

BELL SYSTEM PRACTICES
Station Installation and Maintenance

SECTION C32.375
Issue 1, 11-1-31
Standard

HAND SET MOUNTINGS

A TO E TYPES **MAINTENANCE**

1. GENERAL

1.01 This section outlines the requirements and adjusting procedures for the maintenance of A1, A2, A3, B1, B2, B3, B6, C1, D1, D2, D3, D5, D6 and E4 types of hand set mountings.

1.02 **Reason for Issue:** This section is issued to replace the maintenance information on hand set mountings previously covered in Section C32.175.

2. REQUIREMENTS

Contacts and Contact Springs

2.01 **Contact Follow:** All contact springs including those which make contact when the hand set is on the mounting shall have a perceptible follow.

2.02 **Contact Alignment:** Contacts shall line up so that the contact point falls wholly within the circumference of the opposing contact disc.

2.03 **Contact Margins:** To ensure proper contact margins, all contacts shall make or break before the plunger or switchhook reaches a point approximately $1/32$ inch from its extreme upper position and before it reaches a point $1/16$ inch from the lowest position it takes with the hand set in place on the mounting. (Gauge travel of switchhook on C type hand set mountings at point where switchhook enters the cover of hand set mounting.)

2.04 **Contact Sequence:** The contact sequence shall be as follows :

Hand Set Mountings	Plunger	Springs
A1, A2, A3, B1, B3, C1, D1, D3, E4	Upward Stroke	BK and Y make before GN and W
D5	Upward Stroke	R and Y make before BB and W BKH and B make before BB and W
B2 D2	Upward Stroke	B and RR break before B and R make B and R make before GN and W BK and Y make before GN and W
B6 D6	Upward Stroke	YY and RR break before YY and Y make YY and Y make before GN and W BK and YY make before GN and W

Hand Set Mounting Plunger or Switchhook

- 2.05 The plunger or switchhook shall move freely without binding or squeaking throughout the entire travel.
- 2.06 When the hand set is slowly lifted from the mounting, the plunger or switchhook shall move upward and come to a positive stop.
- 2.07 When the hand set is slowly lowered into place on the mounting it shall cause the plunger to move downward until the handle of the hand set rests on the supports. In the case of the hanging type mounting the switchhook shall move downward and come to a positive stop.

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- 2.08 **Key Plungers:** Key plungers shall work freely in their bearings and when released shall return to their normal position with a snap.

2.09 Locking plungers shall lock reliably and when any one of them is operated to its locked position it shall release any other locked plunger.

2.10 **Key Levers and Slide Plate:** Lever arms and slide plate shall move freely in their bearings.

2.11 Lever arms shall pivot freely on the shaft.

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2.12 **Contact Alignment:** Contacts shall line up so that the contact point falls wholly within the circumference of the opposing contact disc.

2.13 **Contact Separation:** The separation between contacts normally open or between contacts which are opened when the key is operated shall not be less than .016 inch (approximately 1/64"). Gauge by eye.

2.14 **Contact Sequence:** Normally closed contacts of an individual spring assembly shall break before the normally open contacts of the same spring assembly make by minimum .006 inch. Gauge by eye.

2.15 **Spring Clearance:** There shall be a clearance between contact springs designed never to make contact and between any contact spring and the frame whether in the operated or unoperated position of minimum .016 inch (approximately 1/64"). Gauge by eye.

2.16 **Contact Follow:** There shall be a follow on all normally open or closed contacts of minimum .016 inch (approximately 1/64"). Gauge by eye.

2.17 **Spring Travel:** The travel of plunger springs at the point of contact with the rubber rollers operated by the locking plunger shall be maximum 1/8 inch between the unoperated and operated positions. In the case of non-locking plungers, this travel shall be maximum 3/16 inch. Gauge by eye.

537 TYPE KEY

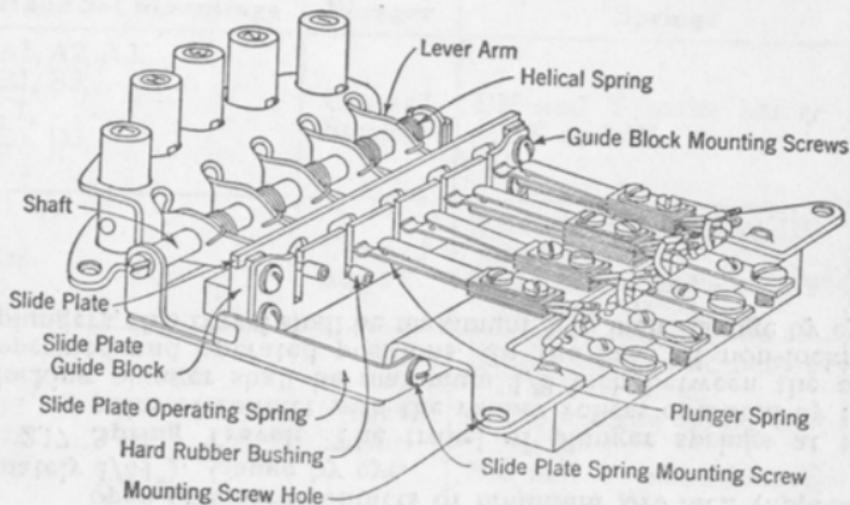


Fig. 1.

537 TYPE KEY

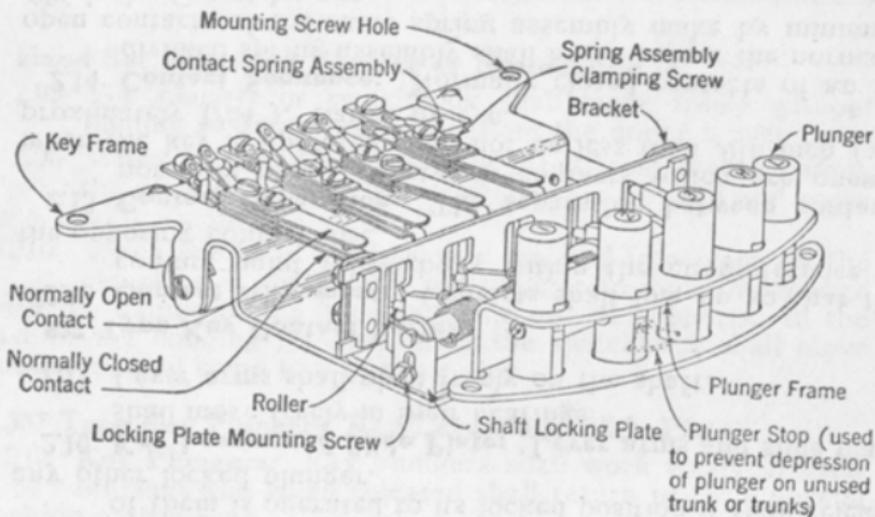


Fig. 2.

3. ADJUSTING PROCEDURES

Contacts and Contact Springs

- 3.01 **General:** Contacts should be cleaned with the 265B tool.
- 3.02 When adjusting contact springs take care not to kink them. Kinked springs should not be straightened unless the kink interferes with the proper adjustment because this tends to weaken the spring and shorten its life.
- 3.03 **Contact Follow, Contact Separation, Contact Sequence:** If the requirements are not met adjust the contact springs close to the point where they leave the clamping plates and insulators with the 143 or 303 tool or approved equivalent.
- 3.04 **Contact Alignment:** If the contact springs do not meet the requirement loosen the spring assembly with a 3-1/2" cabinet screwdriver and shift the springs until each contact point lies wholly within the corresponding contact disc preferably as near the center as possible. Then tighten the screws securely.
- 3.05 **Contact Margin:** If the requirements are not met select the spring or springs which are operated directly by the plunger or switchhook (long springs) and adjust these springs with the 143 or 303 tool or approved equivalent.

Hand Set Mounting Plunger or Switchhook

3.06 **Plungers:** If plunger fails to operate properly it is probably due to dirt or a gummy substance forming between plunger and its bearing. Remove plunger screw, plunger bracket, plunger and helical spring and then clean plunger stem with KS-2423 cloth. Replace helical spring on plunger stem and then place plunger so that nickel silver guides on the plunger cross member are in the following positions:

- (a) At the right hand side viewed from the front of hand set mounting if a D or E4 type hand set mounting.
- (b) At the rear of hand set mounting if an A or B type hand set mounting.

3.07 When replacing plunger brackets make sure that bakelite washer is first placed on the shaft and that split washer is placed under screw. If plunger does not operate properly, replace hand set mounting. If plunger fails to operate properly when hand set is placed in cradle of hand set mounting, it is probably due to excessive tension of the long contact springs. If such is the case, reduce the excessive tension of such springs as required, by applying the 143 tool or approved equivalent close to the point where the springs leave the clamping plates and insulators. Check other spring adjustments.

3.08 Switchhook: If the switchhook binds due to its being bent replace it. If the switchhook binds due to the pin being bent or rusty replace the pin. If the switchhook squeaks, remove pin and clean with KS-2423 cloth. If switchhook stop is broken or missing replace the switchhook. If switchhook does not operate properly it may be due to excessive tension or not sufficient tension of the long contact springs. Adjust the spring and then check all spring requirements.

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3.09 Key Plungers: If the key plunger binds in the sub-base shift the key slightly in its mounting. To do this remove the hand set mounting base and loosen the four screws which mount the key to the sub-base and shift the key until no bind occurs.

3.10 If the plunger still binds, it is probably due to an accumulation of dirt between the plunger and the key frame. Remove the key mounting screws and wipe off the plunger with a clean, dry KS-2423 cloth and reassemble the hand set mounting.

3.11 If the plunger fails to release from its locked position when another locking plunger is depressed, it may be due to insufficient travel of the slide plate. This condition is generally due to foreign material between the slide plate and the slide plate guide block and may generally be remedied by removing the foreign material.

3.12 If the plunger fails to release with a snap when any other locking plunger is depressed, it is probably due to a broken or distorted helical spring. If this is the case, replace the key.

3.13 If the plunger fails to lock in its operated position, it may be due to a weakened or damaged slide plate operating spring. Correct this condition as covered under Paragraph 3.20.

3.14 If the lever arm binds in the slot in the bracket it is probably due to dirt or the lever arm being bent. Operate the key and while operated, place a few drops of C. P. carbon tetrachloride on the lever arm at the point where it passes through the slot. Operate and release the key a few times and then take a toothpick that has been dipped in C. P. carbon tetrachloride and remove whatever dirt may remain.

3.15 If the lever arm binds on the shaft it is probably due to dirt. Place a few drops of C. P. carbon tetrachloride on the shaft at the point where the shaft passes through the lever arm and then operate and release the key a few times. Wipe off the shaft with a clean, dry cloth. Repeat this operation until all dirt has been removed.

3.16 If it binds due to the lever arm being bent, replace the key.

Key Levers and Slide Plate

3.17 **Slide Plate:** To determine whether or not the slide plate binds in its bearings, hold the slide plate operating spring away from the slide plate. Move the slide plate back and forth a number of times. If it does not move freely, it probably is due to an accumulation of dirt between the slide plate and slide plate guide block. Place a few drops of C. P. carbon tetrachloride between the slide plate guide block and the slide plate and operate the slide plate by hand a few times. Then take a toothpick that has been dipped in C. P. carbon tetrachloride and remove whatever dirt may remain. Wipe off the slide plate lugs.

3.18 If the bind in the slide plate is not due to dirt, loosen the two screws that hold the slide plate guide block and bracket and shift the slide plate guide until the slide plate operates freely. Then retighten the bearing screws.

3.19 If the bind in the slide plate is due to the slide plate being bent or broken, replace the key.

3.20 If the tension of the slide plate operating spring is insufficient, resulting in failure to lock the plungers in the operated position, adjust the spring with the 143 tool or approved equivalent close to the base.

3.21 If the slide plate operating spring is broken, replace it.

This spring is held in place by means of a slide plate spring mounting screw which is accessible when the base plate is removed from the sub-base.

537 Type Key Contact Springs

3.22 Adjust in accordance with Paragraphs 3.01 and 3.04.