

CS-0606 Series

SERVICE MANUAL

Note: Some details apply to CS-430 and CS-438

Please read this manual before making any adjustments.

ELECTRONIC DIRECT DRIVE LOCKSTITCH BAR TACKER



Collier Equipment

The home of **CEDAR** *Special* &
CEDAR Systems Automated Sewing Devices

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This service manual is intended for CS-0606 be sure to read the instruction manual before

Carefully read the "SAFETY INSTRUCTIONS" below and the whole of this manual to understand this product before you start maintenance.

As a result of research and improvements regarding this product, some details of this manual may not be the same as those for the product you purchased.

If you have any questions regarding this product, please contact a dealer.

SAFETY INSTRUCTIONS

1. Safety indications and their meanings

This service 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

 DANGER	The instructions which follow this term indicate situations where failure to follow the instructions will almost certainly result in death or severe injury.
 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.

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 on safety



DANGER



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.



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 $\pm 10\%$ 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°C to 35°C 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 during 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 Brother dealer or a qualified electrician for any electrical work that may need to be done.



The sewing machine weighs approximately 56 kg. 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 foot switch is depressed by mistake, which could result in injury.



Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.



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 safety 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 and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

CAUTION

Sewing

- | | |
|--|--|
|  <p>This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.</p> |  <p>If using a work table which has casters, the casters should be secured in such a way so that they cannot move.</p> |
|  <p>The sewing machine should not be used for any applications other than sewing.</p> |  <p>Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.</p> |
|  <p>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.</p> |  <p>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.</p> |
|  <p>Turn off the power switch at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.</p> <ul style="list-style-type: none">• When threading the needle• When replacing the needle and bobbin• When not using the machine and when leaving the machine unattended |  <p>If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest Brother dealer or a qualified technician.</p> <p> If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.</p> |

Cleaning

- | | |
|--|---|
|  <p>Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.</p> |  <p>Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
Keep the oil out of the reach of children.</p> |
|--|---|

Maintenance and inspection

- | | |
|--|---|
|  <p>Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.</p> |  <p>Hold the machine head with both hands when tilting it back or returning it to its original position.
Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.</p> |
|  <p>Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.</p> |  <p>Use only the proper replacement parts as specified by Brother.</p> |
|  <p>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 foot switch is depressed by mistake, which could result in injury.</p> <ul style="list-style-type: none">• When carrying out inspection, adjustment and maintenance• When replacing consumable parts such as the rotary hook |  <p>If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.</p> |
|  <p>If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.</p> |  <p>Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.</p> |

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 Brother dealer.

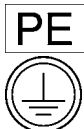
1

	⚠ 危険	⚠ 危険
	高電圧部分にふれて、大けがをすることがある。電源を切り、5分たってからカバーをはずすこと。	触摸高压电部分，会导致受伤。在切断电源5分钟后，再开启盖罩。
⚠ DANGER	⚠ GEFAHR	⚠ PELIGRO
Hazardous voltage will cause injury. Turn off main switch and wait 5 minutes before opening this cover.	Hochspannung verletzungsgefahr! Bitte schalten sie den hauptschalter aus und warten sie 5 minuten, bevor sie diese abdeckung öffnen.	Un voltage non adapte provoque des blessures. Eteindre l'interrupteur et attendre 5 minutes avant d'ouvrir le capot.
		Un voltaje inadecuado puede provocar las heridas. Apagar el interruptor principal y esperar 5 minutos antes de abrir esta cubierta.

2

動く部分でけがをする。安全保護装置をつけて、縫製作業をすること。電源を切ってから、糸通し、ボビンや針の交換、掃除や調整をすること。
⚠ CAUTION
Moving parts may cause injury. Operate with safety devices. Turn off main switch before threading, changing bobbin and needle, cleaning etc.

3



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.

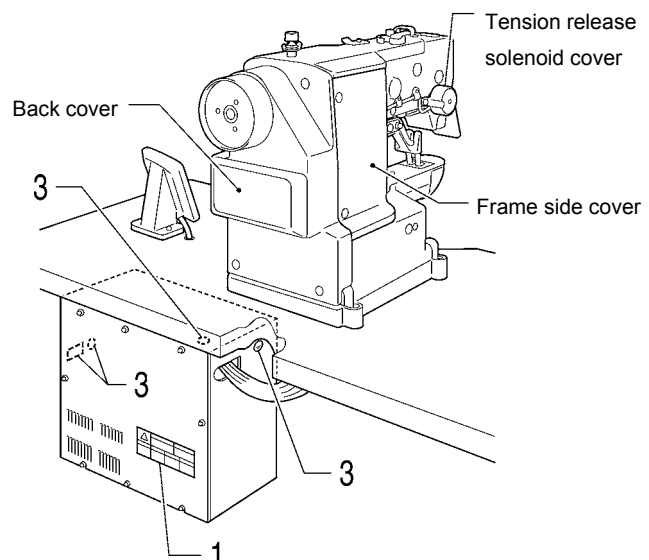
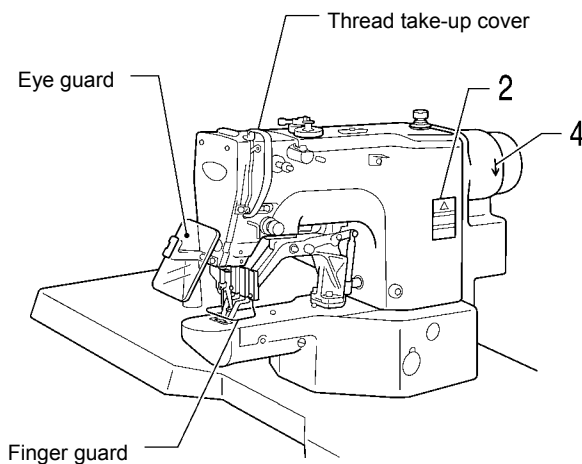
4



Direction of operation

Safety devices

Eye guard
Finger guard
Tension release solenoid cover
Thread take-up cover
Frame side cover
Back cover, etc.



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1. SPECIFICATIONS



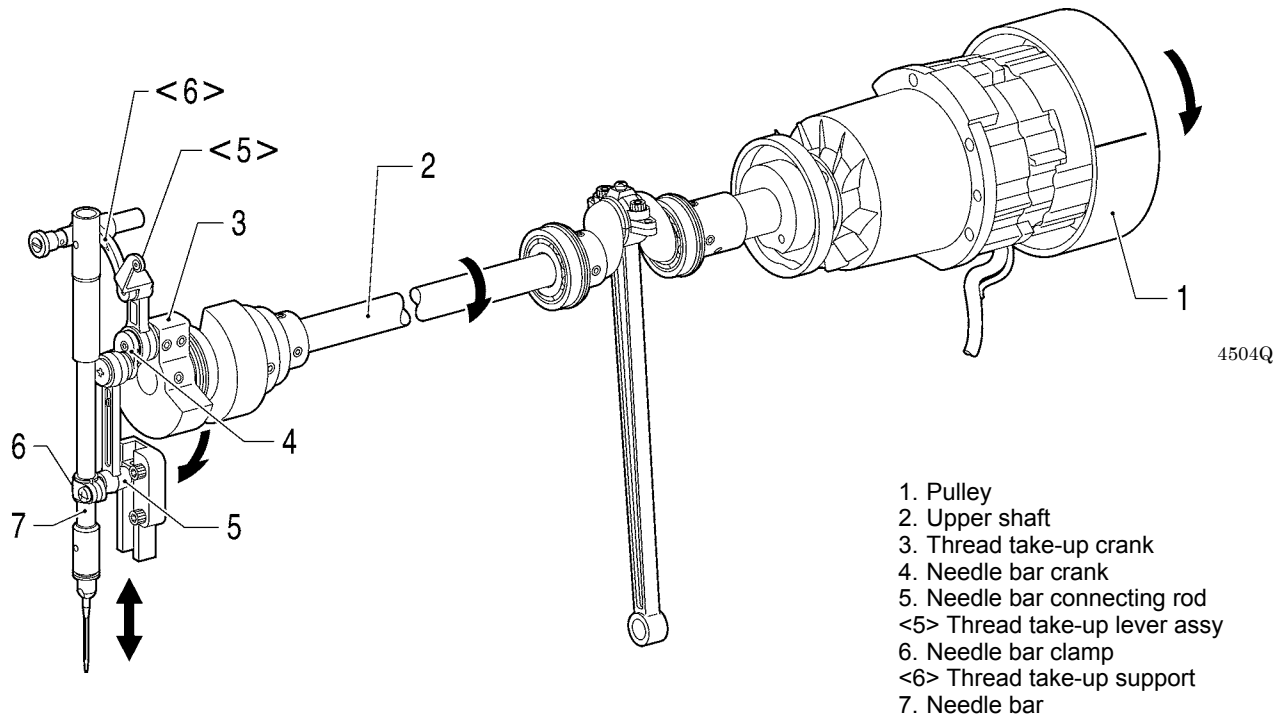
1	Ordinary materials
2	Denim
7	Foundation garments

	CS-0606 Electronic direct drive lockstitch bar tacker	
Stitch formation	Single needle lock stitch	
Maximum sewing speed	3,200 rpm	2,700 rpm
Pattern size (X x Y)	40 x 30 mm max.	6.4 x 6.4 mm max.
Dimensions of buttons that can be sewn	Outer diameter of button 8 - 30 mm (Use the optional button clamp B for diameters of 20 mm or greater.)	
Feed mechanism	Y-θ intermittent feed mechanism (pulse-motor driven mechanism)	
Stitch length	0.05 - 12.7 mm	
Number of stitches	Variable (Refer to "Program List" for details on the number of stitches for sewing patterns that are already preset.)	
Maximum stitch number	210,000 stitches (including 200,000 stitches which can be added)	
Work clamp lifter	Pulse-motor driven mechanism	
Work clamp height Button clamp height	17 mm max.	13 mm max.
Rotary hook	Shuttle hook (shuttle hook 2, optional)	Shuttle hook
Wiper device	Standard equipment	
Thread trimmer device	Standard equipment	
Thread nipper device	Standard equipment	
Data storage method	Flash memory (Any sewing pattern can be added using CF card)	
Number of user programs	50	
Number of cycle programs	9	
Number of stored data	89 sewing patterns are set already	49 sewing patterns are set already
	(Up to 200 patterns can be added. Total number of stitches of stored data which can be added is within 200,000.)	
Motor	AC servo motor 550 W	
Weights	Machine head: approx. 56 kg, Operation panel: approx. 0.6 kg Control box: 14.2 – 16.2 kg (depending on destination)	
Power source	Single-phase 100V / 220V, 3-phase 200V / 220V / 380V / 400V 400VA	

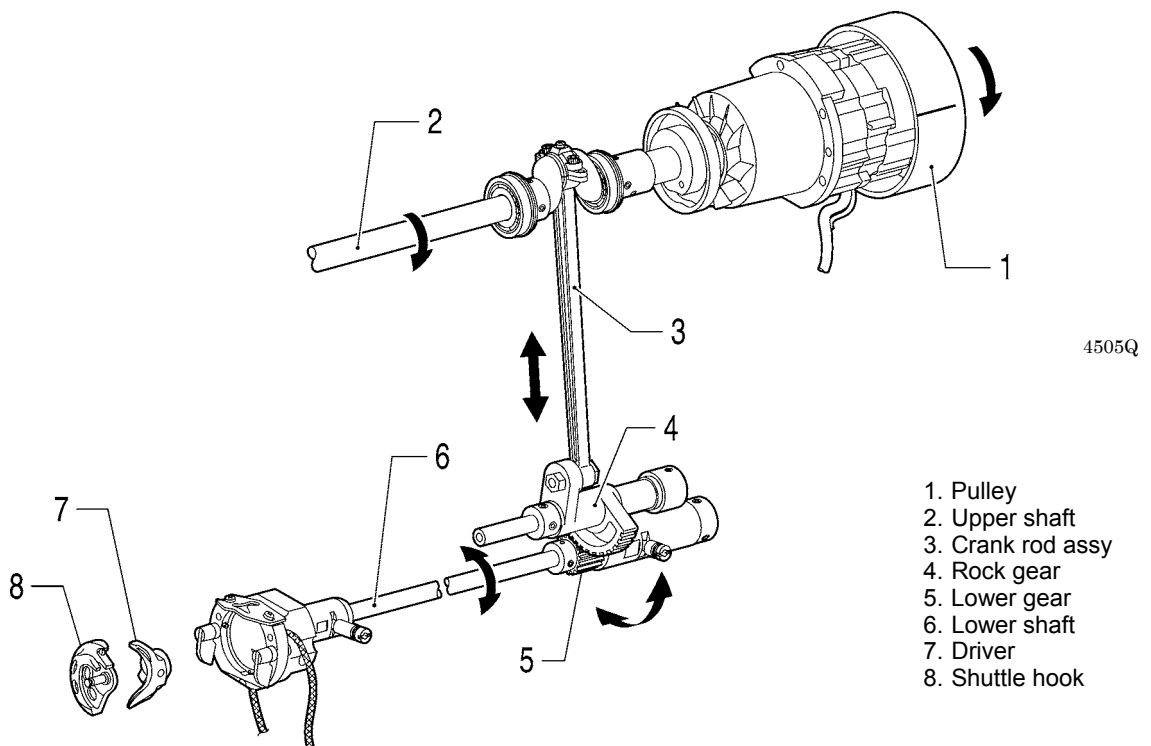
4. MECHANICAL DESCRIPTIONS

The mechanisms operate in the order of the numbers given in the illustrations.

4-1. Needle bar and thread take-up mechanisms

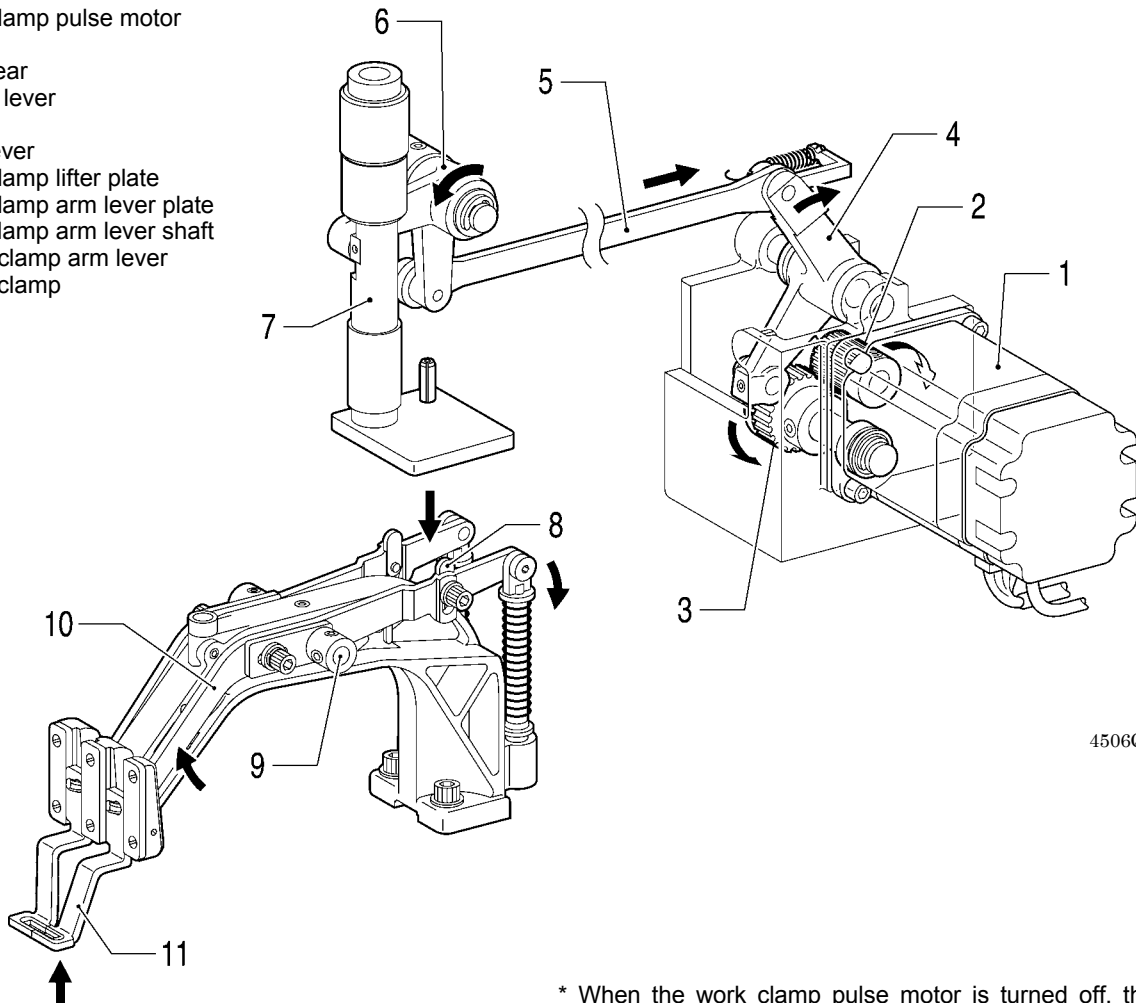


4-2. Lower shaft and shuttle race mechanisms



4-3. Work clamp lifter mechanism

1. Work clamp pulse motor
2. Gear
3. Cam gear
4. Driving lever
5. Link
6. Lifter lever
7. Work clamp lifter plate
8. Work clamp arm lever plate
9. Work clamp arm lever shaft
10. Work clamp arm lever
11. Work clamp

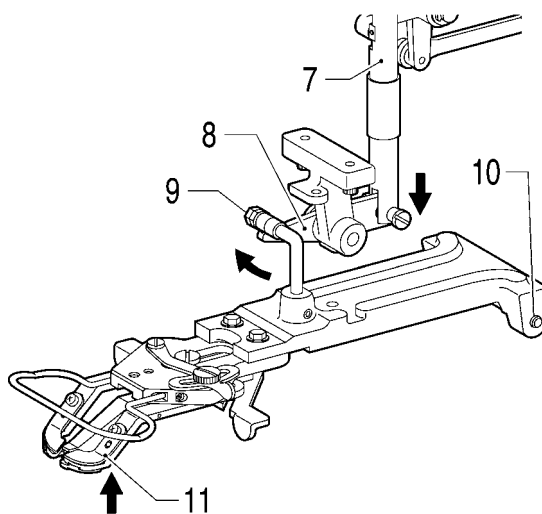


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* When the work clamp pulse motor is turned off, the work clamp lifter plate rises, and work clamps lower.



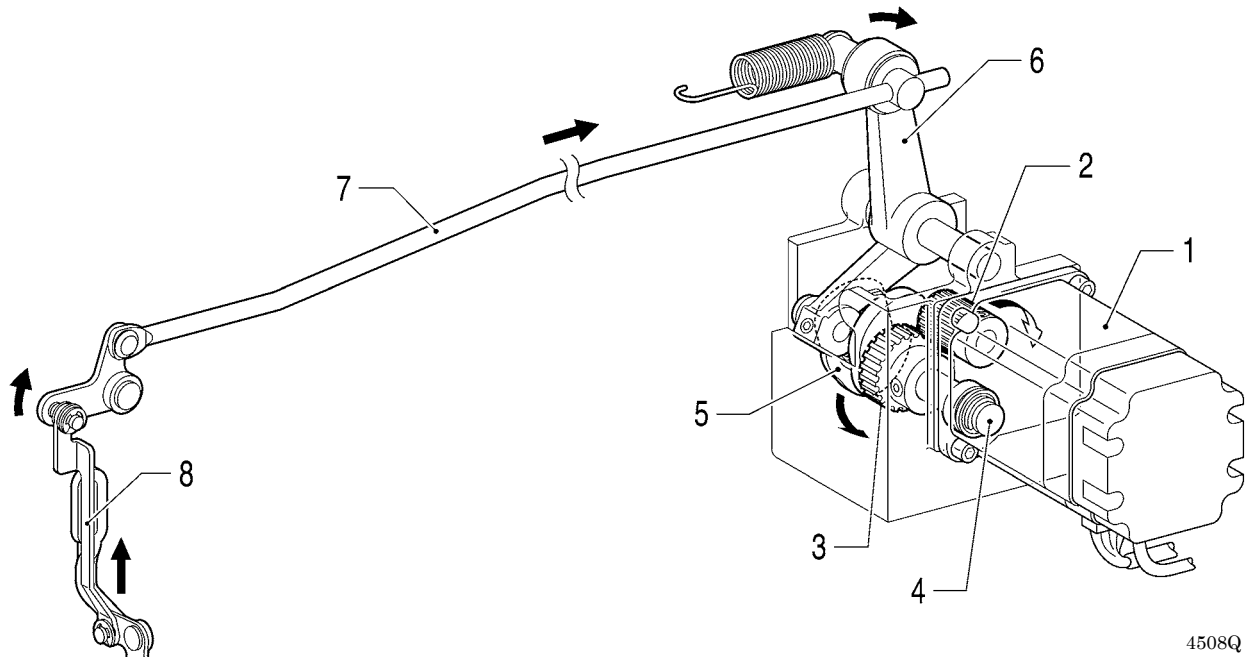
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* When the work clamp pulse motor is turned off, the button clamp rod rises, and button clamps lower.

7. Button clamp rod
8. Button clamp lever
9. Button clamp holder hook assy
10. Button clamp holder shaft
11. Button clamp

4-4. Thread wiper mechanism



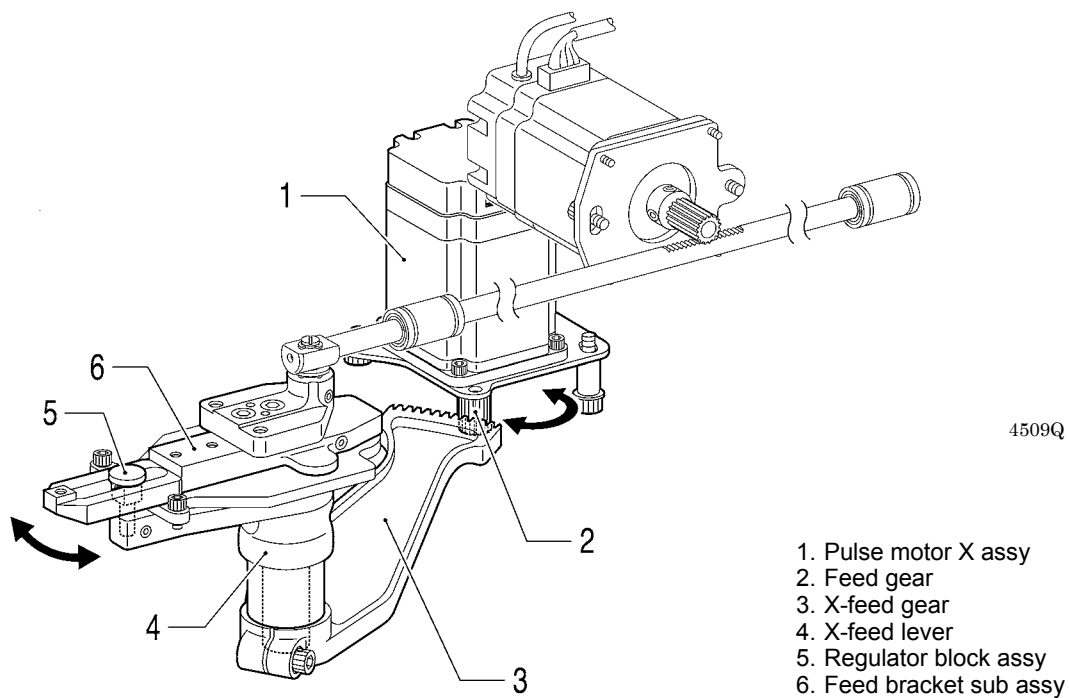
When the work clamp pulse motor is turned off, the thread wiper operates in the opposite direction.

1. Work clamp pulse motor
2. Gear
3. Cam gear
4. Cam shaft
5. Thread wiper cam
6. Driving lever
7. Wiper rod
8. Connecting plate
9. Wiper

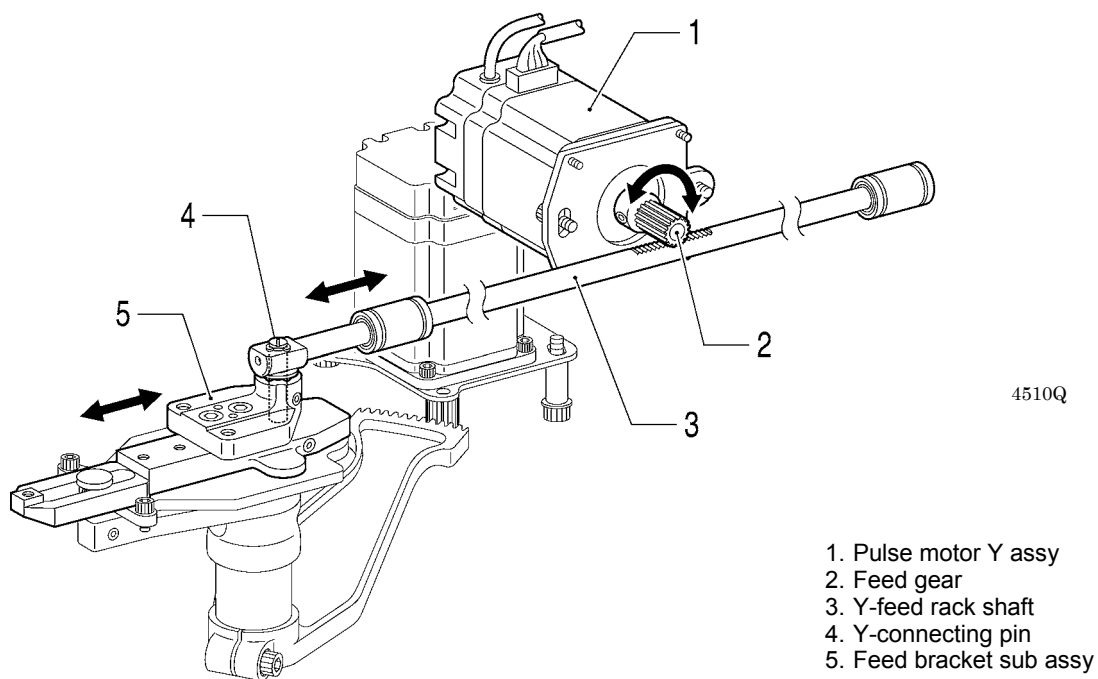
4-5. Feed mechanism

Sewing patterns are created through combinations of X and Y movements.

X direction

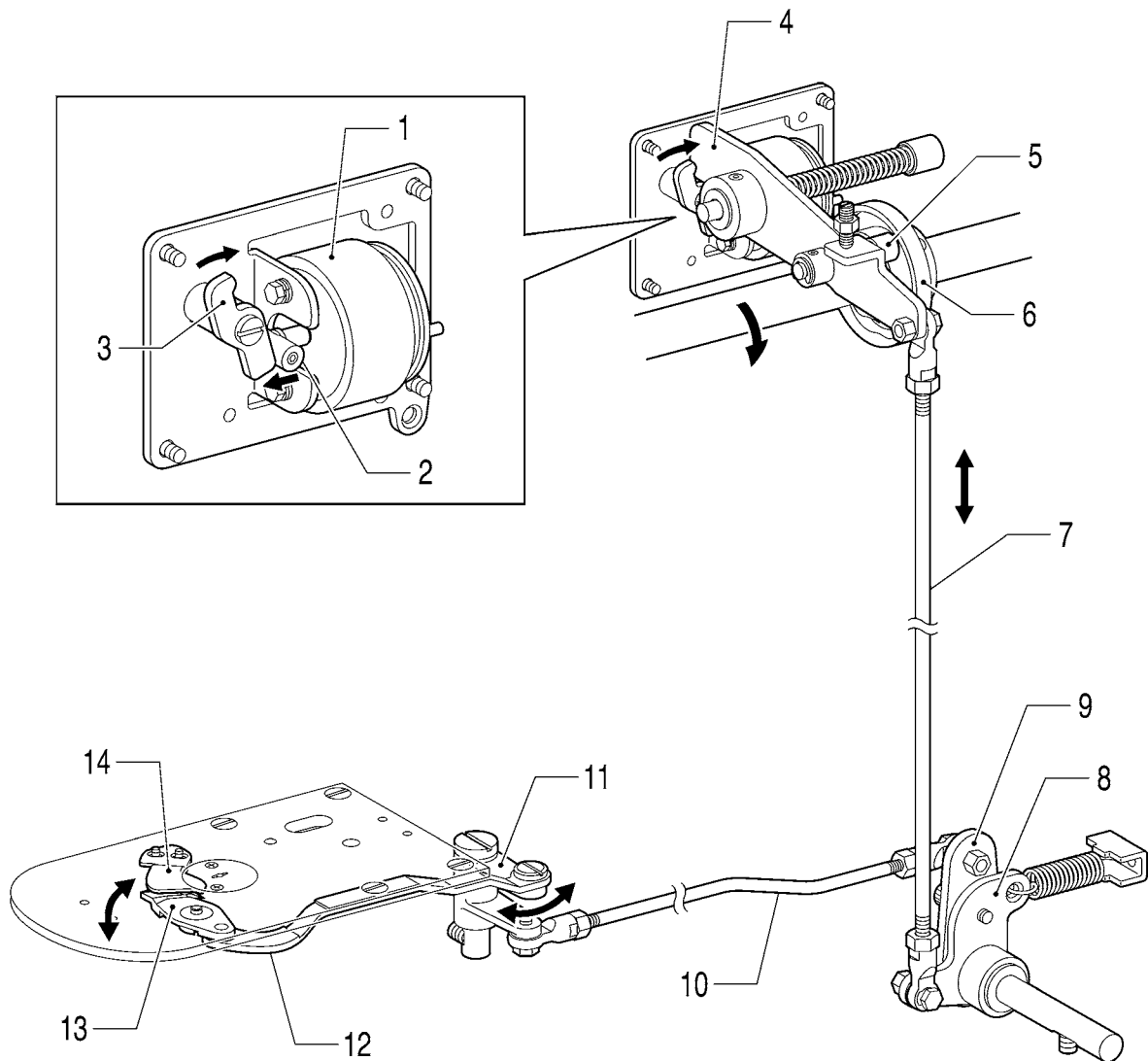


Y direction



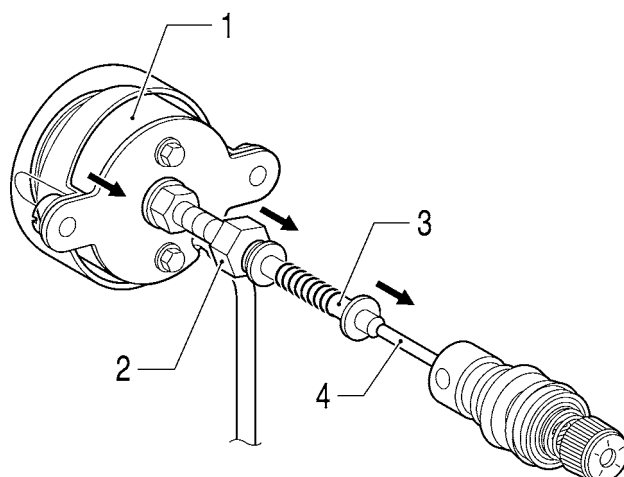
4-6. Thread trimmer mechanism

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1. Thread trimmer solenoid assy
2. Solenoid lever
3. Pushing lever
4. Driving lever
5. Thread trimmer collar
6. Thread trimmer cam
7. Thread trimmer rod V
8. Thread trimmer lever V
9. Thread trimmer lever H
10. Thread trimmer rod H
11. Movable knife lever
12. Movable knife connecting plate
13. Movable knife
14. Fixed knife

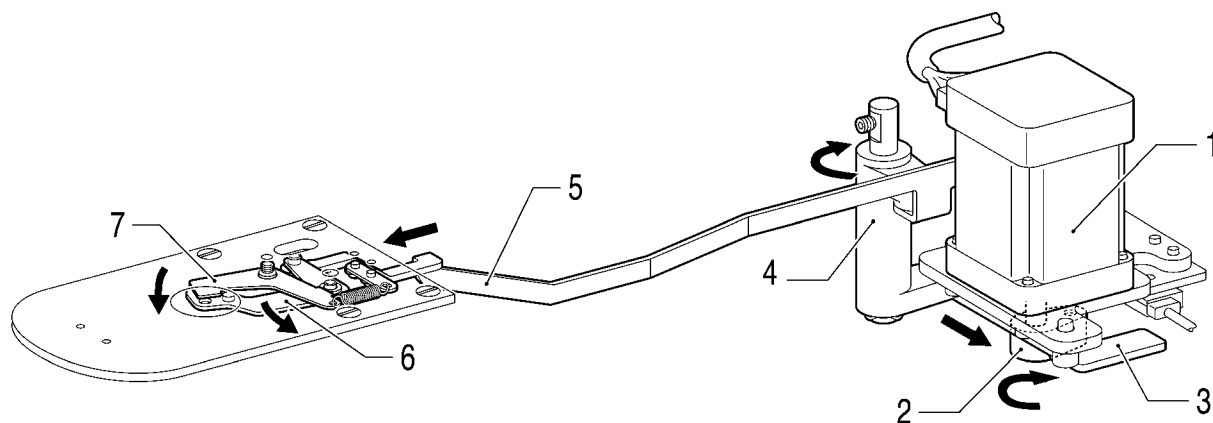
4-7. Tension release mechanism



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- 1. Tension release solenoid
- 2. Bolt
- 3. Tension release bar
- 4. Tension release pin

4-8. Thread nipper mechanism



- 1. Thread nipper pulse motor assy
- 2. Motor lever
- 3. Connecting plate B
- 4. Thread nipper lever
- 5. Connecting plate F assy
- 6. Thread nipper D assy
- 7. Thread nipper U

5. DISASSEMBLY

CAUTION



Disassembly should only be carried out by a qualified technician.



Turn off the power switch before disassembly, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.



Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.

Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea.

Keep the oil out of the reach of children.



Use only the proper replacement parts as specified by Brother.



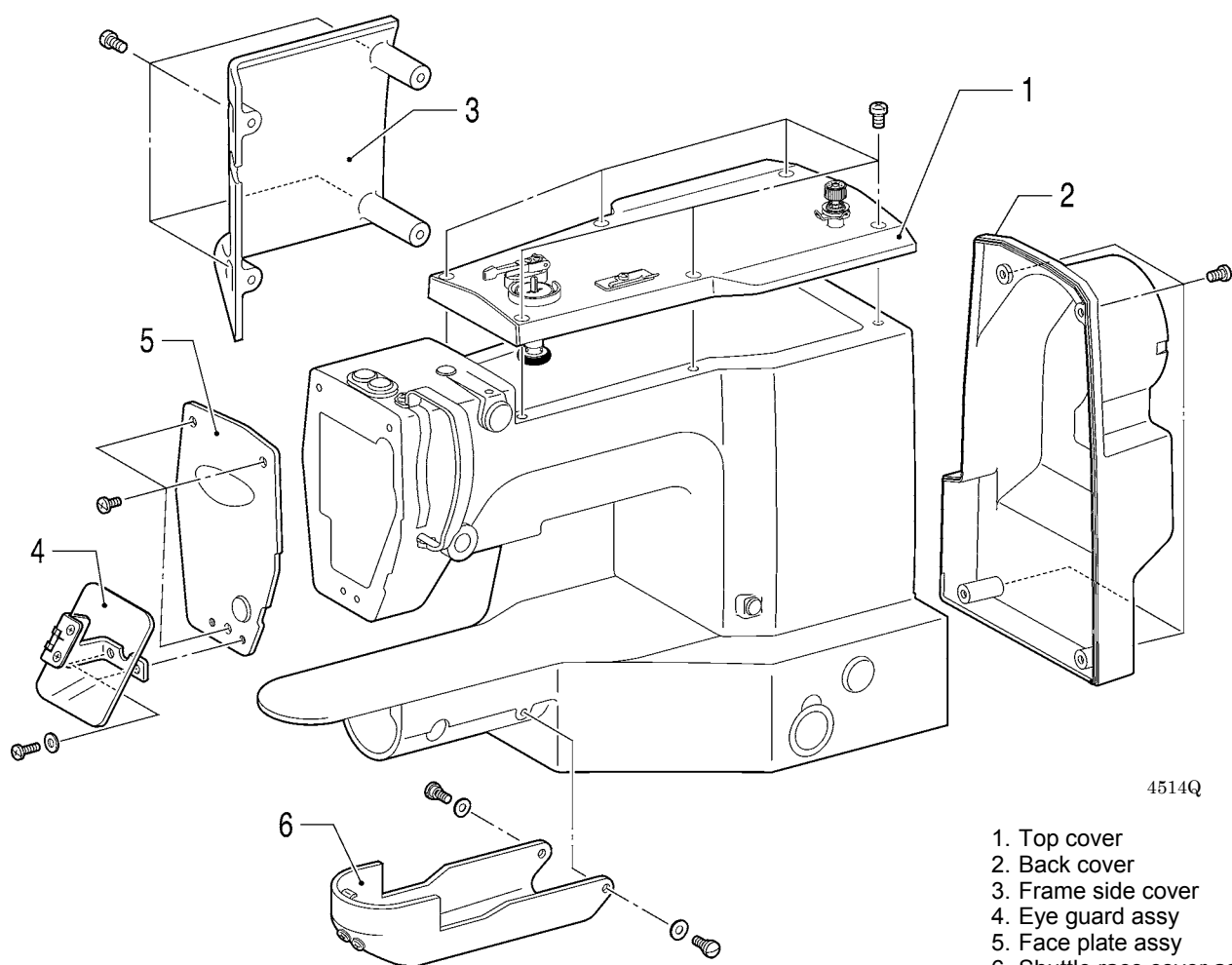
If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.



Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

Disassemble each part in order of the numbers.

5-1. Covers

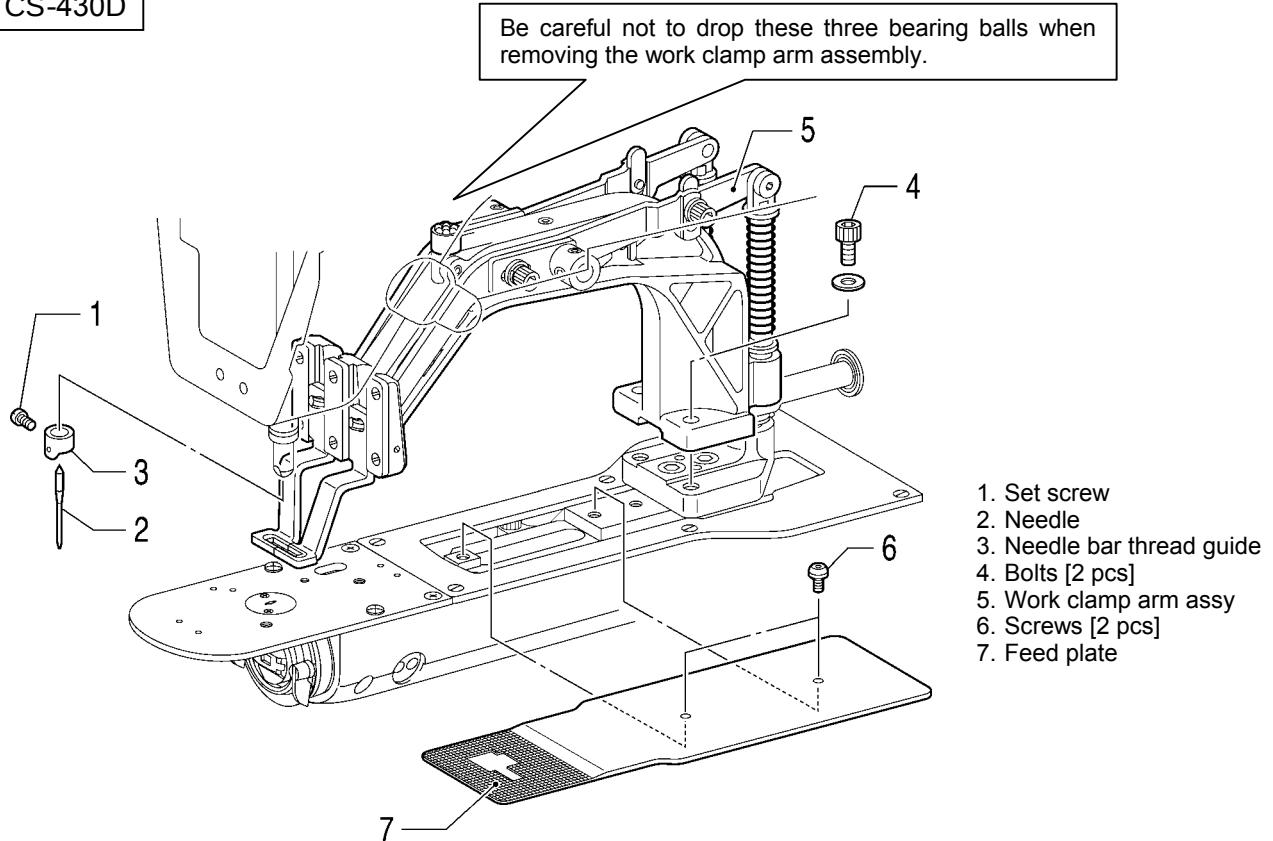


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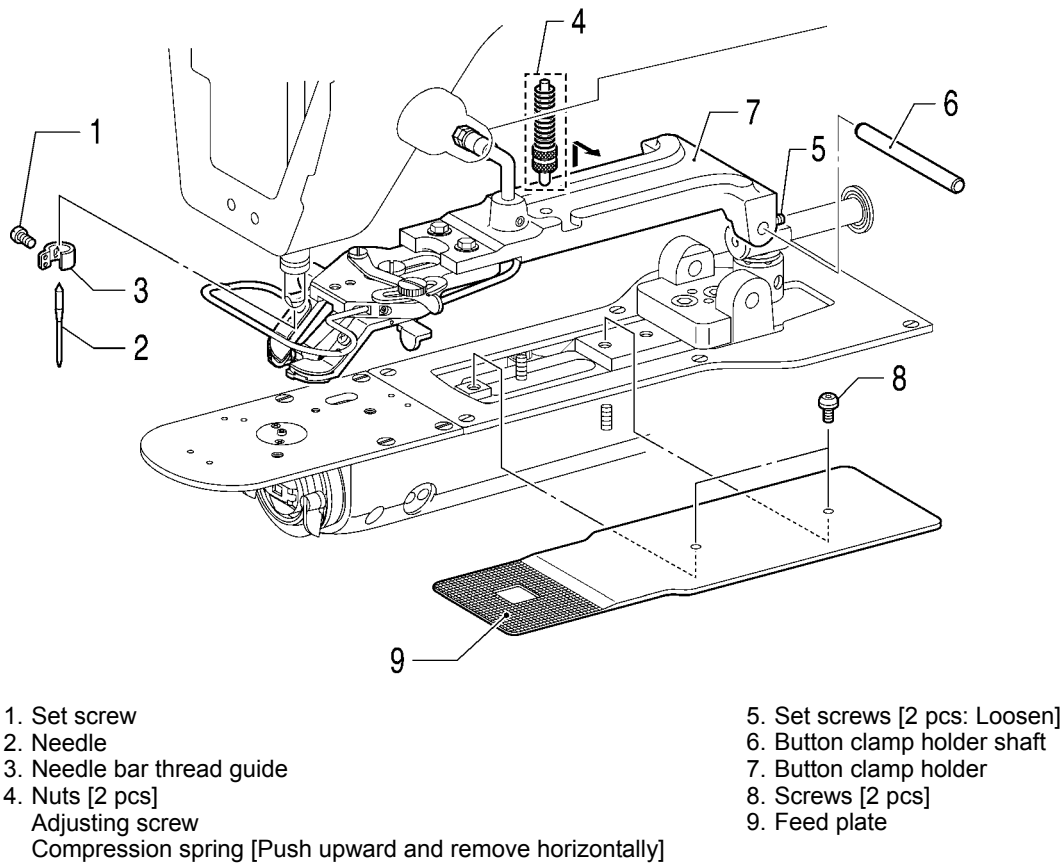
1. Top cover
2. Back cover
3. Frame side cover
4. Eye guard assy
5. Face plate assy
6. Shuttle race cover assy

5-2. Work clamp arm mechanism

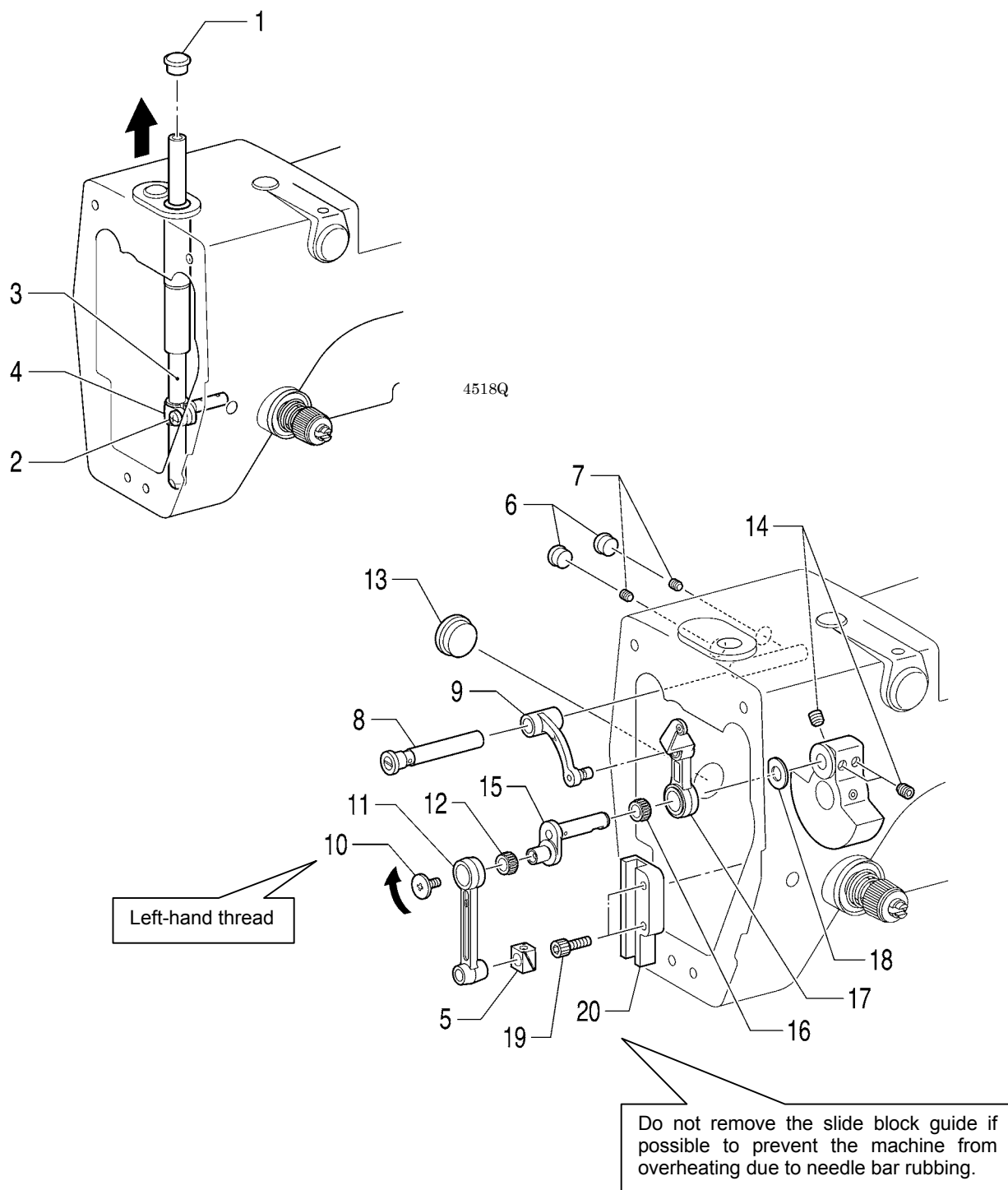
CS-430D



CS-438D



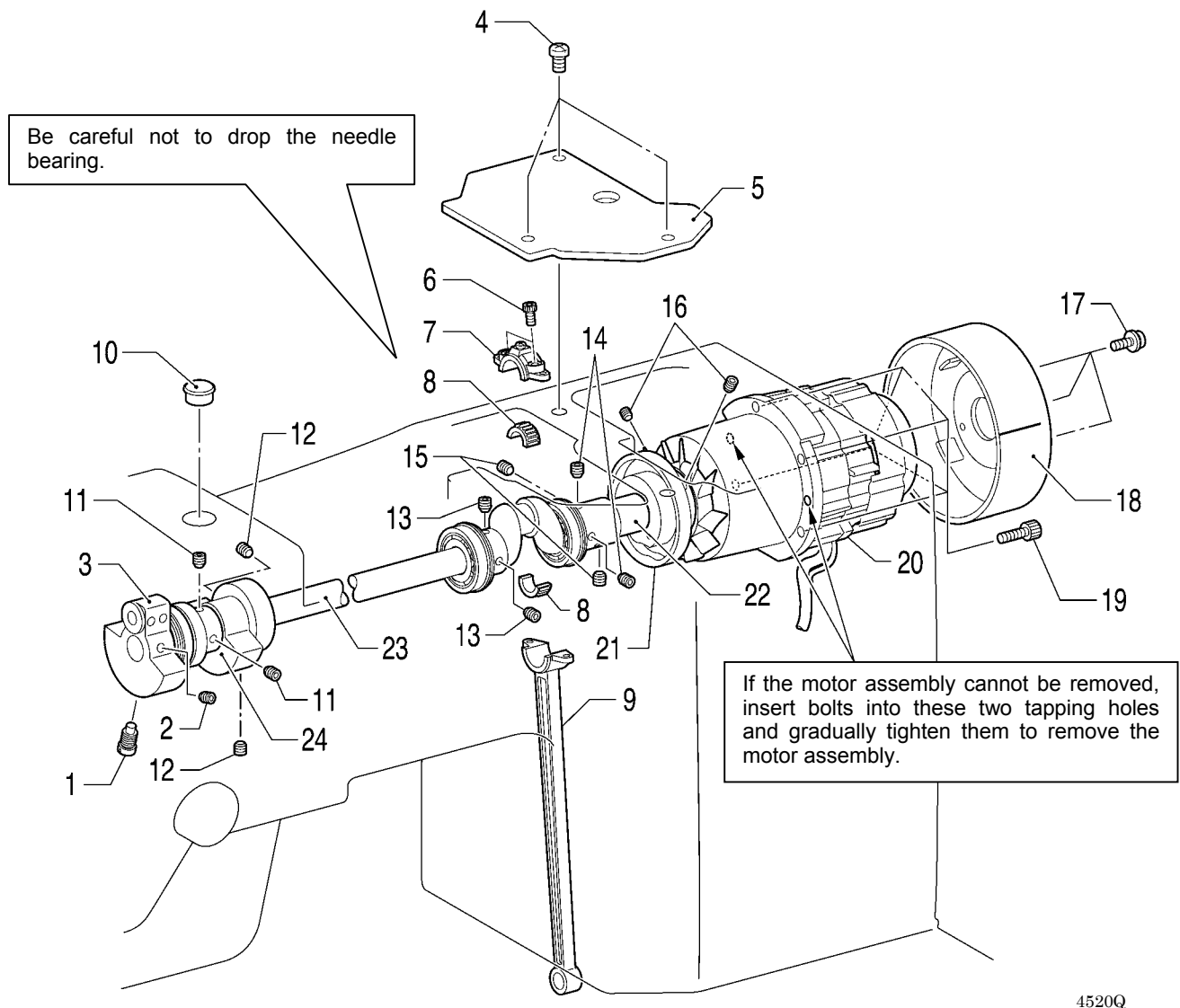
5-3. Needle bar mechanism



1. Rubber cap
2. Screw
3. Needle bar
4. Needle bar clamp [Pull out]
5. Slide block
6. Rubber caps [2 pcs]
7. Set screws [2 pcs : Loosen]
8. Thread take-up support shaft assy
9. Thread take-up support
10. Screw [Loosen]

11. Needle bar connecting rod
12. Needle bearing
13. Oil cap
14. Set screws [3 pcs : Loosen]
15. Needle bar crank
16. Needle bearing
17. Thread take-up lever assy
18. Washer
19. Bolts [2 pcs]
20. Slide block guide

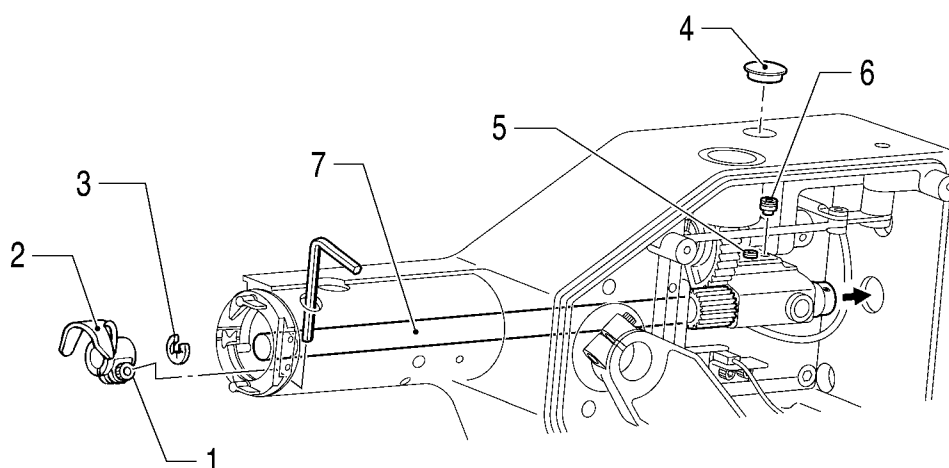
5-4. Upper shaft mechanism



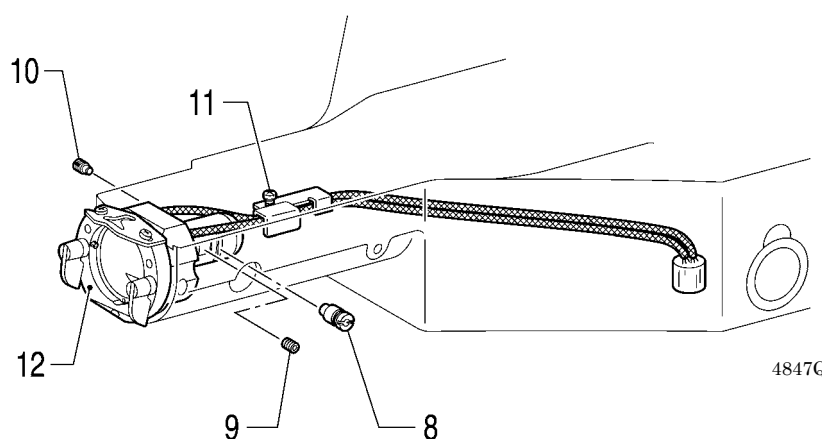
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- | | |
|--|---|
| 1. Screw [Loosen] | 13. Set screws [2 pcs: Loosen] |
| 2. Set screw [Loosen] | 14. Set screws [2 pcs: Loosen] |
| 3. Thread take-up crank | 15. Set screws [2 pcs: Loosen] |
| 4. Screws [3 pcs: Loosen] | 16. Set screws [2 pcs: Loosen] |
| 5. Crank cover | 17. Screws with washers [3 pcs: Loosen] |
| 6. Bolts [2 pcs] | 18. Pulley |
| 7. Crank rod (Upper part) | 19. Bolts [4 pcs: Loosen] |
| 8. Needle bearing | 20. Motor assy |
| 9. Crank rod (Lower part) [Lower downward] | 21. Thread trimmer cam |
| 10. Rubber cap | 22. Joint assy |
| 11. Set screws [2 pcs: Loosen] | 23. Upper shaft |
| 12. Set screws [2 pcs: Loosen] | 24. Bobbin winder driving wheel |

5-5. Lower shaft mechanism



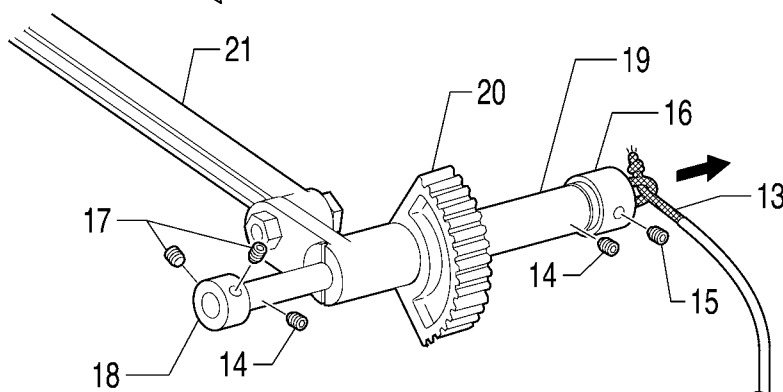
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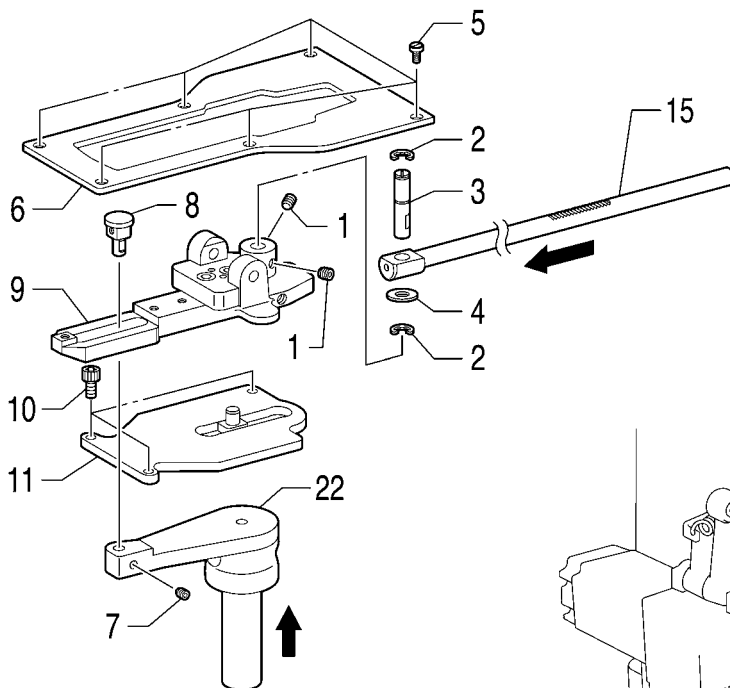
1. Bolt [Loosen]
2. Driver
3. Retaining ring, E
4. Oil cap
5. Set screw [Loosen]
6. Adjusting stud [Pull out]
7. Lower shaft assy
[Pull out from the rear of the machine]
8. Adjusting stud [Pull out]
9. Set screw [Loosen]
10. Set screw [Loosen]
11. Screw
12. Shuttle race base assy

Remove the rock gear and the crank rod together as a single unit.

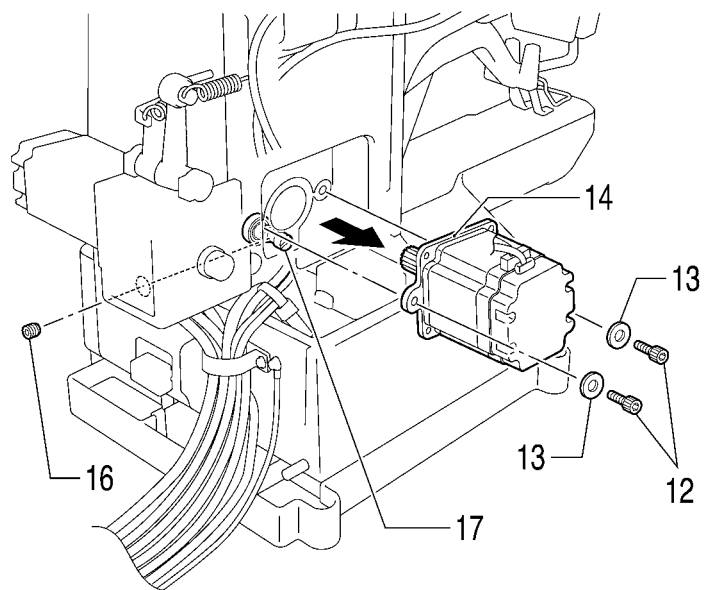


13. Wick
14. Set screws [2 pcs: Loosen]
15. Set screw [Loosen]
16. Set screw collar, R
17. Set screws [2 pcs: Loosen]
18. Set screw collar, B
19. Rock gear shaft
[Pull out from the rear of the machine]
20. Rock gear
21. Crank rod (Lower part)

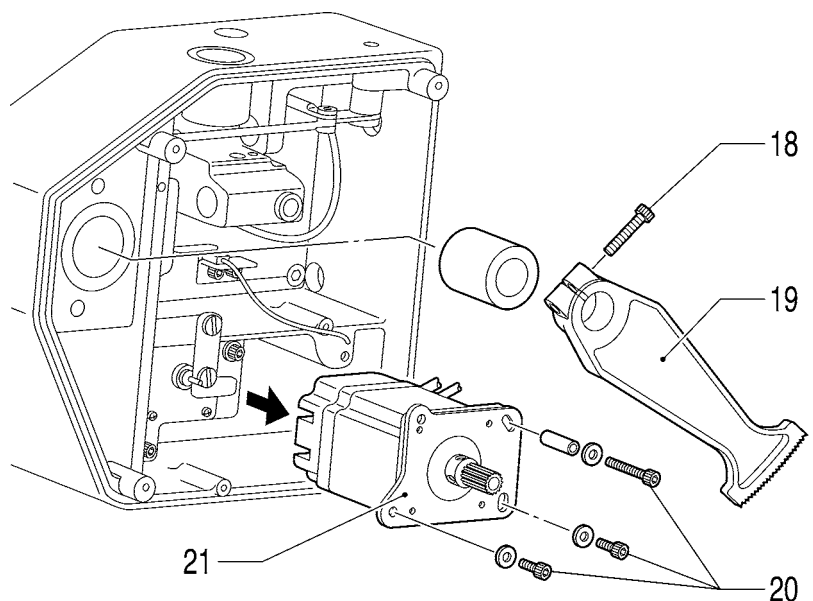
5-6. Feed mechanism



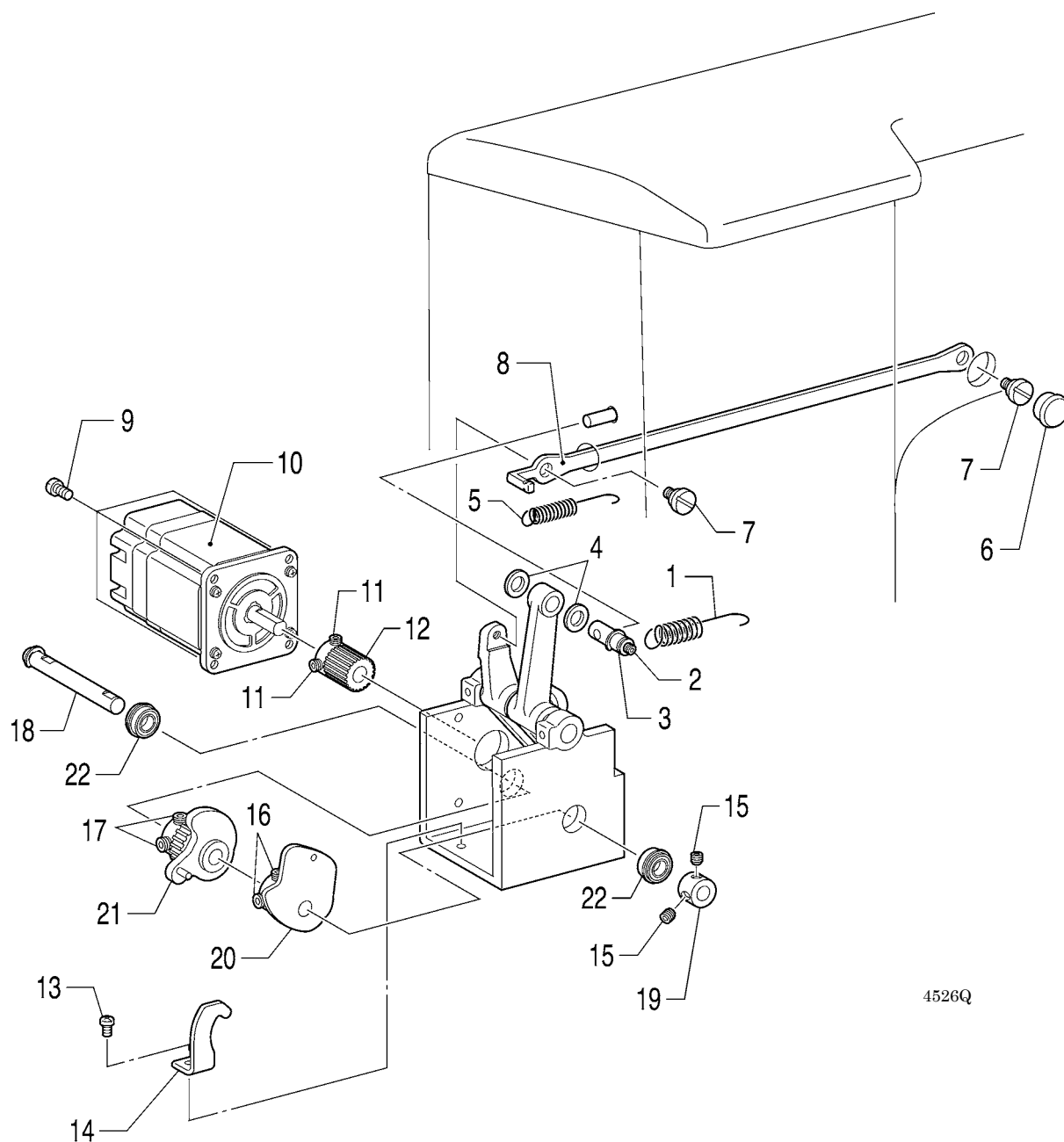
4524Q



1. Set screws [2 pcs: Loosen]
2. Retaining rings [2 pcs]
3. Y-connecting pin [Pull upward]
4. Thrust washer
5. Screws [6 pcs]
6. Feed bracket cover
7. Set screw [Loosen]
8. Regulator block assy
9. Feed bracket sub assy
10. Bolts [3 pcs]
11. Feed bracket support plate
12. Bolts [2 pcs]
13. Plain washers [3 pcs]
14. Y-motor setting plate [Pulse motor Y assy]
15. Y-feed rack shaft
16. Set screw [Loosen]
17. Eccentric shaft
18. Bolt
19. X-feed gear
20. Bolts [3 pcs]
21. X-motor setting plate [Pulse motor X assy]
22. X-feed lever [Pull upward]



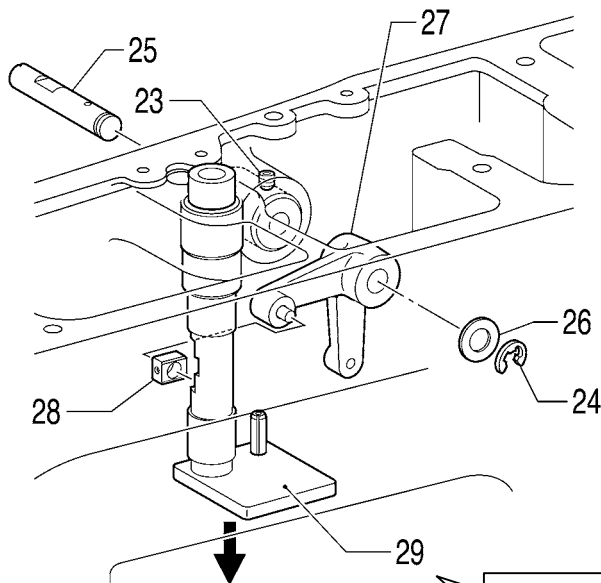
5-7. Work clamp lifter mechanism



4526Q

- | | |
|---|--------------------------------|
| 1. Spring | 12. Gear |
| 2. Set screw [Loosen] | 13. Screw |
| 3. Thread wiper rod shaft | 14. Stopper |
| 4. Plain washers [2 pcs] | 15. Set screws [2 pcs: Loosen] |
| 5. Spring | 16. Set screws [2 pcs: Loosen] |
| 6. Rubber cap | 17. Set screws [2 pcs: Loosen] |
| 7. Link shoulder screws [2 pcs] | 18. Cam shaft |
| 8. Link [Pull backward] | 19. Set screw collar, B |
| 9. Bolts [4 pcs] | 20. Thread wiper cam |
| 10. Pulse motor P Assy [Disconnect the harness] | 21. Cam gear |
| 11. Set screws [2 pcs: Loosen] | 22. Ball bearings [2 pcs] |

CS-430D

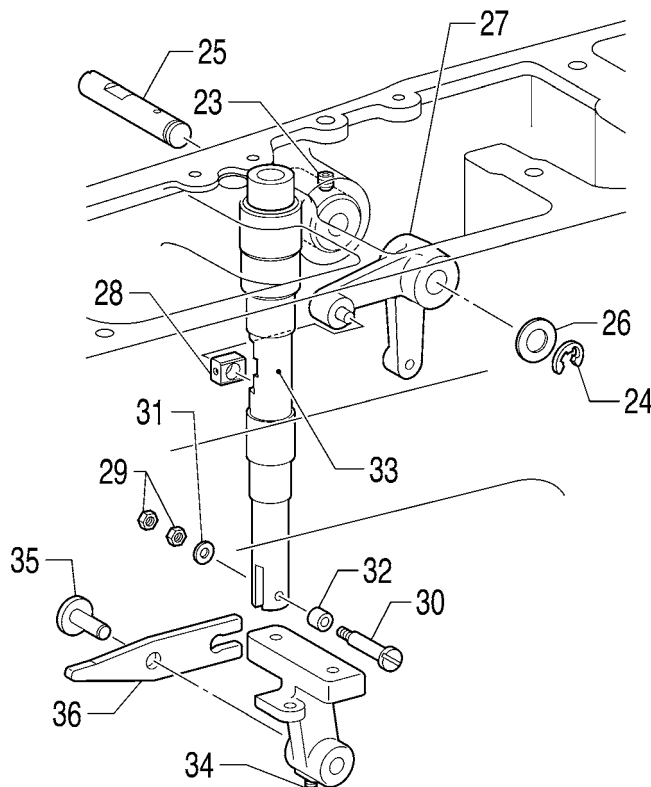


- 23. Set screw [Loosen]
- 24. Retaining ring, E
- 25. Lever shaft
- 26. Plain washer
- 27. Lifter lever
- 28. Needle bar guide slide block
- 29. Work clamp lifter plate

Note:

Hold the work clamp lifter plate when removing lifter lever, otherwise the work clamp lifter plate may fall down.

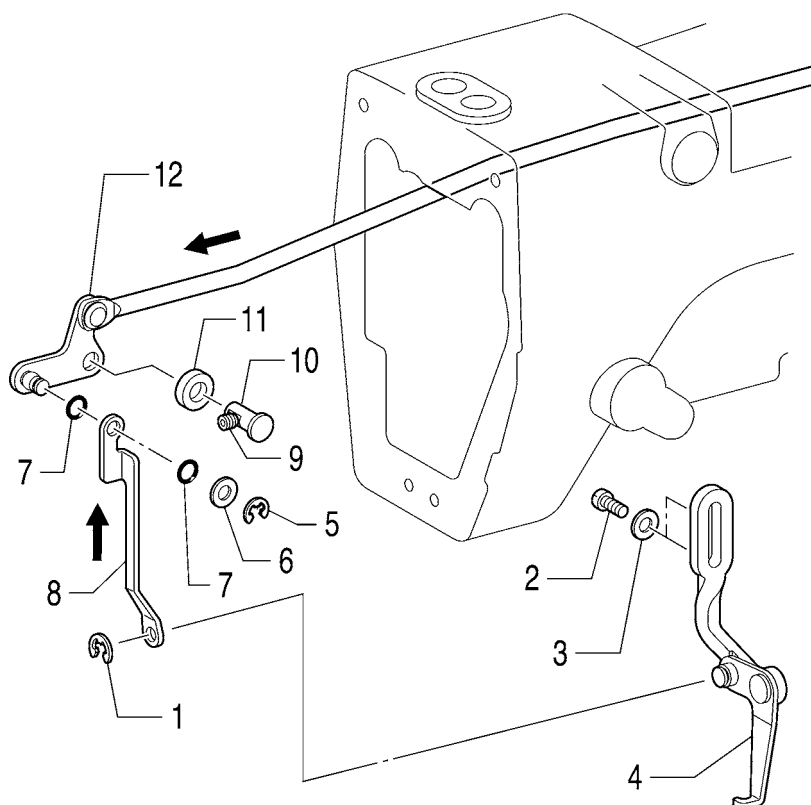
CS-438D



- 23. Set screw [Loosen]
- 24. Retaining ring, E
- 25. Lever shaft
- 26. Plain washer
- 27. Lifter lever
- 28. Needle bar guide slide block
- 29. Nuts [2 pcs]
- 30. Button clamp roller shaft
- 31. Plain washer
- 32. Roller
- 33. Button clamp rod [Pull upward]
- 34. Set screw [Loosen]
- 35. Button clamp lever shaft [Pull out]
- 36. Button clamp lever

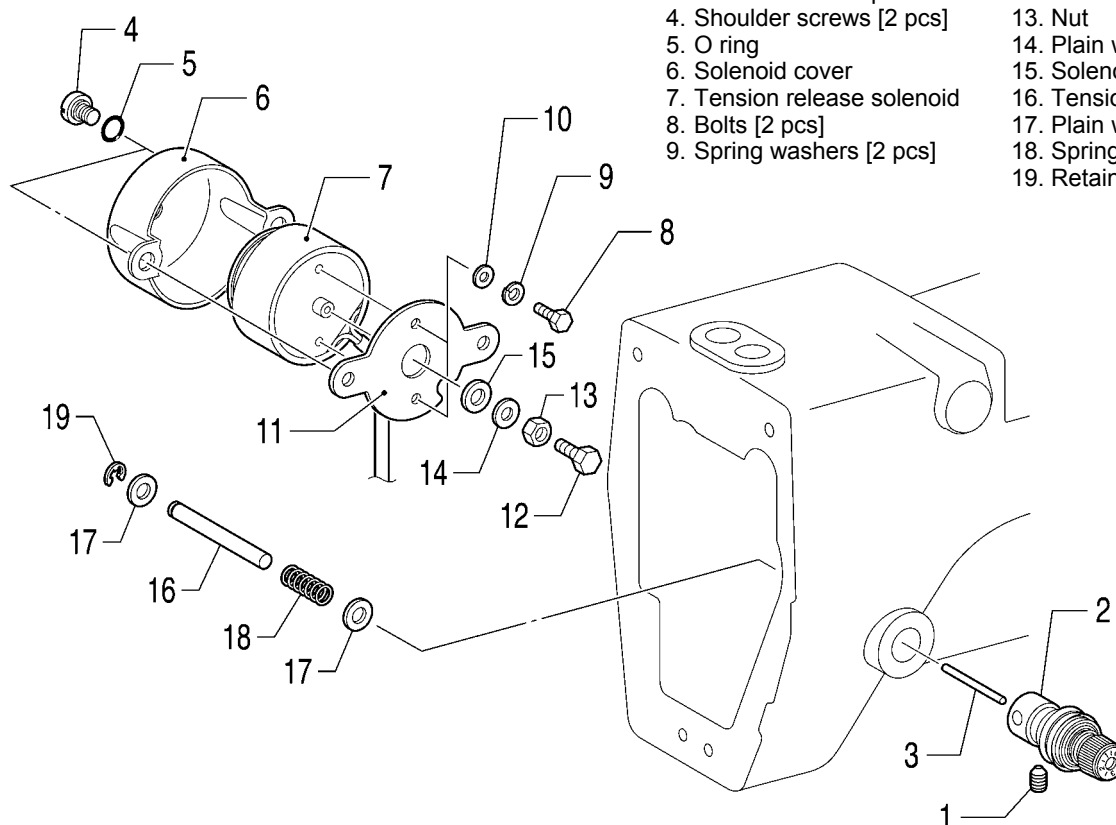
5-8. Thread wiper mechanism

1. Retaining ring, E
2. Screws [2 pcs]
3. Plain washers [2 pcs]
4. Thread wiper arm Assy
5. Retaining ring, E
6. Plain washer
7. O rings [2 pcs]
8. Connecting plate [Pull upward]
9. Set screw [Loosen]
10. Work clamp lifter roller shaft
11. Collar
12. Thread wiper rod Assy [Pull forward]

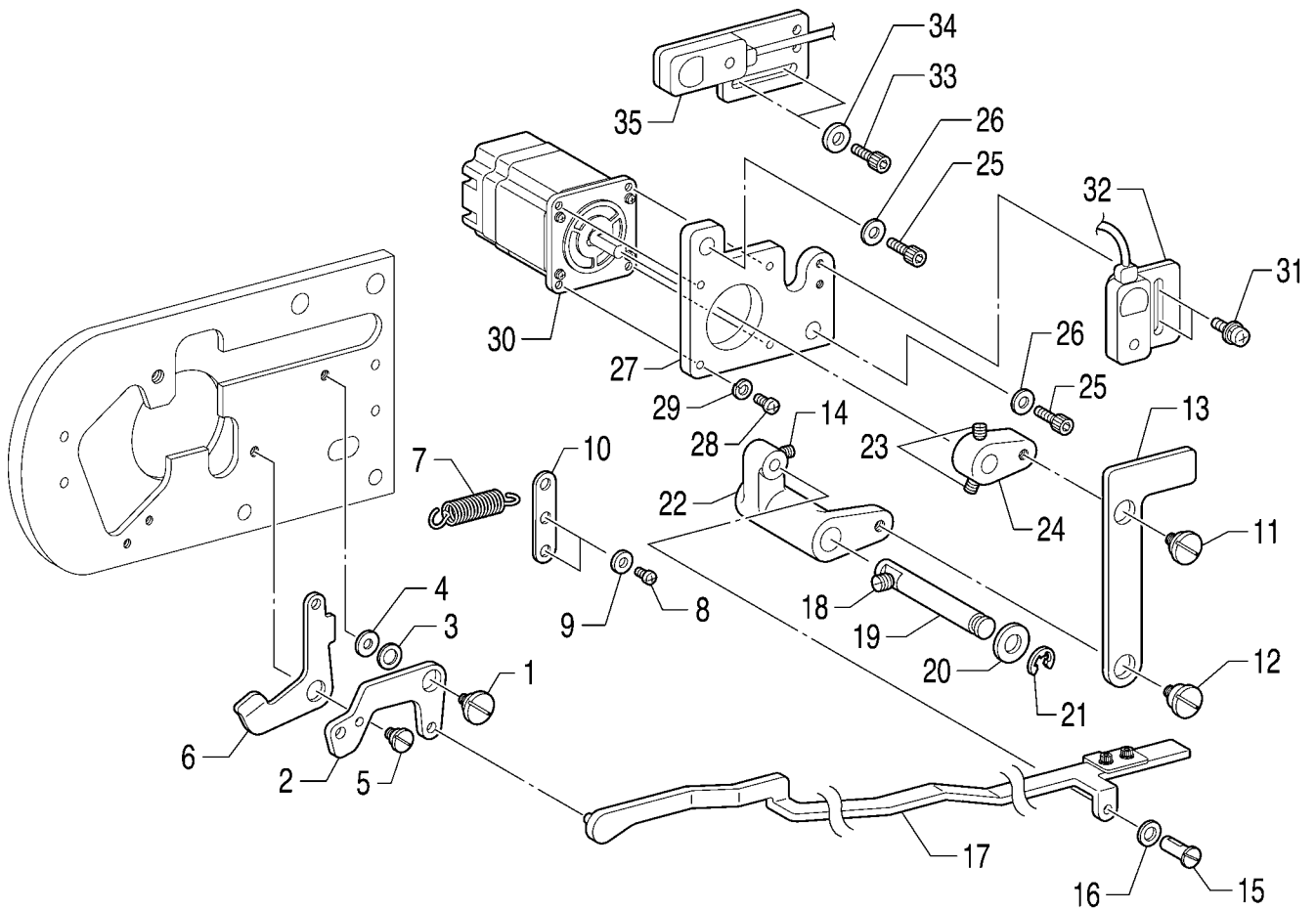


5-9. Tension release mechanism

- | | |
|-------------------------------|----------------------------|
| 1. Set screw [Loosen] | 10. Plain washers [2 pcs] |
| 2. Tension bracket [Pull out] | 11. Solenoid setting plate |
| 3. Tension release pin | 12. Bolt |
| 4. Shoulder screws [2 pcs] | 13. Nut |
| 5. O ring | 14. Plain washer |
| 6. Solenoid cover | 15. Solenoid cushion |
| 7. Tension release solenoid | 16. Tension release bar |
| 8. Bolts [2 pcs] | 17. Plain washers [2 pcs] |
| 9. Spring washers [2 pcs] | 18. Spring |
| | 19. Retaining ring, E |

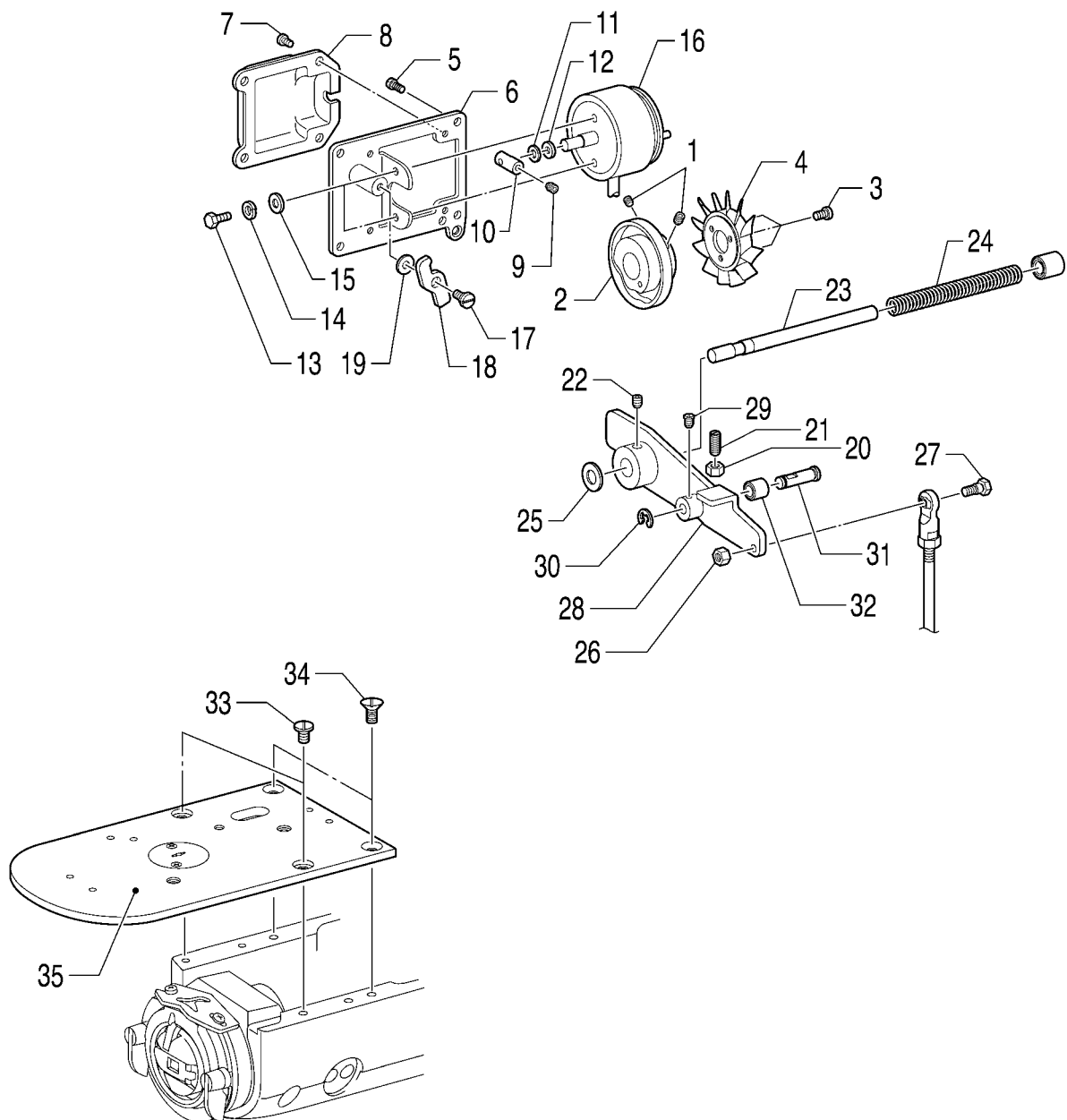


5-10. Thread nipper mechanism



- | | |
|---------------------------|------------------------------------|
| 1. Shoulder screw | 19. Thread nipper lever shaft |
| 2. Thread nipper D assy | 20. Washer |
| 3. Collar | 21. Retaining ring, E |
| 4. Spacer | 22. Thread nipper lever |
| 5. Shoulder screw | 23. Set screws [2 pcs: Loosen] |
| 6. Thread nipper U | 24. Motor lever |
| 7. Spring | 25. Bolts [2 pcs] |
| 8. Screws [2 pcs] | 26. Plain washers [2 pcs] |
| 9. Plain washers [2 pcs] | 27. TN-motor setting plate |
| 10. Spring hook plate | 28. Screws [4 pcs] |
| 11. Shoulder screw, 6-1.8 | 29. Spring washers [4 pcs] |
| 12. Shoulder screw, 6-3.5 | 30. Thread nipper pulse motor assy |
| 13. Connecting plate B | 31. Screws with washers [2 pcs] |
| 14. Set screw [Loosen] | 32. TN-sensor setting plate F |
| 15. Lever shaft | 33. Bolts [2 pcs] |
| 16. Plain washer | 34. Plain washers [2 pcs] |
| 17. TN-sensor dog assy | 35. TN-sensor setting plate B |
| 18. Set screw [Loosen] | |

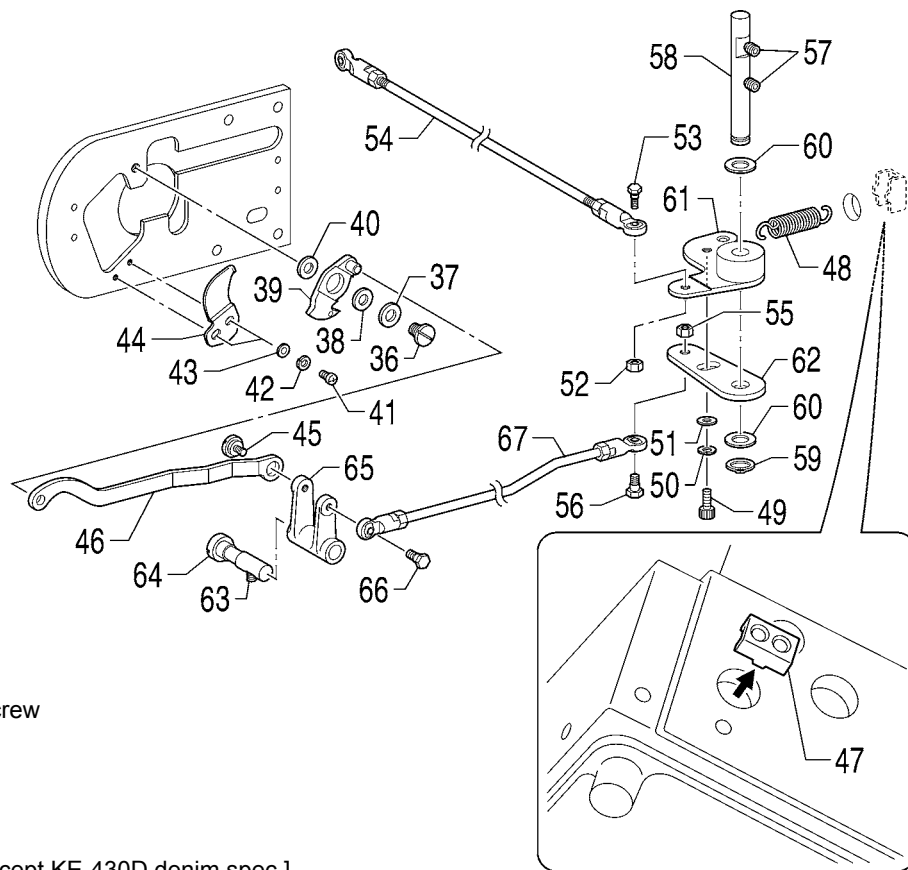
5-11. Thread trimmer mechanism



1. Set screws [2 pcs: Loosen]
2. Thread trimmer cam
3. Screws [3 pcs]
4. Fan
5. Screws [4 pcs]
6. Solenoid setting plate
7. Screws [4 pcs]
8. Solenoid cover
9. Set screw
10. Solenoid lever
11. Washer
12. Solenoid cushion

13. Bolts [2 pcs]
14. Spring washers [2 pcs]
15. Plain washers [2 pcs]
16. Thread trimmer solenoid assy
17. Shoulder screw
18. Pushing lever
19. Washer
20. Nut
21. Set screw
22. Set screw
23. Guide shaft
24. Spring

25. Cushion
26. Nut
27. Shoulder screw B
28. Driving lever
29. Set screw
30. Retaining ring, E
31. Collar shaft
32. Thread trimmer collar
33. Screws [2 pcs]
34. Flat screws [2 pcs]
35. Needle plate



36. Movable knife shoulder screw

37. Thrust washer

38. Movable knife collar

39. Movable knife assy

40. Movable knife spacer

41. Screws [2 pcs]

42. Spring washers [2 pcs: except KE-430D denim spec.]

43. Plain washers [2 pcs]

44. Fixed knife

45. Shoulder screw

46. Connecting plate

47. Spring hook

48. Spring

49. Bolt

50. Spring washer

51. Plain washer

52. Nut

53. Shoulder screw B

54. Thread trimmer rod V

55. Nut

56. Shoulder screw B

57. Set screw [Loosen]

58. Thread trimmer lever shaft

59. Retaining ring, C

60. Spacers [2 pcs]

61. Thread trimmer lever V

62. Thread trimmer lever H

63. Set screw [Loosen]

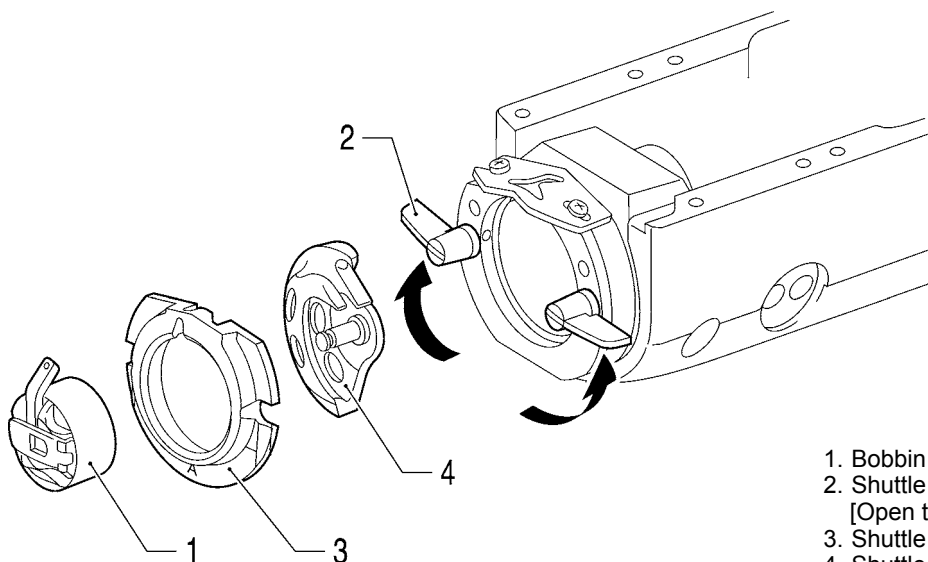
64. Movable knife lever shaft

65. Movable knife lever

66. Shoulder screw

67. Thread trimmer rod H

5-12. Shuttle hook mechanism



1. Bobbin case assy

2. Shuttle race base setting claw
[Open to right and left]

3. Shuttle race base

4. Shuttle hook

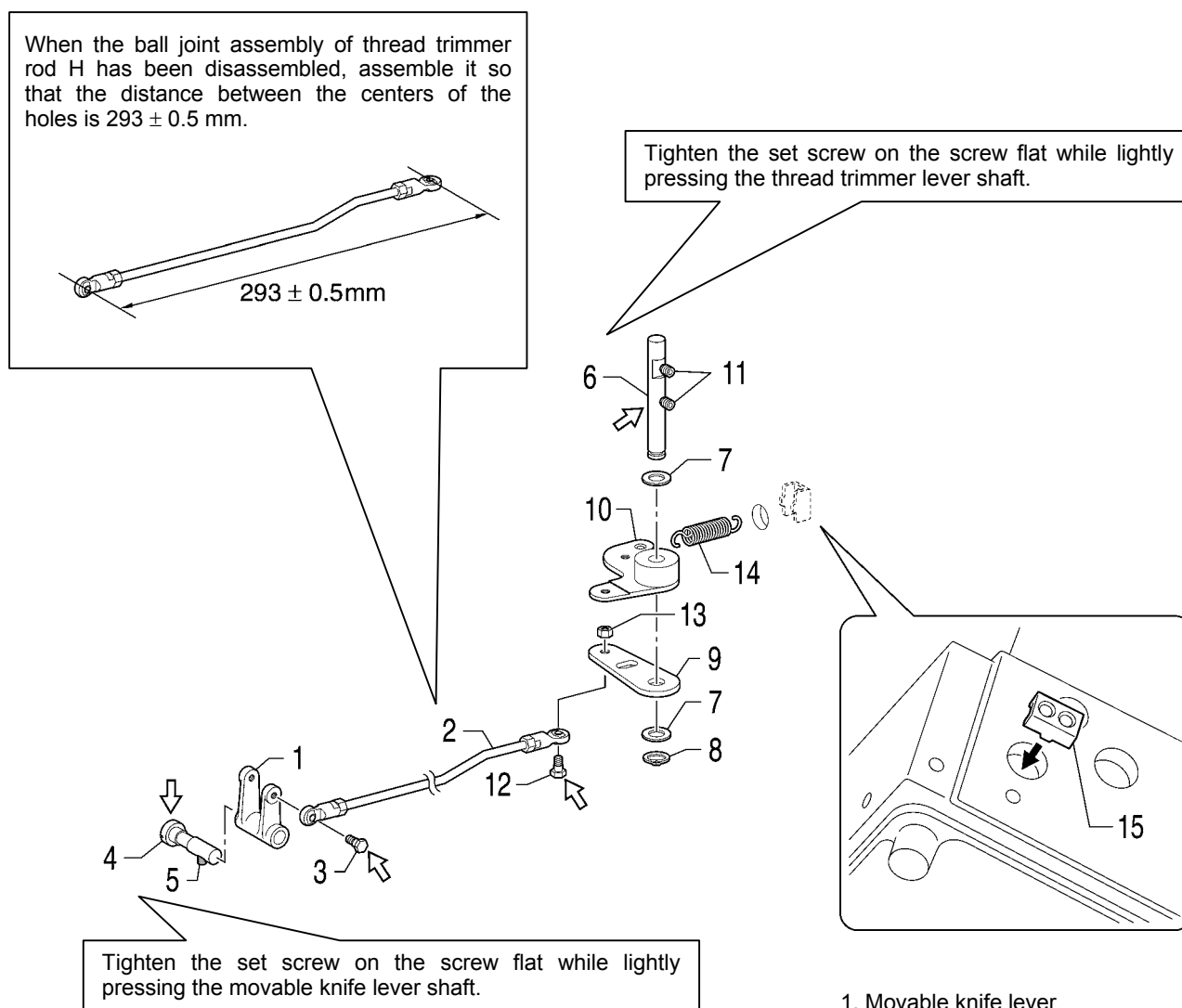
6. ASSEMBLY

Assemble each part in order of the numbers.

Apply grease to the required places when reassembling the parts and once every two years.

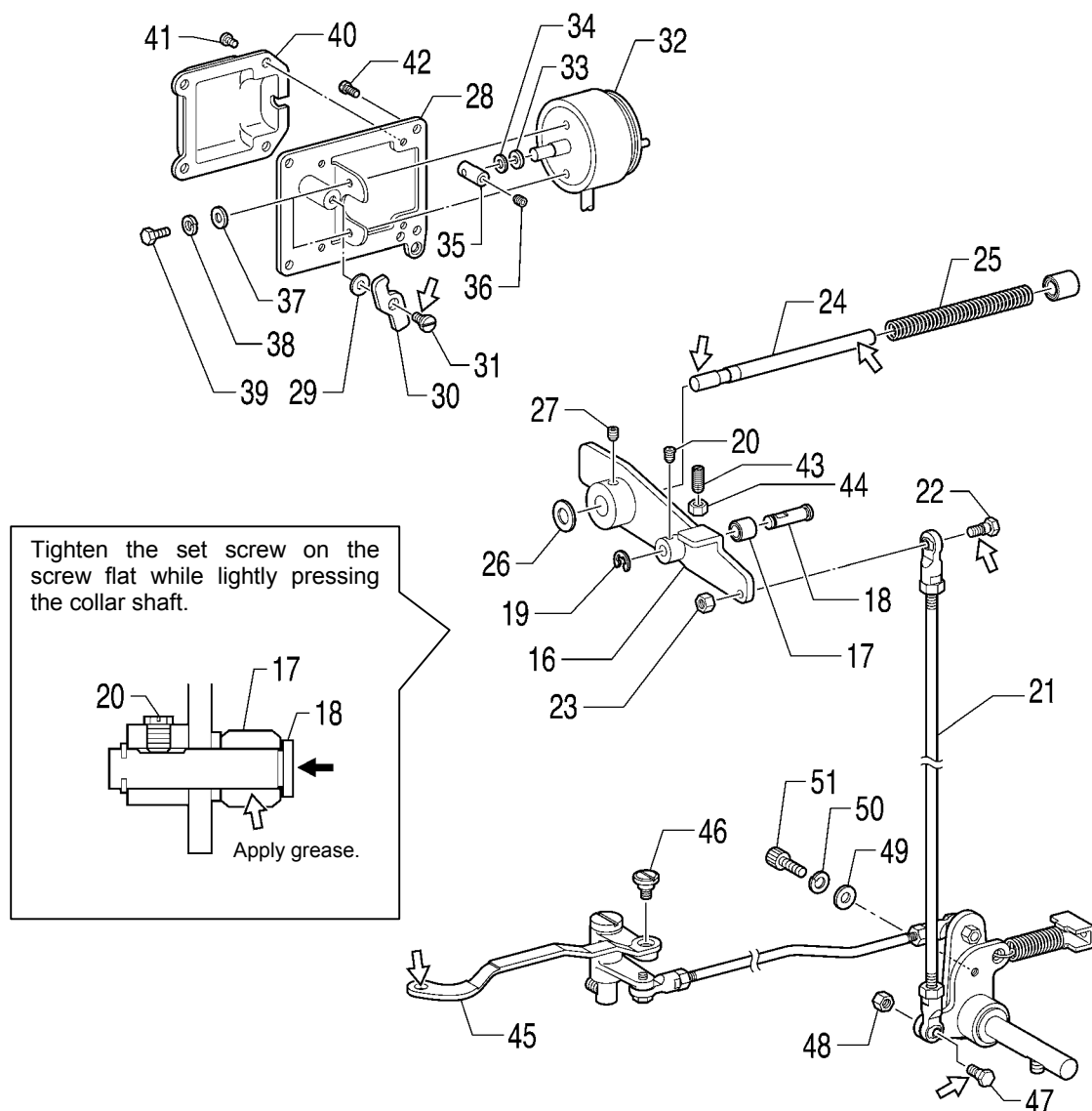
6-1. Thread trimmer mechanism (1)

Apply grease to the portions indicated by the white arrows.



1. Movable knife lever
2. Thread trimmer rod H
3. Shoulder screw
4. Movable knife lever shaft
5. Set screw
6. Thread trimmer lever shaft
7. Spacers [2 pcs]
8. Retaining ring, C
9. Thread trimmer lever H
10. Thread trimmer lever V
11. Set screws [2 pcs]
12. Shoulder screw B
13. Nut
14. Spring
15. Spring hook

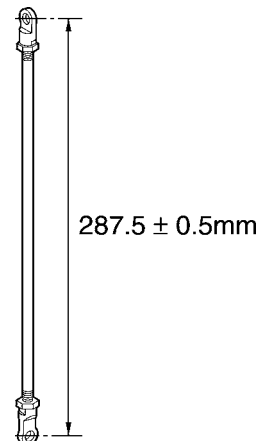
6. ASSEMBLY



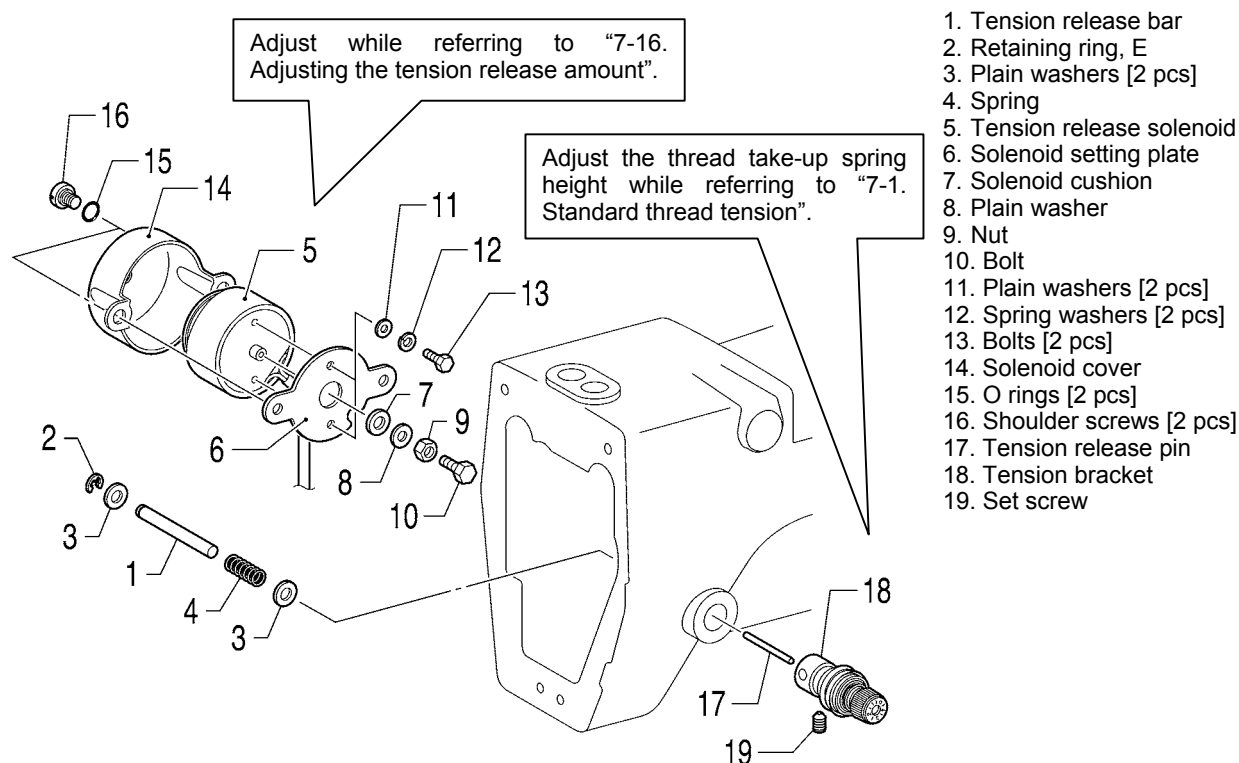
- 16. Driving lever
- 17. Thread trimmer collar
- 18. Collar shaft
- 19. Retaining ring, E
- 20. Set screw
- 21. Thread trimmer rod V
- 22. Shoulder screw B
- 23. Nut
- 24. Guide shaft
- 25. Spring
- 26. Cushion
- 27. Set screw
- 28. Solenoid setting plate
- 29. Washer
- 30. Pushing lever
- 31. Shoulder screw
- 32. Thread trimmer solenoid assy
- 33. Solenoid cushion

- 34. Washer
- 35. Solenoid lever
- 36. Set screw
- 37. Plain washers [2 pcs]
- 38. Spring washers [2 pcs]
- 39. Bolts [2 pcs]
- 40. Solenoid cover
- 41. Screws [4 pcs]
- 42. Screws [4 pcs]
- 43. Set screw
- 44. Nut
- 45. Connecting plate
- 46. Shoulder screw
- 47. Shoulder screw B
- 48. Nut
- 49. Plain washer
- 50. Spring washer
- 51. Bolt

When the ball joint assembly of thread trimmer rod V has been disassembled, assemble it so that the distance between the centers of the holes is 287.5 ± 0.5 mm.

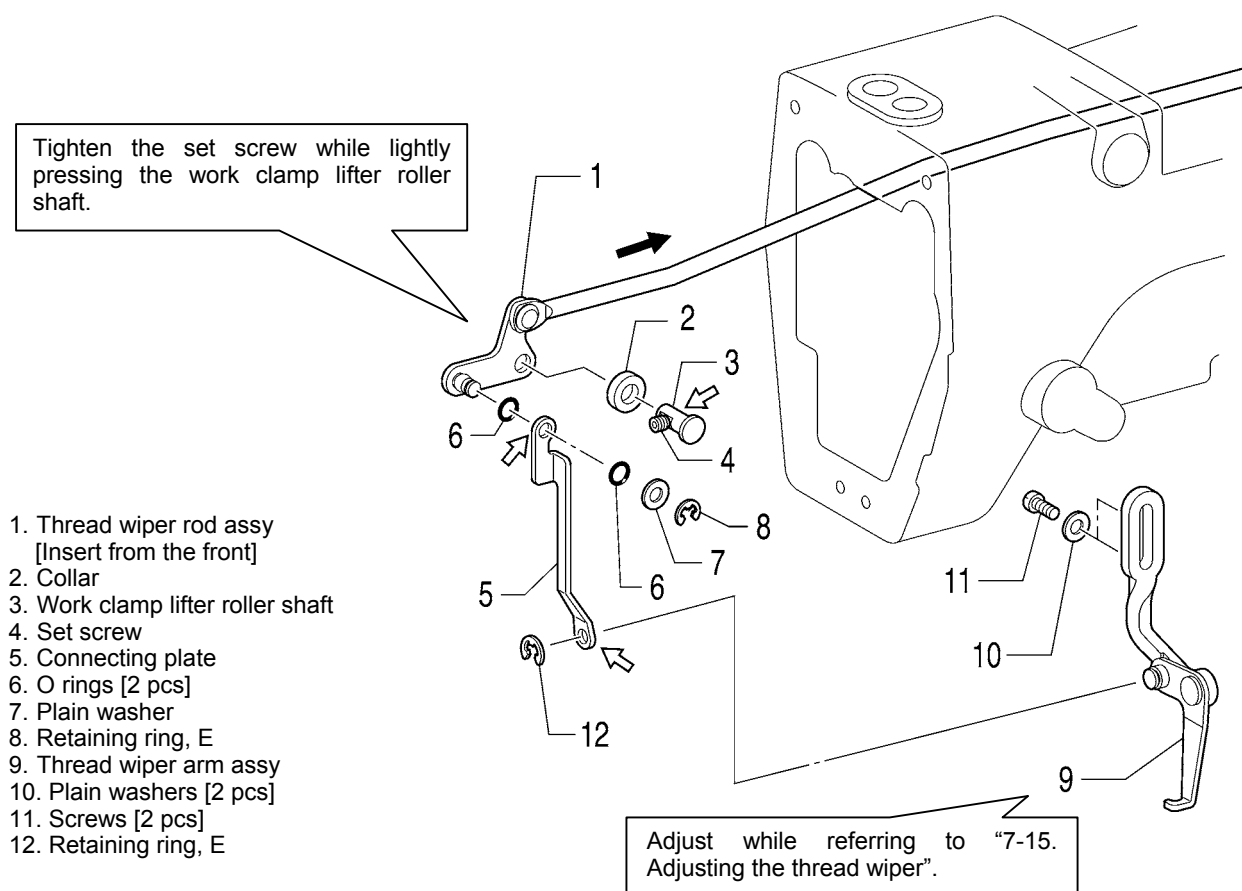


6-2. Tension release mechanism



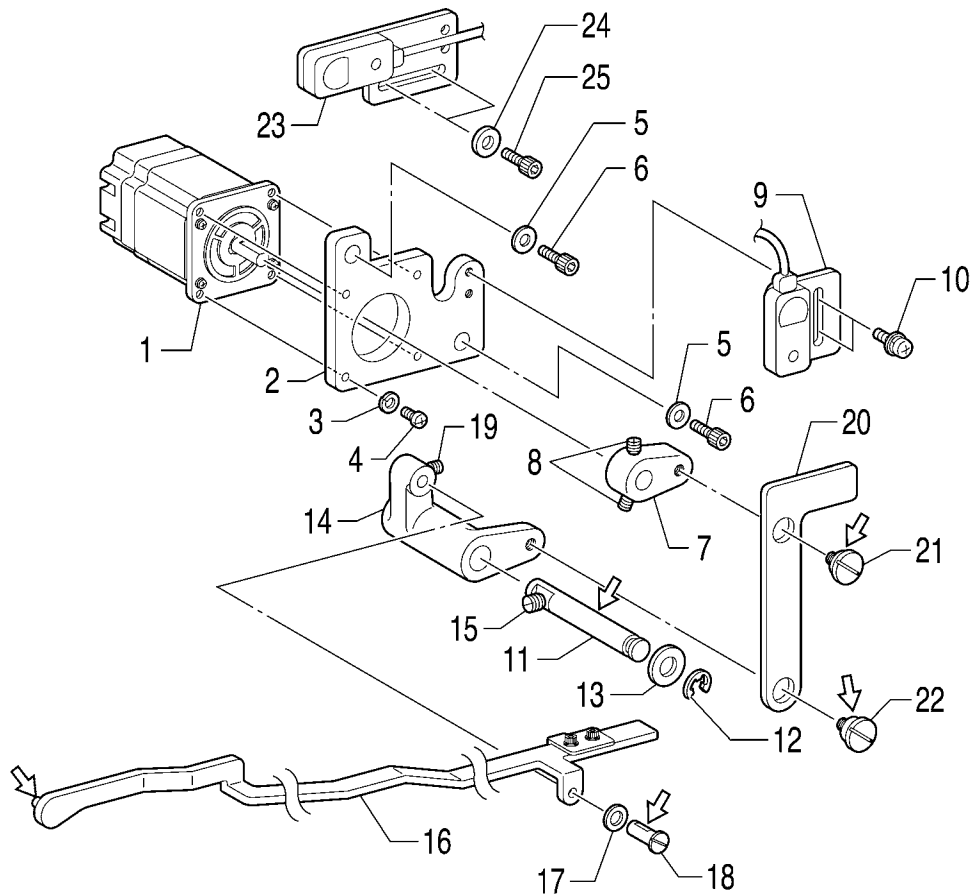
6-3. Thread wiper mechanism

Apply grease to the portions indicated by the white arrows.



6-4. Thread nipper mechanism

Apply grease to the portions indicated by the white arrows.

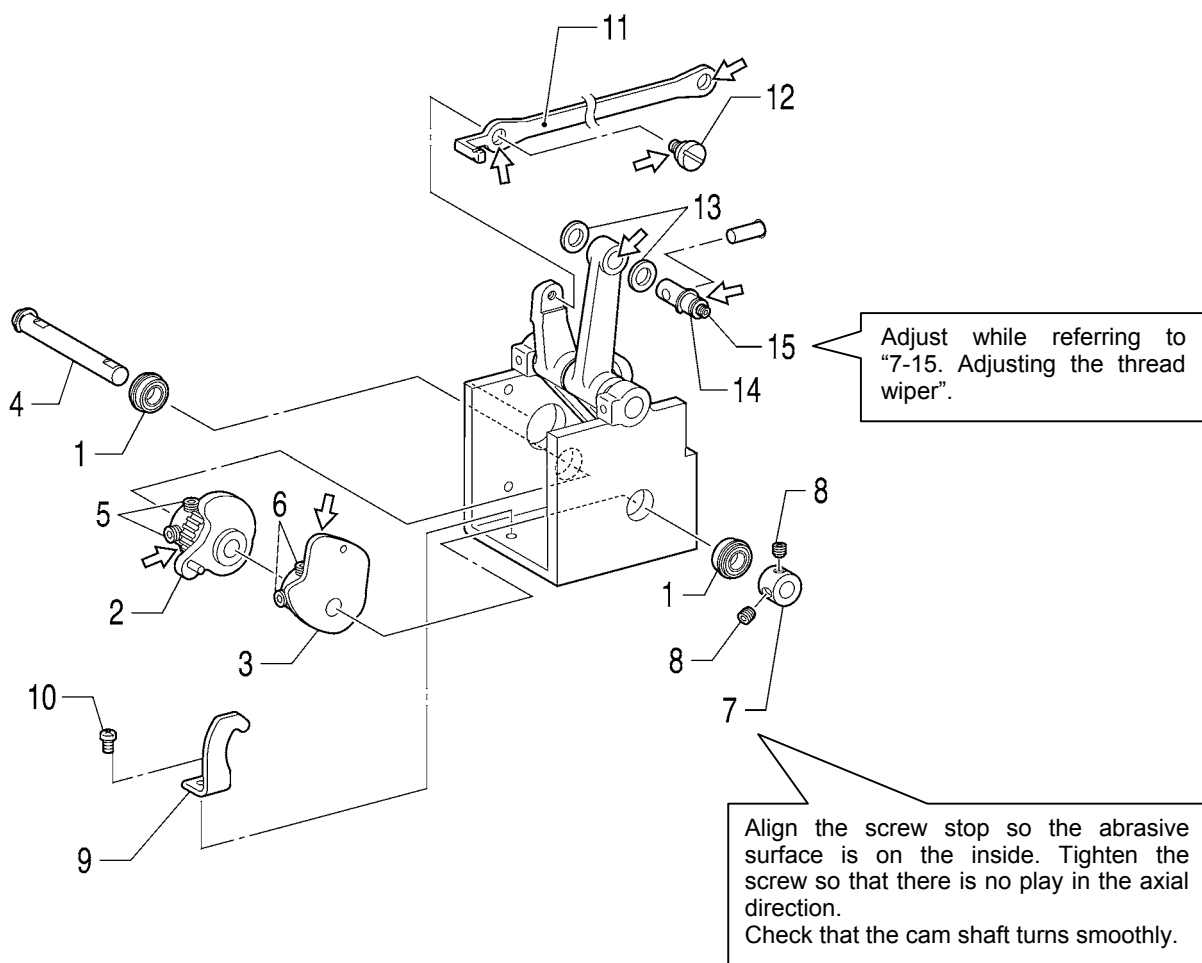


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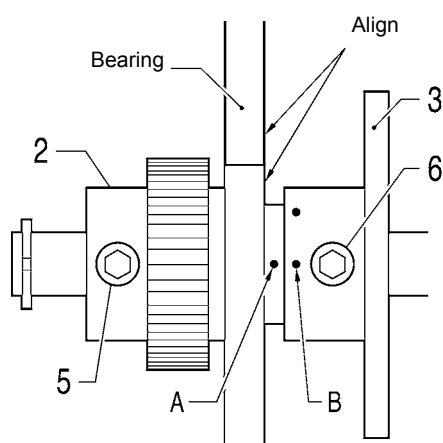
- | | |
|-----------------------------------|-------------------------------|
| 1. Thread nipper pulse motor assy | 14. Thread nipper lever |
| 2. TN-motor setting plate | 15. Set screw |
| 3. Spring washers [4 pcs] | 16. TN-sensor dog assy |
| 4. Screws [4 pcs] | 17. Plain washer |
| 5. Plain washers [2 pcs] | 18. Lever shaft |
| 6. Bolts [2 pcs] | 19. Set screw |
| 7. Motor lever | 20. Connecting plate B |
| 8. Set screws [2 pcs] | 21. Shoulder screw, 6-1.8 |
| 9. TN-sensor setting plate F | 22. Shoulder screw, 6-3.5 |
| 10. Screws with washers [2 pcs] | 23. TN-sensor setting plate B |
| 11. Thread nipper lever shaft | 24. Plain washers [2 pcs] |
| 12. Retaining ring, E | 25. Bolts [2 pcs] |
| 13. Washer | |

6-5. Work clamp lifter mechanism

Apply grease to the portions indicated by the white arrows.



4619Q



Align the set screw on the index mark A side of the cam gear with the screw stop, and then tighten the set screw so that the sides of the bearing and the cam are flush.

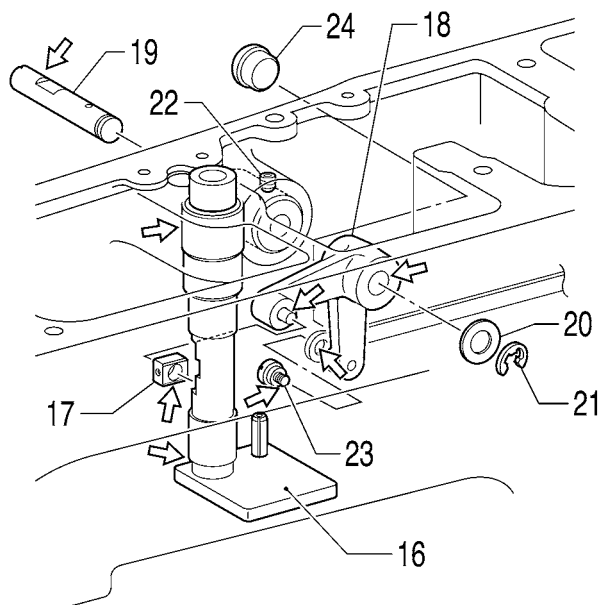
Align the index mark B of the thread wiper cam that is on the same side as the set screw with the index mark A of the cam gear, and then tighten the set screw so that the thread wiper cam is touching the cam gear.

4620Q

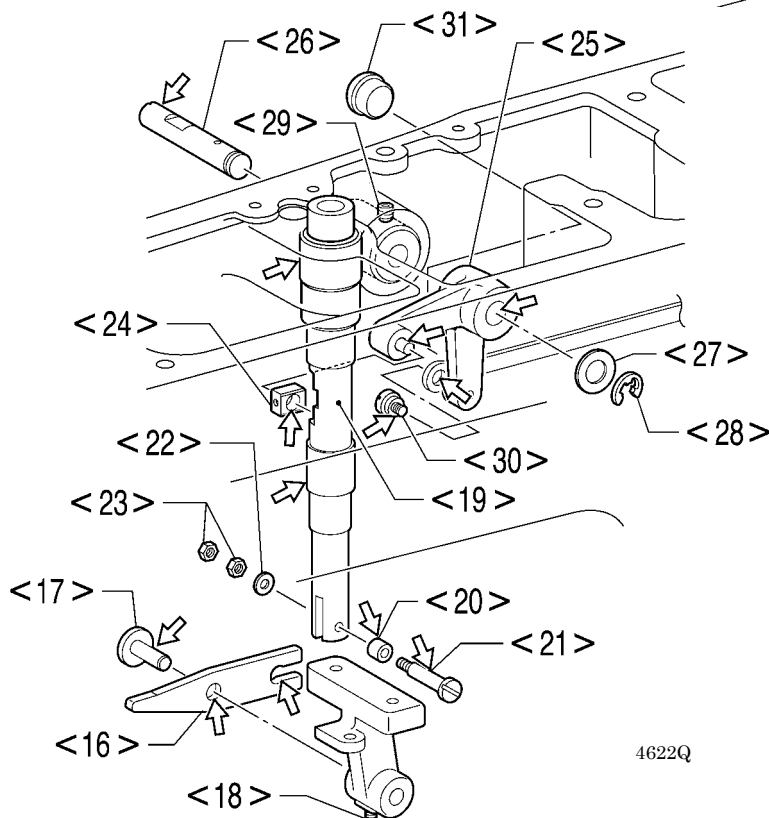
1. Ball bearings [2 pcs]
2. Cam gear
3. Thread wiper cam
4. Cam shaft
5. Set screws [2 pcs]
6. Set screws [2 pcs]
7. Set screw collar, B
8. Set screws [2 pcs]
9. Stopper
10. Screw
11. Link [Insert from the back]
12. Link shoulder screws [2 pcs]
13. Plain washers [2 pcs]
14. Thread wiper rod shaft (with retaining ring)
15. Set screw (Temporarily tighten)

CS-430D

- 16. Work clamp lifter plate
- 17. Needle bar guide slide block
- 18. Lifter lever
- 19. Lever shaft
- 20. Plain washer
- 21. Retaining ring, E
- 22. Set screw
- 23. Link shoulder screw
- 24. Rubber cap



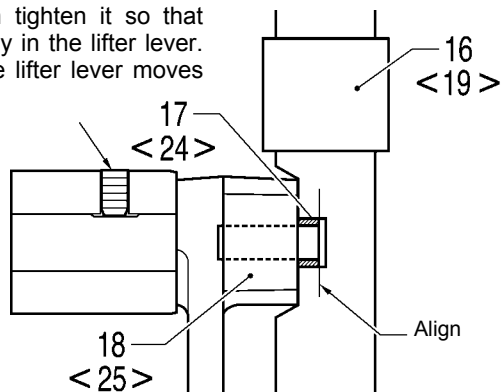
CS-438D



- <16> Button clamp lever
- <17> Button clamp lever shaft
- <18> Set screw
- <19> Button clamp rod
- <20> Roller
- <21> Button clamp roller shaft
- <22> Plain washer
- <23> Nuts [2 pcs]
- <24> Needle bar guide slide block
- <25> Lifter lever
- <26> Lever shaft
- <27> Plain washer
- <28> Retaining ring, E
- <29> Set screw
- <30> Link shoulder screw
- <31> Rubber cap

4622Q

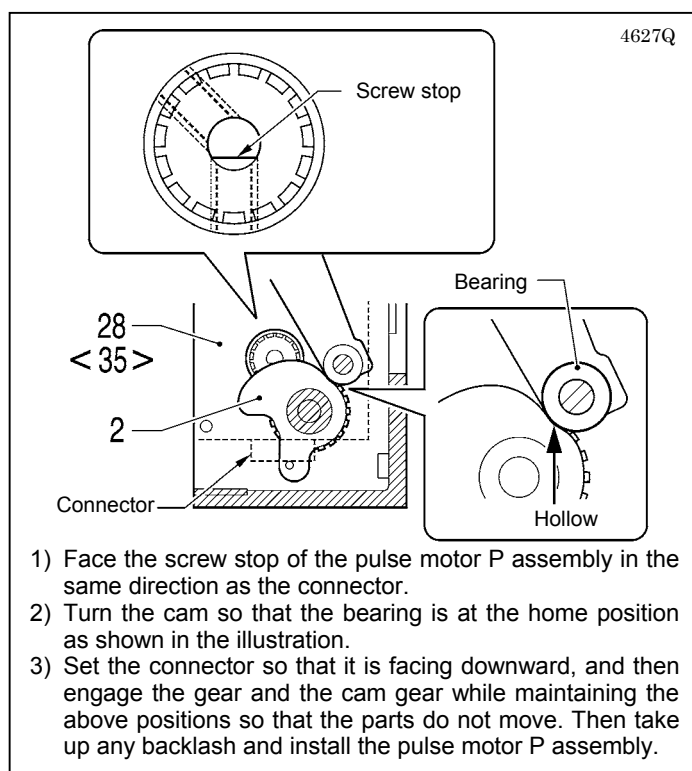
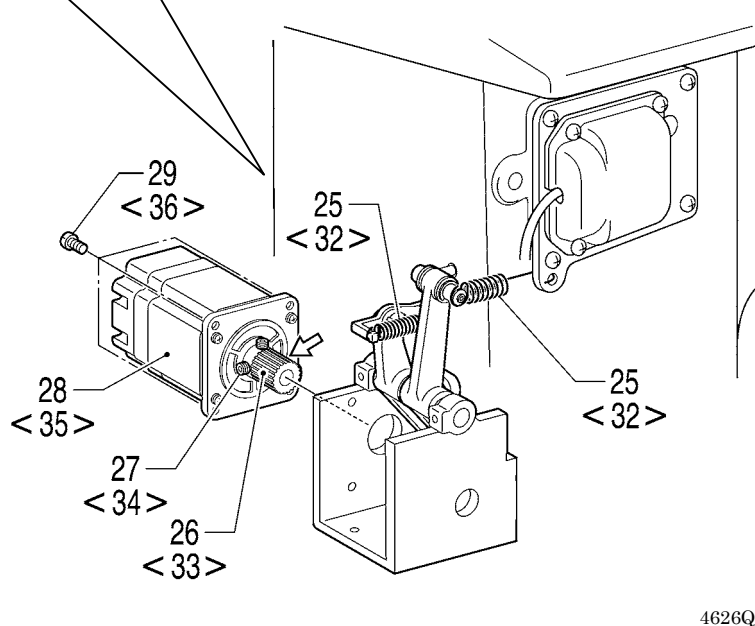
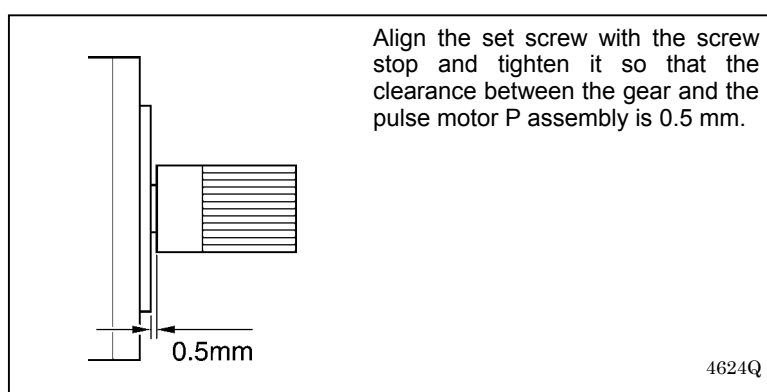
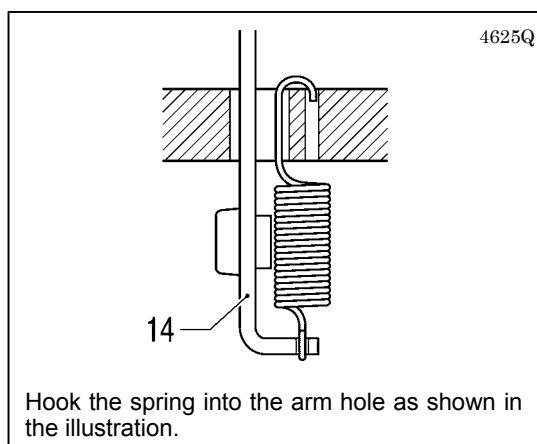
Align the set screw with the screw stop and then tighten it so that there is no play in the lifter lever. Check that the lifter lever moves smoothly.



Place the needle bar guide slide block onto the pin of the lifter lever. The pin and the surface of the slide block should be aligned. While aligning the needle bar guide slide block with the groove in the work clamp lifter plate (button clamp rod), pass the lever shaft through the lifter lever.

Note:

When the work clamp lifter plate (button clamp rod) is lowered, the needle bar guide slide block moves away, so hold the work clamp lifter plate (button clamp rod) in place until the link shoulder screw is tightened.



CS-430D

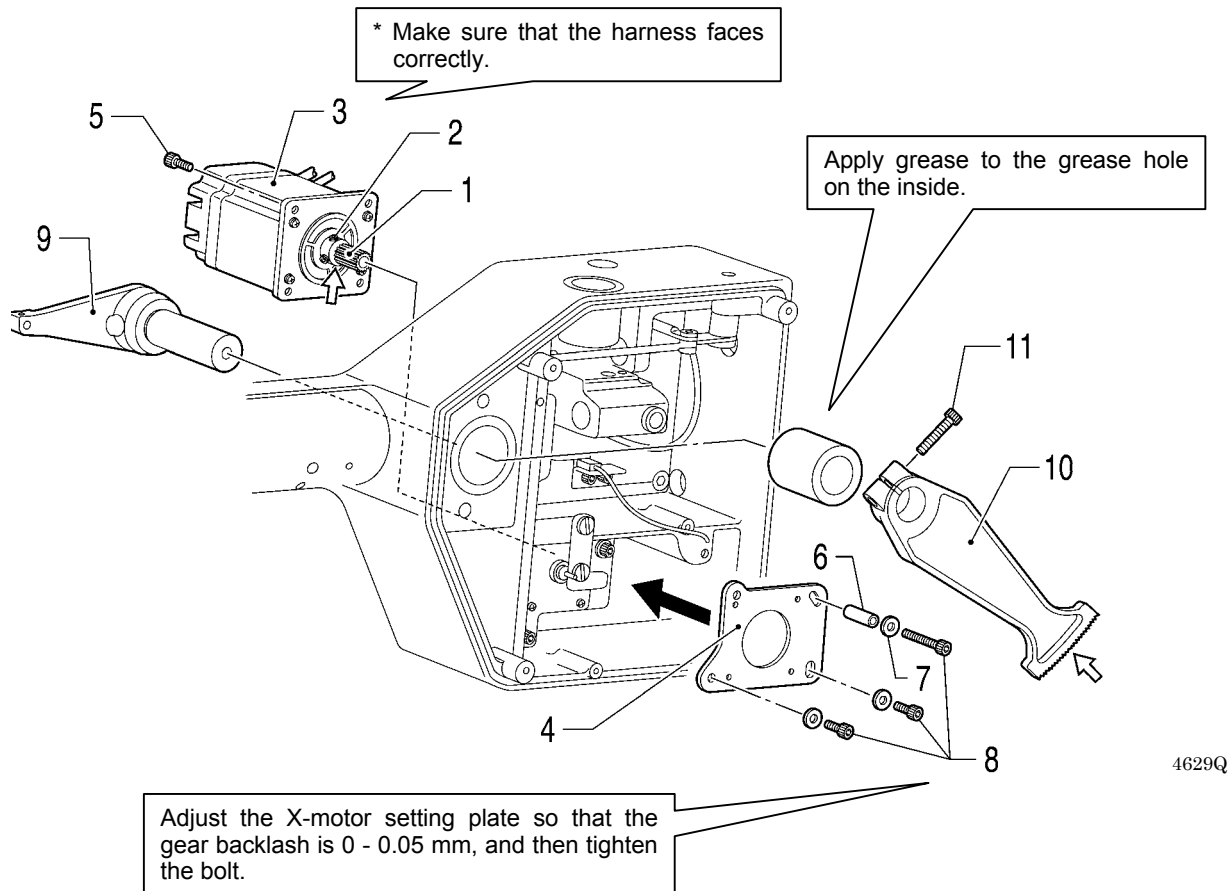
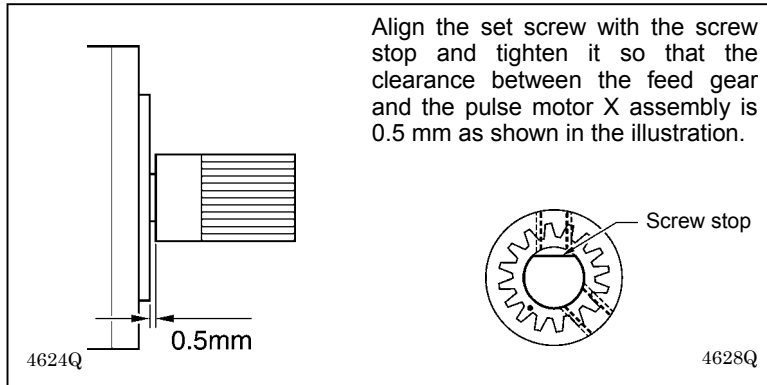
25. Spring [2 pcs]
 26. Gear
 27. Set screws [2 pcs]
 28. Pulse motor P assy
 29. Bolts [4 pcs]

CS-438D

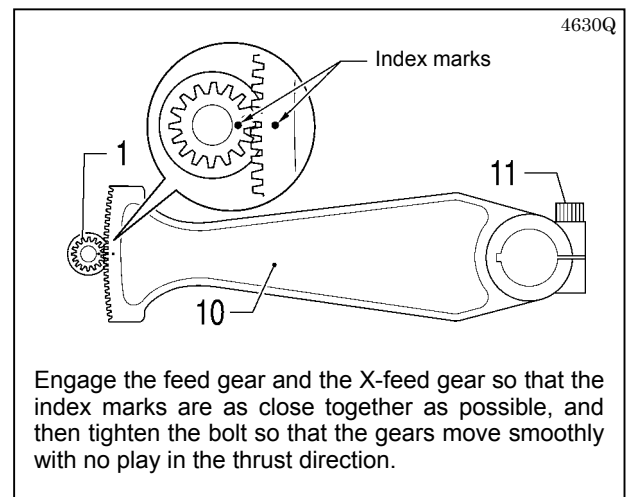
<32> Spring [2 pcs]
 <33> Gear
 <34> Set screws [2 pcs]
 <35> Pulse motor P assy
 <36> Bolts [4 pcs]

6-6. Feed mechanism

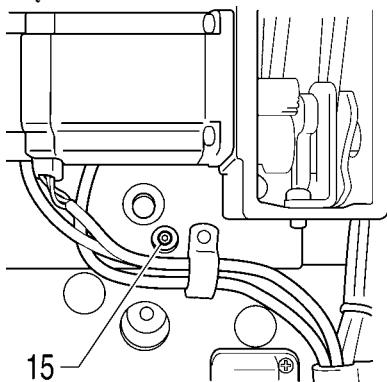
Apply grease to the portions indicated by the white arrows.



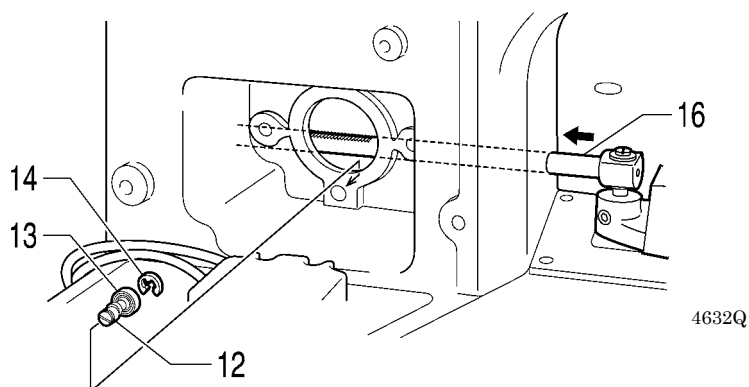
1. Feed gear
2. Set screws [2 pcs]
3. Pulse motor X assy [Insert from above the machine]
4. X-motor setting plate
5. Bolts [4 pcs]
6. Collar
7. Plain washers [3 pcs]
8. Bolts [3 pcs]
9. X-feed lever
10. X-feed gear
11. Bolt



4631Q

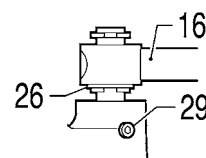


- 1) Loosen the set screw by about 1/3 of a turn from the tightened position so that the eccentric shaft can turn.
- 2) Insert the Y-feed rack shaft, turn the eccentric shaft so that the Y-feed rack shaft slightly touches the ball bearing, and then tighten the set screw.

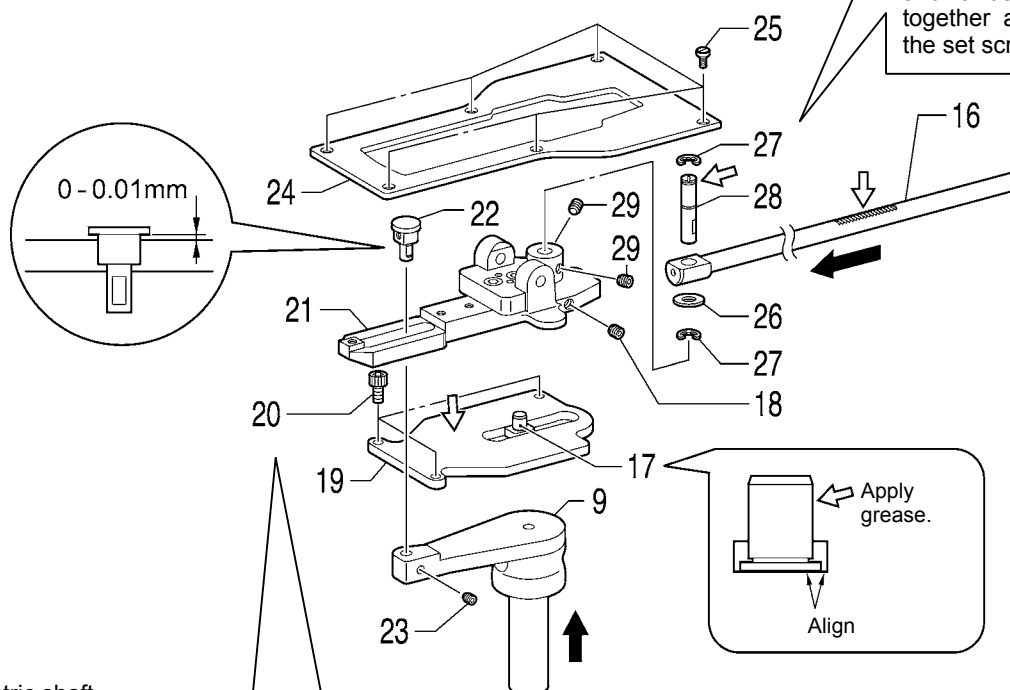


4632Q

4633Q

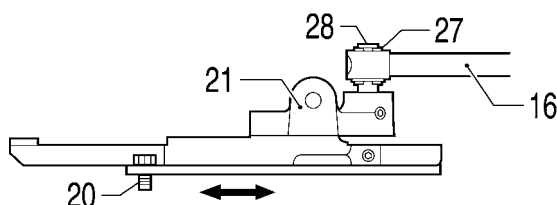


Push the Y-feed rack shaft and thrust washer close together and then tighten the set screw.



4634Q

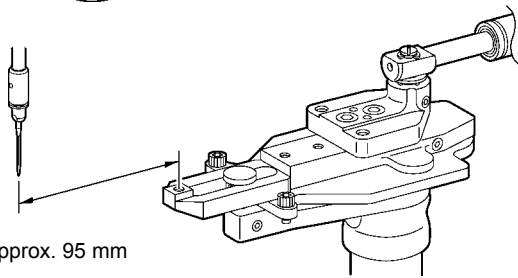
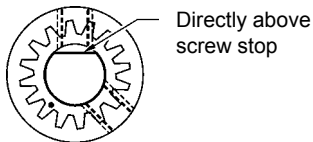
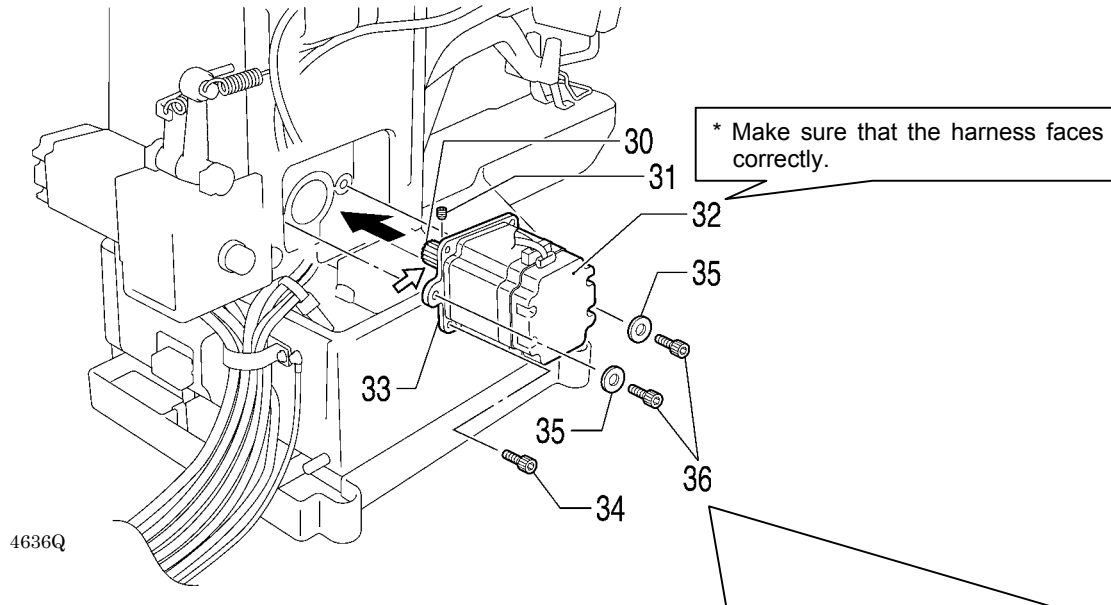
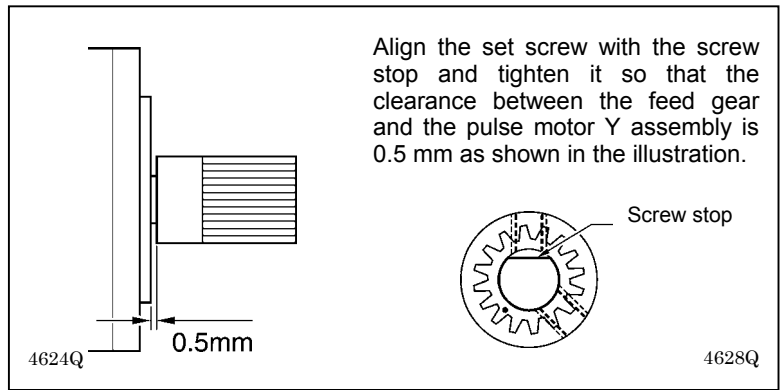
12. Eccentric shaft
13. Ball bearing
14. Retaining ring
15. Set screw
(Temporarily tighten)
16. Y-feed rack shaft
17. Regulator block assy
18. Set screw
19. Feed bracket support plate
20. Bolts [3 pcs]
(Temporarily tighten)
21. Feed bracket sub assy
22. Regulator block assy
23. Set screw
24. Feed bracket cover
25. Screws [6 pcs]
26. Thrust washer
27. Retaining rings [2 pcs]
28. Y-connecting pin
29. Set screws [2 pcs]



- 1) Connect the Y-feed rack shaft and the feed bracket sub assembly with the Y-connecting pin with the retaining ring at the top.
- 2) Move the feed bracket sub assembly back and forth so that the Y-connecting pin moves smoothly into the holes of the Y-feed rack shaft and the feed bracket sub assembly, and then tighten the bolt.
- 3) Temporarily remove the Y-connecting pin.

4635Q

6. ASSEMBLY



- 1) Provisionally tighten the bolt so that the distance shown in the illustration is 95 mm with the screw stop of the pulse motor Y assembly is facing the same way as the connector.
- 2) Move the pulse motor Y assembly up or down so that the Y-feed rack shaft moves with a force of 8-12 N, and then tighten the bolt.

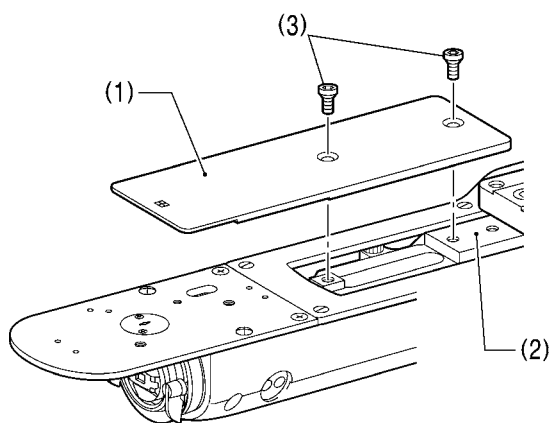
* For the CC-438D, be particularly careful that the mechanism is in the correct position shown in the above illustration.

4628Q 4637Q

- 30. Feed gear
- 31. Set screws [2 pcs]
- 32. Pulse motor Y assy
- 33. Y-motor setting plate
- 34. Bolts [4 pcs]
- 35. Plain washers [2 pcs]
- 36. Bolts [2 pcs] (Temporarily tighten)

After installing, carry out the steps in "Feed mechanism home position adjustment" on the following page.

<Feed mechanism home position adjustment>



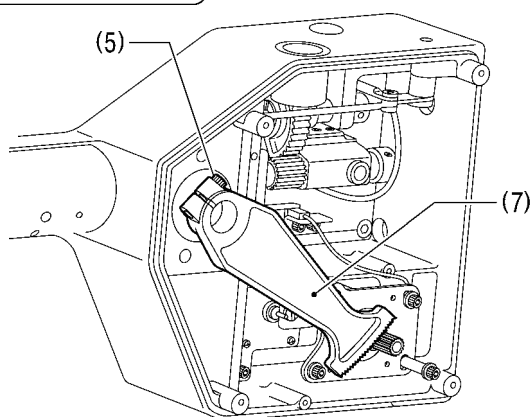
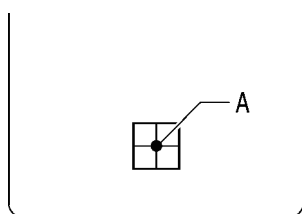
4638Q

4639Q

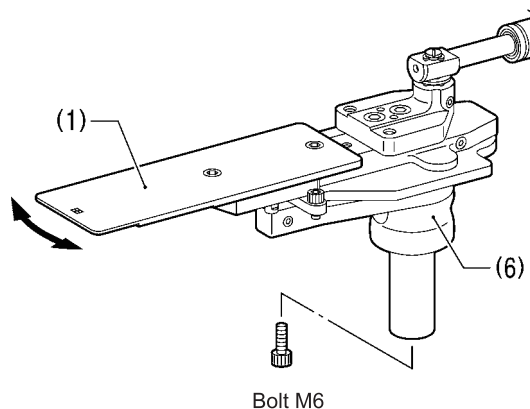
1. Install the home position standard plate (1) to the feed bracket sub assembly (2) with the two screws (3).
2. Gently tilt back the machine head.
3. Switch the sewing machine to home position adjustment mode. (See "7-18. Adjusting the home position".)

* The offset value will be cleared and reset to "0".

4640Q



4641Q



4642Q

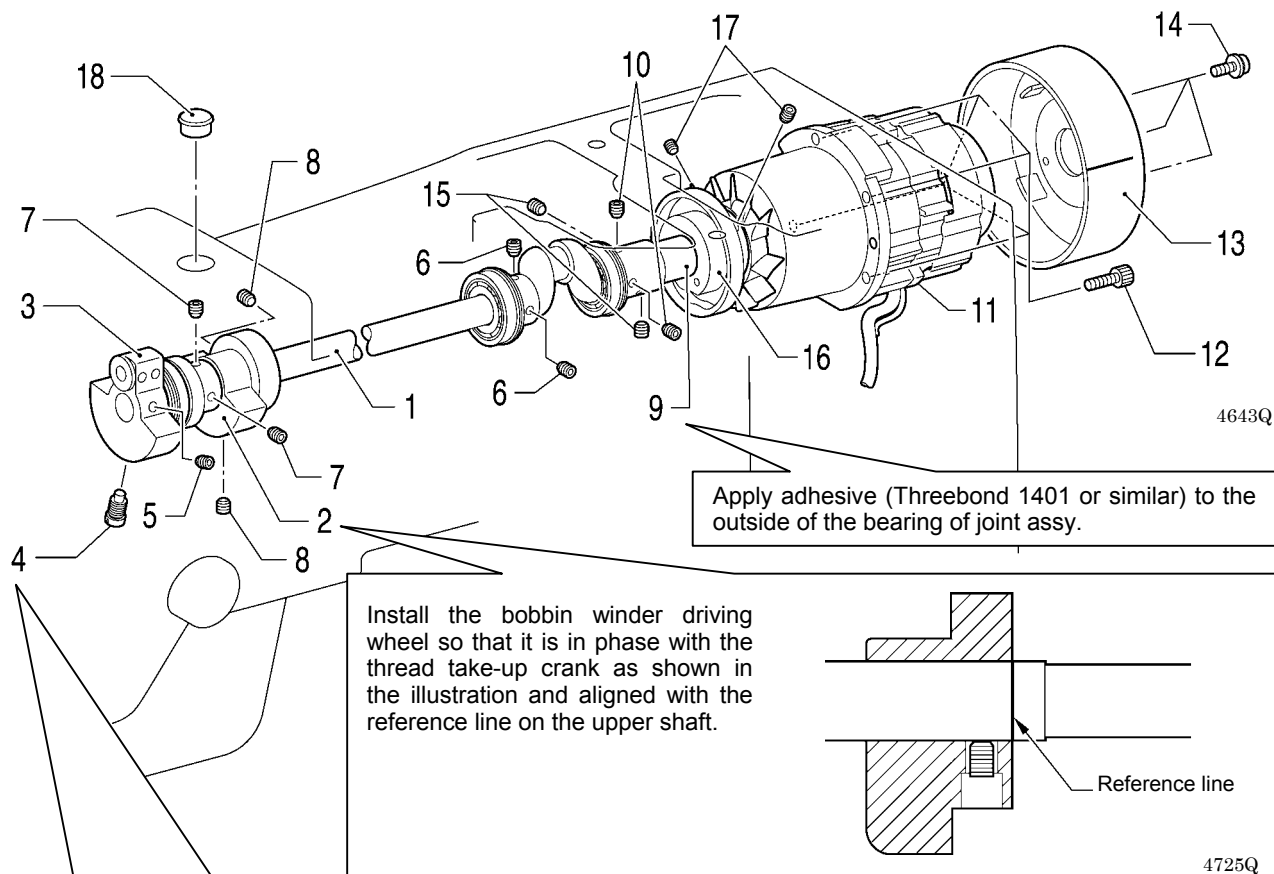
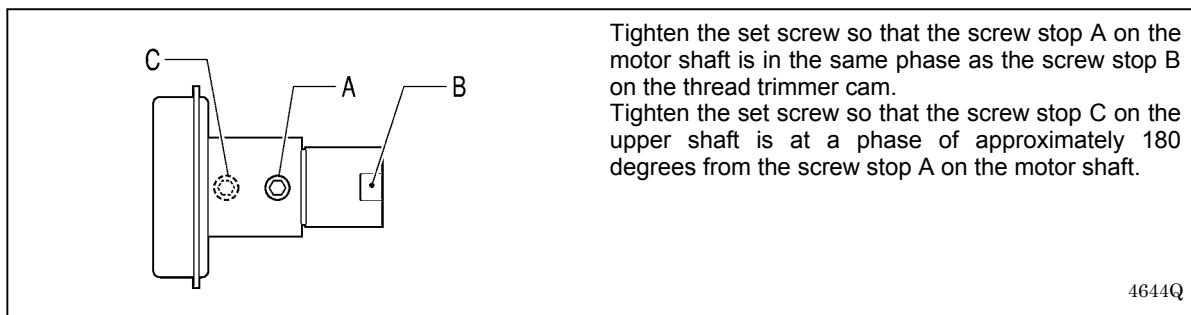
5. Turn the pulley by hand and check at what point the needle drops to the home position standard plate. If the needle does not drop to point (A), carry out the following adjustments.

Note:

Be careful not to let the needle touch the home position standard plate.

6. Loosen the bolt (5) and move the home position standard plate (1) to the left or right to adjust the point where the needle drops at the home position.
 - * If play occurs in the thrust direction, tighten the M6 bolt on the X-feed lever (6), and adjust while pulling the bolt.
7. Tighten the bolt (5).
8. Turn off the power switch and check that there is no play in the thrust direction in the X-feed gear (7).
9. Make fine adjustments while referring to "7-18-1. Adjusting the X-Y feed home position".

6-7. Upper shaft mechanism



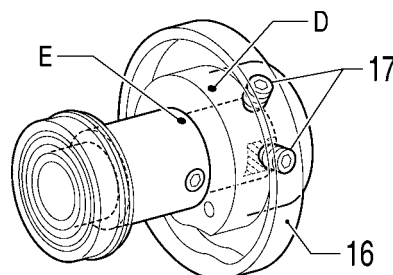
- 1) Tighten the screw of the thread take-up crank so that it is aligned with the upper shaft hole.
- 2) While pressing the thread take-up crank so that there is no play in it, tighten the two set screws (6).

Apply adhesive (Threebond 1401 or similar) to the thread section of the screw.

- 1) Align the index mark D on the thread trimmer cam and the index mark E on the joint assembly, and then provisionally tighten the set screw at the index mark side.
- 2) After tightening the set screw at the screw stop side, fully tighten the set screw at the index mark side.
- 3) Carry out the adjustments in "7-14. Adjusting the thread trimmer cam position".

Apply the specified grease (GREASE BZL-301) to the grooves.

- | | |
|--------------------------------|---|
| 1. Upper shaft | 10. Set screws [2 pcs] |
| 2. Bobbin winder driving wheel | 11. Motor assy |
| 3. Thread take-up crank | 12. Bolts [4 pcs] |
| 4. Screw | 13. Pulley |
| 5. Set screws [2 pcs] | 14. Screws with washers [3 pcs: Loosen] |
| 6. Set screws [2 pcs] | 15. Set screws [2 pcs] |
| 7. Set screws [2 pcs] | 16. Thread trimmer cam |
| 8. Set screws [2 pcs] | 17. Set screws [2 pcs] |
| 9. Joint assy | 18. Rubber cap |

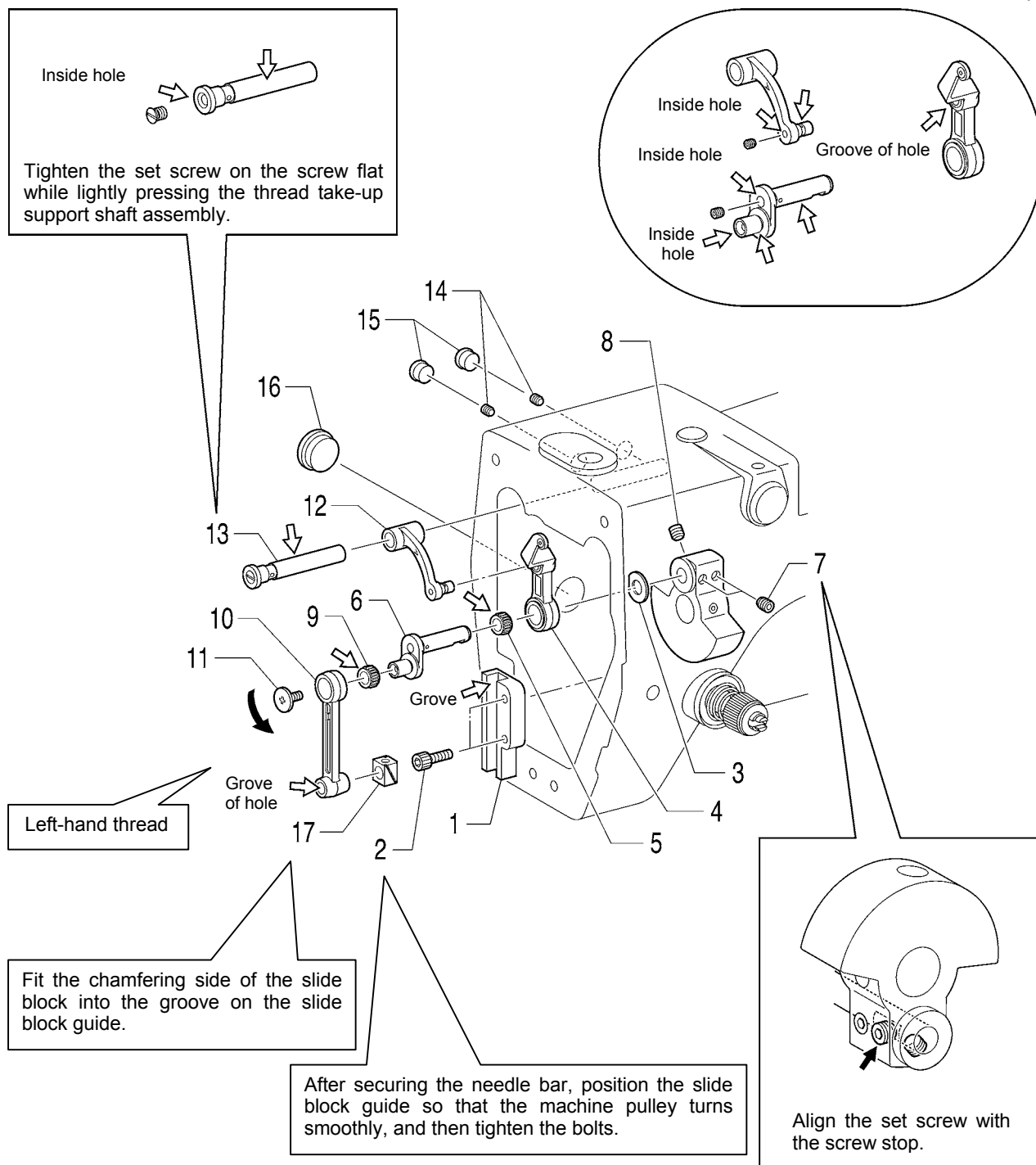


4706Q

6-8. Needle bar mechanism

Apply grease <GREASE BZL-301> specified by Brother to the portions indicated by the white arrows.

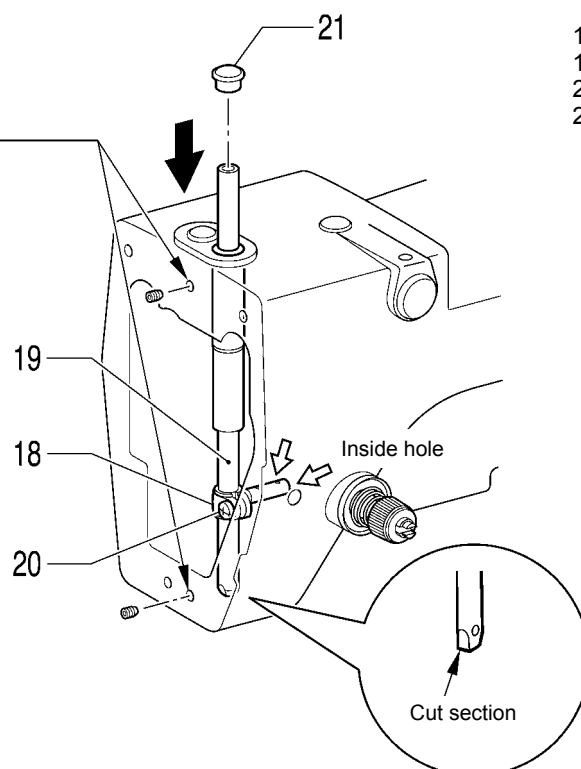
4645Q



- | | |
|--|---------------------------------------|
| 1. Slide block guide | 10. Needle bearing |
| 2. Bolts [2 pcs] (Temporarily tighten) | 11. Screw |
| 3. Washer | 12. Thread take-up support |
| 4. Thread take-up lever assy | 13. Thread take-up support shaft assy |
| 5. Needle bearing | 14. Set screws [2 pcs] |
| 6. Needle bar crank | 15. Rubber caps [2 pcs] |
| 7. Set screws [2 pcs] | 16. Rubber cap |
| 8. Set screw | 17. Slide block |
| 9. Needle bearing | |

6. ASSEMBLY

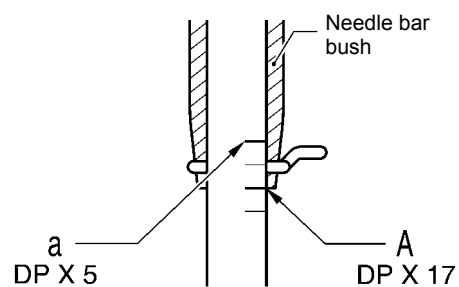
With the needle bar inserted, apply grease inside the holes.



- 18. Needle bar clamp
- 19. Needle bar [Insert from above]
- 20. Screw
- 21. Rubber cap

4646Q

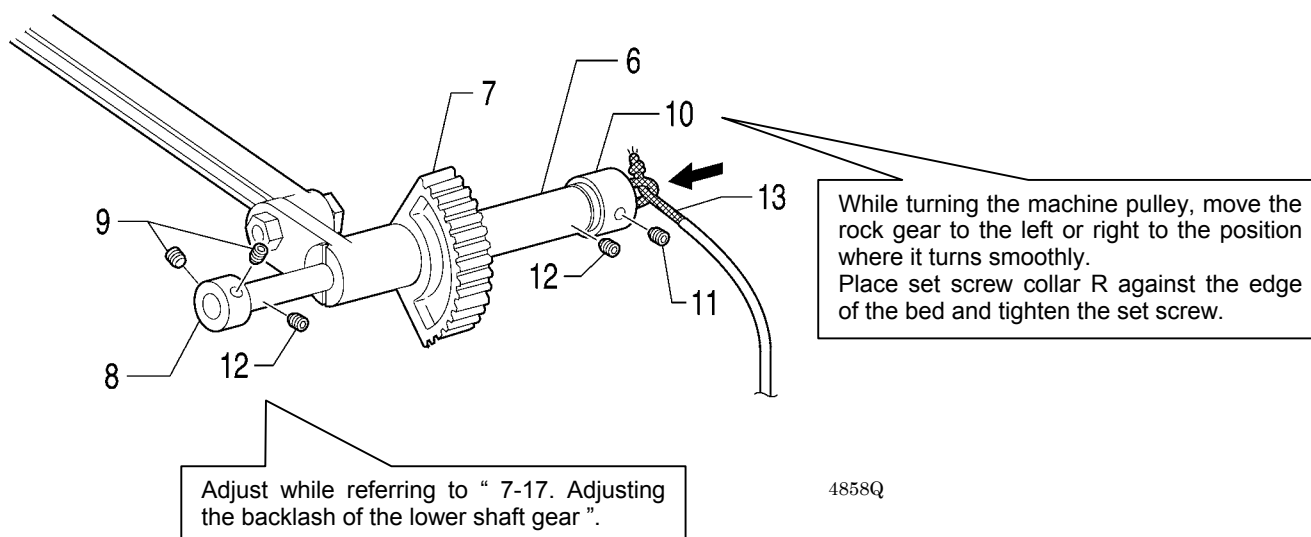
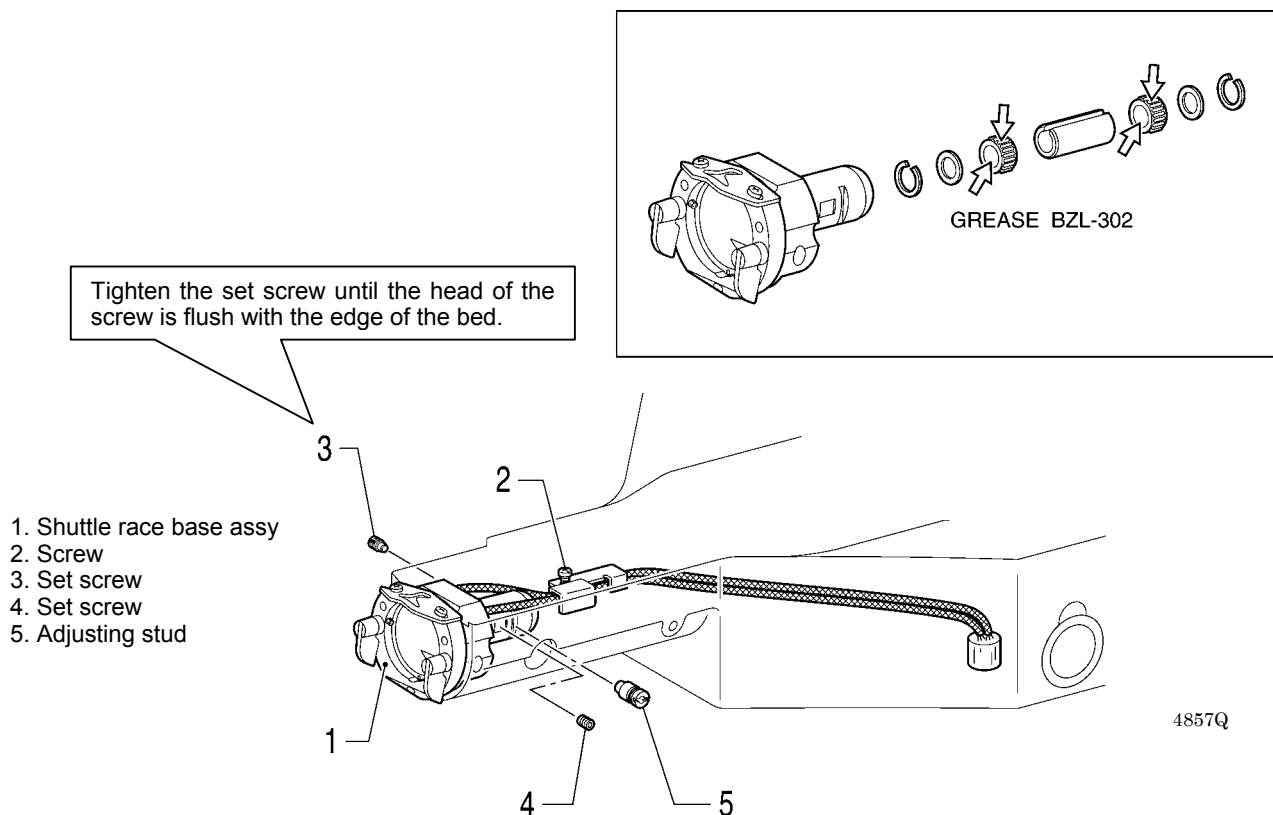
Align the needle bar so that reference line A (the second lowest reference line on the needle bar) or reference line a (top reference line) is aligned with the lower edge of the needle bar bush when the machine pulley is turned to raise the needle bar from its lowest position, and then set the cut section so that it is facing forward and tighten the screw.

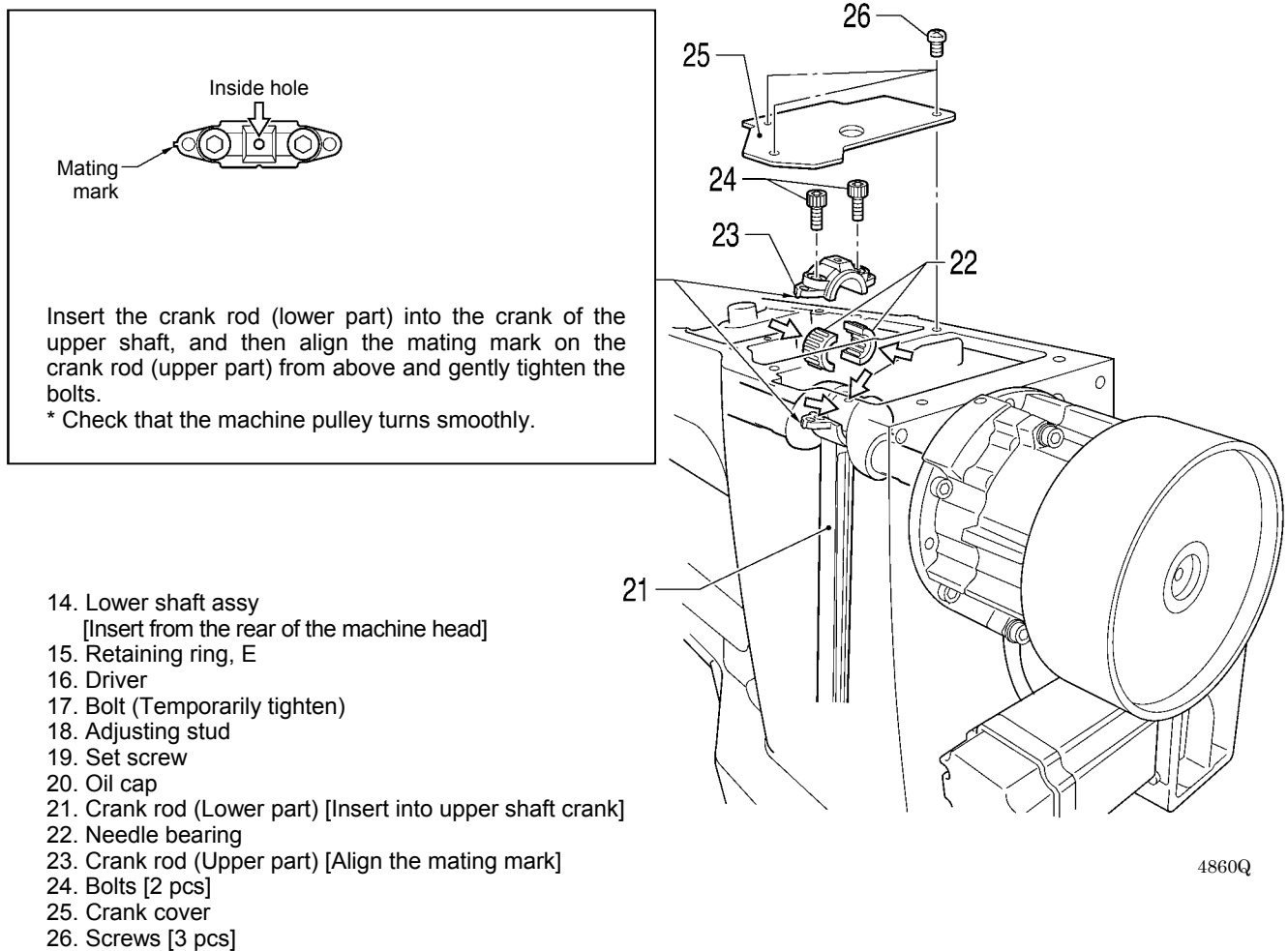
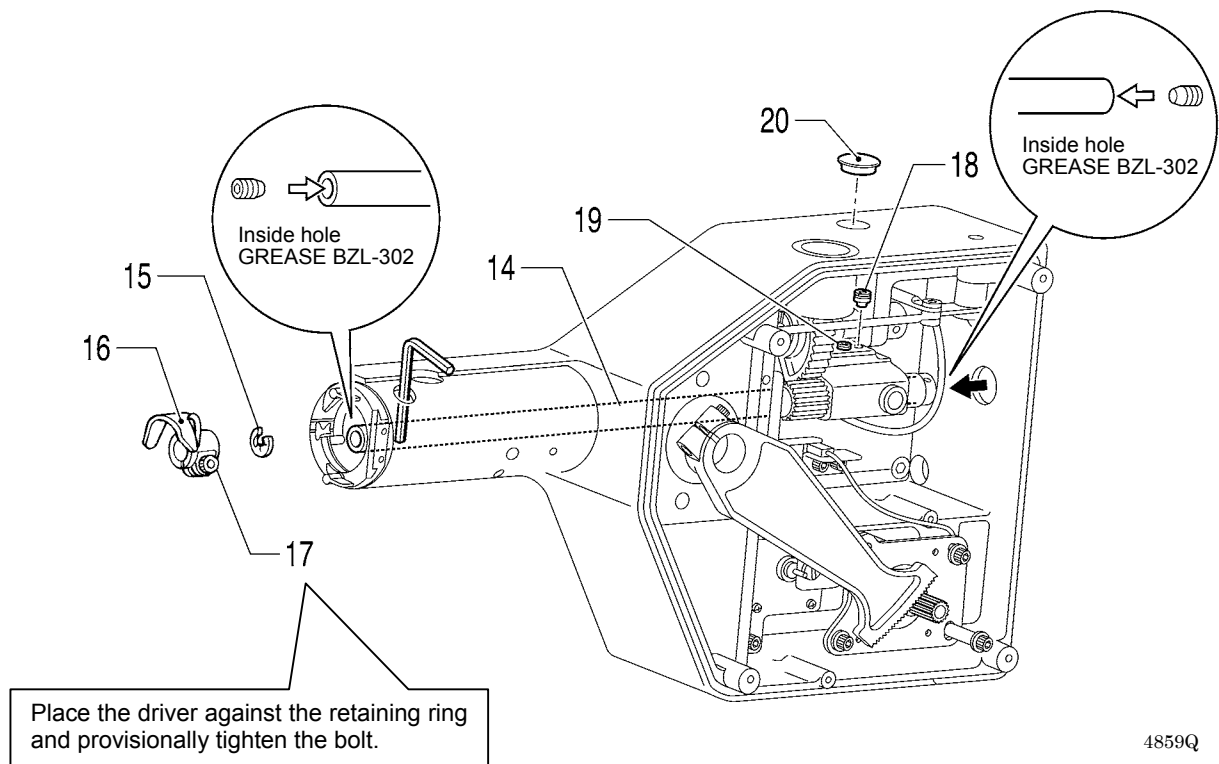


4647Q

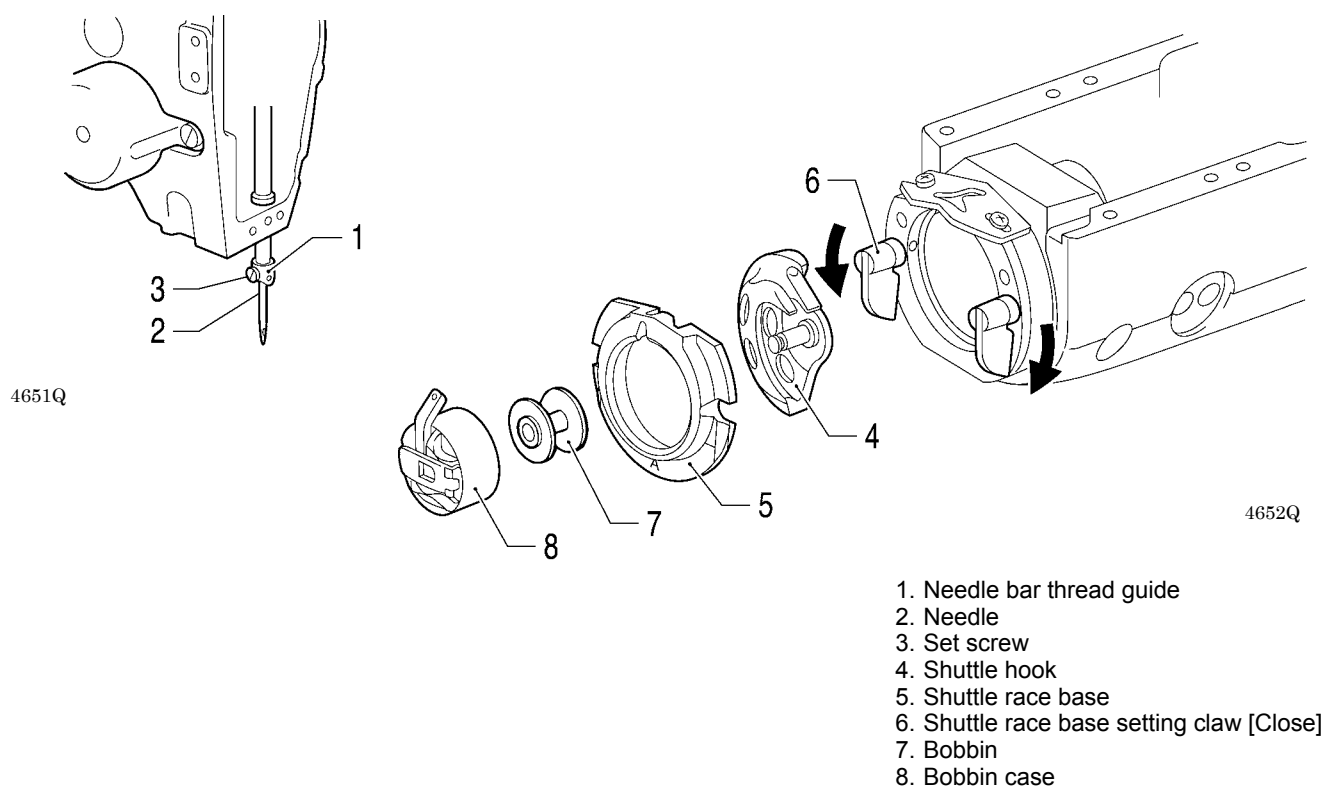
6-9. Lower shaft mechanism

Apply grease <GREASE BZL-301> or <GREASE BZL-302> specified by Brother to the portions indicated by the white arrows.





6-10. Shuttle hook mechanism

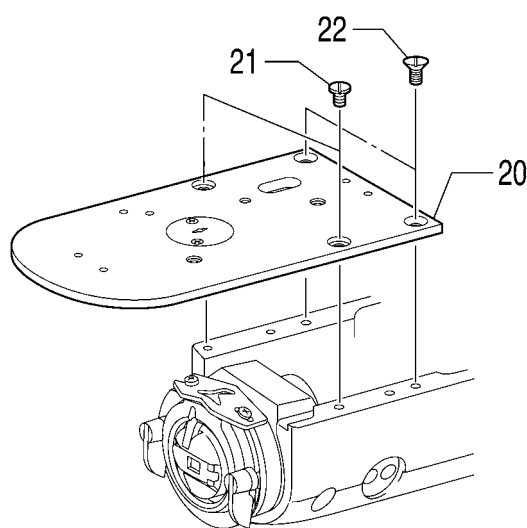
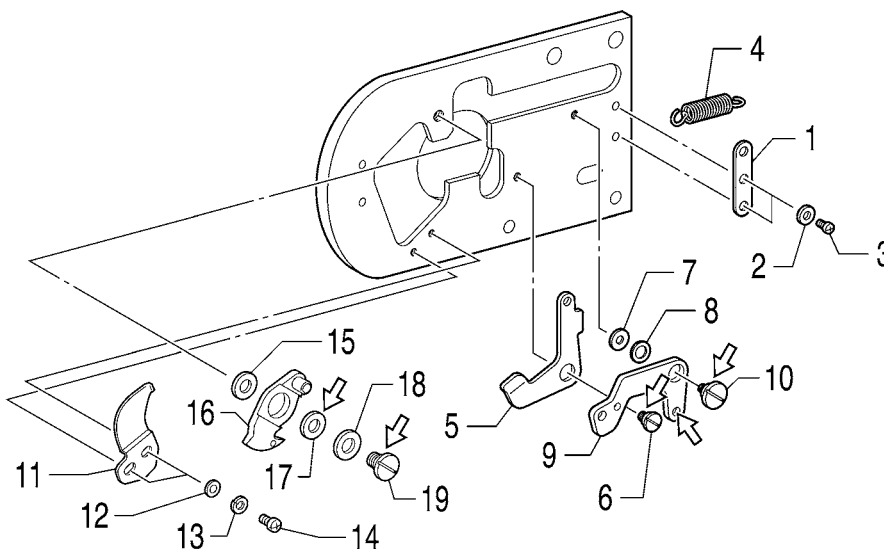


After installing the shuttle hook, carry out the adjustments in “7-3. Adjusting the needle bar lift amount”, “7-4. Adjusting the driver needle guard” and “7-5. Adjusting the needle clearance”.

6-11. Thread trimmer mechanism (2)

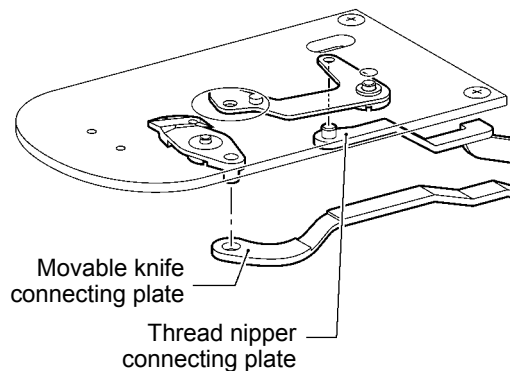
Apply grease to the portions indicated by the white arrows.

4861Q



4862Q

- 1) Insert the pin of the movable knife assembly into the hole in the movable knife connecting plate, insert the pin of the thread nipper connecting plate into the hole in the thread nipper D assembly, and then install the needle plate with the screws and flat screws so that the needle drops into the center of the needle hole.
- 2) Check through the slot in the needle plate that the thread nipper D assembly is on the pin.



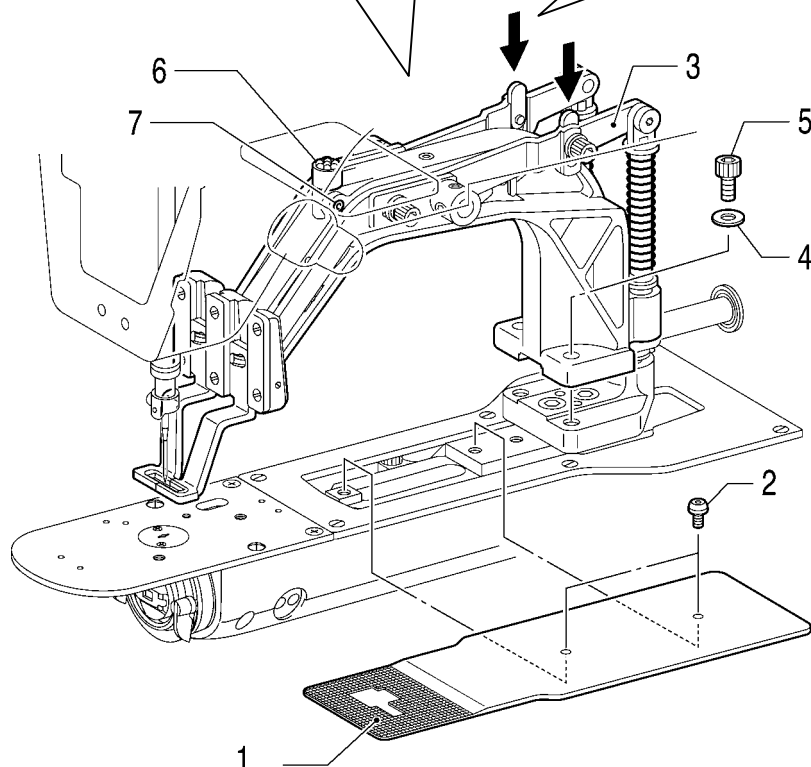
4655Q

- | | |
|--------------------------|--|
| 1. Spring hook plate | 12. Plain washers [2 pcs] |
| 2. Plain washers [2 pcs] | 13. Spring washers [2 pcs: except KE-430D denim spec.] |
| 3. Screws [2 pcs] | 14. Screws [2 pcs] |
| 4. Spring | 15. Movable knife spacer |
| 5. Thread nipper U | 16. Movable knife assy |
| 6. Shoulder screw | 17. Movable knife collar |
| 7. Spacer | 18. Thrust collar |
| 8. Collar | 19. Movable knife shoulder screw |
| 9. Thread nipper D assy | 20. Needle plate |
| 10. Shoulder screw | 21. Screws [2 pcs] |
| 11. Fixed knife | 22. Flat screws [2 pcs] |

6-12. Work clamp arm mechanism (CS-430D)

Be careful not to drop these seven ball bearings when installing the work clamp arm assembly.

Push the work clamp arm lever plate in the direction of the arrow to raise the work clamp by about 5 mm, and then press the bearing ball gently against the underside of the work clamp arm support plate and secure the support shaft with the set screw.

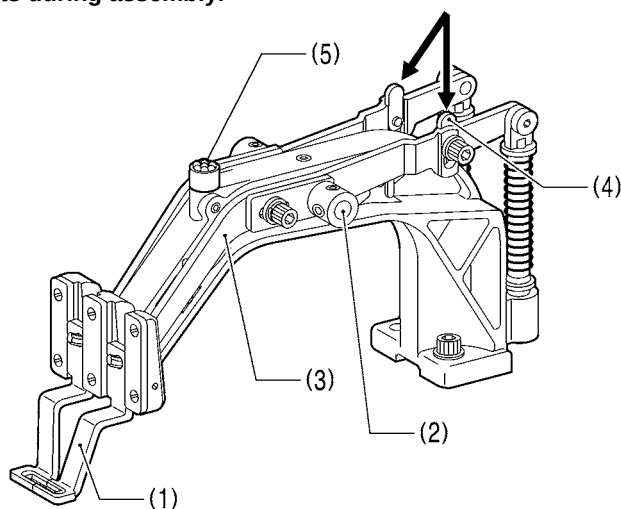


1. Feed plate
2. Screws [2 pcs]
3. Work clamp arm assy
4. Plain washers [2 paces]
5. Bolts [2 pcs]
6. Support shaft
7. Set screw

4656Q

After installing, carry out test feeding and check that the needle hole is inside the work clamp and the feed plate frame. If the needle hole is not inside the frame, adjust the position of the work clamp arm assembly and feed plate.

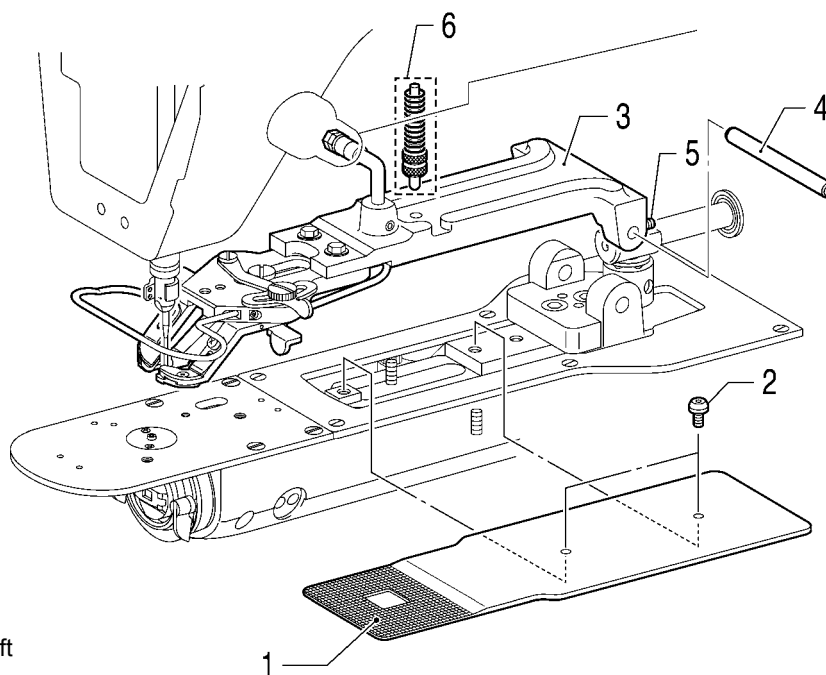
Apply grease to all sliding parts during assembly.



- 1) Sliding portion of the work clamp (1) (Apply small amount of grease.)
- 2) Sliding portion of the work clamp arm lever shaft (2) and the work clamp arm levers R and L (3)
- 3) Round portion of the work clamp arm lever plate (4)
- 4) Bearing ball of the work clamp arm support shaft (5)

4657Q

6-13. Work clamp arm mechanism (CS-438D)

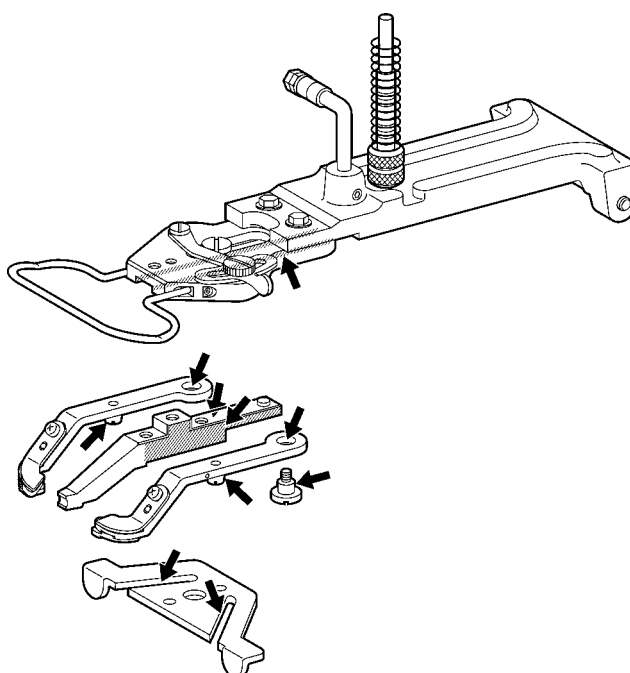


- 1. Feed plate
- 2. Screws [2 pcs]
- 3. Button clamp holder
- 4. Button clamp holder shaft
- 5. Set screws [2 pcs]
- 6. Nuts [2 pcs]
Adjusting screw
Compression spring

4658Q

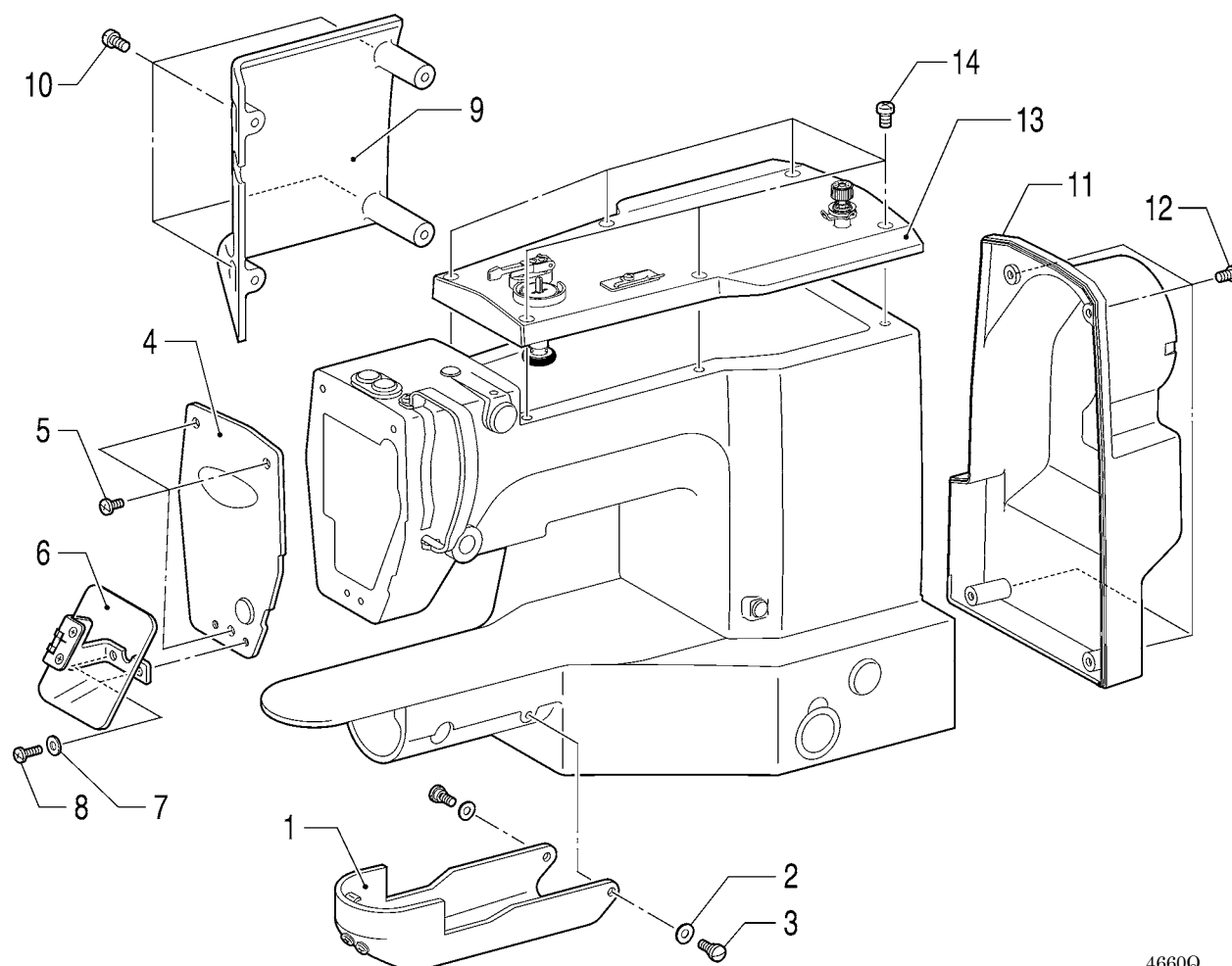
After installing, check that the needle passes into the button hole without touching the button. (Refer to "7-13. Adjusting the position of the button holder".)

Apply grease to the portions indicated by the arrows during assembly.



4659Q

6-14. Covers



4660Q

- | | |
|----------------------------|---------------------|
| 1. Shuttle race cover assy | 8. Screws [2 pcs] |
| 2. Spring washers [2 pcs] | 9. Frame side cover |
| 3. Screws [2 pcs] | 10. Screws [4 pcs] |
| 4. Face plate assy | 11. Back cover |
| 5. Screws [3 pcs] | 12. Screws [4 pcs] |
| 6. Eye guard assy | 13. Top cover |
| 7. Plain washers [2 pcs] | 14. Screws [6 pcs] |

7. ADJUSTMENT

! CAUTION



Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.



Ask your Brother 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 foot switch is depressed by mistake, which could result in injury.

- When carrying out inspection, adjustment and maintenance
- When replacing consumable parts such as the rotary hook



Hold the machine head with both hands when tilting it back or returning it to its original position.

Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.



If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.

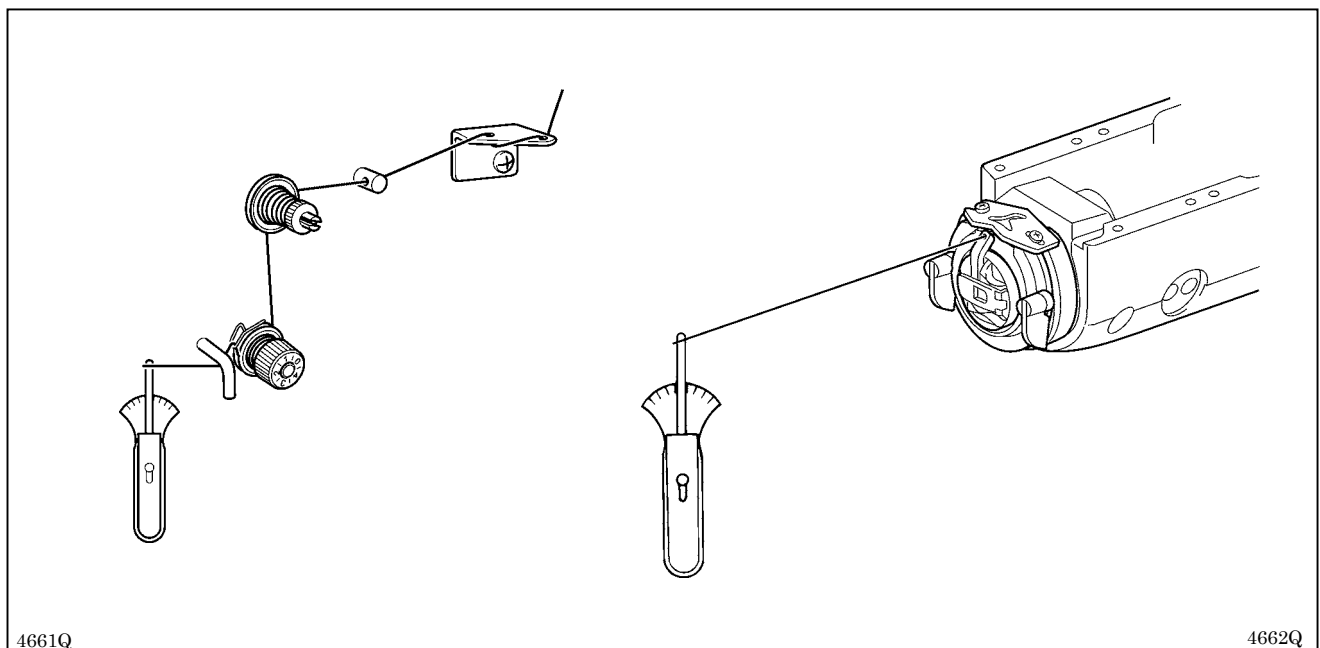


If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.

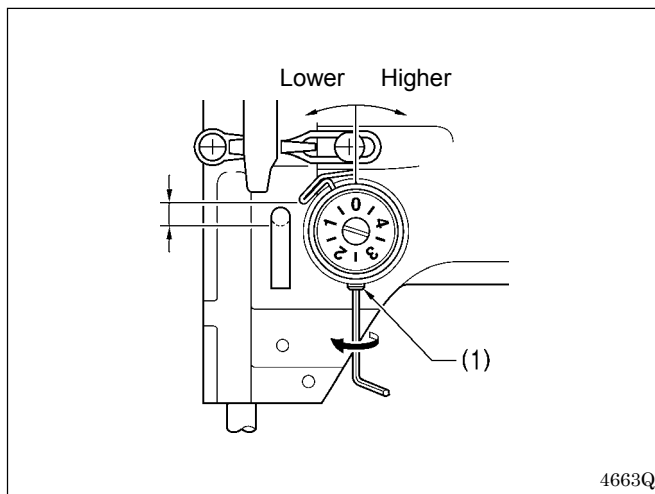
7-1. Standard thread tension

Use	CS-430D			CS-438D
	Ordinary materials (-01)	Foundation garments (-07)	Denim (-02)	
Upper thread	#50 or equivalent	#60 or equivalent	#30 or equivalent	#60 or equivalent
Lower thread	#60 or equivalent	#80 or equivalent	#50 or equivalent	#60 or equivalent
Upper thread tension (N)	0.8 - 1.2		1.6 - 2.0	1.0 - 1.8
Lower thread tension (N)	0.2 - 0.3			0.2 - 0.4
Thread take-up spring height (mm)	6 - 8			7 - 9
Thread take-up spring tension (N)	0.2 - 0.4		0.6 - 1.0	0.15 - 0.35
Pre-tension (N)	0.05 - 0.3			0.1 - 0.4
Needle	DP x 5 #14	DP x 5 #9	DP x 17NY #19	DP x 17NY #12

7-1-1. Upper and lower thread tension



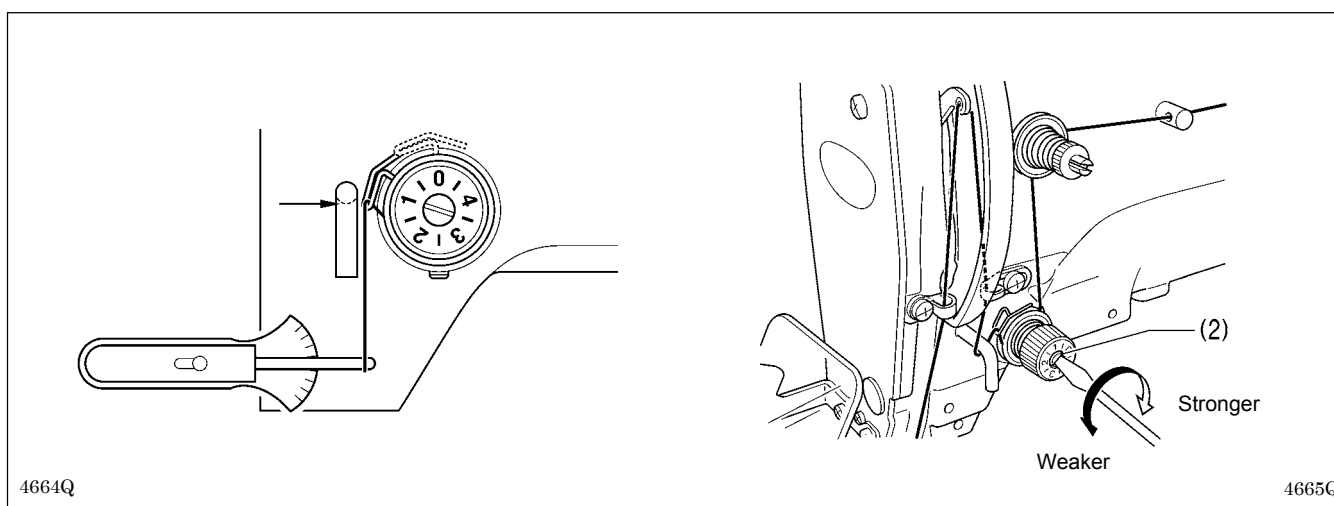
7-1-2. Thread take-up spring



< Thread take-up spring height >

Loosen the set screw (1) and turn the tensioner body to adjust the thread take-up spring height.

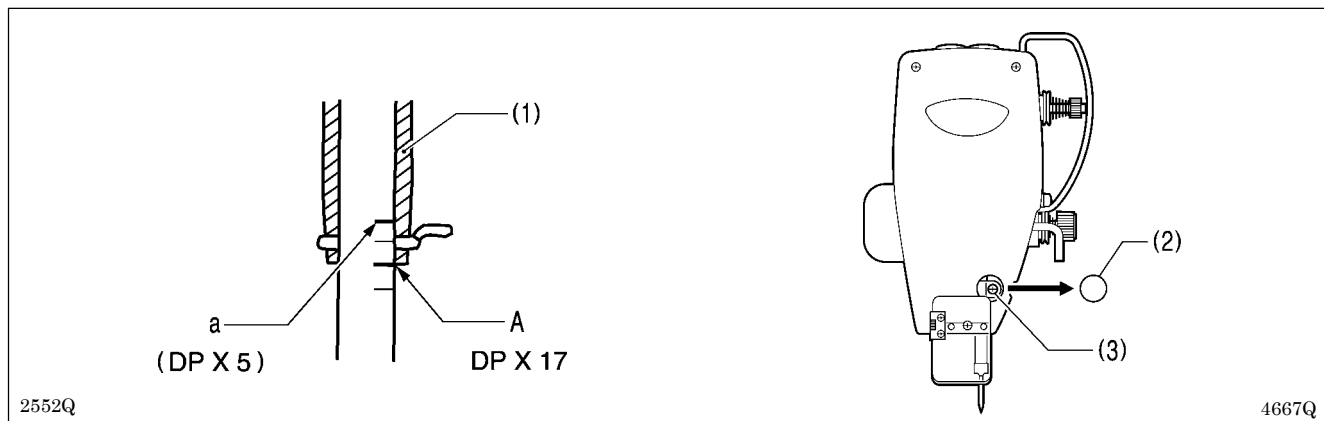
< Thread take-up spring tension >



Turn the tension stud (2) with a screwdriver.

* When the spring height (stroke) is great or the spring tension is insufficient, it may cause the thread end length to vary after thread trimming.

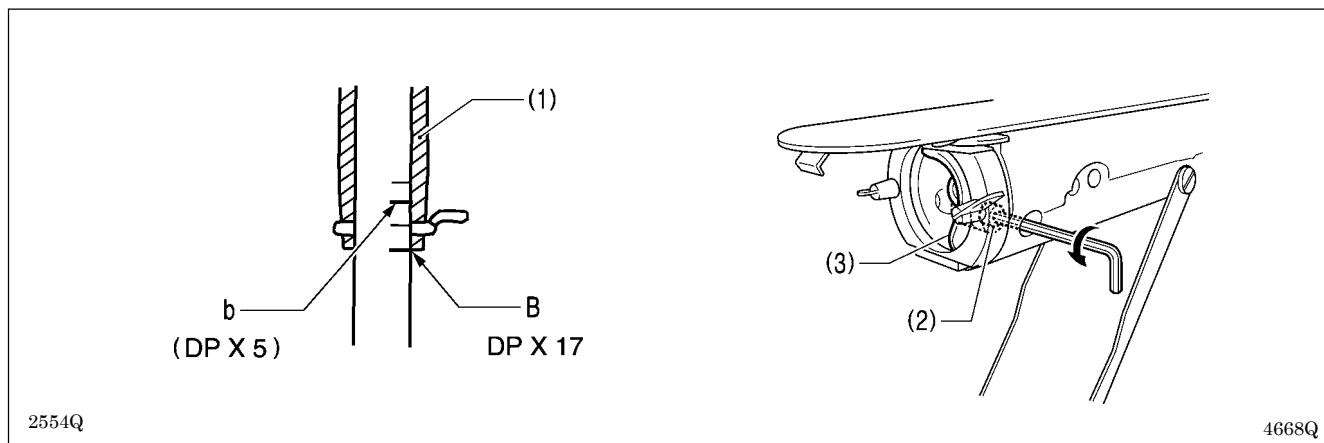
7-2. Adjusting the needle bar height



Turn the pulley to move the needle bar to the lowest position. Then remove the rubber cap (2), loosen the screw (3) and then move the needle bar up or down to adjust so that the second reference line from the bottom of the needle bar (reference line A) is aligned with the lower edge of the needle bar bush (1).

* If using a DP x 5 needle, use the highest reference line (reference line a).

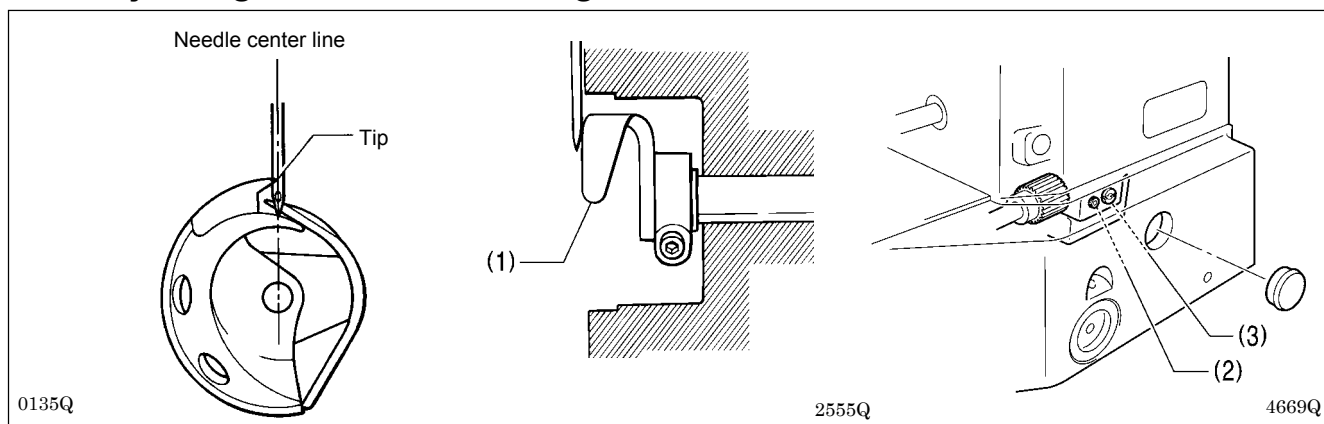
7-3. Adjusting the needle bar lift amount



Turn the pulley to raise the needle bar from the lowest position until the lowest reference line on the needle bar (reference line B) is aligned with the lower edge of the needle bar bush (1). Then loosen the bolt (2) and move the driver (3) to adjust so that the tip of the rotary hook is aligned with the needle center line.

* If using a DP x 5 needle, use the second reference line from the top on the needle bar (reference line b).

7-4. Adjusting the driver needle guard

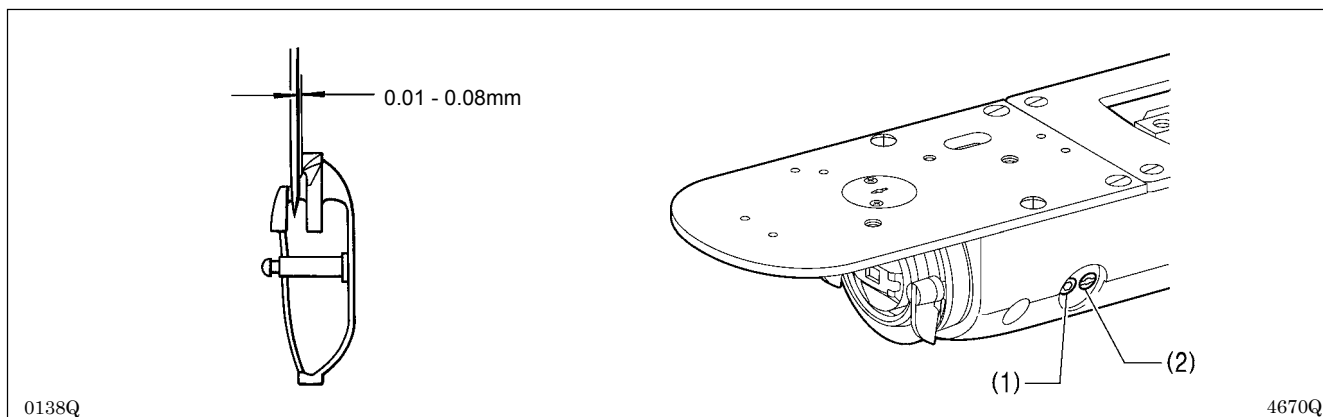


Turn the pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw (2) and turn the eccentric shaft (3) to adjust so that the driver needle guard (1) contacts the needle.

Note:

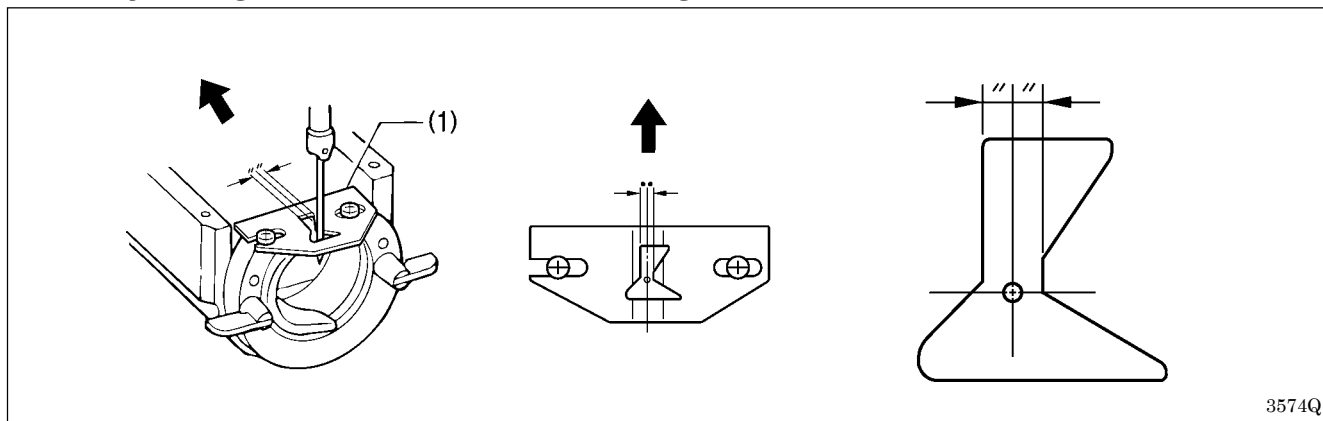
If the needle contact pressure is too great, skipped stitches may occur. On the other hand, if the driver needle guard (1) is not touching the needle, the tip of the inner rotary hook will obstruct the needle, resulting in an excessively high amount of friction.

7-5. Adjusting the needle clearance



Turn the pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw (1) and turn the eccentric shaft (2) to adjust so that the clearance between the needle and the rotary hook is 0.01 - 0.08 mm.

7-6. Adjusting the shuttle race thread guide



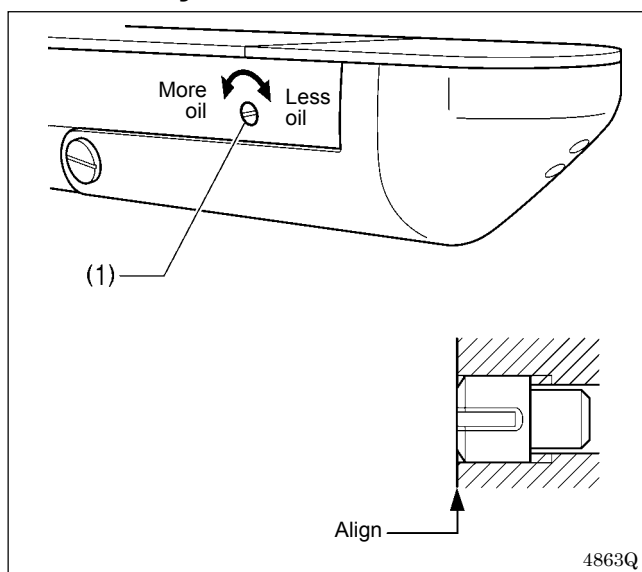
Install the shuttle race thread guide (1) by pushing it in the direction of the arrow so that the needle groove is aligned with the center of the needle plate hole.

Note:

If the shuttle race thread guide is in the wrong position, thread breakages, soiled thread or thread entanglements may occur.

The position of the shuttle race thread guide is adjusted at the time of shipment from the factory. It should not be changed if at all possible.

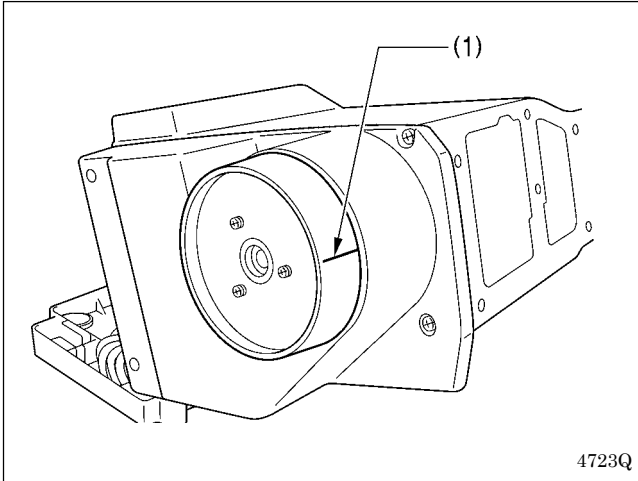
7-7. Rotary hook lubrication amount



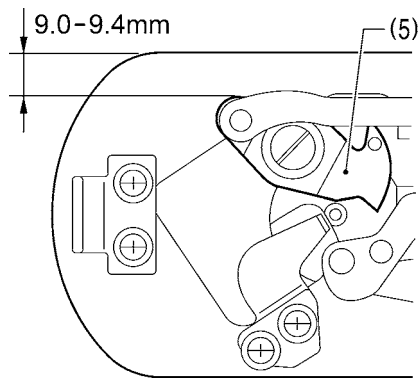
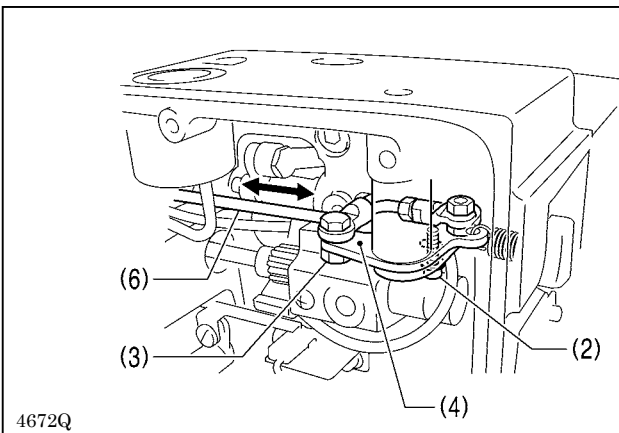
The optimum position is when the head of the set screw (1) is flush with the edge of the bed. The adjustment range for the lubrication amount is within three clockwise turns from this position.

- If the set screw (1) is turned clockwise, the lubrication amount becomes smaller.
- If the set screw (1) is turned counterclockwise, the lubrication amount becomes greater.

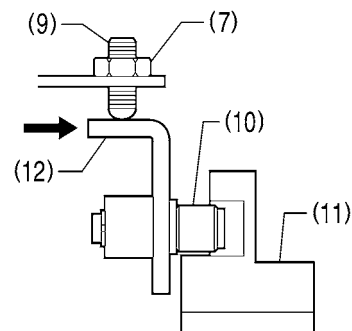
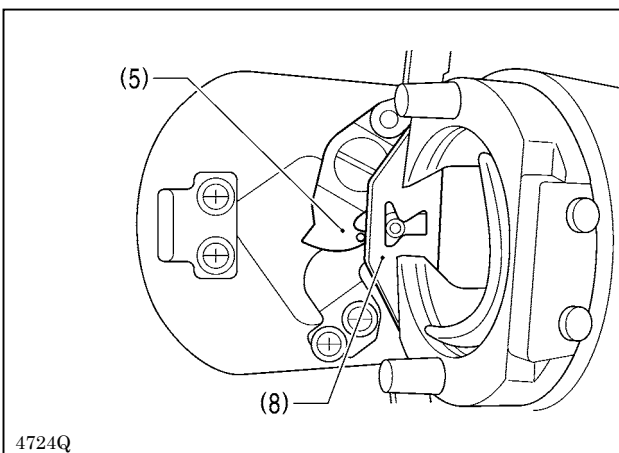
7-8. Adjusting the position of the movable knife



1. Remove the top cover and tilt back the machine head.
2. Turn the machine pulley by hand so that the index mark (1) is near facing straight upward.

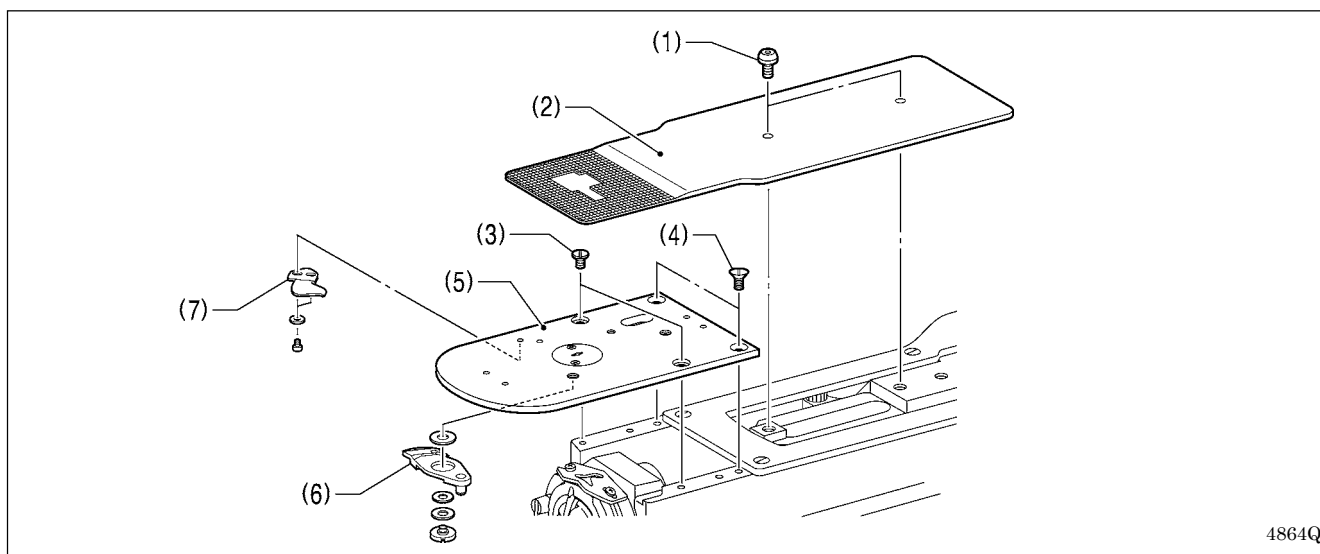


3. Loosen the bolt (2).
4. Hold the nut (3) with the spanner (10), and turn it counterclockwise as far as the point where the thread trimming lever V (4) stops turning.
5. In this condition, move thread trimmer rod H (6) forward or back to adjust so that the distance between the ridge line on the right side of the needle plate and the ridge line on the movable knife (5) is 9.0 – 9.4 mm.
6. Tighten the bolt (2), and then check the above position once more.

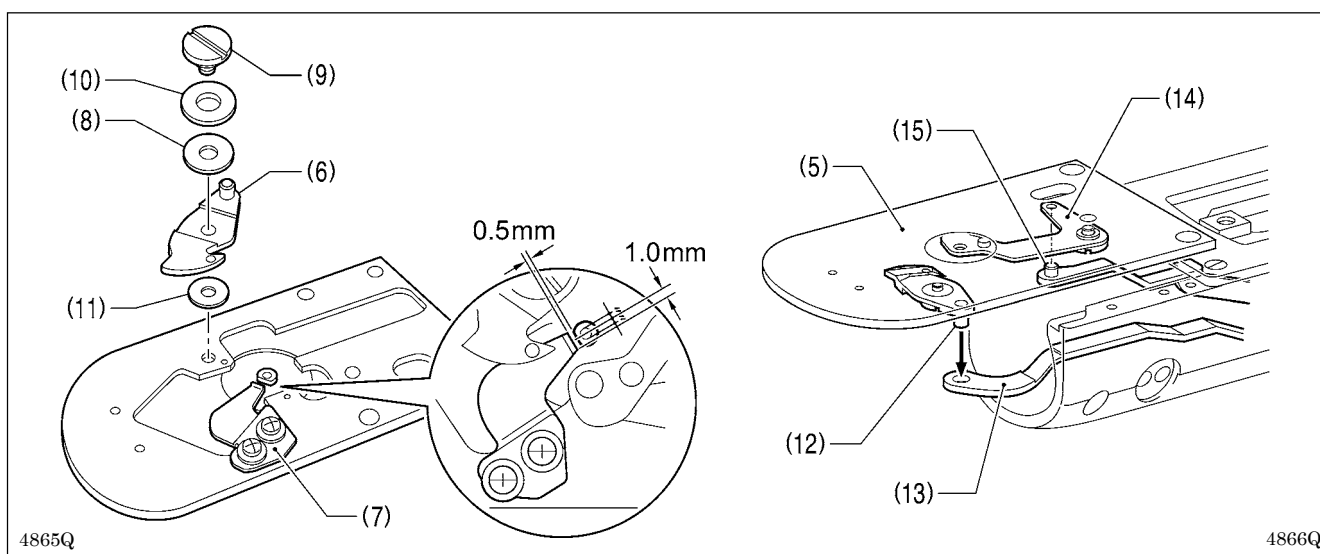


7. Loosen the nut (7), and then turn the set screw (9) to adjust so that the outside of the hole in the movable knife (5) is aligned with the ridge line on the shuttle race thread guide (8).
8. Tighten the nut (7).
9. Turn the pulley by hand to set the needle bar to its lowest point.
10. Check that the collar (10) is not touching the inside of the thread trimmer cam (11). Furthermore, push the driving lever (12) by hand toward the thread trimmer cam (11) so that the collar (10) goes into the groove of the cam, and then release your hand and check that the driving lever (12) returns smoothly to its original position.

7-9. Replacing the movable knife and fixed knife



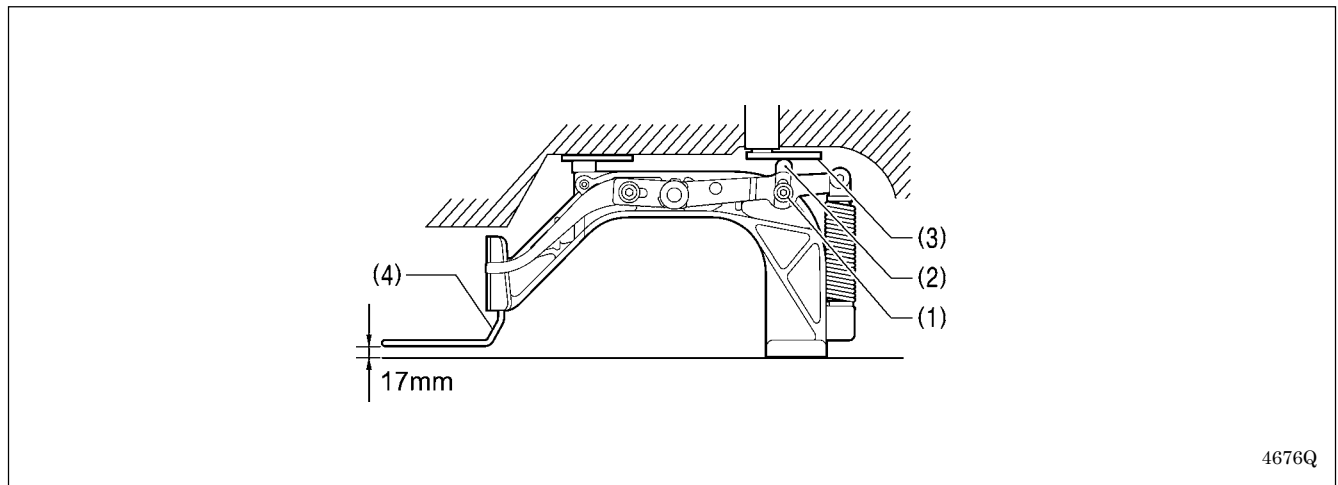
1. Open the shuttle race cover, remove the two screws (1), and then remove the feed plate (2).
2. Remove the two screws (3) and the two flat screws (4), and then remove the needle plate (5).
3. Remove the movable knife (6) and the fixed knife (7).



4. Install new fixed knife (7) in the position shown in the illustration.
5. Apply grease to the outside of the collar (8) and the shoulder screw (9), and then install the new movable knife (6) together with the thrust washer (10) and movable knife spacer (11).
6. Check that the movable knife (6) and the fixed knife (7) cut the thread cleanly.
7. Apply grease to the pin (12) of the movable knife, and then insert it into the hole in the movable knife connecting plate (13). Then, while placing the pin (15) of thread nipper connecting plate F into the hole in thread nipper D (14), install the needle plate (5).
8. Check that the center of the needle hole and the needle are aligned.

7-10. Adjusting the work clamp lift amount (CS-430D)

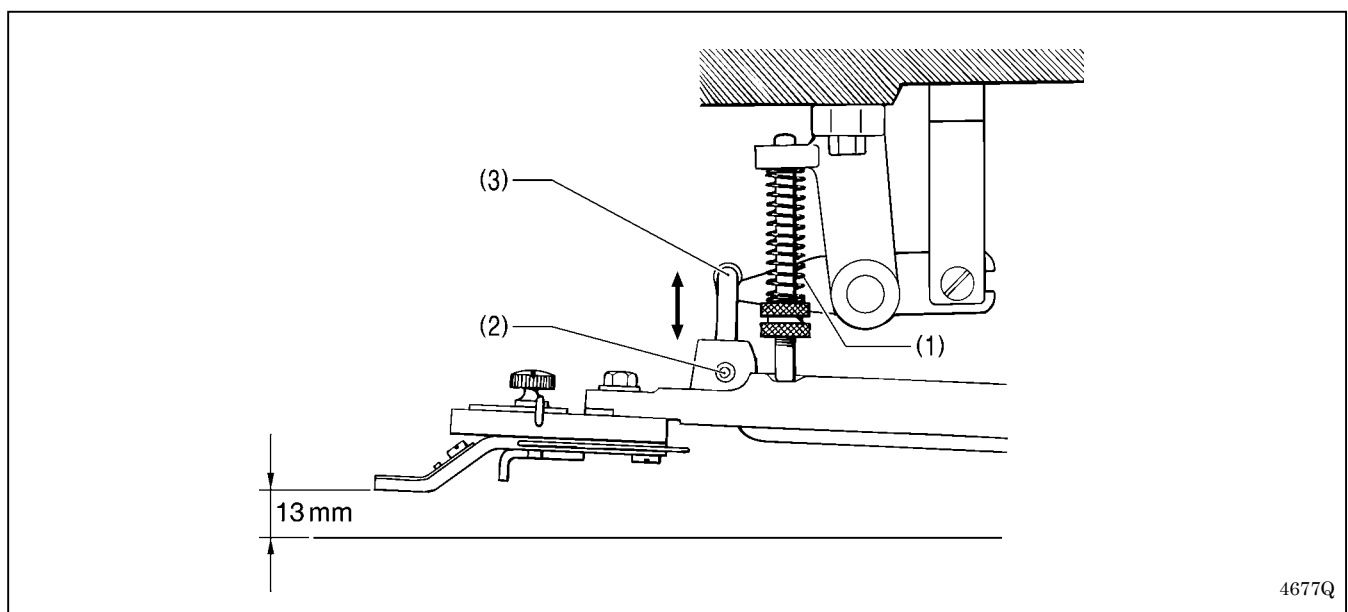
Adjust so that the actual maximum lift amount for the work clamp is 17 mm above the top of the needle plate when the maximum work clamp height has been set to 17 mm using the operation panel.



1. Loosen the bolt (1) and move the work clamp arm lever plate (2) up or down to adjust.
2. Apply grease to the bottom of the work clamp lifter plate (3), to the top of the work clamp arm lever plate (2) and to the sliding part of the work clamp (4) (grease is already applied at the time of shipment), and check that the movement becomes easier.

7-11. Adjusting the button clamp lift amount (CS-438D)

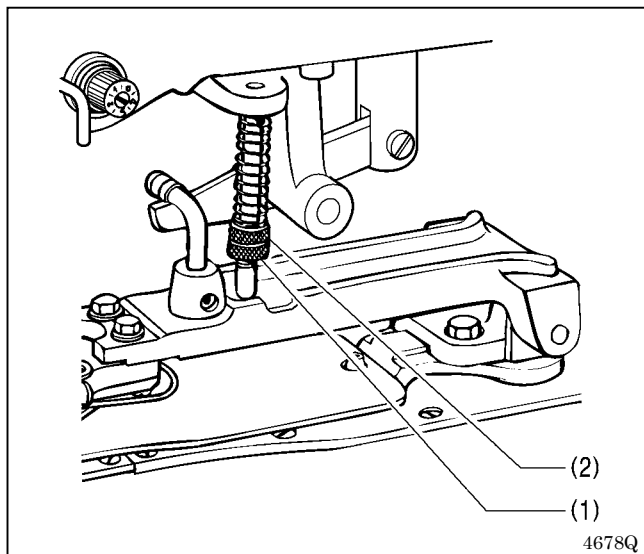
Adjust so that the actual maximum lift amount for the button clamp is 13 mm above the top of the needle plate when the maximum button clamp height has been set to 13 mm using the operation panel.



Remove the spring (1), loosen the screw (2) and adjust the button clamp holder hook (3) by moving it up and down.

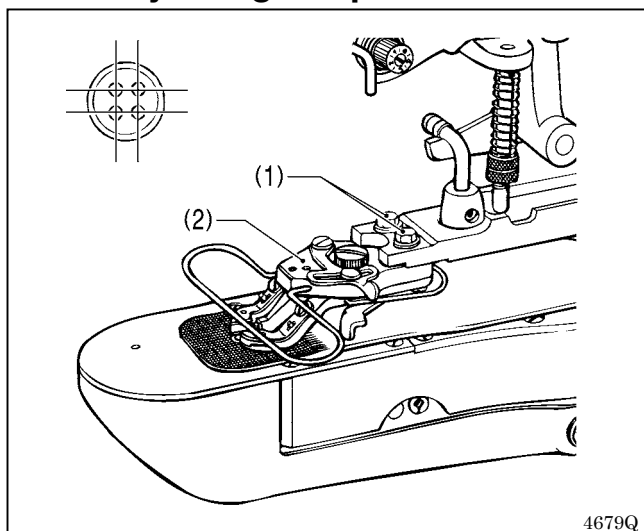
* If the button clamp lift amount is too large, the button clamp will not be raised.

7-12. Adjusting the holding pressure (CS-438D)



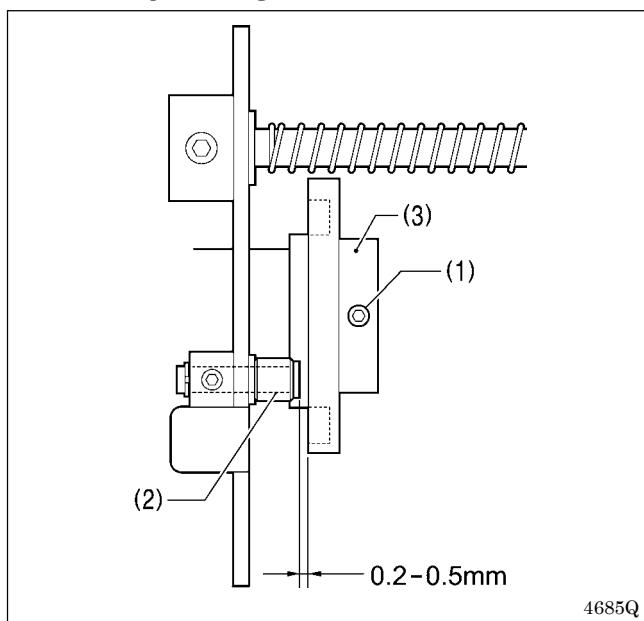
Loosen the nut (1) and turn the nut (2) to the point where it is just tight enough that the material will not slip out of place when it is slightly pulled (keep pressure as slight as possible).

7-13. Adjusting the position of the button clamp (CS-438D)



1. Loosen the two bolts (1) and adjust the button clamp base (2) by moving it.
2. Carry out test feeding to check that the needle will go through the button hole with no contact.

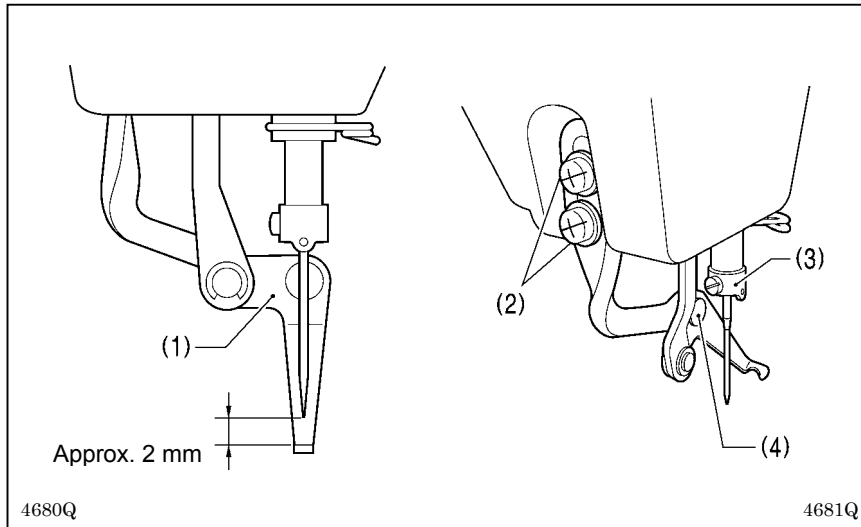
7-14. Adjusting the thread trimmer cam position



1. Remove the top cover.
2. Loosen the two set screws (1), and then adjust the position of the thread trimmer cam (3) so that the distance between the edge of the collar shaft (2) and the edge of the thread trimmer cam (3) is 0.2 - 0.5 mm. After adjusting, tighten the two set screws (1).

7-15. Adjusting the thread wiper

<Thread wiper height adjustment>

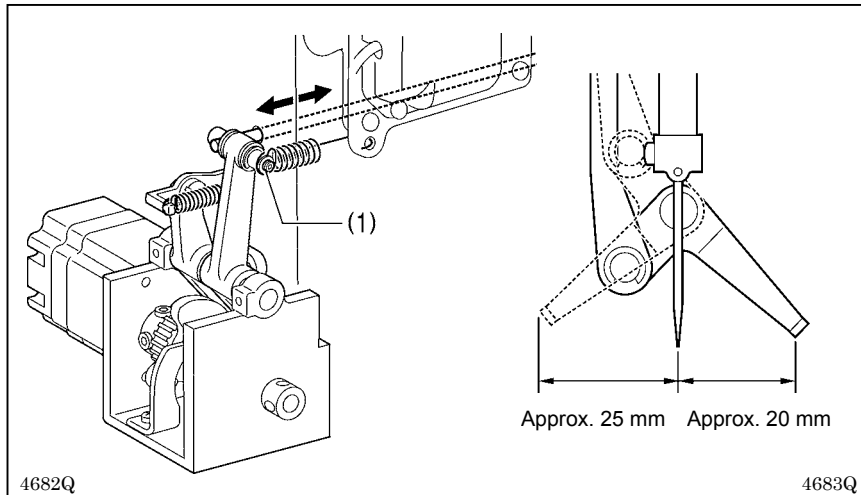


Loosen the two screws (2) and adjust the thread wiper (1) so that the clearance between the top of the thread wiper (1) and the needle point is approximately 2 mm when the thread wiper (1) is aligned with the center of the needle.

Note:

Check that the needle bar thread guide (3) and the thread wiper base shaft (4) are not touching at this time.

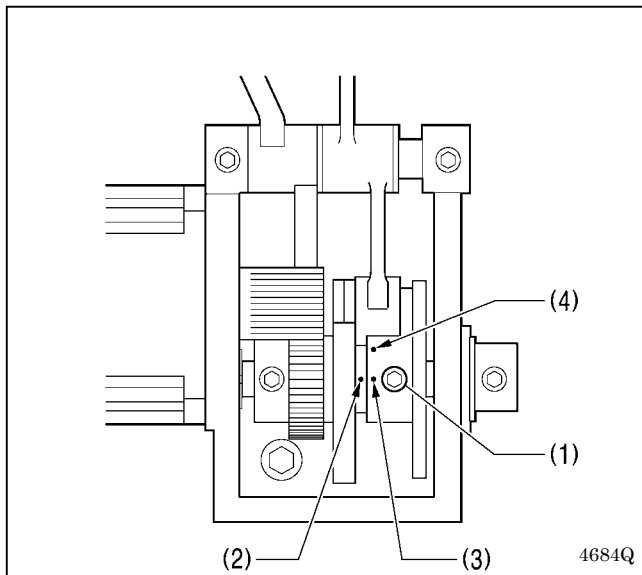
< Thread wiper racking width adjustment >



1. Remove the back cover.
2. Loosen the set screw (1) and adjust so that the distance from the thread wiper to the center of the needle is as shown in the illustration.

<Thread wiper racking timing adjustment>

You can adjust the thread wiper racking timing to the ideal setting that matches the height of the work clamp, in order to prevent the thread from getting caught when the work clamp is lowered.

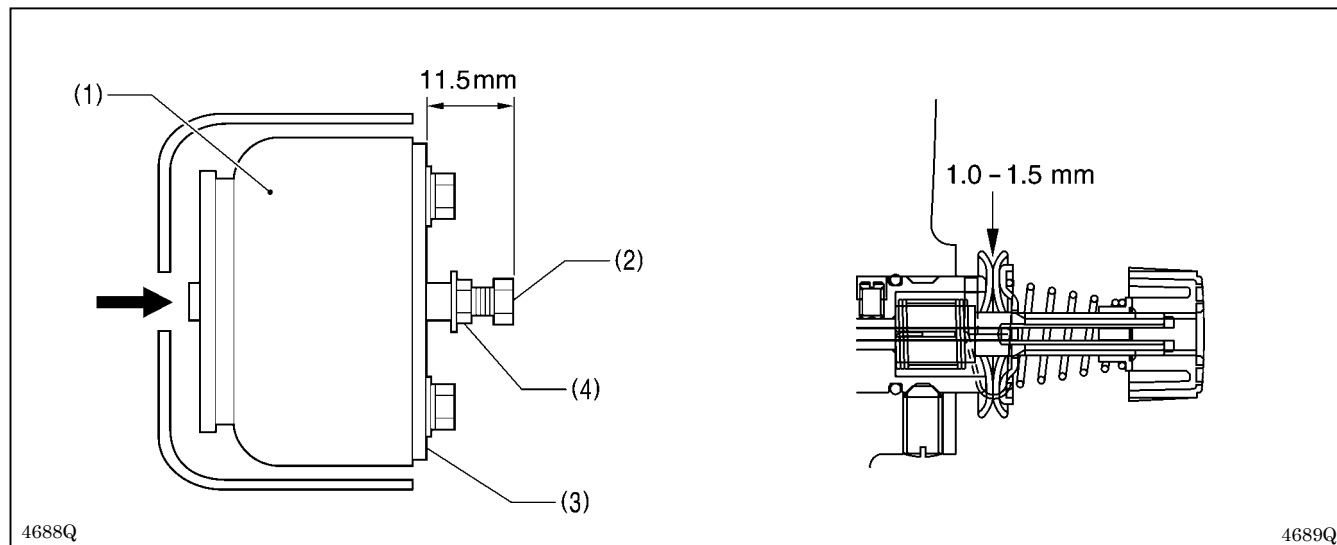


1. Remove the back cover.
2. Loosen the two screws (1), and adjust so that the mark (2) on the cam is in between the two marks (3) and (4) on the thread wiper cam.
 - If mark (2) is closer to mark (3), the thread wiper will move below the work clamp when it moves sideways.
 - If mark (2) is closer to mark (4), the thread wiper will move above the work clamp when it moves sideways.
3. After making the adjustment, switch to work clamp height setting mode and check the thread wiper racking timing.

Note:

If the mark (2) is too close to the mark (4), the work clamp and the thread wiper may touch. If this happens, adjust the height of the thread wiper. However, be careful not to let the thread wiper and the needle touch each other.

7-16. Adjusting the tension release amount

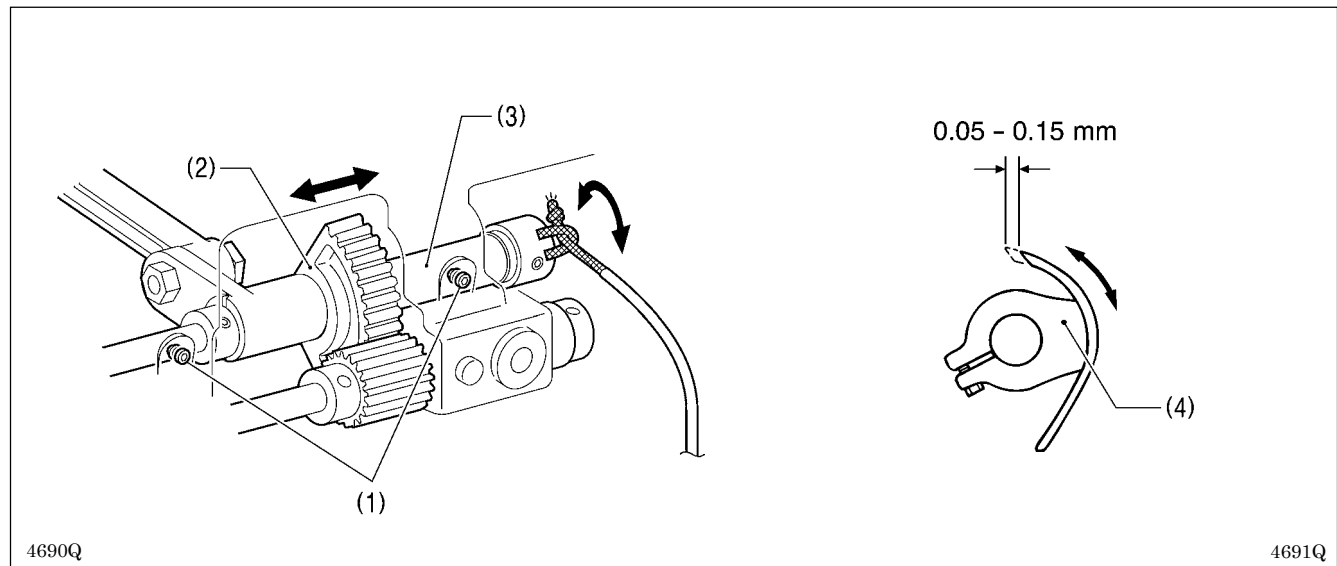


1. Loosen the nut (4) and turn the bolt (2) to adjust so that the distance between the tip of the bolt (2) and the solenoid setting plate (3) is 11.5 mm when the plunger of the tension release solenoid (1) is pushed in as far as it will go.
2. Check that the tension disc opening amount is 1.0 - 1.5 mm when the tension release solenoid (1) is installed to the arm and the plunger is pushed with a screwdriver or similar tool through the hole in the solenoid cover.

* When memory switch No. 551 is set to "ON", the tension release will operate at the sewing start to reduce instances of the thread pulling out.

* If memory switch No. 552 has been set so that the tension release timing is early, you can increase the trailing length for the upper thread.

7-17. Adjusting the backlash of the lower shaft gear



1. Loosen the set screw (1), and move the rock gear (2) to the left and right so that the pulley can rotate easily.
2. Turn the rock gear shaft (3) to adjust the play at the end of the driver (4) to 0.05 - 0.15 mm, and tighten the set screw (1).



SERVICE MANUAL

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