TWO-COLOR
SMALL OFFSET PRESS

Itek Graphix 3985

SERVICE MANUAL

WARNING

SAFETY COVERS HAVE BEEN INSTALLED FOR THE SAFETY OF THE OPERATOR AND PERSONS IN THE SURROUNDING AREA. REMOVAL THEREOF MAY RESULT IN SERIOUS INJURY TO SUCH PERSONS. ACCORDINGLY, SAFETY COVERS SHOULD NOT BE REMOVED FROM THE EQUIPMENT NOR SHOULD SUCH EQUIPMENT BE OPERATED WITHOUT SAME.

CONTENTS

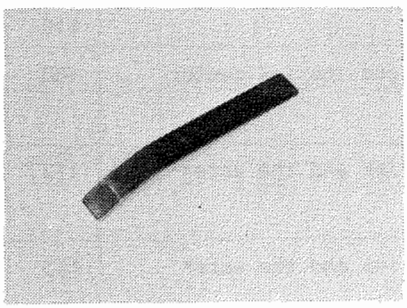
The adjustments marked with (*) must be done in an order based on other adjustments, so please refer to the basic adjustment procedure list.

The adjustments marked with (*) must be done in an order based on other adjustments, so please refer to the basic adjustment procedure list.

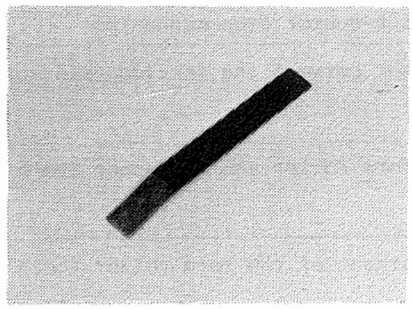
BASIC ADJUSTMENT PROCEDURE LIST

	Order		Adjustment	Page
Main section	1		1. Cylinder packing	1
	2		2. Leveling the machine	3
	3		3. The electrical wiring	5
	4		4. Arrangement of the pipes	7
	5		5. Adjustment of the pump belt	9
	6		6. The base machine drive belt tensioning adjustment	10
	7	1	7. The alignment of the plate cylinder and the blanket cylinder (on both the first unit and the second unit)	11
		2	8. The alignment of the blanket cylinder and the impression cylinder (on both the first unit and the second unit)	13
	8	1	9. The position adjustment of the cylinder-on cam	15
		2	10. The adjustment of the cylinder-on mechanism between the plate cylinder and the blanket cylinder (on both the first unit and the second unit)	17
		3	11. The adjustment of the cylinder-on mechanism between the blanket cylinder and the impression cylinder (on both the first unit and the second unit)	19
	9	1	12. The clearance adjustment between the first plate cylinder and the blanket cylinder	21
		2	13. The clearance adjustment between the second plate cylinder and the blanket cylinder	23
		3	14. The clearance adjustment between the first blanket cylinder and the impression cylinder	25
		4	15. The clearance adjustment between the second blanket cylinder and the impression cylinder	27
	10		16. The side play adjustment of the blanket cylinder (on both the first unit and the second unit)	29
	11	1	17. The cylinder on linkage adjustment between the blanket cylinder and the impression cylinder (on both the first unit and the second unit)	31
		2	18. The cylinder on linkage adjustment between the plate cylinder and the blanket cylinder (on both the first unit and the second unit)	33
	12		19. The lateral positioning adjustment of the plate cylinder	35
	13		21. The operating lever positioning (on both the first unit and the second unit)	40

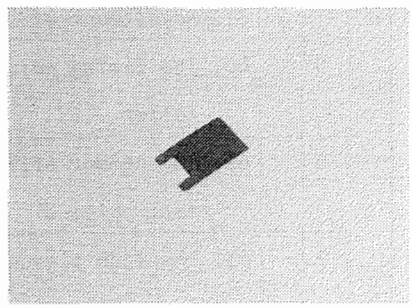
* List of the adjustment gauges for this machine



(1)



(2)



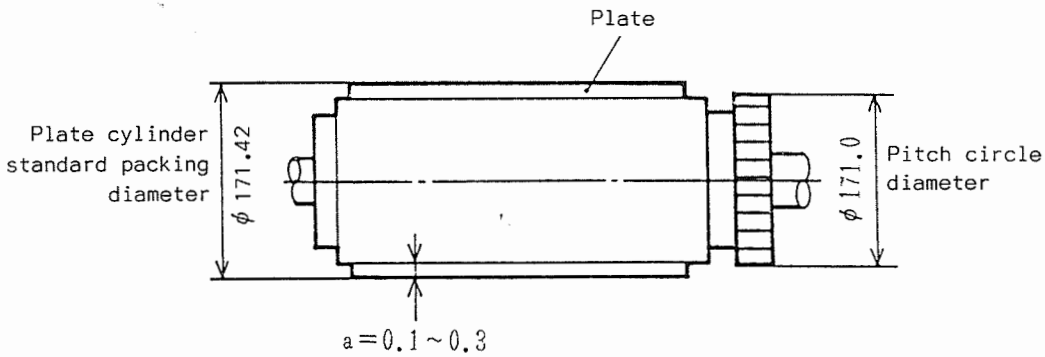
(3)

Order number	Name	Q'ty	Reference pages
(1) 5340 J 001	Thickness gauge for the clearance adjustment between the plate cylinder and the blanket cylinder	1	P. 22, P. 24
(2) 5340 J 002	Thickness gauge for the clearance adjustment between the blanket cylinder and the impression cylinder	1	P. 26, P. 28
(3) 5340 J 003	Adjustment gauge of the paper feed drum	1	P. 62

1. CYLINDER PACKING

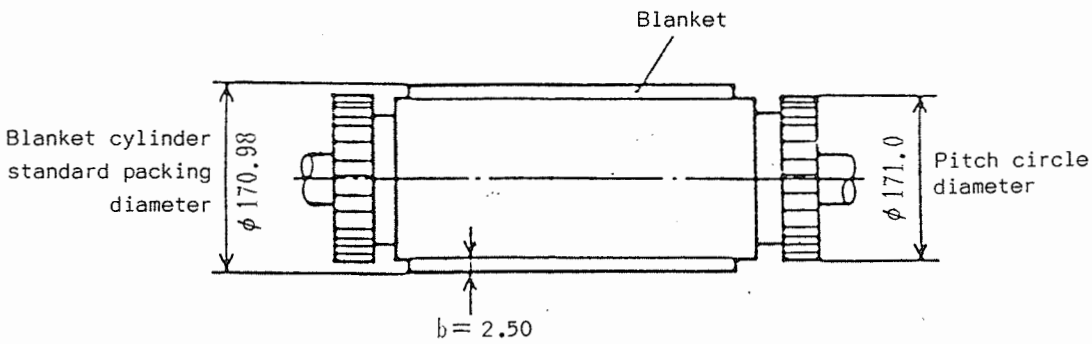
For the cylinder packing, the true-rolling method is used. This method produces an excellent effect in realizing the image dimension in the circumferential direction of the plate accurately on the sheets of paper.

(The Plate Cylinder Packing Illustration) * Unit = mm

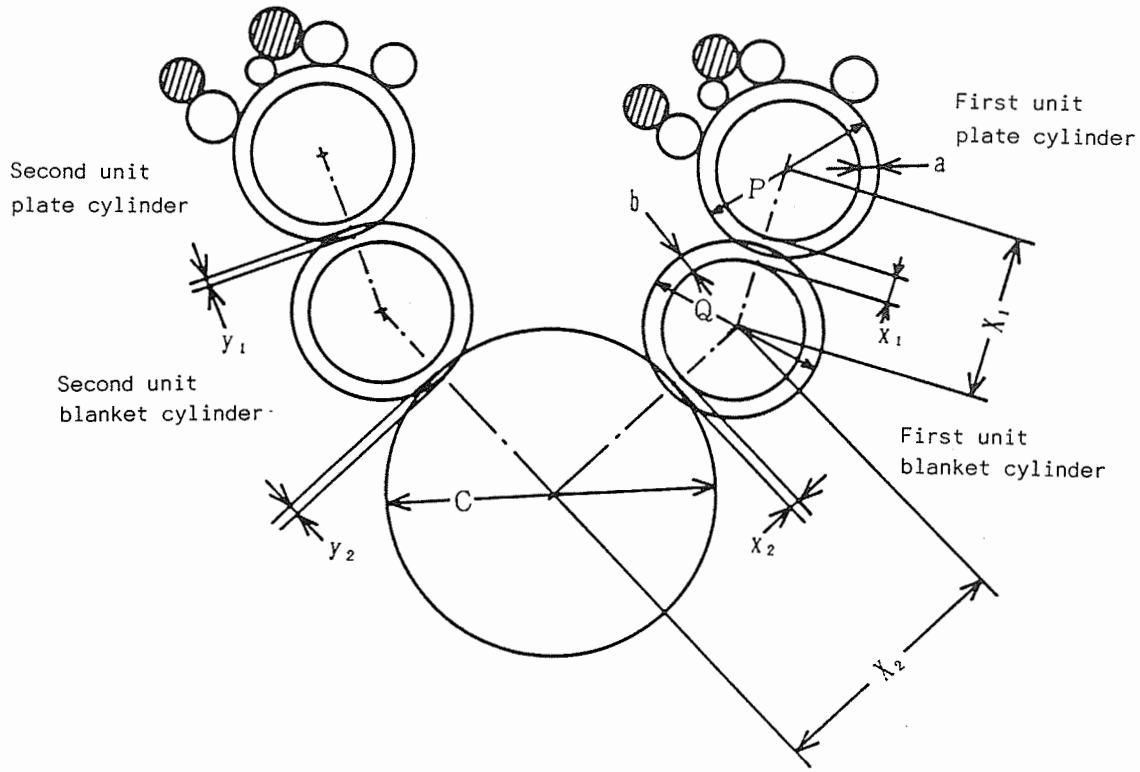


The plate cylinder standard packing (a) = 0.13
(With the plate pressure dial scale on the 0.13 position)
* It is possible to change the plate cylinder packing diameter from 0.1 to 0.3mm.

(The Blanket Cylinder Packing Illustration)



The blanket cylinder standard packing (b) = 2.50



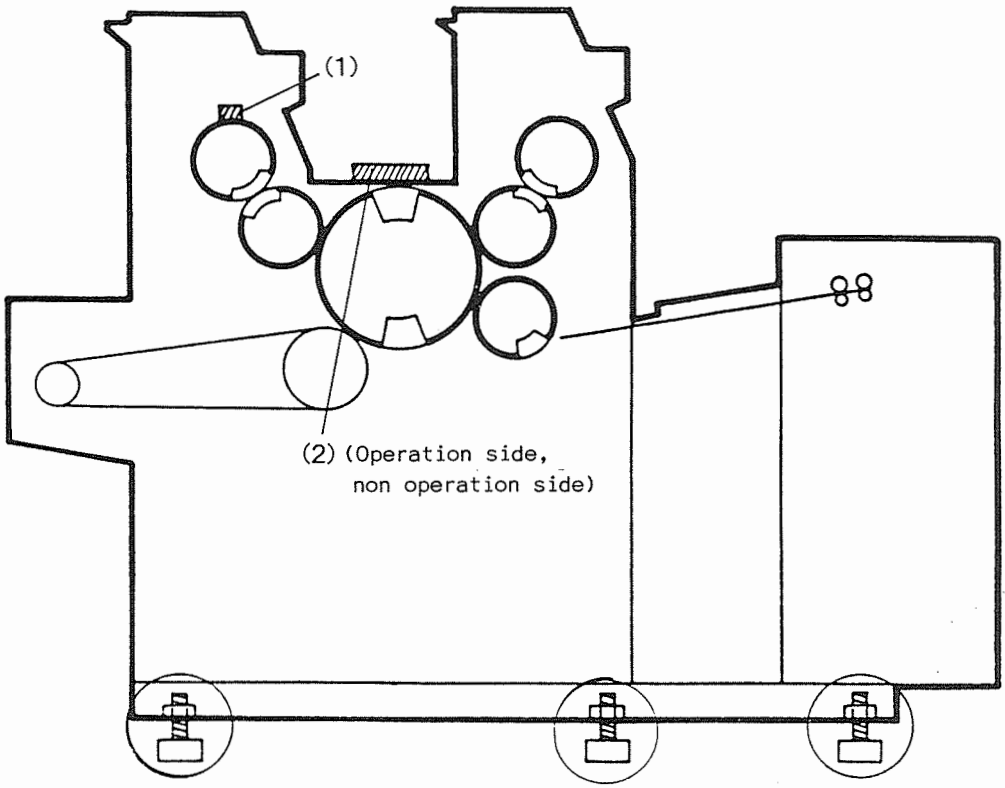
P = First plate cylinder packing diameter = Second plate cylinder packing diameter = 171.42
Q = First blanket cylinder packing diameter = Second blanket cylinder packing diameter = 170.98
C = Impression cylinder diameter = 342.8
X_1 = 170.97
X_2 = 256.74
a = Plate cylinder standard packing = 0.13 (It is possible to change it from 0.1 to 0.3.)
b = Blanket cylinder standard packing = 2.50
x_1 = Clearance between the first plate cylinder and the blanket cylinder = Clearance between the second plate cylinder and the blanket cylinder = 2.53 (With the impression pressure dial scale at the 0.13 position)
x_2 = Clearance between the first blanket cylinder and the impression cylinder = Clearance between the second blanket cylinder and the second impression cylinder = 2.35 (With the impression pressure dial scale on the 0 position)
y_1 = Plate pressure = 0.10
y_2 = Impression pressure = 0.15

2. LEVELING THE MACHINE

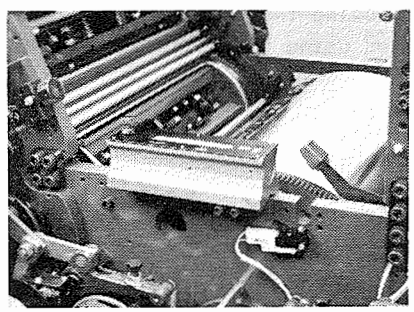
1) Purpose
Perfect leveling of the machine can prevent unnecessary wear and damage and will also prevent various printing troubles due to faulty installation of the machine.

2) Point
The level accuracy in both the vertical and the lateral direction should be within 0.05mm per meter.

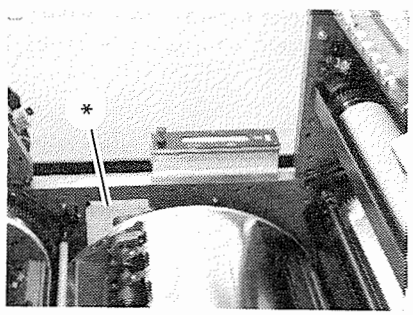
3) Measuring points for level accuracy
Use a level with an accuracy of within 0.02mm per meter.
Level the machine at the following three points.



1. On the plate cylinder (1)
(The second unit)



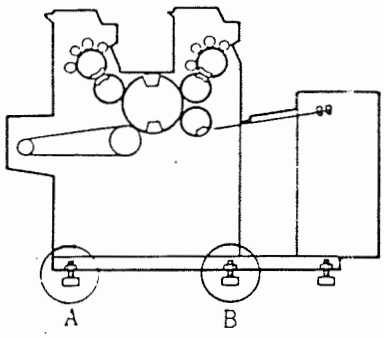
2. Operation side base machine frame (2)



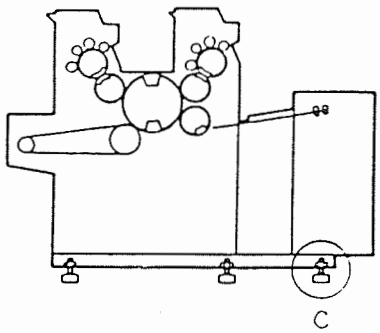
3. Non operation side base machine frame (2)
(Except on the cutting part (*) of the frame)

(Note)
The surface where the level is to be positioned must be free of all oil and foreign particles.

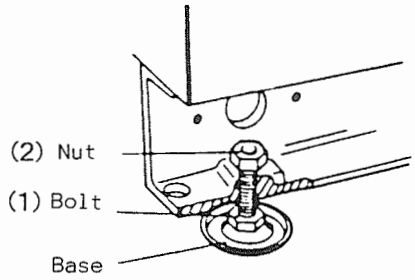
4) Adjustment



1. Adjust the level of the machine by using the four adjustment bolts "A" and "B".



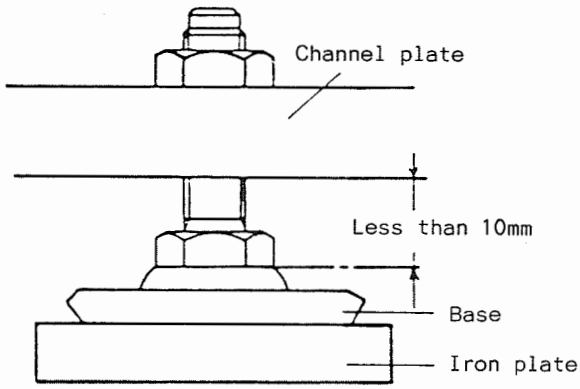
2. After the level is adjusted, fix the feeder section by using the two "C" bolts.



3. After the adjustment is finished, fix the bolt (1) by using the nut (2).

(Note)

1. The clearance between the channel plate and the base should be less than 10mm to secure sufficient strength of the bolts.

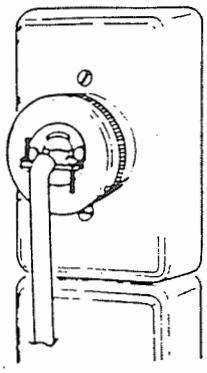


If a clearance within 10mm cannot be secured, an iron plate should be placed under the base.

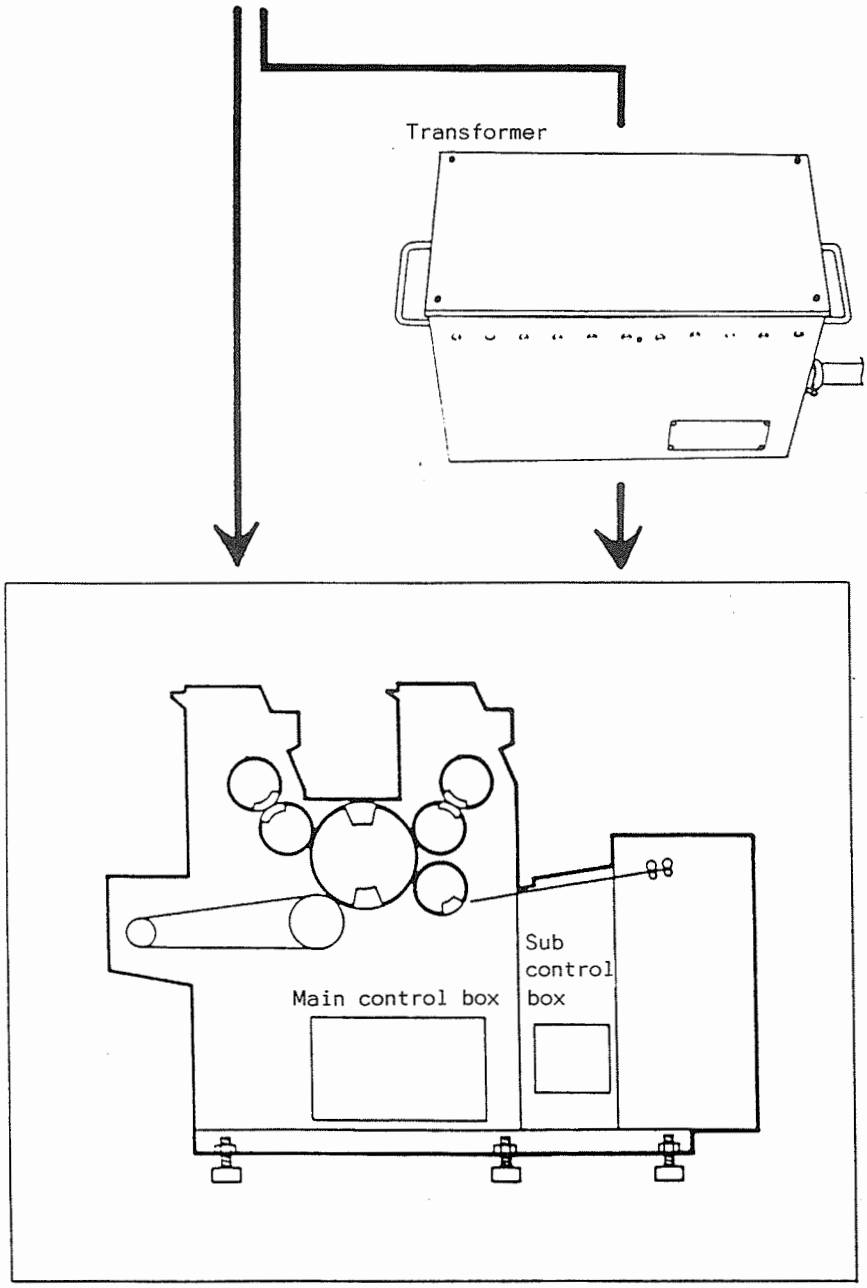
2. When fixing the feeder section using the two bolts "C", just contact the bolts "C" to the floor so that the level adjusted using the bolts "A" and "B" does not change.

3. THE ELECTRICAL WIRING

1) Power source

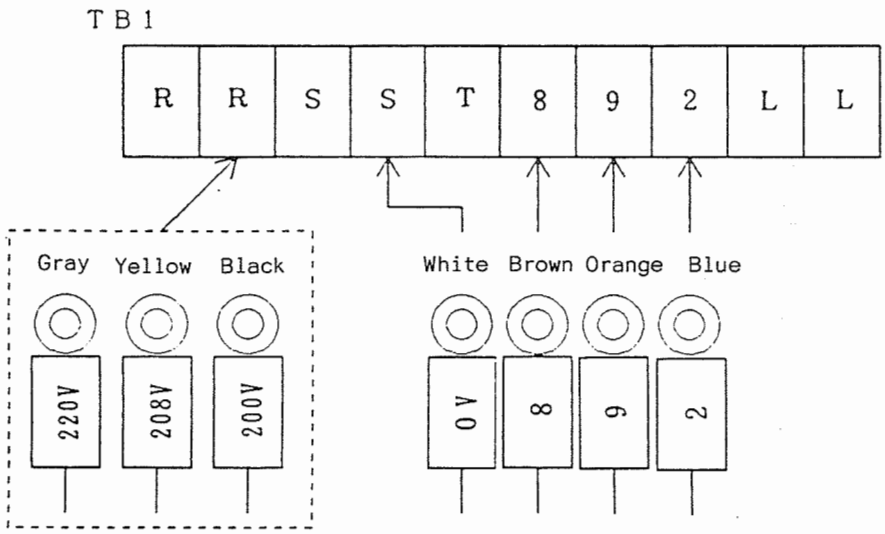


This machine power sources are
Single phase 200V, 208V, 220V
Three phase 200V
If a power source is used that is not on the list above, use a transformer and set the voltage value to the one shown on the machine identification plate.



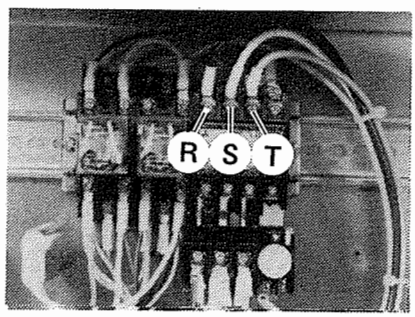
Set the voltage by changing the tap at the output side of the transformer.

2) The sub control box at the terminal base



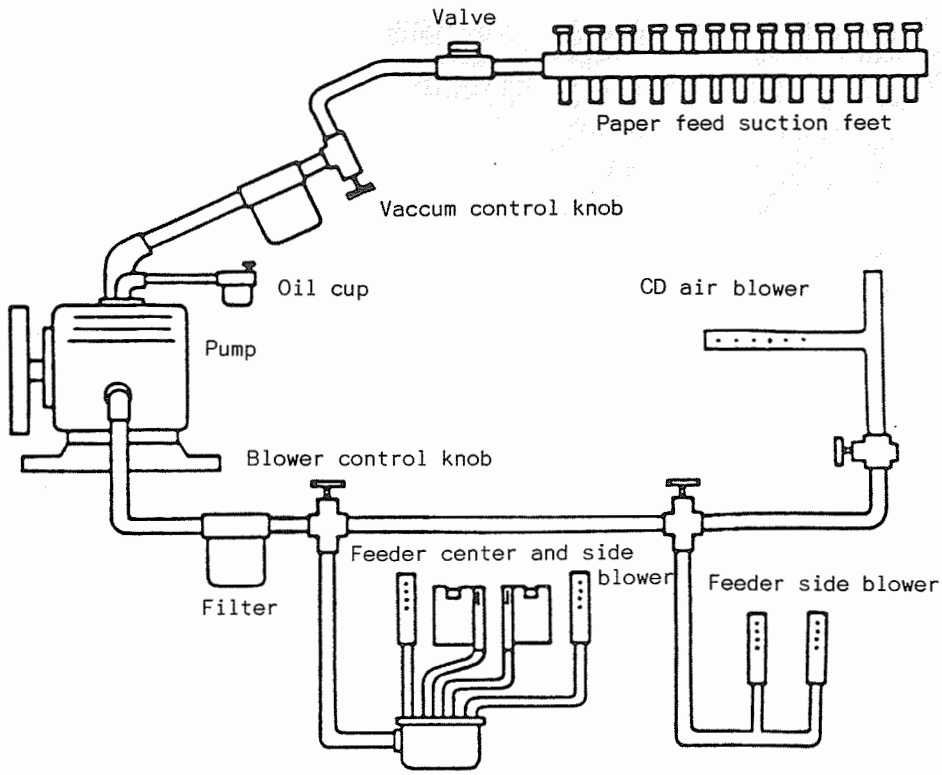
Single phase and three phase are the black lines.
Single phase 208V is the yellow line.
Single phase 220V is the gray line and should be connected to R on the TB1, and other lines that are not used should be properly insulated.

3) Checking the power source phase (Three phase machine)
The base machine motor will always rotate normally because an inverter is used. To check the power source phase, check the pump motor rotation direction.



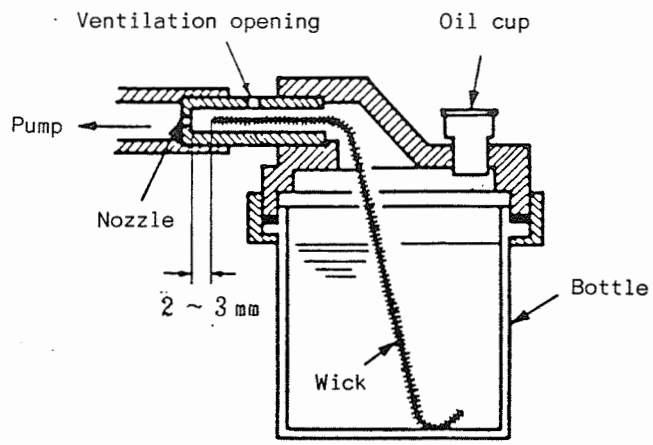
If the pump rotates backwards, switch any two of the wires R, S, T.

4. ARRANGEMENT OF THE PIPES



Arrangement of the pipes

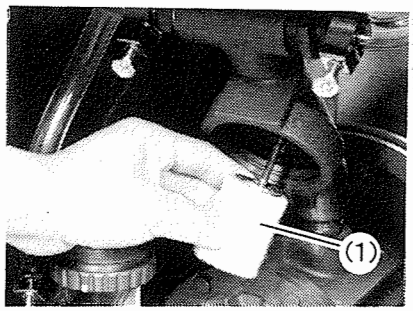
(Lubrication Mechanism)



Position the wick tip so that it is located 2 to 3mm away from the nozzle. (If the wick tip is completely in contact with the nozzle or if it is located behind the ventilation opening the pump will not be lubricated and it may seize.)

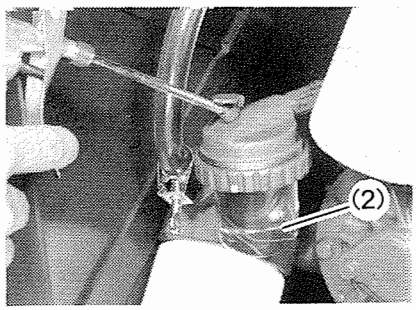
(Note)

1) Cleaning the filter



1. Clean the filter (1) once a month.

2) Supplying oil in the oil cup

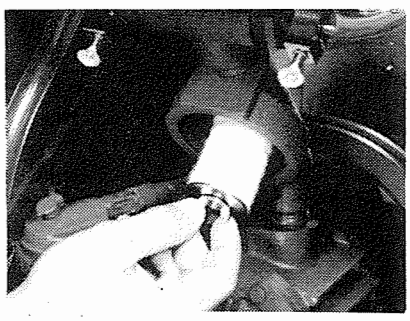


2. Periodically supply oil into the oil cup to keep the bottle (2) filled with oil at all times.

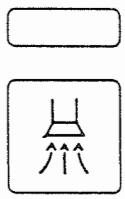
When supplying oil into the oil cup, use the special pump oil shipped together with the machine or the equivalent oil. (The table of recommended pump oil and grease is listed in the operation manual.)

3) Cleaning the pump

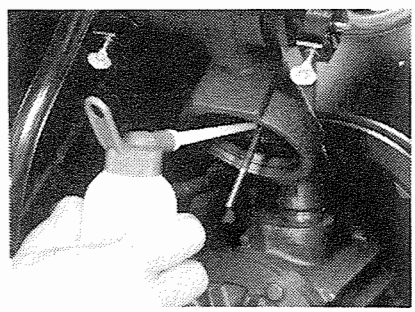
Clean the pump following the procedures one through four when the vacuum force and the force of the blower are reduced or when the machine is installed.



1. Remove the filter.



2. Push the pump button  .



3. Pour in a cleaning mixture of cleaning solution (70%) and pump oil (30%) from the vacuum side.

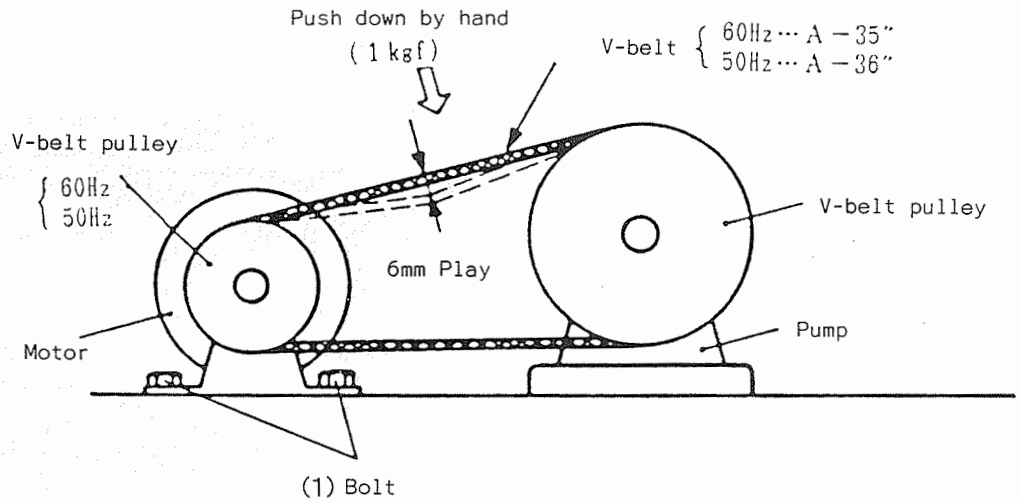
4. To evaporate the cleaning solution inside completely, run the pump under no load for two to three minutes after the pump is cleaned and mount the filter.

When pouring the cleaning mixture in from the vacuum side, remove the other filter and collect the discharged cleaning mixture with rags to check the cleaning condition at the exhaust side.

5. ADJUSTMENT OF THE PUMP BELT

1) Purpose

Properly tensioning the pump belt eliminates unnecessary wear of and/or damage to the belt and can prevent excessive power transmission loss.

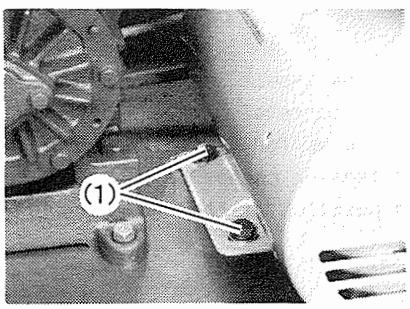


Pump belt

(Confirmation)

When pushing down on the central part of the V-belt by hand (with a force of about 1kg), there should be a play in the belt of about 6mm.

2) Adjustment



1. Loosen the four bolts (1) and move the motor to properly tension the belt.

(Reference)

Use the correct V-belt pulley and V-belt according to the power frequency.

Pulley Single phase 50Hz - 5340 16 113
Single phase 60Hz - 5330 16 112
3 phase 50Hz - 5340 16 111
3 phase 60Hz - 5340 16 112

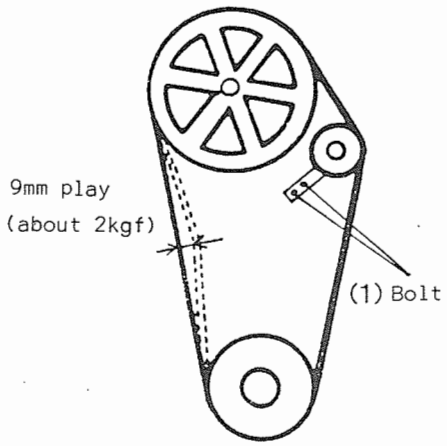
V-Belt Single phase, 3 phase 50Hz - A-36" 90102
Single phase, 3 phase 60Hz - A-35" 90101

6. THE BASE MACHINE DRIVE BELT TENSIONING ADJUSTMENT

1) Purpose

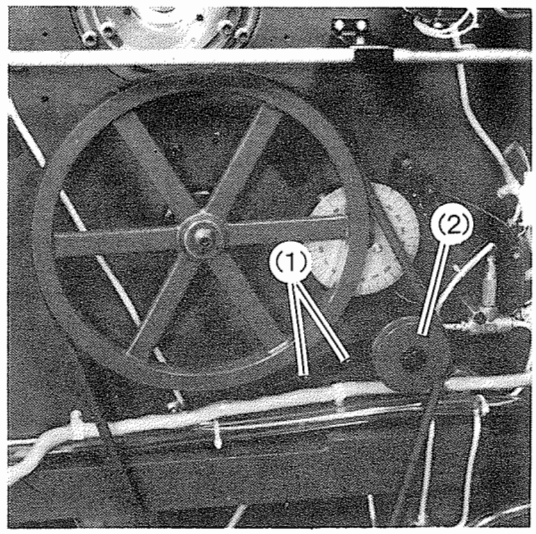
To properly tension the V-belt

2) Point



(Confirmation)

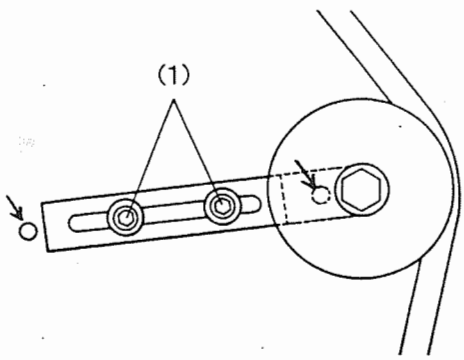
When pushing the central part of the V-belt (With a force of about 2kg), there should be a play of 9mm.



(Adjustment)

Loosen the two bolts (1) and move the tensioning pulley (2) to adjust it.

(Note)



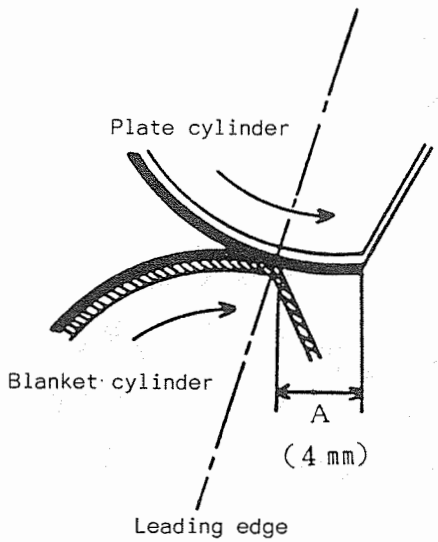
When the tension of the V-belt is weak, the machine cannot be run correctly.
There are four bolt holes for fixing the pulley. So when the proper tension cannot be assured by only shifting. the position of the two bolts (1) should be changed.

7. THE ALIGNMENT OF THE PLATE CYLINDER AND THE BLANKET CYLINDER (ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

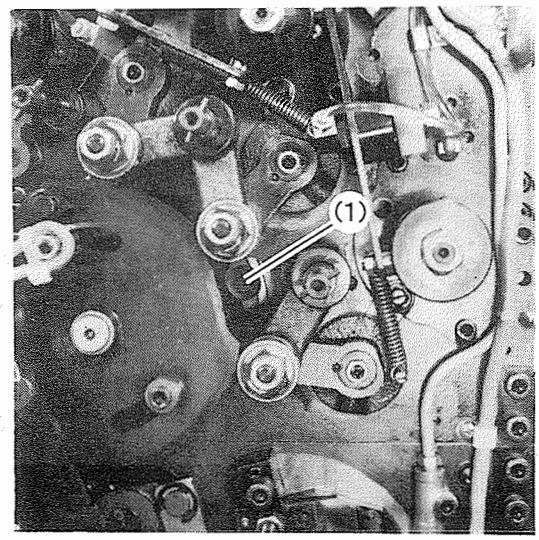
By doing the alignment of the plate cylinder and the blanket cylinder, the maximum printing area of 330 x 438mm is assured.

2) Point



(Confirmation)

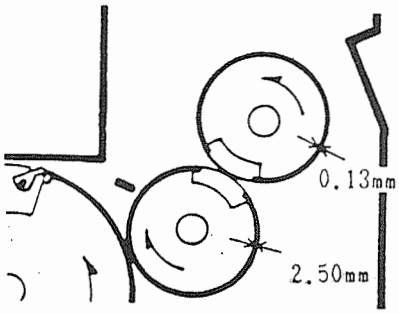
The position relationship between the plate cylinder and the blanket cylinder.



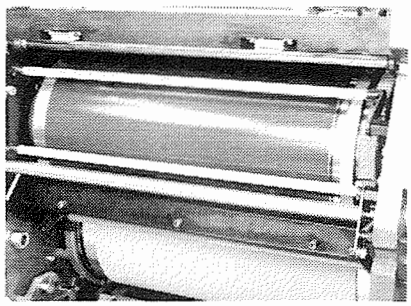
(Adjustment)

Loosen the three plate cylinder gear fixing bolts (1) and turn the plate cylinder.

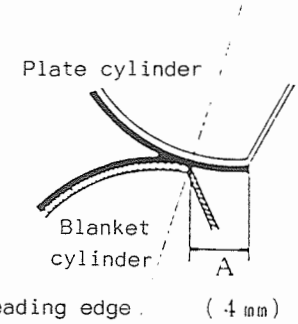
3) Adjustment



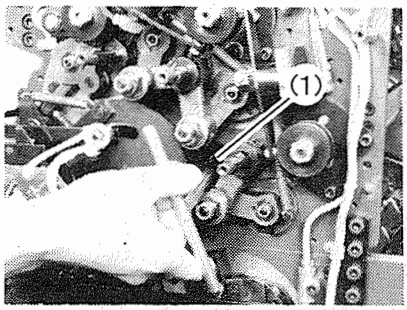
1. Pack the plate cylinder and the blanket cylinder to their standard thickness.



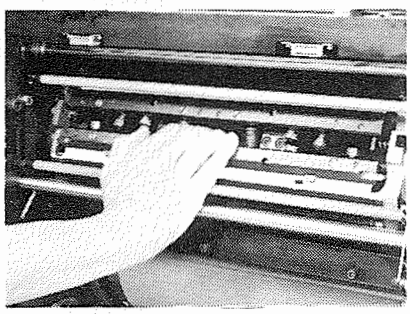
2. Supply ink on to the plate.



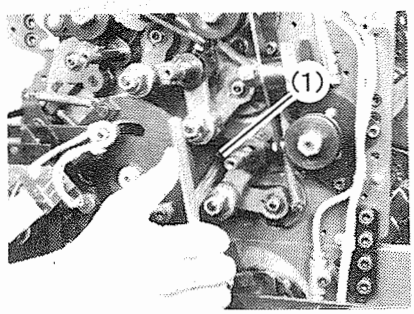
3. Rotate the cylinder once with the cylinders ON and measure the length (A) of the plate which does not transfer ink to the blanket cylinder.



4. Loosen the three plate cylinder gear fixing bolts (1).



5. Turn the plate cylinder so that the length (A) is 4mm.



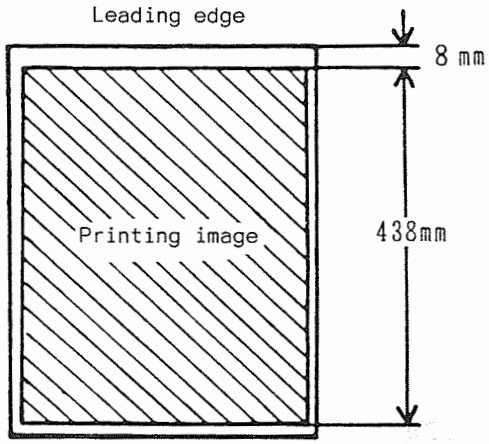
6. Tighten the three fixing bolts (1).

8. THE ALIGNMENT OF THE BLANKET CYLINDER AND THE IMPRESSION CYLINDER (ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

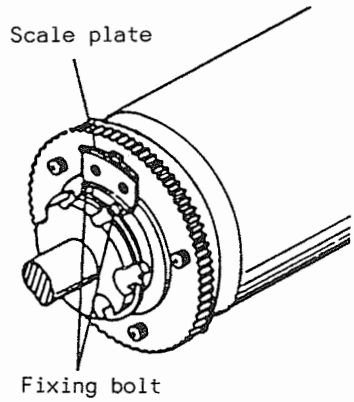
When the vertical adjustment scale is set on (0), the maximum printing area of 330 x 438mm and the standard gripper margin of 8mm will be assured.

2) Point



(Confirmation)

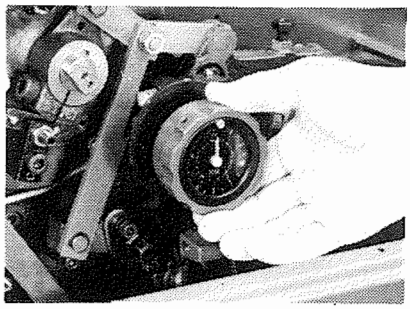
Check the gripper margin and the maximum printing area by doing maximum solid printing.



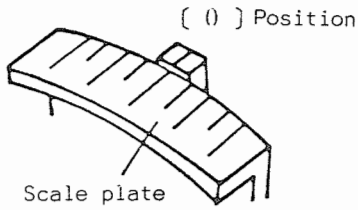
(Adjustment)

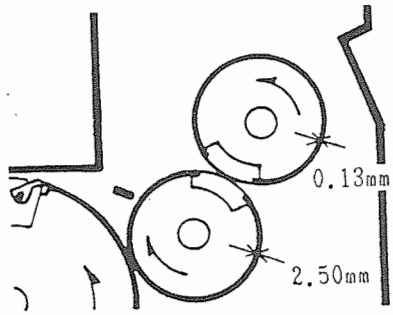
After adjusting the vertical image positioning adjustment dial, align the scale plate on (0).

3) Adjustment

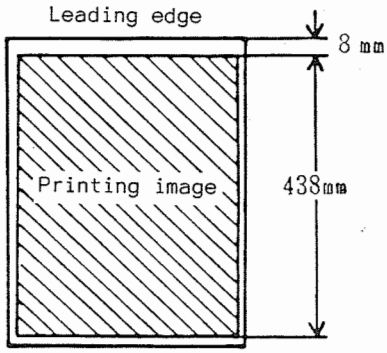


1. Set the scale plate to the (0) position.

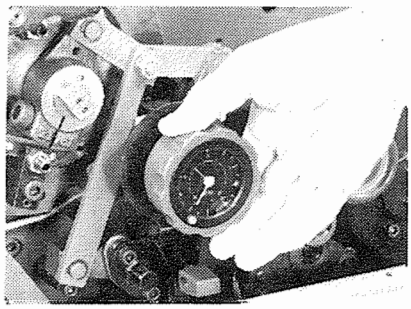




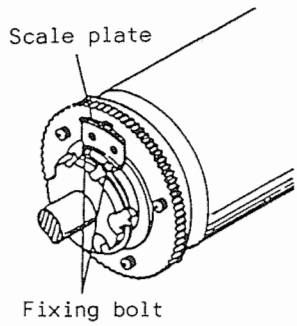
2. The plate cylinder and the blanket cylinder must be packed to their standard thickness.



3. Do the maximum solid printing.



4. Move the vertical adjustment dial to adjust the gripper margin so it is standard and so the maximum printing area is assured.



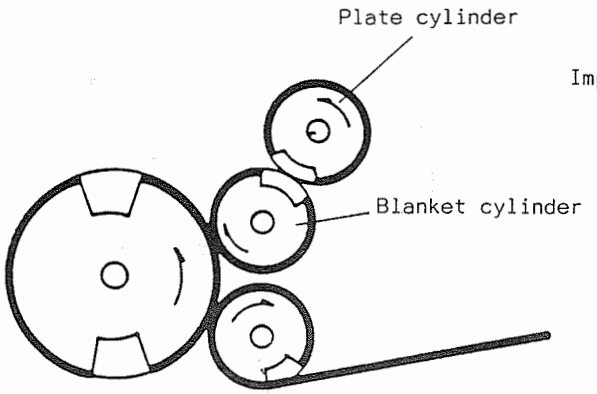
5. Loosen the bolts and align the scale plate on the (0) position and fix it.

9. THE POSITION ADJUSTMENT OF THE CYLINDER ON CAM

1) Purpose

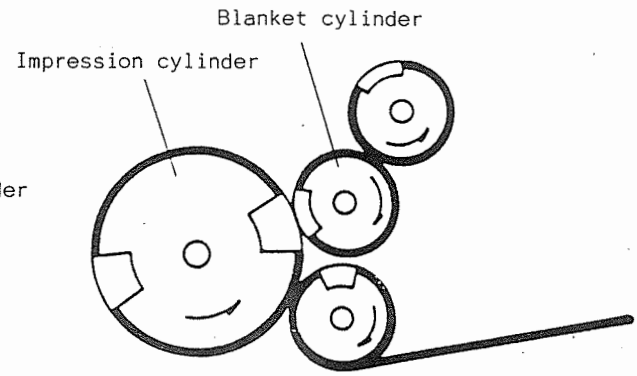
The cylinder ON of the blanket cylinder, the plate cylinder, and the impression cylinder should be done consistently at the correct position.

2) Point



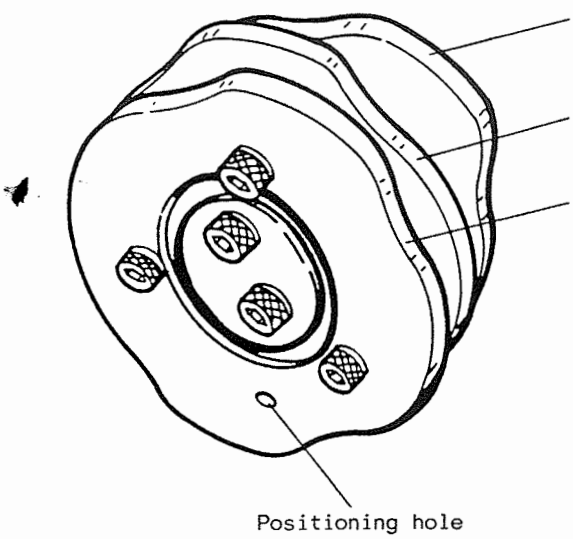
(Confirmation 1)

The plate cylinder and the blanket cylinder should go ON at the position where the plate cylinder notch and the blanket cylinder notch are facing each other.



(Confirmation 2)

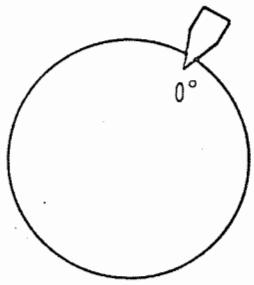
The blanket cylinder and the impression cylinder should go ON at the position where the blanket cylinder notch at the impression cylinder notch are facing each other.



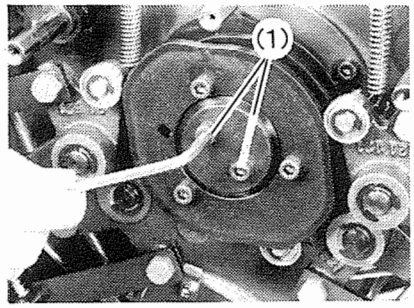
(Adjustment)

When the timing plate is on 0°, the frame positioning hole and the three plate cam positioning hole should be aligned. (At the 6 o'clock position)

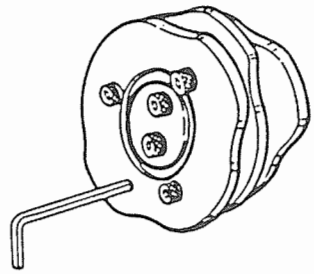
3) Adjustment



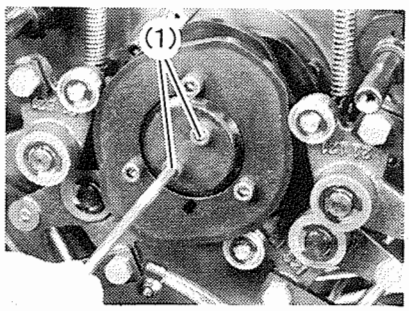
1. Set the timing plate on the 0° position.



2. Loosen the two cam fixing bolts (1).



3. Align the frame positioning hole and the three plate cam positioning hole using a 4mm allen wrench.
(at the 6 o'clock position)



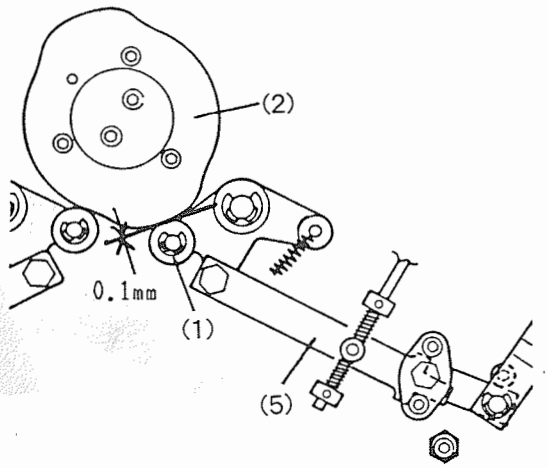
4. Fix the two bolts (1).

10. THE ADJUSTMENT OF THE CYLINDER ON MECHANISM BETWEEN THE PLATE CYLINDER AND THE BLANKET CYLINDER (ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

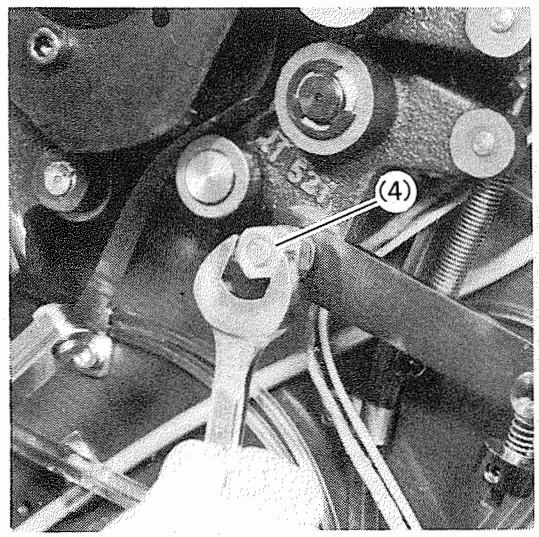
The cylinder ON between the plate cylinder and the blanket cylinder should go consistently ON and OFF smoothly by the cylinder ON and OFF signal while the machine is running.

2) Point



(Confirmation)

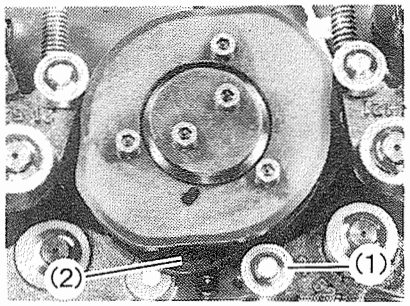
When setting the cam follower (1) at the high position of the cam (2) with the thruster (5) ON, there should be a 0.1mm clearance between the cam follower (1) and the cam (2).



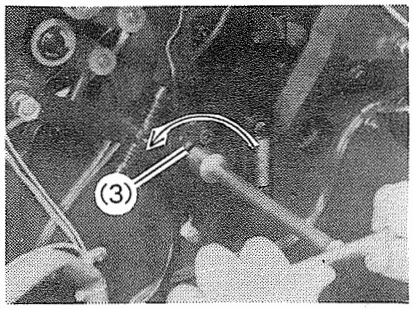
(Adjustment)

Adjust by turning the eccentric pin (4).

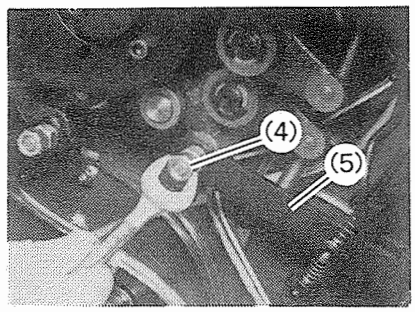
3) Adjustment



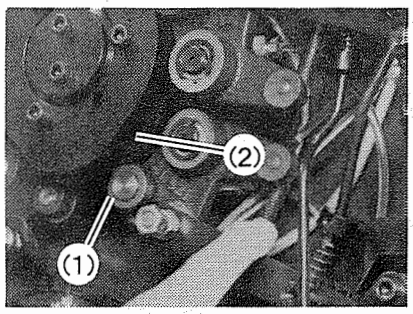
1. Turn the handwheel and set the cam follower (1) at the low position of the cam (2).



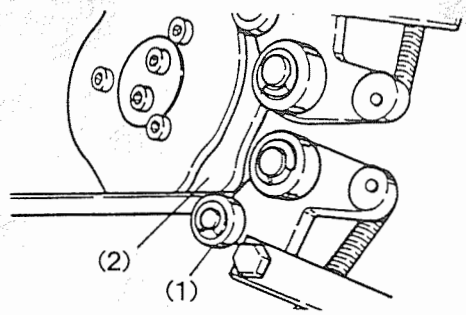
2. Set the cylinder arm (3) at the ON side by hand.



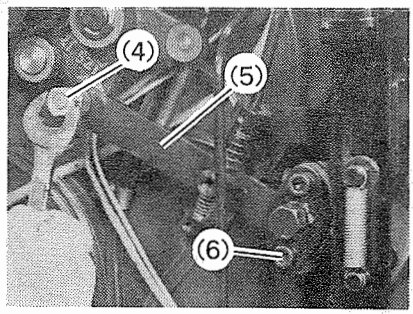
3. Loosening the eccentric pin (4), position the thruster (5) so it is fully toward the cam (2) side.



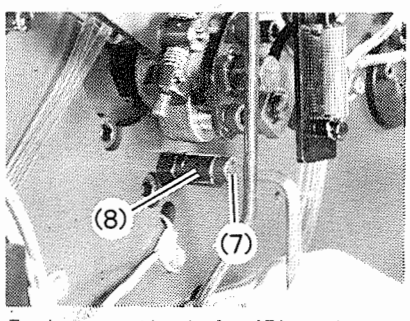
4. Turn the handwheel while pushing the thruster by hand and set the cam follower (1) on the high position of the cam (2).



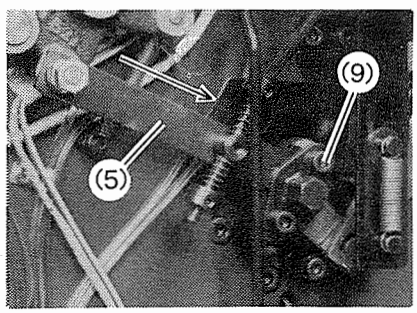
5. Insert a 0.1mm thickness gauge between the cam follower (1) and the cam (2).



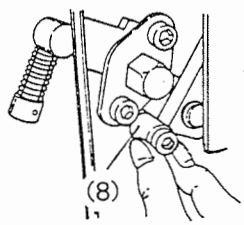
6. Adjust the eccentric pin (4) so that the thruster (5) is lightly in contact with the pin (6) at the ON side.



7. Loosen the bolt (7) and release the OFF side stopper (8).

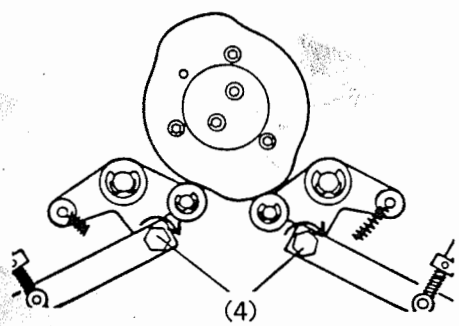


8. Turn the handwheel and set it at the position where the thruster (5) pushes out the pin (9) on the OFF side.



9. Turn the OFF side stopper (8) to adjust the clearance to 0.5mm.

(Note)



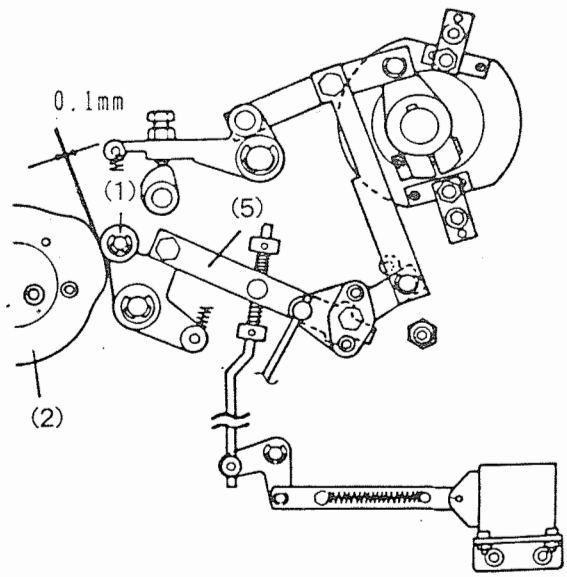
Set the eccentric pin (4) so that the clearance between the thruster and the pin becomes narrower when turning it in the clockwise direction on both the first unit and the second unit.

11. THE ADJUSTMENT OF THE CYLINDER ON MECHANISM BETWEEN THE BLANKET CYLINDER AND THE IMPRESSION CYLINDER (ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

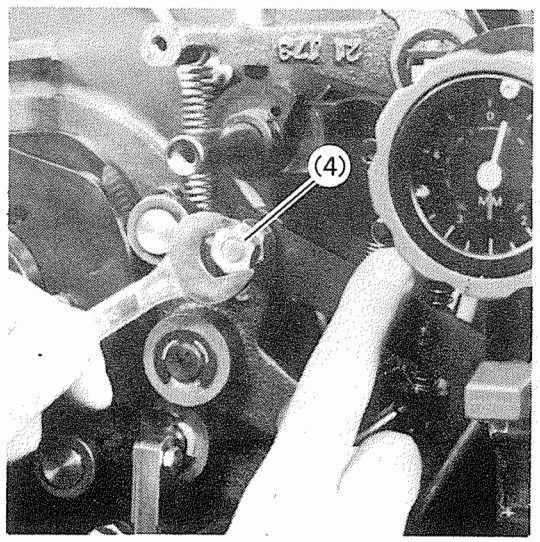
The cylinder ON between the blanket cylinder and the impression cylinder should go consistently ON and OFF smoothly by the cylinder ON and OFF signal while the machine is running.

2) Point



(Confirmation)

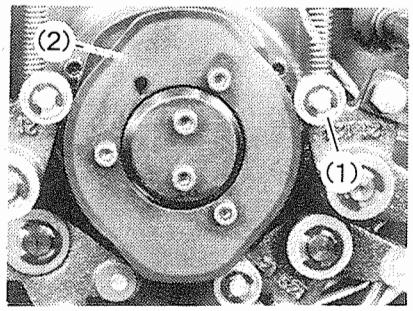
When setting the cam follower (1) at the high position of the cam (2) with the thruster (5) ON, there should be a 0.1mm clearance between the cam follower (1) and the cam (2).



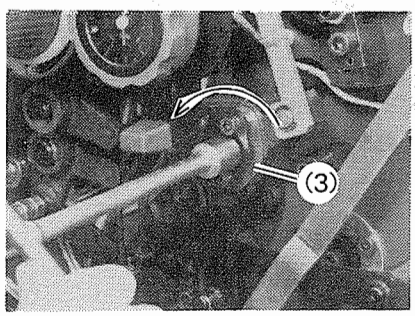
(Adjustment)

Adjust by turning the eccentric pin (4).

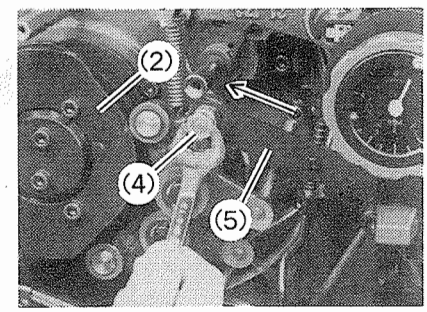
3) Adjustment



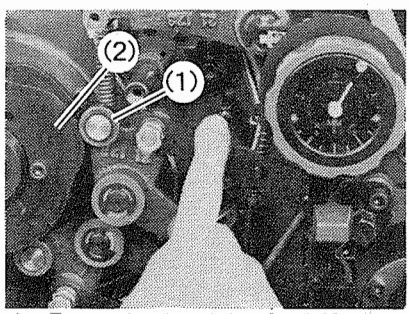
1. Turn the handwheel and set the cam follower (1) at the low position of the cam (2).



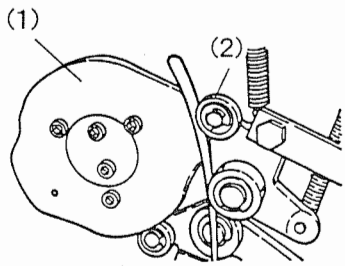
2. Set the cylinder ON arm (3) at the ON side by hand.



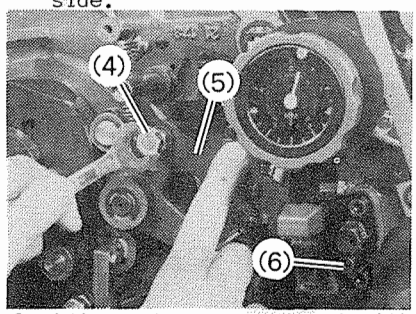
3. Loosen the eccentric pin (4) and set it at the position where the thruster (5) is fully pushed to the cam (2) side.



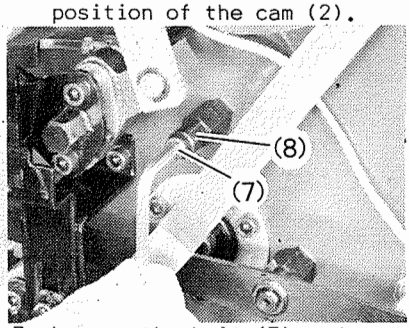
4. Turn the handwheel while pushing the thruster by hand and set the cam follower (1) on the high position of the cam (2).



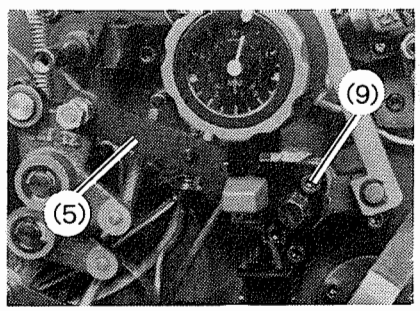
5. Insert a 0.1mm thickness gauge between the cam follower (1) and the cam (2).



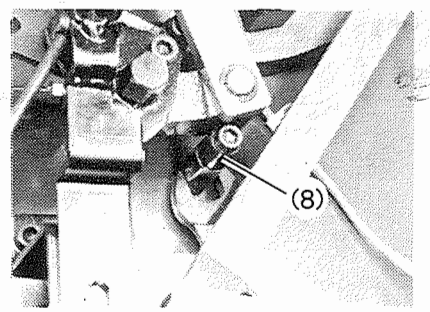
6. Adjust the eccentric pin (4) so that the thruster (5) is lightly in contact with the pin (6) at the ON side.



7. Loosen the bolt (7) and release the OFF side stopper (8).

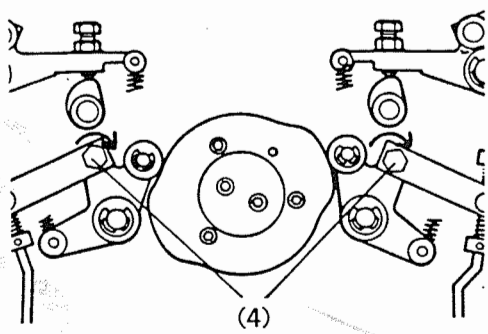


8. Turn the handwheel and stop it at the position where the thruster (5) pushes out the pin (9) on the OFF side.



9. Turn the OFF side stopper (8) to adjust the clearance to 0.5mm.

(Note)



Set the eccentric pin (4) so that the clearance between the thruster and the pin is reduced when turning it in the clockwise direction on both the first unit and the second unit.

12. THE CLEARANCE ADJUSTMENT BETWEEN THE FIRST PLATE CYLINDER AND THE BLANKET CYLINDER

1) Purpose

The clearance between the first bare plate cylinder and the first bare blanket cylinder should be 2.53mm with the cylinders ON.

2) Point

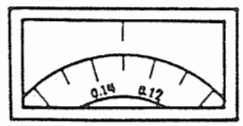
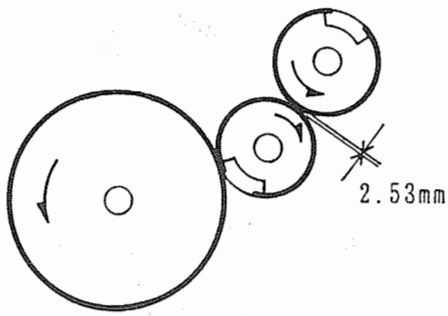
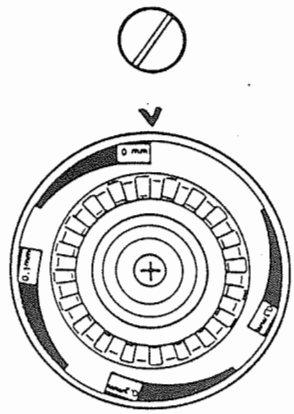


Plate pressure dial



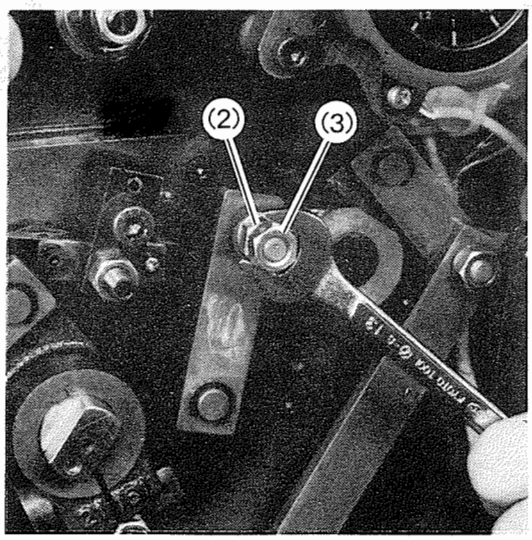


Impression pressure dial

(Confirmation)

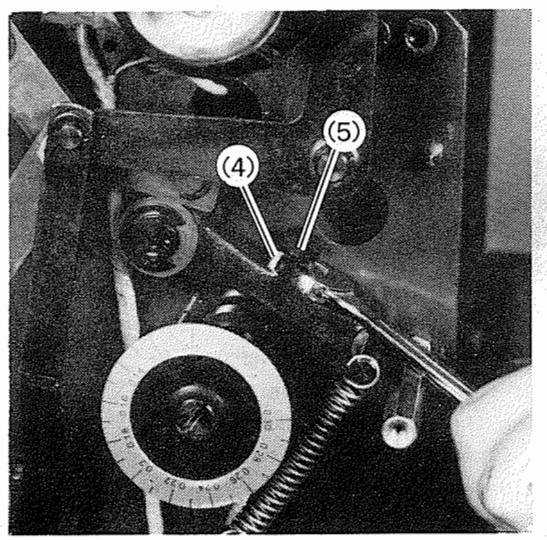
* With the blanket cylinder and the plate cylinder ON and the plate pressure dial on 0.13,
* With the blanket cylinder and the impression cylinder ON and the impression pressure dial is on 0,

the clearance between the plate cylinder and the blanket cylinder should be 2.53mm.



(Parallel Pressure Adjustment)

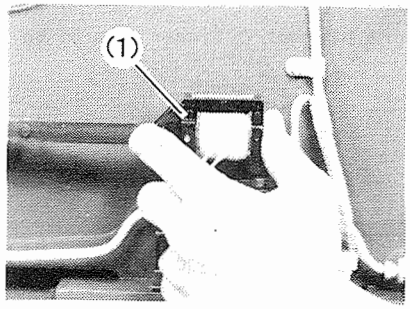
Loosen the lock nut (2) and adjust by turning the eccentric bolt (3).



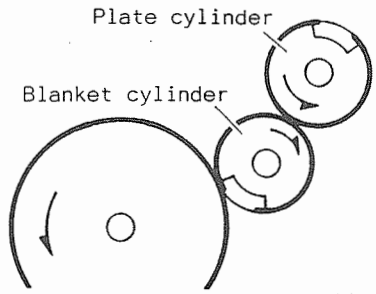
(Total Pressure Adjustment)

Loosen the lock nut (4) and adjust by turning the adjustment bolt (5).

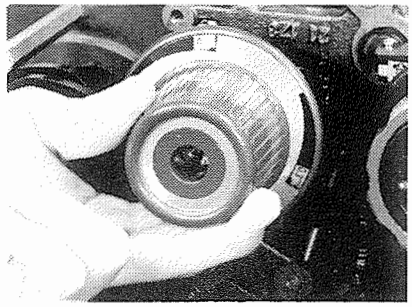
3) Adjustment



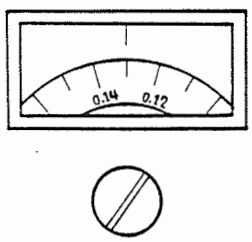
1. Turn the handwheel while pushing the solenoid (1) in by hand and set the blanket cylinder and the plate cylinder, and the blanket cylinder and the impression cylinder ON.



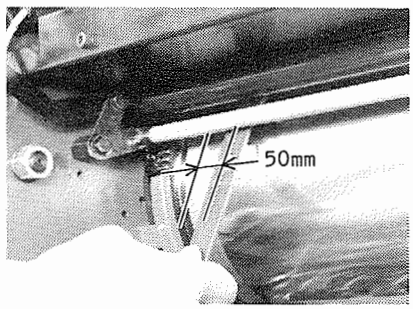
2. Position the plate cylinder and the blanket cylinder so that the notches are shown in the illustration above. (Timing plate 180°)



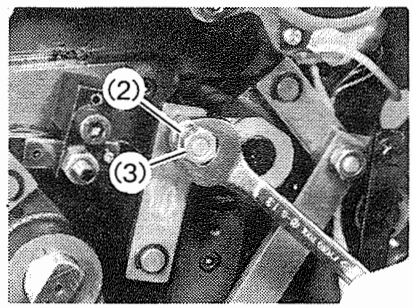
3. Set the impression pressure dial to 0 (the point where the dial is fully turned in the counterclockwise direction.).



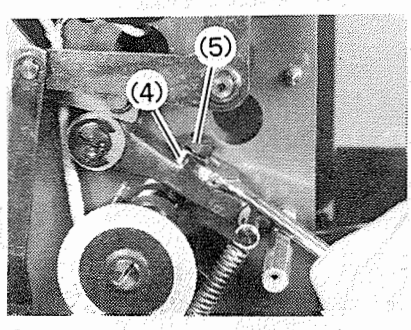
4. Set the plate pressure dial to 0.13.



5. Insert a 2.53mm thickness gauge between the plate cylinder and the blanket cylinder to check the clearance. (On both the operation side and the non operation side)



6. Loosen the lock nut (2) and adjust the parallel pressure by turning the eccentric bolt (3). (When turning it in the clockwise direction, the clearance will be reduced.)



7. Loosen the lock nut (4) and adjust the total pressure by turning the adjustment bolt (5). (When tightening it, the clearance will be reduced.)

* When adjusting the total pressure, set the plate cylinder and the blanket cylinder ON and OFF to check the clearance.

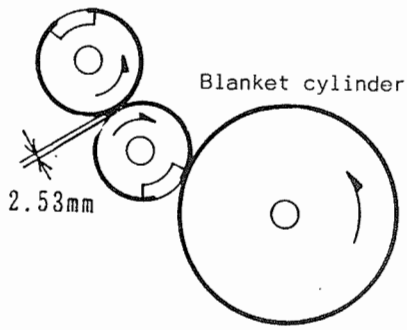
(Note)

After the clearance adjustment between the plate cylinder and the blanket cylinder is done, the clearance adjustment between the blanket cylinder and the impression cylinder has to be done.

13. THE CLEARANCE ADJUSTMENT BETWEEN THE SECOND UNIT PLATE CYLINDER AND THE BLANKET CYLINDER

1) Purpose
The clearance between the second bare plate cylinder and the second bare blanket cylinder should be 2.53mm with the cylinders ON.

2) Point



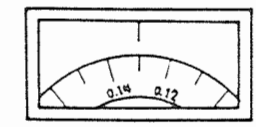
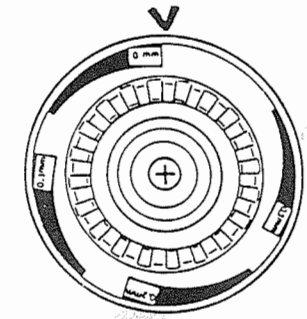
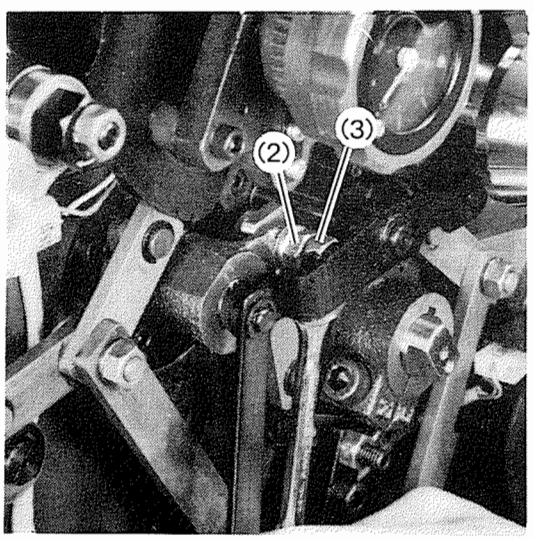


Plate pressure dial

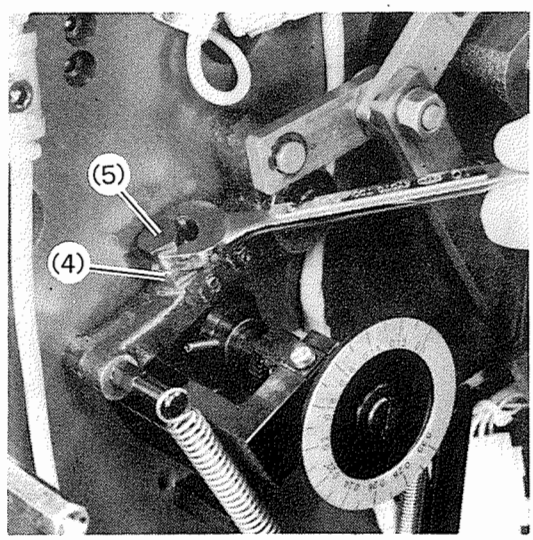


Impression pressure dial

(Confirmation)
* With the blanket cylinder and the plate cylinder ON and the plate pressure dial set on 0.13,
* With the blanket cylinder and the impression cylinder ON and the impression pressure dial set on 0,
the clearance between the plate cylinder and the blanket cylinder should be 2.53mm.

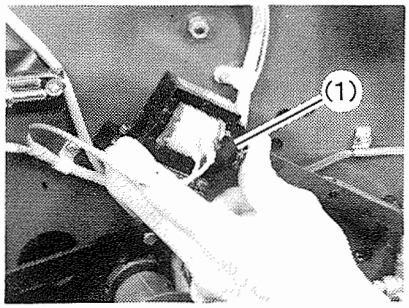


(Parallel Pressure Adjustment)
Loosen the lock nut (2) and adjust by turning the eccentric bolt (3).

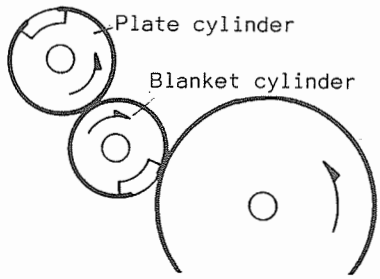


(Total Pressure Adjustment)
Loosen the lock nut (4) and adjust by turning the adjustment bolt (5).

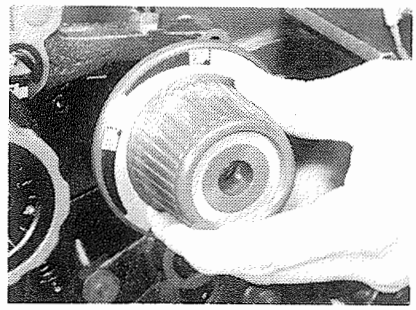
3) Adjustment



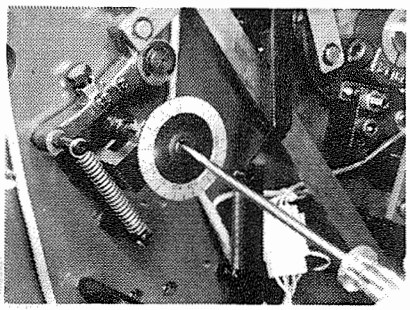
1. Turn the handwheel while pushing the solenoid (1) in by hand and set the blanket cylinder and the plate cylinder, and the blanket cylinder and the impression cylinder ON.



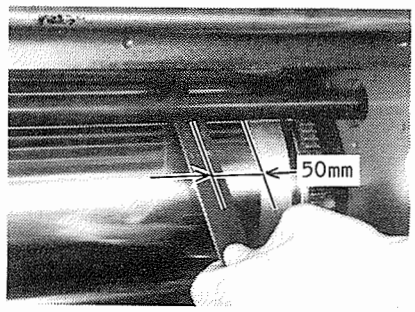
2. Position the plate cylinder and the blanket cylinder so that the notches are shown in the illustration above. (Timing plate 180°)



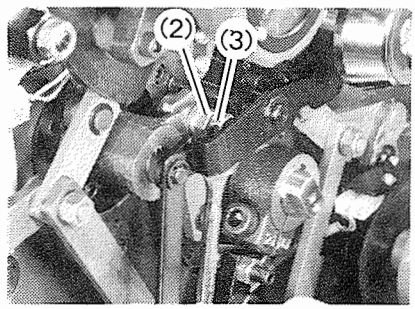
3. Set the impression pressure dial to 0 (the point where the dial is fully turned in the counterclockwise direction.).



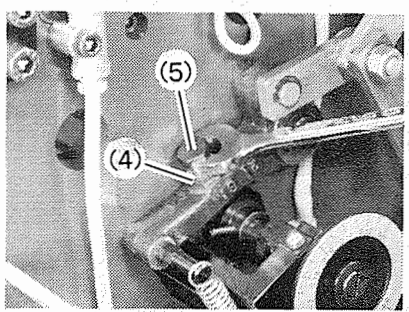
4. Set the plate pressure dial to 0.13.



5. Insert a 2.53mm thickness gauge between the plate cylinder and the blanket cylinder to check the clearance. (On both the operation side and the non operation side)



6. Loosen the lock nut (2) and adjust the parallel pressure by turning the eccentric bolt (3). (When turning it in the clockwise direction, the clearance will be reduced.)



7. Loosen the lock nut (4) and adjust the total pressure by turning the adjustment bolt (5). (When tightening it, the clearance will be reduced.)

* When adjusting the total pressure, set the plate cylinder and the blanket cylinder ON and OFF to check the clearance.

(Note)

After the clearance adjustment between the plate cylinder and the blanket cylinder is done, the clearance adjustment between the blanket cylinder and the impression cylinder has to be done.

15. THE CLEARANCE ADJUSTMENT BETWEEN THE SECOND UNIT BARE BLANKET CYLINDER AND THE BARE IMPRESSION CYLINDER

1) Purpose
The clearance between the second unit bare blanket cylinder and the bare impression cylinder should be 2.35mm with the cylinders ON.

2) Point

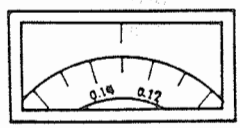
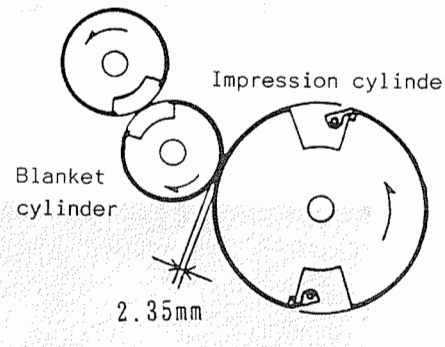
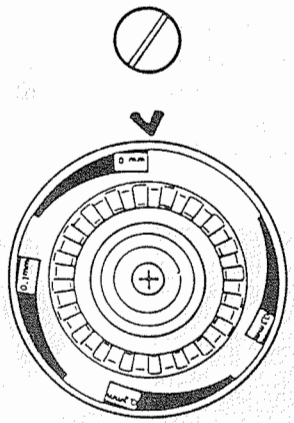
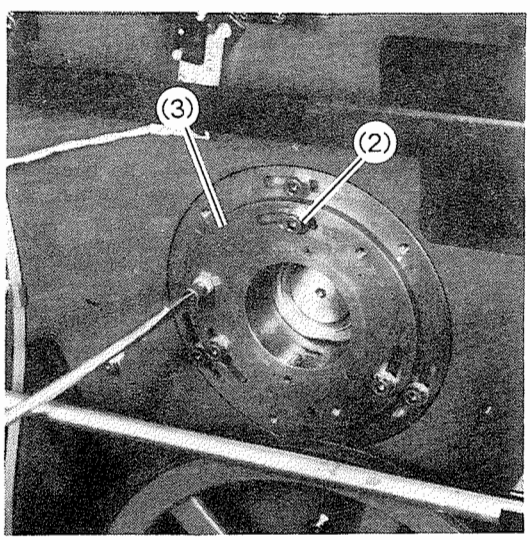


Plate pressure dial

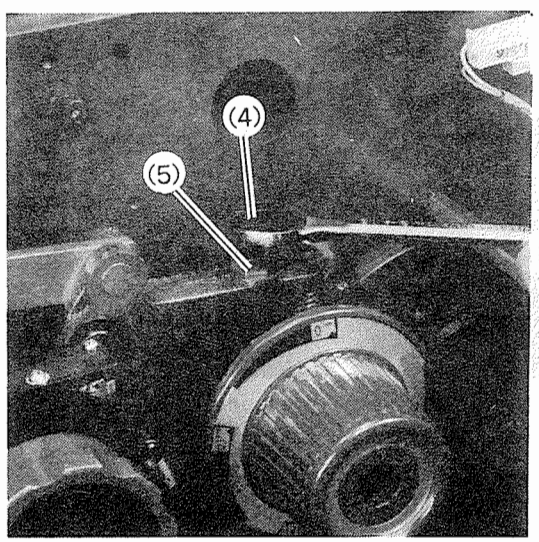



Impression pressure dial

(Confirmation)
* With the blanket cylinder and the plate cylinder ON and the plate pressure dial on 0.13,
* With the blanket cylinder and the impression cylinder ON and the impression pressure dial on 0,
the clearance between the blanket cylinder and the impression cylinder should be 2.35mm.

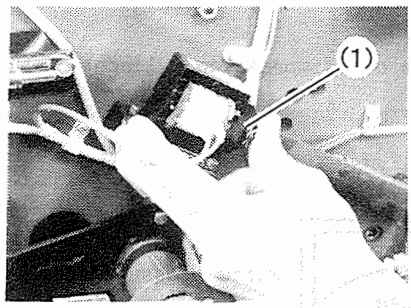


(Parallel Pressure Adjustment)
Loosen the three bolts (2) and adjust by turning the inner bearing case (3).

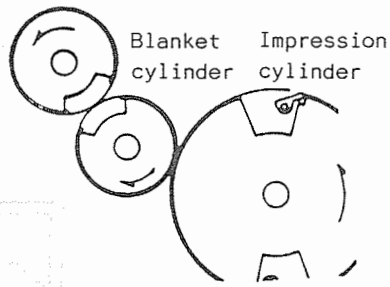


(Total Pressure Adjustment)
Loosen the lock nut (5) and adjust by turning the adjustment bolt (4).

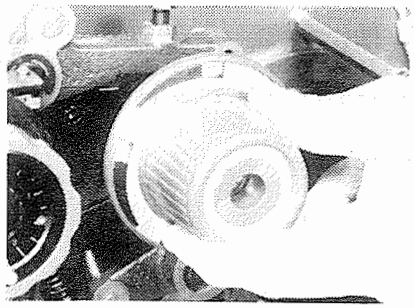
3) Adjustment



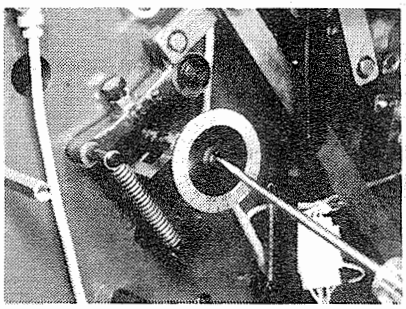
1. Turn the handwheel while pushing the solenoid (1) in by hand and set the cylinder ON between the plate cylinder and the blanket cylinder and between the blanket cylinder and the impression cylinder.



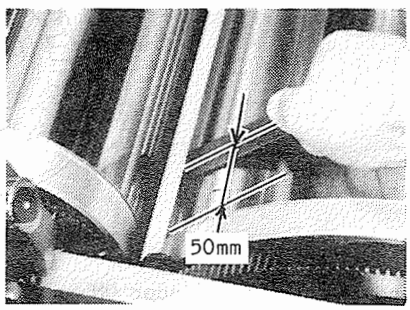
2. Set the blanket cylinder notch and the impression cylinder notch at the position shown in the illustration. (Timing plate 340°)



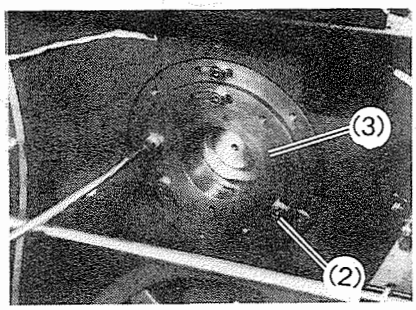
3. Set the impression pressure dial on 0 (the point where the dial is fully turned in the counterclockwise direction.)



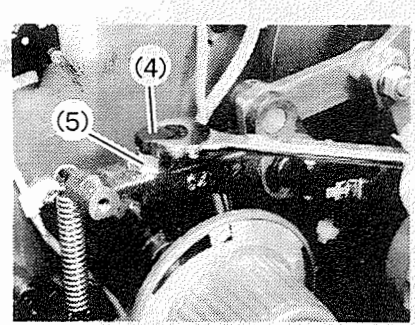
4. Set the plate pressure dial on 0.13.



5. Insert a 2.35mm thickness gauge between the blanket cylinder and impression cylinder to check the clearance. (On both the operation side and the non operation side)



6. To adjust the parallel pressure, loosen the three bolts (2) and turn the inner bearing case (3). (When turning it in the clockwise direction, the clearance will be reduced.)



7. To adjust the total pressure, loosen the lock nut (5) and turn the adjustment bolt (4). (When turning it in the clockwise direction, the clearance will be reduced.)

* When adjusting the total pressure, set the blanket cylinder and the impression cylinder ON and OFF to check the clearance.

14. THE CLEARANCE ADJUSTMENT BETWEEN THE FIRST BLANKET CYLINDER AND THE IMPRESSION CYLINDER

1) Purpose

The clearance between the first bare blanket cylinder and the bare impression cylinder should be 2.35mm with the cylinders ON.

2) Point

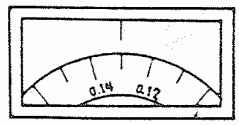
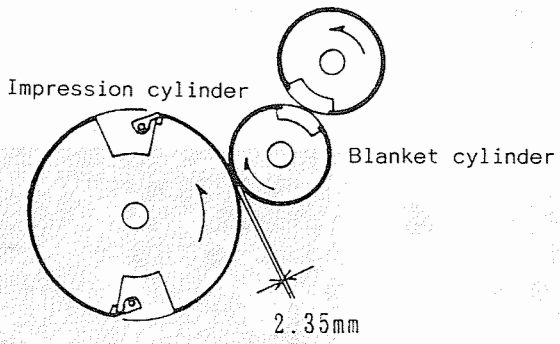
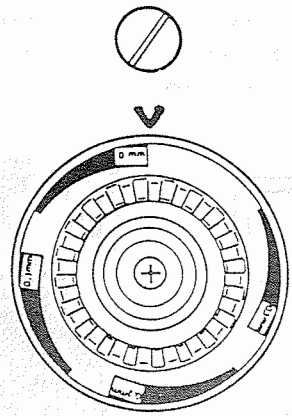


Plate pressure dial



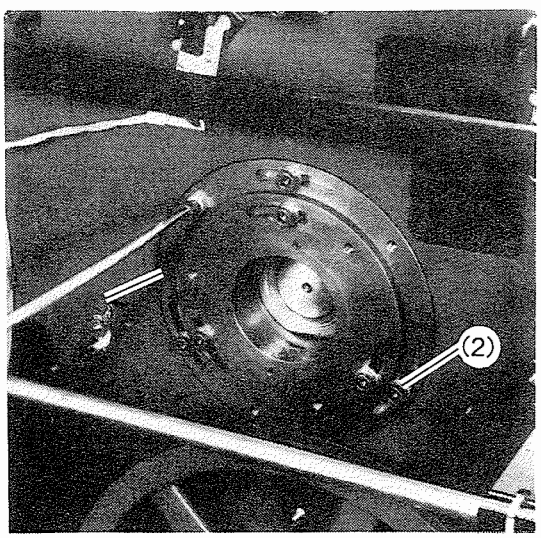


Impression pressure dial

(Confirmation)

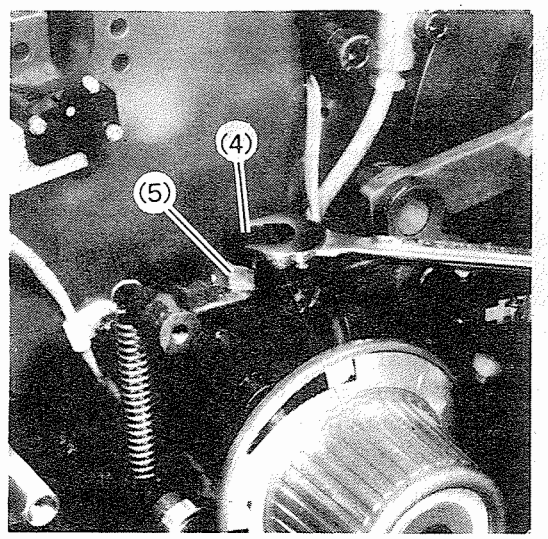
* With the blanket cylinder and the plate cylinder ON and the plate pressure dial on 0.13,
* With the blanket cylinder and the impression cylinder ON and the impression pressure dial on 0,

the clearance between the blanket cylinder and the impression cylinder should be 2.35mm.



(Parallel Pressure Adjustment)

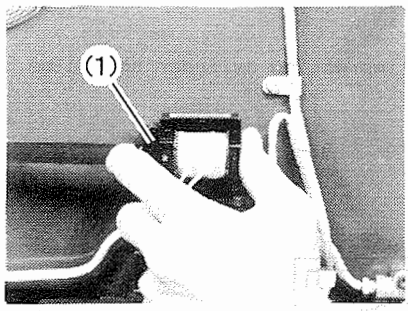
Loosen the three bolts (2) and adjust by turning the outer bearing case (3).



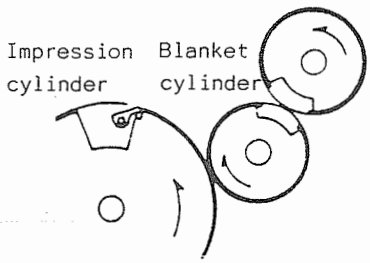
(Total Pressure Adjustment)

Loosen the lock nut (5) and adjust by turning the adjustment bolt (4).

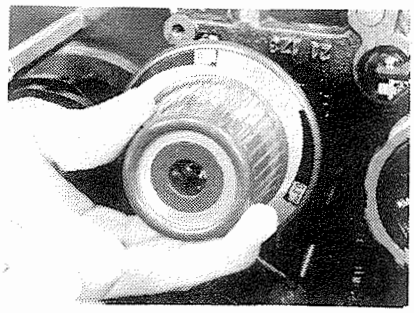
3) Adjustment



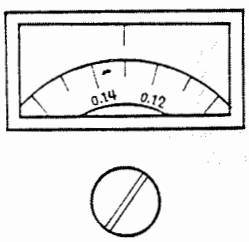
1. Turn the handwheel while pushing the solenoid (1) in by hand and set the blanket cylinder and the plate cylinder, and the blanket cylinder and the impression cylinder ON.



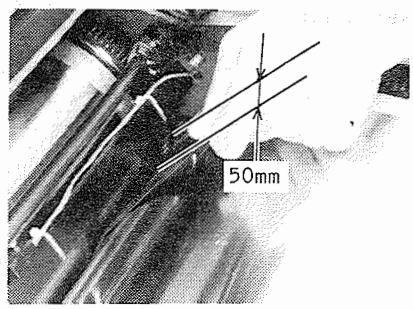
2. Position the blanket cylinder and the impression cylinder so that the notches are shown in the illustration above. (Timing plate 60°)



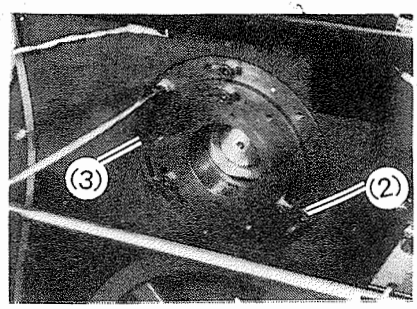
3. Set the impression pressure dial on 0. (the point where the dial is fully turned in the counterclockwise direction.)



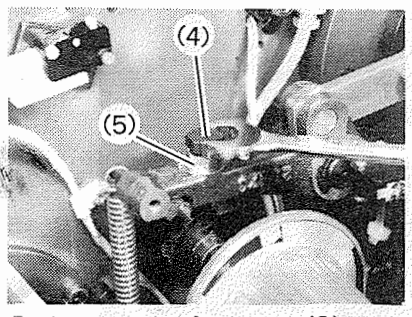
4. Set the plate pressure dial on 0.13.



5. Insert a 2.35mm thickness gauge between the blanket cylinder and the impression cylinder to check the clearance. (On both the operation side and the non operation side)



6. Loosen the three bolts (2) and adjust the parallel pressure by turning the outer bearing case (3). (When turning it in the clockwise direction, the clearance will be reduced.)



7. Loosen the lock nut (5) and adjust the total pressure by turning the adjustment bolt (4). (When tightening it, the clearance will be reduced.)

* When adjusting the total pressure, set the blanket cylinder and the impression cylinder on the second unit ON and OFF to check the clearance.

(Note)

When the clearance adjustment between the first unit blanket cylinder and the impression cylinder is done, the clearance adjustment between the second unit blanket cylinder and the impression cylinder may be changed. After doing this adjustment, do the clearance adjustment between the blanket cylinder and the impression cylinder on the second unit.

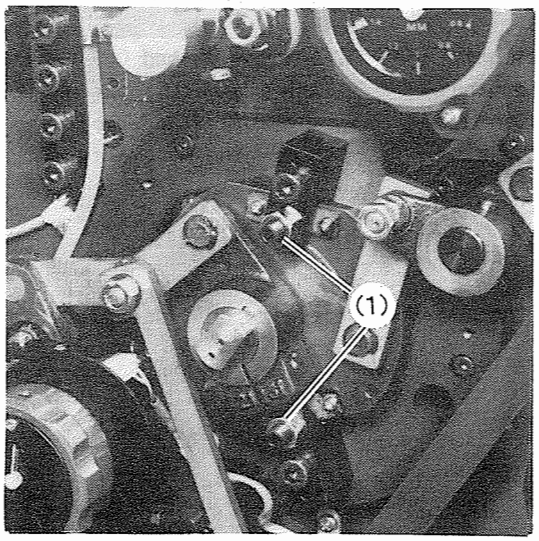
16. THE SIDE PLAY ADJUSTMENT OF THE BLANKET CYLINDER (ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

To eliminate any side play of the blanket cylinder which will cause printing problems.

2) Point

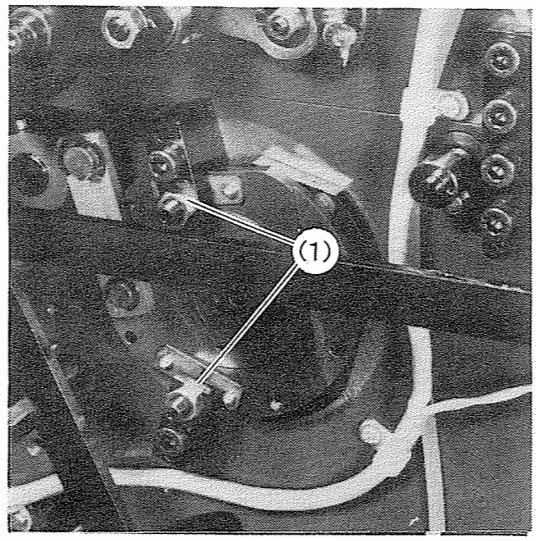
Operation side



(Confirmation)

There should be no side play of the blanket cylinder and the cylinder ON and OFF should be done smoothly.

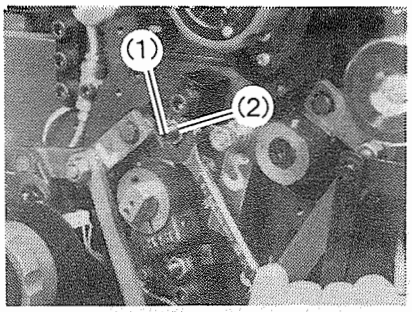
Non operation side



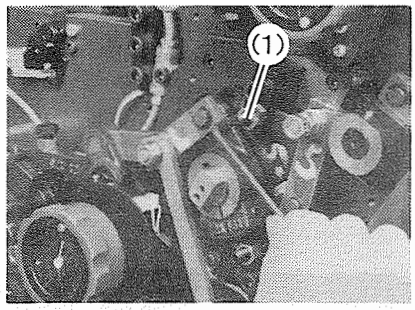
(Adjustment)

The adjustment to eliminate any side play is done by using the adjustment screw (1). (On both the operation side and the non operation side)

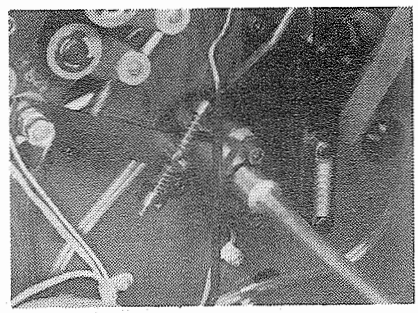
3) Adjustment



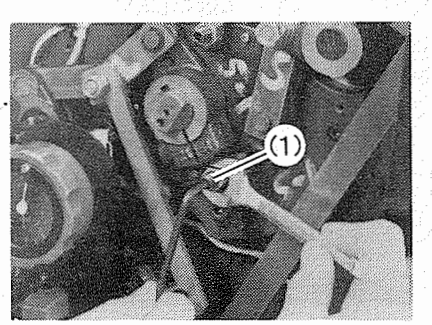
1. Loosen the nut (2) and release the adjustment screw (1). (On both the operation side and the non operation side)



2. Tighten the 4 adjustment screws (1) slowly alternating from the operation side and the non operation side.



3. Set the ON and OFF between the plate cylinder and the blanket cylinder by hand to check the movement.



4. Fix the adjustment screw (1) at the point where the cylinder ON between the plate cylinder and the blanket cylinder is done with the proper pressure.

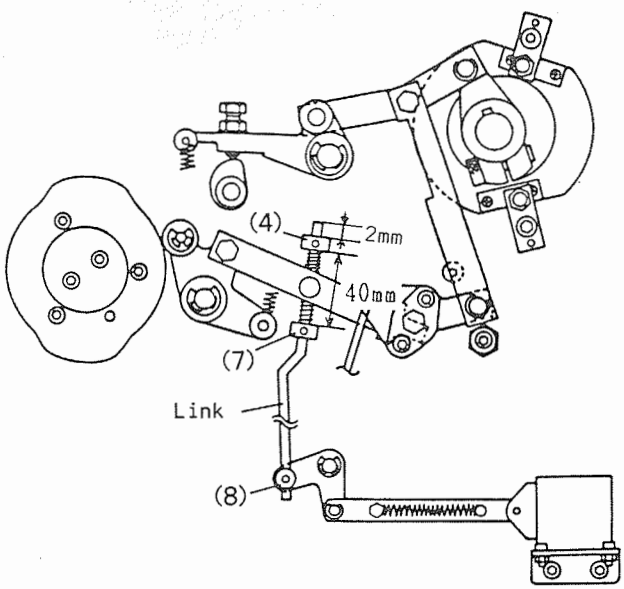
* Run the machine and check that the cylinder ON and OFF is smooth.

17. THE CYLINDER ON LINKAGE ADJUSTMENT BETWEEN THE BLANKET CYLINDER AND THE IMPRESSION CYLINDER (ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

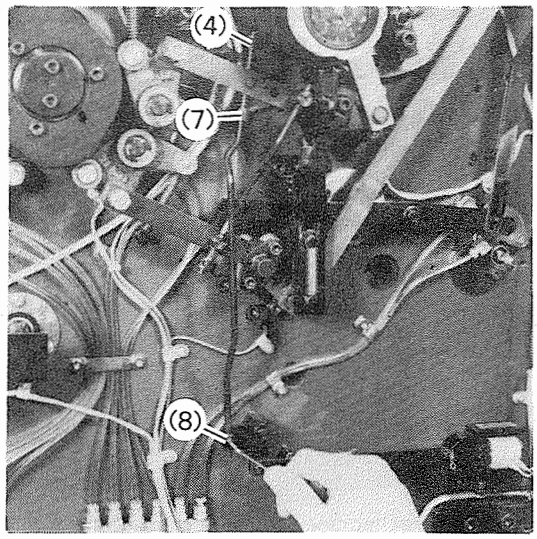
When the cylinder ON solenoid goes ON, the blanket cylinder and the impression cylinder should go ON consistently.

2) Point



(Confirmation)

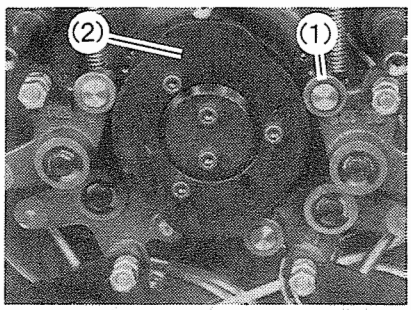
The link and the spring should consistently control the ON and OFF of the thruster.



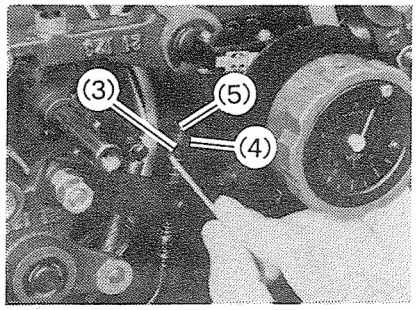
(Adjustment)

Adjust the length of the spring by using the collars (4) and (7), adjust the length of the link by using the screw (8).

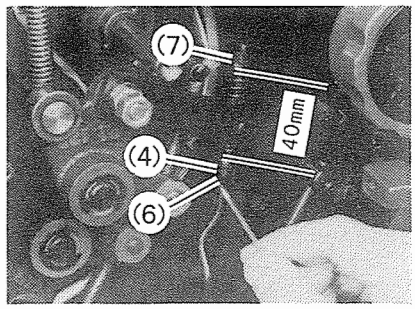
3) Adjustment



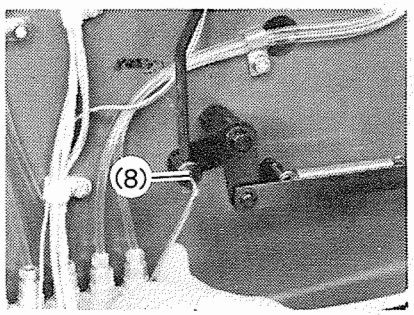
1. Set the cam follower (1) on the low position of the cylinder ON cam (2).



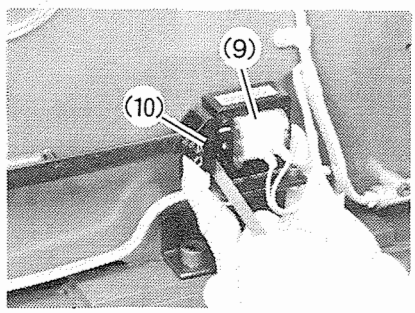
2. Loosen the set screw (3) and move the collar (4) and set the length of the link (5) to be 2mm.



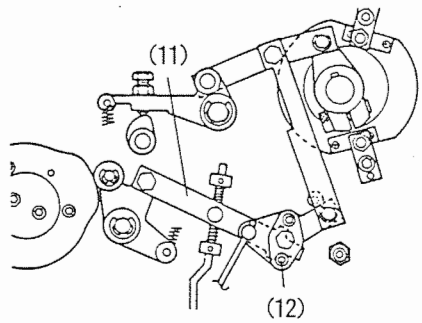
3. Loosen the set screw (6) and adjust the length between the collar (4) and the collar (7) to be 40mm.



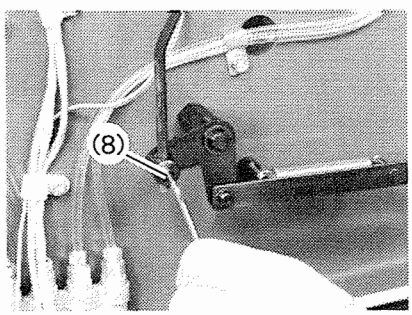
4. Loosen the set screw (8).



5. Insert a 1mm thickness gauge between the solenoid (9) and the plunger (10).



6. Check that the thruster (11) lightly contacts the pin (12) under its own weight.



7. Fix the set screw (8).

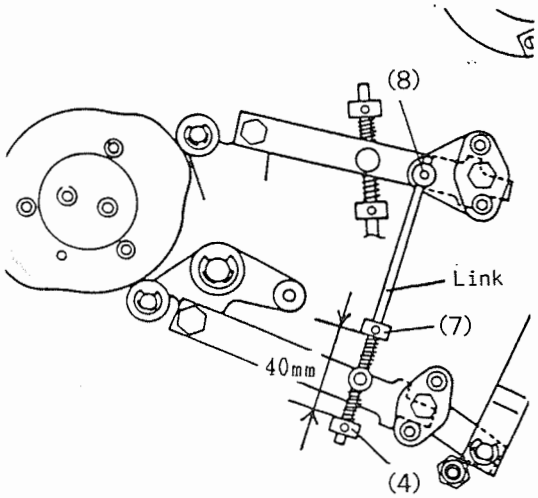
18. THE CYLINDER ON LINKAGE ADJUSTMENT BETWEEN THE PLATE CYLINDER AND THE BLANKET CYLINDER (ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

When shifting the operating lever to the position 4, the plate cylinder and the blanket cylinder should go ON.

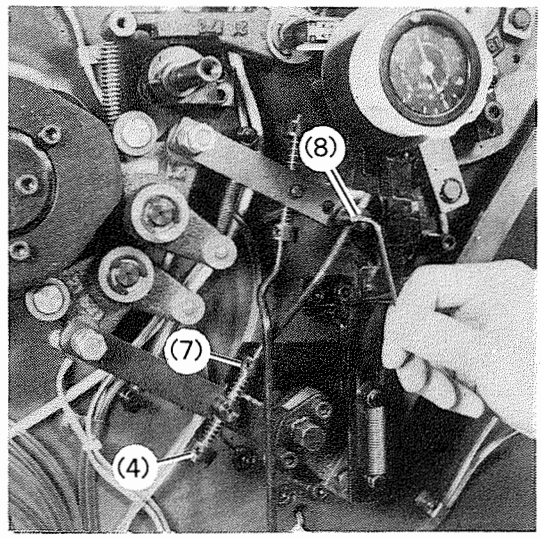
2) Point

(For the machines with the serial numbers from 1001 to 1060)



(Confirmation)

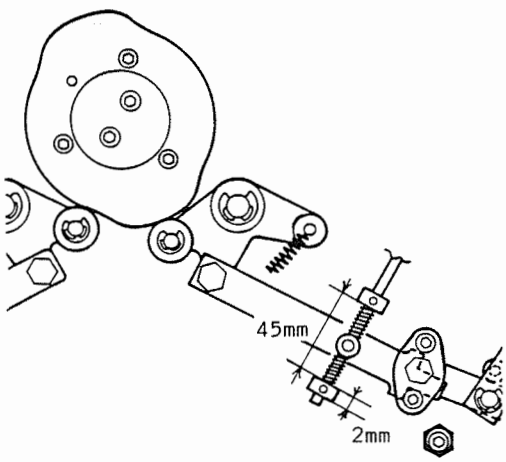
The link and the spring should consistently control the ON and OFF of the thruster.



(Adjustment)

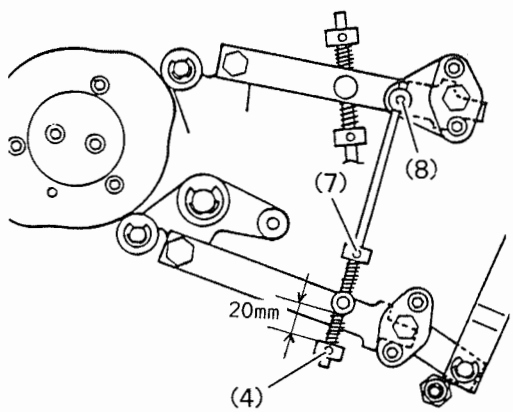
Adjust the spring length by the collars (4) and (7), and adjust the link length by the screw (8).

(For the machines with the serial numbers from 1061)



(Confirmation)

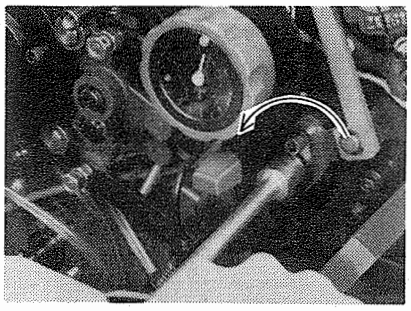
The link and the spring should consistently control the ON and OFF of the thruster.



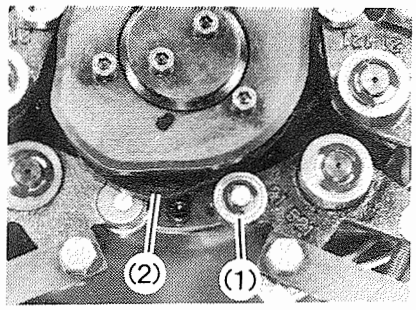
(Adjustment)

Adjust the spring length by the collars (4) and (7), and adjust the link length by the screw (8).

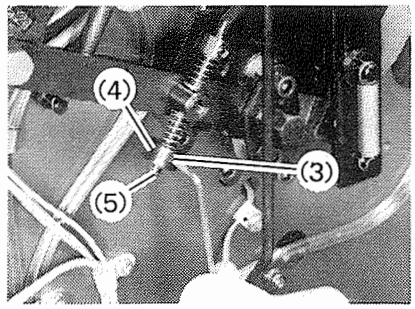
3) Adjustment
(For the machines with the serial numbers from 1001 to 1060)



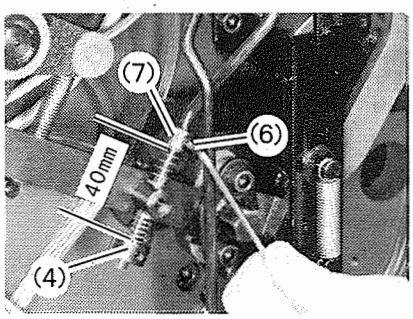
1. Set the blanket cylinder and the impression cylinder ON.



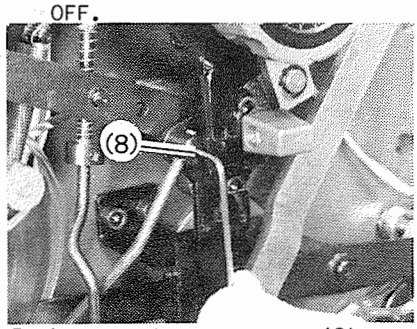
2. Set the cam follower (1) on the low position of the cam (2) with the blanket cylinder and the plate cylinder OFF.



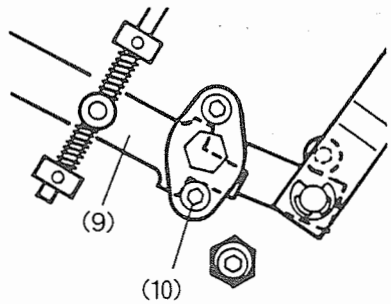
3. Loosen the set screw (3) and set the collar (4) so that the length of the link is 2mm.



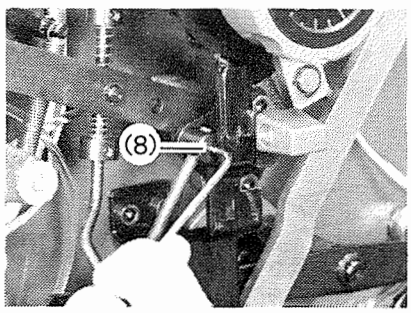
4. Loosen the set screw (6) and adjust the length between the collar (4) and the collar (7) to be 40mm.



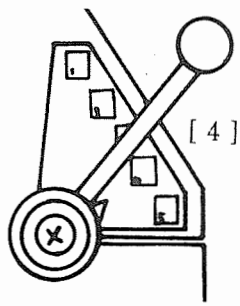
5. Loosen the set screw (8).



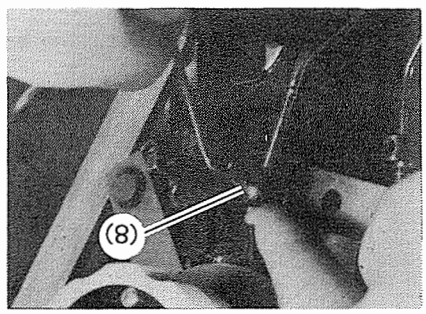
6. Set the thruster (9) so it lightly contacts the pin (10) under its own weight.



7. Fix the set screw (8).



8. Run the machine and shift the operating lever to the position 4.



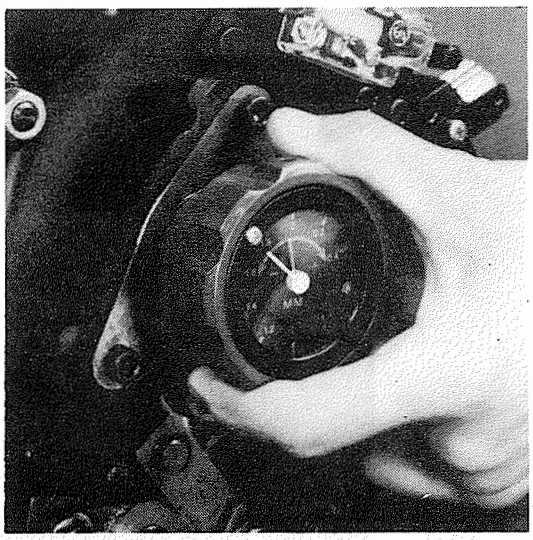
9. Loosen the lock screw (8) and push the link (5) down slowly until the blanket cylinder and the plate cylinder goes ON, and then fix the screw (8).

(Note)
For the adjustment step "6", set the lower spring length to 20mm by pushing the shaft up for the machines with the serial numbers from 1061.

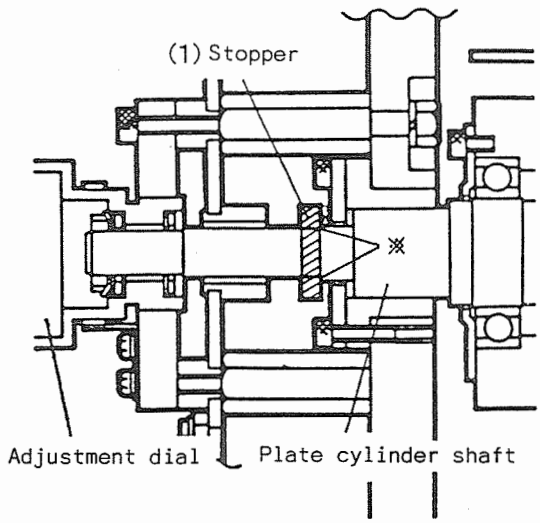
19. THE LATERAL POSITIONING ADJUSTMENT OF THE PLATE CYLINDER

1) Purpose
The plate cylinder lateral movement volume should be ±2mm.

2) Point



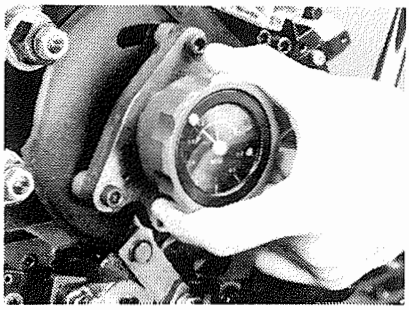
(Confirmation)
The plate cylinder lateral movement volume should be ±2mm.



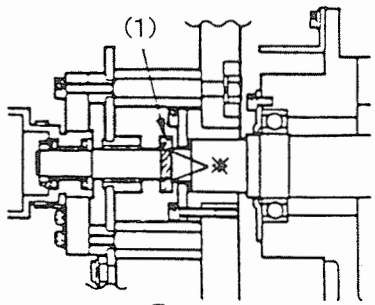
(Adjustment)
Fix the stopper (1) while pushing it against the part (*) of the shaft.

3) Adjustment

(Stopper Adjustment)

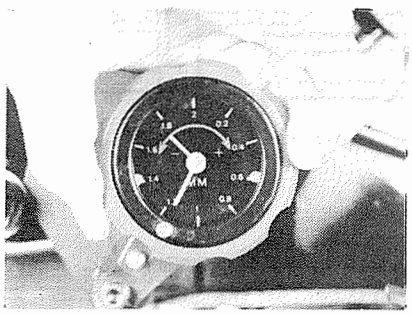


1. Turn the adjustment dial fully in the clockwise direction and move the plate cylinder to the operation side.

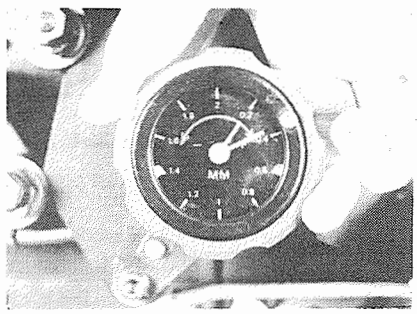


2. Push the stopper (1) on the part (*) of the shaft and fix it.

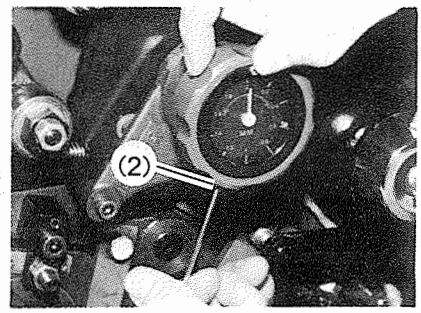
(Adjustment Dial (0) Position Adjustment)



1. Turn the adjustment dial fully in the (-) direction.



2. Turn the adjustment dial fully in the (+) direction.



3. Loosen the screw (2) and set the indicator so that the center of the graduation scales of the adjustment items 1 and 2 should be aligned with the graduation "2".

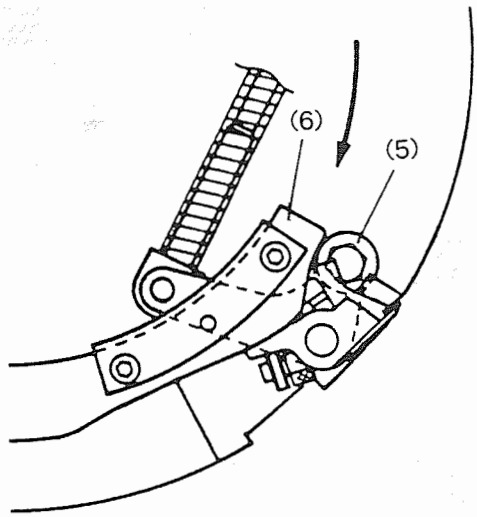
20. THE IMPRESSION CYLINDER GRIPPER ADJUSTMENT

1) Purpose

The impression cylinder grippers should sufficiently and uniformly grip the paper and all of the impression cylinder grippers opening and closing timing should be the same.

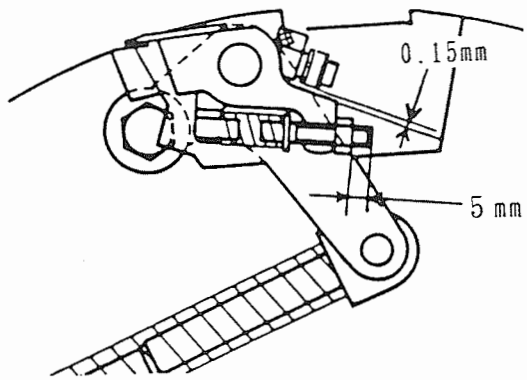
2) Point

Both the grippers should be adjusted for the confirmation items 1 and 2.



(Confirmation 1)

When the cam follower (5) of the impression cylinder grippers is at the low position of the cam (6), the cam foliower should lightly contact the cam.

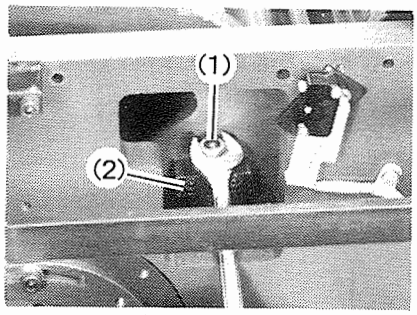


(Confirmation 2)

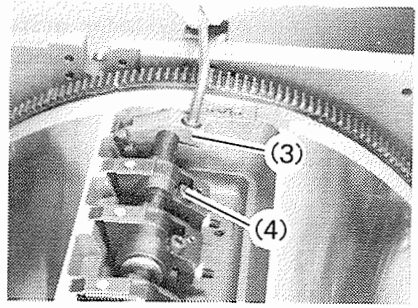
When the impression cylinder grippers are closed, the impression cylinder grippers should be as shown in the illustration above.

3) Adjustment

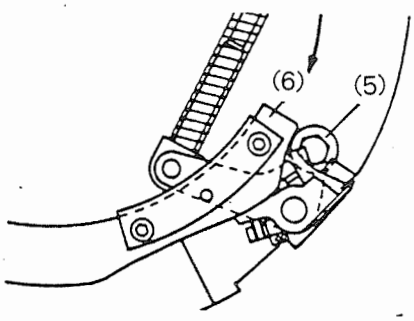
1. Prepare a M8 nut and the washers.



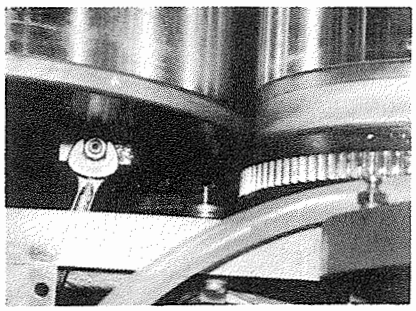
2. Mount the nut and the washer on the spring shaft (1) and tighten it until they contact the block (2).

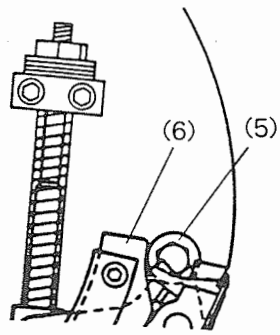


3. Loosen the two stoppers (3) and the six gripper fixing bolts.

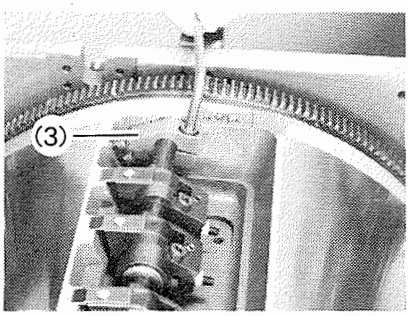


4. Turn the handwheel and set the cam follower (5) on the low position of the cam (6).

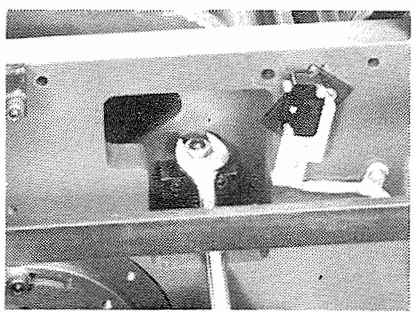




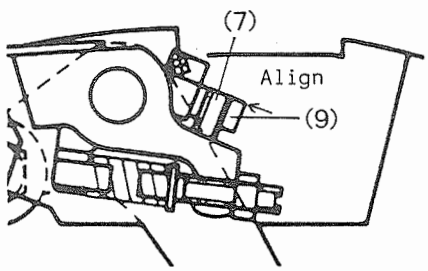
5. Turn the nut and adjust it so that the cam follower (5) just contacts the cam (6).



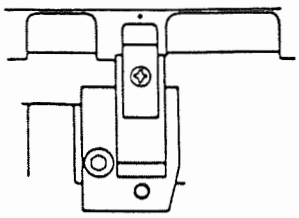
6. Push the two stoppers (3) against the cylinder and fix them.



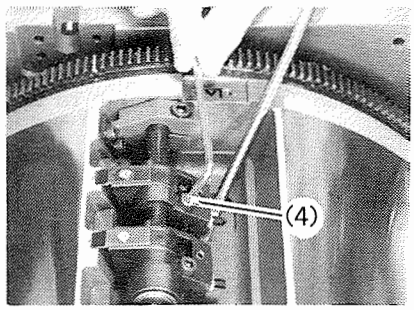
7. Remove the nut and the washers.



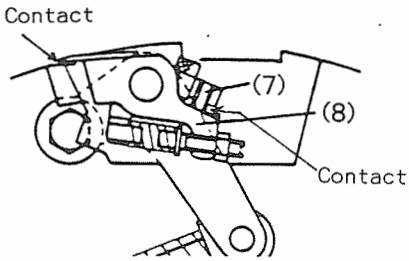
8. Turn the screw (7) and align it with the supporter (9).



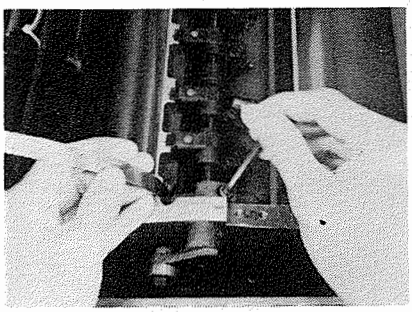
9. Align the center of the gripper with the punch mark on the gripper base to set the lateral position.



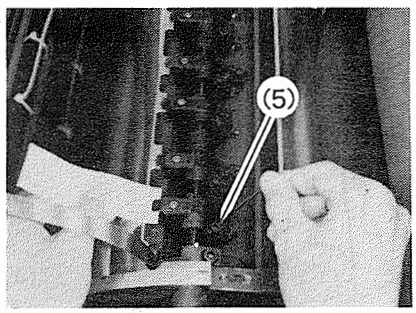
10. Push the gripper against the gripper base and fix it with the bolt (4).



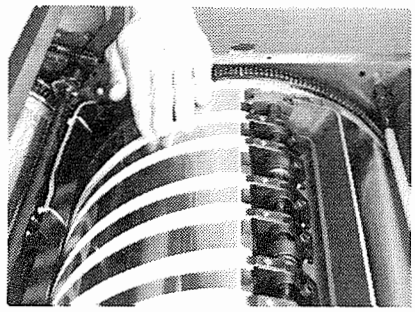
At this time the top edge of the screw (7) should contact the gripper holder (8) and the gripper.



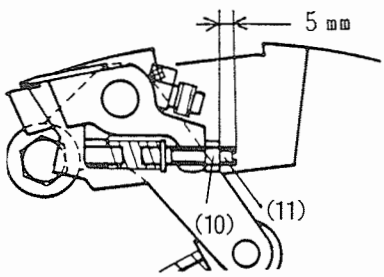
11. Insert a 0.15mm thickness gauge between the stopper and the cylinder on the non operation side.



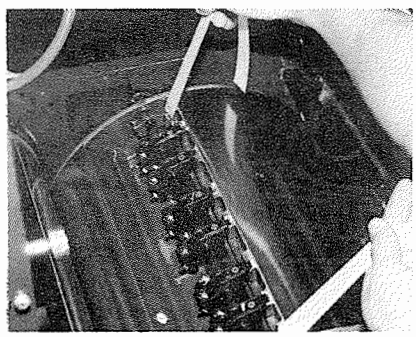
12. Adjust by turning the screw (5) so that a 0.08mm thick strip of paper can be pulled out with light force. (The pressure of all the grippers should be uniform.)



13. After removing the 0.15mm thickness gauge, check that the pressure of each gripper is sufficient by using the strip of paper.



14. Loosen the nut (10) and set the length of the 6 screws (11) to be 5mm.



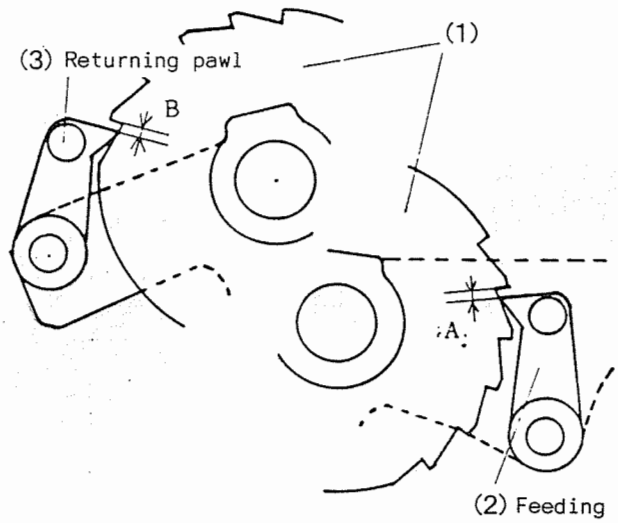
15. After finishing the adjustment, insert 2 strips of paper between the cylinder and the stopper (3) and check that the pressure is sufficient.

21. THE OPERATING LEVER POSITIONING
(ON BOTH THE FIRST UNIT AND THE SECOND UNIT)

1) Purpose

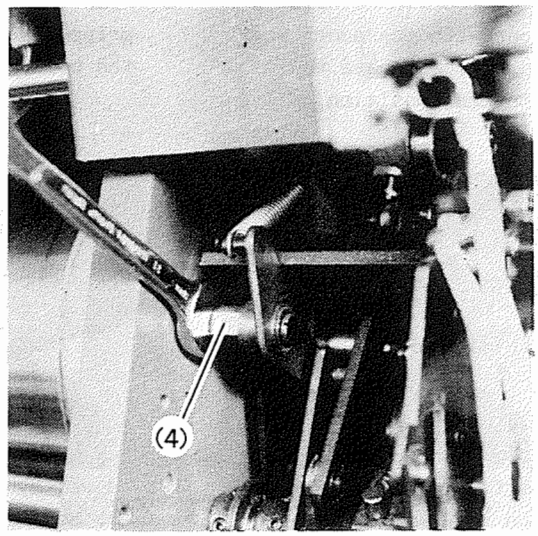
The operating lever should be controlled from positions 1 to 5 properly.

2) Point



(Confirmation)

The clearance A when the feeding pawl (2) fully pushes the ratchet (1) and the clearance B when the returning pawl (3) fully pushes the ratchet (1) should be the same.

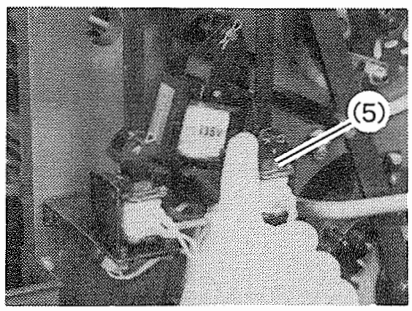


(Adjustment)

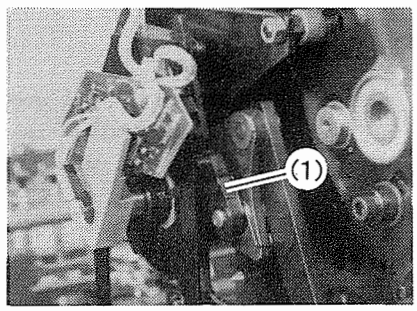
Position the ratchet by using the eccentric bolt (4).

3) Adjustment

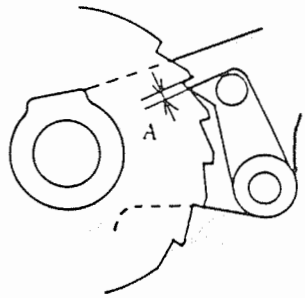
(Feeding Pawl)



1. Turn the solenoid (5) ON by hand with the operating lever at the position 1.

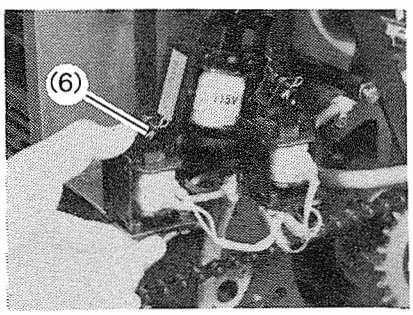


2. Manually rotate the machine in the normal direction and set the feeding pawl (1) at the position where the ratchet is fully pushed. (The operating lever is at the position 2)

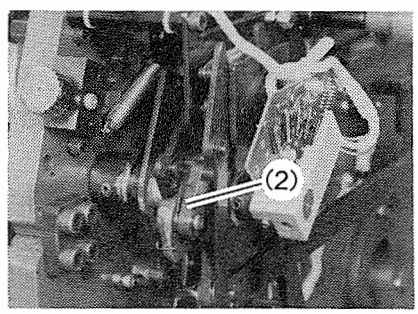


3. Check the clearance A at this time.

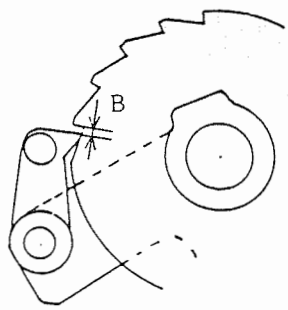
(Returning Pawl)



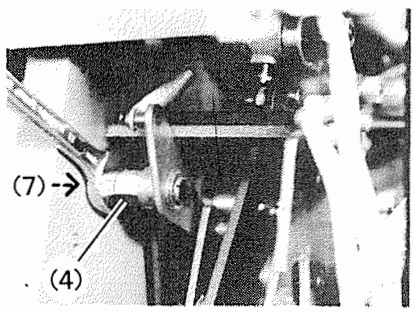
4. Manually turn the solenoid (6) ON.



5. Manually rotate the machine in the normal direction and set the returning pawl (2) at the position where the ratchet is fully pushed. (The operating lever is at the position 1.)



6. Check the clearance B at this time.



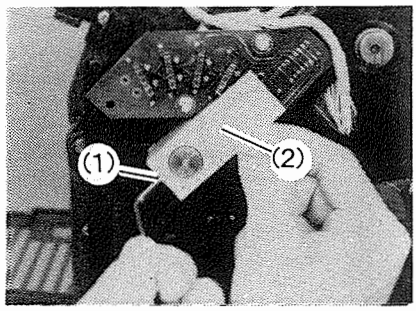
7. Loosen the nut (7) and turn the eccentric stud (4) so that the clearances A and B are the same.

(Note)

After this adjustment, check the position of:

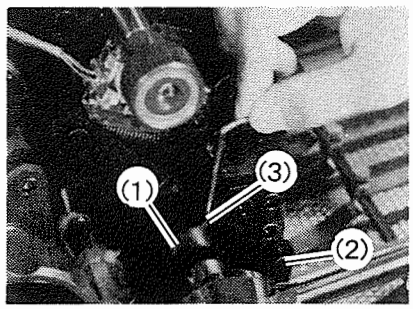
1. Operating lever section proximity switch
2. Image cam

1



Loosen the screw (1) and adjust by moving the block (2) so that the lead switch is aligned with the magnet.

2



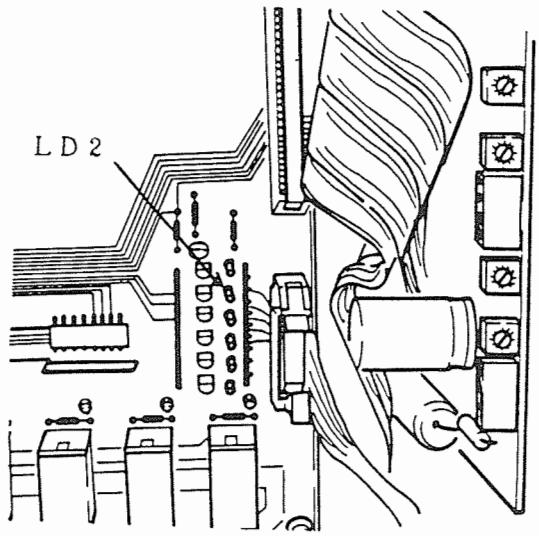
Adjust by loosening the screw (3) so that the top of the image cam (1) consistently pushes out the pin (2) with the operating lever on the position 4.

22. THE PROXIMITY SWITCH TIMING ADJUSTMENT

1) Purpose

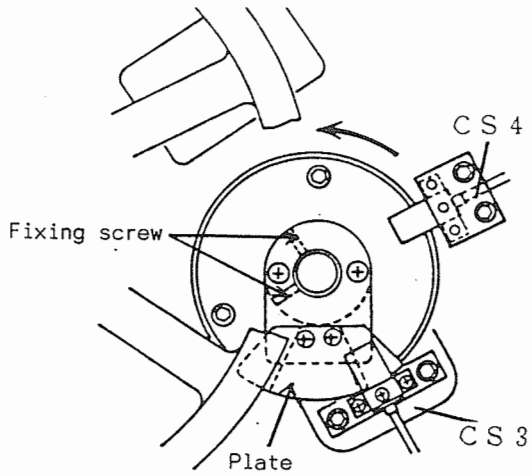
To adjust the proximity switch timing.

2) Point



(Confirmation)

When the timing plate is on 60°, the LD2 should just go off.

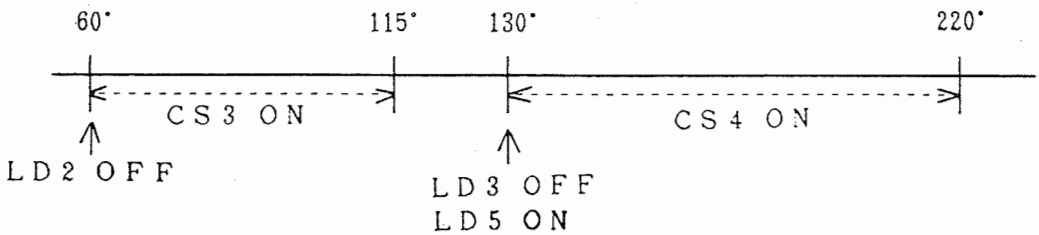


(Adjustment)

Loosen the two fixing screws and turn the plate in the normal rotation direction and fix it at the point where the LD2 just goes off.

(Reference 1)

The timing of the CS3 and the CS4 ON/OFF is done as shown below on the timing plate.



When adjusting the CS3 ON timing (60°), the remaining 3 points will be set automatically.

(Reference 2)

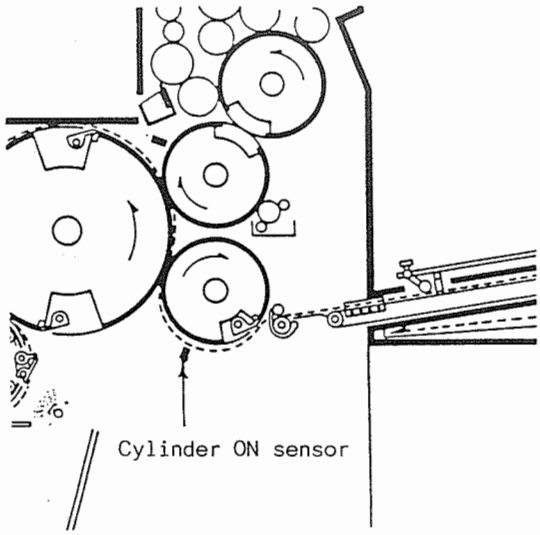
When doing the timing adjustment by yourself, use the input checking program (keep pushing the second unit normal rotation inching button and turn on the main power to enter the program.) So, you can check the timing switch ON/OFF by the buzzer sound.

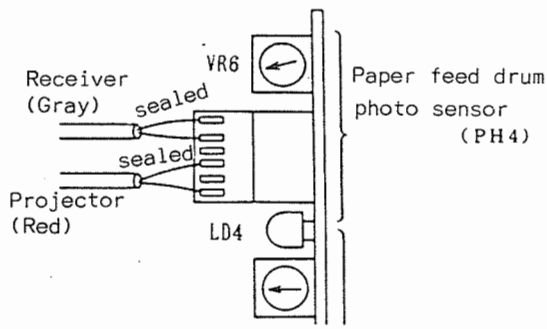
23. THE CYLINDER ON SENSOR SENSITIVITY ADJUSTMENT

1) Purpose

Set the cylinder ON sensitivity as high as possible without causing mis-actuation to consistently detect the sheet of paper that is fed to the paper feed drum.

2) Point





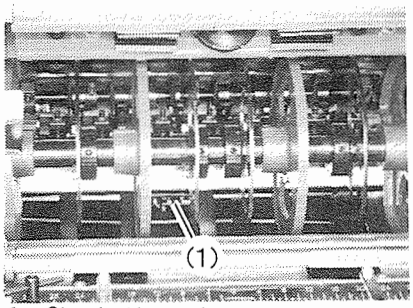
(Confirmation)

When the sheet of paper passes over the cylinder ON sensor, the LD4 should light.

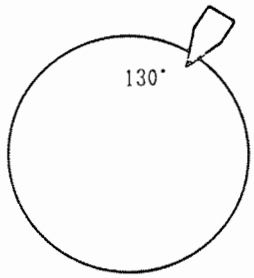
(Adjustment)

The variable resistor for the adjustment
.....VR6
LED for the operation checking
.....LD4

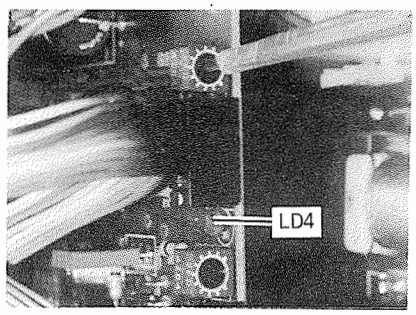
3) Adjustment



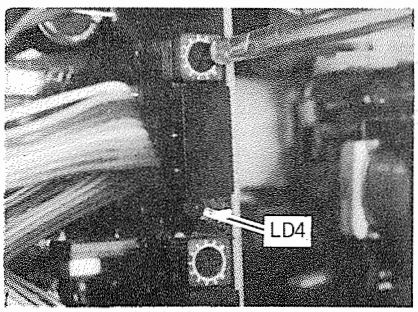
1. Check that there are no etching solution stains or foreign particles on the surface of the sensor (1).



2. Set the timing plate on 130°.



3. Turn the VR6 fully in the clockwise direction and check that the LD4 does not light.



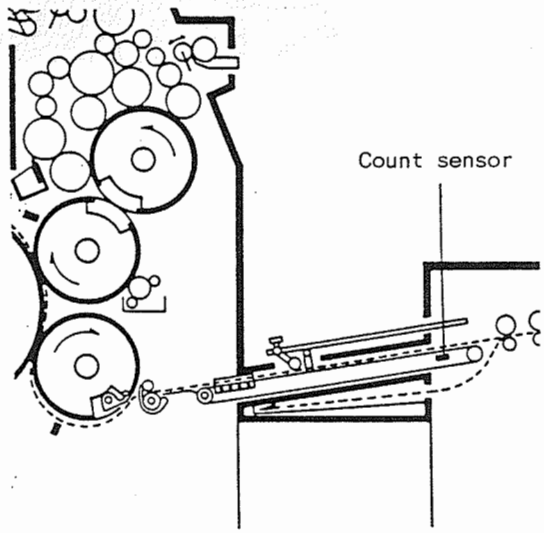
4. If the LD4 lights, turn the VR6 in the counterclockwise direction slowly until the LD4 light goes off.

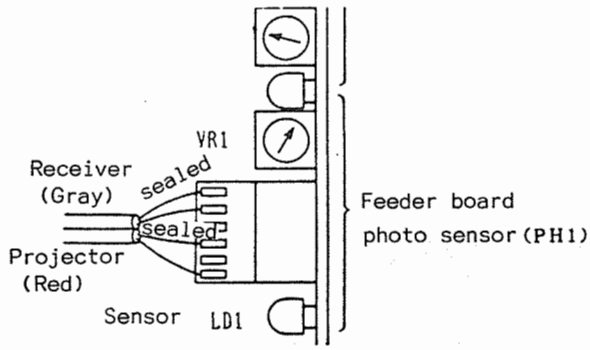
24. THE COUNT SENSOR SENSITIVITY ADJUSTMENT

1) Purpose

The sensor sensitivity has to be adjusted to consistently detect the paper that passes over the count sensor.

2) Point





(Confirmation)

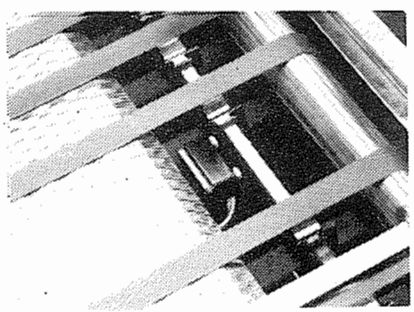
When a sheet of paper being printed passes over the count sensor, the LD1 should light.

(Adjustment)

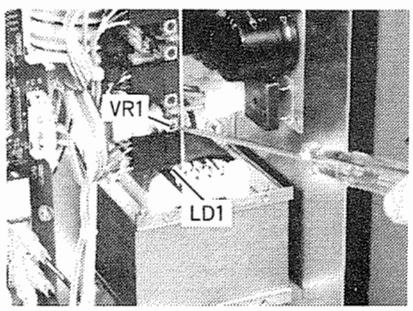
Adjustment variable resistor VR1

Operation confirmation LED LD1

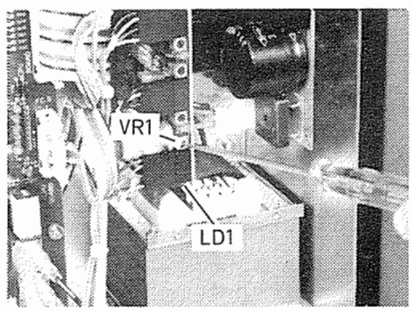
3) Adjustment



1. Check that there is no sheet of paper or retainer over the sensor.



2. Turn the VR1 fully in the clockwise direction and check that the LD1 does not light.



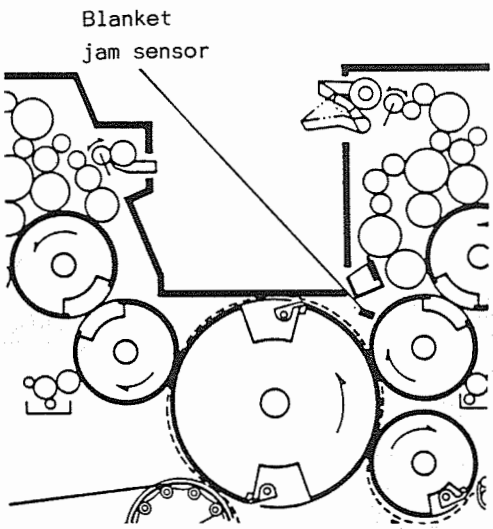
3. If the LD1 lights, turn the VR1 in the counterclockwise direction until the LD1 goes off.

25. THE BLANKET JAM SENSOR SENSITIVITY ADJUSTMENT

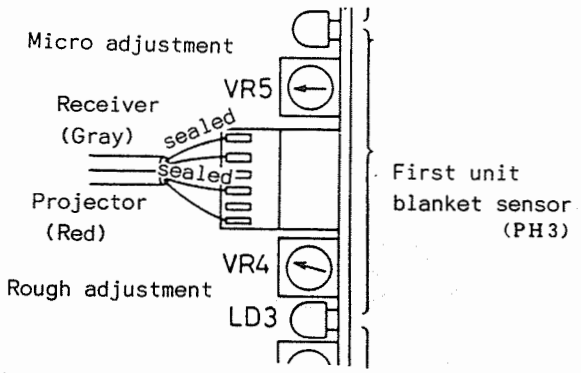
1) Purpose

The sensor sensitivity has to be adjusted to consistently detect a sheet of paper that is jammed on the blanket.

2) Point

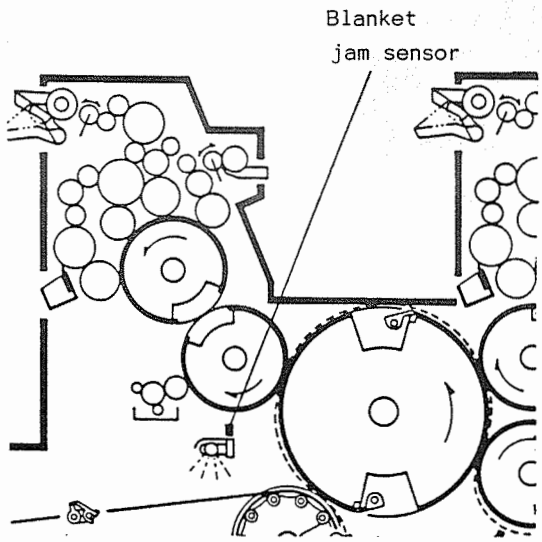


The first blanket jam sensor

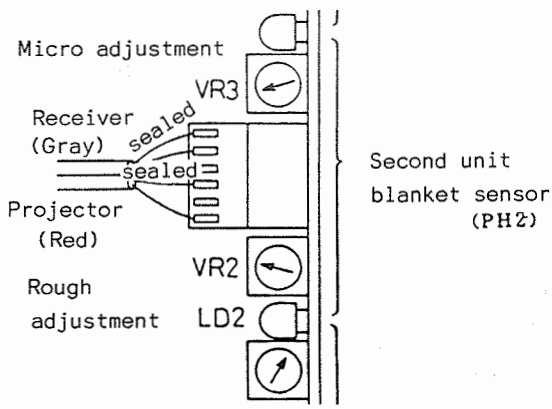


(Adjustment)

Micro adjustment variable resistor...VR5
Rough adjustment variable resistor...VR4
Operation confirmation LED.....LD3



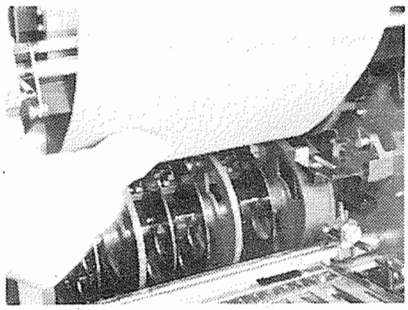
The second blanket jam sensor



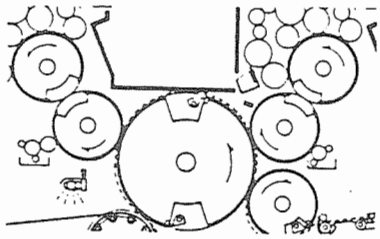
(Adjustment)

Micro adjustment variable resistor...VR3
Rough adjustment variable resistor...VR2
Operation confirmation LED.....LD2

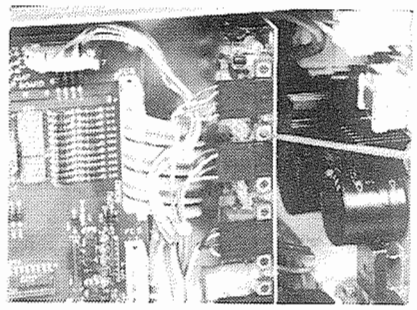
3) Adjustment (Do the adjustment of both the first and the second units)



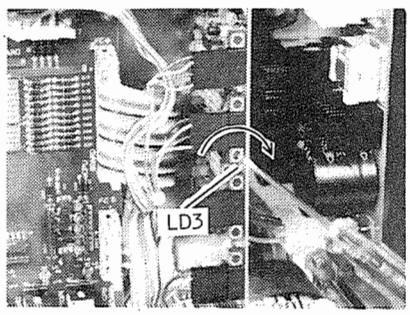
1. Mount the blanket.



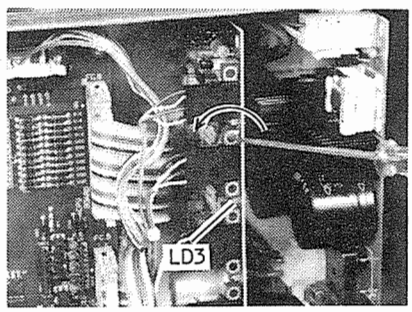
2. Rotate the machine so that the blanket surface faces the sensor.



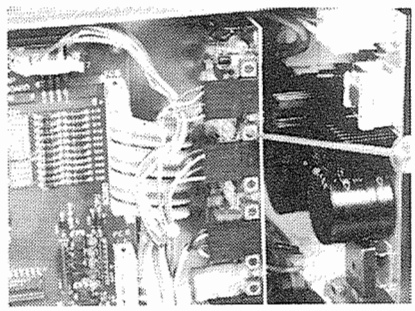
3. Set the VR5 at the center. (for the first unit)



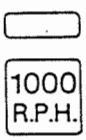
4. Turn the VR4 in the clockwise direction until the LD3 lights.



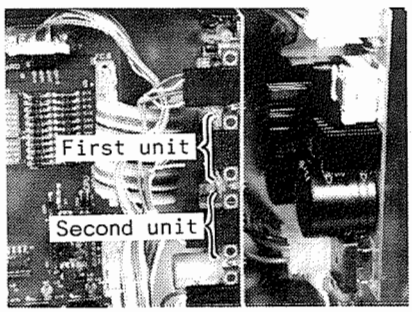
5. Turn the VR5 in the counterclockwise direction slowly until the LD3 goes off.



6. Turn the VR5 about half a scale more further in the counterclockwise direction from that point.



7. Run the machine at the crawl speed and check that the blanket jam sensor does not actuate.

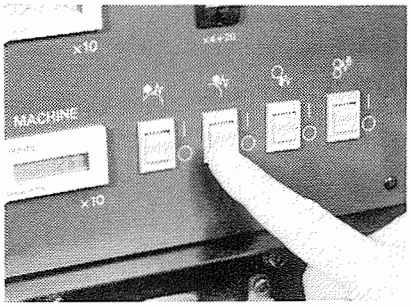


8. The second unit adjustment is done the same way as the first unit.

(Note)

Before doing the sensitivity adjustment, remove any stains like etching solution and foreign particles on the sensor surface.

(Reference)

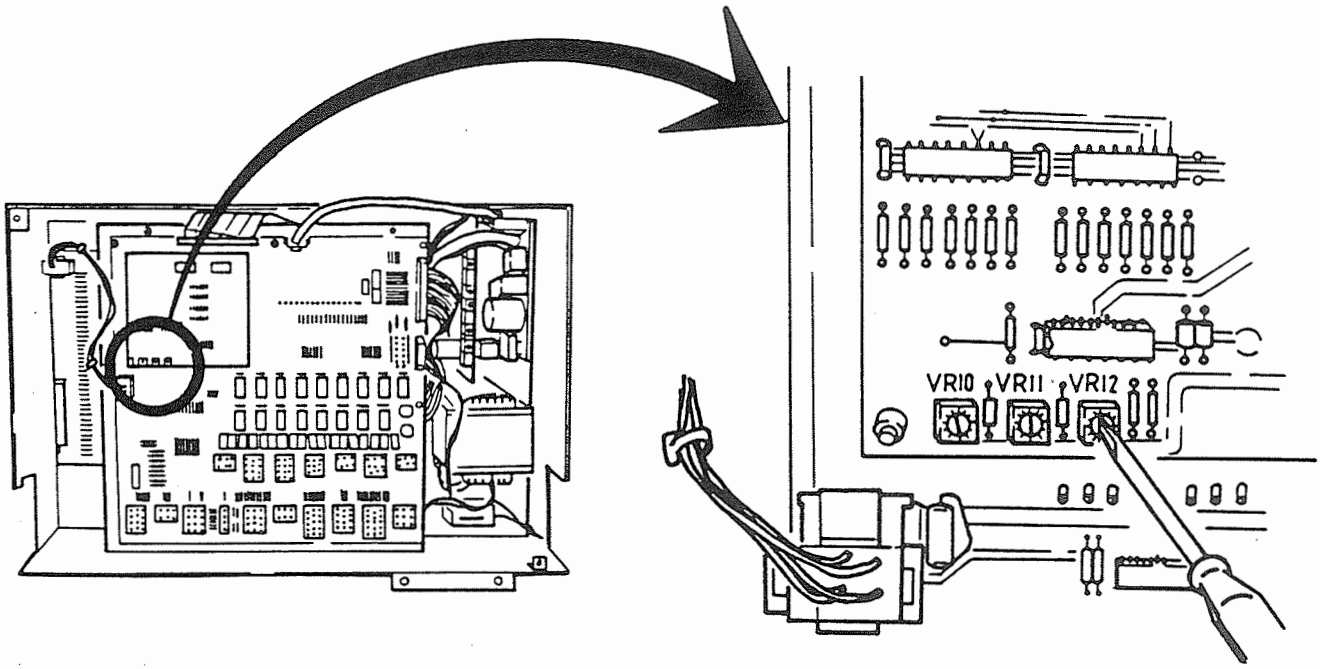


When running the machine without a blanket mounted, turn the blanket jam sensor switch OFF.

26. SPEED ADJUSTMENT

1) Purpose
   * To set the machine speed to follow the specifications.
   * To align the speed indicator on the control panel with the actual machine speed.

2) Point

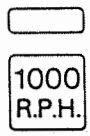


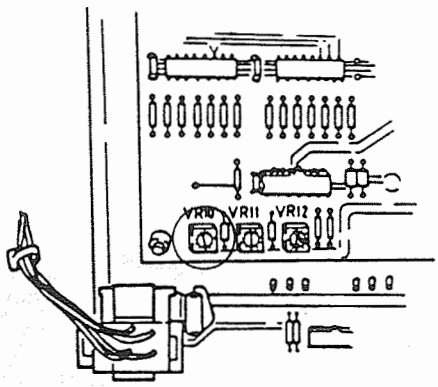
(Confirmation)
- Crawl Speed.....1,000rph
- Minimum Speed.....3,000rph
- Maximum Speed....10,000rph

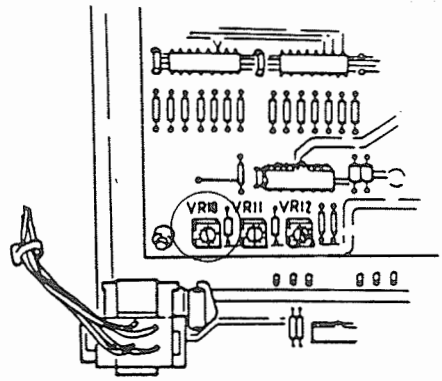
(Adjustment)
- Crawl Speed.....Adjusted by using the VR10
- Minimum Speed...Adjusted by using the VR11
- Maximum Speed...Adjusted by using the VR12

3) Adjustment

(Inching Speed)

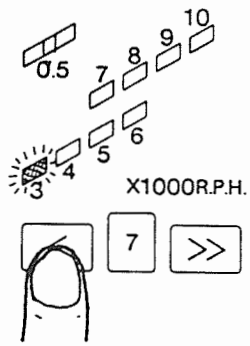


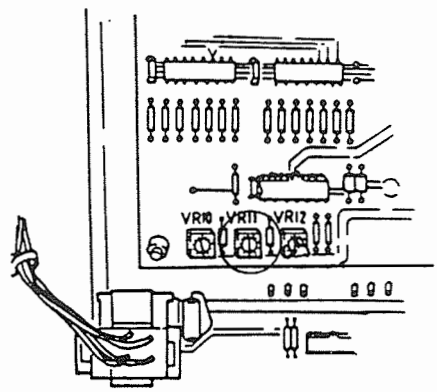




1. Push the crawl speed button and start the machine.
2. Turn the VR10 to adjust it. When turning it in the clock-wise direction, the speed will be increased.
3. Turn the VR10 to adjust the speed so the cylinders rotate 16 to 17 times per minute (about 1,000rph).

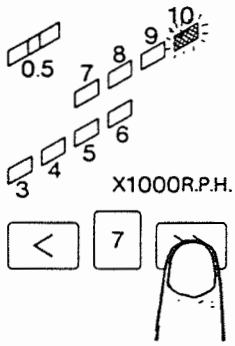
(Minimum Speed)

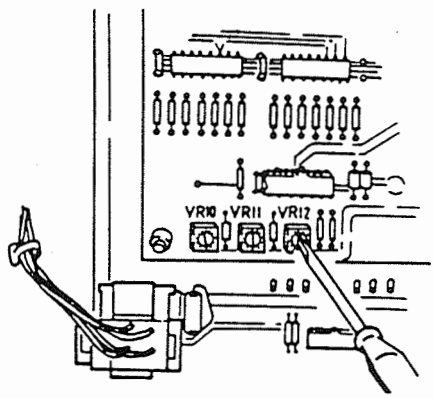




1. Push the drive button to start the machine.
2. Push the decleration button and set the speed indicator on 3,000rph.
3. Turn the VR11 to adjust the speed so the cylinders rotate 50 times per minute (3,000rph).

(Maximum Speed)





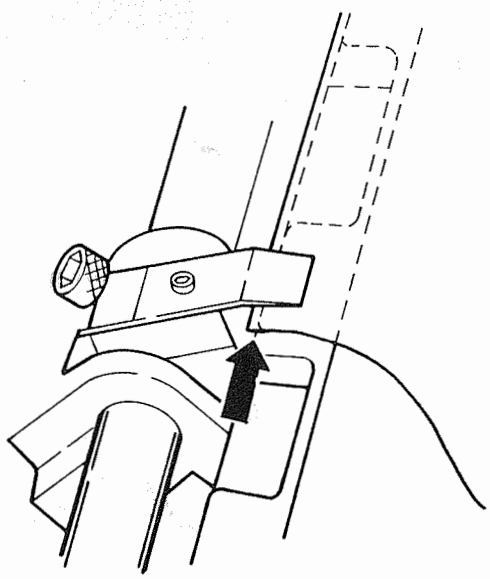
1. Push the drive button to start the machine.
2. Push the acceleration button and set the speed indicator on 10,000rph.
3. Turn the VR12 to adjust the speed so the cylinders rotate 83 times every 30 seconds.

27. THE ALIGNMENT OF THE PAPER FEED DRUM AND THE IMPRESSION CYLINDER

1) Purpose

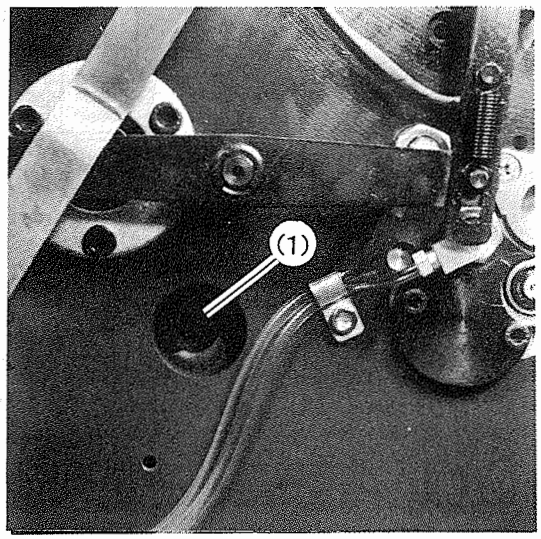
To align the paper feed drum and the impression cylinder correctly.

2) Point



(Confirmation)

When a sheet of paper is fed to the impression cylinder grippers, the leading edge of the paper should be advanced 0.2mm to 0.5mm from the leading edge of the gripper base.

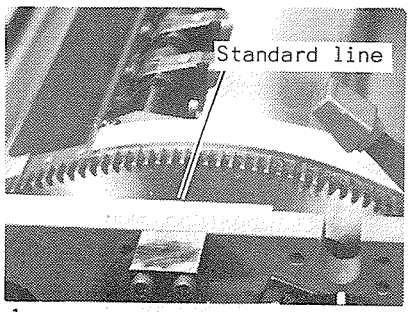


(Adjustment)

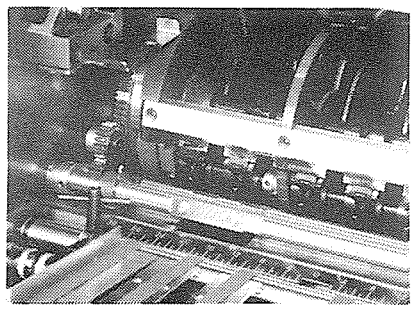
Loosen the three paper feed drum gear fixing bolts (1) and turn the paper feed drum to adjust it.

3) Adjustment

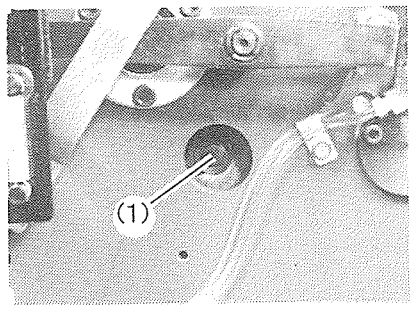
(Rough Adjustment)



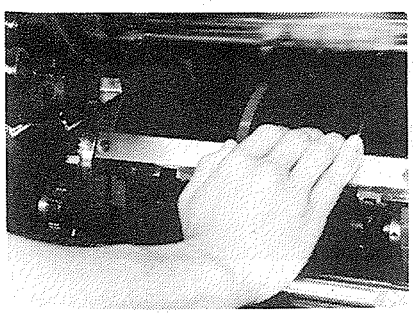
1. Mark the top of the gear position aligned on the impression cylinder standard line using paint.



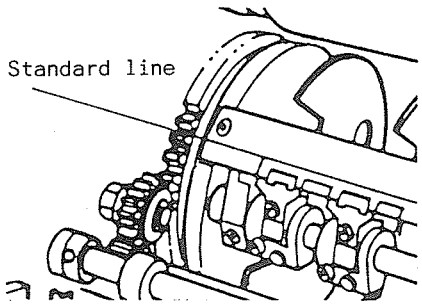
2. Turn the handwheel and transfer the paint to the paper feed drum gear.



3. Loosen the three paper feed drum gear fixing bolts (1).

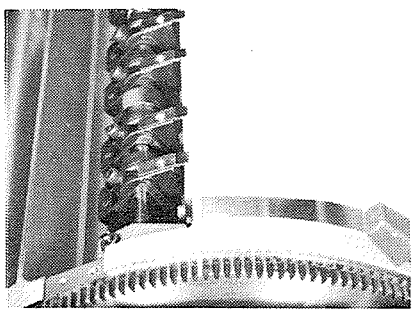


4. Move the paper feed drum.

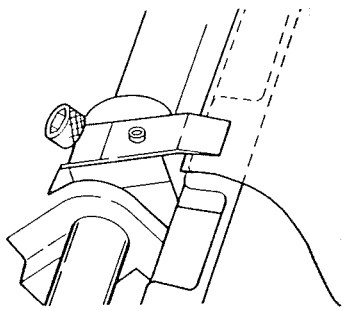


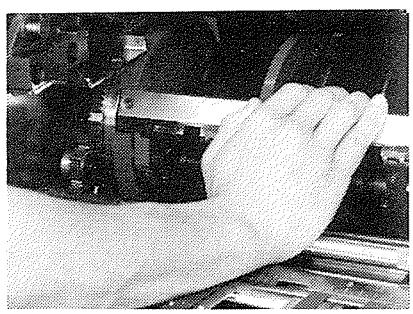
5. Align the paper feed drum gripper base standard line with the bottom of the gear tooth that has the paint transferred on to it.

(Micro Adjustment)



1. Manually feed one sheet of paper to the impression cylinder grippers.





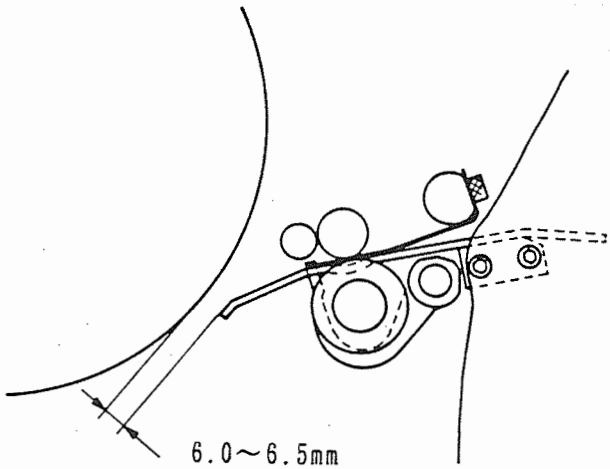
2. By turning the paper feed drum, micro adjust the paper position so that the leading edge of the sheet is advanced 0.2mm to 0.5mm from the leading edge of the gripper base.

28. PAPER GUIDE HEIGHT ADJUSTMENT

1) Purpose

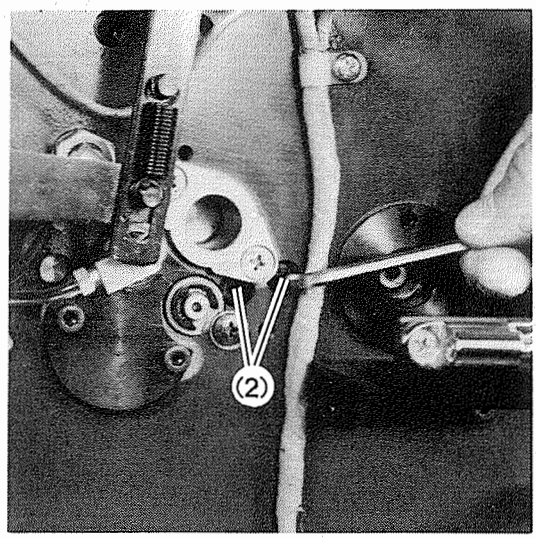
The paper guide height has to be adjusted to stabilize the paper feed.

2) Point



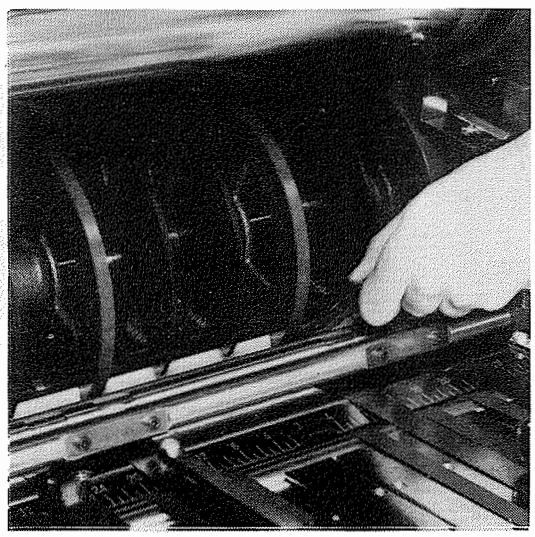
(Confirmation)

The clearance between the paper feed drum and the edge of the paper guide should be from 6.0 to 6.5mm.



(Adjustment)

Loosen the two paper guide fixing bolts (1) and adjust the clearance.
(Two each on the operation side and the non operation side.)



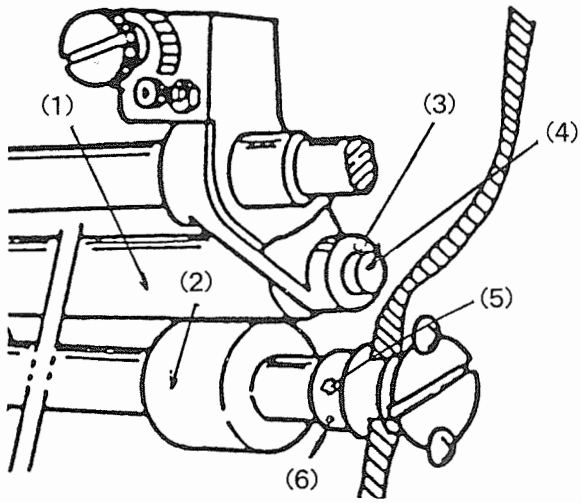
29. INFEED ROLLER SECTION SIDE PLAY ADJUSTMENT

1) Purpose

To eliminate any side play of the infeed roller section to prevent poor registration and paper feed problems.

2) Point

(The side play adjustment of the lower feed roller and the upper feed roller)



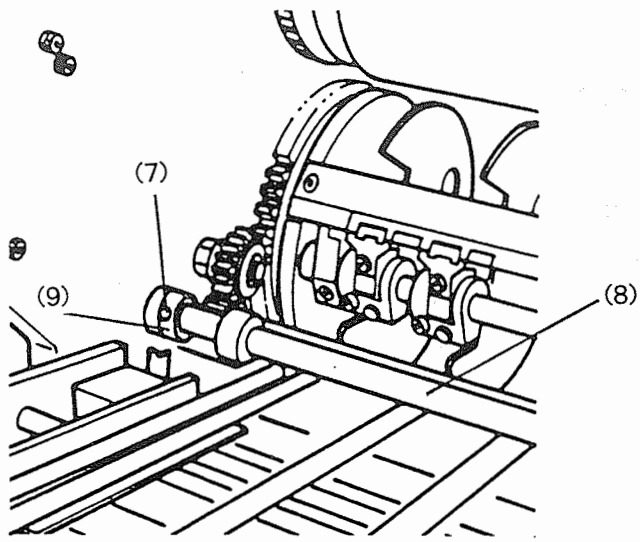
(Confirmation)

The upper feed roller (1) and the lower feed roller (2) should have no side play.

(Adjustment)

* For the upper feed roller, loosen the screw (3) and adjust by moving the pin (4).
* For the lower feed roller, loosen the screw (5) and adjust by moving the collar (6).

(Side play adjustment of the upper feed roller drive shaft)



(Confirmation)

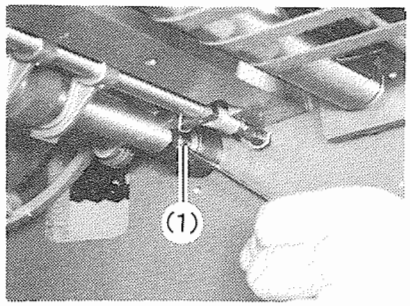
The drive shaft (8) should have no side play.

(Adjustment)

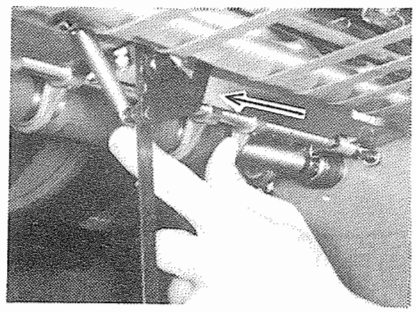
Loosen the screw (7) and adjust by moving the collar (9).

3) Adjustment

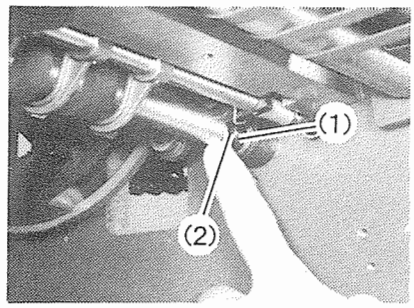
(The Lower Feed Roller)



1. Loosen the two set screws (1).

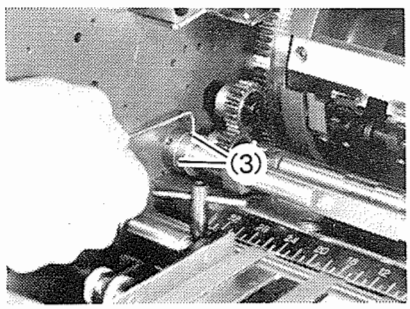


2. Shift the lower feed roller fully to the operation side.

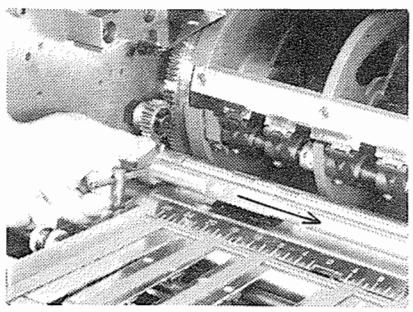


3. Push the collar (2) on the non operation side and fix it using the two set screws (1).

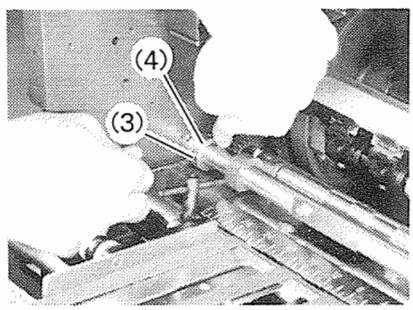
(Upper Feed Roller Drive Shaft)



1. Loosen the two set screws (3).

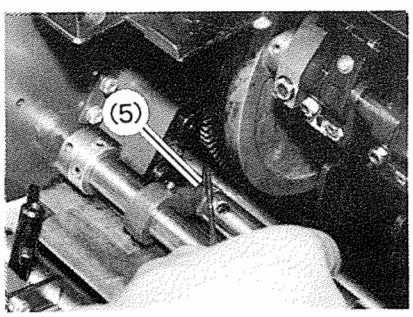


2. Shift the shaft fully to the non operation side.

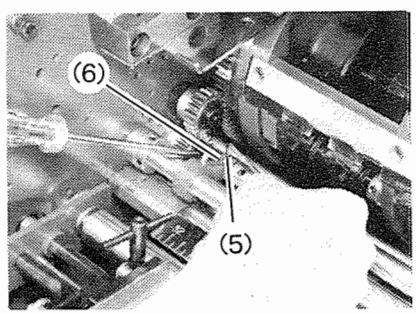


3. Push the collar (4) on the operation side and fix it using the two set screws (3).

(Upper Feed Roller)



1. Loosen the set screw (5) on the operation side and the non operation side.



2. Fix the shaft (6) by tightening the set screw (5) on both sides.

(Note)

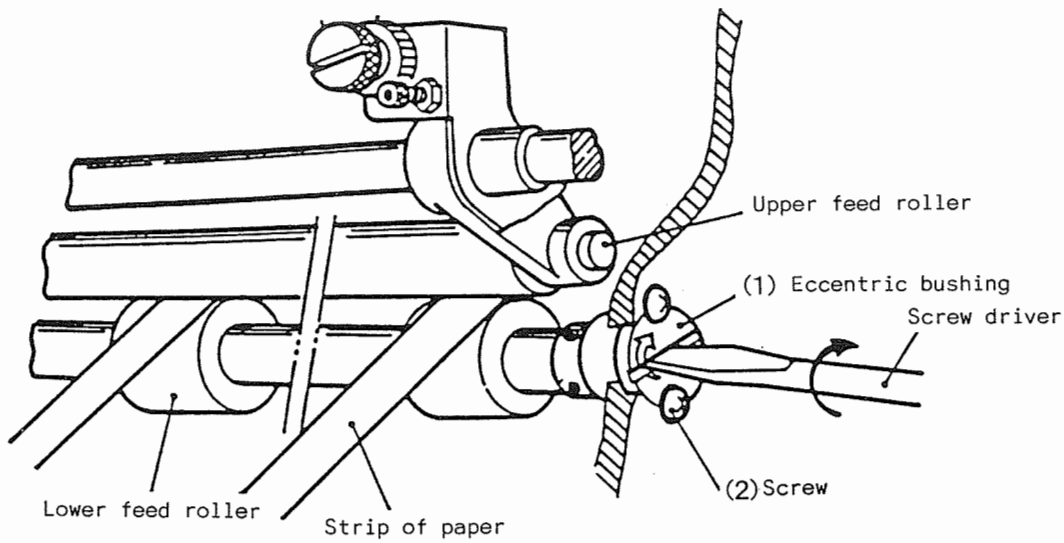
After the adjustment, check that the movement of each part is smooth.

30. THE UPPER FEED ROLLER ADJUSTMENT

1) Purpose

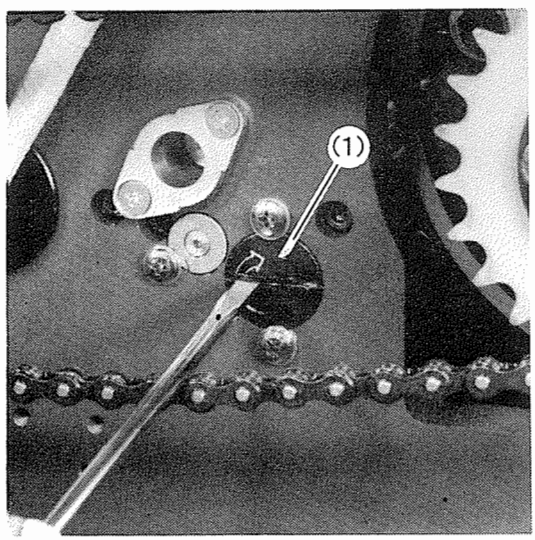
The upper feed roller parallel pressure and total feeding volume have to be adjusted so that the sheet of paper is fed straight to the paper feed drum with the proper backlash.

2) Point



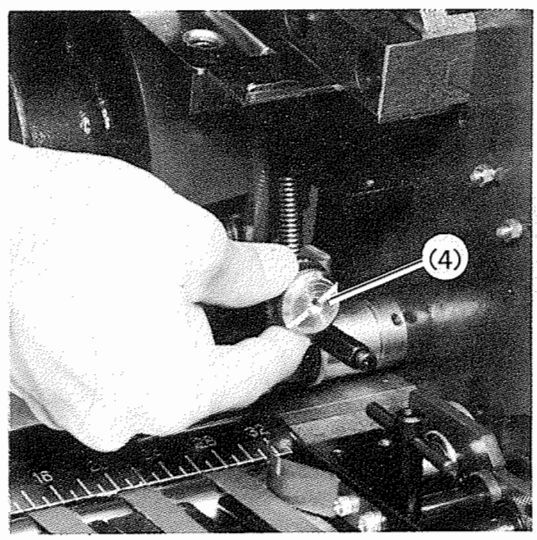
(Confirmation)

* The pressure of the upper feed roller and the lower feed roller on the operation side and the non operation side should be parallel.
* The upper feed roller and the lower feed roller should contact with the timing plate on 34° to 35°.



(Parallel Pressure Adjustment)

Adjust by turning the eccentric bushing (1).

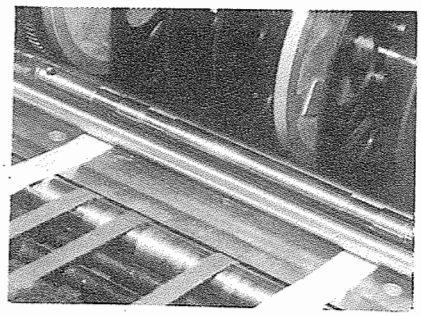


(Total Pressure Adjustment)

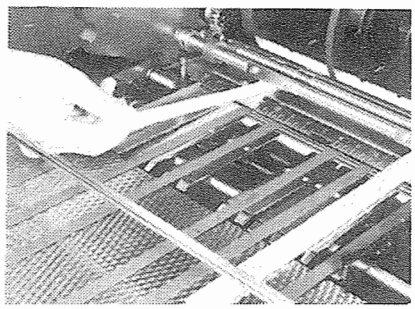
Adjust by turning the adjustment screw (4).

3) Adjustment

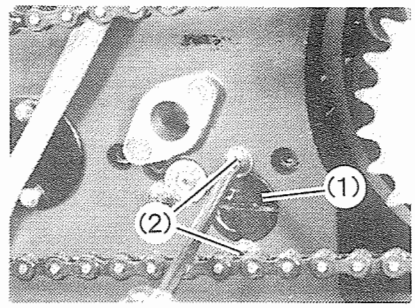
(Upper Feed Roller Parallel Pressure Adjustment)



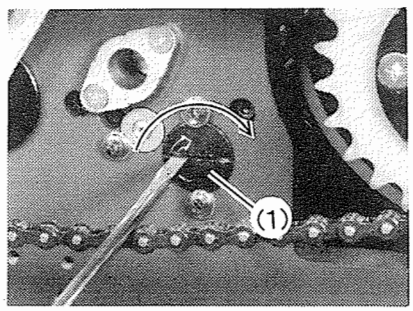
1. Insert two strips of paper (0.08mm thick) between the upper feed roller and the lower feed roller.



2. Pull out the strips of paper at the position where the rollers start to release from each other to check the pressure.

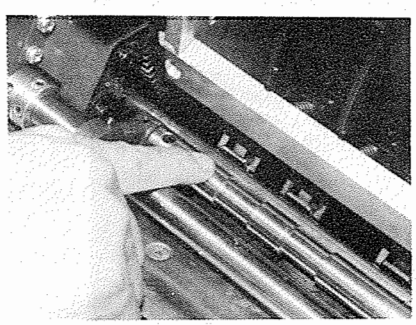


3. Loosen the two screws (2) that fix the eccentric bushing (1) on the non operation side.

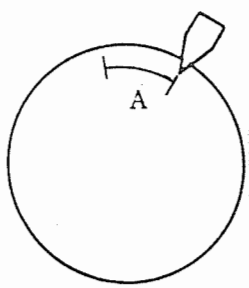


4. Turn the eccentric bushing (1) to adjust the parallel pressure. (The pressure on the non operation side will be increased by turning the bushing in the direction of the arrow.)

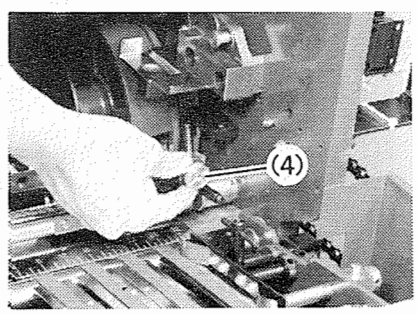
(Upper Feed Roller Total Pressure Adjustment)



1. Turn the handwheel and stop at the point where the upper feed roller and the lower feed roller just contact.



2. Read out the timing period A that is the point where the upper feed roller starts to release from the lower feed roller on the timing plate.



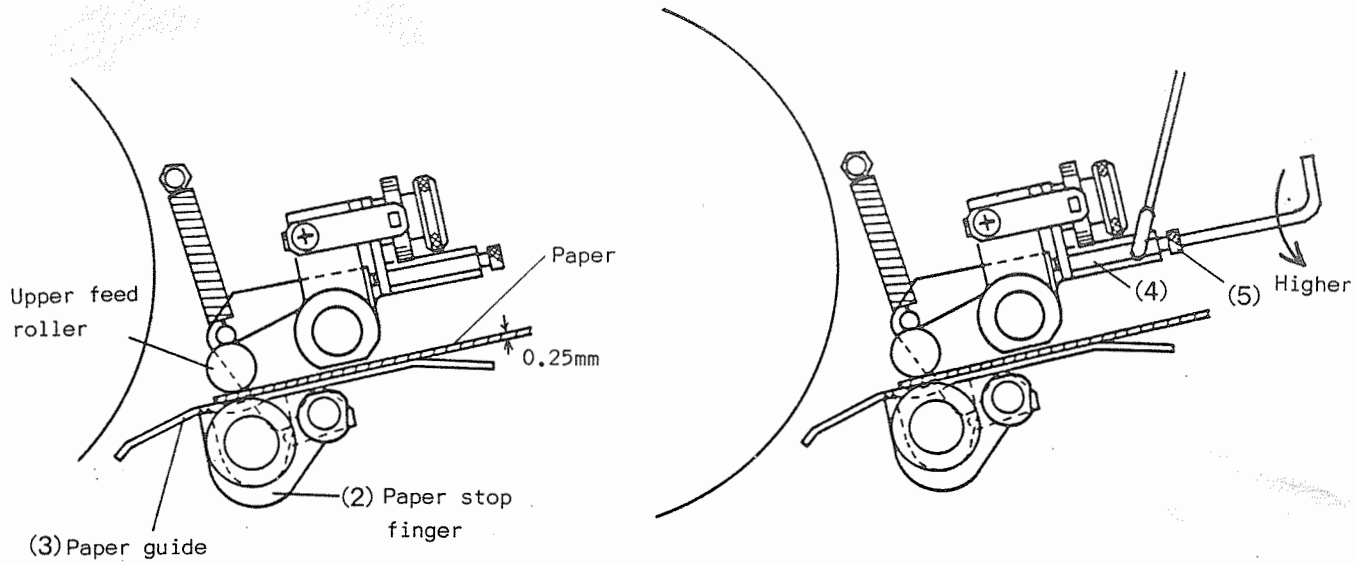
3. Adjust the timing period A to be 34° to 35° by using the adjustment screw (4).

31. THE PAPER STOP FINGER ADJUSTMENT

1) Purpose

The paper stop finger should be adjusted so that a sheet of paper will not be damaged when it comes in contact with the paper stop finger after it is fed out by the feed rollers.

2) Point



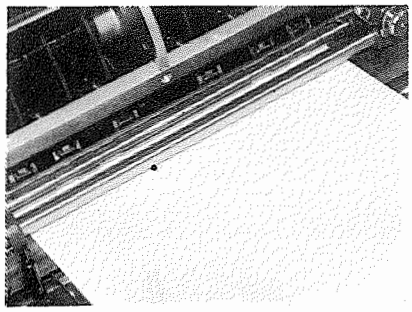
(Confirmation)

When feeding a 0.25mm thick sheet of paper from the upper feed roller, the edge of the paper stop finger (2) has to be positioned just below the paper guide (3).

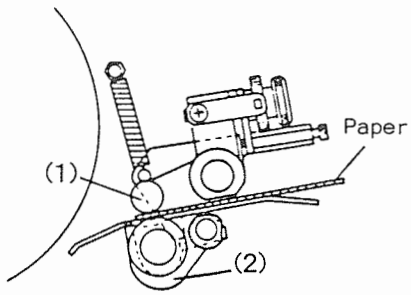
(Adjustment)

Loosen the nut (4) and adjust the paper stop finger height by turning the screw (5).

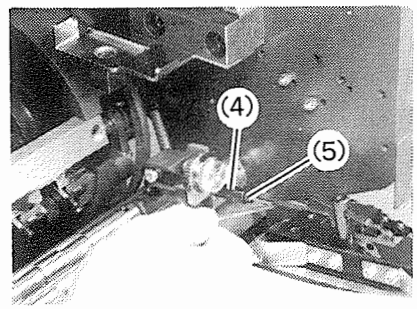
3) Adjustment



1. Insert a sheet of paper (thickness 0.25mm) until it contacts the paper stop finger (2).



2. Turn the handwheel in the normal direction, until the upper feed roller (1) just contacts the paper, as shown in the illustration.



3. Adjust by turning the screw (5) after loosening the nut (4) so that the leading edge of the paper is not in contact with the paper stop finger (2). (When turning the screw (5) in the clockwise direction, the stop finger will be lowered.)

(Note)

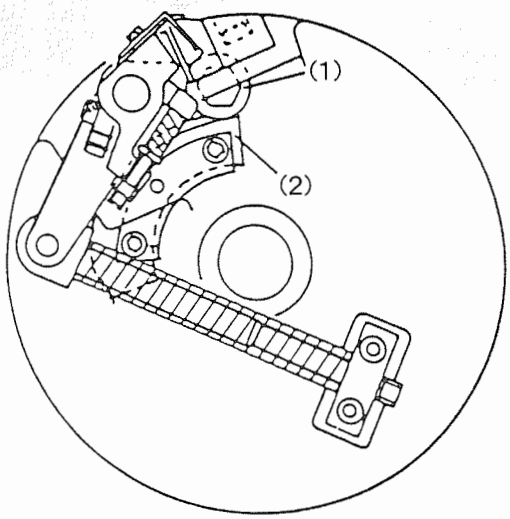
With the upper feed roller in light contact with the paper, advance and retract the paper manually, after the adjustment. At this time, check that the leading edge of the paper is not in contact with the paper stop finger, as it is fed into the machine.

32. THE PAPER FEED DRUM GRIPPER ADJUSTMENT

1) Purpose

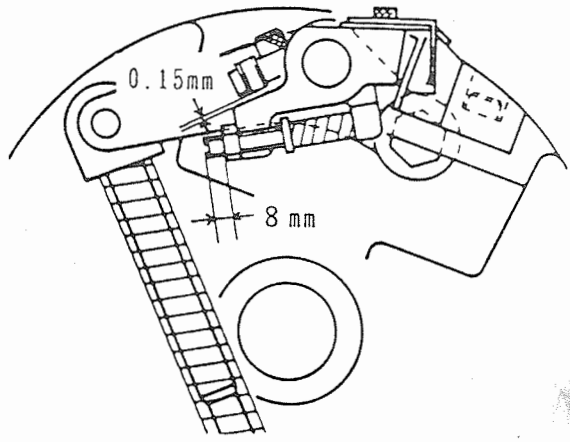
All the grippers have to hold a sheet of paper sufficiently and uniformly and the grippers opening and closing timing must be the same.

2) Point



(Confirmation 1)

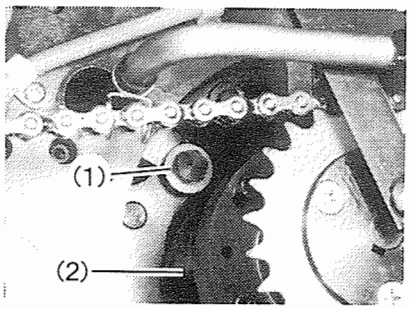
The paper feed drum gripper cam follower (1) should just contact low position of the gripper closing cam (2).



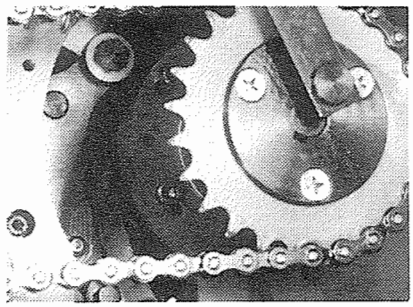
(Confirmation 2)

When the paper feed drum grippers close, the paper feed drum grippers should be positioned as shown in the illustration above.

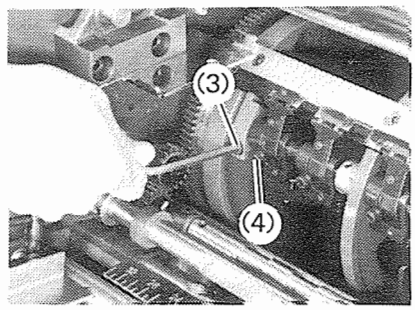
3) Adjustment



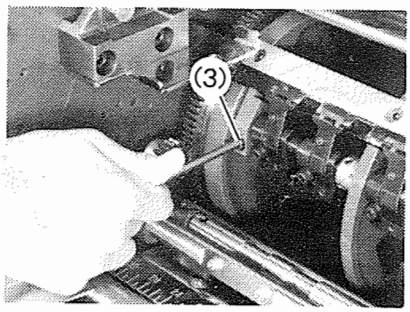
1. Turn the handwheel and set the paper feed drum gripper cam follower (1) on the low position of the gripper closing cam (2).



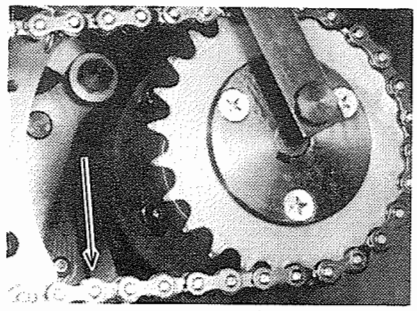
2. Insert a 0.2mm thickness gauge between the cam follower (1) and the cam (2).



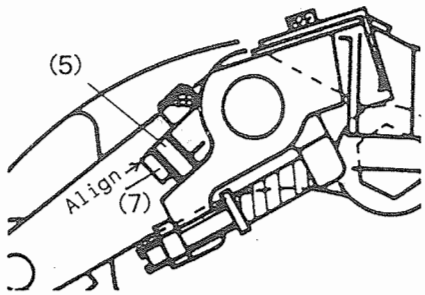
3. Loosen the two stoppers (3) and the 6 gripper fixing bolts (4).



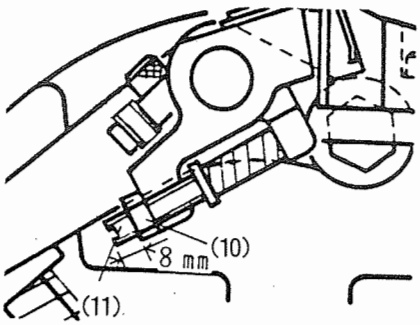
4. Push the two stoppers (3) against to the paper feed drum gripper base and fix them.



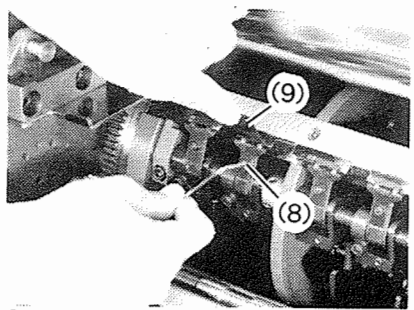
5. Remove the thickness gauge.

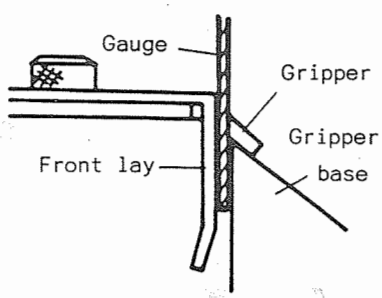


6. By turning the screw (5), align the supporter (7) with the screw.

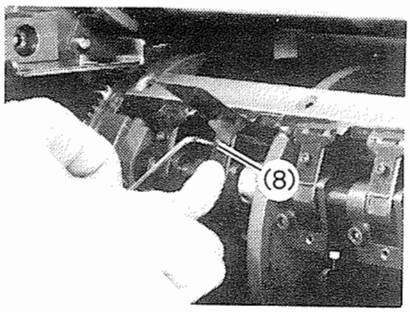


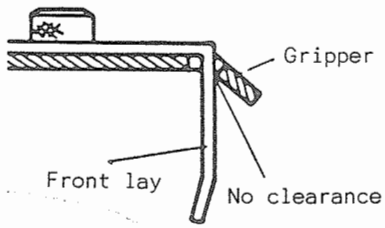
7. Loosen the nut (10) and set the screw (11) length to be 8mm. (all 6 screws).



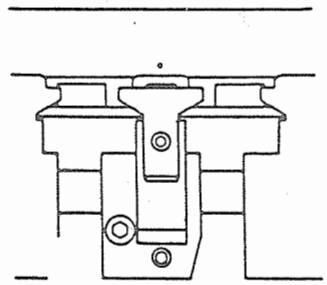


8. Loosen the screw (8) and insert the gauge (8) between the gripper base and the front lay.

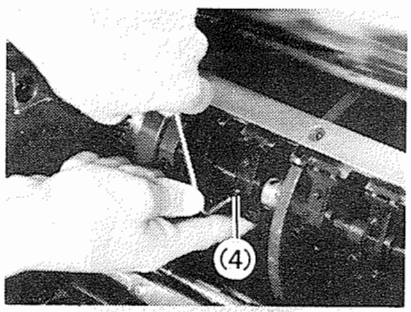


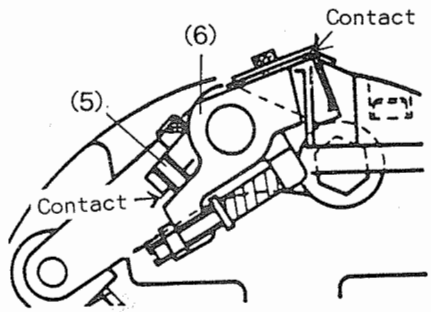


9. Push the front lay against to the gauge and fix the screw (8).
   At this time, be sure that there is no clearance between the front lay and the grippers.

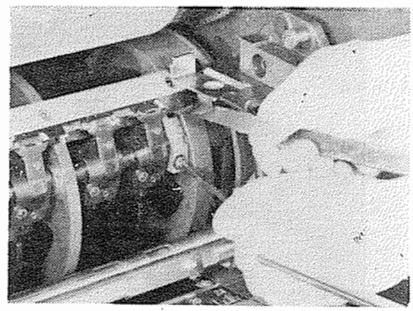


10. Align the punch mark on the gripper base and the center of the grippers to set the lateral position.

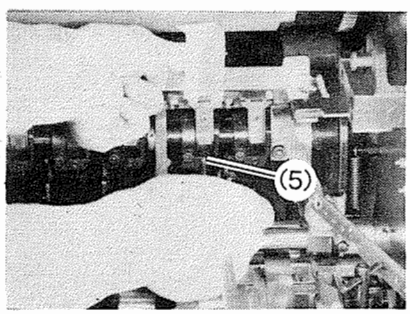




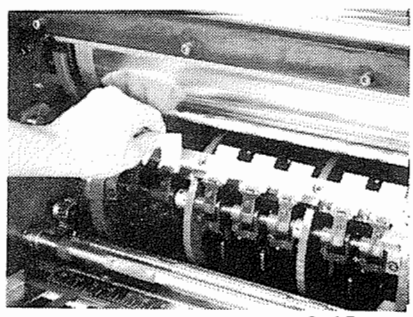
11. Push the gripper against to the gripper base and fix the bolt (4).
    At this time, the edge of the screw (5) should contact the gripper holder (6).



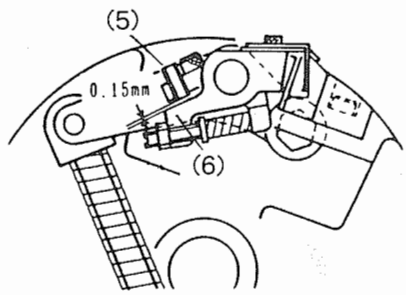
12. Insert a 0.15mm thickness gauge between the stopper on the non operation side and the gripper base.



13. Adjust by turning the screw (5) so that a 0.05mm thick strip of paper is pulled out with light force. (The pressure of all the grippers should be uniform.)



14. After removing the 0.15mm thickness gauge, check that the pressure of each gripper is sufficient by using the strip of paper.



15. After removing the strip of paper, check that the clearance between the screw (5) and the gripper holder (6) is from 0.10 to 0.15mm.

(Note)

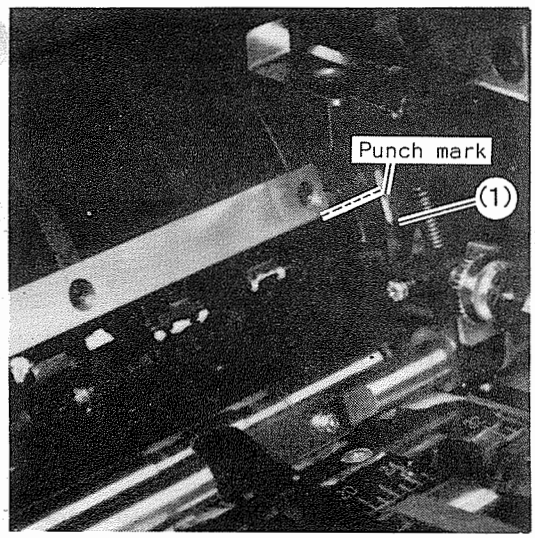
1. After the adjustment, when the clearance from 0.10 to 0.15mm between the screw (5) and the gripper holder (6) can not be adjusted, switch the thickness gauge in the adjustment step "12" from a 0.15 to a 0.20mm gauge.
2. After the adjustment, insert 2 strips of paper between the gripper base and the stopper both on the OPS and the NOPS and check that the pressure is proper.

33. THE PAPER FEED CAM ADJUSTMENT

1) Purpose

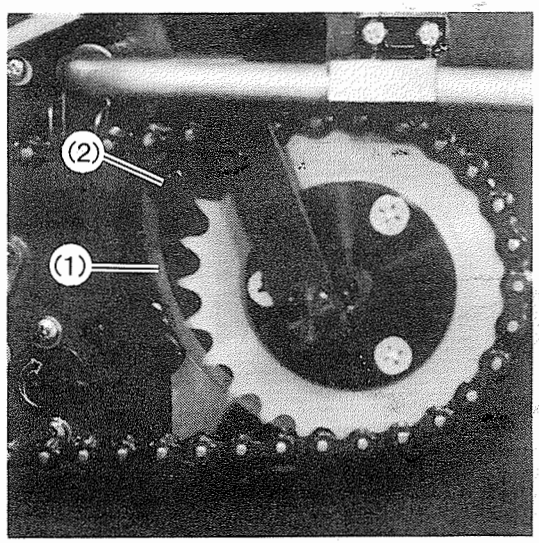
The paper feed cam adjustment has to be done so the paper is fed up to the paper feed drum front lay properly.

2) Point



(Confirmation)

The standard line of the paper feed drum gripper base and the punch mark of the paper feed cam (1) should be aligned.



(Adjustment)

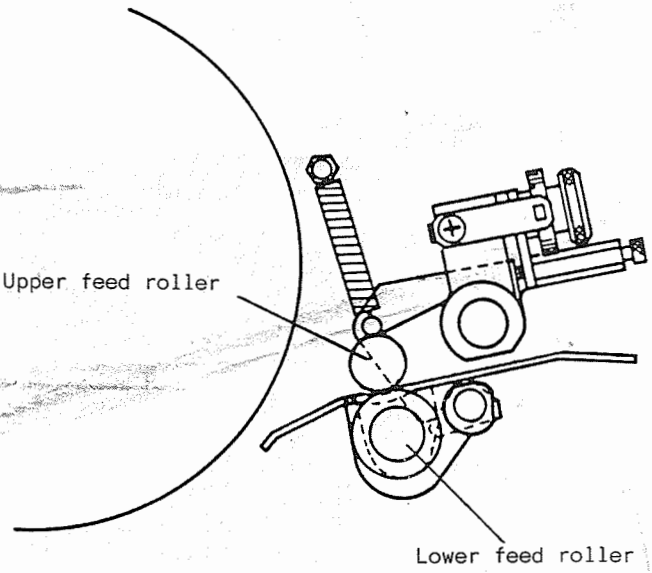
Loosen the four fixing bolts (2) and move the paper feed cam (1) to adjust it.

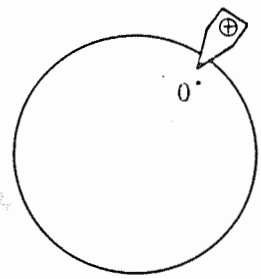
34. THE TIMING PLATE SETTING

1) Purpose

To set the timing plate to its standard position.

2) Point

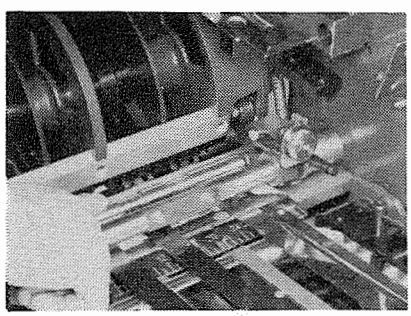




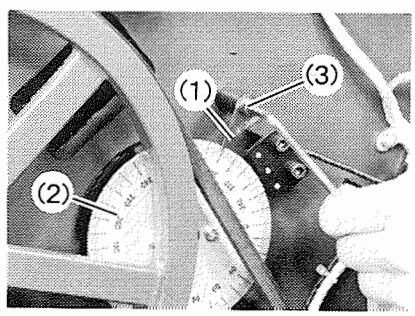
(Confirmation)

When the upper feed roller contacts the lower feed roller (0 point), the timing plate indicator should be on the 0° on the timing plate.

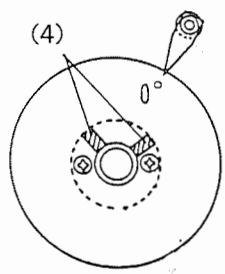
3) Adjustment



1. Rotate the machine in the normal direction and stop at the point where the upper feed roller just contacts the lower feed roller.



2. Loosen the screw (3) and set the indicator (1) to face the center of the timing plate (2).



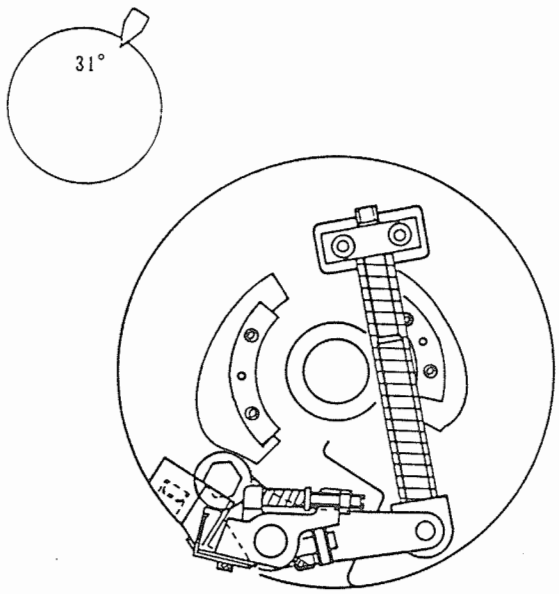
3. Loosen the two screws (4) and align the 0° of the timing plate (2) to the indicator (1) and fix them.

35. THE PAPER FEED DRUM GRIPPER CLOSING TIMING ADJUSTMENT

1) Purpose

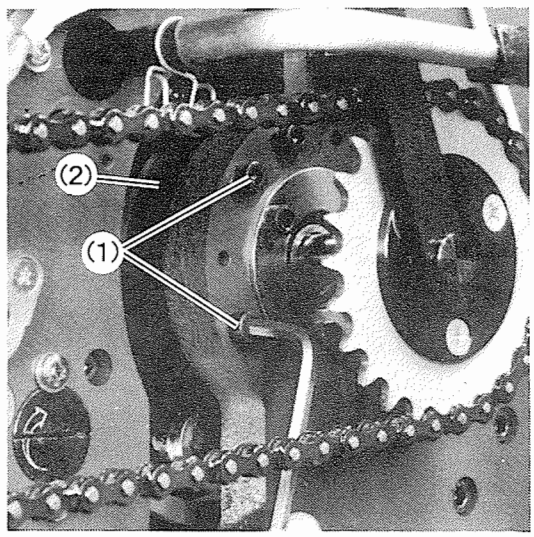
To set the paper feed drum gripper closing timing to 31° on the timing plate.

2) Point



(Confirmation)

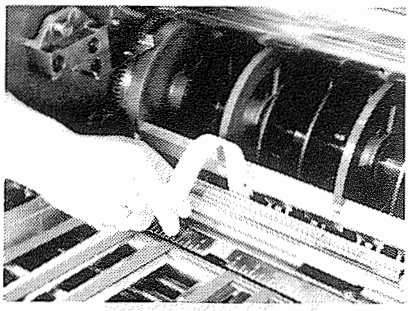
When the timing plate is on 31°, the paper feed drum grippers should be closed.



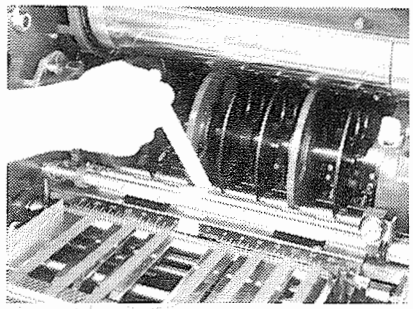
(Adjustment)

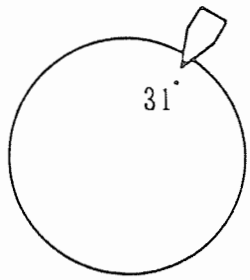
Loosen the two bolts (1) and move the gripper closing cam (2) to adjust it.

(Confirmation)



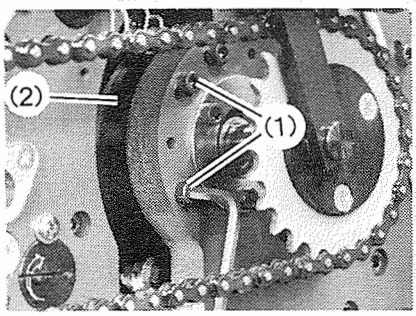
1. Turn the handwheel and have one paper feed drum gripper grip a 0.08mm standard strip of paper.



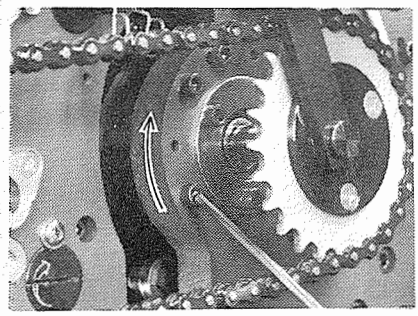


2. Reverse the machine slowly and stop at the point where the strip of paper can be pulled out with strong pressure. This point should be on 31° on the timing plate.

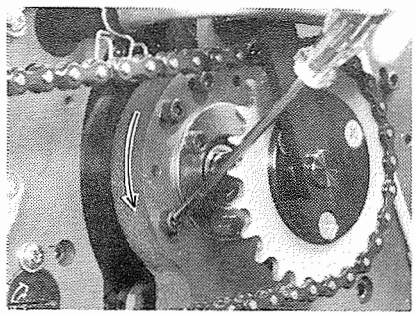
3) Adjustment



1. Loosen the two cam fixing bolts (1) and move the gripper closing cam (2) to adjust it.



2. When moving it in the direction of the arrow, the gripper closing timing will be earlier.



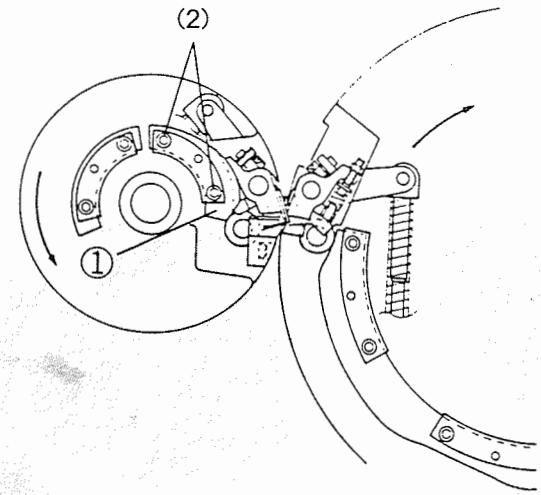
3. When moving it in the direction of the arrow, the gripper closing timing will be later.

36. THE PAPER FEED DRUM GRIPPER OPENING TIMING ADJUSTMENT

1) Purpose

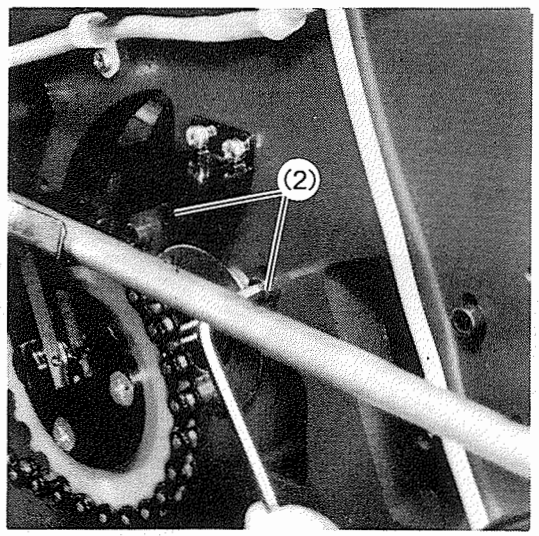
To set the paper feed drum grippers opening timing.

2) Point



(Confirmation)

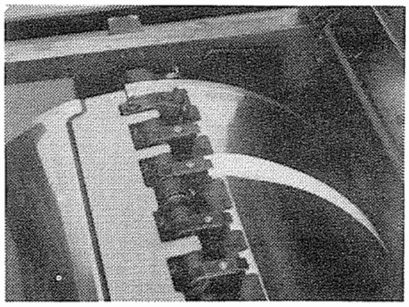
The paper feed drum gripper should release the sheet of paper, 1° after the impression cylinder grippers grip the sheet.



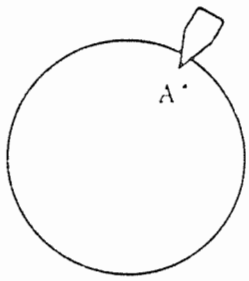
(Adjustment)

Loosen the two cam fixing bolts (2) and adjust the timing by changing the cam (1) position.

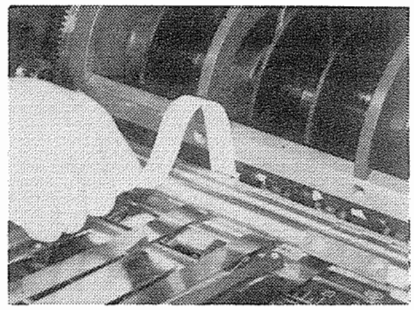
3) Adjustment



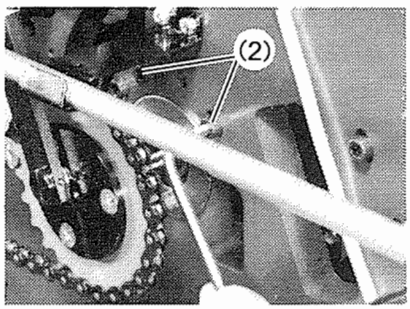
1. Turn the handwheel and have one impression cylinder gripper grip a 0.08mm standard strip of paper.



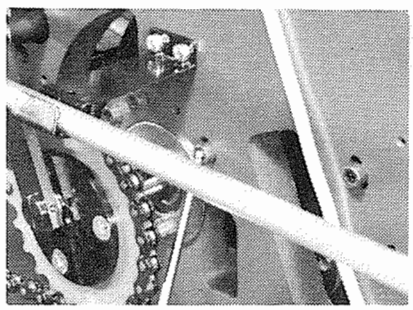
2. Reverse the machine slowly until the impression cylinder gripper just releases the strip of paper. Read the point of release (A°) on the timing plate.



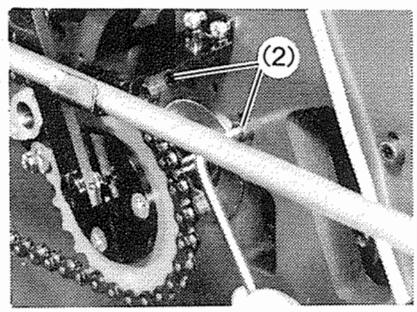
3. Have one paper feed drum gripper grip the standard strip of paper.



4. Loosen the two cam fixing bolts (2).



5. Adjust the cam position so that the paper feed drum gripper just releases the strip of paper 1° after the (A°).



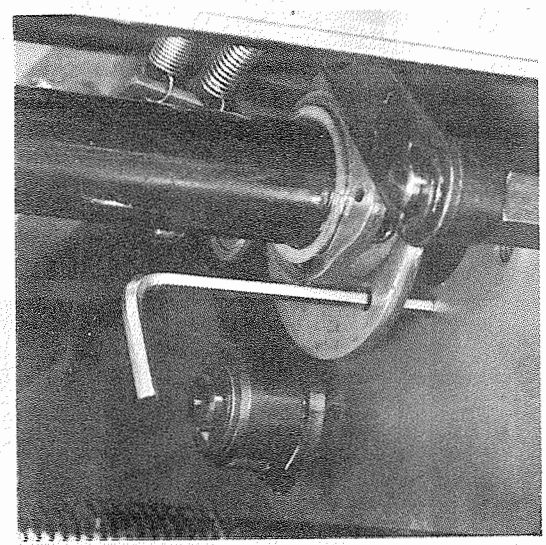
6. Tighten the two cam fixing bolts (2).

37. THE CONNECTION ADJUSTMENT OF THE FEEDER TO THE BASE MACHINE

1) Purpose

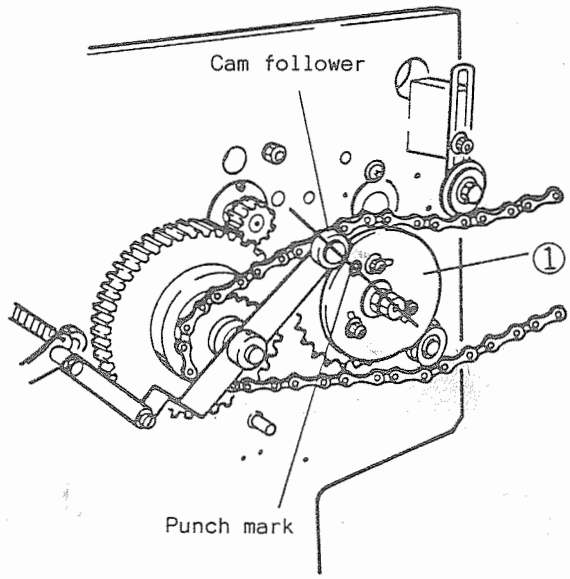
The feeder should be connected to the base machine with the correct timing to stabilize the paper feed of any paper size from minimum size to maximum size paper.

2) Point



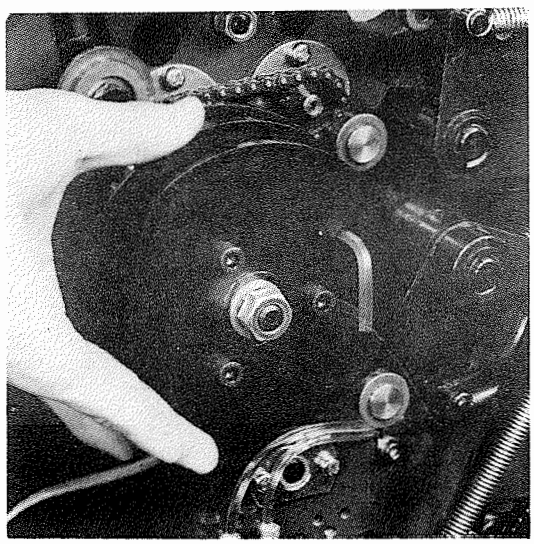
(Confirmation 1)

When the upper feed roller contacts the lower feed roller (0 point), the push guide cam should be aligned with the frame positioning hole.



(Confirmation 2)

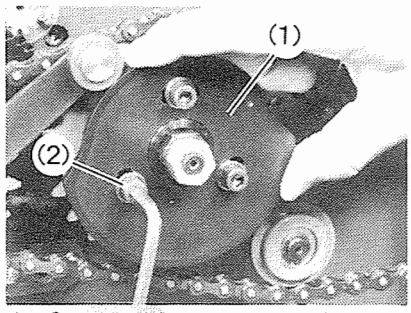
At the 0 point, the center of the vacuum valve cam (1) and the punch mark and the cam follower should be on the same straight line. (Rough Adjustment)



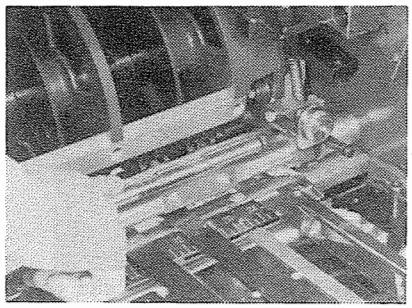
(Confirmation 3)

At the 0 point, the three plate cam ϕ6 holes on the operation side and the frame hole should be aligned.

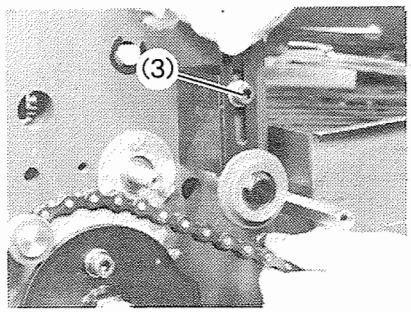
3) Adjustment



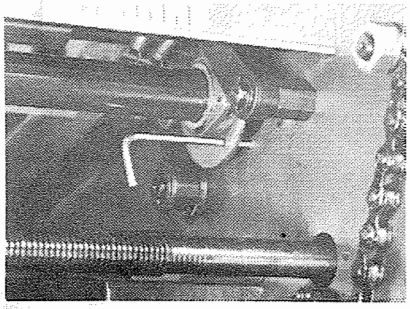
1. Set the fixing screw (2) of the vacuum valve cam (1) in the center of the long slot.



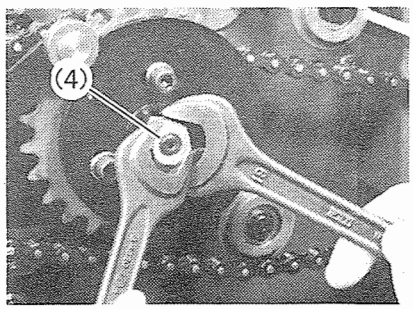
2. Turn the handwheel in the normal direction and stop at the point where the upper feed roller contacts the lower feed roller (0 point).



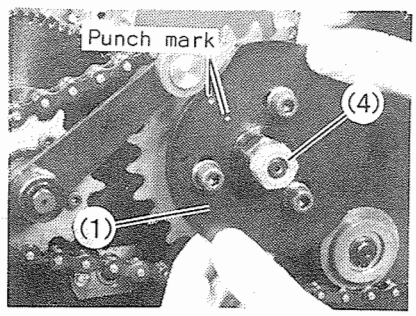
3. Loosen the two fixing bolts (3) of the chain tensioner and remove the chain.



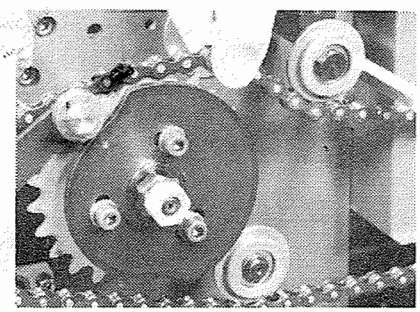
4. Check that the push guide cam (Feeder Section, Operation Side, Inside the Frame) hole is aligned with the frame hole by using a M3 allen wrench.
If they are not aligned, align them by turning the shaft.



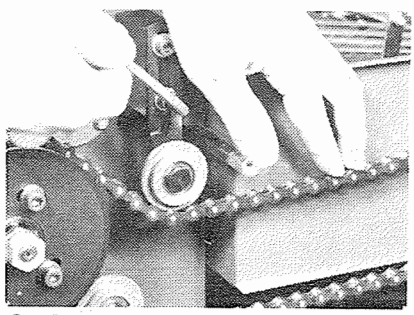
5. Loosen the bolt (4). (Left hand threaded)



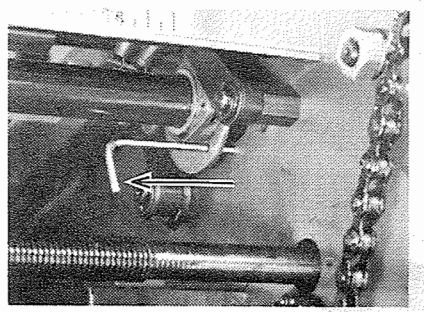
6. Align the center of the vacuum valve cam (1) and the center of the two punch marks and the cam follower on the same straight line and fix the bolt (4).



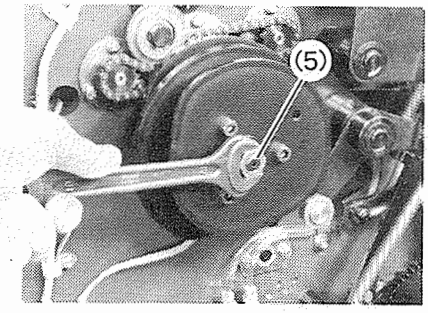
7. Remount the chain.



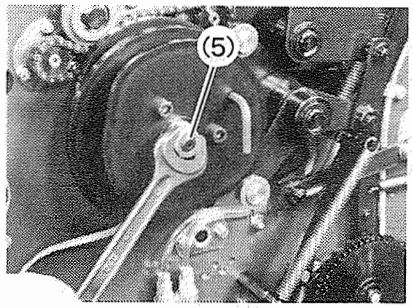
8. Push the central part of the chain with your finger lightly to check the tensioning. Fix the chain tension so that there is a play of from 5 to 10mm.



9. Remove the allen wrench.



10. Loosen the three cam fixing bolts (5) on the operation side. (Left hand threaded)



11. Align the three plate cam ϕ6 holes with the frame hole and fix the bolt (5).

(Note)

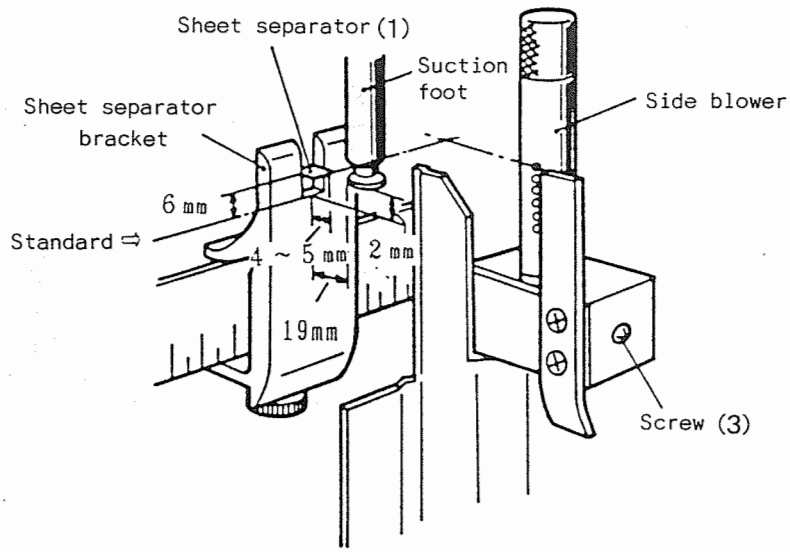
After this adjustment, do the micro adjustment of the vacuum valve cam (P. 73).

38. THE POSITION ADJUSTMENT OF THE SHEET SEPARATOR AND THE SIDE BLOWER

1) Purpose

The sheets of paper should be properly separated one by one by the sheet separator and the side blower so stabilized paper feed will be secured.

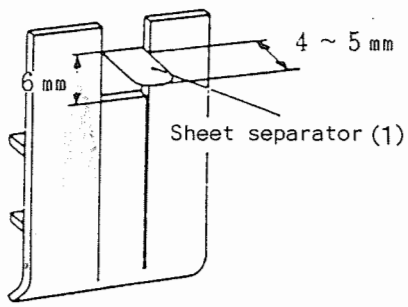
2) Point



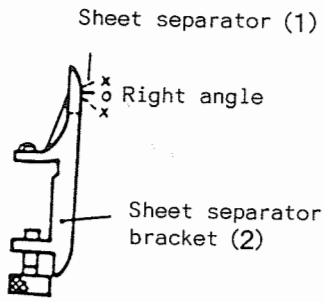
(Confirmation)

The sheet separator and the side blower should be positioned as shown in the illustration above.

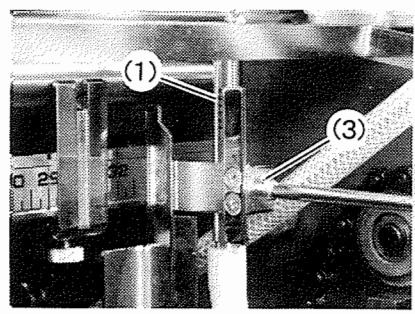
3) Adjustment



1. The sheet separator should be adjusted as shown in the illustration above.



2. The sheet separator (1) should be at a right angle to the face of the sheet separator bracket (2).



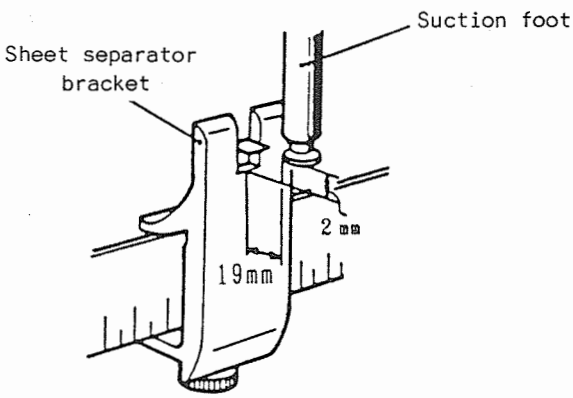
3. Loosen the screw (3) to adjust the position of the sheet separator to be aligned with the highest hole of the side blower (4).

39. THE SUCTION FEET ADJUSTMENT

1) Purpose

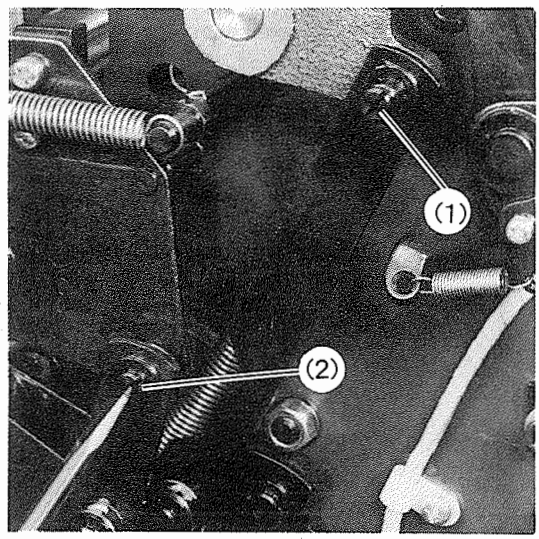
To secure stabilized paper feed, the suction feet should be set in the following position with the sheet separator bracket at the lowest position.

2) Point



(Confirmation)

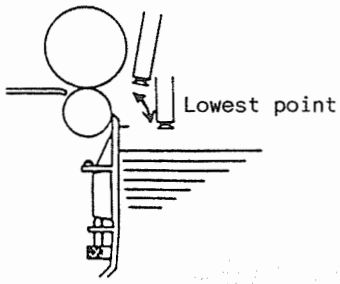
When the suction feet are at their lowest position, they should be positioned as shown in the illustration above.



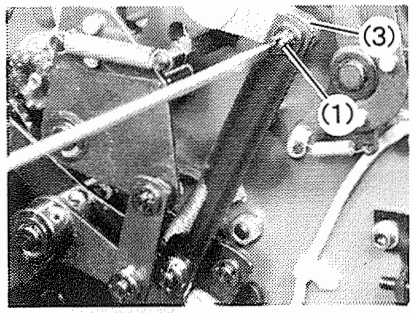
(Adjustment)

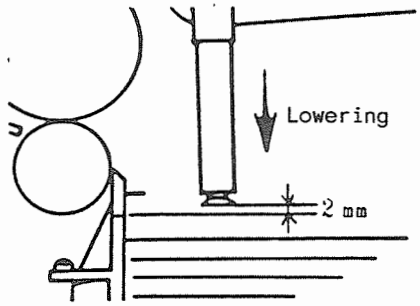
The vertical direction is adjusted by using the eccentric pin (1) and the horizontal direction is adjusted by using the eccentric pin (2).

3) Adjustment

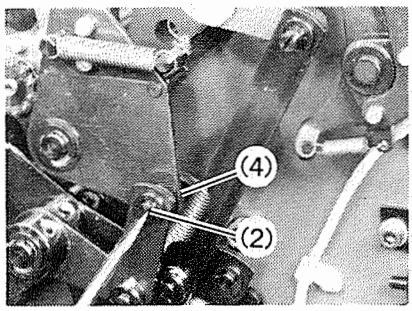


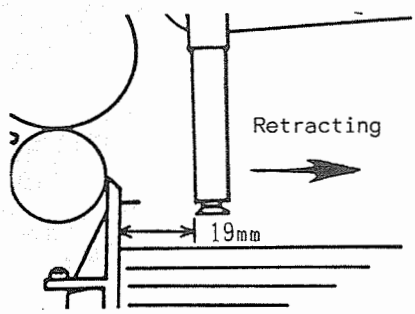
1. Turn the handwheel and set the suction feet at their lowest position.





2. For the vertical direction, loosen the lock nut (3) and adjust by using the eccentric pin (1).
(When turning it in the clockwise direction, the suction feet will be lowered.)

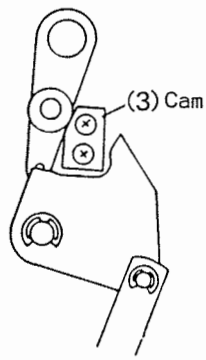




3. For the horizontal direction, loosen the lock nut (4) and adjust by using the eccentric pin (2).
(When turning it in the clockwise direction, the suction feet are retracted.)

(Note)

1. When doing the vertical and the horizontal adjustment, it is recommended that the vertical adjustment be done first.
2. After the vertical adjustment is done, do the feed lever section latch adjustment. (See P. 78)
3. After the adjustment, turn the handwheel and check that the suction feet go straight up from their lowest position. If they swing while being elevated, move the cam (3) to adjust it. When doing this after the adjustment, check the suction feet vertical and horizontal positions again.

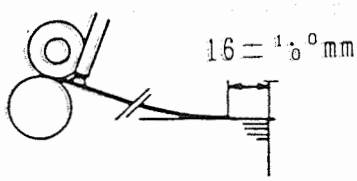


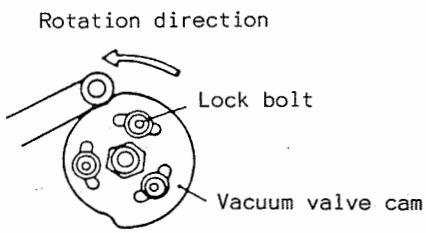
40. THE MICRO ADJUSTMENT OF THE VACUUM VALVE CAM

1) Purpose

To set the suction feet vacuum cut timing.

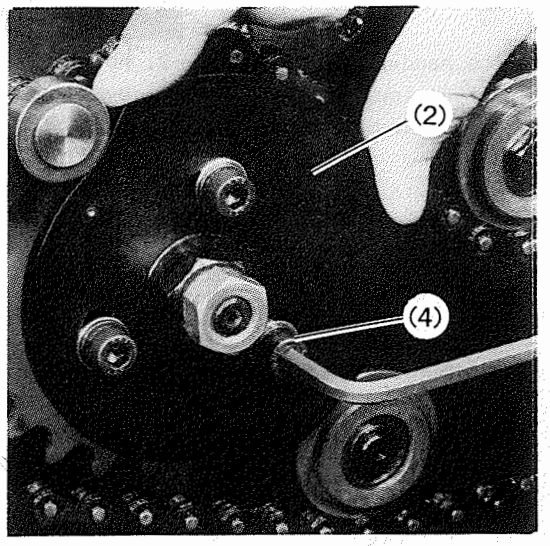
2) Point





(Confirmation)

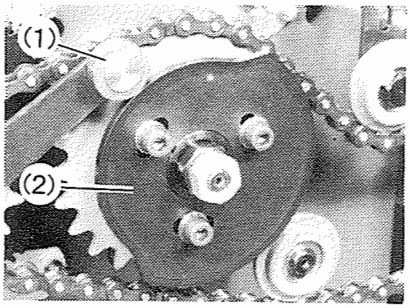
When the tail edge of the sheet of paper is fed $16^{+1.0}_{-0}$ mm, the air should start to be released from the vacuum valve cam.



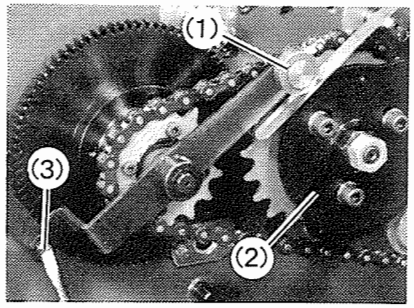
(Adjustment)

Loosen the three fixing bolts (4) and move the vacuum valve cam (2) to where the vacuum just starts to be cut.

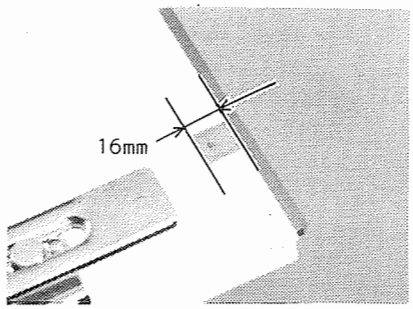
3) Adjustment



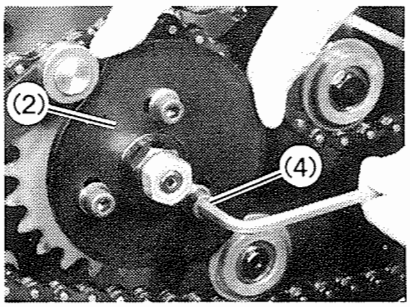
1. Turn the handwheel and set the cam follower (1) on the low position of the cam (2).



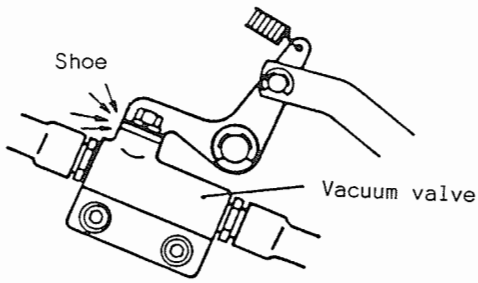
2. Set the clearance between the cam follower (1) and the cam (2) to 0.3mm by turning the eccentric pin (3).



3. Turn the handwheel and feed the sheet of paper until the tail edge is fed 16mm.



4. Loosen the three fixing bolts (4) and move the vacuum valve cam (2) in the direction of the arrow.



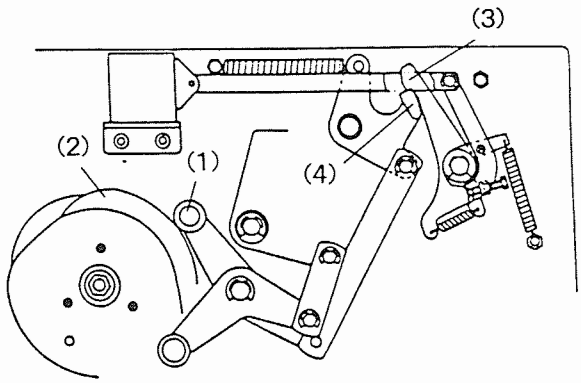
5. Fix the vacuum valve cam (2) at the point where the vacuum starts to be cut.

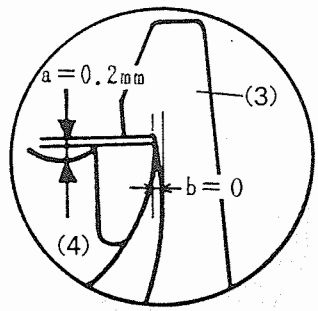
41. FEED LEVER SECTION LATCH ADJUSTMENT

1) Purpose

The lever has to go ON/OFF consistently when the feed lever is shifted.

2) Point

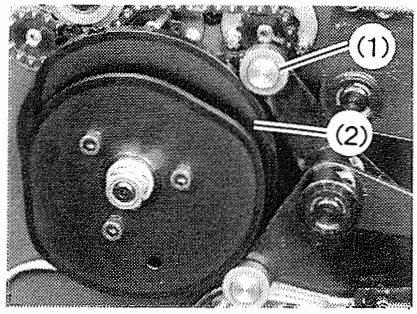




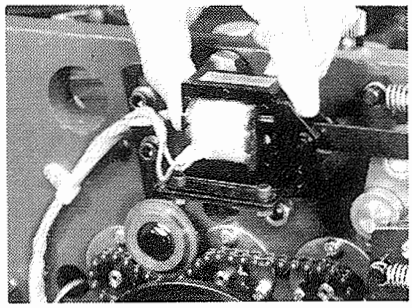
(Confirmation)

Position the cam follower (1) on the high position of the suction feet vertical cam (2), and when turning the solenoid ON, the clearance between the latch (3) and the lever (4) should be a = 0.2mm and b = 0.

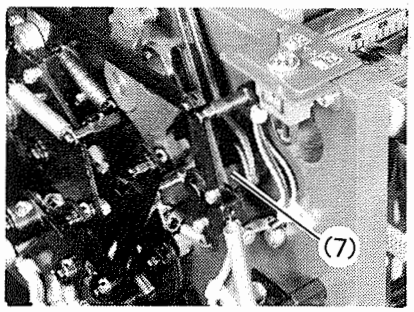
3) Adjustment

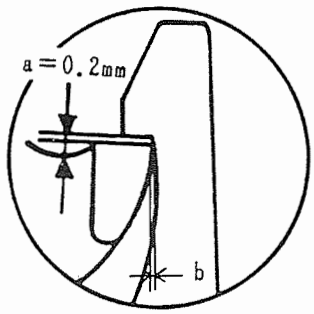


1. Turn the handwheel and set the cam follower (1) on the high position of the suction feet vertical cam (2).

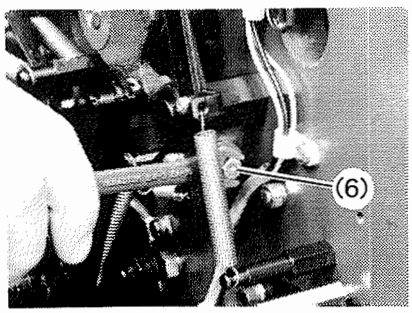


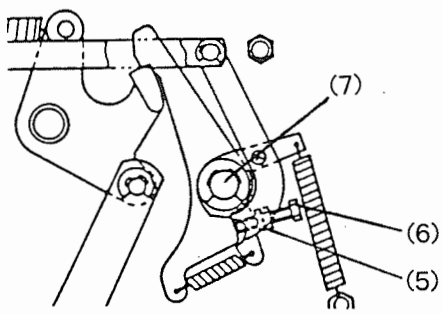
2. Manually turn the solenoid ON.





3. Adjust the clearance "a" to be 0.2mm by using the eccentric stud (7). (When turning the eccentric stud in the clockwise direction, the clearance will be reduced.)





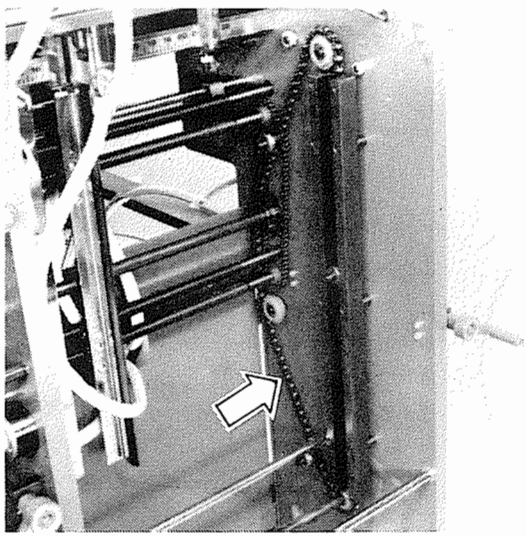
4. Loosen the nut (5) and adjust by using the bolt (6) so the clearance "b" is 0.

42. TENSION ADJUSTMENT OF THE PAPER PILE TABLE CHAIN

1) Purpose

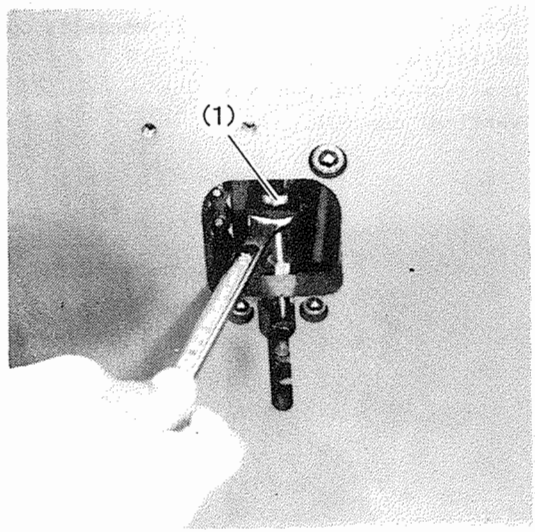
The paper pile table chain has to have proper tension.

2) Point



(Confirmation)

When pushing down on the center of the chain by using your finger lightly (1kgf), there should be a play of about 2mm.



(Adjustment)

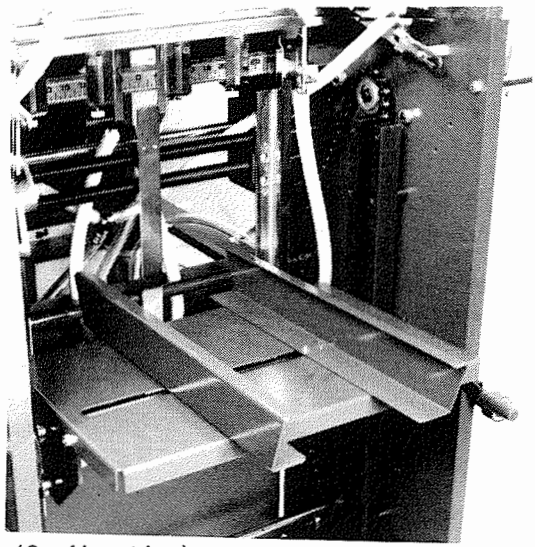
Adjust the chain tension by using the tensioning bolt (1).

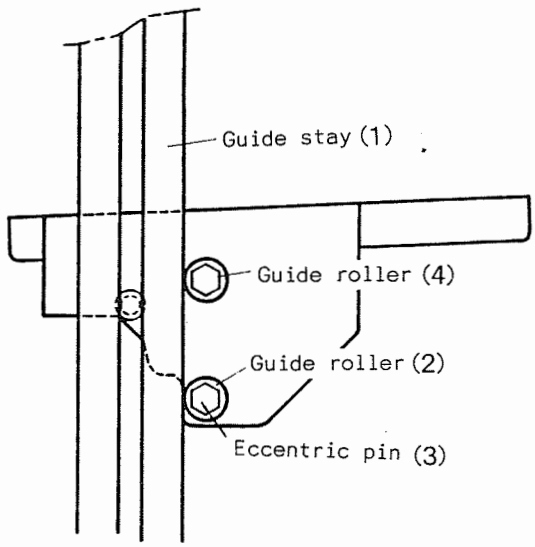
43. THE PAPER PILE TABLE GUIDE ROLLER ADJUSTMENT

1) Purpose

The paper pile table should be elevated and lowered smoothly by the guide rollers.

2) Point

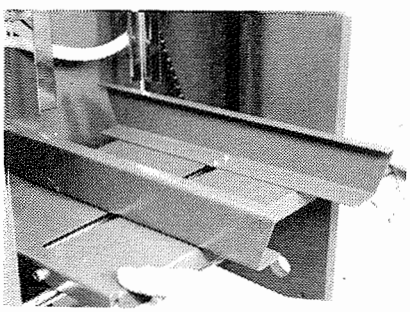




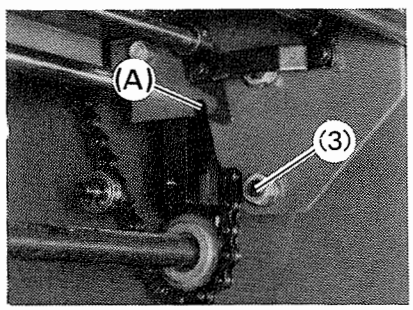
(Confirmation)

The guide roller (2) should lightly contact the guide stay (1).

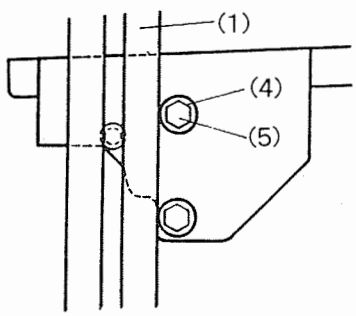
3) Adjustment



1. Set the paper pile table.



2. Adjust the guide roller (2) to lightly contact the guide stay (1) by using the eccentric pin (3).



3. After elevating the paper pile table slightly, adjust by turning the eccentric pin (5) so that the guide roller (4) is in contact with the guide stay (1).

(Note)

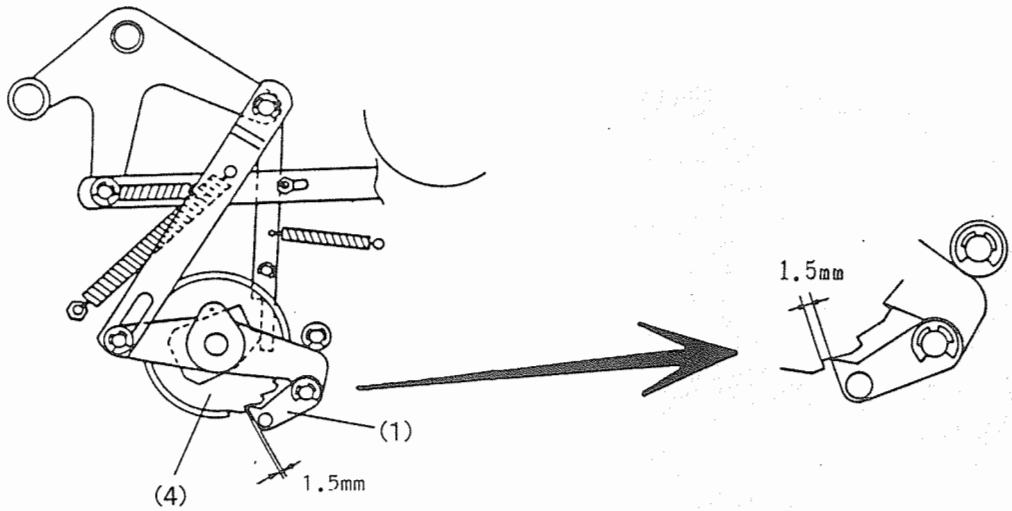
1. When the guide roller contacts the guide stay too strongly, the paper pile table can not be elevated and lowered smoothly.
2. After the adjustment, check that the paper pile table is positioned in the groove (A).

44. THE PAPER PILE TABLE DRIVE ARM ADJUSTMENT

1) Purpose

When the release lever is set to the position, the paper pile table should be securely elevated by the feeding pawl.

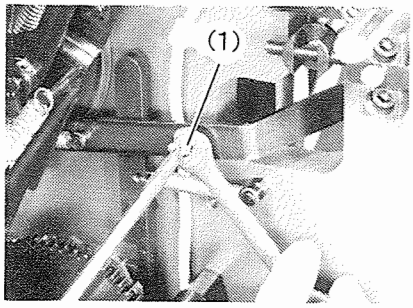
2) Point

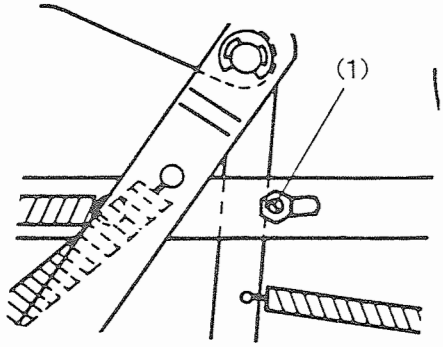


(Confirmation)

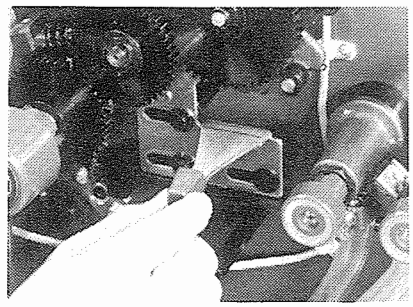
When the feeding pawl (2) is located at the return position, the clearance between the feeding pawl (2) and the ratchet wheel (4) should be 1.5mm.

3) Adjustment

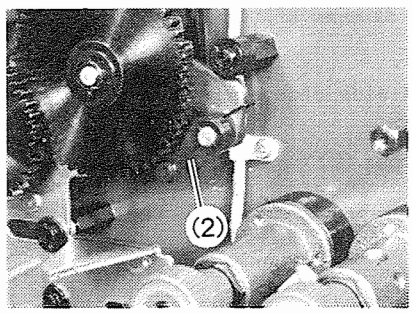




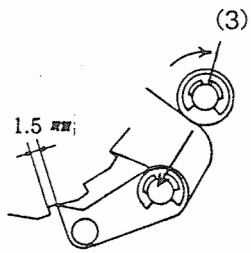
1. Set the pin (1) at the left side end of the long slot to fully push the pole clutch.

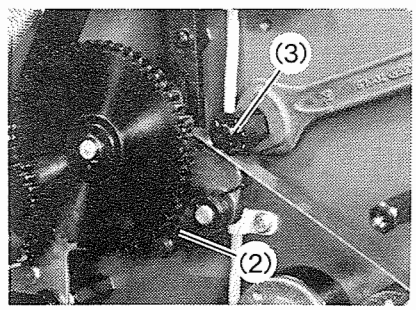


2. Lower the paper pile table and set the release lever to the position.



3. Turn the handwheel in the normal direction and set the feeding pawl (2) at its return position.





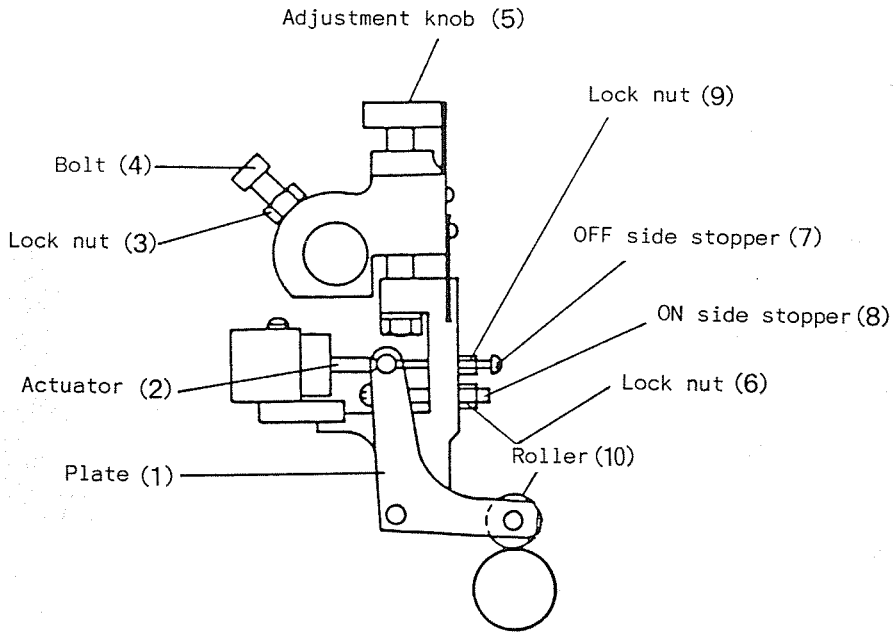
4. Turn the eccentric stud (3) to adjust the clearance between the feeding pawl (2) and the ratchet wheel to be 1.5mm.
(Set the eccentric stud, so that when turning it in the clockwise direction, the clearance will be reduced.)

45. ADJUSTMENT OF THE DOUBLE SHEET DETECTOR

1) Purpose

The detector has to detect any double sheets consistently.

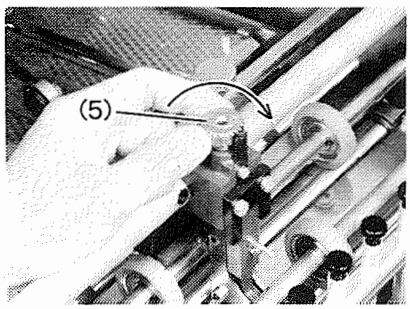
2) Point



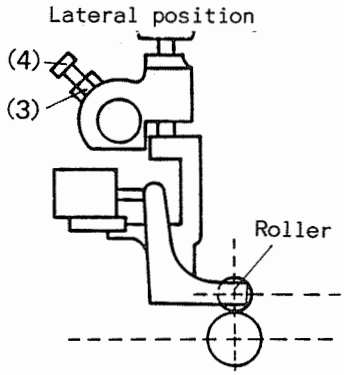
Double sheet detector

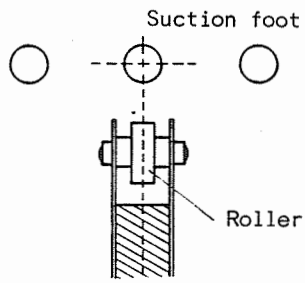
3) Adjustment

(The Positioning Adjustment)



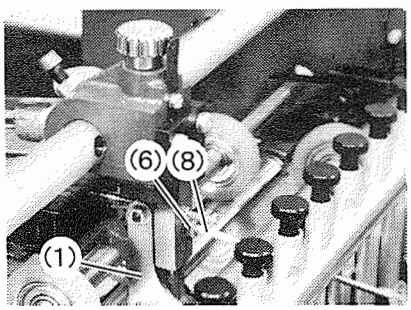
1. Turn the knob (5) to release the roller (10) from the feed roller.



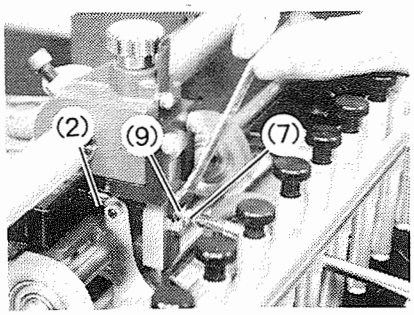


2. Loosen the lock nut (3) and the bolt (4) and do the lateral positioning and the vertical positioning adjustment.

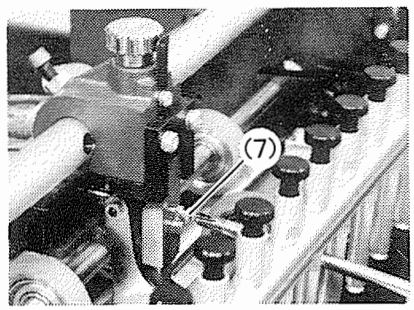
(The ON Side Stopper Adjustment)



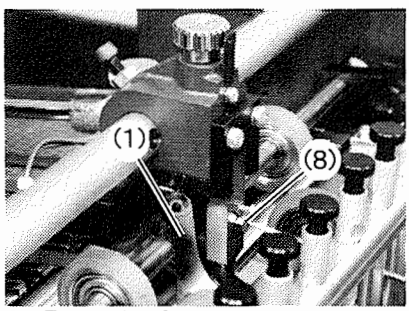
1. Loosen the lock nut (6) and turn the ON side stopper screw (8) in the clockwise direction and fully release it from the plate (1).



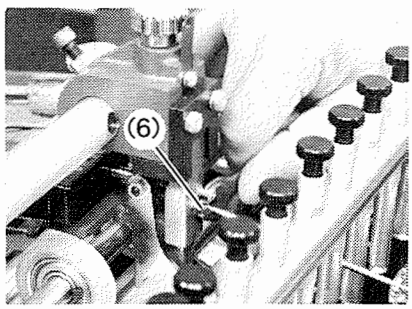
2. Loosen the lock nut (9) and turn the screw (7) in the clockwise direction until the actuator (2) goes ON.



3. Turn the screw (7) in the clockwise direction half a turn more from that point.

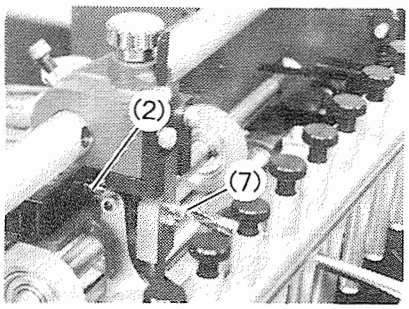


4. Turn the ON side stopper screw (8) in the counter-clockwise direction and contact it with the plate (1).

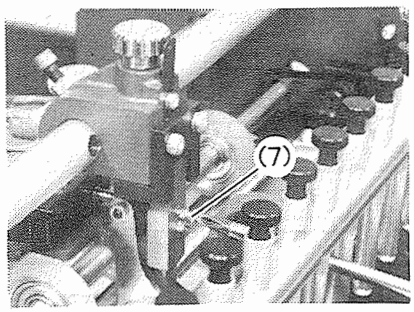


5. Fix the lock nut (6).

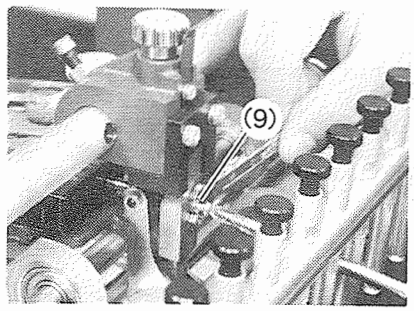
(The OFF Side Stopper Adjustment)



1. Turn the screw (7) in the counterclockwise direction until the actuator (2) goes OFF.



2. Turn the screw (7) from that point one quarter turn more in the counterclockwise direction.



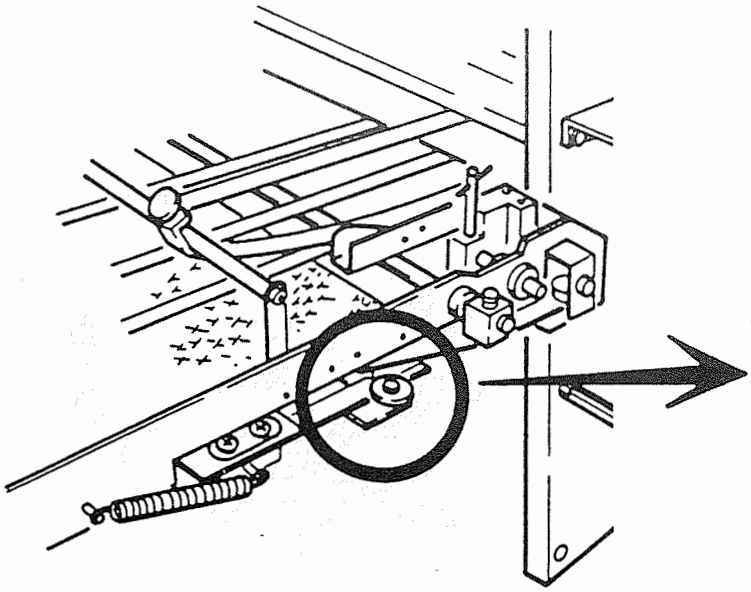
3. Fix the lock nut (9).

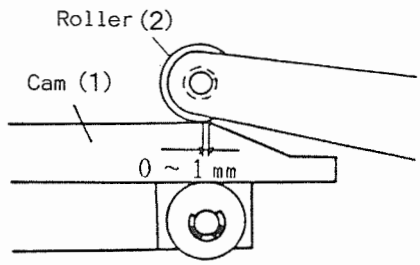
46. PUSH GUIDE ADJUSTMENT

1) Purpose

Accurate side registration should be secured by correctly adjusting the push guide.

2) Point

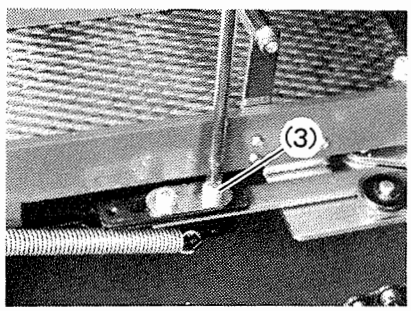




(Confirmation)

When the upper feed roller contacts the lower feed roller (0 point), the point of contact on the high position of the cam (1) and the cam follower (2) should be from 0 to 1mm.

3) Adjustment



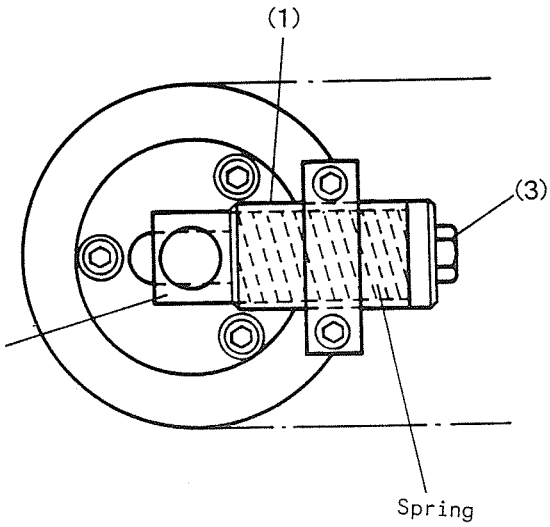
1. Loosen the two screws (3) and adjust the point of contact to from 0 to 1mm.

47. CD CHAIN TENSIONING ADJUSTMENT

1) Purpose

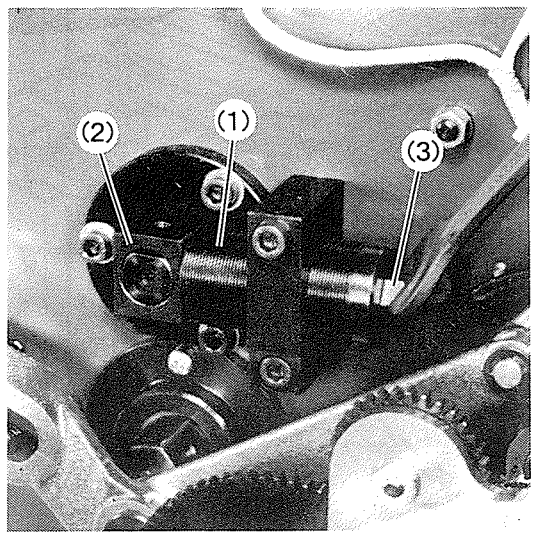
The CD chain should always be properly tensioned by the spring to stabilize the CD section drive.

2) Point



(Confirmation)

The holder (1) should lightly contact the block (2).



(Adjustment)

Tighten the bolt (3) until the holder (1) contacts the block (2).

(Note)

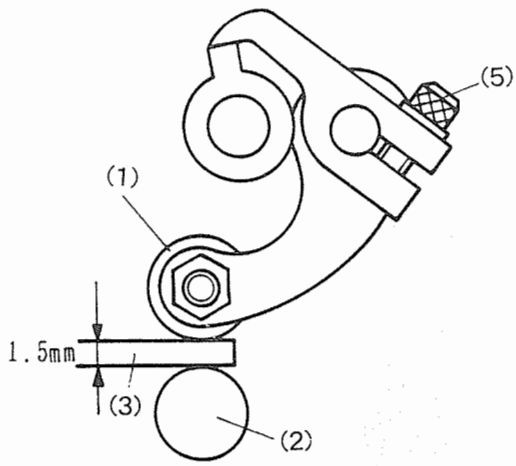
Tighten the bolt (3), slowly alternating from the operation side and the non operation side. If only fully tightening one side first then the other side, the chain tension may not be even.

48. CD GRIPPER ADJUSTMENT

1) Purpose

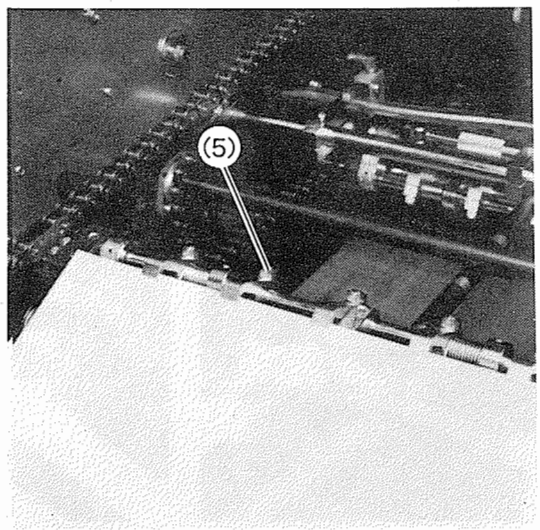
The paper should be gripped by the CD grippers sufficiently and uniformly, and adjust so that all of the CD grippers opening and closing timing is the same.

2) Point



(Confirmation)

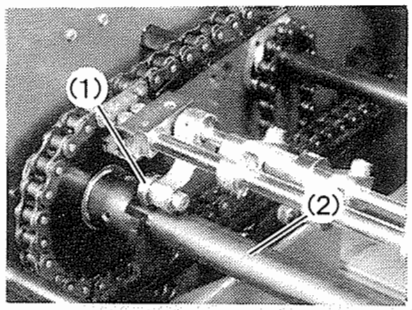
The clearance between the CD gripper opening cam follower (1) and the CD sprocket shaft (2) should be 1.5mm and the grippers pressure should be sufficient and uniform.



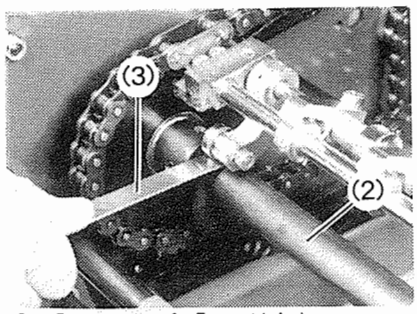
(Adjustment)

Adjust the pressure by loosening the bolt (5) so that the total pressure is uniform.

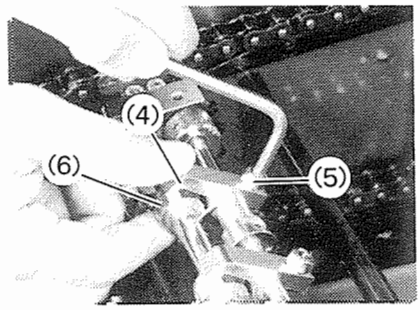
3) Adjustment



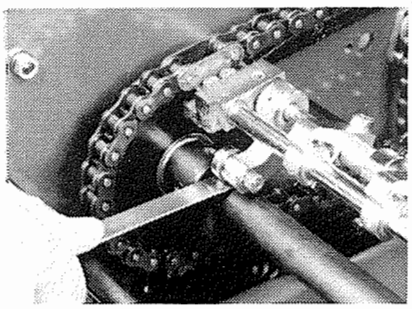
1. Turn the handwheel and stop at the point where the gripper opening cam follower (1) is over the CD sprocket shaft (2).



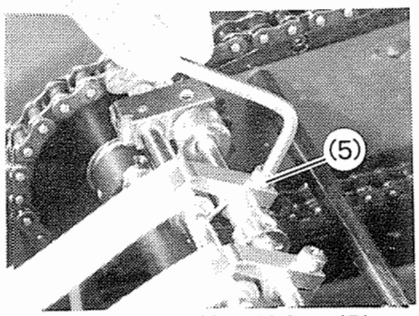
2. Insert a 1.5mm thickness gauge (3) on the shaft (2).



3. Loosen the five bolts (5) that fix the CD grippers (4) and push the grippers (4) against the base (6) and fix them.



4. Remove the thickness gauge and have the grippers hold 0.05mm strips of paper and confirm the grippers pressure.



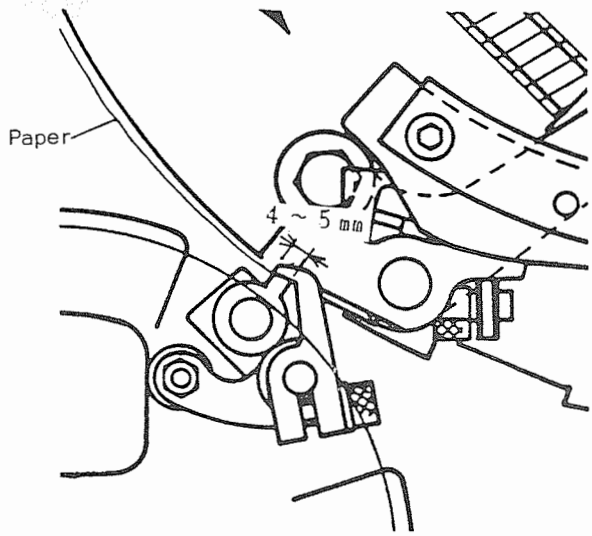
5. Loosen the five bolts (5) and micro adjust them so that the gripper pressure is uniform.

49. TRANSFER POSITION ADJUSTMENT BETWEEN THE IMPRESSION CYLINDER AND THE CD

1) Purpose

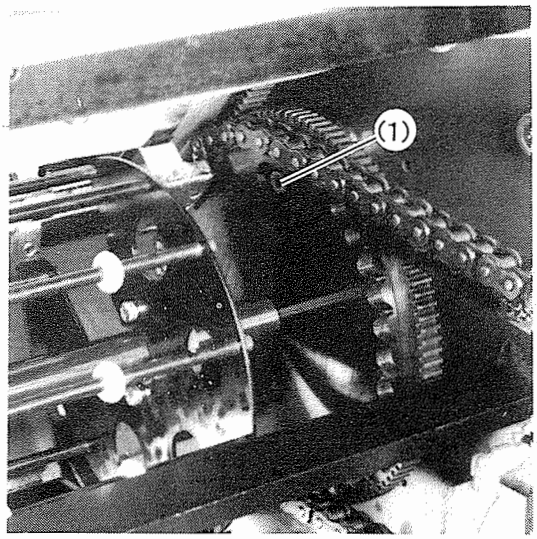
To align the transfer position between the impression cylinder grippers and the CD grippers, so that the paper transfer is correct.

2) Point



(Confirmation)

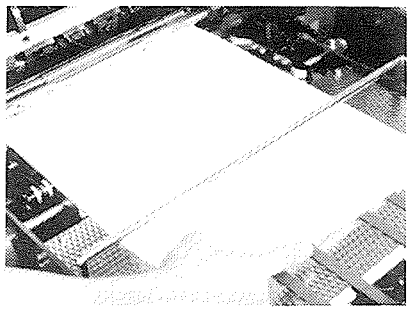
The three CD grippers paper gripping volume should be from 4.0 to 5.0mm and should be held on the operation side and the non operation side uniformly.



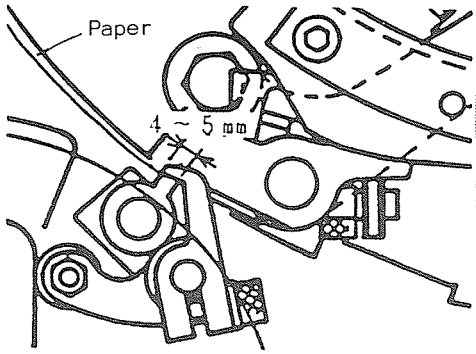
(Adjustment)

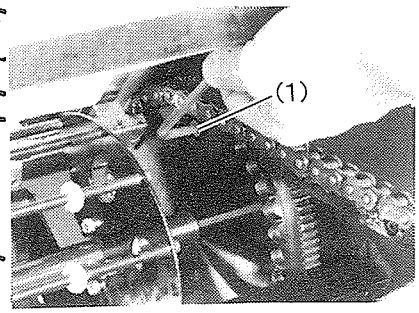
Loosen the three bolts (1) that fix the CD gear and the chain sprocket and adjust the position of the CD grippers by turning the sprocket shaft.

3) Adjustment

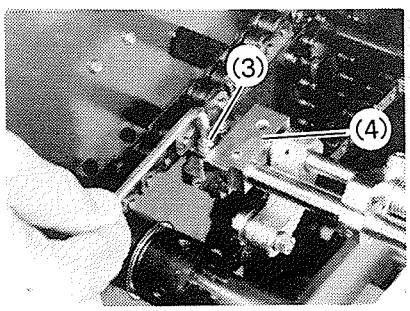


1. Feed one sheet of paper by manually rotating the machine.





2. Loosen the three bolts (1) and adjust so that the CD grippers paper gripping volume is from 4.0 to 5.0mm by turning the CD sprocket shaft (2).



3. When the CD gripper paper gripping volume on the operation side and the non operation side is different, loosen the screw (3) and move the gripper holder (4) back and forth to adjust it.

(Note)

The proximity switch and the timing plate are mounted on the non operation side of the CD sprocket shaft. After doing this adjustment, do the adjustments listed below again.

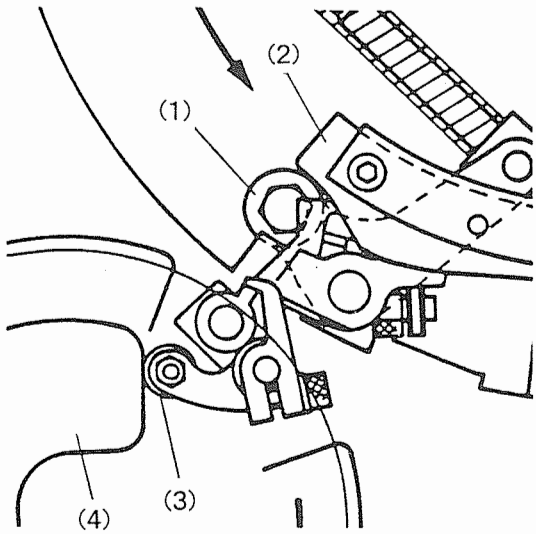
* The timing plate setting (P. 65)
* Timing adjustment of the proximity switch (P. 43)

50. ADJUSTMENT OF THE CD GRIPPERS CLOSING TIMING

1) Purpose

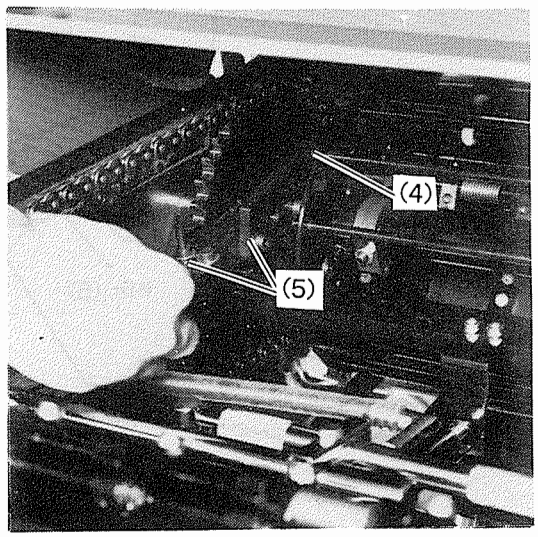
To set the CD grippers closing timing.

2) Point



(Confirmation)

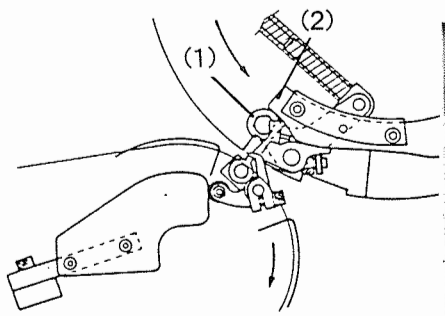
When the cam follower (1) lightly contacts the impression cylinder gripper cam (2), the clearance between the cam follower (3) and the CD gripper opening cam (4) should be 0mm.



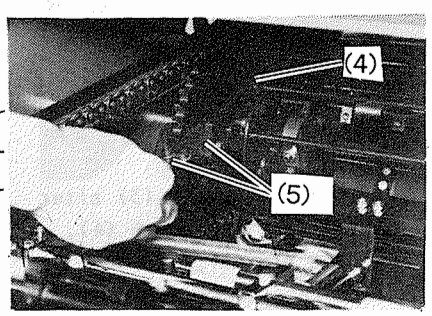
(Adjustment)

Loosen the two bolts (5) and contact the cam (4) to the cam follower (3).

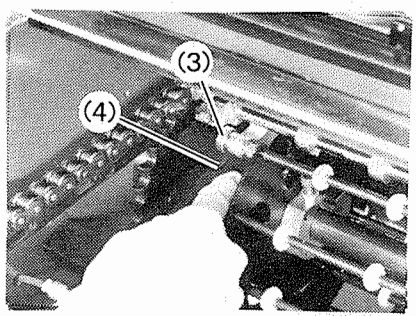
3) Adjustment



1. Rotate the machine and have the cam follower (1) lightly contact the impression cylinder gripper cam (2).



2. Loosen the two bolts (5) of the cam (4).



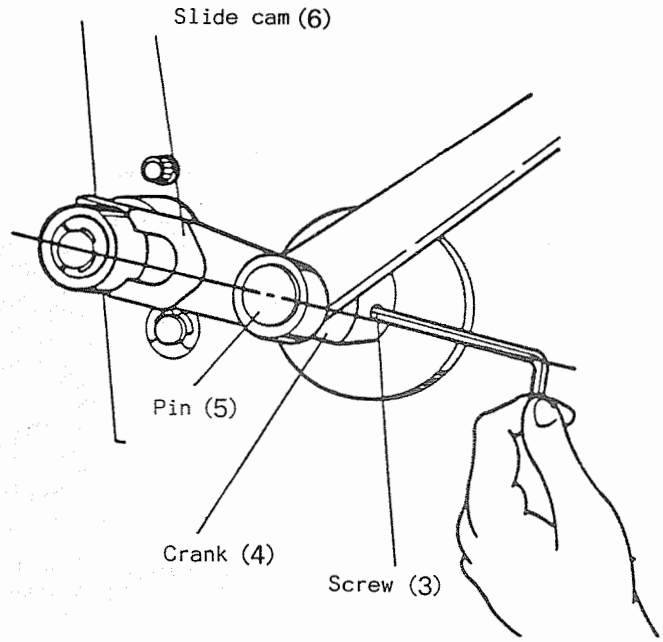
3. Move the cam (4) to lightly contact the cam follower (3) and fix them.

51. ADJUSTMENT OF THE CD JOGGER GUIDE TIMING

1) Purpose

When the CD grippers deliver a sheet of paper, the delivery jogger side guide has to be at its fully open position.

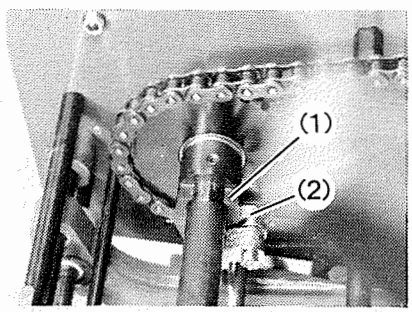
2) Point



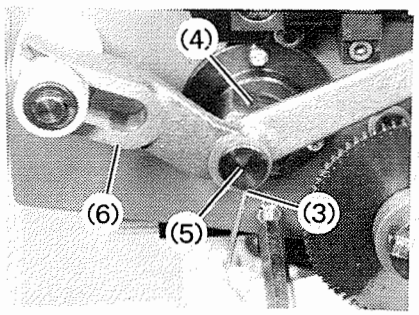
(Confirmation)

When the CD grippers cam follower contacts the delivery cam, the crank, the pin and the slide cam should be on the same straight line.

3) Adjustment



1. Turn the handwheel in the normal direction and stop where the cam follower (2) just contacts the paper release cam (1). (The timing where the CD grippers release the sheet of paper.)

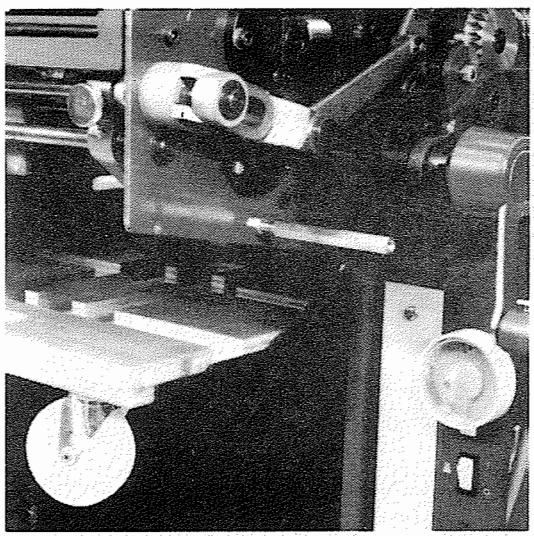


2. Fix the two screws (3) after positioning the crank (4), and the pin (5), and the slide cam (6) on the same straight line.

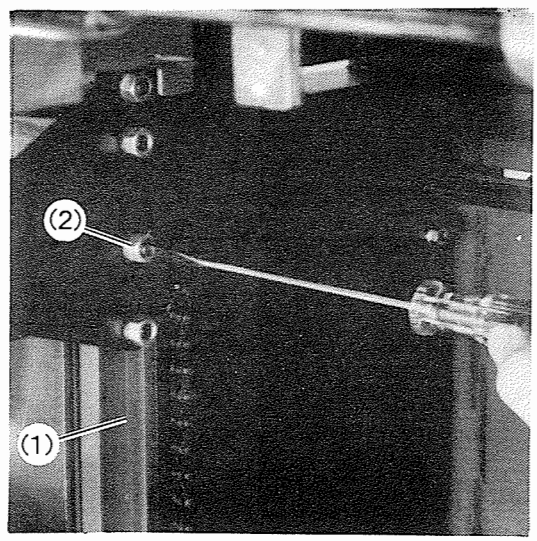
52. DELIVERY TABLE DOLLY GUIDE ROLLER ADJUSTMENT

1) Purpose
The delivery table dolly has to be elevated and lowered smoothly by the guide roller.

2) Point



(Confirmation)
There should be no clearance between the guide stay and the guide roller, and the delivery table dolly should be elevated and lowered smoothly.



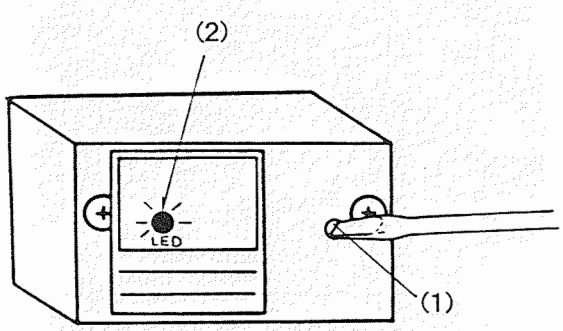
(Adjustment)
Adjust by turning the eccentric pin (2) so that the guide roller lightly contacts the guide stay (1).
(on both the operation side and the non operation side)

53. THE SENSITIVITY ADJUSTMENT OF THE DELIVERY DETECTION SENSOR

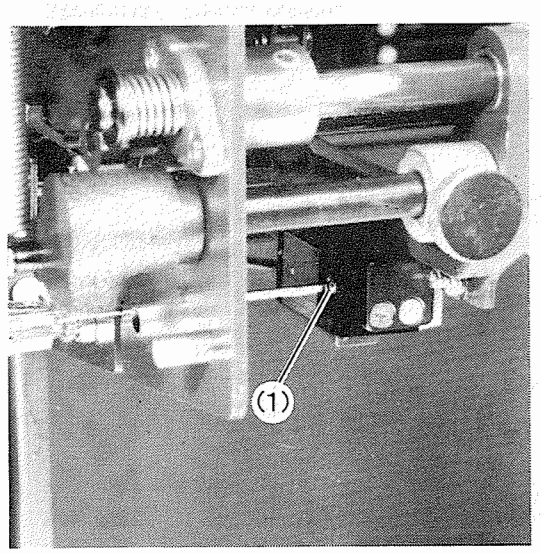
1) Purpose

The sensor sensitivity must be properly adjusted so that the height of the delivery pile is detected exactly.

2) Adjustment



1. Turn the adjustment screw (1) in the clockwise direction until the LED (2) just lights without any paper on the delivery table dolly.



2. Return the adjustment screw (1) 90 degrees in the counterclockwise direction from the point where the LED (2) just lit.

(Confirmation)

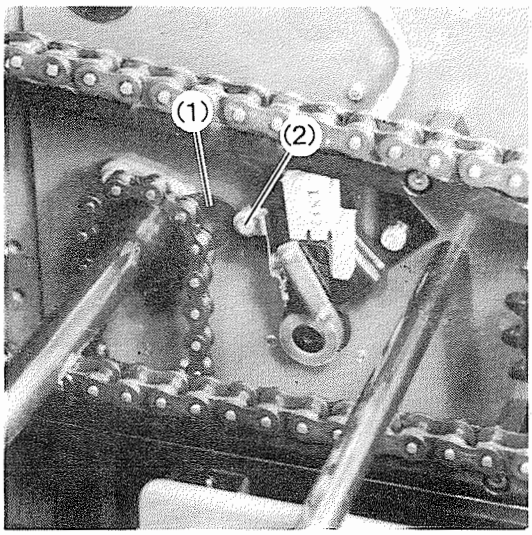
Do the actual paper feed and check that the sensor detects the paper and lowers the delivery table dolly automatically. When the delivery table dolly is not lowered, turn the adjustment screw (1) in the clockwise direction to increase the sensitivity.

54. ADJUSTMENT OF THE DELIVERY TABLE DOLLY LOWER LIMIT SWITCH

1) Purpose

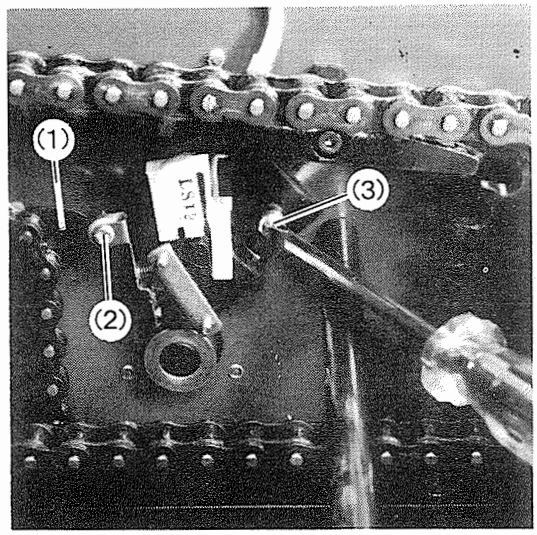
The delivery table dolly lower limit switch has to be adjusted to turn off the feeder vacuum when the delivery table dolly reaches its lowest position.

2) Point



(Confirmation)

The cam (1) should consistently push the actuator (2) of the delivery table dolly limit switch.



(Adjustment)

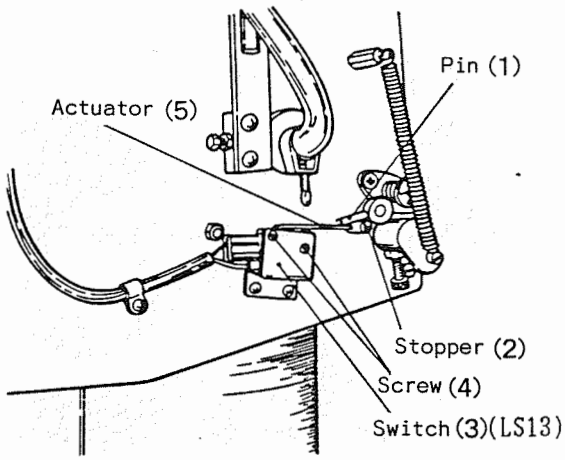
Loosen the two screws (3) and adjust so that the actuator (2) is pushed by the cam (1) exactly.

55. ADJUSTMENT OF THE DELIVERY JAM SWITCH

1) Purpose

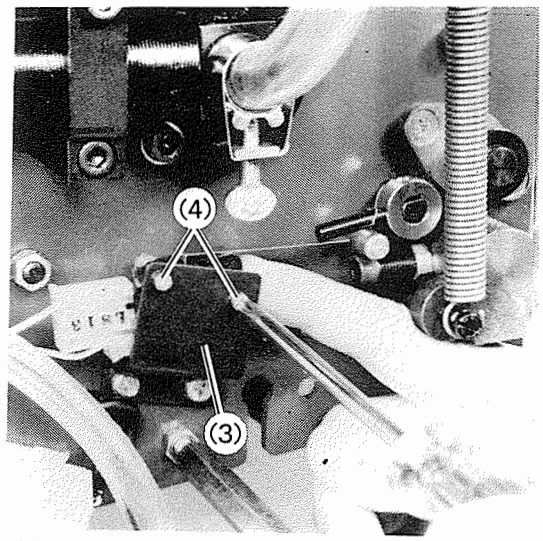
When a sheet of paper jams in the delivery section, the machine should stop immediately.

2) Point



(Confirmation)

When the pin (1) contacts the stopper (2), the delivery jam switch (3) should actuate.



(Adjustment)

Loosen the two screws (4) and move the switch (3) to adjust it.

(Note)

When the switch (3) is actuated, be careful that the actuator (5) is not pushed more than 0.5mm.

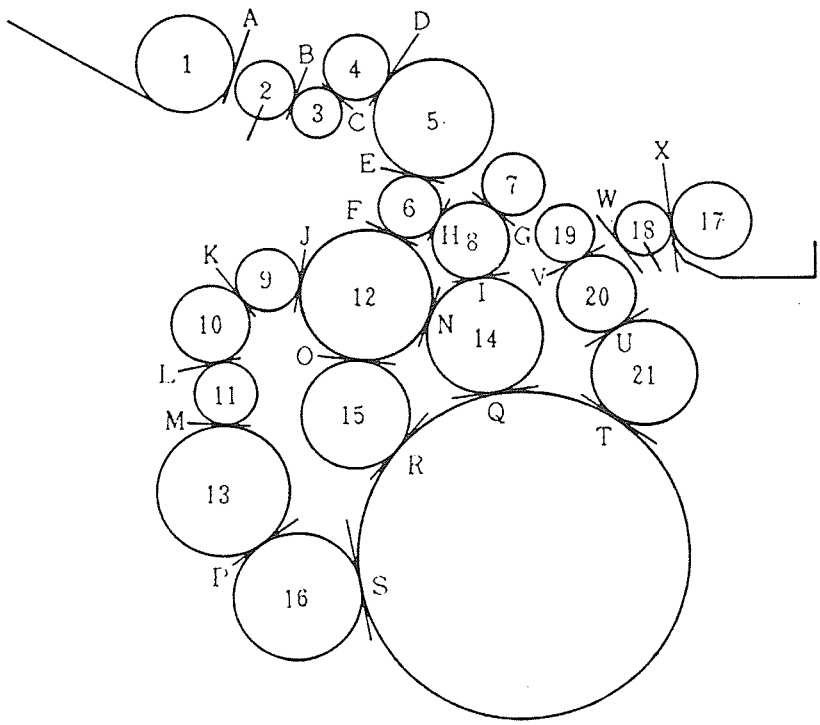
56. ADJUSTMENT OF THE ROLLERS PRESSURE

1) Purpose

The pressure of each roller should be checked after installing the machine, and adjust the pressure so it is proper because the ink and water roller pressure greatly influence the printing quality.

2) Point

1. Roller Arrangement



2. Roller Pressure List

Ink roller nip width

(Unit : mm)

Position	Nip width	Position	Nip width	Position	Nip width
A	Parallel pressure	H	Parallel pressure	O	3.0
B	1.5 - 2.0	I	Parallel pressure	P	3.0
C	2.0 - 2.5	J	2.5 - 3.0	Q	3.5
D	2.0 - 2.5	K	3.0 - 3.5	R	3.5
E	2.0 - 2.5	L	3.0 - 3.5	S	3.5
F	2.0 - 2.5	M	3.5 - 4.0		
G	Parallel Pressure	N	3.0		

Water roller (Molleton) pressure

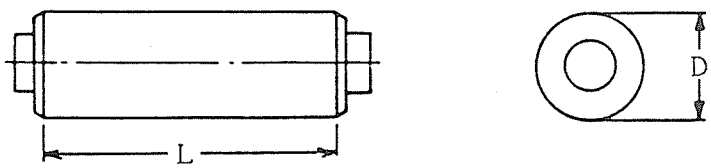
Position	Standard roller pressure
T	10
U	8
V	Parallel pressure
W	6
X	6

(Note)

Dampen the molleton to match the condition during printing and then insert strips of paper (30mm wide and 0.08mm thick) between the plate and the roller. A pressure of "10" means the strip of paper can be pulled out from between the plate and the roller without tearing. The pressure "8" and "6" must be based on the pressure "10" so please use your judgment.

3. The Roller Size and The Rubber Hardness

No.	Name	Outer diameter (D)mm	Effective length (L)mm	Rubber hardness (coating)
1	Ink fountain roller	50	335	Steel plated
2	Ink ductor roller	31	333	20°
3	Ink distributor roller	28.5	333	Rilsan coating
4	Ink distributor roller	34	335	35°
5	Ink rider oscillating roller	63	346	Rilsan coating
6	Ink distributor roller	34	335	35°
7	Ink distributor roller	34	327	35°
8	Ink distributor roller	40	333	Rilsan coating
9	INk distributor roller	34	335	35°
10	Ink distributor roller	40	333	Rilsan coating
11	Ink distributor roller	34	335	35°
12	Ink oscillating roller	69.16	340	Rilsan coating
13	Ink oscillating roller	69.16	340	Rilsan coating
14	Ink first form roller	61.5	335	30°
15	Ink second form roller	56	335	30°
16	Ink third form roller	65	335	30°
17	Water fountain roller	40	355	Chrome plated
18	Water ductor roller	26	360	32°
19	Water distributor roller	26	360	32°
20	Water oscillating roller	42	363	Chrome plated
21	Water form roller	50	360	32°

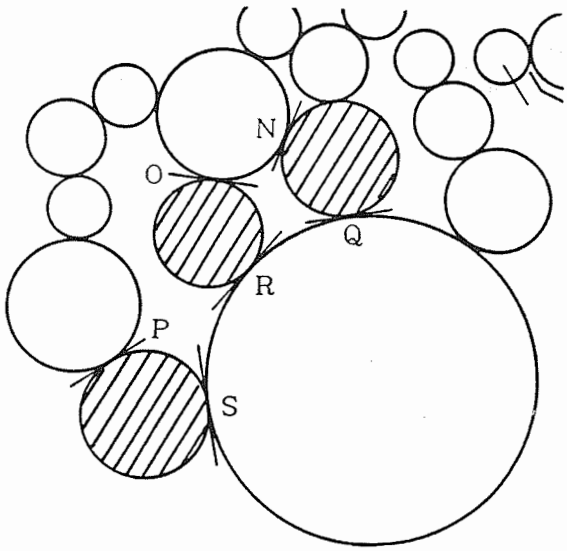


57. THE PRESSURE ADJUSTMENT OF THE INK FORM ROLLER

1) Purpose

The pressure has to be properly adjusted between the ink form roller and the ink oscillating roller and the ink form roller and the plate cylinder.

2) Point



(Unit : mm)

Position	Nip width
N	3.0
O	3.0
P	3.0
Q	3.5
R	3.5
S	3.5

(Confirmation)

Each rollers pressure has to be adjusted to the standard value.

(Adjustment)

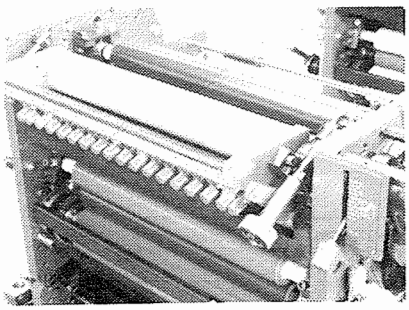
Adjustment order

N → O → P → Q → R → S

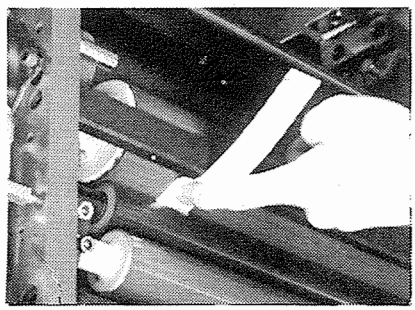
* After the pressure adjustment between the form roller and the oscillating roller is done, do the pressure adjustment between the form roller and the plate.

3) Adjustment

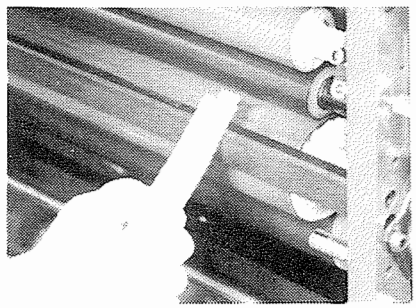
(The Adjustment of The Pressure Between The Form Roller and The Oscillating Roller)



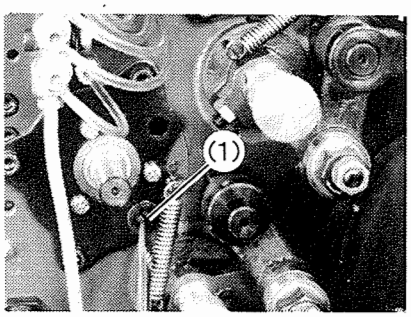
1. Rotate the machine and feed ink to each roller.



2. Stop the machine and after pausing a moment, turn the handwheel and the nip will appear on the roller.



3. Transfer the nip onto a strip of paper and then measure the nip width. (Measure the nip width that appear on the oscillating roller.)

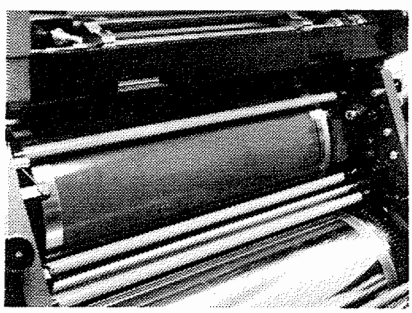


4. Adjust the roller pressure to be the standard value by using the adjustment screw (1). When turning the screw in the clockwise direction, the pressure will be increased. (On both the operation side and the non operation side)

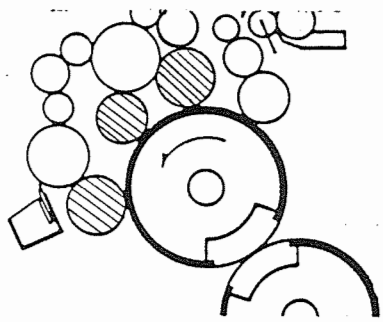
(Note)

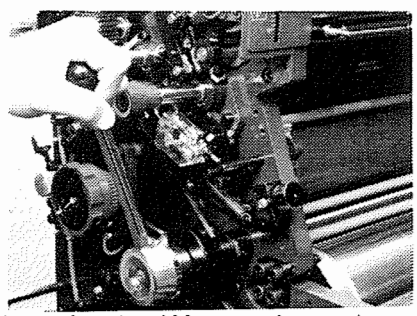
For this adjustment, the pressure should be adjusted from strong to weak pressure. When adjusting the pressure from weak to strong, turn the night latch lever ON and OFF.

(The Adjustment of The Pressure Between The Form Roller and The Plate)

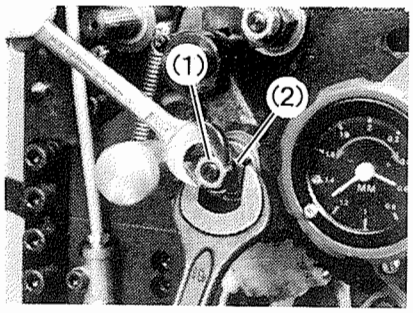


1. Rotate the machine and set the operating lever to the position 3 and supply the ink onto the plate surface.





2. Stop the machine at the point shown in the illustration and when returning the operating lever to the position 1, the nip width will appear on the plate surface.



3. Loosen the nut (1) and turn the adjustment nut (2) to adjust it. (On both the operation side and the non operation side)

(Note)

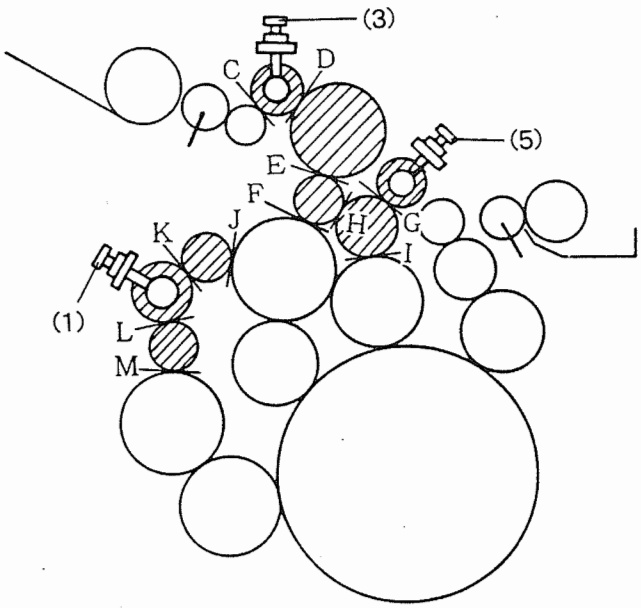
When turning the adjustment nut (2) in the direction of the arrow, the roller pressure will be increased.

58. THE PRESSURE ADJUSTMENT OF THE INK DISTRIBUTOR ROLLER

1) Purpose

To adjust the ink distributor roller pressure to the proper nip width so that the pressure is proper.

2) Point



(Unit : mm)

Position	Nip width
C	2.0 - 2.5
D	2.0 - 2.5
E	2.0 - 2.5
F	2.0 - 2.5
G	Parallel pressure
H	Parallel pressure
I	Parallel pressure
J	2.5 - 3.0
K	3.0 - 3.5
L	3.0 - 3.5
M	3.5 - 4.0

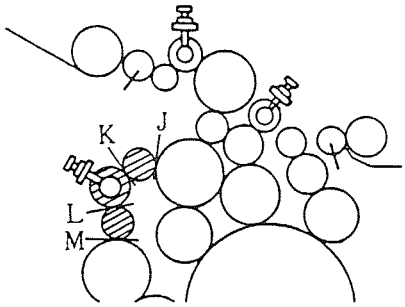
(Confirmation)

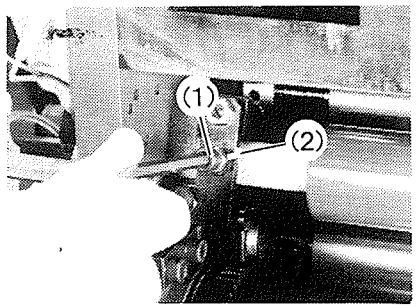
Each distributor roller pressure should be adjusted to the standard value.

(Adjustment)

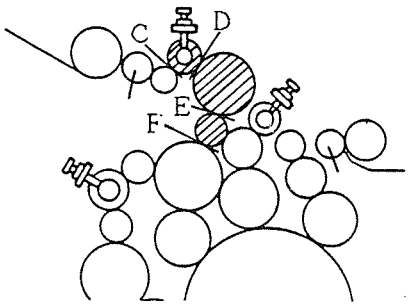
Do the parallel pressure and total pressure adjustment by using the adjustment bolts (1), (2) and (5).

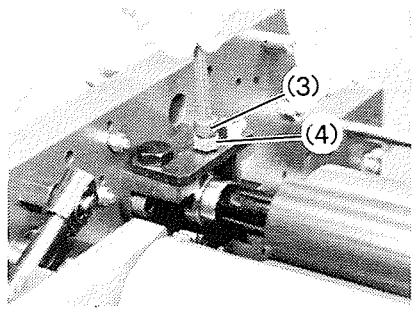
3) Adjustment



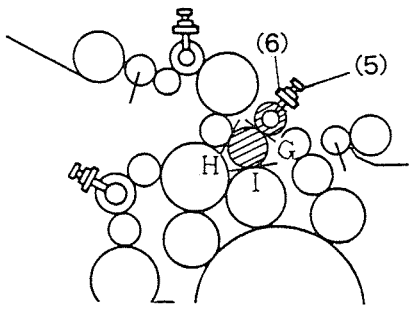


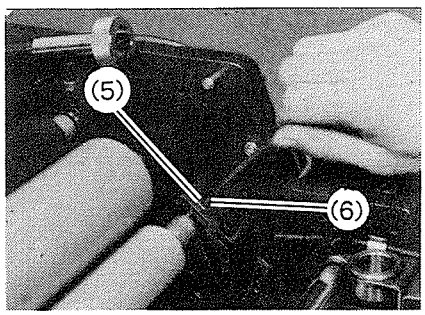
1. For the J, K, L, M parallel pressure and the total pressure, loosen the nut (3) and adjust by turning the bolt (1). (On both the operation side and the non operation side)





2. For the C, D, E, F parallel pressure and the total pressure, loosen the nut (4) and adjust by turning the bolt (3). (On both the operation side and the non operation side)





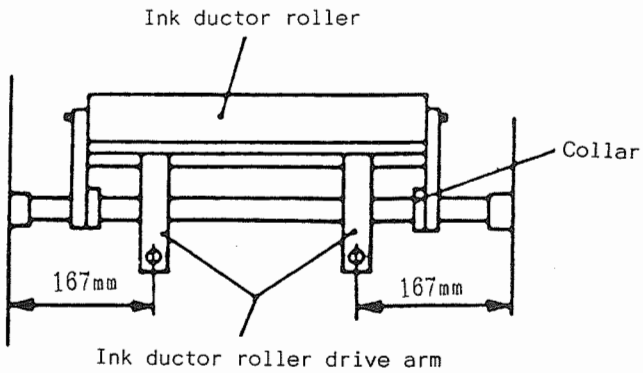
3. For the G, H, I parallel pressure and the total pressure, loosen the nut (6) and adjust by turning the bolt (5). (On both the operation side and the non operation side)

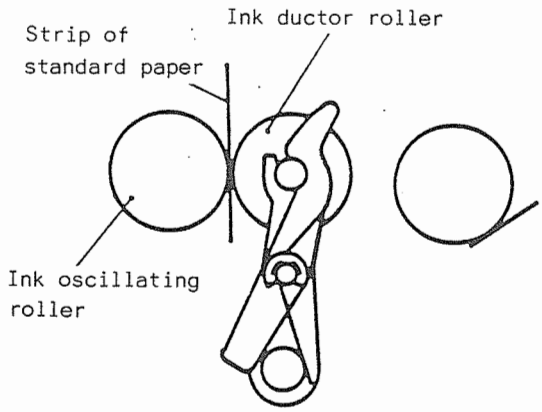
59. ADJUSTMENT OF THE INK DUCTOR ROLLER

1) Purpose

By adjusting the ink ductor roller pressure so it is proper, the ink supply from the ink fountain roller to the ink first roller will be stabilized.

2) Point





(Confirmation 1)

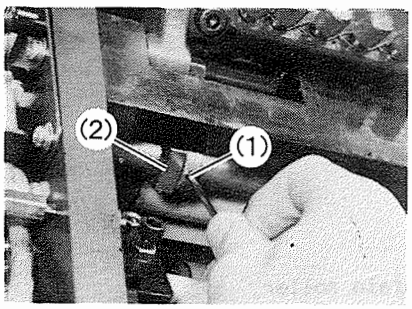
The ink ductor roller should be located at the position where it is separated from the ink first roller and the ductor drive arm should be located at the position shown in the illustration.

(Confirmation 2)

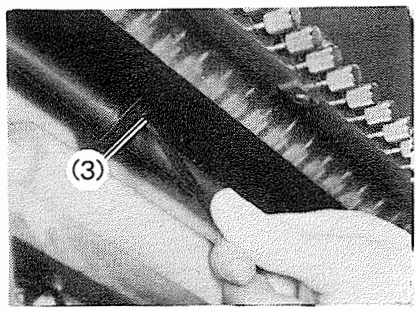
The pressure (parallel pressure and total pressure) between the ink ductor roller and the ink first roller has to be proper (a nip width from 1.5 to 2.0mm).

3) Adjustment

(Positioning of The Ink Ductor Roller Drive Arm)

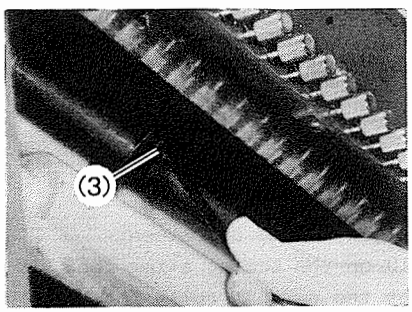


1. To position the ink first roller and the ink ductor roller, loosen the screw (1) and move the collar (2) to adjust them.



2. To position the ink ductor roller drive arm, loosen the bolt (3) to adjust it.

(The Pressure Adjustment Between The Ink First Roller and The Ink Ductor Roller)

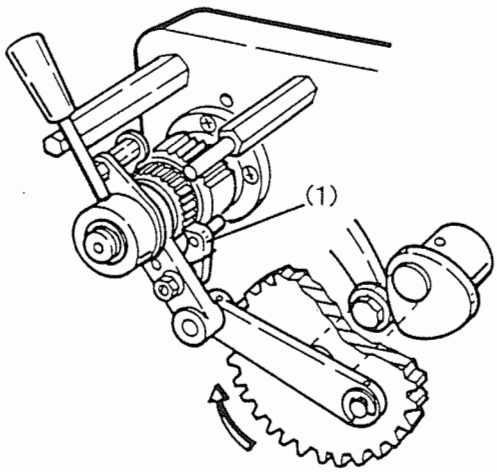


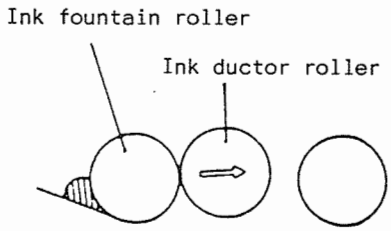
1. Loosen the bolt (3) and move the ink ductor drive arm (On both the operation side and the non operation side) and then adjust it.

60. THE TIMING ADJUSTMENT BETWEEN THE INK FOUNTAIN ROLLER AND THE INK DUCTOR ROLLER

1) Purpose
   * Adjust the position of the ink feed volume adjustment lever so it consistently feeds the ratchet wheel one tooth.
   * After the ink fountain roller finishes one rotation, the ductor roller should release from the fountain roller.

2) Point



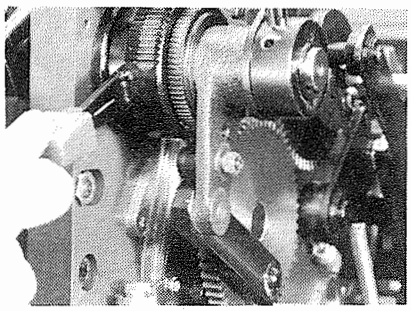


(Confirmation 1)
When the ink feed volume adjustment lever is on 1 on the scale, the pawl (1) should move the ratchet wheel one tooth.

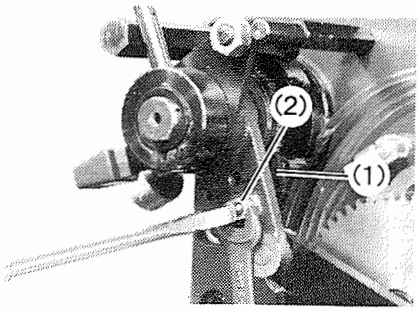
(Confirmation 2)
When the ink feed volume adjustment lever is on 10 on the scale, after the pawl (1) moves the ratchet fully to the feed side, the ductor roller should release from the fountain roller.

3) Adjustment

(Ink Fountain Feed Adjustment)

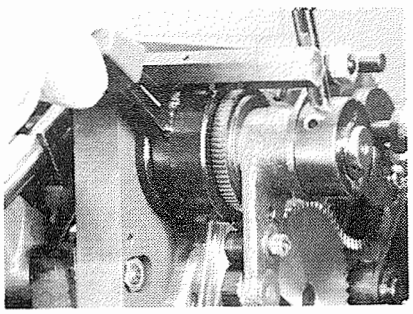


1. Set the ink feed volume adjustment lever to 1 on the scale.

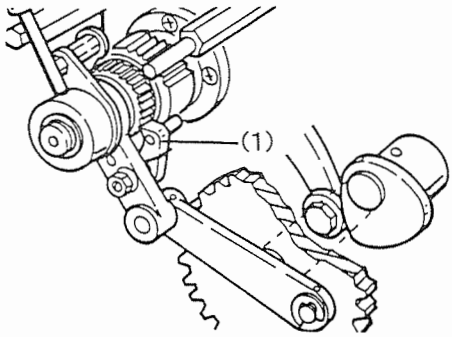


2. Adjust the pawl (1) to feed the ratchet wheel by one tooth by turning the eccentric pin (2).

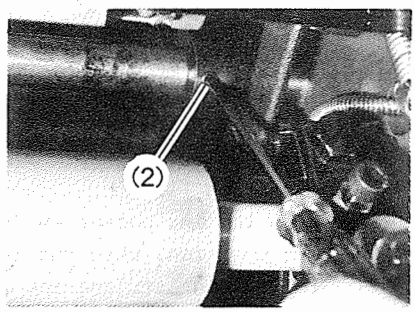
(Ink Ductor Timing Adjustment)



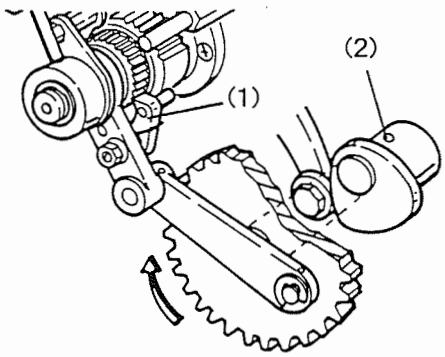
1. Set the ink feed volume adjustment lever to 10 on the scale.



2. Rotate the machine and set the pawl (1) at the position where the ratchet wheel moves fully to the feed side.



3. Loosen the screw (2).



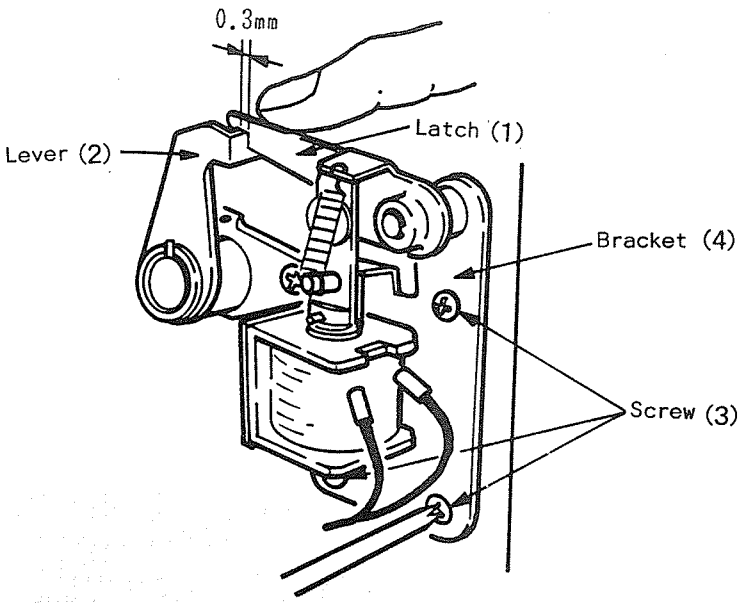
4. Turn the cam in the direction of the arrow and set the screw (2) at the position where the ink ductor roller just releases from the ink fountain roller.

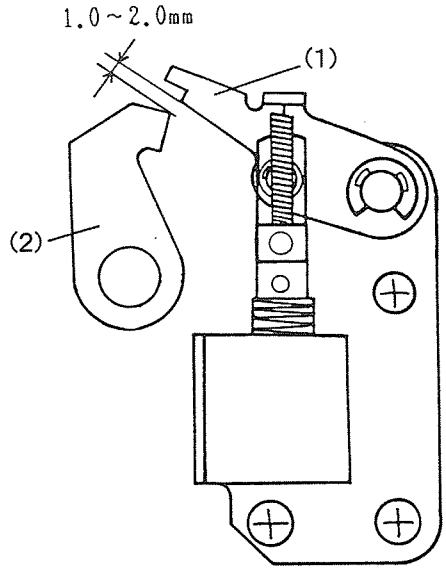
61. ADJUSTMENT OF THE INK DUCTOR STOP MECHANISM

1) Purpose

The ductor clutch clearance has to be adjusted so that the ink ductor starts and stops smoothly.

2) Point





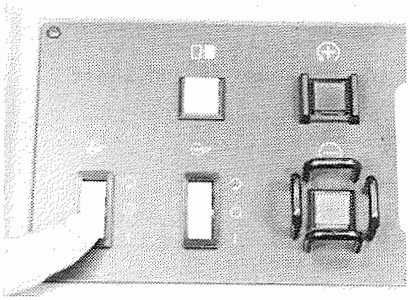
(Confirmation 1)

With the ink ductor switch at the OFF position, when the ink ductor roller contacts the ink first roller, there should be a 0.3mm clearance between the latch (1) and the lever (2).

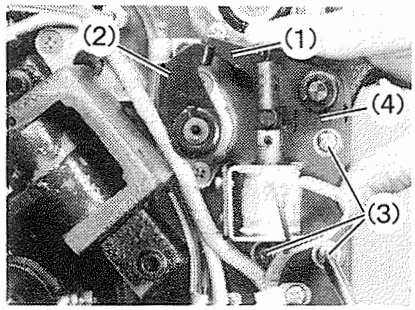
(Confirmation 2)

When the ink ductor switch is ON, there should be a clearance of from 1.0 to 2.0mm between the latch (1) and the lever (2).

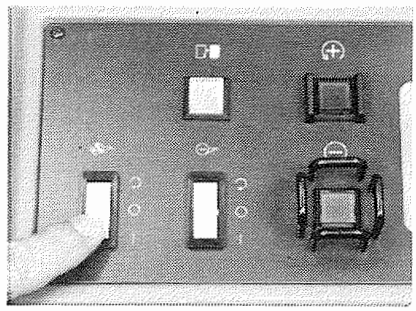
3) Adjustment



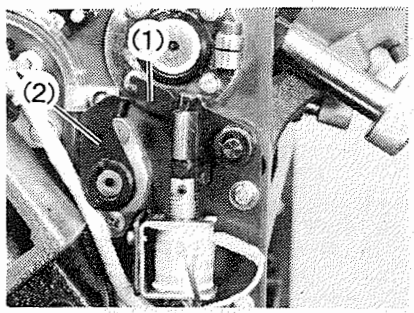
1. Set the ink ductor switch at the OFF position and set it so the ink ductor roller contacts the ink first roller.



2. Loosen the three screws (3) and move the bracket (4) to adjust so that there is a 0.3mm clearance between the latch (1) and the lever (2).



3. Set the ink ductor switch ON.



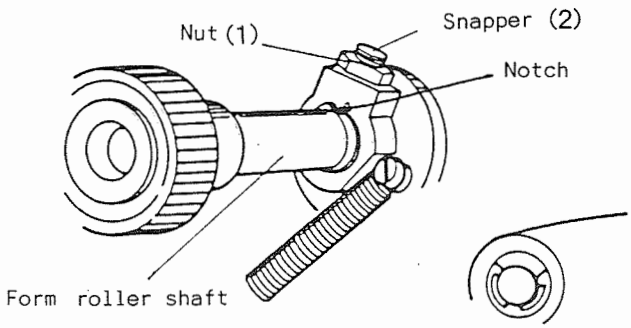
4. Check that the clearance between the lever (2) and the latch (1) is from 1.0 to 2.0mm.

62. ADJUSTMENT OF THE FORM ROLLER SHAFT SNAPPER (BOTH THE INK AND THE WATER FORM ROLLERS)

1) Purpose

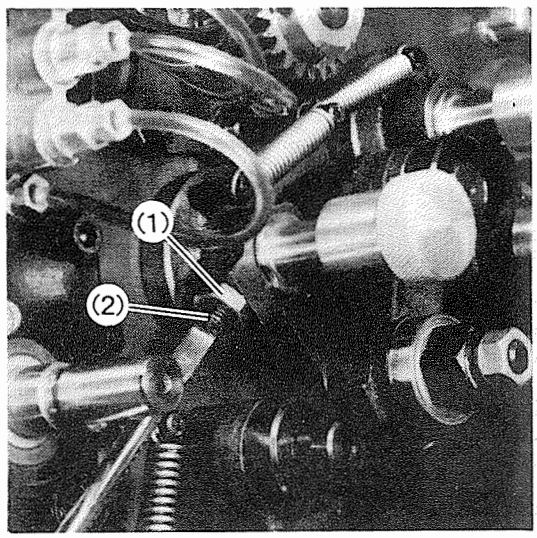
The form roller shaft should be properly locked by the snapper and the rotation of the shaft should not be heavy.

2) Point



(Confirmation)

Lock the form roller shaft properly by using the snapper (2) and the rotation of the shaft should be smooth.



(Adjustment)

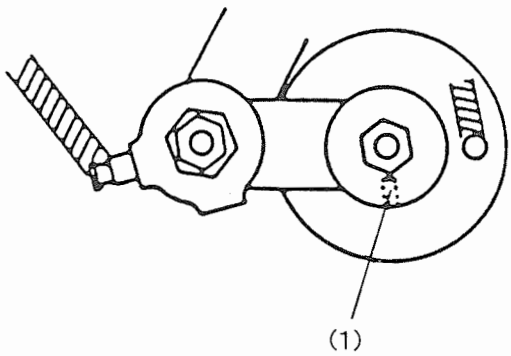
Set the snapper (2) at the form roller shaft notch. Loosen the nut (1) and adjust by moving the snapper (2).

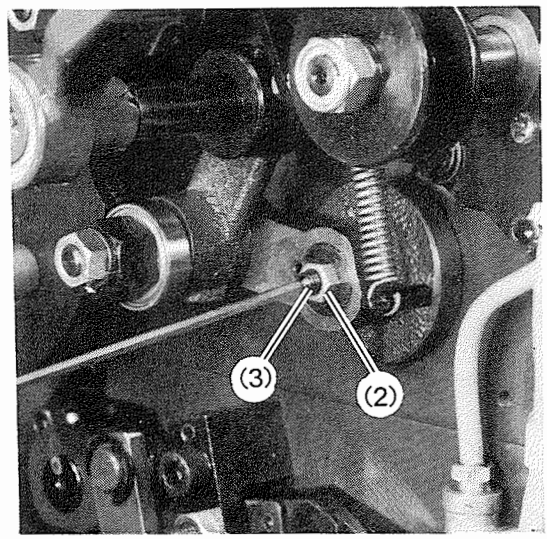
63. THE SIDE PLAY ADJUSTMENT OF THE FORM ROLLER (BOTH THE INK AND THE WATER FORM ROLLERS)

1) Purpose

To eliminate any play of the form rollers and they should rotate smoothly.

2) Point





(Confirmation)

Set the night latch lever at the OFF position, check the side play in the lateral direction.

(Adjustment)

Loosen the lock screw (1) and the nut (2), and adjust by tightening the screw (3).

(Note)

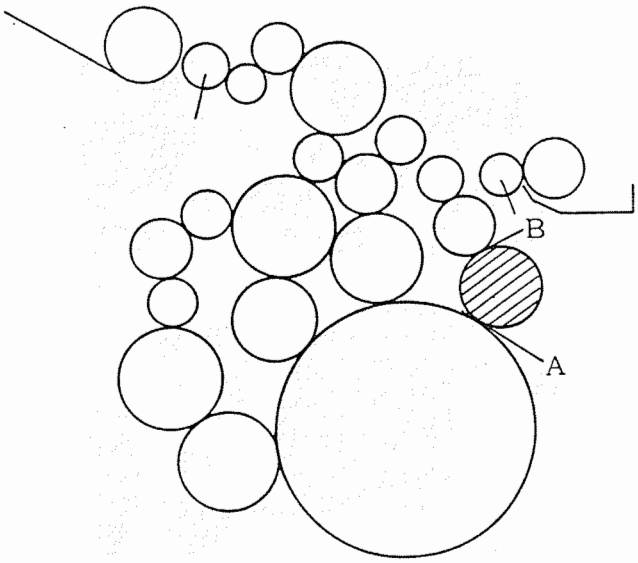
If the screw (3) is tightened too much, it will be hard to set the form roller shaft.

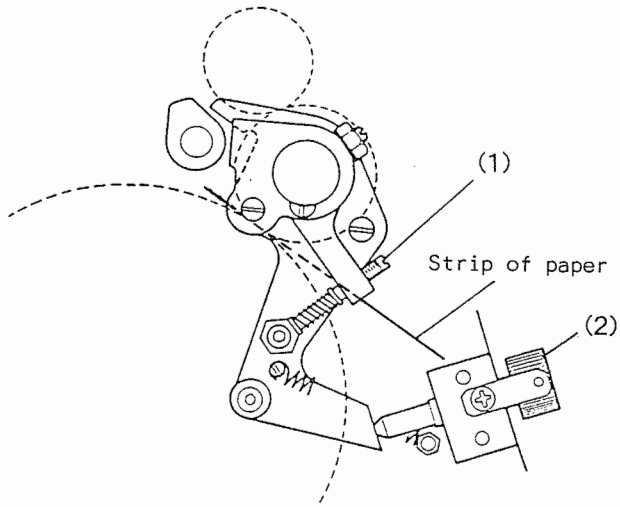
64. THE PRESSURE ADJUSTMENT OF THE WATER FORM ROLLER

1) Purpose

To do the pressure adjustment between the water form roller and the water oscillating roller, and between the water form roller and the plate cylinder.

2) Point





(Confirmation)

Each rollers pressure should be adjusted to the standard value.

A : B = 10 : 8

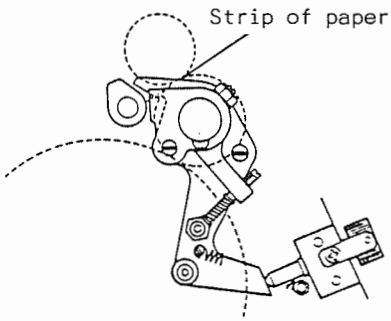
(Adjustment)

Adjust the pressure B by using the screw (1) and adjust the pressure A by using the knob (2).

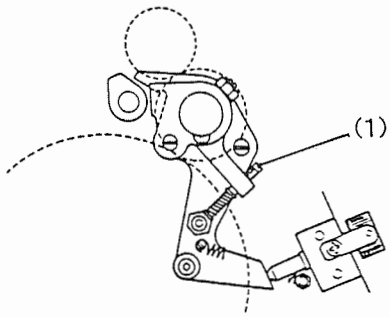
* After the pressure adjustment between the form roller and the oscillating roller is done, the pressure adjustment between the form roller and the plate should be done.

3) Adjustment

(The Pressure Adjustment Between The Form Roller and The Oscillating Roller)

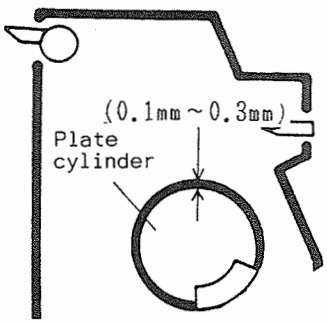


1. Insert a strip of paper (0.08mm thick, 30mm wide) between the oscillating roller and the form roller.

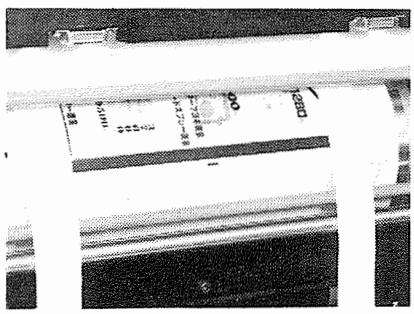


2. Adjust the pressure to be proper by using the screw (1). When turning it in the clockwise direction, the pressure will be increased. (On both the operation side and the non operation side)

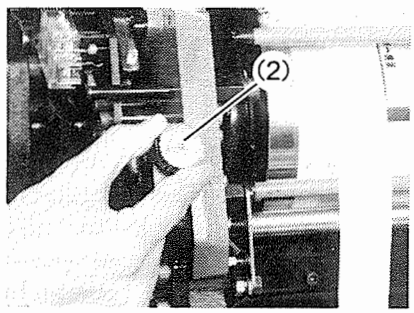
(The Pressure Adjustment Between The Form Roller and The Plate)



1. Pack the plate cylinder to its standard thickness.



2. Insert a strip of paper between the form roller and the plate and shift the operating lever to the position 2.



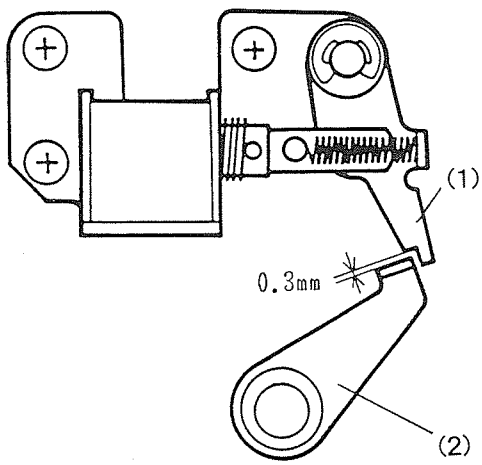
3. Adjust the pressure to be proper by using the adjustment knob (2). When turning it in the counterclockwise direction, the pressure will be increased. (On both the operation side and the non operation side)

65. ADJUSTMENT OF THE WATER DUCTOR STOP MECHANISM

1) Purpose

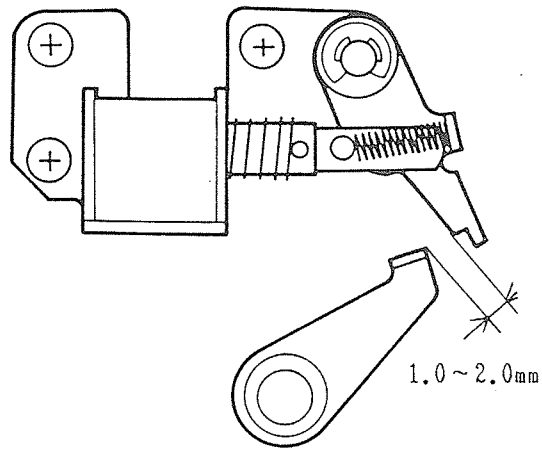
The ductor clutch clearance adjustment has to be done so that the water ductor roller starts and stops smoothly.

2) Point



(Confirmation 1)

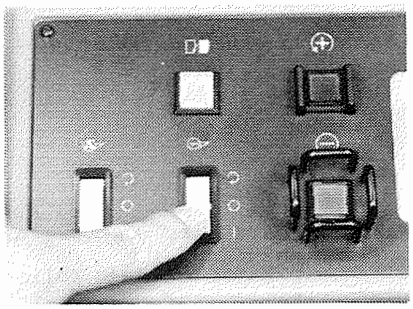
When the water ductor roller contacts the water oscillating roller with the water ductor switch on the OFF position, there should be a 0.3mm clearance between the latch (1) and the lever (2).



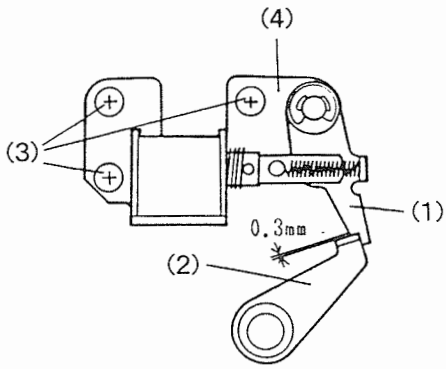
(Confirmation 2)

When turning the water ductor roller switch ON, there should be a clearance of from 1.0 to 2.0mm between the latch (1) and the lever (2).

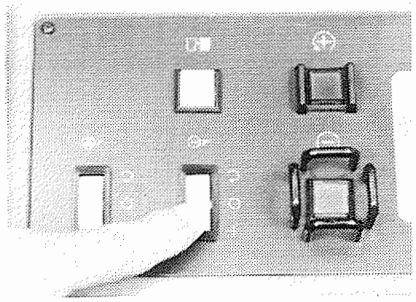
3) Adjustment



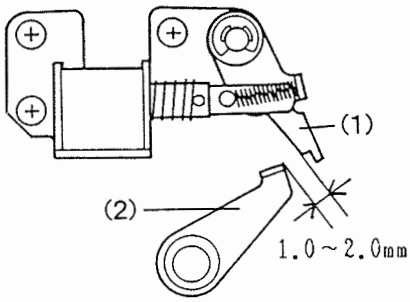
1. Set the water ductor switch to the OFF position and set the ductor roller so it contacts the oscillating roller.



2. Loosen the three screws (3) and move the bracket (4) to adjust the clearance to be 0.3mm between the latch (1) and the lever (2).



3. Turn the water ductor switch ON.



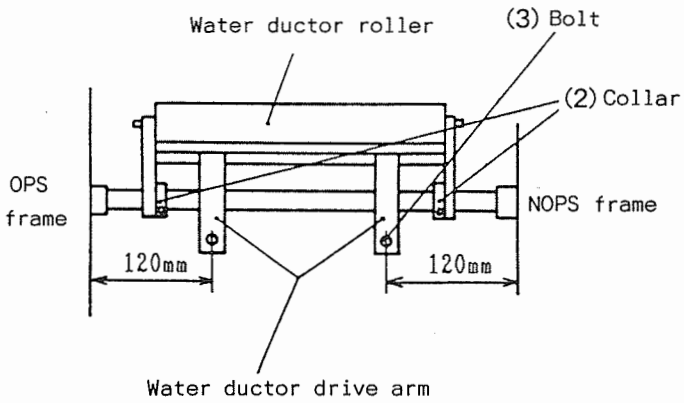
4. Check that there is a clearance of from 1.0 to 2.0mm between the lever (2) and the latch (1).

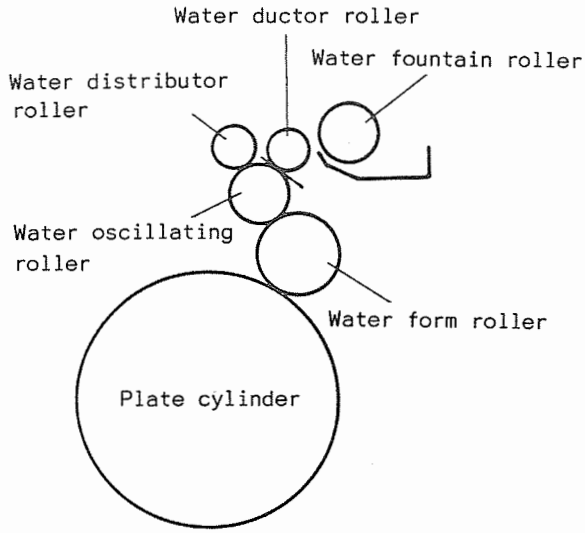
66. THE PRESSURE ADJUSTMENT OF THE WATER DUCTOR ROLLER

1) Purpose

By adjusting the water ductor roller pressure so it is proper, the dampening solution supply will be stable to the water oscillating roller from the water fountain roller.

2) Point



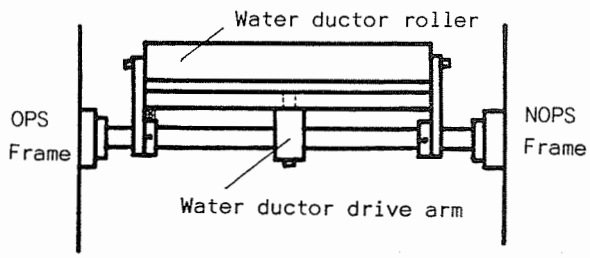


(Confirmation 1)

The water ductor roller should be at the position where it is separated from the water fountain roller and the water ductor drive arm should be positioned as shown in the illustration. (For the machines with the serial numbers from 1001 to 1060)

(Confirmation 2)

The pressure between the water ductor roller and the water oscillating roller should be proper.

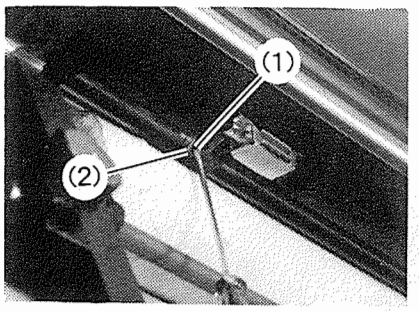


(For the machines with the serial numbers from 1061)

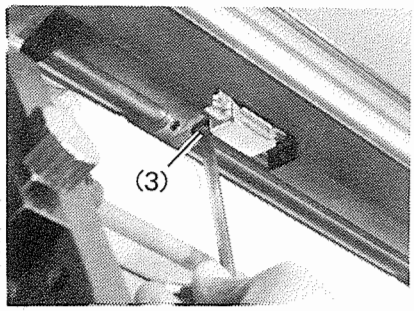
3) Adjustment

(Positioning of The Water Ductor Roller Drive Arm)

(For the machines with the serial numbers from 1001 to 1060)



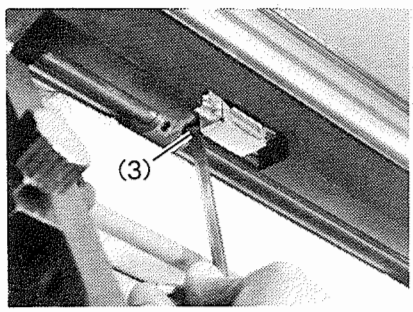
1. To position the water fountain roller from the water ductor roller, loosen the screw (1) and move the collar (2) to adjust them.



2. To position the water ductor roller drive arm, loosen the bolt (3) and adjust it.

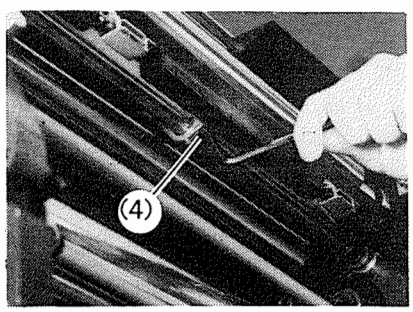
(The Pressure Adjustment Between The Water Oscillating Roller and The Water Ductor Roller)

(For the machines with the serial numbers from 1001 to 1060)

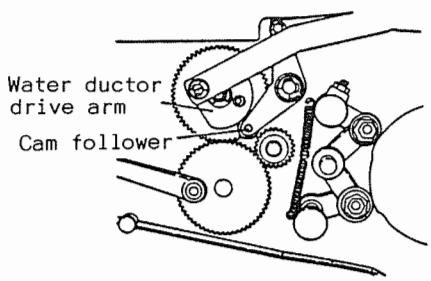


1. Loosen the bolt (3) and move the water ductor roller drive arm to adjust it.

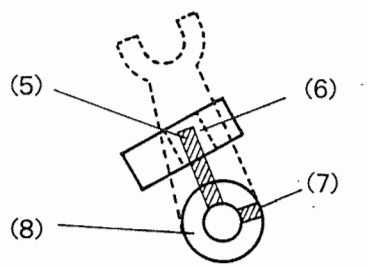
(For the machines with the serial numbers from 1061)



1. Loosen the bolt (4) and move the water ductor drive arm to adjust it.



2. Set the cam follower on the high position of the cam.



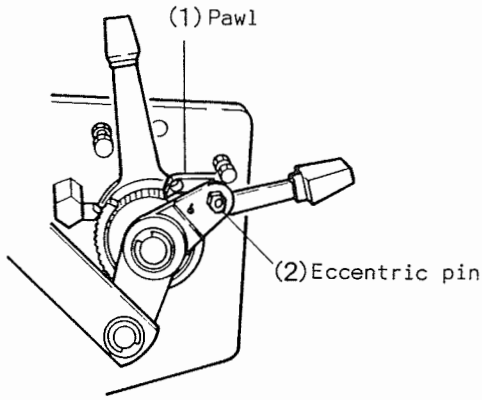
3. Check that the stopper (5) is located at the center of the hole (6).
(If not, adjust it by moving the collar (7).)

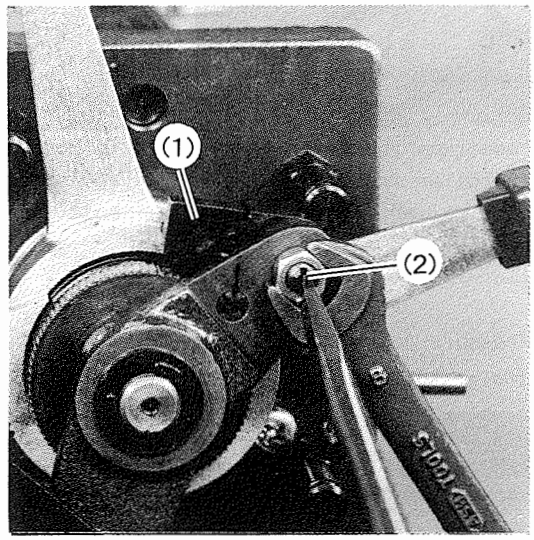
67. THE WATER FOUNTAIN ROLLER FEEDING MECHANISM ADJUSTMENT

1) Purpose

The water fountain roller feeding mechanism adjustment should be done to correspond the actual dampening solution supply to the number shown on the water feed volume adjustment scale.

2) Point





(Confirmation)

When the water volume adjustment lever is on 1 on the scale, the pawl (1) should feed the ratchet wheel one tooth.

(Adjustment)

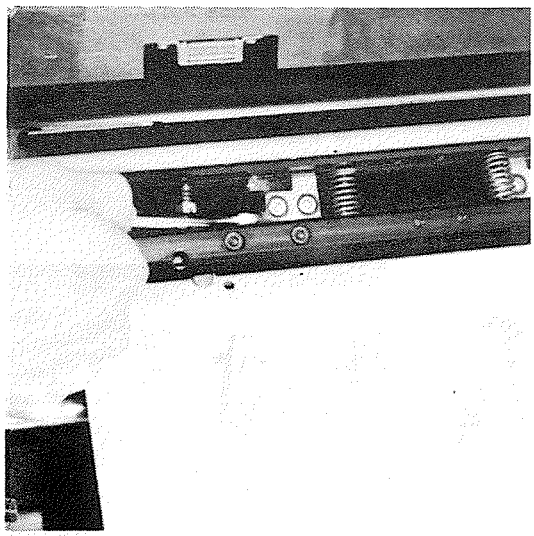
When the water volume adjustment lever is on 1 on the scale, adjust by using the eccentric pin (2) so that the pawl (1) feeds the ratchet wheel one tooth.

68. THE PLATE CLAMP ADJUSTMENT

1) Purpose

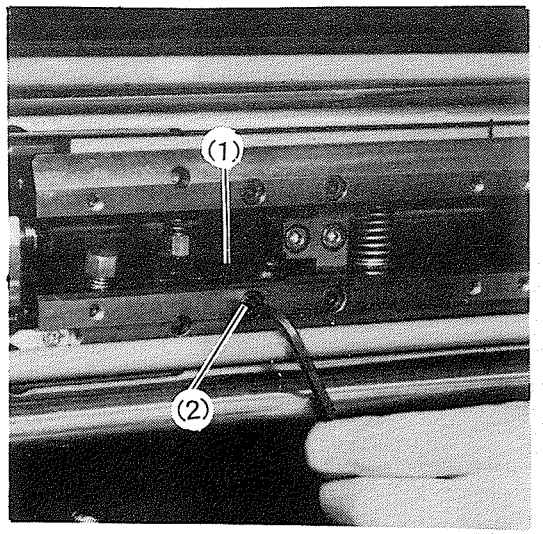
To adjust the clamping pressure of the plate clamp depending on the thickness of the plate being used.

2) Point



(Confirmation)

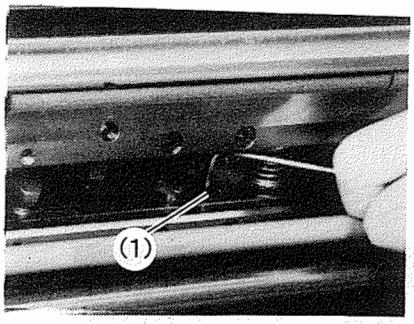
The plate clamp should hold the plate with even pressure.
(On both the leading edge and the tail edge)



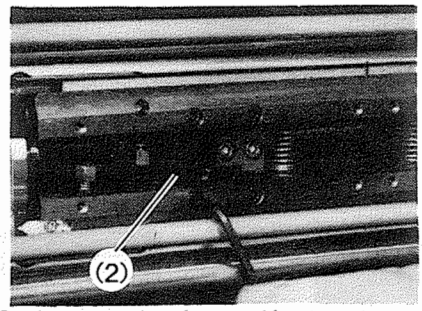
(Adjustment)

Loosen the stopper screw (1) and adjust by using the adjustment screw (2).

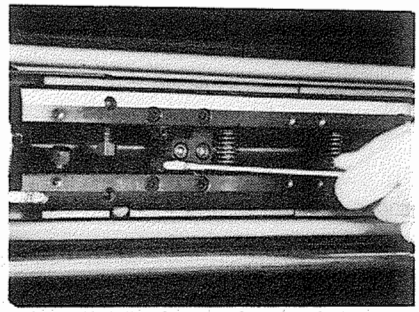
3) Adjustment



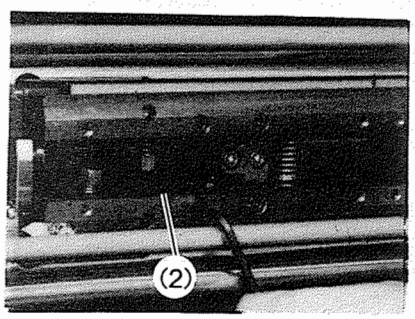
1. Loosen the four stopper screws (1).



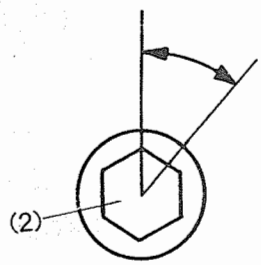
2. Loosen the four adjustment screws (2).



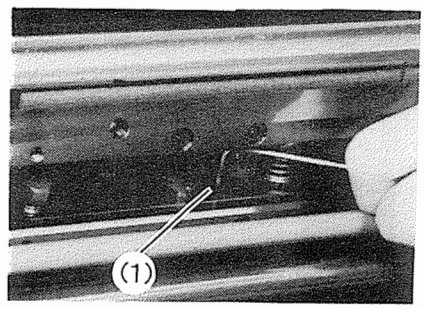
3. Lock the plate clamp without the plate.



4. Tightening the adjustment screws (2) until they start to be hard to turn.



5. Tighten the adjustment screws (2) a quater of a turn further.



6. Fix the four stopper screws (1).

(Note)

1. For the adjustment step "4", when the adjustment screws are covered with rust or ink particles, it may be difficult to judge the point that the screws start to be hard to turn when tightenig the screws.
   Before the adjustment, remove the rust and/or ink particles so that the screw turns smoothly.

2. After the adjustment mount the plate on the cylinder and check that the plate can not be pull out from the clamp.
   If the plate pulls out from the clamp before the plate is properly tensioned, tighten the adjustment screws (2) further.

   (The proper tightening volume is a half to a quater of a turn. If tightening the screws more than this, the plate clamp may be bent.)

69. ADJUSTMENT OF THE BLANKET CLEANING DEVICE

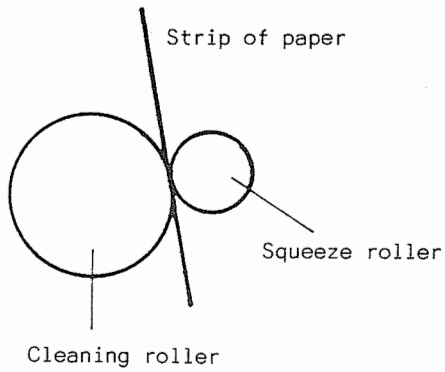
(1) The Roller Pressure of The Blanket Cleaning Device

1) Purpose

By adjusting the proper roller pressure of the blanket cleaning device, the splashing of the solution when supplying too much solution is prevented and the proper cleaning condition is assured.

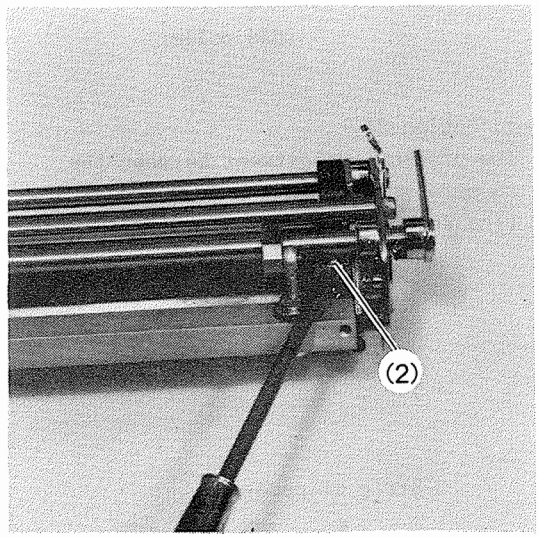
2) Point

Check the parallel pressure and the total pressure between each roller as follows.
When checking the total pressure insert a 0.08mm thick and 20mm wide strip of standard paper between the rollers and pull it out. The pressure is correct when pulling out the strip of paper a noise is heard.



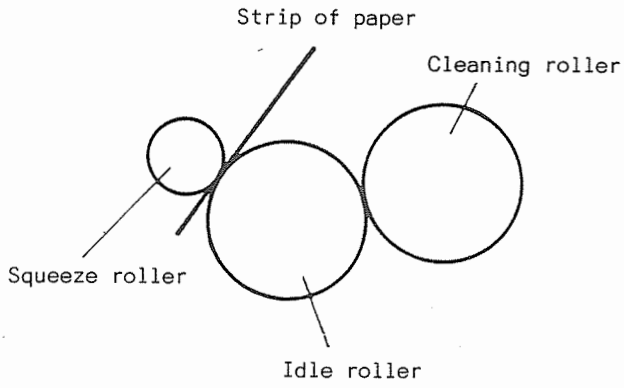
(Confirmation 1)

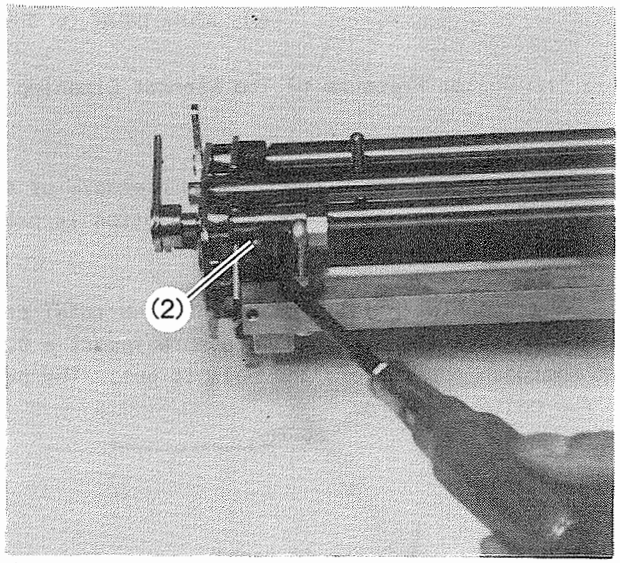
The pressure between the squeeze roller and the cleaning roller (The first unit)



(Adjustment 1)

Adjust the parallel pressure and the total pressure between the rollers by using the screws (1). (On both the operation side and the non operation side) (When turning the screw (1) in the clockwise direction the pressure will be increased.)



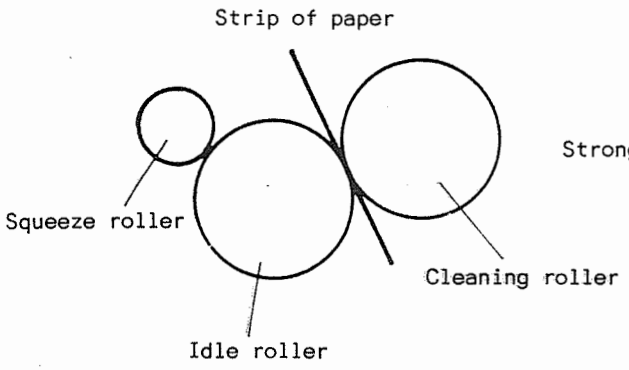


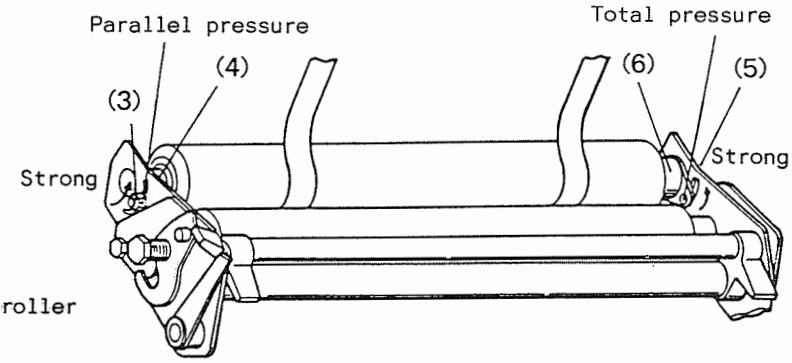
(Confirmation 2)

The pressure adjustment between the squeeze roller and the idle roller (The second unit)

(Adjustment 2)

Adjust the parallel pressure and the total pressure between the rollers by using the screw (2). (On both the operation side and the non operation side) (When turning the screw (2) in the clockwise direction, the pressure will be increased.)





(Confirmation 3)

The pressure adjustment between the idle roller and the cleaning roller (The second unit)

(Adjustment 3)

(The Parallel Pressure Adjustment)

Loosen the bolt (3) and adjust the arm (4). (The parallel pressure will be increased by turning the bolt in the direction of the arrow.)

(Total Pressure Adjustment)

Loosen the bolt (5) and adjust the arm (6). (The total pressure will be increased by turning the bolt in the direction of the arrow.)

(Note)

When the solution rises over 2mm from the edge of the cleaning roller, increase the pressure between the rollers.

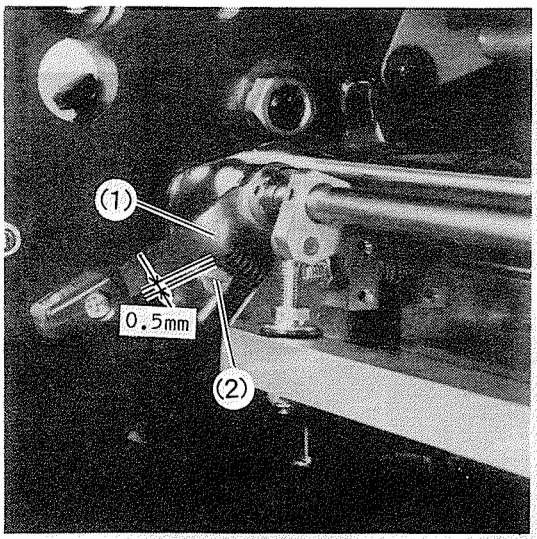
(2) Adjustment of The Blanket Cleaning Solenoid

1) Purpose

The solenoid has to be properly positioned so the blanket cleaning is done automatically by the operation of the blanket cleaning solenoid.

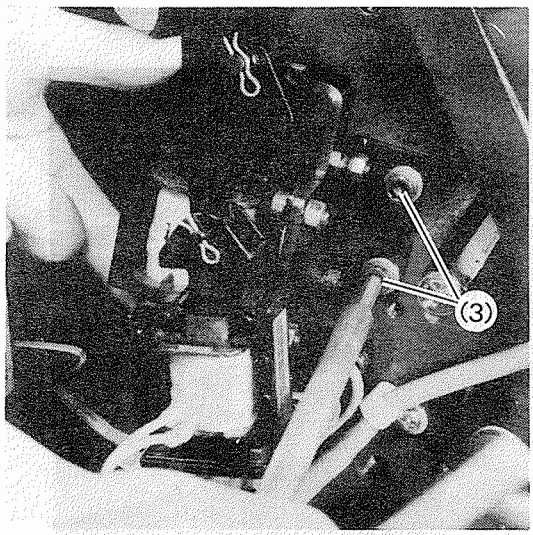
2) Point

The first unit



(Confirmation)

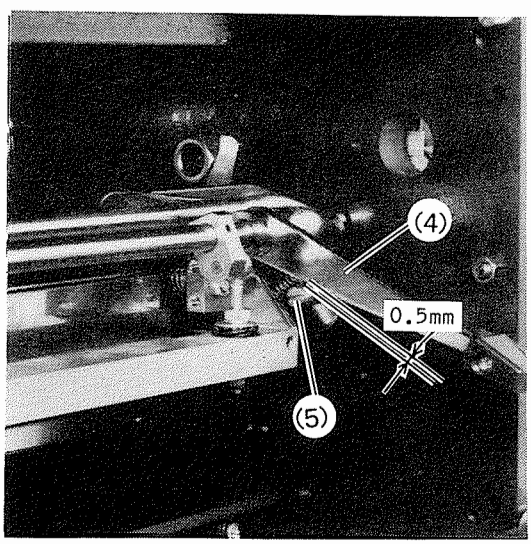
When turning the blanket cleaning solenoid ON by hand, there should be a 0.5mm clearance between the blanket cleaning operating lever (1) and the stopper (2).



(Adjustment)

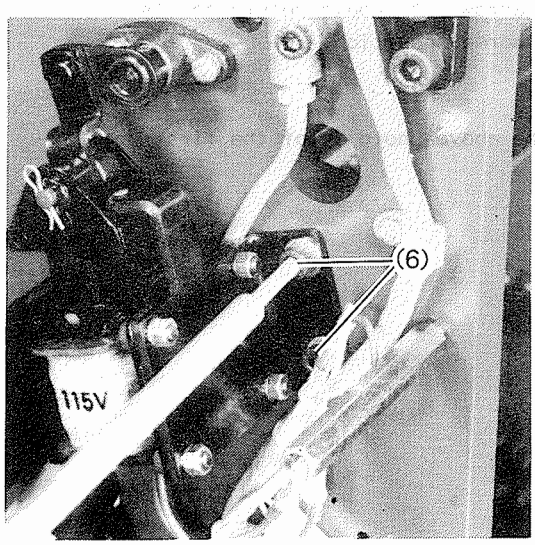
Loosen the two bolts (3) and move the solenoid to adjust it.

The second unit



(Confirmation)

When turning the blanket cleaning solenoid ON by hand, there should be a 0.5mm clearance between the blanket cleaning operating lever (4) and the stopper (5).



(Adjustment)

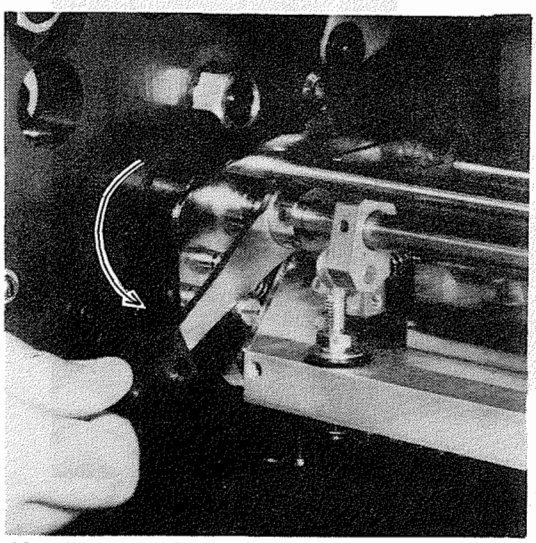
Loosen the two bolts (6) and move the solenoid to adjust it.

(3) The Spring Pressure Adjustment of The Blanket Cleaning Operating Lever

1) Purpose

When the blanket cleaning is finished, the spring pressure has to be adjusted to turn off the device consistently and to release the cleaning roller from the blanket.

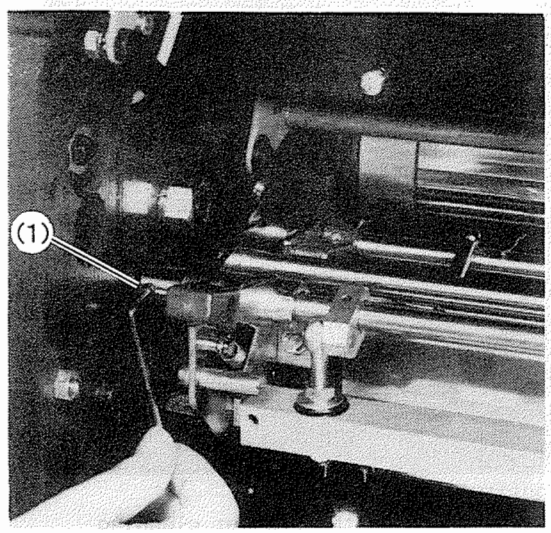
2) Point



(Confirmation)

Mount the blanket cleaning solution tank and when the blanket cleaning roller is located in the cylinder notch, after shifting and releasing the lever in the direction of the arrow, it should return to its normal position.

* The above photo is of the first unit.



(Adjustment)

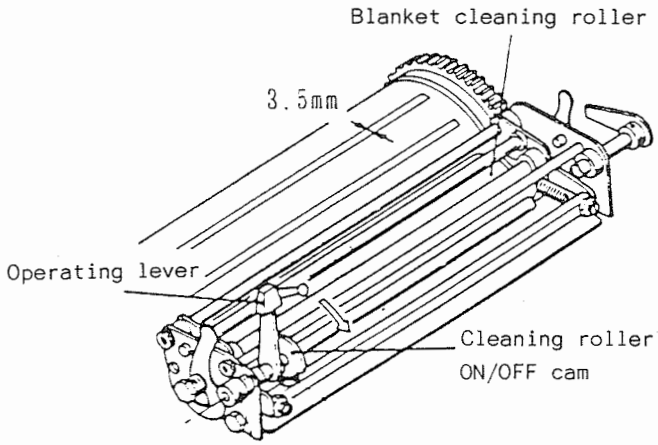
Turn the spring holder (1) to adjust the spring pressure.

(4) The Pressure Adjustment of The Blanket Cleaning Roller and The Blanket

1) Purpose

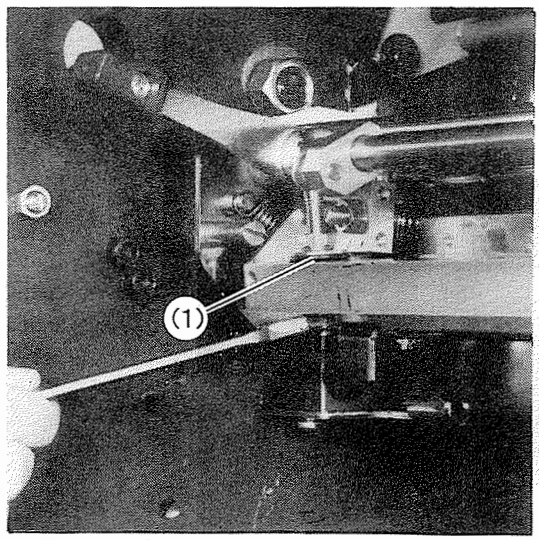
By adjusting the pressure between the blanket cleaning roller and the blanket, so it is proper, poor cleaning of the blanket is prevented and good blanket cleaning effect is assured.

2) Point



(Confirmation)

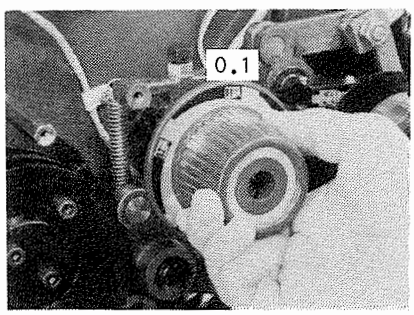
Supply ink onto the blanket and contact the blanket cleaning roller on the blanket and turn the hand-wheel in steps and then check the nip width that appears. The nip width should be 3.5mm and should be equal on the operation side and the non operation side.



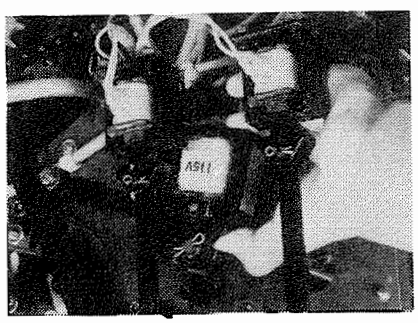
(Adjustment)

Turn the nut (1) to adjust the nip width.

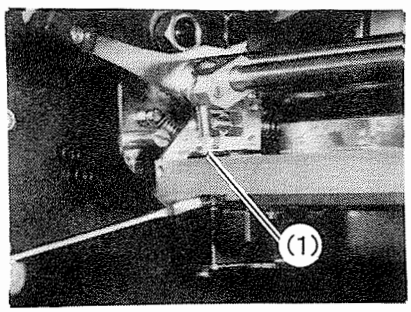
3) Adjustment



1. Set the impression pressure dial on the 0.1 position.

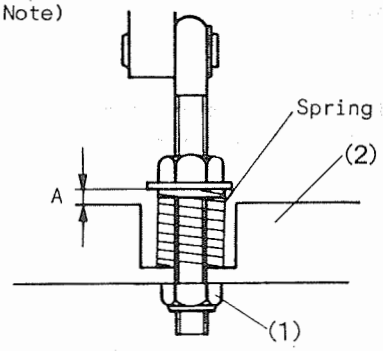


2. Supply ink onto the blanket and the pull the solenoid ON and check the nip width that appears on the blanket.

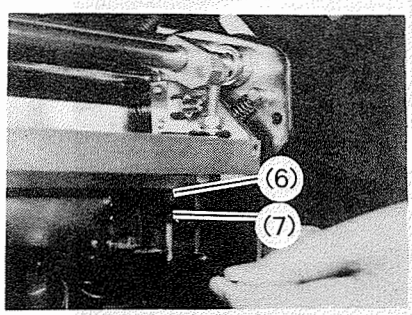


3. Adjust the nip width to be 3.5mm by using the nut (1).

(Note)



1. For the adjustment step "3", when the adjustment nut (1) is released from the stay (2), the proper roller pressure can not be assured.
   Therefore, adjust the roller pressure with the spring length properly set.
   The length (A) should be from 1 to 2mm to assure the proper spring pressure.



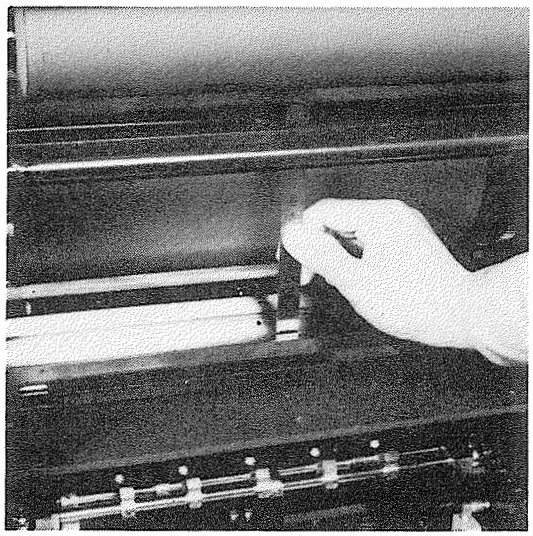
2. During the cleaning of the blanket, when there is too much play in the rollers when it is located on the cylinder notch, loosen the nut (6) and tighten the bolt (7) to eliminate the play.

(5) The Height Adjustment of The Blanket Cleaning Tray

1) Purpose

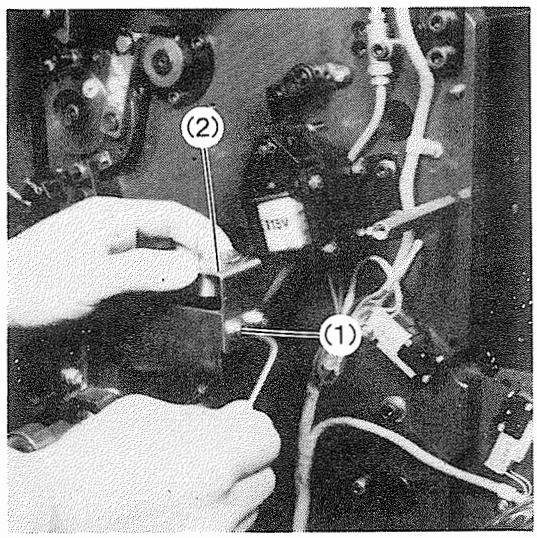
The cleaning solution should always be at the proper level in the blanket cleaning tray.

2) Point



(Confirmation)

The cleaning solution level in the tray should have a depth of 9mm.



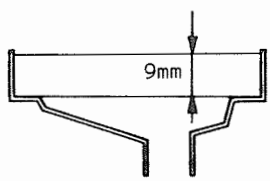
(Adjustment)

Loosen the two bolts (1), adjust by moving the bracket (2).

(Note)

The depth of the cleaning solution should be measured at the position shown in the illustration.

Measuring point



TROUBLE SHOOTING PROCEDURES

* Poor registration
* Poor feeding and delivery
* Poor printing quality
* Inconsistently cylinder ON
* Incorrect timing plate positioning

If any of the troubles listed above occur, please refer to the procedures starting on the next page.

Checking procedures when poor registration occurs (Adjustment)

Order	Adjustment point	Page
1	Paper guide height	54
2	In feed roller section side play	55
3	The upper feed roller	57
4	The upper stop finger	59
5	The paper feed cam	64
6	The paper feed drum gripper	61
7	The paper feed drum gripper closing timing	66
8	The impression cylinder gripper	37
9	The alignment of the paper feed drum and the impression cylinder	52
10	The paper feed drum gripper opening timing	68
11	CD chain tensioning	88
12	CD gripper	89
13	Transfer position between the impression cylinder and the CD	91
14	The CD gripper closing timing	93
15	The timing plate setting	65
16	The connection of the feeder to the base machine	70
17	Push guide	87

Checking procedures when poor registration occurs (Operation)

Order	Checking point
1	A sheet of paper is fed on the feeder board straight
2	The paper side is from 0.5 to 1.0mm away from the flat spring
3	The skid roller is not on the tail edge of the paper
4	The push guide can push the sheet accurately
5	The proper flat spring is used
6	The electrostatic eliminator is working properly
7	The board tapes and the retainers are not set correctly

Checking procedures when poor feeding and/or delivery occurs (Adjustment)

Order	Adjustment point	Page
1	Paper guide height	54
2	In feed roller section side play	55
3	The upper feed roller	57
4	The paper stop finger	59
5	The paper feed cam	64
6	The paper feed drum gripper	61
7	The paper feed drum gripper closing timing	66
8	The impression cylinder gripper	37
9	The alignment of the paper feed drum and the impression cylinder	52
10	The paper feed drum gripper opening timing	68
11	CD chain tensioning	88
12	CD gripper	89
13	Transfer position between the impression cylinder and the CD	91
14	The CD grippers closing timing	93
15	The connection of the feeder to the base machine	70
16	The position of the sheet separator and the side blower	73
17	The suction feet	74
18	The micro adjustment of the vacuum valve cam	76
19	Feed lever section latch	78
20	Push guide	87
21	Tension of the paper pile table chain	80
22	The paper pile table guide roller	81
23	The paper pile table drive arm	82
24	The double sheet detector	84
25	The CD jogger guide timing	94
26	Delivery table dolly guide roller	95
27	The sensitivity of the delivery detection sensor	96
28	The delivery table dolly lower limit switch	97
29	The delivery jam switch	98

Checking procedures when poor feeding and/or delivery occurs (Operation)

Order	Checking point
1	The CD air blower setting
2	The CD air blower volume is insufficient because the feeder back blower is volume is too strong.

Checking procedures when poor printing quality occurs

Order	Adjustment point	Page
1	The clearance between the first plate cylinder and the blanket cylinder	21
2	The clearance between the second plate cylinder and the blanket cylinder	23
3	The clearance between the first blanket cylinder and the impression cylinder	25
4	The clearance between the second blanket cylinder and the impression cylinder	27
5	The side play of the blanket cylinder (on both the first unit and the second unit)	29
6	The pressure of the ink form roller	101
7	The pressure of the ink distributor roller	104
8	The ink ductor roller	106
9	The timing between the ink fountain roller and the ink ductor roller	108
10	The ink ductor stop mechanism	110
11	The side play of the form roller (on both the ink and the water form roller)	113
12	The pressure of the water form roller	114
13	The water ductor stop mechanism	116
14	The pressure of the water ductor roller	118
15	The water fountain roller feeding mechanism	120

Checking procedures when the cylinder goes ON inconsistently

Order	Adjustment point	Page
1	The position of the cylinder ON cam	15
2	The cylinder ON mechanism between the plate cylinder and the blanket cylinder (on both the first unit and the second unit)	17
3	The cylinder ON mechanism between the blanket cylinder and the impression cylinder (on both the first unit and the second unit)	19
4	The side play of the blanket cylinder (on both the first unit and the second unit)	29
5	The proximity switch timing	43
6	The cylinder ON sensor sensitivity	44

Checking procedures when the timing is not correct

Order	Adjustment point	Page
1	The upper feed roller	57
2	The paper feed cam	64
3	The paper feed drum gripper	61
4	The impression cylinder gripper	37
5	The alignment of the paper feed drum and the impression cylinder	52
6	Transfer position between the impression and the CD	91
7	The timing plate setting	65

MAINTENANCE CHECK LIST

MAINTENANCE CHECK ITEMS

1. General

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	The condition and the tension of the V-belt	x	x				
2	The cleaning of the pump inside and filters		x				
3	The lubrication of the pump	x	x				
4	The lubrication and greasing of the main lubrication points, and the inspection of the centralized oiling system	x	x				
5	The functioning of the safety cover switches	x	x				
6	The functioning of the safety bar switches	x	x				
7	The functioning of the emergency stop button	x	x				
8	The functioning of the indication lamps and solenoids (Output checking program)		x				
9	The functioning of each push button switch (Input checking program)	x	x				
10	Unusual sounds from and over heating of the pump	x	x				
11	Unusual sounds during machine operation	x	x				
12	Leveling the machine (To within 0.05mm/m)		x				

2. Cylinders and cylinder ON section

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Cylinder clearance (1) First P.C.-B.C.; 2.53mm (2) First B.C.-I.C.; 2.35mm (3) Second P.C.-B.C.; 2.53mm (4) Second B.C.-I.C.; 2.35mm Condition; When checking the cylinder clearance, first set the three items listed below * All cylinders should be ON * Plate pressure dial is on 0.13 * Impression pressure dial is on 0		x				
2	Setting the cylinder ON cam follower		x				
3	Checking that the plate cylinder is ON when the operating lever is shifted to the (4) position		x				
4	Checking the cylinder ON operation by the cylinder ON sensor; between P.C.-B.C., and between B.C.-I.C.		x				

3. Paper insertion section

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Parallel pressure of the upper feed roller	x	x				
2	Total pressure of the upper feed roller (34° - 35° on the timing plate)		x				
3	Height of the paper stop finger		x				
4	Height of the auxiliary retainer on the upper feed roller shaft (0.5 - 1.0mm)		x				
5	Side play of the upper feed roller and the lower feed roller		x				

4. Paper feed drum and impression cylinder section

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Height of the paper feed drum gripper cam follower (The cam follower lightly contacts the cam at the low position of the cam)		x				
2	Setting the paper feed drum gripper shaft stopper		x				
3	Parallelism and clearance of the paper feed drum front lay (Clearance; 0.2mm)		x				
4	Height of the impression cylinder gripper cam follower (Both cam followers lightly contact the cam at the low position of the cam)		x				
5	Setting the impression cylinder gripper shaft stopper		x				
6	Sheet transfer adjustment from the paper feed drum to the impression cylinder	x	x				
7	Closing point of the impression cylinder grippers (A and B) (The closing point of the A gripper and the B gripper should be the same)	x	x				Check it using a strip of paper

5. Feeder section

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Connection timing of the feeder section and the main section		x				
2	Adjustment of the vacuum valve cam (Vacuum cut)	x	x				
3	The functioning of the double sheet detector		x				

6. Delivery section

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Lubrication condition of the CD chain	x	x				
2	The CD gripper pressure adjustment	x	x				
3	Tensioning of the CD chain (Spring loaded tension) Confirmation; Check the clearance between the holder and the block		x				
4	Smooth movement of the back guide (Check for the spray powder build up)		x				

7. Image position adjustment section

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	First unit vertical image adjustment dial; * Smooth movement of the dial (Gear and gear wheel) * Greasing		x				
2	Second unit vertical image adjustment dial; * Smooth movement of the dial (Gear and gear wheel) * Greasing		x				
3	The functioning of the clutch lever and the safety switch on the vertical image adjustment dial	x	x				

8. Ink and water sections (First and second units)

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Roller pressure adjustment of each roller	x	x				
2	No side play of the form rollers		x				
3	The plate is mounted on the plate clamp firmly		x				
4	The smooth opening and closing of the plate clamp		x				
5	The functioning of the lateral image adjustment dial (Plate cylinder sliding)		x				
6	Roller clean-up attachment (Cleaning efficiency)		x				
7	Roller bearings on the rollers		x				
8	The functioning of the water ductor roller stop (First and second units)		x				
9	The functioning of the ink ductor roller stop (First and second units)		x				

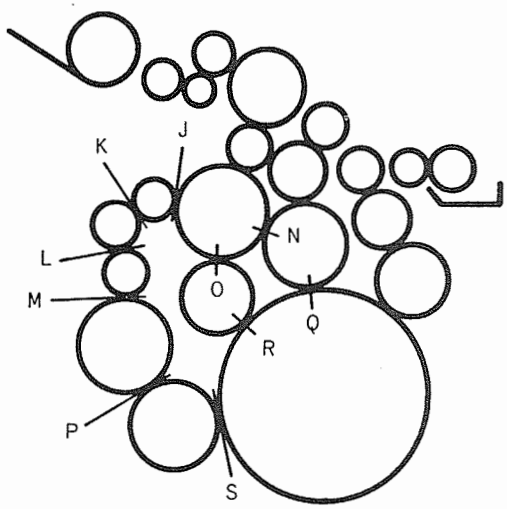
9. Blanket cleaning device (First and second units)

No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Cleaning roller pressure (3.5mm nip) Check that the device does not vibrate when setting impression pressure dial on 0.1 and on 0.3	x	x				
2	Revolutions of the cleaning roller and the squeeze roller	x	x				
3	Condition of the rubber rollers and the sponge rollers (Damage)	x	x				
4	Cleaning solution level		x				
5	Draining of the cleaning solution		x				

10. Electrical equipment

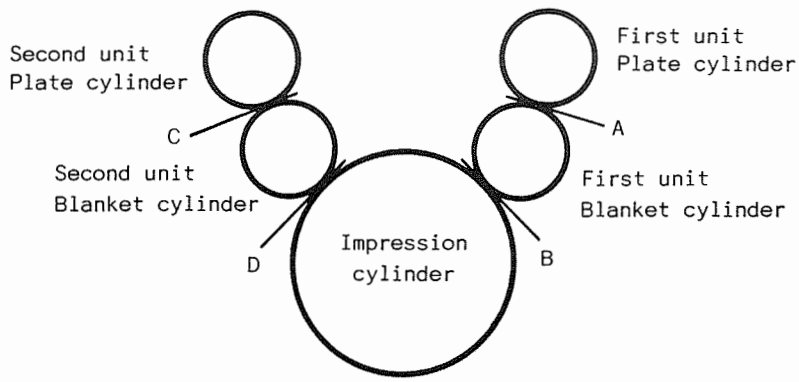
No.	Items	3 months	6 months	Correct	Faulty	Adjustment	Remarks
1	Functioning of the spray device		x				
2	Cleaning and inspection of the static eliminator		x				
3	Functioning of the tape inserter		x				

11. Roller pressures and cylinder pressures



(Roller pressures)

	Standard nip (mm)	First	Second
J	2.5 - 3.0		
K	3.0 - 3.5		
L	3.0 - 3.5		
M	3.5 - 4.0		
N	3.0		
O	3.0		
P	3.0		
Q	3.5		
R	3.5		
S	3.5		



(Cylinder pressures)

	Nip
A	
B	
C	
D	

Disclaimer of Warranties (Express and Implied)
While due care has been taken in the preparation of this manual, A.B.Dick Company makes no representation or warranties with respect to the adequacy or accuracy hereof and specifically disclaims any implied warranties of merchantibility or fitness for any particular purpose. Further, A.B.Dick Company reserves the right to revise this publication and to make changes (both substantial and insubstantial in nature) in the contents hereof from time to time hereafter without obligation of A.B.Dick Company to notify any person or organization of such revisions or changes.

Safety Warning
Safety devices have been installed as original equipment for your protection and safety. The removal, disconnection, or alteration of any safety guard, protective cover, safety interlock, or other safety or protective device comprising part of the equipment described herein poses an undue safety hazard and the same is strictly prohibited.

Disclaimer of Liability
A.B.Dick Company disclaims any responsibility or liability for personal injury, death, or property damage caused by or arising out of (i) the removal, disconnection, or alteration of any safety guard, protective cover, safety interlock, or other safety or protective device comprising part of the equipment described herein, or (ii) the failure of the person or persons operating the equipment described herein or servicing or repairing the same to observe all operating and safety procedures and warnings contained herein.

Trademarks
Itek Graphix is a licensed trademark of Itek Graphix Corp.

Recommended Technical Training
The instructions herein are designed only to supplement a formalized training program for skilled service technicians who already possess full knowledge of general electrical and mechanical safety procedures. This document is not intended to be a guide for "Do it yourself" repair of the subject equipment by anyone who has not successfully completed a formal technical training course on the subject equipment.