

## 659A AND 659D TOOLS METHOD OF CONVERTING TO 659C AND 659F TOOLS

### 1. GENERAL

**1.01** This section covers the procedures for converting the 659A and 659D tools to the 659C and 659F tools, respectively. These conversions provide manual control for both the hole-enlarging and tab-clipping operations in place of control by the foot-pedal hydraulic system. This section also covers procedures for adding a counter which will provide an approximate check of the number of cards coded by the tool.

**1.02** This section is reissued to add procedures covering conversion of the 659D tool to the 659F tool. Detailed reasons for reissue will be found at the end of the section.

**1.03** The 659D tool is similar to the 659A and the 659F tool is similar to the 659C except that in each case the former tool is equipped with the 660B punch and die assembly and the latter is equipped with the 660A.

**1.04** The conversion of a 659A or 659D tool involves:

- (a) Removal of the foot-pedal assembly and associated tubing.
- (b) Substitution of a weaker restoring spring in the hole-enlarging and tab-clipping control units to facilitate manual operation of these units.
- (c) Substitution of a new plug with a hand operated plunger in the hole-enlarging control unit.
- (d) Addition of a counter.

Fig. 1 shows the modified tool which is identified by the code 659C or 659F.

**1.05** The power plug should be disconnected from the power supply before starting conversion of the tool.

### 2. LIST OF TOOLS, MATERIALS, AND PARTS

CODE OR SPEC NO.	DESCRIPTION
<b>TOOLS</b>	
240	Scriber
245 (2 reqd)	3/8- and 7/16-Inch Hex. Open Double-End Wrench
347	Spanner Wrench
418A	5/16- and 7/32-Inch Hex. Open Double-End Wrench
KS-7139	Pliers
KS-14164	Brush
KS-14250 L1	Flashlight
R-1482	Flat Combination File
R-1542 (2 reqd)	3/4-Inch Adjustable Single-End Wrench
R-2315	Lettering and Numbering Set
R-2485	5/32-Inch Allen Socket Screw Wrench
R-2486	5/16-Inch Allen Socket Screw Wrench
R-2670	3/32-Inch Allen Socket Screw Wrench
R-2671	1/8-Inch Allen Socket Screw Wrench
R-2812	3/16-Inch Allen Socket Screw Wrench
R-2958	5/64-Inch Allen Socket Screw Wrench
R-2959	1/16-Inch Allen Socket Screw Wrench
R-2964	7/32-Inch Allen Socket Screw Wrench
—	Hacksaw
—	3-Inch C Screwdriver (or replaced 3-inch cabinet screwdriver)

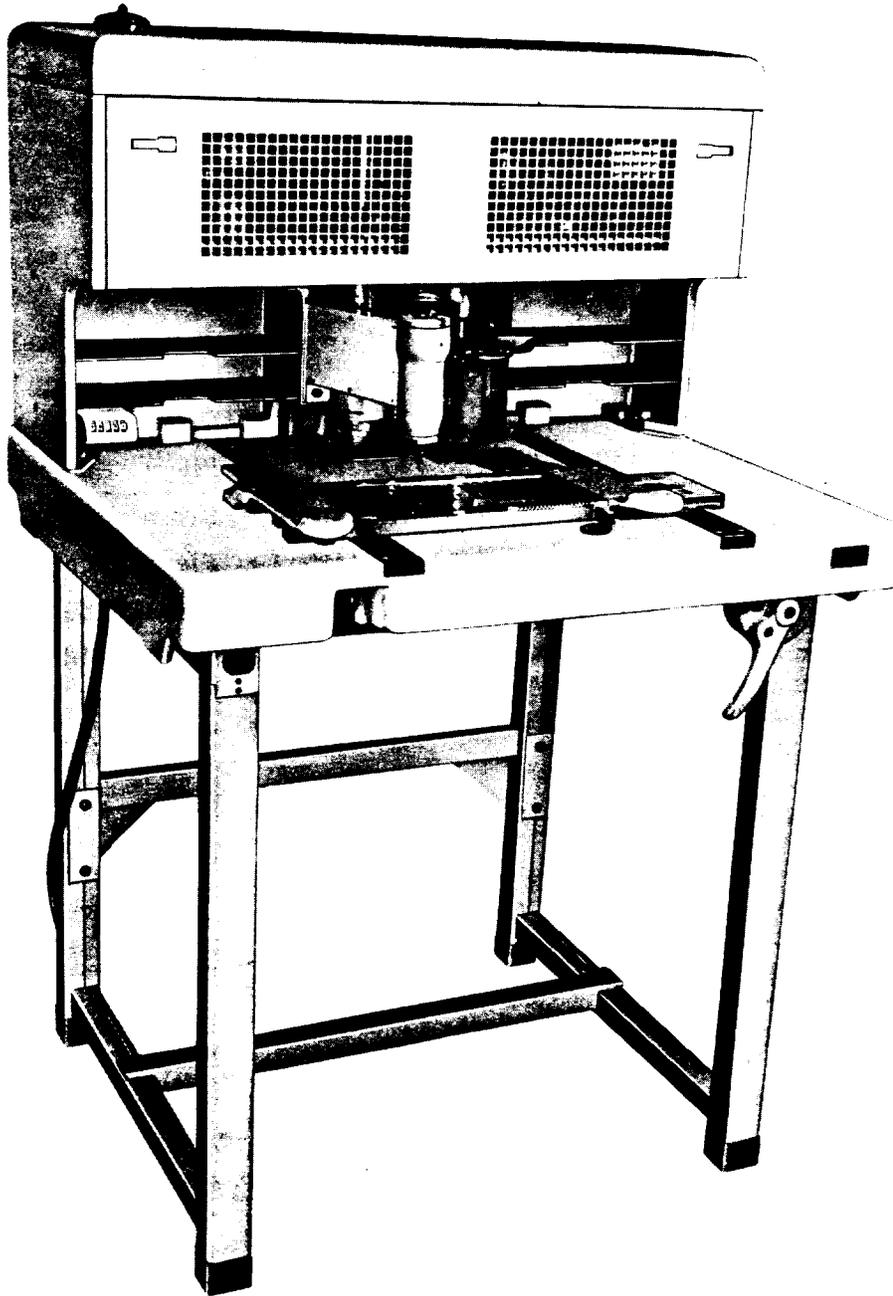


Fig. 1 - 659C and 659F Tools

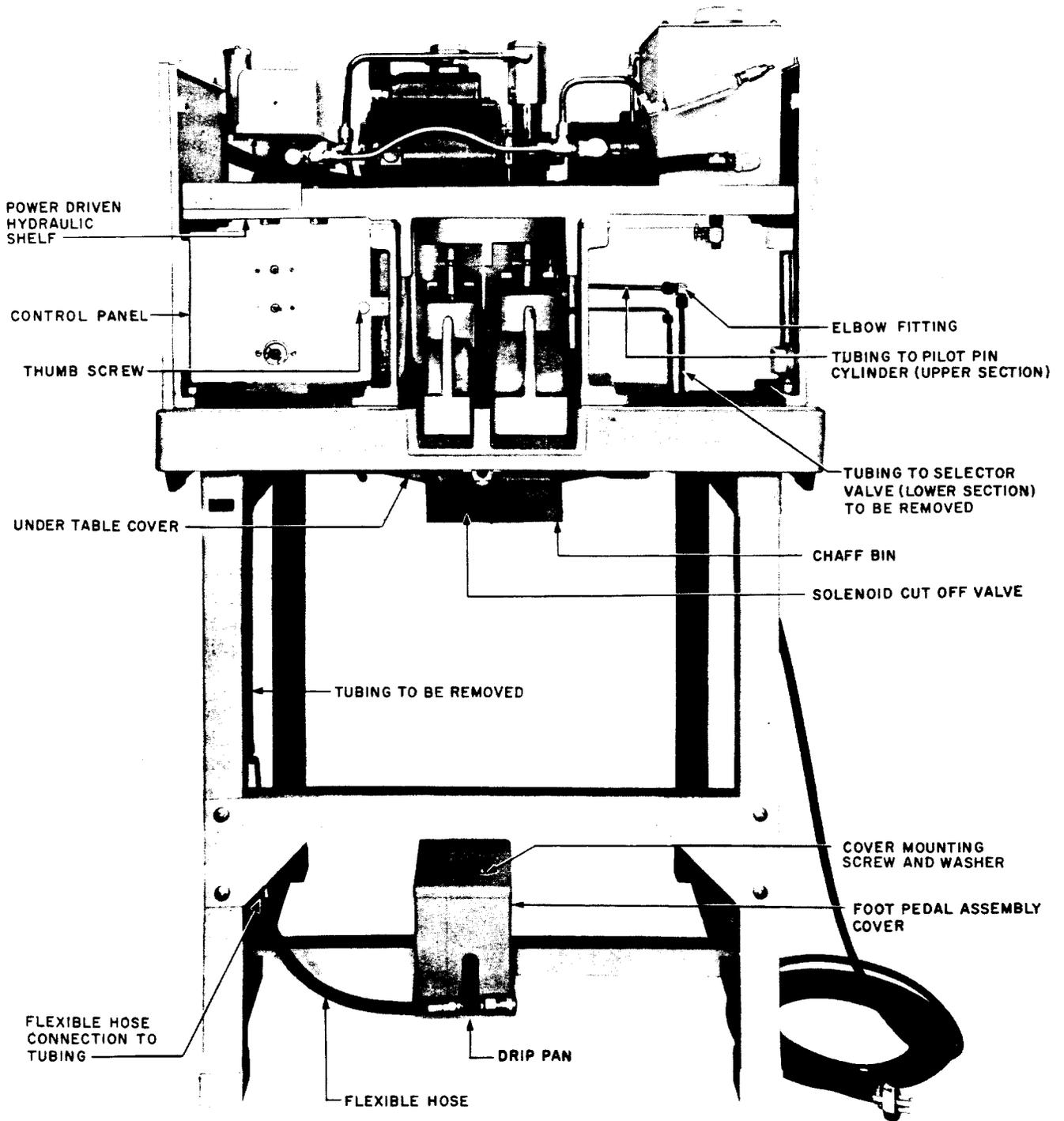


Fig. 2 - 659A and 659D Tools (rear view — covers removed)

CODE OR  
SPEC NO.

## DESCRIPTION

## TOOLS

—	4-Ounce Riveting Hammer
—	1/8-Inch Drive Pin Punch No. 565, L. S. Starrett Co

## MATERIALS

KS-2423	Cloth
KS-7860	Petroleum Spirits
KS-13385	No. 20GA Single Stranded Wire — 2 Feet Having White and 4-1/2 Feet Having Orange-Colored Insulation
KS-14666	Cloth
—	No. 8 Machine Screw — 3 Inches Long
—	No. 46 W.E. White Ink, Quick Drying
Γ —	6-Ply Twine (or the replaced No. 6 twine)
—	Clear Varnish

## L PARTS REQUIRED FOR CONVERSION OF 659A AND 659D TOOLS

P-11B888	Plunger Assembly
P-11B909	Spring (tab-clipping control unit)
P-11B910	Spring (hole-enlarging control unit)
P-12B001	Mounting Assembly (counter mounting bracket)
—	Counter, 110V, Cat. No. 1268 With Mounting Screws Veedor-Root, Inc

3. REMOVING AND REMOUNTING UNDER TABLE  
COVER

3.01 Before starting conversion of the tool, remove the under table cover as follows. Pull out on the latch pin located on each side near the front of the table. Allow the cover to swing downward and pull the cover forward to disengage the slots at the rear of each side of the cover from the locating pins in the table. To remount the cover, engage the locating pins in the slots at the rear of the cover and push the cover up against the underside of the table so that the latch pins engage the cover mounting holes.

## 4. REMOVAL OF FOOT-PEDAL HYDRAULIC SYSTEM

4.01 Remove the drip pan from the foot-pedal assembly cover (Fig. 2) using the 3-inch C screwdriver. Then remove the cover using the R-2671 wrench.

4.02 Referring to Fig. 2 and 3, place a KS-14666 cloth below the flexible hose connection to the tubing clamped to the leg of the tool and place the drip pan below the hose connection to the hydraulic cylinder fitting to catch the oil that will drain from these parts when the hose connections are broken.

4.03 Hold the connector of the hose fitting at the tubing end with the R-1542 wrench and unscrew the nut engaging the connector with a second R-1542 wrench. Disengage the connector from the tubing. Then hold the tee fitting on the hydraulic cylinder (Fig. 3) with the R-1542 wrench and disconnect the hose using the 245 wrench. Remove the foot-pedal assembly mounting screws using the R-2812 wrench and remove the assembly. Remove the drip pan and cloth.

4.04 *Removing Tubing:* Referring to Fig. 2 and 4, remove the tubing which is entirely below the table and also the lower section of the tubing between the selector valve and the hole enlarging control unit pilot pin cylinder as follows.

(a) *Tubing Entirely Below Table:* Fig. 2 and 4 — To remove the tubing, hold the body of the fitting at one end of the tubing with the R-1542 wrench and unscrew the nut of the fitting with a second R-1542 wrench. Similarly break the connection at the other end of the tubing. Remove the tubing clamps using the R-2671 wrench and remove the tubing.

(b) *Tubing Between Selector Valve and Hole-Enlarging Control Unit Cylinder:* Fig. 2 and 4 — This tubing consists of two sections connected together by a compression-type elbow fitting at the rear of the tool above the table as shown in Fig. 2. Remove only the lower section as follows. Hold the body of the fitting at one end of the tubing with the R-1542 wrench and unscrew the nut of the fitting with a second R-1542 wrench. Similarly break the connection at the other end of the tubing. Remove the tubing clamps using the R-2671 wrench. Disengage the tubing from the fittings

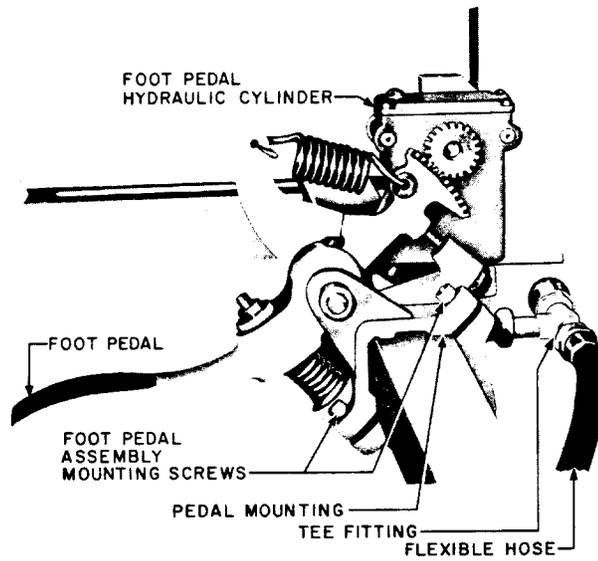


Fig. 3 – Foot-Pedal Assembly (drip pan and covers removed)

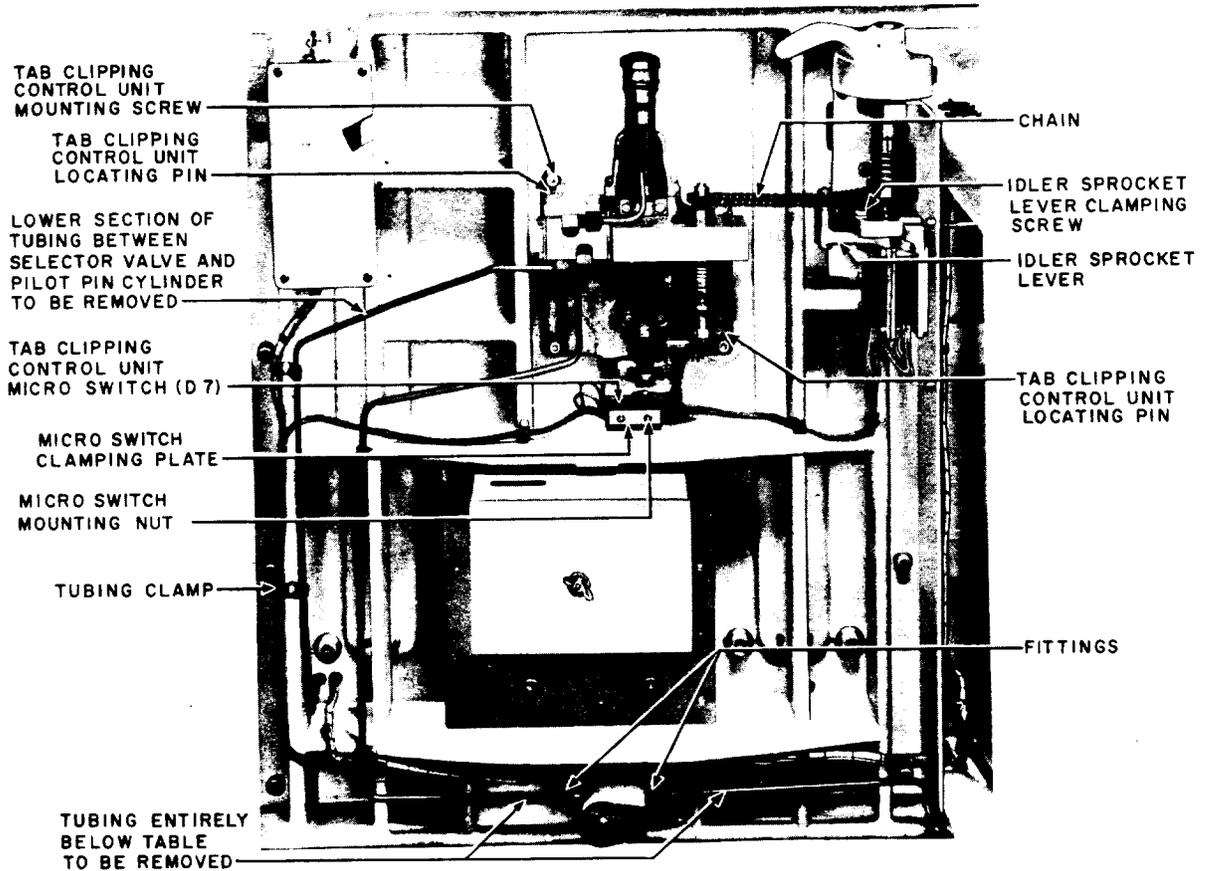


Fig. 4 – 659A and 659D Tools — Underside of Tool (cover removed)

and lower the tubing below the table as far as possible. Using the hacksaw, saw through the section of the tubing below the table. Remove the tubing.

**Disconnecting Solenoid Cut-Off Valve Leads**

4.05 Referring to Fig. 2, manually disengage the control panel thumbscrew and swing the panel outward. Using the 3-inch C screwdriver, remove the solenoid cut-off valve lead from terminal 9 on the control panel terminal strip. Tape the end of the lead. Close the panel and securely tighten the thumbscrew.

**5. CONVERTING THE HOLE-ENLARGING CONTROL UNIT**

5.01 Remove the cover from the left side of the housing of the hole-enlarging control unit using the R-2670 wrench. Unscrew the nut from the fitting in the control unit cylinder (Fig. 5) using the R-1542 wrench.

5.02 Back off the three adjusting screws around the periphery of the cylinder housing (Fig. 5) at least two turns using the

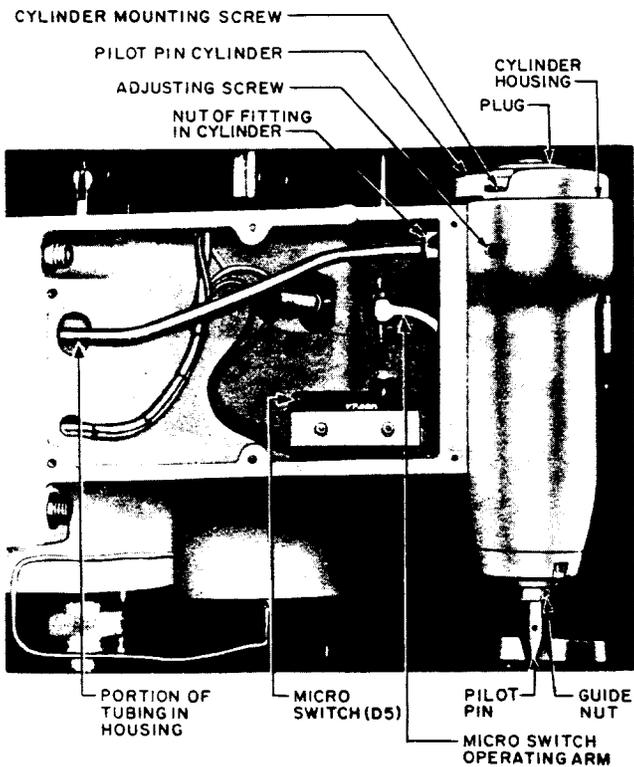


Fig. 5 - Hole-Enlarging Control Unit (cover removed)

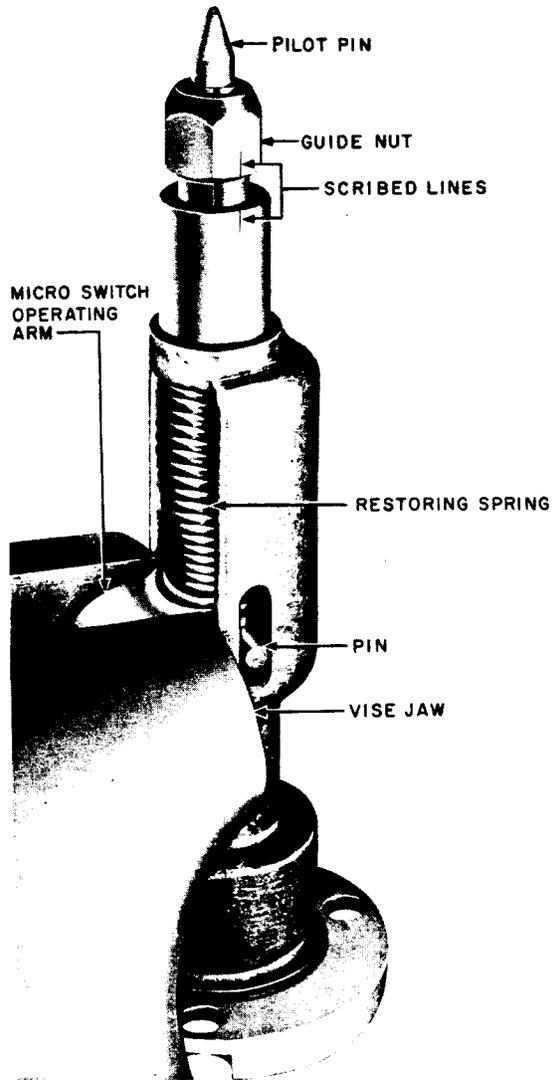


Fig. 6 - Hole-Enlarging Control Unit Cylinder Clamped in Vise

R-2671 wrench. Remove the mounting screws at the top of the cylinder using the R-2671 wrench. Raise the cylinder, disengage the tubing from the fitting in the cylinder, and remove the cylinder.

5.03 Remove the fitting holding plate and the fitting from the cylinder using the R-1542 wrench. Remove the plug at the top of the cylinder using the 347 wrench. Then insert the No. 8 machine screw, 3 inches long, into the threaded hole at the top of the upper part of the shaft in the cylinder. Pull this part out of the cylinder with the screw.

**5.04** Using the 240 scribe, scribe lines on the pilot pin guide nut and the adjacent surface of the cylinder to obtain the same relative position of these parts when reassembling. Clamp the Micro Switch operating arm close to the shaft in the jaws of a vise, as shown in Fig. 6, to avoid bending the shaft when removing the pin from the shaft. Remove the pin using the 1/8-inch drive pin punch and 4-ounce riveting hammer. Remove the cylinder from the vise.

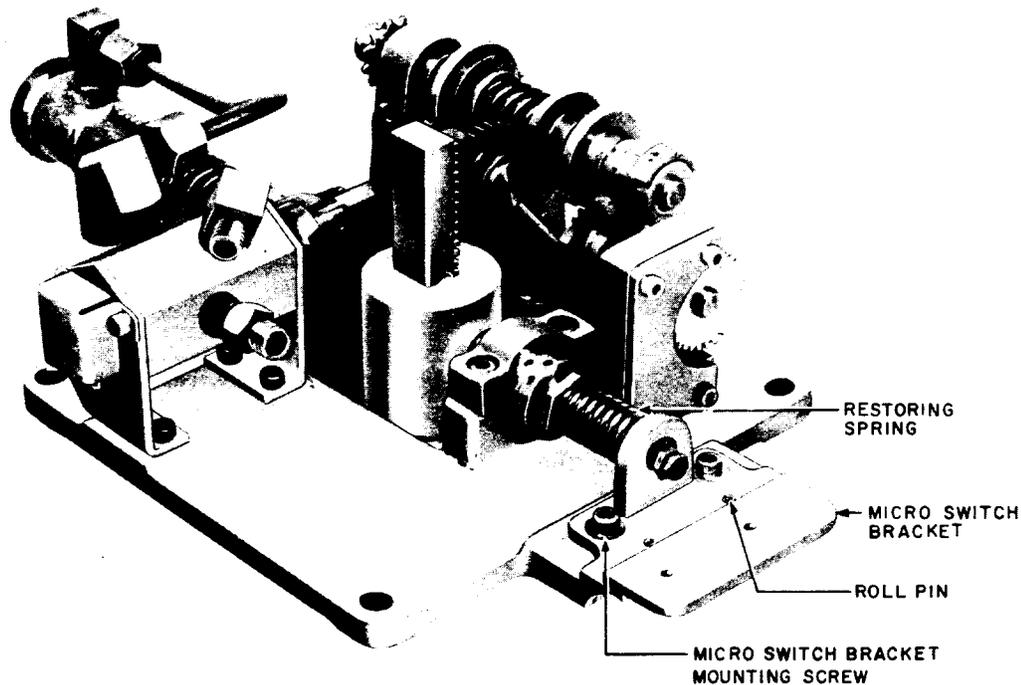
**5.05** Using the R-2959 wrench, loosen the setscrew which clamps the Micro Switch operating arm to the shaft. Remove the shaft, spring, and arm. Place the arm and the new spring in the cylinder. Mount the shaft, making sure that the scribed lines on the pilot pin guide nut and cylinder are in alignment. Position the shaft hole so that it lines up with the Micro Switch operating arm hole and clamp the arm in the vise as described in 5.04. Chamfer one end of the pin with the R-1482 file to facilitate reinserting the pin. Remount the pin, chamfered end first, using the drive pin punch and hammer. Remove the cylinder from the vise. Tighten the setscrew in the arm. Mount the new plunger assembly in the top of the cylinder.

**5.06** Remount the cylinder in the hole-enlarging control unit and tighten the mounting screws at the top of the cylinder friction tight. Check the requirements covering operation of the Micro Switch and position of the blank in the card nest in Section 076-143-701. If the requirements are met, securely tighten the cylinder mounting screws and tighten the adjusting screws friction tight. Remount the hole-enlarging control unit housing cover. Recheck the position of blank requirement. If the requirement is not met, align the pilot pin with the hole-enlarging punch as covered in the procedures for this requirement in Section 076-143-701.

## 6. CONVERTING THE TAB-CLIPPING CONTROL UNIT — Fig. 4 and 7

**6.01** Remove the tab-clipping control unit Micro Switch mounting nuts and clamping plate (Fig. 4) using the 418A wrench. Remove the Micro Switch and cover and allow the Micro Switch to hang by its leads.

**6.02** Release the tension on the chain by loosening the idler sprocket lever clamping screw using two 245 wrenches. Remove the chain.



**Fig. 7 — Tab-Clipping Control Unit Removed From Tool**

**6.03** Unlock the carriage and move it as required to obtain access to the two tab-clipping control unit locating pins. Working from the top of the table, drive these pins through the table and down into the tab-clipping control unit casting with the 1/8-inch drive pin punch and 4-ounce riveting hammer.

**6.04** Working from the underside of the table, support the tab-clipping control unit and remove its four mounting screws using the R-2964 wrench. Taking care not to drop the tab-clipping control unit, remove it and place it on a table or bench.

**6.05** Referring to Fig. 7, remove the Micro Switch mounting bracket screws using the R-2485 wrench. Remove the bracket. If difficulty is experienced in removing the bracket, drive the two roll pins securing the bracket through the bracket into the control unit casting using the 1/8-inch drive pin punch and 4-ounce riveting hammer. Remove the restoring spring.

**6.06** Substitute the new spring and remount the Micro Switch mounting bracket. If the roll pins have been disengaged from the bracket, drive them back into the bracket and securely tighten the bracket mounting screws.

**6.07** If necessary, clean the parts of the control unit which have been lubricated using a KS-2423 cloth moistened with KS-7860 petroleum spirits and then wipe with a clean, dry KS-2423 cloth. Relubricate the parts as covered in Section 076-143-701.

**6.08** Remove the two locating pins in the tab-control unit casting using the 1/8-inch drive pin punch and 4-ounce riveting hammer. Chamfer one end of each of these pins with the R-1482 file to facilitate reinserting the pins.

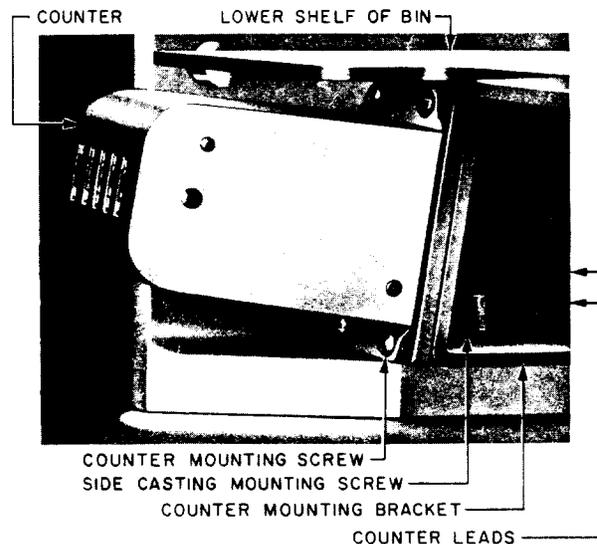
**6.09** Remount the tab-clipping control unit on the underside of the table and tighten the mounting screws friction tight. Holding the KS-14250 L1 flashlight below the table, align the locating pin holes in the tab-clipping control unit with the associated holes in the table. Insert the locating pins from the top of the table, chamfered end downward. Using the drive pin punch and hammer, drive the pins down so that the ends of the pin are flush with the top of the table. Securely tighten the mounting screws.

**6.10** Remount the Micro Switch on the tab clipping control unit. Remount the chain. Check for requirements covering chain tension, position of tab-clipping control, and operation of the Micro Switch with respect to the stylus as covered in Section 076-143-701.

## 7. MOUNTING COUNTER — Fig. 8 and 9

**7.01** Position the counter on the mounting bracket provided for it, as shown in Fig. 8, so that the numerals may be read from left to right. Using the 3-inch C screwdriver, mount the counter in this position using the mounting screws furnished with the counter. Then, using lengths of 2 and 4-1/2 feet, splice KS-13385 single-stranded wire having white- and orange-colored insulation, respectively, to the leads of the counter. Tape each splice.

**7.02** Remove the lower shelf of the left bin using the R-2959 wrench. Then, using the R-2486 wrench, remove the side casting mounting screw located on the table below the shelf. Using this screw, mount the counter on the table as shown in Fig. 8. Remount the shelf.



**Fig. 8 — Counter Mounted on Tool**

**7.03** Insert the leads from the counter through the opening at the rear below the shelf and through the cable hole in the table. Follow the cable with the two leads, bringing the white-colored lead to the solenoid cut-off valve and

the orange-colored lead to the selector handle Micro Switches. Tie these leads to the cable at several points using 6-ply twine. Skin the leads approximately 3/4 inch from the ends using the KS-7139 pliers.

**7.04** Referring to Fig. 9, remove the (D9) Micro Switch mounting plate using the R-2485 wrench and allow the (D9) Micro Switch and mounting plate to hang by its leads. Then, remove the (D10) Micro Switch and clamping plate from the bracket using the 3-inch C screwdriver. Lift the cover off the Micro Switch and slide it back on the leads. Connect and solder the orange lead from the counter to the Micro Switch terminal marked NORM CLOSED CIRCUIT. Remount the cover on the (D10) Micro Switch. Remount the (D10) Micro Switch and clamping plate on the bracket and securely tighten the screws. Remount the (D9) Micro Switch mounting plate with the Micro Switch and securely tighten the screws.

**7.05** Cut the white lead at the solenoid cut-off valve with the KS-7139 pliers. Skin this lead approximately 3/4 inch from its end using the pliers. Splice the lead to the white lead from the counter and tape the splice.

## 8. CHANGING CODE ON NAMEPLATE OF CONVERTED TOOL

**8.01** Using the 240 scribe, obliterate the code 659A or 659D and stamp the code 659C or 659F, respectively, as follows. Using the R-2315 lettering and numbering set and quick drying white ink, stamp the new code with 1/8-inch letters immediately to the left of the oblit-

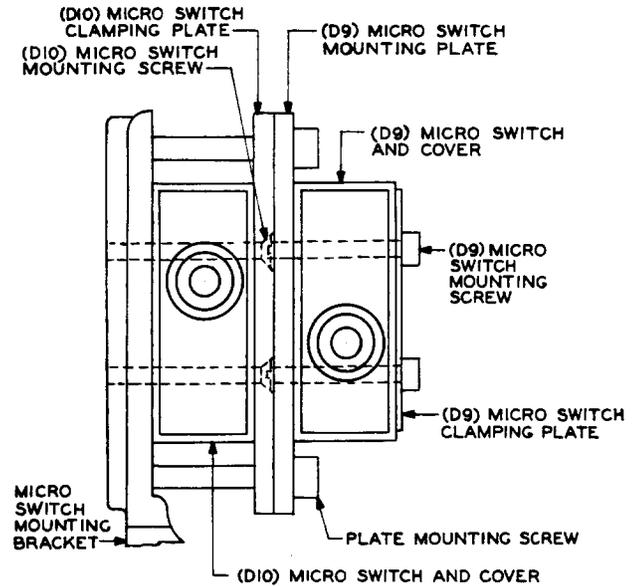


Fig. 9 - Selector Handle Micro Switches

erated code. After the ink has dried, apply clear varnish, such as Valspar, over the stamped code using the KS-14164 brush.

## REASONS FOR REISSUE

1. To add information covering conversion of the 659D tool to the 659F tool (1.03 and 1.04).
2. To revise the List of Tools, Materials, and Parts (Part 2).
3. To revise titles of Fig. 1, 2, and 4.
4. To revise information for changing code on nameplate (8.01).