

**KE-430B, 430C, 431B, 431C**  
**KE-432B, 432C, 433B**  
**KE-434B, 434C, 435B, 435C**  
**KE-436B, 436C, 484C**  
**BE-438B, 438C**

SERVICE MANUAL



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Please read this manual before using the machine.

Please keep this manual within easy reach for quick reference.

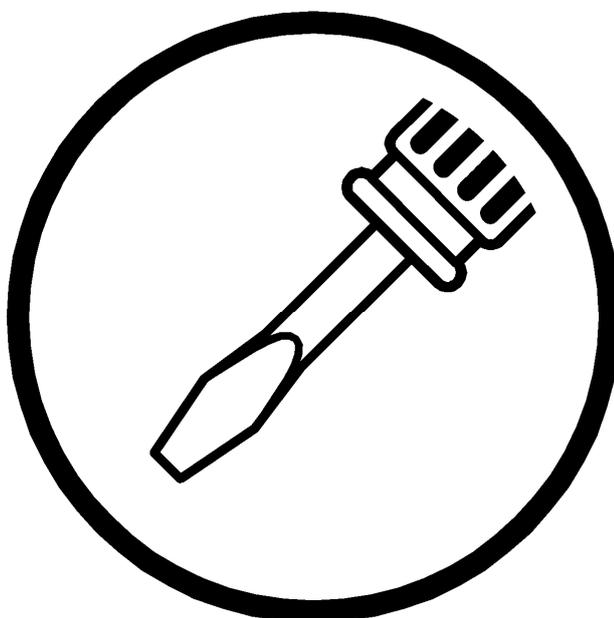
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ELECTRONIC LOCKSTITCH BAR TACKER

ELECTRONIC LOCKSTITCH BELT LOOP BAR TACKER

ELECTRONIC LOCKSTITCH PATTERN TACKER

ELECTRONIC LOCKSTITCH BUTTON SEWER



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**brother®**

This service manual is intended for KE-430B series, KE-430C series, BE-438B, BE-438C, KE-484C; be sure to read the KE-430B series, KE-430C series, BE-438B, BE-438C, KE-484C instruction manual before this manual.

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 Brother 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

 <b>DANGER</b>	The instructions which follow this term indicate situations where failure to follow the instructions will almost certainly result in death or severe injury.
 <b>CAUTION</b>	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 ( $\triangle$ ) 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 ( $\circ$ ) indicates something that you must not do.
-  ..... This symbol ( $\bullet$ ) 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 pneumatic delivery capability should be greater than the requirements for the sewing machine's total air consumption.

Insufficient pneumatic delivery capability 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 more than 52 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 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 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

-  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.
-  Set the needle to the needle up stop position before turning off the power.  
If this is not done, the wiper may strike the needle, which might cause the needle to break.
-  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.
  - When threading the needle
  - When replacing the needle and bobbin
  - When not using the machine and when leaving the machine unattended
-  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 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.
-  If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.

### Cleaning

-  Set the needle to the needle up stop position before turning off the power.  
If this is not done, the wiper may strike the needle, which might cause the needle to break.
-  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.
-  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.

### Maintenance and inspection

-  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.
-  Set the needle to the needle up stop position before turning off the power.  
If this is not done, the wiper may strike the needle, which might cause the needle to break.
-  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
-  Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before carrying out inspection, adjustment and repair of any parts which use the pneumatic equipment.
-  If the power switch and air need to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
-  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.
-  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.

### 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**

	<b>⚠ DANGER</b>	<b>⚠ GEFAHR</b>	<b>⚠ DANGER</b>	<b>⚠ PELIGRO</b>
	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 adapt 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**

	<b>⚠ CAUTION</b>
	Moving parts may cause injury. Operate with safety devices. Turn off main switch before threading, changing bobbin and needle, cleaning etc.

Safety devices

- Eye guard
- Finger guard
- Thread take-up cover
- Thread take-up solenoid cover
- Belt cover
- Frame side cover, etc.

**3**



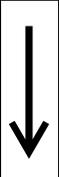
High temperature warning display

**4**

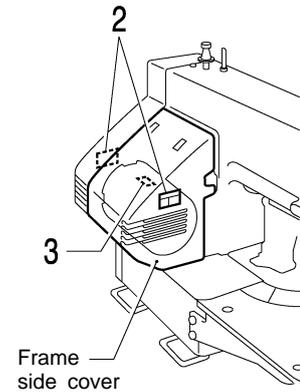


Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

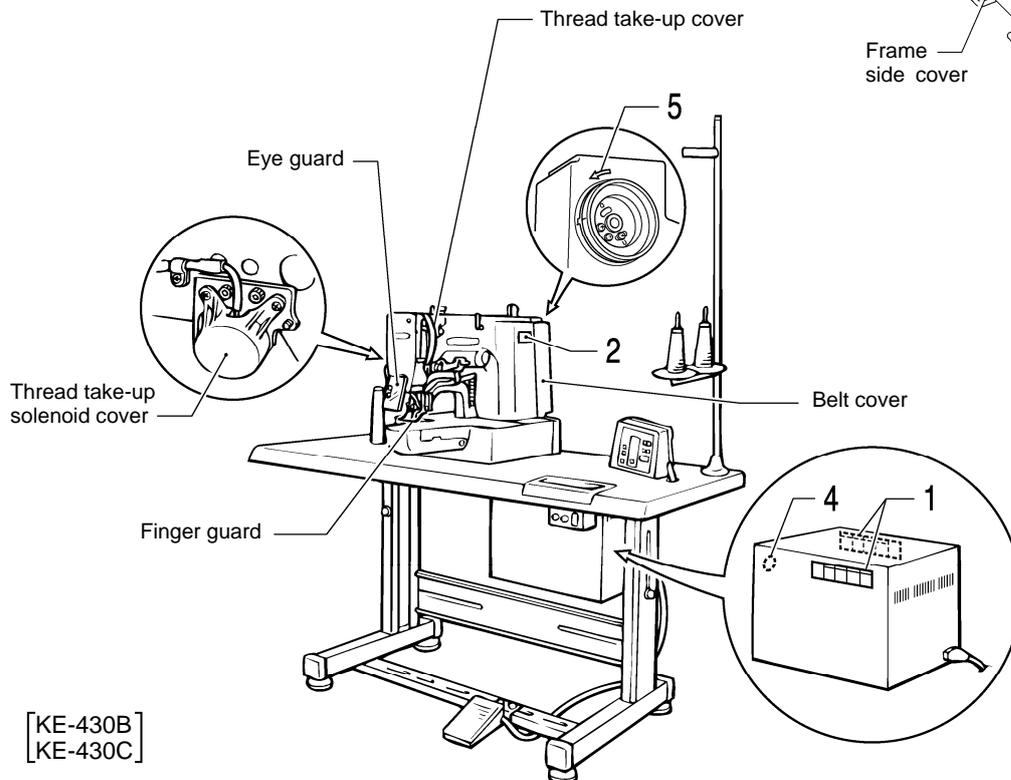
**5**



Direction of operation



2670Q



[KE-430B]  
[KE-430C]

2737Q

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# 1. SPECIFICATIONS

## 1 - 1 . SPECIFICATIONS



1	Ordinary materials
5	
2	Denim
7	Knitted materials



2	Bar tacking length 6 -14 mm
3	Bar tacking length 14 - 25 mm



1	Ordinary materials
2	Denim
7	Knitted materials

	KE-430B Electronic lockstitch bar tacker	KE-431B Electronic lockstitch belt loop bar tacker	KE-432B Electronic lockstitch eyelet buttonhole end bar tacker	KE-433B Electronic lockstitch decorative pattern tacker
Stitch formation	Single needle lock stitch			
Maximum sewing speed	2,700 rpm			2,500 rpm
Maximum pattern size	30 × 10 mm max.		12 × 3 mm max.	30 × 30 mm max.
Feed mechanism	R-θ intermittent feed mechanism (pulse-motor driven mechanism)			
Stitch length	0.1 - 10.0 mm			
Number of stitches	Variable			
Maximum stitch number	20,000 stitches (including 10,000 stitches which can be added)			
Work clamp lifter	Solenoid type			
Work clamp height	17 mm max.			
Rotary hook	Shuttle hook (shuttle hook 2, optional)			
Wiper device	Standard equipment			
Thread trimmer device	Standard equipment			
Thread take-up device	Standard equipment			
Data storage method	P-ROM (Any sewing pattern can be added using PS-3000.)			
Number of user programs	16			
Number of cycle programs	4			
Number of stored data	35 sewing patterns are set already	6 sewing patterns are set already	3 sewing patterns are set already	
	(Up to 100 patterns can be added. Total number of stitches of stored data which can be added is within 10,000.)			
Motor	Three-phase 400W induction motor			
Weights	Machine head: 52 kg, Operation panel: 0.6 kg, Control box: 9 - 19 kg (depending on destination)			
Power source	Single-phase 110, 220 - 230, 240V 3-phase 220-230, 380, 400V Maximum electric power consumption; 600VA			



1	Medium materials
2	Heavy materials

	KE-434B Electronic lockstitch pattern tacker	KE-435B Electronic lockstitch pattern tacker with stepping foot	KE-436B Electronic lockstitch pattern tacker with stepping foot and programming function	BE-438B Electronic lockstitch button sewer
Stitch formation	Single needle lock stitch			
Maximum sewing speed	2,500 rpm (Pitch 3 mm)			2,500 rpm
Maximum pattern size	100 × 60 mm max.			0 - 6.4 × 0 - 6.4 mm
Feed mechanism	R-θ intermittent feed mechanism (pulse-motor driven mechanism)			
Stitch length	0.1 - 10.0 mm			
Number of stitches	Variable			
Maximum stitch number	20,000 stitches (including 10,000 stitches which can be added)		20,000 stitches (One pattern)	20,000 stitches (including 10,000 stitches which can be added)
Work clamp lifter	Solenoid type or pneumatic type	Pneumatic type		Solenoid type
Work clamp height	17 mm max. (for solenoid) 25 mm max. (for pneumatic) (Max. 17 mm for inner clamping device)			13 mm max.
Rotary hook	Shuttle hook (shuttle hook 2, optional)			
Wiper device	Standard equipment			
Thread trimmer device	Standard equipment			
Thread take-up device	Standard equipment			
Stepping foot lift amount	18 mm			
Stepping foot stroke	0 mm, 3 - 8 mm			
Safety device	built-in stopping mechanism			
Data storage method	P-ROM (Any sewing pattern can be added using PS-3000.)		3.5 floppy disk 2HD/1.44MB, 2DD	P-ROM (Any sewing pattern can be added using PS-3000.)
Number of user programs	16		16	
Number of cycle programs	4		4	
Number of stored data	(*)		49 sewing patterns are set already	
			(*)	
Motor	Three-phase 400W induction motor			
Weights	Machine head: 56 kg, Operation panel: 0.6 kg (2.8 kg: KE-436B), Control box: 9 - 19 kg (depending on destination)			
Power source	Single-phase 110, 220 - 230, 240V 3-phase 220-230, 380, 400V Maximum electric power consumption; 600VA			

\* Up to 100 patterns can be added. Total number of stitches of stored data which can be added is within 10,000.

## 1. SPECIFICATIONS

BROTHER INDUSTRIES, LTD. • <b>KE-430C-0</b> ■ •		BROTHER INDUSTRIES, LTD. • <b>KE-431C-0</b> ■ •		BROTHER INDUSTRIES, LTD. • <b>KE-432C</b> •		BROTHER INDUSTRIES, LTD. • <b>BE-438C</b> •	
1	Ordinary materials	2	Bar tacking length 6 -14 mm				
2	Denim	3	Bar tacking length 14 -25 mm				
7	Knitted materials						

	KE-430C Electronic lockstitch bar tacker	KE-431C Electronic lockstitch belt loop bar tacker	KE-432C Electronic lockstitch eyelet buttonhole end bar tacker	BE-438C Electronic lockstitch button sewer
Stitch formation	Single needle lock stitch			
Maximum sewing speed	2,700 rpm			2,500 rpm
Maximum pattern size	30 × 26 mm max.	30 × 10 mm max.	12 × 3 mm max.	0 - 6.4 × 0 - 6.4 mm
Feed mechanism	R-θ intermittent feed mechanism (pulse-motor driven mechanism)			
Stitch length	0.1 - 10.0 mm			
Number of stitches	Variable			
Maximum stitch number	20,000 stitches (including 10,000 stitches which can be added)			
Work clamp lifter	Solenoid type			
Work clamp height	17 mm max.			13 mm max.
Rotary hook	Shuttle hook (shuttle hook 2, optional)			
Wiper device	Standard equipment			
Thread trimmer device	Standard equipment			
Thread take-up device	Standard equipment			
Data storage method	P-ROM (Any sewing pattern can be added using PS-3000.)			
Number of user programs	16			
Number of cycle programs	4			
Number of stored data	61 sewing patterns are set already	6 sewing patterns are set already	3 sewing patterns are set already	49 sewing patterns are set already
	(Up to 100 patterns can be added. Total number of stitches of stored data which can be added is within 10,000.)			
Motor	Three-phase 400W induction motor			
Weights	Machine head: 52 kg, Operation panel: 0.6 kg, Control box: 9 - 19 kg (depending on destination)			
Power source	Single-phase 110, 220 - 230, 240V 3-phase 220-230, 380, 400V Maximum electric power consumption; 600VA			



1	Medium materials
2	Heavy materials

	KE-434C Electronic lockstitch pattern tacker	KE-435C Electronic lockstitch pattern tacker with stepping foot	KE-436C Electronic lockstitch pattern tacker with stepping foot and programming function	KE-484C Electronic lockstitch pattern tacker with treble hook
Stitch formation	Single needle lock stitch			
Maximum sewing speed	2,500 rpm (Pitch 3 mm)			2,200 rpm (Pitch 3 mm)
Maximum pattern size	100 × 60 mm max.			
Feed mechanism	R-θ intermittent feed mechanism (pulse-motor driven mechanism)			
Stitch length	0.1 - 10.0 mm			
Number of stitches	Variable			
Maximum stitch number	20,000 stitches (including 10,000 stitches which can be added)	20,000 stitches (One pattern)	20,000 stitches (including 10,000 stitches which can be added)	
Work clamp lifter	Solenoid type or pneumatic type	Pneumatic type		
Work clamp height	17 mm max. (for solenoid), 25 mm max. (for pneumatic) (Max. 17 mm for inner clamping device)			
Rotary hook	Shuttle hook (shuttle hook 2, optional)			Treble hook
Wiper device	Standard equipment			
Thread trimmer device	Standard equipment			
Thread take-up device	Standard equipment			
Stepping foot lift amount	18 mm			
Stepping foot stroke	0 mm, 3 - 8 mm			
Safety device	built-in stopping mechanism			
Data storage method	P-ROM (Any sewing pattern can be added using PS-3000.)	3.5 floppy disk 2HD/1.44MB, 2DD	P-ROM (Any sewing pattern can be added using PS-3000.)	
Number of user programs	16		16	
Number of cycle programs	4		4	
Number of stored data	(*)		(*)	
Motor	Three-phase 400W induction motor			
Weights	Machine head: 56 kg, Operation panel: 0.6 kg (2.8 kg: KE-436C), Control box: 9 - 19 kg (depending on destination)			
Power source	Single-phase 110, 220 - 230, 240V 3-phase 220-230, 380, 400V Maximum electric power consumption; 600VA			

\* Up to 100 patterns can be added. Total number of stitches of stored data which can be added is within 10,000.

## 1. SPECIFICATIONS

### 1 - 2 . Standard thread tension

[KE-430B, 430C, 431B, 431C, 432B, 432C, 433B, 434B, 434C, 435B, 435C, 436B, 436C]

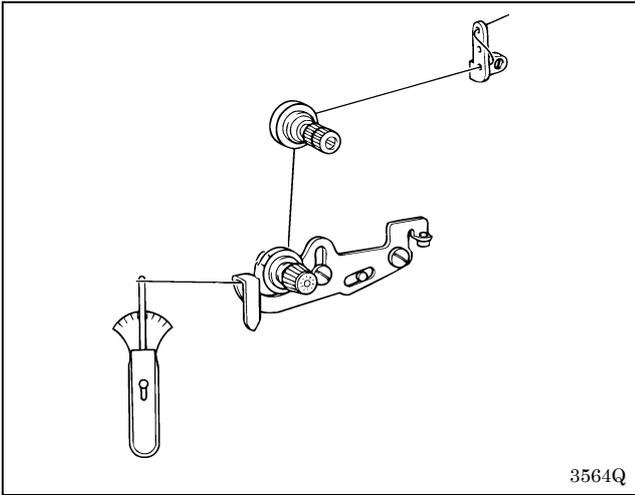
Use	Medium materials (Ordinary materials)		Heavy materials (Denim)		Knitted materials
	Standard hook	Large hook	Standard hook	Large hook	Standard hook
Upper thread	#50 or equivalent	←	#30 or equivalent	←	#60 or equivalent
Lower thread	#60 or equivalent	←	#50 or equivalent	←	#80 or equivalent
Upper thread tension (N)	0.8 - 1.2	1.0 - 1.3	1.2 - 1.6	1.4 - 1.8	0.8 - 1.2
Lower thread tension (N)	0.2 - 0.3	←	0.2 - 0.3	←	0.25 - 0.3
Thread take-up spring height (mm)	6 - 8	←	6 - 8	←	6 - 8
Thread take-up spring tension (N)	0.3 - 0.4	←	0.5 - 0.6	←	0.3 - 0.4
Pre-tension (N)	0.5 - 0.8	←	0.3 - 0.5	←	0.5 - 0.8
Needle	DP×5 #14	←	DP×17NY #19	←	DP×5 #9

[BE-438B, 438C, KE-484C]

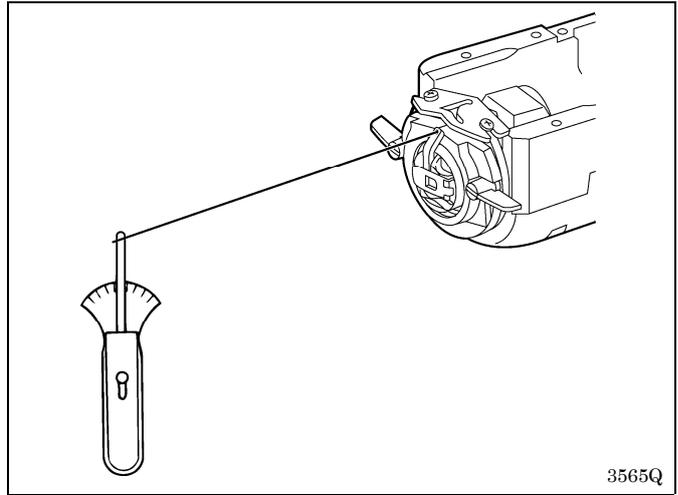
Model	BE-438B	BE-438C		KE-484C
Needle	TQ×1 #12	TQ×1 #12	DP×17NY #12	DP×17 #25
Upper thread	#60 or equivalent	#60 or equivalent		#4 or equivalent
Lower thread	#60 or equivalent	#60 or equivalent		#4 or equivalent
Upper thread tension (N)	0.7 - 1.3	0.7 - 1.3	0.7 - 1.5	4.5 - 5.0
Lower thread tension (N)	0.3 - 0.4	0.3 - 0.4		1.0 - 1.2
Thread take-up spring height (mm)	6 - 8	6 - 8		0 - 5
Thread take-up spring tension (N)	0.4 - 0.6	0.4 - 0.6		2.0 - 2.5
Pre-tension (N)	0.1 - 0.3	0.1 - 0.3	0.05 - 0.3	0.3 - 0.5

1 - 2 - 1 . Measuring tension

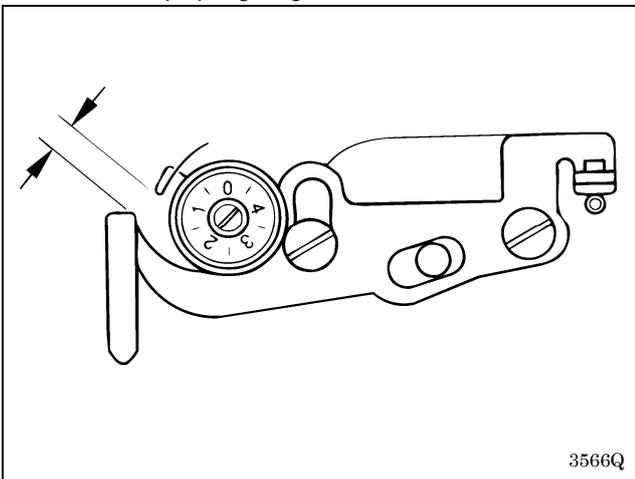
Upper thread tension



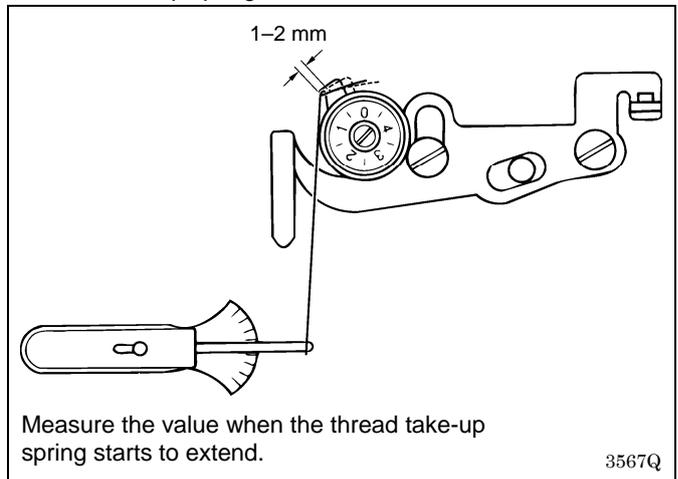
Lower thread tension



Thread take-up spring height



Thread take-up spring tension

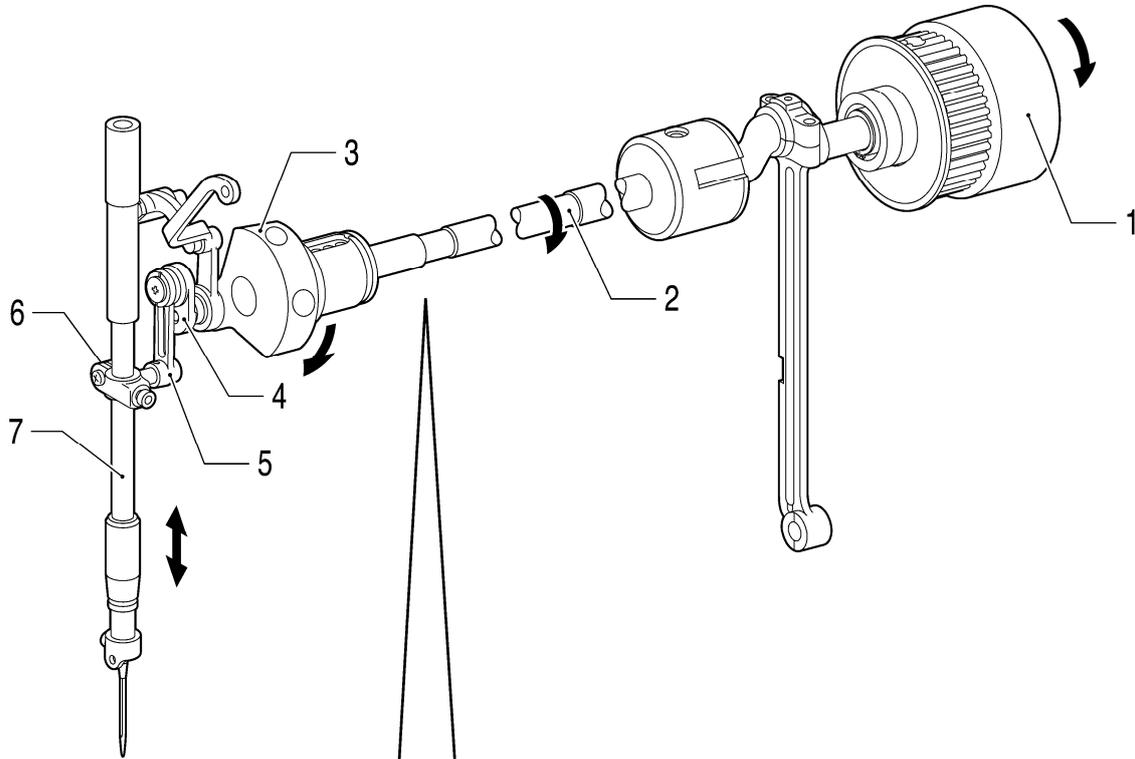


\* When the spring height (stroke) is great or the spring tension is insufficient, it may cause the thread end length to vary after thread trimming.

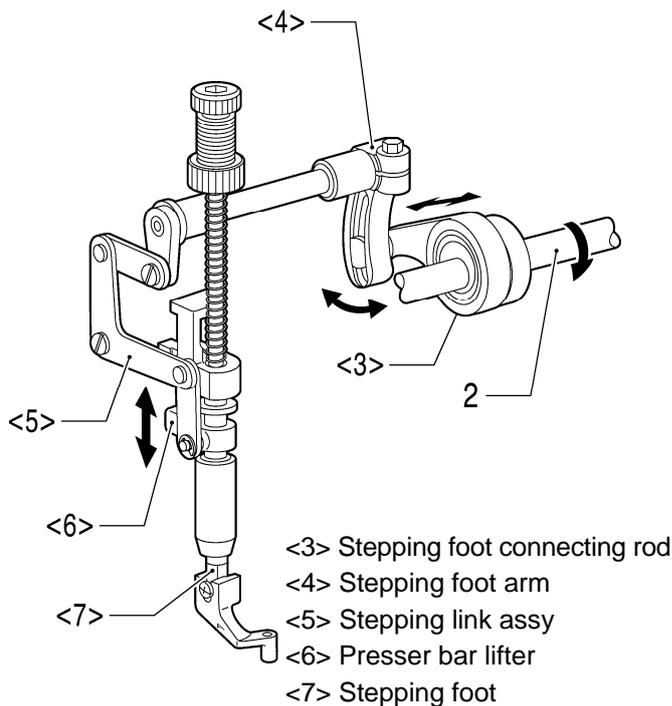
## 2. MECHANICAL DESCRIPTIONS

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

### 2 - 1 . Needle bar and thread take-up mechanisms

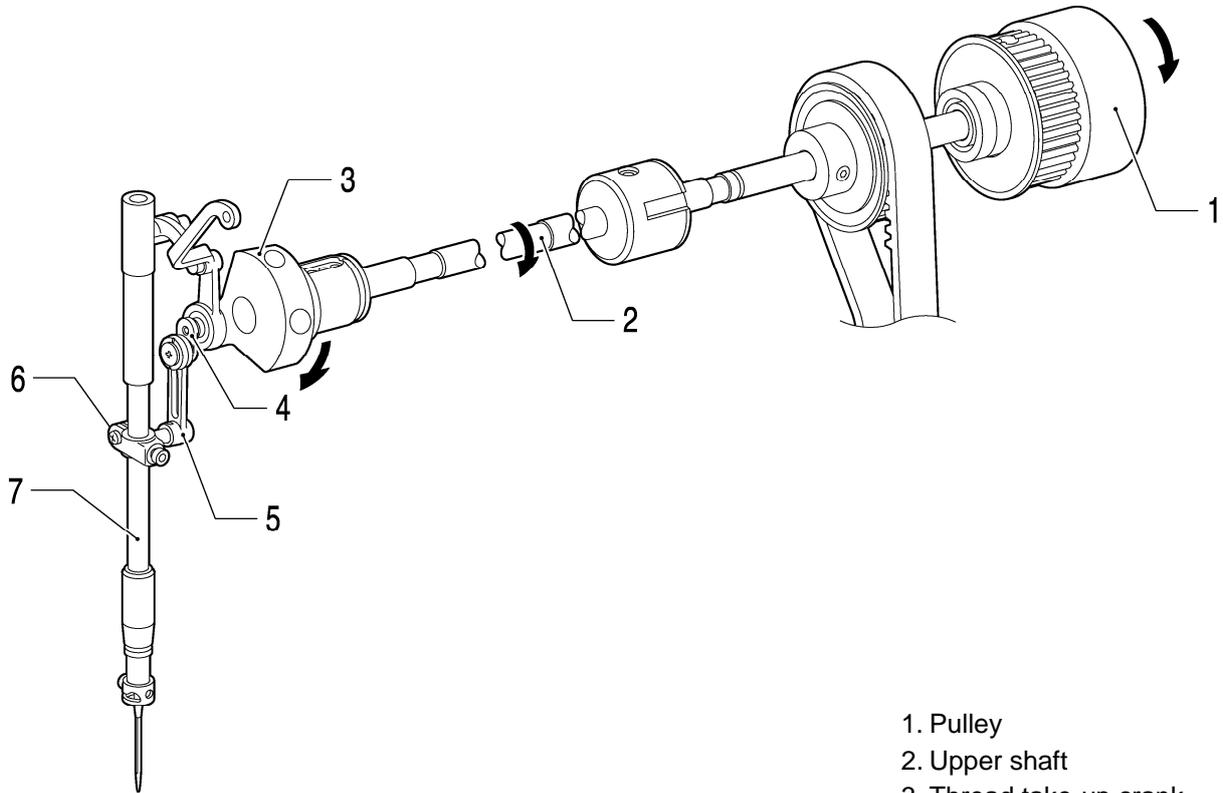


With stepping foot



- 1. Pulley
- 2. Upper shaft
- 3. Thread take-up crank
- 4. Needle bar crank
- 5. Needle bar connecting rod
- 6. Needle bar clamp
- 7. Needle bar

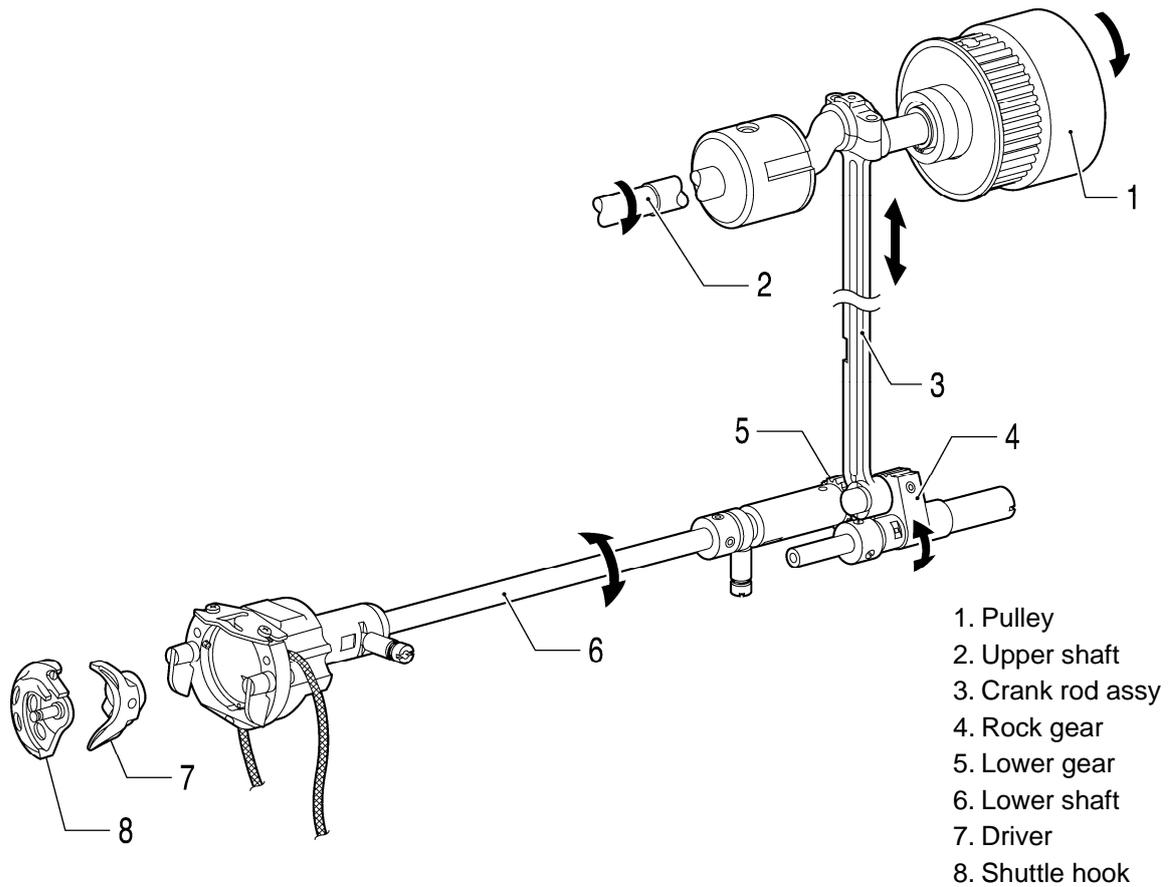
KE-484C



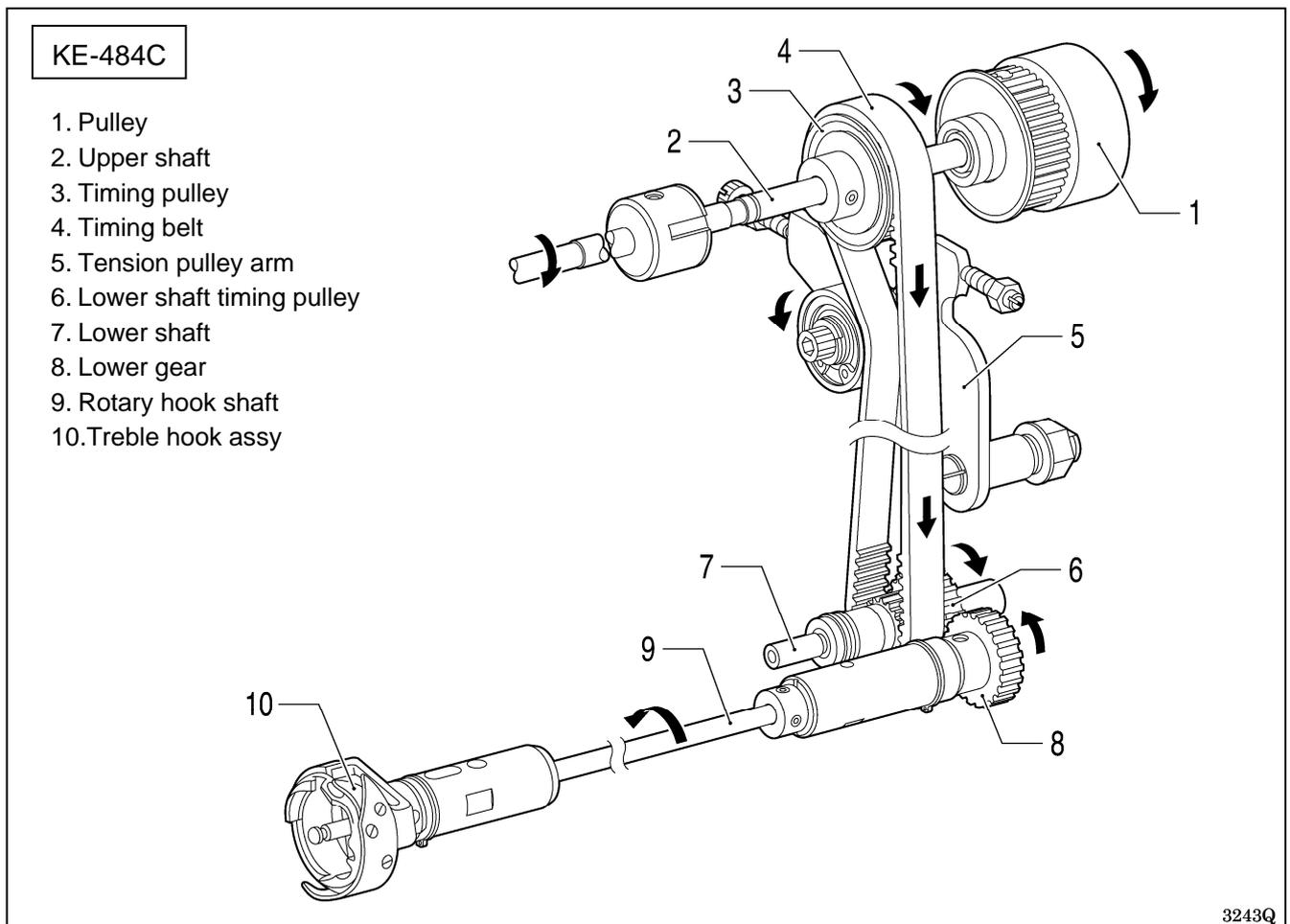
1. Pulley
2. Upper shaft
3. Thread take-up crank
4. Needle bar crank
5. Needle bar connecting rod
6. Needle bar clamp
7. Needle bar

3241Q

2 - 2 . Lower shaft and shuttle race mechanisms



3242Q

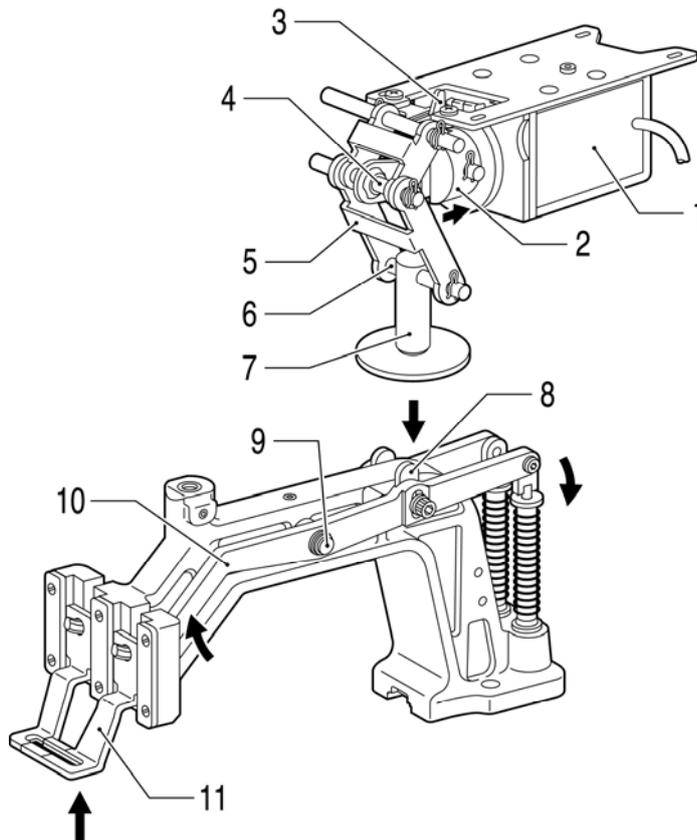


3243Q

2 - 3 . Work clamp lifter mechanism

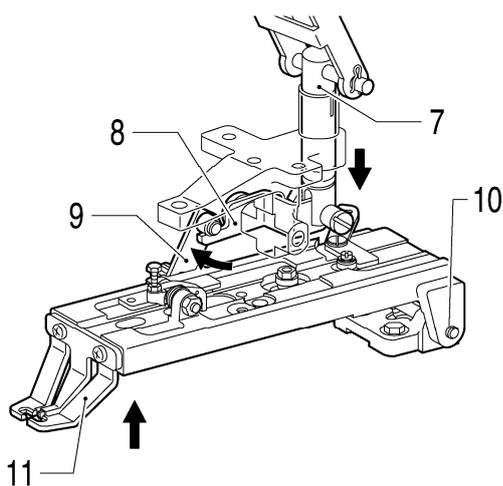
3244Q

- 1. Work clamp solenoid
- 2. Plunger
- 3. Link assy, C
- 4. Link shaft, B
- 5. Link, B
- 6. Link shaft, C
- 7. Work clamp plate
- 8. Work clamp arm lever plate
- 9. Work clamp arm lever shaft
- 10. Work clamp arm lever
- 11. Work clamp



\* When the presser solenoid is turned off, the presser plate rises, and work clamps lower.

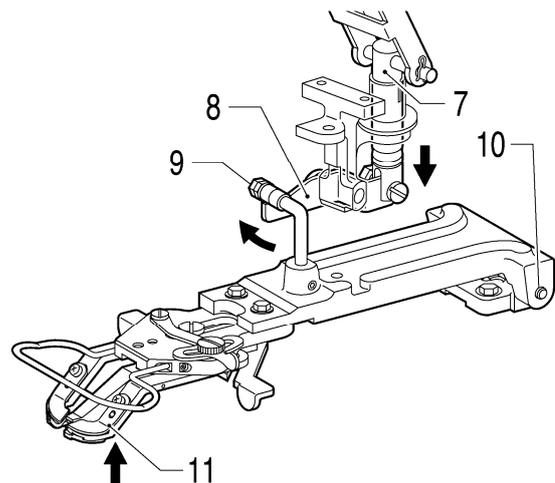
KE-432B, 432C



- 7. Work clamp lifting rod
- 8. Work clamp lifter lever
- 9. Presser adjusting plate assy
- 10. Button clamp holder shaft
- 11. Work clamp

3266Q

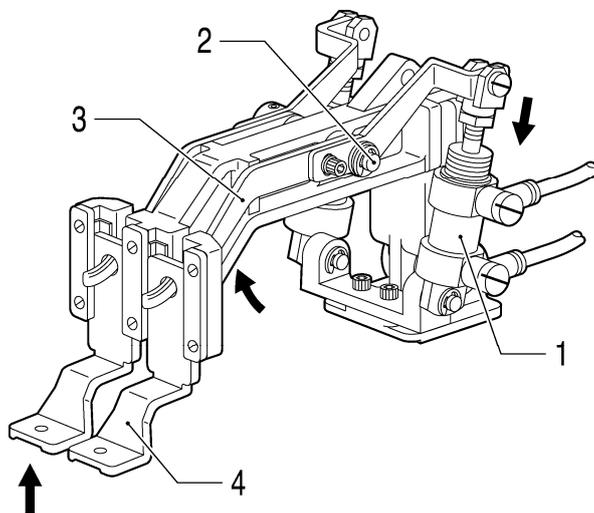
BE-438B, 438C



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

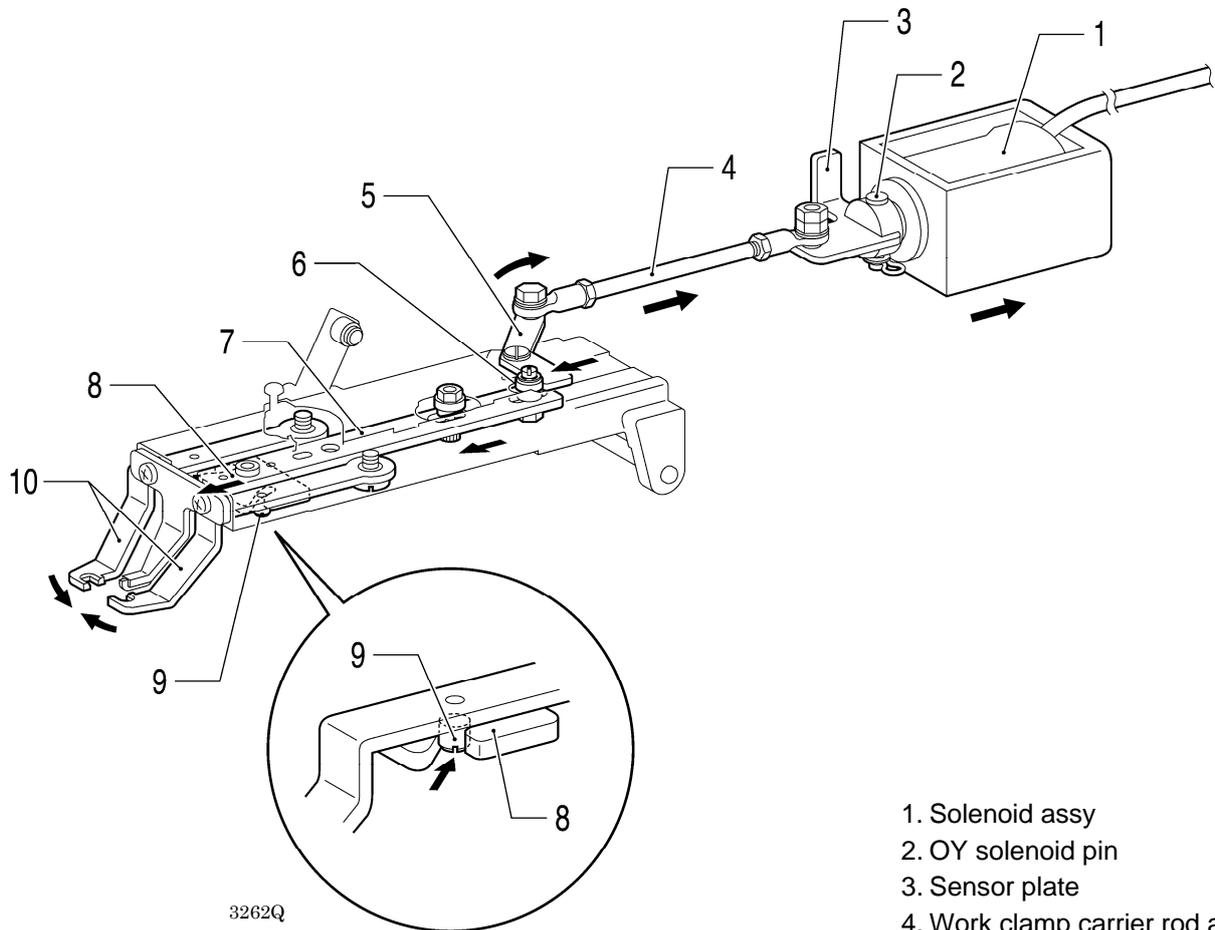
3267Q

Pneumatic specifications



- 1. Air cylinder
- 2. Work clamp arm lever shaft
- 3. Work clamp arm lever
- 4. Work clamp

2 - 4 . Work clamp open-close mechanism (KE-432B, 432C)

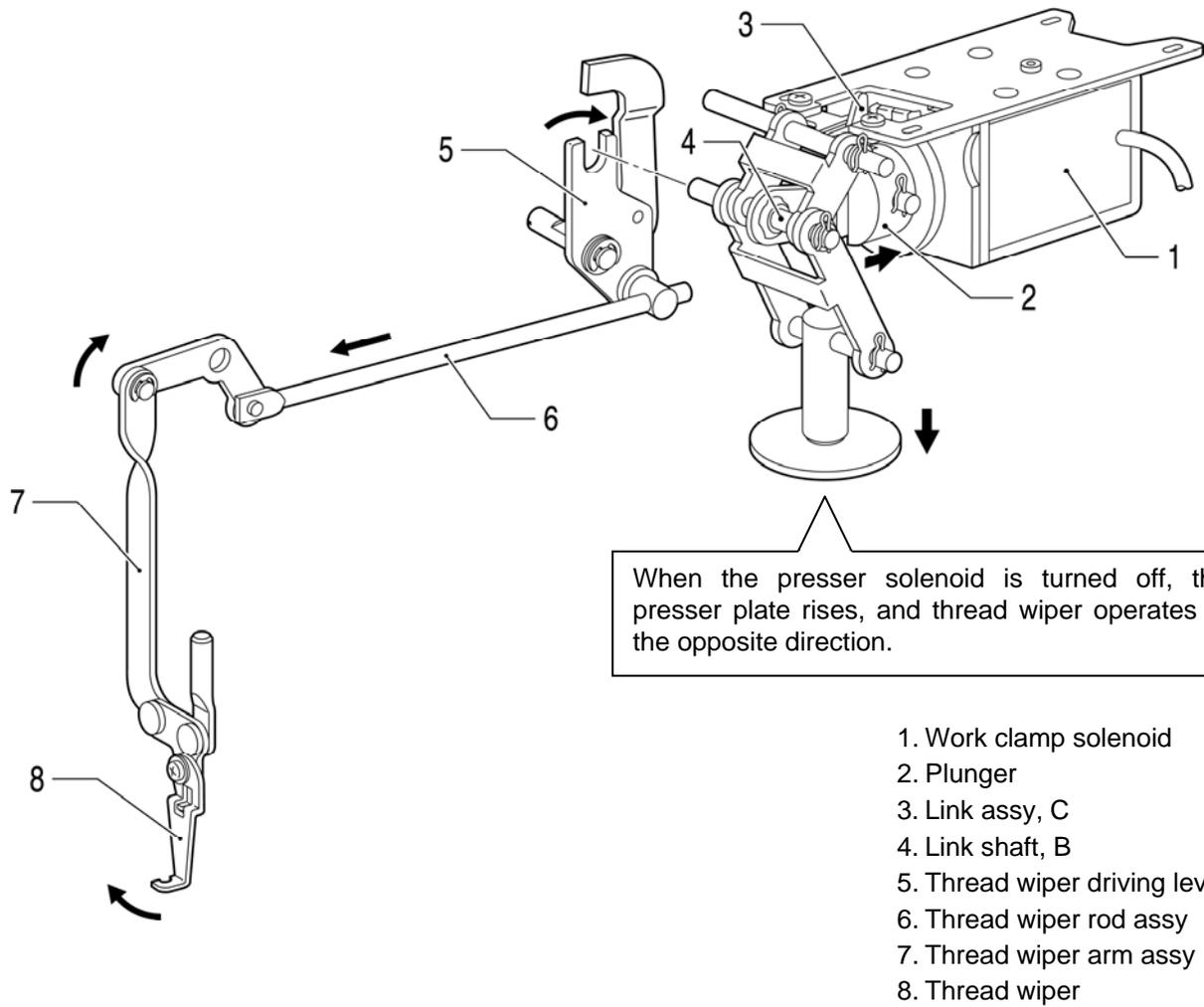


3262Q

- 1. Solenoid assy
- 2. OY solenoid pin
- 3. Sensor plate
- 4. Work clamp carrier rod assy
- 5. Lever
- 6. Roller
- 7. Work clamp carrier plate
- 8. Work clamp guide plate
- 9. Screw
- 10. Work clamp

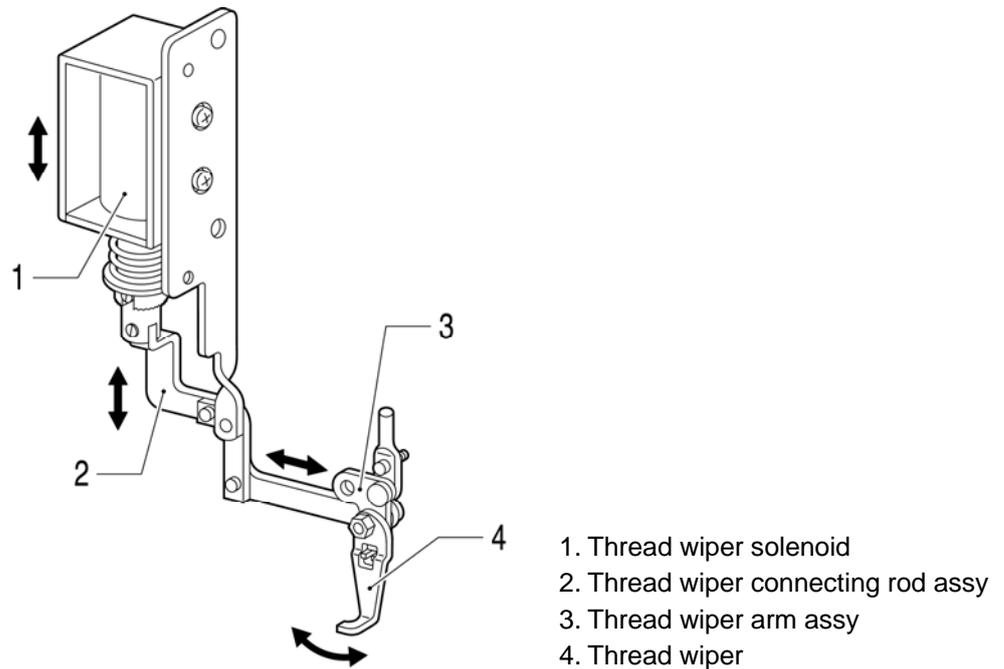
2 - 5 . Thread wiper mechanism

3246Q

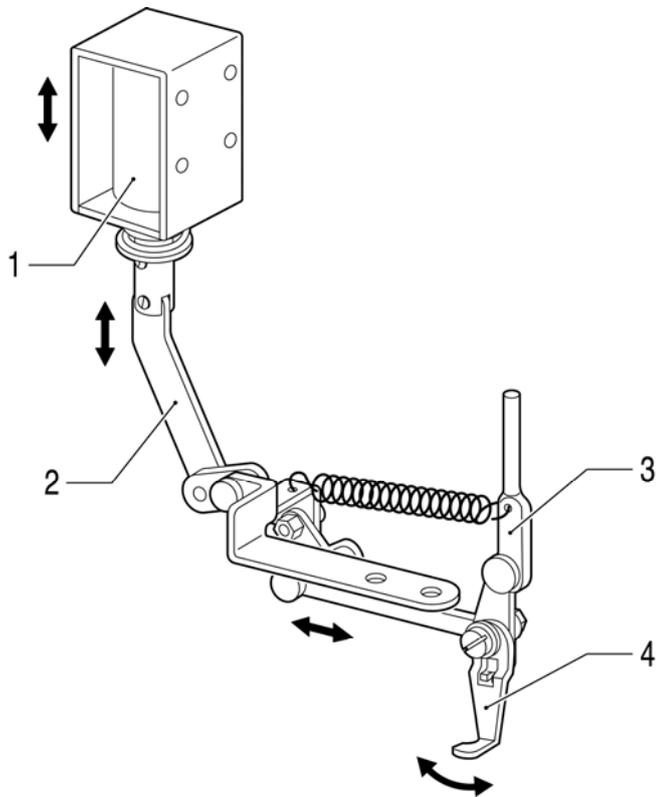


Solenoid type thread wiper

3247Q



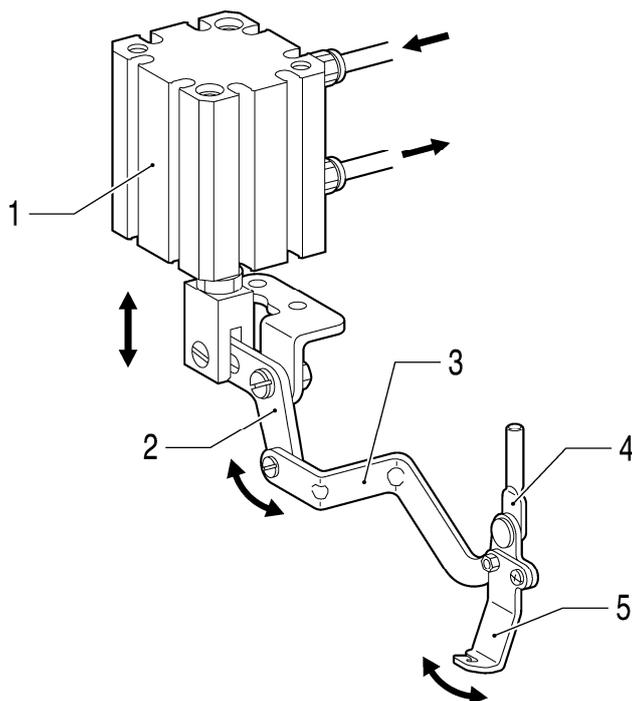
Stepping foot specifications



- 1. Thread wiper solenoid
- 2. Thread wiper connecting rod assy
- 3. Thread wiper arm assy
- 4. Thread wiper

3248Q

KE-484C



- 1. Thread wiper cylinder
- 2. Thread wiper connecting rod lever
- 3. Thread wiper connecting rod
- 4. Thread wiper arm assy
- 5. Thread wiper

3249Q

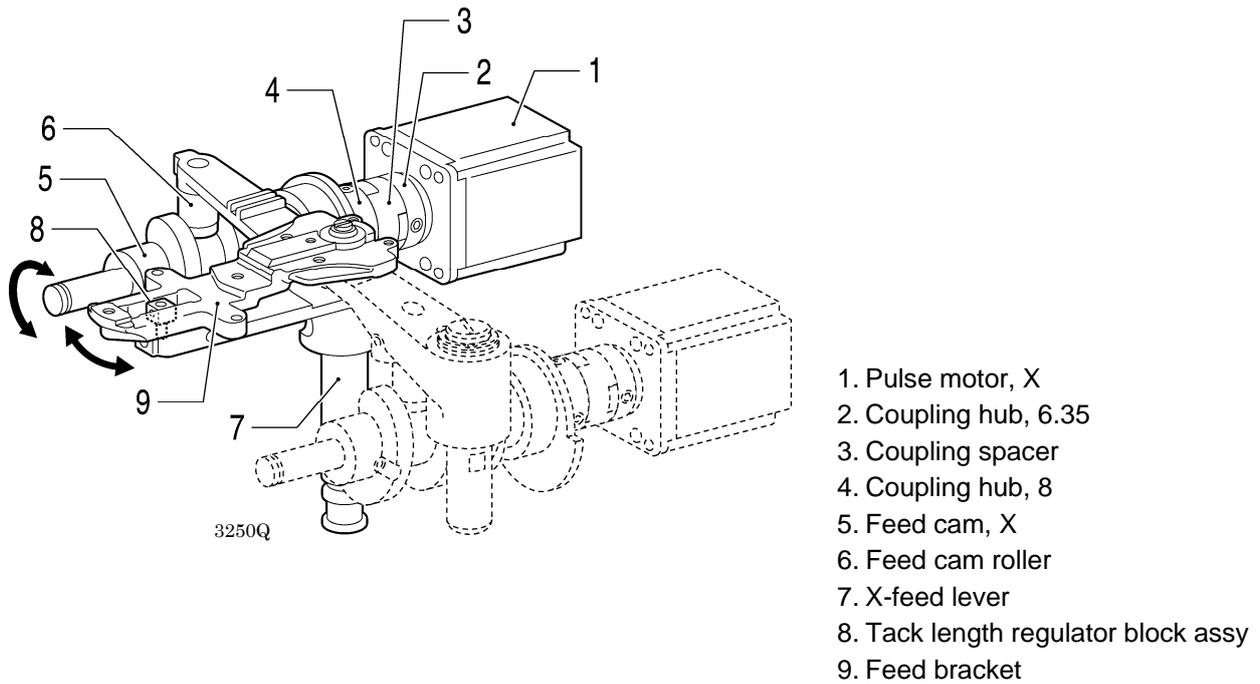
## 2. MECHANICAL DESCRIPTIONS

### 2 - 6 . Feed mechanism

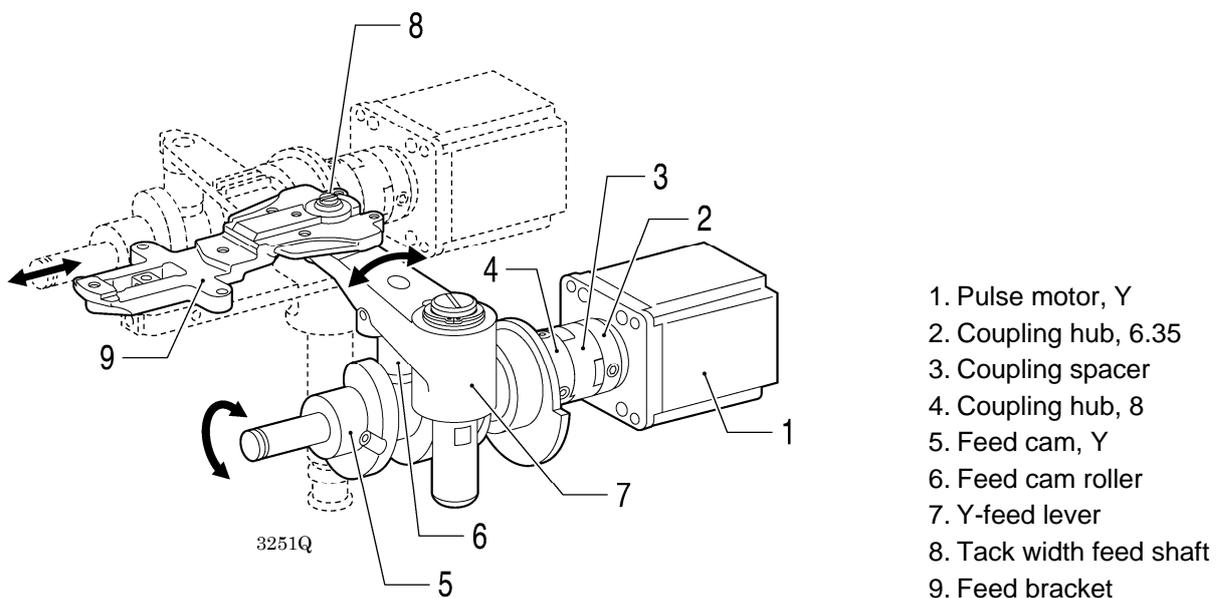
Sewing patterns are created through combinations of X and Y movements.

KE-430B, 431B, 432B, 433B, BE-438B  
 KE-430C, 431C, 432C, BE-438C

X direction

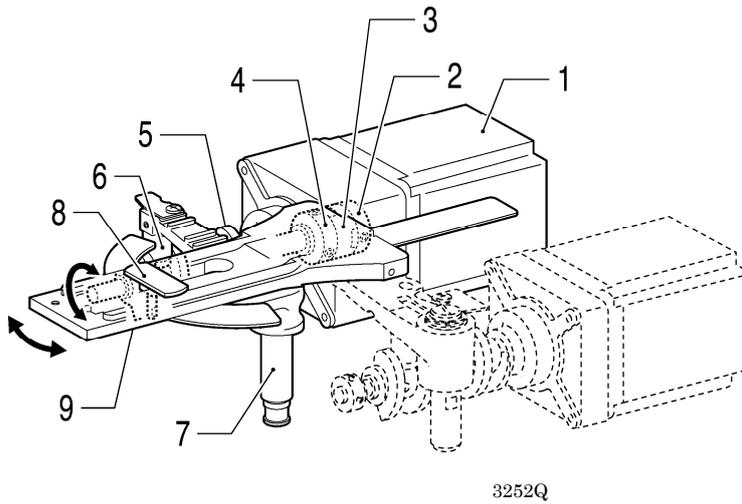


Y direction



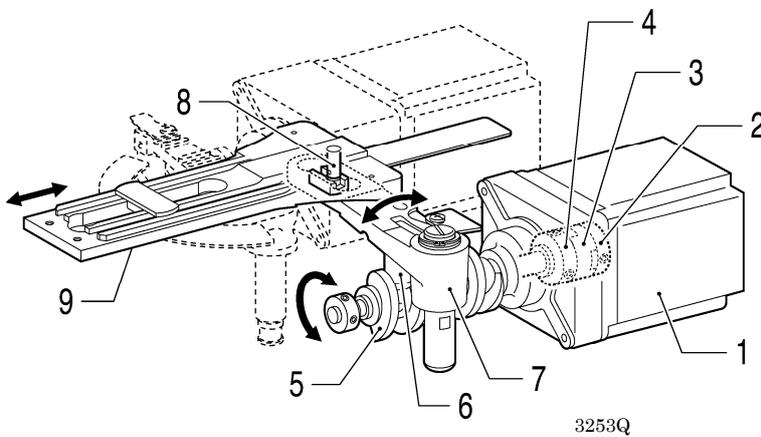
KE-434B, 435B, 436B  
 KE-434C, 435C, 436C, 484C

X direction



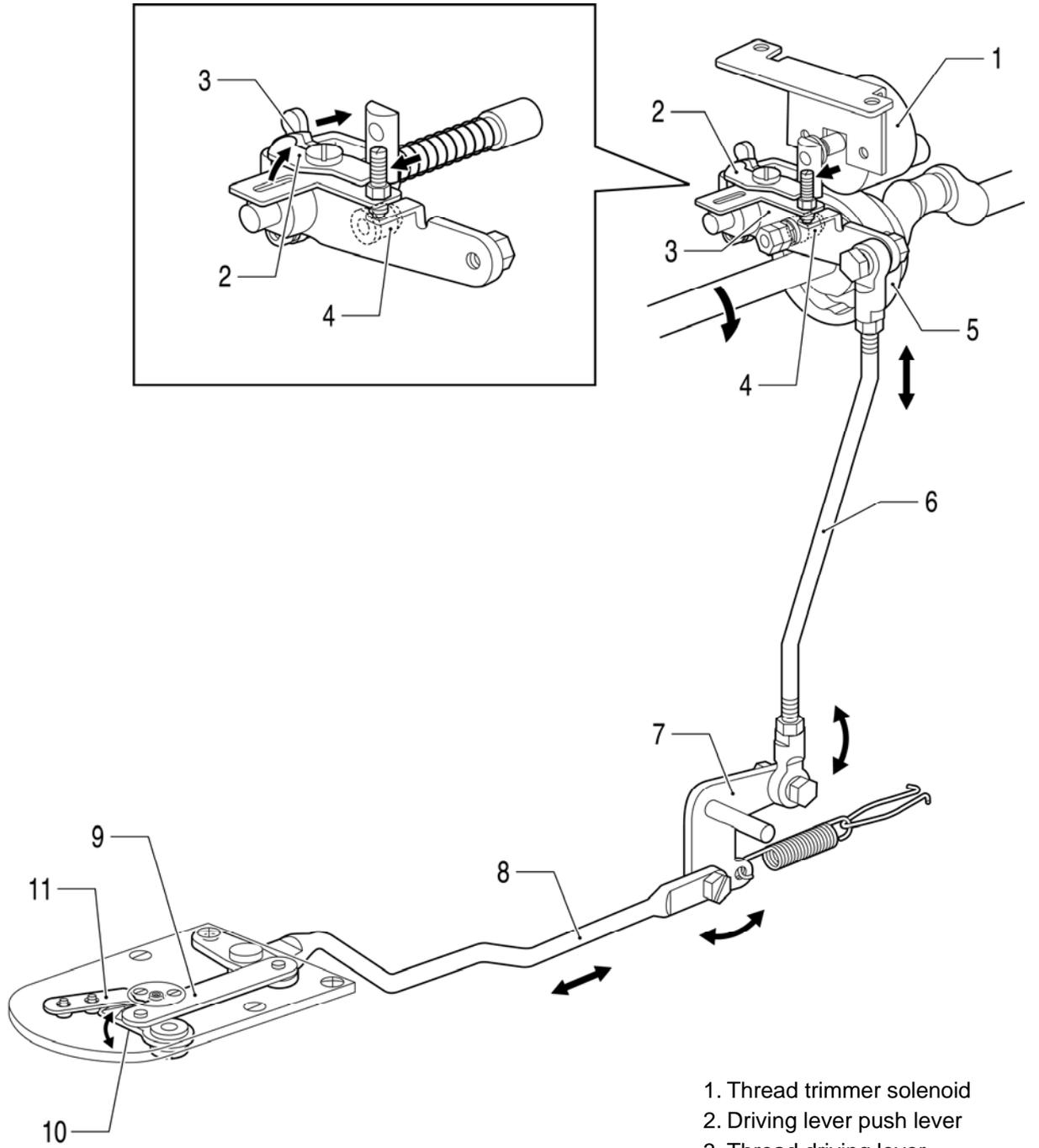
1. Pulse motor, X
2. Coupling hub, 8
3. Coupling spacer
4. Coupling hub, 8
5. Feed cam, X
6. Feed cam roller
7. X-feed lever
8. Tack length regulator block assy
9. Feed bracket

Y direction



1. Pulse motor, Y
2. Coupling hub, 8
3. Coupling spacer
4. Coupling hub, 8
5. Feed cam, Y
6. Feed cam roller
7. Y-feed lever
8. Tack width regulator block assy
9. Feed bracket

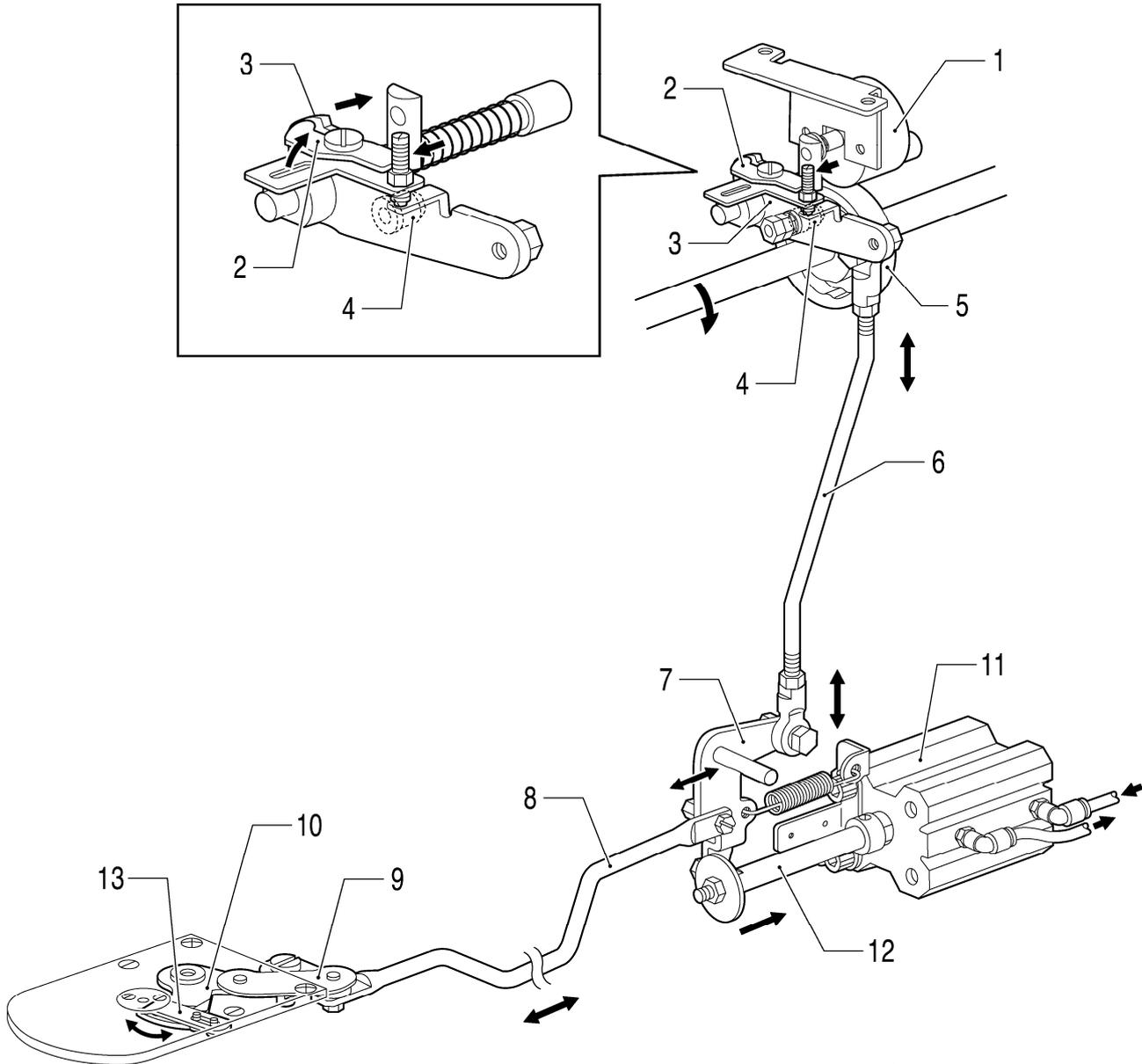
2 - 7 . Thread trimmer mechanism



3254Q

- 1. Thread trimmer solenoid
- 2. Driving lever push lever
- 3. Thread driving lever
- 4. Thread trimmer roller
- 5. Thread trimmer cam
- 6. Thread trimmer rod
- 7. Thread trimmer lever
- 8. Connecting rod lever assy
- 9. Thread trimmer connecting rod
- 10. Movable knife
- 11. Fixed knife

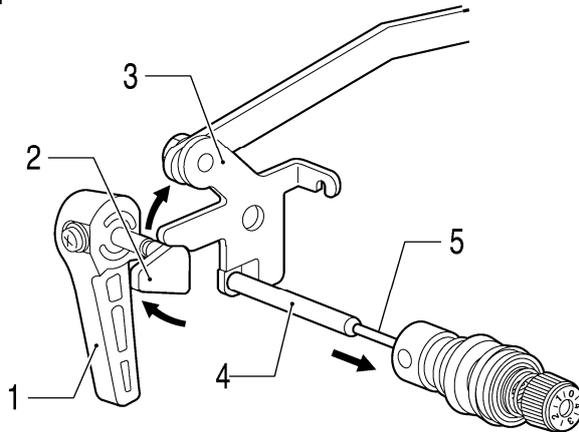
KE-484C



1. Thread trimmer solenoid
2. Driving lever push lever
3. Thread driving lever
4. Thread trimmer roller
5. Thread trimmer cam
6. Thread trimmer rod
7. Thread trimmer lever
8. Thread trimmer rod, L
9. Thread trimmer connecting rod
10. Movable knife
11. Thread trimmer cylinder
12. Extension rod
13. Fixed knife

2 - 8 . Thread nipper mechanism

Manual operation

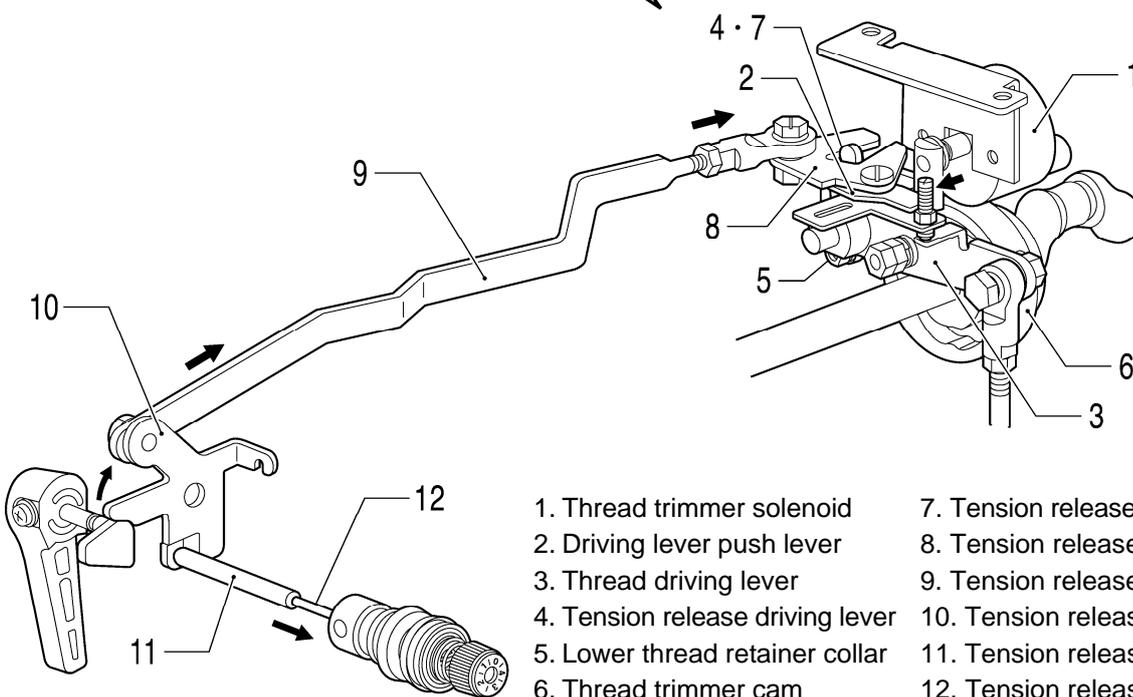
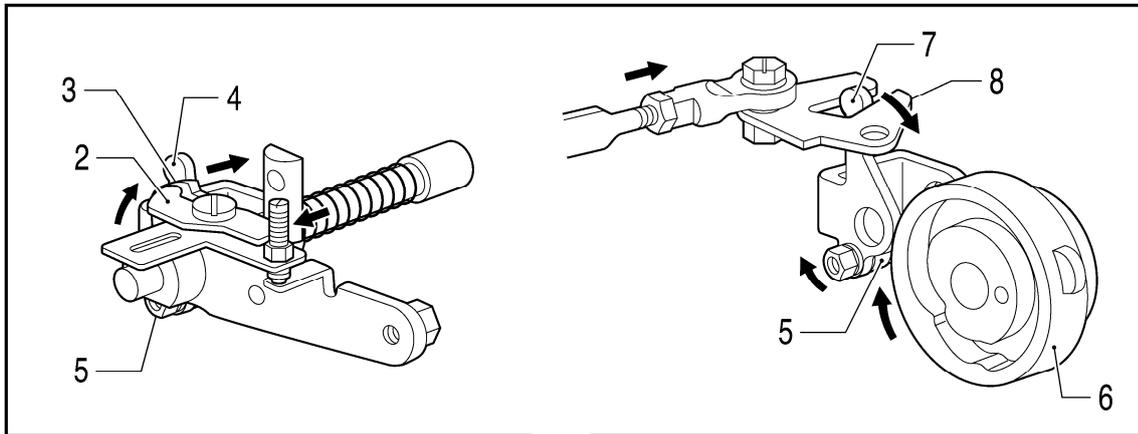


3256Q

- 1. Lifting lever
- 2. Lifting crank
- 3. Tension release lever
- 4. Tension release stud
- 5. Tension release pin

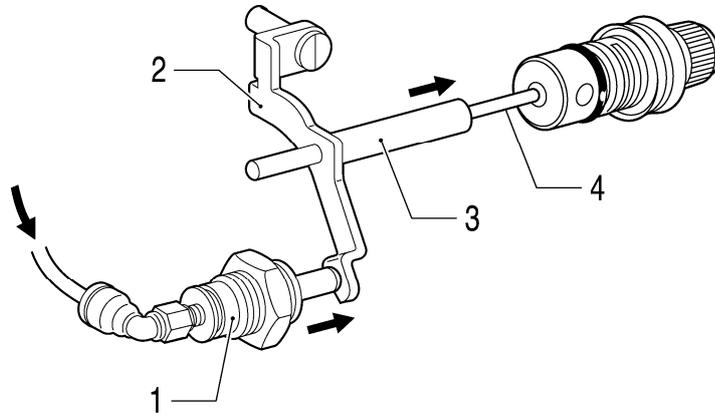
In thread trimming

3257Q



- 1. Thread trimmer solenoid
- 2. Driving lever push lever
- 3. Thread driving lever
- 4. Tension release driving lever
- 5. Lower thread retainer collar
- 6. Thread trimmer cam
- 7. Tension release driving lever
- 8. Tension release lever, U
- 9. Tension release rod assy
- 10. Tension release lever
- 11. Tension release stud
- 12. Tension release pin

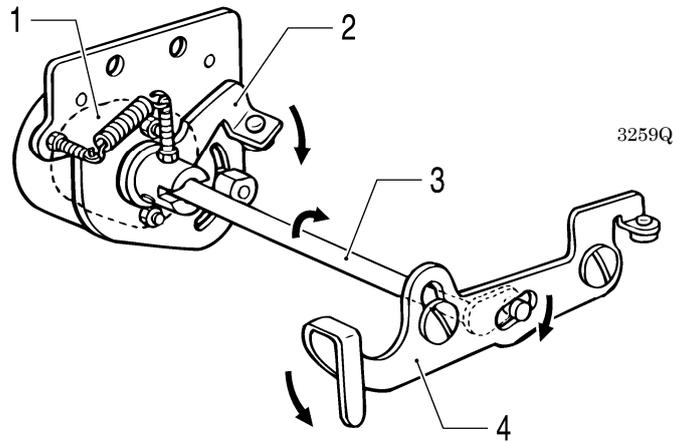
KE-484C



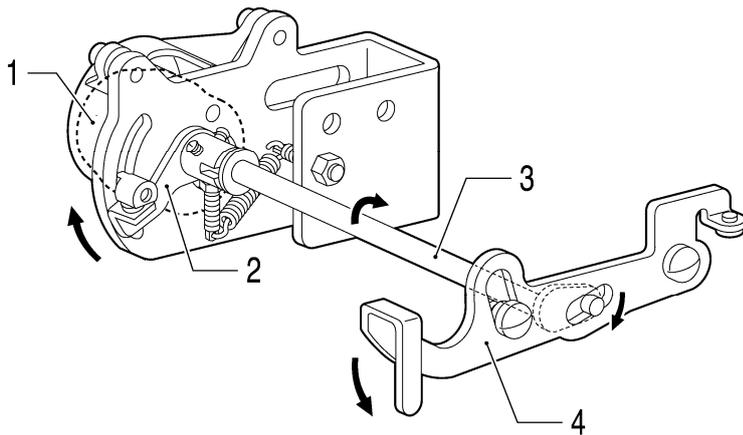
- 1. Tension release cylinder
- 2. Tension release pin push lever
- 3. Tension release pin, L
- 4. Tension release pin

3258Q

2 - 9 . Thread take-up mechanism



Stepping foot specifications

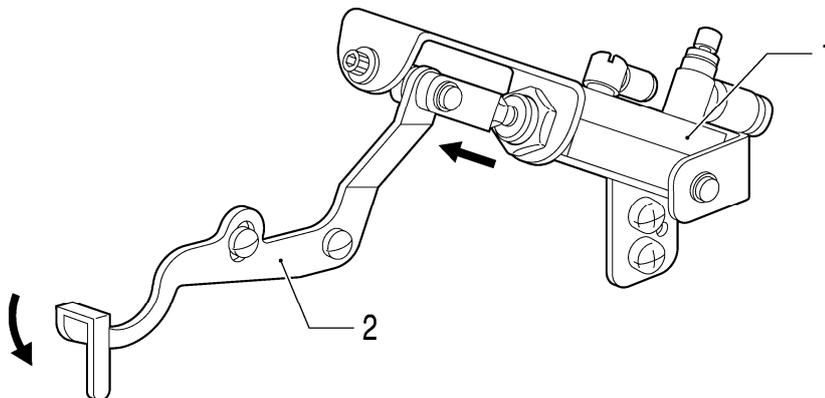


- 1. Thread take-up solenoid
- 2. Solenoid joint
- 3. Thread take-up lever crank
- 4. Thread take-up lever

3260Q

KE-484C

3261Q



- 1. Thread take-up cylinder
- 2. Thread take-up lever

## 3. DISASSEMBLY

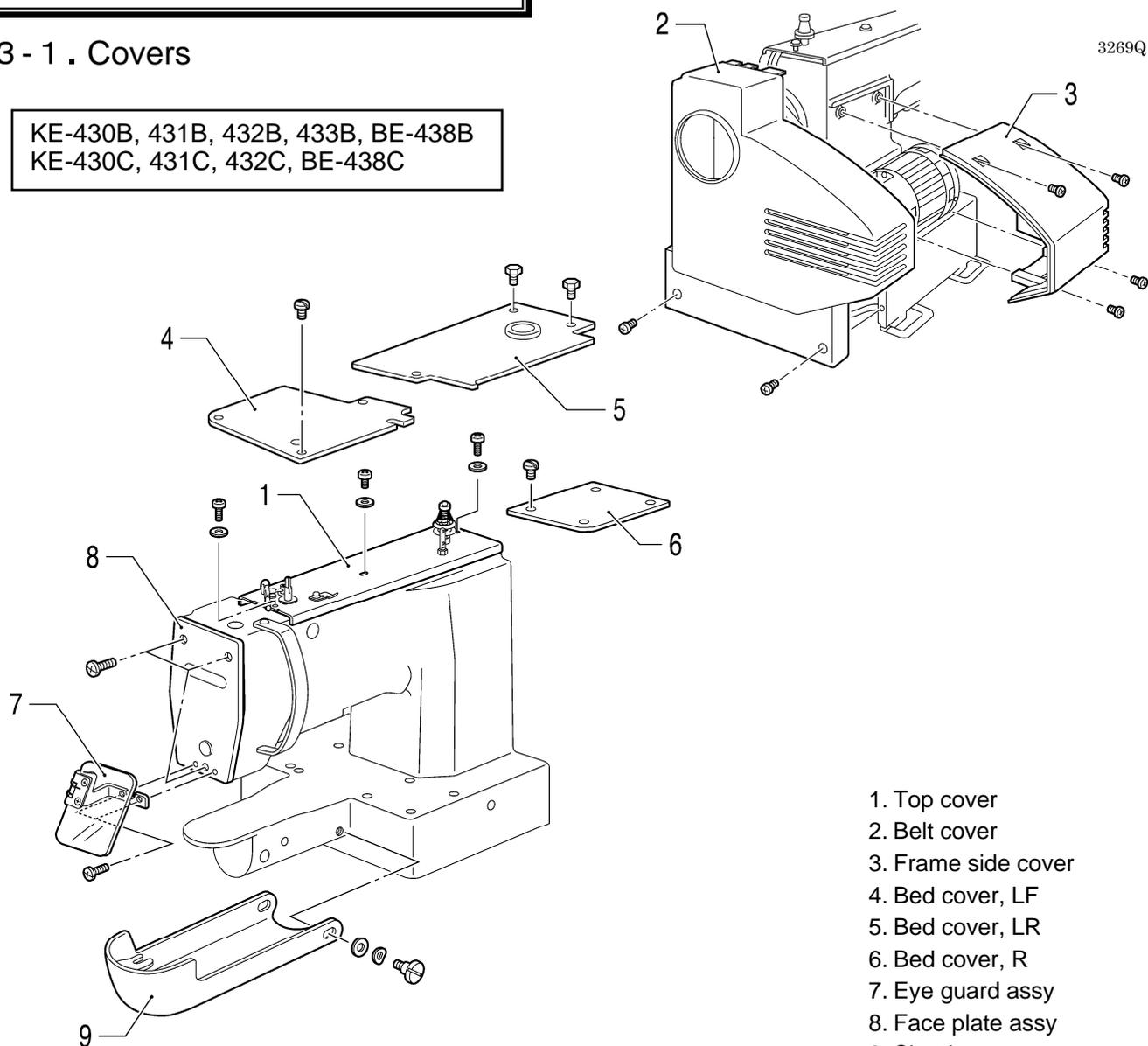
**CAUTION**

-  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.
-  Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before disassembly of any parts which use the pneumatic equipment.
-  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.

## 3-1. Covers

KE-430B, 431B, 432B, 433B, BE-438B  
KE-430C, 431C, 432C, BE-438C



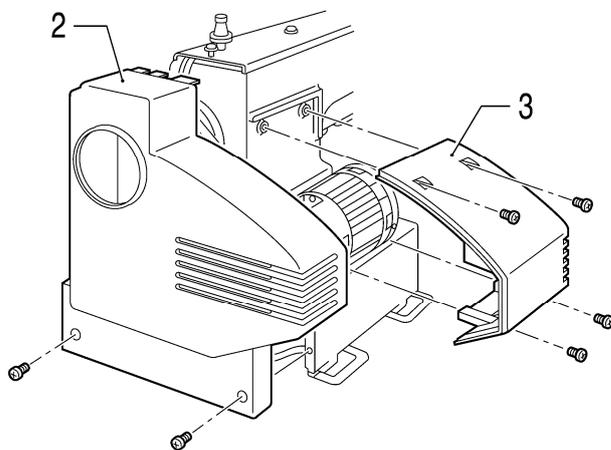
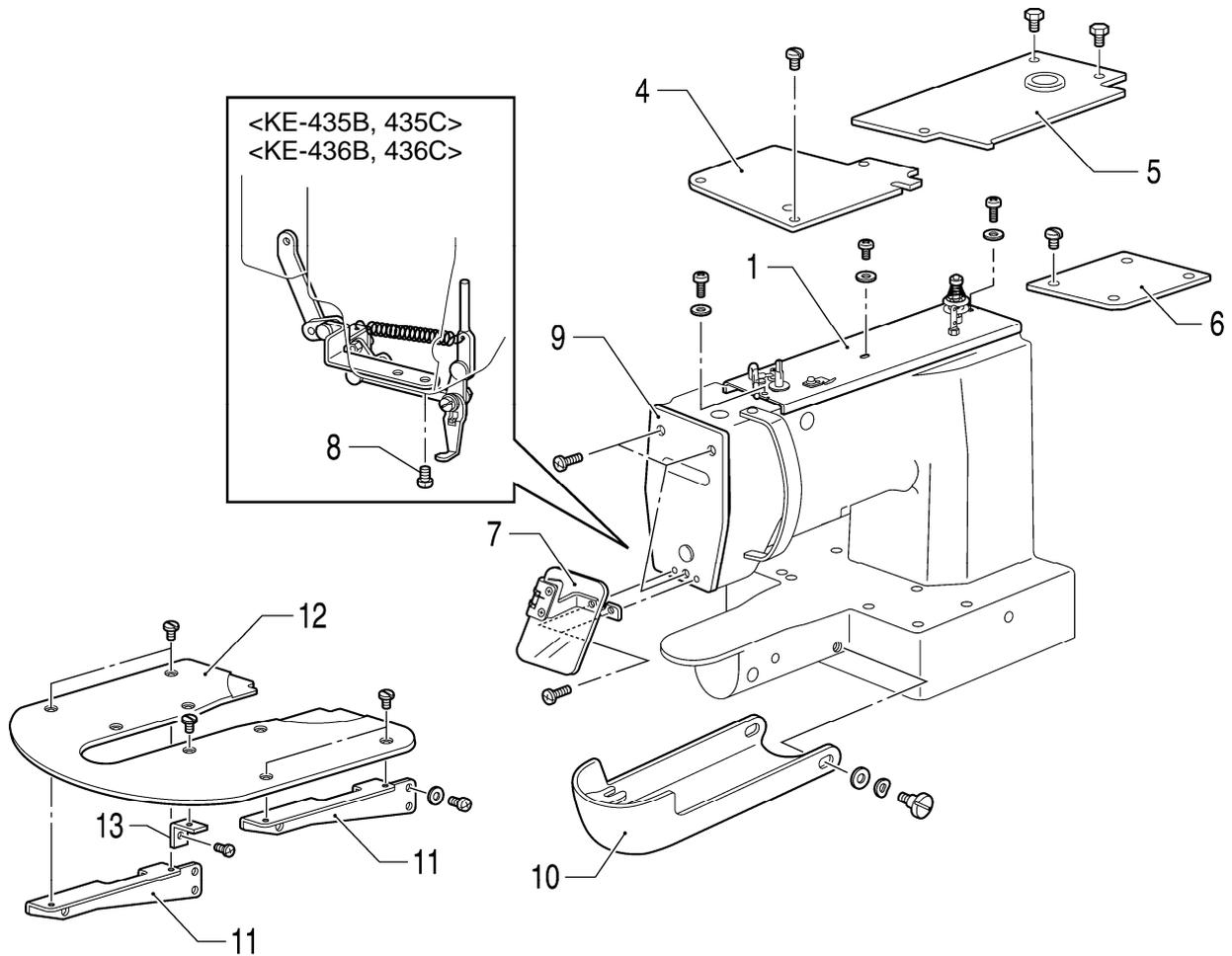
1. Top cover
2. Belt cover
3. Frame side cover
4. Bed cover, LF
5. Bed cover, LR
6. Bed cover, R
7. Eye guard assy
8. Face plate assy
9. Shuttle race cover assy

3268Q

### 3. DISASSEMBLY

KE-434B, 435B, 436B  
KE-434C, 435C, 436C, 484C

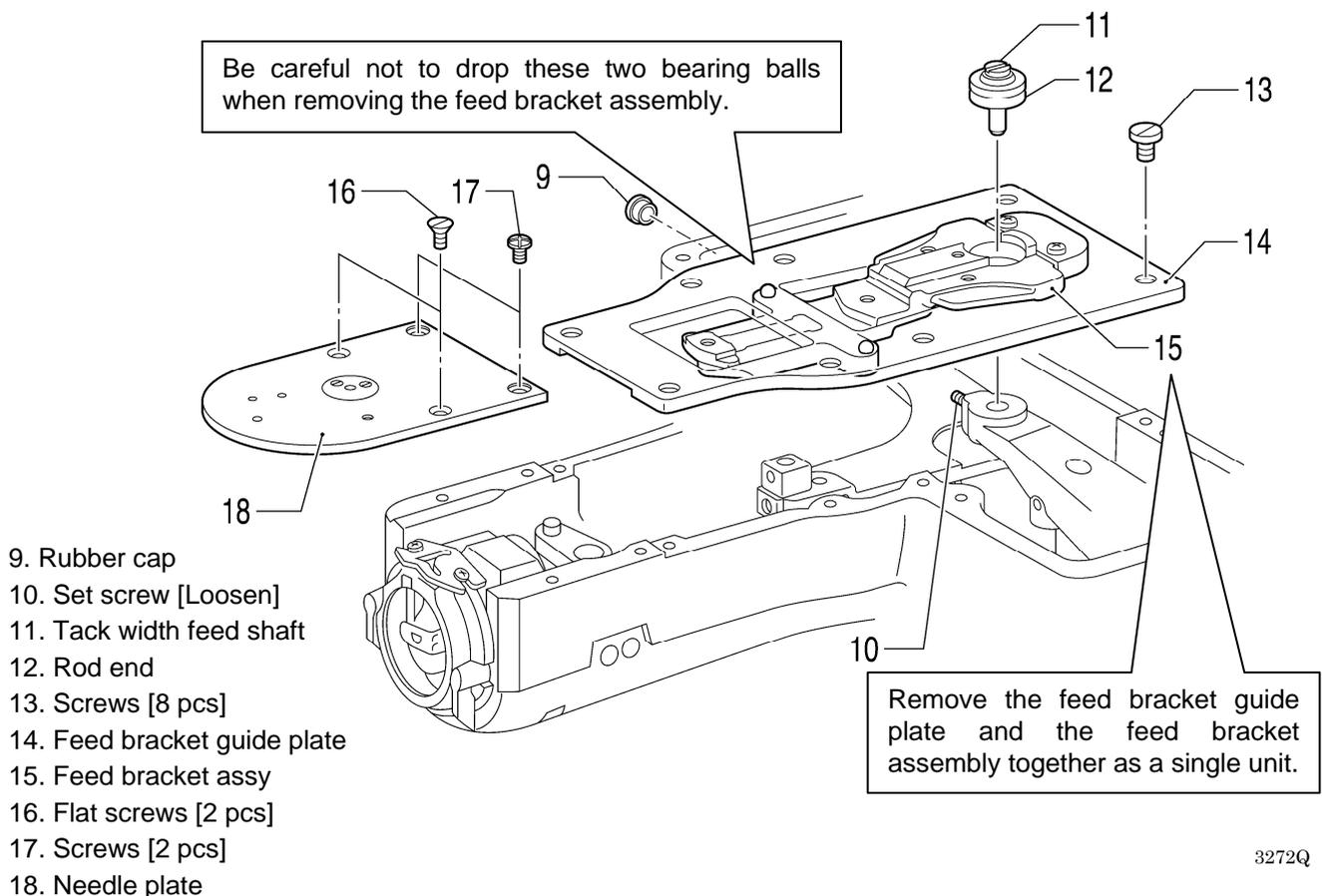
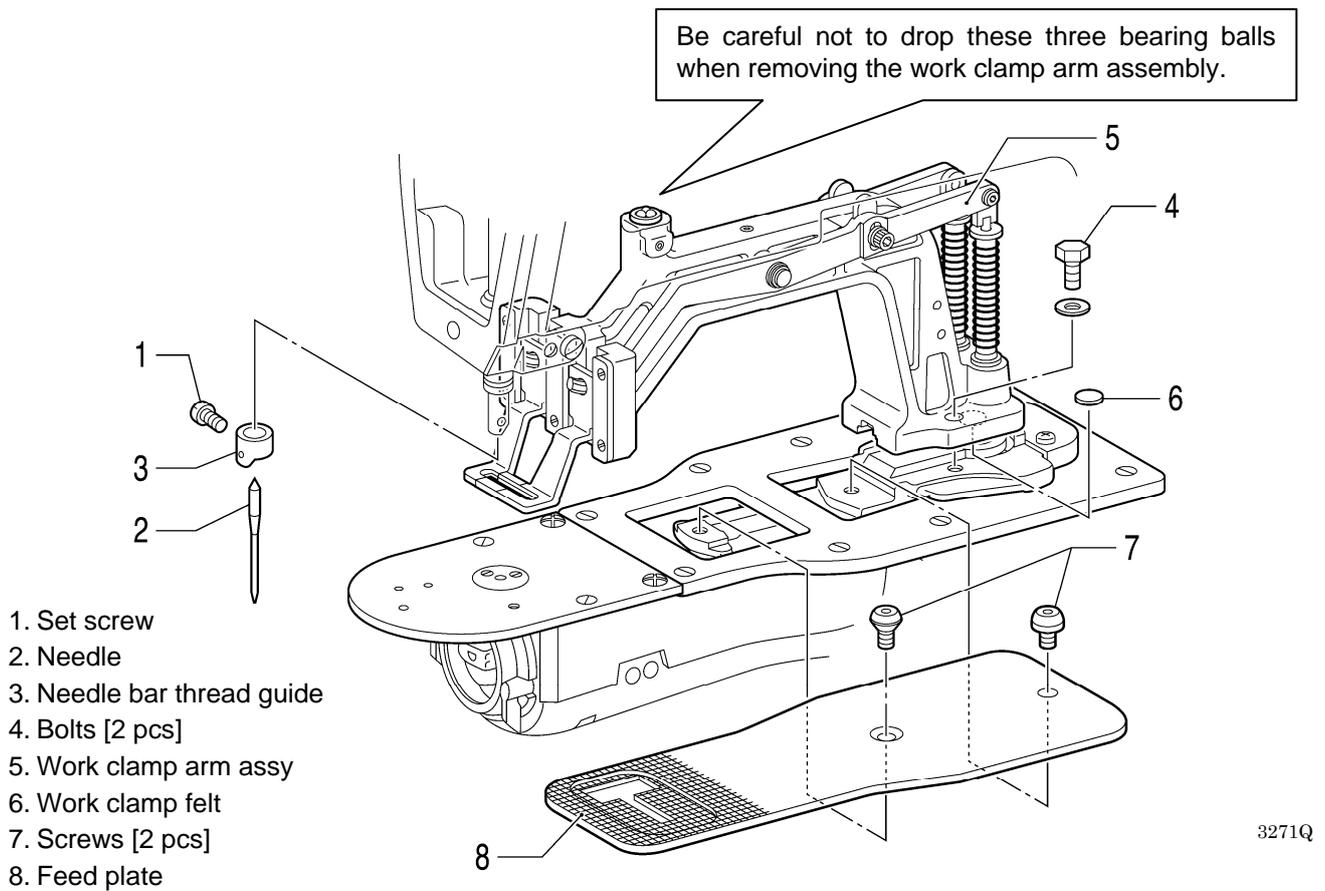
3270Q



1. Top cover
2. Belt cover
3. Frame side cover
4. Bed cover, LF
5. Bed cover, LR
6. Bed cover, R
7. Eye guard assy
8. Bolts [2 pcs]
9. Face plate assy
10. Shuttle race cover assy
11. Auxiliary plate supports [2 pcs]
12. Needle plate auxiliary plate
13. Auxiliary plate supports [4 pcs]

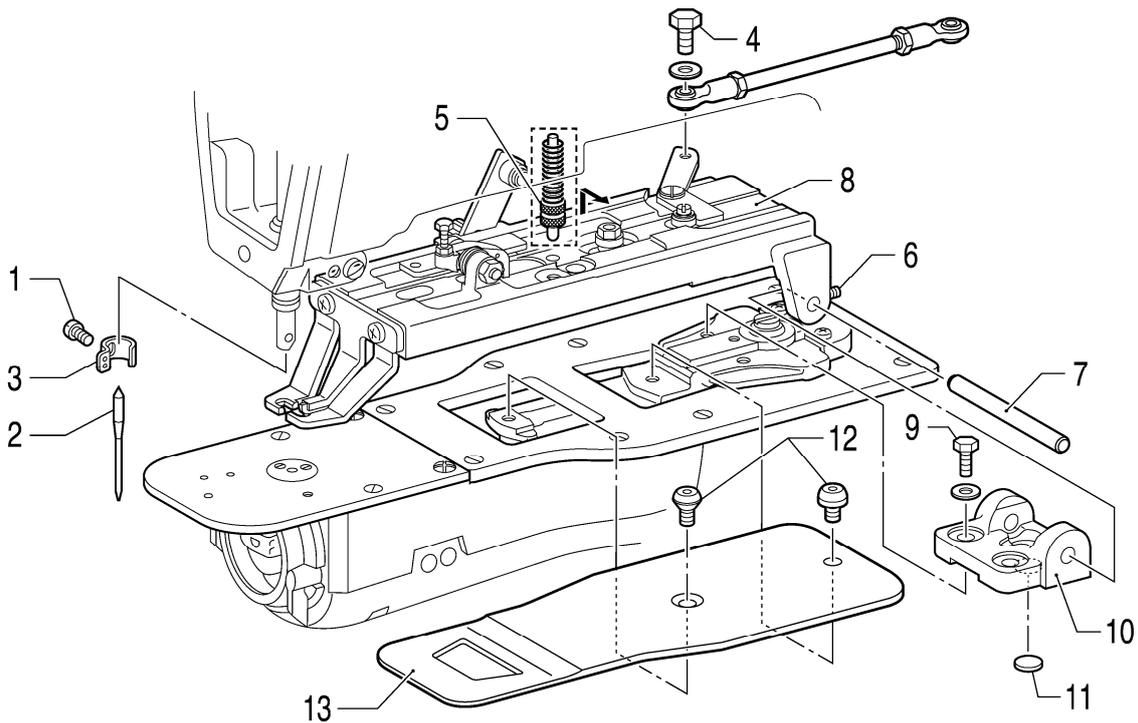
3269Q

3 - 2 . Work clamp arm mechanism (KE-430B, 430C, 431B, 431C)

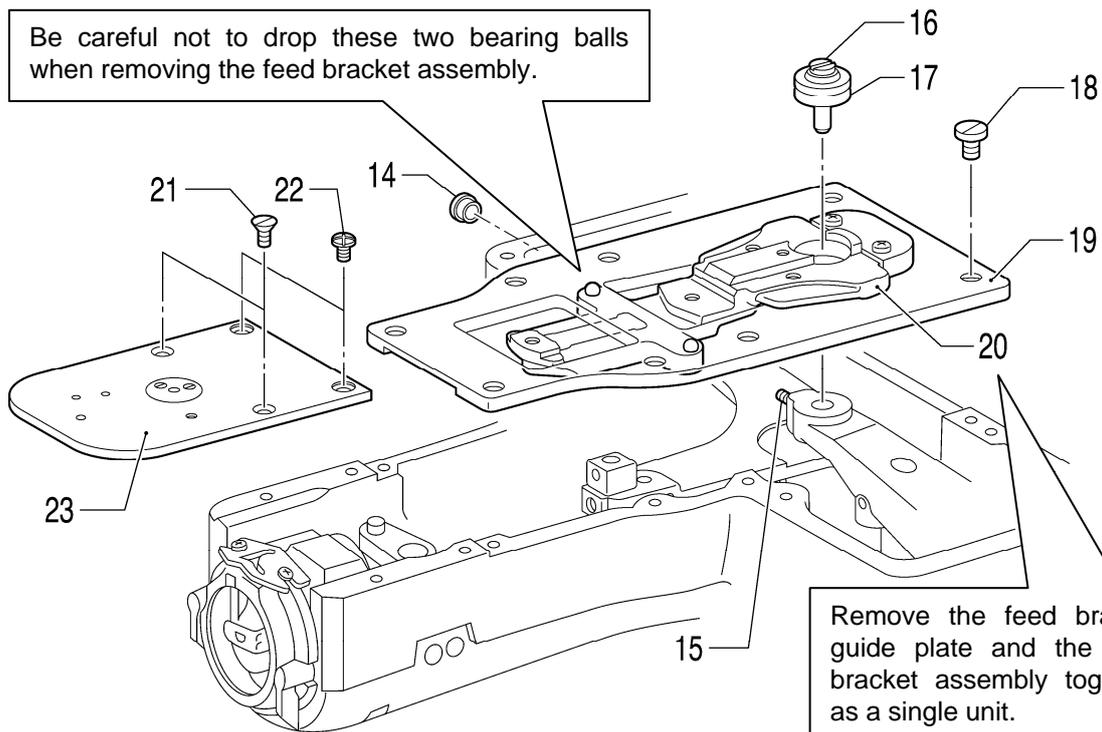


3 - 3 . Work clamp arm mechanism (KE-432B, 432C)

3273Q



Be careful not to drop these two bearing balls when removing the feed bracket assembly.

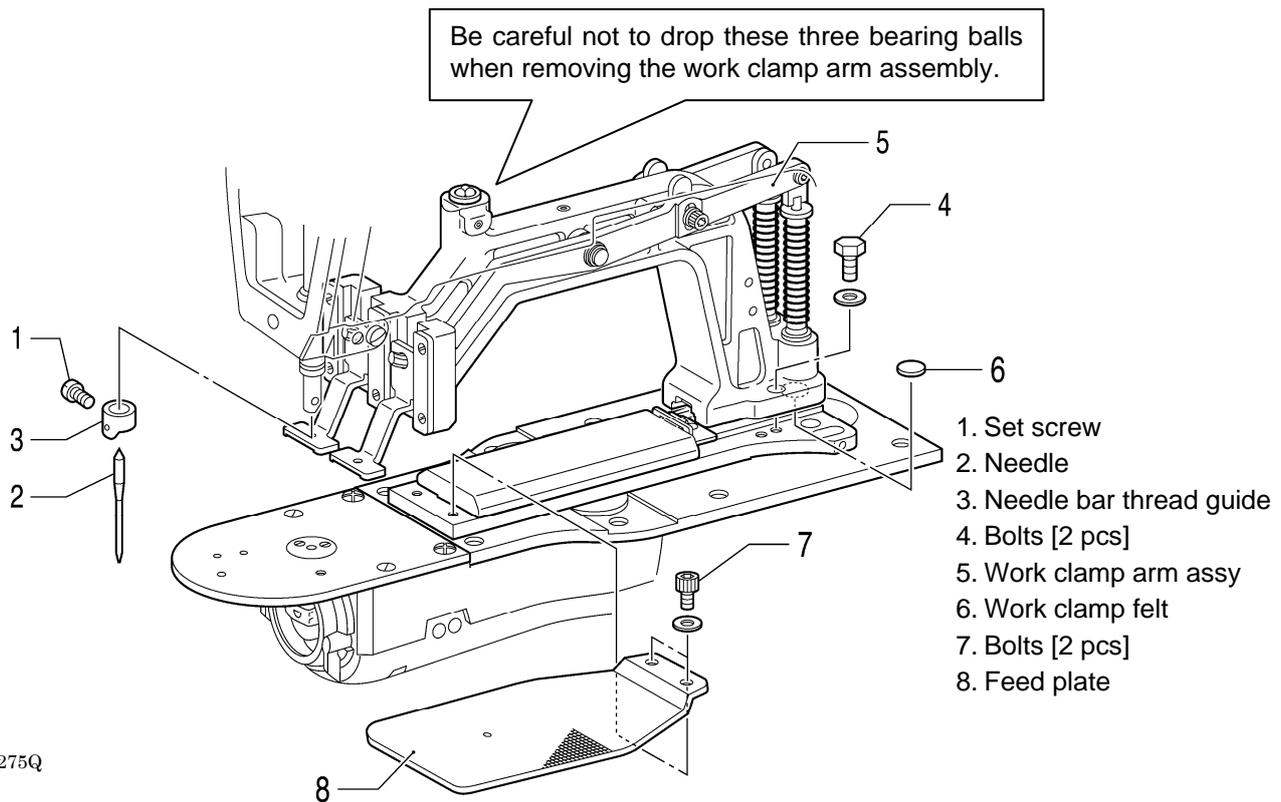


Remove the feed bracket guide plate and the feed bracket assembly together as a single unit.

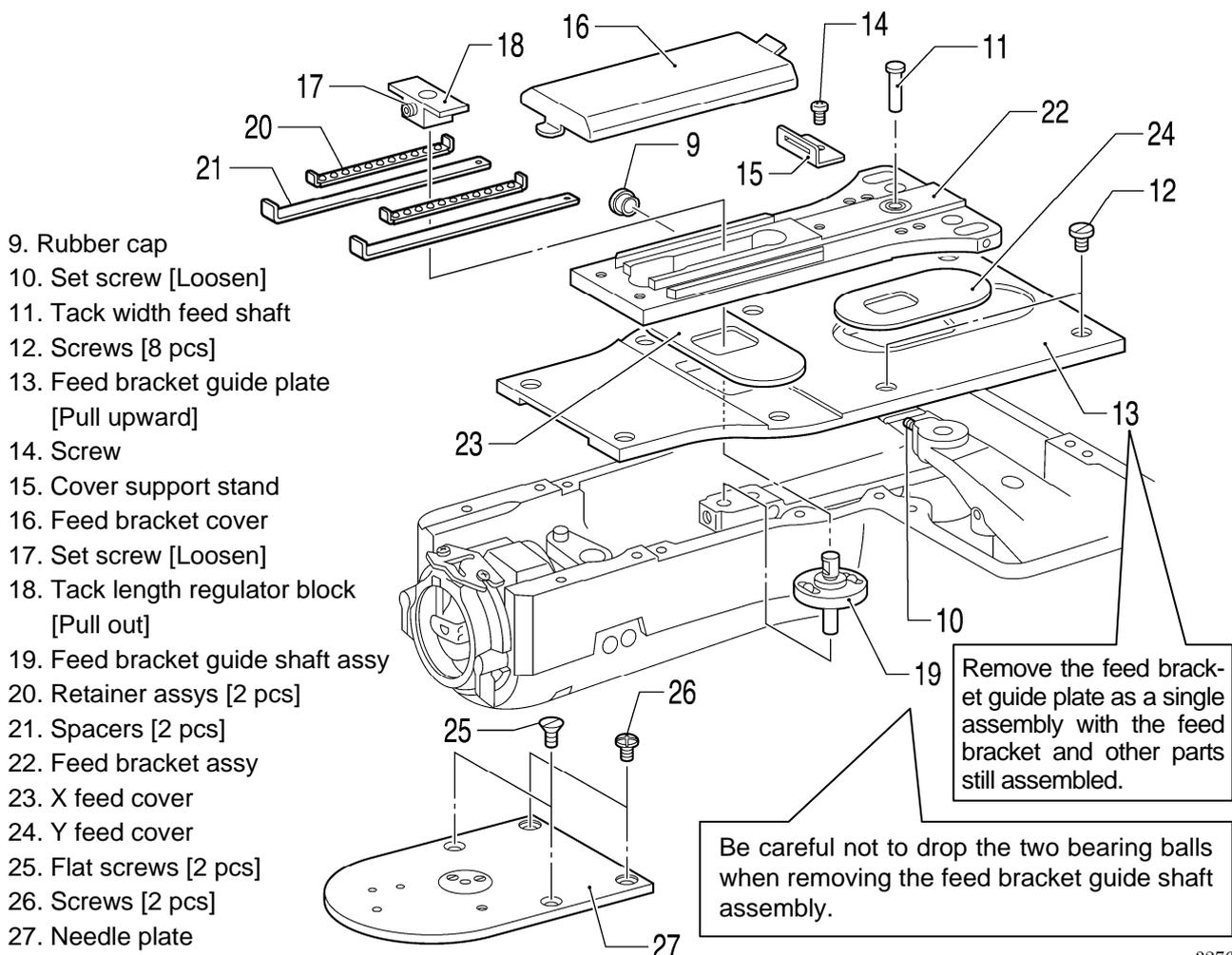
3274Q

- |                                       |                                 |                              |
|---------------------------------------|---------------------------------|------------------------------|
| 1. Set screw                          | 7. Button clamp holder shaft    | 16. Tack width feed shaft    |
| 2. Needle                             | 8. Work clamp arm assy          | 17. Rod end                  |
| 3. Needle bar thread guide            | 9. Bolts [2 pcs]                | 18. Screws [8 pcs]           |
| 4. Bolt                               | 10. Button clamp holder support | 19. Feed bracket guide plate |
| 5. Nuts [2 pcs]                       | 11. Work clamp felt             | 20. Feed bracket assy        |
| Adjusting screw                       | 12. Screws [2 pcs]              | 21. Flat screws [2 pcs]      |
| Compression spring                    | 13. Feed plate                  | 22. Screws [2 pcs]           |
| [Push upward and remove horizontally] | 14. Rubber cap                  | 23. Needle plate             |
| 6. Set screws [2 pcs: Loosen]         | 15. Set screw [Loosen]          |                              |

3 - 4 . Work clamp arm mechanism (KE-433B)



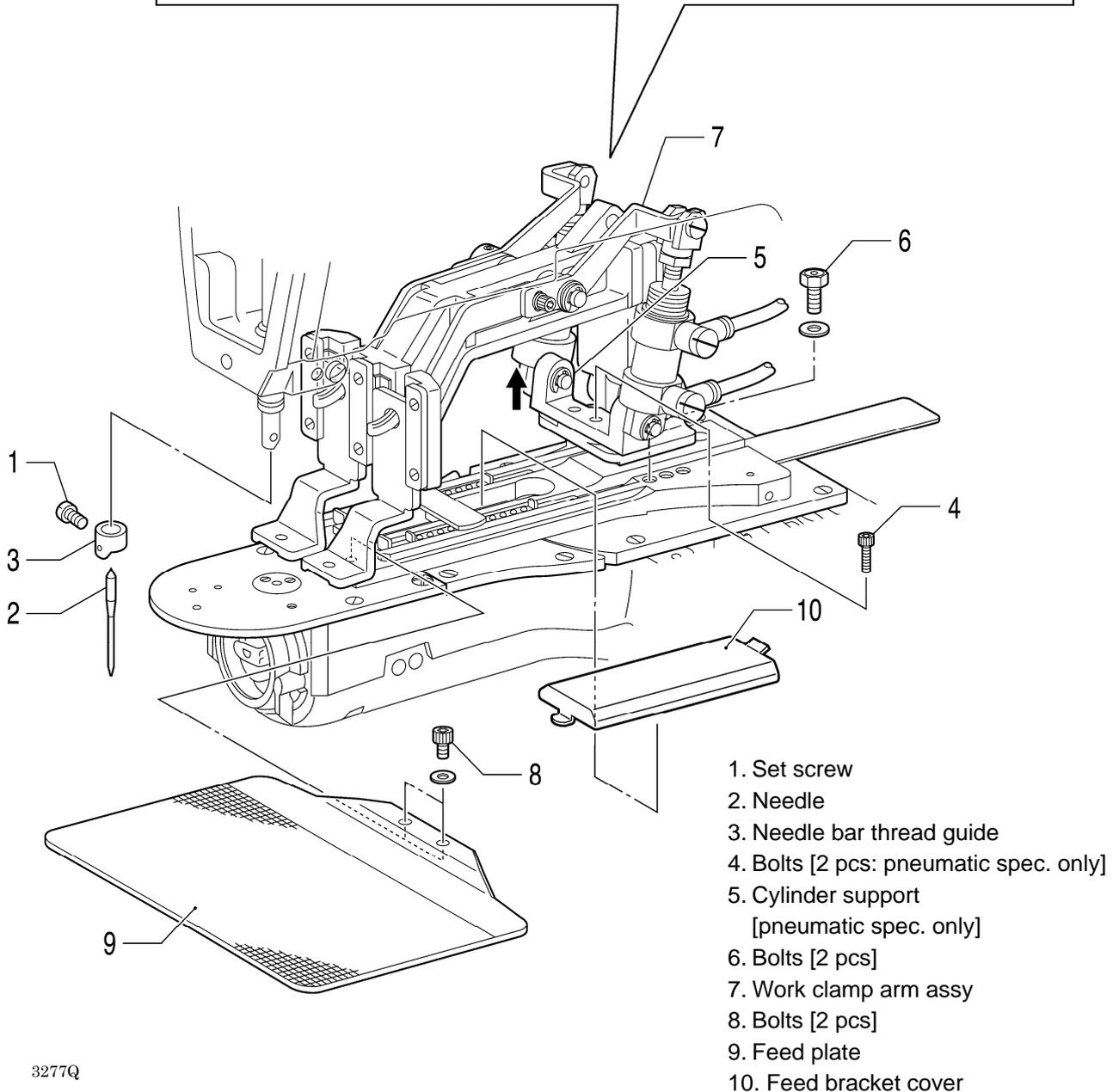
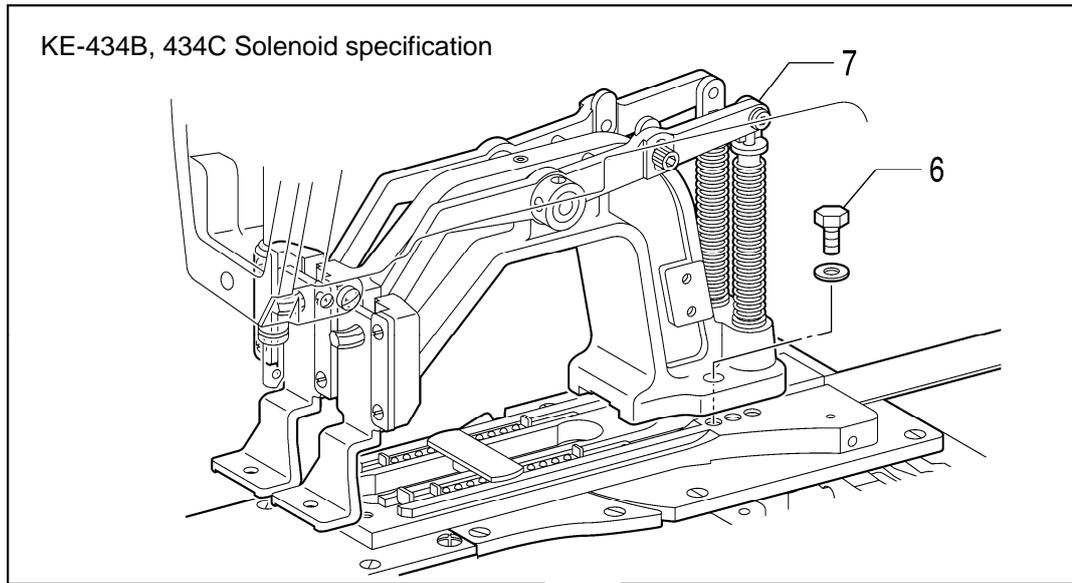
3275Q



3276Q

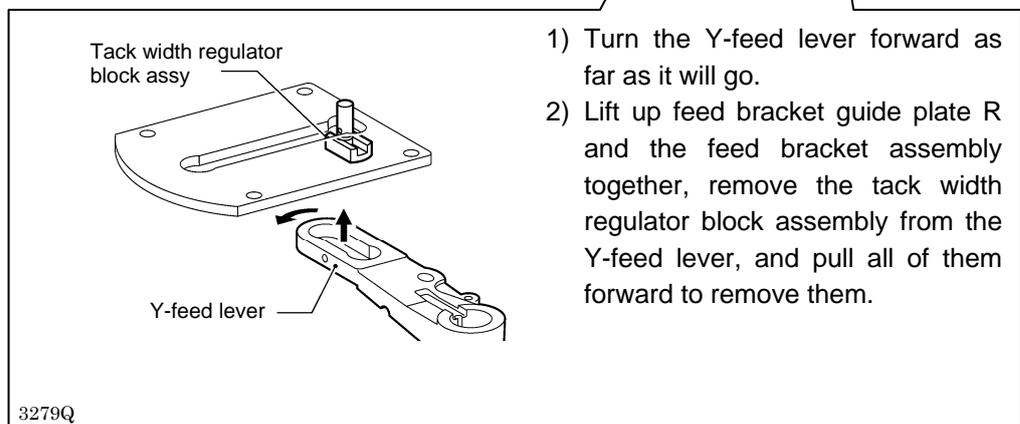
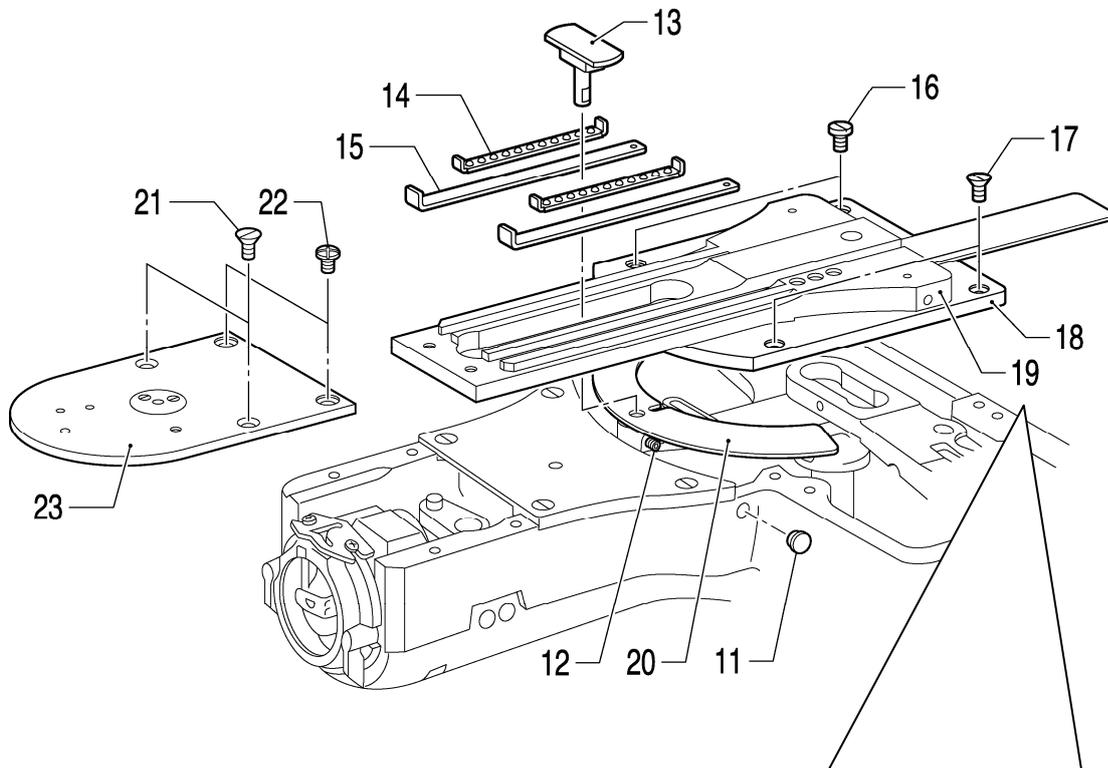
### 3. DISASSEMBLY

#### 3-5. Work clamp arm mechanism (KE-434B, 434C, 435B, 435C, 436B, 436C, 484C)



3277Q

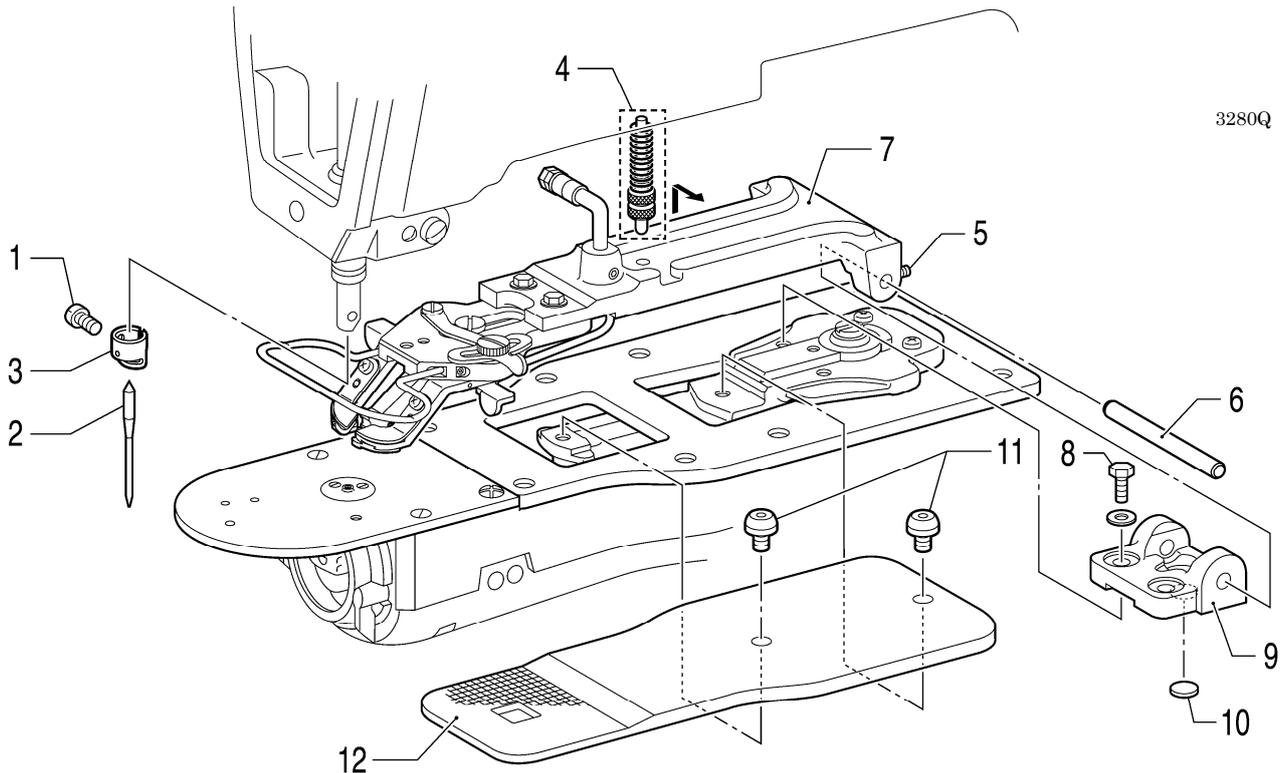
3278Q



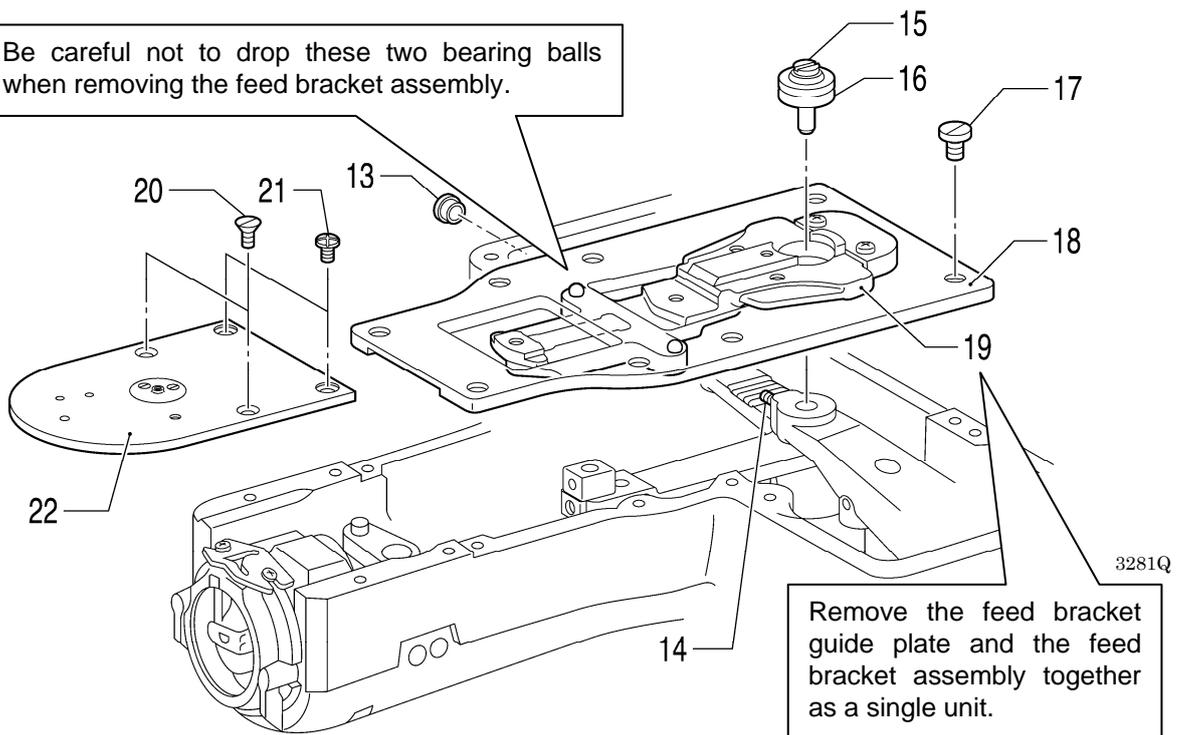
- 1) Turn the Y-feed lever forward as far as it will go.
- 2) Lift up feed bracket guide plate R and the feed bracket assembly together, remove the tack width regulator block assembly from the Y-feed lever, and pull all of them forward to remove them.

- 11. Rubber cap
- 12. Set screw [Loosen]
- 13. Tack length regulator block assy
- 14. Retainer assys [2 pcs]
- 15. Spacers [2 pcs]
- 16. Screws [2 pcs]
- 17. Flat screws [2 pcs]
- 18. Feed bracket guide plate, R
- 19. Feed bracket assy
- 20. X-feed lever cover
- 21. Flat screws [2 pcs]
- 22. Screws [2 pcs]
- 23. Needle plate

3 - 6 . Work clamp arm mechanism (BE-438B, 438C)



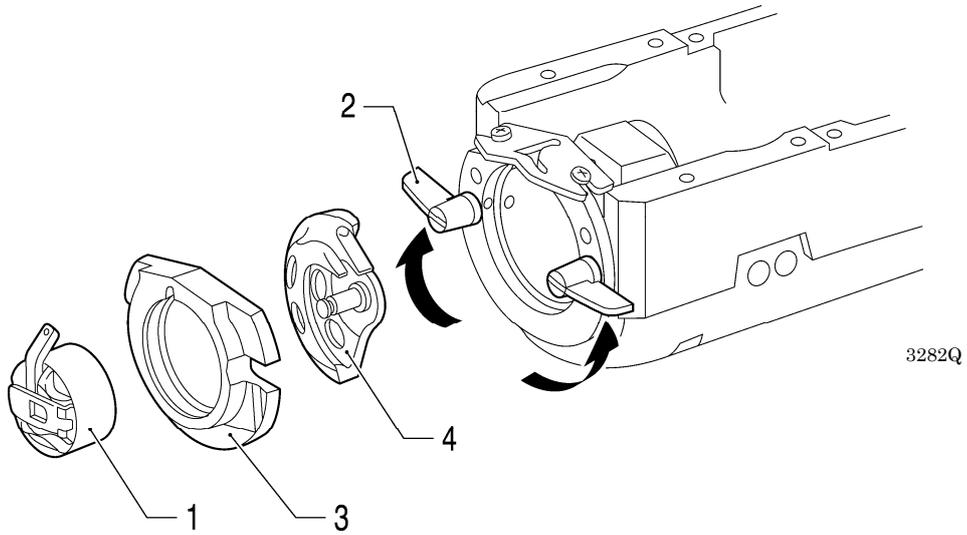
Be careful not to drop these two bearing balls when removing the feed bracket assembly.



Remove the feed bracket guide plate and the feed bracket assembly together as a single unit.

- |                                       |                                |                              |
|---------------------------------------|--------------------------------|------------------------------|
| 1. Set screw                          | 7. Button clamp holder         | 15. Tack width feed shaft    |
| 2. Needle                             | 8. Bolts [2 pcs]               | 16. Rod end                  |
| 3. Needle bar thread guide            | 9. Button clamp holder support | 17. Screws [8 pcs]           |
| 4. Nuts [2 pcs]                       | 10. Work clamp felt            | 18. Feed bracket guide plate |
| Adjusting screw                       | 11. Screws [2 pcs]             | 19. Feed bracket assy        |
| Compression spring                    | 12. Feed plate                 | 20. Flat screws [2 pcs]      |
| [Push upward and remove horizontally] | 13. Rubber cap                 | 21. Screws [2 pcs]           |
| 5. Set screws [2 pcs: Loosen]         | 14. Set screw [Loosen]         | 22. Needle plate             |
| 6. Button clamp holder shaft          |                                |                              |

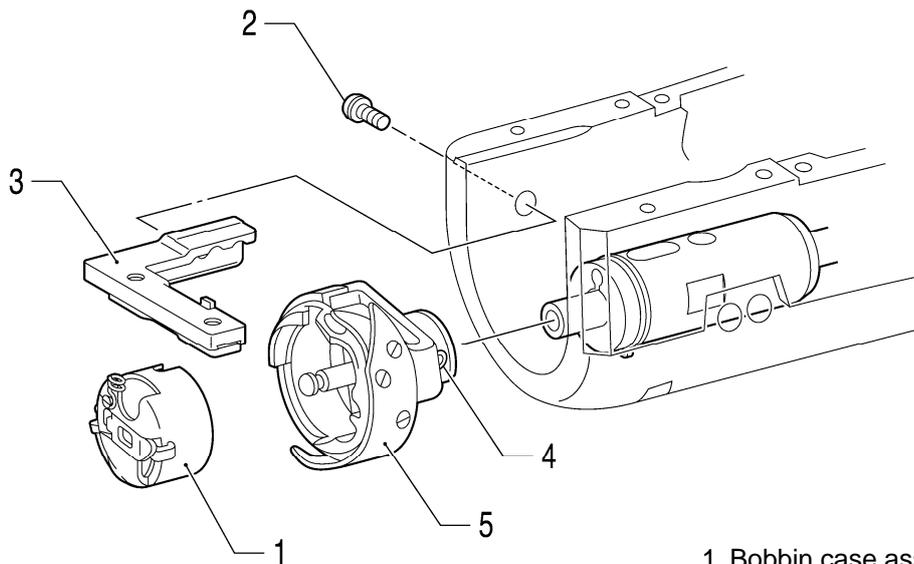
3 - 7 . Shuttle hook mechanism



- 1. Bobbin case assy
- 2. Shuttle race base setting claw  
[Open to right and left]
- 3. Shuttle race base
- 4. Shuttle hook

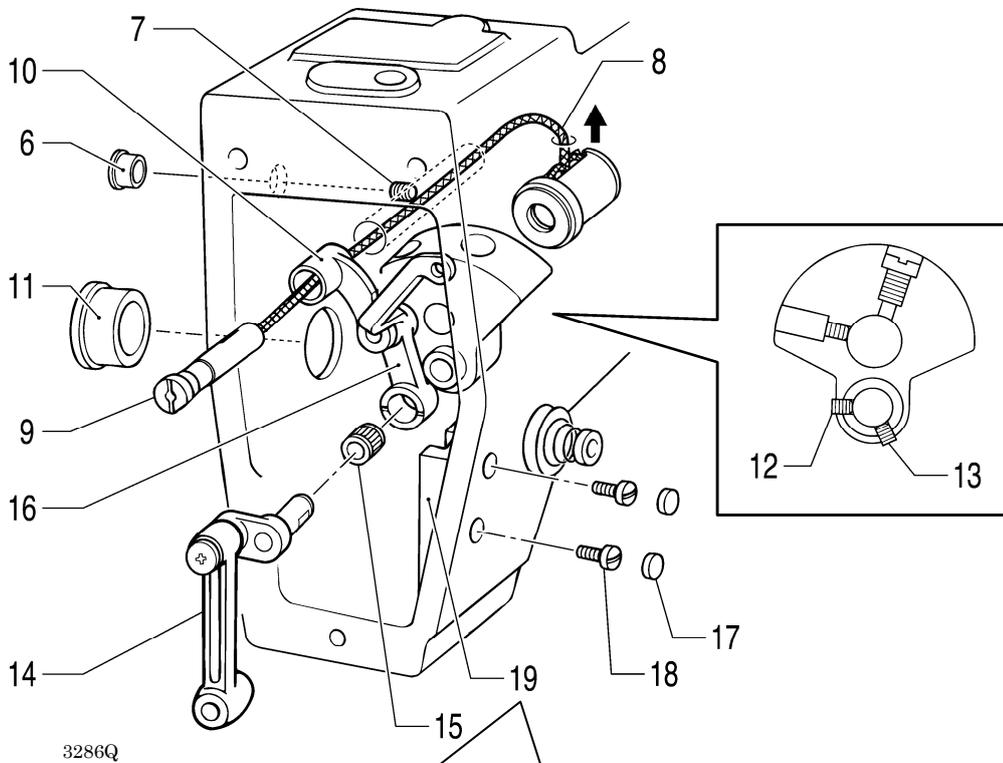
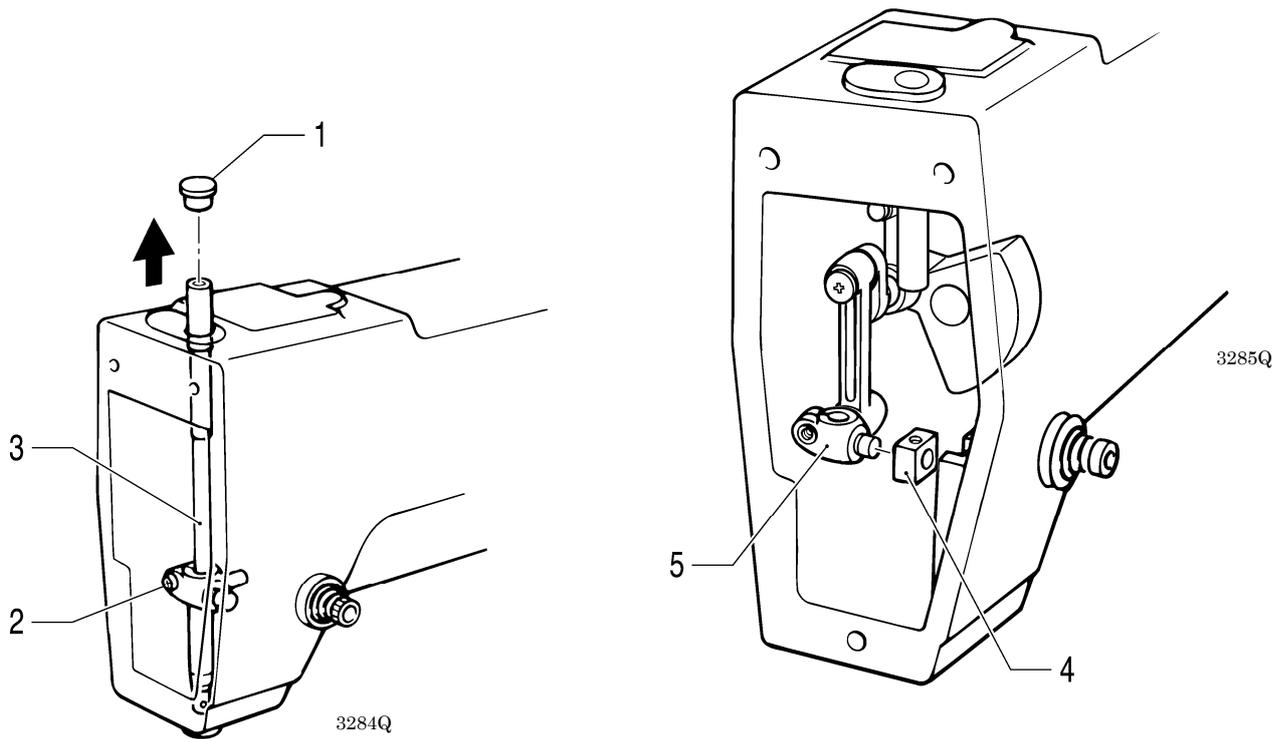
KE-484C

3283Q



- 1. Bobbin case assy
- 2. Screw
- 3. Hook stopper setting base
- 4. Set screw [Loosen]
- 5. Treble hook assy

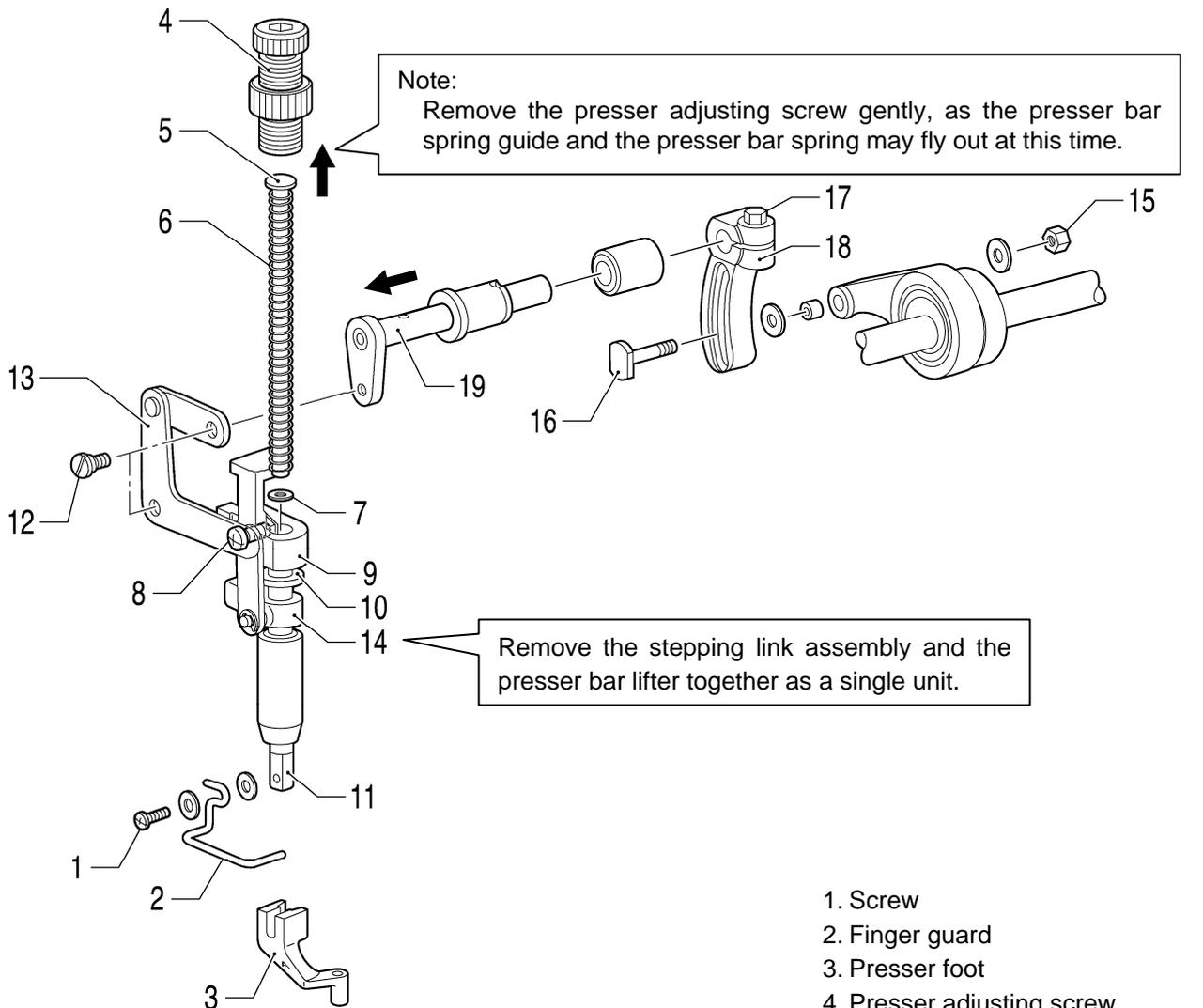
3 - 8 . Needle bar mechanism



- 1. Rubber cap
- 2. Screw
- 3. Needle bar
- 4. Slide block
- 5. Needle bar clamp  
[Pull out]
- 6. Rubber cap
- 7. Set screw [Loosen]
- 8. Wick  
[Pull out from arm]
- 9. Thread take-up support shaft
- 10. Thread take-up support
- 11. Oil cap
- 12. Set screw [Loosen]
- 13. Set screw [Loosen]
- 14. Needle bar connecting rod
- 15. Needle bearing
- 16. Thread take-up lever
- 17. Rubber caps [2 pcs]
- 18. Screws [2 pcs]
- 19. Needle bar guide

Do not remove the needle bar guide if possible to prevent the machine from overheating due to needle bar rubbing.

3 - 9 . Stepping foot mechanism (KE-435B, 435C, 436B, 436C)

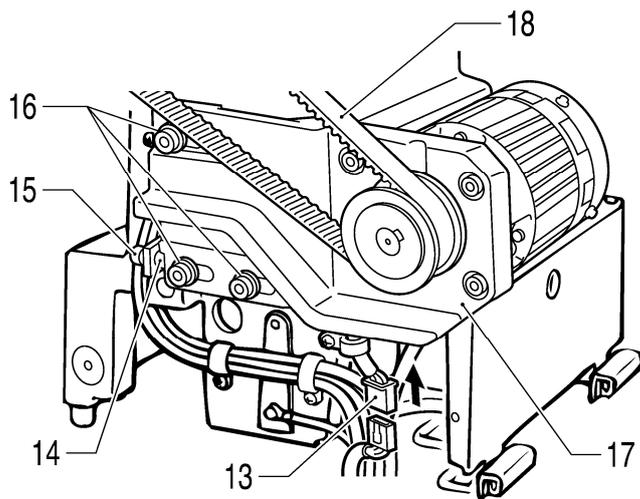
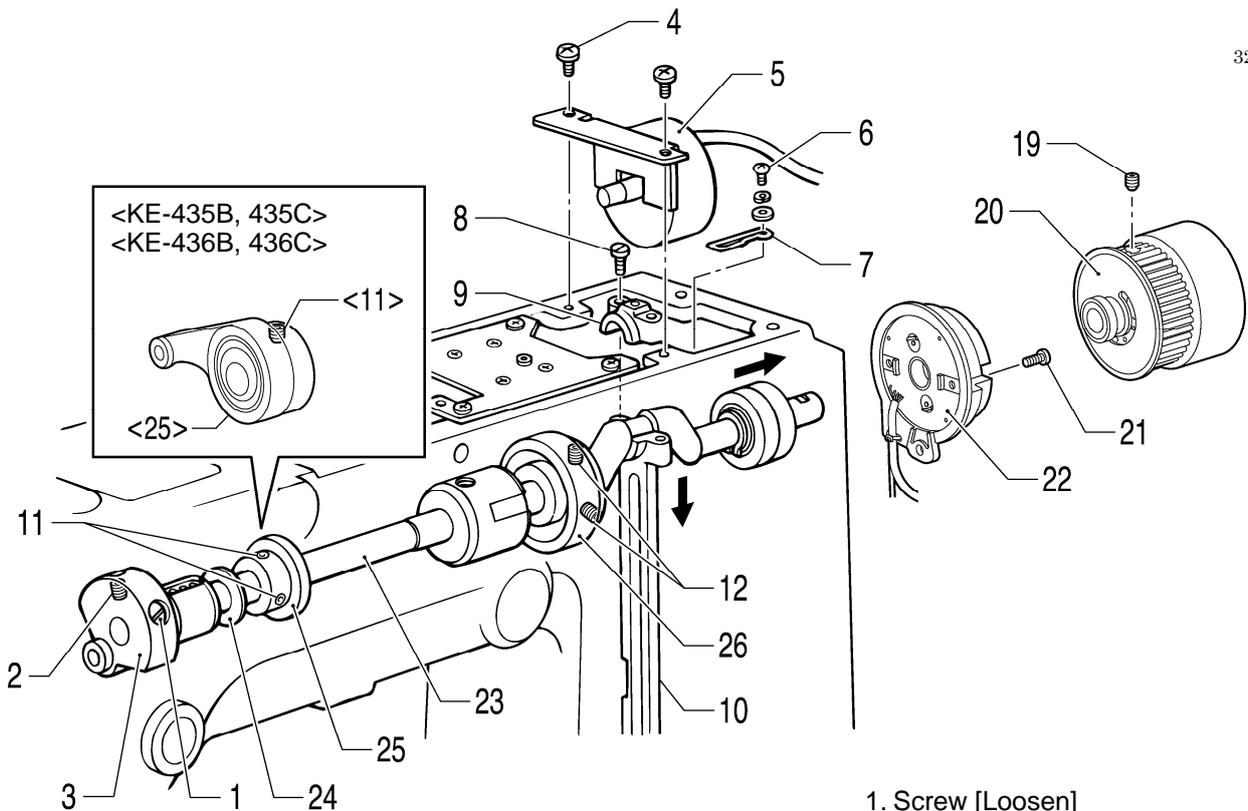


3287Q

1. Screw
2. Finger guard
3. Presser foot
4. Presser adjusting screw
5. Presser bar spring guide
6. Presser bar spring
7. Washer
8. Screw [Loosen]
9. Presser bar clamp
10. Cushion
11. Presser bar
12. Screws [2 pcs]
13. Stepping link assy
14. Presser bar lifter
15. Nut
16. Feed lifter lever shaft
17. Bolt [Loosen]
18. Stepping foot arm, R
19. Stepping foot arm, F [Pull out]

3 - 1 0 . Upper shaft mechanism

3288Q

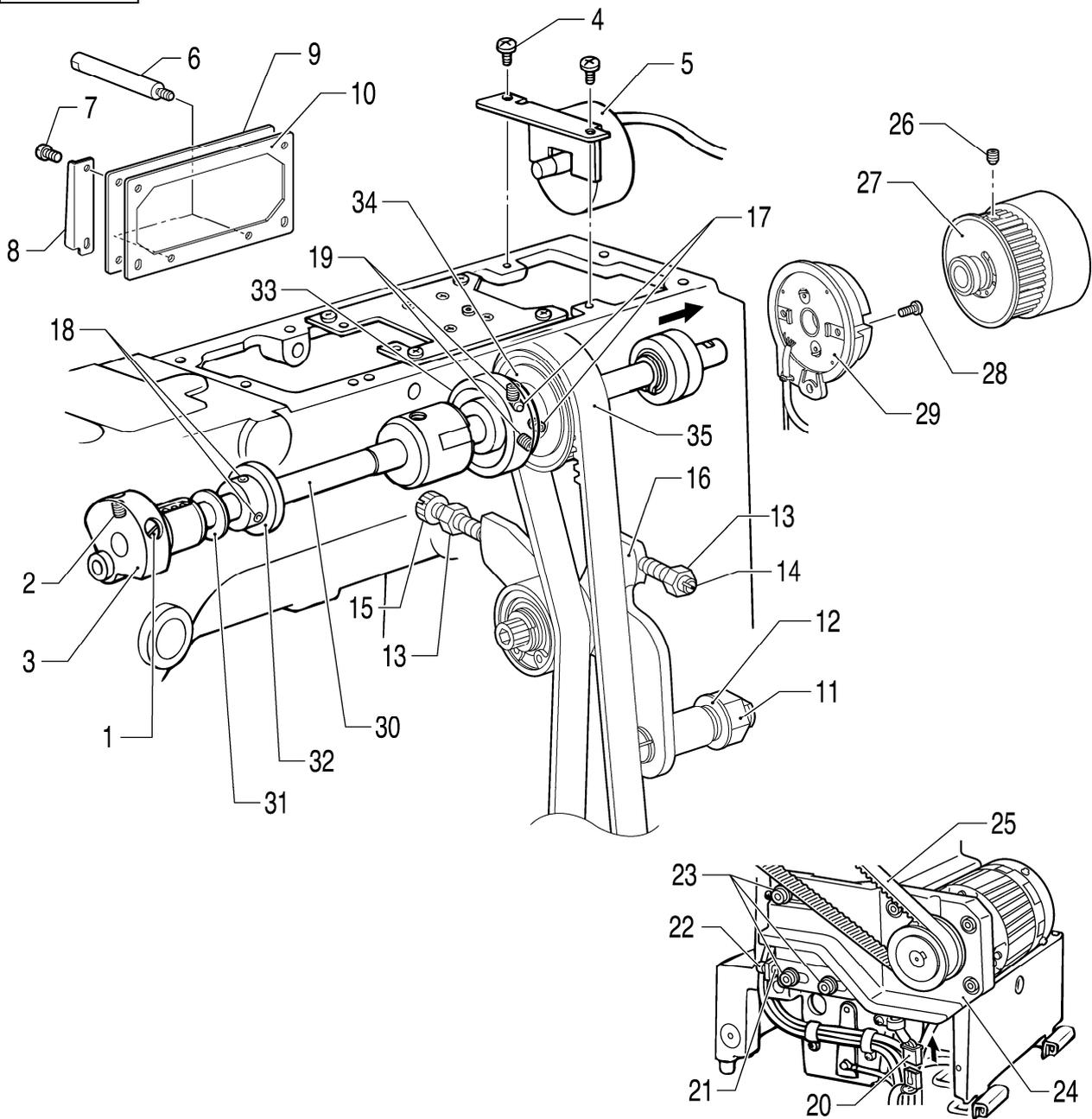


3289Q

1. Screw [Loosen]
2. Set screw [Loosen]
3. Thread take-up crank
4. Screws [2 pcs]
5. Thread trimmer solenoid
6. Screw
7. Wick support
8. Screws [2 pcs]
9. Crank rod (Upper part)
10. Crank rod (Lower part)  
[Lower downward]
11. Set screws [2 pcs: Loosen]
- <11> Set screws [2 pcs: Loosen]
12. Set screws [2 pcs: Loosen]
13. Motor connector
14. Nut [Loosen]
15. Bolt [Loosen]
16. Bolts [3 pcs]
17. Motor bracket
18. Upper shaft timing belt
19. Set screws [2 pcs: Loosen]
20. Timing pulley assy, U
21. Screws [2 pcs]
22. Synchronizer assy
23. Upper shaft
24. Thrust washer
25. Bobbin winder pulley
- <25> Stepping foot connecting rod
26. Thread trimmer cam

3290Q

KE-484C



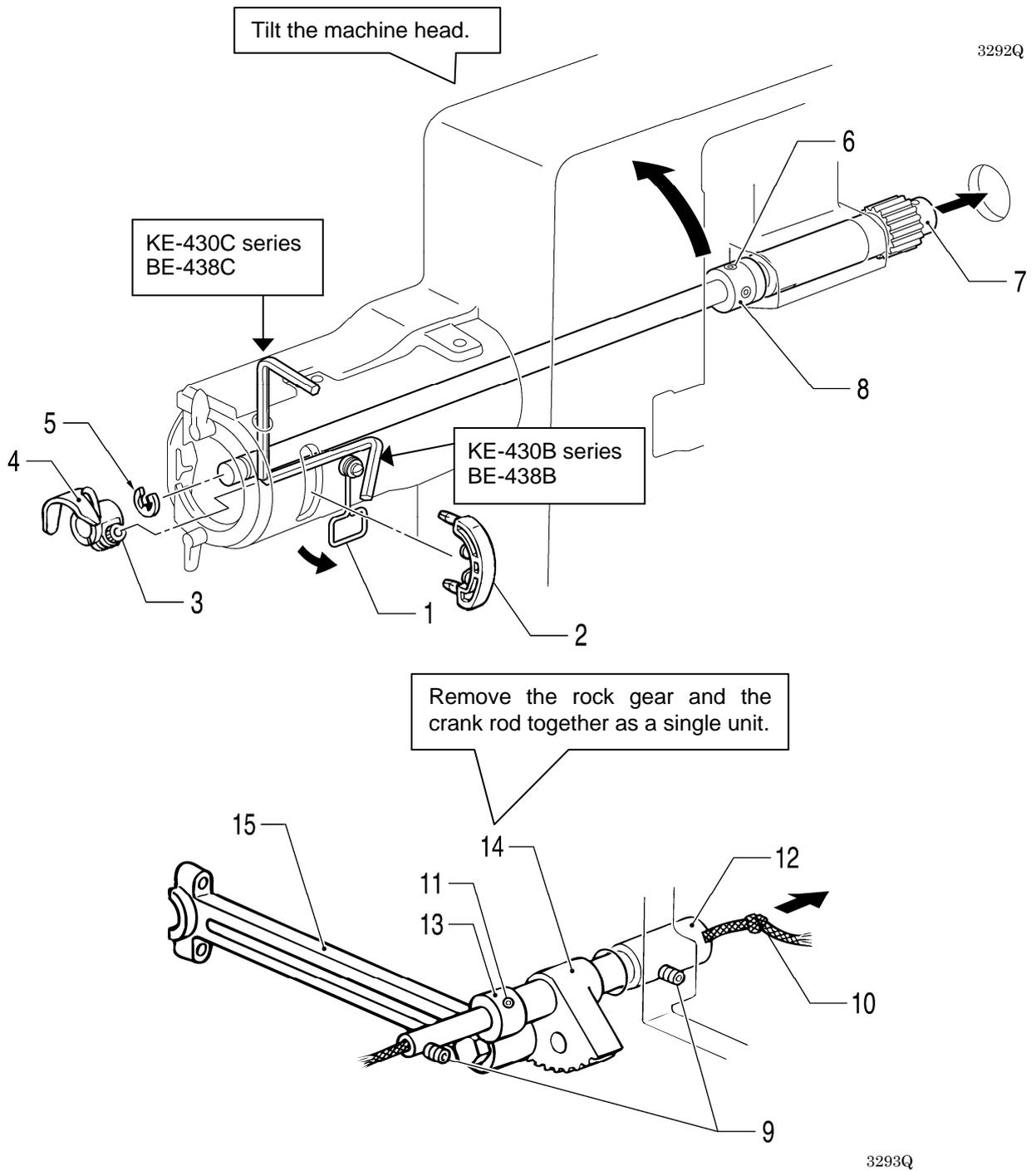
3291Q

- 1. Screw [Loosen]
- 2. Set screw [Loosen]
- 3. Thread take-up crank
- 4. Screws [2 pcs]
- 5. Thread trimmer solenoid
- 6. Belt cover support pillars [2 pcs]
- 7. Screws [4 pcs]
- 8. Blind plate
- 9. Frame side cover
- 10. Setting plate packing
- 11. Nut
- 12. Plain washer

- 13. Nuts [2 pcs: Loosen]
- 14. Adjusting screw [Loosen]
- 15. Adjusting screw [Loosen]
- 16. Tension pulley arm
- 17. Set screws [2 pcs: Loosen]
- 18. Set screws [2 pcs: Loosen]
- 19. Set screws [2 pcs: Loosen]
- 20. Motor connector
- 21. Nut [Loosen]
- 22. Bolt [Loosen]
- 23. Bolts [3 pcs]
- 24. Motor bracket

- 25. Upper shaft timing belt
- 26. Set screws [2 pcs: Loosen]
- 27. Timing pulley assy, U
- 28. Screws [2 pcs]
- 29. Synchronizer assy
- 30. Upper shaft
- 31. Thrust washer
- 32. Bobbin winder pulley
- 33. Thread trimmer cam
- 34. U-timing pulley, F
- 35. U-timing belt, F

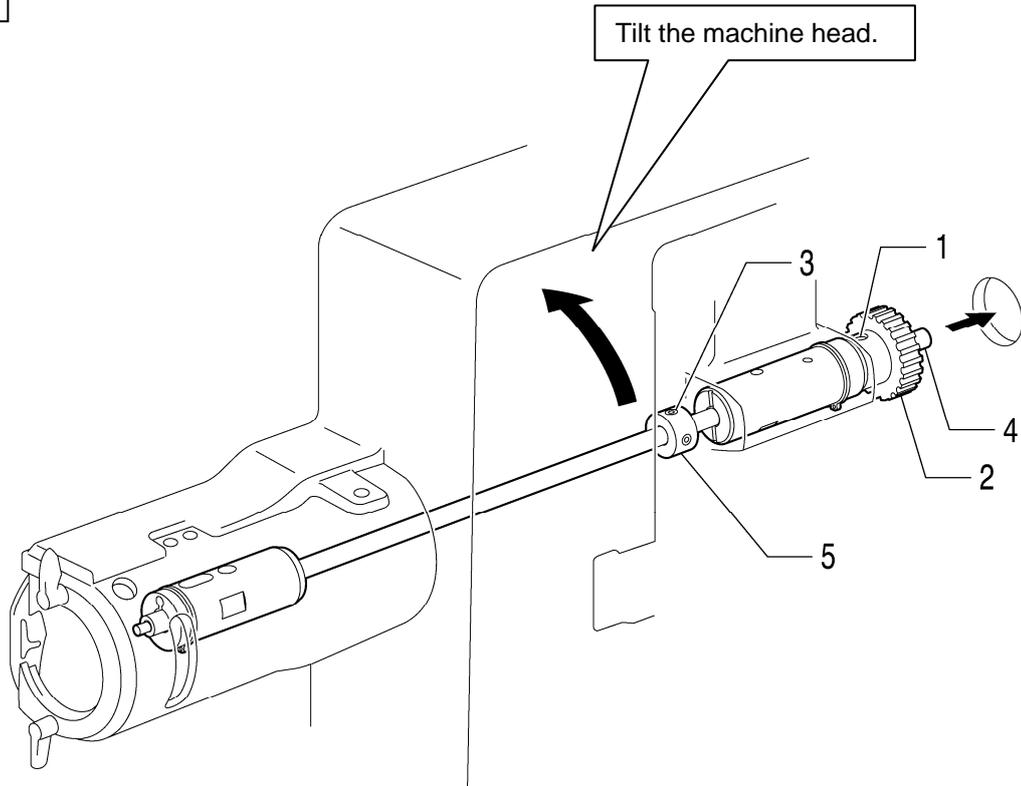
3 - 1 1 . Lower shaft mechanism



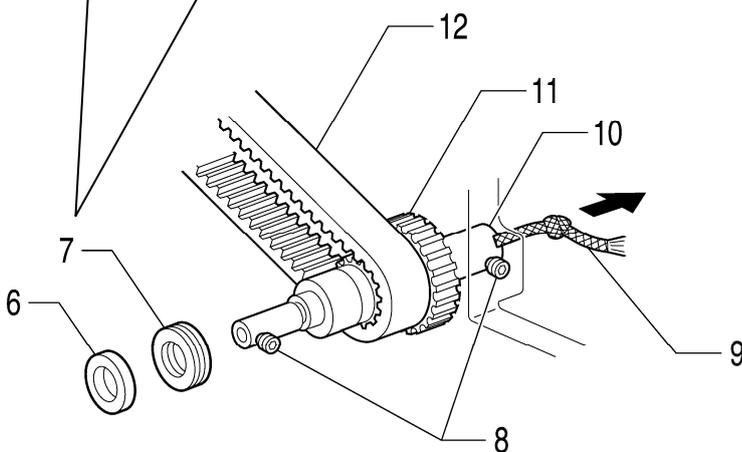
- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1. Support [Turn in the direction of the arrow]</li> <li>2. Felt holder</li> <li>3. Bolt [Loosen]</li> <li>4. Driver</li> <li>5. Retaining ring</li> <li>6. Set screws [2 pcs: Loosen]</li> <li>7. Lower shaft assy<br/>[Pull out from the rear of the machine]</li> <li>8. Set screw collar</li> </ul> | <ul style="list-style-type: none"> <li>9. Set screws [2 pcs: Loosen]</li> <li>10. Wick [Untie the knot]</li> <li>11. Set screws [2 pcs: Loosen]</li> <li>12. Rock gear shaft<br/>[Pull out from the rear of the machine]</li> <li>13. Set screw collar</li> <li>14. Rock gear</li> <li>15. Crank rod (Lower part)</li> </ul> |
|--|--|

KE-484C

3294Q



Note:  
This part consists of three smaller parts  
which should not be disassembled.

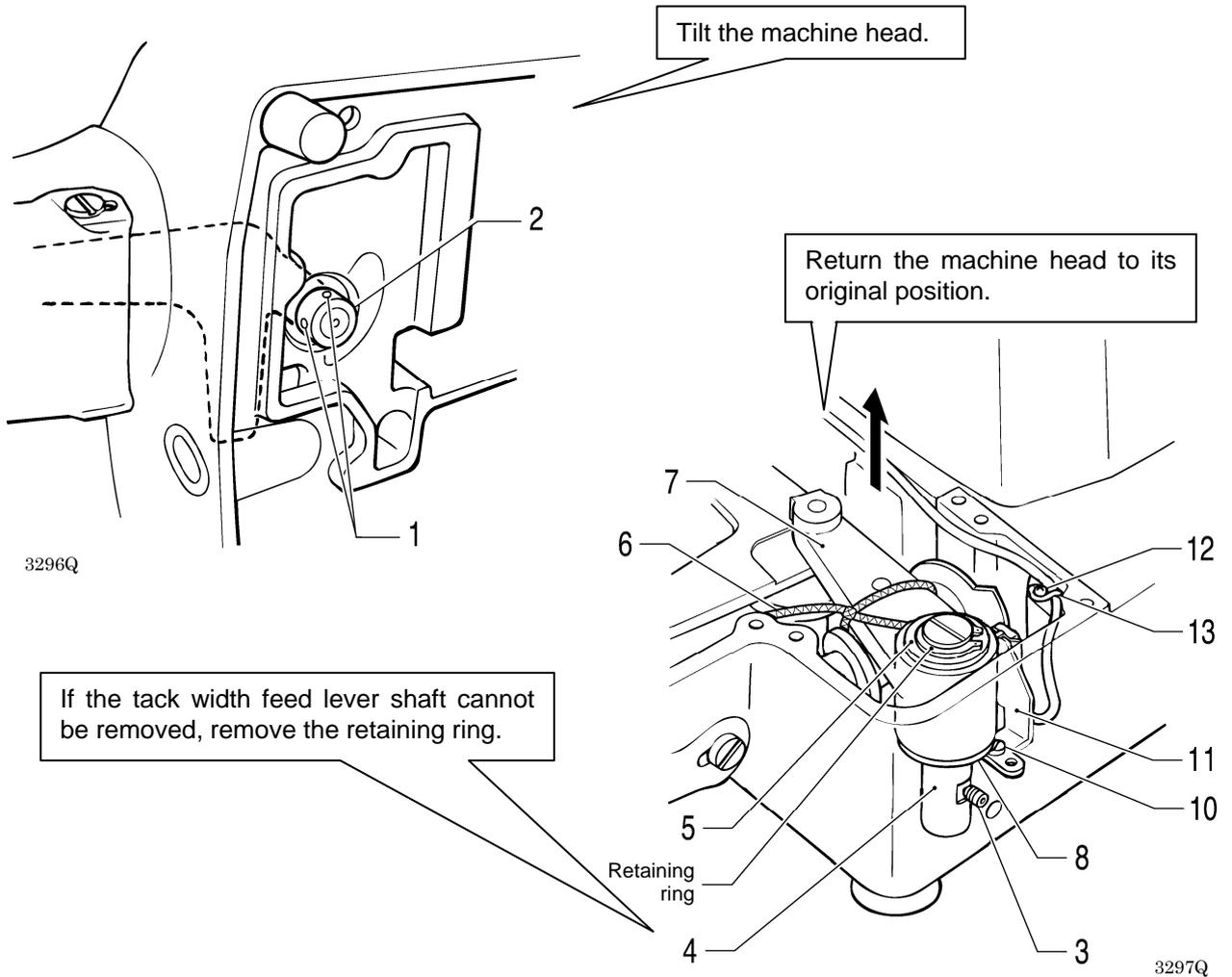


1. Set screw [Loosen]
2. Lower gear
3. Set screws [2 pcs: Loosen]
4. Rotary hook shaft
5. Set screw collar
6. Lower shaft gear spacer
7. Thrust bearing
8. Set screw [Loosen]
9. Wick [Untie the knot]
10. Lower shaft  
[Pull out from the rear of the machine]
11. Lower shaft timing pulley
12. U-timing belt, F

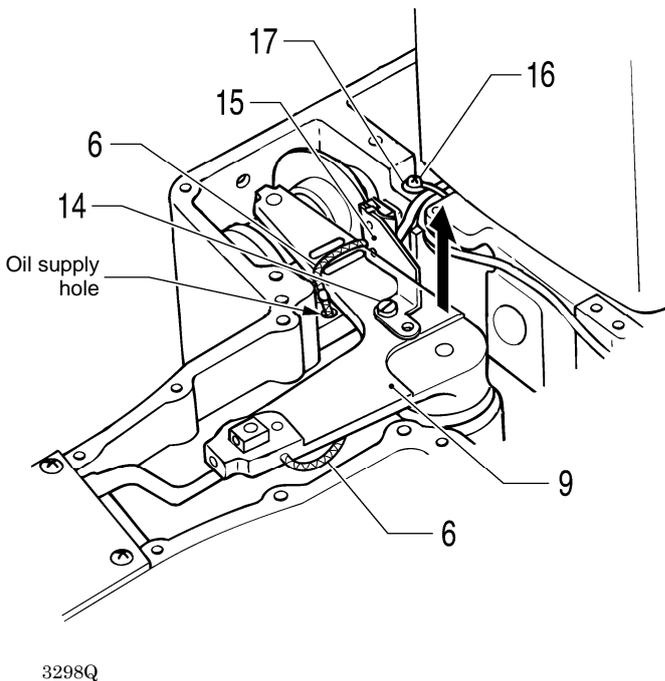
3295Q

3-1 2. Feed mechanism (1)

KE-430B, 431B, 432B, 433B, BE-438B  
KE-430C, 431C, 432C, BE-438C

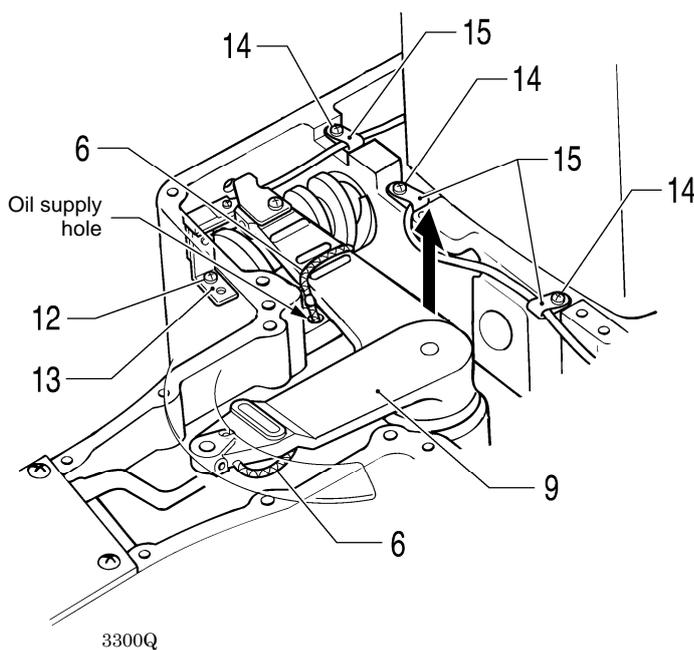
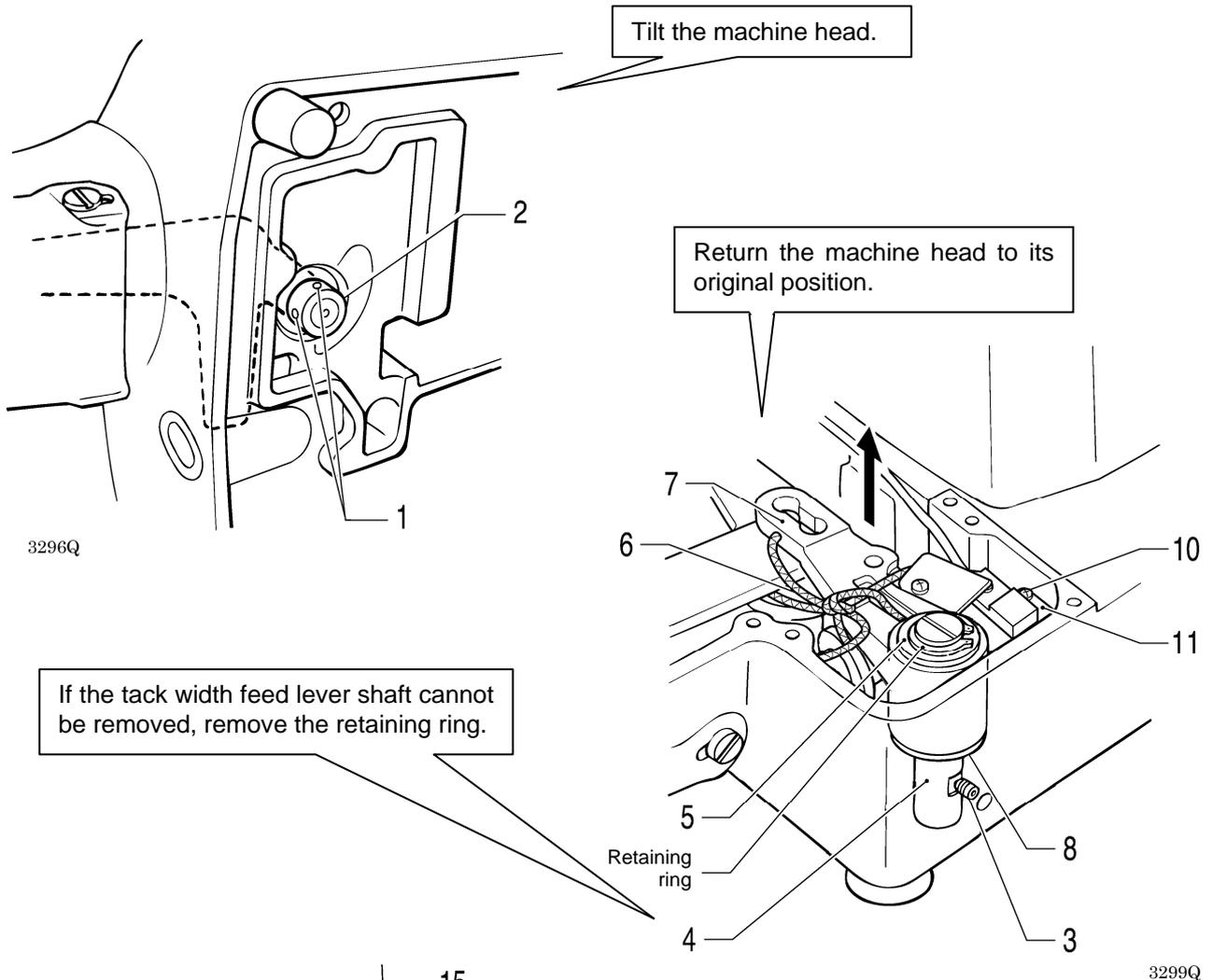


If the tack width feed lever shaft cannot be removed, remove the retaining ring.



1. Set screws [2 pcs: Loosen]
2. Set screw collar
3. Set screw [Loosen]
4. Tack width feed lever shaft (with retaining ring) [Pull upward]
5. Thrust washer
6. Wicks [3 pcs: Pull out from oil supply hole]
7. Y-feed lever assy [Pull upward]
8. Thrust washer
9. X-feed lever assy [Pull upward]
10. Screw
11. Home sensor setting plate
12. Screw
13. Cord holder
14. Screw
15. Home sensor setting plate
16. Screw
17. Cord holder

KE-434B, 435B, 436B  
KE-434C, 435C, 436C, 484C

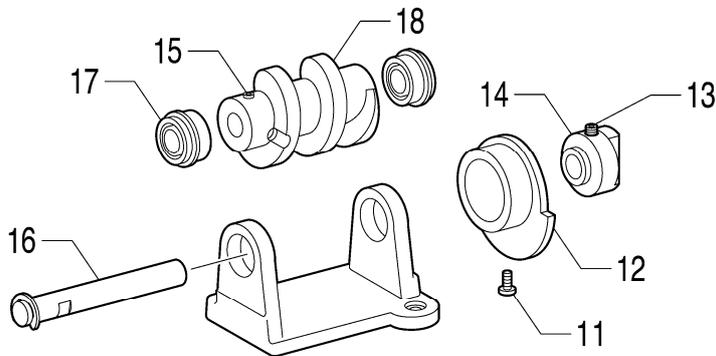
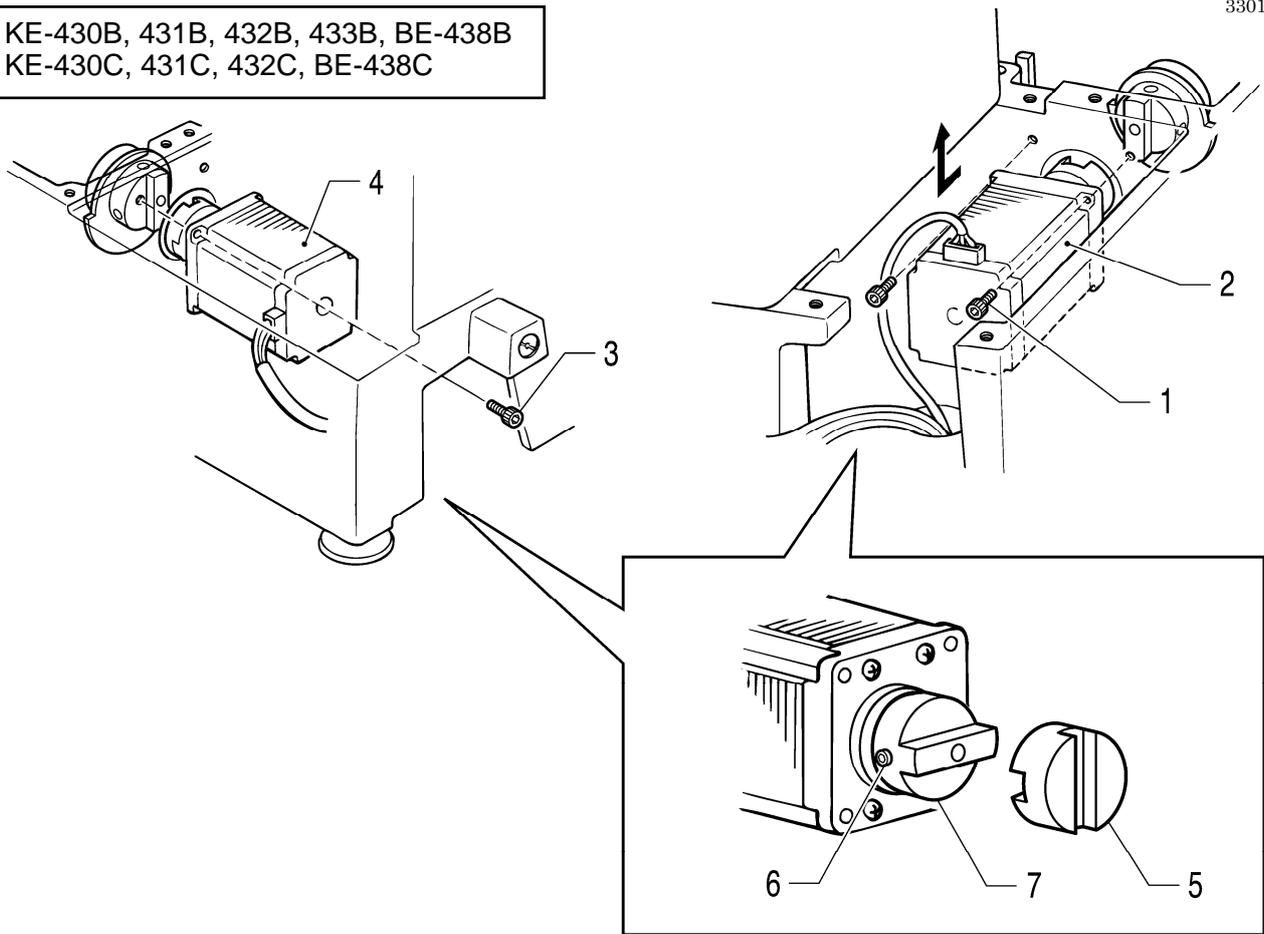


1. Set screws [2 pcs: Loosen]
2. Set screw collar
3. Set screw [Loosen]
4. Tack width feed lever shaft (with retaining ring) [Pull upward]
5. Thrust washer
6. Wicks [3 pcs: Pull out from oil supply hole]
7. Y-feed lever assy [Pull upward]
8. Thrust washer
9. X-feed lever assy [Pull upward]
10. Screw
11. Y-sensor setting plate
12. Screw
13. X-sensor setting base
14. Screws [3 pcs]
15. Cord clamps [3 pcs]

3 - 1 3 . Feed mechanism (2)

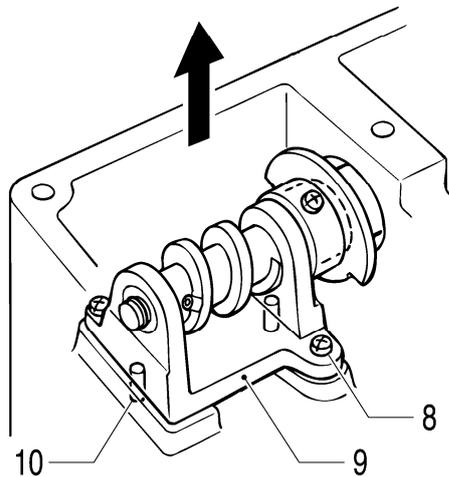
KE-430B, 431B, 432B, 433B, BE-438B  
 KE-430C, 431C, 432C, BE-438C

3301Q



1. Bolts [4 pcs]
2. Pulse motor assy, X  
[Disconnect the harness]
3. Bolts [4 pcs]
4. Pulse motor assy, Y  
[Disconnect the harness]
5. Coupling spacer
6. Set screws [2 pcs: Loosen]
7. Coupling hub, 6.35
8. Screws [2 pcs]
9. Feed cam bracket
10. Positioning pins [2 pcs]
11. Screw
12. Feed home position dog
13. Set screws [2 pcs: Loosen]
14. Coupling hub, 8
15. Set screws [2 pcs: Loosen]
16. Cam shaft
17. Ball bearings [2 pcs]
18. Feed cam

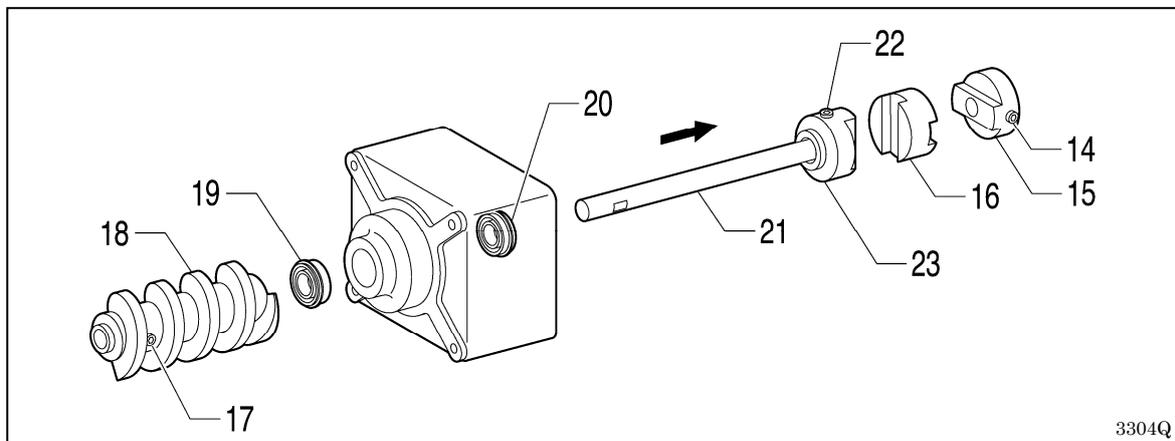
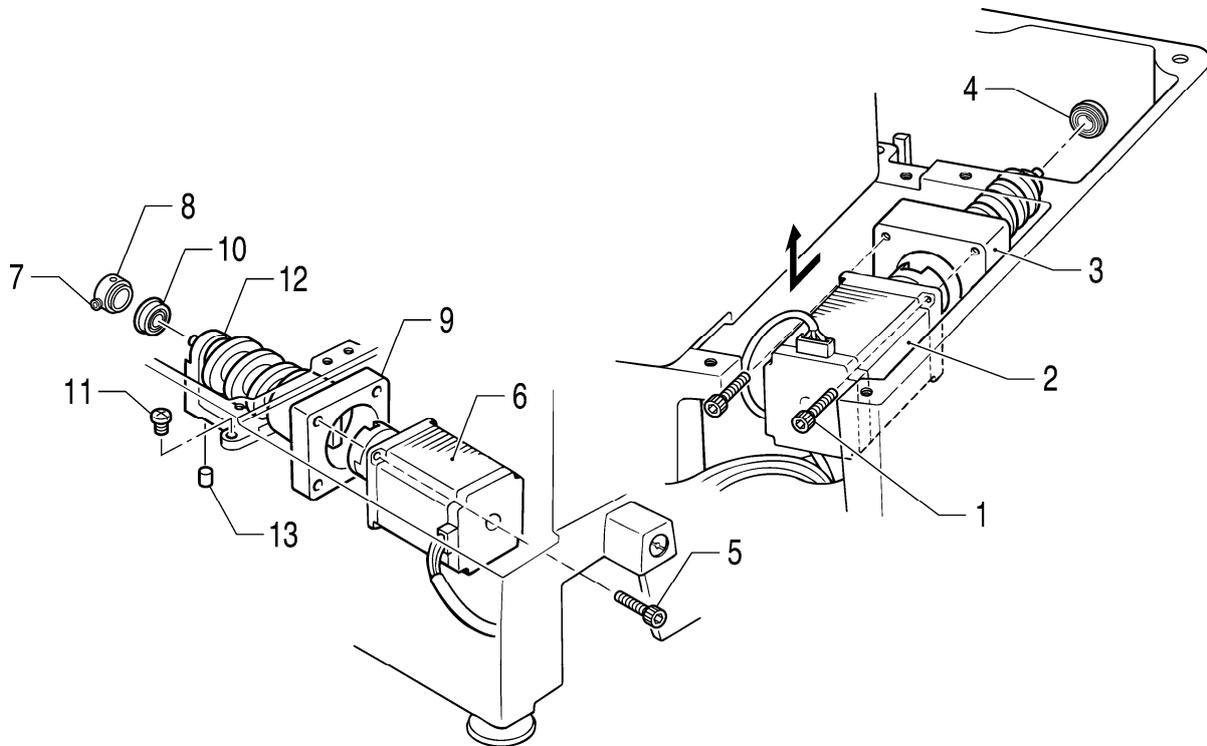
Same for both  
 X and Y



3302Q

KE-434B, 435B, 436B  
KE-434C, 435C, 436C, 484C

3303Q

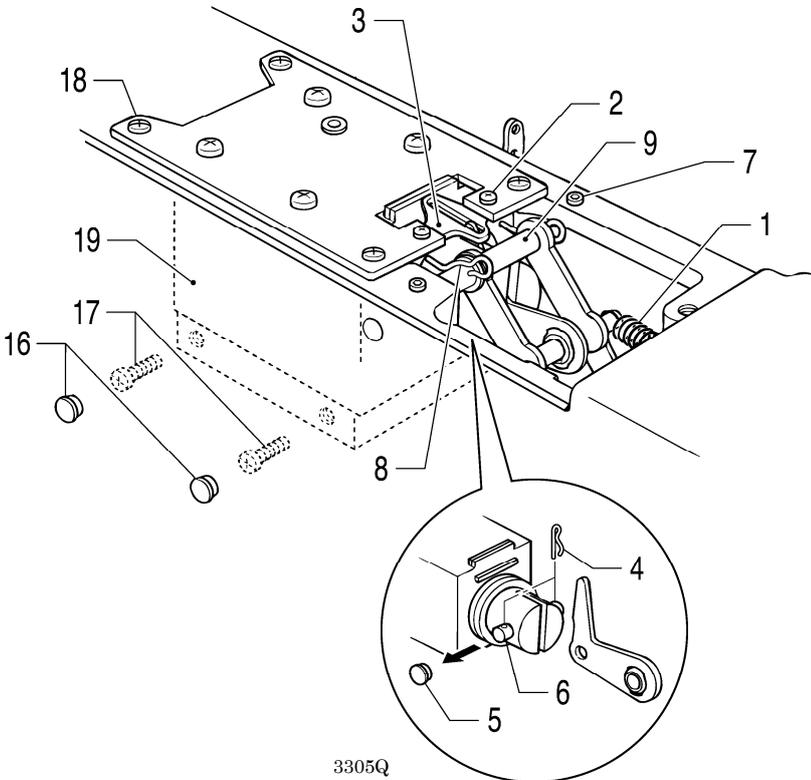


- |   |                                |
|---|--------------------------------|
| 1. Bolts [4 pcs]                                | 13. Positioning pins [2 pcs]   |
| 2. Pulse motor assy, X [Disconnect the harness] | 14. Set screws [2 pcs: Loosen] |
| 3. PM bracket, X                                | 15. Coupling hub, 8            |
| 4. Ball bearing                                 | 16. Coupling spacer            |
| 5. Bolts [4 pcs] [3 pcs: KE-484C]               | 17. Set screws [2 pcs: Loosen] |
| 6. Pulse motor assy, Y [Disconnect the harness] | 18. Feed cam                   |
| 7. Set screws [2 pcs: Loosen]                   | 19. Ball bearing [X side only] |
| 8. Set screw collar                             | 20. Ball bearing               |
| 9. PM bracket, Y                                | 21. Cam shaft                  |
| 10. Ball bearing                                | 22. Set screws [2 pcs: Loosen] |
| 11. Screws [2 pcs]                              | 23. Coupling hub, 8            |
| 12. Y-feed cam bracket                          |                                |

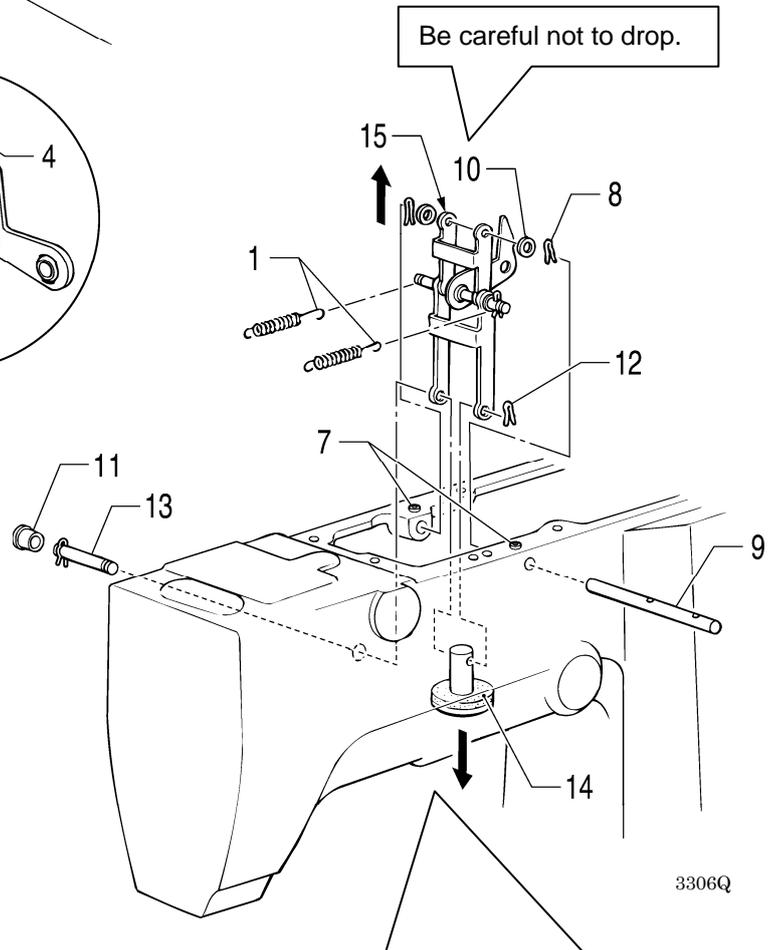
**3. DISASSEMBLY**

**3 - 1 4 . Work clamp lifter mechanism (Solenoid specifications)**

KE-430B, 431B, 433B, 434B  
KE-430C, 431C, 434C



- 1. Springs [2 pcs]
- 2. Screws [2 pcs]
- 3. Guide
- 4. Snap pins [2 pcs]
- 5. Rubber cap
- 6. Link shaft, D [Pull out]
- 7. Set screws [2 pcs: Loosen]
- 8. Snap pins [2 pcs]
- 9. Link shaft, A [Pull out]
- 10. Washers [2 pcs]

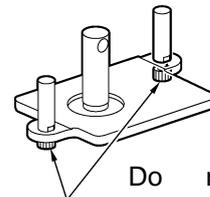


- 11. Oil cap
- 12. Snap pin
- 13. Link shaft, C [Pull out]
- 14. Work clamp plate
- 15. Work clamp lifter link-related parts
- 16. Rubber caps [2 pcs]
- 17. Screws [2 pcs]
- 18. Screws [4 pcs]
- 19. Presser solenoid assy  
[Disconnect the harness]

**Note:**

Hold the work clamp plate when removing link shaft C, otherwise the work clamp plate may fall down.

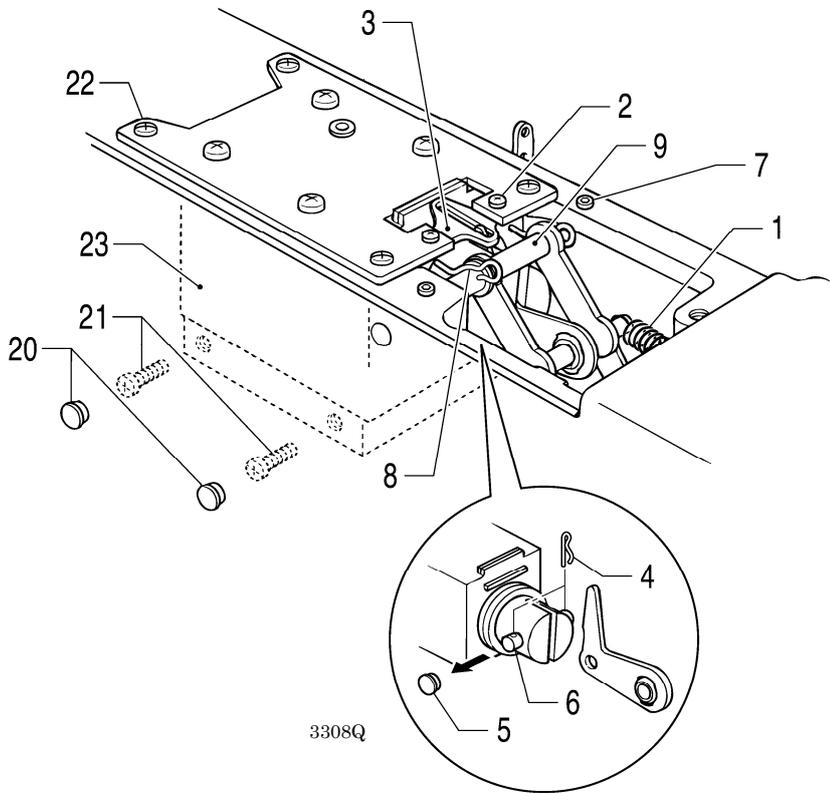
<KE-433B, 434B, 434C>



Do not remove, otherwise the work clamp will not move smoothly.

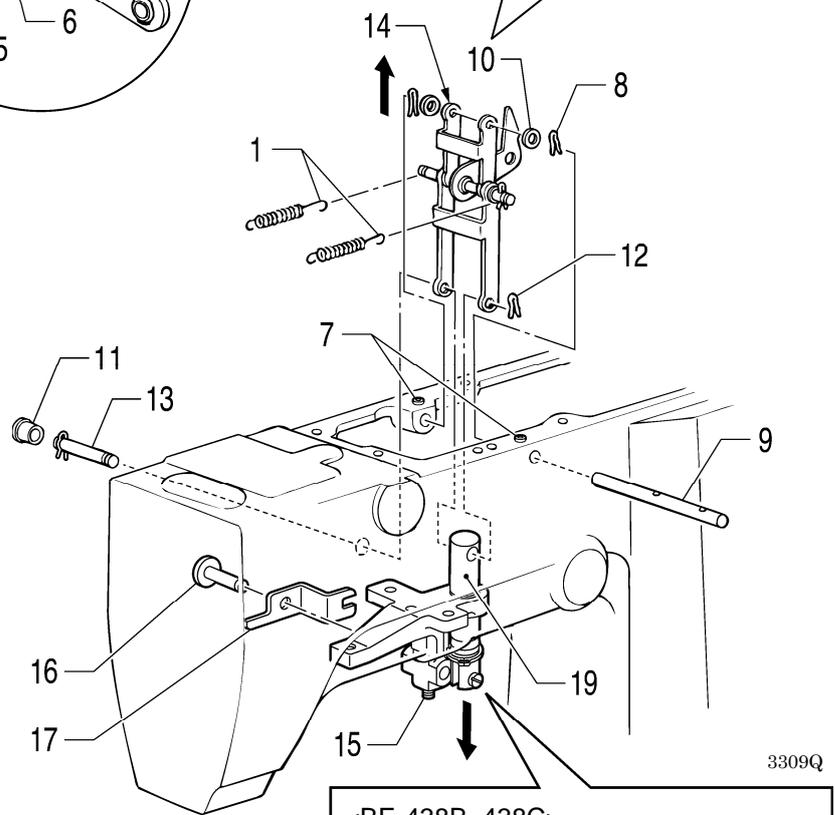
3307Q

KE-432, 432C  
BE-438, 438C

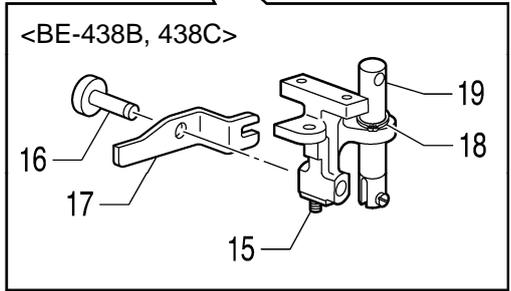


- 1. Springs [2 pcs]
- 2. Screws [2 pcs]
- 3. Guide
- 4. Snap pins [2 pcs]
- 5. Rubber cap
- 6. Link shaft, D [Pull out]
- 7. Set screws [2 pcs: Loosen]
- 8. Snap pins [2 pcs]
- 9. Link shaft, A [Pull out]
- 10. Washers [2 pcs]

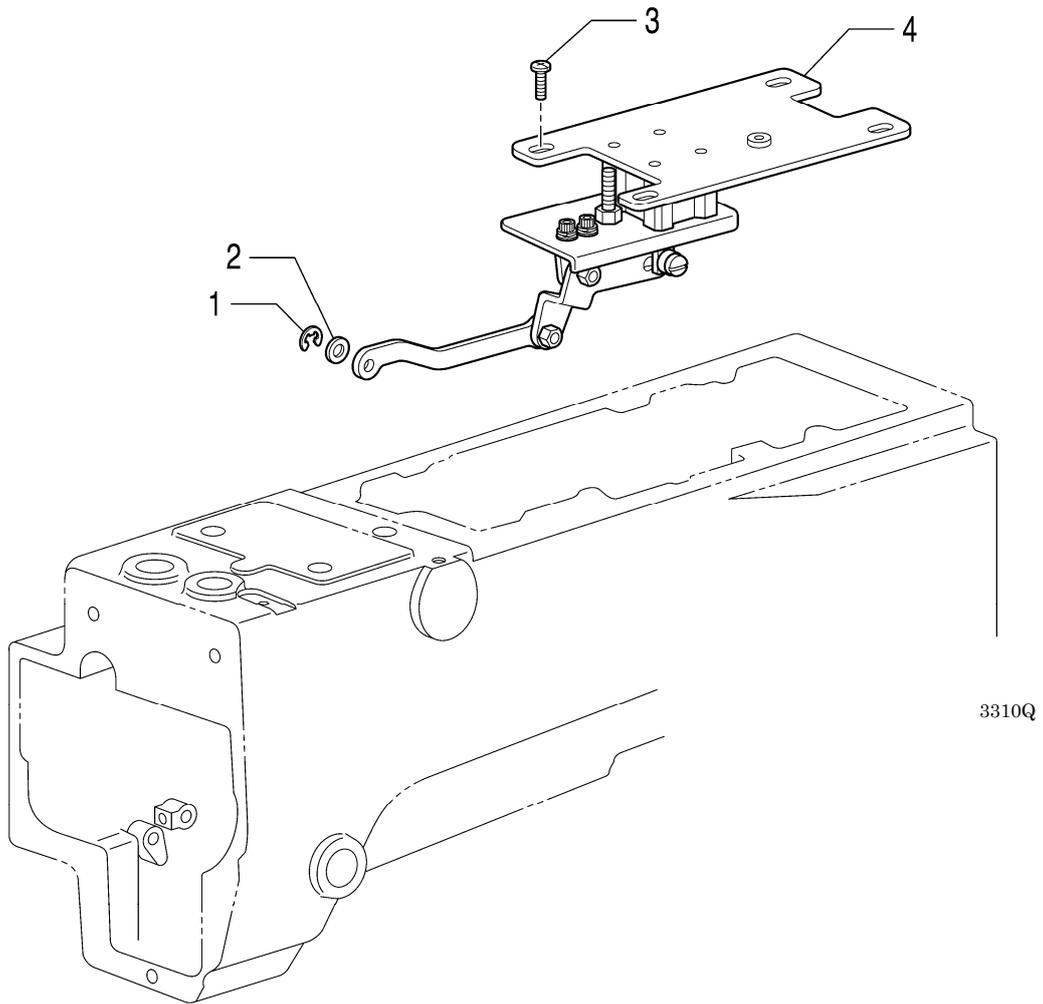
Be careful not to drop.



- 11. Oil cap
- 12. Snap pin
- 13. Link shaft, C [Pull out]
- 14. Presser lifter link-related parts
- 15. Set screw [Loosen]
- 16. Button clamp lever shaft [Pull out]
- 17. Work clamp lifter lever  
[KE-432B, 432C]  
Button clamp lifting lever  
[BE-438B, 438C]
- 18. Retaining ring [BE-438B, 438C]
- 19. Work clamp lifting rod  
[Pull downward]
- 20. Rubber caps [2 pcs]
- 21. Screws [2 pcs]
- 22. Screws [4 pcs]
- 23. Presser solenoid assy  
[Disconnect the harness]



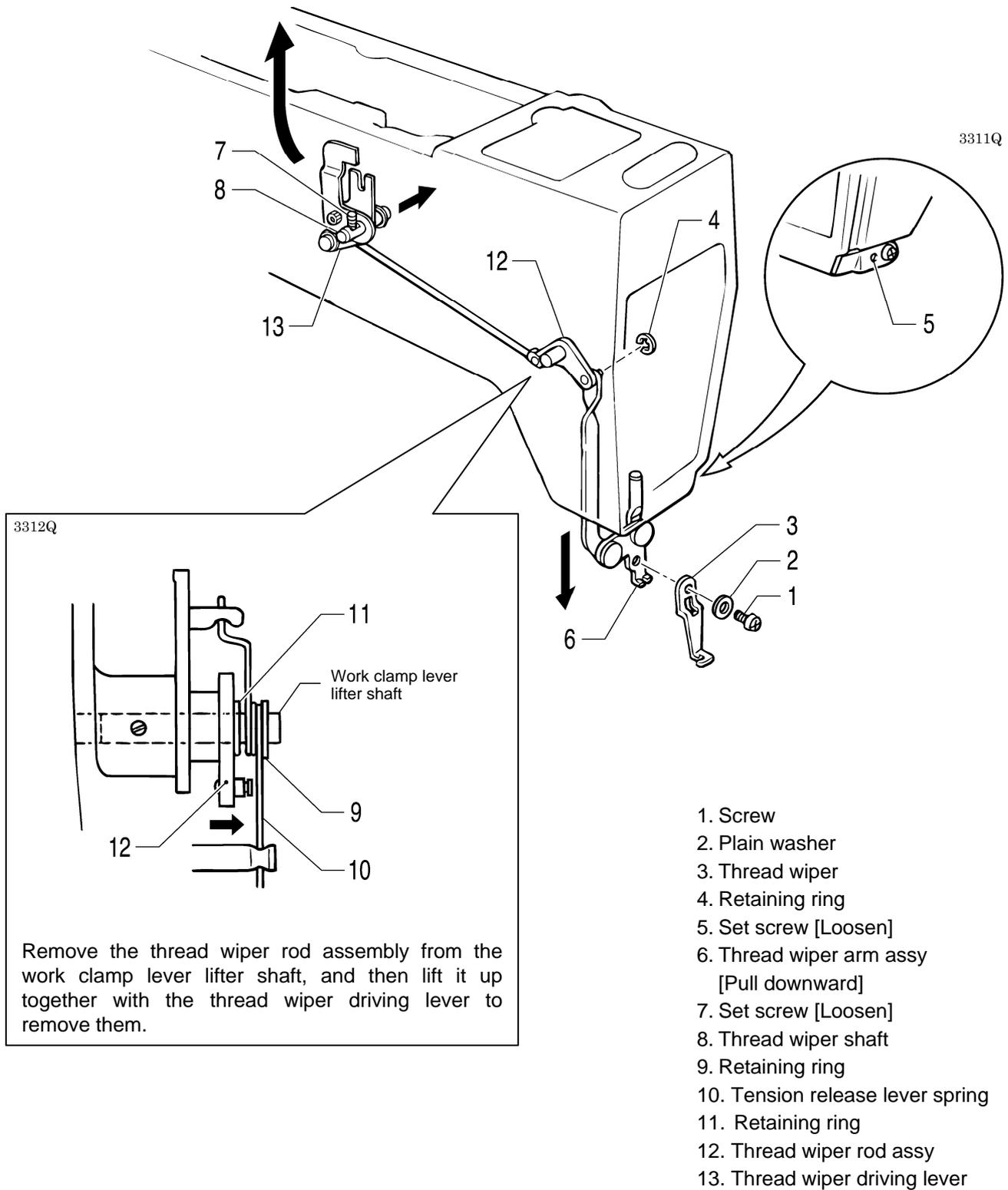
3 - 1 5 . Stepping foot lifter mechanism (KE-435B, 435C, 436B, 436C)



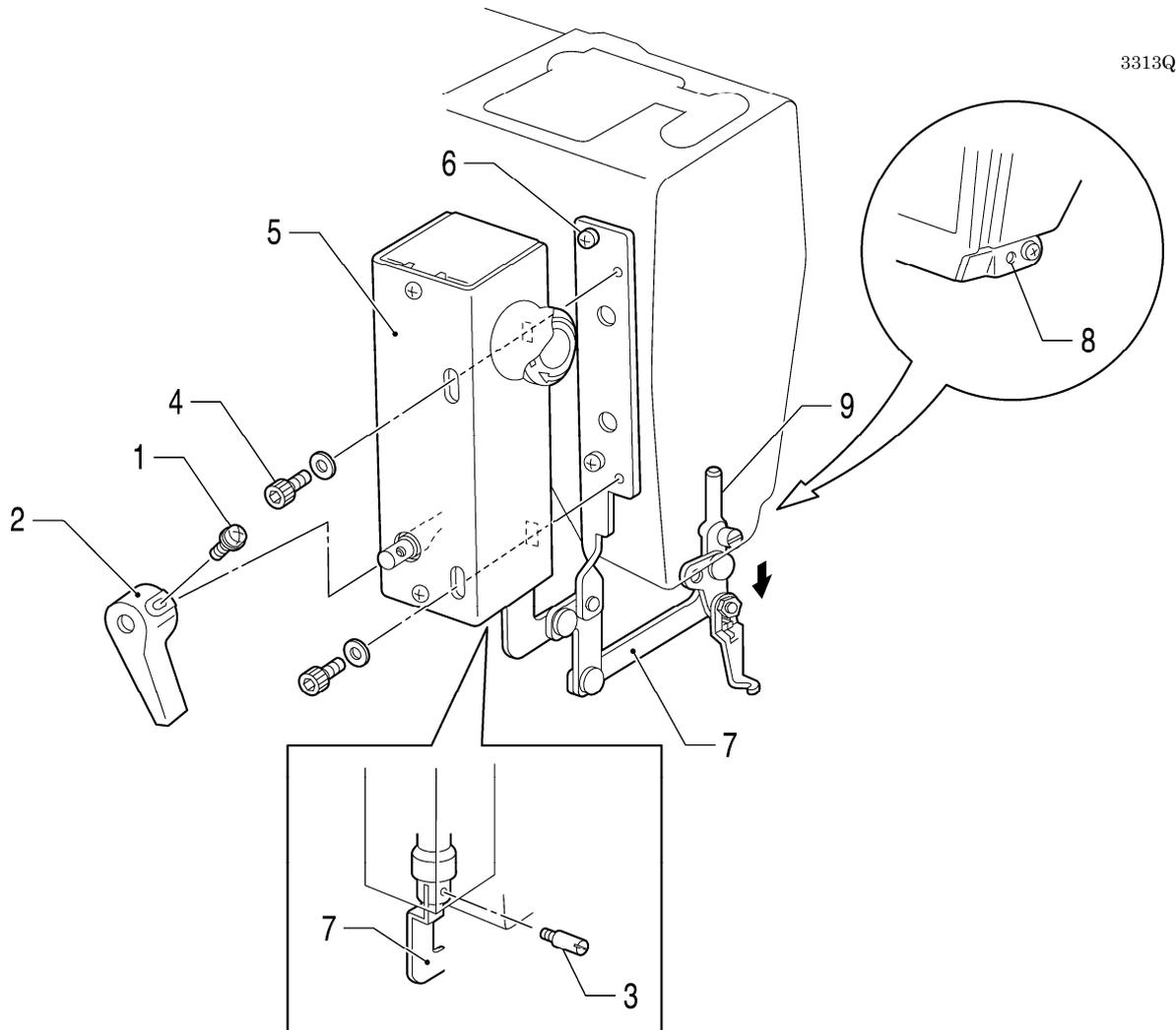
1. Retaining ring
2. Plain washer
3. Screws [4 pcs]
4. Air cylinder setting plate  
[Pull upward after disconnecting the air tubes]

### 3 - 1 6 . Thread wiper mechanism

#### Solenoid specifications



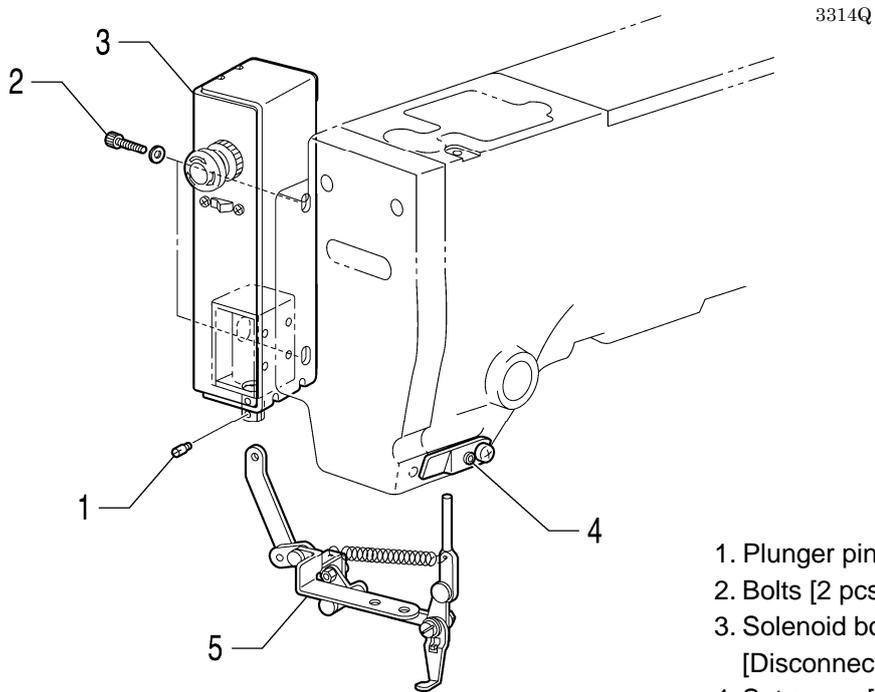
Pneumatic specifications



3313Q

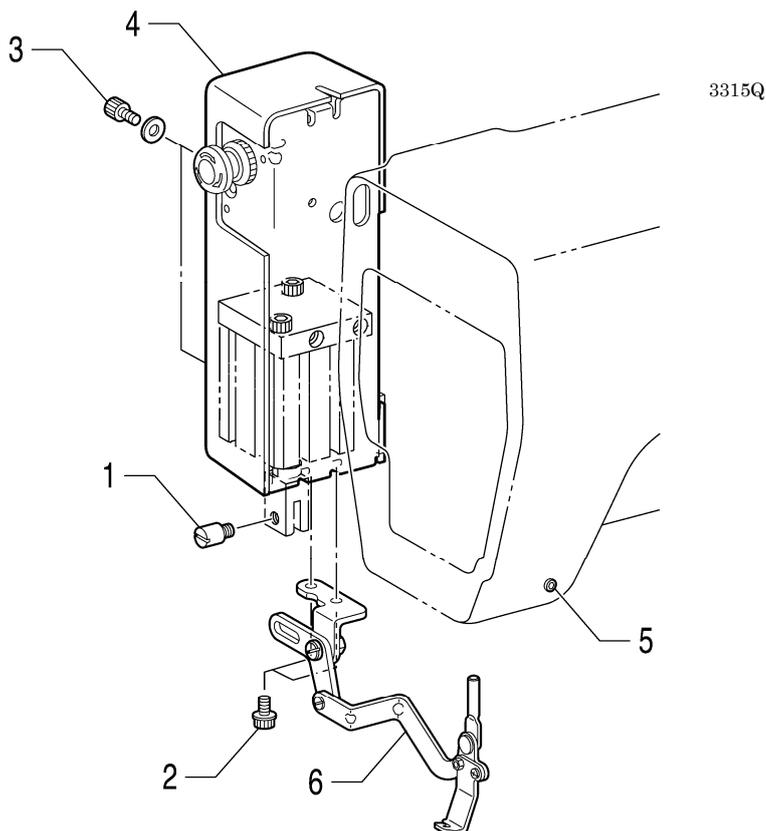
- 1. Screw with washer
- 2. Lifting lever
- 3. Plunger pin
- 4. Bolts [2 pcs]
- 5. Solenoid box assy  
[Disconnect the harness]
- 6. Screws [2 pcs]
- 7. Thread wiper connecting rod assy
- 8. Set screw [Loosen]
- 9. Thread wiper arm assy [Pull downward]

Stepping foot specifications



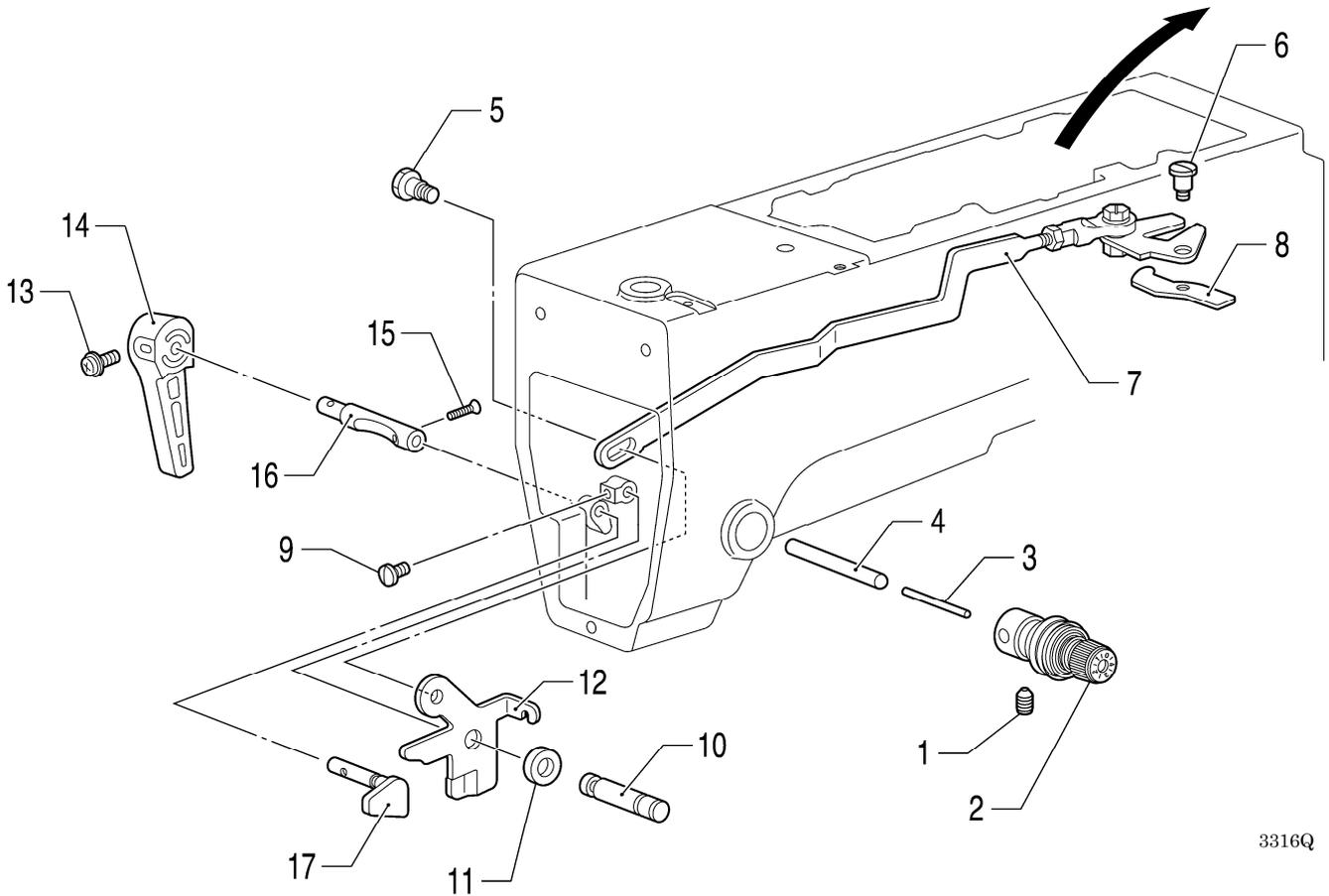
- 1. Plunger pin
- 2. Bolts [2 pcs]
- 3. Solenoid box assy  
[Disconnect the harness]
- 4. Set screw [Loosen]
- 5. Thread wiper connecting rod assy

KE-484C



- 1. Screw
- 2. Bolts with washers [2 pcs]
- 3. Bolts [2 pcs]
- 4. Cylinder box  
[Disconnect the harness]
- 5. Set screw [Loosen]
- 6. Thread wiper connecting rod

3 - 1 7 . Thread nipper mechanism

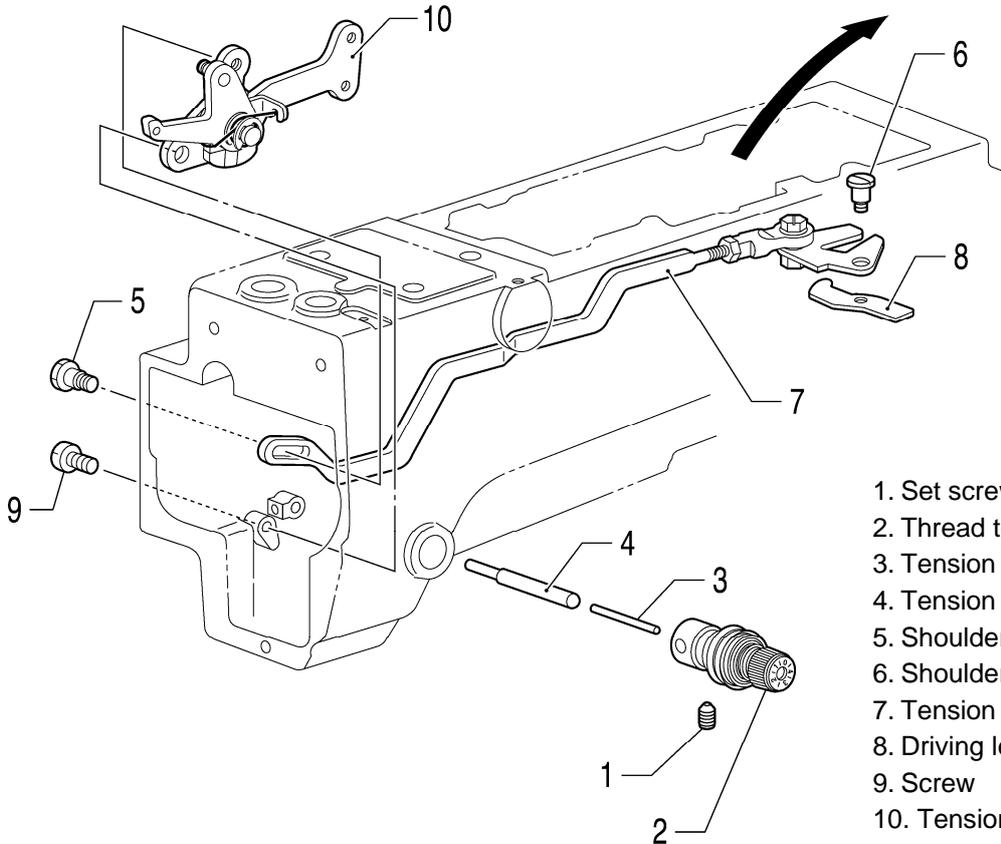


3316Q

- |                                   |   |
|-----------------------------------|---|
| 1. Set screw                      | 10. Work clamp lever lifter shaft                       |
| 2. Thread tension assy [Pull out] | 11. Collar  |
| 3. Tension release pin            | 12. Tension release lever                               |
| 4. Tension release stud           | 13. Screw with washer                                   |
| 5. Shoulder screw                 | 14. Lifting lever                                       |
| 6. Shoulder screw                 | 15. Screw [KE-434B, 434C Pneumatic spec.]               |
| 7. Tension release rod assy       | 16. Tension release rod [KE-434B, 434C Pneumatic spec.] |
| 8. Driving lever push lever       | 17. Presser bar lifter crank                            |
| 9. Set screw [Loosen]             |   |

3317Q

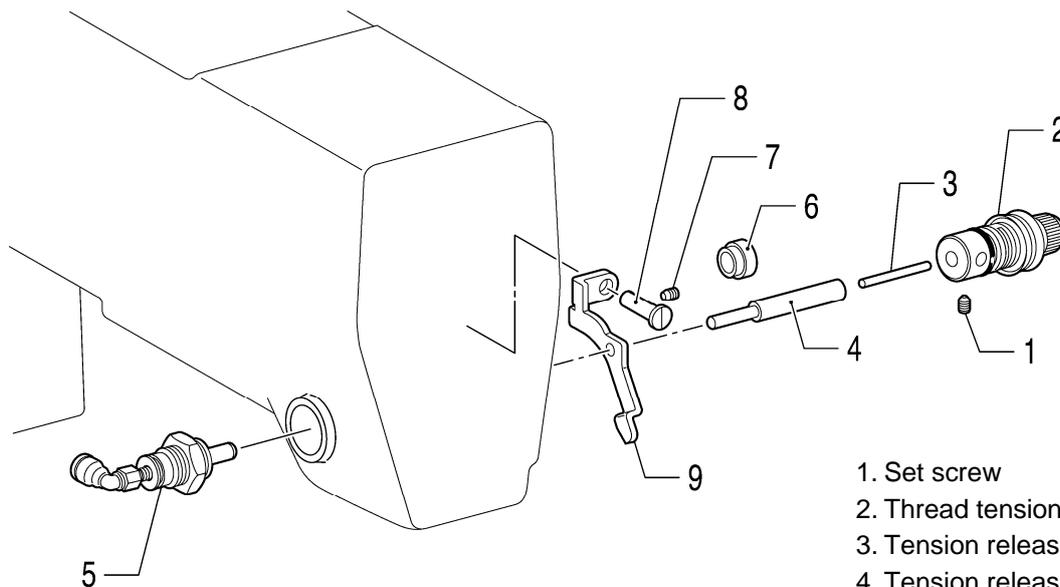
Stepping foot specifications



1. Set screw
2. Thread tension assy [Pull out]
3. Tension release pin
4. Tension release pin, L
5. Shoulder screw
6. Shoulder screw
7. Tension release rod assy
8. Driving lever push lever
9. Screw
10. Tension release bracket

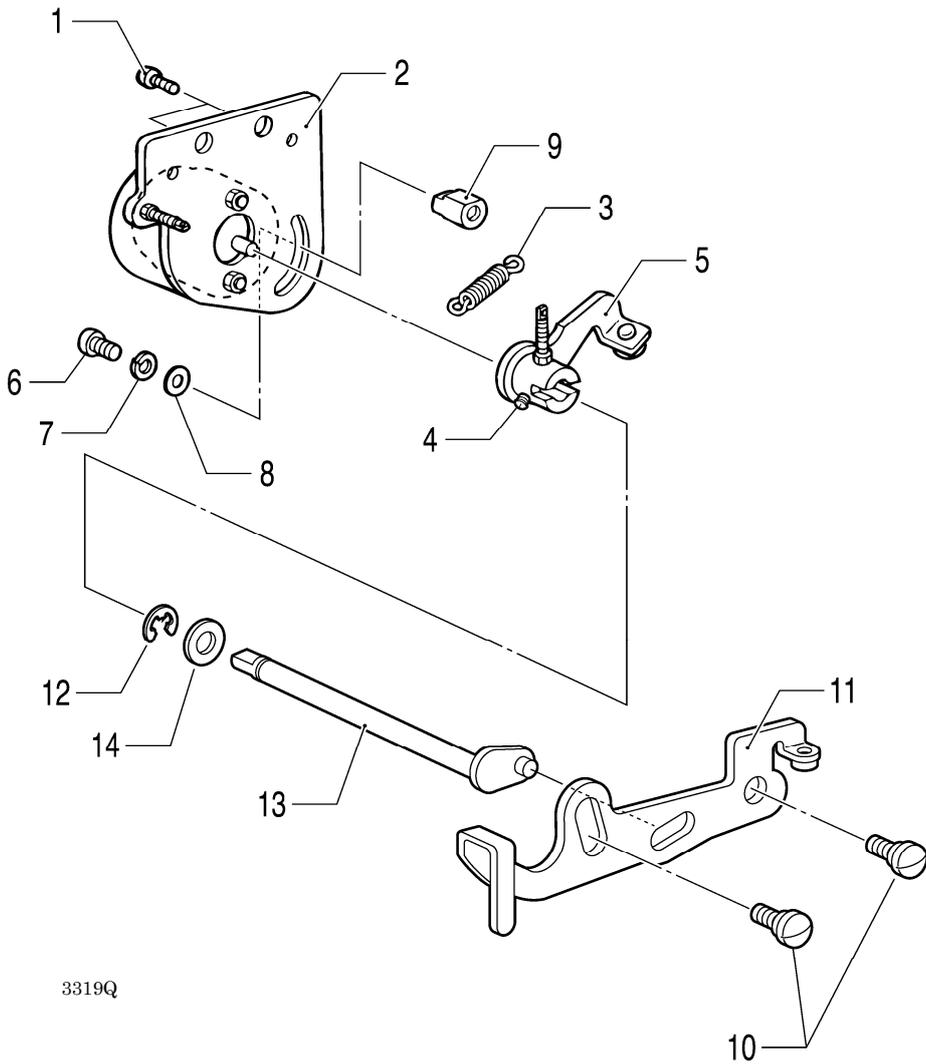
KE-484C

3318Q



1. Set screw
2. Thread tension assy [Pull out]
3. Tension release pin
4. Tension release pin, L
5. Tension release cylinder assy
6. Rubber cap
7. Set screw [Loosen]
8. Lever shaft
9. Tension release pin push lever

3-1 8. Thread take-up mechanism

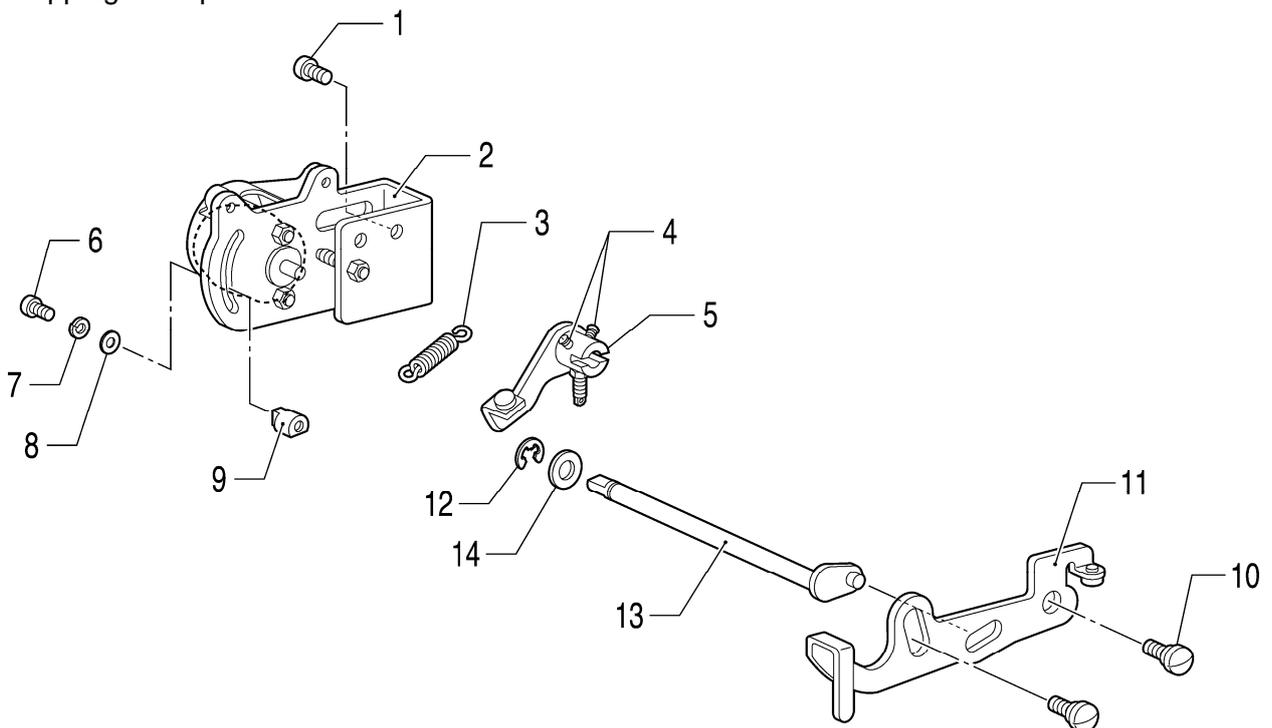


- 1. Screws [2 pcs]
- 2. Solenoid setting plate
- 3. Spring
- 4. Set screws [2 pcs: Loosen]
- 5. Solenoid joint
- 6. Screw
- 7. Spring washer
- 8. Plain washer
- 9. Nut
- 10. Shoulder screws [2 pcs]
- 11. Thread take-up lever
- 12. Retaining ring
- 13. Thread take-up lever crank
- 14. Plain washer

3319Q

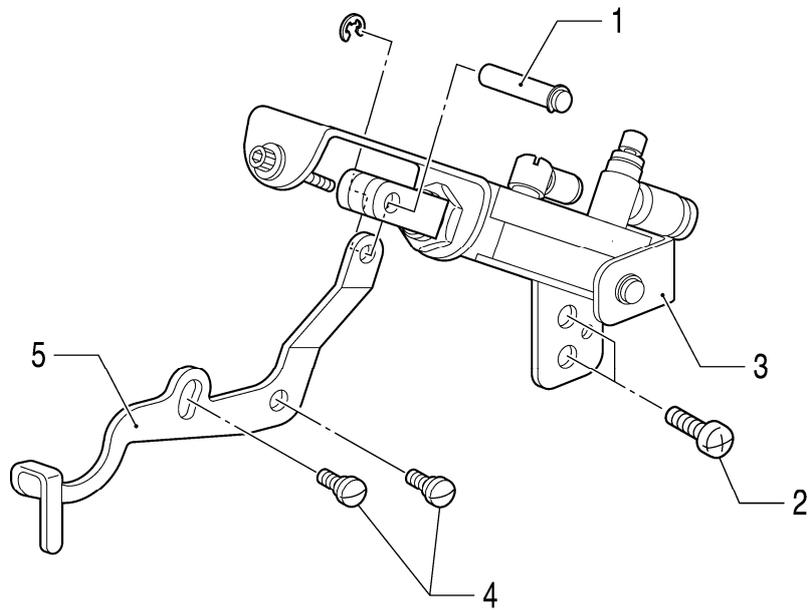
Stepping foot specifications

3320Q



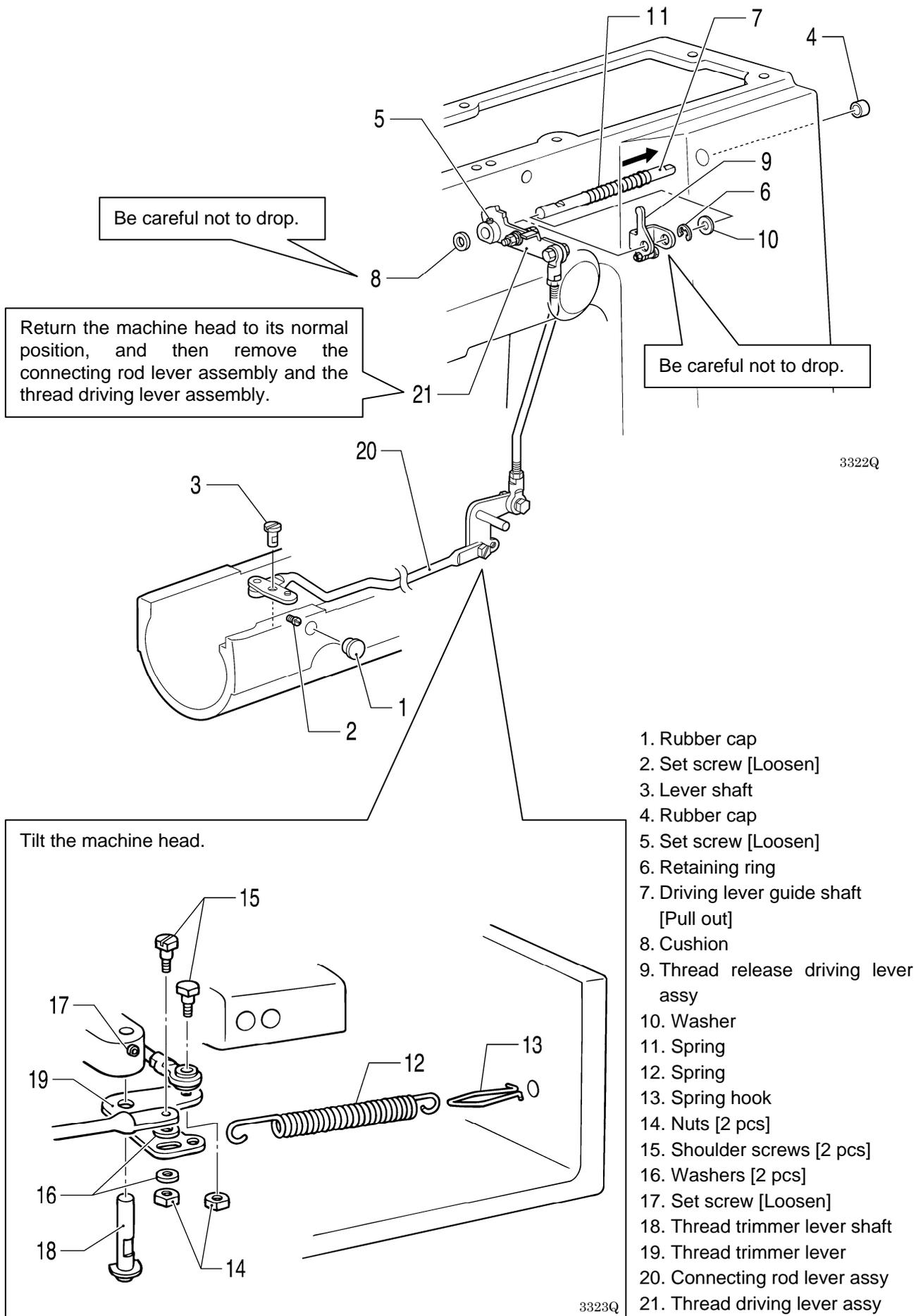
KE-484C

3321Q



1. Pin
2. Screws [2 pcs]
3. Setting plate
4. Shoulder screws [2 pcs]
5. Thread take-up lever

3-19. Thread trimmer mechanism



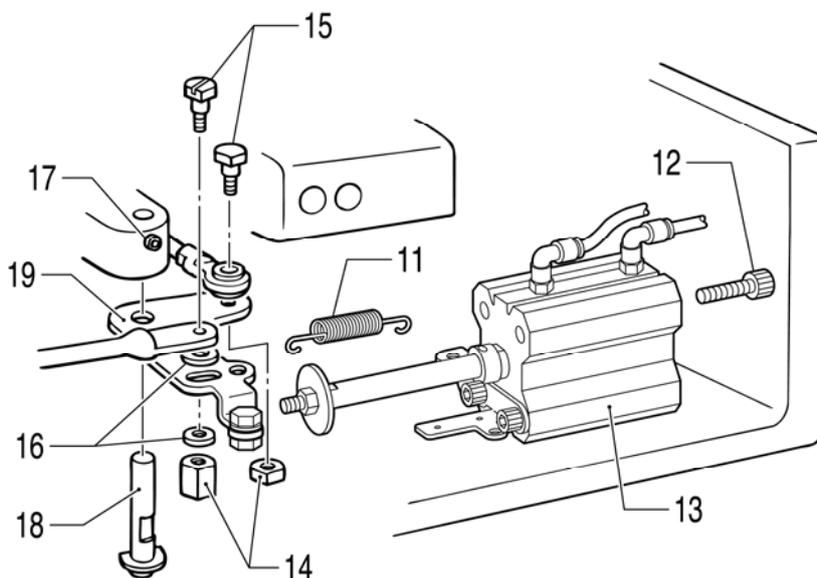
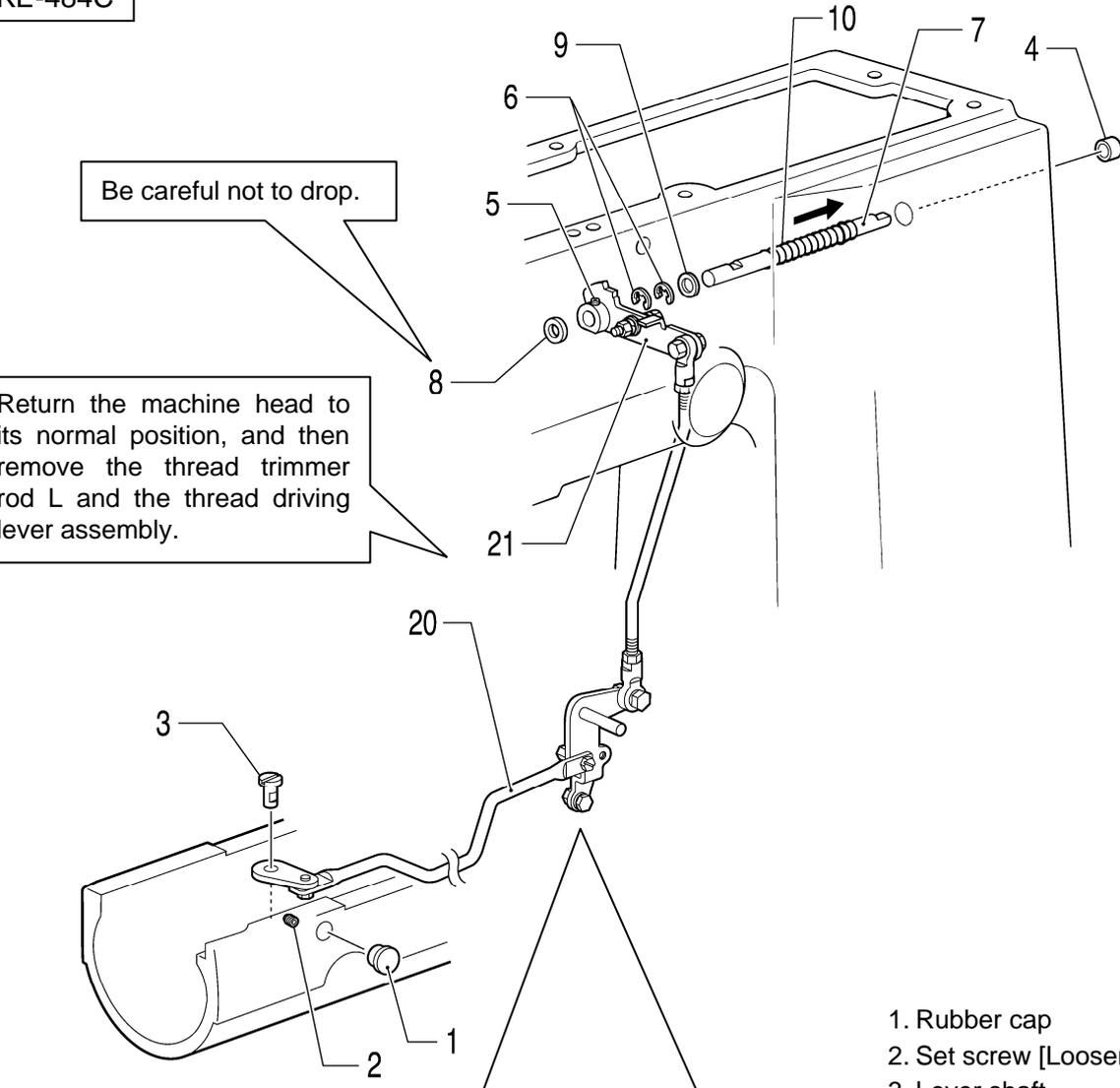
KE-484C

3324Q

Be careful not to drop.

Return the machine head to its normal position, and then remove the thread trimmer rod L and the thread driving lever assembly.

Tilt the machine head.



1. Rubber cap
2. Set screw [Loosen]
3. Lever shaft
4. Rubber cap
5. Set screw [Loosen]
6. Retaining rings [2 pcs]
7. Driving lever guide shaft  
[Pull out]
8. Cushion
9. Washer
10. Spring
11. Spring
12. Bolts [2 pcs]
13. Thread trimmer cylinder
14. Nuts [2 pcs]
15. Shoulder screws [2 pcs]
16. Washers [2 pcs]
17. Set screw [Loosen]
18. Thread trimmer lever shaft
19. Thread trimmer lever
20. Thread trimmer rod, L
21. Thread driving lever assy

3325Q



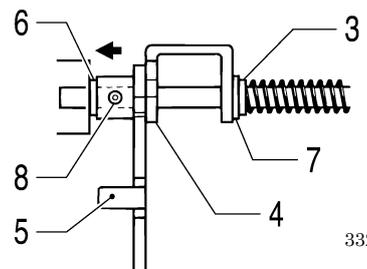
# 4. ASSEMBLY

Assemble each part in order of the numbers.

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

## 4-1. Thread trimmer mechanism (1)

Install the retaining ring between the thread release driving lever assembly and the washer.

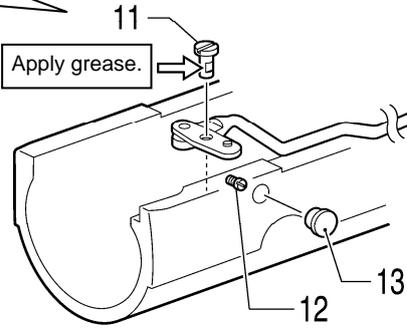


3328Q

Place the cushion against the edge of the arm, set the various parts so that there is no gap between them as shown in the illustration, and then tighten the set screw as far as the screw stop.

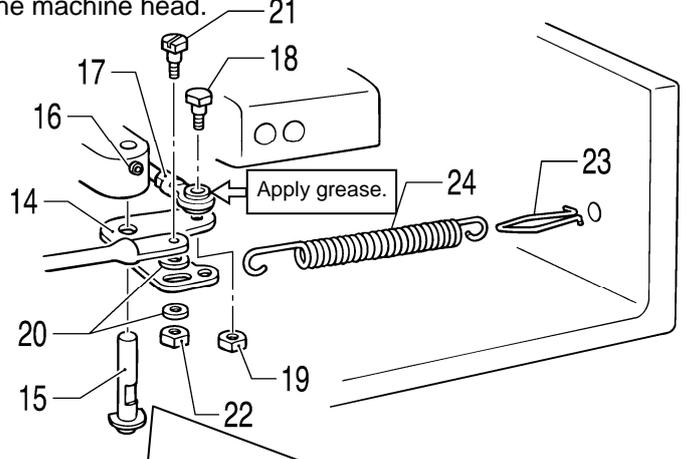
Adjust the position of the thread driving lever assembly while referring to "5-20. Adjusting the position of the thread trimming link mechanism".

Tighten the set screw on the screw flat while lightly pressing the lever shaft downward.



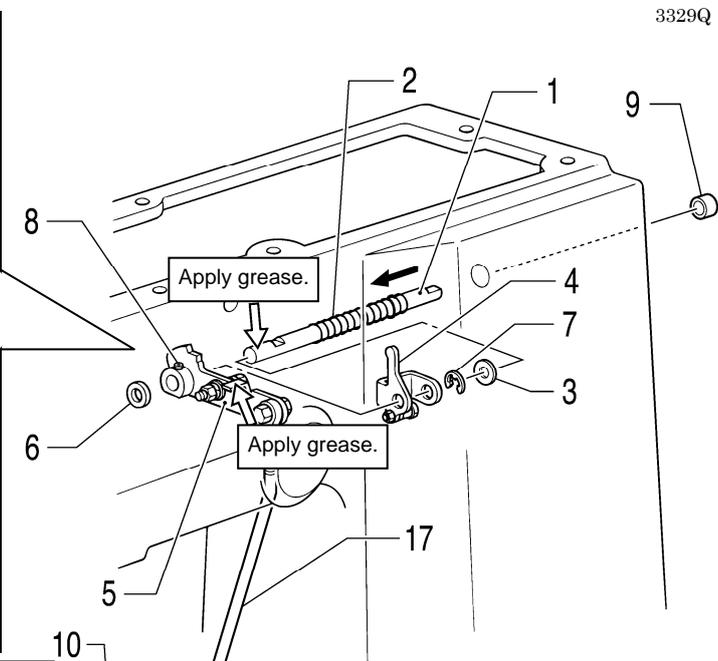
Apply grease.

Tilt the machine head.



3330Q

Tighten the set screw on the screw flat while lightly pressing the thread trimmer lever shaft upward.



3329Q

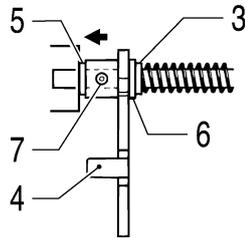
Apply grease.

Apply grease.

- 1. Driving lever guide shaft
- 2. Spring
- 3. Washer
- 4. Thread release driving lever assy
- 5. Thread driving lever assy
- 6. Cushion
- 7. Retaining ring
- 8. Set screw
- 9. Rubber cap
- 10. Connecting rod lever assy
- 11. Lever shaft
- 12. Set screw
- 13. Rubber cap
- 14. Thread trimmer lever
- 15. Thread trimmer lever shaft (with washer and retaining ring)
- 16. Set screw
- 17. Thread trimmer rod assy
- 18. Shoulder screw
- 19. Nut
- 20. Washers [2 pcs]
- 21. Shoulder screw
- 22. Nut
- 23. Spring hook
- 24. Spring

KE-484C

Install the retaining ring between the thread driving lever assembly and the washer.

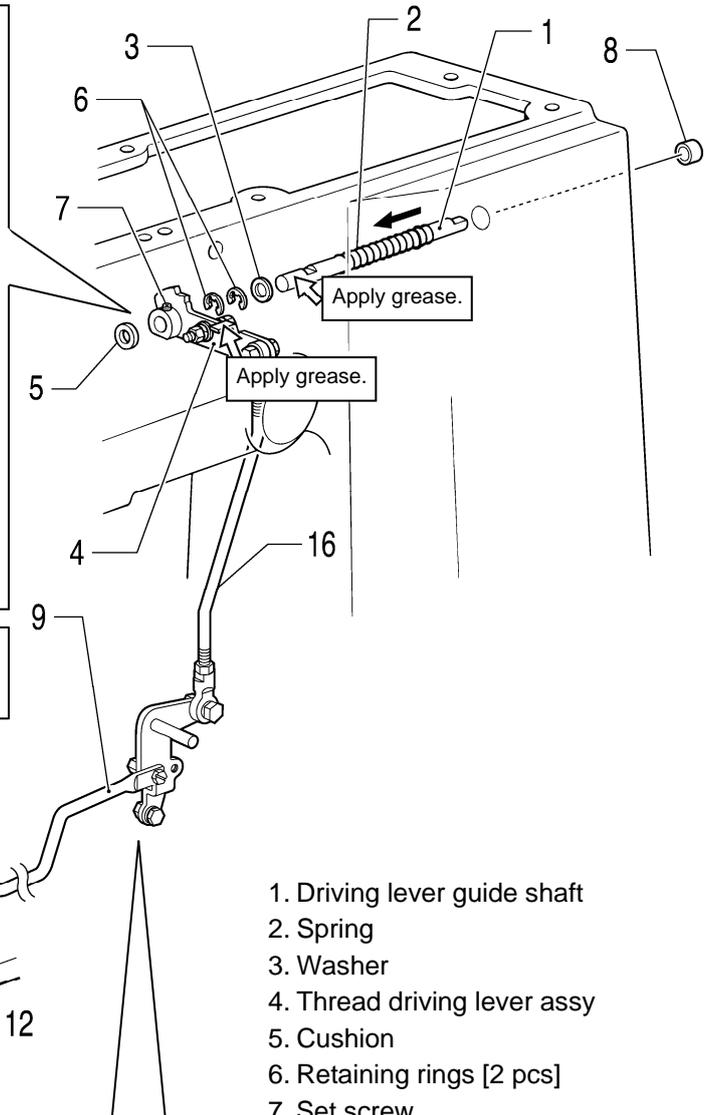
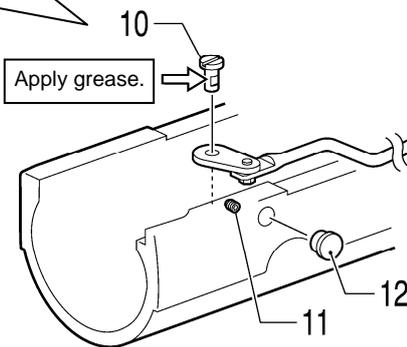


3331Q

Place the cushion against the edge of the arm, set the various parts so that there is no gap between them as shown in the illustration, and then tighten the set screw as far as the screw stop.

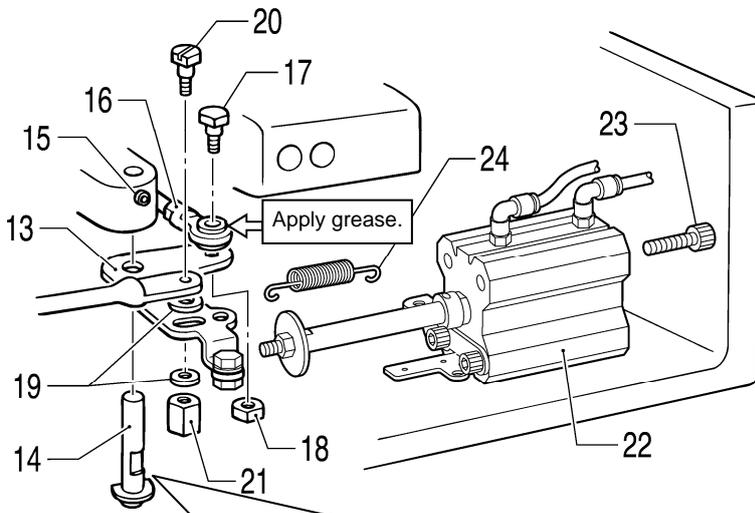
Adjust the position of the thread driving lever assembly while referring to "5-20. Adjusting the position of the thread trimming link mechanism".

Tighten the set screw on the screw flat while lightly pressing the lever shaft downward.



- 1. Driving lever guide shaft
- 2. Spring
- 3. Washer
- 4. Thread driving lever assy
- 5. Cushion
- 6. Retaining rings [2 pcs]
- 7. Set screw
- 8. Rubber cap
- 9. Thread trimmer rod, L
- 10. Lever shaft
- 11. Set screw
- 12. Rubber cap
- 13. Thread trimmer lever
- 14. Thread trimmer lever shaft (with washer and retaining ring)
- 15. Set screw
- 16. Thread trimmer rod assy
- 17. Shoulder screw
- 18. Nut
- 19. Washers [2 pcs]
- 20. Shoulder screw
- 21. Nut
- 22. Thread trimmer cylinder
- 23. Bolts [2 pcs]
- 24. Spring

Tilt the machine head.

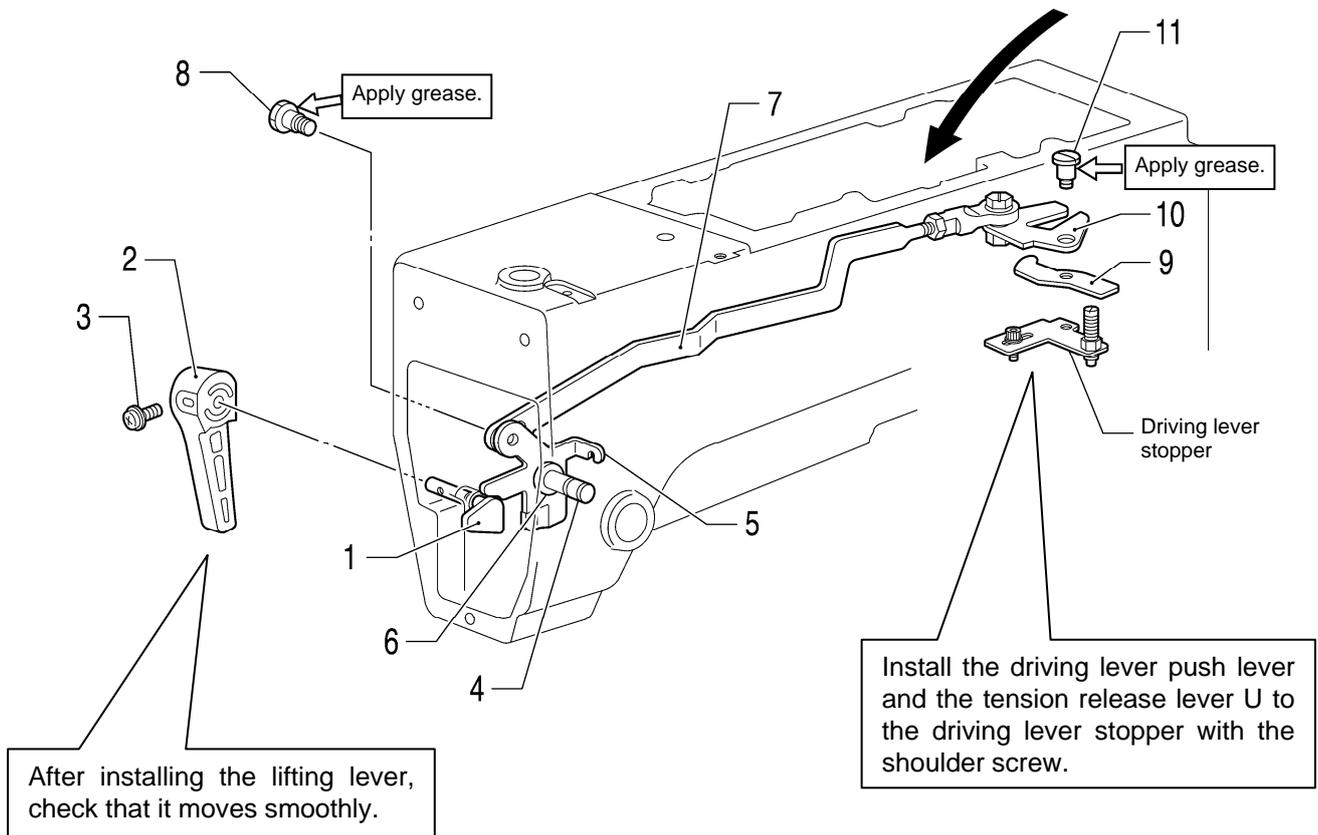


Tighten the set screw on the screw flat while lightly pressing the thread trimmer lever shaft upward.

3333Q

## 4 - 2 . Thread nipper mechanism

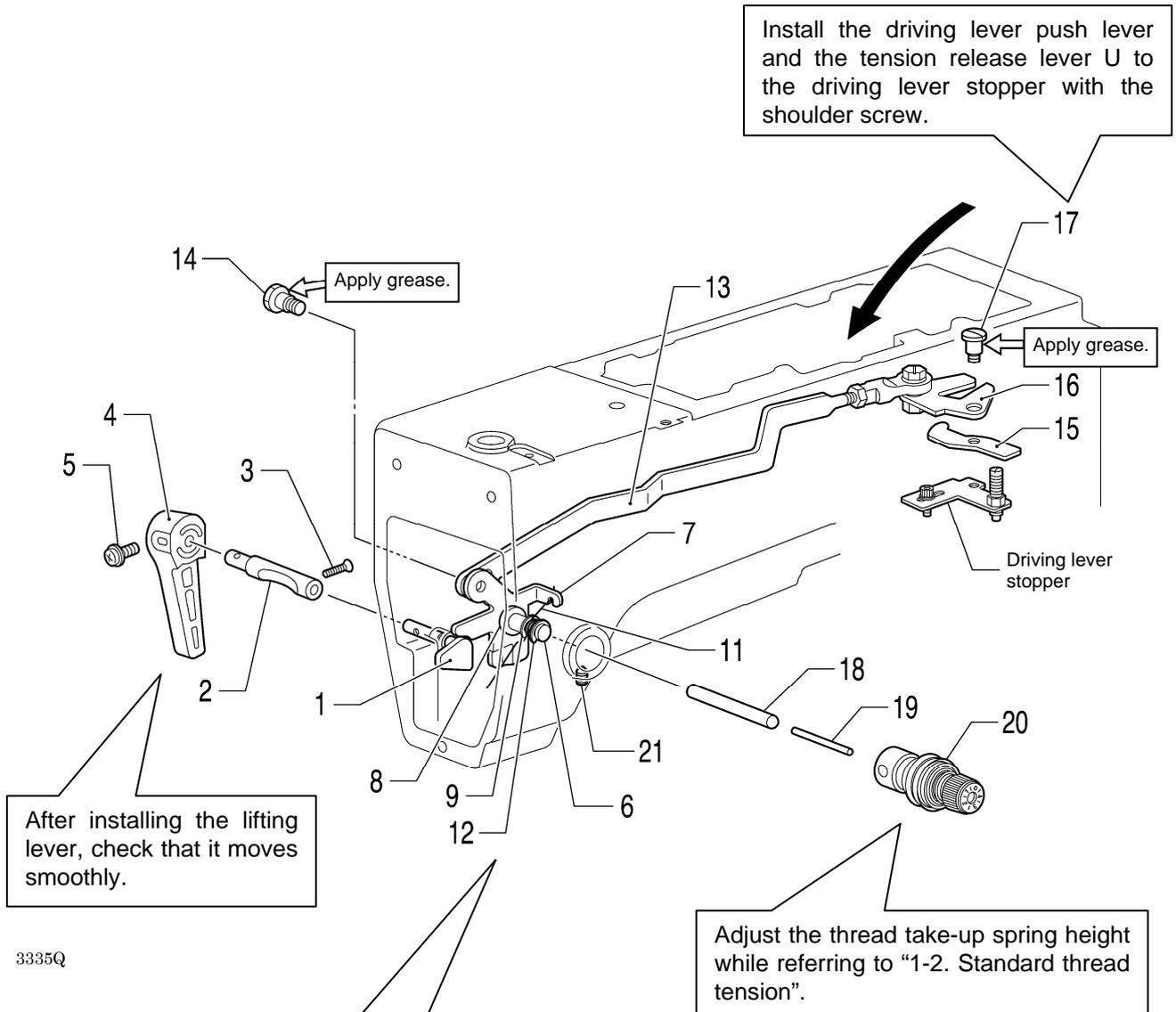
### Solenoid specifications



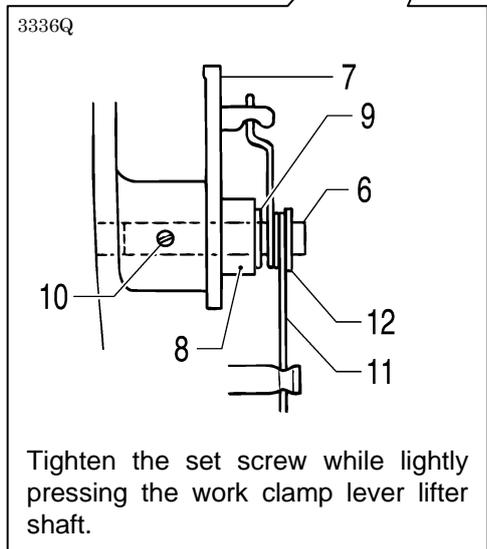
3334Q

1. Presser bar lifter crank
2. Lifting lever
3. Screw with washer
4. Work clamp lever lifter shaft
5. Tension release lever
6. Collar
7. Tension release rod assy
8. Shoulder screw
9. Driving lever push lever
10. Tension release lever, U
11. Shoulder screw

Pneumatic specifications

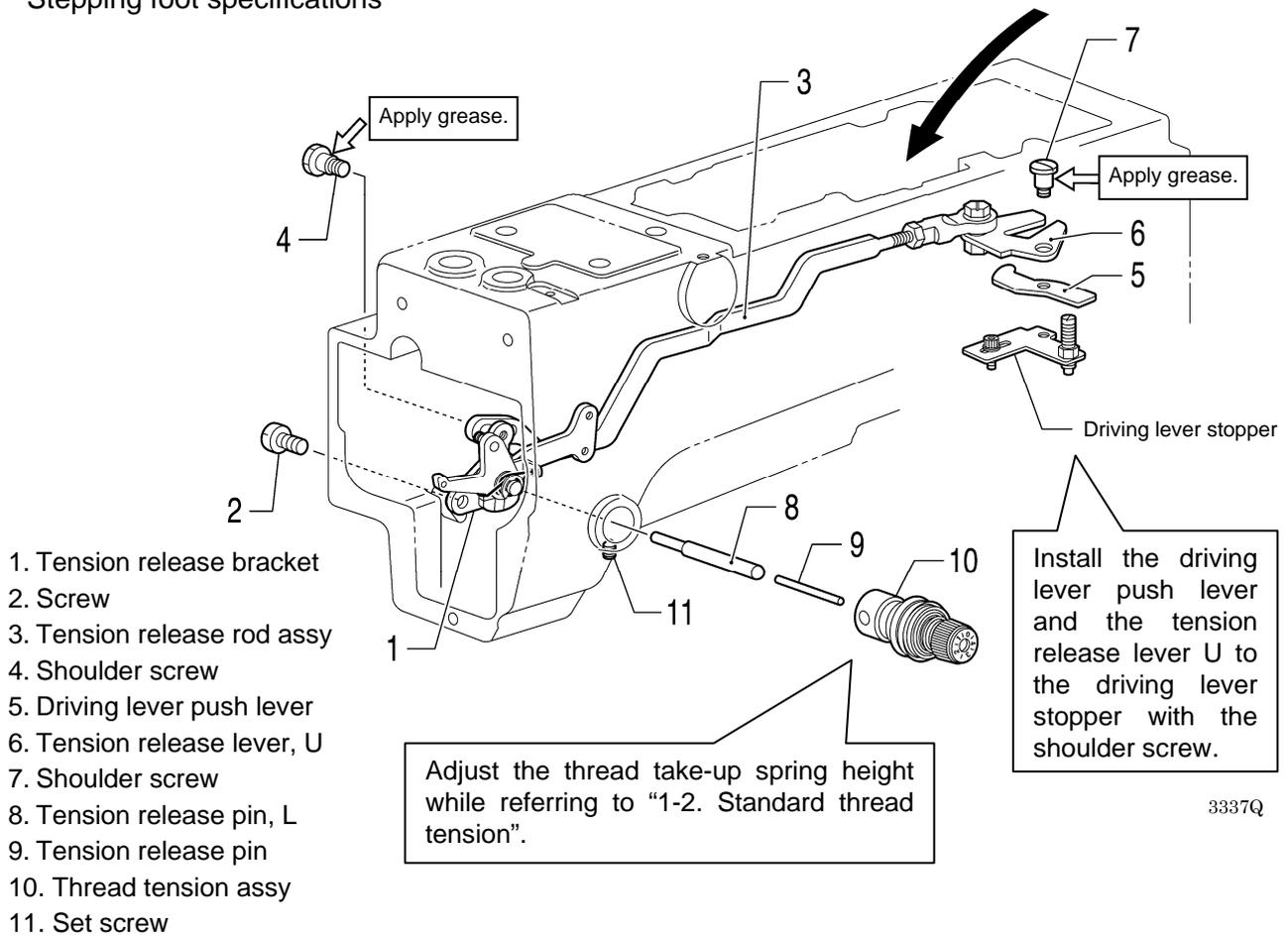


3335Q



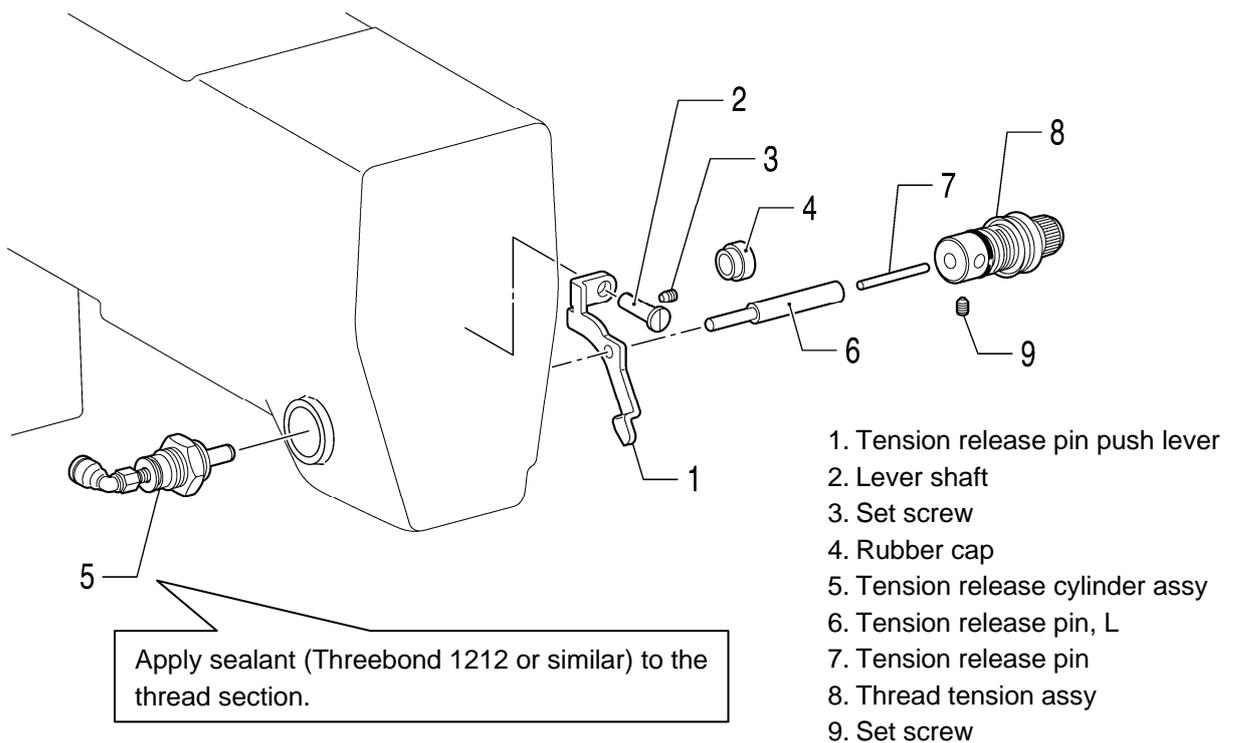
- |                                  |                              |
|----------------------------------|------------------------------|
| 1. Presser bar lifter crank      | 12. Retaining ring           |
| 2. Tension release rod           | 13. Tension release rod assy |
| 3. Screw                         | 14. Shoulder screw           |
| 4. Lifting lever                 | 15. Driving lever push lever |
| 5. Screw with washer             | 16. Tension release lever, U |
| 6. Work clamp lever lifter shaft | 17. Shoulder screw           |
| 7. Tension release lever         | 18. Tension release stud     |
| 8. Collar                        | 19. Tension release pin      |
| 9. Retaining ring                | 20. Thread tension assy      |
| 10. Set screw                    | 21. Set screw                |
| 11. Tension release lever spring |                              |

Stepping foot specifications



3337Q

KE-484C



3338Q

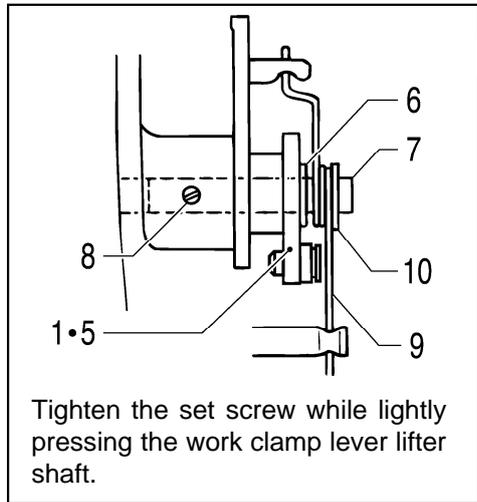
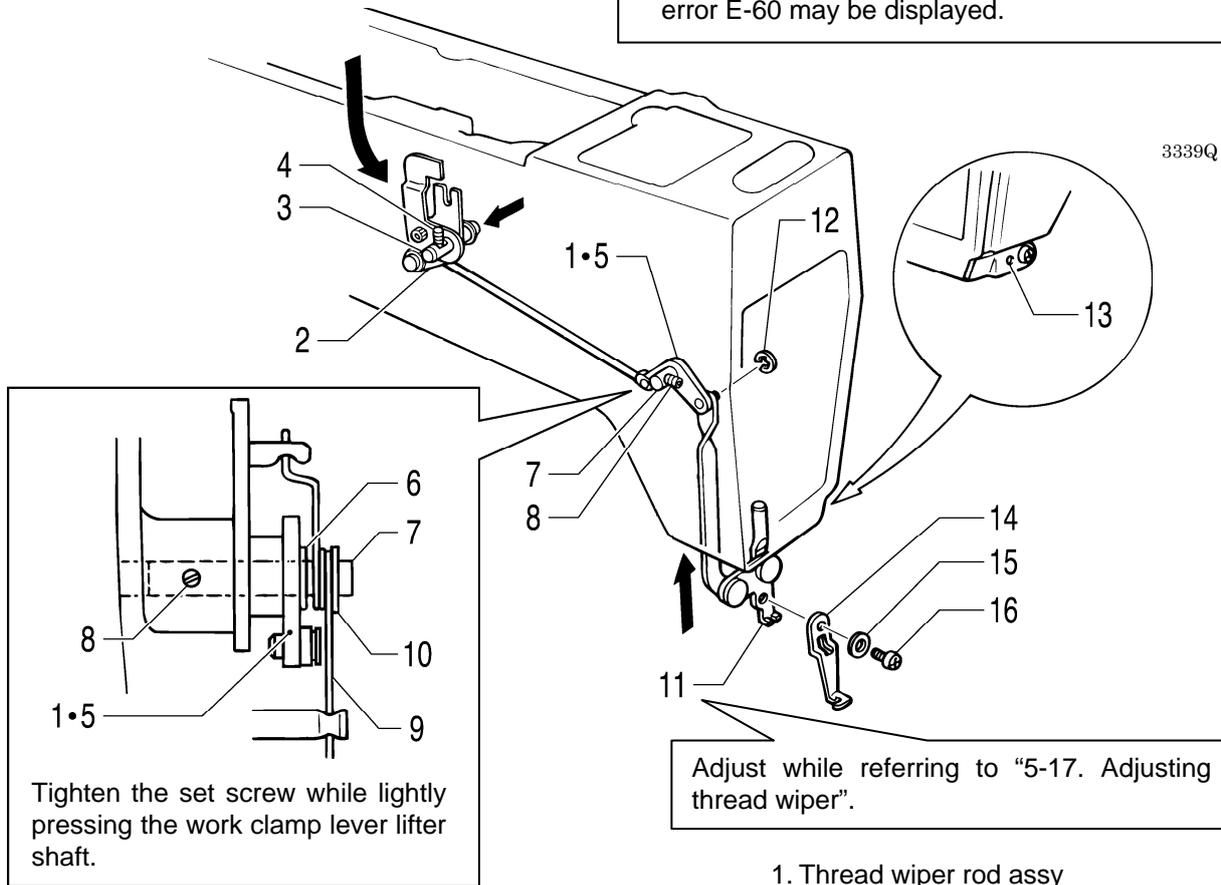
4 - 3 . Thread wiper mechanism

Solenoid specifications

After installing the thread wiper, moved the forked part of the thread wiper driving lever and check that the thread wiper unit moves smoothly.

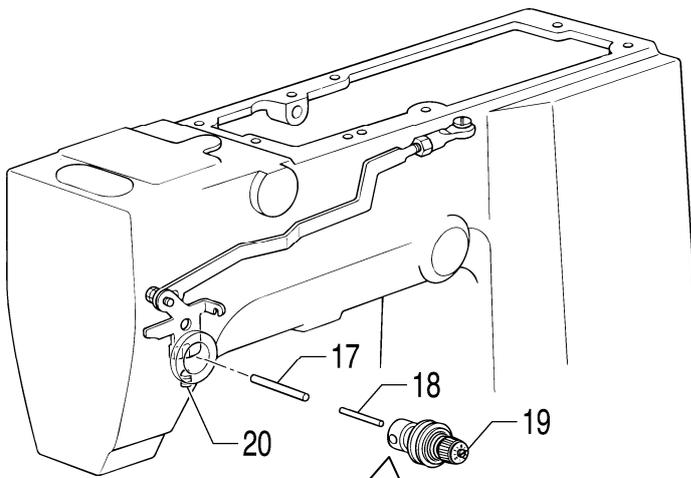
Note:

If the thread wiper unit does not move smoothly, error E-60 may be displayed.



Tighten the set screw while lightly pressing the work clamp lever lifter shaft.

Adjust while referring to "5-17. Adjusting the thread wiper".

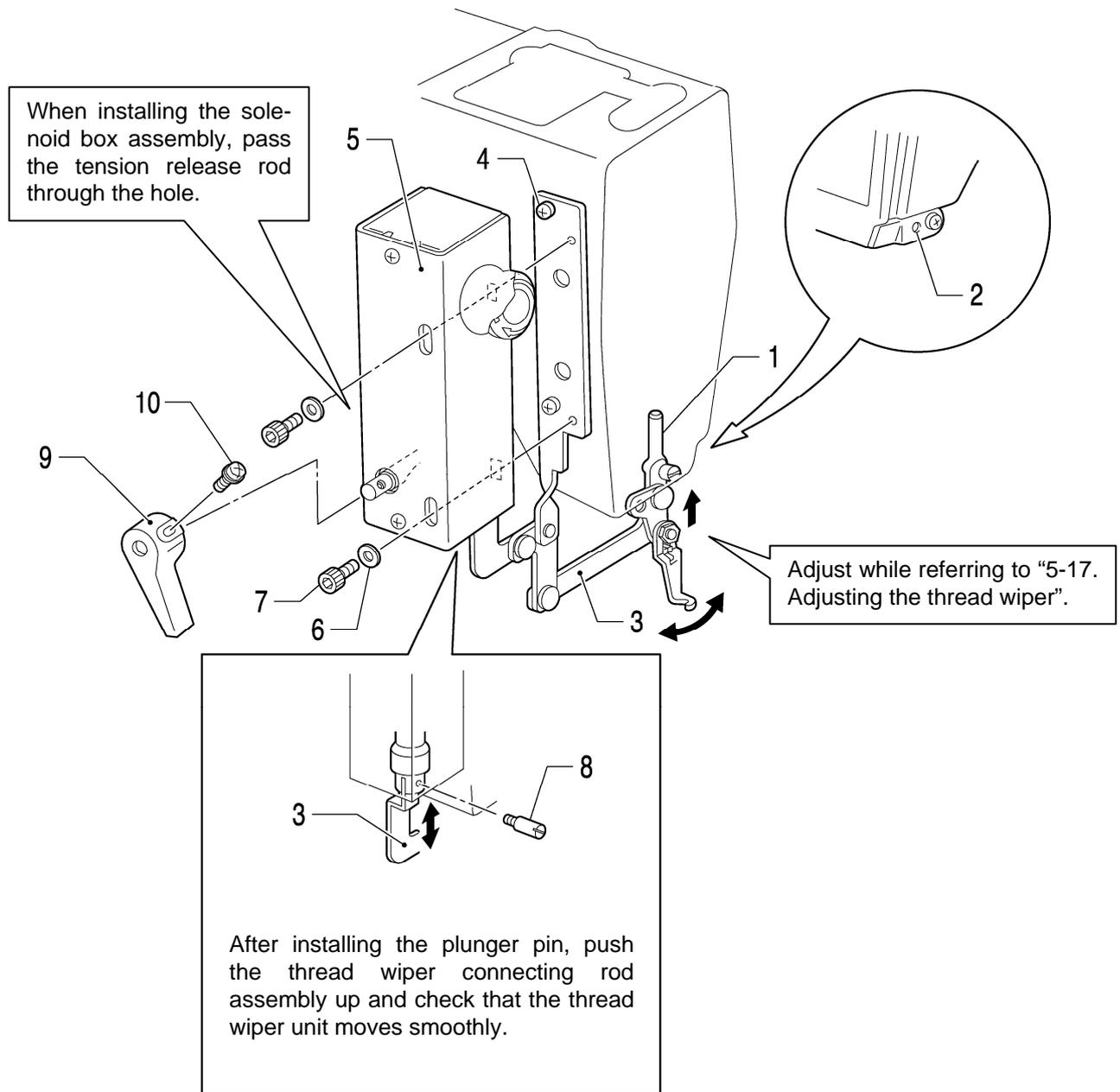


3341Q

Adjust the thread take-up spring height while referring to "1-2. Standard thread tension".

1. Thread wiper rod assy  
[Insert from above]
2. Thread wiper driving lever
3. Thread wiper shaft (with washer and retaining ring)
4. Set screw
5. Thread wiper rod assy  
[Place onto the work clamp lever lifter shaft]
6. Retaining ring
7. Work clamp lever lifter shaft
8. Set screw
9. Tension release lever spring
10. Retaining ring
11. Thread wiper arm assy
12. Retaining ring
13. Set screw [Temporarily tighten]
14. Thread wiper
15. Plain washer
16. Screw
17. Tension release stud
18. Tension release pin
19. Thread tension assy
20. Set screw

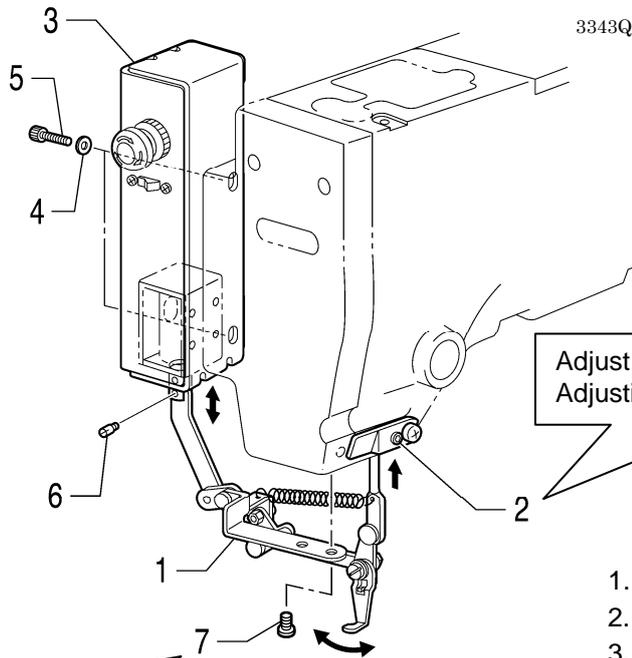
Pneumatic specifications



3342Q

1. Thread wiper arm assy
2. Set screw [Temporarily tighten]
3. Thread wiper connecting rod assy
4. Screws [2 pcs]
5. Solenoid box assy
6. Washers [2 pcs]
7. Bolts [2 pcs]
8. Plunger pin
9. Lifting lever
10. Screw with washer

Stepping foot specifications

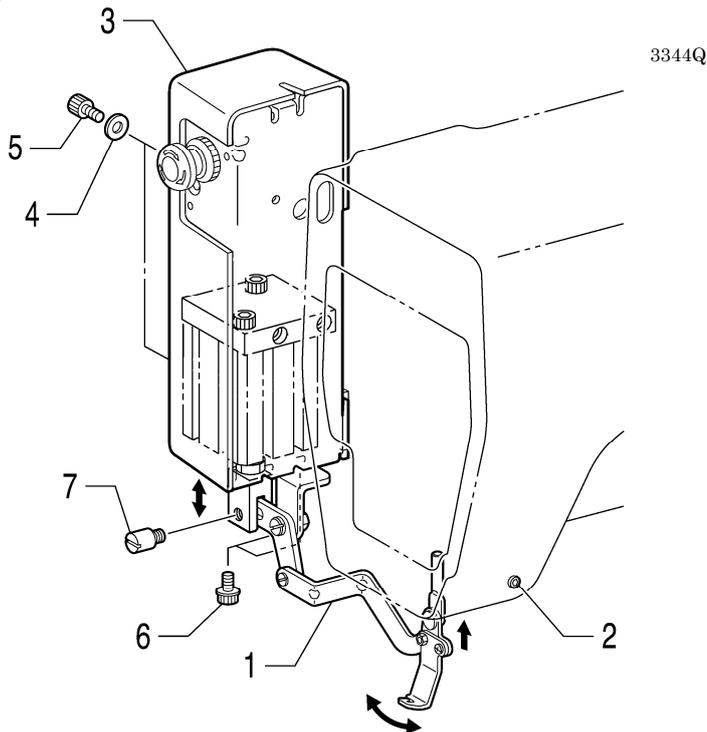


Adjust while referring to "5-17. Adjusting the thread wiper".

- 1. Thread wiper connecting rod assy
- 2. Set screw [Temporarily tighten]
- 3. Solenoid box assy
- 4. Washers [2 pcs]
- 5. Bolts [2 pcs]
- 6. Plunger pin
- 7. Bolts [2 pcs: Install to face plate]

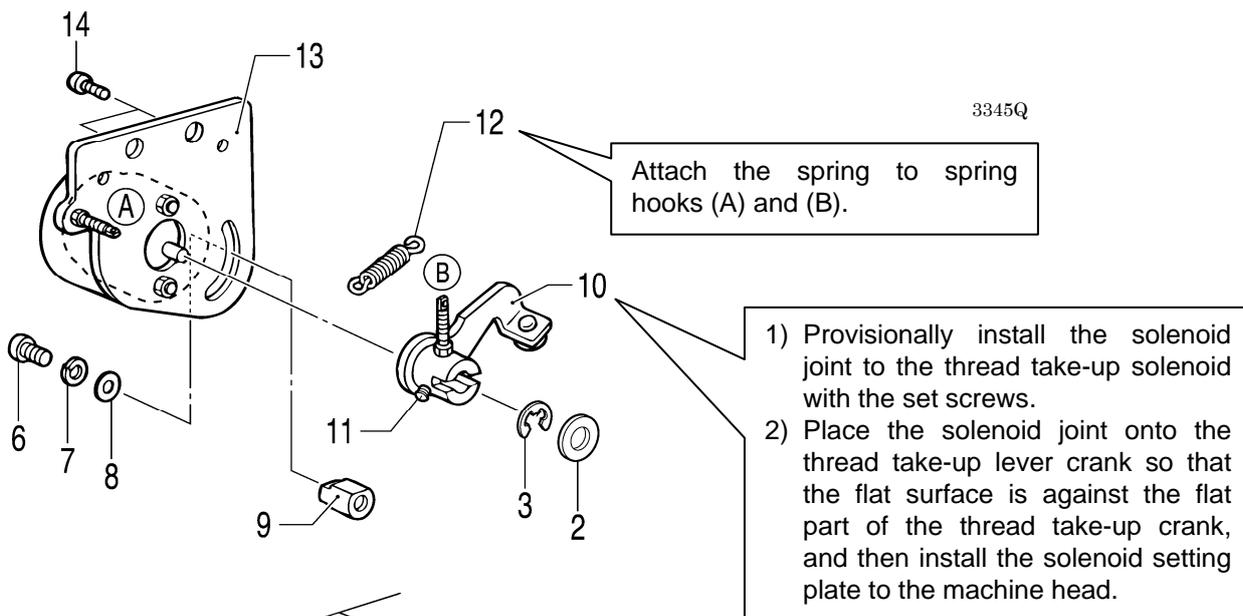
After installing the face plate while referring to "4-21. Covers", install the bolts, and then push the thread wiper connecting rod assembly up and check that the thread wiper unit moves smoothly.

KE-484C

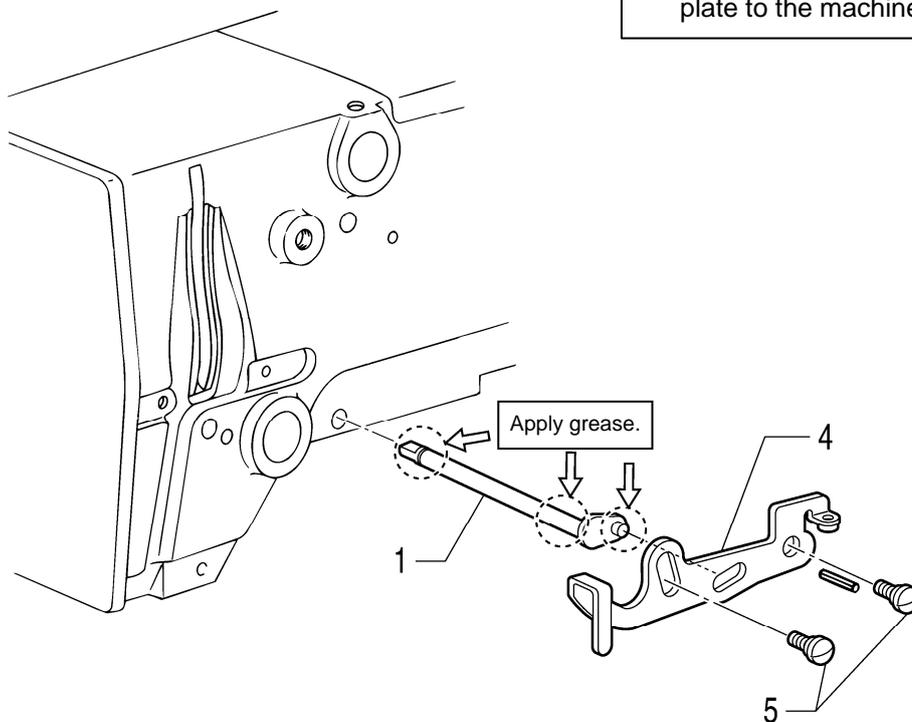


- 1. Thread wiper connecting rod
- 2. Set screw [Temporarily tighten]
- 3. Cylinder box
- 4. Washers [2 pcs]
- 5. Bolts [2 pcs]
- 6. Bolts with washers [2 pcs]
- 7. Screw

4 - 4 . Thread take-up mechanism

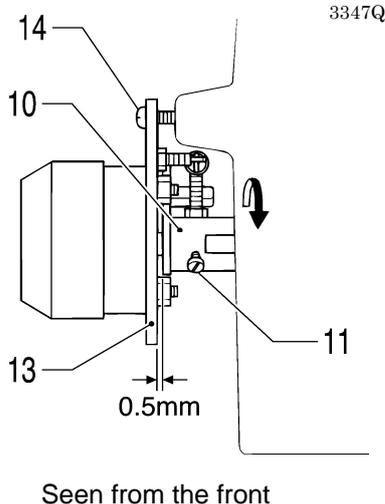


3346Q



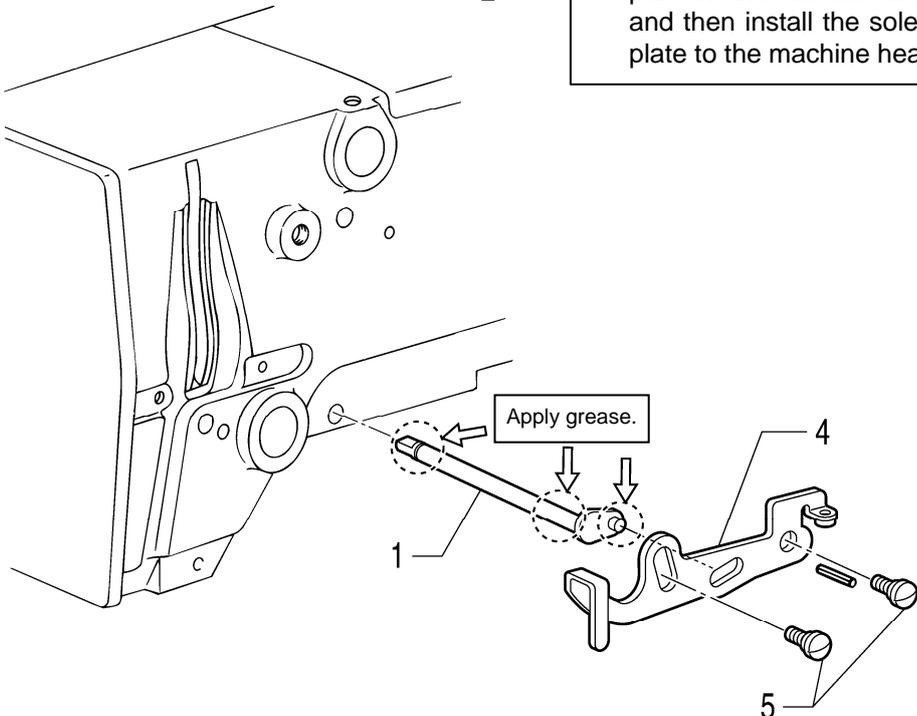
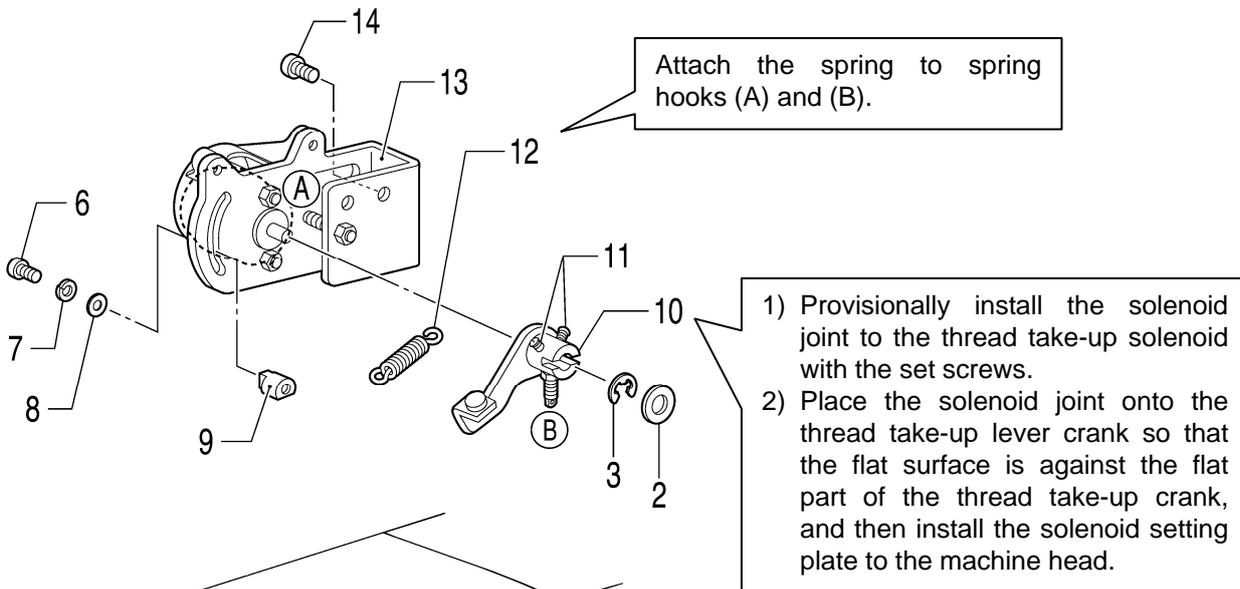
While pushing the solenoid joint in the direction of the arrow, set the solenoid setting plate and the solenoid joint so that the gap between them is 0.5 mm, and then tighten the set screws.

\* Move the solenoid joint and check that the thread take-up lever operates smoothly. If it does not move smoothly, it may damage the solenoid. If the movement is not smooth, make fine adjustments to the position of the solenoid setting plate until the thread take-up lever operates smoothly.



- 1. Thread take-up lever crank
- 2. Plain washer
- 3. Retaining ring
- 4. Thread take-up lever
- 5. Shoulder screws [2 pcs]
- 6. Set screw [Temporarily tighten]
- 7. Spring washer
- 8. Plain washer
- 9. Nut
- 10. Solenoid joint
- 11. Set screws [2 pcs]
- 12. Spring
- 13. Solenoid setting plate
- 14. Screws [2 pcs]

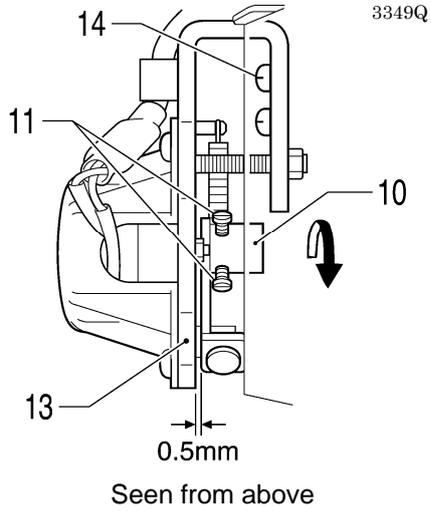
Stepping foot specifications



3346Q

While pushing the solenoid joint in the direction of the arrow, set the solenoid setting plate and the solenoid joint so that the gap between them is 0.5 mm, and then tighten the set screws.

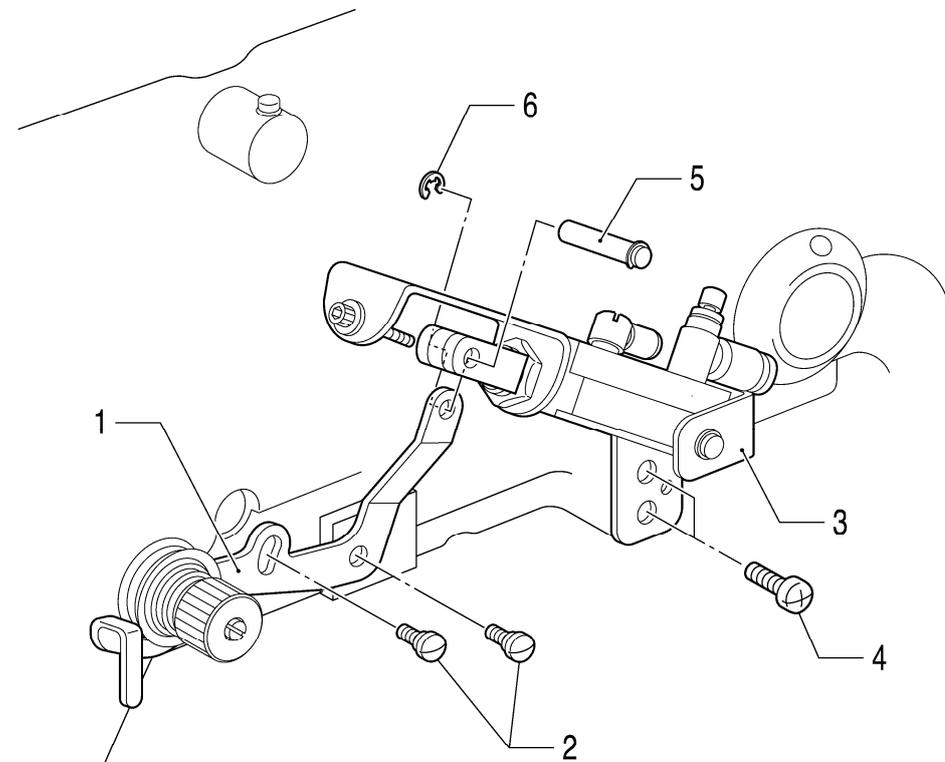
\* Move the solenoid joint and check that the thread take-up lever operates smoothly. If it does not move smoothly, it may damage the solenoid. If the movement is not smooth, make fine adjustments to the position of the solenoid setting plate until the thread take-up lever operates smoothly.



- 1. Thread take-up lever crank
- 2. Plain washer
- 3. Retaining ring
- 4. Thread take-up lever
- 5. Shoulder screws [2 pcs]
- 6. Set screw [Temporarily tighten]
- 7. Spring washer
- 8. Plain washer
- 9. Nut
- 10. Solenoid joint
- 11. Set screws [2 pcs]
- 12. Spring
- 13. Solenoid setting plate
- 14. Screws [2 pcs]

KE-484C

3350Q

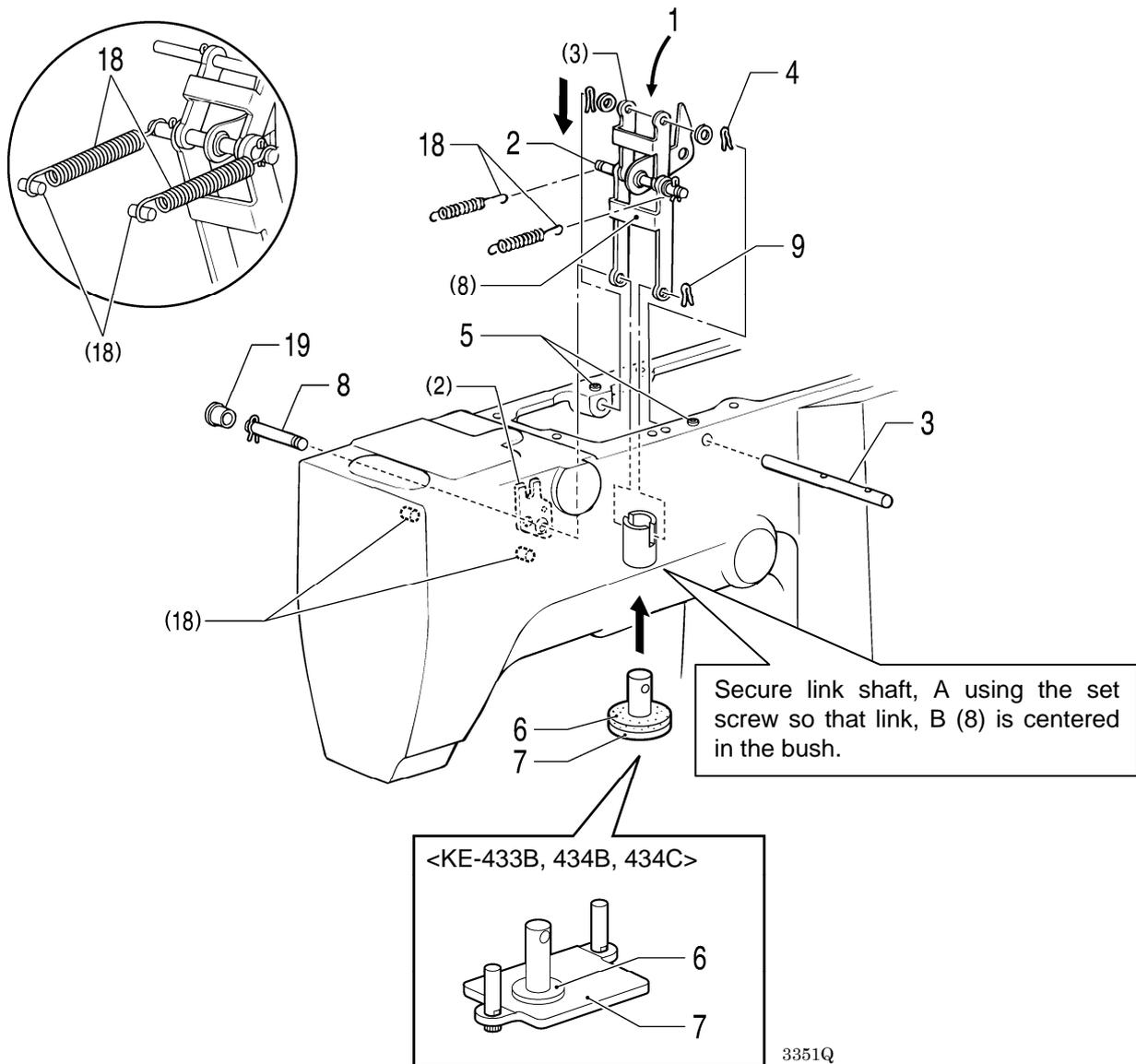


1. Thread take-up lever
2. Shoulder screws [2 pcs]
3. Setting plate
4. Screws [2 pcs]
5. Pin
6. Retaining ring

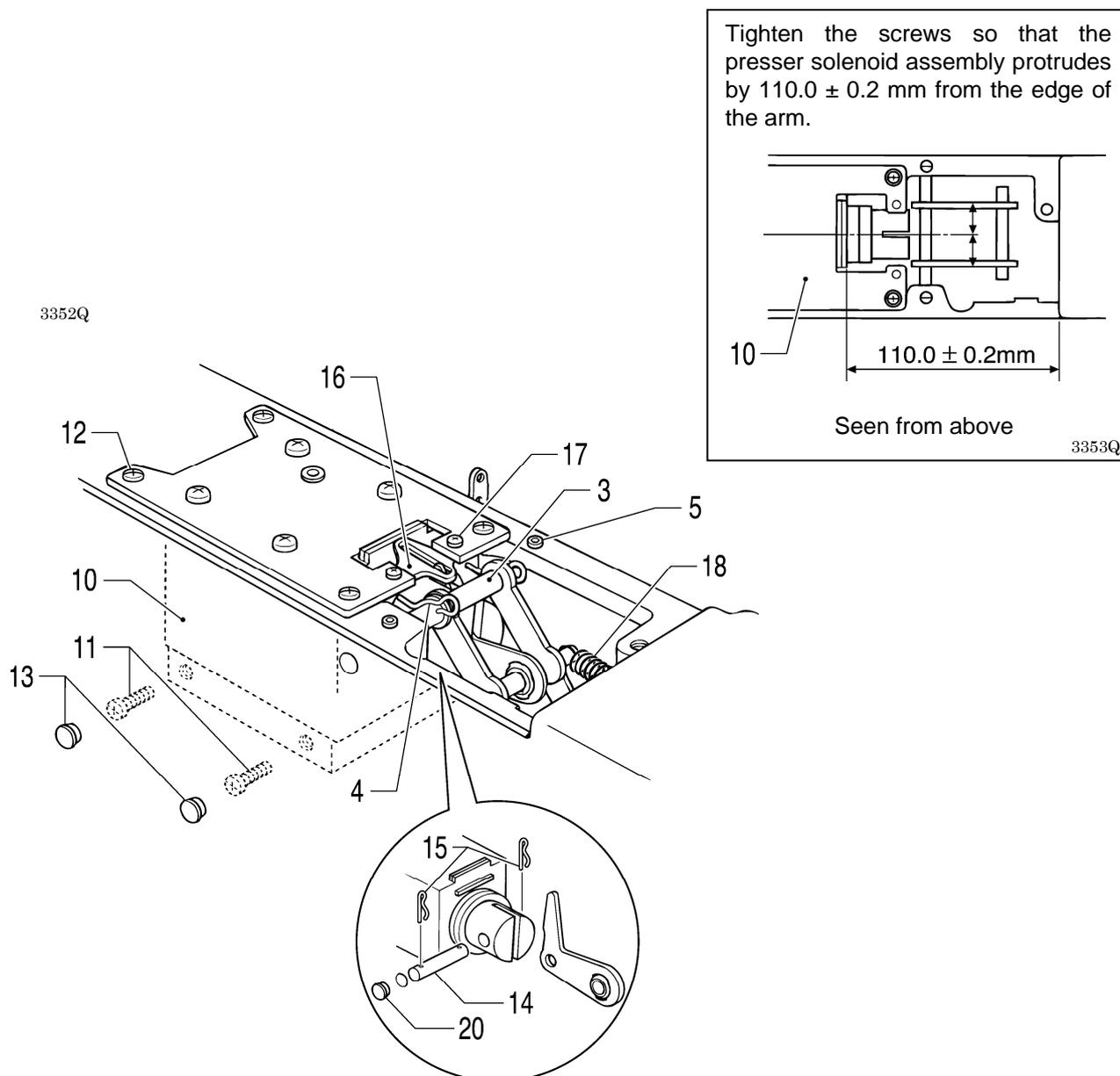
### 4 - 5 . Work clamp lifter mechanism (Solenoid specifications)

When assembling, apply grease to the required places while referring to “4-5-1. Applying grease”.

KE-430B, 431B, 433B, 434B  
KE-430C, 431C, 434C



1. Work clamp lifter link-related parts [Insert from above the arm]
2. Link shaft, B [Place into the forked section of the thread wiper driving lever (2)]
3. Link shaft, A [Pass through the washer and link A (3)]
4. Snap pins [2 pcs: Attach to both ends of link shaft A]
5. Set screws [2 pcs]
6. Work clamp lifter stopper rubber
7. Work clamp plate [Insert from below the arm]
8. Link shaft, C [Pass through link B (8) and the work clamp plate]
9. Snap pins [2 pcs: Attach to both ends of link shaft C]
10. Presser solenoid assy [Insert from above the arm]



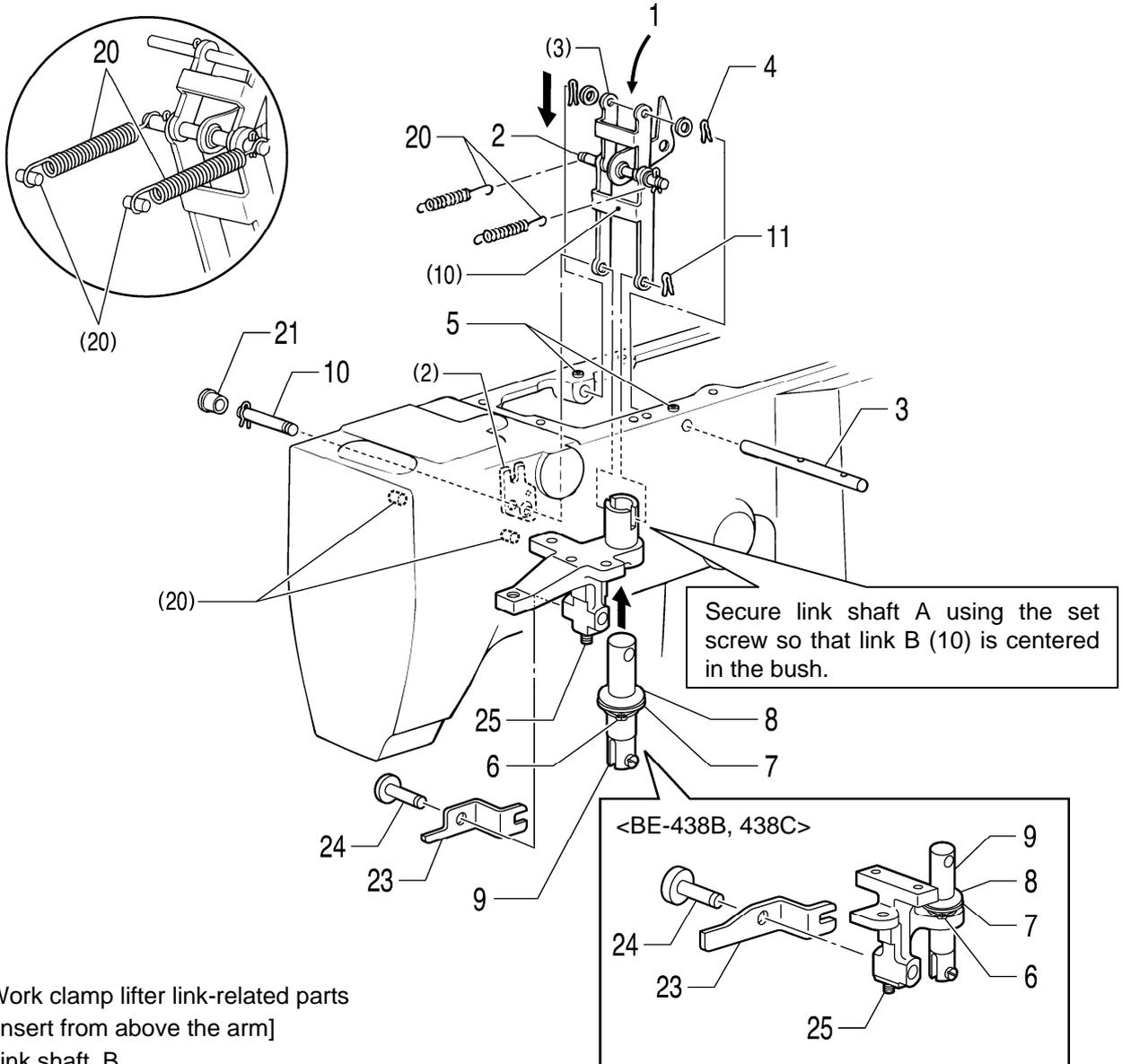
Lastly, move the work clamp lifer link-related parts by hand and check that they move smoothly.

- 11. Screws [2 pcs]
- 12. Screws [4 pcs]
- 13. Rubber caps [2 pcs]
- 14. Link shaft, D
- 15. Snap pins [2 pcs]
- 16. Guide
- 17. Screws [2 pcs]
- 18. Springs [2 pcs: Hook onto link shaft B and the grooved pins (18)]
- 19. Oil cap
- 20. Rubber cap

## 4. ASSEMBLY

When assembling, apply grease to the required places while referring to “4-5-1. Applying grease”.

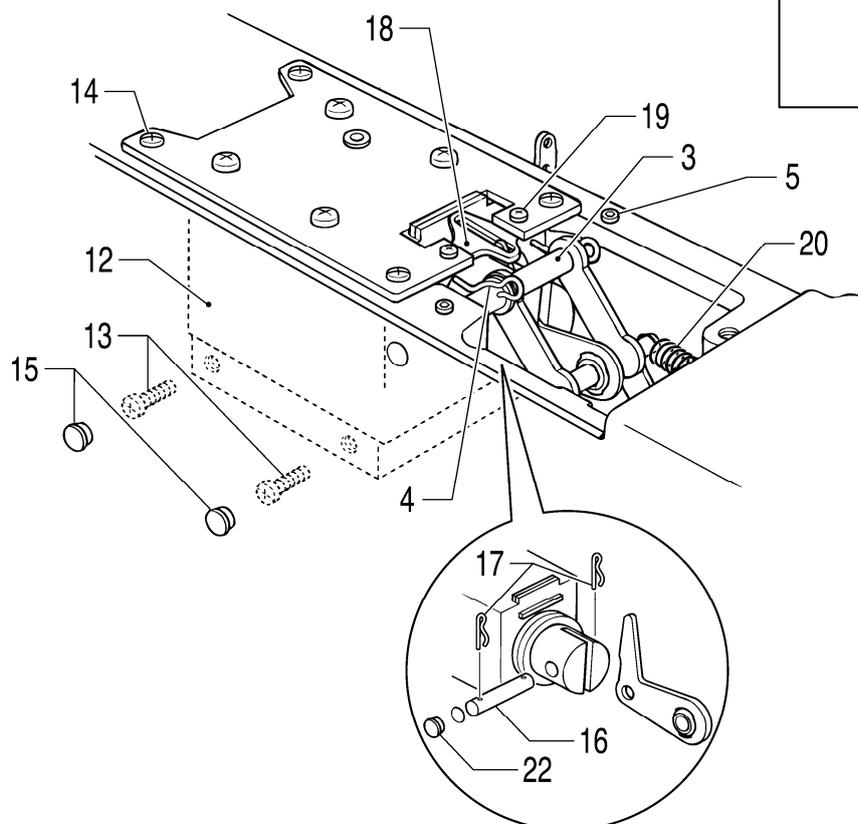
KE-432B, 432C  
BE-438B, 438C



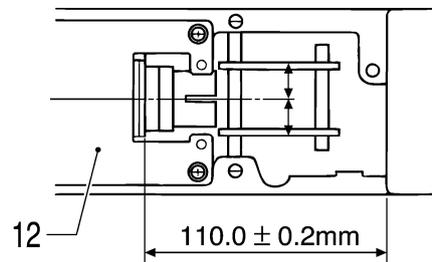
1. Work clamp lifter link-related parts  
[Insert from above the arm]
2. Link shaft, B  
[Place into the forked section of the thread wiper driving lever (2)]
3. Link shaft, A [Pass through the washer and link A (3)]
4. Snap pins [2 pcs: Attach to both ends of link shaft A]
5. Set screws [2 pcs]
6. Retaining ring
7. Plain washer
8. Rubber band
9. Work clamp lifting rod
10. Link shaft, C [Pass through link B (10) and the work clamp plate]
11. Snap pins [2 pcs: Attach to both ends of link shaft C]
12. Presser solenoid assy [Insert from above the arm]
13. Screws [2 pcs]
14. Screws [4 pcs]
15. Rubber caps [2 pcs]

3354Q

3355Q



Tighten the screws so that the presser solenoid assembly protrudes by  $110.0 \pm 0.2$  mm from the edge of the arm.



Seen from above

3356Q

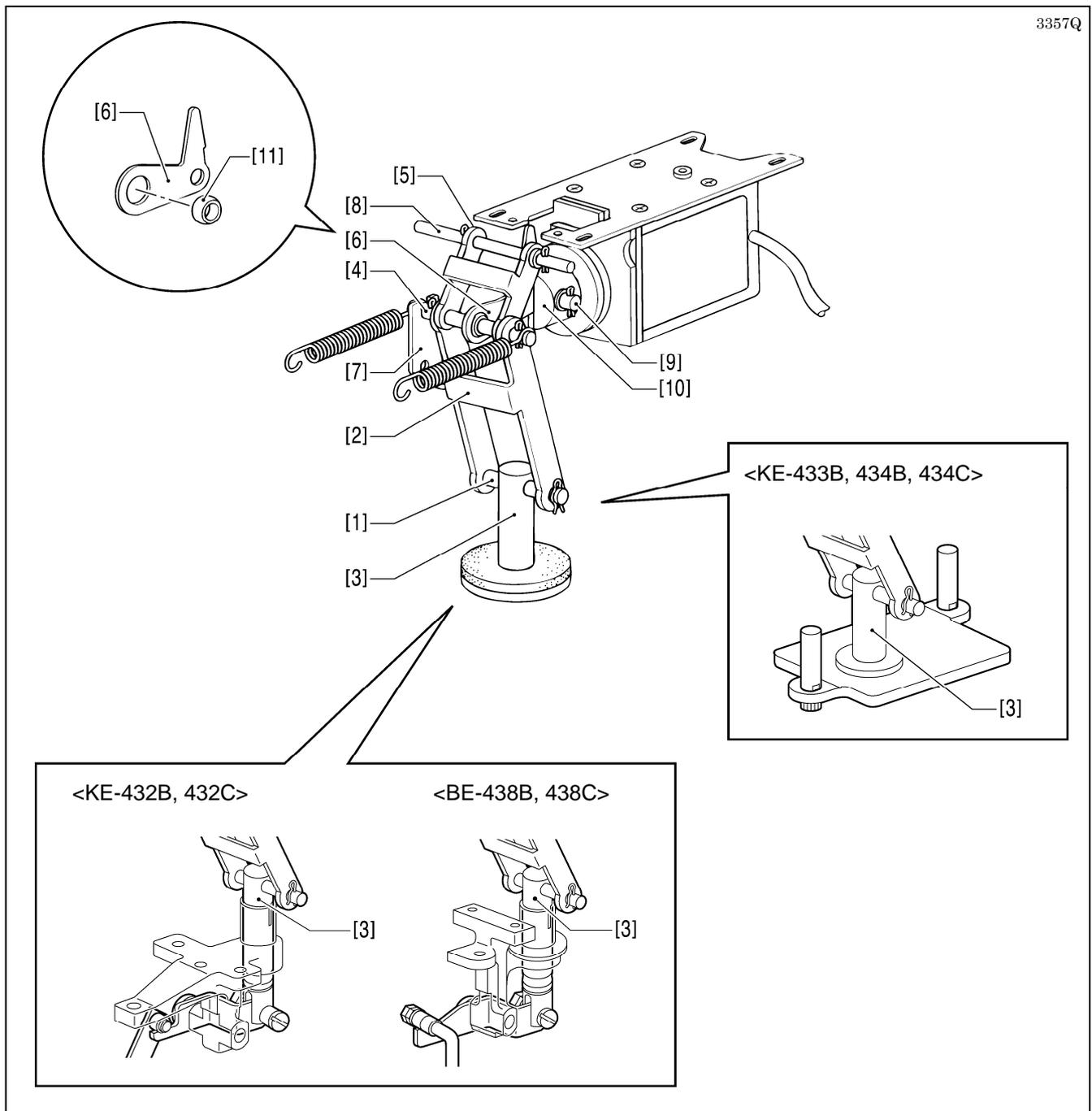
Lastly, move the work clamp lifer link-related parts by hand and check that they move smoothly.

- 16. Link shaft, D
- 17. Snap pins [2 pcs]
- 18. Guide
- 19. Screws [2 pcs]
- 20. Springs [2 pcs: Hook onto link shaft B and the grooved pins (20)]
- 21. Oil cap
- 22. Rubber cap
- 23. Work clamp lifer lever [KE-432B, 432C]  
Button clamp lifting lever [BE-438B, 438C]
- 24. Button clamp lever shaft
- 25. Set screw

4 - 5 - 1 . Applying grease

If the work clamp does not move up and down smoothly, error E-60 may be displayed.

Check that the mechanism moves smoothly and also apply grease to all sliding parts during assembly.



3357Q

1. Sliding portions of link shaft, C [1], link, B [2], and work clamp plate (work clamp lifting rod: KE-432B, 432C, BE-438B, 438C) [3]
2. Sliding portions of link shaft, B [4], link, B [2], link, A [5] and link assy, C [6]
3. Forked portion of the thread wiper driving lever [7]
4. Sliding portions of link shaft, A [8] and link, A [5]
5. Sliding portions of link shaft, D [9] and link assy, C [6]
6. Forked portion of the plunger [10] where link assy, C [6] is fitted
7. Outer and inner surfaces of spherical bush [11] to be attached to link assy, C [6]
8. Shaft of work clamp plate (work clamp lifting rod: KE-432B/432C, BE-438B/438C) [3]

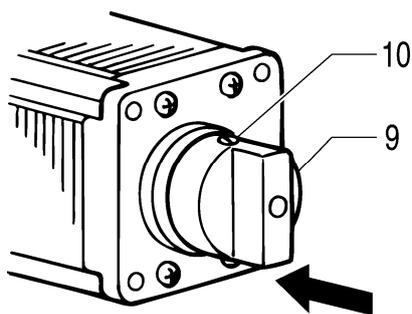
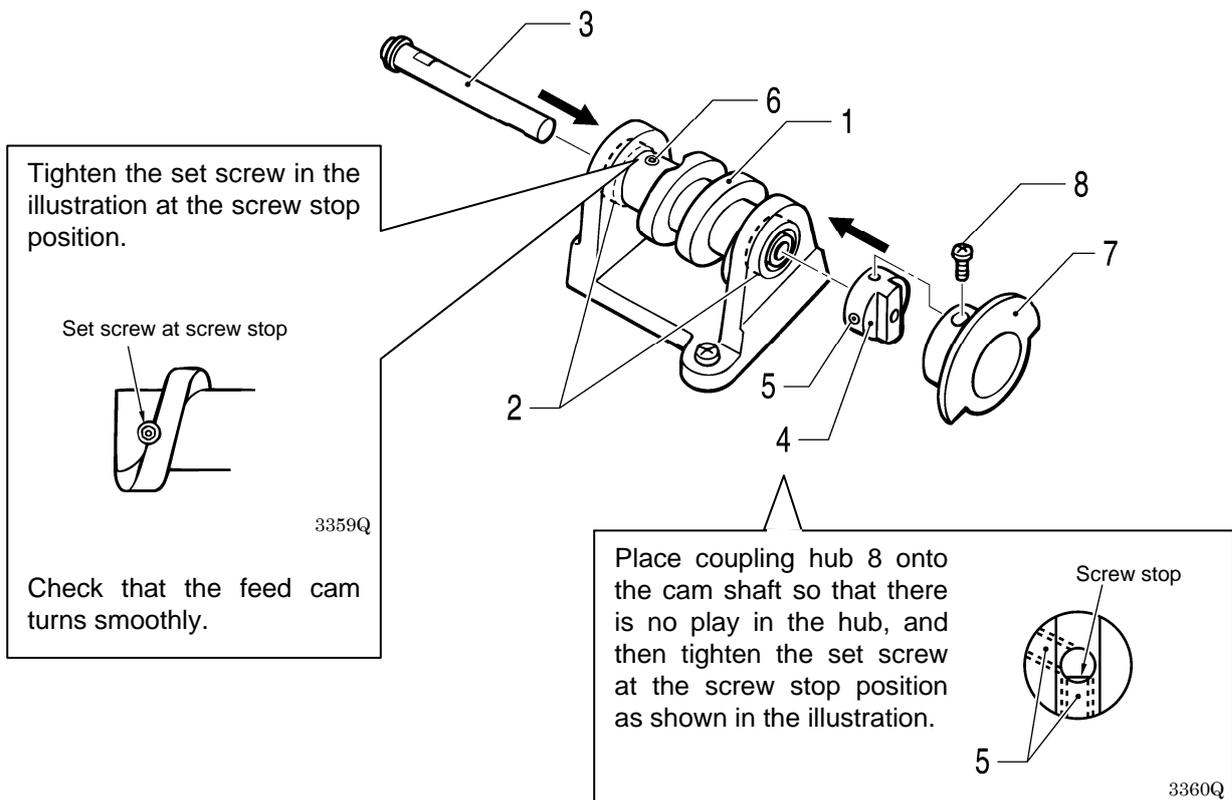
### 4 - 6 . Feed mechanism (1)

KE-430B, 431B, 432B, 433B, BE-438B  
 KE-430C, 431C, 432C, BE-438C

Feed cams X and Y both have index marks. Check these when using.

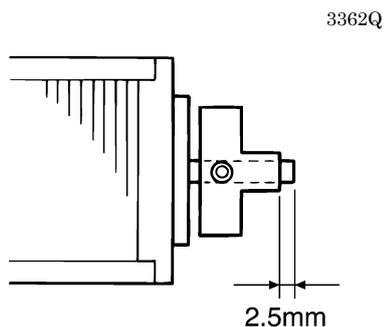
Assembly steps of the feed mechanism are the same for X and Y directions.

3358Q



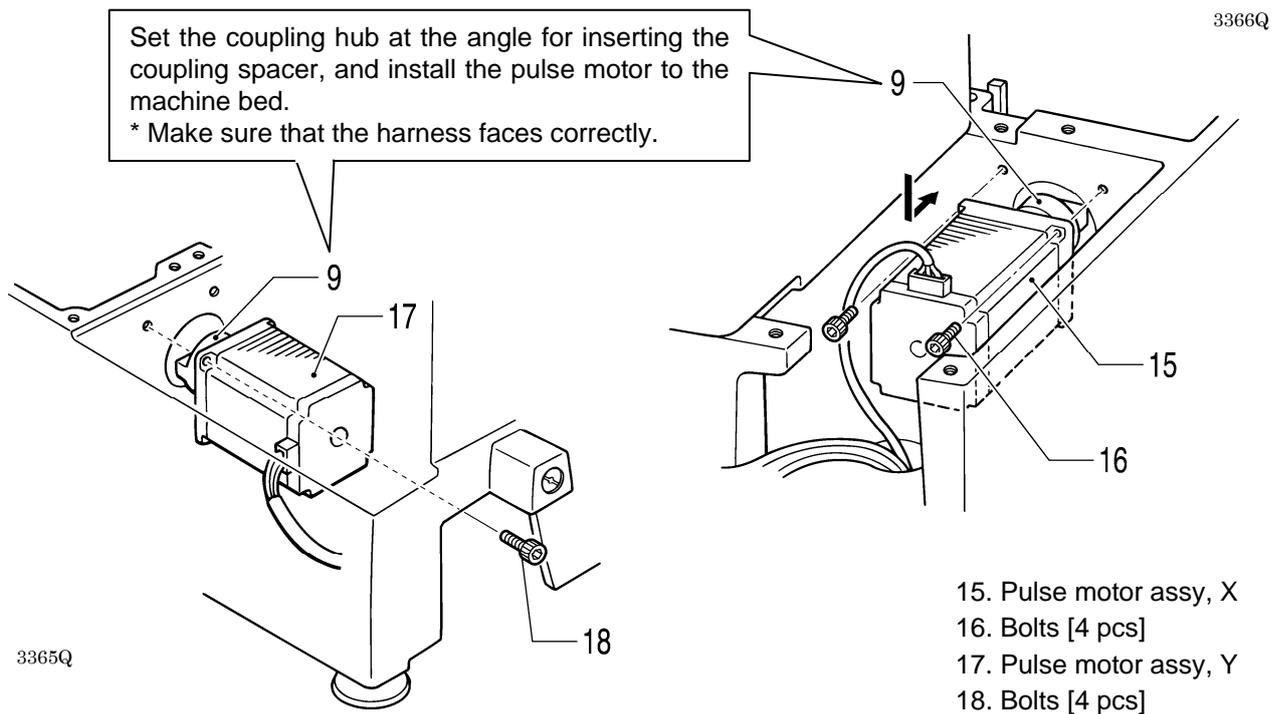
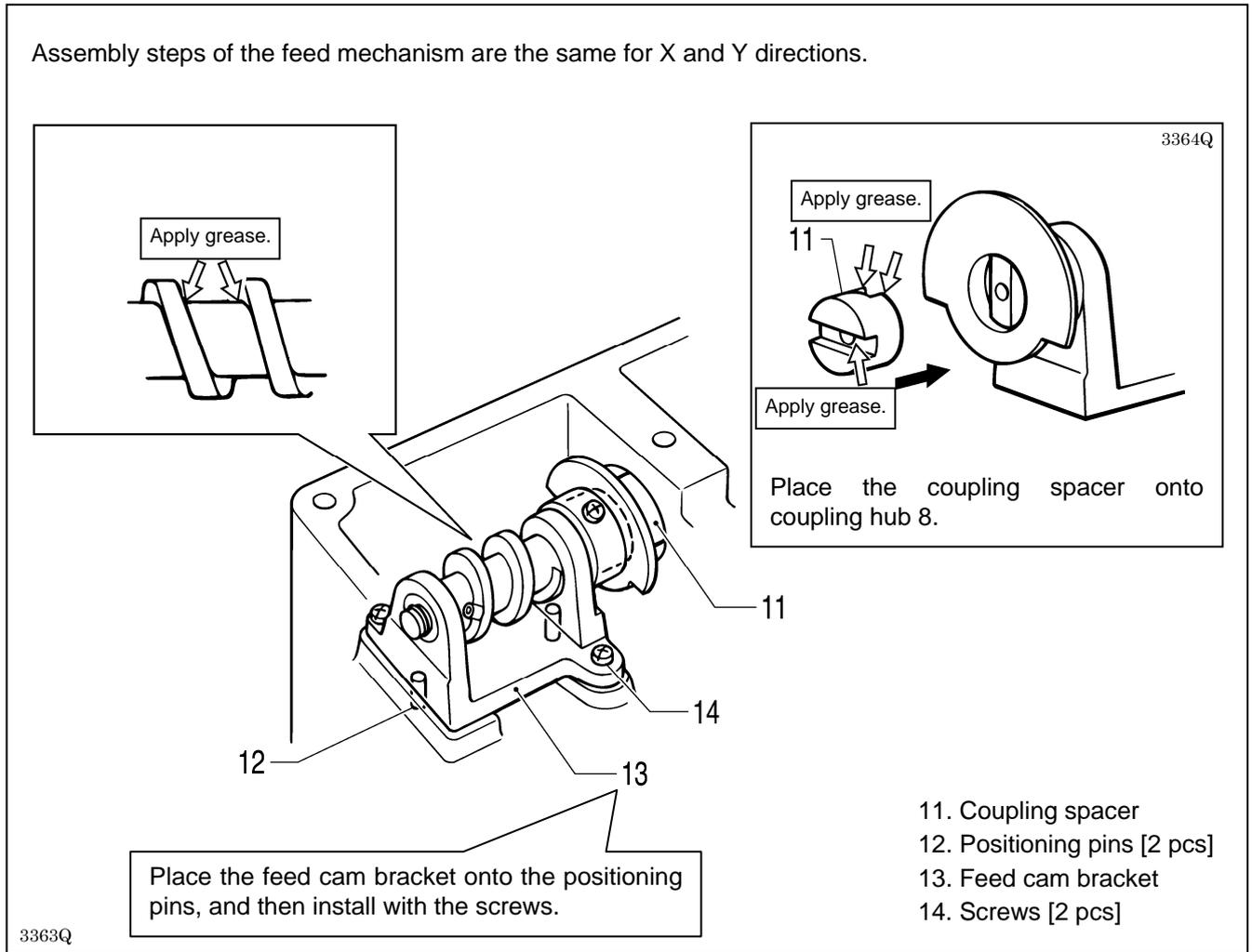
3361Q

Place the coupling hub onto the pulse motor shaft, and then tighten the set screw at the screw stop position so that the pulse motor shaft protrudes from the edge by 2.5 mm.



- 1. Feed cam
- 2. Ball bearings [2 pcs]
- 3. Cam shaft (with retaining ring)
- 4. Coupling hub, 8
- 5. Set screws [2 pcs]
- 6. Set screws [2 pcs]
- 7. Feed home position dog
- 8. Screw [Provisionally tighten at middle of slot]
- 9. Coupling hub, 6.35  
Coupling hub, 8 [KE-433B]
- 10. Set screws [2 pcs]

Assembly steps of the feed mechanism are the same for X and Y directions.



KE-434B, 435B, 436B  
 KE-434C, 435C, 436C, 484C

Feed cams X and Y both have index marks. Check these when using.

Assembly steps of the feed mechanism are the same for X and Y directions. 3367Q

Align the edges of coupling hub 8 and the cam shaft. 3368Q

X direction

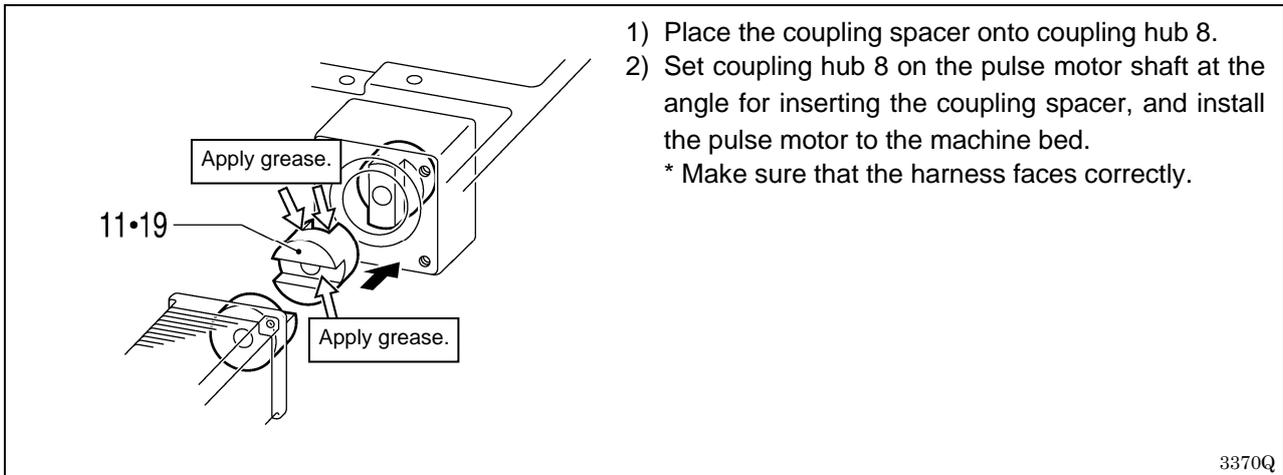
Place the cam onto the cam shaft so that there is no play in the cam, and then tighten the set screws.

Y direction

Place the coupling hub 8 onto the pulse motor shaft, and then tighten the set screw at the screw stop position so that the pulse motor shaft protrudes from the edge by 2.5 mm. 3362Q

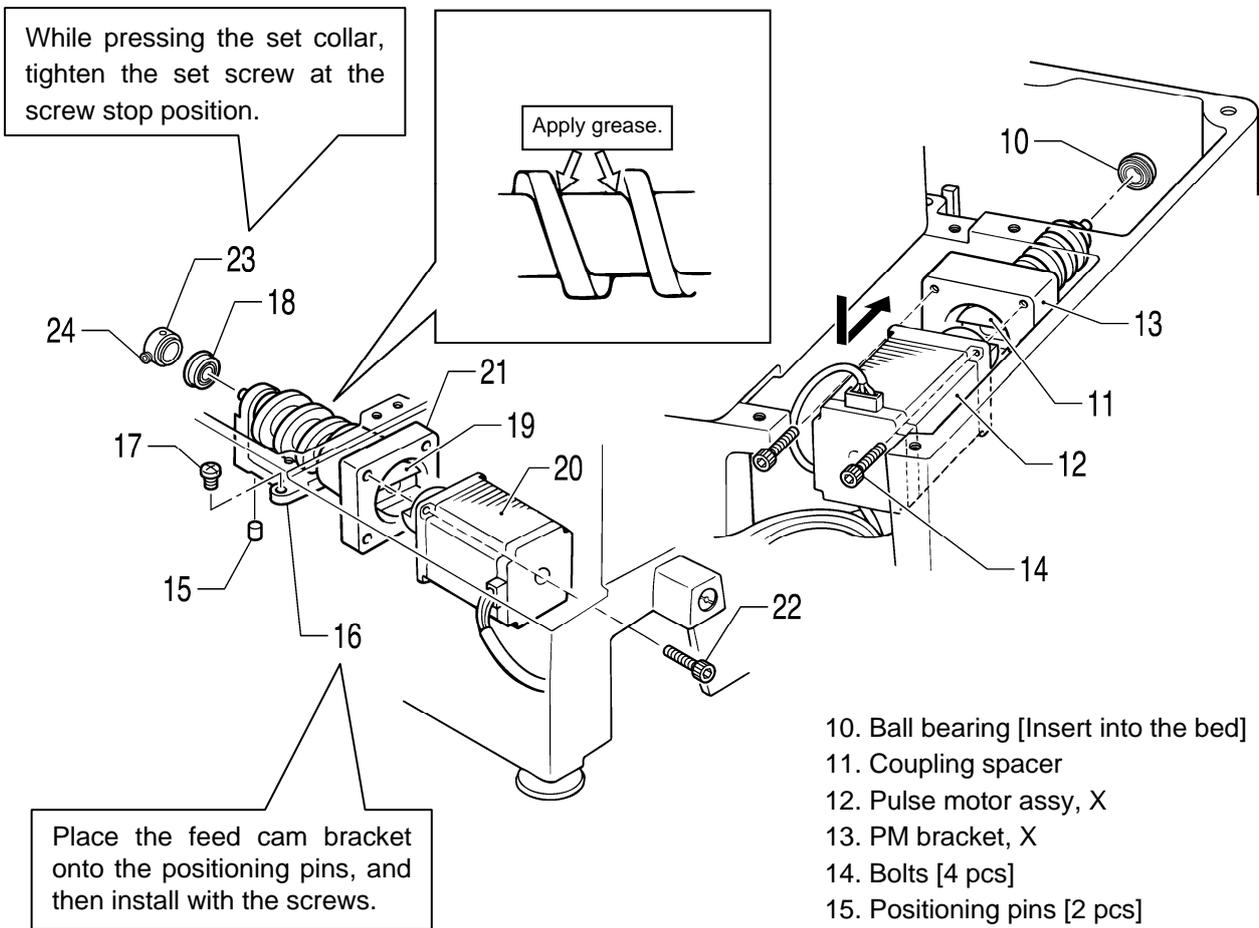
1. Coupling hub, 8  
 2. Set screws [2 pcs]  
 3. PM bracket  
 4. Ball bearing [X: 2 pcs, Y: 1 pc]  
 5. Cam shaft  
 6. Feed cam  
 7. Set screws [2 pcs]  
 8. Coupling hub, 8  
 9. Set screws [2 pcs]

2.5mm



- 1) Place the coupling spacer onto coupling hub 8.
  - 2) Set coupling hub 8 on the pulse motor shaft at the angle for inserting the coupling spacer, and install the pulse motor to the machine bed.
- \* Make sure that the harness faces correctly.

3370Q



While pressing the set collar, tighten the set screw at the screw stop position.

Apply grease.

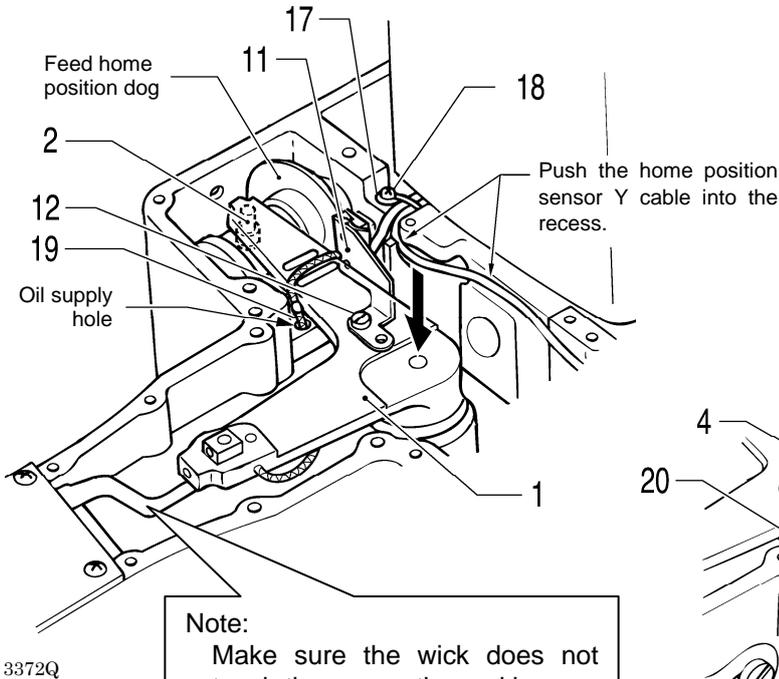
Place the feed cam bracket onto the positioning pins, and then install with the screws.

- 10. Ball bearing [Insert into the bed]
- 11. Coupling spacer
- 12. Pulse motor assy, X
- 13. PM bracket, X
- 14. Bolts [4 pcs]
- 15. Positioning pins [2 pcs]
- 16. Y-feed cam bracket
- 17. Screws [2 pcs]
- 18. Ball bearing
- 19. Coupling spacer
- 20. Pulse motor assy, Y
- 21. PM bracket, Y
- 22. Bolts [4 pcs: 3 pcs for KE-484C]
- 23. Set screw collar
- 24. Set screws [2 pcs]

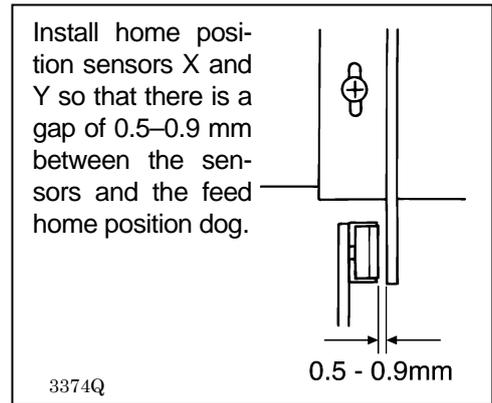
3371Q

4 - 7 . Feed mechanism (2)

KE-430B, 431B, 432B, 433B, BE-438B  
KE-430C, 431C, 432C, BE-438C



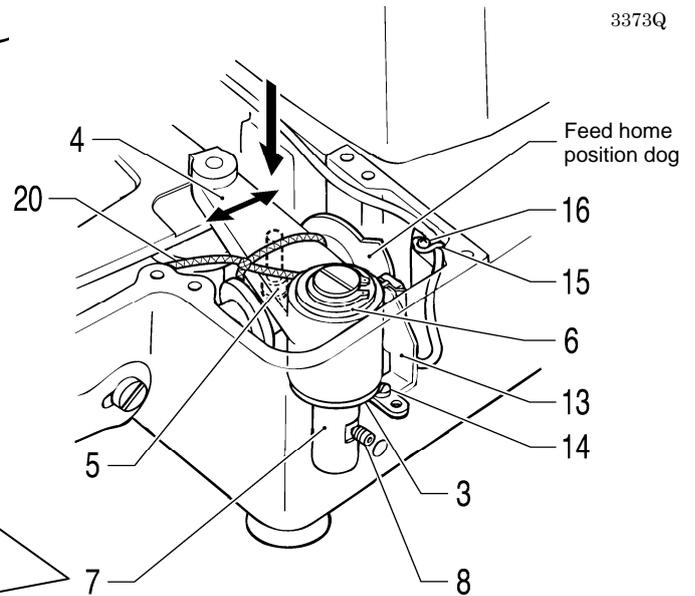
3372Q



3374Q

0.5 - 0.9mm

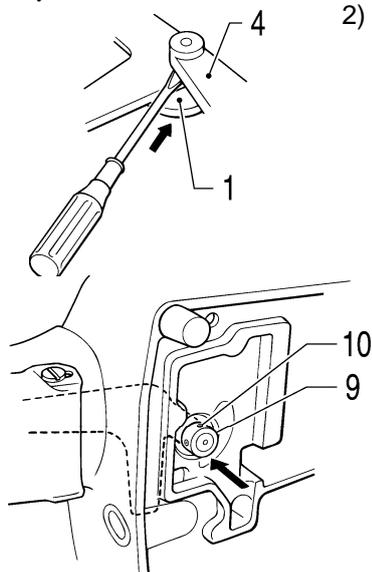
3373Q



1) Insert the tack width feed lever shaft with the thrust washer and retaining ring installed into the Y-feed lever assembly, press down on the top of it so that there is no play, and then tighten the set screw at the screw stop position.  
\* Check that the Y-feed lever assembly moves smoothly.

- 1. X-feed lever assy [Insert onto bushing]
- 2. Feed cam roller  
[Place into groove of feed cam X]
- 3. Thrust washer
- 4. Y-feed lever assy
- 5. Feed cam roller  
[Place into groove of feed cam Y]
- 6. Thrust washer
- 7. Tack width feed lever shaft (with retaining ring)
- 8. Set screw
- 9. Set screw collar
- 10. Set screws [2 pcs]
- 11. Home sensor setting plate
- 12. Screw
- 13. Home sensor setting plate
- 14. Screw
- 15. Cord holder
- 16. Screw
- 17. Cord holder
- 18. Screw
- 19. Wick [Insert into oil supply hole]
- 20. Wick [Insert into oil supply hole]

3375Q

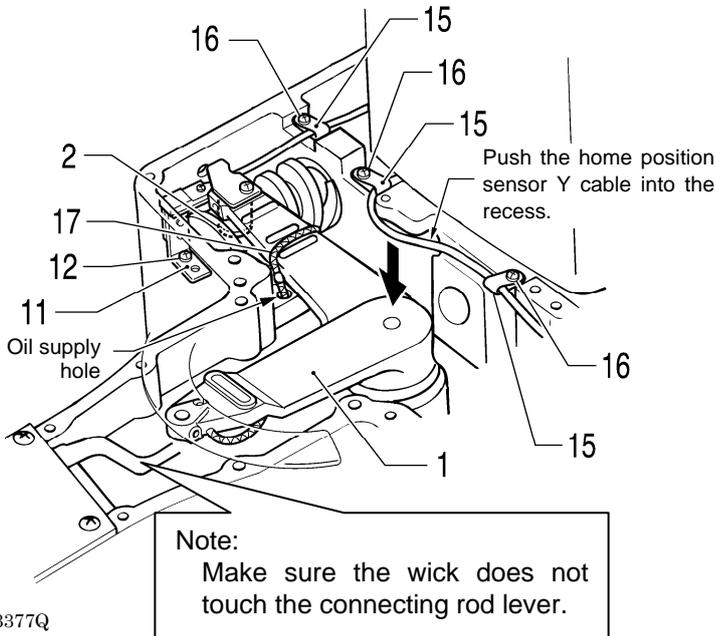


3376Q

- 2) Put the driver into the end of the Y-feed lever, and press the X-feed lever assy downward.
- 3) Place the set screw collar on the shaft of the X-feed lever, press it in the direction of the arrow, and tighten the set screws.

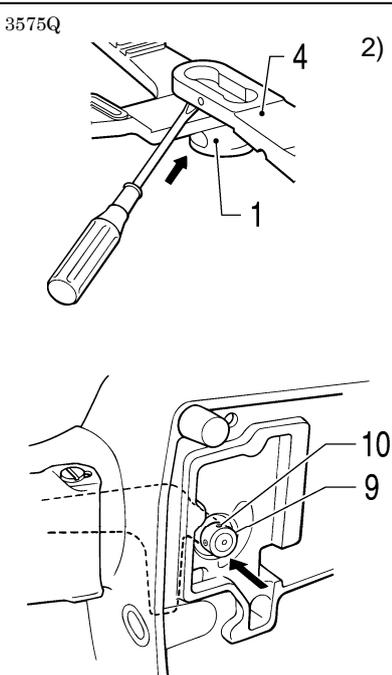
**4. ASSEMBLY**

KE-434B, 435B, 436B  
KE-434C, 435C, 436C, 484C



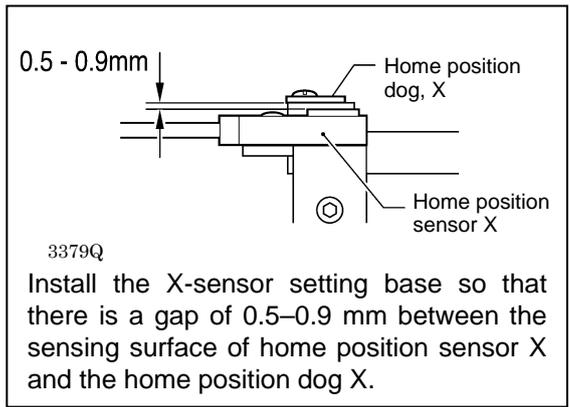
3377Q

- 1) Insert the tack width feed lever shaft with the thrust washer and retaining ring installed into the Y-feed lever assembly, press down on the top of it so that there is no play, and then tighten the set screw at the screw stop position.  
\* Check that the Y-feed lever assembly moves smoothly.



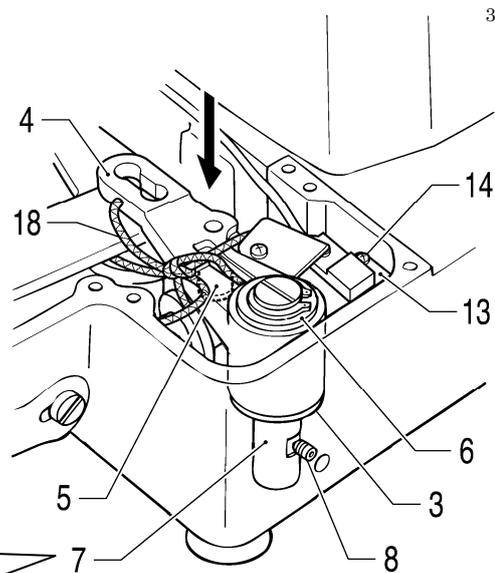
3376Q

- 2) Put the driver into the end of the Y-feed lever, and press the X-feed lever assembly downward.
- 3) Place the set screw collar on the shaft of the X-feed lever, press it in the direction of the arrow, and tighten the set screws.



3379Q

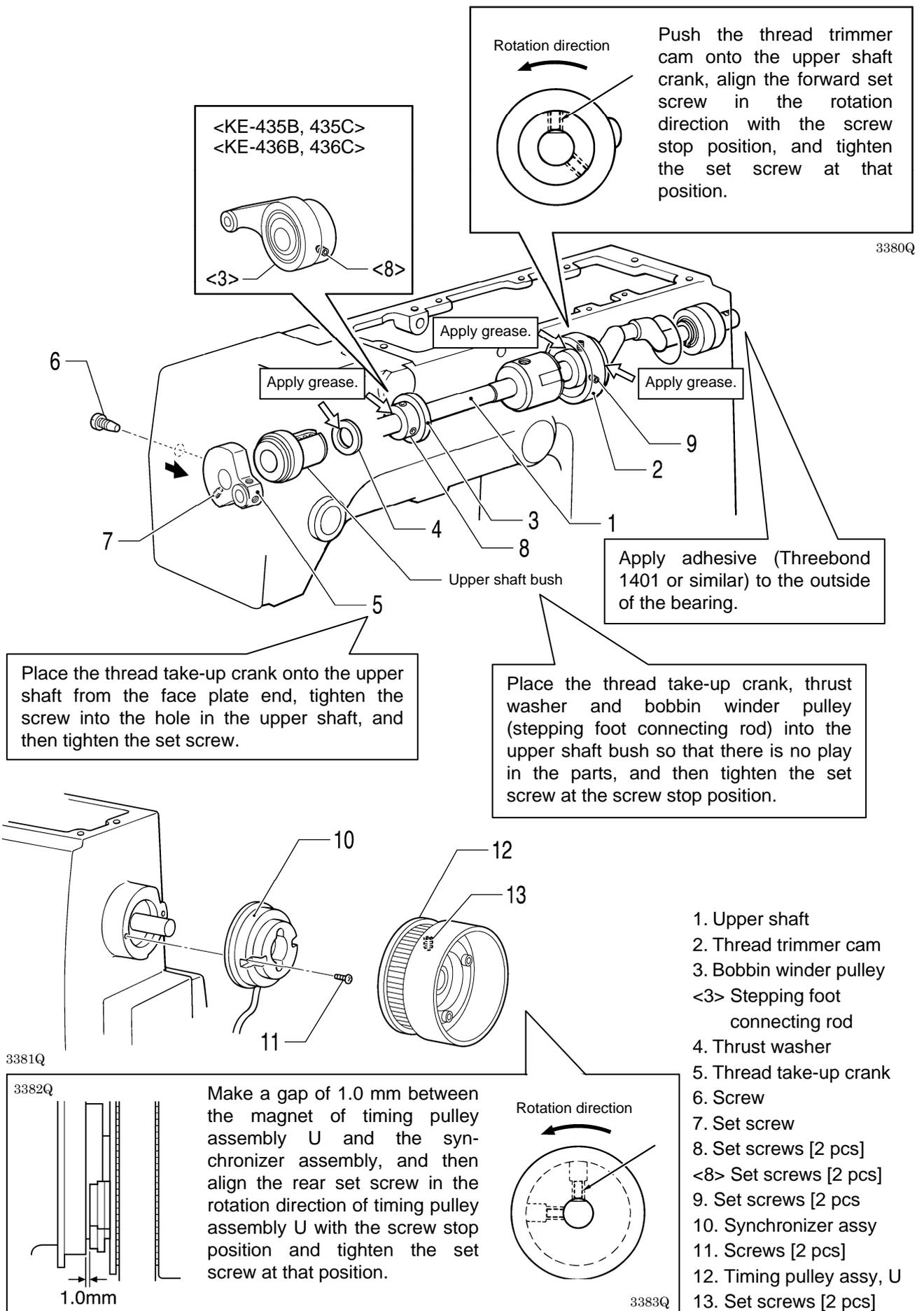
Install the X-sensor setting base so that there is a gap of 0.5–0.9 mm between the sensing surface of home position sensor X and the home position dog X.



3378Q

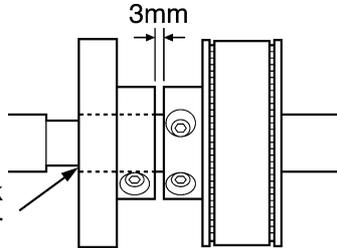
1. X-feed lever assy [Insert onto bushing]
2. Feed cam roller  
[Place into groove of feed cam X]
3. Thrust washer
4. Y-feed lever assy
5. Feed cam roller  
[Place into groove of feed cam Y]
6. Thrust washer
7. Tack width feed lever shaft (with retaining ring)
8. Set screw
9. Set screw collar
10. Set screws [2 pcs]
11. X-sensor setting base
12. Screw
13. Y-sensor setting plate
14. Screw
15. Cord clamps [3 pcs]
16. Screws [3 pcs]
17. Wick [Insert into oil supply hole]
18. Wick [Insert into oil supply hole]

4 - 8 . Upper shaft mechanism



KE-484C

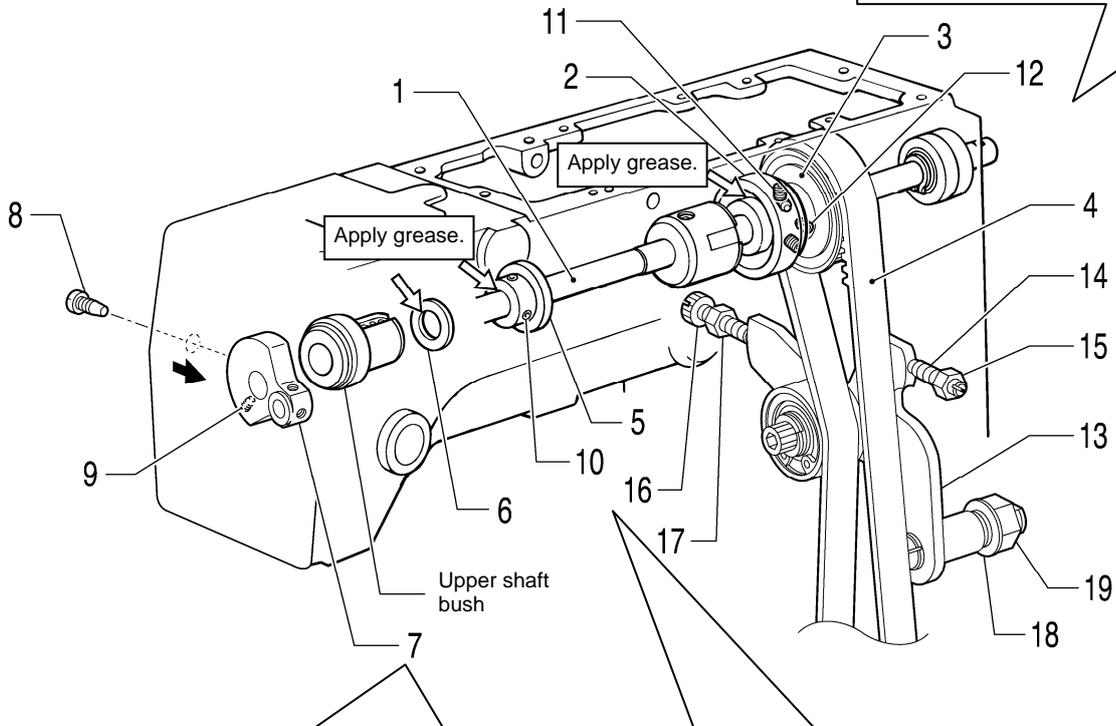
Make a gap of 3 mm between the thread trimmer cam and U-timing pulley F.



Align the ridge line at the back of the groove in the upper shaft with the edge of the thread trimmer cam.

3384Q

Apply adhesive (Threebond 1401 or similar) to the outside of the bearing.



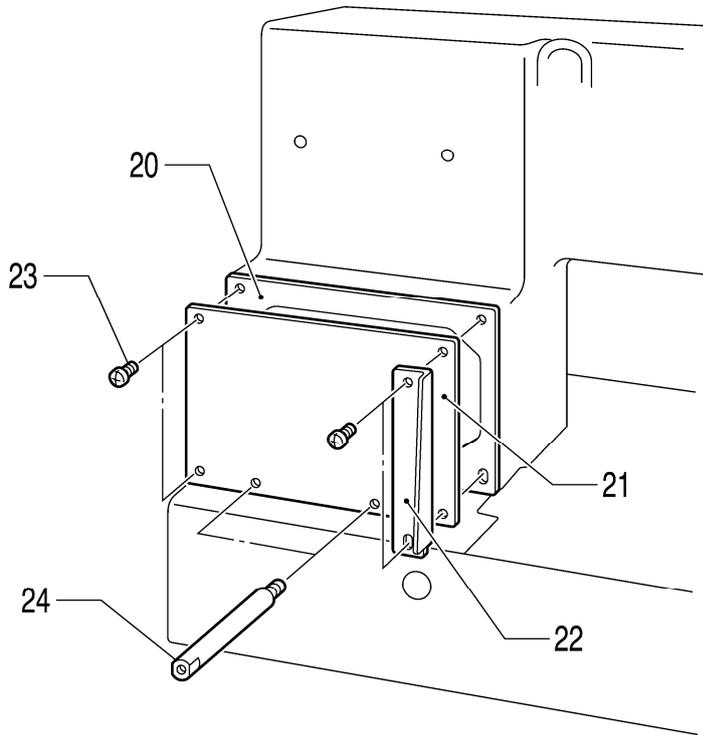
Place the thread take-up crank onto the upper shaft from the face plate end, tighten the screw into the hole in the upper shaft, and then tighten the set screw.

Place the thread take-up crank, thrust washer and bobbin winder pulley into the upper shaft bush so that there is no play in the parts, and then tighten the set screw at the screw stop position.

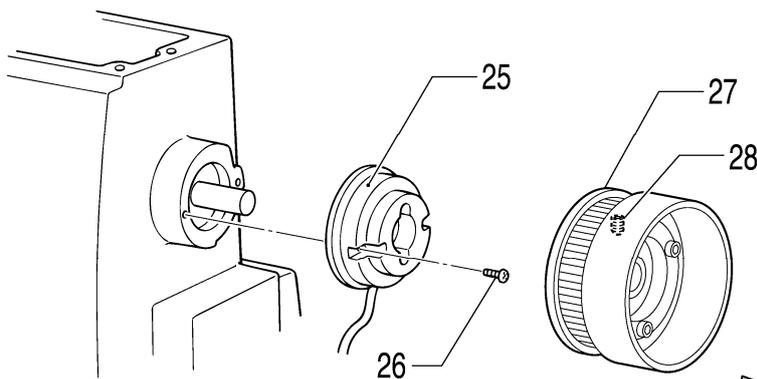
- |                         |                        |
|-------------------------|------------------------|
| 1. Upper shaft          | 11. Set screws [2 pcs] |
| 2. Thread trimmer cam   | 12. Set screws [2 pcs] |
| 3. U-timing pulley, F   | 13. Tension pulley arm |
| 4. U-timing belt, F     | 14. Adjusting screw    |
| 5. Bobbin winder pulley | 15. Nut                |
| 6. Thrust washer        | 16. Adjusting screw    |
| 7. Thread take-up crank | 17. Nut                |
| 8. Screw                | 18. Plain washer       |
| 9. Set screw            | 19. Nut                |
| 10. Set screws [2 pcs]  |                        |

3385Q

3386Q

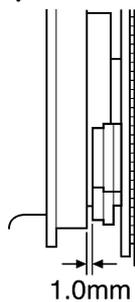


- 20. Setting plate packing
- 21. Frame side cover
- 22. Blind plate
- 23. Screws [4 pcs]
- 24. Belt cover support pillars [2 pcs]
- 25. Synchronizer assy
- 26. Screws [2 pcs]
- 27. Timing pulley assy, U
- 28. Set screws [2 pcs]

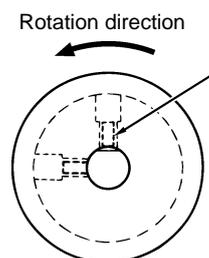


3387Q

3382Q

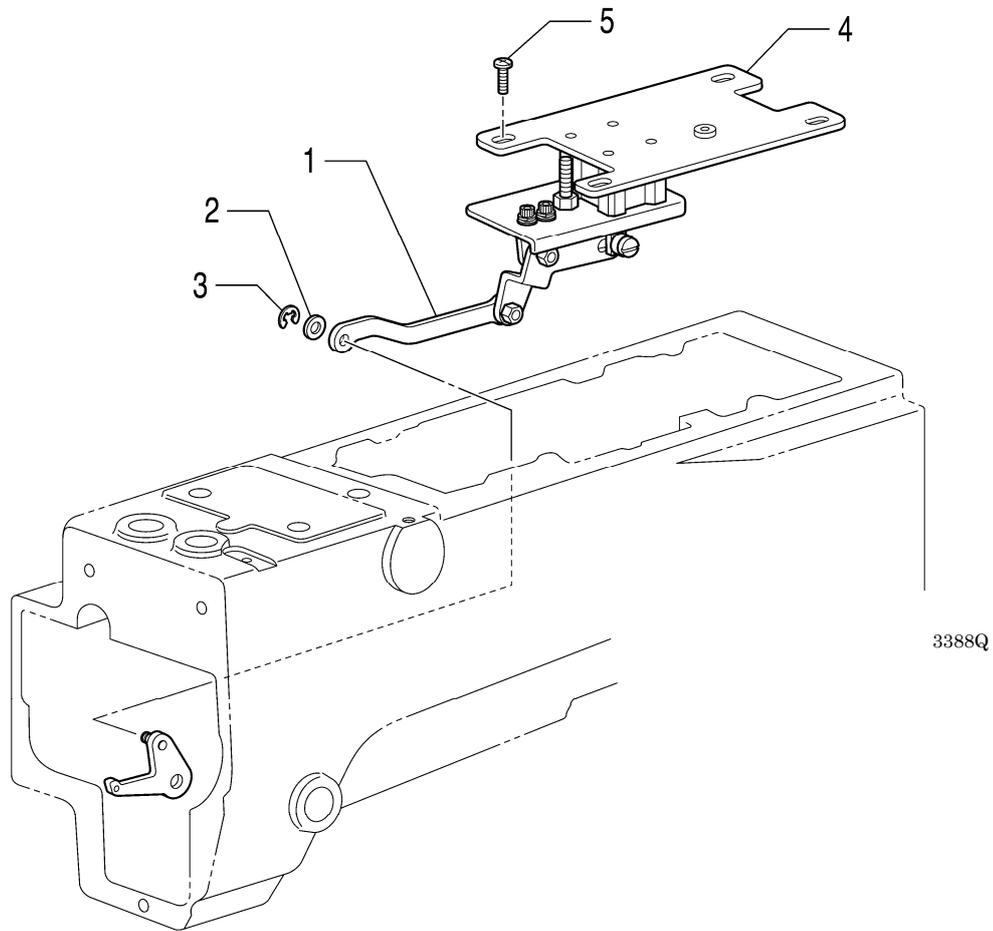


Make a gap of 1.0 mm between the magnet of timing pulley assembly U and the synchronizer assembly, and then align the rear set screw in the rotation direction of timing pulley assembly U with the screw stop position and tighten the set screw at that position.

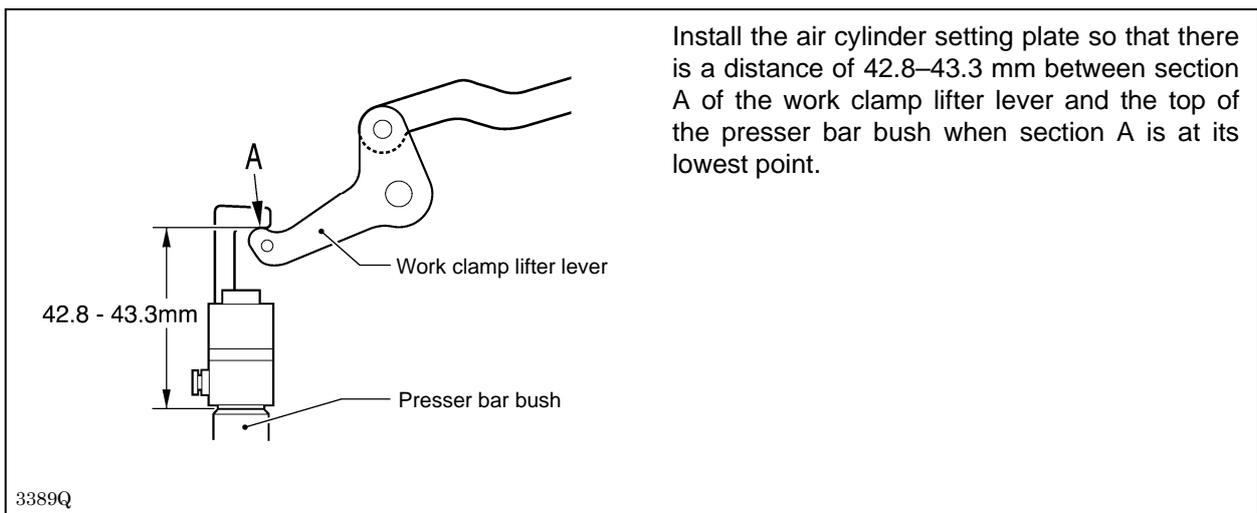


3383Q

4 - 9 . Stepping foot lifter mechanism (KE-435B, 435C, 436B, 436C)



3388Q



3389Q

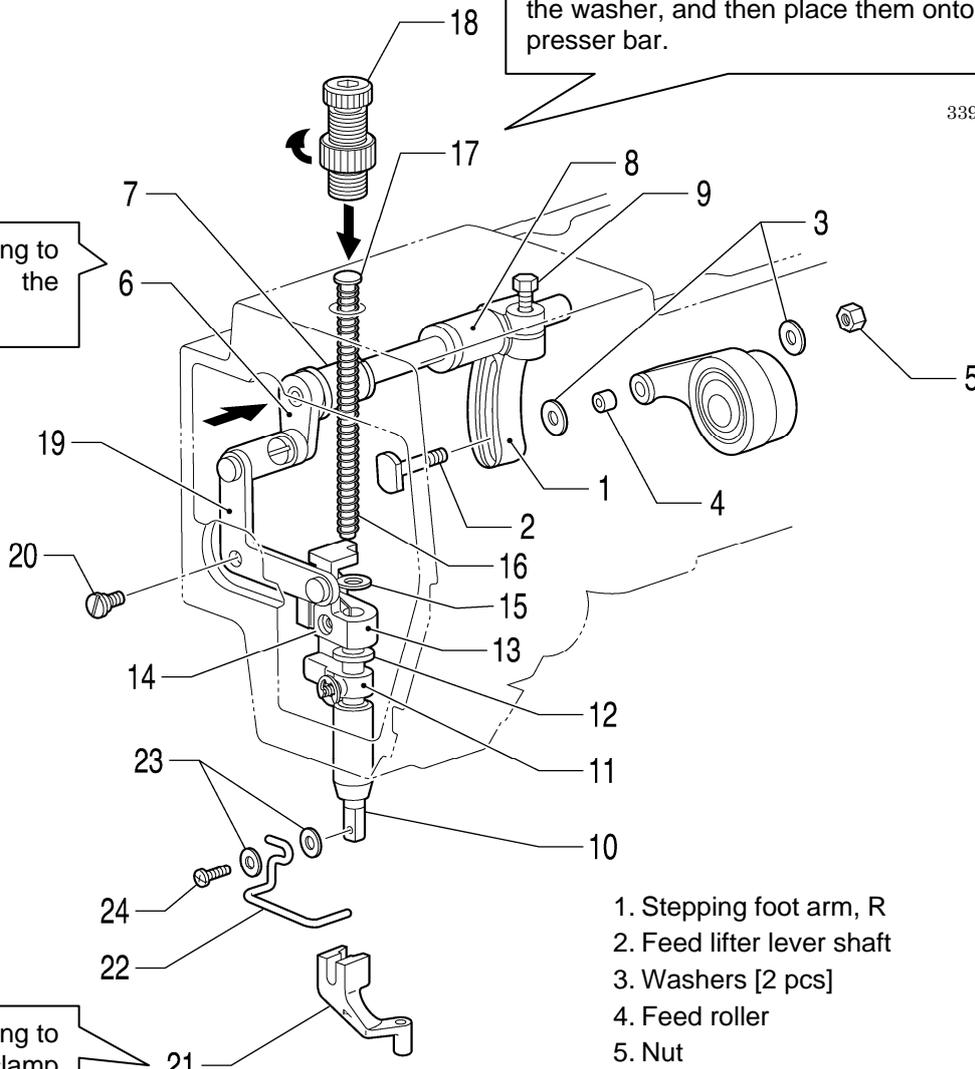
- 1. Stepping link, A
- 2. Plain washer
- 3. Retaining ring
- 4. Air cylinder setting plate
- 5. Screws [4 pcs]

4 - 1 0 . Stepping foot mechanism (KE-435B, 435C, 436B, 436C)

Insert the presser bar spring and the presser bar spring guide into the top of the machine head, pass them through the washer, and then place them onto the presser bar.

3390Q

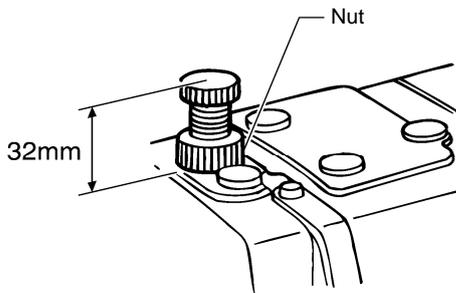
Adjust while referring to "5-16. Changing the work clamp lift".



Adjust while referring to "5-15. Work clamp adjustment".

- 1. Stepping foot arm, R
- 2. Feed lifter lever shaft
- 3. Washers [2 pcs]
- 4. Feed roller
- 5. Nut
- 6. Stepping foot arm, F
- 7. Bush, L
- 8. Bush, R
- 9. Bolt
- 10. Presser bar [Insert from above]
- 11. Presser bar lifter
- 12. Cushion
- 13. Presser bar clamp
- 14. Screw
- 15. Washer
- 16. Presser bar spring
- 17. Presser bar spring guide
- 18. Presser adjusting screw
- 19. Stepping link assy
- 20. Screws [2 pcs]
- 21. Presser foot
- 22. Finger guard
- 23. Plain washers [2 pcs]
- 24. Screw

3391Q

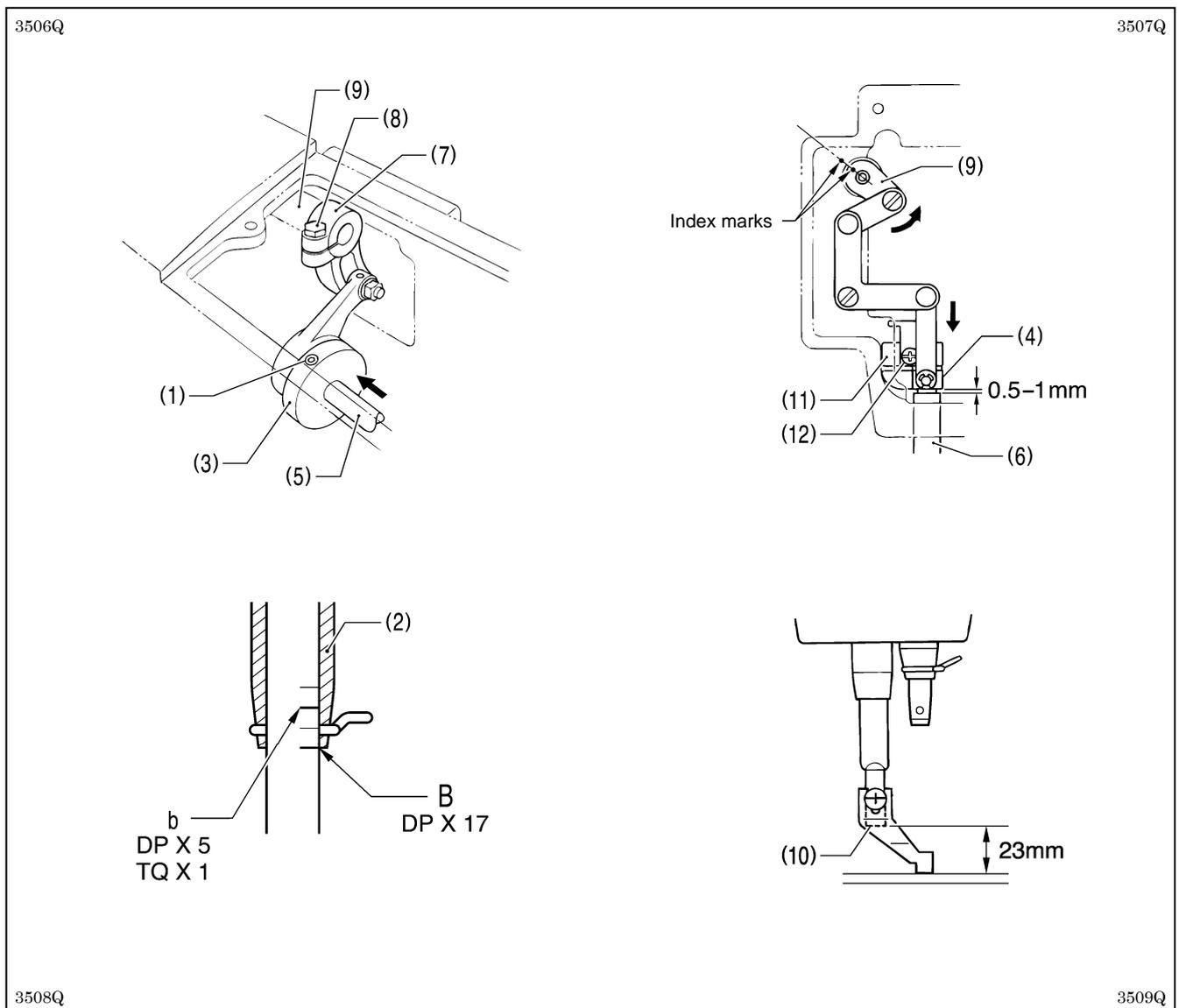


Set the presser adjusting screw so that the distance from its top to the top of the machine head is approximately 32 mm, and then secure the nut.

## 4. ASSEMBLY

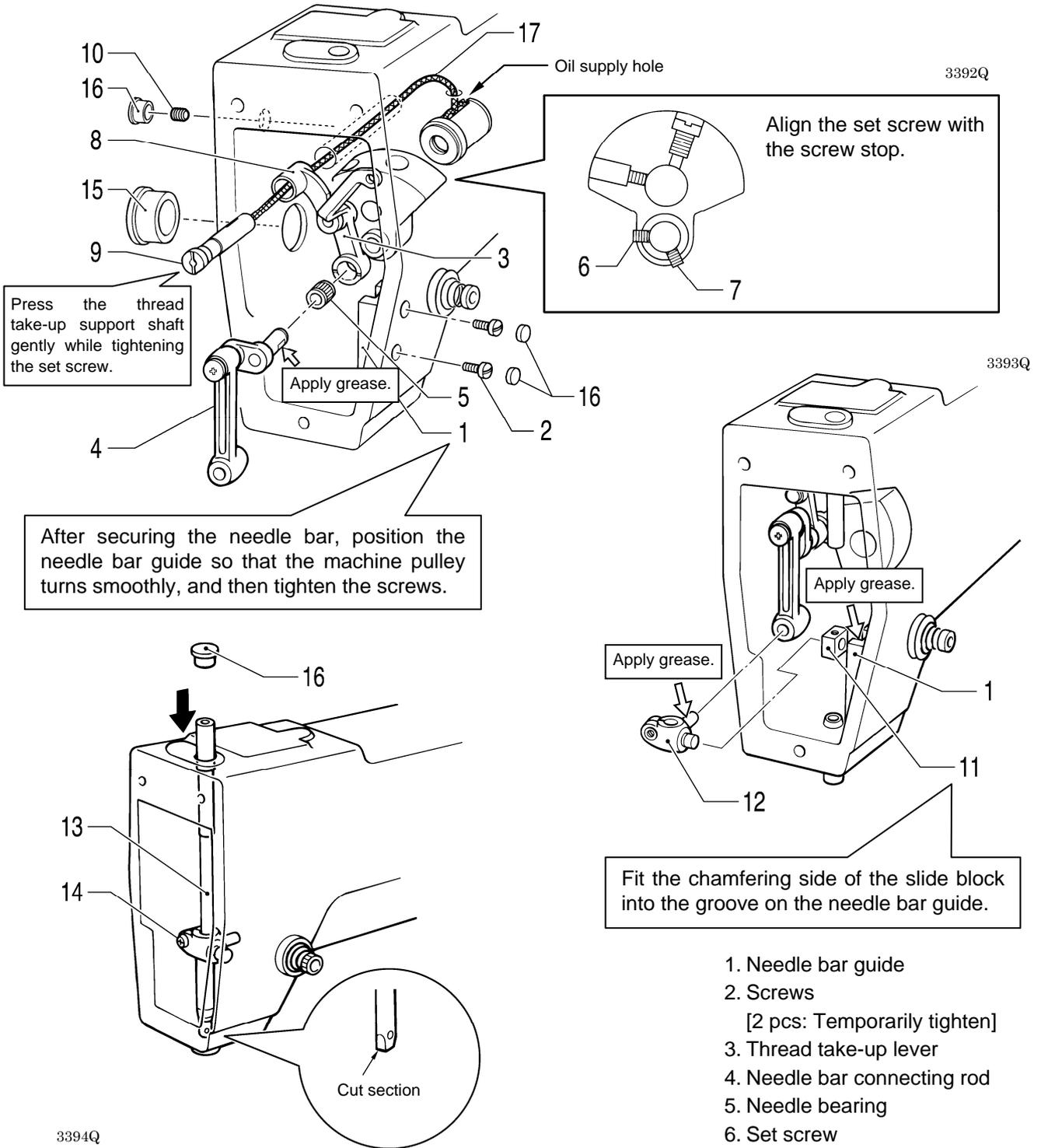
### 4-1 O-1 . Adjusting the lowest point of the presser foot

Carry out the steps in “4-11. Needle bar mechanism” before making this adjustment.

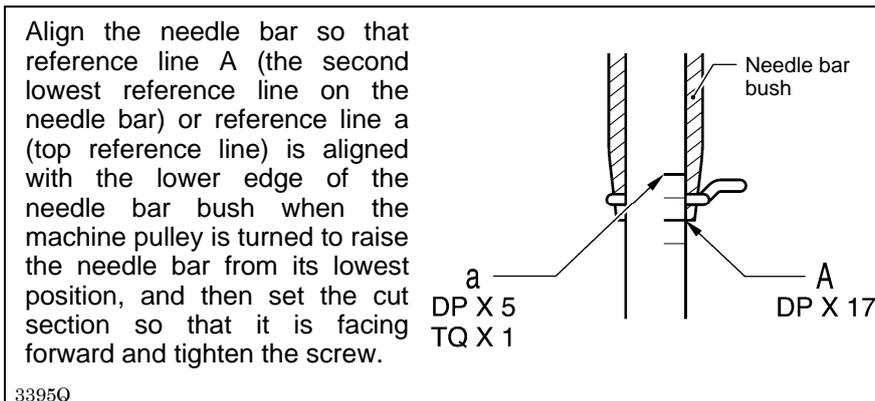


1. Loosen the set screw (1).
2. Turn the machine pulley to raise the needle bar from its lowest position until reference line B (the lowest reference line on the needle bar) or reference line b (second reference line from the top) is aligned with the lower edge of the needle bar bush (2).
3. Turn the stepping work clamp cam (3) without turning the machine pulley to set the presser bar lifter (4) to its lowest position, and then secure the stepping work clamp cam (3) to the upper shaft (5) with the set screw (1).
  - \* At this time, push the stepping work clamp cam (3) in the direction of the arrow so that there is no play between it and the upper shaft (5).
4. With the presser bar lifter (4) at its lowest point, loosen the bolt (8) of stepping work clamp arm R (7) and adjust so that the gap between the presser bar lifter (4) and the presser bar bush (6) is 0.5–1.0 mm. (A guide to this is that the index mark on stepping work clamp arm F (9) should be about aligned with the index mark on the arm.)
  - \* Check that there is no forward or backward play in stepping work clamp arm F (9) at this time.
5. With the presser bar (10) at its lowest position, secure the presser bar clamp (11) with the screw (12) so that the distance from the bottom edge of the presser bar and the top of the needle plate is 23 mm.

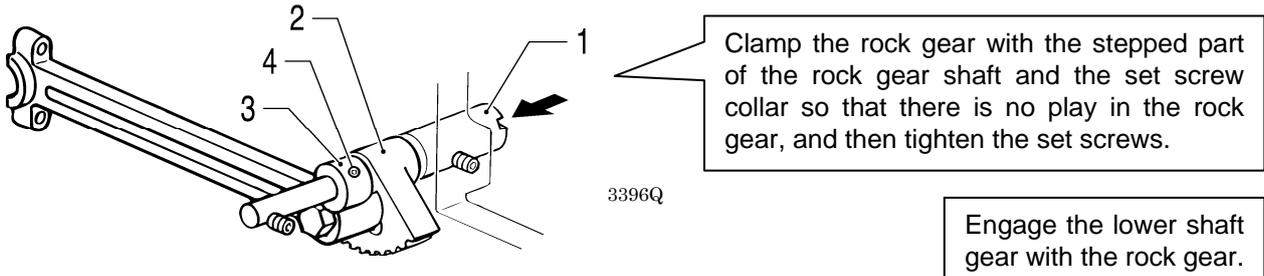
4 - 1 1 . Needle bar mechanism



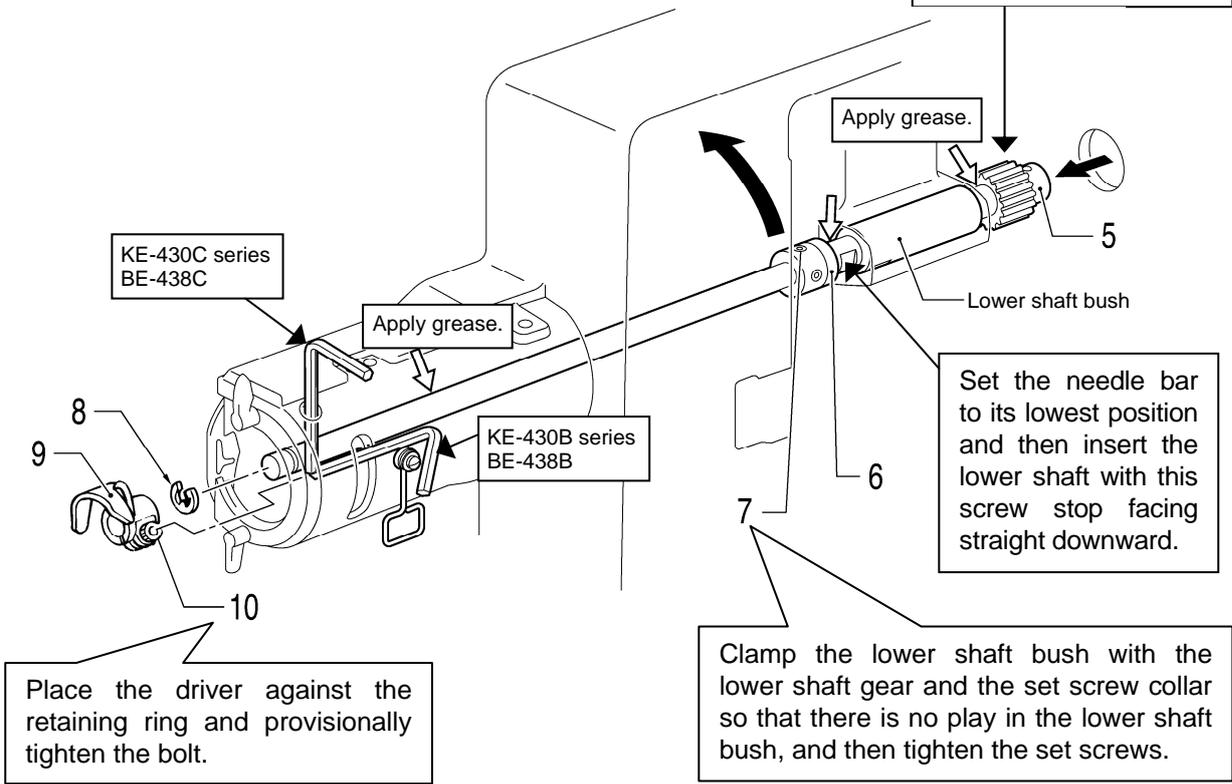
1. Needle bar guide
2. Screws  
[2 pcs: Temporarily tighten]
3. Thread take-up lever
4. Needle bar connecting rod
5. Needle bearing
6. Set screw
7. Set screw
8. Thread take-up support
9. Thread take-up support shaft
10. Set screw
11. Slide block
12. Needle bar clamp
13. Needle bar [Insert from above]
14. Screw
15. Oil cap
16. Rubber caps [4 pcs]
17. Wick [Insert into oil supply hole]



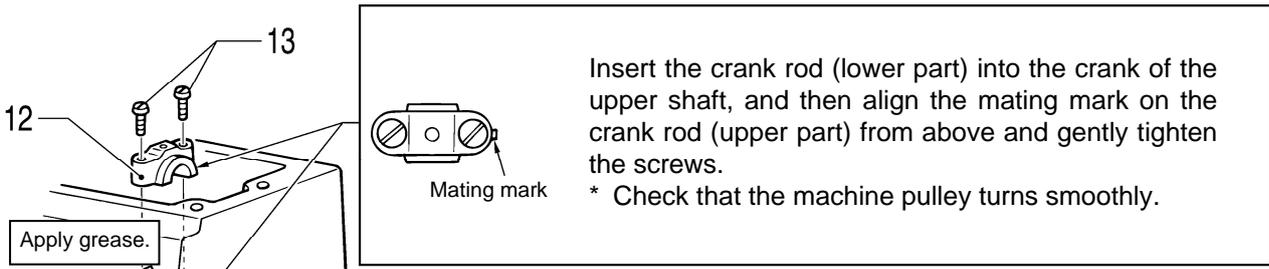
4 - 1 2 . Lower shaft mechanism



3396Q



3397Q

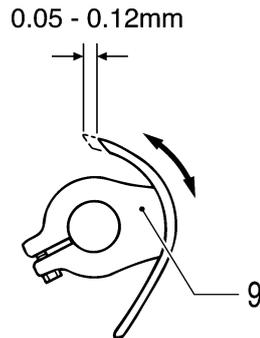


3398Q

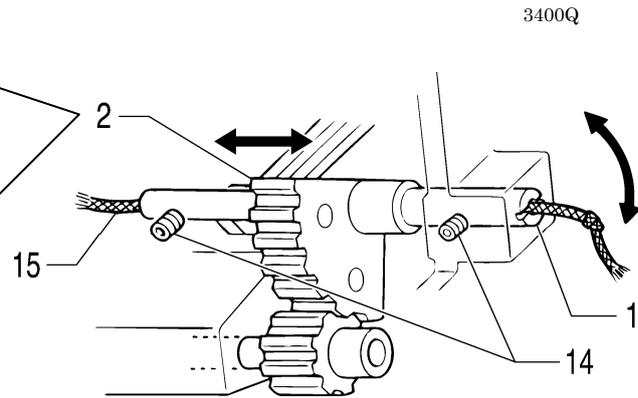
- 1. Rock gear shaft [Insert from the rear of the machine head]
- 2. Rock gear
- 3. Set screw collar
- 4. Set screws [2 pcs]
- 5. Lower shaft assy [Insert from the rear of the machine head]
- 6. Set screw collar
- 7. Set screws [2 pcs]
- 8. Retaining ring
- 9. Driver
- 10. Bolt [Temporarily tighten]
- 11. Crank rod (Lower part) [Insert into upper shaft crank]
- 12. Crank rod (Upper part) [Align the mating mark]
- 13. Screws [2 pcs]

While turning the machine pulley, move the rock gear to the left and right to find the position where it moves smoothly. Then without moving the rock gear, turn the rock gear shaft so that there is a gap of 0.05--0.12 mm at the end of the driver, and tighten the set screws.

\* Check that the machine pulley turns smoothly.



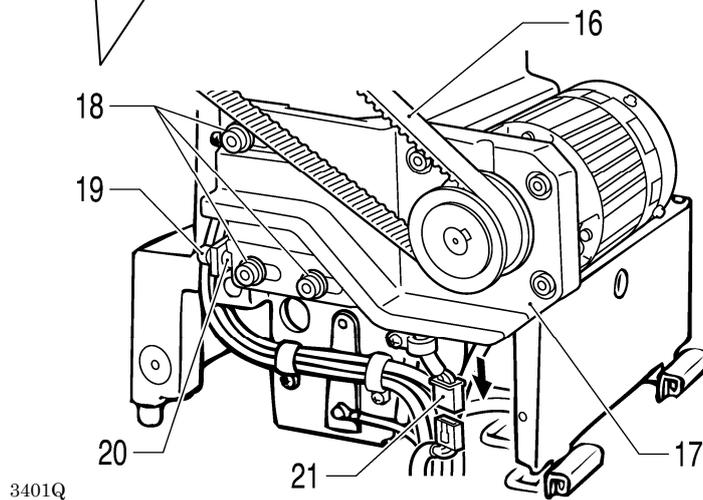
3399Q



3400Q

Carry out the steps in "5-26. Adjusting the tension of the upper shaft timing belt" before tightening.

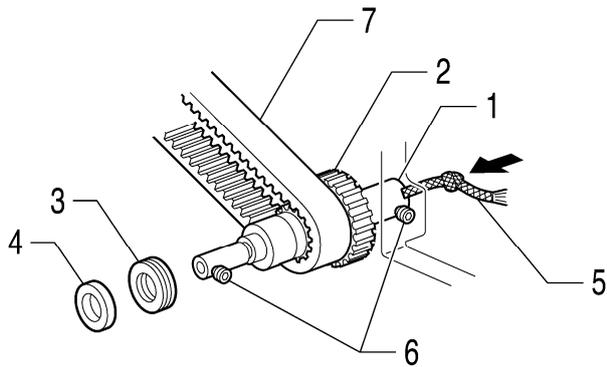
Place the upper shaft timing belt onto the upper shaft pulley and the motor pulley.



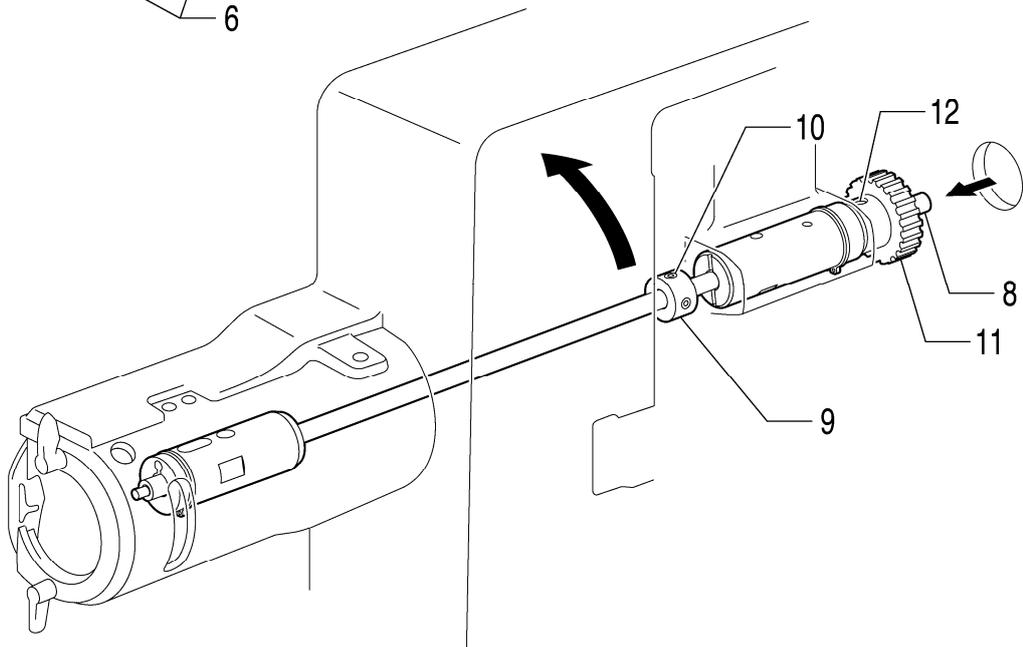
3401Q

- 14. Set screws [2 pcs]
- 15. Wick [Pass through the rock gear shaft and make a knot]
- 16. Upper shaft timing belt
- 17. Motor bracket
- 18. Bolts [3 pcs: Temporarily tighten]
- 19. Bolt
- 20. Nut
- 21. Motor connector

KE-484C



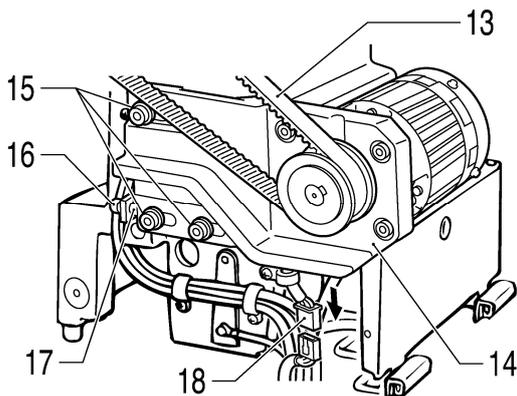
3402Q



3403Q

Carry out the steps in "5-26. Adjusting the tension of the upper shaft timing belt" before tightening.

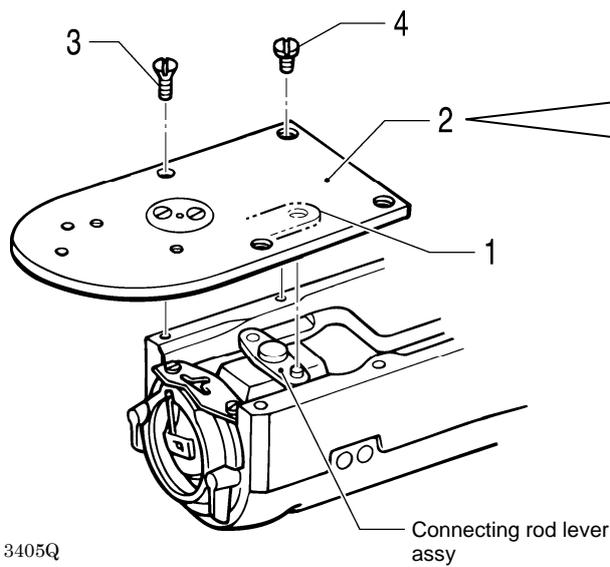
Place the upper shaft timing belt onto the upper shaft pulley and the motor pulley.



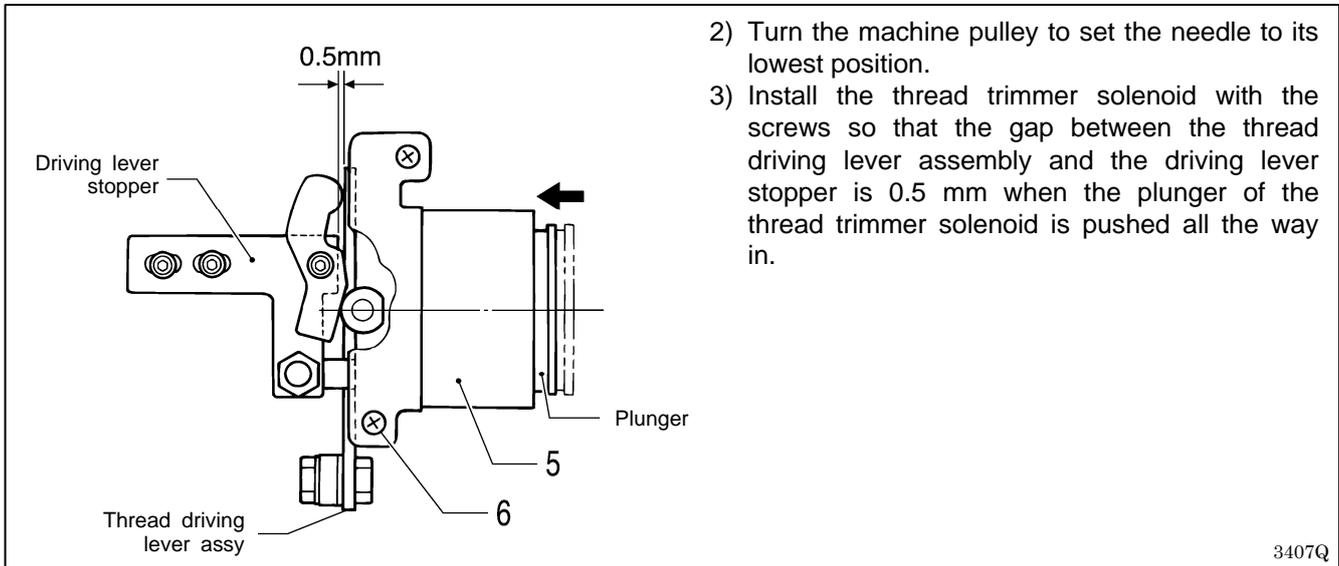
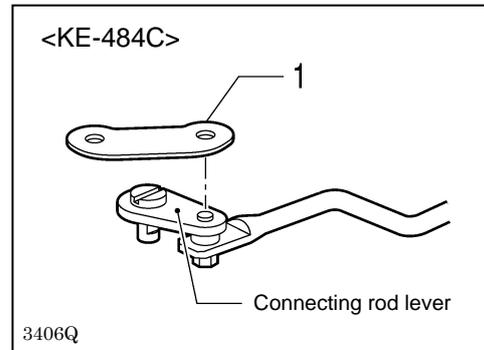
3404Q

1. Lower shaft [Insert from the rear of the machine head]
2. Lower shaft timing pulley
3. Thrust bearing
4. Lower shaft gear spacer
5. Wick [Pass through the lower shaft and make a knot]
6. Set screw
7. U-timing belt, F [Place onto the lower shaft timing pulley]
8. Rotary hook shaft [Insert from the rear of the machine head]
9. Set screw collar
10. Set screws [2 pcs]
11. Lower gear
12. Set screw
13. Upper shaft timing belt
14. Motor bracket
15. Bolts [3 pcs: Temporarily tighten]
16. Bolt
17. Nut
18. Motor connector

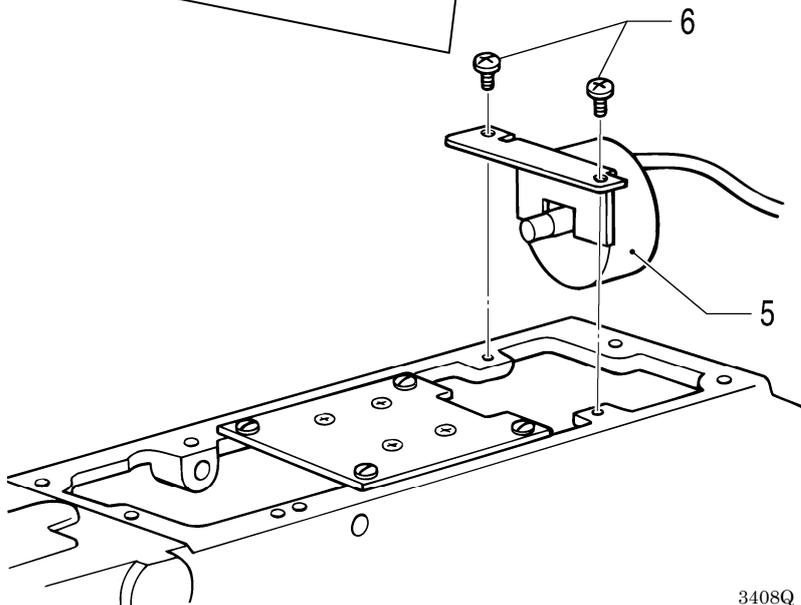
4 - 1 3. Thread trimmer mechanism (2)



1) Place the thread connecting rod onto the pin of the connecting rod lever assembly, and then install the needle plate with flat screws and screws so that the needle is at the center of the needle hole.



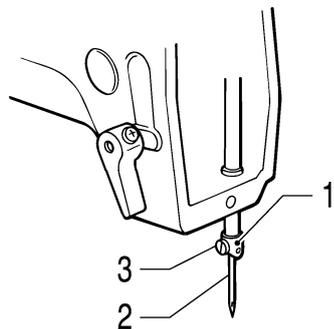
2) Turn the machine pulley to set the needle to its lowest position.  
 3) Install the thread trimmer solenoid with the screws so that the gap between the thread driving lever assembly and the driving lever stopper is 0.5 mm when the plunger of the thread trimmer solenoid is pushed all the way in.



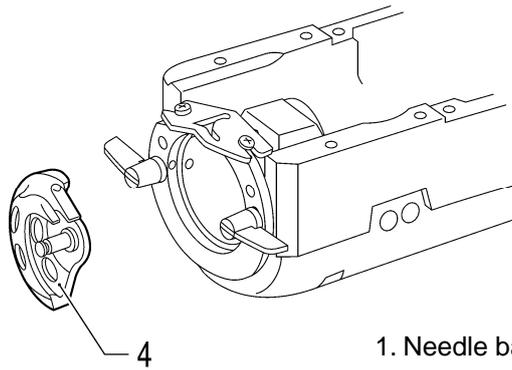
- 1. Thread connecting rod
- 2. Needle plate
- 3. Flat screws [2 pcs]
- 4. Screws [2 pcs]
- 5. Thread trimmer solenoid
- 6. Screws [2 pcs]

After installing, carry out the steps in "5-19. Adjusting the movable knife".

4 - 1 4 . Shuttle hook mechanism



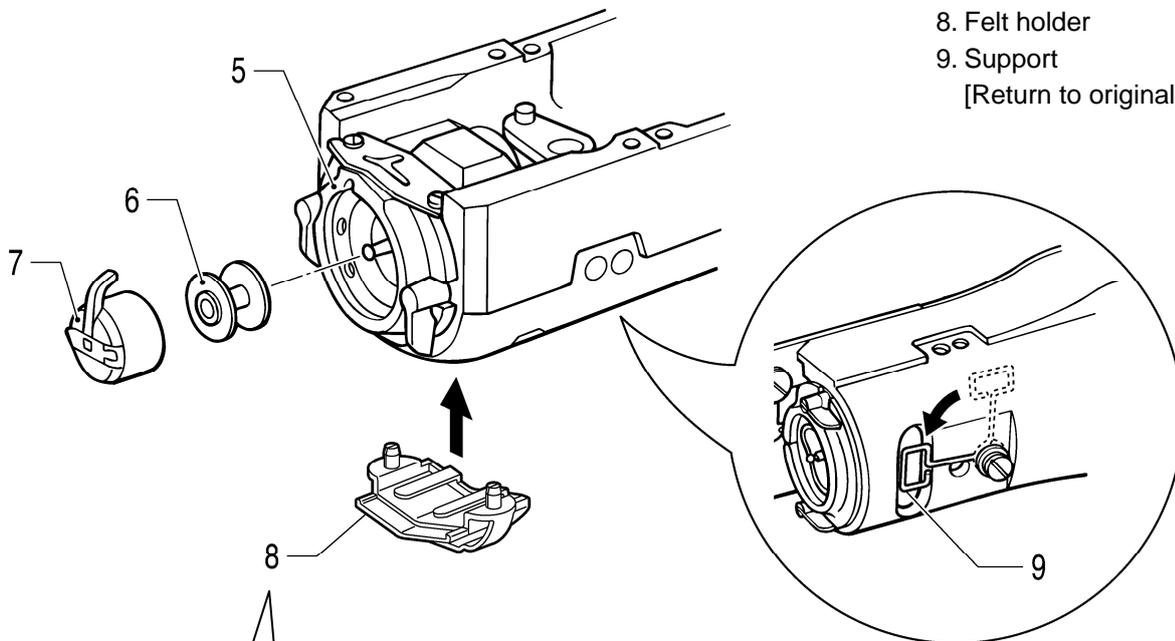
3411Q



3412Q

- 1. Needle bar thread guide
- 2. Needle
- 3. Set screw
- 4. Shuttle hook
- 5. Shuttle race base
- 6. Bobbin
- 7. Bobbin case assy
- 8. Felt holder
- 9. Support  
[Return to original position]

After installing the shuttle hook, carry out the adjustments in "5-2. Adjusting the needle bar lift amount", "5-3. Adjusting the driver needle guard" and "5-4. Adjusting the needle clearance".



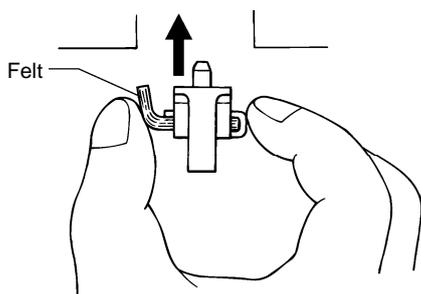
3419Q

<KE-430B series, BE-438B>



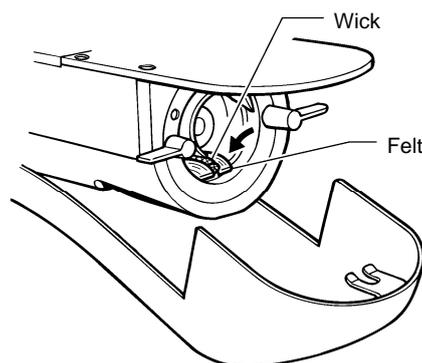
3447Q

1) Place the felt support as shown in the illustration so as not to clamp the felt.



3420Q

2) Press the felt and the wick gently as shown in the illustration.

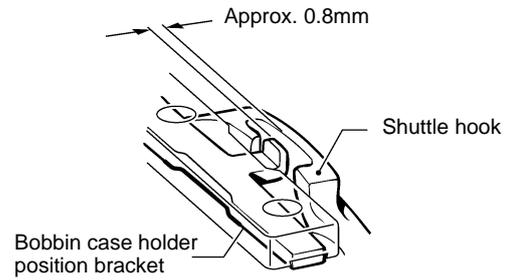
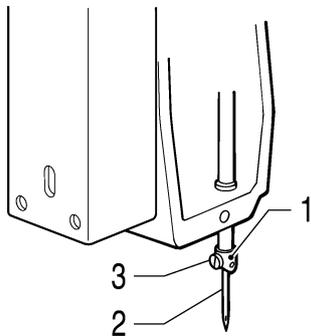


3421Q

KE-484C

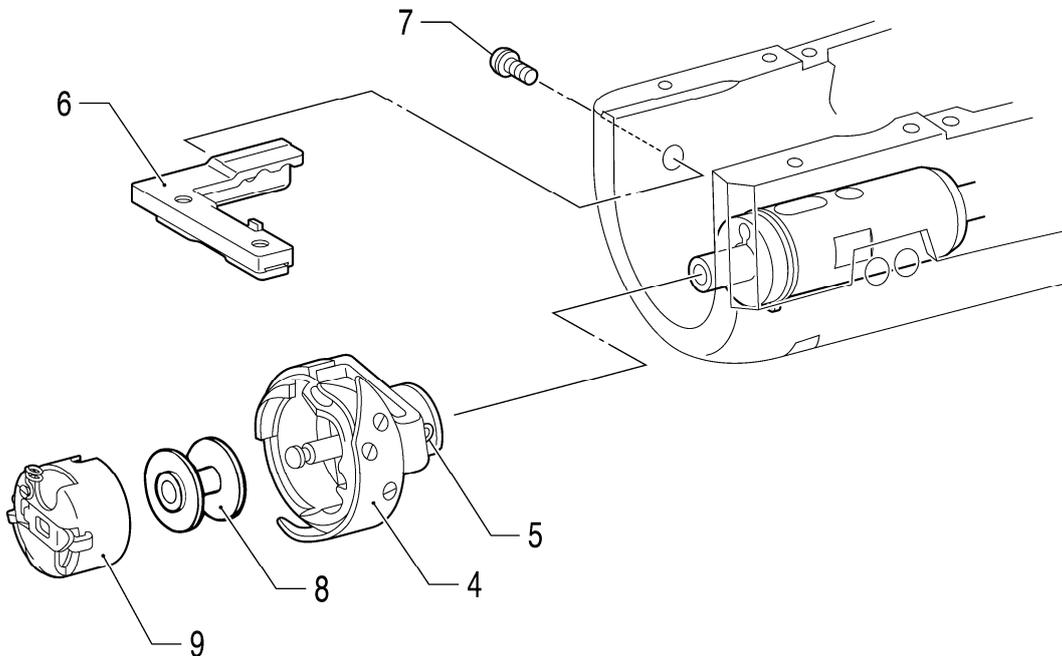
3423Q

3422Q

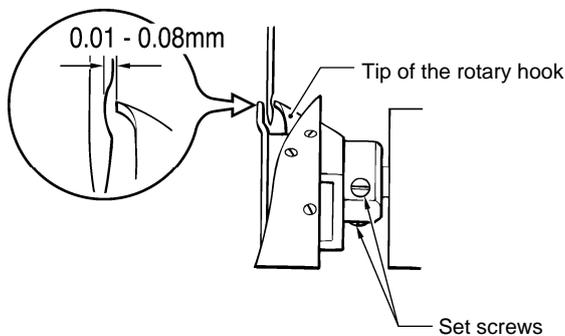


Install the hook stopper setting base so that the distance from the tip of the bobbin case holder position bracket to the needle drop surface is approximately 0.8 mm.

3424Q



3425Q



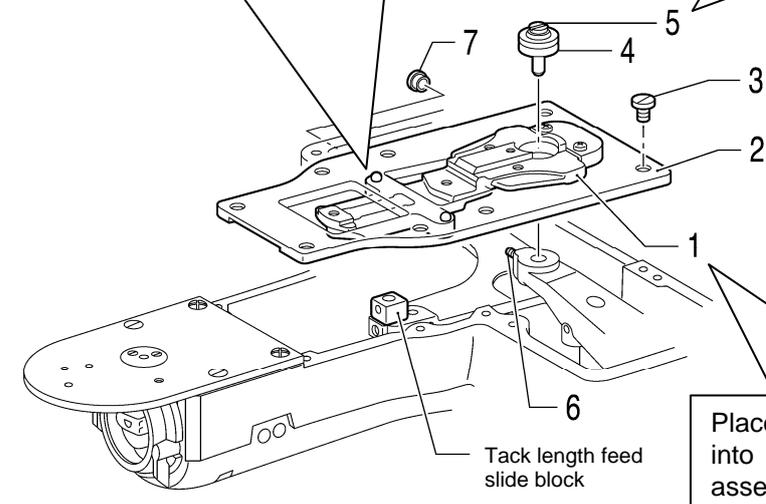
Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then tighten the set screw to adjust the clearance between the needle and the tip of the rotary hook to 0.01–0.08 mm.

- 1. Needle bar thread guide
- 2. Needle
- 3. Set screw
- 4. Treble hook assy
- 5. Set screws [2 pcs]
- 6. Hook stopper setting base
- 7. Screw
- 8. Bobbin
- 9. Bobbin case assy

4 - 1 5 . Work clamp arm mechanism (KE-430B, 430C, 431B, 431C)

Be careful not to drop these two ball bearings when installing the feed bracket assembly.

Align with the screw stop and push down from above while tightening the set screw.

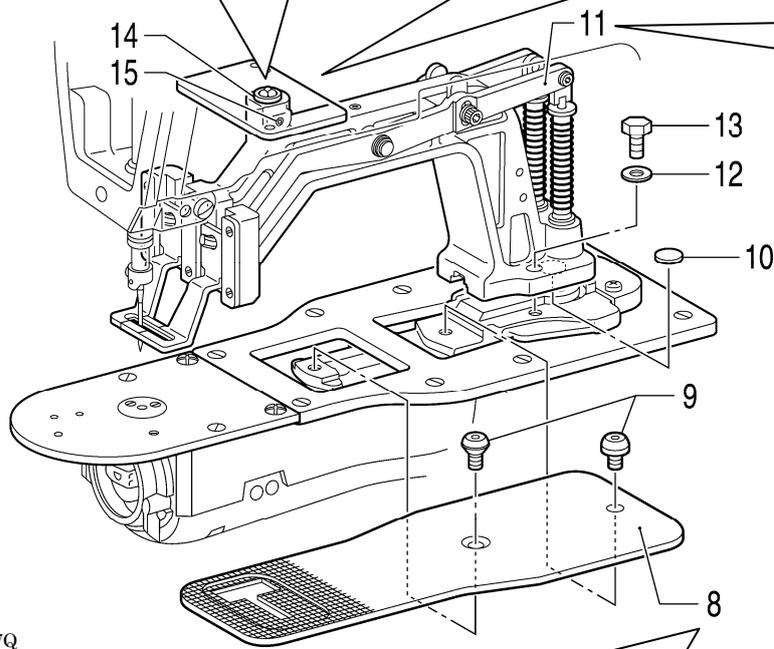


3426Q

Place the tack length feed slide block into the groove of the feed bracket assembly, and then use the screws to install it together with the feed bracket guide plate.

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

Secure the work clamp arm support shaft with the set screw so that the bottom of the work clamp arm support plate and the ball bearings touch when the work clamp is raised.



3427Q

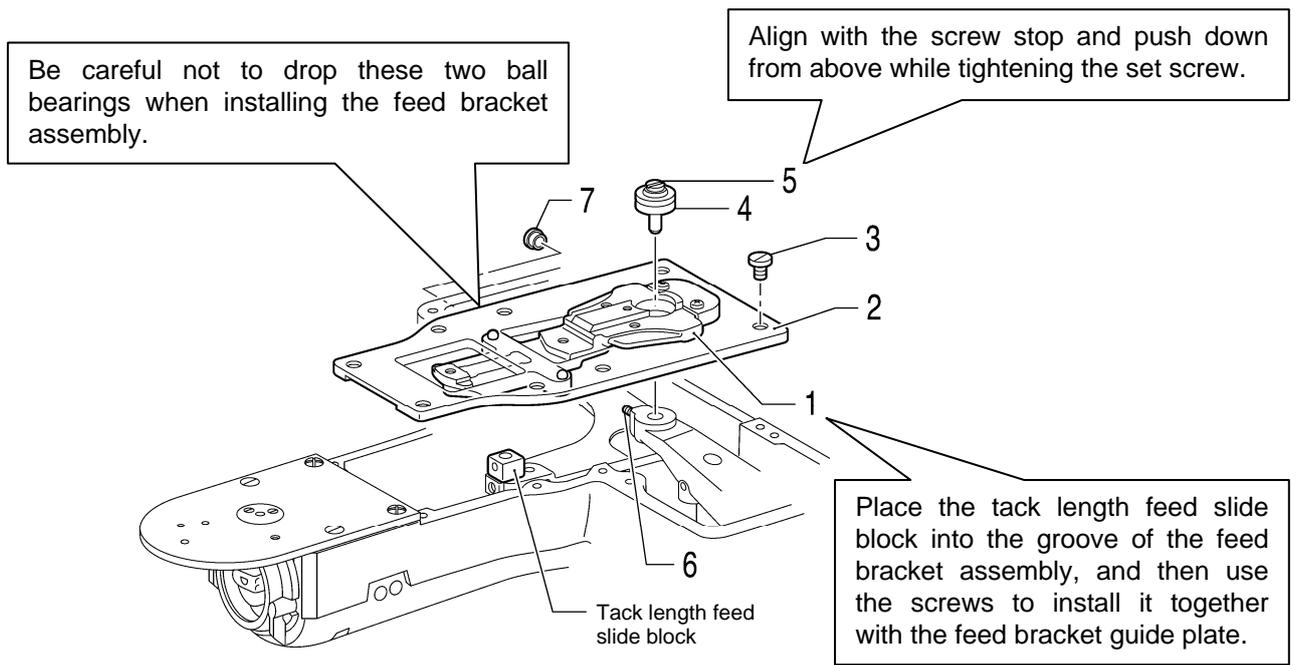
Carry out the adjustment in "5-24. Adjusting the home position" before installing the feed plate.

Refer to "4-20. Work clamp arm mechanism (Applying grease)"

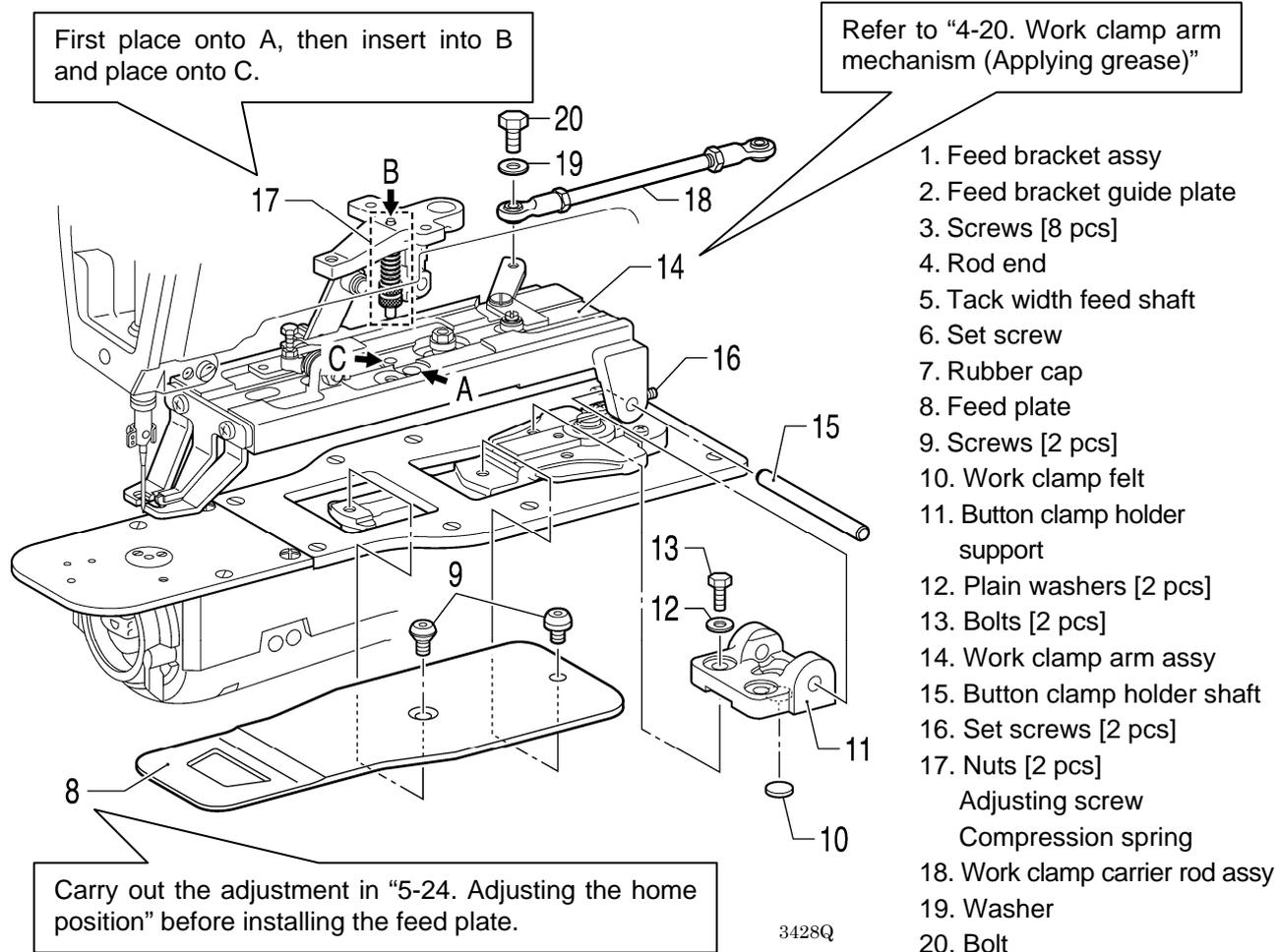
- 1. Feed bracket assy
- 2. Feed bracket guide plate
- 3. Screws [8 pcs]
- 4. Rod end
- 5. Tack width feed shaft
- 6. Set screw
- 7. Rubber cap
- 8. Feed plate
- 9. Screws [2 pcs]
- 10. Work clamp felt
- 11. Work clamp arm assy
- 12. Washers [2 pcs]
- 13. Bolts [2 pcs]
- 14. Work clamp arm support shaft
- 15. Set screw

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.

4 - 1 6 . Work clamp arm mechanism (KE-432B, 432C)



3426Q



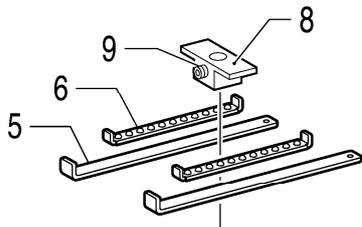
- 1. Feed bracket assy
- 2. Feed bracket guide plate
- 3. Screws [8 pcs]
- 4. Rod end
- 5. Tack width feed shaft
- 6. Set screw
- 7. Rubber cap
- 8. Feed plate
- 9. Screws [2 pcs]
- 10. Work clamp felt
- 11. Button clamp holder support
- 12. Plain washers [2 pcs]
- 13. Bolts [2 pcs]
- 14. Work clamp arm assy
- 15. Button clamp holder shaft
- 16. Set screws [2 pcs]
- 17. Nuts [2 pcs]
- Adjusting screw
- Compression spring
- 18. Work clamp carrier rod assy
- 19. Washer
- 20. Bolt

3428Q

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 button clamp holder support and feed plate.

4 - 1 7 . Work clamp arm mechanism (KE-433B)

3429Q

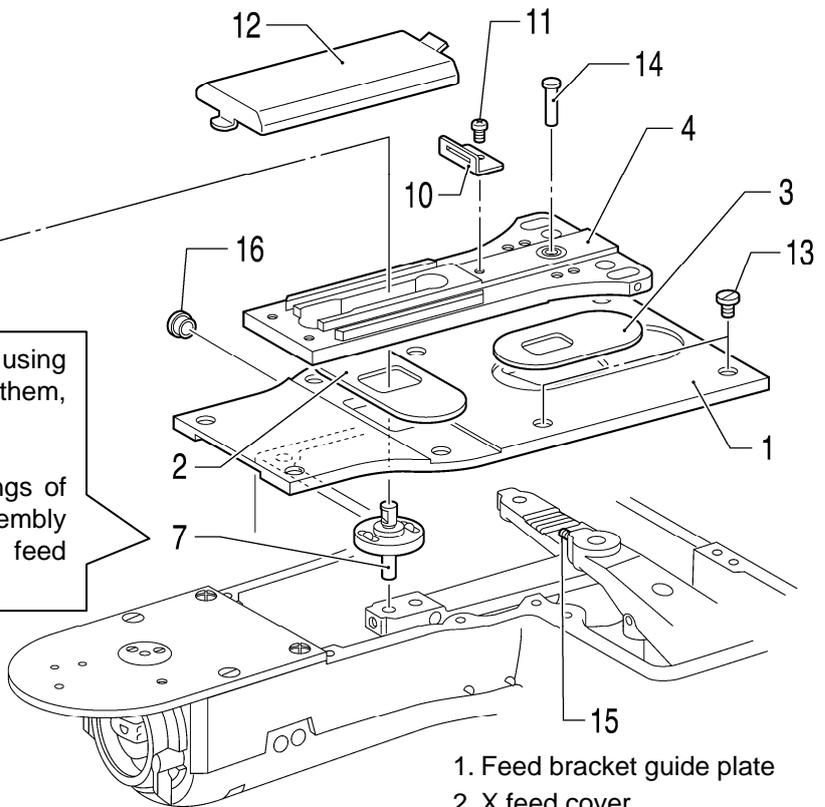


Install parts 1 to 6, clamp them using parts 7 and 8 so there is no play in them, and tighten the set screw 9.  
 Note:  
 Install so that the two ball bearings of the feed bracket guide shaft assembly do not fit into the holes in the feed bracket guide plate.

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

Secure the work clamp arm support shaft with the set screw so that the bottom of the work clamp arm support plate and the ball bearings touch when the work clamp is raised.

Refer to "4-20. Work clamp arm mechanism (Applying grease)"



- 1. Feed bracket guide plate
- 2. X feed cover
- 3. Y feed cover
- 4. Feed bracket assy
- 5. Spacers [2 pcs]
- 6. Retainer assys [2 pcs]
- 7. Feed bracket guide shaft assy
- 8. Tack length regulator block
- 9. Set screw
- 10. Cover support stand
- 11. Screw
- 12. Feed bracket cover
- 13. Screws [8 pcs]
- 14. Tack width feed shaft
- 15. Set screw
- 16. Rubber cap
- 17. Feed plate
- 18. Plain washers [2 pcs]
- 19. Bolts [2 pcs]
- 20. Work clamp felt
- 21. Work clamp arm assy
- 22. Washers [2 pcs]
- 23. Bolts [2 pcs]
- 24. Work clamp arm support shaft
- 25. Set screw

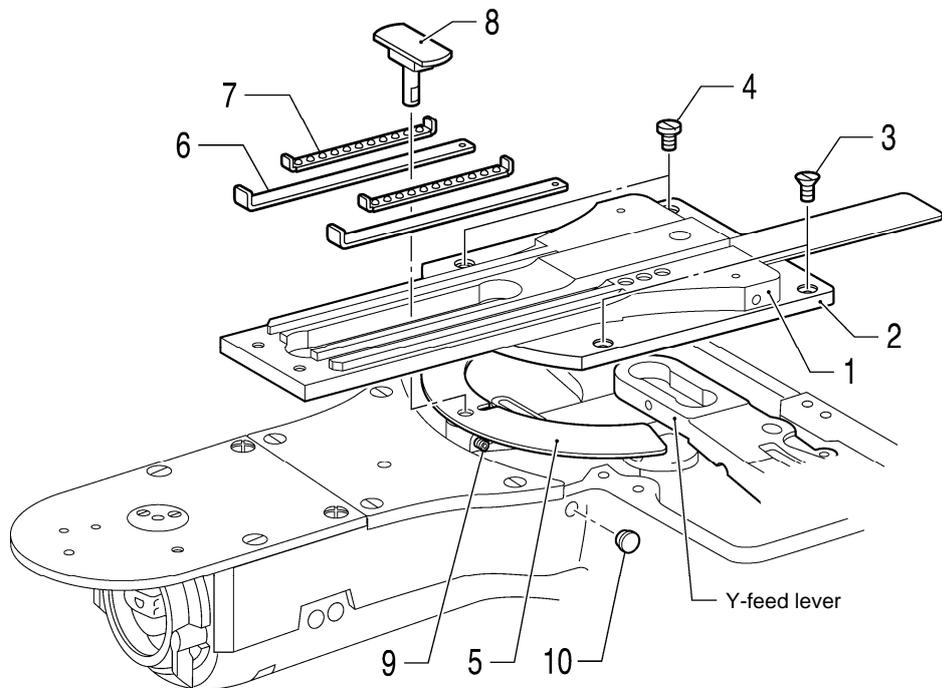
3430Q

Carry out the adjustment in "5-24. Adjusting the home position" before installing the feed plate.

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.

4 - 1 8 . Work clamp arm mechanism (KE-434B, 434C, 435B, 435C, 436B, 436C, 484C)

Align with the screw stop and push down gently from above while tightening the set screw.



3431Q

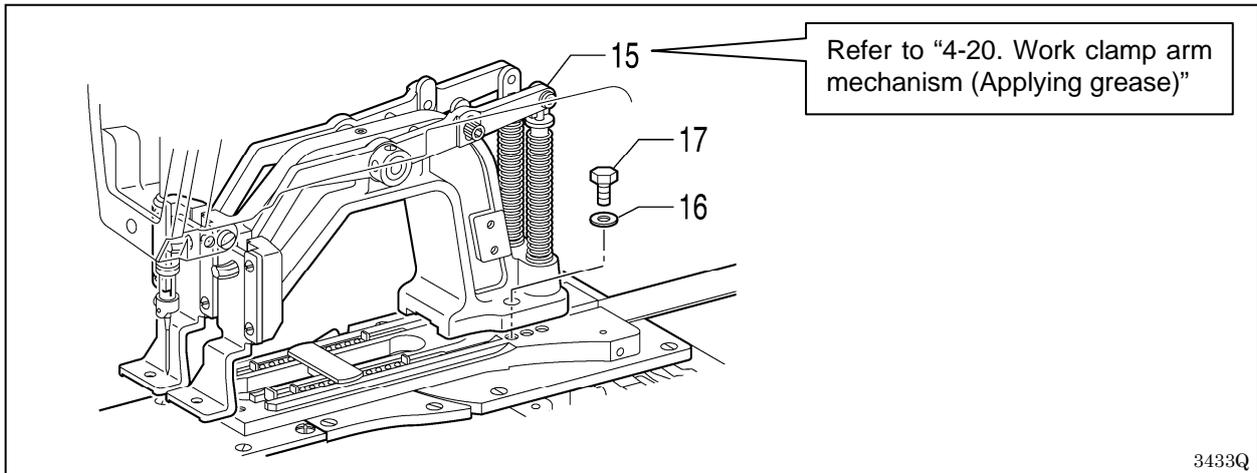
- 1) Turn the Y-feed lever forward as far as it will go.
- 2) Insert the tack width regulator block assembly and the feed guide slide block into the groove in feed bracket guide plate R so that they face as shown in the illustration, and then install the feed bracket assembly and feed bracket guide plate R.

Seen from below

- 3) Pass the Y-feed lever cover through the slot in the arm bed, and then insert the tack width regulator block assembly into the hole in the Y-feed lever.

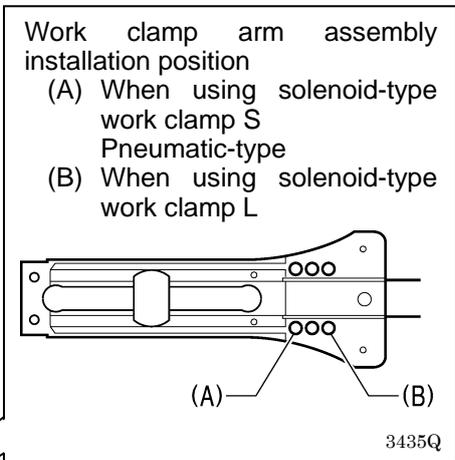
3432Q

- 1. Feed bracket assy
- 2. Feed bracket guide plate, R
- 3. Flat screws [2 pcs]
- 4. Screws [2 pcs]
- 5. X-feed lever cover
- 6. Spacers [2 pcs]
- 7. Retainer assys [2 pcs]
- 8. Tack length regulator block assy
- 9. Set screw
- 10. Rubber cap

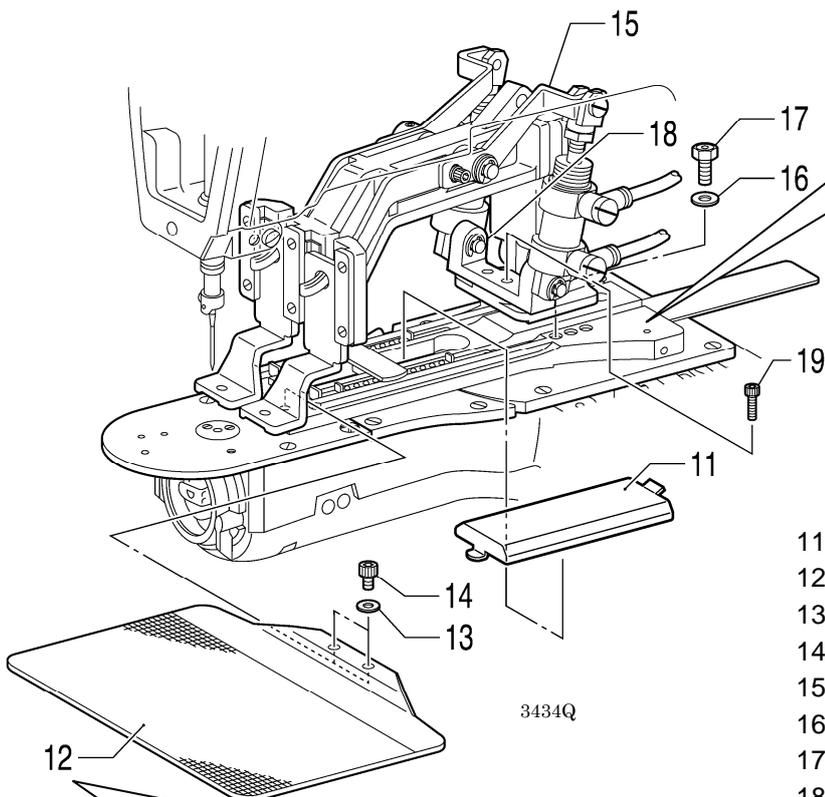


3433Q

Refer to "4-20. Work clamp arm mechanism (Applying grease)"



3435Q



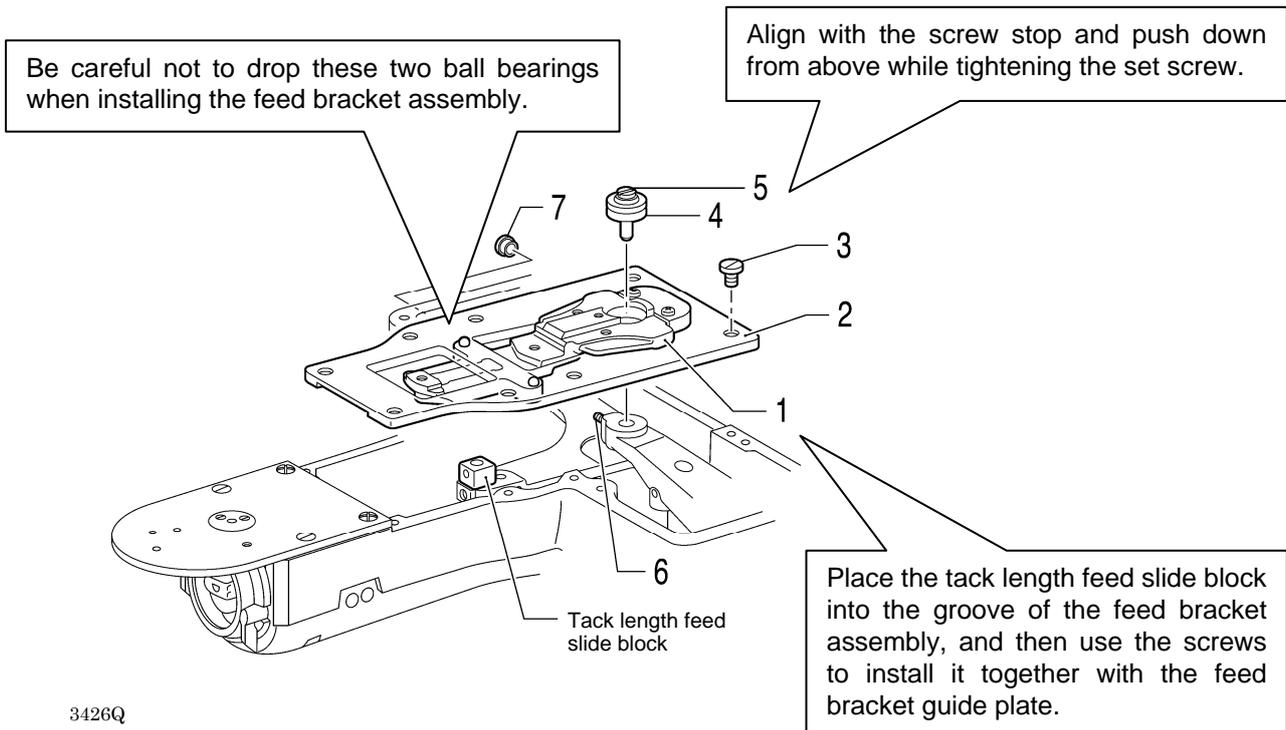
3434Q

- 11. Feed bracket cover
- 12. Feed plate
- 13. Plain washers [2 pcs]
- 14. Bolts [2 pcs]
- 15. Work clamp arm assy
- 16. Washers [2 pcs]
- 17. Bolts [2 pcs]
- 18. Cylinder support [Pneumatic spec. only]
- 19. Bolts [2 pcs: Pneumatic spec. only]

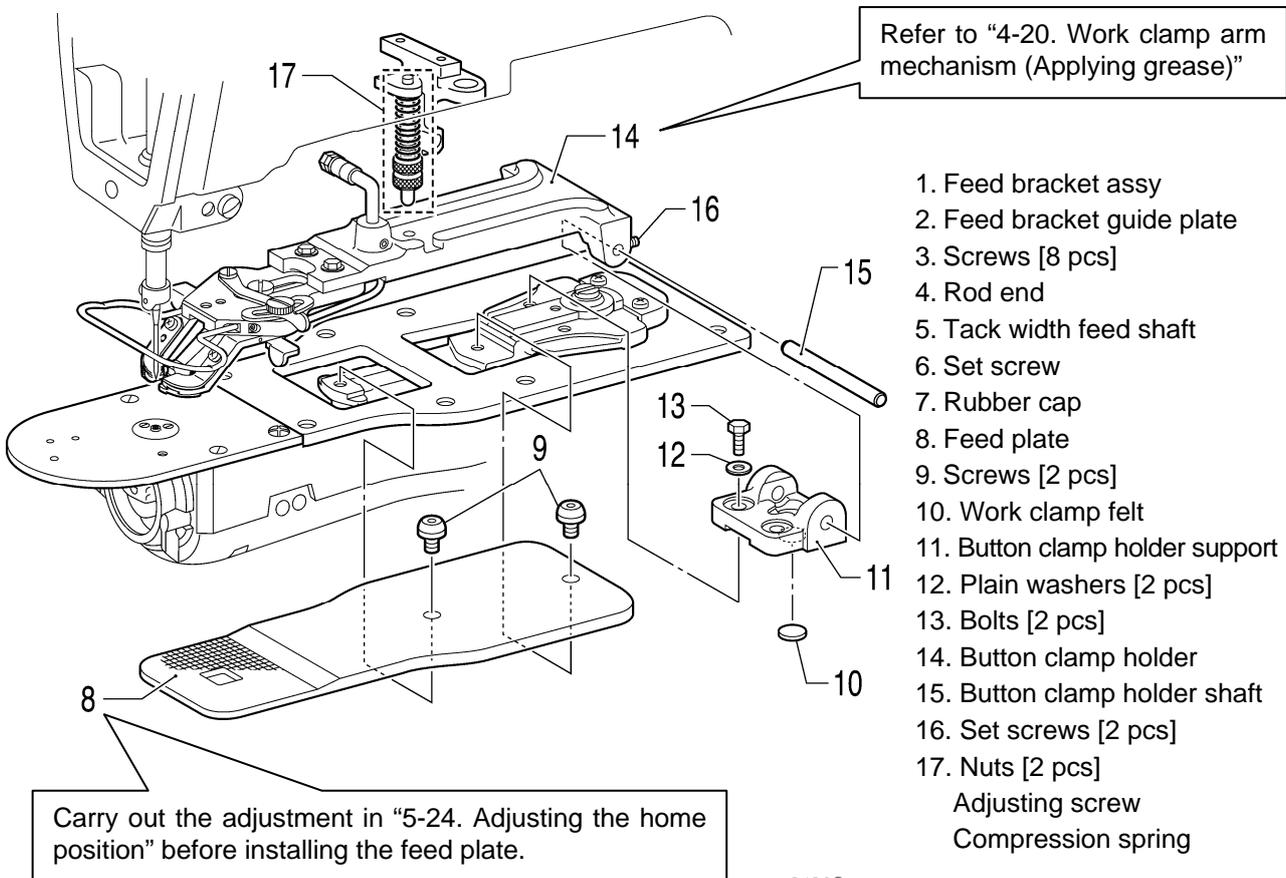
Carry out the adjustment in "5-24. Adjusting the home position" before installing the feed plate.

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.

4 - 1 9 . Work clamp arm mechanism (BE-438B, 438C)



3426Q



3436Q

After installing, check that the needle passes into the button hole without touching the button. (Refer to "5-14. Adjusting the position of the button holder".)

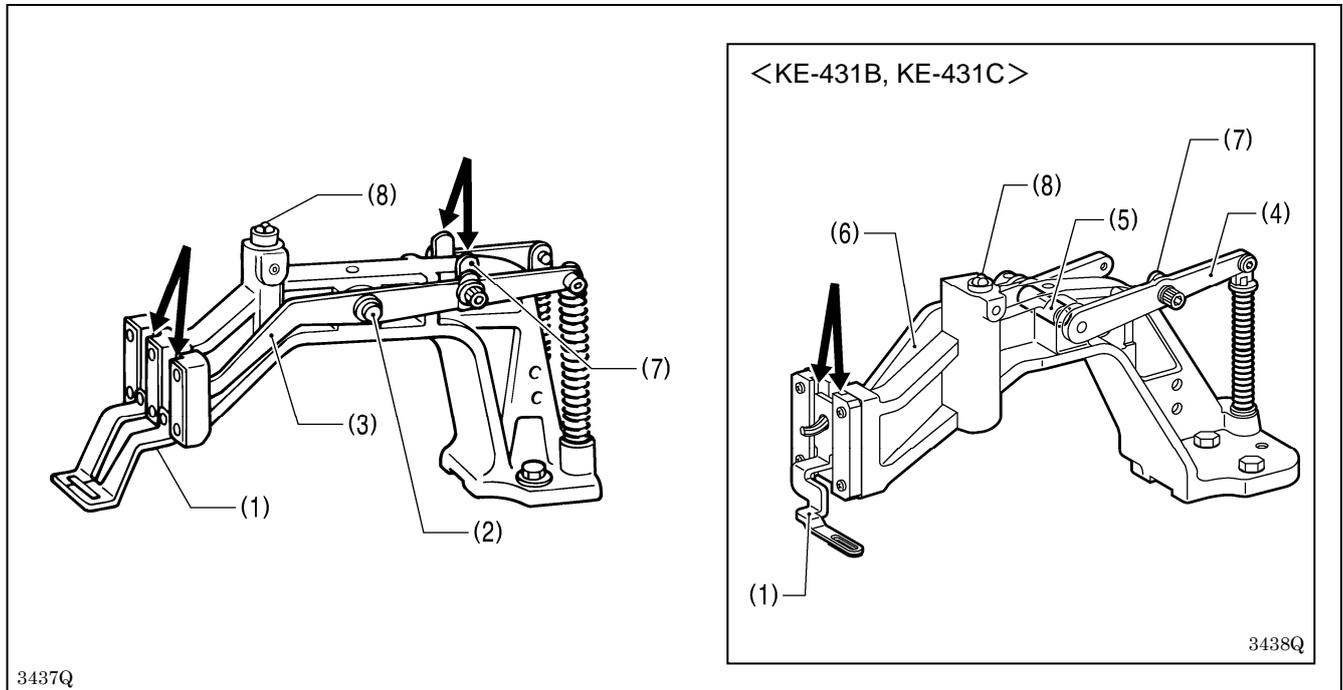
## 4. ASSEMBLY

### 4 - 2 0 . Work clamp arm mechanism (Applying grease)

Check that the mechanism moves smoothly and also apply grease to all sliding parts during assembly.

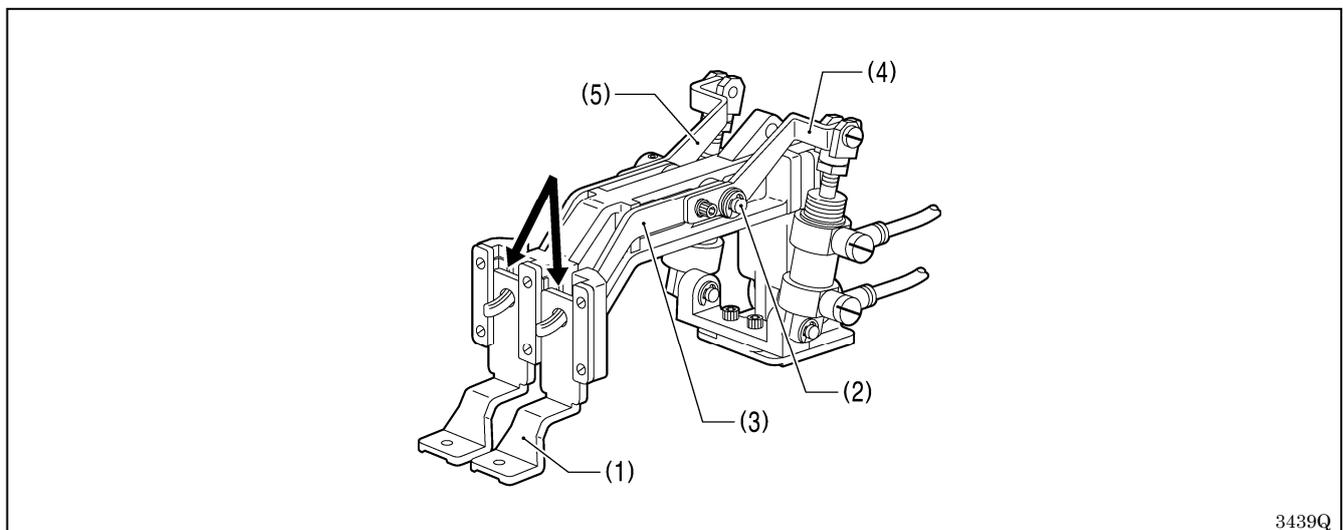
If the work clamp does not move up and down smoothly, error E-60 may be displayed. (for solenoid specifications)

[KE-430B, 430C, 431B, 431C, 433B, 434B/434C solenoid specifications]



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) [KE-430B, 430C, 433B, 434B/434C solenoid specifications]  
Sliding portion of the work clamp lever B (4) and lever shaft bush (5) and work clamp lever A (6) [KE-431B, 431C]
3. Round portion of the work clamp arm lever plate (7)
4. Bearing ball of the work clamp arm support shaft (8) [KE-430B, 430C, 431B, 431C, 433B]

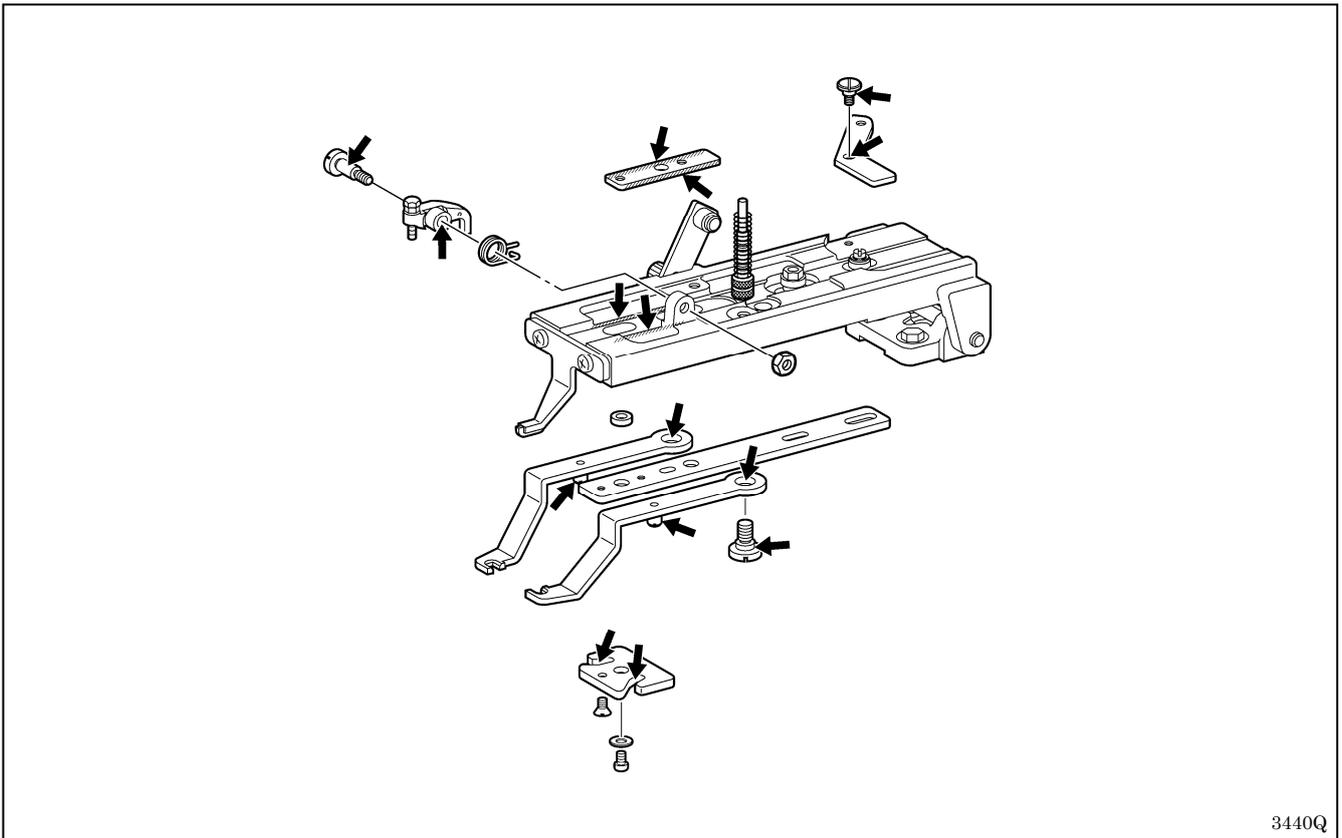
[KE-434B/434C pneumatic specifications, KE-435B, 435C, 436B, 436C, 484C]



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 lever F (3), the work clamp arm lever RR(4) and RL (5)

[KE-432B, 432C]

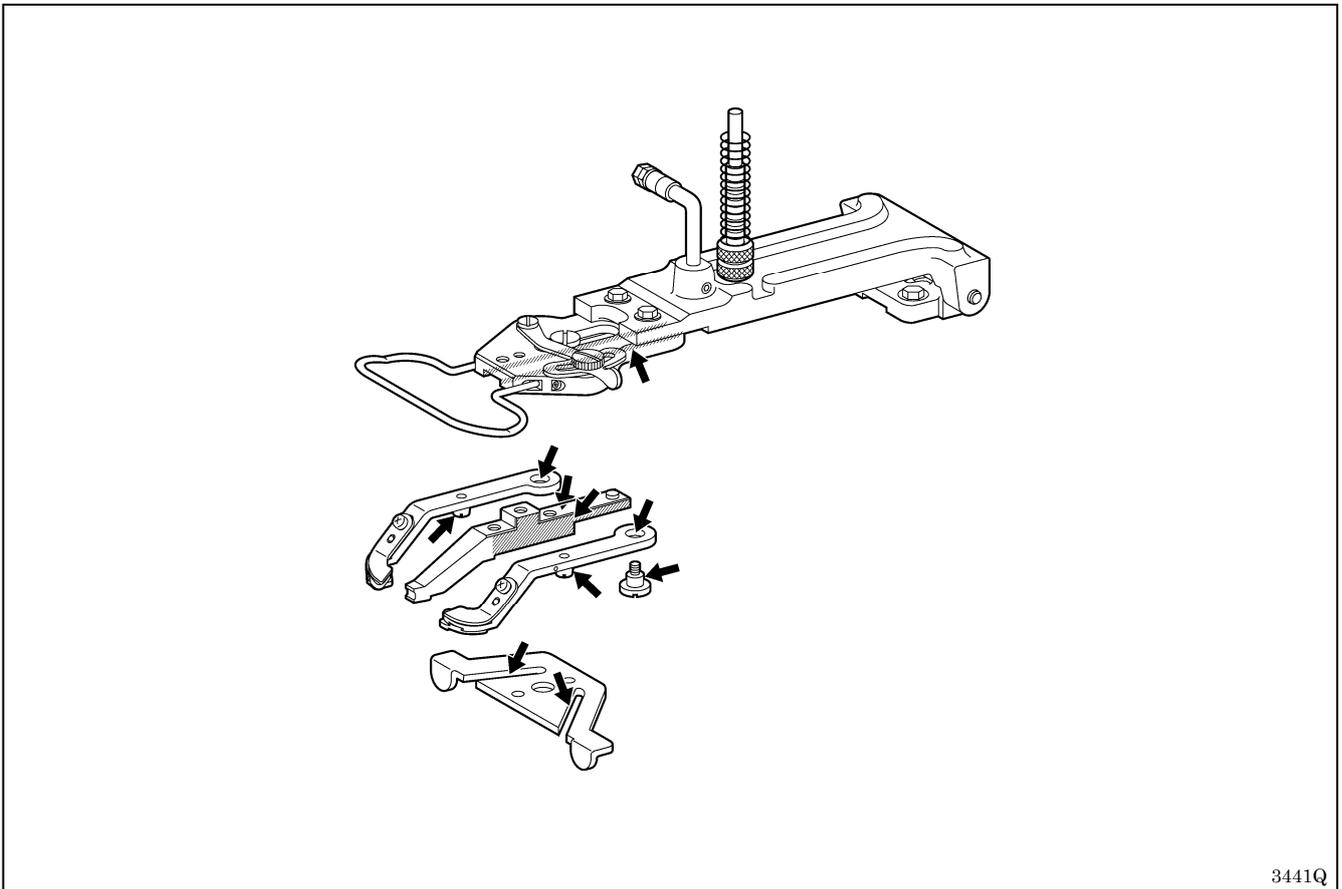
Apply grease to the portions indicated by the arrows.



3440Q

[BE-438B, 438C]

Apply grease to the portions indicated by the arrows.

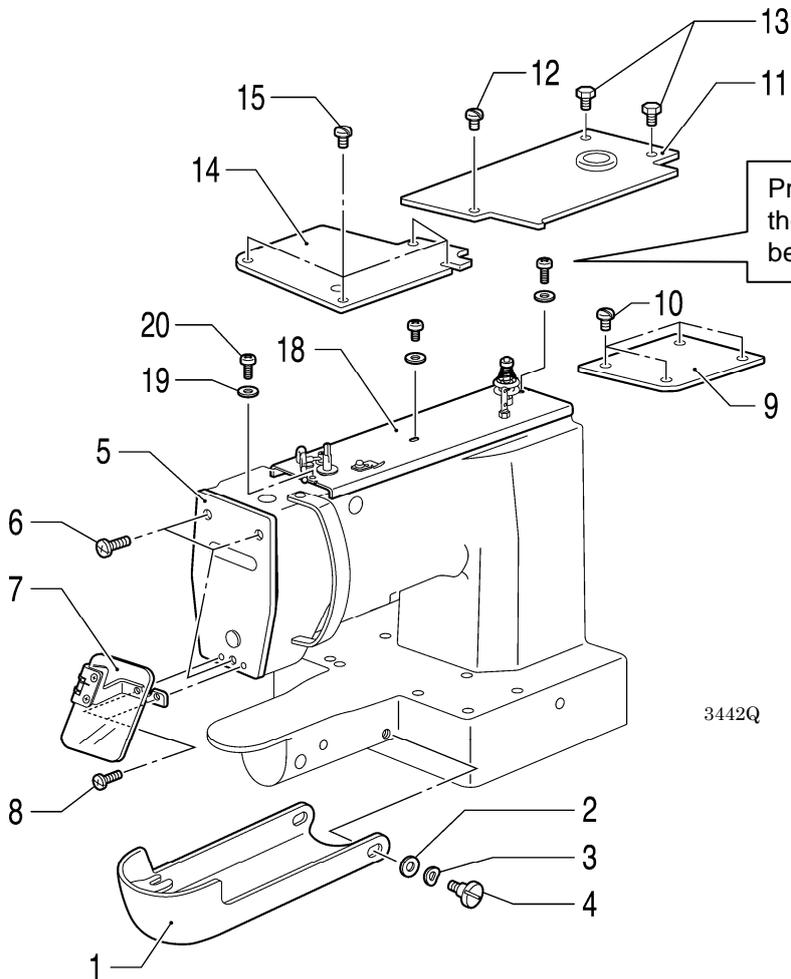


3441Q

## 4. ASSEMBLY

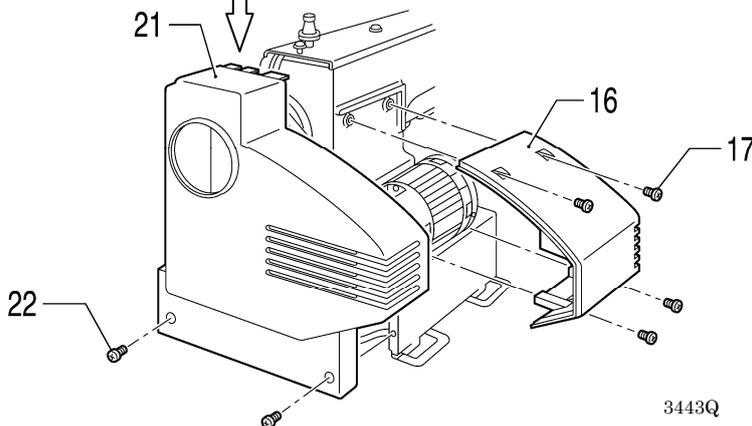
### 4 - 2 1 . Covers

KE-430B, 431B, 432B, 433B, BE-438B  
KE-430C, 431C, 432C, BE-438C



3442Q

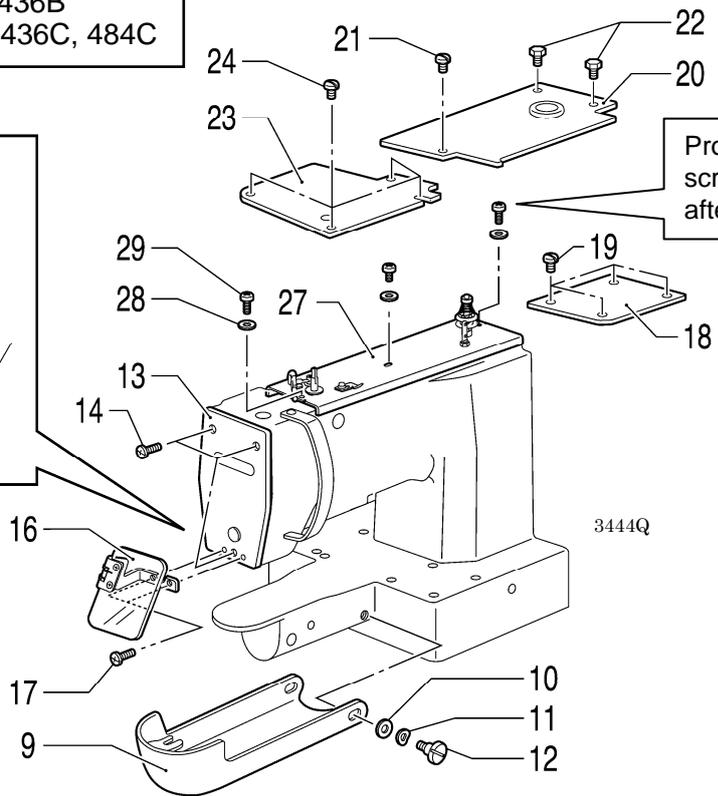
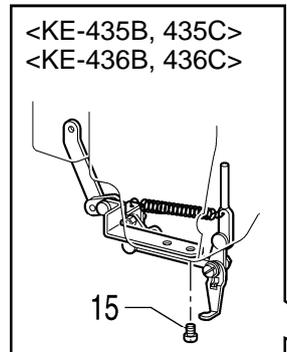
Insert this part of the belt cover into the upper cover, install it with the two screws, and then tighten the upper cover screw.



3443Q

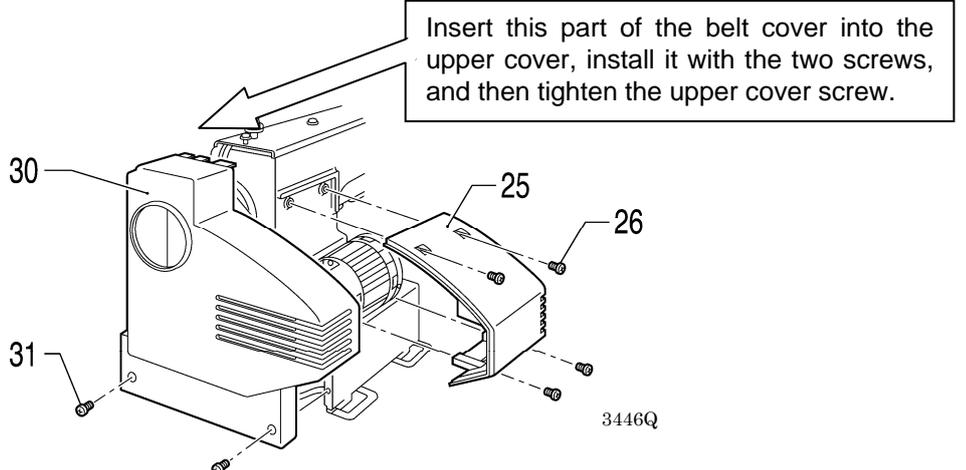
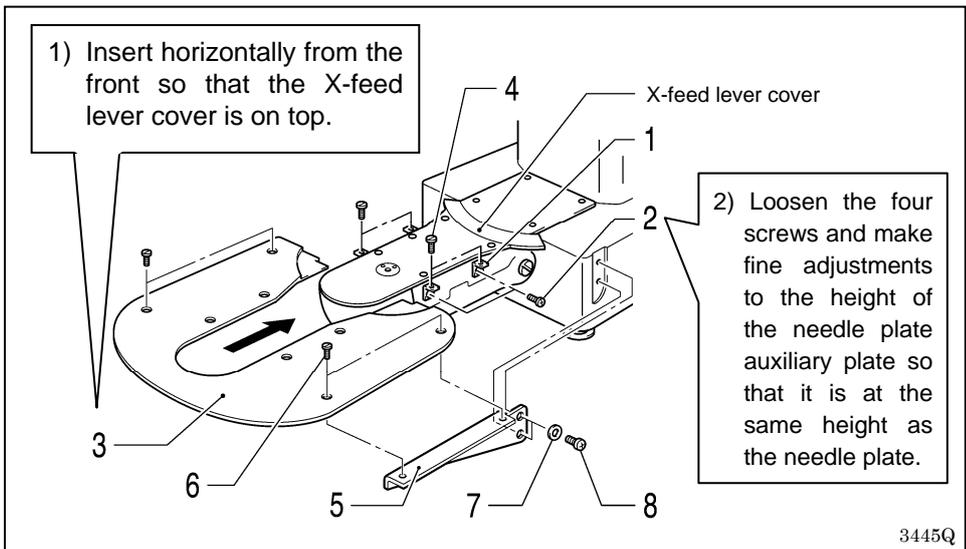
1. Shuttle race cover assy
2. Plain washers [2 pcs]
3. Wave washers [2 pcs]
4. Shoulder screws [2 pcs]
5. Face plate assy
6. Screws [3 pcs]
7. Eye guard assy
8. Screws [2 pcs]
9. Bed cover, R
10. Screws [4 pcs]
11. Bed cover, LR
12. Screw
13. Bolts [2 pcs]
14. Bed cover, LF
15. Screws [4 pcs]
16. Frame side cover
17. Screws [4 pcs]
18. Top cover
19. Plain washers [3 pcs]
20. Screws [3 pcs]
21. Belt cover
22. Screws [2 pcs]

KE-434B, 435B, 436B  
KE-434C, 435C, 436C, 484C



Provisionally tighten this screw, and then fully tighten it after installing the belt cover.

- 1. Auxiliary plate supports [4 pcs]
- 2. Screws [4 pcs]
- 3. Needle plate auxiliary plate
- 4. Screws [4 pcs]
- 5. Auxiliary plate supports [2 pcs]
- 6. Washers [4 pcs]
- 7. Screws [4 pcs]
- 8. Screws [4 pcs]
- 9. Shuttle race cover assy
- 10. Plain washers [2 pcs]
- 11. Wave washers [2 pcs]
- 12. Shoulder screws [2 pcs]
- 13. Face plate assy
- 14. Screws [3 pcs]
- 15. Bolts [2 pcs]
- 16. Eye guard assy
- 17. Screws [2 pcs]
- 18. Bed cover, R
- 19. Screws [4 pcs]
- 20. Bed cover, LR
- 21. Screw
- 22. Bolts [2 pcs]
- 23. Bed cover, LF
- 24. Screws [4 pcs]
- 25. Frame side cover
- 26. Screws [4 pcs]
- 27. Top cover
- 28. Plain washers [3 pcs]
- 29. Screws [3 pcs]
- 30. Belt cover
- 31. Screws [2 pcs]



Insert this part of the belt cover into the upper cover, install it with the two screws, and then tighten the upper cover screw.

# 5. 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 and knife



Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before carrying out inspection, adjustment and repair of any parts which use the pneumatic equipment.



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



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.



Use only the proper replacement parts as specified by Brother.



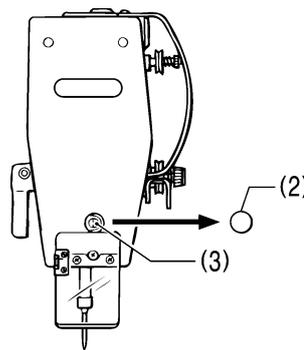
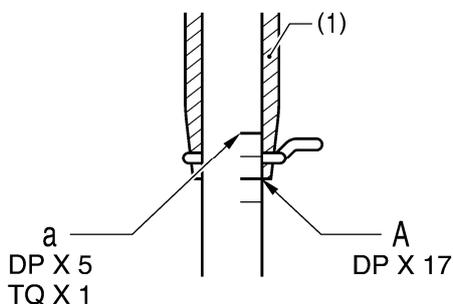
If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.



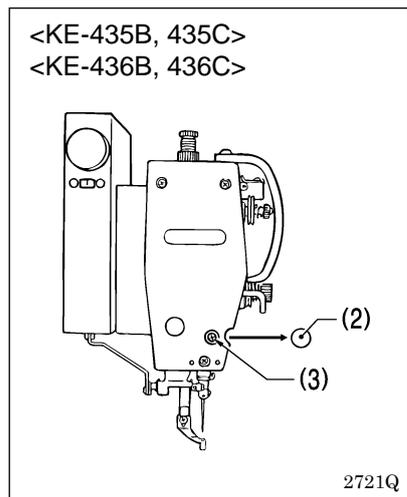
Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

### 5-1. Adjusting the needle bar height

3450Q



2553Q



2721Q

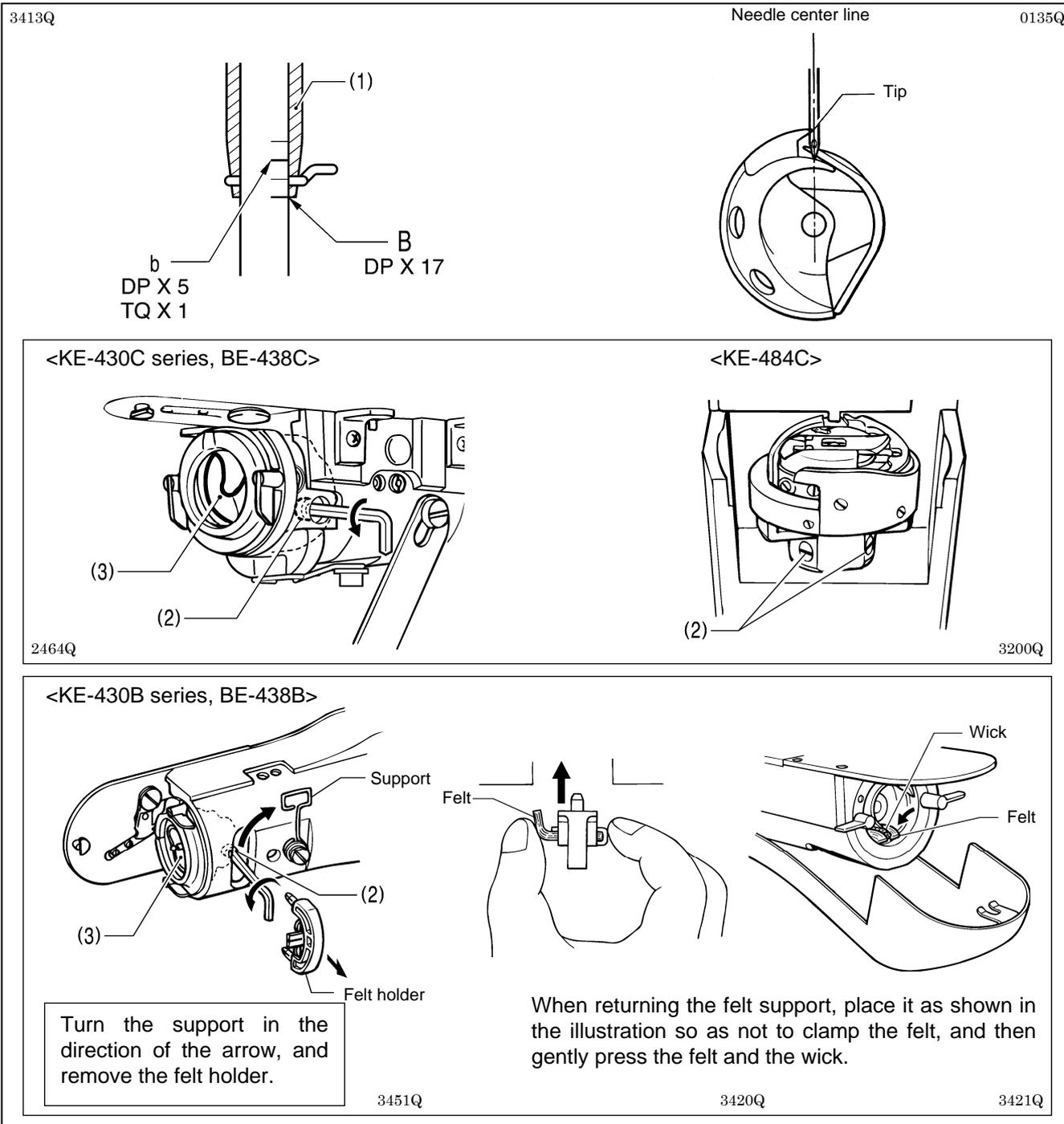
<When using a DP x 17 needle>

Turn the machine pulley to move the needle bar to the lowest position. Then remove the rubber plug (2), loosen the set 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 (reference line A) is aligned with the lower edge of the needle bar bush (1).

<When using a DP x 5 or TQ X1 needle>

Turn the machine pulley to move the needle bar to the lowest position. Then remove the rubber plug (2), loosen the set screw (3) and then move the needle bar up or down to adjust so that the highest reference line (reference line a) is aligned with the lower edge of the needle bar bush (1).

## 5-2. Adjusting the needle bar lift amount



## &lt;When using a DP x 17 needle&gt;

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

## &lt;KE-484C&gt;

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

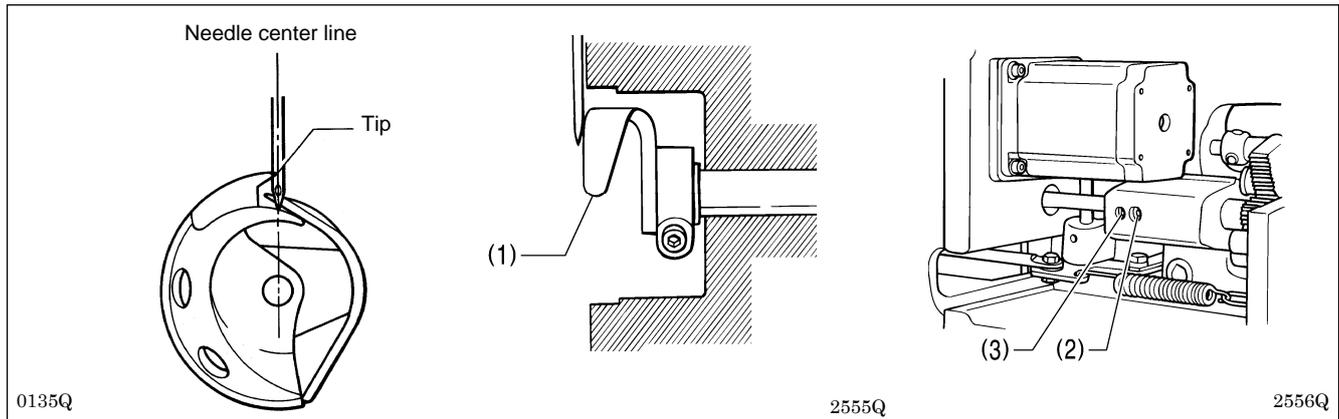
## &lt;When using a DP x 5 or TQ X1 needle&gt;

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

## 5. ADJUSTMENT

### 5 - 3 . Adjusting the driver needle guard

\* The KE-484C does not have a driver needle guard.

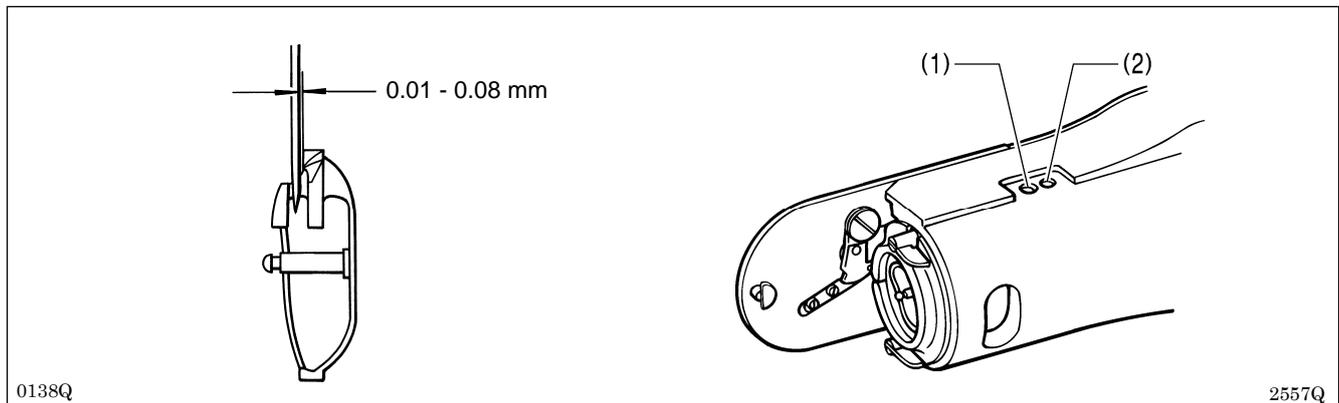


Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw (2) and turn the eccentric shaft (3) to adjust so that the driver needle guard (1) contacts the needle.

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.

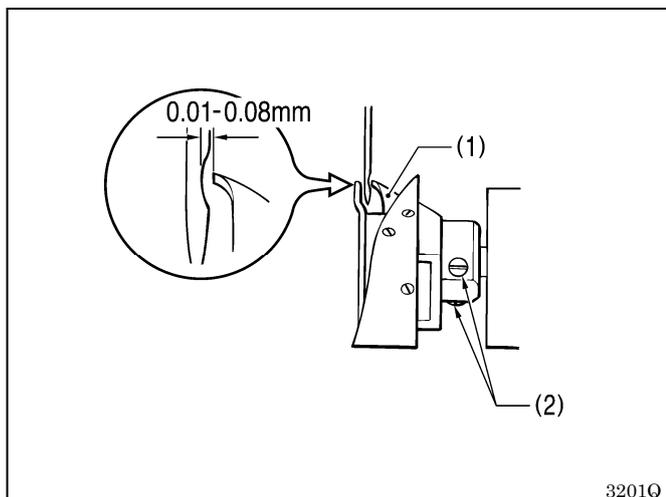
### 5 - 4 . Adjusting the needle clearance

<KE-430B series, KE-430C series, BE-438B, 438C>



Turn the machine 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.

<KE-484C>

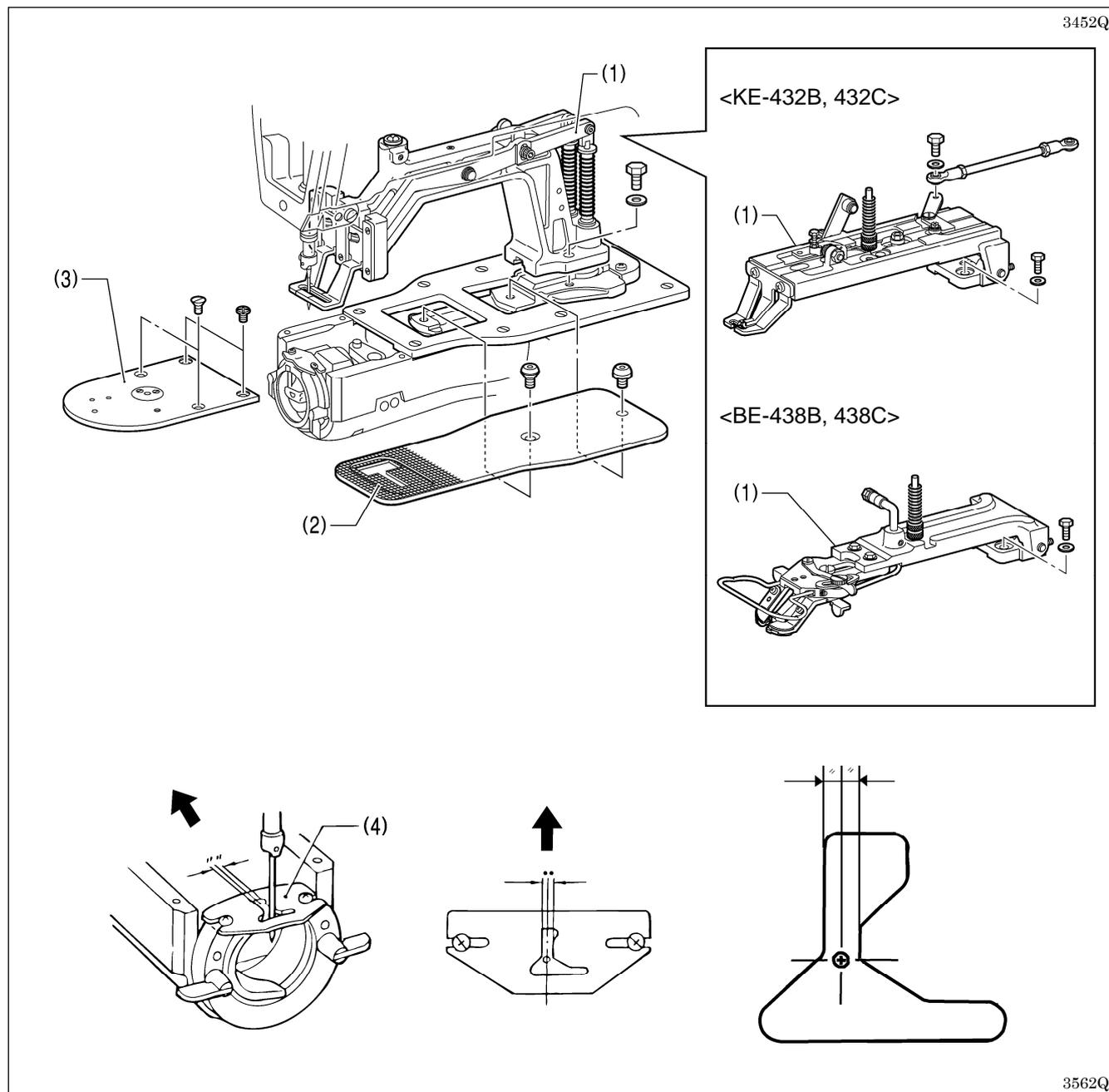


Turn the machine pulley to align the tip of the rotary hook (1) with the needle center line. Then loosen the set screw (2) to adjust so that the clearance between the needle and the rotary hook (1) is 0.01 - 0.08 mm.

## 5 - 5 . Adjusting the shuttle race thread guide

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.

\* The KE-484C does not have a shuttle race thread guide.



1. Remove the arm assembly (1), the feed plate (2) and the needle plate (3).

Remove the button clamp assembly (1), the feed plate (2) and the needle plate (3). [BE-438B, 438C]

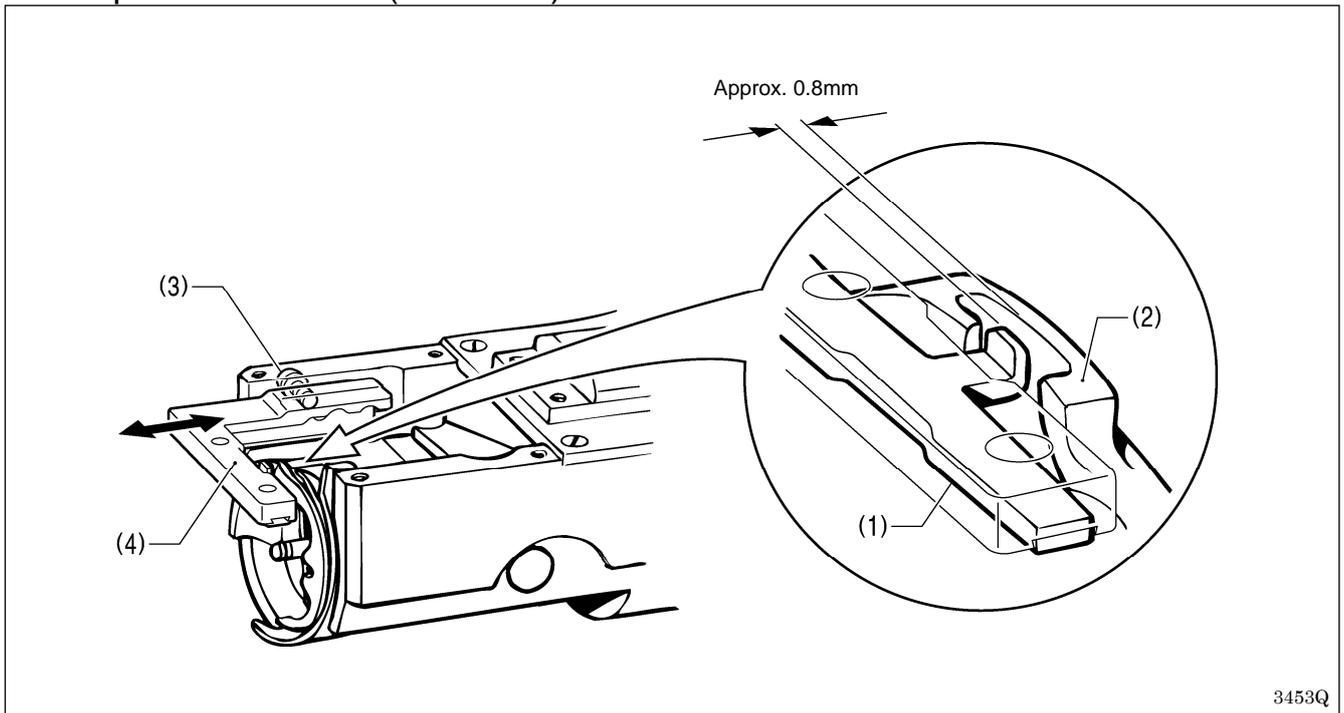
2. While pushing the shuttle race thread guide (4) in the direction of the arrow, set the needle groove to the center position.

Note:

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

## 5. ADJUSTMENT

### 5 - 6 . Adjusting the clearance between the shuttle hook and bobbin case holder position bracket (KE-484C)

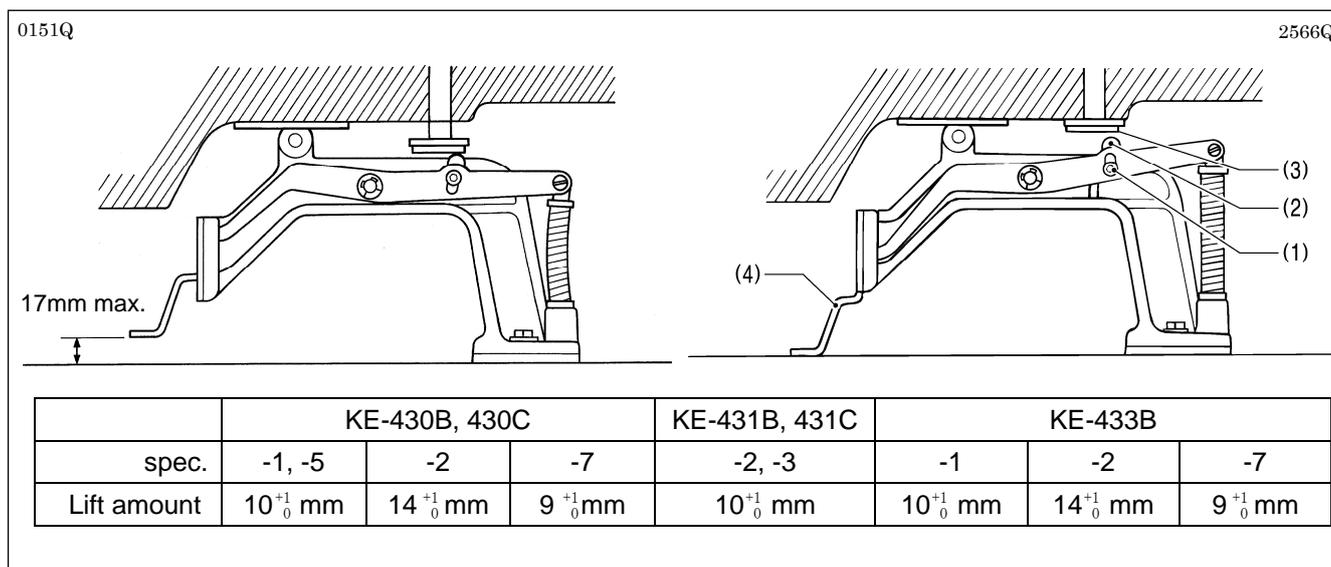


Loosen the screw (3) and move the hook stopper setting base (4) to adjust so that the tip of the bobbin case holder position bracket (1) is approximately 0.8 mm away from the needle drop surface.

### 5 - 7 . Adjusting the work clamp lift amount (KE-430B, 430C, 431B, 431C, 433B)

The maximum work clamp lift amount is 17 mm from the top of the needle plate.

The lift amount for each model is adjusted as shown in the table at the time of shipment.

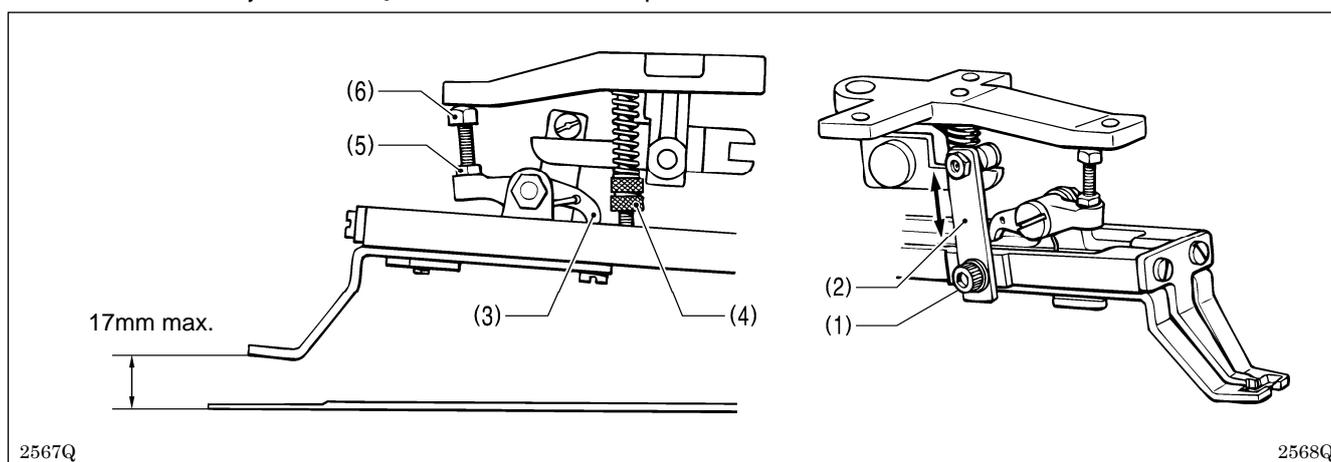


- To adjust the work clamp lift amount, loosen the bolt (1) and move the presser arm lever plate (2) up or down.
- Apply grease to the bottom of the presser plate (3) to the top of the presser arm lever plate (2) and to the sliding part of the work clamp (4) (grease is already applied at the time of shipment), and check that the movement becomes easier.
- Check that there is a gap between the presser arm lever plate (2) and the presser plate (3) when the work clamp (4) is lowered.
  - \* If movement is sluggish when the work clamp (4) is being raised and lowered, it may not be possible to increase the work clamp (4) lift amount.
  - \* If the work clamp (4) cannot be raised or lowered, error code "E-61" or "E-63" will be displayed.

### 5 - 8 . Adjusting the work clamp lift amount (KE-432B, 432C)

The maximum work clamp lift amount is 17 mm from the top of the needle plate when the machine is stopped.

The lift amount is adjusted  $13^{+1}_0$  mm at the time of shipment.



While the machine is stopped, loosen the bolt (1) and move the presser roller attachment plate (2) vertically to adjust the lift amount.

- \* When making this adjustment, check to see if the work clamp will open. Also, readjust the closing distance of the work clamp according to the second procedure of "5-13. Work clamp closing-distance adjustment".
- \* Loosen the nut (5) and turn the stop lever adjusting screw (6) to adjust the position of the stop lever (3) so that it does not touch the adjusting ring (4) when the work clamp is raised.
- \* If the work clamp cannot be raised or lowered, error code "E-61" or "E-63" will be displayed.

## 5. ADJUSTMENT

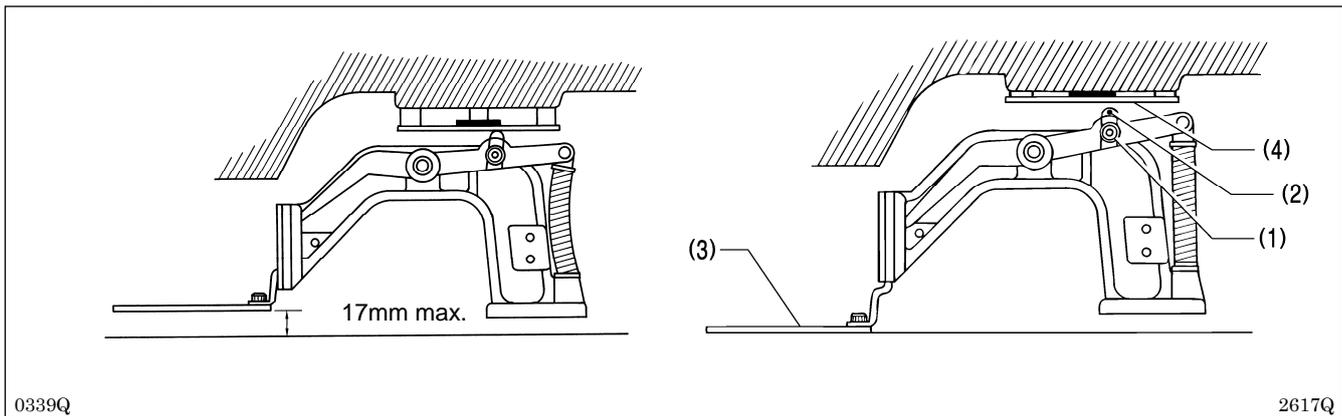
### 5-9 . Adjusting the work clamp lift amount (KE-434B, 434C, 435B, 435C, 436B, 436C, 484C)

Work clamp lifter	Solenoid type	Pneumatic type	Pneumatic type (inner clamping device)
Max. lift amount from the top of the needle plate	17mm	25mm	17mm

The lift amount is adjusted as shown in the table at the time of shipment.

	KE-434B, 434C, 435B, 435C, 436B, 436C	KE-484C
Uses	Medium materials	Heavy materials
Lift amount	10 <sup>+1</sup> <sub>0</sub> mm	14 <sup>+1</sup> <sub>0</sub> mm

#### [Solenoid type]



To adjust the work clamp lift amount, loosen the bolt (1) and move the presser arm lever plate (2) up or down.

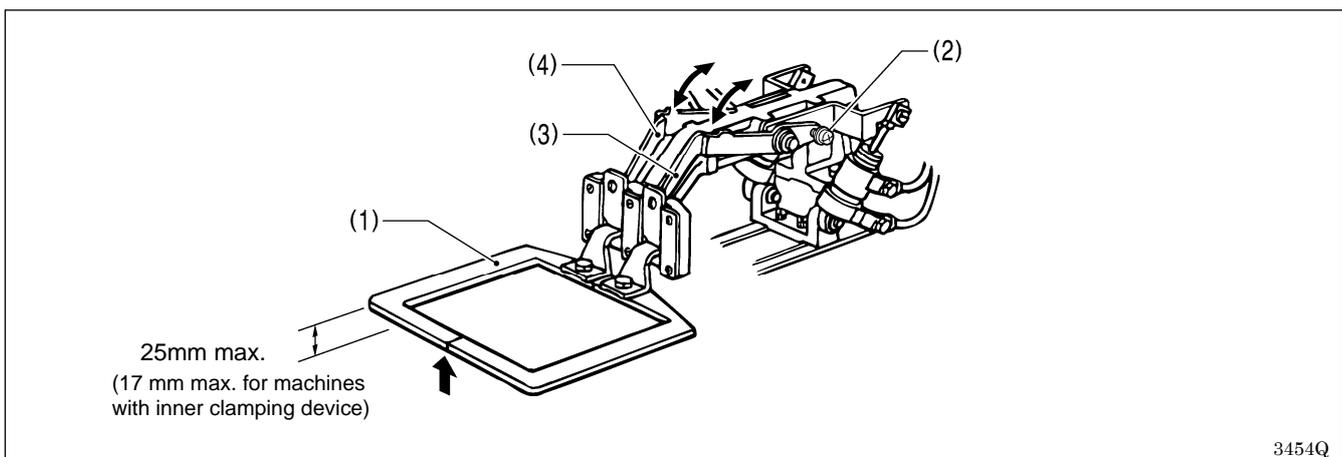
\* If movement is sluggish when the work clamp (3) is being raised and lowered, it may not be possible to increase the work clamp (3) lift amount.

Apply grease to the bottom of the presser plate (4) to the top of the presser arm lever plate (2) and to the sliding part of the work clamp (3) (grease is already applied at the time of shipment), and check that the movement becomes easier.

\* If the work clamp (3) cannot be raised or lowered, error code "E-61" or "E-63" will be displayed.

\* Check that there is a gap between the presser arm lever plate (2) and the presser plate (4) when the work clamp (3) is lowered.

#### [Pneumatic type]



1. Raise the work clamp (1) and loosen the screws (2).

2. Adjust the work clamp lift by moving the presser levers (3) and (4) up and down and then tighten the screws (2).

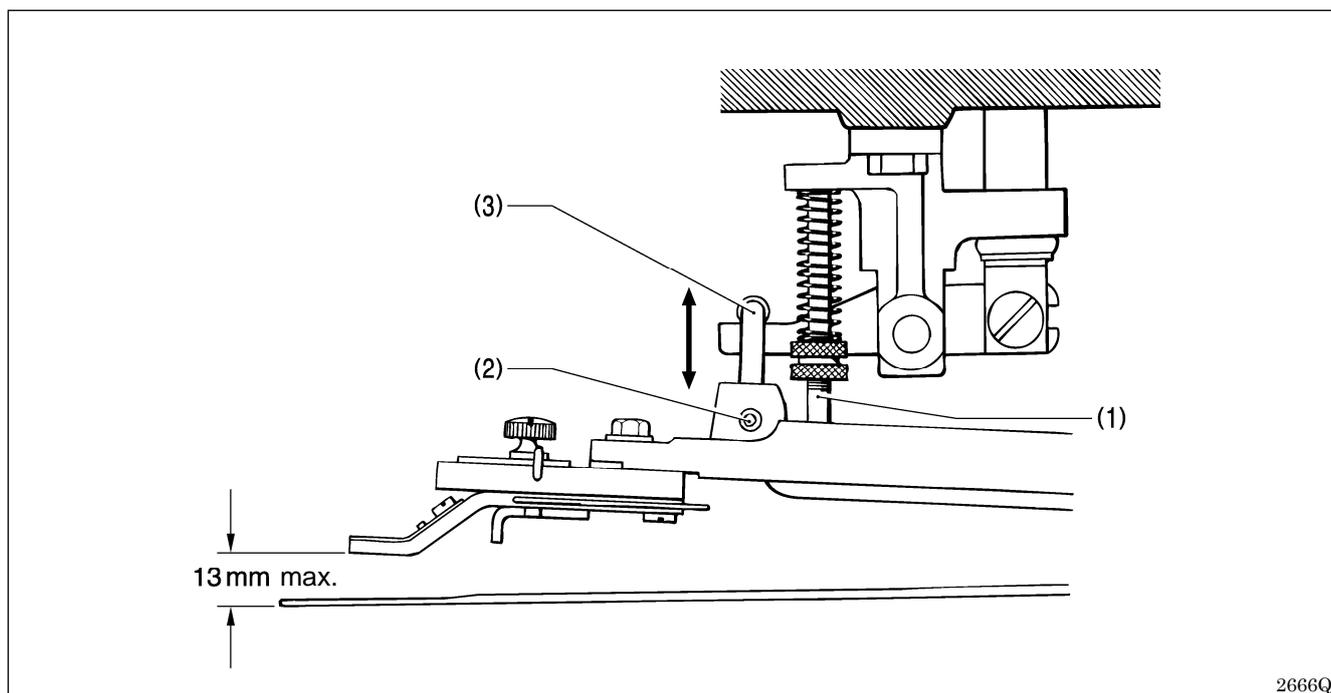
\* If movement is sluggish when the work clamp (1) is being raised and lowered, it may not be possible to increase the work clamp (1) lift amount.

Apply grease to the sliding part of the work clamp (1) (grease is already applied at the time of shipment), and check that the movement becomes easier.

In addition, check that the air tubes are routed correctly.

### 5 - 1 0 . Adjusting the button clamp lift amount (BE-438B, 438C)

The maximum button clamp lift amount is 13 mm from the top of the needle plate.  
The lift amount is adjusted  $10^{+1}_0$  mm at the time of shipment.

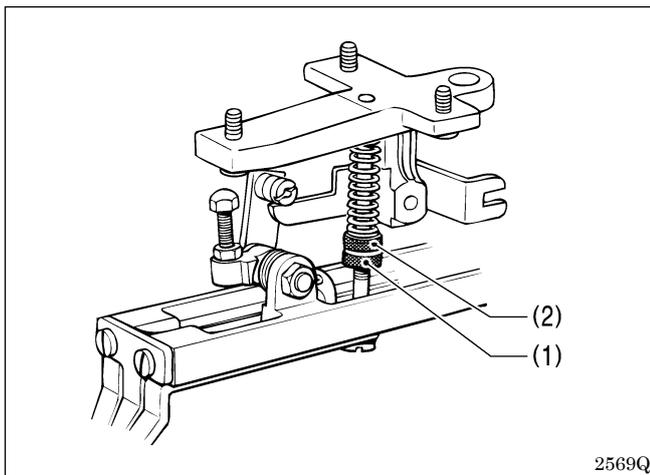


Remove the button clamp presser spring (1), loosen the screw (2) and adjust the button clamp holder hook (3) by moving it up and down.

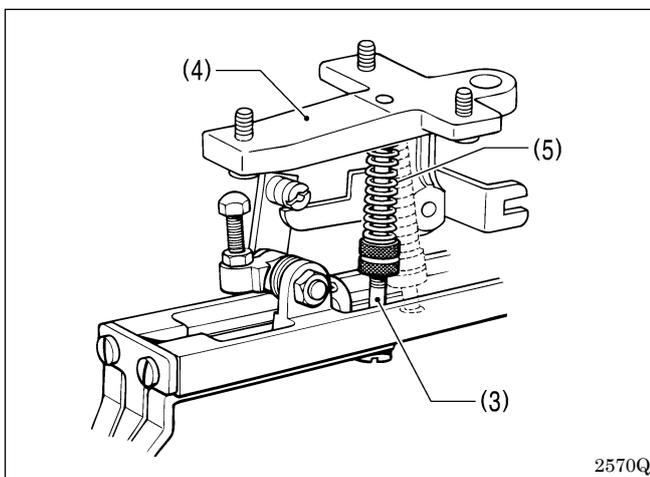
\* If the button clamp cannot be raised or lowered, error code "E-61" or "E-63" will be displayed.

## 5. ADJUSTMENT

### 5 - 1 1 . Work clamp pressure adjustment (KE-432B, 432C)



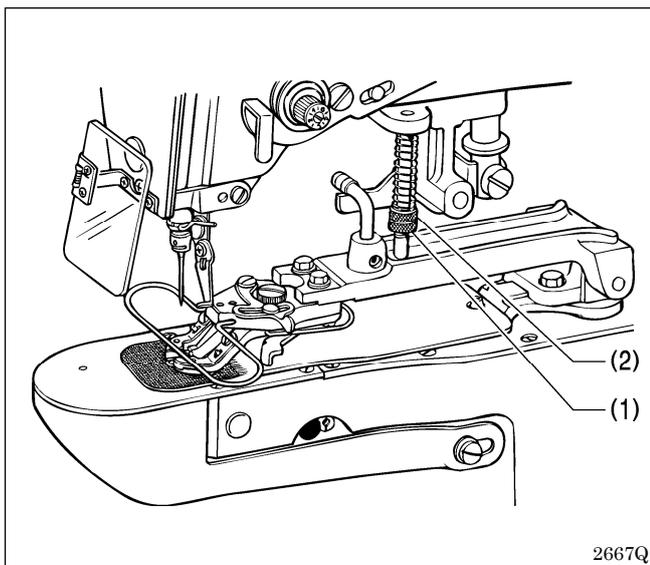
Loosen the lower adjusting ring (1) as much as possible (to the extent that the material being sewn does not slip and alter the pattern). Then, adjust the pressure by turning the upper adjusting ring (2).



#### Removal of the work clamp spring

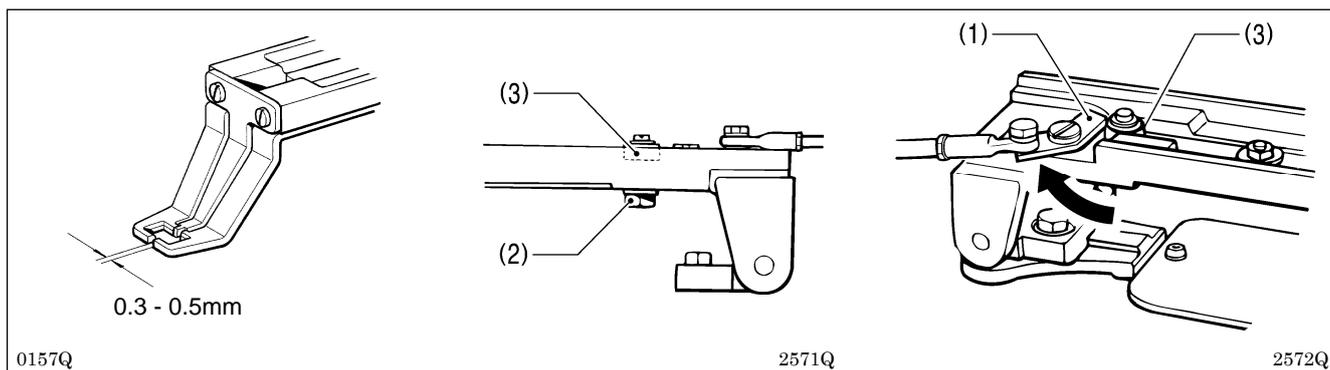
Lower the work clamp, then place the adjusting ring (3) in the hole of the frame, remove the tip of the adjusting screw from the lever holder (4), and remove the work clamp spring (5).

### 5 - 1 2 . Adjusting the holding pressure (BE-438B, 438C)



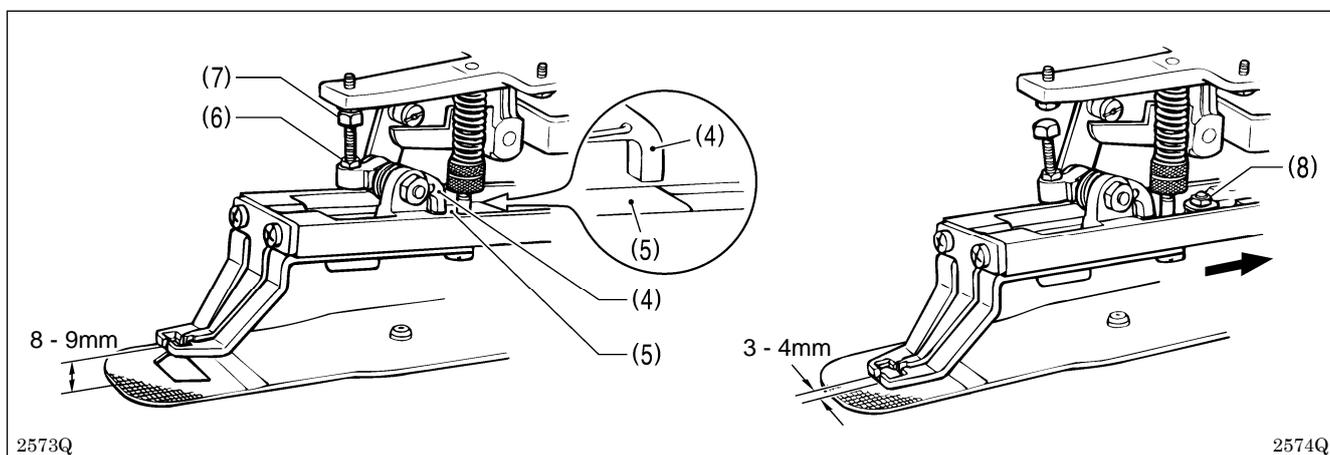
Loosen the adjusting nut (1) and turn the adjusting nut (2) to the point where it is just tight enough that the material will not slip out of place when it is slightly pulled (keep pressure as slight as possible).

## 5 - 1 3 . Work clamp closing-distance adjustment (KE-432B, 432C)



1. With the presser closing lever (1) pushed all the way by hand in the direction of the arrow in the illustration, loosen the nut (2) and move the presser closing roller (3) so that the gap is 0.3 - 0.5 mm when the work clamp is closed while the sewing machine is in operation.

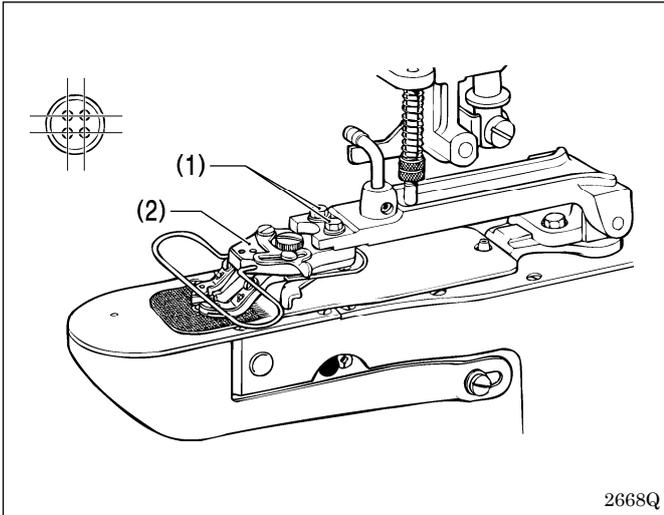
\* As the presser closing roller (3) is brought closer to the presser closing lever (1), the gap of the work clamp is narrowed. Note, however that if the presser closing roller (3) is moved closer than necessary, the operation of the presser closing lever (1) may be impaired.



2. By loosening the nut (6) and turning the stop lever adjusting screw (7), adjust the stop lever (4) so that it separates from the stop position adjusting plate (5) when the work clamp is elevated 8 - 9 mm above the surface of the needle plate.

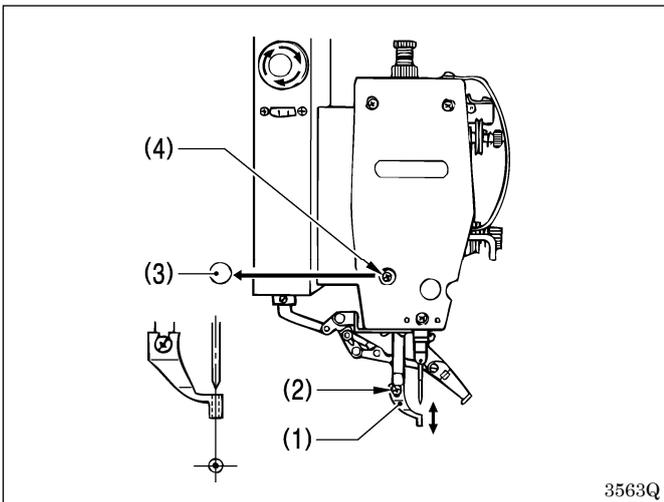
3. Loosen the nut (8) and move the work clamp so that the closing distance becomes 3 - 4 mm when the work clamp is in the lowered position. Then, push the nut (8) all the way in the direction indicated by the arrow, and tighten it.

### 5 - 1 4 . Adjusting the position of the button holder (BE-438B, 438C)



1. Loosen the two hexagonal bolts (1) and adjust the button holder body (2) by moving it.
2. Check that the needle will go through the button hole with no contact. (Refer to "CHECKING THE SEWING PATTERN" in the Instruction Manual.)

### 5 - 1 5 . Work clamp adjustment (KE-435B, 435C, 436B, 436C)



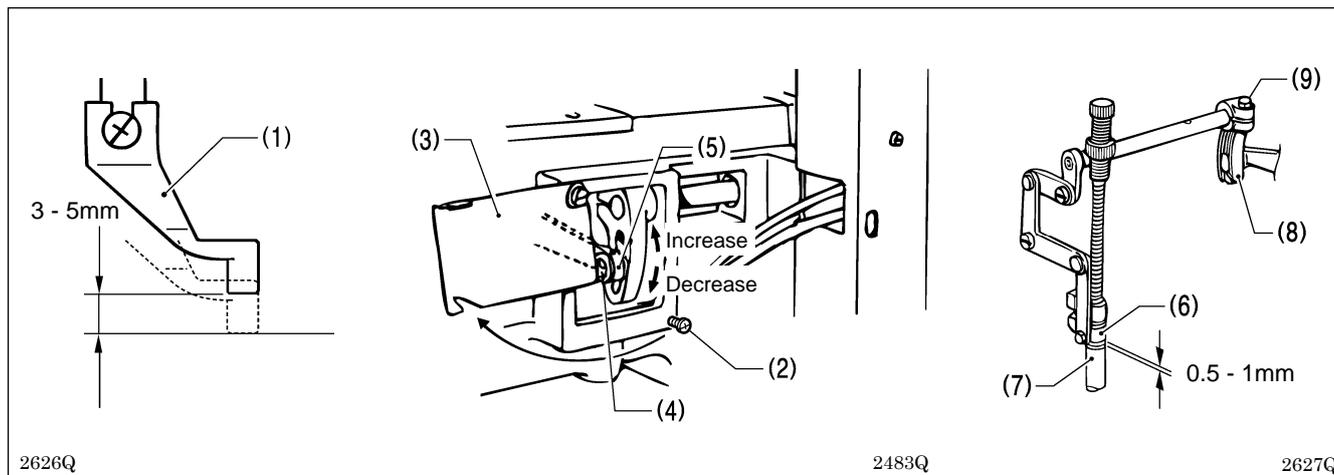
1. Turn the pulley by hand to set the work clamp (1) to its lowest point.
2. Loosen screw (2), set the bottom of the work clamp (1) lightly against the work piece, and then tighten screw (2).

**Note:**

- If the work clamp is lowered too far, the work piece will shift when sewing. Also, if the work clamp is too high, skipped stitches may occur.
3. Turn the pulley by hand, and make sure the needle enters the center of the needle hole in the work clamp (1). If the needle is not aligned with the center of the needle hole, remove cap (3), loosen screw (4), and turn the work clamp (presser bar) to adjust.

## 5 - 1 6 . Changing the work clamp lift (KE-435B, 435C, 436B, 436C)

Standard lift amount of the work clamp (1) is 3 mm (max. 8 mm).

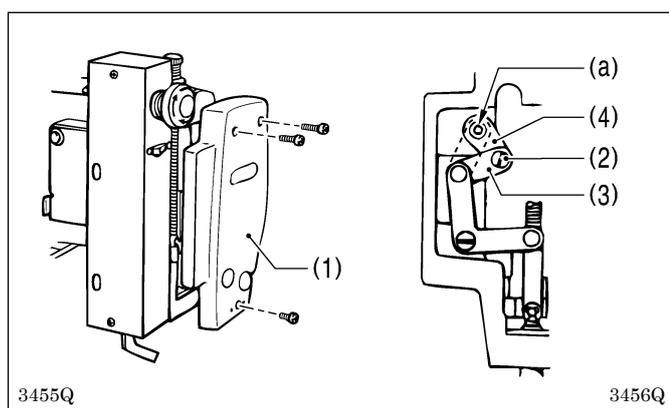
**Adjusting work clamp lift to 3 - 5 mm**

1. Loosen the screw (2) and open the stepping cover (3).
2. Loosen the nut (4) and adjust the stepping work clamp connecting rod (5) position.

\* If you would like to increase the work clamp lift, move the stepping work clamp connecting rod (5) up, and if you would like to decrease it, move the stepping work clamp connecting rod (5) down.

**Adjusting work clamp lift to 5 - 8 mm**

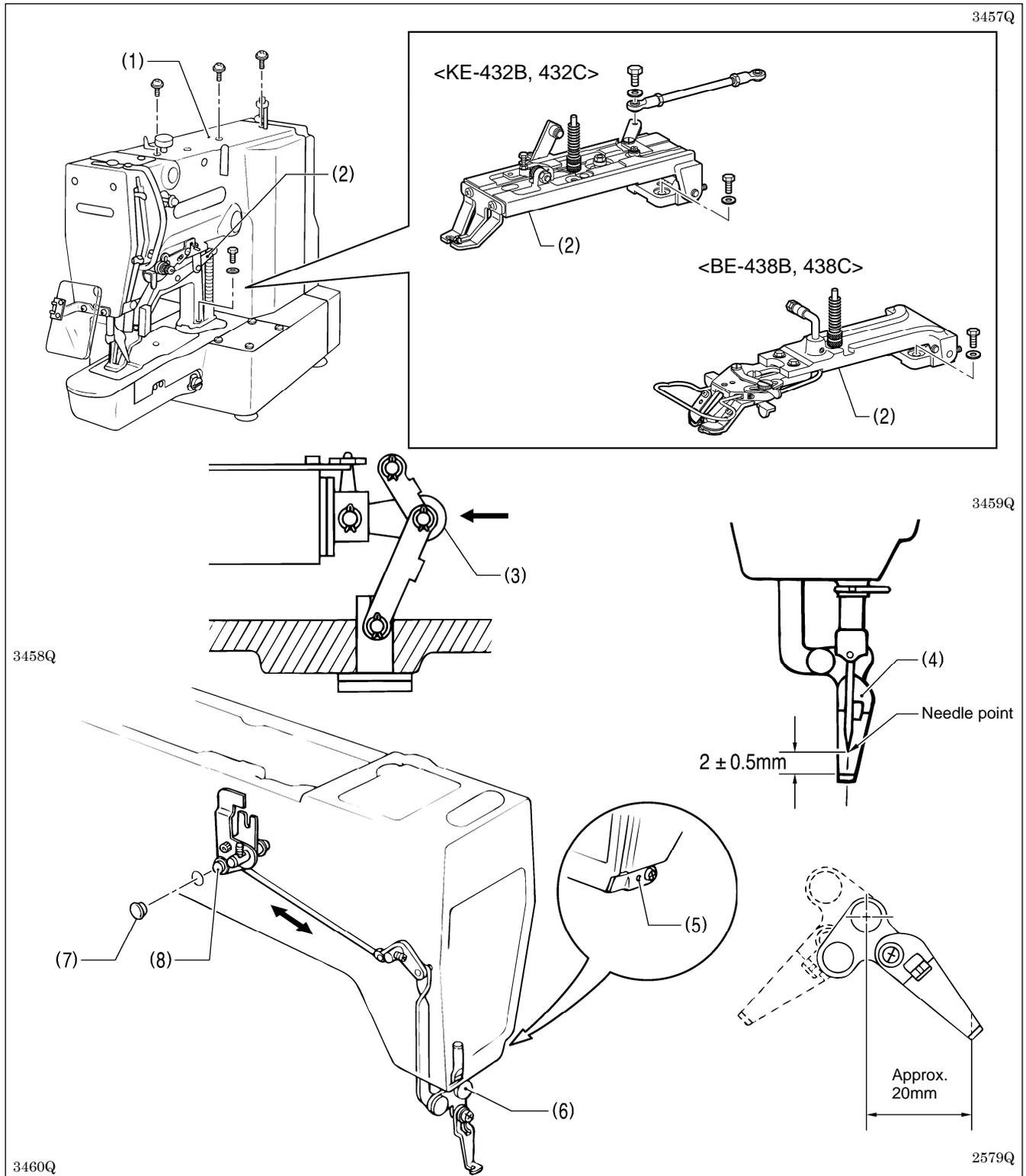
1. Loosen the screw (2) and open the stepping cover (3).
2. Loosen the nut (4) and adjust the stepping work clamp connecting rod (5) position.
  - \* If you would like to increase the work clamp lift, move the stepping work clamp connecting rod (5) up, and if you would like to decrease it, move the stepping work clamp connecting rod (5) down.
3. Remove the face plate and turn the pulley by hand to set the work clamp to its lowest point. Loosen the bolt (9) of stepping work clamp arm R (8). Adjust the clearance between the presser bar lifter (6) and the presser bar bush (7) to 0.5 - 1 mm.

**<If vertical movement of the work clamp is not required>**

1. Remove the face plate (1).
2. Remove the shoulder screw (2) and re-attach the stepping link assembly (3) to the upper screw hole (a) of the stepping work clamp arm F (13).

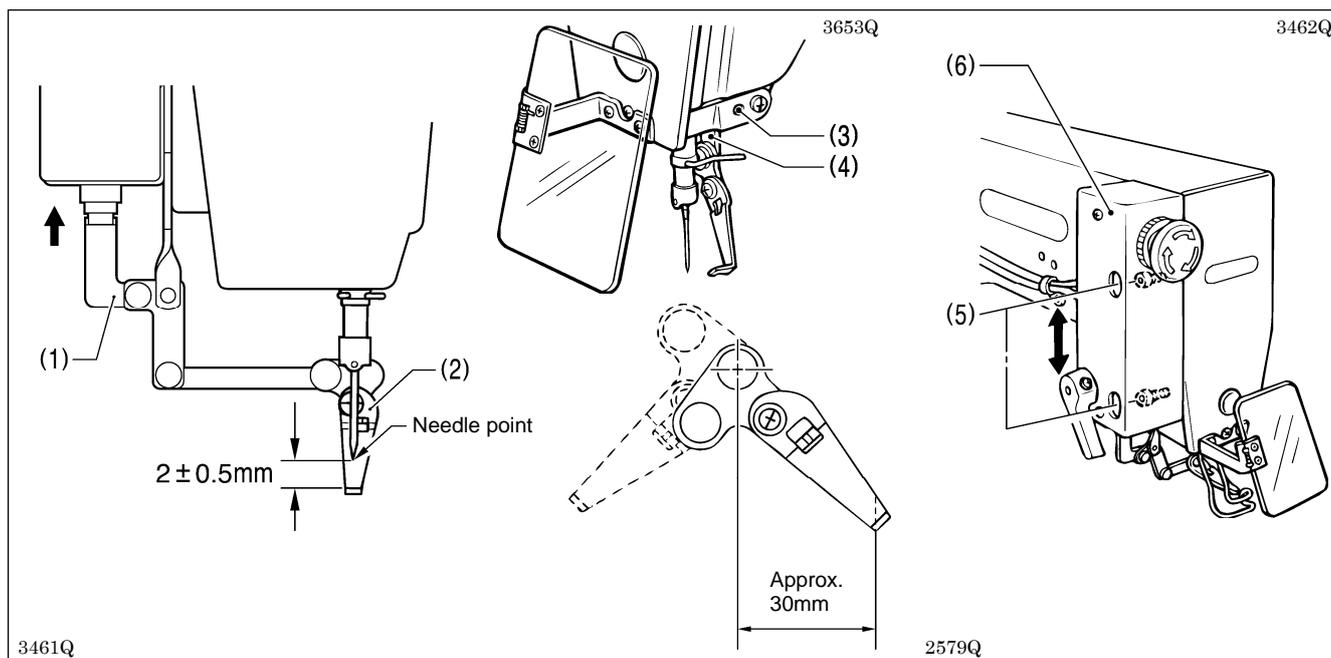
5 - 1 7 . Adjusting the thread wiper

[Solenoid type]



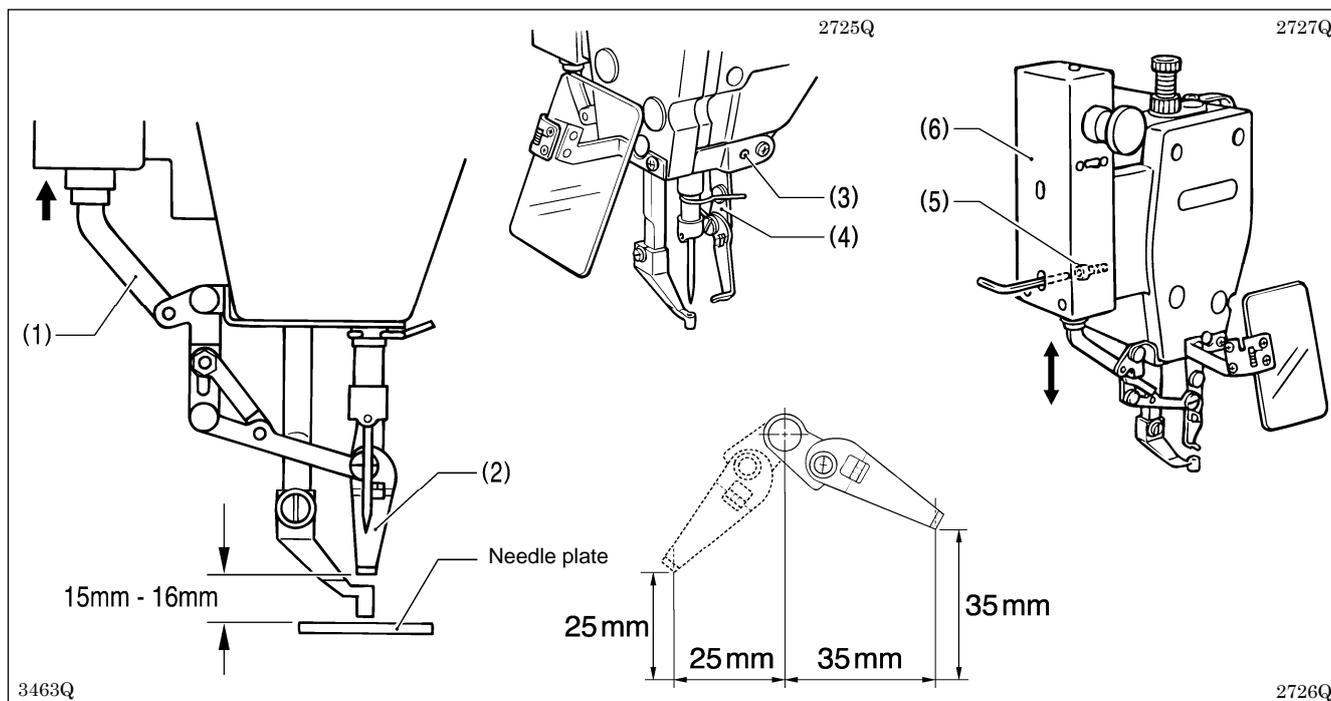
1. Remove the top cover (1) and the work clamp arm assembly (2).  
Remove the top cover (1) and the button clamp assembly (2). [BE-438B, 438C]
2. While the sewing machine is stopped, loosen the set screw (5) and move the thread wiper arm assembly (6) up or down to adjust so that the clearance between the tip of the needle and the top of the wiper is  $2 \pm 0.5$  mm when the link assembly C (3) of the work clamp lifter mechanism is pushed and the thread wiper (4) has passed below the needle.  
\* This adjustment should be made while the sewing machine is stopped. Be careful not to turn the machine pulley, otherwise the tip of the needle will move.
3. Remove the rubber cap (7) and loosen the set screw (8) to adjust the thread wiper so that it is approximately 20 mm from the needle when it is at the standby position.

## [Pneumatic type]



- While the sewing machine is stopped, loosen the set screw (3) and move the thread wiper arm assembly (4) up or down to adjust so that the clearance between the tip of the needle and the top of the wiper is  $2 \pm 0.5$  mm when the thread wiper connecting rod assembly (1) is pushed up and the thread wiper (2) has passed below the needle.
  - \* This adjustment should be made while the sewing machine is stopped. Be careful not to turn the machine pulley, otherwise the tip of the needle will move.
- Loosen the two bolts (5) and move the wiper solenoid cover (6) up or down so that the thread wiper is approximately 30 mm from the needle when it is at the standby position.

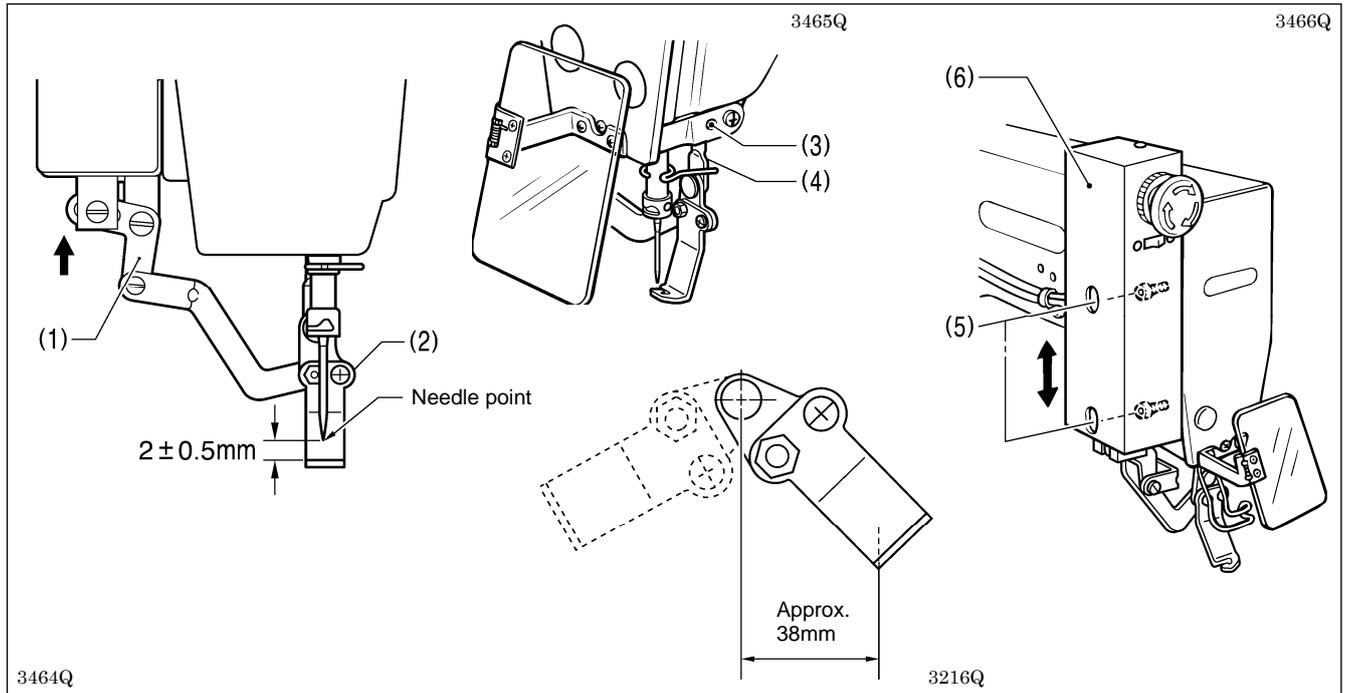
## [Stepping foot specifications]



- While the sewing machine is stopped, loosen the set screw (3) and move the thread wiper arm assembly (4) up or down to adjust so that the clearance between the needle plate and the bottom of the wiper is 15–16 mm when the thread wiper connecting rod assembly (1) is pushed up and the thread wiper (2) has passed below the needle.
- Loosen the two bolts (5) and move the solenoid cover (6) up or down so that the thread wiper is approximately 35 mm from the needle when it is at the standby position.

## 5. ADJUSTMENT

[KE-484C]



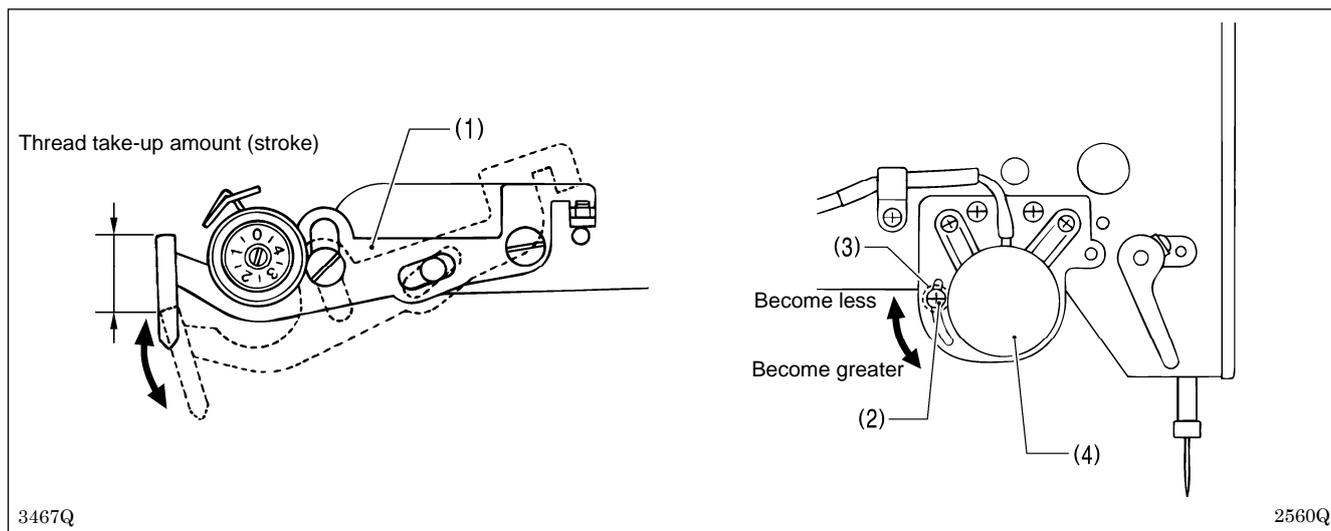
1. While the sewing machine is stopped, loosen the set screw (3) and move the thread wiper arm assembly (4) up or down to adjust so that the clearance between the tip of the needle and the top of the wiper is  $2 \pm 0.5$  mm when the thread wiper connecting rod lever (1) is pushed up and the thread wiper (2) has passed below the needle.  
\* This adjustment should be made while the sewing machine is stopped. Be careful not to turn the machine pulley, otherwise the tip of the needle will move.
2. Loosen the two bolts (5) and move the cylinder cover (6) up or down so that the thread wiper is approximately 38 mm from the needle when it is at the standby position.

## 5-18. Adjusting the thread take-up amount

[KE-430B, 430C, 431B, 431C, 432B, 432C, 433B, 434B, 434C, BE-438B, 438C]

At the time of shipment from the factory, the thread take-up amount (stroke) of the thread take-up lever (1) is adjusted as shown in the table below. You may need to adjust this setting depending on the sewing conditions to prevent the thread from pulling out at the sewing start.

	KE-430B, 430C		KE-431B, 431C	KE-433B		KE-432B, 432C, 434B, 434C BE-438B, 438C
Spec.	-1, -5	-2, -7	-2, -3	-1	-2, -7	-
Thread take-up amount	5mm	0mm	0mm	5mm	0mm	5mm



Loosen the screw (2) and move the stopper (3.57 nut) (3) to adjust the operating angle of the thread take-up solenoid (4).

\* To reduce the thread take-up amount, move the stopper (3) upward.

\* To increase the thread take-up amount, move the stopper (3) downward.

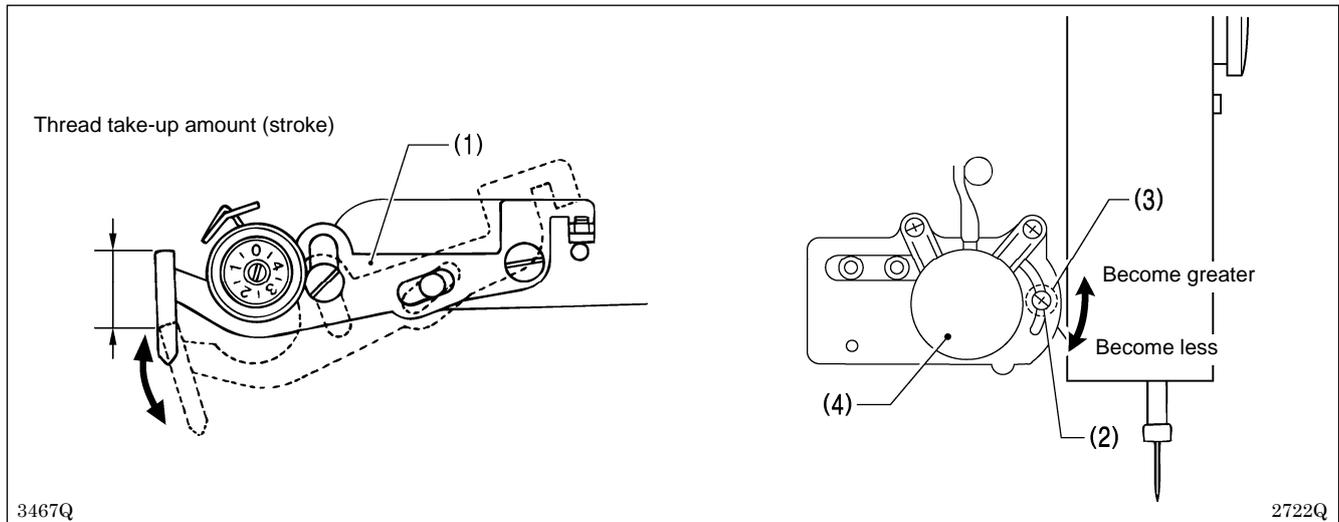
**Note:**

If the stroke of the thread take-up lever (1) is shorter than necessary, the needle thread trailing length may become too short and the thread may come out of the needle. Furthermore, if it is larger than necessary, the needle thread trailing length may become too long and the underside of the article being sewn may become untidy.

## 5. ADJUSTMENT

### [KE-435B, 435C, 436B, 436C]

At the time of shipment from the factory, the thread take-up amount (stroke) of the thread take-up lever (1) is set to the standard setting of 5 mm. You may need to adjust this setting depending on the sewing conditions to prevent the thread from pulling out at the sewing start.



Loosen the screw (2) and move the stopper (3.57 nut) (3) to adjust the operating angle of the thread take-up solenoid (4).

\* To reduce the thread take-up amount, move the stopper (3) downward.

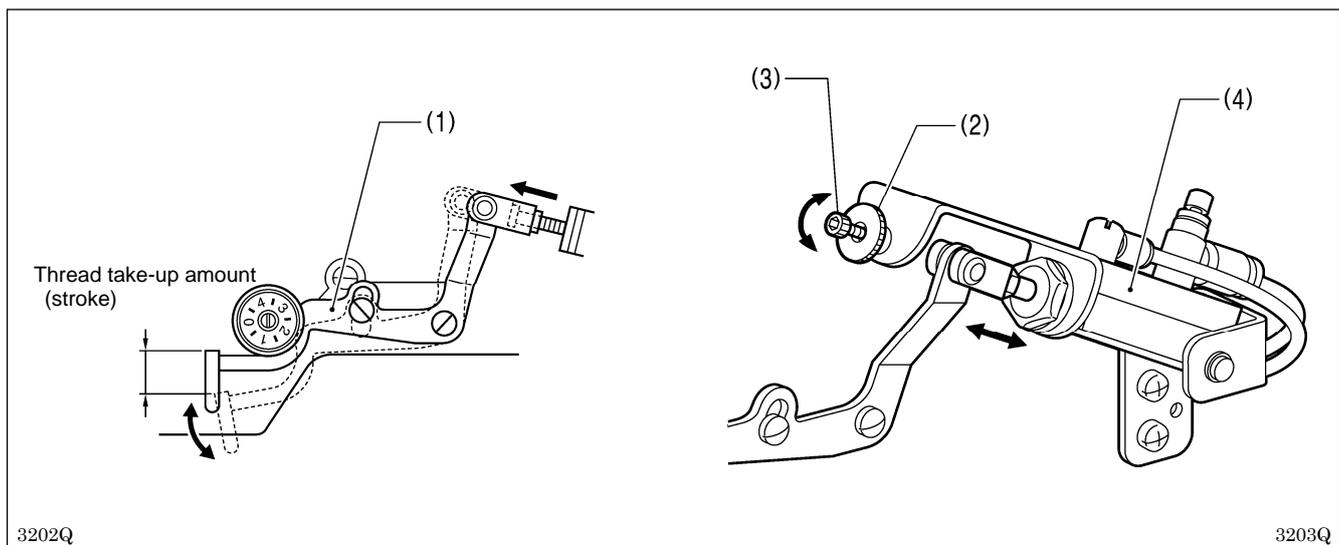
\* To increase the thread take-up amount, move the stopper (3) upward.

#### Note:

If the stroke of the thread take-up lever (1) is shorter than necessary, the needle thread trailing length may become too short and the thread may come out of the needle. Furthermore, if it is larger than necessary, the needle thread trailing length may become too long and the underside of the article being sewn may become untidy.

### [KE-484C]

At the time of shipment from the factory, the thread take-up amount (stroke) of the thread take-up lever (1) is set to the standard setting of 7 mm. You may need to adjust this setting depending on the sewing conditions to prevent the thread from pulling out at the sewing start.



Loosen the nut (2) and move the stopper (bolt) (3) to adjust the protruding position of the cylinder (4).

\* To reduce the thread take-up amount, tighten the stopper (3).

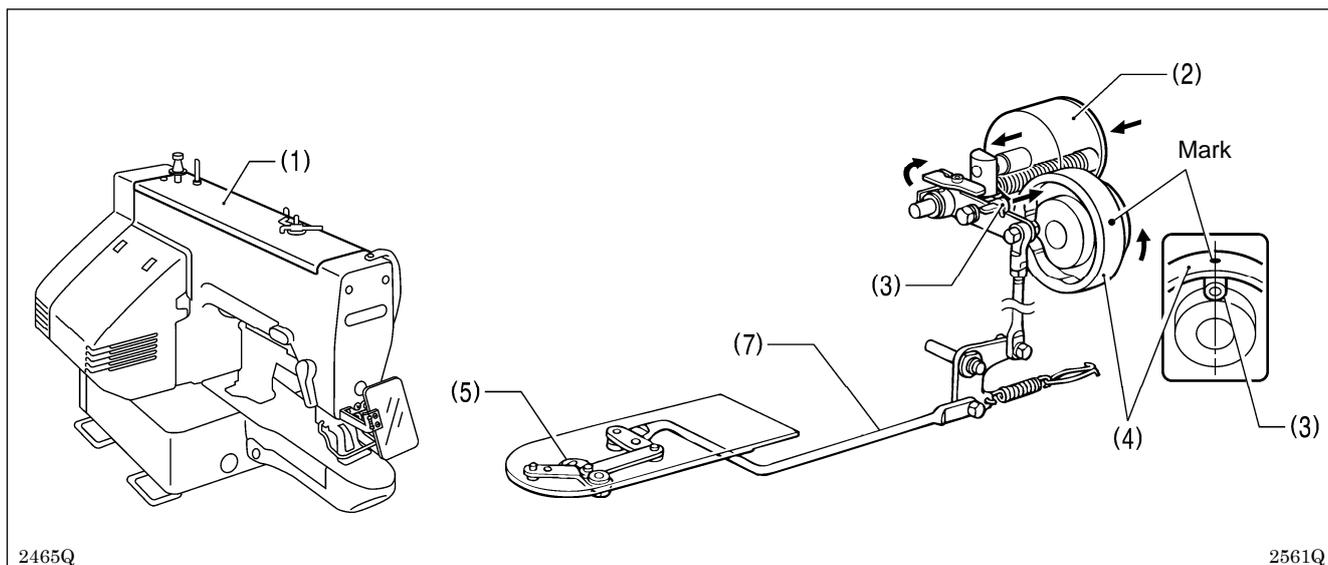
\* To increase the thread take-up amount, loosen the stopper (3).

#### Note:

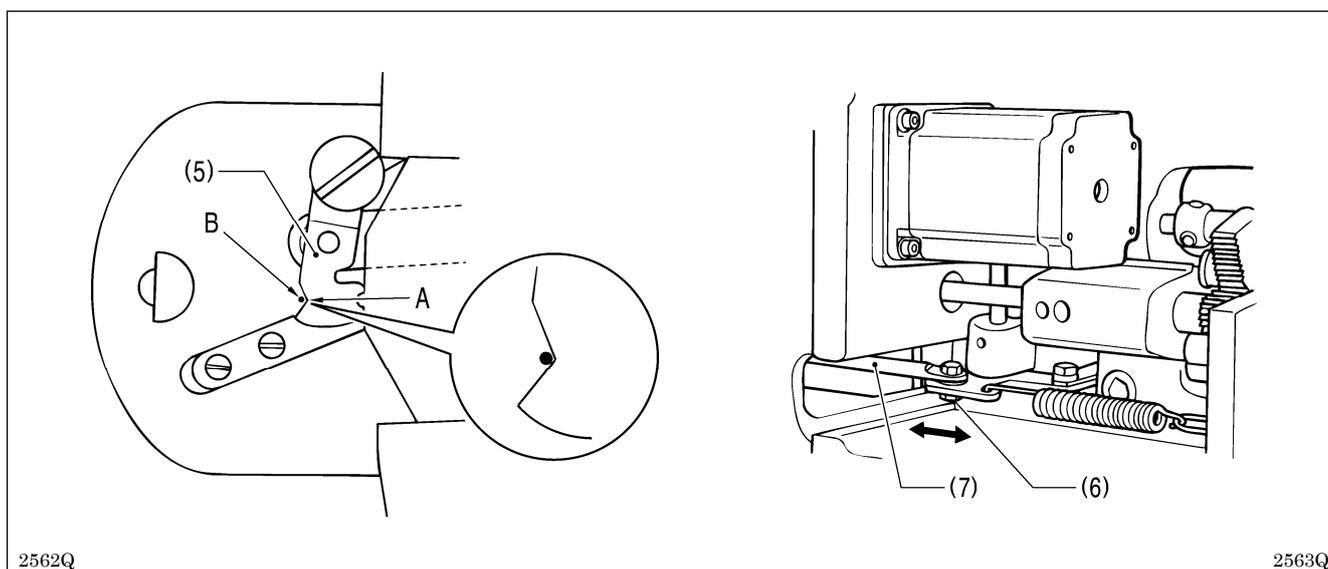
If the stroke of the thread take-up lever (1) is shorter than necessary, the needle thread trailing length may become too short and the thread may come out of the needle. Furthermore, if it is larger than necessary, the needle thread trailing length may become too long and the underside of the article being sewn may become untidy.

## 5 - 1 9 . Adjusting the movable knife

[KE-430C series]



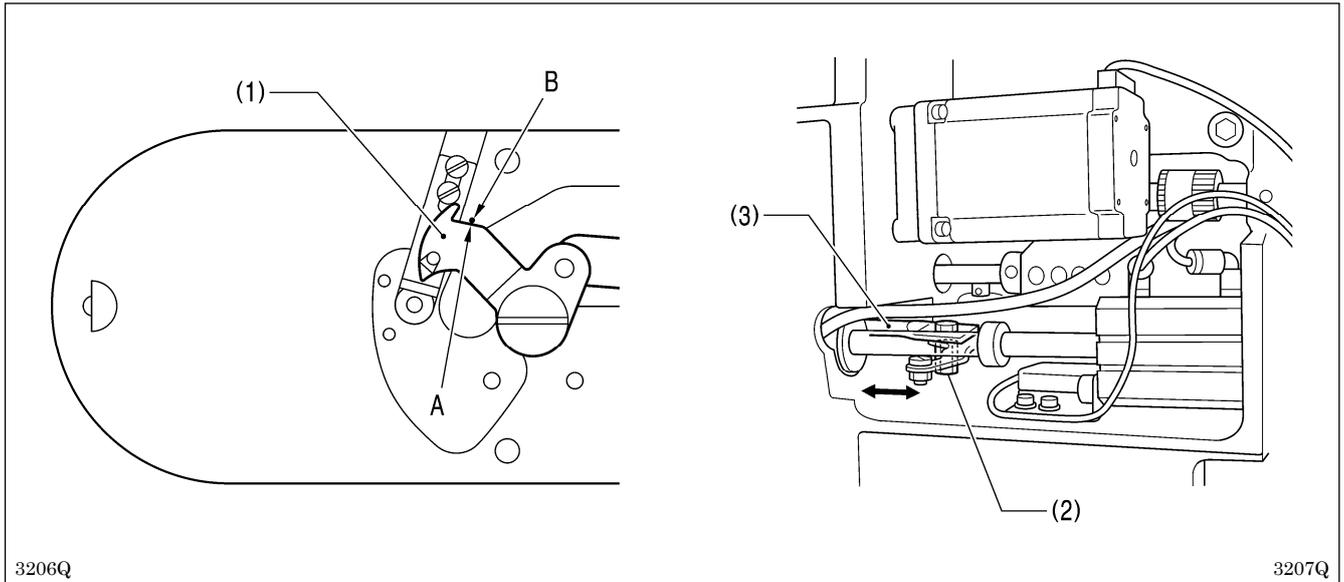
1. Remove the top cover (1) while making this adjustment.
2. Turn the pulley by hand to set the needle bar to its lowest point.
3. Press down on the plunger (2) of the thread trimming solenoid as far as it will go, and fit the roller (3) into the groove of the thread trimmer cam (4).
4. In this condition, turn the machine pulley to align the position of the roller (3) with the mark on the thread trimmer cam (4).



5. Loosen the nut (6) and move the connecting rod lever (7) to the left or right to adjust so that the V section A is aligned with the index mark B on the needle plate when in this condition (the procedure 3.) and the movable knife (5) is pushed to the machine pulley side so that there is no play.

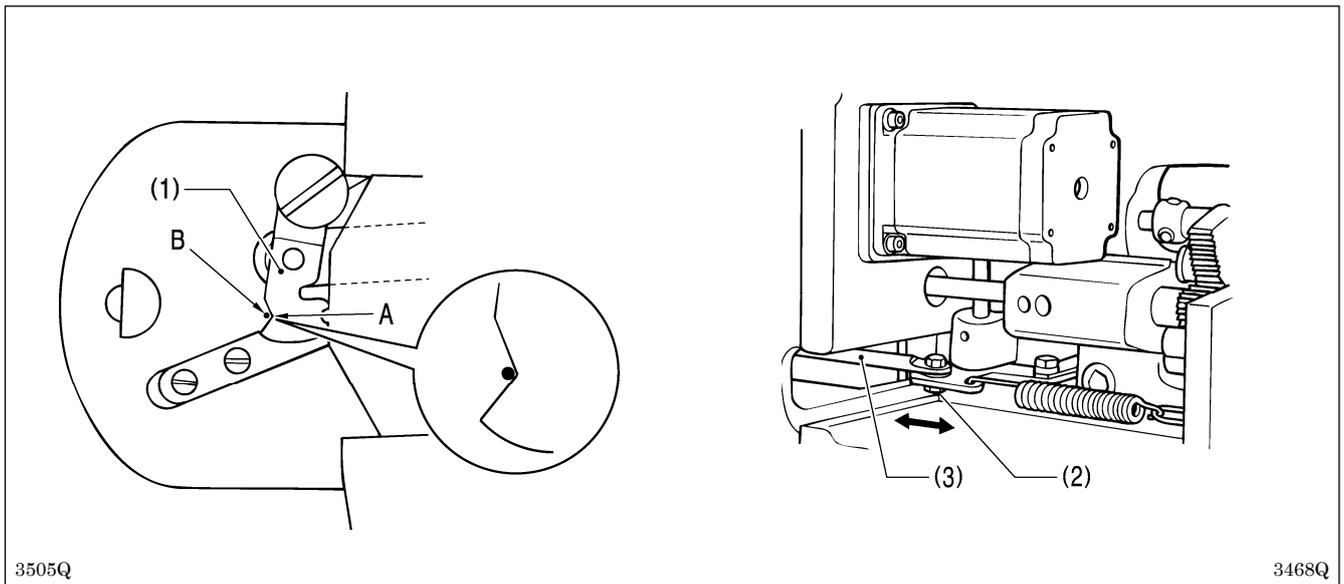
## 5. ADJUSTMENT

[KE-484C]



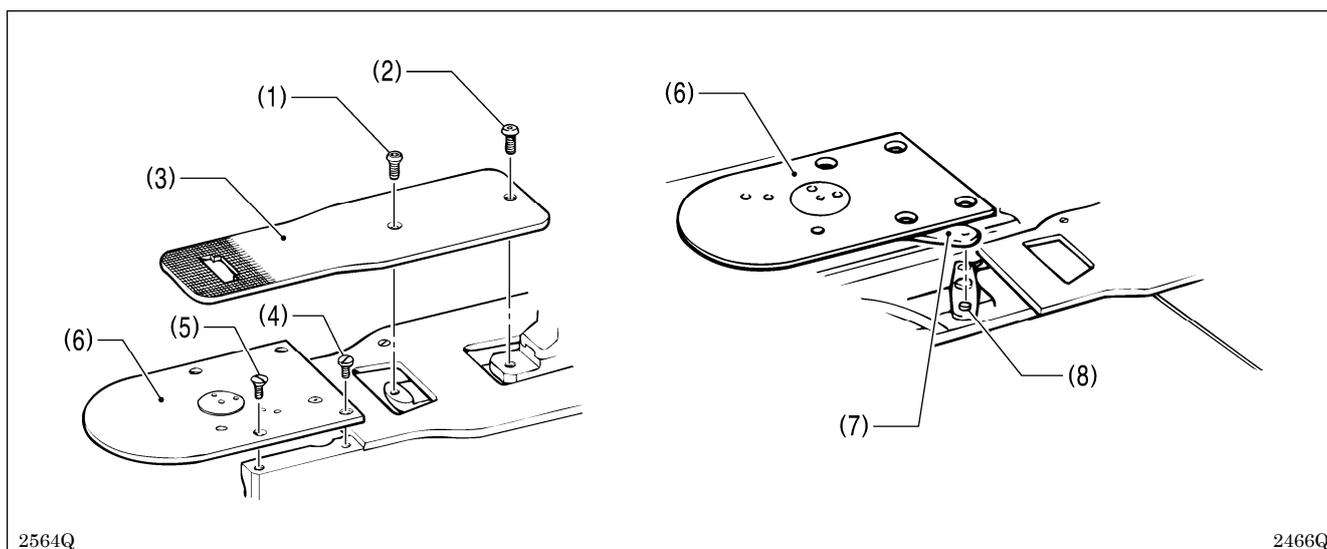
Loosen the nut (2) and move the connecting rod lever (3) to the left or right to adjust so that the V section A is aligned with the index mark B on the needle plate when the sewing machine in the stopped position and the movable knife (1) is pushed to the machine pulley side so that there is no play.

[KE-430B series]

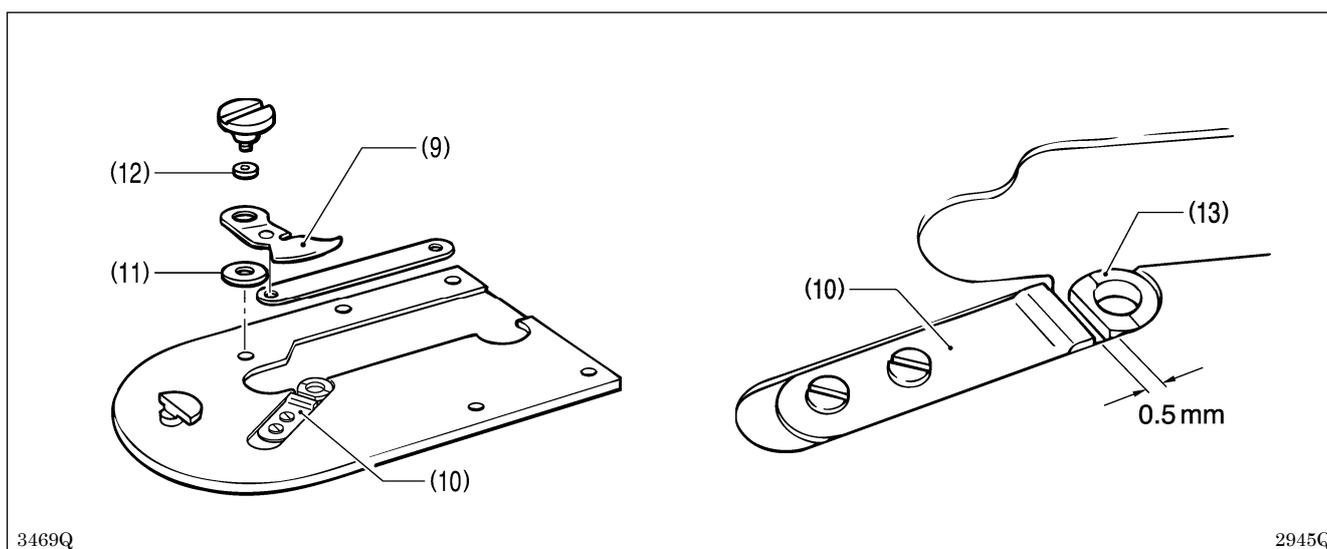


Loosen the nut (2) and move the connecting rod lever (3) to the left or right to adjust so that the V section A is aligned with the index mark B on the needle plate when the sewing machine in the stopped position and the movable knife (1) is pushed to the machine pulley side so that there is no play.

### 5-1 9-1. Replacing the movable knife and fixed knife (KE-430B, 430C, 431B, 431C, 432B, 432C, 433B, BE-438B, 438C)



1. Open the large shuttle hook cover, remove the screws (1) and (2), and then remove the feed plate (3).
2. Remove the two screws (4) and the two screws (5), and then remove the needle plate (6).
3. Remove the thread trimmer connecting rod (7) from the connecting rod lever pin (8).



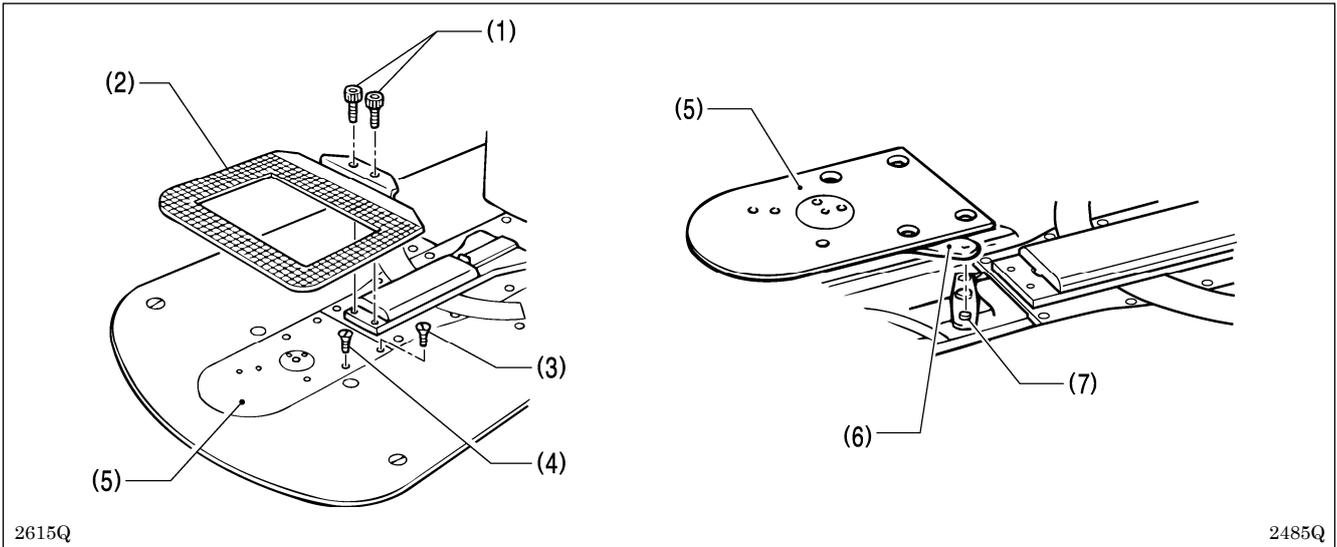
4. Remove the movable knife (9) and replace it with a new one. At this time, check that the movable knife (9) and the fixed knife (10) cut the thread cleanly. If necessary, adjust by using the appropriate movable knife washer (11) (supplied as accessories).

\* Apply grease to the outside of the collar (12) at this time.

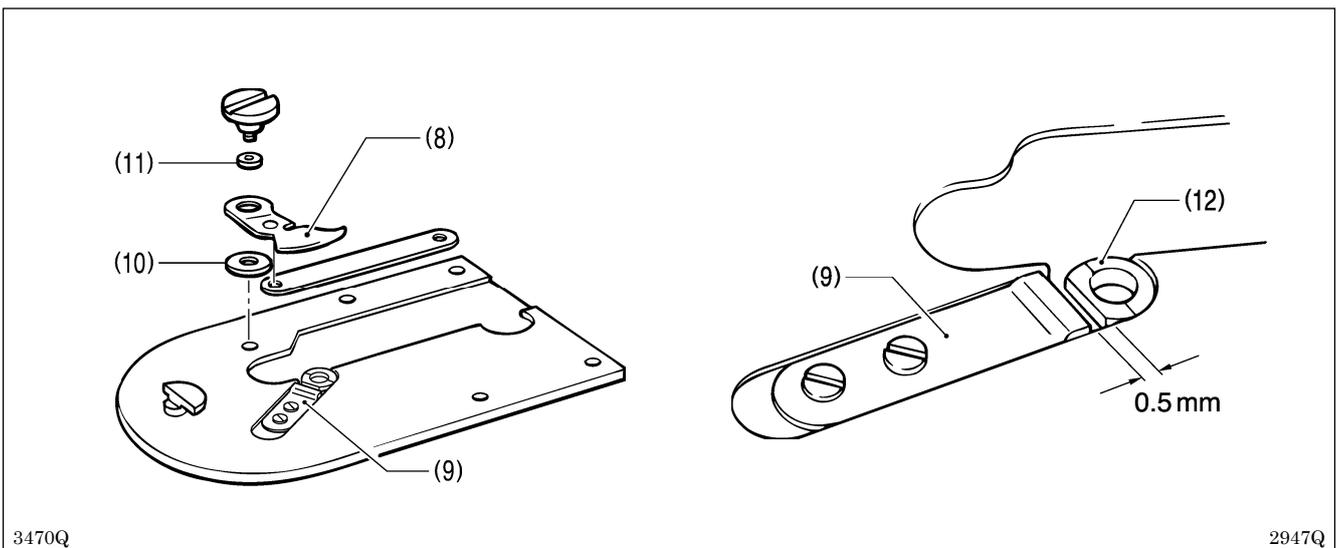
5. Install the fixed knife (10) at a distance of 0.5 mm from the needle hole plate (13).
6. Place the thread trimming connecting rod (7) onto the connecting rod lever pin (8), and then install to the needle plate (6).

## 5. ADJUSTMENT

### 5- 1 9- 2 . Replacing the movable knife and fixed knife (KE-434B, 434C, 435B, 435C, 436B, 436C)

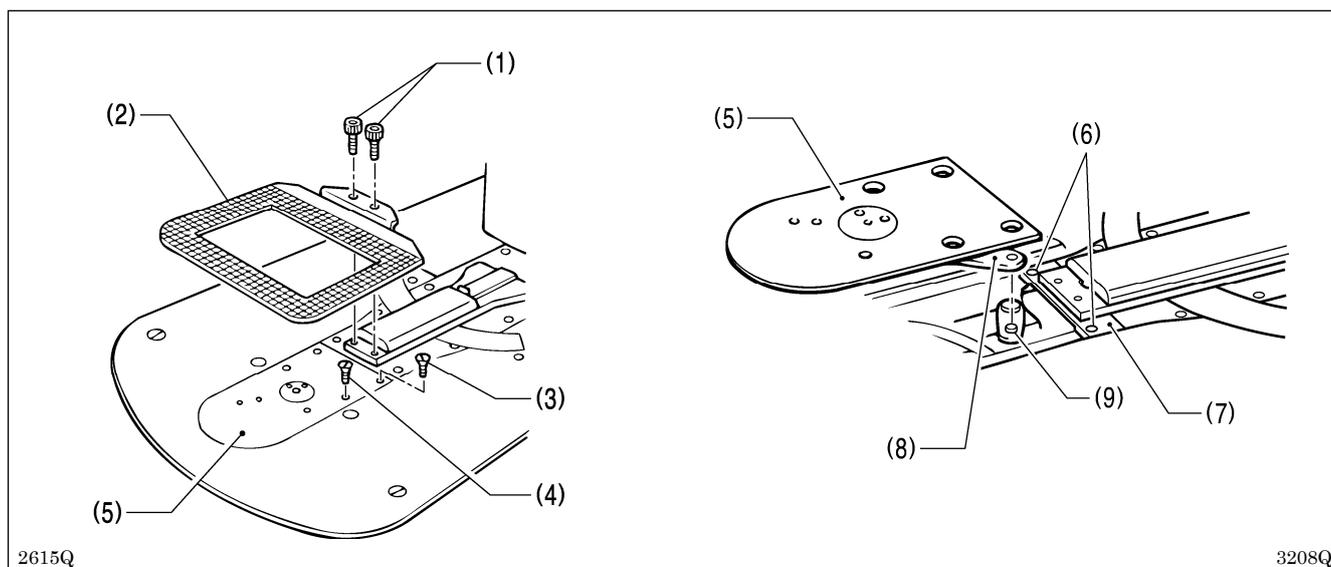


1. Open the large shuttle hook cover, remove the bolts (1) and the feed plate (2).
2. Remove the two screws (3) and the two screws (4), and then remove the needle plate (5).
3. Remove the thread trimmer connecting rod (6) from the connecting rod lever pin (7).

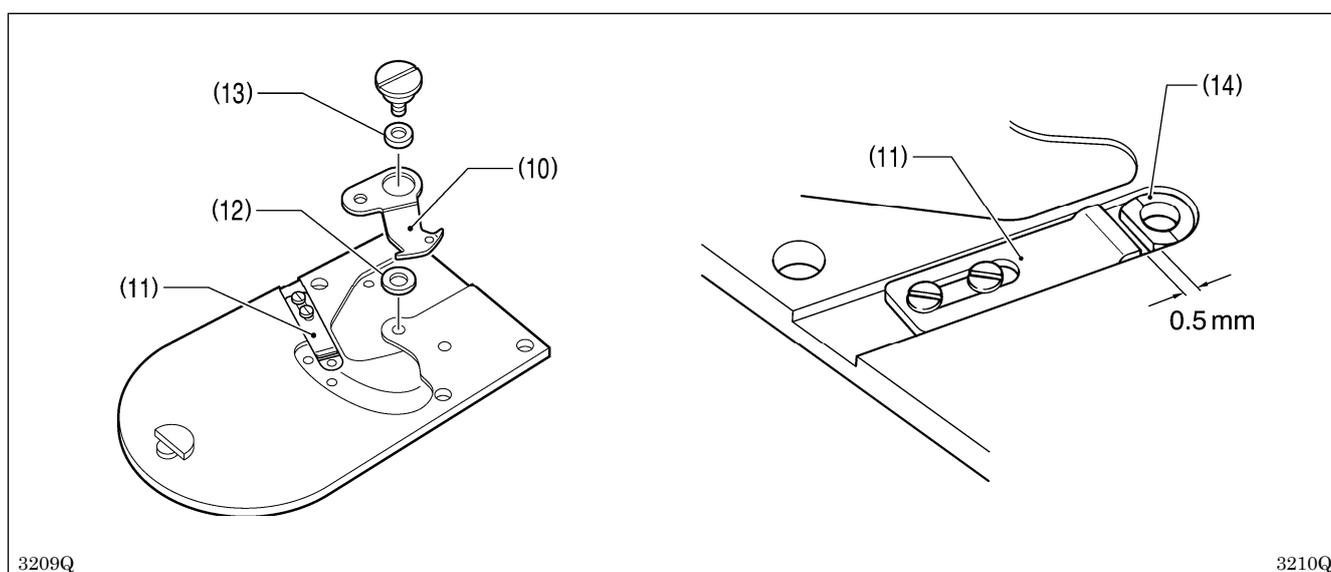


4. Remove the movable knife (8) and replace it with a new one. At this time, check that the movable knife (8) and the fixed knife (9) cut the thread cleanly. If necessary, adjust by using the appropriate movable knife washer (10) (supplied as accessories).  
\* Apply grease to the outside of the collar (11) at this time.
5. Install the fixed knife (9) at a distance of 0.5 mm from the needle hole plate (12).
6. Place the thread trimming connecting rod (6) onto the connecting rod lever pin (7), and then install to the needle plate(5).

## 5-19-3. Replacing the movable knife and fixed knife (KE-484C)



1. Open the large shuttle hook cover, remove the bolts (1) and the feed plate (2).
2. Remove the two screws (3) and the two screws (4), and then remove the needle plate (5).
3. Remove the two screws (6) and the feed bar guide plate FF (7).
4. Remove the thread trimmer connecting rod (8) from the connecting rod lever pin (9).



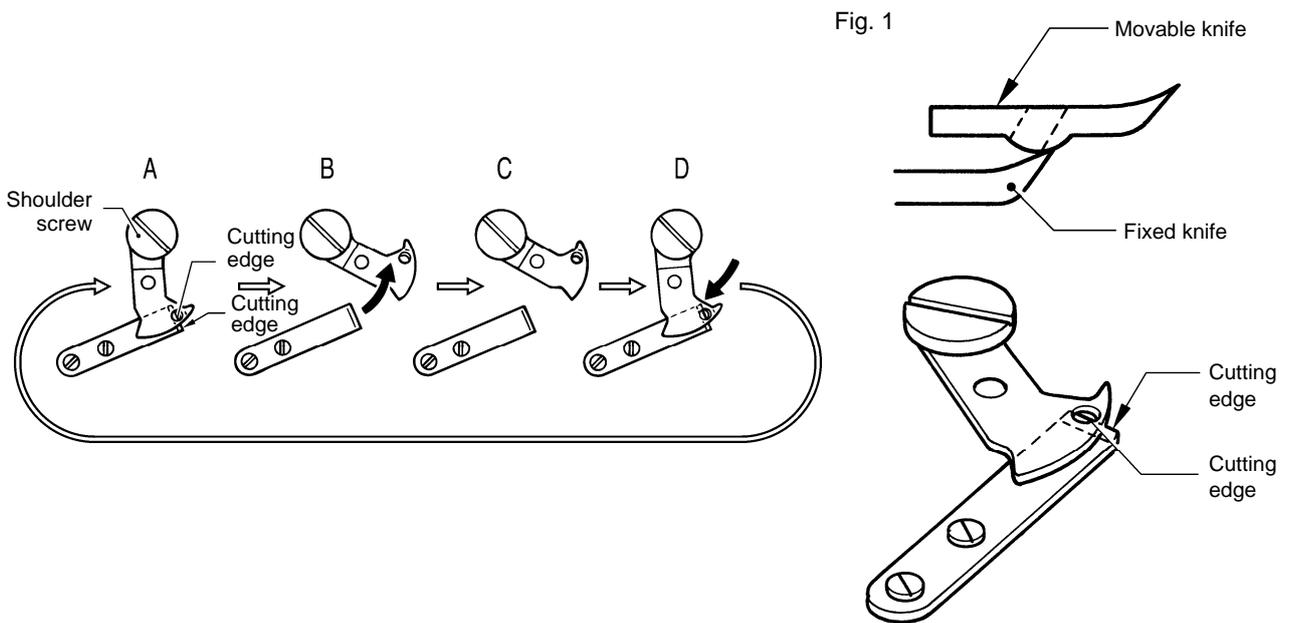
5. Remove the movable knife (10) and replace it with a new one. At this time, check that the movable knife (10) and the fixed knife (11) cut the thread cleanly. If necessary, adjust by using the appropriate movable knife washer (12) (supplied as accessories).
  - \* Apply grease to the outside of the collar (13) at this time.
6. Install the fixed knife (11) at a distance of 0.5 mm from the needle hole plate (14).
7. Place the thread trimming connecting rod (8) onto the connecting rod lever pin (9), and then install to the needle plate(5).

## 5. ADJUSTMENT

### 5 - 1 9 - 4 . Adjusting the engagement of the movable knife and fixed knife

3471Q

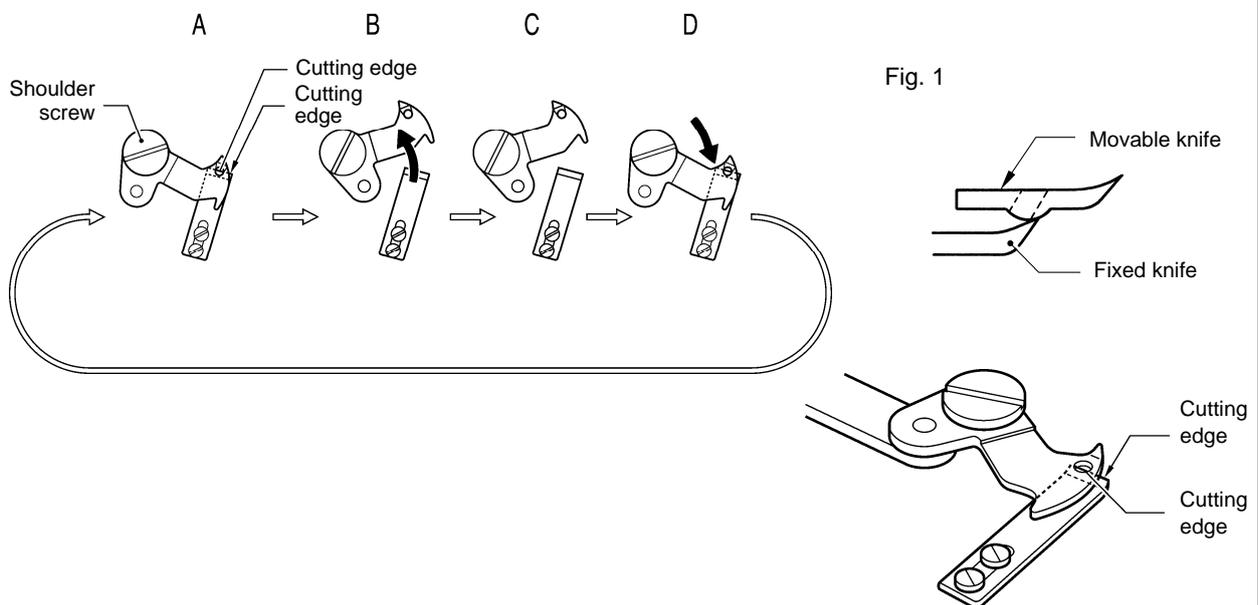
0149Q



0150Q

<KE-484C>

0149Q

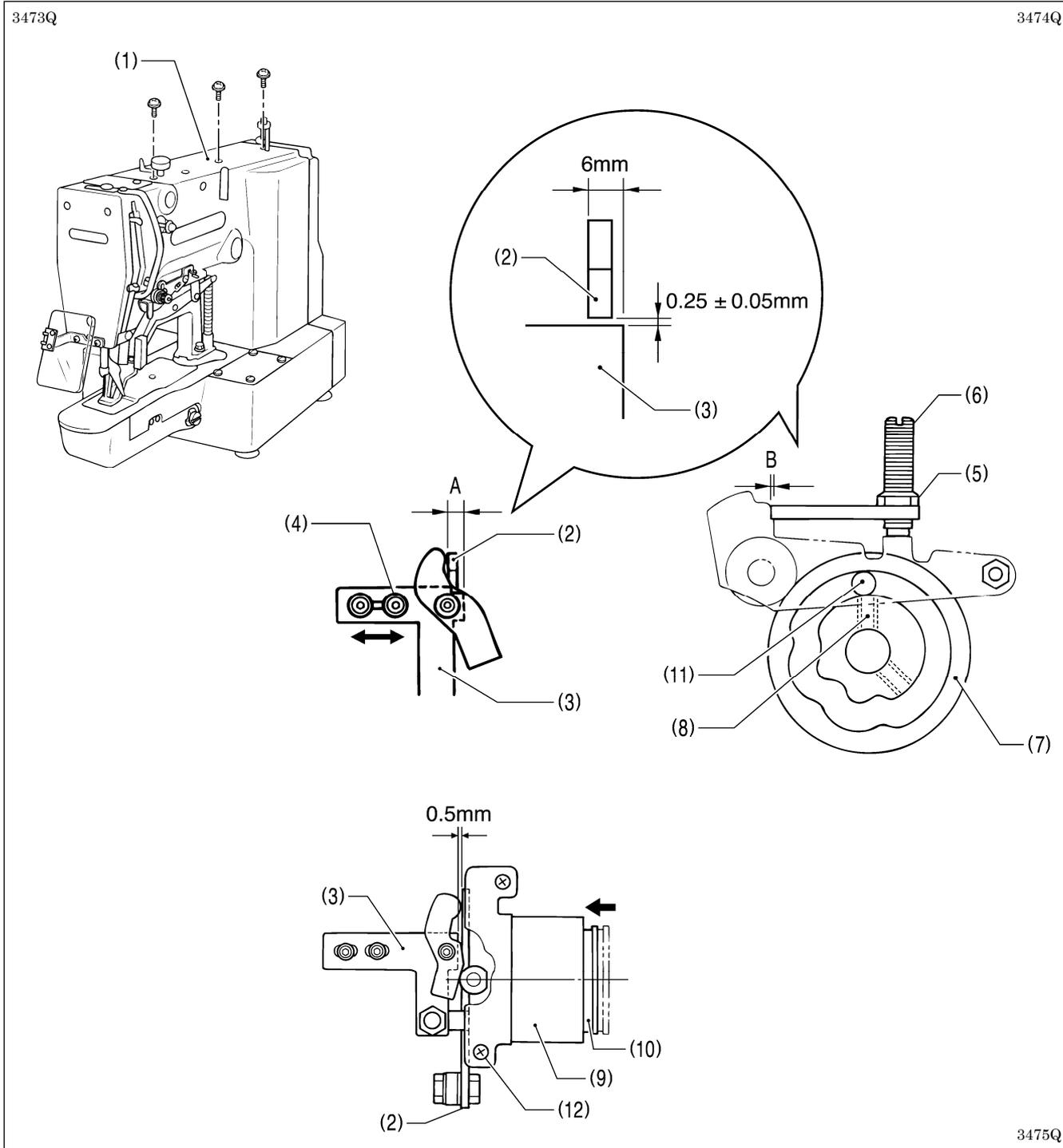


3472Q

3213Q

- A. After the movable knife and fixed knife are properly engaged, tighten the screw as shown in Fig. 1.  
 B. Turn the movable knife (in the direction of the arrow) while the screw is still tightened.  
 C. Loosen the screw.  
 D. Turn the movable knife (in the direction of the arrow) while the screw is still loosened.  
 Repeat above steps A , B, C and D four or five times to maintain the cutting performance of the knife.

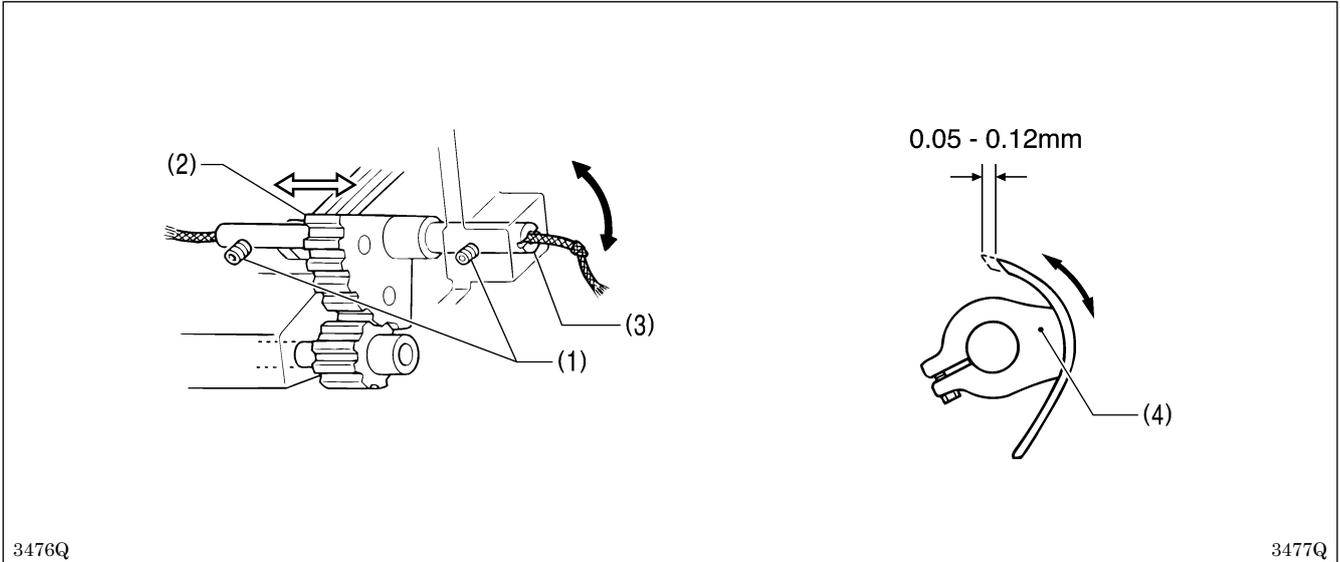
## 5 - 2 0 . Adjusting the position of the thread trimming link mechanism



1. Remove the top cover (1).
2. Loosen the two bolts (4) and adjust the position of the driving lever stopper (3) so that distance A between the thread driving lever (2) and the driving lever stopper (3) shown in the illustration is 6 mm.
3. Loosen the nut (5) and use the adjusting screw (6) to adjust the position of the thread driving lever (2) so that the clearance B between the thread driving lever (2) and the driving lever stopper (3) is  $0.25 \pm 0.05$  mm.
4. Turn the machine pulley so that the set screw (8) at the front of the thread trimmer cam (7) in the direction of rotation is facing upward, and then push the plunger (10) of the thread trimmer solenoid (9) in as far as it will go and check that it returns smoothly when the roller (11) is in the slot.
5. Loosen the two screws (12) and adjust the position of the thread trimmer solenoid (9) so that the clearance between the thread driving lever (2) and the driving lever stopper (3) is 0.5 mm when the plunger (10) of the thread trimmer solenoid (9) is pushed in as far as it will go.

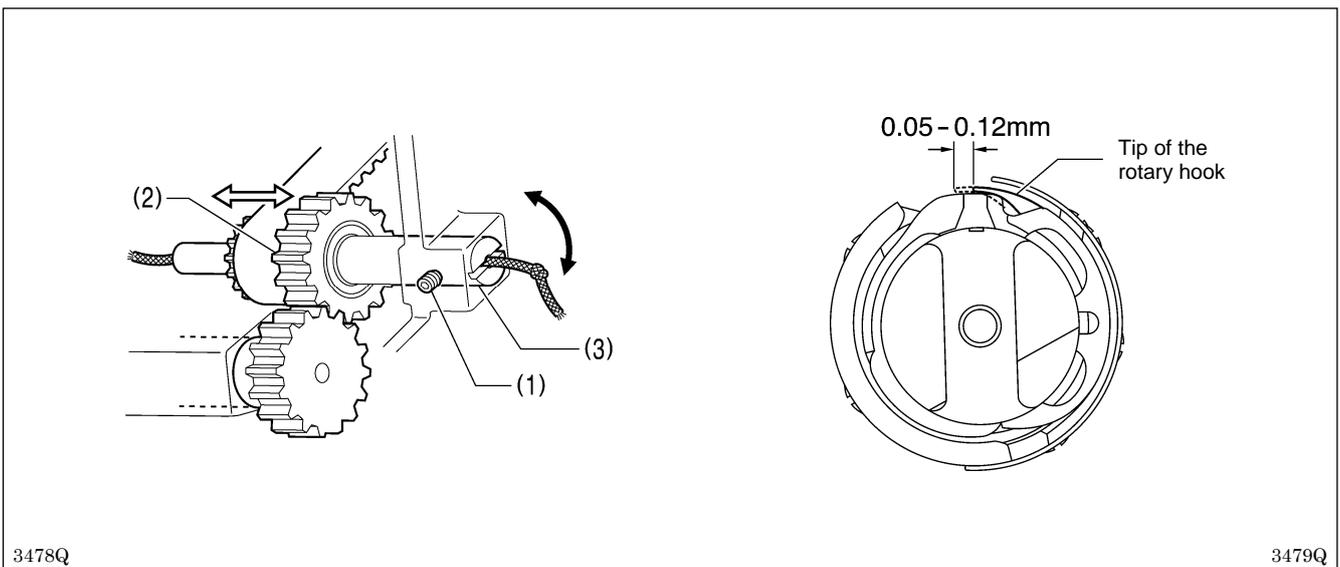
## 5. ADJUSTMENT

### 5 - 2 1 . Adjusting the backlash



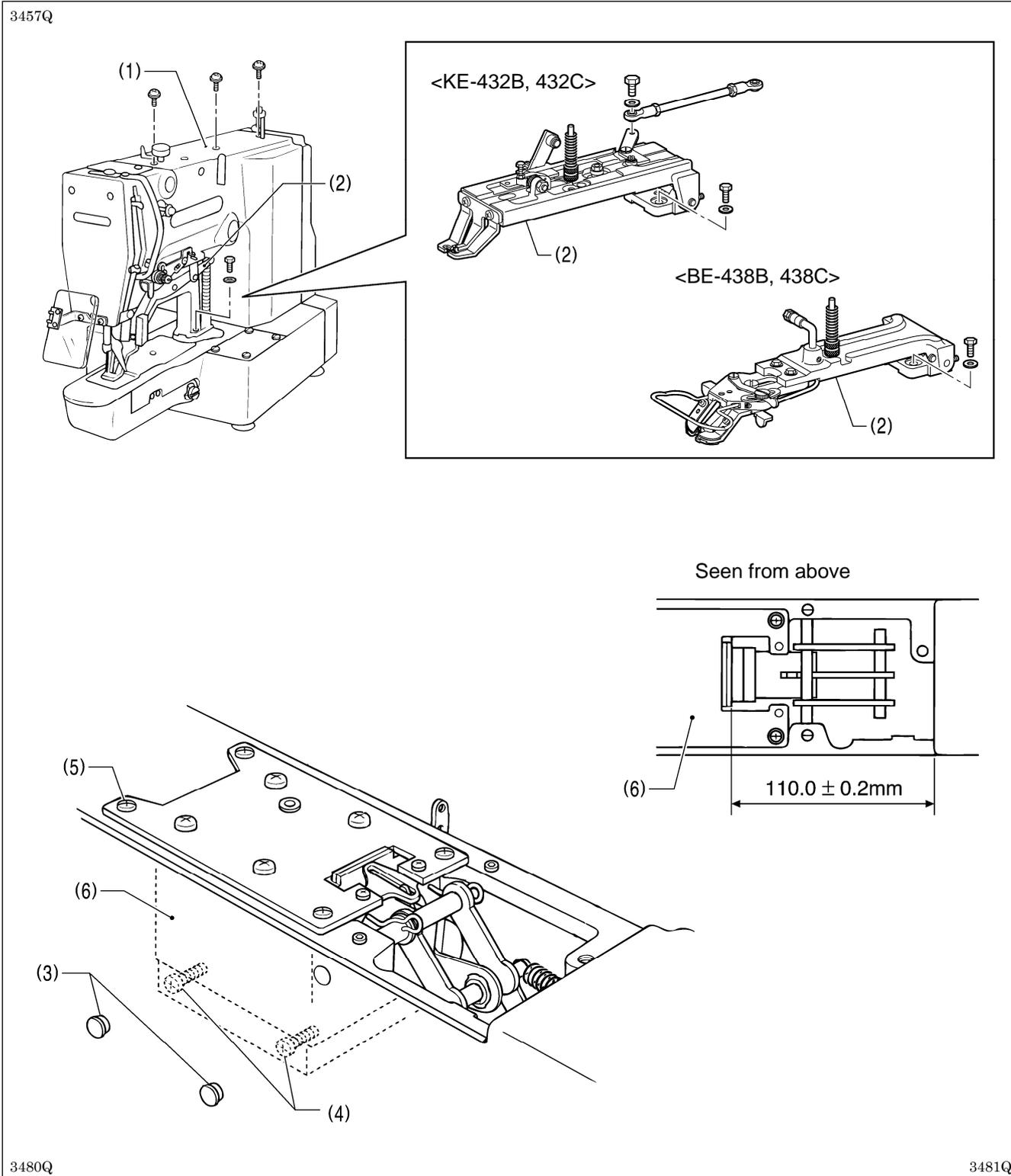
1. Loosen the set screw (1), and move the rock gear (2) to the left and right so that the pulley can rotate easily.
2. Turn the rock gear shaft (3) to adjust the play at the end of the driver (4) to 0.05 – 0.12 mm, and tighten the set screw (1).

<KE-484C>



1. Loosen the set screw (1), and move the lower shaft timing pulley (2) to the left and right so that the pulley can rotate easily.
2. Turn the lower shaft (3) and adjust the play in the rotary hook tip to 0.05–0.12 mm, and then tighten the set screw (1).

## 5 - 2 2 . Adjusting the presser solenoid position (Solenoid specifications)



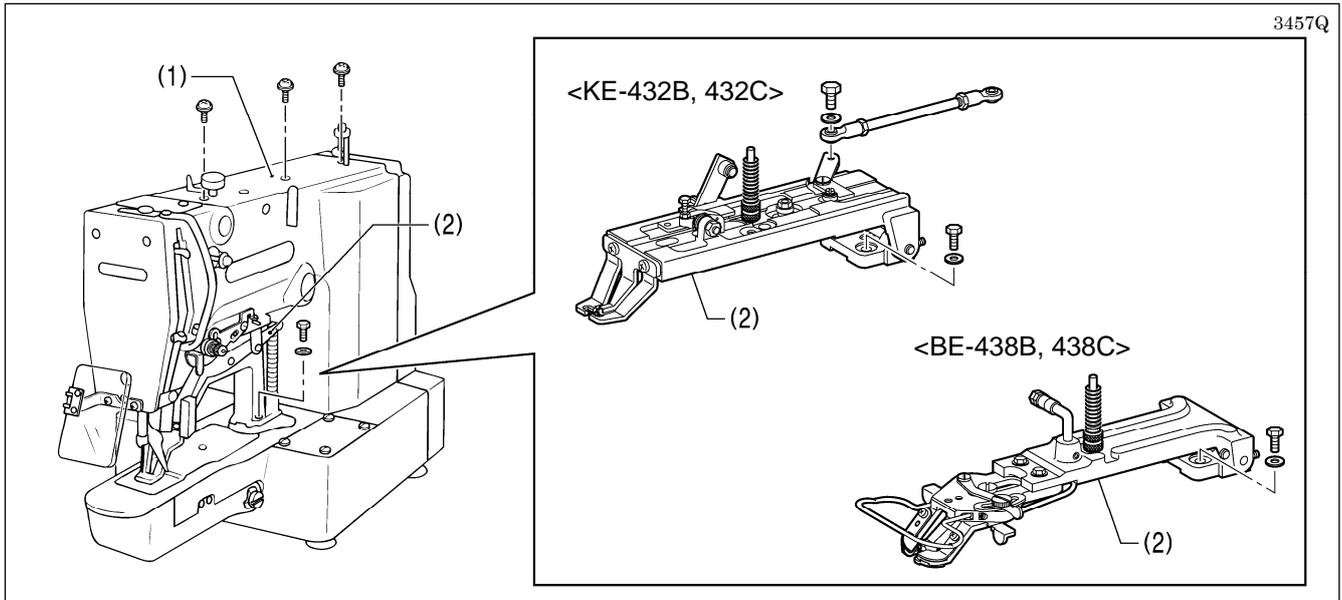
1. Remove the top cover (1) and the work clamp arm assembly (2).  
Remove the top cover (1) and the button clamp assembly (2). [BE-438B, 438C]
2. Remove the two rubber caps (3), and loosen the two screws (4) of the solenoid setting plate B.
3. Loosen the four screws (5), set the presser solenoid (6) so that it is  $110 \pm 0.2$  mm from the edge of the arm, and then tighten the screws (4) and (5) in that order.

**Note:**

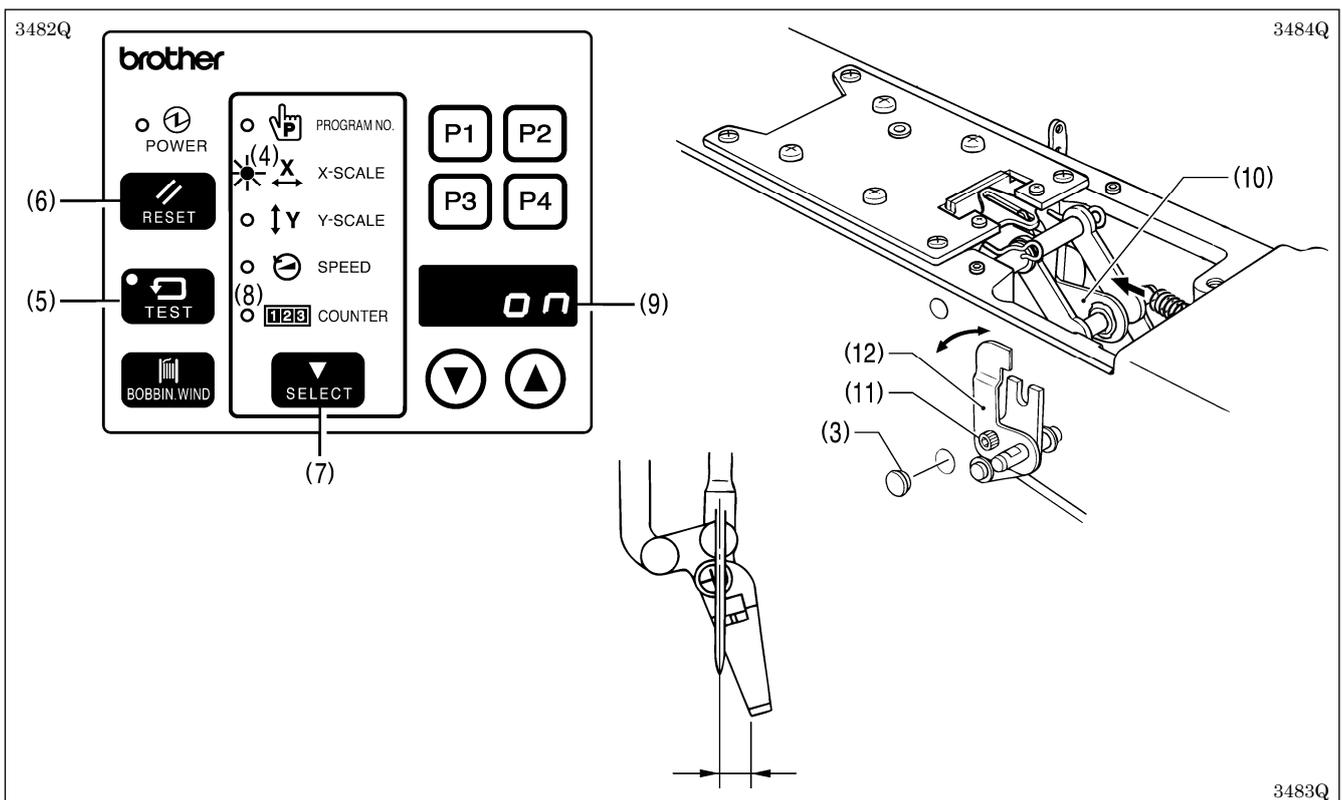
If this adjustment is not done correctly, the work clamp may not lift or drop and error E-60 may be displayed.

## 5. ADJUSTMENT

### 5 - 2 3 . Adjusting the sensor perceive plate position (Solenoid specifications)



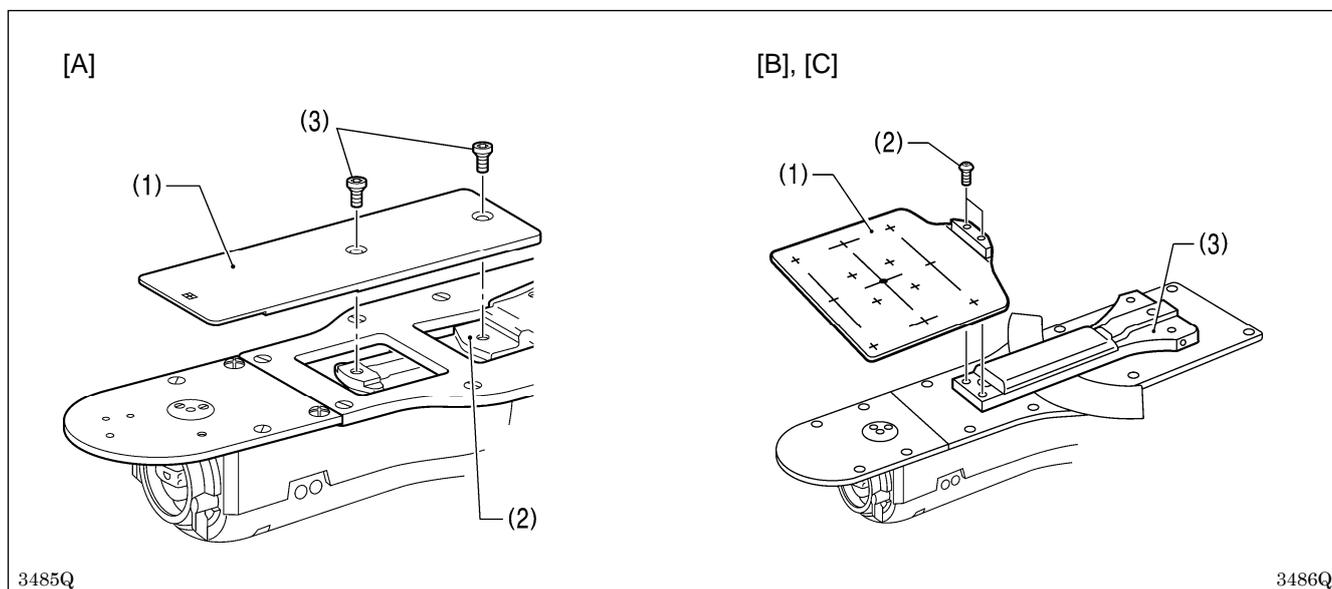
1. Remove the top cover (1) and the work clamp arm assembly (2).  
Remove the top cover (1) and the button clamp assembly (2). [BE-438B, 438C]



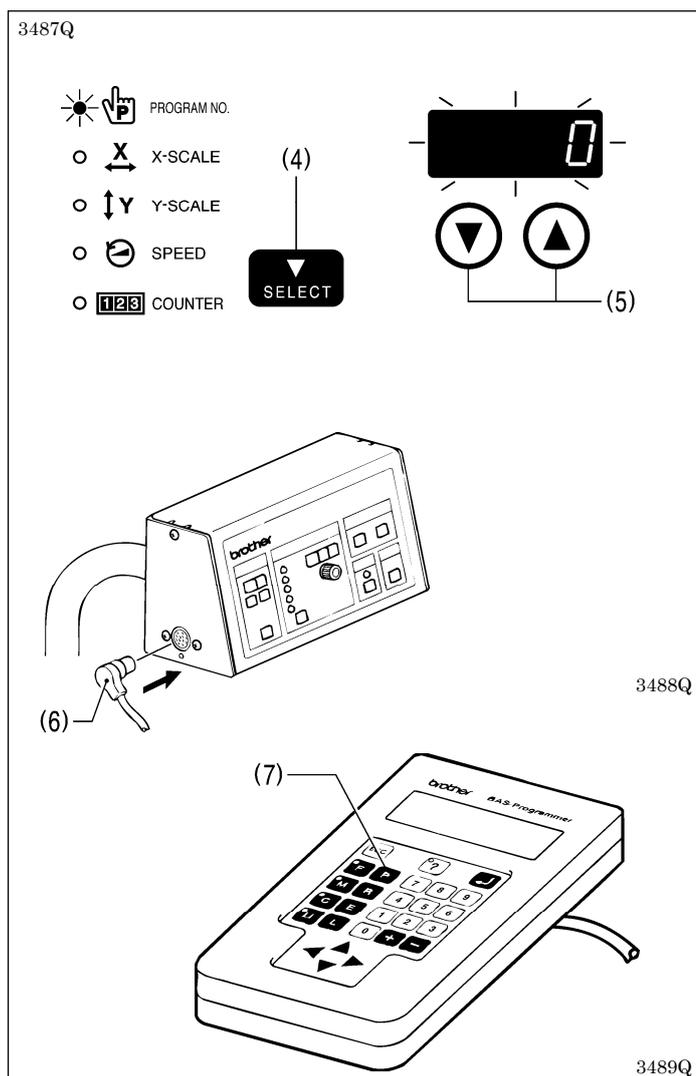
2. Remove the rubber cap (3) from the side of the arm. Approx. 5mm
3. Turn on the power switch.
4. While the X-SCALE indicator (4) on the operation panel is illuminated, hold down the TEST switch (5) and press the RESET switch (6) to activate input sensor check mode.
5. Press the SELECT switch (7) to illuminate the COUNTER indicator (8).  
\* The display (9) will show the work clamp signal status (ON, OFF).
6. Loosen the bolt (11) and move the sensor perceive plate (12) forward or back to adjust so that the work clamp signal is ON when the link C assembly (10) of the work clamp lifter mechanism is pushed so that the wiper is at the position shown in the illustration.

### 5 - 2 4 . Adjusting the home position

KE-430B, KE-430C, KE-431B, KE-431C, KE-432B, KE-432C, KE-433B, BE-438B, BE-438C... Refer to [A].  
 KE-434B, KE-434C, KE-435B, KE-435C, KE-484C... Refer to [B].  
 KE-436B, KE-436C... Refer to [C].



1. Install the home position standard plate (1) to the feed bracket (2) with the two screws (3).



[A], [B]

2. Turn on the power switch.
  3. Press the SELECT switch (4) until the PROGRAM NO. indicator illuminates.
  4. Press the DISPLAY SET switches (5) until the program number [0] is flashing in the display window, then depress the foot switch.
- \* The display will stop flashing and illuminate steadily, and the feed mechanism will move to the origin points for X and Y feed.

[C]

2. Connect the programmer connector (6) to the operation panel.
  3. Turn on the power switch.
  4. Press the P key (7) on the programmer.
- \* The feed mechanism will move to the origin points for X and Y feed.

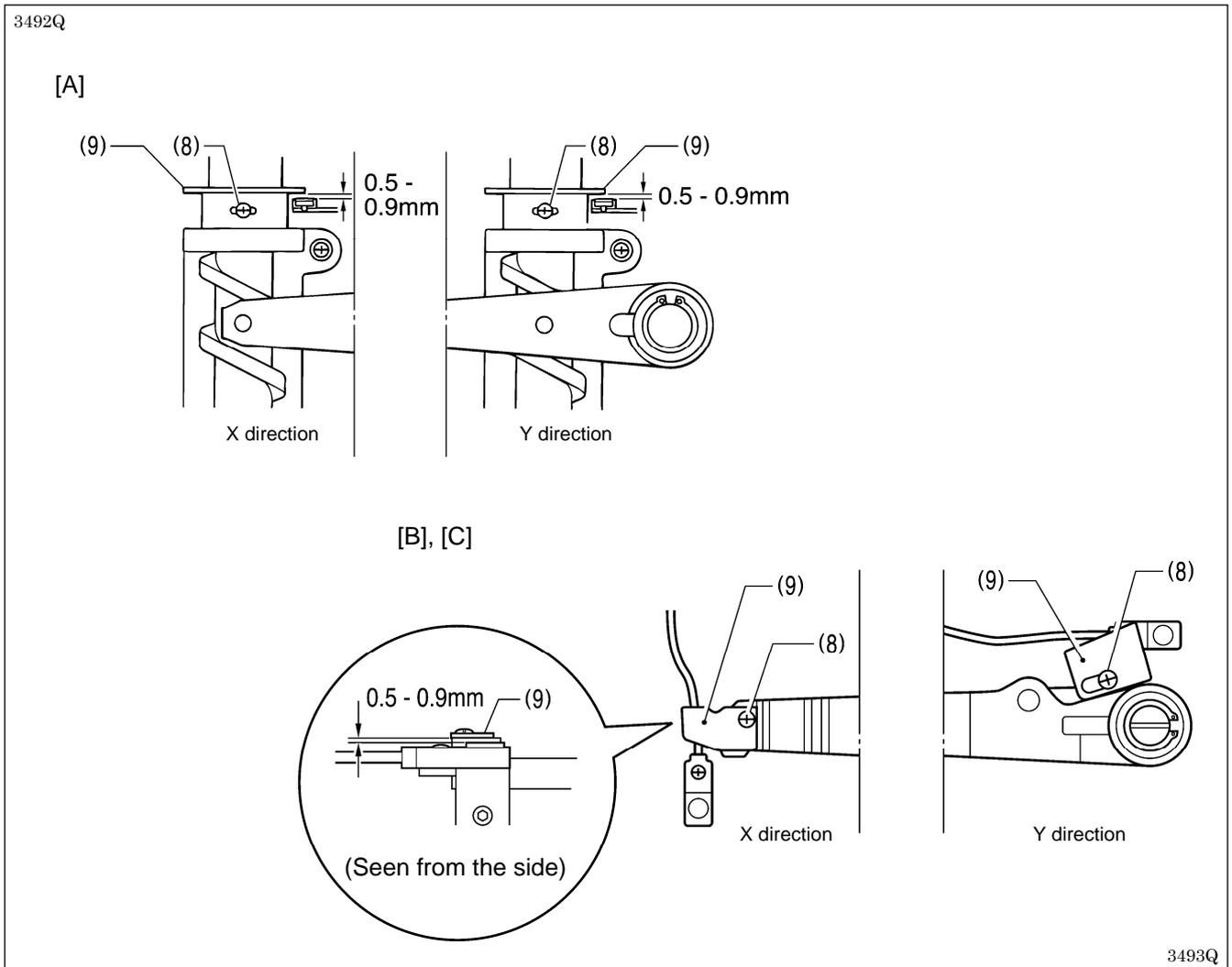
## 5. ADJUSTMENT



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. Turn off the power switch.

7. Loosen the screws (8), and then adjust by turning the home position dog (9). (Refer to the next page.)

8. After adjusting, turn on the power switch and repeat the check in step 5.

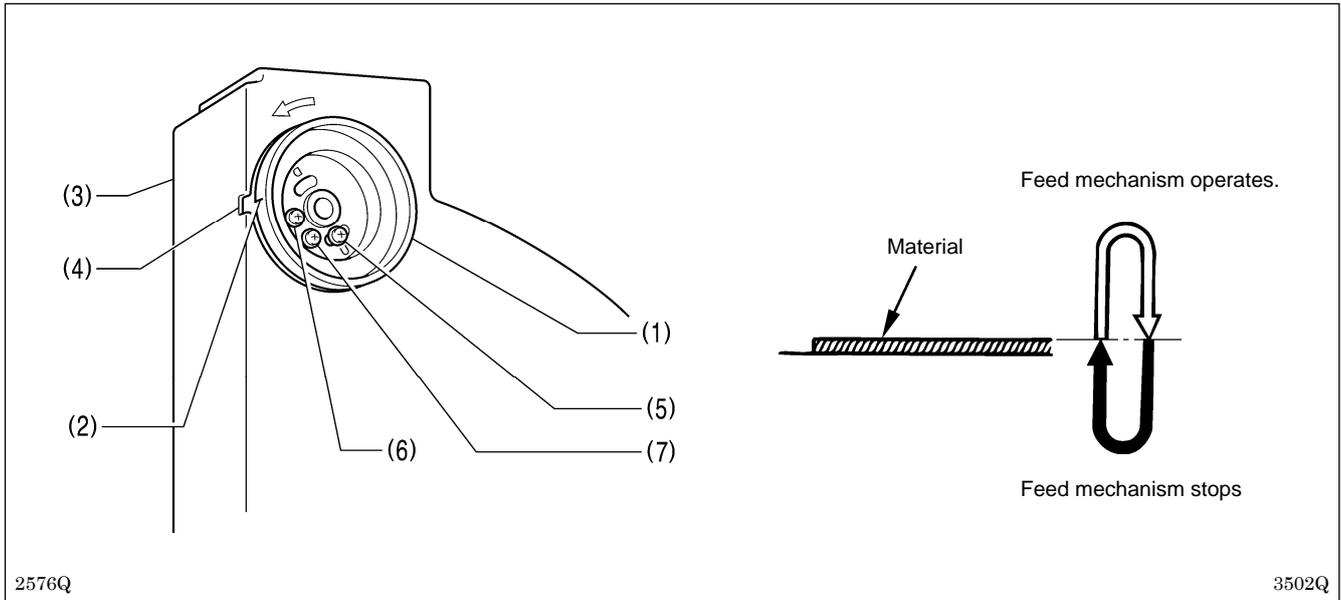
Adjusting the X direction

<p>[A] <span style="float: right;">3494Q</span></p> <p>Needle drops to the right of point a</p> <p>Turn the home position dog for feed cam X to the right</p> <p style="text-align: right;">3495Q</p>	<p>[B], [C] <span style="float: right;">3496Q</span></p> <p>Needle drops to the left of point a</p> <p>Turn the home position dog for feed lever X to the back</p> <p style="text-align: right;">3497Q</p>
<p>Needle drops to the left of point a</p> <p>Turn the home position dog for feed cam X to the left</p> <p style="text-align: right;">3495Q</p>	<p>Needle drops to the right of point a</p> <p>Turn the home position dog for feed lever X to the front</p> <p style="text-align: right;">3497Q</p>

Adjusting the Y direction

<p>[A] <span style="float: right;">3498Q</span></p> <p>Needle drops in front of point a</p> <p>Turn the home position dog for feed cam Y to the right</p> <p style="text-align: right;">3499Q</p>	<p>[B], [C] <span style="float: right;">3500Q</span></p> <p>Needle drops in front of point a</p> <p>Move the home position dog for feed lever Y to the right</p> <p style="text-align: right;">3501Q</p>
<p>Needle drops behind point a</p> <p>Turn the home position dog for feed cam Y to the left</p> <p style="text-align: right;">3499Q</p>	<p>Needle drops behind point a</p> <p>Move the home position dog for feed lever Y to the left</p> <p style="text-align: right;">3501Q</p>

### 5 - 2 5 . Adjusting the needle up stop position



Loosen the screw (5) (at the U side on the pulley), and turn the pulley (1) so that the mark (2) on the pulley is inside the mark (4) of the belt cover (3). The pulley (1) will stop more slowly if the screw (5) is moved counter to the normal direction of rotation, and will stop more quickly if the screw (5) is moved in the normal direction of rotation.

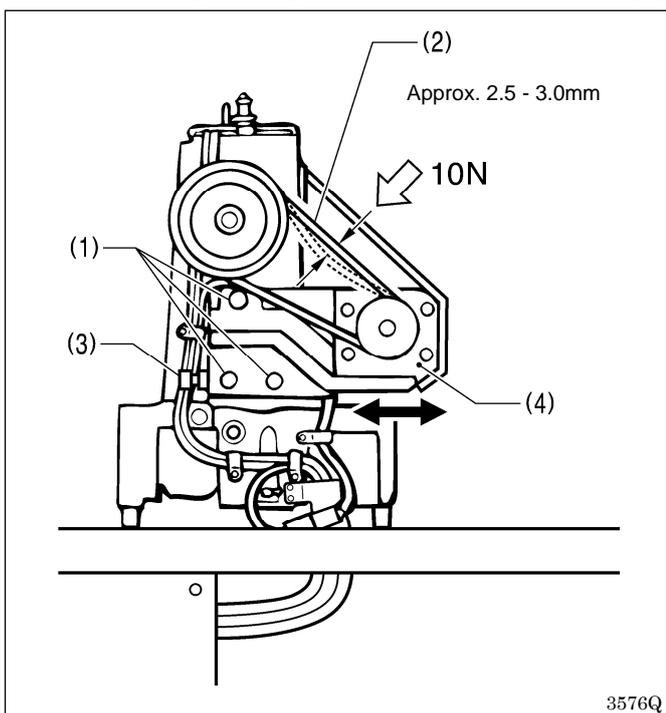
The standard position is when the needle bar is lowered approximately 5.5 mm from its highest position.

Timing between the needle and the feed mechanism is adjusted so that the feed mechanism starts operating after the needle comes out of the material sewn, and stops before the needle penetrates the material.

**Note:**

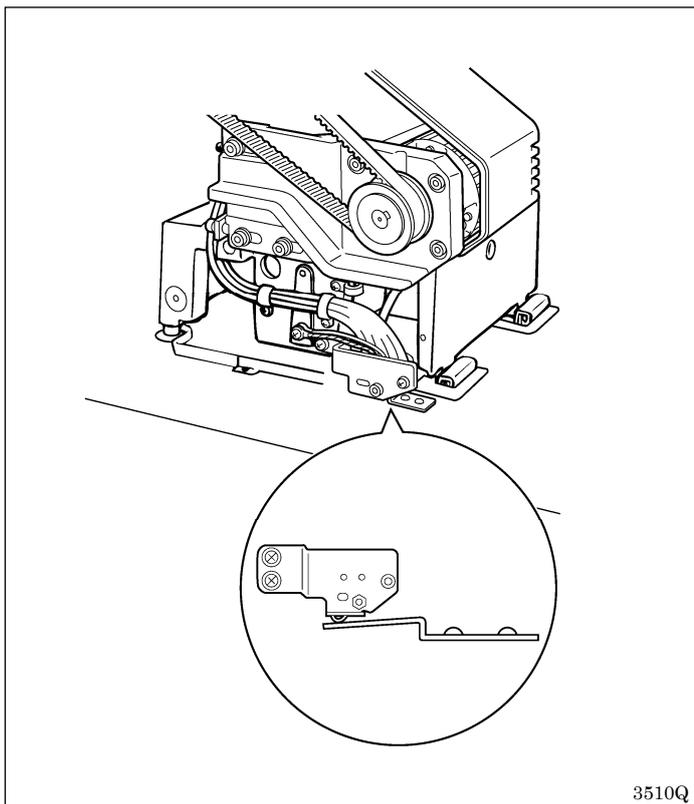
- The screw (6) at the “D” mark is an adjusting screw for the needle down detection function and is adjusted to match the feed timing, so it should not be loosened.
- The screw (7) is a screw for detecting the machine stop position, and should not be loosened.

### 5 - 2 6 . Adjusting the tension of the upper shaft timing belt



1. Loosen the three bolts (1).
2. Turn the bolt (3) in the tightening direction to adjust the position of the motor bracket (4) so that there is approximately 2.5–3.0 mm of deflection in the upper shaft timing belt (2) when the middle of the belt is pressed with a force of 10 N.

## 5 - 2 7 . Checking the head position switch

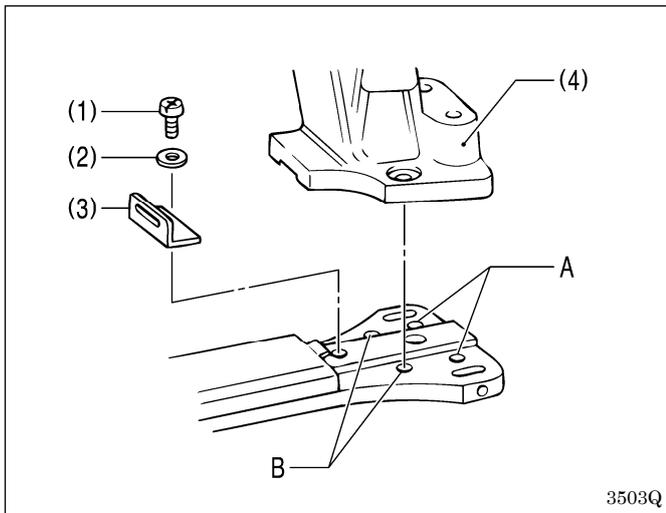


Check that the head position switch is turned on as shown in the illustration.

**Note:**

If the head position switch is not turned on, error E-17 (error E.16 for the KE-436B/436C) will be displayed.

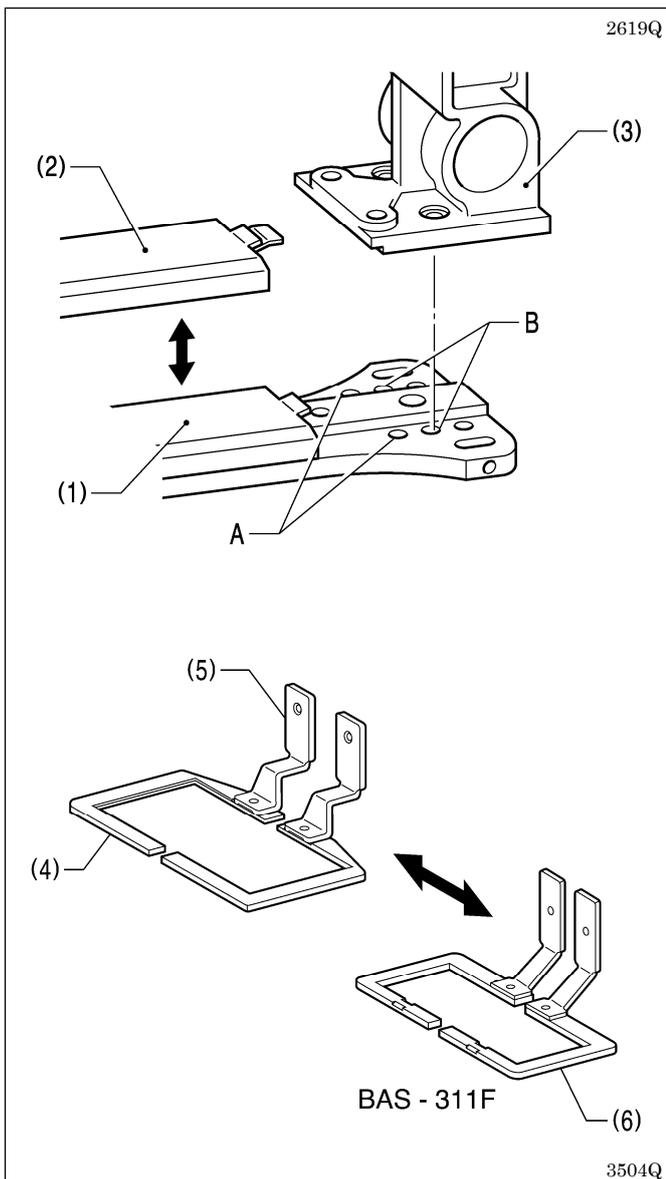
5 - 2 8 . Work clamp interchangeability (KE-433B)



The KE-430B, 430C work clamp can also be used with the KE-433B.

Remove the screw (1), washer (2) and cover support stand (3), and then change the installation position for the work clamp arm assembly (4) from the standard installation position A to installation position B.

5 - 2 9 . Work clamp interchangeability (KE-434B, 434C, 435B, 435C, 436B, 436C, 484C)



The work clamp for the BAS-311F can be used.

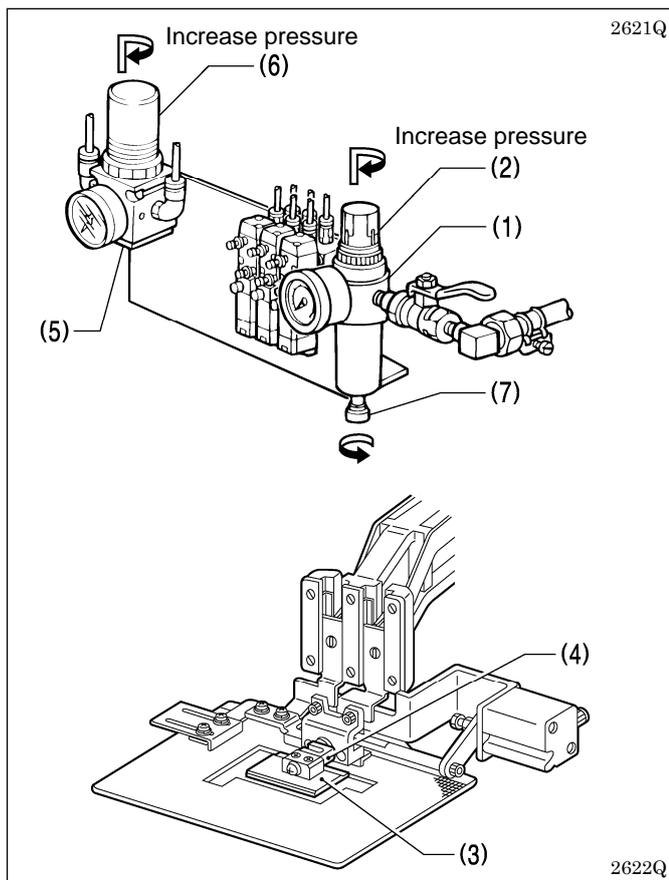
Replace the feed bar guide cover (1) with the feed bar guide cover assembly, LL (2) (optional).

Then, change the installation position for the presser arm assembly (3) from the standard installation position A to installation position B.

**To alternate use between the normal work clamp and the BAS-311F work clamp**

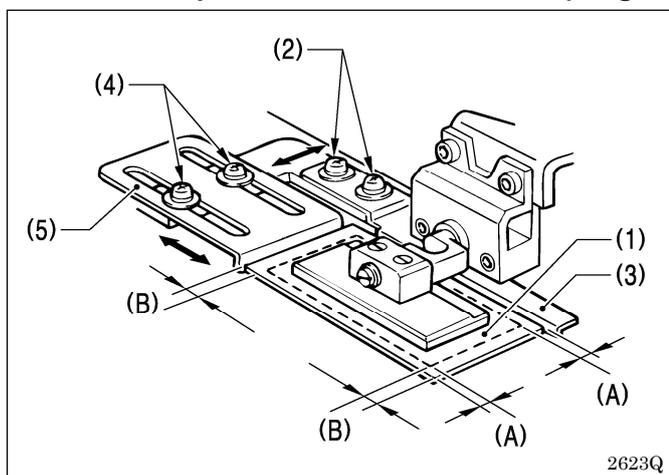
Use the optional work clamp 434EMK2 air (5) with the work clamp (4). It can then be used interchangeably with the BAS-311F work clamp (6) at installation position B.

## 5 - 3 0 . Adjustment of air pressure (Pneumatic specifications)



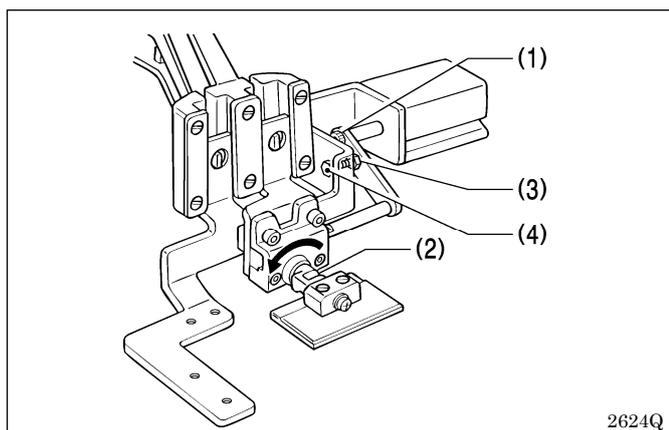
1. Air pressure should be 0.5 Mpa.  
The air pressure can be adjusted by pulling up and turning the control knob (2) on the integrator (1).  
After adjustment is complete, push the control knob (2) downward to lock it.
2. Adjust the air pressure for the reversal cylinder to stay within such a range that the presser crank (4) rotates reversely when pressing the sewing material with the pressure plate (3). (Approx. 0.3 Mpa)  
For adjustment, pull up and, turn the control knob (6) on the air regulator (5).  
After adjustment is complete, push the control knob (6) downward to lock it.
3. If water stands in the bottle of the integrator (1), turn the drain cock (7) in the direction indicated by an arrow to drain the water.

## 5 - 3 1 . Adjustment of inner clamping device

**Adjustment of the positioning plates**

Loosen the screws (2), and adjust the position of the positioning plate R (3) so that the label (1) can be evenly laid out between the front and back seams (A).

Next, loosen the screws (4), and adjust the position of the positioning plate L (5) so that the presser plate can be evenly laid out between the left and right seams (B).

**Adjustment of the presser crank horizontal position**

Loosen the nut (3) and push in or pull out the adjusting bolt (4) so that the presser crank (2) can be horizontal when the reversal cylinder piston rod (1) is moved to the left extreme.

## 6. TROUBLESHOOTING

**CAUTION**

Turn off the power switch and disconnect the power cord before carrying out troubleshooting, otherwise the machine will operate if the foot switch is depressed by mistake, which could result in injury.

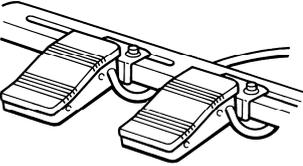
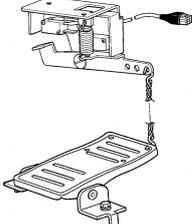
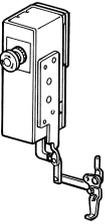
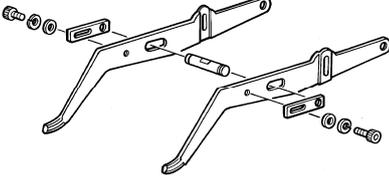
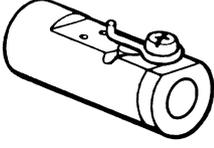
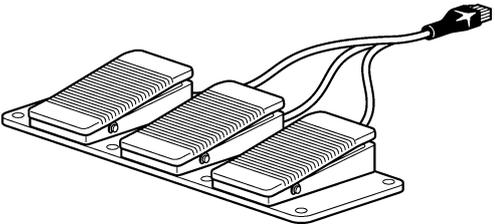
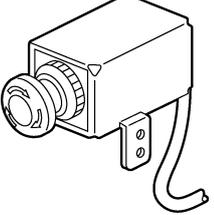
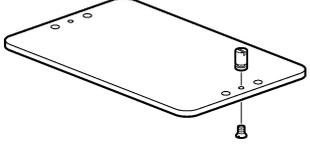
Problem	Cause	Remedy	Ref.
<b>Work clamp does not rise. Button clamp does not rise. (438)</b>	<430, 431, 433, 434, 435, 436, 484> Work clamp operation is sluggish.	Grease the sliding part of the work clamp.	P.104 P.105
	Work clamp (Button clamp) lift amount is too great.	Adjust the work clamp (button clamp) lift amount.	P.104 P.105 P.106
	Too much friction between work clamp plate and work clamp arm lever plate. (430, 431, 433, 434 solenoid specifications)	Grease the work clamp plate and work clamp arm lever plate.	P.104 P.105
	Work clamp is contacting thread wiper.	Adjust the position of the thread wiper.	P.111 - P.113
<b>Work clamp is not lowered. Button clamp is not lowered. (438)</b>	Presser lifter link is not moving back.	Check if the link return spring is unhooked.	P.65 - P.68
<b>Work clamp lift amount is incorrect. Button clamp lift amount is incorrect. (438)</b>	<Solenoid specifications> Incorrect position of work clamp arm lever plate (button clamp holder hook assembly). <Pneumatic specifications> Incorrect position of work clamp arm lever.	Adjust the work clamp (button clamp) lift amount.	P.104 P.105 P.106
<b>Work clamp does not close. (432)</b>	Incorrect position of presser closing roller.	Check whether stop lever is engaged with stop position adjusting plate or not, and adjust the position of presser closing roller.	P.108
<b>Thread wiper does not operate correctly.</b>	The thread wiper is obstructing the needle.	Adjust the height of the thread wiper.	P.111 - P.113
		Adjust the operating distance of the thread wiper.	P.111 - P.113
	Thread wiper position is incorrect.	Adjust the operating distance of the thread wiper.	P.111 - P.113
<b>Lower thread winds to one side.</b>	Tension stud height is incorrect.	Adjust the height of the tension stud.	Instruction manual
<b>Lower thread winding amount is incorrect.</b>	Bobbin presser position is incorrect.	Adjust the position of the bobbin presser.	Instruction manual
<b>Thread comes unthreaded.</b>	Stitches being skipped at the sewing start.	Refer to "Skipped stitches occur"	P.134
	Uneven needle thread.	Adjust the sub-tension.	Instruction manual
	Needle thread is too short.	Adjust the thread take-up lever stroke.	P.114 P.115

Problem	Cause	Remedy	Ref.
<b>Upper thread breaks.</b>	Upper thread tension is too strong.	Adjust the upper thread tension.	P.5
	Needle is installed incorrectly.	Install the needle correctly.	Instruction manual
	Thread is too thick for the needle.	Use the correct thread for the needle.	P.5
	Thread take-up spring tension and height are incorrect.	Adjust the tension and height of the thread take-up spring.	P.5
	Damaged or burred rotary hook, needle hole plate or needle.	File smooth or replace the affected part.	/
	Thread melting (synthetic thread)	Use a thread cooling device (optional)	P.136
<b>Lower thread breaks.</b>	Lower thread tension is too strong.	Adjust the lower thread tension.	P.5
	Corners of needle hole plate or bobbin case are damaged.	File smooth or replace the affected part.	/
<b>Skipped stitches occur.</b>	Clearance between needle and rotary hook tip is too great.	Adjust the needle clearance.	P.101
	Incorrect needle and rotary hook timing.	Adjust the needle bar lift amount.	P.100
	Driver is contacting needle more than is necessary. (except KE-484C)	Adjust the driver needle guard.	P.101
	Needle is bent.	Replace the needle.	/
	Needle is installed incorrectly.	Install the needle correctly.	Instruction manual
	Needle thread is too short.	Adjust the thread take-up lever stroke.	P.114 P.115
<b>Needle breaks.</b>	Needle is touching the rotary hook.	Adjust the needle clearance.	P.101
		Adjust the needle bar lift amount.	P.100
	Needle is bent.	Replace the needle.	/
	Needle is too thin.	Use the correct needle for the material.	P.5
	Needle is striking the button (438)	Refer to "6. CHECKING THE SEWING PATTERN" in the Instruction Manual.	Instruction manual
<b>Button breaks. (438)</b>	Needle is striking the button	Refer to "6. CHECKING THE SEWING PATTERN" in the Instruction Manual.	Instruction manual

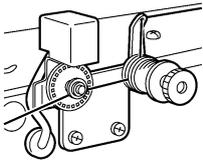
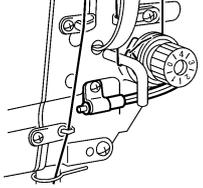
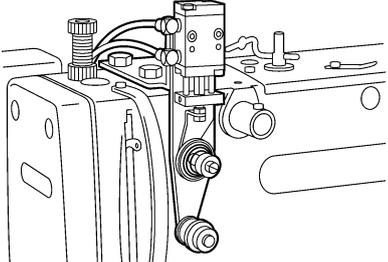
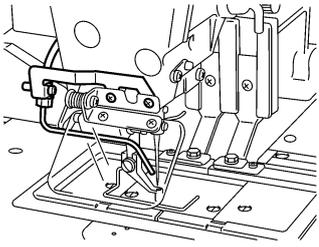
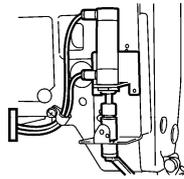
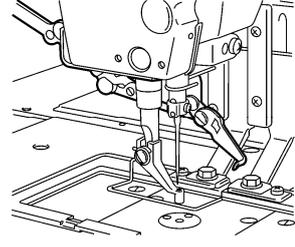
## 6. TROUBLESHOOTING

Problem	Cause	Remedy	Ref.
<b>Upper thread is not trimmed.</b>	Movable knife is blunt.	Replace the movable knife.	P.118 - P.120
	Fixed knife is blunt.	Sharpen or replace the fixed knife.	P.118 - P.120
	Movable knife does not pick up the thread.	Adjust the position of the shuttle race thread guide. (except KE-484C)	P.102
		Adjust the needle bar lift amount.	P.100
	The movable knife does not pick up the thread because of skipped stitches at the sewing end.	Refer to "Skipped stitches occur".	P.134
	Movable knife position is incorrect.	Adjust the position of the movable knife.	P.116 P.117
	Sub-tension is too weak.	Turn the sub-tension nut to adjust the tension.	Instruction manual
<b>Thread jamming.</b>	Thread take-up spring tension and height are incorrect.	Adjust the tension and height of the thread take-up spring.	P.5
	Incorrect needle and rotary hook timing.	Adjust the needle bar lift amount.	P.100
	Shuttle race thread guide is not separating the threads. (except KE-484C)	Adjust the position of the shuttle race thread guide.	P.102
<b>Poor seam finish on reverse side of material.</b>	Shuttle race thread guide is separating the threads insufficiently. (except KE-484C)	Adjust the position of the shuttle race thread guide.	P.102
	Upper thread is not properly tight.	Adjust the upper thread tension.	P.5
	Uneven needle thread.	Adjust the sub-tension.	Instruction manual
	Needle thread is too long.	Adjust the thread take-up lever stroke.	P.114 P.115
	Needle is striking the button (438)	Refer to "6. CHECKING THE SEWING PATTERN" in the Instruction Manual.	Instruction manual
<b>Incorrect thread tightness.</b>	Upper thread tension is too weak.	Adjust the upper thread tension.	P.5
	Lower thread tension is too weak.	Adjust the lower thread tension.	P.5
	Thread take-up spring tension and height are incorrect.	Adjust the tension and height of the thread take-up spring.	P.5
<b>Machine does not operate when power is turned on and foot switch is depressed.</b>	Head position switch does not work.	Check if the head position switch cord is disconnected.	Instruction manual
		Adjust the position of the switching plate.	P.130
		Replace the head position switch if it is broken.	
<b>Inner clamping device does not operate. (434, 435, 436)</b>	Work clamp pressure is too strong.	Adjust the work clamp pressure so that the inner clamping device operates.	P.132

## 7. OPTIONAL PARTS

<b>Two-pedal foot switch</b>	<b>Two-step foot switch</b>
 <p style="text-align: right;">0271Q</p>	 <p style="text-align: right;">0272Q</p>
<p>The presser switch and the start switch have been separated, giving the operator more flexibility to select the best method of working. * Standard equipment for pneumatic specification</p>	<p>This is a pedal-type foot switch.</p>
<b>Solenoid thread wiper</b>	<b>Work clamp set QC (KE-430*)</b>
 <p style="text-align: right;">0275Q</p>	 <p style="text-align: right;">0274Q</p>
<p>This wipes the thread independently of the work clamp operation. * Standard equipment for the KE-434* pneumatic specification</p>	<p>The work clamp can be easily replaced by loosening the bolt and moving work clamp arm levers.</p>
<b>Liquid cooling tank</b>	<b>Three-pedal foot switch (for pneumatic)</b>
 <p style="text-align: right;">0273Q</p>	 <p style="text-align: right;">3222Q</p>
<p>This helps to prevent thread breakage caused by friction when using synthetic threads. Fill the tank with silicone oil (100mm<sup>2</sup>/s).</p>	<p>The switch has an independent left work clamp switch (left side), right work clamp switch (center) and start switch (right side).</p>
<b>Emergency stop switch</b>	<b>Work clamp plate, OT (KE-435*, 436*)</b>
 <p style="text-align: right;">0276Q</p>	 <p style="text-align: right;">3577Q</p>
<p>If the emergency stop switch has been pressed during sewing, the machine can be stop. And, you can move the feed mechanism back in steps to the desired position and then start sewing again.</p>	<p>Provide an even clamping pressure. Replacement of work clamp blanks and positioning of parts can be carried out easily. In addition, the work clamp is made from plastic so that pattern shape processing is also easy.</p>

## 7. OPTIONAL PARTS

<p><b>Thread breakage detector (KE-436*)</b></p>	<p><b>2-step thread tension device (KE-436*)</b></p>
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>&lt;Rotary-type&gt;</p> </div> <div style="text-align: center;">  <p>&lt;Beam-type&gt;</p> </div> </div> <p style="text-align: right;">3578Q</p>	 <p style="text-align: right;">3579Q</p>
<p>The emergency stop is activated to warn the operator when a thread breakage is detected. Both rotary-type and beam-type detectors are available.</p>	<p>This allows the upper thread tension to be switched between two settings at any position desired by using the programmer.</p>
<p><b>Needle cooler (KE-436*)</b></p>	<p><b>Air wiper (KE- 436*)</b></p>
 <p style="text-align: right;">3580Q</p>	<div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: right;">3581Q</p>
<p>This is a pneumatic type needle cooler which prevents the thread breakage due to heat. It is particularly useful when sewing thicker materials and when sewing at high speeds.</p>	<p>The thread wiper is driven by a pneumatic cylinder. It can be used when the thread cannot be pulled out from the material when sewing extremely thick materials.</p>
<p><b>Programmer (KE-436*)</b></p>	<p><b>PS-3000 Programming software for electronic pattern sewer</b></p>
 <p style="text-align: right;">3582Q</p>	<p>This is a software program which creates new sewing patterns using a personal computer.</p>
<p>Sewing date can be created, edited and saved.</p>	

## 8 . ELECTRIC MECHANISM

### 8 - 1 . Precautions at the time of adjustment

Pay attention to the following when opening the control box for maintenance.

#### Electric shock

Some large capacitors may have a high voltage remaining in them for up to 5 minutes after the power is turned off. To prevent electric shock, wait at least 5 minutes after the power is turned off before doing the following:

- Opening and closing the control box
- Replacing fuses
- Separating and joining connectors
- Measuring resistance
- Doing anything with a possibility of touching something inside the control box

Some adjustments require measuring the voltage while the power is turned on with the control box kept open. In such a case, be careful not to touch any place other than that for the measurement. In addition, always keep in mind that a high voltage remains for about 5 minutes after power is turned off.

#### Injury

While the power is turned on, the cooling fan of the control box operates; be careful not to get caught in it. When separating or rejoining connectors, and measuring something, be careful not to cut your fingers on metal parts such as heat sinks and covers.

### 8 - 2 . Components inside the control box and the operation panel

The following are brief explanations of components inside the control box. See control circuit block diagram at the end of this manual for the details of the connections.

#### Main circuit board

The main circuit board is fixed to the rear panel of the control box. This PCB serves to control machine operation.

#### Power supply circuit board

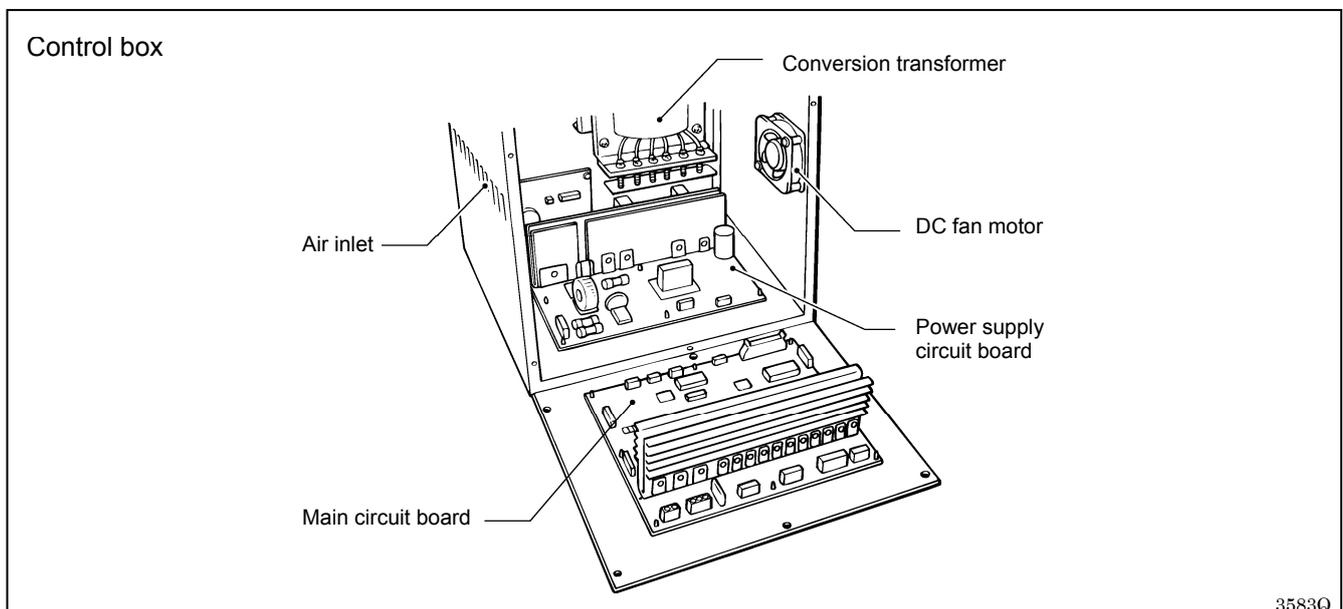
The power supply circuit board is fixed at the bottom of the control box. Four fuses are mounted on this PCB.

#### DC fan motor

The DC fan motor serves as a fan to cool the inside of the control box. Clean the inlet filter monthly.

#### Conversion transformer (depending on power supply voltage specification)

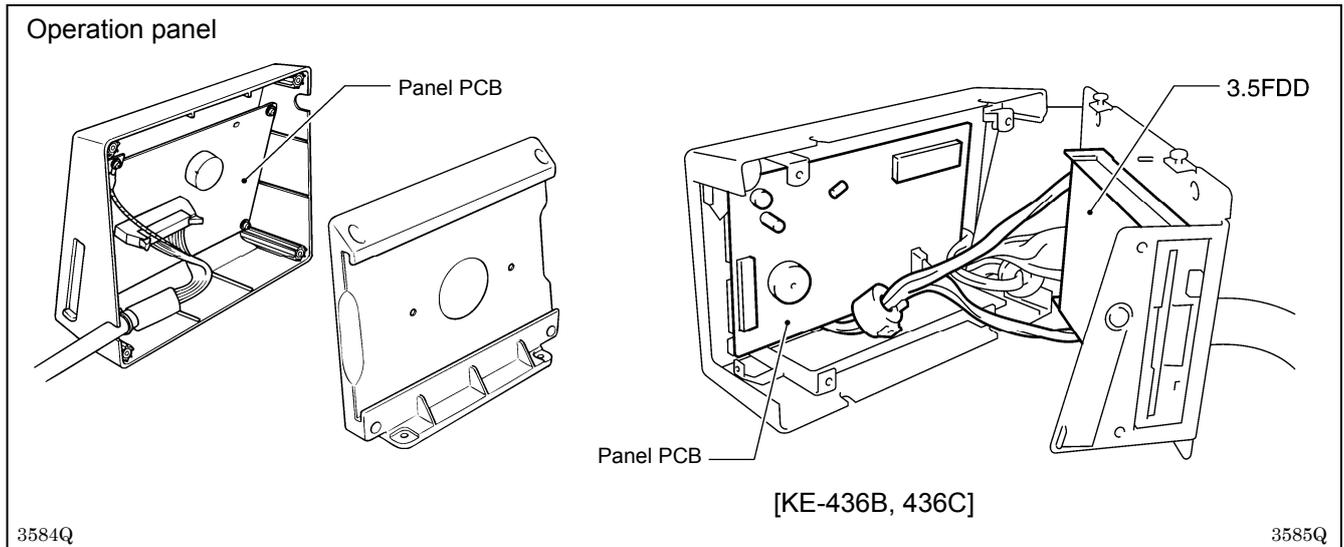
The conversion transformer controls the power supply voltage to provide 220V.



## 8. ELECTRIC MECHANISM

### Panel PCB

The panel PCB is fixed to the front panel of the operation panel. This PCB controls indications of the machine status and the input operation.

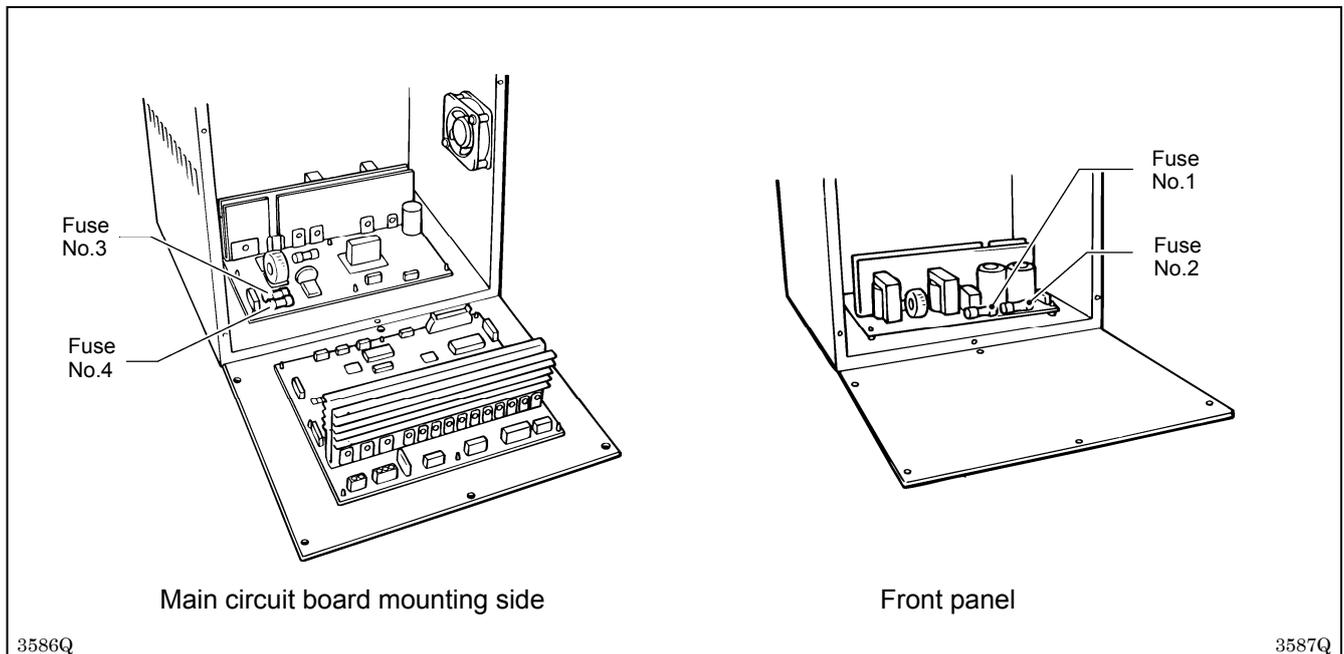


### 8 - 3 . Fuse explanation

When replacing a fuse, follow the instructions indicated in “ 8-14. Troubleshooting flowchart”. If a component on a PCB is damaged, a fuse may blow again immediately even when it has been replaced.

When replacing a fuse, be sure to use the specified ones listed below.

No.	Part name	Part code	When a fuse has blown
1	G fuse (5AFB) (quick melting type, 5A-250V)	S08030-000	The feed mechanism and work clamp do not operate. Error E-A0 is displayed. ([E.A1] KE-436B, 436C)
2	G fuse (7AFB) (quick melting type, 7A-250V)	S48580-000	The machine motor does not turn. Error E-20 is displayed. ([E.20] KE-436B, 436C)
3	Fuse 6A (glass tube fuse, 6A-250V)	153242-000	The power indicator is not illuminated, and nothing operates.
4	Fuse 6A (glass tube fuse, 6A-250V)	153242-000	The power indicator is not illuminated, and nothing operates.

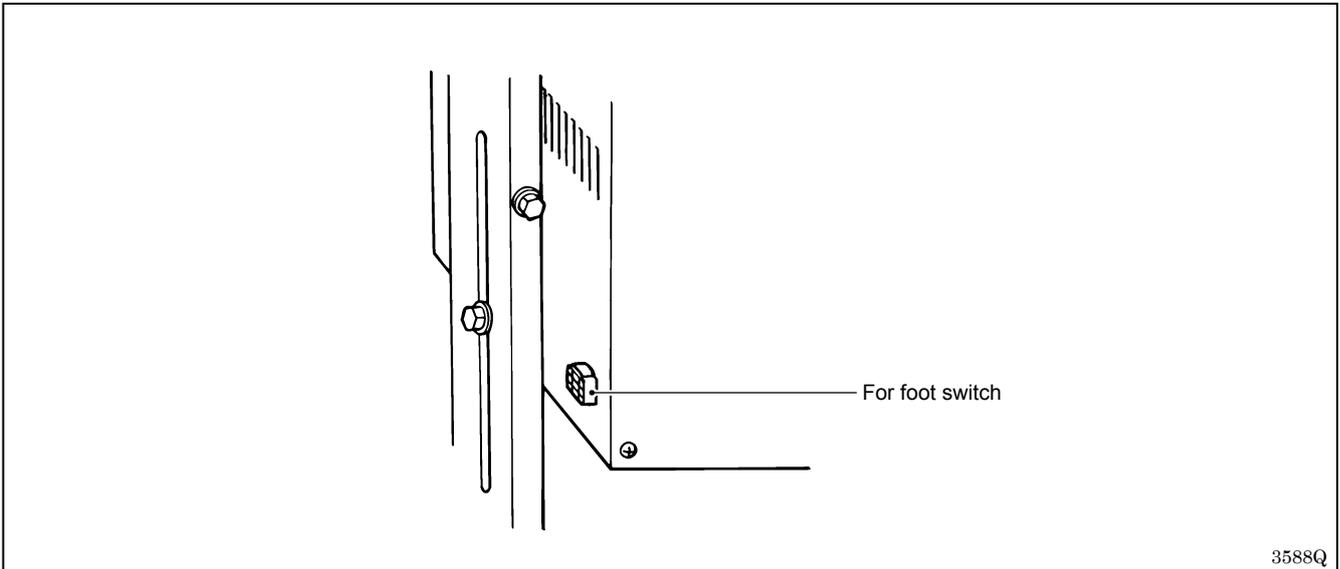


## 8 - 4 . Connectors

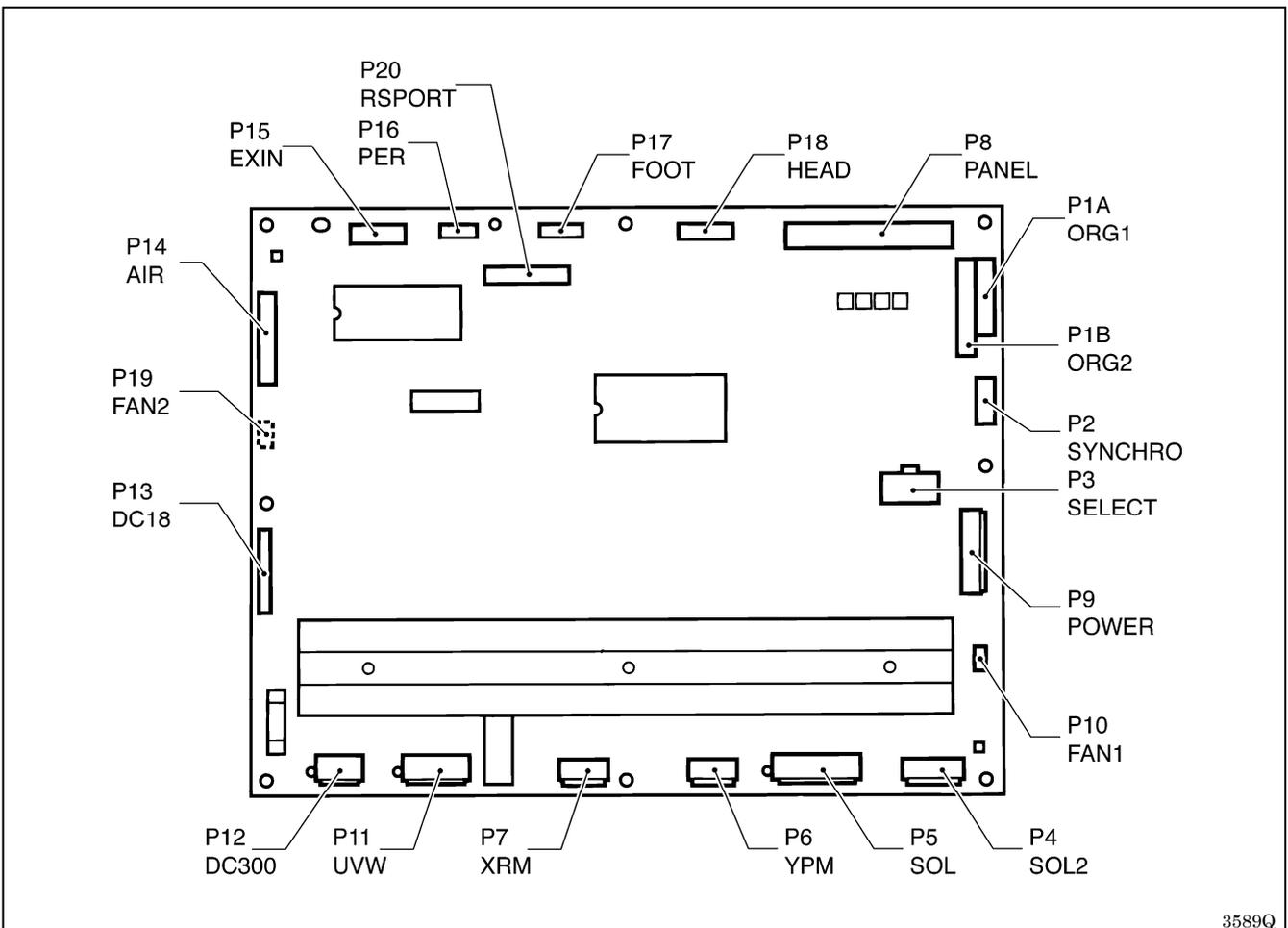
Most of the machine trouble is due to connector problems including improper connection or sufficient contact. Therefore, be sure to check if each connector is correctly inserted and that there is no contact failure between pins and wires before starting troubleshooting procedures.

### 8 - 4 - 1 . Connector positions

#### Outside of the control box

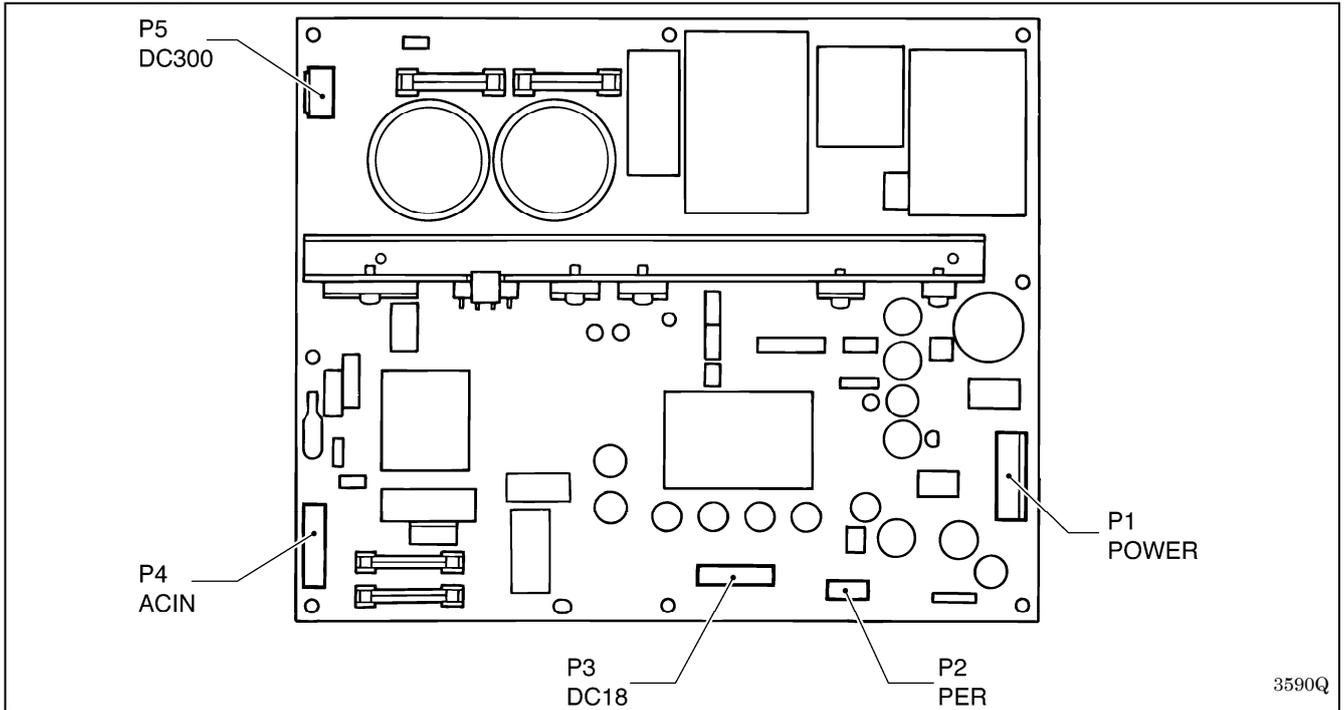


#### Main circuit board

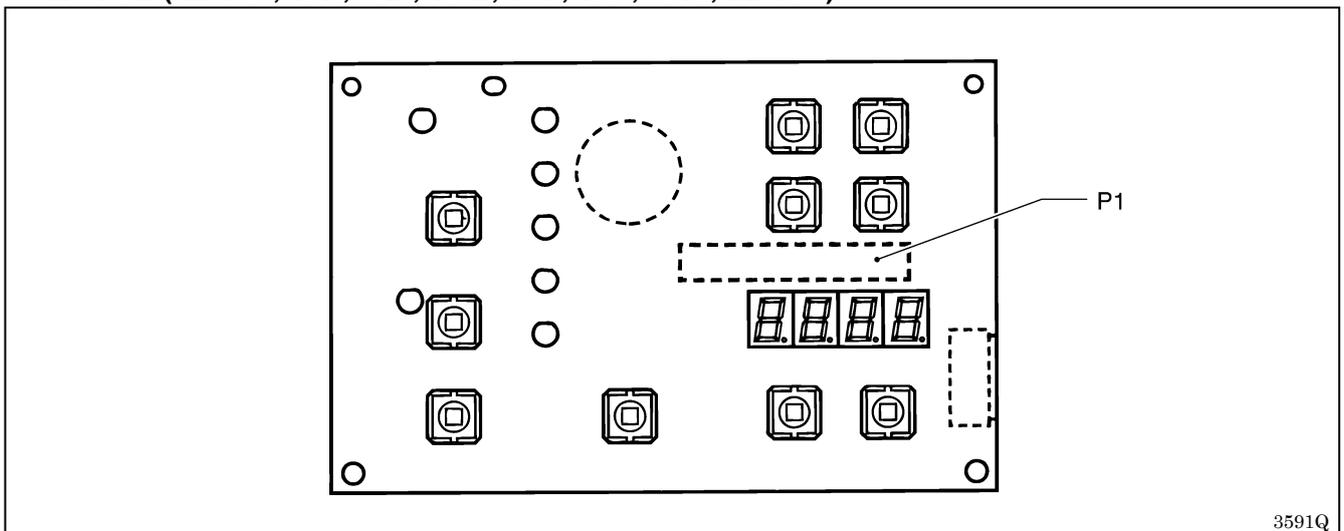


## 8. ELECTRIC MECHANISM

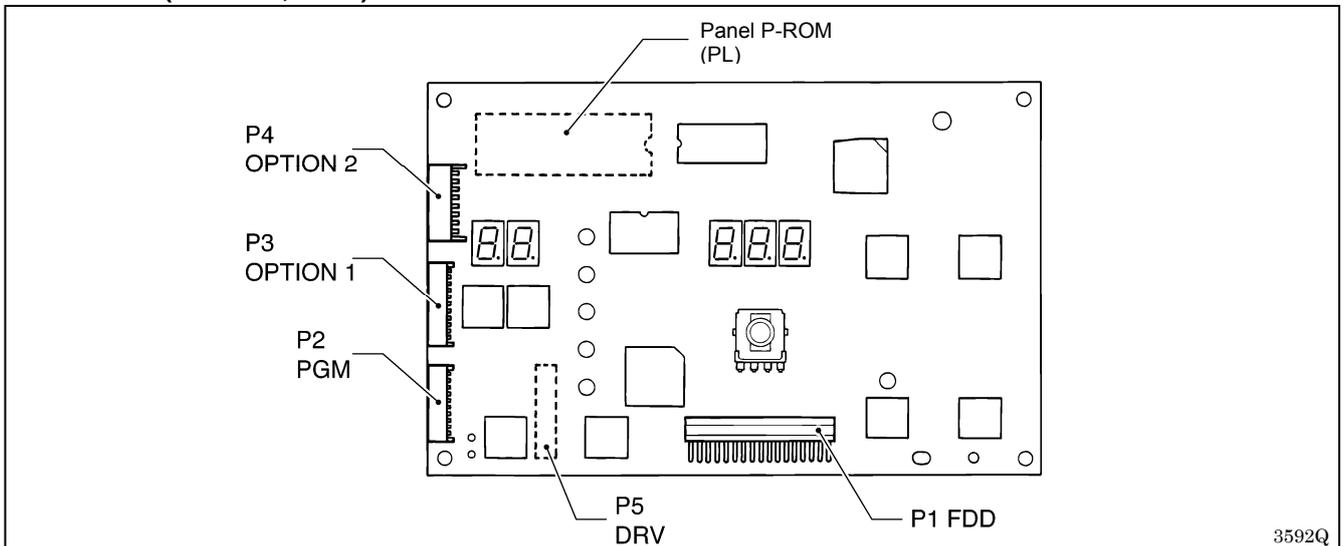
### Power supply circuit board



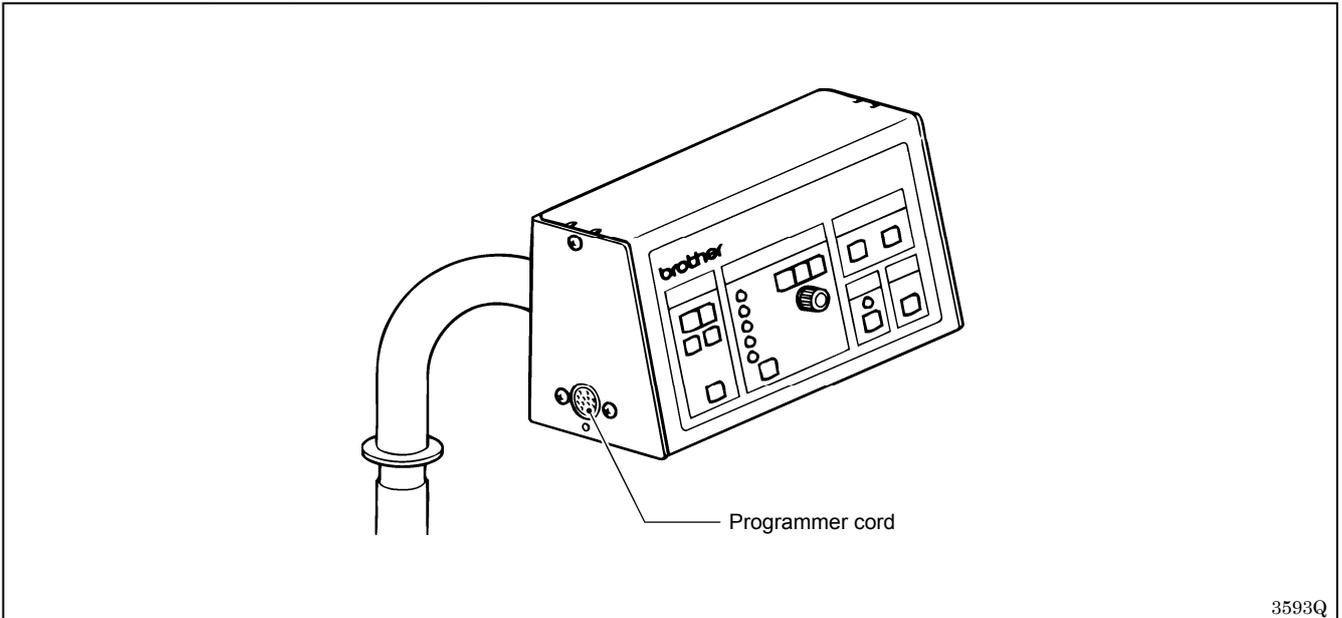
### Panel PCB (KE-430\*, 431\*, 432\*, 433B, 434\*, 435\*, 484C, BE-438\*)



### Panel PCB (KE-436B, 436C)

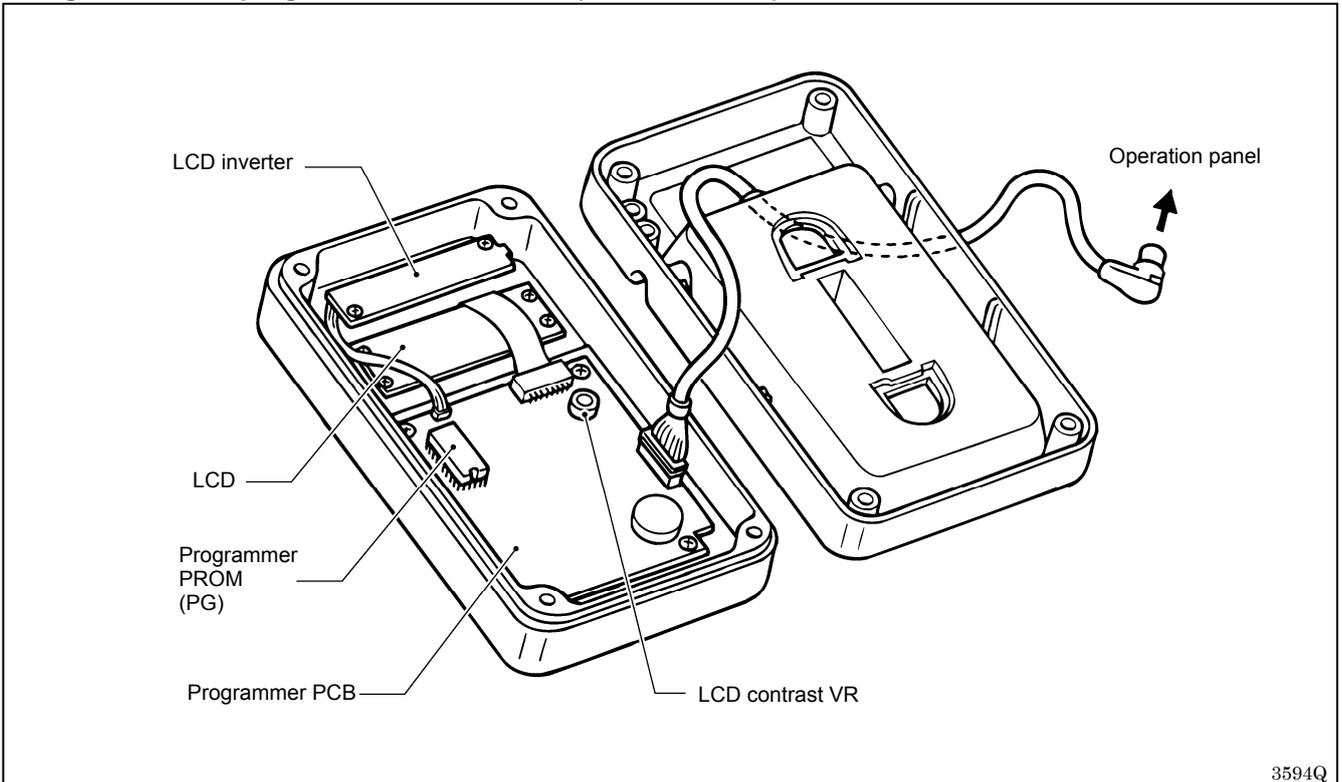


Outside of the panel (KE-436B, 436C)



3593Q

Programmer and programmer circuit board (KE-436B, 436C)



3594Q

## 8. ELECTRIC MECHANISM

### 8 - 4 - 2 . Contact failure

The connectors functions are divided into five categories. Some connectors may belong to more than one group. Be sure to investigate another category if a problem is not found in one category.

For the details of connections, refer to the control circuit block diagram at the end of this manual.

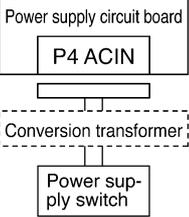
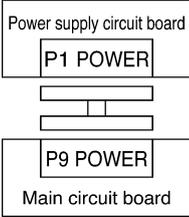
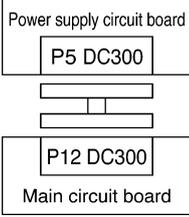
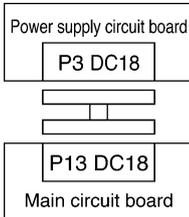
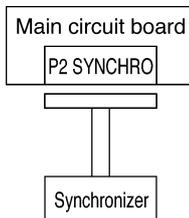
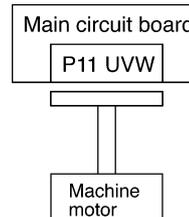
#### 1. Feed mechanism

Problem	Connector No. and position
<ul style="list-style-type: none"> <li>The feed mechanism operates but the home position is not detected correctly.</li> <li>Error E-A0 is displayed. ([E.A1] KE-436B, 436C)</li> <li>The work clamp does not operate.</li> <li>Error E-61 is displayed. (solenoid specification only)</li> </ul>	<div style="text-align: right;">3654Q</div> <p>* Not used with pneumatic specifications.</p>
<ul style="list-style-type: none"> <li>Forward feed does not operate correctly.</li> <li>Error E-A0 is displayed. ([E.A1] KE-436B, 436C)</li> </ul>	<div style="text-align: right;">3655Q</div>
<ul style="list-style-type: none"> <li>Sideways feed does not operate correctly.</li> <li>Error E-A0 is displayed. ([E.A1] KE-436B, 436C)</li> </ul>	<div style="text-align: right;">3656Q</div>

#### 2. Work clamp lifter and thread trimmer mechanisms

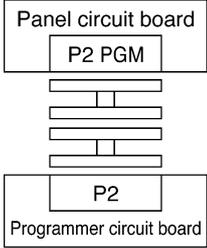
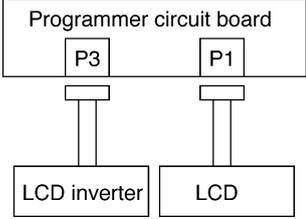
Problem	Connector No. and position
<ul style="list-style-type: none"> <li>The work clamp does not operate.</li> <li>The machine does not operate.</li> </ul>	<div style="text-align: right;">3657Q</div>
<ul style="list-style-type: none"> <li>The work clamp does not operate.</li> <li>Error E-61 is displayed. (solenoid specification only)</li> <li>Thread trimming is not performed.</li> </ul>	<div style="text-align: right;">3658Q</div> <p>* Not used with pneumatic specifications.</p>
<ul style="list-style-type: none"> <li>Thread take-up lever does not operate.</li> </ul>	<div style="text-align: right;">3659Q</div>

3. Sewing operation

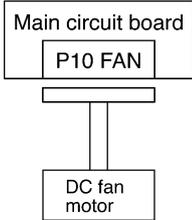
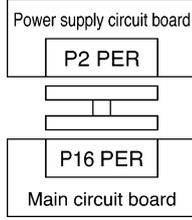
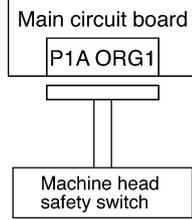
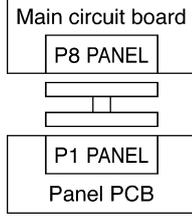
Problem	Connector No. and position
<ul style="list-style-type: none"> <li>The power indicator is not illuminated, and nothing operates.</li> <li>Machine operation is unstable.</li> </ul>	 <p style="text-align: right;">3660Q</p>
<ul style="list-style-type: none"> <li>The power indicator is not illuminated, and nothing operates.</li> <li>Machine operation is unstable.</li> <li>The feed mechanism does not operate.</li> <li>The work clamp lifter mechanism does not operate.</li> <li>Error E-61 is displayed.</li> <li>Error E-A0 is displayed. ([E.A1] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3661Q</p>
<ul style="list-style-type: none"> <li>The machine motor does not run.</li> <li>Motor operation is unstable.</li> <li>Needle up stop position is not correct.</li> <li>Error E-20 is displayed. ([E.20] KE-436B, 436C)</li> <li>Error E-50 is displayed. ([E.22] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3662Q</p>
<ul style="list-style-type: none"> <li>The machine motor does not run.</li> <li>Motor operation is unstable.</li> <li>Needle up stop position is not correct.</li> <li>Error E-20 is displayed. ([E.20] KE-436B, 436C)</li> <li>Error E-50 is displayed. ([E.22] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3663Q</p>
<ul style="list-style-type: none"> <li>The machine motor does not run.</li> <li>Motor operation is unstable.</li> <li>Needle up stop position is not correct.</li> <li>Error E-20 is displayed. ([E.20] KE-436B, 436C)</li> <li>Error E-50 is displayed. ([E.22] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3664Q</p>
<ul style="list-style-type: none"> <li>The machine motor does not run.</li> <li>Motor operation is unstable.</li> <li>Needle up stop position is not correct.</li> <li>Error E-20 is displayed. ([E.20] KE-436B, 436C)</li> <li>Error E-50 is displayed. ([E.22] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3665Q</p>

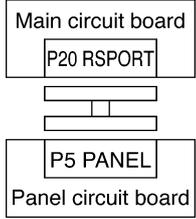
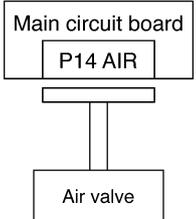
## 8. ELECTRIC MECHANISM

### 4. Programmer operation (KE-436B, 436C)

Problem	Connector No. and position
<ul style="list-style-type: none"> <li>The programmer does not operate.</li> <li>No switches on operation panel operate.</li> </ul>	 <p style="text-align: right;">3666Q</p>
<ul style="list-style-type: none"> <li>Keys on the programmer respond, but nothing appears on the display. (P1-LCD)</li> <li>Display of the programmer is not lit (Inverter for P3-LCD)</li> </ul>	 <p style="text-align: right;">3667Q</p>

### 5. Others

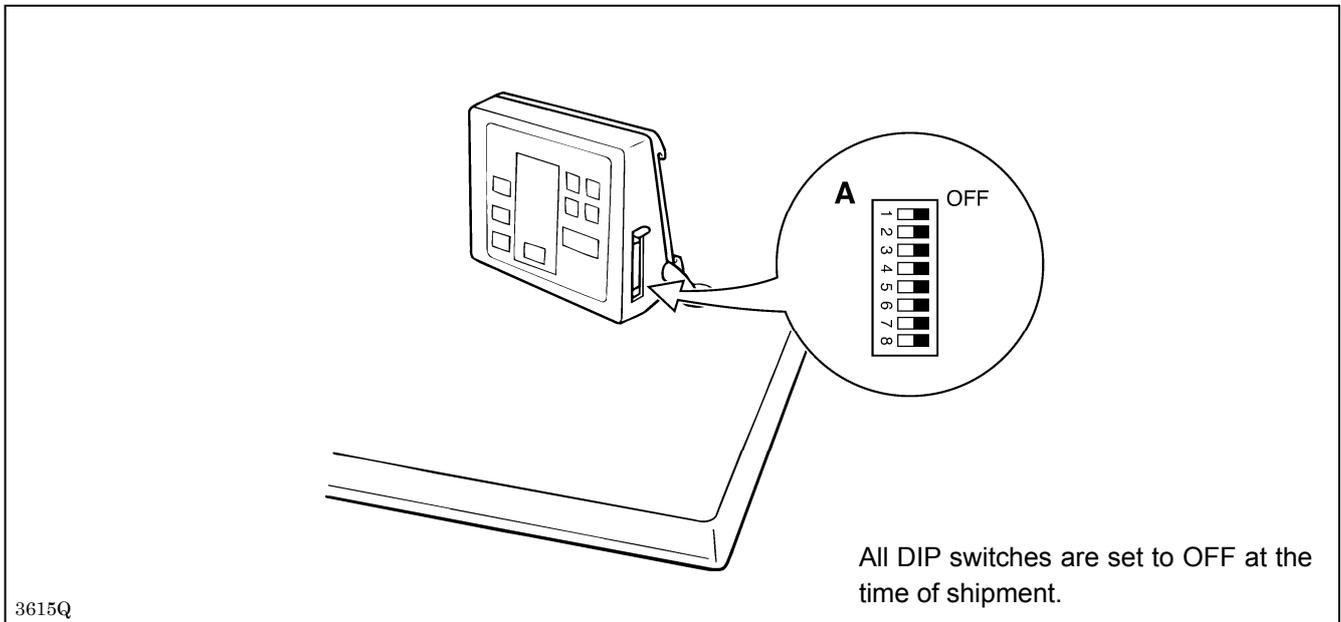
Problem	Connector No. and position
<ul style="list-style-type: none"> <li>The DC fan motor does not run.</li> <li>Error E-70 is displayed. ([E.c1] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3668Q</p>
<ul style="list-style-type: none"> <li>Error E-F1 is displayed. ([E.F1] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3669Q</p>
<ul style="list-style-type: none"> <li>The machine does not operate.</li> <li>Error E-17 is displayed. ([E.16] KE-436B, 436C)</li> </ul>	 <p style="text-align: right;">3670Q</p>
<p><b>&lt;KE-430*, 431*, 432*, 433B, 434*, 435*, 484C, BE-438*&gt;</b></p> <ul style="list-style-type: none"> <li>Indication is strange.</li> <li>Any switch does not have any effect.</li> <li>The power indicator is not illuminated.</li> </ul>	 <p style="text-align: right;">3671Q</p>

Problem	Connector No. and position
<p><b>&lt;KE-436B, 436C&gt;</b></p> <ul style="list-style-type: none"> <li>• Indication is strange.</li> <li>• Any switch does not have any effect.</li> <li>• The power indicator is not illuminated.</li> <li>• Error E.E1, E.E2 or E.E3 is displayed.</li> </ul>	 <p style="text-align: right;">3672Q</p>
<p><b>&lt;KE-434* pneumatic specification, KE-435*, 436*, 484C&gt;</b></p> <ul style="list-style-type: none"> <li>• The work clamp does not operate.</li> <li>• The stepping foot does not operate.</li> </ul>	 <p style="text-align: right;">3673Q</p>

8 - 5 . Explanation of the DIP switches

8-5-1 . Operation panel DIP switches (KE-430\*, 431\*, 432\*, 433B, 434\*, 435\*, 484C, BE-438\*)

**Note:**  
Always turn off the power before setting the DIP switches.



3615Q

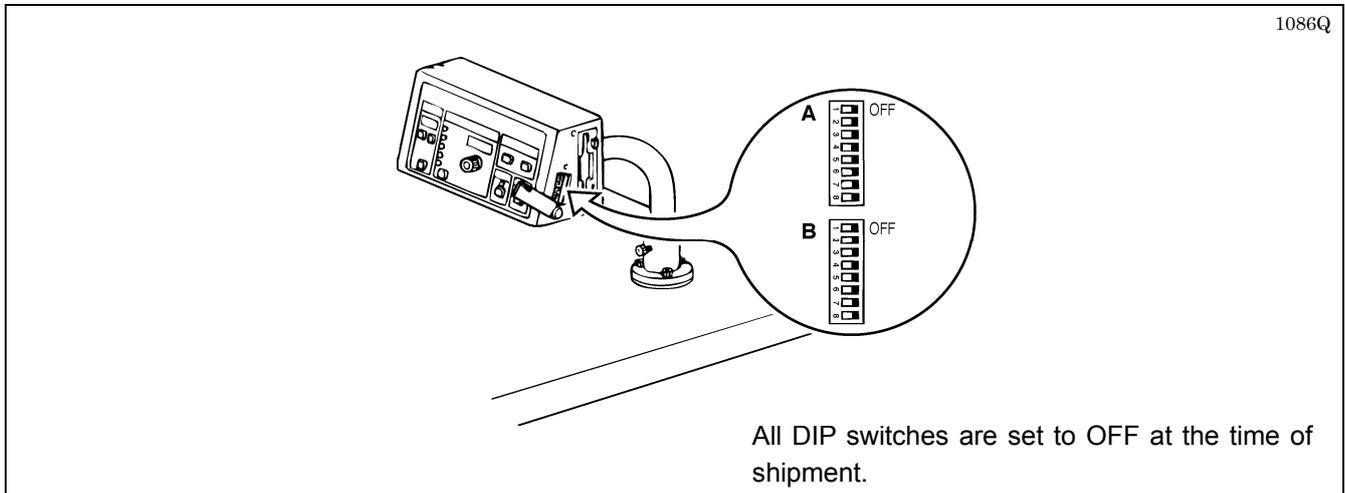
**DIP switch A**

Switch	Motion when set to ON	
DIPA-1	Presser does not automatically lift after sewing is completed.	See "8-8. Setting the work clamp mode"
DIPA-2	Pedal mode is switched.	
DIPA-3	User program mode is available.	
DIPA-4	-	
DIPA-5	The work clamp does not rise automatically when a split is found.	
DIPA-6	Displays the enlargement/reduction ratio in millimeter units instead of as a percentage. (After changing this setting, be sure to carry out the auto-clear operation by referring to page 164.)	
DIPA-7	Enlargement of pattern size is not available.	
DIPA-8	Program number is fixed.	

## 8-5-2. Operation panel DIP switches (KE-436B, 436C)

**Note:**

Always turn off the power before setting the DIP switches.

**DIP switch A**

Switch	Motion when set to ON	
DIPA-1	Work clamp does not automatically lift after sewing is completed.	See "8-8. Setting the work clamp mode"
DIPA-2	Pedal mode is switched.	
DIPA-3	-	
DIPA-4	-	
DIPA-5	After sewing is completed, work clamp does not automatically rise. (only in split mode)	
DIPA-6	Clamping force output is produced. (Inner clamping device available as an option)	
DIPA-7	-	
DIPA-8	Thread breakage detector device is activated (available as an option).	

**DIP switch B**

Switch	Motion when set to ON
DIPB-1	Single split mode activated
DIPB-2	-
DIPB-3	Thread is not trimmed after an emergency stop.
DIPB-4	Needle cooler output is produced. (Needle cooler available as an option)
DIPB-5	When a rotating-type thread breakage detector device is used, detection precision is increased from 8 to 14. When a fiber-type thread breakage detector device is used, detection precision is increased from 5 to 10.
DIPB-6	Fiber-type thread breakage detector device is ON, and DIP switch A-8 is ON (available as an option).
DIPB-7	-
DIPB-8	-

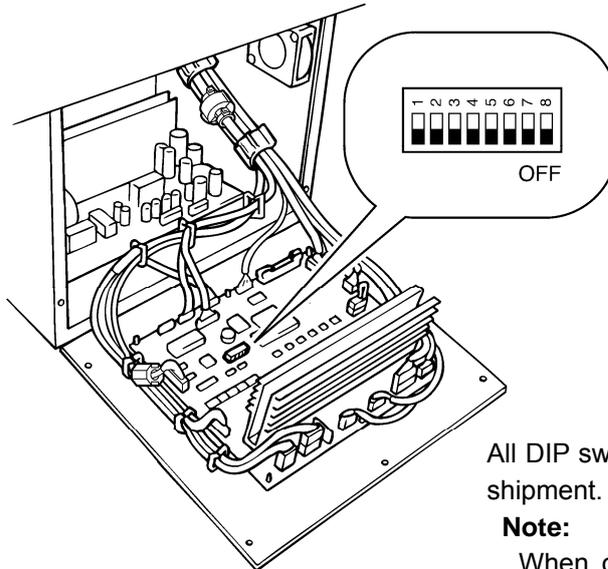
## 8. ELECTRIC MECHANISM

### 8-5-3 . DIP switches inside the control box

# ! 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.



All DIP switches are set to OFF at the time of shipment.

**Note:**

When opening the cover, hold it securely so that it does not fall down.

3616Q

Switch	Motion when set to ON
DIP-1	First two stitches are sewn at a low speed of 260 rpm.
DIP-2	Last two stitches are sewn at a low speed of 260 rpm.
DIP-3	-
DIP-4	Last two stitches are sewn at a low speed of 700 rpm.
DIP-5	First two stitches are sewn at a low speed of 400 rpm.
DIP-6	Low speed sewing is not performed at the start of sewing.
DIP-7	The motor operates in reverse when the upper shaft stops, to return the needle bar to close to its highest position. *NOTE
DIP-8	Maximum area for the sewing data is increased. ----- <KE-436B, 436C> During an emergency stop, the thread is trimmed and the needle bar stops in the raised position.

**\*Note:**

When the motor operates in reverse to raise the needle, the thread take-up will stop at a position which is lower than its normal stopping position. As a result, the thread take-up will rise slightly at the sewing start, and this may result in the thread pulling out under certain conditions.

## 8 - 6 . Explanation of the memory switches

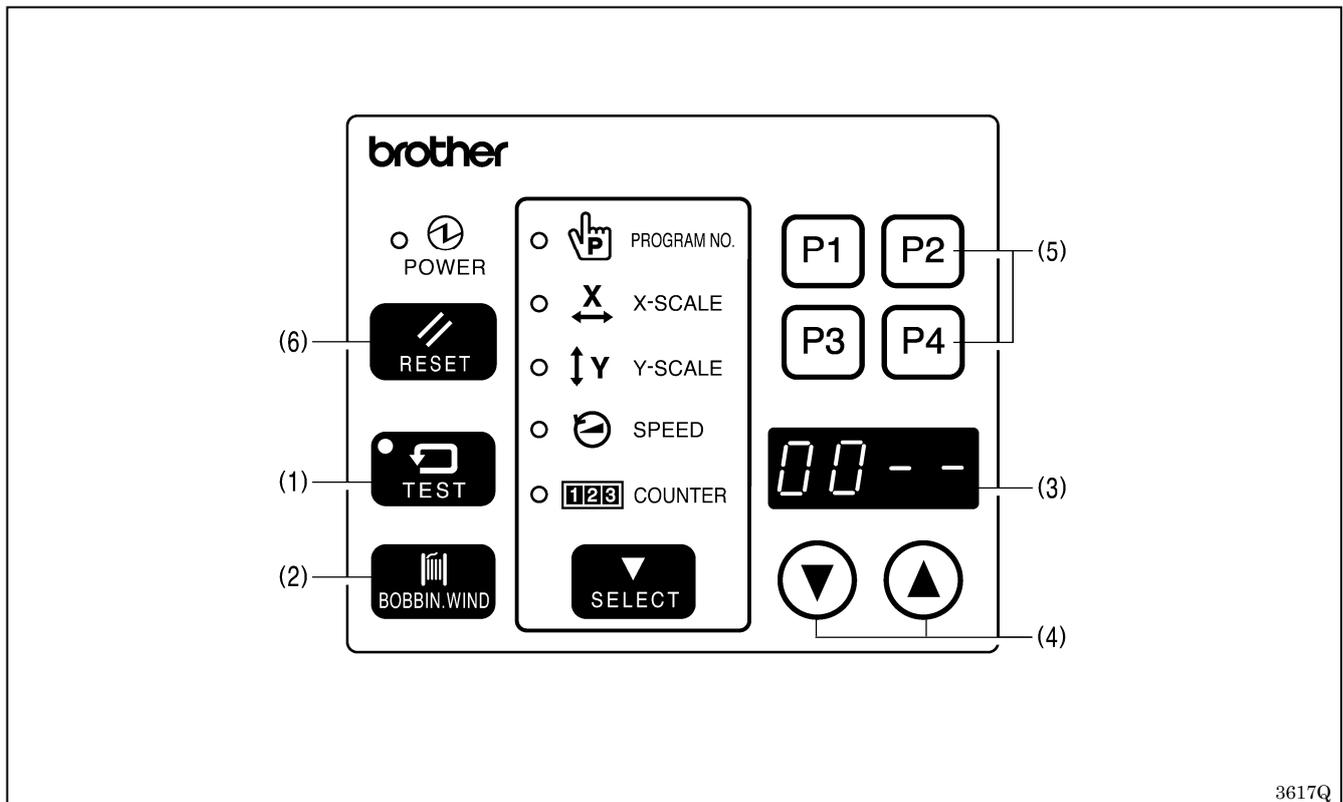
(KE-430\*, 431\*, 432\*, 433B, 434\*, 435\*, 484C, BE-438\*)

Special function settings can be carried out using the operation panel.

**Note:**

After changing the memory switch settings, press the power switch to turn the power off and then back on again.

The memory switches "00 - 2F" are set to OFF at the time of shipment.



3617Q

1. Turn on the power switch.
2. While pressing the TEST switch (1), press the BOBBIN. WIND switch (2).  
\* "00 - -" will appear in the display window (3).
3. Press the DISPLAY SET switches (4) to set the two digits at the left of the display window (3) to the corresponding number (00 to 4F) of the function shown in the table below that you would like to select.
4. For Nos. 00 to 2F, the two spaces at the right in the display window will change from "--" to "ON" when the BOBBIN. WIND switch (2) is pressed. When it is pressed again, the two spaces will change from "ON" back to "--".  
For Nos. 30 to 4F, the two spaces at the right in the display window will increase and decrease respectively when user program switches P2 and P4 (5) are pressed.  
\* If you press the RESET switch (6) at this time, memory switches will be returned to their initial settings (factory default settings).
5. Press the TEST switch (1). The display will return to normal.

## 8. ELECTRIC MECHANISM

### <Memory switches 00 - 0F>

Switch	Motion when set to ON	Initial value	
		Solenoid	Pneumatic
memo-00	At the end of sewing, the feed plate will be returned to the sewing start point via mechanical home position.	--	--
memo-01	Work clamp (button clamp) will move to the sewing start point, and then will be lifted. (For models with solenoid specifications other than the KE-434*, the work clamp rises at the final stitch to enable quick taking out of the workpieces.)	*1	ON
memo-02	Feed will move automatically to the next starting point at the same time as a user program is switched. (Normally it moves to the starting point after sewing starts.)	--	--
memo-03	When sewing using programs, the programs which have been set will be sewn in numerical order. (Cycle sewing mode is set.)	--	--
memo-04	The sewing speed will be fixed at the minimum speed for the maximum pitch of the sewing data. (Set this to ON if you are concerned that variations in pitch may cause changes in the sewing speed.)	--	--
memo-05	Increases the presser solenoid lifting force (Set to ON when using the optional spring for extra-heavy material)	*2	--
memo-06	Enlargement and reduction ratio settings for X and Y become the same.	--	--
memo-07	The inner clamping device can be used with pneumatic specifications.	--	*3
memo-08	Test feeding is carried out stitch by stitch when the foot switch is depressed.	*4	--
memo-09	The sewing start point becomes the reference point for enlargements and reductions. (The reference point for enlargements and reductions is normally the center of the sewing frame.)	--	--
memo-0A	Work clamp does not close. (KE-432*)	--	--
memo-0b	Work clamp closes when the machine starts. (KE-432*)	--	--
memo-0c	Needle stops in up position during emergency stop. (EMERGENCY STOP switch is available as an option except for KE-434*, 435*, 484C)	--	--
memo-0d	The bar tacking stitches (with a pitch of less than 1 mm) are also enlarged and reduced. (Normally stitches with a pitch of less than 1 mm are not enlarged or reduced.)	--	--
memo-0E	Test feeding will be performed at the same speed as that for actual sewing. (This is used for checking feeding operation.)	--	--
memo-0F	After sewing is finished, the work clamp automatically opens and closes once (practice operation).	--	--

\*1 ON for KE-434B, 434C, and "--" at other times

\*2 ON for solenoid/heavy material specifications of KE-434B, 434C, and "--" at other times

\*3 ON when the inner clamping device is being used, and "--" at other times

\*4 ON for BE-438B, 438C, and "--" at other times

### <Memory switches 10 - 1F>

Switch	Motion when set to ON	Initial value	
		Solenoid	Pneumatic
memo-10	The optional emergency stop switch can be used. (KE-430*, 431*, 432*, 433B, BE-438*)	--	--
memo-11	On when a two-stage tensioner is used. (Special order device that outputs from option output No. 1) (Normally the tension opens when output is OFF, and the tension closes when option output No. 1 is ON)	--	--
memo-12	Pneumatic wiper can be used. (Special order device except for KE-484C that outputs from option output No. 2)	--	*5
memo-13	The inner clamping device moves forward at the 1/4-way mark and returns at the 3/4-way mark for the pattern being sewn. (The device does not retract at this time, regardless of the setting for memo-15.)	--	--
memo-14	Solenoid wiper can be used (available as an option except for KE-434* pneumatic specification and KE-435*).	--	ON

\*5 ON for KE-484C, and "--" at other times

Switch	Motion when set to ON	Initial value	
		Solenoid	Pneumatic
memo-15	When using the inner clamping device, shunting to prevent interference between the inner clamping device and the needle is not carried out after the sewing end.	--	--
memo-16	Needle cooler can be used (available by special order).	--	--
memo-17	Thread take-up device is not operated at the sewing end.	--	--
memo-18	Thread take-up device operates one stitch before the sewing end.	--	--
memo-19	For solenoid specifications, presser position errors are not detected.	--	--
memo-1A	Needle up stop position errors are not detected.	--	--
memo-1b	Work clamp can be moved up and down before the home position is detected. (Normally the work clamp cannot be moved up and down until after the home position has been detected.)	--	--
memo-1c	-	--	--
memo-1d	For pneumatic specifications, the air pressure detection switch is enabled. (The air pressure sensor is a special-order option.)	--	--
memo-1E	Errors can be reset using the EMERGENCY STOP switch. (EMERGENCY STOP switch is available as an option except for KE-434*, 435*, 484C.)	--	--
memo-1F	Thread is not trimmed when an emergency stop occurs during sewing. (EMERGENCY STOP switch is available as an option except for KE-434*, 435*, 484C.)	--	--

## &lt;Memory switches 20 - 2F&gt;

Switch	Motion when set to ON	Initial value	
		Solenoid	Pneumatic
memo-20	-	--	--
memo-21	Rotating-type thread breakage detector operates. (Device is available by special order.)	--	--
memo-22	When thread breakage detection is operating, sensitivity is decreased at the sewing start. (Sensitivity during sewing is three stitches.) [Rotating-type] 8→14 stitches, [Fiber-type] 5→10 stitches	--	--
memo-23	When DIP switch A-8 is simultaneously ON, setting values changed using the operation panel are ignored.	--	--
memo-24	-	--	--
memo-25	-	--	--
memo-26	Enables the fiber-type thread breakage detector (when memo-21 is ON)	--	--
memo-27	Test operation of pneumatic-type thread trimmer, tension release and thread take-up. (KE-484C)	--	--
memo-28	Stores the amount of parallel movement in memory. (Use the memory all clear operation to clear the setting.)	--	--
memo-29	Pneumatic thread wiper sensor is enabled (when memo-12=ON and memo-14=ON) (sensor is optional). (KE-484C)	--	--
memo-2A	Special emergency stop release method is used (error code E-11 is cleared by pressing reset switch once and home position is cleared). (KE-484C)	--	--
memo-2b	-	--	--
memo-2E	-	--	--
memo-2F	Pneumatic thread wiper and work clamp operate together. (KE-484C)	--	--

## 8. ELECTRIC MECHANISM

### <Memory switches 30 - 4F>

30 to 4F are set by entering two-digit values.

These values are incremented using the P2 switch, and decremented using the P4 switch.

Switch	Possible setting range	Units	Initial value	Explanation
memo-30	0 - 30	mm	***	<KE-430*, 431*, 432*, 433B, BE-438*> Limits the maximum area in the horizontal direction (X).
	0 - 99			<KE-434*, 435*, 484C> Limits the maximum area in the horizontal direction (X).
memo-31	0 - 30	mm	***	<KE-430*, 431*, 432*, 433B, BE-438*> Limits the maximum area in the vertical direction (Y).
	0 - 60			<KE-434*, 435*, 484C> Limits the maximum area in the vertical direction (Y).
memo-32	12 - 27	×100rpm	27	<KE-430*, 431*, 432*> Changes the maximum sewing speed.
	12 - 25		25	<KE-433B, 434*, 435*, BE-438*> Changes the maximum sewing speed.
	12 - 22		22	<KE-484C> Changes the maximum sewing speed.
memo-33	1 - 10	×7.5°	5	<KE-430*, 431*, 432*, 433B, 434*, 435*, 484C> Changes the feed timing 1 (Fast) ← 5 (Standard) → 10 (Slow)
	1 - 15		10	<BE-438*> Changes the feed timing 1 (Fast) ← 10 (Standard) → 15 (Slow)
memo-34	0 - 5	Stitch	0	<KE-430*, 431*, 432*, 433B, 434*, 435*, 484C> The (setting value + 1) number of stitches are sewn at the speed set by memo-35 at the sewing start. (No low-speed sewing if set to 0.)
			1	<BE-438*> The (setting value + 1) number of stitches are sewn at the speed set by memo-35 at the sewing start. (No low-speed sewing if set to 0.)
memo-35	3 - 9	×100rpm	4	Changes the sewing start speed for the number of stitches specified by memo-34.
memo-36	-	-	-	-
memo-37	1 - 20	×7.5°	10	Changes the feed timing one stitch before the sewing end. 1 (Fast) ← 10 (Standard) → 20 (Slow)
memo-38	1 - 20	×7.5°	10	Changes the feed timing two stitches before the sewing end.
memo-39	1 - 20	×7.5°	10	<KE-430*, 431*, 432*, 433B, 434*, 435*, 484C> Changes the feed timing for the third stitch at the sewing start. 1 (Fast) ← 10 (Standard) → 20 (Slow)
			1	<BE-438*> Changes the feed timing for the third stitch at the sewing start. 1 (Fast) ← 10 (Standard) → 20 (Slow)

### \*\*\* Default values for each model setting

Model	Default value for memo-30	Default value for memo-31
KE-430*	30	26
KE-431*	30	10
KE-432*	12	3
KE-433B	30	30
KE-434*, 435*, 484C	99 (If the value is set to 99, the maximum length allowed will be 100 mm)	60
BE-438*	7 (Limited to 6.4 mm)	7 (Limited to 6.4 mm)

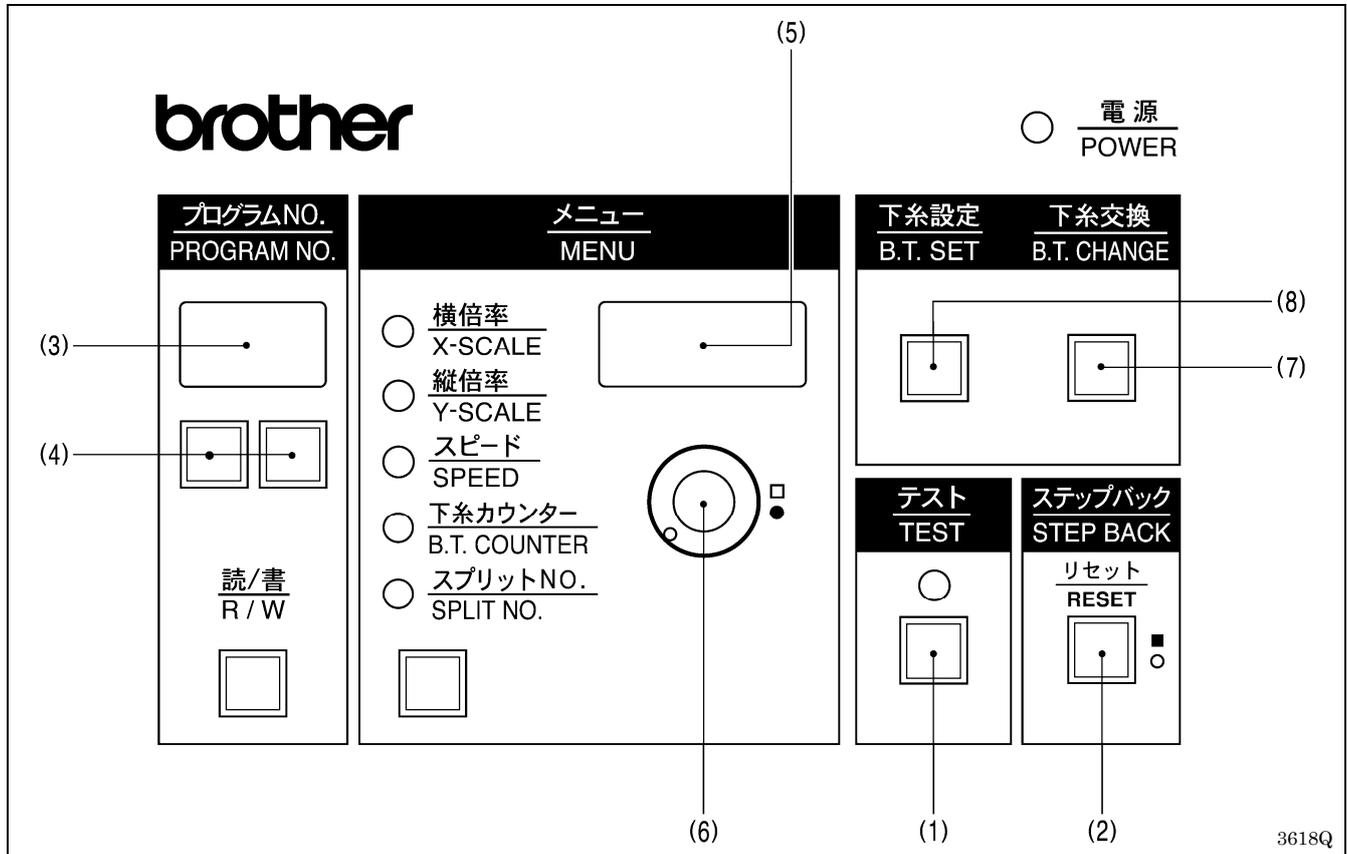
Switch	Possible setting range	Units	Initial value	Explanation
memo-3A	1 - 20	×7.5°	10	<KE-430*, 431*, 432*, 433B, 434*, 435*, 484C> Changes the feed timing for the second stitch at the sewing start.
			1	<BE-438*> Changes the feed timing for the second stitch at the sewing start.
memo-3b	1 - 20	×7.5°	10	<KE-430*, 431*, 432*, 433B, 434*, 435*, 484C> Changes the feed timing for the first stitch at the sewing start.
			1	<BE-438*> Changes the feed timing for the first stitch at the sewing start.
memo-3c	0 - 99	Stitch	0	Sets the number of stitches for which the feed timing (memo-33 setting) is enabled. 0: Enabled for all stitches 1 - 99: Enabled for the specified number of stitches from the sewing start
memo-3d	-	-	-	-
memo-3E	-	-	-	-
memo-3F	-	-	-	-
memo-40	1 - 5	-	4	<KE-434*, 435*, 484C> Changes the test feeding speed (with no material). 1 (Fast) ↔ 5 (Slow)
memo-41	1 - 99	x10ms	10	<KE-435*> Changes the standby time after the stepping foot is raised.
memo-42	0 - 10	-	0	<Solenoid specifications> The work clamp operating mode can be changed. (When set to "0", the mode is selected according to the settings for DIP switches A-1 and A-2.) Refer to "8-8. Setting the work clamp mode" for details of the available modes.
			0	<Pneumatic specifications>
	0 - 13	-	5	<Inner clamping device specifications>
memo-43	1 - 3	-	3	<KE-434*, 435*, 484C> Changes the allowable speed/sewing pitch. 1 (Fast) ↔ 3 (Standard)
memo-44	0 - 3	-	0	<KE-434*, 435*, 484C> Changes the path taken when moving from the machine home position to the start position. 0: Across inside of work clamp, 1: Top-left, 2: Bottom-left, 3: Bottom-right
			1	<Inner clamping device specifications> 1: Top-left, 2: Bottom-left, 3: Bottom-right
memo-45 - memo-4c	-	-	-	-
memo-4d	0 - 10	x100ms	0	<KE-484C> Changes the work clamp lift timing after sewing is finished.
memo-4E	2 - 9	×7.5°	5	<KE-484C> Tension release ON timing after thread trimming. 2 (Fast) ← 5 (Standard) → 9 (Slow)
memo-4F	14 - 19	×7.5°	14	<KE-484C> Thread trimming timing 14 (Standard) ↔ 19 (Slow)

### 8 - 7 . Explanation of the memory switches (KE-436B, 436C)

Special function settings can be carried out using the operation panel.

**Note:**

After changing the memory switch settings, press the power switch to turn the power off and then back on again.



1. Turn on the power switch.
2. While pressing the TEST switch (1), press the STEP BACK switch (2) to switch to setting mode.
3. Press the program select switch (4) so that the number displayed on the display screen (3) matches the switch number (00 - 3F) for the function that you would like to select from the table.
4. For Nos. 00 to 2F, the display screen (5) will change from "OFF" to "ON" when the STEP BACK switch (2) is pressed. When it is pressed again, the display screen will change from "ON" back to "OFF".  
For Nos. 30 to 3F, the number appearing in the display screen (5) can be changed by turning the dial (6) while pressing the STEP BACK switch (2).  
If the B.T. CHANGE switch (7) is pressed at this time, all memory switch settings will be changed to OFF.

5. Press the TEST switch (1). The display will return to normal.

**Note:**

The following steps set the memory switch settings separately for each program number.

6. Once the program data has been read from the floppy disk, change to memory switch setting mode and then press the B.T. SET switch (8). The buzzer will sound twice, and the current memory switch settings will be written to the floppy disk.

## Memory switches (00–0F)

Switch No.	Motion when set to ON	Initial value
memo-00	When moving to the home position, the feed plate moves in the order $\theta \rightarrow r$ and the start position moves in the order $r \rightarrow \theta$ . (*1) (The feed plate does not move via the position that has been set by memo-3C.)	–
memo-01	When moving to the home position, the feed plate moves in the order $r \rightarrow \theta$ and the start position moves in the order $\theta \rightarrow r$ . (*1) (The feed plate does not move via the position that has been set by memo-3C.)	–
memo-02	–	–
memo-03	–	–
memo-04	Needle stops in up position during emergency stop. (Needle normally stops in down position.)	–
memo-05	When sewing is finished, the feed plate moves via the machine home position to the start position.	–
memo-06	After the final stitch, the work clamp rises and then the feed plate returns to the start position.	–
memo-07	Intermittent work clamp is not used (does not rise).	–
memo-08	When using an inner clamping device, the inner clamping device moves forward at the 1/4-way mark and returns at the 3/4-way mark for the pattern being sewn. (Inner clamping device is available as an option.)	–
memo-09	Changes the wiper to air drive. (Air wiper is available as an option.)	–
memo-0A	Jog feeding becomes faster during programming.	–
memo-0b	ON when a two-stage tensioner is used (available as an option).	–
memo-0c	–	–
memo-0d	Clearing the emergency stop switch action is carried out using the STEP BACK switch. <b>Note:</b> The factory default setting is ON, and it changes to ON when all memory settings are cleared.	ON
memo-0E	Test feeding is carried out at the same speed as normal sewing. (For checking feed operation)	–
memo-0F	After sewing is finished, the work clamp automatically opens and closes once. (practice operation) If memo-0E is ON, the work clamp opens and closes twice.	–

\*1: The  $\theta$  direction is rotation with reference to the x axis, and the r direction is rotation with reference to the y axis.

## Memory switches (10–1F)

Switch No.	Motion when set to ON	Initial value
memo-10	–	–
memo-11	Bobbin thread counter and production counter are adjusted when thread is trimmed.	–
memo-12	–	–
memo-13	–	–
memo-14	Needle up error detected.	–
memo-15	When using the inner clamping device, shunting to prevent interference between the inner clamping device and the needle is not carried out after the sewing end. (Inner clamping device is available as an option.)	–
memo-16	–	–
memo-17	–	–
memo-18	–	–
memo-19	–	–
memo-1A	–	–
memo-1b	–	–
memo-1c	Bobbin thread counter is decremented at the start of sewing.	–
memo-1d	When using an air pressure drop detection switch. (This detection switch is available by special order.)	–
memo-1E	Changes the split number automatically by using an external switch. (Use option connector P3 on the operation panel.)	–
memo-1F	Program number is changed automatically by using outside switch. (Use optional connector P3 on the operation panel.)	–

## 8. ELECTRIC MECHANISM

### Memory switches (20 - 2F)

Switch No.	Motion when set to ON	Initial value
memo-20	During feed test operation, jump feeding 100 stitches at a time is possible using the STEP BACK switch.	–
memo-21	After the home position is detected and the machine moves to the sewing start position, the work clamp rises automatically.	–
memo-22	–	–
memo-23	–	–
memo-24	–	–
memo-25	The enlargement and reduction ratio settings at the operation panel are fixed at the values when memo-25 was set to ON.	–
memo-26	Thread trimming is not carried out.	–
memo-27	The sewing speed setting at the operation panel is fixed at the value when memo-27 was set to ON.	–
memo-28	Set to ON when using the thread take-up device.	ON
memo-29	Work clamp lifting and lower thread winding before home position detection are disabled.	–
memo-2A	–	–
memo-2b	–	–
memo-2c	–	–
memo-2d	–	–
memo-2E	–	–
memo-2F	When the input voltage is being checked, the display shows the temperature of the heat sink on the main circuit board instead of the voltage.	–

### Memory switches (30 - 3F)

Memory switches 30 to 3F are set to numeric values instead of “ON” and “OFF”.

Turn the dial while pressing the STEP BACK switch to change the values.

Switch No.	Possible setting range	Units	Initial value	Explanation
memo-30	1 - 999	× 10ms	10	Time until feed mechanism starts moving after work clamp has lifted.
memo-31	1 - 5	–	4	Changes the feed speed. 1 (Fast) ← → 5 (Slow)
memo-32	3 - 7	–	3	Changes the possible sewing speed for a given stitch length. 3 (Fast) ← → 7 (Slow) 3 (2,500/3 mm), 4 (2,300/3 mm), 5 (2,000/3 mm), 6 (1,800/3 mm), 7 (1,200/3 mm)
memo-33	1 - 10	× 7.5°	5	Changes the feed timing. 1 (Fast) ← 5 (Standard) → 10 (Slow)
memo-34	1 - 5	stitch	1	Number of low-speed stitches sewn at 400 rpm at sewing start.
memo-35	3 - 9	× 100rpm	4	Changes the sewing start speed for the number of stitches specified by memo-34.
memo-36	–	–	–	–
memo-37	0 - 3	–	0	Automatically corrects the gear speed when reading 2DD disks. 0: No automatic correction 1: Read as BAS-311A data 2: Read as BAS-326A data 3: Read as BAS-341A, 342A data ex. Read BAS-311A data by KE-436C → Set memo-37=1.
memo-38	–	–	–	–

Switch No.	Possible setting range	Units	Initial value	Explanation
memo-39	0 - 11	–	0	Changes the reference point for enlargement and reduction using the operation panel. 0, 1: Center of work clamp, 2: Upper-left corner of work clamp, 3: Lower-left corner of work clamp, 4: Upper-right corner of work clamp, 5: Lower-right corner of work clamp, 6: Sewing start point, 7: Sewing end point, 8: Upper-left corner of sewing pattern, 9: Lower-left corner of sewing pattern, 10: Upper-right corner of sewing pattern, 11: Lower-right corner of sewing pattern
memo-3A	1 - 3	–	2	Changes the speed limit for the given sewing pitch when the maximum speed remains constant. 1: Speed limit is increased for the given sewing pitch and the sewing speed for that pitch is increased. 2: Standard 3: Speed limit is decreased for the given sewing pitch and the sewing speed for that pitch is decreased. <b>Note:</b> If sewing slippage occurs in places where a large sewing pitch is used, reduce the setting to 3. Furthermore, sewing slippage may occur in some cases if setting 1 is used.
memo-3b	0 - 13	–	0	Changes the work clamp operating mode. (When set to “0”, the mode is selected according to the settings for DIP switches A-1 and A-2.) Refer to “8-8. Setting the work clamp mode” for details on the setting values.
memo-3c	0 - 4	–	0	Changes the path taken when moving from the machine home position to the start position. 0: Across inside of work clamp, 1: Top-left, 2: Bottom-left, 3: Bottom-right, 4: Top-right
memo-3d	–	–	–	–
memo-3E	–	–	–	–
memo-3F	–	–	–	–

### 8 - 8 . Setting the work clamp mode

Through the combination of DIP switches A-1 and A-2 on the operation panel, presser motions can be set as follows:

**[Setting solenoid work clamp mode]**

DIPA-1	DIPA-2	Pedal specifications	Raising the presser at the sewing end
-	-	Single pedal	Work clamp is raised automatically. (factory default settings)
ON	-	Single pedal	Work clamp is raised by pressing the pedal.
-	ON	Two pedals	Work clamp is raised automatically, then it is lowered by pressing the pedal.
ON	ON	Two pedals	Work clamp is kept lifted while the work clamp pedal is pressed.

**[Setting pneumatic work clamp mode]**

**memo-42=0 (memo-3b=0: KE-436B, 436C) <initial value>**

DIPA-1	DIPA-2	Pedal specifications	Raising the presser at the sewing end
-	ON	Single pedal	Work clamp is raised automatically.
ON	ON	Single pedal	Work clamp is raised by pressing the pedal.
-	-	Two pedals	Work clamp is raised automatically, then it is lowered by pressing the pedal. (factory default settings)
ON	-	Two pedals	Work clamp is kept lifted while the work clamp pedal is pressed.

**Special memo-42 settings (memo-3b: KE-436B, 436C)**

memo-42 memo-3b	Pedal specifications	Raising the presser at the sewing end
5	Two pedals	Left presser drops when presser pedal is at the 1st step, and right presser drops when presser pedal is at the 2nd step. Raising is carried out in the reverse order. * Initial value for inner clamping specifications only * Setting used when using the light work clamp function (Refer to “1-8-3. Light work clamp”.)
6	Two pedals	Right presser drops when presser pedal is at the 1st step, and left presser drops when presser pedal is at the 2nd step. Raising is carried out in the reverse order.
7	Two pedals	The left/right operating sequence changes alternately for each item sewn when using two-pedal operation. Starts with right → left.
8	Three pedals (Option)	The left pedal is used to raise and lower the left presser, and the right (center) pedal is used to raise and lower the right presser. The start (right) pedal is used to start sewing. Furthermore, when DIP switch A-2 is at ON, and if one presser is already lowered, pressing the start pedal causes the other presser to be lowered and then sewing starts.
9	Two pedals	When the presser pedal is depressed to the 1st step, both left and right pressers are raised simultaneously. When it is pressed to the 2nd step, sewing starts.
10	Two pedals	When the start pedal is depressed, both left and right pressers are lowered simultaneously. When the start pedal is released, sewing starts.
11	Three pedals (Option)	The left pedal raises and lowers the left and right work clamps, and the right pedal (center) detects the home position. The start (right) pedal is used to start sewing. For the stepping foot specifications, both work clamps are lowered when DIP switch A-2 is ON, and the stepping foot is also lowered at the same time.
12	Three pedals (Option)	The left pedal raises and lowers the left work clamp, and the right pedal (center) detects the home position. When the start pedal (right side) is depressed for a short time (200 ms), the right work clamp is lowered, and when it is depressed for a longer time the right work clamp is lowered and then sewing starts. For the stepping foot specifications, the right work clamp is lowered when DIP switch A-2 is ON, and the stepping foot is also lowered at the same time.
13	Two pedals	Two-pedal operation raises and lowers the left and right work clamps simultaneously, and the stepping foot is lowered at the sewing start.

When memo-42 (memo-3b) has been used to make a special setting, DIP switches A-1 and A-2 function as follows.

- When DIP switch A-1 is at ON, the work clamp are not raised automatically at the sewing end.
- DIP switch A-2 is ignored except when memo-42 (memo-3b) = 8, 11, 12.

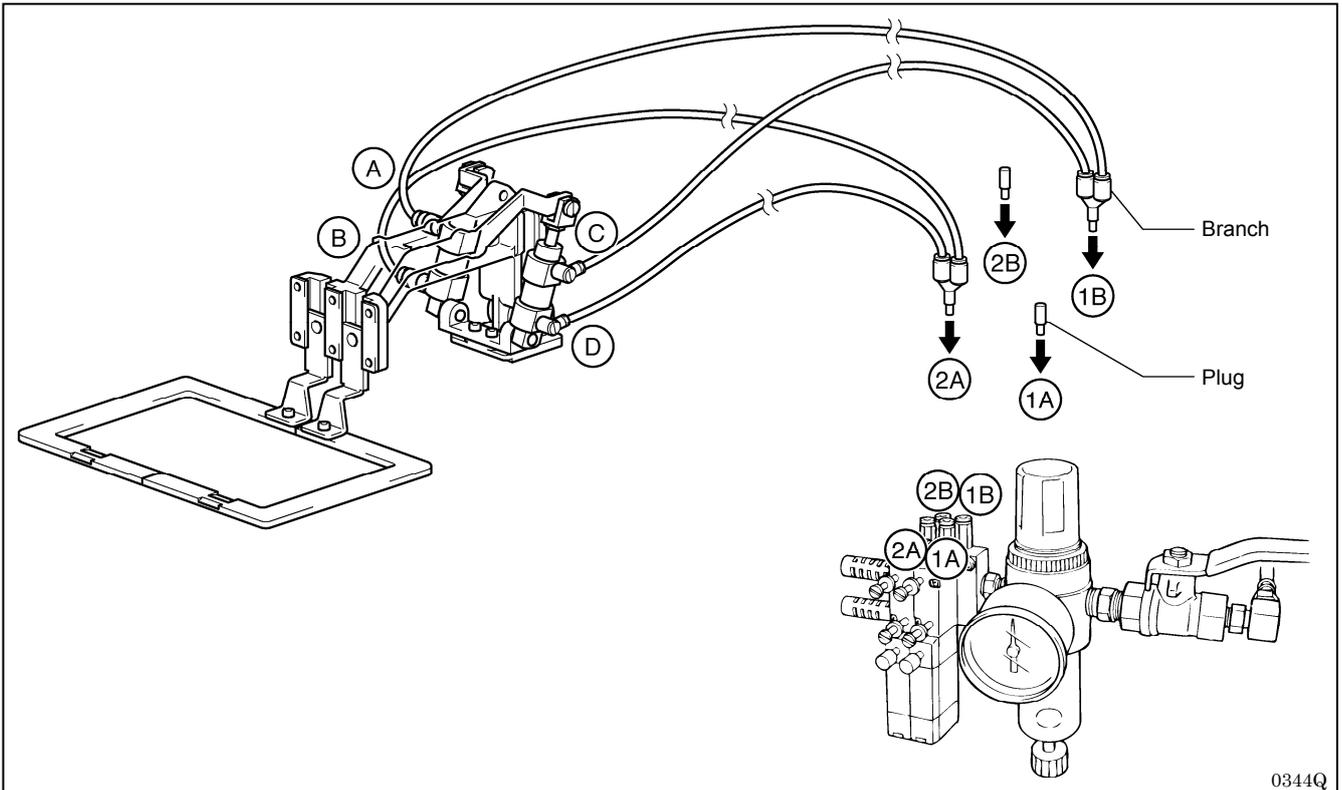
8-8-1 . Light work clamp

For pneumatic specifications, the hose connections can be changed so that the work clamp are made to lower gently when the work clamp pedal is depressed to the 1st step, and firmly when the work clamp pedal is depressed to the 2nd step. This makes it easier to carry out position matching when attaching small articles such as labels.

**[Memory switch setting]**

Set memo-42 (memo-3b: KE-436B, 436C) to 5 for two-pedal mode so that the work clamps lower in the order of left then right for the standard hose connection. (Refer to “8-6./8-7. Explanation of the memory switches”.)

**Hose connections for light work clamp operation by both pressers**



0344Q

**[How to use]**

1. Depress the work clamp pedal to the 1st step to lower the work clamps and apply a light pressure. You can then position small articles such as labels at this time.
2. After checking that everything is positioned correctly, depress the work clamp pedal to the 2nd step to firmly clamp the article being sewn.
3. Press the start pedal to start sewing.

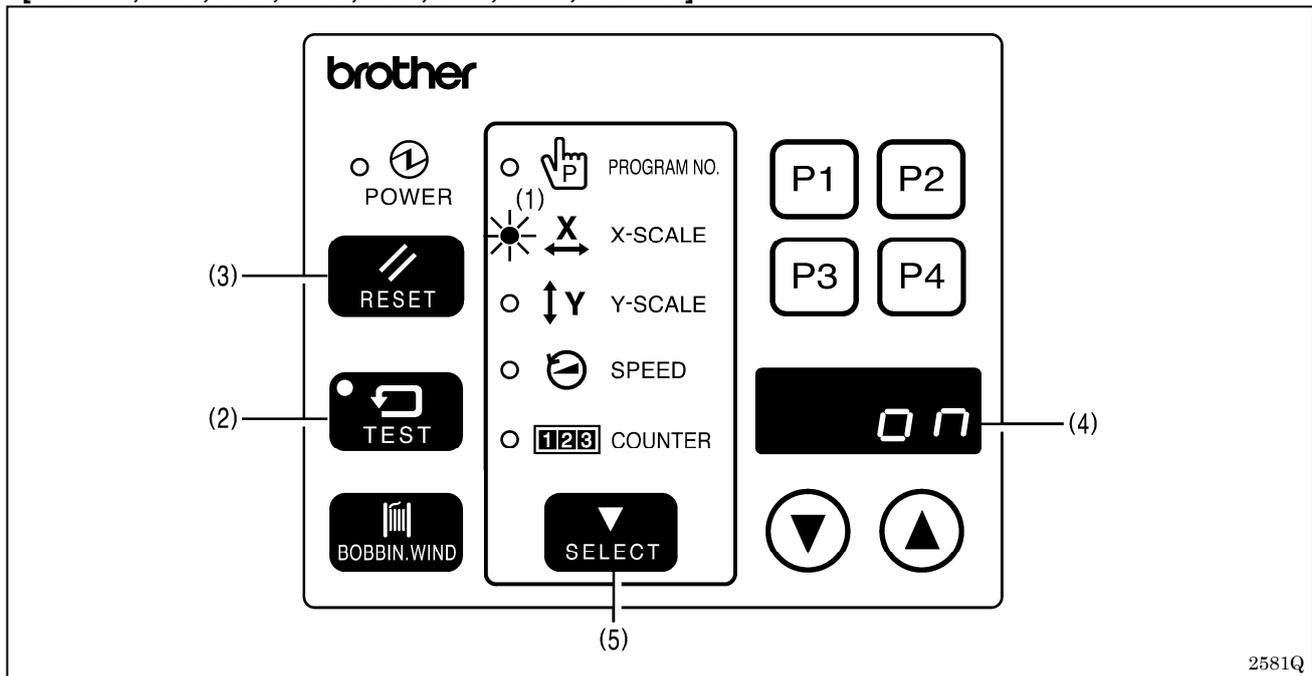
**Other hose connections and corresponding operations**

The hoses can be connected in combinations other than the one shown above so that only one side of the work clamp operates in light work clamp mode.

Branch and plug connectors	Cylinder connectors				Operation when presser pedal is depressed to the 1st step
	A	B	C	D	
Branch: 1B, 2A Plug: 1A, 2B	1B	2A	1B	2A	Both pressers operate in light work clamp mode (example shown above)
Branch: 1B Plug: 2B	1B	2A	1B	1A	Only left presser lowers, and it lowers in light work clamp mode
Branch: 1B Plug: 2B	1B	1A	1B	2A	Only right presser lowers, and it lowers in light work clamp mode
Branch: 2A Plug: 1A	1B	2A	2B	2A	Both pressers lower, but only left presser lowers in light work clamp mode
Branch: 2A Plug: 1A	2B	2A	1B	2A	Both pressers lower, but only right presser lowers in light work clamp mode

8-9. Checking the input sensor and DIP switch input

[KE-430\*, 431\*, 432\*, 433B, 434\*, 435\*, 484C, BE-438\*]



1. When the X-SCALE indicator (1) is illuminated and the RESET switch (3) is pressed while the TEST switch (2) is being pressed, the state of the X home position signal will appear on the display window (4).

- When sensor is ON
- When sensor is OFF

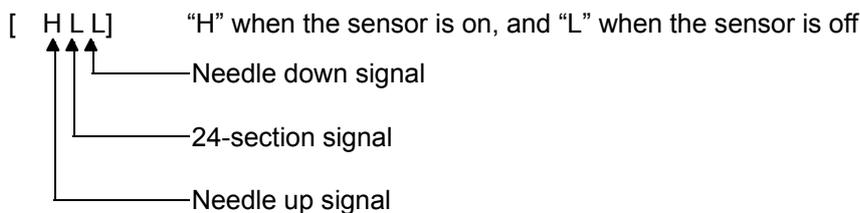


\* For the KE-430\*, 431\*, 432\*, 433B and BE-438\*, "ON" is displayed when the Y home position sensor is off.

2. Each time the SELECT switch (5) is pressed, a different indicator will illuminate and the operating condition for the corresponding item will appear on the display window.

- When X-SCALE indicator is illuminated..... X home position sensor (ON [KE-430\*, 431\*, 432\*, 433B and BE-438\*] or OFF [KE-434\*, 435\*, 484C] when home position detected)
- When Y-SCALE indicator is illuminated ..... Y home position sensor (ON [KE-430\*, 431\*, 432\*, 433B and BE-438\*] or OFF [KE-434\*, 435\*, 484C] when home position detected)
- When SPEED indicator is illuminated..... Synchronizer ( \* 1)
- When COUNTER indicator is illuminated ..... Presser sensor (ON when presser is lowered)
- When PROGRAM NO. indicator is illuminated..... Work clamp closed sensor (ON when work clamp is open [KE-432\* only])

\*1 The synchronizer display simultaneously displays the needle up signal (3rd digit), the 24-section signal (2nd digit) and the needle down signal (1st digit).



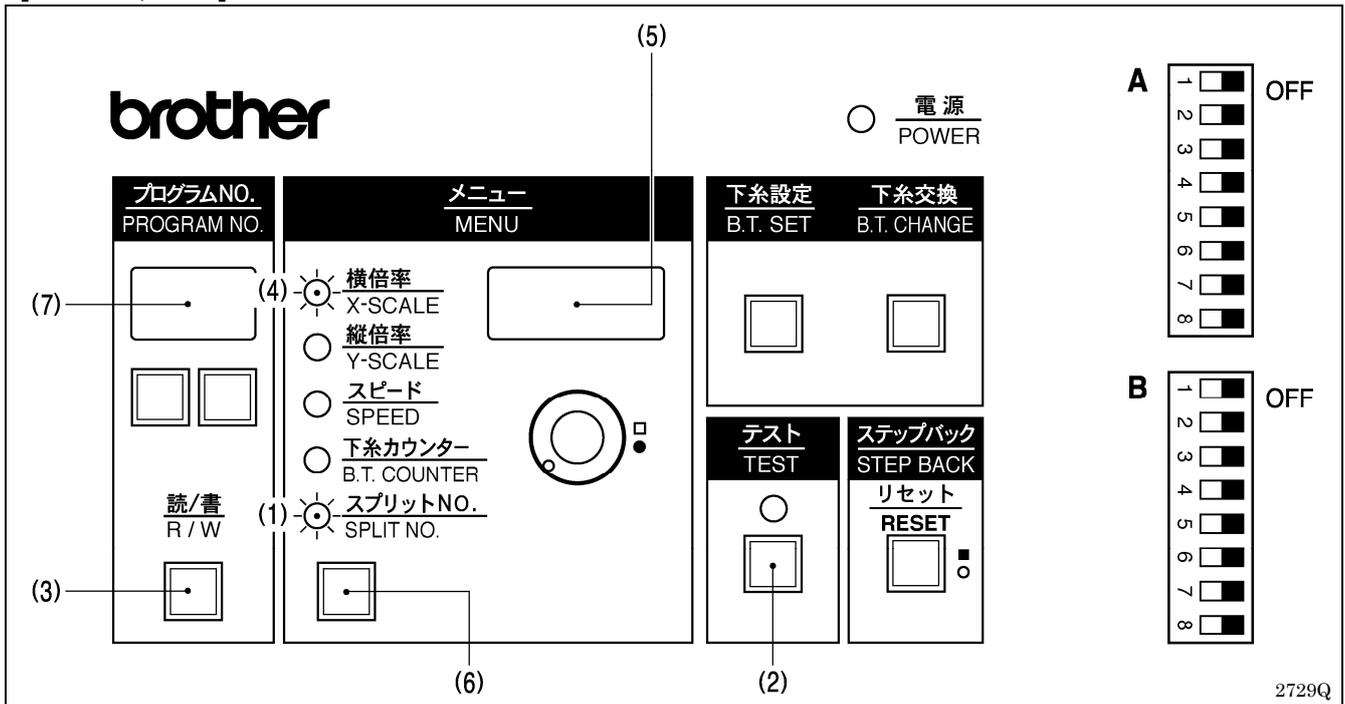
If the DIP switches at the side of the operation panel are changed at this time, the number of the DIP switch which was changed will be displayed in the 4th digit position of the display window (4) for about one second.

**Note:**

The DIP switch can be changed at this time without turning off the power so that you can check the DIP switch input. However, you should normally always turn off the power when changing DIP switch settings.

3. Press the TEST switch (2) again to return the display to the normal condition.

[KE-436B, 436C]



2729Q

1. When the SPLIT NO. indicator (1) is illuminated and the R/W switch (3) is pressed while the TEST switch (2) is being pressed, the X-SCALE indicator (4) will illuminate and the state of the X home position signal will appear on the display screen (5).

• When sensor is ON



• When sensor is OFF



2. Each time the MENU switch (6) is pressed, a different indicator will illuminate and the operating condition for the corresponding item will appear on the display screen (5).

- When X-SCALE indicator is illuminated : X home position sensor
- When Y-SCALE indicator is illuminated : Y home position sensor
- When SPEED indicator is illuminated : Needle up signal (synchronizer)
- When B.T. COUNTER indicator is illuminated : 24-section signal (synchronizer)
- When SPLIT ON. indicator is illuminated : Needle down signal (synchronizer)

3. If the settings for DIP switch A at the side of the operation panel are changed at this time, the number of the changed switch will appear in the top row of the program number display (7).



4. If the settings for DIP switch B are changed at this time, the number of the changed switch will appear in the bottom row of the program number display (7).

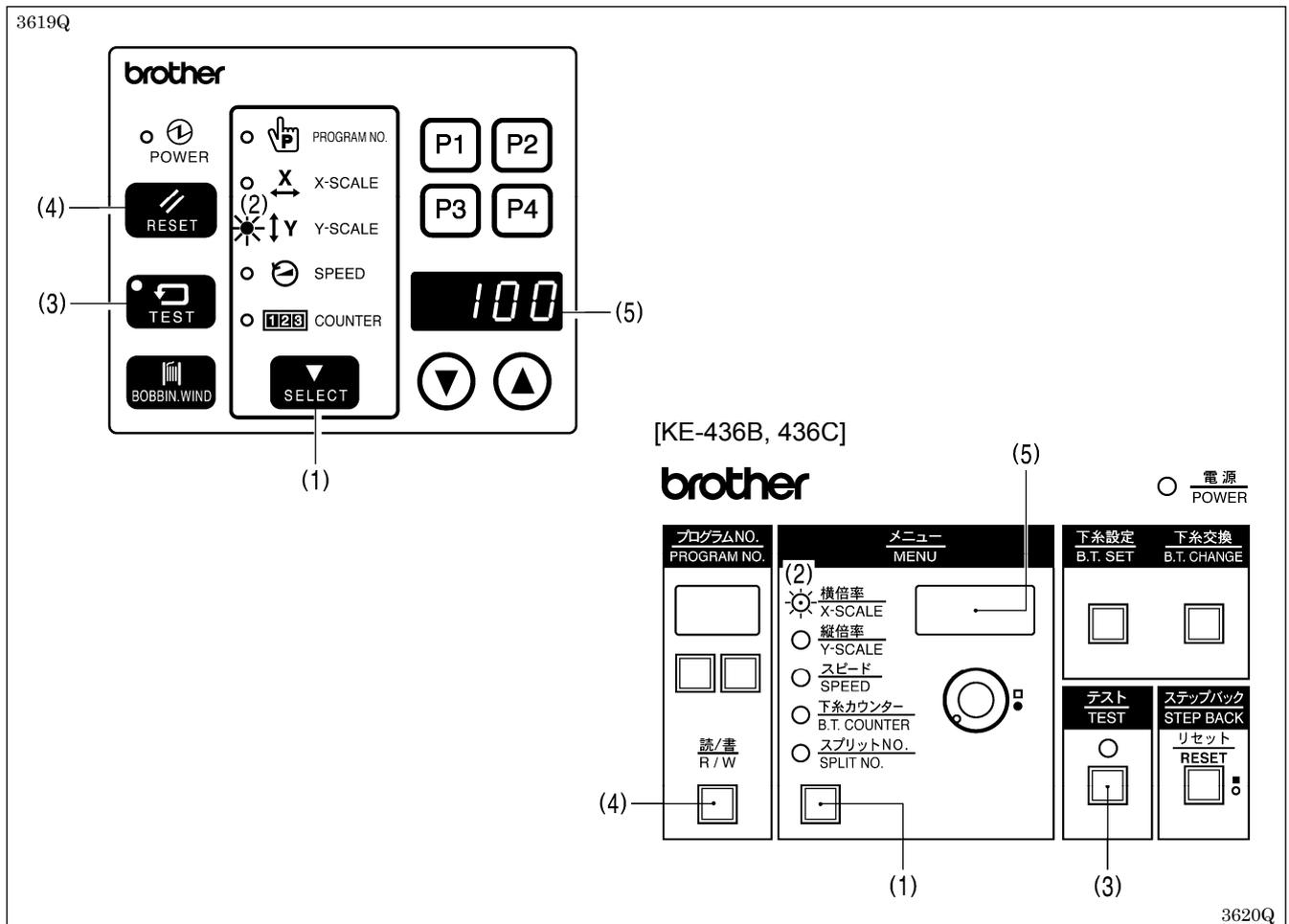


5. Press the TEST switch (2). The display will return to normal.

**Note:**

The DIP switch can be changed at this time without turning off the power so that you can check the DIP switch input. However, you should normally always turn off the power when changing DIP switch settings.

8 - 1 0 . Checking the input voltage



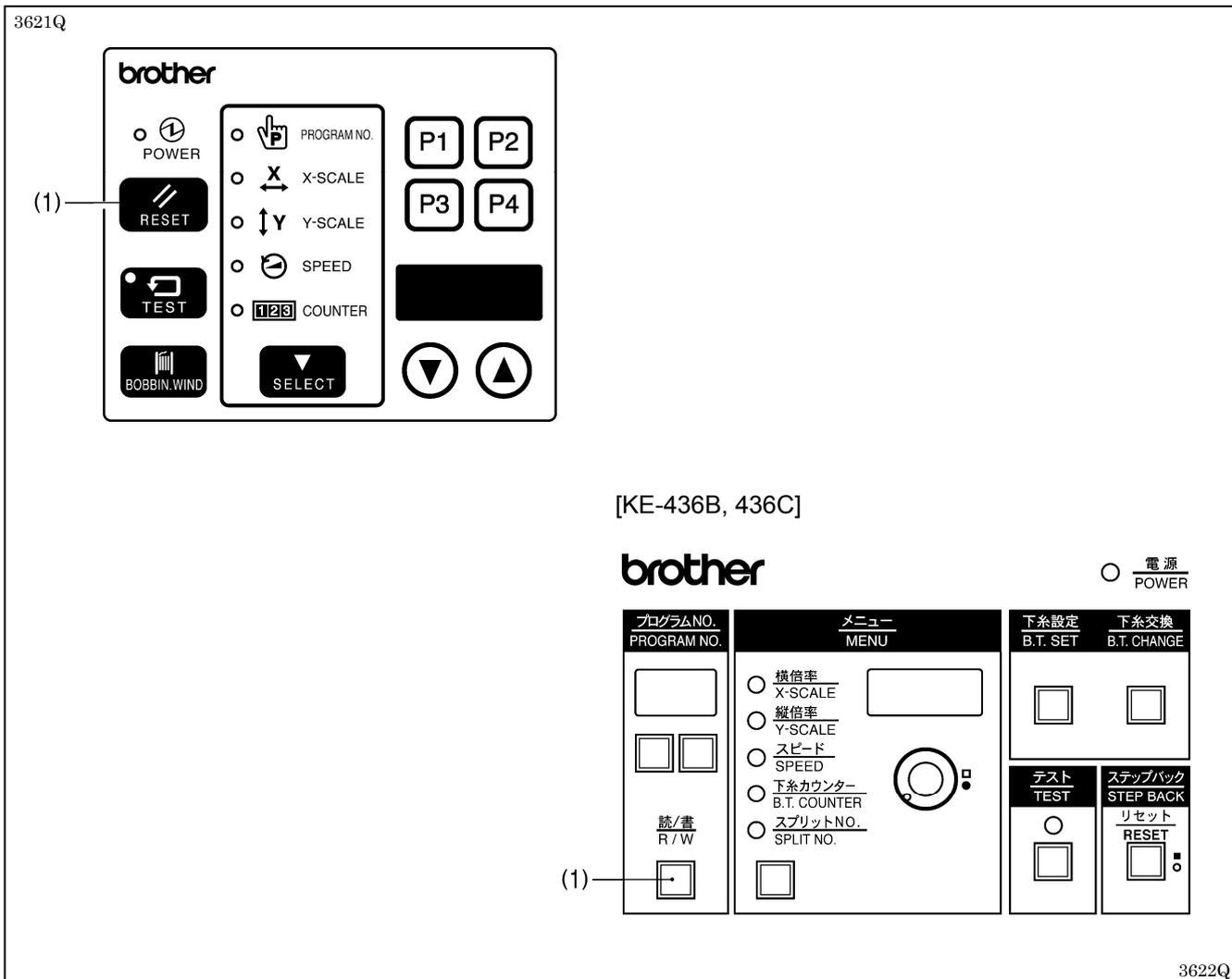
1. Turn on the power switch.
2. Press the SELECT switch (1) until the Y-SCALE indicator (2) illuminates.  
[KE-436B, 436C]  
Press the menu switch (1) until the X-SCALE indicator (2) illuminates.
3. While pressing the TEST switch (3), press the RESET switch (4).  
[KE-436B, 436C]  
While pressing the TEST switch (3), press the R/W switch (4).
4. If the input voltage is normal, the input voltage conditions will be shown in the display window (5) as indicated in the table above.

Specifications	Display	Notes
200V	[090 - 110]	"100" is displayed when the input voltage is 200 V.
220V	[100 - 120]	
230V	[105 - 125]	
100V 380V 400V 415V	[100 - 120]	"110" is displayed when the input voltage is 100V (for 100-V specs.), 380V (for 380-V specs.), 400V (for 400-V specs.) or 415V (for 415-V specs.).

5. Press the TEST switch (3) again to return the display to the normal condition.

### 8-1 1. Clearing all memory settings

If the sewing machine stops operating normally, the cause may be that an incorrect memory setting may have been made by means of the memory switch, for instance. In such cases, carry out the following procedure to clear the memory, and also check the DIP switch settings.



[KE-430\*, 431\*, 432\*, 433B, 434\*, 435\*, 484C, BE-438B]

While pressing the RESET switch (1), turn on the power. This will clear all of the memory setting.

[KE-436B, 436C]

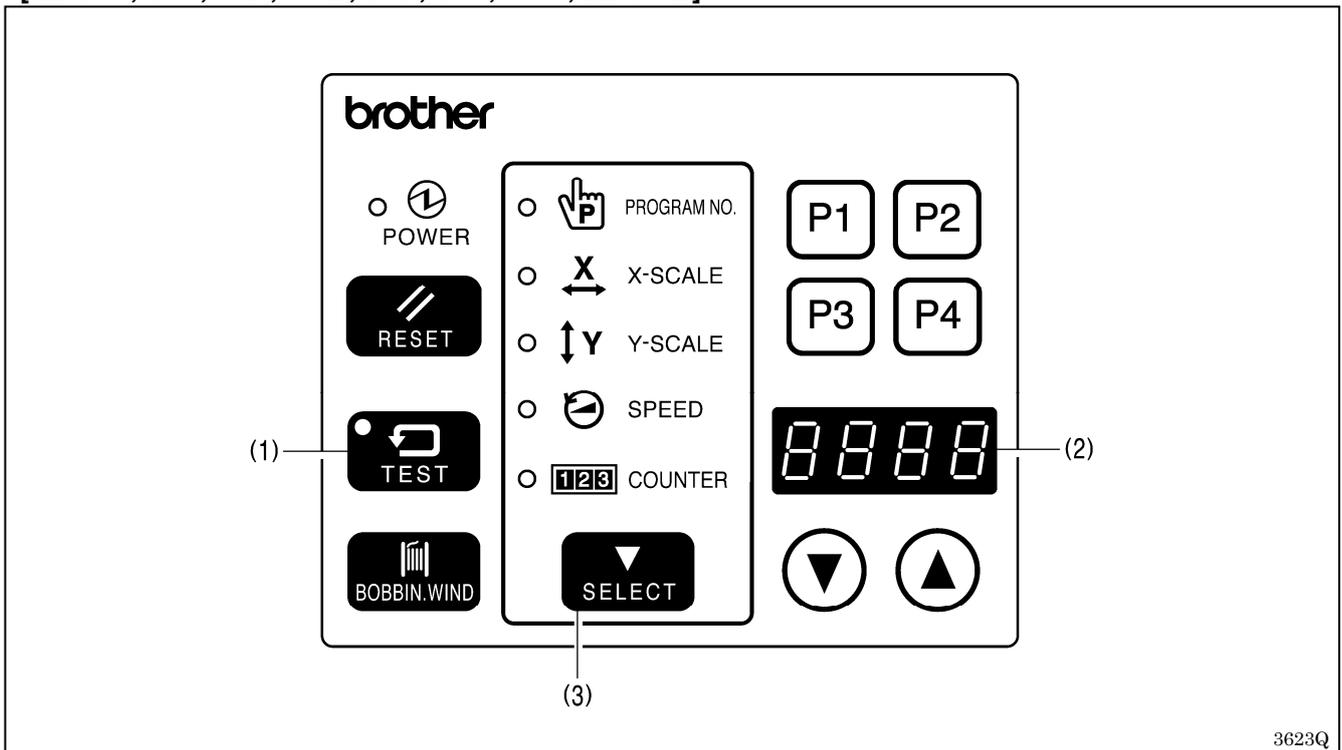
While pressing the R/W switch (1), turn on the power. This will clear all of the memory setting.

**Note:**

- This operation causes memory switches to be returned to their initial settings, and user program settings to be cleared.
- If the optional emergency stop switch has been installed, you should reset memory switch No. 10 to ON.

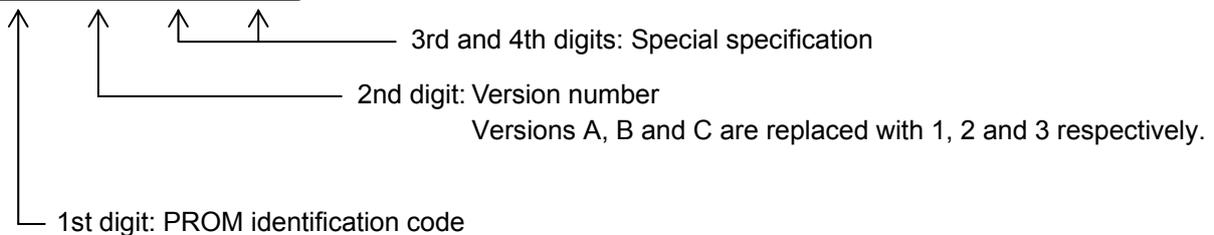
8 - 1 2 . Confirming software version

[KE-430\*, 431\*, 432\*, 433B, 434\*, 435\*, 484C, BE-438B]



3623Q

1. While pressing the TEST switch (1), turn on the power to the machine. Version number of each PROM can be confirmed in display (2).



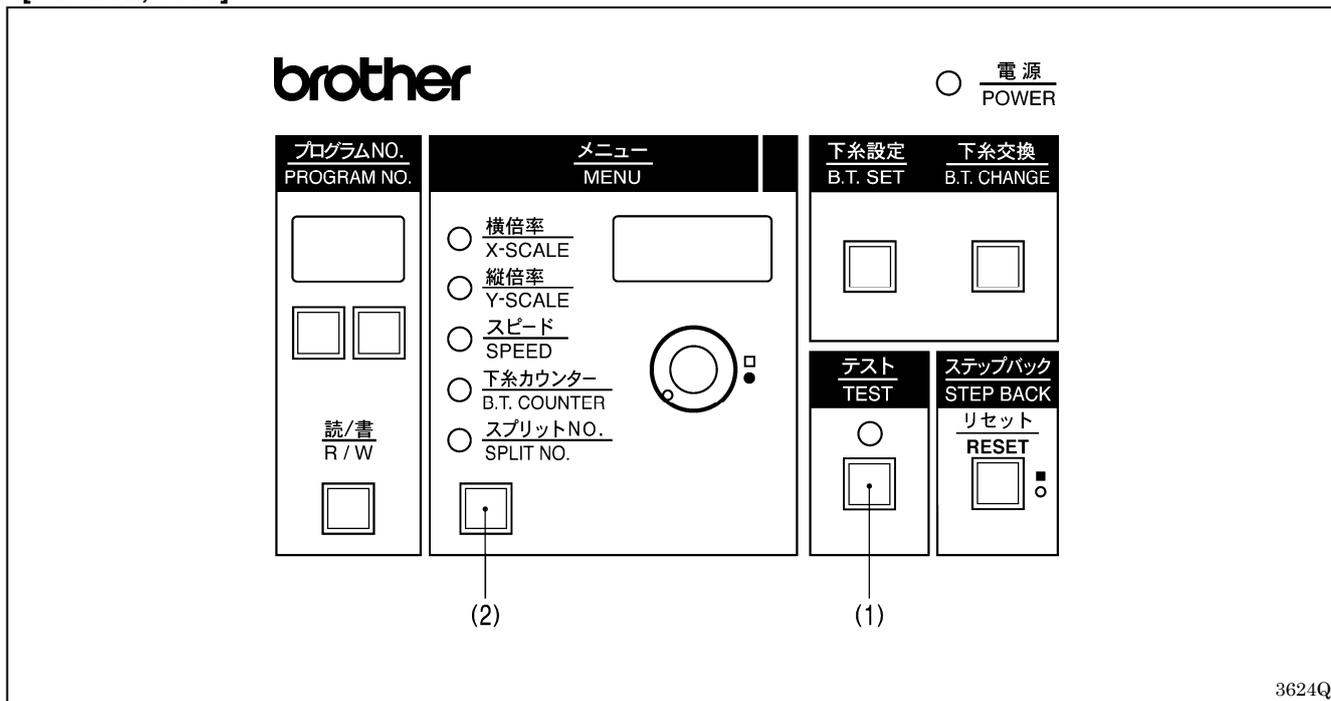
2. Every time the SELECT switch (3) on the panel is pressed until the TEST switch (1) is pressed again, the indication will change as follows:

Indication	LED of Menu switch	PROM
A (A)	X-SCALE	Main PROM (MN)
c (c)	Y-SCALE	Motor PROM (IM)

Version number indication (example)

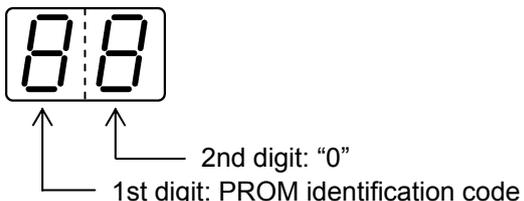
PROM label	Indication
KE430C MN-C	Indication [A300]
KE430C IM-D03	Indication [c403]

[KE-436B, 436C]

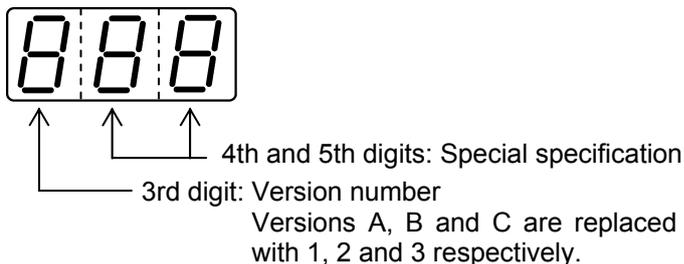


1. While pressing the TEST switch (1), turn on the power to the machine. Version number of each PROM can be confirmed.

Program No. display



Menu display



2. Every time the MENU switch (2) on the panel is pressed until the TEST switch (1) is pressed again, the indication will change as follows:

Indication	LED of Menu switch	PROM
<i>A</i> (A)	X-SCALE	Main PROM (MN)
<i>b</i> (b)	Y-SCALE	Motor PROM (IM)
<i>c</i> (c)	SPEED	Programmer PROM (PG)
<i>d</i> (d)	B. T. COUNTER	Panel PROM (PL)

Version number indication (example)

PROM label

KE436C  
MN-C      Indication [A0] [300]

BAS300E  
PL-D03      Indication [d0] [403]

8 - 1 3 . Table of error codes

**⚠ 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.

If a malfunction should occur with the sewing machine, a buzzer will sound and an error code will appear in the display window. Follow the remedy procedure to eliminate the cause of the problem.

**REFERENCE** segment LED alphabet

	Panel display										
	Text display	A	b	c	d	E	F	G	H	L	O

[KE-430\*, 431\*, 432\*, 433B, 434\*, 435\*, 484C, BE-438\*]

Code	Cause	Remedy
E-10	Emergency stop switch was pressed.	Turn the EMERGENCY STOP switch clockwise to release the lock, and then press the RESET switch to reset the error.
E-11	Emergency stop switch was pressed during sewing.	Turn the EMERGENCY STOP switch clockwise to release the lock, and then press the RESET switch to reset the error. You can then press the BOBBIN. WIND switch to repeat the sewing.
E-12	Emergency stop switch is being continually pressed, or emergency switch connection error.	Turn off the power and check.
E-13	Machine specification select connector is not connected properly.	Turn off the power and check if connectors P3 is disconnected.
E-14	Thread breakage detected.	Turn the EMERGENCY STOP switch clockwise to release the lock, and then press the RESET switch to reset the error. You can then press the BOBBIN. WIND switch to repeat the sewing.
E-15	Air pressure drop error.	Turn off the power and check. If drops in air pressure are not being detected, clear all memory settings and then set the memo-1d switch to OFF.
E-17	The foot switch was pressed or the operation panel was used while the machine head was tilted back, or the machine head was tilted back while it was operating.	Turn off the power, and then return the machine head to its original position.
E-20	Problem with machine motor stopping, or synchronizer connection error. Or thermostat inside sewing machine motor has operated.	Turn off the power, and then turn the machine pulley to check if the machine has locked up. Check the synchronizer connection. Check if connectors P11, P12 and P13 are disconnected. Check that the correct combination of motor and PROM has been installed. Check if the sewing machine motor has overheated.
E-21	Machine motor operation error.	Turn off the power and check the ground wire connection.
E-30	Data is outside possible sewing area due to enlargement ratio setting.	Press the RESET switch, and then set the enlargement ratio again.

Code	Cause	Remedy
E-31	Stitch pattern data overlaps the sewing area when area limiting is active.	Press the RESET switch, and then reset the memory switches "30" and "31" or enlargement ratio.
E-32	The data format of the user program (% or mm) does not match the setting of DIP switch A-6.	After changing the setting of DIP switch A-6, clear all memory settings. (Refer to "8-11. Clearing all memory settings".)
E-40	Length of a stitch exceeds 10 mm.	Press the RESET switch, and then set the enlargement ratio again.
E-41	Abnormality in the sewing data.	If programming a new sewing data, repeat the procedure from the beginning.
E-42	Invalid program number specified.	Press the RESET switch and specify a correct number.
E-50	Needle bar does not stop when the needle is raised.	Turn the pulley to align the index mark with the needle up stop position. (Refer to "5-25. Adjusting the needle up stop position".)
E-60	Presser has not been lowered.	Refer to "6. Troubleshooting". Turn off the power and check the connection of presser sensor connector P1.
E-61	Presser cannot be raised.	
E-62	Presser is not raised.	
E-63	Presser cannot be lowered.	
E-64	Work clamp closed sensor stays on, or sensor is incorrectly connected.	Refer to "6. Troubleshooting". Turn off the power and check the connection of work clamp closed sensor connector P1.
E-65	Work clamp does not close.	
E-66	Thread trimmer cylinder does not operate.	Turn off the power and check the cylinder.
E-67	Thread wiper cylinder does not operate.	Turn off the power, and then check if thread is tangled in the thread wiper.
E-70	Cooling fan does not operate.	Turn off the power, and then check if the cooling fan is blocked with scraps of thread.
E-80	Motor PROM is not correctly inserted.	Turn off the power and check.
E-81	Foot switch was depressed when the power was turned on.	Turn off the power and check.
E-82	An operation panel switch was depressed when the power was turned on.	Turn off the power and check the operation panel. Check that all panel cords are normal.
E-90	Abnormal drop in power supply voltage, or power was turned on again immediately after it was turned off.	Turn off the power and check the input voltage. After turning off the power, wait 3 seconds or more before turning it on again. (Refer to "8-10. Checking the input voltage".)
E-91	Abnormal rise in power supply voltage.	Turn off the power and check the input voltage. (Refer to "8-10. Checking the input voltage".)
E-A0	Home position cannot be detected (malfunction of home position sensor), or malfunction of power supply circuit board.	Turn off the power and check the connection of home position sensor connector P1.
E-b0	You tried to change the program number when DIP switch A-8 was set to ON.	Press the RESET switch. Set DIP switch A-8 to OFF before trying to change the program number.
E-b1	No sewing data available.	Replace the PROM with one which contains sewing data.
E-d0	Heat sink of control circuit board is abnormally hot.	Turn off the power and clean the air intake port of the box.
E-E0	Malfunction of EEPROM (malfunction of main circuit board).	Turn off the power, and turn it back on. If the error continually occurs, contact a qualified service technician.

## 8. ELECTRIC MECHANISM

Code	Cause	Remedy
E-E1	Corrupted EEPROM data, or main PROM version has been upgraded.	Press the RESET switch to reset the error. However, the data (memory switches, display and user programs) will be reset to the backup data or initialized.
E-E2	Corrupted EEPROM control information data.	Press the RESET switch to reset the error. However, the data (memory switches, display and user programs) will all be initialized.
E-F0	Solenoid or feed motor short-circuit (malfunction of main circuit board), or power relay is not operating (malfunction of power supply circuit board).	Turn off the power and contact a qualified service technician.
E-F1	Bad connection in cable between power supply circuit board and main circuit board.	Turn off the power and check if connectors P16 is disconnected.
E-F2	Abnormal current detected in power supply circuit board.	Turn off the power and contact a qualified service technician.

[KE-436B, 436C]

Code	Cause	Remedy
E.10	Emergency stop switch was pressed.	Turn the EMERGENCY STOP switch clockwise to release the lock, and then press the STEP BACK (RESET) switch to reset the error.
E.11	Emergency stop switch was pressed during sewing.	Turn the EMERGENCY STOP switch clockwise to release the lock, and then press the STEP BACK (RESET) switch to reset the error. You can then press the STEP BACK (RESET) switch to repeat the sewing.
E.12	Emergency stop switch is activated or its connection is not correct.	Turn off power and check it.
E.13	Defective connection of model selection connector.	Turn off power and check connector P3.
E.14	Foot switch was depressed, or connection of foot switch is defective.	Turn off power and check it.
E.15	Start switch was depressed, or connection of start switch is defective.	Turn off power and check it.
E.16	Machine head was tilted back.	Turn off power and tilt machine head back.
E.17	Operation panel switch was depressed when power was turned on.	Turn off power and check it.
E.20	Motor malfunctions or synchronizer is not connected correctly. Or thermostat inside sewing machine motor has operated.	Turn off power, and then turn the machine pulley to check if the machine has locked up. Check the synchronizer connection, and connectors P11, P12 and P13. Check if the sewing machine motor has overheated.
E.21	Motor malfunctioned.	Turn off power and check ground wire connection.
E.22	Needle up stop position error.	Turn pulley to align timing mark with that on belt cover.
E.30	Data exceeds available sewing area due to resize ratio.	Adjust resize ratio.
E.31	Stitch length exceeds 10mm due to resize ratio.	Adjust resize ratio.
E.32	No end code in sewing data.	Input end code, or change program No.

Code	Cause	Remedy
E.40	Floppy disk is not inserted or operation panel cable is not securely connected.	Insert a floppy disk. If floppy disk is already inserted, turn off the power and check the connections of cords inside the operation panel.
E.41	Invalid program No., or no data.	Change program No.
E.43	Different floppy disk!	Use original floppy disk.
E.4F	Error occurred during floppy disk data reading.	Replace the floppy disk and repeat the operation.
E.50	Floppy disk is write-protected	Release write-protection.
E.51	Insufficient available memory on floppy disk.	Use another floppy disk.
E.52	Can not format this floppy disk.	Change floppy disk.
E.5F	Error occurred during data writing on floppy disk.	Replace the floppy disk and repeat the operation.
E.60	Can not backup data. (Panel PCB)	Turn off power and then clear all of the memory setting.
E.61	Can not backup data. (Control PCB)	Turn off power and then clear all of the memory setting.
E.62	Operation panel error.	Turn off power and then on again.
E.63	Combination of control PROM and operation panel PROM is invalid.	Turn off power and check it.
E.80	Upper thread has broken. (Rotary type sensor)	Thread upper thread again. You can start sewing again.
E.81	Upper thread has broken. (Optical fiber type sensor)	Thread upper thread again. You can start sewing again.
E.90	Power supply voltage is extremely low, or power was turned on again immediately after it was turned off.	Turn off power and check voltage. After turning off the power, wait 30 seconds or more before turning it on again.
E.91	Power supply voltage is extremely high.	Turn off power and check voltage.
E.A0	Start switch was pressed when there was no sewing available data.	Read sewing data again.
E.A1	Can not detect home position. X-Y feed or connection of home position sensor is incorrect.	Turn off power and, check X-Y feed and connector P1.
E.c0	Motor PROM is not correctly inserted.	Turn off power and check it.
E.c1	Cooling fan in control box does not operate.	Turn off power and check whether any thread scraps have built up. Check fan connector.
E.c2	Heat-sink on main PCB is overheating.	Turn off power and clean air inlet port.
E.d0	Air pressure has dropped.	Turn off power and check it. If drops in air pressure are not being detected, clear all memory settings to set the memo-1d switch to OFF.
E.E0	Control PROM is not correctly inserted.	Turn off power and check it.
E.E1	Main PCB detected communication error.	Turn off power and then on again.
E.E2	Panel PCB detected communication error.	Turn off power and then on again.
E.E3	Incorrect connection of cable between operation panel and control box.	Turn off power and check it.
E.F0	Solenoid or feed motor short-circuit (malfunction of main circuit board) or power supply relay is not operating (malfunction of power supply circuit board).	Turn off power and check it.
E.F1	Incorrect connection of cable between power supply PCB and main PCB.	Turn off power and check connector P20.
E.F2	Overcurrent at power supply PCB.	Turn off power and check it.

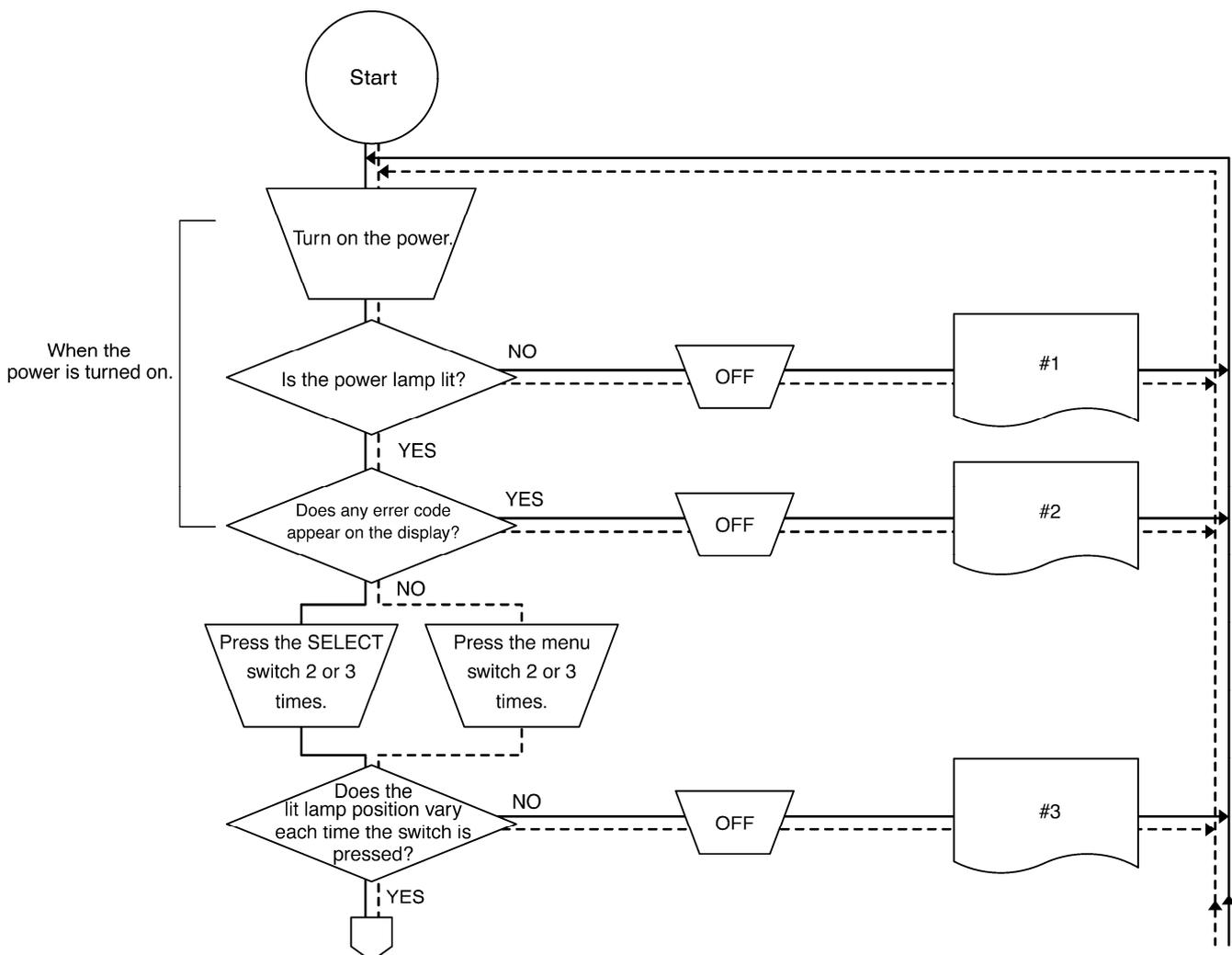
8-14. Troubleshooting

8-14-1. Troubleshooting flowchart

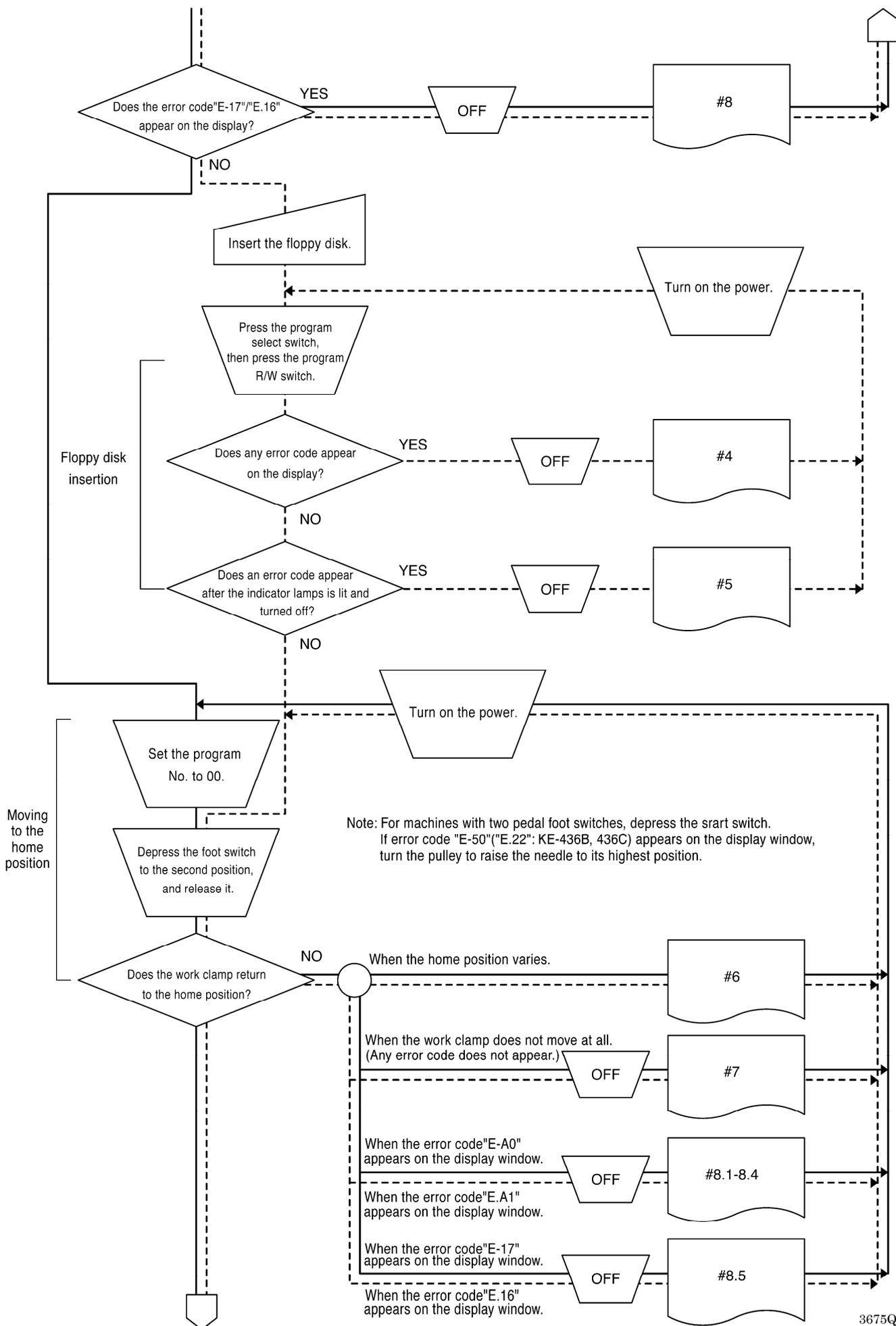
Be sure to set DIP switch A-1 on the operation panel to off before starting the troubleshooting flowchart.

Symbols and their meanings

	Manual operation		Set-up operation or condition
	Switch operation		The procedure to follow continues on the next page
	Yes-or-no decision-making process		Turning-off of the power switch
	The error status number in the first column of the table of "8-14-2. Problem solution and measures"		
	KE-430*, 431*, 432*, 433B, 434*, 435*, 484C, BE-438*		
	KE-436B, 436C		

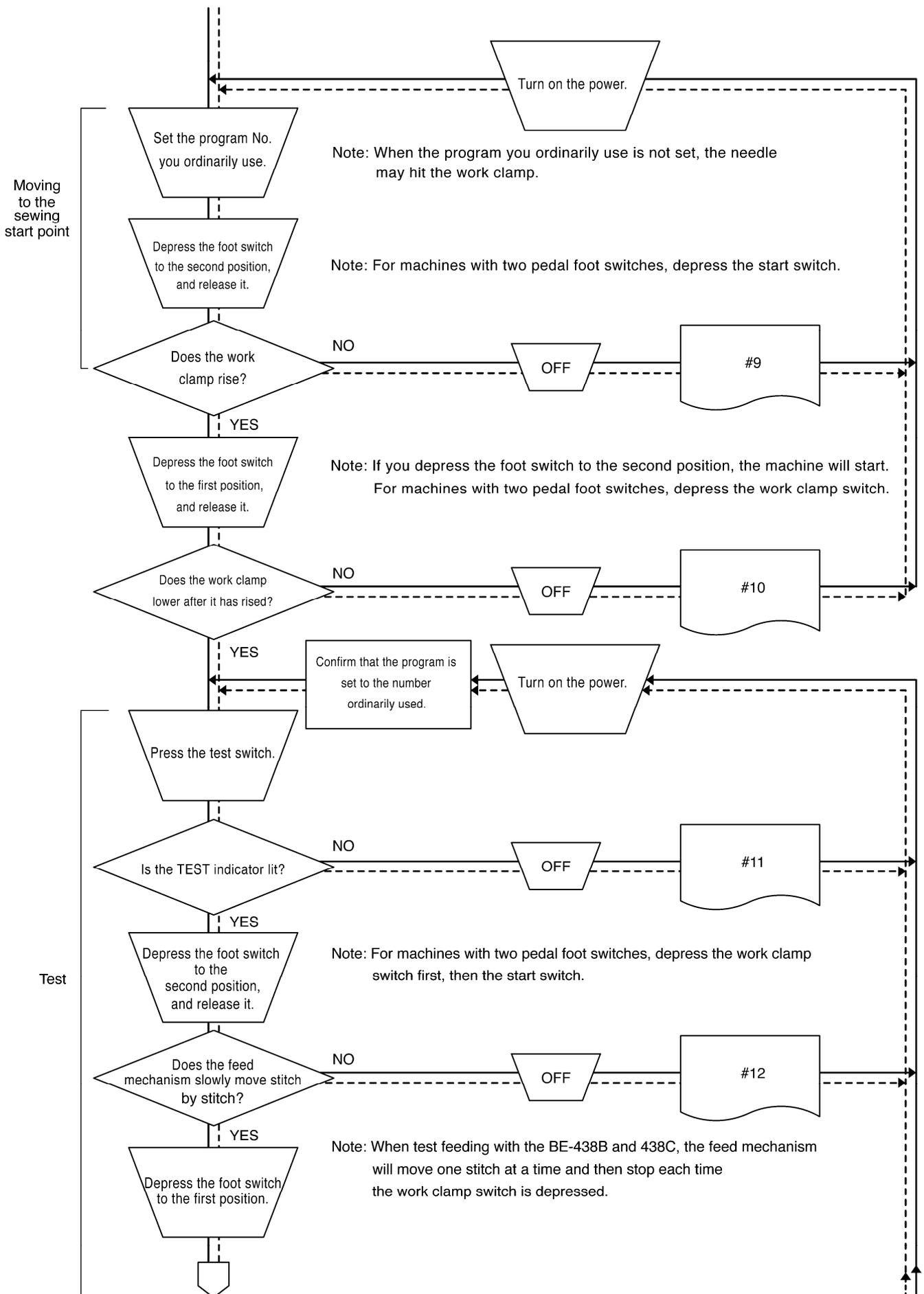


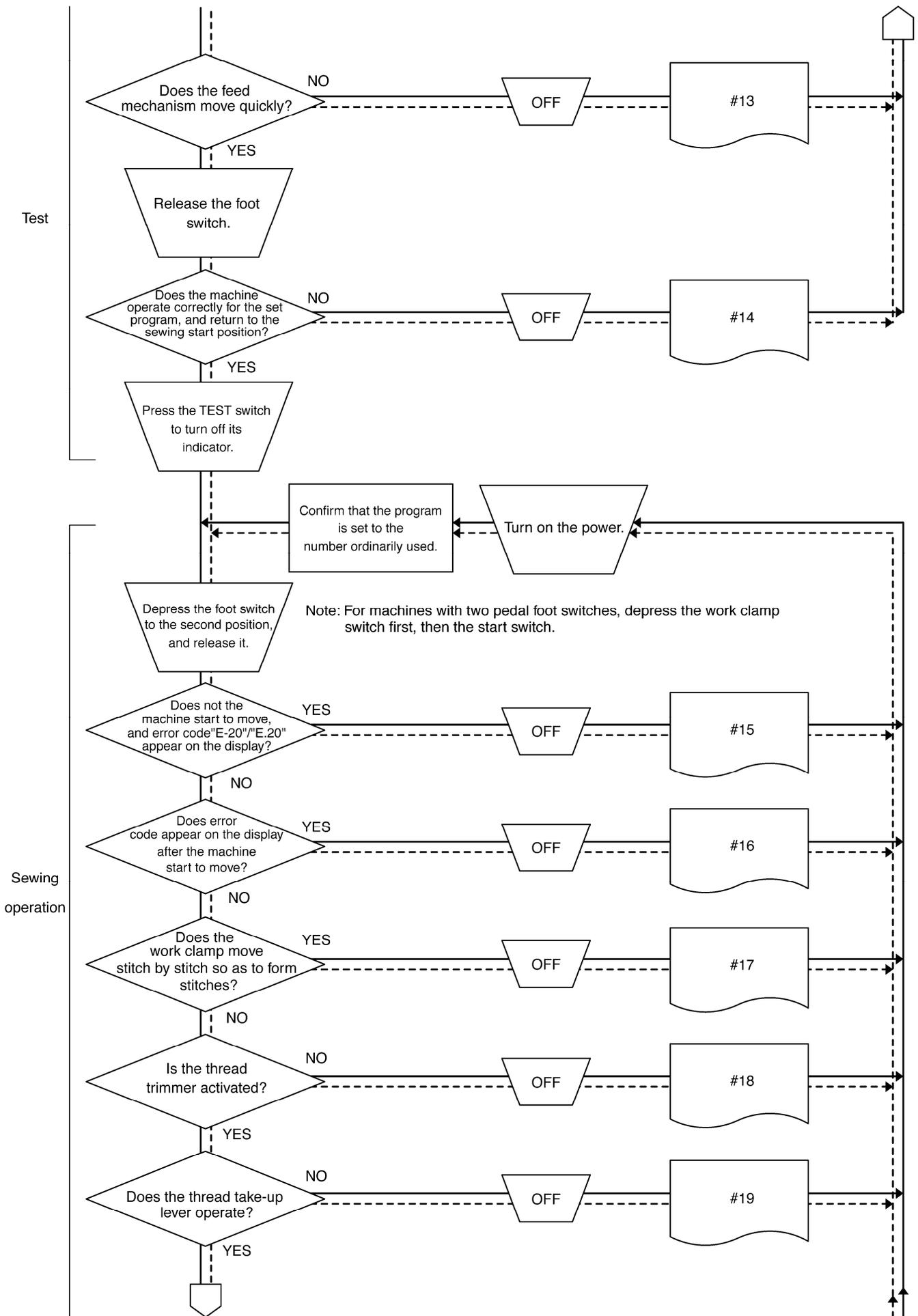
3674Q



3675Q

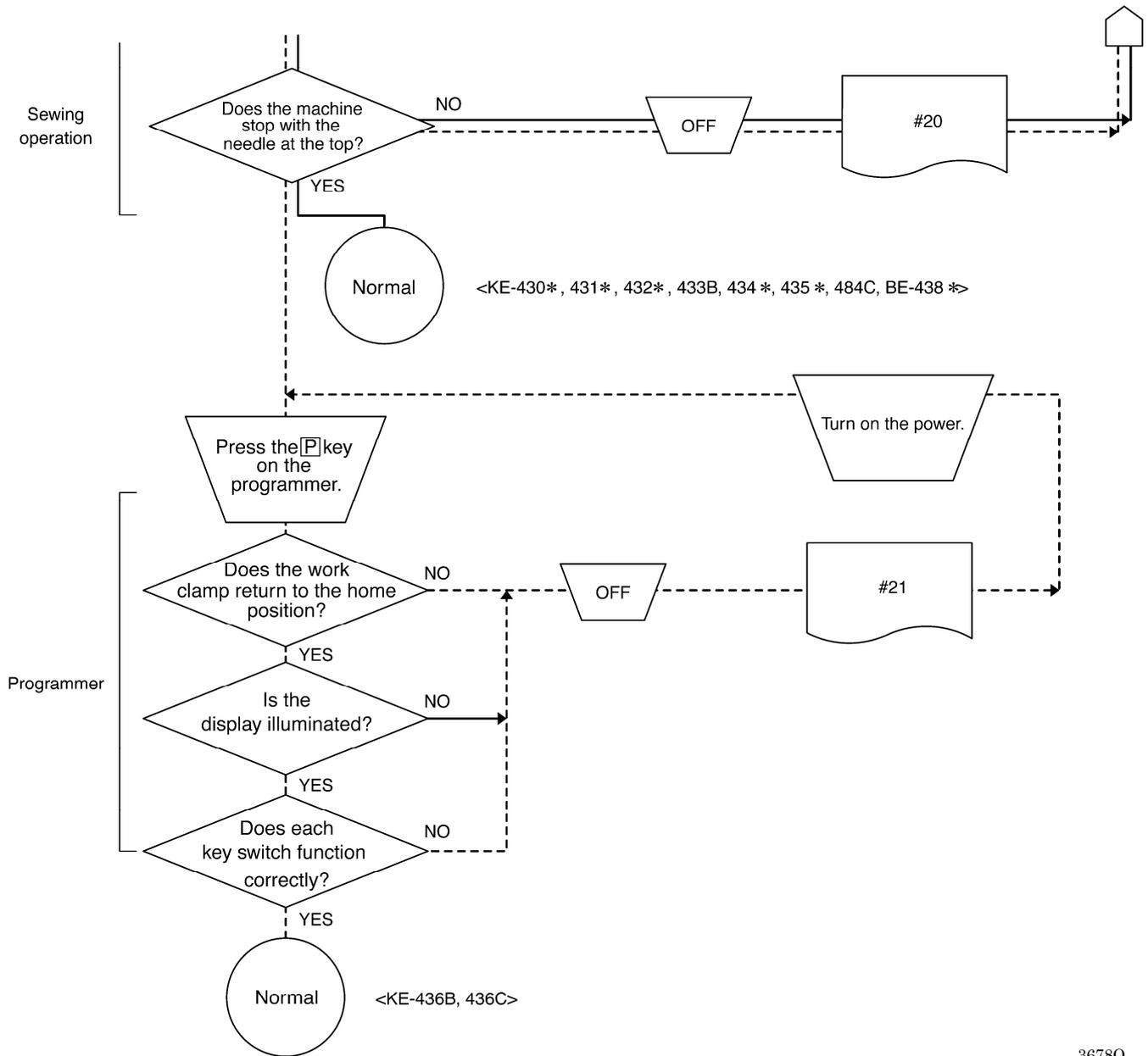
# 8. ELECTRIC MECHANISM





3677Q

# 8. ELECTRIC MECHANISM



3678Q

## 8-1 4-2 . Problem solution and measures

1. Pay attention to the following when opening the control box for maintenance.

### **Electrical shock**

Some large capacitors may have a high voltage remaining in them for up to 5 minutes after the power is turned off. To prevent electrical shock, wait at least 5 minutes after the power is turned off before doing the following:

- Opening and closing the control box
- Replacing fuses
- Separating and joining connectors
- Measuring resistance
- Doing anything with a possibility of touching something inside the control box

Some adjustments require measuring the voltage while the power is turned on with the control box kept open. In such a case, be careful not to touch any place other than that for the measurement. In addition, always keep in mind that a high voltage remains for about 5 minutes after power is turned off.

### **Injury**

While the power is turned on, the cooling fan of the control box operates; be careful not to get caught in it.

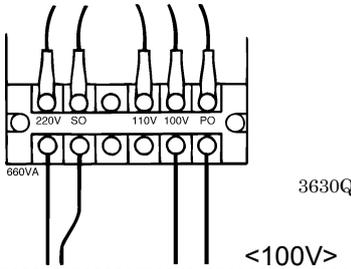
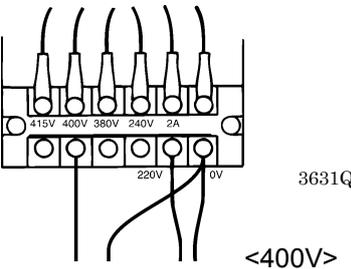
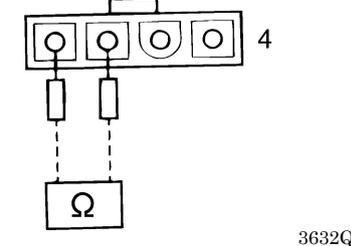
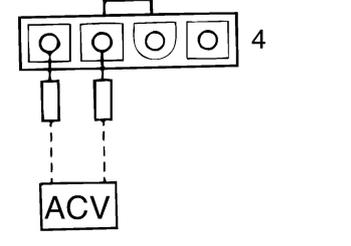
When separating or rejoining connectors, and measuring something, be careful not to cut your fingers on metal parts such as heat sinks and covers.

2. When replacing a fuse, be sure to use a new one of the same quality and capacity as the old one.
3. Refer to the circuit block diagram at the end of this manual regarding the connector numbers and their matches.

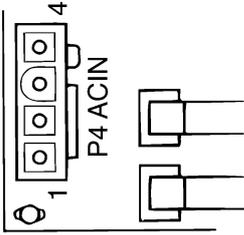
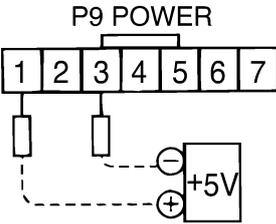
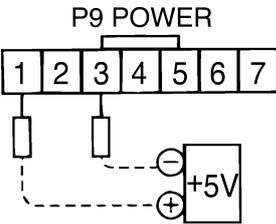
### **Before adjustment**

1. While the power is turned off, check each connector is securely plugged in by referring to "8-4. Connectors".
2. Find the error status number in the troubleshooting flowchart.
3. From the applicable part of the flowchart, take the reference number to find the correspondingly numbered details of the problem in the following table.

## 8. ELECTRIC MECHANISM

Error status #1 The power indicator does not light when the power is turned on.						
Probable causes	Check/ repair/ adjust	Parts to be replaced				
<p>1. Conversion transformer improperly wired (for 100V and 110V specifications)</p>  <p>(for 240V, 380V, 400V and 415V specifications)</p>  <p>(for 200V, 220V and 230V specifications) No conversion transformer is installed.</p>	<p><b>Note:</b> Before adjustment, be sure to check that the power is turned off to prevent electric shock. If the power is turned on, turn off the power, and wait at least 5 minutes.</p> <ul style="list-style-type: none"> <li>Conversion in the control box Check the transformer is correctly and securely wired to the terminals. (For 200V, 220V and 230V specifications, this is not necessary.)</li> </ul>					
<p>2. Conversion transformer defective</p> 	<ul style="list-style-type: none"> <li>Separate P4 (ACIN) connectors on the power supply circuit board, and check there is continuity between pins 1 and 2 in the connector on the cable. (For 200V, 220V and 230V specifications, this is not necessary.)</li> </ul>	Conversion transformer				
<p>3. Power supply cable defective</p> 	<ul style="list-style-type: none"> <li>Separate P4 (ACIN) connectors on the power supply circuit board, turn on the power, and measure the voltage across pins 1 and 2 in the connector on the cable. If the voltage is as shown in the table below, the power supply cable is not defective.</li> </ul> <table border="1" data-bbox="603 1662 1104 1841"> <tbody> <tr> <td>For 200V, 220V and 230V specifications</td> <td>The same as the power supply voltage of wall socket</td> </tr> <tr> <td>For 100V, 110V, 240V, 380V, 400V and 415V specifications</td> <td>About 220V</td> </tr> </tbody> </table> <p>After checking, turn off the power, and rejoin P4 connectors.</p>	For 200V, 220V and 230V specifications	The same as the power supply voltage of wall socket	For 100V, 110V, 240V, 380V, 400V and 415V specifications	About 220V	Power supply cable
For 200V, 220V and 230V specifications	The same as the power supply voltage of wall socket					
For 100V, 110V, 240V, 380V, 400V and 415V specifications	About 220V					
<p>4. Fuse has blown</p>	<ul style="list-style-type: none"> <li>Remove fuses No.3 and No.4, and check them for continuity. If there is no continuity, replace the fuses with new ones, and perform the check/ repair/ adjust items of #1-5.</li> </ul>	Fuse 6A-250V				

Error status #1 The power indicator does not light when the power is turned on.

Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>5. Power supply circuit board defective</p>   <p style="text-align: right;">3634Q</p>	<ul style="list-style-type: none"> <li>Separate P4 (ACIN) connectors on the power supply circuit board, and then measure the resistance between the following pairs of pins, pins 1 and 4 and pins 2 and 4, in the connector on the cable. If the resistance is <math>\infty \Omega</math> in both cases, the power supply circuit board is not defective.</li> <li>Measure the resistance between pins 1 and 2. If there is no short, the power supply circuit board is not defective.</li> <li>Rejoin P4 (ACIN) connectors on the power supply circuit board. Separate P9 (POWER) connectors on the main circuit board, turn on the power, and measure the voltage across pins 1 and 3 in the connector on the cable. If it is + 5V, the power circuit board is not defective. After measurement, turn off the power, wait at least 5 minutes, and then rejoin P9 connectors.</li> </ul>	<p>Power supply circuit board</p>
<p>6. Main circuit board defective</p>  <p style="text-align: right;">3635Q</p>	<ul style="list-style-type: none"> <li>With P9 (POWER) connectors plugged in on the main circuit board, turn on the power, and measure the voltage across pins 1 and 3 in the connector on the cable. If it is + 5V, the power circuit board is not defective. After measurement, turn off the power.</li> </ul>	<p>Main circuit board</p>
<p>7. Panel circuit board defective</p>	<ul style="list-style-type: none"> <li>Check that P8 (PANEL) connectors of the main circuit board and P1 (PANEL) connectors of the panel circuit board are plugged in.</li> </ul> <hr/> <p>&lt;KE-436B, 436C&gt;</p> <ul style="list-style-type: none"> <li>Check that P20 (RSPORT) connectors of the main circuit board and P5 (DRV) connectors of the panel circuit board are plugged in.</li> </ul>	<p>Panel circuit board Panel cord</p> <hr/> <p>Panel circuit board</p>

Error status #2 Error code appears on the display window when the power is turned on.

Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>1. Cooling fan defective when the error code E-70 appears on the display window. ([E.c1] KE-436B, 436C)</p>	<p>a. Check threads are not tangled in the cooling fan. b. Check P10 (FAN) connectors are securely plugged in on the main circuit board.</p>	<p>DC fan motor assembly</p>

## 8. ELECTRIC MECHANISM

Error status #2 Error code appears on the display window when the power is turned on.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
2. PROM chip defective or main circuit board defective when the error code E-80 appears on the display window. ([E.c0] KE-436B, 436C)	<ul style="list-style-type: none"> <li>a. Check the PROM chip is securely attached to the main circuit board without its lead bent.</li> <li>b. Check the PROM chip is attached to the main circuit board with letters MN and IM on the PROM chip and those on the main circuit board matching.</li> </ul>	PROM chip Main circuit board
3. Foot switch remains pressed when error code E-81 appears on the display window. ([E.14], [E.15] KE-436B, 436C)	<ul style="list-style-type: none"> <li>• See #7-1 and #7-2.</li> </ul>	Foot switch Foot switch cord assembly
4. A switch on operation panel remains pressed when error code E-82 appears on the display window. ([E.17] KE-436B, 436C)	<ul style="list-style-type: none"> <li>• Check that P8 (PANEL) connectors of the main circuit board and P1 (PANEL) connectors of the panel circuit board are plugged in.</li> </ul>	Panel circuit board Panel cord
	<p>&lt;KE-436B, 436C&gt;</p> <ul style="list-style-type: none"> <li>• Check that P20 (RSPORT) connectors of the main circuit board and P5 (DRV) connectors of the panel circuit board are plugged in.</li> </ul>	Panel circuit board
5. Power supply voltage drops abnormally when error code E-90 appears on the display window. ([E.90] KE-436B, 436C)	<ul style="list-style-type: none"> <li>a. Make sure that the power supply voltage of the wall socket is within <math>\pm 10\%</math> of the voltage specification.</li> <li>b. See #1-2 and #1-3.</li> </ul>	
6. Power supply voltage rises abnormally when error code E-91 appears on the display window. ([E.91] KE-436B, 436C)	<ul style="list-style-type: none"> <li>a. Make sure that the power supply voltage of the wall socket is within <math>\pm 10\%</math> of the voltage specification.</li> <li>b. See #1-2 and #1-3.</li> </ul>	
7. Control box has overheated when the error code E-d0 appears on the display window. ([E.c2] KE-436B, 436C)	<ul style="list-style-type: none"> <li>a. Clean the ventilation outlet of the control box.</li> <li>b. Keep the control box open for a while to allow the inside to cool down and then turn on the power again. If the same code still appears on the display, the main circuit board is defective.</li> </ul>	Main circuit board
8. Main circuit board defective when the error code E-E0 appears on the display window. (other than KE-436B, 436C.)	<ul style="list-style-type: none"> <li>• Turn on the power again. If the same code still appears on the display, the main circuit board is defective.</li> </ul>	Main circuit board
9. Cord defective when the error code E-F1 appears on the display window. ([E.F1] KE-436B, 436C)	<ul style="list-style-type: none"> <li>• Check P2 (PER) connectors are attached to the power supply circuit board and P16 (PER) connectors are attached to the main circuit board. Check the cord connecting P2 and P16 is not damaged.</li> </ul>	PER cord

Error status #2 Error code appears on the display window when the power is turned on.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
10. Short circuit in a solenoid or feed motor (malfunction of main circuit board) occurs or relay on the power supply circuit board does not function when error code E-F0 appears on the display window. ([E.F0] KE-436B, 436C)	a. See #9-3. b. See #18-2. c. Power supply circuit board is defective if the error still appears after replacement of the main circuit board. d. See #19-2.	Presser solenoid and main circuit board Thread trimming solenoid and main circuit board Main circuit board and power supply circuit board Thread take-up solenoid
11. Abnormal electricity supply is detected when error code E-F2 appears on the display window. ([E.F2] KE-436B, 436C)	• Power supply circuit board defective if the error still appears after replacement of the main circuit board.	Main circuit board and power supply circuit board
12. The model select connector is not inserted when error code E-13 appears on the display window. ([E.13] KE-436B, 436C)	a. Insert the short pin harness that is connected to the encoder harness into connector P3 (SELECT) on the main circuit board. b. Check if there is a problem with the crimping of the short pin harness.	Model select connector

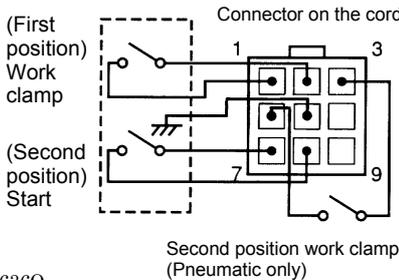
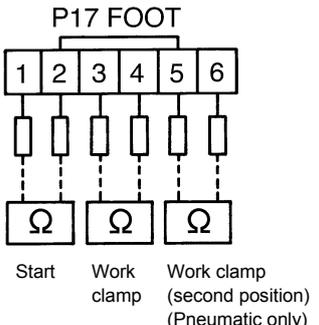
Error status #3 No switches on the operation panel are not activated.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Panel PCB defective	• Check that P8 (PANEL) connectors of the main circuit board and P1 (PANEL) connectors of the panel circuit board are plugged in. ----- <KE-436B, 436C>	Panel circuit board Panel cord
	• Check that P20 (RSPORT) connectors of the main circuit board and P5 (DRV) connectors of the panel circuit board are plugged in.	Panel circuit board

Error status #4 If the R/W switch is pressed, the indicator lamp is not lit and an error code appears. (KE-436B, 436C only)		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. With error code [E.40], the cord or the floppy disk drive (FDD) is defective.	a. Check the connections and pins between connector P1 on the panel PCB and the FDD, and between connectors CH1 and CH2 on the panel PCB and the FDD. b. Replace the floppy disk drive.	FDD harness  Floppy disk drive

Error status #5 After a few seconds after the R/W switch is pressed, an error code appears. (KE-436B, 436C only)		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. With error code [E.40], a floppy disk is not inserted.	• When a floppy disk is inserted into the FDD, check the sound of the motor.	Drive device
2. With error code [E.41] or [E.4F], the floppy disk is defective.	• When error code [E.40], [E.41], or [E.4F] appears, insert other floppy disk into the FDD. If the FDD reads the floppy disk, the original disk is defective.	Floppy
3. Panel circuit board defective		Panel circuit board

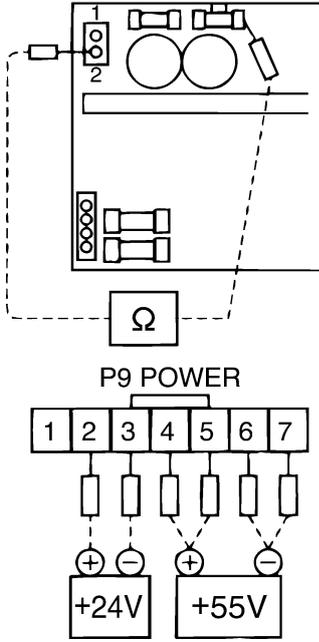
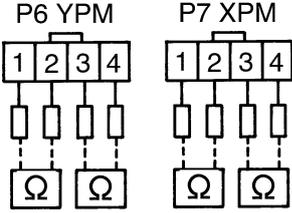
## 8. ELECTRIC MECHANISM

Error status #6 Home position is not correct.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Home position sensor not adjusted properly	<ul style="list-style-type: none"> <li>Check the status of home position signals. (Detect the home position and check the monitor lamps (red) of the X and Y home position sensors.)</li> <li>&lt;KE-430*, 431*, 432*, 433B, BE-438*&gt; X is illuminated and Y is off.</li> <li>&lt;KE-434*, 435*, 436*, 484C&gt; Both X and Y are off.</li> </ul> <p>In the above cases, adjust the position of the home position dog. (See "5-24. Adjusting the home position.")</p> <p>For any other cases, carry out inspection #8.</p>	

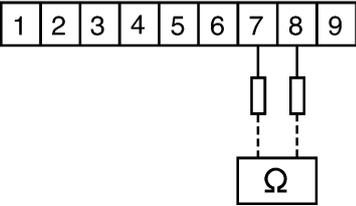
Error status #7 Work clamp does not return to the home position even after the foot switch is depressed.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Foot switch and cord defective  3636Q	(Make sure that the power is turned off.) <ul style="list-style-type: none"> <li>Remove the connector for foot switch connected to the outside of the control box, and check the continuity between pins 1 and 2, and pins 7 and 8 in the connector on the cord. (For pneumatic specification, check the continuity between pins 3 and 4.)</li> </ul> <p>The continuity in each case should be normally <math>\infty \Omega</math> or <math>0 \Omega</math> when the foot switch is depressed.</p>	Foot switch
2. Any cord in the control box is defective  3637Q	<ul style="list-style-type: none"> <li>Insert the connector checked above, open the control box, and check the continuity between pins 1 and 2, pins 3 and 4 in the connector P17 (FOOT) on the main circuit board. (For pneumatic specification, check the continuity between pins 5 and 6.)</li> </ul> <p>(Without removing the connector, put a tester from the lead side.)</p> <p>The continuity in each case should be normally <math>\infty \Omega</math>, or <math>0 \Omega</math> when the foot switch is depressed.</p>	Foot switch cord assembly

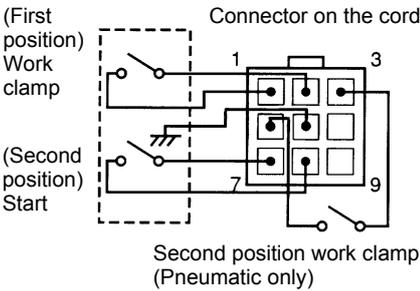
Error status #8 Error code appears on the display window when the foot switch is depressed.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Fuse has blown when the feed mechanism does not move and error code E-A0 appears on the display window. ([E.A1] KE-436B, 436C)	<ul style="list-style-type: none"> <li>Remove fuse No.1 and check it for continuity. If there is no continuity, the fuse is defective. Proceed to #8-2.</li> </ul>	Fuse 5A-250V

Error status #8 Error code appears on the display window when the foot switch is depressed.

Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>2. Power supply circuit board is defective when the feed mechanism does not move and error code E-A0 appears on the display window. ([E.A1] KE-436B, 436C)</p>  <p style="text-align: right;">3638Q</p>	<p>a. Measure the resistance between the fuse No.1 terminal which is close to the center of the power supply circuit board and pin 2 of P5 (DC300) connector. If the resistance is <math>\infty \Omega</math>, the power supply circuit board is not defective.</p> <p>b. Separate P9 (POWER) connectors on the main circuit board, turn on the power, and measure the voltage across the following pairs of pins, pins 4 and 6 and pins 5 and 7, in the connector on the cord. If the voltage is +55V in each case, the power supply circuit board is not defective. After measurement, turn off the power, wait at least 5 minutes, and rejoin P9 connectors.</p> <p>c. Separate P9 (POWER) connectors on the main circuit board, turn on the power, and measure the voltage across pins 2 and 3 on the cord. If it is + 24V, the power supply circuit board is not defective. After measurement, turn off the power, wait at least 5 minutes, and rejoin P9 connectors.</p>	<p>Power supply circuit board</p>
<p>3. Home position sensor is defective when the work clamp moves in an unexpected direction and error code E-A0 appears on the display window. ([E.A1] KE-436B, 436C)</p>	<p>a. Turn the power switch off and then on again, and move the work clamp to near the home position by hand. If the home position sensor LED is lit, the home position sensor is not defective.</p> <p>b. Check that P1 (ORG) connector on the main circuit board and the home position sensor are plugged in.</p> <p>c. See "8-9. Checking the input sensor and DIP switch input" to make sure that the home position sensor is connected. If item a causes no problem and item b results in defective sensor input, either the cord connection is poor or the main circuit board is defective.</p>	<p>Home position sensor</p> <p>Main circuit board</p>
<p>4. Pulse motor and cord are defective when the work clamp operates abnormally and error code E-A0 appears on the display window. ([E.A1] KE-436B, 436C)</p>  <p style="text-align: right;">3639Q</p>	<p>a. Separate P6 (YPM) and P7 (XPM) connectors on the main circuit board. Measure the resistance between the following pairs of pins, pins 4 and 6 and pins 5 and 7, in the connector on the cord. If the resistance is 2-3 <math>\Omega</math>, it is not defective. After measurement, rejoin P6 and P7 connectors.</p> <p>b. If item a causes no problem, the main circuit board is defective.</p>	<p>X- or Y-pulse motor assembly</p> <p>Main circuit board</p>

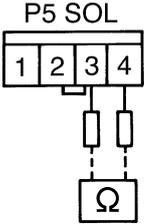
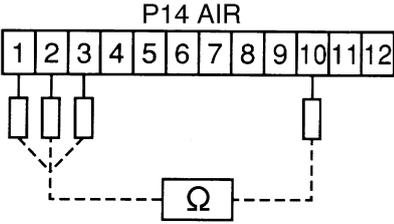
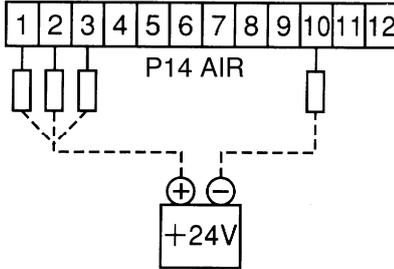
## 8. ELECTRIC MECHANISM

Error status #8 Error code appears on the display window when the foot switch is depressed.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>5. Head position sensor is defective when the feed mechanism does not move and error code E-17 appears on the display window. ([E.16] KE-436B, 436C)</p> <p style="text-align: center;">P1A ORG1</p>  <p style="text-align: right;">3640Q</p>	<p>a. Separate P1A (ORG1) connector on the main circuit board. Measure the resistance between pins 7 and 8 in the connector on the cord. When machine head is horizontal: If the resistance is <math>0\Omega</math>, it is not defective. When machine head is tilted back: If the resistance is <math>\infty\Omega</math>, it is not defective.</p> <p>b. If item a cause no problem, the main circuit board is defective.</p>	<p>Head position sensor</p> <p>Main circuit board</p>

Error status #9 Work clamp does not rise.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>1. Foot switch and cord defective</p>  <p style="text-align: right;">3636Q</p>	<p>(Make sure that the power is turned off.)</p> <ul style="list-style-type: none"> <li>Remove the connector for foot switch connected to the outside of the control box, and check the continuity between pins 1 and 2, and pins 7 and 8 in the connector on the cord. (For pneumatic specification, check the continuity between pins 3 and 4.)</li> </ul> <p>The continuity in each case should be normally <math>\infty\Omega</math> or <math>0\Omega</math> when the foot switch is depressed.</p>	<p>Foot switch</p>

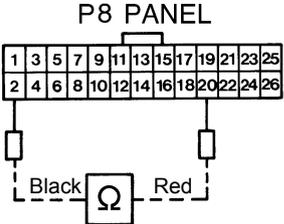
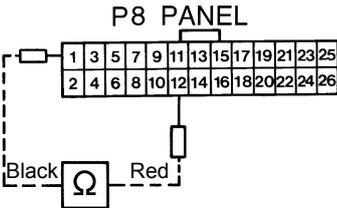
### <Solenoid specifications>

<p>2. Work clamp is not lowered when error code E-60 appears on the display window.</p>	<p>a. If it is not lowered due to the mechanical lock, see "5-22. Adjusting the positions of the presser solenoid" for adjustment.</p> <p>b. Open the top cover, turn on the power switch, and press the tip of the plunger of the presser solenoid. If the work clamp sensor LED is turned on and off, it is OK.</p> <p>c. Make sure P1 (ORG) connector on the main circuit board and work clamp sensor are plugged in.</p> <p>d. See "8-9. Checking the input sensor and DIP switch input" to make sure that the work clamp sensor is connected. If item b causes no problem and item c results in defective sensor input, either the cord connection is poor or the main circuit board is defective.</p>	<p>Work clamp sensor</p> <p>Main circuit board</p>
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Error status #9 Work clamp does not rise.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
<b>&lt;Solenoid specifications&gt;</b>		
<p>3. Work clamp is not raised although attempted, when no error code appears or error code E-61 appears on the display window.</p> <ul style="list-style-type: none"> <li>Presser bar lifter solenoid defective</li> </ul>  <p style="text-align: right;">3641Q</p>	<p>a. If it does not rise because of mechanical problem, see “5-22. Adjusting the positions of the presser solenoid.”</p> <p>b. Separate P5 (SOL) connectors on the main circuit board, and measure the resistance between pins 3 and 4 in the connector on the cable. If the resistance is 2–3 ohms, there is no problem. After measurement, rejoin P5 connectors. If the resistance is 0 ohms (it means a short circuit), replace the main circuit board with a new one because it may be defective.</p> <p>c. If the work clamp lifter solenoid does not operate at all, the main circuit board is defective.</p>	<p>Work clamp lifter solenoid</p> <p>Main circuit board</p> <p>Main circuit board</p>
<b>&lt;Pneumatic specifications&gt;</b>		
<p>4. The air valve is defective.</p>  <p style="text-align: right;">3642Q</p>	<ul style="list-style-type: none"> <li>Pull out connector P14 (AIR) on the main circuit board and measure the resistance between the following pins in the connector on the cord: Pins 1 and 10 (air valve for right work clamp) Pins 2 and 10 (air valve for left work clamp) Pins 3 and 10 (air valve for presser foot) The resistance in each case should be 300 – 400 Ω.</li> </ul>	<p>Air valve harness assembly</p>
<p>5. The main circuit-board IC is defective.</p>  <p style="text-align: right;">3643Q</p>	<ul style="list-style-type: none"> <li>Disconnect connector P14 (AIR) from the main circuit board, then turn on the power and measure the voltage between the circuit board connectors while turning the work clamp switch on and off. Pins 1 and 10 (air valve for right work clamp) Pins 2 and 10 (air valve for left work clamp) Pins 3 and 10 (air valve for presser foot) The voltage in each case should be +20V to 24V. (The solenoid valve LED will light while the power is on.) After measurement, turn off the power, wait at least 5 minutes, and insert P14.</li> </ul>	<p>Main circuit board</p>

Error status #10 Work clamp does not lower. (Solenoid specifications only)		
Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>1. Work clamp is not raised when error code E-62 appears on the display window.</p>	<ul style="list-style-type: none"> <li>Same as #9-3.</li> </ul>	
<p>2. Work clamp is not lowered although attempted when error code E-63 appears on the display window.</p>	<ul style="list-style-type: none"> <li>Same as #9-2.</li> </ul>	

## 8. ELECTRIC MECHANISM

Error status #11 The TEST indicator does not light when the TEST switch is pressed.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>1. TEST switch and its cord are defective. (KE-430*, 431*, 432*, 433B, 434*, 435*, 484C, BE-438*)</p>  <p style="text-align: center;">P8 PANEL</p> <p style="text-align: center;">3644Q</p>	<ul style="list-style-type: none"> <li>Separate P8 (PANEL) connectors on the main circuit board, and measure the resistance between pins 2 and 20 in the connector on the cord with the polarity shown in the left figure. (Use of a digital meter is prohibited.) If the resistance is normally <math>\infty \Omega</math>, or the needle oscillates at its maximum limits when the TEST switch is pressed, the TEST indicator and its cord are not defective.</li> </ul>	Panel PCB or panel cable assembly
<p>2. TEST indicator and its cord are defective. (KE-430*, 431*, 432*, 433B, 434*, 435*, 484C, BE-438*)</p>  <p style="text-align: center;">P8 PANEL</p> <p style="text-align: center;">3645Q</p>	<ul style="list-style-type: none"> <li>Measure the resistance between pins 1 and 12 with the same method as above. If the needle oscillates at its maximum limits, the TEST indicator and its cord are not defective.</li> </ul>	Panel PCB or panel cable assembly
3. Main circuit board defective		Main circuit board
4. Panel PCB defective (KE-436B, 436C)	<ul style="list-style-type: none"> <li>Check that P20 (RSPORT) connectors of the main circuit board and P5 (DRV) connectors of the panel circuit board are plugged in.</li> </ul>	Panel circuit board

Error status #12 The feed mechanism does not slowly move stitch by stitch during test sewing.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Foot switch and cord defective	<ul style="list-style-type: none"> <li>See #7.</li> </ul>	
2. Incorrect memory switch setting	<ul style="list-style-type: none"> <li>Set memo-08 to OFF. (For the BE-438B and 438C, the default setting is ON.)</li> <li>Set memo-0E to OFF.</li> </ul>	

Error status #13 Quick feeding cannot be performed during test sewing.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Foot switch and cord defective	<ul style="list-style-type: none"> <li>See #7.</li> </ul>	

Error status #14 The machine does not operate correctly for the set program during test sewing.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Foot switch and cord defective	• See #7.	

Error status #15 The machine does not operate during sewing, and the error code E-20 appears on the display window. ("E.20" appears for the KE-436B and 436C.)		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Cord related to machine motor is defective	<ul style="list-style-type: none"> <li>a. Make sure P3 (DC18) connector on the power supply circuit board and P13 (DC18) on the main circuit board are plugged in.</li> <li>b. Make sure P5 (DC300) connector on the power supply circuit board and P12 (DC300) connector on the main circuit board are plugged in.</li> <li>c. Check the connection between P11 (UVW) connector on the main circuit board and the terminal block of the machine motor.</li> </ul>	<p>Gate power supply cord</p> <p>Motor power supply cord</p> <p>Motor cable</p>
2. Main circuit board is defective when fuse F1 on the main circuit board has blown.	• Replace the main circuit board with a new one when fuse F1 has blown.	Main circuit board
3. Main circuit board defective	<ul style="list-style-type: none"> <li>• Separate P12 (DC300) connectors on the main circuit board, and measure the resistance between pins 1 and 2 in the connector on the main circuit board with the same polarity as shown in the left figure. (Use of a digital meter is prohibited.) If the pointer indicates 10KΩ – 30kΩ on the x 1kΩ range, the main circuit board is not defective. After measurement, rejoin P12 connectors. (If the pointer does not, fuses No.2, 3, and 4 may be blown. Examine them.)</li> </ul>	Main circuit board
<p style="text-align: center;">3646Q</p>		
4. Short cycle operation has been run continuously, so the sewing machine has overheated and the motor's internal thermostat has operated.	<ul style="list-style-type: none"> <li>a. Turn off the power and leave the sewing machine for 30 minutes or more.</li> <li>b. Turn the power back on. If operation is normal, the problem is solved.</li> </ul> <p>Avoid continuous sewing of sewing data that is 15 stitches or less.</p>	

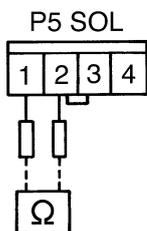
Error status #16 Error code appears on the display window after the machine operates.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Synchronizer is defective or machine is not adjusted properly when error code E-20 appears on the display window after the machine is started. ([E.20] KE-436B, 436C).	<ul style="list-style-type: none"> <li>a. Make sure that P2 (SYNCHRO) connector on the main circuit board and the synchronizer are plugged in.</li> <li>b. See "8-9. Checking the input sensor and DIP switch input" to make sure that the synchronizer is connected. If signal is switched on and off, there is no problem.</li> <li>c. Turn the pulley by hand to check it can easily rotate.</li> <li>d. If error code E-20 (E.20) appears when the machine is stopped, see "5-20. Adjusting the thread trimming solenoid position" for adjustment.</li> </ul>	Synchronizer assembly

## 8. ELECTRIC MECHANISM

Error status #16 Error code appears on the display window after the machine operates.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
2. A malfunction occurs due to noise or main PROM is defective when error code E-21 appears after the machine is started. ([E.21]: KE-436B, 436C).	<ul style="list-style-type: none"> <li>a. Make sure that the ground wire is surely grounded and there is no equipment that generates strong electrical noise in the vicinity.</li> <li>b. If the machine has been remodeled, return the machine to its original condition before checking.</li> <li>c. If the error still occurs after replacement of PROM, put the original PROM back before checking.</li> </ul>	PROM
3. Power supply voltage abnormally lowers when error code E-90 appears after the machine is started. ([E.90]: KE-436B, 436C).	<ul style="list-style-type: none"> <li>a. Make sure that the power supply voltage of the wall socket is within <math>\pm 10\%</math> of the voltage specification.</li> <li>b. See #1-2 and #1-3.</li> </ul> <p>If 550VA/machine is not allocated at the power source, the voltage will drop as soon as the machine is started, resulting in this error.</p>	

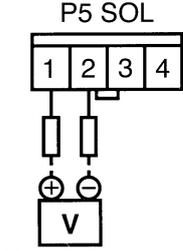
Error status #17 The machine cannot produce correct stitches.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Synchronizer defective	<ul style="list-style-type: none"> <li>• See #16-1.</li> </ul>	
2. Pulse motor is defective or mechanical adjustment is not appropriate when stitching deviates from what it should be.	<ul style="list-style-type: none"> <li>a. See #8-4.</li> <li>b. If stitching deviates because of insufficient pressure of the work clamp, see "Adjusting the work clamp lift amount" for adjustment.</li> <li>c. Make adjustments if the feed mechanism has any unnecessary looseness.</li> </ul>	

Error status #18 The thread trimmer does not operate.		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. Home position sensor not adjusted properly	<ul style="list-style-type: none"> <li>• Adjust the thread trimmer mechanism (page 54, 55 and 86). (When it is obvious that the thread trimmer does not operate, perform the check/ repair/adjust items of #18-2 and #18-3.)</li> </ul>	
2. Thread trimmer solenoid defective	<ul style="list-style-type: none"> <li>• Separate P5 (SOL) connectors on the main circuit board, and then measure the resistance between pins 1 and 2 in the connector on the cable. If the resistance is 7–8 <math>\Omega</math>, the solenoid is not defective.</li> </ul>	Thread trimmer solenoid

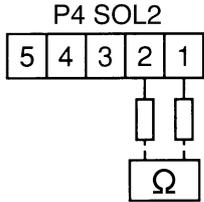
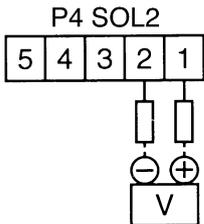


3647Q

Error status #18 The thread trimmer does not operate.

Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>3. Main circuit board defective</p>  <p>Thread trimmer</p> <p>3648Q</p>	<ul style="list-style-type: none"> <li>With P5 (SOL) connectors plugged in on the main circuit board, turn on the power, perform sewing, and measure the voltage across pins 1 and 2 in the connector on the cable.</li> <li>If there is a sudden voltage output at the end of sewing, it is OK.</li> </ul>	Main circuit board

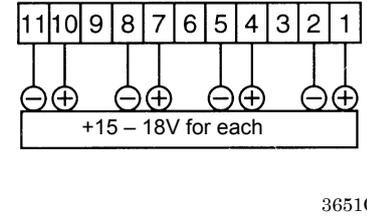
Error status #19 Thread take-up lever does not operate.

Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>1. Home position sensor not adjusted properly</p>	<ul style="list-style-type: none"> <li>Adjust the thread take-up mechanism (page 62–64).</li> <li>(If the solenoid does not work even after it is separated from the mechanical parts, perform the following items #19-2 and #19-3.)</li> </ul>	
<p>2. Thread take-up solenoid defective</p>  <p>3649Q</p>	<ul style="list-style-type: none"> <li>Separate P4 (SOL2) connectors on the main circuit board, and then measure the resistance between pins 1 and 2 in the connector on the cable.</li> <li>If the resistance is 12–14 Ω, the solenoid is not defective.</li> </ul>	
<p>3. Main circuit board defective</p>  <p>3650Q Thread take-up lever</p>	<ul style="list-style-type: none"> <li>With connector P4 (SOL2) on the main circuit board removed, turn on the power, perform sewing, and measure the voltage across pins 1 and 2 of connector P4.</li> <li>If there is a sudden voltage output at the end of sewing, it is OK.</li> </ul>	
<p>4. Incorrect memory switch setting</p>	<ul style="list-style-type: none"> <li>Set memo-17 to OFF.</li> <li>&lt;KE-436B, 436C&gt;</li> <li>Set memo-28 to ON.</li> </ul>	

Error status #20 The machine does not stop with the needle at the upper position. (“E-50” appears <“E.22” for the KE-436B and 436C>.)

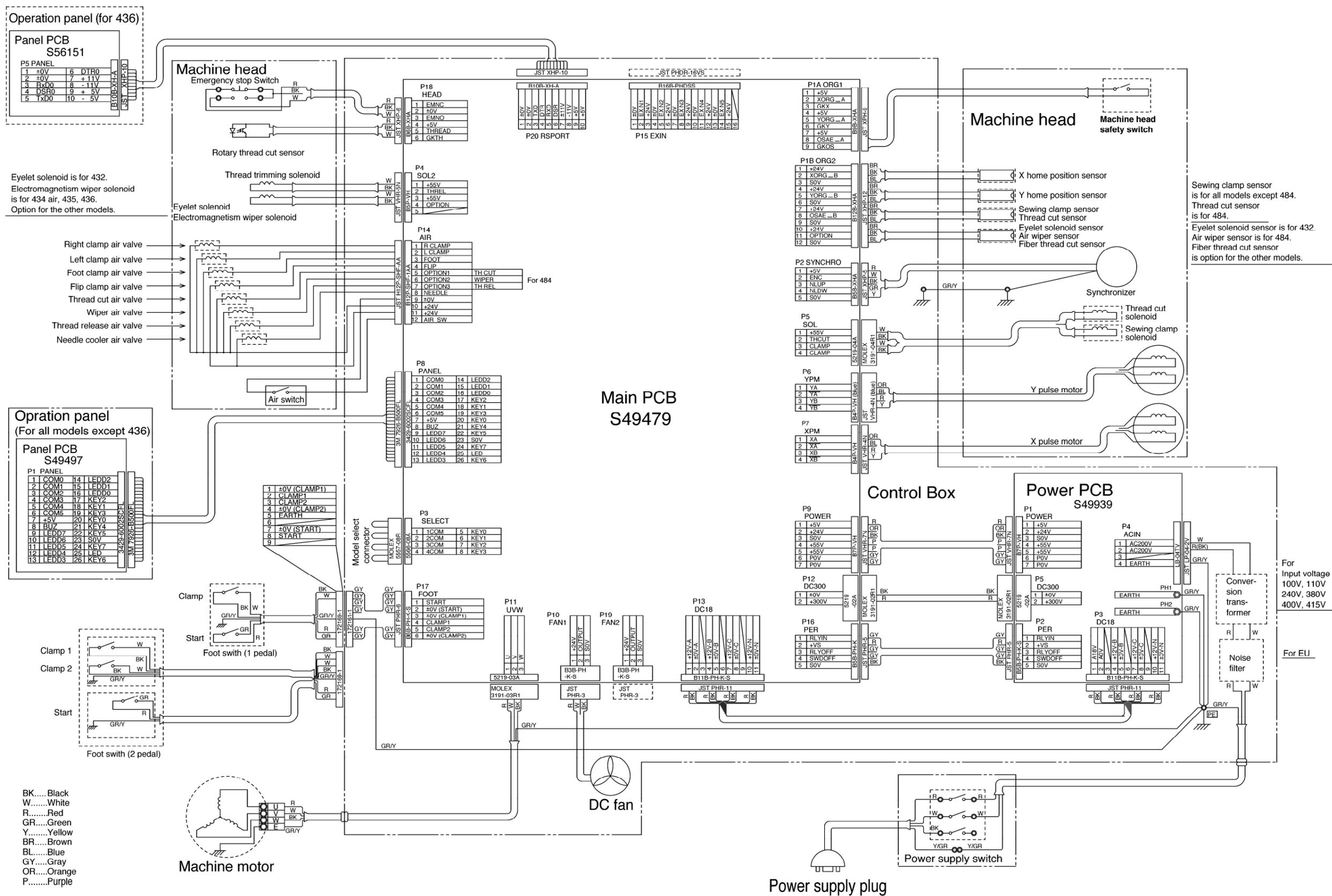
Probable causes	Check/ repair/ adjust	Parts to be replaced
<p>1. Poor adjustment</p>	<ul style="list-style-type: none"> <li>See “5-25. Adjusting the needle up stop position,” for adjustment.</li> </ul>	
<p>2. Synchronizer defective</p>	<ul style="list-style-type: none"> <li>See #16-1.</li> </ul>	

## 8. ELECTRIC MECHANISM

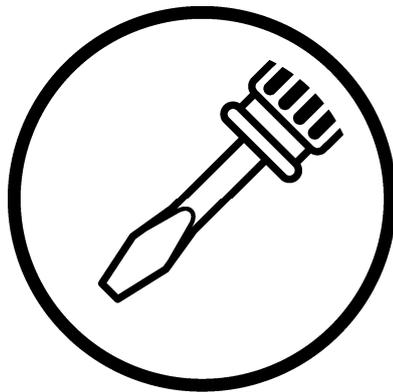
Error status #20 The machine does not stop with the needle at the upper position. (“E-50” appears <“E.22” for the KE-436B and 436C>.)		
Probable causes	Check/ repair/ adjust	Parts to be replaced
3. Cord defective	<ul style="list-style-type: none"> <li>See #15-1.</li> </ul>	
4. Power supply circuit board defective  Main circuit board P13(PC18) 	<ul style="list-style-type: none"> <li>With P13 (DC18) connectors plugged in on the main circuit board, measure the voltage in the connector on the cable. If the voltage across the following pairs of pins, pins 1 and 2, pins 4 and 5, and pins 10 and 11 is DC 15–18 V, it is OK.</li> </ul>	Power supply circuit board
5. Main circuit board defective		Main circuit board
6. Motor defective		Motor

Error status #21 Programming can not be made. (KE-436B, 436C only)		
Probable causes	Check/ repair/ adjust	Parts to be replaced
1. The programmer connector and its cable are defective.	<ul style="list-style-type: none"> <li>Remove connector P2 (PGM) on the panel PCB and connector P2 on the programmer PCB, and then return them to their positions.</li> </ul>	
2. The programmer is defective.	<ul style="list-style-type: none"> <li>Replace the programmer with a new one.</li> </ul>	Programmer
3. Panel circuit board defective	<ul style="list-style-type: none"> <li>Replace the panel circuit board with a new one.</li> </ul>	Panel circuit board

8-15. Control circuit block diagram



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