

# AMS-221F Pneumatic type inverting clamp device INSTRUCTION MANUAL

CAUTION :



This Instruction Manual is intended for the pneumatic type inverting clamp device. Read and fully understand the instructions given under "IMPORTANT SAFETY INSTRUCTIONS" in the Instruction Manual for the AMS-221F before putting the machine into service when this device is installed to the AMS-221F.

In addition, to emphasize the device, some illustrations of the AMS-221F are simplified. Also, illustrations of the safety devices are partially omitted.

## CONTENTS

I. SPECIFICATIONS1
II. PREPARATION FOR OPERATION1
1. Removing the intermediate presser1
2. Setting of the memory switch2
3. Installing the inverting device4
4. Assembling the feed plate5
5. Connecting the pneumatic components5
6. Replacing the needle bar thread guide6
III. OPERATION OF THE SEWING MACHINE
1. Adjusting the intermediate stop position of the inverting intermediate presser7
2. How to use the label guide (supplied with the device)7
IV. OPERATION OF THE SEWING MACHINE (BASIC)9
1. Sewing (How to operate the pedal switch)9
V. MAINTENANCE
1. Adjusting the degree of angle of the inverting intermediate presser
2. To enlarge/reduce an inversion pattern11
3. Cautions to be taken when creating a sewing pattern
4. When the machine is used without inverting device15
VI. DIMENSIONS OF THE FEEDING FRAME16
1. When the pneumatic type inverting clamp device is installed on AMS-221F
2. Machining the inverting intermediate presser17
VII. PARTS LIST

## I. SPECIFICATIONS

1)	Sewing area :	Max. sewing area	X (lateral) direction : 180 mm Y (longitudial) direction : 110 mm			
		X (lateral) direction : 46 mm Y (longitudinal) direction : 42 mm				
		(When the inverting intermediate presser mounting base, that is optional				
		is used.				
		∖Min. sewing area	X (lateral) direction : 38 mm Y (longitudinal) direction : 34 mm $$ $$			
2)	Needle :	DP X 17 (exclusiv	re)			
3)	Lift of the inverting	feeding frame :	Standard 25 mm Max. 30 mm			
	Lift of the inverting	intermediate press	ser : Standard 25 mm Max. 30 mm			
4)	Specification of the second origin :		A second origin can be specified at a desired position within			
			the sewing area during creating a sewing pattern.			
			A second origin cannot be specified using the moving key.			
			(When reading an inversion pattern)			
5)	Inverting crank cor	ntrol system :	Pneumatically driven and inverted to the right and left			
<b>(</b> /c	aution					
1	I ne other sp	ecifications of the	se subclass models are same as the AMS-221F-2516.			

## (II. PREPARATION FOR OPERATION



## WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

## 1. Removing the intermediate presser



Remove the wiper and intermediate presser. Attach spacer **1** instead of the intermediate presser.

## 2. Setting of the memory switch

To use the pneumatic type inverting clamp device, it is necessary to set the memory switch of the sewing machine main unit.



#### (Remarks)

When memory switch (K241) is set to the value of the list on the previous page, the various memory switches which are necessary for the motion of the pneumatic type inverting clamp device of the machine head automatically change over.

To actually actuate the inverting crank, it is necessary to input inversion setting \* to the sewing pattern used beforehand.

\* Automatic inversion (a) or optional inversion (b) (default) is selected with function code No.091 (clamp inversion setting) of IP-500, and inversion point has to be inputted with function code No.005 (inversion point) when optional inversion (b) is selected. Input clamp inversion setting immediately after the start of pattern inputting.

[For the details, refer to WEB edition of IP-500 INSTRUCTION MANUAL.]



Model	221F	221F
woder	SL	HL
Sewing range	2516	2516
K241 set value	07	08

(2) Select memory switch button K241.
Press UP/DOWN SCROLL buttons 
Image: The select state of the

select.

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(3) Change memory switch data K241 for the pneumatic type inverting clamp device. Change the contents of K241 in accordance with the list below. Enter the desired number with the numeric keypad <sup>(3)</sup>. Then, press Enter button <sup>(3)</sup> <sup>(3)</sup>

221FSL(2516), enter "7". Then, press the Enter button to confirm the number you have entered.

If you change the setting of the K241, the memory switch data that have been conventionally entered will be changed collectively to the data for the newly-set inverting clamp device specification. If you have changed the memory switch previously, carry out changing of the K241 setting. Then, re-set the memory switch.

## 3. Installing the inverting device



Remove four setscrews ① and four washers ②.
 Then remove feeding frame, right ③ and left ④.

2) Install inverting intermediate presser asm. 
using two pcs. each of setscrew SM6061802TP
and washer WP0651056SD 
and spacer
supplied with the pneumatic type inverting clamp device.



- 3) Install inverting feeding frame ① on inverting presser foot, right asm. ① using two setscrews
  ③ and two washers ④ supplied with the pneumatic type inverting clamp device.
- 4) Assemble screw (2) and nut (3) supplied with the pneumatic type inverting clamp device to inverting presser foot, right asm. (10). See the item "the degree of the angle of presser" described in the Instruction Manual for the sewing machine main unit and adjust the degree of the angle of feeding frame (1).

Fix the right assembly of the presser foot for reversing **(1)** to the feed base with two supplied screws SM601202TP **(1)** and two washers WP0651056SD **(2)**.

## 4. Assembling the feed plate



## 5. Connecting the pneumatic components





Loosen setscrews ②, and replce feed plate ①
 with inverting feed plate ③.

- Loosen setscrew ② in end block ①, and draw out end block ① in the direction A.
- 2) Insert solenoid valve **③** into the position as shown in the figure.
- Insert end block ① into rail ④, and tighten setscrew ② while contacting the end block closely to the solenoid valve.



When tightening setscrew ②, care should be taken so that there will be no clearance among the solenoid valve and other components since air leakage will be caused if solenoid valve and other components are not closely set. Be sure to insert three bushings ③ into solenoid valve ④.

- 4) Insert solenoid valve cables (3) into solenoid valve(3).
- 5) Insert the pins of solenoid valve cables ③ into the specified positions of the connector ⑦.
   Red lead wire → to No. 4 of the connector Black lead wire → to No. 10 of the connector



6) Connect green ① and yellow ② air tubes, joint ③, joint B ④ and two air tubes ③ (1.5 meter each) coming from the air cylinder of inverting ietermediate presser asm. as shown in the figure, and connect them to solenoid valve for inverting ③ (③, ⑤).

Connect joint B  $\blacksquare$  in the direction of ( $\clubsuit$ ) as shown in the figure.

## 6. Replacing the needle bar thread guide

If your sewing machine is provided with needle bar thread guide ②, replace it with needle bar thread guide ③ for heavy-weight materials.



- 1) Remove setscrew **1**.
- Draw out needle bar thread guide 2 from needle bar 4.
- Insert needle bar thread guide 3 for heavyweight materials into needle bar 4 and secure it with setscrew 1. Threading hole almost faces toward you as illustrated.

## **III. OPERATION OF THE SEWING MACHINE**



See the Instruction Manual for the sewing machine main unit together with this Instruction Manual.

### 1. Adjusting the intermediate stop position of the inverting intermediate presser



WARNING : Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Loosen knob ① .

 Adjust the intermediate stop position of the inverting intermediate presser by turning knob so that it stops slightly above the workpiece on the machine.

Turning knob ② in the direction A will increase the height of the inverting intermediate presser in its intermediate stop position or in the direction B will decrease it.





Only the inverting intermediate presser is capable of stopping at the intermediate stop position.

#### 2. How to use the label guide (supplied with the device)

#### (1) Installing the label guide



#### (2) Adjusting the label guide



WARNING : Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

(A) to position **D**.



## **IV. OPERATION OF THE SEWING MACHINE (BASIC)**

See the Instruction Manual for the sewing machine main unit together with this Instruction Manual.

## 1. Sewing (How to operate the pedal switch)



- Place a garment body under the feeding frame ②. Depress pedal ③ of the pedal switch, and the feeding frame ② will come down to clamp the garment body.
   Re-depress pedal ④, and the feeding frame will go up.
- 2) Place a label inside the inverting intermediate presser ①. Lightly depress pedal ③, and the inverting intermediate presser ① will stop in the intermediate stop position. Release the pedal, and the inverting intermediate presser ① will rise back to the initial position.
- 3) Position the label and further depress pedal (3), and the inverting intermediate presser (1) will come down to the lowest position to clamp the label. Re-depress pedal (3) until it will go no further, the inverting intermediate presser (1) will return to the intermediate stop position.
- 4) Depress pedal when both the feeding frame and intermediate presser are in the lowest position, the sewing machine will start sewing.

Caution

## V. MAINTENANCE



See the Instruction Manual for the sewing machine main unit together with this Instruction Manual.

## 1. Adjusting the degree of angle of the inverting intermediate presser

WARNING : Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



- If the inverting intermediate presser is in parallel to the throat plate, the pressure of the front side of the inverting intermediate presser is likely to drop. Consequently, be sure to adjust the inclination of the inverting intermediate presser so that the front side of the inverting intermediate presser is slightly lower than its rear side.
- Loosen screws ① and nut ③ . Turning adjustment screw ② clockwise will lower the front side of the inverting intermediate presser.
- After the adjustment of the degree of angle of the inverting intermediate presser, tighten screws 1 and nut 3.
- Adjust the inclination of the feeding arm in the similar manner. (Refer to the Instruction Manual for the sewing machine main unit.)



If the inverting intermediate presser is excessively tilted, troubles may result such as the inverting crank shaft fails to turn and the inverting intermediate presser fails to go up.
As reference of the adjustment of the inclination of the inverting intermediate presser, the rear end of the inverting intermediate presser should be approximately 2 mm above the throat plate surface when the front end of the inverting intermediate presser meets the throat plate surface.

## 2. To enlarge/reduce an inversion pattern



Unlike the standard sewing pattern, a sewing pattern which contains a pattern inversion command cannot be enlarged/reduced.

Specify a reference point **1** for the pattern enlargement/reduction by means of the IP-500.



When an inversion pattern is enlarged/ reduced, the crank shaft may interfere with the needle resulting in needle breakage. So, carefully specify a reference point for the pattern enlargement/ reduction.

## 3. Cautions to be taken when creating a sewing pattern



Be sure to take the cautions described below when creating a sewing pattern using the IP-500.

## (1) Controlling the inverting crank



The inverting crank is actuated between **A** and **B** sides by the air cylinder.When automatic inversion (A) is selected with clamp inversion setting (function code No.091 : refer to IP-500 INPUT INSTRUCTION MANUAL.), the inverting crank status is controlled as described below.

- When a pattern (pattern with an inversion) is read from a floppy disk and the origin is retrieved, the inverting crank is inverted to A side.
- 2) When the start switch is turned on at the sewing starting point or the 2nd origin (already established in the pattern by the input device), the inversting crank is also inverted to A side. (Nothing is output when operating the forward key.)
- 3) When the needle passes the line  $\ell$  located approximately 17mm.
- \* above the origin on the right-hand side of Y-axis, the inverting crank will be inverted to **B** side when the sewing proceeds in direction a or **A** side when the sewing proceeds in direction b.
- 4) When the sewing starting point or 2nd origin is retrieved after the completion of sewing, the inverting crank is inverted to **A** side.
- In the case where an inverting point (function code No.005 : refer to IP-500 INPUT INSTRUCTION MANUAL.) is set when inputting a sewing pattern, the inverting crank will be inverted from A to B or B to A at the specified point. At this time, the inversion at line 2 of 17mm is not performed.

#### (2) Input "jump" up to the 2nd origin.



Pressing the Set Ready switch will move the feeding frame to the 2nd origin (2) after retrieving the origin. At this time, the inverting intermediate presser mounting base may interfere with the needle. To prevent this, "jump" should be entered up to the 2nd origin (2) as illustrated in the figure.

#### (3) Specify the 2nd origin.



When the sewing start point **①** is retrieved after the completion of sewing, the inverting crank rotates and the feeding frame goes up. At this time, the tip of the needle may interfere with the inverting crank if the sewing start point **①** is close to the inverting crank. To prevent this, **specify the 2nd origin ② at a position that is 25 mm or more** away from the center of the inverting crank shaft using the offset input function, and then enter "jump" from the 2nd origin **②** to the sewing start point **①**. When the 2nd origin **②** has been set, the machine will return to the 2nd origin **②** after the completion of sewing.



For a sewing pattern which contains a pattern inversion command, the 2nd origin cannot be specified using the moving key. ۱

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(4) Be sure to input needle entry points near the crank shaft within the predetermined data input area.



1) When sewing the material of which thickness is 4 mm or less

- a. The inverting crank and the inverting intermediate presser mounting base should be positioned with respect to the origin as illustrated in the figure. Take care not to allow the needle and the needle bar to come in contact with the inverting crank and the inverting intermediate presser mounting base.
- b. In principle, the sewing area near the crank shaft and the inverting intermediate presser mounting base is the portion indicated by attaching slanting lines (

[	At this time, the sewir	ng area will be as follows :		٦
	Max. sewing area	X (lateral) direction : 180mm	Y (longitudinal) direction : 110mm	
Caution	Min. sewing area	X (lateral) direction : 34mm	Y (longitudinal) direction: 32mm	ļ
	When the inverting Min. sewing area	intermediate presser mounting X (lateral) direction: 26mm	base, that is optionally available, is used Y (longitudinal) direction: 24mm	)  

#### 2) When sewing the material of which thickness exceeds 4 mm



When the material to be sewn is thicker than 4 mm, the sewing area near the crank shaft will be reduced. The sewing area in the X (lateral) direction is not symmetrical. So, be careful.



#### 3) When the intermediate presser is used





## 4. When the machine is used without inverting device

- 1) Remove air tubes **1** and **2** for inverting from the joint and the joint B.
- 2) Remove screws  ${\rm (3)}$  , and remove inverting intermediate presser asm. (4).
- 3) Perform initialization of the memory switch (see P2) as occasion demands.



## VI. DIMENSIONS OF THE FEEDING FRAME

## Sewing area Feed plate 110 Origin 6 20 90 ส 19.5 22.5 38.5 <u>\_\_\_</u> 6 4 37 37 73 Ų 10 125.5 28.5 287 Feed plate ጊ ø 4 mm hole 15/64 28-thread screw

## 1. When the pneumatic type inverting clamp device is installed on AMS-221F

## 2. Machining the inverting intermediate presser

1) If you use the standard inverting intermediate presser mounting base (B4320220000), be sure to drill attaching holes in the inverting intermediate presser as illustrated in the figure.



2) If you use the optional inverting intermediate presser mounting base (B4316220000), be sure to drill attaching holes in the inverting intermediate presser as illustrated in the figure.



## VII. PARTS LIST



REF.NO	NOTE	PART NO	DESCRIPTION	品名	Qty
1		402-20275	LOWER PLATE FOR INVERSION		1
2		401-96094	NEEDLE BAR THREAD GUIDE H	針棒糸案内日	1
3		B2553-215-A00	FRAME	ハンテンヨウヌノオサエソトワク	1
4		B2557-215-A00	PLASTICS BLANK	ハンテンヨウプラスチックブランク	2
5		B2558-220-000	PLASTIC BLANK PLATE	プラスチツク ブランクオサエ	2
6		B2559-220-000	HINGE PIN	プラスチツク ブランク コテイジク	4
7		B2564-215-A00	SPONGE	ハンテンヨウヌノオサエソトワクスポンジ	1
8		402-20276	PRESSER FOOT ASM.	反転用布押え足組	1
9		402-20278	INNER_PRESSER_FOOT_ALL_ASM	反転用中押え足総組	1
10		402-20279	INNER_PRESSER_FOOT_FOR_INVERSION	反転用中押え足組	(1)
11		B4302-220-000	BEARING	ハンテンクランク ジクウケ	(1)
12		B4303-220-000	SPACER	ハンテンクランク ジクウケスペーサ	(1)
13		B4304-220-000		ハンテンラックワケ	(1)
14		B4305-220-000			(1)
15		B4306-220-000	KNUCKLE	ハンテンシリンダーナックル	(1)
10		B4307-220-000		ハノナノンリノダーノフクット	(1)
10		B4300-215-000		ハノナノ シリノタナユーフ	(1)
10		B4309-220-000		ハンテンサランシング ハンタンナカオサエ トロッケダイ	(1)
20		B4327-220-000		ハンタンテ カオ シエ トワング タイ ハンテン シルトンダ	(1)
20		B4328-220-000	WASHER	ハンテンクランク ザガネ	(2)
22		P.I-0460525-03	HOSE ELBOW	ホーマ エルボ	(2)
23		SB-3070001-00	BEARING	ころがり軸受	(2)
24		SB-3070001-00	BEARING	ころがり軸受	(1)
25		SB-3070002-00	BEARING	ころがり軸受	(1)
26		SD-0460703-TP	SHOULDER SCREW D=4.6 H=7		(1)
27		SS-1121010-SP	SCREW	サラネジ	(2)
28		SS-6110640-SP	SCREW 11/64-40 L=6	ヒラネジ 11/64-40 L=6	(1)
29		SS-6151412-TP	SCREW 15/64-28 L=14	ロツカクアナボルト 15/64-28 L=14	(2)
30		SS-7090910-TP	SCREW 9/64-40 L= 8.5	マルヒラネジ 9/64-40 L=8.5	(4)
31		SS-5110710-SP	SCREW 11/64-40 L=7	トラスネジ 11/64-40 L=7	(1)
32		SS-7150940-SP	SCREW 15/64-28 L=9	マルヒラネジ 15/64-28 L=9	(2)
33		SS-8150912-TH	SCREW 15/64-28 L=9	トメネジ 15/64-28 L=9	(1)
34		NS-6150310-SP	NUT 15/64-28	ロッカク ナット 15/64-28	(1)
35		B3228-771-00B	BOBBIN WINDER SPACER	イトマキ スペーサー	(1)
36		B4310-215-000	LABEL GUIDE A	ラベルガイドA	1
37		B4311-220-0A0	LABEL GUIDE B ASM.	ラベル ガイドBクミ	1
38		B4311-220-000		ラベル カイドB	(1)
39		B4315-220-000			(1)
40		NS 6150220 SD			1
41		SS 1000510 SD	SCREW 0/64 401 -5	ロッカクノット 15/64-28	1
42		SS-1090510-3F	SCREW 9/04-40 L=5	リノネシ 9/04-40 L-5 ナベマジ 11/64-40 L-7	2
43		SS-4110715-SP	SCREW 11/64-40 L=7	$+ \sqrt{2}$ 11/04 40 L-7	2
45		SS-4110715-SP	SCREW 11/64-40 L=7	$+ \sqrt{2}$ 11/64-40 L=7	2
46		SS-7110510-SP	SCREW 11/64-40 L =5	$\overline{2}$	4
47		SS-7150910-TP	SCREW 15/64-28 L=9	$\sqrt{15}$ $\sqrt{64-28}$ $1=9$	2
48		SM-6061202-TP	SCREW M6 L=12	$\Box_{y} = D_{y} = D_{y$	2
49		SS-8150822-TP	SCREW 15/64-28 L=8	トメネジ 15/64-28 L=8	1
50		WP-0450000-SD	WASHER 4.5X8X0.5	ヒラザガネ 4.5×8×0.5	2
51		WP-0450000-SD	WASHER 4.5X8X0.5	ヒラザガネ 4.5X8X0.5	2
52		WP-0450000-SD	WASHER 4.5X8X0.5	ヒラザガネ 4.5×8×0.5	2
53		WP-0450801-SD	WASHER 4.5X10X0.8	ヒラザガネ 4.5×10×0.8	4
54		WP-0502616-SD	WASHER	ヒラ ザガネ	1
55		WP-0651056-SD	WASHER 6.5X11X1	ヒラザガネ 6.5X11X1	2
56		WP-0651056-SD	WASHER 6.5X11X1	ヒラザガネ 6.5X11X1	2
57		400-35324	SOLENOID VALVE CONNECTER ASM	デンジベンコネクタクミ	1
58		B4711-220-00I	AIR TUBE LABEL J07	エアーチューフラベルJO/	1
59		B4711-220-00J			1
60		B1-0400251-EB	URETHANE TUBE BLACK 4X2.5	ホリワレダンチューノ羔 4X2.5	2
62		DI 3030400 02		フラビノハノト フトレート コニオンオ	5 1
63		P J 3030400-02		ヘビレード ユーオフォ ロンタッチ ツギテ	1
64		P\/_1502000000		ランファッテ フイテ ちポート デンバベン	⊥ 1
65	#01	B4316-220-000	SUPPORT BASE B	しい コンテンノンシン ハンテン ナカオサエ トロッケダイロ	1
66	#01 #01	SS-1090750-SP	SCREW 9/64-40 I =7	シタメストリッケネジ	2
67	#01	B4317-220-000	LARGE BLANK (DIAMOND CUT)	ハンテンナカオサエブランクダイギザアロ	1
68	#01	B4318-220-000	MIDDLE BLANK (DIAMOND CUT)	ハンテンナカオサエブランクチョウギザアリ	1
69	#01	B4319-220-000	SMALL BLANK (DIAMOND CUT)	ハンテンナカオサエブランクショウギザアリ	1
70	#01	B4326-220-000	CRANK SHAFT B	ハンテンクランクジクB	1
				オプシットンが早	
		NUIE(/土記)	#UTUPTIONAL PARTS	コ ノノコノ 中四	