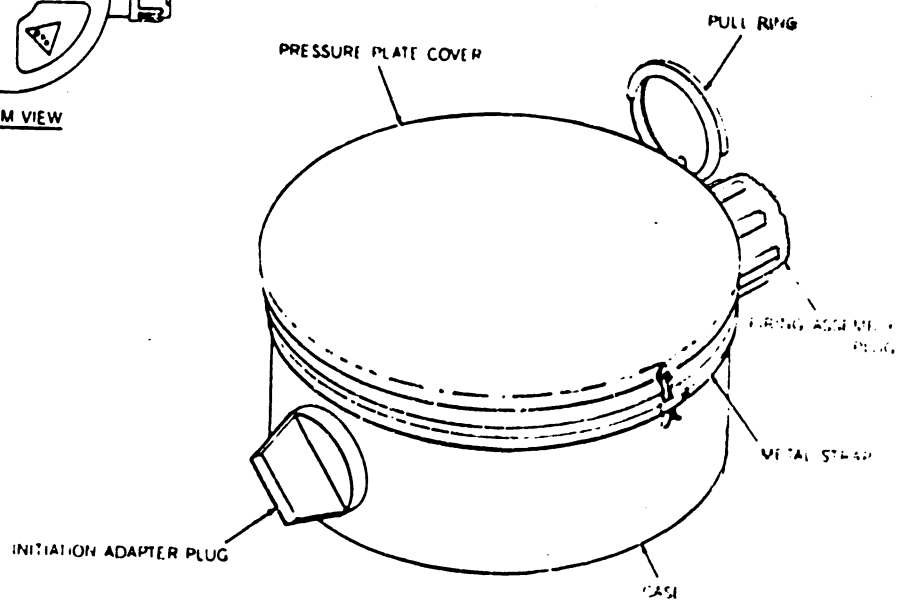
6. Functioning.

SOVIET MODEL PMN ANTI PERSONNEL MINE





BOTTOM VIEW



UNCLASSIFIED

1. Type. The mine is a delay armed, pressure fired high-explosive (blast) anti personnel mine.

2. Paintings and Markings. The mine case may be either black, green or brown.

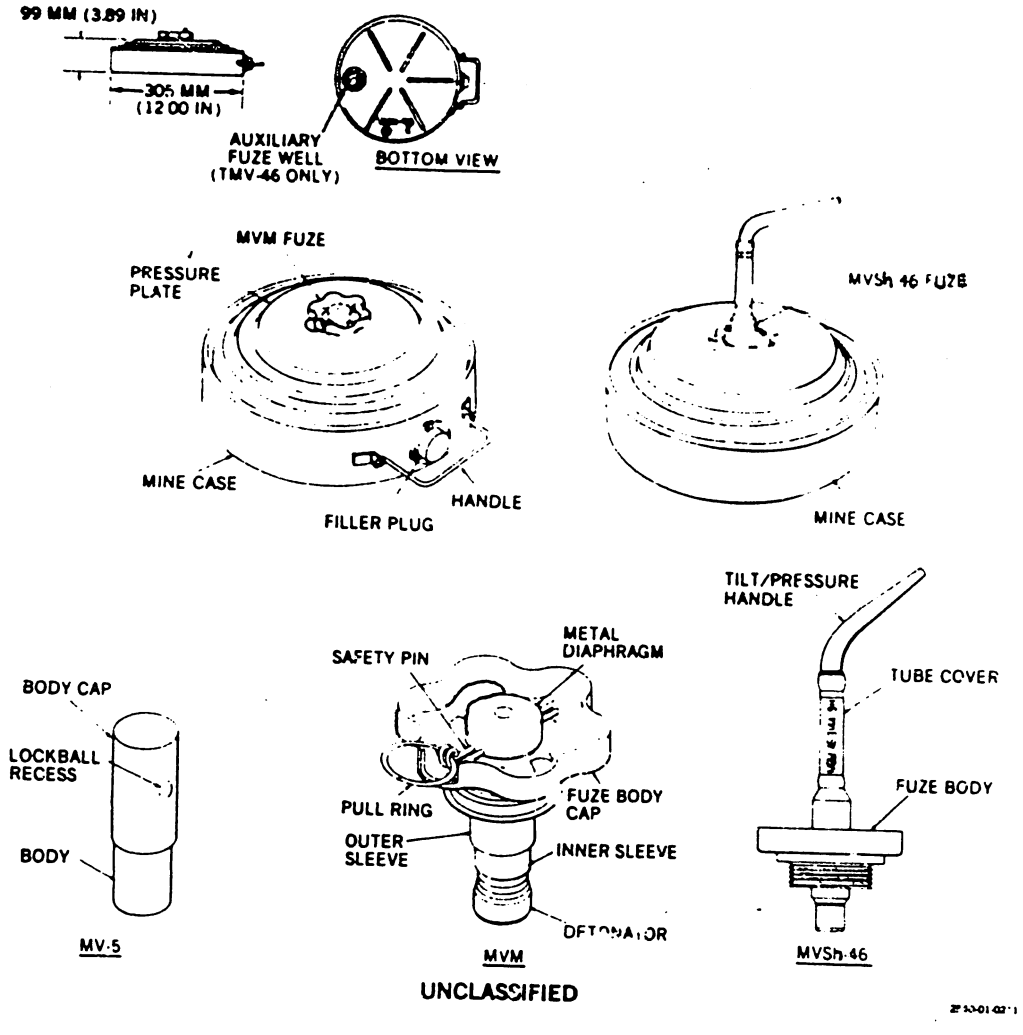
3. Material. The body is plastic with a rubber pressure plate.

4. Weight. The mine weighs 1.0 lb.

5. Filler. The mine contains a main charge of 8.0 oz of TNT.

6. Functioning. The mine is fired when 9 lb of pressure is applied on the rubber pressure plate.

SOVIET MODEL TM-46 and TMN-46 ANTI-TANK MINES



1. Type.

2. Paintings and Markings. The mines are dark green or olive drab.

3. Material. The mines are constructed of metal.

4. Weight. The mines weigh 19 lb.

5. Filler. The mines contain 12.6 lb of TNT or Ammonite A-50.

6. Functioning. The mines function by pressure applied to the pressure plate or when the tilt-rod is deflected.

Italy	Limpet Mine	EPR-2.5
Kill Mechanism		
Case Material		
Main Charge		
Booster Charge		
Main Charge Wt		
Booster Charge Wt		
Total Weight		
Height		
Anti - Disturbance Features		
Mine Counter-Counter		
Emplacement		

Fuze Type(s) - Initiation	Operating Force	Temp Operational Limits

Functioning:

Mine's Operational:

Comments: