

# INSTRUCTIONS

Cat. No. 9A2044

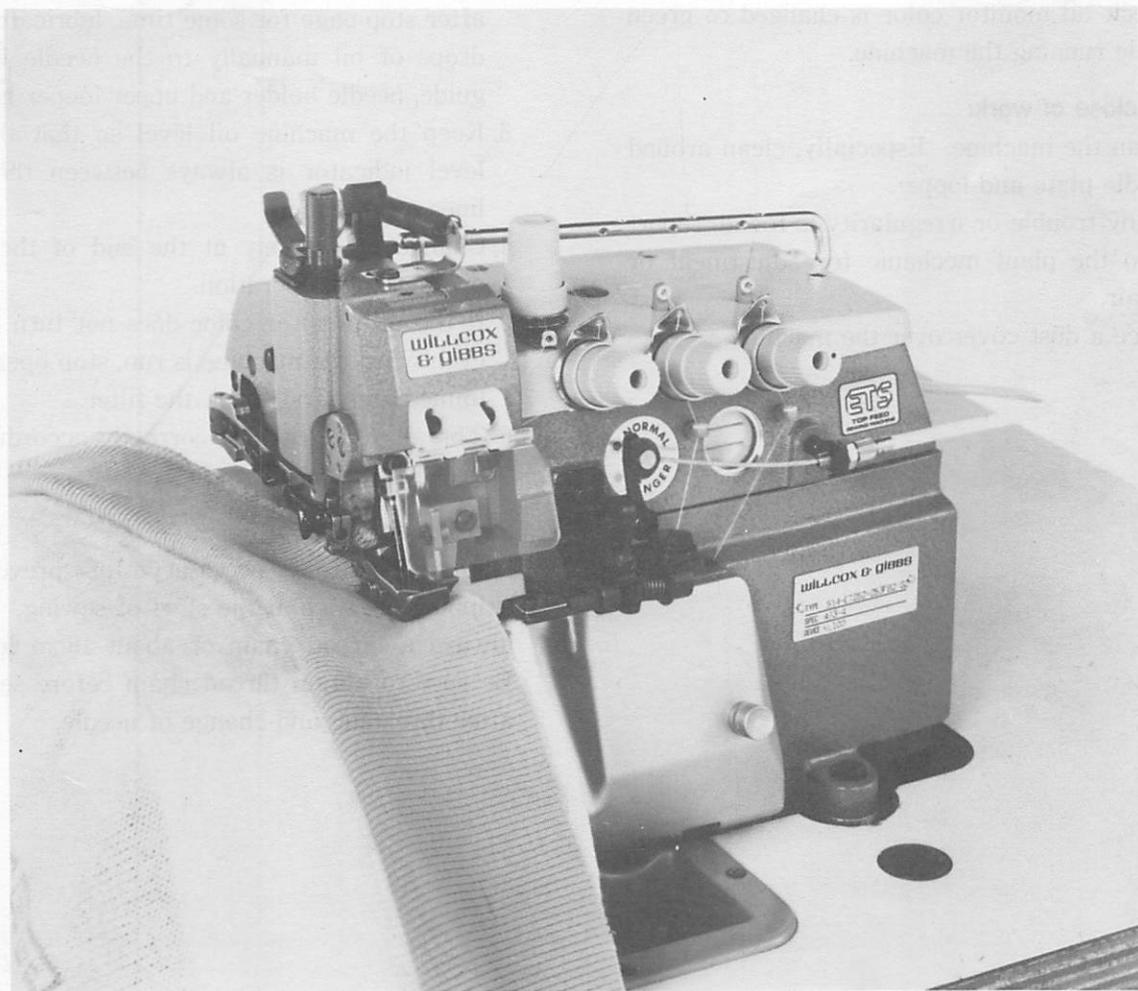
December, 1984

# ETS52 SERIES

TOP AND BOTTOM, DIFFERENTIAL FEED OVEREDGERS

First edition; issued in May, 1984

Second edition; issued in December, 1984



**WILLCOX & GIBBS**

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## INTRODUCTION

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This booklet contains some notes on the operation and maintenance of the ETS series machines. Careful reading of this booklet before use of the machine will help you to derive the best use from it.

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## DAILY MAINTENANCE

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### Before starting work:

1. Check needle is in sound condition and not damaged.
2. Check needle is correctly set.
3. Check threading is correct.
4. Check thread chain of about 10mm length is formed.
5. Check oil indicator tip is between the two lines of oil gauge.
6. Check oil is not short for the manual lubrication parts.
7. Check oil monitor color is changed to green while running the machine.

### After close of work:

1. Clean the machine. Especially, clean around needle plate and looper.
2. If any trouble or irregularity is found, report it to the plant mechanic for adjustment or repair.
3. Place a dust cover over the machine.

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## FOR SAFETY

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1. Make sure Belt Guard is properly fitted.
2. Be well careful in connecting the machine with the power source and checking energizing.
3. Turn off Motor Switch whenever you leave the work table.
4. Be sure to turn off Power Switch in case of an electric breakdown.
5. Make sure to turn off Power Switch before checking and cleaning the machine.
6. Make sure Motor has completely stopped when the machine requires threading, replacing Needles, etc.

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## NOTES ON USE

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1. Run new machine at a 20% less speed than the maximum for the first one month.
2. In using the machine for the first time and after stop-page for some time, lubricate 2~3 drops of oil manually to the needle holder guide, needle holder and upper looper holder.
3. Keep the machine oil level so that the oil level indicator is always between the two lines of oil gauge.
4. Change oil entirely at the end of the first one month in operation.
5. If the oil monitor color does not turn green even when the machine is run, stop operation immediately and check the filter.
6. Thread your machine correctly according to the illustration.

### Re: Thread chain

Thread chain is necessary for preventing skipping of stitch at the start of sewing. Keep always a thread chain of about 10cm length. Be sure to obtain thread chain before sewing, after threading and change of needle.

# CONTENTS

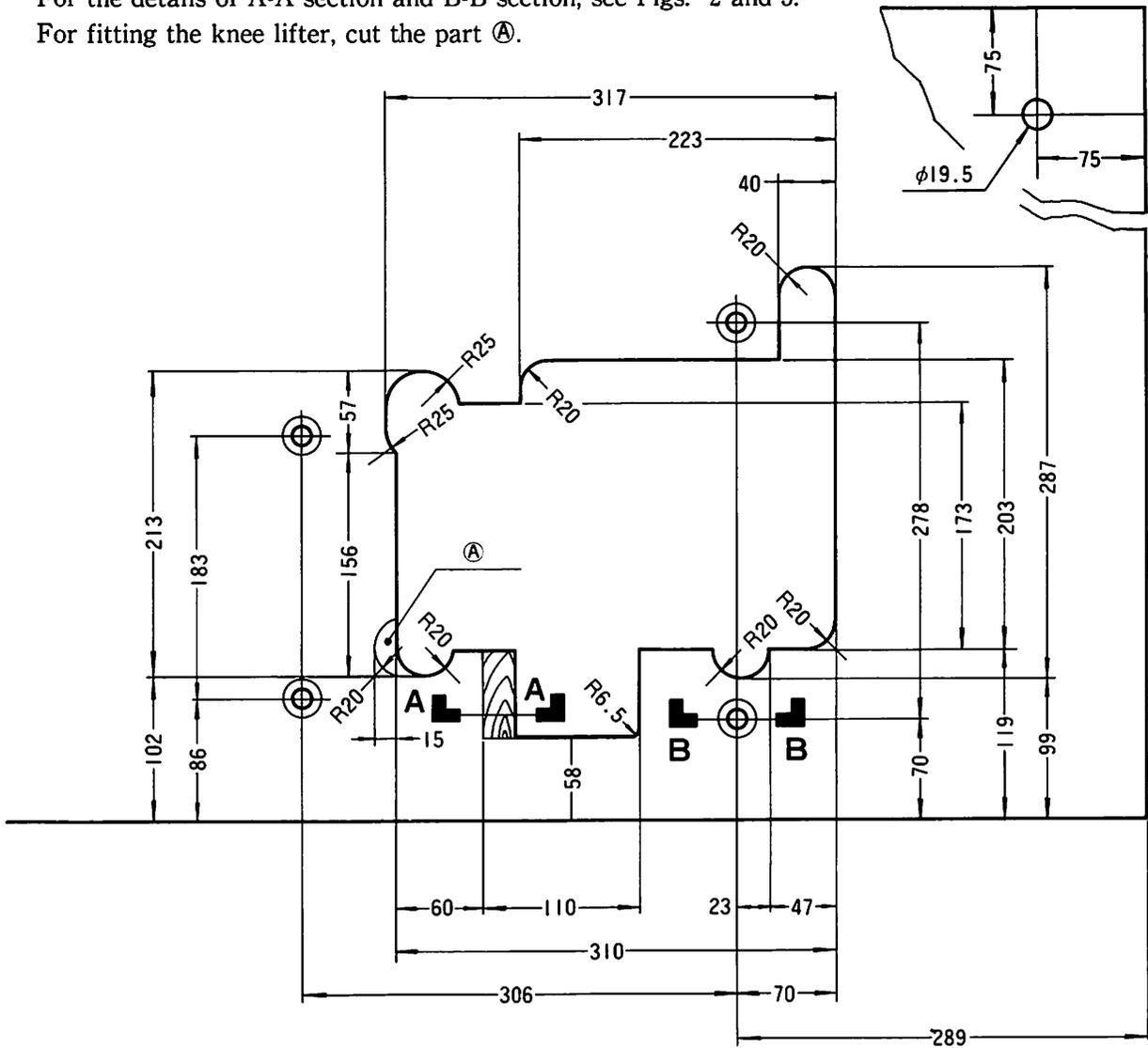
Page

Pattern paper for semi-submerged installation	2
Assembling the machine rest board	3
Machine speed	4
Driving motor pulley and belting	4
Installation of machine	4
Turning direction of machine	4
Lubrication	6
Checking and replacing oil filter	7
Silicone oil for H.R. device	7
Needles	8
Replacing needles	8
Threading	8
Regulating thread tension	8
Presser arm swinging-in and -out	13
Presser foot pressure	13
Stitch length adjustment	14
Differential feed adjustment	14
Top feed stroke adjustment	15
Adjusting top feed pressure	15
Regulating seam width	16
Changing upper knife	16
Changing lower knife	16
Regulating seam width (angled upper knife)	17
Changing upper knife (angled upper knife)	17
Knives	17
Needle thread guide setting position	18
Looper thread takeup and looper thread guide setting positions	18
Bottom feed height	20
Auxiliary feed dog height	20
Bottom feed leveling position adjustment	20
Needle height setting	22
Lower looper setting	22
Upper looper setting	24
Needle guard setting	26
Height of upper knife holder	26
Adjusting the lengthwise position of bottom feed dogs	29~31
Adjusting vertical stroke of top feed dog	32
Setting position of top feed dog	32
Adjusting the lengthwise position of top feed dog	32
Top feed stroke and diff. feed ratio	34
Adjusting the lengthwise position of top feed dog	36
Adjusting the sidewise position of top feed dog	36
Adjusting top feed dog height	38
Adjusting presser foot and top feed dog lift	40
Adjusting sidewise position of presser arm	42
Presser foot setting	42
Adjusting edge guide	42
Adjusting piping binder	43
Adjusting shirring blade	43

**PATTERN PAPER FOR SEMI-SUBMERGED INSTALLATION**

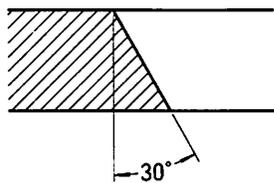
For the details of A-A section and B-B section, see Figs. 2 and 3.

For fitting the knee lifter, cut the part ①.



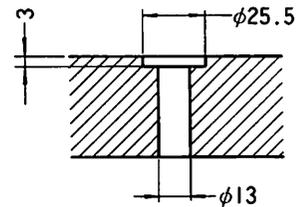
**A-A section**

**Fig. 2**



**B-B section**

**Fig. 3**



**Table 1**

Table thickness (mm)	38 or less	38 ~ 40	40 ~ 42	42 ~ 44	44 ~ 46	46 ~ 48	48 ~ 50
Number of Spacers ⑧	3	2	2	2	1	1	—
Number of Spacers ⑨	—	2	1	—	2	1	1

● Spacer thickness: ⑧ (Part No. 205467)=6.0mm

⑨ (Part No. 206337)=1.6mm

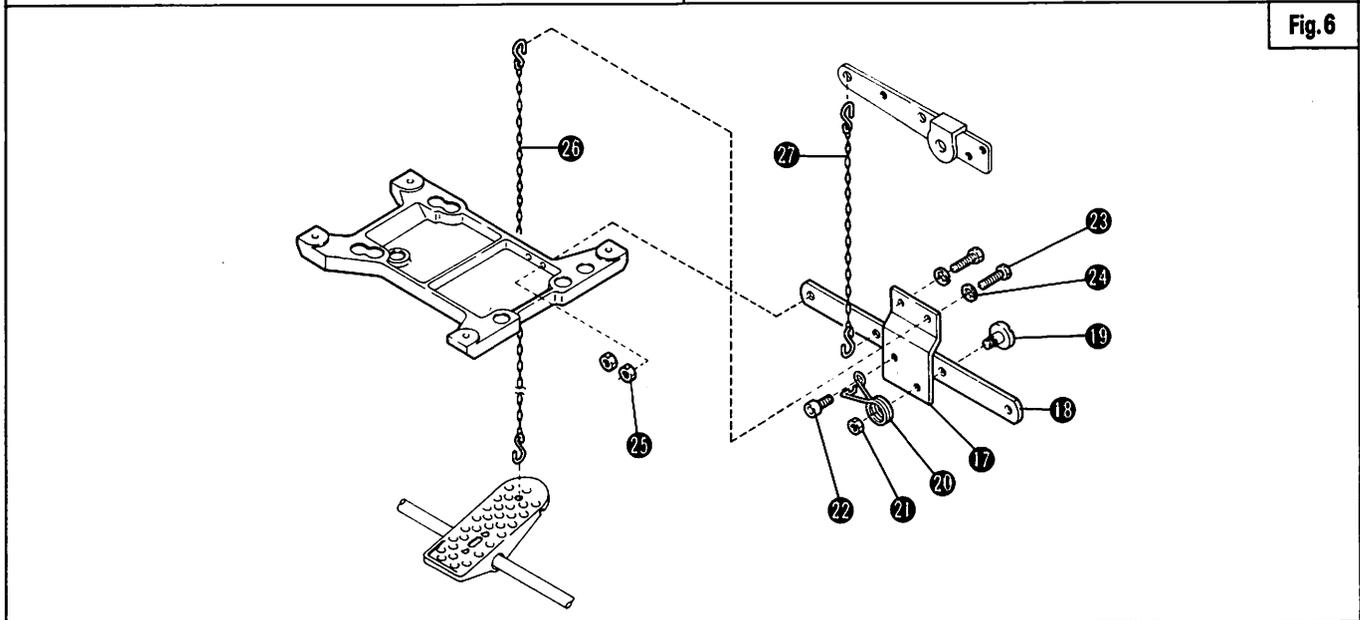
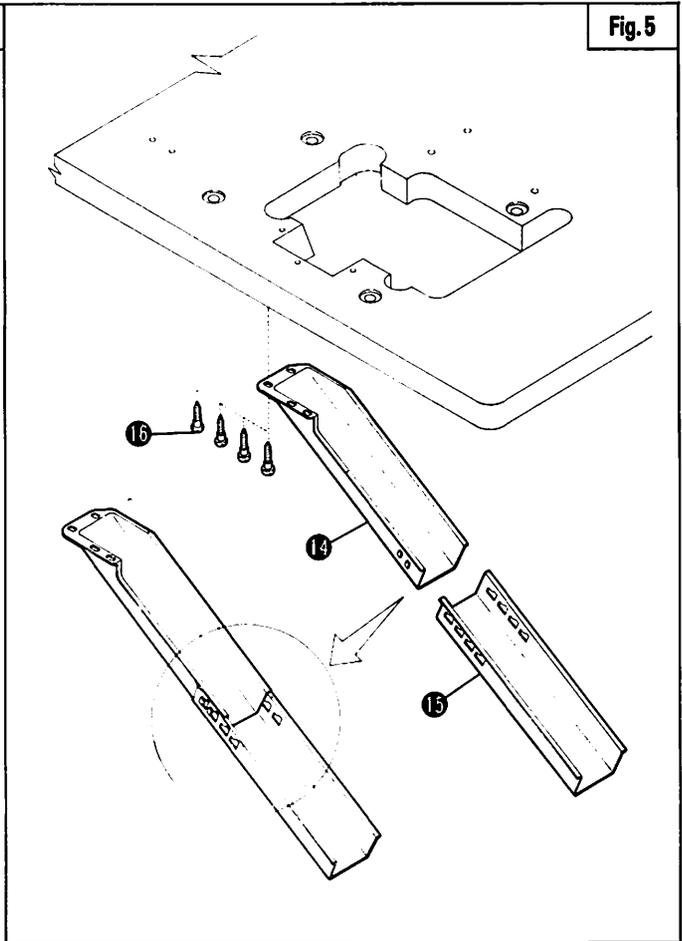
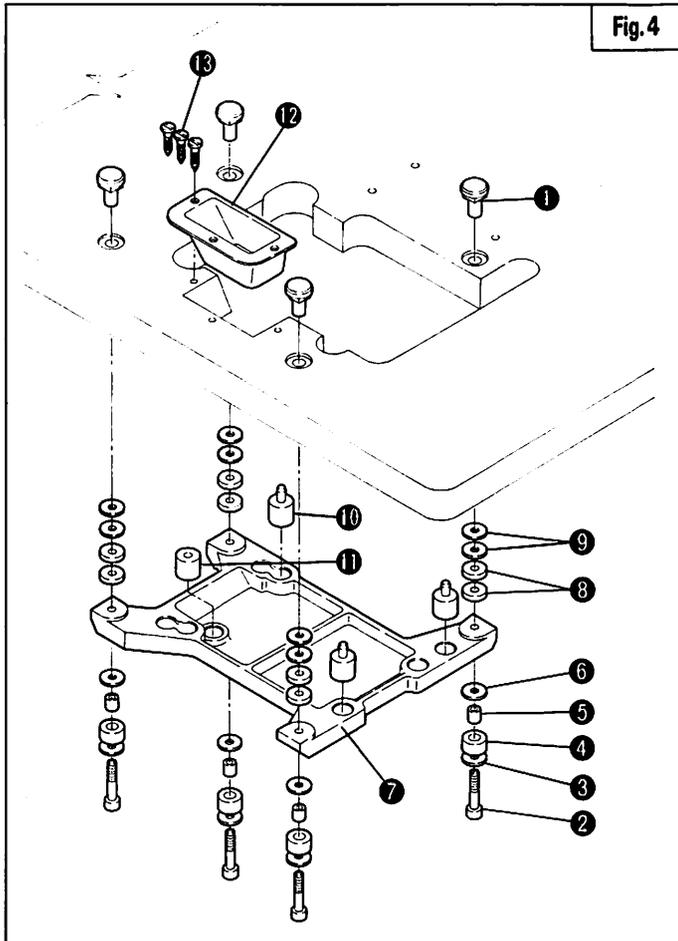
## ASSEMBLING THE MACHINE REST BOARD

The semi-submerged installation is standard for this machine. Assemble the machine rest board and the presser foot lifter in the following manner.

1. Refer to Fig.1 and cut the table as specified.
2. Refer to Figs.4 and 5. Assemble the machine rest board and the waste chute in sequence of ① - ⑯.
3. Refer to Fig.6 and assemble the presser foot lifter in sequence ⑰ - ⑳.

### Note:

1. For ETS series machine, a table of thickness 45mm or more is recommended.
2. Install the machine so that the needle plate top surface is about 10cm above the table. Use Spacers ⑧ and ⑨ to obtain the correct height of the machine as guided in Table 1.



## MACHINE SPEED (Fig. 7)

Table 3 lists the maximum speed by type. Make sure your machine type number with Type Plate ❶ and run it not exceeding the maximum speed conforming to the type.

For running the machine at a lower speed for convenience of sewing process and fabric kind, use suitable motor pulley referring to Table 2.

## DRIVING MOTOR PULLEY AND BELTING

Each machine should use a motor and belt of the following specifications:

1. Clutch motor: 3 phase, 2 pole, more than 400 watts (1/2HP).
2. Belt: V belt, Type M.
3. Motor pulley: as shown in Table 2.  
Motor Pulley Diameter should be measured at its outer diameter.

## INSTALLATION OF MACHINE (Figs. 8, 9)

1. Apply the belt to the machine pulley, and then fit Belt Cover ❸ with Screws ❷.
2. Place the machine on the table base, apply the belt to the motor pulley, and adjust the tension of the belt.

### Note:

For adjusting the tension of the belt, adjust the height of the motor so that the belt can be 2cm bent inward when you press the middle of it by finger.

3. Connect the foot lift lever and the foot lift device with "chain."

## TURNING DIRECTION OF MACHINE (Fig.9)

The turning direction of Machine Pulley is clockwise, seeing the machine from its right side.

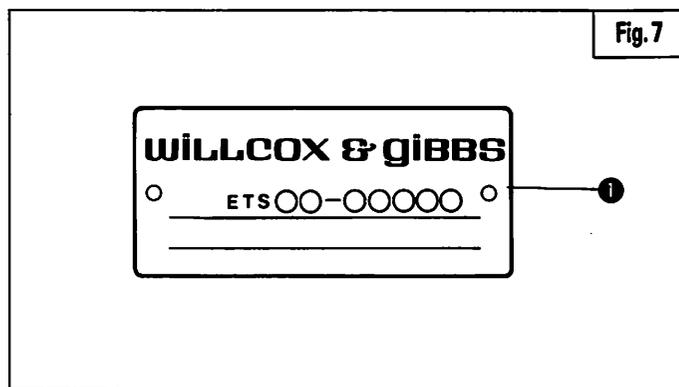
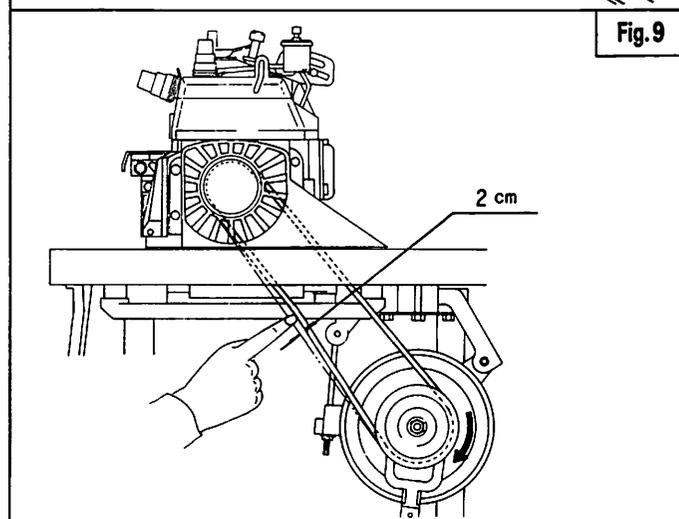
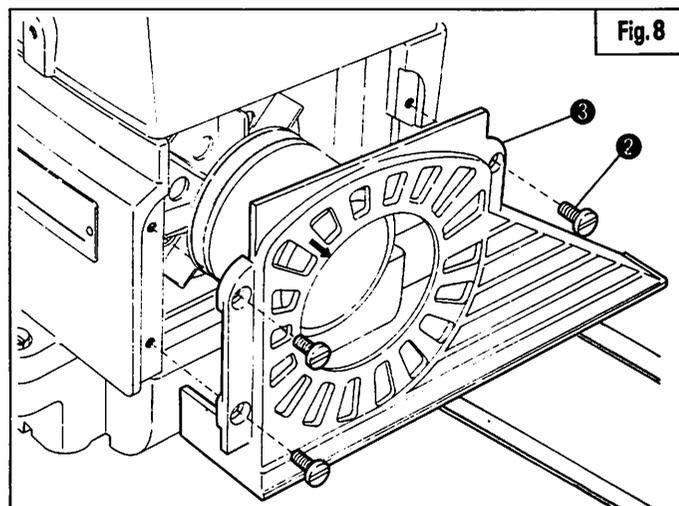


Table 2

Machine speed (s.p.m.)	Motor pulley diameter (mm)	
	60 Hz	50 Hz
6,000	95	115
5,500	90	105
5,300	85	100
5,000	80	95
4,700	75	90
4,400	70	85
4,100	65	80



# MAXIMUM SPEED-FRONT TOP FEED ETS52

Table 3

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
------------------------	------------------

## GENERAL SEAMING

Machine type/spec.	Maximum speed (s.p.m.)	Machine type/spec.	Maximum speed (s.p.m.)
○504-ETS52-141FA2/463W	6,000	○504-ETS52-130FA2/363N	6,000
○514-ETS52-142FA2/463W	"	○514-ETS52-133FA2/363N	"
○512-ETS52-142FA2/463W	"	○512-ETS52-133FA2/363N	"
●504-ETS52-141FA3/463W	"	●504-ETS52-130FA3/363N	"
●514-ETS52-142FA3/463W	"	●514-ETS52-133FA3/363N	"
●512-ETS52-142FA3/463W	"	●512-ETS52-133FA3/363N	"

## GATHERING

Machine type/spec.	Maximum speed (s.p.m.)	Machine type/spec.	Maximum speed (s.p.m.)
○514-ETS52-243FD2/463W/KL100	5,500	○514-ETS52-245FD2/363W/KL100	5,500
○512-ETS52-243FD2/463W/KL100	"	○512-ETS52-245FD2/363W/KL100	"
●514-ETS52-243FD3/463W/KL100	"	●514-ETS52-245FD3/363W/KL100	"
●512-ETS52-243FD3/463W/KL100	"	●512-ETS52-245FD3/363W/KL100	"

## PIPING

Machine type/spec.	Maximum speed (s.p.m.)	Machine type/spec.	Maximum speed (s.p.m.)
○504-ETS52-350FC2/P <sub>2</sub> <sup>P1</sup> /453W	6,000		
○514-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	○514-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	6,000
○512-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	"

## SEAMING/HEAVY

Machine type/spec.	Maximum speed (s.p.m.)
○514-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	5,000
○512-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"
○512-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"

## BACK-LATCHING

Machine type/spec.	Maximum speed (s.p.m.)
○514-ETS52-184FB2/443W/BT152	5,000

## BLIND-HEMMING

Machine type/spec.	Maximum speed (s.p.m.)
●505-ETS52-210FE3/323N	6,000

# MAXIMUM SPEED-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Maximum speed (s.p.m.)
○504-ETS52-141BA2/463W	6,000
○514-ETS52-142BA2/463W	"
○512-ETS52-142BA2/463W	"

## PIPING

Machine type/spec.	Maximum speed (s.p.m.)
○504-ETS52-350BC2/P <sub>2</sub> <sup>P1</sup> /453W	6,000
○514-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"
○512-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"

○ = Normal presser foot  
● = Narrow presser foot

## LUBRICATION

The oil was drained from the machine when shipped. So, fill the machine with oil before starting it for the first time.

### 1 Lubricating Oil

Use Mobil Velocite oil No.10 (ISO VG 22) or equivalent.

### 2 To fill oil (Fig.10)

Take out Screw ① and pour fresh oil until the head of Oil Level Indicator ② reaches the upper line 'H' of Oil Level Sight Window ③. Replace Screw ①.

### 3 Oil level (Fig.10)

Always keep enough oil in the machine so that Indicator ② is between two lines H and L of Window ③.

### 4 Manual oiling (Figs.11,12,13)

Before starting machine for the first time, or if the machine is idle for more than a couple of weeks, manually lubricate hole ④, hole ⑤ and Upper Looper Holder ⑥.

**Note:**

On every morning start, lubricate hole ④.

### 5 Oil circulation check (Fig.10)

Oil Monitor ⑦ turns green from red when you run the machine.

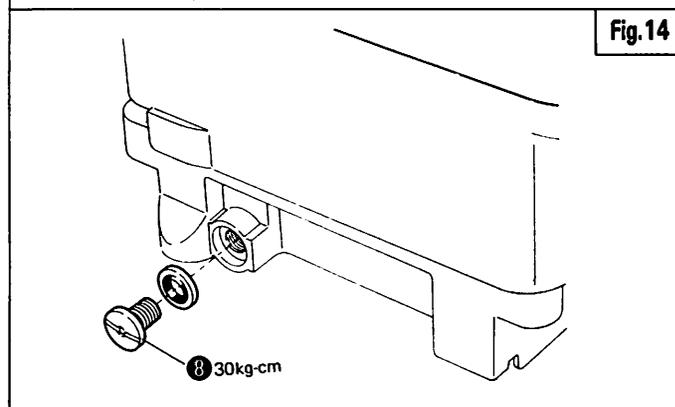
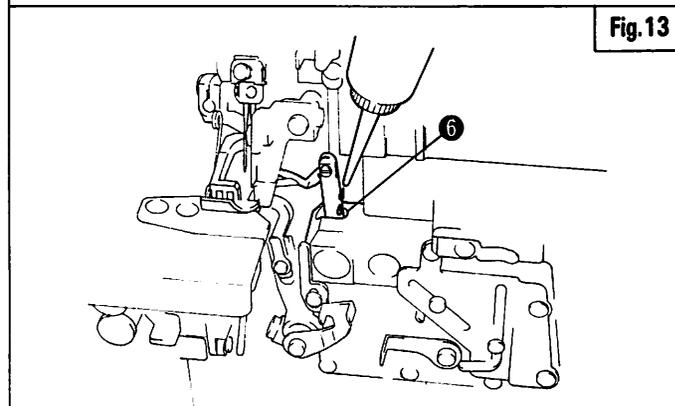
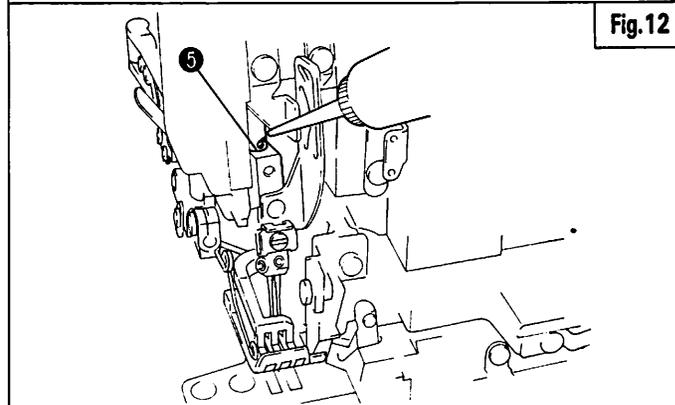
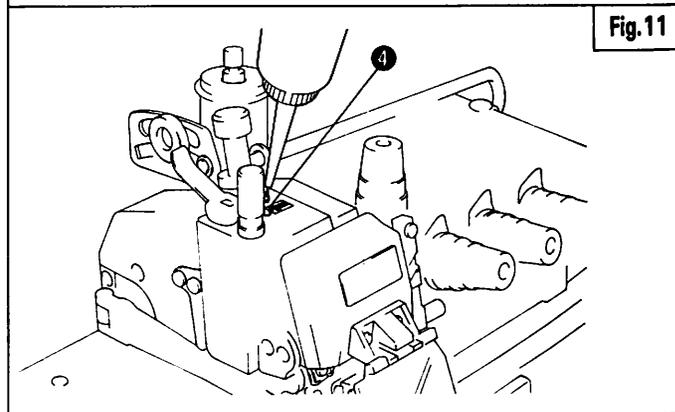
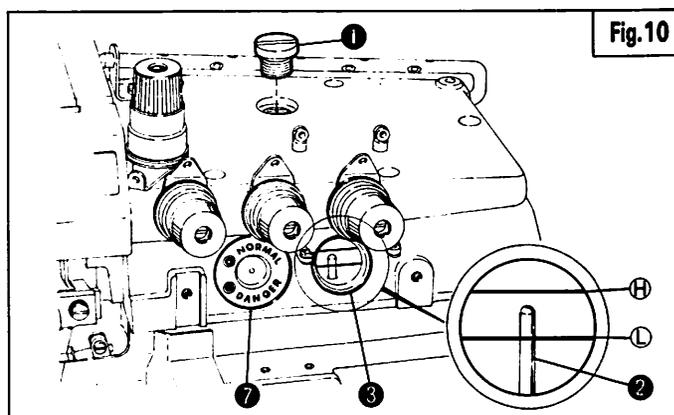
If it keeps red, stop the machine immediately and check if the oil level is correct and if the oil filter is clogged.

### 6 Oil Change

Change oil after the first 1 month in operation. After that, change oil every 6 months.

### 7 To drain oil (Fig.14)

Take out Screw ⑧ and drain oil from here.



## CHECKING AND REPLACING OIL FILTER (Fig.15)

### Oil Filter

If Oil Filter ⑫ is clogged, normal lubrication cannot be kept. Check and clean ⑫ every 6 months at the time of the regular oil change. If Oil Monitor does not turn into green or oil with bubbles is seen, clean or replace Filter ⑫ immediately.

### Replacing Oil Filter

Disassemble parts ⑨ - ⑫. Clean ⑫ or if necessary, replace it with a new one.

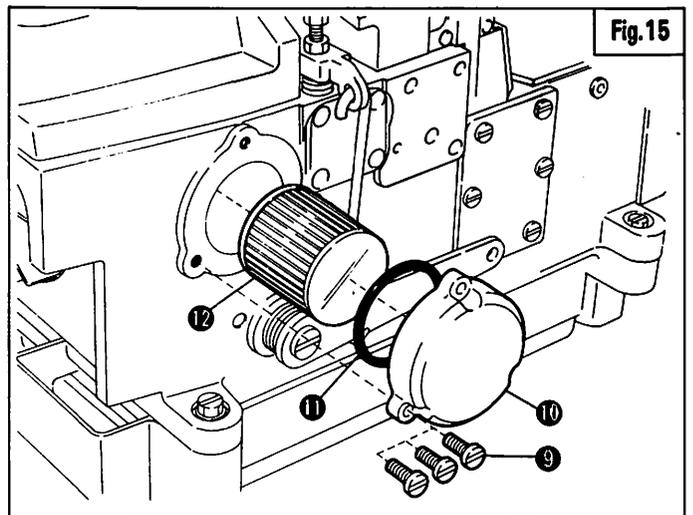


Fig.16

## SILICONE OIL FOR H.R. DEVICE (Fig.16,17)

Keep Reservoirs ⑬ and ⑭ with factory supplied silicone oil or equivalent.

Never use this oil to lubricate any machine parts.

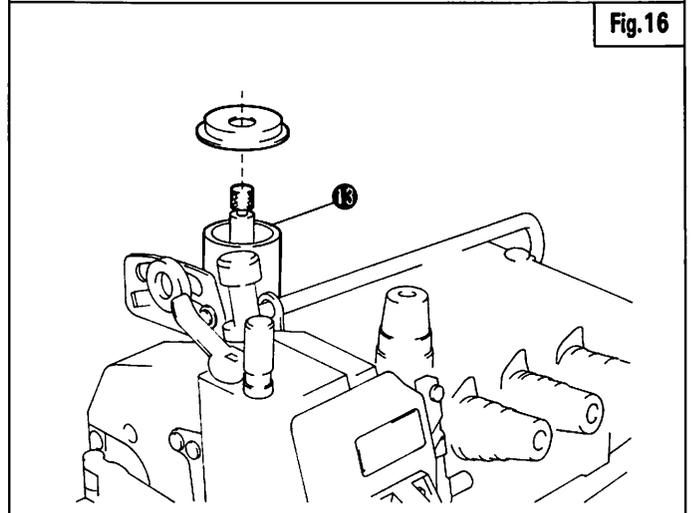
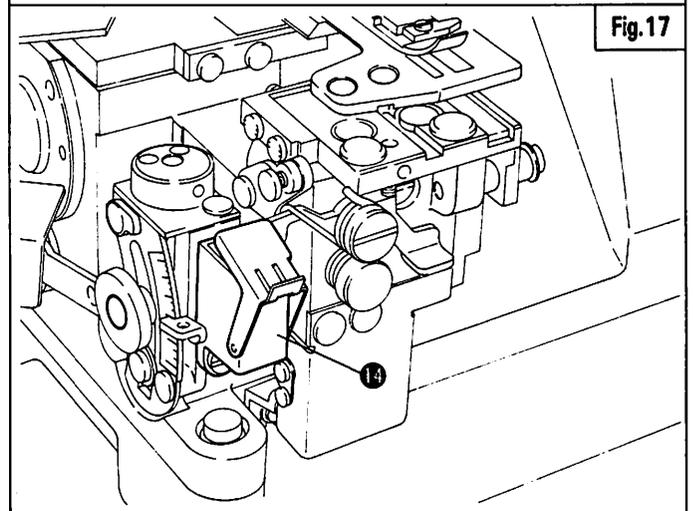


Fig.17



## NEEDLES

Use the needle system DC×27.

The size is as shown in Table 4.

Refer to Table 4 and use the needle suitable to your machine.

**Note:**

1. When the extremely different size needle is used, the looper adjustments may be required.
2. Use the upper looper/spreader according to the needle size as listed in Table 5.

## REPLACING NEEDLES (Fig.18)

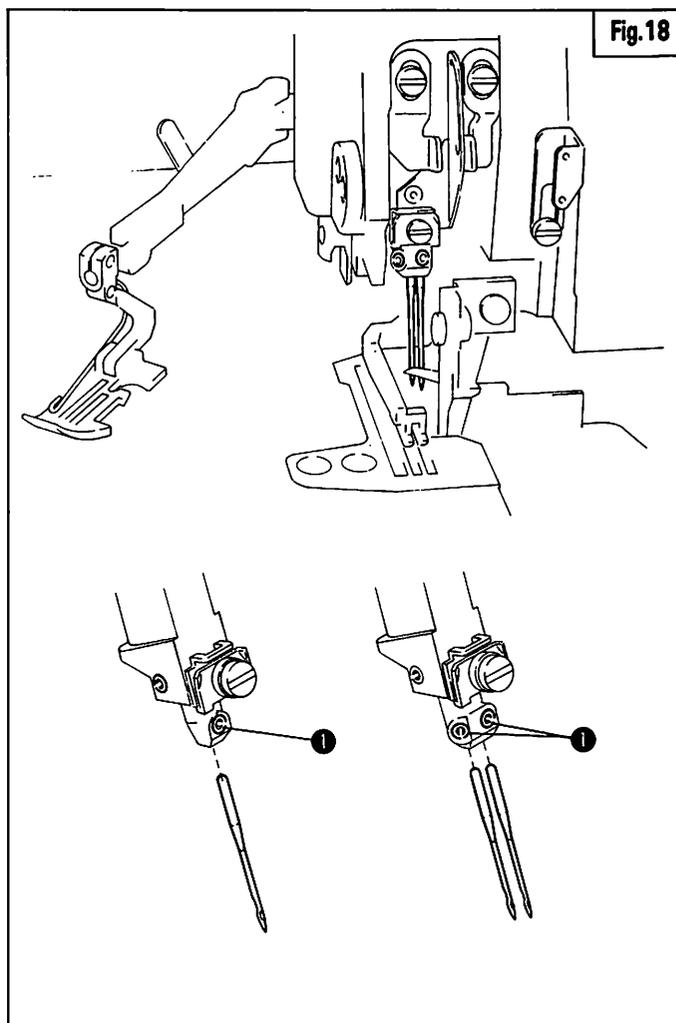
1. Loosen Screw ❶ and remove old needle.
2. Insert a new needle into the needle hole as far as it will go.
3. Tighten Screw ❶ after making sure the long groove on the needle is facing you.

## THREADING (Figs. 19~22)

Threading differs by the machine type. Refer to Table 4 and make a correct threading.

**Note:**

Thread your machine correctly. Incorrect threading may cause thread breakage, skip stitches, or uneven stitch formation.



## REGULATING THREAD TENSION

Changes of threads, seam width, stitch length, etc. require re-adjustment of thread tension. Adjust individual thread tension as follows:

**To increase tension:**

Turn Nut clockwise.

**To decrease tension:**

Turn Nut counter-clockwise.

**Note:**

Adjust each thread tension as low as possible while making sure well-balanced, neat sewing results.

# NEEDLE SIZE AND THREADING-FRONT TOP FEED ETS52

Table 4

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
------------------------	------------------

## GENERAL SEAMING

Machine type/spec.	Needle size	Threading	Machine type/spec.	Needle size	Threading
○504-ETS52-141FA2/463W	# 11	Fig.21	○504-ETS52-130FA2/363N	# 11	Fig.22
○514-ETS52-142FA2/463W	"	Fig. 19	○514-ETS52-133FA2/363N	"	Fig.20
○512-ETS52-142FA2/463W	"	"	○512-ETS52-133FA2/363N	"	"
●504-ETS52-141FA3/463W	"	Fig.21	●504-ETS52-130FA3/363N	"	Fig.22
●514-ETS52-142FA3/463W	"	Fig. 19	●514-ETS52-133FA3/363N	"	Fig.20
●512-ETS52-142FA3/463W	"	"	●512-ETS52-133FA3/363N	"	"

## GATHERING

Machine type/spec.	Needle size	Threading	Machine type/spec.	Needle size	Threading
○514-ETS52-243FD2/463W/KL100	# 11	Fig. 19	○514-ETS52-245FD2/363W/KL100	# 11	Fig.20
○512-ETS52-243FD2/463W/KL100	"	"	○512-ETS52-245FD2/363W/KL100	"	"
●514-ETS52-243FD3/463W/KL100	"	"	●514-ETS52-245FD3/363W/KL100	"	"
●512-ETS52-243FD3/463W/KL100	"	"	●512-ETS52-245FD3/363W/KL100	"	"

## PIPING

Machine type/spec.	Needle size	Threading	Machine type/spec.	Needle size	Threading
○504-ETS52-350FC2/P <sub>2</sub> <sup>1</sup> /453W	# 11	Fig.21			
○514-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	Fig. 19	○514-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	# 11	Fig.20
○512-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	"	"

## SEAMING/HEAVY

Machine type/spec.	Needle size	Threading
○514-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	# 11	Fig. 19
○512-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	"	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○512-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"

## BACK-LATCHING

Machine type/spec.	Needle size	Threading
○514-ETS52-184FB2/443W/BT152	# 11	Fig. 19

## BLIND-HEMMING

Machine type/spec.	Needle size	Threading
●505-ETS52-210FE3/323N	# 11	Fig.22

# NEEDLE SIZE AND THREADING-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Needle size	Threading
○504-ETS52-141BA2/463W	# 11	Fig.21
○514-ETS52-142BA2/463W	"	Fig. 19
○512-ETS52-142BA2/463W	"	"

## PIPING

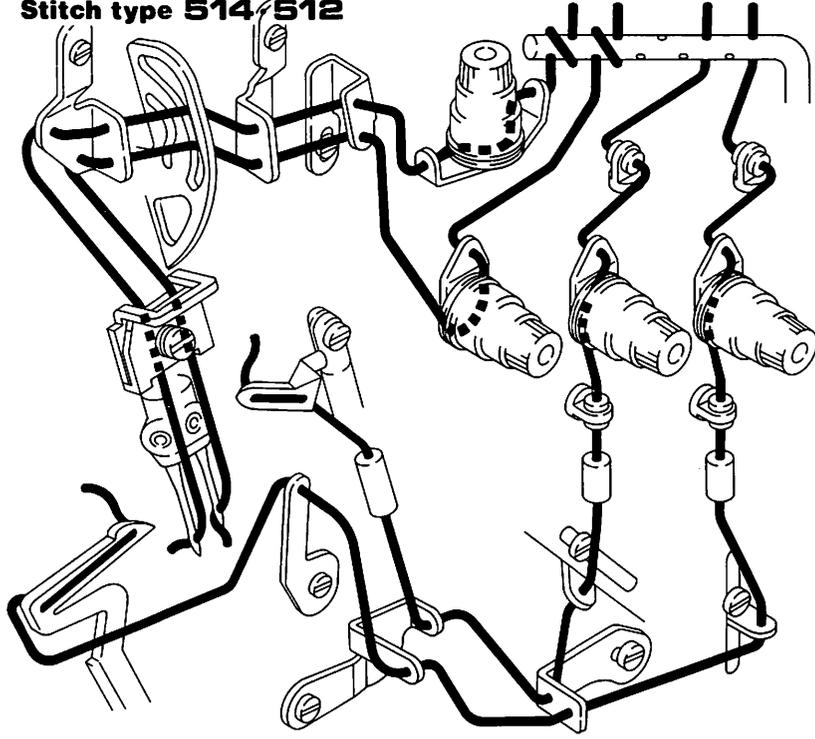
Machine type/spec.	Needle size	Threading
○504-ETS52-350BC2/P <sub>2</sub> <sup>1</sup> /453W	# 11	Fig.21
○514-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	Fig. 19
○512-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"

○ = Normal presser foot  
● = Narrow presser foot

Extra-high Lift

Fig.19

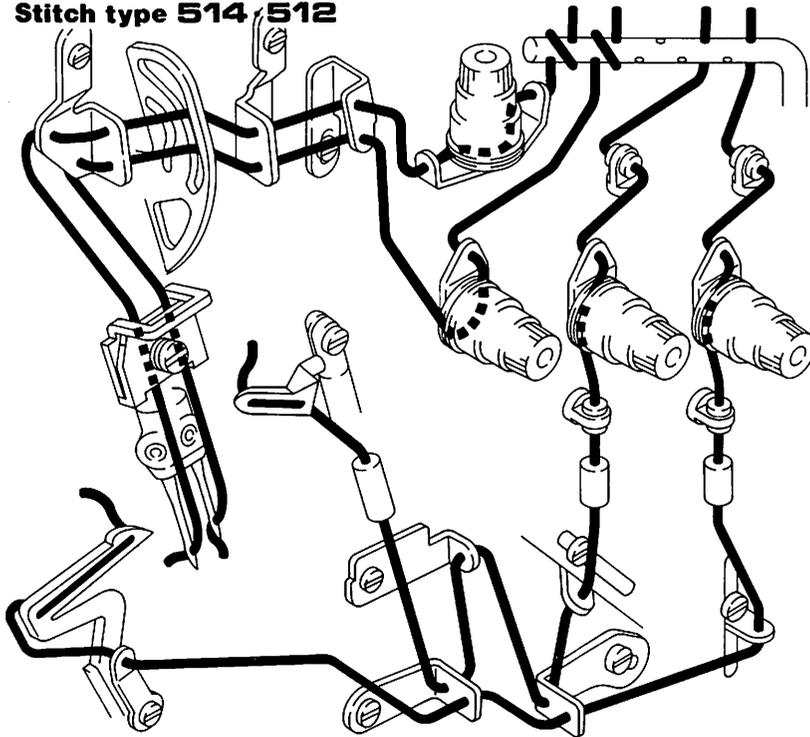
Stitch type 514 / 512



High Lift

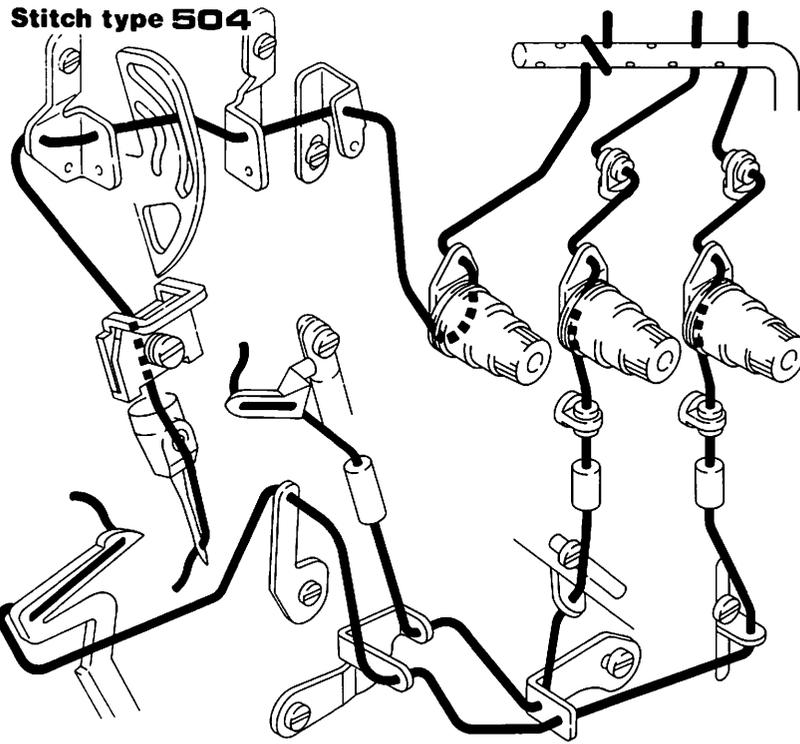
Fig.20

Stitch type 514 / 512



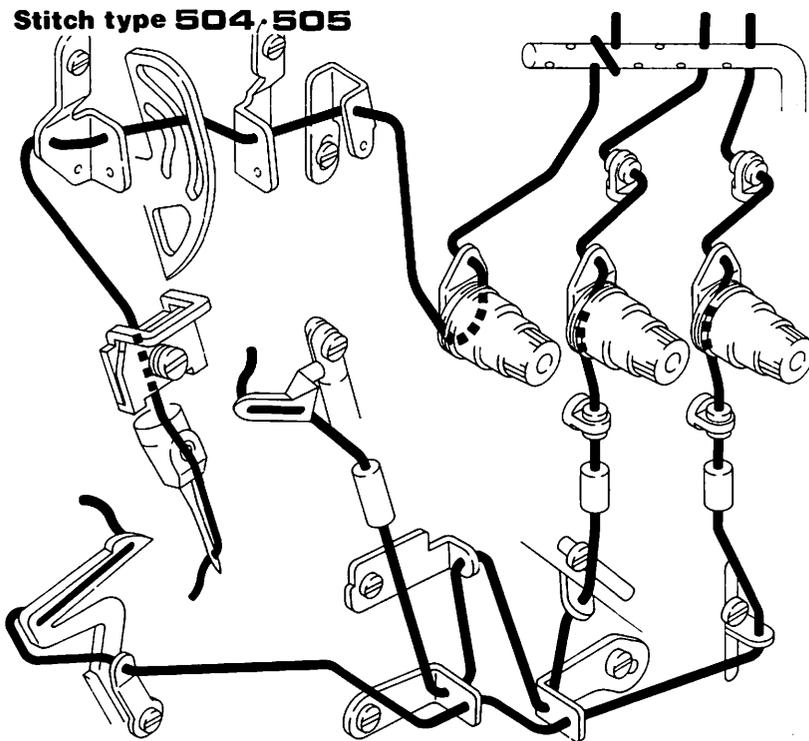
Extra-high Lift

Fig.21



High Lift

Fig.22



**THE RELATIONSHIP BETWEEN NEEDLE AND UPPER LOOPER/SPREADER**

**Table 5**

Stitch type	Needle size	High lift	Extra-high lift
		Part No.	Part No.
503	9-12	210515 (#27)	————
	13-16	210514 (#25)	————
	17-21	210513 (#23)	————
504 505	9-12	210366 (#26)	211719 (#38)
	13-16	210367 (#28)	"
	17-21	210365 (#24)	"
512	9-12	211507 (#36)	211844 (#42)
	13-16	210368 (#34)	"
514 (NG=2mm)	9-12	210365 (#24)	211719 (#38) ←
	13-16	210729 (#30)	————
	17-21	————	————
514 (NG=2.5mm)	9-12	210729 (#30)	————
	13-16	210730 (#32)	————
	17-21	————	————

For woolen yarn.  
211720 (#40)

## PRESSER ARM SWINGING-IN AND -OUT (Fig. 23)

When Swinging-in or swinging-out the presser arm, first raise the needle to the highest position.

### Swinging-out

Open Spring ② in the arrowed direction, press the foot lifting treadle or lower Lever ③ and only the top feed dog will be raised. Keeping this position, pull up Lever ④ and swing-out Presser Arm ① to the left.

### Swinging-in

Press the foot lifting treadle or lower Foot Lift Lever ③ and the top feed dog will be raised. Keeping this position, pull up Lever ④ and return Presser Arm ① to the original position.

#### Note:

Rear Top Feed Machines shown as (BA2) or (BC2) in the last 3 figures of Type Plate:  
Raise the needle to the highest position and you can swing-in or swing out Presser Arm ④.

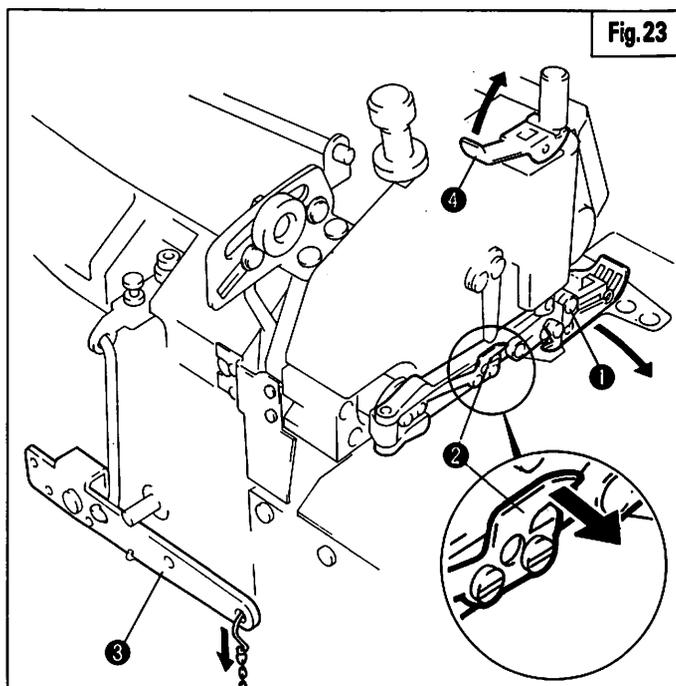


Fig. 23

## PRESSER FOOT PRESSURE (Fig. 24)

To adjust the pressure, turn Screw ⑤.  
Presser foot pressure should be as light as possible, while still sufficient to feed fabric and obtain proper stitch formation.

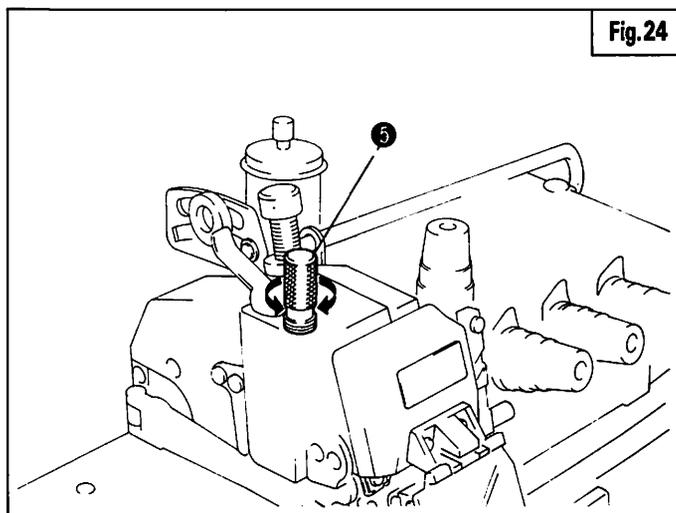


Fig. 24

## STITCH LENGTH ADJUSTMENT (Figs. 25, 26)

While pressing Push Button ①, turn Handwheel ② until Button ① drops in.

Turn ② further for a desired stitch length. Release ①.

For a longer stitch length, turn ② in the (+) direction.

For a shorter stitch length, turn ② in the (-) direction.

### Note:

The stitch length is the main feed stroke in nominal.

Table 6 shows this stroke by the handwheel scale setting. It may be a reference to know an approximate stitch length.

### MAIN FEED STROKE (mm) BY THE HANDWHEEL SCALE SETTING

Table 6

Handwheel scale setting	1	2	3	4	5	6	7
Main feed stroke (mm)	1.0 (0.6)	1.5 (0.9)	2.0 (1.2)	2.5 (1.5)	3.0 (1.9)	3.5 (2.2)	3.8 (2.35)
	(0.8)	(1.3)	(1.7)	(2.1)	(2.5)	(3.0)	(3.2)

● ( ) = ETS52-142FB2, -184FB2.

● ( [ ] ) = FTS52-253FB2.

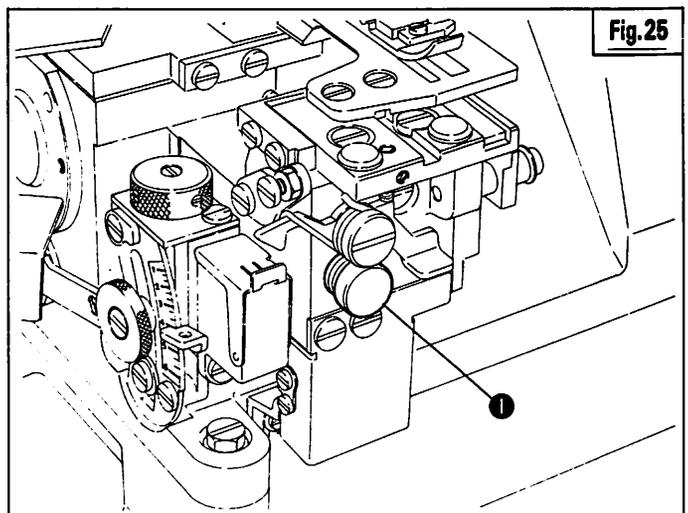
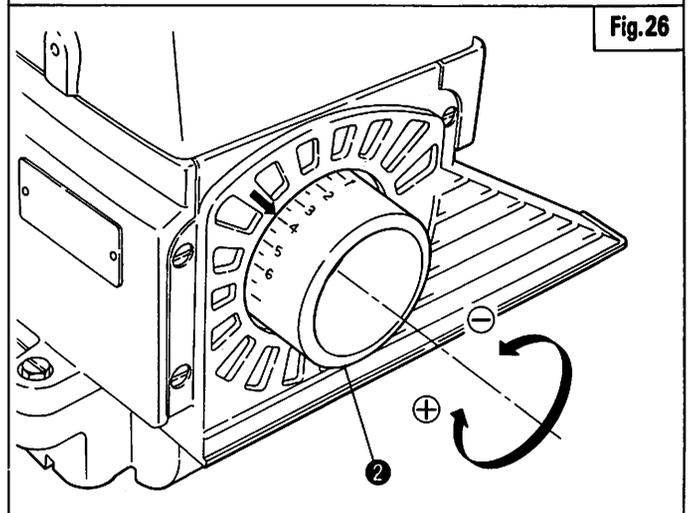


Fig. 26



## DIFFERENTIAL FEED ADJUSTMENT (Fig. 27)

Loosen Nut ③.

To gather the fabric, turn Screw ④ in the (+) direction.

To stretch the fabric, turn Screw ④ in the (-) direction.

### Note:

Table 7 shows the differential feed ratio by the lever setting.

When Lever ⑤ is set to the scale (2), the differential feed ratio is 1 : 1.

● If set higher than (2), the negative differential feed is applied.

Maximum up to 1 : 0.7.

● If set lower than (2), the positive differential feed is applied.

Maximum up to 1 : 2.

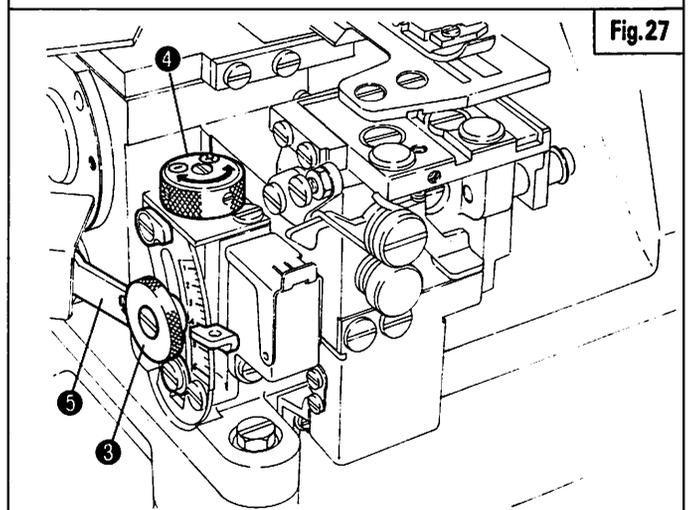


Fig. 27

### DIFFERENTIAL FEED RATIO

Table 7

Scale on the indication plate	1	2	3	4	5	6
Differential feed ratio	1:0.7 (1:1.1) (1:0.8)	1:1 (1:1.6) (1:1.2)	1:1.4 (1:2.2) (1:1.7)	1:1.7 (1:2.7) (1:2)	1:2 (1:3.2) (1:2.4)	(1:2.8)

● ( ) = ETS52-142FB2, -184FB2.

● ( [ ] ) = ETS52-253FB2.

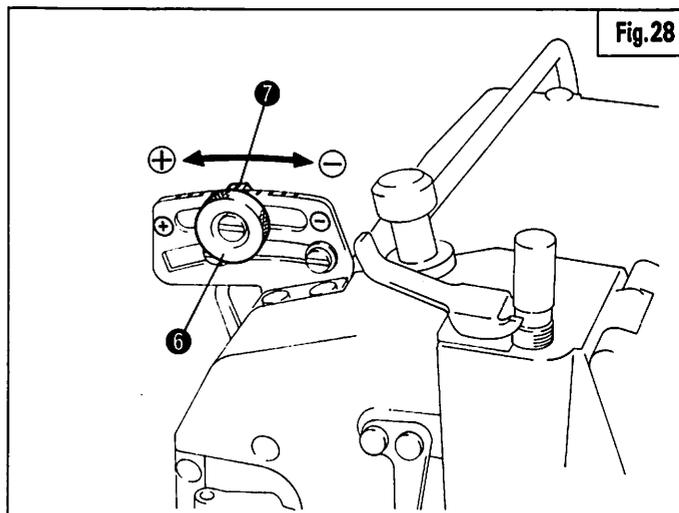
### TOP FEED STROKE ADJUSTMENT (Fig. 28)

Loosen Nut ⑥ shift Lever ⑦ and the top feed stroke will be changed.

Shift ⑦ in the (+) direction, and the stroke will increase.

Shift ⑦ in the (-) direction, and the stroke will decrease.

- When seaming, adjust so that the ply shift will not occur.
- When shirring/adding fullness, adjust depending on the nature of the fabrics.



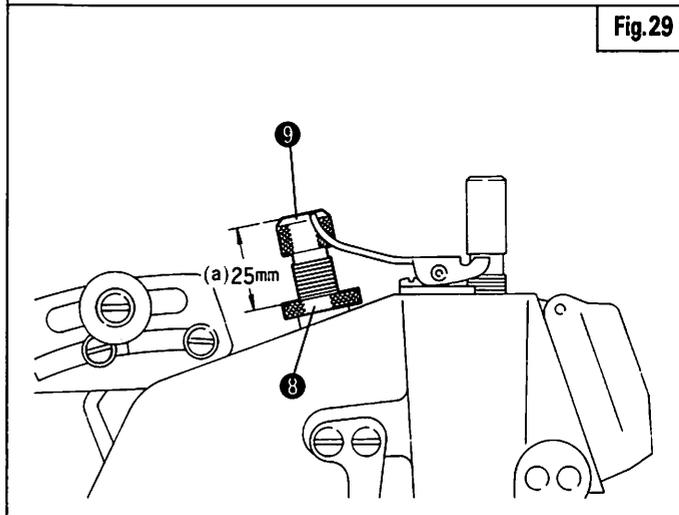
### ADJUSTING TOP FEED PRESSURE (Fig. 29)

For standard pressure set gap (a) to 25mm.

Loosen Nut ⑧, turn Screw ⑨ and adjust the top feed pressure on the fabric.

#### Notes:

- Too much pressure may cause feed marking on the fabric.
- Too little pressure may cause jumping of the top feed dog, uneven feeding or abnormal noise.
- Adjust the pressure as weak as possible while positive feeding should be kept.



## REGULATING SEAM WIDTH (Figs. 30, 31)

1. Loosen Screw ②, push Lower Knife Holder ① to the left and lightly tighten Screw ②.
2. Loosen Screw ④ and move Upper Knife Clamp ③ to the right or left until a desired seam width is obtained. Tighten Screw ④.
3. Turn Handwheel so that the point 'b' of Knife is about 1.0mm above from Needle Plate top. Loosen Screw ②, then Holder ① will return to position.
4. Make sure Knives are in a perfect alignment. Tighten Screw ②.
5. Check Knives cut sharply; insert a piece of thread between Knives, turn Handwheel and check the cutting of knives.

### Note:

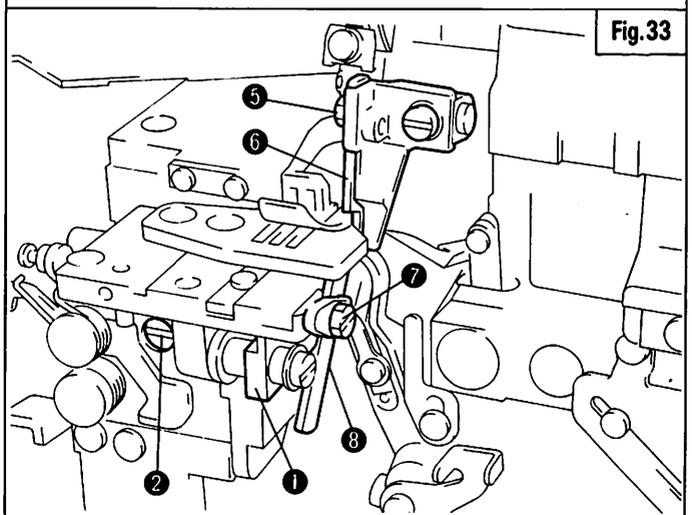
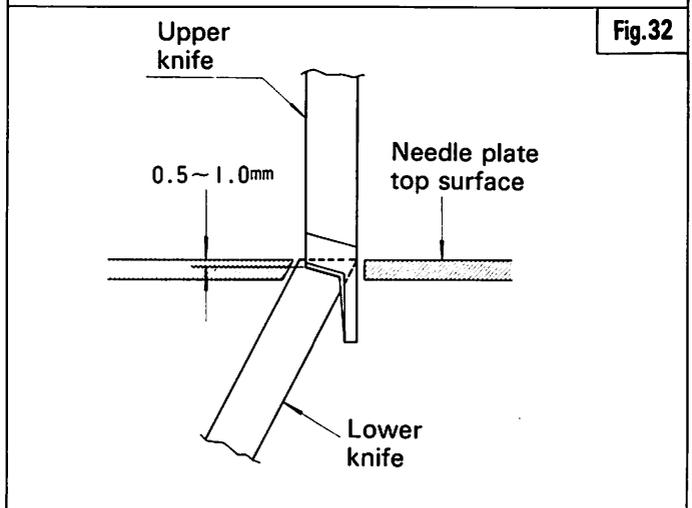
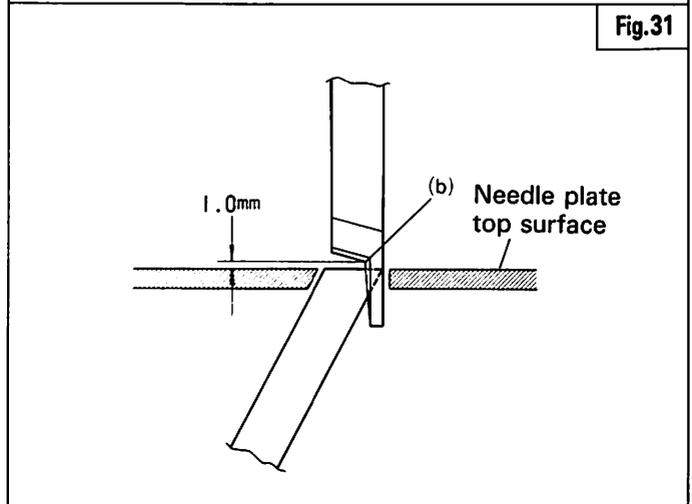
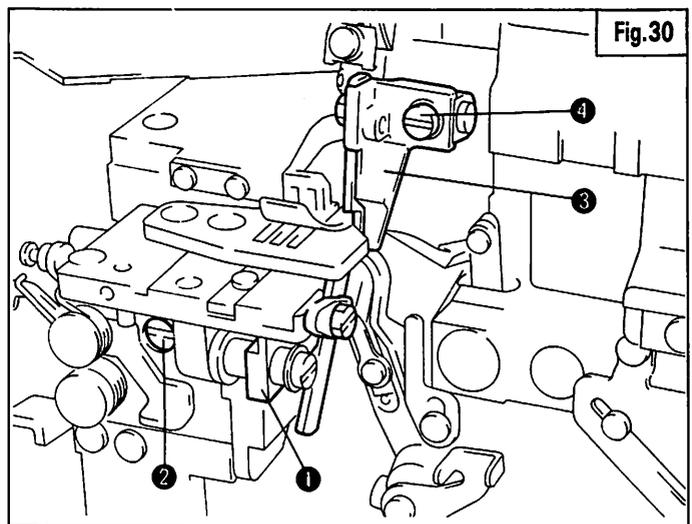
Needle Plates for various seam widths are available. Best results are obtained with use of the proper size Needle Plate for seam width required.

## CHANGING UPPER KNIFE (Figs. 31~33)

1. Loosen Screw ②, push Lower Knife Holder ① to the left and lightly tighten Screw ②.
2. Remove Screw ⑤.  
Replace Upper Knife ⑥ with the new one. Adjust ⑥ so that it is in the correct position for the seam width and also, the overlap of Upper and Lower Knives is 0.5 – 1.0mm when ⑥ is lowest.
3. Turn Handwheel so that the point 'b' of Knife is about 1.0mm above from Needle Plate top. Loosen Screw ②, then Holder ① will return to position.  
Make sure Knives are in a perfect alignment. Tighten Screw ②.
4. Check Knives cut sharp; insert a piece of thread between Knives, turn Handwheel and check the cutting of Knives.

## CHANGING LOWER KNIFE (Figs. 31~33)

1. Loosen Screw ②, push Lower Knife Holder ① to the left, and lightly tighten Screw ②.
2. Loosen Screw ⑦.  
Replace Lower Knife ⑧ with the new one. Move Knife up or down until its cutting edge is level with Needle Plate top. Tighten Screw ⑦.
3. Turn Handwheel so that the point 'b' of Upper Knife is about 1.0mm above from Needle Plate top. Loosen Screw ②, then Holder ① will return to position.
4. Make sure Knives are in a perfect alignment. Tighten Screw ②.
5. Check Knives cut sharp; insert a piece of thread between Knives, turn Handwheel and check the cutting of knives.



## REGULATING SEAM WIDTH (Figs. 34, 35) (ANGLED UPPER KNIFE)

1. Loosen Screw ②, push Lower Knife Holder ① to the left and lightly tighten Screw ②.
2. Loosen Screw ⑩ and move Upper Knife Holder ⑨ to the right or left until a desired seam width is obtained.  
Tighten Screw ⑩.
3. Turn Handwheel so that the point 'b' of Knife is about 1.0mm above from Needle Plate top. Loosen Screw ②, then Holder ① will return to position.
4. Make sure Knives are in a perfect alignment.  
Tighten Screw ②.  
Check Knives cut sharply; insert a piece of thread between Knives, turn Handwheel and check the cutting of knives.

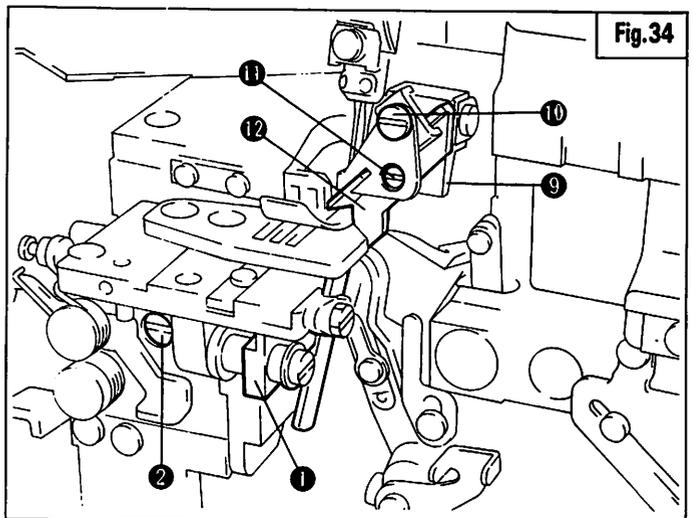


Fig. 34

## CHANGING UPPER KNIFE (Figs. 34~36) (ANGLED UPPER KNIFE)

1. Loosen Screw ②, push Lower Knife Holder ① to the left and lightly tighten Screw ②.
2. Loosen Screws ⑩, ⑪ and replace Upper Knife ⑫.  
Adjust ⑫ so that it is in the correct position for the seam width and also, the overlap of Upper and Lower Knives is 0.5 - 1.0mm when ⑫ is lowest.
3. Turn Handwheel so that the point 'b' of Knife is about 1.0mm above from Needle Plate top.  
Loosen Screw ②, then Holder ① will return to position.  
Make sure Knives are in a perfect alignment.  
Tighten Screw ②.
4. Check Knives cut sharp; insert a piece of thread between Knives, turn Handwheel and check the cutting of Knives.

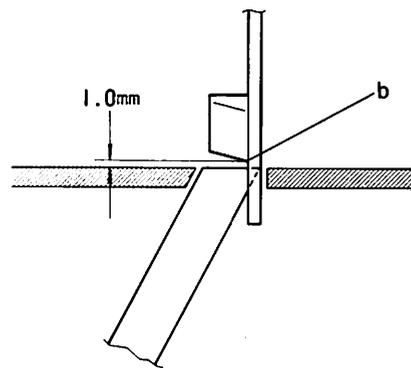


Fig. 35

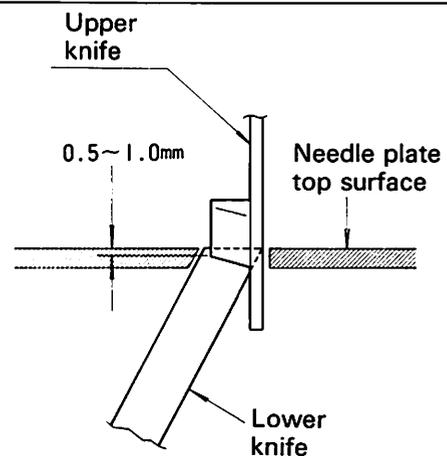


Fig. 36

## KNIVES (Fig. 37)

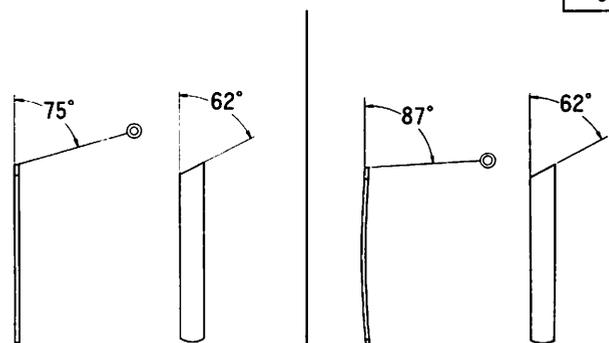
Knives must be kept sharp.  
If the machine does not trim the fabric sharply, sharpen the lower knife.

### Sharpening Lower Knife ⑧

Sharpen Lower Knife ⑧ as specified in Fig. 37.

### Upper Knife

Upper Knife may be sent to our distributors or returned to us for resharpening since it requires special grinding.



Part No. 202295

Part No. 201127

Fig. 37

## NEEDLE THREAD GUIDE SETTING POSITION (Fig.38)

The standard setting positions of needle thread guides ①, ②, ③ are as shown in Table 8. Refer to Table 8 and set them to the correct positions to your machine.

For adjusting, loosen Screws ④, ⑤, ⑥ and adjust Guides ①, ②, ③.

## LOOPER THREAD TAKEUP AND LOOPER THREAD GUIDE SETTING POSITIONS

Check your machine with Table 8. See Fig.39 for the extra-high lift machines. See Fig.40 for the high lift machines.

### Extra-high Lift (Fig.39)

#### 1. Loper Thread Guide ⑦

Loosen Screw ⑧ and set Guide ⑦ to the lowest position.

When a woolen yarn is used, set ⑦ to the highest position.

#### 2. Upper Loper Thread Takeup ⑨, Lower Loper Thread Takeup ⑩

When the lower looper is at the right dead point, loosen Screws ⑪, ⑫, shift Thread Guides ⑨, ⑩ up and down and set to the position shown in Fig. 39.

When a woolen yarn is used, set ⑩ to (36mm) in Fig. 39.

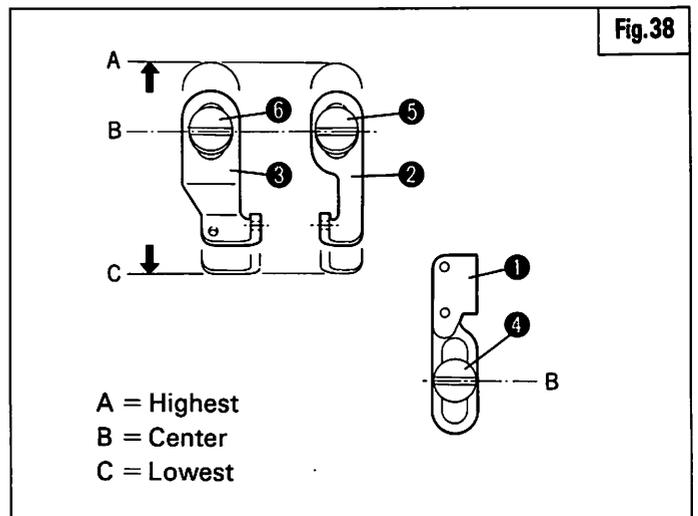
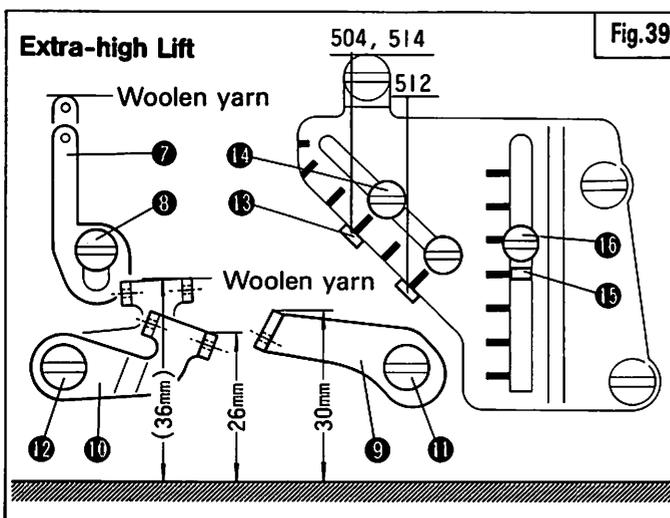
#### 3. Loper Thread Guide ⑬

For the machines of the stitch types 504 and 514, loosen Screw ⑭ and set Thread Guide ⑬ to the positions indicated as (504) and (514) respectively.

For the machines of the stitch type 512, set ⑬ to (512).

#### 4. Loper Thread Guide ⑮

Loosen Screw ⑯ and set Guide ⑮ to the position as indicated in Fig. 39.



### High Lift (Fig.40)

#### 1. Loper Thread Guide ⑰

Loosen Screw ⑱ and set that the distance between Bed (a) surface and the hole of Thread Guide ⑰ is 39.0mm.

#### 2. Upper Loper Thread Takeup ⑲, Lower Loper Thread Takeup ⑳

When the lower looper is at the right dead point, loosen Screws ㉑, ㉒, adjust Thread Takeups ⑲, ⑳ up and down, and set at the position as shown in Fig. 40.

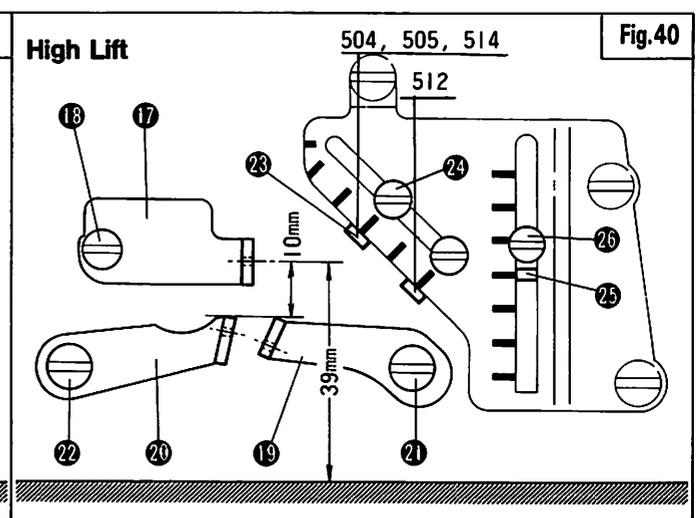
#### 3. Loper Thread Guide ㉓

For the machines of the stitch types 504, 505 and 514, loosen Screw ㉔ and set Guide ㉓ to the positions indicated as (504), (505) and (514) respectively.

For the machines of the stitch type 512, set ㉓ to (512).

#### 4. Loper Thread Guide ㉕

Loosen Screw ㉖ and set Guide ㉕ to the position as indicated in Fig. 40.



# NEEDLE THREAD GUIDE SETTING POSITION-FRONT TOP FEED ETS52

Table 8

## EXTRA-HIGH LIFT

## HIGH LIFT

### GENERAL SEAMING

Machine type/spec.	Setting position			Machine type/spec.	Setting position		
	①	②	③		①	②	③
○504-ETS52-141FA2/463W	B	B	B	○504-ETS52-130FA2/363N	B	C	C
○514-ETS52-142FA2/463W	"	"	"	○514-ETS52-133FA2/363N	"	"	"
○512-ETS52-142FA2/463W	"	"	"	○512-ETS52-133FA2/363N	"	"	"
●504-ETS52-141FA3/463W	"	"	"	●504-ETS52-130FA3/363N	"	"	"
●514-ETS52-142FA3/463W	"	"	"	●514-ETS52-133FA3/363N	"	"	"
●512-ETS52-142FA3/463W	"	"	"	●512-ETS52-133FA3/363N	"	"	"

### GATHERING

Machine type/spec.	Setting position			Machine type/spec.	Setting position		
	①	②	③		①	②	③
○514-ETS52-243FD2/463W/KL100	B	B	B	○514-ETS52-245FD2/363W/KL100	B	C	C
○512-ETS52-243FD2/463W/KL100	"	"	"	○512-ETS52-245FD2/363W/KL100	"	"	"
●514-ETS52-243FD3/463W/KL100	"	"	"	●514-ETS52-245FD3/363W/KL100	"	"	"
●512-ETS52-243FD3/463W/KL100	"	"	"	●512-ETS52-245FD3/363W/KL100	"	"	"

### PIPING

Machine type/spec.	Setting position			Machine type/spec.	Setting position		
	①	②	③		①	②	③
○504-ETS52-350FC2/P <sub>2</sub> <sup>P1</sup> /453W	B	B	B				
○514-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"	"	○514-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	B	C	C
○512-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	"	"	"

### SEAMING/HEAVY

Machine type/spec.	Setting position		
	①	②	③
○514-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	B	B	B
○512-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	"	"	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	"	"
○512-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	"	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	"	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	"	"

### BACK-LATCHING

Machine type/spec.	Setting position			Machine type/spec.	Setting position		
	①	②	③		①	②	③
○514-ETS52-184FB2/443W/BT152	B	B	B	●505-ETS52-210FE3/323N	B	A	A

### BLIND-HEMMING

# NEEDLE THREAD GUIDE SETTING POSITION-REAR TOP FEED ETS52

### GENERAL SEAMING

Machine type/spec.	Setting position		
	①	②	③
○504-ETS52-141BA2/463W	B	B	B
○514-ETS52-142BA2/463W	"	"	"
○512-ETS52-142BA2/463W	"	"	"

### PIPING

Machine type/spec.	Setting position		
	①	②	③
○504-ETS52-350BC2/P <sub>2</sub> <sup>P1</sup> /453W	B	B	B
○514-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"	"
○512-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"	"

○ = Normal presser foot

● = Narrow presser foot

## BOTTOM FEED HEIGHT (Figs. 41, 42)

Bottom feed dog height by type is as shown in Table 9. Make sure that the setting is correct to your machine.

1. Turn the handwheel to lift the bottom feed dog to the highest position.
2. Adjust gap (a) from the top face of the needle plate to the tooth end of the rear part of the main feed dog to the height correct to the type.

For adjusting, loosen Screw ❶ and shift Main Feed Dog ❷ up and down.

3. Set the tooth end (b) of Differential Feed Dog ❸ to the same height as the tooth end (c) of the main feed dog.

For adjusting, loosen Screw ❹ and shift Differential Feed Dog ❸ up and down.

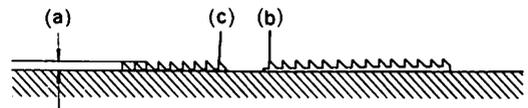


Fig. 41

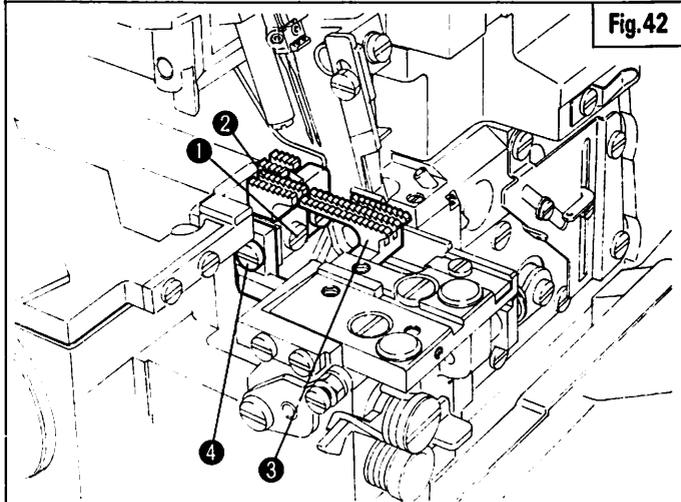


Fig. 42

## AUXILIARY FEED DOG HEIGHT (Fig. 43)

Gap (d) from the tooth end of the main feed dog to the tooth end of Auxiliary Feed Dog ❺ is adjusted to the machine type.

Generally, for using coarse thread, set the gap wider, and for using finer thread, set the gap smaller.

To adjust the gap, loosen Screw ❻ and shift Auxiliary Feed Dog ❺ up and down.

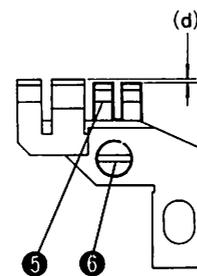


Fig. 43

## BOTTOM FEED LEVELING POSITION ADJUSTMENT (Figs. 44, 45)

Adjust so that all the teeth ends are flush with the needle plate top surface when they first appear.

For adjusting, remove cover plate ❷, loosen Screw ❸, and turn Washer ❹.

### Note:

1. For tightening Screw ❸ after adjustment, hold the feed bar exactly with Washer ❹ so as to avoid sidewise shifting.
2. Be sure to adjust "bottom feed height" after the adjustment.

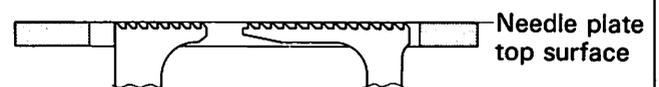


Fig. 44

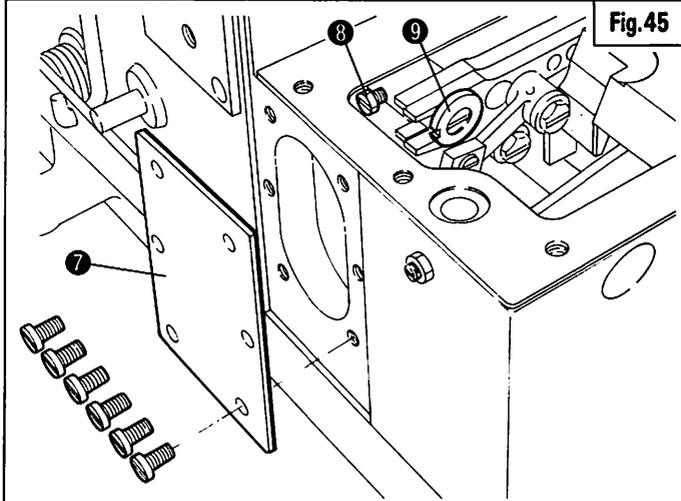


Fig. 45

# BOTTOM FEED HEIGHT-FRONT TOP FEED ETS52

Table 9

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
------------------------	------------------

## GENERAL SEAMING

Machine type/spec.	Bottom feed height	Machine type/spec.	Bottom feed height
○ 504-ETS52-141FA2/463W	0.9~1.1	○ 504-ETS52-130FA2/363N	0.8~1.0
○ 514-ETS52-142FA2/463W	"	○ 514-ETS52-133FA2/363N	"
○ 512-ETS52-142FA2/463W	"	○ 512-ETS52-133FA2/363N	"
● 504-ETS52-141FA3/463W	"	● 504-ETS52-130FA3/363N	"
● 514-ETS52-142FA3/463W	"	● 514-ETS52-133FA3/363N	"
● 512-ETS52-142FA3/463W	"	● 512-ETS52-133FA3/363N	"

## GATHERING

Machine type/spec.	Bottom feed height	Machine type/spec.	Bottom feed height
○ 514-ETS52-243FD2/463W/KL100	0.9~1.1	○ 514-ETS52-245FD2/363W/KL100	0.8~1.0
○ 512-ETS52-243FD2/463W/KL100	"	○ 512-ETS52-245FD2/363W/KL100	"
● 514-ETS52-243FD3/463W/KL100	"	● 514-ETS52-245FD3/363W/KL100	"
● 512-ETS52-243FD3/463W/KL100	"	● 512-ETS52-245FD3/363W/KL100	"

## PIPING

Machine type/spec.	Bottom feed height	Machine type/spec.	Bottom feed height
○ 504-ETS52-350FC2/P <sub>2</sub> <sup>P1</sup> /453W	0.9~1.1		
○ 514-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	○ 514-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	0.8~1.0
○ 512-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	○ 512-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	"

## SEAMING/HEAVY

Machine type/spec.	Bottom feed height
○ 514-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	0.9~1.1
○ 512-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	"
○ 514-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"
○ 512-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"
○ 514-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"
○ 512-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"

## BACK-LATCHING

Machine type/spec.	Bottom feed height	Machine type/spec.	Bottom feed height
○ 514-ETS52-184FB2/443W/BT152	0.9~1.1	● 505-ETS52-210FE3/323N	0.8~1.0

## BLIND-HEMMING

# BOTTOM FEED HEIGHT-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Bottom feed height
○ 504-ETS52-141BA2/463W	0.9~1.1
○ 514-ETS52-142BA2/463W	"
○ 512-ETS52-142BA2/463W	"

## PIPING

Machine type/spec.	Bottom feed height
○ 504-ETS52-350BC2/P <sub>2</sub> <sup>P1</sup> /453W	0.9~1.1
○ 514-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"
○ 512-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"

○ = Normal presser foot

● = Narrow presser foot

## NEEDLE HEIGHT SETTING (Figs. 46, 47)

Needle height by type is as shown in Table 10. Make sure of the machine type, refer to Table 10, and set to the correct height in the following procedures.

1. Turn the handwheel and bring the needle to the highest level.
2. Measure gap (a) between the needle point and the needle plate top surface perpendicularly and adjust the needle height to the correct dimension.

For adjusting, loosen Screw ❶ and adjust Needle Holder Guide ❷.

### Note:

In the case of 2-needle machines, make sure that each needle passes the center of the needle slot of the needle plate.

If not, loosen Screw ❸, turn Needle Holder ❹ and adjust.

## LOWER LOOPER SETTING (Figs. 48, 49)

The lower looper setting is as shown in Table 10. Make sure of the machine type, refer to Table 10, and set in the following procedures.

1. With the needle guard idle, set the needle 0 – 0.05mm bent by the looper point when it comes to the center of the needle.  
In the case of 2-needle, obtain this condition for both needles.

For adjusting, loosen Screw ❺ and shift Looper Holder ❻ back and forth.

2. When the lower looper is at the left dead point, adjust gap (b) between the looper point and the needle centerline to the correct dimension to machine type.

In the case of 2-needle, check gap (b) with the left needle.

For adjusting, loosen Screw ❺ and shift Looper Holder ❻ to the right or left.

Fig.46

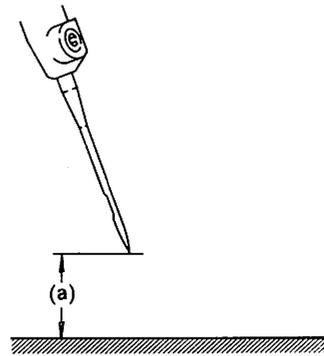


Fig.47

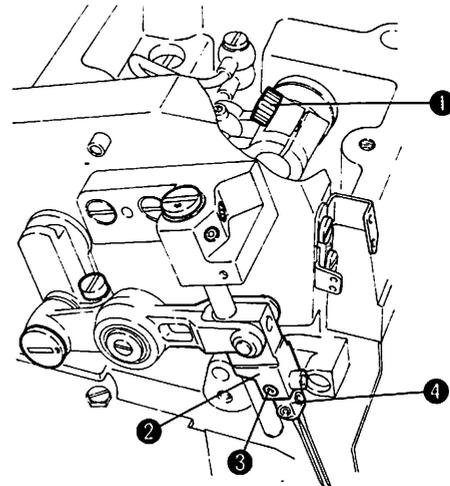


Fig.48

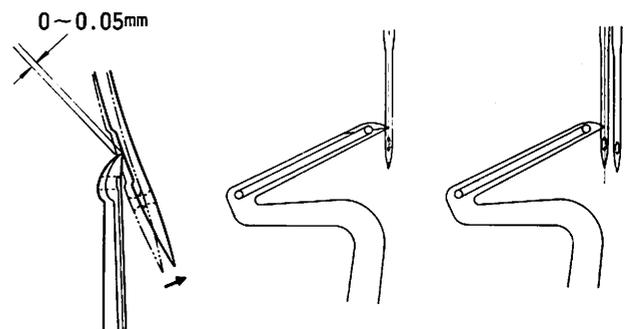
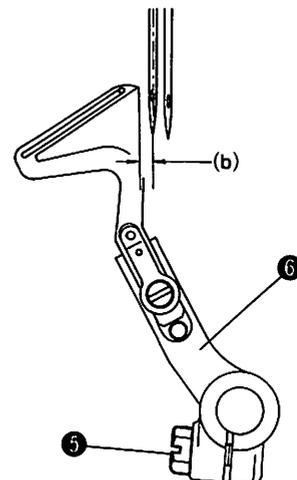


Fig.49



# NEEDLE HEIGHT/LOWER LOOPER SETTING-FRONT TOP FEED ETS52

Table 10

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
------------------------	------------------

## GENERAL SEAMING

Machine type/spec.	Needle (a)	Lower looper (b)	Machine type/spec.	Needle (a)	Lower looper (b)
○504-ETS52-141FA2/463W	11.7~11.9	3.6~3.9	○504-ETS52-130FA2/363N	10.4~10.6	3.8~4.1
○514-ETS52-142FA2/463W	"	"	○514-ETS52-133FA2/363N	"	"
○512-ETS52-142FA2/463W	"	"	○512-ETS52-133FA2/363N	11.3~11.5	"
●504-ETS52-141FA3/463W	"	"	●504-ETS52-130FA3/363N	10.4~10.6	"
●514-ETS52-142FA3/463W	"	"	●514-ETS52-133FA3/363N	"	"
●512-ETS52-142FA3/463W	"	"	●512-ETS52-133FA3/363N	11.3~11.5	"

## GATHERING

Machine type/spec.	Needle (a)	Lower looper (b)	Machine type/spec.	Needle (a)	Lower looper (b)
○514-ETS52-243FD2/463W/KL100	11.7~11.9	3.6~3.9	○514-ETS52-245FD2/363W/KL100	10.4~10.6	3.8~4.1
○512-ETS52-243FD2/463W/KL100	"	"	○512-ETS52-245FD2/363W/KL100	11.3~11.5	"
●514-ETS52-243FD3/463W/KL100	"	"	●514-ETS52-245FD3/363W/KL100	10.4~10.6	"
●512-ETS52-243FD3/463W/KL100	"	"	●512-ETS52-245FD3/363W/KL100	11.3~11.5	"

## PIPING

Machine type/spec.	Needle (a)	Lower looper (b)	Machine type/spec.	Needle (a)	Lower looper (b)
○504-ETS52-350FC2/P <sub>2</sub> <sup>1</sup> /453W	11.7~11.9	3.6~3.9			
○514-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	○514-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	10.4~10.6	3.8~4.1
○512-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	11.3~11.5	"

## SEAMING/HEAVY

Machine type/spec.	Needle (a)	Lower looper (b)
○514-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	11.7~11.9	3.6~3.9
○512-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	"	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○512-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"

## BACK-LATCHING

Machine type/spec.	Needle (a)	Lower looper (b)	Machine type/spec.	Needle (a)	Lower looper (b)
○514-ETS52-184FB2/443W/BT152	11.7~11.9	3.6~3.9	●505-ETS52-210FE3/323N	10.4~10.6	3.8~4.1

## BLIND-HEMMING

# NEEDLE HEIGHT/LOWER LOOPER SETTING-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Needle (a)	Lower looper (b)
○504-ETS52-141BA2/463W	11.7~11.9	3.6~3.9
○514-ETS52-142BA2/463W	"	"
○512-ETS52-142BA2/463W	"	"

## PIPING

Machine type/spec.	Needle (a)	Lower looper (b)
○504-ETS52-350BC2/P <sub>2</sub> <sup>1</sup> /453W	11.7~11.9	3.6~3.9
○514-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"
○512-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"

○ = Normal presser foot  
 ● = Narrow presser foot

## UPPER LOOPER SETTING (Figs. 50~55)

The standard setting is as shown in Table 11. Make sure that the setting is correct for your machine.

1. Tentatively set the looper in Holder ① by Screw ②.

Fig. 50 or 51. Table 11.

2. When the looper is at the left dead point, adjust gap (a) to the correct dimension.

Loosen Screw ③, move Crank ④ up or down, and adjust this.

Figs. 52 or 53.

- In the case of 2-needle, check gap (a) with the left needle.

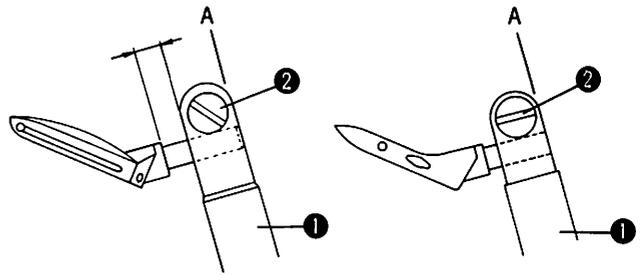
3. When the upper and lower loopers cross, check that clearance (b) is approximately 0.5mm. Turn the looper and adjust clearance (c) to approximately 0.2mm.

Tighten Screws ② and ③.

Figs. 54 and 55.

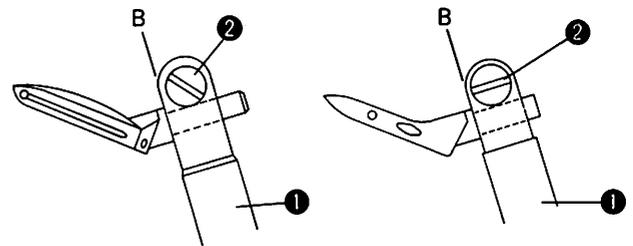
Extra-high lift

Fig.50



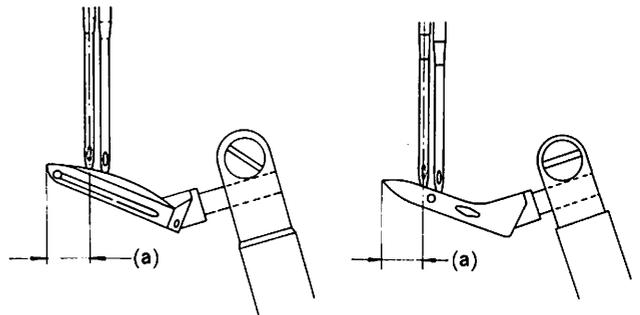
High lift

Fig.51



Extra-high lift

Fig.52



High lift

Fig.53

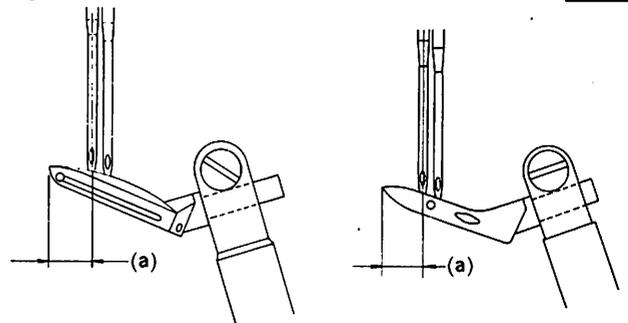


Fig.54

(c) 0.2mm

(b) 0.5mm

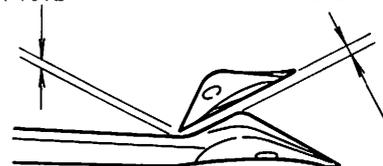
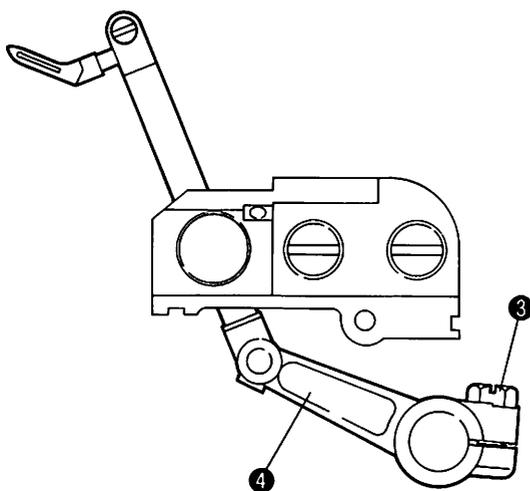


Fig.55



# UPPER LOOPER SETTING-FRONT TOP FEED TYPE ETS52

Table 11

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
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## GENERAL SEAMING

Machine type/spec.	Position	Distance (a)	Machine type/spec.	Position	Distance (a)
○504-ETS52-141FA2/463W	A	4.5~5.0	○504-ETS52-130FA2/363N	B	4.5~5.0
○514-ETS52-142FA2/463W	"	5.5~5.8	○514-ETS52-133FA2/363N	"	5.5~5.8
○512-ETS52-142FA2/463W	"	5.3~5.6	○512-ETS52-133FA2/363N	"	4.8~5.1
●504-ETS52-141FA3/463W	"	4.5~5.0	●504-ETS52-130FA3/363N	"	4.5~5.0
●514-ETS52-142FA3/463W	"	5.5~5.8	●514-ETS52-133FA3/363N	"	5.5~5.8
●512-ETS52-142FA3/463W	"	5.3~5.6	●512-ETS52-133FA3/363N	"	4.8~5.1

## GATHERING

Machine type/spec.	Position	Distance (a)	Machine type/spec.	Position	Distance (a)
○514-ETS52-243FD2/463W/KL100	A	5.5~5.8	○514-ETS52-245FD2/363W/KL100	B	5.5~5.8
○512-ETS52-243FD2/463W/KL100	"	5.3~5.6	○512-ETS52-245FD2/363W/KL100	"	4.8~5.1
●514-ETS52-243FD3/463W/KL100	"	5.5~5.8	●514-ETS52-245FD3/363W/KL100	"	5.5~5.8
●512-ETS52-243FD3/463W/KL100	"	5.3~5.6	●512-ETS52-245FD3/363W/KL100	"	4.8~5.1

## PIPING

Machine type/spec.	Position	Distance (a)	Machine type/spec.	Position	Distance (a)
○504-ETS52-350FC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /453W	A	4.5~5.0			
○514-ETS52-351FC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /453W	"	5.5~5.8	○514-ETS52-352FC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /353W	B	5.5~5.8
○512-ETS52-351FC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /453W	"	5.3~5.6	○512-ETS52-352FC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /353W	"	4.8~5.1

## SEAMING/HEAVY

Machine type/spec.	Position	Distance (a)
○514-ETS52-142FB2/S <sub>1</sub> <sup>1</sup> /S <sub>2</sub> <sup>1</sup> /463W/KL100	A	5.5~5.8
○512-ETS52-142FB2/S <sub>1</sub> <sup>1</sup> /S <sub>2</sub> <sup>1</sup> /463W/KL100	"	5.3~5.6
○514-ETS52-253FB2/S <sub>1</sub> <sup>1</sup> /S <sub>2</sub> <sup>1</sup> /493W/KL100	"	5.5~5.8
○512-ETS52-253FB2/S <sub>1</sub> <sup>1</sup> /S <sub>2</sub> <sup>1</sup> /493W/KL100	"	5.3~5.6
○514-ETS52-253FB2K/S <sub>1</sub> <sup>1</sup> /S <sub>2</sub> <sup>1</sup> /493W/KL100	"	5.5~5.8
○512-ETS52-253FB2K/S <sub>1</sub> <sup>1</sup> /S <sub>2</sub> <sup>1</sup> /493W/KL100	"	5.3~5.6

## BACK-LATCHING

Machine type/spec.	Position	Distance (a)
○514-ETS52-184FB2/443W/BT152	A	5.5~5.8

## BLIND-HEMMING

Machine type/spec.	Position	Distance (a)
●505-ETS52-210FE3/323N	B	4.5~5.0

# UPPER LOOPER SETTING-REAR TOP FEED TYPE ETS52

## GENERAL SEAMING

Machine type/spec.	Position	Distance (a)
○504-ETS52-141BA2/463W	A	4.5~5.0
○514-ETS52-142BA2/463W	"	5.5~5.8
○512-ETS52-142BA2/463W	"	5.3~5.6

## PIPING

Machine type/spec.	Position	Distance (a)
○504-ETS52-350BC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /453W	A	4.5~5.0
○514-ETS52-351BC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /453W	"	5.5~5.8
○512-ETS52-351BC2/P <sub>1</sub> <sup>1</sup> /P <sub>2</sub> <sup>1</sup> /453W	"	5.3~5.6

○ = Normal presser foot  
 ● = Narrow presser foot

## NEEDLE GUARD SETTING (Figs. 56~58)

### Rear Needle Guard

When the lower looper point is behind the needle centerline, Needle Guard ② should push the needle so that gap (a) is 0mm.

Loosen Screw ①, move Needle Guard ② and adjust this.

Fig. 58.

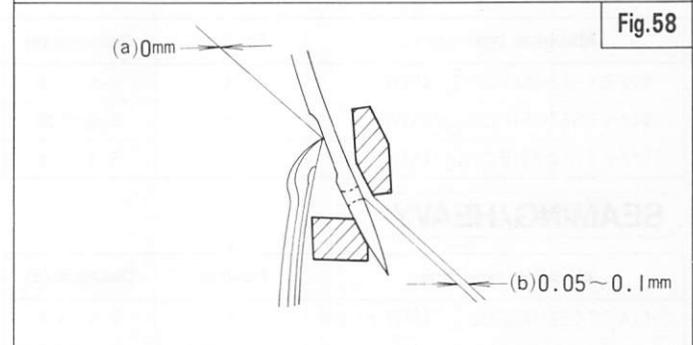
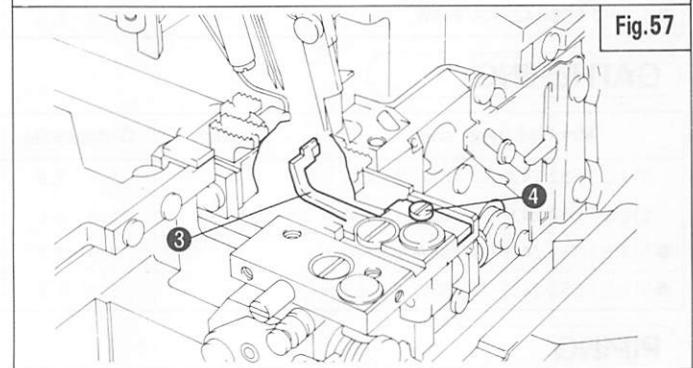
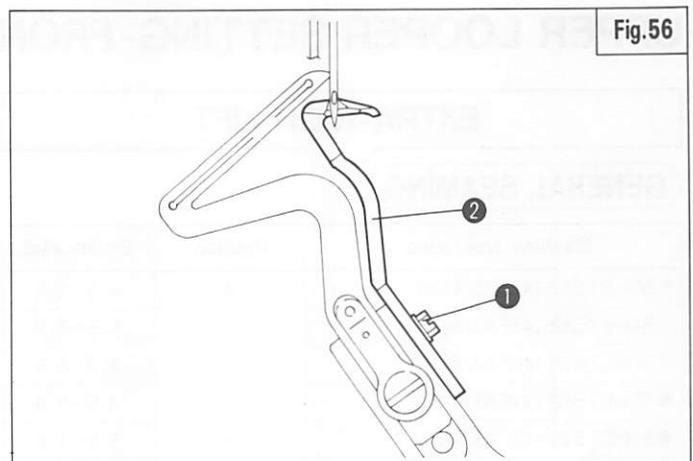
- In the case of 2-needle, obtain gap (a) of 0mm for both needles.

### Front Needle Guard

When the lower looper point is behind the needle centerline, adjust gap (b) to 0.05 – 0.1mm. Loosen Screw ④, move Needle Guard ③ and adjust this.

Fig. 58.

- In the case of 2-needle, adjust gap (b) to 0.1 – 0.2mm for both needles.

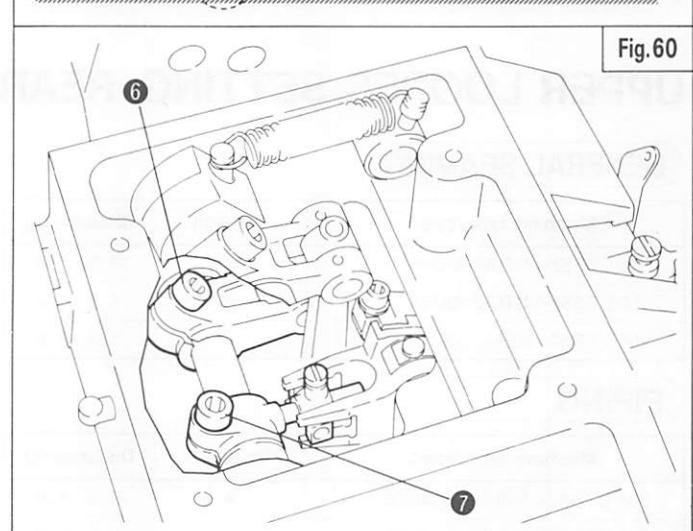
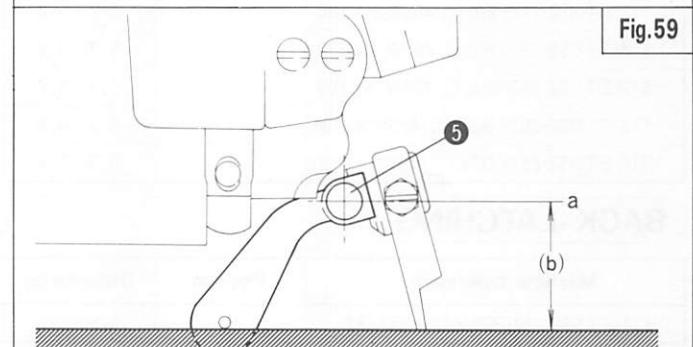


## HEIGHT OF UPPER KNIFE HOLDER (Figs. 59, 60)

The height of the upper knife holder is as shown in Table 12. Make sure that the height is correct to your machine.

1. Turn the handwheel and lift Upper Knife Holder ⑤ to the highest position.
2. Adjust so that distance (b) between the top surface of the needle plate and the point (a) of Upper Knife Holder ⑤ is set to the specified height.

For adjusting, loosen Screws ⑥, ⑦ and slide Upper Knife Holder ⑤ up and down.



# HEIGHT OF UPPER KNIFE HOLDER-FRONT TOP FEED ETS52

Table 12

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
------------------------	------------------

## GENERAL SEAMING

Machine type/spec.	Height (b)	Machine type/spec.	Height (b)
○ 504-ETS52-141FA2/463W	20.0	○ 504-ETS52-130FA2/363N	19.5
○ 514-ETS52-142FA2/463W	"	○ 514-ETS52-133FA2/363N	"
○ 512-ETS52-142FA2/463W	"	○ 512-ETS52-133FA2/363N	"
● 504-ETS52-141FA3/463W	"	● 504-ETS52-130FA3/363N	"
● 514-ETS52-142FA3/463W	"	● 514-ETS52-133FA3/363N	"
● 512-ETS52-142FA3/463W	"	● 512-ETS52-133FA3/363N	"

## GATHERING

Machine type/spec.	Height (b)	Machine type/spec.	Height (b)
○ 514-ETS52-243FD2/463W/KL100	20.0	○ 514-ETS52-245FD2/363W/KL100	19.5
○ 512-ETS52-243FD2/463W/KL100	"	○ 512-ETS52-245FD2/363W/KL100	"
● 514-ETS52-243FD3/463W/KL100	"	● 514-ETS52-245FD3/363W/KL100	"
● 512-ETS52-243FD3/463W/KL100	"	● 512-ETS52-245FD3/363W/KL100	"

## PIPING

Machine type/spec.	Height (b)	Machine type/spec.	Height (b)
○ 504-ETS52-350FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	20.0		
○ 514-ETS52-351FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	○ 514-ETS52-352FC2/ <sup>P1</sup> / <sub>P2</sub> /353W	19.5
○ 512-ETS52-351FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	○ 512-ETS52-352FC2/ <sup>P1</sup> / <sub>P2</sub> /353W	"

## SEAMING/HEAVY

Machine type/spec.	Height (b)
○ 514-ETS52-142FB2/ <sup>S1</sup> / <sub>S2</sub> /463W/KL100	20.0
○ 512-ETS52-142FB2/ <sup>S1</sup> / <sub>S2</sub> /463W/KL100	"
○ 514-ETS52-253FB2/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"
○ 512-ETS52-253FB2/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"
○ 514-ETS52-253FB2K/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"
○ 512-ETS52-253FB2K/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"

## BACK-LATCHING

Machine type/spec.	Height (b)
○ 514-ETS52-184FB2/443W/BT152	20.0

## BLIND-HEMMING

Machine type/spec.	Height (b)
● 505-ETS52-210FE3/323N	19.5

# HEIGHT OF UPPER KNIFE HOLDER-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Height (b)
○ 504-ETS52-141BA2/463W	20.0
○ 514-ETS52-142BA2/463W	"
○ 512-ETS52-142BA2/463W	"

## PIPING

Machine type/spec.	Height (b)
○ 504-ETS52-350BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	20.0
○ 514-ETS52-351BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"
○ 512-ETS52-351BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"

○ = Normal presser foot  
● = Narrow presser foot

# MAIN AND DIFF. FEED STROKES AND FEED RATIO- FRONT TOP FEED ETS52

Table 13

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
------------------------	------------------

## GENERAL SEAMING

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio	Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
○504-ETS52-141FA2/463W	3.8	2.65~7.6	1:0.7 ~1:2	○504-ETS52-130FA2/363N	3.8	2.65~7.6	1:0.7 ~1:2
○514-ETS52-142FA2/463W	"	"	"	○514-ETS52-133FA2/363N	"	"	"
○512-ETS52-142FA2/463W	"	"	"	○512-ETS52-133FA2/363N	"	"	"
●504-ETS52-141FA3/463W	"	"	"	●504-ETS52-130FA3/363N	"	"	"
●514-ETS52-142FA3/463W	"	"	"	●514-ETS52-133FA3/363N	"	"	"
●512-ETS52-142FA3/463W	"	"	"	●512-ETS52-133FA3/363N	"	"	"

## GATHERING

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio	Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
○514-ETS52-243FD2/463W/KL100	3.8	2.65~7.6	1:0.7 ~1:2	○514-ETS52-245FD2/363W/KL100	3.8	2.65~7.6	1:0.7 ~1:2
○512-ETS52-243FD2/463W/KL100	"	"	"	○512-ETS52-245FD2/363W/KL100	"	"	"
●514-ETS52-243FD3/463W/KL100	"	"	"	●514-ETS52-245FD3/363W/KL100	"	"	"
●512-ETS52-243FD3/463W/KL100	"	"	"	●512-ETS52-245FD3/363W/KL100	"	"	"

## PIPING

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio	Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
○504-ETS52-350FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	3.8	2.65~7.6	1:0.7 ~1:2				
○514-ETS52-351FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"	○514-ETS52-352FC2/ <sup>P1</sup> / <sub>P2</sub> /353W	3.8	2.65~7.6	1:0.7 ~1:2
○512-ETS52-351FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"	○512-ETS52-352FC2/ <sup>P1</sup> / <sub>P2</sub> /353W	"	"	"

## SEAMING/HEAVY

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
○514-ETS52-142FB2/ <sup>S1</sup> / <sub>S2</sub> /463W/KL100	2.35	2.65~7.6	1:1.1 ~1:3.2
○512-ETS52-142FB2/ <sup>S1</sup> / <sub>S2</sub> /463W/KL100	"	"	"
○514-ETS52-253FB2/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	3.2	2.65~9.0	1:0.8 ~1:2.8
○512-ETS52-253FB2/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"	"	"
○514-ETS52-253FB2K/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"	"	"
○512-ETS52-253FB2K/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"	"	"

## BACK-LATCHING

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
○514-ETS52-184FB2/443W/BT152	2.35	2.65~7.6	1:1.1 ~1:3.2

## BLIND-HEMMING

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
●505-ETS52-210FE3/323N	3.8	2.65~7.6	1:0.7 ~1:2

# MAIN AND DIFF. FEED STROKES AND FEED RATIO- REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
○504-ETS52-141BA2/463W	3.8	2.65~7.6	1:0.7 ~1:2
○514-ETS52-142BA2/463W	"	"	"
○512-ETS52-142BA2/463W	"	"	"

## PIPING

Machine type/spec.	Max. main feed stroke	Diff. feed stroke	Feed ratio
○504-ETS52-350BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	3.8	2.65~7.6	1:0.7 ~1:2
○514-ETS52-351BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"
○512-ETS52-351BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"

○ = Normal presser foot  
● = Narrow presser foot

# ADJUSTING THE LENGTHWISE POSITION OF BOTTOM FEED DOGS (Figs.61~65)

Diff. feed ratio 1:0.7~1:2

The standard setting is as shown in Table 13.  
Make sure that the setting is correct for your machine.

**1** Set Pin ① and Washer ② as shown. Be careful to their direction and position. To adjust, loosen Nut ③.

Fig.61

**2** Limit the shifting range of Lever ⑧ to 1-5 by Stoppers ④ and ⑥. To adjust, loosen Screws ⑤ and ⑦.

Fig.62

**3** Set the stitch length or the stroke of Main Feed Dog ⑨ to the maximum. The handwheel scale = 7.

**4** When the feed dogs are at the end of stroke, search a position of Crank ⑪ where Diff. Feed Dog ⑩ does not move even if you move Lever ⑧ up or down. To adjust, loosen Screw ⑫.

Fig.63

**5** Raise Lever ⑧ and adjust the stroke of Diff. Feed Dog ⑩ to the minimum. The lever setting = 1. To adjust, loosen Nut ⑬.

Fig.64

**6** When Main Feed Dog ⑨ and Diff. Feed Dog ⑩ are at the front dead point, adjust gap (c) to 0.5mm. To adjust, loosen Screw ⑭ and move Crank ⑮.

Fig.65

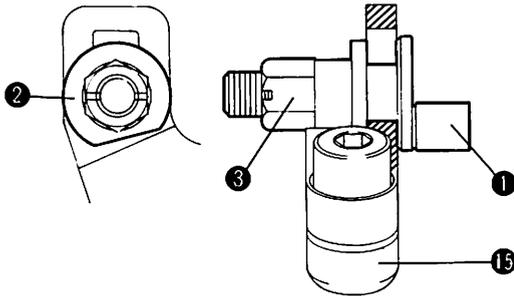
# ADJUSTING THE LENGTHWISE POSITION OF BOTTOM FEED DOGS (Figs. 66~70)

Diff. feed ratio 1:1.1~1:3.2

The standard setting is as shown in Table 13.  
Make sure that the setting is correct for your machine.

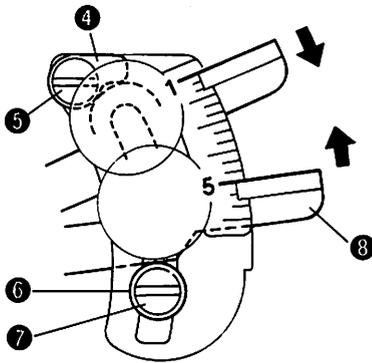
- 1** Set Pin ① and Washer ② as shown. Be careful to their direction and position. To adjust, loosen Nut ③.

Fig.66



- 2** Limit the shifting range of Lever ⑧ to 1-5 by Stoppers ④ and ⑥. To adjust, loosen Screws ⑤ and ⑦.

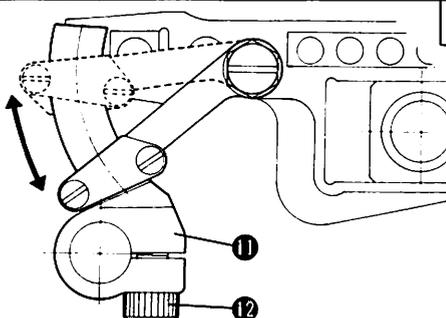
Fig.67



- 3** Set the stitch length or the stroke of Main Feed Dog ⑨ to the maximum. The handwheel scale = 7.

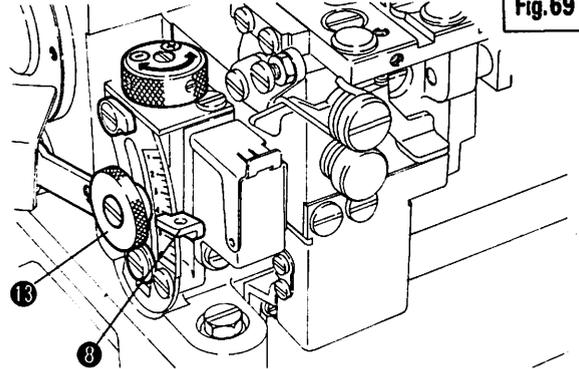
- 4** When the feed dogs are at the end of stroke, search a position of Crank ⑪ where Diff. Feed Dog ⑩ does not move even if you move Lever ⑧ up or down. To adjust, loosen Screw ⑫.

Fig.68



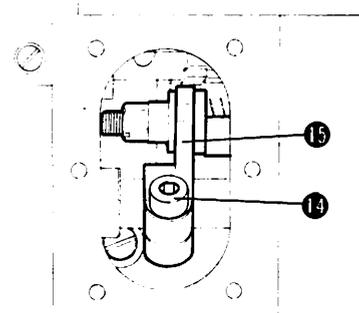
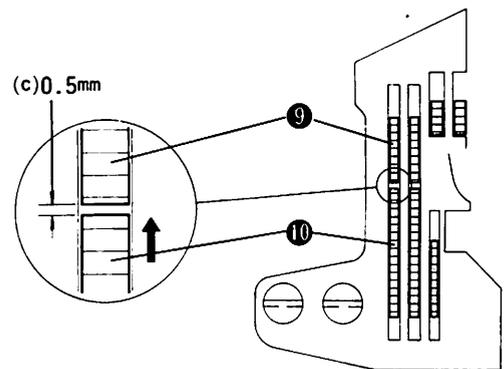
- 5** Raise Lever ⑧ and adjust the stroke of Diff. Feed Dog ⑩ to the minimum. The lever setting = 1. To adjust, loosen Nut ⑬.

Fig.69



- 6** When Main Feed Dog ⑨ and Diff. Feed Dog ⑩ are at the front dead point, adjust gap (c) to 0.5mm. To adjust, loosen Screw ⑭ and move Crank ⑮.

Fig.70



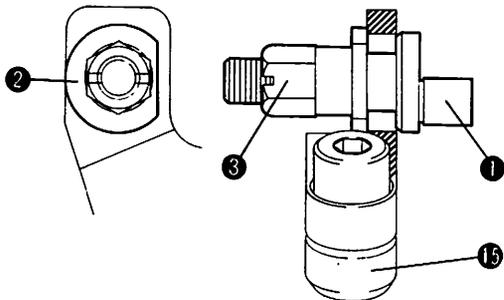
# ADJUSTING THE LENGTHWISE POSITION OF BOTTOM FEED DOGS (Figs. 71~76)

Diff. feed ratio 1:0.8~1:2.8

The standard setting is as shown in Table 13.  
Make sure that the setting is correct for your machine.

- 1** Set Pin ① and Washer ② as shown. Be careful to their direction and position. To adjust, loosen Nut ③.

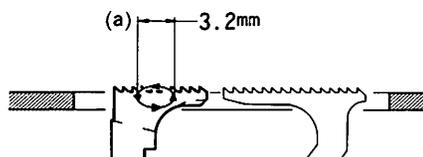
Fig. 71



- 2** Set the stitch length or the stroke of Main Feed Dog ⑨ to the maximum. The handwheel scale = 7.

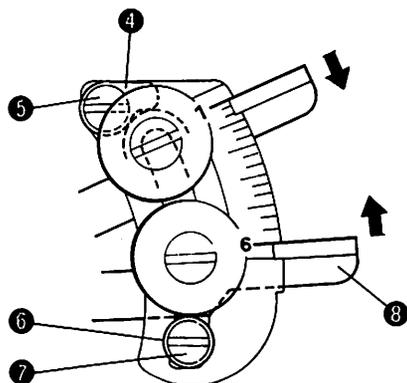
- 3** Adjust the main feed stroke (a) to 3.2mm. To adjust, loosen Nut ③ and move Pin ①.

Fig. 72



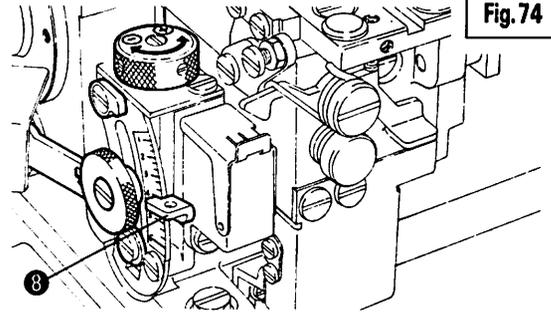
- 4** Limit the shifting range of Lever ⑧ to 1-6 by Stoppers ④ and ⑥. To adjust, loosen Screws ⑤ and ⑦.

Fig. 73



- 5** Lower Lever ⑧ and adjust the stroke of Diff. Feed Dog ⑨ to the maximum. The lever setting = 6.

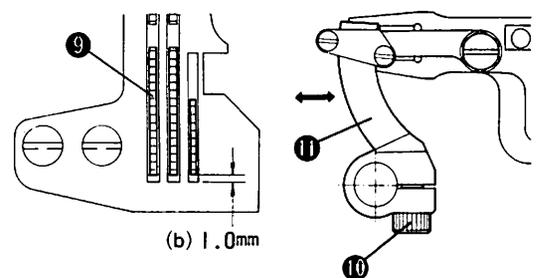
Fig. 74



- 6** Turn the handwheel until Diff. Feed Dog ⑨ is at the front dead point. Adjust gap (b) to 1.0mm.

- To adjust, loosen Screw ⑩ and move Crank ⑪.

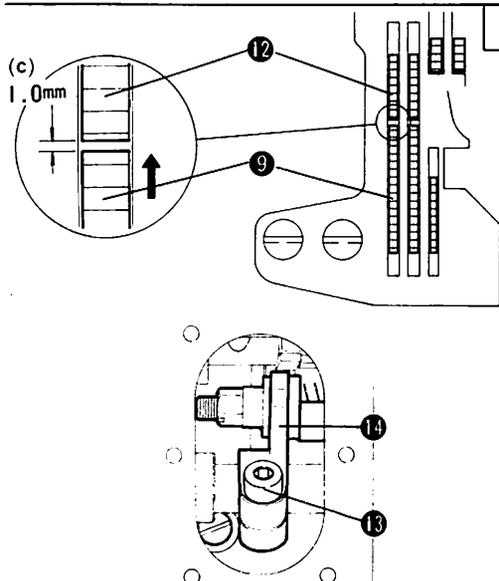
Fig. 75



- 7** Turn the handwheel until gap (c) is minimum. Adjust gap (c) to 1.0mm.

- To adjust, loosen Screw ⑬ and move Crank ⑭.

Fig. 76

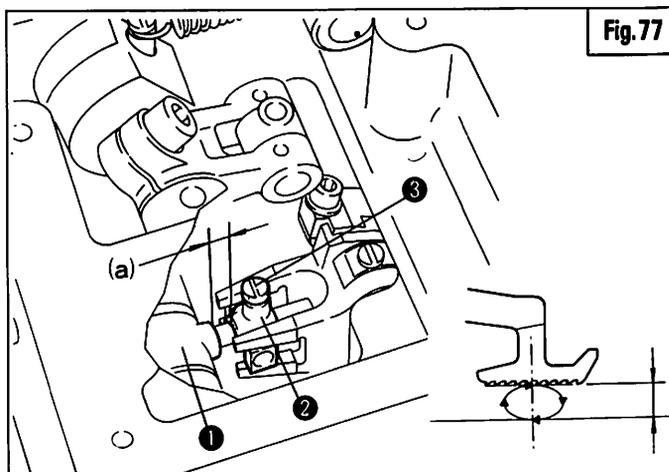


## ADJUSTING VERTICAL STROKE OF TOP FEED DOG (Fig.77)

The vertical stroke of top feed dog and gap (a) between Crank ① and Crank Pin ② are shown in Table 14 by machine type.

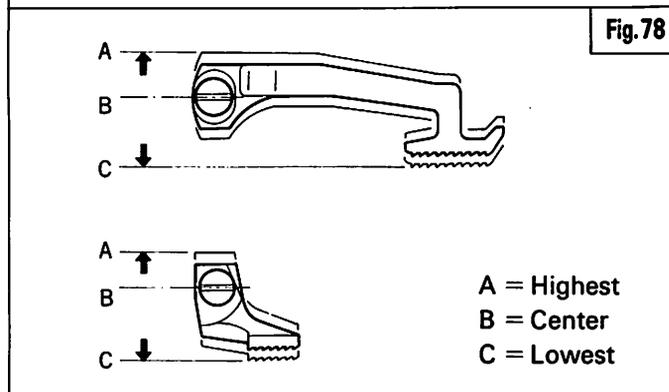
Make sure that the setting is correct for your machine by referring to Table 14.

For adjusting, loosen Screw ③ and shift Crank Pin ②.



## SETTING POSITION OF TOP FEED DOG (Fig.78)

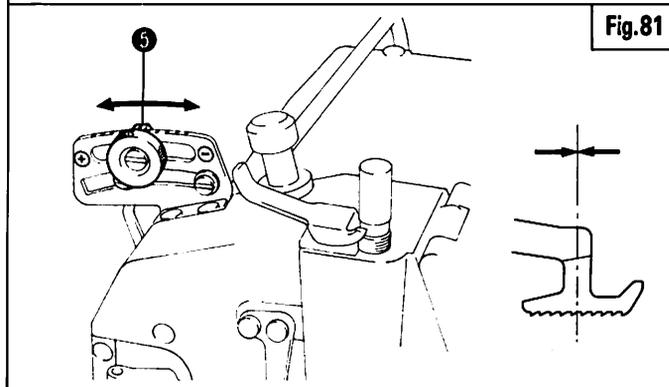
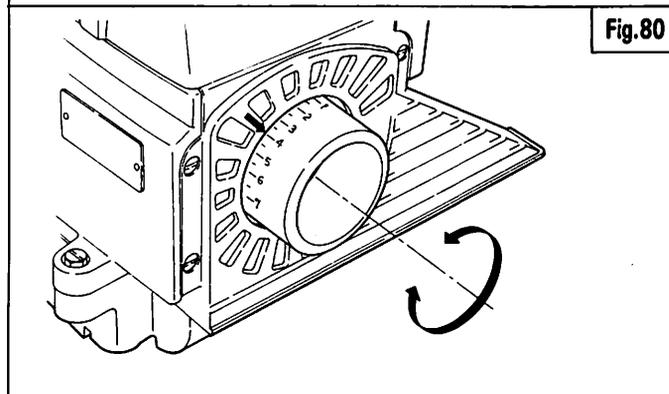
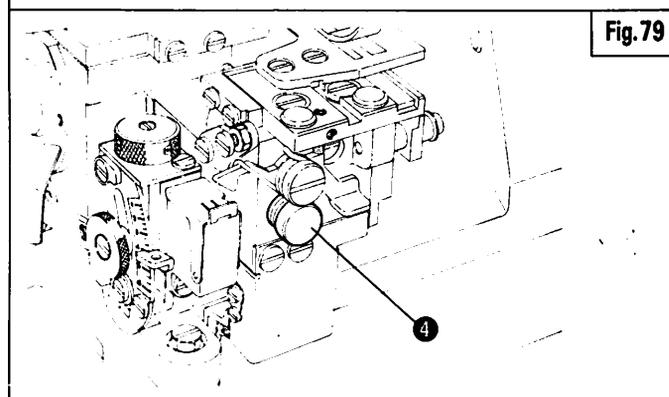
Setting position of top feed dog by machine type is shown in Table 14. Make sure that the setting is correct for your machine by referring to Table 14.



## ADJUSTING THE LENGTHWISE POSITION OF TOP FEED DOG (Figs.79~81)

To adjust the lengthwise position of top feed dog.

1. Pressing Push Button ④, turn the handwheel and set the scale to 4.
2. Release your hand from the bush button, turn the handwheel and bring the top feed dog to the rear dead point.
3. Make sure that the feed dog stands still even by shifting Top Feed Adjusting Lever ⑤ back and forth.



# TOP FEED VERTICAL STROKE AND SET POSITION- FRONT TOP FEED ETS52

Table 14

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
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## GENERAL SEAMING

Machine type/spec.	Stroke	Gap (a)	Position	Machine type/spec.	Stroke	Gap (a)	Position
○504-ETS52-141FA2/463W	4.5	1.5	A	○504-ETS52-130FA2/363N	4.5	1.5	A
○514-ETS52-142FA2/463W	"	"	"	○514-ETS52-133FA2/363N	"	"	"
○512-ETS52-142FA2/463W	"	"	"	○512-ETS52-133FA2/363N	"	"	"
●504-ETS52-141FA3/463W	"	"	"	●504-ETS52-130FA3/363N	"	"	"
●514-ETS52-142FA3/463W	"	"	"	●514-ETS52-133FA3/363N	"	"	"
●512-ETS52-142FA3/463W	"	"	"	●512-ETS52-133FA3/363N	"	"	"

## GATHERING

Machine type/spec.	Stroke	Gap (a)	Position	Machine type/spec.	Stroke	Gap (a)	Position
○514-ETS52-243FD2/463W/KL100	4.5	1.5	B	○514-ETS52-245FD2/363W/KL100	4.5	1.5	B
○512-ETS52-243FD2/463W/KL100	"	"	"	○512-ETS52-245FD2/363W/KL100	"	"	"
●514-ETS52-243FD3/463W/KL100	"	"	"	●514-ETS52-245FD3/363W/KL100	"	"	"
●512-ETS52-243FD3/463W/KL100	"	"	"	●512-ETS52-245FD3/363W/KL100	"	"	"

## PIPING

Machine type/spec.	Stroke	Gap (a)	Position	Machine type/spec.	Stroke	Gap (a)	Position
○504-ETS52-350FC2/P <sub>2</sub> <sup>1</sup> /453W	4.5	1.5	A				
○514-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"	○514-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	4.5	1.5	A
○512-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	"	"	"

## SEAMING/HEAVY

Machine type/spec.	Stroke	Gap (a)	Position
○514-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	5.5	3.5	B
○512-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	"	"	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"
○512-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"

## BACK-LATCHING

Machine type/spec.	Stroke	Gap (a)	Position
○514-ETS52-184FB2/443W/BT152	5.5	3.5	B

## BLIND-HEMMING

Machine type/spec.	Stroke	Gap (a)	Position
●505-ETS52-210FE3/323N	4.5	1.5	A

# TOP FEED VERTICAL STROKE AND SET POSITION- REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Stroke	Gap (a)	Position
○504-ETS52-141BA2/463W	4.5	4.0	C
○514-ETS52-142BA2/463W	"	"	"
○512-ETS52-142BA2/463W	"	"	"

## PIPING

Machine type/spec.	Stroke	Gap (a)	Position
○504-ETS52-350BC2/P <sub>2</sub> <sup>1</sup> /453W	4.5	4.0	C
○514-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"
○512-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"

○ = Normal presser foot  
● = Narrow presser foot

**TOP FEED STROKE AND DIFF. FEED RATIO (Fig.82)**

The standard setting is as shown in Table 15. Make sure that the setting is correct for your machine.

Using Stopper ③, set Lever ① in the correct shifting range.

Loosen Screw ②, move Stopper ③ and adjust.

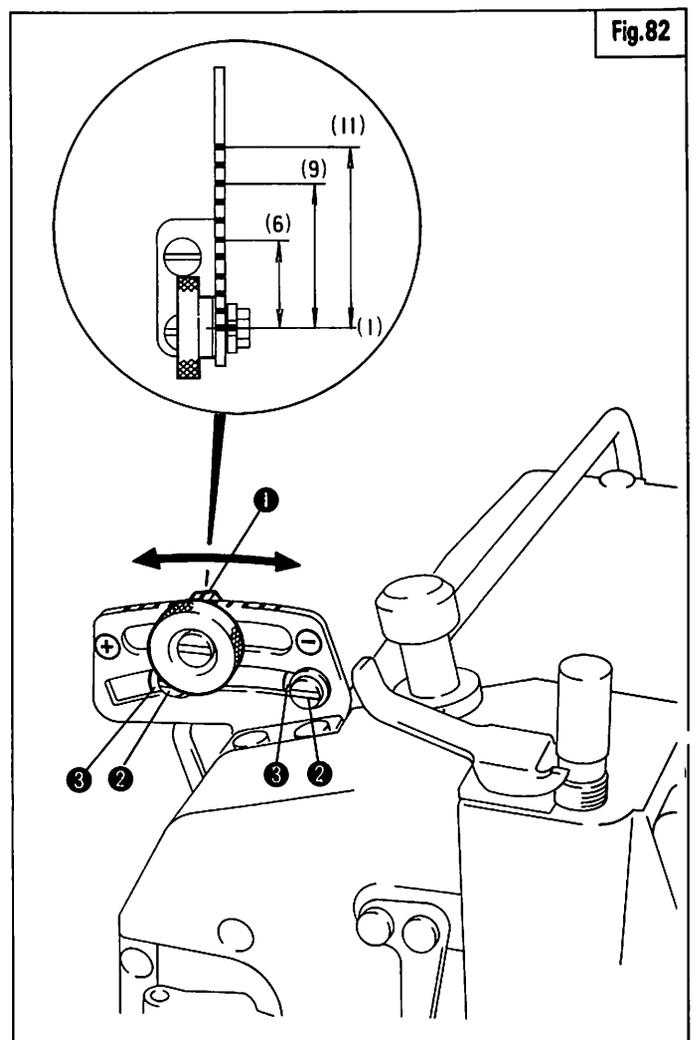


Fig.82

# TOP FEED STROKE AND TOP FEED RATIO-FRONT TOP FEED ETS52

Table 15

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
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## GENERAL SEAMING

Machine type/spec.	Stroke	Feed ratio	Setting	Machine type/spec.	Stroke	Feed ratio	Setting
○504-ETS52-141FA2/463W	2.8~5.8	1:0.75 ~1:1.5	1~6	○504-ETS52-130FA2/363N	2.8~5.8	1:0.75 ~1:1.5	1~6
○514-ETS52-142FA2/463W	"	"	"	○514-ETS52-133FA2/363N	"	"	"
○512-ETS52-142FA2/463W	"	"	"	○512-ETS52-133FA2/363N	"	"	"
●504-ETS52-141FA3/463W	"	"	"	●504-ETS52-130FA3/363N	"	"	"
●514-ETS52-142FA3/463W	"	"	"	●514-ETS52-133FA3/363N	"	"	"
●512-ETS52-142FA3/463W	"	"	"	●512-ETS52-133FA3/363N	"	"	"

## GATHERING

Machine type/spec.	Stroke	Feed ratio	Setting	Machine type/spec.	Stroke	Feed ratio	Setting
○514-ETS52-243FD2/463W/KL100	2.8~7.4	1:0.75 ~1:1.95	1~9	○514-ETS52-245FD2/363W/KL100	2.8~7.4	1:0.75 ~1:1.95	1~9
○512-ETS52-243FD2/463W/KL100	"	"	"	○512-ETS52-245FD2/363W/KL100	"	"	"
●514-ETS52-243FD3/463W/KL100	"	"	"	●514-ETS52-245FD3/363W/KL100	"	"	"
●512-ETS52-243FD3/463W/KL100	"	"	"	●512-ETS52-245FD3/363W/KL100	"	"	"

## PIPING

Machine type/spec.	Stroke	Feed ratio	Setting	Machine type/spec.	Stroke	Feed ratio	Setting
○504-ETS52-350FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	2.8~5.8	1:0.75 ~1:1.5	1~6				
○514-ETS52-351FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"	○514-ETS52-352FC2/ <sup>P1</sup> / <sub>P2</sub> /353W	2.8~5.8	1:0.75 ~1:1.5	1~6
○512-ETS52-351FC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"	○512-ETS52-352FC2/ <sup>P1</sup> / <sub>P2</sub> /353W	"	"	"

## SEAMING/HEAVY

Machine type/spec.	Stroke	Feed ratio	Setting
○514-ETS52-142FB2/ <sup>S1</sup> / <sub>S2</sub> /463W/KL100	2.8~8.5	1:1.2 ~1:3.6	1~11
○512-ETS52-142FB2/ <sup>S1</sup> / <sub>S2</sub> /463W/KL100	"	"	"
○514-ETS52-253FB2/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"	1:0.85 ~1:2.65	"
○512-ETS52-253FB2/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"	"	"
○514-ETS52-253FB2K/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"	"	"
○512-ETS52-253FB2K/ <sup>S1</sup> / <sub>S2</sub> /493W/KL100	"	"	"

## BACK-LATCHING

Machine type/spec.	Stroke	Feed ratio	Setting
○514-ETS52-184FB2/443W/BT152	2.8~8.5	1:1.2 ~1:3.6	1~11

## BLIND-HEMMING

Machine type/spec.	Stroke	Feed ratio	Setting
●505-ETS52-210FE3/323N	2.8~5.8	1:0.75 ~1:1.5	1~6

# TOP FEED STROKE AND TOP FEED RATIO-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Stroke	Feed ratio	Setting
○504-ETS52-141BA2/463W	2.8~5.8	1:0.75 ~1:1.5	1~6
○514-ETS52-142BA2/463W	"	"	"
○512-ETS52-142BA2/463W	"	"	"

## PIPING

Machine type/spec.	Stroke	Feed ratio	Setting
○504-ETS52-350BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	2.8~5.8	1:0.75 ~1:1.5	1~6
○514-ETS52-351BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"
○512-ETS52-351BC2/ <sup>P1</sup> / <sub>P2</sub> /453W	"	"	"

○ = Normal presser foot  
● = Narrow presser foot

## ADJUSTING THE LENGTHWISE POSITION OF TOP FEED DOG (Figs. 83~86)

The standard setting is as shown in Table 16. Make sure that the setting is correct for your machine.

### To adjust:

1. Pressing Push Button ❶, turn the handwheel and set the stitch length to the maximum.
  2. Shift Top Feed Adjusting Lever ❷ to the back extremely in the (+) direction, and set the top feed stroke to the maximum.
  3. Turn the handwheel and bring Top Feed Dog ❸ to the front dead point.
  4. Adjust gap (a) between (A) and (B) to the correct dimension. (B) is the front tip of Top Feed Dog ❸ and (A) is that of the needle plate.
- Loosen Screw ❹, move Top Feed Bar ❺ and adjust.

## ADJUSTING THE SIDewise POSITION OF TOP FEED DOG (Fig. 87)

The standard setting is as shown in Table 16. Make sure that the setting is correct for your machine.

### To adjust:

1. Turn the handwheel and bring the bottom feed dog to the bottom dead point.
2. Loosen Screws ❹, ❺.
3. Move Top Feed Dog ❸ sidewise and adjust the gap between the left end of the bottom feed dog and the left end of the top feed dog to the correct height.
4. When the position of the top feed dog is fixed, clamp the top feed bar with Guides ❽ and ❾, and tighten Screws ❹, ❺.

### Note:

The marks (+) and (-) listed in Table 16 show the right direction (+) and the left direction (-) based on the left end face of the bottom feed dog.

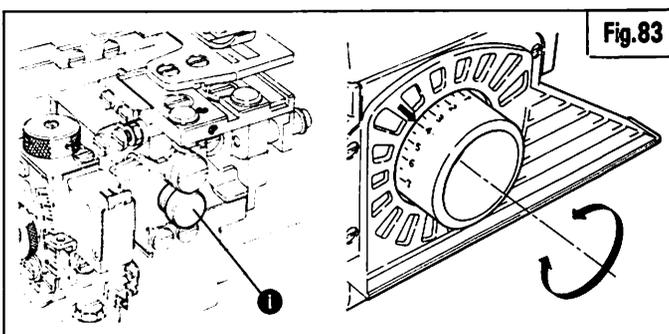
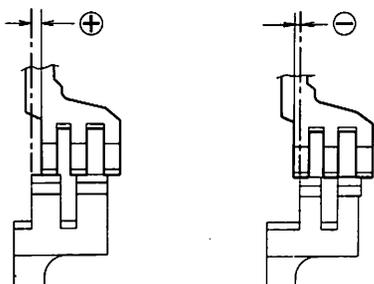


Fig.83

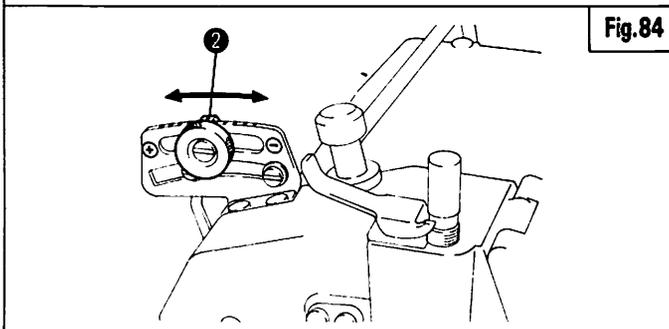


Fig.84

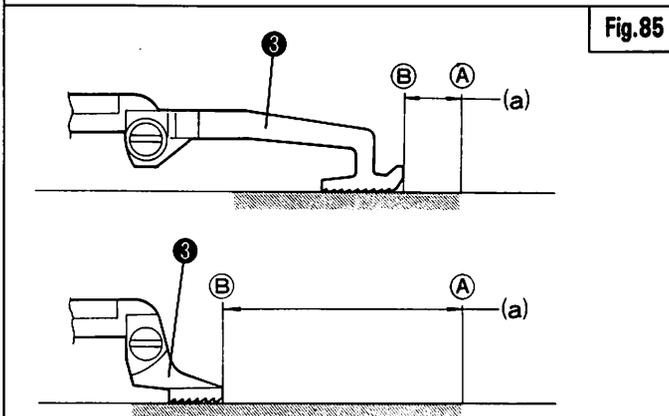


Fig.85

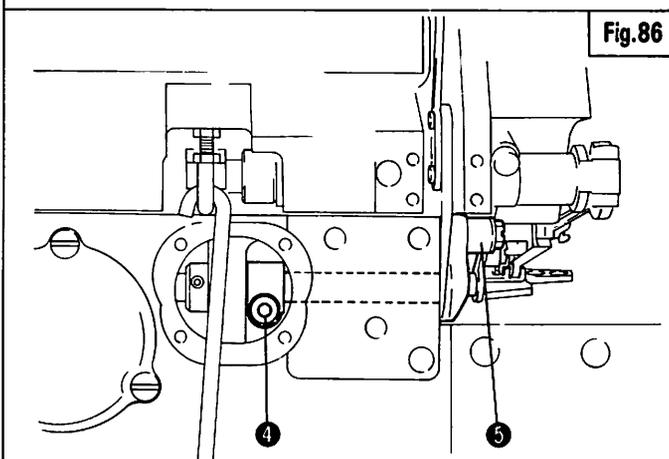


Fig.86

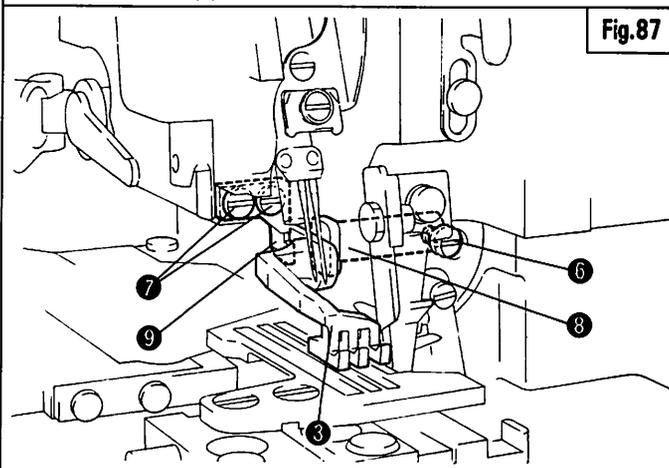


Fig.87

# HORIZONTAL TOP FEED POSITION-FRONT TOP FEED ETS52

Table 16

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
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## GENERAL SEAMING

Machine type/spec.	Back and forth position	Right to left position	Machine type/spec.	Back and forth position	Right to left position
○504-ETS52-141FA2/463W	14.0	+1.1	○504-ETS52-130FA2/363N	14.0	+1.1
○514-ETS52-142FA2/463W	"	"	○514-ETS52-133FA2/363N	"	"
○512-ETS52-142FA2/463W	"	"	○512-ETS52-133FA2/363N	"	"
●504-ETS52-141FA3/463W	16.5	+3.6	●504-ETS52-130FA3/363N	16.5	+3.6
●514-ETS52-142FA3/463W	"	"	●514-ETS52-133FA3/363N	"	"
●512-ETS52-142FA3/463W	"	"	●512-ETS52-133FA3/363N	"	"

## GATHERING

Machine type/spec.	Back and forth position	Right to left position	Machine type/spec.	Back and forth position	Right to left position
○514-ETS52-243FD2/463W/KL100	13.0	+1.1	○514-ETS52-245FD2/363W/KL100	13.0	+1.1
○512-ETS52-243FD2/463W/KL100	"	"	○512-ETS52-245FD2/363W/KL100	"	"
●514-ETS52-243FD3/463W/KL100	15.5	+3.6	●514-ETS52-245FD3/363W/KL100	15.5	+3.6
●512-ETS52-243FD3/463W/KL100	"	"	●512-ETS52-245FD3/363W/KL100	"	"

## PIPING

Machine type/spec.	Back and forth position	Right to left position	Machine type/spec.	Back and forth position	Right to left position
○504-ETS52-350FC2/P <sub>2</sub> <sup>P1</sup> /453W	14.0	+1.1			
○514-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"	○514-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	14.0	+1.1
○512-ETS52-351FC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>P1</sup> /353W	"	"

## SEAMING/HEAVY

Machine type/spec.	Back and forth position	Right to left position
○514-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	12.0	+1.1
○512-ETS52-142FB2/S <sub>2</sub> <sup>S1</sup> /463W/KL100	"	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	+2.2
○512-ETS52-253FB2/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>S1</sup> /493W/KL100	"	"

## BACK-LATCHING

Machine type/spec.	Back and forth position	Right to left position
○514-ETS52-184FB2/443W/BT152	12.0	+1.1

## BLIND-HEMMING

Machine type/spec.	Back and forth position	Right to left position	Machine type/spec.	Back and forth position	Right to left position
			●505-ETS52-210FE3/323N	17.5	+1.45

# HORIZONTAL TOP FEED POSITION-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Back and forth position	Right to left position
○504-ETS52-141BA2/463W	43.5	-0.7
○514-ETS52-142BA2/463W	"	"
○512-ETS52-142BA2/463W	"	"

## PIPING

Machine type/spec.	Back and forth position	Right to left position
○504-ETS52-350BC2/P <sub>2</sub> <sup>P1</sup> /453W	43.5	-0.7
○514-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"
○512-ETS52-351BC2/P <sub>2</sub> <sup>P1</sup> /453W	"	"

○ = Normal presser foot  
● = Narrow presser foot

## ADJUSTING TOP FEED DOG HEIGHT (Figs.88~91)

The standard setting is as shown in Table 17. Make sure that the setting is correct to your machine.

### Note:

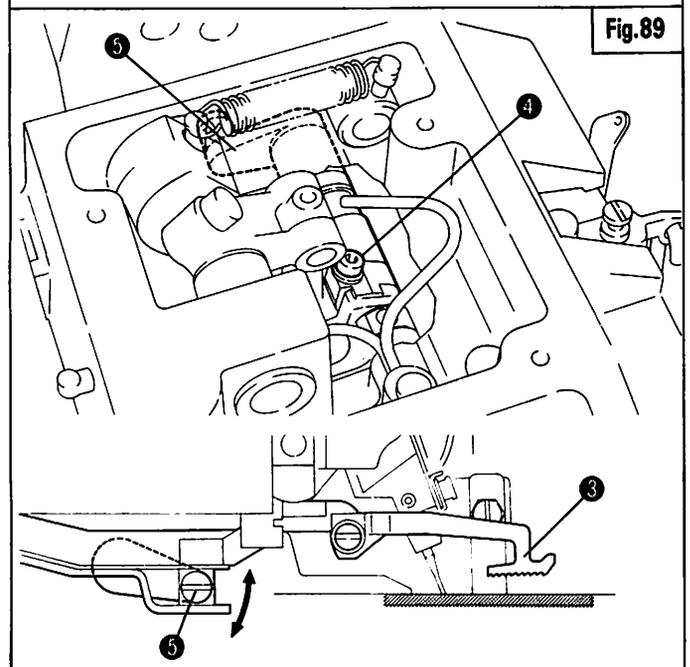
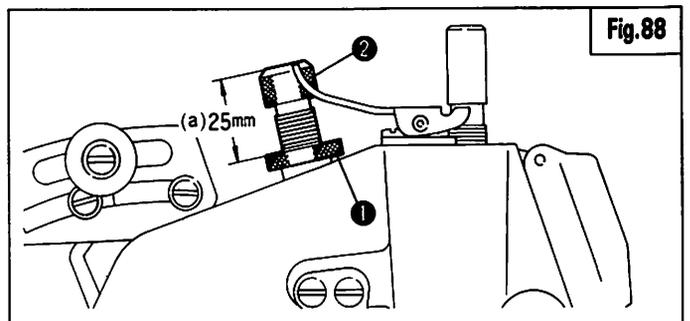
Be sure to check your machine at either the upper or lower dead point of the top feed dog.

### Adjustments at the lower dead point:

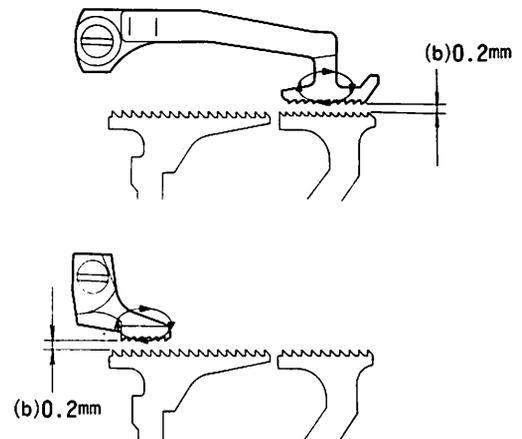
- Lower dead point is when the top feed dog is in the lowest position.
1. Loosen Nut ①, turn Screw ② and adjust gap (a) to 25mm.
  2. Make sure that Top Feed Dog ③ is set to the correct position. Table 14.
  3. Lower Top Feed Dog ③ to the lowest position and adjust the gap (b) between the bottom feed dog and the top feed dog to 0.2mm. For adjusting, loosen Screw ④ and move Shaft ⑤ up and down.

### Adjustments at the upper dead point:

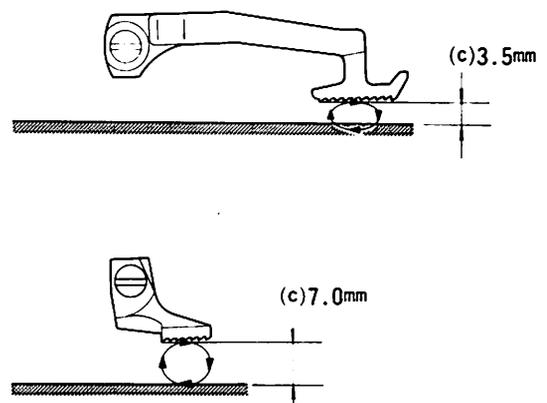
- Upper dead point is when the top feed dog is in the highest position.
1. Loosen Nut ①, turn Screw ② and adjust gap (a) to 25mm.
  2. Make sure that Top Feed Dog ③ is set to the correct position. Table 14.
  3. Raise Top Feed Dog ③ to the highest position and adjust the gap (c) between the upper surface of the needle plate and the top feed dog to the correct dimension. For adjusting, loosen Screw ④ and move Shaft ⑤ up and down.



### lower dead point:



### upper dead point:



# VERTICAL TOP FEED POSITION-FRONT TOP FEED ETS52

Table 17

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
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## GENERAL SEAMING

Machine type/spec.	Height	Checking dead point	Machine type/spec.	Height	Checking dead point
○504-ETS52-141FA2/463W	0.2	Bottom	○504-ETS52-130FA2/363N	0.2	Bottom
○514-ETS52-142FA2/463W	"	"	○514-ETS52-133FA2/363N	"	"
○512-ETS52-142FA2/463W	"	"	○512-ETS52-133FA2/363N	"	"
●504-ETS52-141FA3/463W	"	"	●504-ETS52-130FA3/363N	"	"
●514-ETS52-142FA3/463W	"	"	●514-ETS52-133FA3/363N	"	"
●512-ETS52-142FA3/463W	"	"	●512-ETS52-133FA3/363N	"	"

## GATHERING

Machine type/spec.	Height	Checking dead point	Machine type/spec.	Height	Checking dead point
○514-ETS52-243FD2/463W/KL100	3.5	Top	○514-ETS52-245FD2/363W/KL100	3.5	Top
○512-ETS52-243FD2/463W/KL100	"	"	○512-ETS52-245FD2/363W/KL100	"	"
●514-ETS52-243FD3/463W/KL100	"	"	●514-ETS52-245FD3/363W/KL100	"	"
●512-ETS52-243FD3/463W/KL100	"	"	●512-ETS52-245FD3/363W/KL100	"	"

## PIPING

Machine type/spec.	Height	Checking dead point	Machine type/spec.	Height	Checking dead point
○504-ETS52-350FC2/P <sub>1</sub> <sup>1</sup> /453W	0.2	Bottom			
○514-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	○514-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	0.2	Bottom
○512-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	"	"

## SEAMING/HEAVY

Machine type/spec.	Height	Checking dead point
○514-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	5.5	Top
○512-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	"	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○512-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"

## BACK-LATCHING

Machine type/spec.	Height	Checking dead point	Machine type/spec.	Height	Checking dead point
○514-ETS52-184FB2/443W/BT152	5.5	Top	●505-ETS52-210FE3/323N	0.2	Bottom

## BLIND-HEMMING

# VERTICAL TOP FEED POSITION-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Height	Checking dead point
○504-ETS52-141BA2/463W	0.2	Bottom
○514-ETS52-142BA2/463W	"	"
○512-ETS52-142BA2/463W	"	"

## PIPING

Machine type/spec.	Height	Checking dead point
○504-ETS52-350BC2/P <sub>2</sub> <sup>1</sup> /453W	0.2	Bottom
○514-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"
○512-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"

○ = Normal presser foot  
● = Narrow presser foot

## ADJUSTING PRESSER FOOT AND TOP FEED DOG LIFT (Figs. 92~95)

The standard setting is as shown in Table 18. Make sure that the setting is correct to your machine.

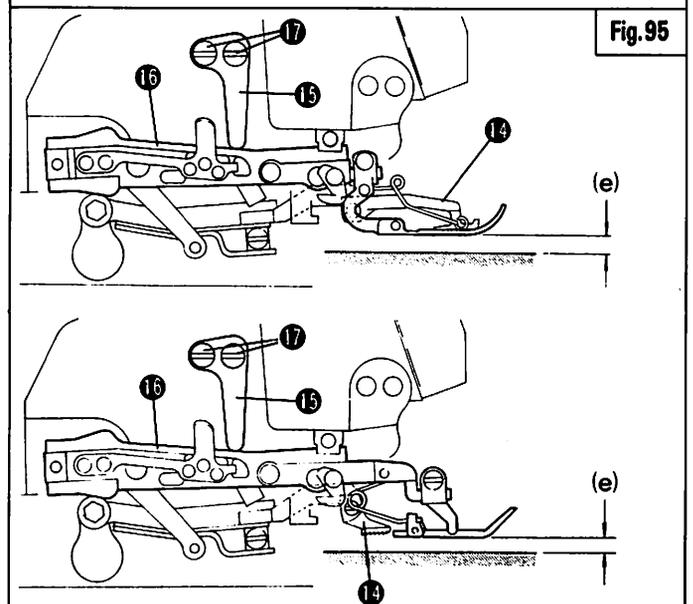
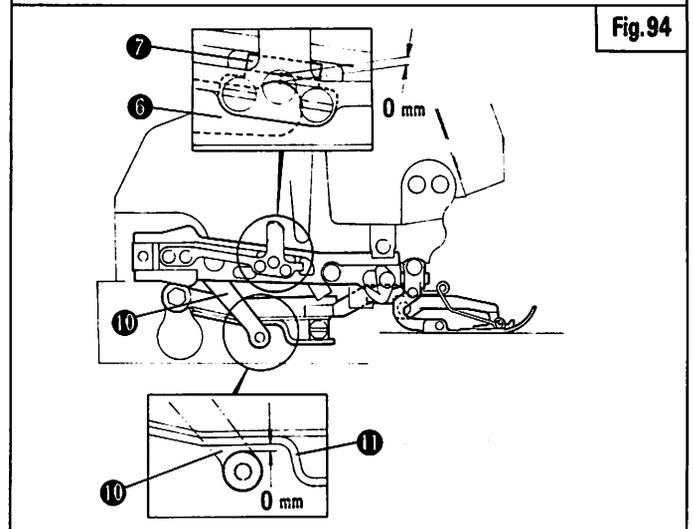
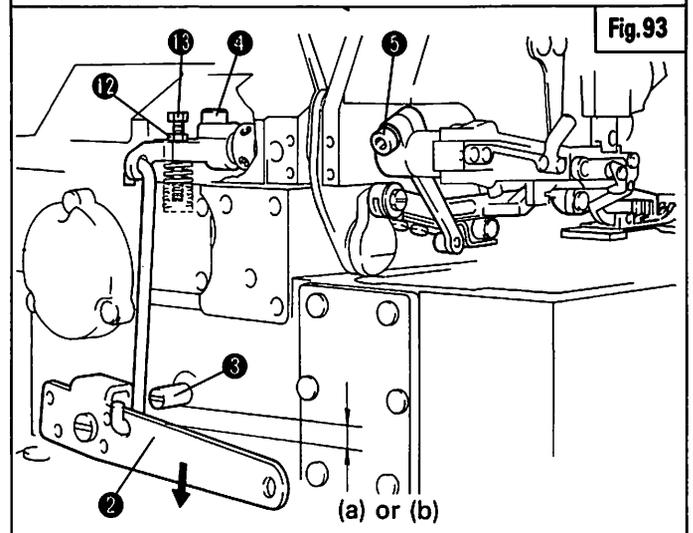
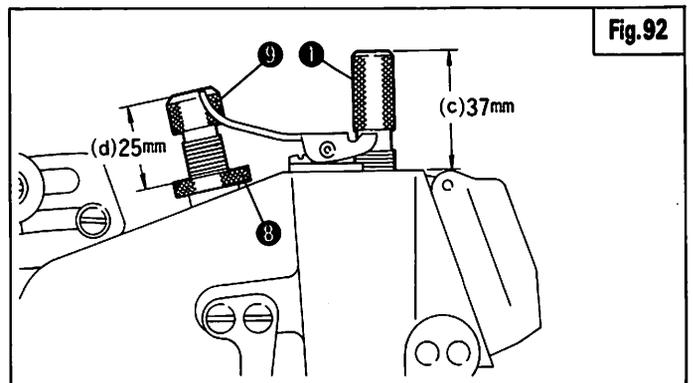
### For setting:

1. Turn Adjusting Screw ① and set gap (c) to 37mm.
2. Turn the handwheel and lift the needle to the highest position.
3. Lower Lever ② and adjust gap (a) between Lever ② and Pin ③ to the correct dimension.
4. Keeping the condition of the above 3., loosen Screws ④, ⑤, adjust the gap between the end of Presser Arm Shaft ⑥ and Plate ⑦ to 0mm and tighten Screw ④.
5. Loosen Nut ⑧, turn Adjusting Screw ⑨ and set gap (d) to 25mm.
6. Lower Lever ② and adjust gap (b) between ② and Pin ③ to the correct dimension.
7. Keeping the condition of the above 6., adjust the gap between Lever ⑩ and Plate ⑪ to 0mm and tighten Screw ⑤.
8. Lower Lever ②, and adjust gap (e) to the correct dimension.  
For adjusting, loosen Nut ⑫ and turn Screw ⑬.
9. When Lever ② is lowered and the presser foot is lifted to the correct height, make sure that Upper Feed Dog ⑭ is lifted to the correct height.

### Note:

If necessary, widen or shorten the gap b between Lever ② and Pin ③ than the correct dimension to obtain the correct top feed height.

10. Lift the presser foot to the correct height and adjust so that Stopper ⑮ lightly brushes the upper face of Presser Foot ⑯.  
For adjusting, loosen Screw ⑰ and move Stopper ⑮ up and down.



# PRESSER FOOT AND TOP FEED HEIGHTS-FRONT TOP FEED ETS52

Table 18

<b>EXTRA-HIGH LIFT</b>	<b>HIGH LIFT</b>
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## GENERAL SEAMING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)	Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○504-ETS52-141FA2/463W	5.5	5.5	2.0	2.0	○504-ETS52-130FA2/363N	5.5	5.5	2.0	2.0
○514-ETS52-142FA2/463W	7.0	7.0	"	"	○514-ETS52-133FA2/363N	"	"	"	"
○512-ETS52-142FA2/463W	"	"	"	"	○512-ETS52-133FA2/363N	"	"	"	"
●504-ETS52-141FA3/463W	5.5	5.5	"	"	●504-ETS52-130FA3/363N	"	"	"	"
●514-ETS52-142FA3/463W	7.0	7.0	"	"	●514-ETS52-133FA3/363N	"	"	"	"
●512-ETS52-142FA3/463W	"	"	"	"	●512-ETS52-133FA3/363N	"	"	"	"

## GATHERING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)	Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○514-ETS52-243FD2/463W/KL100	7.0	7.0	2.0	1.0	○514-ETS52-245FD2/363W/KL100	5.5	5.5	2.0	1.0
○512-ETS52-243FD2/463W/KL100	"	"	"	"	○512-ETS52-245FD2/363W/KL100	"	"	"	"
●514-ETS52-243FD3/463W/KL100	"	"	"	"	●514-ETS52-245FD3/363W/KL100	"	"	"	"
●512-ETS52-243FD3/463W/KL100	"	"	"	"	●512-ETS52-245FD3/363W/KL100	"	"	"	"

## PIPING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)	Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○504-ETS52-350FC2/P <sub>2</sub> <sup>1</sup> /453W	6.0	6.0	2.0	2.0					
○514-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"	"	○514-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	5.5	5.5	2.0	2.0
○512-ETS52-351FC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"	"	○512-ETS52-352FC2/P <sub>2</sub> <sup>1</sup> /353W	"	"	"	"

## SEAMING/HEAVY

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○514-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	7.0	7.0	2.0	1.0
○512-ETS52-142FB2/S <sub>2</sub> <sup>1</sup> /463W/KL100	"	"	"	"
○514-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"	"
○512-ETS52-253FB2/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"	"
○514-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"	"
○512-ETS52-253FB2K/S <sub>2</sub> <sup>1</sup> /493W/KL100	"	"	"	"

## BACK-LATCHING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○514-ETS52-184FB2/443W/BT152	7.0	7.0	2.0	1.0

## BLIND-HEMMING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
●505-ETS52-210FE3/323N	5.5	5.5	2.0	2.0

# PRESSER FOOT AND TOP FEED HEIGHTS-REAR TOP FEED ETS52

## GENERAL SEAMING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○504-ETS52-141BA2/463W	6.0	6.0	2.0	1.2
○514-ETS52-142BA2/463W	"	"	"	"
○512-ETS52-142BA2/463W	"	"	"	"

## PIPING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○504-ETS52-350BC2/P <sub>2</sub> <sup>1</sup> /453W	5.0	6.0	2.0	0.5
○514-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"	"
○512-ETS52-351BC2/P <sub>2</sub> <sup>1</sup> /453W	"	"	"	"

○ = Normal presser foot  
● = Narrow presser foot

## ADJUSTING SIDewise POSITION OF PRESSER ARM (Fig. 96)

Presser arm should be in position where Presser Bar ② is smooth on Presser Arm ③ when Hand Lift Lever ① is moved up and down, so as to make the slot of the presser foot parallel with the top feed dog.

For adjusting, loosen Screws ④ and ⑤ and shift Presser Arm Shaft ⑥.

**Note:**

When tightening Screw ⑤, be sure to return Lever ⑦ to the original position.

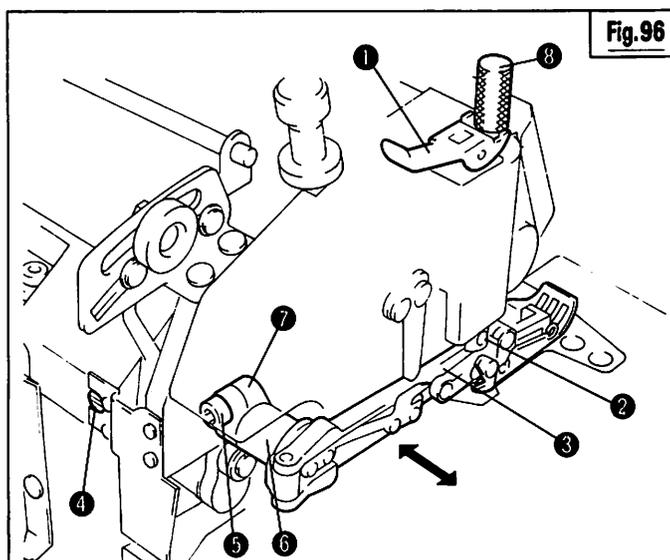


Fig. 96

## PRESSER FOOT SETTING (Figs. 96~98)

1. Loosen Screw ⑧ until the spring pressure on the presser foot is eliminated.
2. Turn the handwheel to lift the needle to the top position.
3. Align the needle slot of the presser foot with that of the needle plate. Also, make the presser foot sit even and flat on the needle plate.

For adjusting, loosen Screw ⑨.

**Note:**

For setting the type of Fig. 98, loosen Screws ⑩, ⑪ and adjust.

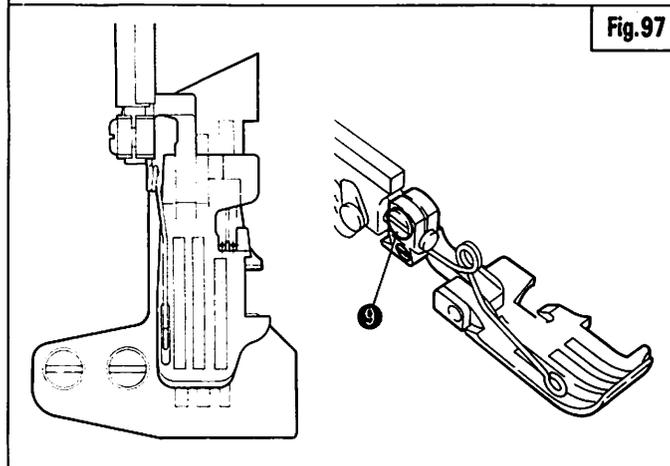


Fig. 97

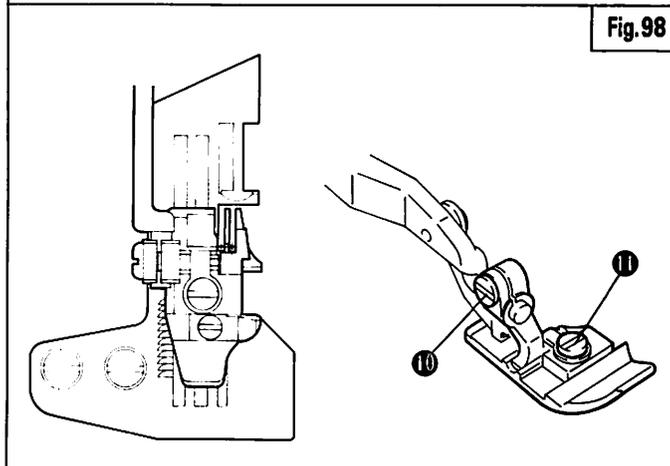


Fig. 98

## ADJUSTING EDGE GUIDE (Fig. 99)

1. Adjust Edge Guide ⑫ so that it lightly brushes the needle plate.

For adjusting, loosen Screw ⑬ and move Bracket ⑭ up and down.

2. Adjust gap (a) between the cutting edge of the lower knife and Edge Guide ⑫ to 0.5 – 1.0mm.

For adjusting, loosen Screw ⑮ and slide Edge Guide ⑫.

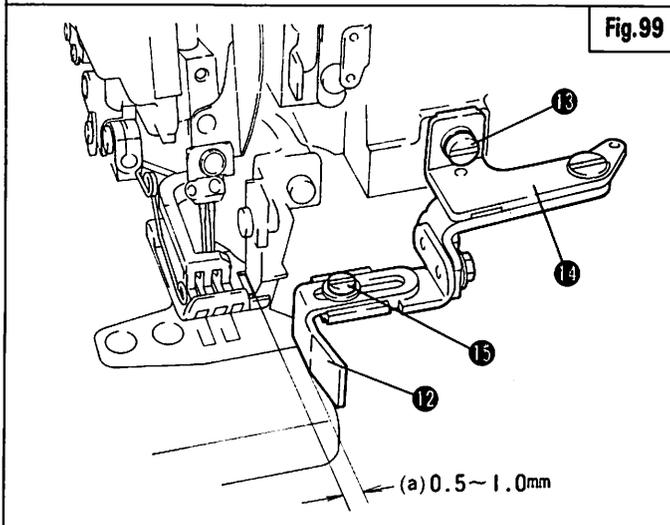
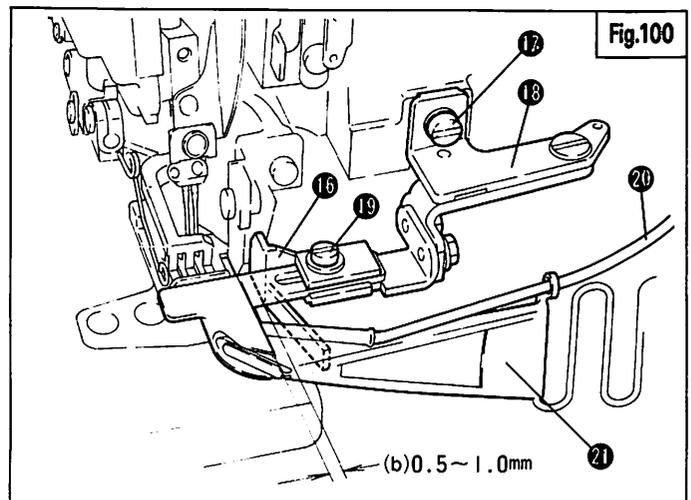


Fig. 99

### ADJUSTING PIPING BINDER (Fig. 100)

1. Set Edge Guide ⑩ so that it lightly brushes the needle plate.  
For adjusting, loosen Screw ⑰ and vertically slide bracket ⑱.
2. Adjust gap (b) between the cutting edge of the lower knife and Edge Guide ⑩ to 0.5 – 1.0mm.  
For adjusting, loosen Screw ⑲ and slide Edge Guide ⑩.
3. Set Piping Binder ⑳ so that Cord ㉓ is accurately inserted into the groove in the presser foot sole from Piping Binder ㉑.



### ADJUSTING SHIRRING BLADE (Figs. 101~103)

Adjust Shirring Blade ㉒ in the following manner.

1. Open Presser Arm to the left.
  2. Set Blade ㉒ so as to lightly brush the needle plate.  
For adjusting, loosen Screw ㉔ and vertically slide Blade ㉒.
  3. Fig. 102. Set the tip of Blade ㉒ to the needle hole. Then, adjust so that the gap (c) between the overlock needle and the right end of Blade ㉒ is 3.0mm.  
For adjusting, loosen Screw ㉕ and slide Blade ㉒.
  4. Turn Worm ㉖ left until no spring pressure is on Blade ㉒.  
Turn right 3 ~ 4 times from that position to adjust the spring pressure on Blade ㉒.
  5. When the presser foot and top feed dog are raised up to the specified height by foot lift pedal, set the gap between the needle plate and Blade ㉒ to 3.0mm.  
For adjusting, loosen Nut ㉗ and move Cable Stopper ㉘.
- When Cable Stopper ㉘ is let in to (-) side, the lift of Blade ㉒ becomes large.
  - When it is let out to (+) side, the lift of Blade ㉒ becomes small.

