

## KS-5464 CALL TIMING SWITCH REQUIREMENTS AND ADJUSTING PROCEDURES

### 1. GENERAL

1.01 This section covers the KS-5464 call timing switch.

1.02 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.

1.03 Requirements are marked with an asterisk (\*) when to check for them would necessitate the dismantling or dismounting 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.

1.04 The requirements and adjusting procedures covered herein are based on the call timing switch being set to operate to full scale in a period of 5 minutes. The gear change lever must not be moved to the 15 minute scale.

### 2. REQUIREMENTS

2.01 Contact Cleaning Contacts shall be cleaned in accordance with the section covering cleaning of relay contacts and parts.

2.02 Mounting The call timing switch shall be securely mounted in its case and the case shall be securely mounted on the frame. Gauge by feel.

#### 2.03 Contact Alignment

(a) Fig. 1(A) and 2(A) - The timing contacts shall line up so that their centers are not out of alignment more than 1/8 of the contact diameter. Operate the actuating contact spring manually and gauge by eye just as the contacts make.

\* (b) Fig. 2(B) and 3(A) - The motor stop contacts shall line up so that their centers are not out of alignment more than 1/4 of the contact diameter. Gauge by eye.

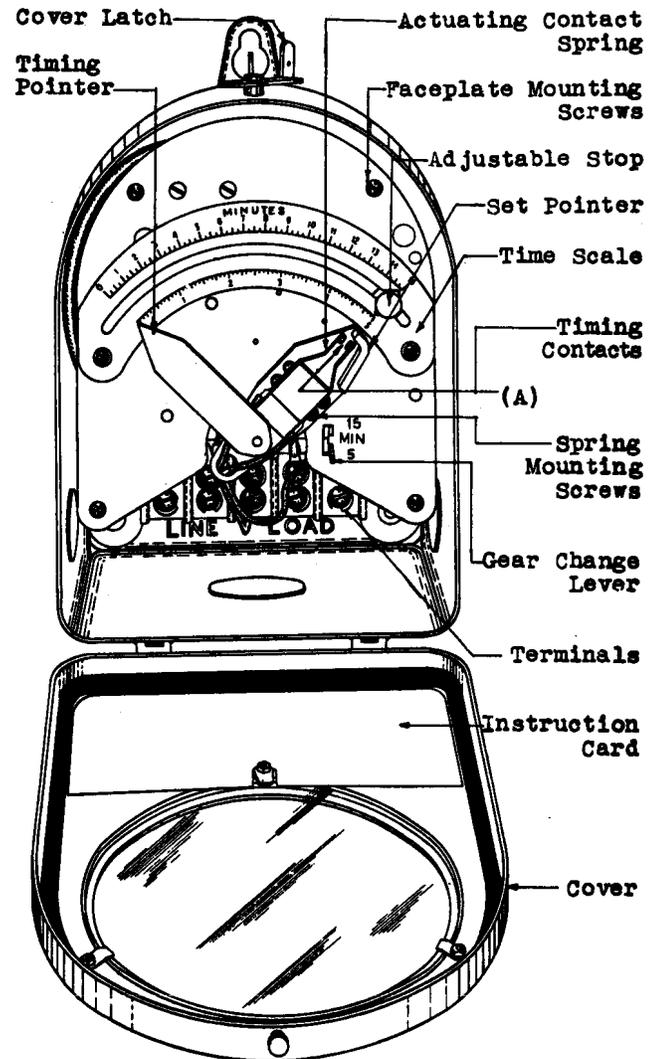


Fig. 1 - Front View of KS-5464 Call Timing Switch

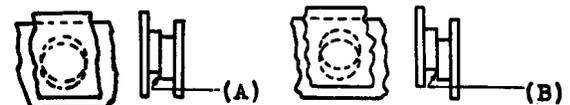


Fig. 2 - Contact Alignment

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\*2.04 Spring Clearance - There shall be a clearance between contact springs and between any spring and the frame of  
 Min. .010"  
 Gauge by eye.

\*2.05 Straightness of Springs All contact springs shall be free from sharp bends or kinks due to adjustment. Gauge by eye.

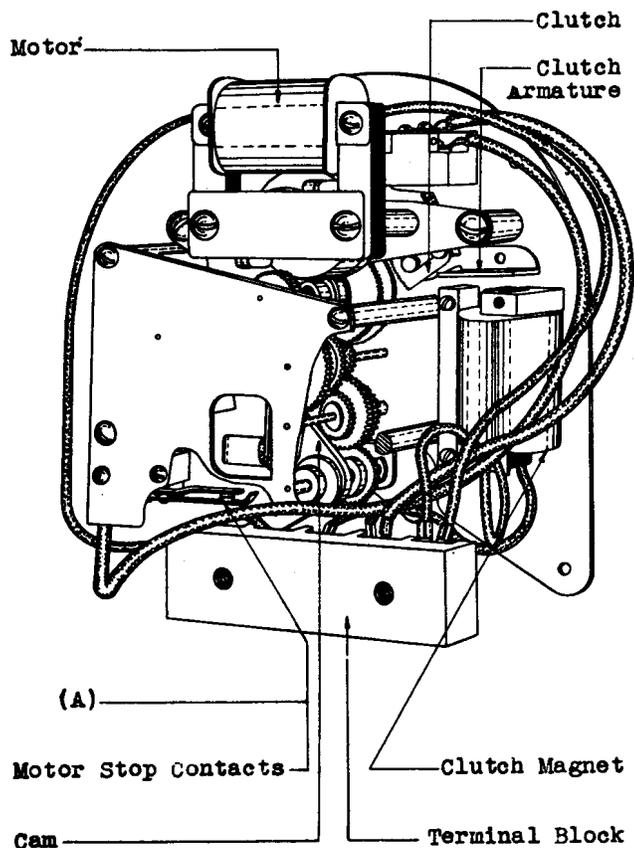


Fig. 3 - Rear View of KS-5464 Call Timing Switch

2.06 Contact Separation of Timing Contacts  
 Fig. 1 (A) The separation between the timing contacts when the call timing switch is in the normal position shall be  
 Min. .020"  
 Gauge by eye.

\*2.07 Contact Follow of Motor Stop Contacts  
 When the upper motor stop spring is moved upward with the switch in the normal position the lower contact shall follow  
 Min. .010"  
 Use the KS-6320 orange stick and gauge by eye.

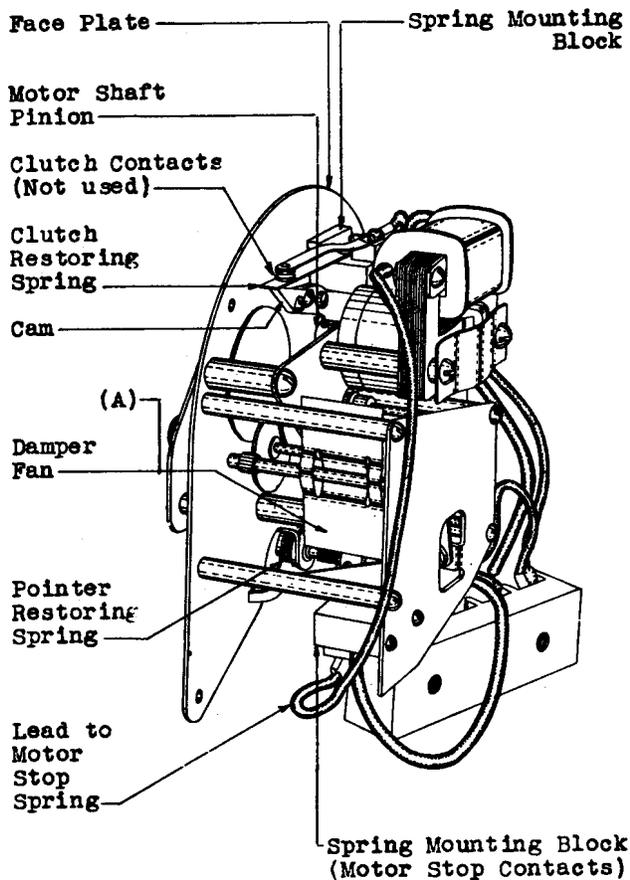


Fig. 4 - Rear View of KS-5464 Call Timing Switch

\*2.08 Cam and Spring Alignment - The cam which actuates the motor stop contacts shall engage the end of the associated contact spring entirely within the width of the spring and shall overlap the end of the bottom spring  
 Min. 1/32"

Operate the timing pointer manually and gauge by eye.

\*2.09 Clearance Between Motor Shaft Pinion and Frame There shall be a perceptible (approximately .005") clearance between the motor shaft pinion and the frame. Gauge by eye.

\*2.10 Damper Fan Clearance - Fig. 4 (A)

(a) There shall be a clearance between the damper fan and the frame in all positions of rotation of  
 Min. .010"  
 Gauge by eye.

(b) Leads to the motor stop springs shall be so placed that they can not interfere with the operation of the damper fan.

2.11 Position of Motor Stop Contacts The motor stop contacts shall open the motor circuit after the timer has been operated on the 5 minute scale for  
 Min. - 5 minutes, 20 seconds  
 Max. - 5 minutes, 40 seconds  
 Use the KS-3008 stop watch.

\*2.12 Freedom of Movement of Clutch and Clutch Armature The clutch and clutch armature shall move freely on their bearings. Gauge by feel.

### 2.13 Electrical Requirements

(a) The clutch magnet shall meet the following electrical requirement

Operate - 45 Volts  
 Release - Open Circuit

(b) With the motor operating and with the clutch magnet operated on the voltage specified in (a) the timing pointer shall move over the scale and close the adjustable time contacts within 10 seconds before the expiration of the period indicated by the set pointer. Use the KS-3008 stop watch.

(c) When the current is disconnected from the clutch magnet the clutch shall release, the timing pointer shall restore to zero and the set pointer shall return to its set position.

## 3. ADJUSTING PROCEDURES

### 3.001 List of Tools, Gauges and Materials

<u>Code No.</u>	<u>Description</u>
<u>Tools</u>	
206	Screw-driver - 30° Offset
207	Screw-driver - 90° Offset
303	Spring Adjuster
KS-6015	Duck-bill Pliers
KS-6320	Orange Stick
KS-6854	Screw-driver - 3-1/2"
R1005	Jewelers Screw-driver
-	Bell System Cabinet Screw-driver - 3-1/2" per A.T.& T.Co. Drawing 46-X-40
-	Bell System Regular Screw-driver - 4" per A.T.&T. Co. Drawing 46-X-34
<u>Gauges</u>	
KS-3008	Stop Watch

3.002 In order to check certain requirements and make certain adjustments, it is necessary to remove the mechanism from the case. To do this proceed as follows: Disconnect the lead to the power supply for the motor. Disconnect the leads at the terminal block in the case by removing the terminal screws with the 3-1/2" cabinet screw-driver. Label the wires so that they can be replaced correctly. Remove the four face-plate mounting screws from the face of the timer with the 4" regular screw-driver and remove the mechanism from the case.

### 3.01 Contact Cleaning (Rq.2.01)

(1) Clean the contacts in accordance with the section covering the cleaning of relay contacts and parts.

### 3.02 Mounting (Rq.2.02)

(1) If the timer or the case is loose in its mounting tighten the mounting screws securely using the 4" regular screw-driver.

### 3.03 Contact Alignment (Rq.2.03)

### 3.04 Spring Clearance (Rq.2.04)

### 3.05 Straightness of Springs (Rq.2.05)

(1) To adjust the timing contacts for contact alignment or spring clearance loosen the spring mounting screws with the Nos. 206 and 207 screw-driver and shift the springs as required. Tighten the mounting screws securely. If the springs are distorted due to adjustment straighten them as required using the KS-6015 duck-bill pliers.

(2) If the requirements are not met on the motor stop contacts due to the springs having shifted out of position in the mounting, loosen the spring mounting screws with the 3-1/2" cabinet screw-driver and shift the springs as required. If the requirements are not met due to distortion of the springs due to adjustment, straighten the springs using the KS-6015 duck-bill pliers. Recheck the contact alignment and spring clearance and remount the switch in the case.

### 3.06 Contact Separation (Rq.2.06)

### 3.07 Contact Follow (Rq.2.07)

(1) To adjust the timing contacts for contact separation apply the KS-6015 duck-bill pliers close to the point where the spring leaves the spring mounting block and adjust the actuating spring to the right or left as required.

(2) To adjust the motor stop contacts remove the switch from the case as covered in 3.002 and adjust the contact spring springs as required using the No. 303 spring adjuster.

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### 3.08 Cam and Spring Alignment (Rq.2.08)

(1) If the cams do not line up properly with their associated contact springs loosen the spring mounting screws slightly with the 3-1/2" cabinet screw-driver and shift the spring as required. Before retightening the screws be sure that requirement 2.04, covering contact alignment, is met.

### 3.09 Clearance Between Motor Shaft Pinion and Frame (Rq.2.09)

(1) To adjust the position of the motor shaft pinion loosen the set screws which hold the pinion to the motor shaft with the KS-6854 screw-driver and shift the pinion as required. Tighten the set screws securely.

### 3.10 Damper Fan Clearance (Rq.2.10)

(1) To adjust the damper fan clearance slide the fan to the right or left on the shaft as required taking care that the fan sets within the cut out portion of the shaft.

### 3.11 Position of Motor Stop Contacts (Rq.2.11)

(1) When necessary to check the motor stop contacts connect the circuit through the clutch winding so that the clutch is continuously operated, thus causing the timing pointer to move completely across the scale and open the motor stop contacts. Observe that the motor stop contacts operate within the specified time limits as indicated by the timing pointer and the KS-3008 stop watch.

(2) If the motor stop contacts fail to operate properly inspect the springs to see that the cam engages the motor stop spring properly. If the cam does not operate the springs properly loosen the spring mounting screws with the 3-1/2" cabinet screw-driver and snift the springs as required.

(3) If the motor stop contacts fail to operate within the specified time limits loosen the set screw which attaches the cam to its shaft with the jewelers screw-driver and turn the cam on the shaft until the requirement is met. This setting can be obtained by operating the timing pointer manually and noting the indication on the scale when the motor stop contacts operate. After the adjustment has been completed tighten the set screw securely. Remount the switch in the case and check the operation of the springs by operating the switch electrically.

### 3.12 Freedom of Movement of Clutch (Rq.2.12)

### 3.13 Electrical Requirements (Rq.2.13)

(1) If the clutch fails to operate properly return the call timing switch for repair in accordance with local instructions.

(2) If the clutch fails to release, increase the tension of the clutch springs as required until the clutch releases properly.

(3) If the call timing switch does not close the timing contacts within the specified operating time as indicated by the set pointer, adjust the right hand contact spring using the KS-6015 duck-bill pliers. Adjust the contact spring to the right or left as required until the switch meets the specified timing requirement.

### 3.14 Zero Correction

(1) If the switch fails to restore to zero, loosen the scale mounting screws and move the scale as required. If sufficient movement is not permitted by the clearance holes in the scale proceed as covered in (2), (3) and (4).

(2) If the pointer indicates a reading on the scale move the set pointer as far to the right as possible and fasten it in that position by tightening the pointer set screw. Then take the reading of the movable pointer on the scale. Set the gear shift lever to the 15 minute position and move the timing pointer ahead one-half the distance from its position to the zero of the scale. Hold the timing pointer in this position and move the gear shift lever to the 5 minute position. Release the timing pointer which should restore to zero.

(3) If the timing pointer indicates a reading off scale to the left of the zero mark, set the gear shift lever on the 5 minute scale and move the timing pointer until it indicates approximately 5 minutes. Then move the gear shift lever to the 15 minute scale and release the timing pointer. The timing pointer should stop at some reading to the right of the zero mark. If it fails to do this repeat the operation until it does, then proceed as covered in (2).

(4) In case the timing pointer cannot be restored to zero by either of the two methods specified above set the timing pointer as near as possible to zero. Loosen the set screws which mount the gear on the shaft which is directly connected to the timing pointer. Turn the

**3.14 (Continued)**

timing pointer until it indicates zero and retighten the set screws. Take care in this operation to see that the gear on the shaft with the time pointer does not become disengaged from the gear di-

rectly above it since this will release the tension of the pointer restoring spring. After setting the pointer properly, check to be sure that requirement 2.12 covering the position of the motor stop springs is met and if necessary re-adjust to meet this requirement.