JUKI®

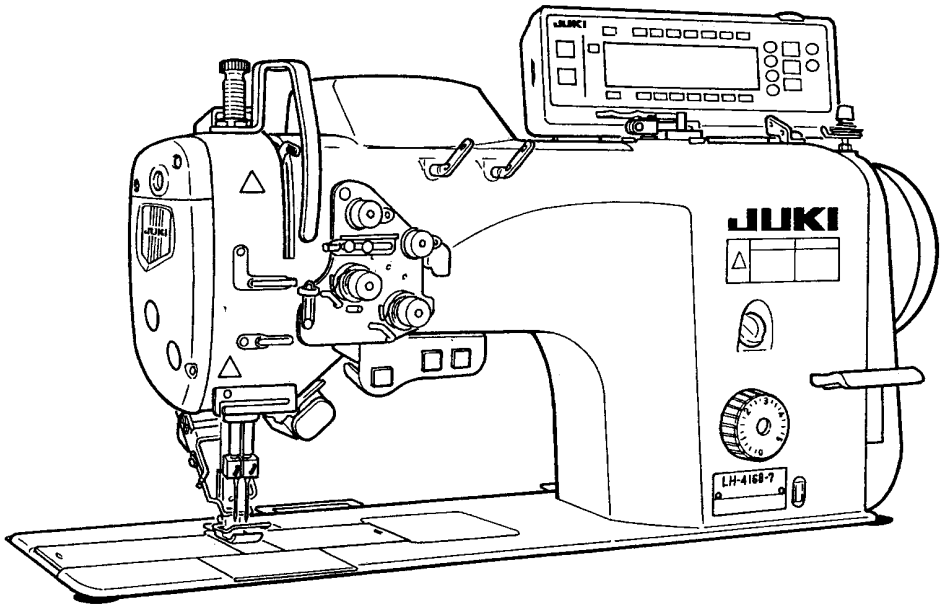
Direct-drive, High Speed, 2-Needle, Needle-feed, Lockstitch Machine

LH-4128

Direct-drive, High Speed, 2-Needle, Needle-feed, Lockstitch Machine with Automatic Thread Trimmer

LH-4128-7/4168-7/4188-7

ENGINEER'S MANUAL



40038257
No.E367-01

PREFACE

This Engineer’s Manual is written for the technical personnel who are responsible for the service and maintenance of the machine.
The Instruction Manual for these machines intended for the maintenance personnel and operators at an apparel factory contains operating instructions in detail. And this manual describes “Standard Adjustment”, “Adjustment Procedures”, “Results of Improper Adjustment”, and other important information which are not covered by the Instruction Manual.
It is advisable to use the relevant Instruction Manual and Parts List together with this Engineer's Manual, and the manual of SC-910 when carrying out the maintenance of these machines.
In addition, for the motor for the sewing machine with thread trimmer, refer to the separate Instruction Manual or Engineer’s Manual for the motor. And for the control panel, refer to the Instruction Manual for the control panel.
This Engineer’s Manual gives the “Standard Adjustment” on the former page under which the most basic adjustment value is described, and on the latter page “Results of Improper Adjustment” under which stitching errors and troubles arising from mechanical failures are described together with the “Adjustment Procedures”.

CONTENTS

1. Specifications

No.	Model name / Item	Application			
		LH-4128	LH-4128-7 (with automatic thread trimmer)	LH-4168-7 (with automatic thread trimmer incorporating corner stitching)	LH-4188-7 (with automatic thread trimming shuttle rectangular stitching function)
1	Model	Direct-drive, high speed, 2-needle, needle-feed, lockstitch machine			
2	Application	For light-, medium- and heavy-weight materials			For medium- and heavy-weight materials
		Specification S: Standard Specification F: Foundation Specification G: Jeans	Specification S : Standard, Specification G : Jeans		Specification G : Jeans
3	Max. sewing speed	4000rpm (Specification F: 3000rpm)		3200 rpm	
4	Max. stitch length	Forward/reverse feed: 5mm **(Caution)1.**			
5	Thread take-up	Linked thread take-up lever			
6	Needle bar stroke	31.6mm			32.6mm
7	Hook	Small hook			Large hook
8	Separately driven needle stop mechanism	Not provided		Provided	
9	Needle	Specification S : DP x 5 #9 to #16, Specification F : DP x 5 #9 to #11,Specification G : DP x 5 #16 to #22 **(Caution) 2.**			
10	Gage size inch (mm)	1/8” to 1-1/2” (3.2 to 38.1mm)	1/8” to 1-1/4” (3.2 to 31.8mm)	1/8” to 1” (3.2 to 25.4mm)	
11	Lift of presser foot	12mm by knee lifter, 5.5mm by hand lifter lever, 9mm by knee lifter with wiper			
12	Lubricating oil	JUKI NEW Defrix oil No. 1 (equivalent ISO VG7)			
13	Grease	JUKI grease A (Part No. : 40006323)		JUKI grease A (Part No. : 40006323) JUKI grease B (Part No. : 40013640)	
14	Control box used	SC910A□△-AA◇ **(Caution) 3.**			
15	External dimensions	Width: 615mm, Heigh: 420mm, Depth: 267mm (with AK125)			
16	Weight of head	65kg (LH-4168-7/AK125)			
17	Power consumption	650VA			
18	Working temperature/ humidity	Temperature : 5°C to 35°C, Humidity : 35% to 85% (no condensation)			
19	Supply voltage/ frequency	Rated voltage ± 10%, 50/60Hz			
20	Audible sound level (3000rpm)	Approx. 83dB A			

(Caution) 1. 4 mm only in the case of Specification F. For other Specifications S and G, 4 mm of normal/reverse feed stitching is applicable to a maximum sewing speed of 3500 rpm or above.

2. For Specification F, the recommendable needle shall be of 134SES SERV7 Nm65 (equivalent to #9).

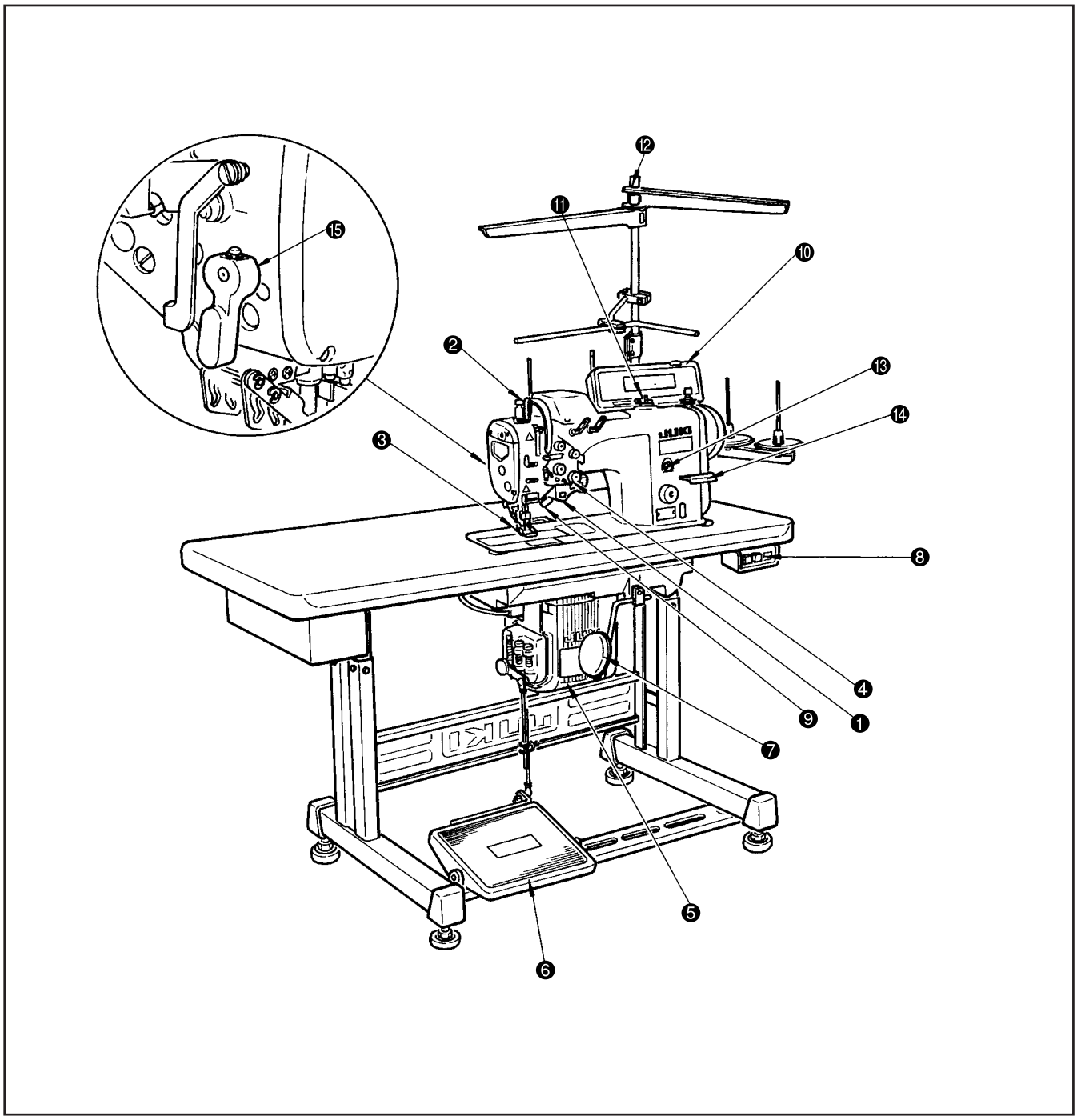
3. The control box□ , △ , and ◇ to be used shall be selected according to the classification specified below.

□	Control box classification		
S	JUS (LA):	single-phase 100 to 120V	PFL
D	JUS/General export:	3-phase 200 to 240V	PFL
K	General export:	single-phase 200 to 240V	PFL
N	CE:	single-phase 200 to 240V	PFL
U	China:	single-phase 200 to 240V	PFL

△	Control box type classification
S	LH-4128, 4128-7
A	LH-4128, 4128-7, 4168-7, 4188-7

◇	Shipping voltage classification
3	100 to 120V
4	200 to 240V

2. Name of each component



❶ Separately driven needle changeover switch (LH-4168-7, LH-4188-7 only)
❷ Thread take-up cover
❸ Finger guard
❹ Thread tension controller
❺ Control box
❻ Pedal
❼ Knee patch
❽ Power switch
❾ Hand switch
❿ Operation panel
⓫ Bobbin winder
⓬ Thread stand
⓭ Oil supply opening
⓮ Reverse feed control lever
⓯ Hand lifter lever

3. Model numbering system

(1) LH-4128 (without a thread trimmer)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
L	**H**	**4**	**1**	**2**	**8**	□	□	□	**A**	**0**	**B**	△	□	□	△	△	△	**—**	**A**	**A**

7	Classification for the head specifications
S	Semi-dry head

8	Classification for the head specifications
F	Specification for foundation
S	Specification for medium heavy-weight materials
G	Jeans, specification for heavy-weight materials

9	Needle gauge classification			
	Model	4128S		
Code	Gauge size [mm (inch)]	F	S	G
B	3.2 (1/8)	○	—	—
D	4.8 (3/16)	○	○	—
F	6.4 (1/4)	○	○	○
Q	25.4 (1)	—	○	—

* Standard marked by ○

10	Classification for feed
A	Needle feed

11 to 12	Classification for wiper and auto-reverse feed
0B	Without wiper, with auto-reverse feed

13	Classification for attachment application
1	Standard throat plate, standard face plate, and standard cloth presser
4	Taping throat plate and taping face plate Presser with a guide

* 4 selectable only for the sewing spec. classification F
1 only for the sewing spec. classifications S and G

14 to 18	Classification of presser lifter
Space	Not provided
AK125	Auto-lifter (Pedal drive)

20	Place of distination
A	Standard

21	Accessoried type
A	Standard

(2) LH-4128-7•LH-4168-7•LH-4188-7(with a thread trimmer)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
L	**H**	**4**	**1**	△	△	□	□	**F**	**A**	**7**	**W**	**B**	□	□	△	△	△	**—**	**A**	**A**

5 to 6	Classification for the model
28	2-needle lock stitch needle feed
68	2-needle lock stitch needle feed with rectangular stitching function
88	Shuttle spec. for 2-needle lock stitch needle feed with rectangular stitching function

7	Classification for the head specifications
S	Semi-dry head

8	Classification for the sewing specification
S	Specification for medium heavy-weight materials
G	Jeans, specification for heavy-weight materials

* For the LH-4188-7, setting shall be made only for G.

9	Need gauge classification			
	Model	4128S-7 4168S-7		4188S-7
Code	Gauge size [mm (inch)]	S	G	G
F	6.4 (1/4)	○	○	○

* Standard marked by ○

10	Classification for feed
A	Needle feed

12 to 13	Classification for wiper and auto-reverse feed
WB	Without wiper, with auto-reverse feed

14 to 18	Classification of automatic presser lifter
Space	Not provided
AK125	Auto-lifter (Pedal drive)

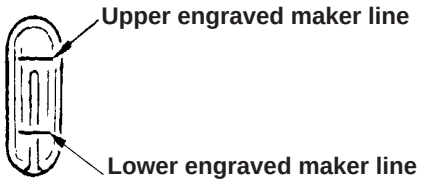
20	Place of distination
A	Standard

21	Accessoried type
A	Standard

4. Special notes for safe operation

(1) For the LH-4128 models of sewing machine without a thread trimmer, the throat plate, feed dog and presser foot developer for the LH3128, LH-512 and LH-515 are applicable. Furthermore, commercially available thread trimmer, throat plate, feed dog and presser foot can also be used with them.

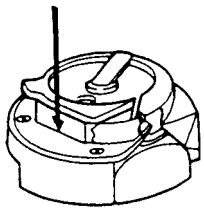
(2) The machine oil (JUKI New Deflex Oil No.1) shall be supplemented so that the level gauge remains in the range between the upper and lower engraved marker lines of the oil tank.



(3) When the sewing machine is operated for the first time or when it is reused after a long time of storage, running-in operation shall be carried out at a speed of 3,000rpm or below. At that time, a few drops of machine oil shall be applied to the hook race plane (indicated by the arrow).

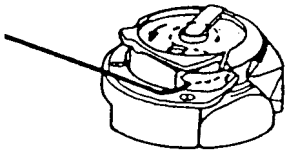
(Caution) Never lubricate inside of the face plate section. (No lubrication is required because a grease lubrication system is adopted.)

o Hook race surface (left and right)

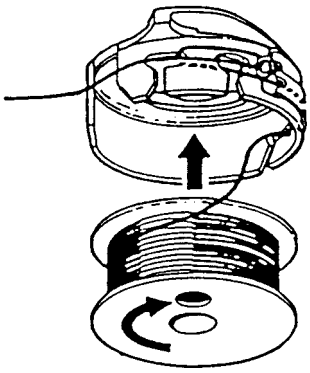


(4) Hook differs with the type of sewing machine, i.e., the sewing machine with/without a thread trimmer. Be sure to use a hook that is exclusively designed for the sewing machine head.
(5) How to pass the bobbin thread (The bobbin thread winding direction is indicated by the arrow.)

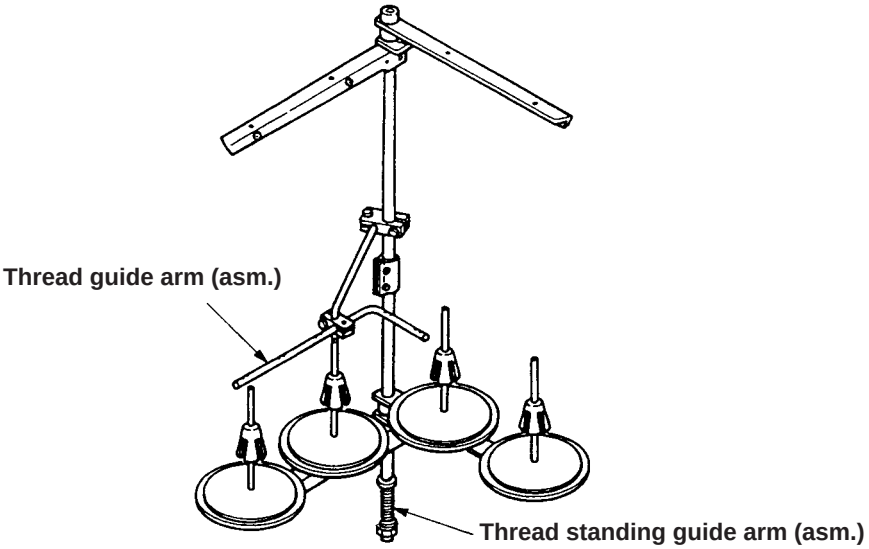
o LH-4128 Latch hook
o LH-4128-7 Latch hook with a thread trimmer



o LH-4168-7 Hook with a thread trimmer and an separately driven needle
o LH-4188-7 Hook with a thread trimmer and an separately driven needle



(6) When synthetic threads are used, the thread guide arm (asm.) for the thread stand (asm.) if the thread flaps during sewing.



MEMO

5. Standard adjustment

(1) Needle bar and feed dog

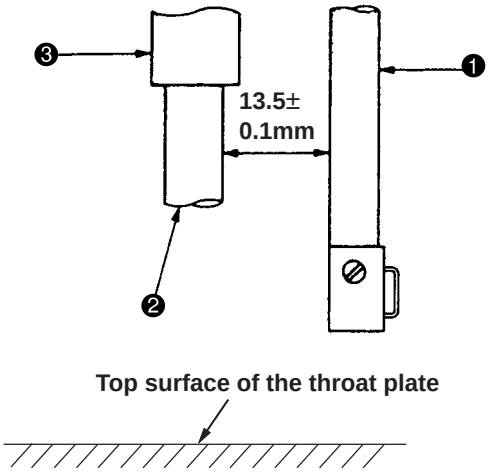
Standard Adjustment

1) Initial position of the needle bar

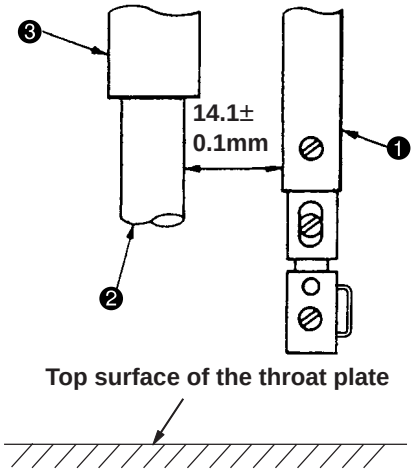
Conditions

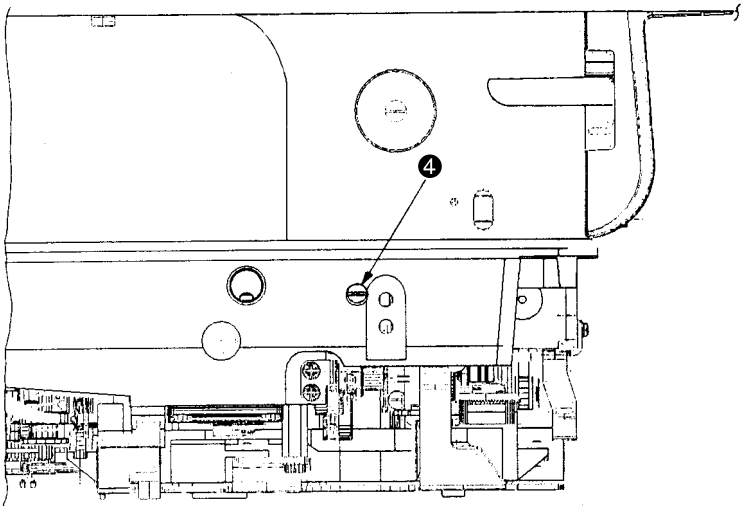
- o The needle bar is in the lowest dead point.
- o Feed amount : Minimum

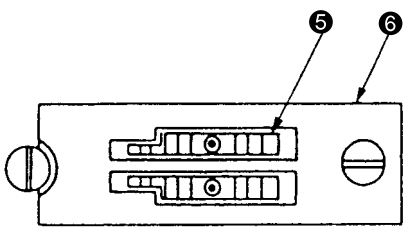
o LH-4128, LH-4128-7



o LH-4168-7, LH-4188-7





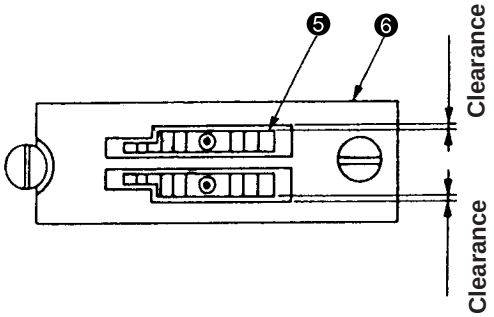


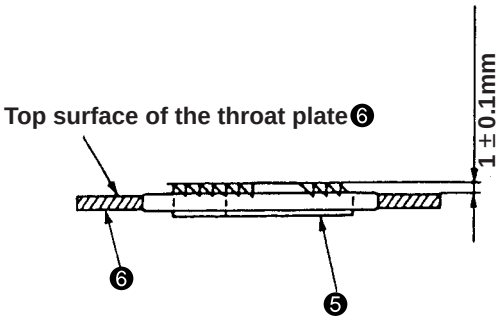
Adjustment Procedure	Results of Improper Adjustment
1) Initial position of the needle bar 1. Set the stitch dial at “Minimum” on the scale. 2. Turn the handwheel to bring needle bar ❶ to the lowest dead point. 3. Loosen the setscrew ❹ shown. 4. Adjust the inner dimension provided between needle bar ❶ and presser bar ❷ to the specified dimension. Then, tighten screw ❹. **(Caution) 1. Distance from needle bar ❶ to presser bar ❷ should be the distance provided between the bottom end of the presser bar ❷ and the bottom end of presser bar lower bushing ❸.** **2. After the adjustment, the needle entry point in the needle slot in the feed dog ❺ may change.**	When the stitch length is maximized, the feed dog ❺ will come in contact with the throat plate ❻. o Stitch skipping or needle breakage will be caused. o Thread trimming failure will be caused.

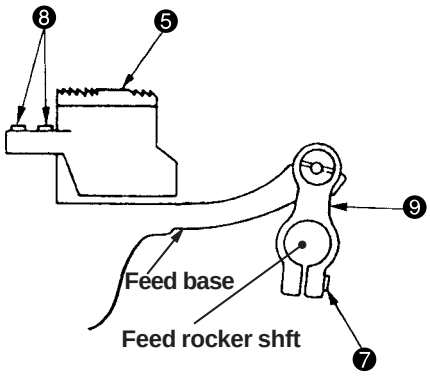
2) Adjustment of the right and left feed dog positions, height, and gradient

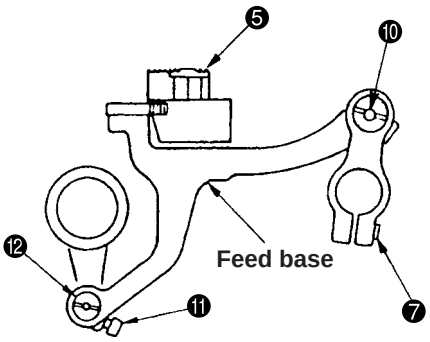
Conditions

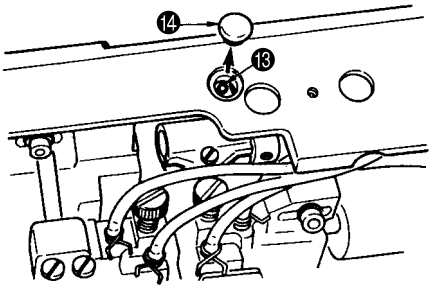
- o Feed amount : Minimum
- o When the feed dog ❺ is in the hightest position of its stroke, it should rise 1 ± 0.1mm from the top surface of the throat plate ❻.

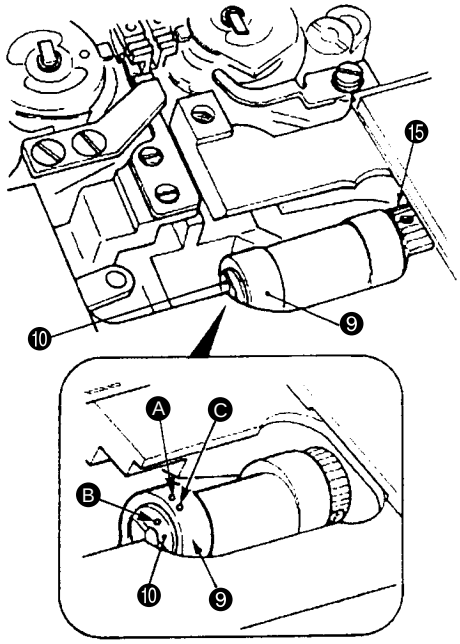












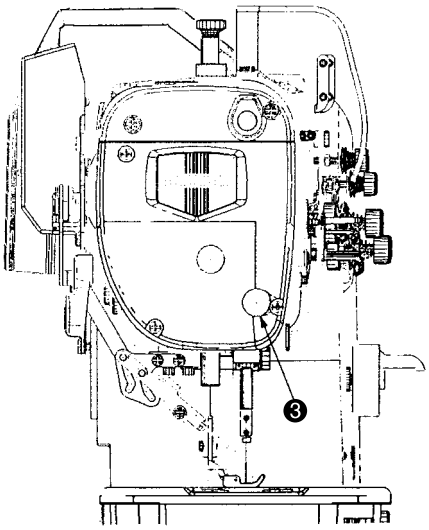
Adjustment Procedure	Results of Improper Adjustment
2) Adjustment of the right and left feed dog positions, height, and gradient o Right and left feed dog positions 1. In order to make the right and left clearances be uniformly balanced between the hole of the throat plate ❻ and the feed dog ❺, loosen the feed base arm setscrew ❼ to move the feed base arm ❾ in the axial direction. After adjustments, tighten the setscrew ❼. 2. If the above-mentioned adjustments are insufficient, loosen the setscrew ❽ of the feed dog ❺ and adjust the feed dog ❺ and the feed bar until they become parallel to each other. Since then, tighten the setscrew ❽ and adjust the horizontal positioning (adjustments of 1. above) of the feed dog ❺ again. **(Caution) When the gauge is replaced, make right/left adjustments of the feed dog ❺.** o Feed dog height 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the hand wheel so that the feed dog ❺ is positioned to secure its maximum protrusion from the throat plate ❻. 3. Loosen the setscrew ⓫ and rotate the vertical feed link shaft ⓬ to adjust the feed dog ❺ to 1 ± 0.1mm from the upper face of the throat plate ❻. After adjustments, tighten the setscrew ⓫. **(Caution) 1. After adjustments, the needle location may be changed in relation to the hole of the feed dog ❺.** o Feed dog gradient 1. Remove the cap ⓮ of the bed side face and loosen the feed bar shaft setscrew ⓭. Turn the roulette section ⓯ to adjust the gradient. 2. The standard gradient of the feed dog ❺ is defined where the engraved marking dot Ⓒ of the feed base arm ❾ coincides with the engraved marking dot Ⓑ of the feed base arm shaft ⓾. (The engraved marker dot Ⓐ is for the LH-3500.)	When the feed dog is positioned too high: o The feed dog ❺ will come in contact with the throat plate ❻. o The stitch length will be larger than the value indicated by the scale on the stitch dial. o It can be a cause of thread trimming deficiency. When the feed dog is positioned too low: o The pitches of stitches become smaller than the graduations of the feed adjusting dial. o The moving knife will come in contact with the feed dog ❺ at the time of thread trimming. This can be a cause of trimmer malfunction.

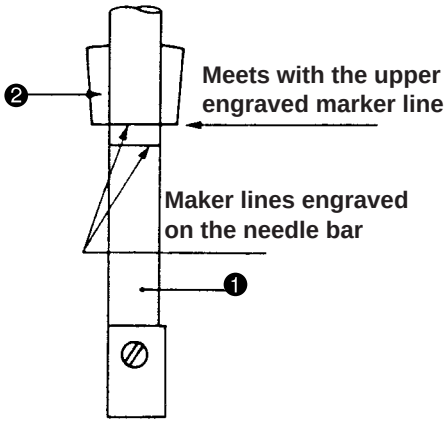
3) Needle bar height

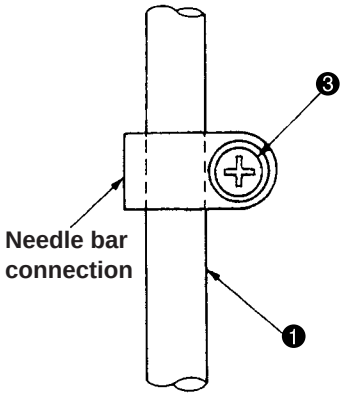
Conditions

- o Needle bar should be in its lowest dead point.
- o Feed amount : Minimum

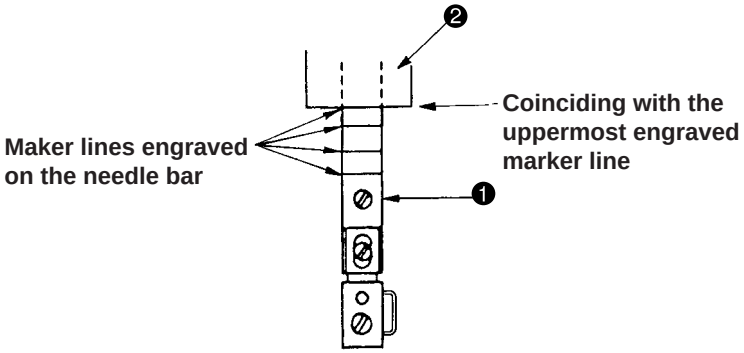
- o LH-4128
- o LH-4128-7

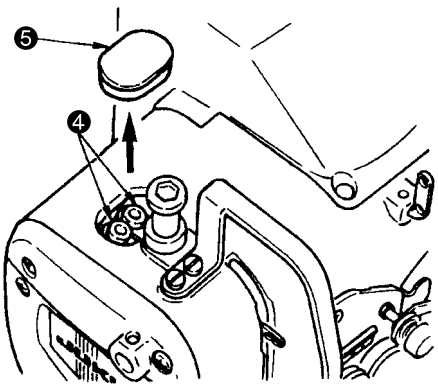


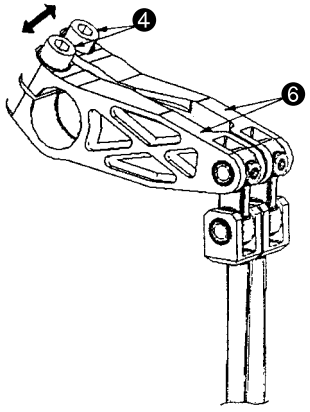




- o LH-4168-7
- o LH-4188-7





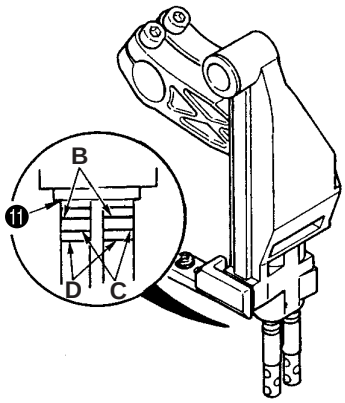


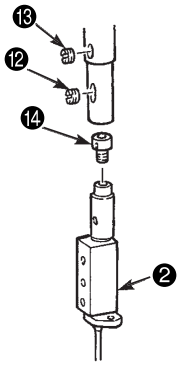
Adjustment Procedure	Results of Improper Adjustment
3) Needle bar height o LH-4128, LH-4128-7 1. Set stitch dial “Minimum”. 2. Turn the handwheel to bring needle bar ❶ to the lowest dead point. 3. Loosen the needle bar connecting setscrew ❸. 4. Align the upper marker line engraved on the needle bar ❶ with the lower end face of the needle bar rocking base ❸ and tighten the needle bar connecting setscrew ❷.	o Change in height of the needle bar may result in stitch skipping or thread breakage.
o LH-4168-7, LH-4188-7 1. Set the stitch dial at “Minimum”. 2. Turn the handwheel to bring needle bar ❶ to the lowest dead point. 3. Remove the cap ❺, and loosen the setscrew ❹. 4. Align the uppermost marker line engraved on the needle bar ❶ with the lower end face of the needle bar rocking base ❷ and tighten the tightening screw ❹ at a tightening torque of 5.9N•m (60kgf•cm). **(Caution) 1. After the adjustment, the needle entry point in the needle slot in the feed dog may change.** **2. When tightening the setscrew ❹, make sure not to shift the needle throwing drive arm ❻ in the direction of the arrow.** (When the DPX17 is used) While the DPX17 is used, the second engraved marking line from the bottom of the needle bar ❶ shall be made to coincide with the lowest face of the needle bar rocking base ❷.	o If the needle throwing drive arm ❻ is shifted, this can be a cause of needle bar torque or needle bar lock-up.

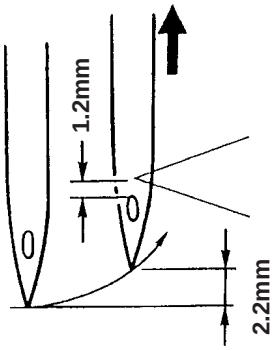
4) Needle clamp

Conditions

- o Needle bar should be in the lowest dead point.
- o Feed amount : 2.5mm

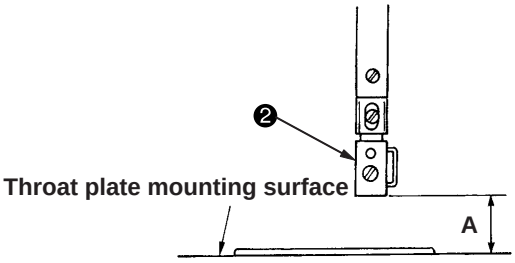




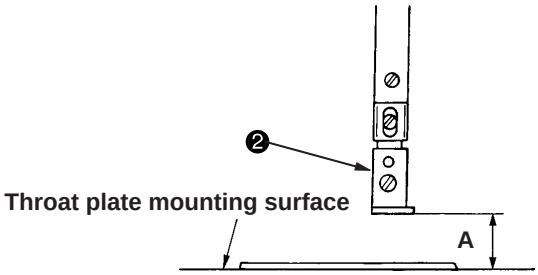


[Dimension for reference] Needle clamp height at the lower dead point of the needle bar

o LH-4128, 4128-7, 4168-7



o LH-4188-7

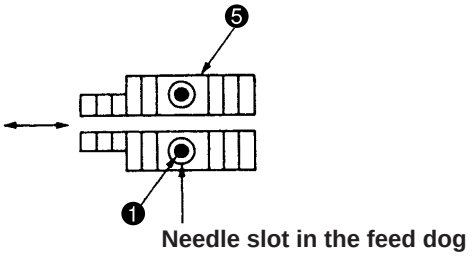


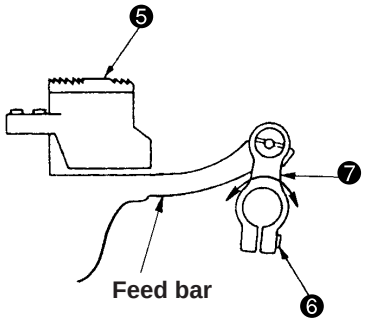
	LH-4128, 4128-7	LH-4168-7	LH-4188-7
Dimension A	15.1±0.15mm	15.8±0.15mm	15.2±0.15mm

5) Needle entry

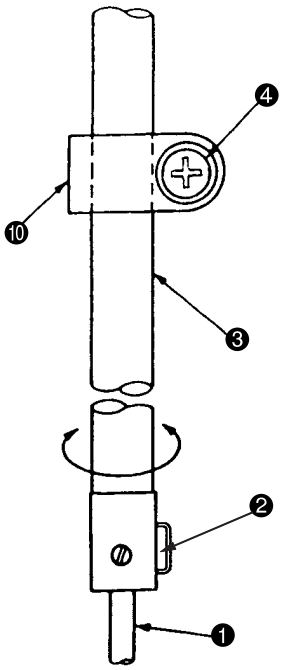
Conditions

- o Needle bar should be in the lowest dead point.
- o Feed amount : Minimum
- o The needle should enter of the needle slot in the feed dog.

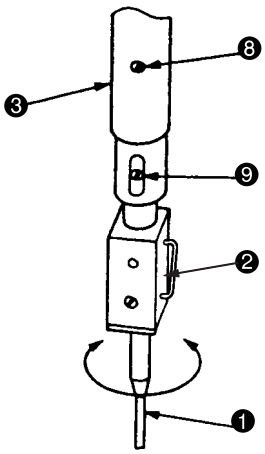




o LH-4128
o LH-4128-7



o LH-4168-7
o LH-4188-7



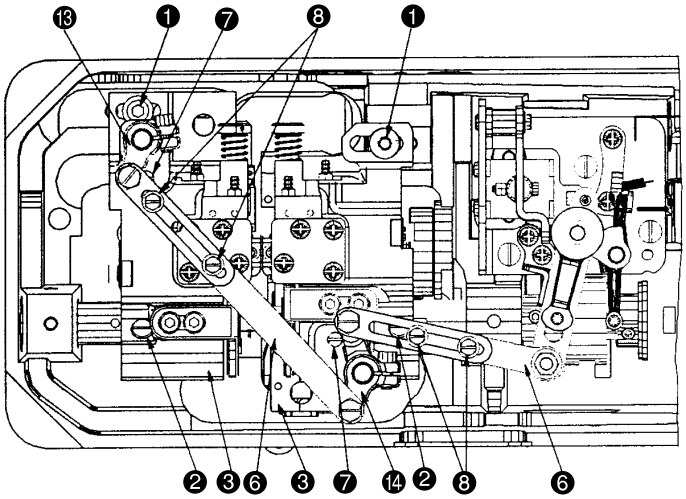
Adjustment Procedure	Results of Improper Adjustment
4) Needle clamp 1. Turn the hand wheel and align the engraved line "B", which is the third one from the bottom of the needle bar, with the lower end of the needle bar lower bushing ⓫. (A rise of 2.2m) At that time, the distance between the upper end section of the needle hole and hook's blade point is 1.2mm in standard practice. 2. The above-mentioned adjustments are required when the needle DPX5 is used. When using the DPX17 needle, adjustments of "C" and "D" should be carried out. 3. If standard values cannot be secured, remove the needle clamp screw ⓬ and rotate the needle clamp ❷ by one turn for adjustment (the amount of adjustment: 0.6mm). Otherwise, remove the spring hold setscrew ⓭ and rotate the spring hold ⓮ by half turn (the amount of adjustment: 0.3mm).	
5) Needle entry o LH-4128, LH-4128-7 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the handwheel to bring needle bar ❸ to the lowest dead point. 3. Loosen the setscrew ❹ of the needle bar connection ⓾. 4. Turn the needle bar ❸ in the direction of the arrow to adjust so that the needle ❶enters the center of the needle slot in the feed dog ❺. After the adjustment, tighten the screw ❹. 5. If needle ❶ is longitudinally dislocated in the needle slot in the feed dog, loosen clamping screw ❻ in feed rocker and adjust the longitudinal position of the needle by turning feed base arm ❼ in the direction of the arrow. After the adjustment, tighten screw ❻. **(Caution) 1. Do not change the needle bar ❸ height.** **2. Do not loosen needle clamp ❷.** o LH-4168-7, LH-4188-7 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the handwheel to bring needle bar ❸ to the lowest dead point. 3. Loosen clamping screws ❽ and ❾. 4. Turn the needle clamp ❷ so that the needle ❶ enters the center of the needle slot in the feed dog ❺. After adjustments, tighten the tightening screws ❽ and ❾. 5. If the needle ❶ seems to be displaced forward or backward in the slot of the feed dog, loosen the feed bar arm tightening screw ❻ to rotate the feed base arm ❼. After adjustments, tighten the feed bar arm tightening screw ❻. **(Caution) 1. Needle clamp ❷ can be turned in the clearance provided between screw ❾ and the rightmost and leftmost edges on the slot in the needle bar ❸.**	o Stitch skipping and thread breakage will be caused. o Poorly tensed seam will result. o When the feed dog has elongated needle slots (2.2mm x 3.2mm), the needle thread will be loosened if the needles enter the far end of the respective elongated slots viewed from the operator. * If needle entry is performed on the operator side at the time of thread trimming, this can be a cause of failure in thread trimming.

(2) Timing between the needle and the hook

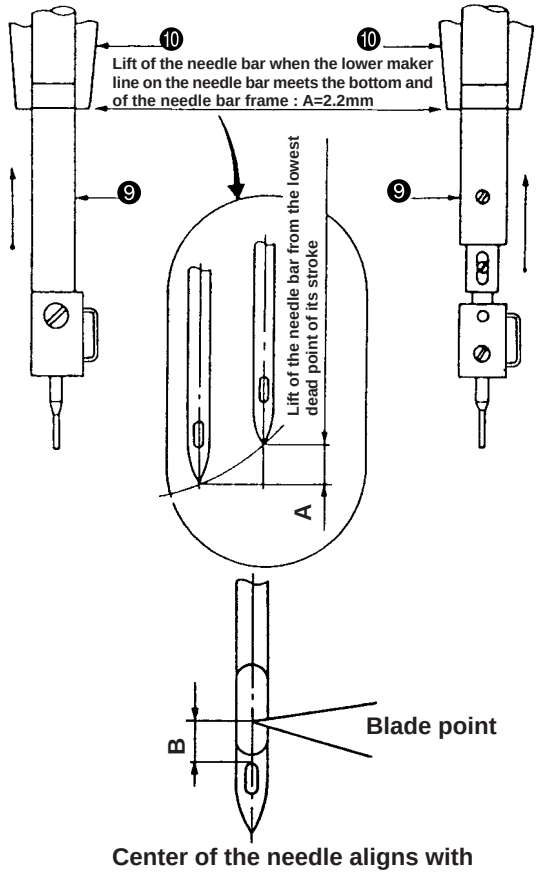
Standard Adjustment

1) Lift of the needle bar
2) Clearance between the needle and the blade point of the hook
3) Position of the needle and the blade point of the hook

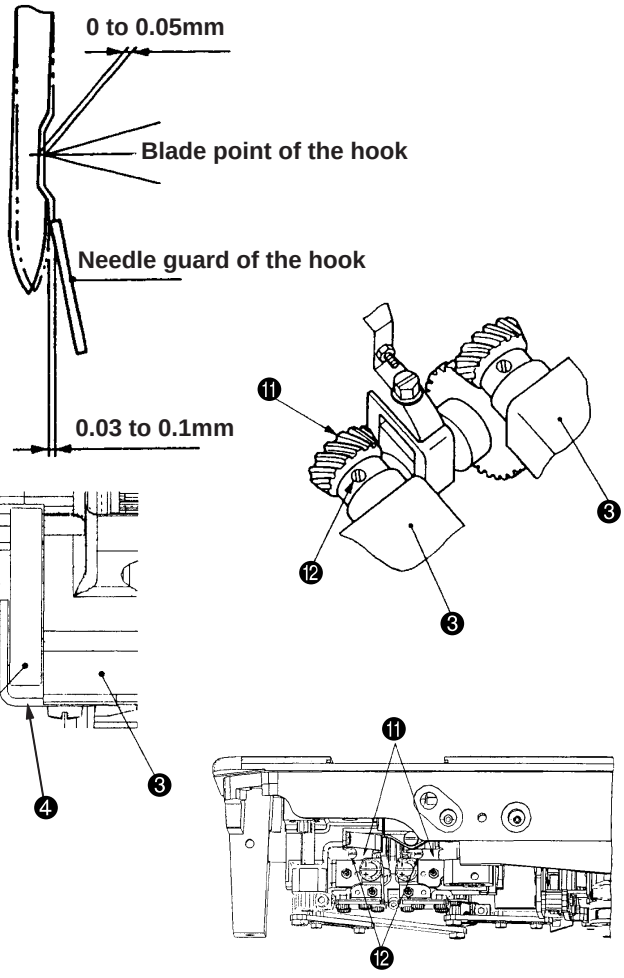
Condition
- o The needle bar ❾ ascends from the lowest dead point of its stroke.
- o Fed amount (stitch length)
  : 2.5mm (For G type, it should be set at 3.5mm)
  (For F type, it should be set at 2mm)



o LH-4128
LH-4128-7



o LH-4168-7
LH-4188-7



Application	A (mm)	B (mm)
S.G.F	2.2	1.2

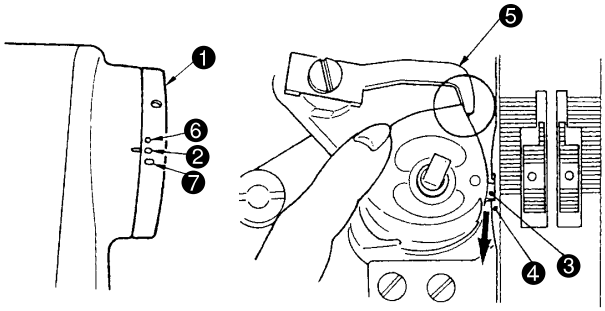
Adjustment Procedure	Results of Improper Adjustment
1) List of the needle bar **2) Clearance between the needle and the blade point of the hook** o To adjust the clearance between the needle and the blade point of the hook and the needle gauge 1. For the sewing machine provided with a thread trimmer, loosen the setscrew ❽ of the connector link ❻. Loosen the setscrews ❶ and ❷ of the hook shaft base ❸. 2. For the sewing machine of which sewing specification is S, or A, set the stitch dial at 2.5 on the scale. For the sewing machine of which sewing specification is G, set the stitch dial at 3.5 on the scale. For the sewing machine of which sewing specification is F, set the stitch dial at 2 on the scale. 3. Raise needle bar ❾ from the lowest dead point of its stroke by dimension A. At this time, align the lower marker line engaged on needle bar ❾ with the bottom end face of needle bar rocking base ❿, and the lift of the needle bar will be 2.2mm. 4. Move the hook shaft base ❸ to the right or left so that the specified clearance of 0 to 0.05mm is secured between the needle and the blade point of the hook and that the needle guard attains the specified effective amount of 0.03 to 0.1mm. Then, tighten the setscrews ❶ and ❷ to fasten the hook shaft base ❸. 5. Install the connector link ❻ by means of the hinged screw ❽. At that time, keep the moving knife driving arms ⓭ and ⓮ pressed against the moving knife driving arm stopper ❼ respectively and fix the setscrew ❽. **(Caution) 1. Confirm that the lower shaft gear ❺ has no unwanted contact with the lower shaft gear guide ❹.** **2. If the hook shaft base setscrew ❷ is tightened too much, a lower shaft torque may be generated, thus giving rise to seizure. (Tightening torque: 2.9N•m)** **3. In the case of the sewing machine provided with a thread trimmer, confirm the initial position of the moving knife after the completion of adjustments. Refer to 5.- (12) – 1) Moving knife position.** **3) Position of the needle and the blade point of the hook** o To change the position of needle and the blade point of the hook 1. Loosen the three setscrews ⓬ of the hook shaft screw gear ⓫. 2. Let the hook blade tip coincide with the center of the needle to secure Size B and tighten the setscrew ⓬.	o Stitch skipping or thread breakage will result.

(3) Initial position of the bobbin case opening lever

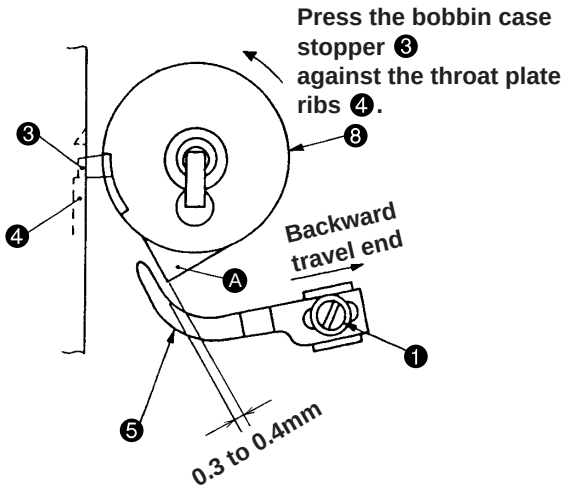
Standard Adjustment

o LH-4128, 4128-7, 4168-7

When adjustment is based on the central point ❷ (green engraved marker line) of the 3-serial engraved marking, the amount of opening for the inner hook stop ❸ and the throat plate rib ❹ becomes 0.3mm (standard adjusting value).

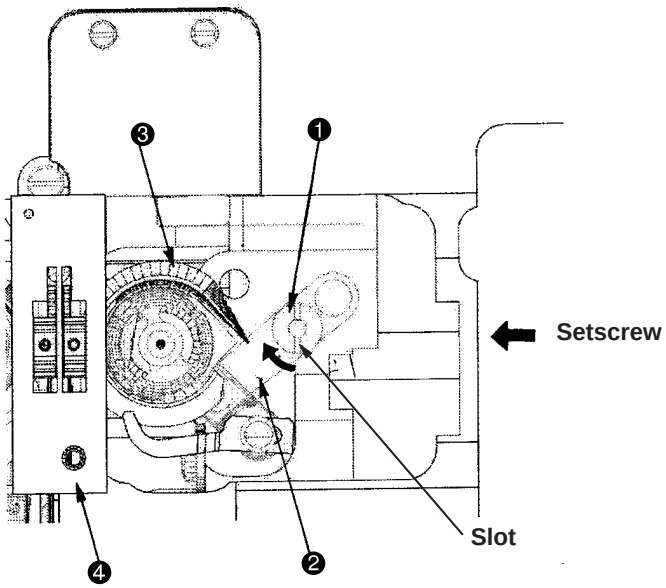


o LH-4188-7



(4) Standard adjusting position for the inner hook guide arm shaft

Standard Adjustment



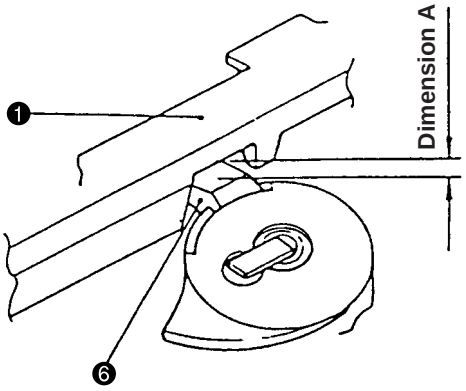
Adjustment Procedure	Results of Improper Adjustment
o LH-4128, 4128-7, 4168-7 1. Adjust the hand wheel ❶ to the central point ❷ of the green engraved marker line of the 3-serial engraved marking, and press the inner hook claw in the direction of the arrow. In this state, apply the inner hook guide ❺ to the inner hook and fix it. 2. When the inner hook guide ❺ is fixed to the position of the smaller engraved marking ❻, the amount of opening for the inner hook stop ❸ becomes small. When the inner hook guide ❺ is fixed to the position of the larger engraved marking ❼ the amount of opening for the inner hook stop ❸ becomes large. o LH-4188-7 1. Turn the hand wheel ❶ in the normal direction (counterclockwise) to bring the inner hook guide ❺ to the extreme rear position. 2. Turn the bobbin case ❽ in the direction of the arrow and apply the inner hook stop ❸ to the throat plate rib ❹ (groove of the throat plate). 3. Loosen the setscrew ❶ of the inner hook guide ❺ and adjust the clearance to 0.3 to 0.4 mm between the inner hook guide ❺ and the embossed part Ⓐ of the bobbin case ❽. After adjustments, tighten the setscrew ❶.	When it stays on the side of the shorter engraved marking o Towel-face stitches, loosened stitches or thread breakage will result. When it is adjusted faster than the longer engraved marking o The bobbin case may break. If the clearance between the bobbin case and the bobbin case opening lever is large than the specified value: o Towel-face stitches, loosened stitches or thread breakage will result. If the clearance is smaller than the specified value: o The bobbin case may break.

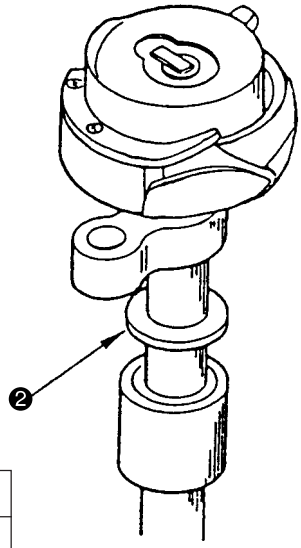
Adjustment Procedure	Results of Improper Adjustment
1. In regard to the standard adjusting position for the inner hook guide arm shaft ❶ (eccentric shaft), loosen the setscrew to turn the inner hook guide arm shaft ❶ in the direction of the arrow, turn it further when the inner hook guide link ❷ comes closest to the hook ❸, and tighten the setscrew where the slot of inner hook guide arm shaft ❶ becomes parallel to the throat plate ❹, as illustrated.	

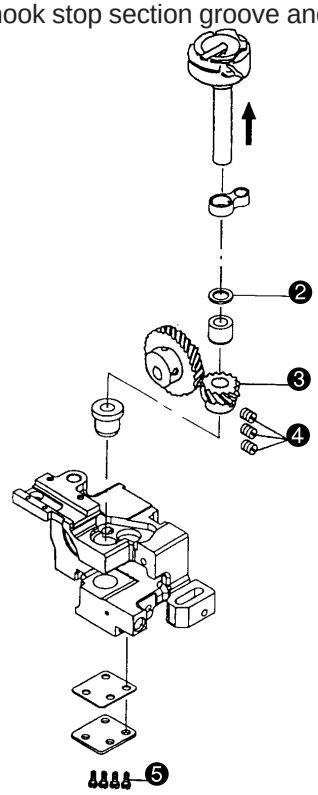
(5) Clearance between the throat plate and the bobbin case stopper

Standard Adjustment

o Size A (mm) of a clearance between the upper plane of the throat plate ❶ hook stop section groove and the upper plane of the inner hook stop section ❻.







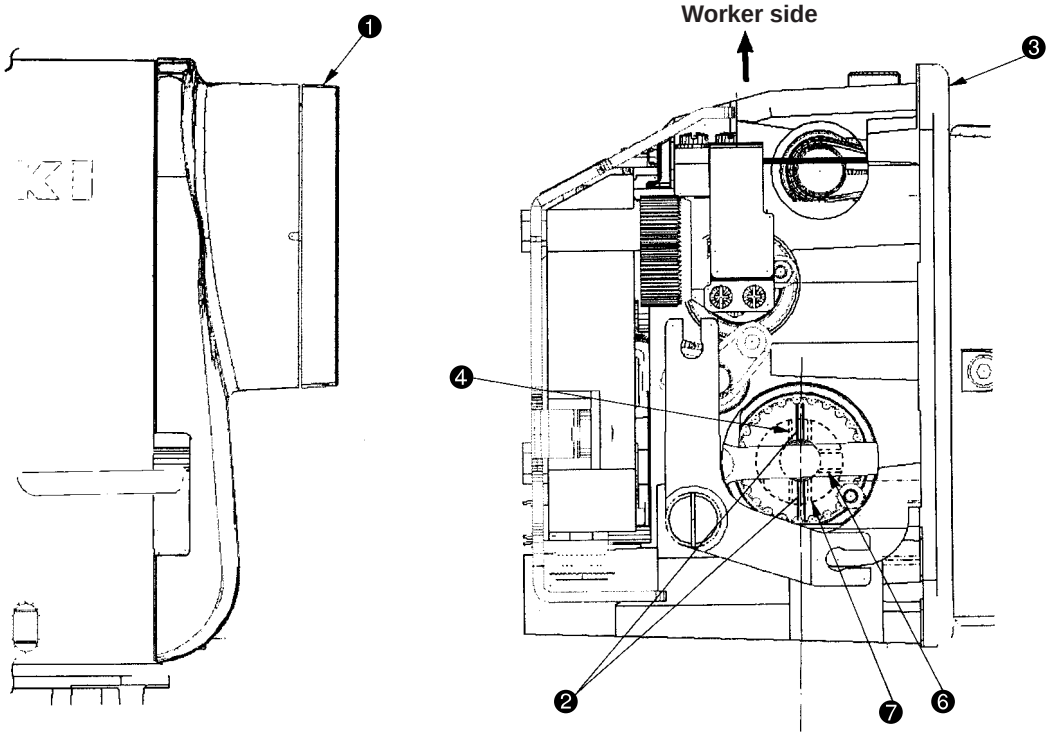
Model	Dimension A (mm)
LH-4128	0.8±0.1mm
LH-4128-7	
LH-4168-7	0.9±0.1mm
LH-4188-7	1.0±0.1mm

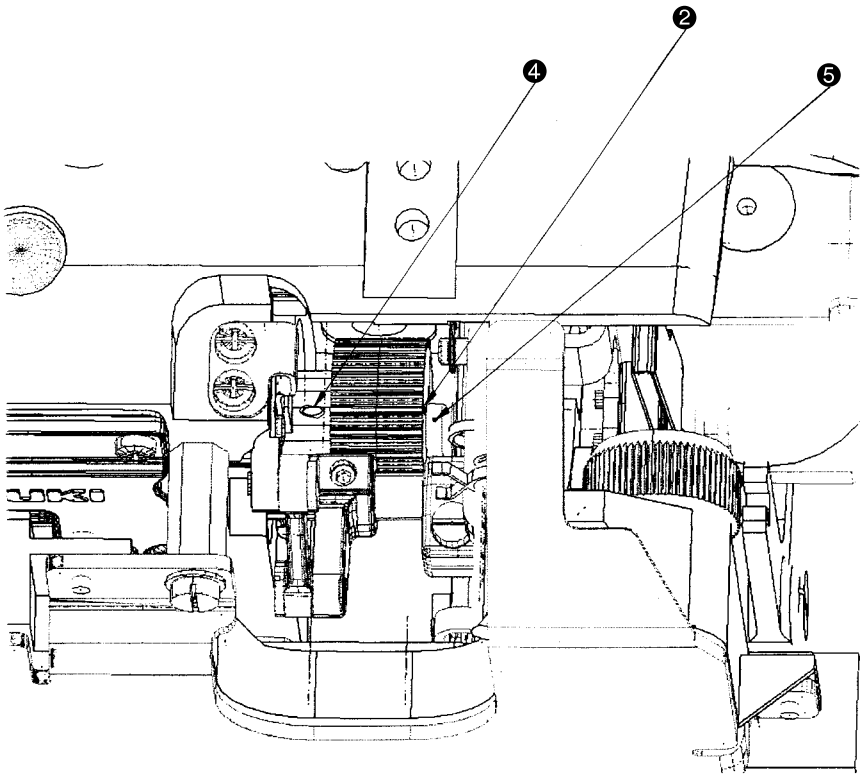
Part No.	Name of part	Engraved mark	Thickness (mm)
10109700	Hook driving shaft upper bushing thrust plate A	0	1
10110906	Hook driving shaft upper bushing thrust plate C	1	1.1
10111003	Hook driving shaft upper bushing thrust plate D	2	1.2
10111102	Hook driving shaft upper bushing thrust plate E	3	1.3
10111201	Hook driving shaft upper bushing thrust plate F	4	1.4
10109809	Hook driving shaft upper bushing thrust plate B	5	1.5
10112506	Hook driving shaft upper bushing thrust plate G	6	1.6
10112605	Hook driving shaft upper bushing thrust plate H	7	1.7
10112704	Hook driving shaft upper bushing thrust plate K	8	1.8
22614002	Hook driving shaft upper bushing spacer A	A	1.9
22614101	Hook driving shaft upper bushing spacer B	B	2.0
22614200	Hook driving shaft upper bushing spacer C	C	2.1
22614309	Hook driving shaft upper bushing spacer D	D	2.2
22614408	Hook driving shaft upper bushing spacer E	E	2.3
22614507	Hook driving shaft upper bushing spacer F	F	2.4

Adjustment Procedure	Results of Improper Adjustment
1. Remove the throat plate ❶ bobbin case opening lever, feed dog and needle. 2. Loosen three screws which are used to secure the hook driving shaft gear. 3. For the sewing machine equipped with a thread trimmer, remove the counter knife. 4. Draw out the hook upwards. 5. Replace the thrust plate and spacer ❷ of the hook driving shaft upper bushing with appropriate ones. * Thrust plate and spacer ❷ of the hook driving shaft upper bushing are prepared respectively the sewing machine with/without a thread trimmer. **(Caution) 1. For this type of sewing machine, the bottom section of the hook shaft is sealed with gaskets. Therefore, if any air pressure is exerted, loosen the bottom screws ❺ (4 pcs.) used to fix the hook shaft base from the bottom. Then, tighten the setscrews ❹ (3 pcs.) of the hook shaft screw gear ❸ under the condition of no air pressure.**	If the clearance provided between the throat plate and the bobbin case stopper is larger than the specified value: o The bobbin case may come off the throat plate. If the clearance provided between the throat plate and the bobbin case stopper is smaller than the specified value: o Isolated idling loops will result. o Moving knife will come in contact with the hook at the time of thread trimming.

(6) Relation between the main shaft and the lower shaft

Standard Adjustment



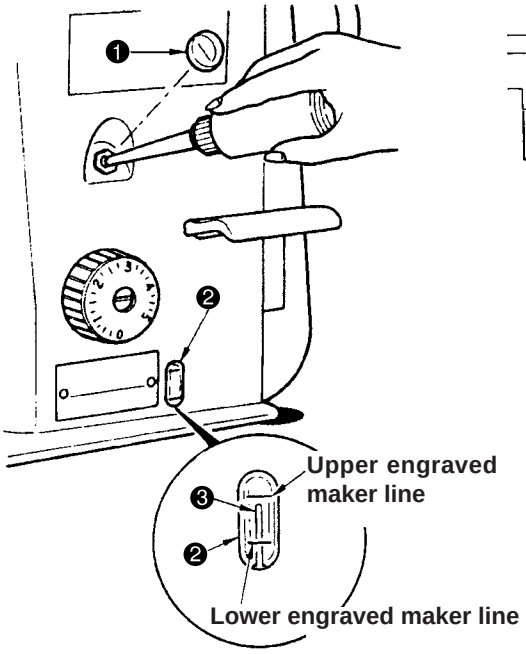


Adjustment Procedure	Results of Improper Adjustment
1. Turn the hand wheel ❶ until it reaches the lower dead point of the needle bar. 2. Confirm that the engraved marker line ❷ of the sprocket is in parallel to the upper plane ❸ of the bed and that the first screw ❹ of the sprocket is located on the worker side. 3. Adjust the engraved marker dot ❺ of the lower shaft to the engraved marker line ❷of the sprocket. Then, fasten the first screw ❹ of the sprocket and the second screw ❻. (The third screw ❼ shall be used for bottom feed.)	If the relation between the main shaft and the hook driving o Thread trimming timing, needle entry in the feed dog slot and feed timing will change, causing the sewing machine to be locked. So, carefully adjust the relation between the aforementioned shafts.

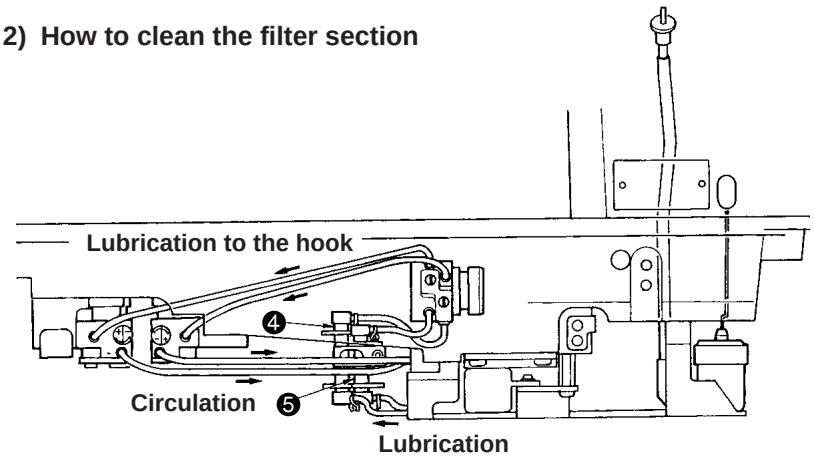
(7) Lubrication

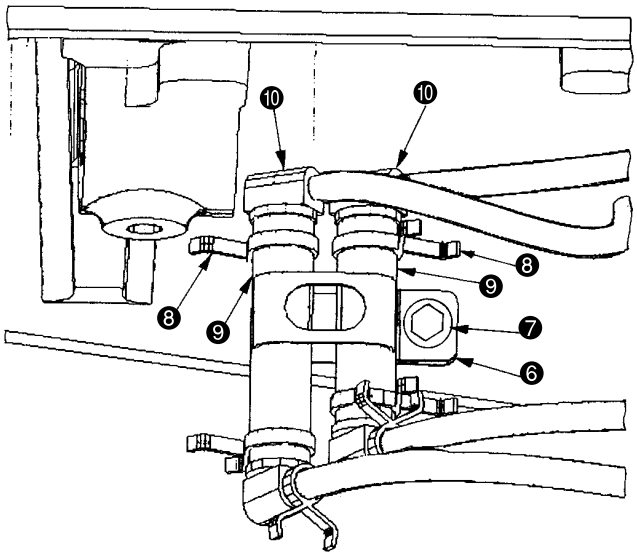
Standard Adjustment

1) Lubrication system



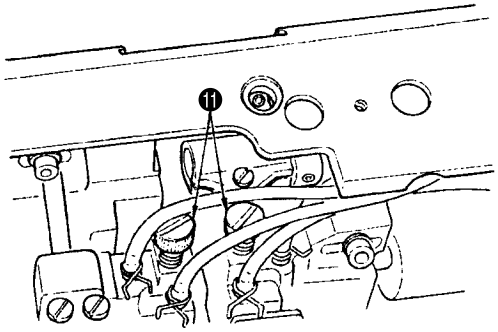
2) How to clean the filter section

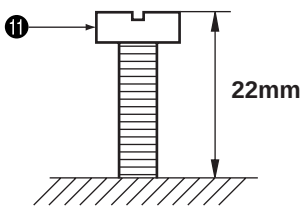


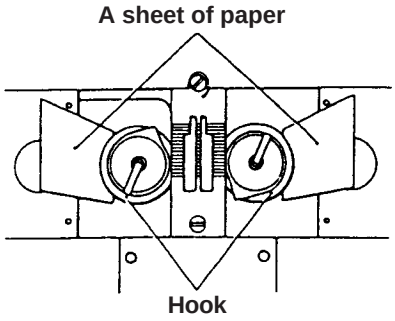


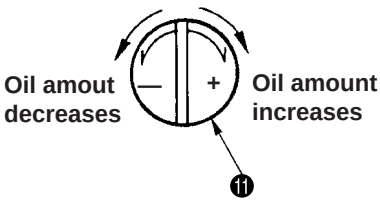
3) Hook oil amount

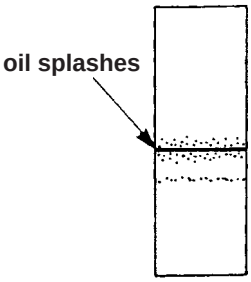
Condition:
After 30 seconds of idling, there shall be generation of oil splashes in 5 seconds.





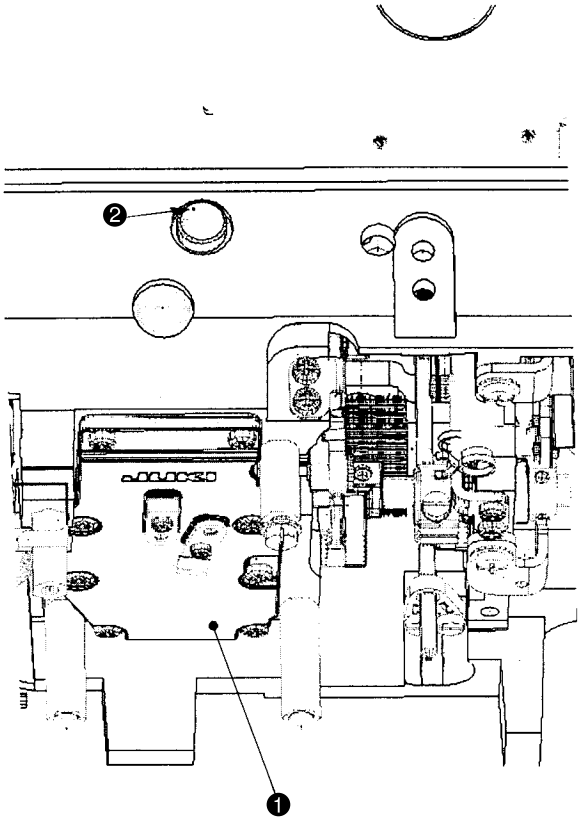






Adjustment Procedure	Results of Improper Adjustment
1) Lubrication system Fill the oil tank with oil for hook lubrication before operating the sewing machine. 1. Remove oil hole cap ❶ and fill the oil tank with JUKI New Defrix Oil No. 1 using the oiler supplied with the machine. 2. Feed the lubricant so that the tip of the oil amount indicating rod ❸ comes in between the upper and lower engraved marker lines of the oil amount indicating window ❷. In this case, note that excessive oil supplement will result in oil leakage from the air hole of the oil tank or failure in normal lubrication. 3. When you operate the sewing machine, refill oil if the top end of oil amount indicating rod ❸ comes down to the lower engraved marker line of oil amount indicating window ❷. **(Caution) 1. When you use anew sewing machine or a sewing machine after an extended period of disuse, use the sewing machine after performing break-in at 3,000 rpm or less.** **2. For the oil for hook lubrication, purchase JUKI New Defrix Oil No. 1 (Part No. : MDFRX1600C0).** **2) How to clean the filter section** Periodically (approximately once every three months), clean the filter sections ❹ and ❺ (two places). 1. Loosen the setscrew ❼ of the lubrication tube holder ❻ for removal from the bed. 2. Loosen the pipe stopper ❽ to take out the tube ❾ and the joint ❿. 3. Receiver the initial state after the removal of dust attached to the net area of the joint ❿. **3) Hook oil amount** The amount of oil can be adjusted with the oil amount adjusting screw ⓫ that is mounted on the hook shaft base. The amount of oil is increased when the oil amount adjusting screw ⓫ is turned clockwise, and is decreased when it is turned counterclockwise. The amount of oil is measured in five seconds. **(Caution) 1. Height of the oil amount adjusting screw ⓫ shall be adjusted to a standard of approximately 22mm.** **2. Be careful not to let the oil trace removal paper entangled around the hook.**	o If the amount of oil in the hook is insufficient, poorly-tensed seam will result. Furthermore, the hook will become hot causing seizure. o If the amount of oil in the hook is excessive, the thread will be stained with oil. The material will also be stained with oil.

4) Oil in the feed box

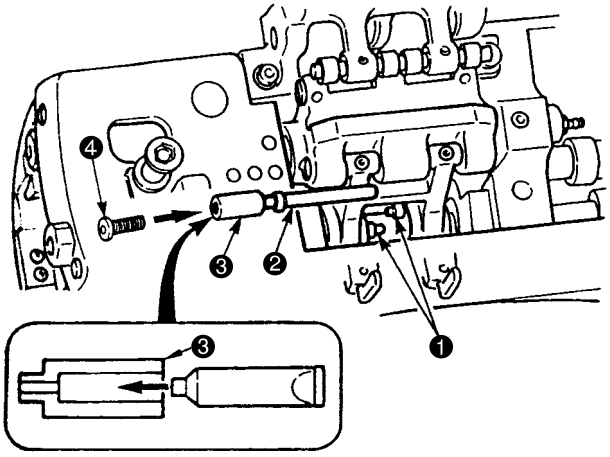


Adjustment Procedure	Results of Improper Adjustment
4) Oil in the feed box 1. The amount of oil in the feed box ❶ is 55cc. (The oil type shall be of JUKI New Defrix Oil No. 2. equivalent to ISO VG32) **(Caution) Unless any problem occurs, never open the feed box ❶.**	When the amount of oil is little o The lubricant is not carried as far as to the feed mechanism, thus causing the reduction of durability or the occurrence of rattles or abrasion. When the amount of oil is much o The oil may ooze out of the air relief hole ❷ on the side face of the bed.

Standard Adjustment

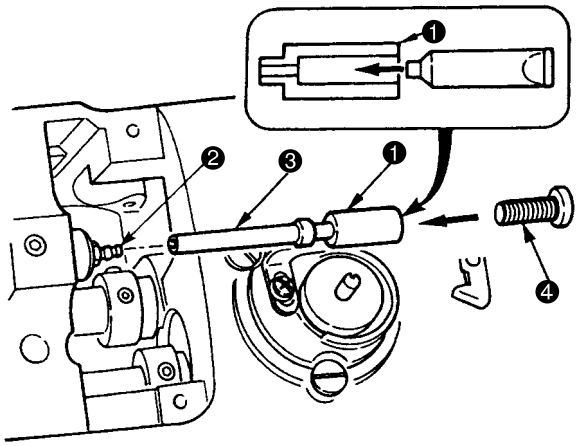
5) Replenishing grease to the specified places (for LH-4168-7, LH-4188-7 only)

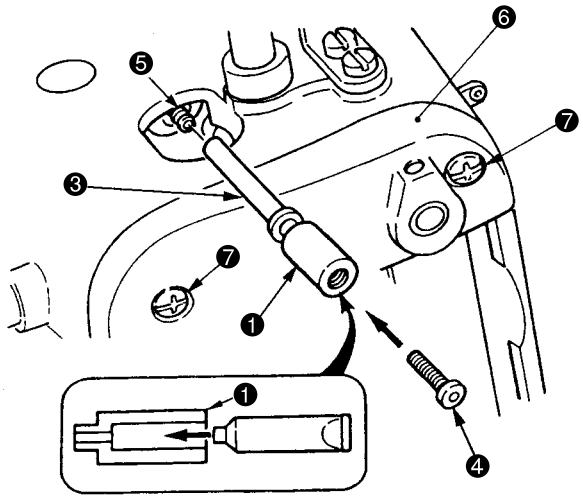
1. Replenishing grease to the needle bar drive cam section



Adjustment Procedure	Results of Improper Adjustment
5) Replenishing grease to the specified places (for LH-4168-7 , LH-4188-7 only) 1. After the sewing count (stitch count) exceeds a certain number, the error code, No. E220, is displayed on the control box (also displayed on the IP panel when IP-100 is used) at power-on and a warning beep sounds 5 times intermittently. This phenomenon indicates that it is time to replenish grease to the specified points. ★ **Therefore, be sure to replenish grease as described below, call the memory switch, No. 118, set the value to "1", and turn off the power.** 2. The machine is usable even after the error, No. E220, is displayed, but every time the power is turned on, the error, No. E220, is displayed and a warning beep sounds. Press the reset key to cancel the error when the IP panel is used. 3. In case that you use the machine after the error, No. E220, is displayed without grease replenishment to the specified points for a certain period, the error, No. E221, is displayed and the machine will not operate. The error cannot be canceled even after pressing the reset key when the IP panel is used. * In such a case, follow the operation marked with ★ in Step 1. described above. **(Caution) 1. After replenishing grease, call memory switch No.118, set the description to "1", and turn OFF the power. Otherwise, error No.E220 or error No.E221 is displayed again.** **2. For replenishing grease to the specified places below, use JUKI GREASE A TUBE (Part No. 40006323) or JUKI GREASE B TUBE (Part No. 40013640), supplied as accessories. If grease other than the specified one is used, breakage of components will be caused.** 1. Replenishing grease to the needle bar drive cam section 1) Remove the top face cover, and remove the rubber caps attached to the nipples ❶. 2) Fill joint ❸ supplied as accessories with JUKI grease A from the grease tube. 3) Connect pipe ❷ with nipples ❶, turn screw ❹ supplied as accessories to joint ❸, and replenish the joint with JUKI grease A. **(Caution) Replenish the joint with grease by repeating JUKI grease A filling of step 2) when the first replenishing is not enough.** 4) Fit the rubber caps to the nipples ❶, turn the main shaft by hand, and confirm that the rubber caps do not interfere with other components.	o If the main shaft is rotated with any rubber cap left dislodged, this rubber cap may be torn off. Turn the main shaft after attaching the rubber cap to the nipple ❶, without fail.

2. Center link section





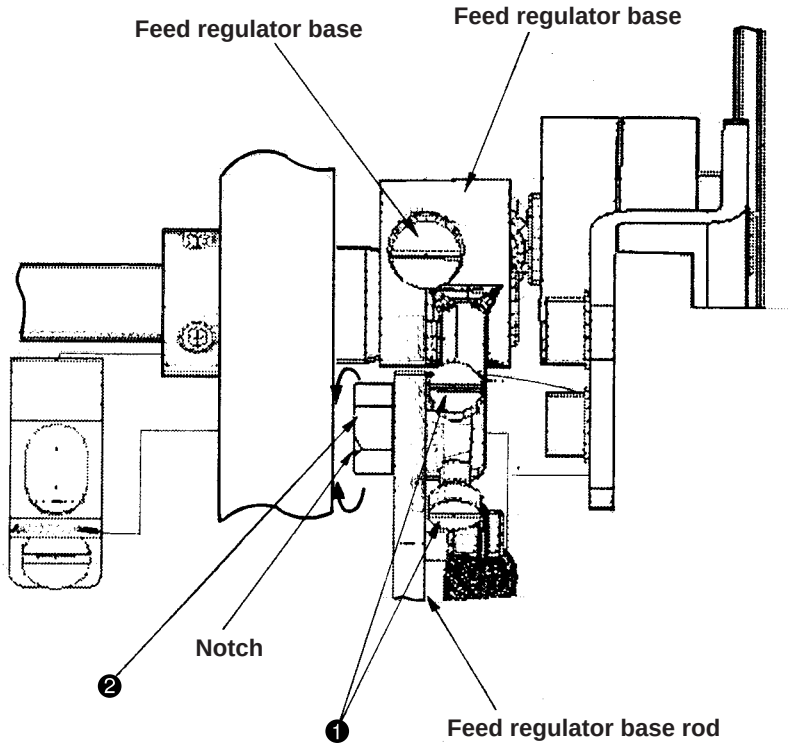
Adjustment Procedure	Results of Improper Adjustment
2. Center link section 1) Remove the rubber cap locates at the top surface of face section and the face plate. 2) Fill joint ❶ supplied as accessories with JUKI grease B from the JUKI grease B tube. 3) Connect pipe ❸ with nipple, right ❷, turn screw ❹ supplied as accessories to joint ❶, and fill the joint with grease. **(Caution) Replenish the joint with grease by repeating grease filling of step 2) when the first replenishing is not enough.** 4) With the same procedure as steps 2) and 3), fill the nipple, left ❺ with grease. At this time, pass the pipe ❸ through the rubber cap hole located at the top surface of the face section, and connect it with nipple, left ❺. Then, turn the supplied screw ❹ to the joint ❶, and fill the joint with JUKI grease B. 5) Return the face plate, rubber cap, and top face cover to their home places. **(Caution) 1. To confirm the amount of replenishing at all grease replenishing sections is performed by confirming that grease protrudes from the corresponding sections.** **2. Never remove the fulcrum shaft base of the fulcrum shaft base ❻.**	o When the setscrew ❼ is loosened and the position of the fulcrum shaft base ❻ of the rocking base is shifted once, this can be a cause of sewing machine torque and needle bar lock-up.

(8) Forward and reverse stitch pitches

Standard Adjustment

Conditions

o When the stitch dial is set at “3”, the difference in the stitch length between the normal feed stitching and reverse feed stitching should be 0.2mm or less.

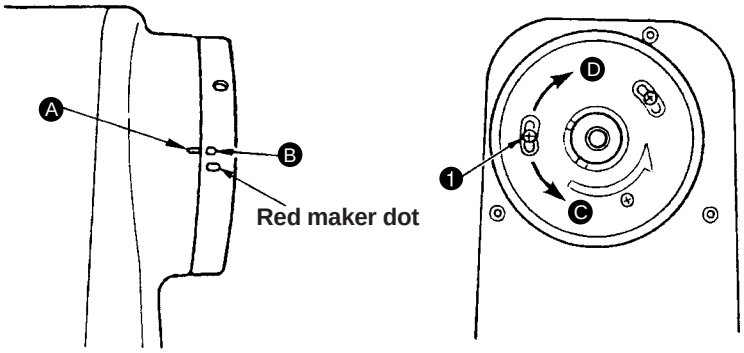


Adjustment Procedure	Results of Improper Adjustment
1. Set the stitch dial at “3”. 2. Loosen two screws ❶ in the feed regulator base. 3. Move feed regulator to base pin ❷ in the direction of the arrow to adjust so that a difference in stitch length becomes 0.2mm or less between the normal feed stitching and the reverse feed stitching. Fasten the setscrews ❶ (2 pcs.) of the feed regulator to base pin.	o The stitch length for reverse feed stitching will be different from that for the normal feed stitching.

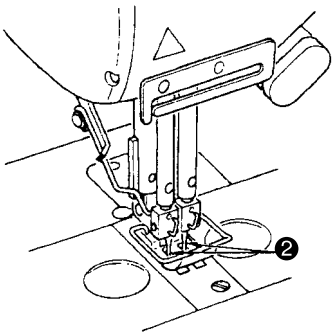
(9) Adjusting the needle stop position

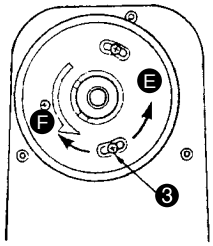
Standard Adjustment

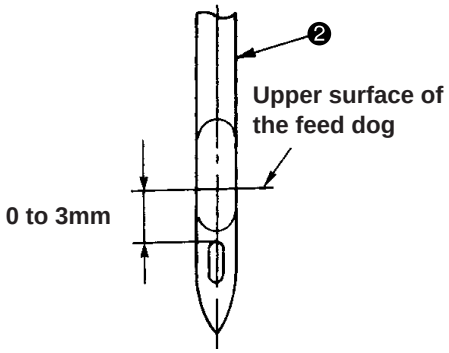
1) Needle-up stop position of the sewing machine

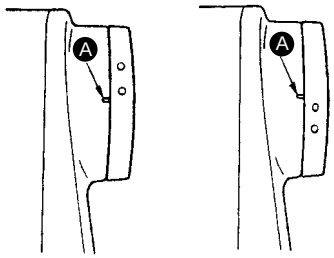


2) Needle-down stop position of the sewing machine



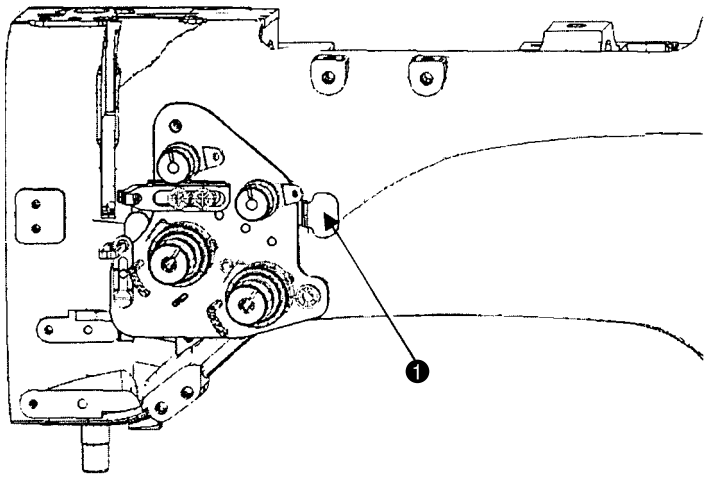


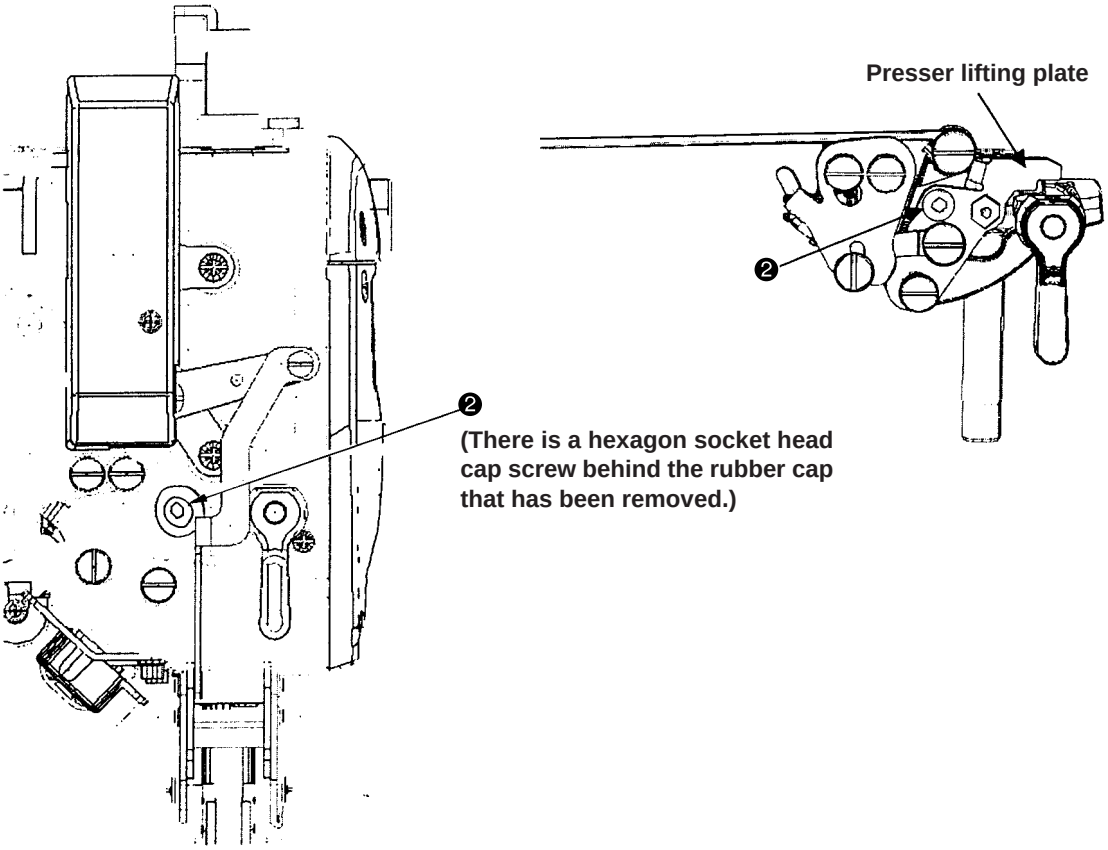


Adjustment Procedure	Results of Improper Adjustment
Stop position after thread trimming (1) The standard needle stop position is obtained by aligning marker dot Ⓐ on the pulley cover with white marker dot Ⓑ on the handwheel. (2) Stop the needle in UP position, turn OFF the power, and loosen screw ❶ to perform adjustment within the slot of the screw. The needle stop timing is advanced if you move the screw in the direction of Ⓒ. The needle stop timing is delayed if you move the screw in the direction of Ⓓ. **(Caution) Do not operate the machine with screw ❶ loosened. Just loosen the screw, and do not remove it.**	 **Early** **Late** o If the needle-up stop position of the sewing machine is not properly adjusted, thread trimming failure will result. The cam roller will not come off the thread trimming cam at the time of thread trimming, but will come off from the cam at the start of next sewing with a noise.
Lower stop position (1) When the pedal is moved from front part depression to neutral, the lower stop position of the needle ❷ will be located in the section where the needle ❷ thrusts the feed dog and the upper end of the needle hole coincides with the upper surface of the feed dog. (2) Like stoppage in UP position, stop the needle ❷ in DOWN position, turn the power OFF, and loosen the screw ❸ within the range of the oblong hole. The needle stop motion is fastened if the screw is moved in the direction of Ⓔ, and delayed if it is moved in Ⓕ. **(Caution) Do not operate the machine with screw ❸ loosened. Just loosen the screw, and do not remove it.**	o The timing to detect the needle-down stop position of the sewing machine should be advanced the most. If the timing is retarded, troubles will result such that the thread trimmer fails to cut the thread, reverse-feed stitches may not to be sewn accurately on the normal-feed stitches at the time of automatic reverse stitching or the needle thread will be insufficiently tensed at the corner of a material at the time of sewing the corner.

(10) Disc release changeover for lap lifter

Standard Adjustment

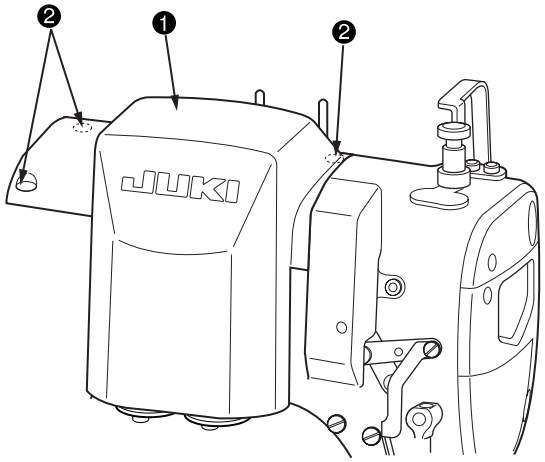




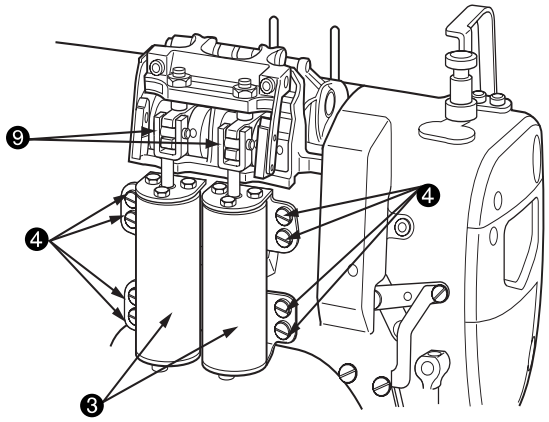
Adjustment Procedure	Results of Improper Adjustment
o LH-4128-7, 4168-7, 4188-7 The lap lifter and the thread tension release are not interactive at the time of shipment. When loosening the thread, press the disc releasing plate ❶ to lift the disc. 1. When interlocking the thread tension release (1) Remove the rubber cap. (2) Mount and fix the hexagon socket head cap screw ❷ (supplied). **(Caution) 1. Thread slacks when turning cloth at the corner stitching, and sewing trouble of thread tension release may occur.** **2. When the wiper is not used at the time of thread trimming, needle thread may be drawn out when removing cloth.** **3. When removing the hexagon socket head cap screw ❷, make sure not to drop it in the machine head.**	

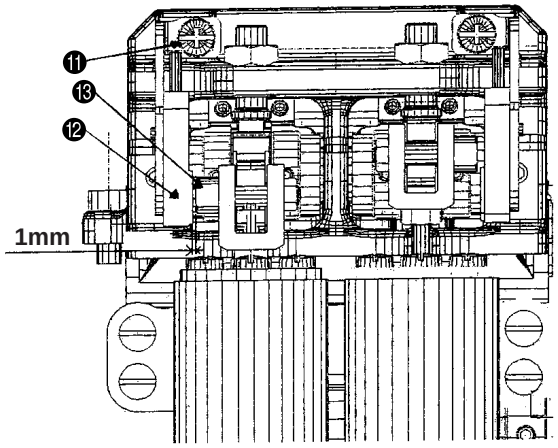
(11) Needle bar stroke adjustment (for LH-4168-7, LH-4188-7 only)

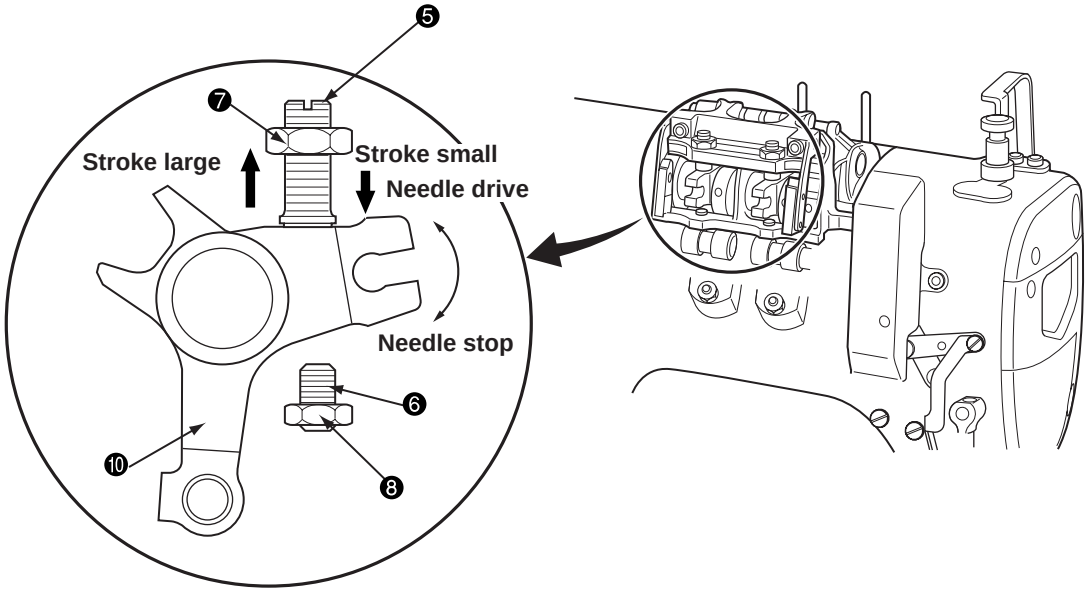
Standard Adjustment



Model	Dimension A (mm)
LH-4168-7	31.6±0.2mm
LH-4188-7	32.6±0.2mm





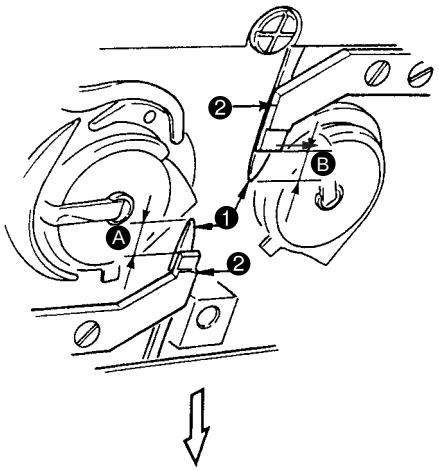


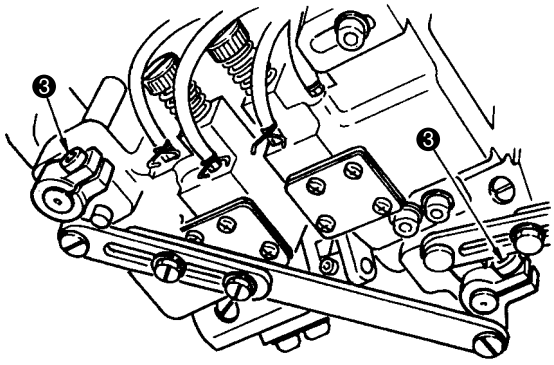
Adjustment Procedure	Results of Improper Adjustment
1. Remove the three screws ❷, and remove the top cover ❶. 2. Remove the eight screws ❹, and remove the changeover solenoid ❸. 3. Adjust the needle bar stroke by adjusting the amount of screw-in of the needle drive stopper ❺. Loosen the nut ❼ and adjust the amount of screw-in of the needle drive stopper ❺. After adjustments, tighten the nut ❼ again. As the needle drive stopper ❺ is screwed in downwards, the amount of stroke begins to decrease. When it is returned upwards, the amount of stroke begins to increase. Adjust the needle bar stroke to Size A. **(Caution) When the amount of stroke is adjusted, the needle bar height is changed at the same time. Therefore, adjust the as per 5.-(1)-3) Needle bar height.** 4. Based on the amount of needle stopper ❻ screw-in, adjust the needle bar stroke to 0 ± 0.2mm in the position of needle stop. Loosen the nut ❽ and adjust the amount of screw-in of the needle stopper ❻. Since then, tighten the nut ❽ again. 5. Install the changeover solenoid ❸ by means of eight screws ❹. Confirm that the knuckle ❾ has a play in the revolving direction in both cases when the changeover lever ❿ stays on the needle drive side and needle stop side. 6. Loosen the sensor mounting screw ⓫ and tighten the sensor mounting screw ⓫ again after a clearance of 1mm has been secured between the unilateral needle sensor ⓬ and the solenoid knuckle pin ⓭. 7. Fasten the top cover ❶ with three screws ❷.	o If no play is provided and some mechanical mismatch is present, this can be a cause of solenoid shaft destruction or similar problem.

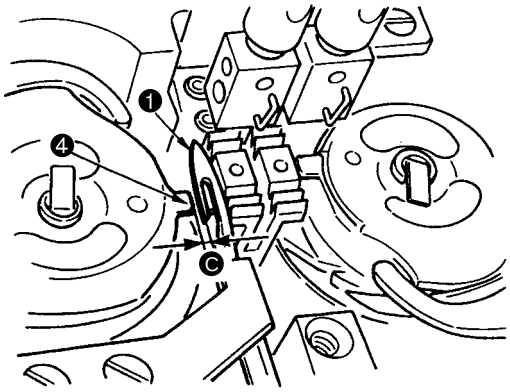
(12) Thread trimming device

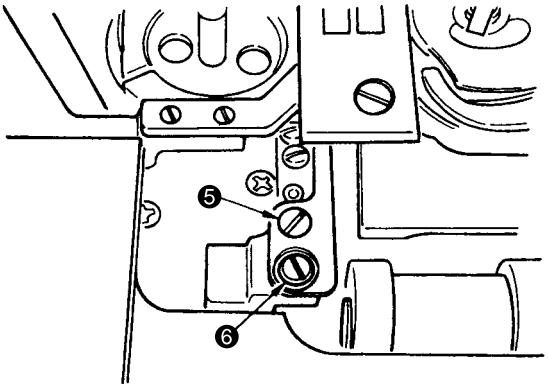
Standard Adjustment

1) Moving knife position

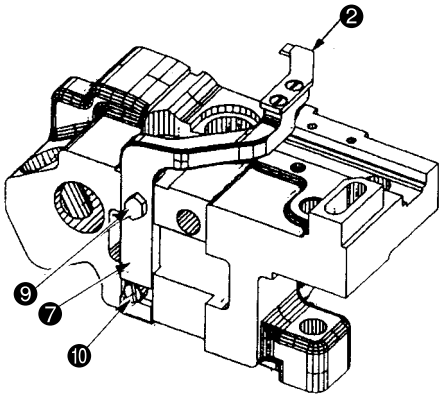


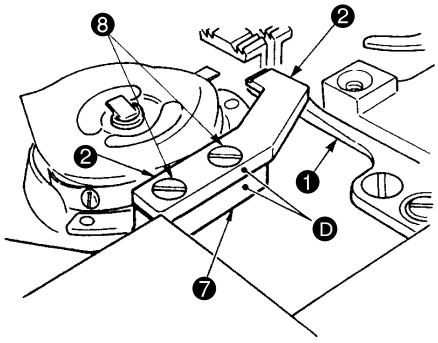


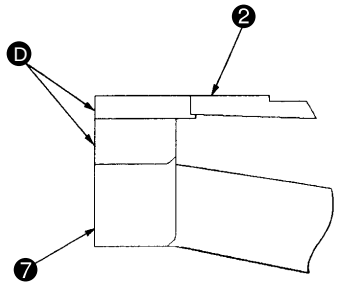




2) Adjusting the height of the counter knife



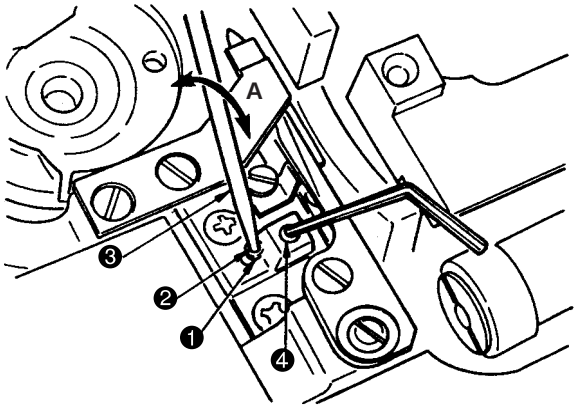




Adjustment Procedure	Results of Improper Adjustment
1) Moving knife position 1. Loosen and adjust the connector screw ❸ on the rear side of the bed so that Distance Ⓐ between tip of the standby moving knife ❶ and that of the counter knife ❷ becomes identical with Dimension Ⓑ. Dimension Ⓑ { 4128-7 3.1±0.2mm 4168-7 3.3±0.2mm 4188-7 3.3±0.2mm 2. The clearance Ⓒ between the moving knife ❶ in moving phase and the inner hook ❹ shall be 0.4 ± 0.1mm. This adjustment is possible by loosening the moving knife setscrews ❺ and ❻.	o Any deviation from this adjusting value can cause failure in thread trimming due to poor thread spreading.
2) Adjusting the height of the counter knife 1. Align the counter knife base ❼ with the plane Ⓓ of the counter knife ❷ and tighten the setscrew ❽. 2. Loosen the setscrew ❾ of the counter knife base ❼ and change its height with the eccentric pin ❿ to adjust the pressure of the counter knife ❷.	o If the counter knife pressure is too high, this can be a cause of failure in returning to the standby position of the thread trimmer lock and the moving knife ❶. o If the counter knife pressure is too low, failure in thread cutting may occur.

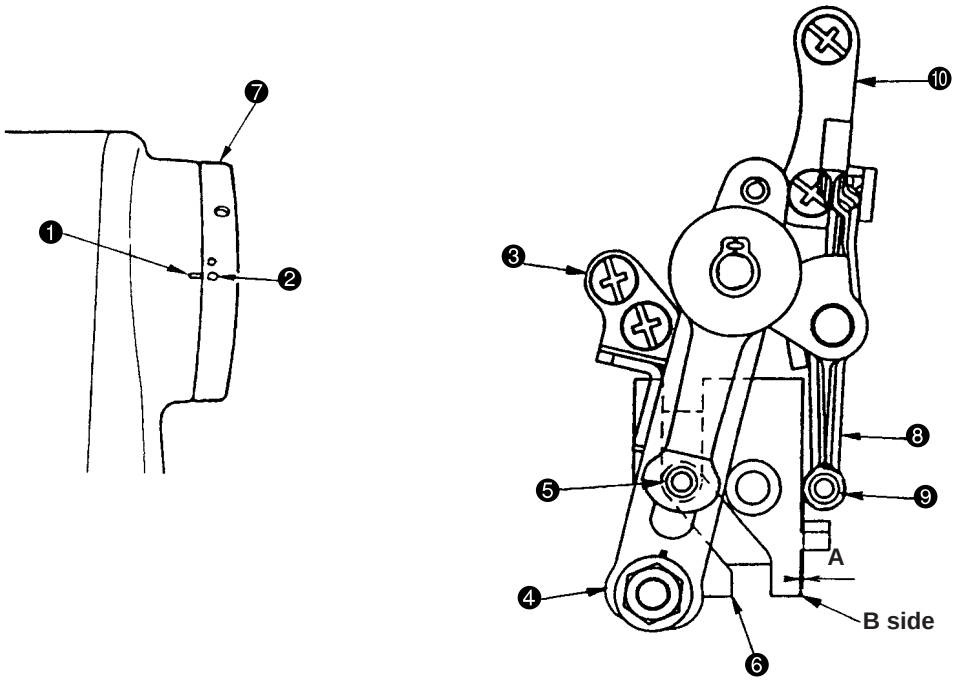
Standard Adjustment

3) Adjusting the thread presser spring



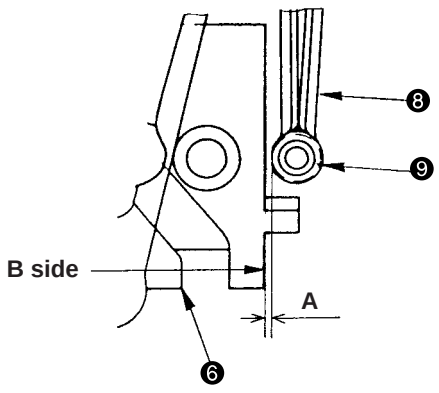
Adjustment Procedure	Results of Improper Adjustment
3) Adjusting the thread presser spring 1. Insert a rod ❸ (thin rod, wrench, etc.) into adjusting hole ❷ in thread presser spring base ❶, and loosen setscrew ❹ with a hexagonal wrench key of 1.5 mm. 2. Adjust the thread presser spring by rod ❸ in the direction of arrow mark A, and fix it with setscrew ❹. **(Caution) Clamp trouble occurs even when the thread presser spring pressure is excessive or insufficient. So, be careful.**	

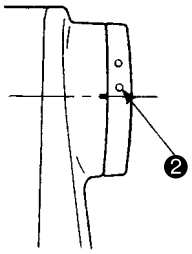
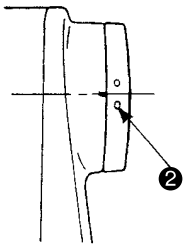
4) Position of the thread trimming cam and the thread trimming timing



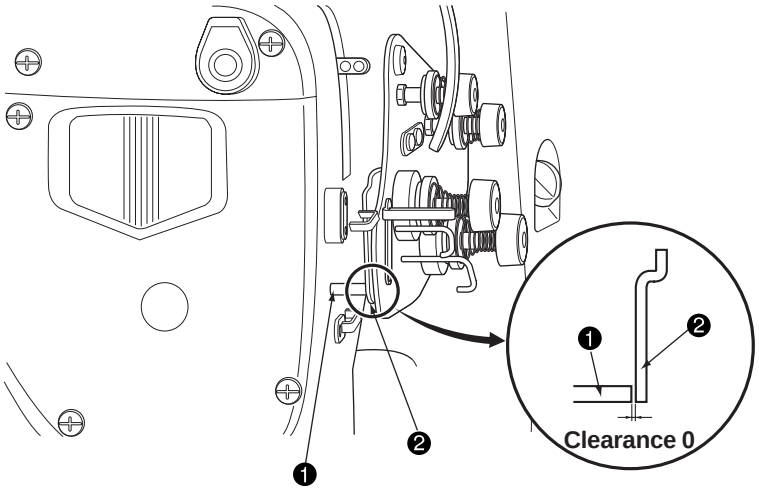
5) Clearance between the thread trimming cam and the thread loosening arm

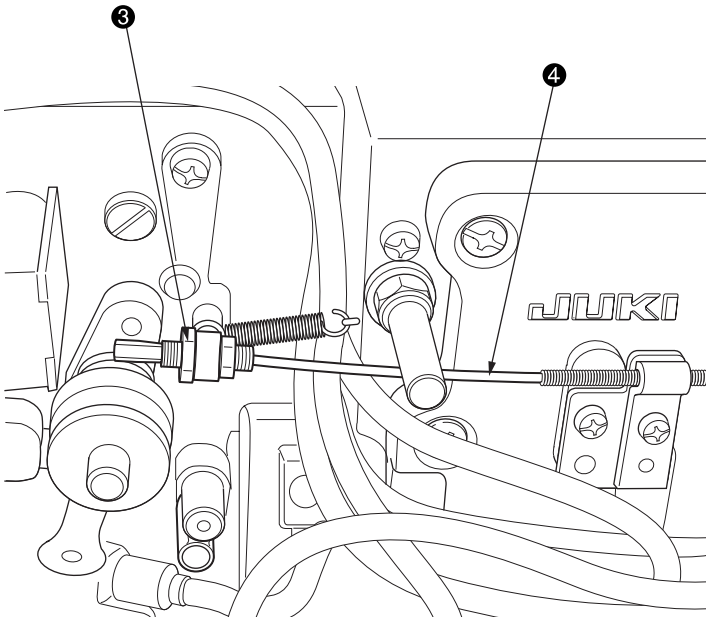
Enlarged Part A in the top right diagram



Adjustment Procedure	Results of Improper Adjustment
4) Position of the thread trimming cam and the thread trimming timing 1. Let the arm's engraved marker dot ❶ coincide with the engraved marker dot (red) of the hand wheel ❷. 2. In the state that the knife driving arm ❹ is keeping contact with the stopper ❸ of the thread trimmer driving arm, push in the cam roller ❺ and set it in the groove of the thread trimming cam ❻. 3. In this state, turn the thread trimming cam ❻ as far as the illustrated position. In this position (midpoint where the groove shape of the thread trimming cam ❻ changes from straight to diagonal), tighten the tightening screws (2 pcs.) of the thread trimming cam ❻. o Checking the thread trimming timing 1. Push in the cam roller ❺ until it assumes the posture being settled in the cam groove. 2. Turn the hand wheel ❼ in the direction opposite to the sewing machine revolving direction and stop it where it is hooked. Confirm in this case that the engraved marker dot (red) of the hand wheel ❷ exactly coincides with the arm's engraved marker dot ❶. o Thread trimmer cam position check 1. In the state that the thread trimmer drive arm stopper ❸ keeps contact with the knife drive stopper ❹, turn the hand wheel ❼ so that the groove-state straight section of the thread trimmer cam ❻ comes to the position of the cam roller ❺. 2. Confirm that the cam roller ❺ does not involve any mechanical mismatch in that position and it can be pushed in the groove of the thread trimmer cam ❻.	 **Thread trimming timing is excessively advanced.**  **Thread trimming timing is excessively retarded.** If the thread trimming timing is excessively advanced: o Needle thread will come of the needle eyelet. o Thread trimmer will fail to operate normally, which will result in thread trimming failure. o Needle thread clamp failure will occur at the time of thread trimming. If the thread trimming timing is excessively retarded: o The needle will interfere with the wiper. o Thread trimming failure will occur.
5) Clearance between the thread trimming cam and the thread loosening arm 1. Push in the thread relieving arm ❽. 2. At that time, adjust the position of the stopper ❿ so that Clearance A of 0.5mm is secured between Face B on the right end face of the thread trimming cam ❻ and the roller section ❾ of the thread relieving arm ❽.	When the clearance is large: o The amount of disc floating in the disc floating mechanism becomes insufficient and a thread trimming error is caused. When the clearance is small: o The roller section ❾ comes in contact with the thread trimming cam ❻ and the thread trimmer cannot function.

6) Adjustment of thread tension release

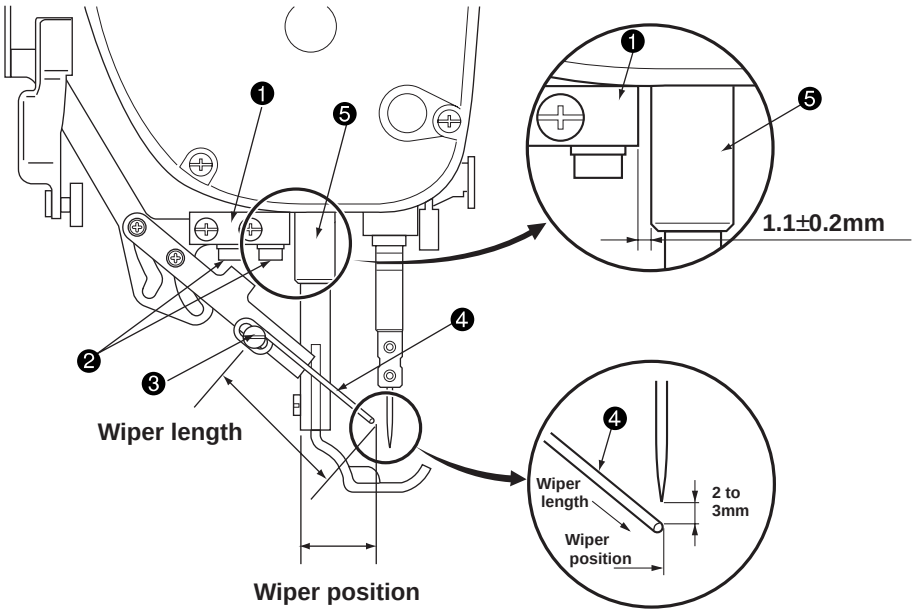




Adjustment Procedure	Results of Improper Adjustment
6) Adjustment of thread tension release 1. Confirm that there is no play between the disc rise pin ❶ and the disc rise plate ❷. 2. If presence of some play is perceived, loosen the nut ❸ and shift the wire ❹ to the left side so that the clearance can be adjusted to zero between the disc rise pin ❶ and the disc rise plate ❷.	

(13) Wiper components

Standard Adjustment



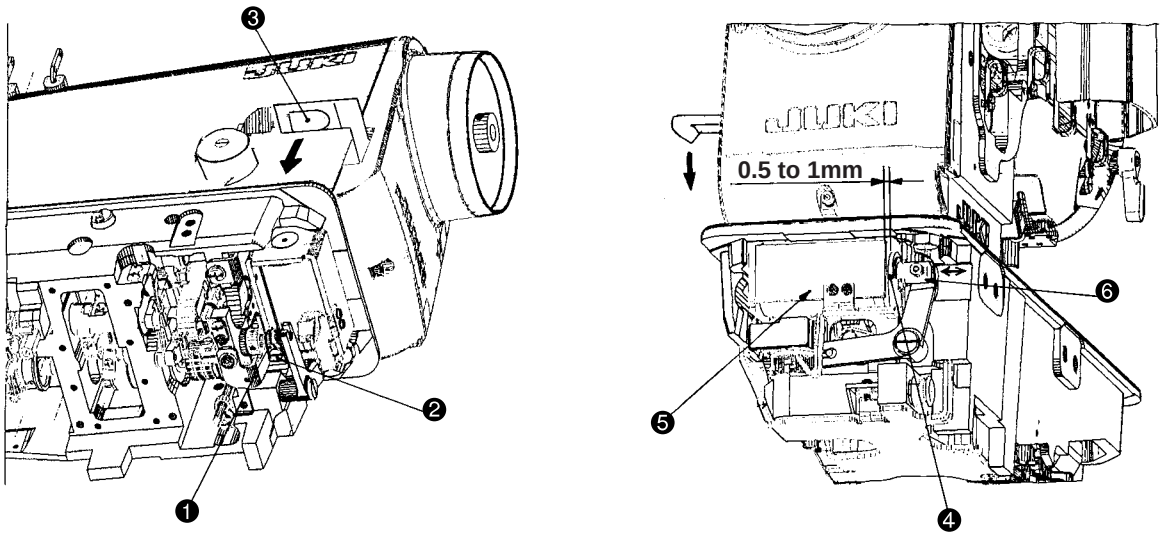
(14) Reverse solenoid position

Standard Adjustment

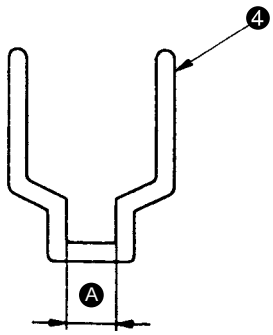
Conditions

o Stitch length (feed amount): Maximum

o A clearance of 0.5 to 1mm should be provided between the reverse feed solenoid ❺ and the plunger rubber washer ❹ when the reverse feed control lever ❸ is pressed sown until it will not go further.



Adjustment Procedure	Results of Improper Adjustment
1. Loosen the screw ❷ and then tighten it in the position where a clearance of 1.1±0.2mm is secured between the wiper base ❶ and the presser bar metal ❺. 2. Move the feed adjusting dial to MAX position. 3. Align the white engraved marker dot of the hand wheel to the engraved marker line of the pulley cover and move the wiper ❹ by hand. Loosen the screw ❸ to adjust the wiper ❹ and tighten the screw ❸ again when the clearance has been adjusted to 2 to 3mm while the wire tip comes closest to the tip of the wiper ❹. 4. Confirm that a clearance of more than 0.7mm is secured when the pulley is turned and the wiper ❹ comes closest to the needle clamp.	o If the wiper ❹ is too long the wiper will interface with the needle clamp while the sewing machine is no operation. o If the wiper ❹ is not correctly positioned the wiper will interfere with the needle clamp while the sewing machine is in operation. o If the wiper ❹ is not correctly positioned the wiper ❹ will come in contact with the needle while the wiper is in operation. (The needle may breaks.



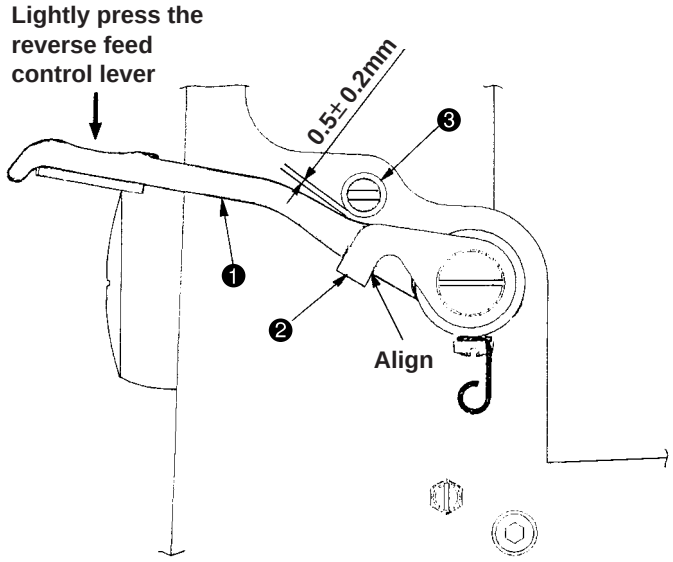
Gage size (inch)	Part No.	Dimension Ⓐ (mm)
3/22” to 3/8”	10209203	16
7/16” to 5/8”	10209500	24
3/4” to 7/8”	10209807	30
1” to 1 1/4”	10209906	37

Adjustment Procedure	Results of Improper Adjustment
1. Set the stitch dial to the max. value on the scale. 2. Loosen two screws ❷ in reverse feed solenoid mounting base ❶. 3. Press the reverse feed control lever ❸ until it stops, and move the plunger ❻ in the direction of the arrow. Adjust the clearance to 0.5 to 1mm between the rubber washer ❹ of the plunger ❻ and the side surface of the reverse feed solenoid ❺, and tighten the setscrew ❷. * This adjustment should be carried out after confirming that adjustments have been finished as per (15) Initial position of the reverse feed control lever.	If the clearance provided between the plunger radial plate and the reverse stitching solenoid is larger than the specified value: o The attraction of the magnet will be decreased. In this case, the machine fails to start reverse feed stitching. If there is no clearance provided between the plunger radial plate and the reverse stitching magnet: o The stitch length for reverse feed stitching ill be decreased.

(15) Initial position of the reverse feed control lever

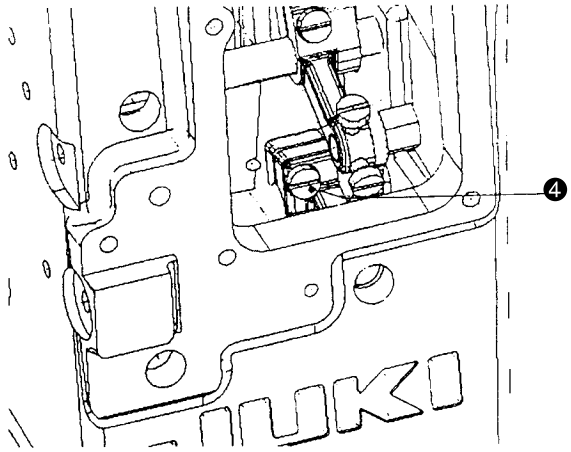
Standard Adjustment

1) Auto-back



Conditions

- o Stitch length (feed amount) should be maximized.
- o Lightly press the reverse feed control lever ❶ until the lever is aligned with the reverse feed link ❷, a clearance of 0.5 ± 0.2 mm should be provided between the reverse feed control lever ❶ and the back lever stopper ❸.

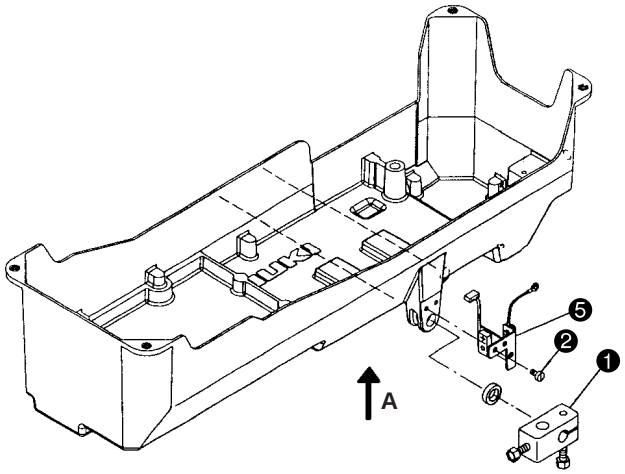


Adjustment Procedure	Results of Improper Adjustment
1) Auto-back 1. Set the stitch dial at the maximum value on the scale. 2. Lightly press reverse feed control lever ❶ down until it meets reverse feed link ❷. At this time, a clearance of 0.5 ± 0.2mm should be provided between reverse feed control lever ❶ and back lever stopper ❸. 3. If the clearance deviates from the range of 0.5 ± 0.2mm, loosen the screw ❹ and make the reverse feed lever ❶ coincide with the reverse feed link ❷. Adjust the clearance between the reverse feed lever ❶ and the back lever stopper ❸ to 0.5 ± 0.2mm and tighten the screw ❹. **(Caution) When the screw ❹ in the feed adjusting base is loosened, do not move the feed adjusting base in the axial direction of reverse feed control lever ❶. This will push the feed adjusting base against the reverse feed control lever. In this case, stitching troubles such as reduced stitch length for the reverse feed stitching will occur.**	If the clearance provided between the back lever stopper and the reverse feed control lever is 0 (zero): o This can be a cause of vibration sound from the reverse feed lever ❶. o Stitch length will be shortened. If the clearance provided between the back lever stopper and the reverse feed control lever is 0.7mm or more: o Stitch length will be reduced when performing reverse feed stitching.

(16) Assembling/adjusting the knee-lifter detecting device

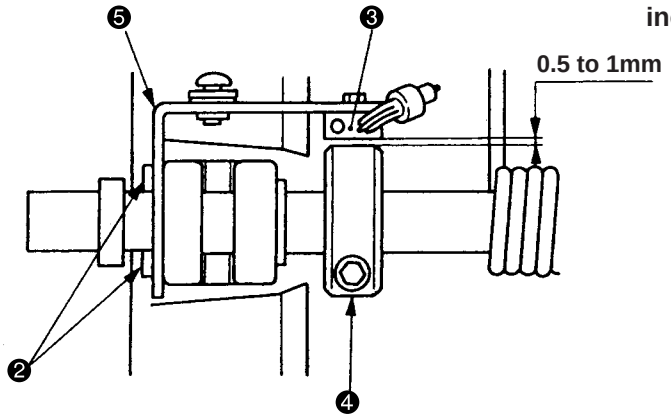
Standard Adjustment

1) Assembling the knee-lifter detection sensor plate (asm.)



(Caution) To use the knee-lifter, be sure to set the function to lift the presser foot after thread trimming (function setting No.055 of the control box) inoperative ("0": off).

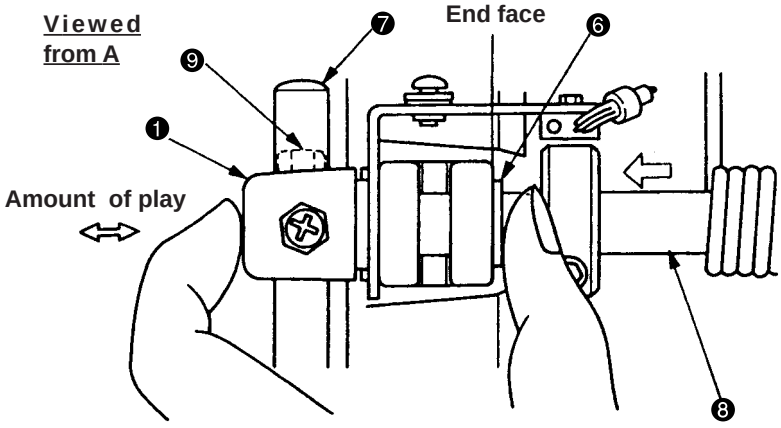
Viewed from A



Condition:
Clearance provided between knee-lifter detection sensor ❸ and knee-lifter detection seat (asm.) ❹ =0.5 to 1.0 mm

2) Assembling the knee-patch plate (asm.)

Viewed from A



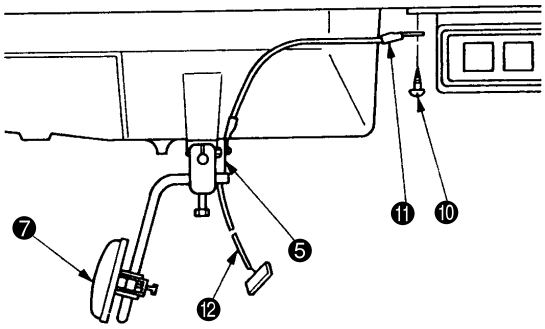
Condition:
Play in the knee-patch plate horizontal shaft ❽ in the axial direction: Approx. 0.2 mm

*** The knee-patch plate and other parts are excluded from the above illustration.**

Adjustment Procedure	Results of Improper Adjustment
1) Assembling the knee-lifter detection sensor plate (asm.) 1. Remove the knee-lifter plate vertical shaft installing arm ❶ and the two setscrews ❷ that are temporarily fixed on the bottom cover. 2. Attach knee-lifter detection sensor plate (asm.) ❺ with screw ❷ at a position where a 0.5 to 1.0 mm clearance is provided between knee-lifter detection sensor ❸ and the periphery of knee-lifter detection seat (asm.) ❹.	o If the clearance is larger than the specified value, detection failure may result. o If the clearance is smaller than the specified value, the knee-lifter detection seat (asm.) may interfere with the knee-lifter sensor ❸, resulting in breakage of the sensor.
2) Assembling the knee-patch plate (asm.) 1. Apply the knee-lifter working shaft ❻ to the boss end plane of the bottom cover, and fasten it with the setscrew ❾ by pinching the knee vertical shaft mounting arm ❶ provided with the knee-patch plate ❼. Adjust the play of the axial direction of the knee-patch horizontal shaft ❽ to approximately 0.2mm. 2. Check that knee-patch plate ❼ smoothly move.	o If the amount of play is 0 mm or holding the components with an excessive pressure, the knee-patch plate ❼ (asm.) may maloperate.

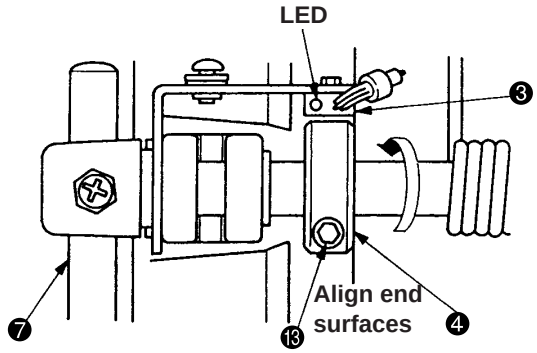
Standard Adjustment

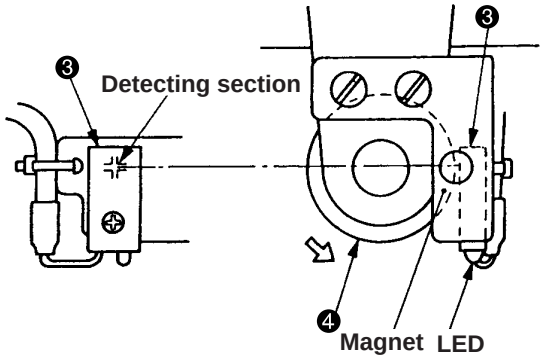
3) Connecting the cords



4) Adjusting the knee-lifter detection seat (asm.)

Condition:
The LED starts to light up when the presser foot goes up by 5 mm



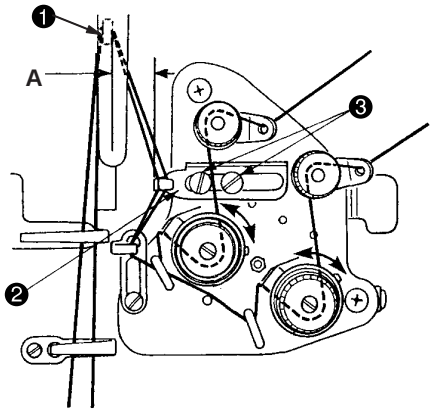


*** The knee-patch plate and other parts are excluded from the above illustration.**

(17) Thread take-up lever guide position

Standard Adjustment

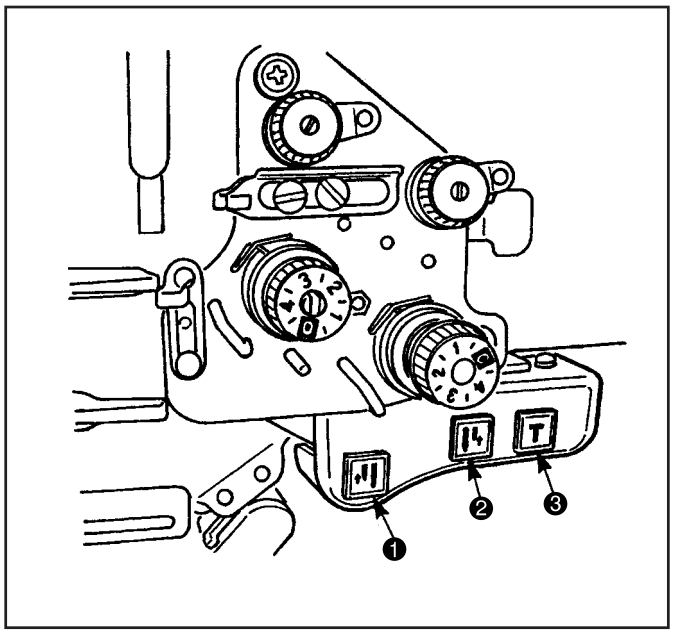
Model	Dimension A (mm)
LH-4128/4128-7	15.5±0.5mm
LH-4168-7	13.0±0.5mm
LH-4188-7	5.0±0.5mm



Adjustment Procedure	Results of Improper Adjustment
3) Connecting the cords 1. Remove screw ❿ locating at the left-hand side of the power switch. Place the top end of ground cord (asm.) ⓫ corning from knee-lifter detection sensor plate (asm.) ❺ on the tapped hole from which the screw has been removed. Then, re-tighten the screw in the tapped hole so as to secure the ground cord (asm.). 2. In regard to the connection of the cord ⓬, connect it to [CN32] of the control box. **4) Adjusting the knee-lifter detection seat (asm.)** 1. Turn ON the power to the machine. 2. Press knee-patch plate ❼ to raise the presser foot by 5 mm above the top surface of the throat plate. 3. Turn the knee-lifter sensor seat (asm.) ❹ in the direction of the arrow and secure it with the setscrew ⓲ where the LED of the knee-lifter sensor ❸ begins to light. At that time, align the end face of the sensor seat (asm.) ❹ with that of the knee-lifter sensor ❸. 4. Check that the LED goes up when knee-patch plate ❼. is released. **(Caution) The machine has been adjusted so that the knee-lifter actuation is detected when the presser foot goes up by 5 mm or more. To enable the sensor to detect the actuation of the knee-lifter with a smaller amount of the presser foot lift, reduce the standard adjustment value and re-adjust the machine according to step 3.** 5. When the magnet of knee-lifter detection seat (asm.) ❹ approaches the detecting section (marked with "+") of knee-lifter detection sensor ❸, the sensor detects that the presser foot has been raised by the knee-lifter and the LED of the sensor lights up.	o If the ground cord (asm.) ⓫ is not connected, maloperation may be caused. o If the cord is not connected or improperly connected to the control box, the sensor may fail to perform detection. o If no coincidence is secured of the knee-lifter sensor ❸ with the end plane of the knee-lifter sensor seat (asm.) ❹, this can be a cause of failure in sensing.

Adjustment Procedure	Results of Improper Adjustment
1. Check Dimension A of the thread take-up lever ❶ and its thread guide ❷. 2. If Dimension A is not secured properly, loosen two setscrews ❸ for adjustment.	

6. Separately driven needle changeover switch (for LH-4168-7, LH-4188-7 only)



❶ : Left-hand needle changeover switch
When this switch is pressed, left-hand needle goes up. When it is presser again, the needle comes down.

❷ : Right-hand needle changeover switch
When this switch is pressed, right-hand needle goes up. When it is pressed again, the needle comes down.

❸ : Teaching switch

1. Press the teaching switch ❸, and then press the left changeover switch ❶ or the right changeover switch ❷, or press the teaching switch ❸ after pressing the left changeover switch ❶or the right changeover switch ❷. Then, the number of stitches begins to be counted after the mode of single needle is assured and until the presser is raised again. When the presser is lowered, the needle is returned after the completion of sewing for the counted number of stitches.

2. Changeover of the teaching mode

Teaching mode changeover is possible by the procedures specified below. This function should be utilized according to the specification of the sewing product.

1) When the power supply is turned ON while the rightmost button of the control box is pressed, functional setup becomes available.
(Refer to the Instruction Manual for SC-910)

2) Call function setting No. 112 of the display in the control box.

Setting 0 (Initial set value) : Normal mode (manual teaching mode)

When the sewing comes to the corner section, press left-hand (right-hand) needle changeover switch and teaching switch.
Sew the corner in a single needle state, lift the presser foot, turn the cloth, and sew the corner of return.
It is not necessary for the operator to perform the release at the time of return since the release of single needle after this work is automatically performed.
(This function cannot be obtained unless the teaching switch is pressed.)

Setting 1 : Automatic move by changeover of single needle

It is the setting that the teaching mode is automatically set when the separately driven needle changeover switch is pressed.
Without pressing the teaching switch number of stitches until the presser foot goes up from a single needle state is counted, and when the presser foot is lowered, the needle returns after the number of stitches which has been counted. Number of times of button operation is decreased since the number of stitches of entering and that of return are the same in many cases.

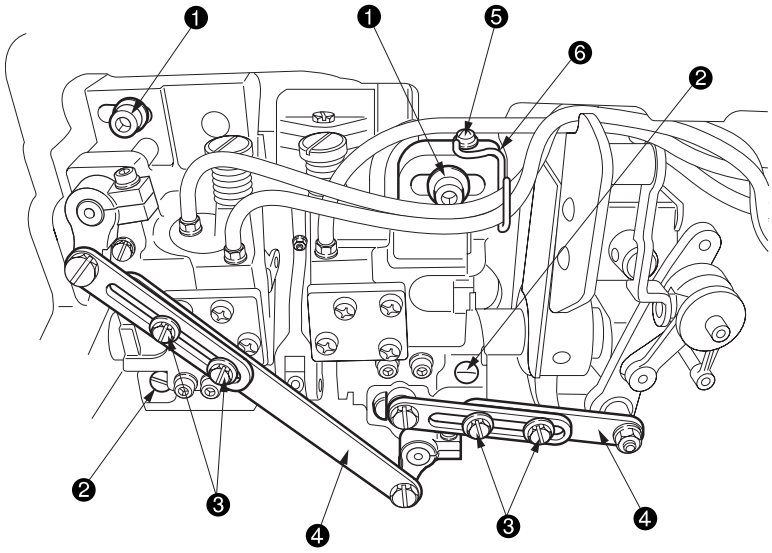
Setting 2 : Teaching mode changeover prohibition

It is setting that the mode does not become the teaching mode even when the teaching switch is pressed after the separately driven needle changeover switch was pressed and several stitches were sewn.
This function saves the trouble that the stitches of entering and return do not agree with each other when the teaching switch works after several stitches were sewn.

7. Gauge replacing procedure

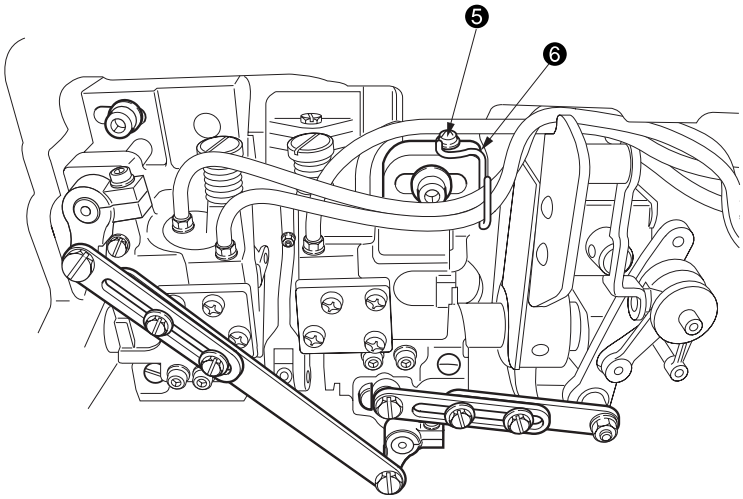
(1) How to remove the gauge

1) Turn OFF the power switch.
2) Remove the slide plate, needle, needle clamp, presser foot, throat plate and feed dog.
   * In the case of a thread trimming machine provided with a wiper, refer to the table of “5.-(13) Wiper components”. Remove the wiper if the replacing gauge size is not found in the present wiper range.
3) Tilt the sewing machine.
4) Loosen screw ❶ and ❷ in the hook driving shaft saddle. Then loosen the setscrew ❺ of the pipe guide ❻.
   * In the case of a thread trimming machine, loosen the setscrews ❸ (4 pcs.) of the connecting link (asm.) ❹. They can be loosened but cannot be removed.

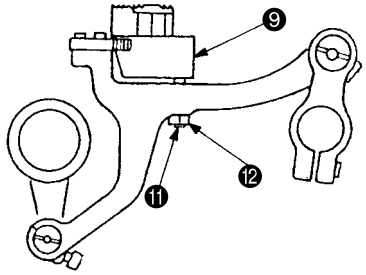


(2) How to install the gauge

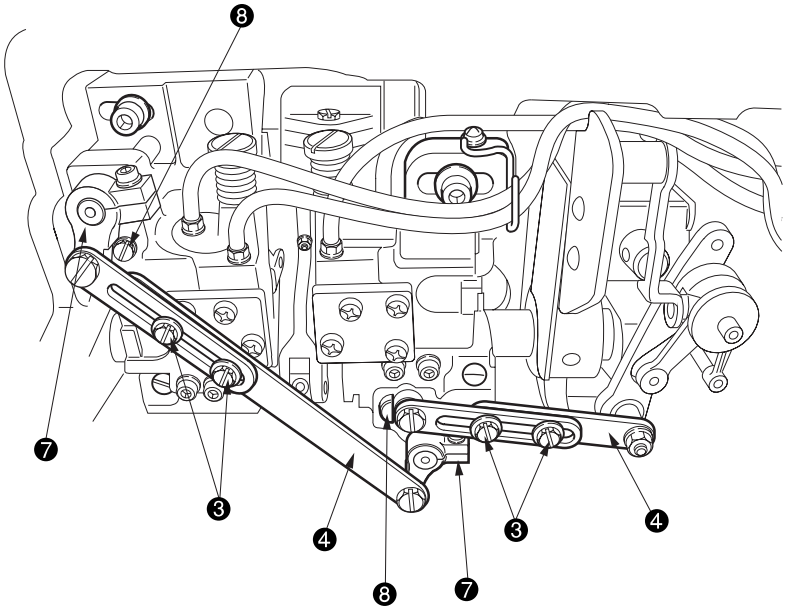
1) Raise the sewing machine.
2) Attach the feed dog in position. ——— Refer to “5.-(1)-2) Adjustment of the right and left feed dog positions, height, and gradient”
3) Attach the needle clamp and needle in position. ——— Refer to “5.-(1)-4) Needle calmp, -5) Needle entry”
4) Remove the throat plate.
5) Tilt the sewing machine.
6) Move the hook driving shaft saddle from its home position.
   Adjust so that the specified clearance is provided between the needle and the blade point of the hook.
   Then, fix the hook driving shaft. ——— Refer to “5.-(2) Timing between the needle and the hook”
7) Let the pipe guide ❻ stay in the position where the pipe layout can be made optimal. Then tighten the setscrew ❺.



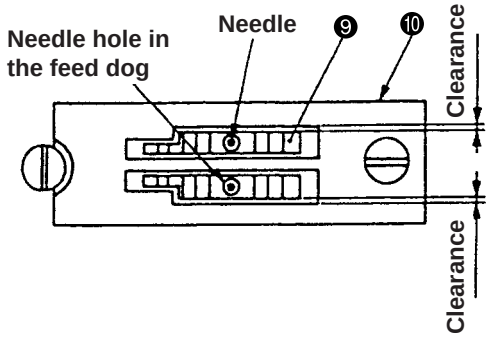
8) Raise the sewing machine.
9) Attach the throat plate in position.
10) Attach the presser foot in position.
11) Attach the wiper in position in the case of the thread trimmer. ——————————— Refer to “5.-(13) Wiper components”
12) Adjust the feed dog support screw ⓫.
Loosen the nut ⓬, adjust the feed dog support screw ⓫ to the position where it comes in contact with the feed dog ❾, and tighten the nut ⓬.



13) In the case of the thread trimmer, tighten four setscrews ❸ of the connector link (asm.) ❹ while the knife driving arm ❼ is pressed against the stopper ❽.

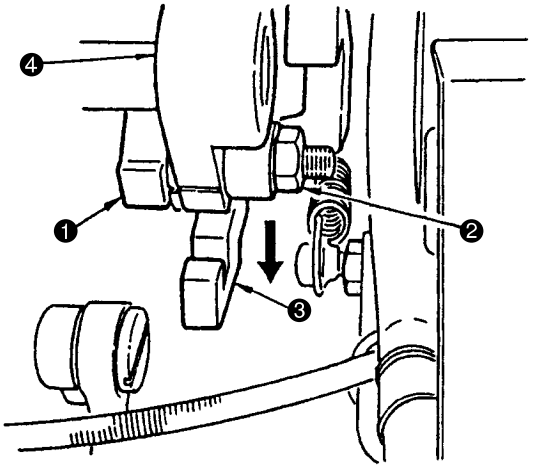


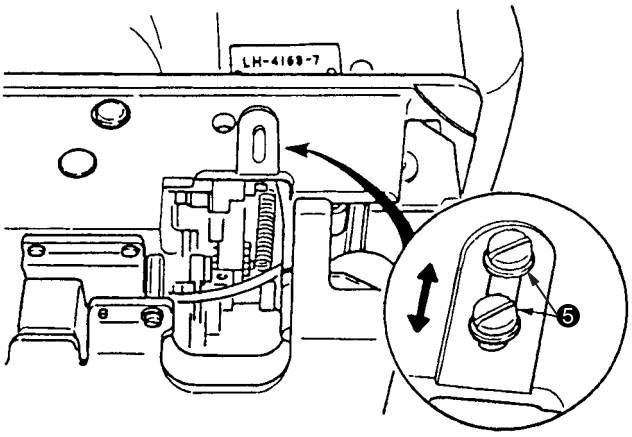
(Caution) 1. When attaching feed fog ❾, confirm that it is equidistantly spaced in the feed dog slot in throat plate ❿ with respect to the lateral direction. Also confirm that the needle enters the center of the needle hole in feed dog ❾.

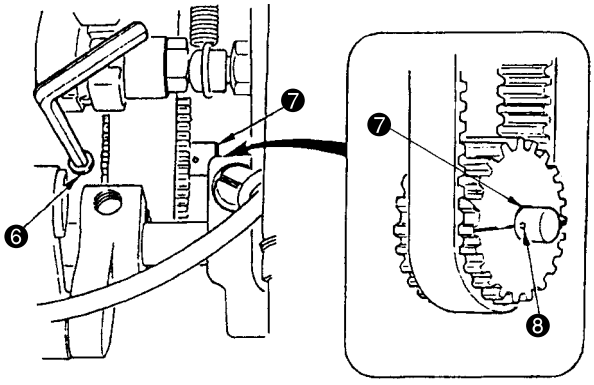


2. When attaching the presser foot, confirm that the needle does not come in contact with the hook.

8. Needle feed/bottom feed changeover

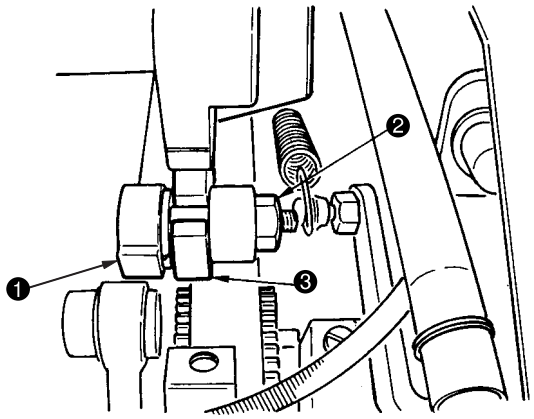






[Bottom feed changeover]

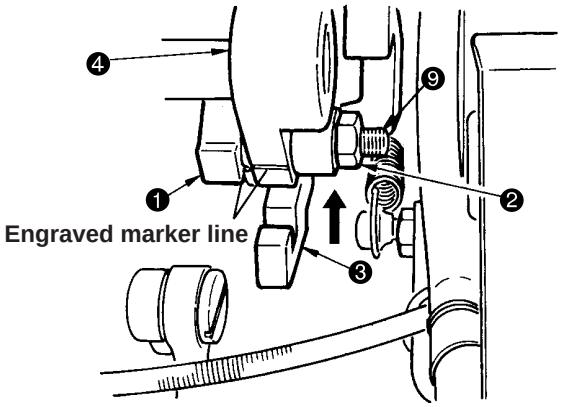
1. Adjust the feed control dial to the minimum position and loosen the nut ❷ of the needle bar rocking rod ❶. Move the needle bar rocking rod ❶ from the needle bar rocking rod arm ❹ to the needle throwing rod fixing base ❸ and fix it with the nut ❷.
2. For needle entry adjustments, the position of needle entry can be adjusted by vertically moving the set-screw ❺ of the needle bar rock fixing base. Since then, the feed dog and throat plate should be replaced with the bottom feed parts.
3. For needle and feed synchronism (timing) adjust-ments, loosen the second setscrew ❻ of the bottom sprocket and then loosen the first setscrew after it has been moved to the position as illustrated. In this state, remove the first setscrew. Turn the hand wheel until the position of the third setscrew is secured. At that time, confirm that the engraved marker dot ❽ of the bottom shaft ❼ is positioned where this shaft seems to be tightened smoothly. In this state, mount the removed first setscrew on the third setscrew and fasten it based on the engraved marker dot ❽. Then tighten the second setscrew.
4. Check the condition of hook adjustment.

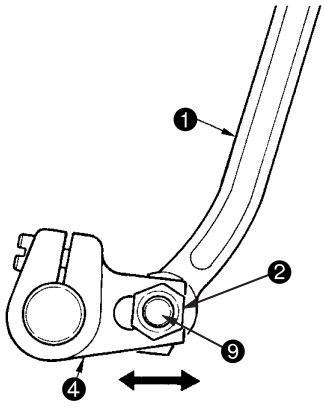


[Changeover to Needle Feed]

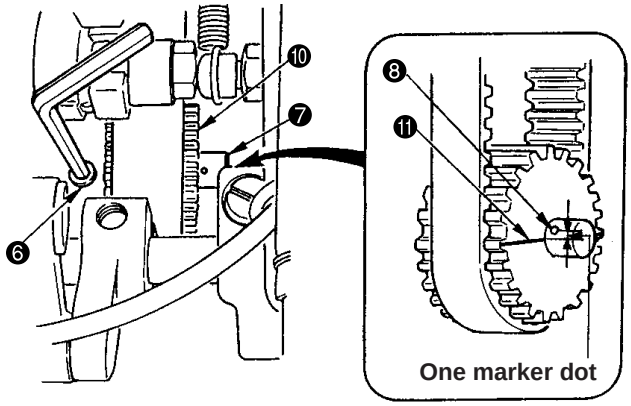
Procedures below are the reverse steps for changeover to needle feed.

1. Loosen nut ❷ and move needle bar rocking rod ❶ from needle throwing rod fixing base ❸ to needle bar rocking rod arm ❹. Fix it temporarily with nut ❷. At that time, let the engraved marker line of ❹ coincide with that of needle throwing adjusting screw ❾.
   Replace the feed dog and the throat plate with needle feed parts.





2. Under both conditions of needle stick and draw-out, make adjustments so that the needle settles in the center of feed dog needle hole. For adjustments, loosen nut ❷, shift needle throwing adjusting screw ❾ in the direction of the arrow, and regularly tighten nut ❷.

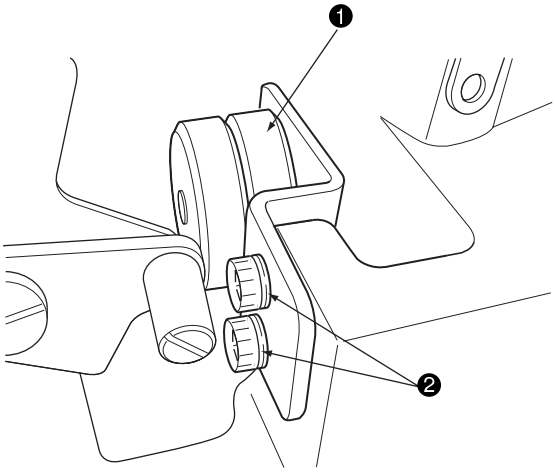


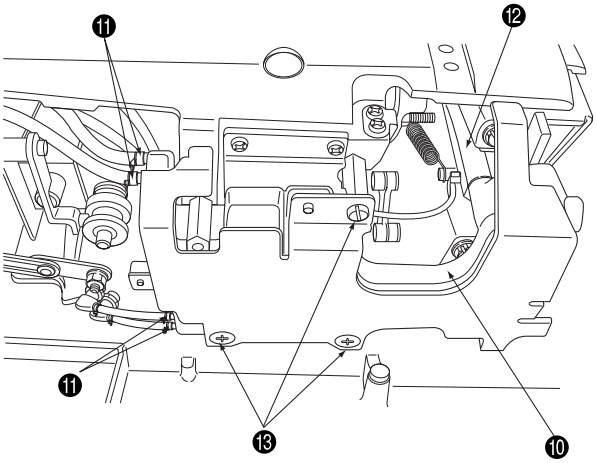
3. Loosen the setscrew ❻ of the sprocket ❿, turn the pulley by 180° so that engraved marker ❽ of lower shaft ❼ comes to the position where engraved marker line ⓫ is shifted by one marker dot. Since then, fix it setscrew ❻.

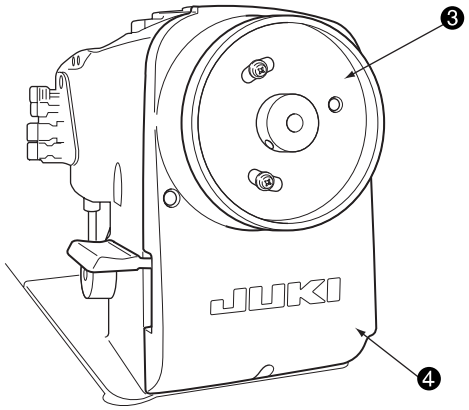
(Caution) Move the setscrews, which have the engraved marker lines ⓫ in the same direction, to the screw holes located on opposite side.

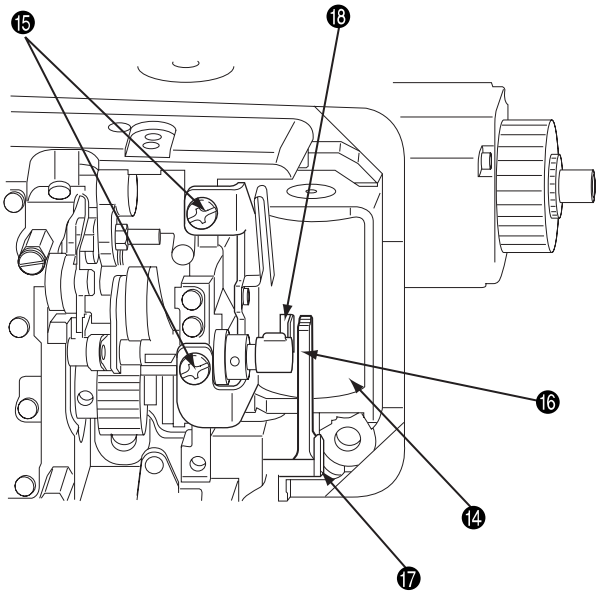
MEMO

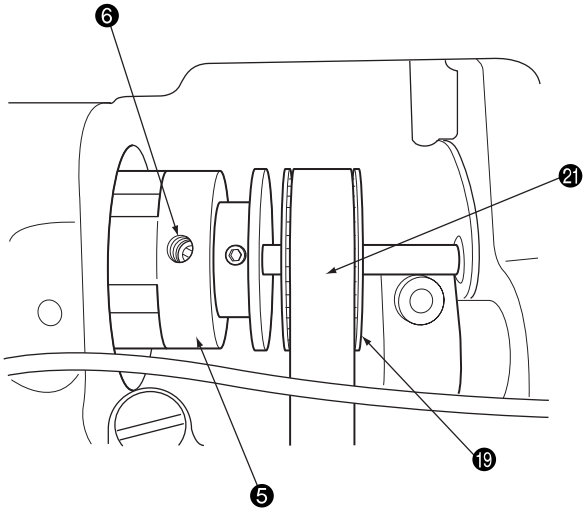
9. Replacing the timing belt

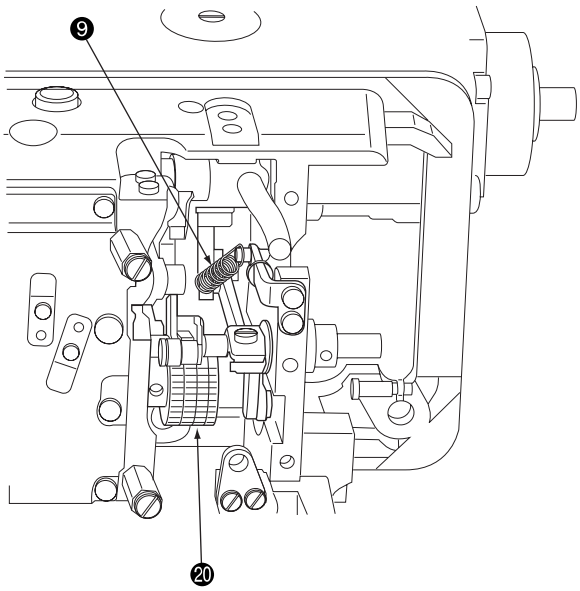


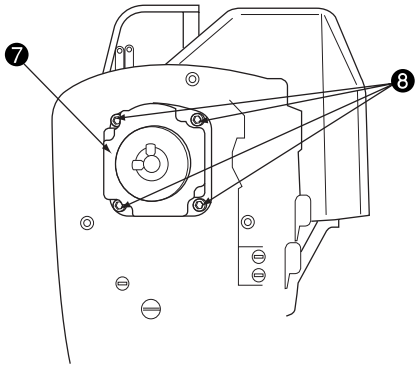












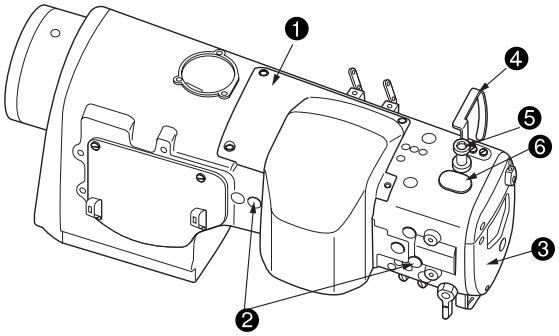
(1) How to remove the timing belt

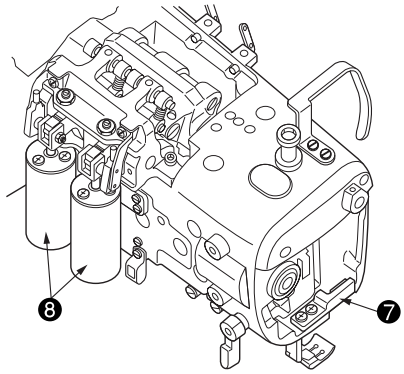
1) Remove the window plate, two screws ❷, and idler ❶.
2) Remove the hand wheel ❸ and pulley cover ❹.
3) Loosen the setscrew ❻ of the coupling ❺. (The first screw is fastened flat.)
4) Turn the four screws ❽ and remove the motor ❼.
5) Tilt the sewing machine and remove the oil tank ❿.
   For disassembly procedures, remove the four pipe stops ⓫ and draw out the pipe. Then, pull out the lubricating tube ⓬ and remove three screws ⓭. Making sure not to damage the oil quantity indicator bar of the float asm., remove the oil tank ❿.
6) Remove the hinge screw ⓱ and the reverse feed solenoid lever ⓰, and dislodge the reverse feed arm. ⓲. Then remove two screws ⓯ and reverse feed solenoid ⓮.
7) Remove the feed adjust spring ❾.
   Remove the knee patch plate and tilt the sewing machine.
8) Draw out the timing belt ㉑.

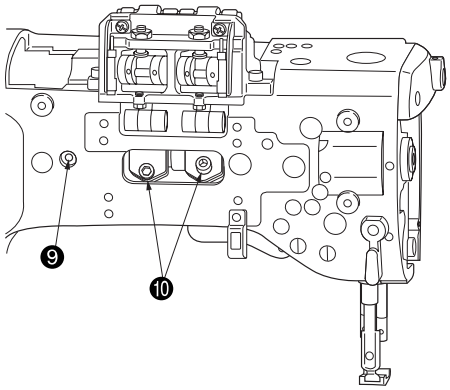
(2) How to install the timing belt

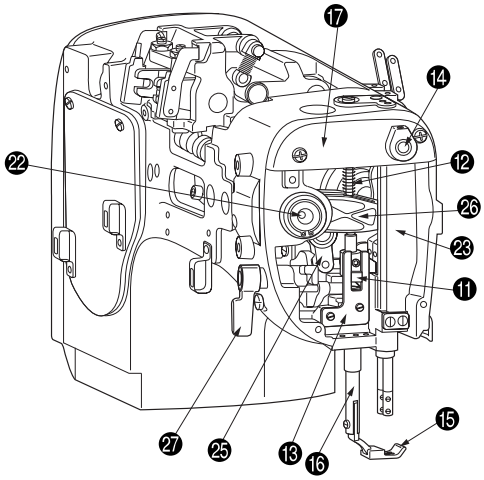
1) Apply a belt to the upper sprocket ⓳ and then install the motor ❼. Fasten the first screw of the coupling ❺ to the flat section of the upper shaft and tighten the second screw.
2) Mount the pulley cover ❹ and fasten the first screw of the hand wheel ❸ to the motor shaft in a flat posture. Then tighten the second screw.
3) Confirm that the timing belt ㉑ is meshed with the upper sprocket ⓳ at the lower dead point of the needle bar. After this confirmation, hook the timing belt ㉑ on the lower sprocket ⓴. At that time, confirm that the engraved marker line of the lower sprocket ⓴ is positioned in parallel to the upper plane of the bed and that the first screw of the lower sprocket ⓴ is positioned on the worker side. (Refer to 5.-(6) Relation between the main shaft and the lower shaft.)
4) Hook the feed adjust spring ❾ and mount the reverse feed solenoid ⓮. Since then, mount the reverse feed solenoid lever ⓰ and the reverse feed arm ⓲. (Refer to 5.-(14) and (15).)
5) Install the oil tank ❿. At that time, be careful not to damage the oil quantity indicator bar of the float asm.
6) Pushing the idler ❶ against the timing belt ㉑ at a torque of 6.9N•m (700g), fix it with two screws ❷.
7) Install the window plate.

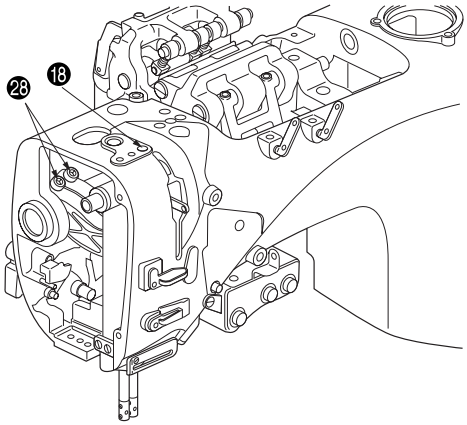
10. Installation/removal of the needle bar rocking base

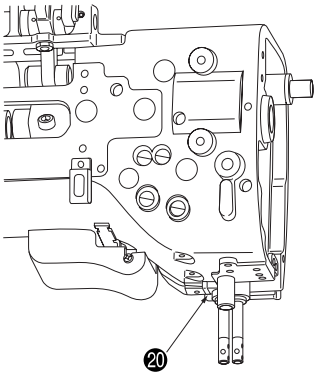


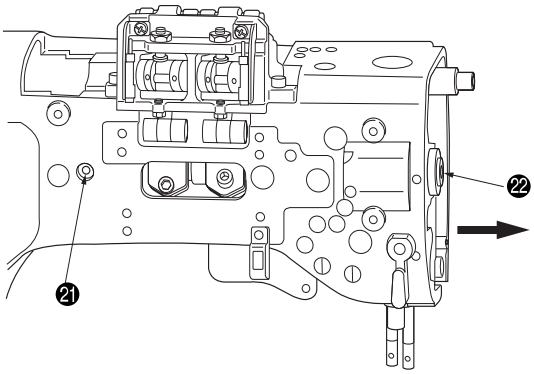


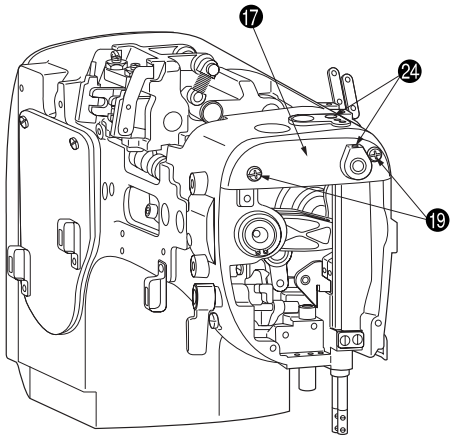


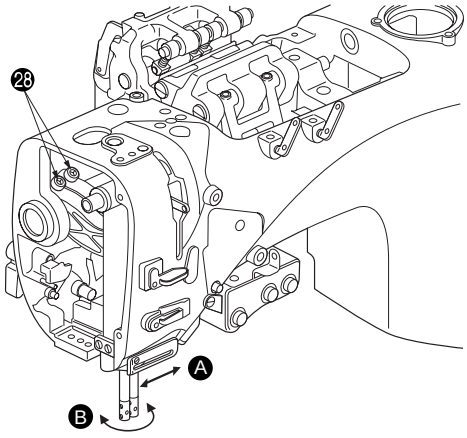












(1) Removal of the needle bar rocking base

1. Remove top cover ❶ (3 screws), stop plug ❷ (2 screws), face plate ❸ (3 screws), thread take-up lever guard ❹ (2 screws), presser stroke adjusting screw ❺, cap ❻, and rocking base thrust holder ❼ (2 screws).
2. Loosen the connecting screws ㉘ oon the right and left of the needle driving arm ㉖.
3. Remove the right and left unilateral needle changeover solenoids ❽ (8 screws) and loosen connecting screws ❿ on the right and left of the needle drive crank. Then, remove the left thrust collar of the needle driving shaft ❾ (2 screws).
4. Draw out the left needle driving shaft ㉒ in the direction of the face section.
5. Remove presser bar connector ⓫, presser adjusting spring ⓬, presser bar connecting guide ⓭ (2 screws), presser ⓯, presser bar ⓰, and rocking fulcrum shaft base ⓱ (2 screws). Then, loosen setscrews of rocking base fulcrum shaft ⓲ and rocking arm ㉕.
6. Remove needle bar rocking base ㉓. At that time, remove right needle driving arm ㉖, needle bar rocking base fulcrum shaft ⓮, and rocking arm ㉕. In this case, a uniform force should be exerted on these three parts.

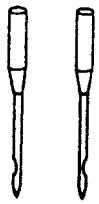
(2) Installation of the needle bar rocking base

1. Insert needle bar rocking base ㉓ in position. At that time, exert a uniform force on the three parts of right needle driving arm ㉖, needle bar rocking base fulcrum shaft ⓮, and rocking arm ㉕ until thrust plate ⓴ enters and touches the frame.
2. Insert left needle driving shaft ㉒, secure a proper thrust, and fix thrust collar ㉑ (2 screws).
3. Taking a thrust for needle bar rocking base ㉓, loosen two screws ❿ of rocking fulcrum shaft base ⓱ and two setscrews of rocking fulcrum shaft ㉔. If a torque is generated in the rocking direction Ⓑ of the needle bar rocking base ㉓, make fine vertical adjustments of the fixing position for rocking fulcrum shaft base ⓱.
4. Checking the thrust for needle bar rocking base ㉓, fix rocking base thrust holder ❼ (2 screws). After the completion of fixing, confirm without fail that needle bar rocking base ㉓ is free from rattling in Direction A, right and left. Also confirm that there is no torque in rocking Direction B.
5. Moving the needle bar up and down, tighten needle driving arm connecting screw ㉘ where the right and left positioning of needle driving arm ㉖ settles in natural position. [Screw tightening torque: 5.9N•m (60kgf•cm)] If the screw tightening torque is insufficient, this can be a cause of destruction in needle driving arm ㉖.
   Confirm that the needle bar torque is kept light after screw tightening.
   [2.9N•m (300g or below)]
   If the torque seems to be too much, such a problem may have resulted from the shifting of needle driving arm ㉖ to the right or left at the time of screw tightening.
6. Secure the needle bar height [Refer to 5.- (1) -3] Needle bar height.] and tighten the right and left connecting screws of needle driving crank ❿.
   [Screw tightening torque: 5.9N•m (60kgf•cm)] If the screw tightening torque is too much, this can be a cause of destruction in needle driving arm ㉖.
7. Install right and left unilateral needle changeover solenoids ❽.
   [Refer to Items 5 and 6 of 5.- (11) Needle bar stroke adjustment.]
8. Insert presser bar ⓰. In the state of needle bar lower dead point and pitch 0, tighten the setscrew of the rocking bar ㉕ in the position where the distance between needle bar and presser bar ⓰ becomes identical with the dimension specified in [5.-(1)-1] Initial position of the needle bar].
9. Install presser bar connector ⓫, presser bar ⓰, presser adjusting spring ⓬, presser bar connecting guide ⓭ (2 screws), and presser ⓯. When fixing the presser bar connecting guide ⓭, make sure that presser bar connector ⓫ can slide smoothly without any torque.
   In addition, in regard to the fixing position for presser bar connector ⓫, make adjustments so that the amount of presser rise with presser lifting lever ㉗ stays around 5.2 to 5.5mm.
10. Install thread take-up lever guard ❹ (2 screws), presser stroke adjusting screw ❺, cap ❻, rocking base thrust holder ❼ (2 screws), face plate ❸ (3 screws), and top cover ❶ (3 screws).

11. Sewing specification

Refer to the table below when the sewing specification is changed from the standard.

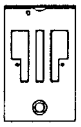
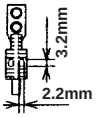
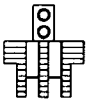
Table of sewing specifications

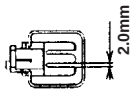
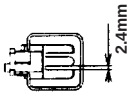
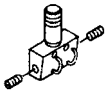
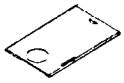
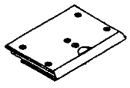
Name of part	S type	G type	F type
Thread tension spring 	Part No. 22921704 Wire diameter 1.0 mm	Part No. 22962005 Wire diameter 1.2 mm	Part No. D3129555D00 Wire diameter 0.8 mm
Thread tension spring No. 1 	Part No. 22945505	Part No. 22945505	Part No. 22945505
Needle (standard)  **(Caution)1.**	DPx5 #14 MDP500B1400	DPx5 #21 MDP500B2100	DPx5 #10 MDP500B1000
	DPx17 #14 MDP170B1400	DPx17 #21 MDP170B2100	DPx17 #10 MDP170B1000

(Caution) 1. When replacing the needle for changing the sewing specification, adjust the needle referring to "(2) Needle-to-hook timing"

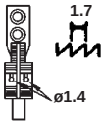
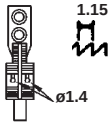
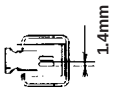
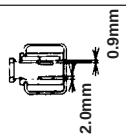
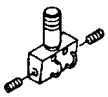
12. List of gauge components

(1) LH-4128

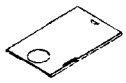
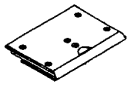
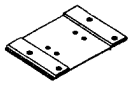
Needle gauge			Throat plate			Feed dog			
Cord									
	(Inch)	mm	**Throat feed**	**Lower feed**	**Lower feed**		**(G)**	**Lower feed**	**Lower feed**
B	1/8	3.2	22625107	22845200	—	40033563	—	23205107	—
C	5/32	4.0	22625206	—	—	40025784	—	—	—
D	3/16	4.8	22625305	22845408	—	40025785	40025801	23205305	—
E	7/32	5.6	22625404	—	—	40025786	40025802	—	—
F	1/4	6.4	22625503	22845606	—	40025787	40025803	23205503	—
G	9/32	7.1	22625602	—	—	40025788	40025804	—	—
H	5/16	7.9	22625701	22845804	—	40025789	40025805	22847800	—
K	3/8	9.5	22625800	—	—	40025790	40025806	—	—
W	7/16	11.1	22625909	—	—	40025791	40025807	—	—
L	1/2	12.7	22626006	—	22846109	40025792	40025808	—	22848105
M	5/8	15.9	22626105	—	—	40025793	40025809	—	—
N	3/4	19.1	22626204	—	22846307	40025794	40025810	—	22848303
P	7/8	22.2	22626303	—	22846406	40025795	40025811	—	22848402
Q	1	25.4	22626402	—	22846505	40025796	40025812	—	22848501
R	1-1/8	28.6	22626501	—	—	40025797	40025813	—	—
S	1-1/4	31.8	22626600	—	—	40025798	40025814	—	—
T	1-3/8	34.9	22626709	—	—	40025799	40025815	—	—
U	1-1/2	38.1	22626808	—	—	40025800	40025816	—	—
"S" specification			★			★			
Lower feed				★	★			★	★
"G" specification			★				★		

Needle gauge			Presser foot (asm.)			Needle clamp (asm.)	Sliding plate		
Cord									
	(Inch)	mm	(Locomobile forked top)	(Locomobile forked top)	**Lower feed**		Sliding plate, left asm.	Sliding plate, right asm.	Sliding plate, front
B	1/8	3.2	40035896	—	10391852	40026027			
C	5/32	4.0	40035897	—	—	40026029			
D	3/16	4.8	22640353	22816557	10392058	40026031			
E	7/32	5.6	22640452	22816656	—	40026033			
F	1/4	6.4	22640551	22816755	10392256	40026035	22601058	22600555	
G	9/32	7.1	22640759	22816854	—	40026037			
H	5/16	7.9	22640858	22816953	10392454	40026039			
K	3/8	9.5	22640957	22817050	—	40026041			
W	7/16	11.1	22641054	40033941	—	40026043			40034931
L	1/2	12.7	22641252	22817159	10392751	40026045			
M	5/8	15.9	22641351	40033945	—	40026047	22601157	22600654	
N	3/4	19.1	22641450	40033947	10393056	40026049			
P	7/8	22.2	22641658	40033949	22844450	40026051			
Q	1	25.4	22641757	40033951	22844559	40026053	22601256	22600753	
R	1-1/8	28.6	22641856	40033953	—	40026055			
S	1-1/4	31.8	22641955	40033955	—	40026057			
T	1-3/8	34.9	2642052	40033957	—	40026059	22601355	22600852	
U	1-1/2	38.1	22642151	40033959	—	40026061			
"S" specification			★			Common it all specification	Common it all specification	Common it all specification	Common it all specification
Lower feed					★				
"G" specification				★					

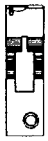
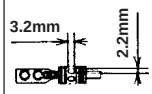
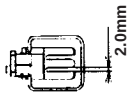
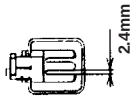
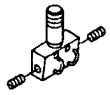
(2) LH-4128F

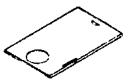
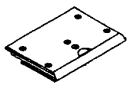
Cord	Needle gauge		Throat plate		Feed dog		Presser foot (asm.)		Needle clamp (asm.)
									
	(Inch)	mm	**Standard**	**For taping**	**(F)**	**Option**		**For taping Swivel guide**	
B	1/8	3.2	22625107	22628002	40033563	40035883	22627152	22647051	40026027
D	3/16	4.8	22625305	22628200	40033564	40035884	22627350	22647150	40026031
E	7/32	5.6	22625404	22628309	40033565	40035885	* 22627459	* 22647259	40026033
F	1/4	6.4	22625503	22628408	40033566	40035886	22627558	22647358	40026035
G	9/32	7.1	22625602	22628507	40033567	40035887	22627657	22647457	40026037
H	5/16	7.9	22625701	22628606	40033568	40035888	22627756	22647556	40026039

* : Special order products

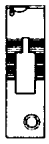
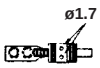
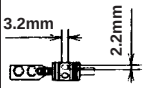
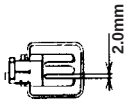
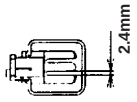
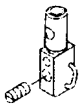
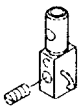
Cord	Needle gauge		Sliding plate			
						
	(Inch)	mm	Sliding plate, left asm.	Sliding plate, right asm.	Sliding plate, front	**For taping** Sliding plate, front
B	1/8	3.2	22601058	22600555	40034931	23206709
D	3/16	4.8				
E	7/32	5.6				
F	1/4	6.4				
G	9/32	7.1				
H	5/16	7.9				

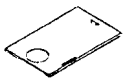
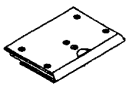
(3) LH-4128-7

Needle gauge			Throat plate	Feed dog		Presser foot (asm.)		Needle clamp (asm.)
Cord								
	(Inch)	mm		(S)	(G)	(Locomobile forked top)	(Locomobile forked top)	
B	1/8	3.2	40035881	40035890	40053705	40035896	—	40026027
C	5/32	4.0	40025485	40025817	—	40035897	—	40026029
D	3/16	4.8	40025490	40025818	40025831	22640353	22816557	40026031
E	7/32	5.6	40025491	40025819	40025832	22640452	22816656	40026033
F	1/4	6.4	40025492	40026715	40025833	22640551	22816755	40026035
G	9/32	7.1	40025493	40025820	40025834	22640759	22816854	40026037
H	5/16	7.9	40025494	40025821	40025835	22640858	22816953	40026039
K	3/8	9.5	40025495	40025822	40025836	22640957	22817050	40026041
W	7/16	11.1	40025496	40025823	40025837	22641054	40033941	40026043
L	1/2	12.7	40025498	40025824	40025838	22641252	22817159	40026045
M	5/8	15.9	40025499	40025825	40025839	22641351	40033945	40026047
N	3/4	19.1	40025500	40025826	40025840	22641450	40033947	40026049
P	7/8	22.2	40025502	40025827	40025841	22641658	40033949	40026051
Q	1	25.4	40025503	40025828	40025842	22641757	40033951	40026053
R	1-1/8	28.6	40025504	40025829	40025843	22641856	40033953	40026055
S	1-1/4	31.8	40025505	40025830	40025844	22641955	40033955	40026057
"S" specification			Common it all specification	★		★		Common it all specification
"G" specification					★		★	

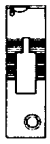
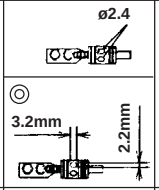
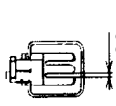
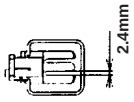
Needle gauge			Sliding plate			Wiper
Cord						
	(Inch)	mm	Sliding plate, left asm.	Sliding plate, right asm.	Sliding plate, front	
B	1/8	3.2	40025247	40025235	40031358	10209203
C	5/32	4.0				
D	3/16	4.8				
E	7/32	5.6				
F	1/4	6.4				
G	9/32	7.1				
H	5/16	7.9				
K	3/8	9.5				
W	7/16	11.1				10209500
L	1/2	12.7	40025248	40025236		
M	5/8	15.9				
N	3/4	19.1				10209807
P	7/8	22.2	40025249	40025239		
Q	1	25.4				10209906
R	1-1/8	28.6				
S	1-1/4	31.8	40025250	40025240		
"S" specification			Common it all specification	Common it all specification	Common it all specification	Common it all specification
"G" specification						

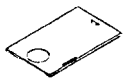
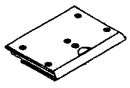
(4) LH-4168-7

Needle gauge			Throat plate	Feed dog		Presser foot (asm.)		Needle clamp (left)a sm.	Needle calmp (right) asm.
Cord									
	(Inch)	mm				(Locomobile forked top)	(Locomobile forked top)		
B	1/8	3.2	40035881	40035890	40053705	40035896	—	40035877	40035878
C	5/32	4.0	40025485	40025817	—	40035897	—	40026063	40026084
D	3/16	4.8	40025490	40025818	40025831	22640353	22816557	40026065	40026086
E	7/32	5.6	40025491	40025819	40025832	22640452	22816656	40026067	40026088
F	1/4	6.4	40025492	40026715	40025833	22640551	22816755	40026069	40026090
G	9/32	7.1	40025493	40025820	40025834	22640759	22816854	40026070	40026091
H	5/16	7.9	40025494	40025821	40025835	22640858	22816953	40026072	40026093
K	3/8	9.5	40025495	40025822	40025836	22640957	22817050	40026074	40026095
L	1/2	12.7	40025498	40025824	40025838	22641252	22817159	40026076	40026097
M	5/8	15.9	40025499	40025825	40025839	22641351	40033945	40026078	40026099
N	3/4	19.1	40025500	40025826	40025840	22641450	40033947	40026080	40026101
Q	1	25.4	40025503	40025828	40025842	22641757	40033951	40026082	40026103
"S" specification			Common it all specification	★		★		Common it all specification	Common it all specification
"G" specification					★		★		

Needle gauge			Sliding plate			Wiper
Cord						
	(Inch)	mm	Sliding plate, left asm.	Sliding plate, right asm.	Sliding plate, front	
B	1/8	3.2	40025247	40025235	40031358	10209203
C	5/32	4.0				
D	3/16	4.8				
E	7/32	5.6				
F	1/4	6.4				
G	9/32	7.1				
H	5/16	7.9				
K	3/8	9.5				
L	1/2	12.7	40025248	40025236		10209500
M	5/8	15.9				
N	3/4	19.1				10209807
Q	1	25.4	40025249	40025239		10209906
"S" specification			Common it all specification	Common it all specification	Common it all specification	Common it all specification
"G" specification						

(5) LH-4188-7

Needle gauge			Throat plate	Feed dog		Presser foot (asm.)		Needle clamp (left)a sm.	Needle calmp (right) asm.
Cord						 (Locomobile forked top)	 (Locomobile forked top)		
	(Inch)	mm							
B	1/8	3.2	40035881	40035890	◎40053705	40035896	—	B1402526BA0A	B1402526BA0A
C	5/32	4.0	40025485	40025817	—	40035897	—	B1402-526-CAO-A	B1402-526-CAO-A
D	3/16	4.8	40025490	40025818	40035891	22640353	22816557	B1402-526-DAL-A	B1402-526-DAR-A
E	7/32	5.6	40025491	40025819	40050009	22640452	22816656	102-28559	102-22567
F	1/4	6.4	40025492	40026715	40035892	22640551	22816755	B1402-526-FAL-A	B1402-526-FAR-A
G	9/32	7.1	40025493	40025820	40050010	22640759	22816854	B1402-526-GAL-A	B1402-526-GAR-A
H	5/16	7.9	40025494	40025821	40050011	22640858	22816953	B1402-526-HAL-A	B1402-526-HAR-A
K	3/8	9.5	40025495	40025822	40035893	22640957	22817050	B1402-526-KAL-A	B1402-526-KAR-A
L	1/2	12.7	40025498	40025824	40035894	22641252	22817159	B1402-526-LAL-A	B1402-526-LAR-A
M	5/8	15.9	40025499	40025825	—	22641351	—	102-28856	102-28864
N	3/4	19.1	40025500	40025826	—	22641450	—	102-28955	102-28963
Q	1	25.4	40025503	40025828	—	22641757	—	102-29151	102-29169
"S" specification			Common it all specification	★		★		Common it all specification	Common it all specification
"G" specification					★		★		

Needle gauge			Sliding plate			Wiper
Cord			 Sliding plate, left asm.	 Sliding plate, right asm.	 Sliding plate, front	
	(Inch)	mm				
B	1/8	3.2	40025247	40025235	40031358	10209203
C	5/32	4.0				
D	3/16	4.8				
E	7/32	5.6				
F	1/4	6.4				
G	9/32	7.1				
H	5/16	7.9				
K	3/8	9.5				
L	1/2	12.7	40025248	40025236		10209500
M	5/8	15.9				
N	3/4	19.1				10209807
Q	1	25.4	40025249	40025239		10209906
"S" specification			Common it all specification	Common it all specification	Common it all specification	Common it all specification
"G" specification						

13. List of the major components

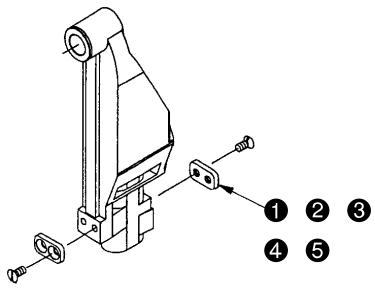
(1) List of expendable parts

No.	Part No.	Part name	Model	Remarks
1	————————	Needle DP x 5	LH-4128, LH-4128-7, LH-4168-7, LH-4188-7	
2	10210805	Bobbin	LH-4128, LH-4128-7, LH-4168-7	
3	10231603	Bobbin	LH-4188-7	
4	40013786	Latch hook (asm.)	LH-4128, LH-4128-7	
5	40025164	Cap hook (asm.)	LH-4168-7	
6	40018976	Cap hook overall (asm.)	LH-4188-7	
7	22603708	Felt	LH-4128, LH-4128-7, LH-4168-7	
8	40012403	Moving knife	LH-4128-7, LH-4168-7, LH-4188-7	
9	40012404	Counter knife	LH-4128-7, LH-4168-7, LH-4188-7	

(2) Other renewal parts

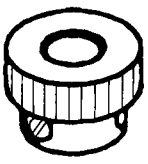
No.	Part No.	Part name	Model	Remarks
1	22121605	Thread take-up spring	LH-4128, LH-4128-7, LH-4168-7, LH-4188-7	"S", "G" specification
2	D3128555D00	Thread take-up spring	LH-4128, LH-4128-7, LH-4168-7	"F" specification
3	40017033	Clamp	LH-4128-7, LH-4168-7, LH-4188-7	
4	40012494	Clamp spring	LH-4128-7, LH-4168-7, LH-4188-7	
5	SM6850400SP	Clamp spring setscrew	LH-4128-7, LH-4168-7, LH-4188-7	Flat small screw M2.5 L=4
6	10111508	Thread take-up spring	LH-4128-7, LH-4168-7, LH-4188-7	
7	22653802	Idline revention sheet	LH-4128-7, LH-4168-7	
8	22819809	Idline revention sheet	LH-4188-7	
9	B1425526000	Needle clamp screw	LH-4168-7, LH-4188-7	
10	SM6030672TP	Feed bar setscrew	LH-4128, LH-4128-7, LH-4168-7, LH-4188-7	Hexagon socket head cap screw M3 L=6

1) Needle entry spacer



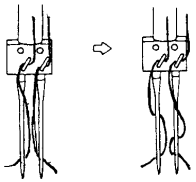
No.	Part No.	Part name	Thickness: ±0.2mm
❶	40055495	Needle entry spacer A0	2.8mm
❷	40025032	Needle entry spacer A1	2.9mm
❸	40020032	Needle entry spacer A2	3.0mm
❹	40025033	Needle entry spacer A3	3.1mm
❺	40055372	Needle entry spacer A4	3.2mm

2) Hook shaft gear



Part No.	Part name
40028560	Hook shaft screw gear A
40028561	Hook shaft screw gear B
40028562	Hook shaft screw gear C
40028563	Hook shaft screw gear D
40040549	Hook shaft screw gear E
40040550	Hook shaft screw gear F

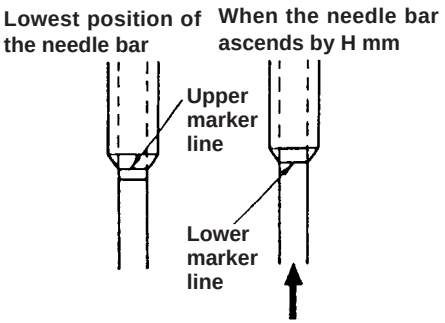
14. Troubles and corrective measures

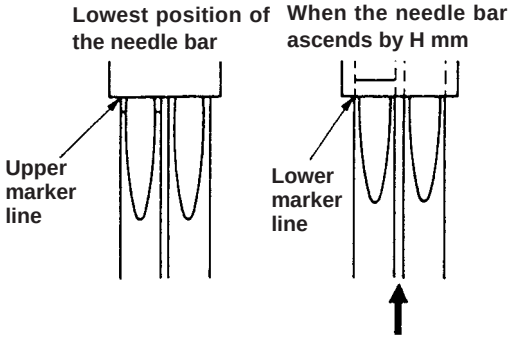
Trouble	Case (1)	Case (2)	Check and Corrective measures
1. Thread breakage	1-1) Groove on the bobbin case stopper of the throat plate has scratches.		Grind the groove on the bobbin case stopper.
	1-2) The needle thread tension is too high.		Adjust the needle thread tension.
	1-3) Needle-to-hook timing is not properly adjusted.	3-A) The clearance provide between the hook and the bobbin case opener.	Adjust the clearance provided between the hook and the bobbin case opener to 0.2 mm.
		3-B) The clearance provided between the needle and the blade point of the hook.	Adjust the clearance provided between the needle and the blade point of the hook to 0.05 mm.
		3-C) The clearance provided between the hook and the throat plate.	Check the clearance provide between the hook and the throat plate.
		3-D) Lift of the needle bar and the needle bar height.	Adjust the lifting amount of the needle bar and the height of the needle bar properly.
	1-4) Amount of oil in the hook is insufficient.	4-A) Amount of oil in the hook.	Properly adjust the amount of oil in the hook.
	1-5) Operating range and pressure of the thread take-up spring are improper.	5-A) Operating range and pressure of the thread take-up spring.	Properly adjust the thread take-up spring.
	1-6) Blade point of the hook has scratches.		Grind the blade point of the hook.
	1-7) Periphery of the needle hole in the feed dog has scratches.		Grind the periphery of the needle hole in the feed plate.
	1-8) The machine head is not properly threaded.		Refer to the Instruction Manual, 11. How to pass the needle thread.
	1-9) The needle is not properly installed.	9-A) Orientation of the needle.	Refer to the Instruction Manual, 8. How to set up the needle.
	1-10) The needle is bent or has a blunt point.	10-A) Needle	Replace the needle with a new one.
	1-11) The presser foot is not properly installed.		Install the presser foot while facing it in the correct direction.
	1-12) The needle thread untwists.	12-A)If thread is likely to break especially when using a tetron thread: 1) Minimize the needle thread tension and the thread take-up spring pressure as long as stitches are neatly finished. 2) Wind the thread round the needles to reduce the frequency of the trouble. 	
	1-13) Idling stitches are produced.		
	1-14) A thread loop is not made with consistency when the blade point of the hook clamps the needle thread.		Use the thread guide equipped with a felt pad.

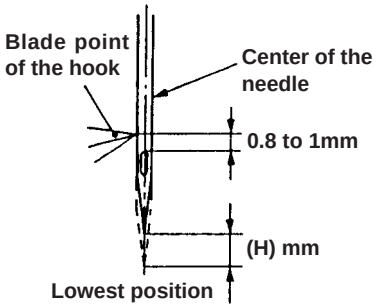
Trouble	Case (1)	Case (2)	Check and Corrective measures
2. Loose stitches are produced	Same as the aforementioned causes given in the “Thread breaking”. Other causes are described below in addition to them.		
	2-1) Bobbin fails to move smoothly.		Replace the bobbin with a new one.
	2-2) The clearance provided between the hook and the bobbin case opener is too large.		Adjust the clearance provided between the hook and the bobbin case opener to 0.2mm.
	2-3) The feed dog is positioned too high.		Adjust the height of the feed dog to 1mm.
	2-4) The thread path is poorly finished.		Buff it up.
	2-5) The clearance provided between the bobbin case and the throat plate is not properly adjusted.		Adjust the clearance provided between the bobbin case and the throat plate to 0.9mm.
3. Puckering frequently occurs.	3-1) The needle thread tension is too high.		Minimize the needle thread tension as long as stitches are neatly finished.
	3-2) The bobbin thread tension is too high.		Minimize the bobbin thread tension as long as stitches are neatly finished.
	3-3) The tension of thread take-up spring is too high.		Minimize the thread take-up spring tension as long as stitches are neatly finished.
	3-4) Operating range of the thread take-up spring too large.		Minimize the operating range of the thread take-up spring as long as stitches are neatly finished.
	3-5) Presser foot pressure is too low.		Increase the presser foot pressure.
	3-6) Sewing speed is too high. (The number of revolutions of the motor is too large.)		Reduce the sewing sped.

Trouble	Case (1)	Case (2)	Check and Corrective measures
4. Stitch skipping frequency occurs	Same as the aforementioned causes of “Needle-to-hook relation” in the “Thread breakage”		
	4-1) Presser foot pressure is too low.		Increase the presser foot pressure.
	4-2) Blade point of the hook is blunt.	2-A) the shape of the blade point of the hook.	Correct the blade point of the hook or replace the hook with a new one.
	4-3) The needle guard of the hook fails to work.	3-A) Correct the blade point of the hook or replace the hook with a new one	Adjust the needle guard of the hook so that it works normally.
	4-4) The needle is too thick for the thread used.		Replace the needle with one that is thinner by one count.
	4-5) A heavy eight material is used.		

f stitch skipping is likely to occur particularly when using a spun thread:
Refer to “(2) Needle-to-hook relation.”



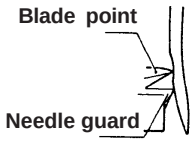




Stitch skipping is not likely to occur when H mm is adjusted 2.4 to 2.6mm. If H (mm) is excessively increased, loosened stitches will result.
So, be careful

Trouble	Case (1)	Case (2)	Check and Corrective measures
5. Needle thread trimming failure	5-1) Thread trimming timing is not properly adjusted.		Properly adjust the thread trimming timing.
	5-2) Top end of the moving knife has scratches or bent.		Replace the moving knife with a new one.
	5-3) Needle-to-hook relation is not properly adjusted.	3-A) The clearance provided between the hook and the bobbin case opener.	Adjust the clearance provided between the hook and the bobbin case opener to 0.2mm.
		3-B) The clearance provided between the needle and the blade point of the hook.	Adjust the clearance provided between the needle and the blade point of the hook to 0.05mm.
		3-C) The clearance provided between the bobbin case and the throat plate.	Adjust the clearance provided between the bobbin case and the throat plate to 0.9mm.
		3-D) Lift of the needle bar and the needle bar height.	Adjust the lifting amount of the needle bar and the height of the needle bar properly.
	5-4) The moving knife is improperly positioned.		Adjust the longitudinal position of the moving knife.
	5-5) Operating range of the thread take-up spring is too small.		Adjust the operating range of the thread take-up spring using the thread take-up spring stopper.
6. Bobbin thread trimming failure	6-1) Top end of the moving knife is positioned too low.	1-A) Position of the moving knife blade.	Replace the moving knife with a new one.
	6-2) The hook is positioned too high.		Check the height of the hook.
	6-3) Top end of the moving knife has scratches or bent.		Replace the moving knife with a new one.
	6-4) Needle hole in the feed dog (throat plate) is too large.		Replace the feed dog (throat plate) with one that has a needle hole of appropriate size.
	6-5) The feed dog is positioned too high.		Adjust the height of the feed dog to 1mm.
	6-6) Blade point of the hook has worn out.		Replace the hook with a new one.
	6-7) The clearance provided between the needle and the blade point of the hook is not properly adjusted.		

(Caution)
If the clearance between the needle and the blade point of the hook is adjusted when the needle guard works, the needle may bend.



Trouble	Case (1)	Case (2)	Check and Corrective measures
7. Bobbin case idles at the time of thread trimming.	7-1) Thread is not wound round the bobbin in the correct direction.		Wind the thread round a bobbin in the direction opposite to the direction of rotation of the hook.
	7-2) The bobbin is wound with thread of which amount exceeds 80% of its capacity.	2-A) Amount of thread wound round the bobbin.	Wind the bobbin with thread until 80% of its capacity is reached.
	7-3) Pressure of the idling prevention spring is too low.		Replace the idling prevention spring with a new one.
		3-A) Idling prevention sheet is not used.	Use an idling prevention sheet with the machine.
	7-4) A bobbin made of iron is used.	4-A) Type of the bobbin used.	Replace the bobbin with a specified aluminum bobbin for the sewing machine with a thread trimmer.
	7-5) Thread path on the hook is poorly finished.		Grind the thread path on the hook or replace the hook with a new one.
8. Stitch skipping at the start of sewing Slip-off the thread at the start of sewing	8-1) The needle-up stop timing is excessively advanced.	1-A) Position of the red maker dot engraved on the handwheel and the marker dot engraved on the machine arm when the sewing machine stops with its needle up.	Properly adjust the needle-up stop position of the sewing machine.
	8-2) Bobbin thread presser spring fails to clamp the bobbin thread after thread trimming.	2-A) Check whether the thread is clamped under the moving knife after thread trimming.	Adjust the position of the moving knife or replace the thread presser with a new one.
	8-3) The feed dog is positioned too high.		Adjust the height of the feed dog to 1mm.
	8-4) Pressure of the thread take-up spring is too high or the stroke of the spring is too large.		Decrease the pressure of the thread take-up spring or reduce the stroke of the spring.
	8-5) Length of thread remaining at the needle eyelet is insufficient.		Adjust the pretensioner to a lower value so that a longer thread remains at the needle eyelet after thread trimming.
	8-6) The needle used is too thick.		Use a thinner needle.

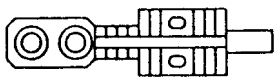
To be continued to the next page

Trouble	Case (1)	Case (2)	Check and Corrective measures

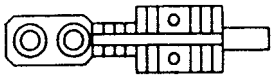
Continued from the previous page

8-7) Needle hole in the feed dog is too large. → Replace the feed dog with one that has a smaller needle hole.

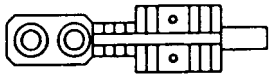
(Caution)
The feed comes in three different types with respect to the size of the needle hole. Use the food dog with the smallest needle hole as long as the needle does not break.



For heavy-weight materials



For medium-weight materials



For light-weight materials

8-8) Bobbin thread tension is too high. → Decrease the bobbin thread tension.

(Caution)
When using a thin thread (with a higher count), stitch skipping or slip-off of the needle thread is likely to occur when the remaining amount of bobbin thread is not enough.

8-9) Bobbin thread tension is too low. → 9-A) Extent of idling of the bobbin. → Increase the bobbin thread tension.

8-10) The presser foot rises at the start of sewing. → Use the soft-start function.

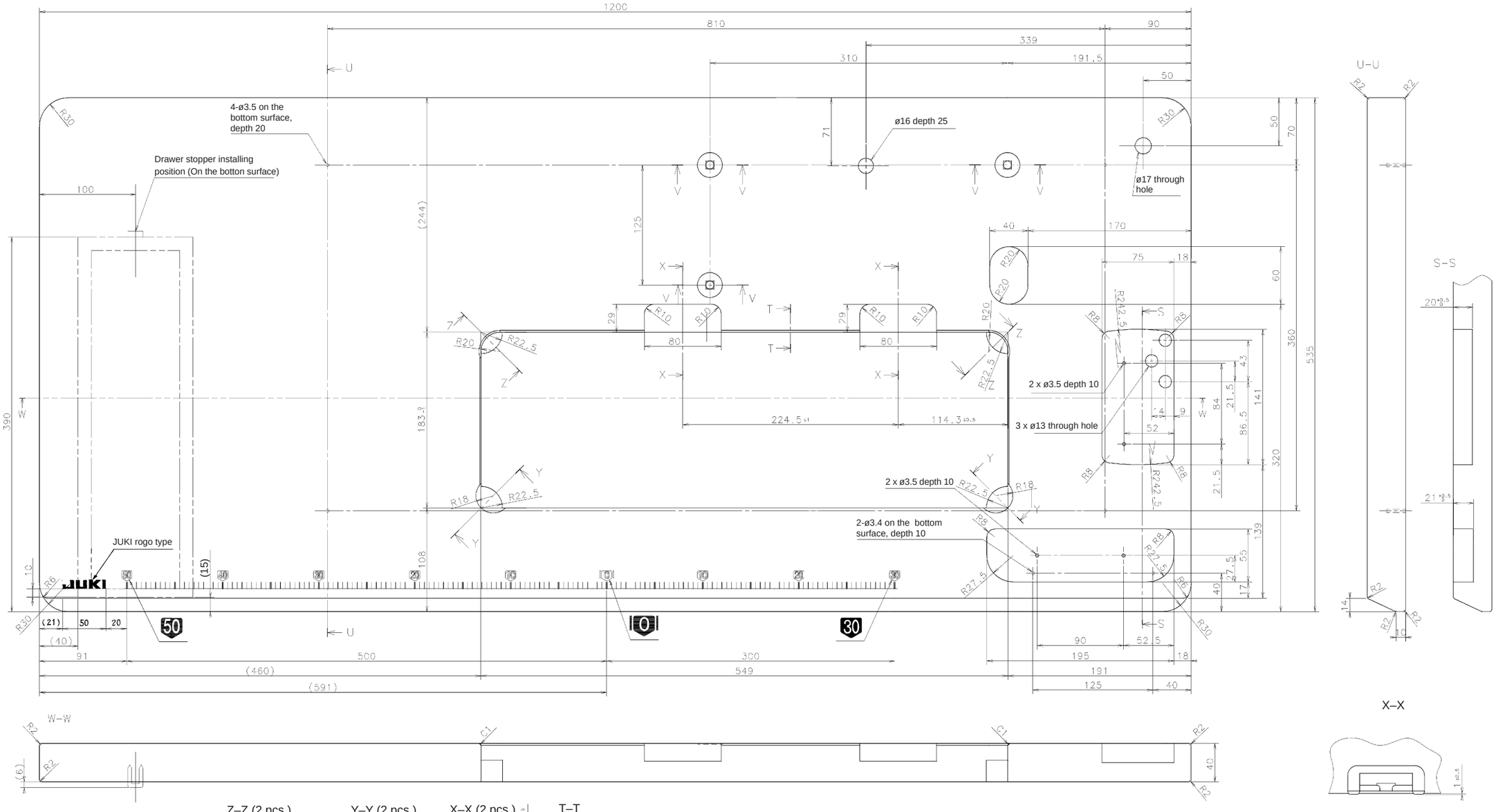
Trouble	Case (1)	Case (2)	Check and Corrective measures
9. Length of thread remaining at the needle eyelet after thread trimming is insufficient, of the thread slips off the needle eyelet after thread trimming.	9-1) Thread is not smoothly fed from the thread stand.	1-A) How the thread is wound round the thread stand and fed from it.	Adjust so that the needle is smoothly fed from the thread stand. **(Caution) 1**.
	9-2) Thread tension of the tension controller No. 1 is too high.		Reduce the thread tension of the tension controller No.1.
	9-3) Operating range of the thread take-up spring is too large.		Decrease the operating range of the thread take-up spring.
	9-4) Hook of the moving knife is not properly ground.		Replace the moving knife with a new one.
	9-5) Tension disk fails to work at the time of thread trimming.	5-A) Action of the tension releaser.	Properly adjust the tension releaser.
	9-6) Thread trimming timing is not properly adjusted.		Properly adjust the thread trimming timing.
	9-7) Longitudinal position of the moving knife is not properly adjusted.		Adjust the longitudinal position of the moving knife properly.
	9-8) Needle-to-hook relation is not properly adjusted.	8-A) The clearance provided between the hook and the bobbin case opener is too large.	Adjust the clearance provided between the hook and the bobbin case opener to 0.2mm.
		8-B) The clearance provided between the bobbin case and the throat plate is too small.	Adjust the clearance provided between the bobbin case tand he throat plate to 0.9mm.
	9-9) The needle and the bobbin case stopper have scratches.		Correct the needle and the bobbin case stopper or replace them with new one.
	9-10) The moving knife fails to cut the thread sharp.		Replace the moving knife with a new one.
	9-11) Thread is cut outside the material.		Use the thread guide equipped with a felt pad.
			Actuate the thread trimmer with the sewing speed reduced if the thread is cut outside the material.
	9-12) The felt pad of the thread guide equipped with a felt pad has a thread passing mark and is flattened.		Replace the felt (22603708) with a new one.

(Caution)

1. When using a synthetic thread, the thread is likely to be wound round the thread stand. In this case, use the thread stand guide arm (asm.) supplied with the sewing machine.

Trouble	Case (1)	Case (2)	Check and Corrective measures
10. The wiper comes in contact with the needle.	10-1) The wiper is improperly positioned.		Adjust so that the wiper spreads the thread properly.
	10-2) The needle-up stop position of the machine is improper.	2-A) Position of the red marker dot engraved on the handwheel and the marker dot engraved on the machine arm when the sewing machine stops with its needle up.	Properly adjust the needle-up stop position of the sewing machine.
11. The wiper fails to spread the thread.	11-1) The wiper improperly positioned.		Adjust so that the wiper spreads the thread properly.
	11-2) Length of the needle thread remaining after thread trimming is excessive.	2-A) Tension of the tension controller No.1.	Adjust the tension controller No.1 so that the needle thread of 35 to 45mm remains after thread trimming.
		2-B) Timing of the thread trimming action.	Properly adjust the thread trimming timing.
		2-C) Position of the moving knife.	Adjust the longitudinal position of the moving knife.
	11-3) The bobbin thread clamping pressure is too high.	3-A) Thread presser spring.	Properly adjust the position of the thread presser.
	11-4) The moving knife fails to cut the thread sharp.		Replace the moving knife with a new one.

15. Drawing of the table



Part No. : 40026321

MEMO

JAB
EMS Accreditation
RE005

EMS
ISO14001: 2004
REG.NO.JSAE389

UKAS
ENVIRONMENTAL MANAGEMENT
089

JUKI CORPORATION HEAD OFFICE

The environmental management system to promote and conduct
①the technological and technical research, the development and design of the products in which the environmental impact is considered,
②the conservation of the energy and resources, and the recycling, in the research, development, design, distribution, sale and maintenance service of the industrial sewing machines, household sewing machines and industrial-use robots, etc. and in the sale and maintenance service of data entry system and in the purchase, distribution and sale of the household commodities including the healthcare products.

This manual uses environment-friendly soyink.

JUKI®

JUKI CORPORATION

MARKETING & SALES H.Q.
8-2-1, KOKURYO-CHO,
CHOFU-SHI, TOKYO 182-8655, JAPAN
PHONE : (81)3-3480-2357 • 2358
FAX : (81)3-3430-4909

Please do not hesitate to contact our distributors or agents in your area for further information when necessary.

* **The description covered in this engineer's manual is subject to change for improvement of the commodity without notice.**

06 · 10 Printed in Japan (E)