MANHOLE COVERS
REMOVING AND REPLACING

CONTENTS PAGE

1. GENERAL

1.01 This section describes the procedures to be followed when removing and replacing manhole covers.

1.02 This section is revised to:

- Add Table A
- Add information on manhole cover identification
- Add information on manhole cover removal tools
- Add information on locking manhole covers
- Add illustrations.

Revision arrows are used to indicate the more significant changes.

1.03 The wide variety of manhole covers still in service precludes illustrating every type of cover. This section deals only with the more commonly encountered covers. Observation of the safety principles included in the section should promote safe removal and replacement, regardless of the type of cover involved.

1.04 One person equipped with a B manhole cover hook can safely remove and replace most round covers. ▮The B or C manhole cover lifters and the PTS-49 manhole cover lifter provide the craftsperson with a mechanical means to aid in cover removal.▮ Use of the C manhole cover lifter permits one person to remove even the heaviest standard round cover from a relatively level frame.

2. PRECAUTIONS

2.01 Before removing a manhole cover, place warning and guarding devices in accordance with the procedures covered in Section 620-135-010. Upon completion of the work in a manhole, be sure the cover is properly replaced before removing the warning and guarding devices.

2.02 If snow, ice, or other surface conditions make the footing around the manhole opening insecure, clear the working area with a shovel or broom. If this is impractical, scatter sand or other suitable material around the opening to ensure firm footing.

2.03 Do not use an open flame or salt to thaw ice around or over a cover. An open flame is hazardous because of the possibility of an explosion in the event combustible gases are present in the manhole. Salt solution seeping into the manhole may contribute to cable and hardware corrosion. To remove ice from a cover or lifter pocket, use a hardened cold chisel.

2.04 Manhole covers are heavy and should be handled with care to avoid injury. When removing or replacing a cover, keep the feet solidly placed and positioned so they will be clear of the cover in the event it should drop.

When lifting, bend the knees slightly and keep the back straight so the work will be done with the arm and leg muscles and not the back muscles.

2.05 Two-person handling of manhole covers should be avoided wherever possible. Two-person operations are awkward and present more of a possibility of muscle strain or of the second person being struck if a manhole hook should slip. Two-person operation is desirable only when removing or replacing type A covers.

2.06 When a cover cannot readily be lifted, make certain that it is not secured by a locking device. Place a block of wood on the cover near the rim and strike the block with a heavy hammer. Do this at several points around the circumference until the cover can be pried loose, using the manhole hook or a cover lifter.

◗***Note:*** When a gasket is used on a G or H cover, the additional leverage provided by a B or C manhole cover lifter may be required to unseat and remove the cover.◖

2.07 When moving covers, always use a B manhole cover hook or a cover lifter. ***Never place the hands under a manhole cover.***

2.08 Ordinarily the cover should be left near the manhole opening. If the cover is a hazard to craftspersons, pedestrians, or vehicles, move the cover to a safe location within the protected work area.

2.09 In locations where the manhole frame and cover are set substantially off level (ie, 10 degrees or more) or where there is an inadequate working area for use of the tools described in this section, a special manhole cover lifting device such as a derrick or truck-mounted winch may be required to remove the cover.

3. ◗MANHOLE COVER IDENTIFICATION

3.01 The standard covers listed in Table A are shown in Fig. 1. Any of the tools listed in Table A may be used to remove the type cover indicated. Type A manhole frames have an inner cover below the surface cover (Fig. 2).

TABLE A

MANHOLE COVER IDENTIFICATION

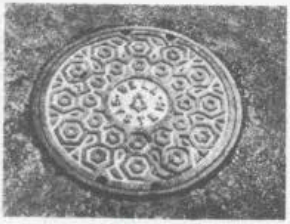
TYPE	SIZE NOMINAL DIAMETER OF OPENING (INCHES)	OUTSIDE DIAMETER OF COVER (INCHES)	COVER IDENTIFICATION	B MANHOLE COVER HOOK (AT-8172)	B MANHOLE COVER LIFTER (AT-8967)	C MANHOLE COVER LIFTER (AT-8967)	PTS-49 MANHOLE COVER LIFTER
A*	27 30	33-7/16 36-7/16	Hook holes in rim	✓		✓	✓
B†	27 30	28-15/16 31-15/16	Hook holes in rim	✓		✓	✓
C†,‡	30	31-15/16	Hook holes in rim, removable locking bolts	✓		✓	✓
D‡	30	32-1/4	Hook slots in surface, removable locking bolts	✓			
Introductory G†	27 30	28-15/16 31-15/16	Oval lifter pockets in surface	✓			
G	27 30	28-15/16 31-15/16	Rectangular lifter pockets in surface	✓	✓	✓	
Introductory H†	27 30	28-15/16 31-15/16	Oval lifter pockets in surface, captive locking assemblies	✓			
H‡	27 30	28-15/16 31-15/16	Rectangular lifter pockets in surface, captive locking assemblies	✓	✓	✓	
R	27 30	29-1/4 32-1/4	Hook slots in surface	✓			

* The frames for these covers have an inner cover below the surface cover.

† Manufacture discontinued.

‡ Locking Covers — A B-manhole wrench (AT-8454) must also be used to unlock these covers.

TYPE A



TYPE B*

TYPE C* (NOTE 1)

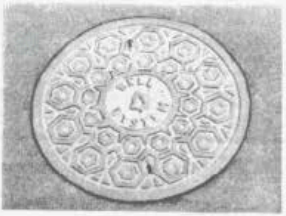
TYPE D (NOTE 2)

INTRODUCTORY
TYPE G*

TYPE G

INTRODUCTORY
TYPE H*

TYPE H (NOTE 3)



TYPE R

*MANUFACTURE DISCONTINUED

NOTES:
1. TYPE C COVER IS A LOCKING 30-INCH B COVER WITH TWO LOCKING BOLTS.
2. TYPE D COVER IS A LOCKING 30-INCH R COVER WITH TWO LOCKING BOLTS.
3. TYPE H COVER IS A G COVER WITH TWO LOCKING ASSEMBLIES.

Fig. 1—Manhole Covers

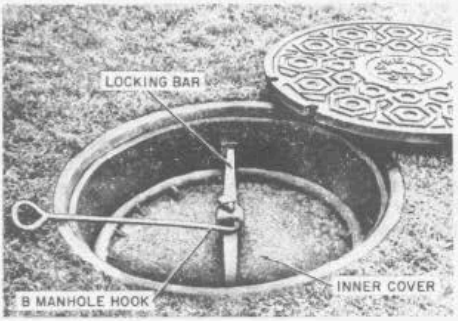


Fig. 2—Manhole Inner Cover

3.02 The B manhole wrench (Fig. 3) is a socket-type wrench designed to fit pentagonal-headed bolts or locking assemblies (Fig. 4) used on locking manhole covers. The wrench is turned by using a B manhole hook or other suitable tool as a handle.

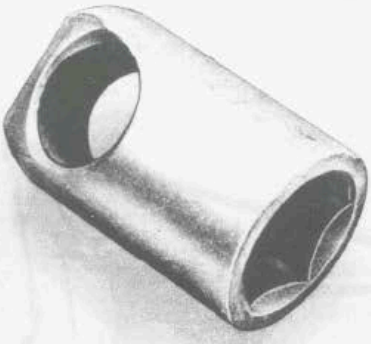


Fig. 3—B Manhole Wrench

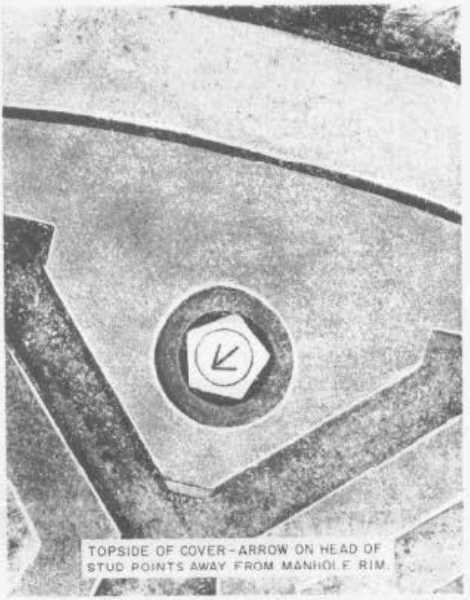


Fig. 4—Locking Assembly in Unlocked Position

4. MANHOLE COVER REMOVAL TOOLS

4.01 ***B Manhole Cover Hook AT-8172:*** The B manhole cover hook (Fig. 5) may be used to remove all manhole covers.

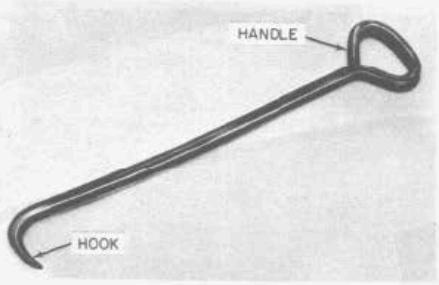


Fig. 5—Manhole Cover Hook

4.02 ***B Manhole Cover Lifter AT-8967:*** The B manhole cover lifter (Fig. 6) can only be used on manhole covers with lifter pockets.

4.03 ***C Manhole Cover Lifter AT-8967:*** The C manhole cover lifter (Fig. 7) can be used to remove round manhole covers with hook holes in either the rim or lifter pockets. The C cover lifter can also be used to remove inner covers.

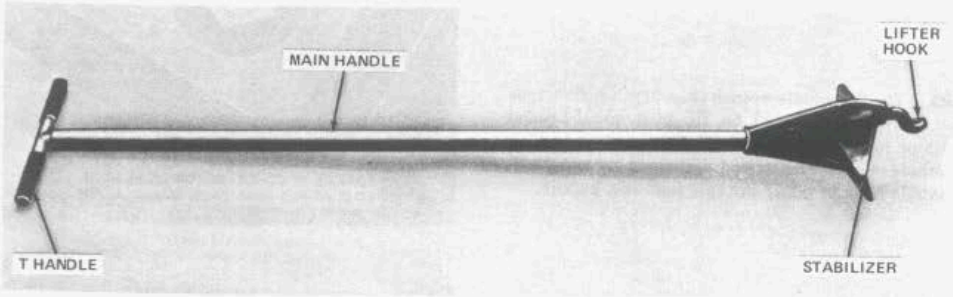


Fig. 6—B Manhole Cover Lifter

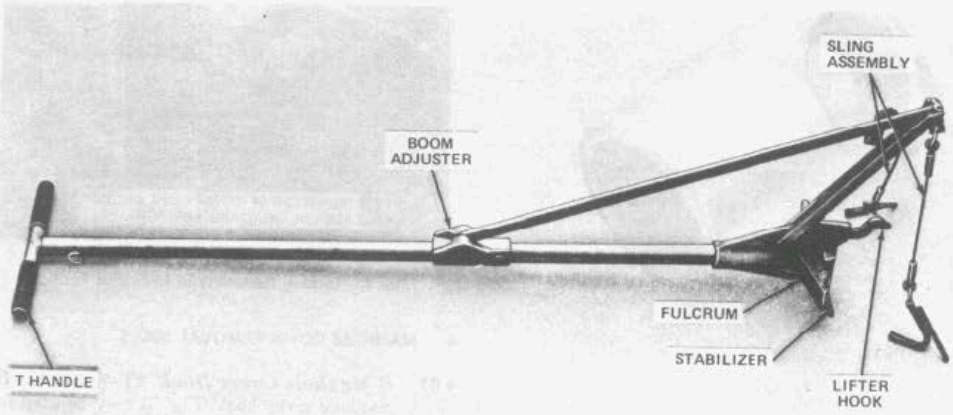


Fig. 7—C Manhole Cover Lifter

4.04 ***PTS-49 Manhole Cover Lifter:*** The PTS-49 manhole cover lifter is shown in Fig. 8. The open end of the hook can be locked in a safe, covered position for storage.

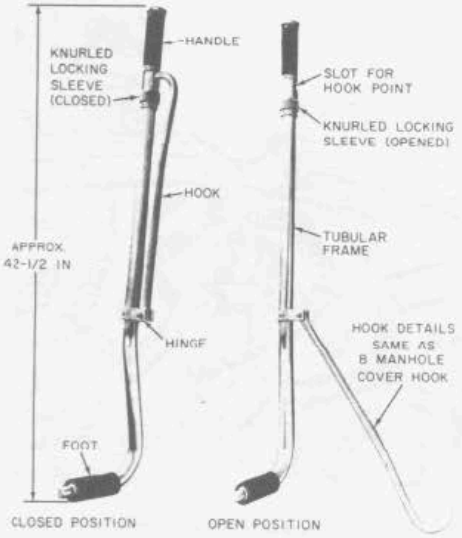


Fig. 8—PTS-49 Manhole Cover Lifter

5. REMOVING MANHOLE COVERS

Always make sure the area around the cover to be removed is clear of tools or other work obstructions before removing the cover from the frame.

5.01 After properly guarding the work area (Section 620-135-010), the manhole cover may be safely removed by working as described in the following paragraphs. Use one of the hook holes or cover lifter pockets in the cover on the side away from moving traffic, if practicable. Otherwise, move the cover in line with the direction in which traffic is moving. The object in removing the cover in this manner is that, in the event of tool slippage, any tendency to fall will be away from traffic rather than toward it. It also affords better observation of oncoming traffic while in the act of removing the cover.

5.02 If the cover is secured to the frame by a locking device, see Part 7 for unlocking procedures.

One-Person Method—Using B Manhole Cover Hook

5.03 To remove round manhole covers that have hook holes in the rim, proceed as follows:

(1) Insert the manhole hook into one of the hook holes as shown in Fig. 9.

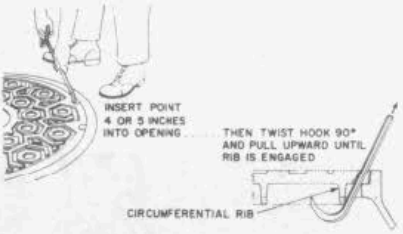


Fig. 9—Inserting Manhole Hook Into Hook Hole

(2) The cover should then be unseated approximately 4 inches as shown in Fig. 10.

Fig. 10—Unseating the Cover

(3) Slide the cover clear of the frame (Fig. 11).

Fig. 11 - Sliding Cover Clear of Frame

5.04 The type-R cover has two hook slots in the surface of the cover approximately 4 inches in from the rim. This cover can be removed by one craftsperson inserting a manhole hook in the slot and lifting and sliding the cover from the frame (Fig. 12).

Fig. 12—Preparing to Unseat Type R Manhole Cover

5.05 To remove manhole covers that have rectangular slotted lifter pockets in the surface of the cover (AT-8453 G and H covers), proceed as follows:

(1) Locate one of the lifter pockets in the cover surface and remove any dirt in the pocket with a screwdriver or suitable tool. This is accomplished by a simple jab-and-pry technique, flipping the debris toward the center of the cover (Fig. 13). To remove hardened material from the pocket, use a hardened cold chisel.

Fig. 13—Cleaning G or H Manhole Cover Lifter Pocket

(2) Insert the manhole hook into the pocket as shown in Fig. 14, making certain the hook engages the horizontal rod in the lifter pocket.

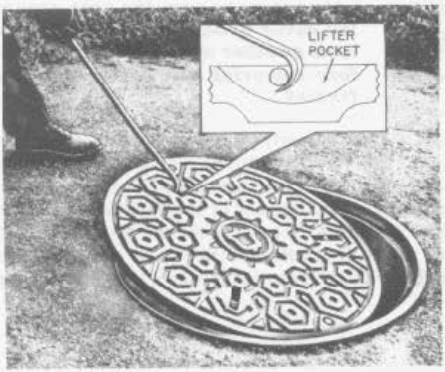


Fig. 14—Unseating G or H Covers With Rectangular Lifter Pockets

(3) The cover should be unseated approximately 4 inches (Fig. 14) by pulling with the manhole hook.

(4) Slide the cover clear of the frame (Fig. 15).

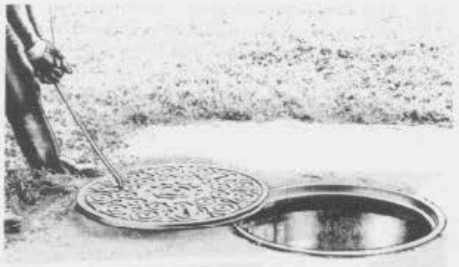


Fig. 15—Sliding G or H Cover Clear of Frame

5.06 To remove manhole covers that have oval-shaped lifter pockets in the surface of the cover (introductory G and H covers), proceed as follows:

(1) Locate two of the lifter pockets in the cover surface and remove any dirt in the pocket with a screwdriver or suitable tool. This is accomplished by a simple jab-and-pry technique, flipping the debris toward the center of the cover. To remove hardened material from the pocket, use a hardened cold chisel.

(2) Insert the manhole hook into one of the pockets as shown in Fig. 16, with the point of the hook toward the rim. ***Make certain*** that the hook tip engages the grooves as shown in Fig. 16.

(3) To unseat the cover, pry up on the handle of the B manhole hook, using the knees as a fulcrum or rest for the forearms. When the near edge of the cover is clear of the frame approximately 4 inches, rock backward on the feet and allow the far side of the cover to drop into the frame.

Note: Bosses on the undersurface of the cover will hang up on the frame.

(4) Slowly pull the cover off the frame ***until*** the bosses contact the frame.

(5) Set the cover down and move the B hook to an adjacent lifter pocket.

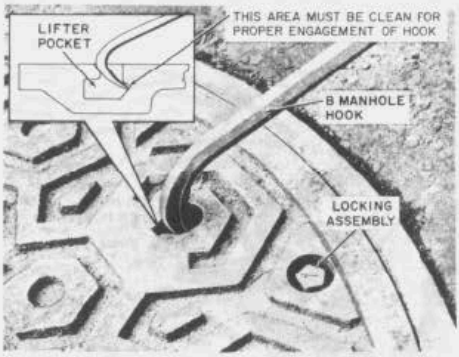


Fig. 16—Inserting B Manhole Hook Into Oval Lifter Pocket (G or H Introductory Cover)

(6) Lift the cover edge high enough for the boss to clear the frame, and pivot the cover off and clear of the frame.

One-Person Method—Using B or C Manhole Cover Lifter

In resurfaced roadways where the frame and cover are recessed in the pavement, a shim of sufficient thickness to raise the tool fulcrum to the new pavement level may be placed between the frame and tool fulcrum to provide an adequate pivoting surface. In soft unpaved areas, it may be necessary to place a block of wood or other firm material under the tool fulcrum.

5.07 To remove covers that have lifter pockets, using the B or C cover lifter, proceed as follows:

(1) Clean the lifter pocket as described in paragraph 5.05 (1).

(2) Rotate the lifter hook to its down position (Fig. 17). Hold the lifter in a vertical position and insert the hook into the lifter pocket. Lower the lifter handle so the fulcrum rests on the top edge of the manhole frame (Fig. 18).

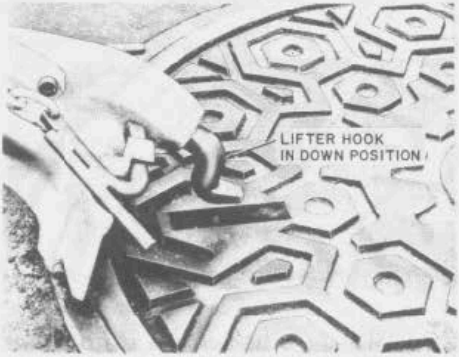


Fig. 17—Lifter Hook Ready to Insert in Lifter Pocket

Fig. 18—Manhole Cover Lifter in Positon to Lift Cover

(3) Apply downward pressure to the tool handle to raise the near edge of the cover and bring the cover into contact with the stabilizers.

(4) Continue downward pressure to raise the cover clear of the frame. Maintain downward pressure and walk sideways to pivot the tool on its fulcrum and rotate the cover clear of the opening.

(5) Set the cover down by relaxing downward pressure on the handle. Remove the tool and place it out of the way.

5.08 To remove round manhole covers that have hook holes in the rim, using the C cover lifter, proceed as follows:

(1) Release the strap to free the slings and allow the boom adjuster to slide down the tool handle. Slide the boom adjuster down the handle until the lower edge of the adjuster is adjacent to the cover size (stamped on handle) to be lifted. Insert a locking pin to lock the boom adjuster into position (Fig. 19). Rotate the lifter hook to the up position (Fig. 20).

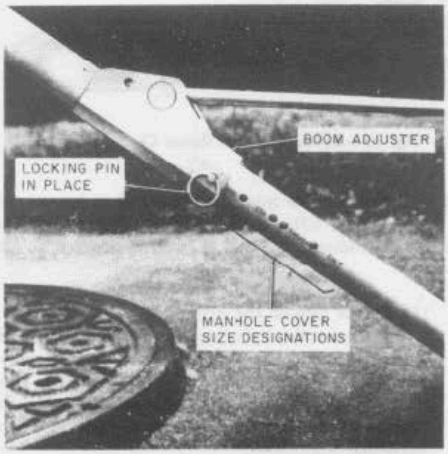
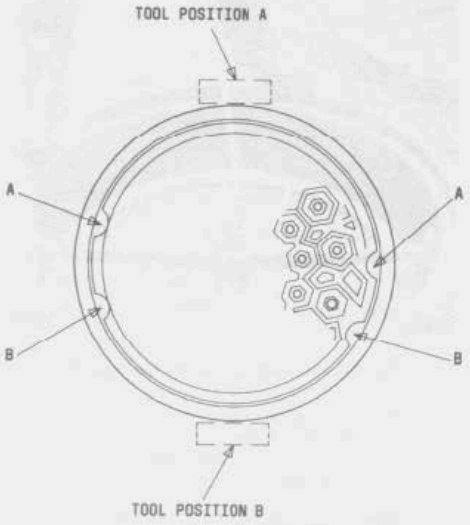


Fig. 19—Boom Adjuster Locked in Position to Remove Manhole Cover by Hook Holes

Fig. 20—Lifter Hook Rotated to Up Position

(2) Select one of the two tool positions in Fig. 21 and insert sling hooks into hook holes indicated. Place the tool fulcrum on the frame and center between the two hook holes (Fig. 21).



A = HOOK HOLES FOR TOOL POSITION
B = HOOK HOLES FOR TOOL POSITION

Fig. 21—Selection of Tool Position and Appropriate Hook Holes

(3) Apply downward pressure to the tool handle to raise the near edge of the cover and bring the cover into contact with the stabilizers.

Note: If additional leverage is required to lift the cover, remove the locking pin in the upper end of the tool handle, extend the T handle, and replace the pin (Fig. 22).

(4) Continue the downward pressure to raise the cover clear of the frame (Fig. 23). Maintain downward pressure and walk sideways to pivot the tool on its fulcrum and rotate the cover clear of the opening (Fig. 24).

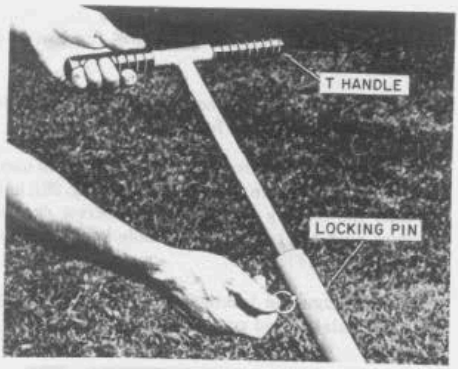


Fig. 22—Extending T Handle

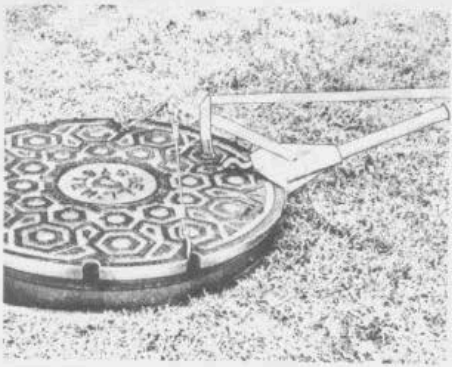


Fig. 23—Raising Cover Clear of Frame

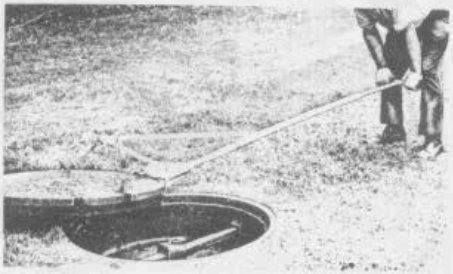


Fig. 24—Rotating Cover Clear of Frame

(5) ◗Set the cover down by relaxing downward pressure on the handle. Remove the tool and place it out of the way.◖

5.09 To remove the inner covers of A-type manhole frames, proceed as follows:

(1) Unlock and remove the padlock, if one is used (Fig. 25); remove the saddle plate (Fig. 26); and loosen the locking bar screw. The screw can be turned with the point of a manhole hook or other suitable tool (Fig. 27).

(2) Disengage the locking bar from the locking bar catches and remove it.

Fig. 25—◗Unlocking Padlock◖

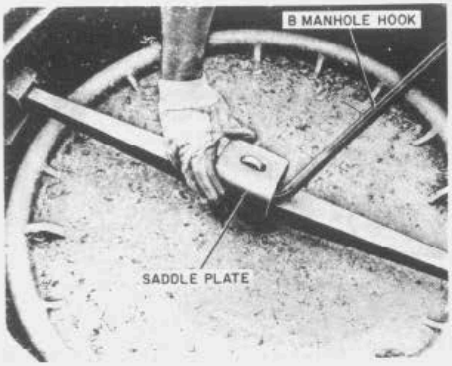


Fig. 26—◗Removing Saddle Plate◖

Fig. 27—◗Loosening Locking Bar Screw◖

(3) Slide the boom adjuster down the C cover lifter handle to the 30B designation (for 30A inner covers) or to the 27B designation (for 27A inner covers) and insert the locking pin.

(4) Remove the locking pin in the upper end of the main handle, position the adjustable T handle to the retracted position, and replace the pin. ***Engage the sling hooks in the hook holes in the rib of the cover as shown in Fig. 28, making sure that both sling hook spurs are pointing away from the fulcrum and that they engage the cover edge.***

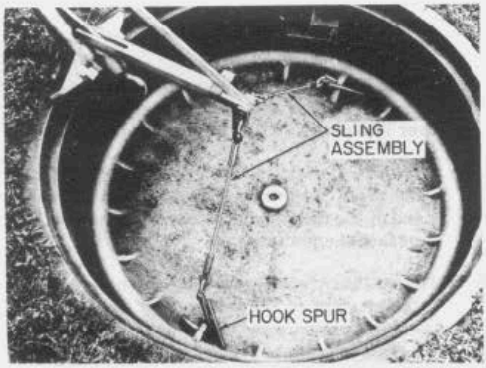


Fig. 28—◗Engaging Sling Hooks on Inner Cover◖

(5) Position the tool fulcrum on the top edge of the manhole frame. Apply downward pressure to the tool handle to lift the inner cover clear of the frame. Maintain downward pressure and walk sideways to pivot the inner cover clear of the manhole opening.

(6) Set the cover down by relaxing downward pressure on the handle. Remove the tool and place it out of the way.

One-Person Method—Using PTS-49 Manhole Cover Lifter

5.10 To remove B-type manhole covers that have hook holes in the rim, proceed as follows:

(1) Release the hook by turning the knurled sleeve. Insert the hook tip into one of the hook holes in the cover as shown in Fig. 29, making certain to insert the hook deep enough to clear the rib on the underside of the cover.

Fig. 29—Inserting PTS-49 Manhole Cover Lifter Hook Into Hook Hole

(2) Turn the hook 90 degrees, set the foot of the tool on the ground about 12 inches from the cover, take a working position as shown in Fig. 30, and unseat the cover by pulling on the handle.

Fig. 30—Unseating Cover With PTS-49 Manhole Cover Lifter

(3) Reposition the foot of the tool and make additional pulls of the handle until the cover is clear of the frame and will not interfere with the work operation or be a hazard to vehicular or pedestrian traffic.

5.11 With an A-type manhole frame and cover having an inner cover, a different procedure is necessary in order to avoid having the rib on the underside of the cover become fouled with the locking bar screw and saddle as the cover is being pulled across the frame. Proceed as follows:

(1) Insert the hook, set the foot of the tool as described in paragraph 5.10 (1) and (2), and unseat the cover sufficiently to permit sliding a B manhole cover hook under the cover and against

the frame as shown in Fig. 31. Remove the manhole cover lifter and lock its hook in the closed position. Then slide the foot of the lifter under the cover, adjacent to the B manhole cover hook as shown in Fig. 32, and raise the cover by pushing down on the handle sufficiently to reposition the hook so it lies across the locking bar and against the manhole frame. (Note the position of the hook in Fig. 33.)

(2) Remove the manhole cover lifter, reposition it on the cover opposite the hook as shown in Fig. 33, and pull the cover clear of the hook and locking bar.

Fig. 31—Inserting B Manhole Cover Hook for Positioning on Locking Bar

Fig. 32—Positioning Manhole Cover Hook on Locking Bar and Manhole Frame

Fig. 33—Pulling Cover Clear of Frame

(3) Reposition the foot of the tool and make additional pulls of the handle until the cover is clear of the frame.

(4) ◗The inner cover of the manhole frame can now be removed as described in paragraph 5.13.◖

Two-Person Method—Using B Manhole Cover Hooks

5.12 To remove A-type manhole covers, proceed as follows:

(1) Insert each manhole hook into adjacent holes in the rim as shown in Fig. 9. The hook can then be turned and raised to engage the rib (Fig. 34).

Fig. 34—◗Preparing to Unseat Cover—Two-Person Method◖

(2) Unseat the cover as shown in Fig. 35.

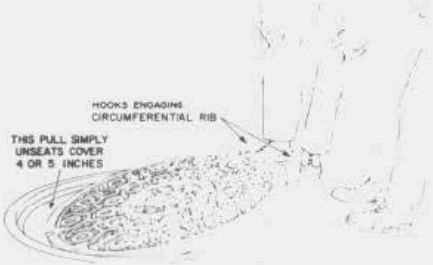


Fig. 35—Unseating Cover—Two-Person Method

(3) While one craftsperson holds the cover in the position shown in Fig. 35, the other craftsperson releases the manhole hook, moves around to the opposite side, and (while facing the first person) engages the hook under the rim of the cover as shown in Fig. 36.

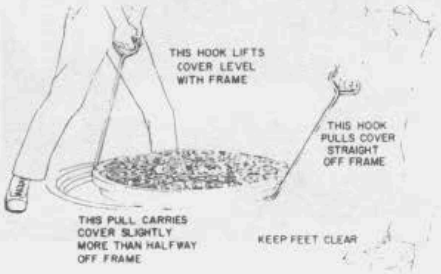


Fig. 36—Sliding Cover Partially Clear of Frame—Two-Person Method

(4) The person in the original position now pulls while the other lifts the side of the cover level with the rim of the frame and also assists in pulling to the extent permitted by the position of the person. The pull should be directly off the frame. Any attempt to swing the cover by other than a

direct pull may cause the manhole hooks to slip. It is not necessary that this pull carry the cover completely clear of the frame; only that less than half its weight be left overhanging the opening at the completion of the pull.

(5) While the person on the pulling side still has the manhole hook engaged, the other craftsperson moves around and engages the hook under the circumferential rib. The craftspersons then assume positions so that the cover can be pulled clear of the frame (Fig. 37).

Fig. 37—◗Sliding Cover Clear of Frame—Two-Person Method◖

5.13 The inner covers of A-type manhole frames are removed by unlocking and removing the padlock from the locking bar screw (if one is used), removing the saddle plate, and loosening the locking bar screw. The screw can be turned with the point of the manhole cover hook or any suitable tool. When the locking bar is free, disengage it from the locking bar catches and remove it. ◗The inner cover can then be lifted out, using two manhole hooks to engage either the handles or the hook holes provided in the ribs of the cover (Fig. 38).◖

Fig. 38—◗Removing Inner Cover—Two-Person Method◖

6. REPLACING MANHOLE COVERS

6.01 ◗With the cover close to the frame, remove all loose material from the frame seat and from the sides and seat of the cover so the cover will rest evenly in the frame. A wire brush or other suitable tool can be used for this purpose.

> ***Note:*** Where a gasket is used on a G- or H-type cover, clean and inspect the gasket before replacing the cover in the frame. If the gasket is damaged, replace it as described in paragraph 6.07.◖

One-Person Method—Using B Manhole Cover Hook

6.02 Proceed as follows:

(1) With feet spread well apart, stand slightly over the cover while facing approximately at right angles to the line on which the cover is to be moved.

(2) Place the point of the manhole hook under the rim of the cover, lift slightly, and swing the cover toward the manhole while the cover pivots on its opposite edge (Fig. 39).

◗***Note:*** When moving a G- or H-type cover in the manner shown in Fig 39, the hook must be placed under the rim directly opposite a lifter

pocket. This will allow the cover to pivot on the boss under the pocket.

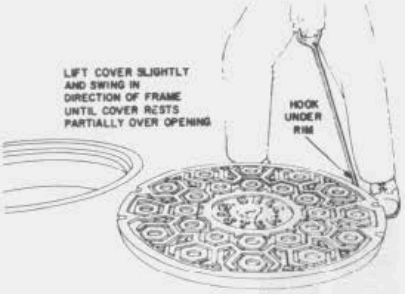


Fig. 39—Sliding Cover to Manhole Frame

(3) Change to the opposite side and repeat steps (1) and (2) until the cover rests partially over the opening of the manhole.

(4) Place the hook under the rim of the cover at the point farthest from the opening and lift until the cover slides onto its seat (Fig. 40).

Note: When replacing the outer "A" cover, do not allow the cover to strike the locking bar screw when sliding the cover into the opening. A heavy blow may bend or break the screw. The forward edge of the cover should be guided with a hook, if necessary, until it has cleared the screw.

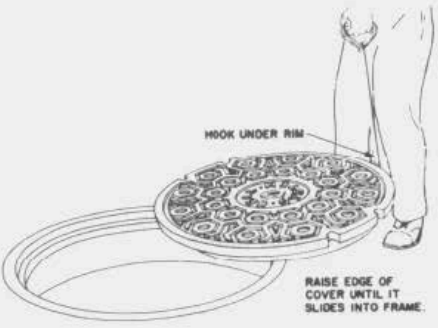


Fig. 40—Preparing to Slide Cover Onto Seat

6.03 To replace inner "A" covers, first inspect the cover to see that the rubber gasket, if present, is clean and properly held by the retaining lug (27- or 30-inch B manhole cover gaskets for "A" inner covers are available as replacement items). Remove loose material from the inner cover lip and set the cover in place. Place the locking bar into the catches on either side of the frame and turn down the locking bar screw until the inner cover is firmly seated and the locking bar is secure in the catch at each end. Place the saddle plate over the screw and snap the padlock on the eye of the screw, if the cover is locked in this manner.

One-Person Method—Using B or C Manhole Cover Lifter

6.04 To replace covers with lifter pockets, rotate the lifter hook to its down position and insert the lifter hook into the lifter pocket closest to the manhole frame. Press downward on the tool handle until the cover is clear of the ground and, while maintaining pressure on the handle, walk sideways, rotating the cover toward the manhole frame.

Note: The above procedure must be repeated, changing tool positions, until the cover can be placed on the frame.

6.05 To replace covers with hook holes in the rim, rotate the lifter hook to the up position and engage the sling hooks into the hook holes (Fig. 20) with the tool positioned nearest the manhole frame. Position the boom adjuster as described in paragraph 5.08 (1). Press downward on the tool handle until the cover is clear of the ground and, while maintaining pressure on the handle, walk sideways, rotating the cover toward the manhole frame.

Note: The above procedure must be repeated, changing tool positions, until the cover can be placed on the frame.

6.06 To replace inner "A" covers, engage the sling hooks into the hook holes in the ribs of the cover as shown in Fig. 28 and ***ensure that both sling hook spurs are pointing away from the fulcrum and that they engage the cover edge.*** Position the boom adjuster as described in paragraph 5.09 (3). Press downward on the tool handle until the cover clears the ground and, while maintaining pressure on the handle, walk sideways, rotating the cover toward the manhole frame. Repeat this procedure,

alternating tool positions, until the cover can be replaced in the frame. Inspect and secure the cover as described in paragraph 6.03.

Note: In soft unpaved areas it may be necessary to place a block of wood or other firm material under the tool fulcrum.

6.07 To replace a damaged C-type gasket on the G- or H-type covers, proceed as follows:

Unclean rims or improperly installed gaskets will not allow the cover to seat properly.

(1) Clean mating surfaces of the cover and the frame.

(2) Fit the gasket into the groove in the manhole cover rim with the gasket sealing flanges pointed outward and toward top of cover (Fig. 41).

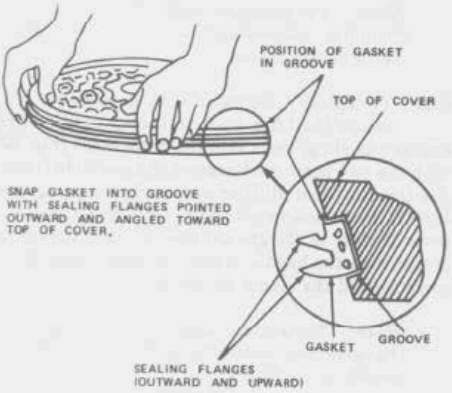


Fig. 41—Replacing C-Type Gasket

(3) Apply lubricant around the vertical surface of the manhole frame and replace the manhole cover.

Note: The C manhole cover gasket kit (AT-8572) includes a gasket, lubricant, and a lubricant applicator, as well as gasket installation instructions.

One-Person Method—Using PTS-49 Cover Lifter

6.08 Engage the manhole cover lifter hook under the rim of the cover and raise the foot of the lifter until the end of the handle rests on top of the cover as shown in Fig. 42. Then, holding the lifter foot, raise the cover slightly and swing it toward the manhole frame while pivoting it on the cover edge directly under the lifter handle.

Fig. 42—Moving Cover to Manhole Frame

7. LOCKING COVERS

Covers With Locking Bolts (C and D Type)

7.01 These covers have two pentagonal-headed bolts set 180 degrees apart at the cover circumference as shown in Fig. 1 (types C and D).

7.02 Before attempting to unseat the cover, the two locking bolts must be removed, using a B manhole wrench (Fig. 3). Unscrew the bolts by turning the wrench counterclockwise, using a B manhole cover hook or other suitable tool as a handle. If the bolts are difficult to turn, apply penetrating oil to aid in the removal. With the bolts removed, the cover can then be removed by the procedure described in Part 5.

7.03 The replacement procedure for the cover is the same as described in Part 6 except that when the locking cover is seated, the alignment marks on the cover and frame must register to permit replacing the locking bolts (Fig. 43). It is advisable to apply a small amount of grease to the threads of the bolts before replacing them to help prevent difficult removal in the future.

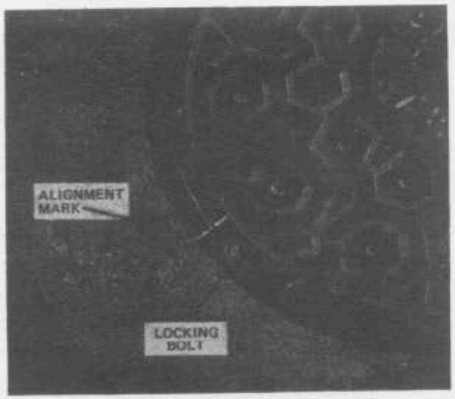


Fig. 43—◆Alignment Marks and Locking Bolt◆

7.04 Always replace ***both*** locking bolts. Start the bolts carefully to avoid cross-threading and then, using the B manhole wrench, tighten only until snug. Do not overtighten as this can make removal difficult. When using the B manhole cover hook as a wrench handle, light hand pressure on the manhole cover hook is sufficient to adequately tighten the locking bolts.

◆***Note:*** In the locked position, neither bolt should protrude above the top surface of the cover.

Covers with Captive Locking Assemblies (H Type)

7.05 These covers have two pentagonal-headed studs with a directional indicator on the top of each stud. The two locking assemblies are located in the cover surface 180 degrees apart, positioned from the Bell System logo as shown in Fig. 1 (type H).

7.06 Before attempting to remove the cover, ensure that both studs are positioned with the indicator pointing toward the center of the cover (unlocked position). This is accomplished by turning each stud counterclockwise (about 140 degrees) with a B manhole wrench until hitting the stop (Fig. 4). The cover can then be removed by using the procedure described in Part 5.◆ The procedure for replacing the cover is the same as described in Part 6. The cover does not require special alignment; however, be sure the locking assemblies are in the unlocked position before replacing the cover. With the manhole cover properly replaced in the frame, turn the locking assemblies clockwise to the locked position, using the B manhole wrench. When in the locked position, the directional indicator on the head of the locking assembly bolt will point away from the cover center and toward the manhole frame.