

## **FIELD-EXPEDIENT BREACHING OF COMMON URBAN BARRIERS**

*An integral part of combat in built-up areas is the need to gain access to compounds, buildings, and rooms. Mechanical breaching of doors or windows using weapons fire, sledgehammers, bolt cutters, saws, or crowbars is almost always an option for infantrymen attempting to gain rapid access, but it is sometimes too slow or exposes them to too much risk of enemy fire. Explosive breaching is often the fastest and most combat-effective method. With a little time to prepare, units can use slightly modified standard Army demolitions to breach all common urban barriers.*

### **M-1. FORCE PROTECTION**

As in all operations involving demolitions, soldiers must take care when fabricating, carrying, and using field-expedient explosive devices. Leaders must ensure that all the standard procedures and precautions outlined in doctrinal and training material for Army demolitions activities are followed. This is dictated by more than just the commander's concern for the safety and welfare of his individual soldiers. Accidental or premature detonation of demolitions during combat not only can injure or kill friendly soldiers but also can jeopardize the unit's mission. During combat, soldiers often need to position themselves close to breach points in order to enter quickly and overcome enemy resistance before the effects of the explosion subside. However, a soldier who is too close to an explosion and injured by flying debris is considered a casualty the same as one who is shot by the enemy. The unit must accomplish its mission without sustaining friendly casualties from its own demolitions. All demolitions have the potential to cause injury to nearby personnel, mainly from flying debris but also from blast and noise overpressure.

### **M-2. BREACHING REINFORCED AND NONREINFORCED EXTERIOR WALLS**

The Army issues both bulk explosives (TNT or C4) and prepackaged satchel charges that are powerful enough to breach all but the most heavily reinforced exterior walls. In some situations, satchel charges may be unavailable or they may prove to be too powerful for the breach required. In high-intensity urban conflict, the situation may call for large amounts of bulk explosive, but in many situations the commander wants to create a smaller-size hole than the M37 or M183 satchel charges normally produce. Smaller, yet effective, satchel charges can be improvised. Experimentation can determine the correct size of

these improvised satchels, depending on the types of walls found in the battle area.

a. General-purpose satchel charges can be assembled using empty machine gun ammunition bandoleers filled with various amounts of C4 explosive.

(1) Connect a short length of detonation cord firmly to the explosive and leave it dangling. Tape the explosive securely into the bandoleer.

(2) Hang the charge on a wall by the bandoleer strap or prop it against the wall using a stick or other object. Satchel charges detonated while held firmly against the target wall at about shoulder height produce the best effects.

(3) Prime the charge, attaching either an electric or nonelectric firing system to the short length of detonation cord left dangling.

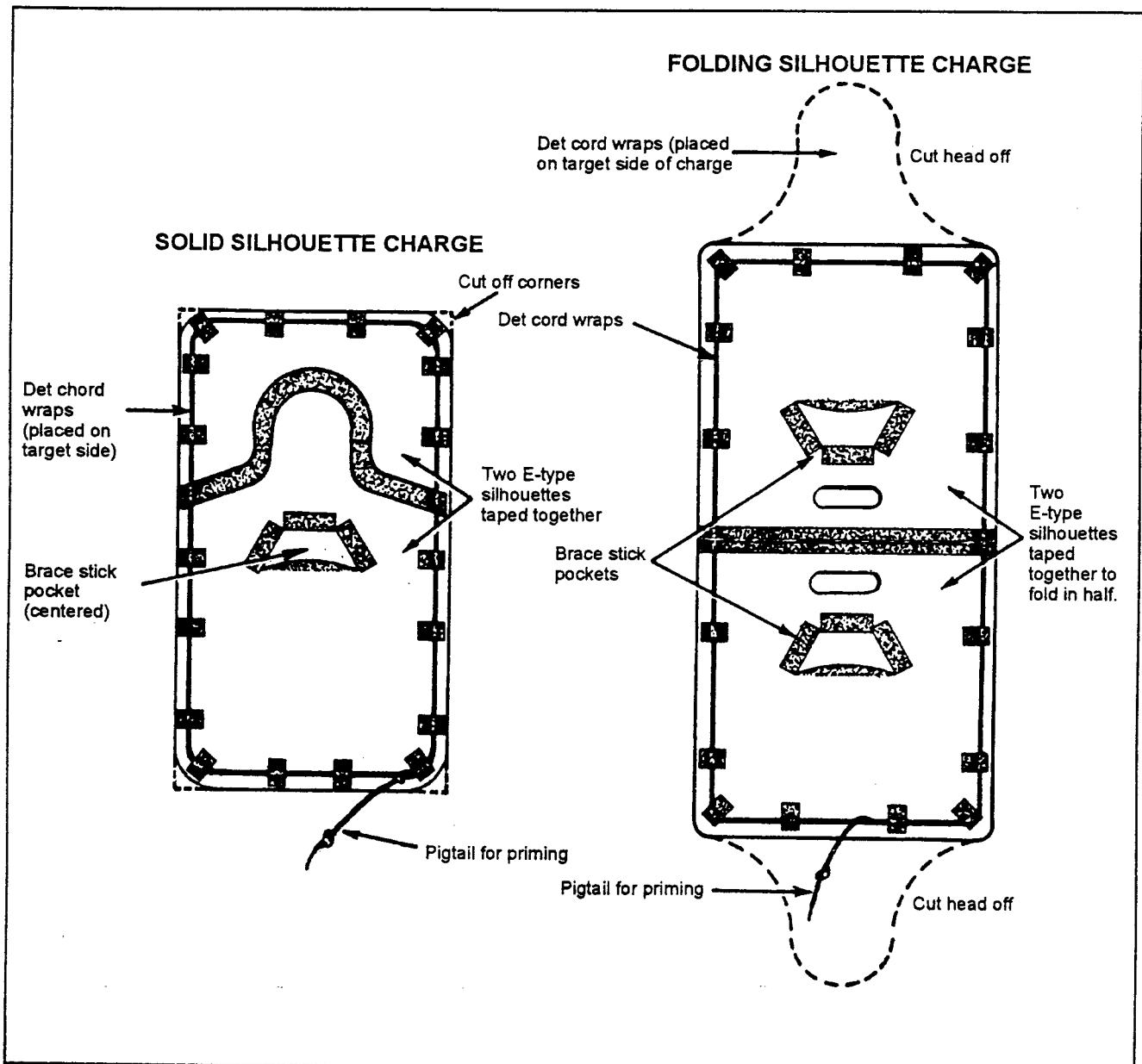
When used against nonreinforced concrete walls, a satchel charge containing 2 pounds of C4 normally produces a mousehole; 5 pounds create a hole large enough for a man to move through; 7 pounds create a large hole through which two men can move simultaneously; and 10 pounds can blow a hole large enough to drive a vehicle through. The 10-pound charge may also destroy the entire building if it is not of sturdy construction.

b. A useful breaching charge improvised by light engineer sappers during combat operations in Somalia consisted of a 3-foot length of engineer picket (U-shaped engineer stake) packed with 4 to 8 pounds of C4. The explosive was primed with detonation cord and taped securely to the picket. When needed, the picket was placed upright with its flat side against the wall, held to the wall by another stake, and then detonated. This charge could be rapidly fabricated, was sturdy, and could be easily and quickly emplaced. According to reports from the field, this device would blow a hole about 4 feet wide and 8 feet high in a nonreinforced concrete wall (common in the third world). The charge would throw fragments from the picket straight back for long distances (from 50 to 100 meters) but was fairly safe to either side. In combat, infantrymen could stand about 20 meters from the picket, crouched tightly against the wall with their backs turned to the explosive, without undue risk. This allowed them to follow up on the explosion with a rapid assault into the compound or building before the occupants could recover.

### **M-3. BREACHING INTERIOR WALLS AND PARTITIONS**

Interior walls generally require much less explosive to create a satisfactory breach than do exterior, load-bearing walls. An easily fabricated silhouette charge can further reduce the amount of explosive needed to breach plywood, sheet rock, or light plaster walls. It can also be used to breach wooden or metal doors. This charge produces a hole large enough for a man to run through. It can be emplaced quickly and throws only a small amount of dangerous material back into the first room.

a. Tape two E-type silhouette targets or similar stiff cardboard together. To make the charge easier to carry, it can be built to fold in the middle (Figure M-1). Rounding the corners makes the charge easier to handle.



**Figure M-1. Construction of solid and folding silhouette charges.**

b. Place detonation cord or flexible linear-shaped charge (FLSC) around the edges of the silhouettes, leaving a 6-inch tail for priming. Secure the cord to the silhouette using sturdy tape. (See Table M-1 for the appropriate number of wraps of detonation cord or FLSC to breach various barriers.) Tape several small dowels or other materials at various places around the silhouette if using FLSC. This provides the necessary stand-off distance to ensure the maximum shaped charge effect. (See Table M-2 for the required stand-off distance for various sizes of FLSC.)

Type of Obstacle	Detonation Cord Needed	FLSC Needed
Hollow-core door	1 wrap	75 grain/foot
Particle-filled door (1 inch)	2 wraps	75 grain/foot
Solid wood door (2 inches)	3 wraps	75 grain/foot
High-quality solid door	4 wraps	225 grain/foot
1/4-inch plywood	1 wrap	75 grain foot
1/2-inch plywood	2 wraps	75 grain/foot
3/4-inch plywood	3 wraps	75 grain/foot
Light metal door	NA	225 grain/foot
Medium steel door	NA	300 grain/foot
Heavy steel door	NA	300 grain/foot

**Table M-1. Silhouette charge explosive loads.**

Standoff Required for FLSC	
75 grain	0 - 1/16 inch
225 grain	1/8 inch
300 grain	1/8 inch - 3/16 inch

**Table M-2. Standoff required for flexible linear-shaped charges**

c. Using heavy-duty tape, place three or four strips of double-sided contact tape on the front of the silhouette from top to bottom. Construct a sturdy pocket for a brace stick in the appropriate position on the back of the silhouette.

d. Pull the covering off the double-sided tape and place the charge against the wall at knee height, bracing it if necessary. Prime, take cover, and detonate.

**M-4. DOOR-BREACHING CHARGES**

Several different field-expedient charges can be used to breach interior or exterior doors. Among these are the general-purpose charge, the rubber band charge, the flexible linear charge, and the doorknob charge. All can be made ahead of time and are simple, compact, lightweight, and easy to emplace.

a. The *general-purpose charge* is the most useful preassembled charge for breaching a door or other barrier. As its name implies, it is useful not only for door breaching, but it can also cut mild steel chain and destroy captured enemy equipment.

(1) Start building the general-purpose charge with a length of detonation cord about 2 feet long. Using another length of detonation cord, tie two uli knots (Figure M-2) around the 2-foot long cord. The uli knots must have a minimum of six wraps and be loose enough for them to slide along the main line. Trim excess cord from the uli knots and secure them with tape, if necessary.

(2) Cut a block of C4 explosive to a 2-inch square. Tape one uli knot to each side of the C4 block, leaving the length of detonation cord free to slide through the knots (Figure M-3).

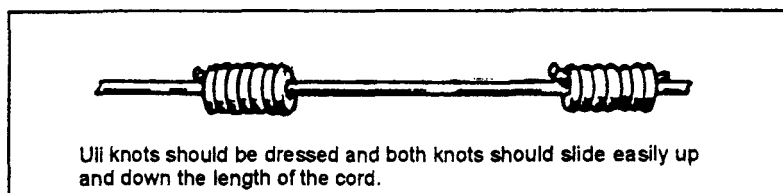


Figure M-2. Sliding uli knots.

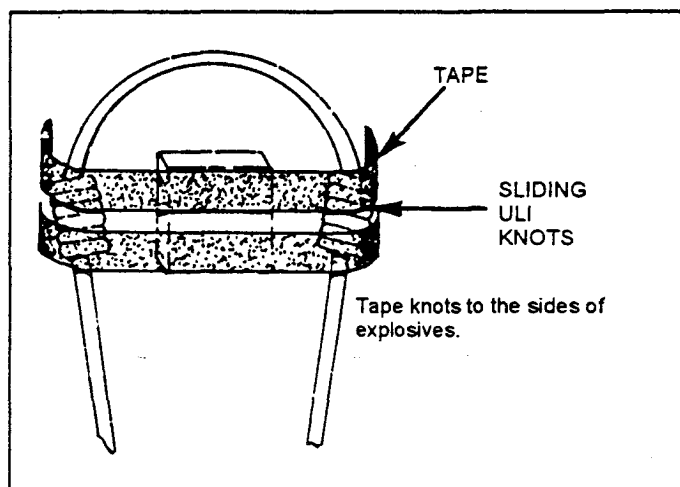


Figure M-3. Completed general-purpose charge.

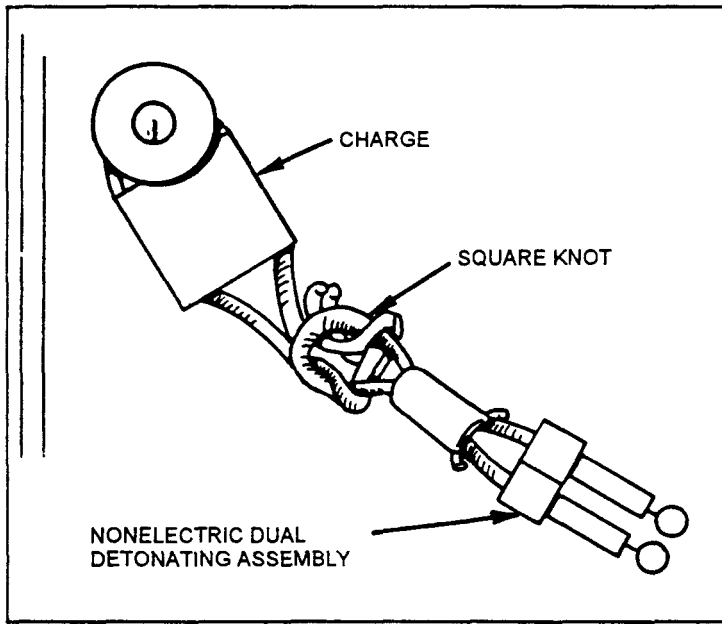


Figure M-4. Charge placement against doorknob.

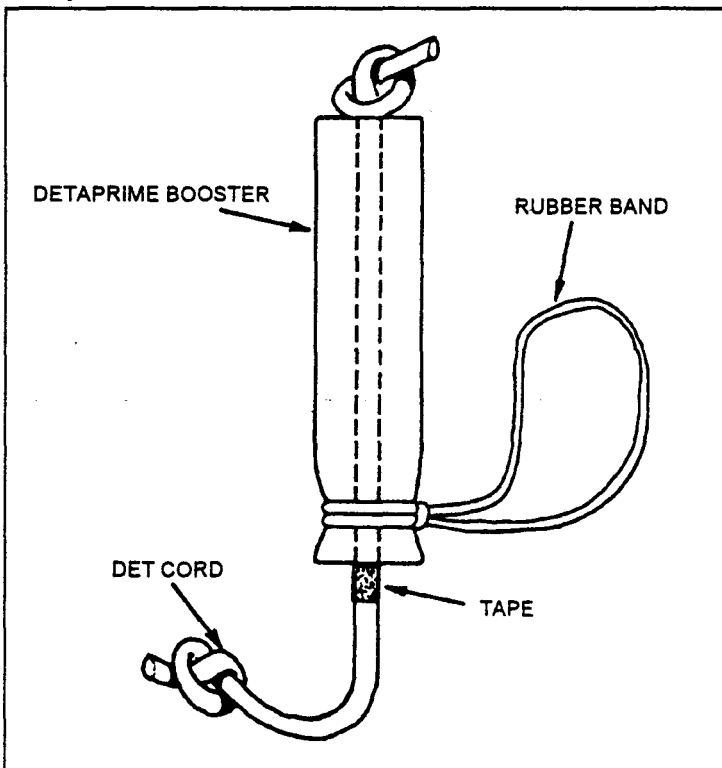


Figure M-5. Rubber band charge with Detaprime booster.

(3) To breach a standard door, place the top loop of the charge over the doorknob. Slide the uli knots taped to the C4 so that the charge is tight against the knob. Prime the loose ends of the detonation cord with either an electric or nonelectric firing system and detonate (Figure M-4). To cut mild steel chain, place the loop completely around the chain link to form a girth hitch. Tighten the loop against the link by sliding the uli knots.

b. The *rubber band charge* is another easily fabricated, lightweight device that can be used to remove the locking mechanism or doorknob from wooden or light metal doors, or to break a standard-size padlock at the shackle.

(1) Cut a 10-inch piece of detonation cord and tie an overhand knot in one end. Using another piece of detonation cord, tie a uli knot with at least eight wraps around the first length of cord. As an alternative to the uli knot, pass the detonation cord through the center of a 20-gram Detaprime booster. Slide the uli knot or the Detaprime booster tightly up against the overhand knot. Secure it in place with either tape or string. Loop a strong rubber band around the base of the uli knot tied around the detonation cord, or around the base of the booster. Tie an overhand knot in the other end of the cord to form a pigtail for priming the charge (Figure M-5).

(2) Attach the charge to the doorknob (or locking mechanism) by pulling the loose end of the rubber band around the knob. The charge should be placed between the knob and the door frame. This places the explosive over the bolt that secures the door to the frame.

c. One of the simplest field-expedient charges for breaching wooden doors is the *flexible linear charge*. It can be made in almost any length and then cut to the right size quickly just before it is used. It can be rolled up and easily carried until needed. It is effective against hollow-core, particle-

filled, and solid wood doors. When detonated, the flexible linear charge cuts through the door near the hinges (Figure M-6).

(1) Lay out a length of double-sided contact tape with the top-side adhesive exposed. Place the necessary number of strands of detonation cord down the center of the double-sided tape, pressing them firmly in place. For hollow-core doors, use a single strand. For particle-filled doors, use two strands, and for solid wood doors use three. If the type doors encountered is unknown, use three strands. One of the strands must be cut about a foot longer than the others and should extend past the end of the double-sided tape. This forms a pigtail where the firing system is attached once the charge is in place.

(2) Cover the strands of detonation cord and all the exposed portions of the double-sided tape with either sturdy single-sided tape or another length of double-sided tape. Roll the charge, starting at the pigtail, with the double-sided tape surface that is to be placed against the door on the inside.

(3) At the breach site, place the charge straight up and down tightly against the door. If the charge is too long, angle it to best fit the door. If it is too short, place it so that it covers at least half of the door's height. Prime and fire the charge from the bottom.

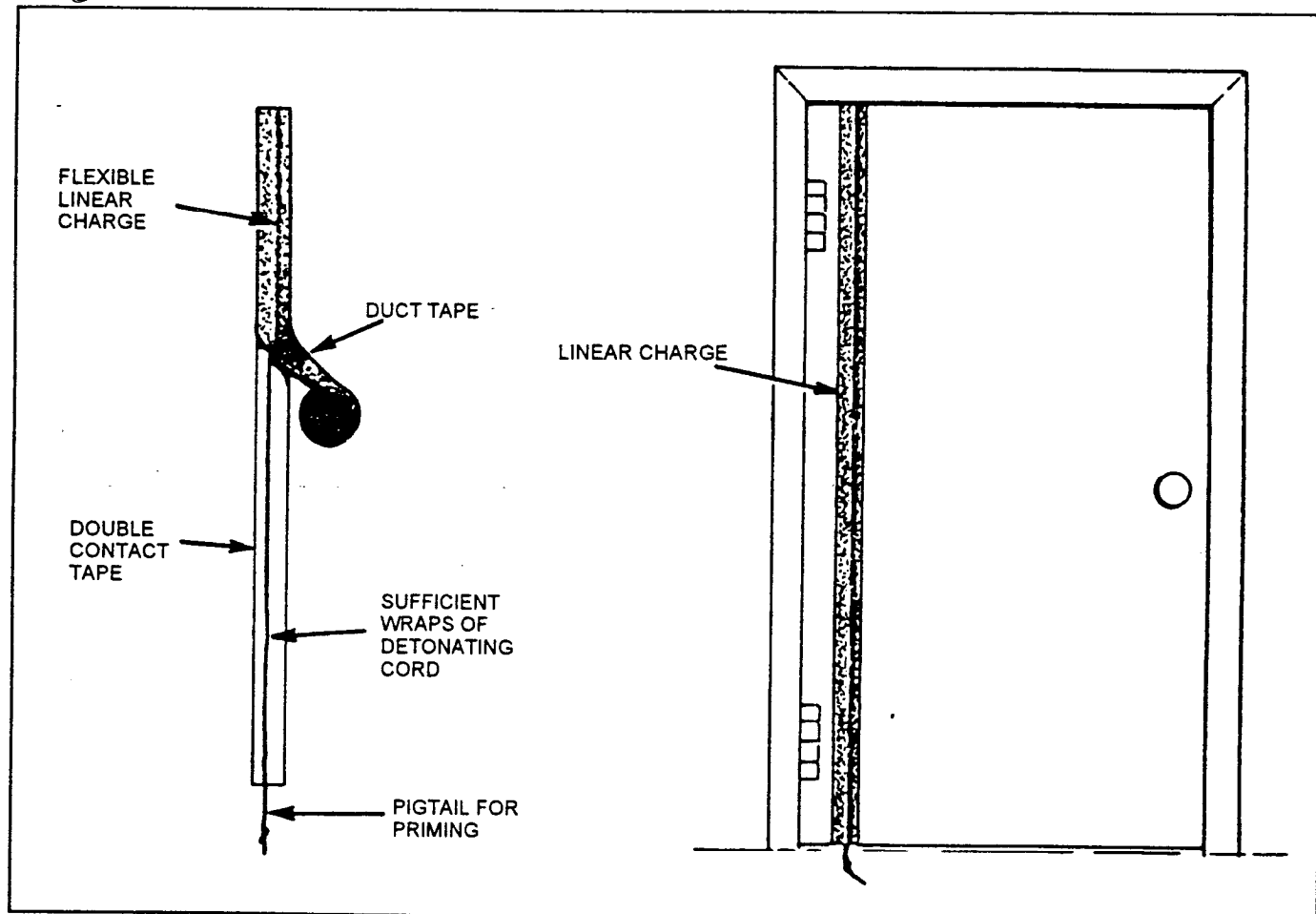


Figure M-6. Placement of the flexible linear charge.

d. A *doorknob charge* is easy to make and is highly effective against wooden or light metal doors. Charges for use against wooden doors can be made with detonation cord. If the charge is to breach a light metal door, either detonation cord (3 lengths) or 225 grain/foot FLSC should be used.

(1) Cut the appropriate amount of detonation cord for the charge. Use a 30-inch length for a hollow-core door. For a particle-filled door, use one 30-inch length and one 18-inch length. For a solid-core wooden door or a light metal door, use one 30-inch length and two 18-inch lengths.

(2) Cut the charge holder from a piece of stiff cardboard.

(3) Tape the detonation cord in the shape of a large "C" along the edge of the charge holder. Leave a 12-inch pigtail for priming (Figure M-7). Place double-sided tape on the back of the charge holder.

(4) If using FLSC, cut a length 21 inches long. Cut a 20-gram Detaprime booster in half. Tape the FLSC to the charge holder, leaving a 3-inch tail for priming. Bend the tail upward. Slide a 12-inch length of detonation cord through the Detaprime booster and tie an overhand knot on each end. Tape the booster and detonation cord combination to the tail end of the FLSC.

(5) Hang the charge on the door knob or locking mechanism. Secure it in place with the double-sided tape. The detonation cord must be held firmly against the door's surface.

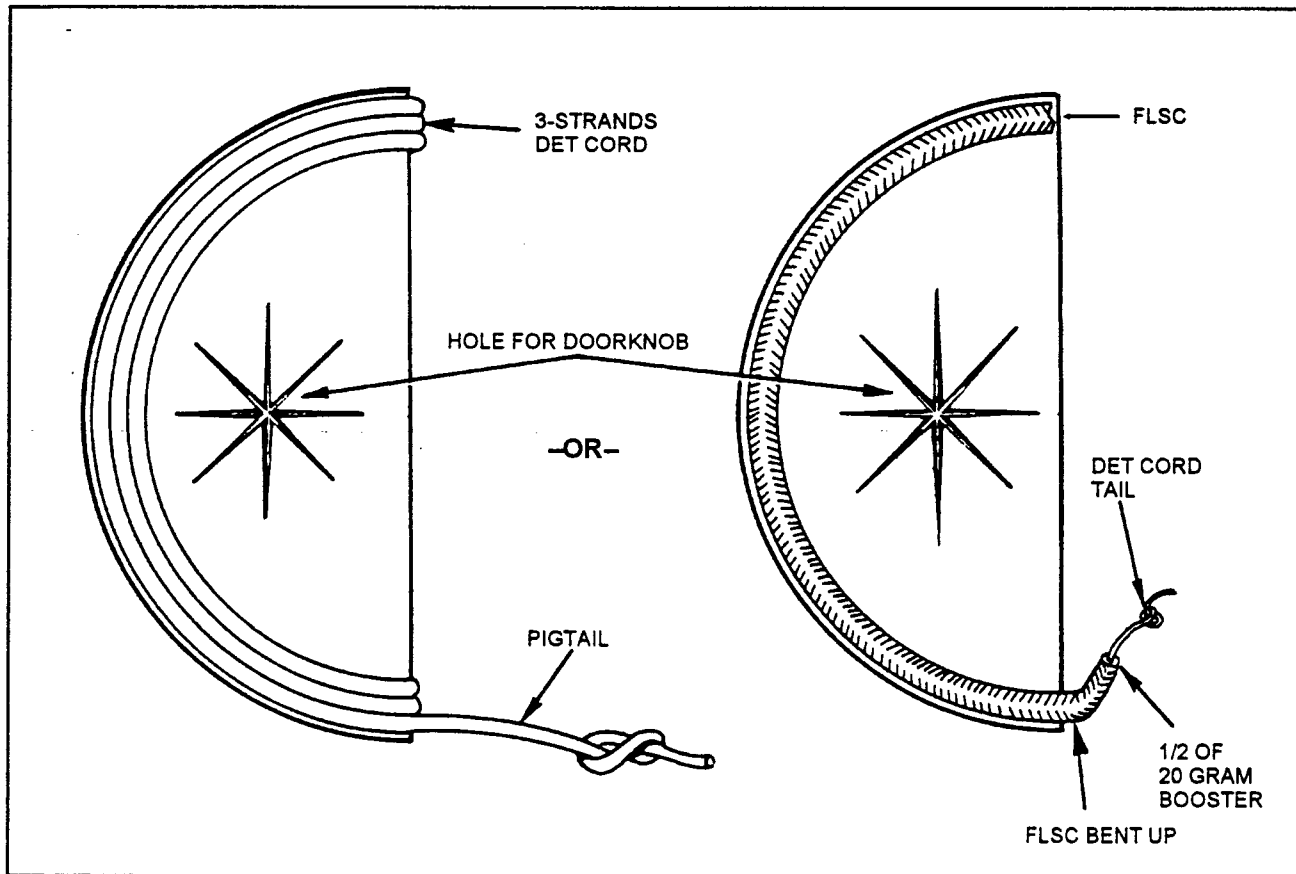


Figure M-7. Doorknob charge.