BELL SYSTEM PRACTICES
Station Installation and Maintenance

SECTION C32.375
Issue 2, 9-25-36
AT&T Co. Standard

HAND SET MOUNTINGS
A, B, C, D, E AND G TYPES
TESTS AND ADJUSTMENTS

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, D8, E4, E5, G1, G2 and G3 types of hand set mountings.

1.02 **Reason for Reissue:** This section is reissued to provide requirements and adjusting procedures for the D8, E5, G1, G2 and G3 types of hand set mountings, to include information for mountings having crossbar contacts, to specify the use of the newest approved contact spring adjusting tool, and to cover other minor changes.

2. CONTACTS AND CONTACT SPRINGS (Except 537 Type Key)

2.01 **Cleaning of Contacts:** Contacts shall be clean:

(a) To clean burnish with No. 265B tool. In the case of mountings having crossbar contacts, apply the burnishing tool at an angle of approximately 45° with the axis of the springs, in the same plane as the springs.

2.02 **Contact Alignment:** Contacts shall line up so that in case of mountings having point and disc contacts the contact point falls wholly within the circumference of the opposing contact disc, and in mountings having crossbar contacts the width of the contact surface of each contact falls wholly within the length of the contact surface of its opposing contact bar. Each of those requirements applies throughout the entire range of operation in which the contacts are normally made.

(a) 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 the requirement is met. In case of mountings having crossbar contacts the contact bar which is parallel to the axis of the spring should be as near as practicable to the center of its opposing contact bar. Take precautions to see that the bushings go through the holes and then tighten screws securely.

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 and G type hand set mountings at point where switchhook enters the cover of the hand set mounting.)

(a) For adjustment see 2.07.

2.04 **Contact Sequence:** The contact sequence shall be as given in the figures in the sections covering connections for the respective hand telephone sets. In the case of mountings having twin contacts both contacts on the same spring shall make with their respective opposing contacts at approximately the same time.

(a) For adjustment see 2.07

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

(a) For adjustment see 2.07.

2.06 **Contact Separation:** The break between all contacts when open shall be not less than .012". Gauge by eye.

2.07 **Adjustments for Contact Follow, Contact Separation, Contact Sequence, Contact Margins:** If the requirements are not met adjust the contact springs, as follows: In the case of the long springs apply the No. 466A tool and while holding the tool in a direction tending either to increase or decrease the tension of the spring, as required, move the tool up and down the spring, bowing the spring slightly. Care should be taken not to injure the contacts in doing this. In the case of the short springs apply the tool to the spring close to the point where it leaves the clamping plate and insulators, giving a slight bend as required. 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. After making any spring adjustments check all requirements.

3. HAND SET MOUNTING PLUNGER OR SWITCHHOOK

Requirements

3.01 The plunger or switchhook shall move freely without binding or squeaking throughout the entire travel.

(a) For adjustment see 3.04, 3.05 and 3.06.

3.02 When the hand set is slowly lifted from the mounting, the plunger or switchhook shall move upward and come to a positive stop.

(a) For adjustment see 3.04, 3.05 and 3.06.

3.03 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.

Adjustments

3.04 **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, or operating details, 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 E type hand set mounting.

(b) At the rear of hand set mounting if an A or B type hand set mounting.

3.05 When replacing plunger brackets make sure that phenol fibre washer is first placed on the shaft and that split or lock 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 No. 466A tool and adjusting in the manner described in 2.07. Check other spring adjustments.

3.06 **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 and in case of G type mounting clean also the hard rubber switchhook stud or studs which operate the contact springs. If one of the

switchhook stops is broken replace the switchhook. If switchhook still does not operate properly it may be due to excessive tension or not sufficient tension of the long contact springs in the case of the C type mounting, or to incorrect tension of the helical spring in the case of the G type mounting. Adjust the springs in case of C type mounting, replace helical spring if necessary in case of G type mounting, and then check all spring requirements.

4. 537 TYPE KEY

Key Plungers

4.01 Key plungers shall work freely in their bearings and when released shall return to their normal position with a snap. Locking plungers shall lock reliably and when any one of them is operated to its locked position it shall release any other locked plunger. To adjust proceed as follows:

(a) 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.

537 TYPE KEY

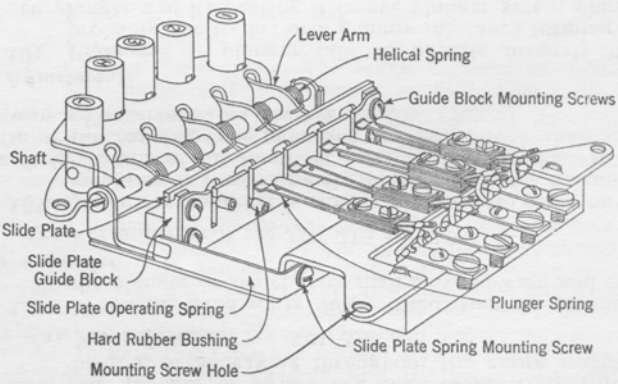

Fig. 1

(b) 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.

(c) 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.

(d) 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.

(e) 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 4.02 (d).

(f) 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.

537 TYPE KEY

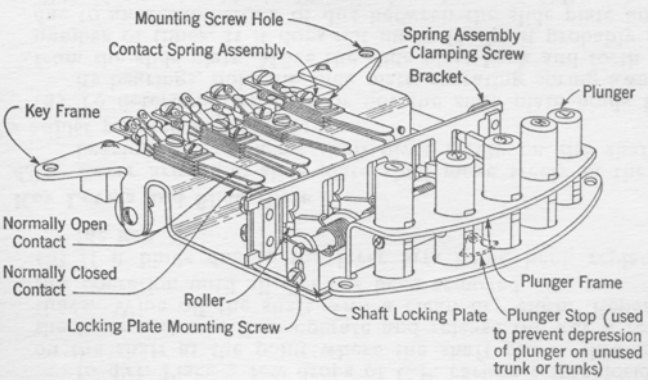

Fig. 2

(g) 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.

(h) If it binds due to the lever arm being bent, replace the key.

Key Levers and Slide Plate

4.02 Lever arms and slide plate shall move freely in their bearings. Lever arms shall pivot freely on the shaft. To adjust proceed as follows:

(a) 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.

(b) 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.

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

(d) 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 No. 466A← tool close to the base.

(e) 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—Requirements

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

4.04 **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.

4.05 **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.

4.06 **Contact Follow:** All contact springs including those which make when the plunger is released shall have a perceptible follow. ←

4.07 **Spring Travel:** The travel of plunger springs at the point of contact with the rubber bushings on the levers shall be maximum 1/8 inch between the unoperated and operated positions in the case of locking plungers, and maximum 3/16 inch between unoperated and the extreme downward position in the case of non-locking plungers. Gauge by eye.

537 Type Key Contact Springs—Adjustments

4.08 Adjust in accordance with 2.02 (a) and 2.07 except that all spring adjustments should be made with the No. 466A tool applied at the base of the spring close to the clamping plates and insulators. Clean in accordance with 2.01 (a). ←