

INSTRUCTIONS

Cat. No. 9A2045

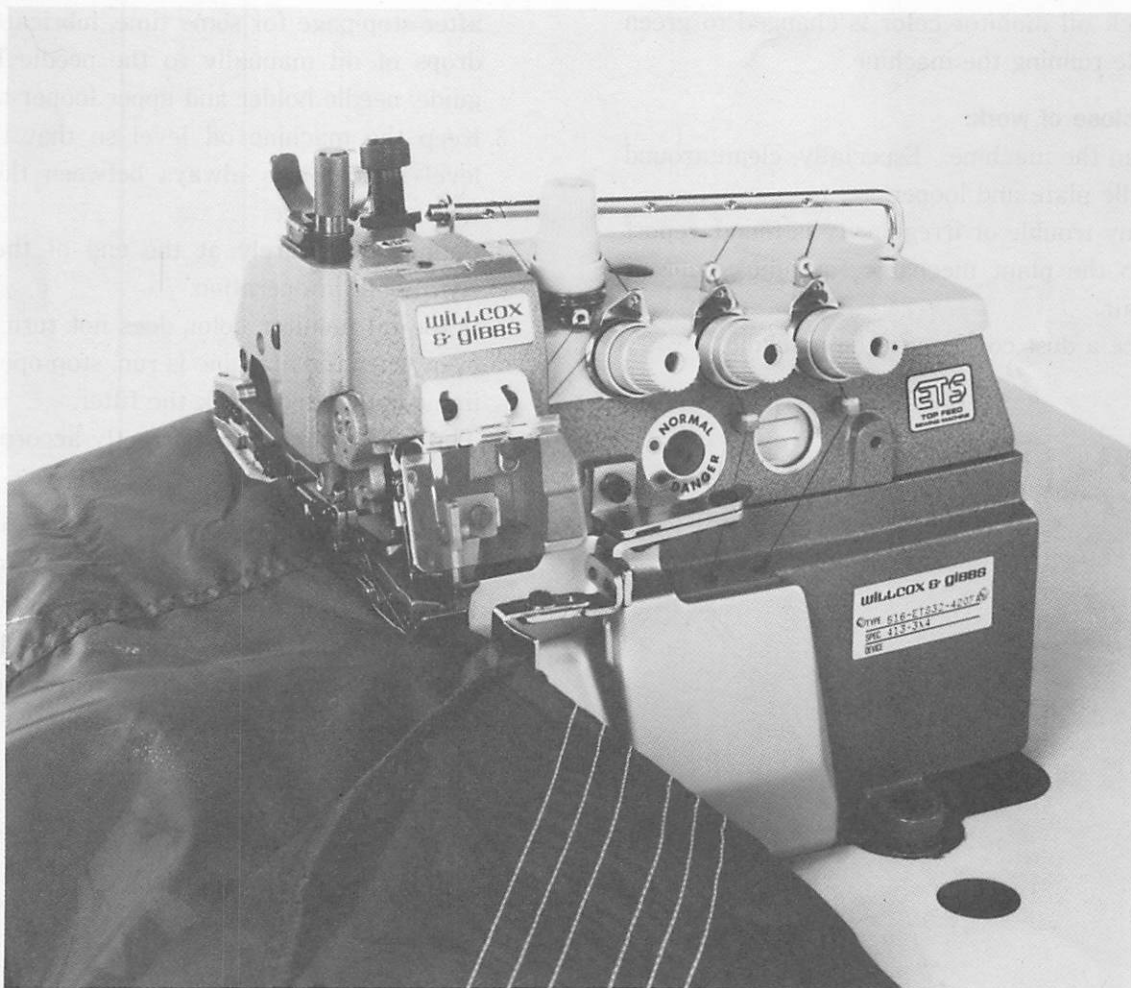
December, 1984

ETS32SERIES

TOP AND BOTTOM, DIFFERENTIAL FEED
SAFETY STITCH MACHINES

First edition; issued in May, 1984

Second edition; issued in December, 1984



WILLCOX & GIBBS

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INTRODUCTION

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.

DAILY MAINTENANCE

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.

FOR SAFETY

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.

NOTES ON USE

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.

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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.

Fig.4

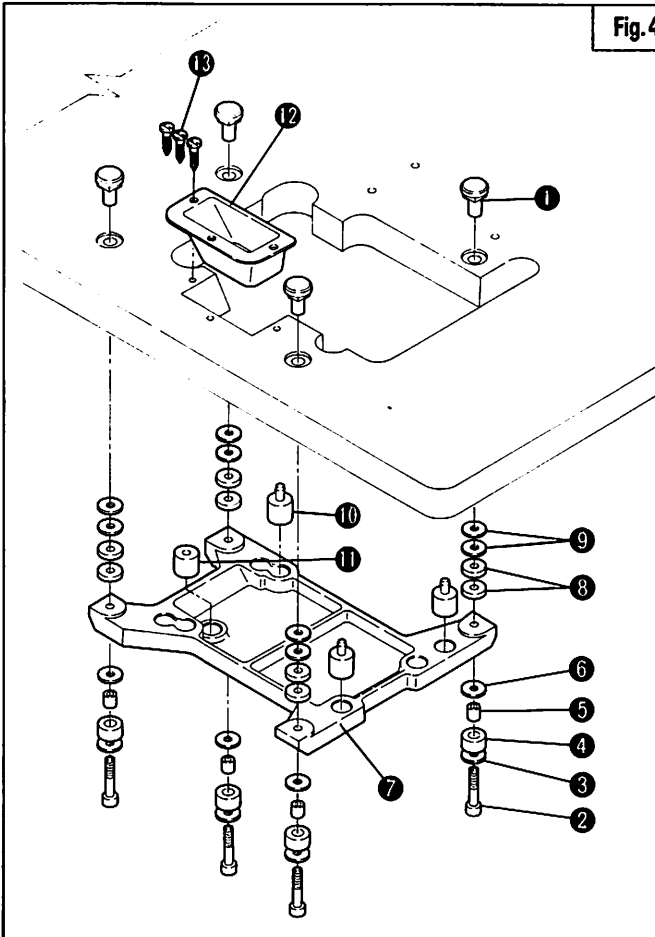


Fig.5

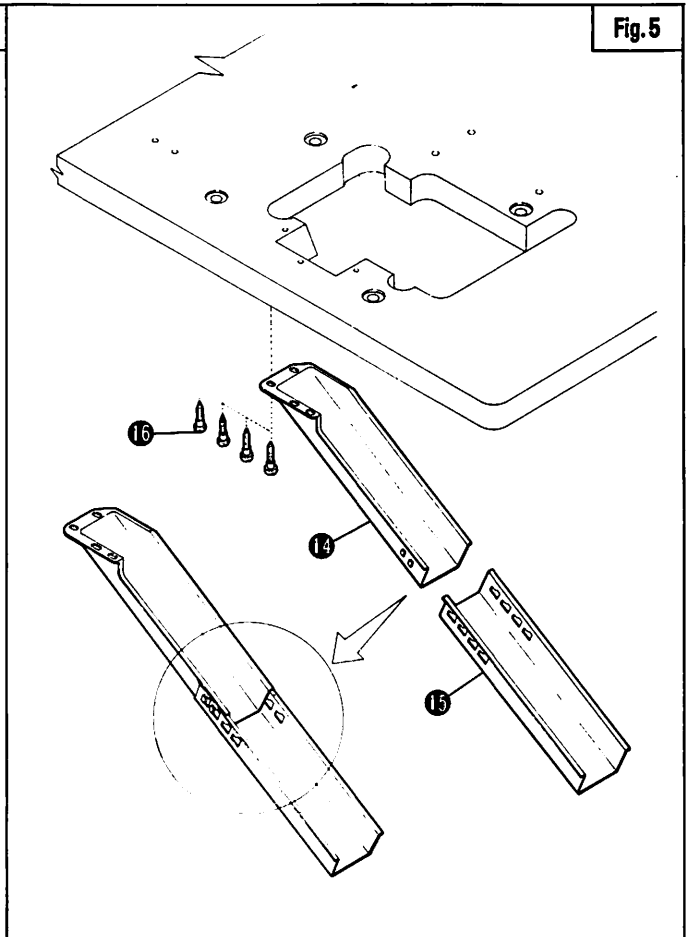
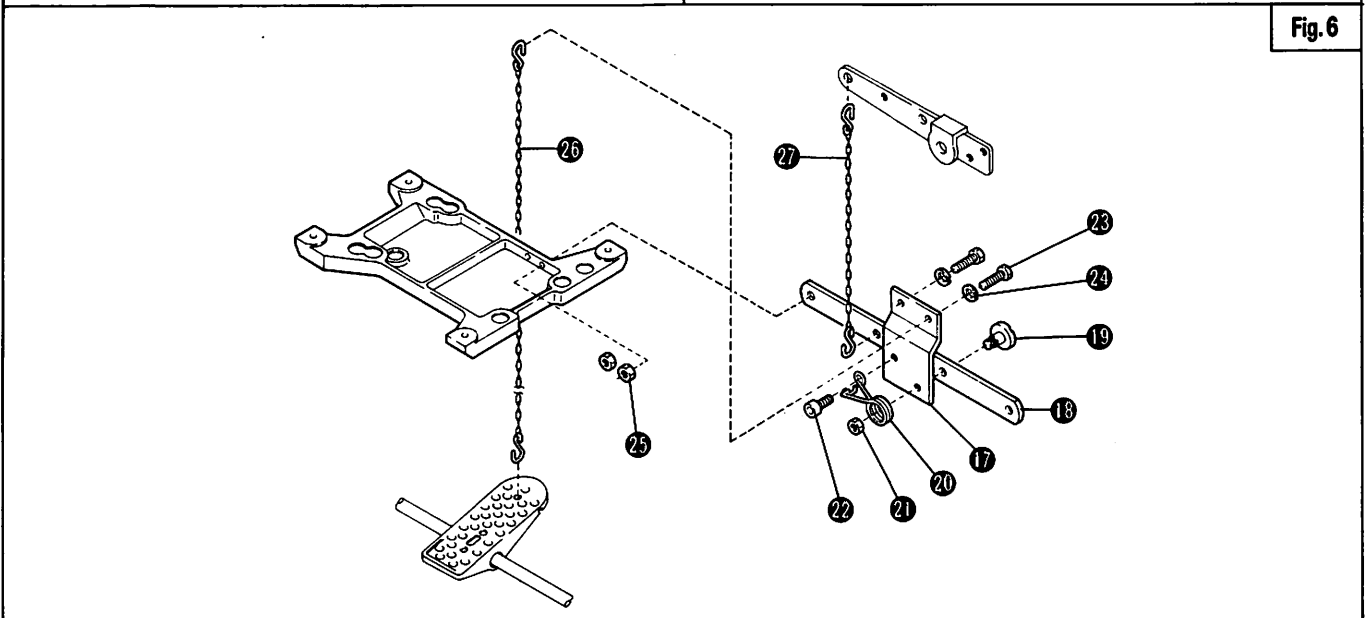


Fig.6



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.

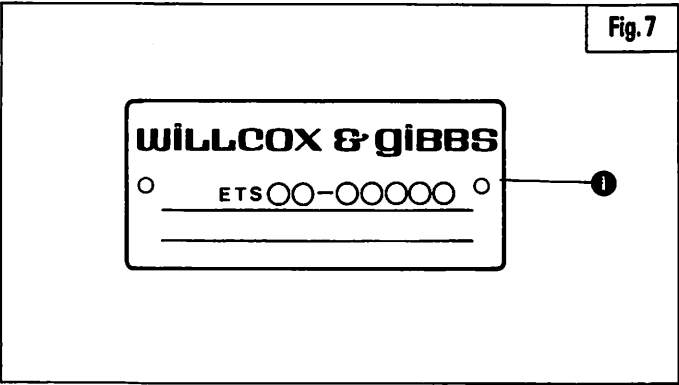
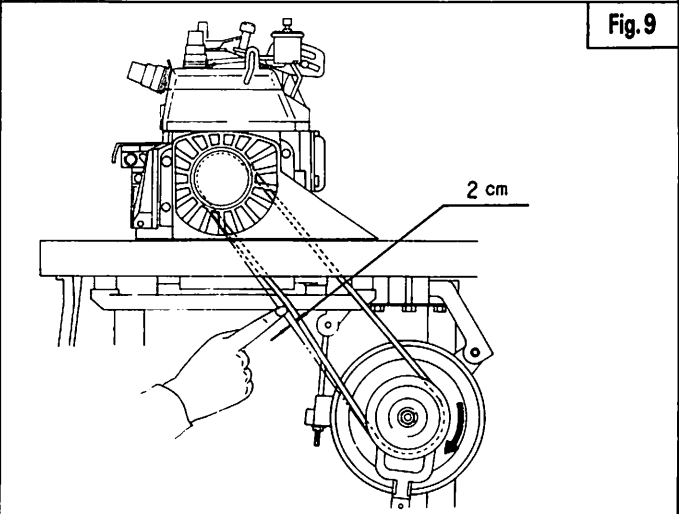
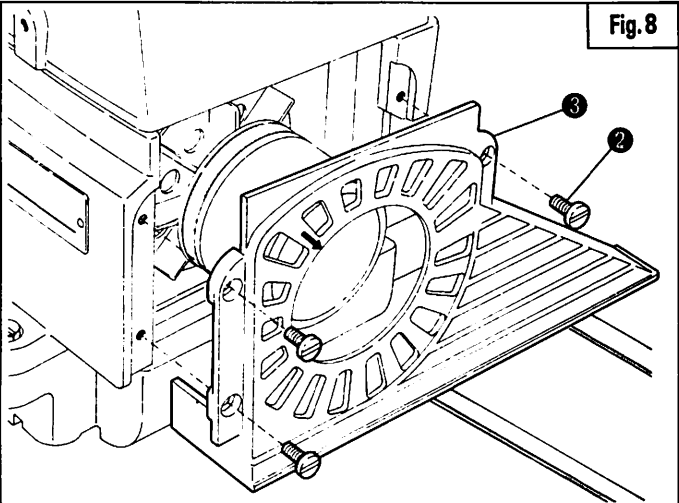


Table 2

Machine speed (s.p.m.)	Motor pulley diameter (mm)	
	6 0 H z	5 0 H z
6 , 0 0 0	9 5	1 1 5
5 , 5 0 0	9 0	1 0 5
5 , 3 0 0	8 5	1 0 0
5 , 0 0 0	8 0	9 5
4 , 7 0 0	7 5	9 0
4 , 4 0 0	7 0	8 5
4 , 1 0 0	6 5	8 0



MAXIMUM SPEED-FRONT TOP FEED ETS32

Table 3

EXTRA-HIGH LIFT	HIGH LIFT
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GENERAL SEAMING

Machine type/spec.	Maximum speed (s.p.m.)	Machine type/spec.	Maximum speed (s.p.m.)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	6,000	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	6,000
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"

GATHERING

Machine type/spec.	Maximum speed (s.p.m.)	Machine type/spec.	Maximum speed (s.p.m.)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	5,500	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	5,500
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"

PIPING

Machine type/spec.	Maximum speed (s.p.m.)	Machine type/spec.	Maximum speed (s.p.m.)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} / _{P2} /453	6,000	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} / _{P2} /333	6,000

MAXIMUM SPEED-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Maximum speed (s.p.m.)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	6,000
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"

SEAMING/HEAVY

Machine type/spec.	Maximum speed (s.p.m.)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	5,500
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"

PIPING

Machine type/spec.	Maximum speed (s.p.m.)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} / _{P2} /453	6,000

○ = Normal presser foot
 ● = Narrow presser foot
 ■ = Tractor 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.

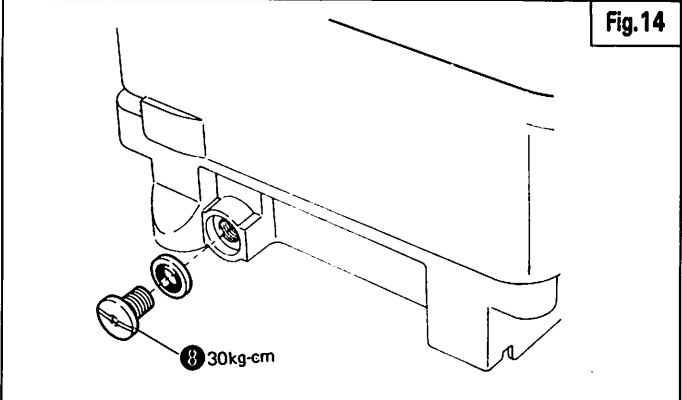
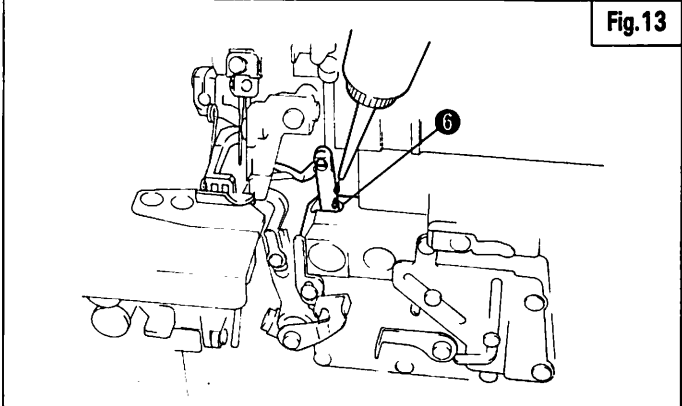
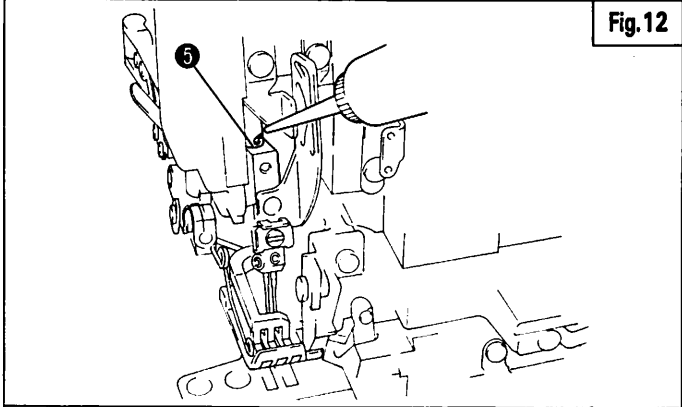
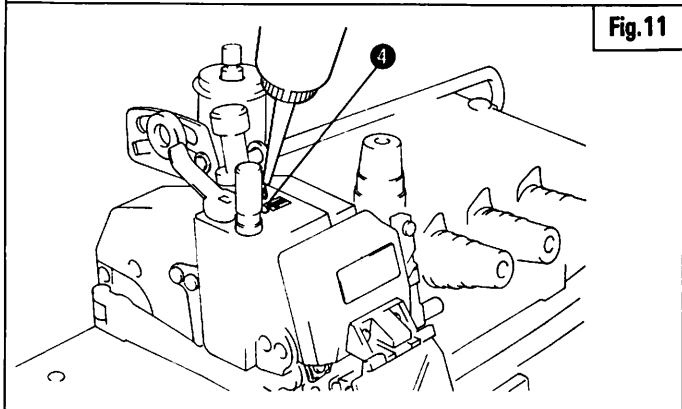
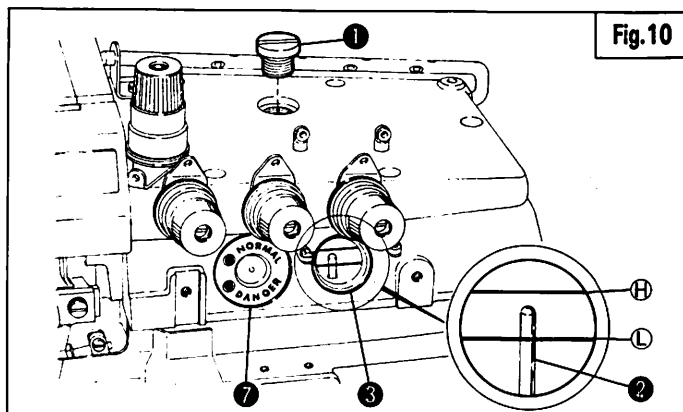
If it keeps red, stop the machine immediately and check if the oil level is correct and if the oil filter is clogged.

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.



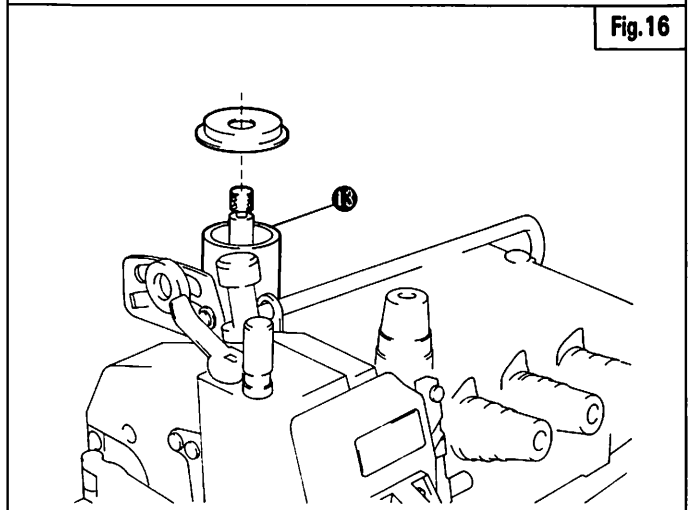
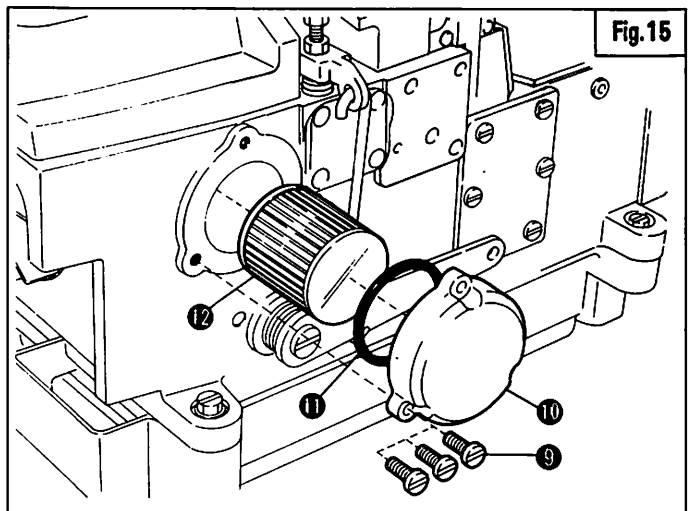
CHECKING AND REPLACING OIL FILTER (Fig.15)

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

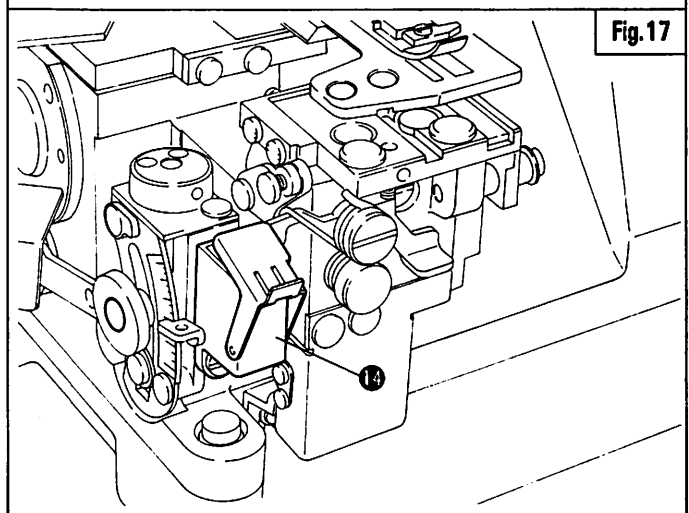
Disassemble parts ⑨ – ⑫. Clean ⑫ or if necessary, replace it with a new one.



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.



NEEDLES

Use DC×27, #11 for both overlock and double chainstitch needles.

Note:

For the following machines for jeans (for extra-heavy fabrics), use DC×1, #21 for the overlock needle and DC×27, #21 for the double chainstitch needle.

- ETS32-452BA2/ ⁵¹⁶(515)-433
- ETS32-452BA4/ ⁵¹⁶(515)-433
- ETS32-453BA2/ ⁵¹⁶(515)-453
- ETS32-453BA4/ ⁵¹⁶(515)-453

Needle size and Upper Looper/Spreader

Upper Looper (Spreader) should be used according to the size of needle as listed in Table 11. Upper Looper (Spreader) should be replaced and adjusted when needle size is changed extremely.

REPLACING NEEDLES (Fig.18)

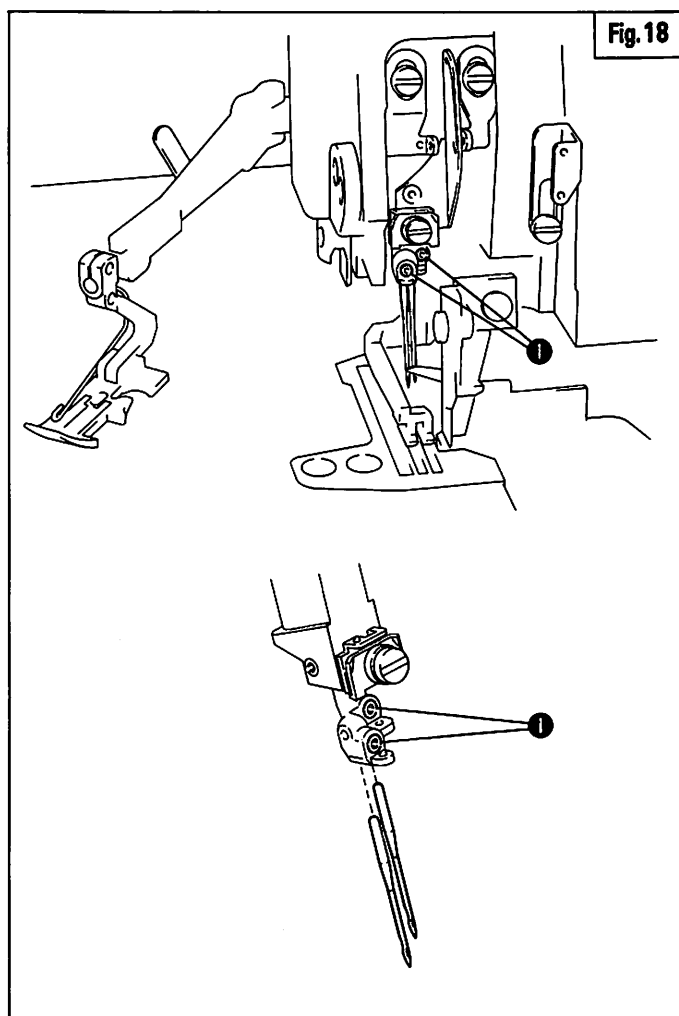
1. Loosen Screw ❶ and remove old needle.
2. Insert a new needle into the needle hole as far as it will go.
3. Tighten Screw ❶ after making sure the long groove on the needle is facing you.

THREADING (Figs.19~23)

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.

THREADING-FRONT TOP FEED ETS32

Table 4

EXTRA-HIGH LIFT	HIGH LIFT
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GENERAL SEAMING

Machine type/spec.	Stitch type			Machine type/spec.	Stitch type		
	516	515	401		516	515	401
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	Fig. 19	Fig. 21	Fig. 23	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	Fig. 20	Fig. 22	Fig. 23
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"	"	"

GATHERING

Machine type/spec.	Stitch type			Machine type/spec.	Stitch type		
	516	515	401		516	515	401
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	Fig. 19	Fig. 21	Fig. 23	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	Fig. 20	Fig. 22	Fig. 23
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"	"	"

PIPING

Machine type/spec.	Stitch type			Machine type/spec.	Stitch type		
	516	515	401		516	515	401
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} / _{P2} /453	Fig. 19	Fig. 21	Fig. 23	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} / _{P2} /333	Fig. 20	Fig. 22	Fig. 23

THREADING-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Stitch type		
	516	515	401
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	Fig. 19	Fig. 21	Fig. 23
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"	"	"

SEAMING/HEAVY

Machine type/spec.	Stitch type		
	516	515	401
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	Fig. 19	Fig. 21	Fig. 23
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"	"	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"	"	"

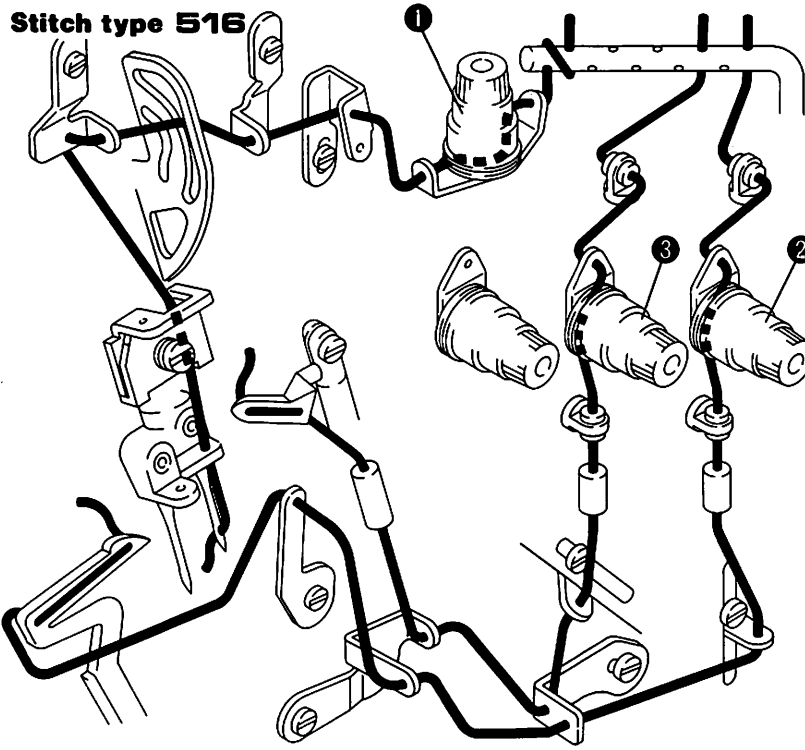
PIPING

Machine type/spec.	Stitch type		
	516	515	401
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} / _{P2} /453	Fig. 19	Fig. 21	Fig. 23

- = Normal presser foot
- = Narrow presser foot
- = Tractor foot

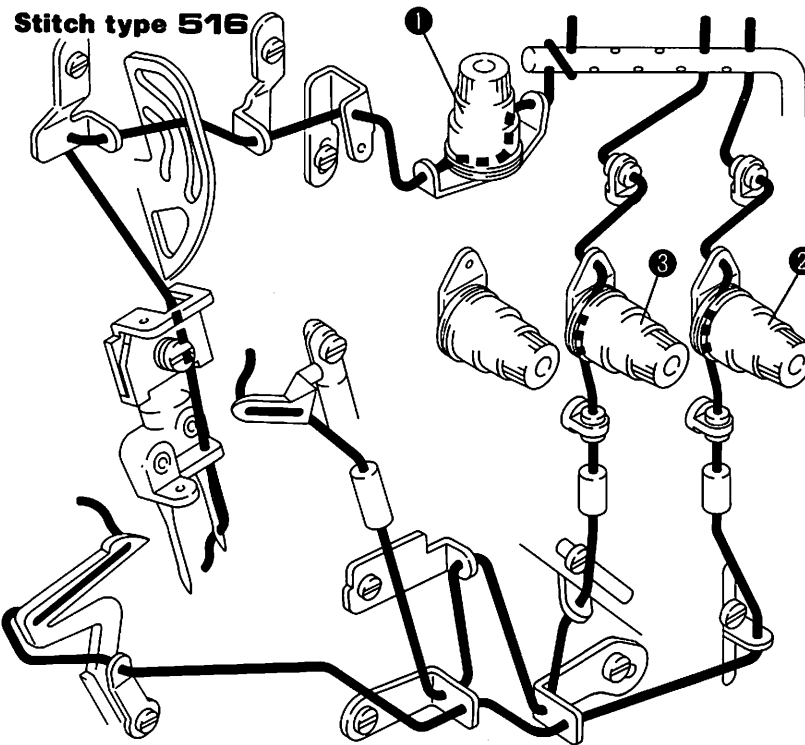
Extra-high lift

Fig. 19



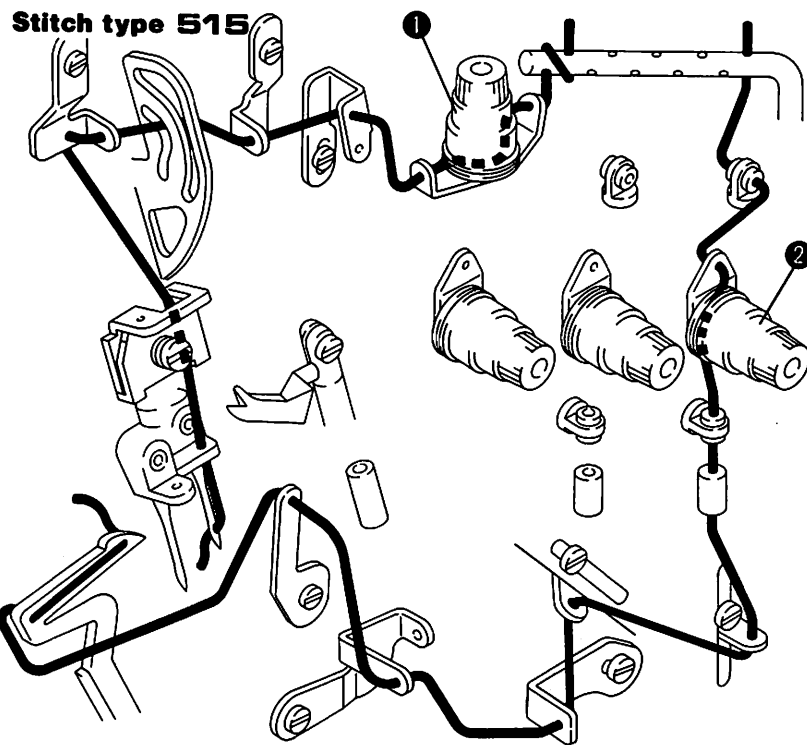
High lift

Fig. 20



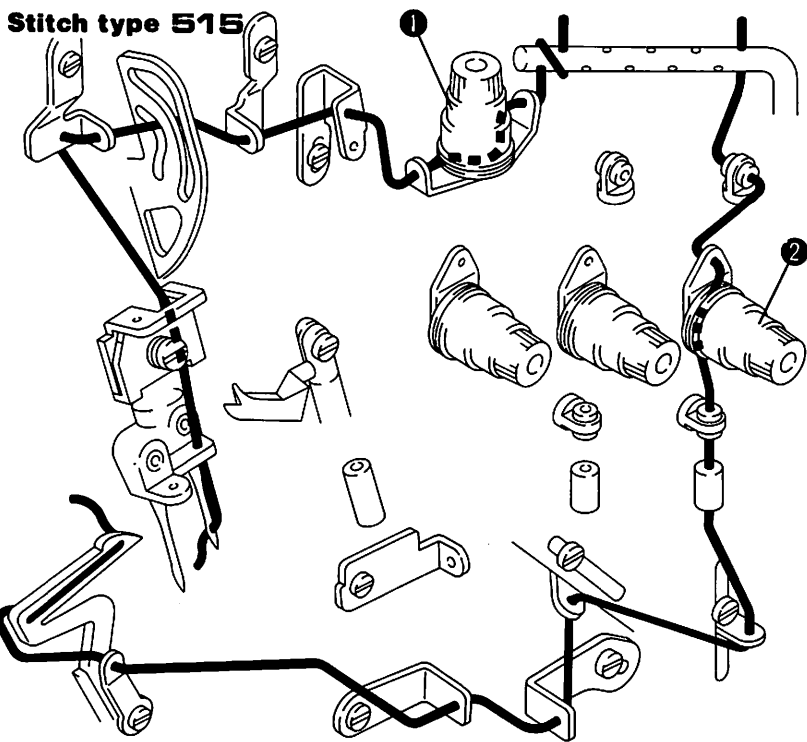
Extra-high lift

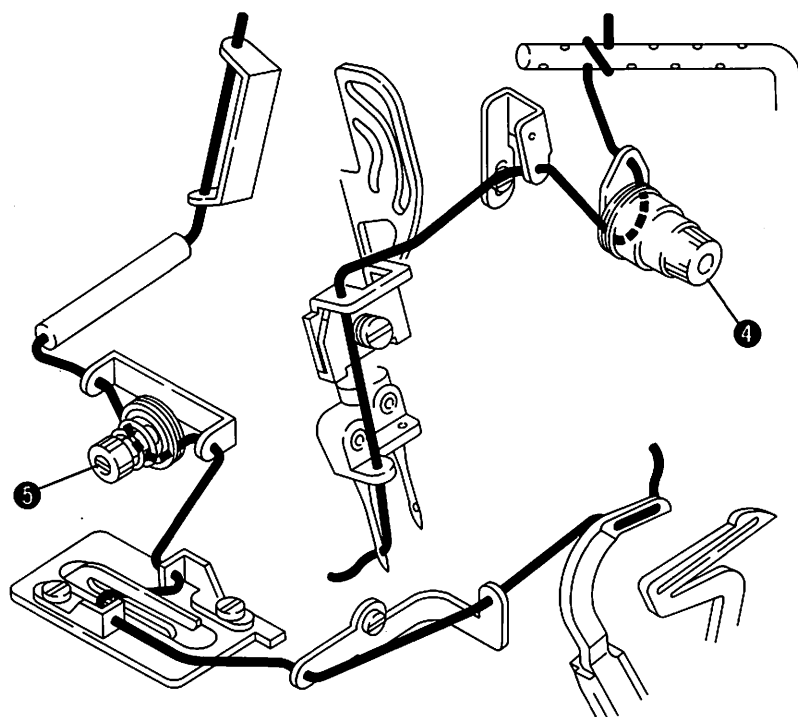
Fig. 21



High lift

Fig. 22



Stitch type 401

PRESSER ARM SWINGING-IN AND -OUT (Fig. 24)

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.

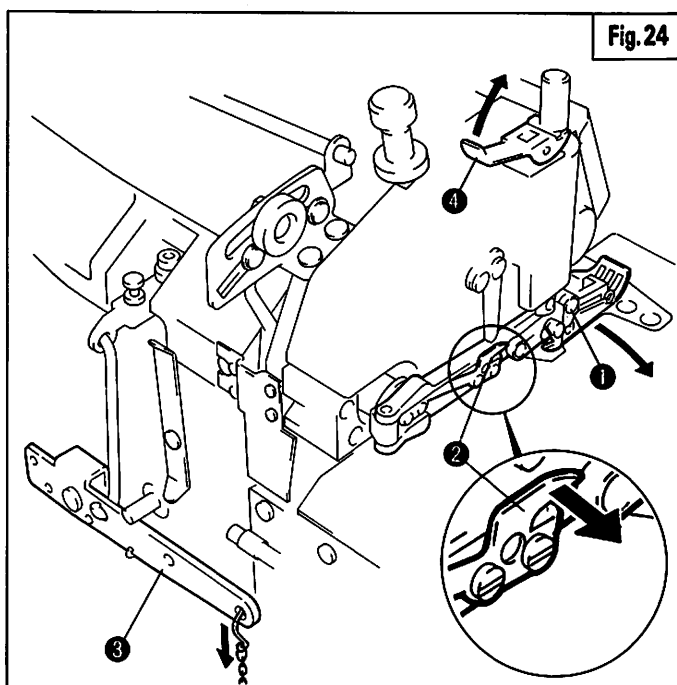


Fig. 24

PRESSER FOOT PRESSURE (Fig. 25)

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.

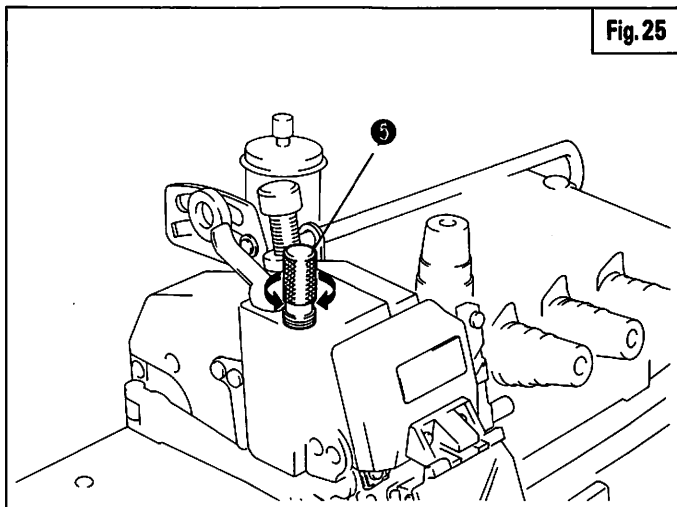


Fig. 25

STITCH LENGTH ADJUSTMENT (Figs. 26,27)

While pressing Push Button ❶, turn Handwheel ❷ until Button ❶ drops in.
Turn ❷ further for a desired stitch length.
Release ❶.
For a longer stitch length, turn ❷ in the (+) direction.
For a shorter stitch length, turn ❷ in the (−) direction.

Note:
The stitch length is the main feed stroke in nominal.
Table 5 shows this stroke by the handwheel scale setting. It may be a reference to know an approximate stitch length.

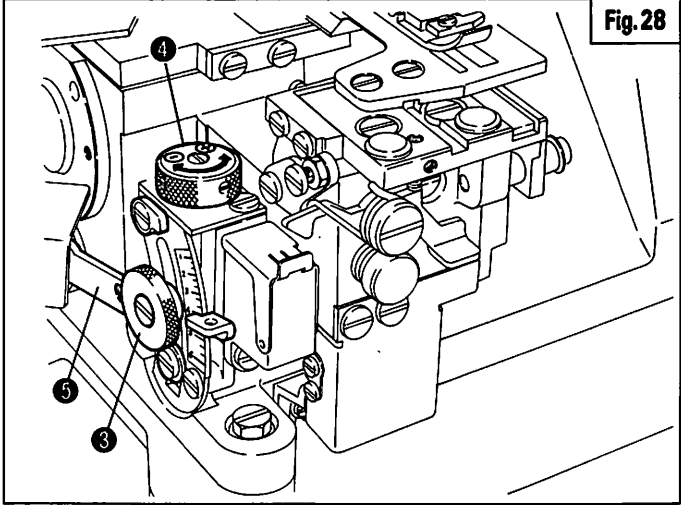
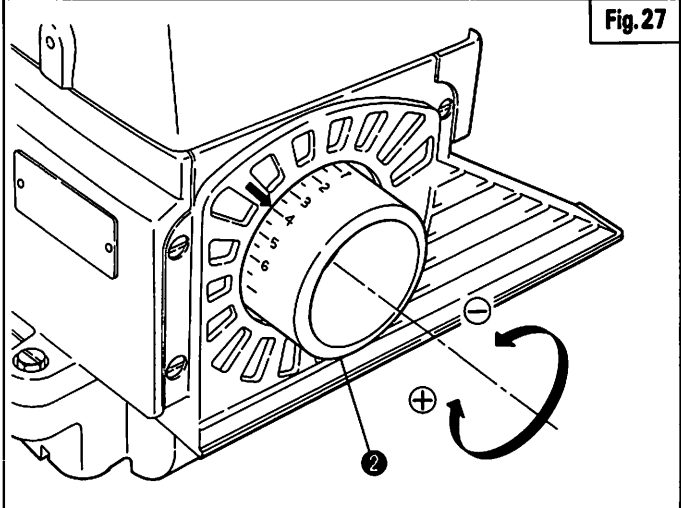
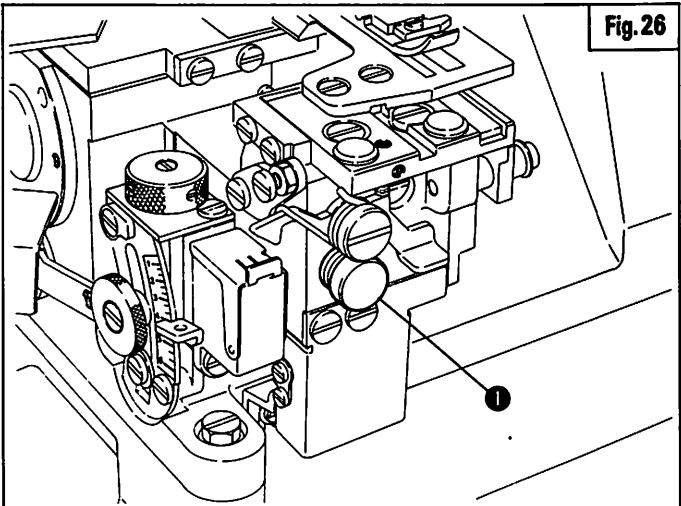
MAIN FEED STROKE (mm) BY THE HANDWHEEL SCALE SETTING Table 5

Handwheel scale setting	1	2	3	4	5	6	7
Main feed stroke	1.0	1.5	2.0	2.5	3.0	3.5	3.8

DIFFENTIAL FEED ADJUSTMENT (Fig. 28)

Loosen Nut ❸.
To gather the fabric, turn Screw ❹ in the (+) direction.
To stretch the fabric, turn Screw ❹ in the (−) direction.

Note:
Table 6 shows the differential feed ratio by the lever setting.
When Lever ❺ 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.



DIFFERENTIAL FEED RATIO Table 6

Scale on indication plate	1	2	3	4	5
Differential feed ratio	1 : 0.7	1 : 1	1 : 1.4	1 : 1.7	1 : 2

TOP FEED STROKE ADJUSTMENT (Fig. 29)

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. 30)

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. 31,32)

1. Loosen Screw ⑪, push Lower Knife Holder ⑩ to the left and lightly tighten Screw ⑪.
2. Loosen Screw ⑬ and move Upper Knife Clamp ⑫ to the right or left until a desired seam width is obtained. Tighten Screw ⑬.
3. Turn Handwheel so that the point 'b' of Knife is about 1.0mm above from Needle Plate top. Loosen Screw ⑪, then Holder ⑩ will return to position.
4. Make sure Knives are in a perfect alignment. Tighten Screw ⑪.
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.

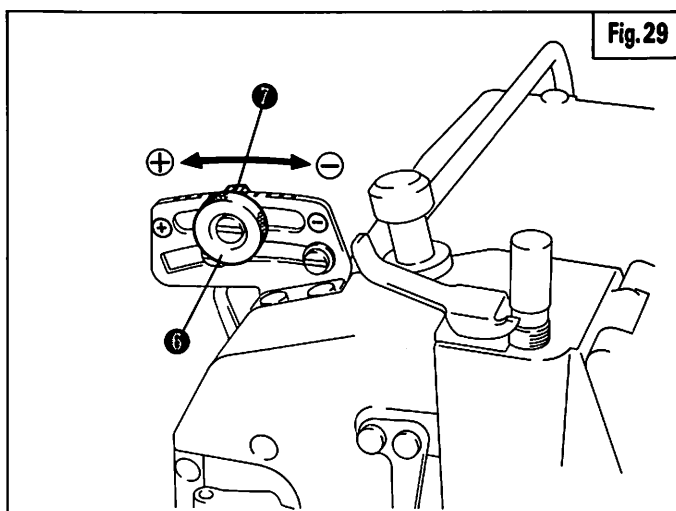


Fig. 29

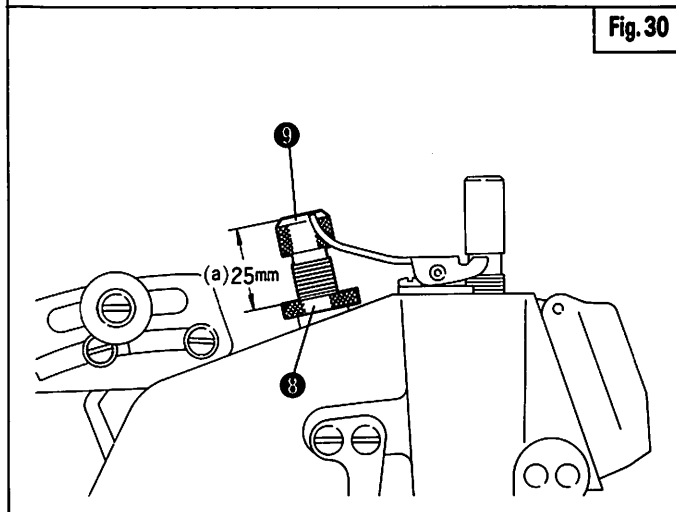


Fig. 30

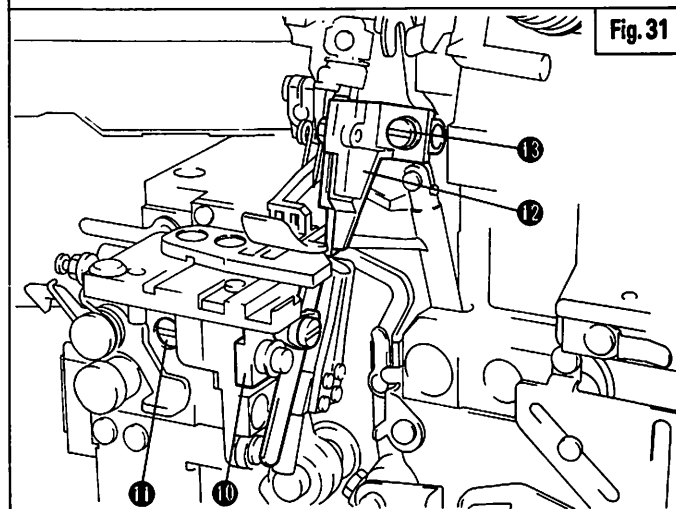


Fig. 31

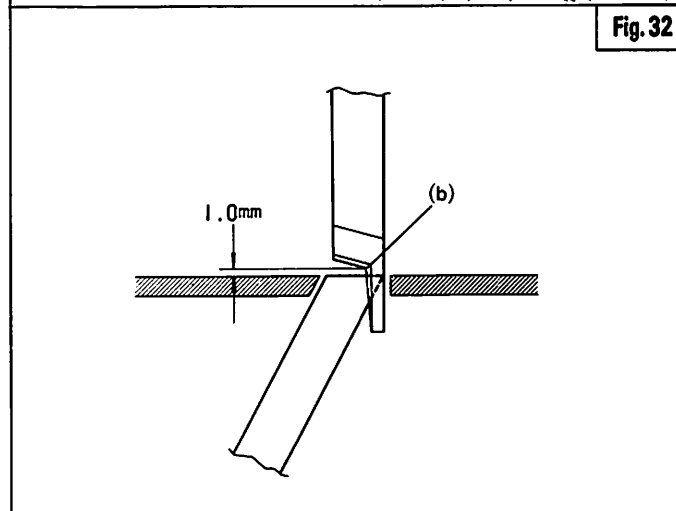


Fig. 32

NEEDLE THREAD GUIDE SETTING POSITION (Fig.33)

The standard setting positions of needle thread guides ①, ②, ③ are as shown in Table 7. Refer to Table 7 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 7. See Fig.34 for the extra-high lift machines. See Fig.35 for the high lift machines.

Extra-high Lift (Fig. 34)

1. Looper Thread Guide ⑦

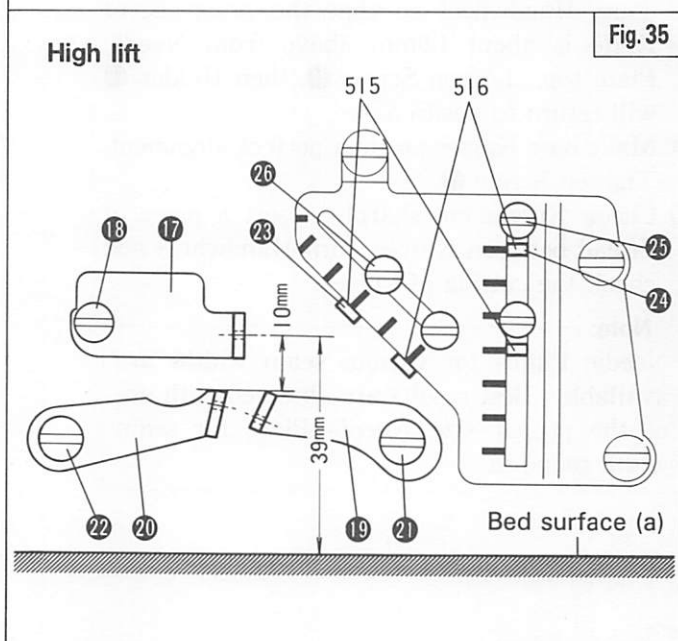
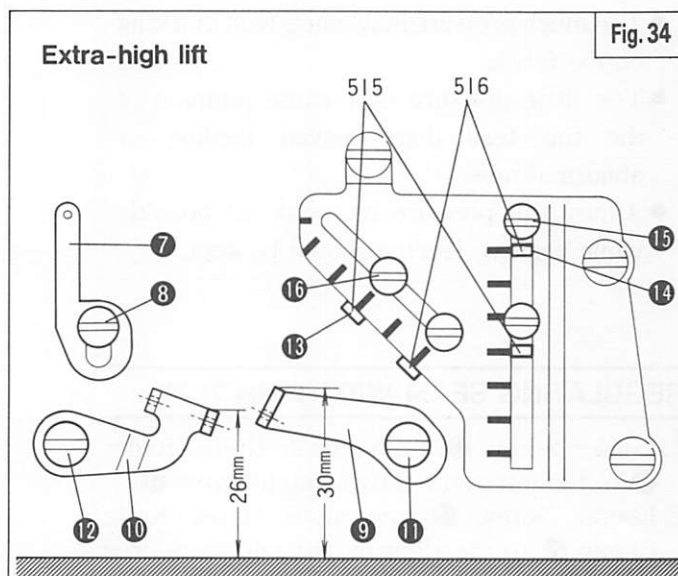
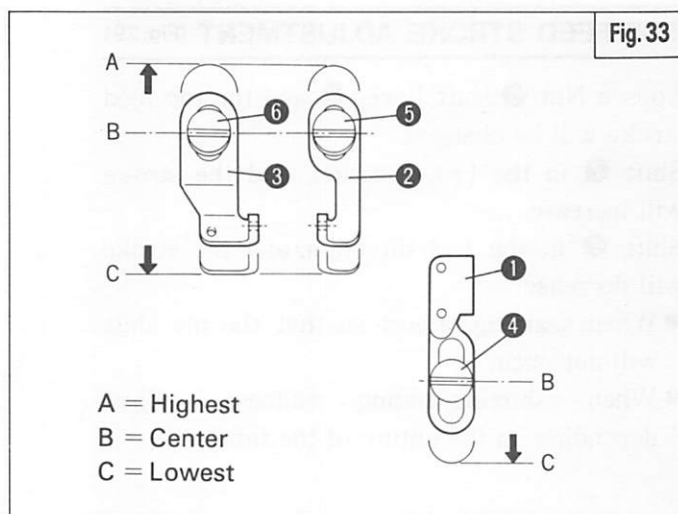
Loosen Screw ⑧ and set Guide ⑦ to the lowest position.

2. Upper Looper Thread Takeup ⑨, Lower Looper 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. 34.

3. Looper Thread Guides ⑬ ⑭

- For the machines of the stitch type 515, loosen Screws ⑮ ⑯ and set Thread Guides ⑬ ⑭ to the positions indicated as (515).
- For the machines of the stitch type 516, set Thread Guides ⑬ ⑭ to the positions indicated as (516).



High Lift (Fig. 35)

1. Looper Thread Guide ⑦

Loosen Screw ⑧ and set that the distance between Bed surface (a) and the hole of Thread Guide ⑦ is 39.0mm.

2. Upper Looper Thread Takeup ⑨, Lower Looper Thread Takeup ⑩

When the lower looper is at the right dead point, loosen Screws ⑪, ⑫, adjust Thread Takeups ⑨, ⑩ up and down, and set at the position as shown in Fig. 35.

3. Looper Thread Guides ⑬ ⑭

- For the machines of the stitch type 515, loosen Screws ⑮ ⑯ and set Thread Guides ⑬ ⑭ to the positions indicated as (515).
- For the machines of the stitch type 516, loosen Screws ⑮ ⑯ and set Thread Guides ⑬ ⑭ to the positions indicated as (516).

NEEDLE THREAD GUIDE SETTING POSITION-FRONT TOP FEED ETS32

Table 7

EXTRA-HIGH LIFT	HIGH LIFT
-----------------	-----------

GENERAL SEAMING

Machine type/spec.	Stitch type 516			Stitch type 515			Machine type/spec.	Stitch type 516			Stitch type 515		
	1	2	3	1	2	3		1	2	3	1	2	3
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	B	B	B	B	A	A	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	B	C	C	B	C	C
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	"	"	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"	"	"	"	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	"	"	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"	"	"	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	"	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"	"	"	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	"	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"	"	"	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	"	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"	"	"	"	"	"

GATHERING

Machine type/spec.	Stitch type 516			Stitch type 515			Machine type/spec.	Stitch type 516			Stitch type 515		
	1	2	3	1	2	3		1	2	3	1	2	3
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	B	B	B	B	A	A	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	B	C	C	B	C	C
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	"	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"	"	"	"	"	"

PIPING

Machine type/spec.	Stitch type 516			Stitch type 515			Machine type/spec.	Stitch type 516			Stitch type 515		
	1	2	3	1	2	3		1	2	3	1	2	3
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} _{P2} /453	B	B	B	B	A	A	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} _{P2} /333	B	C	C	B	C	C

NEEDLE THREAD GUIDE SETTING POSITION-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Stitch type 516			Stitch type 515		
	1	2	3	1	2	3
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	B	B	B	B	A	A
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"	"	"	"	"	"

SEAMING/HEAVY

Machine type/spec.	Stitch type 516			Stitch type 515		
	1	2	3	1	2	3
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	C	C	C	C	A	A
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"	"	"	"	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"	"	"	"	"	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"	"	"	"	"	"

PIPING

Machine type/spec.	Stitch type 516			Stitch type 515		
	1	2	3	1	2	3
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} _{P2} /453	B	B	B	B	A	A

- = Normal presser foot
- = Narrow presser foot
- = Tractor foot

CHAINSTITCH LOOPER THREAD HANDLING (Figs. 36, 37)

① Looper Thread Takeup Guide ①

Adjust the gap between the top surface of Bracket ② and the tip of Looper Thread Takeup Guide ① to 6.0 – 6.5mm.

Loosen Screw ③ and adjust.

② Looper Thread Takeup ④

When the needle is at the upper dead point, adjust the gap between the top surface of Bracket ② and tip (b) of Takeup ④ (Fig.36, dimension c) to 6.5mm.

Loosen Screws ⑤ and adjust.

③ Looper Thread Eyelets

Adjust the eye of Eyelet ⑥ to mark (d) of Bracket ②.

Loosen Screw ⑦ and adjust.

Note:

- For more thread in the seam, shift ⑥ in the (+) direction.
- For less thread in the seam, shift ⑥ in the (–) direction.

CHANGING UPPER KNIFE (Figs. 38, 39, 40)

1. Loosen Screw ⑨, push Lower Knife Holder ⑧ to the left and lightly tighten Screw ⑨.

2. Remove Screw ⑩.

Replace Upper Knife ⑪ with the new one. Adjust ⑬ 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 Upper Knife ⑪ is lowest.

3. Turn Handwheel so that the point 'e' of Knife is about 1.0mm above from Needle Plate top.

Loosen Screw ⑨, then Holder ⑧ will return to position.

Make sure Knives are in a perfect alignment. Tighten Screw ⑨.

4. Check Knives cut sharp; insert a piece of thread between Knives, turn Handwheel and check the cutting of Knives.

Fig.36

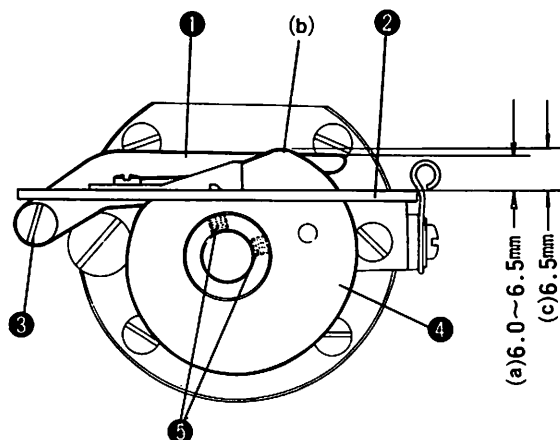


Fig.37

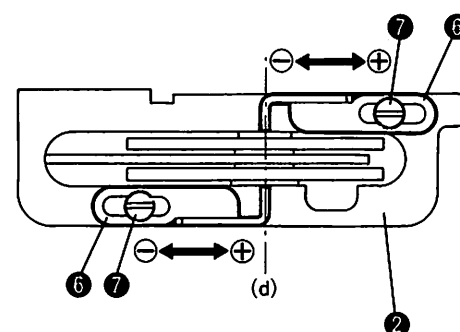


Fig.38

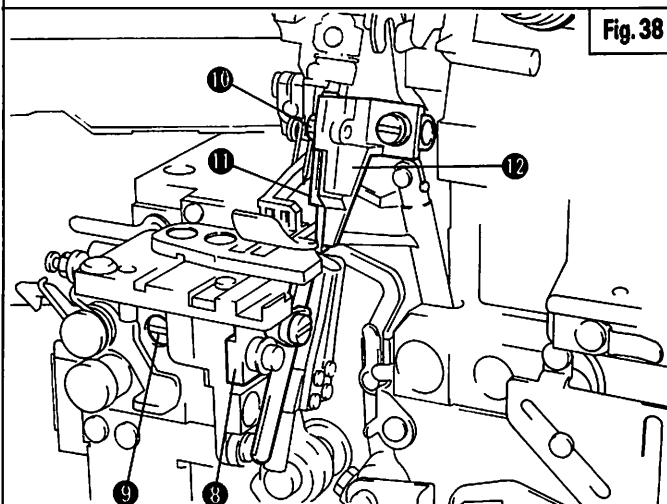
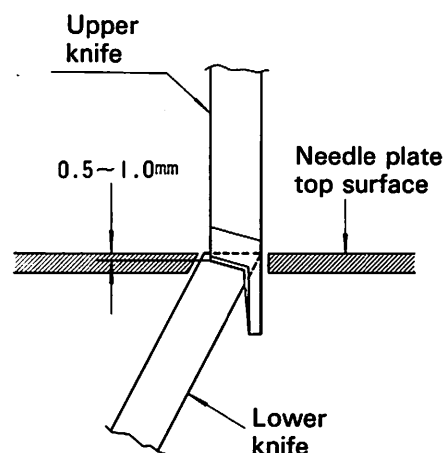


Fig.39



CHANGING LOWER KNIFE (Figs. 40, 41)

1. Loosen Screw ⑨, push Lower Knife Holder ⑧ to the left, and lightly tighten Screw ⑨.
2. Loosen Screw ⑬.
Replace Lower Knife ⑭ with the new one.
● Move Knife up or down until its cutting edge is level with Needle Plate top.
Tighten Screw ⑬.
3. Turn Handwheel so that the point 'e' of Upper Knife is about 1.0mm above from Needle Plate top. Loosen Screw ⑨, then Holder ⑧ will return to position.
4. Make sure Knives are in a perfect alignment.
Tighten Screw ⑨.
5. Check Knives cut sharp; insert a piece of thread between Knives, turn Handwheel and check the cutting of Knives.

KNIVES (Fig. 42)

Knives must be kept sharp.

If the machine does not trim the fabric sharply, sharpen the lower knife.

Sharpening Lower Knife ⑭

Sharpen the lower knife as specified in Fig. 42.

Upper Knife

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

Fig.40

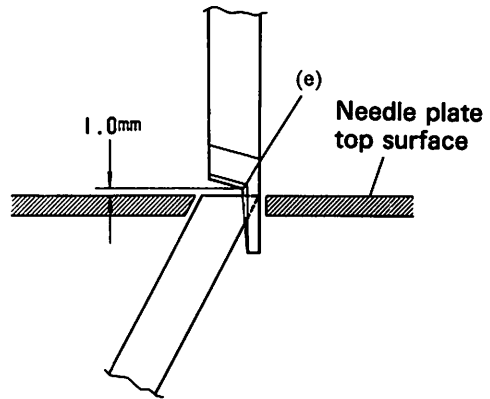


Fig.41

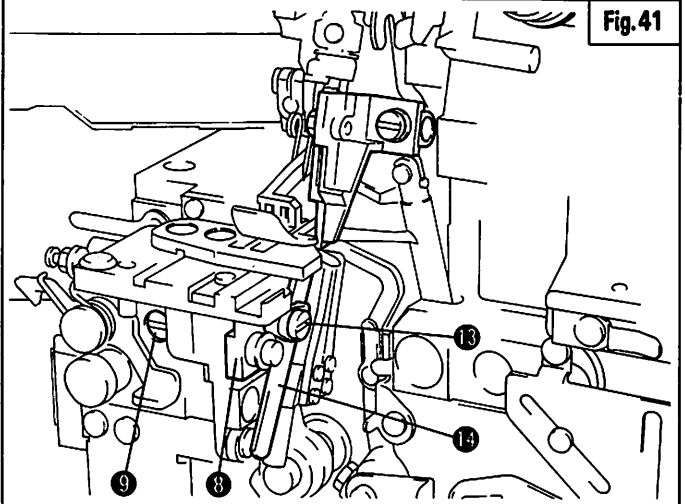
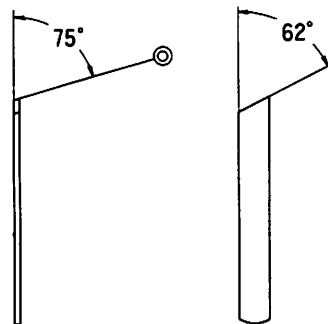


Fig.42



BOTTOM FEED HEIGHT (Figs.43,44)

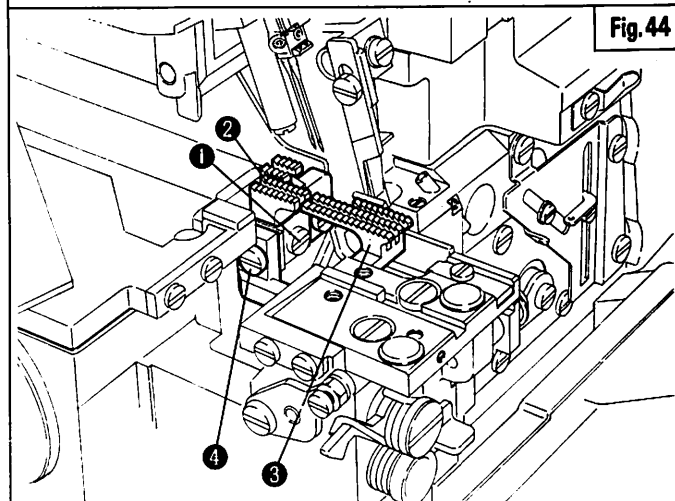
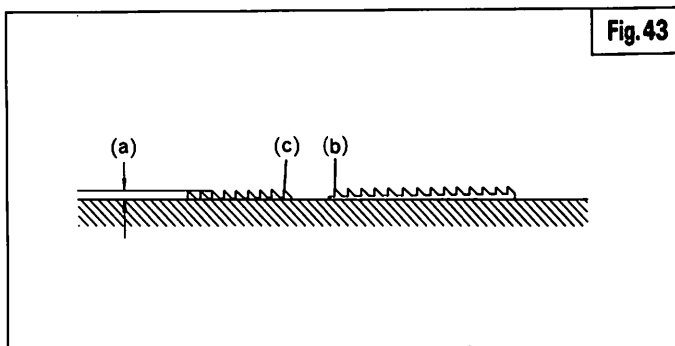
Bottom feed dog height by type is as shown in Table 8. Make sure that the setting is correct to your machine.

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.

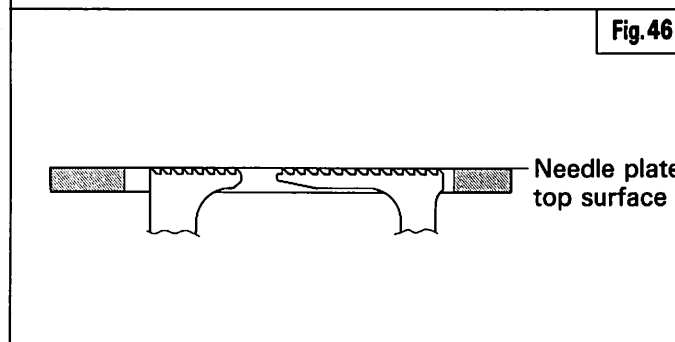
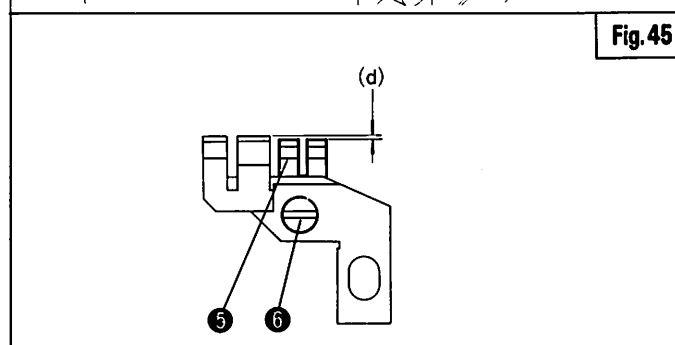


AUXILIARY FEED DOG HEIGHT (Fig.45)

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.



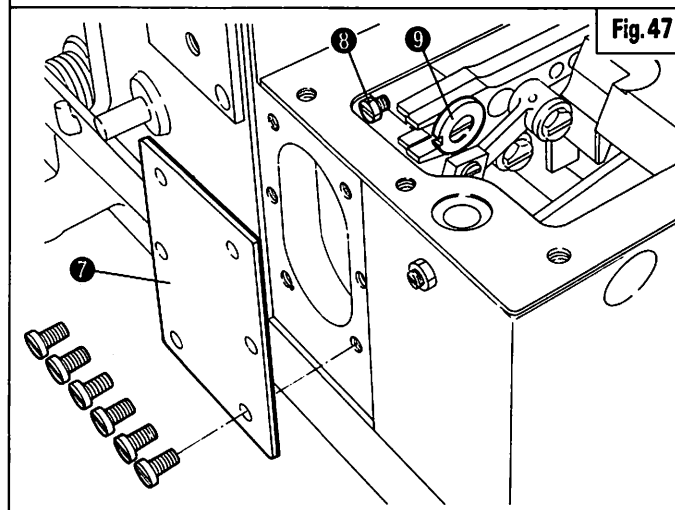
BOTTOM FEED LEVELING POSITION ADJUSTMENT (Figs.46,47)

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 sideways shifting.
2. Be sure to adjust "bottom feed height" after the adjustment.



BOTTOM FEED HEIGHT-FRONT TOP FEED ETS32

Table 8

EXTRA-HIGH LIFT	HIGH LIFT
-----------------	-----------

GENERAL SEAMING

Machine type/spec.	Bottom feed height	Machine type/spec.	Bottom feed height
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	0.9~1.1	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	0.8~1.0
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"

GATHERING

Machine type/spec.	Bottom feed height	Machine type/spec.	Bottom feed height
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	0.9~1.1	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	0.8~1.0
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"

PIPING

Machine type/spec.	Bottom feed height	Machine type/spec.	Bottom feed height
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} / _{P2} /453	0.9~1.1	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} / _{P2} /333	0.8~1.0

BOTTOM FEED HEIGHT-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Bottom feed height
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	0.9~1.1
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"

SEAMING/HEAVY

Machine type/spec.	Bottom feed height
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	0.9~1.1
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"

PIPING

Machine type/spec.	Bottom feed height
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} / _{P2} /453	0.9~1.1

○ = Normal presser foot
 ● = Narrow presser foot
 ■ = Tractor foot

NEEDLE HEIGHT SETTING (Figs. 48, 49)

Table 9 shows the correct needle height for each machine type.

Make sure that the setting is correct for your machine.

To adjust:

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:

Make sure that the chainstitch needle passes the center of the needle hole of the needle plate.

If necessary, loosen Screw ❸ and turn Needle Holder ❹ and adjust.

LOWER LOOPER SETTING (Figs. 50, 51)

Table 9 shows the correct lower looper setting for each machine type. Make sure that the setting is correct for your machine.

To adjust:

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.
For adjusting, loosen Screw ❸ and shift Looper Holder ❹ 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.

For adjusting, loosen Screw ❸ and shift Looper Holder ❹ to the right or left.

Fig. 48

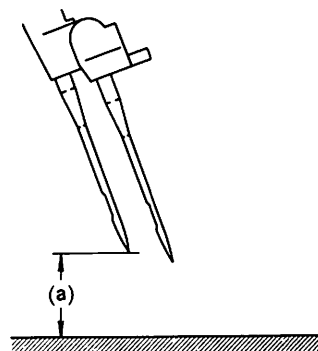


Fig. 49

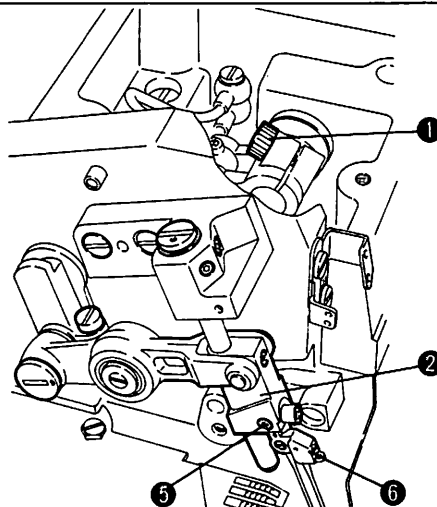


Fig. 50

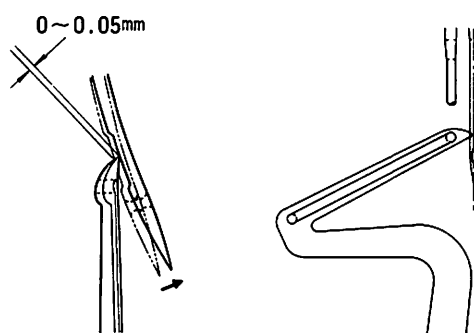
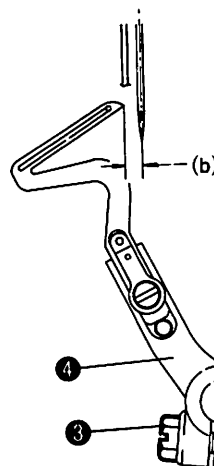


Fig. 51



NEEDLE HEIGHT/LOWER LOOPER SETTING-FRONT TOP FEED ETS32

Table 9

EXTRA-HIGH LIFT	HIGH LIFT
-----------------	-----------

GENERAL SEAMING

Machine type/spec.	Needle (a)	Lower looper (b)	Machine type/spec.	Needle (a)	Lower looper (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	11.7~11.9	3.6~3.9	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	10.4~10.6	3.8~4.1
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"	"

GATHERING

Machine type/spec.	Needle (a)	Lower looper (b)	Machine type/spec.	Needle (a)	Lower looper (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	11.7~11.9	3.6~3.9	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	10.4~10.6	3.8~4.1
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"	"

PIPING

Machine type/spec.	Needle (a)	Lower looper (b)	Machine type/spec.	Needle (a)	Lower looper (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} _{P2} /453	11.7~11.9	3.6~3.9	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} _{P2} /333	10.4~10.6	3.8~4.1

NEEDLE HEIGHT/LOWER LOOPER SETTING-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Needle (a)	Lower looper (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	11.7~11.9	3.6~3.9
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"	"

SEAMING/HEAVY

Machine type/spec.	Needle (a)	Lower looper (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	11.7~11.9	3.6~3.9
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"	"

PIPING

Machine type/spec.	Needle (a)	Lower looper (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} _{P2} /453	11.7~11.9	3.6~3.9

- = Normal presser foot
- = Narrow presser foot
- = Tractor foot

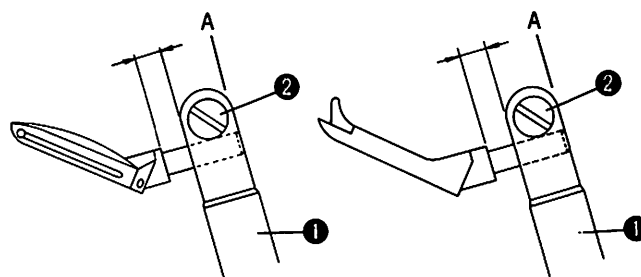
UPPER LOOPER SETTING (Figs. 52 ~ 57)

The standard setting is as shown in Table 10. Make sure that the setting is correct for your machine.

1. Tentatively set the looper in Holder ❶ by Screw ❷.
2. When the looper is at the left dead point, adjust gap (a) to the correct dimension. Loosen Screw ❸, move Crank ❹ up or down, and adjust this.
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 ❷ and ❸.

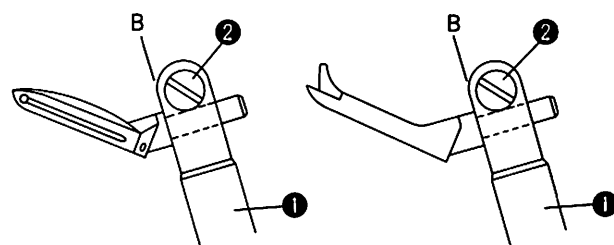
Extra-high lift

Fig. 52



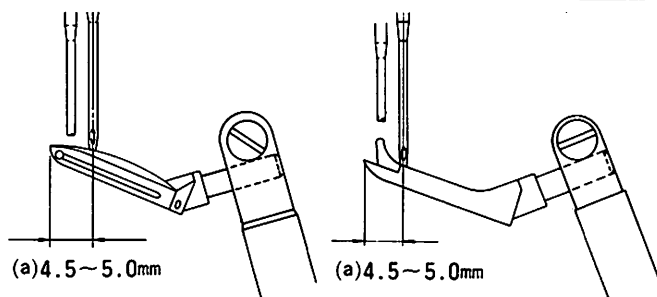
High lift

Fig. 53



Extra-high lift

Fig. 54



High lift

Fig. 55

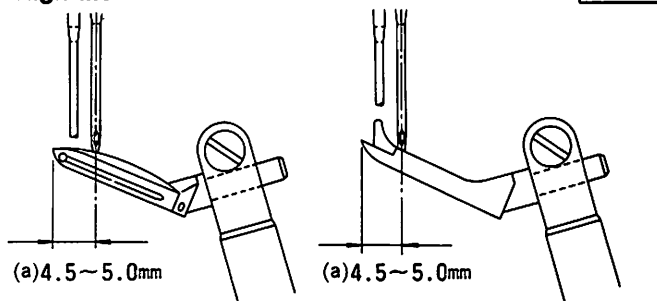


Fig. 56

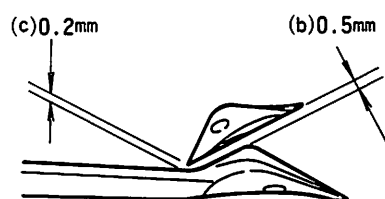
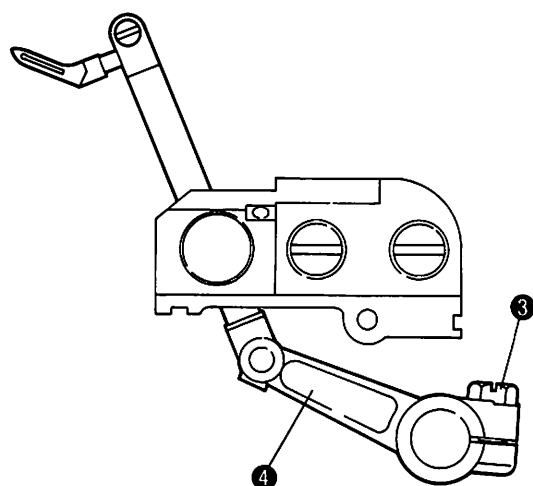


Fig. 57



UPPER LOOPER SETTING-FRONT TOP FEED TYPE ETS32

Table 10

EXTRA-HIGH LIFT	HIGH LIFT
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GENERAL SEAMING

Machine type/spec.	Position	Distance (a)	Machine type/spec.	Position	Distance (a)
○ $\frac{516}{(515)}$ -ETS32-420FA2/413	A	4.5~5.0	○ $\frac{516}{(515)}$ -ETS32-422FA2/313	B	4.5~5.0
○ $\frac{516}{(515)}$ -ETS32-430FA2/433	"	"	○ $\frac{516}{(515)}$ -ETS32-434FA2/333	"	"
○ $\frac{516}{(515)}$ -ETS32-432FA2/453	"	"	○ $\frac{516}{(515)}$ -ETS32-433FA2/353	"	"
● $\frac{516}{(515)}$ -ETS32-420FA3/413	"	"	● $\frac{516}{(515)}$ -ETS32-422FA3/313	"	"
● $\frac{516}{(515)}$ -ETS32-430FA3/433	"	"	● $\frac{516}{(515)}$ -ETS32-434FA3/333	"	"
● $\frac{516}{(515)}$ -ETS32-432FA3/453	"	"	● $\frac{516}{(515)}$ -ETS32-433FA3/353	"	"

GATHERING

Machine type/spec.	Position	Distance (a)	Machine type/spec.	Position	Distance (a)
○ $\frac{516}{(515)}$ -ETS32-542FD2/453/KL100	A	4.5~5.0	○ $\frac{516}{(515)}$ -ETS32-544FD2/353/KL100	B	4.5~5.0
● $\frac{516}{(515)}$ -ETS32-542FD3/453/KL100	"	"	● $\frac{516}{(515)}$ -ETS32-544FD3/353/KL100	"	"

PIPING

Machine type/spec.	Position	Distance (a)	Machine type/spec.	Position	Distance (a)
○ $\frac{516}{(515)}$ -ETS32-432FC2/ $\frac{P1}{P2}$ /453	A	4.5~5.0	○ $\frac{516}{(515)}$ -ETS32-433FC2/ $\frac{P1}{P2}$ /333	B	4.5~5.0

UPPER LOOPER SETTING-REAR TOP FEED TYPE ETS32

GENERAL SEAMING

Machine type/spec.	Position	Distance (a)
○ $\frac{516}{(515)}$ -ETS32-430BA2/433	A	4.5~5.0
○ $\frac{516}{(515)}$ -ETS32-432BA2/453	"	"

SEAMING/HEAVY

Machine type/spec.	Position	Distance (a)
○ $\frac{516}{(515)}$ -ETS32-452BA2/433	A	4.5~5.0
■ $\frac{516}{(515)}$ -ETS32-452BA4/433	"	"
○ $\frac{516}{(515)}$ -ETS32-453BA2/453	"	"
■ $\frac{516}{(515)}$ -ETS32-453BA4/453	"	"

PIPING

Machine type/spec.	Position	Distance (a)
○ $\frac{516}{(515)}$ -ETS32-432BC2/ $\frac{P1}{P2}$ /453	A	4.5~5.0

○ = Normal presser foot
 ● = Narrow presser foot
 ■ = Tractor foot

CHAINSTITCH LOOPER SETTING (Figs. 58~61)

1. Set the looper in the holder as shown in Fig. 58.

- At the factory, the looper is adjusted like this by the regulator ❶, located below the looper shank.

Insert the looper until its shank touches the regulator ❶.

2. When the looper moves to the right and its point comes behind the centerline of the needle, adjust gap (a) to the correct dimension:

- (a) is 0~0.05mm for needles #16 or thinner.
 - (a) is 0~0.1mm for needles #17 or thicker.
- Loosen Screw ❷ and adjust Looper Holder ❸.

3. Distance from needle

When the looper is at the left dead point, the distance between the looper point and the needle centerline should be 1.6~1.8mm.

Loosen Screw ❷ and adjust Looper Holder ❸.

4. Looper avoiding motion

Adjust the looper avoiding motion according to the needle size.

Loosen Nut ❹ and move Pin ❺ up or down.

- For a thinner needle, move Pin ❺ upward.
- For a thicker needle, move Pin ❺ downward.

Fig. 58

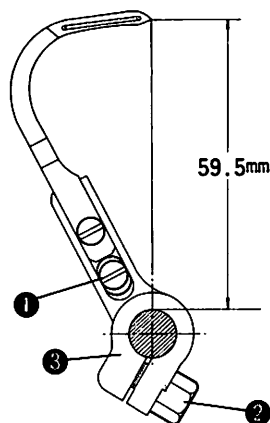


Fig. 59

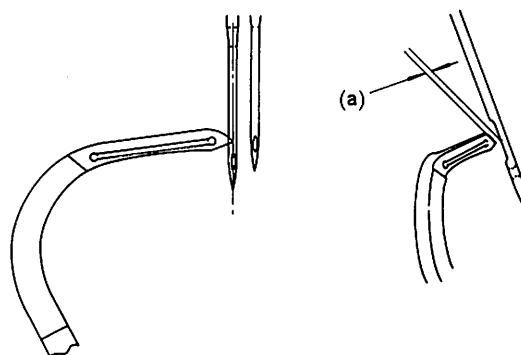


Fig. 60

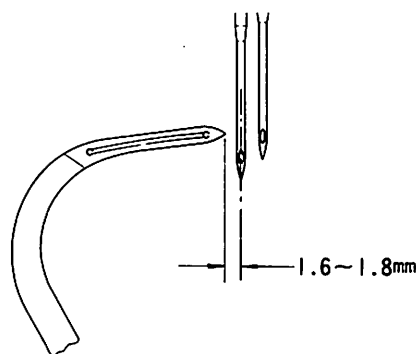
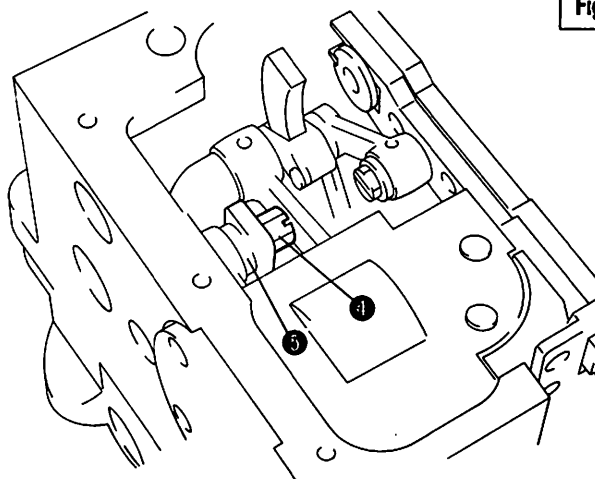


Fig. 61



OVERLOCK NEEDLE GUARD SETTING (Figs.62~66)

Overlock Needle Guard (rear) setting ⑦

● Movable type

When the lower loop point is behind the needle centerline, Needle Guard ⑦ should push the needle so that the clearance (b) between the loop point and the needle is 0mm.

Loosen Screw ⑥ and adjust.

Overlock Needle Guard (front) setting ⑧

When the lower loop point is behind the needle centerline, the clearance (c) between Needle Guard ⑧ and the needle should be 0.1 ~ 0.2mm.

Loosen Screw ⑨ and adjust.

Overlock Needle Guard (rear) setting ⑪

● Solid type

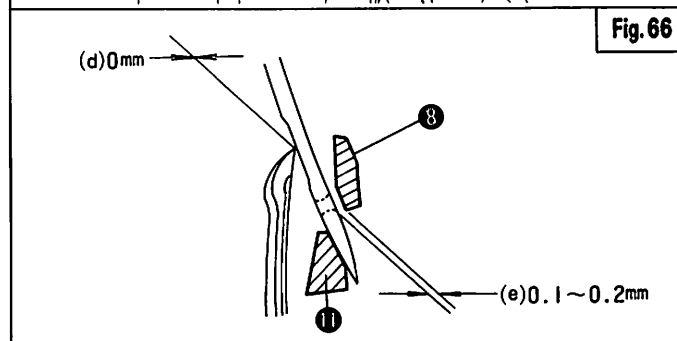
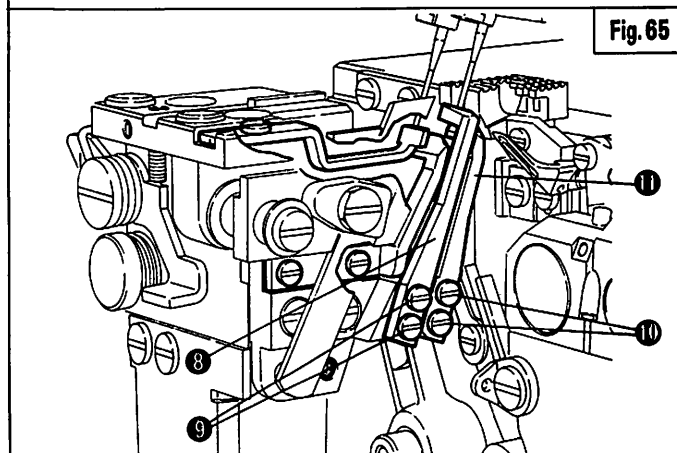
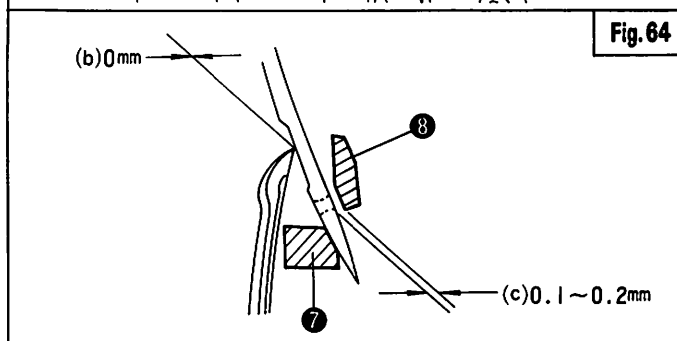
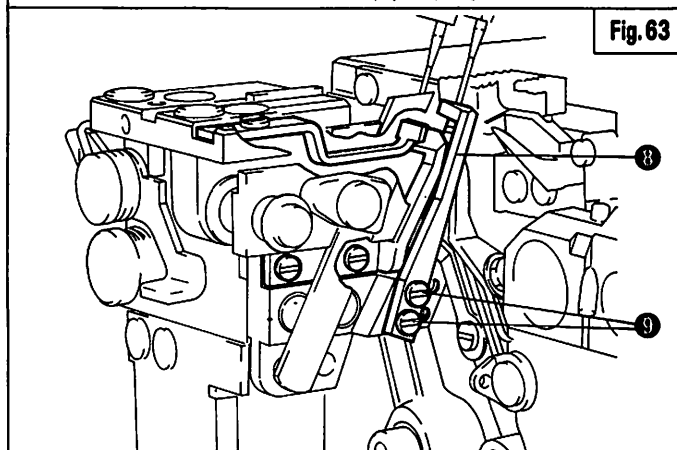
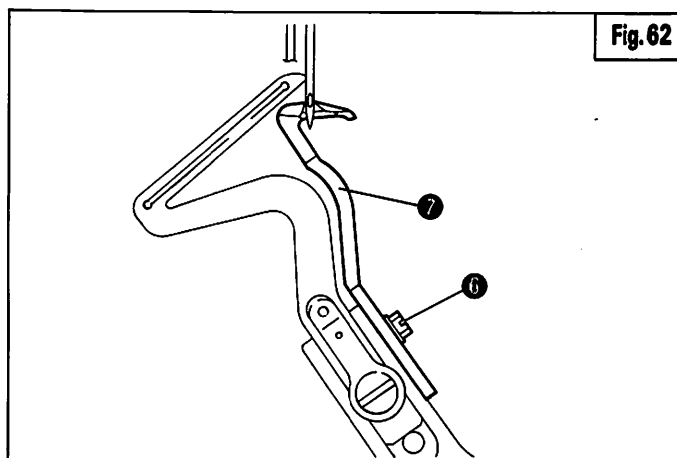
When the lower loop point is behind the needle centerline, Needle Guard ⑪ should push the needle so that the clearance (d) between the loop point and the needle is 0mm.

Loosen Screw ⑩ and adjust.

Overlock Needle Guard (front) setting ⑧

When the lower loop point is behind the needle centerline, the clearance (e) between Needle Guard ⑧ and the needle should be 0.1 ~ 0.2mm.

Loosen Screw ⑨ and adjust.



CHAINSTITCH NEEDLE GUARD
SETTING (Figs. 67, 68)

Chainstitch Needle Guard (rear) setting ❶

When the needle is in the lowest position, the clearance (a) between Needle Guard ❶ and the needle should be 0mm.

Loosen Screw ❷ and adjust.

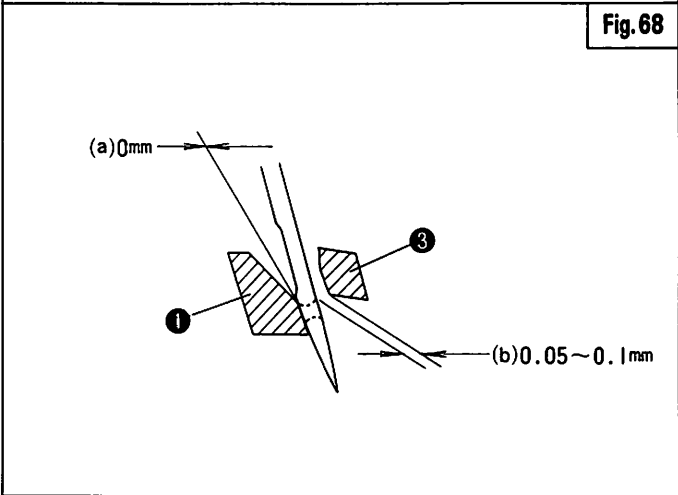
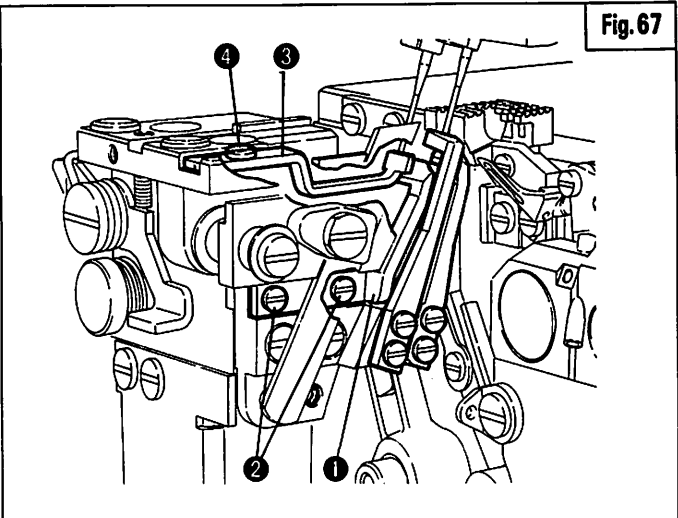
Note:

If Needle Guard ❶ pushes the needle too heavy and the clearance between the chainstitch needle and looper becomes too wide (more than 0.05mm), a skip stitching may be caused.

Chainstitch Needle Guard (front) setting ❸

When the needle is in the lowest position, the clearance between Needle Guard ❸ and the needle should be 0.05~0.1mm.

Loosen Screw ❹ and adjust.



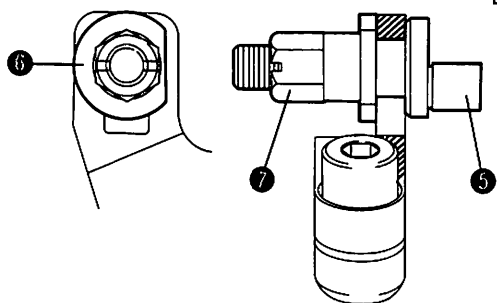
NEEDLE SIZE AND UPPER LOOPER/SPREADERTable 11

Stitch type	Needle size	High lift	Extra-high lift
		Part No.	Part No.
515	9-12	210515 (#27)	211845 (#29)
	13-16	210514 (#25)	"
	17-21	210513 (#23)	"
516	9-12	210366 (#26)	211719 (#38)
	13-16	210367 (#28)	"
	17-21	210365 (#24)	"

ADJUSTING THE LENGTHWISE POSITION OF BOTTOM FEED DOGS (Figs. 69~73)

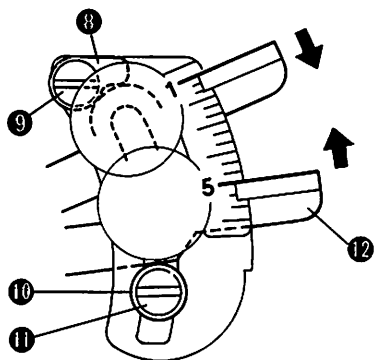
- 1** Set Pin ⑤ and Washer ⑥ as shown.
Be careful to their direction and position.
To adjust, loosen Nut ⑦.

Fig. 69



- 2** Limit the shifting range of Lever ⑫ to 1 - 5
by Stoppers ⑧ and ⑩.
To adjust, loosen Screws ⑨ and ⑪.

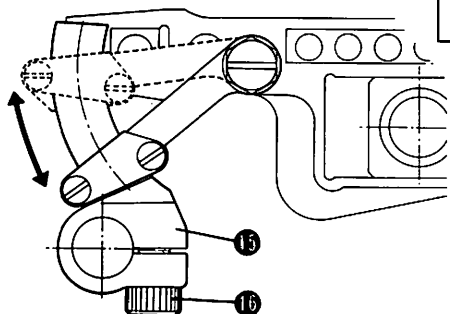
Fig. 70



- 3** Set the stitch length or the stroke of Main
Feed Dog ⑬ to the maximum.
The handwheel scale = 7.

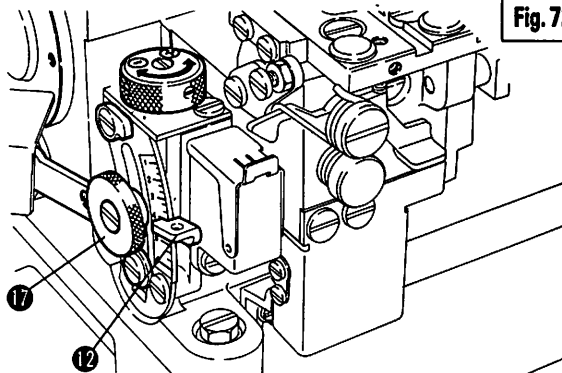
- 4** When the feed dogs are at the end of stroke,
search a position of Crank ⑮ where Diff.
Feed Dog ⑭ does not move even if you move
Lever ⑫ up or down.
To adjust, loosen Screw ⑯.

Fig. 71



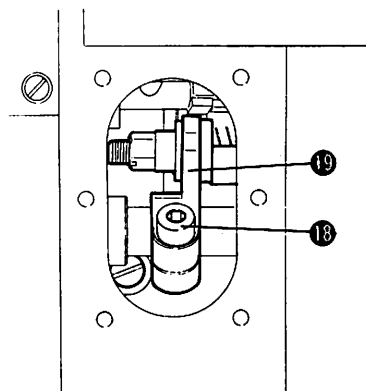
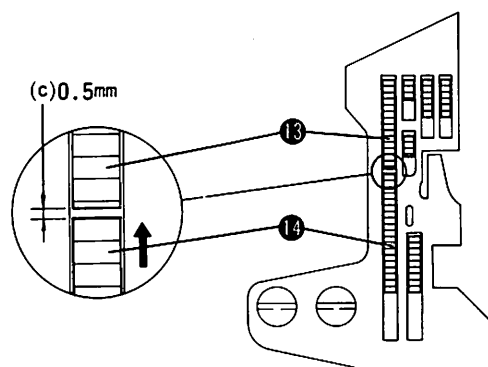
- 5** Raise Lever ⑫ and adjust the stroke of Diff.
Feed Dog ⑭ to the minimum. The lever
setting = 1.
To adjust, loosen Nut ⑰.

Fig. 72



- 6** When Main Feed Dog ⑬ and Diff. Feed Dog
⑭ are at the front dead point, adjust gap (c)
to 0.5mm.
To adjust, loosen Screw ⑱ and move Crank
⑲.

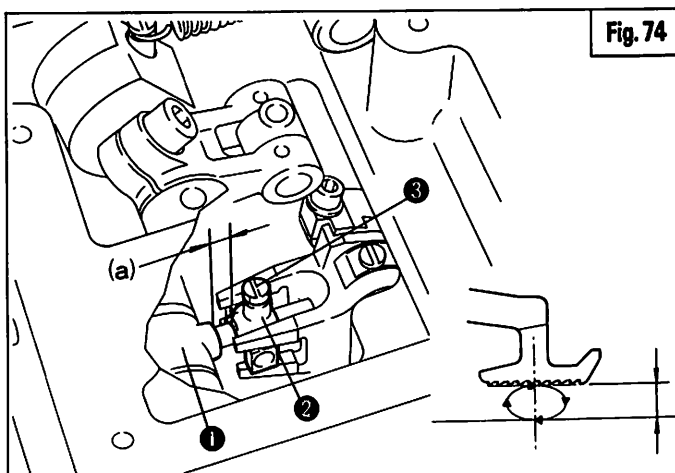
Fig. 73



ADJUSTING VERTICAL STROKE OF TOP FEED DOG (Fig. 74)

Table 12 shows the standard stroke of the top feed dog and the gap (a) between Crank ① and Crank Pin ② for each machine type. Make sure that the setting is correct for your machine.

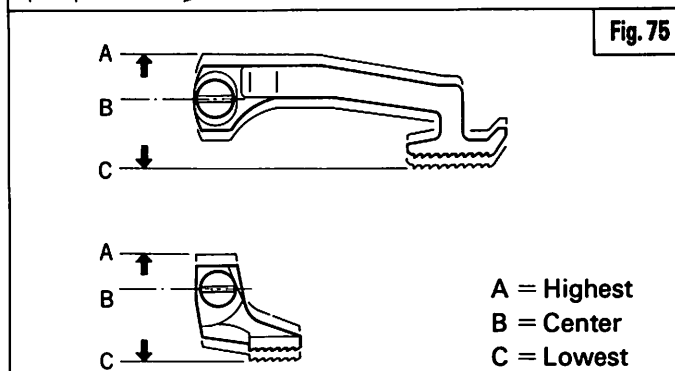
For adjusting, loosen Screw ③ and shift Crank Pin ②.



SETTING POSITION OF TOP FEED DOG (Fig. 75)

Table 12 shows the standard setting of the top feed dog for each machine type.

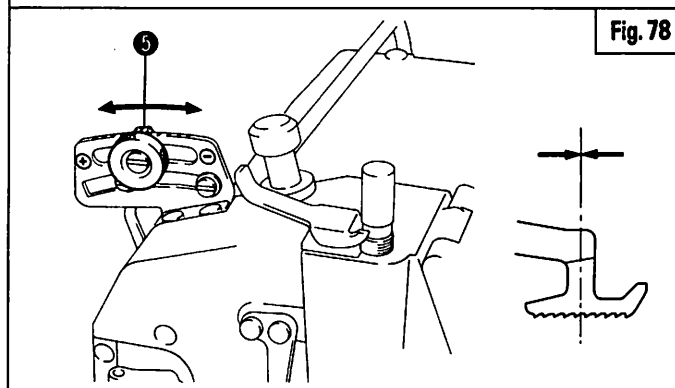
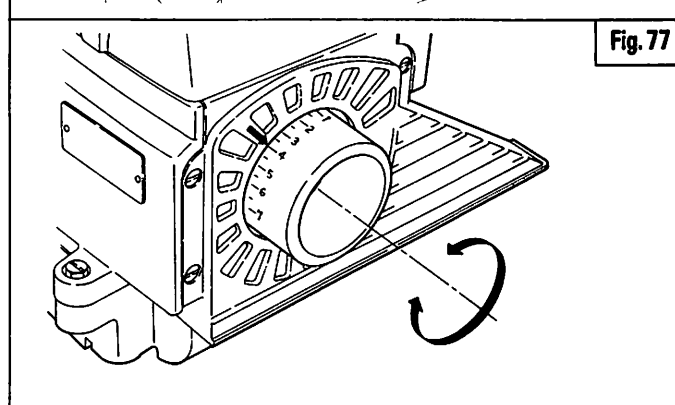
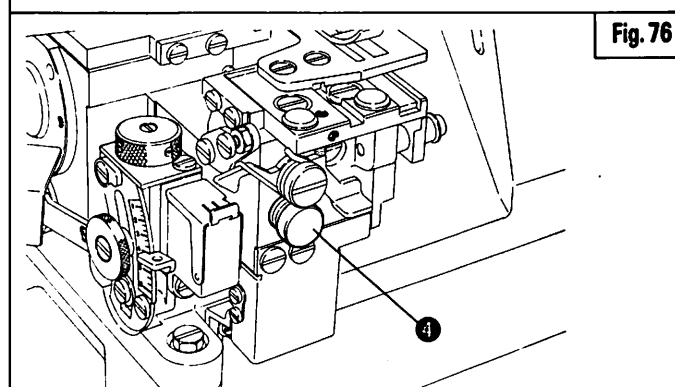
Make sure that the setting is correct for your machine.



ADJUSTING THE LENGTHWISE POSITION OF TOP FEED DOG (Figs. 76~78)

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 STROTE AND SET POSITION- FRONT TOP FEED ETS32

Table 12

EXTRA-HIGH LIFT	HIGH LIFT
-----------------	-----------

GENERAL SEAMING

Machine type/spec.	Stroke	Gap (a)	Position	Machine type/spec.	Stroke	Gap (a)	Position
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-420FA2/413	4.5	1.5	A	○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-422FA2/313	4.5	1.5	A
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-430FA2/433	"	"	"	○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-434FA2/333	"	"	"
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-432FA2/453	"	"	"	○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-433FA2/353	"	"	"
● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-420FA3/413	"	"	"	● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-422FA3/313	"	"	"
● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-430FA3/433	"	"	"	● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-434FA3/333	"	"	"
● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-432FA3/453	"	"	"	● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-433FA3/353	"	"	"

GATHERING

Machine type/spec.	Stroke	Gap (a)	Position	Machine type/spec.	Stroke	Gap (a)	Position
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-542FD2/453/KL100	4.5	1.5	B	○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-544FD2/353/KL100	4.5	1.5	B
● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	"	"	● ⁵¹⁶ / ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"	"	"

PIPING

Machine type/spec.	Stroke	Gap (a)	Position	Machine type/spec.	Stroke	Gap (a)	Position
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} / _{P2} /453	4.5	1.5	A	○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} / _{P2} /333	4.5	1.5	A

TOP FEED VERTICAL STROKE AND SET POSITION- REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Stroke	Gap (a)	Position
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-430BA2/433	4.5	4.0	C
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-432BA2/453	"	"	"

SEAMING/HEAVY

Machine type/spec.	Stroke	Gap (a)	Position
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-452BA2/433	7.0	8.0	C
■ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-452BA4/433	"	"	"
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-453BA2/453	"	"	"
■ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-453BA4/453	"	"	"

PIPING

Machine type/spec.	Stroke	Gap (a)	Position
○ ⁵¹⁶ / ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} / _{P2} /453	4.5	4.0	C

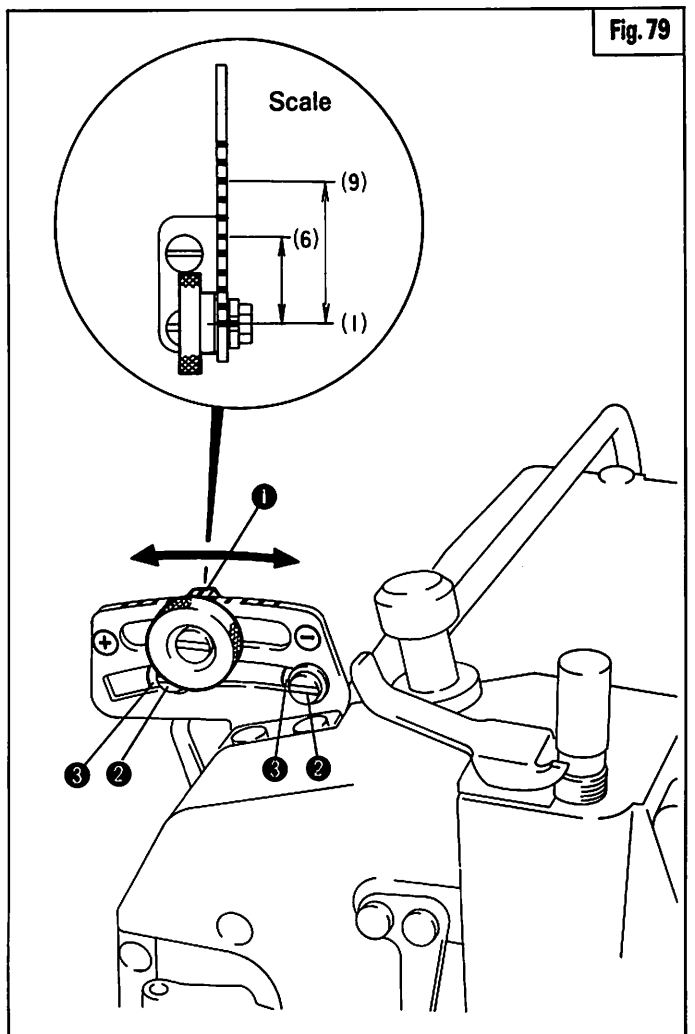
○ = Normal presser foot
● = Narrow presser foot
■ = Tractor foot

TOP FEED STROKE AND DIFF. FEED RATIO (Fig. 79)

The standard setting is as shown in Table 13.
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.



TOP FEED STROKE AND TOP FEED RATIO-FRONT TOP FEED ETS32

Table 13

EXTRA-HIGH LIFT	HIGH LIFT
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GENERAL SEAMING

Machine type/spec.	Stroke	Feed ratio	Setting	Machine type/spec.	Stroke	Feed ratio	Setting
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	2.8~5.8	1:0.75 ~1:1.5	1~6	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	2.8~5.8	1:0.75 ~1:1.5	1~6
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"	"	"

GATHERING

Machine type/spec.	Stroke	Feed ratio	Setting	Machine type/spec.	Stroke	Feed ratio	Setting
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	2.8~7.4	1:0.75 ~1:1.95	1~9	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	2.8~7.4	1:0.75 ~1:1.95	1~9
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"	"	"

PIPING

Machine type/spec.	Stroke	Feed ratio	Setting	Machine type/spec.	Stroke	Feed ratio	Setting
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} / _{P2} /453	2.8~5.8	1:0.75 ~1:1.5	1~6	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} / _{P2} /333	2.8~5.8	1:0.75 ~1:1.5	1~6

TOP FEED STROKE AND TOP FEED RATIO-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Stroke	Feed ratio	Setting
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	2.8~5.8	1:0.75 ~1:1.95	1~6
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"	"	"

SEAMING/HEAVY

Machine type/spec.	Stroke	Feed ratio	Setting
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	2.8~5.8	1:0.75 ~1:1.95	1~6
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"	"	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"	"	"

PIPING

Machine type/spec.	Stroke	Feed ratio	Setting
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} / _{P2} /453	2.8~5.8	1:0.75 ~1:1.95	1~6

○ = Normal presser foot
● = Narrow presser foot
■ = Tractor foot

ADJUSTING THE LENGTHWISE POSITION OF TOP FEED DOG (Figs.80~83)

The standard setting is as shown in Table 14. 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.

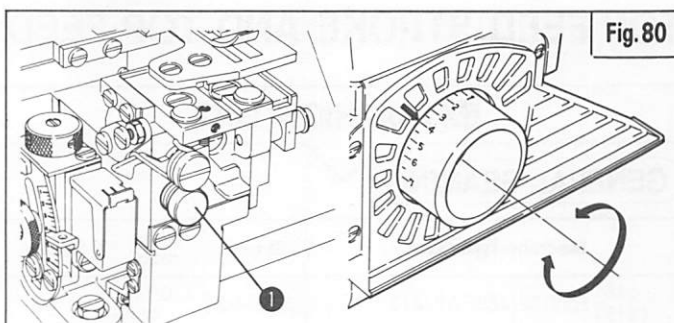


Fig.80

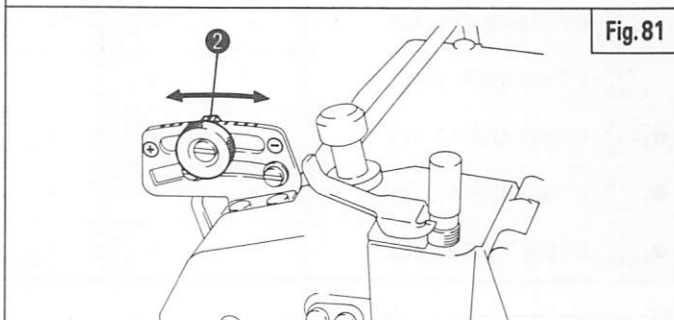


Fig.81

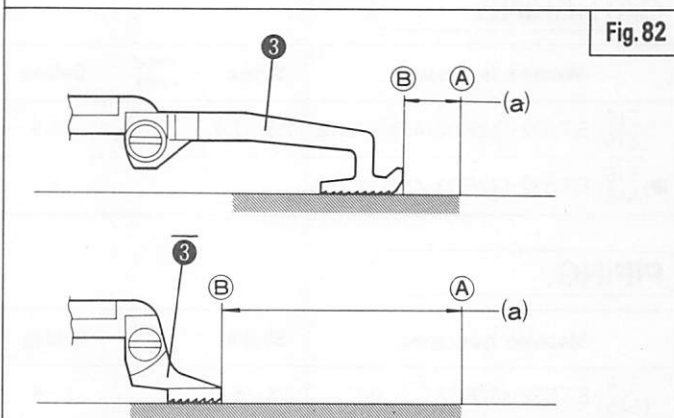


Fig.82

ADJUSTING THE SIDEWISE POSITION OF TOP FEED DOG (Fig. 84)

The standard setting is as shown in Table 14. 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.

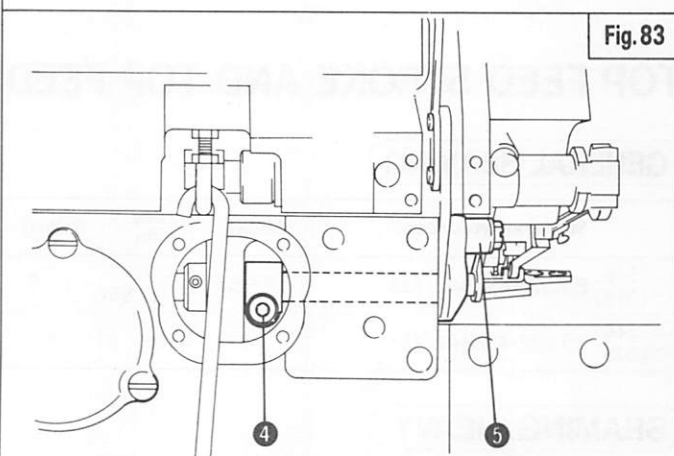


Fig.83

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.

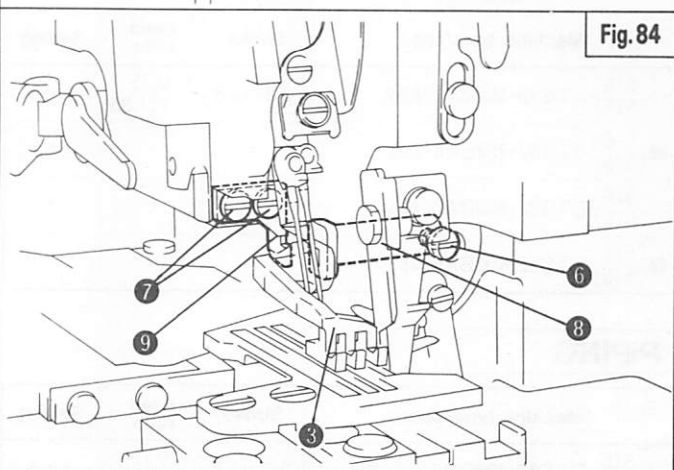
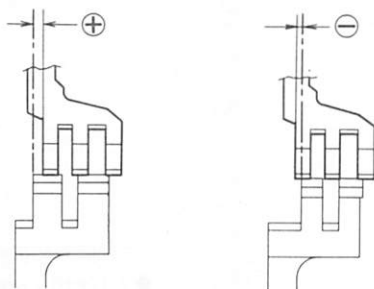


Fig.84

HORIZONTAL TOP FEED POSITION-FRONT TOP FEED ETS32

Table 14

EXTRA-HIGH LIFT	HIGH LIFT
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GENERAL SEAMING

Machine type/spec.	Back and forth position (a)	Right to left position	Machine type/spec.	Back and forth position (a)	Right to left position
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	11.0	-0.6	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	11.0	-0.6
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	+1.6	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"	+1.6
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	12.5	+2.05	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	12.5	+2.05
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	+4.25	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"	+4.25
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"	"

GATHERING

Machine type/spec.	Back and forth position (a)	Right to left position	Machine type/spec.	Back and forth position (a)	Right to left position
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	10.0	+1.6	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	10.0	+1.6
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	11.5	+4.25	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	11.5	+4.25

PIPING

Machine type/spec.	Back and forth position (a)	Right to left position	Machine type/spec.	Back and forth position (a)	Right to left position
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} _{P2} /453	11.0	+1.6	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} _{P2} /333	11.0	+1.6

HORIZONTAL TOP FEED POSITION-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Back and forth position (a)	Right to left position
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	43.5	-0.3
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"	"

SEAMING/HEAVY

Machine type/spec.	Back and forth position (a)	Right to left position
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	43.5	-0.3
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	47.0	+3.8
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	43.5	-0.3
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	47.0	+3.8

PIPING

Machine type/spec.	Back and forth position (a)	Right to left position
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} _{P2} /453	43.5	-0.3

- = Normal presser foot
- = Narrow presser foot
- = Tractor foot

ADJUSTING TOP FEED DOG HEIGHT (Figs. 85~88)

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

Note:

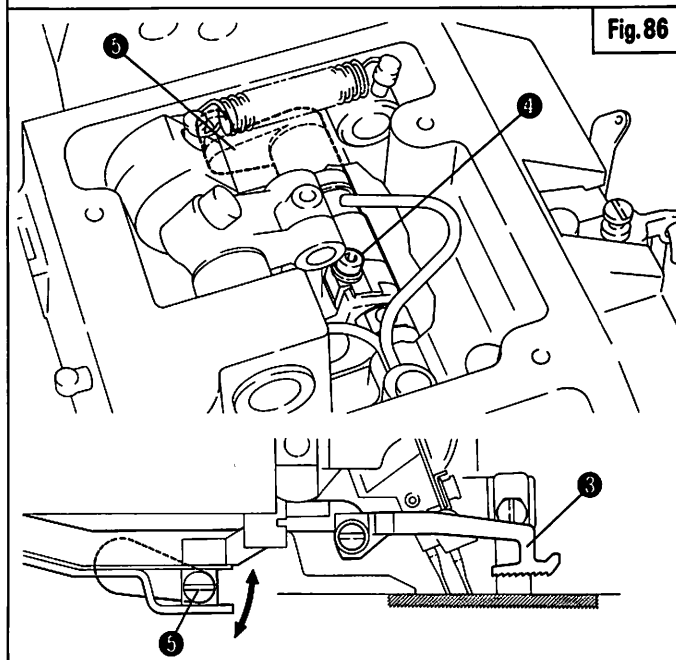
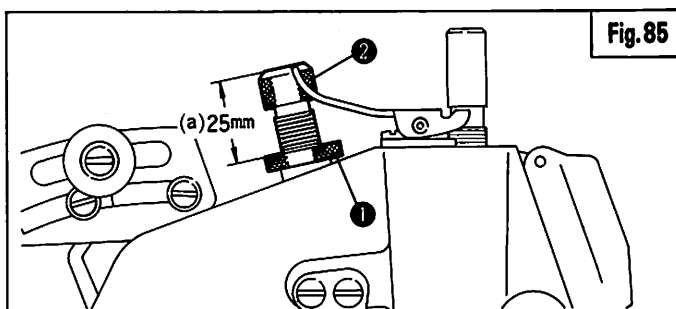
Be sure to check your machine at either the upper or lower dead point of the top feed dog.

Adjustments at the lower dead point:

- Lower dead point is when the top feed dog is in the lowest position.
- 1. Loosen Nut ❶, turn Screw ❷ and adjust gap (a) to 25mm.
- 2. Make sure that Top Feed Dog ❸ is set to the correct position.
- 3. Lower Top Feed Dog ❸ 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 ❹ and move Shaft ❺ up and down.

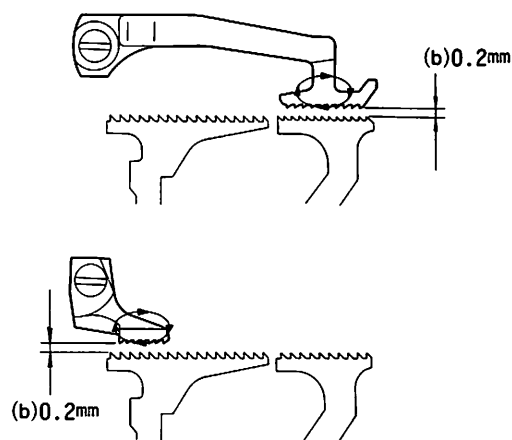
Adjustments at the upper dead point:

- Upper dead point is when the top feed dog is in the highest position.
- 1. Loosen Nut ❶, turn Screw ❷ and adjust gap (a) to 25mm.
- 2. Make sure that Top Feed Dog ❸ is set to the correct position.
- 3. Raise Top Feed Dog ❸ 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 ❹ and move Shaft ❺ up and down.



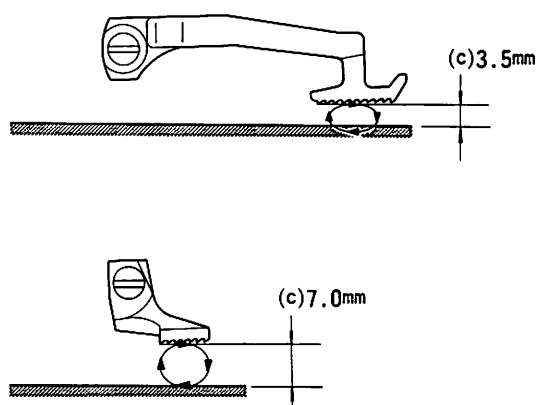
lower dead point

Fig. 87



upper dead point

Fig. 88



VERTICAL TOP FEED POSITION-FRONT TOP FEED ETS32

Table 15

EXTRA-HIGH LIFT	HIGH LIFT
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GENERAL SEAMING

Machine type/spec.	Height (b)	Checking dead point	Machine type/spec.	Height (b)	Checking dead point
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	0.2	Bottom	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	0.2	Bottom
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"	"

GATHERING

Machine type/spec.	Height (b)	Checking dead point	Machine type/spec.	Height (b)	Checking dead point
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	3.5	Top	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	3.5	Top
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"	"

PIPING

Machine type/spec.	Height (b)	Checking dead point	Machine type/spec.	Height (b)	Checking dead point
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} _{P2} /453	0.2	Bottom	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} _{P2} /333	0.2	Bottom

VERTICAL TOP FEED POSITION-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Height (b)	Checking dead point
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	0.2	Bottom
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"	"

SEAMING/HEAVY

Machine type/spec.	Height (b)	Checking dead point
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	7.0	Top
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"	"

PIPING

Machine type/spec.	Height (b)	Checking dead point
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} _{P2} /453	0.2	Bottom

○ = Normal presser foot
● = Narrow presser foot
■ = Tractor foot

ADJUSTING PRESSER FOOT AND TOP FEED DOG LIFT (Figs. 89 ~ 92)

The standard setting is as shown in Table 16. 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.

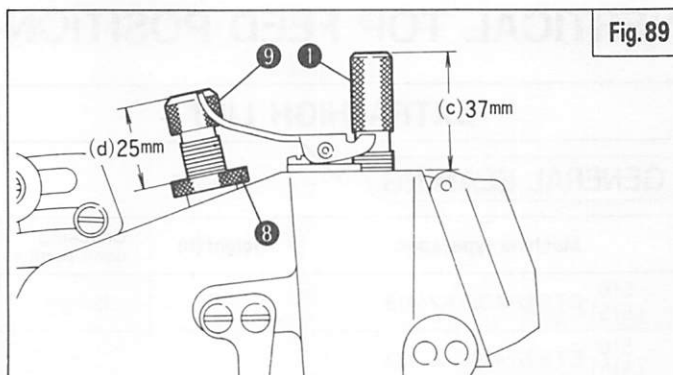


Fig. 89

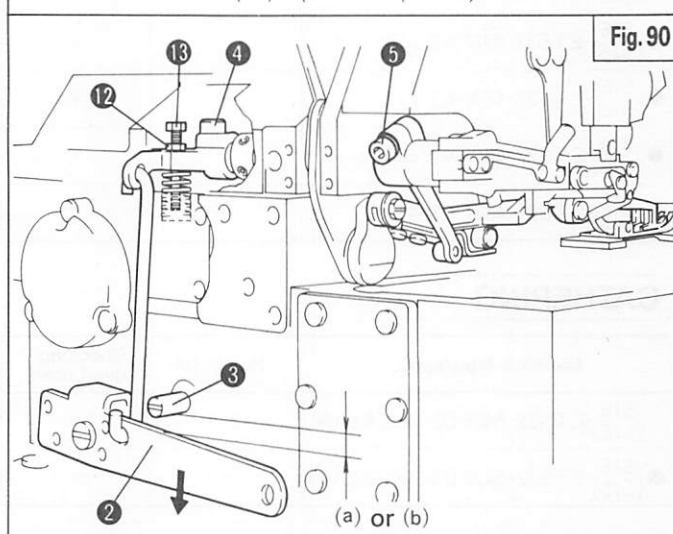


Fig. 90

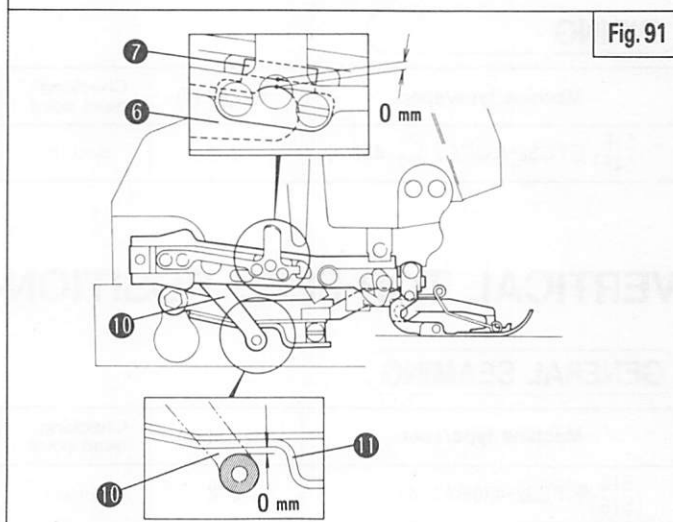


Fig. 91

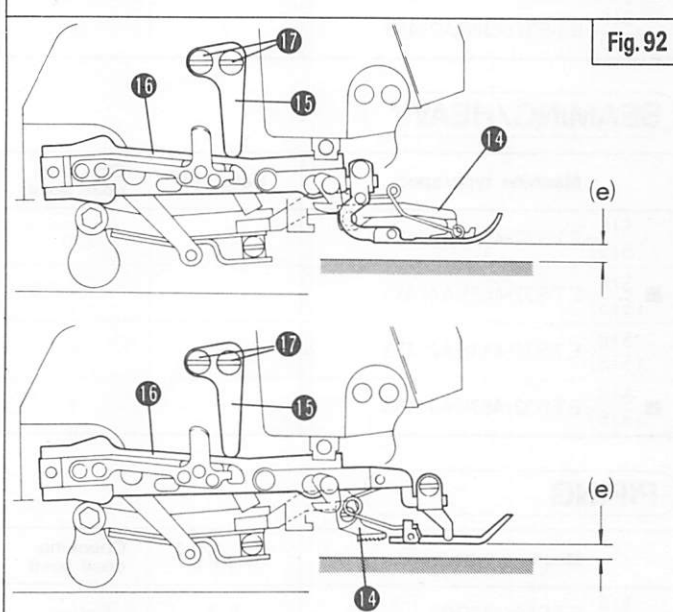


Fig. 92

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 ETS32

Table 16

EXTRA-HIGH LIFT

HIGH LIFT

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)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	5.5	5.5	2.0	3.0	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	5.5	5.5	2.0	3.0
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"	"	"	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	"	"	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"	"	"	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"	"	"	"

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)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	5.5	5.5	2.0	1.0	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	5.5	5.5	2.0	1.0
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	"	"	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/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)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} _{P2} /453	5.5	5.5	2.0	3.0	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} _{P2} /333	5.5	5.5	2.0	3.0

PRESSER FOOT AND TOP FEED HEIGHTS-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	6.0	6.0	2.0	1.0
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"	"	"	"

SEAMING/HEAVY

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	6.0	6.0	2.5	0.5
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	7.0	"	2.0	1.0
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	6.0	"	2.5	0.5
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	7.0	"	2.0	1.0

PIPING

Machine type/spec.	Foot lift (e)	Feed lift	Gap (a)	Gap (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} _{P2} /453	6.0	6.0	2.0	1.0

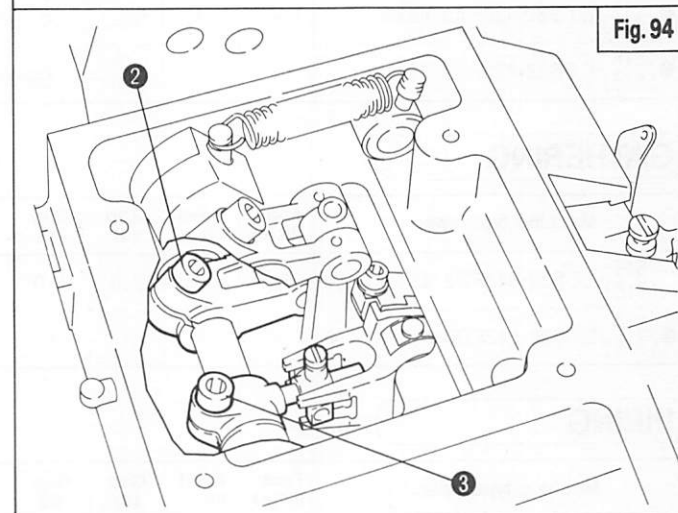
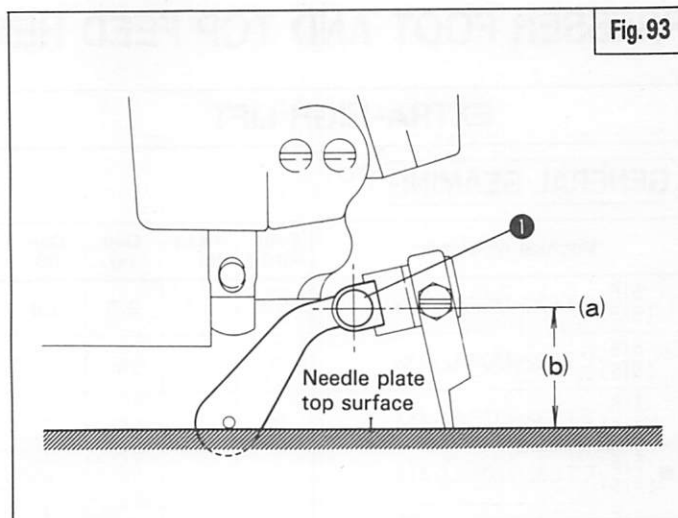
- = Normal presser foot
- = Narrow presser foot
- = Tractor foot

HEIGHT OF UPPER KNIFE HOLDER (Figs. 93, 94)

The height of the upper knife holder is as shown in Table 17. Make sure that the height is correct to your machine.

1. Turn the handwheel and lift Upper Knife Holder ① 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 ① is set to the specified height.

For adjusting, loosen Screws ②, ③ and slide Upper Knife Holder ① up and down.



HEIGHT OF UPPER KNIFE HOLDER-FRONT TOP FEED ETS32

Table 17

EXTRA-HIGH LIFT	HIGH LIFT
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GENERAL SEAMING

Machine type/spec.	Height (b)	Machine type/spec.	Height (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA2/413	20.0	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA2/313	19.5
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA2/433	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA2/333	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA2/453	"	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA2/353	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-420FA3/413	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-422FA3/313	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-430FA3/433	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-434FA3/333	"
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FA3/453	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FA3/353	"

GATHERING

Machine type/spec.	Height (b)	Machine type/spec.	Height (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD2/453/KL100	20.0	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD2/353/KL100	19.5
● ⁵¹⁶ ₍₅₁₅₎ -ETS32-542FD3/453/KL100	"	● ⁵¹⁶ ₍₅₁₅₎ -ETS32-544FD3/353/KL100	"

PIPING

Machine type/spec.	Height (b)	Machine type/spec.	Height (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432FC2/ ^{P1} _{P2} /453	20.0	○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-433FC2/ ^{P1} _{P2} /333	19.5

HEIGHT OF UPPER KNIFE HOLDER-REAR TOP FEED ETS32

GENERAL SEAMING

Machine type/spec.	Height (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-430BA2/433	20.0
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BA2/453	"

SEAMING/HEAVY

Machine type/spec.	Height (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA2/433	20.0
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-452BA4/433	"
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA2/453	"
■ ⁵¹⁶ ₍₅₁₅₎ -ETS32-453BA4/453	"

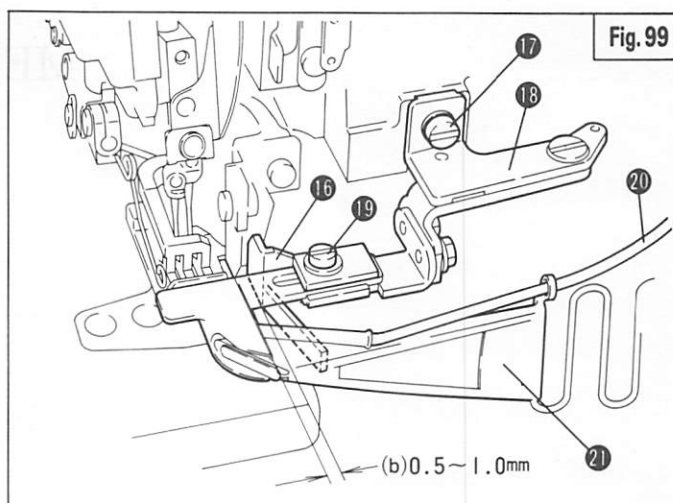
PIPING

Machine type/spec.	Height (b)
○ ⁵¹⁶ ₍₅₁₅₎ -ETS32-432BC2/ ^{P1} _{P2} /453	20.0

○ = Normal presser foot
● = Narrow presser foot
■ = Tractor foot

ADJUSTING PIPING BINDER (Fig. 99)

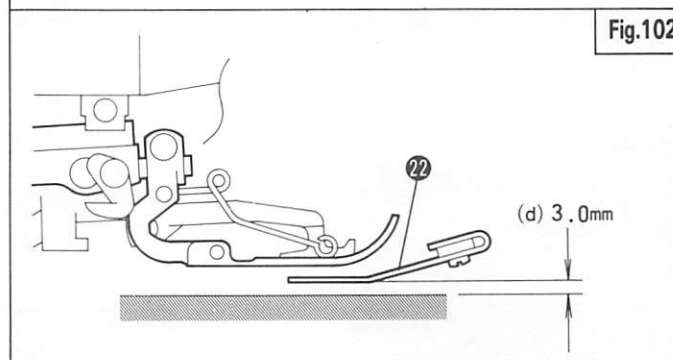
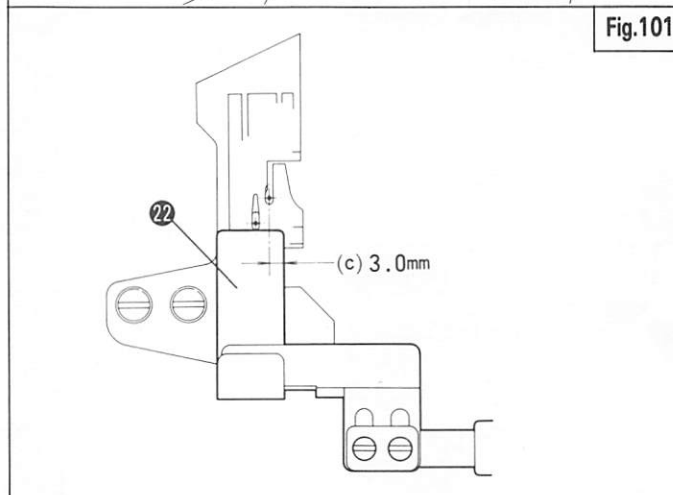
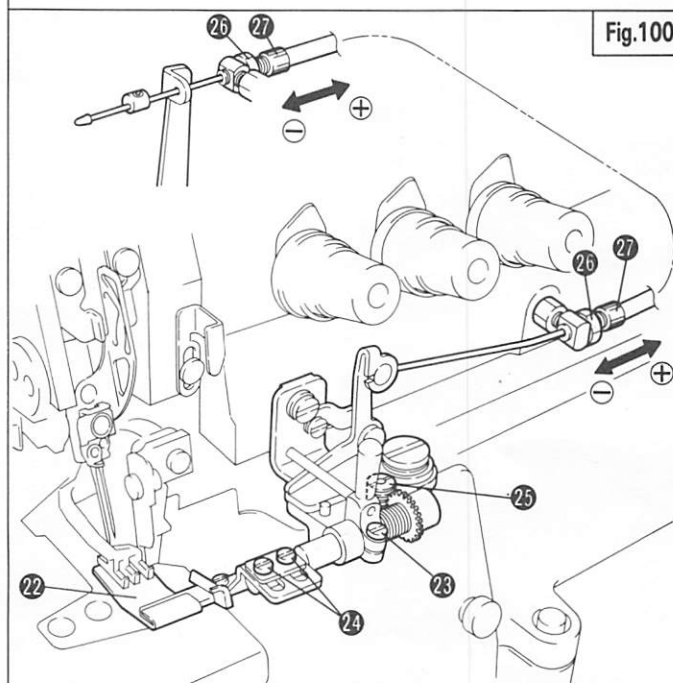
1. Set Edge Guide ①⑥ so that it lightly brushes the needle plate.
For adjusting, loosen Screw ①⑦ and vertically slide bracket ①⑧.
2. Adjust gap (b) between the cutting edge of the lower knife and Edge Guide ①⑥ to 0.5 – 1.0mm.
For adjusting, loosen Screw ①⑨ and slide Edge Guide ①⑥.
3. Set Piping Binder ②① so that Cord ②② is accurately inserted into the groove in the presser foot sole from Piping Binder ②①.



ADJUSTING SHIRRING BLADE (Figs. 100 ~ 102)

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 ②③ and vertically slide Blade ②②.
3. Fig. 101. 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 ②④ and slide Blade ②②.
4. Turn Worm ②⑤ 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 ②⑥ and move Cable Stopper ②⑦.
 - When Cable Stopper ②⑦ 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.



MEMO