

Horizon **SPF-20** STITCHER & FOLDER

Important Information

- This manual is designed to help you to install, operate and maintain Stitching and Folding System SPF-20. Read, understand and keep this manual in a safe and convenient place.
- Do not operate SPF-20 until you read and understand the instructions in this manual.
- Horizon International Inc. shall not be liable for incidental consequential damages resulting from : improper or inadequate maintenance by customer; unauthorized modification or misuse; operation outside of the environmental specifications for the product.
- Horizon International Inc. pursues a policy of continuing improvement in design and performance of the product. Therefore, the product design and specifications are subject to change without prior notice and without our legal obligation.
- All rights are reserved. No part of the manual may be photocopied, reproduced or translated to another language without the prior written consent of Horizon International Inc.

Safety Precautions

- The signal word **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

- The signal word **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in damage on machines. It may also be used to alert against unsafe practices.

- Read and understand all safety instructions with signal word such as **WARNING** and **CAUTION**. If safety instructions are ignored, personal injury may result.

- Horizon International Inc. cannot anticipate every possible situation that might involve a potential hazard. The instructions in this manual and warning labels on the machine are therefore not all inclusive.

- All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device where it is locked or tagged out.

- Do not operate the machines when any covers are removed.

- Some of the drawings in this manual show the machine uncovered for explaining the detail or inside of machine.

CONTENTS

Important Information	I
Safety Precautions	II

1. Before You Begin

1-1 Specification	2
1-2 Machine Descriptions	3
1-2-1 Safety Device and Safety Function	3
1-2-2 Machine Descriptions, and Function	4
[1] General View 1	4
[2] General View 2	5
[3] Jog Section	6
[4] Stitcher Wire Section	6
[5] Fold Section	7
[6] Delivery Conveyor Section	7
1-2-3 Control Section	8
1-3 Tools and Accessories	9

2. Safety Function Check

2-1 Function Check of Stop Button	14
2-2 Function Check of Safety Cover	15

3. Set up

3-1 Collator Set Up	18
3-2 Stitch and Fold Operation Set Up (Stitch Section)	18
3-2-1 Stitch Distance	18
3-2-2 Top and Bottom Jog Guide	19
3-2-3 Head Stopper	20
3-2-4 Stitch Position	21
3-2-5 Weights and Sheet Holders	22
3-2-6 Sheets Transport from Stitch Section to Fold Section	23

3-3 Stitch and Fold Operation Set Up (Fold Section)	24
3-3-1 Fold Position	24
3-3-2 Jog Pusher	24
3-3-3 Transport Roller	25
3-3-4 Fold Guide	26
3-3-5 Fold Roller Gap	27
3-3-6 Fold Plate Clearance Adjust Knob	27
3-4 Stitch and Fold Operation Set Up (Conveyor)	28
3-5 Stitch and Fold Operation Set Up (Control Panel)	28
3-6 Fold Operation Set Up	29
3-7 Side Stitch Operation Set Up	29
3-7-1 Stitch Distance, Top and Bottom Jog Guide Set Up	29
3-7-2 Side-Stitch Stopper	29
3-7-3 Control Panel	30

4. Operation Procedure

4-1 Test Binding	32
4-1-1 System Position Adjustment	32
4-1-2 Production Speed Set Up	32
4-1-3 Bulging Nose	32
4-1-4 Test Binding	33
[1] Test Binding Procedure	33
[2] Quality Check of Book	33
[3] Fold Angle Microadjustment	34
[4] Fold Knife Height Adjustment	34
[5] Stitch Position Adjustment	35
[6] Jog Guide Stroke Adjustment	35
4-2 Binding	36
4-2-1 Start Binding Operation	36
4-2-2 Production Speed Adjustment	36
4-3 Special Operation	37
4-3-1 Sticher Head Reverse Operation	37

5. Special Binding

5-1 Hand Feeding	40
5-2 Corner Stitching	41

6. Stitcher Head

6-1 Wire Attachment	44
6-2 Stitcher Attachment	45
6-3 Threading	46
6-4 Test Stitch	47
6-5 Stitch Length Adjustment	47
6-6 Stitch Balance Adjustment	48
6-7 Wire Straight Adjustment	49

7. Maintenance

7-1 Greasing	52
7-1-1 Shaft on Jog Guide	52
7-2 Lubrication	52
7-2-1 Shaft for stitcher Unit	52
7-2-2 Fold Knife	52
7-2-3 Stitcher Head	53
7-3 Cleaning	54
7-3-1 Rollers and Belt	54
7-3-2 Inside Cleaning	54
7-4 Clincher Point Replacement	55

8. Movement and Installation

8-1 Movement of SPF-20	58
8-2 Installation of SPF-20	59
8-2-1 Installation of SPF-20	59
8-2-2 Attachment of Scale Plate and Register Line Label	60
8-3 Paper Insertion Knife Unit (Option) Attachment	61
8-3-1 Parts	61
8-3-2 Roller Unit Attachment	62
8-3-3 Fold Knife Replacement	64

1. Before You Begin

1-1 Specification	2
1-2 Machine Descriptions	3
1-3 Tools and Accessories	9

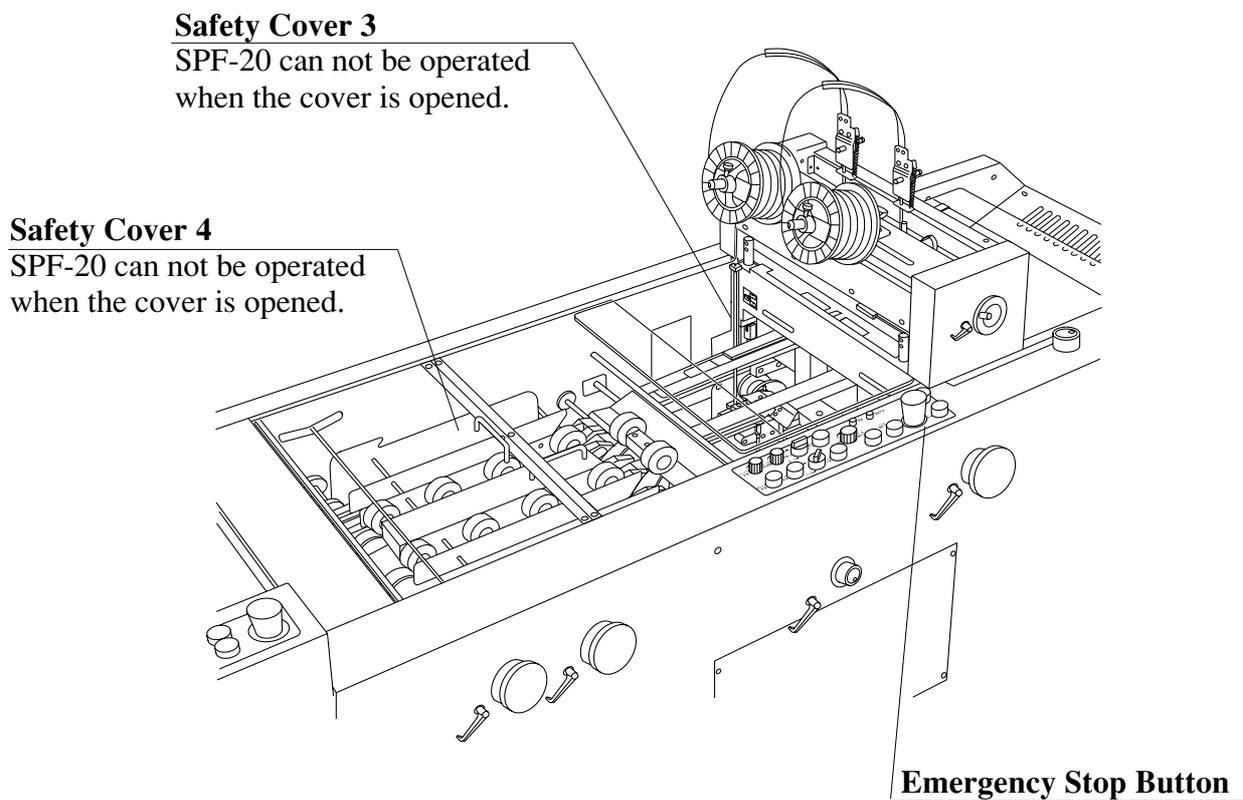
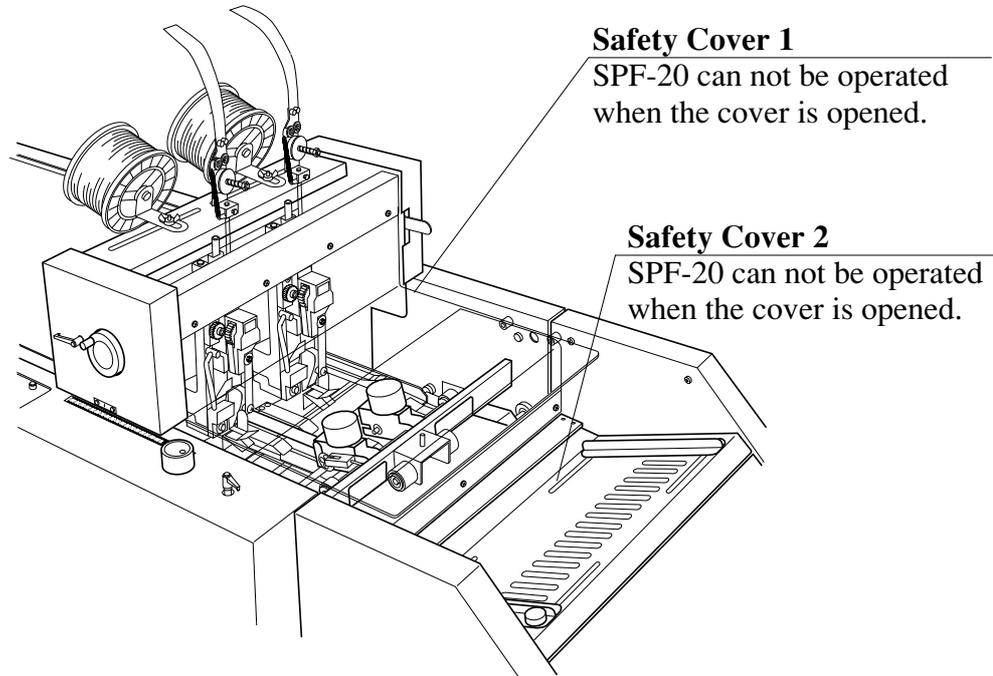
1-1 Specification

Model	SPF-20
Sheet Size	Maximum : 350 mm x 500 mm (13.7" x 19.7") Minimum : 120 mm x 180 mm (4.75" x 7.1")
Finish Size	Maximum : 250 mm x 350 mm (9.8" x 13.8") Minimum : 90 mm x 120 mm (3.5" x 4.7")
Stitching Thickness	Maximum : 4 mm (Only Stitching) (0.16")
Stitching and Fold Thickness	20 sheets of 60 gsm 2 mm (0.08")
Stitch Distance	73 to 160 mm (2.9" to 6.2")
Wire Diameter	Standard : 0.5 mm (0.02") Option : 0.4 mm (0.016")
Production Speed	Maximum 3,660 booklets / h (A4-Finish) Maximum 4,050 booklets / h (A5-Finish)
Power Source	Single Phase 200 V 50 / 60 Hz Single Phase 220 V 60 Hz (7.6 A) Single Phase 230 V 50 Hz
Power Consumption	450 W
Motor	200 W x 1, 100 W x 1, 60 W x 1, 15 W x 1
Weight	470 kg (1,035 lb)
Machine Size (W x D x H)	1990 mm x 730 mm x 1100 mm (78.35" x 28.74" x 43.3") Height : wire guide not included Width: delivery conveyor not included

The machine design and specifications are subject to change without any notice.

1-2 Machine Descriptions

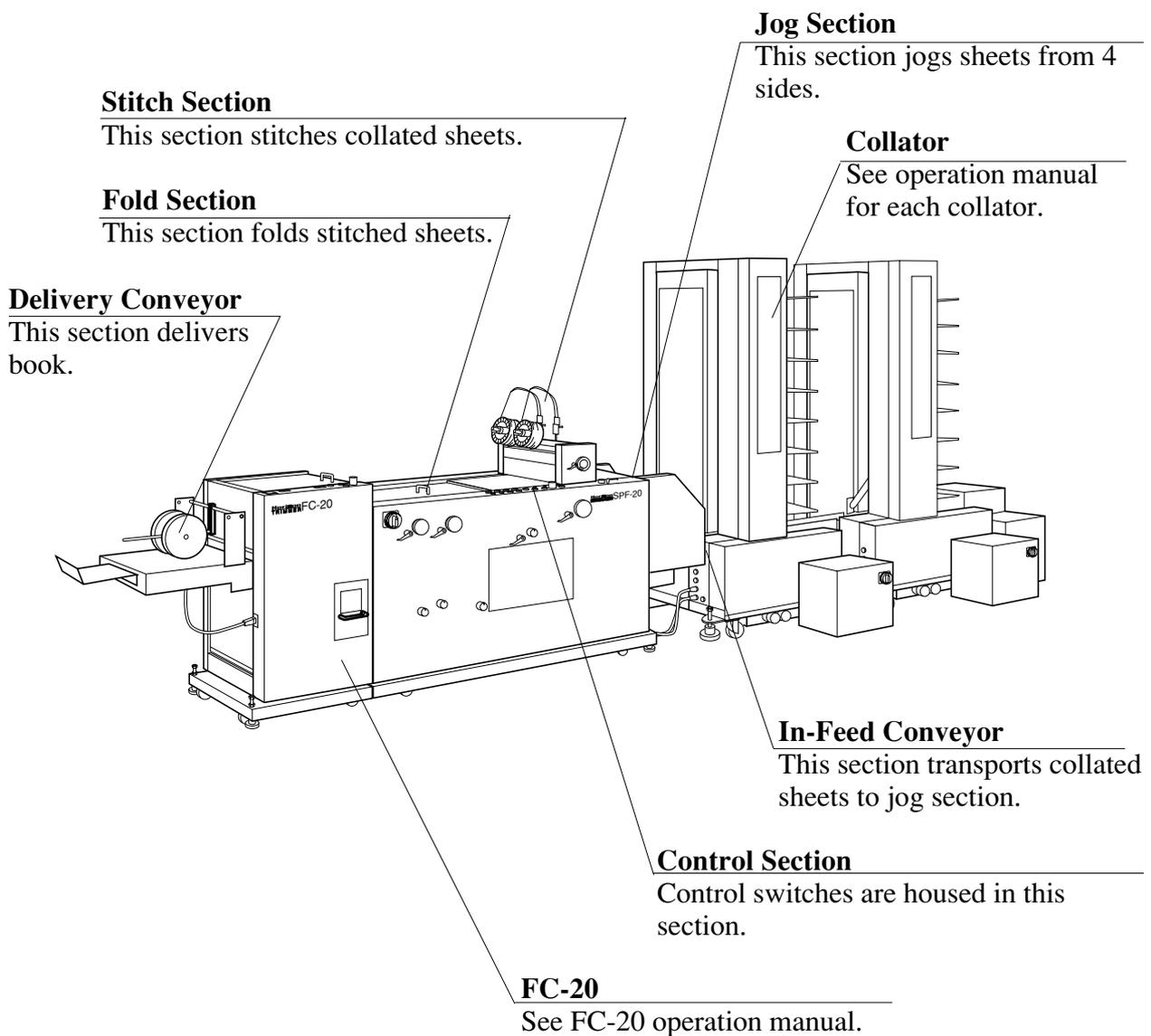
1-2-1 Safety Device and Safety Function



1-2 Machine Descriptions

1-2-2 Machine Descriptions, and Function

[1] General View 1



1-2 Machine Descriptions

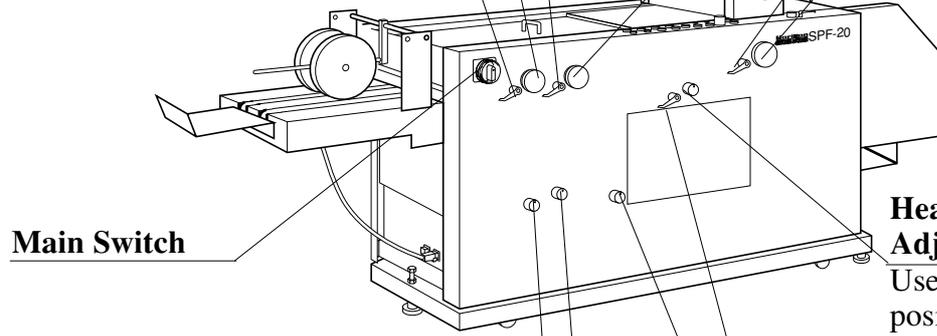
[2] General View 2

Transport Roller Lock Lever

Fold Position Adjust Knob

Used to adjust fold position. (The distance between fold position and stopper.)

Fold Stopper Lock Lever



Main Switch

Fold Plate Clearance Adjust Knob

Used to select fold plate clearance according to thickness of collated sheets.

Uneven Fold Adjust Knob

Used to correct uneven fold.

Transport Roller Position Adjust Knob

Used to adjust transport roller position according to sheet size.

Stitch Position Lock Lever

Stitch Position Adjust Knob

Used to adjust stitch position.

Head Stopper Position Adjust Knob

Used to adjust head stopper position according to sheet size.

Head Stopper Position Lock Lever

Fold Knife Height Adjust Knob

Used to adjust fold knife height.

Stitch Position Microadjust Knob

Used to correct stitch position when one of stitches is not aligned with fold line.

Side/Corner Stitching Stopper

Stitch Distance Adjust Knob

Used to adjust stitches distance.

Stitcher Head Position Lock Lever

Stitch Position Scale and Pointer

Used to indicate stitch position from trail edge.

Jog Guide Adjust Knob

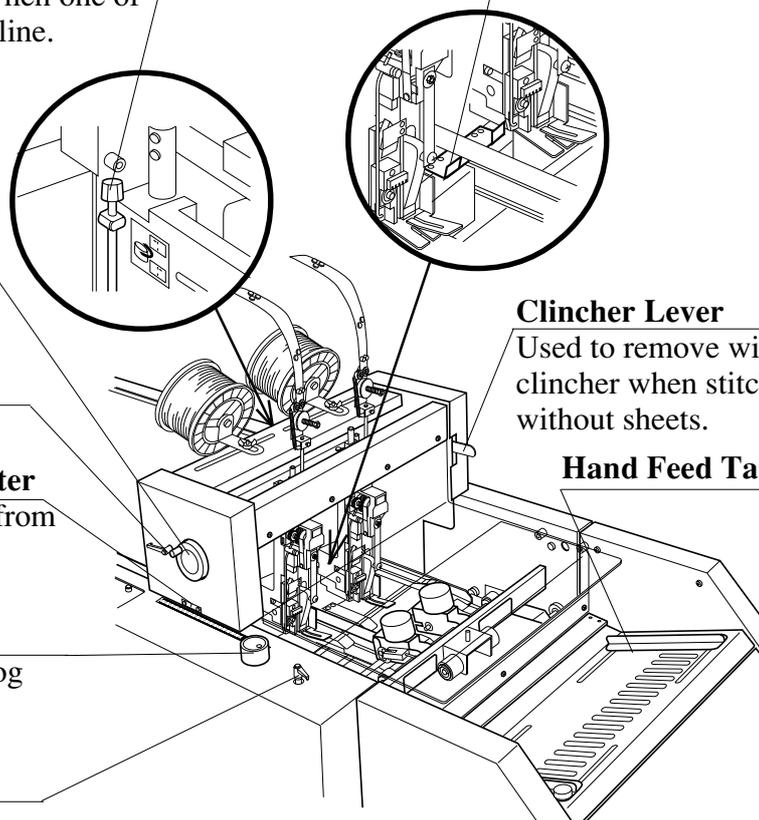
Used to adjust top and bottom jog guide position.

Jog Guide Lock Lever

Clincher Lever

Used to remove wire on clincher when stitched without sheets.

Hand Feed Table



1-2 Machine Descriptions

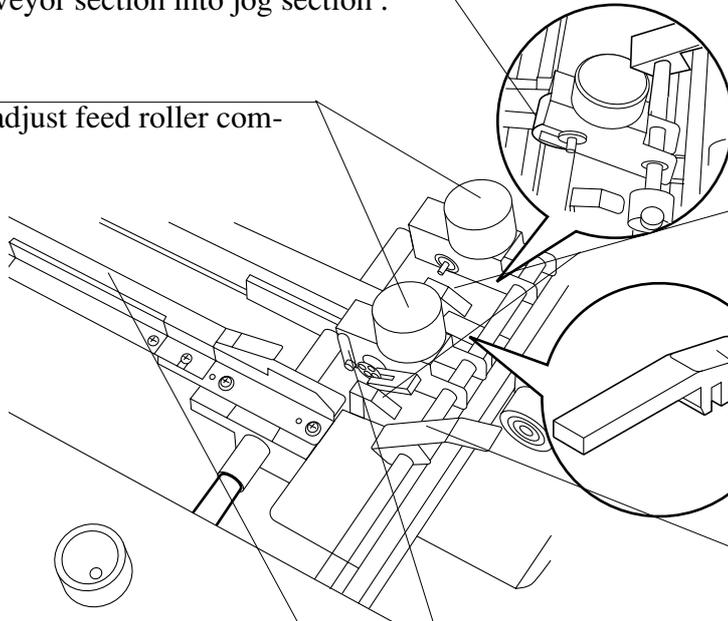
[3] Jog Section

Weight Rollers

Feed sheets which is transported from in-feed conveyor section into jog section .

Weights

Used to adjust feed roller compression.



Tail Jog Plate

Jogs sheets from the tail edge.

Bulging Nose

Bends sheets very slightly to feed them smoothly.

Sheet Holders

Hold sheets and prevent sheets curling up.

Jog Guides

Jog sheets from both top and bottom side.

Transport Angle Adjust Lever

Changes sheet transport direction downward.

[4] Stitcher Wire Section

Stitch Distance Scale

Indicates suggested stitch distance.

Wire Guide

Guides wire from wire coil to stitcher heads.,

Wire

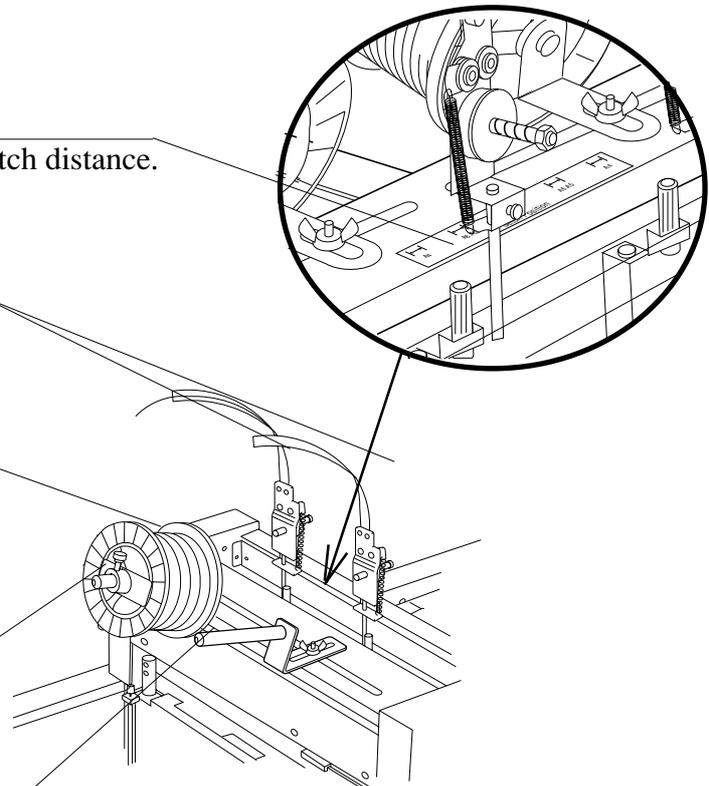
Wire for stitching.

Wire Brake

Prevents wire spool turns too much.

Wire Spool Holder

Holds wire spool.

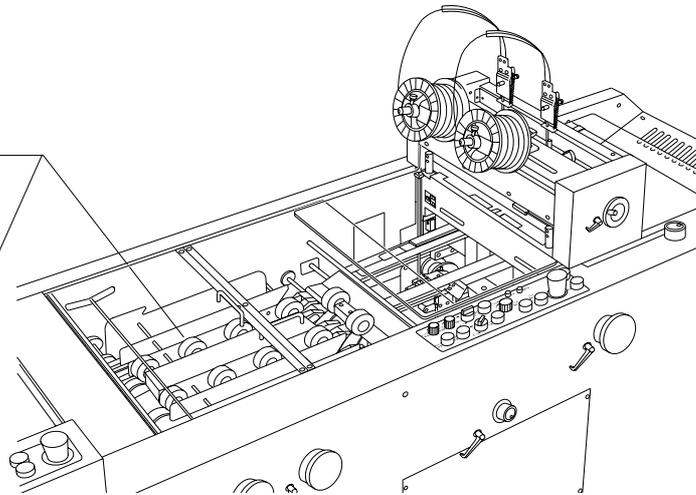


1-2 Machine Descriptions

[5] Fold Section

Bypass Section

Transports sheets when not folded.

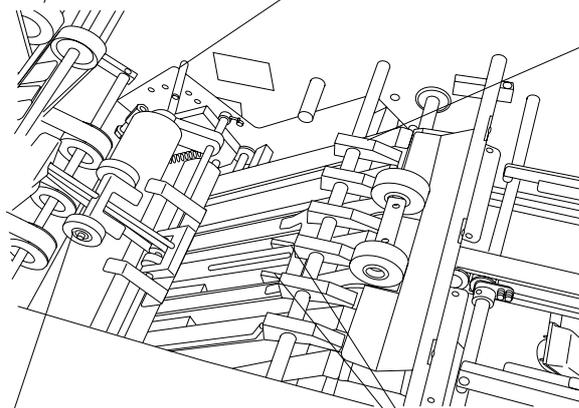


Fold Roller Gap Adjust Lever

Used to adjust fold roller gap.

Gate

Change sheets transport direction according to operation mode.



Transport Rollers

Transport sheets into fold plate and prevent sheets backing up.

Jog Pusher

Jogs sheets before folding.

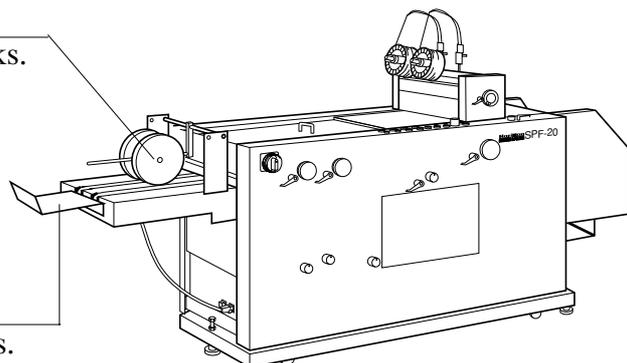
[6] Delivery Conveyor Section

Conveyor Wheels

Hold ejected sheets/books.

Stack Plate

Stacks ejected sheets/books.



1-2 Machine Descriptions

1-2-3 Control Section

Stitching Delay Time Adjust Knob

Used to adjust stitch delay time to give enough time for jog sheets.

Conveyor Operate Time Adjusting Knob

Used to adjust operating time of delivery conveyor according to booklet size.

Operation Mode Select Switch

Used to select operation mode, side/corner stitching, stitching and folding or folding.

Jog ON/OFF Button

Used to turn on/off jog pusher, head stopper and tail jog plate.

Speed Adjust Knob

Used to adjust mechanical speed of SPF-20 and FC-20.

Power Lamp

Turns on when main switch is ON.

Jam Lamp

Turns on when jam occurs at entrance of jog section and fold section.

Single Fold Button

Used to fold sheets in fold section.

Single Stitch Button

Used to stitch sheets on jog section and transport to bypass or fold section.

Stitch ON/OFF Switch

Used to turn on/off stitching function.

Stitcher Inching Button

Used to inch stitcher.

Collating Start/Stop Button

Used to start/stop collation.

System Backwards Button

Used to move SPF-20 and FC-20 to drive side.

System Forwards Button

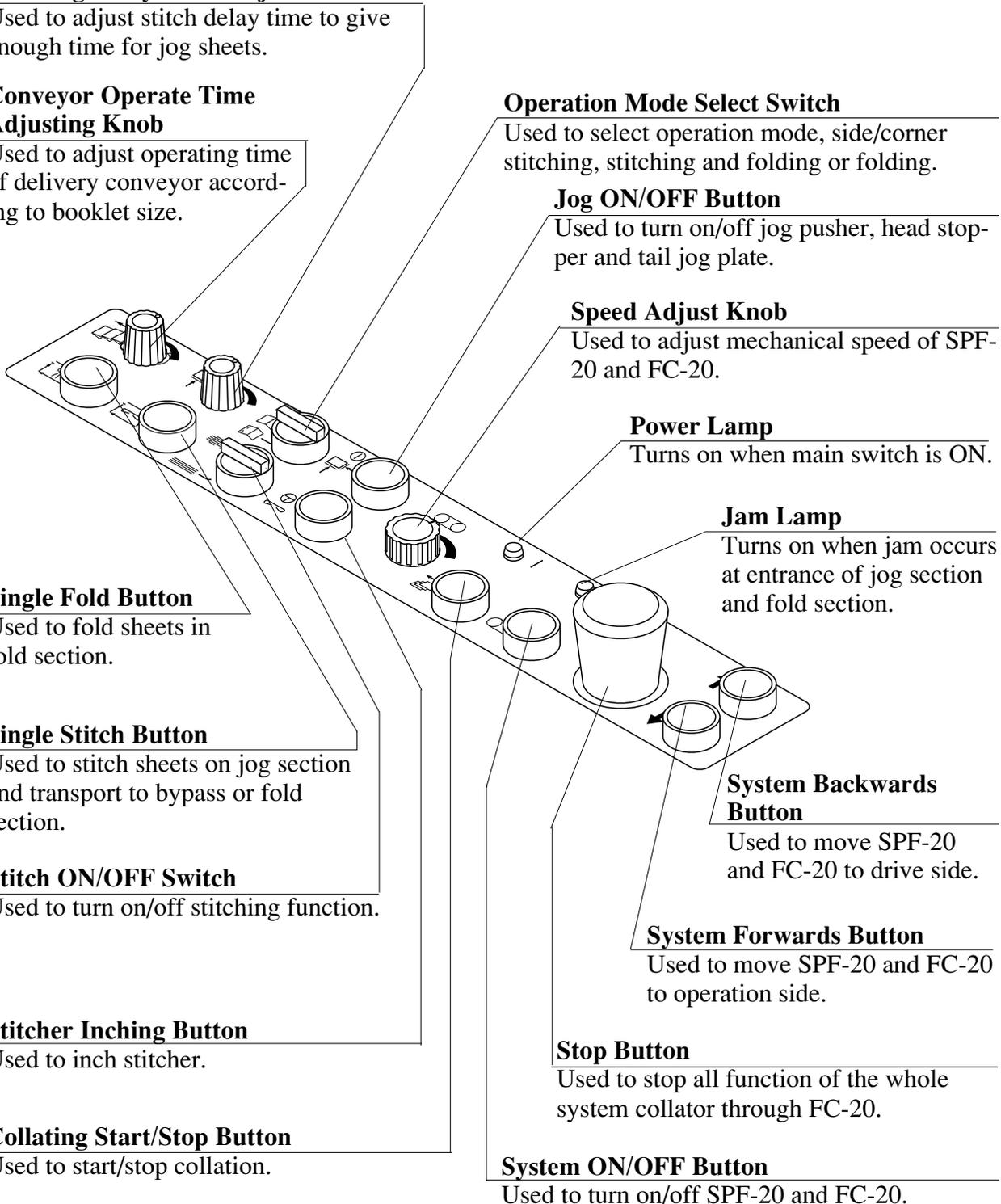
Used to move SPF-20 and FC-20 to operation side.

Stop Button

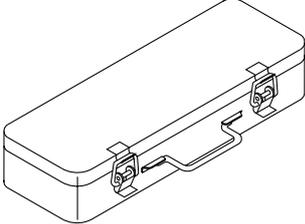
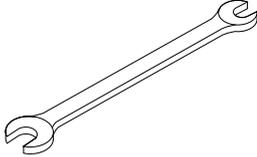
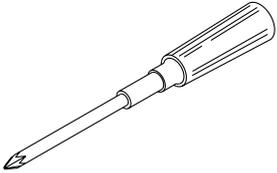
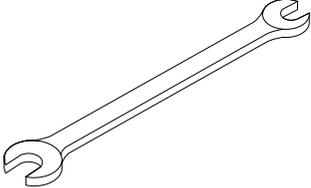
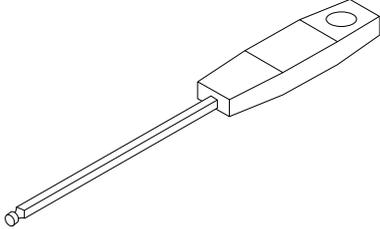
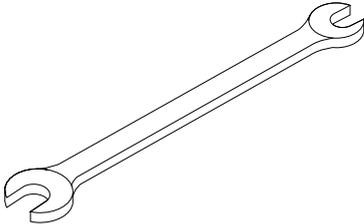
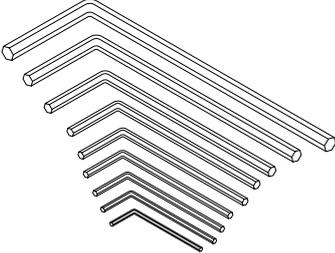
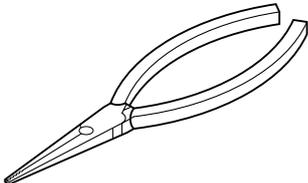
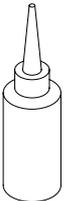
Used to stop all function of the whole system collator through FC-20.

System ON/OFF Button

Used to turn on/off SPF-20 and FC-20.

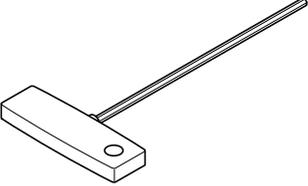
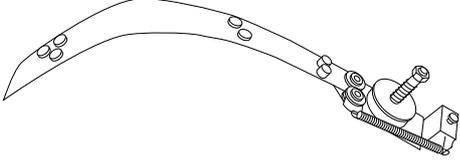
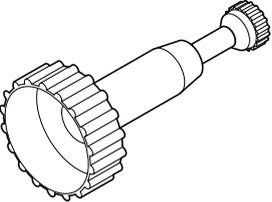
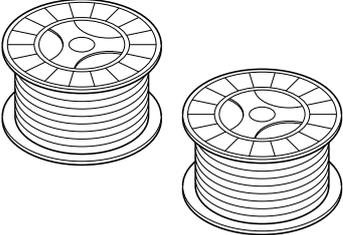
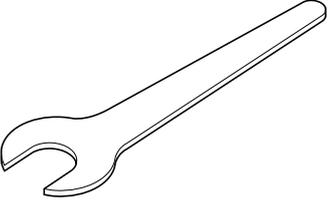
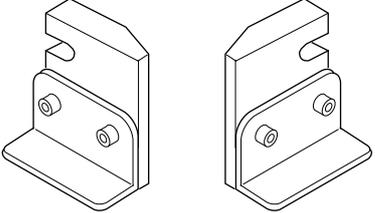
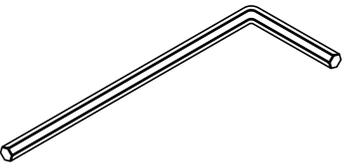
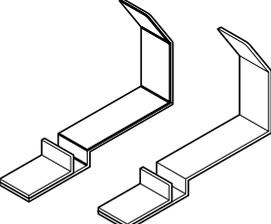
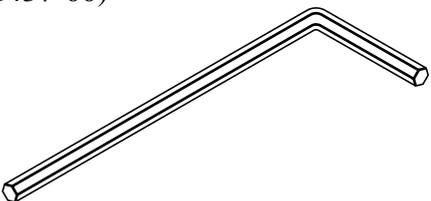
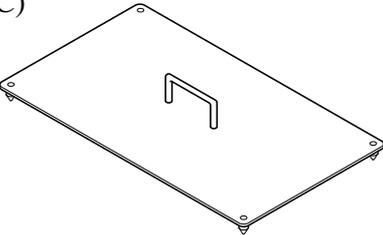


1-3 Tools and Accessories

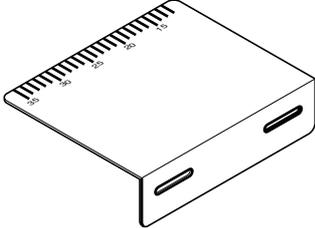
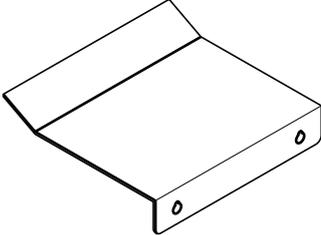
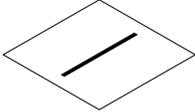
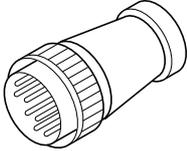
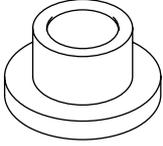
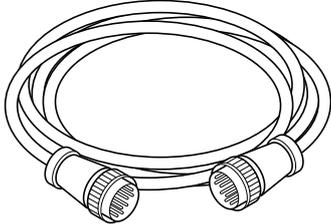
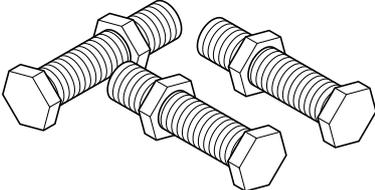
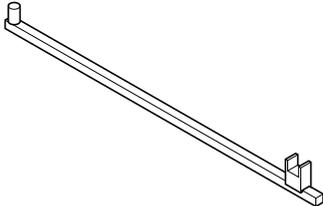
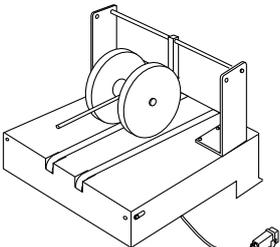
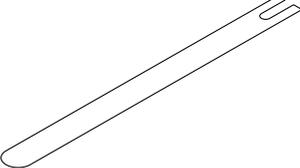
Tool Box (4-003344-00) HR-305	1 pc	Spanner (8-20 mm) (4-005397-00) 1pc
		
Screwdriver (4-005382-00)	1 pc	Spanner (13-17 mm) (4-005400-00) 1 pc
		
Ball Point Driver (4 mm)	1 pc	Spanner (16-24 mm) (4-005410-00) 1 pc
		
Allen Wrench (4-009603-00)	1 set	Grease (4-001272-00)
		
Pliers (4-001434-00)	1 pc	Oil (ISO VG68) (4-003061-00) 50 cc
		

1. Before You Begin

1-3 Tools and Accessories

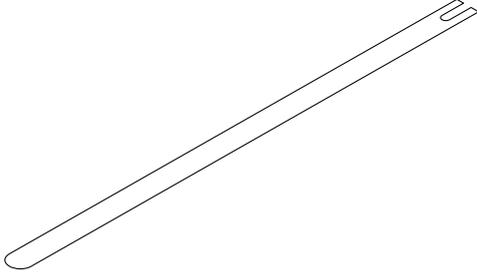
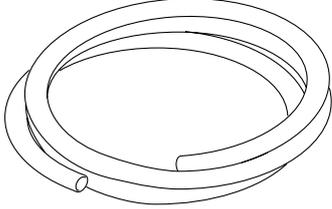
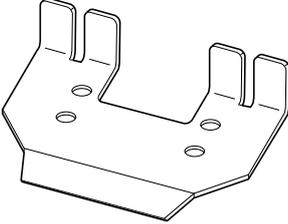
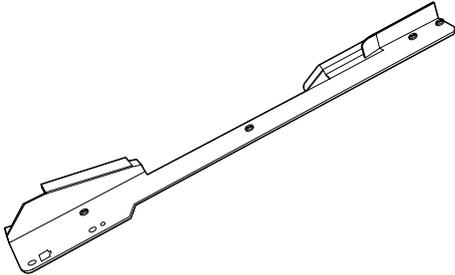
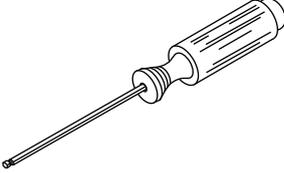
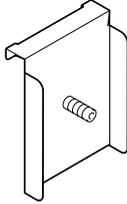
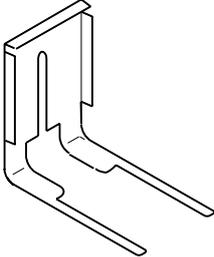
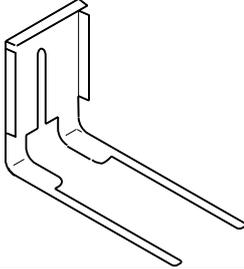
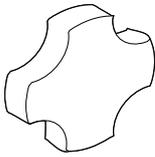
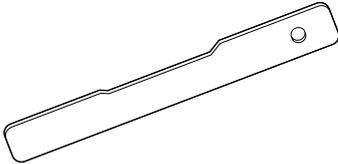
<p>T-Wrench (4 mm) 1 pc</p> 	<p>Wire Guide (9961175) 2 pcs</p> 
<p>Wire Adjust Knob (9459210) 1 pc</p> 	<p>Wire (CO-25) 2 pcs</p> 
<p>Spanner (7 mm) 1 pc</p> 	<p>Fold Guide 1 pair</p> <p>A302653-00 (Near Side) A302652-00 (Far Side)</p> 
<p>Allen Wrench (2 mm) 1 pc</p> 	<p>Stopper Guide (M036730-01) 2 pcs</p> 
<p>Allen Wrench (2.5 mm) 1 pc</p> <p>(4-001437-00)</p> 	<p>Connecting Plate (M037709-AS) 1 pc</p> <p>(for MC/HAC)</p> 

1-3 Tools and Accessories

Scale Plate (M037715-00)	1 pc	Stack Plate (M037743-00)	1 pc
			
Register Line Label (L001663-00)	1 pc	SPF-20 Connector (E144314-00)	1 pc
			
Mount Base (M000025-01)	3 pcs	Connecting Cable (E144266-00)	1 pc
			
Leveling Bolt and Nuts (M12-100)	3 sets	Guide Bar (M036377-AS)	4 pcs
			
Delivery Conveyor (M037722-AS)	1 pc	Sheet Guide (M036328-00)	1 pc
			

1. Before You Begin

1-3 Tool and Accessories

Sheet Guide (L) (M036329-00) 1 pc	Hose (M036333-00) 1 pc
	
Stopper Plate (M036803-03) 1 pc	Corner Stitch Guide (A932668-01) 1 pc
	
Ball Point Driver (40072221-00) 1 pc (For Jog Guides)	Bracket for Sheet Holder (A932689-00) 1 pc
	
Sheet Holder S(M036796-00) 1 pc	Sheet Holder L (M036795-00) 1 pc
	
Lock Knob (4014109-00) 1 pc	Gauge (M036599-00) 1 pc
	

2. Safety Function Check

2-1 Function Check of Stop Button	14
2-2 Function Check of Safety Cover	15

2-1 Function Check of Stop Button

This section shows how to check function of emergency stop.

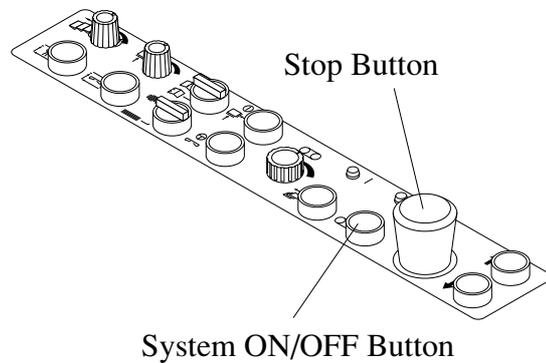
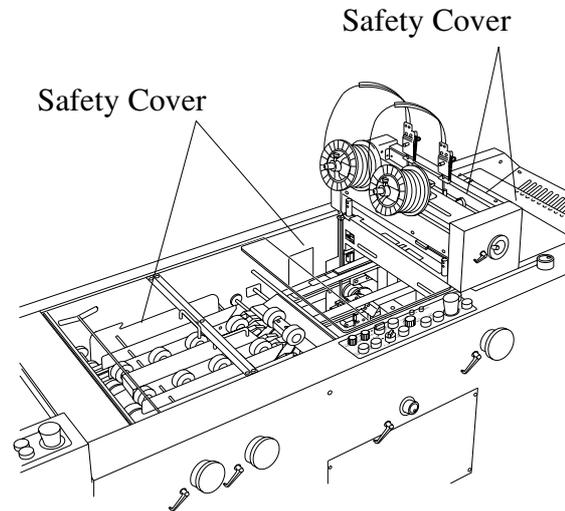


WARNING

- Do not put hands or tools in SPF-20 when SPF-20 is operated.

1. Close all safety covers.
2. Release stop button.
3. Press system ON/OFF button and then press stop button.

- Confirm whether Collator, SPF-20 and FC-20 stop.



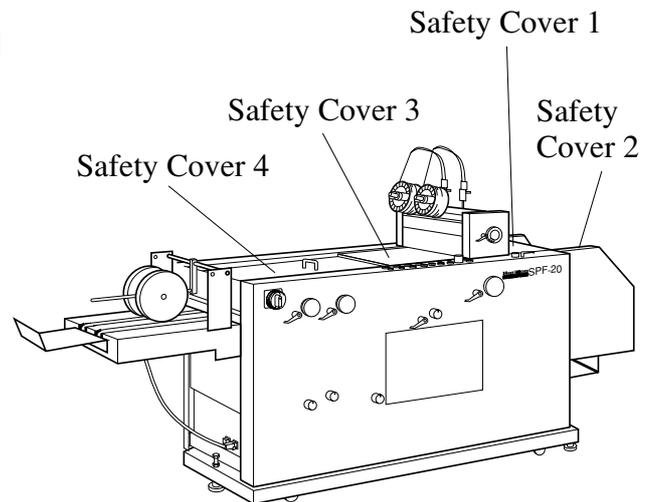
2-2 Function Check of Safety Cover

This section shows how to check function of safety covers.

WARNING

- Do not put hands or tools in SPF-20 when SPF-20 is operated.

1. Close all safety covers.



2. Release stop button.

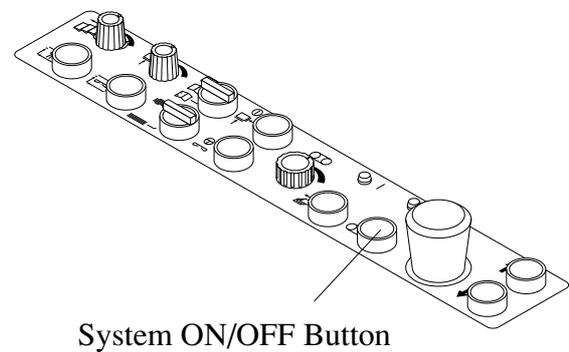
3. Press system ON/OFF button.

4. Open safety cover 1.

- Confirm whether Collator, SPF-20 and FC-20 stop.

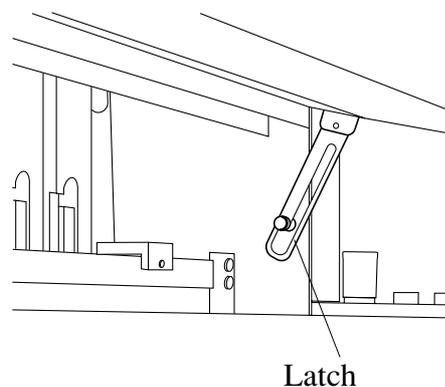
5. Close safety cover 1.

6. Perform step 2 to 5 for each cover.



NOTE

When safety cover 1 or 2 is opened, pull up cover until latch holds cover. When it is closed, push up latch to close safety cover.



3. Set up

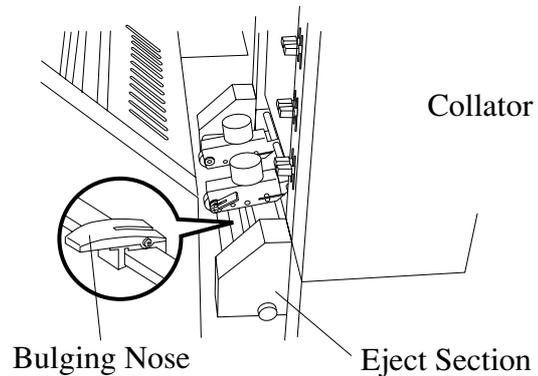
3-1 Collator Set Up	18
3-2 Stitch and Fold Operation Set Up (Stitch Section)	18
3-3 Stitch and Fold Operation Set Up (Fold Section)	24
3-4 Stitch and Fold Operation Set Up (Conveyor)	28
3-5 Stitch and Fold Operation Set Up (Control Panel)	28
3-6 Fold Operation Set Up	29
3-7 Side Stitch Operation Set Up	29

3. Set Up

3-1 Collator Set Up

Pile paper on collator.

1. See operation manual for each collator and pile paper on collator.
2. Remove all bulging nose on eject section of collator.



3-2 Stitch and Fold Operation Set Up (Stitch Section)

3-2-1 Stitch Distance

This section shows how to set up stitch distance.

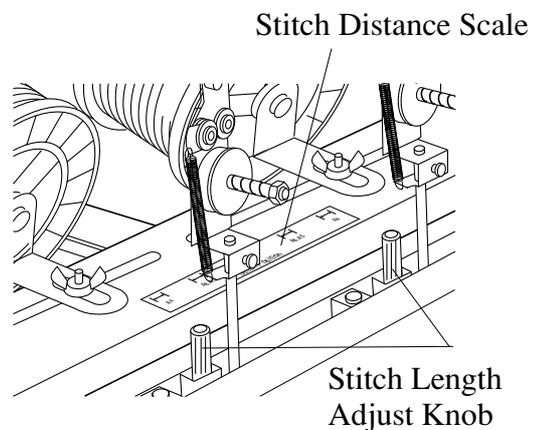
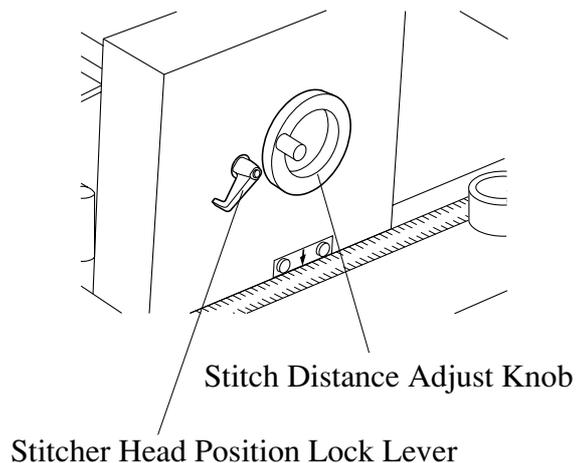
CAUTION

Do not hit head stopper, or jog guide with stitcher heads when stitch distance is adjusted.

NOTE

When being stitched outside of indicated area, fold knife may hit stitch when folding and create uneven fold.

1. Loosen stitcher head position lock lever.
2. Turn stitch distance adjust knob and adjust stitch distance.
 - Align stitch length adjust knob with required stitch position which is indicated on stitch distance scale.
3. Fasten stitcher head position lock lever.

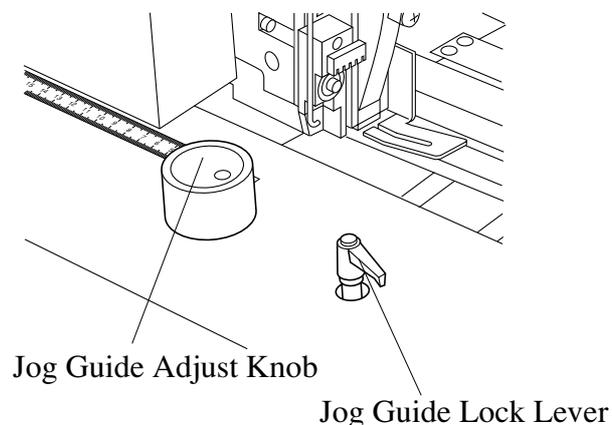


3-2 Stitch and Fold Operation Set Up (Stitch Section)

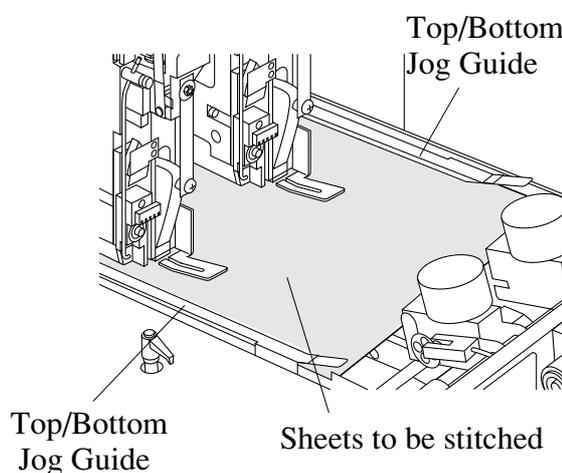
3-2-2 Top and Bottom Jog Guide

This section shows how to set up top and bottom jog guide.

1. Loosen jog guide lock lever.

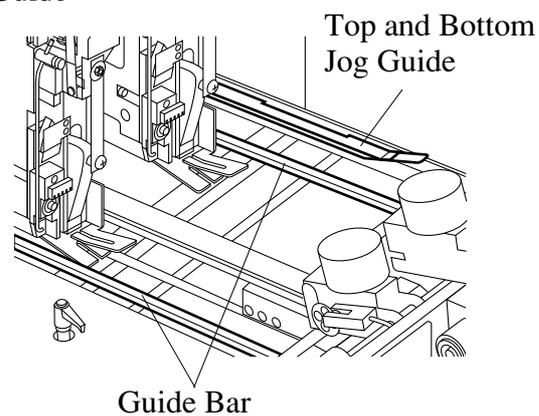


2. Place one set of sheets to be collated at jog section.



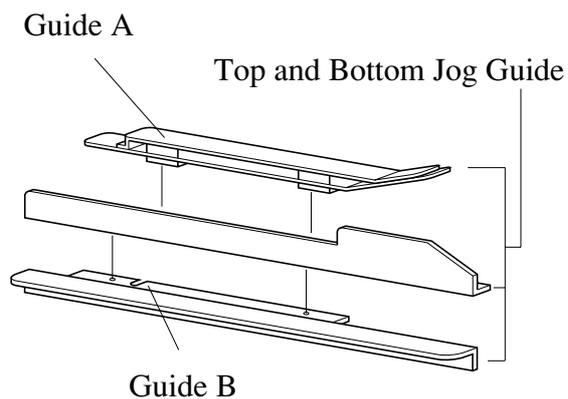
3. Turn jog guide adjust knob to adjust top and bottom jog guide to the sheet size.

Fasten top and bottom jog guide lock lever.



NOTE

- Turn jog guide adjust knob clockwise to set top and bottom jog guides.
- Attach guide bar when wide gap between stitcher and top/bottom guides exists.
- Remove guide A and B mounted on top and bottom jog guide when sheets are smaller than 128 X 182 mm (5" X 7.2").



3-2 Stitch and Fold Operation Set Up (Stitch Section)

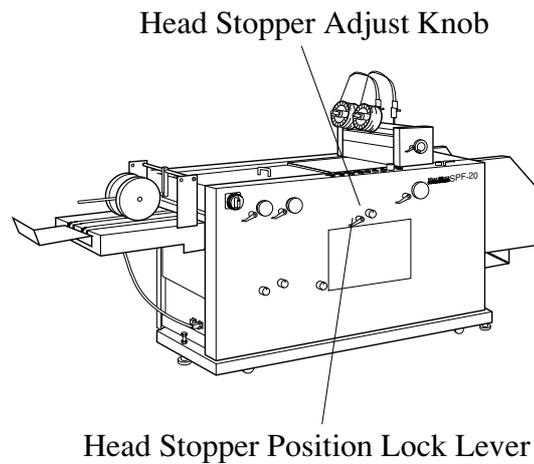
3-2-3 Head Stopper

This section shows how to set up head stopper position.

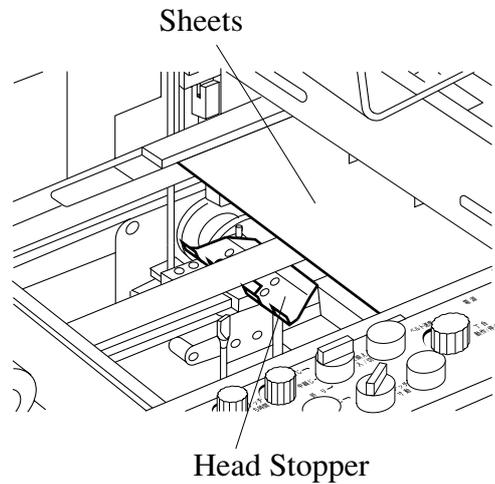
1. Loosen head stopper position lock knob.

NOTE

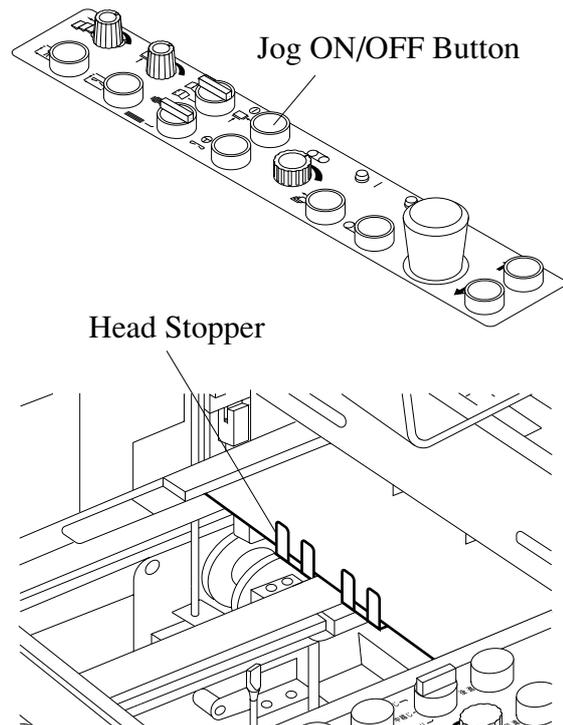
Move head stopper to left when head stopper is staying under sheets.



2. Press jog ON/OFF button to raise head stopper.



3. Adjust head stopper position.
 - Move head stopper so that head stopper touches left side of the sheets slightly.
 - Do not push the sheets with head stopper.
 - Do not leave any play between the sheets and head stopper.

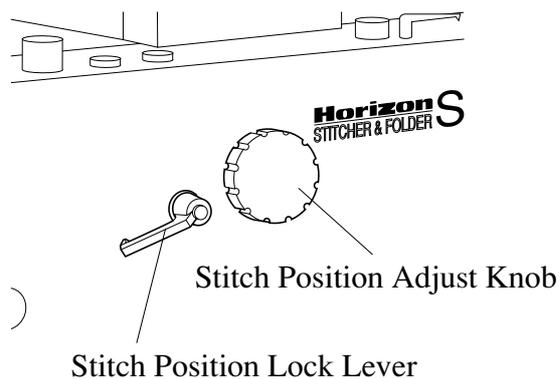


3-2 Stitch and Fold Operation Set Up (Stitch Section)

3-2-4 Stitch Position

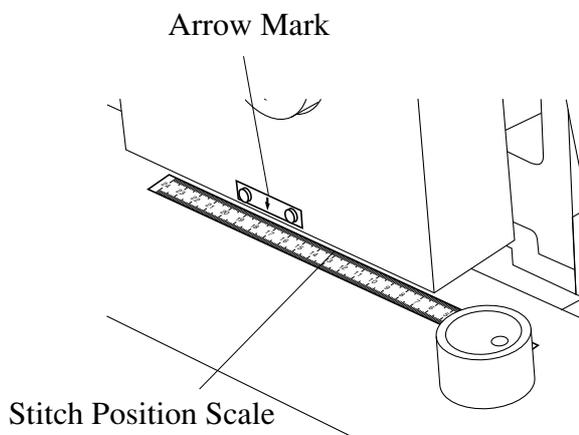
This section shows how to adjust stitch position.

1. Loosen stitch position lock lever.



2. Turn stitch position adjust knob and adjust stitch position. Stitch position scale indicates stitch position from right edge of the sheets.

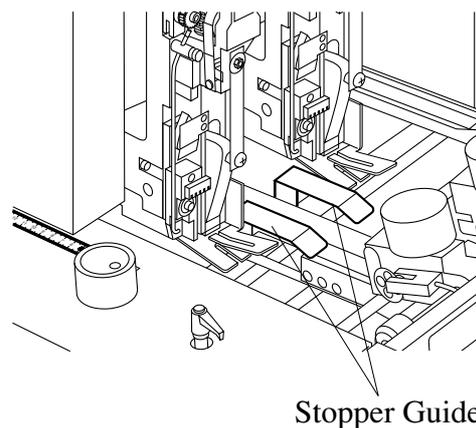
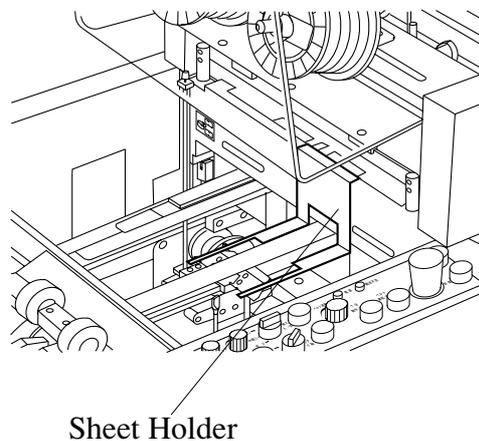
Fasten stitch position lock lever.



3. Attach sheet holder.

NOTE

Attach stopper guide to prevent sheets hit side-stitch stopper when stitch distance is set for more than 91 x 128 mm (3.6" x 5") size sheet.



3-2 Stitch and Fold Operation Set Up (Stitch Section)

3-2-5 Weights and Sheet Holders

This section shows how to set up weights and sheet holders.

1. Adjust roller pressure by turning pressure roller adjust knob.

NOTE

The standard position is where pressure roller adjust knob is fully turned clockwise. When sheets wrinkle on transportation, reduce the pressure by turning pressure roller adjust knob counterclockwise.

2. Loosen and move weights to center of groove on weight roller units for most of the operation.

NOTE

Move weights to left to increase pressure when thick sheets or many sheets are transported.

3. Set up sheets holder when sheets width are bigger than 182 mm (7.2").

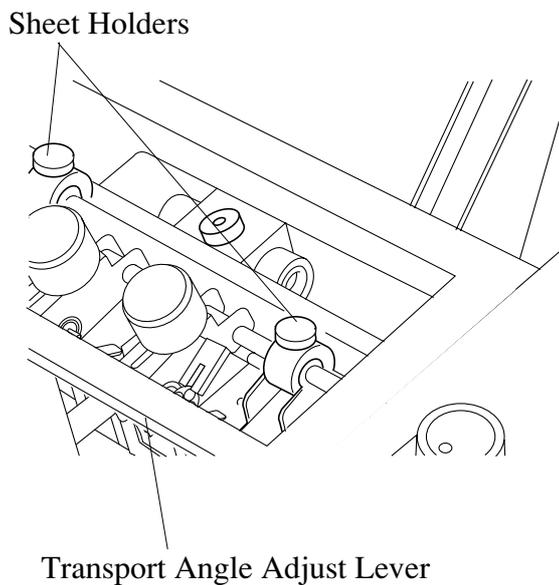
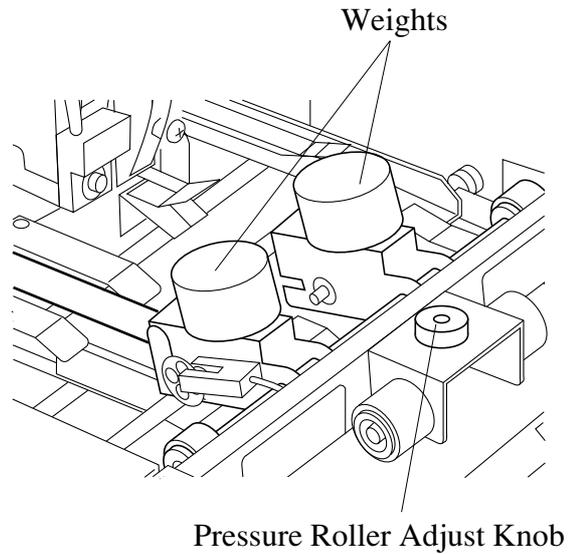
- Loosen lock screw on sheet holders and adjust sheet holders position.

NOTE

Sheets holders are not necessary for sheets width is smaller than 182 mm (7.2"). Tilt up sheet holders.

4. Set up transport angle adjust lever when smaller size sheet is collated.

- Loosen lock screw on adjust lever and adjust lever angle.



3-2 Stitch and Folding Operation Setting Up (Stitch Section)

3-2-6 Sheets Transport from Stitch Section to Fold Section

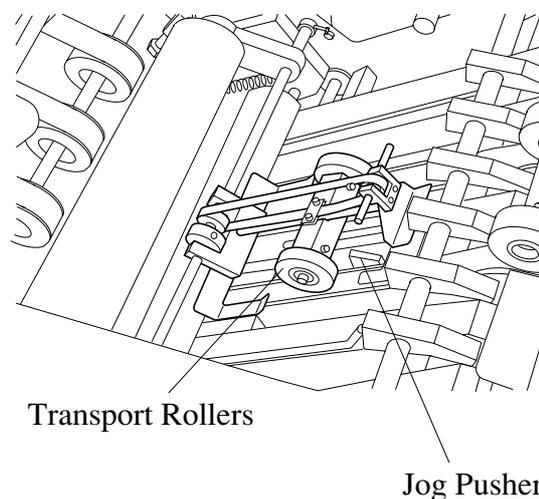
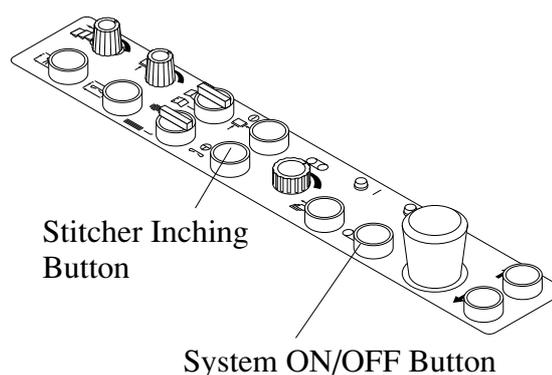
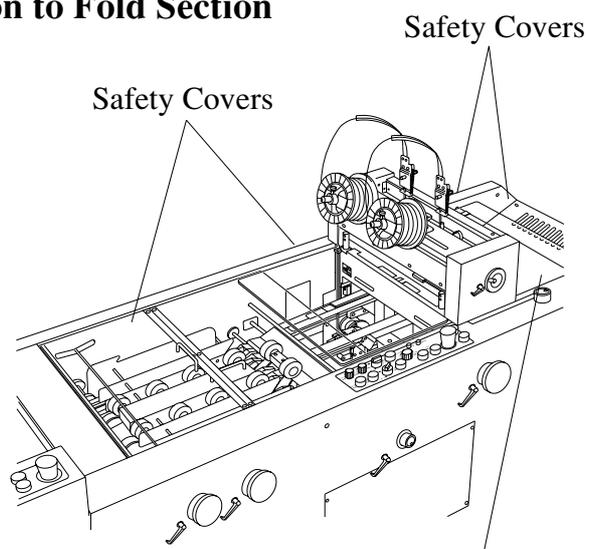


1. Close all safety covers.
 - Turn jog guide adjust knob clockwise and hold it.
 - Press single stitch button until stitcher heads stitch one time.

2. Stitch the sheets in jog section with stitcher inching button.
 - Turn jog guide adjust knob clockwise and hold it.
 - Press single stitch button until stitcher heads stitch one time.

3. Provide space on folder section for the sheets.
 - Open safety cover 3 and 4.
 - Loosen lock knob and move transport rollers fully to right. Fasten lock knob.
 - Loosen fix screw on jog pusher with ball point driver and move jog pusher full right side.
 - Close all safety covers.

4. Move the stitched sheets to fold section.
 - Press system ON/OFF button and move the sheets into fold section.



3-3 Stitch and Fold Operation Set Up (Fold Section)

3-3-1 Fold Position

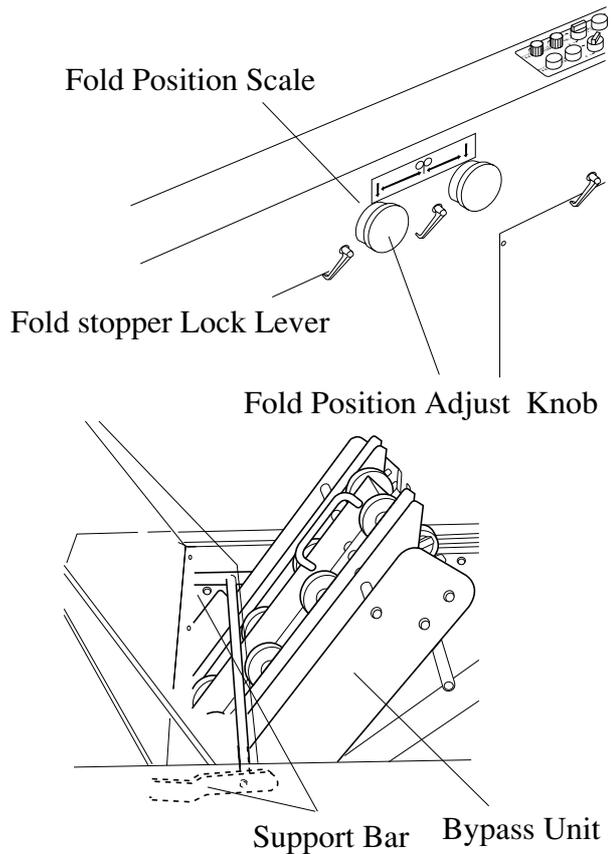
This section shows how to set fold position.

⚠ WARNING

Hang bypass unit on support bar when tilted up. Heavy bypass unit can cause severe personal injury.

1. Loosen fold stopper lock lever.
2. Turn fold position adjust knob to set fold position. Fold position scale indicates fold position from left edge of the sheets.

Fasten fold position lock lever.



3-3-2 Jog Pusher

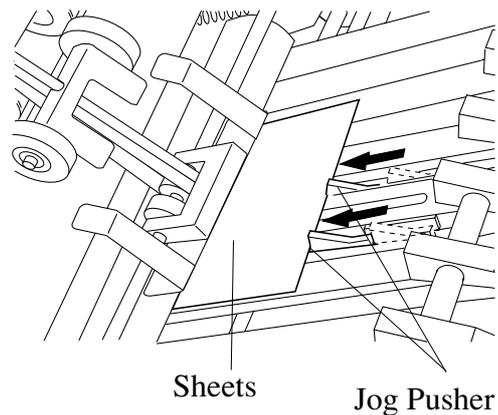
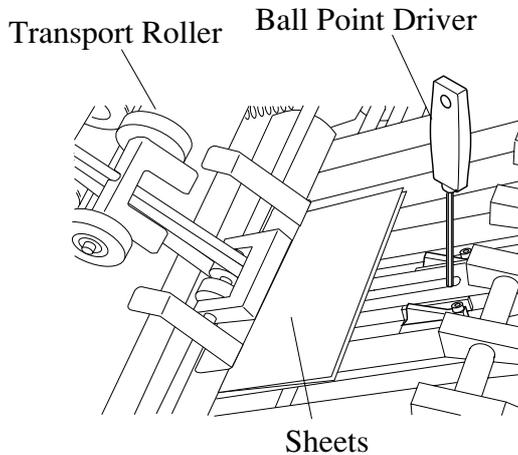
This section shows how to set up jog pusher on fold section.

1. Open safety cover 3 and 4. Raise bypass unit and hook on support bar.
2. Press jog ON/OFF button.
3. Loosen lock screw on jog pusher and move it to left so that jog pusher touches the sheets slightly.

Fasten lock screw.

NOTE

Jog pusher cannot be used when sheet size is smaller than 155 (W) x 260 mm (L). (6.1" x 10.3")

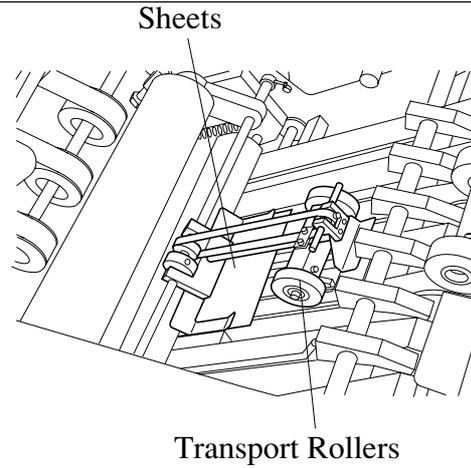


3-3 Stitch and Fold Operation Set Up (Fold Section)

3-3-3 Transport Roller

This section shows how to set transport roller on fold section.

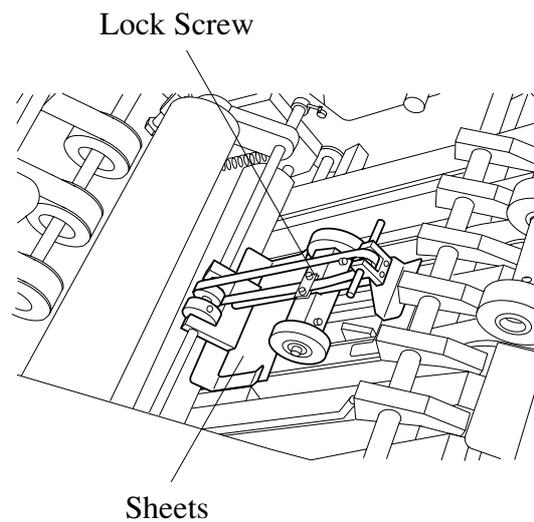
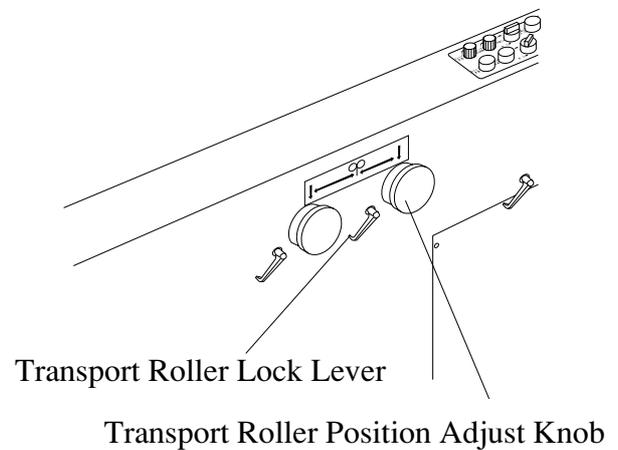
1. Lower transport roller and guide bar.



2. Loosen transport roller lock lever and turn transport roller position adjust knob so that transport roller touches right edge of the sheets very slightly.

NOTE

Improper positioning of transport roller causes uneven fold.

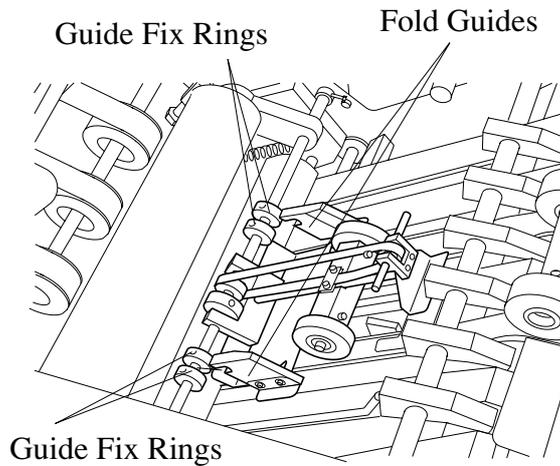


3-3 Stitch and Fold Operation Set Up (Fold Section)

3-3-4 Fold Guide

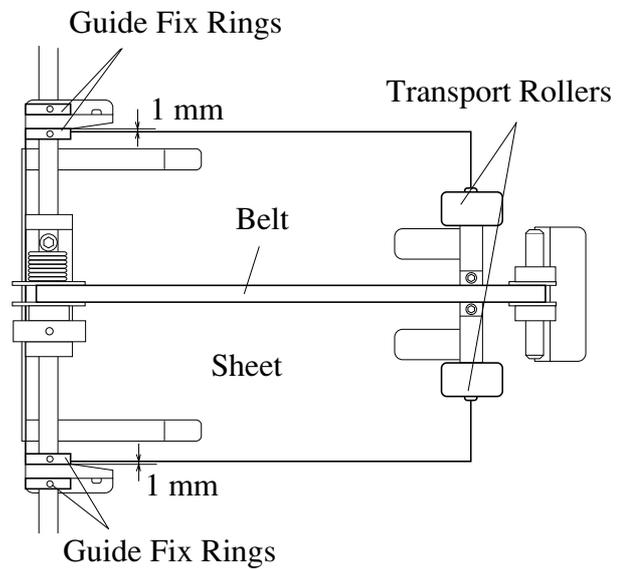
This section shows how to set fold guide in fold section.

1. Set fold guides providing about 1 mm clearance between fold guides and sheets.



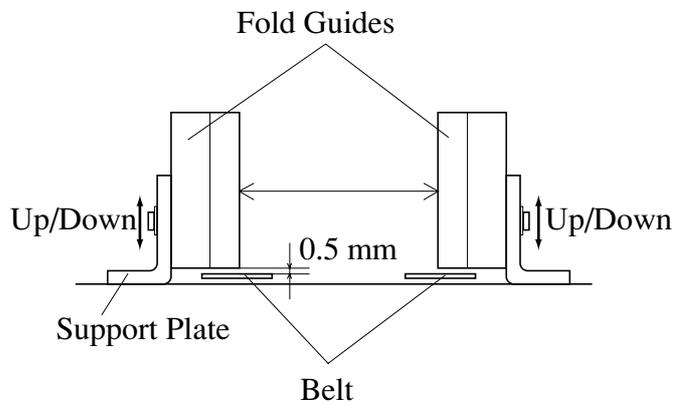
2. Install guide fix rings on both sides of fold guides to fix the position of fold guides.

- Fasten/loosen screws on guide fix rings with ball point driver.



NOTE

- If the length of sheet is less than 125 mm, adjust support plate position so that fold guides do not touch belt. (The clearance between fold guides and belt is about 0.5 mm.)



3-3 Stitch and Fold Operation Set Up (Fold Section)

3-3-5 Fold Roller Gap

This section shows how to set up fold roller gap.

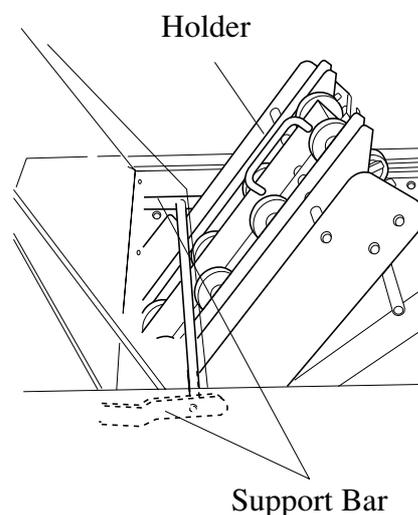
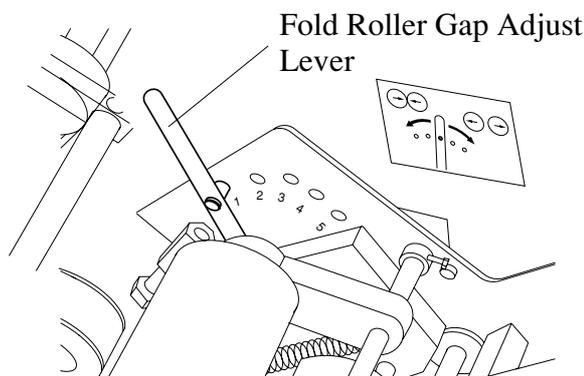
1. Set fold roller gap adjust lever according to number of the sheets to be folded.

Number of Sheets	Gap Position
2~4	No.1
4~7	No.2
7~10	No.3
10~15	No.4
more than 15	No.5

NOTE

- Gap position may change depending on thickness of each sheet.
- Adjust both operation and drive side fold roller gap adjust levers at same position.

2. Hold holder on bypass section and then release support bar. Place bypass unit slowly.



3-3-6 Fold Plate Clearance Adjust Knob

This section shows how to set up fold plate clearance by steps using the fold plate clearance adjust knob.

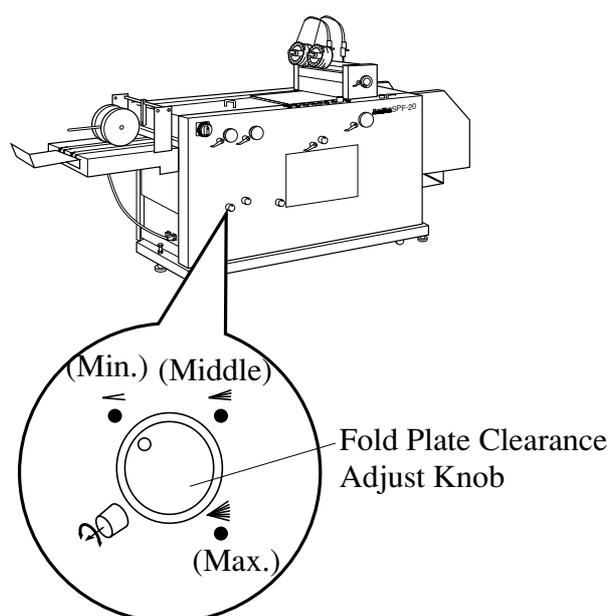
Less than 0.5 mm (0.02")	: minimum
From 0.5 (0.02") to 1.0 mm (0.04")	: middle
From 1.0 (0.04") to 2.0 mm (0.08")	: Maximum

[Adjustment]

1. Pull out the fold plate clearance adjust knob.
2. Turn the knob and adjust the clearance.
3. Press the knob.

NOTE

Do not operate the machine when the knob is pulled up.

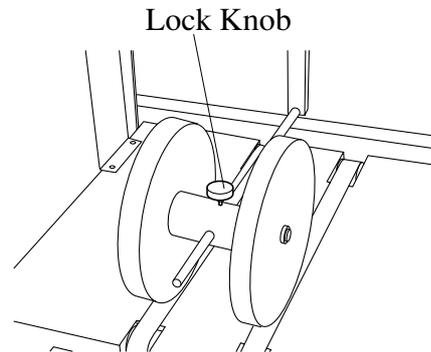


3. Set Up

3-4 Stitch and Fold Operation Set Up (Conveyor)

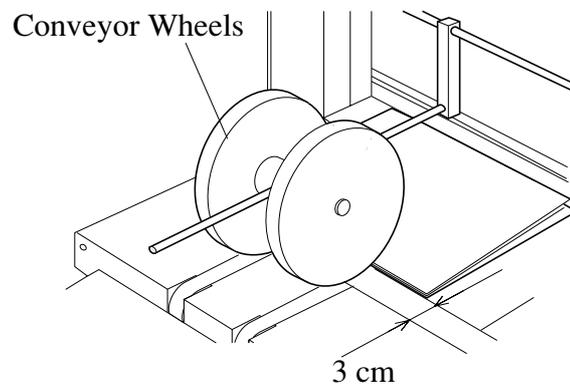
This section shows how to set conveyor wheels position.

1. Loosen lock knob.



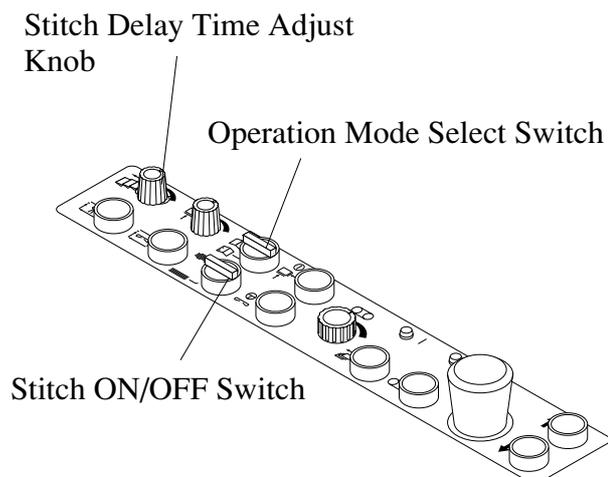
2. Set conveyor wheels so that conveyor wheels locate 3 cm left side of the book.

- Fasten lock knob.



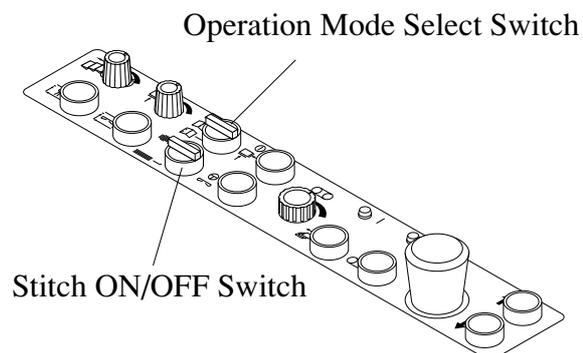
3-5 Stitch and Fold Operation Set Up (Control Panel)

1. Select Stitch & Fold mode with operation mode select switch.
2. Select stitch ON mode with stitch ON/OFF switch.
3. Turn stitching delay time adjust knob for shortest delay time (fully counterclockwise).



3-6 Fold Operation Set Up

1. Select Stitch & Fold mode with operation mode select switch.
2. Select Stitch OFF mode with stitch ON/OFF switch.
3. Set up another section with same steps as stitch and fold operation set up.
 - Stitch Position and Stitch Distance set up is not required.



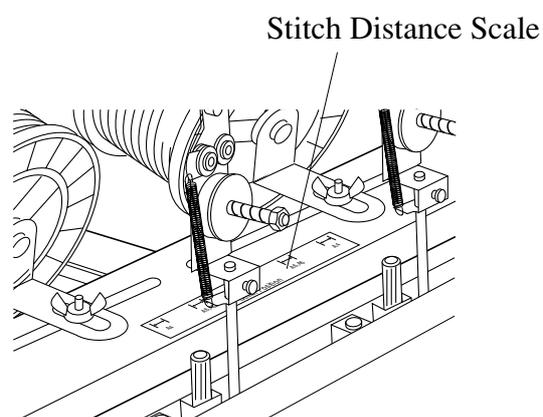
3-7 Side Stitch Operation Set Up

3-7-1 Stitch Distance, Top and Bottom Jog Guide Set Up

Set up stitch distance and top and bottom jog guide with same steps for stitch and fold operation set up.

NOTE

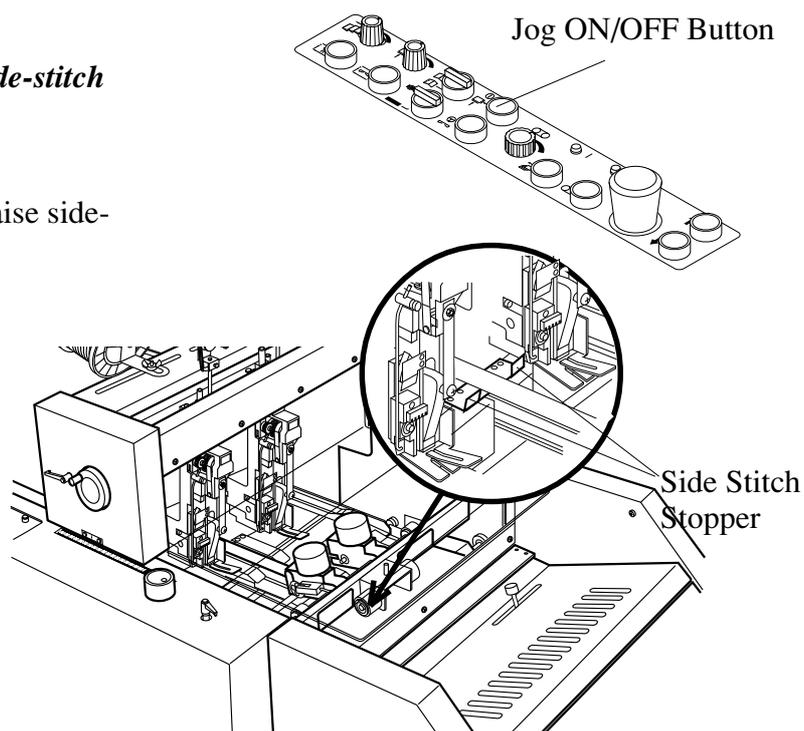
Stitch distance is not critical. It is not necessary to follow stitch distance scale.



3-7-2 Side-Stitch Stopper

This section shows how to set up side-stitch stopper for side stitch.

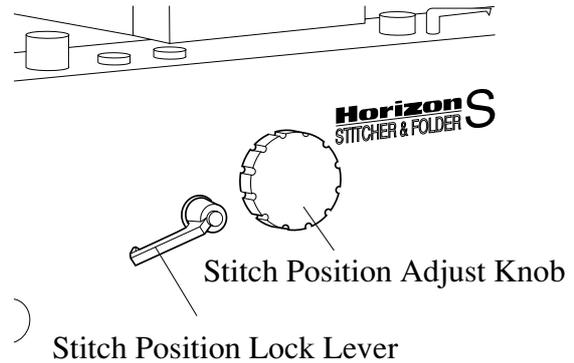
1. Press jog ON/OFF button to raise side-stitch stopper.



3. Set Up

3-7 Side Stitch Operation Set Up

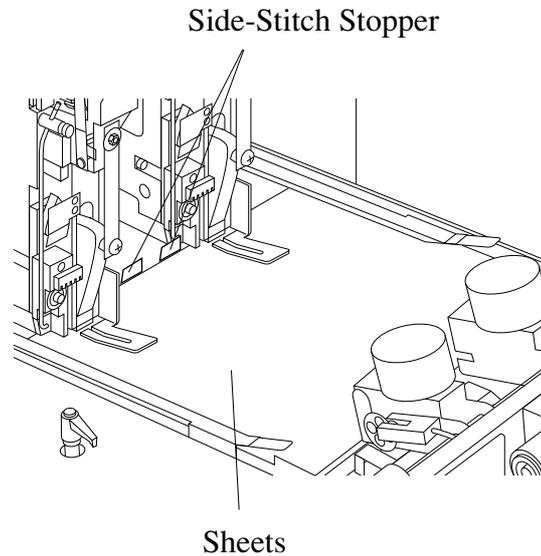
- Loosen stitch position lock lever.



- Adjust side-stitch stopper position.
 - Turn stitch position adjust knob so that side-stitch stopper touches the sheets slightly.
 - Do not push the sheets and do not leave any play between the sheets and stopper.

NOTE

- Do not hit head stopper with stitcher head when stitcher heads are moved to left.
- Locate head stopper closer to the stitcher heads. This will speed up production speed.



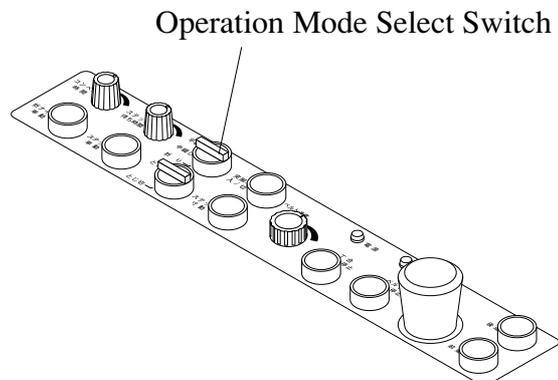
3-7-3 Control Panel

This section shows how to set up switches on control panel.

- Select Side-Stitch mode with operation mode select switch.

NOTE

- In case folding is required after side stitch, follow the instruction for *Stitch & Folding* operation. And select *Side-Stitch & Fold* with operation mode select switch.
- Set up rest of the sections with same step as *stitch and fold operation set up*.



4. Operation Procedure

4-1 Test Binding	32
4-2 Binding	36
4-3 Special Operation	37

4-1 Test Binding

4-1-1 System Position Adjustment

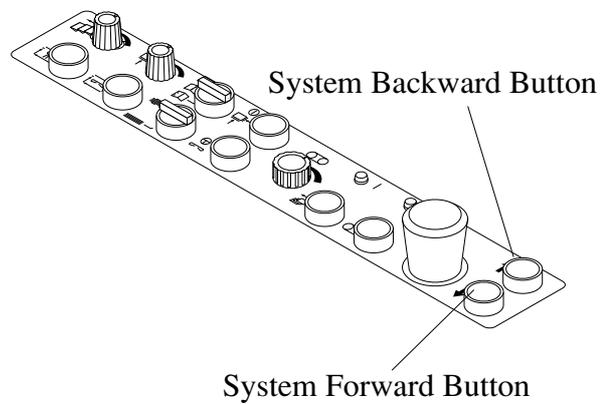
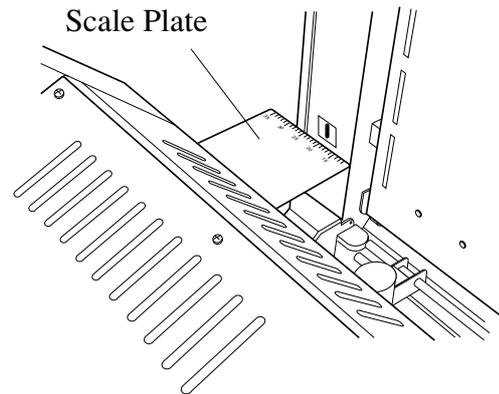
This section shows how to adjust position of SPF-20/FC-20 to collator.



WARNING

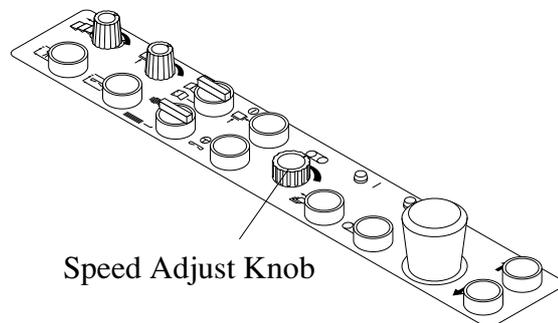
- Do not move SPF-20/FC-20 when other persons touche the machines.

1. Press system forward button or system backward button to adjust SPF-20 position.



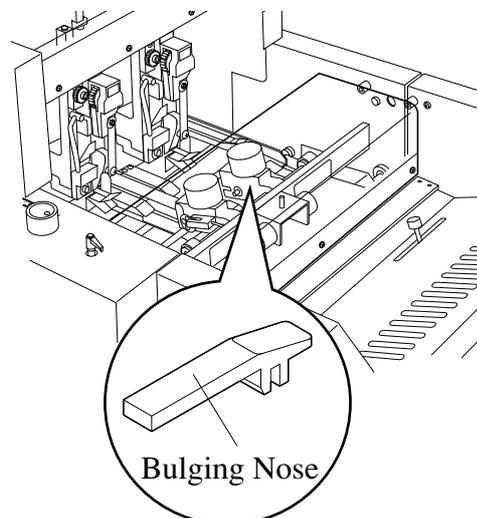
4-1-2 Production Speed Set Up

Set speed adjust knob at center.



4-1-3 Bulging Nose

- Use bulging nose for most sheets.
- Remove bulging nose when collated sheets hesitate to be transported.



4-1 Test Binding

4-1-4 Test Binding

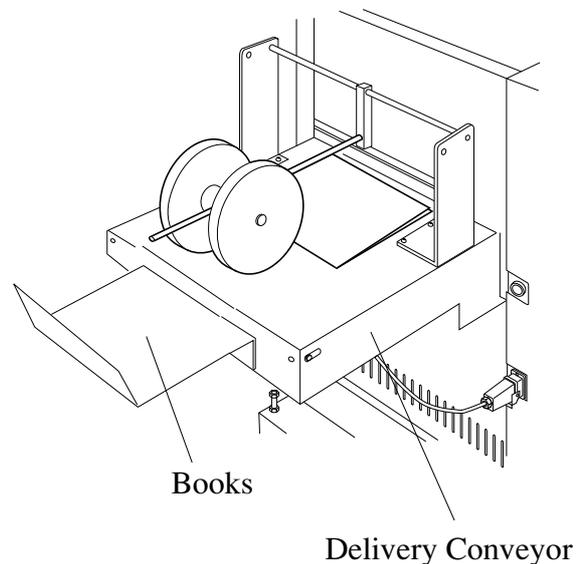
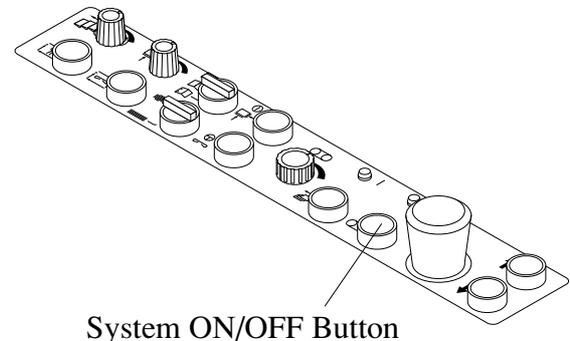
[1] Test Binding Procedure

1. Close all safety covers.
2. Press system ON/OFF button to turn on SPF-20.

NOTE

- In winter, the belt becomes hard and may not drive when starting the machine. Set the belt speed slow using the belt speed adjust knob, and press [system ON/OFF] button to drive the belt. Drive it for 5 minutes for warming up.

3. Press sheet caliper memorize button on collator. One set of sheets is fed into SPF-20 and stops at jog section.
4. Press single stitch button. The sheets are stitched and transported to fold section.
5. Press single fold button. The sheets are folded and ejected to delivery conveyor.



[2] Quality Check of Book

This section shows some points which binding quality should be checked after test binding.

1. Check the following 5 points.
 - number of sheets.
 - page order
 - stitch position
 - fold position
 - folding accuracy

If binding quality is not sufficient, read-just each section.

NOTE

Check binding quality with several books.

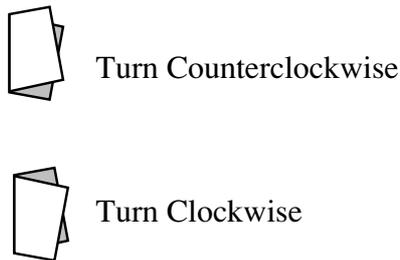
4-1 Test Binding

4-1-4 Test Binding

[3] Fold Angle Microadjustment

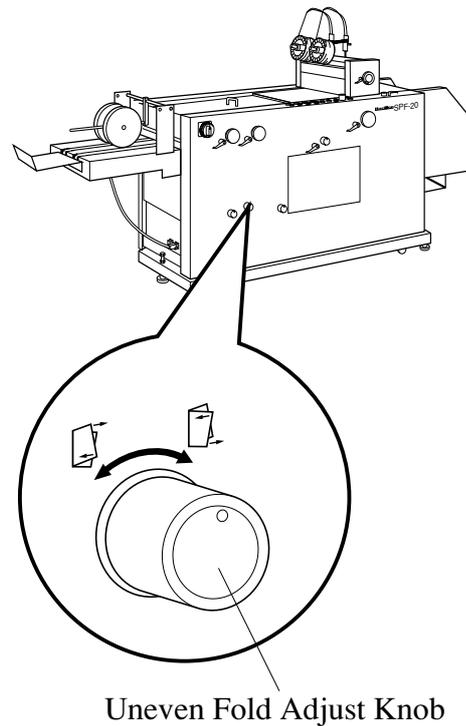
This section shows how to correct uneven fold.

1. Turn uneven fold adjust knob and correct uneven fold.



NOTE

- To set standard position, turn uneven fold adjust knob fully clockwise, and then turn the knob counterclockwise 1.5 to 2 times.



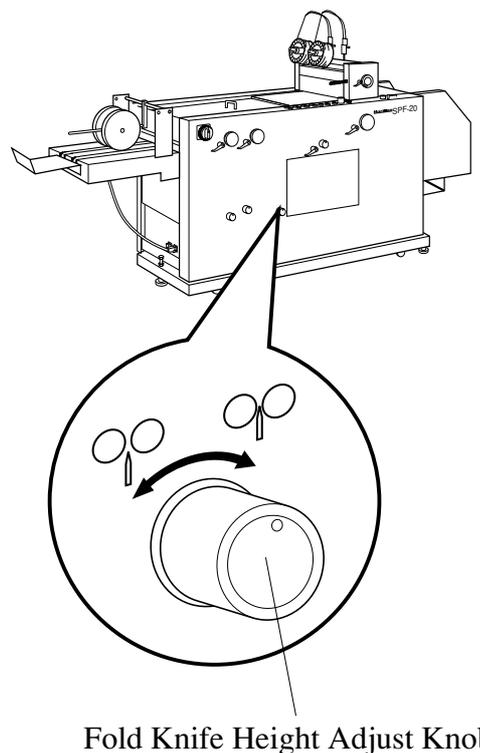
[4] Fold Knife Height Adjustment

This section shows how to adjust fold knife height according to number of sheets.

1. For thin sheets, turn fold knife height adjust knob clockwise to lower fold knife.
2. For thick sheets, turn fold knife height adjust knob counterclockwise to raise fold knife.

NOTE

- To set standard height, turn fold knife height adjust knob fully clockwise and then turn fold knife height adjust knob counterclockwise three times.



CAUTION

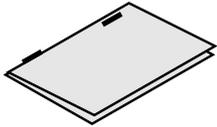
If the knife is raised too much when the fold roller gap is narrow or the top and bottom width of the booklet is small, the knife may hit the folding roller.

4-1 Test Binding

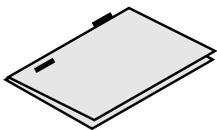
[5] Stitch Position Adjustment

This section shows how to adjust stitch position. When stitch position is not aligned with folded line even if sheets are folded correct, adjust stitch position.

1. Turn stitch position microadjust knob.

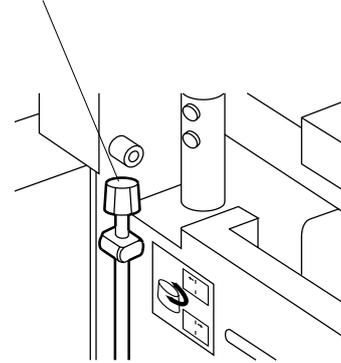


Turn Counterclockwise



Turn Clockwise

Stitch Position Microadjust Knob



NOTE

When stitch position is adjusted, check and adjust fold section so that two stitches aligned with fold line.

[6] Jog Guide Stroke Adjustment

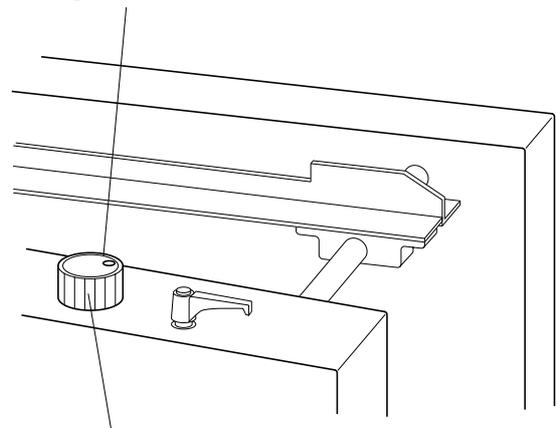
This section shows how to adjust jog guide stroke. The stroke is adjusted to 3 mm when your SPF-20 is shipped from factory.

1. Turn jog guide adjust knob to set register mark to drive side.
2. Turn adjust bolt inside frame of operation side near jog adjust knob.

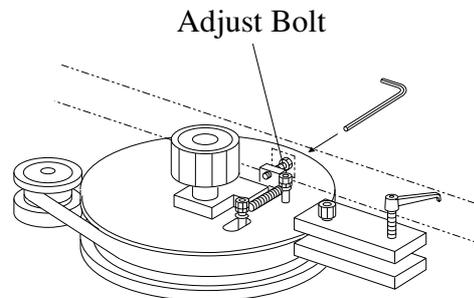
Turn clockwise Less Stroke

Turn counterclockwise ... More Stroke

Register Mark



Jog Guide Adjust Knob



4-2 Binding

4-2-1 Start Binding Operation

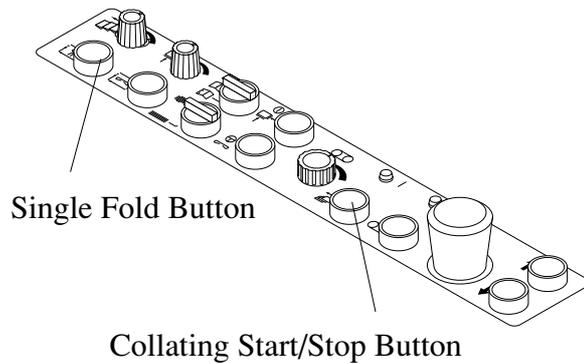
This section shows how to start binding.

1. Press collating start/stop button to start collator.

NOTE

- Collating can be started with start button on collator, too.
- Set collating interval to long when you start collating/binding.

2. When you want to stop binding, press collating start/stop button on SPF-20 or stop button on collator.
3. After collating is stopped press single fold button to fold last set of sheets. Sheets staying in fold section will be ejected.



4-2-2 Production Speed Adjustment

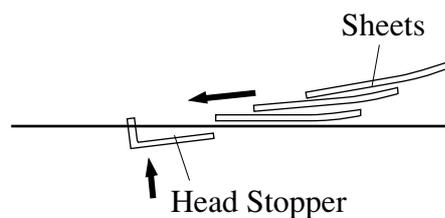
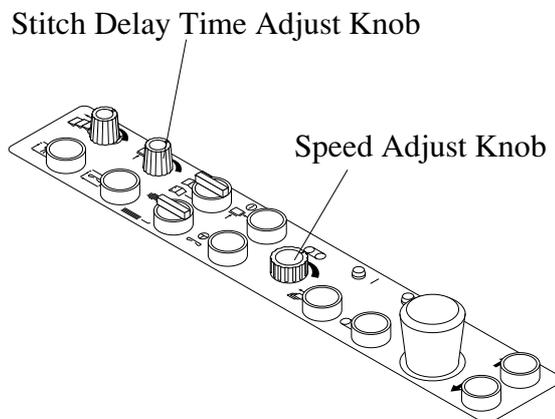
This section shows how to adjust production speed of SPF-20/FC-20.

1. Turn stitch delay time adjust knob and adjust stitch delay time after sheets are transported to jog section.
2. Turn speed adjust knob and adjust production speed.

NOTE

- Belt speed on SPF-20 should be faster than delivery speed collator. If slower, jam will occur on in-feed conveyor on SPF-20.
- The maximum speed of system can be checked with head stopper.

After stitched sheet pass through head stopper, the head stopper moves up to catch next sheets. The timing that head stopper others sheets as soon as it moves up is fastest for each job.

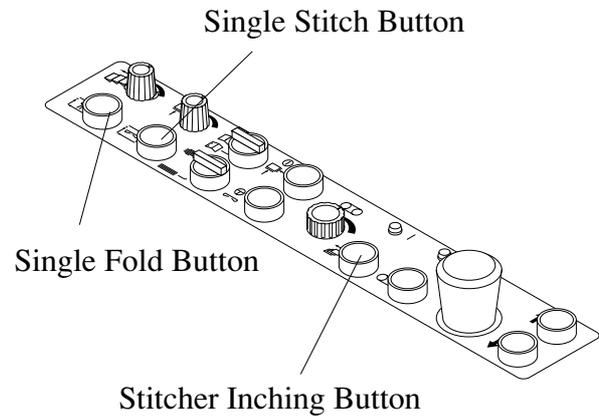


4-3 Special Operation

4-3-1 Stitcher Head Reverse Operation

Stitcher heads may be locked when sticher heads stitch extremely thick sets of sheets or perform double stitch. Reverse stitcher heads in this case.

1. Press stitcher inching button while pressing single fold button and single stitch button simultaneously.
2. Continue to press stitch inching button until stitcher heads stop after removing sheets or stitches.



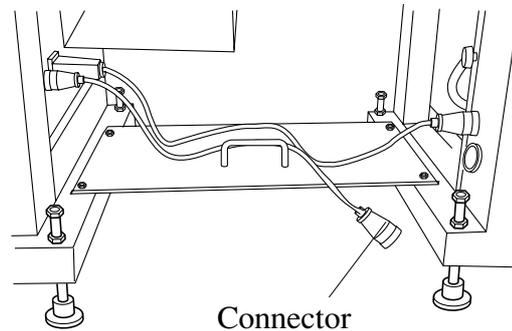
5. Special Binding

5-1 Hand Feeding	40
5-2 Corner Stitching	41

5-1 Hand Feeding

This section shows how to feed sheets by hand.

1. Remove lower connector from SPF-20.



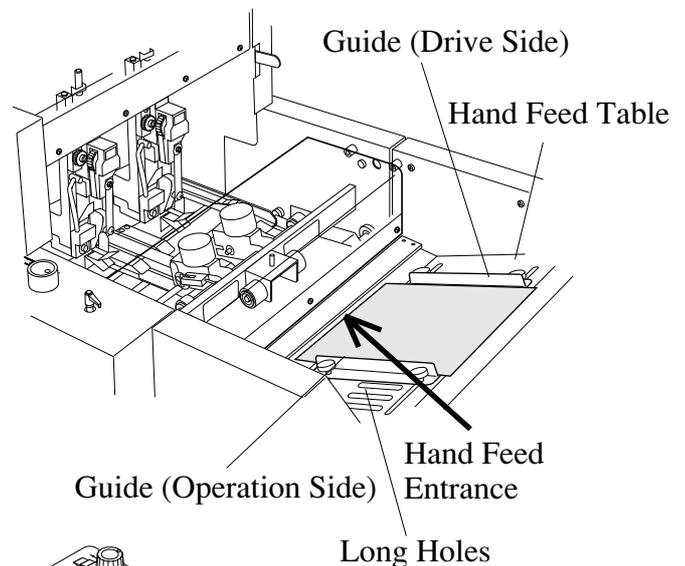
SPF-20

Collator

2. Adjust guide positions.
 - Place sheet on the center of hand feed table with referring to long holes on table.
 - Move both guides so that they slightly touch sheet.

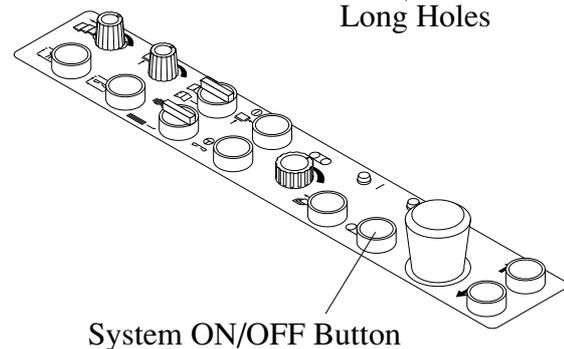
NOTE

Refer to each section adjustment for setting up SPF-20.



3. Press system ON/OFF button to start SPF-20/FC-20.

4. Start binding.
 - Feed sheets by hand.
 - Guides are register guide for feeding.

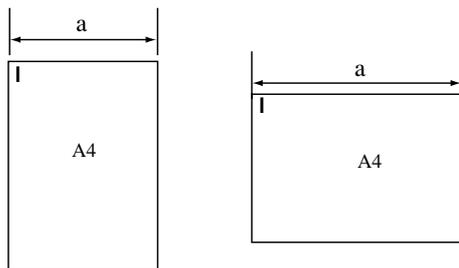


5-2 Corner Stitching

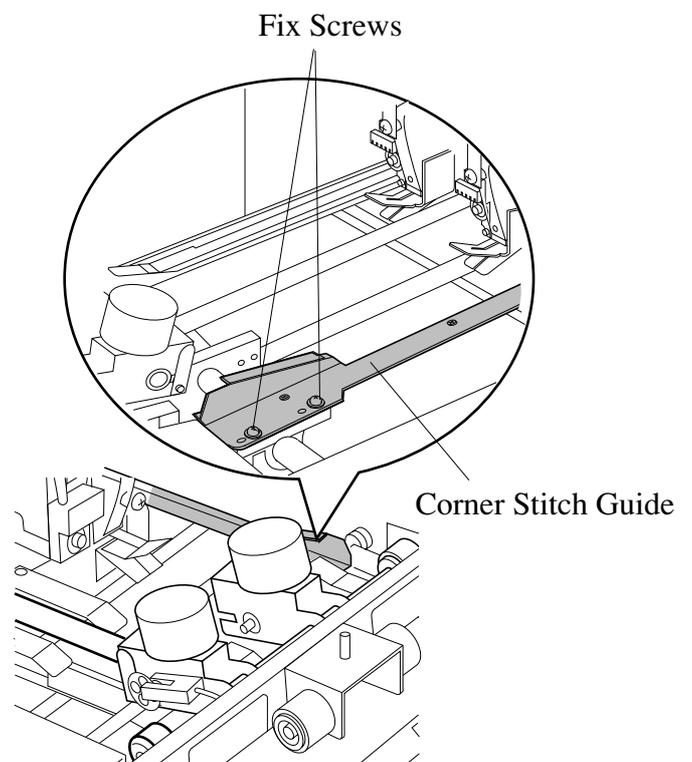
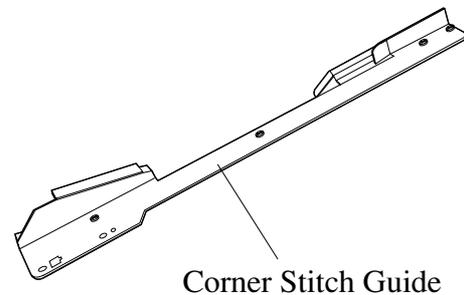
This section shows how to set up SPF-20 for corner stitching.

1. Loosen two fix screws on drive side jog guide and replace it with corner stitch guide.

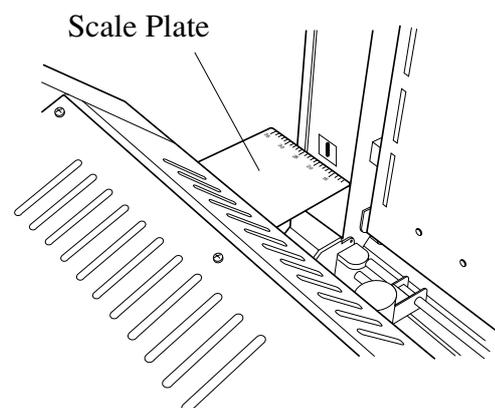
Possible Corner Stitch Size



$$210 \text{ mm}(8.3") < a < 297 \text{ mm}(11.7")$$



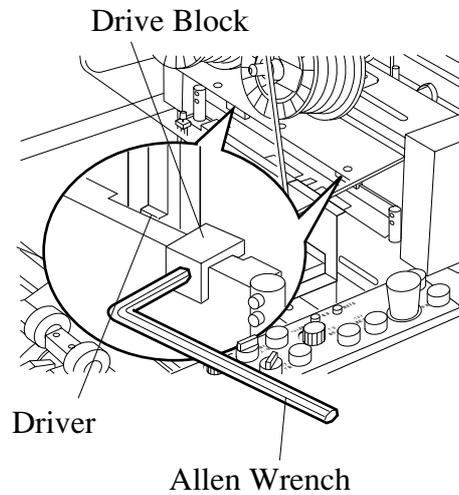
2. See "3-7 Side Stitch Operation Set Up" (Page 29 and 30) to set up SPF-20.
3. Press system backward button to move SPF-20/FC-20 by 15 mm (0.6").



5-2 Corner Stitching

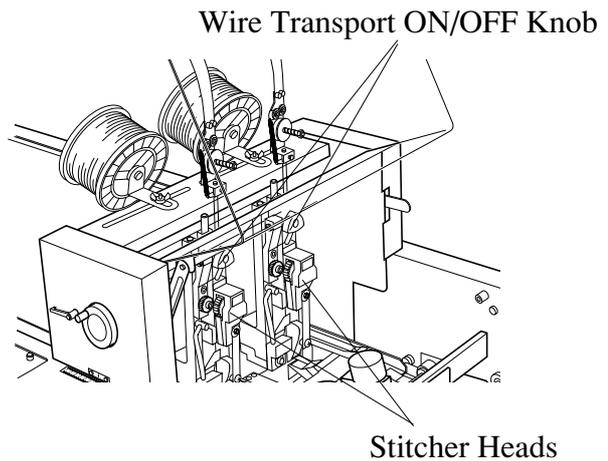
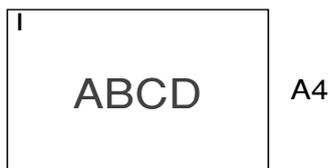
4-1. When stitching at the corner in drawing below.

- Move drive side stitcher head to required position.
- Slide drive block behind the drive side stitcher so that the block is placed over the driver.



4-2. When stitching at the corner in drawing below.

- Move drive side stitcher head to required position.
- Turn wire transport ON/OFF knob to off position on operation side stitcher or remove operation side stitcher, (Please refer to "6-2 Stitcher Attachment" (Page 45).



6. Stitcher Head

6-1 Wire Attachment	44
6-2 Stitcher Attachment	45
6-3 Threading	46
6-4 Test Stitch	47
6-5 Stitch Length Adjustment	47
6-6 Stitch Balance Adjustment	48
6-7 Wire Straight Adjustment	49

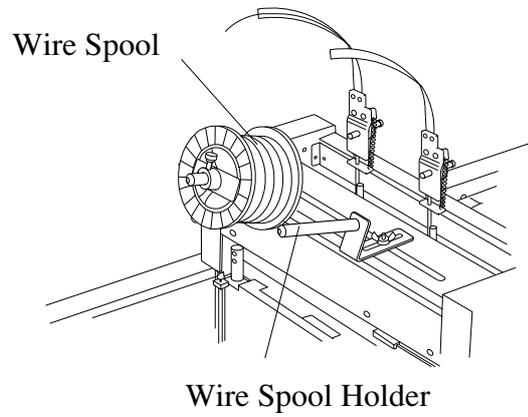
6-1 Wire Attachment

This section shows how to attach wire spool.

NOTE

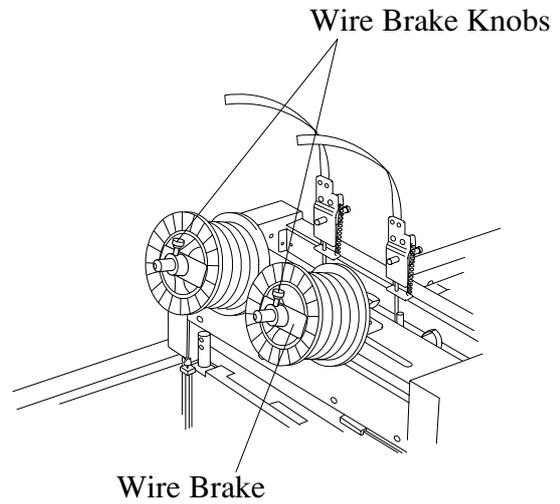
Both 0.5 mm wire (standard) and 0.4 mm wire (option) can be used on SPF-20.

1. Install wire spool on wire spool holder.
2. Touch wire brake slightly wire spool. Position wire brake so that it slightly touches wire spool.



NOTE

When wire spool turns too much too smoothly, position wire brake so that it pushes wire spool.



6-2 Stitcher Attachment

This section shows how to attach stitcher heads to SPF-20.

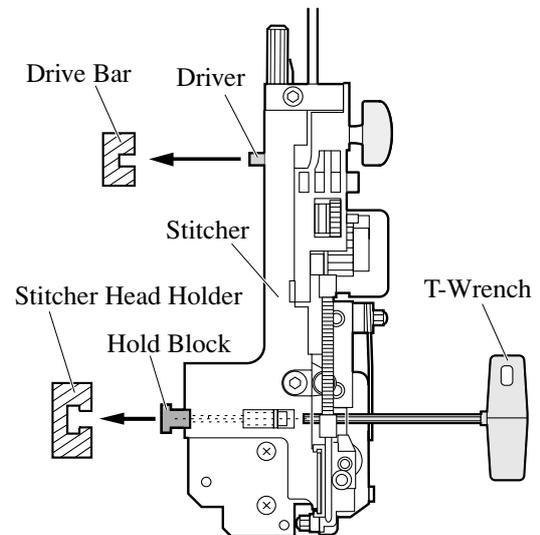
1. Loosen hold block with T-Wrench from front side of stitcher. And slide in hold block from side of stitcher head holder.



CAUTION

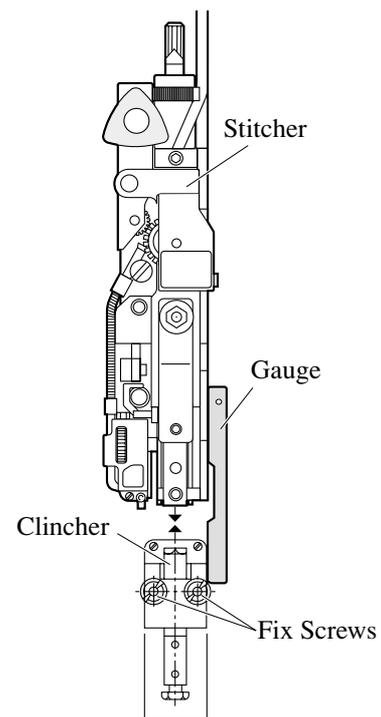
- Insert hold block into stitcher head holder completely. Otherwise, the machine may be damaged.

2. Insert driver into groove of drive bar.



3. Align the stitcher with the clincher.

Fit the gauge (accessory) on the side. Align the stitcher and the clincher so that there is no gap in between.

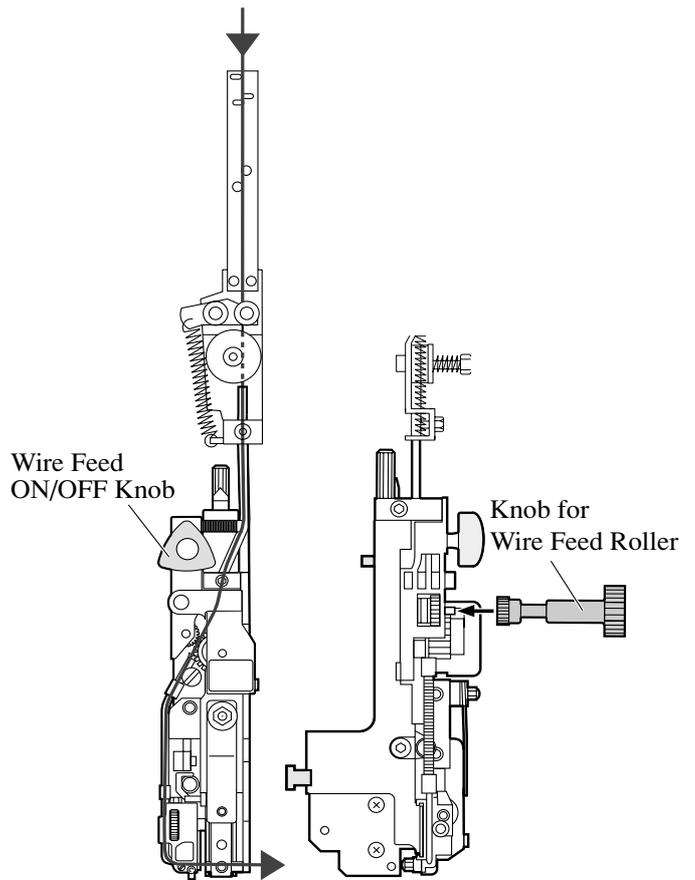


4. Fix hold block with T-Wrench.

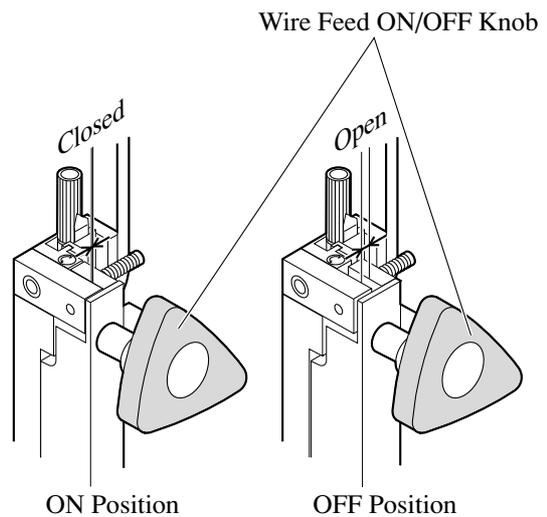
6-3 Threading

This section shows how to thread wire to stitcher.

1. Turn wire feed ON/OFF knob to OFF position. (See the drawing below)
2. Insert wire as shown in the drawing at right.



3. Turn wire feed ON/OFF knob to ON position.

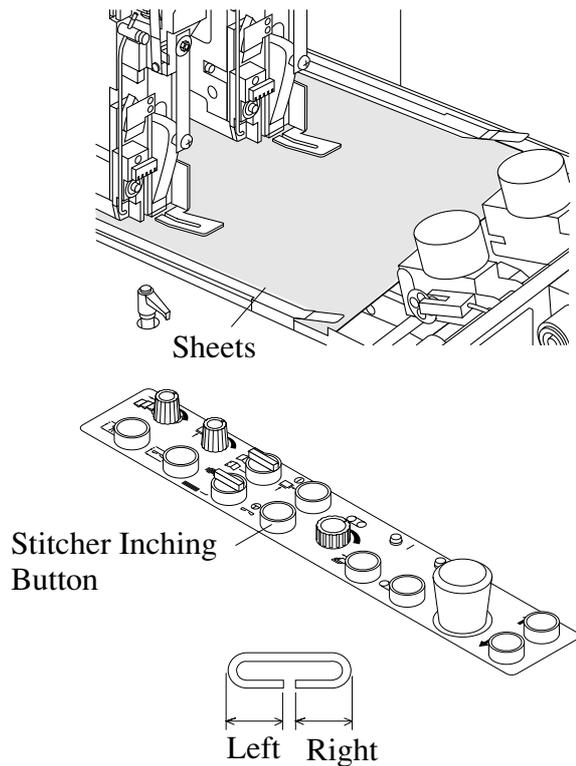


4. Turn wire feed roller with adjust knob to thread wire.

6-4 Test Stitch

This section shows how to test stitch.

1. Place a few sheets on jog section.
2. Press stitcher inching button till wire is completely inserted and stitcher head stitches sheet with wire.
3. Check the both right and left length of wire.



6-5 Stitch Length Adjustment

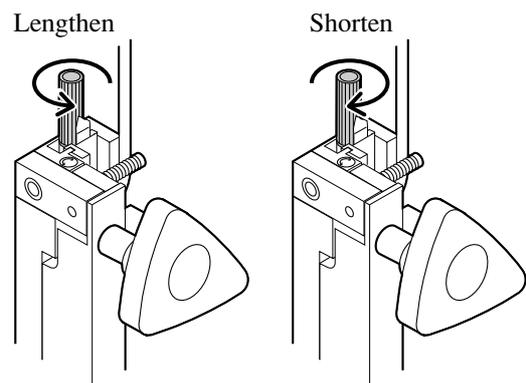
This section shows how to adjust stitch length.

1. Turn wire length adjust knob and adjust stitch length.

Clockwise - Shorter
Counterclockwise - Longer

NOTE

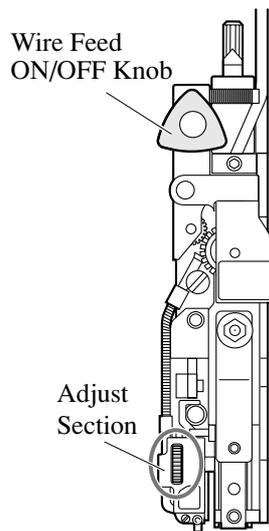
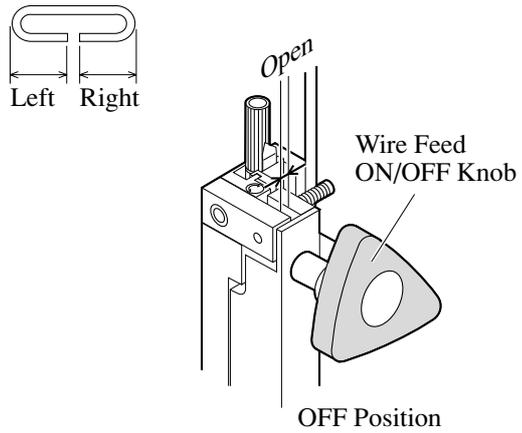
- In case of the 48/5S Stitcher, to the contrary, turning knob clockwise makes the stitch length longer.



6-6 Stitch Balance Adjustment

This section shows how to adjust balance of stitch.

1. Turn wire feed ON/OFF knob to OFF position.

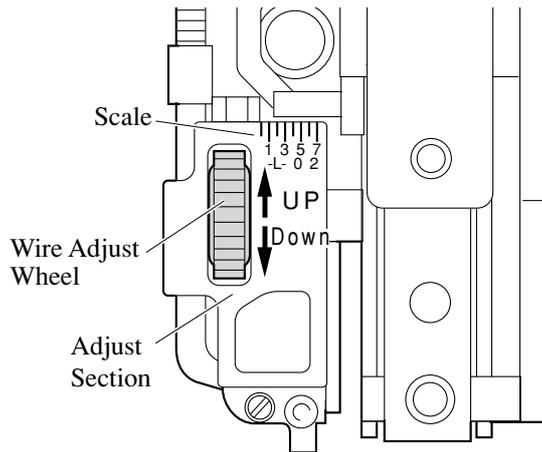


2. Adjust the wire balance by turning the wire adjust wheel.

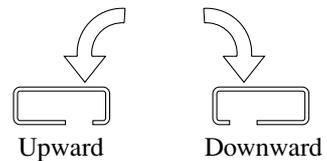
Turn downward - Right leg longer
 Turn upward - Left leg longer

NOTE

Use scale as reference of wire balance.



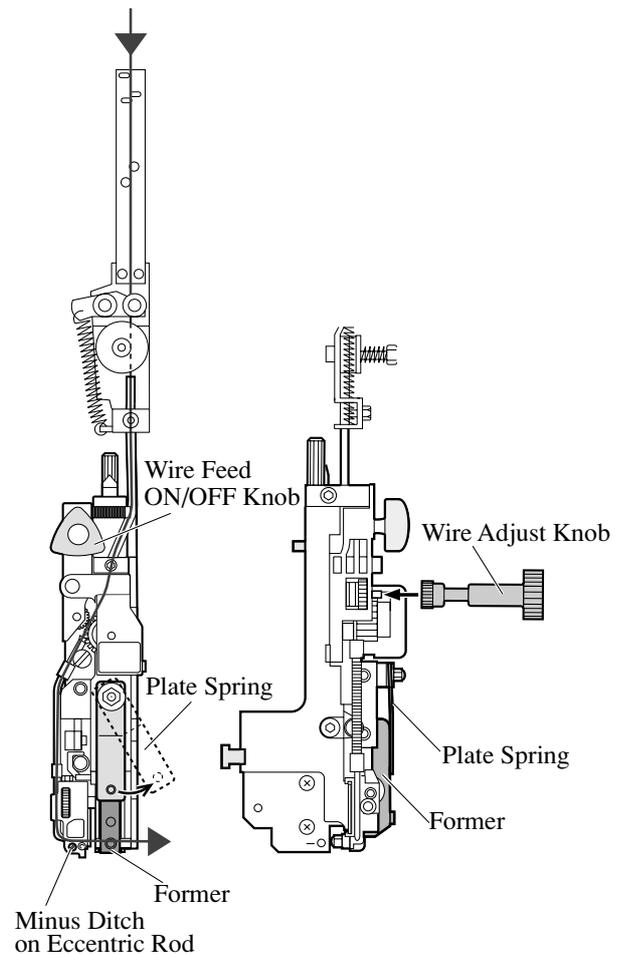
3. Turn wire feed ON/OFF knob to ON position.



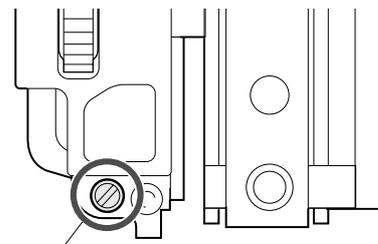
6-7 Wire Straight Adjustment

This section shows how to straighten wire.

1. Turn wire feed ON/OFF knob to ON position.
2. Slide plate spring to right and remove former to check the wire.
3. Turn wire adjust knob clockwise and feed wire. You can check whether wire comes out straightly or not.

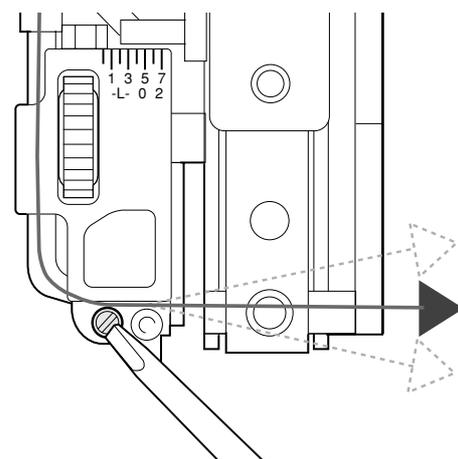


4. If wire does not come out straightly, turn the minus ditch on the eccentric rod with a screw driver and straighten the wire.



Turn and adjust the eccentric rod with a minus screwdriver so that the wire comes out straightly.

5. Turn wire adjust knob clockwise and feed wire for check.
6. Cut wire, attach former and plate spring.



7. Maintenance

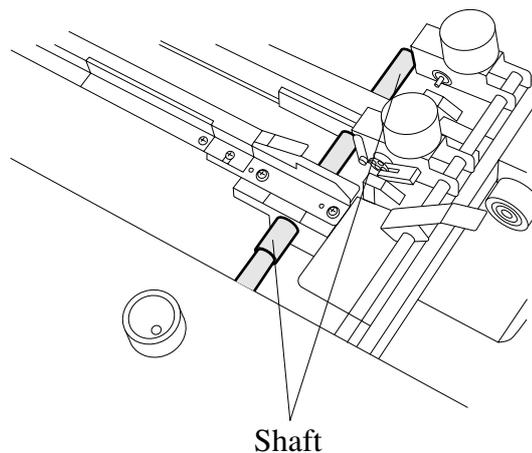
7-1 Greasing	52
7-2 Lubrication	52
7-3 Cleaning	54
7-4 Clincher Point Replacement	55

7-1 Greasing

7-1-1 Shaft on Jog Guide

Greasing is required once a month.

1. Clean shaft with cloth to remove dust on shaft.
2. Apply grease supplied as accessory on the shaft.

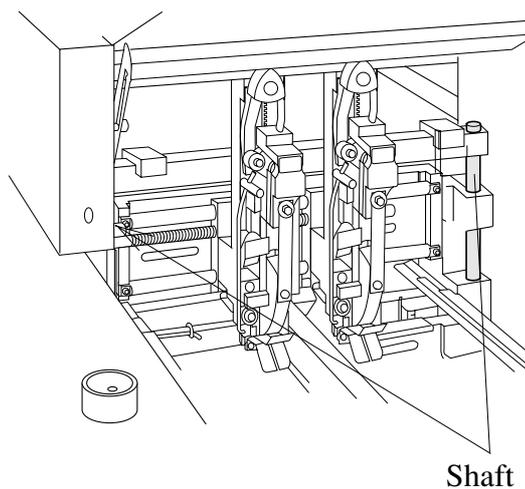


7-2 Lubrication

7-2-1 Shaft for stitcher Unit

Lubrication is required once a month.

1. Clean shaft with cloth to remove dust on shaft.
2. Lubricate two shafts with oil supplied as accessory.



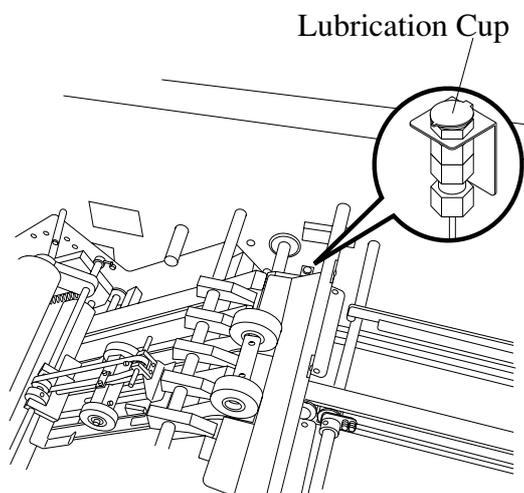
7-2-2 Fold Knife

Lubrication is required once a month.

1. Lubricate oil (10 drops) supplied as accessory in to lubrication cup.

NOTE

Do not overflow oil from lubrication cap.



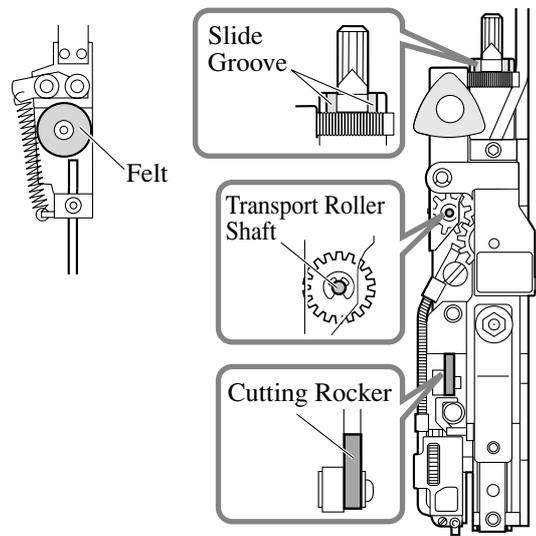
7-2 Lubrication

7-2-3 Stitcher Head

Lubrication is required once a month.

Lubricate the follwings (see the drawing to the right):

- Felt
- Both slide grooves
- Transport roller shaft
- Cutting rocker on its roller



7-3 Cleaning

7-3-1 Rollers and Belt

Clean rollers and belt with cloth soaked with alcohol solvent.

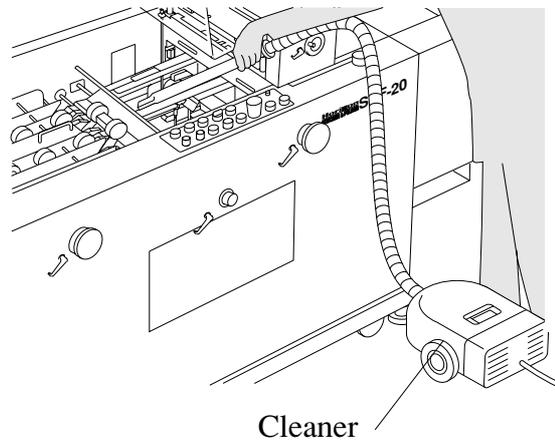
7-3-2 Inside Cleaning



CAUTION

- Do not catch power cords in SPF-20 with cleaner.

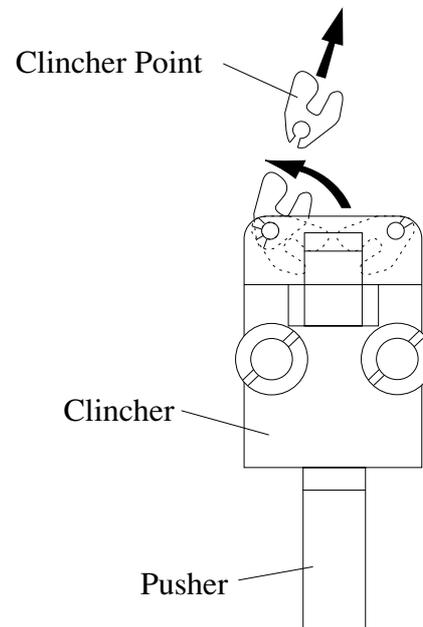
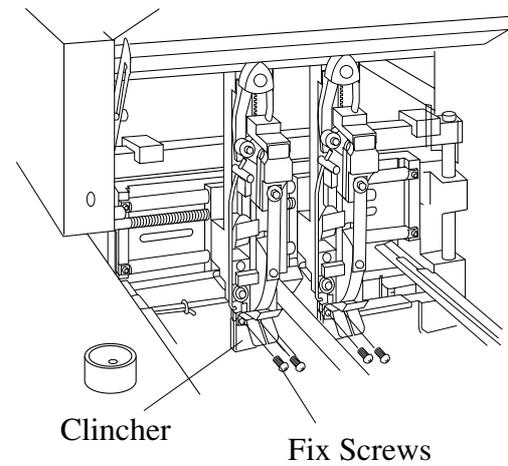
1. Turn off power switch.
2. Clean wires or dust inside of SPF-20 with cleaner.



7-4 Clincher Point Replacement

This section shows how to replace clincher point.

1. Loosen two fix screws and remove clincher.
2. Pull out pusher.
3. Remove clincher point upward.
4. Attach new clincher point. Attach clincher with reverse order of removing.



8. Movement and Installation

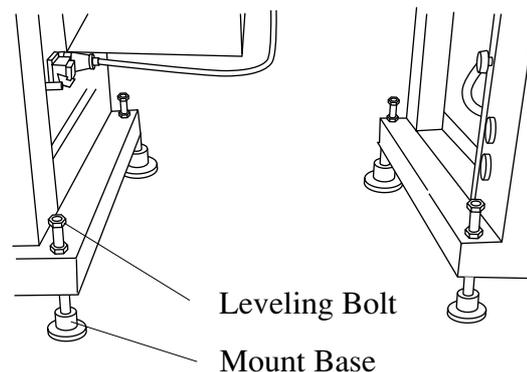
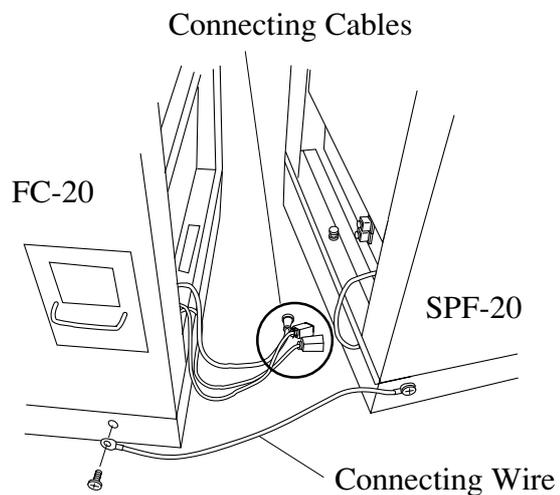
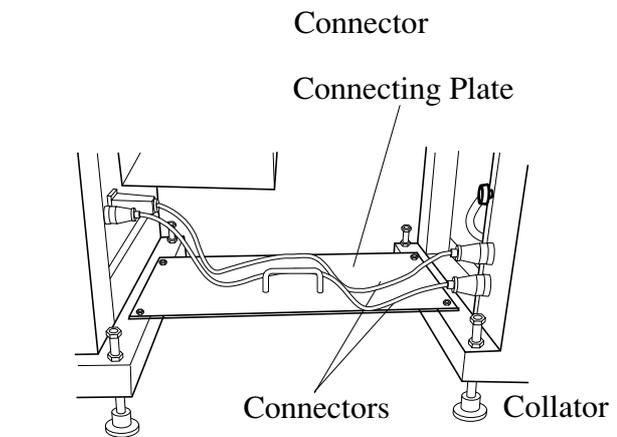
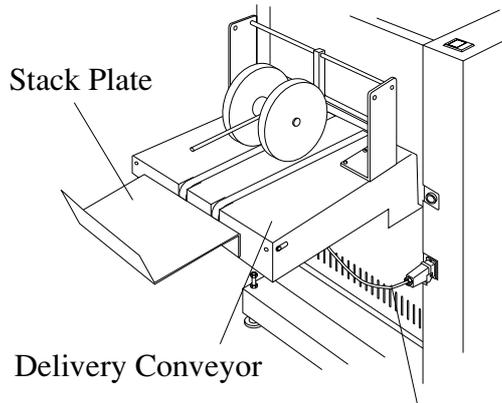
8-1 Movement of SPF-20	58
8-2 Installation of SPF-20	59
8-3 Paper Insertion Knife Unit (Option) Attachment	61

8-1 Movement of SPF-20

⚠ WARNING

- Weight of SPF-20 is 470 kg (1,035 lb).
Move SPF-20 with suitable method for weight of unit.
- Install SPF-20 on flat and rigid surface floor.

1. Remove stack plate, conveyor cable, and delivery conveyor.
2. Detach connecting cable between collator and SPF-20.
3. Remove connecting plate.
4. If FC-20 is connected, detach connecting cable between SPF-20 and FC-20 and remove connecting wire.
5. Loosen lock nut on leveling bolt with spanner (19 mm) and loosen leveling bolts.
Remove mount bases.
6. Move SPF-20 with more than two person.



8-2 Installation of SPF-20

8-2-1 Installation of SPF-20

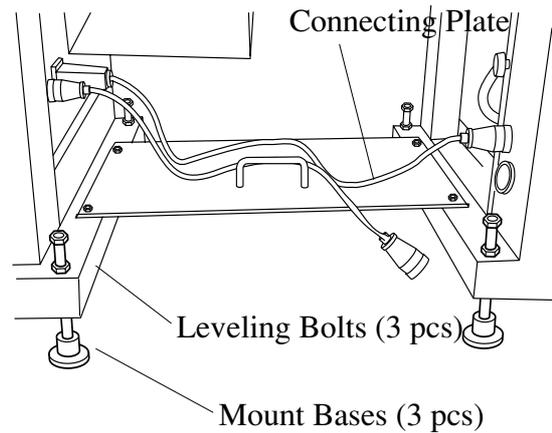
This section shows how to install SPF-20.

1. Attach connecting plate.
2. Raise ejecting rollers on delivery section of collator.
3. Adjust height of ejecting section of collator and in-feed conveyor with leveling bolts as in illustration.

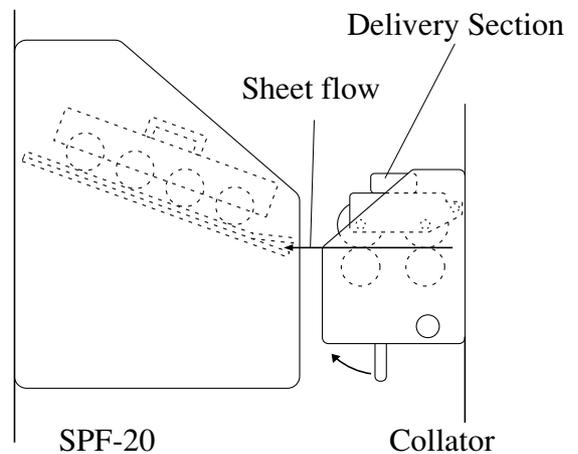
Collator and SPF-20 height can be adjusted with leveling bolts

NOTE

SPF-20 should be leveled with three leveling bolts.



In-Feed Conveyor



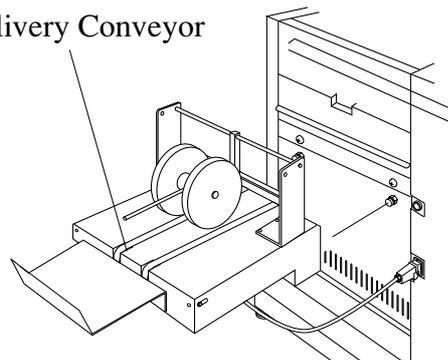
4. Attach two connecting cables between collator and SPF-20.
5. Hang delivery conveyor on hunger bolts.

NOTE

- Hook hunger bolt into key hole shape hook firmly.

- When FC-20 is connected install delivery conveyor on FC-20.

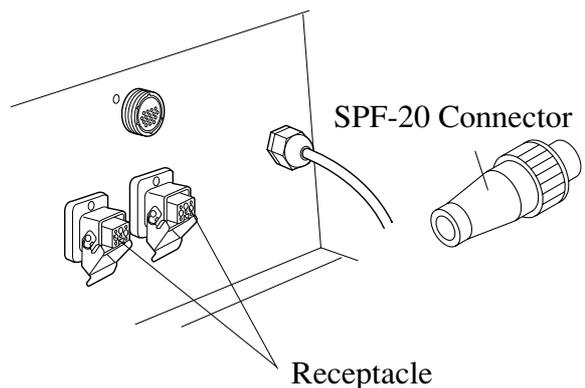
Delivery Conveyor



6. Attach stack plate on delivery conveyor and attach connector to receptacle.

NOTE

- When FC-20 is not connected, attach SPF-20 connector.

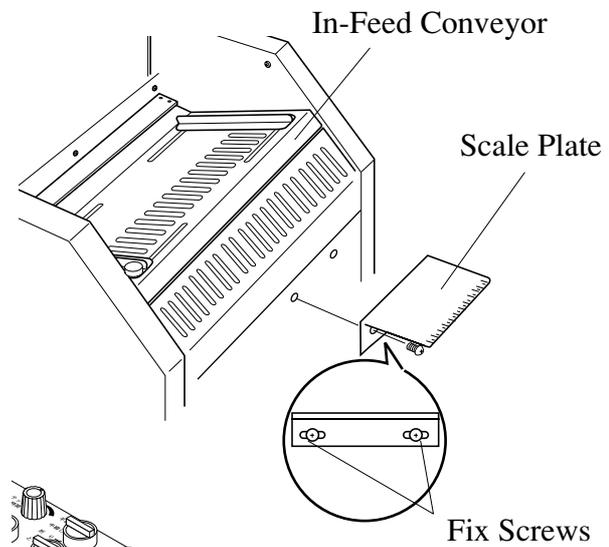


8-2 Installation of SPF-20

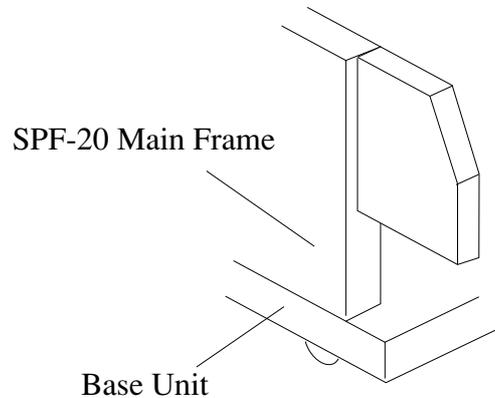
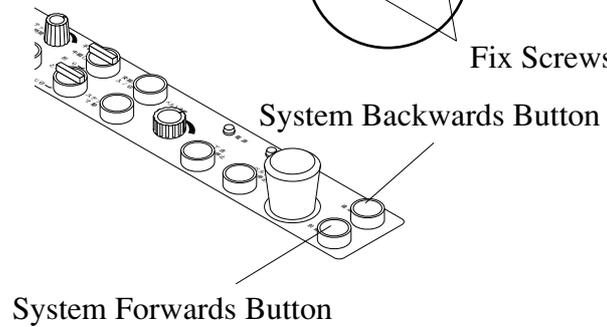
8-2-2 Attachment of Scale Plate and Register Line Label

1. Attach scale plate at end of in-feed conveyor.

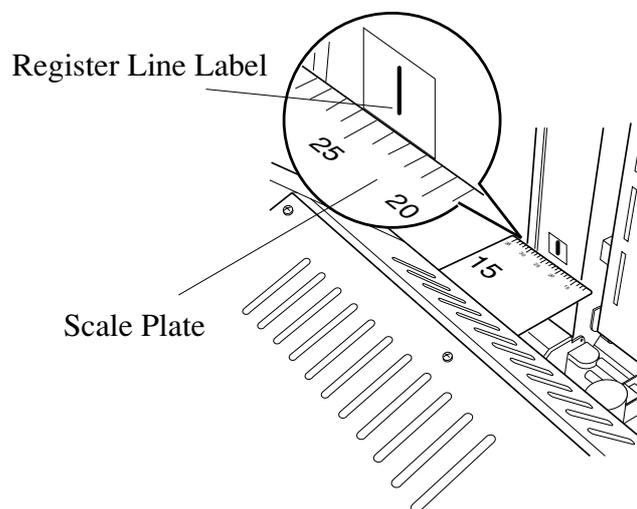
- Fix two screws at middle of long holes.



2. Turn on main switch and press system forwards/backwards button to align SPF-20 main frame and base unit.



3. Attach register line label on collator frame so that the register line align with the 23.5 mm on scale plate.

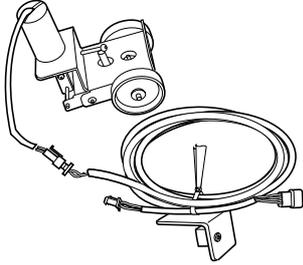
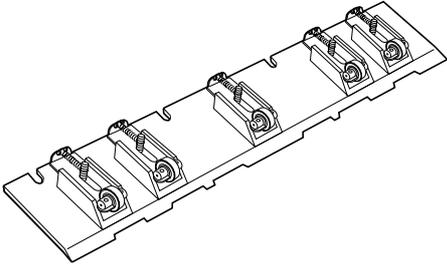
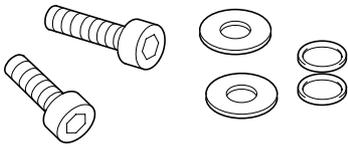


NOTE

Scale plate position can be adjusted within a range of long holes.

8-3 Paper Insertion Knife Unit (Option) Attachment

8-3-1 Parts

Roller Unit	1 pc	Fold Knife (for PN-20)	1 pc
			
Screw (SB5-12, W5, W5)	2 pcs each		
			

8-3 Paper Insertion Knife Unit (Option) Attachment

8-3-2 Roller Unit Attachment

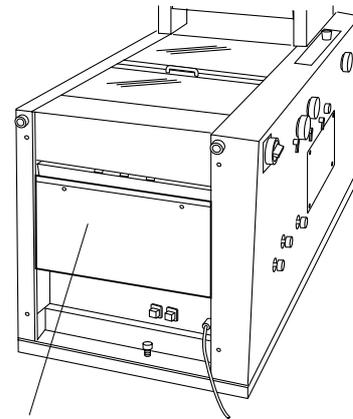
This section shows how to attach roller unit to SPF-20/SPF-20A.



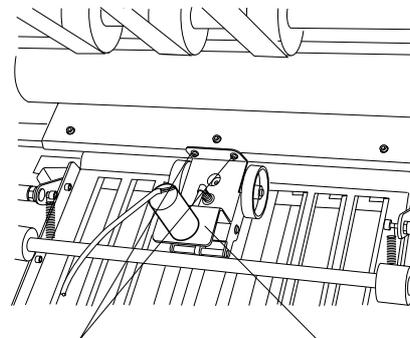
WARNING

- Turn off main power before attaching roller unit. Otherwise sudden start of SPF-20/SPF-20A can cause severe personal injury.

1. Remove SPF-20/SPF-20A side cover (L). (4 fix screws)
2. Attach roller unit on the position as shown in the drawing at right. (2 fix screws)



Side Cover (L)

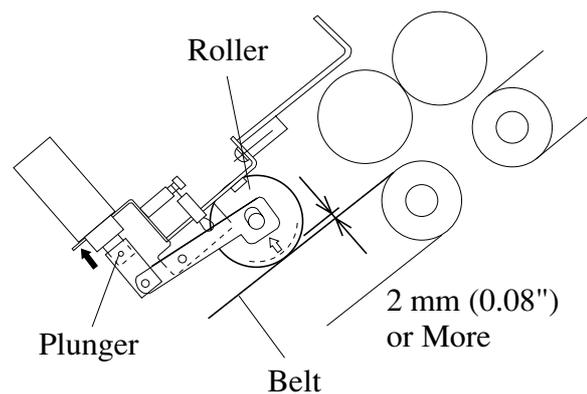


Fix Screws

Roller Unit

NOTE

- Attach roller unit so that roller slightly touches belt when plunger is raised. And at the same time, the gap between roller and belt is 2 mm (0.08") or more when roller is held.

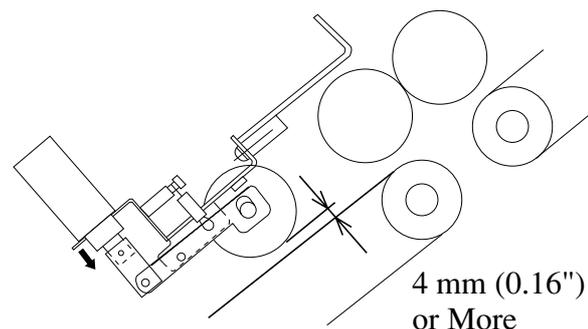


Plunger

Belt

2 mm (0.08")
or More

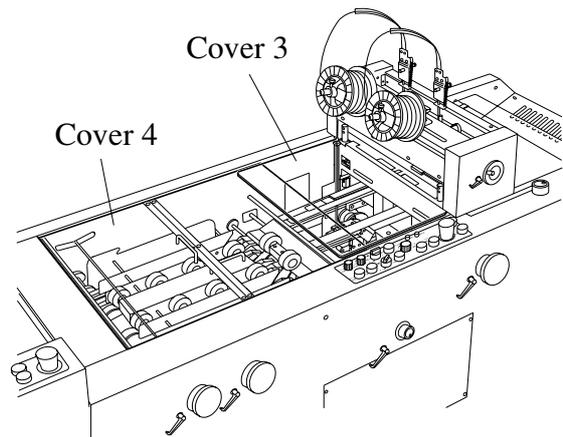
- Check that the gap between roller and belt is 4 mm (0.16") or more when plunger is lowered.



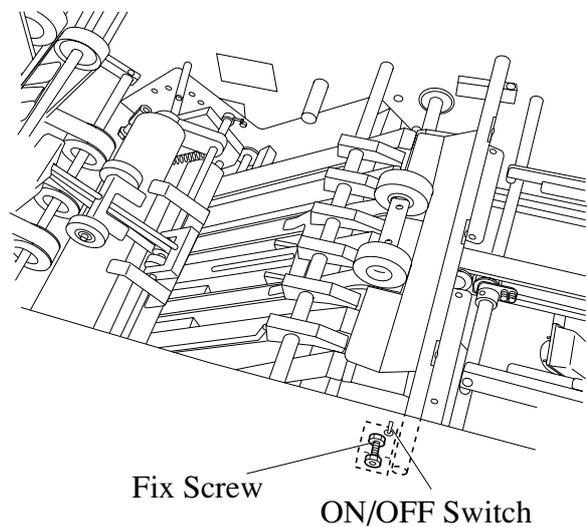
4 mm (0.16")
or More

8-3 Paper Insertion Knife Unit (Option) Attachment

3. Open covers 3 and 4.



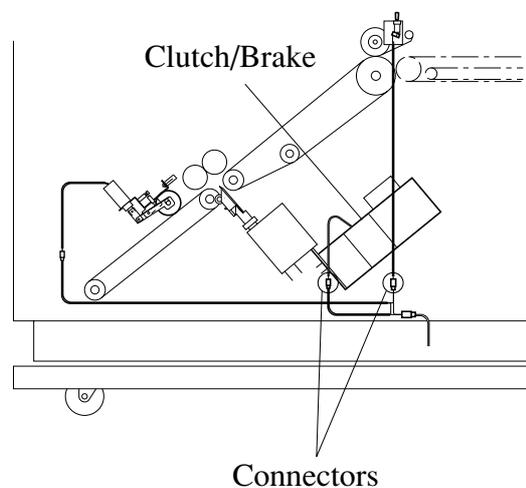
4. Attach ON/OFF switch on the position as shown in the drawing at right. (1 fix screw)



5. Remove clutch/brake connectors and connect roller unit connectors between clutch/brake connectors.

6. Attach side cover (L). (4 fix screws)

7. Close covers 3 and 4.



8-3 Paper Insertion Knife Unit (Option) Attachment

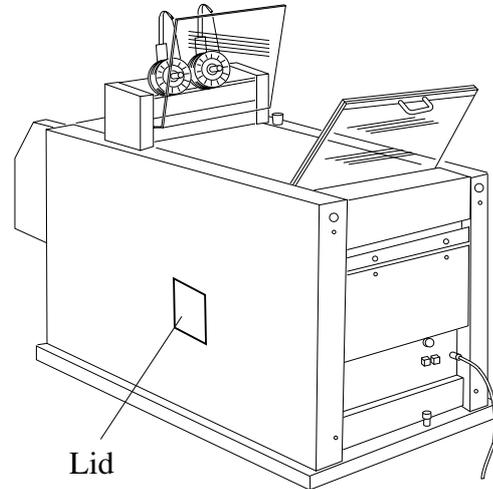
8-3-3 Fold Knife Replacement

This section shows how to replace fold knife.

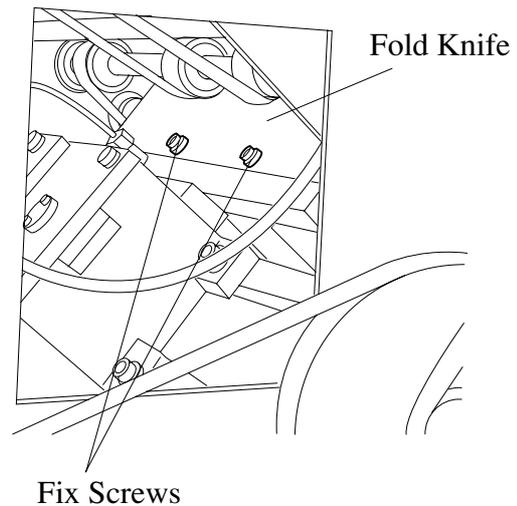
⚠ WARNING

- Turn off main power before replacing fold knife. Otherwise sudden start of SPF-20/SPF-20A can cause severe personal injury.

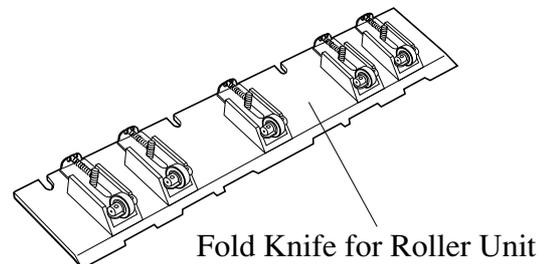
1. Remove lid on SPF-20/SPF-20A rear cover. (4 fix screws)



2. Remove original fold knife. (4 fix screws)



3. Attach fold knife for roller unit instead. (4 fix screws)



4. Attach lid on SPF-20 rear cover. (4 fix screws)