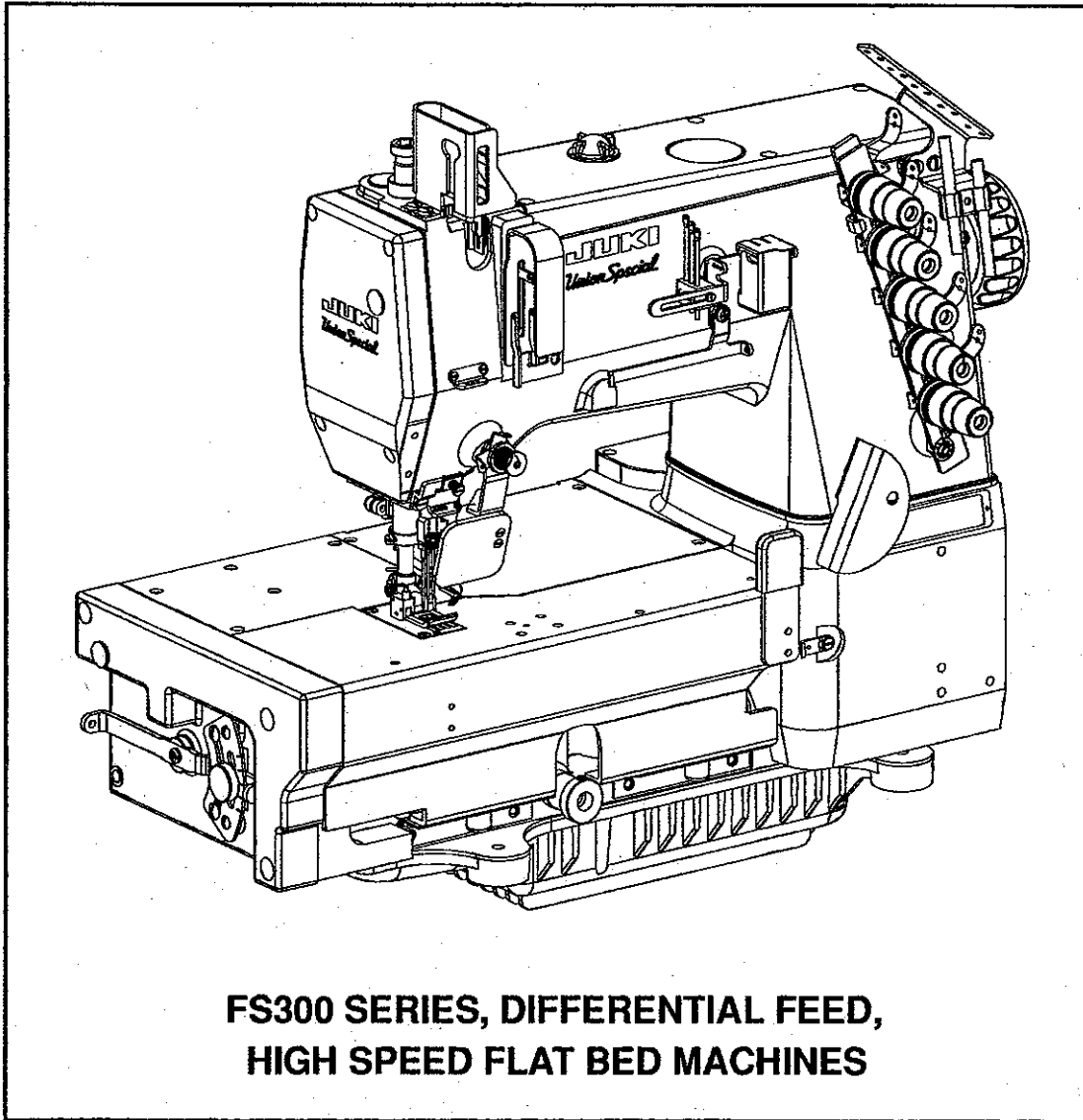




# JUKI

*Union Special*

## INSTRUCTIONS/OPERATOR'S MANUAL



**FS300 SERIES, DIFFERENTIAL FEED,  
HIGH SPEED FLAT BED MACHINES**

**MANUAL NO. OP9420  
STYLES**

<b>FS322C01</b>	<b>FS322H01</b>
<b>FS332C01</b>	<b>FS332H01</b>
<b>FS322E12</b>	<b>FS332L01</b>
<b>FS332E12</b>	<b>FS332L21</b>

# Manual No. OP9420 Operator's Manual for FS300 Series Machines

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By

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I-6th.

## PREFACE:

This operator's manual has been prepared to guide you while operating the FS300 Series machines. It can be used in conjunction with Union Special Engineer's Manual EN9421 and Parts Manual's PT9422, PT9501 and PT9502 depending on application.

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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## IDENTIFICATION OF MACHINES:

Each UNION SPECIAL machine is identified by a style number, which is stamped into the style plate affixed to the middle of the machine under the tension assembly. The serial number is stamped into the serial number plate affixed to the right rear base of the machine.

## STYLES OF MACHINES:

Precision high speed, two or three needles, top coverstitch, differential feed flat bed machines. Totally enclosed feed and looper drive mechanism, automatic forced feed lubrication system with easily replaceable filter. Main feed has thumbscrew adjustment and differential has lever adjustment and independently driven rear needle guard.

**FS332C01-3D\_ \_** COLLARETTE. Three needle, top coverstitch, differential feed with strip tension. - Typical Application - For attaching flat or ribbed knit split tube borders to knit underwear. Seam Specification 605 BSa-1. Standard gauge numbers 056, (7/32", 5.6mm) and 060, (15/64", 6.0mm). Recommended needle 128GBS, needle range sizes 065/025 - 090/036. Maximum recommended speed, depending on application, is up to 6500 R.P.M.

**FS332C01-3D\_/\_TC4** COLLARETTE.\*\*\* Three needle, top coverstitch, differential feed with strip tension and pneumatic "fast action" tape cutter. - Typical Application - For attaching flat or ribbed knit split tube borders to knit underwear. Seam Specifications 605 BSa-1. Standard gauge number 060, (15/64", 6.0mm). Recommended needle 128GBS, needle range sizes 065/025 - 090/036. Maximum recommended speed, depending on application, is up to 6500 R.P.M.

\*\*\*Does not have short sewing parts.

**FS332E12-3D\_/\_MD1/TC4** ELASTICATOR. Three needle, top coverstitch, differential feed, flat bed machine with fabric undertrimmer, single stage, stepper motor driven upper elastic metering device, and "fast action" tape cutter. - Typical Application - for attaching narrow woven elastic or lace from the roll to ladies briefs and lingerie. Seam Specifications 605 LSa-1. Standard gauge 060, (15/64", 6.0mm). Recommended needle 128GBS, needle range sizes 065/025 - 090/036. Maximum recommended speed, depending on application, is up to 6500 R.P.M.

**FS332L01-2C\_ \_** LAP SEAMING. Two needle, top coverstitch, tandem differential feed. - Typical Application - For crotch seaming operations on men's and boy's knit underwear. Seam Specification 602 LSa-1. Standard gauge number 040, (5/32", 4.0mm). Recommended needle 128 GBS, needle range sizes 065/025 - 090/036. Maximum recommended speed, depending on application, is up to 6500 R.P.M.

**FS332L01-3B\_ \_** LAP SEAMING. Three needle, top coverstitch, tandem differential feed. - Typical Application - For crotch seaming operations on men's and boy's knit underwear. Seam Specification 605 LSa-1. Standard gauge numbers 056, (7/32", 5.6mm), 060, (15/64", 6.0mm). Recommended needle 128 GBS, needle range sizes 065/025 - 090/036. Maximum recommended speed, depending on application, is up to 6500 R.P.M.



## NEEDLES:

Each needle has both a type and size number. The type number denotes the kind of shank, point, length, groove, finish and other details. The size number, stamped on the needle shank, denotes the largest diameter of the blade measured between the shank and the eye. Collectively, the type and size number represent the complete symbol which is given on the label of all needles packed and sold by Union Special.

### TYPE

### DESCRIPTION

128 GBS Short, double groove, struck groove, ball eye, ball point, spotted, chromium plated - sizes 065/025, 070/027, 075/029, 080/032, 090/036.

When changing the needle, make sure it is fully inserted in the needle head before the screw is tightened.

When ordering needles, please use the complete type and size numbers as printed on the package to ensure prompt and accurate processing of your order. A complete order should read as follows: "100 needles, type 128 GBS, size 075/029".



## 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 instructions 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.

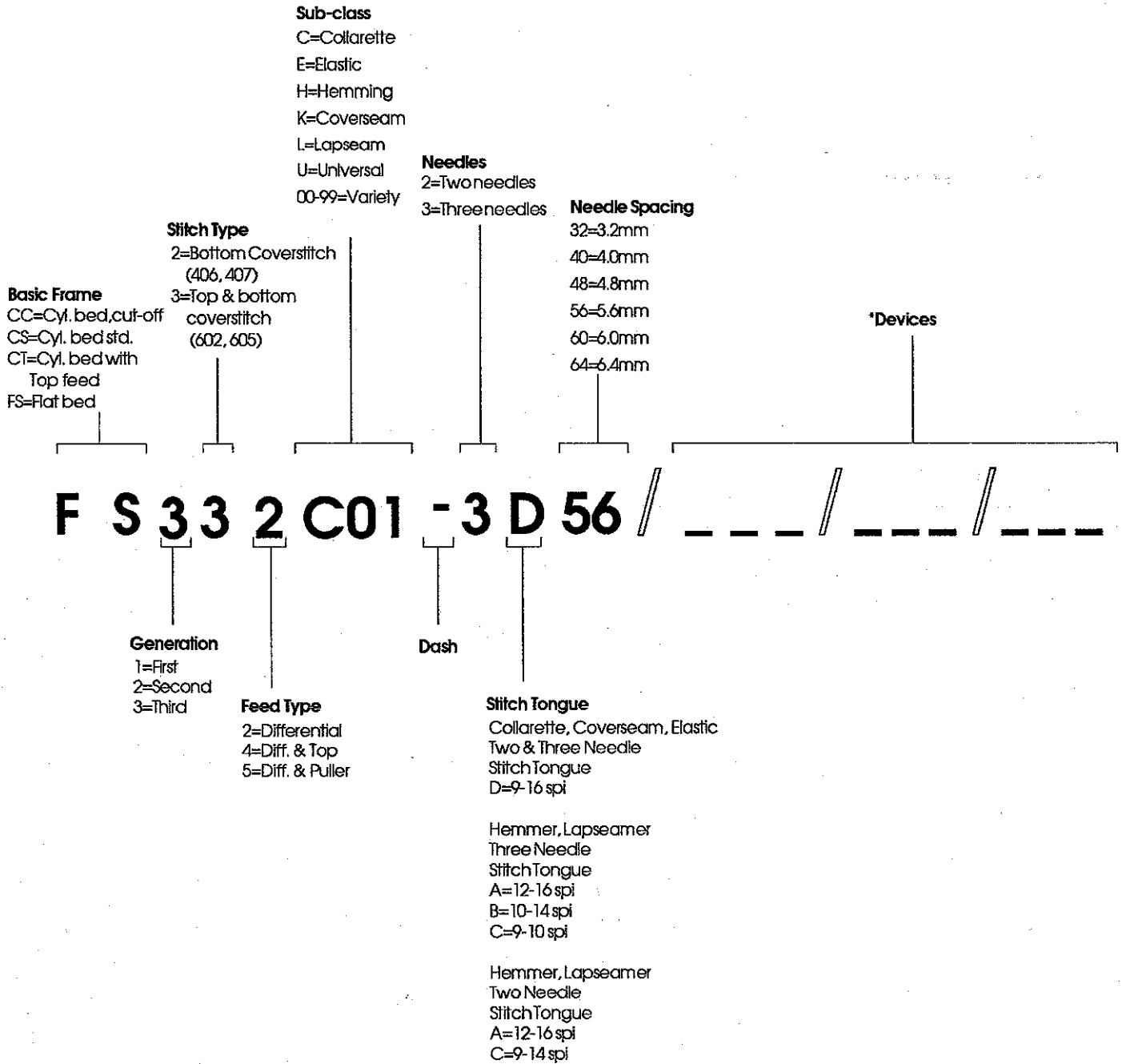
4. All safety devices must be in position when the machine is ready for work or in operation. Operation of the machine without the appertaining safety devices is prohibited.
5. Wear safety glasses.
6. In case of machine conversions and changes all valid safety rules must be considered. Conversions and 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.



# FS300 SERIES STYLE DESIGNATION SYSTEM:



MD1 for use on FS-E12 Styles = Electric, single stage, top metering device.

TC4 for use on FS-E1 & FS-C01 Styles = Pneumatic "fast action" tape cutter, double action air cylinder knee switch activated.



**SPECIFICATIONS:**

**FS332C01-3D\_\_**

Gauges	056, 7/32" (5.6mm) 060, 15/64" (6.0mm)
Sewing Speed (Max.)	6500 R.P.M.
Stitch Type	605 BSc-1
Stitch Length	9 to 16 S.P.I. set at 12
Needle	128 GBS 065/025 - 090/036
Presser Foot Lift	11/32" (8.1mm)

**Table I**

**FS332C01-3D\_\_ /TC4**

Gauges	060, 15/64" (6.0mm)
Sewing Speed (Max.)	6500 R.P.M.
Stitch Type	605 BSc-1
Stitch Length	9 to 16 S.P.I. set at 12
Needle	128 GBS 065/025 - 090/036
Presser Foot Lift	11/32" (8.1mm)

**Table II**

**FS332L01-3B\_\_**

Gauges	040, 5/32" (4.0mm)
Sewing Speed (Max.)	6500 R.P.M.
Stitch Type	602 LSc-1 / 605 LSc-1
Stitch Length	9 to 16 S.P.I. set at 12
Needle	128 GBS 065/025 - 090/036
Presser Foot Lift	11/32" (8.1mm)

**Table III**

**FS332L01-2C\_\_**

Gauges	040, 5/32" (4.0mm)
Sewing Speed (Max.)	6500 R.P.M.
Stitch Type	605 LSc-1
Stitch Length	9 to 16 S.P.I. set at 12
Needle	128 GBS 065/025 - 090/036
Presser Foot Lift	11/32" (8.1mm)

**Table IV**

**FS332E12-3B\_\_ /MD1/TC4**

Gauges	060, 15/64" (6.0mm)
Sewing Speed (Max.)	6500 R.P.M.
Stitch Type	605 LSc-1
Stitch Length	9 to 16 S.P.I. set at 12
Needle	128 GBS 065/025 - 090/036
Presser Foot Lift	11/32" (8.1mm)

**Table V**



**CAUTION AREAS:**

**CAUTION**



P257-94

WEAR SAFETY GLASSES, DO NOT TAMPER WITH SAFETY SHIELD. USE WITHOUT SHIELD MAY CAUSE INJURY.


**CAUTION**



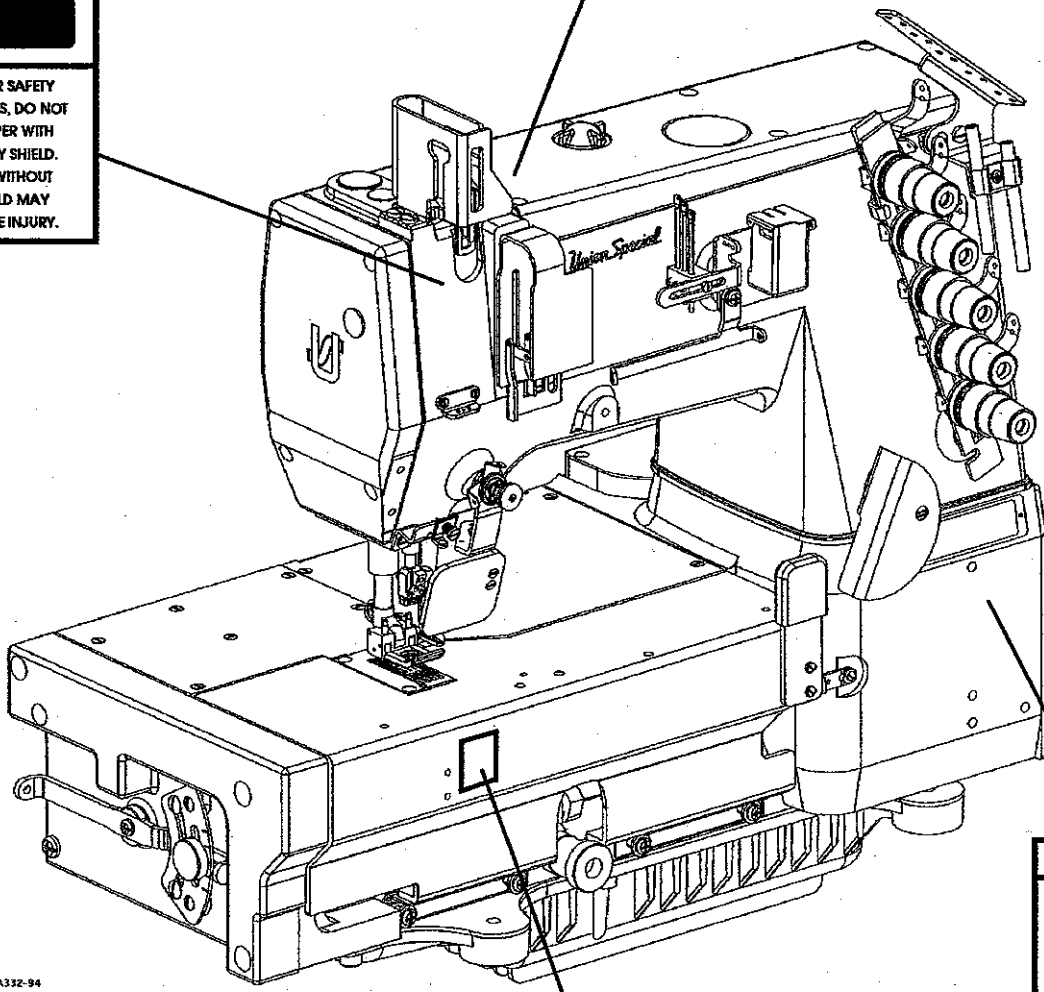
P259-94

KEEP NEEDLE BAR GUARD IN PLACE

**CAUTION**




DO NOT OPERATE A MACHINE WITHOUT A SYNCHRONIZER WITH THE PLUG REMOVED



A332-94

**CAUTION**



KEEP COVER CLOSED DURING OPERATION

**CAUTION**



KEEP BELT GUARD IN PLACE

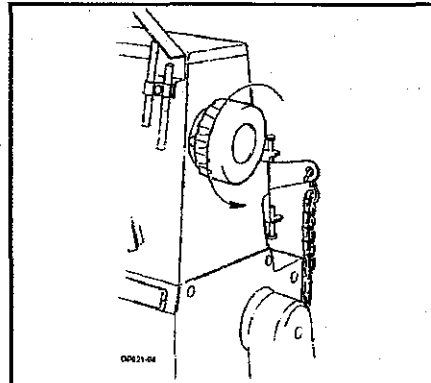
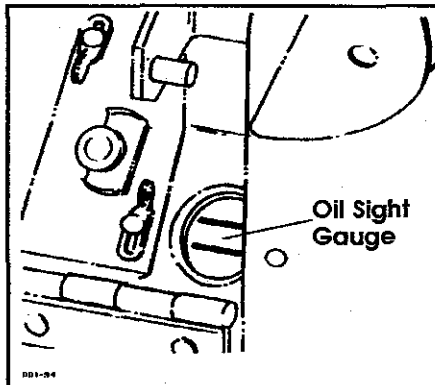




## OPERATOR'S DAILY CHECK LIST:

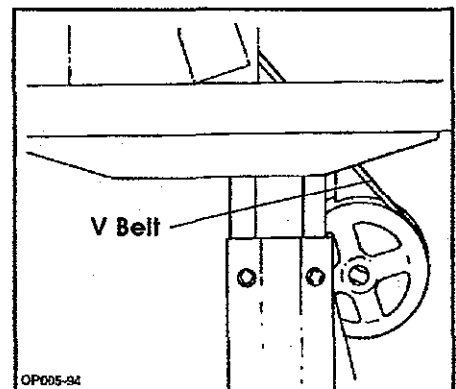
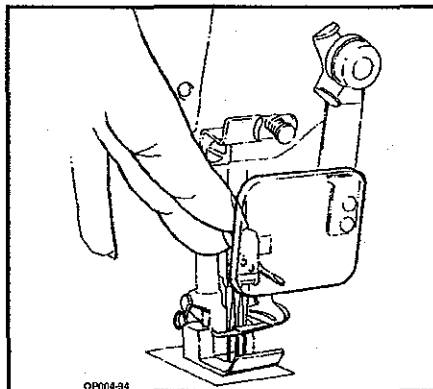
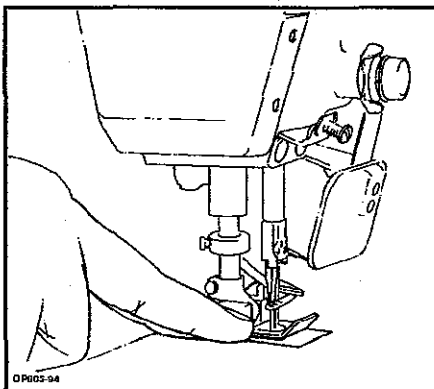
The following should be checked daily and cleaned as required when it applies to your Union Special machine:

- 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)



1. The oil level in the sight gauge should be between the two red lines when the machine is at rest. If not, fill with Union Special Specification 175 oil, (Union Special Part No. 28604R).
2. The correct rotating direction of the handwheel is counterclockwise, 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.

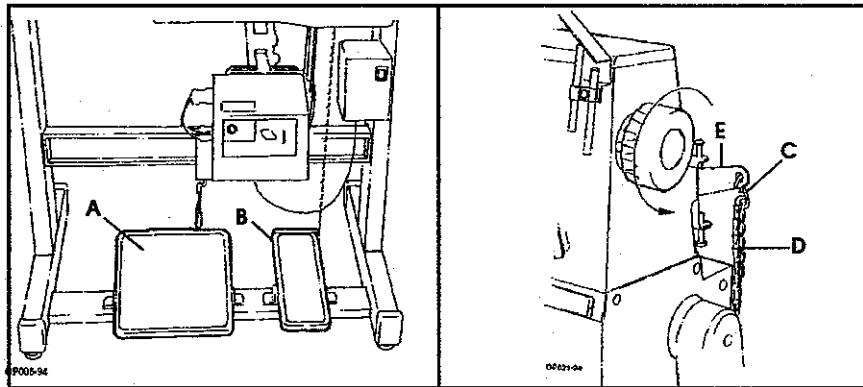
## OPERATING CAUTIONS (CONT.):



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 machine 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.

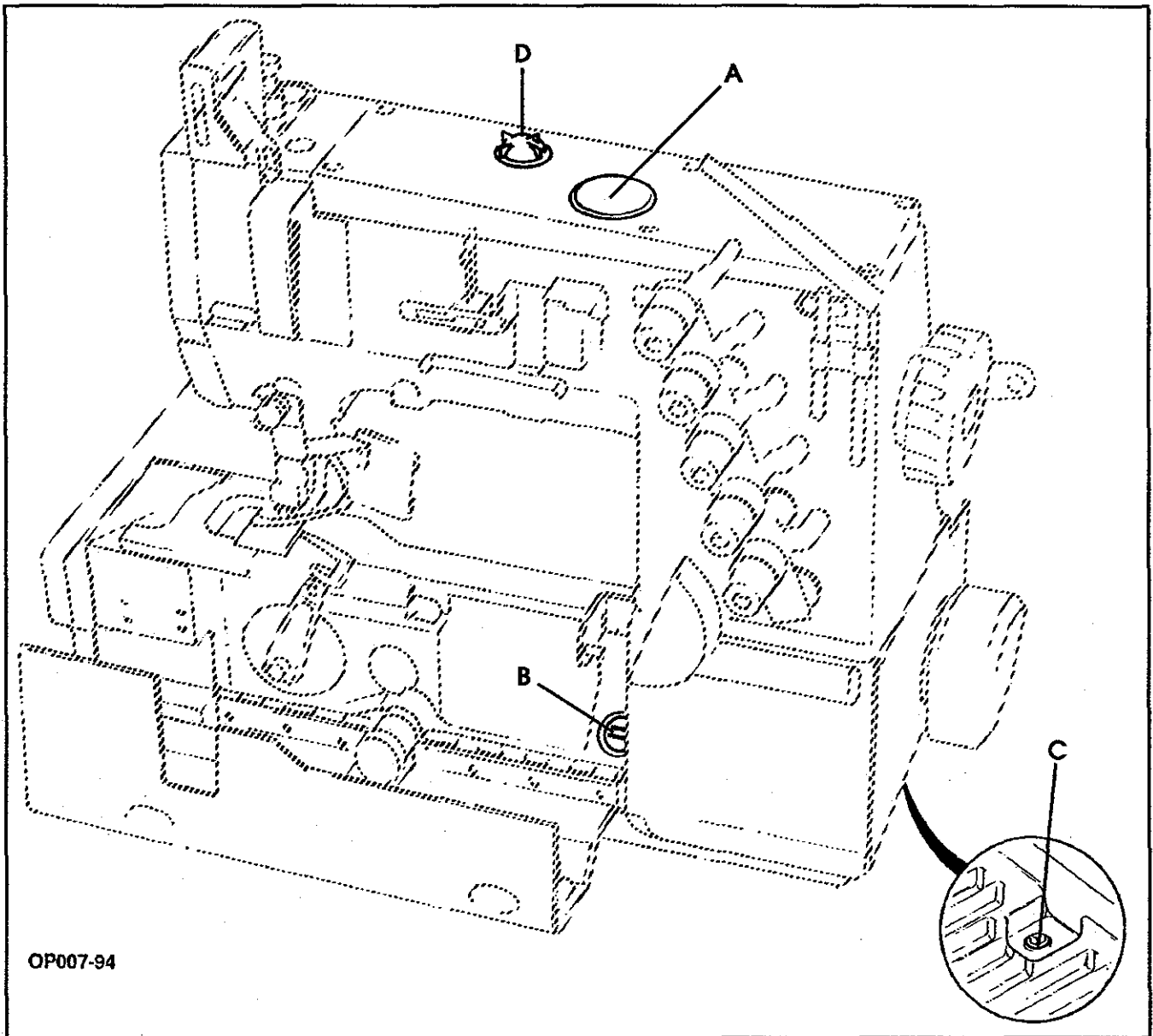
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## OPERATING THE PEDALS:



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

## LUBRICATION:



OP007-94

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

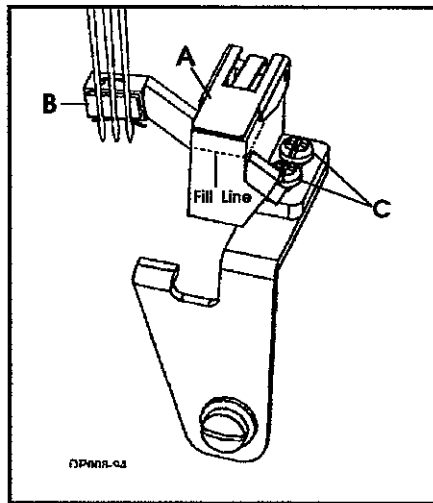
1. If oil is required remove oil cap (A).
2. Fill between lines (B) with Union Special Specification 175 oil (Union Special Part No. 28604R).



**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).

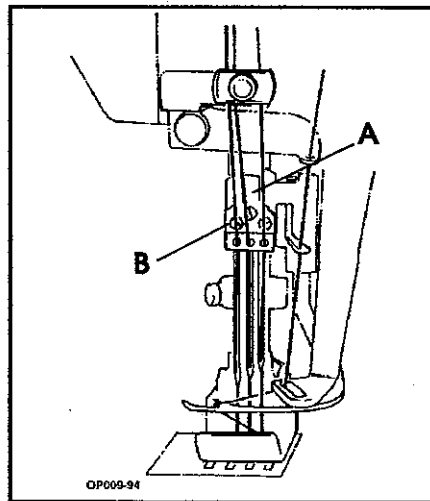
## LUBRICATION (CONT.):



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

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

## INSERTING NEEDLES:



The standard needle is 128 GBS, needle range sizes "065/025 - 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).

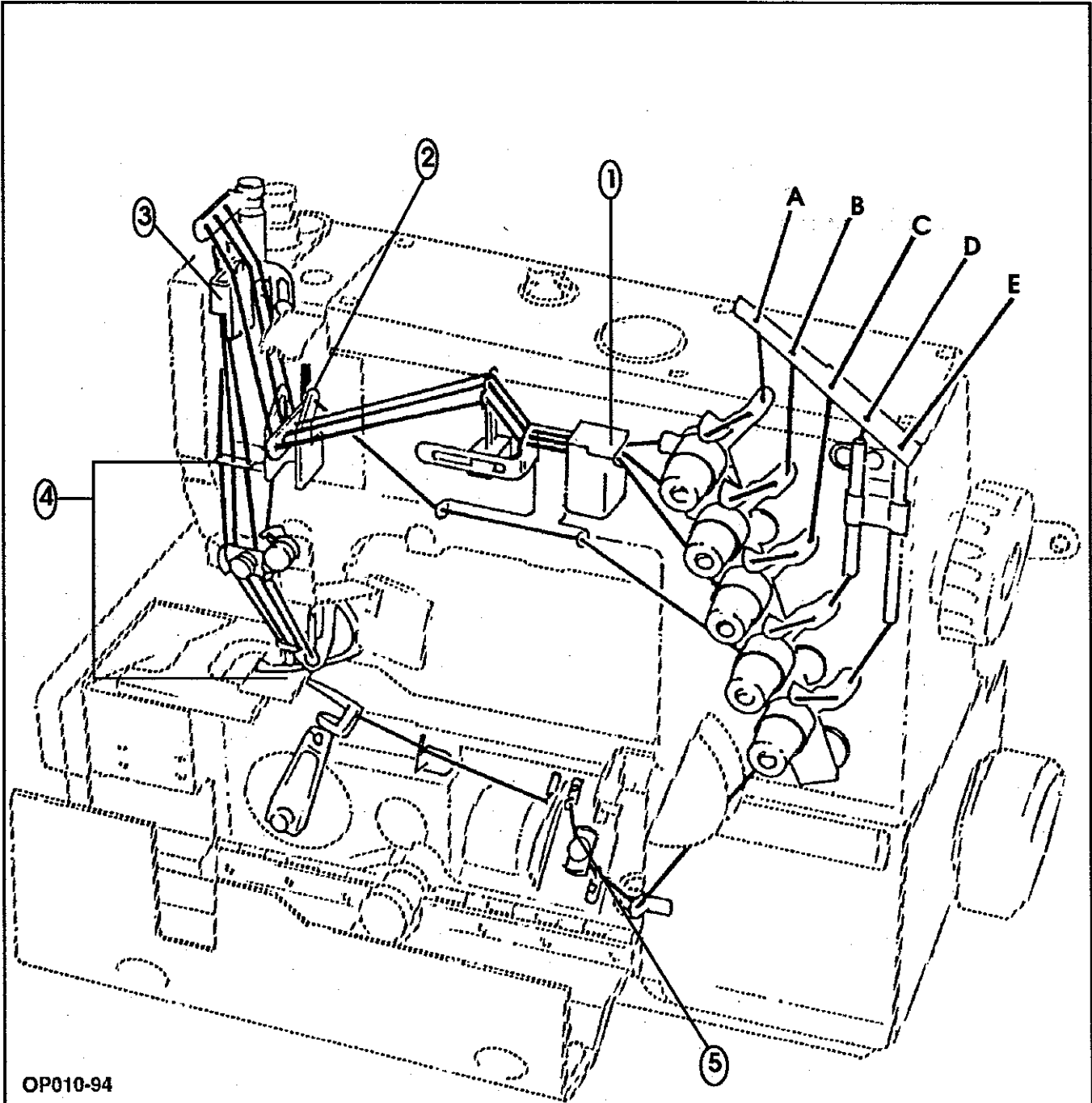
## THREADING THE MACHINE:



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".



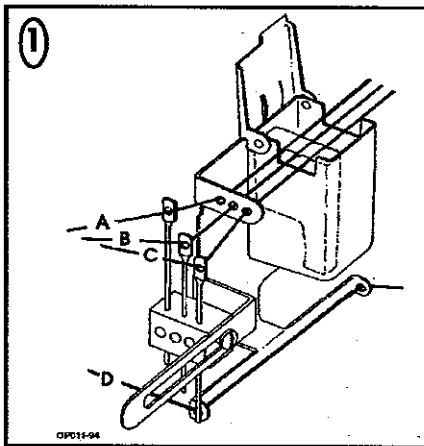
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- |                        |                                |
|------------------------|--------------------------------|
| A Left Needle Thread   | ① Thread Lubricator Area       |
| B Middle Needle Thread | ② Needle Thread Eyelet Area    |
| C Right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

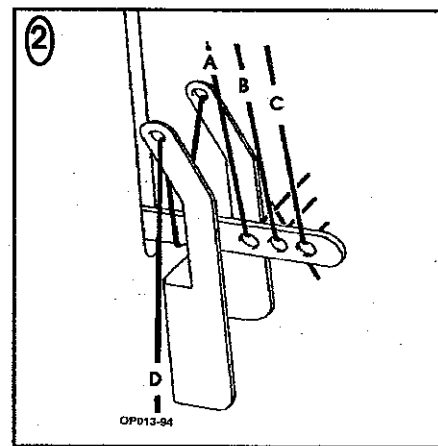
NOTE: When threading two needle machines use needles "A" & "C", DO NOT use needle "B".

# THREADING THE MACHINE (CONT.):

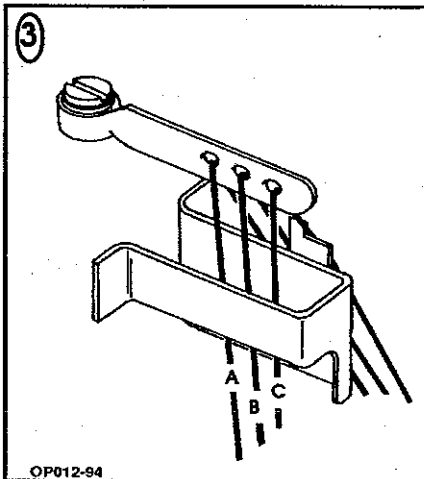
NOTE: When threading two needle machines use needles "A" & "C".



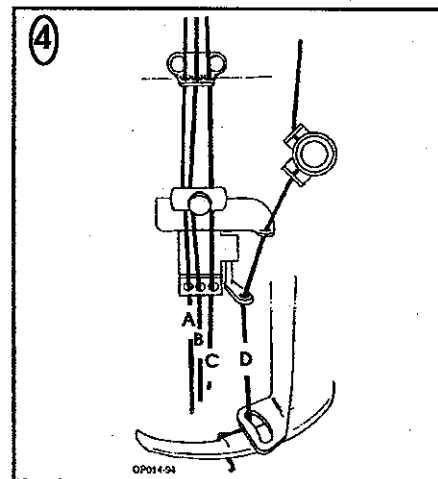
Thread Lubricator Area



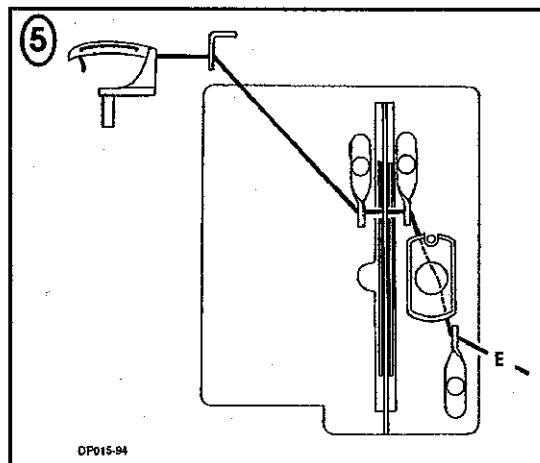
Needle Thread Eyelet Area



Needle Bar Area

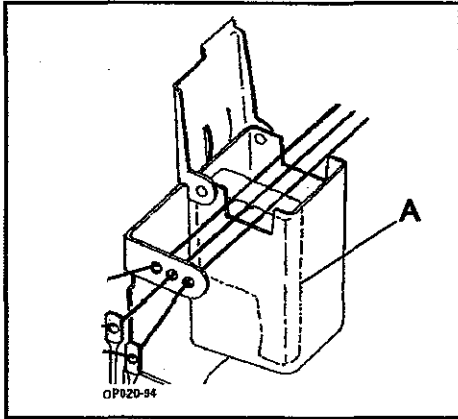


Thread Nipper, Spreader Area



Thread Take-Up Area

## THREADING THE MACHINE (CONT.):



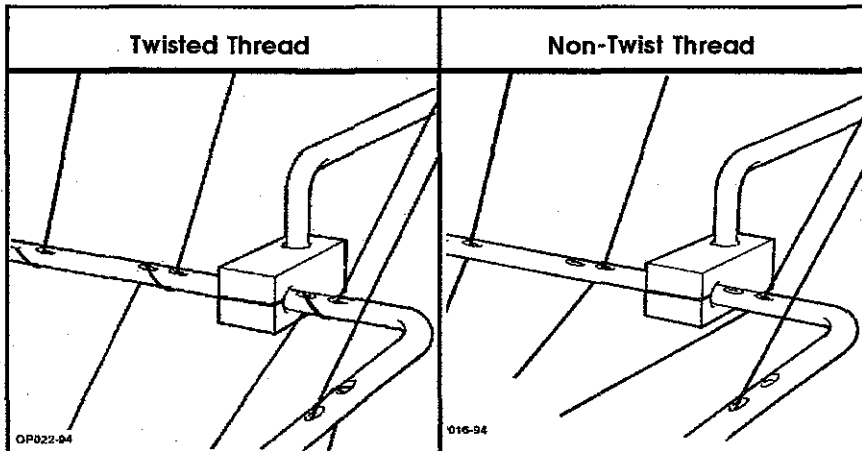
When the needle thread lubricator is used:

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

When the needle thread lubricator is not used:

1. Remove felt (A).

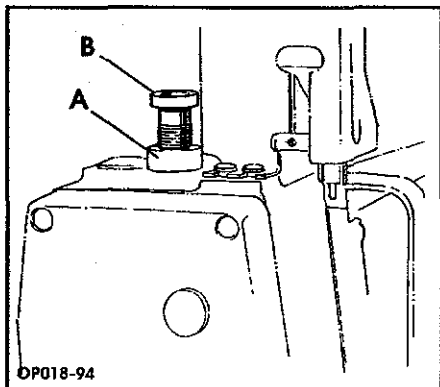
## Threading Methods:



**CAUTION!**

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

## 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. Reighten nut (A).



## ADJUSTING THE STITCH LENGTH:



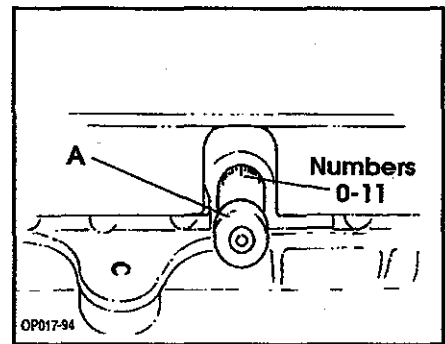
Turn off main power switch before setting the stitch length! When using clutch motors without actuation lock wait until the motor has completely stopped.

1. To change stitch length turn stitch regulating screw (A).

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.

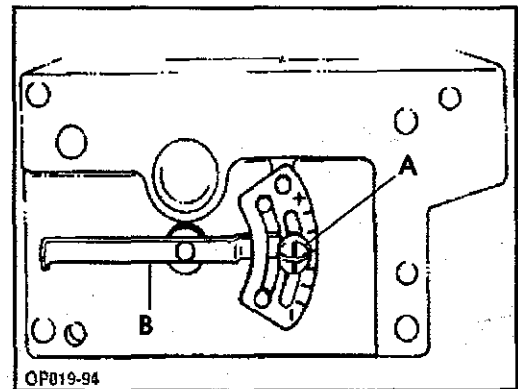
2. Numbers 0-11 on stitch regulating screw are for operator's reference only.



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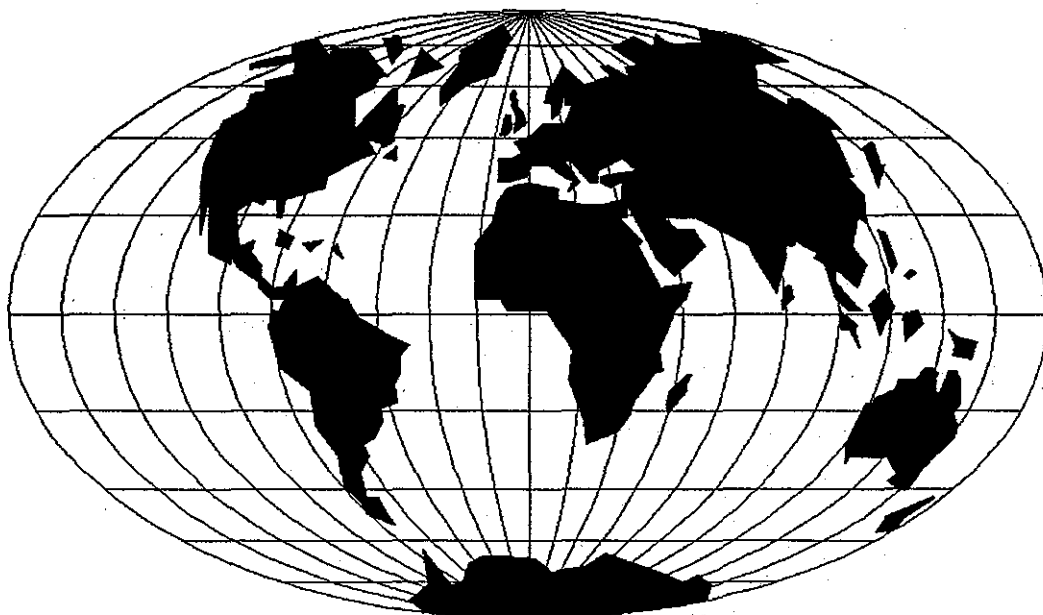
## DIFFERENTIAL FEED MECHANISM:

1. Loosen screw (A) and move lever (B) up for gathering (+) and down (-) for stretch.
2. Retighten screw (A).
3. When the main stitch travel is set at .078" (2mm) the differential ratio for maximum gather is 1:1.5, maximum stretch is 1:0.6, depending on material.









## WORLDWIDE SALES AND SERVICE

Union Special Corporation maintains sales and service facilities throughout the world. These offices will aid you in the selection of the right sewing equipment for your particular operation. Union Special Corporation representatives and service technicians are factory trained and are able to serve your needs promptly and efficiently. Whatever your location, there is a qualified representative to serve you.

**Corporate Office:** One Union Special Plaza  
Huntley, IL 60142  
Phone: 847-669-5101  
Fax: 847-669-1096

**European Distribution Center:** Union Special GmbH  
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Tel: 49-07141-247-0  
Fax: 49-7141-247-100

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