



TYPICAL

GT856D SERIES

DIRECT DRIVE COMPUTER-CONTROLLED
ZIGZAG SEWING MACHINE
INSTRUCTION BOOK
PARTS CATALOGUE

Thank you very much for buying our company's sewing machine. Before using your new machine, please read the safety instructions below and the explanations given in the instruction manual.

With industrial sewing machines, it is normal to carry out work while positioned directly in front of moving parts such as the needle and thread take-up lever, and consequently there is always a danger of injury that can be caused by these parts. Follow the instructions from training personnel and instructors regarding safe and correct operation before operating the machine so that you will know how to use it correctly.


SAFFTY INSTRUCTIONS

1. Safety indications and their meanings

This instruction manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.

The meanings of these indications and symbols are given below.

Indications

 CAUTION	The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.
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Symbols



..... This symbol (△) indicates something that you should be careful of. The picture inside the triangle indicates the nature of the caution that must be taken.
(For example, the symbol at left means "beware of injury".)



..... This symbol (⊘) indicates something that you must not do.










..... This symbol (●) indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.
(For example, the symbol at left means "you must make the ground connection".)










2. Notes in safety

CAUTION

Environmental requirements










-  Use the sewing machine in an area which is free from sources of strong electrical noise such as high-frequency welders. Sources of strong electrical noise may cause problems with correct operation.
-  Any fluctuations in the power supply voltage should be within +10% of the rated voltage for the machine. Voltage fluctuations which are greater than this may cause problems with correct operation.
-  The power supply capacity should be greater than the requirements for the sewing machine's electrical consumption. Insufficient power supply capacity may cause problems with correct operation.
-  The ambient temperature should be within the range of 5° to 35° during use. Temperatures which are lower or higher than this may cause problems with correct operation.
-  The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices. Excessively dry or humid environments and dew formation may cause problems with correct operation.
-  Avoid exposure to direct sunlight use. Exposure to direct sunlight may cause problems with correct operation.
-  In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet. Lightning may cause problems with correct operation.

Installation



-  Machine installation should only be carried out by a qualified technician.
-  Contact your dealer or a qualified electrician for any electrical work that may need to be done.
-  The sewing machine weighs more than 38kg. The installation should be carried out by two or more people.
-  Do not connect the power cord until installation is complete, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
-  Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.
-  All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.
-  Install the belt covers to the machine head and motor.
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

CAUTION









Sewing

-  This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.
-  The sewing machine should not be used for any applications other than sewing.
-  Be sure to wear protective goggles when using the machine.
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.
-  Turn off the power switch at the following times, otherwise the machine may operate if the treadle is depressed by mis-take, which could result in injury.
 - When threading the needle
 - When replacing the needle and bobbin
 - When not using the machine and when leaving the machine unattended* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.
-  Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.
-  If an error occurs in machine, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest dealer or a qualified technician.
-  If the machine develops a problem, contact your nearest dealer or a qualified technician.

Cleaning


-  Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea.
Keep the oil out of the reach of children.


Maintenance and inspection

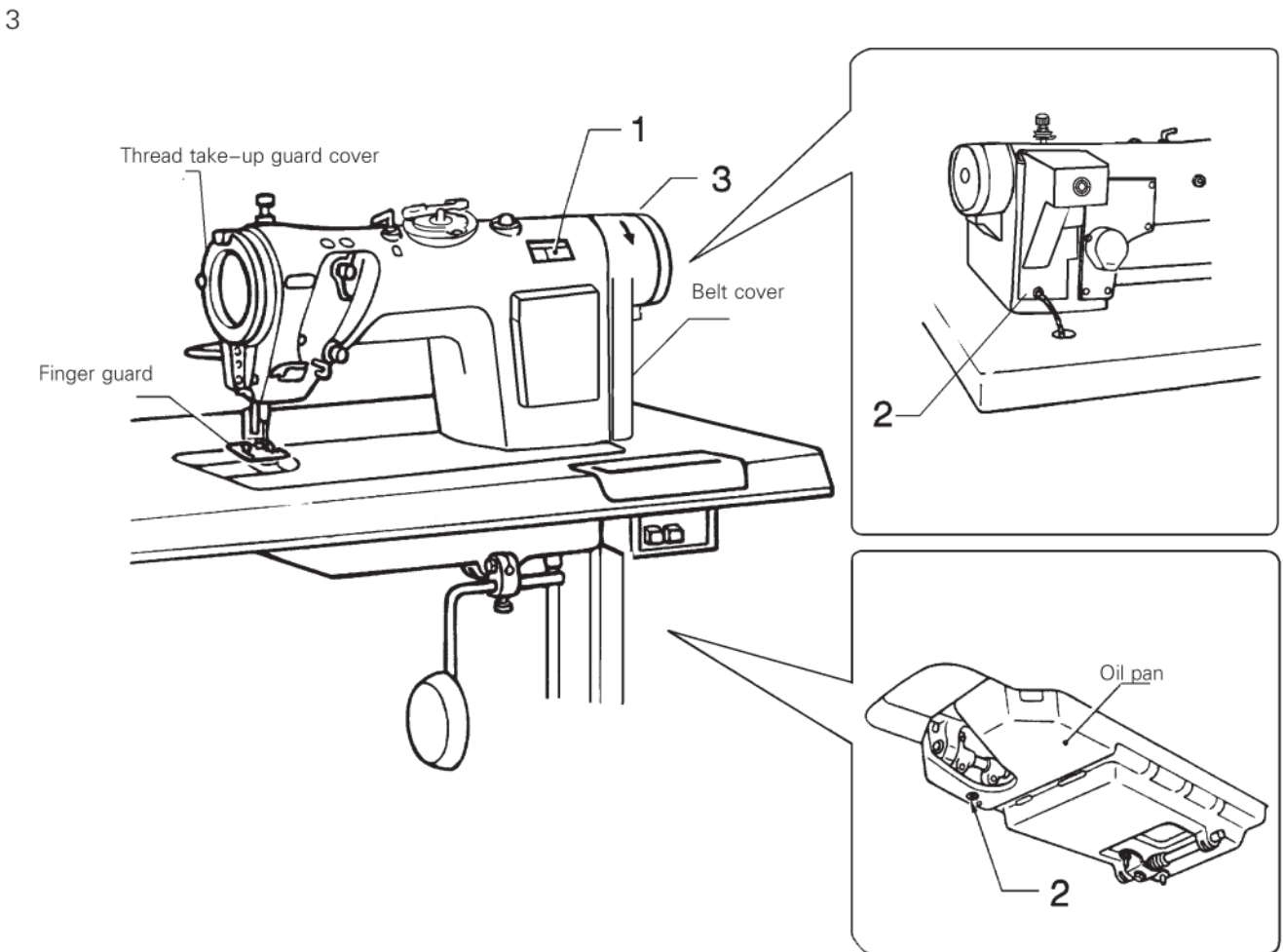
-  Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.
-  Ask your dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
-  Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the treadle is depressed by mis-take, which could result in injury.
 - When carrying out inspection, adjustment and maintenance
 - When replacing consumable parts such as the rotary hook* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
If the power switch needs to be left on when carrying out
-  some adjustment, be extremely careful to observe all safety precautions.
-  Be careful not to touch your fingers or the lubrication amount check sheet against moving parts such as the rotary hook or the feed mechanism when checking the amount of oil supplied to the rotary hook, otherwise injury may result.
-  Use only the proper replacement parts as specified by our company.
-  If any safety devices have been removed, be absolutely sure to reinstall them to their original positions and check that they operate correctly before using the machine.
-  Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

3.Warning labels

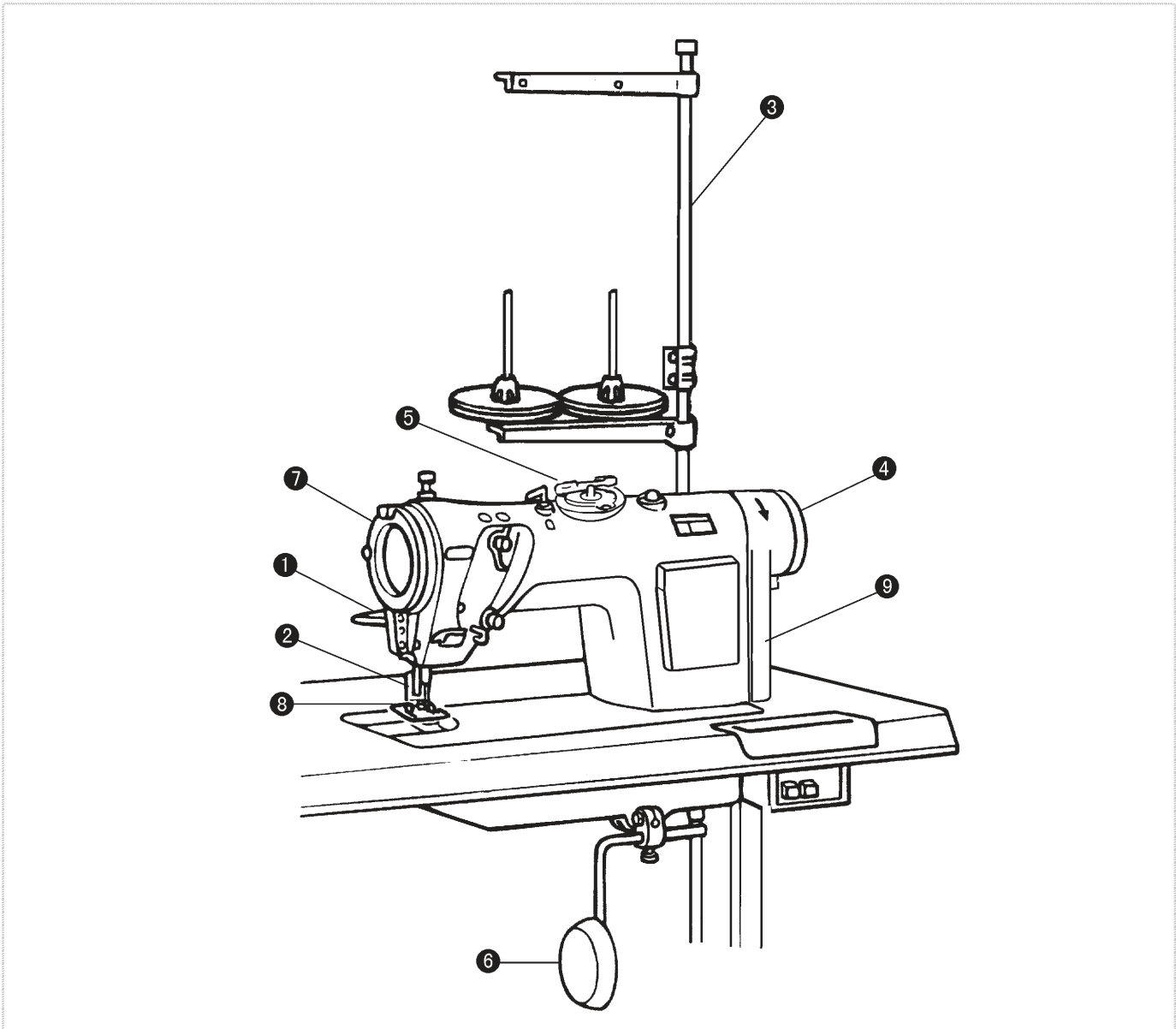
●The following warning labels appear on the sewing machine.Please follow the instructions on the labels at all times when using the machine. If the labels have been removed or are difficult to read, please contact your nearest dealer.

1  ·Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

2  ·Direction of operation



1.NAMES OF MAJOR PARTSP



(1)Presser bar lifter lever

(4)Machine pulley

(2)Presser foot

(5)Bobbin winder

(3)Cotton stand

(6)Knee lifter assembly

Safety devices

(7)Thread take-up guard cover

(8)Finger guard

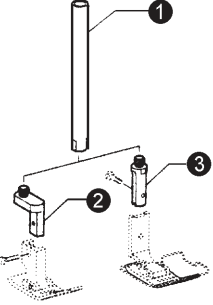
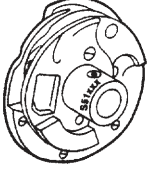
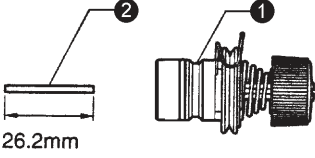
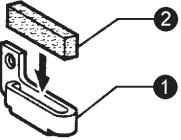
(9)Belt cover

2.MACHINE SPECIFICATIONS

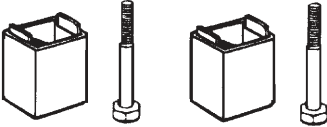
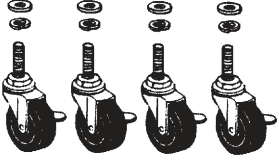
.GT856D-

		118	318
Maximum stitch length		5mm	5mm
automatic treading trimming			yes
Max zigzag width		8mm	
Max sewing speed		5,000rpm	
Thread take-up lever		Rotary thread take-up	
Needle bar stroke		33.3mm	
Feed dog height		1mm	
Presser foot height	presser bar lifter	6mm	
	knee lifter	10mm	
Presser foot pressure		20-60N	
Needle		Schmetz SY1965 Nm70/10	
Use		For light-weight materials--Medium-weight materials	

3.Optional

	Part name	Part code
	1.Presser bar U	BX50996-009
	2.Presser bar tip A	BX50995-009
	3.Presser bar tip B	BX50994-009
	Rotary hook (Carbide reinforced hook tip)	BX59289-109
	Rotary hook (for medium-weight materials)	BX52439-109
	Rotary hook (for swing coarse light materials)	BX59202-009
	1.Thread tension assembly (for lock stitchers)	BXXBX59201-009
	2.Tension release pin	BX59296-009
	1.Thread guide F (for coarse materials)	BX59296-009
	Felt	B996169-009
Tension gauge set		B927188-909

Work table parts

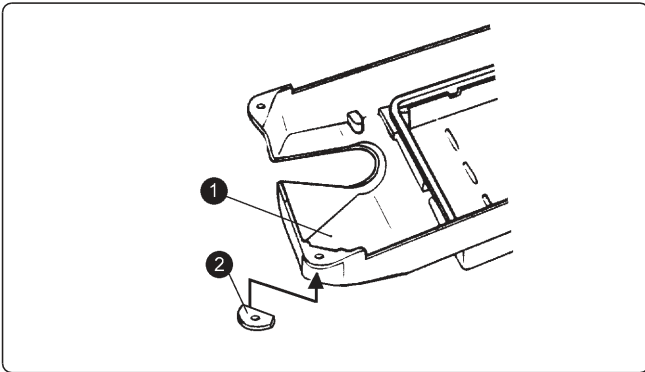
	Part name	Part code
	Specer Set	B927506-001
	Caster set	B927509-009

5.INSTALLATION

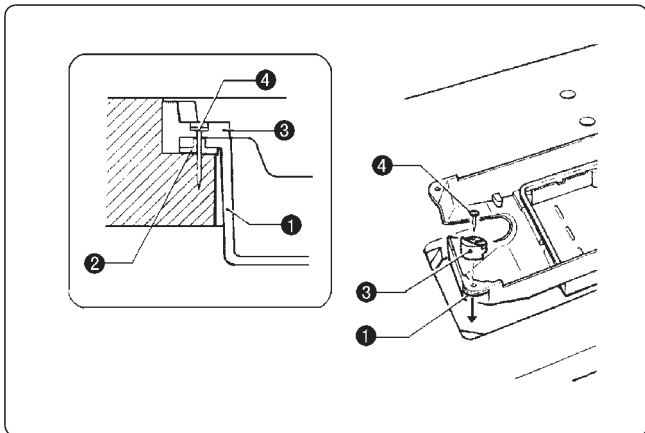
⚠ CAUTION

- ⊘ The sewing machine should only be installed by a qualified technician.
- ⊘ Do not connect the power cord until installation is complete, otherwise the machine will operate if the treadle is depressed by mistake, which could result in injury.
- ! Ask your dealer or a qualified electrician for any electrical work that may need to be done.
- ! Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.
- ! The sewing machine weights more than 38kg. The installation should be carried out by two or more people.
- ! Install the belt cover to the machine head.

5-1.Installing the oil pan

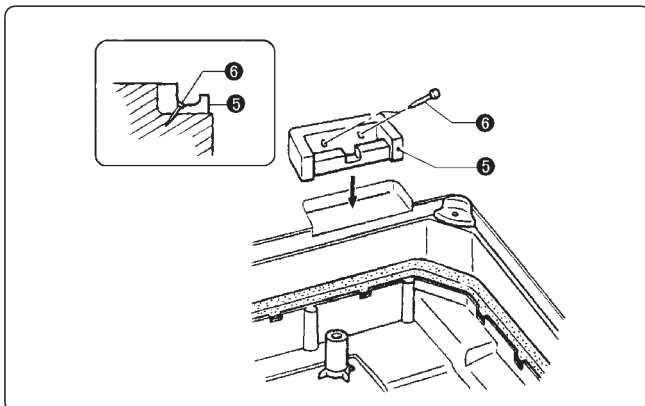


1.Insert the two black head cushions(2)into the right-side corners of the oil pan(1)(when looking at the oil pan(1) from the direction shown in the illustration).



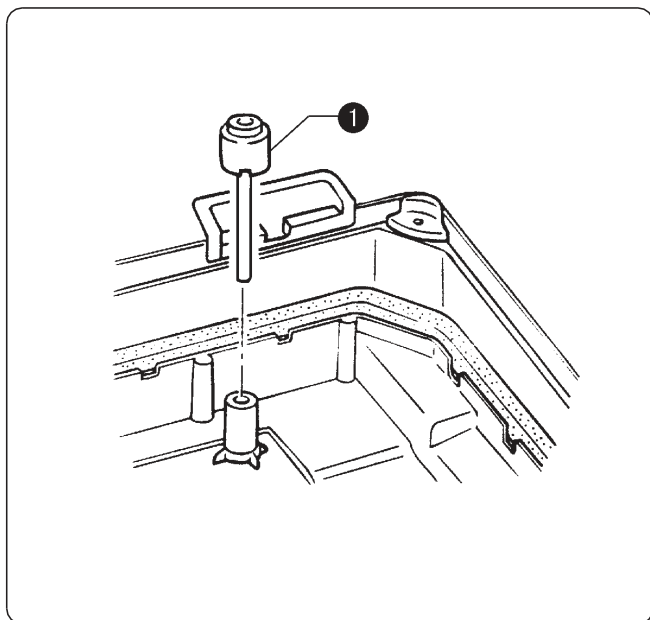
2.Insert the two white head cushions (3)into the left-side corners of the oil pan(1).

3.Fit the oil pan(1) into the table grooves.

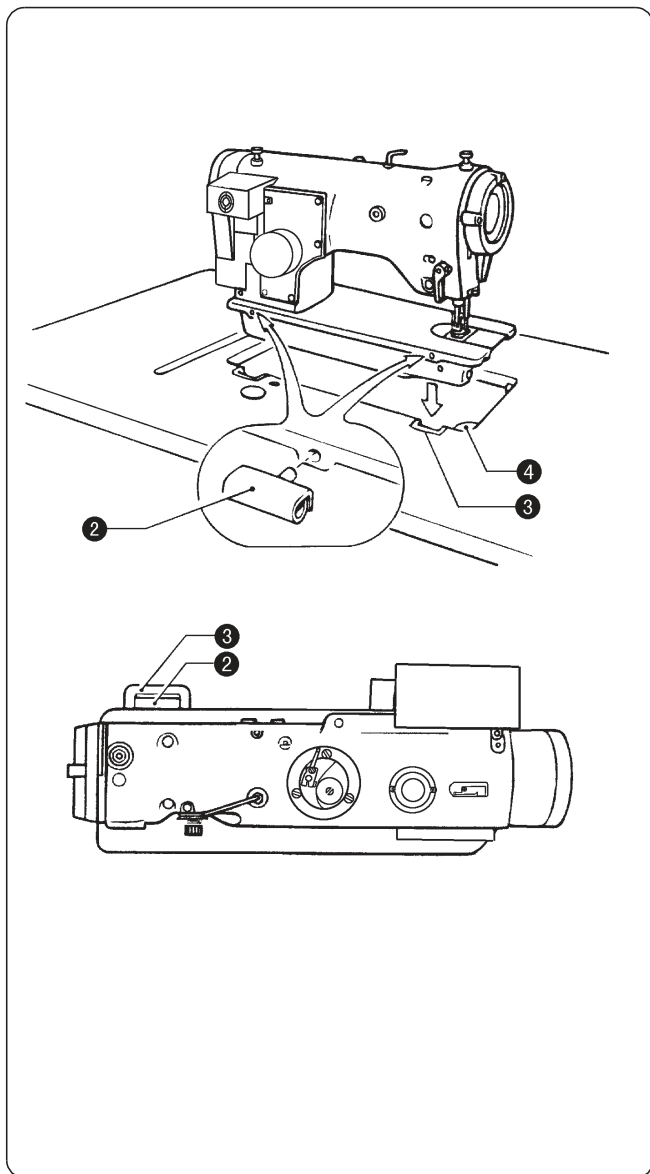


4.Insert the rubber cushions(4)into the notches in the table, and then secure them with the four nails(5).

5-2. Installing the machine head

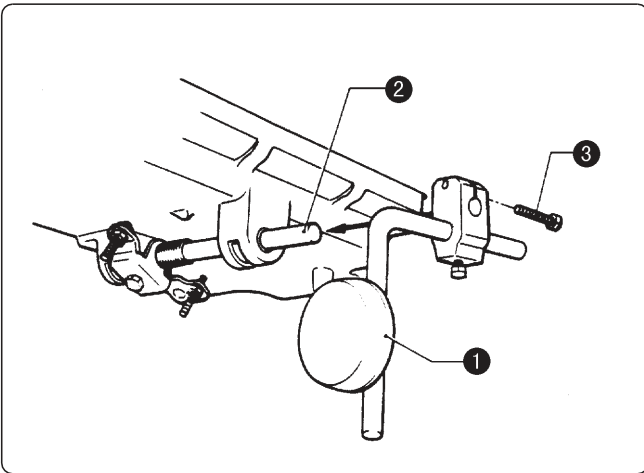


1. Insert the knee lifter complying bar(1).



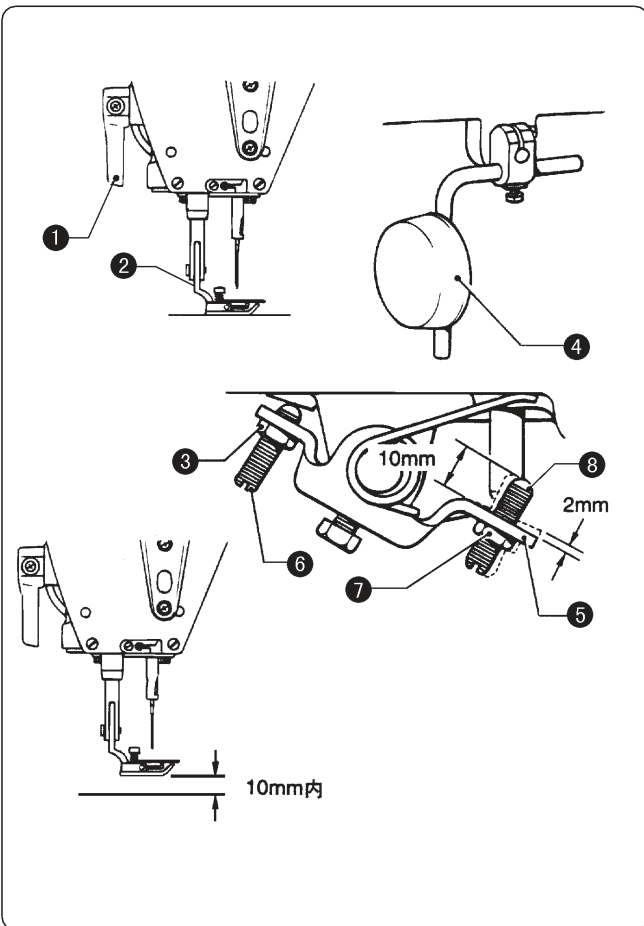
2. Insert the two hinges(2)into the holes in the machine bed.
3. Clamp the hinges(2)onto the rubber cushions(3)in the work table, and then place the machine head onto the head cushions(4)which are on top of the oil pan corners.

5-3. Installing the knee lifter plate



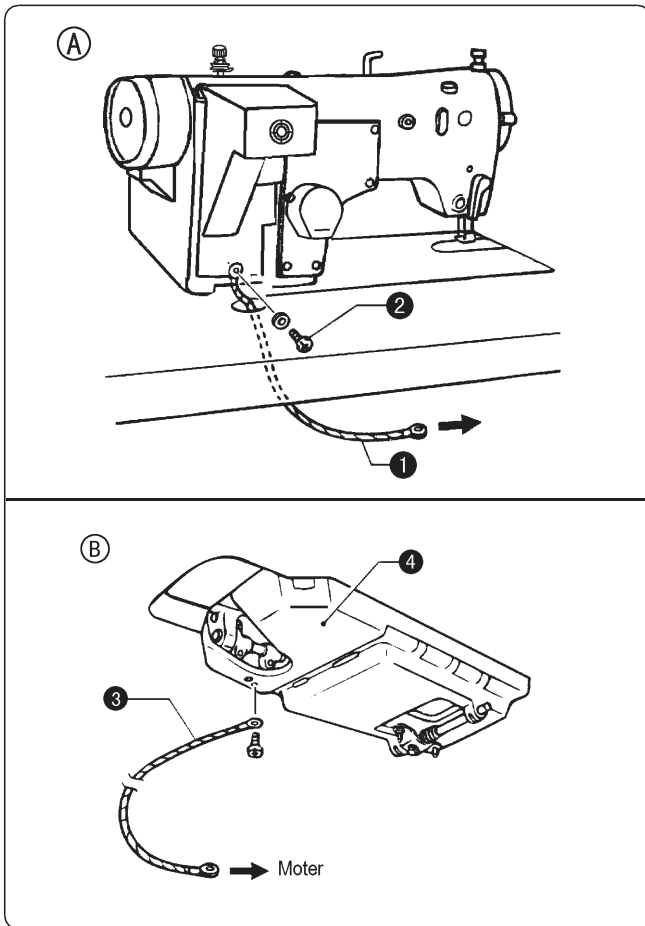
Place the knee lifter assembly (1) onto the knee lifter bar (2) on the oil pan, and then secure it by tightening the bolt (3).
* Adjust the position of the knee lifter plate (1) so that it is easy to use.

5-4. Adjusting the knee lifter



1. Turn the machine pulley so that the feed dog is below the top of the needle plate.
2. Lower the presser foot (2) by using the presser bar lifter (1).
3. Loosen the nut (3).
4. Turn the screw (6) to adjust so that the amount of play in the knee lifter (5) is approximately 2 mm when the knee lifter plate (4) is gently pressed.
5. Securely tighten the nut (3).
6. Loosen the nut (7).
7. Turn the screw (8) until the distance between the end of the screw (8) and the knee lifter (5) is approximately 10 mm.
8. Turn the adjusting screw (8) to adjust so that the presser foot (2) is at the desired position within a distance of 10 mm of the needle plate when the knee lifter plate (4) is fully pressed.
9. After adjustment is completed, securely tighten the nut (7).

5-5. Ground Wire Connections



Use the correct type of ground wire.

(A) Connect the ground wire (in the plastic bag) to the sewing machine head and motor.

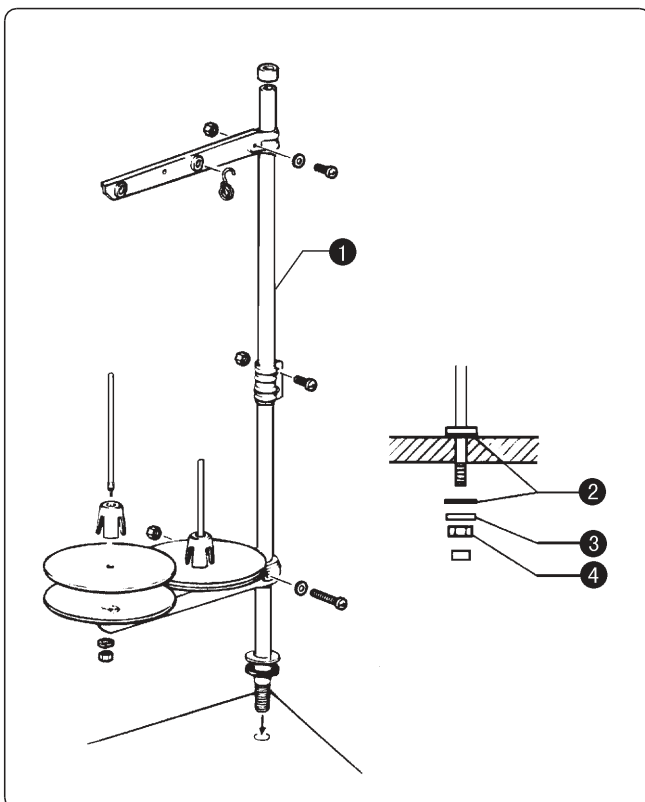
1. Secure the ground wire (1) to the sewing machine head with screw (2). (The attachment location is indicated by a ground symbol.)

2. Pass the ground wire (1) through the hole in the table.

3. Connect the ground wire (1) to the motor in accordance with the instructions in the instruction manual for the (B) Connect the ground wire (3) to the oil pan (4) and motor in accordance with the instructions in the instruction manual for the motor.

(The attachment location is indicated by a ground symbol.)

5-6. Installing the cotton stand



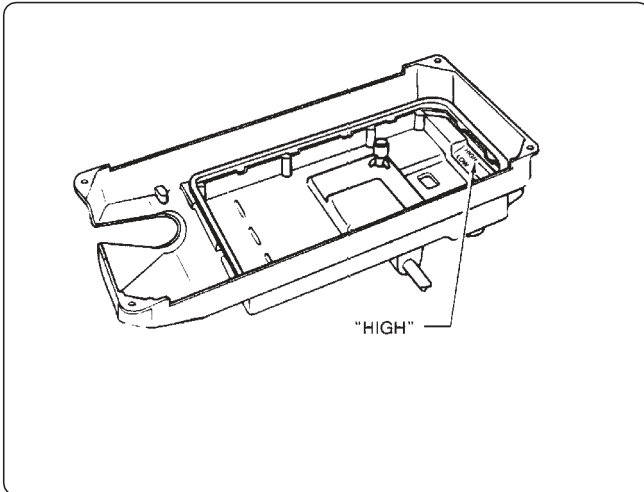
Assemble the cotton stand (1) while referring to the cotton stand instruction manual, and then install the cotton stand (1) to the far right corner of the work table.

* Securely tighten the nut (4) so that the rubber cushion (2) and the washer (3) are securely clamped and so that the cotton stand does not move.

5-7.Lubrication

⚠ CAUTION

- ⊘ Do not connect the power cord until lubrication has been completed, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.
- ⊘ Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea. Keep the oil out of the reach of children.



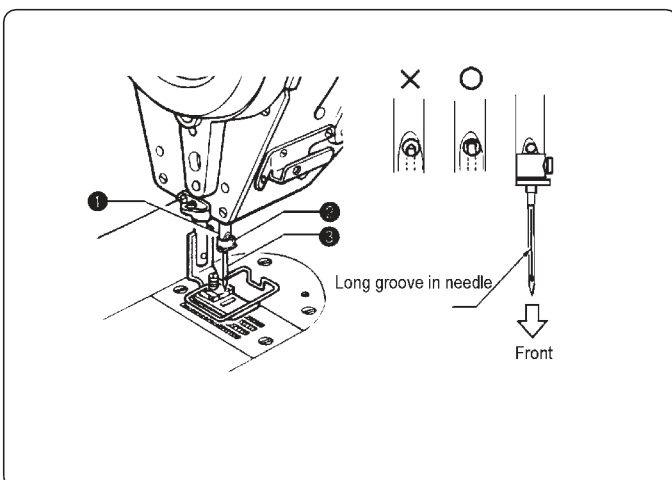
- Use only the lubricating oil Specified by our company.
- Tilt back the machine head and slowly pour in lubricating oil until the oil level reaches the "HIGH" mark.
- * If the oil level drops below the "LOW" mark, add more lubricating oil.

6.PREPARATION BEFORE SEWING

6-1.Installing the needle

⚠ CAUTION

- ⚠ Turn off the power switch before installing the needle, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.
- * When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. wait until the motor stops fully before starting work.



1. Turn the machine pulley to move the needle bar (1) to its highest position.
2. Loosen the screw (2).
3. Insert the needle (3) in a straight line as far as it will go, marking sure that the long groove on the needle is toward the front, and then securely tighten the screw(2).

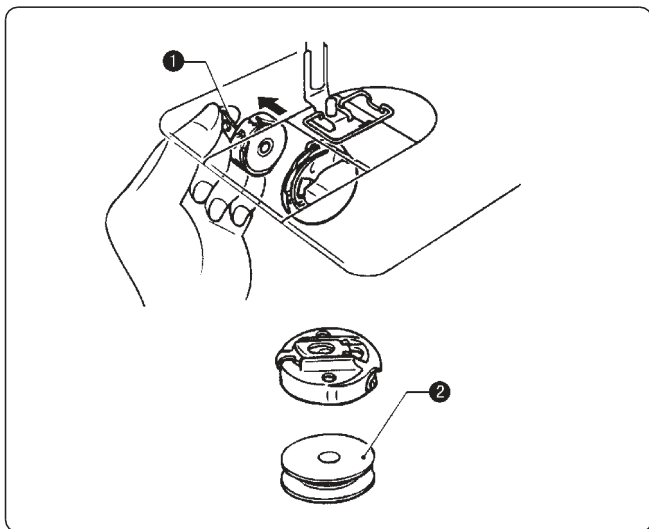
6-2. Removing the bobbin case

⚠ CAUTION



Turn off the power switch before removing the bobbin case, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.

* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.



1. Turn the machine pulley to raise the needle until it is above the needle plate.
2. Pull the latch (1) of the bobbin case upward and then remove the bobbin case.
3. The bobbin (2) will come out when the latch (1) is released.

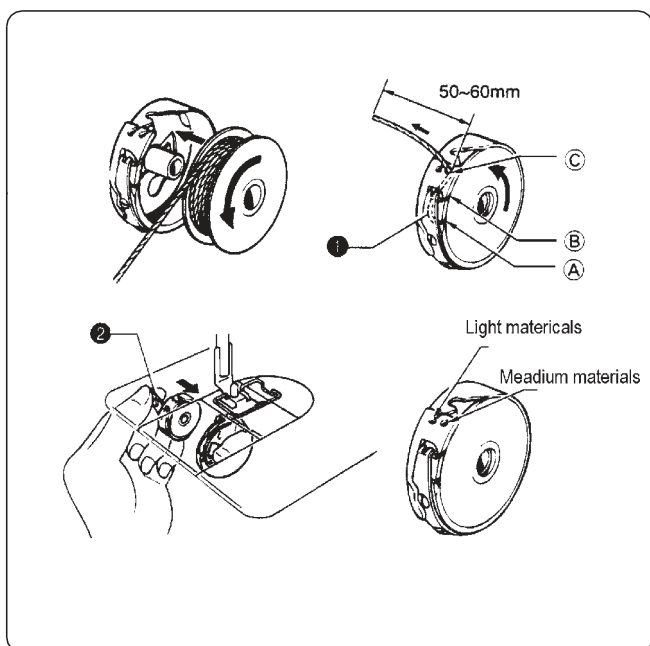
6-3. Installing the bobbin case

⚠ CAUTION



Turn off the power switch before installing the bobbin case, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.

* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.



1. Turn the machine pulley to raise the needle until it is above the needle plate.
2. Hold the bobbin so that the thread spools out counter clockwise, and place the bobbin into the bobbin case.
3. Pass the thread through slot A and hook it under the thread guide C.
Pass the thread back through slot B and hook it out from thread guide C.
* Use thread guide C shown in the illustration in accordance with the type of material being sewn.
5. Check that the bobbin rotate counterclockwise when the thread is pulled out.
6. While holding the latch (2) of the bobbin case, insert the bobbin case into the rotary hook.

6-4. Threading the upper thread

⚠ CAUTION

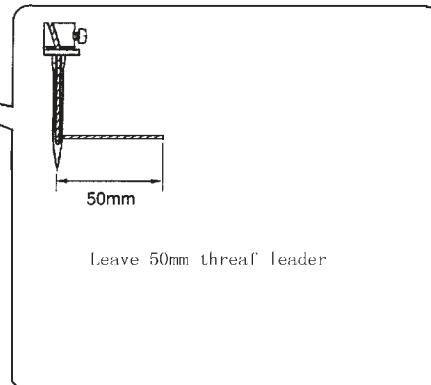
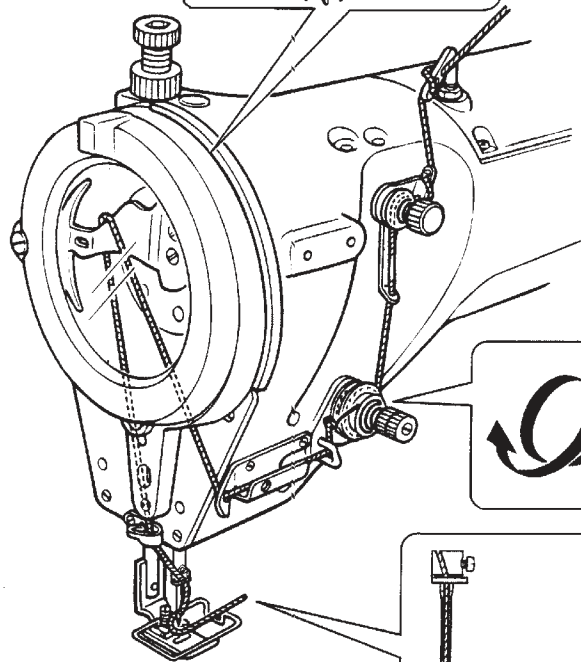
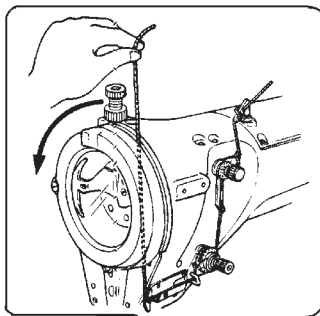
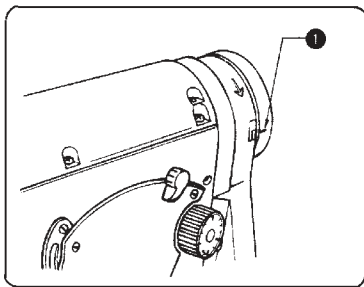


Turn off the power switch before threading the upper thread, otherwise the machine will operate if the treadle is pressed by mistake, which could result in injury.

* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

Turn the machine pulley to align the reference line (1) in the machine pulley with the index mark on the belt cover.

* This will make threading easier and it will prevent the thread from coming out at the sewing start.



6-5. Cautions when replacing gauge parts

The following must be observed at all times

When replacing gauge parts (presser foot, needle plate and feed dog), care must be taken to adjust these parts so that they operate correctly together. If settings such as zigzag width, needle position and stitch length are not appropriate for the gauge parts used, the needle may strike the needle plate and break, or the feed dog may touch the needle plate and be damaged during sewing machine operation. In order to prevent things like this from happening, turn the machine pulley by hand after adjusting the zigzag width, needle position and stitch length, and check that none of the gauge parts touch the needle plate before carrying out sewing.

7. SEWING

⚠ CAUTION



Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.

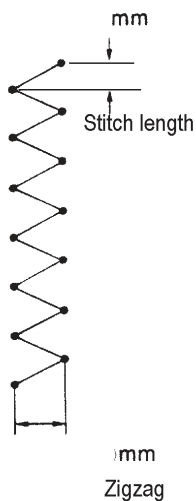


Turn off the power switch at the following times, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.

- When threading the needle
 - When replacing the needle and bobbin
 - When not using the machine and when leaving the machine unattended
- * When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.



Do not touch any of the moving parts or place any objects against the machine while sewing, as this may result in personal injury or damage to the machine.



1. Make any adjustments which may be required, such as zigzag width and stitch length.

- Zigzag width (Refer to P.57.)
- Needle position (Refer to P.57.)
- Stitch length (Refer to P.58.)

2. Turn on the power switch.

3. Depress the treadle to start sewing.

8.THREAD TENSION

8-1.Adjusting the thread tension

⚠ CAUTION



Turn off the power switch before removing or inserting the bobbin case, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.

* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.



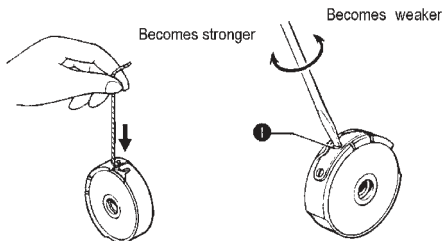
Good even stitches



Upper thread tension too weak or lower thread tension too strong

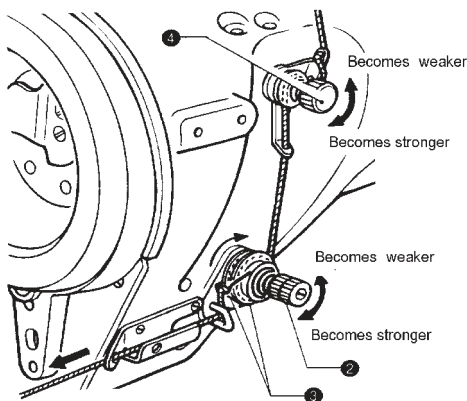


Upper thread tension too strong or lower thread tension too weak



Lower thread tension

Turn the thread tension screw (1) to adjust the lower thread tension so that the bobbin drops by its own weight with no resistance when the end of the thread is held.



Upper thread tension

After the lower thread tension has been adjusted, adjust the upper thread tension so that a good, even stitch is obtained.

1. Lower the presser foot.
 2. Adjust by turning the thread tension nut (2).
 3. After adjusting the upper thread tension, pull the upper thread in the direction of the arrow and check that the rotary disc (3) turns together with the upper thread.
- * If it does not turn, tighten the pre-tension (4).

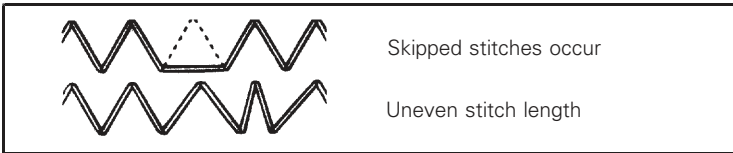
Note:

If the tension of the pre-tension (4) is too weak the thread will slip and the rotary disc (3) will not rotate. The pre-tension (4) should be adjusted to as weak a tension as possible while still allowing the rotary disc (3) to rotate smoothly.

8-2. Adjusting the presser foot pressure



Correct Stitches



Skipped stitches occur

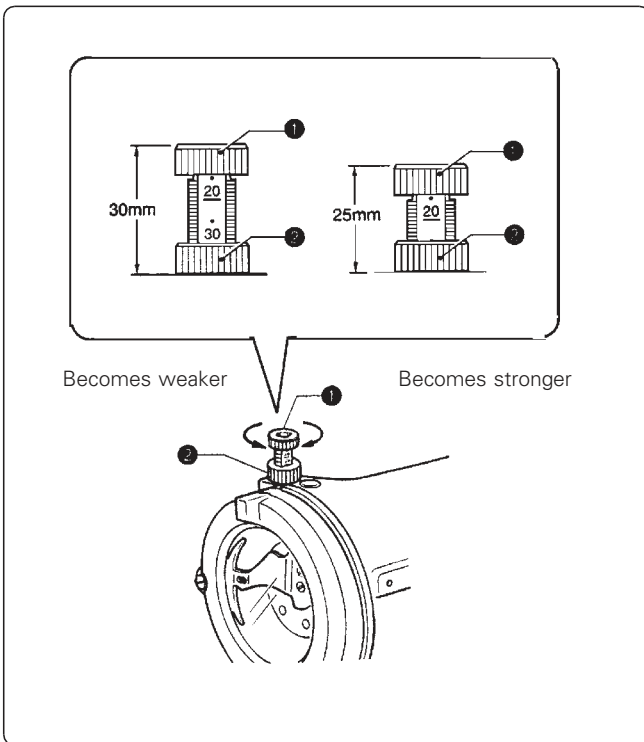
Uneven stitch length

Increase the pressure



Stitches are puckered

Decrease the pressure



- The presser foot pressure should be as weak as possible, but strong enough so that the material does not slip.
- The scale on the adjustment screw (1) indicates the height of the adjustment screw (1), and should be used as a guide to adjustment. (Refer to the following page.)

1. Loosen the adjustment nut (2).
2. Turn the adjustment screw (1) to adjust the presser foot pressure.
3. Tighten the adjustment nut (2).

Relationship between adjustment screw height and presser foot pressure (guide)

Spring			Adjustmen screw height	Presser foot pressure	Adjustment range
standand part	BX62824009	Black	25mm	40N	20-60N
Accessory part	BX62825009	Yellow	25m	23N	10-30N

* Models 655-01 and 656 include an accessory spring which allows fine adjustments to be made for weaker presser foot pressures. Use whichever of the two springs are best suited to the material being sewn, while referring to the above table.

Refer to P.70 for details on replacing the spring.

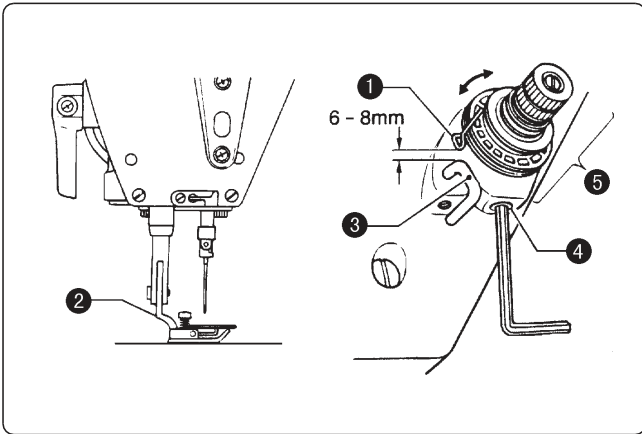
<Removal>

Refer to steps 1 to 5.

<Installation>

Refer to steps 5 to 9.

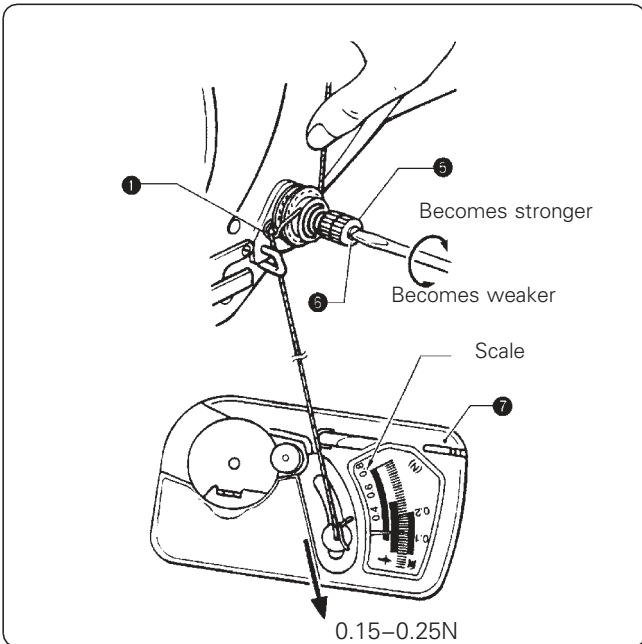
8-3. Adjusting the thread tension spring



● Thread tension spring position

The standard position of the thread tension spring (1) is 6–8 mm above the surface of the thread guide (3) when the presser foot (2) is lowered.

1. Lower the presser foot (2).
2. Loosen the set screw (4).
3. Turn the thread tension bracket (5) to adjust the spring position.
4. Securely tighten the set screw (4).



● Thread tension spring tension

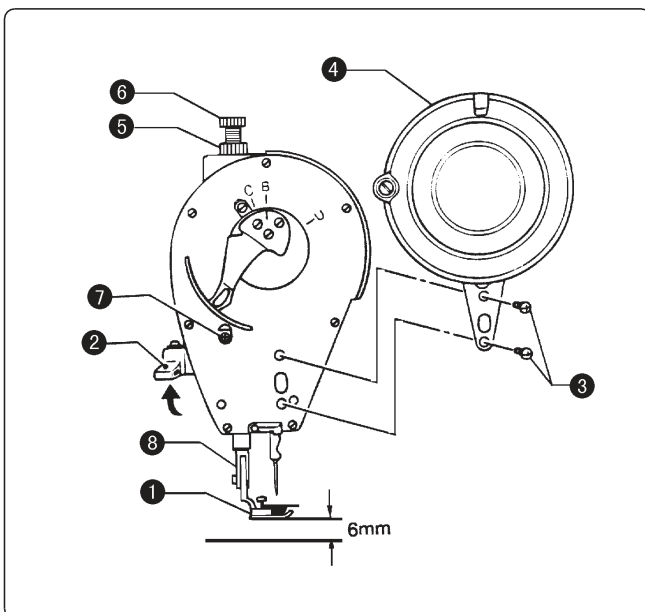
The standard tension of the thread tension spring (1) 0.15 to 0.25 N.

1. Press the upper thread slightly above the thread tension bracket (5) with a finger to stop the thread spooling out.
2. Pull the upper thread down until the thread tension spring (1) starts to move down, and measure the tension of the thread tension spring (1) at this point.
3. Insert the tip of a screwdriver into the groove in the thread tension stud (6) and turn it to adjust the tension of the thread tension spring (1).

Note:

If using a tension gauge (7) (sold separately) to measure the tension, take the reading from the scale on the side of the red line.

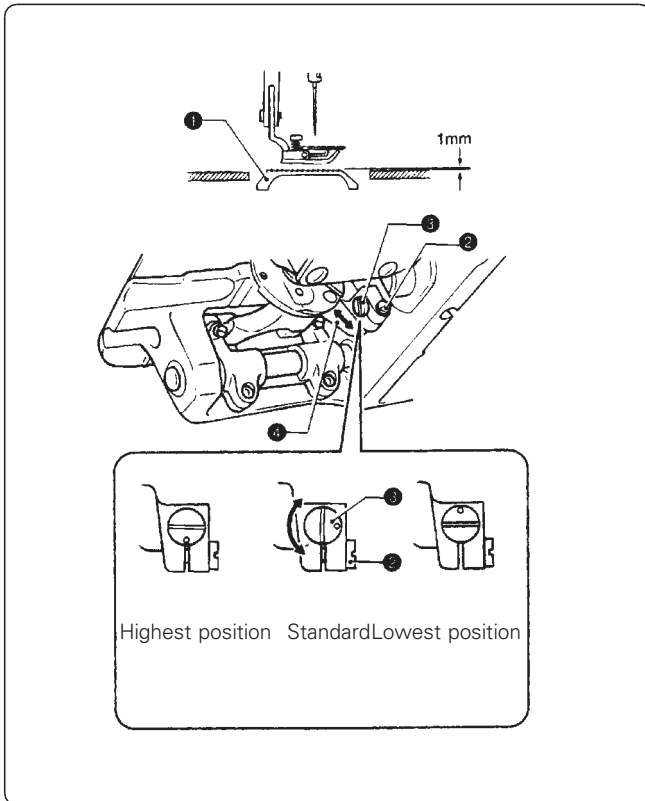
8-4. Adjust the presser foot height



The standard height of the presser foot (1) is 6 mm when the presser foot (1) is raised by means of the presser bar lifter (2).

1. Loosen the two screws (3) and then remove the thread take-up guard (4).
2. Loosen the nut (5) of the adjustment screw (6), and then turn the adjustment screw (6) so that there is no pressure applied to the presser foot.
3. Raise the presser bar lifter lever (2). The presser foot (1) will also rise.
4. Loosen the screw (7) and move the presser bar (8) up and down to adjust the height of the presser foot (1) to 6 mm.
5. Tighten the bolt (7).
6. Adjust the presser foot pressure using the adjustment screw (6), and then tighten the nut (5). (Refer to page 62.)
7. Install the thread take-up guard (4) with the two screws (3).

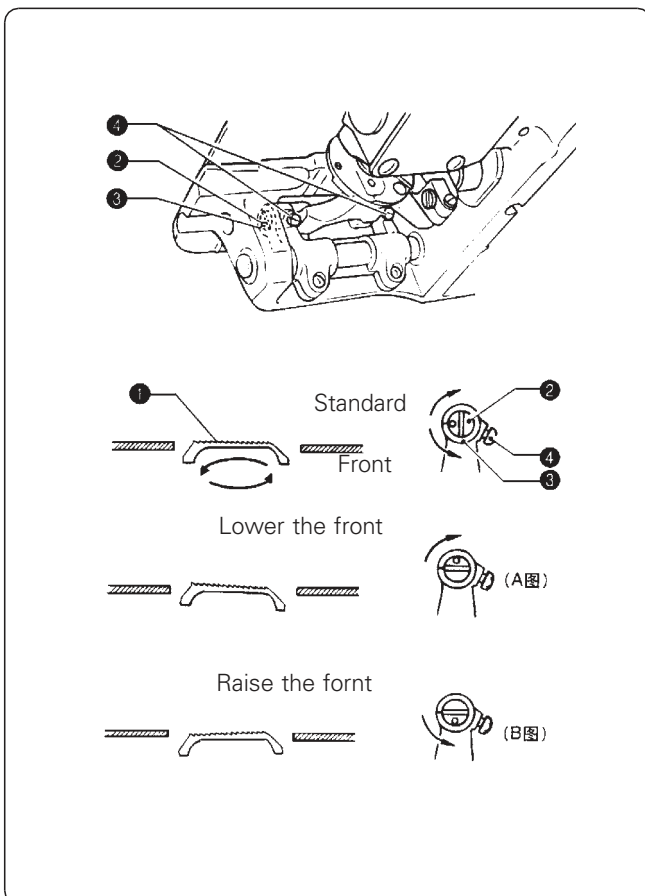
8-5. Adjusting the feed dog height



The standard height when the feed dog (1) is at its highest position above the needle plate is 1 mm.

1. Turn the machine pulley to move the feed dog (1) to its highest position above the needle plate.
2. Tilt back the machine head.
3. Loosen the pin (2).
4. Turn the pin (3) to move the feed bar (4) up and down in order to adjust the height.
5. Securely tighten the screw (2).

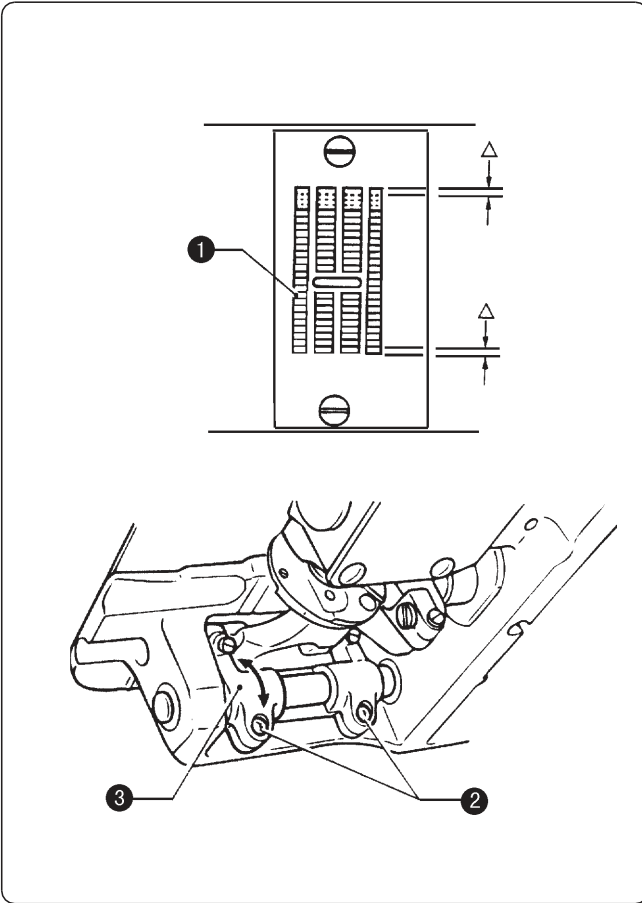
8-6. Adjusting the feed dog angle



The standard angle for the feed dog (1) is for the top of the needle plate and the top of the feed dog (1) to be parallel when the feed dog (1) is at its maximum height above the needle plate. (with the O mark on the feed bracket shaft (2) aligned with the mark on the feed rocker bracket arm (3)).

1. Turn the machine pulley to move the feed dog (1) to its highest position above the needle plate.
2. Tilt back the machine head.
3. Loosen the two set screws (4).
4. Turn the feed bracket shaft (2) in the direction of the arrow within a range of 90° with respect to the standard position.
 - Tilting the feed dog (1) so that the front is lowered tends to prevent puckering (gathering). (Figure A)
 - Tilting the feed dog (1) so that the front is raised tends to prevent material from slipping (uneven material feeding). (Figure B)
5. Securely tighten the set screws (4). When the angle of the feed dog (1) is adjusted, the height and forward/back position of the feed dog (1) will also change and will need to be readjusted.

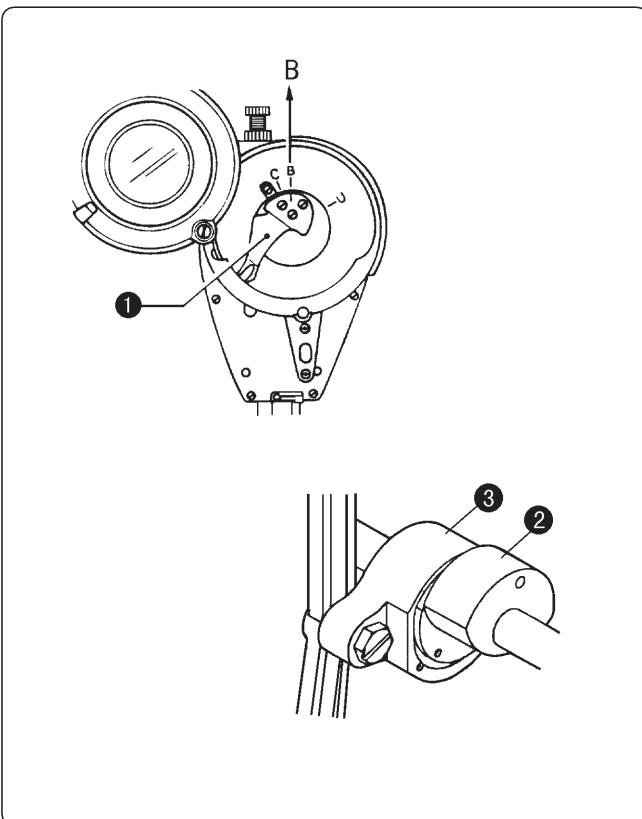
8-7. Adjusting the forward/back position of the feed dog



The standard height when the feed dog (1) is at its highest position above the needle plate is 1 mm.

1. Turn the machine pulley to move the feed dog (1) to its highest position above the needle plate.
2. Tilt back the machine head.
3. Loosen the pin (2).
4. Turn the pin (3) to move the feed bar (4) up and down in order to adjust the height.
5. Securely tighten the screw (2).

8-8. Adjusting the needle and feed mechanism timing

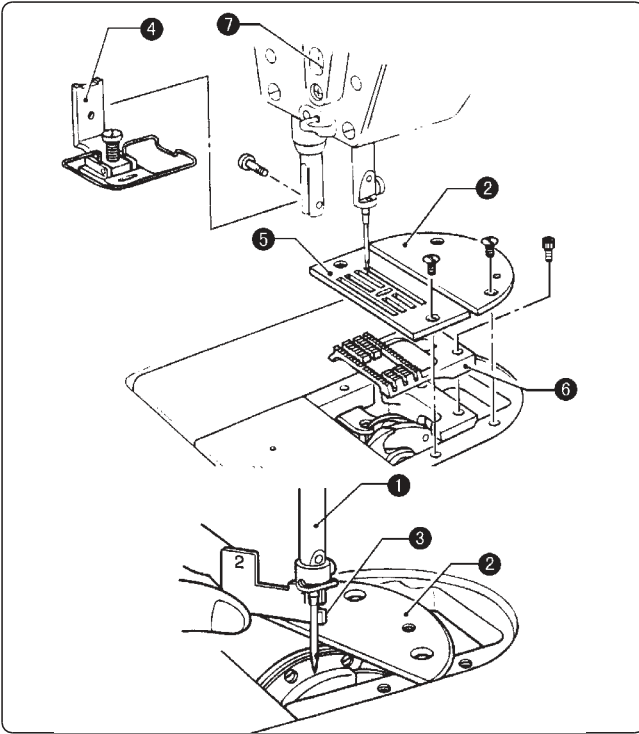


The \bigcirc mark on the eccentric cam (2) should be aligned with the \bigcirc mark on the eccentric cam (3) when the reference line on the thread take-up lever (1) is aligned with the B mark on the face plate.

1. Tilt back the machine head.
2. Align the reference line on the thread take-up lever (1) with the B mark on the face plate.
3. Loosen the four screws (4).
4. Turn the eccentric cam (2) to align the \bigcirc mark with the \bigcirc mark on the eccentric cam (3).
5. Securely tighten the four screws (4).

* If the needle and feed timing has been adjusted, you should also adjust the needle and rotary hook timing.

8-9. Adjusting the needle bar height



When the needle bar (1) is at its lowest position, the distance from the top of the auxiliary needle plate (2) to the bottom edge of the needle bar (1) should be the same as the height of accessory timing gauge (3).

1. Remove the presser foot (4), needle plate (5), auxiliary needle plate (2) and feed dog (6).
2. Place the auxiliary needle plate (2) on the needle plate in installation surface of the machine bed.
3. Turn the machine pulley to move the needle bar (1) to its lowest position.
4. Loosen the screw (7).
5. Move the needle bar (1) up or down to adjust the distance from the top of the auxiliary needle plate (2) to the bottom edge of the needle bar (1) so that it is the same as the height of accessory timing gauge (3).

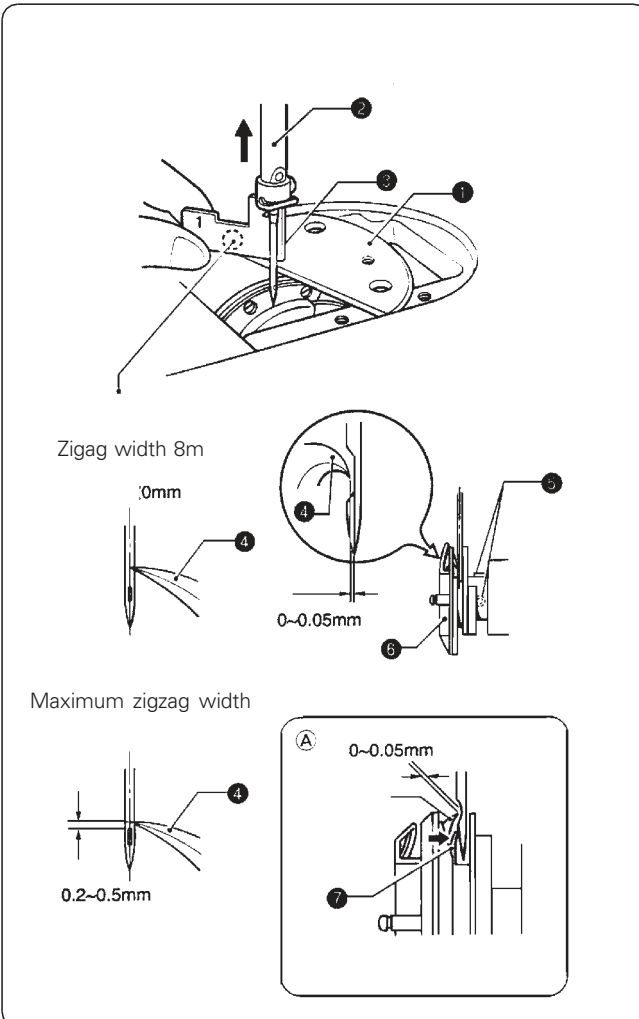
Note:

The needle plate (5) and the auxiliary needle plate (2) are of different thicknesses, so be sure to use the auxiliary needle plate (2).

6. Securely tighten the screw (7).
7. Install the presser foot (4), needle plate (5), auxiliary needle plate (2) and feed dog (6).

* When adjusting the needle bar height, be sure to adjust the needle and rotary hook timing also.

8-10. Needle and rotary hook timing



1. Set the zigzag width to "0", and set the needle position to the center reference line.

2. Remove the presser foot, needle plate, auxiliary needle plate and feed dog.

3. Place the auxiliary needle plate (1) on the needle plate installation surface of the machine bed.

4. Turn the machine pulley to move the needle bar (2) from its lowest position, and check the following when the distance from the top of the auxiliary needle plate (1) to the bottom edge of the needle bar (2) is the same as the height of accessory timing gauge (3).

- The tip of the rotary hook (4) should be aligned with the center of the needle.

- The distance from the tip of the rotary hook (4) to the needle should be 0 to 0.05 mm.

Note:

The needle plate and the auxiliary needle plate (1) are of different thicknesses, so be sure to use the auxiliary needle plate (1).

5. If the above are not correct, loosen the two screws (5) and adjust the position of the rotary hook (6). After adjustment, securely tighten the two screws (5).

6. Set the zigzag width to the maximum setting.

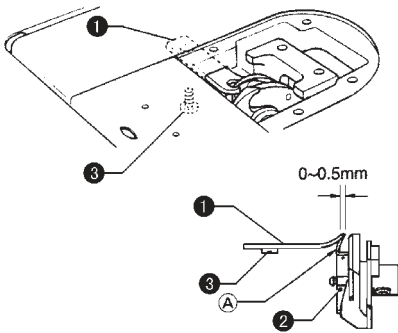
7. Turn the machine pulley to move the needle to its furthest left position so that the tip of the rotary hook (4) is aligned with the center of the needle, and check that the distance from the upper edge of the needle hole to the tip of the rotary hook (4) is 0.2 to 0.5 mm at this time.

* If the distance is not correct, adjust the height of the needle bar. (Refer to page 68.)

8. If the needle deflection occurs when sewing material with joints, bend the needle guard (7) in the direction of the arrow as shown in the illustration so that it touches the needle.

* After this, check that the clearance between the tip of the rotary hook (4) and the needle is 0 to 0.05mm.

8-11. Hook stopper position



Adjust so that the end of the rotary hook holder (1) is 0 to 0.5 mm back from end (A) of the inner rotary hook (2).

*The end of the rotary hook holder (1) must never extend to the right of end (A) of the inner rotary hook (2).

1. Loosen the screw (3) and adjust the position of the rotary hook holder (1).
2. Securely tighten the screw (3).

8-12. Adjusting the rotary hook lubrication amount

⚠ CAUTION



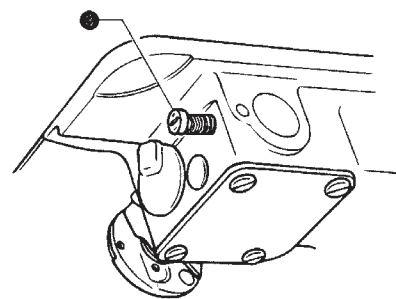
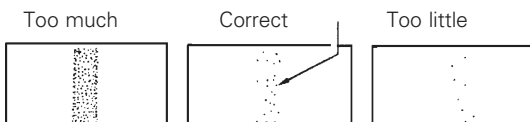
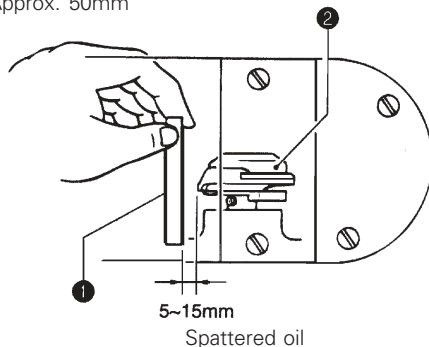
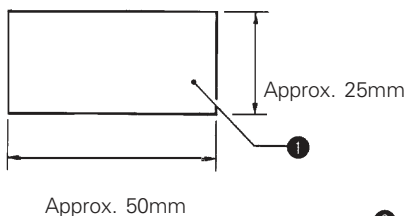
Be careful not to touch your fingers or the lubrication amount check sheet against moving parts such as the rotary hook or the feed mechanism when checking the amount of oil supplied to the rotary hook, otherwise injury may result.

• Use the following procedure to check the amount of oil being supplied to the rotary hook when replacing the rotary hook or when changing the sewing speed.

Check the lubrication amount

1. Run the machine at the normal sewing speed for approximately 1 minute without sewing any material (following the same start/stop pattern as when actually sewing).
2. Place the lubrication amount check sheet (1) to the left of the rotary hook (2) and hold it there. Then run the sewing machine at the normal sewing speed for 10 seconds. (Any type of paper can be used as the lubrication amount check sheet (1).)
3. Check the amount of oil which has spattered onto the sheet.

* Be sure to repeat this operation three to four times to check average lubrication amounts.



Less oil

More oil

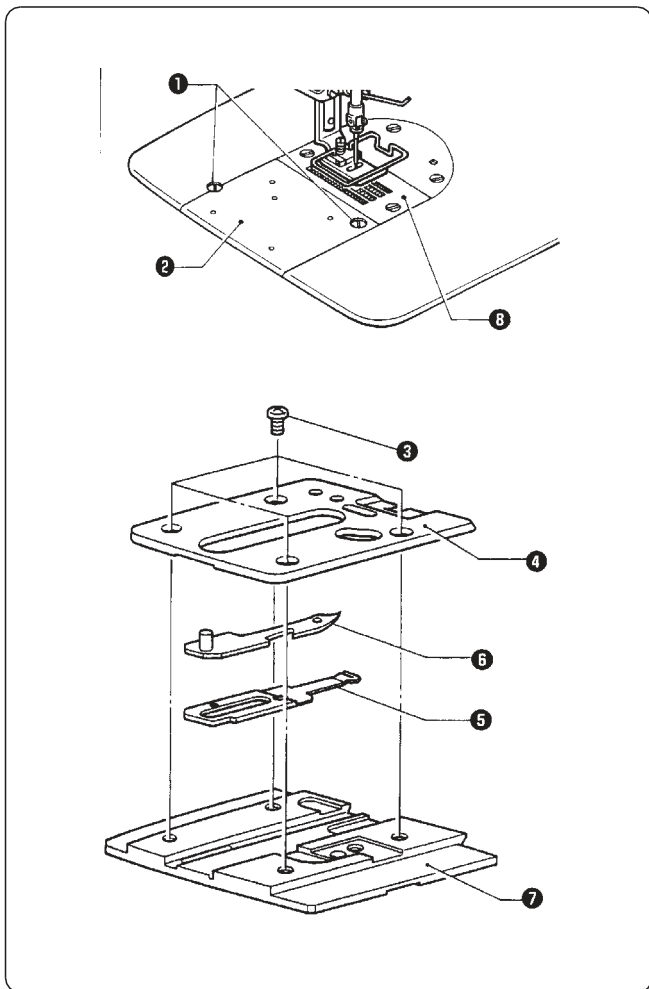
Adjusting the lubrication amount

1. Tilt back the machine head.
2. Turn the lubrication adjustment screw (3) to adjust the lubrication amount.
3. Return the machine head to the upright position.
4. Check the lubrication amount again according to the procedure given in "Checking the lubrication amount" above.

* Turn the lubrication adjustment screw (3) and check the lubrication amount repeatedly until the lubrication amount is correct.

5. Check the lubrication amount again after the sewing machine has been used for approximately two hours.

8-13 Fixed knife and movable knife



■ Removal

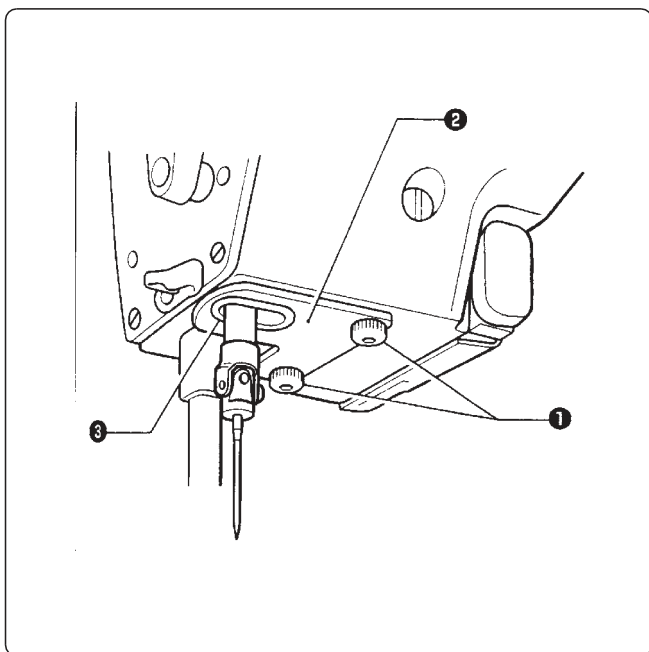
1. Remove the two screws ①, and then remove the knife unit ②.
2. Remove the four screws ③, and then remove the knife holder ④.
3. Remove the fixed knife ⑤ and the movable knife ⑥.

■ Installation

1. Install the fixed knife ⑤ and the movable knife ⑥ to the knife base plate ⑦.
2. Install the knife holder ④ with the four screws ③.
3. Install the needle plate ⑧ if it is not already installed.
4. Install the knife unit ② securely to the edge of the needle plate ⑧, with the two screws ①.

8-14. change of needle plate localizer

When presser foot, needle plate (optional parts) are suitable for stitch length 10mm 8mm 5mm 3mm the needle plate localizer must be changed to match that too.

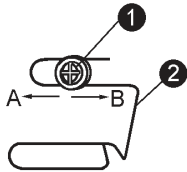


1. Remove the two screws ①, and then remove the stopper plate ②.
2. Remove the stopper ③ which is inserted into the stopper plate ②, and then install the stopper ③ which matches the presser foot and needle plate.
3. Install the stopper plate ② to the machine head, and then securely tighten the two screws ①.
4. Turn on the power.
5. Set the zigzag width to the maximum width for the gauge parts.
6. Turn the machine pulley by hand and check that the needle does not touch any of the needle holes in the gauge parts, and that the needle bar does not touch the stopper ③.

8-15. adjustment of thread length reserve after trimming

thread length will be reserved according to the character of thread

upper thread	length of reserved thread
Fibre#60	50-60mm
elastics synthetic fibre#60	40-50mm

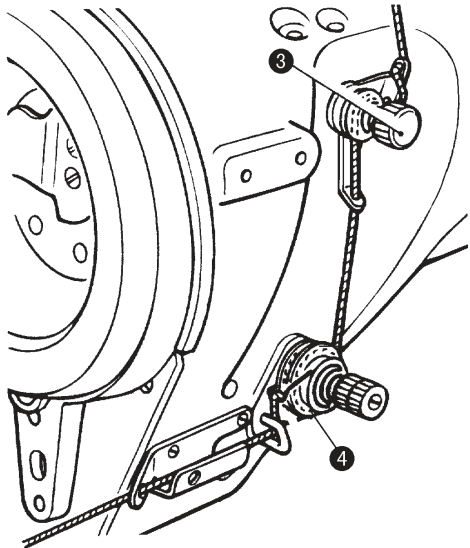


■ adjustment of thread feeding device

Loose screw 1, move tread feeding device to A direction for short thread reserve and to B direction for long thread reserve

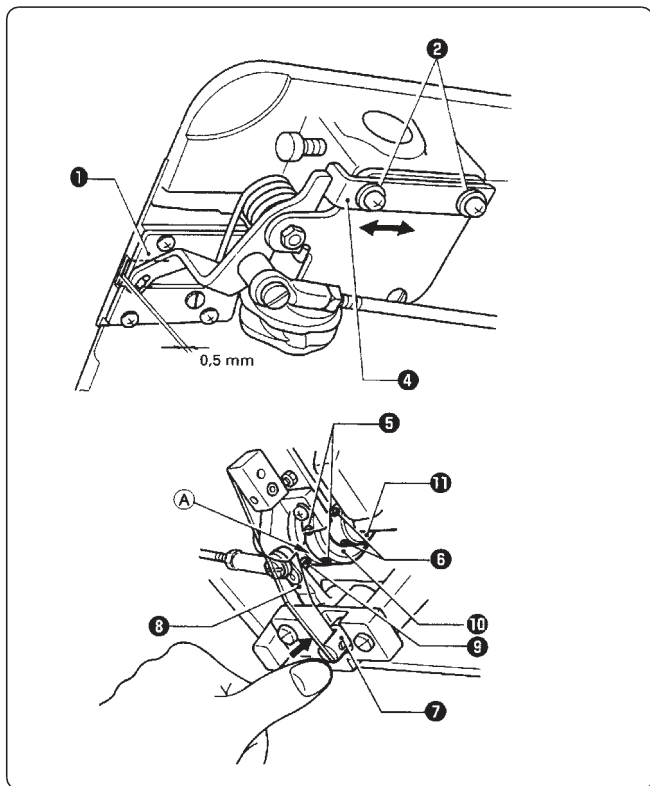
Attention:

If thread tension is too strong thread reserve adjustment will be affected. Adjust button 3, make thread tension be a proper situation that device 4 could work normally.



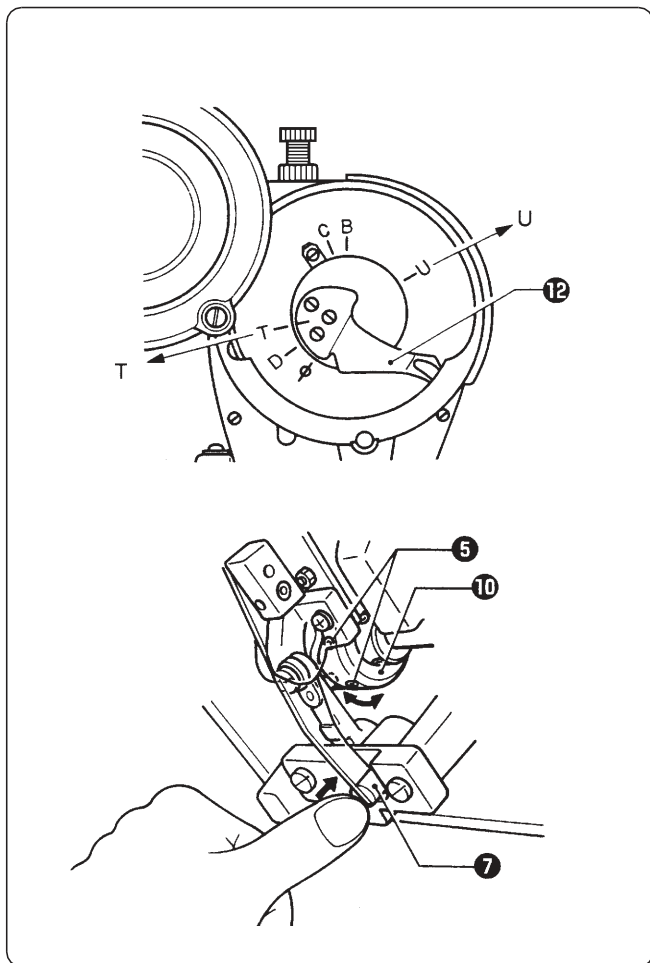
8-16. Adjusting the position of the thread trimming cam

1. The knife unit 1 should already be installed in the correct way when the following adjustments are carried out.



■Horizontal position adjustment

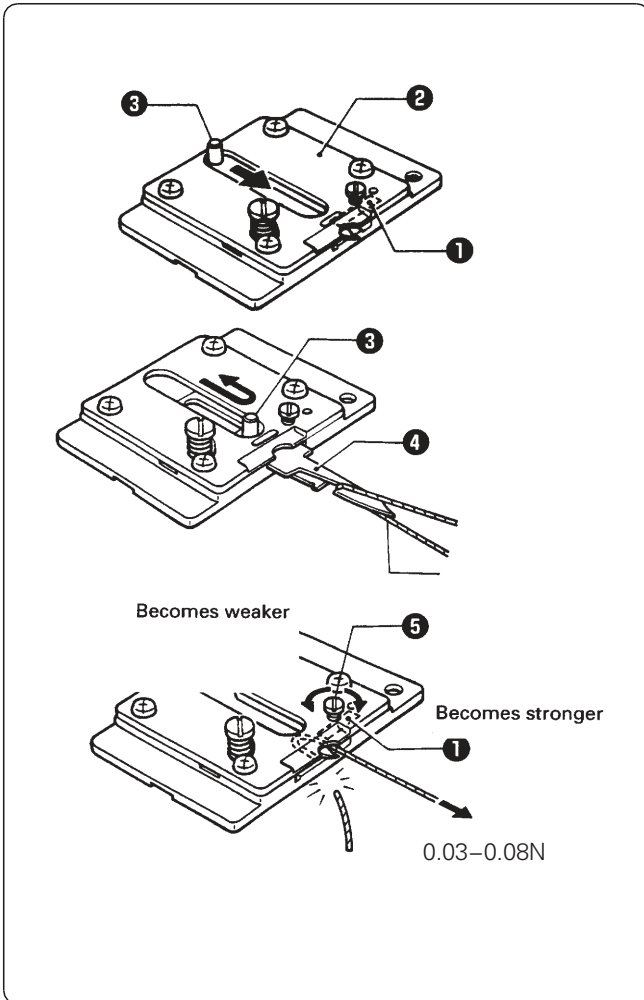
1. Tilt back the machine head.
2. Loosen the two screws ②.
3. Move the stopper ④ to adjust so that the edge of the movable knife ③ is 0.5mm inside the edge of the knife unit ①.
4. Securely tighten the screws ②.
5. Loosen the two set screws ⑤ and the two set screws ⑥.
6. While pushing the thread trimming driving rod ⑦ by hand, adjust the horizontal position of the thread trimming cam ⑩ so that the roller ⑨ of the main lever ⑧ moves smoothly in and out of the straight section A of the groove in the thread trimming cam ⑩.
7. Provisionally tighten the two set screws ⑤.
8. Place the set screw collar (11) firmly against the thread trimming cam ⑩, and then securely tighten the two set screws ⑥.



■Rotating direction adjustment

1. While still pushing thread trimming driving rod ⑦ by hand, turn the machine pulley slowly by hand toward you until the reference line on the thread take-up lever (12) is aligned with the T mark on the face plate. Adjust the position of the thread trimming cam ⑩ so that the knife begins to move at this point.
2. Securely tighten the two set screws ⑤.
3. While still pushing thread trimming driving rod ⑦ by hand, turn the machine pulley slowly by hand toward you until the reference line on the thread take-up lever is aligned with the T mark on the face plate. Check that the knife begins to move at this point, and that it returns when the reference line is aligned with the U mark.

8-17. Adjusting the tension of the lower thread presser spring



Adjust the tension of the lower thread presser spring ① so that the tension is 0.03 to 0.11N(3 TO 11 GF)when the lower thread presser spring① is pulling the lower thread (nylon thread:100DX3Z)after thread trimming.

- 1.Remove the knife unit ②.
- 2.Move the knob ③to slide out the movable knife④,and then hook the thread as shown in the illustration.
- 3.Return the movable knife ④to trim the thread .After this, measure the tension of the lower thread presser spring① while it is pulling the lower thread.
- 4.Turn the screw ⑤to adjust the tension of the lower thread presser spring ①to 0.03 to 0.11N(3 to 11 gf).

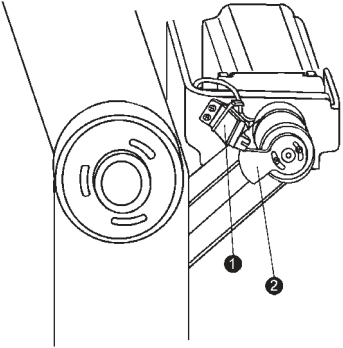
Note:

If using a tension gauge (sold separately)to measure the tension,take the reading from the scale on the side of the red line.

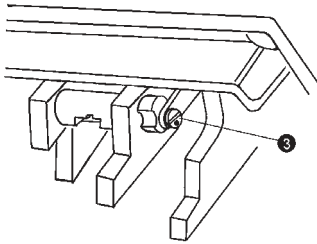
8-18. way of origin position setup

Steps of original position setup

- 1.install reverse sewing motor and sensor of origin position
- 2.link motor and sensor wire
- 3.When materials feeding amount is in O status move the front edge of sensor board to the center of sensor



turn on the switch and check the origin position of needle plate and reverse sewing motor



origin position of needle plate

NO → adjust the origin position of needle plate

YES

1. Select pattern 1
2. set needle gauge to O position on panel
3. put paper, move balance wheel by hand and check whether the paper is moving or not

no,

NO → 1.paper moving forward: If no, adjust position of sensor board to origin
2.push pattern button 1 again to go back origin position

YES

- set by step-point button
E-: 99 stitch
F-: 0 stitch
- 1.put paper and put down presser foot to sew(99 stitch)
 - 2.according to the moving situation of paper adjust the position of sensor board

Whether the paper move forward and backward

NO → 1.Take eccentric pin 3 to adjust
2.Push pattern button 1 once again to go back origin position
3.start sewing once again

YES

- 1.select L-stitch pattern size 7(Y direction 4 stitch X direction 2 stitch)
- 2.try for the 10 basic patterns

check whether sewing status is normal or not

NO → 1.Take eccentric pin 3 to adjust
2.Push pattern button 1 once again to go back origin
3.start sewing once again

YES

setup finished

9.CLEANING

• The following cleaning operations should be carried out each day in order to maintain the performance of this machine and to ensure a long service life.

Furthermore, if the sewing machine has not been used for a long period of time, carry out the following cleaning procedures before using it again.

⚠ CAUTION



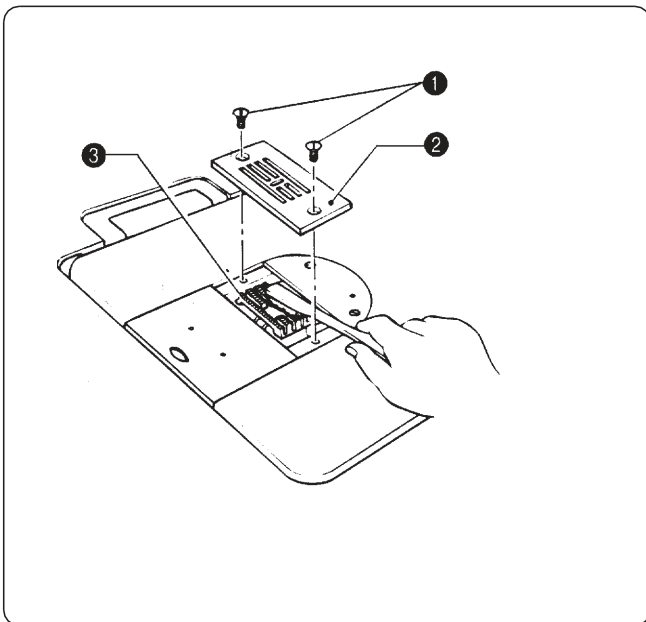
Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the treadle is pressed by mistake, which could result in injury.

* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

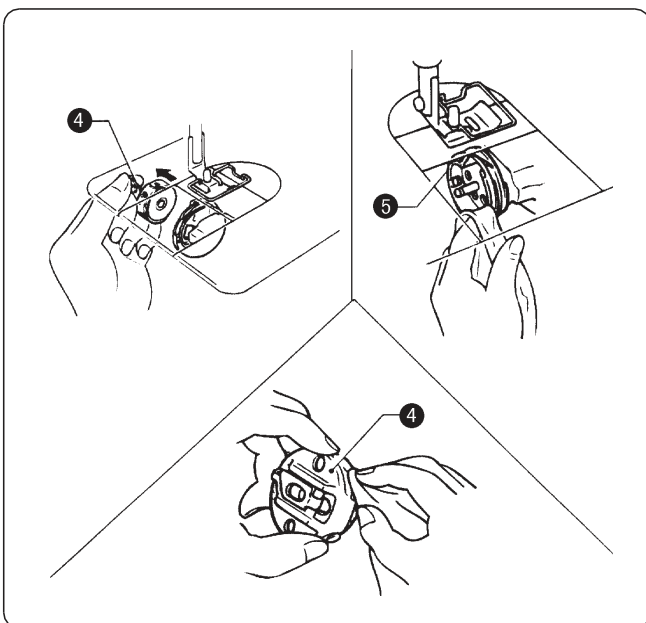
Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result.



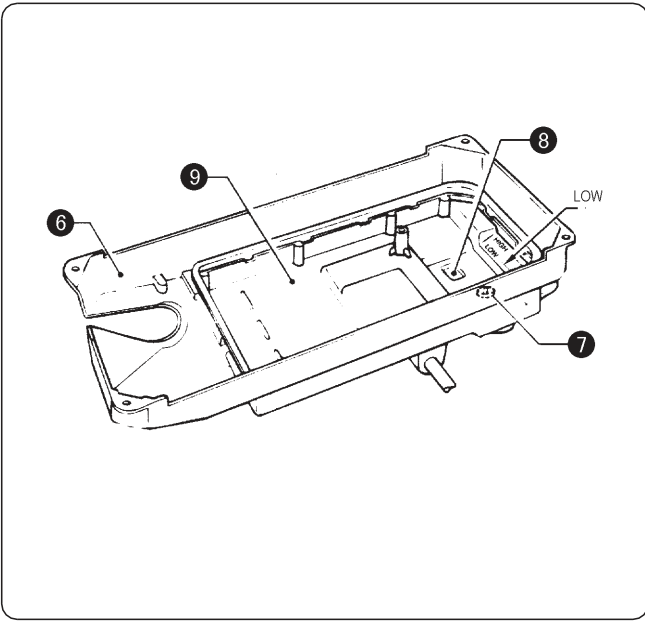
Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea. Keep the oil out of the reach of children.



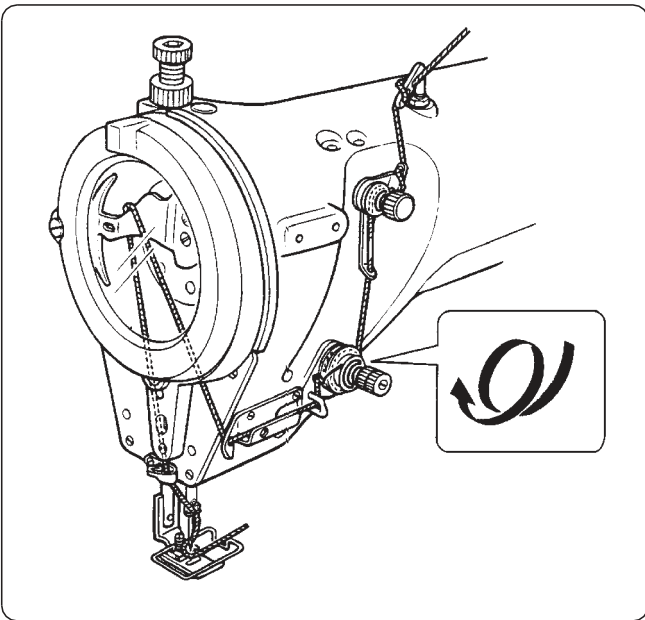
1. Raise the presser foot.
2. Remove the two screws (1), and then remove the needle plate (2).
3. Use a soft wire brush to clean any dust from the feed dog (3).
4. Install the needle plate (2) with the two screws (1).



5. Remove the bobbin case (4).
6. Wipe off any dust from the rotary hook (5) with a soft cloth, and check that there is no damage to the rotary hook (5).
7. Remove the bobbin from the bobbin case (4) and clean the bobbin case (4) with a cloth.
8. Insert the bobbin into the bobbin case (4), and then place the bobbin case (4) back into the machine.
9. Tilt back the machine head.



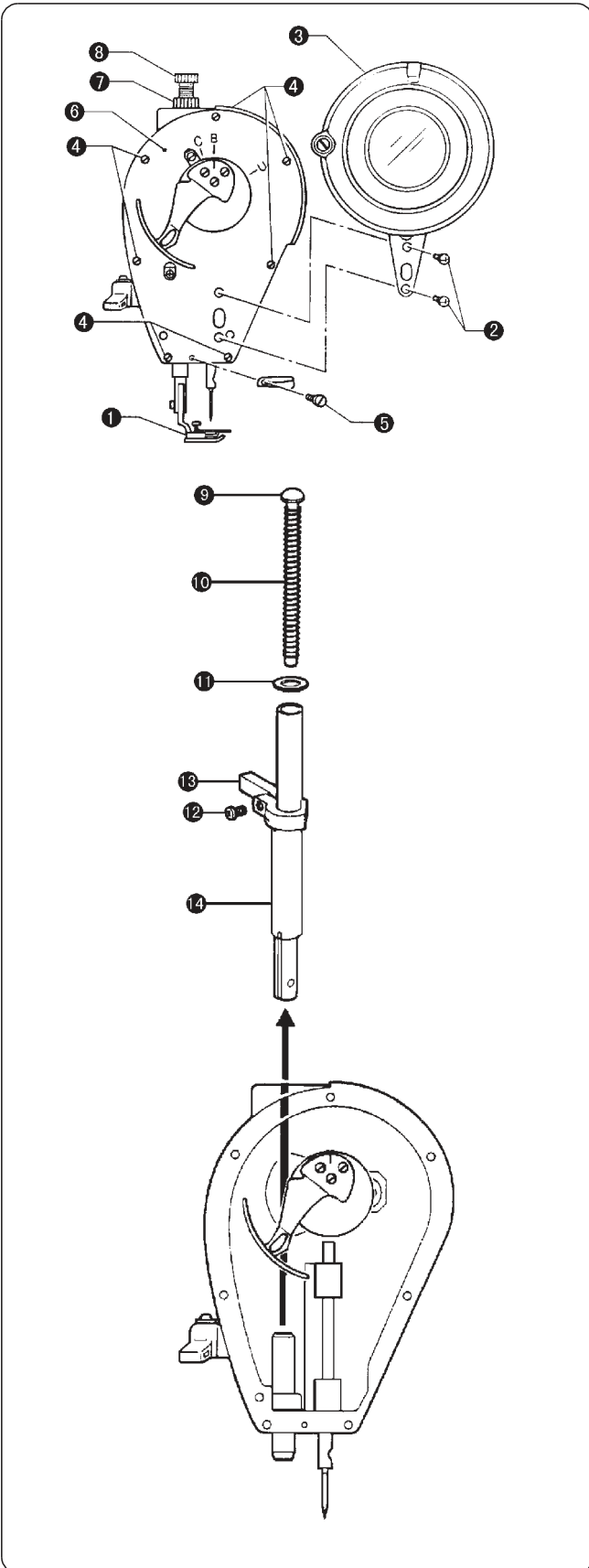
10. Clean the oil sump (6) with a cloth.
11. If the oil level drops below the LOW mark, add more lubricating oil.
 - Use only the lubricating oil specified by our company.
 - If the lubricating oil is contaminated, remove the oil cap screw (7) and drain the oil.
 - Clean off any dirt on the collection magnet (8) and in the oil pan (9).
12. Return the machine head to its original position.



13. Check that the rotary hook lubrication amount is correct. If it is not correct, re-adjust.
14. Replace the needle if it is bent or if the tip is broken.
15. Check that the upper thread is threaded correctly.
16. Carry out a test sewing.

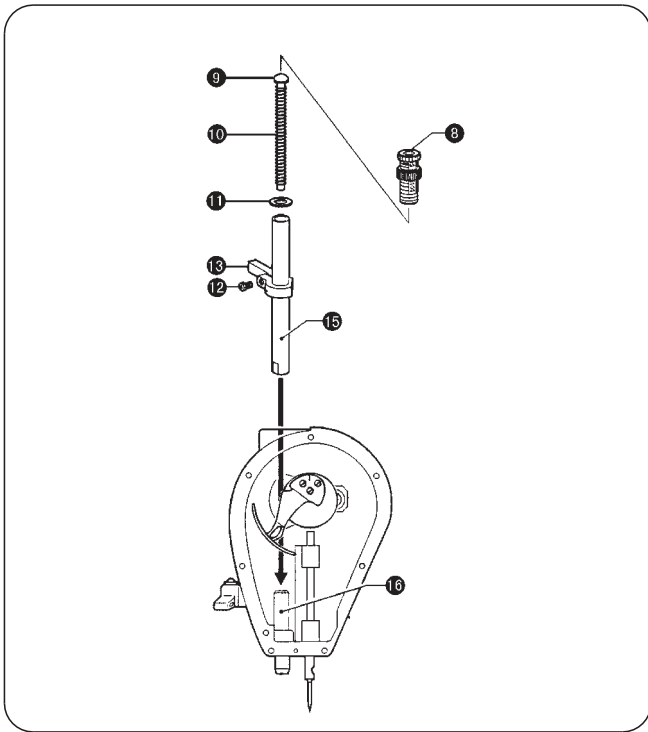
10.INSTALLING OPTIONAL PARTS

10-1.Presser bar U and presser bar tip



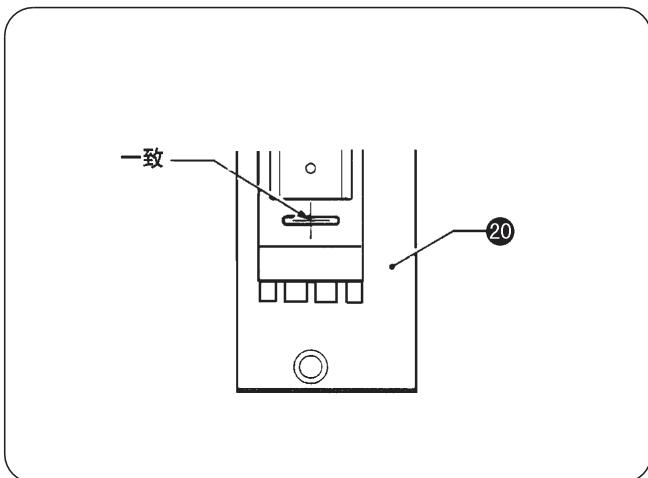
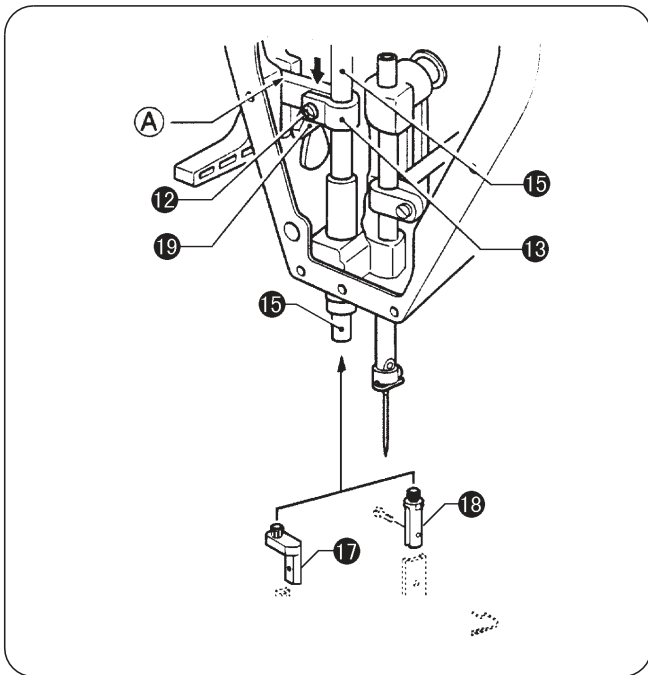
<Removal>

- 1.Remove the presser foot(1).
- 2.Remove the two wcrews (2),and then remove the thread take-up guard (3).
- 3.Remove the seven screws (4) and the screw (5), and then remove the face plate (6).
- 4.Loosen the nut (7),and then unscrew and remove the ad justment screw (8).
- 5.Remove the spring guide (9), spring (10) and washer(11)
- 6.Loosen the screw (12),and then remove the guide bracket (13).
- 7.Pull the presser bar (14) up to remove it.



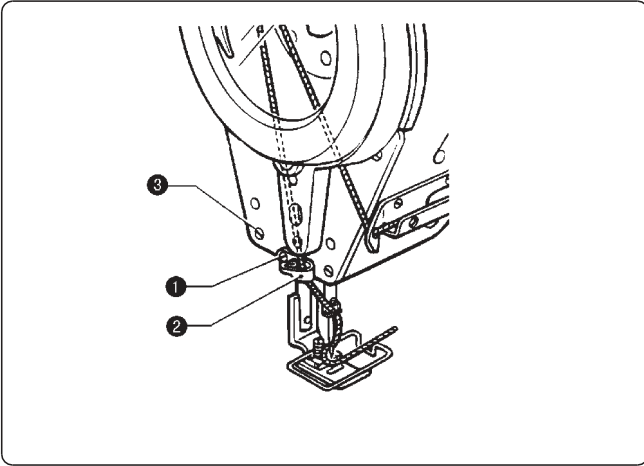
<Installation>

1. Pass presser bar U (15) through the bushing (16) from above.
2. Use a spanner or similar tool to securely tighten presser bar tip A (17) or presser bar tip B (18) into presser bar U (15)
3. Fit the guide bracket (13) into presser bar U (15) and the groove in the arm, and provisionally secure it in place with the screw (12).
4. Install the presser foot to presser bar tip A (17) or presser bar tip B(18).
5. Install the washer (11), spring guide (9) and spring (10).
6. Tighten the adjustment screw (8).
7. Loosen the screw (12), align the presser foot with the groove in the needle plate (20), and then carry out the adjustment in "Adjusting the presser foot height".
* When tightening the screw (12), lower the guide bracket (13) until it is touching the lifter lever (19), and then tighten the screw (12).
8. Install the face plate (6) with the screws (4) and the screw (5).
9. Install the thread take-up guard (3) with the screws(2)

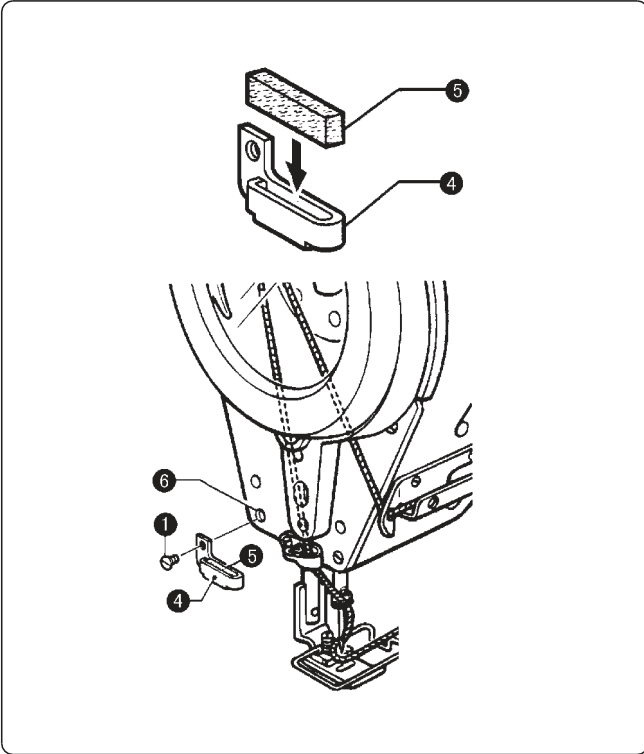


10-2.Thread guide F

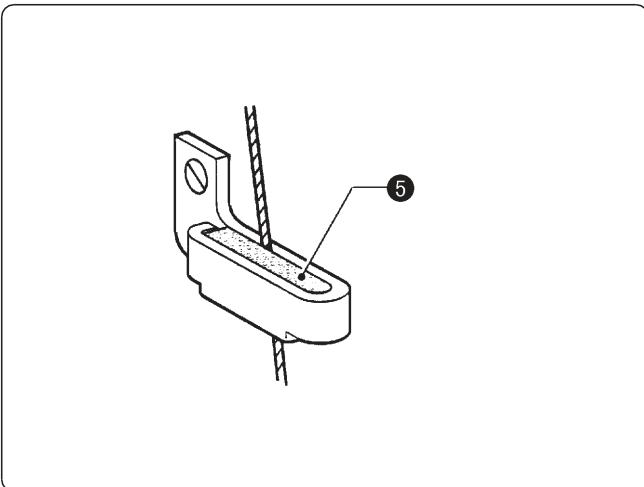
• Thread guide F prevents flapping of the upper thread, which can otherwise cause skipped stitches and thread breakages when sewing coarse materials.



- 1.Remove the screw (1), and then remove the standard thread guide (2).
- 2.Remove the screw (3) which is securing the face plate.



- 3.Install the felt (5) to thread guide F(4).
- 4.Use the screw (1) which was installing the standard thread guide (2) to install thread guide F(4) to the hole (6) left by the screw (3).



<Threading the upper thread>

Pass the upper thread through the rear side of the felt (5).

11.TROUBLESHOOTING

•Please check the following points before calling for repairs or service.





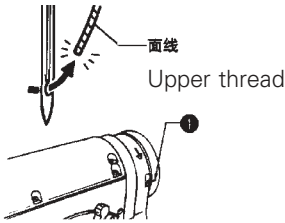
•If the following suggestions do not solve the problem, turn off the machine power supply and contact your nearest service center.


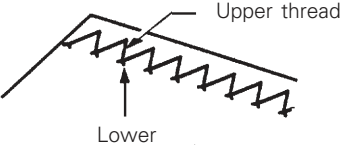

11-1.Machine head

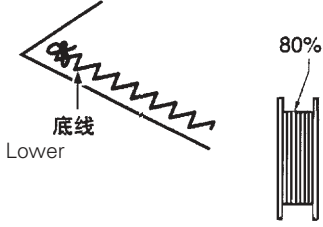
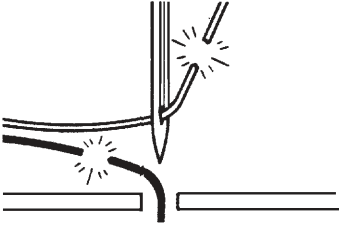
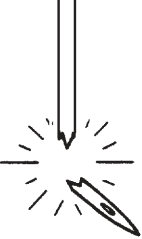
⚠ CAUTION



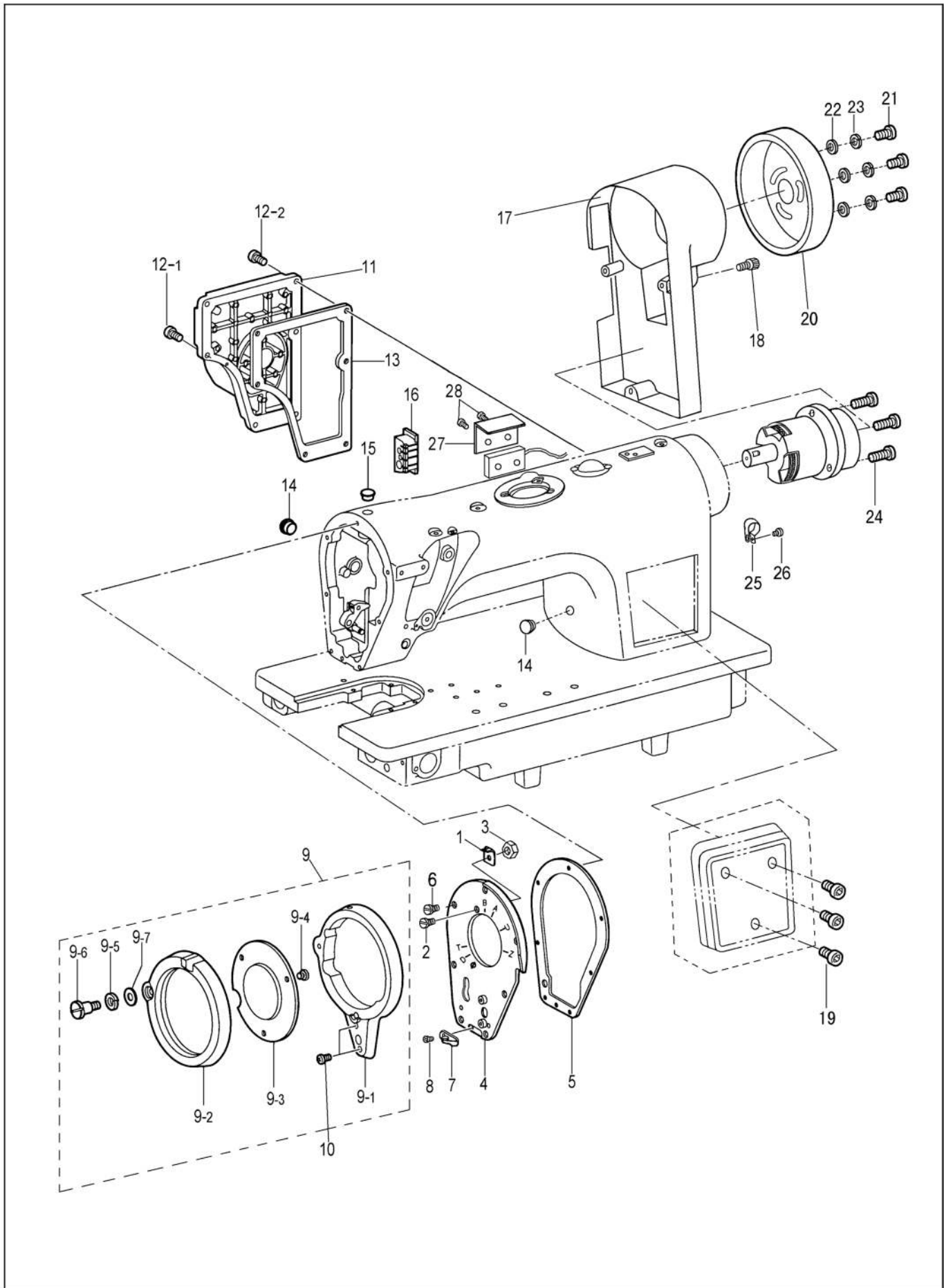
Turn off the power switch and disconnect the power cord before carrying out troubleshooting, otherwise the machine will operate if the treadle is pressed by mistake, which could result in injury.
* When using a clutch motor, the motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

Problem	Possible cause
<p>1.Upper thread is not tight</p> 	<ul style="list-style-type: none"> •Is the upper thread tension too weak, or is the lower thread tension too strong? Adjust the upper thread tension or lower thread tension.
<p>2.Lower thread is not tight.</p> 	<ul style="list-style-type: none"> •Is the lower thread tension too weak, or is the upper thread tension too strong? Adjust the lower thread tension or upper thread tension.
<p>3.Skipped stitches occur while sewing</p> 	<ul style="list-style-type: none"> •Is the needle tip bent? Is the needle tip blunt? If the needle tip is bent or broken,replace the needle. •Is the needle properly installed? If it is incorrect, install the needle correctly. •Is the machine properly threaded? If it is incorrect, thread the thread correctly. •Is the presser foot pressure too weak? Adjust the presser foot pressure. •Is the needle too thin? Replace the needle with a needle that is one rank thicker. •Is the presser foot too high? Adjust the height of the presser foot. •Is the needle and rotary hook timing incorrect? Adjust the height of the needle bar. Adjust the clearance between the needle and the rotary hook. •Is the thread tension spring too weak? Adjust the tension of the thread tension spring.
<p>4.Skipped stitches at sewing start</p>  <p>Thread unravelling at sewing start</p> 	<ul style="list-style-type: none"> •Are the thread take-up spring tensions too strong? Reduce the tension of the thread take-up springs. •Is the thread tension spring operating range too large? Lower the position of the thread tension spring. •Is the needle too wide? Try using a needle with a count that is one lower than the current needle. •Is the reference line (1)on the machine pulley aligned with the mark on the belt cover at the sewing start? Align the reference line (1) on the machine pulley with the mark on the belt cover at the sewing start. •Is the length of thread trailing out from the needle hole too short? Align the reference line (1) on the machine pulley with the mark on the belt cover at the sewing start, and then pull out 50 mm of thread from the needle hole.

Problem	Possible cause
<p>5. Uneven seam</p> 	<ul style="list-style-type: none"> • Is the presser foot pressure too weak? Adjust the presser foot pressure. • Is the feed dog too low? Adjust the feed dog height. • Is the bobbin scratched? If the bobbin is damaged, smooth it with an oiled grindstone or replace it.
<p>6. Horizontal thread tightening not balanced</p> 	<ul style="list-style-type: none"> • Is the upper thread tension or lower thread tension too strong or too weak? Adjust the upper thread tension or lower thread tension. • Does the rotary disc rotate smoothly? Adjust the pre-tension. • Is the tension of the thread take-up spring correct? Adjust the tension of the thread take-up spring. • Is the stroke of the thread take-up spring correct? Adjust the position of the thread take-up spring. • Is the needle and rotary hook timing correct? Adjust the needle and rotary hook timing. • Is the needle and rotary hook timing correct? Adjust the height of the needle bar. Adjust the clearance between the needle and the rotary hook. • Is the thread too thick for the needle? Use the correct needle or the correct thread. • Is the rotary hook, bobbin case, thread take-up lever or some other part in the thread path damaged? Repair the damage, or replace the part with a new one.
<p>7. Large degree of puchering (excess tension)</p> 	<ul style="list-style-type: none"> • Is the upper thread tension too strong? Mark the upper thread tension as weak as possible. • Is the lower thread tension too strong? Mark the lower thread tension as weak as possible. • Is the point of the needle broken? If the point of the needle is broken, replace the needle. • Is the needle too thick? Replace with as thin a needle as possible. • Are the thread take-up spring tensions too strong? Mark the thread take-up spring tension as weak as possible. • Is the thread tension spring operating range too large? Lower the position of the thread tension spring to as low a position as possible. • Is the presser foot pressure too strong? Adjust the presser foot pressure. • Is the sewing machine running too fast? Check that an appropriate motor pulley (pulley diameter) which matches the maximum sewing speed and frequency is being used. If an incorrect motor pulley is being used, replace the motor pulley. • Is the angle of the feed dog incorrect? Tilt the front of the feed dog down slightly.


Problem	Possible cause
<p>8. Lower thread is tangled at the</p>  <p>The diagram shows a zigzag line representing a tangled lower thread. Below it, the Chinese characters '底线' (Bottom Line) and the English word 'Lower' are written. To the right, a bobbin is shown with a label '80%' indicating the winding amount.</p>	<ul style="list-style-type: none"> • Is the bobbin spinning direction correct when the lower thread is being pulled? Set the bobbin so that it turns in the opposite direction to the rotary hook. • Is there too much thread wound onto the bobbin? The bobbin winding amount should not be more than 80%. • Is the bobbin turning smoothly? If the bobbin is not turning smoothly, replace the bobbin. • Is a bobbin other than the light-alloy bobbins specified by our company being used? Use only bobbins which are specified by our company.
<p>9. Upper and lower threads are breaking.</p>  <p>The diagram shows a needle stitching through fabric. The upper and lower threads are shown breaking at the needle point, with starburst symbols indicating the breakage.</p>	<ul style="list-style-type: none"> • Is the needle bent or is the needle tip broken? Replace the needle if it is bent or broken. • Is the needle properly installed? If it is incorrect, install the needle correctly. • Is the needle properly threaded? If it is incorrect, thread the needle correctly. • Is the upper or lower thread tension too weak or too strong? Adjust the upper thread or lower thread tension. • Is the upper thread may be loose because the thread tension spring operating range is too small? Adjust the position of the thread tension spring. • Is the needle and rotary hook timing incorrect? Adjust the height of the needle bar. Adjust the clearance between the needle and the rotary hook. • Is the thread too thick for the needle? Use the correct needle or the correct thread. • Is the rotary hook, bobbin case, thread take-up lever or some other part in the thread path damaged? Repair the damage, or replace the part with a new one.
<p>10. Broken needles</p>  <p>The diagram shows a needle falling through fabric. The needle is broken into two pieces, with starburst symbols indicating the breakage.</p>	<ul style="list-style-type: none"> • Is the material being pushed or pulled with excessive force during sewing? • Is the needle properly installed? If it is incorrect, install the needle correctly. • Is the needle bent, is the needle tip broken, or is the needle hole blocked? Replace the needle. • Is the needle and rotary hook timing incorrect? Adjust the height of the needle bar. Adjust the clearance between the needle and the rotary hook. <p>Caution</p> <ul style="list-style-type: none"> • It is extremely dangerous to leave any pieces of broken needle sticking in the material. If the needle breaks, search for all pieces until the whole of the needle is found again. • Furthermore, we recommend that through steps be taken to account for such needles to comply with product liability regulations.

1. Machine body

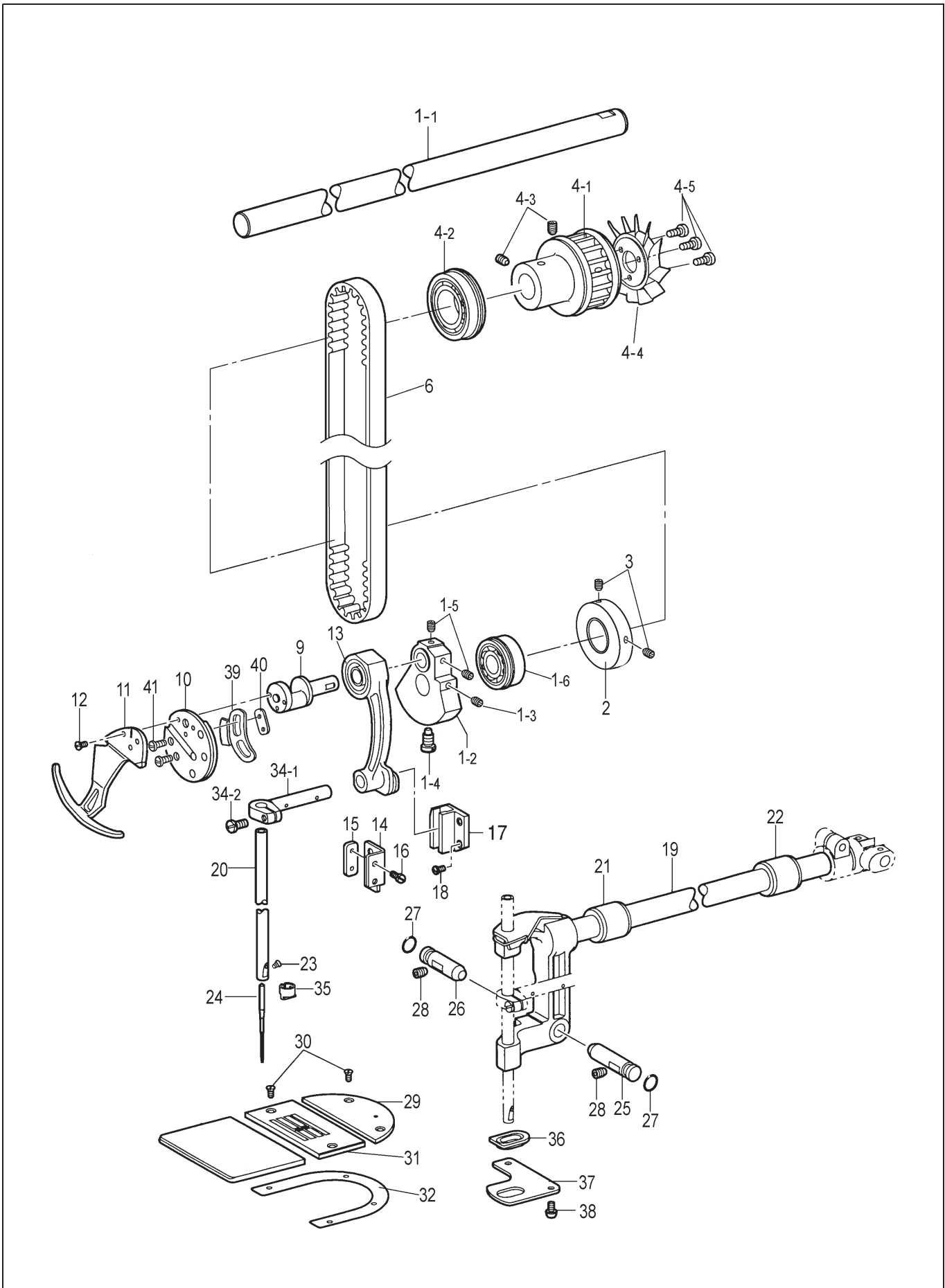


1. Machine body

No.	Ref.No.	Description	Qt	Note
1	203100009	Knife face plate	1	
2	BX09414009	Screw SM3.57 × 6	1	
3	B089430808	Nut SM3.57-40	1	
4	203170000	Face plate	1	
5	203100012	Packing, F-plate	1	
6	BX09414009	Screw, Flat SM3.57 × 6	7	
7	BX62001009	Thread guide	1	
8	B908572008	Screw SM3.57	1	
9	203160000	Thread take-up guard assy	1	
9-1	BX62099909	Thread take-up guard	1	
9-2	B952063001	Thread take-up guard cover	1	
9-3	203160001	Cover winder	1	
9-4	B969566009	Screw SM3.18-40 × 3	3	
9-5	BX58095009	Washer, wave spring	1	
9-6	BX62098909	Screw SM4.76	1	
9-7	B085330878	Shoulder screw, SM6.25	1	
10	B048429098	Screw SM4.37-40 × 10	2	
11	BX62097009	Rear plate	1	
12-1	B048429098	Screw SM4.37-40 × 10	4	
12-2	B048429698	Screw SM4.37-40 × 14	2	
13	BX62096000	Packing	1	
14	B906661009	Rubber cap 15.5	2	
15	B906289009	Rubber cap 10.5	2	
16	BX62755000	Cord bush	1	
17	203100013	Belt cover	1	
18	B048399898	Screw SM4.76-32 × 12	3	
19	S150220011	Screw M4 × 20	3	
20	203100010	Pulley	1	
21	B62401012	Screw M4 × 10	3	
22	S8A3103011	Washer M4	3	
23	217100024	Washer plain M4	3	
24	B048509294	Screw	3	
25	213000021	NYLON Cable holder (M)	1	
26	B040600294	Screw M4	1	
27	203100020	Protection cover	1	
28	S150216014	Screw M3 × 16	2	

*The part circled by  is supplied in complete set.

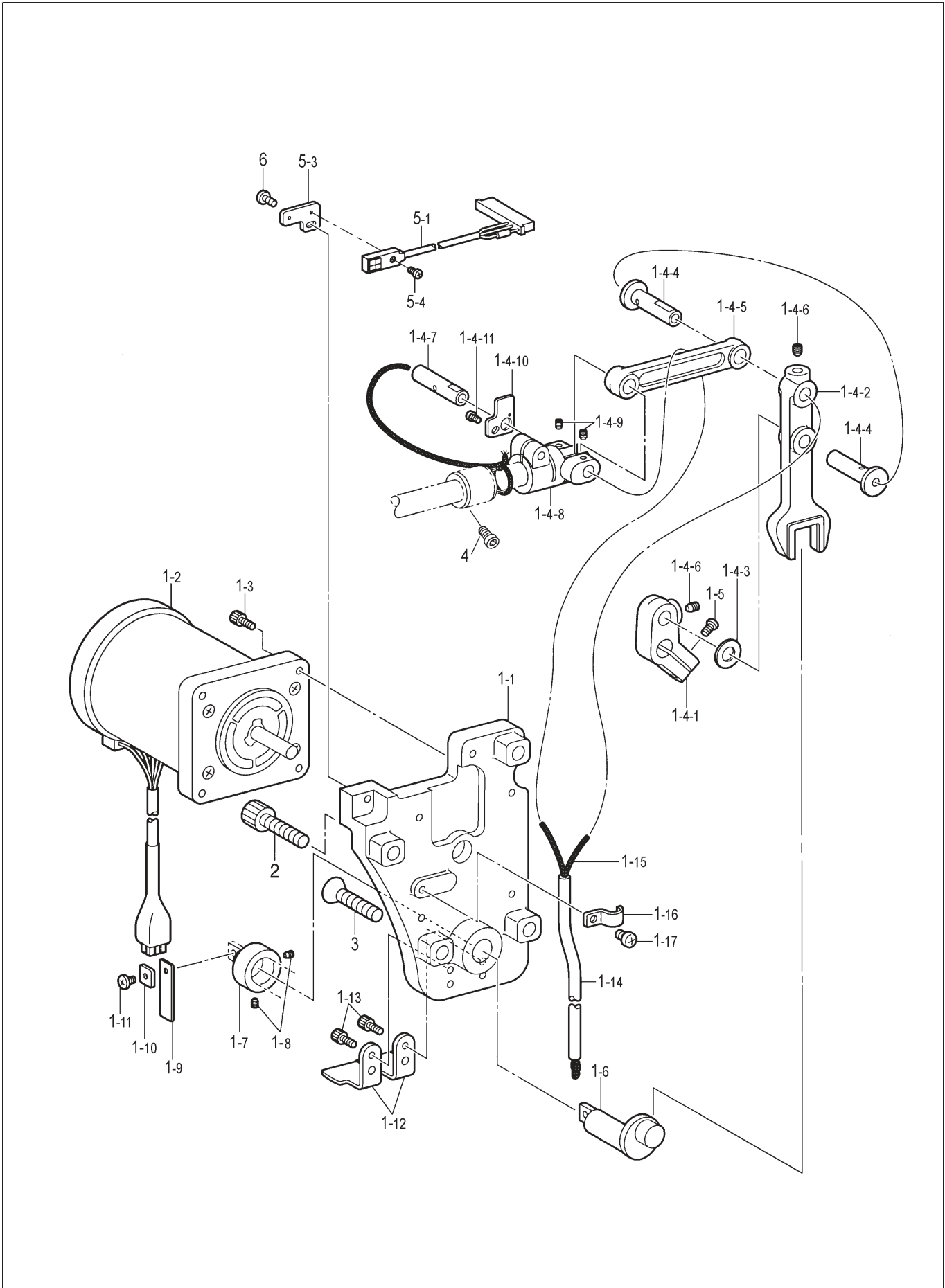
2. Needle bar and thread take-up mechanism



2. Needle bar and thread take-up mechanism

No.	Ref.No.	Description	Qt	Note
1-1	203100006	Upper shaft	1	
1-2	BX62083900	Thread take-up crank	1	
1-3	B096339088	Set screw SM6.35	1	
1-4	B906646009	Screw SM7.14-28	1	
1-5	B096330478	Set screw SM6.35	2	
1-6	B034808254	Ball bearing, 6202ZZNR	1	
2	203100008	Bobbin winder driving wheel	1	
3	B098500574	Screw M5 x 5	2	
4-1	203100007	Timing pulley assy	1	
4-2	S150866006	Ball bearing 6005ZZNR	1	
4-3	B096330478	Set screw SM6.35	4	
4-4	BX72397900	Fan	1	
4-5	B092600274	Screw M4 x 8	3	
6	BX56341009	Timing belt	1	
9	BX62074009	Thread take-up lever shaft	1	
10	203120000	Rotary take-up mounting plate	1	
11	BX56114009	Rotary take-up lever	1	
12	BX62069009	Screw flat Sm3.57	3	
13	BX62068009	Thread take-up lever set	1	
14	BX62065009	Guide,N-bar connecting rod	1	
15	BX62064009	Nut plate,SM4.37	1	
16	B905934009	Screw SM4.37	2	
17	BX62063009	Clamp guide,needle bar	1	
18	B905934009	Screw SM4.37	2	
19	203210000	Needle bar bracket	1	
20	BX62053909	Needle bar	1	
21	BX62052000	Bush, F	1	
22	BX62051000	Bush, R	1	
23	B960557908	Set screw SM3.18	1	
24	BX62850030	Needle 1965	1	
25	BX62049009	Pin F	1	
26	BX62048009	Pin R	1	
27	B029005030	O ring P5	2	
28	B096390588	Screw SM4.76	2	
29	BX62047009	Auxiliary needle plate	1	
30	BX62069009	Screw, flat SM3.57	4	
31	BY62046008	Needle plate	1	
32	BX04945009	Spacer,needle plate	1	
34-1	BX62030009	Needle bar clamp	1	
34-2	B965792009	Screw SM4.37	1	
35	BX53160009	Thread guide	1	
36	BX62037009	Stopper plate	1	
37	BX62038009	Stopper	1	
38	B957053909	Screw SM4.37	1	
39	203200001	Thread wiper driving	1	
40	203200002	Nut plate	1	
41	BX09414009	Screw, flat SM3.57x6	2	

3.Zigzag mechanism

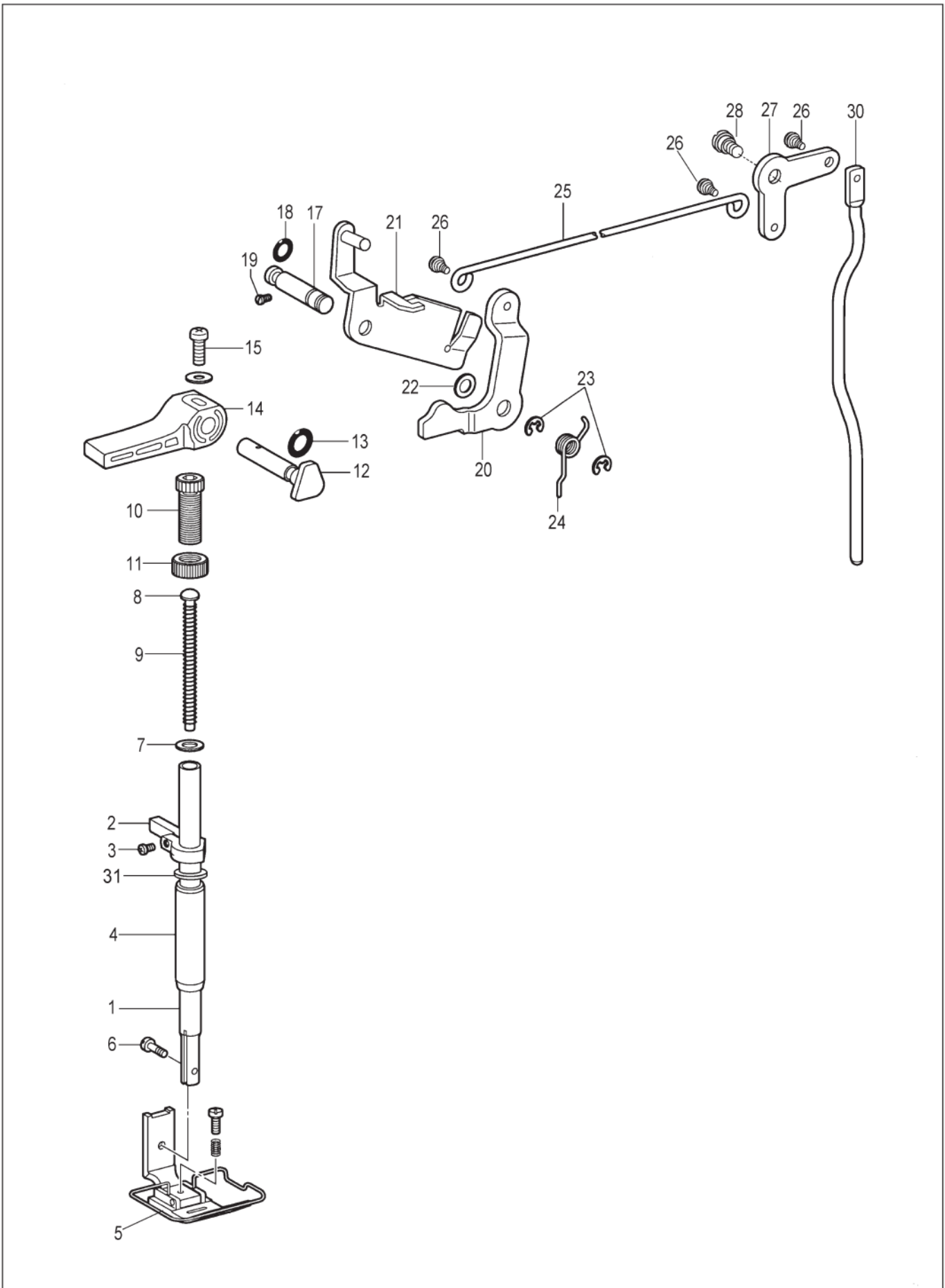


3. Zigzag mechanism

No.	Ref.No.	Description	Qt	Note
1-1	BX62847009	Setting bracket,motor	1	
1-2	203300003	Pulse motor	1	
1-3	S150220002	Screw M4 × 10	4	
1-4-1	203320001	Lever,motor	1	
1-4-2	BX62844009	Rock bracket	1	
1-4-3	B992375008	Washer plain	1	
1-4-4	BX62843009	Shaft,motor lever	2	
1-4-5	BX62842009	Connecting rod	1	
1-4-6	B098500574	Set screw M5 × 5	2	
1-4-7	BX62841009	Shaft connecting rod	1	
1-4-8	BX62830009	Joint	1	
1-4-9	B096420688	Screw SM4.37	2	
1-4-10	BX62754009	Home position olate	1	
1-4-11	B048430498	Screw 3.57-40 × 6	1	
1-5	B092509878	Screw M5X12	1	
1-6	BX62838009	Eccentric shaft	1	
1-7	B960018009	Set shaft collar	1	
1-8	B096420688	Set screw SM4.37-40 × 4	2	
1-9	BX62837000	Spring,plate	1	
1-10	BX62836009	Setting plate,spring	1	
1-11	B040429098	Screw SM4.37-40 × 10	1	
1-12	BX62835009	Clamp plate,spring	2	
1-13	B092600274	Screw M4 × 8	4	
1-14	BX03654000	Oil tube 3x5 L=160	1	
1-15		Wick 4x4	1	
1-16	203300002	Cord holder	1	
1-17	B048600494	Screw M4 × 6	1	
2	B092028588	Screw M8 × 25	3	
3	203300001	Screw flat M8 × 25	1	
4	B092049488	Screw M6 × 16	1	
5-1	203300004	Home position	1	
5-3	BX62833009	Sensor bracket	1	
5-4	B62300812	Screw M3 × 8	1	
6	B048600294	Screw M4 × 8	1	

*The part circled by  is supplied in complete set.

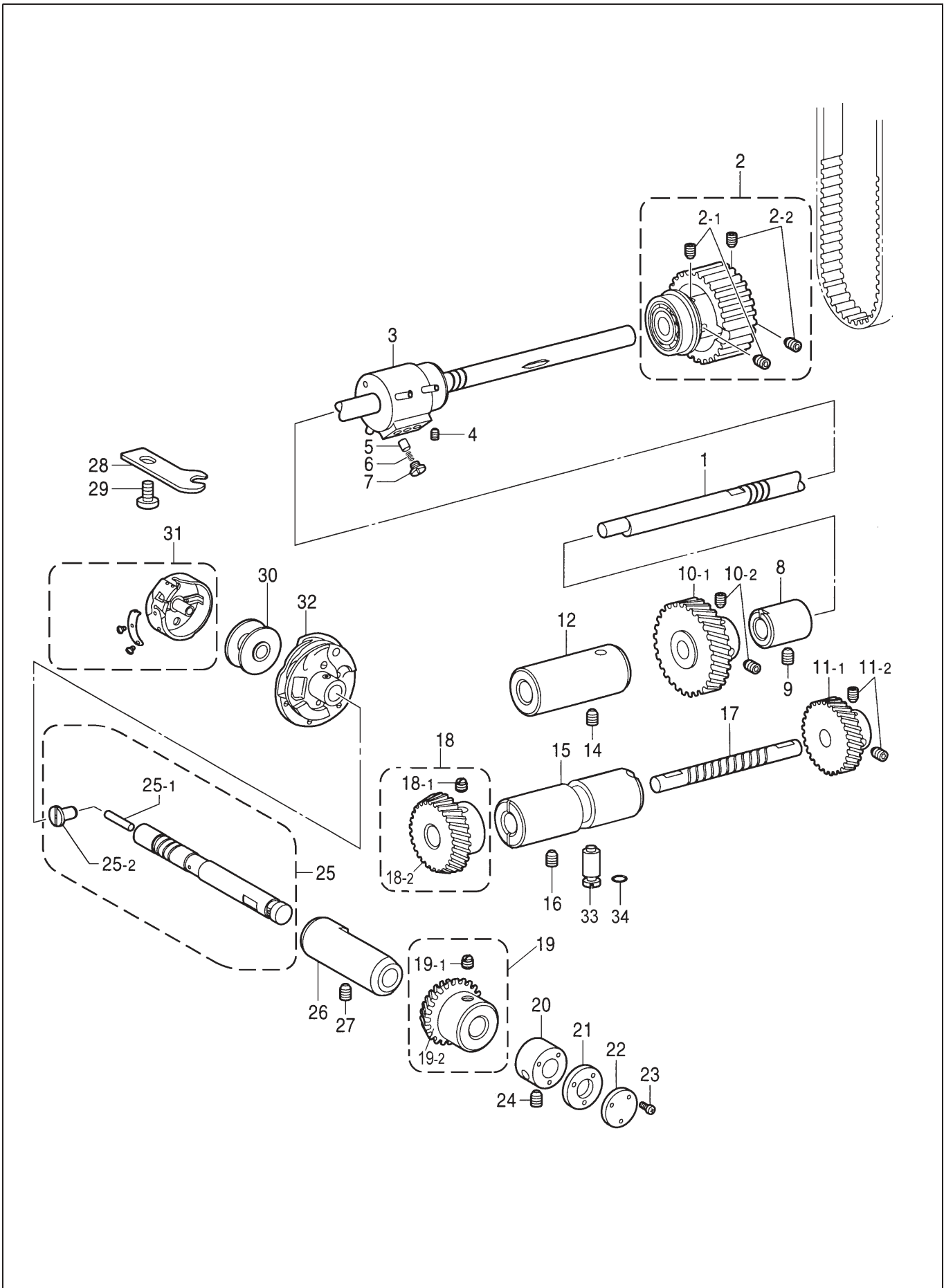
4. Presser foot mechanism



4. Presser foot mechanism

No.	Ref.No.	Description	Qt	Note
1	BX62829009	Presser bar	1	
2	BX62828009	Guide bracket bar	1	
3	B048429898	Screw SM4.37-40 x 12	1	
4	BX62752000	Bush presser bar	1	
5	BX62817008	Presser foot assy	1	
6	B997050009	Screw SM3.57	1	
7	B960603009	Washer	1	
8	BX86360009	Spring guide	1	
9	BX62824009	Spring compression	1	
10	BX57796009	Adjusting screw M16	1	
11	BX57795009	Adjusting nut	1	
12	BX79158009	Presser bar lifter crank	1	
13	B029006030	O ring p4	1	
14	BX79004009	Presser bar lifter	1	
15	BX71059009	Screw M3.5 x 12	1	
17	BX64376009	Lifter shaft	1	
18	B029009430	O ring pw1	1	
19	BX09112009	Screw M3.57-40 x 6	1	
20	B965520009	Presser bar lifter lever	1	
21	BX62823009	Tension release plate	1	
22	B901347008	Washer	1	
23	B062060768	Retaining ring E4	2	
24	BX64374009	Spring	1	
25	BX62819009	Connecting rod Knee lifter	1	
26	B965632909	Screw SM4.76	3	
27	B965631008	lever Knee lifter	1	
28	203600001	Shoulder Screw SM4.76	1	
30	BX62818009	Bar knee lifter	1	
31	B956514000	Cushion	1	

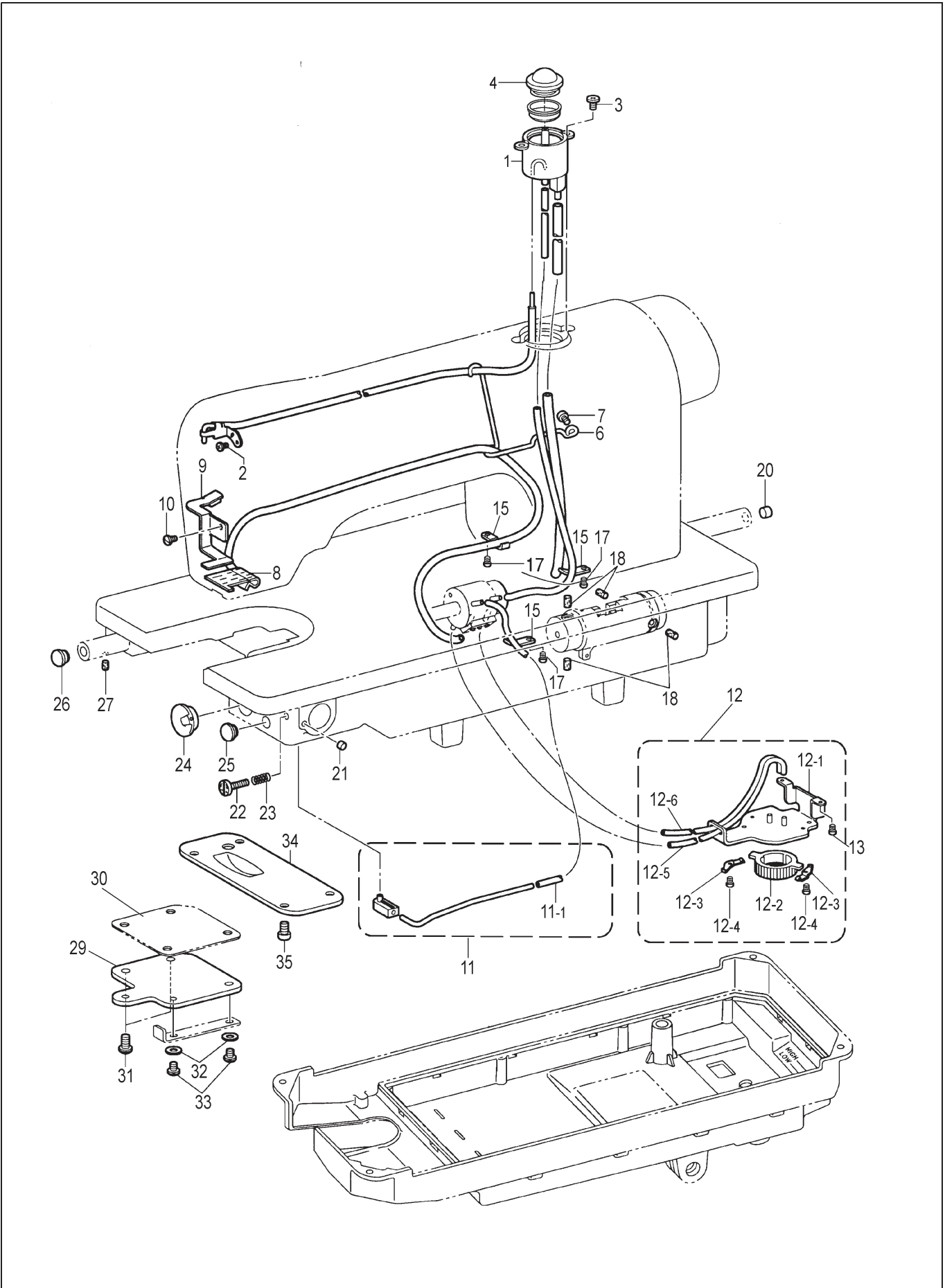
5. Lower shaft mechanism



5. Lower shaft mechanism

No.	Ref.No.	Description	Qt	Note
1	203700001	Lower shaft	1	
2	BX62952009	Timing pulley assy, D	1	
2-1	B096330488	Set screw, socket SM6.35	2	
2-2	B096339078	Set screw, socket SM6.35	2	
3	BX62940009	Bush assy, R L-shaft	1	
4	B097340490	Set screw, SM5.95	1	
5	B966235009	Plunger	3	
6	BX72842009	Spring compression	3	
7	B998643008	Screw, SM6.35 x 5	3	
8	BX55446000	Rush, L-shaft	1	
9	B096330490	Set screw, SM5.95	1	
10-1	BX62946909	Gear assy, L-shaft	1	
10-2	B096330488	Set screw, SM6.35 x 5	2	
11-1	BX62944009	Driving gear, R-hook	1	
11-2	B097340490	Set screw SM5.95	1	
12	BX62943000	Bush, F L-shaft	1	
14	B097340490	Set screw, SM5.95	1	
15	BX62942000	Bush, D-shaft	1	
16	B097340490	Set screw, SM5.95	1	
17	BX62941009	Driving shaft, R-hook	1	
18	BX00784009	Bevel gear assy, D	1	
18-1	B096330488	Set screw, socket SM6.35 x 5	2	
18-2	B960728009	Bevel gear, D	1	
19	B927703009	Bevel gear assy, L-shaft	1	
19-1	B096330488	Set screw, SM6.35 x 5	2	
19-2	B960727009	Bevel gear	1	
20	BXF9190009	Bush, f-hook shaft	1	
21	BX62939000	Packing	1	
22	BX62938009	Cap	1	
23	B048470398	Screw SM2.38-56 x 7	3	
24	B097340490	Set screw SM5.95	1	
25	BX62937009	Rotary hook shaft assy	1	
25-1	BX62934000	Felt	1	
25-2	B901937909	Screw	1	
26	BX62932009	Bush, R-hook shaft	1	
27	B097340490	Set screw SM5.95	1	
28	BX62931009	B-case holder position bracket	1	
29	BX040430298	Screw SM3.57-40 x 8	1	
30	B951952059	Bobbin	1	
31	BX62920909	Bobbin case assr	1	
32	BX62929008	Rotary hook assy, w/box: st	1	
33	B958432809	Adjusting stud	1	
34	B029007430	O ring, PW3	1	

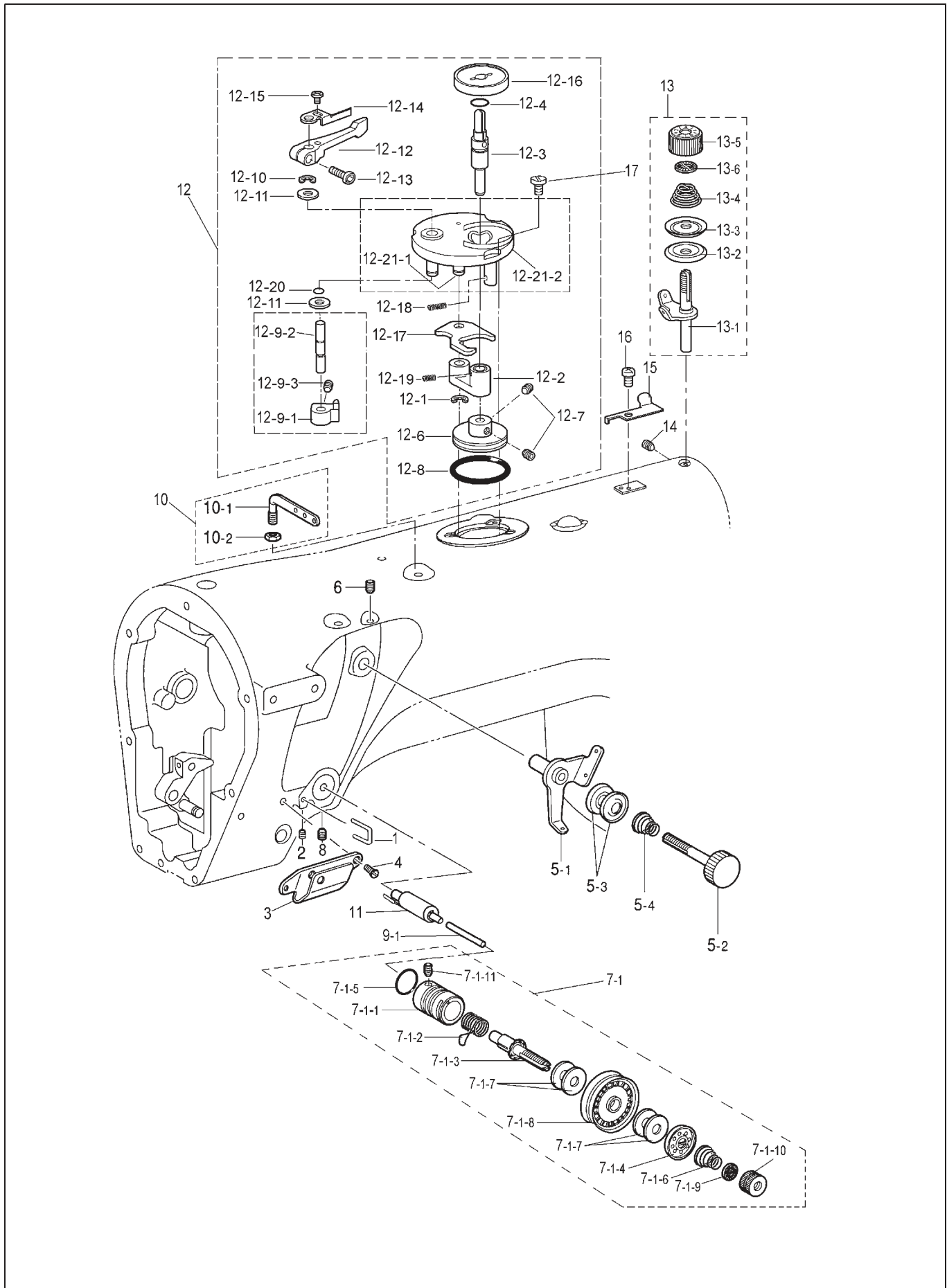
6.Lubrication



6. Lubrication


No.	Ref.No.	Description	Qt	Note
1	203130000	Oil cup assy	1	
2	B040430498	Screw SM3.57-40 x 7	2	
3	B040600294	Screw M4x8	2	
4	022180000	Oil window assy	1	
6	BX62919000	Tube holder	1	
7	B040600294	Screw M4 x 8	1	
8	BX62918009	Oil tube assy	1	
9	BX62915009	Holder left	1	
10	B100242003	Screw SM3.57-40 x 5	1	
11	BX62914009	Oil tube assy	1	
11-1	BX62911009	Tube L=150	1	
12	BX62800009	Oil filter assy	1	
12-1	BX62809909	Setting bracket filter	1	
12-2	B966238909	Pump filter	1	
12-3	B966236009	Spring	2	
12-4	B048430498	Screw SM3.57-40 x 6	2	
12-5	BX62911000	Tube L=150	1	
12-6	BX03654000	Tube L=160	1	
13	B048430298	Screw SM3.57-40 x 8	2	
15	BX08453909	Cord holder	3	
17	B048430498	Screw SM3.57-40 x 6	3	
18	B962367009	Felt	4	
20	BX80232000	Rubber cap 5.3	1	
21	B968836909	Rubber cap 4.2	1	
22	B965576009	Adjusting screw SM4.37-40 x 19	1	
23	B994316009	Adjusting spring	1	
24	BX62804000	Oil cap	1	
25	BX78847009	Rubber cap 8.5	1	
26	B906650909	Rubber cap 8	1	
27	BX85782009	Felt	1	
29	BX62801009	Gear cover R-hook shaft	1	
30	BX62890000	Packing gear cover	1	
31	B903603007	Screw SM4.37	2	
32	B900465007	Washer	2	
33	B048429698	Screw SM4.37-40 x 14	2	
34	BX62899009	Gear cover L-shaft	1	
35	B048420298	Screw SM4.37-40 x 8	4	

7. Threading mechanism

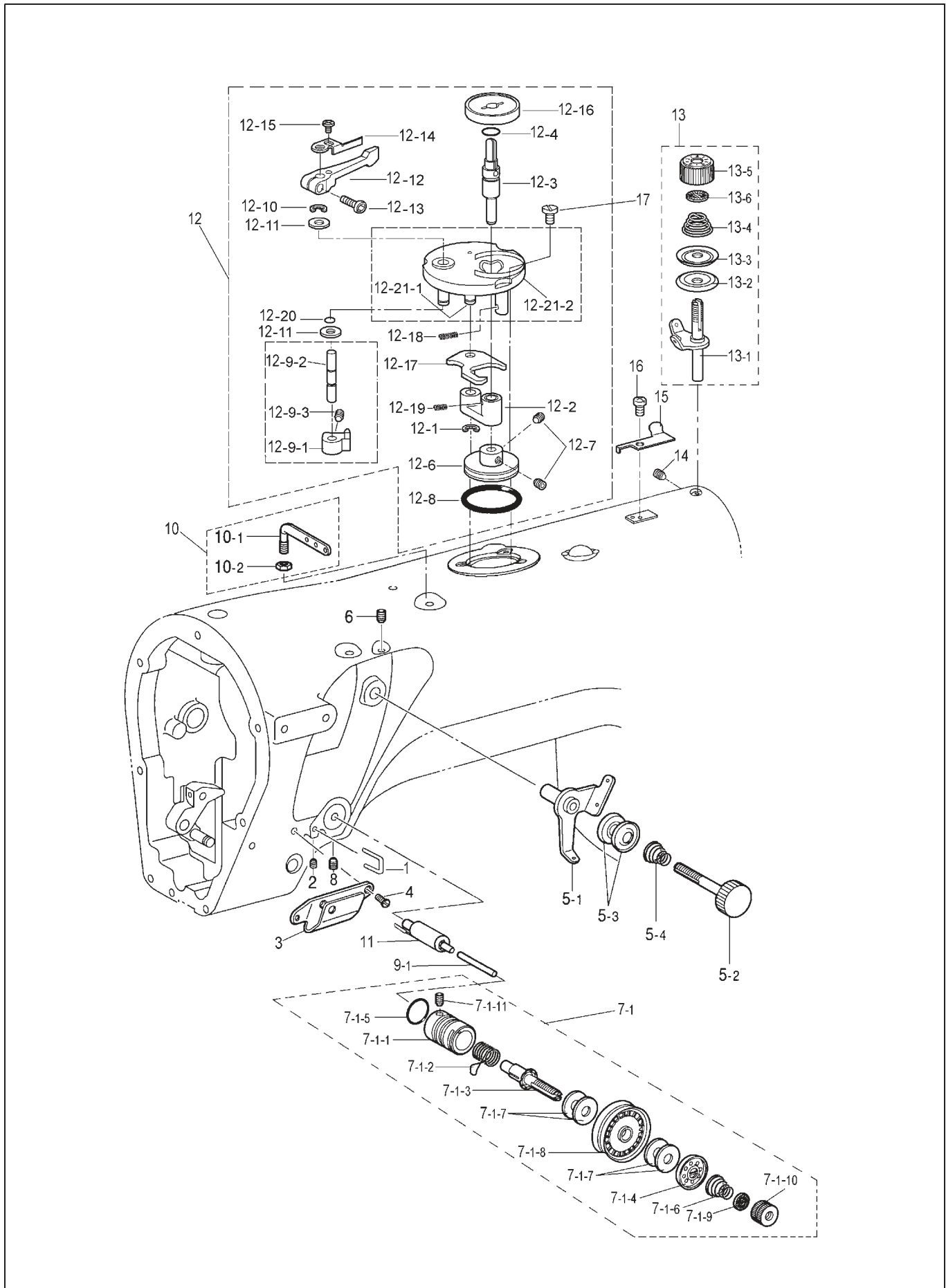


7. Threading mechanism

No.	Ref.No.	Description	Qt	Note
1	BXF8322009	Thread guide	1	
2	B097431698	Set screw, SM3.57	1	
3	BX62032009	Thread guide	1	
4	B908572008	Screw, Flat SM3.57	2	
5	BX62031909	Pre-tension assy	1	
5-1	BX62020909	Thread guide shaft assy	1	
5-2	BX08498009	Pre-tension stud	1	
5-3	B966506009	Disc, ththread guide	2	
5-4	B956548009	Spring, B: pre-tension	1	
6	B096420488	Set screw, SM4.37	1	
7-1	BX62027009	Thread tension assy	1	
7-1-1	BX62026009	Thread tension bracket	1	
7-1-2	BX62025009	Thread take-up spring	1	
7-1-3	BX62024009	Tension stud	1	
7-1-4	BX62023009	Disc presser, tension	1	
7-1-5	B029096230	O Ring	1	
7-1-6	BX62022009	Spring, tension	1	
7-1-7	BX62021000	Felt	4	
7-1-8	BX62010009	Rotary disc	1	
7-1-9	B959962009	Stopper, ML	1	
7-1-10	BX62730009	Tension nut	1	
7-1-11	B900608006	Set screw SM3.57	1	
8	BX90641009	Set screw, SM5.95	1	
9-1	BX09691000	Tension release pin	1	
10	BX70505009	Thread retainer assy	1	
10-1	B960583009	Thread retainer	1	
10-2	B950557007	Nut, SM5.95	1	
11	203600002	Tension release solenoid	1	


*The part circled by  is supplied in complete set.

7. Threading mechanism

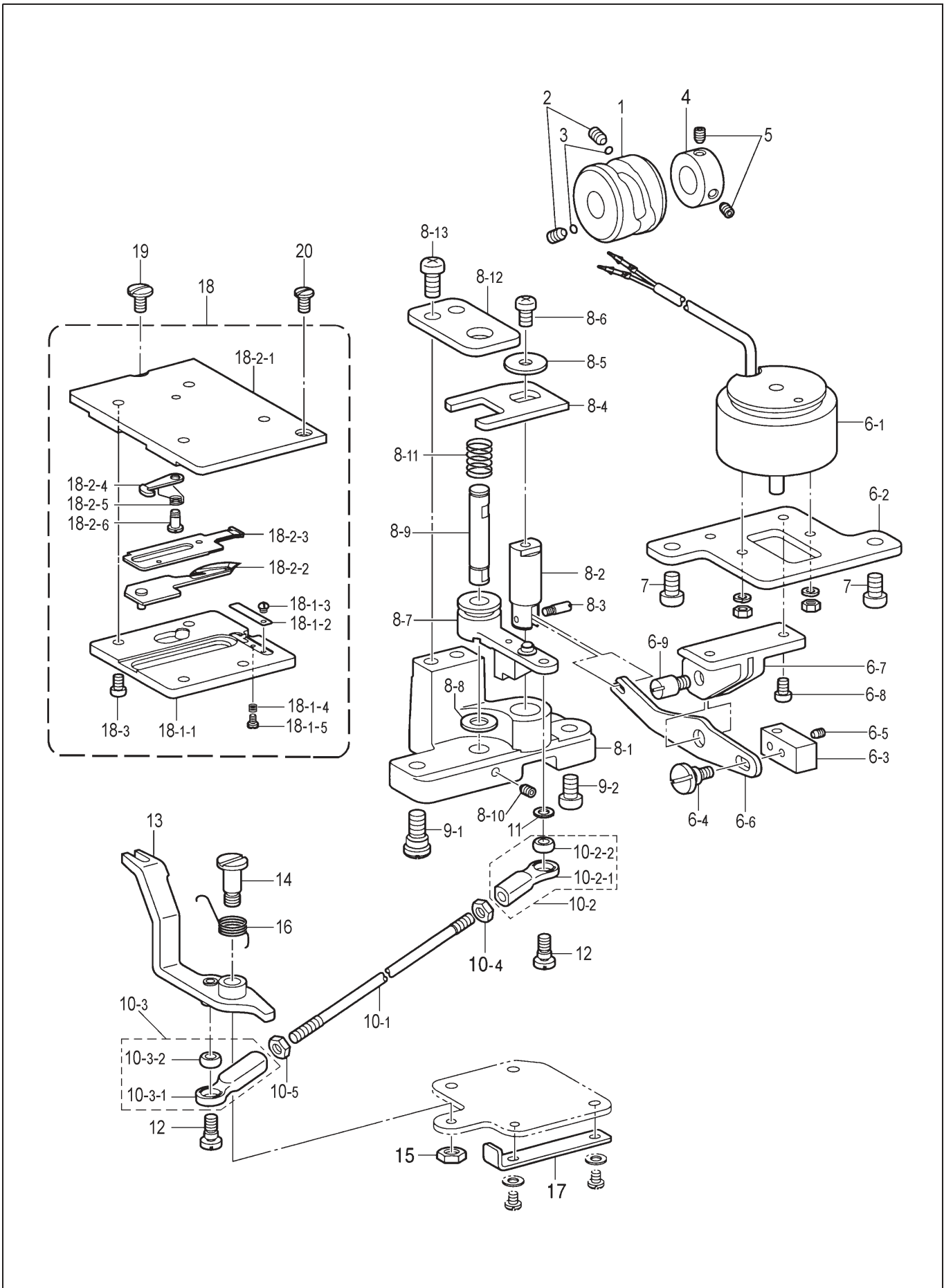


7. Threading mechanism

No.	Ref.No.	Description	Qt	Note
12	203910000	Winder assy	1	
12-1	B062060768	Retaining ring E4	1	
12-2	BXF9135009	Winder base assy	1	
12-3	203910001	Winder shaft	1	
12-4	217102002	O ring $\Phi 9.5 \times \Phi 2.5$	1	
12-5	B085040974	Washer S6	1	
12-6	BXF9120009	Washer toll	1	
12-7	S150224025	Screw M4 \times 6	2	
12-8	BX85321000	Rubber washer $\Phi 27 \times \Phi 7$	1	
12-9	BXF9129909	Bobbin climp cam assy	1	
12-9-1	BXF9128908	Bobbin climp cam	1	
12-9-2	BXF9127009	Bobbin climp shaft	1	
12-9-3	S150224026	Screw M5 \times 5	1	
12-10	B062060768	Retaining ring E4	1	
12-11	B085040974	Washer S6	2	
12-12	217100042	Bobbin arm shaft	1	
12-13	B048609894	Screw M4 \times 12	1	
12-14	BXF9125009	Bobbin climp	1	
12-15	BX87692008	Screw M4 \times 5	2	
12-16	217100033	Bobbin base	1	
12-17	BXF9121009	Winder rod	1	
12-18	BXF9110909	Spring	1	
12-19	BXF9119009	Spring	1	
12-20	BXF8910009	Retaining ring SS5	1	
12-21	BXF9138009	Winder plate shaft assy	1	
12-21-1	BXF9137009	Winder plate shaft	1	
12-21-2	BXF9136009	Winder plate	1	
13	BXF9116009	Winder tension assy	1	
14	B098500574	Screw M5 \times 5	1	
15	BXF7811009	Knife	1	
16	B048500494	Screw M5 \times 6	1	
17	BXF9118009	Screw	3	


*The part circled by  is supplied in complete set.

8.Thread trimmer mechanism

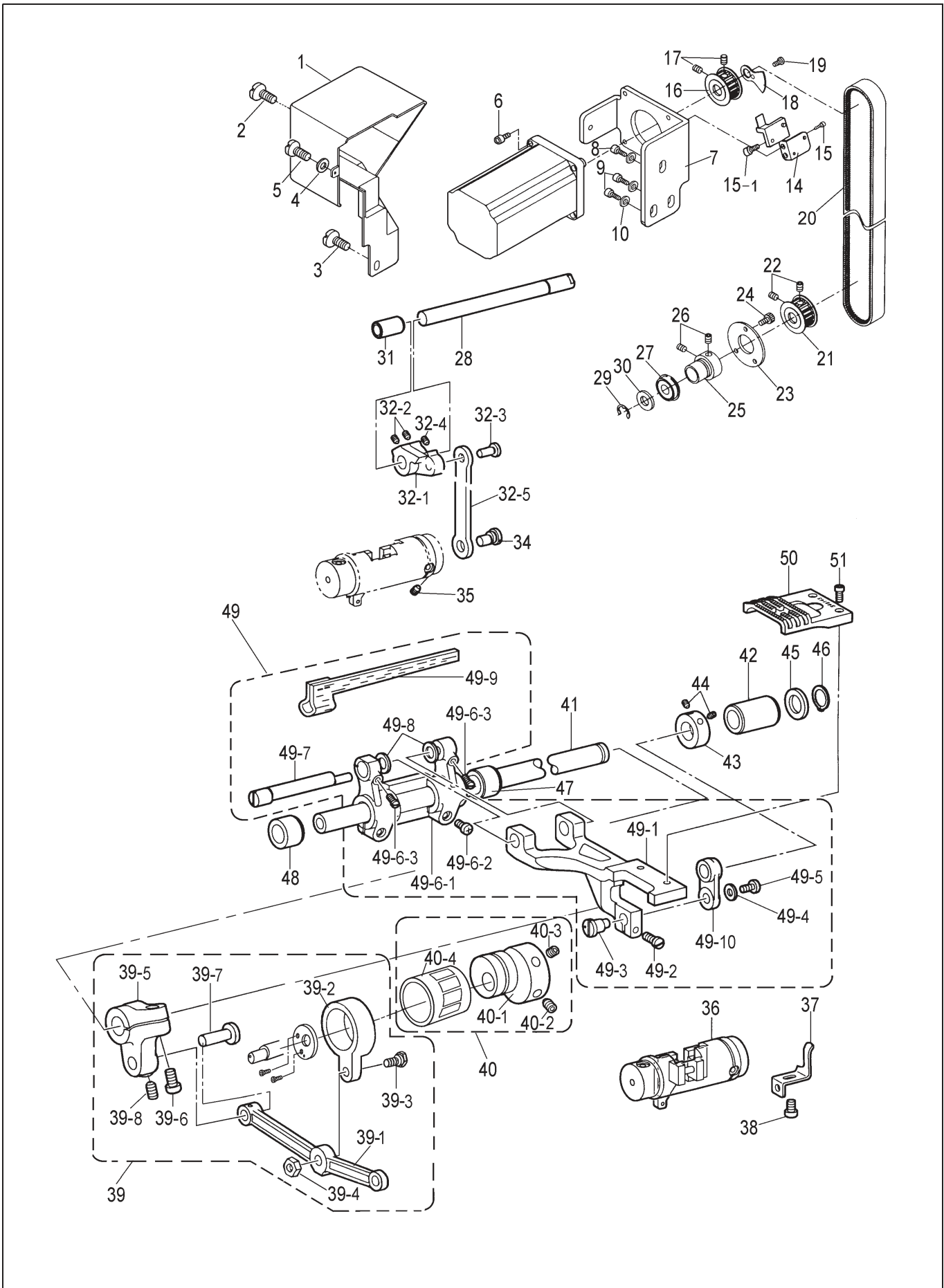


8. Thread trimmer mechanism

No.	Ref.No.	Description	Qt	Note
1	BX62888009	Thread trimmer cam	1	
2	B096330488	Screw SM6.35	2	
3	B963959000	Washer	2	
4	203400019	Set screw collar	1	
5	BX87459009	Set screw M6 × 6	2	
6-1	203540000	Thread trimmer solenoid assy	1	
6-2	BX62885009	Solenoid plate	1	
6-3	BX03613909	Thread trimmer solenoid joint	1	
6-4	B966584009	Shoulder screw	1	
6-5	B096420478	Screw SM4.37	1	
6-6	BX62884009	Lever solenoid	1	
6-7	BX03611009	Solenoid lever bracket	1	
6-8	B048420298	Screw SM4.37-40 × 8	2	
6-9	BX03500009	Plunger pin	1	
7	B092049088	Screw pan M6 × 10	2	
8-1	BX62882009	Support bracket	1	
8-2	BX03509009	Thread trimmer driving rod	1	
8-3	B962564009	Plunger pin	1	
8-4	BX62881009	Connecting plate	1	
8-5	B994448007	Washer	1	
8-6	B048399098	Screw SM4.76-32 × 10	1	
8-7	203510000	Main lever assy,knife	1	
8-8	B962551900	Rubber	1	
8-9	203500010	Y-driving gear shaft	1	
8-10	B096340488	Screw SM5.95	1	
8-11	BX62870009	Spring	1	
8-12	BX66987009	Support plate	1	
8-13	B048349898	Screw SM5.95-28 × 12	2	
9-1	203500008	Shoulder crew	1	
9-2	B092048088	Stud M6 × 20	1	
10	203530000	Knife driving rod assy	1	
10-1	BX62878009	Knife driving rod	1	
10-2	BX03598009	Joint assy R	1	
10-3	BX03596009	Joint assy L	1	
10-4	B900088005	Nut SM5.95	1	
10-5	B962518009	Nut SM5.95	1	
11	B955551009	Washer	1	
12	BXF8441009	Shoulder screw	2	
13	BX62877009	Thread trimmer driving rod	1	
14	B961986009	Shoulder screw	1	
15	B900088005	Nut SM5.95	1	
16	BX62876009	Spring	1	
17	BX62875009	Stopper plate	1	
18	203550000	Knife assy	1	
18-1-1	BX62872009	Knife holder	1	
18-1-2	BX62871009	Spring plate	1	
18-1-3	B900905005	Screw SM2.38 × 2.4	1	
18-1-4	BX62860009	Spring	1	
18-1-5	BX62863009	Screw M2.38 × 5	1	
18-2-1	BX62868009	Knife bracket	1	
18-2-2	BX62867009	Movable kinfe	1	
18-2-3	BX62866009	Fixed knife	1	
18-2-4	BX62865009	Clutch, fixed knife	1	
18-2-5	BX62864009	Spring	1	
18-2-6	B995907009	Shoulder screw	1	
18-3	B960006009	Screw SM3.57-40 × 7	4	
19	B998359007	Screw SM3.57 × 7	1	
20	B960006009	Screw SM3.57-40 × 7	1	

*The part circled by  is supplied in complete set.

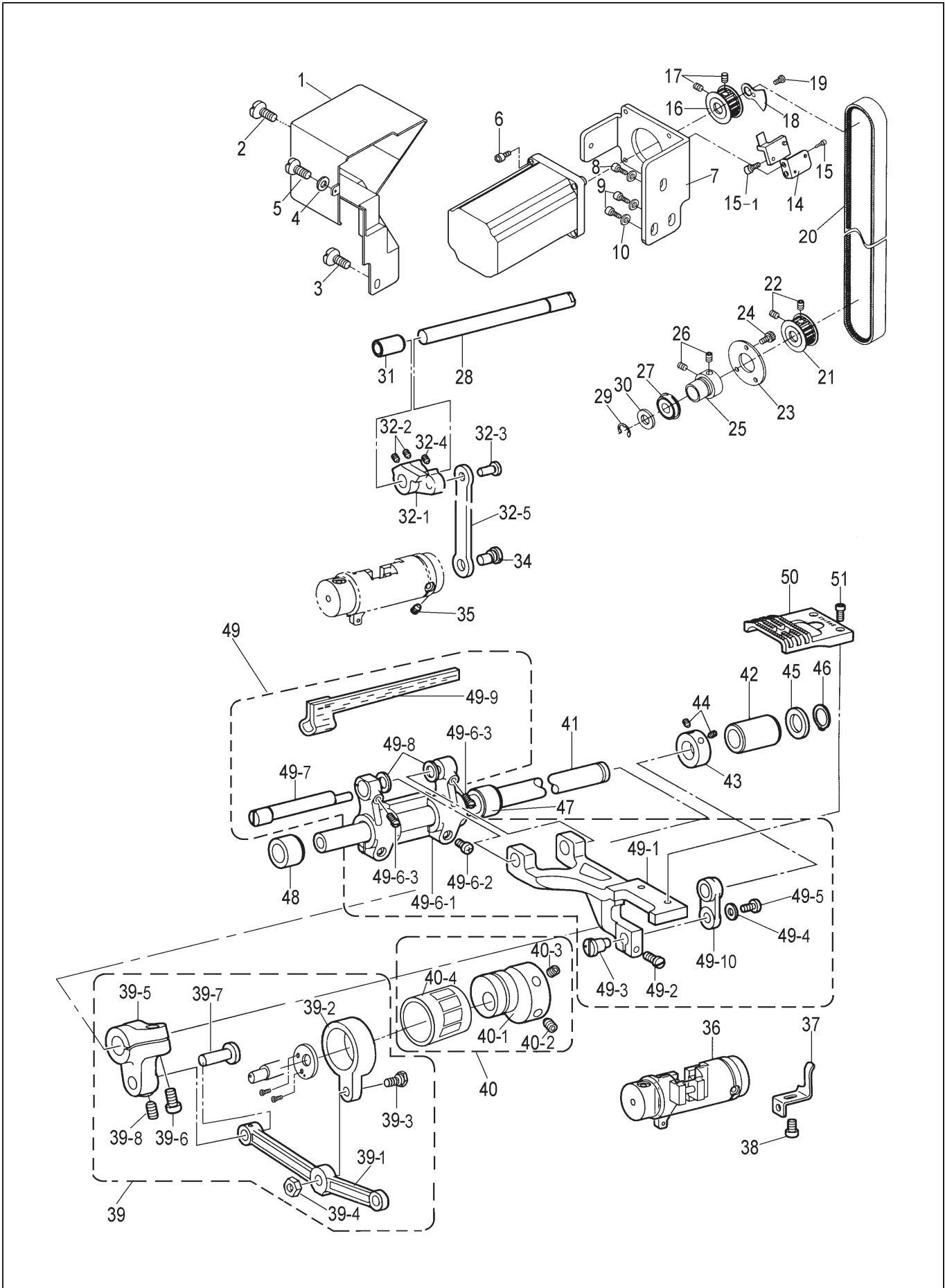
9.Feed mechanism



9. Feed mechanism

No.	Ref.No.	Description	Qt	Note
1	203400001	Motor cover	1	
2	B040429898	Screw SM4.37-40x12	1	
3	B048329698	Screw SM6.35-28x14	1	
4	B900465007	Washer M4	1	
5	B62401012	Screw M4x12	1	
6	B092609074	Screw M4x10	4	
7	203400003	Back tack motor bracket	1	
8	203400006	Screw SM6.35-28x14	1	
9	B048329698	Screw SM 6.35-28x14	2	
10	B995163009	Washer	3	
14	203400005	Sensor base	1	
15	B040430498	Screw SM3.57-40x6	2	
15-1	B62300812	Screw M3x8	1	
16	203410000	Timing pully-A assy	1	
17	B098500574	Screw M5x5	2	
18	203400007	Sensor slit	1	
19	B048700694	Condense regulator M3x4	2	
20	203400008	Timing belt	1	
21	203420000	Timing pully-B assy	1	
22	B098500574	Screw M5x5	2	
23	203400010	Cover for reverse lever shaft	1	
24	B092600274	Screw M4x8	3	
25	203400011	Bearing coilar	1	
26	B098500574	Screw M5x5	2	
27	150866063	Bearing 6002ZZNR	1	
28	203400013	Reverse lever shaft	1	
29	B062020768	Rastining Ring E8	1	
30	B085900978	Washer S10	1	
31	203400018	Reverse lever bushing	1	
32-1	BX62995009	Condense regulator	1	
32-2	BX87459009	Set screw M6 x 6	2	
32-3	B959702908	Connecting stud 12.5	1	
32-4	B098500574	Screw M5 x 5	1	
32-5	BX62994909	Connecting rod F-regulator	1	
34	BX03454008	Eccentric pin	1	
35	B098500574	Screw M5 x 5	1	
36	BX62980009	Feed regulator assy	1	
37	BX62961009	Stopper F-regulator	1	
38	B048390498	Screw SM4.76-32 x 6	1	
39	203430000	Connecting rod assy,side	1	
39-1	203430002	Connecting rod,side	1	

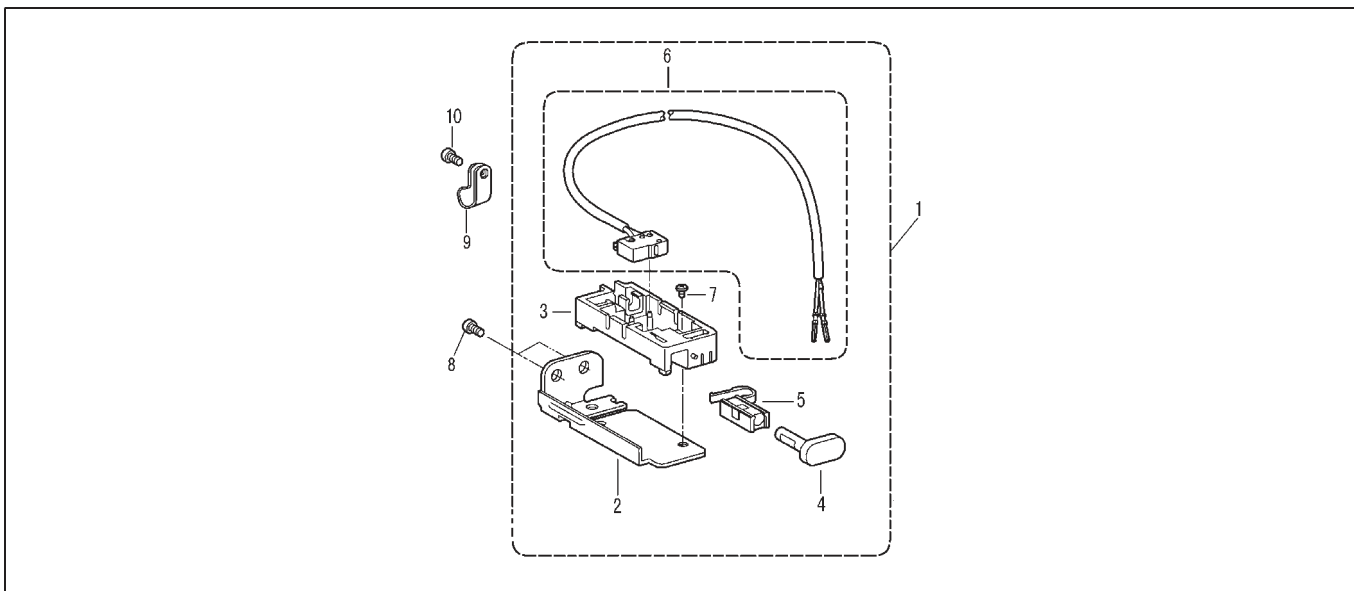
9.Feed mechanism



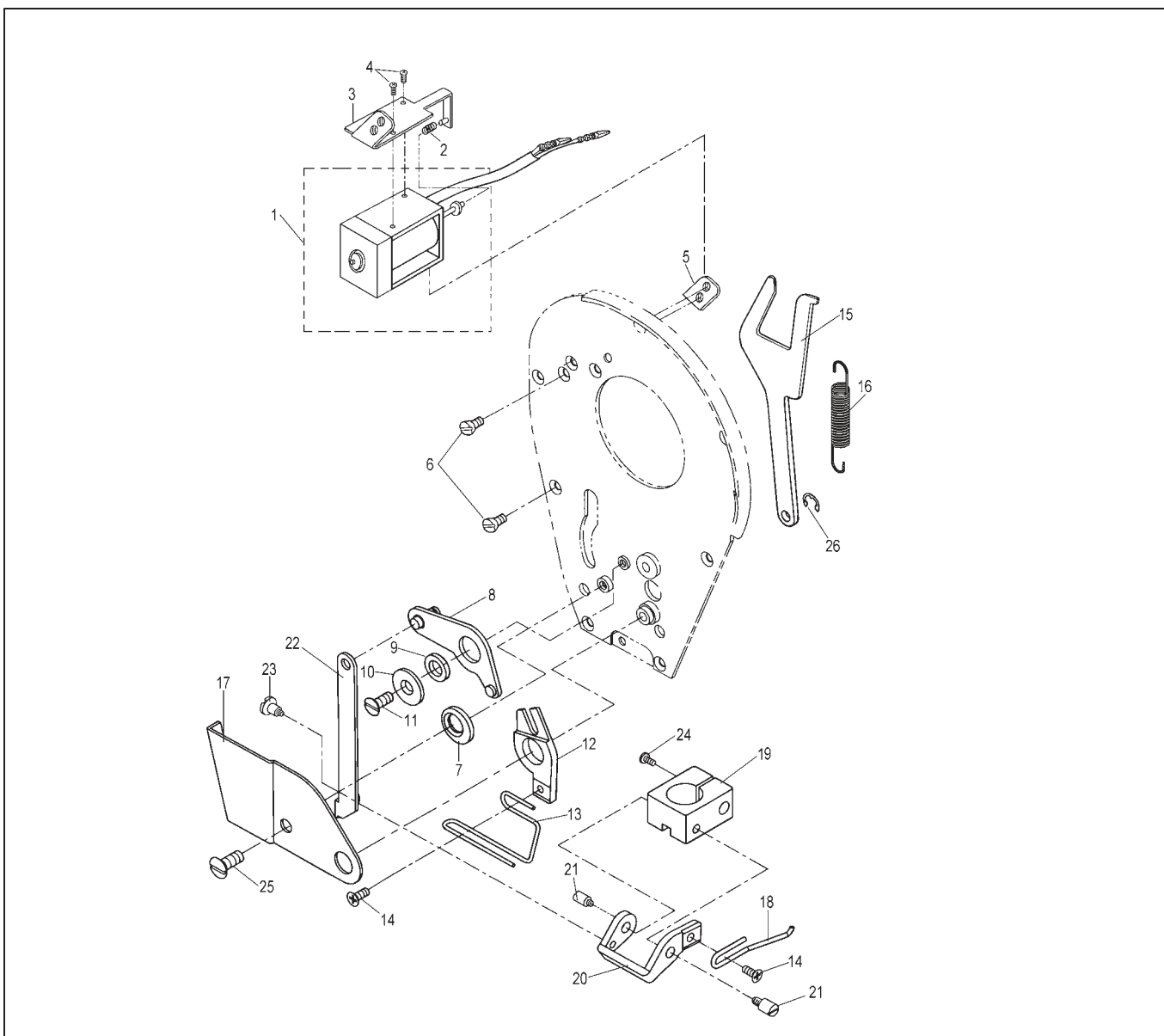
9. Feed mechanism

No.	Ref.No.	Description	Qt	Note
39-2	203430001	Connecting rod,driving	1	
39-3	203430003	Shoulder screw	1	
39-4	S120501011	NUT M6	1	
39-5	BXF9198009	Feed rocker crank	1	
39-6	B048349498	Set screw SM5.95-28 × 16	1	
39-7	BX57285009	Shaft 7.24	1	
39-8	B096340488	Set screw SM5.95	1	
40	BX62983009	L-feed eccentric wheel assy	1	
40-1	203400020	Lever feed eccentric wheel	1	
40-2	B992257009	Screw SM5.95	1	
40-3	B096349070	Screw SM5.95-28 × 10	1	
40-4	S150866062	Roller bearing K22 × 28 × 17	1	
41	BX62981009	Feed rocker shaft	1	
42	BX62970009	Bush R	1	
43	B964529009	Set screw collar	1	
44	B096340488	Set screw SM5.95	2	
45	B968482009	Washer	1	
46	B062990968	Retaining ring C11	1	
47	BX62979000	Bush M	1	
48	BX62978000	Bush L	1	
49	BX62977909	Feed bar set	1	
49-1	BX62976009	Feed bar	1	
49-2	B905937006	Screw SM4.76	1	
49-3	BX62975009	Pin	1	
49-4	B905949006	Washer	1	
49-5	B040440598	Screw SM3.18-40 × 5	1	
49-6	BX62973009	Feed rocker arm assy	1	
49-6-1	BX62972000	Feed rocker arm	1	
49-6-2	B980110009	Screw SM4.37-40 × 12	2	
49-6-3	B048429898	Screw SM4.37-40 × 8	2	
49-7	BX62971009	Feed rocker shaft	1	
49-8	BX62960009	Washer	2	
49-9	BX62969000	Felt	1	
49-10	BX62950009	Feed lifting link	1	
50	BX52102008	Feed dog	1	
51	BX03616009	Screw SM3.18 × 7	2	

10. Quick reverse switch mechanism



11. Thead wiper mechanism



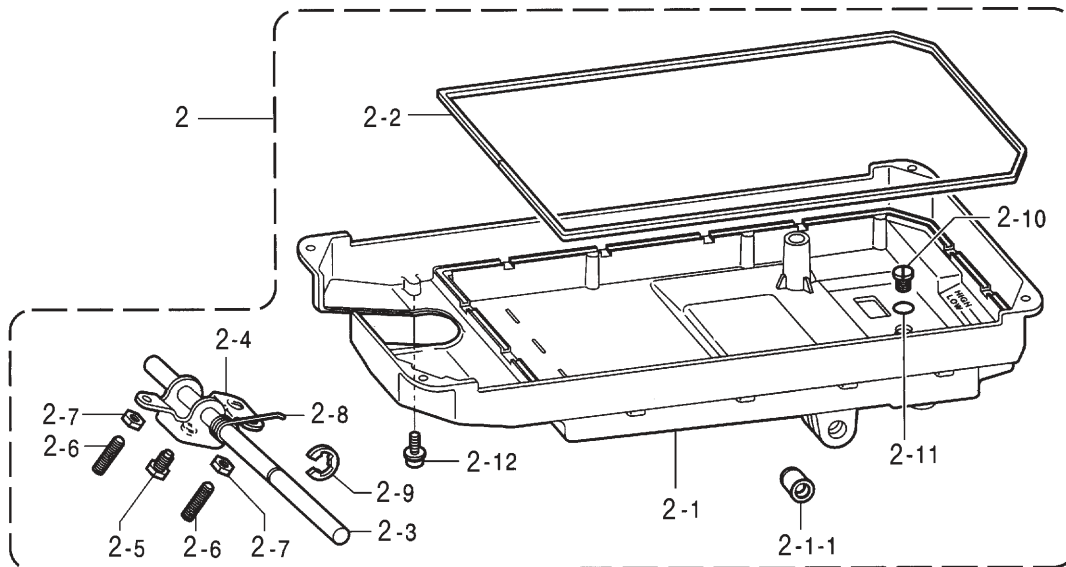
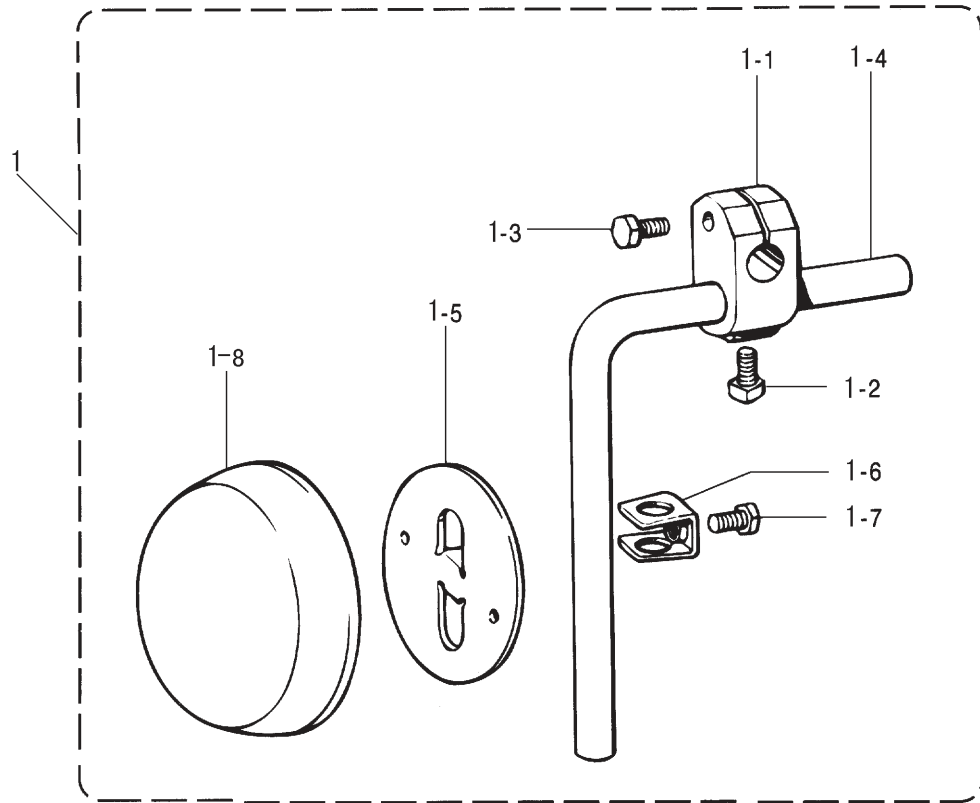
10. Quick reverse switch mechanism

No.	Ref.No.	Description	Qt	Note
1	BXF8422009	Reverse button assy	1	
2	BXF8830009	Bracket	1	
3	BX76829000	Bracket	1	
4	BX78106000	Button	1	
5	BX78105000	Base	1	
6	203440000	Switch assy	1	
7	B60300612	Screw M3x6	1	
8	B048390498	Screw SM3/16" -32x6	2	
9	213000020	Small cable holder	3	
10	B048420398	Screw SM11/64" -40x7	3	

11. Thead wiper mechanism

No.	Ref.No.	Description	Qt	Note
1	203800001	Thread wiper solenoid assy	1	
2	203800003	Spring	1	
3	203800004	Wiper solenoid base	1	
4	B048700694	Screw M3x4	2	
5	203800005	Washer	1	
6	BX09414009	Screw SM3.57 × 6	2	
7	203800006	Eccentric rubber	1	
8	203800007	Thread pulling wire driving lever	1	
9	203800008	Hinge washer	1	
10	203800009	Washer	1	
11	BX09414009	Screw SM3.57x6	2	
12	203800010	Thread pulling wire crank	1	
13	203800011	Thread pulling wire	1	
14	B048700694	Screw 3x4	2	
15	203800011	Wiper driving plate	1	
16	203800012	Wiper driving spring	1	
17	203800013	Wiper connecting rod cover	1	
18	203800014	Thread wiper	1	
19	203800015	Wiper bracket	1	
20	203800016	Wiper clamp bracket	1	
21	203800017	Shoulder screw	2	
22	203800018	Wiper connecting rod	1	
23	203800019	Shoulder screw	1	
24	B048429698	Screw SM4.37-40 × 14	1	
25	B048430498	Screw SM3.57-40 × 6	1	
26	B062070768	Retaining ring E3	1	

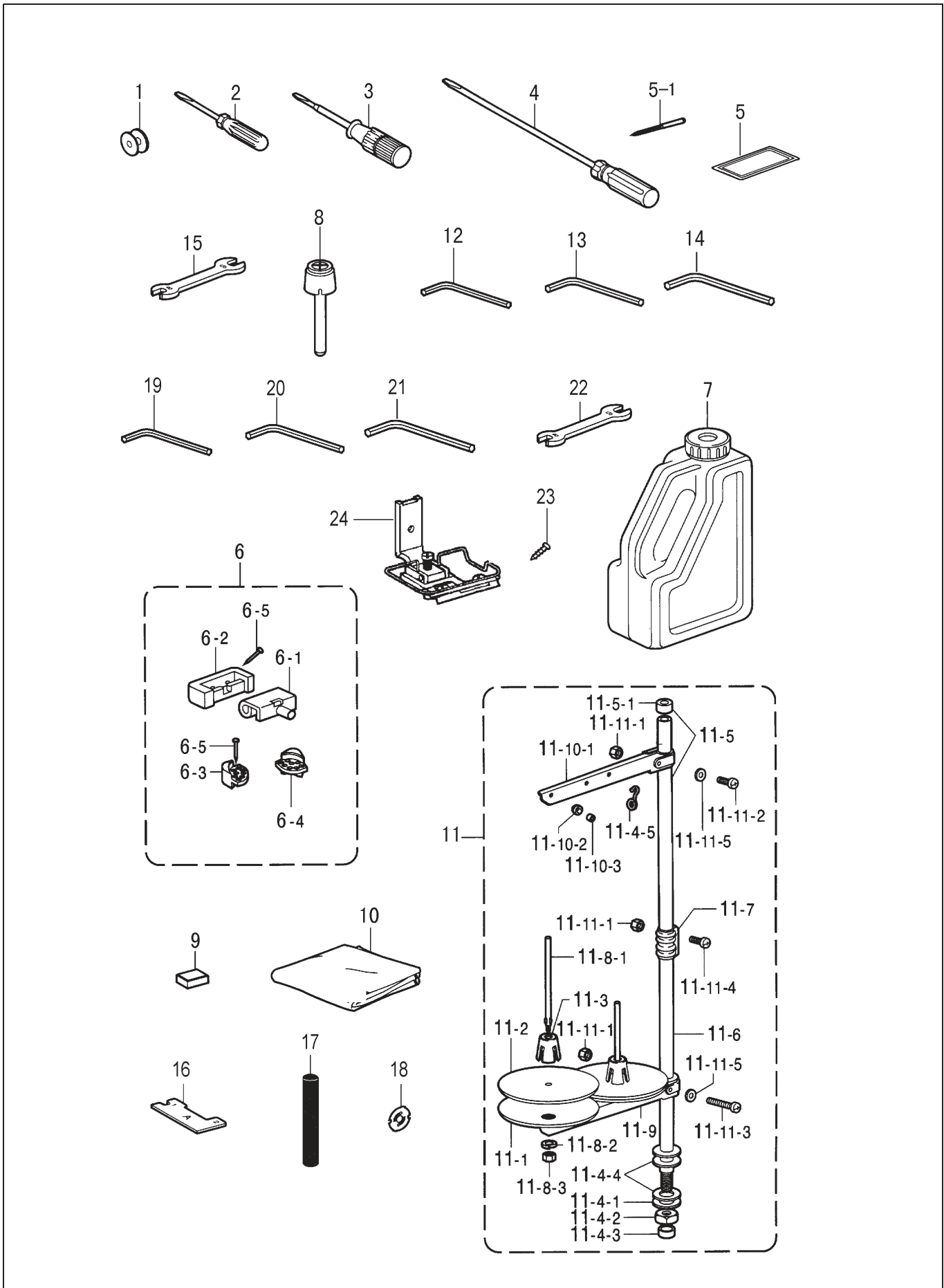
12.Knee lifter mechanism



12. Knee lifter mechanism

No.	Ref.No.	Description	Qt	Note
1	BX76352009	Knee lifter assy	1	
1-1	B964071009	Bracket, K- lifter	1	
1-2	B900647009	Bolt, square SM7.94	1	
1-3	B093348097	Bolt, SM5.95 × 20	1	
1-4	B906491008	Knee lifter bar	1	
1-5	BX76354009	Knee lifter plate	1	
1-6	B996143009	Stopper, K-lifter plate	1	
1-7	B990023009	Bolt, SM5.9-28x8	1	
1-8	BX79225009	Cover, K-lifter plate	1	
2	BX62898009	Oil reservoir complete	1	
2-1	BX62897000	Oil reservoir	1	
2-1-1	B961532000	Bush	2	
2-2	BX62896000	Packing , oil pan	1	
2-3	BX62895009	Knee lifter shaft	1	
2-4	BX01475009	Knee lifter	1	
2-5	B964743009	Bolt, SM5.95	1	
2-6	B906225909	Screw SM5.95-28 × 24	2	
2-7	B900088006	Nut SM5.95	2	
2-8	BX95221009	Spring, twist	1	
2-9	B964817009	Retaining, E10	1	
2-10	B960592009	Screw SM7.94 × 10	1	
2-11	B029003030	O ring	1	
2-12	B058600204	Screw M4×8	1	

13. Accessories



13. Accessories

No.	Ref.No.	Description	Qt	Note
1	B951952059	Bobbin	2	
2	W050102048	Screw driver, 3×5	1	
3	W050102052	Screw driver, 4×70	1	
4	W050102046	Screw driver, 5×250	1	
5	BX62850630	Needle assy	1	
5-1	BX62850030	Needle	4	
6	BX20082808	Rubber hinge assy	1	
6-1	B967228009	Head hinge	2	
6-2	B967190001	Rubber cushion	2	
6-3	BX55743909	Head, cushion, L	2	
6-4	BX55743908	Head, cushion, R	2	
6-5	W050101023	Nail	4	
7	W0502009	Oil tank assy	1	
8	BX01476000	Lifter complying bar, knee	1	
9	W050103001	Magnet	1	
10	W060302036	Head cover	1	
11	BX08347608	Cotton stand assy 2DR	1	
11-1	BX59827009	Spool stand base	2	
11-2	B950928000	Spool mat	2	
11-3	BX59828009	Spool cushion	2	
11-4	BX08333009	Pipe (D) screw set	1	
11-4-1	B950804008	Washer, plain	1	
11-4-2	BX72462009	Nut	1	
11-4-3	B950936000	Column cap	1	
11-4-4	BX09005000	Rubber washer	2	
11-4-5	BX08363909	Spring	1	
11-5	BX60460009	Column pipe w/cap	1	
11-5-1	B950936000	Column cap	1	
11-6	B954998007	Column pipe, D	1	
11-7	B950937007	Column joint	1	
11-8	BX89312009	Spool screw set	2	
11-8-1	B950931008	Spool shaft, B	2	
11-8-2	B082050864	Washer, spring	2	
11-8-3	B089500904	Nut M5	2	
11-9	BX08332008	Spool holder	1	
11-10	BX08324008	Thread hanger assy	1	
11-10-1	BX08323008	Thread hanger	1	
11-10-2	B950927000	Thread hanger base	2	
11-10-3	B968110001	Thread bush	2	
11-11	BX60469009	Spoolshaft screw set, A	1	
11-11-1	B089500904	Nut, M5	4	
11-11-2	B048509604	Screw, M5x14	1	
11-11-3	B048507504	Screw, M5x35	1	
11-11-4	B048509604	Screw, M5x14	2	
11-11-5	B084050974	Washer S5	2	
12	B968008009	Hexagonal wrench, 2	1	
13	B956985009	Hexagonal wrench, 2.5	1	
14	B968389009	Hexagonal wrench, 3	1	
15	B900223001	Wrench, 8x9	1	
16	BX62012009	Timing gauge, A	1	
17	BX62825009	Spring, compression	1	
18	BX62807009	Spring, anti-spin	1	
19	W050102036	Hexagonal wrench 4	1	
20	W050102037	Hexagonal wrench 5	1	
21	W050102038	Hexagonal wrench 6	1	
22	B903320009	Wrench, 10x12	1	
23	W050101012	Wood screw, round M5.5 × 20	2	
24	BX52150009	Presser foot assy	1	

- Besides adjusting stitch, please laypeople don't debug or maintain.
- Parts are subject to changes in design without prior notice.

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