

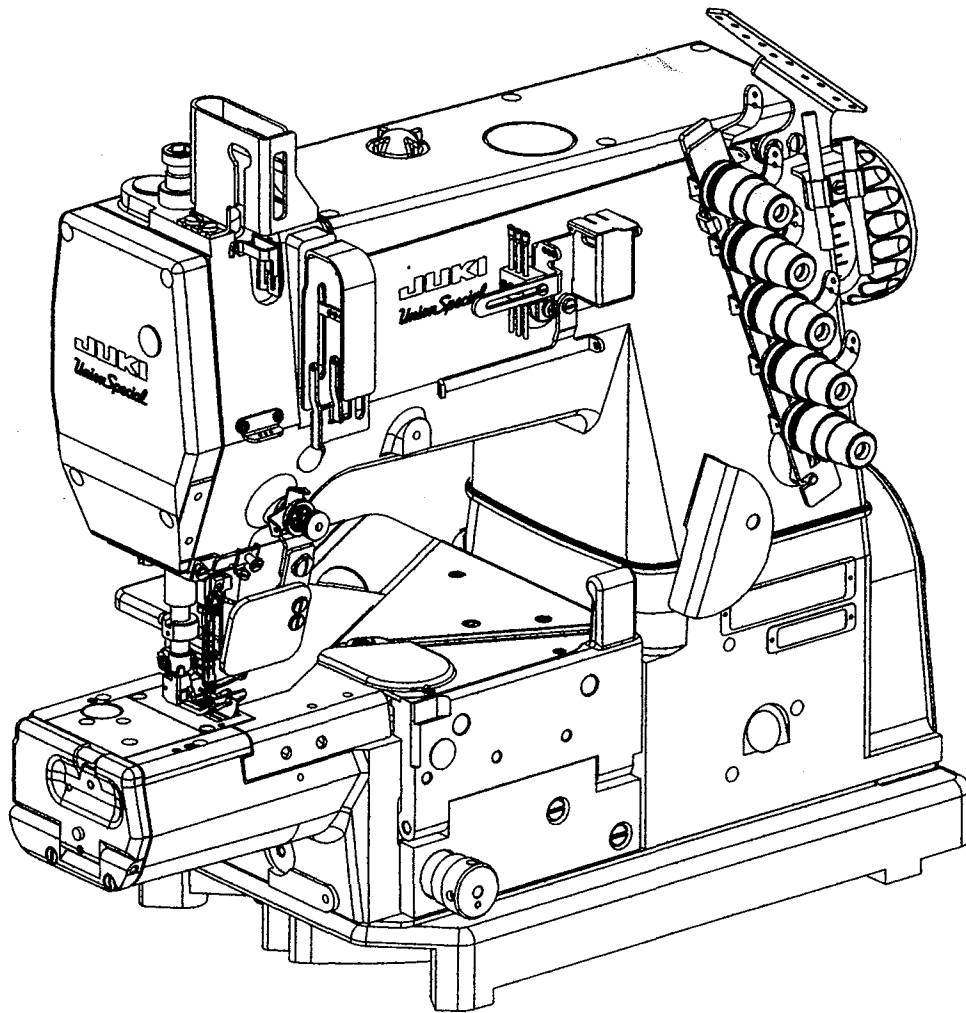


JUKI
Union Special

2-3 Needle Cylinder Bed Coverseam Machine

MFC-7000A Series

INSTRUCTION MANUAL



NOTE: Read safety instructions carefully and understand them before using your MFC-7000.
Retain this Instruction Manual for future reference.

PREFACE:

This operator's manual has been prepared to guide you while operating the MFC-7000 Series machines.

This manual explains in detail the proper settings for operation of the machine. Illustrations are used to show the adjustments and reference letters are used to point out specific items discussed.

Careful attention to the instructions and cautions for operating and adjusting these machines will enable you to maintain the superior performance and reliability designed and built into every Union Special machine.

Adjustments and cautions are presented in sequence so that a logical progression is accomplished. Some adjustments performed out of sequence may have an adverse effect on the function of the other related parts.

This manual has been comprised on the basis of available information. Changes in design and/or improvements may incorporate a slight modification of configuration in illustrations or cautions.

On the following pages will be found illustrations and terminology used in describing operating instructions for your machine.

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SAFETY RULES

1. Before putting the machines described in this manual into service, carefully read the instructions. The starting of each machine is only permitted after taking notice of the instructions and by qualified operators.

IMPORTANT! Before putting the machine into service, also read the safety rules and instruction from the motor supplier.

2. Observe the national safety rules valid for your country.
3. The sewing machines described in this instruction manual are prohibited from being put into service until it has been ascertained that the sewing units which these sewing machines will be built into, have conformed with the EC Council Directives (89/392/EEC, Annex II B).

Each machine is only allowed to be used as foreseen. The foreseen use of the particular machine is described in paragraph "STYLES OF MACHINES" of this instruction manual. Another use, going beyond the description, is not as foreseen.

4. All safety devices must be in position when the machine is ready for work or in operation. Operation of the machine without the appertaining safety devices is prohibited.
5. Wear safety glasses.
6. In case of machine conversions and changes all valid safety rules must be considered. Conversions and changes are made at your own risk.
7. The warning hints in the instructions are marked with one of these two symbols:



8. When doing the following the machine has to be disconnected from the power supply by turning off the main switch or by pulling out the main plug:
 - 8.1 When threading needle(s), looper, spreader etc.
 - 8.2 When replacing any parts such as needle(s), presser foot, throat plate, looper, spreader, feed dog, needle guard, folder, fabric guide etc.
 - 8.3 When leaving the workplace and when the workplace is unattended.
 - 8.4 When doing maintenance work.
 - 8.5 When using clutch motors without actuation lock, wait until the motor is stopped totally.
9. Maintenance, repair and conversion work (see item 8) must be done only by trained technicians or special skilled personnel under consideration of the instructions.
10. Any work on the electrical equipment must be done by an electrician or under direction and supervision of special skilled personnel.
11. Work on parts and equipment under electrical power is not permitted. Permissible exceptions are described in the applicable sections of standard sheet DIN VDE 0105.
12. Before doing maintenance and repair work on the pneumatic equipment, the machine has to be disconnected from the compressed air supply. In case of existing residual air pressure after disconnecting from compressed air supply (i.e. pneumatic equipment with air tank), the pressure has to be removed by bleeding.

SPECIFICATIONS:

Style Name	MFC-7406	MFC-7407	MFC-7602	MFC-7605
Stitch Type	406	407	602	605
	2 Needle Bottom Cover Stitch	3 Needle Bottom Cover Stitch	2 Needle Top & Bottom Cover Stitch	3 Needle Top & Bottom Cover Stitch
Machine Speed	6500RPM (MAX)			
Sewing Speed	* 6500RPM (Texturized Thread)			
Stitch Range	1.6 to 3.2 mm			
Differential Ratio	1:0.3 - 1:2.4			
Needle Spacing	3.2 4.0 4.8	5.6 6.4	3.2 4.0 4.8	5.6 6.4
Needle	128GBS075/032 (055/022 - 090/036)			
Presser Foot Lift	7.0mm			
Needle Bar Stroke	32mm			
Lubricating Oil	Prorex oil 39 (Part Number 28604R, Union Special Spec. 175) 1 Pint			
Noise	87.2dBA max. (at 6500 RPM)			

* Maximum speed depends on thread and material.

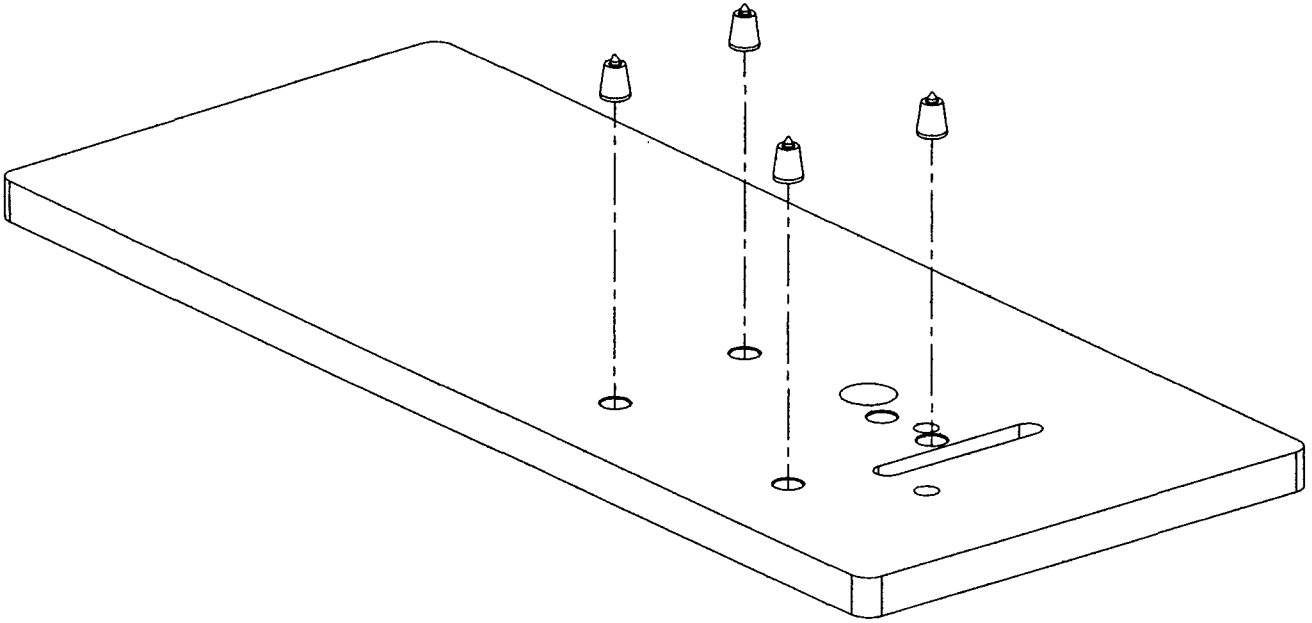
MOTOR PULLEY AND V BELT:

Sewing Speed (RPM)	50Hz		60Hz	
	Motor Pulley O.D. (MM)	V Belt (inches) Non-submerge	Motor Pulley O.D. (MM)	V Belt (inches) Non-submerge
6500	145	43	120	41
6000	135	43	110	41
5500	120	41	100	41
5000	110	41	90	39
4500	95	41	80	39
4000	85	39	70	39
3500	75	39	60	38

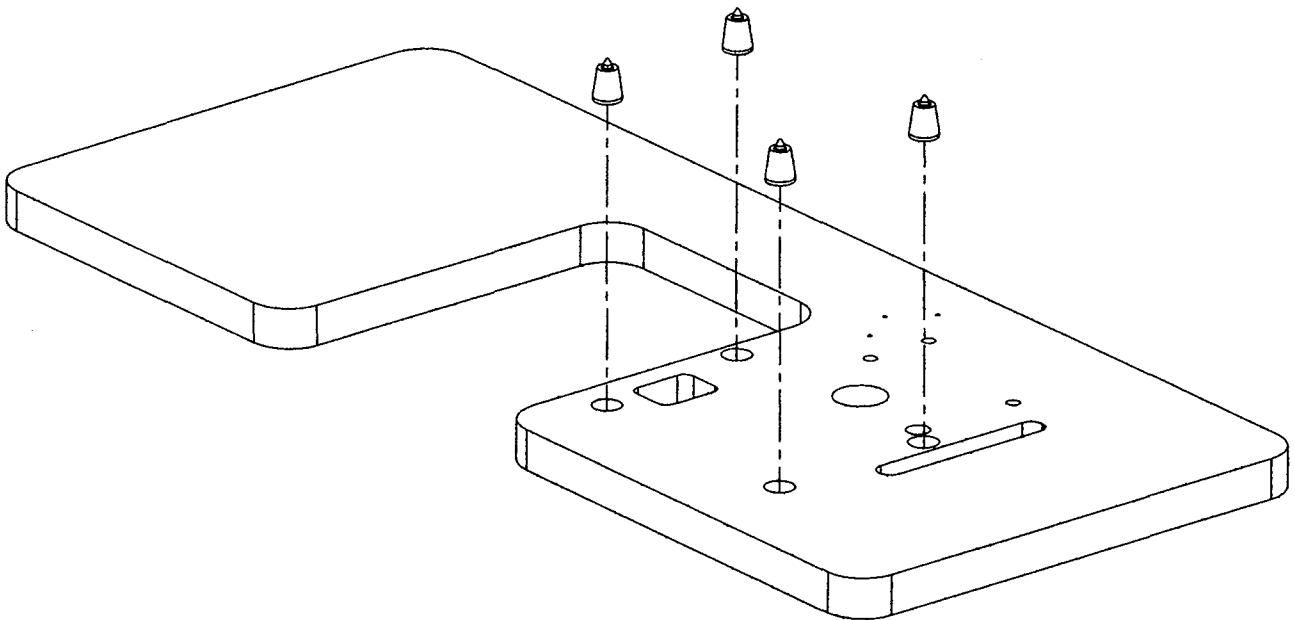
1. Use a M type V belt.
2. The table on the left shows the sewing speeds obtained by the use of motor pulleys with different diameters and V belts with different lengths.
3. Note that the effective diameter of the pulley of the sewing machine head is 57.5mm.
4. Use JUKI Clutch motor (400w).

TABLING INSTALLATION:



(1) NON SUBMERGE FOR STANDARD
(PART NUMBER 21371ZJ48)

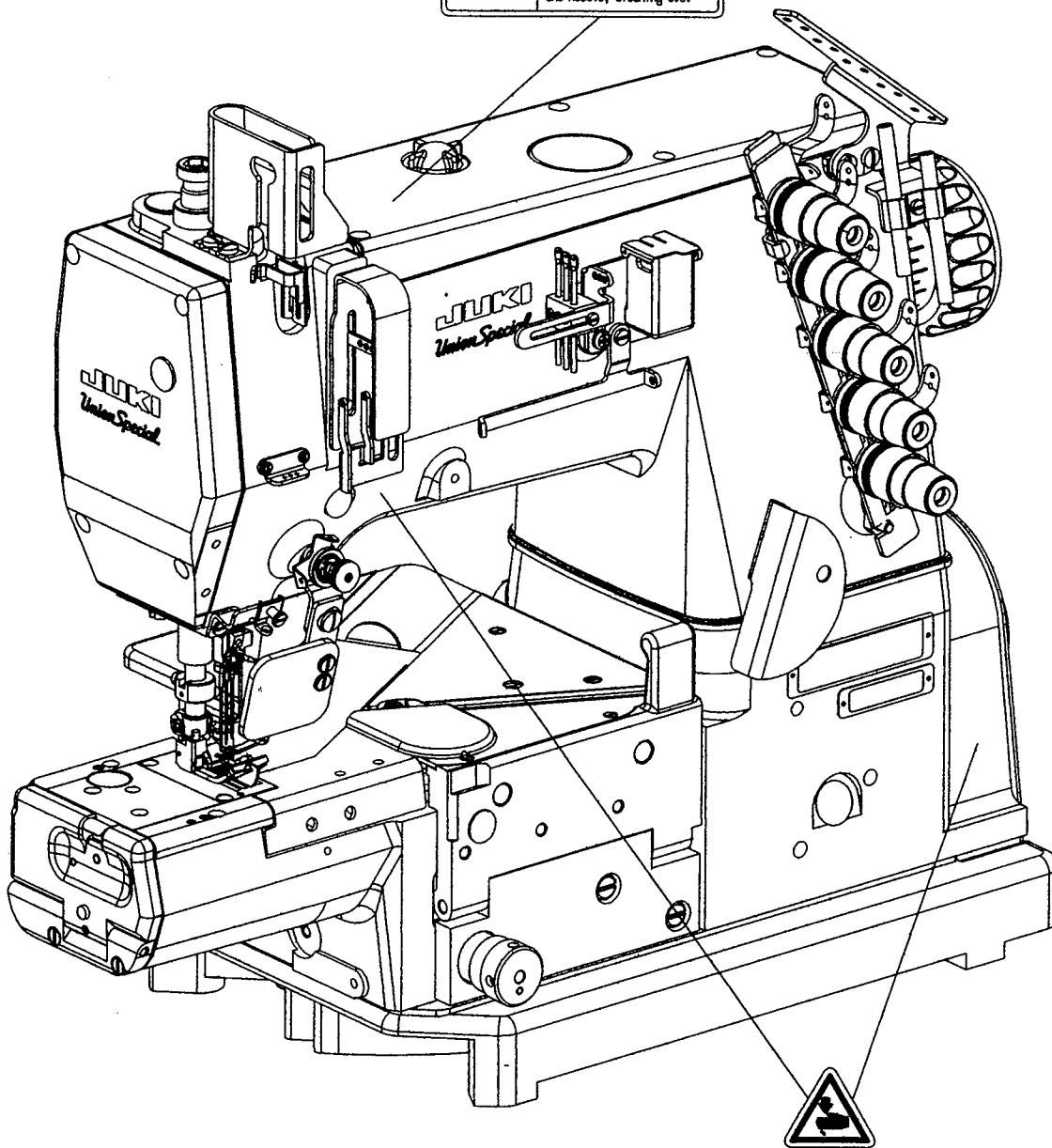


(2) NON SUBMERGE FOR ELASTIC
(PART NUMBER 21371AAJ48)



CAUTION AREAS:

	CAUTION
	Moving parts may cause injury.
	Operate with safety devices. Turn off main switch before threading, changing bobbin and needle, cleaning etc.

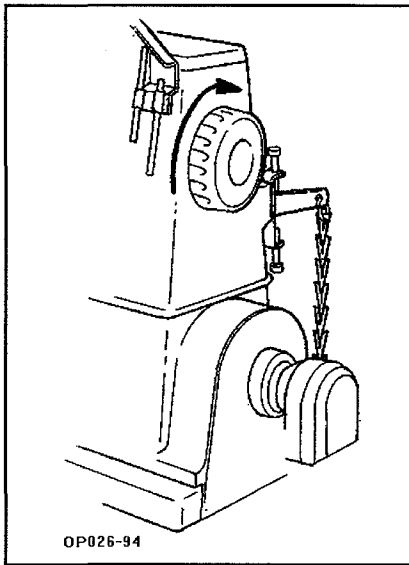


OPERATOR'S DAILY CHECK LIST:

The following should be checked daily and cleaned as required when it applies to your Juki Union Special machine:

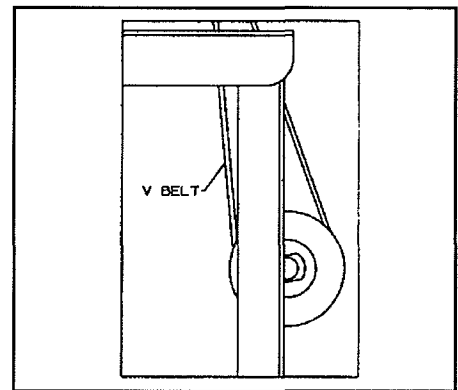
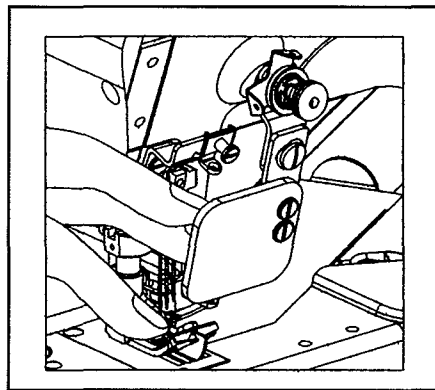
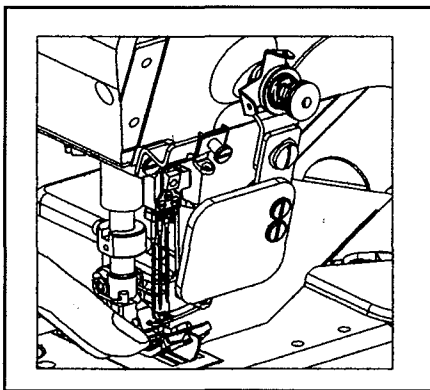
- Oil flow
- Oil level
- Lint area (clean with compressed air or brush)
- Needle bar bushings
- Under feed dogs & throat plates
- In knives
- In thread control eyelets
- Cooling airways
 - In the machine
 - In the motor
 - In the cooling package (package is an extra send charge)

ROTATION:



The correct rotating direction of the handwheel is clockwise, as viewed from the handwheel's side. NEVER run the machine in reverse direction.

OPERATING CAUTIONS:



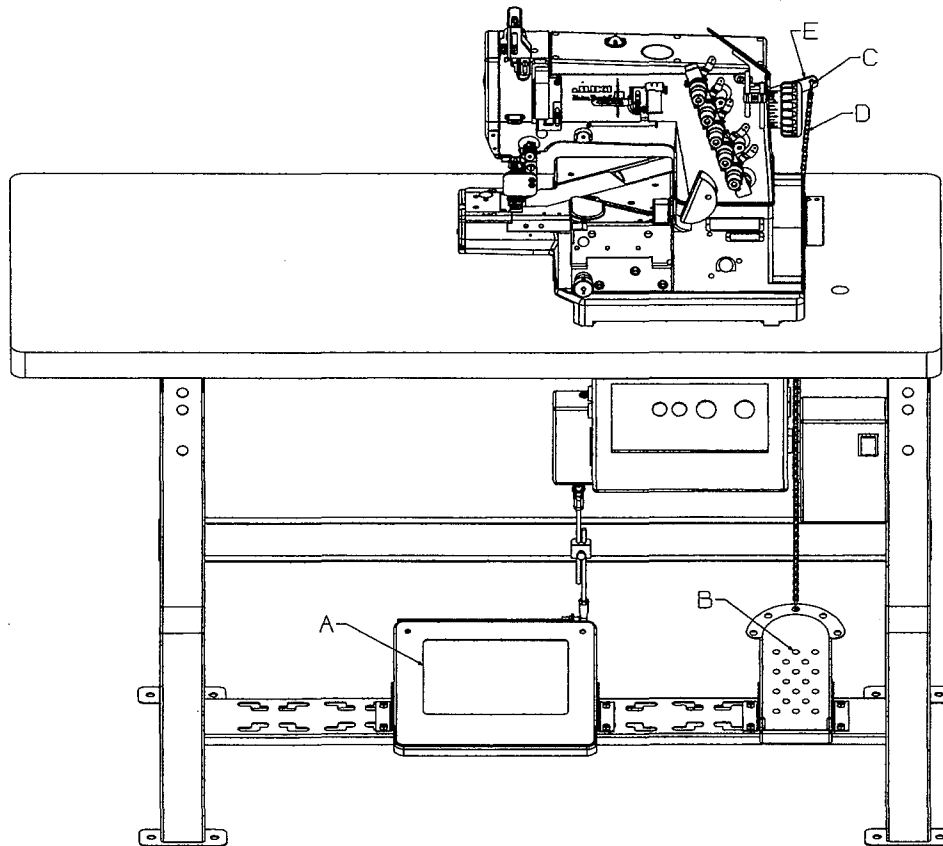
1. Do not put your hand under the needles when turning on the power switch or at any time.
2. Do not put your hand into the sewing area while the machine is running.
3. Turn off the power switch and make sure the clutch motor is at rest before removing the V belt.

OPERATING CAUTIONS (CONT.):



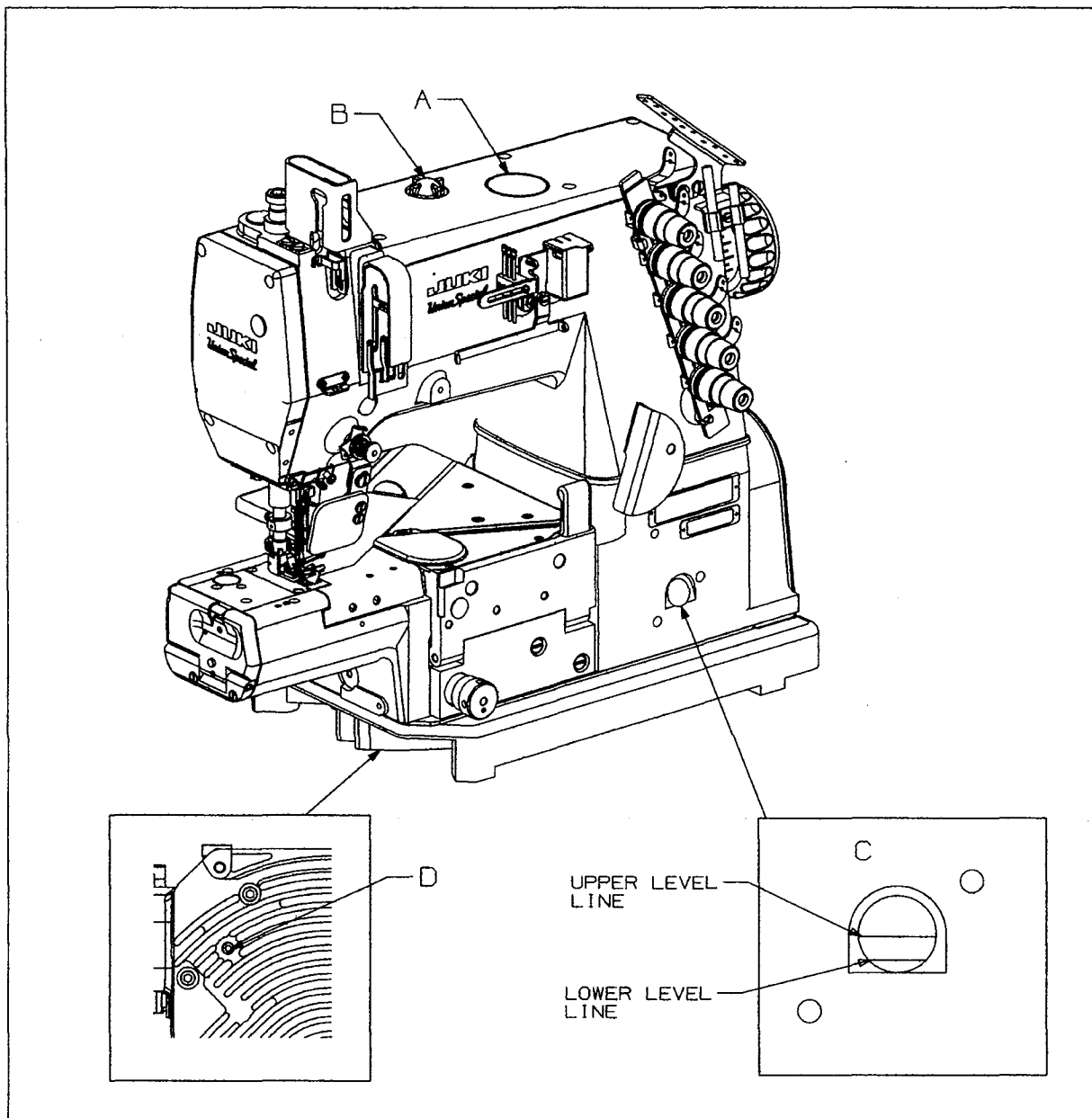
4. During operation, do not allow head, hands or any instrument, tool etc. near handwheel, V belt and motor.
5. Do not operate your machine without the proper belt guard, sewing guards or any other protectors that have been provided. Doing so is very dangerous.
6. Before inspecting, adjusting, cleaning, threading the head or replacing needles, turn OFF the power switch. Make sure the flywheel on the motor has stopped, it will be kept running by inertia after turning OFF the power switch. DO NOT depress the foot pedal while the motor is running or it will cause the machine to rotate abruptly.
7. Turn OFF the power switch when you leave your machine or in case of a power failure.
8. Do not wipe the machine surface with lacquer thinner.

OPERATING THE PEDALS:



1. Locate the center of drive treadle (A) to be in line with the needles.
2. Locate presser lifter pedal (B) for operator comfort and make sure lifter chain is unobstructed.
3. Use S-shaped hook (C) to connect presser lifter pedal chain (D) to presser lifting lever (E). Depending on application.

LUBRICATION:



The oil should be between the two red lines in sight gauge (B) when the machine is at rest.

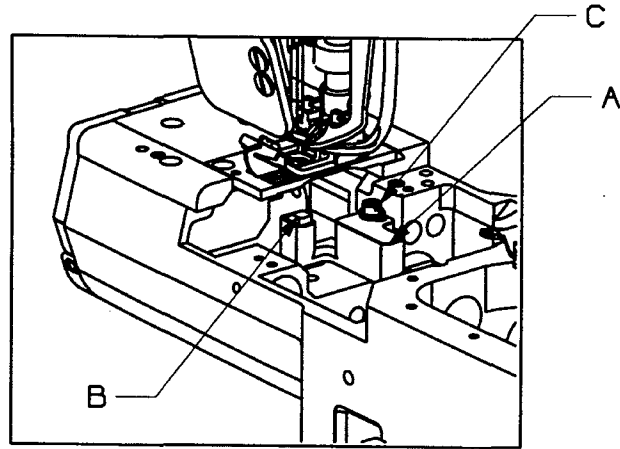
1. If oil is required remove oil cap (A).
2. Fill between lines (B) with Union Special Specification 175 oil (Union Special Part No. 28604R).



CAUTION: Do not exceed the upper red marker line. Excessive oil in the machine will result in oil leakage and possible overheating.

3. To drain oil reservoir, remove oil drain cap (C) on the underside of the machine.
4. To ensure oil flow through machine, check oil flow window (D).

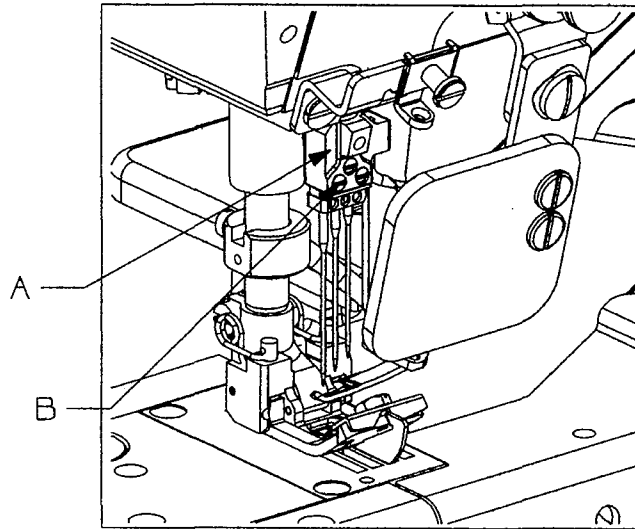
LUBRICATION (CONT.):



Lubrication of Needle Tip Dipper *(Optional, extra send charge item)

1. Open cloth plate and well cover (A), fill well (B) approximately 80% full with silicone oil.
2. The back of the needles should just touch the front of felt (C).
3. If adjustment is necessary loosen screw (D) and move dipper as required.
4. Saturate silicone oil into felt (C) if the machine is started immediately after lubricating needle tip dipper.

INSERTING NEEDLES:



The standard needle is 128GBS, needle range sizes " 055/022 - 090/036."
Insert needles according to the following procedure:

1. Bring needle head (A) to the highest position.
2. Loosen screws (B), insert needles into holes. The needle scarf should face rearwards as viewed from the operator's side.
3. Retighten screws (B).

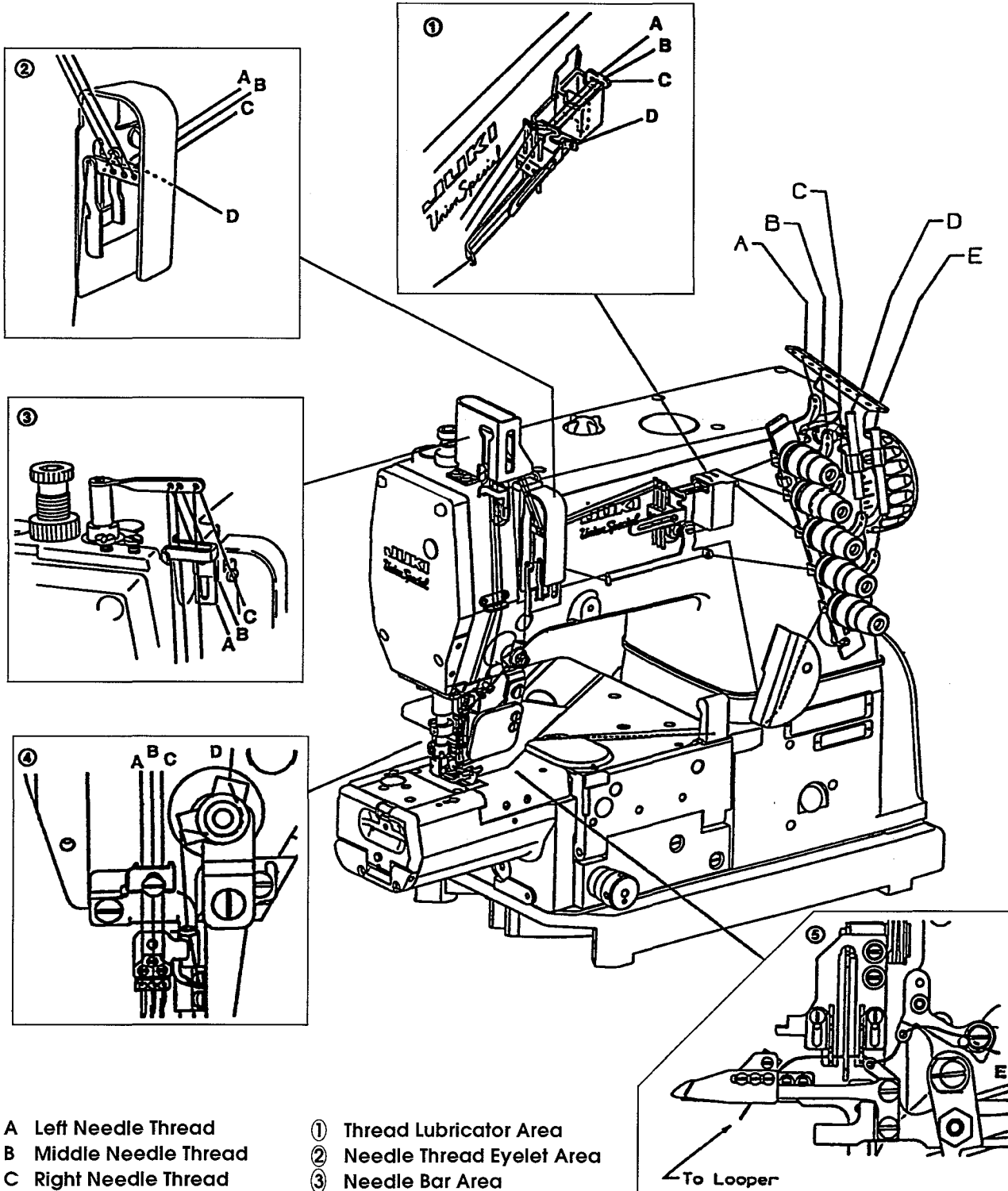
THREADING THE MACHINE:



Turn off main power switch before threading! When using clutch motors without actuation lock wait until the motor has completely stopped.

Thread the machine according to the following threading illustrations.

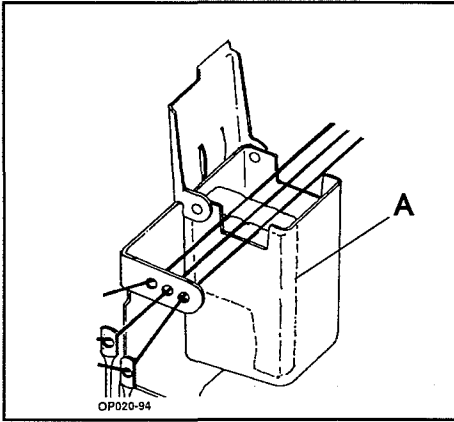
NOTE: When threading two needle machines use needles "A" & "C".



- | | |
|------------------------|--------------------------------|
| A Left Needle Thread | ① Thread Lubricator Area |
| B Middle Needle Thread | ② Needle Thread Eyelet Area |
| C Right Needle Thread | ③ Needle Bar Area |
| D Spreader Thread | ④ Thread Nipper, Spreader Area |
| E Looper Thread | ⑤ Thread Take-Up Area |

NOTE: When threading two needle machines use needles "A" & "C", DO NOT use needle "B".

THREADING THE MACHINE (CONT.):

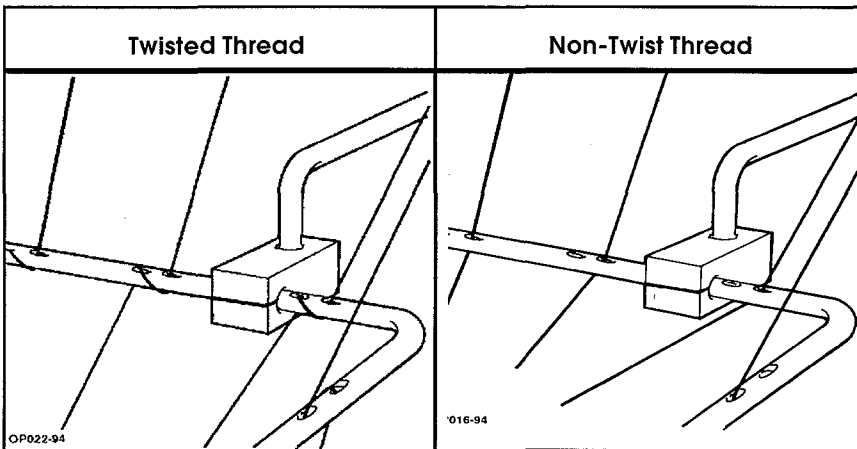


When the needle thread lubricator is used:

1. Saturate felt (A).
2. Pass thread over felt.

When the needle thread lubricator is not used:

1. Remove felt (A).



CAUTION!

When using an untwisted thread such as wooly nylon thread or weak thread, do not wind it around the immediate thread guide.

ADJUSTING THE STITCH LENGTH:



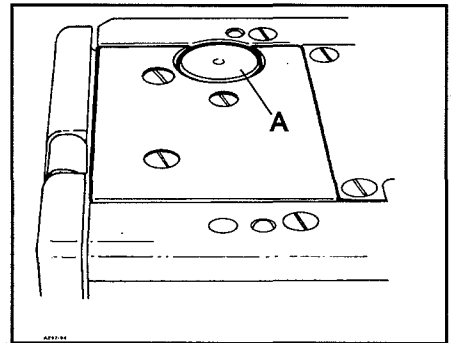
Turn off main power switch before setting the stitch length! When using clutch motors without actuation lock wait until the motor has completely stopped.

1. Locking feature may be engaged, refer to Engineer's Manual EN9424.
2. To change stitch length push down on stitch regulator button (A) and rotate handwheel in appropriate direction.

Clockwise to increase the stitches per inch/shorten the length of one stitch.

Counterclockwise to decrease stitches per inch/increase the length of one stitch.

3. The arrows on the belt cover are for operator's reference only.

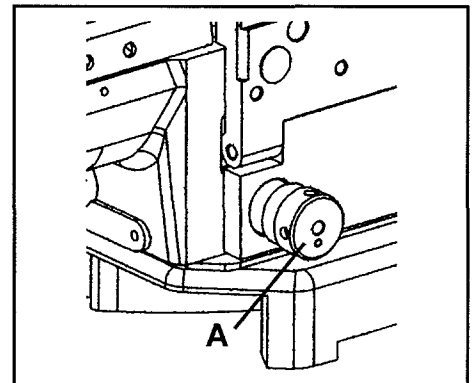


DIFFERENTIAL FEED MECHANISM:

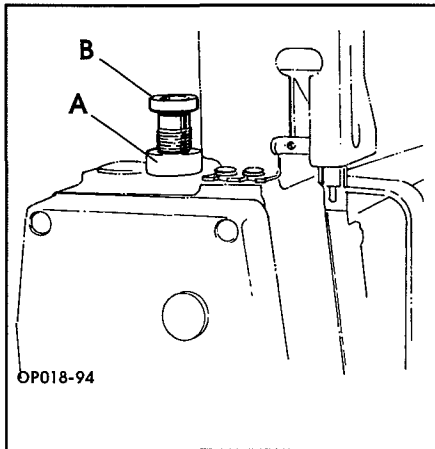
1. Turn knob (A) to change the travel of the differential feed dog.

Clockwise to decrease the stitches per inch/increase the length of one stitch.

Counterclockwise to increase stitches per inch/decrease the length of one stitch.

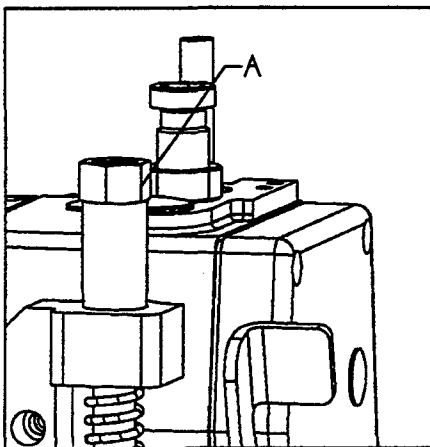


PRESSER FOOT PRESSURE AND LIFTER:



1. Adjust presser foot pressure by loosening nut (A) and turning presser foot adjust screw (B) clockwise to increase the pressure, counterclockwise to decrease the pressure.
2. Retighten nut (A).

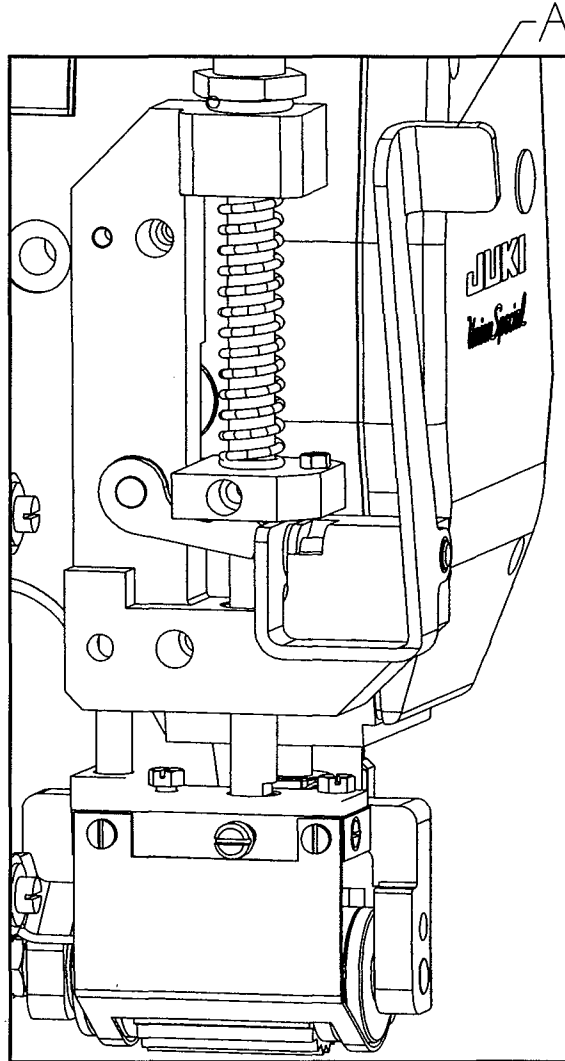
ROLLER PRESSURE ADJUSTING KNOB:



1. To adjust the pressure for the puller drive roller assembly turn adjusting screw (A) clockwise to increase the pressure, counterclockwise to decrease the pressure.

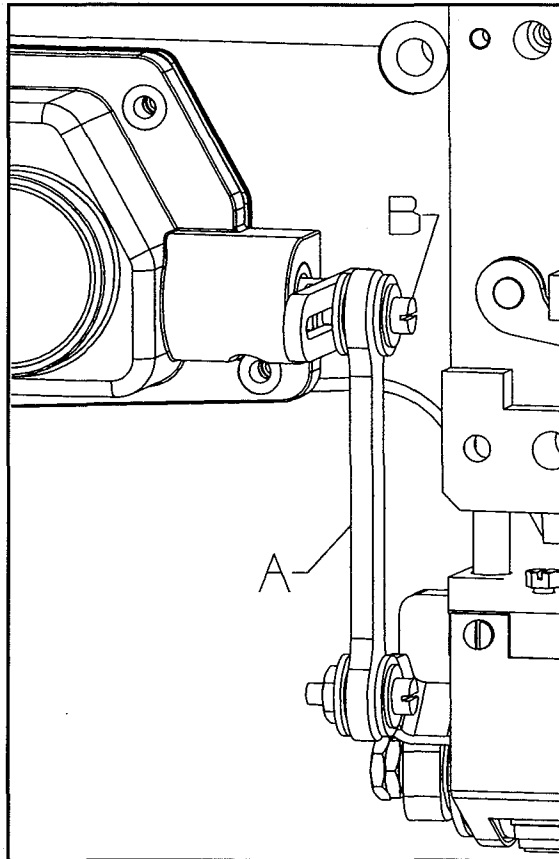
PULLER LIFTER LEVER:

1. To engage puller roller to material, push lifter lever (A) away from the operator.
2. To disengage puller roller to material, pull lifter lever (A) towards the operator.



PULLER STITCH LENGTH:

1. Moving lever (A) towards or away from operator to set stitch length of puller.
 - Set closer to operator for short stitches.
 - Set farther away from operator for longer stitches.
2. Loosen nut (B) and move lever (A) as needed to obtain proper stitch length.

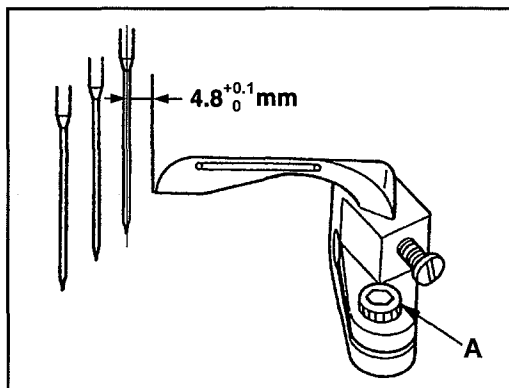


ADJUSTMENT OF LOOPER GAUGE:



Turn off main power switch before setting the stitch length! When using clutch motors without actuation lock wait until the motor has completely stopped.

1. Set the looper gauge to be $4.8^{+0.1}_0$ mm.

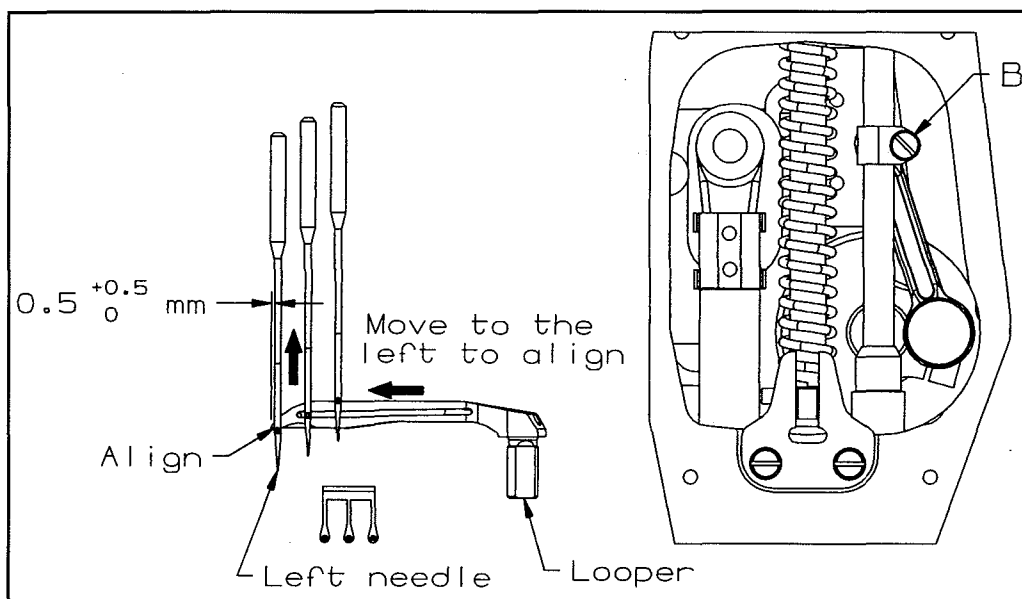


ADJUSTMENT OF NEEDLE BAR HEIGHT:

1. When looper moves to the left side, adjust the tip of the looper so that it comes to the position located past the left needle by $0.5^{+0.5}_0$ mm.
2. Remove face cover and loosen screw (B). Then adjust needle bar to the position where the lower part of looper is aligned to the upper part of the eye of the needle on the left side.

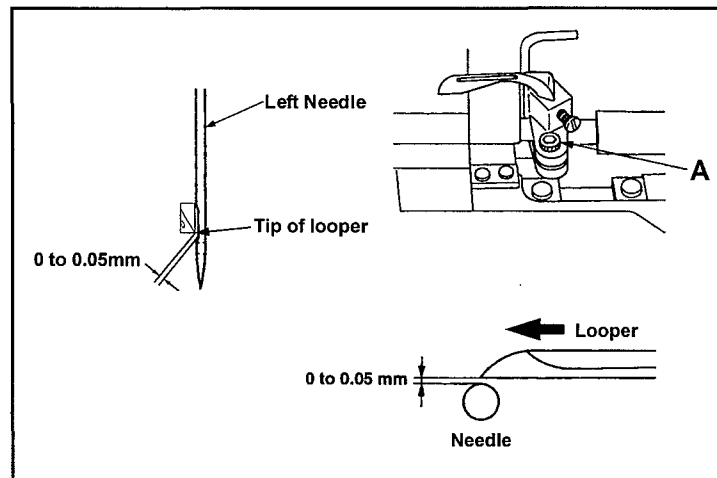
(Caution)

After adjustment, confirm that the direction of needle head is correctly set and the respective needles align into the center of the holes of the throat plate.



ADJUSTMENT OF LOOPER AND NEEDLE:

Turn handwheel in operating direction until tip of looper is in scarf of left needle. Loosen screw (A) and move looper base back and forth so that the clearance between the tip of looper and the scarve of left needle is 0 to 0.05mm.



ADJUSTMENT OF NEEDLE GUARD:

1) Adjusting the height of rear needle guard

- Loosen screw (C) and move rear needle guard up and down so that the tip of needle comes to the height of 1/2 of the end part of rear needle guard (D) when the blade point of looper is aligned with the right side of right needle.

2) Adjusting front to back of rear needle guard

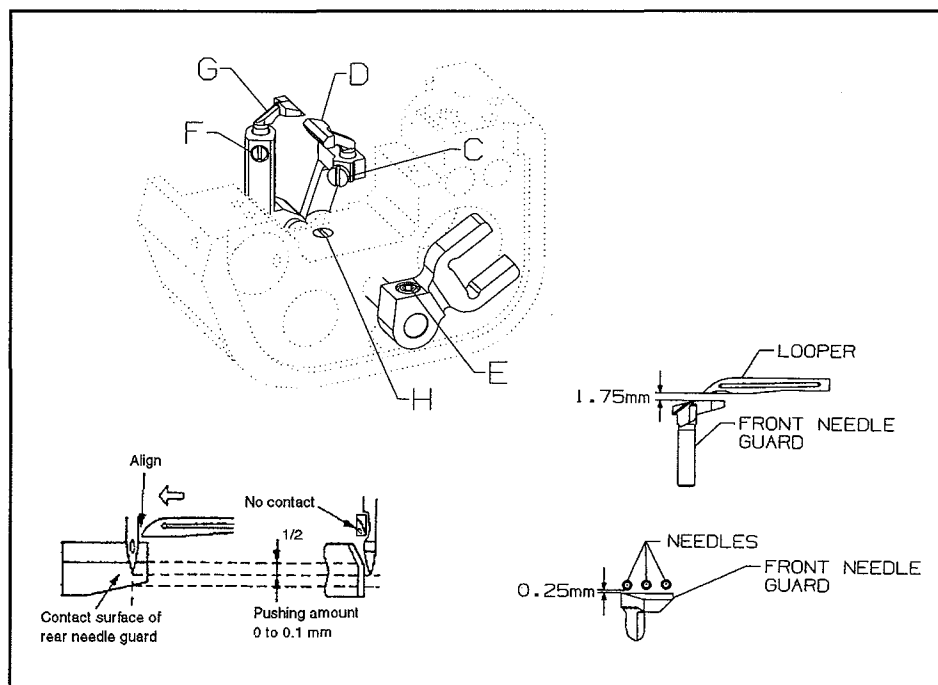
- Loosen screw (E) and Adjust the rear needle guard so when the looper reaches the right needle, there is 0 - .05mm between the needle and the looper point. Use the rear guard to push the right and middle needle forward slightly. The rear guard should touch but not deflect the left needle.

(Caution)

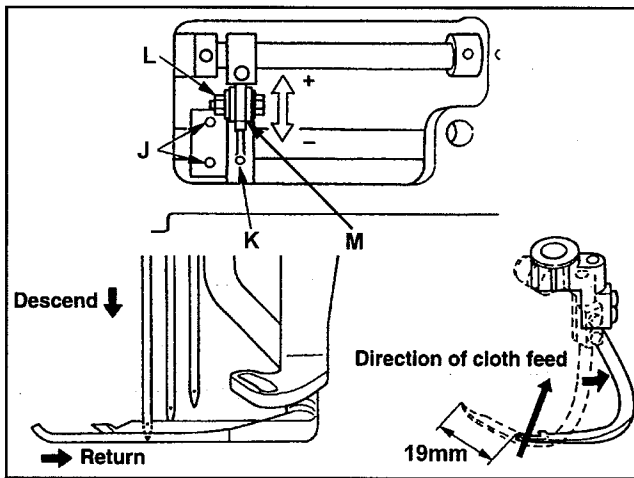
1. Confirm that the blade of looper does not touch the scarves of all needles.
2. When tightening screw (E), confirm that there is no shake left and right of rear needle guard.

3) Adjusting the height of front needle guard

- Loosen screw (F) and move front needle guard (G) up and down so that it comes 1.75mm from the lower part of looper blade. At this time, also loosen screw (H) and adjust so that clearance of 0.25mm is provided in parallel between the angle of front needle guard and all needles.



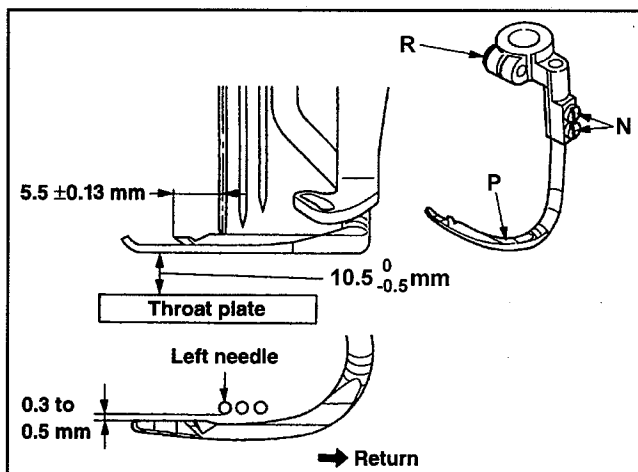
ADJUSTMENT OF SPREADER:



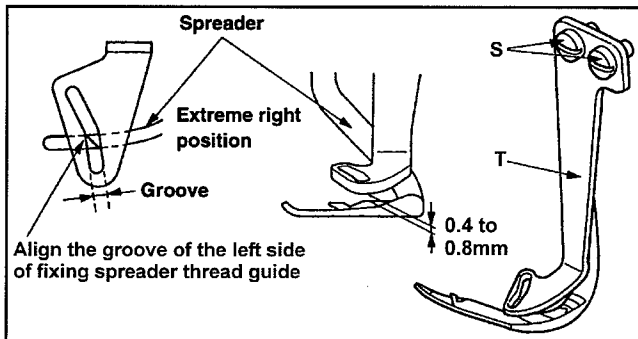
- 1) **Adjusting stroke**
 - Adjust stroke by 19mm by loosening nut (L) and moving (M) back and forth.
 - (If you move (M) toward you the stroke will become short, and the stroke will become longer if you move it backward.)

- 2) **Adjusting the position of spreader**
 - Adjust the height of spreader to be 10.5 -0.5mm after loosening screw (N) and move spreader (P) up and down.
 - Adjust so that when spreader is located at the extreme left, loosen screw (N) and move spreader (P) back and forth. And when spreader moves from the left to the right a clearance of 0.3 to 0.5mm is provided between spreader and left needle.
 - The extreme left position of spreader is adjusted to 5.5 +/-0.13mm from the center of left needle to the tip of spreader by loosening screw (R) and moving spreader left and right.

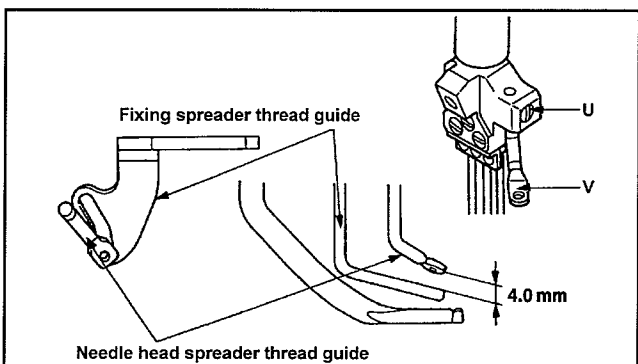
NOTE: It may be necessary to loosen both screws (N) and (R) simultaneously to obtain the proper front to back and left to right settings.



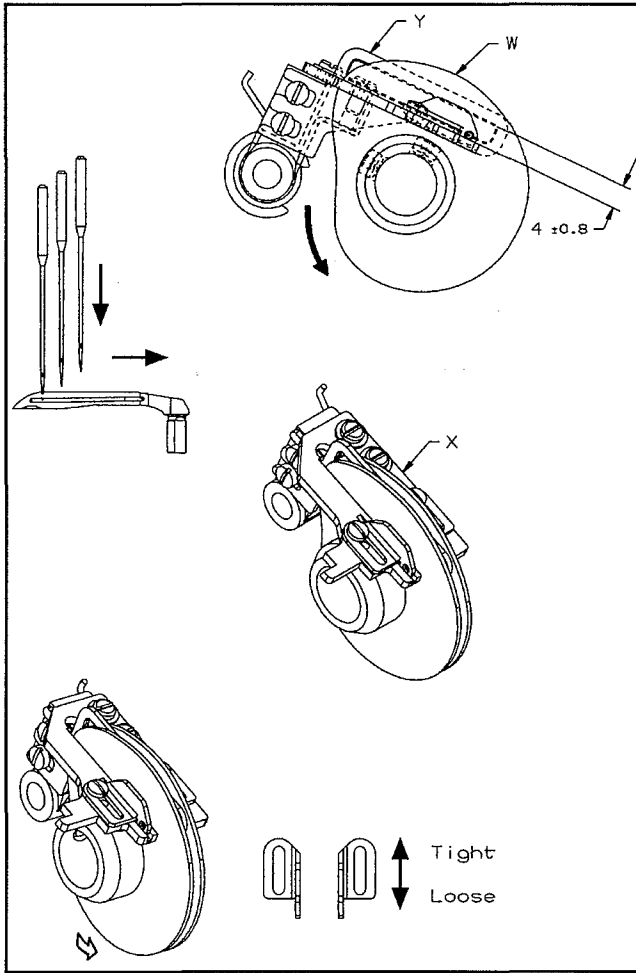
- 3) **Adjusting fixed spreader thread guide**
 - Loosen screw (S) when spreader is in the extreme right position. And adjust the fixed spreader thread guide where the tip of spreader and the top part of the groove of fixed spreader thread guide (T) meet.
 - Then loosen screw (S) and adjust the height from the top of spreader to the underside of the fixed spreader thread guide (T) to be 0.4 to 0.8mm.



- 4) **Adjusting needle head spreader thread guide**
 - Loosen screw (U) and adjust needle head spreader thread guide so that a clearance of 4.0mm is provided between the upper part of fixed spreader thread guide and needle head spreader thread guide at lowest point of needle bar, and center of needle head spreader thread guide over the left side of the groove of fixed spreader thread guide (V).

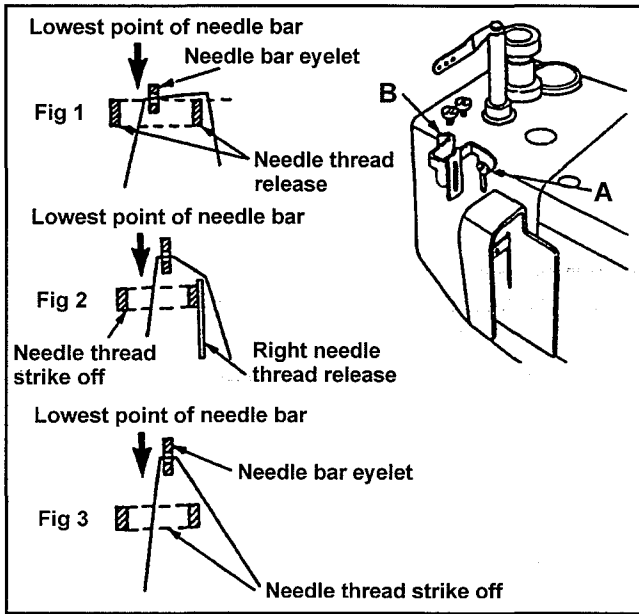


ADJUSTING TAKE-UP CAM:

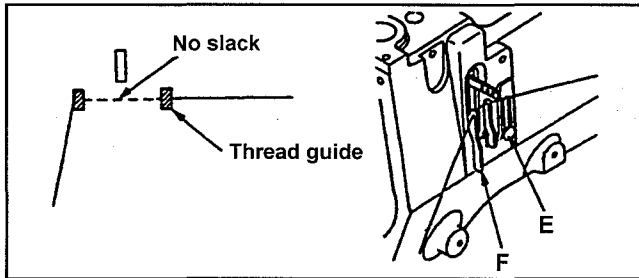


- 1) **Looper take-up adjustments**
 - Center take-up cam (W) to the slots in the take-up plate. Set timing of the cam so that the looper thread cast-off occurs when the tip of the left needle, on its down stroke is 1/2 way down on back side of looper. Set the retaining finger (Y) to 4mm \pm 0.8mm above the take-up plate (X) and parallel to the plate.
- 2) **Adjustment eyelet**
 - Standard setting eyelet is all the way down.
 - Move eyelet up for tight looper thread.

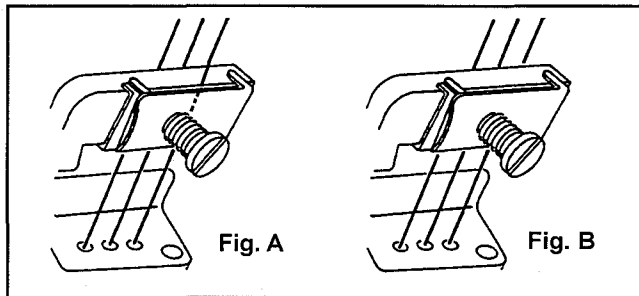
ADJUSTMENT OF THREAD GUIDE:



- 1) **Adjusting needle thread strike off**
- Raise the strike off to help increase the needle thread loop when the looper is at loop taking time.
 - When using cotton thread
Set needle at the lowest point, loosen screw (A). Then lower needle thread strike off (B).
 - When using spun thread
Set needle at the lowest point, loosen screw (A) and lower needle thread releasing so that the thread does not touch needle thread strike off. For very stretchy spun thread the strike off can be raised to increase loop size.



- 2) These settings are for all types of thread. Set the spreader thread control eyelet (F) so that the spreader thread becomes tight when the spreader reaches its left end of stroke and no thread is drawn from the cone.



- 3) **Needle thread nipper**
- Use right needle on the nipper. (Fig. A)
 - Use no needle thread. (Fig. B)

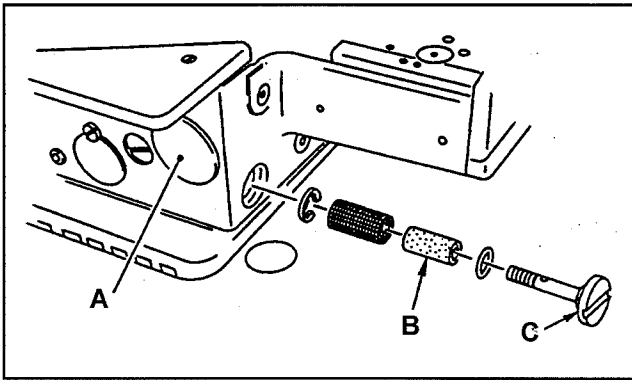
NON KLIPP-IT	KLIPP-IT	TEXTURIZED SPUN STRETCH THREAD	COTTON THREAD
Fig A	Fig B	Fig A	Fig B

MAINTENANCE:

1) Cleaning the machine head



To prevent accidents caused by abrupt start of the machine, turn OFF the power to the machine and confirming that the sewing machine will not run even by depressing the start pedal.



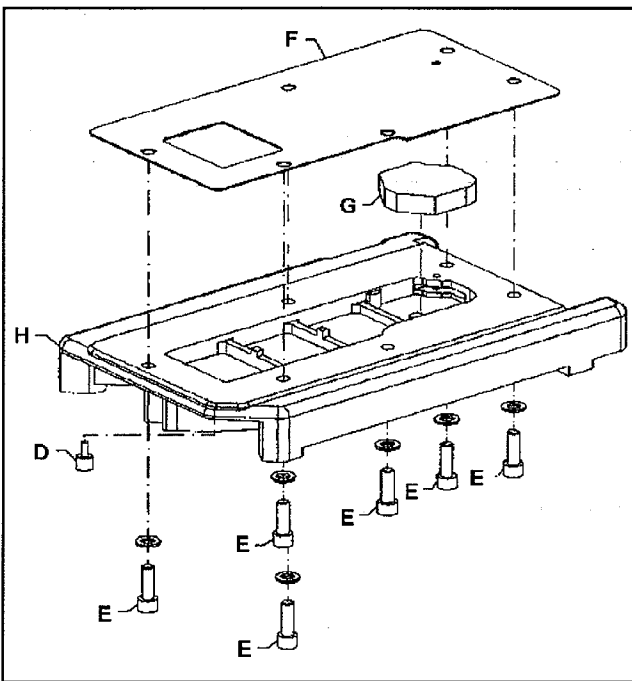
- 1) Clear lint from inside the looper thread take-up cam area and the needle bar components about once or twice a day. If not, oil may leak and the sewing material will be soiled.

Proceed as follows:

- 1) Remove screw (C) and clean or change filter (B).
- 2) Remove cap (A) and clean inside the looper thread take-up cam area.

(Caution) Do not wipe the coated surface of the machine head with lacquer thinner. Doing so will damage the coated surface.

2) Changing oil



Should be done by trained technicians only!

Change oil every 6 months.

When the machine is operated eight hours daily it is recommended to change the oil within 1 to 2 years (in case of excessive contamination and lint also earlier).

For changing the oil proceed as follows:

1. Drain the oil at plug screw (D) in the bottom cover of the machine.
2. Unscrew the six screws (E) for the bottom cover and remove bottom cover (H) and gasket (F).
3. Remove the filter (G) from the right oil sump chamber in the bottom cover and replace it with a new one (part No. 999-254J).
4. Clean the bottom cover with the four oil sump chambers and the gasket for bottom cover.
5. Insert plug screw (D) in the bottom cover, and the filter (G) in the right oil sump chamber.
6. Remount bottom cover with gasket. Make sure that the surfaces on the machine bed and bottom cover for the gasket are absolutely clean! Torque the six screws (E) carefully to 22.6 - 23.1 Nm (200 - 205 in.lbs.).
7. Fill with Union Special oil as described on page 9.

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