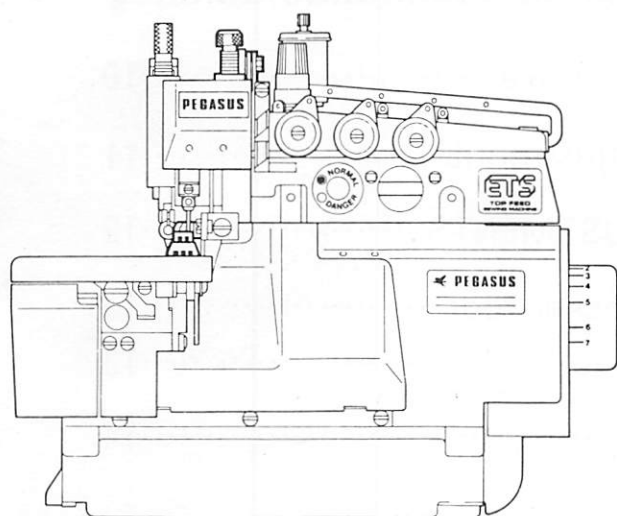




ETIS

TECHNICAL MANUAL



PEGASUS®

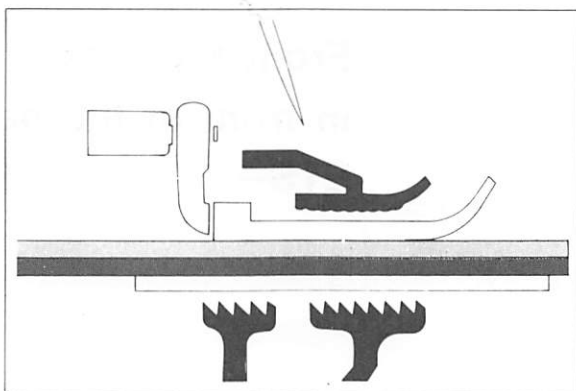
From the library of: Superior Sewing Machine & Supply LLC

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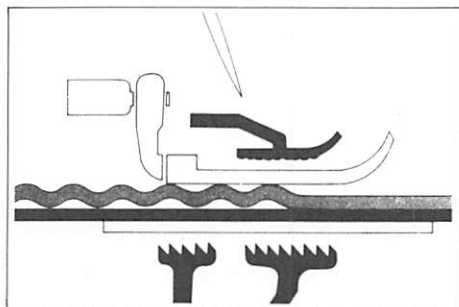
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For all kinds of operation on all kinds of material.

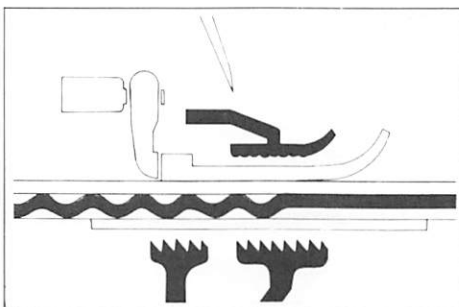
**Ply shift has been
completely eliminated.**



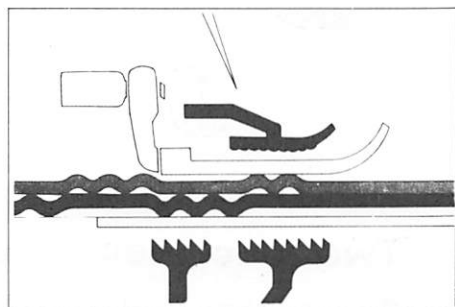
The top feed dog which operates on the same principle as the bottom differential feed dog, feeds the material uniformly, eliminating any ply shift and creating a neatly sewn beautiful product.



● Can shirr the top ply of material.

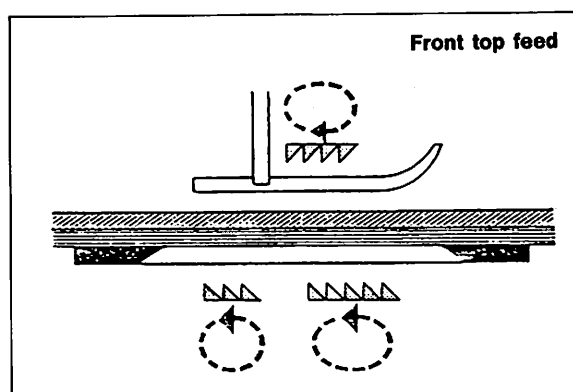


● Can shirr the bottom ply of material.

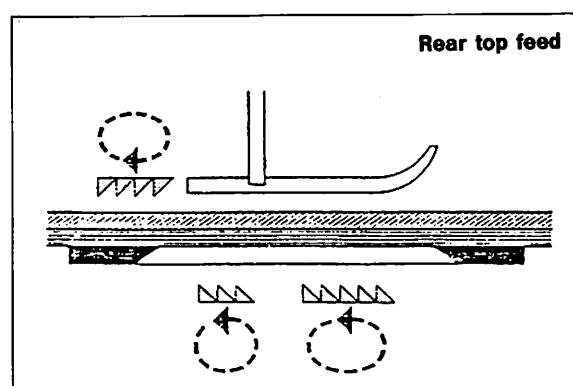


● Can intermittently shirr both top and bottom plies of material together.

There are two types of machines in the ETS series.



**Front top feed machine. The top feed in front of the needle drop point :
ETS-□□-□□-FA**



**Rear top feed machine. The top feed behind the needle drop point :
ETS-□□-□□-BA**

Two machines in one.

● A change of gauge parts and several simple adjustments are all that is required to give you either machine option.

■ Five features of the ETS Series

① Maximum speed : 6,000 s.p.m.

Even with the top feed mechanism, the machine can be operated at speeds of up to 6,000 s.p.m.

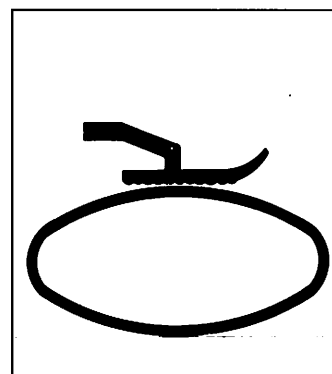
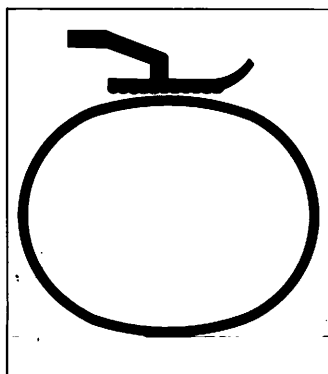
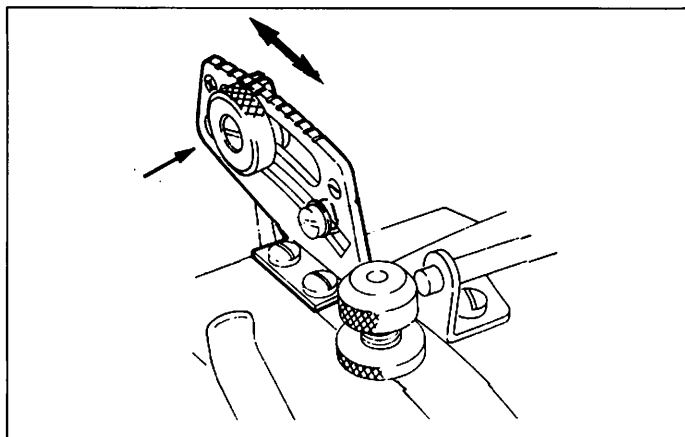
② Simple top feed stroke adjustment

By moving the screw in the directions indicated the amount of top feed stroke can be changed. By moving the screw towards you the feed movement is decreased. By moving the screw away from you the feed movement is increased.

③ Adjustable vertical stroke

The vertical stroke of the top feed dog can be altered without altering the top feed's lower dead point position. Enabling even heavy weight materials to be fed efficiently.

Depending on the type of fabric used the vertical stroke can be adjusted from 3.6mm to 7mm.

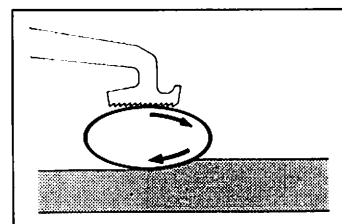
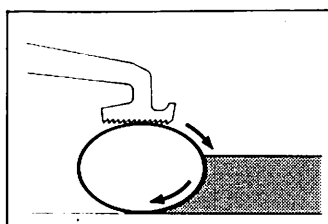
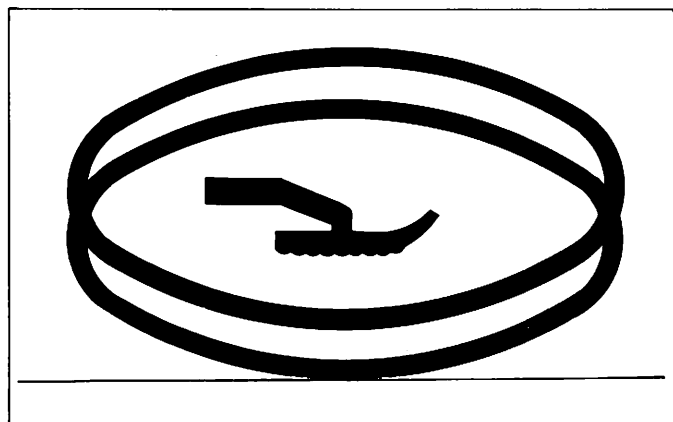


④ Adjustable top feed lower dead point position.

The lower dead point of the top feed can be adjusted without causing any alteration of the vertical stroke setting.

● When sewing heavy fabrics with the top feed dog in a large differential feed ratio the fabric tends to be pushed back towards you as the feed moves forward.

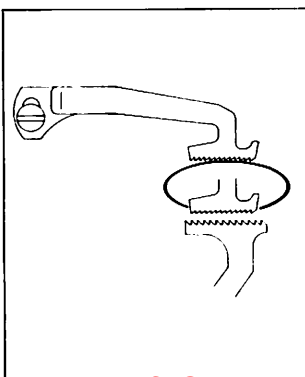
● But since the top feed's lower dead point position can be altered, as illustrated below, this phenomenon is thus eliminated by the top feed dog.



⑤ Shirring stitch by stitch

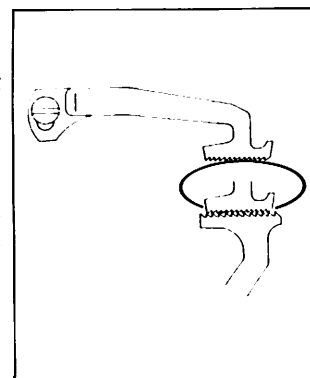
For plain seaming/piping

For light weight fabrics the top feed dog is set in its highest position allowing a clearance between the feeds, thus eliminating feed marking and minimizing noise. (FA/FC type)



For shirring

When shirring, the upper feed dog is set in its lowest position. The top and don't release the fabric until the and don't release the fabric until the needle penetrates the material, resulting in a beautiful pleat for every stitch. (FB/FD type)

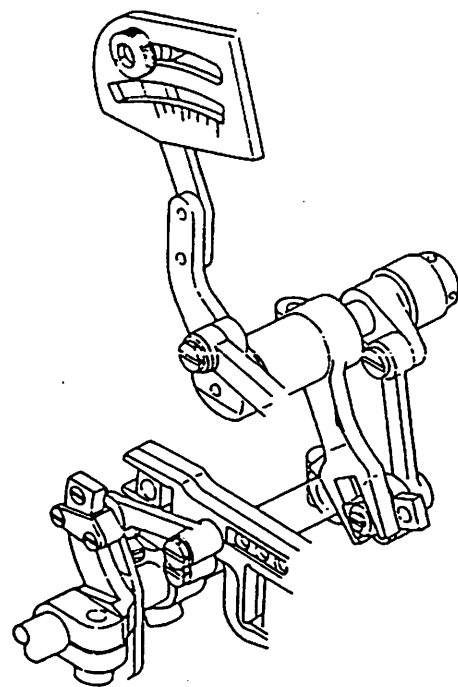
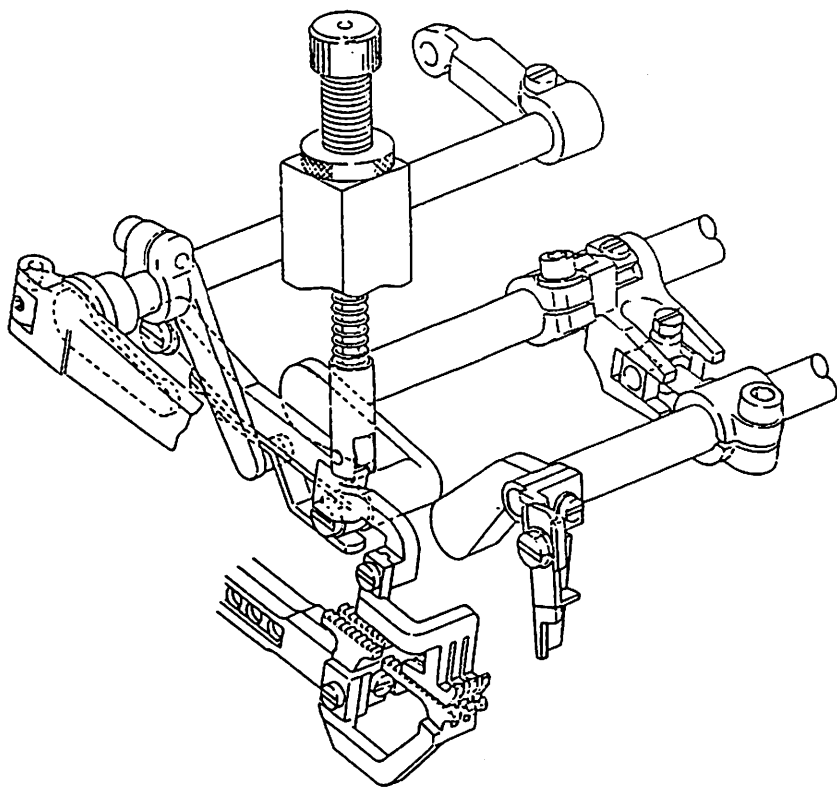
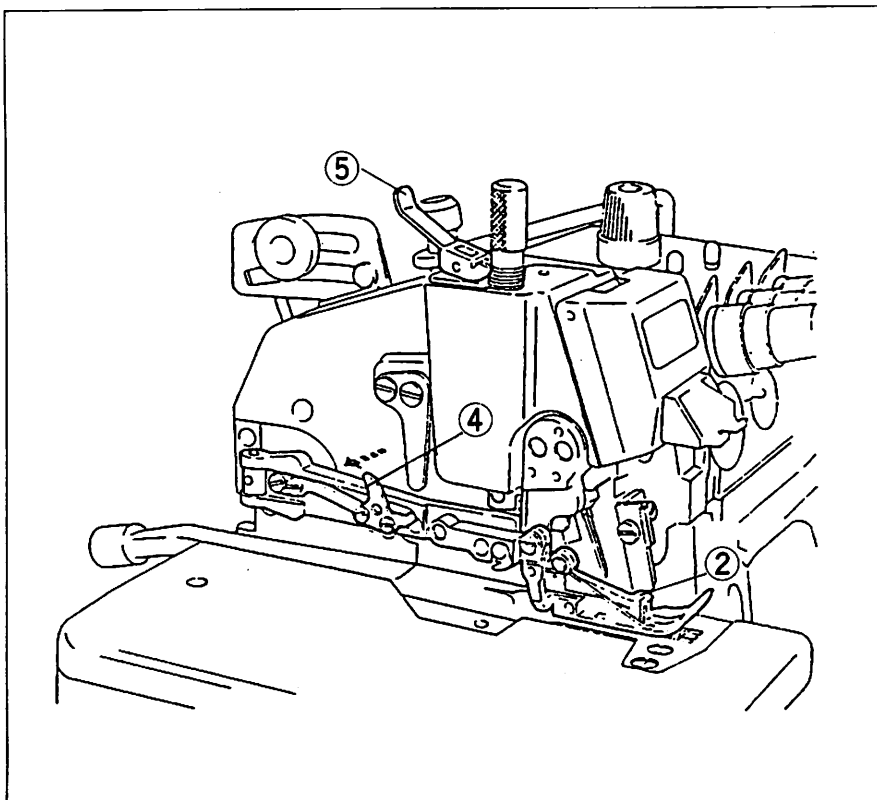


■ Presser Arm Swinging -in and -out

When swinging the presser arm in or out always raise the needle to its highest position.

1. Pull the spring 4 in the arrowed direction and lift the lever 5.
 2. Press the footlift treadle or lever down and the top feed dog 2 will be raised.
- Keeping this condition swing the presser arm out to the left.

When reinserting the presser arm push spring 4 back into its original position. Raise lever 5 and press the footlift treadle or lever down. Keeping this condition swing the presser arm back to this original position.



■ ETS-32-FA (for plain seaming)

■ ETS-52-FA (for plain seaming)

These basic models are designed for general plain seaming operations.

- For eliminating ply shift——

Nylon taffeta as used in jumpers or rain coats is difficult to sew due to ply shift which is caused by slippery surfaces. Training wear, which has high elasticity, is also liable to uneven feeding and ply shift. However, there is no need to worry : these machines will eliminate all such problems.

- For cross seaming——

Sleeve or side seam layers of heavy fabrics such as for training wear or bulky sweaters clog easily in front of the presser foot. With the variable top feed machine, however, the top feed dog forces these layers below the presser foot effortlessly eliminating any such problems.

- For matching patterns——

In conventional pattern matching of blouses or T-shirts, the operator must match the patterns by hand and sew the materials a little at a time. Now, however, the operator can sew the garment in one straight run thanks to the variable top feed machine which eliminates ply shift and insures perfect matching.

- For combining different materials——

When fabrics of different elastic properties are sewn together, for example, when sweater or training wear is partially sewn with leather or quilting, the feed stroke of the top and bottom feed dogs can be adjusted individually to the qualities of each ply of material, thus allowing fabrics of different properties to be sewn together uniformly.

- For attaching sleeves——

The machine is ideally suited to such operations as sleeve attachment, where the fabric requires extra fullness to be added while sewing.

- For delicate fabrics——

Feed dogs covered with rubber are available for delicate materials such as georgette, silk, lawn, and other such materials liable to feed marking.

- Spin tape insertion——

By using the special presser foot and top feed dog even difficult to sew spin tapes can easily be sewn into sweater seams.

- For ruffling——

Attachment of a shirring attachment alone permits shirring.

- For piping——

A change of the presser foot and top feed dog permits piping (such as double piping).



■ ETS-52-FB (for heavy fabrics such as sweaters)

This type is used for adding fullness on sweaters.

Since it has a blade to separate the upper ply from the lower, adding fullness is available not only on the upper ply but also on the lower ply.

Attaching the bottom hem :

In the general turning-up method, the bottom hem is overlapped on the fabric body and then, sewn. If the differential feed stroke is increased, then fullness is added naturally to the fabric body and the bottom hem is neatly sewn onto the body. However, since this method requires the hem to be folded in two, 3 plies need (2 for the hem and 1 for the body) to be sewn. Because of this, ply-shift tends to occur. In order to prevent such ply-shift a variable top feed machine is recommended.

Up until now the turning-up method has been used to attach circular hems to the fabric body. However, now by using a variable top feed machine, the turning-down method is available. First the bottom hem is set on the rollers and guides, and the body fabric is placed on top. The operator then only has to handle the body fabric while performing the sewing operation. The fabric and the hem plies are sewn together with exactly the correct amount of fullness required, due to the machines variable top and bottom feeds. The finished garment is neat with even fullness. The operation is so simple that even an inexperienced operator can expect beautiful sewn results with this machine.



■ ETS-52-FC (for piping)

This model is designed for piping operations.

- For decorative accenting——

Piping is frequently used as an accent on polo shirts, sport shirts, etc. Recently, pretty and colorful pipings have become popular on T-shirts.

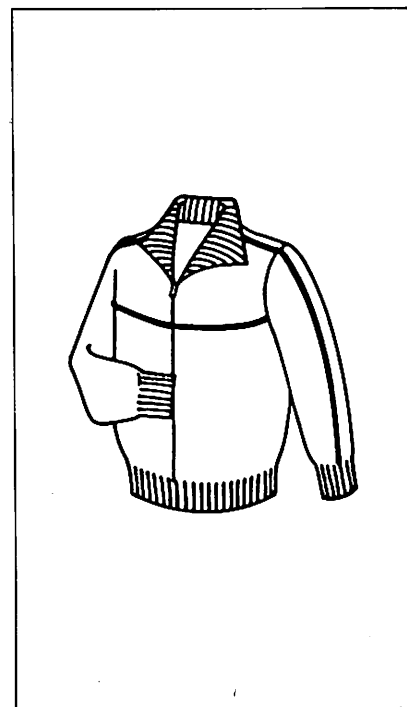
When piping training wear, the material tends to slip or stretch because of the increased number of plies (including the piping tape).

Especially sweatsuit parts where the long side seams are prone to ply shift. This machine, however, is equipped with a presser

foot and feed dogs specially designed for performing piping operations perfectly, free from any ply shift.

- For double piping——

Attachment of special presser foot and feed dogs permits fashionable double piping of training wear etc.



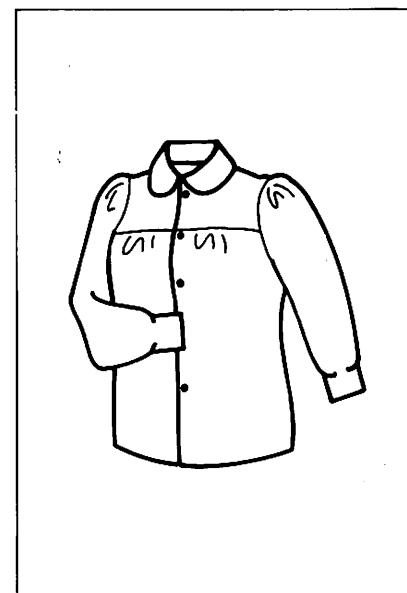
■ ETS-52-FD (For shirring operation)

■ ETS-32-FD

These models are equipped with a blade to separate the upper and lower plies of materials. This means that the top and bottom plies can be shirred independently. The ability to shirr the top ply of material is a major feature of the top feed machines. Because the operator can sew while watching the shirring process, thus the operation can be done with more confidence and less worry that when shirring the bottom ply. Intermittent shirring is also easily performed by using a knee press operated intermittent

shirring device.

These machines are ideally suited for attaching the yokes of blouses, shirring pillow covers, pyjamas and aprons etc.



■ ETS Series (rear top feed)

The variable top feed machines described so far have all been front top feed machines. Also available is the ETS rear top feed series, i.e. the top feed is behind the needle drop point. On jeans, working wear and other thick woven fabrics, there is a tendency for seam crowding to occur. The rear top feed machine which sews while pulling the fabric behind the presser foot is very effective for preventing this shrinkage.

This machine is also suitable for piping

operations.

As you can see the ETS variable top feed machine described so far have many applications ; general plain seaming, adding fullness, shirring and piping on all types of materials.

A variety of models are available to suit your own particular operation.

INTRODUCTION TO SUBCLASSES

1-needle, front top feed ETS52

Operation		Needle gauge	Seam width	Top feed type	Bottom feed type	Lift		Subclasses in ordering
						top feed	foot	
Seaming	Medium		4/5	2-row	3-row	6	5.5	ETS52-130FA3 /504-363N 141FA2 /504-463W 141FA3
	Heavy			3-row		6.5	7	
				2-row				
Piping			5	3-row	3-row	7	6	ETS52-350FC2 ^{P₁_{P₂} /504-453W}
Blind-hemming			4	2-row	3-row	7	5.5	ETS52-210FE2/505-323N

2-needle, front top feed ETS52

Seaming	Medium	2	3/4/5	3-row	3-row	7	5.5	ETS52-	<u>133FA2</u>	/514-363N	
	Heavy			2-row		7	7		<u>133FA3</u>		
				3-row					<u>142FA2</u>		
				2-row					<u>142FA3</u>		514-463N
For sweaters	Heavy	2	3/4/5	3-row	3-row	7	7	ETS52-	<u>142FB2^{S1}_{S2}</u>	/514-463W	
		3	4/5	3-row	4-row				<u>252FB4^{S1}_{S2}</u>		/514-493W
Backlatching	<div></div>	2	4/5	3-row	2-row	7	7	ETS52-	<u>184FB2</u>	/514-443N	
				3-row	3-row				<u>184FB4</u>		/514-463N
Piping	Heavy	2	4	3-row	3-row	7	6	ETS52-	<u>351FC2^{P1}_{P2}</u>	/514-453W	
	2-row			7		5.5	<u>351FC3^{P1}_{P2}</u>				
	3-row						<u>352FC2^{P1}_{P2}</u>		/514-353W		
	2-row						<u>352FC3^{P1}_{P2}</u>				
Gathering	Heavy	2	3/4/5	3-row	3-row	7	7	ETS52-	<u>243FD2</u>	/514-463W	
	Medium			2-row		7	5.5		<u>243FD3</u>		
				3-row					<u>245FD2</u>		/514-363W
				2-row					<u>245FD3</u>		
Gathering /piping	<div></div>	2	3/4/5	3-row	3-row	7	7	ETS52-243FD4 ^{P1} _{P2} /514-463W			

Rear top feed ETS52

地 縫		1		4/5			7.5	7	ETS52- 141BA2/504-463W 142BA2/514-463W
		2	2	4/5					
Piping		1		5			7.5	7	ETS52- 350BC2 ^{P1} _{P2} /504-465W 351BC2 ^{P1} _{P2} /514-453W
		2	2	4/5					

■ Front top feed ETS32

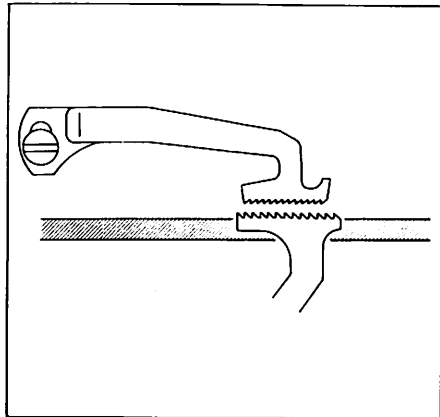
Operation		Needle gauge	Seam width	Top feed type	Bottom feed type	Lift			Subclasses when ordering	
						top feed	foot			
Seaming	Heavy	3	3/4/5	3-row	2-row, narrow	7	7	ETS32-	<u>420FA2</u> /516-413	
				2-row					<u>420FA3</u>	
		3	3/4/5	3-row	2-row, wide				430FA2 /516-433	
				2-row						<u>430FA3</u>
		5	5/6	3-row	3-row, narrow				432FA2 /516-453	
				2-row						<u>432FA3</u>
	Medium	3	3/4/5	3-row	2-row, narrow	6.5	5.5		<u>422FA2</u> /516-313	
				2-row					<u>422FA3</u>	
		3	3/4/5	3-row	2-row, wide	7			<u>434FA2</u> 516-333	
				2-row					<u>434FA3</u>	
		5	5/6	3-row	3-row, narrow	433FA2 /516-353				
				2 列					<u>433FA3</u>	
Piping	Heavy	3	4/6	3-row	3-row, narrow	6	6	ETS32-	<u>432FC2^{P1}_{P2}</u> /516-453	
				2-row					<u>432FC3^{P1}_{P2}</u>	
	Medium	5	5/6	3-row					5.5	<u>433FC2^{P1}_{P2}</u> /516-353
				2-row						<u>433FC3^{P1}_{P2}</u>
Gathering	Heavy	3	3/4/5	3-row	3-row, narrow	6.5	6.5	ETS32-	<u>542FD2</u> /516-453	
				2-row					<u>542FD3</u>	
	Medium	5	5/6	3-row					5.5	<u>544FD2</u> /516-353
				2-row						<u>544FD3</u>
Gathering /piping		3	3/4/5	3-row	3-row, narrow	6.5	6.5		ETS32-542FD4 ^{P1} _{P2} /516-453	
		5	5/6							

■ Rear top feed ETS32

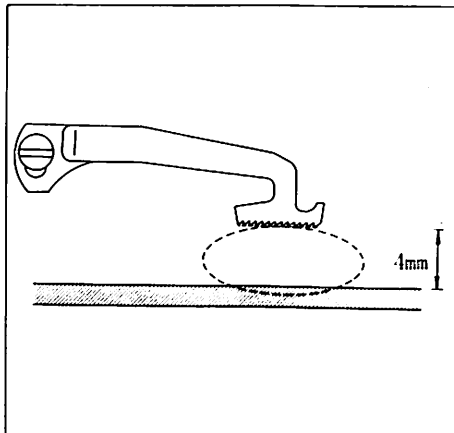
Seaming		5	5/6		2-row, wide	7.5	7	ETS32-	430BA2/516-433
		3	3/4		3-row, narrow				432BA2/516-453
For jeans		5	5/6		2-row, wide	7.5	7	ETS32-	452BA2/516-433
		3	3/4		3-row, narrow				453BA2/516-453
Piping		3	3/4		3-row, narrow	7.5	7		ETS32-432BC ^{P1} _{P2} /516-453
		5	5/6						

■ Top feed height adjustment

(1) The machines for plain seaming (FA) and for piping (FC) operations are adjusted so that there is a clearance between the top and the bottom feed dogs.

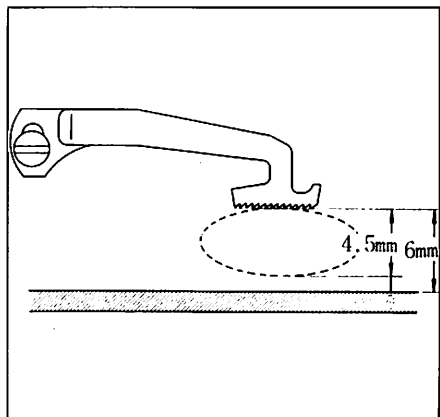


(4) The maximum height between top feed dog and throat plate is 4mm.

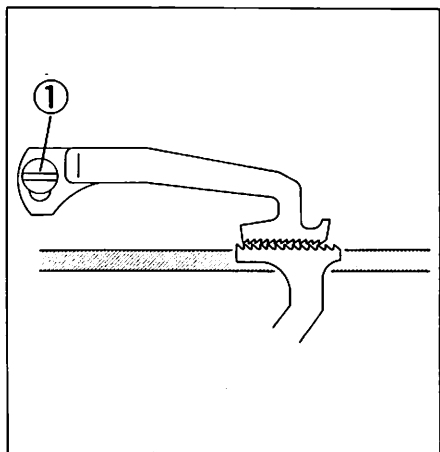


(5) The height of the top feed is easily adjusted by repositioning the top feed as described. The vertical stroke of the top feed dog is set according to the sewing operation and the type of material used, this adjustment is easily made inside the machine.

(2) The vertical stroke of the top feed dog is adjusted to 4.5mm. The maximum height between the top feed dog and the throat plate is 6mm.



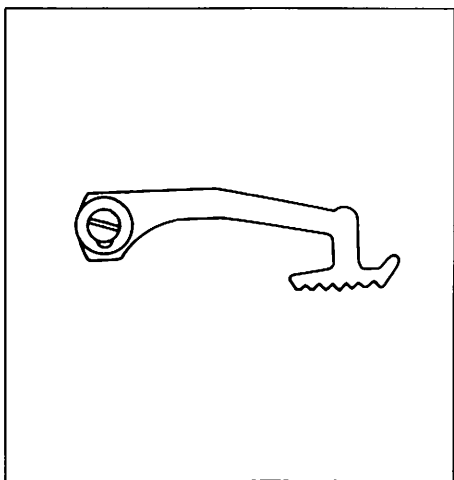
(3) Loosen set screw 1 and place the top feed dog in the lowest position ; the top and bottom feed dogs should mesh together for ruffling (FD) or for adding fullness.



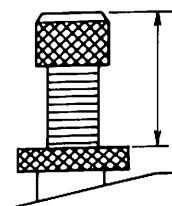
■ Shirring adjustments (FD)

Adjustment when the vertical stroke of the top feed dog is 4.5mm (standard).
(For the adjustment method of the vertical stroke movement, refer to page 10.)

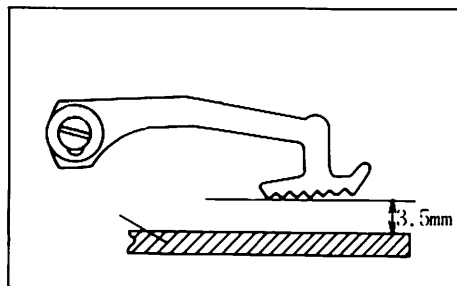
(1) Loosen screw 1 and place the top feed dog in its' lowest position.



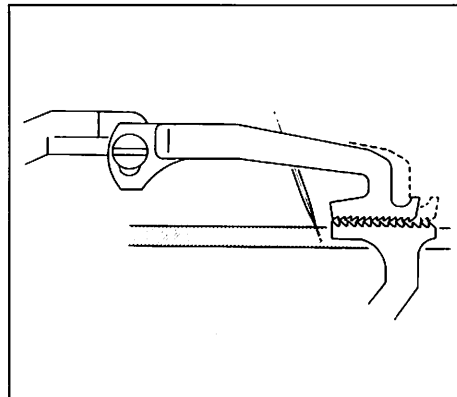
(2) Adjust top feed dog pressure to 25mm.



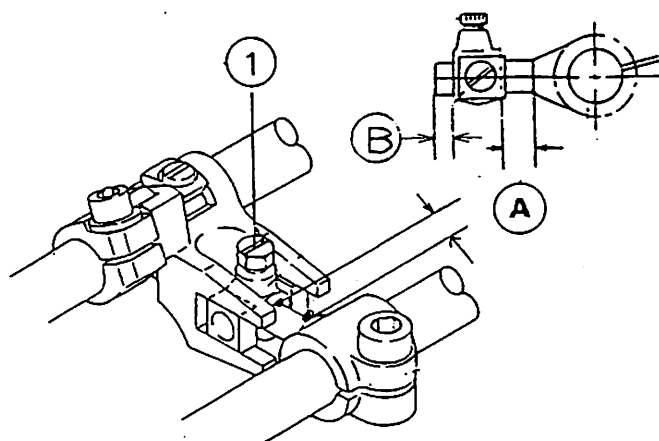
(3) Turn the pulley and set the height between top feed dog and needle plate to 3.5mm.
(For the adjustment method, refer to page 10.)



(4) Turn pulley and check that the top and bottom feed dogs are engaged until the needle point reaches the needle plate.
If the top feed dog rises earlier than specified, check the height of the bottom feed dog and/or reduce the height of the top feed dog (3.5mm).



■ Adjustment of the top feed vertical stroke



Loosen screw 1 and increase distance A to increase the vertical stroke ; reduce distance A to decrease.

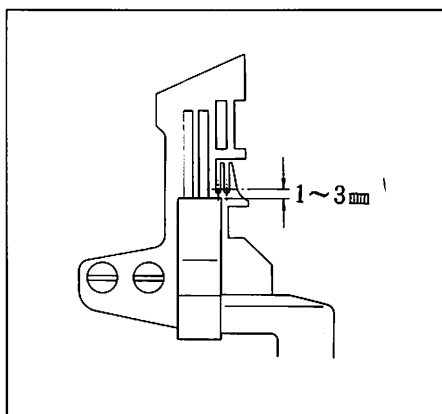
If distance A is difficult to measure, adjust using distance B.

(Example) When distance A is adjusted to 2mm for ETS 52, the vertical stroke of the top feed dog is 4.5mm ; when distance B is adjusted to 6.5mm, it is 4.5mm.

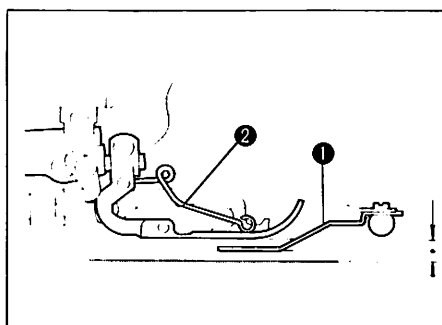
(5) Position the blade 1-3mm from the needle drop point.

Set according to the sewing conditions required.

For small pleats, reduce the distance between the blade and the needle drop point ; for large pleats, increase the distance.



(6) Adjust the pressures of the presser foot and the torsion spring 2, according to the material.



■ Front top feed ETS52

Dim. ①	Top feed lift	Dim. ②	Standard setting	Remarks
0mm	3.6mm	8.5mm		
2	4.5	6.5	FA FC FD	
4	5.5	4.5	FB	
5.5	6.5	3		
6.5	7	2		

■ ETS32

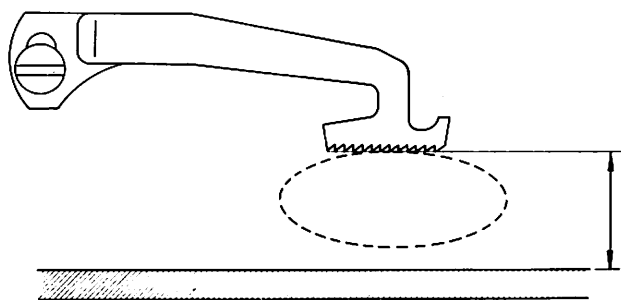
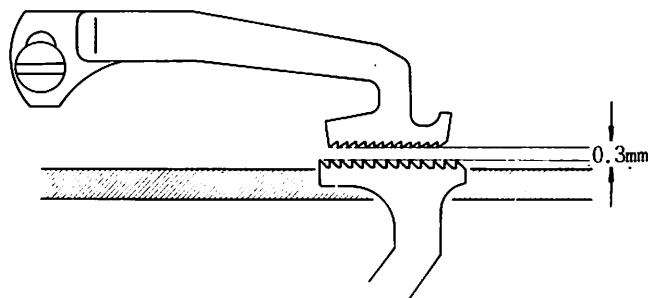
0	3.8	8.5		
1.5	4.5	7	FA FC FA	
3.5	5.5	5		
5	6.5	3.5		
6	7	2.5		

■ Rear top feed ETS32/ETS52

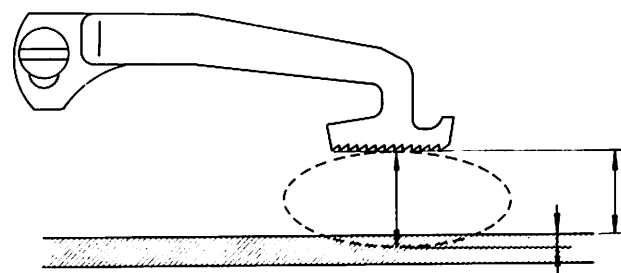
0	3	8.5		
2	3.7	6.5		
4	4.5	4.5		
5.5	5.2	3		
8.5	7	0	All models	

■ The feed dog lower dead point adjustment

For plain seaming(FA) and piping (FC) operations.



For shirring operations.



(1) Adjust the vertical stroke of the top feed dog to the specified or desired dimension.

(For adjustment, refer page 10)

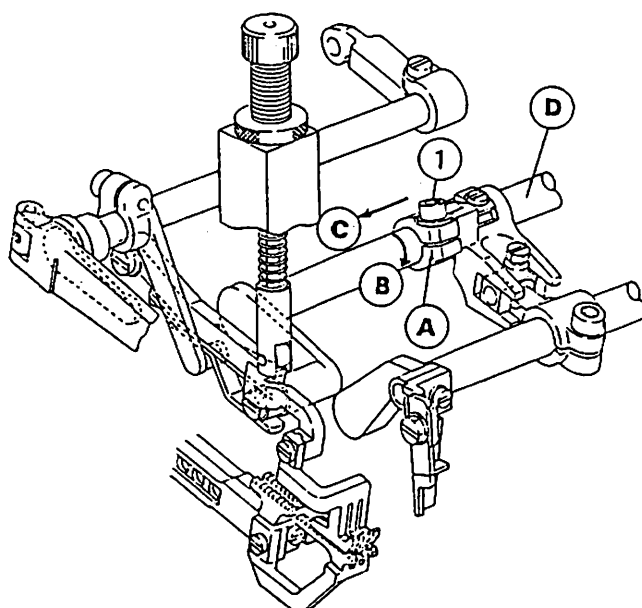
(2) Turn pulley and move the top feed dog to its highest position. Then, insert a gauge 1.5mm larger than the vertical stroke dimension between feed dogs and loosen set screw 1. Firmly move latch A in directions B and C, and tighten screw 1 securely. Check that there isn't any free play in the top feed shaft D.

Note: The height must be set approx. 1.5mm greater than the vertical stroke dimension, because it will be reduced by spring pressure after adjustment.

(3) After making this adjustment on plain seaming(FA) or piping(FC) machines, when the top feed dog is in its lowest position.

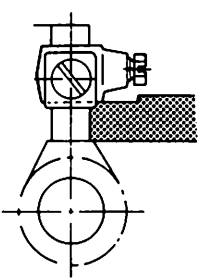
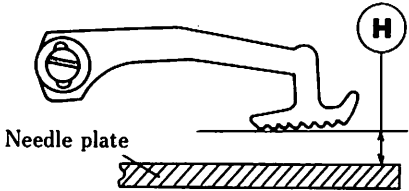
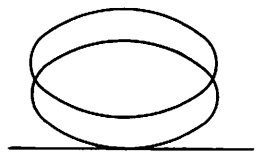
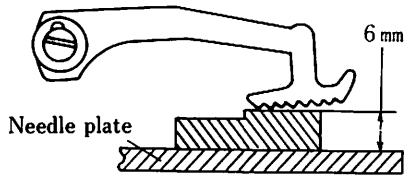
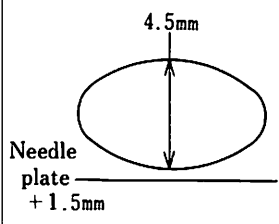
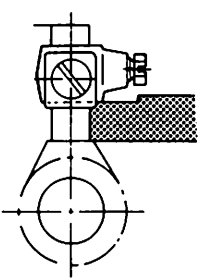
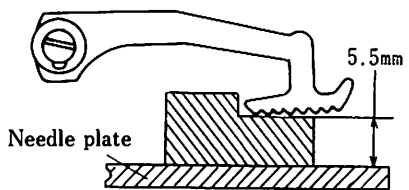
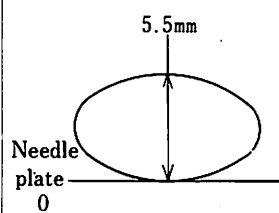
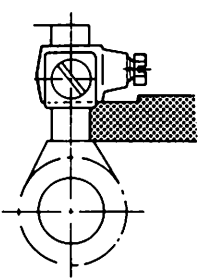
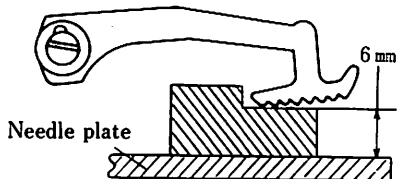
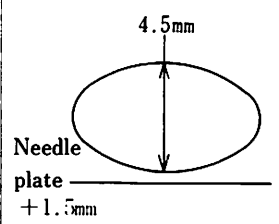
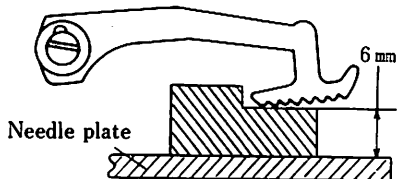
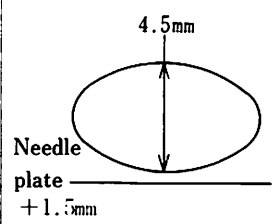
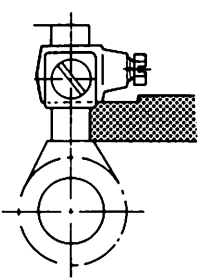
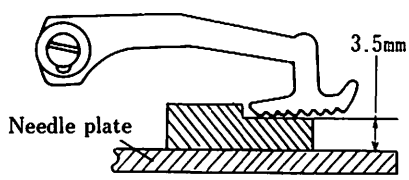
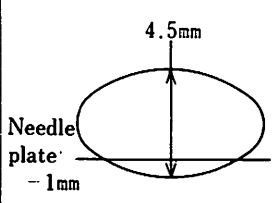
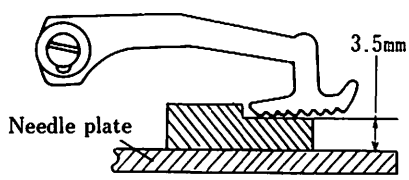
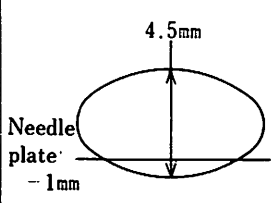
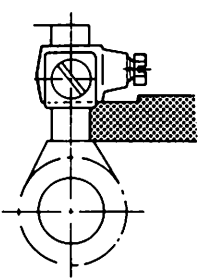
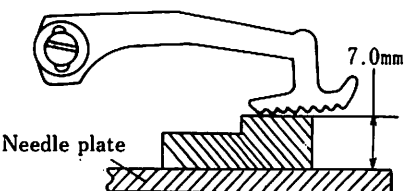
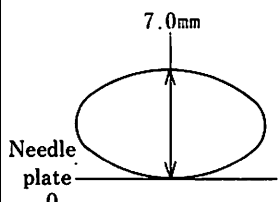
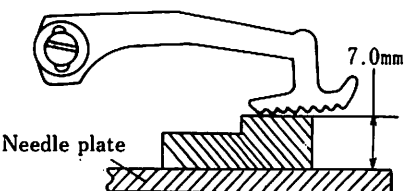
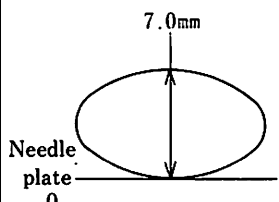
Set the clearance between the top and bottom feeds to approximately 0.3mm.

(4) For shirring(FD type) machines insert a gauge 1mm smaller than the vertical stroke dimension between the top and bottom feeds and complete the operations described in (1). The top and bottom feed dogs should be fully engaged until the needle point reaches the needle plate. (Refer to (4) on page 9.)



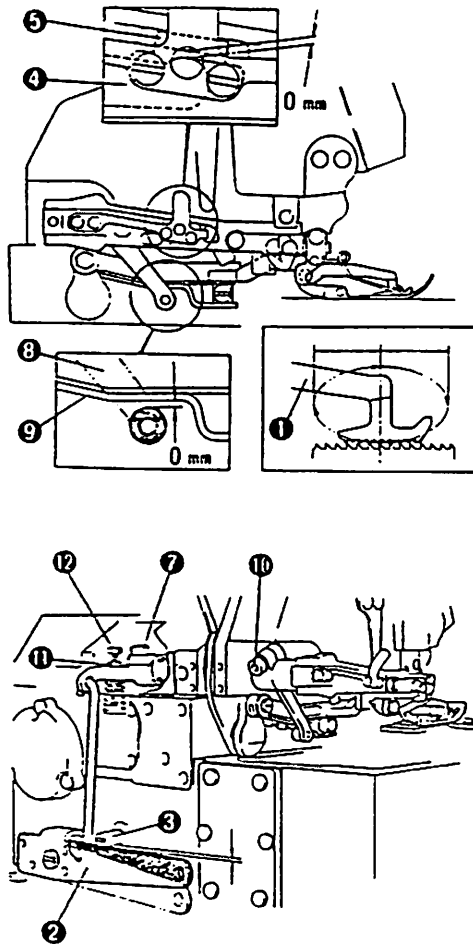
STANDARD DIMENSIONS ON ADJUSTMENTS

Top feed. Vertical stroke · Top feed height · Vertical position

Model	Adjusting manner				
		Setting dimension	Vertical stroke	Top feed height (upper dead position)	Vertical relationship between top feed and needle plate
ETS32-FA		1.5 mm	4.5 mm		
ETS52-FA		2.0			
ESS52-FB		4	5.5		
ETS32-FC		1.5	4.5		
ETS52-FC		2.0			
ETS32-FD		1.5	4.5		
ETS52-FD		2.0			
ETS32-BA BC		8.5	7.0		
ETS52-BA BC					

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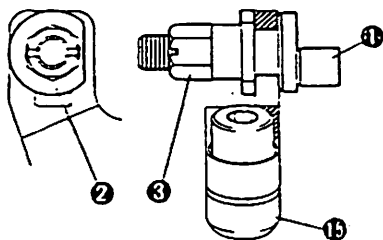
Adjustment of top feed dog and presser foot



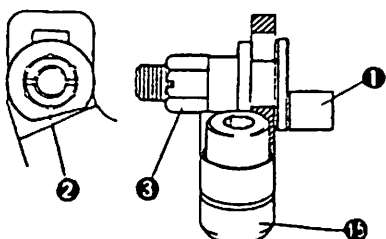
- (1) Engage the feeds together and turning the pulley back and forth set them to the center of their horizontal stroke.
- (2) Insert 1-1.5mm gauge between foot lever 2 and pin 3.
- (3) Adjust the gap between lever 4 and plate 5 to 0mm and tighten screw 7 securely.
- (4) Adjust the gap between lever 8 and flat spring 9 to 0mm and tighten screw 10 securely.

Differential ratio alteration.

1 : 0.7 ~ 1 : 2

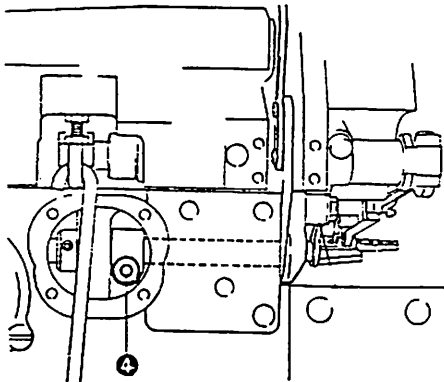
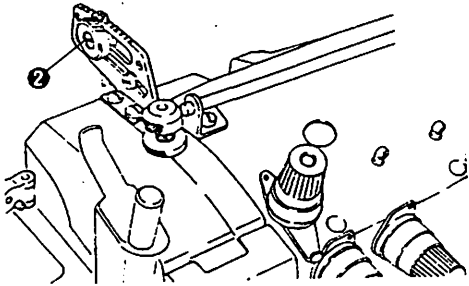
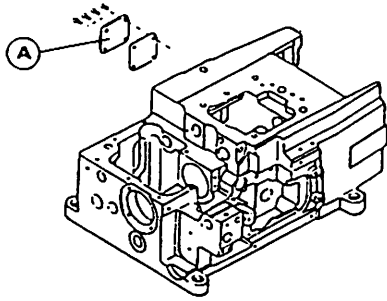


1 : 1.1 ~ 1 : 3.8



- (5) Remove rear bed cover plate.
Loosen nut 3, set eccentric pin 1, to the extreme top position and tighten nut 3 securely.
- (6) Loosen nut 3, set eccentric pin 1 to the lowest position, while paying attention to the direction of the washer, and tighten nut 3 securely.

Top Feed Dog



- (1) Remove the cover A from the rear of the bed.
- (2) Set the stitch length to maximum.
Set the top feed differential lever 2 to maximum (rearmost position)
- (3) Set the position of the top feed dog so that it does not touch the front or the rear or the presser foot slots when the pulley is turned, loosen screw 4 to adjust.