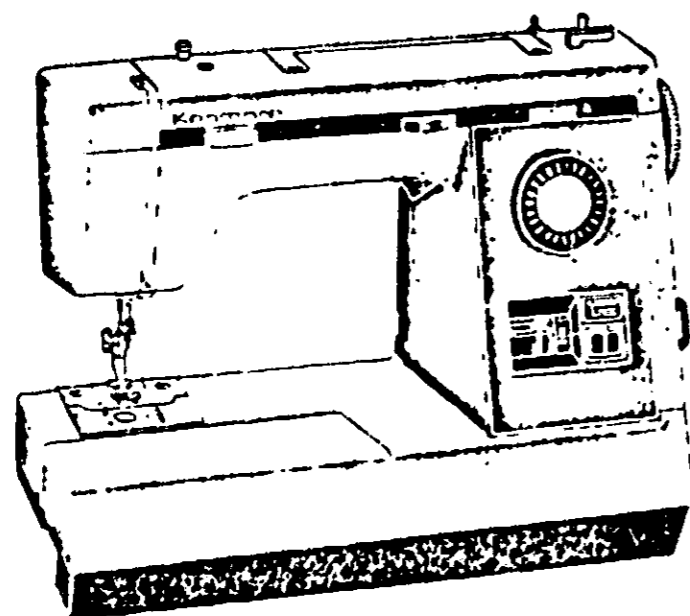


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SERVICE MANUAL



model 1789180

MODEL INFORMATION 159.1789180	REVISED	SEC	1 - 0
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- Attachment dimension Super high bar
- Built - in buttonholer One touch buttonholer
- Buttonholer attachment Snap-in (F-type)
- Shuttle system Horizontal full rotary shuttle
- Drop feed dog Feed cover plate
- Clutch system for bobbin winding Automatic push-pull clutch
- Needle position R,C,L
- Cam shaft cycle 1:3,1:24
- Zigzag bight 5.8
- Stitch selections 24 stations (1 station for BH)
- Motor YM45B (65001)
- Foot control YL350 (54867)
- Others 2 speed motor
Snap-on foot

- Stitch package (Built-in)

(Utility-9)	(Stretch-9)	(Decorative-5)
Straight	Straight	Diamond
Zigzag	Rick-rack	Domino
Mending	Smocking	Scalloped
Blind	Overcast	Arrow head
Box (Fancy)	Elastic	Pyramid
Pagoting	Overedge	
Shell hem	Patching	
2-point shell	Overlock	
Elastic shell	Elastic edge	

NEEDLE BAR HEIGHT

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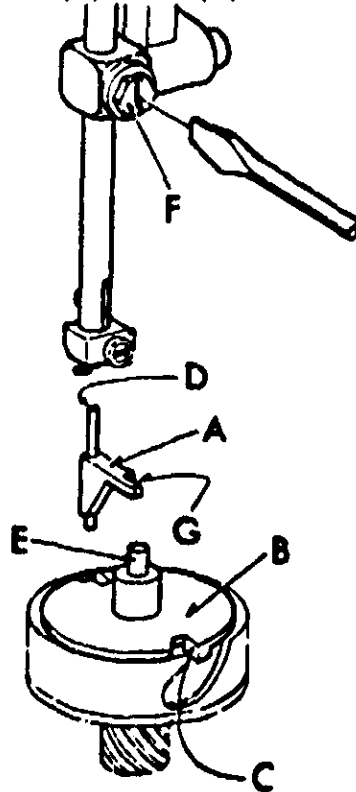
USE GAUGE KIT No. 68173

CHECKING NEEDLE BAR HEIGHT

1. Set the stitch selector at straight stitching and the stitch width control at "C".
2. Remove needle, cover plate, needle plate and bobbin case.
3. Install the pin of the height gauge(A) into the needle bar with the flat side away from you as in the case of a needle.
4. Insert the radial timing gauge(B) into the shuttle with its pointed hook in front by turning the handwheel as illustrated.

NOTE: Insert the gauge with care so that the bobbin case stopper is not bent.

5. Turn the handwheel slowly until the needle bar comes down to its lowest position and check to see if the bottom of the gauge (A) slightly touches the radial timing gauge (B). A clearance within 0.15 mm (0.006 inch) between (A) and (B) is acceptable.

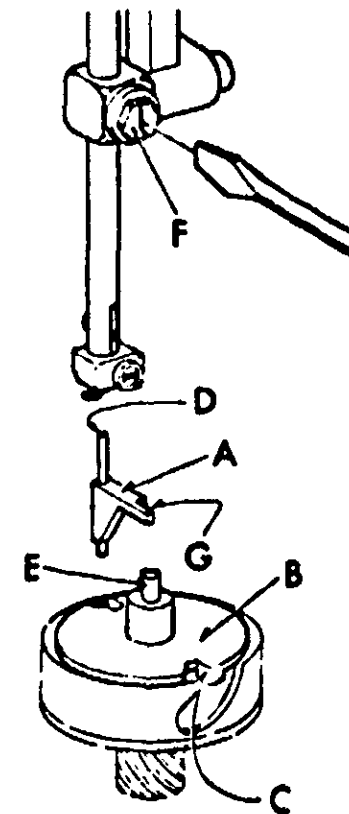


NEEDLE BAR HEIGHT

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ADJUSTMENT NEEDLE BAR HEIGHT

1. Swing the face cover plate open.
2. Loosen the screw(F) on the needle bar clamp.
3. After checking that the needle bar guide bracket is at the lowest position, tighten the screw(F) when the gauge(A) fitted into the needle bar touches the gauge(B) slightly by turning the handwheel.



NEEDLE TIMING TO SHUTTLE

REVISED

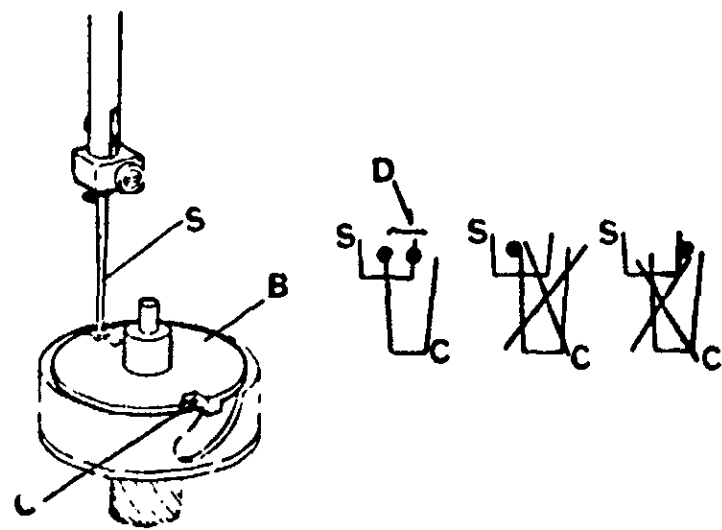
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CHECKING NEEDLE TIMING TO SHUTTLE

1. Remove the gauge(A) out of the needle bar and install a test pin(S) into it instead.
2. Turning the handwheel slowly toward you until the test pin(S) slightly touches the radial timing gauge(B).
3. Turn the radial timing gauge(B) so that the ear(C) of the gauge touches the pointed hook of the shuttle.
4. Check to see whether the point of the test pin(S) is within the marking engraved on the radial timing gauge. See the illustrations for more understanding.



NEEDLE POSITION
AT STRAIGHT STITCHING

REVISED

SEC 1 - 3

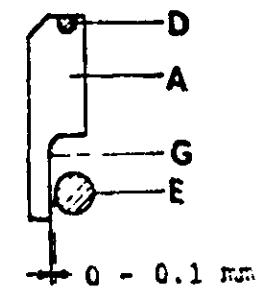
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UFL GAUGE KIT No. 68173

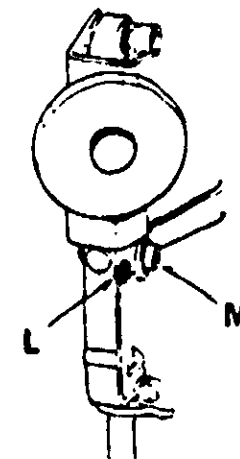
CHECKING

1. Set the stitch selector at straight stitching.
2. Remove needle, cover plate, needle plate and bobbin case.
3. Install the pin of the height gauge(A) into the needle bar with the flat side away from you as in the case of a needle.
4. Lower the gauge(A) by turning the handwheel slowly toward you and check to see whether the right side of the arm(G) of the gauge(A) slightly touches the center pin(L) on the gauge(B). A clearance within 0.1mm (0.004 inch) between (G) and (L) is acceptable.



ADJUSTMENT

1. Swing the face cover plate open.
2. Loosen the screw(L) slightly and then turn the eccentric pin(M) in either way until the arm(G) of the gauge(A) slightly touches the center pin(L) on the gauge(B).



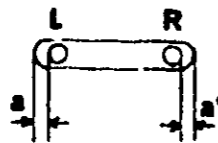
DISTRIBUTION OF NEEDLE SWING

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Never fail to check the needle position at straight stitching before checking the distribution of the needle swing.

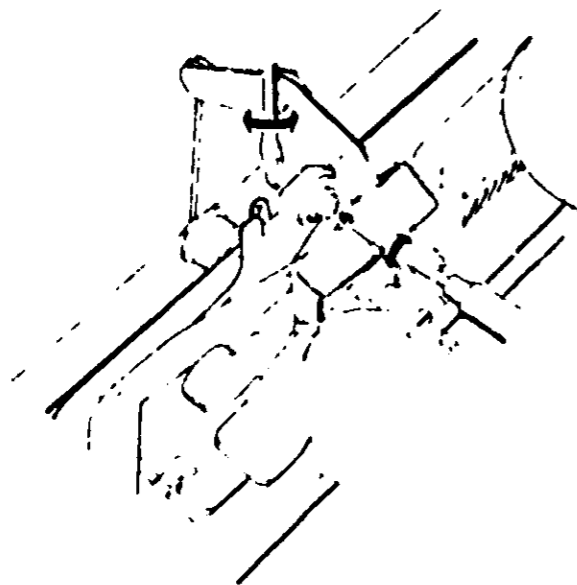
CHECKING

1. Set the stitch selector at zigzag stitching and the stitch width control at maximum.
2. Turning the handwheel slowly toward you, check to see whether the clearances of the needle and the edge of the needle slot at left and right needle position, (a and a') are nearly equal.



ADJUSTMENT

1. Remove the top cover plate.
2. Loosen the screw on the zigzag regulator and adjust by sliding the regulator.



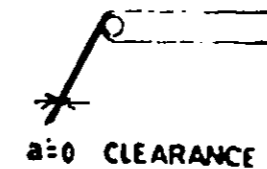
L-R POSITIONER

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CHECKING

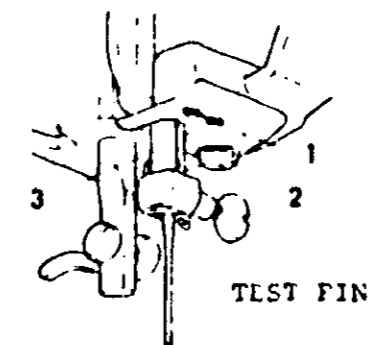
1. Remove the presser foot.
2. Insert a test pin into the needle bar.
3. Set the stitch selector at zigzag stitching and the stitch width control at maximum.
4. With the needle penetrating the needle hole at the left position by turning the handwheel slowly toward you, shift the needle bar (3) to the left manually until the test pin touches the left side of the needle hole.

Check to see whether the clearance between the side of the test pin and the left side of the needle hole is almost zero.



ADJUSTMENT

1. Loosen the screw (2) and adjust by moving the L-R positioner in the direction of arrow.
2. Tighten the screw (2) after adjustment.

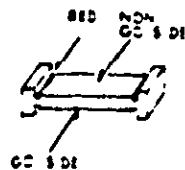
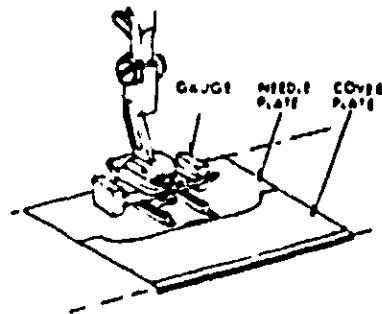
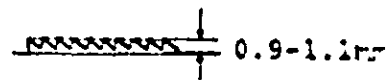


FEED DOG HEIGHT

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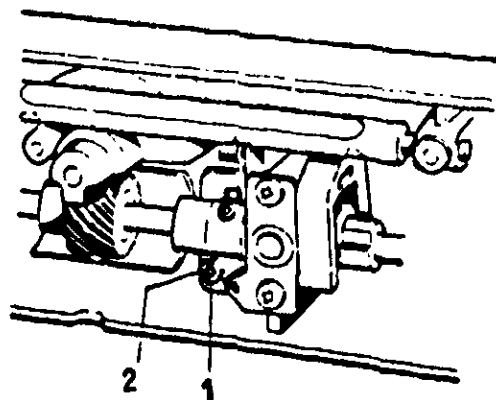
CHECKING

1. Raise the feed dogs to the highest position by turning the handwheel toward you.
2. Check to see whether the tips of the feed dog teeth are at the height within 0.9-1.1mm above the upper surface of the needle plate.



ADJUSTMENT

1. Remove the bottom cover.
2. Raise the feed dogs to the highest position by turning the handwheel toward you.
3. Adjust the height of the feed dogs by loosening the nut (1) slightly and turning the screw (2) in either way.
4. Tighten the nut securely after adjustment.

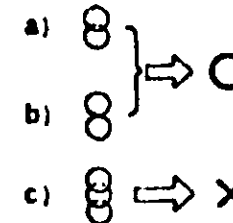


ZERO FEEDING

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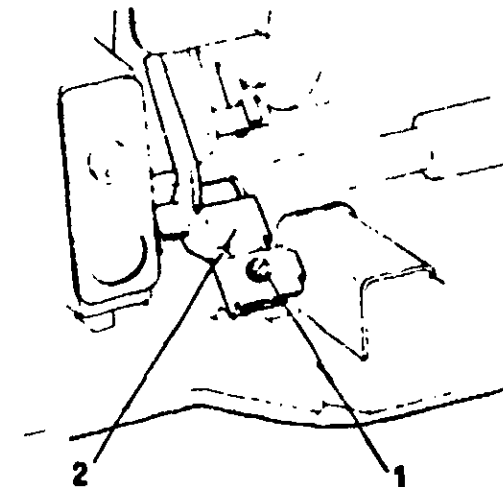
CHECKING

1. Set the stitch length control at zero.
2. Place a sheet of paper under the presser foot and rotate the handwheel toward you eleven times manually. Examine the needle hole(s) perforated on the paper. A single or two needle holes are acceptable as illustrated below for the correct zero feed positioning.



ADJUSTMENT

1. Remove the bottom cover.
2. Turn the screw (1) on the feed regulating arm (2) until zero feed is obtained.



ZIGZAG SYNCHRONIZATION

REVISED

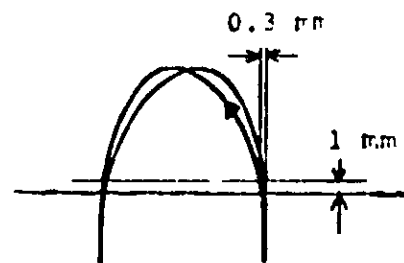
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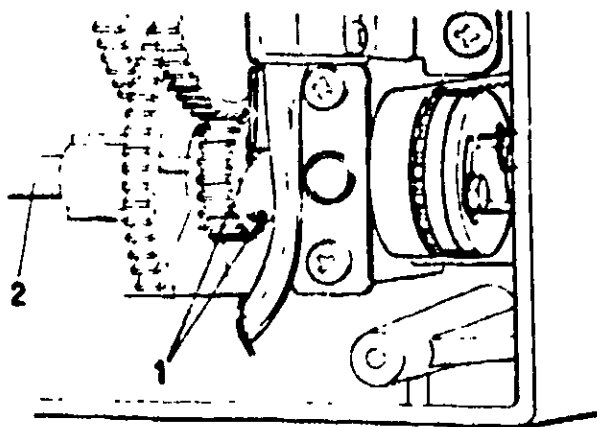
CHECKING

1. Raise the presser bar and remove the presser foot.
2. Set the stitch selector at zigzag stitching and the stitch width control at maximum.
3. Turning the handwheel slowly toward you, check to see whether the side motion of the needle on the standard plane (1.0mm. above the upper surface of the needle plate) at the right needle position comes within the engineering limit of 0.3mm.



ADJUSTMENT

1. Remove the bottom cover.
2. Loosen the two screws (1) on the metal gear and adjust by turning the gear.



STITCH STITCH BALANCE OF FORWARD AND REVERSE STITCHES

REVISED

SEC 1 - 9

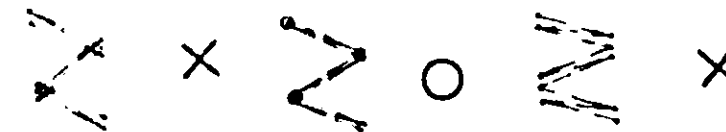
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Be sure to get down to work after adjusting the buttonhole pitches.

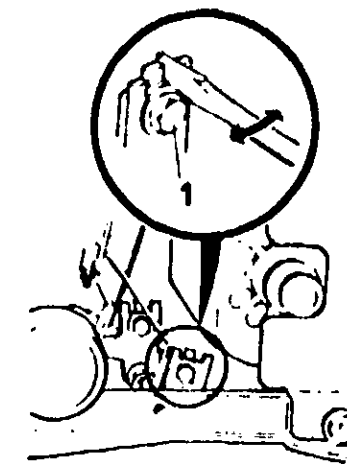
CHECKING

1. Set the stitch selector at zigzag stretch stitching and the stitch length control at maximum.
2. Place a sheet of paper under the presser foot and operate the machine without thread. Check to see whether the pitches of forward stitches and reverse stitches are equal.



ADJUSTMENT

1. Remove the side cover.
2. Loosen the nut (1) on the super cam follower and adjust by sliding the notch with a screwdriver.



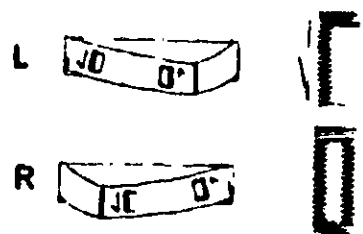
BUILT-IN BUTTONHOLE CONTROL

REVISED

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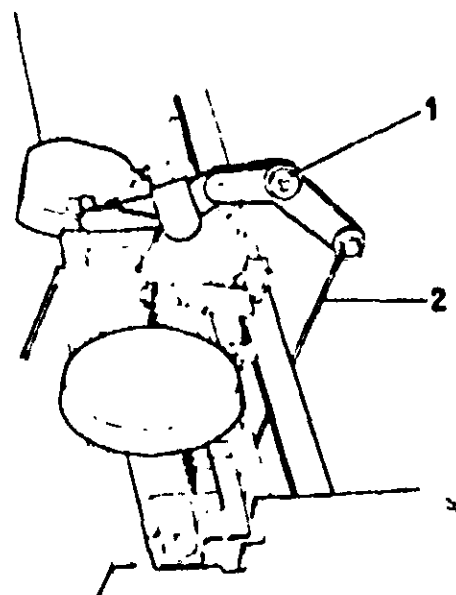
CHECKING

1. Set the machine as follows:
Stitch width control ----- Green buttonhole zone
Stitch selector ----- Buttonhole position
Stitch length control ----- Green buttonhole zone
2. Check to see whether forward and reverse stitches can be sewn when you switch the built-in buttonhole control knob to the left and to the right.



ADJUSTMENT

1. Remove the top cover plate.
2. Loosen the screw (1) on the buttonhole changing lever and adjust by sliding the lever.
3. If switching to the right does not produce reverse stitches, adjust the lever moving the rod (2) downward.



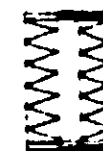
BUILT-IN BUTTONHOLE BALANCE OF FORWARD AND REVERSE STITCHES

REVISED

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CHECKING

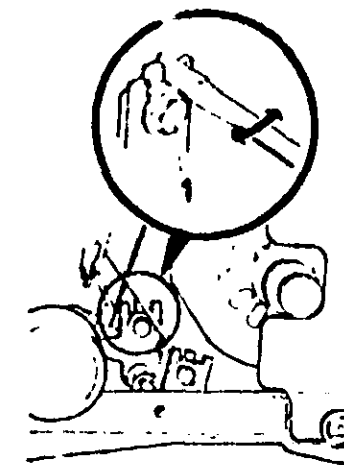
1. Set the machine as follows:
Stitch selector ----- Buttonhole
Stitch length control ----- 8
Stitch width control ----- Maximum
2. Switch the buttonhole knob to the left for forward stitches and to the right for reverse stitches.
3. Check to see whether the pitches of forward and reverse stitches (approximately 0.5-0.55mm) are balanced.



NOTE: Be sure to check the pitches of stretch stitch after this checking.

ADJUSTMENT

1. Remove the side cover.
2. Loosen the nut (1) on the super cam follower and adjust by sliding the follower.



STANDARD FEED FITCH OF PATTERNS	REVISED	SEC	1 - 11
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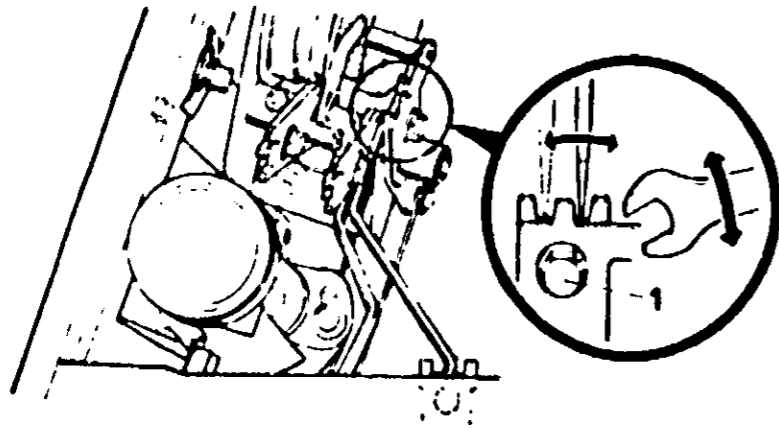
Be sure to check the correct zero feed positioning before starting adjustment in this section.

CHECKING

1. Set the stitch selector at buttonhole stitching and the built-in buttonhole control to the left for forward stitches.
2. Set the stitch length control at "8" and the stitch width control at maximum.
3. The stitch length at this setting should be 0.5-0.55mm.

ADJUSTMENT

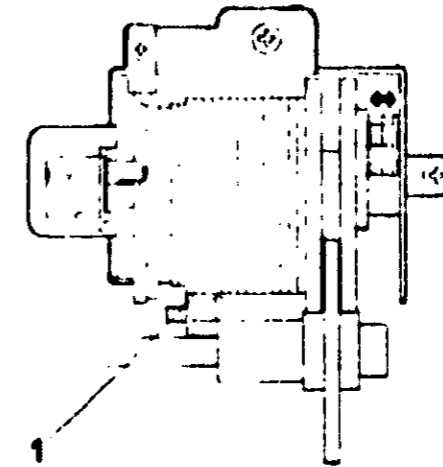
1. Remove the side cover.
2. Loosen the nut (1) on the feed adjusting plate and adjust by sliding the plate.
3. Tighten the nut securely after adjustment.



ALIGNMENT OF ZIGZAG CAM AND CAM FOLLOWER	REVISED	SEC	1 - 12
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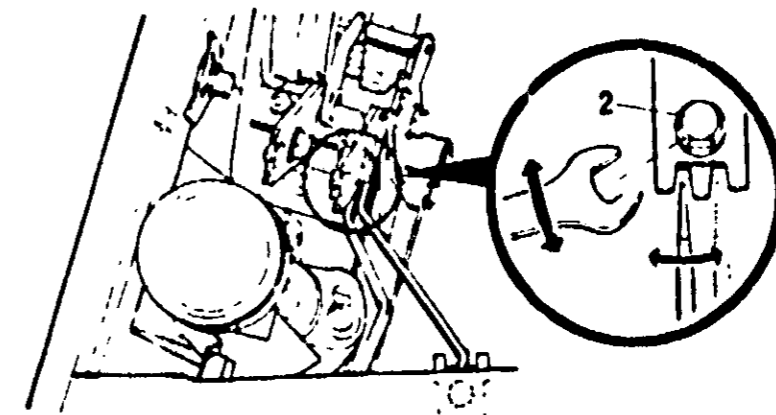
CHECKING

1. Set the stitch selector at domino stitching.
2. Remove the bottom cover. Check to see whether the zigzag cam follower (1) is correctly positioned at the extreme left side of the pattern cams except the buttonhole cam.



ADJUSTMENT

1. Remove the side cover.
2. Loosen the nut (2) on the zigzag follower and adjust by sliding the follower.



ALIGNMENT OF STRETCH
STITCH CAM AND CAM FOLLOWER

REVISED

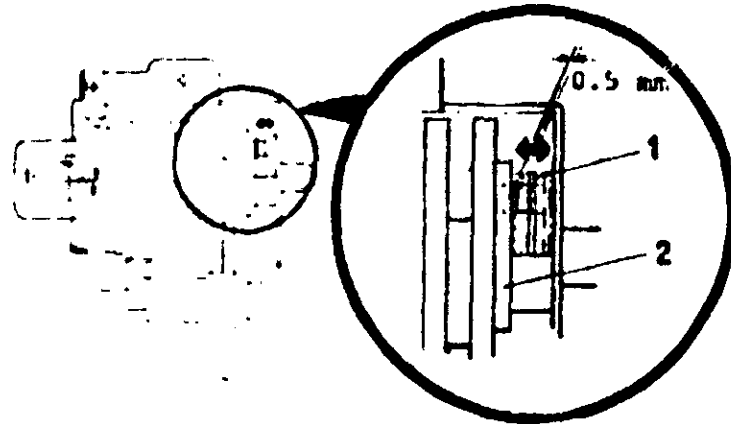
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CHECKING

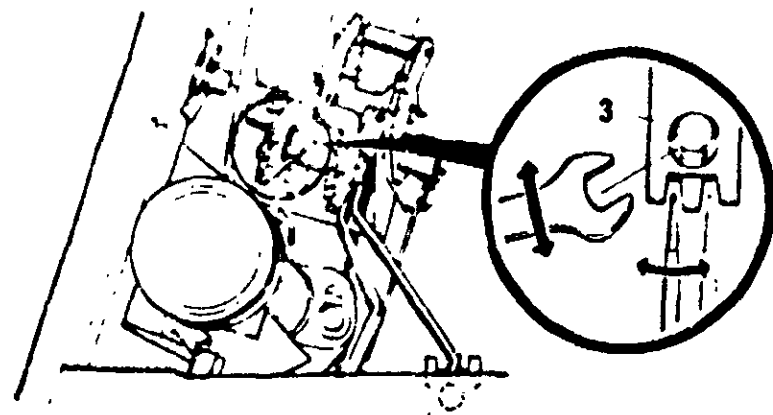
1. Remove the bottom cover.
2. Set the stitch selector at straight stretch stitch position. Cam follower(1) should align with stretch stitch car(2).

Set the stitch selector at straight stretch position. There should be a clearance (about 0.5 mm) between car and cam follower.



ADJUSTMENT

1. Remove the side cover.
2. Loosen the nut on the stretch stitch operating plate and adjust by sliding the plate.



CLEARANCE BETWEEN CAM AND CAM
FOLLOWER WHEN SELECTING CAM PATTERN

REVISED

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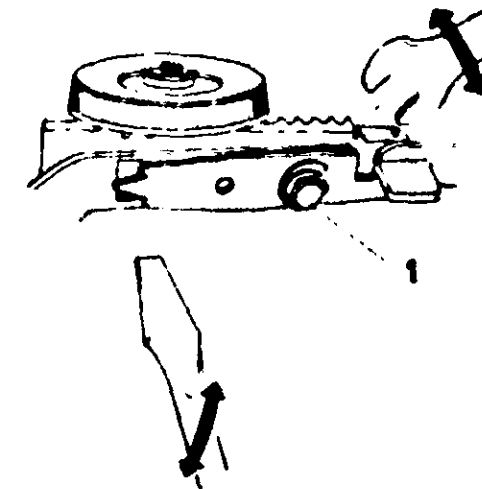
Be sure to check the position of the L-R positioner before getting down to work.

CHECKING

1. Check to see whether the stitch selector can be turned smoothly selecting each pattern of stitches.

ADJUSTMENT

1. Remove the top cover plate.
2. Set the stitch selector between any two patterns.
3. Loosen the bolt(1) on the cam selector guide plate.
4. Adjust the cam selector guide plate so that the needle bar touches slightly the right side of the L-R positioner.



PRESSER FOOT HEIGHT

REVISED

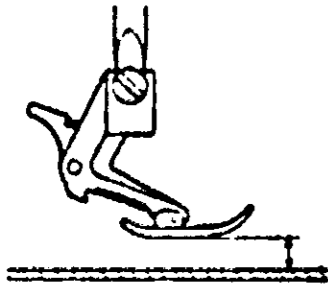
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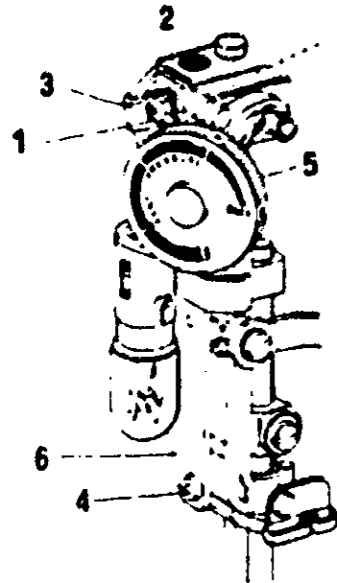
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CHECKING

1. Lift the presser foot lifting lever to raise the presser foot and make sure to mount the presser foot to the shaft correctly.
2. Turn the handwheel to lower the feed dog below the top surface of the needle plate.
3. Check the gap between the bottom of the foot and the top of the needle plate.

Standard gap : 6 mm max.



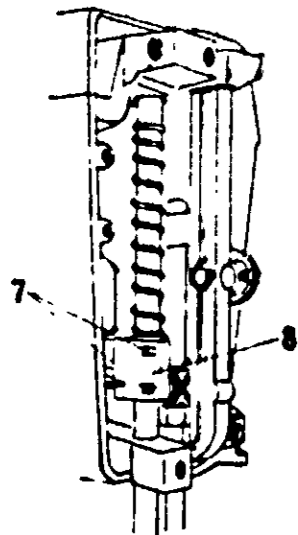
ADJUSTMENT

1. Set the pressure regulator(5) at "0" and lower the presser foot lifting lever.
2. Remove the face cover by undoing two set screws on the hinge.
3. Take out the lamp plate assy(6) after removing the nuts(1), (2), the plastic cord guard(3) and the set screw(4).
4. Raise the presser foot lifting lever and then loosen two set screws(7) on the presser bar guide block(6) slightly.
5. Adjust the presser foot height by lifting or lowering the presser bar so that the correct gap as specified above can be obtained.

6. Tighten the screws(7) securely after adjustment.

NOTE: Keep in mind that the presser foot must align with the teeth of the feed-dog before fixing the presser bar.

7. Reattach the lamp plate assy(6), the cord guard(3) and the face cover.



ADJUSTMENT OF BELT TENSION

REVISED

SIC

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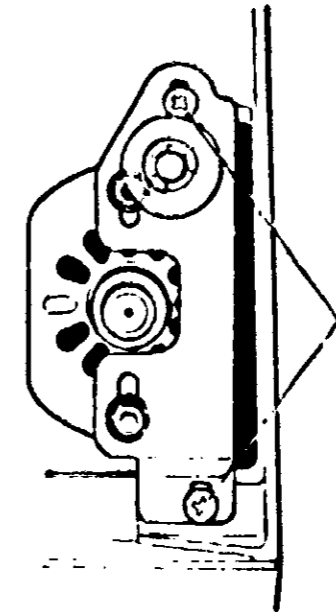
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ADJUSTMENT

1. Remove the side cover.
2. Loosen the screws(1) on the motor bracket and adjust by sliding the belt roller.
3. Tighten the screws securely after adjustment.



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