

**SWITCHES — PLUNGER TYPE**  
**PRIMARY AND SECONDARY LINE SWITCHES AND OUT TRUNK SWITCHES**  
**PROCEDURES FOR CLEANING AND TREATING BANK CONTACTS**

**1. GENERAL**

**1.01** This section covers the procedures for cleaning and treating the tip and ring contacts (lower contacts) of plunger-type line and out trunk switches.

**1.02** This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.

**1.03** The cleaning and treatment of bank tip and ring contacts should be done during a period when there will be a minimum of interference with service.

**1.04 *Make-Busy Information:*** Before cleaning and treating bank tip and ring contacts, take the apparatus out of service as covered in the appropriate section. In the case of primary line switches, it is recommended that the No. 1 and 2 contacts of the line (A) relay be insulated. This permits the relay to operate as a visual indication that a subscriber desires to make a call. The treating procedure may then be interrupted and resumed after the call is completed.

**1.05 *Order of Treating Banks:*** If a number of banks in a bay is to be treated, begin with the topmost bank in a gate and work downward. Completely clean and treat the contacts of each bank before proceeding to the next bank. Also, clean and treat all working banks in a gate before proceeding to the next gate.

**1.06 *Release of Plunger From Plunger Guide:*** Before cleaning the tip and ring contacts of a bank, insert a toothpick between the plunger and backstop screw of the line switch just sufficiently to disengage the plunger fantail from the plunger guide shaft. After treatment of the contacts of the bank is completed, remove the toothpick and re-engage the plunger fantail in the plunger guide shaft before proceeding to the next bank.

**2. TOOLS AND MATERIALS**

CODE OR SPEC NO.	DESCRIPTION
<b>TOOLS</b>	
452A	Bank Contact Separator (modify as covered in 3.01)
KS-6320	Orange Stick
KS-14208	Brush (modify as covered in 3.02)
R-1482	Flat Combination File
—	Sponge Forceps: No. N2035 or MX-30-880, E. Meltenberg, Inc (or equivalent)
—	5-Inch Diagonal Pliers
—	B Scissors (or the replaced B <sup>7</sup> splicer's scissors)
—	P-Long-Nose Pliers (or the replaced long-nose pliers) ↓
—	1-Pint Round Plastic Refrigerator Container — P. Malvern Seal-Tainer (or equivalent — obtain locally)
—	Flour Sifter, 2 Cup — No. 4057, Sears Roebuck and Co (or equivalent — obtain locally) (modify as covered in 3.03)
—	Tongue Depressor or Similar Small Wood Paddle (obtain locally)
<b>MATERIALS</b>	
KS-2423	Cloth
KS-7860	Petroleum Spirits
KS-16062 L10	Disc (see note)
KS-16885 L6	Contact Protectant Compound ←
—	No. 0 Sandpaper (obtain locally)
—	Phenol Fabric, LE Natural Grade 950, 1/32 Inch by 1 Foot Square (modify as covered in 3.01)

**Note:** This disc was used in the KS-16062 rotor which is being replaced by the KS-16062 L2 rotor. The L2 rotor has thicker discs which are not suitable for the procedure covered in this section. Discs from KS-16062 rotors may be used by dismantling the rotor as covered in 3.04 until KS-16062 L10 discs are obtained.

### 3. PREPARATION OF MATERIALS AND TOOLS

#### 3.01 *Preparing Bank Contact Separators*

(a) Fig. 1 and 2 are full-scale drawings of the bank contact separators required for cleaning tip and ring bank contacts and applying contact protectant to the contacts. Use the B scissors to cut out the separators to the size shown in the figures. After cutting, smooth the cut edge with No. 0 sandpaper.

(b) The longer and wider bank contact separator shown in Fig. 1 is obtained by modifying a 452A bank contact separator. This separator is used during cleaning of the tip and ring contacts as covered in Part 4. The shorter and narrower separator, shown in Fig. 2, is cut from sheet phenol fabric and is used during application of the contact protectant as covered in Part 5.

→ **3.02 *Modifying KS-14208 Brush:*** Using the P-long-nose pliers, flatten the bristle end of the metal ferrule of the brush to a thickness of approximately 1/16 inch.

#### 3.03 *Modifying Flour Sifter*

(a) Remove and discard the handle.

(b) Position the sifter in the plastic container, screen end downward as shown in Fig. 3, with the screen of the sifter sufficiently above the bottom of the container to allow sediment to collect below the screen.

(c) Fill the container with KS-7860 petroleum spirits to approximately 1/2 inch above the screen of the sifter. The petroleum spirits are used to clean the discs as covered in Part 4. In use, the foreign matter dislodged when cleaning the discs will drop to the bottom of the container, with the screen reducing the agi-

tation of petroleum spirits in the lower part of the container. This will tend to keep the petroleum spirits above the screen free of sediment.

#### 3.04 *Removing Discs From KS-16062 Rotor:*

Using the 5-inch diagonal pliers, slit the fiber washer at one end of the rotor and remove the washer. Then cut off the flange of the hollow spindle with the pliers. Remove sharp edges from the spindle using the R-1482 file. Remove the discs, discarding the fiber washers. Dismantle a number of rotors as covered above to obtain discs for cleaning the tip and ring contacts as covered in Part 4.

**3.05 *Preparing Forceps:*** Take a KS-16062 L10 disc or one of the discs obtained by dismantling the KS-16062 rotor as covered in 3.04 and clamp it in the forceps so that the tip of the forceps extends to the hole in the disc.

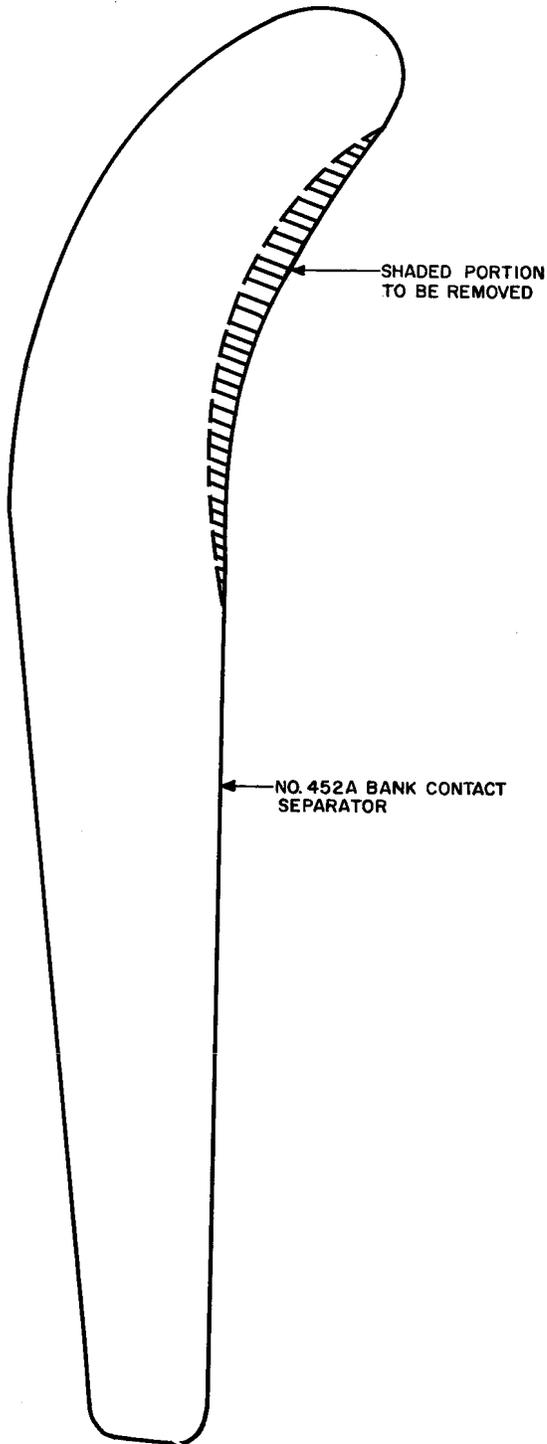
→ **3.06 *KS-16885 L6 Contact Protectant Compound:*** Since the flow characteristics of the compound are affected by high temperatures, the compound should be applied to the bank contacts only when the switchroom temperature is below 90° F. Before use, the compound should be stirred to a uniform consistency. The container of contact protectant should be tightly covered when it is not being used.

### 4. CLEANING PROCEDURES

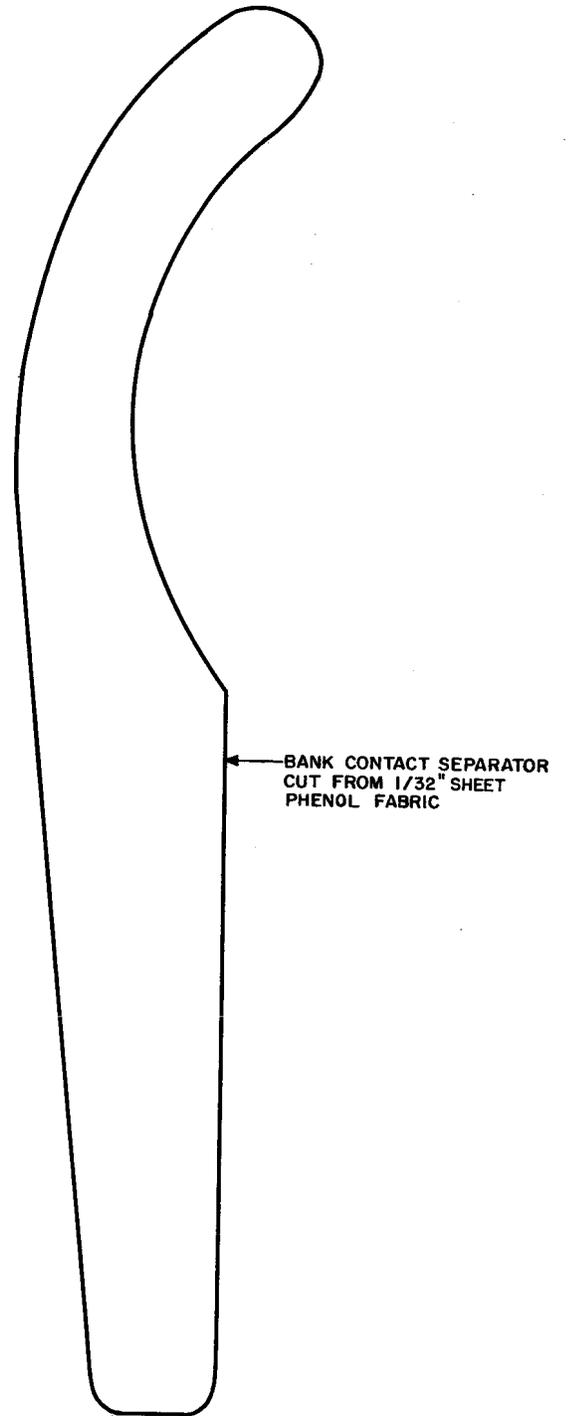
#### 4.01 *Cleaning Tip and Ring Contacts*

(a) ***Caution: Exercise extreme care when inserting and removing the modified 452A separator as covered below to avoid damaging the contact springs.***

(b) Insert the modified 452A separator shown in Fig. 1 (longer and wider separator) from the right side of the bank if the bank is associated with a left line or out trunk switch and from the left if the bank is associated with a right switch. Hold the separator so that the modified edge is away from the bank with the other edge toward the metal separator in the lower half of the bank. Place the inner edge of the separator against the metal separator of the bank. Slide the separator to the left or right, as required, until



**Fig. 1 – Modification of No. 452A Bank Contact Separator for Cleaning Bank Contacts**



**Fig. 2 – Bank Contact Separator for Applying Contact Protectant**

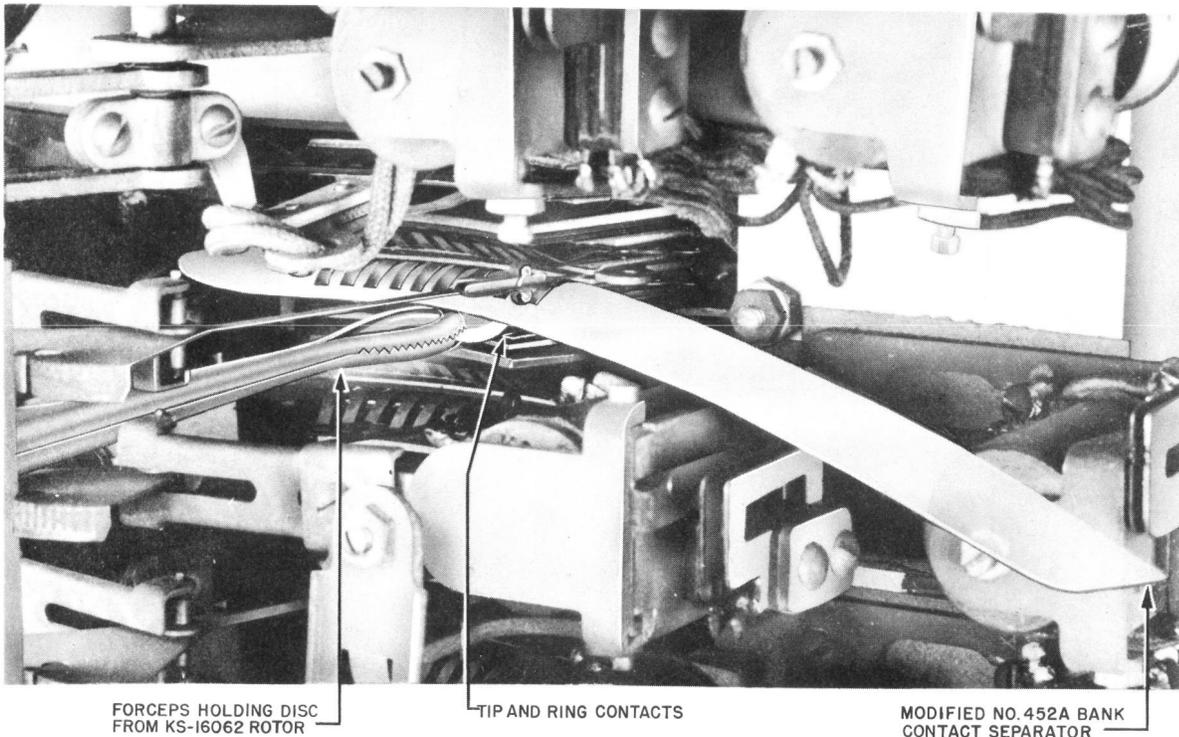


**Fig. 3 – Modified Flour Sifter Positioned in Plastic Container**

the rounded tip of the separator extends beyond the other side of the bank with the separator between the tip and ring contacts and associated bank contact springs as shown in Fig. 4.

(c) With the disc clamped in the forceps as covered in 3.05, dip the disc in the container of petroleum spirits and shake off any excess. Then remove further excess petroleum spirits by blotting the disc on a KS-2423 cloth placed on a clean flat surface.

(d) Lift the bank contact springs away from the contacts with the modified No. 452A separator and insert the disc below the separator at one side of the bank. Release the separator, move the disc laterally across the bank, and scrub all contacts using five double lateral strokes. A double lateral stroke is two side to side strokes over all the contacts in the group. Fig. 4 shows the contacts being scrubbed with the disc.



**Fig. 4 – Cleaning Tip and Ring Contacts**

- (e) Remove the disc and wipe the side of the disc just used on a clean KS-2423 cloth. Then rinse the disc in the petroleum spirits, lightly scrubbing the side just used against the wire screen. Shake off any excess petroleum spirits and blot the disc on a clean KS-2423 cloth.
- (f) Following the procedure covered in (d), again scrub the same bank contacts. Then remove the disc and clean it as covered in (e).
- (g) Remove the separator reversing the procedure of insertion covered in (b).
- (h) Clean all subsequent banks following the procedures covered in (a) through (g). Replace the disc when the surfaces of the disc become frayed. Replace the petroleum spirits when dirty. Discard the used liquid in the approved manner.

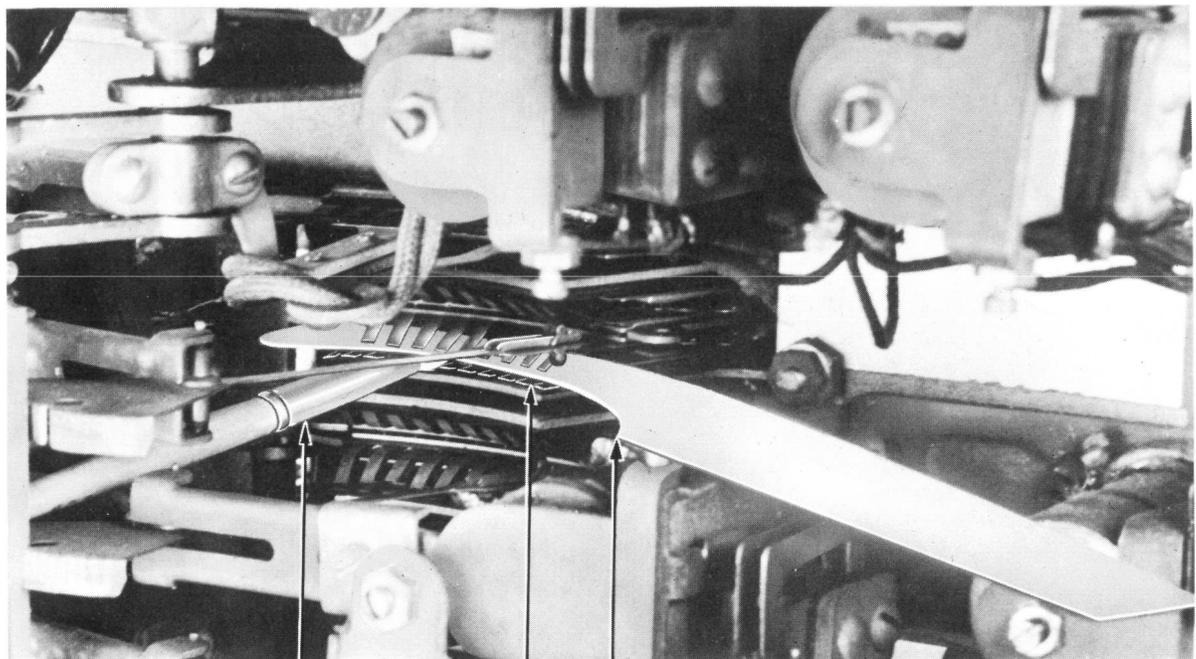
## 5. APPLYING CONTACT PROTECTANT TO TIP AND RING CONTACTS

- 5.01 *Treating Contacts:*** Treat the contacts as covered in (a) through (f) below.

(a) **Caution:** *Exercise extreme care when inserting and removing the phenol fabric separator as covered below to avoid damaging the contact springs.*

(b) Insert the phenol fabric separator shown in Fig. 2 (shorter and narrower separator) from the right side of the bank if the bank is associated with a left line or out trunk switch and from the left if the bank is associated with a right switch. Position the inner edge of the separator against the metal separator of the bank and slide the separator to the left or right, as required, until the rounded tip of the separator extends beyond the other side of the bank. Then move the separator outward (away from the metal separator of the bank) until the tips of the contact springs rest on the separator as shown in Fig. 5.

(c) Dip the modified KS-14208 brush into the contact protectant to the full length of the bristles. Then remove the brush and lightly wipe each flat side of the brush over the surface of the contact protectant in the container to align the bristles. Do not wipe the brush on the side of the container.



MODIFIED KS-14208 BRUSH

TIP AND RING CONTACTS

PHENOL FABRIC BANK CONTACT SEPARATOR

(d) Lift the contact springs with the separator and insert the brush below the separator at one side of the bank.

(e) Starting at one side of the bank, with the springs raised by the separator, apply contact protectant to all tip and ring contacts with a lateral jiggling motion of the brush. This operation should deposit on the contacts practically all the contact protectant carried by the brush. Then again dip the brush in the contact protectant as covered in (c) and repeat this procedure starting from the other side of the bank. Fig. 5 shows the contacts being treated with contact protectant.

*Caution: Exercise care not to touch the bank contacts with the metal ferrule of the brush as this might short circuit the contacts and cause service reaction.*

(f) After the contacts have been treated, remove the brush. Then move the separator

back into the bank until the inner edge of the separator touches the metal separator of the bank. Slide the separator to the left or right as required to remove it from the bank. This will minimize removal of the protectant that was applied to the contacts.

**5.02 Final Procedures:** After completing treatment of banks in a gate, proceed as follows.

(a) Remove any excess contact protectant on or near the plunger rollers with a clean KS-2423 cloth wrapped around a KS-6320 orange stick and slightly moistened with KS-7860 petroleum spirits.

(b) Check for form of bank contact springs, contact spring, and bank contact clearance, and re-engagement of plunger with plunger guide shaft requirements covered in Section 030-761-701.