

# **SERVICE MANUAL FOR**

**LS-1717**

**LS-1817**

**LS-1717P**

**LS-1717B**

**LS-2020**

**LS-2020P**

**LS-30**

**X-3**

**LS-2000**

**LS-2250PRW**

3. 2001.  
8. 2010.

**CONFIDENTIAL**

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## ● GENERAL INFORMATION ●

- This service manual was compiled for use when repairing the LS-1717 Zigzag Stitch Sewing Machines.
- Use this manual, together with the Parts Catalog, when making repairs.
- This manual was written based on the most up-to-date product specifications at the time of printing. Some machine specifications may have been changed to improve the quality of the product. Contact the manufacturer or your local sales representative for information on such changes.

- Symbols used

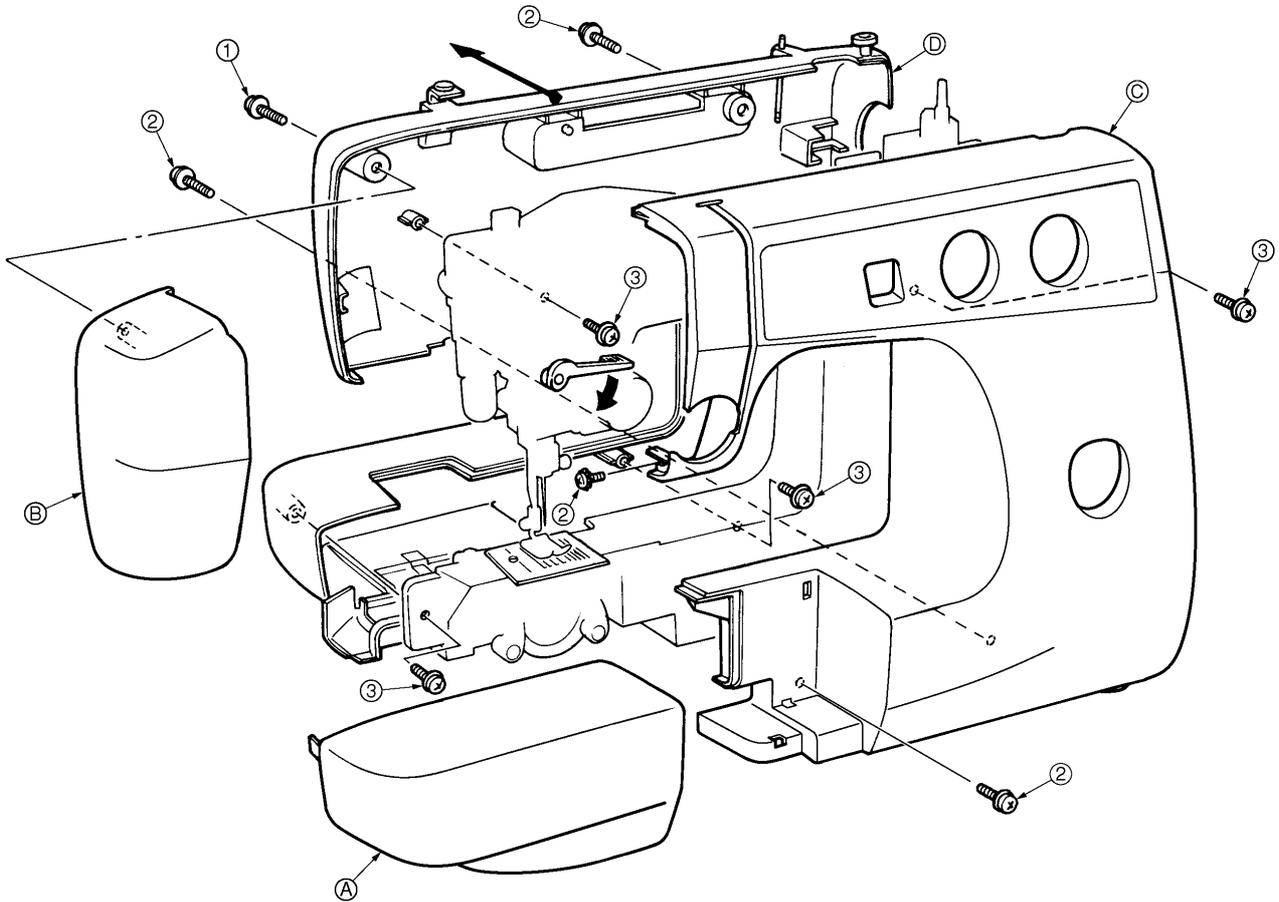
	Move the part in the direction of the arrow.
	Set the clearance as indicated.
	Move the part to its highest or lowest position.



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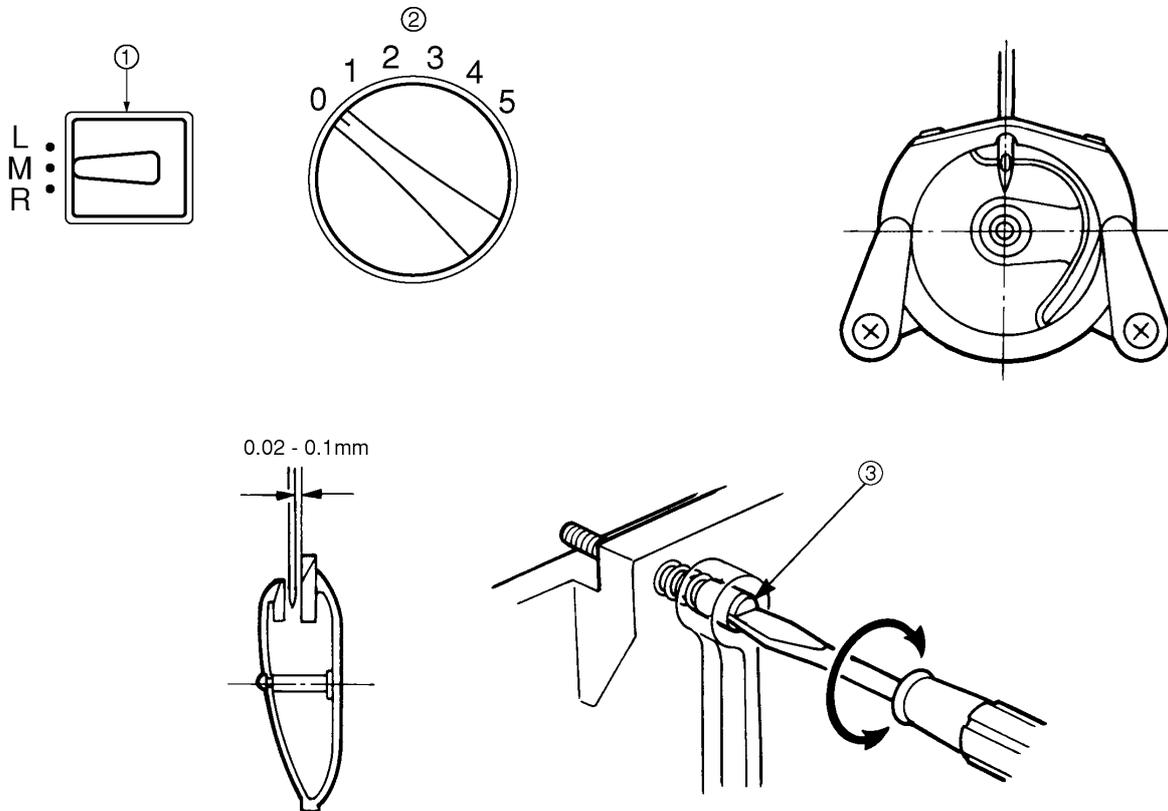
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## Removing order of covers



- Remove accessory table (A).
- Loosen and remove the screw ❶ then remove the face plate (B).
- Loosen and remove the screws ❷ then remove the front cover (C).
- Loosen and remove the screws ❸ lower the presser foot lifter, then remove the rear cover (D).

## Clearance between the needle and the shuttle hook point (Shuttle race position)



### Standard

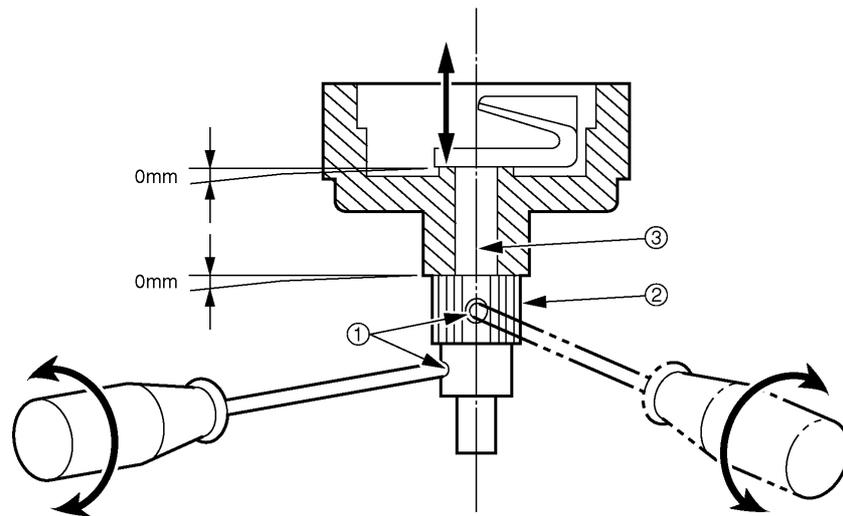
- The shuttle race should be positioned correctly with respect to the turning direction of the shuttle race..
- Clearance between the needle and the shuttle hook point should be 0.02 to 0.1mm.

### Adjustment

- Set the needle position selector to M ① and the stitch width knob to 0 ②.
- Turn the balance wheel to set the needle and the shuttle hook to the correct timing position.
- Turn the needle bar supporter stud ③ slightly to either the right or left and adjust the clearance between the needle and the shuttle hook.

Note: The center of the needle should align with the center of the shuttle hook shaft.

## Clearance between the shuttle driver and the race way



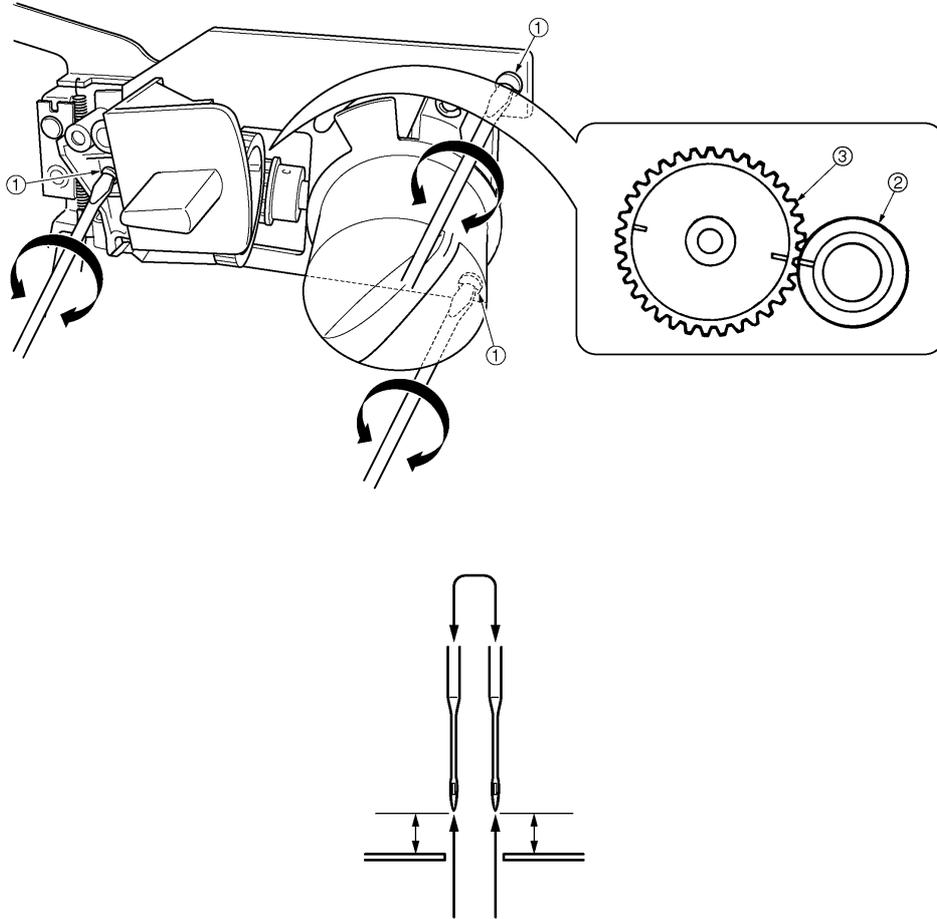
### Standard

- The shuttle driver should rotate smoothly, no play should be felt in the race way.

### Adjustment

1. Loosen setscrews ❶ of the driver shaft gear ❷.
2. Adjust the clearance of the driver shaft ❸.
3. Retighten the setscrews ❶.

## Needle swing (Parabola)



### Standard

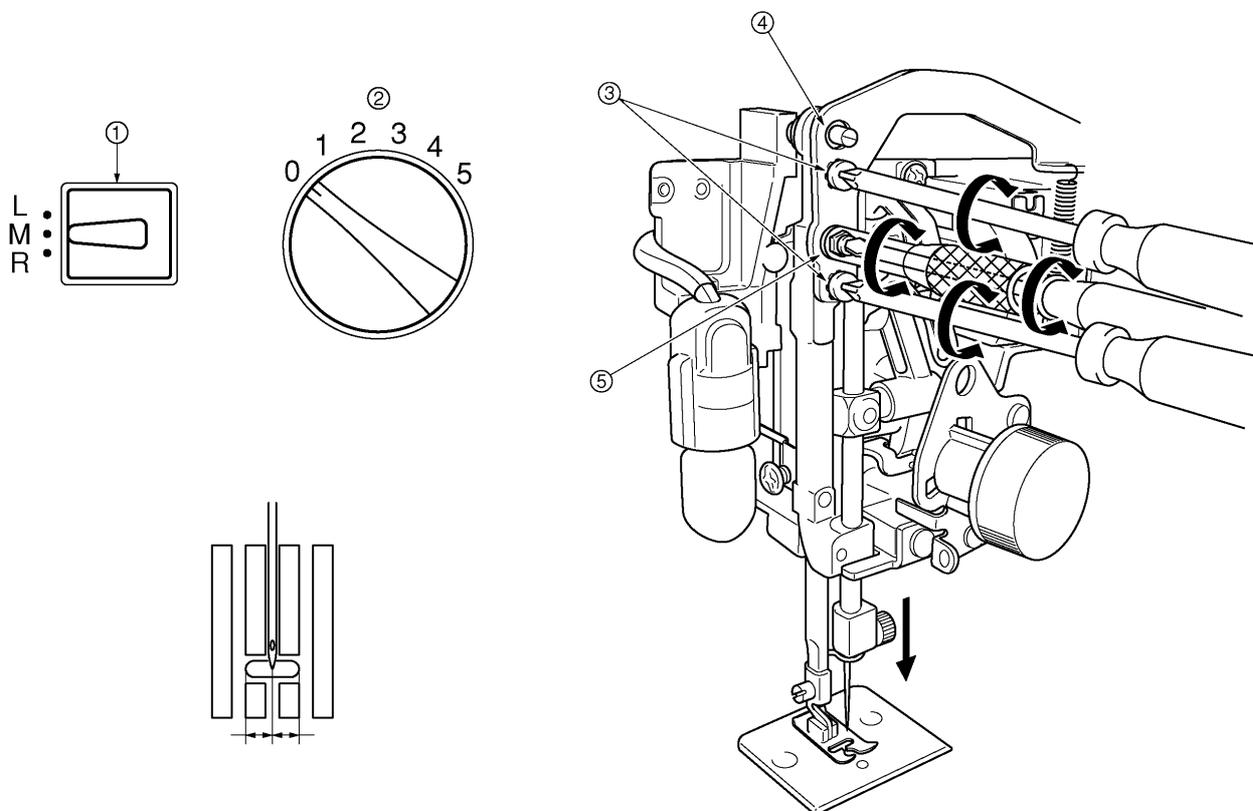
The sideways movement of the needle must be equal completed in the up and down motion.

When the needle is in the descending stroke sideways end movement, this at the left side, turn the zigzag width dial from 5 - 0 and back, the needle movement should be less than 0.1mm.

### Adjustment

- Loosen the three zigzag base assembly screws ❶.
- Align the upper shaft gear ❷ and the zigzag cam gear ❸.
- Tighten the three zigzag base assembly screws ❶.

## Needle down centering



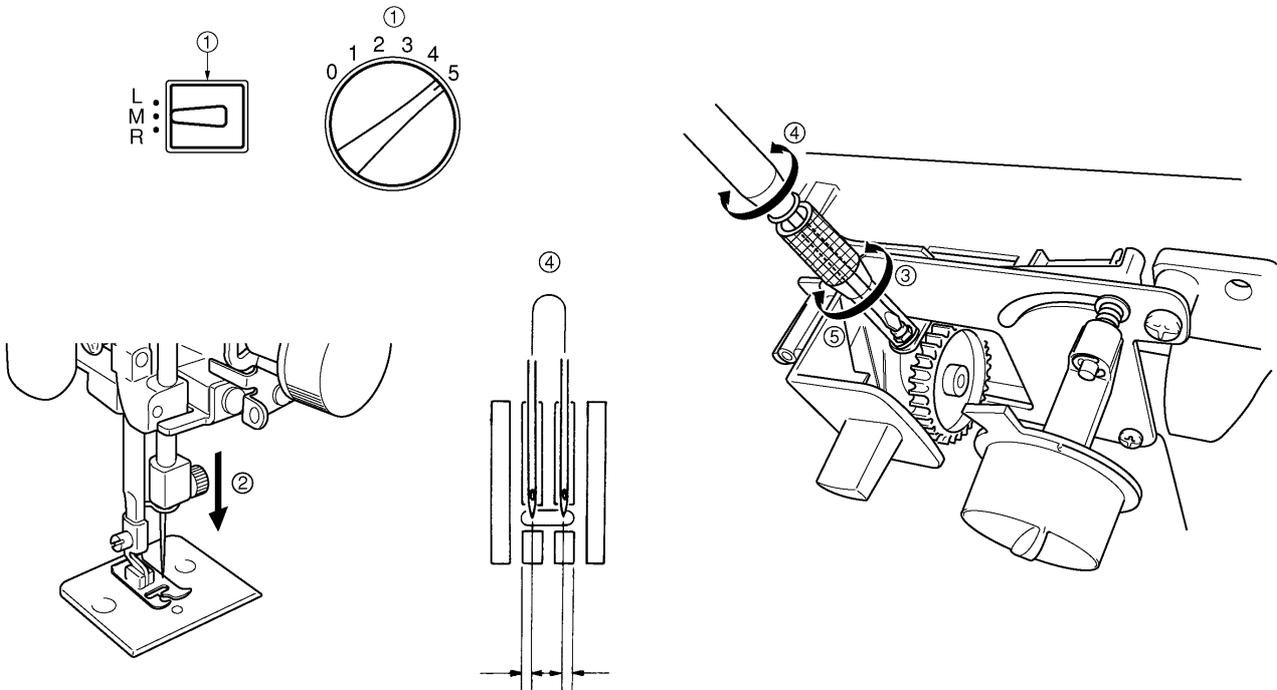
### Standard

- When the needle position dial is set to “M” and the zigzag dial is set to “0”, the needle should be in the center of the needle plate hole.

### Adjustment

- Set the needle position selector to M ① and the stitch width knob to 0 ②.
- Loosen the setscrew ③ of the zigzag connecting rod ④.
- Loosen the fixation screw of the eccentric nut ⑤.
- Turn the eccentric nut ⑤ to make adjustment.
- Retighten the fixation screw of the eccentric nut ⑤.
- Retighten the setscrew ③.

## Needle position on zigzag to the needle plate



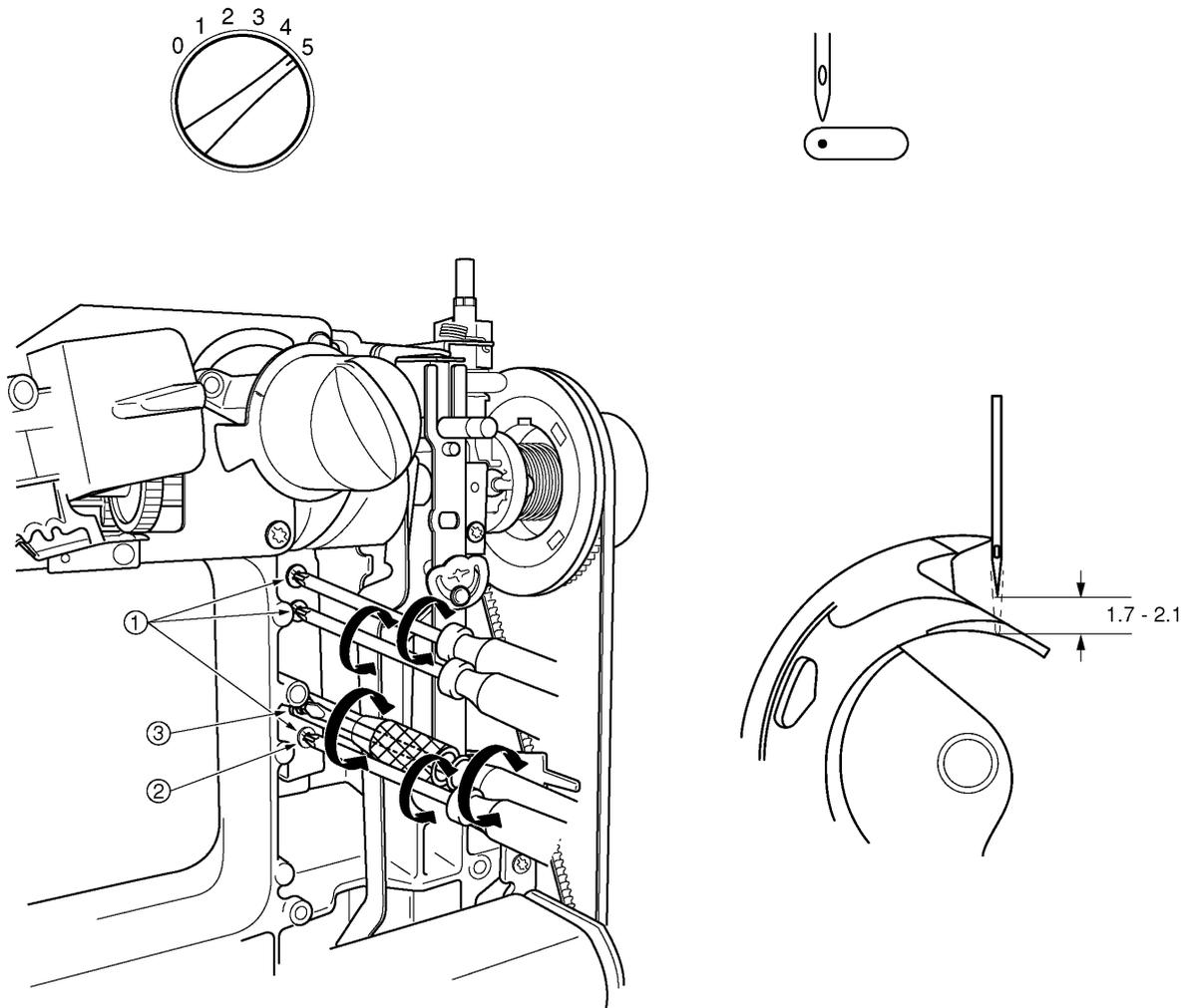
### Standard

- When the needle position selector is set at M and the stitch width knob is set at 5, the needle should move within a range of 4.6 to 5.0mm across the needle plate. When the needle is lowered, it should not be too close to either the left or right edge of the needle plate hole.

### Adjustment

- Set the needle position selector to M and the stitch width knob to 5.
- Turn the balance wheel to lower the needle until it is just above the needle plate.
- Loosen the locknut for the adjusting screw on the zigzag link.
- Using a screwdriver, turn the screw and adjust the needle movement range with respect to the needle plate hole.
- Tighten the locknut.

# Loop lift



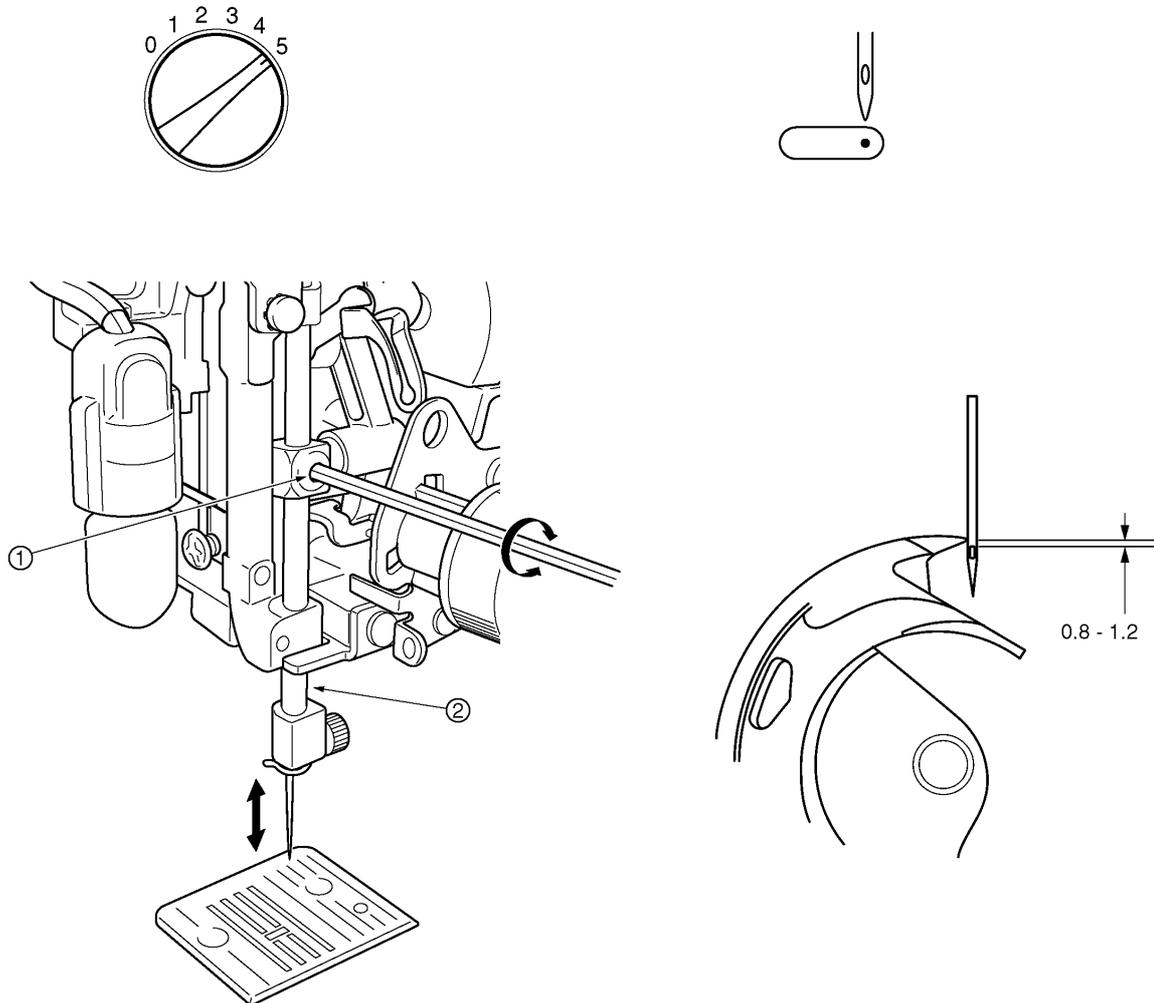
## Standard

- When the needle bar moves 1.7 - 2.1mm upwards from its lowest position at the left side, the shuttle hook point should align with the left side of the needle.

## Adjustment

1. Set the stitch width knob to 5, then lower the needle to its lowest position at the left side of the needle plate.
2. Loosen the setscrews **1** on the drive connecting rod **2**.
3. Loosen the fixation screw of the eccentric nut **3**.
4. Turn the eccentric nut **3** to make adjustment.
5. Retighten the fixation screw of the eccentric nut **3**.
6. Retighten the setscrews **1**.

## Height of the needle bar



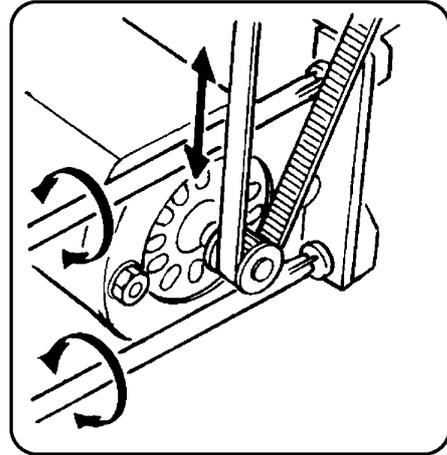
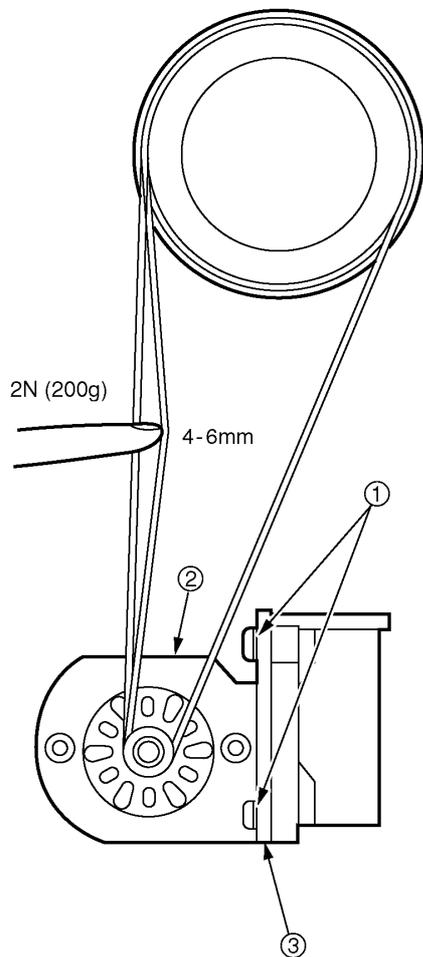
### Standard

- When the needle is at the right side, the shuttle hook point is aligned with the left side of the needle, the shuttle hook point lower edge should be 0.8 - 1.2mm above the upper edge of the needle eye.

### Adjustment

1. Set the stitch width knob to 5, then lower the needle to its lowest position at the right side of the needle plate.
2. Loosen the setscrew ❶ of the needle bar ❷.
3. Move the needle bar ❷ up or down to make adjustment.
4. Retighten the setscrew ❶.

## Tension of the timing belt



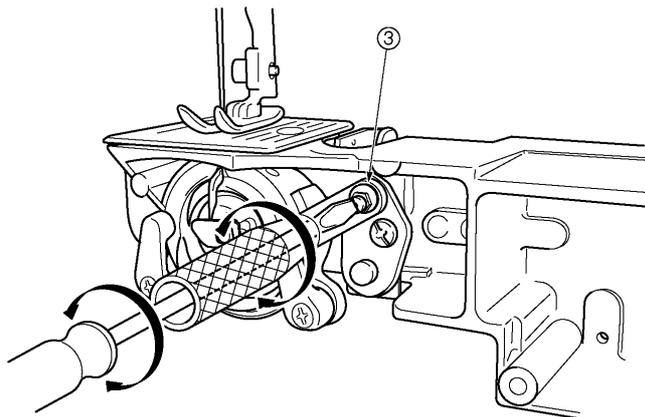
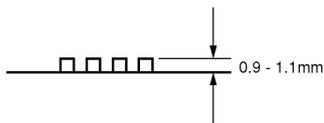
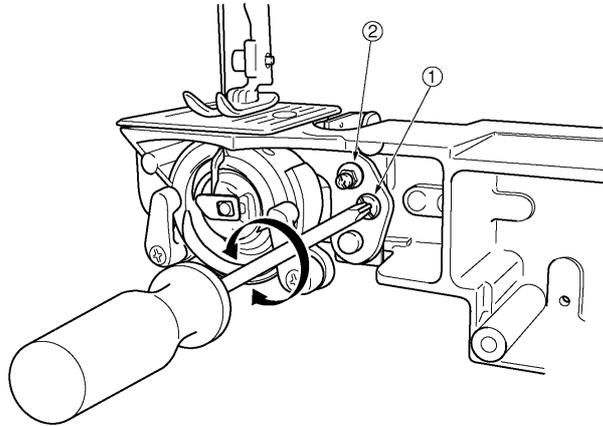
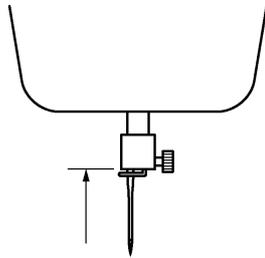
### Standard

- The belt should slacken approx. 4 - 6mm under a 2N (200g) load.

### Adjustment

1. Loosen the setscrews **1** on the motor holder **3**.
2. Move the motor **2** to make adjustment.
3. Retighten the setscrews **1**.

## Height of the feed dogs



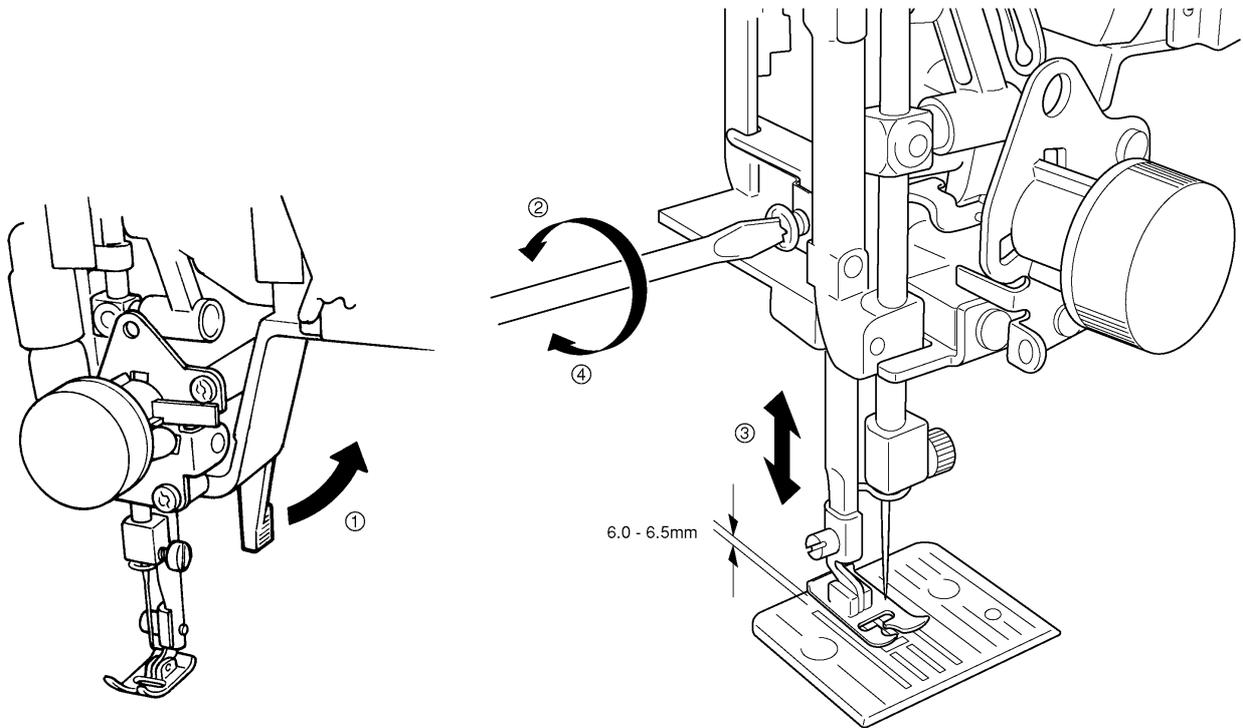
### Standard

- The feed dog teeth should be 0.9 - 1.1mm above the needle plate at the highest position.

### Adjustment

1. Loosen the setscrew ❶ on the vertical feed arm ❷.
2. Loosen the fixation screw of the eccentric nut ❸.
3. Turn the eccentric nut ❸ to make adjustment.
4. Retighten the fixation screw of the eccentric nut ❸.
5. Retighten the setscrew ❶.

## Height of the presser bar



### Standard

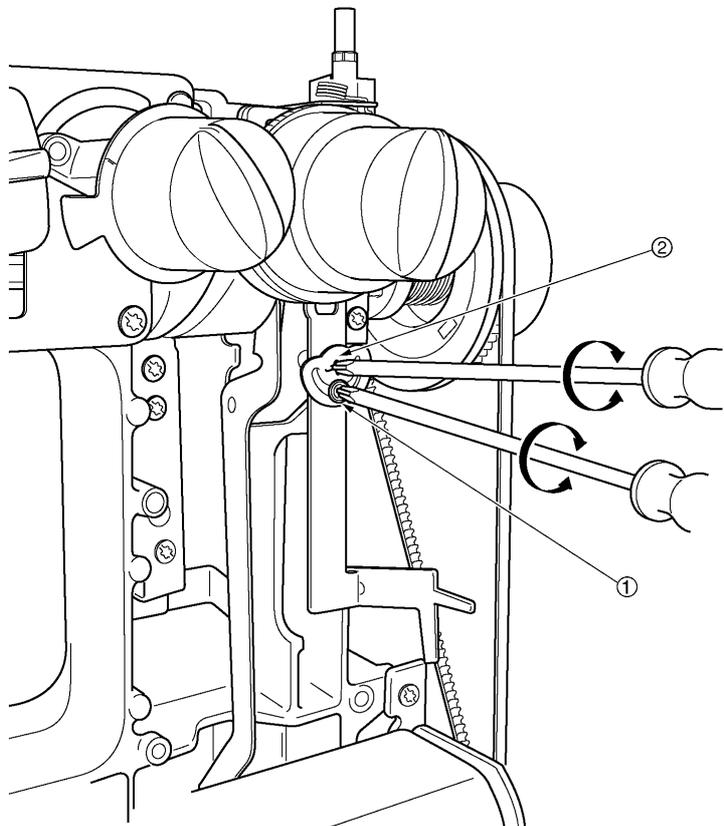
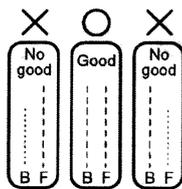
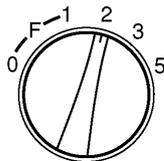
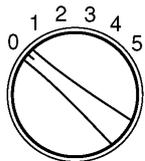
- The clearance between the presser foot and the needle plate should be between 6.0 and 6.5mm.

### Adjustment

1. Raise the presser foot.
2. Loosen the screw on the presser bar guide bracket.
3. Adjust the height of the presser bar.
4. Tighten the screw.

Note: Check that the presser foot and feed dogs are aligned.

## Stitch length for forward and backwards stitching



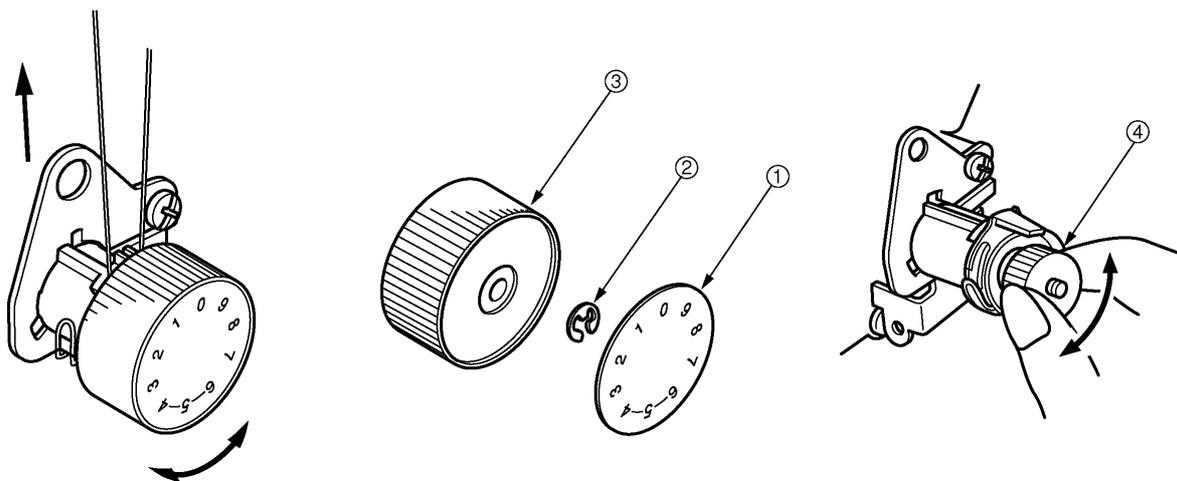
### Standard

- There should be a difference of max. 10% in the lengths of the forward and backward stitching.

### Adjustment

1. Loosen the setscrew ❶ on the reverse sewing regulator shaft ❷.
2. Turn the reverse sewing regulator shaft ❷ left or right to make adjustment.
3. Retighten the setscrew ❶.

## Upper tension control dial



### Standard

- A thread tension amount between 0.05 and 0.1N (5 and 10g) should be measured at dial position 0.

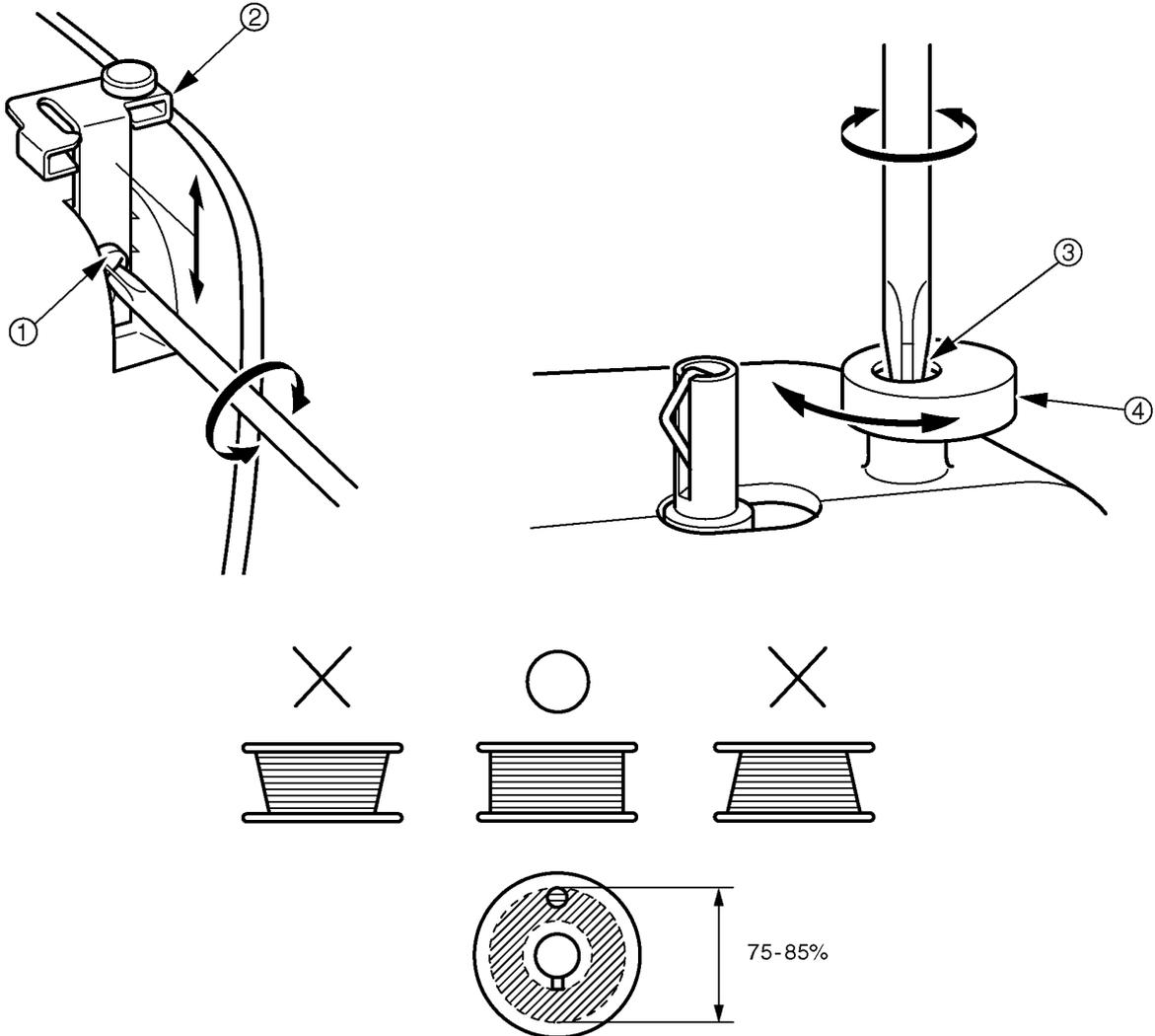
### Adjustment

1. Remove the tension dial sheet ❶ and the stopring ❷.
2. Remove the tension dial ❸.
3. Turn the adjusting nut ❹ left or right to make adjustment.
4. Remount the tension dial at zero position then the stopring and the tension dial sheet.

Note: Cotton thread #50 should be used when adjusting the tension.

Do not include take up spring torque.

## Bobbin Winding



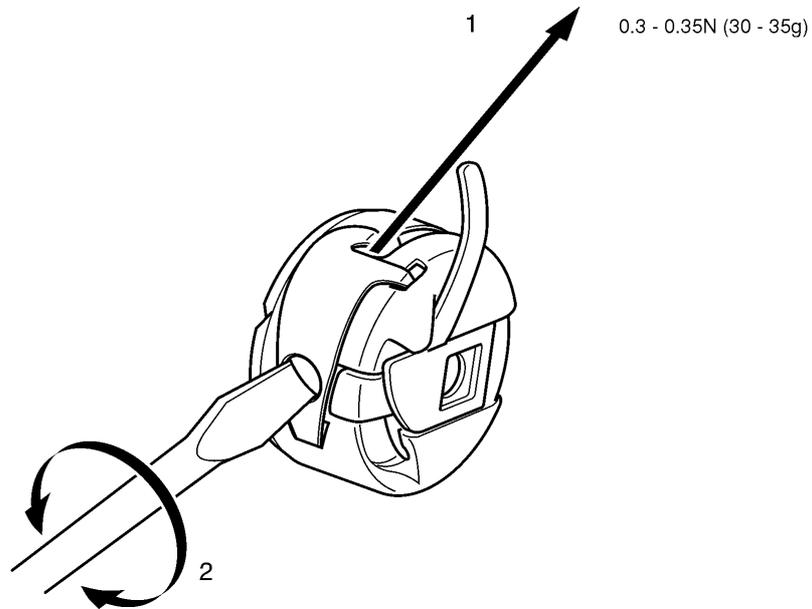
### Standard

- The bobbin should be wound evenly, up to 75 - 85% of the outer diameter of the bobbin.

### Adjustment

1. Loosen the set screw ① of the pretension ② slightly.
2. Shift the pretension ② up or down until even winding is achieved.
3. Retighten the set screw ①.
4. Loosen the set screw ③ of the bobbin presser ④.
5. Adjust the bobbin presser ④ until the correct amount of thread is wound.
6. Retighten the set screw ③.

## Adjustment of lower thread tension



### Standard

Lower thread tension: 0.3 - 0.35N (30 - 35g)

How to check the tension: Pull cotton thread #50 with tension gauge slowly.

1. Set cotton thread #50 in bobbin case and pull it with tension gauge.
2. Adjust the adjustment screw to tension 0.3 - 0.35N (30 - 35g)

