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ANTI-TANK MINES

MILITARY TRAINING PAMPHLET

No. 28.

1939

Prepared under the direction of
The Chief of the Imperial General Staff.

THE WAR OFFICE,
December, 1939.

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MILITARY TRAINING PAMPHLET, No. 28—1939

ANTI-TANK MINES

1. *Responsibility for laying*

All ranks of anti-tank regiments, R.A., R.E. units and of infantry and motor battalions, are trained to arm and fuze anti-tank mines. They may, therefore, be called upon to lay anti-tank mines in minefields, road blocks, etc.

2. *Carriage of anti-tank mines*

The number of Mark I or Mark II mines which can be carried in one 3-ton lorry is 77 boxes each containing 8 mines, or a total of 616. A 30-cwt. lorry will carry 42 boxes, a total of 336.

The number of mines carried in mobile echelons is :—

Divisional or corps field park company, R.E. ..	1,232
Divisional ammunition company, R.A.S.C. ..	1,232
Corps troops ammunition company, R.A.S.C. ..	1,232
Corps ammunition park—each sub park, R.A.S.C.	1,232
Armoured division :—	
Field park troop, R.E.	616
Divisional troops company, R.A.S.C.	616
Divisional ammunition park, R.A.S.C.	616

All the above are carried in 3-ton lorries.

In the event of any other unit, for example a motor battalion, having to carry for a specific operation the mines should be distributed to unit transport from the normal holding unit.

3. *Anti-tank Mine, Mark I*

i. Description

Details of the Mark I mine are given in the "Handbook for the Mine Contact A.Tk. Mark I," issued to engineer and infantry units.

The Mark I mine weighs about 8 lb., is about 3 inches high and 7½ inches in diameter.

ii. Arming and fuzing

To prepare for laying, this mine must first be armed, *i.e.*, the striker mechanism must be assembled and screwed into the mine; and, secondly, fuzed, *i.e.*, the detonator must be inserted.

Arming can be carried out at any convenient time to suit the user and the mine remains quite safe. Fuzing must only be carried out during the process of laying the minefield.

To arm a mine, the striker spring must be compressed by screwing the striker body into the socket provided on the wooden transit box. When the hole in the head of the striker appears, a shear wire is inserted and the assembly unscrewed. Having compressed the striker spring and inserted the shear wire the small flash cap must be inserted and kept in place by screwing in the brass keep ring below it. The cover of the mine should next be removed. This cannot be done unless the hexagon nut on the side of the mine covering the detonator hole is first removed. When the cover is removed the striker assembly is screwed into the hole in the centre of the top of the mine. The cover is now replaced and the hexagon nut on the side of the mine screwed in again. The mines are now repacked in their boxes and transported to the minefield. When the mines are laid the hexagon nut on the side is removed, the detonator placed in the small cavity and the nut replaced.

4. *Anti-Tank Mine, Mark II*

i. Description

The Mark II mine is similar in appearance, weight and dimensions to the Mark I, but embodies certain improvements.

The Mark II mine is water-tight.

ii. Fuzing

As a result of eliminating the process of "arming," the Mark II mine is very simple to prepare and much quicker to lay than the Mark I.

The only action required in laying this mine is to remove the plug in the centre of the under side and screw in the already assembled fuze, which is packed with the mines in the transit box. This is done when the mines are actually being laid. The operation takes a few seconds only, and no special tool is required.

5. *Anti-tank mine Mark III*

i. Description

This is a simplified design of mine which will shortly come into use. The mine is made up of three portions :—

(*a*) The body of the mine, which is a water-tight tin cylinder containing high explosive, and has a socket inserted in its top face.

(*b*) A detonating fuze.

(*c*) A steel cover, which is placed over the body after the fuze has been inserted in the mine.

The above stores will be received by units, packed as follows :—

The body and cover secured together by tape will be packed in nailed-up crates, containing five of each.

The fuzes will be packed in small tin cylinders, closed by adhesive tape, five fuzes to a cylinder; these cylinders will be packed in wooden boxes, each containing ten cylinders, *i.e.*, 50 fuzes=10 cylinders=1 wood box.

ii. Preparation of the mine for use

Open the crate by removing one slat (not the ends). Dig a suitable hole, separate the body from the cover, and insert the mine body in the hole, so that the top of the body is level with, or ½ in. above the ground line; if conditions permit, the body should be pressed into the bottom of the hole with a screwing motion, to ensure that the flange gets a good grip on the soil. Fill up with earth as tightly as possible round the body so that it is half covered with earth, as shown below :—

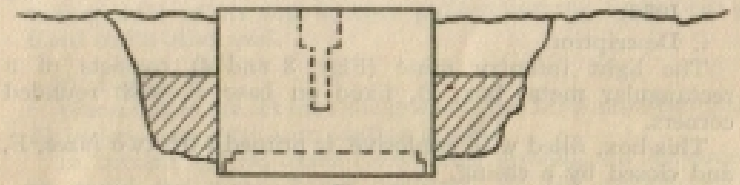


FIG. 1

When planting the body, take care that earth and small stones do not enter the socket at the top. Open the fuze cylinder by tearing off the adhesive tape and remove the fuze.

From the head of the fuze projects a steel rod. Through this rod passes a split pin with strong loop attached, and a piece of bent brass wire. Remove the split pin, but do not touch the brass wire. If the brass wire is not in position, as shown overleaf, the safety pin (split pin) should not be removed and the fuze should not be used.

Insert fuze in socket in top of body. The fuze should be an easy fit; do not use force. If an occasional fuze does not fit easily, discard the fuze and try another. If this fails, discard the mine. This is most unlikely to happen, but it must be impressed on all concerned that in no circumstances should force be used to insert the fuze in the mine. Place

cover gently over mine body and pack up with loose earth. The loose earth may be carefully pressed down, but do not stand or stamp on the mine once the fuze is in position, as the mine is then dangerous.

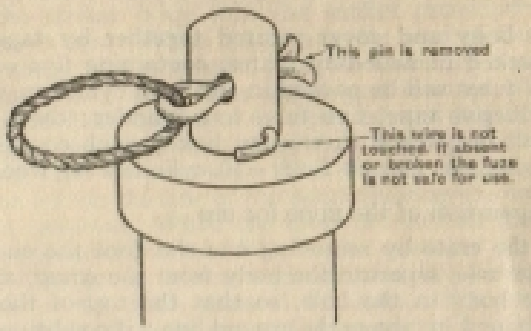


FIG. 2

A Mark IV mine is now being produced, which is similar to the Mark III, except that it is broader and not so deep.

6. *The French anti-tank mine (Light (infantry) mine model, 1936)*

i. Description

The light infantry mine (Figs. 3 and 4) consists of a rectangular metal box, B, fixed on base, S, with rounded corners.

This box, filled with explosive, is primed with two fuzes, F, and closed by a casing, C.

The whole mine is painted a neutral shade.

During transport and laying, the mine is fitted with a safety rod, T, which prevents any detonation due to accidental shocks which might occur when handling the mine.

The casing is attached to the box by three light chains C 1, C 2 and C 3 the two first acting as hinges. At the end of the third chain there is a ring A, which engages in a clip m, on the casing.

There are holes in the base of the mine, by which it can be anchored to the ground by means of pegs.

There are several types of light mines which differ only by their measurements or weight (the case can be made of steel or light alloy).

ii. Action

The mine detonates when the wheel or track of a vehicle passes over the casing.

It is important that the casings should be tightly closed.

When laying the mine it is essential to make sure that the ring A, connected with the base by chain C 3, is well engaged in clip m, on the casing.

iii. Packing

The mines are packed in fours, the fuze holder cases being protected by a metal stopper fitted with a greased leather washer, or a metal-felt fuze hole plug.

The fuzes are stored in boxes of 25.

iv. Preparation before sending up.

(*a*) Remove the devices which close the fuze holder cases (by unscrewing, when the plug is made of metal; by pulling them by the ring with which they are fitted, when metal-felt fuze hole plugs are used).

(*b*) Screw two fuzes into each of the mines (by hand and without forcing).

(*c*) Close the casing (which must be fitted with its safety rod).

v. Preparation at the site

When the mines are in position remove the safety rod by taking hold of its ring a, after pulling out the keeper-pin g, fixed to its other end.

vi. Laying

When mines are let into the ground, the tops must protrude 2½ inches above the surrounding ground.

In certain special cases (very hard ground, for instance), to avoid the mines being dislodged by the vehicle, it is advisable to anchor them in the ground by means of pegs inserted in the holes in the base.

vii. *Removing mines*

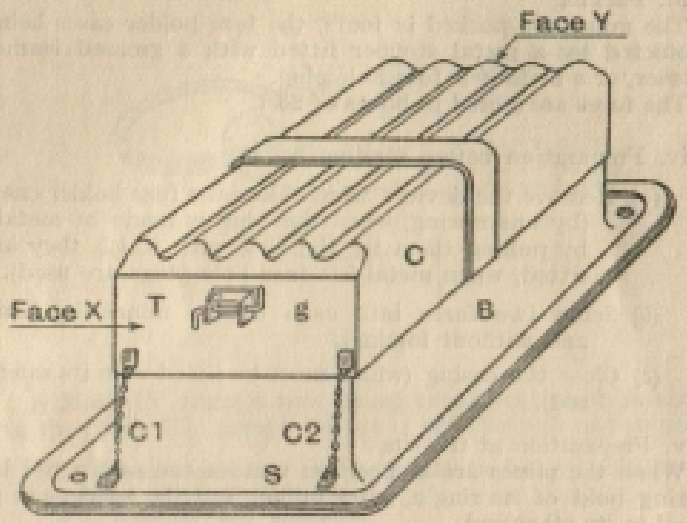
When removing mines from a minefield, the safety rods should be readjusted by sliding them into the holes in the casing which is raised for this purpose. Each rod is to be secured by a keeper-pin which is inserted in the end-hole and suitably bent.

When there is a shortage of safety rods, the mines must be unprimed by unscrewing their fuzes, before they are lifted. (If possible close the fuze holder cases by means of their metal stoppers or their metal-felt plugs.)

Any mine whose casing shows signs of having been crushed, must be destroyed on the spot (if necessary, with help from the Royal Engineers), without unscrewing the fuzes.

FIG. 3

(Safety rod in position)



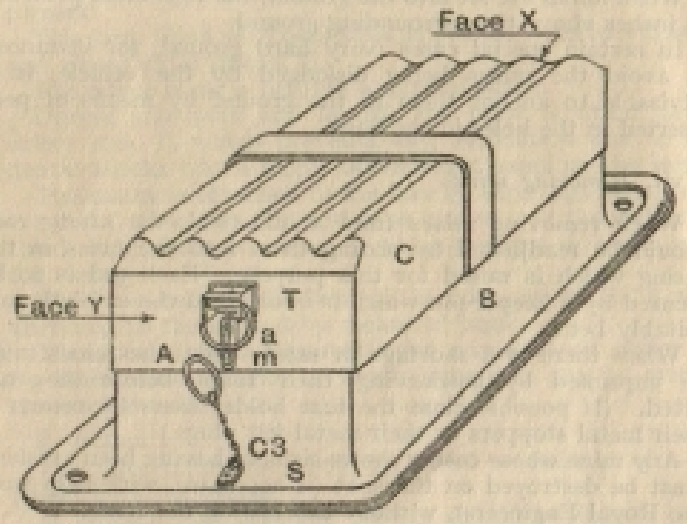
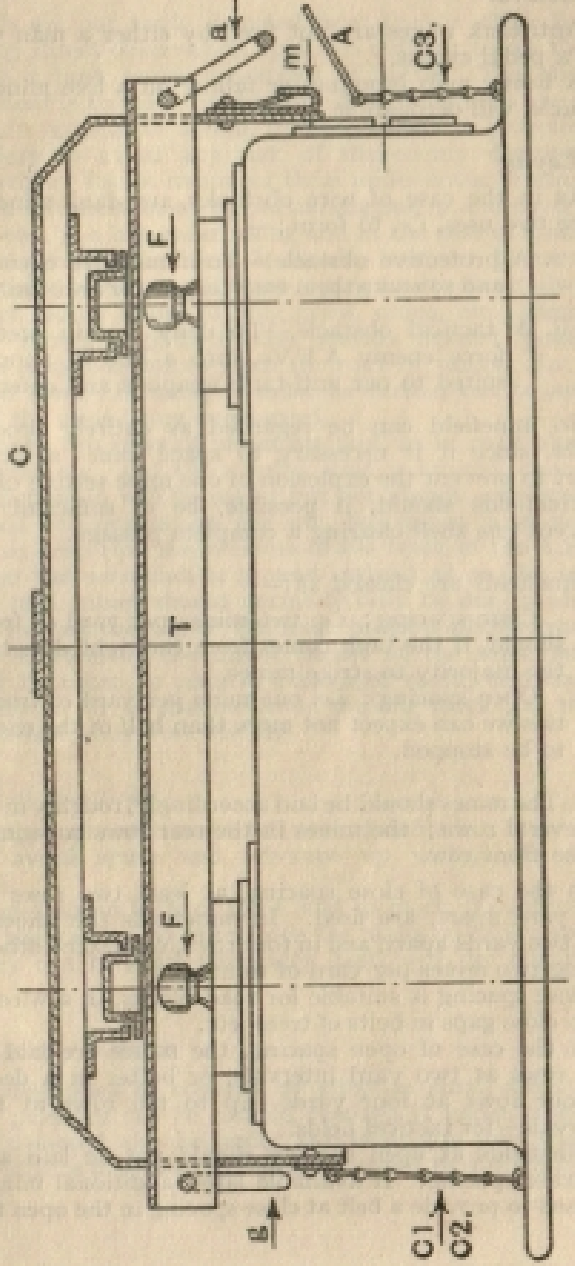


FIG. 4

Longitudinal view of the mine equipped with its fuzes; casing and safety rod are seen in section.



7. *General*

Anti-tank mines are not fired by either a man walking or by a pedal cyclist.

A heavy man jumping, or falling on a live mine, and any vehicle, will detonate it.

8. *Laying*

As in the case of wire obstacles, anti-tank mine obstacles have two uses, *i.e.* to form :—

i. A protective obstacle.—To immobilize enemy A.F.Vs. and so make them easy targets for anti-tank weapons.

ii. A tactical obstacle.—To deny certain areas and so force enemy A.F.Vs. into a line of approach best suited to our anti-tank weapons and defence.

No minefield can be regarded as entirely proof against tanks, since it is necessary to space mines sufficiently far apart to prevent the explosion of one mine setting off another.

Minefields should, if possible, be of sufficient depth to prevent one shell clearing a complete passage.

Minefields are classed as :—

Close spacing : *i.e.* two mines per yard of front which should, if the tank comes from the right direction, cause the majority to strike mines.

Open spacing : *i.e.* one mine per yard of front. With this we can expect not more than half of the enemy tanks to be stopped.

9. The mines should be laid accordingly, roughly in a pattern, in several rows ; the mines in the rear rows covering the gap in the front row.

In the case of close spacing, at least two rows of mines, one yard apart, are used. In minefields the mines may be laid two yards apart, and in four rows, or in some other pattern giving two mines per yard of front.

Close spacing is suitable for road blocks, in a wire obstacle, or to close gaps in belts of trees, etc.

In the case of open spacing, the mines are laid either in two rows at two yard intervals, or better in a deeper field of four rows at four yards—up to ten rows at ten yards intervals—for tactical fields.

Minefields at open spacing should not be laid at exactly accurate spacing. If available later, additional mines should be used to provide a belt at close spacing in the open minefield.

10. *Concealment*

Minefields are not easily detected from the air either from photos or by direct observation, and it is difficult to see them from inside a tank under conditions of battle. The object of concealment is to make doubly sure that minefields are not discovered in or prior to action, by observation or patrolling, and therefore to avoid any risk of the enemy destroying them by artillery fire or removing them under cover of smoke.

The work of concealment by partial digging in and covering with sods, etc., is a big undertaking and in the case of a minefield may not be practicable. It should, however, be carried out when time allows, and every opportunity must always be taken of hiding mines in long grass, crops, etc. Besides concealing mines, digging-in also guards against possible devices for sweeping mines from in front of tanks. In the case of the Mark III mine, it must be carried out to avoid the risk of the mine being overturned.

Where only two rows of mines are laid, as in road blocks, belts of trees, etc., and the number used is limited, concealment by digging-in will be useful but not always practicable. The method will depend on the site, but mines must never be dug in so deep that the pressure of the track of the A.F.V. is taken on the surrounding ground instead of on the mine itself. In fact, mines should normally only be dug in about 2 in., *i.e.*, so that the top of the mine projects above ground level and so receives the direct thrust of the tank track. Care must be taken to remove excavated earth, and laying parties must as far as possible avoid making tracks, as these are very conspicuous from the air.

11. *Siting of minefields*

Attacking tanks will make full use of defilade ; they will probably avoid spurs and advance up valleys, between woods, etc.

Therefore join up belts of trees, and so block the intervals, and mine the valleys, so as to force the tanks on to the spurs, where they can be more efficiently dealt with by anti-tank weapons.

12. *Defence of minefields*

A minefield *must* be covered by effective small arms fire, otherwise passages can be cleared through it under cover of smoke. It should also be under anti-tank gun fire, since a tank may still be able to fire although stopped by the explosion of a mine.

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A minefield *must* be covered by effective small arms fire, otherwise passages can be cleared through it under cover of smoke. It should also be under anti-tank gun fire, since a tank may still be able to fire although stopped by the explosion of a mine.

Minefields must never be laid indiscriminately. The policy regarding their location will be decided by the superior commander who will take into account the necessity for leaving clear areas for counter-attack and for administrative purposes. The actual siting will be carried out under orders of the commanders of defensive sectors, and will be carefully recorded on a map which will be kept with the defence scheme. All concerned must know the location of minefields.

13. *Procedure*

i. Mark I mines should be armed at the site of the minefield if possible. If the time factor or the tactical situation necessitate arming before arrival at the site they can be carried across country in their boxes provided reasonable care is exercised. A proportion of any mines carried armed across country should be examined before laying to ensure that shearing of the shear wire has not started. If a box of armed mines is dropped it must be laid aside and all the shear wires examined before laying.

The personnel in the field stores section of the field park company is insufficient to undertake the arming of large quantities of mines except at a very slow rate. When this has to be done, the general staff must provide the necessary working party.

A mine should not be fuzed (*i.e.*, the detonator inserted) until the mine has actually been laid in position.

Orders should be given as to the time at which minefields are to be made live.

ii. The time taken for laying depends on circumstances. The following times, which exclude the time required for bringing mines to the site, can be taken as a guide.

(*a*) One man takes about 15 minutes to arm a box of Mark I mines.

(*b*) Close spacing.—Three men can "arm," lay and fuze 20 mines in about 20 minutes. This allows for no special concealment, or burying.

(*c*) Open spacing.—One sub-section (approx. 10 men) of a field company can arm, lay and fuze 250 yards of open spacing live minefields 10 rows (100 yards) deep in 1½ hours by day, assuming vehicle available to distribute mines.

(*d*) If mines arrive at site "armed," the above times can be reduced by at least half.

(*e*) If mines are partially buried or concealed the times must be greatly increased, depending on the work involved.

(*f*) With trained infantry, two sections may be taken as the equivalent of an R.E. subsection.

iii. Mark II mines are "live" as soon as fuzed; this should therefore be done on or near the site. As arming is not necessary, the process of making "live" is much quicker than with the Mark I mine. Timings are not yet available.

14. *Training mines*

The following types of training mines have been or will shortly be issued :—

i. Drill mine Mark I

Similar to an unfilled service mine (Mark I) for individual instruction in arming and fuzing Mark I mines.

ii. Drill mine, Mark II

Represents the Mark II service mine. To be used for indivuidal instruction in the use of Mark II mines, and for practice in distribution and laying of minefields.

Amendments to the Handbook for the Mine, Contact, A.Tk., Mark I, 1936, are under preparation.

iii. Mines, contact, practice

A mine containing chemicals which emits smoke when crushed. For use in exercises where the enemy is represented.

iv. Dummy mines

Though dummy mines are no longer used as such in the field, they can be used for training purposes to represent real mines in the laying of minefields until drill mines are available in sufficient quantity.

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