MECHANICAL INSTRUCTIONS

REMINGTON MONARCH
PORTABLE

Remington Rand
DIVISION OF SPERRY RAND CORPORATION
315 PARK AVENUE SOUTH
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FOREWORD

THIS INSTRUCTION BOOK IS INTENDED PRIMARILY FOR MECHANICS; HOWEVER, IT CAN BE STUDIED TO A VERY GOOD ADVANTAGE BY SALESMEN.

THIS BOOK IS NOT AN OPERATOR'S INSTRUCTION BOOK AND SHOULD NOT BE GIVEN TO CUSTOMERS.

THE DRAWINGS CONTAINED IN THIS BOOK SHOULD BE STUDIED IN CONNECTION WITH THE WRITTEN INSTRUCTIONS AND ARE OF GREAT ASSISTANCE IN LEARNING THE FUNCTIONS AND ADJUSTMENTS OF THE VARIOUS MECHANICAL UNITS.

FOR THOSE IN THE FOREIGN FIELD WHO DO NOT READ ENGLISH, A CAREFUL STUDY OF THE DRAWINGS WILL GIVE HELPFUL FUNDAMENTAL INFORMATION.

STUDY ONE UNIT THOROUGHLY BEFORE GOING ON TO ANOTHER TO OBTAIN THE BEST RESULTS, LEARN THE ADJUSTMENTS WHICH PERTAIN TO ONE UNIT FROM THE BOOK, THEN MAKE THEM ON THE MACHINE.
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MACHINE COVERS

TO REMOVE COVERS

TOP COVER (16)

PULL UP. FORM TOP COVER LATCH SPRINGS (13), RIGHT AND LEFT, TO LATCH SECURELY UNDER LATCH SURFACE ON MACHINE FRAME.

SIDE COVERS (15 AND 6)

REMOVE LEFT SIDE COVER MOUNTING SCREWS (11, 14, 17, AND 18). TAKE OFF COVER (15).
REMOVE RIGHT SIDE COVER MOUNTING SCREWS (9, 7, 4, AND 5). TAKE OFF COVER (6).

REAR COVER (2)

REMOVE MOUNTING SCREWS (1 AND 3). REMOVE COVER (2).

FRONT COVER (10)

REMOVE MOUNTING SCREWS (8 AND 12). REMOVE COVER (10).
ESCAPEMENT MECHANISM

The escapement mechanism consists of an escapement wheel (3), pinion (2), escapement wheel pawl (7), escapement rocker (18) containing escapement loose dog (20) and fixed dog (17), and type bar universal bar.

When escapement mechanism is in normal position, escapement loose dog (20) is in contact with tooth of escapement wheel (3) which, through mesh between pinion wheel (2) and feed rack which is mounted on carriage, prevents carriage from moving.

When type bar travels toward cylinder, universal bar fork actuates escapement operating arm (15) which is mounted on escapement rocker shaft (14). As escapement rocker (18) pivots, escapement loose dog (20) is disengaged from tooth of escapement wheel (3), prior to loose dog releasing escapement wheel (3), fixed dog (17) will be in position to intercept tooth just released by loose dog. The carriage, through carriage spring tension, will be forced to move to left until tooth of escapement wheel (3) is against fixed dog (17).

As type bar returns toward rest position, it allows type bar universal bar to restore enough to permit escapement return spring (21) to return escapement rocker (18) to rest position; fixed dog (17) will release tooth of escapement wheel (3) and escapement loose dog (20) will intercept next tooth of escapement wheel. Carriage will travel to left until loose dog limits against rocker body.

The purpose of escapement wheel pawl (7) is to hold escapement wheel (3) from turning while carriage is being returned, assuring even left margins and proper back spacing.

Removal of escapement rocker bracket and escapement complete

Remove space bar connecting link retainer (35), universal bar fork retainer (22). Unhook escapement return spring (21). Remove space bar connecting link (34). Loosen escapement shaft pivot screw nut right (12) and remove escapement shaft pivot screw (13). Remove escapement rocker shaft assembled to right.

Note: Do not remove escapement rocker shaft pivot screw left as this screw positions escapement rocker shaft.

Loosen ribbon carrier shaft lock nut (38) and remove ribbon carrier shaft pivot screw (37). Remove tabulator blade pull wire. Loosen set screw and remove tabulator key lever operating shaft arm from tabulator key lever operating shaft. Remove four escapement rocker bracket mounting screws (11), and remove bracket (10) complete from machine.

Disassemble escapement

Remove escapement wheel shaft nut (9), escapement wheel pinion shaft (1), escapement wheel pinion (2), escapement wheel (3), and escapement wheel washer (6) from rocker bracket (10).

Remove escapement wheel pawl screw (4), spring (5), washer (8), and pawl (7).

Note: Pica pinion and escapement wheels have 11 teeth.

Elite pinion and escapement wheels have 13 teeth.
ASSEMBLING AND ADJUSTMENT OF ESCAPEMENT

REPLACE ESCAPEMENT WHEEL PAWL (7), SCREW (4), SPRING (5), AND WASHER (8) ON ESCAPEMENT ROCKER BRACKET (10).

ASSEMBLE TO ESCAPEMENT WHEEL PINION SHAFT (1), PINION WHEEL (2), ESCAPEMENT WHEEL (3), ESCAPEMENT WHEEL WASHER (6), AND MOUNT TO ESCAPEMENT ROCKER BRACKET (10).

ADJUST ESCAPEMENT WHEEL PINION SHAFT (1) FOR MINIMUM PLAY OF WHEELS. LOCK ESCAPEMENT WHEEL SHAFT NUT (9).

FORM LIP "B" OF ESCAPEMENT WHEEL PAWL (7) SO LIP "A" OF PAWL HAS GOOD HOLD ON ESCAPEMENT WHEEL. (SEE INSET).

DISASSEMBLE ESCAPEMENT ROCKER SHAFT AS FOLLOWS

REMOVE ESCAPEMENT ROCKER (18), LINE LOCK STOP CAM (16), AND ESCAPEMENT OPERATING LEVER (15) FROM SHAFT (14).

ASSEMBLING AND ADJUSTMENT OF ESCAPEMENT ROCKER SHAFT

ASSEMBLE THE FOLLOWING PARTS ON ESCAPEMENT ROCKER SHAFT (14) FROM LEFT TO RIGHT. ESCAPEMENT OPERATING LEVER (15) WITH HUB TO LEFT, LINE LOCK STOP CAM (16) WITH HUB TO RIGHT, AND ESCAPEMENT ROCKER (18) COMPLETE WITH HUB TO RIGHT, WITH ALL MOUNTING SCREWS FACING SAME DIRECTION. TIGHTEN SCREWS LIGHTLY.

MOUNT ESCAPEMENT ROCKER SHAFT (14) TO ESCAPEMENT ROCKER BRACKET (10). REMOVE END PLAY WITH ESCAPEMENT ROCKER SHAFT PIVOT SCREW (13). TIGHTEN LOCK NUT (12).

NOTE: IF LEFT ESCAPEMENT SHAFT PIVOT SCREW (36) HAS BEEN DISTURBED, ADJUST SCREW TO HAVE ABOUT TWO THREADS OF SCREW SHOWING TO THE LEFT OF BRACKET (10). TIGHTEN LOCK NUT (39).

HOLD ESCAPEMENT (3) SO TOOTH OF WHEEL IS AGAINST LIP "A" OF ESCAPEMENT WHEEL PAWL (7). PLACE .020 FEELER GAUGE AGAINST ESCAPEMENT WHEEL TOOTH "C". POSITION ESCAPEMENT ROCKER TO HAVE LOOSE DOG "D" AGAINST FEELER GAUGE. TIGHTEN ESCAPEMENT ROCKER MOUNTING SCREWS (19). (SEE INSET).

LOOSEN NUT (12) AND REMOVE ESCAPEMENT SHAFT MOUNTING SCREW RIGHT (13). REMOVE ESCAPEMENT SHAFT ASSEMBLED. MOUNT ESCAPEMENT ROCKER BRACKET (10) TO BOTTOM OF CARRIAGE FRONT RAIL WITH FOUR ROCKER BRACKET MOUNTING SCREWS (11).

REPLACE RIBBON CARRIER SHAFT PIVOT SCREW (37) AND NUT. REMOVE END PLAY IN SHAFT AND TIGHTEN LOCK NUT (38).

REPLACE TABULATOR KEY LEVER OPERATING SHAFT ARM ON TABULATOR KEY LEVER OPERATING SHAFT, AND TIGHTEN SET SCREW.

INSTALL ESCAPEMENT ROCKER SHAFT ASSEMBLED AND ADJUST

NOTE: WHEN INSTALLING ESCAPEMENT ROCKER SHAFT ASSEMBLED, HAVE UNIVERSAL BAR FORK TO FRONT OF SHAFT.

INSTALL SPACE BAR CONNECTING LINK (34), AND REPLACE RETAINER (35). REPLACE UNIVERSAL BAR FORK RETAINER (22). HOOK UP ESCAPEMENT RETURN SPRING (21). INSTALL TABULATOR BLADE PULL WIRE, AND REPLACE RETAINERS.
ESCAPEMENT TRIP

OPERATE ESCAPEMENT MANUALLY. CHECK ESCAPEMENT "DROP". IT SHOULD BE 1/3 - 2/3 SPACE. IF THERE IS MORE THAN 1/3 SPACE "DROP" ON FIRST TRIp, MOVE ESCAPEMENT ROCKER (18) TO LEFT; IF THERE IS LESS THAN 1/3 SPACE "DROP", MOVE ROCKER TO RIGHT. ADJUST ESCAPEMENT OPERATING LEVER (15) TO HAVE TYPE BAR TRIP TAKE PLACE WHEN TYPE IS 1/4" FROM CYLINDER. IF TRIP IS TOO SOON, MOVE OPERATING LEVER (15) AWAY FROM SEGMENT; IF TOO LATE, MOVE LEVER TOWARD SEGMENT. TIGHTEN SCREWS (23).

SPACE BAR MECHANISM

OPERATION

SPACE LEVER (24) IS SUPPORTED IN MACHINE BY PIVOT SCREWS (25) AND (32). WHEN SPACE BAR (31) IS DEPRESSED, IT CAUSES LINK (34) TO MOVE TOWARD REAR OF MACHINE ACTUATING ESCAPEMENT OPERATING LEVER (15), CAUSING ESCAPEMENT TO TAKE PLACE. WHEN ESCAPEMENT IS COMPLETE, SPRING (21) RETURNS SPACE BAR MECHANISM TO ITS NORMAL REST POSITION.

ADJUSTMENTS

LOOSEN NUTS (27) AND (33) AND ADJUST SPACE LEVER PIVOT SCREWS (25) AND (32) TO REMOVE END PLAY AND TO CENTER SPACE LEVER (24) IN KEY LEVER FRONT COMB. TIGHTEN NUTS (27) AND (33).

WHEN SPACE BAR (31) IS AT REST POSITION, TOP OF SPACE BAR SHOULD BE APPROXIMATELY 3/8" BELOW TOPS OF KEY TOPS OF BOTTOM ROW OF ALPHABET KEYS.

FORM SPACE BAR ARMS AT POINTS (28) AND (30) TO OBTAIN THIS CONDITION.

FORM SPACE BAR CONNECTING LINK (34) TO HAVE ESCAPEMENT TRIP TAKE PLACE APPROXIMATELY 1/16" ABOVE SPACE BAR DOWN STOPS (26) AND (29).

NOTE: EXTREME CARE MUST BE TAKEN TO PREVENT_BINDING OF LINK (34).
BACK SPACE MECHANISM

THIS MECHANISM IS VERY SIMPLE IN CONSTRUCTION AND WILL REQUIRE VERY LITTLE ADJUSTMENT. IT IS NECESSARY, AS IN ALL PARTS OF THE MACHINE, TO HAVE FREE MOVING PARTS.

TO REMOVE BACK SPACE PAWL COMPLETE

REMOVE RIGHT CYLINDER KNOB, RIGHT CARRIAGE END COVER AND RIGHT CARRIAGE RELEASE LEVER PIVOT SCREW. (DO NOT LOSE CARRIAGE RELEASE LEVER SPRING OR SPACER).

MOVE CARRIAGE TO EXTREME LEFT. UNHOOK BACK SPACE PAWL ARM SPRING (3) FROM STUD (7). REMOVE SPACER (5). RAISE CARRIAGE RELEASE LEVER, RIGHT AND REMOVE BACK SPACE PAWL COMPLETE FROM MACHINE.

TO REPLACE BACK SPACE PAWL COMPLETE

OPEN BACK SPACE PAWL AND SLIDE UNDER FEED RACK, BACK SPACE PAWL (4) TO FRONT OF FEED RACK, AND BACK SPACE LOCK PAWL (2) TO REAR. PLACE BACK SPACE PAWL ARM (6) ON STUD (11) OF BACK SPACE INTERMEDIATE LEVER (12), PUT SPACER (5) ON STUD (7), HOOK UP BACK SPACE PAWL ARM SPRING (3). REPLACE CARRIAGE RELEASE LEVER SPACER, SPRING AND PIVOT SCREW (NOT SHOWN).

ADJUSTMENTS

1. LOosen SCREW (1), ADJUST BACK SPACE PAWL (4) AS FAR TO LEFT AS POSSIBLE. TIGHTEN SCREW (1).

2. CHECK BACK SPACE KEY LEVER (14) TO SEE THAT IT IS RESTING LIGHTLY ON KEY LEVER UP-STOP. ALSO BACK SPACE INTERMEDIATE LEVER (12) MUST NOT BE OPERATED WHEN BACK SPACE MECHANISM IS AT REST.

FORM BACK SPACE CONNECTING LINK (9) AT POINT (10) TO OBTAIN THESE CONDITIONS.

3. DEPRESS AND HOLD BACKSPACE KEY LEVER. CARRIAGE MUST BE LOCKED.

4. IF CARRIAGE DOES NOT BACK SPACE PROPERLY, BACK SPACE PAWL (4) WILL HAVE TO BE REPOSITIONED.

CARRIAGE MAIN SPRING

CARRIAGE SPRING DRUM ASSEMBLY (8) IS MOUNTED TO FRAME BASE OF MACHINE BY SPRING DRUM NUT (13). MAIN SPRING SHOULD HAVE ENOUGH TENSION TO PREVENT PILING OF ONE CHARACTER ON TOP OF ANOTHER WHEN TYPING RAPIDLY INTO EXTREME RIGHT MARGIN.

APPROXIMATELY FIVE TURNS ON SPRING DRUM (8) IS USUALLY SUFFICIENT.
CYLINDER AND LINE SPACE MECHANISM

CYLINDER

WITH CYLINDER (6) IN POSITION, RAISE PAPER BAIL SCALE AND PULL FEED ROLL RELEASE LEVER (SEE CARRIAGE PLATE) TO FRONT. SPIN CYLINDER (6). CHECK FOR FREEDOM IN BUSHINGS (9) AND (16) WITHOUT END PLAY. END PLAY IN CYLINDER CAN BE REMOVED BY LOOSENING CYLINDER SHAFT BEARING NUT (10) AND ADJUSTING CYLINDER SHAFT BUSHING (9) UNTIL THERE IS NO END PLAY IN CYLINDER BUT STILL FREE TO SPIN. TIGHTEN NUT (10) TO RETAIN ADJUSTMENT.

REMOVAL OF CYLINDER

REMOVE LEFT PLATEN KNOB (22) BY HOLDING CYLINDER (6) SECURELY AND TURNING KNOB TOWARD REAR OF MACHINE. (DO NOT LOSE SPACER (17). REMOVE RIGHT CYLINDER SHAFT SCREW (7) AND PULL CYLINDER SHAFT (8) TO RIGHT AND OUT OF CARRIAGE. RAISE PAPER BAIL SCALE AND REMOVE CYLINDER UP AND TO RIGHT.

TO REPLACE CYLINDER, REVERSE ABOVE PROCEDURE.

VARIABLE LINE SPACE

THE VARIABLE MECHANISM IS NOT ADJUSTABLE AND DEPENDS UPON FREENESS OF, AND CORRECT ASSEMBLY OF, ITS PARTS.

WHEN LEFT PLATEN KNOB (22) IS TIGHT, VARIABLE LINE SPACE SHAFT (23) MUST HAVE A SLIGHT AMOUNT OF END PLAY. TEST WITH VARIABLE SET AT VARIOUS POSITIONS. NO END PLAY IN SHAFT (23) WOULD PREVENT CLUTCH CONE RETAINING SPRING (5) FROM FORCING CLUTCH CONE (4) TO CAM CYLINDER CLUTCH JAWS (3) INTO INTERNAL SERRATIONS (2) OF RATCHET (1) SECURELY, WHICH IS NECESSARY TO OBTAIN EVEN SPACING BETWEEN TINES.

LINE SPACE ADJUSTMENTS

ASSEMBLE LINE SPACE LEVER SPRING (19) TO LINE SPACE LEVER (21) WITH SCREWS (20). DO NOT TIGHTEN SCREWS. HOLD LINE SPACE LEVER (21) TO ITS HIGHEST POSITION. PLACE HOLE (18) OF LINE SPACE LEVER SPRING (19) OVER TOP OF LINE SPACE LEVER SHAFT (24). TIGHTEN LINE SPACE LEVER SPRING SCREWS (19).

CHECK FOR SLIGHT PLAY IN LINE SPACE RATCHET DETENT ROLL RELEASE LEVER (25). IF THERE IS TOO MUCH PLAY, FORM LINE SPACE RATCHET DETENT (15) AWAY FROM CYLINDER RATCHET (1), AND VICE VERSA.

WITH PAPER BAIL SCALE RAISED, AND FEED ROLL RELEASE LEVER PULLED FORWARD: LINE SPACE REGULATOR (12) SET TO REAR, MOVE LINE SPACE LEVER (21) TO RIGHT SLOWLY, OBSERVE THAT REAR OF LINE SPACE PAWL (11) ENGAGES TEETH OF RATCHET (1) AND, AS LINE SPACE LEVER CONTINUES TO RIGHT AND HAS MOVED CYLINDER TWO TEETH OF RATCHET, LINE SPACE PAWL (11) MUST LIMIT AGAINST LINE SPACE REGULATOR ECCENTRIC SCREW (13). IF NOT, LOOSEN LINE SPACE REGULATOR ECCENTRIC SCREW NUT (26) AND ADJUST LINE SPACE REGULATOR ECCENTRIC SCREW (13). TIGHTEN NUT (26).

THIS IS AN IMPORTANT ADJUSTMENT. THE SOLE PURPOSE OF DETENT ROLL (14) IS TO HOLD RATCHET IN POSITION THAT LINE SPACE LEVER (21) PUTS IT.

THE FINAL TEST TO SEE IF RATCHET DETENT ROLL (14) IS PROPERLY SET IS TO OPERATE LINE SPACE LEVER TO ITS LIMIT AND RELEASE SLOWLY, OBSERVING AT SAME TIME WHETHER PLATEN RATCHET CREEPS TO FRONT OR REAR OF MACHINE SLIGHTLY: IF IT DOES, READJUST ECCENTRIC SCREW (13) UNTIL CORRECTED.
CARRIAGE MECHANISM

TO REMOVE CARRIAGE COVERS

END COVER, LEFT (37):

REMOVE LEFT CYLINDER KNOB BY HOLDING PLATEN RIGIDLY AND TURNING CYLINDER KNOB TOWARD REAR. REMOVE MOUNTING SCREWS (36) AND REMOVE END COVER (37).

END COVER, RIGHT (5):

REMOVE RIGHT CYLINDER KNOB BY REMOVING CYLINDER SHAFT RIGHT, MOUNTING SCREW. REMOVE MOUNTING SCREWS (6) AND REMOVE END COVER (5).

REAR COVER (3):

REMOVE END COVERS RIGHT (6) AND LEFT (37). REMOVE FOUR MOUNTING SCREWS (4) AND REMOVE REAR COVER (3).

ERASURE TABLE (42):

UNHOOK ERASURE TABLE TENSION SPRING (8). SPRING ERASURE TABLE (42) AT POINT (2) TO RELEASE FROM STUD (7) AND REMOVE TABLE (42).

PAPER TROUGH (38):

REMOVE LEFT CYLINDER KNOB.
REMOVE CYLINDER SHAFT, RIGHT, MOUNTING SCREW. PULL CYLINDER SHAFT TOWARD RIGHT AND OUT OF CARRIAGE.
RAISE PAPER BAIL (43).
REMOVE CYLINDER UP AND TO RIGHT (DO NOT LOSE BUSHING IN LEFT CARRIAGE END).
FREE PAPER TROUGH (38) FROM FEED ROLL RELEASE SHAFT (11) AND REMOVE FROM CARRIAGE.

REMOVE CARRIAGE COMPLETE WITH BED RAILS:

NOTE: SOME MACHINES HAVE ADJUSTING SHIMS BETWEEN CARRIAGE FRONT RAIL (25) AND MACHINE FRAME. SHIMS MUST BE REPLACED OR MOTION AND IMPRESSION WILL BE DIFFICULT TO OBTAIN.

UNHOOK DRAW CORD. REMOVE FOUR ESCAPEMENT ROCKER BRACKET MOUNTING SCREWS. (REFER TO ESCAPEMENT MECHANISM) REMOVE FOUR CARRIAGE FRONT RAIL MOUNTING SCREWS (18 AND 31). LOOSEN SCREWS (29) AND REMOVE ALIGNING SCALE (28).

REMOVE CARRIAGE COMPLETE WITH BED RAILS FROM FRAME BASE.

REPLACE CARRIAGE COMPLETE WITH BED RAILS

WHEN SETTING CARRIAGE ON FRAME BASE, MAKE SURE UPPER END OF BACK SPACE INTERMEDIATE LEVER SPRING (23) IS AGAINST CARRIAGE FRONT RAIL (25) AND TO LEFT OF ITS MOUNTING SCREW (24). BACK SPACE INTERMEDIATE LEVER STUD (21) CONNECTED TO BACK SPACE PAWL, FEED RACK THROW-OUT SLIDE (30) CONNECTED WITH FEED RACK THROW-OUT SLIDE LEVER AND CARRIAGE IS SEATED ON DOWEL PINS.

REPLACE CARRIAGE ADJUSTING SHIMS IF NEEDED.

REPLACE FOUR CARRIAGE FRONT RAIL MOUNTING SCREWS (18) AND (31).

SEAT ESCAPEMENT ROCKER BRACKET AND REPLACE FOUR MOUNTING MOUNTING SCREWS.
REMOVE CARRIAGE FROM CARRIAGE RAILS

REMOVE CARRIAGE COMPLETE FROM FRAME BASE.

REMOVE RETAINER (13) FROM CARRIAGE RACK (14) AND REMOVE RACK.

SLIDE CARRIAGE OUT OF RAILS FROM LEFT TO RIGHT.

REPLACE CARRIAGE IN CARRIAGE RAILS

SLIDE CARRIAGE INTO RAILS FROM RIGHT TO LEFT.

POSITION CARRIAGE SO STAR WHEEL (33) OF CARRIAGE BALL RETAINER (15) IS IN FIRST TOOTH OF CARRIAGE BALL RETAINER RACK (26). HOLD CARRIAGE IN THIS POSITION AND INSTALL CARRIAGE RACK (14) SO THAT STAR WHEEL OF CARRIAGE BALL RETAINER (15) IS IN LAST TOOTH OF CARRIAGE RACK (14). REPLACE CARRIAGE RACK RETAINER.

CARRIAGE REAR RAIL ADJUSTMENT

LOosen and make friction tight four CARRIAGE REAR RAIL MOUNTING SCREWS (22).

LOOSEN CARRIAGE REAR RAIL ADJUSTING SCREW LOCK NUTS (19) RIGHT AND LEFT.

ADJUST CARRIAGE REAR RAIL ADJUSTING SCREWS (20) RIGHT AND LEFT TO REMOVE PLAY IN CARRIAGE. TIGHTEN LOCK NUTS (19) RIGHT AND LEFT, ALSO FOUR CARRIAGE REAR RAIL MOUNTING SCREWS (22).

CHECK CARRIAGE FOR FREEDOM FULL LENGTH OF WRITING LINE WITH NO NOTICEABLE PLAY BETWEEN CARRIAGE RAILS.

PAPER FEED

BEFORE ADJUSTING PAPER FEED, CYLINDER AND LINE SPACE ADJUSTMENTS MUST BE PROPERLY MADE. (SEE CYLINDER AND LINE SPACE MECHANISM)

PAPER TROUGH (38) WHICH ALSO SERVES AS PAPER TABLE, IS MOUNTED ON PAPER FEED ROLL RELEASE SHAFT. A GROOVE (10) AT RIGHT END OF FEED ROLL RELEASE SHAFT (11) MAINTAINS LATERAL POSITION OF PAPER TROUGH.

FEED ROLLS SHOULD TURN FREELY IN FEED ROLL ROCKER ARMS (12) AND (35). LUBRICATE ENDS OF FEED ROLL SHAFTS (34) SPARINGLY WITH TYPEWRITER OIL.

CHECK TO SEE THAT FEED ROLLS CLEAR AT LEAST FIVE SHEETS OF PAPER WHEN FEED ROLL RELEASE LEVER (9) IS IN A "RELEASED" (LEVER FORWARD) POSITION.

FEED ROLL PRESSURE

HAVING PREVIOUSLY ADJUSTED AND CHECKED CYLINDER, FEED ROLLS (34), LINE SPACE AND VARIABLE MECHANISMS, WE ARE NOW READY TO CHECK FEED ROLLS FOR PRESSURE:

PLACE STRIPS OF PAPER 1" WIDE BETWEEN CYLINDER AND OUTSIDE ROLLS OF FEED ROLLS. NOW, WITHOUT TURNING CYLINDER, PULL ON EACH STRIP OF PAPER ALTERNATELY TO SEE THAT FEED ROLLS HAVE A FIRM, EVEN TENSION AT BOTH ENDS. EVEN PRESSURE CAN BE OBTAINED BY FORMING FEED ROLL TENSION SPRINGS (16) AND (32) AT POINT (17). FORM UP TO INCREASE TENSION - DOWN TO DECREASE TENSION.
PAPER BAIL

PAPER BAIL ROLLS (39) MUST BE FREE TO TURN ON PAPER BAIL SCALE (43) BUT SHOULD HAVE FRICITION WHEN MOVED ON BAIL SCALE. THIS FRICITION IS CONTROLLED BY PAPER BAIL ROLL SPRINGS (40) INSIDE BEARING HOLE OF BAIL ROLLS (39).

BAIL ROLLS (39) SHOULD CONTACT CYLINDER WITH EQUAL PRESSURE. PAPER BAIL ARMS (41) AND (1) MAY BE FORMED TO SECURE EQUAL PRESSURE.

ALIGNING SCALE

THE ALIGNING SCALE (28) CAN BE ADJUSTED BY FORMING BRACKET (27) TO ALLOW FOR SIX SHEETS OF PAPER BETWEEN ALIGNING SCALE (28) AND CYLINDER. TYPE OFF A LINE OF SMALL IIII'S, LOOSEN SCREWS (29), AND ADJUST ALIGNING SCALE FOR HEIGHT SO THAT THERE IS A FINE LINE OF SPACE BETWEEN TOP OF ALIGNING SCALE AND BOTTOM OF PRINTED LINE OF IIII'S. AT THE SAME TIME, POSITION ALIGNING SCALE LATERALLY SO THAT WHITE DOTS ON ALIGNING SCALE (28) WILL BE IN LINE WITH VERTICAL LINES OF PRINTED IIII'S. TIGHTEN SCREWS (29).
CYLINDER AND ANVIL

CYLINDER AND ANVIL ADJUSTMENTS MUST BE MAINTAINED IN ORDER THAT MACHINE WILL PRODUCE GOOD, CLEAR-CUT TYPE-WRITTEN WORK.

WITH TYPE BAR (22) HELD AGAINST CYLINDER, THERE SHOULD BE .004 TO .008 CLEARANCE BETWEEN TYPE BAR (22) AND ANVIL (23). THIS CLEARANCE IS SET AT THE FACTORY AND SHOULD BE CORRECT.

IF CYLINDER AND ANVIL IS NOT CORRECT, TYPE GUIDE (2) WILL HAVE TO BE RE-POSITIONED THROUGH TYPE GUIDE ADJUSTING SCREW (3).

LOOSEN NUT (4), TURN TYPE GUIDE ADJUSTING SCREW (3) IN TO INCREASE CLEARANCE BETWEEN TYPE BAR (22) AND ANVIL (23).

BACK OUT ON SCREW (3) TO DECREASE CLEARANCE. TIGHTEN NUT (4).

SHIFT MECHANISM

THE SHIFT MECHANISM MUST BE FREE AND OPERATE WITH LIGHT BUT RAPID ACTION.

NOTE: "CYLINDER AND ANVIL" MUST BE ESTABLISHED BEFORE ADJUSTING SHIFT MECHANISM. (REFER TO "CYLINDER AND ANVIL" ADJUSTMENTS)

ADJUSTMENTS

CHECK SHIFT KEY LEVERS (14) AND (18) FOR FREEDOM IN KEY LEVER COMB.

ADJUST SHIFT SHAFT PIVOT SCREWS (13) RIGHT AND LEFT, TO CENTER SHIFT SHAFT AND REMOVE END PLAY.

ADJUST SEGMENT OSCILLATOR PIVOT SCREWS (8 AND 12) TO HAVE OSCILLATOR (5) FREE AND WITHOUT END PLAY.

ADJUST TYPE SEGMENT PIVOT SCREWS (21 AND 6) TO HAVE SEGMENT (1) FREE AND WITHOUT END PLAY.

ADJUST SHIFT SPRING ADJUSTING SCREW (7) TO HAVE A LIGHT BUT RAPID SHIFT.

"ON FEET" AND "MOTION" ADJUSTMENTS

THE CAPITAL LETTERS ARE PUT "ON FEET" AND SMALL LETTERS BROUGHT INTO "MOTION".

"ON FEET" ADJUSTMENTS

WITH SHIFT KEY (17) DEPRESSED, LOOSEN NUT (19) AND ADJUST SHIFT ECCENTRIC SCREW FRONT (10) TO PLACE CAPITAL LETTERS "ON FEET". TIGHTEN NUT (19). RELEASE SHIFT KEY.

"MOTION" ADJUSTMENTS

WITH SEGMENT (1) IN NORMAL POSITION, LOOSEN NUT (20) AND ADJUST SHIFT ECCENTRIC SCREW REAR (9) TO BRING SMALL LETTERS IN "MOTION". TIGHTEN NUT (20) AND STRIKE OFF "MOTION" SAMPLE -- "HhHhHhH"

LOOSEN SCREWS (15) AND POSITION SHIFT LOCK (16) SO SHIFT KEY WILL RELEASE FROM LOCKED POSITION FROM EITHER SIDE AND "ON FEET" WILL BE MAINTAINED. TIGHTEN SCREWS (15).
PLATE 7

BELL, RIBBON DRIVE & REVERSE
RIBBON DRIVE AND REVERSE

RIBBON DRIVE ADJUSTMENTS

POSITION RIBBON REVERSE LEVER (16) TO RIGHT. ADJUST RIBBON REVERSE LEVER STOP SCREW (.10) TO HAVE RIBBON FEED PAWL LEFT (17) MESH UNDER ITS SPRING TENSION WITH RIBBON RATCHET WHEEL LEFT (12). AT THIS POINT CHECK RIBBON RETAINING PAWL (9). IT MUST CLEAR RIBBON RATCHET WHEEL (6). FORM RETAINING PAWL (9) AT POINT "B" IF NECESSARY TO OBTAIN CLEARANCE.

POSITION REVERSE LEVER (16) TO LEFT. ADJUST RIBBON REVERSE LEVER STOP SCREW (14) TO HAVE RIBBON FEED PAWL RIGHT (7) MESH WITH RIBBON RATCHET WHEEL RIGHT (6). RIBBON RETAINING PAWL (13) MUST CLEAR RATCHET WHEEL (12). FORM RETAINING PAWL (13) AT POINT "D" IF NECESSARY.

RATCHET WHEELS LEFT AND RIGHT ARE DRIVEN TWO TEETH WITH EACH STROKE OF A KEY LEVER. RATCHET WHEELS MUST NOT HAVE BACK LASH. FORM RIBBON RETAINING PAWLS (9) AND (13) AT POINTS "A" AND "C" TO REAR. IF RATCHET WHEELS ARE DRIVEN ONE SPACE, FORM PAWLS (9) AND (13) AT POINTS "A" AND "C" TO FRONT.

RIBBON REVERSE ADJUSTMENTS

AS RIBBON UNWINDS FROM LEFT RIBBON SPOOL (19), RIBBON TENSION ARM LEFT (18) MOVES TOWARD RIBBON SPOOL (19). WHEN FROM 5 TO 9 TURNS OF RIBBON REMAIN ON LEFT SPOOL (19), ARM "H" OF RIBBON REVERSE PAWL LEFT (15) IS INTERCEPTED BY POINT "F" OF RIBBON REVERSE TENSION ARM (18) CAUSING RIBBON TO REVERSE AND WIND ONTO LEFT SPOOL (19). (REFER TO INSET.) FORM RIBBON TENSION ARM (18) AT POINT "E" TOWARD RIBBON SPOOL TO DECREASE NUMBER OF TURNS OF RIBBON ON SPOOL AT TIME RIBBON REVERSES. FORM ARM AT POINT "E" AWAY FROM RIBBON SPOOL TO INCREASE NUMBER OF TURNS ON SPOOL AT TIME RIBBON REVERSES.

WIND RIBBON ONTO LEFT SPOOL AND CHECK RIBBON TENSION ARM RIGHT (11) FOR SIMILAR CONDITIONS.

REMOVE RIBBON FROM MACHINE. WITH KEY LEVERS AT REST, POSITION REVERSE LEVER (16) TO LEFT. ARM "H" OF RIBBON REVERSE PAWL MUST CLEAR POINT "F" OF RIBBON REVERSE TENSION ARM BY .020. FORM ARM "H" TO OBTAIN CLEARANCE. MOVE RIBBON REVERSE LEVER (16) TO RIGHT, SAME CONDITION MUST EXIST BETWEEN ARM "H" OF RIGHT REVERSE PAWL AND POINT "F" OF RIGHT TENSION ARM.

BELL MECHANISM

IF NECESSARY, FORM BELL RINGER (3) SO THAT IT WILL ENGAGE RIGHT MARGIN STOP. FORM BELL RINGER SPRING (4) TO HAVE BELL RINGER HAMMER (2) CLEAR BELL (5) BY ABOUT .020.

IF BELL RINGS WHEN CARRIAGE IS RETURNED, BELL HAMMER (2) IS TOO CLOSE TO BELL (5).
RIBBON COVER MECHANISM

OPERATION

WHEN A KEY LEVER IS DEPRESSED, RIBBON UNIVERSAL BAR (12), WHICH PIVOTS ON KEY LEVER FULCRUM SHAFT (11), MOVES DOWNWARD, MOVING RIBBON CARRIER SHAFT OPERATING ARM (9) FORWARD. STUD (6) ROTATES RIBBON CONTROL ARM (3), WHICH IS MOUNTED ON RIBBON CARRIER SHAFT (2), RAISING RIBBON CARRIER (1) TO DESIRED HEIGHT.

WHEN RIBBON CONTROL LEVER (10) IS IN ITS FORWARD POSITION, STUD (6) ON REAR OF RIBBON CARRIER SHAFT OPERATING ARM (9) WILL BE IN LOWER PORTION OF SLOT IN RIBBON CONTROL ARM (3) WHICH CAUSES TYPE TO PRINT ON UPPER HALF OR BLACK PORTION OF RIBBON.

WHEN RIBBON CONTROL LEVER (10) IS AT ITS REAR POSITION, IT CAUSES STUD (6) TO MOVE TO TOP PORTION OF SLOT IN RIBBON CONTROL ARM (3) AND TYPE WILL NOW PRINT ON LOWER HALF OR RED PORTION OF RIBBON. WHEN RIBBON CONTROL LEVER (10) IS SET AT WHITE DOT OR STENCIL POSITION, STUD (6) WILL OPERATE IN CUT-OUT OF RIBBON CONTROL ARM (3) AND WILL NOT RAISE RIBBON CARRIER (1).

ADJUSTMENTS

PLACE RIBBON CONTROL LEVER (10) TO STENCIL POSITION. STUD (6) ON RIBBON CARRIER SHAFT OPERATING ARM (9) SHOULD OPERATE IN CUT-OUT OF RIBBON CONTROL ARM (3). IF STUD (6) IS NOT OPERATING IN CUT-OUT, FORM RIBBON CONTROL INTERMEDIATE LEVER (8) AT POINT (7).

LOOSEN RIBBON CONTROL ARM MOUNTING SCREW (5). HAVE RIBBON CARRIER (1) AT ITS LOWEST POINT. POSITION RIBBON CONTROL ARM (3) TO LIGHTLY REST AGAINST STUD (6). TIGHTEN SCREW (5). MOVE RIBBON CONTROL LEVER TO BLACK POSITION, DEPRESS KEY LEVER AND HOLD TYPE BAR AGAINST CYLINDER. FORM POINT "C" OF RIBBON CONTROL ARM (3) TO CLEAR POINT "B" OF BLACK-RED UPSTOP ARM (4) BY .010. MOVE CONTROL LEVER TO RED POSITION. POINT "C" OF RIBBON CONTROL ARM (3) MUST CLEAR POINT "A" OF BLACK AND RED UPSTOP ARM (4) BY .010 WITH TYPE BAR HELD AGAINST CYLINDER.
MARGIN AND LINE LOCK

MARGIN ADJUSTMENTS

THE MARGIN STOP RACK (17) AND MARGIN SCALE ON PAPER TABLE (NOT SHOWN) ARE NOT ADJUSTABLE. MARGIN STOPS ARE MADE SO RED ARROW ON MARGIN STOPS POINTS EXACTLY TO SCALE READINGS.

CHECK MARGIN STOPS (16 AND 5) FOR FREEDOM ON MARGIN STOP RACK (17).

SET LEFT MARGIN STOP (16) AT 10 ON MARGIN SCALE. MOVE CARRIAGE TO LEFT MARGIN SETTING. LOOSEN SCREWS (9) AND ADJUST LEFT MARGIN STOP PLATE (7) TO HAVE ABOUT .050 CLEARANCE BETWEEN LEFT MARGIN STOP (16) AND MARGIN LOCK RELEASE LEVER (15).

TEST CARRIAGE FOR OVER-BANKING AND DROPING AWAY FROM LEFT MARGIN SETTING. READJUST MARGIN STOP PLATE (7) IF EITHER CONDITION EXISTS.

LINE LOCK ADJUSTMENTS

LOOSEN NUT (2). ADJUST MARGIN LOCK STOP SCREW (3) IN UNTIL IT BINDS MARGIN LOCK RELEASE LEVER (15). BACK OUT ON SCREW UNTIL MARGIN LOCK (1) IS FREE. TIGHTEN NUT (2).

TYPE INTO RIGHT MARGIN STOP (5). ADJUST LINE LOCK STOP CAM (SEE ESCAPEMENT PLATE) TO HAVE .005 CLEARANCE BETWEEN LINE LOCK STOP CAM AND MARGIN LOCK EXTENSION (14). TIGHTEN LINE LOCK STOP CAM SET SCREWS.

TYPE INTO RIGHT MARGIN STOP (5) TO LINE LOCK KEYS. LOOSEN SCREWS (10) AND ADJUST RIGHT MARGIN STOP PLATE (8) SO MARGIN LOCK EXTENSION (14) HAS A FULL HOLD ON LINE LOCK STOP CAM. TIGHTEN SCREWS (10).

MOVE CARRIAGE TO EXTREME END OF WRITING LINE. LOOSEN FINAL MARGIN STOP SCREW LOCK NUT AND ADJUST SCREW LOCATED IN RIGHT CARRIAGE END TO HAVE KEYBOARD FULLY LOCKED. TIGHTEN NUT.

MARGIN RELEASE ADJUSTMENTS

LOOSEN NUT (6) AND ADJUST MARGIN RELEASE STOP SCREW (4) SO THAT MARGIN RELEASE LEVER (15) WILL CLEAR MARGIN STOPS (16) AND (5) WHEN MARGIN RELEASE KEY LEVER (13) IS DEPRESSED.

WHEN MARGIN RELEASE LEVER (15) IS IN REST POSITION, IT MUST ENGAGE MARGIN STOPS LEFT (16) AND RIGHT (5) SQUARELY AND HAVE GOOD HOLD ON STOPS.

FORM MARGIN RELEASE LEVER AT POINT "A" IF NECESSARY.

NOTE: DO NOT FORM EARS ON MARGIN STOPS.

CARRIAGE LOCK

THE PURPOSE OF CARRIAGE LOCK LEVER (12) IS TO CENTER CARRIAGE SO THAT CARRYING CASE CAN BE CLOSED WITHOUT CAUSING DAMAGE TO CARRIAGE OR CARRYING CASE COVER.

CARRIAGE LOCK LEVER (12) IS DETENTED INTO LOCKING CAM MOUNTED ON RIGHT END OF FRONT CARRIAGE RAIL BY SPRING (11).
TABULATOR MECHANISM

OPERATION

WHEN TABULATOR KEY (25) IS DEPRESSED, TABULATOR OPERATING SHAFT (21) IS ROTATED BY TABULATOR OPERATING SHAFT ARM (17) THROUGH TABULATOR OPERATING WIRE (22), INTERMEDIATE LEVER (23) AND TABULATOR OPERATING LEVER (24). AS SHAFT (21) ROTATES, TABULATOR STOP BLADE PULL WIRE (8) MOVES TABULATOR STOP BLADE (18) INTO POSITION TO INTERCEPT "SET" TABULATOR STOP (4). AT SAME TIME CARRIAGE FEED RACK (9) IS RELEASED FROM ESCAPEMENT WHEEL PINION BY FEED RACK RELEASE SLIDE (16). CARRIAGE WILL TABULATE UNTIL TABULATOR STOP (4) (WHICH IS IN "SET" POSITION) IS INTERCEPTED BY TABULATOR STOP BLADE (18), STOPPING CARRIAGE. WHEN TABULATOR KEY (25) IS RELEASED, TABULATOR OPERATING SHAFT RETURNS TO NORMAL POSITION, RESTORING TABULATOR STOP BLADE AND CARRIAGE FEED RACK. FEED RACK (9) RESTORES PRIOR TO TABULATOR STOP BLADE DROPPING CLEAR OF "SET" TABULATOR STOP WHICH PREVENTS CARRIAGE FROM TRAVELING BEYOND DESIRED POSITION.

WHEN TABULATOR SET AND CLEAR KEY (26) IS PULLED FORWARD, TABULATOR SET LEVER (5) WILL BE OPERATED BY TABULATOR SET AND CLEAR SHAFT (2) WHICH WILL "DETENT" TABULATOR STOP (4) TO "SET" POSITION DIRECTLY BEHIND TABULATOR CLEAR LEVER (3).

MOVING TABULATOR SET AND CLEAR KEY (26) TO REAR CAUSES TABULATOR CLEAR LEVER (3) TO "CLEAR" ANY ONE STOP WHICH IS LOCATED DIRECTLY BEHIND IT. THE ENTIRE TABULATOR RACK MAY BE CLEARED OF SEVERAL "SET" STOPS BY FIRST MOVING CARRIAGE TO EXTREME LEFT AND THEN, WITH SET AND CLEAR KEY (26) HELD TO REAR, MOVE CARRIAGE TO EXTREME RIGHT.

ADJUSTMENTS

1. SET TABULATOR STOPS AT VARIOUS POSITIONS ON TABULATOR RACK (1). LOOSEN TABULATOR RACK MOUNTING SCREWS (12), RIGHT AND LEFT, POSITION TABULATOR RACK TO HAVE APPROXIMATELY 1/32" CLEARANCE BETWEEN TOP OF TABULATOR STOP BLADE (18) AND BOTTOM OF TABULATOR STOPS. TIGHTEN SCREWS (12).

2. DEPRESS TABULATOR KEY (25) AND ALLOW IT TO RESTORE SLOWLY. TABULATOR STOP BLADE (18) MUST NOT RELEASE "SET" TABULATOR STOP (4) UNTIL FEED RACK (9) IS FULLY ENGAGED WITH ESCAPEMENT WHEEL PINION.

LOOSEN SCREW (19) AND ADJUST FEED RACK RELEASE SLIDE OPERATING ARM (20) TO OBTAIN ABOVE CONDITION. TIGHTEN SCREW (19).

3. LOOSEN TABULATOR RACK MOUNTING SCREWS (12), RIGHT AND LEFT, AND TABULATOR RACK ADJUSTING SCREW NUT (11). TURNOUT ON TABULATOR RACK ADJUSTING SCREW (10) AND MOVE TABULATOR RACK (1) AS FAR TO LEFT (FACING REAR OF MACHINE) AS POSSIBLE. MAKE TABULATOR RACK MOUNTING SCREWS (12) RIGHT AND LEFT, FRICTION TIGHT. TURN IN ON ADJUSTING SCREW (10) TO OBTAIN 3/4 SPACE DROP. TIGHTEN SCREWS (12) AND NUT (11).

TEST BY TABULATING TO SEVERAL TABULATOR STOPS "SET" AT INTERVALS ACROSS RACK. ALSO CHECK BY TABULATING TO STOP, BACK-SPACING ONE SPACE AND AGAIN TABULATING TO SAME STOP. SET SEVERAL CONSECUTIVE STOPS, TABULATE TO EACH STOP. TABULATOR STOP BLADE (18) MUST NOT CONTACT STOPS ENOUGH TO MOVE ANY STOP FROM ITS "SET" POSITION.

NOTE: DROP IS THE DISTANCE CARRIAGE TRAVELS TO LEFT AFTER TABULATOR STOP BLADE DROPS OFF A "SET" TABULATOR STOP.

4. LOOSEN TABULATOR SET AND CLEAR SHAFT OPERATING ARM SET SCREW (29) AND CENTER TABULATOR SET AND CLEAR KEY LEVER (26) BETWEEN LETTERS "S" AND "C" OF MACHINE FRAME FRONT. TIGHTEN SCREW (29).

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5. Loosen tabulator clear lever limit screw nut (7) and adjust screw (6) to have clear lever just contact "cleared" tabulator stops when tabulator set and clear key (26) is held to rear. Tighten nut (7).

6. Hold tabulator set and clear key (26) forward. Check to see that tabulator stops (4) are fully detented into "set" position by tabulator set lever (5). Form point "A" of tabulator set and clear key (26) if necessary.

7. Form tabulator set lever (5) to set correct tabulator stop and strike stop squarely.

Test as follows: Position carriage at 20, pull set and clear key lever (26) forward to set stop (4). Move carriage back to zero and tabulate to "set" stop (4). Carriage should stop at 20; if not, form tabulator set lever (5) to set correct stop.

CARRIAGE RELEASE LEVERS

Move carriage to extreme right margin. Loosen carriage release lever screw (15), right; pull release lever (13) forward until lug (14) on lever is against post on right carriage end. Move feed rack (9) to rear until it is free of pinion wheel. Tighten carriage release lever screw (15).

Move carriage to extreme left margin. Loosen carriage release lever screw nut (27), adjust carriage release lever screw (28) in until it touches left carriage end. Back out on screw (28) until it just clears left carriage end. (This adjustment removes end play from release mechanism) Hold release lever (30) forward until lug (31) on lever is against post on left carriage end. Move feed rack (9) to rear until it is free of pinion wheel. Tighten nut (27).
KEY TOUCH REGULATOR

THE TOUCH REGULATOR LEVER (1) CAN BE SET FOR THREE POSITIONS - LIGHT, MEDIUM AND HEAVY. THE TOP POSITION IS FOR "LIGHT" TOUCH. WHEN TOUCH REGULATOR LEVER (1) IS MOVED TO CENTER POSITION, IT STRETCHES TOUCH REGULATOR SPRING (2) MAKING IT NECESSARY TO APPLY MORE PRESSURE TO DEPRESS KEY LEVER. THE SPRING IS STRETCHED EVEN FURTHER WHEN LEVER (1) IS MOVED TO BOTTOM OR THIRD POSITION. HOWEVER, EVEN THOUGH KEY TOUCH IS HEAVIER, TYPE BARS WILL RESTORE TO REST POSITION FASTER, WHICH RESULTS IN LESS TYPE BAR COLLIDING FOR FAST, ERRATIC TYPISTS.
CARRYING CASE COVER AND BASE ARE FACTORY MATCHED. THEREFORE, NO COMPONENT PARTS WILL BE AVAILABLE, REQUIRING ORDERS FOR COMPLETE UNIT H-20-9989.

PLATE 12 CARRYING CASE