© 1961
American Telephone and Telegraph Company
Printed in U. S. A.

BELL SYSTEM PRACTICES
Teletypewriter and Data Stations

SECTION P31.155
Issue 1, January, 1961
AT&TCo Standard

KS-15930
STATIC ELIMINATORS

1. GENERAL

1.01 The KS-15930 static eliminators are devices which neutralize static charges on teletypewriter tape and paper by means of ionization produced by high voltage. Static is eliminated by the high potential produced in the sealed power unit which causes a partial ionization of the air surrounding the wire probes (needle points).

1.02 Due to the extremely low amount of current there is no danger of shock hazard in the normal use of these devices. The current drain is very small and power must be on for the unit to operate. However, even though the power unit and the individual probes employ capacitive pickup, which reduces the possibility of shock, an arc may be drawn if the inductor cables are removed before turning off the power unit. **No grounded material should come within 1/4 inch of the exposed ends of the wire points.**

1.03 There are two types of KS-15930 static eliminators, **KS-15930, L2 (inductor bar),** a transparent plastic bar for use with page typing units, and **KS-15930, L3 (inductor point),** for use with tape punching and printing mechanisms. Both types use the same **power unit, KS-15930, L1.** The power unit is equipped with a duplex outlet so that two inductor bars or two inductor points, or one inductor bar and one inductor point can be serviced by a single power unit if the equipment positions permit.

2. POWER UNIT (KS-15930, L1)

2.01 **Installation:** For most installations the power unit may be placed in the bottom of a cabinet or table. Two 1/4-inch holes are provided for other mounting arrangements. The mounting requirements are that a 115-volt ac source be within reach of the six-foot power cord, that the power unit be within reach of the inductor bar or point cable, and that the selected

position be dry and in no way interfere with customer operation or maintenance. **Fig. 1**

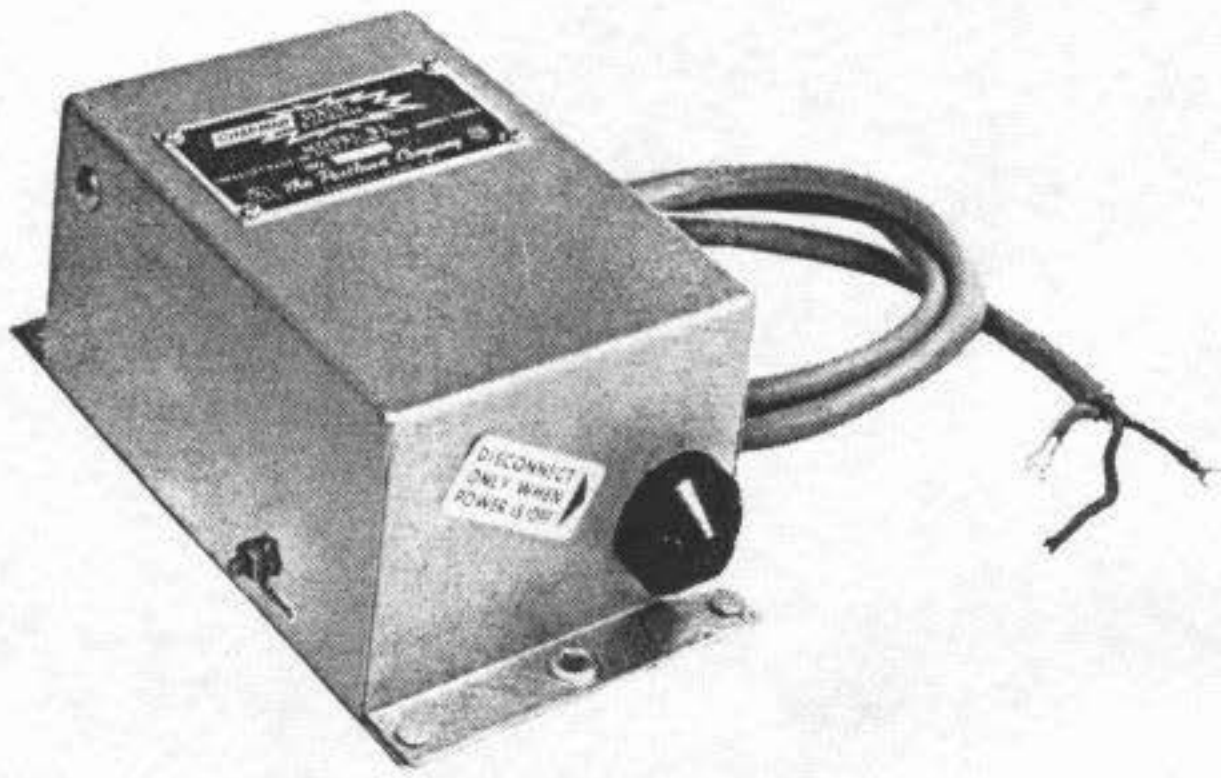

Fig. 1—KS-15930, L1 Static Eliminator (Power Unit)

2.02 **Power Connections:** Careful consideration should be made of all connections to the 115-volt ac power source before the power is turned on. The maximum input is 0.25 amp. Local grounding and/or bonding procedures of teletypewriter equipment should be followed. If the power unit is to serve two machines, the teletypewriter ground screws should be bonded together with 14-gauge solid wire. The power unit is supplied with a gray, six-foot, three-conductor cord. The black and white leads supply the input for the internal transformer and are for the "hot" side and the common or ground side of the 115-volt ac supply. The green lead is chassis or frame ground and is connected internally to the ground lug on the side of the power unit as well as to the return side of the high voltage potential.

2.03 It is preferable that the power unit be connected to the switched side of a 115-volt ac source within the teletypewriter itself. This insures that the power unit is energized only when the teletypewriter is running. The ground lug of the power unit is not used in this type of installation. On the units below, power connections should be made as follows:

Apparatus	Conductor	Terminal Strip #1
Base on 14 Teletypewriter, 14 Typing Reperforator, 15 Teletypewriter, and 19 Teletypewriter Set	BLACK	#22
	WHITE	#23
	GREEN	Ground Screw on Base
		Terminal Strip #1
28A Teletypewriter Cabinet	BLACK	#29
	WHITE	#30
	GREEN	Cabinet Ground Screw
		Terminal Strip #C
28B through 28G Teletypewriter Cabinets	BLACK	#35
	WHITE	#40
	GREEN	Cabinet Ground Screw
		Terminal Strip DH
28 Typing Reperforator on 28A Typing Reperforator Table	BLACK	#1
	WHITE	#2
	GREEN	Ground

On units other than those given above, connections should be made to the switched side of power where possible.

2.04 If the power unit must be connected directly to a 115-volt ac outlet external to the teletypewriter, the power cord should be properly wired to a cap or plug that fits the customer's power outlet. If a 3-wire plug is used, the green lead should be connected to the ground prong. If a 2-wire plug is used, the green lead should be cut back to the sheath. Connect a 14-gauge stranded wire from the ground lug on the power unit to frame ground on the teletypewriter.

3. INDUCTOR BAR (KS-15930, L2)

3.01 The KS-15930, L2 static eliminator (inductor bar) is designed to be used on the 15 and the 28 teletypewriter cabinet covers. 15 typing units should be equipped with the TP110352 ribbon reverse arms to allow sufficient clearance for the inductor bar, and 28 typing units should be equipped with the new-style thin type box to minimize possible interference. 28 sprocket-feed typing units must be equipped with the

TP159356 modification kit for new-style paper fingers. The complete inductor bar kit (KS-15930, L2 static eliminator) also includes a 60-inch cable; adjustable support brackets; cable clamp with screw, flat washer, and lockwasher; and a ground clip. The cable is provided with a connector coupling which permits disconnecting the inductor bar for removal of the 15 and 19 covers. The power unit must be turned off when disconnecting. **Fig. 2**

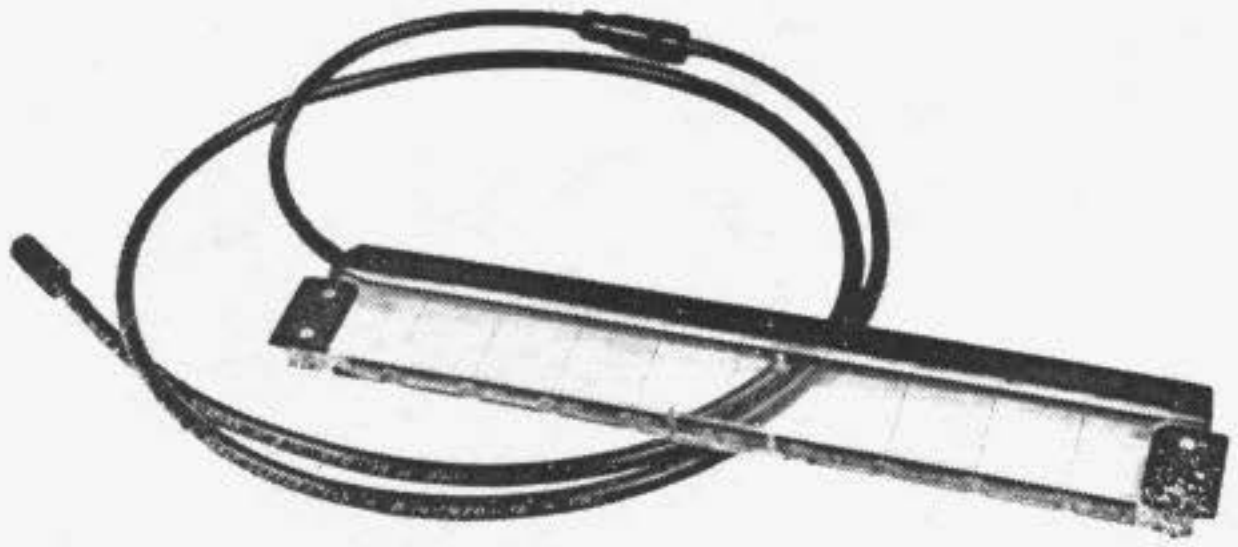

Fig. 2—KS-15930, L2 Static Eliminator (Inductor Bar)

3.02 **Installation on 15 and 28 Teletypewriter Covers**

(a) Inspect the inductor bar to see that it is clean and free from defects that might obstruct vision. If the inductor bar must be cleaned use only a damp tissue, or a damp, clean, soft cloth. Also clean both sides of the cabinet window if necessary.

(b) Loosen the four screws that hold the window in place.

(c) Mount the inductor bar under the window of the 15 or 28 teletypewriter cabinets with the needles toward the platen and the cable extending from the right side of the bar when viewed from the front of the cabinet. The adjustable brackets at the ends of the inductor bar should be at their maximum extension for the 15 window and at their minimum extension for the 28 window. Slide the inductor bar into position so that the bar brackets are held between the window retaining plates and the rubber or felt molding. The inductor bar must be positioned as far away from the tearing edge of the window as possible.

(d) Tighten the window screws.

(e) 1. On the **15 teletypewriter** use the cable clamp supplied to fasten the inductor bar cable to a stud on the right cover detent spring clip. See that there is neither

stress on the cable nor enough slack to interfere with the typing unit. Attach the ground clip supplied to the base plate screw located at the left rear bottom of the teletypewriter base so that the projecting tab will make contact with the installed cover. **Fig. 3**

2. On the **28 RO or KSR teletypewriter** use the cable clamp supplied to fasten the inductor bar cable to the top cover release bracket with the screw, lockwasher, and flat washer supplied. Extend the cable back and down through the hole in the right-rear corner to the lower compartment. **Fig. 4**

3. On the **28ASR teletypewriter** use the cable clamp supplied to fasten the inductor bar cable to the TP49649 shoulder screw on the TP160974 stoparm (later design) or the TP71699 shoulder screw on the TP151576 stoparm (earlier design) on the cabinet dome. See that there is enough slack to allow the window to be opened. Extend the cable back and down through the hole in the right-rear corner to the lower compartment. **Fig. 4**

(f) Connect the inductor bar cable to the power unit. Check for secure connection without endplay by tugging the cable lightly. **An insecure connection will cause arcing.**

Fig. 3—Inductor Bar Mounted on 15 Teletypewriter

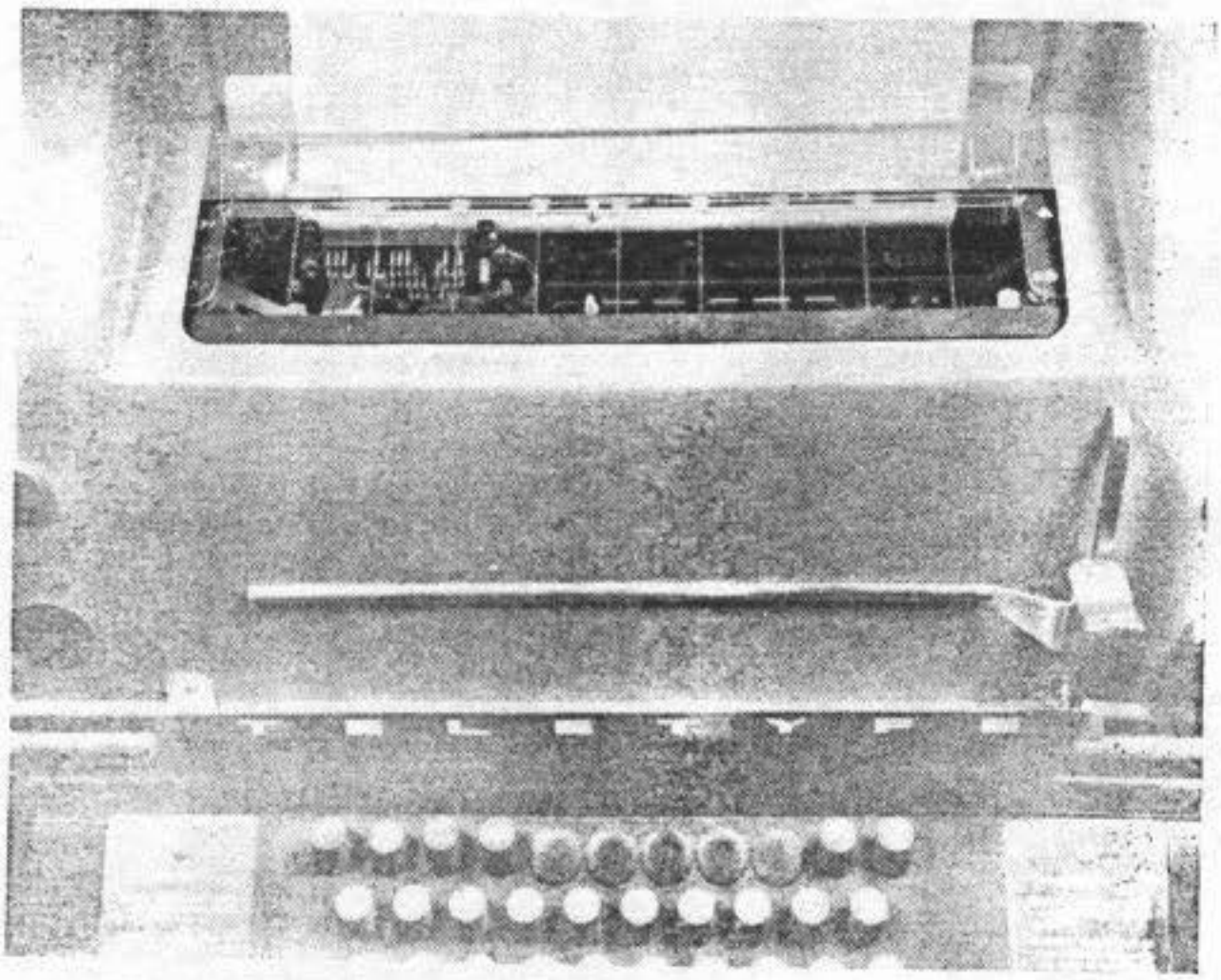

Fig. 4—Inductor Bar Mounted on 28 Teletypewriter

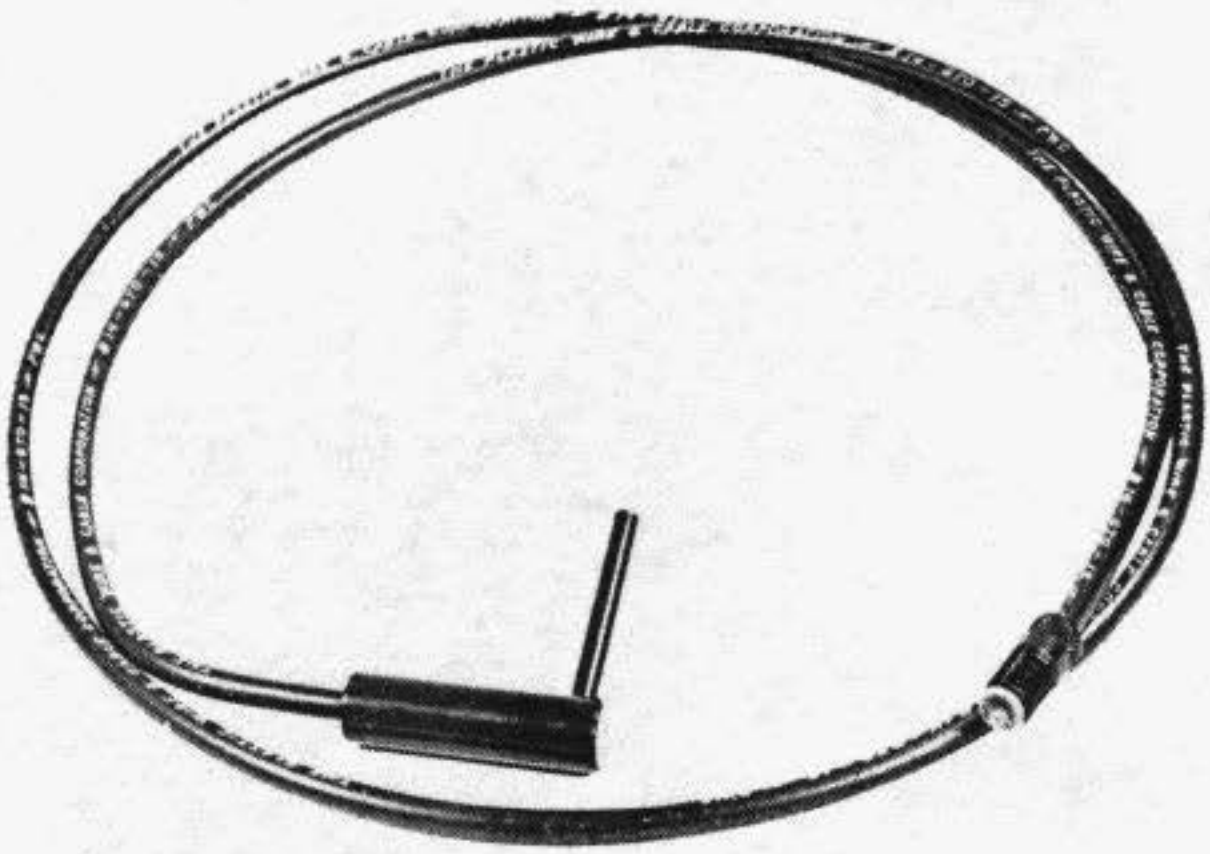

Fig. 5—KS-15930, L3 Static Eliminator (Inductor Point)

4. INDUCTOR POINT (KS-15930, L3)

4.01 The KS-15930, L3 static eliminator (inductor point) is supplied with sufficient screws, lockwashers, nuts, clamps, etc., to mount it on any of the teletypewriter apparatus shown in Part 4 of this section. The installer will not need all the mounting hardware and clamps for any one application, but should choose what he needs for the particular piece of apparatus. The complete inductor point kit (KS-15930, L3 static eliminator) consists of the following: **Fig. 5**

1 — Body with 2-inch extension point
1 — 48-inch connecting table
2 — Support clamp (For body)
1 — Support clamp extension clip (Used on 14 Typing Reperforator and Perforator of 19 Teletypewriter Set)
2 — 2-56 x 1/2-inch machine screw
2 — #2 flat washer
(Used on 14 Reperforator-Transmitter)
1 — 1/4-inch cable clamp
1 — 8-32 x 3/8-inch round head machine screw
1 — #1108 Shakeproof washer
1 — 8-32 hex nut
2 — 10-32 x 3/4-inch fillister head machine screw

4.02 The inductor point should be mounted so that it points approximately toward the center of the tape and for best results should be about 1/2 inch to 2 inches from the tape. In some instances it may be necessary to enlarge the holes slightly in the cable clamp with a rat-tail file. The area of the tape being treated must have an air space completely around it.

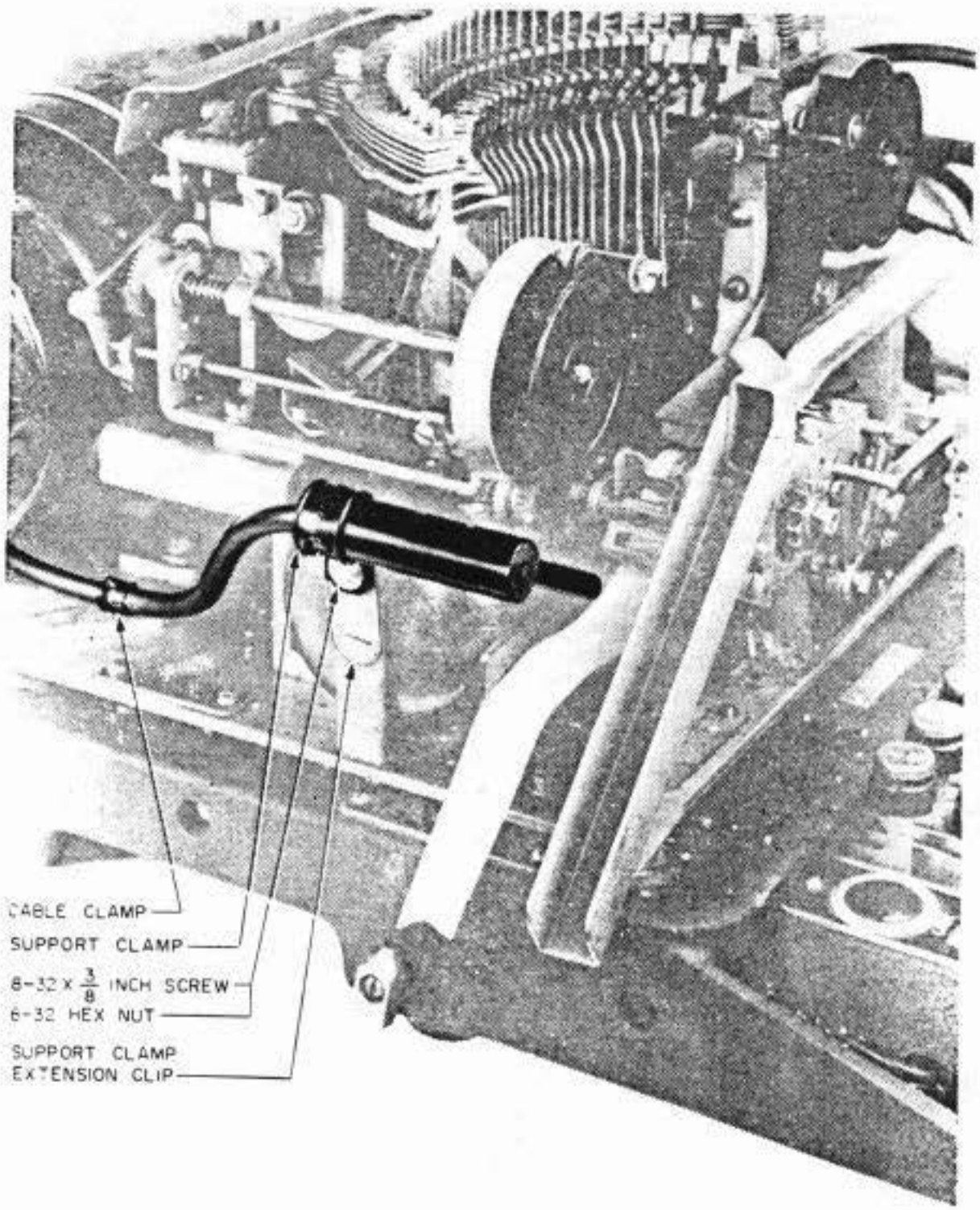

Fig. 6—Inductor Point Mounted on 14 Typing Reperforator

4.03 **Inductor Point Mounted on 14 Teletypewriter or 14 Typing Reperforator**

(1) Remove typing unit from keyboard base.

(2) Unscrew bell bracket from typing unit.

(3) Remove bell from bell bracket.

(4) Fasten support clamp to inductor point body and support clamp extension clip as shown, by means of the 8-32 x 3/8-inch round head screw and 8-32 hex nut.

(5) Reassemble bell on bell bracket with the support clamp extension clip next to the hex screw head as shown and the #1108 Shakeproof washer between the support clamp extension clip and the bell bracket.

(6) Reinstall bell bracket assembly on typing unit.

(7) Reinstall typing unit on keyboard base.

(8) Fasten cable in rear to existing screw by means of cable clamp.

(9) If the tape chute on the typing unit is equipped with a TP7691 transparent cover, cut off the portion of the cover that comes within a 1/2-inch radius of the inductor point probe.

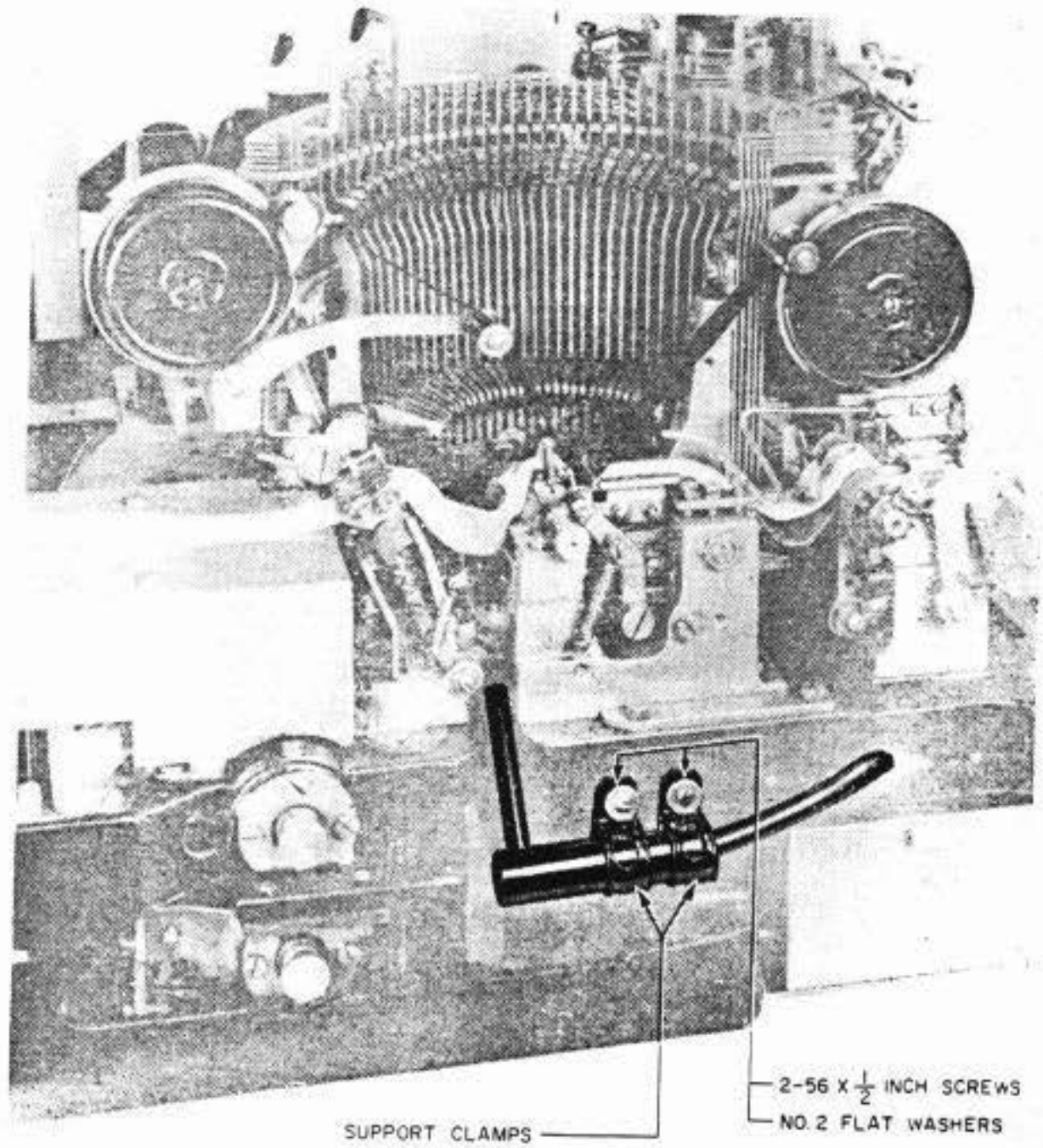

Fig. 7—Inductor Point Mounted on 14 Reperforator-Transmitter

4.04 **Inductor Point Mounted on 14 Reperforator-Transmitter**

(1) Attach the inductor point cable as shown, using the two existing tapped holes.

(2) Adjust the inductor point so that it faces the edge of the tape as it drops away from the punch pins.

(3) Route the cable through the hole in the base as shown, over the chad box and out the center rear opening. Tie the cable to the existing cable to keep it clear of moving parts.

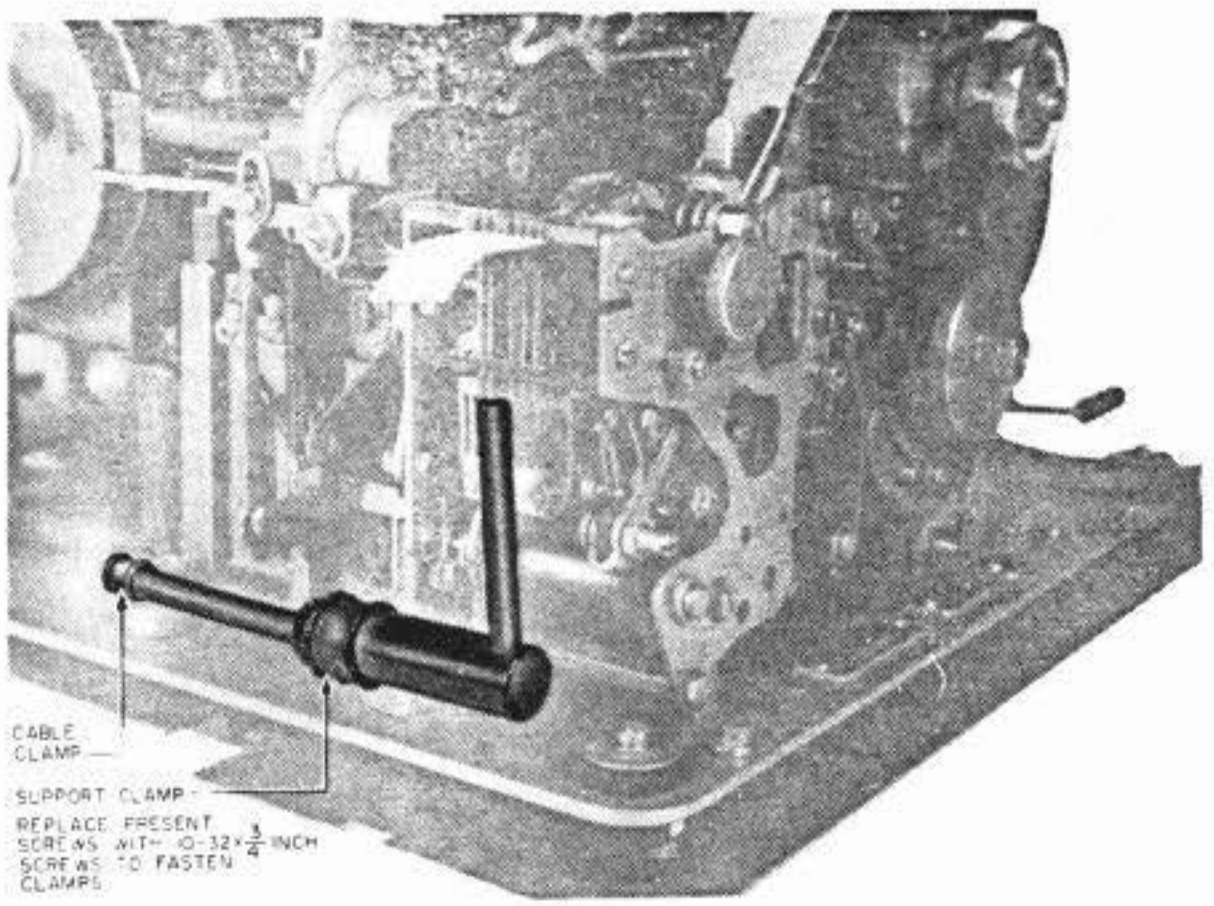

Fig. 8—Inductor Point Mounted on 28 Typing Reperforator

4.05 **Inductor Point Mounted on 28 Typing Reperforator**

(1) Mount the inductor point cable as shown, keeping a 1/8-inch clearance between the inductor point body and the metal of the machine.

(2) Route the cable along the path of the existing cable.

Note: The inductor point is mounted on the perforating mechanism of the 28ASR set in the same manner as above. On the 28ASR the cable is routed downward through holes toward the rear of the cabinet to the underside of the ASR cabinet.

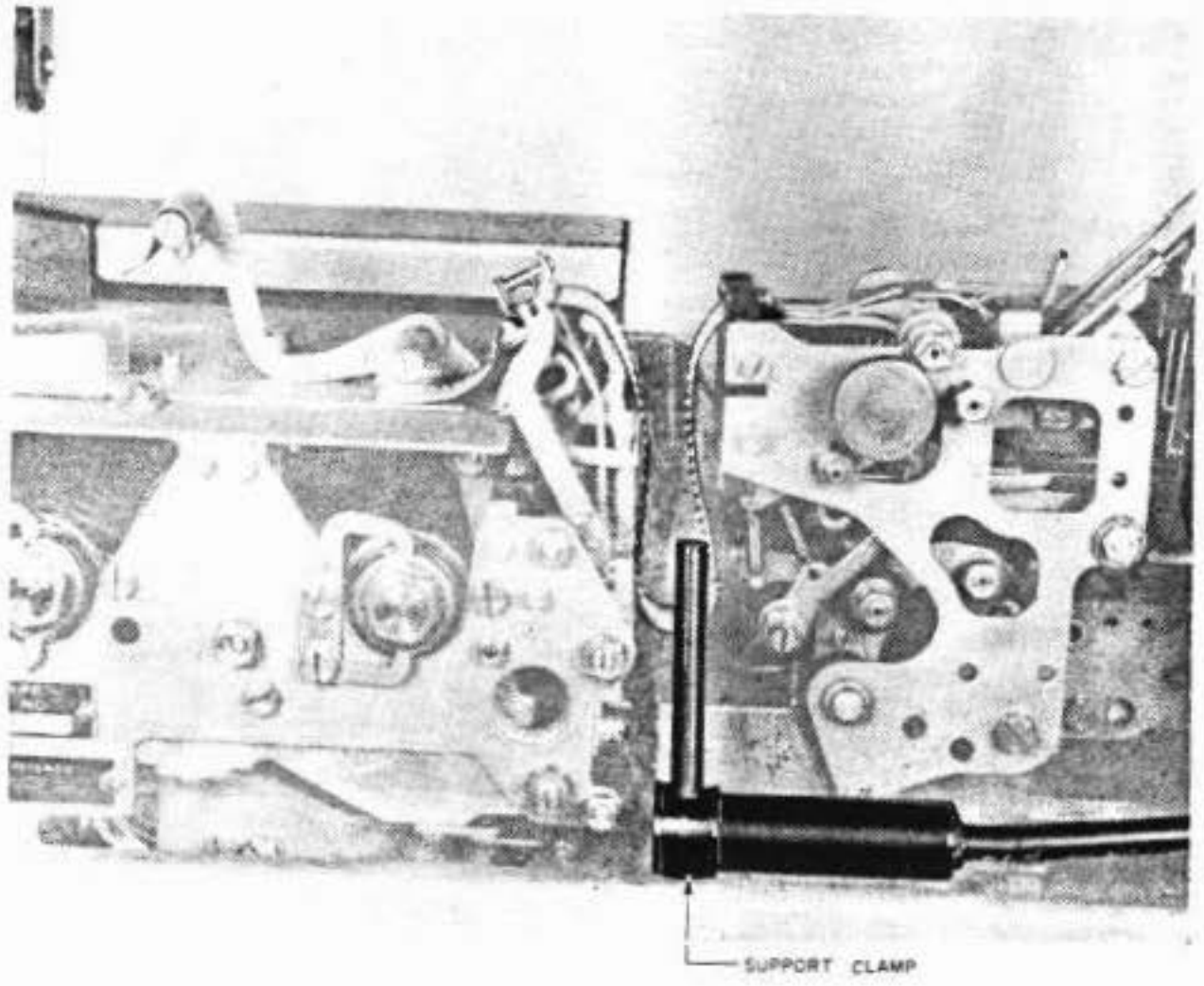

Fig. 9—Inductor Point Mounted on 28 Reperforator-Transmitter

4.06 **Inductor Point Mounted on 28 Reperforator-Transmitter**

(1) Mount the inductor body using the unit mounting screw as shown with the inductor point extension protruding through the slot in the support clamp.

(2) Route the cable back through the hole under the selector to the rear of the bulk cable and tie to the bulk cable.

(3) The power unit (KS-15930, L1) may be mounted on the middle crossbar at the rear of the 28 reperforator-transmitter stand. Drill holes if necessary.

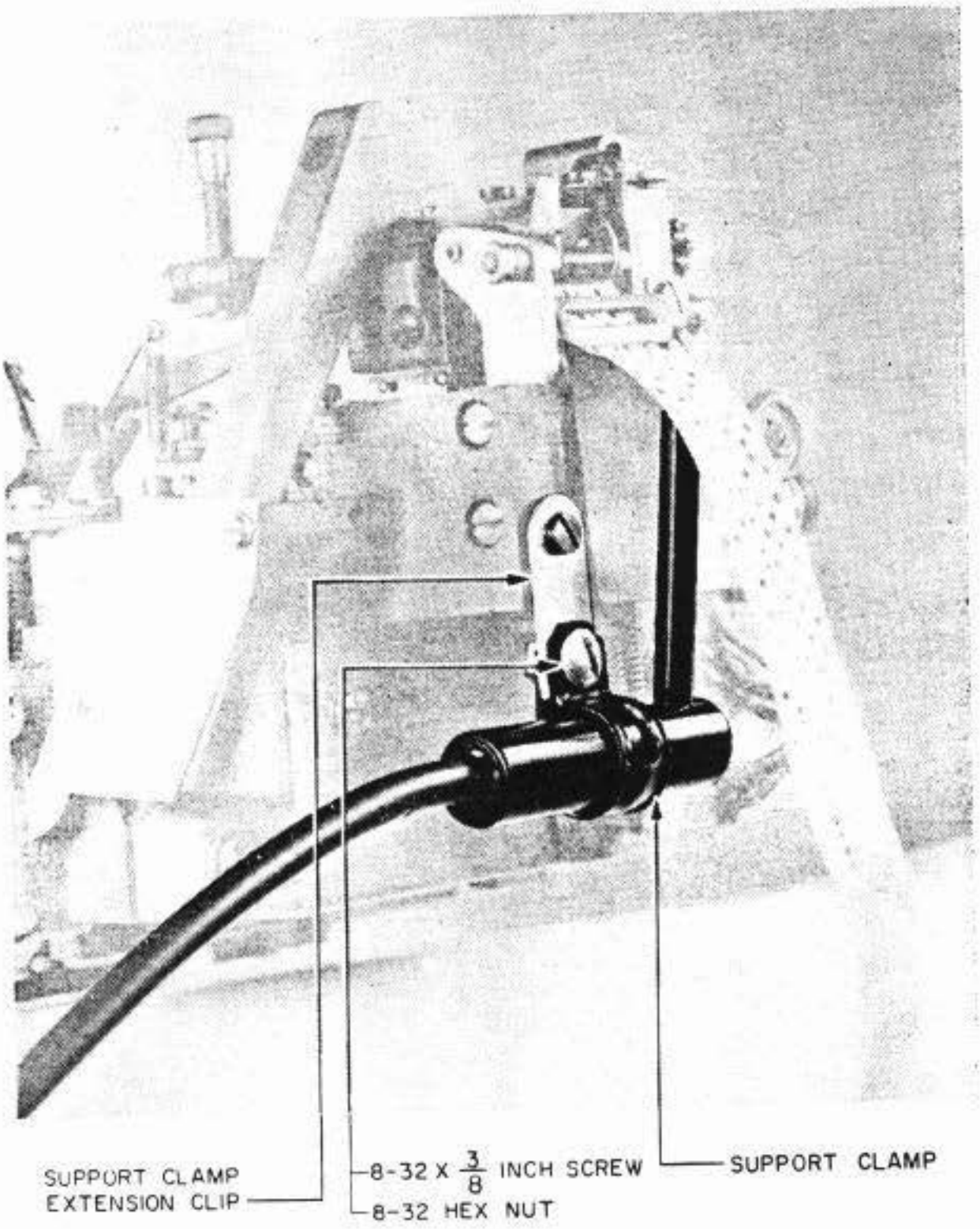

Fig. 10—Inductor Point Mounted on Perforator of 19 Teletypewriter Set

4.07 **Inductor Point Mounted on Perforator of 19 Teletypewriter Set**

(1) Fasten support clamp to inductor point body and support clamp extension clip as shown, by means of the 8-32 x 3/8-inch round head screw and 8-32 hex nut.

(2) Attach other end of the support clamp extension clip to the perforator as shown, by means of the existing screw.

5. MAINTENANCE

5.01 During routine visits clean the area around the exposed ends of the wire probes with a stiff brush and inspect the inductor cable for signs of wear or damage.

6. ORDERING INFORMATION

6.01 Static eliminators should be ordered from the Western Electric Company in the following manner:

(Quantity) Eliminator, Static, KS-15930, List 1 (power unit)

(Quantity) Eliminator, Static, KS-15930, List 2 (inductor bar)

(Quantity) Eliminator, Static, KS-15930, List 3 (inductor point)