Industrial Sewing Machines





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#### CONTENTS

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1.	Specifications · · · · · · · · · · · · · · · · · · ·	1
2.	Selection of Motor Pulley	1
3.	Needie ····	2
4.	Installation Diagram of Table Stand	2
5.	Supplying and Draining the Oil and Filter Replacement	3
6.	Threading and Tension Adjustment	4
7.	Adjustment of Needle Bar Height	6
8.	Adjustment of Looper Backward Movement and Looper Position in the Front-Rear Direction with Respect to the Needle	7
9.	Height of the Feed Dog	8
10.	Feed Dog Position in the Front-Rear Direction	9
11.	Adjustment of the Feed Amount	9
12.	Adjustment of the Cast Support Bracket	9
13.	Adjustment of the Presser Foot	10
14.	Adjustment of the Needle Guard	11
15.	Adjustment of the Puller	11
16.	Elastic Guide	12
17.	Automatic Thread Cutter	14
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#### 1. Specifications

#### 1-1 Name of product

High-speed 2-needle, slim cylinder sewing machine for hemming or cover seaming with the most elastic.

#### 1-2 Types of machines



Type equipped with UTC (Thread cutter) Basic Type Model M1002A M1002C M1002A M1002C M1002P M 1002P Maximum sewing speed (rpm) ( 5000 5000 4500 5000 5000 4500 Number of needles 2 2 2 2 2 2 Looper 1 1 1 1 1 1 3/16, 7/32, 3/16, 7/32, 3/16, 7/32, 3/16, 7/32, 3/16, 7/32, 3/16, 7/32. Needle gauge 1/4 1/4 1/4 1/41/4 1/4 UY128G5 UY128GS UY128GS **UY128GS UY128GS UY128GS** DVK28 Service needle **DVK28** DVK28 DVK28 DVK28 **DVK28** =11, 12, 14 =11, 12, 14 =11, 12, 14 =11, 12, 14 #11, 12, 14 **≠11, 12, 14** Needle bar stroke 31 31 31 31 31 31 Looper stroke 30.5 30.5 30.5 30.5 30.5 30.5 380mm 380mm Outside diameter of cylinder 201mm 201mm 201mm 201mm (with holder) (with holder) Fully auto-Fully auto-Fully auto-Fully auto-Fully auto-Fully automatic forced matic forced matic forced matic forced matic forced matic forced Lubrication system Lubrication Lubrication Lubrication Lubrication Lubrication Lubrication system system system system system system Pressure foot lifting amount 7~10mm 7 ~ 10mm 7~10mm 7~10mm 7~10mm 7~10mm Electrical Electrical Electrical Thread cutting system Pneumatic Pneumatic Pneumatic Wiper system Electrical Electrical Electrical Electrical Electrical Presser foot system Electrical Pneumatic Pneumatic Pneumatic Plain feed Plain feed Feed system Plain feed Plain feed Plain feed Plain feed with puller with puller with puller For flat-felled For processing For stitching For flat-felled For cover For stitching sleeves and seaming of of elastic hems sewing of overseaming of of elastic hems necks for ovm training pants, Hem tucking lock seams for sleeves of half Hem tucking clothes and pajamas. width: 8 to waist bands. sleeve kniteed width: 8 to training wear, short pants, 28mm Application shirts, etc. 28mm Width of etc. etc. Width of elastic: 3 to elastic: 3 to 20mm 20mm Fitted with Fitted with puller puller

#### 2. Selection of Motor Pulley

The optimum combinations of sewing machine speed and motor pulley diameter are shown in the table below. Select the pulley according to the speed.

(Note: The normal rotating direction of the sewing machine bulley is toward the operator when viewed from the front.)

Sewing machine speed (rpm)	Outside diamter of oulley (mm)		
	SOHz	60Hz	
4000	85	70	
4500	95	80	
5000	110	00	

#### 3. Needle

#### 3-1 Types of needles

Needles specified for use with the sewing machine come in variety of sizes from  $\pm 11$  to  $\pm 14$  and are selected according to the work performed.

Japanese gauge	11	12	13	14
German gauge	 75	80	85	90

#### 3-2 Setting the needle

Install the needle so that its gouged portion is exactly located in the back.

- Replacement procedure
  - 1 Turn the pulley until the needle bar comes to its top dead center.
  - 2 Loosen needle set screw A and insert a new needle all the way until it settles on the end of the needle hole. Position the needle correctly so that the gouged portion is located in the back and tighten needle set screw A securely.



#### 4. Installation Diagram of Table Stand



#### 5. Supplying and Draining the Oil and Filter Replacement

5-1 Oil supply



The lubricating oil recommended for the sewing machine is TELESSO 33. To supply oil, proceed as follows.

- 1. Remove siphon case A and supply oil into this opening using a funnel.
- 2. While observing oil level gauge B fitted on the oil reservoir, pour in oil until the oil level reaches to marked line C.
- 3. While the machine is in operation, watch through the siphon case to make sure the oil is sprayed continuously.

#### 5-2 Draining the oil

To drain used oil, remove drain plug E from the front of the oil reservoir.

#### 5-3 Replacing the filter



Remove cover A fitted to the bottom of the oil reservoir. Filter B can now be seen. Remove the filter and replace it with a new one. Be sure to fit it securely in oil feed port C.

#### (Precautions)

- 1. Always check the oil gauge before using the machine to ensure that the oil level is proper.
- 2. Use only the specified lubricating oil or its equivalent.
- 3. If there is no oil spray when viewed through the siphon case, even though a sufficient amount of oil has been poured in, parts may sieze or clatter due to a lack of oil. This suggests a clogging of the oil filter with dust, etc., so clean the filter or replace it with a new one. The inside of the oil reservoir should be claned periodically.

#### 6. Threading and Tension Adjustment

#### 6-1 Threading

Thread the thread by referring to the figure below. Lines A and B represent needle threads and line C represents looper thread.



Needle thread: 80 g/cm to 110 g/cm Looper thread: 20 g/cm to 40 g/cm

#### 6-2 Tension adjustment of the needle thread

The proper thread tension varies according to the kind of fabric, kind and count of sewing thread, coarseness of stitch (amount of feed), and loop width (needle width). Adjust to the tension with the tension regulator to suit the acutal condition of operation. Turn the tension regulator clockwise to increase tension and turn it counterclockwise to reduce tension.

A and 8 : Needle thread С : Looper thread Note: Thread tension should be set low as long as stabilized seams can be obtained.

Tension adjuster

Setting at an unnecessarily high tension is likely to cause the end to break or a stitch to skip.

#### 7. Adjustment of Needle Bar Height

Adjustment value of needle bar height are shown in the table below. Remove the crank chamber oil cover. Loosen the screw fixed the needle crank lever (Fig.  $2\cdot\ddot{G}$ ) and then adjust the needle bar height as shown the value on the table by moving needle bar (Fig.  $2\cdot G$ ) up or down.

	Needle bar height (Dimension Y)		
Needle width	A, C	Р	
2/16 4.76mm			
7/32 5.56mm	· · · · · · · · · · · · · · · · · · ·		
1/4 6.35mm	8.2 ~ 8.5mm		



Note: Needle bar neight (Y) is the dimension from the top face of the needle plate to the tip of the needle on the left in Fig. 1.

#### (Table 1)





#### 8. Adjustment of Looper Backward Movement and Looper Position in Front-Rear Direction with Respect to the Needle



8-1 Adjustment the looper backward movement

Timing for the right-left movement of the looper and the needle is set so that the looper will arrive at the extreme right position when the needle is at its lowest position. At this time, distance D from the edge of the looper to the outside of the needle (the amount of the looper pull with respect to the needle) is 3.5mm. This distance can be finely adjusted by the looper connecting lever by loosing screw E.

# 8-2 Adjustment of looper position in the front-rear position respect to the needle

The relationship of the looper with respect to the needle in the front-rear direction should be adjusted so that the clearance between the tip of the looper A which passes behind the needle when moving from the right toward the left and needle C on the right be kept as minimized as much as possible as long as the looper can move smoothly.



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Adjustment of clearance can be accomplished by opening the front cover and loosening screw H, thus securing the looper travel adjustment lever G.

#### 9. Height of the Feed Dog

The proper height of the feed dog is illustrated below. The teeth of the feed dog are higher than the top face of the needle bar by 1 to 1.5mm, when the feed dog arrives at its upper most position.





Feed dog height adjustment:

The height of the feed dog can be adjusted by loosening the feed dog mount fixing screw A.

#### 10. Feed Dog Position in the Front-Rear Direction

Adjustment of the feed dog's position is delicate and related to the timing of the needle bar. Therefore, undue adjustment of its position should be avoided. When necessary, however, the feed bar's inclination can be adjusted by loosening feed bar set screws A and changing the position of eccentric pin 8.



Crankshalt

#### 11. Adjustment of the Feed Amount

By turning feed regulating screw A clockwise, the feed amount is decreased. The amount is increased by turning the screw counterclockwise. After adjustment, tighten nut B firmly.

#### 12. Adjustment of the Cast Support Bracket

#### 12-1 Thread take-up adjustment

When left-handed needle comes to bottom side of looper, thread take-up just release looper thread. This adjustment is very important in making stable stitches, but, this adjustment is according to standard thread such as polyestel thread. Therefore, if you need softer stitches, you should make gear adjustment thread take-up a little bit forwards. If you need more light stitches, a little bit backwards.



- 9 -

#### 12-2 Position of the looper thread tension cam

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Position the looper thread tension cam so that it will start taking up the looper thread when the looper arrives at its extreme left position. To adjust the position of the looper thread tension cam, loosen screw D and secure looper thread tension cam C. The position may have to be adjusted somewhat depending on the actual condition to stabilize the seams.

#### 13. Adjustment of the Presser Foot

13-1 Pressure adjustment

The pressing force of the presser foot should be as weak as practical. Note, however, if the pressing force is too weak an irregular feed, irregular seam, or skipping of a stitch may result. Turn the pressure regulating screw in the figure in direction A (clockwise) to increase the pressing force. Turn it in direction B (counterclockwise) to decrease the force.



#### 14. Adjustment of the Needle Guard





This adjustment should be done from front side of machine and when feed dog most come to front side and stops

As Needle guard is fixed to Feed dog, please adjust by loosing screw A to let right handed side needle to just exactly touch needle guard (do not push Needle guard)

Please do not make any space between needle and Needle guard.

#### 15. Adjustment of the Puller

- 15-1 Adjustment of the puller travel
  - 1. Detach the cover fitted to the side of the pulley.
  - 2. Use a T-shaped box wrench to loosen connecting rod fixing nut B which can be seen the oblong hole A.
  - 3. Move the connecting rod ball downward to increase the puller travel amount. Move it upward to decrease the travel.
  - 4. Adjust it properly according to the actual condition of operation.
- Note: Be-careful not to excessively tighten connecting rod ball fixing nut B or it will break.





To increase the puller pressure, turn the pressure regulating nut fitted on the puller base lockwise. Turn the nut unti-lockwise to decrease the pressure.



#### 16. Elastic Guide

This sewing machine permits elastic insertion tuck stitching of up to 20mm of the tuck width from the right needle.



(1) Adjustment of fabric at covering portion (Fig. 2-A)

Loosen set screw 1 in Fig. 2 and move fabric ruler 2 in Fig. 2, laterally.

(2) Adjustment of fabric insertion part (Fig. 2-B)

To match the finsihing tuck width, adjust by loosening set screws 4 and moving holders 3 and 5 shown in Fig. 2 to the right and left. Thereafter, loosen link screws 17-A and move guide 6 in Fig. 2

(3) Adjustment of elastic width

To suit the width of elastic used, make adjustment by moving elastic guide 7 in Fig. 2 and guides 9 and 10 to the right and left.

These guides can be moved by toosening set screws 8 and 11 in Fig. 2.



#### 17. Automatic Thread Cutter

17-1 Movable knife position with respect to the looper and the needle

The positional relationship of the movable knife to threads when it comes to the extreme left position is illustrated below. Normal position is as shown in Fig. 1 below, where the point B (location of the needle thread blade) comes within the triangle formed with the needle thread and the looper thread with the movable knife entering the loop formed with the needle threads.





Fig. 1

- (Case a) Neither needle thread nor looper thread is cut.
- (Case b) Both needle thread and looper thread are cut. But, since the looper thread cut is not caught with the plate spring for the knife, looper thread cannot be picked up at the beginning of sewing.
- (Case c) Neither needle thread nor looper thread is cut.
- (Case d) Both needle and looper threads are cut, but an irregular feed of the remaining needle thread will result.
- (Case e) Normal position at which both needle and looper threads are cut properly with the looper thread being caught with the plate spring for the knife.



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a) Position of the movable knife's left dead center to the needle

In order to bring the movable thread cutter to its normal position as shown in Fig. 1, adjust in such a manner that dimension A in Fig. 2 is 1 to 1.5mm when the cutter comes to its extreme left position.



b) Movable knife position in the front-rear direction with respect to the looper
 Fix the thread cutter assembly at the position as shown in Fig. 3.
 To adjust, loosen cutter assembly set screws 27 at 7 locations. (See Fig. 5.)



Fig. 4



Fig. 5

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# ø 000 $\oslash$ @D000000 0 Point P

Fixed knife position in the right-left direction with respect to the needle bar

Fig. 6

As the standard setting the positional relationship of fixed knife 1 in Fig. 6 in the right-left direction is set to 15mm (the dimension "a" in the above figure) with respect to the needle center line. If it is necessary to adjust the amount of excess thread depending on the kind of product to be sewn on the machine, dimension "a" can be changed by loosening set screws 5 in Fig. 6 and shifting fixed knife adjuster 4 to the right. (The dimension "a" is adjustable between 15mm and 17mm.) No clearance is allowed between stationary cutter base 3 and movable knife base 6, (at the point "P" in the Fig. 6), as it will nuliify the cushioning effect of cushion 7.

For adjustment of the point "P" after the fixed knife has properly been positioned, loosen nuts 44 and 46 in Fig. 4 and turn connecting rod 45 in Fig. 4 either clockwise or counterclockwise as the case may be. When there is no more clearance at the point "P", tighten nuts 44 and 46. To set the left dead center and the stroke of the movable knife, which change after the adjustment of the fixed knife use stopper 35 in Fig. 4 to set the left dead center and move stopper 29 in either direction to set the stroke of the movable knife.

d) Positional relationship among fixed knife, movable knife and plate spring

\* Fixed and movable knives ..... As illustrated in Fig. 7 (a), adjust accurately so that the end face of the fixed knife will align in a straight line with the end face of the needle thread cutter blade of the movable knife. (Adjustment is to be made with screw 8 in Fig. 6 and the fixed knife set screws shown in Fig. 8.)

\*Plate spring for the movable knife ..... As shown in Fig. 7 (b), adjust in such a manner that the buttom of the cutter blade of the movable knife will align in a straight line. with the end face of the plate spring, providing a protrusion of 1mm (the dimension "C" in Fig. 7) away from the edge at the tip of the fixed knife. Subsequently, adjust the high tension plate spring by shifting by 2.5mm to the position "D" away from the low tension plate spring. Loosen the spring set screws in Fig. 7 for this adjustment.

"b" Set so that the bottom face of the needle thread cutter blade will align in a straight line with the end face of the plate spring.





#### 17-2 Wiper adjustment (1002A/UTC, 1002C/UTC)

Upon completion of sewing, the knives cut both the needle and looper threads.. Thereupon, wiper 1 in Fig. 9 moves to the left from the right dead center to pass through the clearance between needle thread holder 3 and needle thread holding wire 2, and after catching two the needle threads simultaneously returns to the right dead center 1 shown in Fig. 10.

In this instance, needle threads must securely be held with needle thread holder 3 and needle thread holding wire 2 shown in Fig. 10. Holding needle threads cut on the knives securely in this fashion ensures uniform reserves of the needle threads eliminating drop stitch at the time of starting the next sewing.





#### Adjust as follows.

#### (1) Wiper height

Move lever 19 in Fig. 11 manually from the right dead center to the left dead center and set so that the bottom face of the wiper comes 7mm above the needle plate as shown in Fig. 12. To adjust, loosen set screw 1 fixing lever 19 in Fig. 12 and turn wiper shaft 22 in the direction of the arrow shown in Fig. 12.



(2) Wiper position in the front-rear direction with respect to the needle Set the wiper to the position 0 to 1mm away from the bot-

tom of the crochet needle with the needle center line taken as the datum. (as illustrated in Fig. 8.)

As in the case of the wiper height adjustment, loosen lever set screw 1 in Fig. 8 and slide the wiper shaft in the direction shown with the arrow mark in Fig. 8 (in the front-rear direction).

(3) Position of the wiper left dead center with respect to the needle

Set the wiper at the position 2 - 3mm away from the bottom of the crochet needle with the center line of the left needle taken as the datam as illustrated in Fig. 8. For this adjustment, loosen set screw 3 fixing stopper 2 in Fig. 12 and turn the stopper until the above-described position is arrived at.

(4) Position of the wiper right dead center
Set the position of the wiper right dead center
at 21mm above the needle plate as shown in Fig.
11. For this adjustment, loosen respective set
screws 32 and 33 fixing solenoid actuation lever 28

and wiper actuation lever 19.



(5) Positions of needle thread holder and needle thread holding wire

For this adjustment, loosen set screws 4 and 5 in Fig. 11 and shift thread holder bracket 6 to the right and left.

\*Height adjustment . . .

Set the position 10mm above the needle plate.

To adjust the position, loosen set screws 4 and 5 in Fig. 9 and move needle thread holder 3 and needle thread holding wire 4 vertically.





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- 17-3 Wiper position with regard to the needle (M1002P/UTC)
  - Front-rear position adjustment Adjust so that the bottom face of crochet needle 10 in Fig. 3 of the wiper will come away from the center line of the left needle. To adjust, loosen set screw "" in Fig. 6 fixing the solenoid 2 and adjust the solenoid fixing metal either forward or backward.
  - 2 Position of the wiper right dead center (Wiper push-in position)

As shown in Fig. 3 set the right dead center position of wiper 10 in Fig. 3 at 45mm.

To adjust, loosen set screw 21 in Fig. 6, fixing the stopper 9 and shift the stopper to the proper location.

3 Storke adjustment



By bringing part 10 in Fig. 3 closer to the needle, the length of thread reserved after sewing is shortened, while it is lengthened by shifting the part away from the needle toward left. Adjust with stopper 8 in Fig. 6 by loosening the set screw.

4. Needle thread holder adjustment

Upon completion of sewing, the loopwer thread and needle thread should be cut with the knives and the needle threads must be caught completely with needle thread retaining spring 20 in Fig. 3 as shown in Fig. 3-A Ascertain that the needle threads are caught positively with the needle thread retaining spring. If not, adjust by loosening set screw 27 in Fig 6 and shifting needle thread retaining spring 20 to the right and left.

17-4 Adjustment of the tension release mechanism Whenever the movable knife is activated after sewing, the tension release mechanism (shown in Fig. 1) is invariably activated.

As the standard setting, the thread is slightly pulled after it is cut.

the same straight line.

It may become necessary, however, to adjust the length of reserve thread depending on the kind of product sewn. To adjust the length of reserve inread, loosen set screw 4 in Fig. 1 and raise the hook 3 shorten the length of reserve thread, or lower the hook to lengthen it.





#### 17-5 Installing the sewing machine

- (1) After assembling the table, install the sewing machine on the table and thread the belt.
- (2) Connect the pneumatic piping to the designated point referring to the drawing shown below.



#### 17-6 Wiring diagram for electrical instrumentation

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#### 17-7 Motor and control system

#### 5. Electromagnetic clutch motor specifications

7.	Control	system	specifications
•••			

Item	Specifications		
-	3 phase	Single-phase	
Туре	ENA3A-AD	ENA1A-AD	
No. of poles	2	2	
Output	400	400	
Source voltage	200∨	100V	
Source trequency	50/60Hz	50/60Hz	
Connection with power source	By connector	By connector	
Shaft design	Straight	Straight	
Configuration of mounting base	US	US	
Source voltage for lamp	6V	ôV	
Notes: 1. Clearance in the cluth shall be 0.5mm. (To obtain this clearance, turn the thrust adjustment screw clockwise by 8 steps from the state of no clearance. 2. For motor specifications, refer to the attached Table 1.			

#### 6. Position detector specifications

ltem		Specifications	
Түре		ENSA-A2A	
Detection points	Above needle	1	
of needle position	Under needle	1	
Notes.	•		
Notes.			

-		
ltem		Specifications
Type ENCK-		кн
Source voltage		100-200V, 115V or selectable between 190/208/220/240V
Sole volta	noid actuation source	About DC 32V
	Thread cutter	O
utput	Wiper	0
o piq o	Load A	().
Solen	Pressor foot	Ç
	Automatic needle lifting	
	Manual needle lifting	
	Slow start	<i>6</i>
	Automatic thread cutting	Э
	Thread breakage detection	<u>э</u>
SUC	Selection of stop position	ं
unctic	Manual lifting of presser foot lifter	
ű.	Chopping operation of presser toot lifter	0
	Presser foot lifting switch	<u>о</u>
	Presser foot lifting control with foot pedal	0
:	Continuous reverse stitching (Tuch stitching)	
	External control	0
	Connection of control	
Note	:	

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#### 7.1 Loads applied to solenoids

Solenoia Name	Specifications
For cutting thread	5 min.
For clearing thread	5 min.
Load A	5 min.
For lifting pressure foot	5 min.

#### 7.2 Speed setting

	Item	Speed (rpm)	Bemarks
	Minimum speed (Equals the thread) outting speed)	200	Variable between 170 rpm and 225 rpm.
- 25	* Variable with the co	ntroi volu	me on the printed Circuit Doard.

#### 17-8 Needle position adjustment

- 1) With no operation air supplied, ensure that the thread cutter retracts to the rear home position, and then turn on the motor switch.
- 2) Run the pedal idle, and after confirming that the machine moves forward and backward correctly, adjust the needle stop position.

When the front part of the pedal is pressed, sewing starts. Sewing stops at the neutral position. (At this moment, the needle stops at its lower home position.)

When the rear part of the pedal is pressed, the needle stops at its upper home position to perform thread cutting. Adjust the position of the needle positioner so that the needle will come to a stop exactly when the pedal is stepped in but he follow-up motion.

- 3) After ensuring that the needle is positioned properly, connect the pneumatic piping. (Operational pneumatic pressure is specified at 5kg/cm<sup>2</sup>G.)
- 4) After confirming that all the above-mentioned requirements have been fully met, perform a test sewing. Before turning off the main power switch after work, be sure to insert a test sewing cloth.