SECTION 3

69. KEYBOARD COMBINATION BAR RESET

Check

69.1 Slacken the four screws (two at each end) securing the keyboard mask and lift off the mask. Depress the letter 'X' (MSMMM) key, lift the translator clutch abutment and turn the machine slowly by hand until the top of No.1 transmitter lever (3rd from the rear), Fig.4.65, is fully in.

69.2 Continue to turn the machine, watching No.2 transmitter lever (4th from the rear) move slowly inwards, and stop turning when Nos.1 and 2 transmitter levers are in line. Check, by observation, that the combination bar lever latch has now reset. If no adjustment is required, refit the keyboard mask and secure it with its four screws.

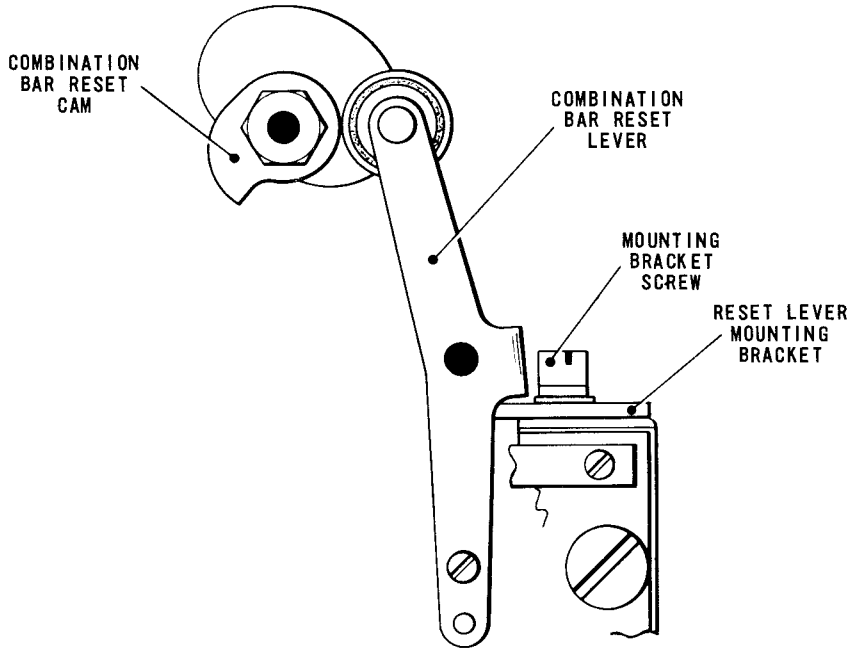


Fig. 4.57 COMBINATION BAR RESET MECHANISM

69.3 Continue to turn the machine until the combination bar reset lever, Fig.4.57, is on the highest point of the reset cam. Depress each key in turn and check that with the key held down it is possible to move the roller on the reset lever away from its cam by a minimum of .005 in.

69.4 Return the machine to the rest position and depress the letter 'Z' (MSSSM) key. Pull the reset lever away from its cam and check, by observation of the pushrods, Fig.4.59, that Nos.1 and 5 combination bars start to reset simultaneously. This is to ensure that the reset lever mounting bracket, Fig.4.57, is positioned squarely with respect to the ends of the combination bars.

Action

69.5 To adjust, depress any key, lift the translator clutch abutment and turn the machine by hand until the condition set up in Check 69.3 is reached. Slacken the two screws securing the reset lever mounting bracket and move the bracket until the roller on the reset lever can be pulled away from its cam by an estimated .010 in. Lightly clamp the bracket screws.

69.6 Repeat Checks 69.1 to 69.4 and, if necessary, refine the adjustment of the mounting bracket until all the conditions are satisfied. Tighten the bracket screws fully and refit the keyboard mask.

†70. KEYBOARD TRIP LEVER PIVOT — DYNAMIC CHECK

Check

70.1 With the keyboard fitted to the machine, repeat Check 21.1 under power conditions.

Action

70.2 To adjust, remove the keyboard and carry out Adjustment 21.2. Refit the keyboard.

†71. SELECTOR BAR/SELECTION PIN ALIGNMENT

Check

71.1 With the machine in the rest position, check that the selector bars, Fig. 4.58, are in alignment with the selection pins. Lift the translator clutch abutment and turn the machine by hand until the pin-box has moved to its alternative position and re-check the alignment of the bars and the selection pins.

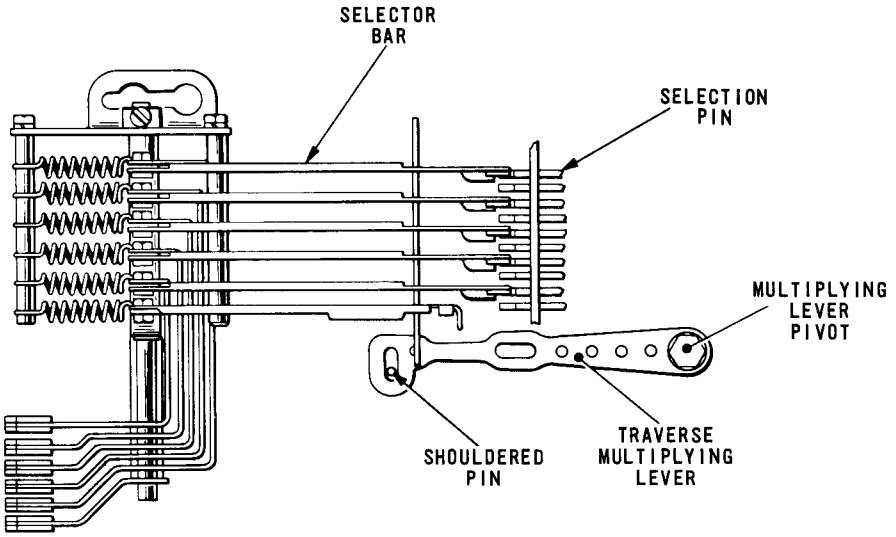


Fig. 4.58 SELECTOR BAR/SELECTION PIN ALIGNMENT

Action

71.2 To adjust, remove the operation counter, slacken the nut securing the shouldered pin and the nut securing the multiplying lever eccentric pivot. Taking up any free play in the direction of traverse, reposition the multiplying lever to obtain the required alignment. Position the shouldered pin so that play between the pin and the ends of the slot in the multiplying lever is equal in both positions of the pin-box. Tighten both nuts and refit the operation counter.

72. SELECTOR BAR/SELECTION PIN CLEARANCE

Check

72.1 Depress the Letters (MMMMM) key and, by applying finger pressure to each of the five selector bars in turn as shown in Fig. 4.59, check that there is an

estimated free movement of .005 - .020 in. (dimension 'ba') between the end of each bar and the corresponding selection pin.

72.2 Lift the translator clutch abutment and turn the machine by hand until the pin-box has moved to its alternative position and repeat Check 72.1.

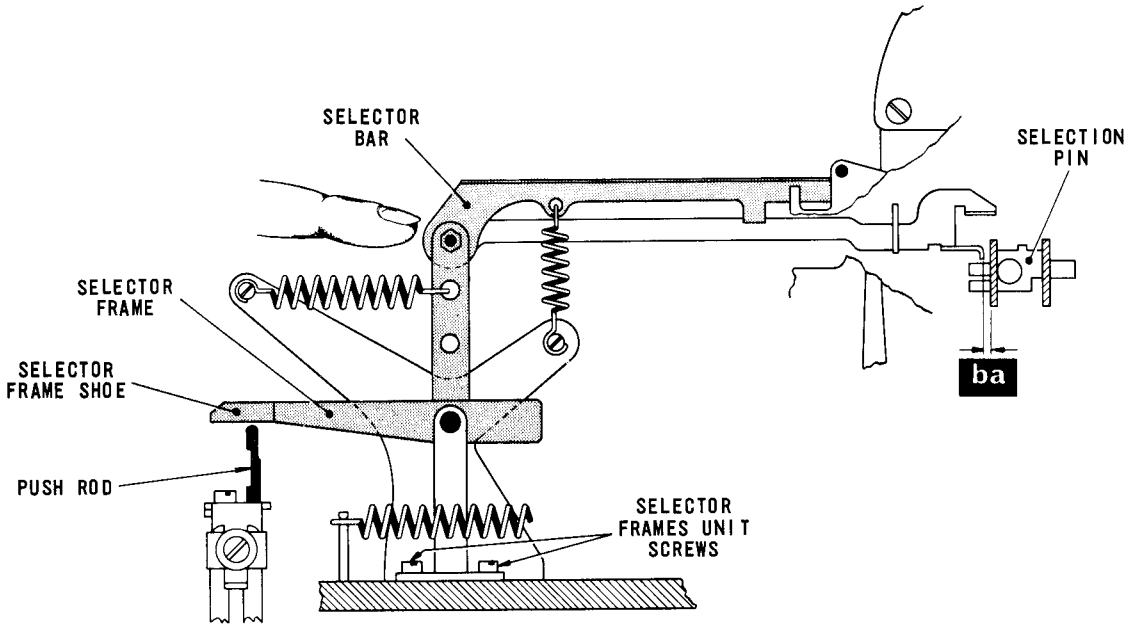


Fig. 4.59 SELECTOR BAR/SELECTION PIN CLEARANCE

Action

72.3 To adjust, slacken the four screws (two only shown in the figure) securing the selector frames unit and reposition the unit until the correct clearance is obtained. Tighten the four screws.

Check

72.4 Check that the five selector frame shoes and the push rods are in alignment.

Action

72.5 To adjust, set the selector frames to obtain alignment.

73. LAG WEIGHT RELEASE LEVER STOP

Check

73.1 With the machine in the rest position, check that there is an estimated engagement of .030 - .045 in. (dimension 'bb') between the latching face of the lag weight release lever, Fig. 4.60, and the projection on the lag weight hook plate.

Action

73.2 To adjust, slacken the nut clamping the release lever eccentric stop and turn the stop until dimension 'bb' is set up. Secure the stop in this position with its clamp nut.

74. LAG WEIGHT TRIP

Check

74.1 Hold the lag weight, Fig.4.60, to prevent it moving and depress any key on the keyboard. Check that the lag weight release lever is now lifted clear of the projection on the lag weight hook plate by an estimated .015 - .045 in. (dimension 'bc' - inset).

74.2 If an answer-back unit is fitted, check that the lifting of the release lever by the action of the answer-back wards causes a similar clearance (dimension 'bc' - inset) to be set up between the release lever and the hook plate.

Action

74.3 To adjust, slacken the screw securing the release lever and reposition the lever on its shaft until the above conditions are achieved. Tighten the release lever screw.

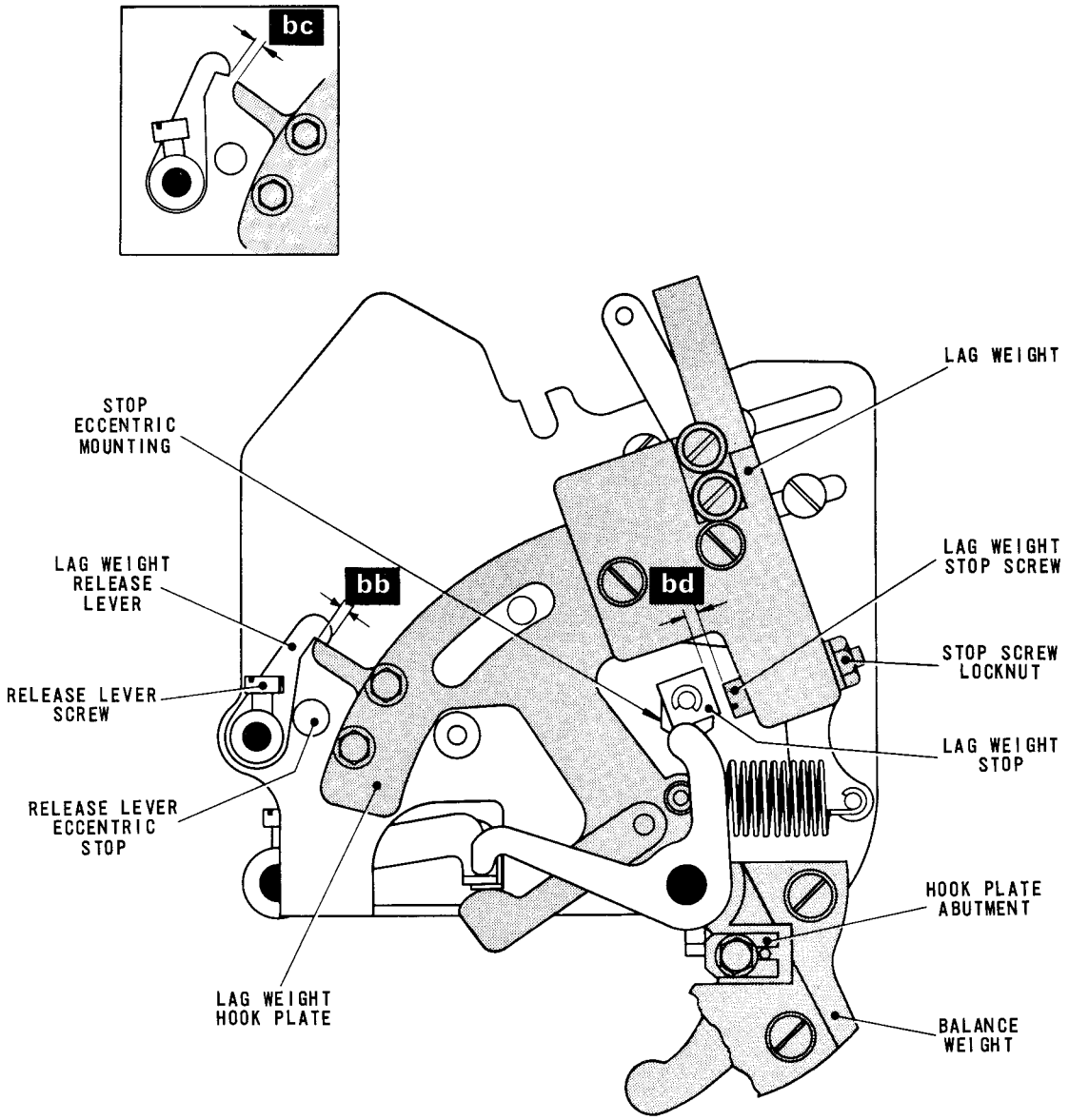


Fig. 4.60 LAG WEIGHT MECHANISM

†75. LAG WEIGHT MOVEMENT

Check

75.1 Ensure that the translator camshaft is in the rest position. Depress the letter 'X' (MSMMM) key and check that the lag weight hook plate, Fig.4.60, is now in contact with the lag weight stop.

75.2 Turn the machine slowly by hand until the function reset bar starts to move towards the rear of the machine. Check that the lag weight hook plate is still in contact with the lag weight stop.

75.3 Continue to turn the machine slowly by hand until the typehead moves forward to print. Check that there is now a clearance between the plate and the stop.

Action

75.4 If this is not so, return the machine to the rest position and remove the transmitter unit. Depress the letter 'X' (MSMMM) key again and turn the machine slowly by hand, this time until the function reset bar has **just ceased** to move towards the rear of the machine.

75.5 With the machine in this position, slacken the nut clamping the stop and turn its eccentric mounting (using the lower half of the eccentric movement) until the stop is just touching the edge of the plate. Tighten the clamp nut and refit the transmitter unit.

★ Whilst carrying out this adjustment, hold the stop with a spanner to prevent it rotating.

Check

75.6 Continue to turn the machine by hand until the top of the lag weight is in its extreme left-hand position. Check that there is now a clearance of .002 - .006 in. (dimension 'bd') between the stop and the lag weight stop screw.

Action

75.7 If necessary, slacken the stop screw locknut and adjust the stop screw until dimension 'bd' is set up. Tighten the locknut.

76. TRANSLATOR TRIP FROM LAG WEIGHT

★ In the following adjustment it is important to ensure that the translator trip occurs on the last .030 in. of movement of the top of the lag weight, otherwise the lag weight timing may be upset - Adjustment No.84 refers. If the translator trip does not occur within this limit, re-check Adjustment Nos.36 and 38 before attempting to adjust the translator trip from the lag weight.

Check

76.1 Depress any key on the keyboard and, with the lag weight hook plate, Fig.4.60, against the lag weight stop, check that there is a maximum clearance of .003 in. (dimension 'be') between the starter arm pin, Fig.4.61, and the worm wheel.

Action

76.2 To adjust, return the machine to the rest position and remove the balance weight, Fig.4.60. Slacken the screw clamping the abutment and move the abutment to its extreme right-hand position. Depress any key again and, with the lag weight hook plate held against the stop, adjust the abutment until the required clearance between the starter arm pin, Fig.4.61, and the worm wheel is obtained. Clamp the abutment, Fig.4.60, in this position with its screw and refit the balance weight.

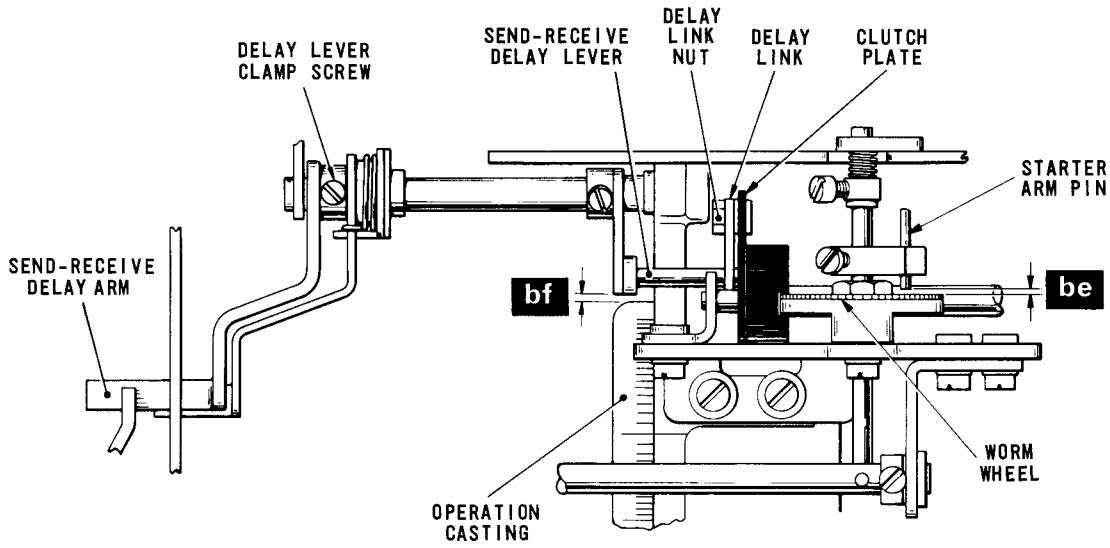


Fig. 4.61 SEND-RECEIVE SWITCH DELAY LINKAGE

77. SEND-RECEIVE DELAY LEVER CLEARANCE

Check

77.1 Depress any key on the keyboard and turn the machine by hand until the send-receive delay lever, Fig.4.61, is in its lowest position. Check that there is now a radial clearance of .015 - .045 in. (dimension 'bf') between the delay lever and the left-hand side of the orientation casting.

Action

77.2 To adjust, slacken the delay lever clamp screw, hold down the delay arm and reposition the delay lever until the correct clearance is achieved. Tighten the clamp screw.

78. SEND-RECEIVE SWITCH CONTACTS

Check

78.1 With the machine in the rest position and the delay arm, Fig.4.62, fully restored by the crawler clutch and in contact with the lag weight extension, check that there is a clearance of approximately .010 in. (dimension 'bg') between the receive contact blade and its buffer plate.

★ If the delay arm and lag weight extension are not in contact with each other when the machine is in the rest position, switch on the motor for a few seconds to allow the slow-return crawler clutch mechanism to reset.

Action

78.2 If necessary, set the buffer plate to achieve dimension 'bg'.

Check

78.3 Hold the lag weight to prevent its movement and depress any key on the keyboard. Allow the lag weight to move slowly to the right until the receive contact blade is against its buffer plate but the tongue and receive contacts are still made. Check that there is now a clearance of .010 - .015 in. (dimension 'bh' - inset) between the tongue and the send contact blade.

Action

78.4 To adjust, set the send contact blade until dimension 'bh' is achieved.

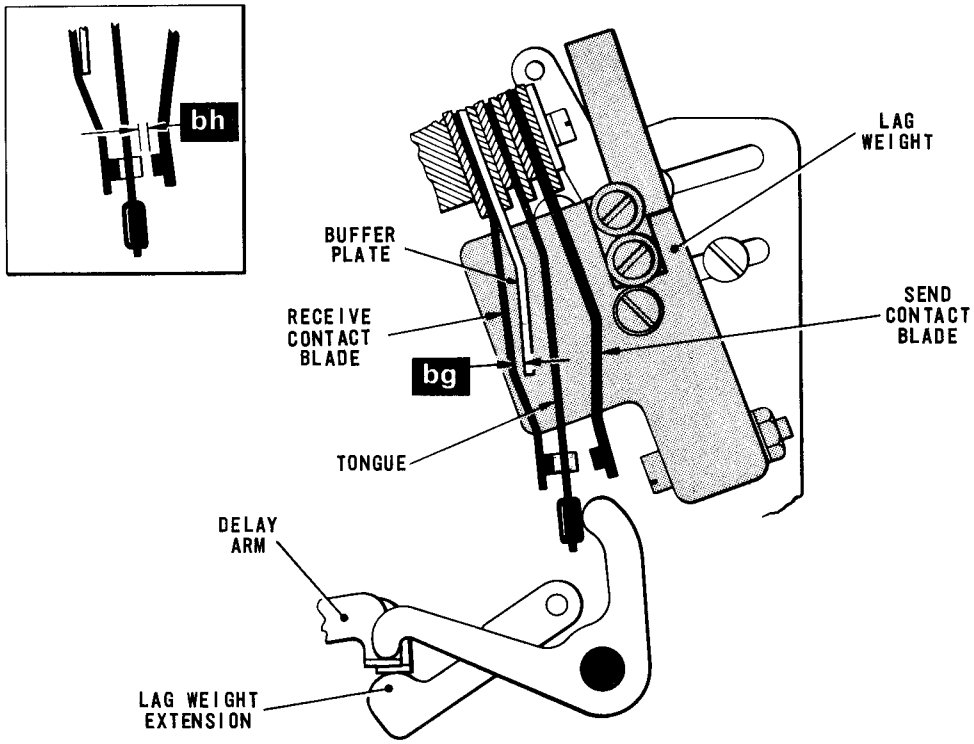


Fig. 4.62 SEND-RECEIVE SWITCH CONTACTS

Check

78.5 Release the lag weight so that the tongue fully engages the send contact blade. Check that a force of 1 - 1½ ounces (28 - 43 grammes) applied to the tip of the tongue will move the tongue over to the receive contact blade.

Action

78.6 To adjust, set the tongue, ensuring that the send contact follows the movement of the tongue and maintains contact with it over the first part of its traverse. Re-check Adjustments 78.1 and 78.3.

79. SEND-RECEIVE CONTACT DELAY

Check

79.1 With the machine in the rest position and the delay arm, Fig.4.62, in contact with the lag weight extension, trip the lag weight by depressing any key on the keyboard. Turn the machine by hand until the translator clutch has completed one revolution and check that the tongue is still touching the send contact blade.

79.2 Lift the translator clutch abutment, turn the machine by hand and check that, during the second revolution of the translator clutch, the tongue breaks from the send contact between the changeover of Nos.4 (2nd from the front) and 5 (nearest the front) transmitter levers, Fig.4.65.

Action

79.3 If the contact changeover is early, slacken the nut securing the link, Fig.4.61, to the clutch plate and slide the link to the right. Tighten the nut. Repeat Checks 79.1 and 79.2 and, if necessary, Adjustment 79.3 until both the above conditions are satisfied.

79.4 If the contact changeover is late, repeat Adjustment 79.3 but this time slide the link to the left.

★ If the conditions in Checks 79.1 and 79.2 cannot be met by carrying out the above adjustments, excessive backlash may be present in the gearing that drives the crawler clutch drum. The end-play in the vertical spindle should not exceed .002 in. and is maintained by raising or lowering the worm spindle bearing. If the conditions still cannot be met, refine Adjustment No.77 and then repeat Adjustment No.79.

80. SEND-RECEIVE CONTACT DELAY - DYNAMIC CHECK

Check

80.1 Switch on the motor and check its speed as recommended in Adjustment No.81.

80.2 Set up a Telegraph Distortion Measuring Set (TDMS) as shown in Fig.4.63. Set the TDMS Controls as follows.

(D) to Start/Stop
(F) to Relay Test
Signal 2 to Transit Time

80.3 Connect the TDMS by means of crocodile clips to the top ends of the send-receive switch contacts, as follows.

TDMS Terminals	Send-Receive Switch Contacts
Mark	Send
Tongue	Tongue
Space	Receive

★ For customers who may wish to construct an adaptor for this adjustment, contact can be made with the send-receive switch connexions at any of the following alternative points.

Send-Receive Switch Contacts	18-way Transmitter Connector	External 12-way Socket	External 12-way Plug
Send	Pin D3	Pin F	Pin F
Tongue	Pin D2	Pin E	Pin E
Receive	Pin D1	Pin D	Pin D

80.4 Place a .025 in. clip (Creed Part No. TA1384) over the end of the tongue, Fig.4.62, and run out the letters code (MMMMM) for about 30 seconds. Check that a single trace appears at the beginning of the transmission and a second trace at the end. If no spurious traces appear, disconnect the TDMS from the send-receive switch.

Action

80.5 If spurious traces do appear during Check 80.4, carry out Check 80.6 to determine whether they are caused by an insufficient delay on the crawler clutch, or by intermittent contact between the tongue and send contacts.

Check

80.6 Using a spring hook, hold the contact operating lever away from the tongue and repeat Check 80.4.

Action

80.7 If the spurious traces have now disappeared, indicating an insufficient delay on the crawler clutch as their cause, carry out Adjustment No.79. If the spurious traces are still present, indicating intermittent contact between the tongue and send contacts, carry out Adjustment No.78. Disconnect the TDMS from the send-receive switch.

SECTION 4

81. MOTOR SPEED

★ (1) A fork stroboscope engraved 140 dvs (Creed Part No. TA1117/140) will be required to carry out the motor speed check.

(2) The direction of rotation of the motor is indicated by an arrow painted on the motor housing.

Check

81.1 Switch on the motor and check that the selector and translator clutches are at rest against their respective detents.

81.2 Hold the fork stroboscope by its handle and set it vibrating by striking the tines sharply against the edge of your hand. View the regular black and white bands on the motor governor cover through the slit in the masking plate which is mounted on the end of each tine. The bands on the governor cover should appear to be moving slowly in the direction of rotation of the motor, indicating that the motor is running slightly fast.

81.3 Lift the translator clutch abutment and repeat the inspection of the governor bands through the vibrating stroboscope. With the additional load imposed by the translator unit, the governor bands should now appear to be moving slowly against the true direction of rotation of the motor.

★ This procedure checks the motor speed under minimum and maximum load conditions, as the load will vary slightly depending upon the combination set up on the selection pins.

Action

81.4 If the speed is found to be incorrect, do not alter the adjustment of the motor governor until the following checks have been made.

(a) Measure the actual voltage of the supply. In cases where power is obtained from a mobile generating set, an error in motor speed is often traceable to excessive voltage fluctuation in the supply.

(b) Check that the governor contacts are operating correctly and in good condition. Adjustment Nos.18 and 19 refer.

(c) Check over the governor circuit wiring and components, Part 1, Fig.1.10.

If no fault can be located by this procedure, adjust the governor by means of the screw visible through the hole in the governor housing. Turn the screw clockwise (viewed from the rear) to increase speed and counter-clockwise to decrease speed.

82. TRANSMITTER CONTACTS AND SIGNALS LENGTH (TDMS)

★ This adjustment describes the method to adopt when using a Telegraph Distortion Measuring Set (TDMS), A.T. and E. Type 6B, to adjust the transmitter contacts and signals length. If any other type of TDMS is used, the references and Fig.4.63 may be different but the method will remain operative.

Check

82.1 Switch on the motor and check its speed as recommended in Adjustment No.81.

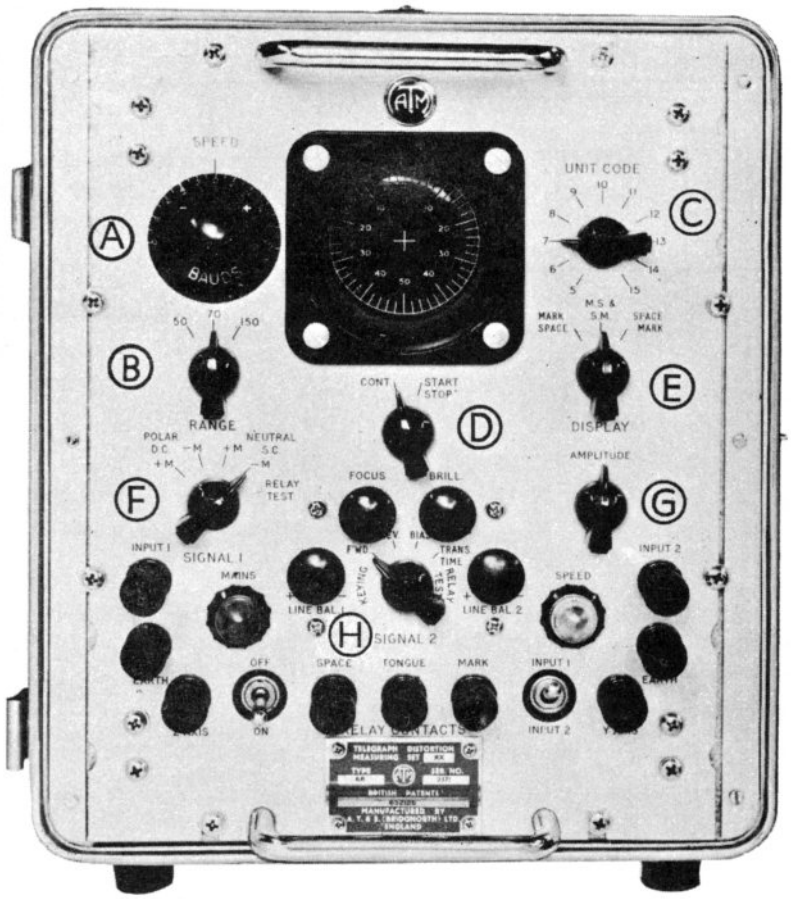


Fig. 4.63 TELEGRAPH DISTORTION MEASURING SET, TYPE 6B

82.2 Set up the TDMS as shown in Fig.4.63. Refer to Fig.4.64 and connect the TDMS by means of crocodile clips to the top ends of the transmitter contacts.

★ For customers who may wish to construct an adaptor for this adjustment, contact can be made with the transmitter connexions at any of the following alternative points.

Transmitter Contacts	18-way Transmitter Connector	External 12-way Socket	External 12-way Plug
Space	Pin B3	Pin C	Pin C
Tongue	Pin B2	Pin B	Pin B
Mark	Pin B1	Pin A	Pin A

82.3 Set the TDMS Line Balance Control, Fig.4.63, to the centre of its range. To do this, lift the translator clutch abutment so allowing the machine to generate 6½ unit signals. Turn the Line Balance Control counter-clockwise and note the position of the control when the signals disappear from the circular trace. Turn the control clockwise and again note when the signals disappear. Adjust the control midway between these two points.

82.4 Refine the Speed Control (A) until the two-group display is stationary.

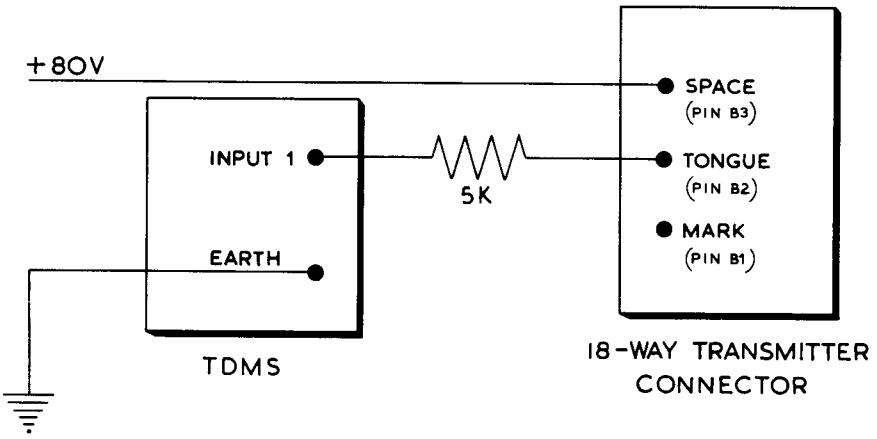


Fig. 4.64 TDMS/TRANSMITTER CONNEXIONS FOR SIGNALS LENGTH CHECK

82.5 Switch the TDMS Control (D) to Start/Stop display. Run out the Letters code (MMMMM) from the keyboard and check that the Start signal is the correct length, i.e.

(a) For *double-current* operation, 1 unit less 2-5%.

(b) For *single-current* operation, 1 unit plus 1-2%.

Action

82.6 If this is not so, adjust the signal length by means of the Start (2nd from the rear) contact screw, Fig.4.65.

Check

82.7 Run out the letter 'V' code (SMMMM) from the keyboard and check that element No.1 is the correct length.

Action

82.8 Adjust the contact screw on No.1 transmitter lever (3rd from the rear) until the correct length is achieved.

Check

82.9 Run out the letter 'X' code (MSMMM) from the keyboard and check that element No.2 is the correct length.

Action

82.10 Adjust the contact screw on No.2 transmitter lever (4th from the rear) until the correct length is achieved.

Check

82.11 Run out the Figures code (MMSMM) and check element No.3.

Action

82.12 Adjust the contact screw on No.3 lever (3rd from the front).

Check

82.13 Run out the letter 'Q' code (MMMSM) and check element No.4.

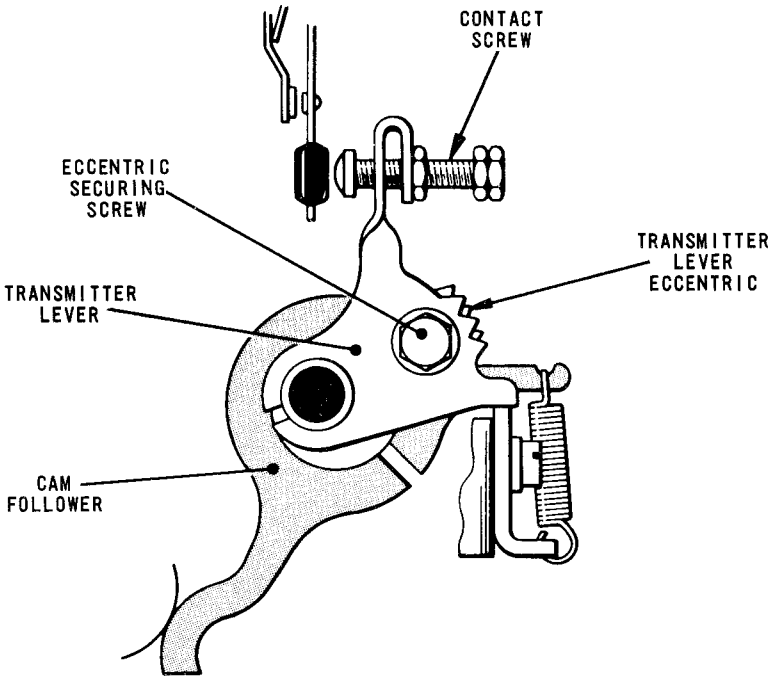


Fig. 4.65 TRANSMITTER LEVER/CAM ASSEMBLY

Action

82.14 Adjust the contact screw on No.4 lever (2nd from the front).

Check

82.15 Run out the letter 'K' code (MMMMS) and check element No.5.

Action

82.16 Adjust the contact screw on No.5 lever (nearest the front).

Check

82.17 Disconnect +80V from the Space contact, Fig.4.64, and connect -80V to the Mark contact. Run out the All Space code (SSSSS) from the keyboard and check that the beginning of the Stop signal is at top dead centre.

Action

82.18 Adjust the Stop contact screw (nearest the rear), Fig.4.65, until the correct condition is achieved.

Check

82.19 (a) *Single-Current.* Depress each key in turn, examine the display and verify that distortion does not exceed ±5%.

(b) *Double-Current.* Reconnect +80V to the Space contact, Fig.4.64, and switch the TDMS Range Control (F), Fig.4.63, to D.C.-M. Depress each key in turn, examine the display and verify that distortion does not exceed ±5%.

82.20 Switch the TDMS Unit Code (C) to 14 Units. Run out the 'R' code (SMSMS) from the keyboard and check that the second group of spots on the display appears at bottom dead centre.

Action

82.21 To adjust, move the speed-change lever, Fig.4.68, towards the front of the machine so that it is freed from its stop screws, and adjust the lever until the condition is satisfied. Secure the lever in its new position with its stop screws.

Check

82.22 Switch the TDMS Unit Code (C), Fig.4.63, to 7 Units. Connect the TDMS by means of crocodile clips to the top ends of the transmitter contacts, as follows.

TDMS Terminals	Transmitter Contacts
Space	Space
Tongue	Tongue
Mark	Mark

82.23 Switch the TDMS Controls (F) to Relay Test and (H) to Transit Time. Check that the transit times are not less than 2% or more than 6%.

Action

82.24 If this is not so, refine the adjustment of the signals length.

★ The cam followers, Fig.4.65, are adjusted in the factory and should not require re-adjustment unless the translator cam pack has been disturbed. If, however, the **position** (as distinct from the **length**) of any element is incorrect, it can be corrected by adjusting the respective transmitter lever, using the following procedure.

(a) Turn the translator camshaft by hand until the transmitter lever to be adjusted is as shown in Fig.4.67. This figure indicates for each transmitter lever, Fig.4.65, the point in the translator camshaft revolution where the respective cam follower associated with that lever is on the root diameter of its cam, and thus the lever will be in a position in which it can safely be adjusted.

(b) Slacken the screw securing the transmitter lever eccentric and, holding down the transmitter lever and the cam follower, insert a screwdriver between the adjustment teeth and reposition the eccentric. To advance the signal, the eccentric should be raised. Tighten the eccentric securing screw.

†83. TRANSMITTER CONTACTS AND SIGNALS LENGTH (TIMING DISC)

★ A timing disc (Creed Part No. TA1316) is provided as an alternate means of adjusting the transmitter contacts in locations where a Telegraph Distortion Measuring Set (TDMS) is not available.

Check

83.1 Check the transmitter output and ensure that each signal element is the correct length and commences at the correct theoretical position, i.e.

(a) For *double-current* operation, each signal is separated from its adjacent signals by an interval of 2 - 5% of the nominal element length.

(b) For *single-current* operation, each signal overlaps its successor by 1 - 2% of the nominal element length.

Action

83.2 Remove the keyboard and refit the right-hand keyboard securing screw, Fig.4.66. Position the screw so that its slot is in line with the centre of the translator camshaft.

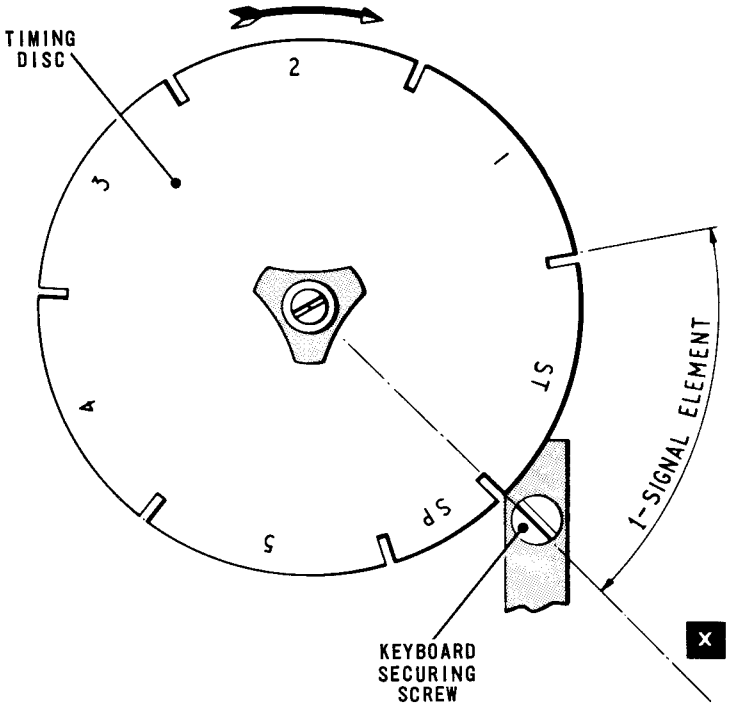


Fig. 4.66 TRANSMITTER TIMING DISC, TA 1316

83.3 Remove the nut at the front end of the camshaft and fit the timing disc in its place. This disc has a friction clutch and it is therefore possible to turn it independently of the camshaft.

83.4 Remove the seven screws securing the top ends of the transmitter contacts and disconnect the contacts. Set up the Letters code (MMMMM) on the pins.

(a) Double-Current Operation

Check

83.5 Connect any type of continuity tester across the Start contacts (2nd from the rear) and turn the machine slowly by hand until the top of the Start transmitter lever, Fig.4.65, is fully in.

83.6 Position the timing disc, Fig.4.66, so that the beginning of the Start signal is in line with the left-hand edge of the slot in the keyboard securing screw, i.e. datum line 'X', as shown in the figure.

83.7 Continue to turn the machine slowly by hand and check that the Start contacts open when the end of the signal is approximately .060 in. from the datum line 'X'. This corresponds to a shortening of the Start signal of approximately 2 – 5%.

Action

83.8 If this is not so, adjust the signal length by means of the Start contact screw, Fig.4.65.

Check

83.9 Return the machine to the rest position and again set up the Letters code (MMMMM) on the pins. Transfer the continuity tester to the contacts of No.1 element (3rd from the rear). Turn the machine slowly by hand until the contacts of No.1 element just close, and check the element length against the timing disc in a similar manner to that adopted for the Start contacts.

Action

83.10 Adjust the contact screw on No.1 transmitter lever until the correct length is achieved.

Check

83.11 Return the machine to the rest position, set up the Letters code (MMMMM) on the pins again and repeat Checks 83.5 and 83.6.

83.12 Transfer the continuity tester to No.1 element contacts. Continue to turn the machine slowly by hand and check that the contacts of No.1 element close as the beginning of No.1 element comes into line with the datum line 'X'.

Transmitter Lever to be adjusted	Position of Translator Camshaft during Adjustment
No. 1	No. 5 lever just starting to move
No. 2	Camshaft at rest
No. 3	START lever just starting to move
No. 4	No. 1 lever just starting to move
No. 5	No. 2 lever just starting to move
STOP	No. 3 lever just starting to move
START	No. 4 lever just starting to move

Fig. 4.67 TRANSMITTER LEVER/CAMSHAFT RELATIONSHIP

Action

83.13 If this is not so, correct the position of the element by adjusting No.1 transmitter lever, Fig.4.65, using the following procedure.

★ The cam followers are adjusted in the factory and should not require re-adjustment unless the translator cam pack has been disturbed.

(a) Turn the translator camshaft by hand until the transmitter lever to be adjusted is as shown in Fig.4.67. This figure indicates for each transmitter lever, Fig.4.65, the point in the translator camshaft revolution where the respective cam follower associated with that lever is on the root diameter of its cam, and thus the lever will be in a position in which it can safely be adjusted.

(b) Slacken the screw securing the transmitter lever eccentric and, holding down the transmitter lever and the cam follower, insert a screwdriver between the adjustment teeth and reposition the eccentric. To advance

the signal, the eccentric should be raised. Tighten the eccentric securing screw.

(c) Check the position of the element by repeating Checks 83.11 and 83.12 and, if necessary, refine (a) and (b) above until the position is correct.

83.14 Adjust the length of No.2 element and position it with respect to No.1. Repeat this procedure with each signal element in turn until all the elements and the gaps between them are of the correct length. Refit the keyboard and secure it with its screws.

(b) Single-Current Operation

Check

83.15 Connect any type of continuity tester across the Stop contacts (nearest the rear) and turn the machine slowly by hand until the contacts just close.

83.16 Position the timing disc, Fig.4.66, so that the beginning of the Stop signal is in line with the left-hand edge of the slot in the keyboard fixing screw, i.e. datum line 'X', as shown in the figure.

83.17 Continue to turn the machine slowly by hand and check that the Stop contacts open when the end of the signal is in line with datum line 'X'.

Action

83.18 If this is not so, adjust the signal length by means of the Stop contact screw, Fig.4.65.

Check

83.19 Return the machine to the rest position and again set up the Letters code (MMMMM) on the pins. Transfer the continuity tester to the Start contacts (2nd from the rear). Turn the machine slowly by hand until the Start contacts just close, and position the timing disc, Fig.4.66, so that the beginning of the Start signal is in line with the datum line 'X'.

83.20 Continue to turn the machine slowly by hand and check that the Start contacts open when the end of the signal is approximately .030 in. past the datum line 'X'. This corresponds to a signal overlap of approximately 1 - 2%.

Action

83.21 If this is not so, adjust the signal length by means of the Start contact screw, Fig.4.65.

Check

83.22 Return the machine to the rest position, set up the Letters code (MMMMM) on the pins again and repeat Checks 83.15 and 83.16.

83.23 Transfer the continuity tester to the Start contacts. Continue to turn the machine slowly by hand and check that the Start contacts close as the beginning of the Start signal comes into line with the datum line 'X'.

Action

83.24 If this is not so, correct the position of the signal by adjusting the Start transmitter lever, Fig.4.65, using the following procedure.

★ The cam followers are adjusted in the factory and should not require re-adjustment unless the translator cam pack has been disturbed.

(a) Turn the translator camshaft by hand until the transmitter lever to be adjusted is as shown in Fig.4.67. This figure indicates for each transmitter lever, Fig.4.65, the point in the translator camshaft revolution where the respective cam follower associated with that lever is not in contact with its cam, and thus the lever will be in a position in which it can safely be adjusted.

(b) Slacken the screw securing the transmitter lever eccentric and, holding down the transmitter lever and the cam follower, insert a screwdriver between the adjustment teeth and reposition the eccentric. To advance the signal, the eccentric should be raised. Tighten the eccentric securing screw.

(c) Check the position of the signal by repeating Checks 83.22 and 83.23 and, if necessary, refine (a) and (b) above until the position is correct.

83.25 Adjust the length of No.1 element and position it with respect to the Start signal. Repeat this procedure with each signal element in turn until all the elements are correctly positioned and are of the correct length. Refit the keyboard and secure it with its fixing screws.

84. LAG WEIGHT TRANSIT TIMING

★ The anchor of the lag weight spring is on the tail of the speed-change lever, Fig.4.68. On dual-speed machines the lag weight transit timing, and thus the length of the Stop signal, should be set to suit the required speed of operation by positioning the speed-change lever against one of its two stop screws. The positions of the stop screws are set in the factory and will not normally require attention. If, however, a new lag weight spring is fitted at any time it may be necessary to reposition the stop screws by carrying out the following procedure.

Check

84.1 Switch on the motor and check its speed as recommended in Adjustment No.81.

84.2 On dual-speed machines, refer to Part 2, page 10 and check that the correct set of gears is engaged.

84.3 Check that the speed-change lever is abutting against its appropriate stop screw for the required speed of operation, i.e.

(a) For 45/50 baud operation, as shown in Fig.4.68(a).

(b) For 75 baud operation, as shown in Fig.4.68(b).

84.4 Ensure that the feed change lever, Fig.4.37, is in the single feed position, i.e. towards the rear of the machine. Move the pressure roller release lever towards the rear of the machine so that the paper will not feed. Mark a pencil line on the platen knob boss and a corresponding mark on the platen unit end-plate.

84.5 Switch on the motor, run out Line Feed from the keyboard and check that the number of revolutions the platen makes over a period of one minute is as follows.

(a) On 45 baud operation - 12.1/6 revolutions.

(b) On 50 baud operation - 13.1/3 revolutions.

(c) On 75 baud operation - 20 revolutions.

Action

84.6 If the correct number of revolutions is not obtained, move the speed-change lever, Fig.4.68, towards the front of the machine so that it is freed from its

stop screws. On single-speed machines, it may also be necessary to slacken the locking screw located in the bottom slot in the translator unit rear frame, and move the screw to one side so that the speed-change lever can be freely adjusted.

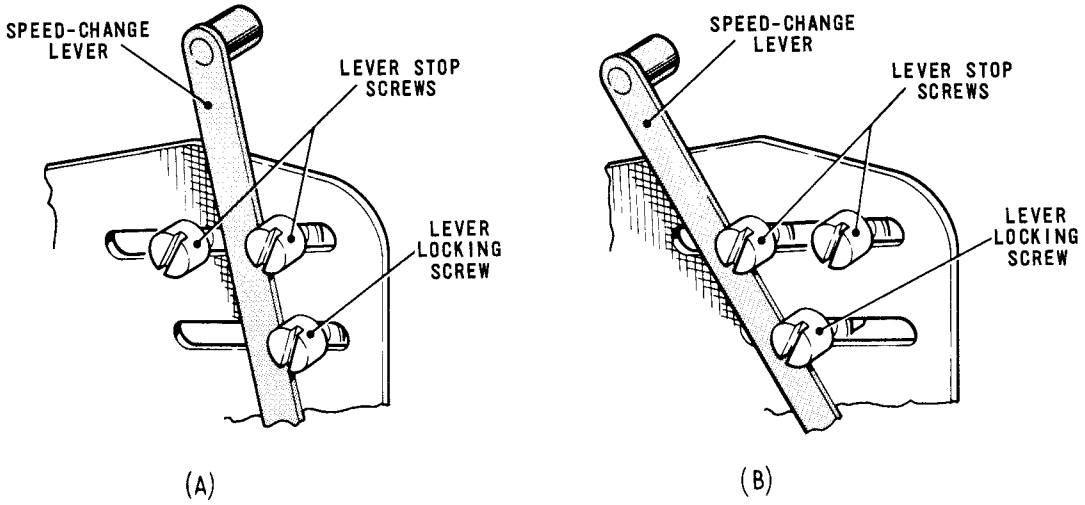


Fig. 4.68 SPEED-CHANGE LEVER POSITIONS

Check

84.7 Move the speed-change lever slightly and repeat Check 84.5. Check whether it is now possible to approach the correct figure more closely without causing the translator clutch to cease tripping the machine.

84.8 If improvement appears to be possible, hold the speed-change lever in its new position and allow the machine to shut down under the action of the starter switch mechanism. Depress any key on the keyboard (except Run Out) and check that the translator clutch abutment lifts and the motor starts up.

84.9 On dual-speed machines, repeat the above procedure with the machine set to operate at its alternate speed.

Action

84.10 Refine the position of the speed-change lever until all the above conditions are satisfied, and then secure the lever in its new position with its stop screws. On single-speed machines, return the locking screw to its position at the right-hand side of the lever.

84.11 Restore the pressure roller release lever towards the front of the machine so that the paper will again feed.

85. TYPEHEAD HEIGHT - FINAL SETTING

Check

85.1 Print a line consisting of all the characters on the top layer of the typehead, then print alongside a line consisting of all the characters on the second layer of the typehead and a further line of top layer characters. Using the top layer as a reference, check that the second layer is at the correct height. Check also that the upper and lower legs of the characters are of equal density.

85.2 Repeat this procedure with the third and bottom layers in turn, using the top layer as the reference level each time.

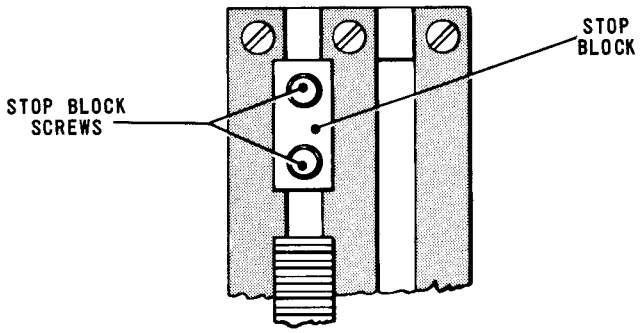


Fig. 4.69 TYPEHEAD LIFT RACK AND STOP BLOCK

Action

85.3 If necessary, refine Adjustment Nos. 59 and 64. If the bottom layer is high with respect to the reference level, slacken the screws securing the stop block, Fig. 4.69, and move the block towards the typehead lift rack until the correct height is obtained. Tighten the stop block screws.

86. CARRIAGE RETURN BUTTON

Check

86.1 Slide the typehead to its extreme right-hand position and refit the machine cover. Operate the carriage return button and check that this action causes the typehead to be returned smoothly to its extreme left-hand position.

Action

86.2 If this is not so, slacken the screw securing the carriage return manual lever, Fig. 4.70, and reposition the lever with respect to the splined shaft. Tighten the screw.

87. DASHPOT - DYNAMIC CHECK

Check

87.1 Transmit into the machine if possible from an automatic transmitter (tape reader), a test message consisting of lines of varying lengths, each line terminating with the code combinations for Carriage Return (SSSMS), Line Feed (SMSSS) and Letters (MMMMM). Paying particular attention to the short lines, check that the typehead comes to rest with a minimum of impact and in time to commence the next line.

Action

87.2 If this is not so, refine the adjustment of the dashpot air vent screw, Fig. 4.46, until the correct condition is obtained for all lengths of line.

88. LINE LENGTH OPERATING STOP

★ The printing line length can be adjusted between 69 and 74 characters depending on the width of the left-hand margin and the position of the line length operating stop, Fig. 4.70, at the right-hand end of the typehead carriage unit. The adjustment of the left-hand margin is given in Adjustment No. 49 on page 38. The following instruction is concerned only with the position of the line length operating stop.

Check

88.1 Run out a complete line of characters and check that the printing line is the required length.

88.2 Slide the typehead to the right so that it is opposite the last character but one, e.g. for a 70-character line, position the typehead opposite the 69th character.

88.3 Depress any printing key or, if the machine has no keyboard, set up any printing combination on the pins. Lift the translator clutch abutment and turn the machine by hand until the printing action has taken place. Check that the retention pawl, Fig.4.35, is now lifted clear of the retention rack and that there is a clearance of approximately .030 in. (dimension 'ar') between the tail of the retention pawl and the top of the retention rack teeth.

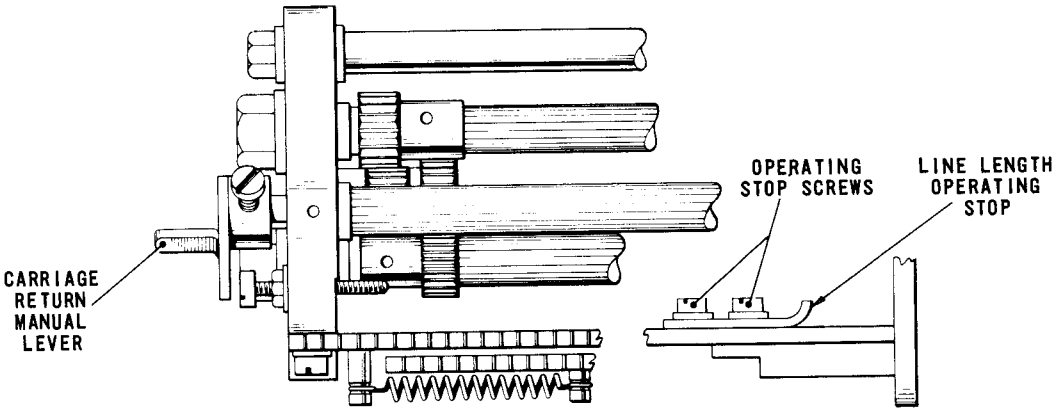


Fig. 4.70 TYPEHEAD CARRIAGE—PLAN VIEW

Action

88.4 To adjust, return the machine to the rest position and operate the carriage return manual lever, Fig.4.70, so that the typehead carriage is returned to its extreme left-hand position. Slacken the screws securing the line length operating stop until friction tight and move the stop to the right as far as it will go.

88.5 Repeat Checks 88.2 and 88.3, and lever the operating stop to the left with a screwdriver until dimension 'ar' is satisfied. Operate the carriage return manual lever again so that the typehead carriage is returned to its extreme left-hand position and tighten the screws securing the operating stop.

89. STARTER SWITCH TIMING

Check

89.1 Check that the holdout release bracket on the switch operating link, Fig.4.71, is in the correct position for the operating speed of the machine, i.e. fully raised for 50 baud or fully lowered for 75 baud operation.

Action

89.2 If this is not so, slacken the screws securing the holdout release bracket and raise or lower the bracket as necessary. Tighten the bracket screws.

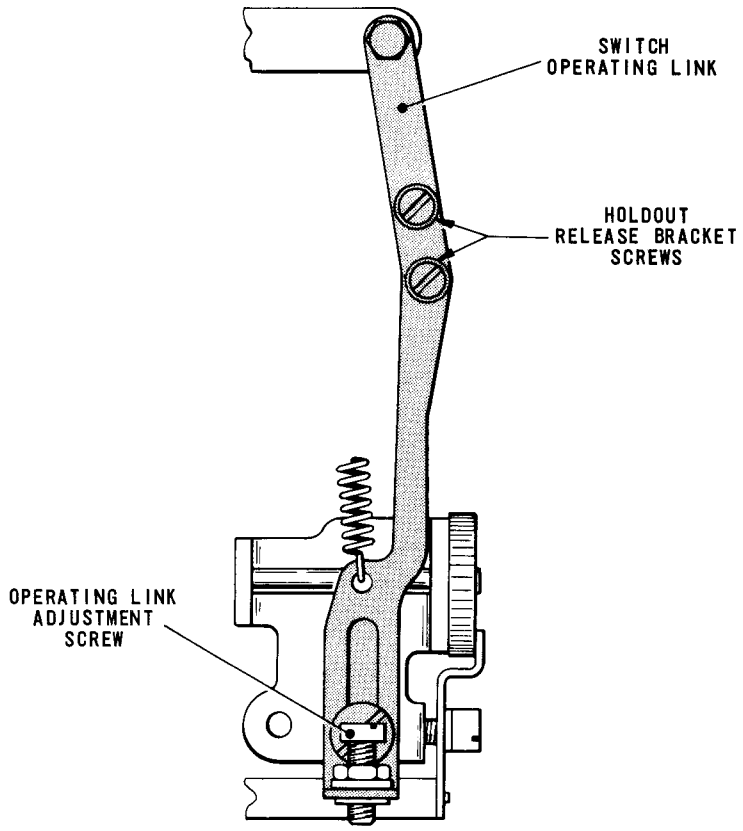


Fig. 4.71 STARTER SWITCH TIMING MECHANISM

Check

89.3 Switch on the motor and move the electromagnet armature to its marking stop. Check that the time between the full engagement of the starter arm pin, Fig. 4.61, with the worm wheel and the motor switching off is within the limits of 60 - 70 seconds.

Action

89.4 If this is not so, slacken the locknut of the operating link adjustment screw, Fig. 4.71, and adjust the screw until the required condition is satisfied. Tighten the adjustment screw locknut.

90. BELL AND WRU? CONTACTS

Check

90.1 Check that the Bell contact peg, Fig. 4.72, is engaged with the projection on Bell switch arm by .015 - .030 in. (dimension) 'bj' - inset).

90.2 Repeat Check 90.1 with respect to the WRU? contact peg.

Action

90.3 To adjust, slacken the screws clamping the appropriate contact spring assembly and swing the assembly until dimension 'bj' is achieved. Tighten the assembly screws.

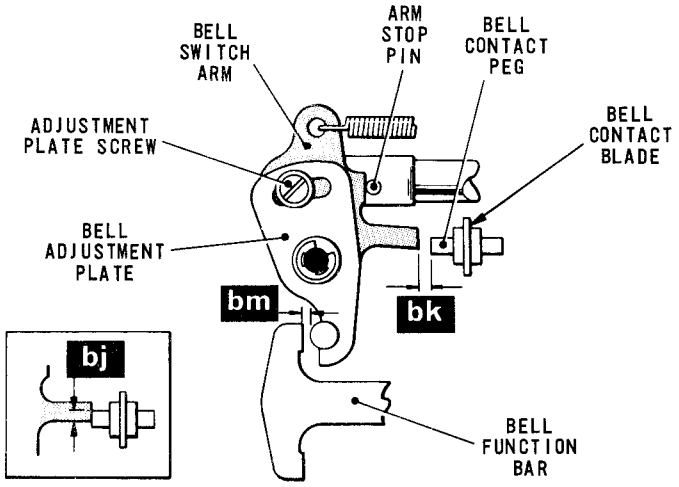


Fig. 4.72 BELL CONTACT OPERATING MECHANISM

Check

90.4 Check that a force of 5½ - 7 ounces (156 - 198 grammes) applied to the tip of the Bell contact blade causes its peg to be moved clear of the projection on the Bell switch arm.

90.5 Repeat Check 90.4 with respect to the WRU? contact blade.

Action

90.6 To adjust, set the appropriate contact blade until the correct tension is present.

Check

90.7 Move the shift lever, Fig.4.53, to the Letters position, i.e. to the left looking from the rear of the machine. Lift the translator clutch abutment and turn the machine by hand until the function reset bar, Fig.4.73, has moved towards the rear of the machine.

90.8 With the Bell switch arm, Fig.4.72, resting against its stop pin, check that there is now a clearance of .004 - .008 in. (dimension 'bk') between the projection on the switch arm and the Bell contact peg.

90.9 Repeat Check 90.8 with respect to the WRU? switch arm.

Action

90.10 To adjust, slacken the nut securing the contact reset arm, Fig.4.73, and move the arm until the correct clearance is present on both switches.

Check

90.11 Return the machine to the rest position and, with the Bell contact peg, Fig.4.72, engaged with the projection on the Bell switch arm, check that the Bell alarm circuit blade, Fig.4.74, is now resting against its buffer spring and that there is a clearance of .015 - .025 in. (dimension 'bl') between the alarm circuit blade and the Bell contact blade. Check also that a force of 1 - 1½ ounces (28 - 43 grammes) applied to the tip of the alarm circuit blade causes its hook to be moved clear of the buffer spring.

90.12 Repeat Check 90.11 with respect to the WRU? contact spring assembly.

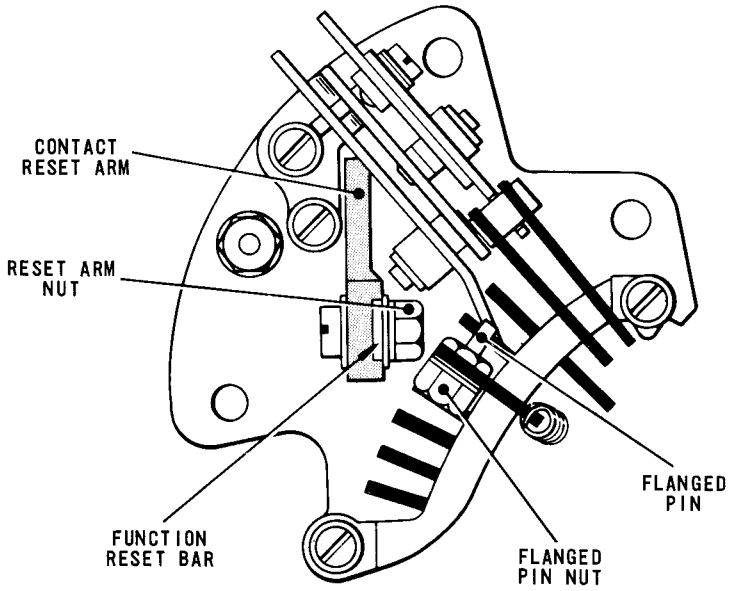


Fig. 4.73 BELL AND WRU? FUNCTION BARS

Action

90.13 To adjust, carry out the following procedure.

(a) Set the alarm circuit blade until its hook is in contact with the buffer spring.

(b) Set the buffer spring until dimension 'bl' is obtained.

(c) Re-adjust the alarm circuit blade until the correct spring pressure is present.

(d) Re-check dimension 'bl' and, if necessary, re-adjust the buffer spring.

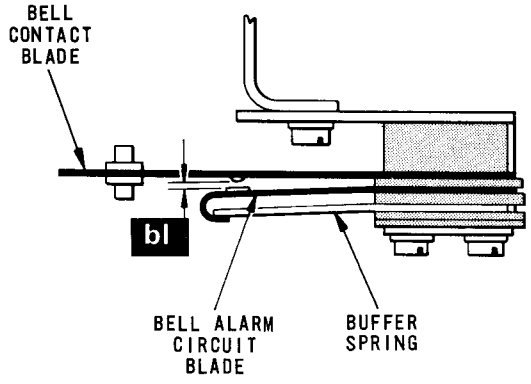


Fig. 4.74 BELL CONTACT SPRING ASSEMBLY

Check

90.14 Depress the Bell key or, if the machine has no keyboard set up the Bell code (MMSMS) on the pins. Lift the translator clutch abutment and turn the machine

by hand until the function reset bar, Fig.4.73, has moved towards the rear of the machine. Check that the rear end of the Bell function bar, Fig.4.72, is abutting against the shift lever, Fig.4.53, and the front end of the bar is clear of the Bell adjustment plate Fig.4.72, by .004 - .008 in. (dimension 'bm').

Action

90.15 To adjust, slacken the screw securing the adjustment plate and move the plate until dimension 'bm' is achieved. Tighten the adjustment plate screw.

Check

90.16 Return the machine to the rest position. Depress the WRU? key or, if the machine has no keyboard, set up the WRU? code (MSSMS) on the pins. Lift the translator clutch abutment and turn the machine by hand until the function reset bar, Fig.4.73, has moved towards the rear of the machine. Check that the rear end of the WRU? function bar is abutting against the shift lever, Fig.4.53, and the flanged pin on the front end of the bar is clear of the WRU? switch arm by .004 - .008 in. (dimension 'bm', Fig.4.72).

Action

90.17 To adjust, slacken the nut securing the flanged pin, Fig.4.73, and move the pin until the correct dimension is achieved. Tighten the nut.

Check

90.18 Move the shift change lever, Fig.4.53, to the Figures position. Depress the Bell key or, if the machine has no keyboard, set up the Bell code (MMSMS) on the pins. Lift the translator clutch abutment, turn the machine slowly by hand and check that, as the function reset bar, Fig.4.73, is returned towards the front of the machine, the projection on the Bell switch arm, Fig.4.72, is lowered on to the top of the Bell contact blade peg and the contacts are permitted to close.

90.19 With the contacts thus closed, lift the projection on the switch arm clear of the contact blade peg and check that the hook of the Bell alarm circuit blade Fig.4.74, is now clear of its buffer spring by a minimum of .003 in.

90.20 Return the machine to the rest position and repeat Checks 90.18 and 90.19 with respect to the WRU? contacts, this time setting up the WRU? code (MSSMS).

Action

90.21 If Check 90.18 is not satisfied, refine the setting of dimensions 'bj', 'bk' and 'bl'. If Check 90.19 is not satisfied, repeat Check 90.4 or 90.5 and, if necessary, Adjustment 90.6.

91. OPERATION COUNTER

Check

91.1 With the machine in the rest position, check that the feed pawl, Fig.4.75, is fully engaged with a tooth of the ratchet wheel, and that there is a clearance of approximately .010 in. (dimension 'bn') between the top face of the retention pawl and the face of the next tooth in the ratchet wheel.

91.2 Lift the translator clutch abutment, turn the machine slowly by hand and check that, as the ratchet wheel is rotated by the feed pawl, the retention pawl drops into its next tooth.

91.3 Continue to turn the machine and check that the feed pawl engages its next tooth before the machine reaches its rest position.

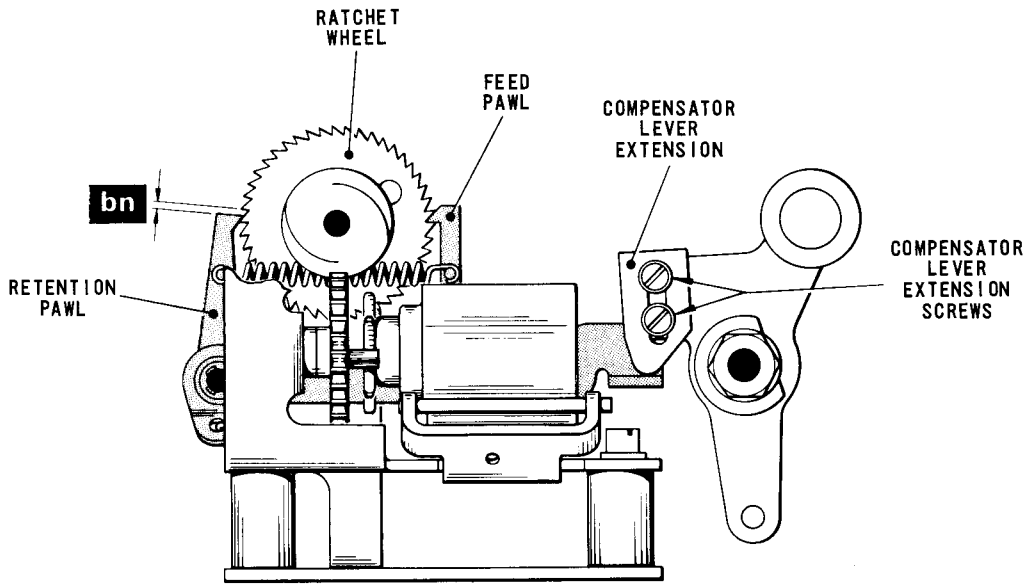


Fig. 4.75 OPERATION COUNTER

Action

91.4 To adjust, slacken the screws securing the compensator lever extension and move the extension until the above conditions are satisfied. Tighten the screws.

SECTION 5

A. REPERFORATING ATTACHMENT

92. SELECTOR BAR/PUNCH - VERTICAL CLEARANCE

Check

92.1 With the punches, Fig.4.76, withdrawn to their fullest extent from the punch block, check that the vertical clearance between the two outer punches and their respective selector bars is approximately equal.

Action

92.2 If this is not so, slacken the screws securing the guide rack, Fig.4.78, and adjust the rack until the condition is satisfied. Tighten the rack screws.

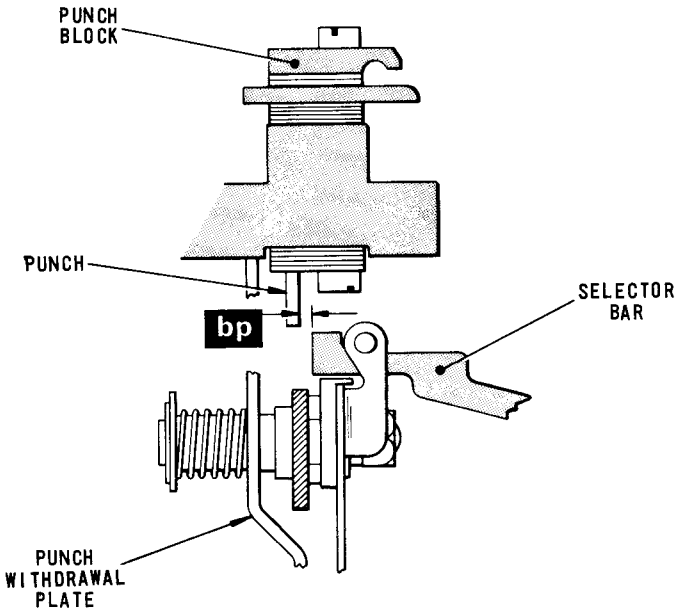


Fig. 4.76 SELECTOR BAR/PUNCH MECHANISM

93. SELECTOR BAR/PUNCH - HORIZONTAL CLEARANCE

Check

93.1 With the machine in the rest condition and the All Space code (SSSSS) set up on the pins, check that there is a horizontal clearance of .020 - .025 in. (dimension 'bp') between each punch, Fig.4.76, and its respective selector bar.

Action

93.2 To adjust, slacken the screw securing the appropriate push rod, Fig.4.77, to its adjustment plate and, holding down the respective selector code plate, insert a screwdriver between the adjustment teeth and move the adjustment plate until dimension 'bp' is obtained. Tighten the push rod screw.

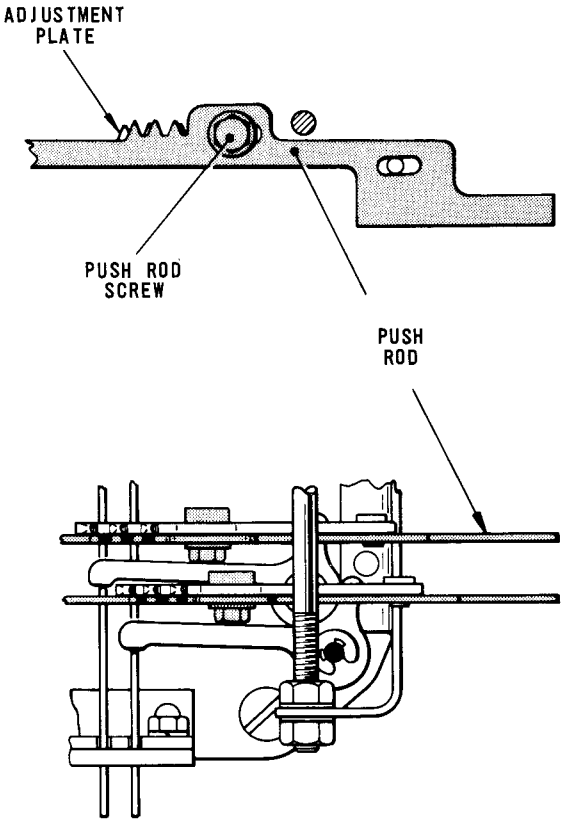


Fig. 4.77 SELECTOR BAR/PUSH ROD LINKAGE

94. PUNCH WITHDRAWAL PLATE

Check

94.1 Depress the Letters key or, if the machine has no keyboard, set up the Letters code (MMMMM) on the pins. Lift the translator clutch abutment and turn the machine by hand until the punching operation has taken place. Continue to turn the machine and check that the punch withdrawal plate, Fig.4.76, withdraws each punch to its fullest extent from the punch block.

94.2 Return the machine to the rest position and check that it is now possible to move each punch upwards by a small amount. This is to ensure that none of the punches is jammed down by the punch withdrawal plate when the machine is in the rest position.

Action

94.3 With the machine in the rest position, adjust the punching arm adjustment screw, Fig.4.78, until the screw just touches the underside of the punching arm. Tighten the screw a further 1/4 of a turn and clamp it in this position with its locknut.

95. FEED HOLE PITCH - INITIAL SETTING

Check

95.1 With the machine in the rest condition, check that the ratchet wheel, Fig.4.79, is so positioned that the engagement face of one of its teeth is in the horizontal plane, as shown in inset 1.

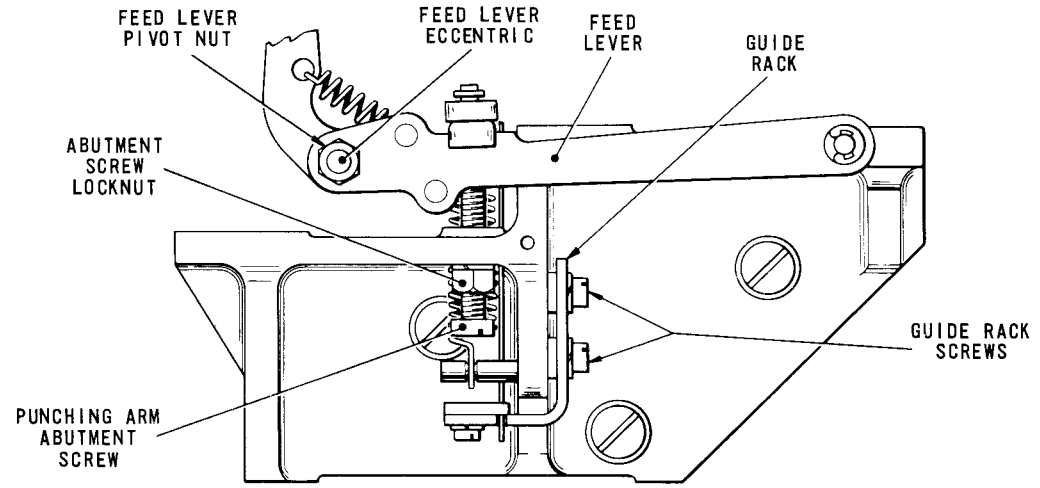


Fig. 4.78 FEED LEVER MECHANISM

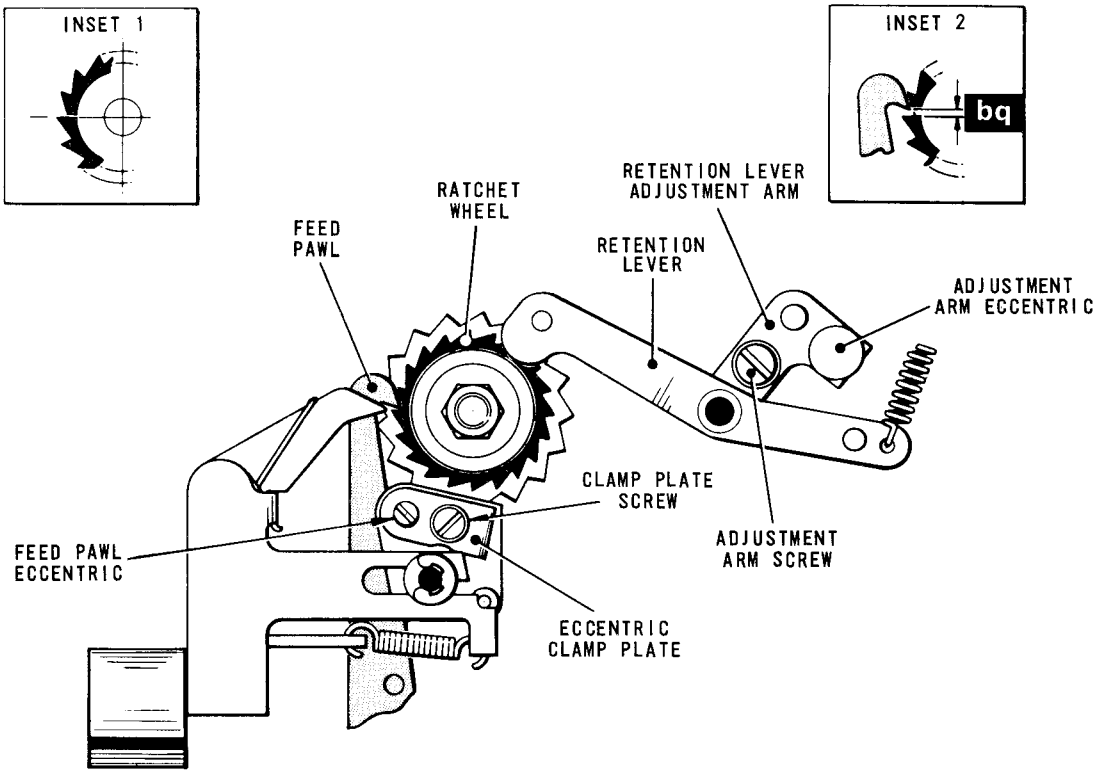


Fig. 4.79 TAPE FEED MECHANISM

Action

95.2 If this is not so, slacken the screw securing the retention lever adjustment arm and turn the arm eccentric until the correct ratchet wheel position is achieved. Tighten the adjustment arm screw.

96. FEED PAWL HEIGHT

Check

96.1 With the machine in the rest condition, check that there is an estimated clearance of .020 in. (dimension 'bq' - inset 2) between the operating face of the feed pawl, Fig.4.79, and the nearest tooth of the ratchet wheel.

Action

96.2 To adjust, slacken the feed lever pivot nut, Fig.4.78, and turn the feed lever eccentric until the correct clearance is obtained. Tighten the pivot nut.

97. FEED PAWL ENGAGEMENT

Check

97.1 Operate the feed pawl, Fig.4.79, by hand and check that on its downward movement the pawl engages one tooth only of the ratchet wheel.

Action

97.2 To adjust, slacken the screw securing the eccentric clamp plate and turn the feed pawl eccentric until the condition is satisfied. Tighten the clamp plate screw.

98. REPERFORATOR CONTROL KNOB

Check

98.1 Push the reperforator control knob, Fig.4.80, inwards to the OFF position, Check that this action disengages the interposer from the driving plate.

Action

98.2 If this is not so, slacken the locknut of the control rod adjustment nut and turn the adjustment nut until the condition is satisfied. Clamp the adjustment nut with its locknut.

99. REPERFORATOR CONTROL LEVER STOP SCREW

Check

99.1 Pull the reperforator control knob, Fig.4.80, outwards to the ON position. Check that there is now a clearance of .005 - .020 in. (dimension 'br') between the control rod domed adjustment nut and the reperforator control lever.

Action

99.2 If this is not so, slacken the locknut of the control lever stop screw and adjust the stop screw until dimension 'br' is obtained. Clamp the stop screw with its locknut.

100. REPERFORATOR SUPPRESSION FROM BELL AND WRU?

Check

100.1 With the machine in the rest condition, check that the tails of the Bell and WRU? function bars, Fig.4.81, are approximately equidistant from the operating pin of the throwout lever.

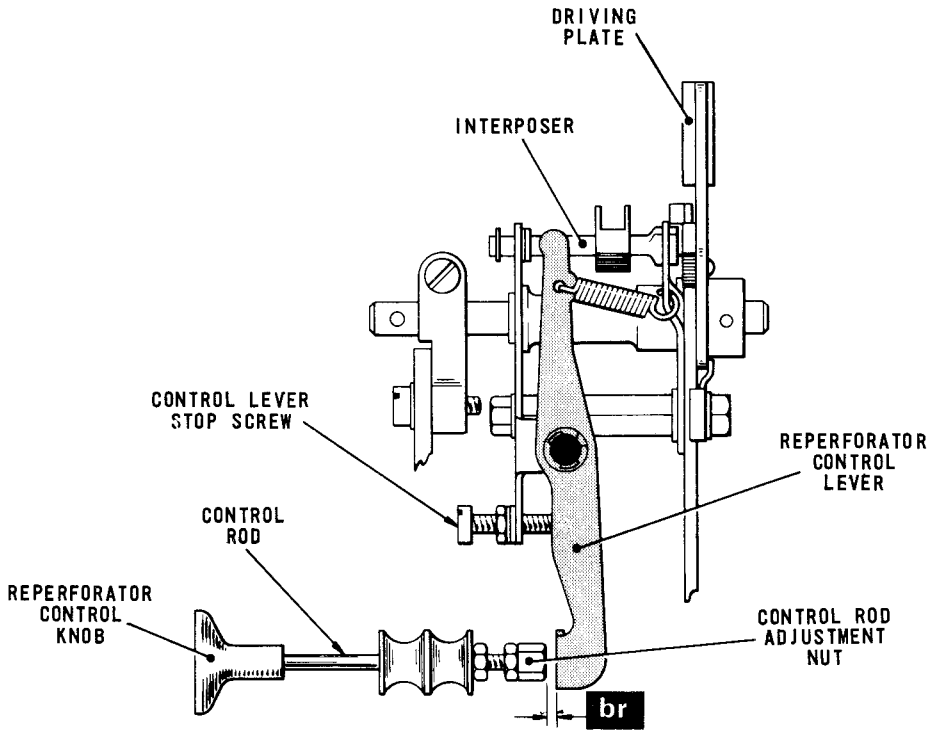


Fig. 4.80 REPERFORATOR ON/OFF CONTROL LINKAGE

Action

100.2 To adjust, set the upper part of the throwout lever.

Check

100.3 Move the shift lever, Fig.4.53, to the Figures position. Depress the Bell key or, if the machine has no keyboard, set up the Bell code (MMSMS) on the pins, Lift the translator clutch abutment and turn the machine by hand until the Bell function bar, Fig.4.81, has moved towards the rear of the machine. Check that this movement of the function bar disengages the interposer, Fig.4.80, from the driving plate.

100.4 Return the machine to the rest position and repeat Check 100.3 with respect to the WRU? function bar, this time setting up the WRU? code (MSSMS).

Action

100.5 To adjust, slacken the nut securing the throwout lever flanged pin, Fig.4.81, and reposition the pin until the condition is satisfied. Hold the pin in its new position and tighten its securing nut.

101. THROWOUT LEVER RESET CHOPPER

Check

101.1 Push the reperforator control knob, Fig.4.80, inwards so that the interposer is disengaged from the driving plate. Lift the translator clutch abutment and turn the machine by hand until the function bars have moved towards the rear of the machine. Check that there is now an estimated clearance of .005 in. (dimension 'bs' - inset) between the tail of the throwout lever, Fig.4.81, and the operating face of the chopper lever.

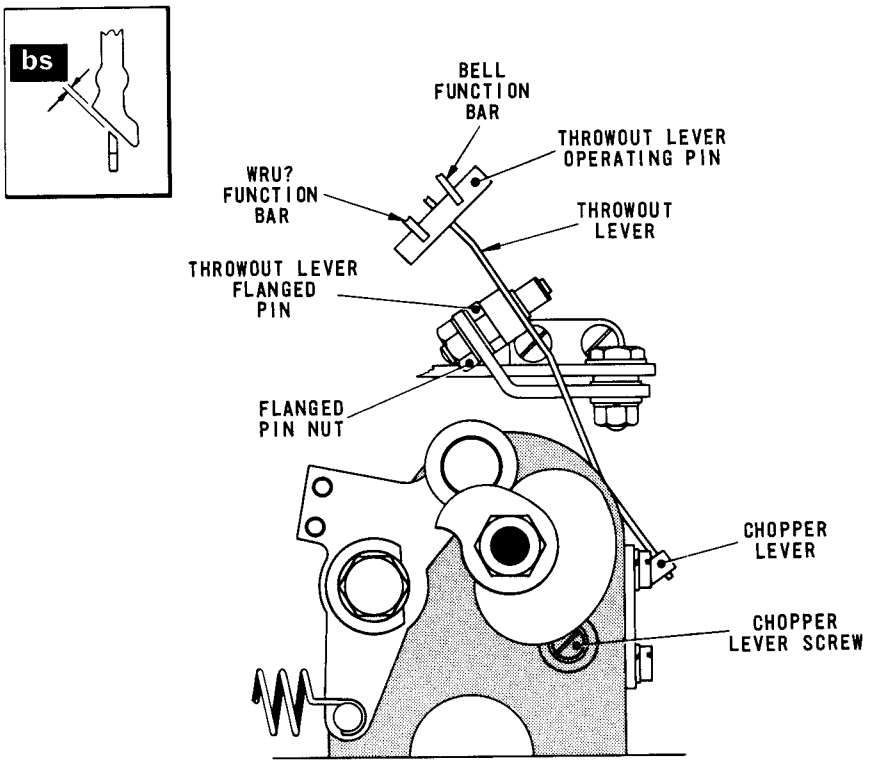


Fig. 4.81 THROWOUT LEVER MECHANISM

Action

101.2 If this is not so slacken the screw securing the chopper lever until it is friction tight and, holding the cam follower part of the chopper lever against its cam, position the tail of the lever so that dimension 'bs' is set up. Tighten the screw.

102. TAPE FEED LATCH

Check

102.1 Check that the slot between the tines of the tape guide, Fig.4.82, is centrally disposed about the teeth of the feed wheel.

102.2 Insert a length of tape perforated with feed holes into the reperforator and check, by carrying out the following procedure, that the tips of the tines are just touching the tape.

(a) Lift the retention lever, Fig.4.79, out of engagement with the extention wheel.

(b) Lift the tape guide, Fig.4.82, and turn the feed wheel knob, noting the force required to do so.

(c) Lower the guide on to the tape and turn the feed wheel knob again. Check that there is no discernible difference in the force required to turn the knob. Check also that there is no visible gap between the tips of the tines and the tape.

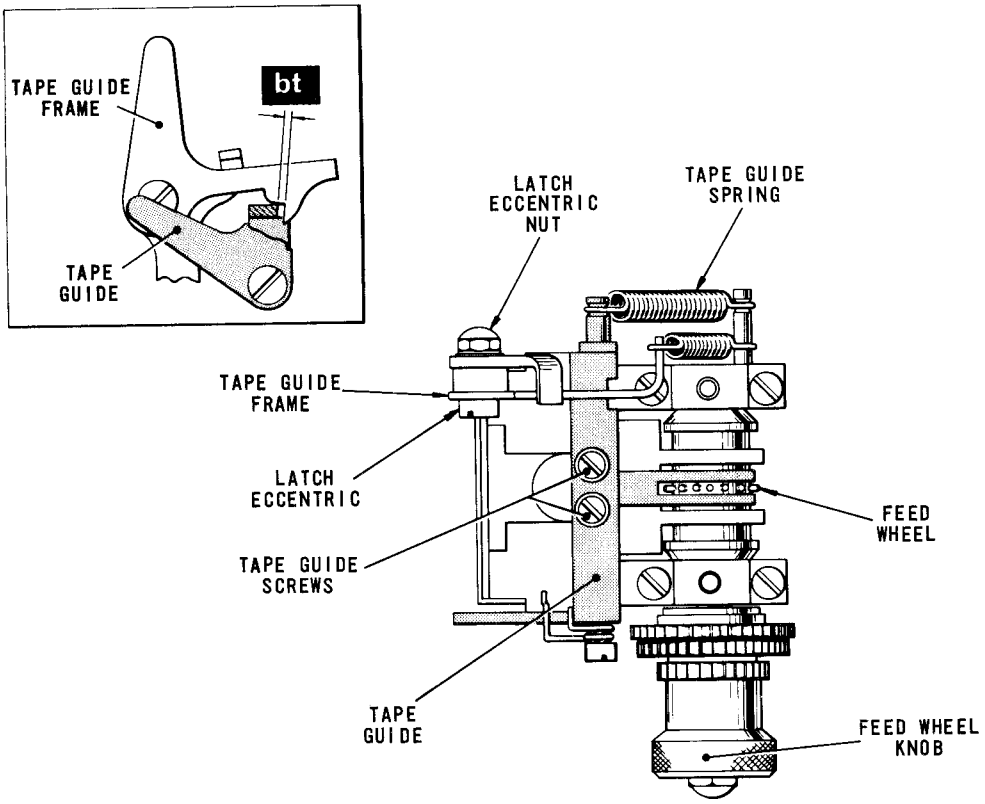


Fig. 4.82 TAPE GUIDE AND LATCH MECHANISM

Action

102.3 If either of these checks is not satisfied, remove the tape guide spring, slacken the domed nut securing the latch eccentric and turn the eccentric until there is a clearance (dimension 'bt' - inset) between the hook on the latch and the tape guide frame.

102.4 Slacken the screws securing the tape guide to the tape guide frame and, pressing the tape lightly on to the rollers by means of the tape guide, slide the guide backwards and forwards until its curved underside is positioned concentrically with the rollers, ensuring that the slot in the guide remains centrally disposed about the teeth of the feed wheel. Tighten the tape guide screws.

102.5 Refit the tape guide spring. Insert two thicknesses of tape perforated with feed holes into the reperforator. Adjust the latch eccentric until, with the tape guide resting on the tape, the hook on the latch is just touching the engagement face of the tape guide frame, i.e. dimension 'bt' is no longer present. Clamp the eccentric with its locknut.

102.6 Remove one thickness of tape. Slacken the tape guide screws again and move the guide towards the guide frame until the tips of the tines on the guide just touch the tape. Ensure that the slot in the guide is still centrally disposed about the teeth of the feed wheel and tighten the tape guide screws.

103. FEED HOLE PITCH - FINAL SETTING

Check

103.1 Insert a length of tape perforated with feed holes into the reperforator and check with a tape pitch gauge TA1385 that the pitch of the feed holes is either constant, or increases or decreases regularly so that the total change of pitch is not more than half a feed hole pitch in ten inches of tape.

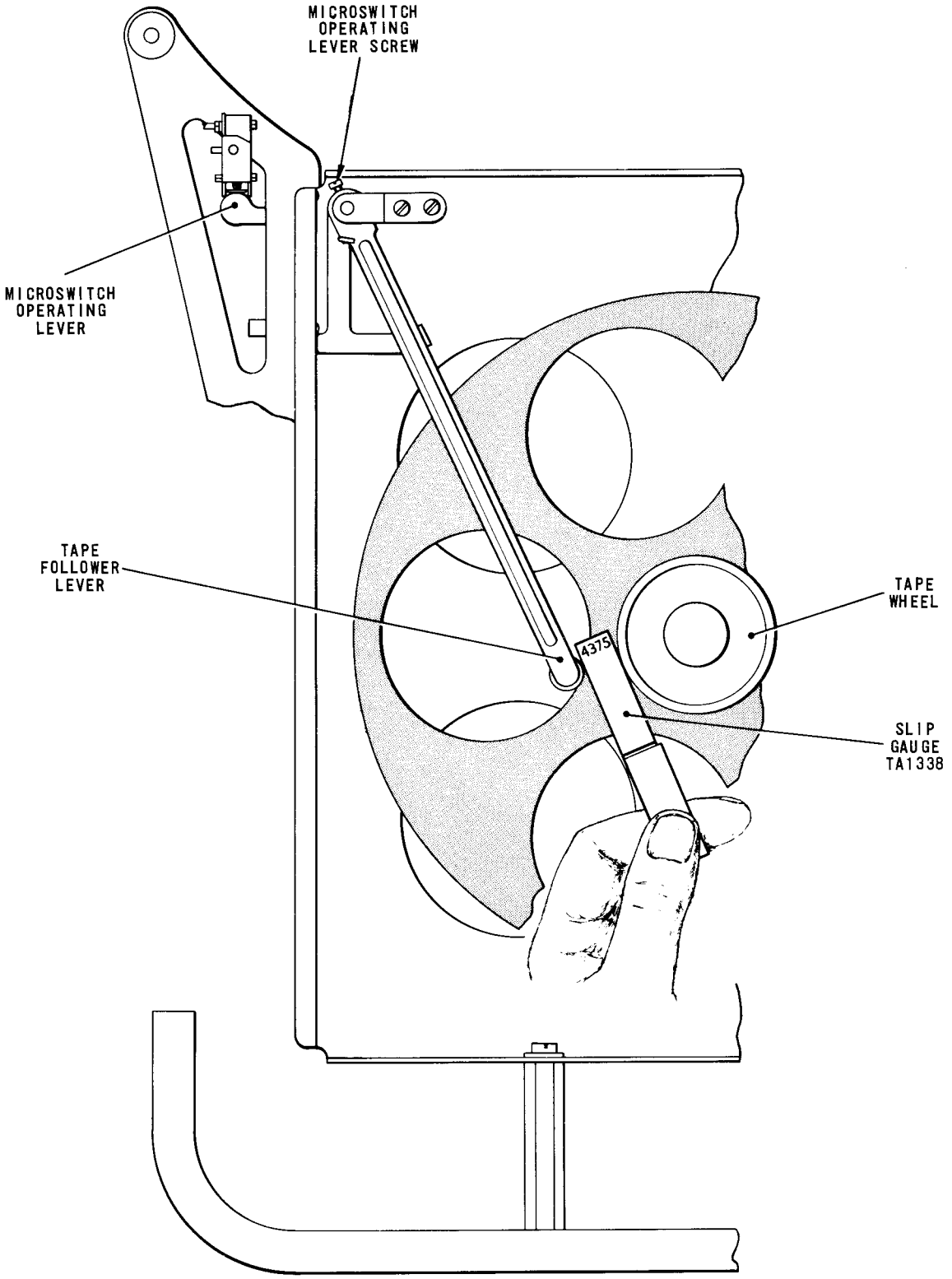


Fig. 4.83 TAPE EXHAUST ALARM

Action

103.2 If the feed hole pitch is irregular, refine Adjustments 102.3 to 102.6.

103.3 If the feed hole pitch varies regularly, but the cumulative variation over ten inches is more than half a feed hole pitch, refine Adjustment 95.2. Repeat Instruction Nos.96 and 97 and, if necessary, refine these adjustments.

103.4 Repeat Check 103.1 and, if necessary, refine Adjustment 103.3 until the feed hole pitch is correct.

104. TAPE EXHAUST ALARM

Check

104.1 Turn the machine on to its right-hand side, open the tape drawer and remove the cardboard tape boss from the tape wheel, Fig.4.83. Insert the 0.4375 in. end of slip gauge TA1338 between the roller on the tape follower lever and the tape wheel, as shown in the figure.

104.2 Switch on the motor and, holding the slip gauge carefully so that it is not dislodged, close the tape drawer. Operate the tape follower lever and check that the end-of-line indicator lamp lights as the roller on the lever comes into contact with the slip gauge. If no adjustment is required, remove the gauge.

Action

104.3 To adjust, slacken the screw securing the microswitch operating lever until it is friction tight and reposition the lever until the condition is satisfied. Tighten the screw and remove the slip gauge.

B. ANSWER-BACK UNIT

105. KEYBOARD SUPPRESSION

Check

105.1 Release the answer-back unit and feed the ward drum round for one or two wards. Check that there is now a horizontal clearance of .010 - .015 in. (dimension 'bu') between the push rod suppressor, Fig.4.84, and each push rod.

Action

105.2 To adjust, slacken the three screws securing the unit and move the unit until the required clearance is obtained. Tighten the unit securing screws.

Check

105.3 With the answer-back unit set up as in Check 105.1, check that the push rods have approximately .030 - .035 in. (dimension 'bv') vertical free movement.

Action

105.4 If this is not so, slacken the nut securing the suppressor link and adjust the link until the required free movement is obtained. Tighten the nut.

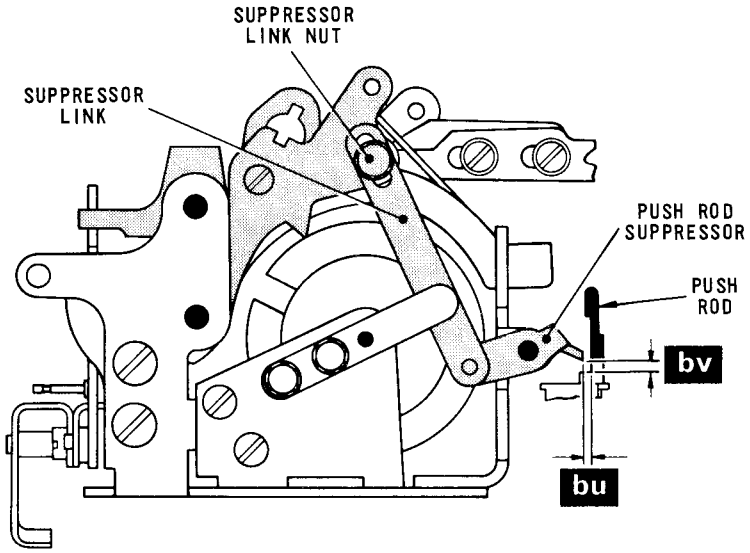


Fig. 4.84 PUSH ROD SUPPRESSOR/PUSH ROD CLEARANCES

106. TRIP FROM KEYBOARD

Check

106.1 Depress the 'Here Is' key. Check that the release lever, Fig.4.86, is engaged on the top step of the release lever latch, and that the release lever trip arm, Fig.4.85, is now pulled .050 - .090 in. (dimension 'bw') below the top surface of the release lever tail.

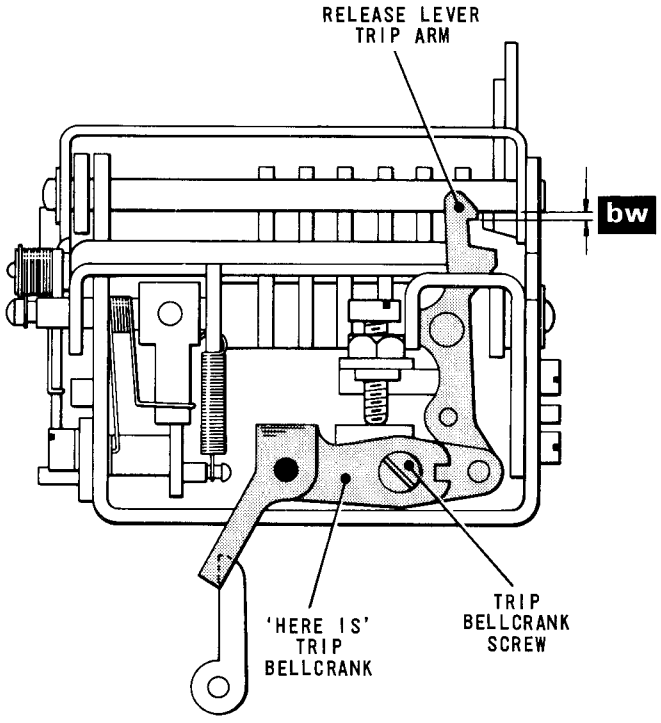


Fig. 4.85 ANSWER-BACK TRIP MECHANISM

Action

106.2 To adjust, slacken the screw securing the 'Here Is' trip bellcrank and move the bellcrank until dimension 'bw' is satisfied. Tighten the screw.

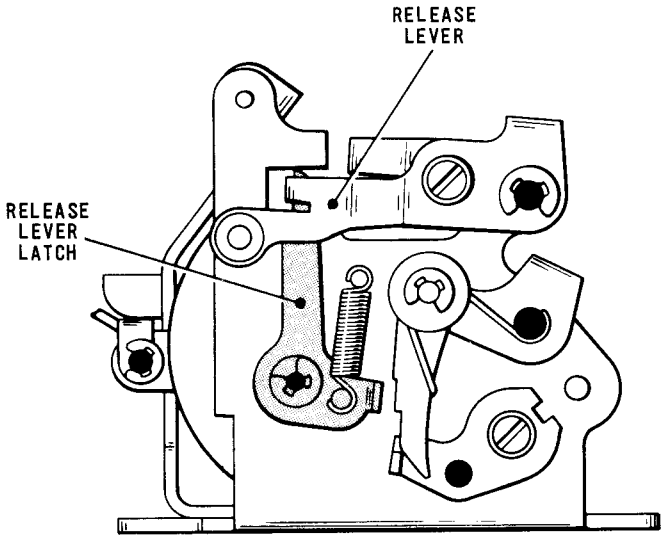


Fig. 4.86 ANSWER-BACK UNIT—REAR VIEW

†107. VERTICAL TRIP LINK

Check

107.1 With the machine in the rest condition, check that there is a clearance of .005 – .015 in. (dimension 'bx') between the block on the vertical trip link, Fig. 4.87, and the transfer lever.

Action

107.2 To adjust, remove the operation counter, slacken the screws securing the vertical trip link bracket and move the bracket up or down until dimension 'bx' is obtained. Tighten the bracket screws and refit the operation counter.

108. TRIP FROM FUNCTION BAR

Check

108.1 Move the shift lever, Fig. 4.53, to the Figures position. Set up the WRU? code (MSSMS) on the pins. Lift the translator clutch abutment and turn the machine by hand until the WRU? function bar, Fig. 4.88, has moved towards the rear of the machine. Check that the release lever, Fig. 4.86, is engaged on the top step of the release lever latch but is not restricting the full movement of the function bar.

108.2 Return the machine to the rest position and move the shift lever, Fig. 4.53, to the Letters position. Depress the letter 'D' key or, if the machine has no keyboard, set up the letter 'D' code (MSSMS) on the pins. Lift the translator clutch abutment and turn the machine by hand until the function bars move towards the rear of the machine. Check that the projection on the WRU? function bar, Fig. 4.88, is now clear of the trip arm by a minimum of .003 in. (dimension 'by').

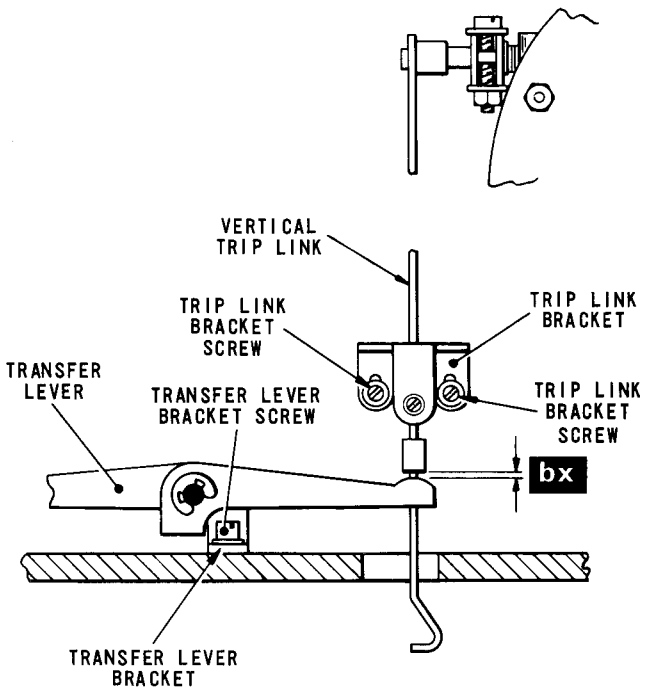


Fig. 4.87 VERTICAL TRIP LINK/TRANSFER LEVER CLEARANCE

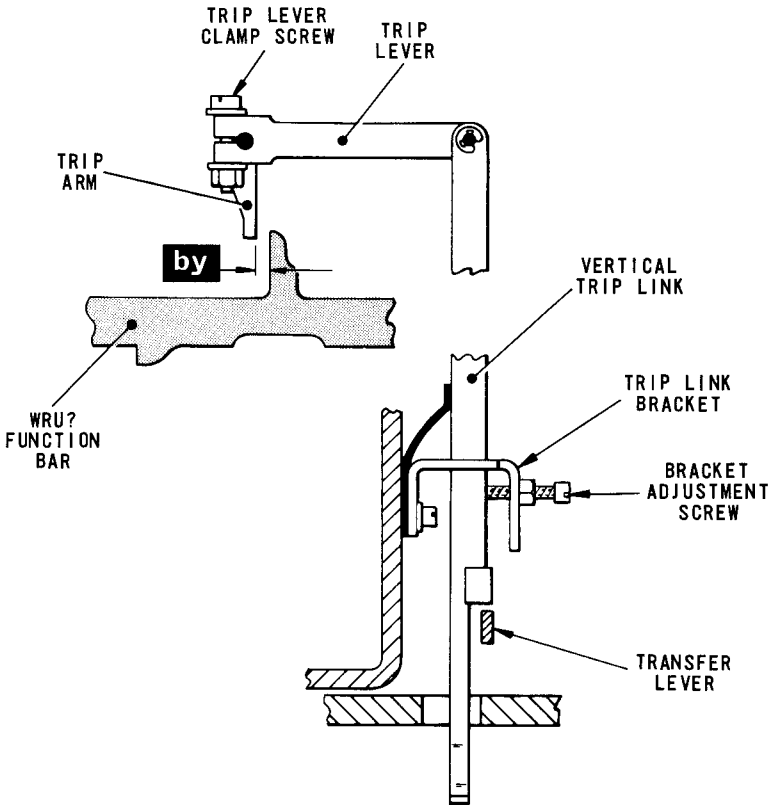


Fig. 4.88 TRIP ARM/WRU? FUNCTION BAR CLEARANCE

Action

108.3 To adjust, slacken the screw clamping the trip lever and holding the trip link upwards against its stop, move the trip lever until dimension 'by' is satisfied. Tighten the trip lever clamp screw.

†109. TRANSFER LEVER BRACKET

Check

109.1 Move the shift lever, Fig.4.53, to the Figures position. Depress the WRU? key and allow the key to remain locked down by its locking bar. Depress the vertical trip link, Fig.4.87, and check that the block on the link passes **behind** the transfer lever with a clearance of .010 - .025 in.

Action

109.2 To adjust, remove the operation counter, slacken the screws securing the transfer lever bracket and move the bracket until the clearance is satisfied. Tighten the bracket screws and refit the operation counter.

†110. TRIP LINK STOP SCREW

Check

110.1 With the machine in the rest condition, check that the front face of the transfer lever, Fig.4.88, is in line with the front face of the block on the vertical trip link.

Action

110.2 If this is not so, remove the operation counter, slacken the locknut of the trip link bracket adjustment screw and turn the adjustment screw until the two faces are in line. Clamp the adjustment screw in this position with its locknut and refit the operation counter.

111. FEED PAWL

Check

111.1 Depress the 'Here Is' key or, if the machine has no keyboard, move the shift lever, Fig.4.53, to the Figures position and set up the WRU? code (MSSMS) on the pins. Lift the translator clutch abutment and turn the machine by hand until the feed pawl, Fig.4.89, is in its extreme left-hand position. Check that there is now a clearance of .002 - .010 in. (dimension 'bz') between the retention pawl and the next tooth of the ratchet wheel.

Action

111.2 To adjust, slacken the screw securing the feed pawl eccentric pivot and turn the pivot until dimension 'bz' is achieved. Tighten the pivot screw.

112. FEED PAWL STOP

Check

112.1 Depress the 'Here Is' key or, if the machine has no keyboard move the shift lever, Fig.4.53, to the Figures position and set up the WRU? code (MSSMS) on the pins. Lift the translator clutch abutment and turn the machine by hand until the feed pawl, Fig.4.89, is in its extreme left-hand position. Check that the feed pawl stop is now lodged tightly against its rack.

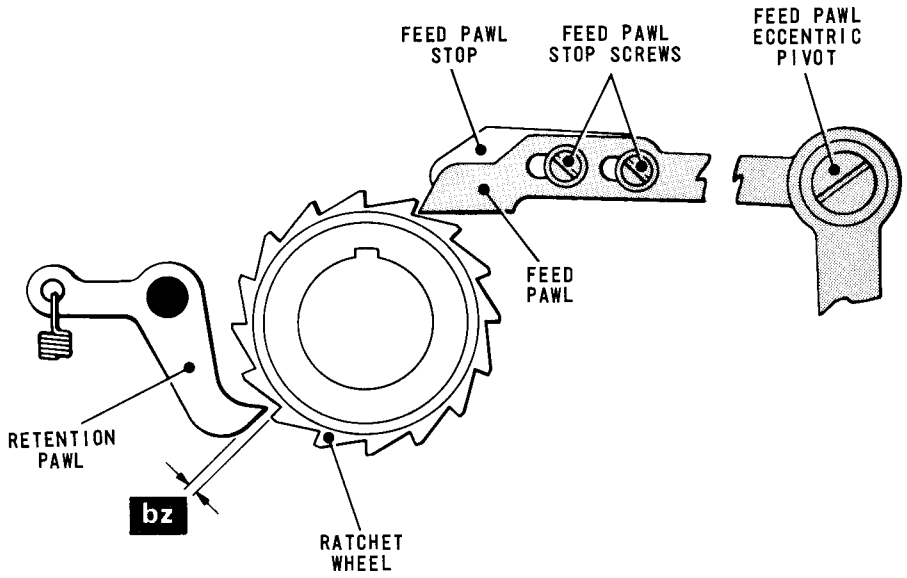


Fig. 4.89 ANSWER-BACK FEED MECHANISM

Action

112.2 To adjust, slacken the screws securing the feed pawl stop and move the stop until the condition is satisfied. Tighten the stop screws.

C. END-OF-LINE INDICATOR

113. TRIP MECHANISM

Check

113.1 Switch on the motor, slide the typehead to the right and check that the end-of-line indicator lamp lights as the typehead reaches the required distance from the end of the platen. The standard setting is 55 characters from the left-hand margin.

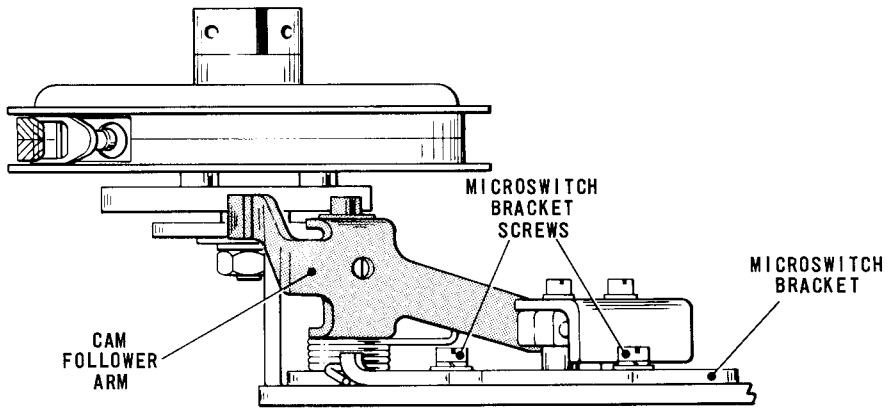


Fig. 4.90 END-OF-LINE INDICATOR TRIP MECHANISM

Action

113.2 To adjust, slacken the screws securing the microswitch bracket, Fig.4.90, and swing the microswitch clear of the cam follower arm. With the typehead at the point at which the lamp is required to light, slowly swing the microswitch bracket round until the lamp just lights and secure the bracket in this position with its screws.

D. AUTOMATIC CARRIAGE-RETURN/LINE-FEED

114. LINE LENGTH

Check

114.1 Slide the typehead to the right until it is in position to print the final character of the required line length. Depress any printing key on the keyboard or, if the machine has no keyboard, set up any printing code on the pins. Lift the translator clutch abutment and turn the machine by hand until the final character has been printed. Continue to turn the machine slowly until the feed rack reaches its extreme right-hand position.

114.2 Check that the flanged pin, Fig.4.91, on the typehead carriage has now operated the feed lever, thus causing the feed lever latch to drop into the bottom step of the lever.

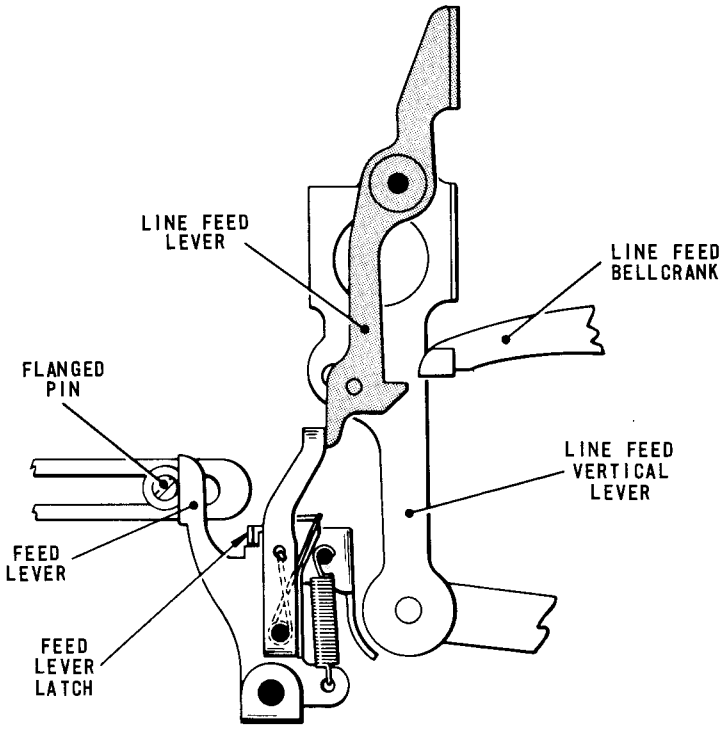


Fig. 4.91 AUTOMATIC CARRIAGE-RETURN/LINE-FEED MECHANISM

114.3 Return the machine to the rest position. Lift the translator clutch abutment and turn the machine by hand until the line-feed vertical lever moves down. Check that the feed lever latch is now released from the feed lever, thus allowing the feed lever to return to its rest position.

Action

114.4 To adjust, slacken the nut securing the flanged pin, move the pin to its extreme left-hand position and re-tighten the nut until it is friction tight. Return the machine to the rest position and repeat Check 114.1. Slide the pin to the right until the feed lever is so positioned that the feed lever latch just drops into the bottom step of the lever. Return the typehead carriage to the left-hand position and fully tighten the nut securing the flanged pin.

Check

114.5 Slide the typehead to the right until it is in position to print the penultimate character of the required line length. Depress any printing key on the keyboard or, if the machine has no keyboard, set up any printing code on the pins. Lift the translator clutch abutment and turn the machine by hand until the feed rack reaches its extreme right-hand position and the line feed bellcrank is on the highest point of its cam. Move both the line feed and carriage return levers up and down and check that there is now some clearance between the bellcranks and their latches.

Action

114.6 If either the line feed or carriage return bellcranks foul their latches, reset the position of the flanged pin.

Check

114.7 Return the machine to the rest position. Depress any printing key or, if the machine has no keyboard, set up any printing code on the pins. Lift the translator clutch abutment and turn the machine by hand until the feed rack reaches its extreme right-hand position. Operate the manual carriage return lever and check that the feed lever latch is engaged with the bottom step in the feed lever.

114.8 Repeat Check 114.3.

Action

114.9 Refine Adjustment 114.4 and, if necessary, 114.6.

E. TWO-COLOUR PRINTING

115. OPERATING CHECK AND SETTING UP PROCEDURE

★ Before carrying out the following adjustments, ensure that a two-colour black and red ink ribbon is fitted to the machine. Check that the black portion of the ribbon (used for incoming messages) is at the top of the ribbon jumper and the red portion (used for local copies of outgoing transmissions) is at the bottom.

● In the interests of safety, it is recommended that the motor is switched off while Adjustments 115.4(a) to (m) inclusive are carried out.

Check

115.1 Operate the carriage return manual lever. Print a few characters then operate the carriage return manual lever again. Check that the top of the ink ribbon is level with the bases of the printed characters.

115.2 Run out a line of letter 'T' and check that the characters are printed wholly in red.

115.3 (a) *If an external source of signals is available,* transmit a line of letter 'Q' into the machine and check that the characters are now printed wholly in black.

(b) *If no external source of signals is available,* it is possible to simulate an incoming message by slackening the screw clamping the trip lever, Fig.4.92, to the lag weight release shaft and swinging the lever clear of the slat latch. Clamp the lever in this position, run out a line of letter 'Q' and check that the characters are now printed wholly in black. If this method of simulating an incoming message is used, it will be necessary to re-adjust the position of the trip lever on completion of the check. Adjustments 115.4(k) to (m) refer.

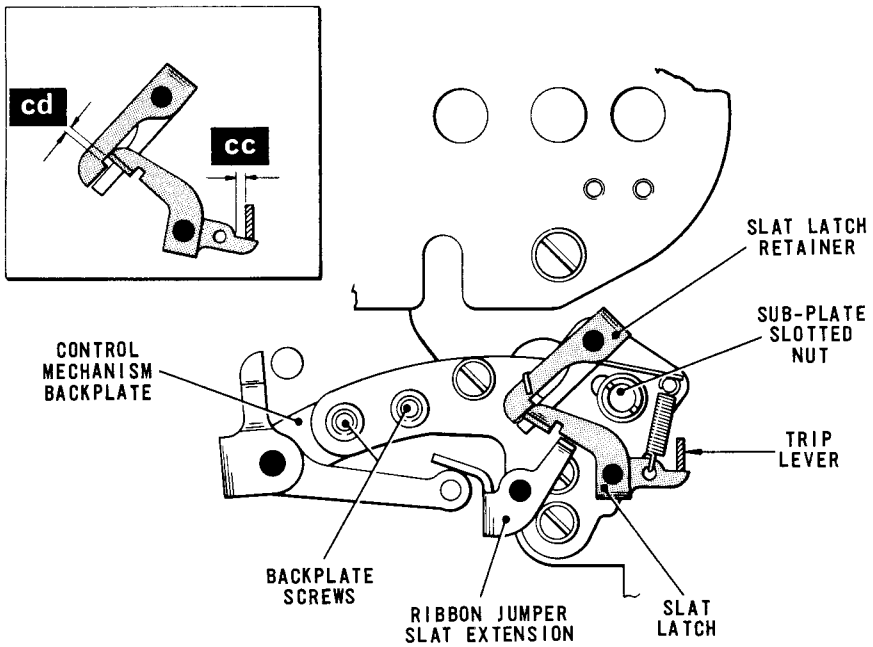


Fig. 4.92 TWO-COLOUR PRINTING—LATCH MECHANISM

Action

115.4 If any of the above conditions are not satisfied, adjust the mechanism by carrying out the following procedure.

(a) If it has not been done already, slacken the screw clamping the trip lever, Fig.4.92, to the lag weight release shaft and move the lever clear of the slat latch.

(b) Slacken the locknut of the lift lever eccentric, Fig.4.93, and turn the eccentric to its mid-position. Tighten the locknut.

(c) Using a tommy pin, slacken the two screws securing the control mechanism backplate, Fig.4.92, and move the backplate to the limit of its movement towards the front of the machine. Lightly clamp the screws securing the backplate.

(d) With the machine in the rest position, lift the slat latch so that it latches on the slat latch retainer. Slide the typehead carriage to its extreme right-hand position. Depress the key of any character on the top layer of the typehead check that the translator clutch abutment is lifted and turn the machine by hand until the typehead moves forward to print.

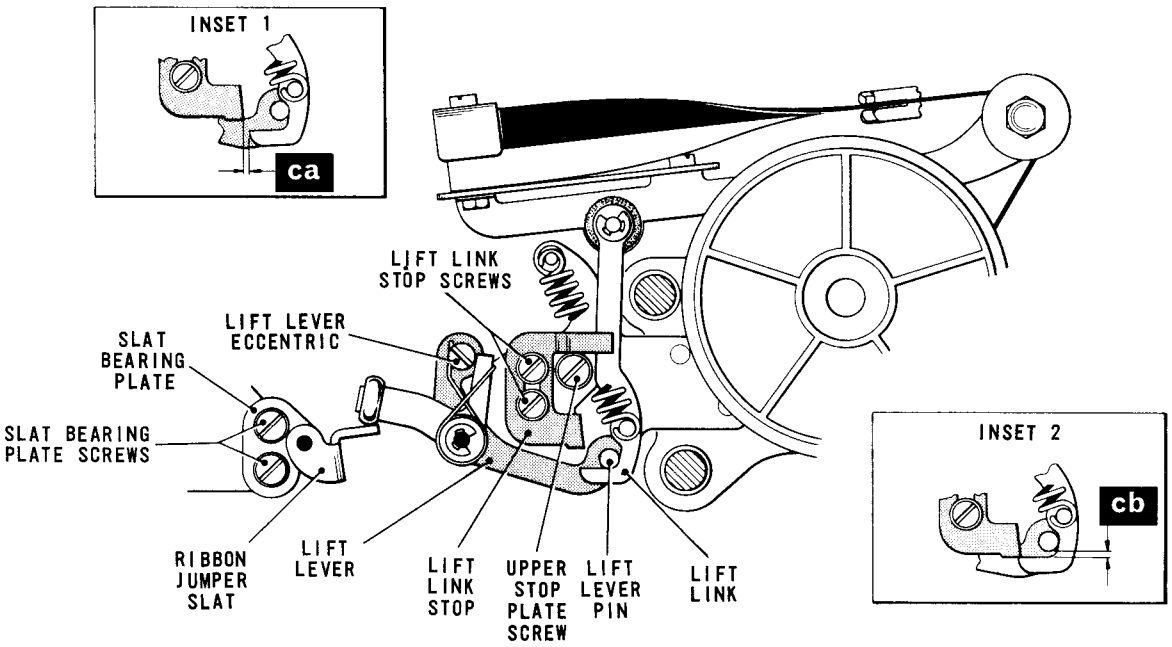


Fig. 4.93 TWO-COLOUR PRINTING—LIFT LINK MECHANISM

(e) Press the typehead casting forward so that the typehead moves towards the platen and check that the selected character is centrally positioned with respect to the lower (red) portion of the ribbon. If necessary, slacken the screw securing the lift link upper stop plate, Fig.4.93, and position the stop plate so that the condition is satisfied. Tighten the stop plate screw.

(f) Depress the ribbon jumper and check that the hook on the lift link is cammed out by the pin on the ribbon lift lever to clear the vertical edge of the lift link stop by approximately .015 in. (dimension 'ca' - inset 1). If necessary, slacken the screws securing the lift link stop until friction tight and tilt the stop slightly until the condition is satisfied. Tighten the stop screws.

(g) Lift the ribbon jumper slat so that its extension, Fig.4.92, is held by the slat latch and the hook on the lift link, Fig.4.93, moves down and rests against the bottom of the lift link stop. Press the typehead casting forward so that the typehead moves towards the platen and check that the selected character is now centrally positioned with respect to the upper (black) portion of the ribbon. To adjust, slacken the screws securing the lift link stop until friction tight and reposition the stop until the condition is satisfied. Tighten the stop screws.

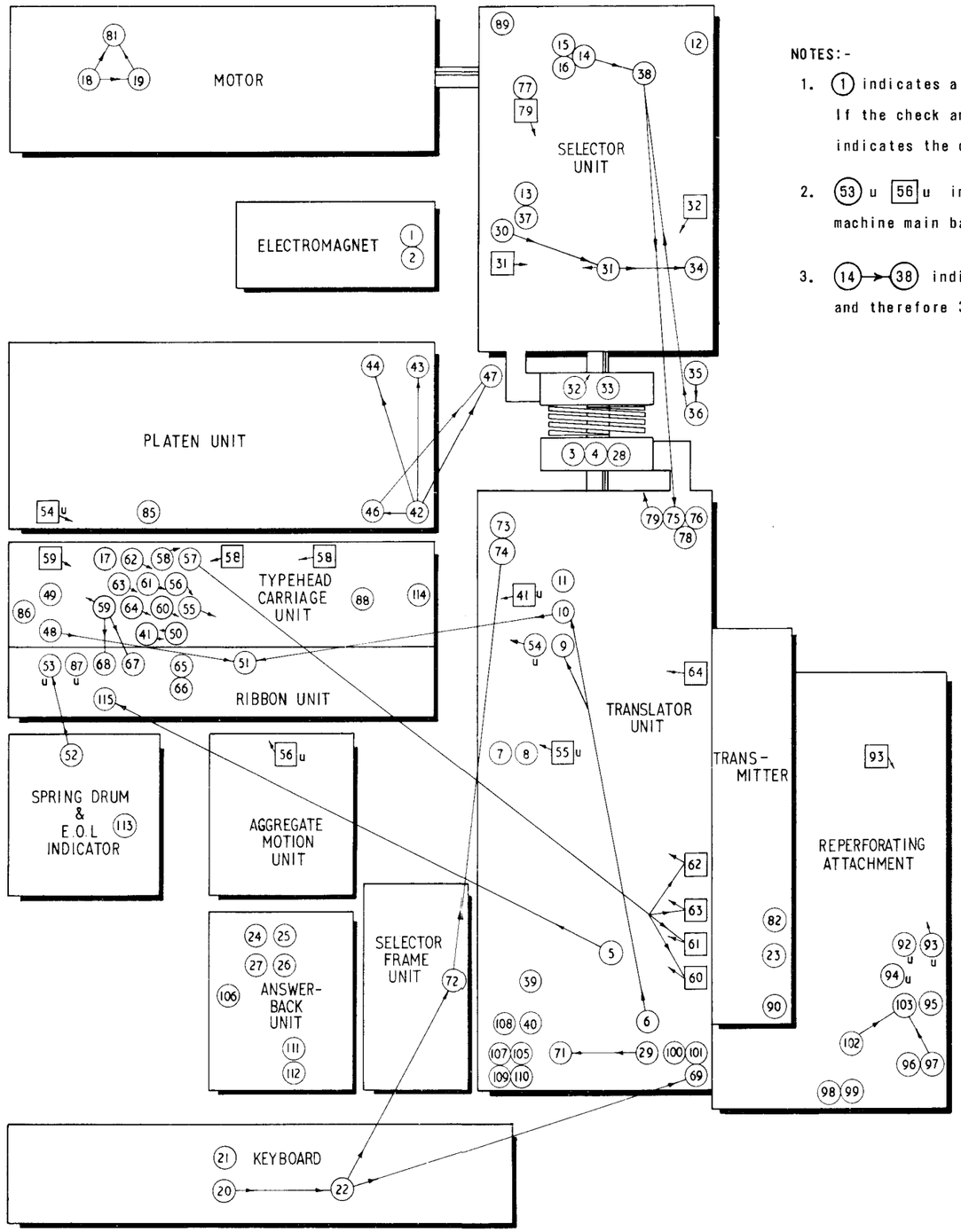
(h) With the lift link latched under the edge of its stop, check that there is a clearance of .016 - .025 in. (dimension 'cb' - inset 2) between the pin on the ribbon lift lever and the horizontal face of the hook on the lift link. To adjust, slacken the sub-plate slotted nut, Fig.4.92, and the locknut of the lift lever eccentric, Fig.4.93. Reposition both the sub-plate and the eccentric until dimension 'cb' is obtained. Tighten the slotted nut and the eccentric locknut. Obtain the final setting with both adjustments as near the centre of their movements as possible.

(j) Operate the carriage return manual lever and check that dimension 'cb' is still present when the typehead is in its extreme left-hand position. If necessary, slacken the screws securing the slat bearing plate and adjust the height of the plate until dimension 'cb' is achieved. Tighten the bearing plate screws, ensuring that the pressure rollers are lightly engaged with the platen and have an even pressure.

(k) Position the trip lever, Fig.4.92, so that it just touches the slat latch and is approximately .015 in. (dimension 'cc' - inset) clear of the corner of the latch. Return the machine to the rest position.

(l) Slacken the screws securing the control mechanism backplate and move the backplate until the top of the ink ribbon is level with the base of the printed characters. Tighten the backplate screws.

(m) Depress any key on the keyboard and turn the machine by hand until the typehead moves forward to print. Check that there is now a clearance of .010 - .030 in. (dimension 'cd' - inset) between the engagement faces of the trip latch and the slat latch retainer. If necessary, reposition the trip lever until this clearance is obtained. Clamp the trip lever and return the machine to the rest position. Check that the trip latch has returned to its rest position and is not influenced by the trip lever. If necessary, refine the setting of the trip lever.



NOTES:-

1. (1) indicates a check point with an adjacent adjustment. If the check and adjustment points are apart, then (31) indicates the check and [31] the adjustment point.
2. (53) u [56] u indicates that the point is underneath the machine main base.
3. (14) → (38) indicates that adjustment 14 may effect 38, and therefore 38 should be re-checked if 14 is altered.

Fig. 4.94 ADJUSTMENT INTERLOCK CHART