

KS-14582 L1 AND L2 SOLDERING COPPERS AND KS-14768 HEAT UNITS DESCRIPTION AND USE

CONTENTS	PAGE
1. GENERAL	1
2. PRECAUTIONS	2
3. TOOLS AND MATERIALS	2
4. DESCRIPTION OF SOLDERING COPPERS	2
5. DESCRIPTION OF HEATING UNIT	3
6. LOADING OF SOLDERING COPPER	4
7. FIRING OF SOLDERING COPPER	4
8. MAINTENANCE OF SOLDERING COPPER	5
9. REPLACEMENT PROCEDURES	6

1.04 Two sizes of tips are provided for the KS-14582 L1 and L2 Soldering Coppers. The larger tip, designated L4, is used for heavier soldering operations such as splicing and maintaining cables. The smaller tip, L5, is used for lighter work, such as soldering conductors on terminal lugs (Fig. 1).

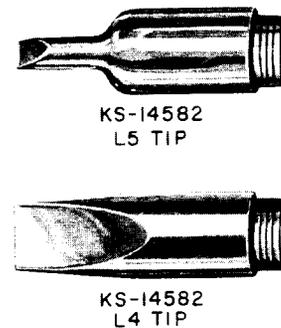


Fig. 1—Tips For KS-14582 Soldering Copper

1. GENERAL

1.01 This section describes the KS-14582 L1 and L2 Soldering Coppers and covers their use, safety measures, and maintenance. It also covers the KS-14768 Heat Unit used to provide heat for soldering operations in the field and the safety precautions that must be observed in the handling of thermite heat units.

1.02 This section is reissued to add further precaution with regard to the firing procedure for the KS-14582 Soldering Copper.

1.03 The soldering copper is intended for use where power for heating an electrical soldering copper is not available or where the use of an open flame-heated copper is not practical, as in the case of certain carrier repeater maintenance operations.

1.05 Before attempting to use the KS-14582 L1 or L2 Soldering Copper, prepare all connections in advance of the soldering operation. The KS-14582 L1 and L2 Soldering Coppers reach operating temperature in approximately 20 seconds after the heat unit is fired. The soldering coppers may then be used for soldering for a period of 4 to 6 minutes with the L4 tip, and 6 to 8 minutes with the L5 tip. To continue soldering for a longer period of time, the expended heat unit must be extracted and fresh one substituted.

1.06 The KS-14582 L1 Soldering Copper has been rated Manufacture Discontinued and may no longer be ordered as a complete unit; however, replacement parts may be obtained to maintain existing L1 soldering coppers in the field. Refer to Part 9 for replacement part procedures.

2. PRECAUTIONS**2.01 Precautions To Be Observed With the Soldering Coppers:**

- (a) To avoid injury to personnel or damage to the copper, do not open the copper for at least 10 minutes after firing a heat unit.
- (b) Do not hold the copper near the hands or face to test its temperature; serious burns may result. Use rosin core solder to check whether the copper has reached soldering temperature.
- (c) Do not place a heated copper on the floor, on equipment, or in any place other than a suitable holder such as the 504A Soldering Copper Holder. Do not remove the copper from its holder to store it, as in a tool kit, until the copper has thoroughly cooled and the expended heat unit has been removed. When the copper is not in use, make sure the heat unit chamber is empty.
- (d) To prevent losing or damaging parts, make sure the copper is assembled before storing it.
- (e) Never heat the copper over an open flame to bring it to soldering temperature. This would damage the copper.

2.02 Precautions To Be Observed With Heat Units:

- (a) Use only standard heat units equipped with a protective cap stamped KS-14768. Do not use commercially available nonstandard heat units.
- (b) A heat unit should be fired only in the copper and never by any other means. To do otherwise is hazardous.

WARNING: Ignited outside the soldering copper, the heat unit becomes white hot. Molten thermite may splatter. Adhere to operating instructions in Parts 6 and 7 of this section.

- (c) Do not store heat units near very hot objects.
- (d) Do not remove heat units from the carton until they are to be used.

3. TOOLS AND MATERIALS

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
504A	Soldering Copper Holder (or other suitable holder)
AT-8420	Combination Pliers, B
KS-14164	Brush
R-1482	File
R-5850	5/8- and 3/4-Inch Open Double End Offset Hex Wrench
—	BR-34 Brush
—	RM-12 Reamer
} Kemode Manufacturing Co.	
—	Carborundum Unfinished Stick, 4 by 1/2 Inch Square, Grading C60-P-VUF, Carborundum Co. or Equivalent
MATERIALS	
KS-2423	Cloth
KS-7470	Oil
—	Pipe Cleaners (obtain locally)
—	Standard Rosin Core Wire Solder
—	"Dag" Dispersion No. 41, Acheson Colloids Corp.

4. DESCRIPTION OF SOLDERING COPPERS

4.01 The KS-14582 L1 and L2 Soldering Coppers (Fig. 2 and 3) are conventional appearing soldering coppers which are heated by means of a chemically charged heat unit (KS-14768) placed in a chamber in the tip of the copper. The heat unit is actuated by a firing pin mechanism mounted in the handle of the copper. The handle is similar to that of the KS-8740 Electric Soldering Copper so the copper may be stored in the 504A Soldering Copper Holder.

4.02 A section view of the KS-14582 L2 Soldering Copper is shown in Fig. 3. The body of the copper consists of a tube having a cupshaped section at one end. The heat unit chamber of the tip screws into this cup and a small hole in the

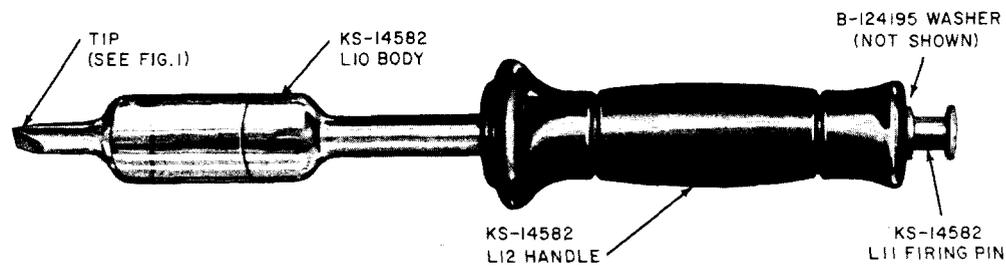


Fig. 2—KS-14582 L1 Soldering Copper (Manufacture Discontinued)

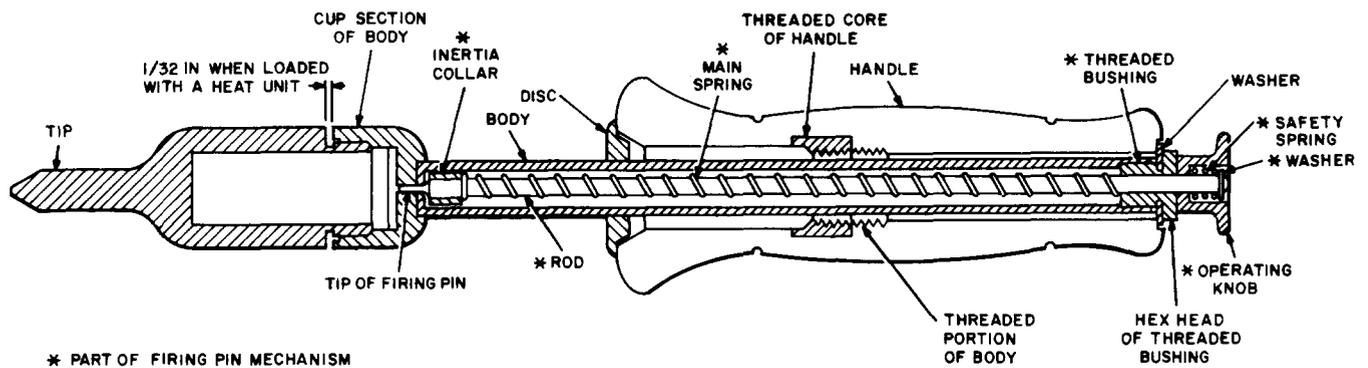


Fig. 3—Section View of KS-14582 L2 Soldering Copper With L5 Tip

bottom of the cup permits entrance of the firing pin to fire the heat unit. The threaded core of the handle screws on the tube and the handle is positioned by a disc secured to the tube. The handle is locked in place against this disc by the hexagonal head of the threaded bushing which screws into the outer end of the tube.

4.03 The firing pin mechanism consists of a rod with the firing pin and inertia collar at one end. The loose-fitting, recessed operating knob with a safety spring is mounted on the other end of the rod. A washer fastened to this end keeps the knob and spring on the rod. Adjacent to the knob is the threaded bushing with a hexagonal head which screws into the body of the copper. The main spring of the firing pin mechanism is assembled on the rod between the inertia collar and the threaded bushing. With the firing pin mechanism in its normal position, the main spring is not under compression and the safety spring in the knob holds the rod so the firing pin cannot protrude into the heat unit chamber.

4.04 When the knob of the firing pin mechanism snaps back after being pulled out and released, the springs force the firing pin rod forward. Near the end of this movement, the inertia of the rod and inertia collar overcome the pressure of the safety spring and the firing pin enters the heat unit chamber to fire the heat unit. The safety spring then restores the rod to its normal position, withdrawing the firing pin from the chamber. If the loaded copper is accidentally dropped, the safety spring prevents the firing pin from entering the heat unit chamber and firing the unit.

5. DESCRIPTION OF HEAT UNIT

5.01 A carton of twelve KS-14768 Heat Units is shown in Fig. 4. A heat unit consists of a cylindrical metal shell with a primer at one end. The primer is covered by a protective cap which is readily indented by the firing pin mechanism of the copper. The chemical mixture, sealed in the shell, is ignited when the primer is actuated by the firing pin. As the chemical mixture burns

without generating or releasing gases, the unit is entirely safe for use within the copper. However, should the unit be ignited outside the copper, contact with the air would cause it to become white hot and therefore, a fire hazard.

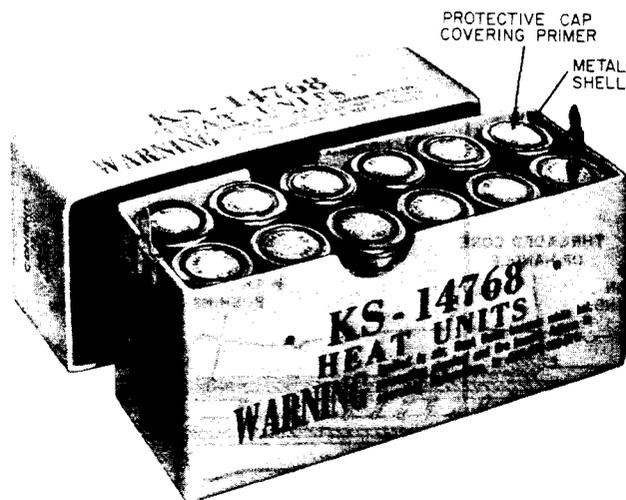


Fig. 4—KS-14768 Heat Units

Note: When inserting a KS-14768 Heat Unit into a KS-14582 L1 or L2 Soldering Copper, make certain the heat unit is firmly clamped between the bottom of the heat unit chamber (L4 or L5 tip) and the inside top of the cup section of the body and that there is a space between the shoulders of the two, at least 1/32-inch, as shown in Fig. 3.

6. LOADING OF SOLDERING COPPER

6.01 While the tool is cold, check that the firing pin mechanism and body are securely tightened against the handle before loading the tool. If necessary, tighten the body manually, and use the R-5850 Wrench to tighten the threaded bushing of the firing pin mechanism.

6.02 To load the copper when it is cold, unscrew the tip and place the KS-14768 Heat Unit into the hollow chamber of the tip with the primer end of the unit facing outwards. Remount the tip on the copper fingertight.

6.03 If it is necessary to reload the copper when it is hot in order to continue soldering

operations, allow the copper to cool for at least 10 minutes after firing (2 or 3 minutes after the heat unit is expended). Earlier removal of the tip may cause the heat unit to expand on contact with the air to such an extent that it will be difficult to remove. To remove the tip while hot, proceed as follows: While holding the handle firmly in one hand, grasp the tip just behind the wedged end with the combination pliers, and loosen the tip. Then hold the tip stationary with the pliers and unscrew the body of the copper from the tip by turning the handle manually. While doing this, take care to hold the copper with the tip pointed downwards to prevent the heat unit from dropping out. When the tip is free of the body, invert the tip over a metal receptacle, or on the ground at some safe location, so the heat unit drops out of the chamber.

Caution: Do not discard the hot heat unit on or near flammable materials.

6.04 Place the body of the copper in a suitable holder such as the 504A Soldering Copper Holder. While holding the tip with the pliers, insert a fresh heat unit into the chamber of the tip with the primer end of the unit facing outward. Screw the body of the copper on the tip. Take care not to tighten the tip excessively as this would make it difficult to remove if necessary to again reload the hot copper to continue soldering.

Caution: Exercise care to avoid touching the hot tip or body of the copper while replacing the heat unit as serious burns may result.

7. FIRING SOLDERING COPPER

7.01 To fire the copper, hold the handle firmly in one hand and grasp the knob of the firing pin mechanism between the thumb and forefinger of the other hand.

Caution: As the tip of the copper heats rapidly after firing, take care to hold the copper away from the body at about an arms length and pointed so the handle end does not face the body.

◆ Pull the firing pin knob out as far as it will go and allow it to snap back. When the firing pin hits, it will actuate the primer in the heat unit. There will **not** be a "pop" or "bang" but the heat

unit will very likely have ignited and started heating the copper. The soldering copper will be ready for operation in about 20 seconds. The copper may then be used for soldering for a period of 4 to 6 minutes with the L4 tip and 6 to 8 minutes with the L5 tip.

7.02 Failure of Copper to Fire: If the copper fails to become hot in approximately 20 seconds, repeat the firing procedure covered in 7.01. Be sure to determine that the copper has not started to heat before refiring or removing a heat unit to avoid the danger of splattering molten thermite. If the copper does not fire after three or four attempts, the heat unit may be defective. Remove the unfired heat unit and try a new heat unit. If the copper still fails to fire, the firing pin hole in the body of the copper may be blocked or the firing pin mechanism may be worn. Clean the body of the copper and firing pin mechanism as covered in 8.08 through 8.14. If, after cleaning, the copper frequently fails to fire, the firing pin mechanism should be replaced as covered in 9.03.

Note: Defective heat units should be disposed of along with other metallic trash. They should not be thrown away with paper trash or other combustible material.

8. MAINTENANCE OF COPPER

Tinning Soldering Copper

- 8.01** When necessary, tin the tip of the copper as covered in 8.02 through 8.04.
- 8.02** With the copper cold, file the surface of one side of the tip for a distance of approximately 1/4 inch from the end until it is bright and clean using the R-1482 file.
- 8.03** Load the copper as covered in 6.02.
- 8.04** Fire the copper as covered in 7.01. When the copper reaches soldering temperature, quickly file the side of the point which was previously cleaned, and apply rosin core solder, spreading the solder by means of the wiping pad of the 504A Soldering Copper Holder or similar tin plate surface. Repeat this operation until the filed surface is well tinned. Only one side of the copper tip should be tinned. This tends to keep the hot solder in contact with the surface to be soldered and prevents the

solder from collecting on the under side of the copper when working on vertical terminals.

Cleaning Tip Chamber

8.05 In order to permit easy removal of the KS-14768 Heat Unit, clean the inside of the tip chamber when soldering operations have been completed and the copper has cooled.

8.06 To clean the chamber, unscrew the tip from the body of the copper and dispose of the expended heat unit. Hold the tip firmly in one hand and insert the BR-34 Brush into the chamber as far as it will go. Turn the brush in a clockwise direction several times. Remove the brush and shake the loosened foreign matter out of the chamber. Repeat this procedure until the chamber is clean. Check the threads on the tip and, if necessary, clean them using the brush. After cleaning and before remounting the tip, lubricate the threads of the tip as covered in 8.07.

Note: Thorough cleaning of the tip chamber is essential to prevent difficulty in removing a spent heat unit.

Lubricating Threads of Tip

8.07 Periodic lubrication of the threads of the tip will facilitate removal of the tip. When necessary to apply the lubricant, remove all traces of old lubricant using the BR-34 Brush and apply "Dag" Dispersion No. 41 to the threads with the KS-14164 Brush. If the tip is worn so it is not held securely to the body of the copper, replace the tip.

Cleaning Body and Firing Pin Mechanism

8.08 Clean the body and firing pin mechanism at the end of each day if the copper has been used continuously. However, if the copper is used intermittently, ie, only several times a day, clean the parts at least once a week to obtain proper operation of the firing mechanism. Clean the parts only when the copper is cold.

8.09 Manually unscrew the tip. Remove the firing pin mechanism using the R-5850 Wrench, taking care that the washer in the recessed end of the handle is not lost. To clean the body, fully insert the RM-12 Reamer into the tube opening at the handle end. Turn the reamer clockwise several

times. Remove the reamer and shake out any loosened foreign matter from the tube. Repeat this procedure until no more foreign matter can be shaken out. Clean the firing pin hole using a pipe cleaner. Check the threads in the cup and if necessary, clean them using the BR-34 Brush.

Note: Thorough cleaning of the body as described above is essential, as an accumulation of foreign matter at the firing pin hole end may not allow proper penetration of the firing pin into the heat unit chamber.

8.10 Brush the accessible parts of the firing pin mechanism thoroughly with the BR-34 Brush, paying particular attention to the turns of the main spring, the firing pin, and the threads of the bushing. Observe whether the tip of the firing pin has become excessively flattened so that there are sharp corners at the periphery of the tip. If there are sharp corners at the periphery, round them as covered in 8.15. After brushing, wipe all parts with a clean KS-2423 Cloth.

8.11 Place one end of the firing pin mechanism on a flat surface, and while holding it in a vertical position, manually compress the main spring. While holding the spring compressed with one hand, clean the exposed part of the rod using the BR-34 Brush and then wipe with a clean KS-2423 Cloth. Invert the mechanism and repeat the procedure to clean the other part of the rod.

8.12 Hold the firing pin mechanism with the knob pointing downward. Hold the firing pin end with one hand and with the other raise the knob compressing the main spring until about an inch of the rod is exposed. If the safety spring has not dropped free of the knob, shake the spring out of the knob onto the exposed part of the rod. Hold the mechanism with the knob cocked against the rod to prevent the safety spring from slipping back into the knob. Clean the safety spring with the BR-34 Brush and wipe with a clean KS-2423 Cloth.

8.13 After the firing pin mechanism has been cleaned, apply a film of KS-7470 Oil to the main and safety springs using a KS-2423 Cloth. Obtain access to the safety spring by following the procedure covered in 8.12. Wipe off any excess oil with a clean KS-2423 Cloth.

8.14 After cleaning and oiling the firing pin mechanism, remount it in the copper. Remount the tip.

Rounding Periphery Around Tip of Firing Pin

8.15 Round the corners at the periphery of the tip of the firing pin using the Carborundum stick to obtain a uniform radius of approximately 0.010 inch as gauged by the eye around the periphery. Do not round the flat on the top. This will shorten the tip and may result in failure of the copper to fire.

9. REPLACEMENT PROCEDURES

9.01 When ordering parts for replacement purposes, give both the KS and L number and name of the part, for example: KS-14582 L11 Firing Pin for KS-14582 L2 Soldering Copper. Do not refer to the BSP number.

9.02 To replace the tip, refer to 6.02 or 6.03 for removal of the tip from a hot or cold soldering copper.

9.03 *Firing Pin and Washer:* To replace either of these parts, hold the handle firmly in one hand and apply the R-5850 Wrench to the hexagonal nut at the rear of the handle. Remove the firing pin and washer in the recessed end of the handle by turning the firing pin counterclockwise with the wrench. Substitute new parts as required and mount the parts in the reverse order of removal.

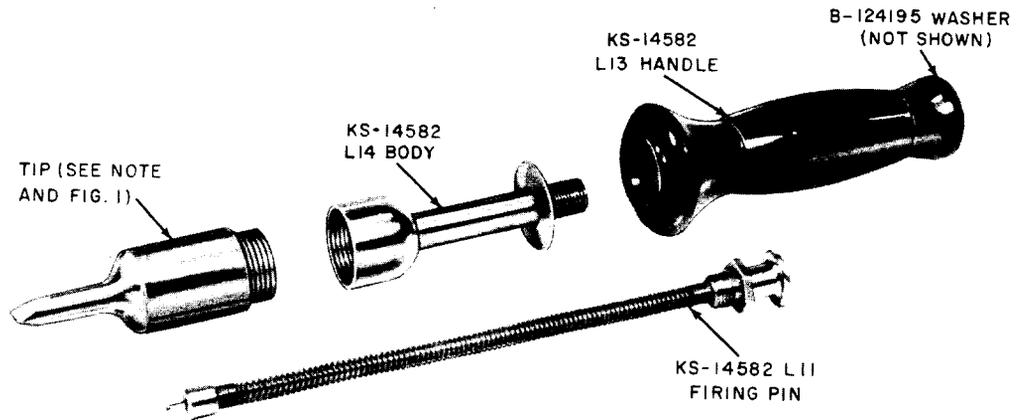
9.04 *Handle:* Remove the firing pin as covered in 9.03, taking care not to lose the washer in the recessed end of the handle. Remove the handle by unscrewing it from the body. If the handle cannot be easily removed, hold it firmly in one hand, grasp the body just forward of the handle with the combination pliers, and loosen the handle. Apply a small amount of KS-6824 Sealing Compound to the threads of the body that screw into the handle with the KS-14164 Brush and mount the new handle. Remount the firing pin making sure the washer is in place in the recess in the handle.

9.05 *Body:* Remove the tip and handle as covered in 9.02 and 9.04. Substitute the new body, applying KS-6824 Sealing Compound to the threads that screw into the handle using the KS-14164

Brush. Remount the parts in the reverse order of removal.

part numbers for the purpose of ordering replacement parts. Note that the tips, firing pin, and B-124195 Washer are interchangeable for either the L1 or L2 Soldering Coppers. See Fig. 2.

9.06 Fig. 5 illustrates the components of the KS-14582 L2 Soldering Copper and associated



NOTE:
THE KS-14582 L2 SOLDERING COPPER IS FURNISHED WITH TIP, WHICH MUST BE SPECIFIED IN THE ORDER.

Fig. 5—KS-14582 L2 Soldering Copper