

# Singer Service Manual

Singer 753U 200

Singer 753U 300

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# SERVICE MANUAL

(DRAFT)

# SINGER®

MACHINE

753U<sub>200</sub>  
300

754U<sub>200</sub>  
300

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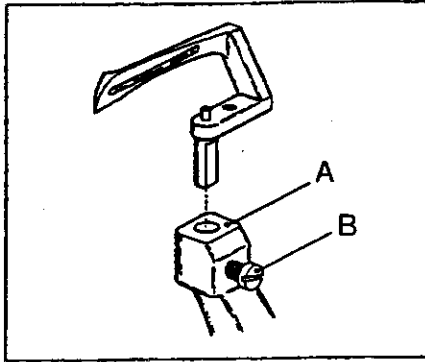
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## 1. Adjustment of timing between Loooper and Needle

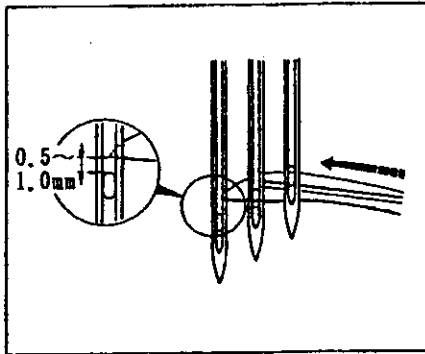
### 1-1 Setting angle and height of Loooper



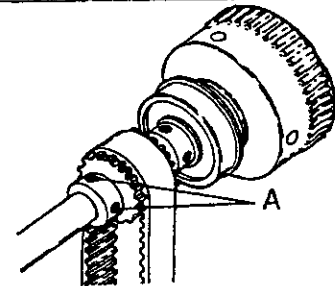
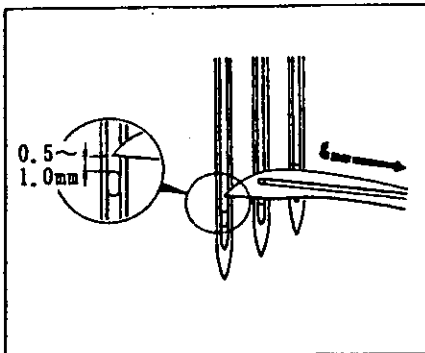
\* When inserting Loooper all the way into Loooper Holder(A) and tighten Screw(B), the height and setting angle ( $3^{\circ}$ ) is fixed accordingly.

\* For the correct setting angle ( $3^{\circ}$ ), the accuracy of Screw is indispensable. Therefore, use authorized Screw at the time of changing Screw.

### 1-2 Timing of movement of Loooper to the right and left



At the time Loooper moves to the right and left, when it comes to the center of left Needle, the tip of Loooper passes the point 0.5~1.0mm above the upper end of eye as shown in the illustration. That is the standard. Adjust so that it passes the same position in both going and returning travel.



\* Adjustment of timing between Needle and Loooper is made by removing Top Cover, Loosening Screw(A) of Main Shaft Sprocket and turning Handwheel.

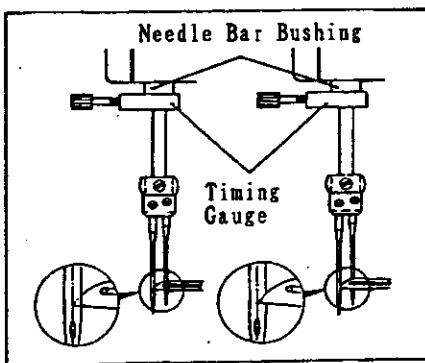
At this time, the sprocket must be held in the same condition.

When using Timing Gauge, the correct adjustment can be made easily.

\* How to use Timing Gauge

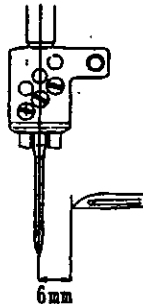
When turning machine to the rotating direction and the tip of Loooper comes to the center of left Needle, push Timing Gauge to the underside of Needle Bar Bushing and fix it to Needle Bar.

Then turn the machine to the reverse direction. Needle Bar descends then rises again and Timing Gauge contacts the under side of Needle Bar Bushing. At that time, if the tip of Loooper is at the center of of left Needle, the timing is proper.



### 1-3 Amount of movement of Loper to the right

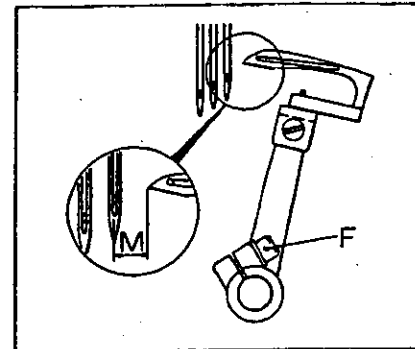
The distance from the tip of Loper to the center of needle is 6mm when Loper moves to the extreme right. That is the standard.



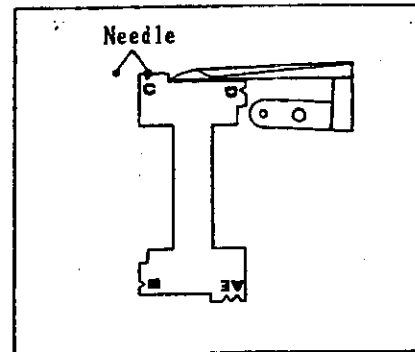
The table below shows the distance from the tip of Loper to the center of the right Needle.

needle (symbol) distance (mm)	amount of movement of Looper to the right (mm)
4.0 B(40)	4.0
4.8 C(48)	3.6
5.6 D(56)	3.2
6.4 E(64)	2.8

- \* With Needle at the lowest point, when Loper is most retreated, the distance(M) between the tip of Loper and the center of right needle varies according to the needle distance. Adjust the distance referring to the table above. The adjustment is made by loosening Screw(F) of Loper Holder. The correct adjustment can be made by using Timing Gauge.



- \* How to use Timing Gauge  
Put the right needle in the V-groove corresponding to the symbol (A~E) inscribed on the Gauge and apply the tip of Loper to the Gauge as illustrated, then tighten Screw(F) of Loper Holder.



#### Advice on adjustment

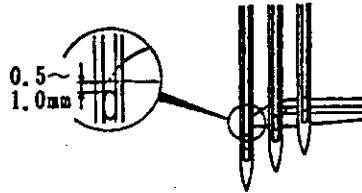
The adjustment should be made paying attention not to move it back and forth.

#### Problems at the time of exceptional adjustment

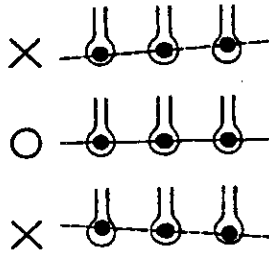
- \* In case of too much movement of Loper to the right by lowering of Needle:  
As the Needle is lowered below the surface of Stitch Plate, loop becomes larger and it apt to collapse, causing skip stitch.
- \* In case of too little movement of Loper to the right by raising of Needle:  
As the lowering of Needle below the surface of Stitch Plate decreases, loop becomes smaller and the entering of Loper into Loop becomes difficult, causing skip stitch.

## 1-4 Height of Needle

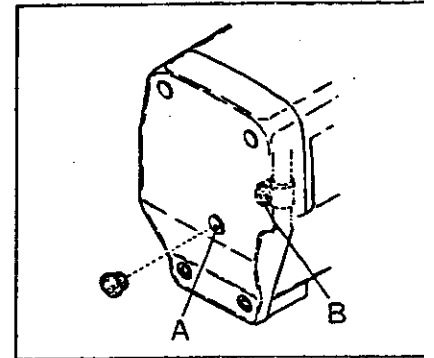
During the turning of machine, when the tip of Loper comes to the center of Needle(left), the tip passes 0.5~1.0mm above the Upper end of eye on the back of Needle. That is the standard.



\* After adjusting Needle height, install Stitch Plate and make sure that Needles descend to the center of needle drop holes of Stitch Plate.



\* Adjustment of height of Needle is made by removing Head Cover Seal Plug, inserting Screwdriver through Hole(A), loosening Screw(B) of Needle Bar Bracket and moving Needle Bar up and down.



### Advice on adjustment

The position where the tip of Loper passes behind Needle

- \* When using woolly thread or other stretchable thread:  
The tip must pass 1.0mm from the upper end of needle eye.
- \* When using spun thread and cotton sewing yarn:  
The tip must pass 0.8mm from the upper end of needle eye.

## 1-5 Longitudinal positions of Needle and Loper

In condition that Needles descend correctly into the needle drop holes, the tip of Loper passes the left needle with a clearance of 0.2~0.3mm when they meet.

That is the standard for both 2 and 3-needles.

Right needle interferes to the tip of Loper.

### \* Adjustment of longitudinal position in case of 3-needles:

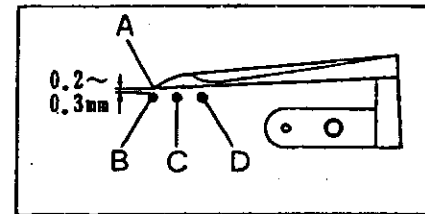
When the tip(A) of Loper meets the left Needle(B), the clearance between them must be 0.2~0.3mm.

When the tip(A) of Loper meets center Needle(C), the clearance between them must be 0.05~0.15mm.

When the tip(A) of Loper meets the right Needle(D), they contact slightly (about 0.2mm). Then give the clearance of 0~0.05mm between the tip of Loper and Needle(D) by pushing Needle Guard(Rear) against Needle(D).

(Refer to 1-8 on page 7.)

The adjustment is made by loosening Screw of Loper Holder.



### \* Adjustment of longitudinal position in case of 2-needles:

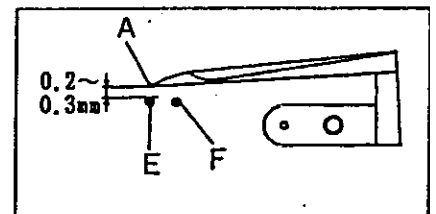
When the tip(A) of Loper meets the left Needle(E), the clearance between them must be 0.2~0.3mm.

When the tip(A) of Loper meets right Needle(F), they contact slightly (about 0.2mm).

Then give the clearance of 0~0.05mm between the tip of Loper and Needle(F) by pushing Needle Guard(Rear) against Needle(F).

(Refer to 1-8 on page 7.)

Adjustment is made by loosening Screw of Loper Holder.



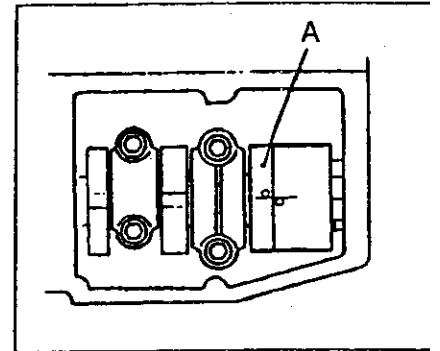
## 1-6 Changing of locus of Loooper (Special adjustment)

The standard locus of Loooper both in case of 2-needles and 3-needles, the tip of Loooper passes contacting slightly to the right Needle and with a clearance of 0.2 ~ 0.3mm between the tip of Loooper and the left Needle.



Note: Change of locus is possible, but there is no need to change in ordinary sewing. But at the time of changing amount of Loooper avoid motion and readjustment, sometimes better sewing performance can be gained by moving Timing Mark to the direction(X) or (Y) slightly.

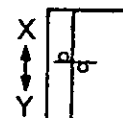
\* When changing locus of Loooper, adjustment is made by loosening Screw of Loooper Rocker Eccentric(A), moving the Eccentric(A) back and forth and shift Timing Mark(○).



### Advice on adjustment

Locus of Loooper can be changed as illustrated right, but take care not to change too much.

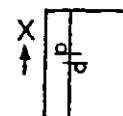
\* Timing Mark: standard



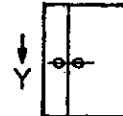
locus of Loooper



\* Timing Mark: hasten direction(X)



\* Timing Mark: delay direction(Y)



### Problems at the time of exceptional adjustment

\* Too much change of Timing Mark to the direction(X)

- ① Skip stitch on the return travel of Loooper is easy to happen.
- ② Formation of thread chain-off becomes bad.

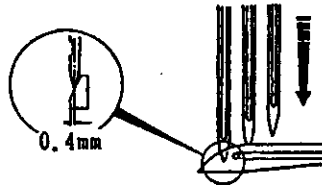
\* Too much change of Timing Mark to the direction(Y)

- ① Skip stitch on the going travel of Loooper is easy to happen.
- ② Contact of Needle to the back of Loooper becomes heavy, causing blunt needle point.



## 1-7 Change of Loper avoid motion

In standard locus of Loper, at the time of travel from the extreme left, the tip of left Needle contacts to the back of Loper by 0.4mm. (Needle is pushed backward.)

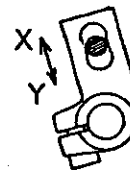
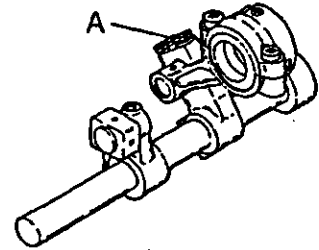


\* At the time of shipment, the amount of Loper avoid motion is adjusted to the Needle of size #9~#11. In such case as using Needle size of #12~#14 and standard adjustment is not proper, adjust the amount of Loper avoid motion as follows:

\* Adjustment of the amount of Loper avoid motion is made by removing Bed Rear Cover(Small), loosening Nut of Connecting Rod Pin and turning Adjusting Screw(A) with a Screwdriver.

To decrease the amount of Loper avoid motion, turn Adjusting Screw(A) clockwise to the direction(X) and to increase turn it counterclockwise to the direction(Y).

The adjusting range is 2.4~3.0mm.



### Advice on adjustment

Adjustment must be made to be suited to Needle size.

### Problems at the time of exceptional adjustment

- \* Too little amount of looper avoid motion:  
Contact of Needle to the back of Loper becomes heavy, causing blunt needle point.
- \* Too much amount of looper avoid motion:  
The clearance between Needle and Loper becomes great, causing skip stitch during return travel of Loper.

### 1-8 Position of Needle Guard(Rear)

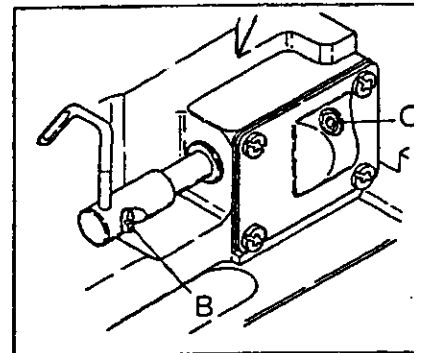
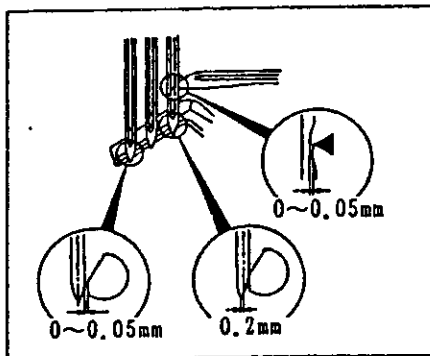
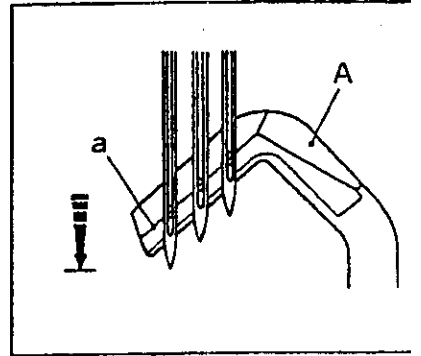
When needles descend to the lowest position, line(a) of Needle Guard(Rear) (A) align the center of eye of each Needle; and when the tip of Loper passes behind Needles, it pushes slightly right Needle forward and at this time the clearance between the left Needle and Needle Guard (Rear) is 0~0.05mm. That is the standard position of Needle Guard(Rear).

\* When needles descend to the lowest position, centers of eyes of each Needle must align to the line(a) of Needle Guard(Rear) (A). The adjustment of height of Needle Guard(Rear) is made by loosening Screw(B)

\* Give a clearance of 0~0.05mm between Needle and Loper when the tip of Loper comes to the center of right Needle. This is made by pushing Needle Guard (Rear).

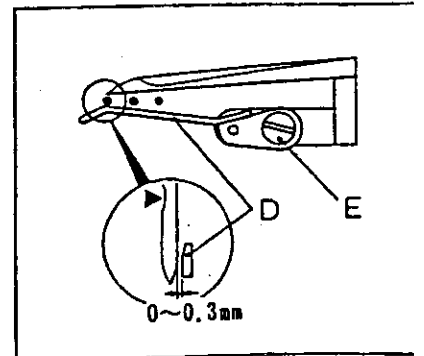
At this time, give a clearance of 0~0.05mm between left Needle and Needle Guard(Rear). (Refer to 1-5 on page 4.)

These adjustments are made by loosening Screws (B) and (C).



### 1-9 Position of Needle Guard(Front)

\* When the tip of Loper comes to the center of each Needle, give a clearance of 0~0.3mm between each Needle and Needle Guard(Front) (D). The adjustment is made by loosening Screw(E).

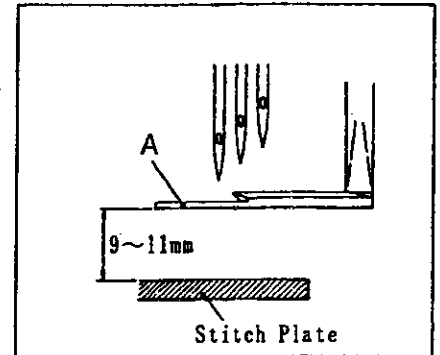


## 1-10 Position of Spreader (In case of machine with Top Cover Thread mechanism)

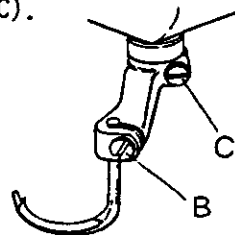
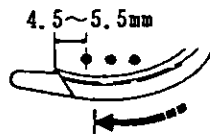
The height of Spreader is 9~11mm above the surface of Stitch Plate and the amount of movement to the left is 4.5~5.5mm and the clearance between the left Needle and the tip of hooking part is 0.5~0.8mm. That is the standard.

\* The height of Spreader(A) must be 9~11mm.

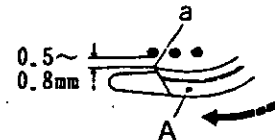
The adjustment is made by loosening Screw(B).



\* When Spreader comes to the extreme left, the distance from the center of left needle to the tip of hooking part(a) must be 4.5~5.5mm. The adjustment is made by loosening Screw(C).



\* When Spreader moves from right to left, the clearance between the tip of hooking part(a) and left needle must be 0.5~0.8mm. The adjustment is made by loosening Screw(B).



### Advice on adjustment

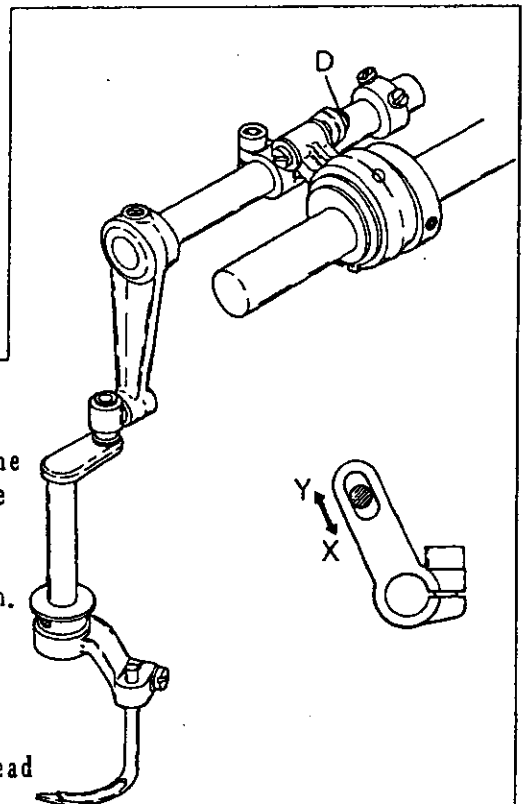
The standard height of Spreader is 9~11mm, but better performance can be gained when changing the height according to the needle distance.

- \* For needle distance of (4mm), (4.8mm), adjust the height about 11mm.
- \* For needle distance of (5.6mm), (6.4mm), adjust the height about 9mm.

### Problems at the time of exceptional adjustment

Although the machine is adjusted to the needle distance(A~E) at the time of shipment, when the above adjusting condition is not satisfied, the amount of movement of Spreader can be changed. The adjustment is made by removing Top Cover, loosening Nut(D) and moving Adjusting Lever Pin. To increase, move the Pin to the direction(X) and to decrease, move it to the direction(Y). The standard amount of movement of Spreader to the left is 4.5~5.5mm.

- \* Too much movement: tension of top cover thread becomes irregular.
- \* Too little movement: skip stitch easy to happen.



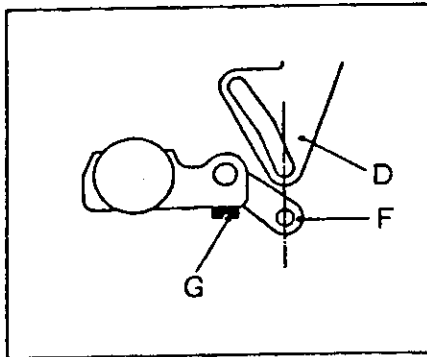
**1-11 Position of Top Cover Thread Guide  
(In case of machines with Top Cover Thread Mechanism)**

There must be a clearance of 0.5mm between Top cover Thread Guide and Spreader; and when Spreader comes to the extreme right, the tip of hooking part of Spreader must come to the center of slot of Top Cover Thread Guide.

And when Needle Bar descends to the lowest position, there must be a clearance of 1mm between Top Cover Thread Guide and Spreader Eyelet; and the eye of Spreader Eyelet must come to the center of slot of Top Cover Thread Guide.

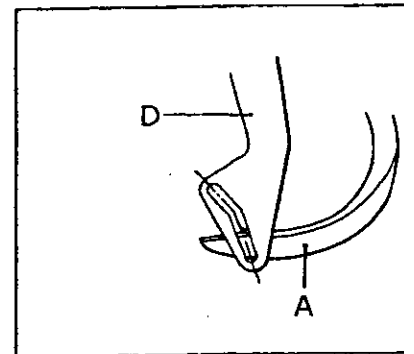
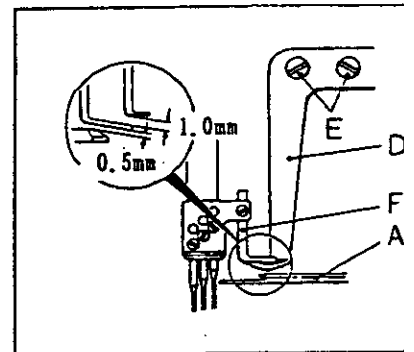
That is the standard.

- \* When Needle Bar descends to the lowest position, adjust the position of Eyelet (F) on Needle Clamp so that there is a clearance of 1mm between the Eyelet and Top Cover Thread Guide (D), and the eye of Spreader Eyelet (F) comes on the center line of slot of Cover Thread Guide (D).  
The adjustment is made by loosening Screw (G).



- \* Adjust the height and lateral position of Top Cover Thread Guide (D) so that there is a clearance of 0.5mm between the Guide and Spreader (A); and when Spreader (A) comes to extreme right, the tip of hooking part of Spreader comes to the center of slot of Top Cover Thread Guide (D).

The adjustment is made by loosening Screw (E).

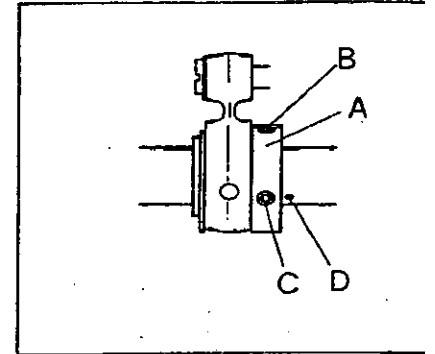
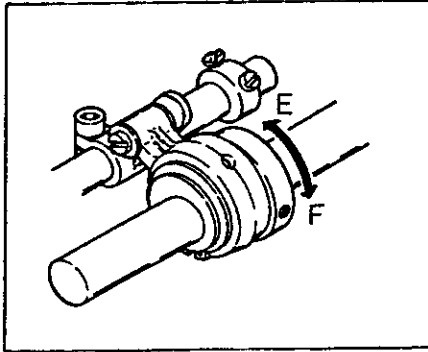


## 1-12 Timing of movement of Spreader(Special adjustment)

The timing is adjusted based on 1-10 and 1-11 at the time of shipment. But in the exceptional case of changing adjustment of 1-10 and 1-11 because of the thread to be used, the timing of Spreader movement can be changed

\* The change of timing is made by removing Top Cover, loosening Screws(B) and (C) on Eccentric(A) of Upper Shaft and moving Screw(C) (rear Srew to the rotating direction) in relation to Mark(D) of Upper Shaft.

\* When moving to the direction(E), the timing of Spreader against Needle becomes earlier and to (F), the timing becomes later.



### Advice on adjustment

Change of timing should be made after confirming the position of Screw(C) in relation to Mark(D).

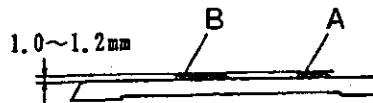
### Problems at the time of exceptional adjustment

- \* Too early timing ... When Needle descends, skip stitch apt to happen because of no-catch of top cover thread.
- \* Too late timing ... Resistance of top cover thread against the pulling-out of Spreader increases, causing the breakage of Needle. (in case of small needle size)

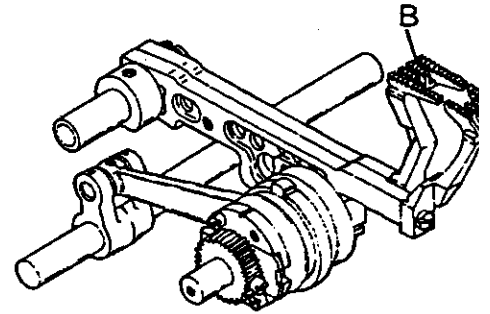
## 2. Adjustment of Feed Dog and stitch length

### 2-1 Height and parallelism (tilt) of Feed Dogs

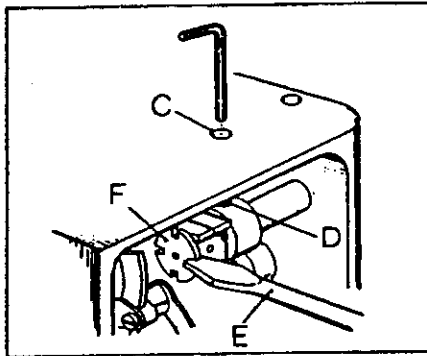
When Feed Dogs rise uppermost, their height is 1~1.2mm above the surface of Stitch Plate and Differential and Main Feed Dog are parallel to the surface of Stitch Plate. That is the standard.



\* Adjustment of height of Feed Dog are made by loosening Screws on Differential(A) and Main(B) Feed Dog and moving the Feed Dog up and down.



\* Adjustment of tilt of Feed Dogs are made by removing Bed Rear Cover and Cloth Plate(Small), inserting Hexagonal Wrench (size: 3mm) through Hole(C) of Bed to loosen Screw(D), turning Feed Adjusting Pin(F) to set Feed Dogs parallel with the surface of Stitch Plate when Feed Dogs rise uppermost.



#### Advice on adjustment

\* When sewing thick and soft material (like knitted material), good sewing performance will be obtained by setting Feed Dogs a little higher than standard.

## 2-2 Adjustment of stitch length

Stitch length can be adjusted continuously from 1.4mm to 3.6mm.  
The table below shows the stitch length per inch (25.4mm) and per 30mm.

(mm)	per inch	per 30mm
3.6	7	8
2.4	10.5	12.5
1.4	18	21

### \* Change of stitch length

When pressing Pushbutton(A) with left hand lightly, the touch of its tip to the inside part is felt. Continue to press the button and turn Handwheel with right hand until the Pushbutton gets in. At that point press in the button strongly and turn Handwheel.

As you turn Handwheel to the right to bring graduation "L" closer to Mark(B), the stitch length becomes longer.

At "L" it is 3.6mm.

And as you turn Handwheel to the left to bring graduation "S" closer to mark(B), the stitch length becomes shorter.

At "S" it is 1.4mm.

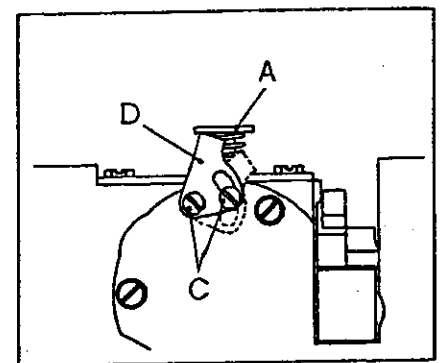
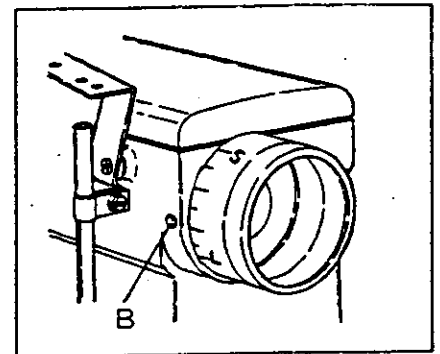
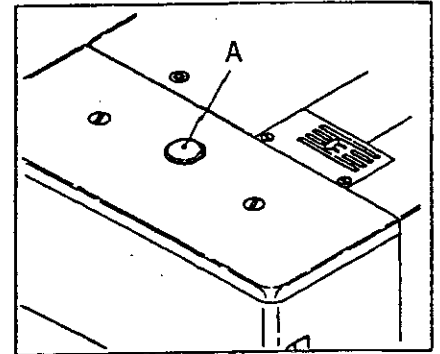
Stitch length varies a little by the kind and thickness of material to be sewn and the amount of differential feed. In this case re-adjust by turning Handwheel.

Note: When changing stitch length, turn Motor Switch "OFF" without fail.

### \* Pushbutton Stop

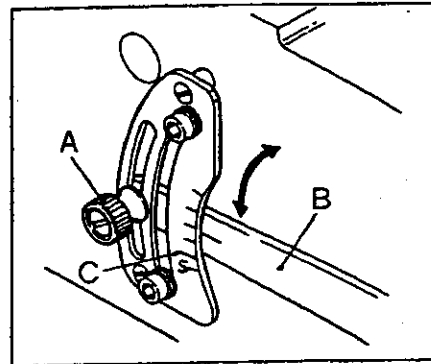
Use this device not to change stitch length by operator during sewing.

To actuate this Stop, loosen Screw(C), turn Pushbutton Stop upward and set it under Pushbutton then tighten Screw(C).

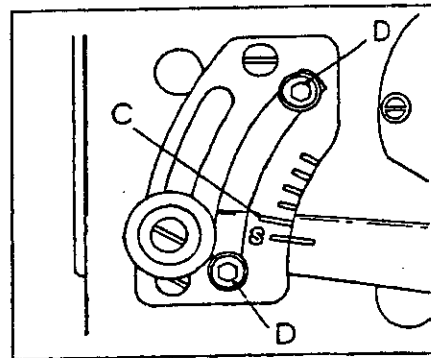


## 2-3 Adjustment of differential feed

- ① Normal differential feed (shrink sewing) :  
 After loosening Nut(A), move Lever(B) up and down and at the desired position tighten Nut(A).  
 When Lever is set to graduation(Long)(C), the ratio of main feed to differential feed is 1:1.  
 When raising the Lever over this Graduation, normal differential feed is obtained.  
 Graduations indicate (from the bottom):  
 1:1.25, 1:1.5, 1:1.75 and 1:2.



- ② Reverse differential feed (stretch sewing):  
 When the Lever downed under Graduation(Long)(C), the feed becomes reverse differential.  
 When it is set to "S", the ratio of main feed to differential feed is 1:0.7.
- ③ Adjustment of differential feed during operation:  
 For the adjustment of differential feed during operation of machine, connect Chain to Lever.  
 Use 2 Stops(D) to fix upper and lower limit within which Lever moves.



※ The range of differential ratio varies according to stitch length. Refer to the table below.

stitch length (mm)	max. normal differential	max. reverse differential
3.6	1 : 1.2	1 : 0.7
2.5	1 : 1.6	1 : 0.7
2.0	1 : 1.8	1 : 0.7
1.4	1 : 2	1 : 0.7

### Advice on adjustment

- \* When changing differential ratio by moving Differential Lever up and down according to the sewing material and sewing place, the stitch length changes accordingly.  
 When stitch length goes out of standard, change the stitch length by pressing Pushbutton.



### 3. Position and height of Presser Foot

Presser Foot must be set correctly to Presser Bar; and the Needle must descend to the center of needle drop hole of Presser Foot.

Height of Presser Foot:

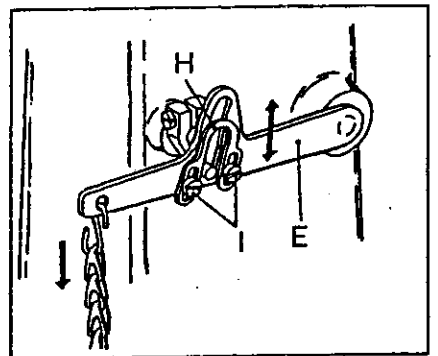
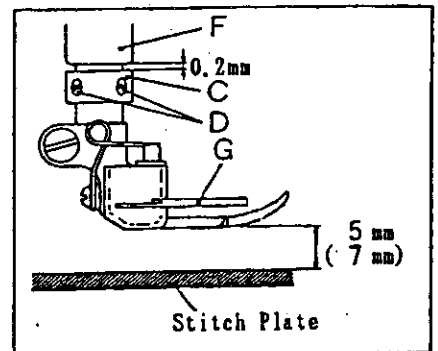
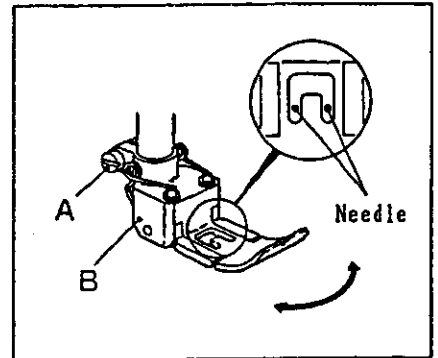
- \* For the machine with Spreader, it is 5mm above the surface of Stitch Plate.
  - \* For the machine without Spreader, it is 7mm above the surface of Stitch Plate.
- But in this case, Stop Collar is not used.

- \* For the machine with Spreader, the height must be 5mm above the surface of Stitch Plate and for the machine without Spreader it must be 7mm.

The adjustment is made by descending Lifter Lever(E) and keeping this condition, loosen Screw(I) and fix the position of Lifter Lever Stop(H) not to descend Lifter Lever any more.

- \* For the machine with Spreader, Collar(C) is equipped to Presser Bar to work as stop to prevent the excessive rise of Presser Foot for guarding Spreader(G)
- In the condition that Presser Foot rises 5mm above the surface of Stitch Plate, provide a clearance of 0.2mm between Collar(C) and Presser Bar Bushing(F) then tighten Screw(D).

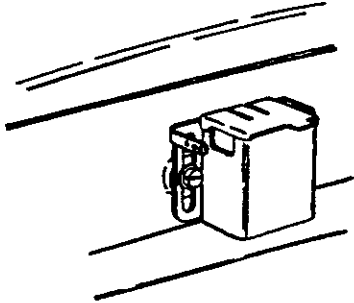
- \* The adjustment of position of Presser Foot is made by loosening Screw(A), moving Presser Foot(B) left and right so that Needle descends into the center of needle drop hole.



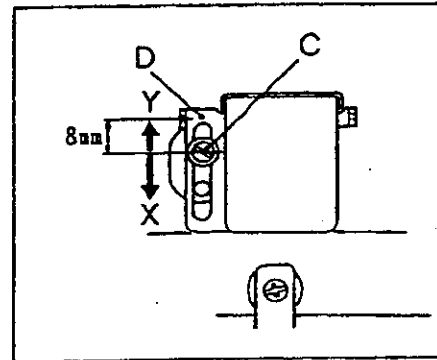
#### 4. Adjustment of sewing performance

##### 4-1 Position of Needle Thread Eyelet

Standard position of the center of Needle Thread Eyelet of SP Container is 8mm from the center of Screw.



\* The adjustment of height of Needle Thread Eyelet is made by loosening Screw(C) and moving Needle Thread Eyelet(D) up and down.



\* When the distance between the center of Screw and the center of eye of Needle Thread Eyelet is over 8mm (Eyelet is moved to the direction(Y)) the needle thread tightens, and when it is under 8mm (to the direction(X)), the needle thread loosens.

##### Advice on adjustment

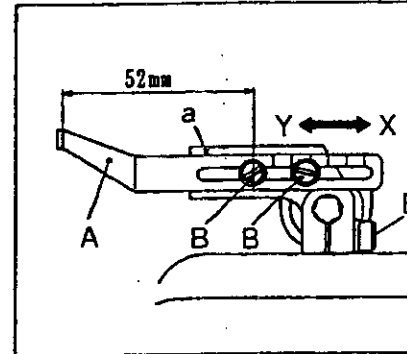
For some thread, tension does not change very much even if the height of Needle Thread Eyelet is changed. After test sewing, unravel the seam and check the tightness of needle thread and adjust the height of Needle Thread Eyelet.

#### 4-2 Position of Needle Thread Take-up Eyelet

With Needle Bar at the uppermost, part (a) of Bracket is horizontal and the tip of Needle Thread Take-up Eyelet (A) is 52mm from the center of Screw (B). That is the standard.

\* Adjust the position of Needle Thread Take-up Eyelet so that when Needle Bar is at the uppermost, part (a) of Needle Thread Take-up Eyelet becomes horizontal. The adjustment is made by loosening Screw (E).

\* Adjustment of lateral position of Needle Thread Take-up Eyelet (A) is made by loosening 2 Screws (B) and moving the Eyelet left and right.



#### Advice on adjustment

When Needle Thread Take-up Eyelet (A) is positioned farther than standard (52mm) (direction (Y)), the needle thread tightens and closer (direction (X)) the needle thread loosens.

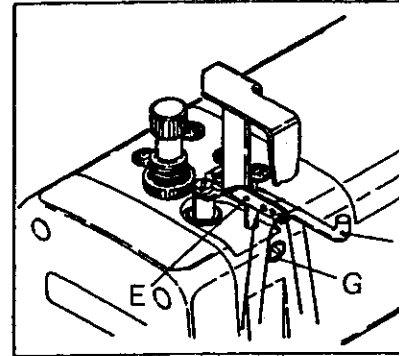
#### 4-3 Position of Needle Thread Guide

With Needle Bar at the lowest position, the center of eye of Needle Bar Thread Eyelet(E) and the surface of Needle Thread Guide(F) are the same height and (E) and (F) must be parallel.

That is the standard.

※ In case of using spun thread (polyester)

\* Adjustment of height and lateral position is made by loosening Screw(G) and moving Needle Thread Guide(F) up and down and left and right.

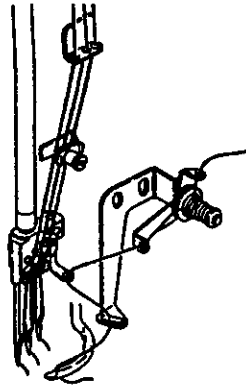


#### Advice on adjustment

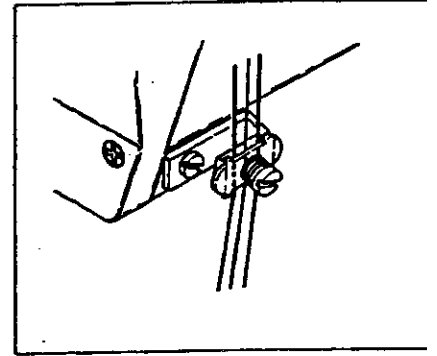
- \* When using cotton sewing yarn or cotton thread (non-stretchable thread), set Needle Thread Guide 2mm lower than standard or do not use Needle Thread Guide. (Loosen Screw(G) and turn Needle Thread Guide backward.)
- \* When using woolly thread (stretchable thread), set Needle Thread Guide as high as possible.
- \* When needle thread loop is not formed (or too small) causing skip stitch, raise Needle Thread Guide.
- \* When too large needle thread loop is formed, causing skip stitch, lower Needle Thread Guide or do not use it. (Turn it backward.)

#### 4-4 Application of Needle Thread Retainer Support

When sewing ordinary fabric with ordinary thread, Needle Thread Retainer Support is not used.



- \* When sewing fabric of bad needle penetration or sewing with stretchable thread, if the sewing is made with thread passed through the disc of Needle Thread Retainer Support, good forming of needle thread loop can be gained. Employ suitable method for the sewing.



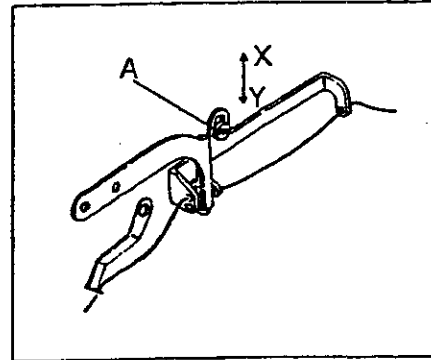
#### Advice on adjustment

- \* Application of Needle Thread Retainer Support according to the thread to be used:
  - ① Do not use it for cotton sewing yarn, cotton yarn, spun thread and tetron thread (polyester thread).
  - ② Use it for woolly thread (stretchable thread).
- \* Application of Needle Thread Retainer Support according to the fabric to be sewn:
  - ① Do not use it for general light knit wear, knit wear and fabric.
  - ② Use it for general heavy knit wear, knit wear and fabric.

Note: Do not use this for the machine with "UT" Device.

#### 4-5 Position of Top Cover Thread Take-up Eyelet(Right)

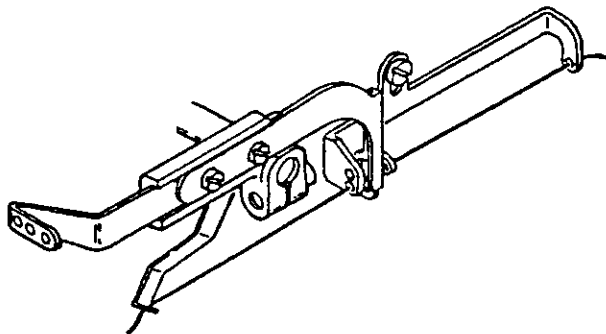
Set Top Cover Thread Take-up Eyelet (Right) all the way to the direction(X) in the slot.



\* The adjustment of Top Cover Thread Take-up is not possible because it is set piled up with Needle Thread Take-up.

\* When using such stretchable thread as woolly thread, use it downed to the direction(Y) by loosening Screw (A) of Top Cover Thread Take-up Eyelet(Right).

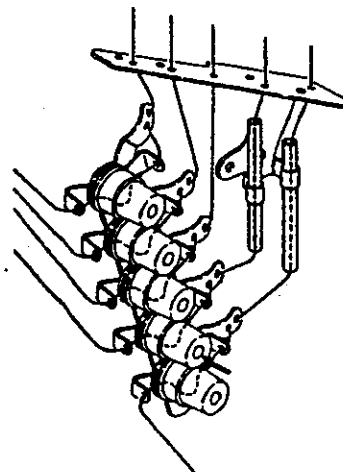
Adjustment should be made according to the thread to be used.



\* When using woolly thread, pass the thread through the lower eye of Top cover Thread Take-up Eyelet(Right).

#### Advice on adjustment

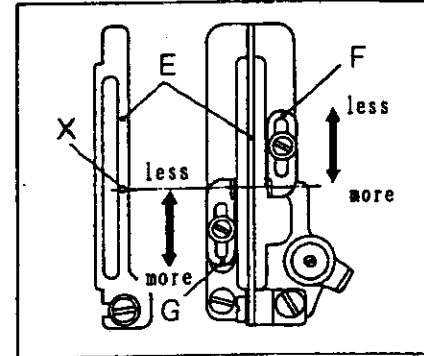
When changing the thread tension according to the kind of top cover thread, adjust the tension by turning Thread Tension Spring Cap of Thread Tension Unit.



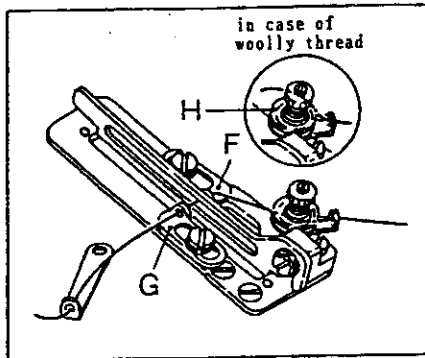
#### 4-6 Position of Thread Take-up Eyelet

To set Eyelet(F) and (G) to mark(X) (○) of Cast-off Plate(E) is the standard adjustment.

\* To increase the amount of looper thread, move Eyelet forward after loosening Screws of Eyelet(F) and (G), and to decrease move it backward.



\* When using woolly thread, move Eyelet(F) and (G) all the way forward and do not pass the thread through Needle Thread Retainer Disc(H).



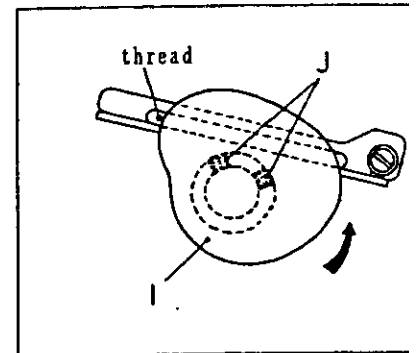
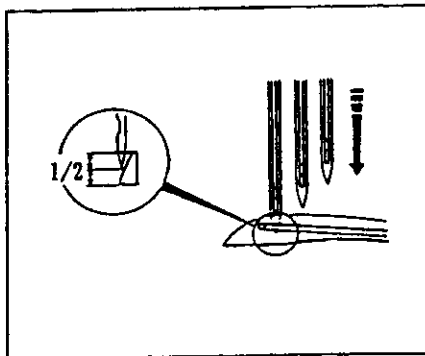
#### Advice on adjustment

Note: When using thread other than woolly thread, too much amount of looper thread (When moving Eyelet forward) may cause skip stitch.

#### 4-7 Position of Loooper Thread Take-up

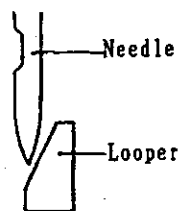
To set Cast-off Plate to the center of groove of Loooper Thread Take-up, and when the point of left Needle comes to the half point in its return travel, the thread get off from the highest position of the Take-up. That is the standard.

\* When left Needle comes down to the half point, the thread must get off from the highest position of Loooper Thread Take-up(I). The adjustment is made by loosening Screw(J) and moving Take-up(I).



#### Advice on adjustment

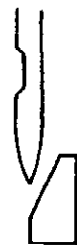
Reference: For some kind of looper thread, when the highest position of Loooper Thread Take-up where the thread gets off is changed, good seam may be obtained.



spun thread (1/2)



cotton sewing yarn,  
cotton thread (1/1)



woolly thread (1/3)

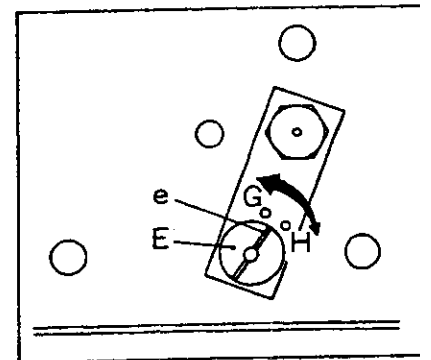
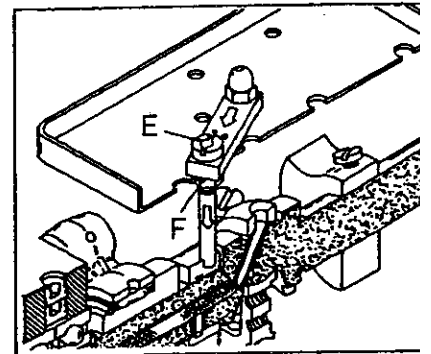


## 5. Adjustment of oil supply to Connecting Rod

Feeding of oil to Needle Bar Mechanism is adjustable.  
The standard adjustment is to set the slot of Oil Adjusting Screw to the middle of Mark( $\infty$ ).

- \* To increase the feeding of oil, turn Oil Adjusting Screw(E) to the left and to decrease, to the right. Adjustment is made by loosening Nut(F). To set the slot(e) of Oil Adjusting Screw(E) at the middle between Mark(G) and(H) is the standard.

Note: Do not set the slot(e) outside Mark(G) and (H).

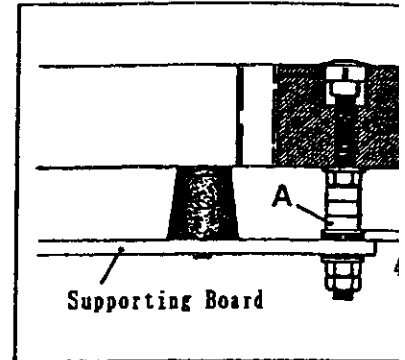


## 6. Installation and maintenance of machine

### 6-1 Installation

Install the machine correctly referring to the illustration.

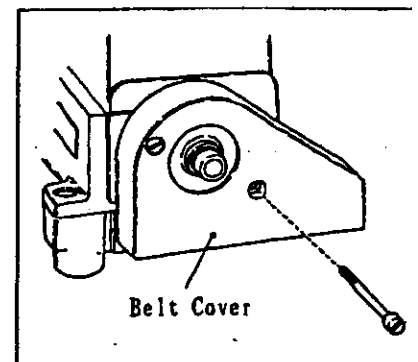
Set bolts to Supporting Board and fix the Supporting Board to Machine Table. Next, put Rubber Cushions on bolts and mount the machine securely on them.



\* Pieces of Spacer(A) and (B)

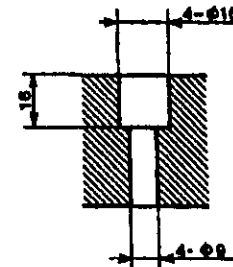
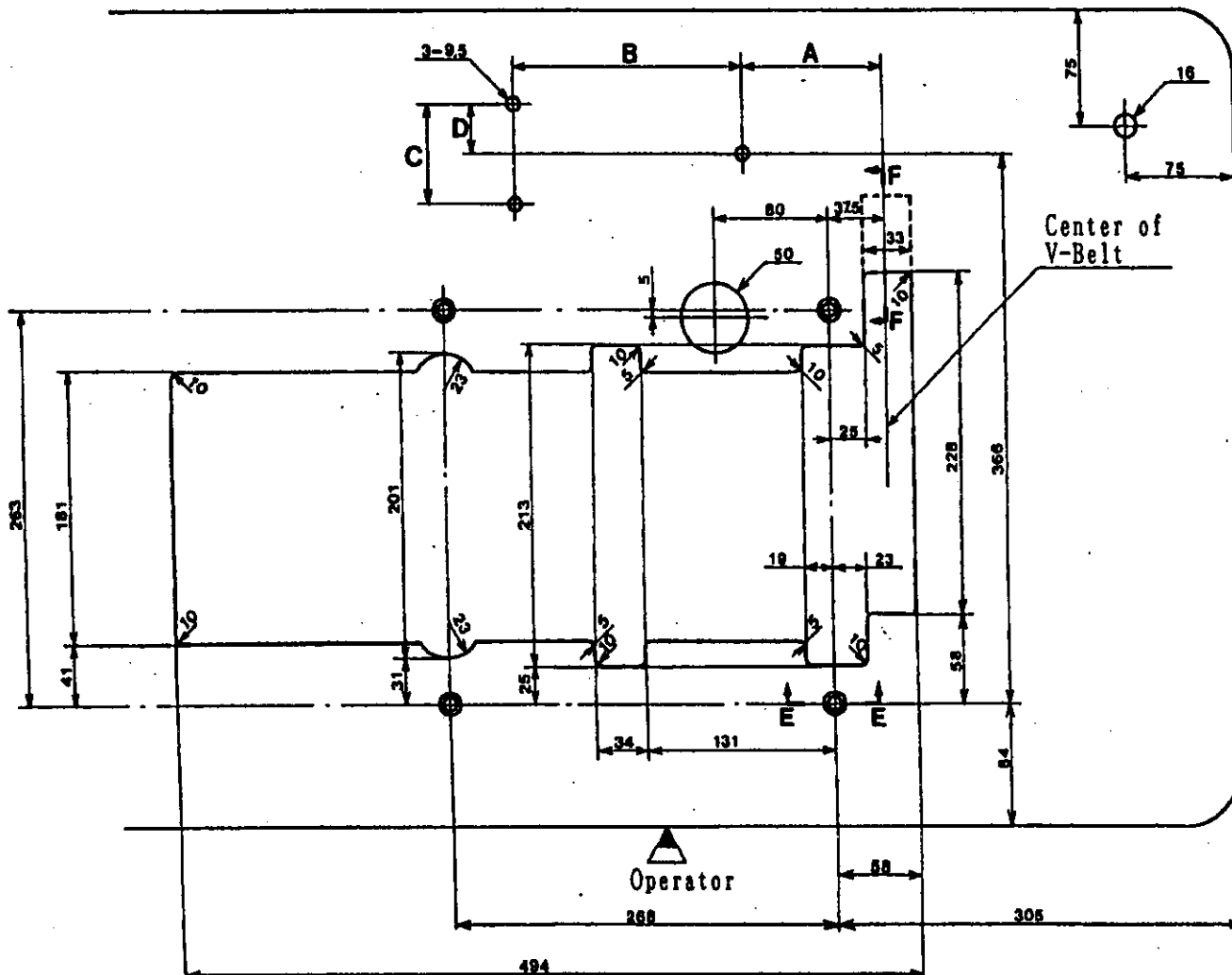
thickness of table (mm)	pcs. of (A)
40	3 pcs. $\times 4=12$
45	2 pcs. $\times 4=8$
50	1 pc. $\times 4=4$

\* Fixing of Belt Cover  
Fix Belt Cover as illustrated.

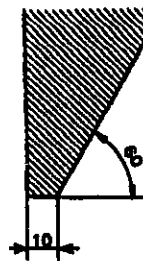


A	B	C	D
57	159	66	33

※ Size of Machine Table : 1,200(L) × 595(W)



Section E-E



Section F-F

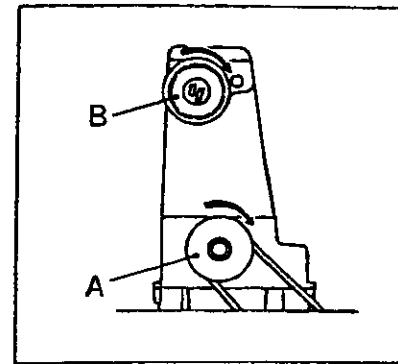
6-2 Drawing of table top cut out

### 6-3 Sewing speed, rotating directing of Pulley, Motor and Belt

**\* Sewing speed and rotating direction of Pulley**

The maximum speed of this machine are shown in the table below.

For the durability of machine, it is recommendable to operate at the speed 15~20% lower than maximum speed for the initial 200 hours (about a month) before operating at ordinary speed. Rotating direction is clockwise as illustrated.



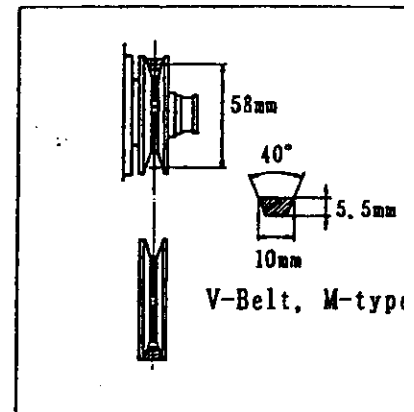
Max. sewing speed	Ordinary sewing speed
6,000 spm	5,500 spm

**\* Motor and Belt**

Use a Clutch Motor of 3-phase, 2-pole, 550W(3/4 HP) and V-Belt of M-type.

Position the Motor so that the centers of Motor Pulley and Machine Pulley align when Motor Pulley shifts to the left by treading Pedal.

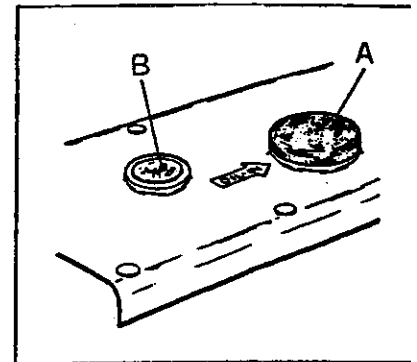
dia. of Motor Pulley (mm)	s. p. m. of machine	
	50Hz	60Hz
80		4,500
90		5,000
95	4,500	5,300
100	4,800	5,500
105	5,000	6,000
115	5,500	
125	5,800	
130	6,000	



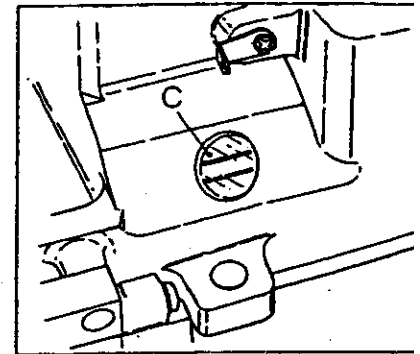
※ As diameter of ready made Pulley available on general market is intervals of 5mm, the diameter shown in the table is nearest to the calculated value.

## 6-4 Lubrication oil

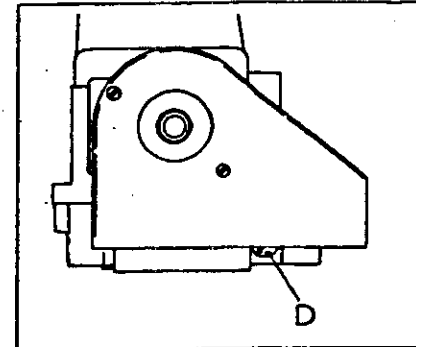
- \* Use SINGER C-oil for lubrication oil and use silicone oil for cooling oil.
- \* Feeding oil:  
Lubrication oil is completely drained before shipment of machine.  
The lubrication oil must be replenished up to the upper line of Oil Sight Gauge(C) before operation by removing Seal Plug(A) indicated "OIL-IN".



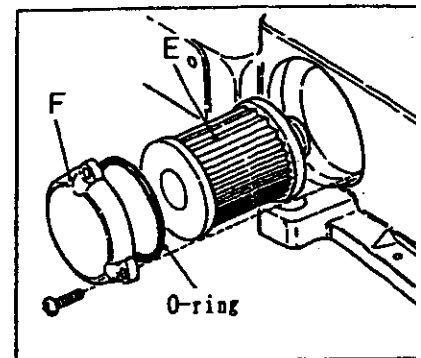
- \* Oil Sight Gauge and Oil Sight Top Nozzle:  
Check Oil Sight Gauge(C) every day before operation and if the oil surface is under the lower line, supply oil.  
Make sure that the oil flows out of Oil Sight Top Nozzle(B) at the time of starting machine.



- \* Change of oil:  
For the long service life of machine, oil of the new machine should be renewed completely after operation of 250 hours.  
The oil change should be made following next procedure:
  - ① Remove V-Belt from Pulley and remove machine out of Machine Table.
  - ② Remove Drain Screw(D) and drain oil. At this time, take care not to smear V-Belt with oil.
  - ③ Tighten Screw(D) after drain without fail.
  - ④ Feed new oil.



- \* Checking and replacement of Oil Filter:  
If Oil Filter(E) get clogged with dust, proper lubrication is not possible. Usually check Filter every 6 months.  
When oil does not flow out of Nozzle, in spite of enough oil in Oil Reservoir, check Oil Filter.  
Check of Oil Filter is made by removing Oil Filter Cap(F).  
If it is clogged, renew it.  
Note: At the time of removing Oil Filter Cap, pay attention to the leakage of oil collected on Oil Filter.



## 6-5 Needle and threading

\* Needle to be used:

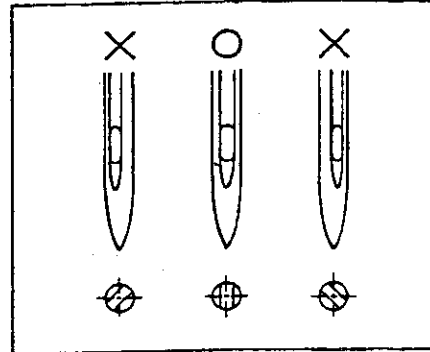
Needle SINGER N3651-05 is to be used.

There are many sizes of needle and the most suited size to the thickness and the kind of material should be selected.

Japanese size	9	10	11	12	13	14
Metric size	65	70	75	80	85	90

\* Setting of needles:

At the time of needle change, set the needles with their scarf facing right back as illustrated.



\* Threading:

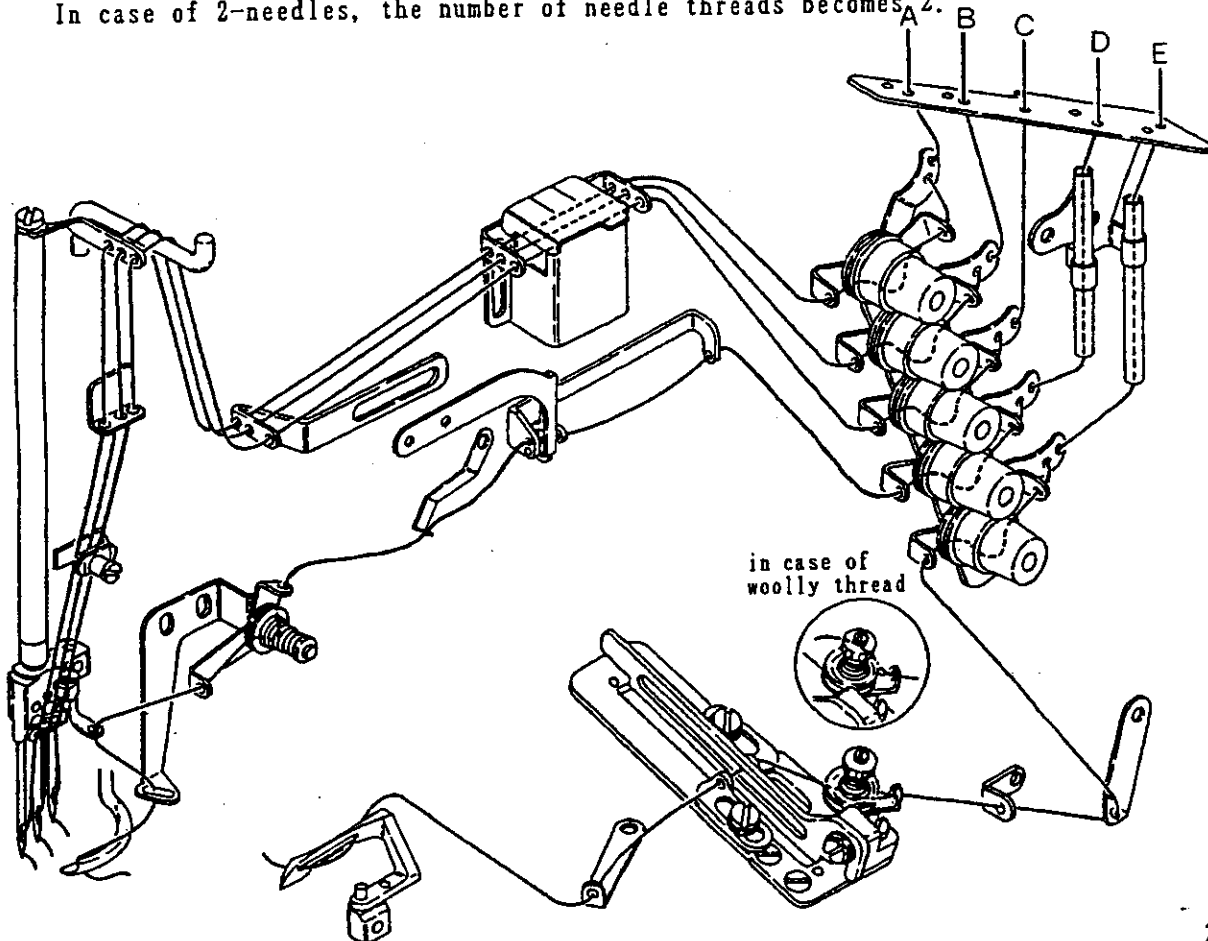
Make threading correctly referring to the illustration.

Improper threading may cause skip stitch, thread breakage and irregular thread tension, etc.

A, B, C...needle thread, D...top cover thread, E...looper thread

The illustration shows the threading for 3-needles.

In case of 2-needles, the number of needle threads becomes 2.

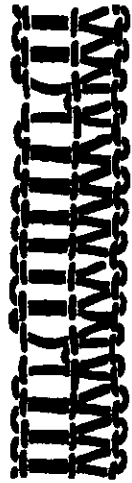


## 7. Troubles on sewing with chainstitch machine

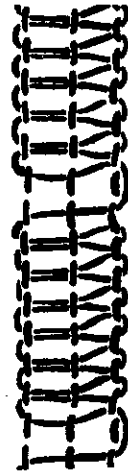
### Classification of skip stitch

\* Needle thread and top cover thread

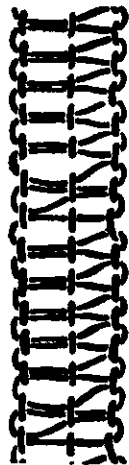
Left Needle does not catch the loop of top cover thread.



Left and middle Needle do not catch the loop of top cover thread.



Only left Needle enters into the loop of top cover thread.



All three Needles enter into the loop of top cover thread.

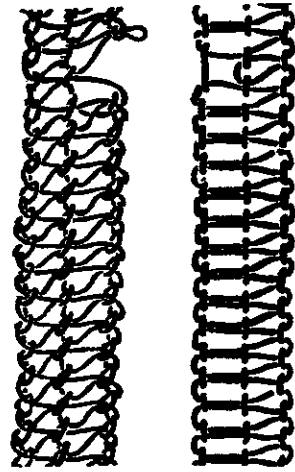


※ The above troubles are caused by improper threading, relation between Needle and Spreader, position of Spreader and Top Cover Thread Guide.

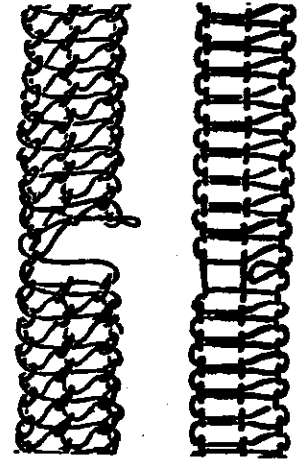
Classification of skip stitch

\* Needle thread and looper thread

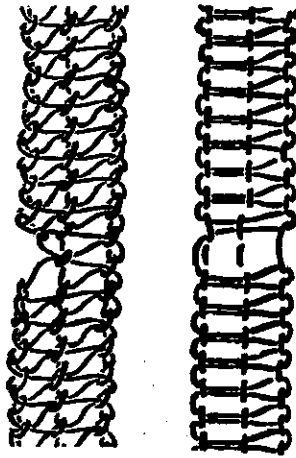
Looper does not enter into the loop of left Needle.



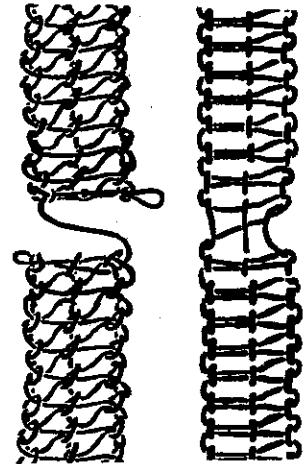
Looper does not enter into the loop of left and middle Needles.



Looper does not enter into the loop of right Needle.



Looper does not enter into all the loops of three Needles.



※ The above troubles are caused by improper threading, height of Needle, longitudinal positions of Needle and Loper, position of Needle and Needle Guard and the amount of movement of Loper to the right, etc.



Classification of skip stitch

\* Needle thread and Loper thread

Left Needle does not enter into the loop of looper thread.



Middle Needle does not enter into loop of looper thread.



Right Needle does not enter into loop of looper thread.



All three Needles do not enter into loop of looper thread.



※ The above troubles are caused by improper threading, height of Needle, longitudinal position of Needle and Loper, position of Needle and Needle Guard and the amount of movement of Loper to the right, etc.