

baby lock

SERVICE MANUAL

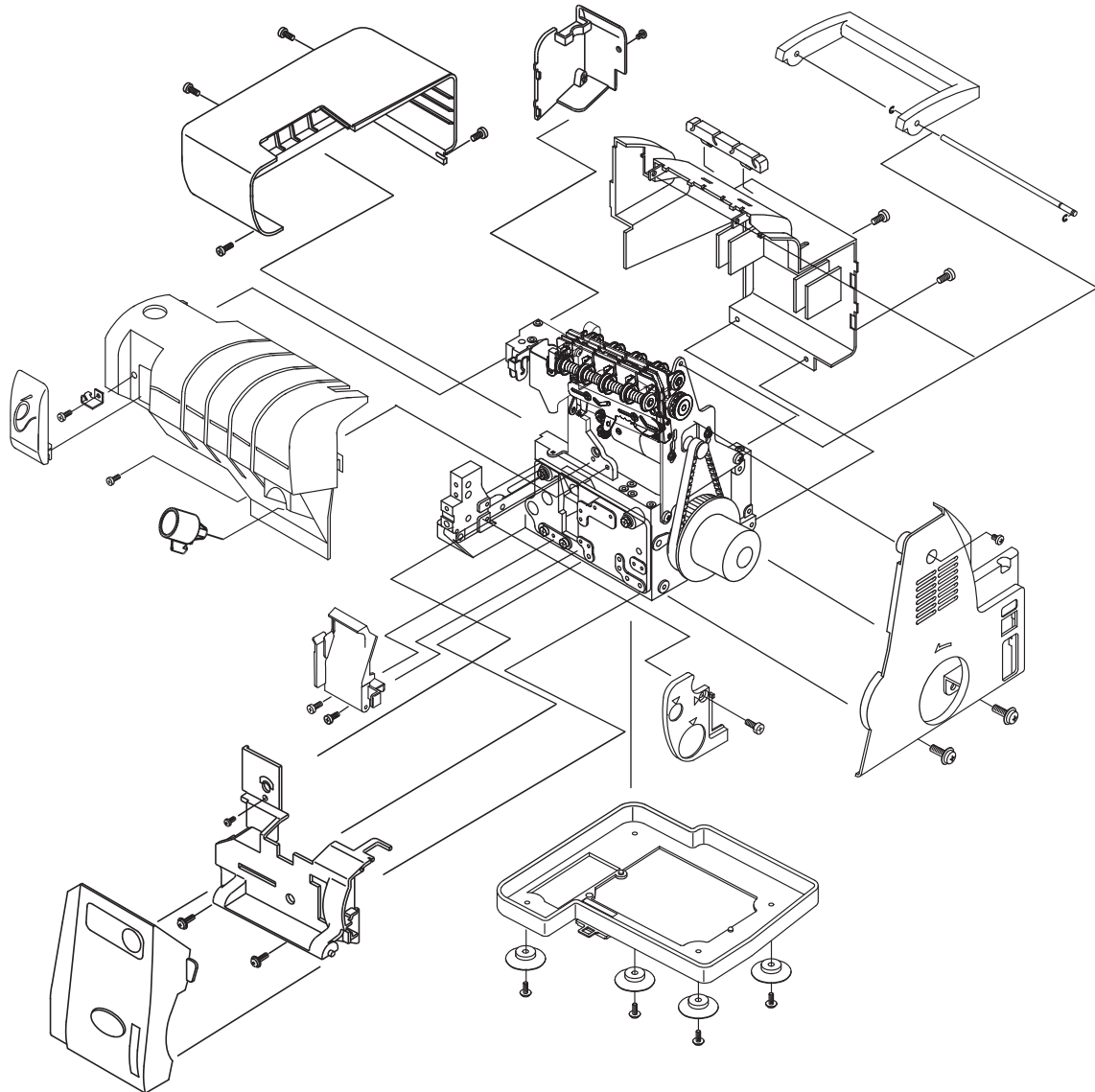
MODEL BLE1 AT

Serial Numbers

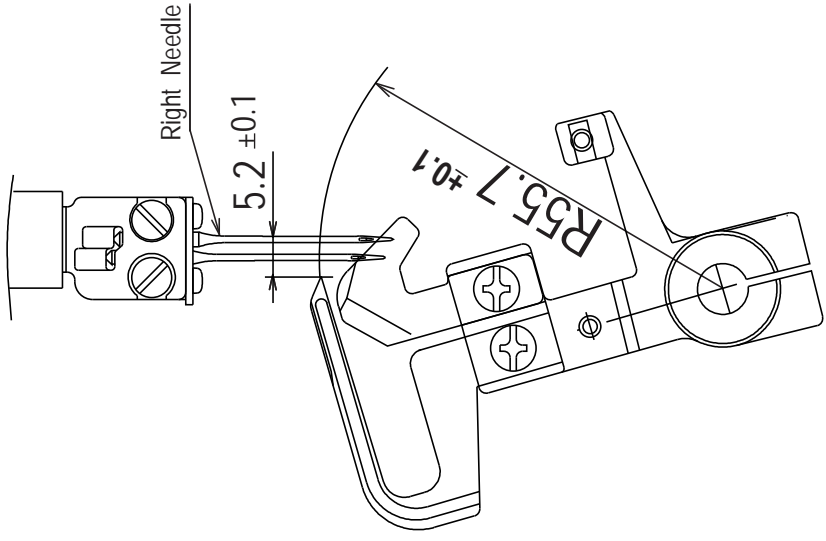
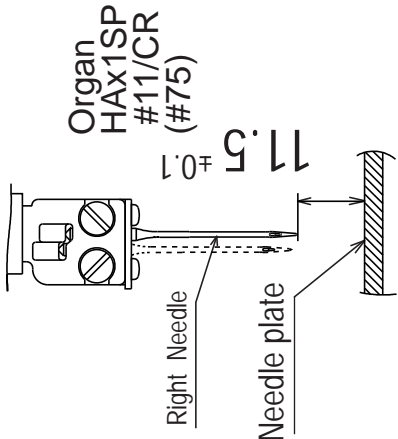
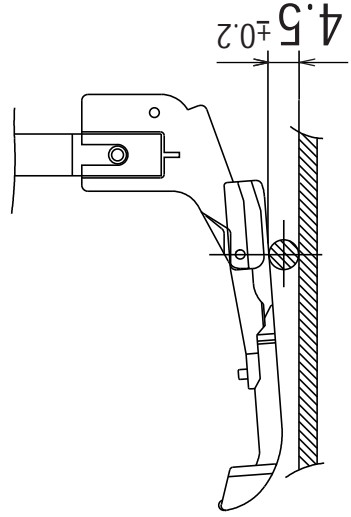
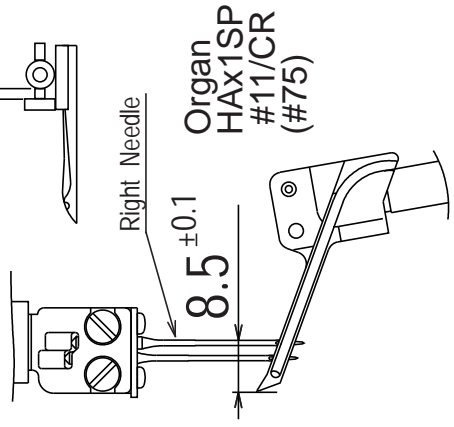
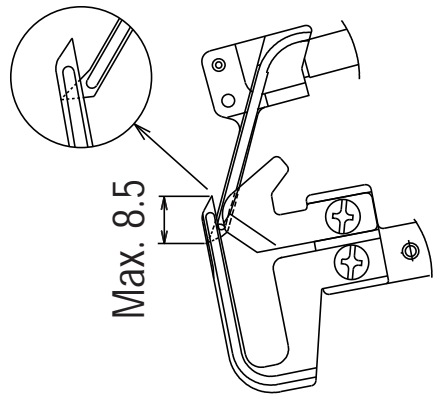
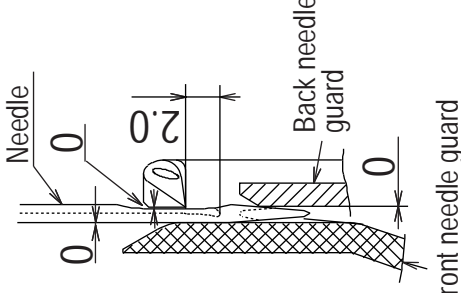
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Vol. 3.0

1. Construction of Covers



2. Adjustment of Needle, Lower looper, Upper looper, Chain looper & Presser foot

<p>Lower looper adjustment</p>  <p>Organ HAX1SP #11/CR (#75)</p> <p>Right Needle</p> <p>5.2 ±0.1</p> <p>R55.7 ±0.1</p>	<p>Height of needle</p>  <p>Organ HAX1SP #11/CR (#75)</p> <p>Right Needle</p> <p>Needle plate</p> <p>11.5 ±0.1</p>	<p>Height of presser foot</p>  <p>4.5 ±0.2</p>
<p>Upper looper adjustment</p>  <p>Organ HAX1SP #11/CR (#75)</p> <p>Right Needle</p> <p>8.5 ±0.1</p> <p>0.8 ±0.3</p>	<p>Adjustment of lower looper and upper looper</p>  <p>Max. 8.5</p>	<p>Needle guard adjustment</p>  <p>Needle</p> <p>0</p> <p>2.0</p> <p>Back needle guard</p> <p>0</p> <p>Front needle guard</p>

Before adjustment of Thread delivery System(ATD)

In case you can not get the proper stitches, please check the following items before you adjust the Thread Delivery System.

- a) Is thread positioned between discs? Double check the thread position.
- b) Does spring in the head thread guide catch thread properly?
BLE1AT's head thread guide is exclusive for BLE1AT. You can not use other head thread guides for LX,DX,SX on BLE1AT.
- c) Is sensor cable positioned on rollers?
Double check each sensor cable is positioned on rollers especially the one in the back of fine tuning screw.
- d) Is stitch selector dial positioned correctly?
- e) Is each thread threaded correctly according to the quick threading reference guide?

3. Adjustment of Thread Delivery Unit

3-1 OPEN-SHUT TIMING OF TENSION DISCS

CORRECT TIMING - When upper looper is lowest position, front tension discs should be just shut perfectly.

How to adjust timing

- a) Loosen 2 pcs of thread delivery unit timing pulley fixing screw ⑥.
- b) Rotate the machine pulley and lower the upper looper at the bottom.
- c) Turn the thread delivery cam ⑦ toward you until the front thread press disc shuts.
- d) Tighten 2 pcs of thread delivery unit timing pulley fixing screw and make sure to fit the thread delivery unit timing pulley.

Note: The screws of thread delivery cam ⑦ and thread delivery changing cam ⑧ should be placed in line.

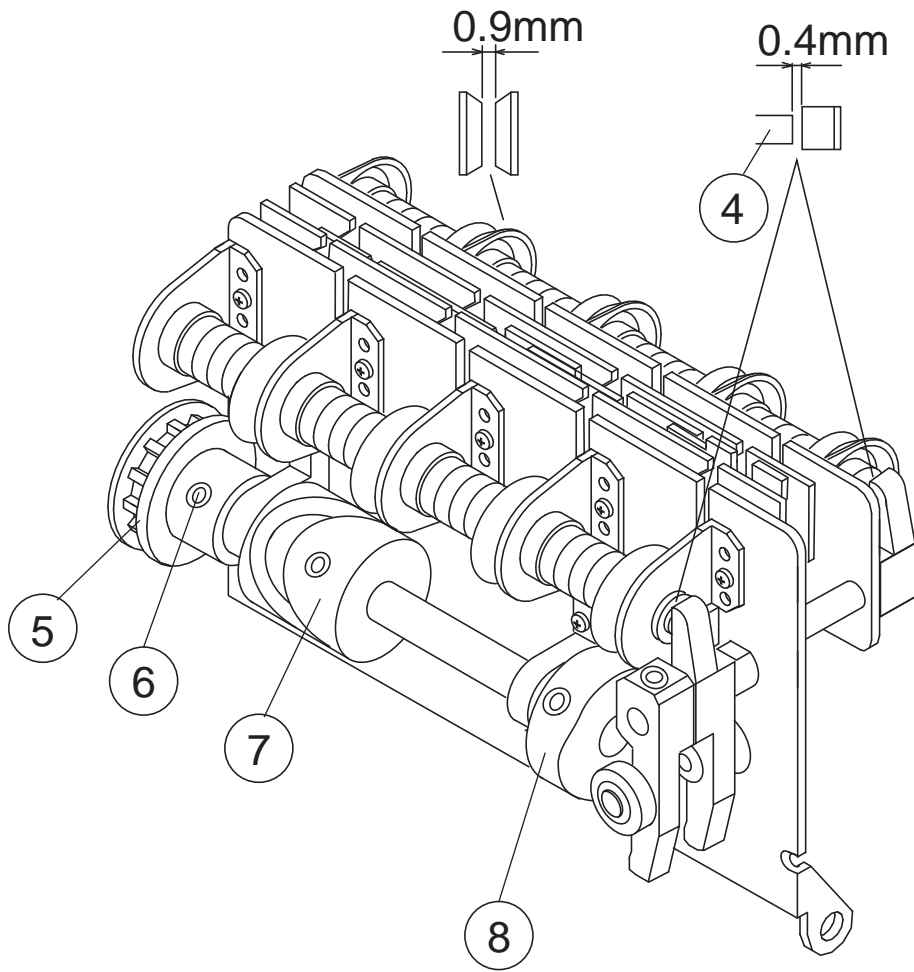
3-2 CLEARANCE A AND B FOR THREAD PRESS POST ARM

CORRECT CLEARANCE – 0.4mm (both front and rear)

How to adjust clearance

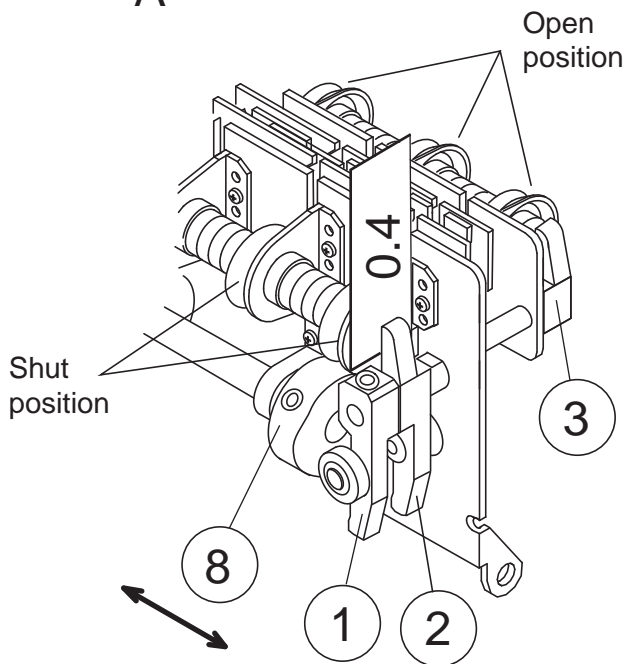
- A) Rear clearance adjustment (You are required to adjust this adjustment first.)
 - a) Rotate the machine pulley and rear tension discs at the shut position.
 - b) Loosen fixing screw of thread delivery changing cam ⑧.
 - c) Make a clearance of 0.4 mm between rear thread press driving arm and thread press disc shaft.
 - d) Move the thread delivery changing cam ⑧ to rightward and tighten screws firmly.
 - e) Rotate the machine pulley and make sure the clearance of 0.4mm between the rear thread press driving arm and thread press shaft.
- B) Front clearance adjustment
 - a) Rotate the machine pulley and front tension discs at the shut position.
 - b) Loosen fixing screw ⑨ of front thread press driving arm 1 ①.
 - c) Make a clearance of 0.4 mm between the front thread press driving arm 2 ③ and thread press disc shaft.
 - e) Tighten fixing screw ⑨ firmly.
 - f) Rotate the machine pulley and make sure the clearance of 0.4mm between the front thread press driving arm 2 and thread press shaft.

Note : After adjusting rear and front clearance, make sure clearance of 0.9 mm between the discs.



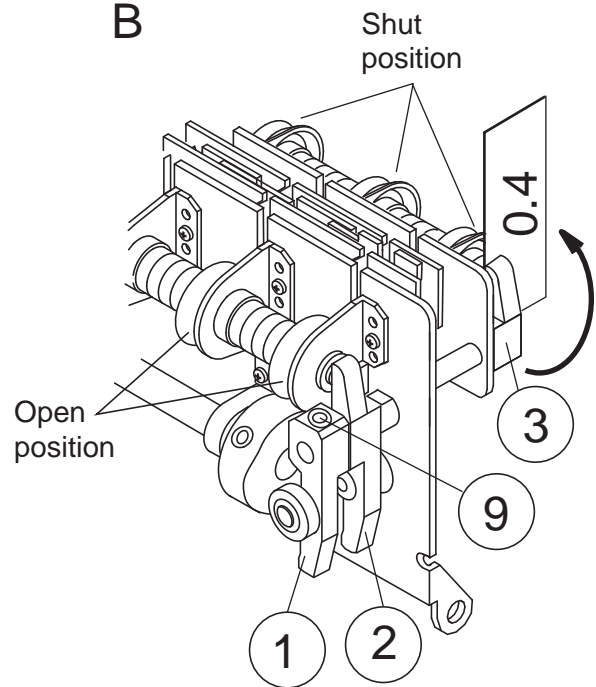
Rear clearance adjustment

A



Front clearance adjustment

B



3-3 HOW TO REPLACE THE TIMING BELT OF THREAD DELIVERY UNIT (see P6)

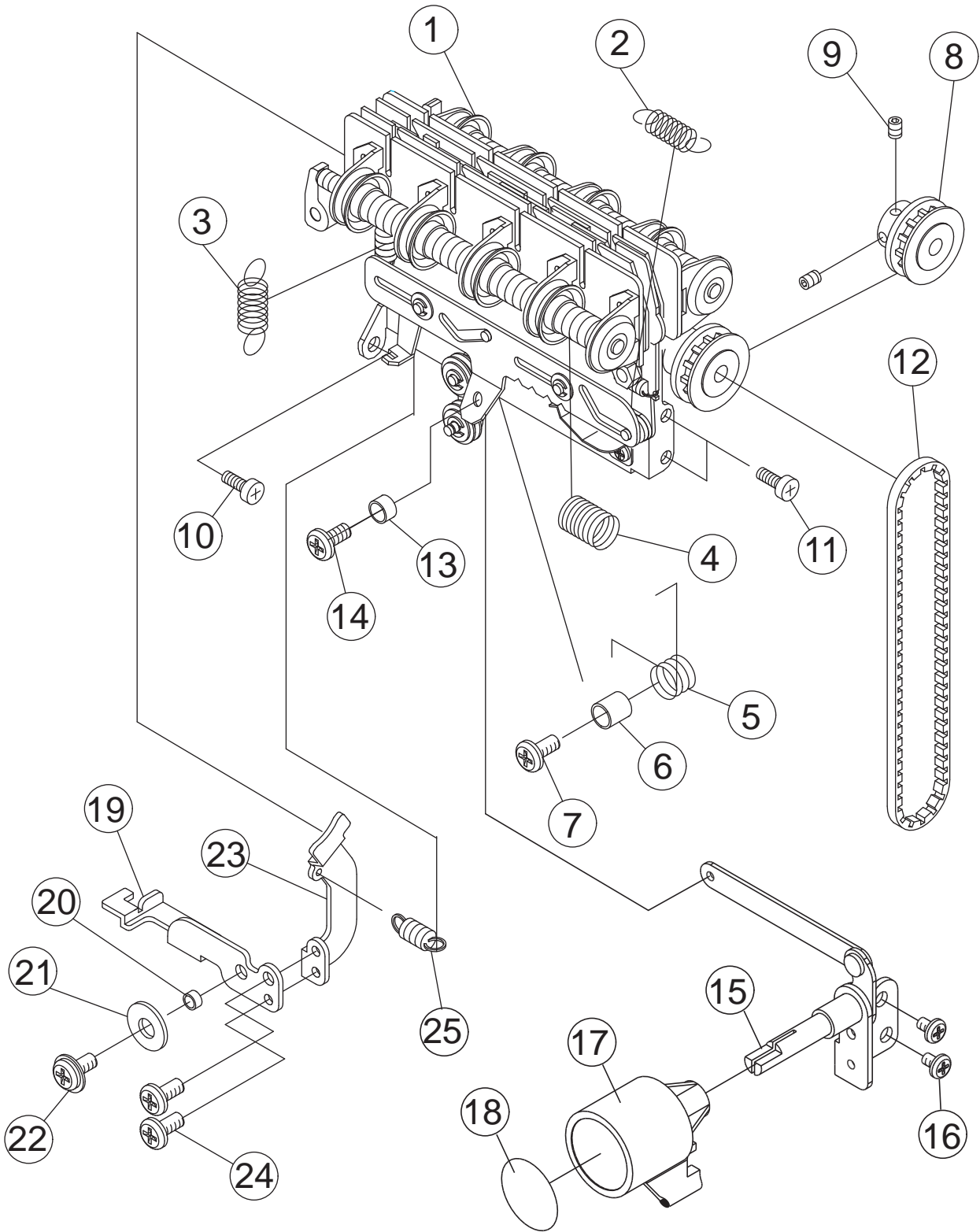
- a) Loosen the presser foot joint link fixing screw A(24 upper screw).
- b) Loosen the thread delivery unit fixing screw ⑩ .
- c) Remove 2 pcs of the thread delivery unit fixing screw ⑪.
- d) Push the thread delivery unit ① downward and remove the timing belt of thread delivery unit ⑫. Then, remove the motor belt and you can replace the timing belt of thread delivery unit.
- e) Return 2 pcs of the thread delivery unit fixing screw ⑪.
You are required to adjust the clearance at 1mm between handle and the timing pulley. (E)
- f) Tighten the screw ⑩ and screw A(24 upper screw).
- g) Adjustment of timing see P.3, 1-1

3-4 HOW TO REPLACE THE THREAD DELIVERY UNIT (see P.6)

- a) Remove the selector knob link fixing screw ⑭ & spacer ⑬.
- b) Remove 3 pcs of sensor cable B, C & D.
- c) Remove 3 pcs of thread delivery unit fixing screw ⑩ & ⑪.
- d) Remove the thread delivery unit timing belt ⑫ and you can remove the thread delivery unit from the machine.
- e) Replace the thread delivery unit and assemble each part in the order of d) - c) - b) - a).
- f) Make sure that the 3 pcs of sensor cable are exactly in the roller.
- g) After you replace the thread delivery unit, you are required to adjust and check following items;
 - 1) Adjustment of timing (see P.3, 1-1)
 - 2) Check the stitches (see P.9, 2).

3-5 HOW TO REPLACE THE SPRINGS OF THREAD DELIVERY UNIT (see P.6)

- a) Stitch connecting arm plate spring ③ Hook the spring both side
- b) Looper thread pulling plate spring ② Hook the spring both side
- c) Thread pulling movable spring ⑤
Remove the edge of hook of thread pulling movable spring ⑤, loosen the fixing screw ⑦ and replace the spring and space ⑥ at the same time.
- d) Disc press spring ④ (both front and rear)
 - 1) Remove 5 pcs. of E-ring of the thread press disc shaft and pull out the press disc shaft rightward.
Be careful not to splash the spring.
 - 2) After you replace the spring ④, insert the thread press disc shaft slowly from the right side.
 - 3) Pushing the thread press disc shaft from the right side, rotate the machine pulley until the thread press driving arm reaches the far left.
 - 4) Replace 5 pcs. of E-ring.
 - 5) Make a clearance of 0.4mm between the thread press driving arm and thread press disc shaft . (see P3, 1-2)



3-6 REPLACEMENT OF SENSOR CABLE (see P.8)

Needle thread and looper thread sensor cable consists of 113 pcs of fine stainless wire and its pulling strength is 13kg (3 lb.). Therefore, it is almost unnecessary to replace the sensor cable. In case you replace the cable, refer the followings;

There are 3 types of sensor cable and each cable is different length.

- * Fabric thickness sensor cable 3 Mono wire
- * Needle thread sensor cable 2 about 320mm (12 inch.)
- * Looper thread sensor cable 1 about 498mm (20 inch.)

a) Replacement of fabric thickness sensor cable 3

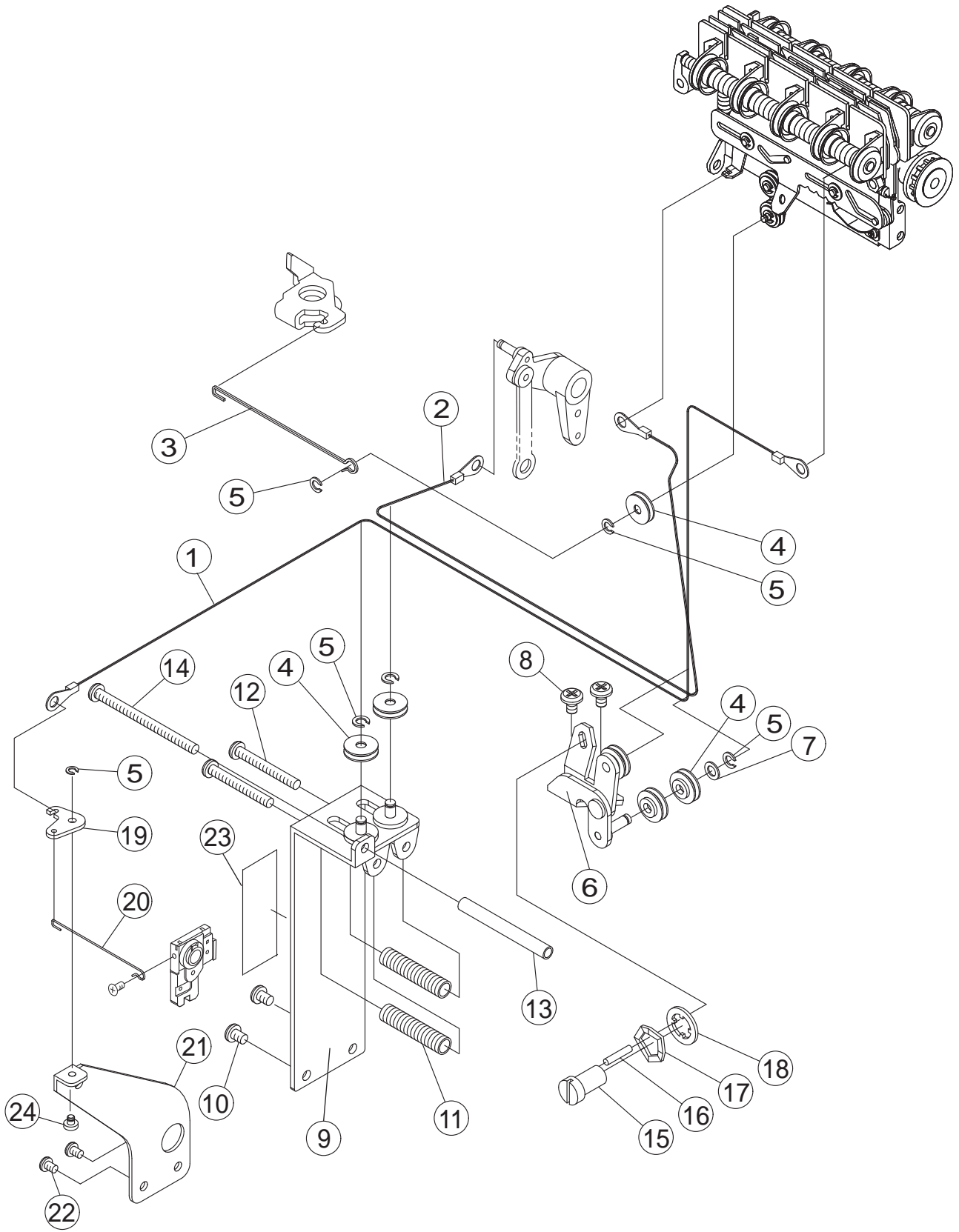
- 1) Remove the cable
- 2) Hook the cable both side.
- 3) Check the stitches (see P.9, 4).

b) Replacement of needle thread sensor cable 2

- 1) Move the stitch joint arm plate B to the right and remove the needle thread sensor cable2.
- 2) Replace the cable and make sure that the cable is in each 4 grooves of guide roller.
- 3) Check the stitches (see P.9, 4).

c) Replacement of looper thread sensor cable 1

- 1) Move the looper thread pulling plate C to the left and remove the looper thread sensor cable1.
- 2) Replace the cable and make sure that the cable is in each 5 grooves of guide roller.
- 3) Check the stitches (see P.9, 4).



4. ADJUSTMENT OF STITCHES

fabric : cotton 1-layer

thread : 100% polyester spun thread (maxi-lock or metrosene thread)

needle : SCHMETZ HAX1SP #11/CR

machine: 1-needle (right), 3-thread sewing

width : 5.0mm (max)

length : 3.0mm

D.F. : N

stitch selector : B

4-1 ADJUSTMENT OF NEEDLE THREAD SENSOR CABLE

The needle thread sensor cable effects the timing of both needle thread and looper threads. You are required to adjust this cable first.

NOTE: The needle thread sensor cable adjusting screw works;

Turn clockwise and both needle & looper threads become loose.

Turn counter-clockwise and both needle & looper threads become tight.

- a) Line up the looper thread fine-tuning screw at the standard position.
- b) Sew 1-layer of cotton with 1-needle (right) 3-thread as shown in the above and adjust only the needle thread in the stitch not to have a puckering. Disregard the looper threads in the stitch at this stage.
- c) Then, adjust the looper thread sensor cable (4-2).

4-2 ADJUSTMENT OF LOOPER THREAD SENSOR CABLE

Before the adjustment of looper thread sensor cable, adjust the needle thread sensor cable first (4-1).

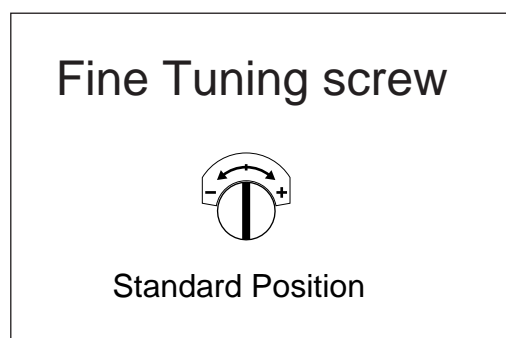
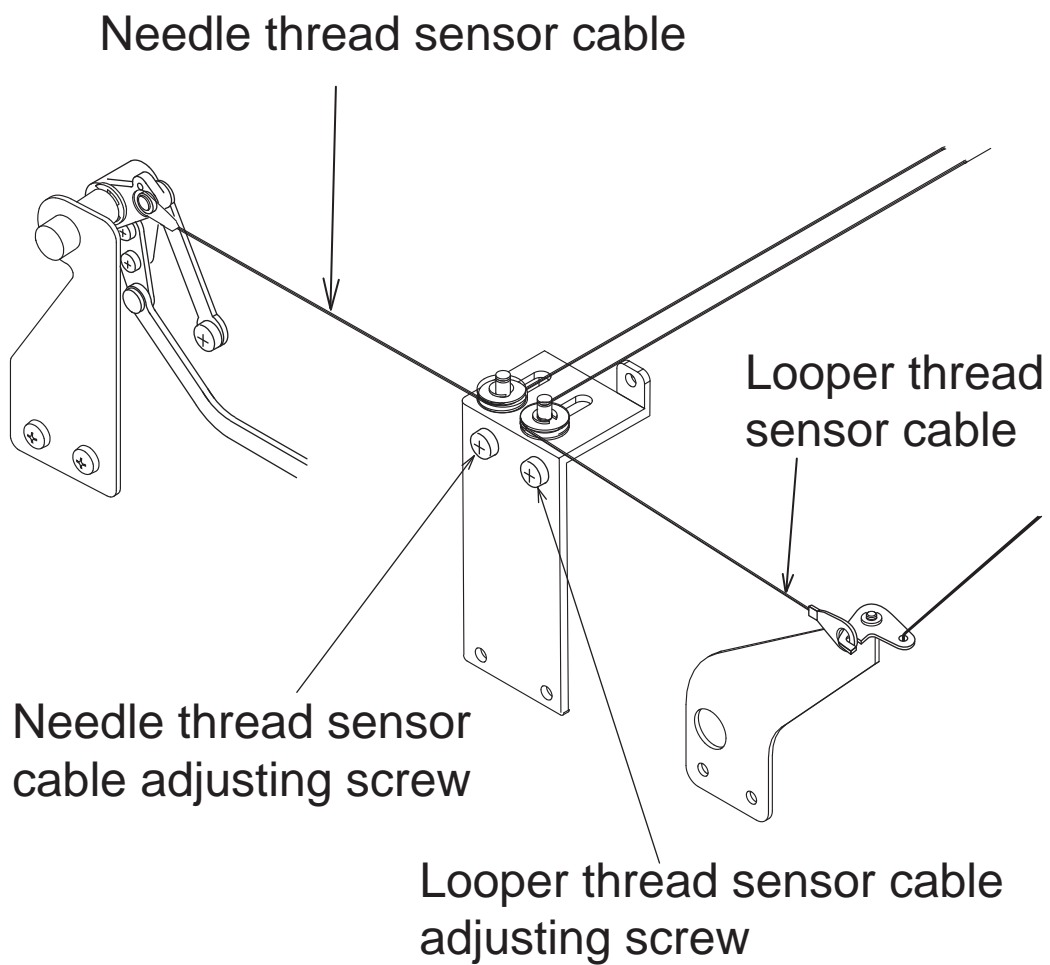
NOTE: The looper thread sensor cable adjusting screw works;

* Turn clockwise and looper threads become loose.

* Turn counter-clockwise and looper threads become tight.

- a) Line up the looper thread fine-tuning screw at the standard position.
- b) Sew 1-layer of cotton with 1-needle (right) 3-thread as shown in the previous page and turn the screw until you get the ideal stitch which looper threads are not loose and fabric is not curled.
- c) After adjustment of looper thread sensor cable, the timing of needle thread might be changed. Therefore, check the needle thread sensor cable again (see 4-1).

Turn Clockwise \Rightarrow Become Loose
Turn Counter-clockwise \Rightarrow Become Tight



5. ADJUSTMENT OF NEEDLE THREADER (see P12)

Before you adjust the needle threader, you are required to exchange the new needles of SCHMETZ HAX1SP #11CR as the bent needles or different needles cause the incorrect timing of needle threader. Also, you are required to make sure that needles are positioned in the needle clamp holder correctly.

5-1 REPLACEMENT OF NEEDLE THREADER

- a) Remove the needle threader hook fixing screw ⑱ and replace the hook ⑰
- b) Insert the hook ⑰ until the end of needle threader selector plate ㉕ and tighten the needle threader hook fixing screw ⑱.
- c) Change the needle threader select plate ㉕ right and left, and make sure if the needle threader works both for right and left needles.

5-2 ADJUSTMENT OF HIGH AND LOW DIRECTION FOR NEEDLE THREADER

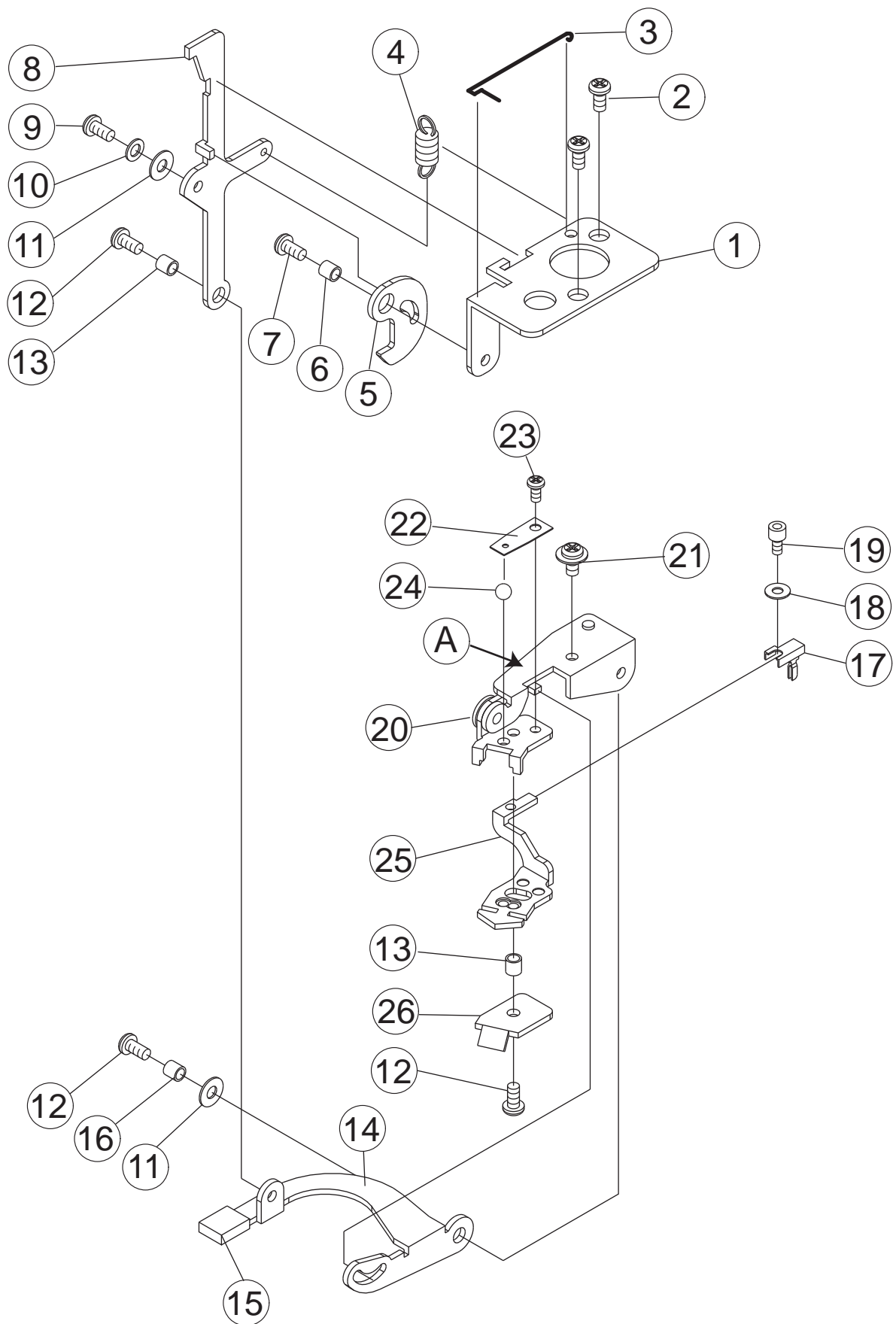
- a) Align the green marks on the pulley.
- b) Make sure that the needle threader hook ⑰ is positioned until the end of needle threader select plate ㉕.
- c) Bend the place A on needle threader holder ㉔ and adjust the direction of high and low for the needle threader
- d) Change the needle threader select plate ㉕ right and left, and make sure if the needle threader works both for right and left needles.

5-3 ADJUSTMENT OF RIGHT AND LEFT DIRECTION FOR NEEDLE THREADER

- a) Align the green marks on the pulley.
- b) Loosen the screw ㉑ and move the needle threader holder ㉔ right and left until the needle threader works properly.
- c) Tighten the screw ㉑.
- d) Change the needle threader select plate ㉕ right and left, and make sure if the needle threader works both for right and left needles.

3-4 ADJUSTMENT OF NEEDLE THREADER SAFETY PLATE

- a) Align the green marks on the pulley.
- b) Loosen the screw ⑨ and adjust the position of washer ⑪ in order to make the needle threader safety plate lowered smoothly when the needle threader lever ⑭ is lowered.
- c) Tighten the screw ⑨.
- d) Rotate the machine pulley and make sure that the needle threader lever ⑭ is not lowered when the needles are not in the highest position.



6. Checking threading steel pipe joint (see p .14)

- a) Set the machine for looper threading.
- b) Move the lock button release lever slightly to the right.
- c) Check the connecting point whether the looper threading pipe joint and threading steel pipe is fitted each other properly

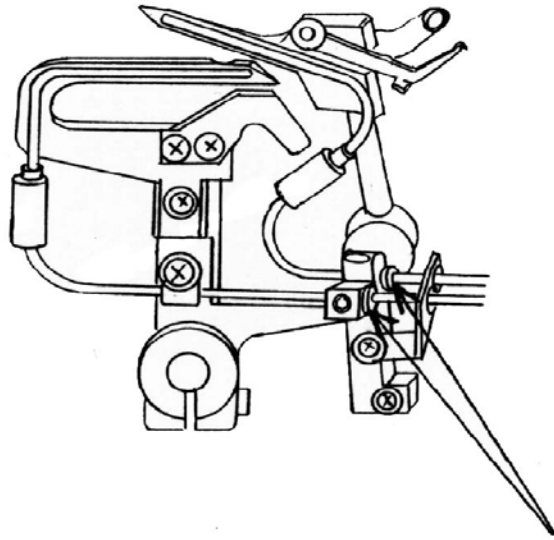
7. Checking pump

7-1 Checking deflate from pump

Holding the pump tube ⑥, pushdown the pump lever ⑮ and check if air is deflated from pump or not.

7-2 Replacement of Piston Cap

- a) Bring the pump lever to the lowest position and fix it with Scotch tape or something like that.
- b) Remove bace plate.
- c) Remove piston driving arm fixing screw ⑪ (SM3005ZU).
- d) Remove piston driving arm from piston driving shaft.
(It will be easy to remove the arm from the shaft, if you push the shaft to the rightward direction.)
- e) Remove piston assembly from cylinder
(It will be easy to remove piston assenbly from cylinder, when the needle is in the lowest position.)
- f) Replace piston cap.
- g) Greace piston cap a little bit.(MOLYKOTE EM-50L)
- h) Return piston assembly to cylinder.
- i) Fit piston driving arm to piston driving shaft properly and tighten fixing screw ⑪ (SM3005IK) firmly.
(It will be easy to fit the arm to the shaft, if you push the shaft to the leftward direction.)
- j) Check and confirm whether the pump works properly or not.
- k) fix bace plate.



Threading steel pipe



Joint

Proper position

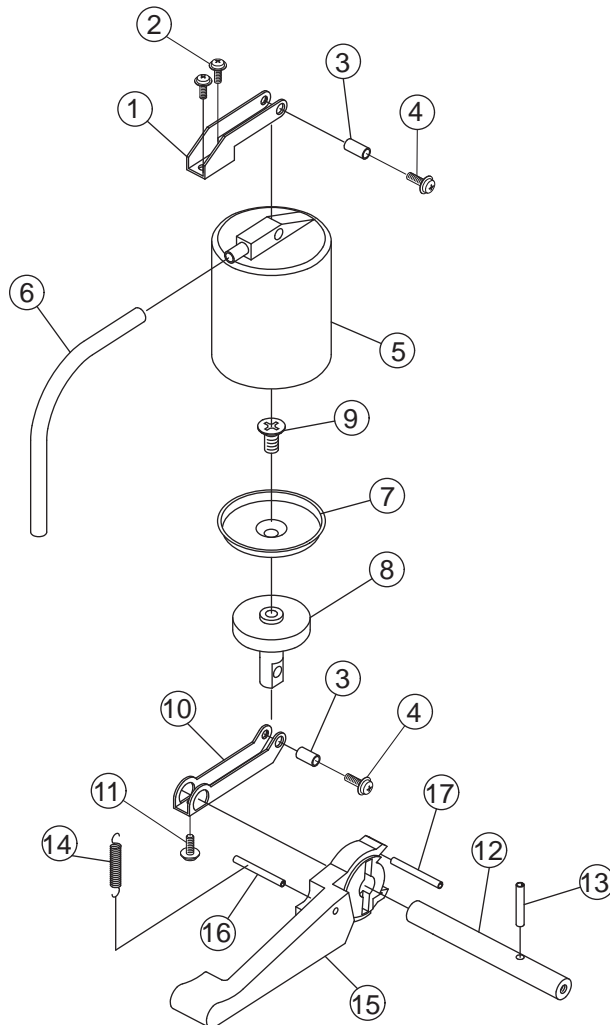


Threading steel pipe



Joint

Unproper position



8. TROUBLE SHOOTING

8-1 NEEDLE THREADS ARE UNBALANCED ;

- * Is the serger threaded correctly? See Quick Reference Guide
- * Are the threads snapped in the head guide? See Instruction Book P.12
- * Is the stitch selector positioned correctly? See Quick Reference Guide
- * Is the looper thread fine-tuning screw positioned correctly?
See Instruction Book P.13
- * Are the threads recommended high quality? See Instruction Book P.7
- * Is the needle thread sensor cable positioned correctly? See P7, 3-6
- * Is the needle thread sensor cable adjusted correctly? See P9, 4

8-2 LOOPER THREADS ARE UNBALANCED ;

- * Is the serger threaded correctly? See Quick Reference Guide
- * Are the threads snapped in the head guide? See Instruction Book P.12
- * Is the stitch selector positioned correctly? See Quick Reference Guide
- * Is the looper thread fine-tuning screw positioned correctly?
See Instruction Book P.13
- * Are the threads recommended high quality? See Instruction Book P.7
- * Is the looper thread sensor cable positioned correctly? See P7, 3-6
- * Is the looper thread sensor cable adjusted correctly? See P9, 4

8-3 THREAD BREAKS ;

- * Is the serger threaded correctly? See Quick Reference Guide
- * Are the threads snapped in the head guide? See Instruction Book P.12
- * Is the stitch selector positioned correctly? See Quick Reference Guide
- * Is the looper thread fine-tuning screw positioned correctly?
See Instruction Book P.13
- * Are the threads recommended high quality? See Instruction Book P.7

8-4 NEEDLE THREADER WORKS IMPROPERLY ;

- * Are the green marks on the pulley and machine body aligned? See P11, 5
- * Are the needles inserted until the end of clamp holder? See P11, 5
- * Is the height of each needle correct? See P 2
- * Is the adjustment of needle threader correct? See P11, 5

8-5 JET AIR THREADER DOES NOT WORK

- *Is air deflated from pump? See P13, 7
- *Are pipes connected properly? See P13, 6
- *Are there any lints or thread in pipes?