

KEYS 520-TYPE REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers 520 type keys.

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 Reference shall be made to Section 020-010-711 covering General Requirements and Definitions for additional information necessary for the proper application of the requirements listed herein.

1.04 Part 1, "General" and Part 2, "Requirements" form part of the Western Electric Co. Inc. Installation Department handbook.

1.05 Requirements are marked with an asterisk (*) when to check for them would necessitate the dismantling or dismantling of apparatus, or would affect the adjustment involved or other adjustments. No check need be made for these requirements unless the apparatus or part is made accessible for other reasons or its performance indicates that such a check is advisable.

1.06 The operated position is that position in which the plunger is depressed to the limit of its stroke with all normally open contacts closed and all normally closed contacts open.

1.07 The normal (unoperated) position is that position in which the plunger is at the upper limit of its stroke with all normally open contacts open and all normally closed contacts closed.

1.08 In gauging the "plunger operate" and "plunger non-operate" pressures the gauge shall be applied to the center of the plunger.

2. REQUIREMENTS

2.01 Cleaning

(a) Contacts shall be cleaned in accordance with the section covering cleaning procedures for key contacts.

(b) Other parts shall be cleaned in accordance with approved procedures.

2.02 Plunger Movement - Fig. 1 (A) - The plunger shall operate freely in the key shell. Gauge by feel.

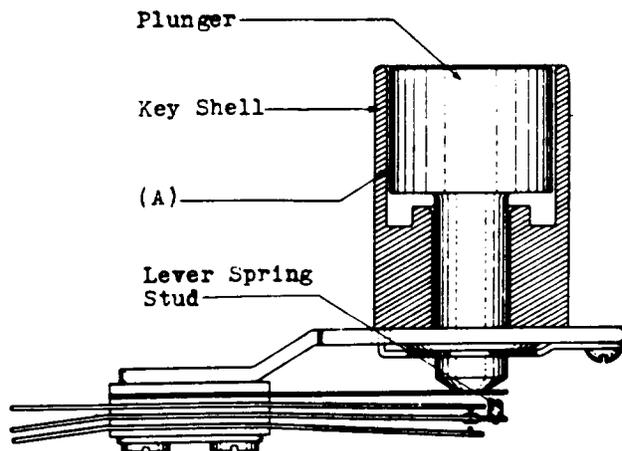


Fig. 1

*2.03 Contact Alignment - Fig. 2 (A) - The contacts shall line up so that the point of contact falls wholly within the boundary of the opposing contact. Gauge by eye.

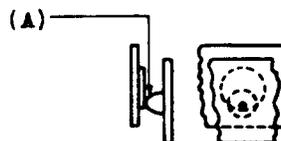


Fig. 2

***2.04 Contact Separation - Figs. 3 (A) and 4 (A)** - There shall be a separation between all open contacts of:

520 Type Keys except 520-F, J and K Keys

Test - Min. .010", Max. .022"

Readjust - Min. .012", Max. .020"

520-F, J and K Keys

Test - Min. .010"

Readjust - Min. .012"

Gauge by eye.

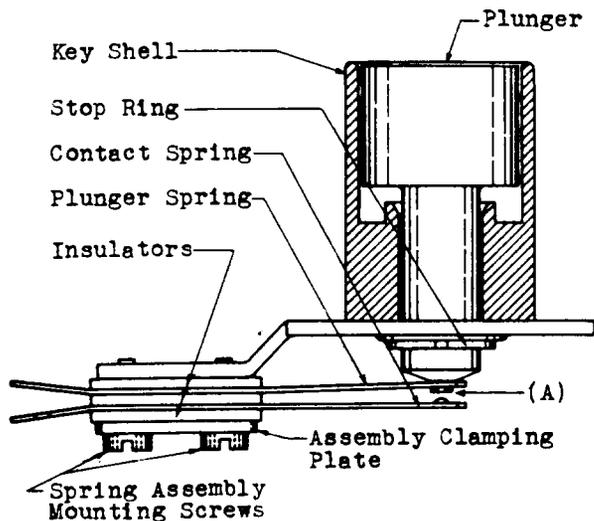


Fig. 3

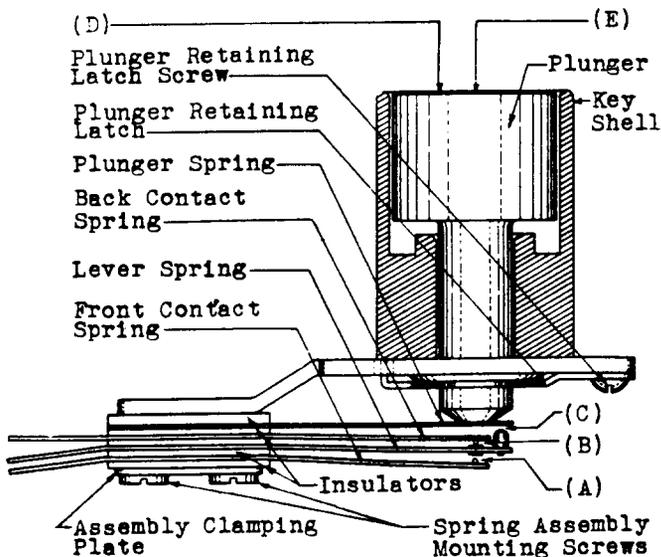


Fig. 4

***2.05 Contact Pressure (520-F, J and K Keys) -**

Fig. 4 (B) - There shall be a pressure between the normally closed contacts when the key is normal and between the normally open contacts when the key is operated of:

Test - Min. 50 grams

Readjust - Min. 55 grams

Use the No. 68-B gauge.

***2.06 Contact Follow - Figs. 3 (A) and 4 (A)** - There shall be a follow of the normally open contacts after making of:

520 Type Keys except 520-F, J and K Keys - Min. .030"

520-F, J and K Keys - Min. .010"

Gauge by eye.

***2.07 Stud Gap (520-F, J and K Keys) - Fig. 4 (C)** - With the key in the normal or unoperated position, there shall be a perceptible clearance between the plunger spring and the lever spring stud. Gauge by eye.

***2.08 Contact Sequence (520-F, J and K Keys)** - Unless otherwise specified, the normally closed contacts operated by the plunger shall break before the normally open contacts make by:

Test - Min. .005"

Readjust - Min. .006"

Gauge by eye

2.09 Plunger Operate Pressure

(a) 520 Type Keys except the 520-F, J and K Keys - Fig. 5 (A) - The pressure required to move the plunger out of the normal position shall be:

Test - Max. 190 grams

Readjust - Max. 170 grams

Use the No. 79-C gauge.

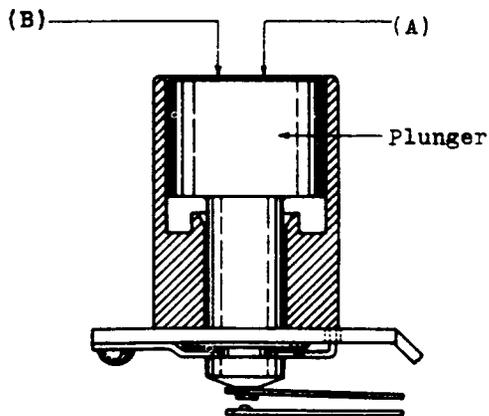


Fig. 5

(b) 520-F, J and K Keys - Fig. 4 (D) - The force required to depress the button to the way-down position shall not exceed the actual contact pressure in this position by more than 300 grams. Use the No. 79-B gauge.

2.10 Plunger Non-Operate Pressure - Figs. 4 (E) and 5 (B) - The plunger shall not move out of the normal position when a pressure is applied of:

Test - 50 grams

Readjust - 55 grams

Use the No. 79-C gauge.

3. ADJUSTING PROCEDURES

3.001 List of Tools, Gauges and Materials

<u>Code No.</u>	<u>Description</u>
<u>Tools</u>	
303	Spring Adjuster
KS-6015	Duck-bill Pliers
-	Bell System Cabinet Screw-driver - 3-1/2" per A.T.& T.Co. Drawing 46-X-40
-	Bell System P-Long Nose Pliers - 6-1/2" per A.T.& T. Co. Drawing 46-X-56
<u>Gauges</u>	
68-B	70-0-70 Gram Gauge
79-B	0-1000 Gram Push-Pull Tension Gauge
79-C	0-200 Gram Push-Pull Tension Gauge
<u>Materials</u>	
KS-2423	Cloth
KS-7860	Petroleum Spirits

3.01 Cleaning (Rq.2.01)

M-1 Clean the contacts in accordance with the section covering cleaning procedures for key contacts. Clean other parts as outlined in procedure 3.02, M-1 to M-3 inclusive.

3.02 Plunger Movement (Rq.2.02)

M-1 Keys equipped with Stop Ring If the plunger binds in the key shell and it is due to an accumulation of dirt, remove the stop spring from the plunger as follows: Insert the 3-1/2" cabinet screw-driver between the ends of the stop ring and twist the screw-driver forcing one end of the ring out of the groove in which it is resting. Then grasp the end that has been partially removed, with the long nose pliers and draw the ring further away from the plunger until it is possible to remove the entire ring from the groove. Then remove the plunger from the key shell.

M-2 After the plunger has been removed from the key shell, wipe it off with a dry KS-2423 cloth. Then clean the key shell with KS-2423 cloth moistened with petroleum spirits. Take care not to get the petroleum spirits on the spring assembly insulators. After the parts of the key have been thoroughly cleaned and the key shell allowed to dry, replace the plunger.

M-3 Other 520 Type Keys If the plunger binds in the key shell and it is due

to an accumulation of dirt, remove the plunger retaining latch screw with the 3-1/2" cabinet screw-driver. Remove the plunger retaining latch and then the plunger. Then clean the plunger and key shell as outlined in M-2. After the plunger and key shell have been cleaned and the key shell allowed to dry, replace the plunger and retaining latch and securely tighten the retaining screw.

- 3.03 Contact Alignment (Rq.2.03)
- 3.04 Contact Separation (Rq.2.04)
- 3.05 Contact Pressure (520-F, J and K Keys) (Rq.2.05)
- 3.06 Contact Follow (Rq.2.06)
- 3.07 Stud Gap (520-F, J and K Keys) (Rq.2.07)
- 3.08 Contact Sequence (520-F, J and K Keys) (Rq.2.08)
- 3.09 Plunger Operate Pressure (Rq.2.09)
- 3.10 Plunger Non-Operate Pressure (Rq.2.10)

M-1 When making these adjustments consult the associated circuit drawing and circuit requirement table, and give proper consideration to the maintenance of any requirement for contact sequence which may be specified thereon. Do not straighten kinked springs unless the kink interferes with the proper adjustment of the key. Removing the kinks tends to weaken the spring and shorten the life of the key.

M-2 Before adjusting the springs, tighten up all the spring assembly mounting screws. Adjust the springs unless otherwise specified close to the point where the spring leaves the spring assembly clamping plate or insulators. In adjusting the springs exercise care to adjust them in line with their movement so as not to twist them off center. Adjust the springs so that there will be the specified clearance between any spring and the frame and between springs designed never to make contact. Straightening the springs will usually rectify any trouble that may exist because of springs touching each other which are designed to clear at all times. In making adjustments on 520-F, J and K keys it may be necessary to remove them from the keyshelf and adjust them as shown in Fig. 6 with the duck-bill pliers. Adjustments on other 520 type keys may be made without removing them from the keyshelf by adjusting with the No. 303 spring adjuster as shown in Fig. 7.

M-3 Contact Alignment Check the key to determine whether or not the springs are out of alignment. If necessary to readjust the springs, loosen the spring assembly mounting screws using the 3-1/2" cabinet screw-driver and shift the springs so that they are all in alignment. Tighten the screws securely.

M-4 Stud Gap If there is no gap between the plunger spring and the lever spring stud or if the gap is not satisfactory, adjust the back contact spring

3.03-3.10 (Continued)

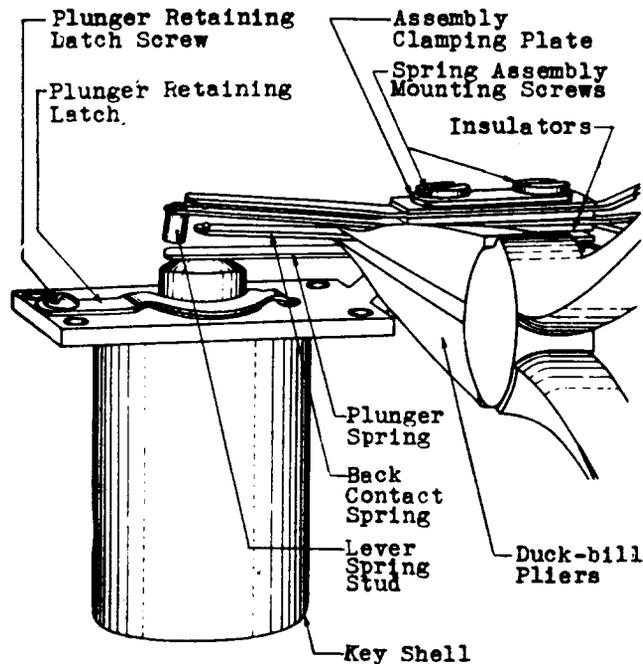


Fig. 6 - Method of Adjusting Springs of No. 520-F, J and K Keys

with the duck-bill pliers as outlined in M-2. Take care in making this adjustment to see that the contact pressure of the normally closed contact is satisfactory. If not, adjust as outlined in M-2.

M-5 Plunger Operate Pressure In checking the plunger operate pressure of 520-F, J and K keys it will be necessary to measure the contact pressure of the normally open springs when the plunger is in the way-down position before measuring the plunger operate pressure. The maximum operate pressure is the pressure measured with the key in the way-down position less the actual contact pressure.

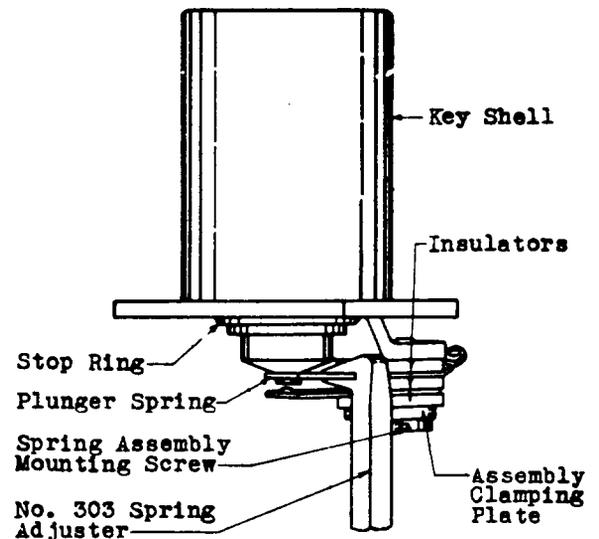


Fig. 7 - Method of Adjusting Springs of Other 520 Type Keys

M-6 If more than the specified maximum pressure is required to depress the plunger and the plunger moves freely in the key shell, see whether the plunger spring is tensioned too stiffly against the plunger. If this condition exists, reduce the tension of the plunger spring slightly using the duck-bill pliers when adjusting 520-F, J and K keys or the No. 303 spring adjuster when adjusting other 520 type keys as outlined in M-2 until the proper adjustment has been obtained, keeping it as near the maximum limit as possible.

M-7 Plunger Non-Operate Pressure If the plunger moves from the normal position when the non-operate pressure is applied, increase the tension of the plunger spring by adjusting it with the duck-bill pliers or the No. 303 spring adjuster as required, taking care that the maximum limit specified to depress the plunger is not exceeded.