

APPENDIX B

Demolitions

GENERAL

There will be times when you have to use demolitions for:

- Breaching minefield.
- Breaching wire obstacles.
- Clearing landing zones.
- Blowing holes in walls of buildings.
- Blowing down trees to create obstacles.

HOW TO PREPARE FIRING SYSTEMS

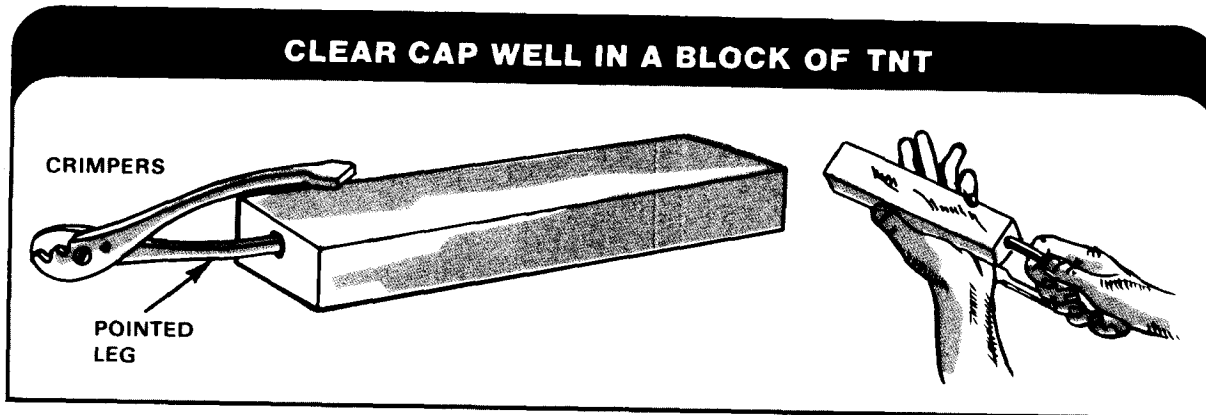
Information on the preparation and placement of demolition charges is in FM 5-25 and in GTA 5-10-27. This appendix covers the preparation of firing systems that are basic to all demolition work. There are two types of firing systems – NONELECTRIC SYSTEM and ELECTRIC SYSTEM.

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NONELECTRIC SYSTEM

To prepare a nonelectric firing system, take these steps:

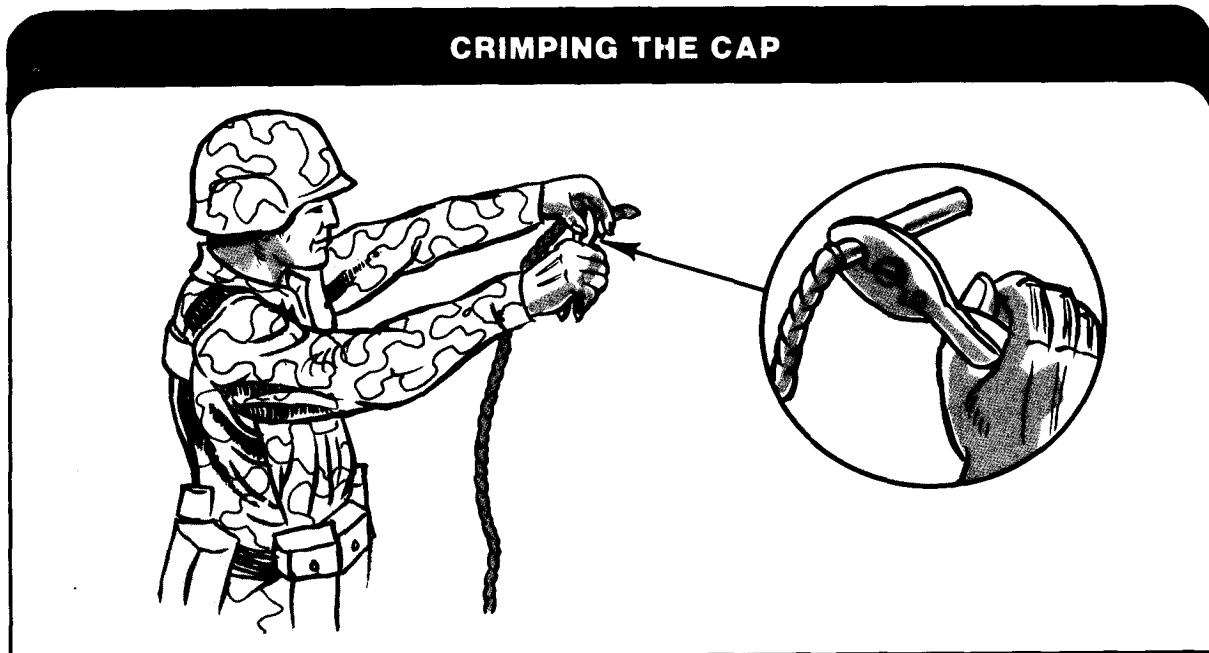
- **STEP 1.** Clear the cap well of a block of TNT or push a hole about the size of a blasting cap (3 cm [1 1/8 in] deep and .65 cm [1/4 in] in diameter) in a block of C4 explosive.



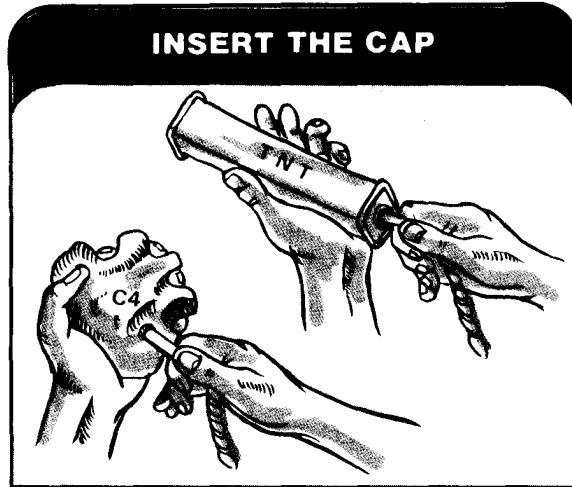
- **STEP 2.** To help prevent a misfire, cut and discard 15-cm (6-in) length of fuse from the free end of the time blasting fuse. That part of the fuse may have absorbed some moisture from the air through the exposed powder in the end of the fuse.



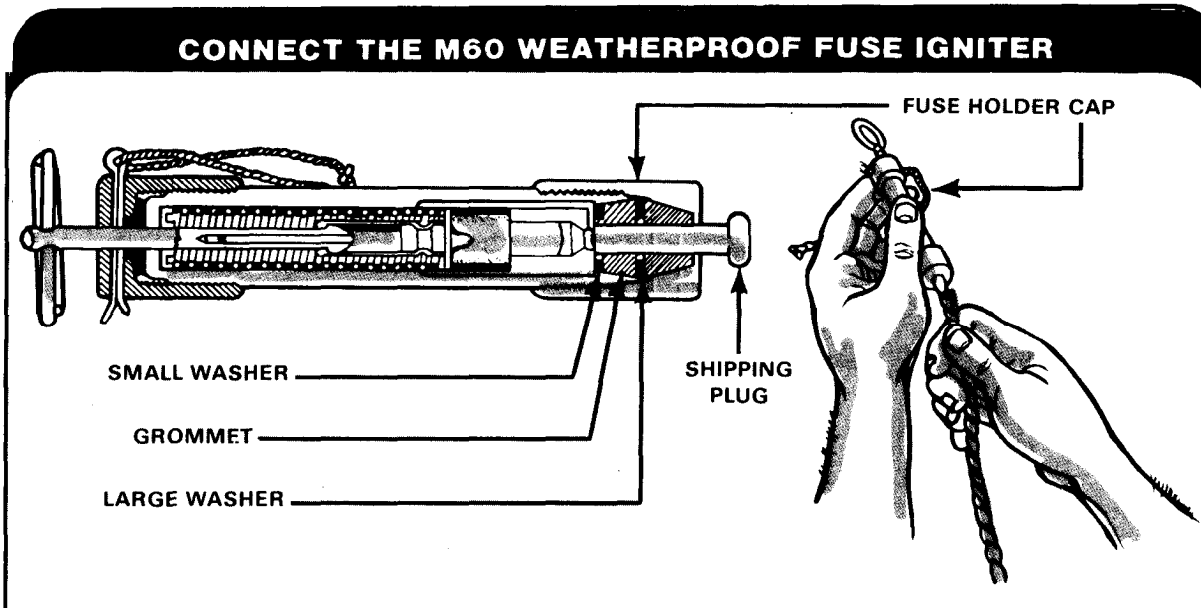
- **STEP 3.** Determine what length of fuse is needed. To do this, first compute the burning time of a 91.4-cm (3-ft) section of fuse. Divide this burning time by 3 to find the burning time of 30.5 cm (1 ft) of fuse. Next, determine the time it takes to reach a safe distance from the explosion. Now divide the time required to reach that distance by the burn time of 30.5 cm (1 ft) of fuse. This will give the number of centimeters (ft) of fuse needed.
- **STEP 4.** Inspect the nonelectric blasting cap to make sure it is clear of foreign matter.
- **STEP 5.** Gently slip the blasting cap over the fuse so that the flash charge in the cap is in contact with the end of the time fuse. **DO NOT FORCE THE FUSE INTO THE CAP.**
- **STEP 6.** After seating the cap, crimp it 3.2 mm (1/8 in) from the open end of the cap. Hold it out and away from your body when crimping.



- **STEP 7.** When using TNT, insert the blasting cap into the cap well. When using C4, place the cap into the hole made in the C4 and mold the C4 around the cap. **DO NOT FORCE THE CAP INTO THE HOLE.**

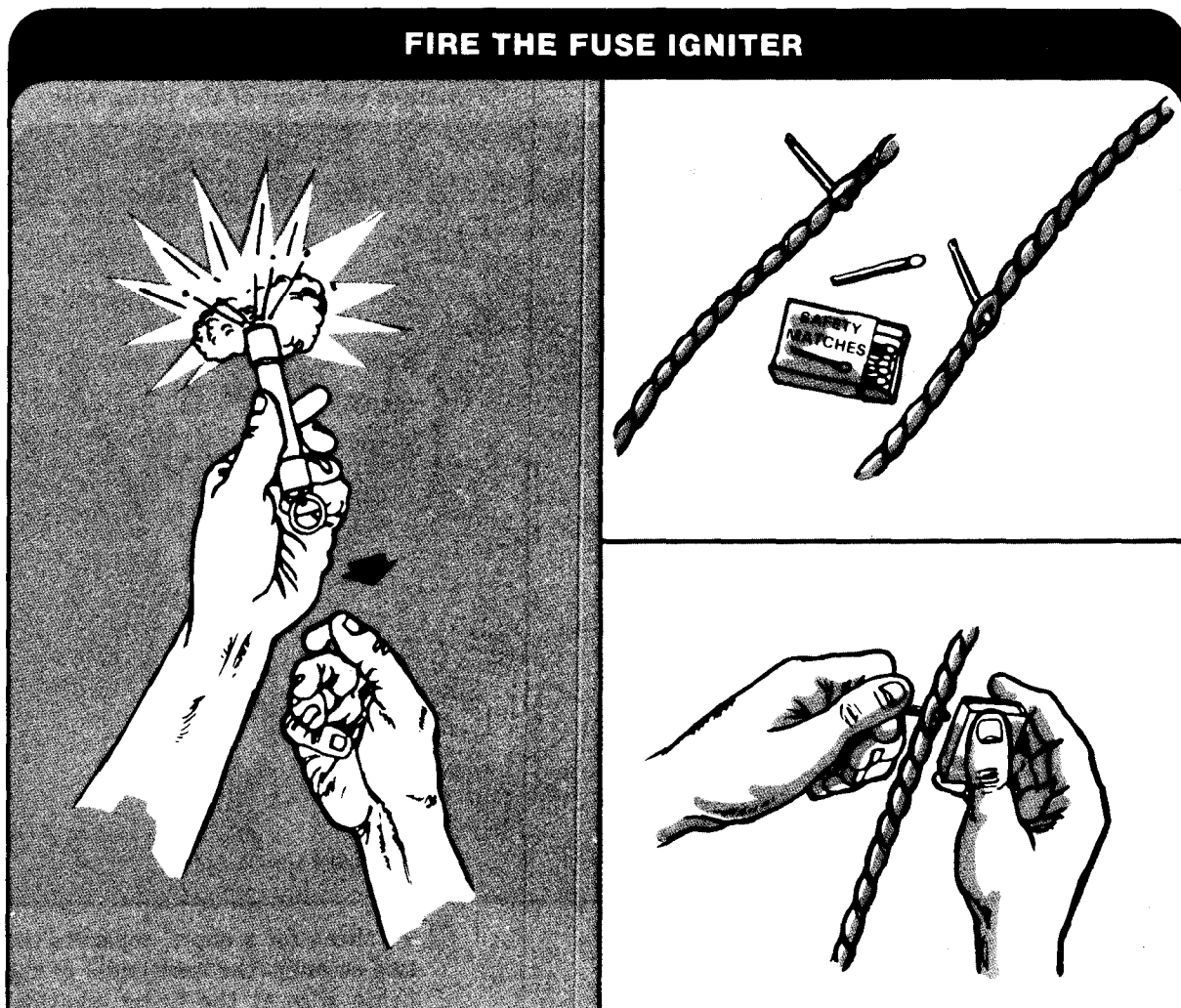


- **STEP 8.** Insert the free end of the fuse into an M60 fuse igniter and secure it in place by screwing on the fuse holder cap.



- **STEP 9.** To fire the fuse igniter, remove the safety pin, hold the barrel in one hand. Take up the slack, before making the final strong pull. If the fuse igniter misfires, reset it by pushing the plunger all the way in. Then try to fire it as before. If it still misfires, replace it.
- **STEP 10.** If a fuse igniter is not available, split the end of the fuse and place the head of an unlighted match in the split. Make sure the match head is touching the powder train.
- **STEP 11.** Then light the inserted match head with a burning match or strike the inserted match head on a matchbox.

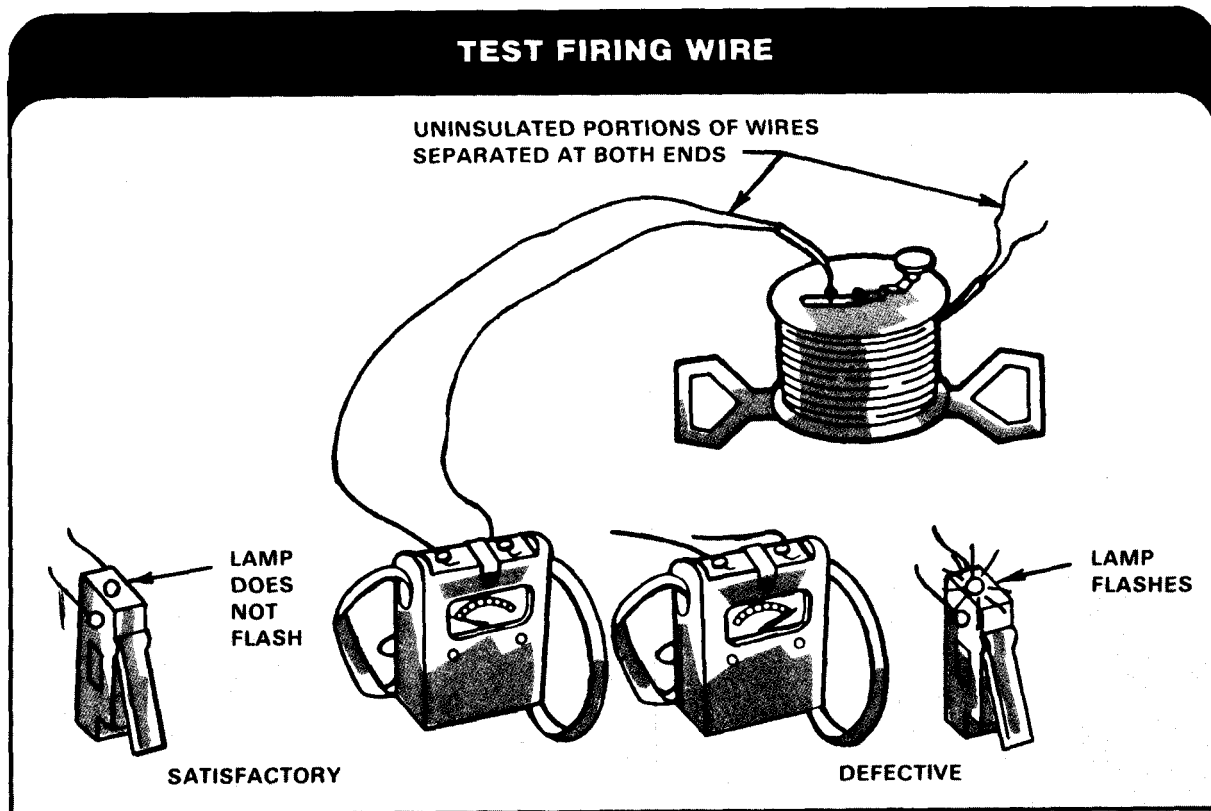
If the fuse burns but the explosive charge does not go off, there is a misfire. Wait 30 minutes before trying to clear it. If the misfire charge was not tamped (nothing packed around it), lay another charge of at least one block of C4 or TNT beside it. If it was tamped, place at least two blocks of C4 or TNT beside it. Do not move the misfire charge. The detonation of the new charge should detonate the misfire charge.



ELECTRIC SYSTEM

To prepare an electric firing system, **take these steps:**

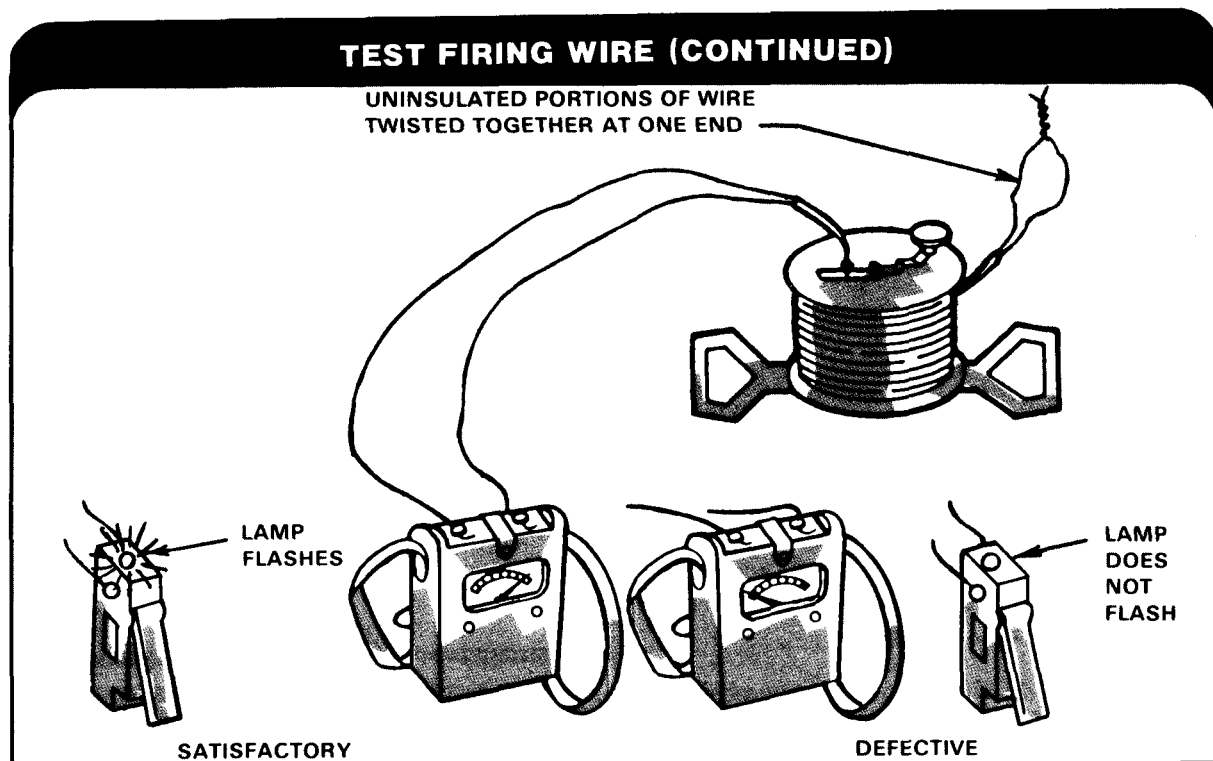
- **STEP 1.** After finding a safe firing position and a place for the charge, lay out the firing wire from the charge position to the firing position. Before leaving the charge position, anchor the firing wire to something. Always keep the firing device with you. **Do not leave it at the firing position.**
- **STEP 2.** Check the firing wire with the galvanometers or circuit taster to make sure it does not have a short circuit or a break. This is best done with one man at each end of the firing wire.



- To check for a short, separate the two strands (the bare ends) of the firing wire at the firing position.

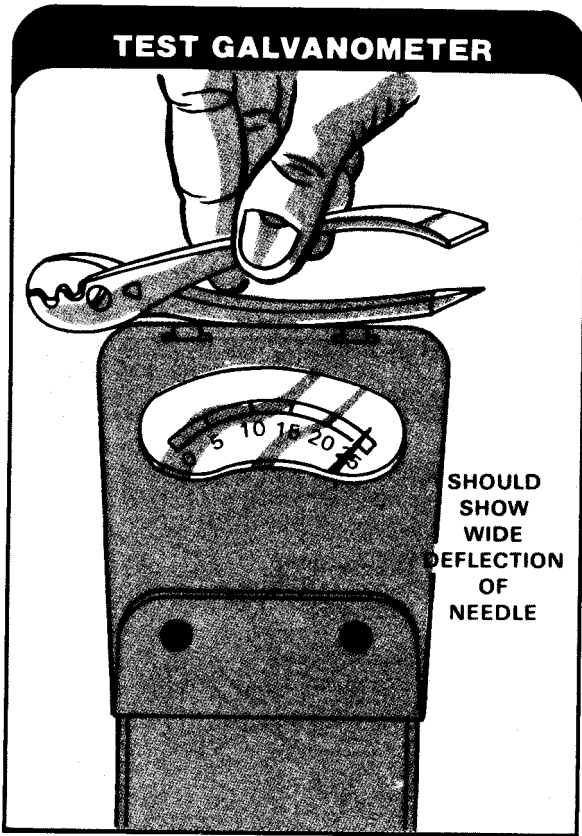
Have the other soldier do the same thing with the other end of the wire at the charge position. At the firing position, touch the bare ends of the two strands to the galvanometer/circuit tester posts. The needle on the galvanometers should not move, nor should the light on the circuit tester come on. If the needle does not move or if the light does not come on, the wire has a break — **replace it.**

- If the wire has no **short** when tested, test it for a **break**. Have the soldier at the charge position twist the bare ends of the strands together. Then touch the two strands at the firing position to the galvanometers/circuit tester posts. That should cause a wide deflection of the galvanometer needle or cause the circuit tester light to come on. If the galvanometers needle does not move or if the light does not come on, the wire has a break — **replace it.**



- **STEP 3.** At the firing position, check the blasting cap with a galvanometers or circuit tester to make sure it does not have a short. Remove the short circuit shunt and touch one cap lead wire using the galvanometers, the needle should make a wide deflection. If it does, the cap is good.

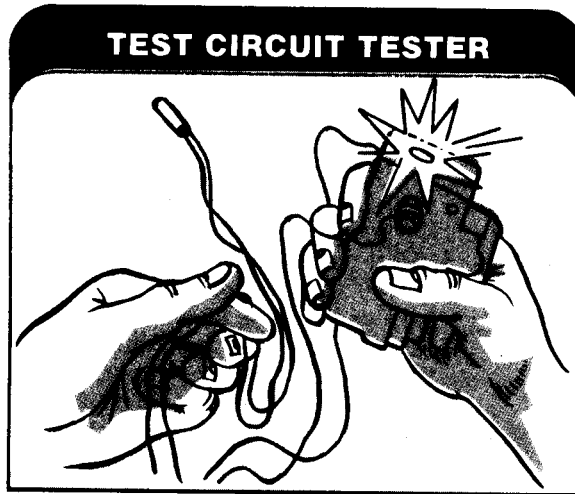
If the needle fails to move or only makes a slight deflection, **replace the cap.**



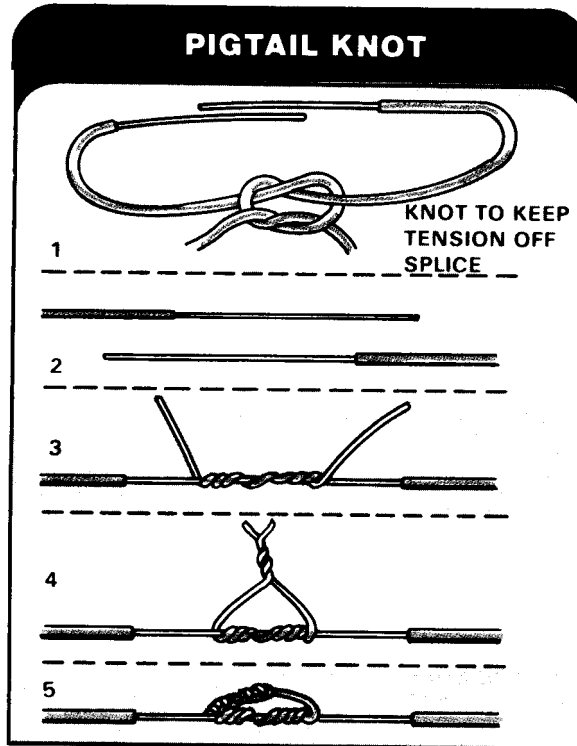
When using the circuit tester, the light should come on when the handle is squeezed. If it does not, **replace the cap.**

- **STEP 4.** Move to the charge position and, if the charge is a block of TNT, clear its cap well if the charge is a block

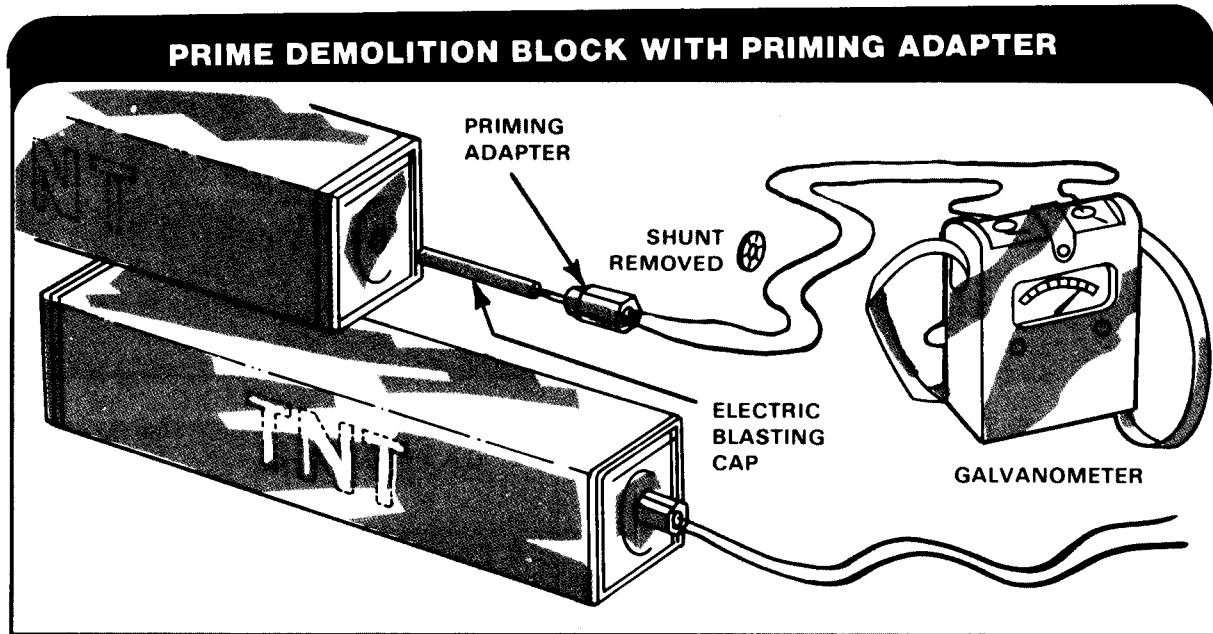
of C4 plastic explosive, push a hole in it about the size of a blasting cap.



- **STEP 5.** Position the charge. Then splice the lead wires of the cap to the firing wire (pigtail knot).



- *STEP 6.* Insert the cap into the cap well of the TNT and secure it with the priming adapter, or insert the cap into the hole made in the C4 and mold the explosive around the cap.



- *STEP 7.* Move back to the firing position and check the wire circuit with the galvanometers or circuit tester (same technique as described earlier).

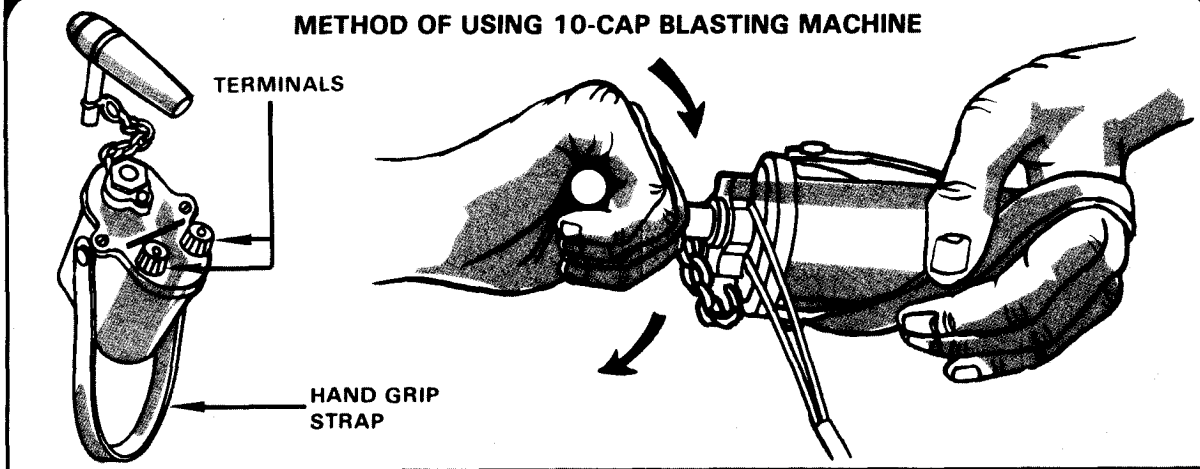
If the circuit checked out and the blasting machine does not set off the charge, there is a misfire.

If an untamped charge misfires, investigate at once. If the charge is tamped, wait 30 minutes before investigating, **then take these steps:**

- *STEP 1.* Check the firing wire connection to the blasting machine to be sure that the contacts are good.
- *STEP 2.* Make two or three more attempts to fire the charge.

TEN-CAP BLASTING MACHINE

METHOD OF USING 10-CAP BLASTING MACHINE



- **STEP 3.** Try to fire it again using another blasting machine.
- **STEP 4.** Disconnect the firing wire from the blasting machine and shunt (twist together) the ends of the wire.
- **STEP 5.** Move to the charge position to investigate. Take the blasting machine with you.
- **STEP 6.** Check the entire circuit, including the firing wire, for breaks and short circuits.
- **STEP 7.** Make no attempt to remove the primer or the charge.
- **STEP 8.** If the fault has not been found, place a new primed charge beside the misfire charge.
- **STEP 9.** Disconnect the old blasting cap wires from the firing wire and shunt the ends of the blasting cap wires.
- **STEP 10.** Attach the new blasting cap wires to the firing wire and fire the

new charge. This should also detonate the misfire charge.

WARNING

CURRENT FROM RADIO FREQUENCY SIGNALS MAY CAUSE PREMATURE DETONATION OF ELECTRIC BLASTING CAPS. MOBILE TYPE TRANSMITTERS AND PORTABLE TRANSMITTERS ARE PROHIBITED WITHIN 50 METERS OF ANY ELECTRIC BLASTING CAPS OR ELECTRICAL FIRING SYSTEMS.

LIGHTNING IS ALSO A HAZARD TO BOTH ELECTRIC AND NONELECTRIC BLASTING CHARGES. THE ONLY SAFE PROCEDURE IS TO SUSPEND ALL BLASTING ACTIVITIES DURING AN ELECTRICAL STORM OR WHEN ONE IS THREATENING.

ELECTRIC FIRING SHOULD NOT BE CONDUCTED WITHIN 155 METERS OF ENERGIZED POWER TRANSMISSION LINES.