

Yamato[®]

Instruction Manual

PNEUMATIC UNDER THREAD TRIMMING DEVICE
with anti-unravelling function controlled
by compact motor

UTL-A/Y

UTL-A44, UTL-A44/ST2-A

VG3721-8 class

Thank you for having purchased UTL-A/Y.

Before using your UTL-A/Y, please read the Instruction manual and understand the contents well.

After reading the instruction manual, please keep it in a location where it is easily accessible to the operator.



YAMATO SEWING MACHINE MFG. CO., LTD.

CONTENTS

1. Installation	1
1.1 Table cutting diagram	1
1.1.1 Table top type(Type A)	1
1.1.2 Table top type(Type B)	2
1.1.3 Semi-submerged type	3
1.2 Wiring	4
1.2.1 Connecting detector switch	4
1.2.2 Connecting intermediate cable	4
1.2.3 Solenoid valve number and intermediate cable part number	4
1.2.4 Wiring motor	5
1.3 Air piping Diagram	6
1.3.1 UTL-A44	6
1.3.2 UTL-A44/ST2-A	7
1.4 Setting motor	8
1.4.1 Setting UTL device	8
1.4.2 Setting sewing speed	9
1.4.3 Release of Hook	10
1.4.4 Release of thread cutting	10
1.5 Adjusting synchronizer	11
2. Proper operation	12
2.1 Operating procedure for UTL-A44 device	12
2.2 Operating procedure for UTL-A44/ST2-A device	13
2.3 Regular maintenance	14

CONTENTS

3. Adjusting	15
3.1 Adjusting detector switch	15
3.2 Adjusting thread trimming mechanism	15
3.2.1 Thread trimming air cylinder	15
3.2.2 Position of lower knife	16
3.2.3 Relation between upper and lower knives	16
3.2.4 Positions of clamp spring and clamp spring presser	16
3.2.5 Pressure of clamp	17
3.2.6 Position of upper knife	17
3.2.7 Relation between lower knife and needle	18
3.2.8 Position of lower knife	19
3.2.9 Lower knife carrier guide	20
3.2.10 Lower knife carrier guide(upper)	20
3.2.11 Adjusting Hook	21
3.2.12 Relation between lower knife and needle thread or looper thread	22
3.3 Adjusting tension release	23
3.3.1 Tension release block	23
3.3.2 Tension release connecting	23
3.3.3 Thread pull-off lever	23
3.3.4 Tension disc sparator	24
3.3.5 Thread pull-off hook unit	24
3.4 Adjusting Air wiper	25
3.5 Presser foot lifter mechanism	26
3.6 ST2-A device	27
3.6.1 Position of movable trimming knife	27
3.6.2 Engagement between movable and fixed trimming knives	28
3.6.3 Pressure of thread clamp spring	29
3.6.4 Adjusting thread pull-off hook unit	29
3.7 Changing timing belt	30
4. Appendix	31

Attention

The description in this instruction manual is subject to change for improvements of the commodity without notice.

1. Installation

1.1 Table cutting diagram

1.1.1 Table top type (Type A)

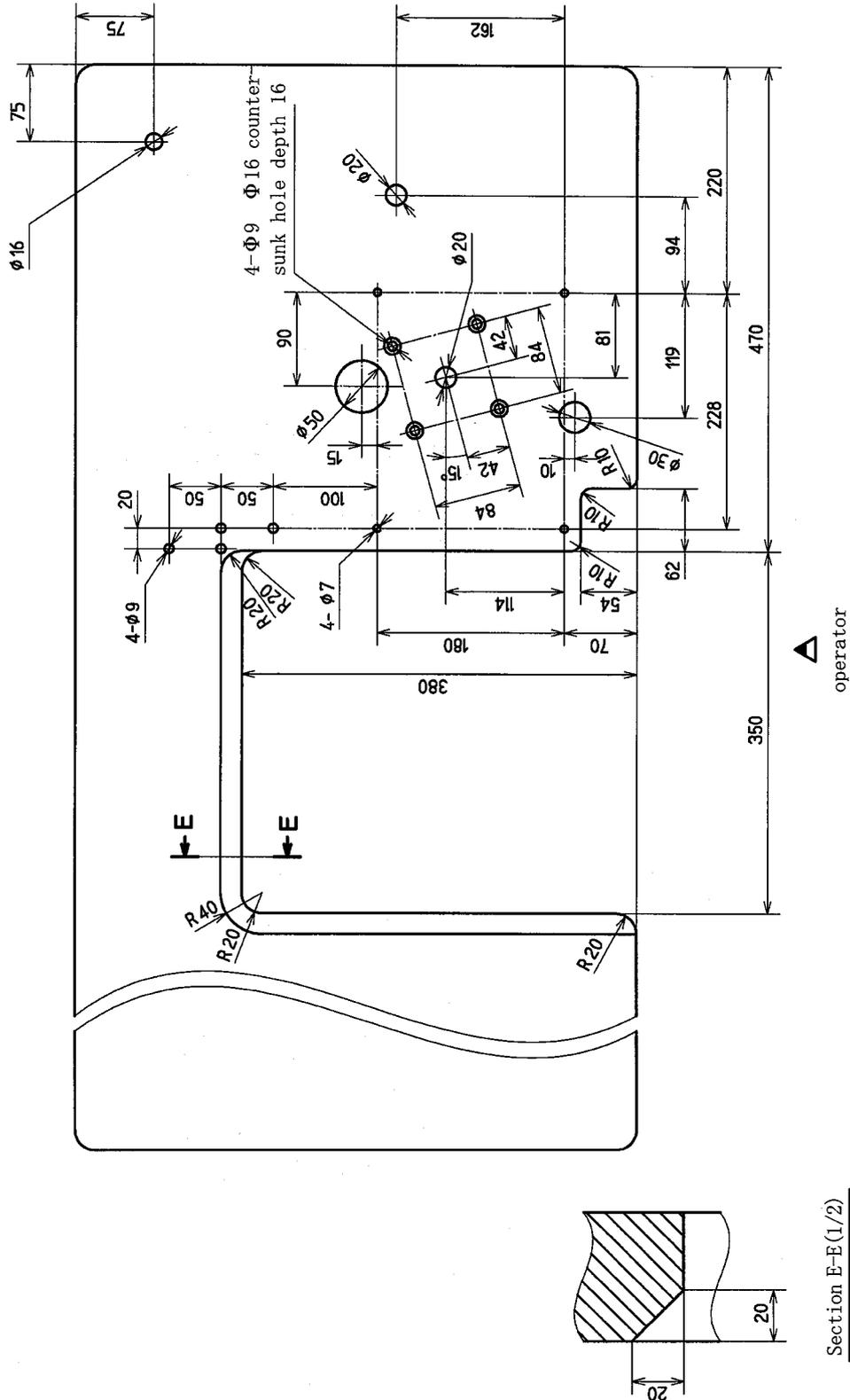


Fig. 1

1. Installation

1.1.2 Table top type (Type B)

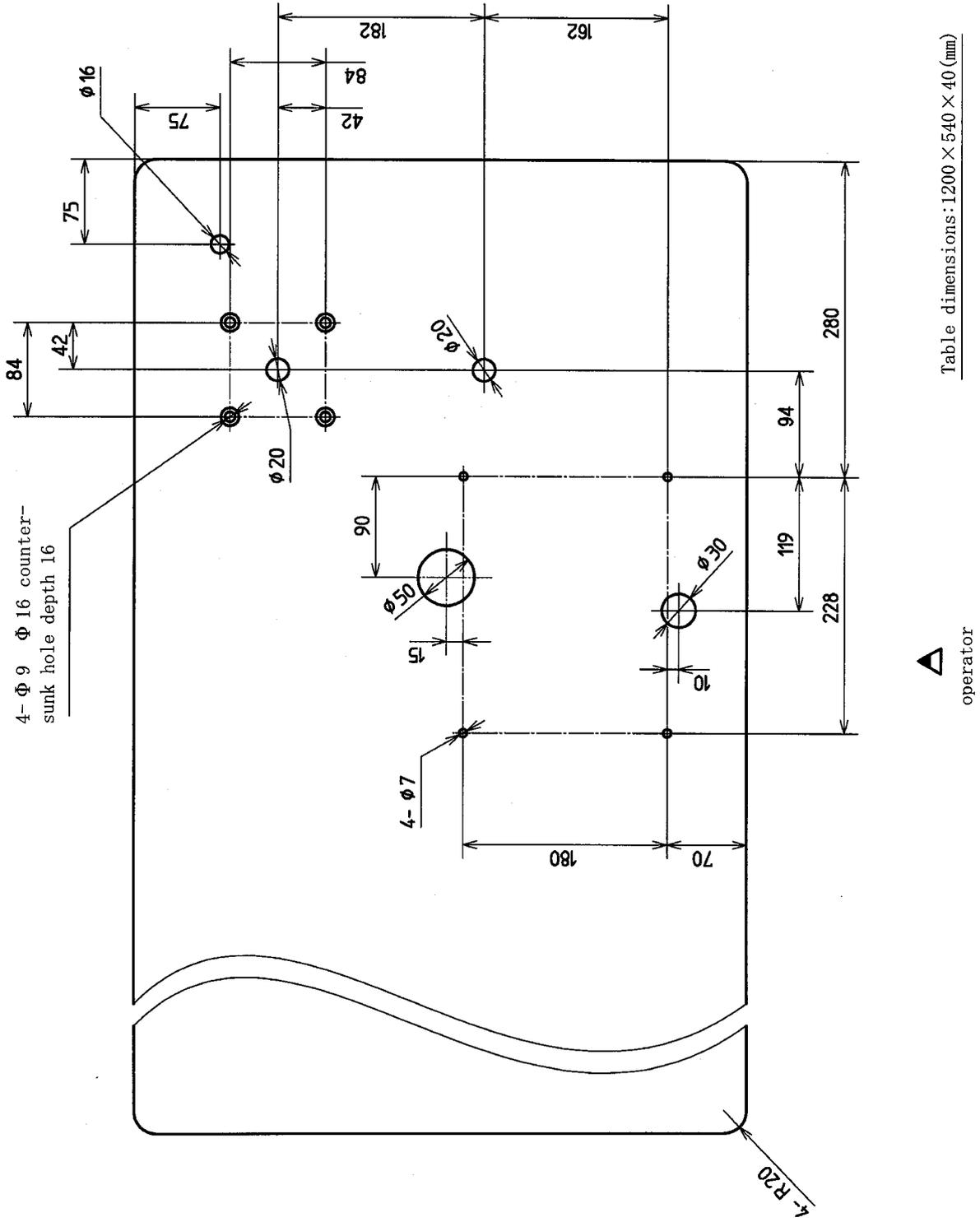


Fig. 2

1. Installation

1.2 Wiring

1.2.1 Connecting detector switch

Connect the 3P-Connector of the Detector Switch to that of the Intermediate Cable.

Insert R Connector properly depending on the machine model or device in the position of figure.

Refer the parts No. of R Connector in "4. Appendix Table 2".

⚠ CAUTION

1. Set the appropriate R connector to the machine model. R Connector is limited by the safety, when improper R Connector is connected, damage to the machine might be caused.
2. Without R Connector, maximum sewing speed is set for 2000rpm. And the function is limited by the consideration in safety.

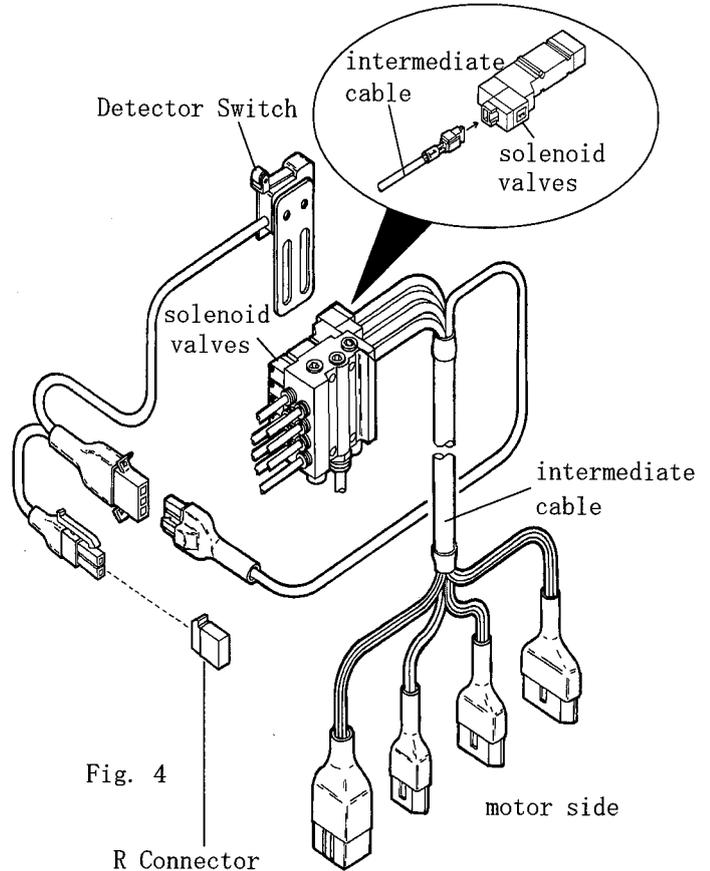


Fig. 4

R Connector

Three last digits of the parts No. are displayed.

1.2.2 Connecting intermediate cable

Insert the connectors of the intermediate cable to the solenoid valves until you hear them click.

1.2.3 Solenoid valve number and intermediate cable part number

Device	Looper Thread Cutter	Presser Foot Lifter	Air Wiper	Top Cover Thread Cutter	Hook	Chip Suctioning Pipe	Number of Solenoid Valves	Intermediate Cable part number
UTL-A44	②	①	③	×	④	⑤	5	1200486
UTL-A44/ST2-A	②	①	×	③	④	⑤	5	1200486

Table 1

Note 1 : The circled number shows the number with the solenoid valve.

1.2.4 Wiring motor

⚠ WARNING

To avoid electrical hazard, keep the power cable for the control box unplugged during wiring.

- Install the control box and the pedal unit on the back surface of the machine table referring to the instruction manual for the motor.
- Connect the control box, the pedal unit, the motor, and the rotation detector unit (synchronizer) referring to the instruction manual for the motor.
- Connect a device from the sewing machine referring to each instruction manual.

Connecting lamp

⚠ CAUTION

If sourcing the power for lamp from the motor, never use the lamp other than the exclusive lamp. If used other lamps, it can cause the damage to the control box.

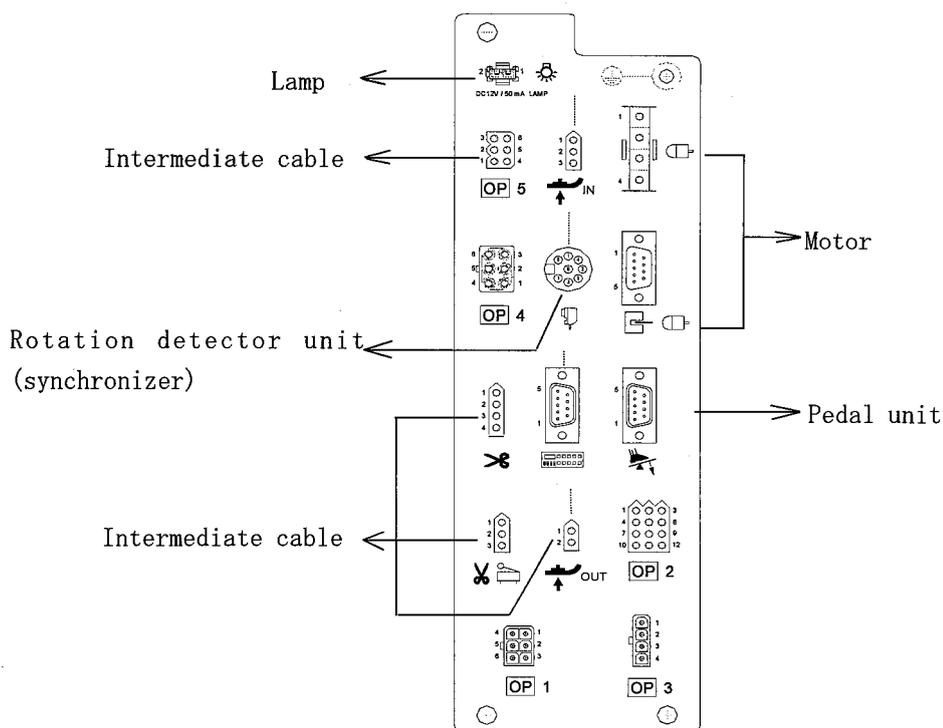


Fig. 5

1. Installation

1.3 Air Piping Diagram

1.3.1 UTL-A44(VG3721 Class)

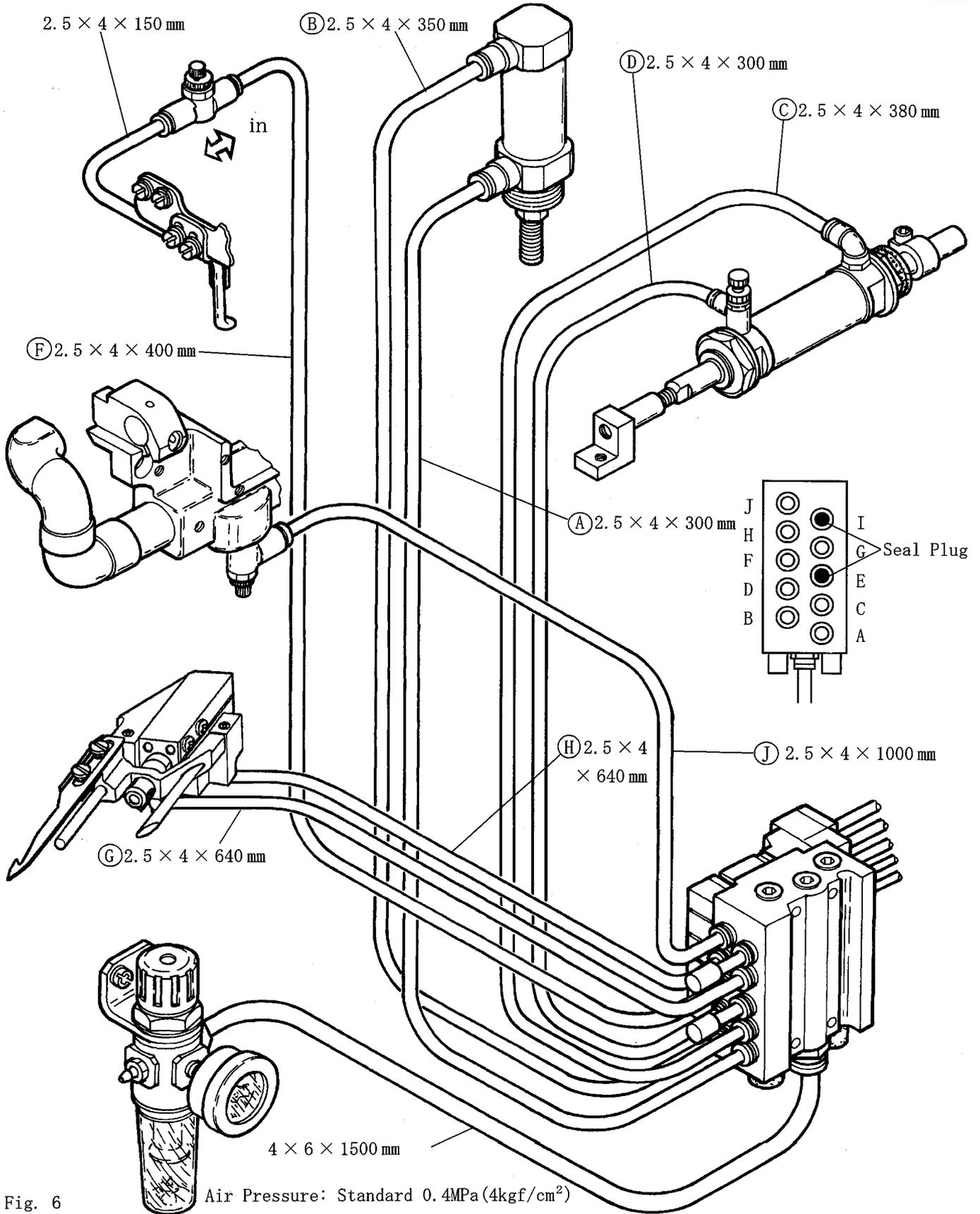


Fig. 6

Air Pressure: Standard 0.4MPa(4kgf/cm²)

Range of use 0.35~0.45MPa

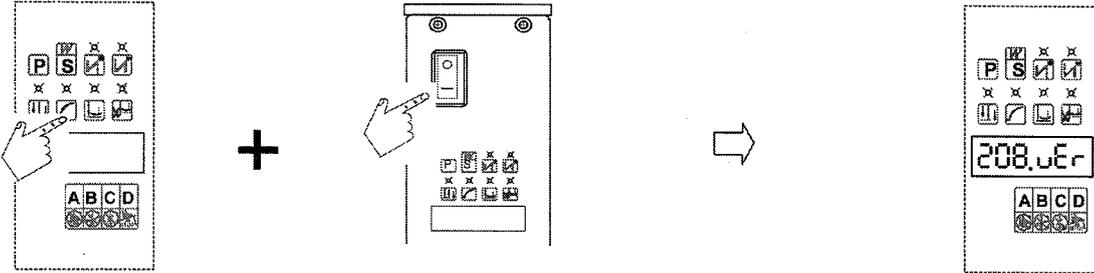
1. Installation

1.4 Setting motor

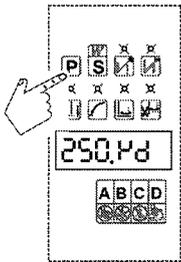
1.4.1 Setting UTL device

As for the main model, the setting of the motor can be changed in the following method.

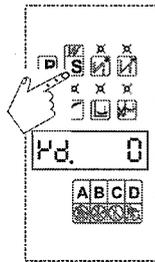
1 While pressing  key, turn the power switch on. LED displays "208.VER" as the parameter number.



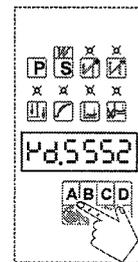
2 As pressing "P" key, the parameter number increases. Keep pressing the key until "250.YD" is displayed.



3 Press "S" key to display "YD.WXYZ", which is the current simple setting. "WXYZ" stand for the setting number and can be displayed from 0 to 9999.

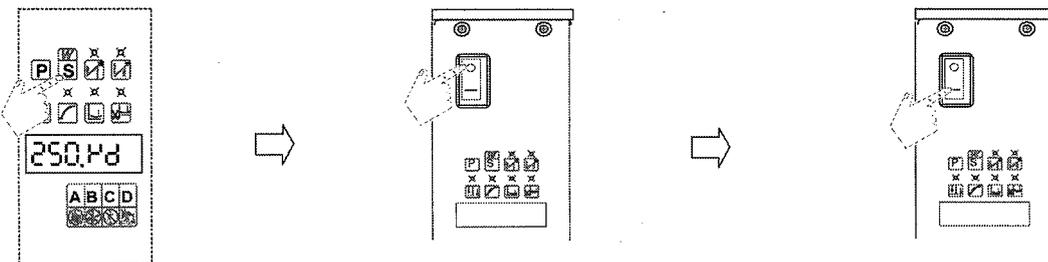


4 Press "A" "B" "C" "D" key to enter the UTL device code. Please enter the appropriate code for machine, referring Table 2 (See "4. Appendix").



5 Press "S" key. And then turn the power switch off one second and more. LED displays "POWEROFF".

6 Turn the power switch on again. Now UTL device can be operated.



Supplement

Even if the setting of UTL is changed by the abovementioned method, it is not to operate correctly when the setting of various parameters is changed to the customer.

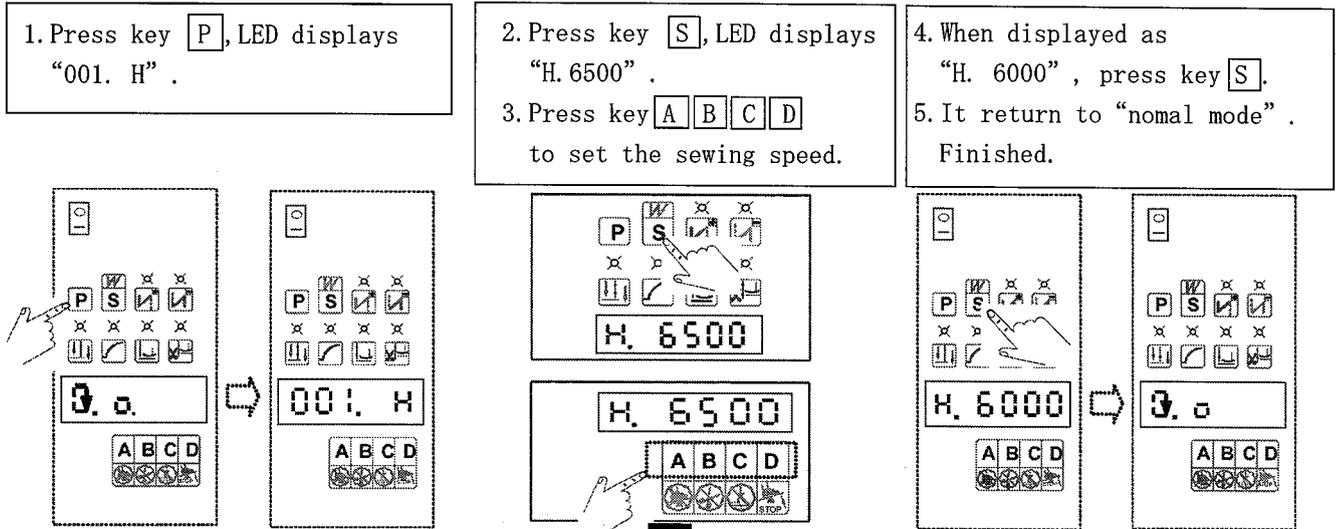
Reset the motor in that case and set UTL again.

Refer to Instruction manual of motor "15. How to Use [Recovery] to call back the Factory Setting".

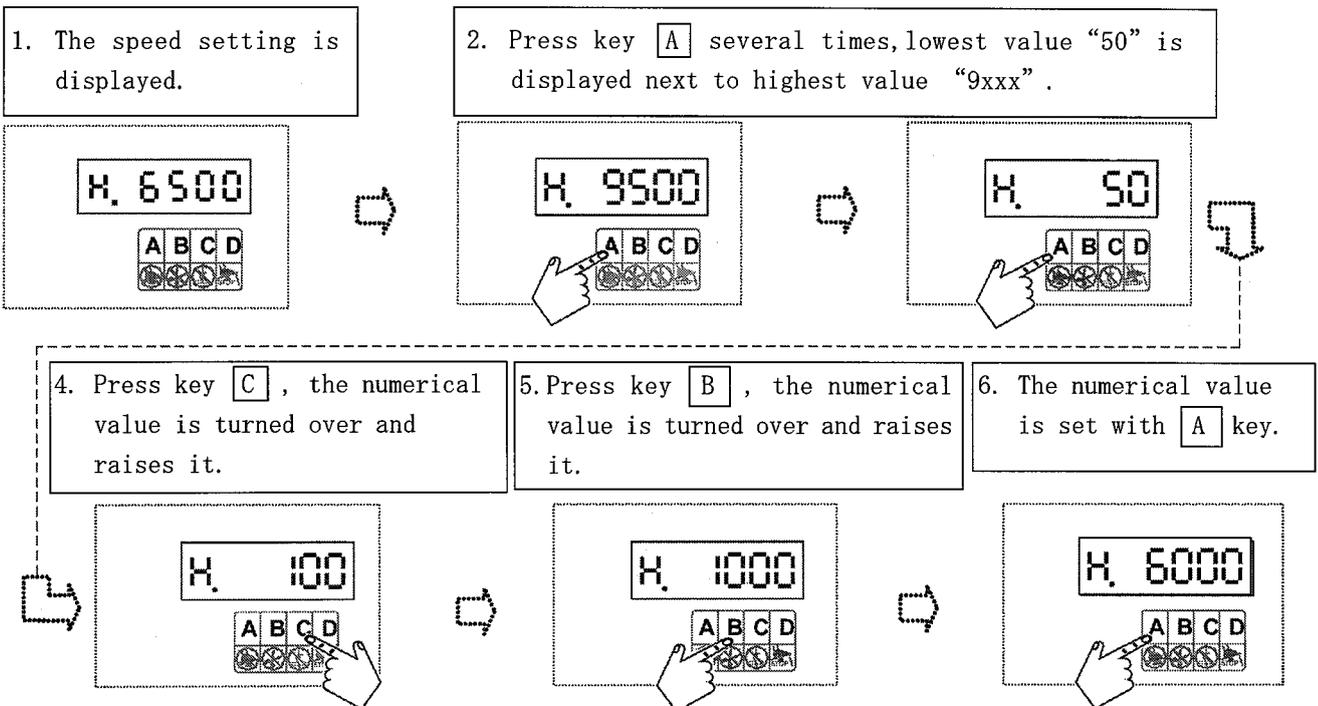
1.4.2 Setting sewing speed

Set the appropriate sewing speed for each machine.

(Example) Changing the speed from 6500rpm to 6000rpm.



The numerical value cannot be decreased, when changing a speed setting.
Do the setting change as follows.



⚠ CAUTION

Do not set the speed over the maximum rotation of the machine. It causes the breakdown and damage.

1. Installation

1.4.3 Release of Hook

Release or use of Hook operation can be set by **C** key. While display 「□」 is above the **C** key lights, Hook operation is released.

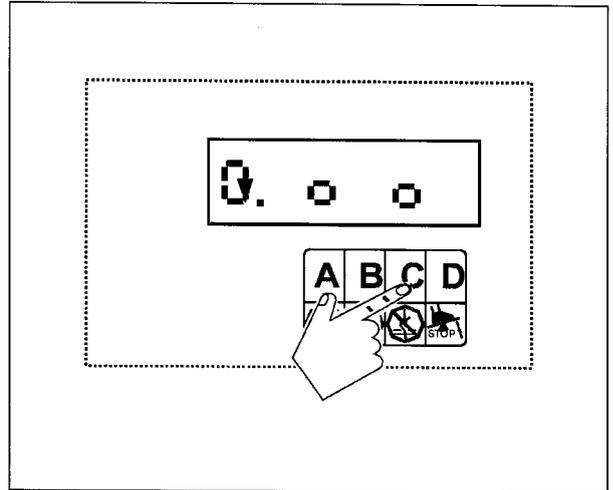


Fig. 8

1.4.4 Release of thread cutting

Release or use of thread cutting operation can be set by **B** key. While display 「□」 is above the **B** key lights, thread cutting operation is released.

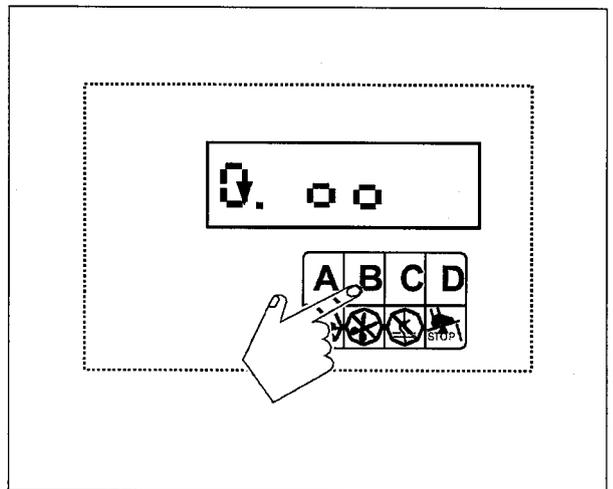


Fig. 9

1.5 Adjusting synchronizer

On the machine with a UTL-A device, check the needle stop position is between the highest point and the point 0.5 mm below the highest point.

Loosen the screws ① to move the synchronizer ② right or left to adjust its position.

- If the needle stops before the highest position, move the synchronizer ② to the left. (Fig. 10)
- If the needle stops after the highest position, move the synchronizer ② to the right. (Fig. 11)

Then run the machine to check the needle stop position.

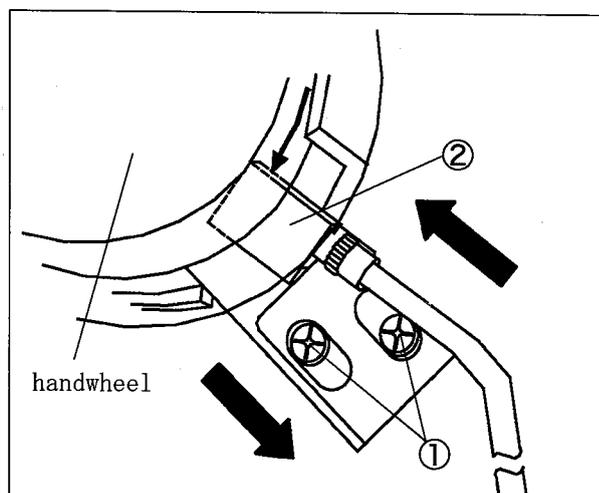


Fig. 10

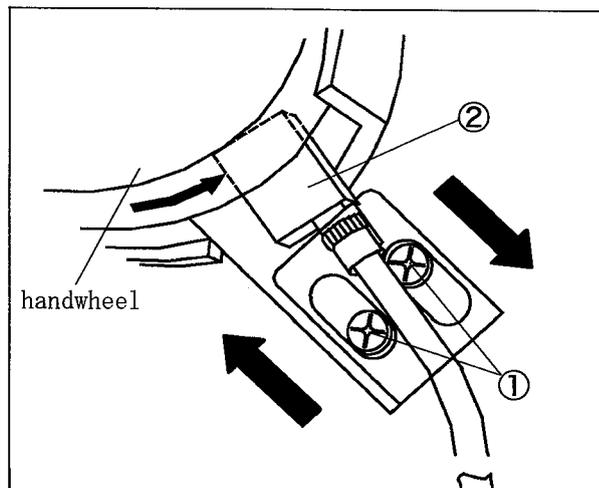


Fig. 11

2. Proper operation

⚠ CAUTION

Be sure to place the fabric under the presser foot when operating.

2.1 Operating procedure for UTL-A44 device

The motor can be selected 1 position or 2 position. The operating procedure for 1 position and 2 position is mentioned below.

- (1) Heel back the pedal to raise the presser foot.
(Fig. 12 ③)
- (2) Place the fabric under the presser foot and toe down the pedal. (Fig. 12 ①)
The machine starts at the same time as sewing and chip suction.
- (3) Release the pedal. (Fig. 12 ②)
The suction stops.
The needle stops at the lowest point.
(Skip this procedure when 1 position is selected.)
- (4) Heel back the pedal. (Fig. 12 ③)
The hook actuates and holds looper thread.
Then, machine runs for several stitches.
The needle rises and stops at the highest point.
The trimming knife mechanism operates to cut the needle and the looper threads under the stitch plate.
The looper thread is held with the clamp spring.
And then, the presser foot is raised and the air wiper blows the air.
The air wiper stops blowing after two seconds.
- (5) Release the pedal. (Fig. 12 ②)
The presser foot is lowered.

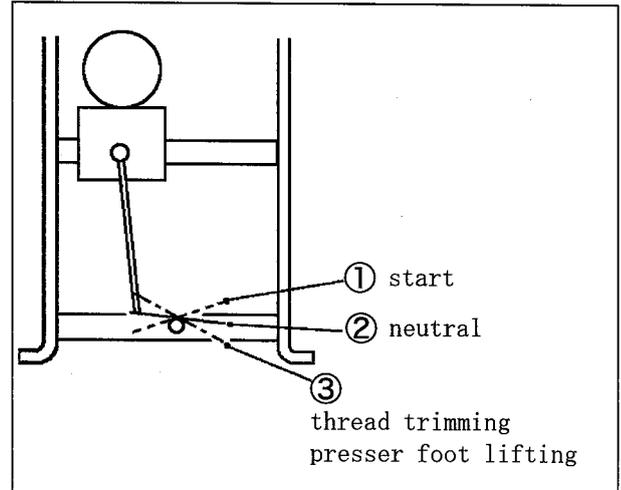


Fig. 12

NOTE

The presser foot can be moved up and down by heeling back the pedal to the positions ② and ③ until the pedal is toed down to the position ①.

CAUTION

Be sure to place the fabric under the presser foot when operating.

2.2 Operating procedure for UTL-A44/ST2-A device

The motor can be selected 1 position or 2 position. The operating procedure for 1 position and 2 position is mentioned below.

- (1) Heel back the pedal to raise the presser foot.
(Fig. 13 ③)
- (2) Place the fabric under the presser foot and toe down the pedal. (Fig. 13 ①)
The machine starts at the same time as sewing and chip suction.
- (3) Release the pedal. (Fig. 13 ②)
The suction stops.
The needle stops at the lowest point.
(Skip this procedure when 1 position is selected.)
- (4) Heel back the pedal. (Fig. 13 ③)
The hook actuates and holds looper thread.
Then, machine runs for several stitches.
The needle rises and stops at the highest point.
The trimming knife mechanism operates to cut the needle and the looper threads under the stitch plate.
The looper thread is held with the thread clamp spring.
The ST2-A device cuts and holds the top cover thread.
And then, the presser foot is raised.
- (5) Release the pedal. (Fig. 13 ②)
The presser foot is lowered.

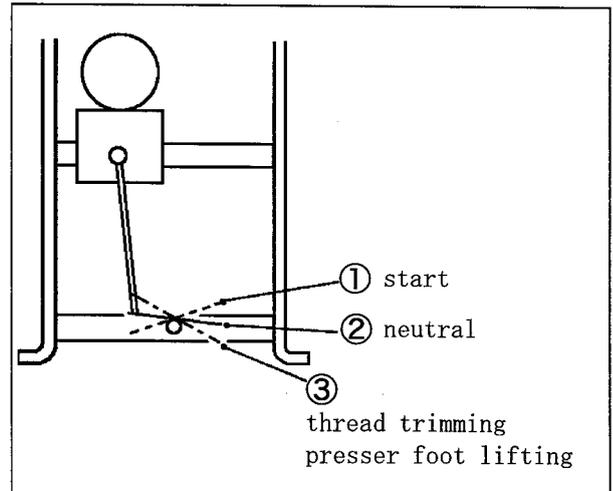


Fig. 13

NOTE

The presser foot can be moved up and down by heeling back the pedal to the positions ② and ③ until the pedal is toed down to the position ①.

2. Proper operation

2.3 Regular maintenance

1. Remove the dust on the dust proof filter ① of the motor bracket every day.

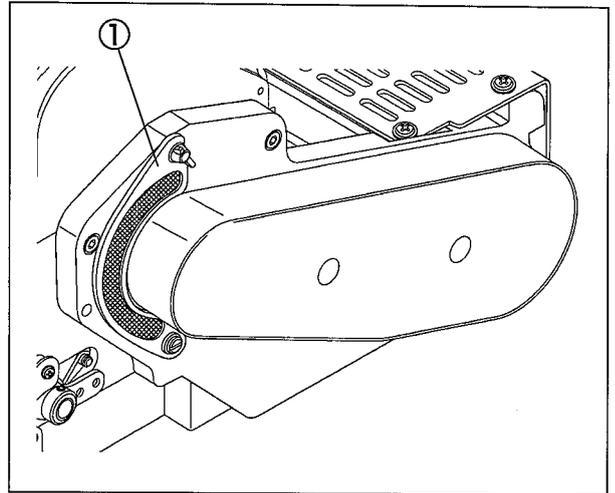


Fig. 14

2. Loosen the wing bolt ② to remove the dust proof filter ①, and remove the dust inside it once a week.

CAUTION

Clogged dust causes the machine to cool insufficiently, resulting in over heating.

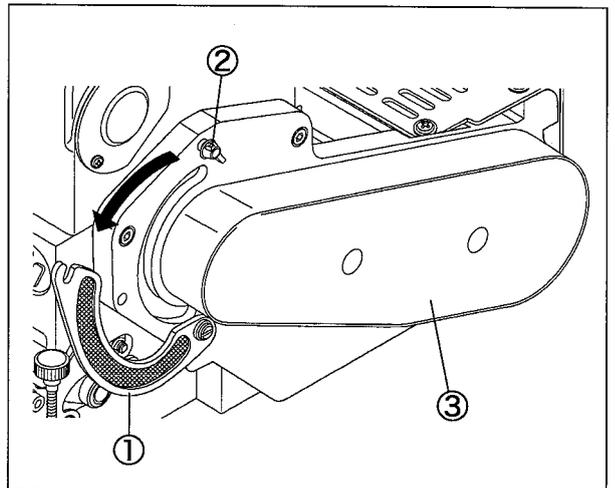


Fig. 15

3. Remove the belt cover to clean around it once a month.

CAUTION

Clogged dust between the timing pulleys ③④ and the timing belt ⑤ can cause the belt breakage.

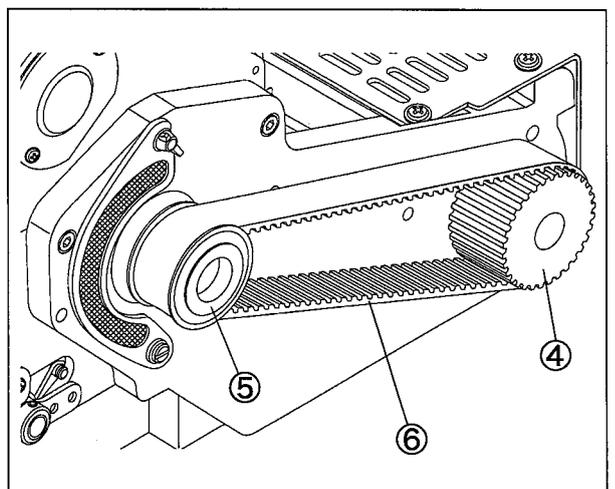


Fig. 16

3. Adjusting

⚠ WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.1 Adjusting detector switch

The detector switch works so that the machine does not run until the trimming knife returns to its original position.

- (1) Loosen the screws ① and ②.
- (2) Adjust the positions of the detector switch ③ and the switch guide ④ as below.
 - Make the switch turn ON when the trimming knife returns to its original position.
 - Make the switch turn OFF when the front of the upper knife touches the looper with moving the air cylinder by hand.
- (3) Tighten the screws ① and ② securely.

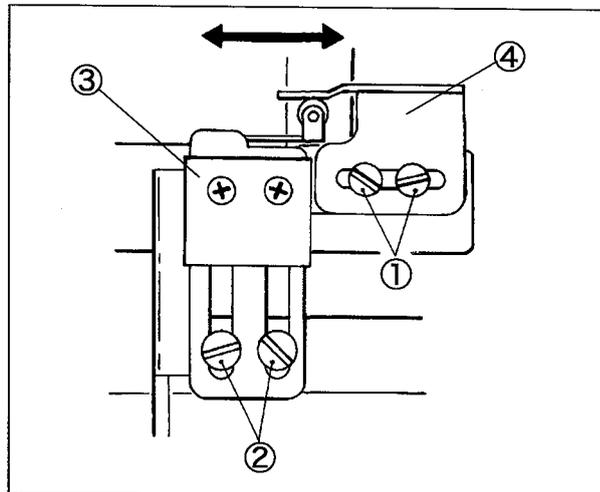


Fig. 17

3.2 Adjusting thread trimming mechanism

3.2.1 Thread trimming air cylinder

The proper stroke of the air cylinder is 15 mm. Loosen the screw ⑥ of the collar ⑤ to adjust it.

⚠ CAUTION

Readjust the thread trimming mechanism after changing the stroke of the air cylinder.

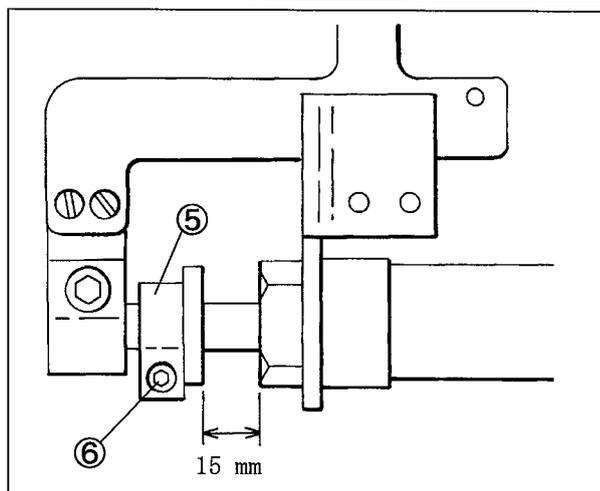


Fig. 18

Adjusting speed controller

The speed controller adjusts the speed between start and return of the thread trimming.

Adjust the standard position that the adjusting knob ⑦ returns twice from tightened securely.

⚠ CAUTION

After adjusting above, fix the adjusting knob ⑦ with the lock nut ⑧ securely.

If opened fully, great shock can cause breakage of the thread trimming mechanism.

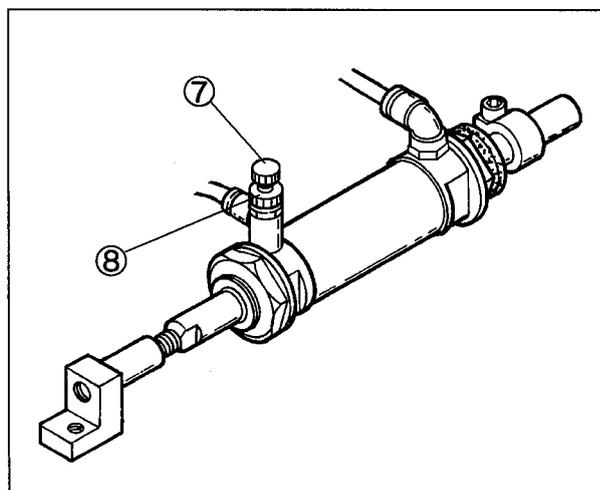


Fig. 19

3. Adjusting

WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.2.2 Position of lower knife

CAUTION

Operate the trimming knife mechanism manually only when the needle is at the highest point. If not, the parts may be touched and broken.

- (1) Loosen the screws ⑤.
- (2) Set the part ② of the lower knife ① parallel to the part ④ of the lower knife carrier ③.
- (3) Tighten the screws ⑤ securely.

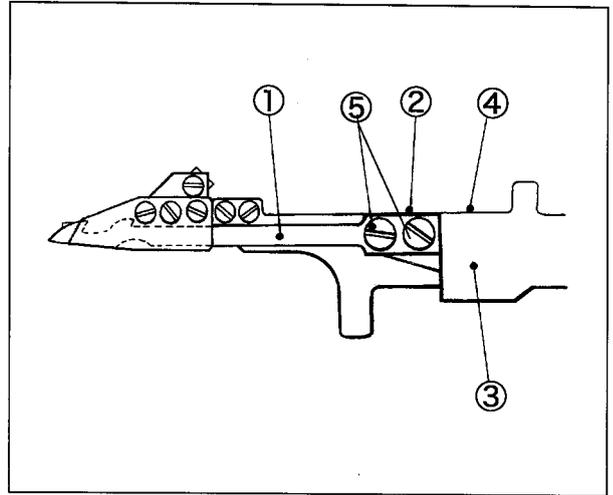


Fig. 20

3.2.3 Relation between upper and lower knives

- (1) Loosen the screws ⑩.
- (2) Adjust the needle thread hook ⑥ of the lower knife to pass at the corner ⑧ of the upper knife ⑦.
- (3) Move the lower knife at the extreme right and the upper knife ⑦ right or left. Make the engagement between the looper thread hook ⑨ and the upper knife ⑦ to 0.5 mm.
- (4) Tighten the screws ⑩ securely.

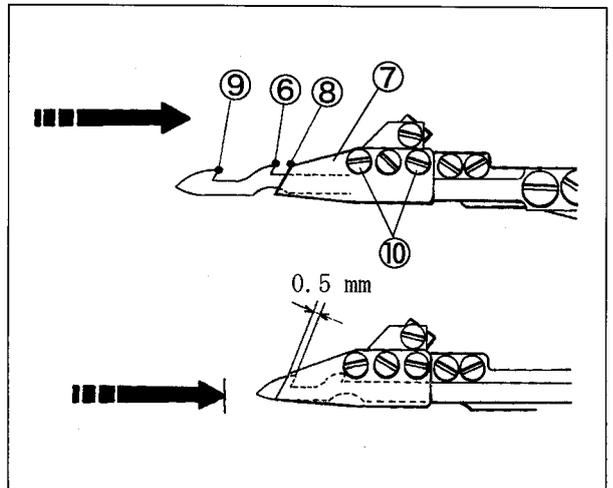


Fig. 21

3.2.4 Positions of clamp spring and clamp spring presser

- (1) Loosen the screws ⑩.
- (2) Set the part ⑫ of the lower knife ① even with the back of the clamp spring ⑪ when the lower knife moves to the right.
- (3) Tighten the screws ⑩ securely.
- (4) Loosen the screws ⑭.
- (5) Set the back of the clamp spring pressure ⑬ even with the backs of the lower knife ① and the clamp spring ⑪.
- (6) Make the distance between the left tip of the clamp spring pressure ⑬ and the upper knife tip to 1 mm.
- (7) Tighten the screws ⑭ securely.

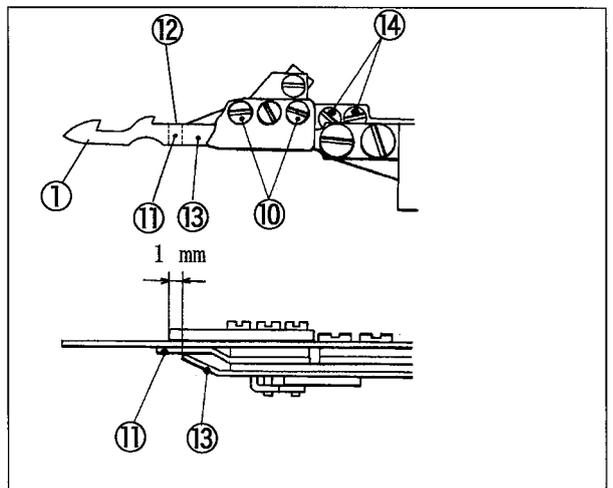


Fig. 22

⚠ WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.2.5 Pressure of clamp

The looper thread is caught and held with the clamp spring ① after cutting it.

Turn the adjusting screw ② to adjust the pressure.

- To increase the pressure, turn it clockwise.
- To decrease the pressure, turn it counterclockwise.

Keep the pressure to a minimum for holding the looper thread.

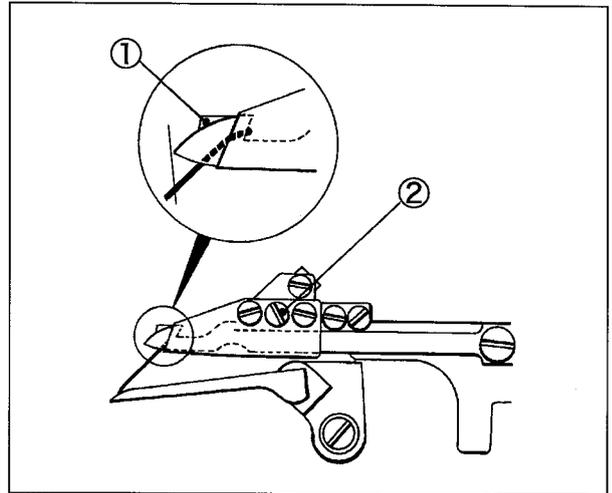


Fig. 23

3.2.6 Position of upper knife

The upper knife carrier ④ slides to the left simultaneously with the lower knife carrier ③.

And it stops by touching the upper knife carrier stop ⑤.

The upper knife slides under the stitch plate.

The upper knife carrier stop positions with the screws ⑥ automatically.

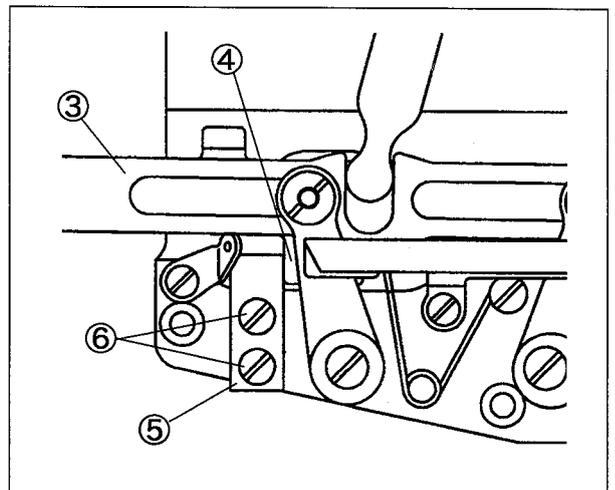


Fig. 24

3. Adjusting

WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.2.7 Relation between lower knife and needle

- (1) Loosen the nuts ②.
- (2) Move the lower knife ① at the extreme left.
- (3) Move the connecting block ③ right or left to make the distance between the needle thread hook ④ and the left needle to 3.5 - 4.5 mm.
- (4) Tighten the nuts ② securely.

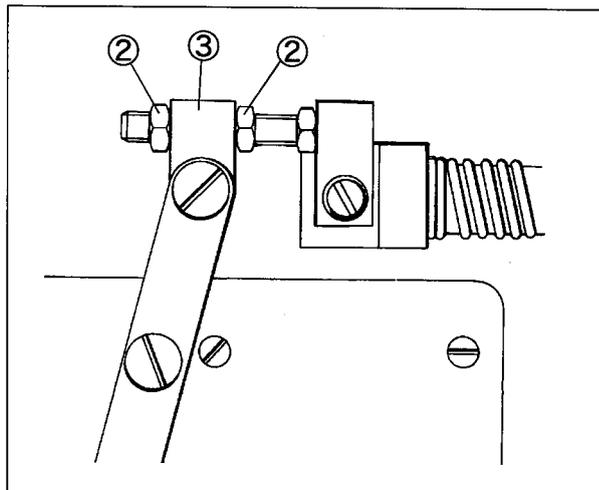


Fig. 25

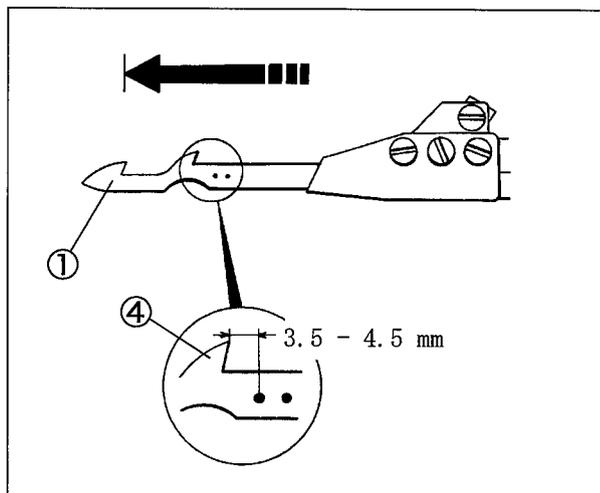


Fig. 26

**WARNING**

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.2.8 Position of lower knife

- (1) Move the lower knife① to the left.
- (2) When the distance between the tip② of the lower knife① and the right end of the looper is 12 mm, center the tip② with the flat part of the looper.
- (3) Loosen the screw③ and turn the knife guide lever ring(right)④ to adjust the tip②.
 - To move the tip backward, turn it clockwise.
 - To move the tip forward, turn it counterclockwise.
- (4) Tighten the screw③ securely.

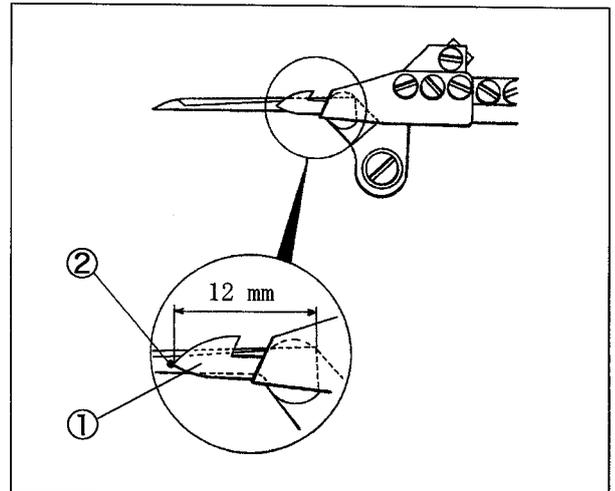


Fig. 27

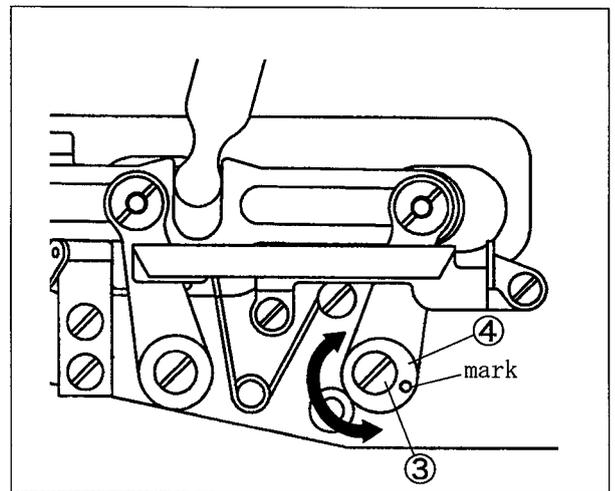


Fig. 28

3. Adjusting

WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.2.9 Lower knife carrier guide

Make the clearance between the lower knife ① and the upper end of the looper to 0.05 - 0.1 mm.

- (1) Loosen the screws ②. Move the lower knife carrier guide ③ up or down to adjust the clearance.
- (2) Tighten the screws ② securely.
- (3) Check the upper and the lower knife carriers move smoothly.

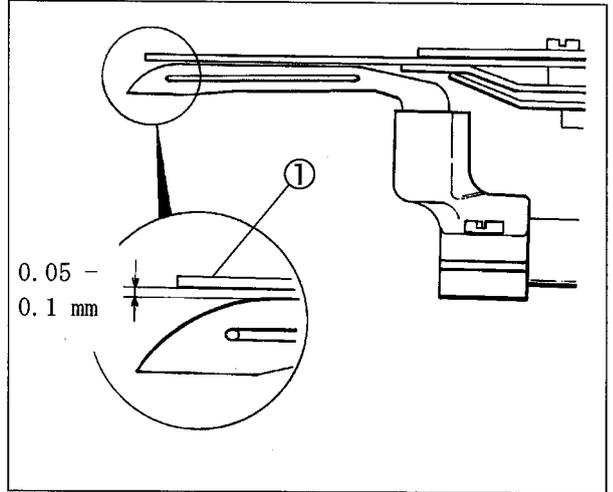


Fig. 29

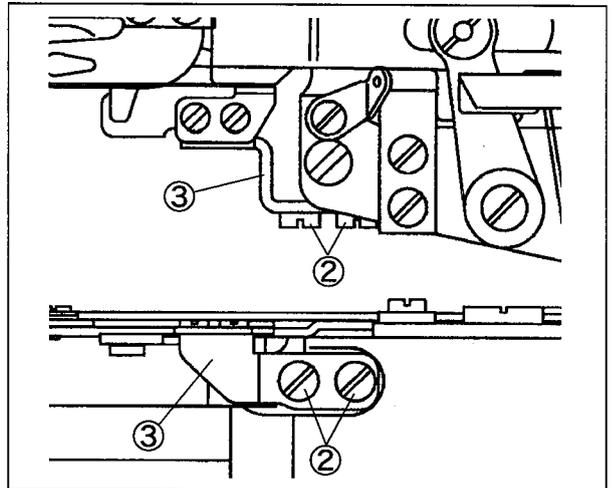


Fig. 30

3.2.10 Lower knife carrier guide(upper)

The upper knife carrier slides to the left simultaneously with the lower knife carrier. And it stops by touching the upper knife carrier stop.

- (1) Loosen the screws ④.
- (2) Make the clearance between the lower knife carrier ⑤ and the lower knife carrier guide(upper) ⑥ to 0.05 - 0.1 mm when the upper knife carrier stops.
- (3) Tighten the screws ④ securely.

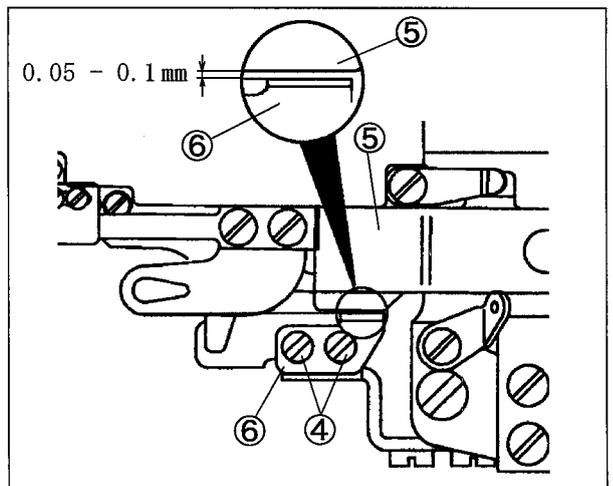


Fig. 31

3.2.11 Adjusting Hook

Up-and-down position

Adjust the height and level of the hook② against looper① by loosening screws③.

Top surface of the hook② should be set lower than top surface of the looper① by 0.5 mm, and the hook② should be horizontal.

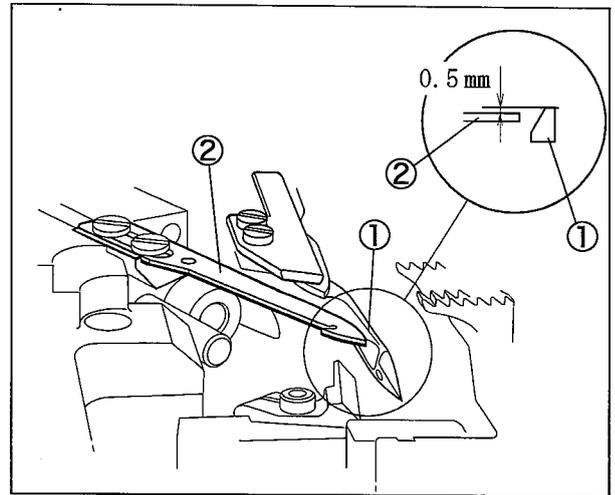


Fig. 32

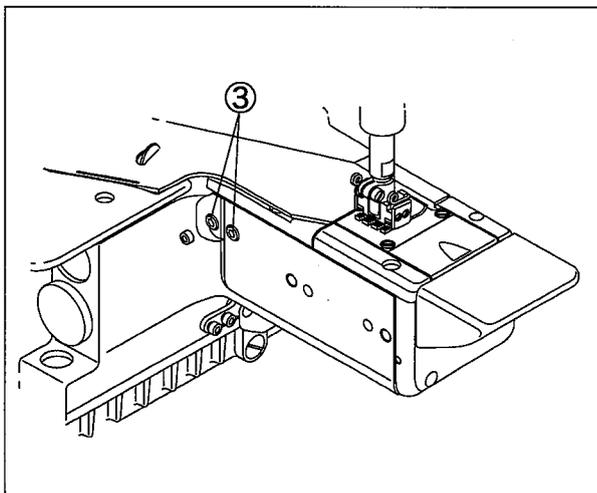


Fig. 33 VG2700, VG3721

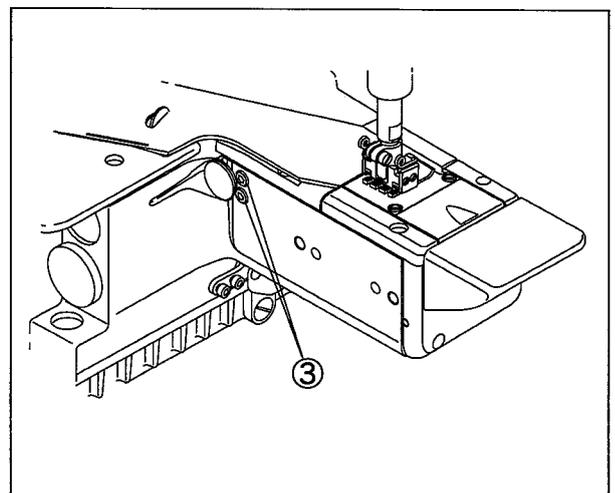


Fig. 34 VG2790

Position of the hook

Adjust the position of the hook② by loosening screws⑦.

When hook② is at its home position (fully retreated), with 0.5-1.0mm between the slot⑥ of the hook② and the behind tip of needle thread hook⑤ at the lower knife④ of UT device.

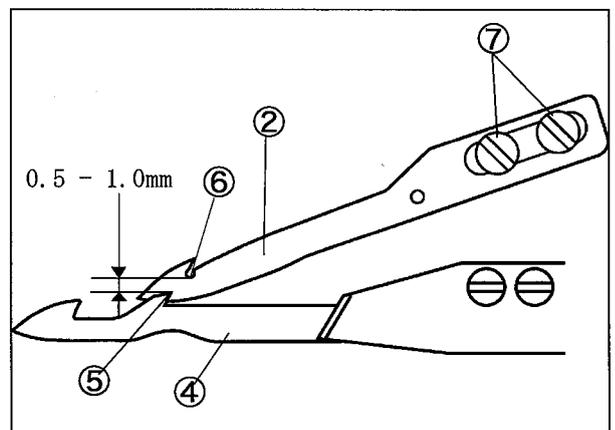


Fig. 35

3. Adjusting

⚠ WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.2.12 Relation between lower knife and needle thread or looper thread

After all adjustments, recheck following points before sewing.

★ The lower knife ① should pass through the needle thread loops ② and ③, and the hook ④ should pass in front of the looper thread.

★ The needle and the looper threads are pulled with the hooks ④ and ⑤ to the right when the lower knife ① returns. Then the threads are cut with the upper knife.

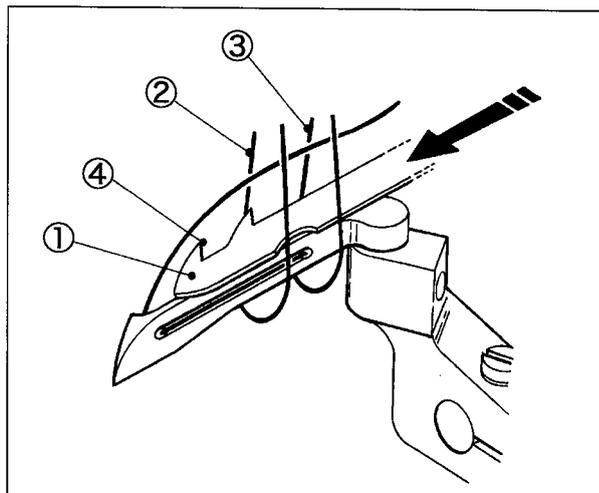


Fig. 36

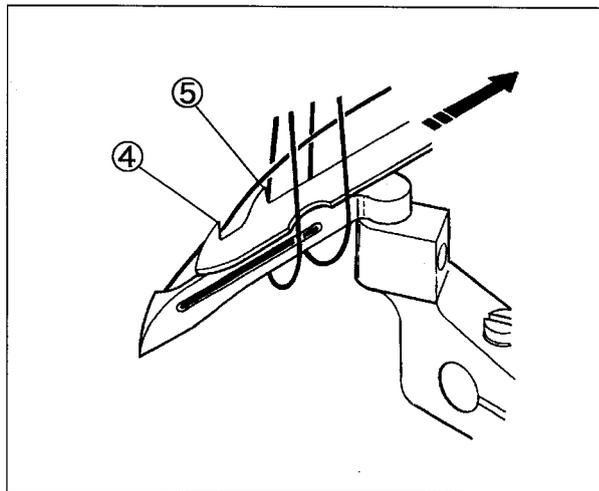


Fig. 37

Finishing sewing with the UTL-A device is shown in figure A when correctly adjusted.

Looper thread ⑥⑦ comes off because it is cut.

Looper thread ⑧ does not become loose easily.

When the hook could not hang the Looper thread, it is shown in figure, B.

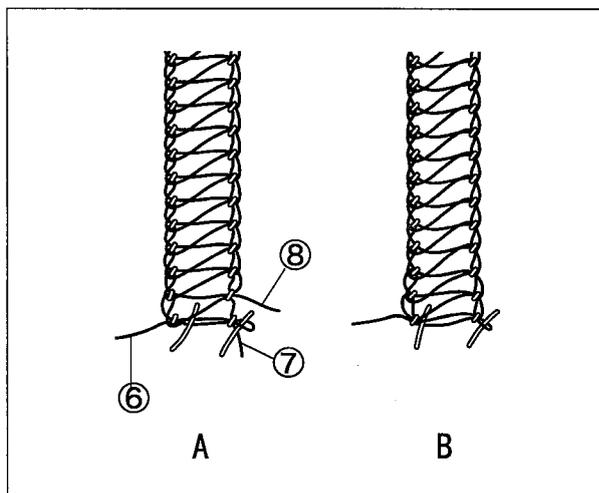


Fig. 38

⚠ WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.3 Adjusting tension release mechanism

3.3.1 Tension release block

- (1) Loosen the screw ③.
- (2) When the rod of the thread trimming air cylinder is at the extreme left (when the trimming knife device does not operate), even up the edge of the tension release block ① and rod end ② of the air cylinder.
- (3) Tighten the screw ③ securely.

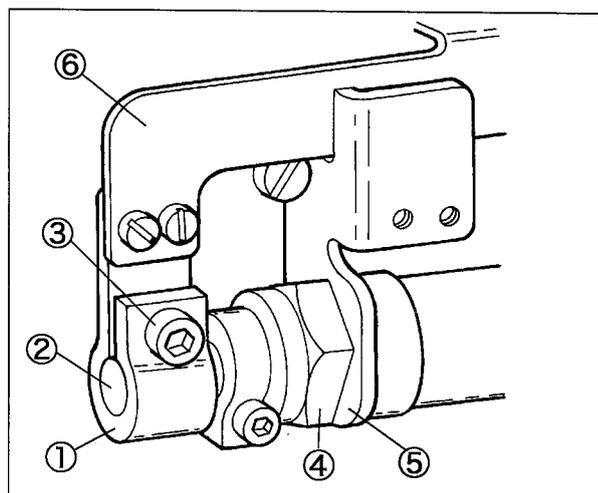


Fig. 39

3.3.2 Tension release connecting plate

Adjust it referring to Figs. 39 and 40.

- (1) Loosen the lock nut ④ of the air cylinder.
- (2) Adjust the position of the switch holder ⑤ so that the screw head ⑦ does not come off with keeping a clearance between the tension release connecting plate ⑥ and the tension release lever ⑧.
- (3) Tighten the lock nut ④ securely.

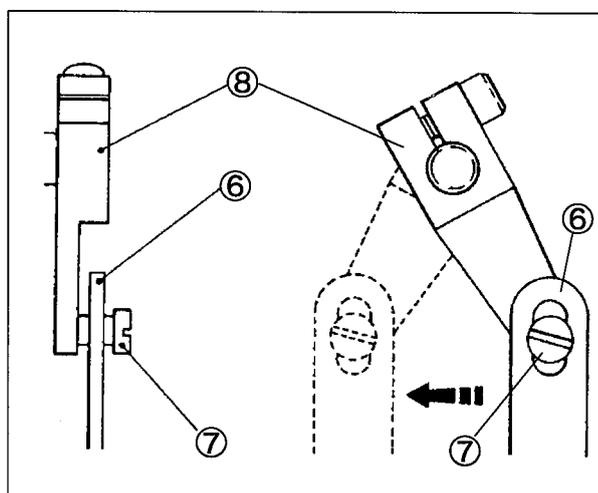


Fig. 40

3.3.3 Thread pull-off lever

- (1) Loosen the screw ⑩ of the tension release lever ⑧ on the rear of the machine frame.
- (2) Raise the thread pull-off lever ⑨ at the highest point.
- (3) Tighten the screw ⑩ securely.

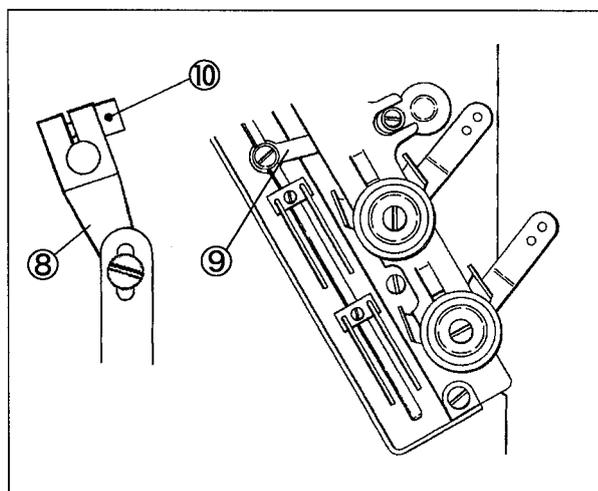


Fig. 41

3. Adjusting

WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.3.4 Tension disc sparator

- (1) Loosen the screw ② of the tension release adjusting eccentric ①.
- (2) Position the tension disc separator ③ by turning the tension release adjusting eccentric ① so that the thread tension discs can open as fast as possible.
To open the thread tension discs fast, lower the tension disc separator ③.
- (3) Loosen the screw ⑦ to set the top of the tension pull-off bar ④ 35 mm extruded from that of the thread pull-off eyelet ⑤.
- (4) Tighten the tension pull-off bar ④ to the thread pull-off bar holder ⑥ with the screw ⑦.

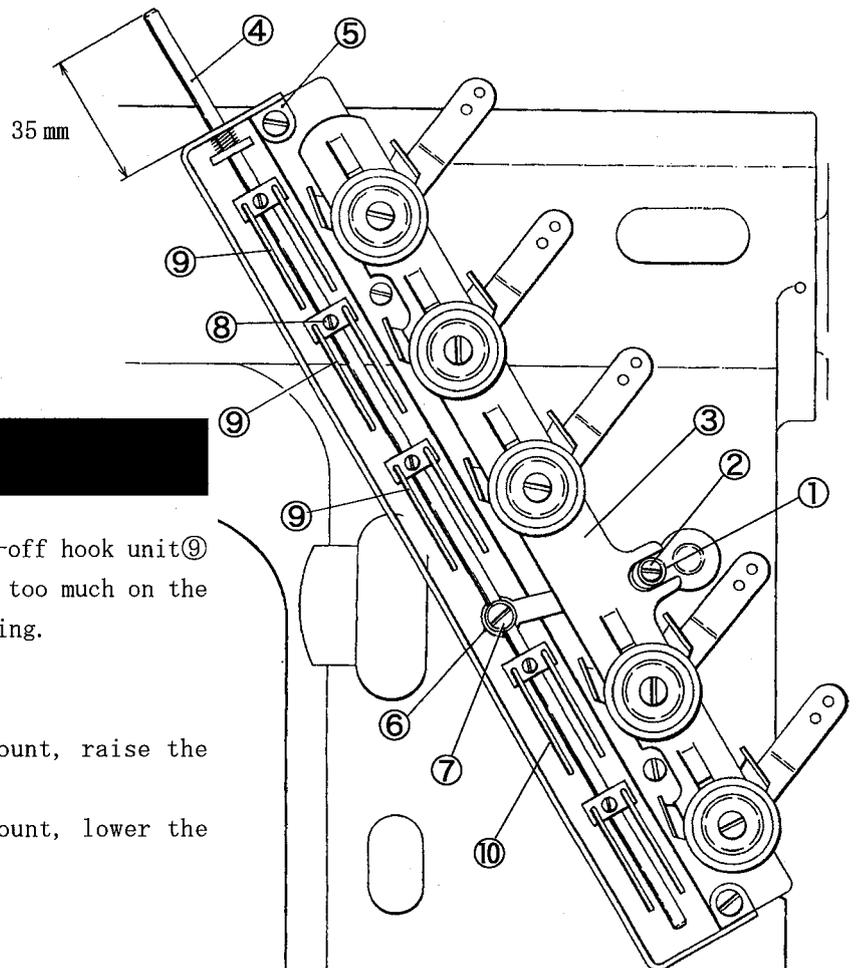


Fig. 42

3.3.5 Thread pull-off hook unit

Adjust the position of the thread pull-off hook unit ⑨ without remaining of the needle thread too much on the fabric surface at the beginning of sewing.
Loosen the screws ⑧ to adjust it.

- To decrease the thread take-up amount, raise the thread pull-off hook unit ⑨.
- To increase the thread take-up amount, lower the unit ⑨.

CAUTION

1. If the thread take-up amount of the hook unit ⑨ is too little, the stitch cannot be formed at the beginning of sewing.
2. Use the thread pull-off hook unit ⑩ only when using woolly thread for the looper. When not using, raise it at the position the thread does not take-up.

3.4 Adjusting Air wiper

- (1) Loosen the screws③.
- (2) Slide the air wiper① back or forth to blow the air behind the needles.
- (3) Tighten the screws③ securely.
- (4) Loosen the screws④.
- (5) Raise the needle at the highest point, and set the center of the air blowing hole② of the air wiper 1 - 2 mm below the left needle eye.
- (6) Tighten the screws④ securely.
- (7) Adjust the air volume with adjusting screw of the speed controller⑤.

- To decrease the air volume, turn it clockwise.
- To increase the air volume, turn it counterclockwise.

⚠ CAUTION

1. Keep the air volume to a minimum.
2. If the air blows in front of the needles, the needle thread may be slipped away from the needle eye. Make sure that the air blows behind the needles.

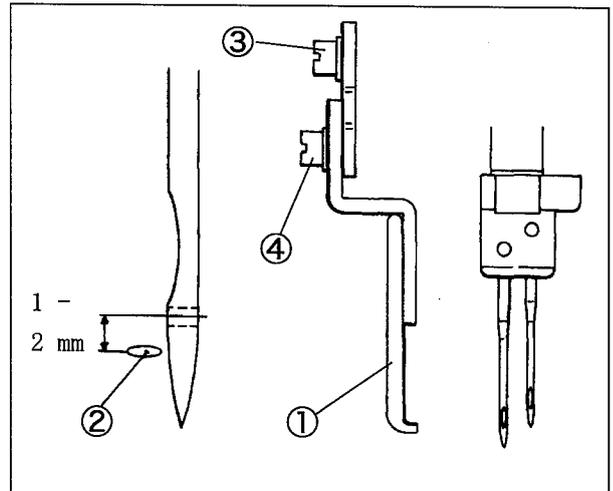


Fig. 43

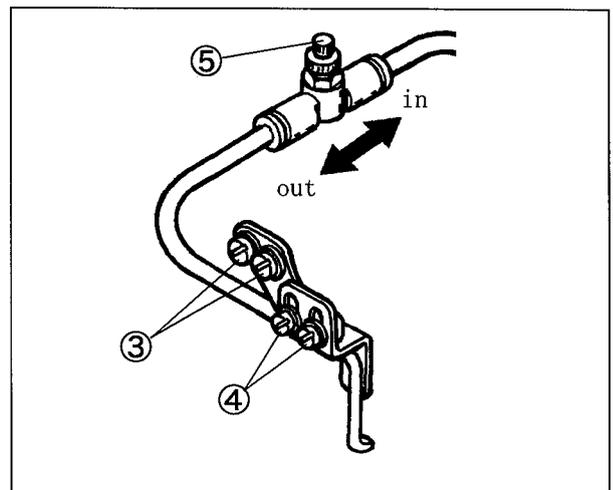


Fig. 44

3. Adjusting

WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.5 Presser foot lifter mechanism

- (1) Loosen the lock nut ①.
- (2) Turn the cylinder rod chip ③ to raise the presser foot by 6 mm when the cylinder rod ② is lowere (when the cylinder operates).
- (3) Tighten the lock nut ① securely.

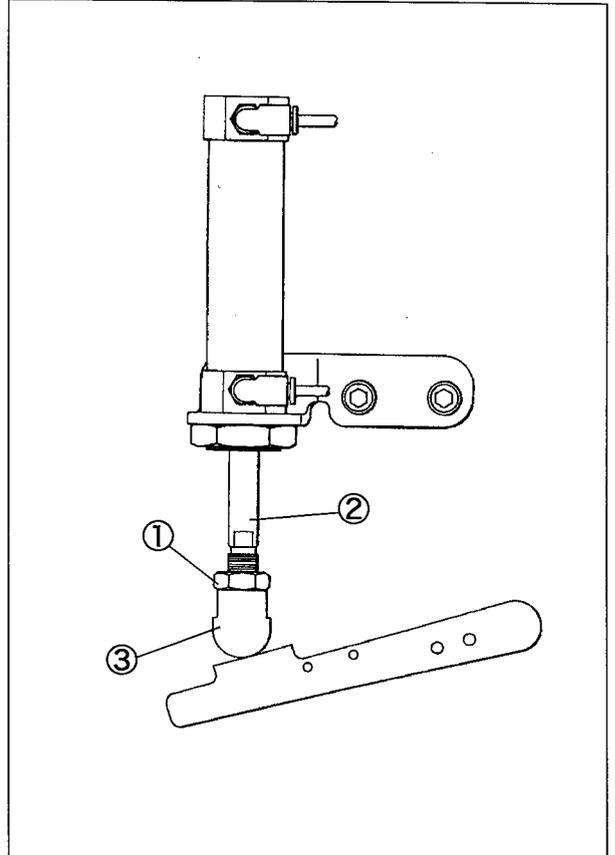


Fig. 45

⚠ WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.6 ST2-A device

3.6.1 Position of movable trimming knife

- (1) Align the line of the handwheel ① with the mark ② of the machine arm (the needle is at the highest point).
- (2) Set the movable trimming knife ③ at the lowest point with inserting a pair of tweezers through the hole ④.

NOTE

Never touch the movable trimming knife ③ to the presser foot, the left needle ⑤, and the spreader ⑥ when lowering .

If touched them, loosen the screws ⑦ and ⑧ to adjust it.

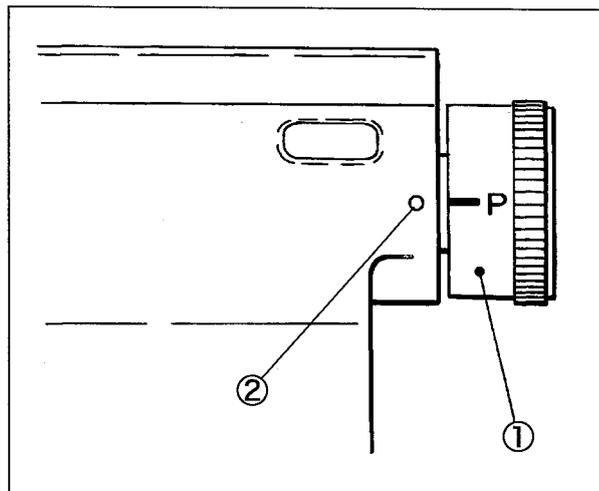


Fig. 46

- (3) Loosen the screw ⑩. Make the clearance between the top of the stitch plate and the movable trimming knife tip ⑨ to 5.5 - 6.0 mm when the movable trimming knife ③ is at the lowest point.

NOTE

After adjusting above, the movable trimming knife ③ should be crossed over the top cover thread.

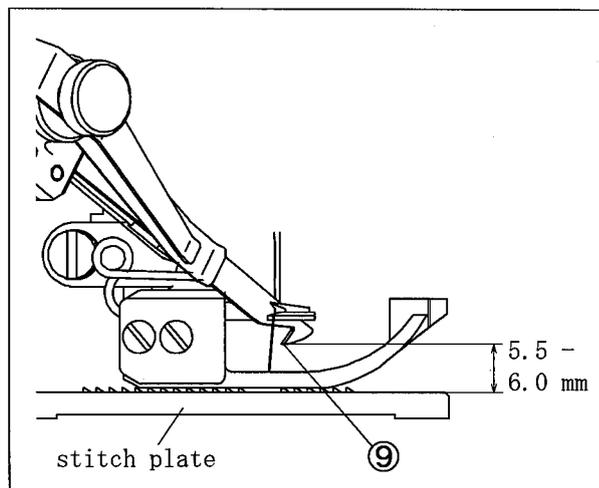


Fig. 47

- (4) After that, tighten the screws ⑦, ⑧, and ⑩ securely.
- (5) Check the position of the movable trimming knife with moving it up or down.

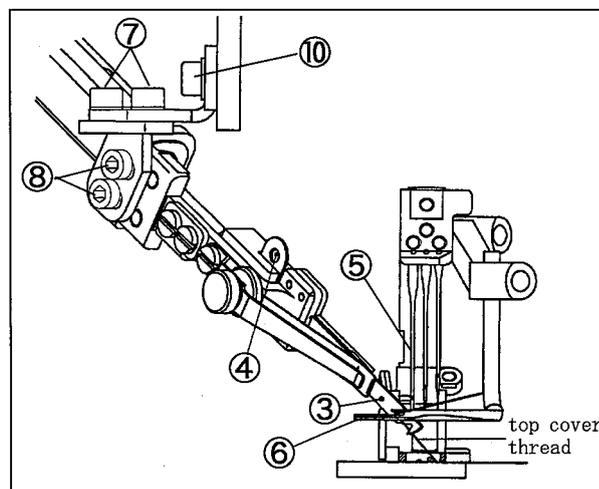


Fig. 48

3. Adjusting

NOTE

To adjust the speed of the movable trimming knife, loosen the nuts ① and turn the adjusting screws ② on the speed controllers of the air cylinder.

● To speed down, turn them clockwise.

● To speed up, turn them counterclockwise.

The presser foot starts rising immediately after cutting the top cover thread with the movable trimming knife.

Adjust the speed so

that the movable trimming knife does not touch the presser foot.

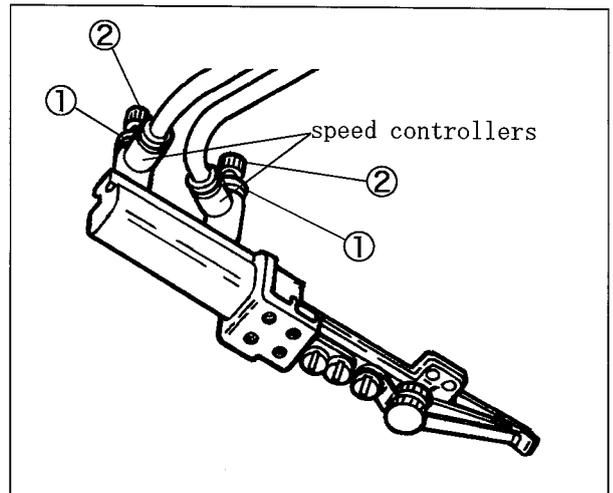


Fig. 49

3.6.2 Engagement between movable and fixed trimming knives

⚠ WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

The engagement between the movable trimming knife ③ and the fixed trimming knife ④ has been adjusted as shown in Fig. 50.

Normally adjustment above is unnecessary.

NOTE

The stroke of the movable trimming knife is the same as that of the air cylinder.

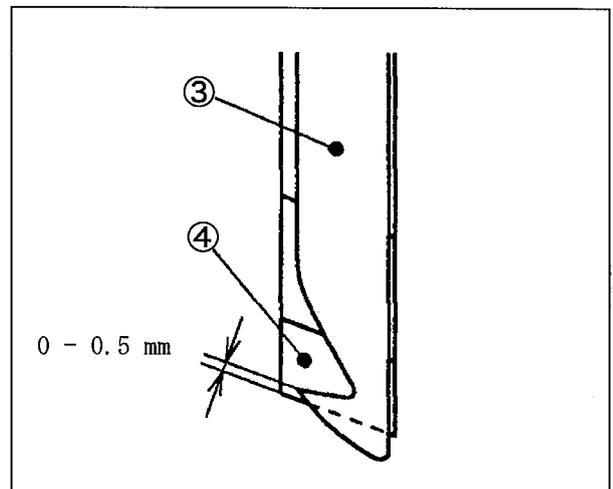


Fig. 50

⚠ WARNING

ALWAYS turn the motor switch OFF and check that the motor has been already stopped.

3.6.3 Pressure of thread clamp spring

Keep the pressure to a minimum for holding the threads.

- (1) Loosen the nut ③.
- (2) Adjust the pressure with the adjusting screw ④ so that the thread clamp spring ② and the movable trimming knife ① hold the threads cut with the knives. To increase the pressure, tighten the adjusting screw ④.

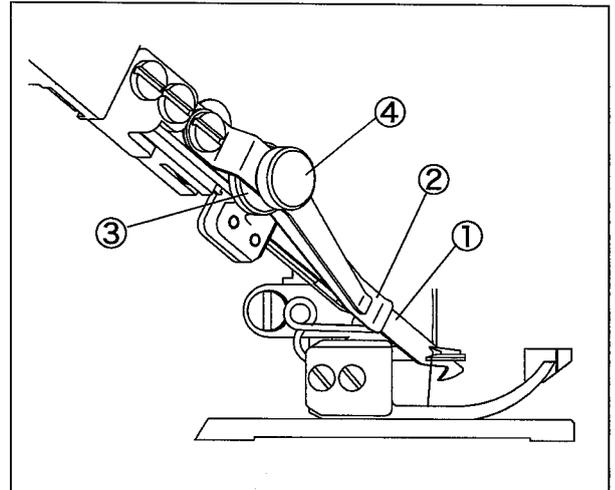


Fig. 51

3.6.4 Adjusting thread pull-off hook unit

- To decrease the thread take-up amount, raise the thread pull-off hook unit ⑤.
- To increase the thread take-up amount, lower it ⑤.

NOTES

1. The feed of the thread should be as much as possible. If not enough, the top cover thread cannot be held after cutting.
2. When using stretchable thread like woolly, thread through the top cover thread eyelet ⑥.

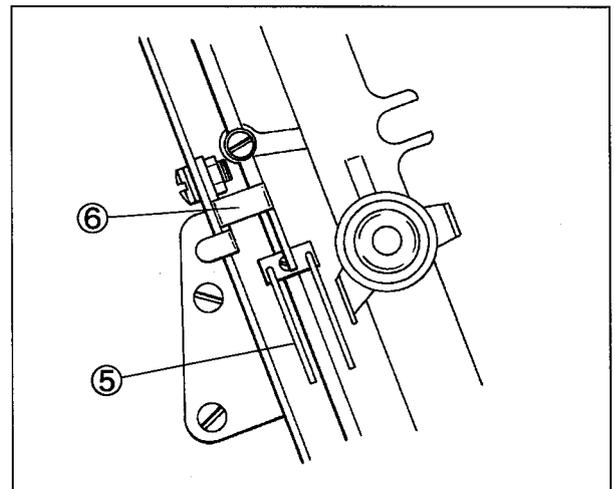


Fig. 52

3. Adjusting

3.7 Changing timing belt

(1) Loosen the screws① to remove the belt cover②.

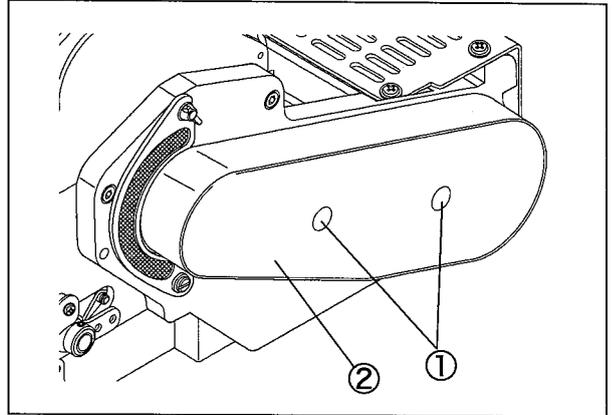


Fig. 53

(2) Remove three screws④ of the motor bracket③.

(3) Remove the old timing belt⑤.

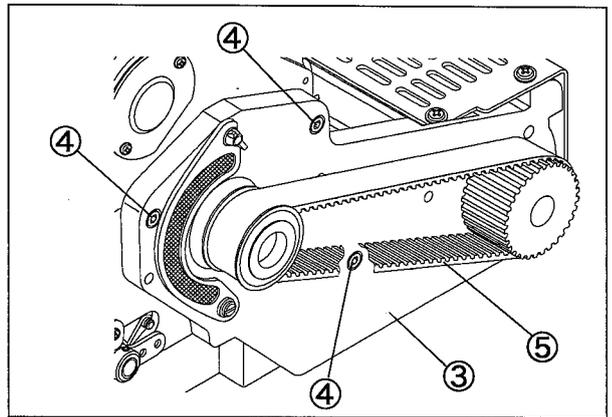


Fig. 54

(4) While holding up the motor bracket③, set a new timing belt.

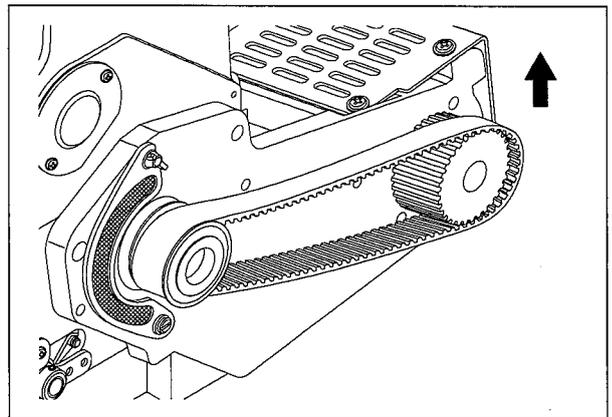


Fig. 55

(5) Align the eyes of the motor bracket③ with two pin⑥ on the machine and fix them with three screws④.

(6) Reset the belt cover②.

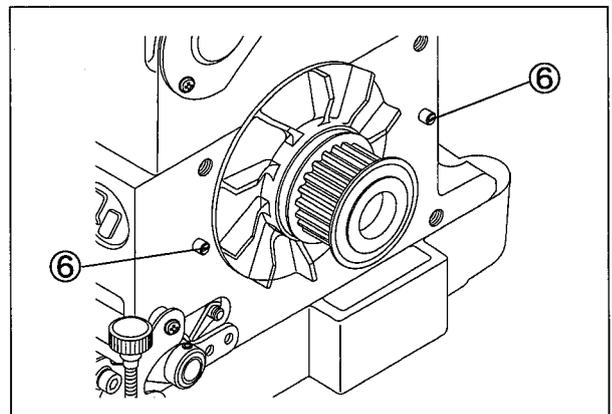


Fig. 56

4. Appendix

Model	Parts No. of R Connector	Code		Main feed dog	Remarks
		UTL-AXX	UTL-AXX/ST2-A		
VG3721-8	1070197	5040	5072	3509048	
VG3721P-8	1070198	4784	4816	3509048	

Table 2

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