Changes for the Better

MITSUBISHI ELECTRIC AUTOMATION, INC.

XC-G SERIES

TECHNICAL MANUAL *USA Version*

CLICK HERE FOR CONTENTS

INDUSTRIAL SEWING EQUIPMENT
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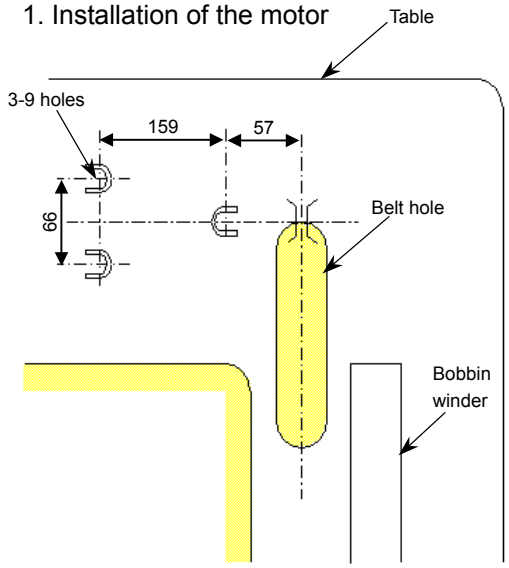
Contents

Installation

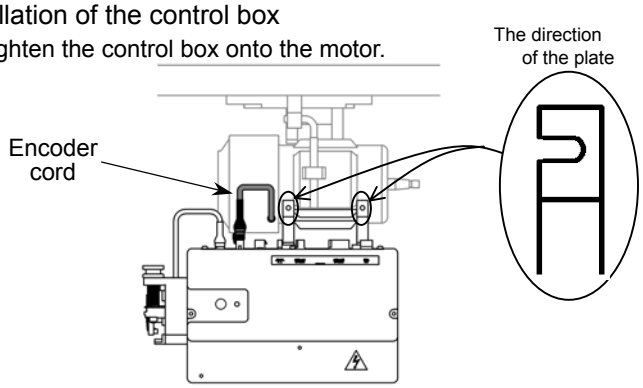
1. Installation of the motor



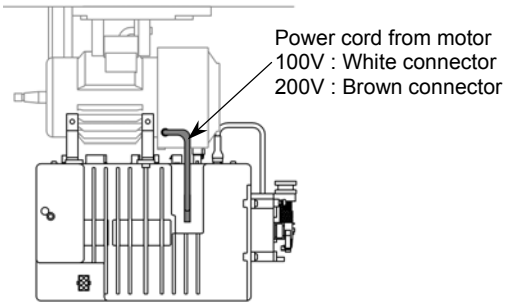
Using the hole opening pattern, open three 9mm holes on the table. Install the motor securely using the installation bolts, washers, spring washers and nuts. The pattern and installation bolts, etc., are included with the motor as accessories.

2. Installation of the control box

(1) Tighten the control box onto the motor.



(2) Insert the power cord from the motor into the connector on the back of the control box. Insert the encoder cord from the motor into the encoder connector on the front of the control box.

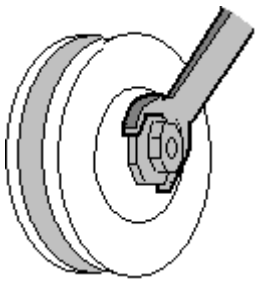


3. Installation of the pulley

* To properly install, the protective cover A (motor side of the protective cover) must be installed onto the motor before the pulley is installed. (Refer to "5. Installing the protective cover".)

Securely tighten the pulley.

Caution
Incomplete tightening may cause malfunctions.



Select the correct pulley diameter to ensure complete use of the motor performance.

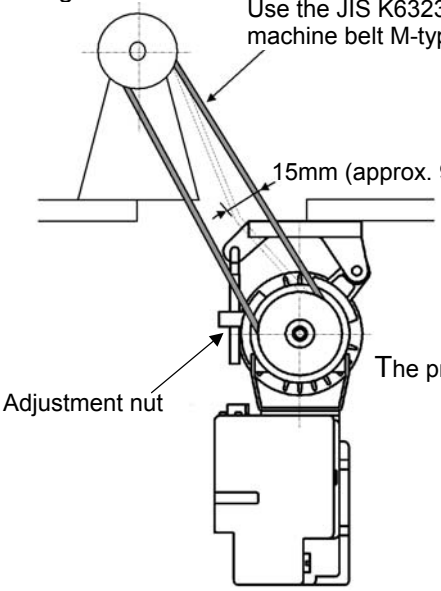
Selection of the motor pulley:

$$\text{Motor pulley outer diameter (mm)} = \frac{\text{Normal sewing machine speed}}{\text{(*) Motor speed}} \times \text{Sewing machine pulley diameter (effective diameter)} + 5\text{ mm}$$

(*) The motor speed should be set at 3,600rpm. When the motor pulley diameter is selected with the above method and the pulley diameter is too small, select the minimum pulley in the range that the belt will not slip.

(**) Refer to page 20 for the pulley diameter to be used when using the Mitsubishi thread trimming sewing machine.

4. Mounting of the belt



To adjust the belt tension, press down on the center of the belt with your hand, and turn the upper and lower nuts of the adjustment nut to increase or decrease the center height of the motor so that the belt dips approximately 15mm.

Caution
If the belt tension is too low, the medium and low speeds will be inconsistent, and the stopping precision will be poor. When too tight, the motor bearings will deteriorate.

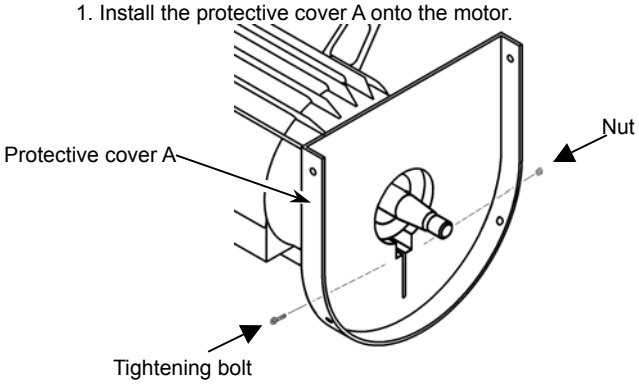
The protective cover A is not shown.

Caution
For safety always turn the power switch off, before adjusting the belt.

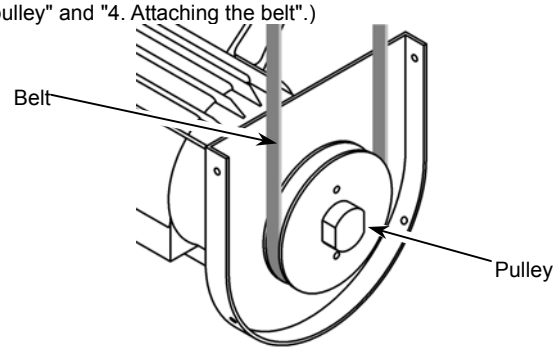
5. Installation of the protective cover (with belt slip off prevention part)

The protective cover is enclosed with the motor as an accessory.

1. Install the protective cover A onto the motor.



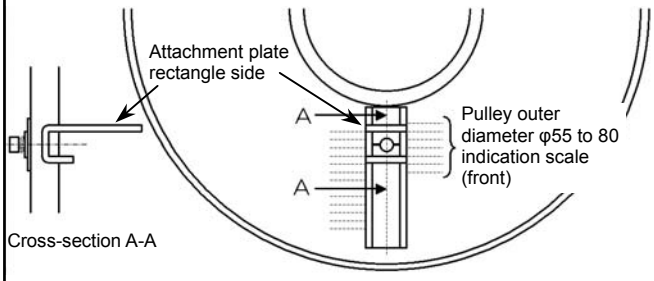
2. Install the pulley and attach the belt. (Refer to "3. Installing the pulley" and "4. Attaching the belt".)



3. Install the "belt slip off prevention part mounting plate" onto protective cover B with the following procedures.

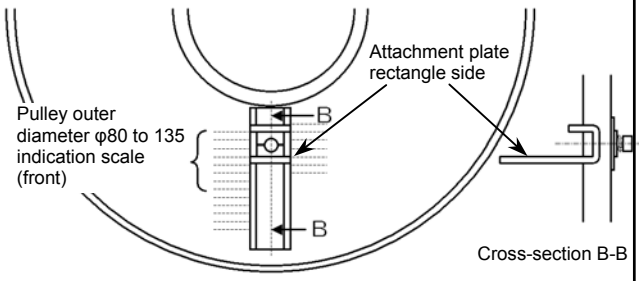
* Change the direction of the long and short side of the attachment plate according to the motor pulley outer diameter.

(a) For motor pulley outer diameter φ55 to φ80



(View from back of protective cover)

(b) For motor pulley outer diameter φ80 to φ135



(View from back of protective cover)

* Set the center of the washer to the pulley diameter indication scale and tighten the bolt.

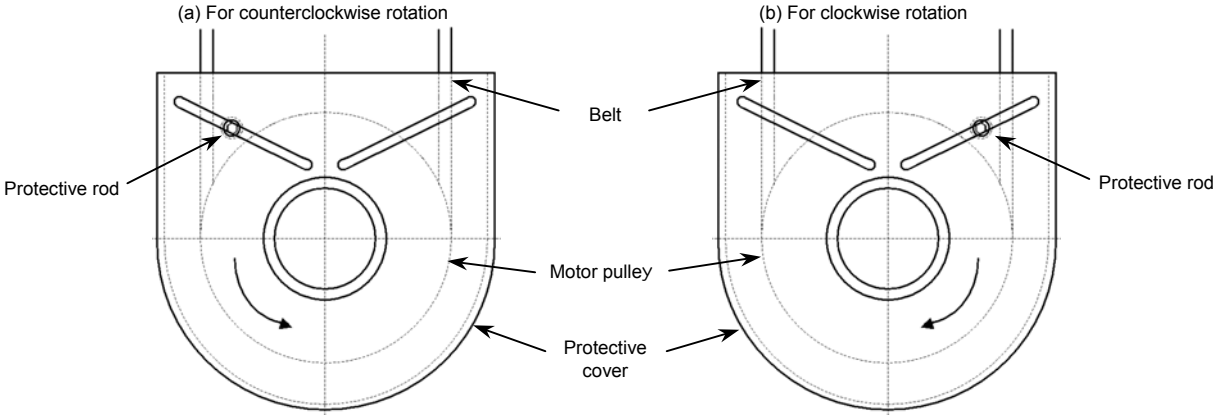
* Confirm that the belt does not contact the attachment plate.

4. Install the "protective rod" onto the protective cover B with the following steps.

* Set the protective rod to the motor pulley rotation direction and install between the belt and motor pulley.

(a) For counterclockwise rotation

(b) For clockwise rotation



(View from front of protective cover)

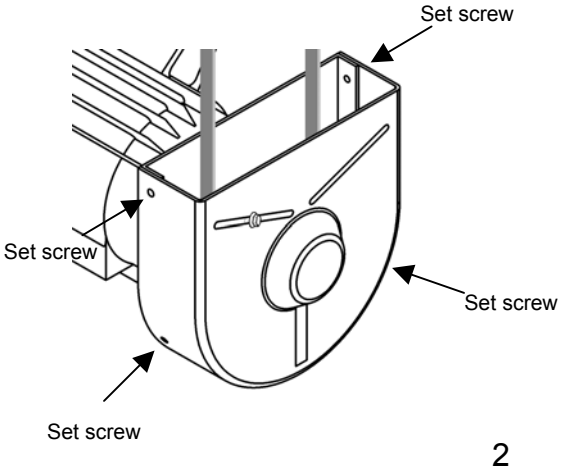
(View from front of protective cover)

* Set the center of the protective rod to the position at the center of the belt and motor pulley and tighten the bolt

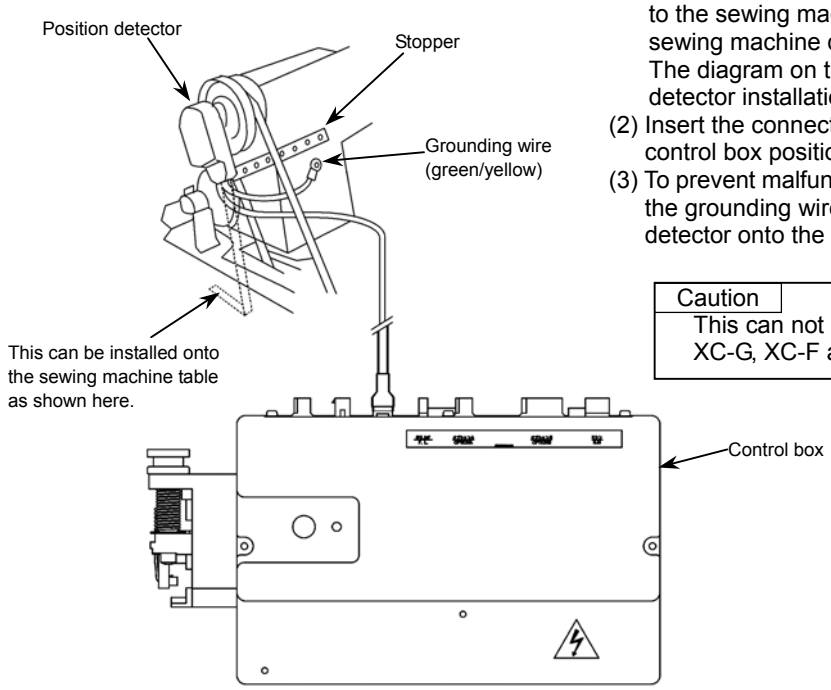
5. Set protective cover B onto protective cover A, and tighten with the four set screws.

* Confirm that the belt and motor pulley do not contact the protective rod.

6. If necessary, adjust the position of the "protective rod" and "belt slip off prevention part mounting plate". Securely tighten after adjusting.



6. Installation of the position detector



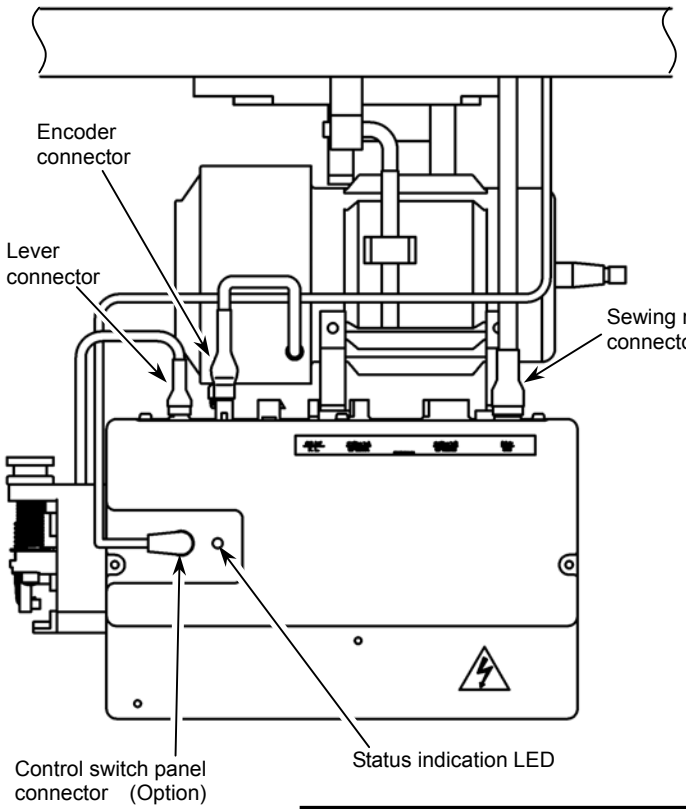
(1) The installation of the position detector will differ according to the sewing machine model, so please consult with your sewing machine dealer for details.
The diagram on the left shows an example of the position detector installation.
(2) Insert the connector from the position detector into the control box position connector.
(3) To prevent malfunctions caused by static electricity, connect the grounding wires (green/yellow) from the position detector onto the sewing machine head.

Caution
This can not be used with except XC-G, XC-F and XC-E Series.

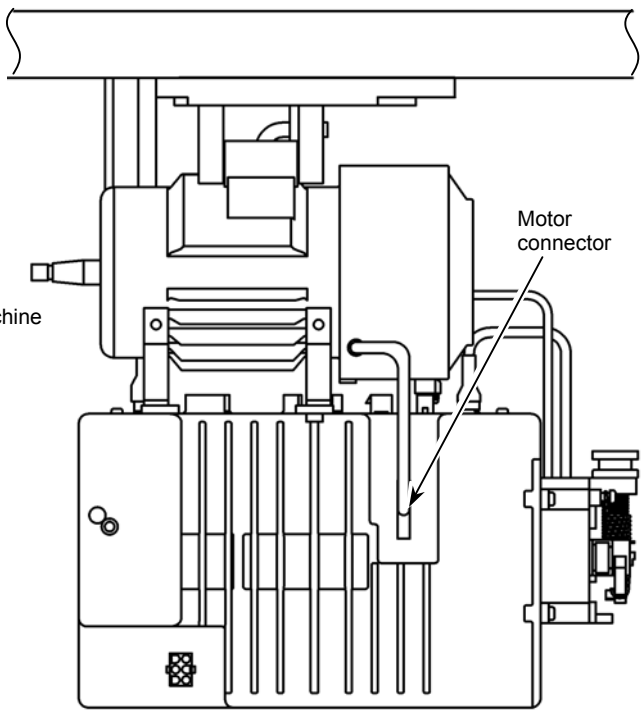
7. Connection of the Mitsubishi sewing machine and control box.

Wire the units as shown below.
Align the connector shape and direction, and securely insert it.

[View of control box from cover side]



[View of control box from box side]

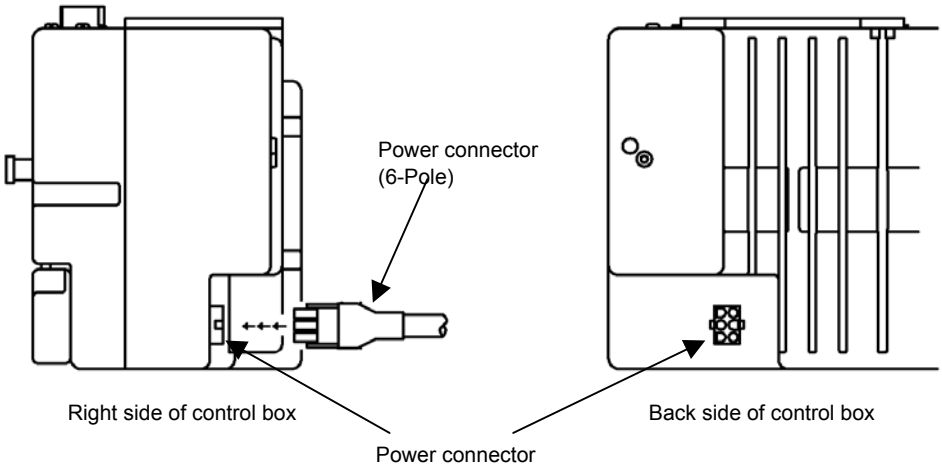


Caution
For safety purposes, always turn the power switch OFF and wait for the status indication LED or the [PWR. OF] (displayed for approx. 10 seconds) LED display on the control switch panel to turn OFF before connecting or disconnecting each connector.
This [PWR.OF] display is not an error.

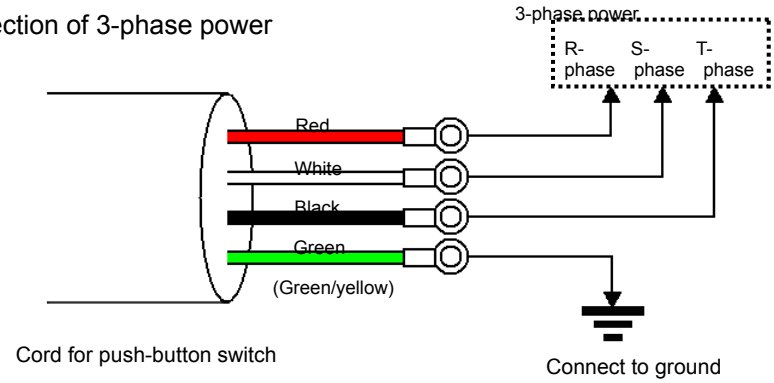
Wire and Grounding

1. Insertion of the power connector

Confirm the connector from and insertion direction when inserting the power connector into the control box and insert completely.



2. Connection of 3-phase power



Ground the green (green/yellow) wire to the grounding terminal. Consult with an electrician for the grounding wires.

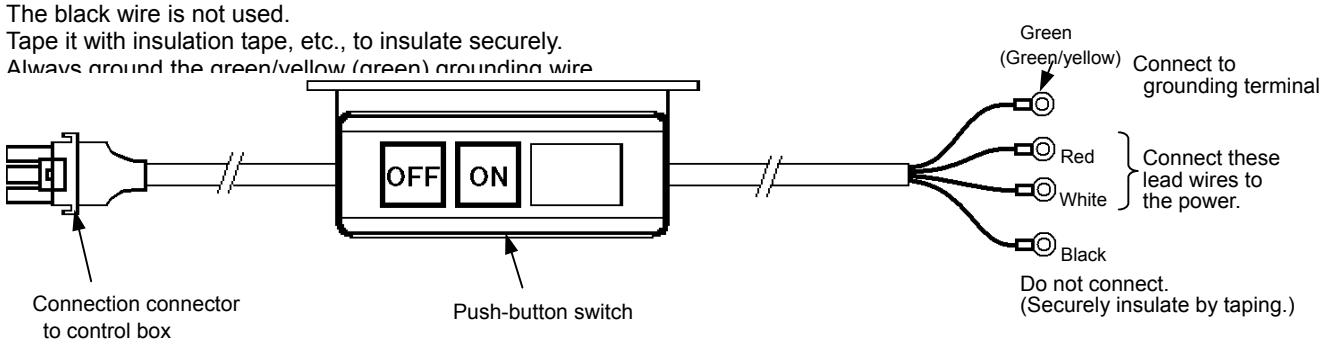
3. Current capacity

Use a fuse or complete breaker for the power.

Power	Recommended current capacity
Single phase 100 to 120V 550W 200 to 240V 550W	15A
3- phase 200 to 240V 550W	10A

4. When using the 3-phase 200 - 240V class Limiservo X with single phase 200 - 240V class

Connect the "red" and "white" lead wires from the push-button switch to the power.
The black wire is not used.
Tape it with insulation tape, etc., to insulate securely.
Always ground the green/yellow (green) grounding wire.

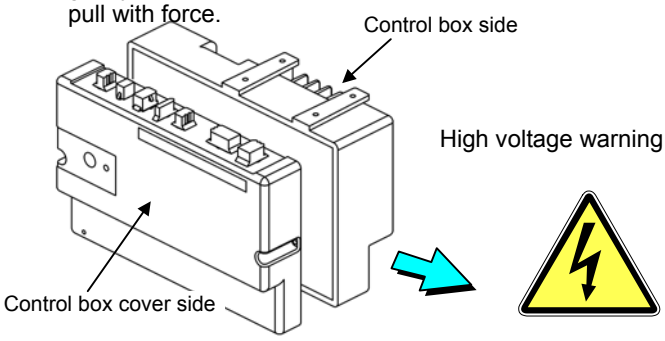


Points of Caution

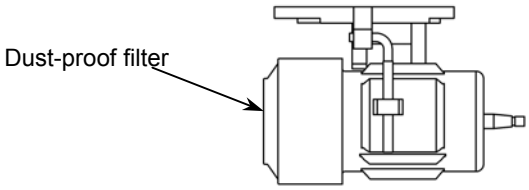
Caution

1. Please remove your foot from the pedal when turning the power ON.
2. Always turn the power OFF when leaving the machine.
3. Do not inspect the control circuit with a tester.
4. Always turn the power switch OFF before tilting the sewing machine, replace the needle or threading the needle.
5. Always ground the grounding wire.
6. Do not use branched wiring.
7. The brakes may not function when the power is turned OFF or when there is a power failure during sewing machine operation.
8. Match the connector shape and direction, and insert securely.
9. Keep the signal wire as short as possible when connecting the external switch to the sewing machine connector. If it is long, malfunctions may occur. Use a shield wire when possible.
10. Install the sewing machine away from sources of strong noise such as high-frequency welders.
11. An optical method is used for the detector's detection element so take care not to let dust or oils get on the detection plate when removing the cover for adjustment, etc. If these do get on the plate, wipe off with a soft cloth and do not scratch the plate. Take care not to let oils enter between the detector discs.
12. When the position detector connector or the belt has come off or when the sewing machine is completely locked, the motor will be automatically turned OFF after a set time to prevent damage to the motor. (The motor may not turn OFF if the locking is not complete.) After the problem has been resolved, turn the power OFF and ON and normal operation will be possible. The same operation should be taken when the detector or wires are broken.
13. Always turn off the power switch before connecting or disconnecting each connector

12. A high voltage is applied inside the box, so **wait at least 10 minutes after turning the power OFF** before opening the control box. There is a cable connecting the PCB on the cover side with the PCB on the box side. When disconnecting the cable, gently disconnect at the connector section. Do not pull with force.

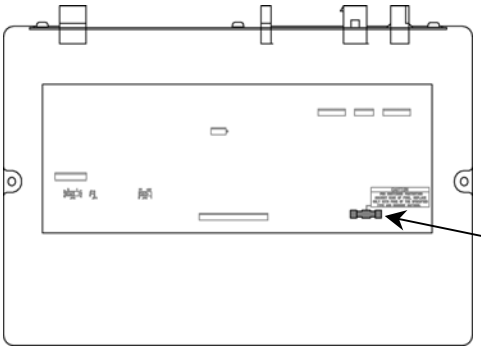


13. Remove the dust that has adhered on the motor's dust-proof filter once every two to three weeks.



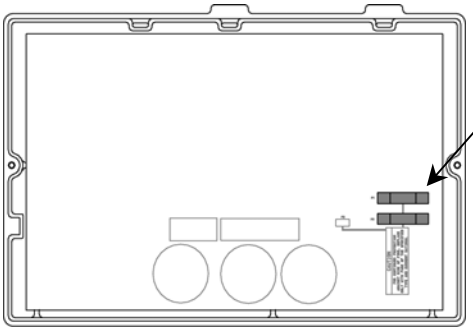
If the motor is run while the filter is clogged, the motor may overheat and affect the motor life.

14. If the fuse blows, remove the cause, and replace the blown fuse with one having the same capacity.



* The above 2.5A fuse is for protection of the 12V power supply section.

(Front view of cover side PCB with control box cover removed.)



* The above fuses are for protection of the control box power supply section.

Always **wait at least 10 minutes after turning the power switch OFF** before opening the control box cover.

(Front view of box side PCB with control box cover removed.)

Changing the solenoid voltage and output voltage

1. To change solenoid voltage DC24V/DC30V

To change solenoid voltage from 24V to 30V

(1) Remove the front cover from the control box.

(2) Reconnect the connector inserted in JP1 on the PCB to the 30V side.

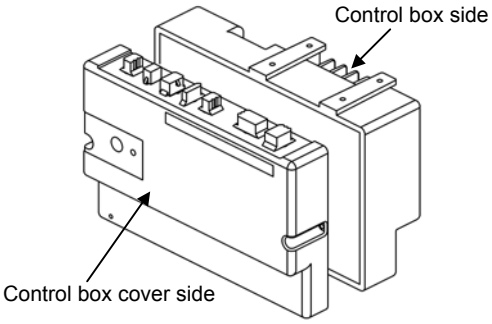
(3) Set the cover to the original position after change.

To change solenoid voltage from 30V to 24V

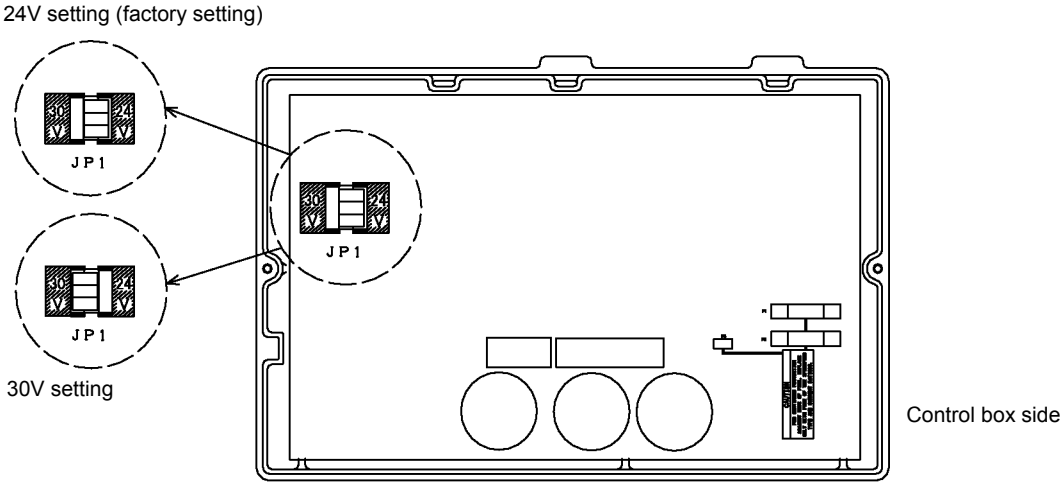
(1) Remove the front cover from the control box.

(2) Reconnect the connector inserted in JP1 on the PCB to the 24V side.

(3) Set the cover to the original position after change.



Wait at least 10 minutes after turning the power switch OFF before opening the control box.



2. Changing the output voltage between 0VDC and 5VDC

(1) Remove the control box cover.

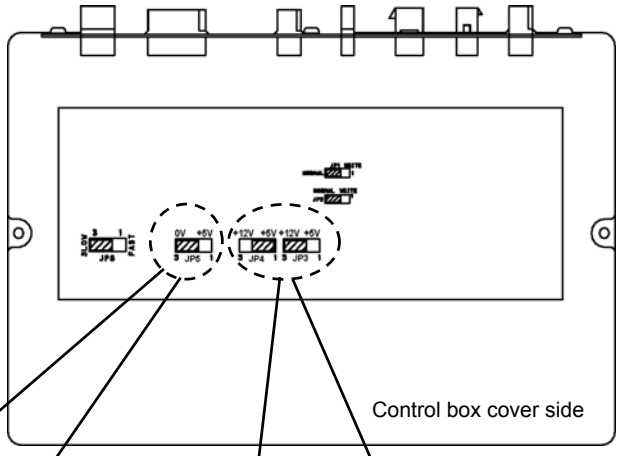
(2) Change the output voltage 5/12VDC with the jumper JP3 and JP4 on the front cover PCB as shown on the right. Change the output voltage 0/5VDC with the jumper JP5 on the front cover PCB.

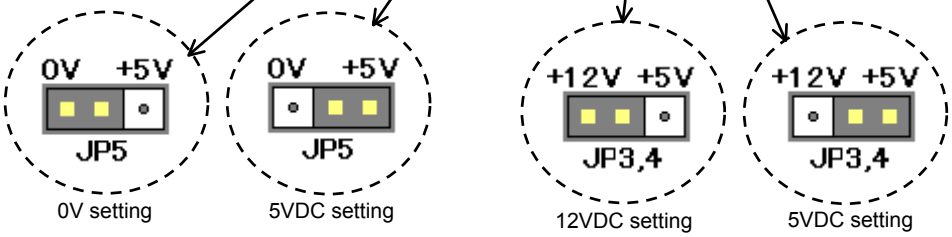
(3) The output voltage can be changed by reconnecting the connector as shown on the right.

(4) The factory setting

Connector	factory setting	Connector (Pin No.)
JP3	+12V	No.3 pin of the option A
JP4	+5V	No.7 pin of the option B
JP5	0V	No.10 pin of the sewing machine

(5) After change, always set the cover to the control box.





Wait at least 10 minutes after turning the power switch OFF before opening the control box.

Do not change the JP1,JP2 and JP6 from the factory setting.

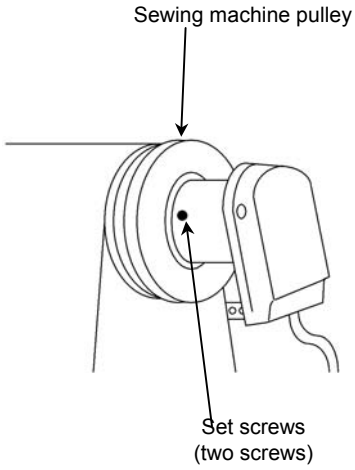
Adjustment of the Synchronizer

1. Adjustment of stopping position

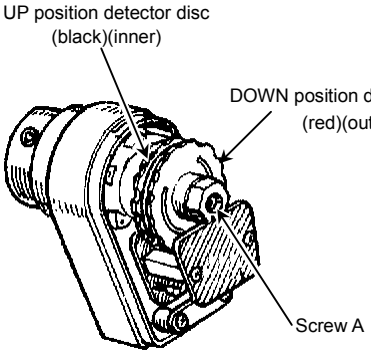
Adjust this position with the detector installed onto the sewing machine and while stopping at the UP and DOWN positions.
For safety, disconnect the connector for the sewing machine.

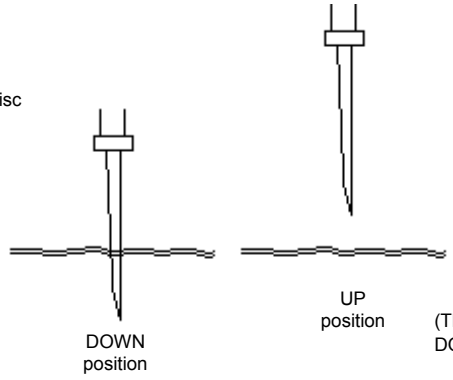
(1) Adjustment of UP position
- -Loosen the two set screws on the detector joint, and set the stop position by rotating by hand.
- -If adjustment is not possible by turning the joint, loosen the cross-recessed screw A shown of the following figure, and turn all detector plates simultaneously to adjust to the designated stop position.

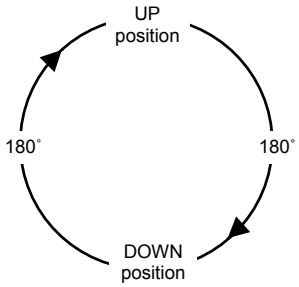
(2) Adjustment of DOWN position
- -The relation of the DOWN position and UP position will differ according to the model, so adjust this according to the sewing machine.
- -When changing the DOWN position, remove the detector cover, and turn only the red detector plate to adjust to the designated stop position.
  (The cross-recessed screw A does not need to be loosened at this time.)
- -Always replace the cover after adjustment.



Caution
Refer to the sewing machine instruction manual when adjusting for use with the Mitsubishi sewing machine.





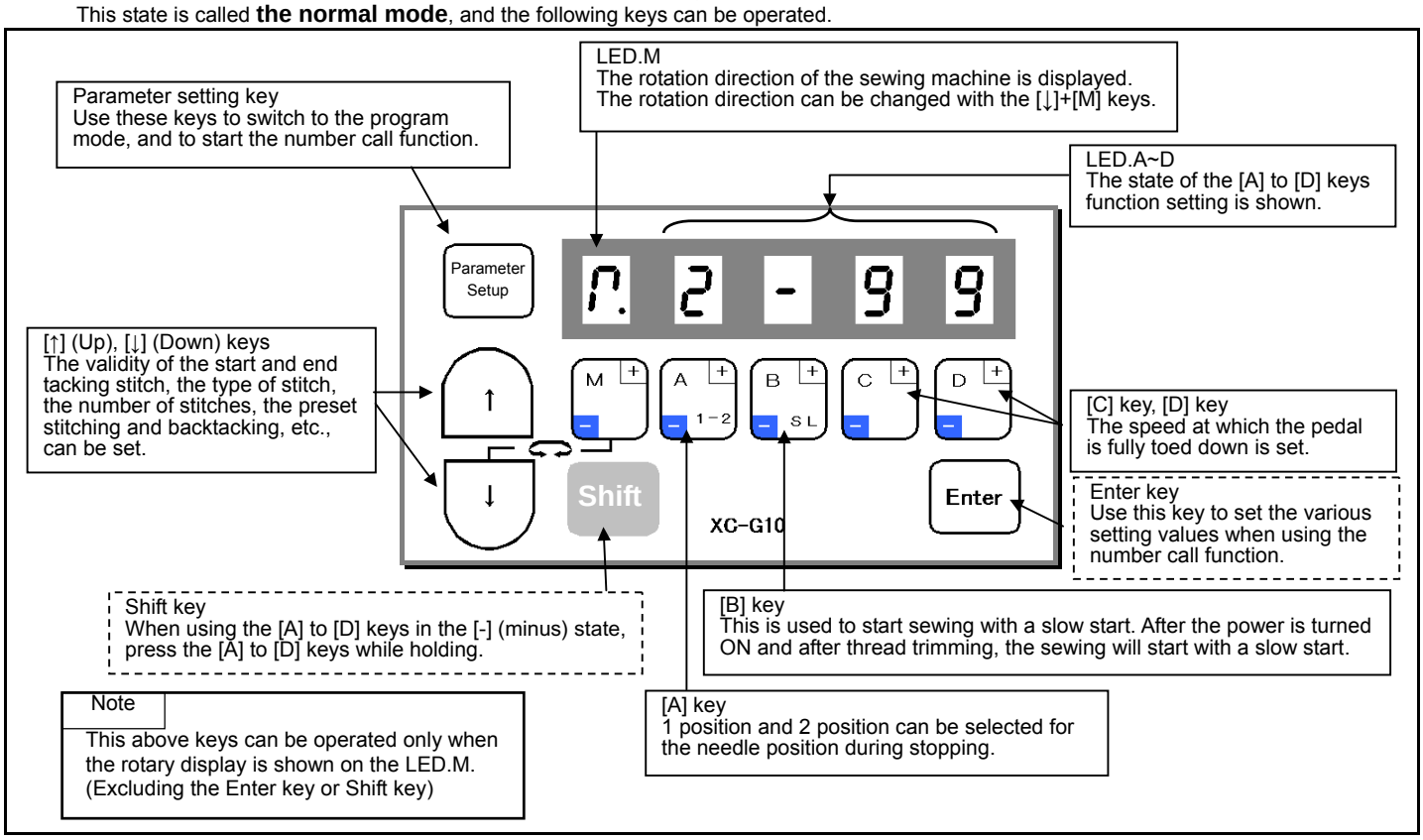


(The factory setting of the clearance from the DOWN position to UP position is approx. 180)

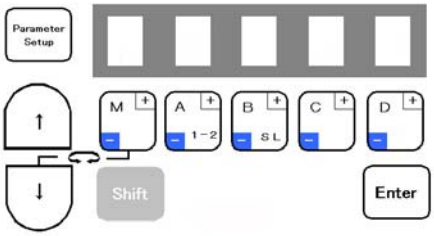
Operation of the Control Switch Panel Keys (When using XC-G10 type operation panel)

Displays during normal mode and functions of each key

When the power supply switch is turned ON, the rotation direction will display on the LED.M shown below.
When the rotation direction is not displayed on LED.M, press the [↓] key any time.
This state is called **the normal mode**, and the following keys can be operated.



HOW TO ENTER THE PROGRAM MODES

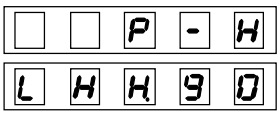
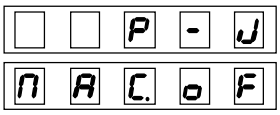
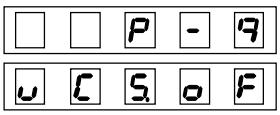
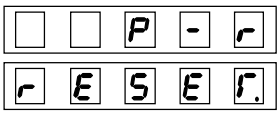
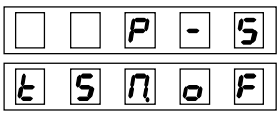
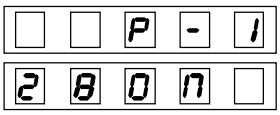
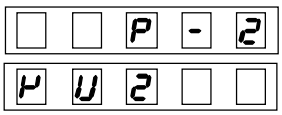
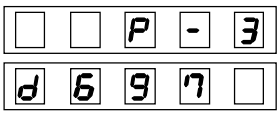


TO RETURN TO THE NORMAL MODE, PRESS THE DOWN ARROW AND UP ARROW MOMENTARIALLY

Mode mane	Key operation	Digital display
Tacking type setting mode	PRESS THE UP ARROW KEY 1 TIME	b-2-2 *The tacking setting mode will be entered. Note) Skipping about this menu at the time of pattern No.=4.
No. of tacking stitch setting mode	PRESS THE UP ARROW KEY 2 TIMES	n4444 *The tacking stitches setting mode will be entered.
Preset stitching setting mode	PRESS THE UP ARROW KEY 3 TIMES	- 44 *The preset stitching setting mode will be entered. Note) Skipping about this menu at the time of pattern A to H.
Pattern No. selection mode	PRESS THE UP ARROW KEY 4 TIMES	P.SEr.1 *The pattern No. selection mode will be entered.
Program mode [P]	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARRROW KEY	P-P H4000 *The display will flicker. *The program mode [P] will be entered.
Program mode [A]	PRESS AND HOLD IN THE DOWN ARROW AND THE A KEY	P-A CA.L *The display will flicker. *The program mode [A] will be entered.
Program mode [B]	PRESS AND HOLD IN THE DOWN ARROW AND THE B KEY	P-b S0 *The display will flicker. *The program mode [B] will be entered.
Program mode [C]	PRESS AND HOLD IN THE DOWN ARROW AND THE C KEY	P-C ,A.PSU *The display will flicker. *The program mode [C] will be entered.
Program mode [D]	PRESS AND HOLD IN THE DOWN ARROW AND THE D KEY	P-d dln *The display will flicker. *The program mode [D] will be entered.
Program mode [E]	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARROW AND THE A KEY	P-E 1E-- *The display will flicker. *The program mode [E] will be entered.
Program mode [F]	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARROW AND THE B KEY	P-F CoA0 *The display will flicker. *The program mode [F] will be entered.
Program mode [G]	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARROW AND THE C KEY	P-G Er.n1 *The display will flicker. *The program mode [G] will be entered.

Note: Program Modes like the P, A, B, C, etc. can also be used via the parameter setup key when using the direct number method.

HOW TO ENTER THE PROGRAM MODES

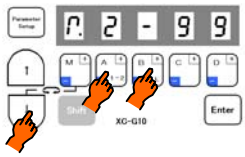
Program mode [H]	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARROW AND THE D KEY		*The display will flicker. *The program mode [H] will be entered.
Program mode [J]	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARROW AND THE A AND B KEYS		*The display will flicker. *The program mode [J] will be entered.
Program mode [Q]	PRESS AND HOLD IN THE DOWN ARROW AND THE A AND C KEYS		*The display will flicker. *The program mode [Q] will be entered.
Program mode [R]	PRESS AND HOLD IN THE DOWN ARROW AND THE B AND C KEYS		*The display will flicker. *The program mode [R] will be entered.
Program mode [S]	PRESS AND HOLD IN THE DOWN ARROW AND THE B AND D KEYS		*The display will flicker. *The program mode [S] will be entered.
Program mode [1]	PRESS AND HOLD IN THE DOWN ARROW AND THE A AND B KEYS		*The display will flicker. *The program mode [1] will be entered.
Program mode [2]	PRESS AND HOLD IN THE DOWN ARROW AND THE C AND D KEYS		*The display will flicker. *The program mode [2] will be entered.
Program mode [3]	PRESS AND HOLD IN THE DOWN ARROW AND THE A AND D KEYS		*The display will flicker. *The program mode [3] will be entered.
PROGRAM MODE K	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARROW AND THE A AND C KEYS		
PROGRAM MODE I	PRESS AND HOLD IN THE DOWN ARROW AND THE UP ARROW AND THE B AND C KEYS	PROGRAM SAVE MODE	

Note: Program Modes like the P, A, B, C, etc. can also be used via the parameter setup key when using the direct number method.

Using the program mode [1] simple setting

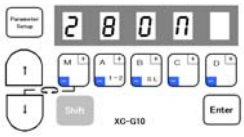
To set the settings to a specific machine setting.
(For example, to set to "LU2-4410-B1T" ... Function setting [410B])

(1)



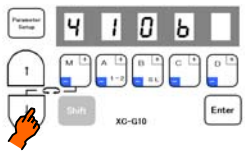
*Enter the program mode [1].
([↓] + [A] + [B] keys)

(2)



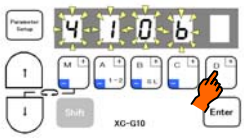
*The mode will change to the program mode [1].

(3)



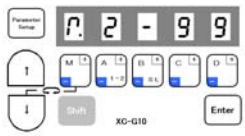
*Press the [↓] key or [↑] key to change the function to [410B].

(4)



*When the [D] key is held down, [410B] will flicker, and the changes to the setting will be set.

(5)



*The mode will return to the normal mode when the [D] key is held down over two seconds or more.
(This completes the settings.)

Description

A. Select the function name corresponding to the sewing machine model from the following simple setting table. The item will change sequentially each time the [↓] or [↑] key is pressed in step (3). (The factory setting is [280M].)

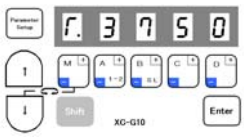
B. After selecting the function name, hold down the [D] key over 2 seconds or more. The function name's set speed and function setting will be set automatically. To return to the normal mode without setting the function name here, press the [↑] key while holding down the [↓] key.

> Caution
> When this function is set, all previously set details will be cleared. The set speed and function setting corresponding to the selected sewing machine model will be set automatically.

C. The set function settings (simple setting value (type)) can be confirmed with the function name corresponding to the set sewing machine model using the following procedures (E mode).

(1) Call out the program mode [E] function [T].
(The mode can also be called out directly with number 772).

(2)



The function name corresponding to the set sewing machine model will appear.
(For example when [3750] is set.)

(3) Return to the normal mode.

(Press [↓]+[↑] or Parameter Setup)

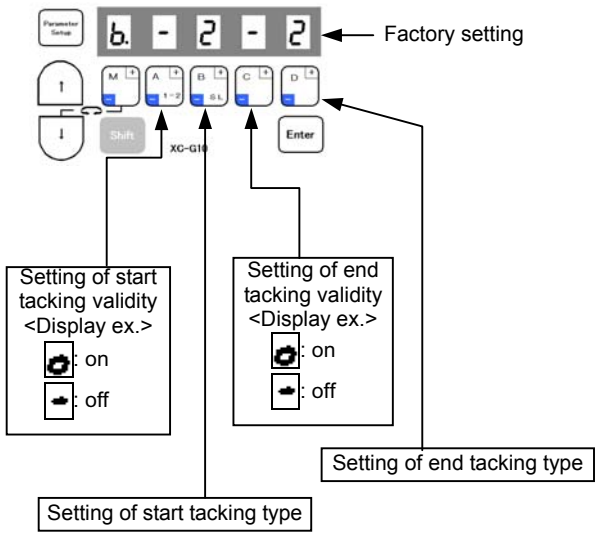
Simple setting table for Mitsubishi thread trimming sewing machine and motor pulley outside diameter.

	Function name	Digital display	Sewing machine type	Speed setting					Function setting			Motor pulley outside diameter (mm)	
				High speed (H)	Low speed (L)	Thread trimming speed (T)	Start tacking speed (N)	End tacking speed (V)	D mode tack alignment (BM)	A mode weak brake (BK)	A mode gain selection (GA)		
*3 ↓	280M	280n	LS2-1280-M1T (W)	4000	250	200	1700	1700	OFF	OFF	L	85	*1
	280H	280H	LS2-1280-H1T(W)	3000	250	200	1200	1200	OFF	OFF	L		
	280B	280b	LS2-1280-B1T	3000	250	200	1200	1200	OFF	OFF	L		
	380M	380n	LS2-1380-M1T(W)	4000	250	200	1700	1700	OFF	OFF	L		
	380H	380H	LS2-1380-H1T(W)	3000	250	200	1200	1200	OFF	OFF	L		
	380B	380b	LS2-1380-B1T	3000	250	200	1200	1200	OFF	OFF	L		
	210M	2 10n	LS2-2210-M1T(W)	4000	250	200	1700	1700	OFF	OFF	L		
	230M	230n	LT2-2230-M1TW	3700	250	175	1200	1200	OFF	OFF	H		
	230B	230b	LT2-2230-B1T	3000	250	175	1200	1200	OFF	OFF	H		
	250M	250n	LT2-2250-M1TW	3000	250	175	1200	1200	OFF	OFF	H		
	250B	250b	LT2-2250-B1T	3000	250	175	1200	1200	OFF	OFF	H		
	3310	33 10	LY2-3310-B1T	2000	250	225	700	700	ON	OFF	H	65	*2
	3319	33 19	LY2-3319-B1T	2000	250	225	700	700	ON	OFF	H		
	3750	3750	LY2-3750-B1T	2000	250	200	700	700	ON	OFF	L		
	6840	6840	LY3-6840-B0T	2000	250	150	700	700	ON	OFF	H		
	6850	6850	LY3-6850-B1T	2000	250	150	700	700	ON	OFF	L		
	410B	4 10b	LU2-4410-B1T	2000	250	175	700	700	ON	OFF	L		
*8	412B	4 12b	LU2-4412-B1T	2000	250	175	700	700	ON	OFF	L		
	430B	430b	LU2-4430-B1T	2000	250	175	700	700	ON	OFF	L		
	4650	4650	LU2-4650-B1T	3000	250	175	700	700	ON	OFF	L	85	
*8	4652	4652	LU2-4652-B1T	3000	250	175	700	700	ON	OFF	L		
	4710	47 10	LU2-4710-B1T	3000	250	175	700	700	ON	OFF	L		
	4730	4730	LU2-4730-B1T	2500	250	175	700	700	ON	OFF	L		
	630	630	LX2-630-M1	800	280	160	500	500	ON	ON	L	65	
	280E	280E	LS2-1280-M1T(W)	5000	250	200	1700	1700	OFF	OFF	H	110	
↑	FL	FL	*5	5000	250	200	1700	1700	OFF	OFF	L		
	N	n	*6	5000	250	200	1700	1700	OFF	OFF	L		
	LOAD2	LoAd2	*7										
*4	LOAD1	LoAd 1	*7										

*1 Factory setting is [280M].
*2 The effective diameter of the sewing machine pulley is 70 mm.
(Note : In case of LY2-3310/3319/3750 is 80 mm, LU2-4410/4412/4430/4650/4652/4710/4730 is 85 mm.)
*3 A function name is displayed in order of the direction of ↓ key when pressed.
*4 A function name is displayed in order of the direction of ↑ key when pressed.
*5 For sewing machine with foot lifter, without thread trimmer.
*6 For needle positioner.
7 It is possible to load the saved setting data by the function of [SAVE] in the program mode [I].
(Program mode [I] : [↓]+[↑]+[B]+[C] key)
(The factory setting of [LOAD1] and [LOAD2] is the setting data of [280M].)
*8 The short bobbin thread tail trimming function is set.

(1) Back Tacking setting mode (If using pattern No.4, this mode will be skipped.)

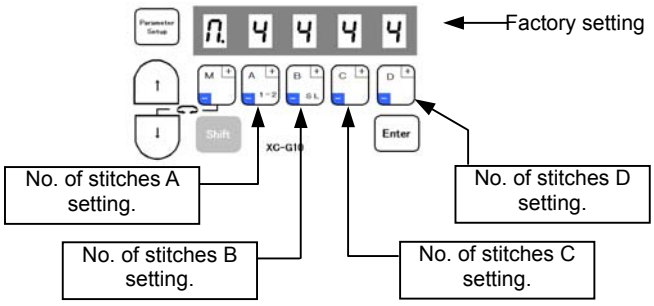
When the [↑] key is turned ON, b. will display above the [M] key, and the tacking setting mode will be entered.



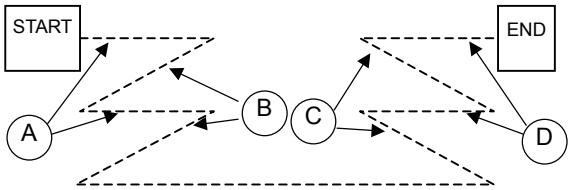
Setting of tacking type < Display ex. >		start tacking	end tacking
0	: No tacking		
1	: V tacking (Once tacking)		
2	: N tacking (Double tacking)		
3	: M tacking (Triple tacking)		
4	: W tacking (4 repeat tacking)		
5	: 5 repeat tacking		
6	: 6 repeat tacking		

(2) No. of tacking stitches setting mode (If using pattern No.4, this mode will be skipped.)

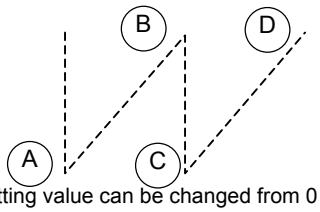
When the [↑] key is turned ON again, n. will display above the [M] key indicator, and the No. of stitches can be set.]



Note: The display below is skipped in pattern No.4



(2) When the pattern No.4 (continuous tack stitching)



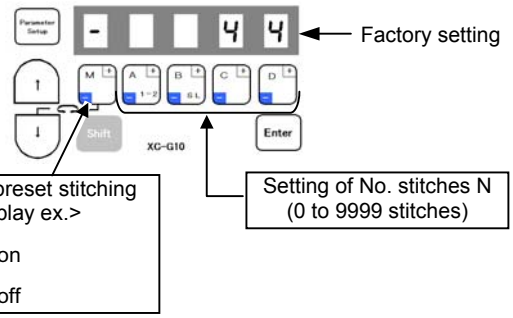
Each setting value can be changed from 0 to 9 stitches, A,B,C,D,E,F stitches.

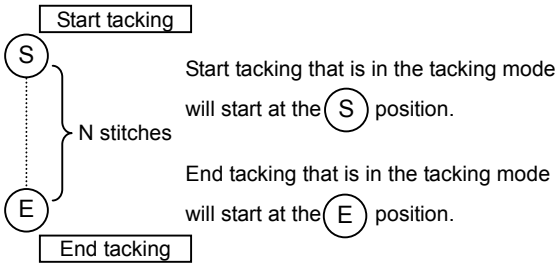
'A' means 10 stitches
'B' means 11 stitches
'C' means 12 stitches
'D' means 13 stitches
'E' means 14 stitches
'F' means 15 stitches

(3) Preset stitching mode

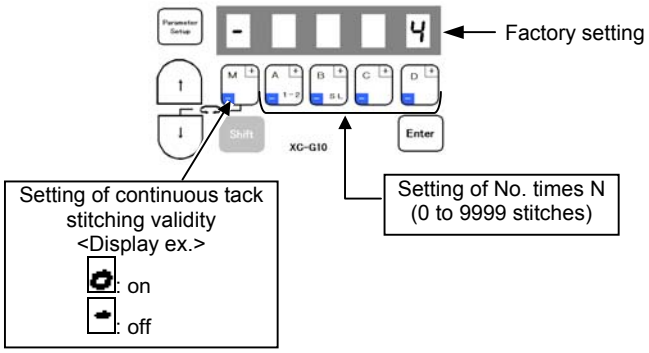
The preset stitching setting mode is entered when the [↑] key is turned ON again. The validity of preset stitching and the number of stitches N can be set.

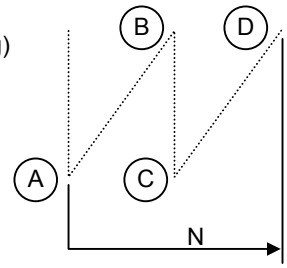
(1) Patterns except pattern No.4





(2) When the pattern is No.4 (continuous tack stitching)





In the No. of times (N) setting is N=3, the stitching will be in the order of A,B and C. If the setting is N=5, the stitching will be in the order of A,B,C,D,C. If the N is 6 or more, the order will be A,B,C,D,C,D.....(If N=0, tacking will continue in the order ABCDCD... while the pedal is pressed down.)

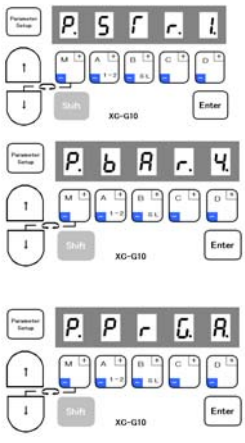
(4) Pattern Number selection mode

When the [↑] key is turned ON again, and the pattern No. selection mode will be entered. Selecting of preset stitching setting (pattern 1 to 3), continuous tack stitching (pattern 4), program stitching (pattern No. A to H).

(1) Display of preset stitching
(Pattern 1 to 3)

(2) Display of continuous tack stitching
(Pattern 4)

(3) Display of program stitching (Pattern A to H)
(Note: Patterns A to H appear only when the XC-G500 type control panel has been connected even once.)



Display of pattern 1.
When pattern 2 or 3, display shows 2 or 3.

Display of pattern A
When pattern B, C, D, E, F, G or H, display shows B, C, D, E, F, G or H.

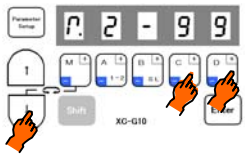
a. Patterns A to H correspond to the programs and teaching patterns A to H input with the XC-G500 type control panel. The control panel is used to change and confirm the settings.
(Refer to the XC-G500 type control panel instruction manual for details on the program and teaching.)

Caution
For safety purposes, always turn off the power switch and confirm to turn off the display when connecting or disconnecting the control panel.

Using the program mode [2] simple setting (for chain stitch sewing machine)

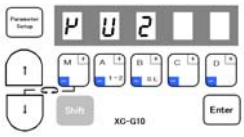
To set the function for chain stitch sewing machine.
(Ex. To set for the VC2800, VC3800 class, "YAMATO") ..... Function setting [YU4]

(1)



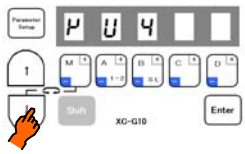
*Enter the program mode [2].
([↓] + [C] + [D] keys)

(2)



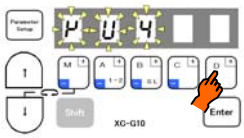
*The mode will change to the program mode [2].

(3)



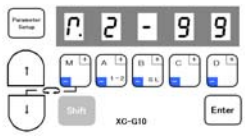
*Press the [↓] key or [↑] key to change the function to [YU4].

(4)



*When the [D] key is held down, [YU4] will flicker, and the changes to the setting will be set.

(5)



*The mode will return to the normal mode when the [D] key is held down over two seconds or more.
(This completes the settings.)

Description

A. Select the function that corresponds to the sewing machine model for "Simple setting table for chain stitch sewing machine".
After selecting the function name, holds down the [D] key over 2 seconds or more. The function name's set speed and function will be set automatically (Refer to the simple setting table for "YAMATO".)

B. To return to the normal mode from the [YU4] display, press the [↑] key while holding down [↓]. In this case, [YU4] will not be set, and the last settings will be used.

C. Each time the [↓] key is pressed in step (3), the function will change in order from [YU2], [YU3], [YU4].....[JMH].

Caution
To use this mode, please ask your dealer or look at "TECHNICAL INFORMATION MANUAL" about simple setting, I/O signal, Junction wiring in detail.

Simple setting table for chain stitch sewing machine

	Function name	Digital display	Sewing machine maker	Model name of sewing machine and device	Needle position	High speed (H)	Low speed (L)	Thread trimming speed (T)	Start condensed speed (N)	End condensed speed (V)
*1	YU2		YAMATO	VC2600, VC2700 class Solenoid-operated under thread trimmer	2	6000	200	200	1400	1400
	YU3		YAMATO	VC2600, VC2700 class Air-operated under thread trimmer with air wiper	2	6000	200	200	1400	1400
	YU4		YAMATO	VC3845P,2845P,2840P class Air-operated under thread trimmer with air wiper	2	6000	200	200	1400	1400
	YU5		YAMATO	Solenoid-operated under thread trimmer with solenoid wiper	2	6000	200	200	1400	1400
	NO1		PEGASUS	W(T) series /UT device Pneumatic under thread trimmer with pneumatic top cover thread trimmer electric under thread trimmer	1	6000	200	200	1400	1400
	NO1A			***Do not use !!***						
	NO2		PEGASUS	W(T) series /UT device Electric under thread trimmer with electric top cover thread trimmer	2	6000	200	200	1400	1400
	NO3		PEGASUS	FW series /UT device	1	4500	200	200	1400	1400
	NO3A			***Do not use !!***						
	NO4		PEGASUS	W674/UT device Super tack	1	4000	200	200	1400	1400
	NO5		PEGASUS	W(T)562-82/UT device Angled stitch Pneumatic under thread trimmer with pneumatic top cover thread trimmer	1	6000	200	200	1400	1400
	NO5A			***Do not use !!***						
	NO6		PEGASUS	W562-82/UT device Angled stitch Pneumatic under thread trimmer with electric top cover thread trimmer	2	6000	200	200	1400	1400
	NO7		PEGASUS	W(T)600,200 series /UT/MS device Condensed stitch Pneumatic under thread trimmer pneumatic under thread trimmer with pneumatic top cover thread trimmer	1	6000	200	200	1400	1400
	NO7A			***Do not use !!***						
	NO8			***Do not use !!***						
	NO9			***Do not use !!***						
	NOA			***Do not use !!***						
	NOC		PEGASUS	W(T)600 series /UT device Skipless Pneumatic under thread trimmer	1	4000	200	200	1400	1400
	NOD		PEGASUS	W(T)600 series /UT device Stitch lock Pneumatic under thread trimmer pneumatic under thread trimmer with pneumatic under theread trimmer	1	6000	200	200	1400	1400
	NOE			***Do not use !!***						
	NOF		PEGASUS	BL500 series	1	6000	200	200	1400	1400
	NOG			***Do not use !!***						
	NOH			***Do not use !!***						
	NOI			***Do not use !!***						
	NOJ			***Do not use !!***						
	NOK			***Do not use !!***						
	NOL			***Do not use !!***						
	NOM			***Do not use !!***						
	NON			***Do not use !!***						
	NOO			***Do not use !!***						
	PFL		PEGASUS	For sewing machine with foot lifter, without thread trimmer	1	6000	200	200	1400	1400
	PN		PEGASUS	For needle positioner	1	6000	200	200	1400	1400
	KA1		KANSAI	M, RX series Automatic thread trimmer with solenoid wiper	2	6000	250	250	1400	1400
	KA2		KANSAI	D series Automatic thread trimmer with air wiper	2	6000	250	250	1400	1400
	KA3		KANSAI	F series Air-operated under thread trimmer with air wiper	2	6000	250	250	1400	1400
	KA4		KANSAI	DX series Air-operated under thread trimmer with air wiper	2	6000	250	250	1400	1400
	UN1		UNION SPECIAL	33700, 34500 class Solenoid-operated under thread trimmer	2	4000	200	200	1400	2999
	UN2		UNION SPECIAL	34800skcc class Solenoid-operated under thread trimmer	2	5500	200	200	1400	2999
	UN3		UNION SPECIAL	34700 class Push and Pull air-operated under thread trimmer with air wiper	2	4000	200	200	1400	2999
	U345			***Do not use !!***						
	U346			***Do not use !!***						
	U348			***Do not use !!***						
	U347			***Do not use !!***						
	U160			***Do not use !!***						
	U16			***Do not use !!***						
	U362			***Do not use !!***						
	UFCW			***Do not use !!***						
	BR1		BROTHER	FD3, FD4 series	2	6000	200	200	1400	1400
	RM1		RIMOLDI	----	1	6000	200	200	1400	1400
	SRB1		SIRUBA	----	2	6000	200	200	1700	1700
*2	JMH		JUKI	MH-481-4-4, MH-484-4-4 class	2	5500	200	200	1700	1900

*1 A function name is displayed in order of the direction of [↓] key when pressed.

*2 A function name is displayed in order of the direction of [↑] key when pressed.

Note : Please refer to the "TECHNICAL INFORMATION MANUAL" for the Junction wiring, I/O signals and details.

General Chainstitch Connections and Settings on the XC-Series Servo Motor

Note: These are general instructions for cover stitch chainstitch machines using a trimmer, wiper, condensed stitch, and foot lift. Extra plugs, pins, etc. are furnished in the accessories packed with the control box.

If the pins on the existing sewing machine connector have molex pins, you may be able to use them without doing the cut, strip, and re-pin method to the wires.

Wiring

Locate the wiring on your machine for the various outputs such as the trimmer solenoid. The solenoid will have 2 wires. Look at the drawing below (Sewing Machine) and locate pin 3 (+24 volts) and pin 4 (Thread Trimming Output) on the control box. This is where you will insert the wires from the trimmer solenoid on your machine.

Tension Release goes to pins 7 and 8

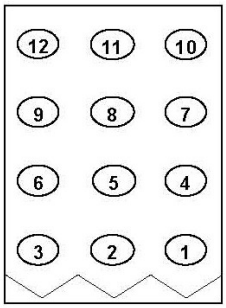
Wiper goes to pins 2 and 3

Condensed Stitch goes to pins 11 and 12

Trimmer Safety Switch goes to pins 5 and 6 (Note: If the safety switch requires power, use pin 3 on the option A plug for 12VDC or pin 7 on the option B plug for 5VDC.

SEWING MACHINE

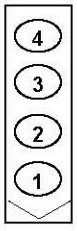
Ground	Ground	1
OB	W : Wiper output	2
+ 24V/ + 30V	+ 24V	3
OA	T : Thread trimming output	4
0V	0V	5
ID	TL : Thread trimmer cancel input	6
OD	L: Thread release output	7
+ 24V/ + 30V	+ 24V	8
IE	S7 : Backstitch input	9
0V	0V	10
+ 24V/ + 30V	+ 24V	11
OC	B : Backstitch output	12



Foot Lift goes to pins 3 and 4 on the Presser Foot Plug

PRESSER FOOT

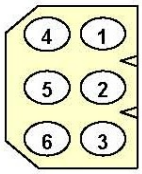
OV	0V	1
IF	F : presser foot input	2
OF	FU+ :presser foot lifter output +	3
	FU- : presser foot lifter output -	4



12VDC on pin 3

OPTION A

0V	0V	1
IA	PSU: Up position stop input	2
+ 12V(+ 5V)	+ 12V	3
IB	PSD: Down position stop input	4
O4	UPW : Needle Up position output	5
IC	S0: Low speed input	6

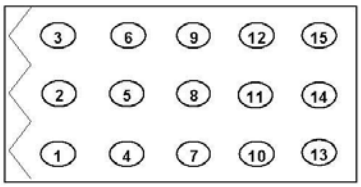


5VDC on pin 7

OPTION B

0V	0V	1
I4	No setting	2
O1	OT1 : Virtual output	3
VC2	VC2 : Variable speed command	4
I5	No setting	5
I1	IO1:Virtual input	6
+ 5V(12V)	+ 5V	7
+ 24V/ + 30V	+ 24V	8
I2	U: Needle lift signal	9
0V	0V	10
+ 24V/ + 30V	+ 24V	11
O2	NCL : Needle cooler output	12
O7	No setting	13
O6/ CP	No setting	14
O3	TF : "TF" output	15

NOTE 1: PIN NUMBER 3, 12, 15 ARE FOR SOLENOID OUTPUT.
NOTE 2: PIN NUMBER 13, 14 ARE FOR AIR VALVE OUTPUT. 300MA MAX



Control Box Settings

Note: After you select a program mode like the P-Mode:

- Press the ↓ arrow key to move forward through the list of functions
- Press the A, B, C, or D keys to change the setting
- Press the ↓ arrow key and the ↑ arrow key momentarily to return to the normal mode

Note: You must return to the normal mode before you can go to another program mode

---The normal mode has the rotating circle---

P-Mode

Press and hold in the ↓ + ↑ arrow keys until the display stops flashing

H High Speed (0-8999) (Adjust according to the machine)

C-Mode

Press and hold in the ↓ + C-keys until the display stops flashing

ID Change the setting from TL to S6 (trimmer safety setting)
IDL OF/ON (This setting may have to be changed if the trimmer safety works in reverse)

A-Mode

Press and hold in the ↓ + A-keys until the display stops flashing

GA Motor Torque Gain (H, L, LL) High, Low, Very Low
(Change the setting to H if the machine requires extra motor torque)

G-Mode

Press and hold in the ↓ + ↑ + C keys until the display stops flashing

TR Change from M1 to PRG (Trimmer settings become changeable)

LTM Change from T1 to TK (Trim after up position for cover stitch chainstitch machines)

Note: The next items are changes that can be made from the default settings to customize the various cover stitch chainstitch models

T1 20ms (Changeable from 0-998ms) (Delay before the trimmer turns on)

T2 90ms (Changeable from 0-998ms) (Duration of the trimmer on time)

W1 10ms---x10 (Changeable from 0-998ms---x10) (Delay before the wiper turns on)

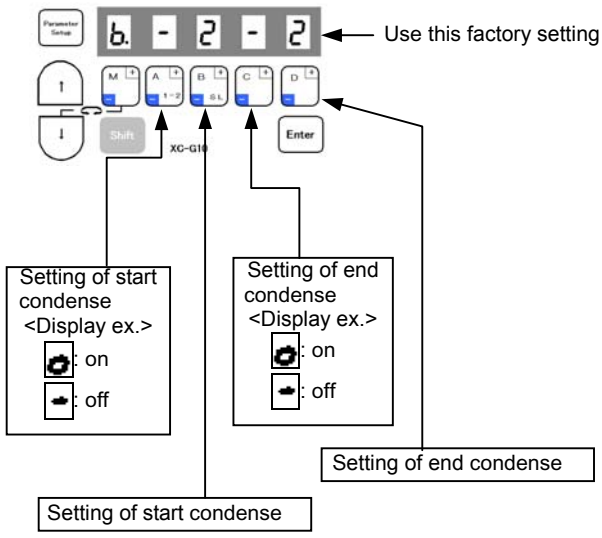
W2 8ms---x10 (Changeable from 0-998ms---x10) (Duration of the wiper on time)

F1 140ms (0-998ms) Presser foot delay to raise after trim

End

Condensed stitching mode

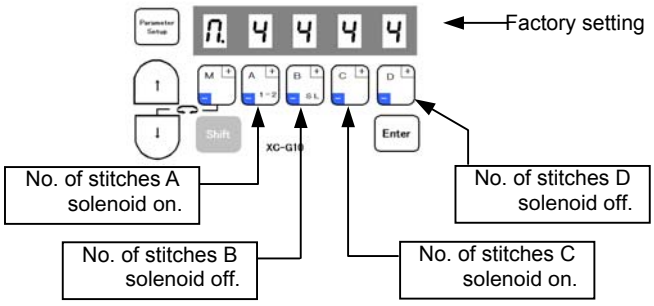
When the [↑] key is turned ON, b. will display above the [M] key, and the condensed stitching mode will be entered.

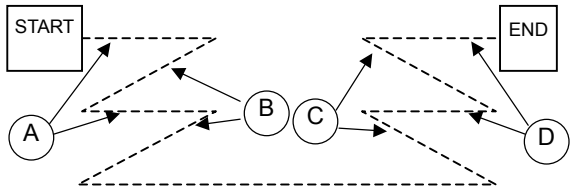


Setting of condense type < Display ex. >		start tacking	end tacking
0	: No tacking	___	___
1	: V tacking (Once tacking)	∠___	___∠
2	: N tacking (Double tacking)	Z___	___Z
3	: M tacking (Triple tacking)	⩘___	___⩘
4	: W tacking (4 repeat tacking)	⩘___	___⩘
5	: 5 repeat tacking	⩘___	___⩘
6	: 6 repeat tacking	⩘___	___⩘

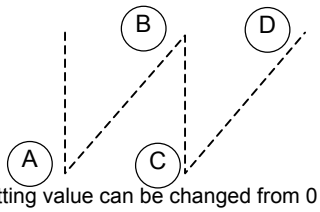
Number of condensed stitches setting mode

When the [↑] key is turned ON again, n. will display above the [M] key indicator, and the No. of stitches can be set.]





(A or C solenoid is on and B or D solenoid is off using the stitch amount)



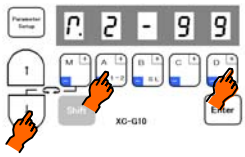
Each setting value can be changed from 0 to 9 stitches, A,B,C,D,E,F stitches.

'A' means 10 stitches
'B' means 11 stitches
'C' means 12 stitches
'D' means 13 stitches
'E' means 14 stitches
'F' means 15 stitches

Using the program mode [3] simple setting (for lock stitch trimming machine except Mitsubishi sewing machine)

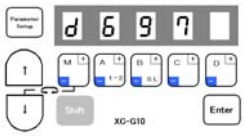
To set the function for DÜRKOPP ADLER thread trimming sewing machine.
(For example, to set for the 271 class, "DÜRKOPP ADLER") ..... Function setting [D271]

(1)



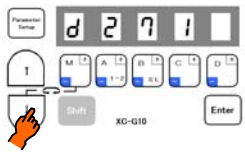
*Enter the program mode [3].
([↓] + [A] + [D] keys)

(2)



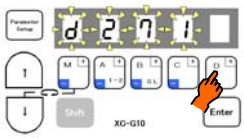
*The mode will change to the program mode [3].

(3)



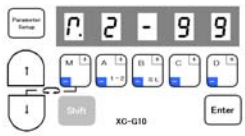
*Press the [↓] key or [↑] key to change the function to [D271].

(4)



*When the [D] key is held down, [D271] will flicker, and the changes to the setting will be set.

(5)



*The mode will return to the normal mode when the [D] key is held down over two seconds or more.
(This completes the settings.)

Description

A. Select the model name that corresponds to the sewing machine model for the simple setting values for the DÜRKOPP ADLER thread trimming sewing machine in the "Technical manual". After selecting the function name, holds down the [D] key over 2 seconds or more. The function name's set speed and function will be set automatically.
B. To return to the normal mode from the [D271] display, press the [↑] key while holding down [↓]. In this case, [D271] will not be set, and the last settings will be used.
C. Each time the [↓] key is pressed in step 3, the function will change in order from [D697], [D271], [D273].....[750].

Caution
To use this mode, please ask your dealer or look at "TECHNICAL INFORMATION MANUAL" about simple setting, I/O signal, Junction wiring in detail.

Simple setting table for thread trimming sewing machine

	Function name	Digital display	Sewing machine maker	Model name of sewing machine and device	Needle position	High speed (H)	Low speed (L)	Thread trimming speed (T)	Start tacking speed (N)	End tacking speed (V)
*1	D697		DÜRKOPP ADLER	697-15000 class	2	1500	250	150	700	700
	D271		DÜRKOPP ADLER	271-14000,272-14000 class	2	3000	170	250	1500	1500
	D273		DÜRKOPP ADLER	273-14000,274-14000 class	2	3000	170	250	1500	1500
	B715		BROTHER	DB2-B705,DB2-B707,DB2-B715 class	2	4300	215	215	1800	1800
	B716		BROTHER	DB2-B716-?,DB2-B716-1,DB2-B716-?,DB2-B716-5 class	2	3500	215	215	1800	1800
	B737		BROTHER	DB2-B737-1,DB2-B737-3,DB2-B737-5 class	2	4000	215	215	1800	1800
	B740		BROTHER	DB2-B746-5,DB2-B746-7,DB2-B746-8,DB2-B747-5,DB2-B748-5,DB2-B748-7 class	2	2000	215	215	1800	1800
	B757		BROTHER	DB2-B757 class	2	5000	215	215	1800	1800
	B770		BROTHER	DB2-B772,DB2-B774,DB2-B7740,DB2-B778 class	2	4500	215	215	1800	1800
	B790		BROTHER	DB2-B790,DB2-B791-3,DB2-B791-5,DB2-B7910-3,DB2-B7910-5,DB2-B792,DB2-B793-403,DB2-B795,DB2-B798 class	2	3500	215	215	1800	1800
	B830		BROTHER	DB2-B837,DB2-B838 class	2	3000	215	215	1800	1800
	BLT		BROTHER	LT2-B841-1,LT2-B841-3,LT2-B841-5,LT2-B842-1,LT2-B842-3,LT2-B842-5,LT2-B845,LT2-B8450,LT2-B8480,LT2-B847,LT2-B848,LT2-B872,LT2-B875,LT2-B8750 class	2	3000	185	185	1000	1000
	BLZ		BROTHER	LZ2-B852,LZ2-B853,LZ2-B854,LZ2-B856,LZ2-B857 class	2	3000	185	185	1800	1800
	J500		JUKI	DDL-500,DMN-5420NFA-6-WB class	2	5000	200	200	1700	1900
	J505		JUKI	DDL-505,DDL-505A,DDL-506,DDL-506A,DDL-506E,DDL-560-5,DDL-5600,DLU-5494NBB-6-WB,PLW-1245-6,PLW-1246-6,PLW-1257-6,PLW-1264-6,PLW-1266-6 class	2	4000	200	200	1700	1900
	J555		JUKI	DDL-555-2-2B,DDL-555-2-4B,DDL-555ON,DDL-5570,DDL-5571,DDL-5580 class	2	4000	200	200	1700	1900
	JDL		JUKI	DLD-432-5,DLD-436-5,DLM-5400N-6,DLM-5400-6,DLN-415-5,DLN-5410N-6,DLN-5410-6,DLU-450,DLU-490-5,DLU-491-5,DLU-5490BB-6-OB,DLU-5490BB-6-WB,DLU-5490N-6,DMN-530-5,DMN-531-5 class	2	4200	200	200	1700	1900
	JDU		JUKI	DNU-241H-5,DNU-241H-6,DSC-244-6,DSC-244V-6,DSC-245-5,DSC-245-6,DSC-246-6,DSC-246V-6,DSU-142-6,DSU-144-6,DSU-145-5,DSU-145-6,DU-141H-4,DU-141H-5,DU-141H-6,DU-161H-6 class	2	2000	200	200	1700	1900
	JLH		JUKI	LH-1172,LH-1180-5,LH-1182-5,LH-1150,LH-1152,LH-1160,LH-1162 class	1	2300	200	200	1700	1900
	JLU1		JUKI	DDL-5560NL-6,LU-1114-5,LU-1114-6,LZH-1290-6 class	2	2800	200	200	1700	1900
	JLU2		JUKI	LU-2210-6-0B class	2	3500	200	200	1700	1900
	T100		TOYOTA	AD1012,AD1012B,AD1012G,AD1013,AD1013A,AD1013G,AD1020,AD1102,AD1102B,AD1102G,AD1103,AD1103A,AD1202,AD1203,AD1204S,AD1205,AD1205S,AD1212G,AD1213,AD2200,AD5010S class	2	3500	200	200	1700	1700
	T157		TOYOTA	AD157,AD157G class	2	4000	200	200	1700	1700
	T158		TOYOTA	AD158,AD158-2,AD158-22,AD158A-3,AD158A-32,AD158B-2,AD158B-22,AD158G-2,AD158G-22,AD158-3,AD158-32 class	2	3500	200	200	1700	1700
	T300		TOYOTA	AD3110,AD3110P,AD320-2,AD320-22,AD320-202,AD331,AD3310,AD3310P,AD332,AD340-2,AD340-22,AD340-202,AD340B-2,AD340B-22,AD340B-202,AD341-2,AD341-22,AD341-202,AD345-2,AD345-22,AD345-202,AD352 class	2	1900	200	200	1700	1700
	U639		UNION SPECIAL	Class 63900 Solenoid-operated needle feed under trimmer	2	4000	250	180	1700	1700
	SLH2		SEIKO	SLH-2B	2	570	100	100	1700	1700
	457G		SINGER	457 Wiper	2	4000	250	160	1500	1500
	457F		SINGER	457 Thread pull	2	4000	250	160	1500	1500
	591		SINGER	591, 1591	2	4000	250	200	1500	1500
	211A		SINGER	211A	2	2300	200	180	1000	1000
	212A		SINGER	212A	2	3500	200	180	1000	1000
	411U		SINGER	411U	2	4000	250	180	1500	1500
	412U		SINGER	412U	2	4500	250	180	1500	1500
	591V		SINGER	591V	2	4000	250	200	1500	1500
	691A		SINGER	1691D250	2	4000	250	200	1500	1500
	691B		SINGER	1691D210, 1691D200	2	4000	250	200	1500	1500
*2	750		SINGER	750	2	4500	250	215	1500	1500

*1 A function name is displayed in order of the direction of [↓] key when pressed.

*2 A function name is displayed in order of the direction of [↑] key when pressed.

Note : Please refer to the "TECHNICAL INFORMATION MANUAL" for the Junction wiring, I/O signals and details.

General Lockstitch Connections and Settings on the XC-Series Servo Motor

Note: These are general instructions for lockstitch machines using a trimmer, tension release, wiper, backtack, and foot lift. Extra plugs, pins, etc. are furnished in the accessories packed with the control box.

If the pins on the existing sewing machine connector have molex pins, you may be able to use them without doing the cut, strip, and re-pin method to the wires.

Wiring

Locate the wiring on your machine for the various outputs such as the trimmer solenoid. The solenoid will have 2 wires. Look at the drawing below (Sewing Machine) and locate pin 3 (+24 volts) and pin 4 (Thread Trimming Output) on the control box. This is where you will insert the wires from the trimmer solenoid on your machine. It doesn't matter which wire goes to pin 3 or 4 unless the solenoid is polarity protected.

Tension Release Solenoid goes to pins 7 and 8

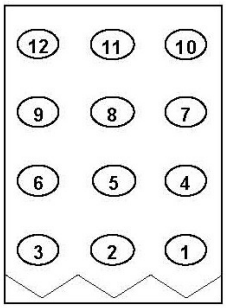
Wiper Solenoid goes to pins 2 and 3

Backtack Solenoid goes to pins 11 and 12

Backtack Input Switch (button) goes to pins 9 and 10

SEWING MACHINE

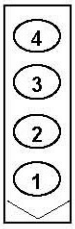
Ground	Ground	1
OB	W : Wiper output	2
+ 24V/ + 30V	+ 24V	3
OA	T : Thread trimming output	4
0V	0V	5
ID	TL : Thread trimmer cancel input	6
OD	L: Thread release output	7
+ 24V/ + 30V	+ 24V	8
IE	S7 : Backstitch input	9
0V	0V	10
+ 24V/ + 30V	+ 24V	11
OC	B : Backstitch output	12



Foot Lift Solenoid goes to pins 3 and 4 on the Presser Foot Plug

PRESSER FOOT

OV	0V	1
IF	F : presser foot input	2
OF	FU+ :presser foot lifter output +	3
	FU- : presser foot lifter output -	4



Control Box Settings

Note: After you select a program mode like the P-Mode:

- Press the ↓ arrow key to move forward through the list of functions
- Press the A, B, C, or D keys to change the setting
- Press the ↓ arrow key and the ↑ arrow key momentarily to return to the normal mode

Note: You must return to the normal mode before you can go to another program mode

---The normal mode has the rotating circle---

P-Mode

Press and hold in the ↓ + ↑ arrow keys until the display stops flashing

H High Speed (0-8999)

N Start Backtack Speed (0-2999)

V End Backtack Speed (0-2999)

RU Reverse after Trim (OF/ON) Optional for Walking Foot Machines

R8 Degree of Reverse after Trim (0-360) Optional for Walking Foot Machines

TR **Change from M1 to PRG------This is the setting for the trimmer. Without the sewing machine connector plugged in, adjust the synchronizer so the take-up stops at the up position after full treadle heel back. Adjust the needle down position by rotating the red disk on the synchronizer. The down position is the signal to activate the trimmer, so it needs to be set to the match the mechanical movement of the trimmer mechanism. Once the trimmer is activated, the signal will stay on until the take-up level on the machine reaches the top position. This makes the PRG setting ideal for most all lockstitch machines. Plug in the sewing machine connector and test the machine. The red disk may need to be re-adjusted to fine tune the electric signal which moves the roller into the trim cam area properly.**

A-MODE

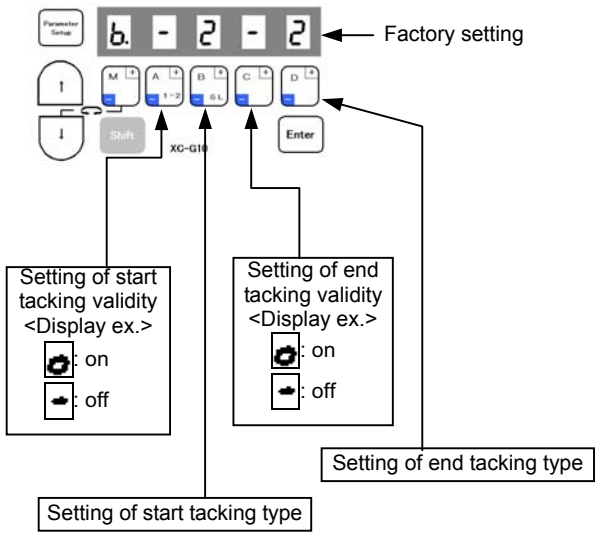
Press and hold in the ↓ + A keys until the display stops flashing

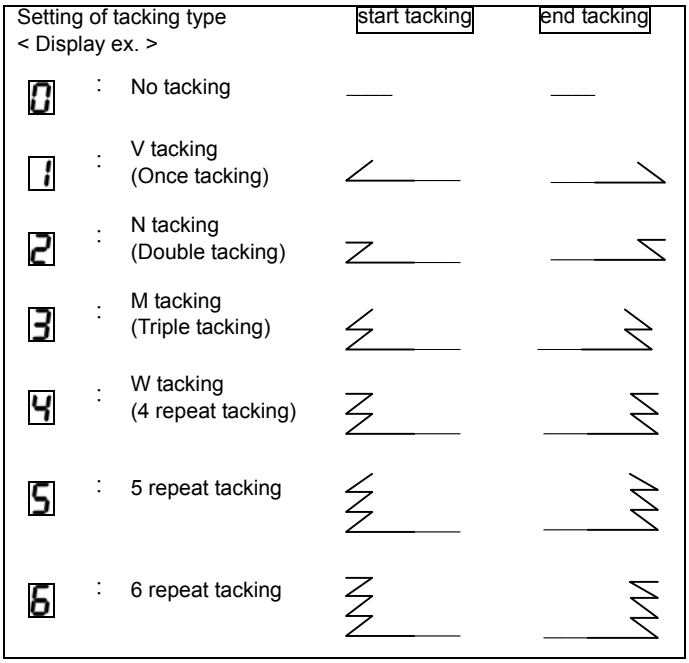
GA Motor Torque Gain (H, L, LL) High, Low, Very Low
(If you are using a Walking Foot Machine, set to H. A smaller motor pulley than the standard 100mm is also recommended for added motor torque if needed.)

End

Back Tacking setting mode

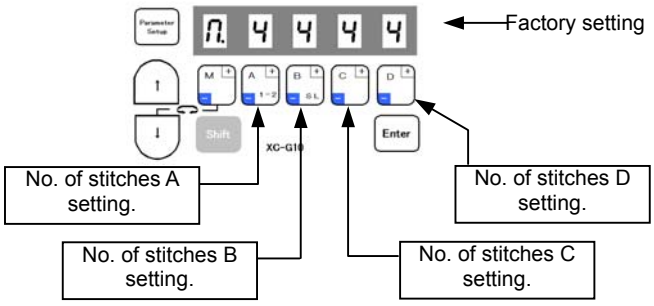
When the [↑] key is turned ON, b. will display above the [M] key, and the tacking setting mode will be entered.



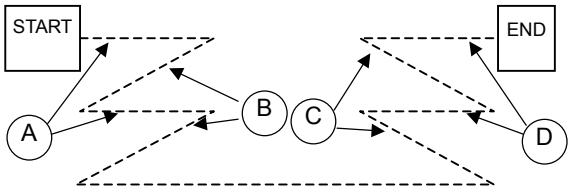


Number of back tacking stitches

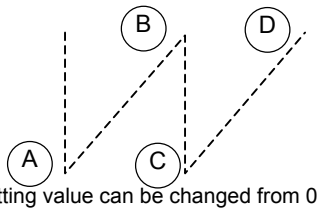
When the [↑] key is turned ON again, n. will display above the [M] key indicator, and the No. of stitches can be set.]



Note: The display below is skipped in pattern No.4



(2) When the pattern No.4 (continuous tack stitching)



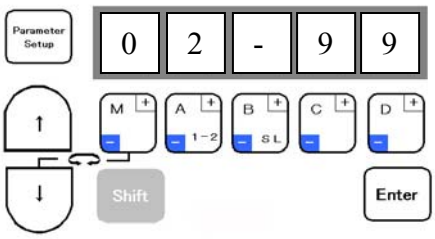
Each setting value can be changed from 0 to 9 stitches, A,B,C,D,E,F stitches.

'A' means 10 stitches
'B' means 11 stitches
'C' means 12 stitches
'D' means 13 stitches
'E' means 14 stitches
'F' means 15 stitches

Direct Parameter Number Call for the XC-GMFY

Note: Refer to the function list for parameter numbers.
The previous method of changing parameters on the XC-FMFY is also possible.

Normal Display



Press the parameter setup key  to access the direct number call methods.

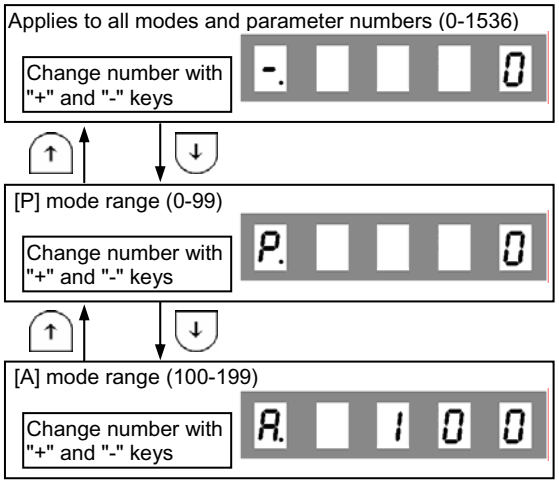
Direct Parameter Number Call Methods

{Method 1} This method is used for direct number entry for all parameters when using the (+ and -) keys 

{Method 2} This method is used for direct number entry for parameters contained in a selected program mode. Use the down arrow key  to select a program mode such as P, A, B, C, etc.

When using the (+ and -) keys  in a specific mode like the P-Mode, parameter numbers are available for that mode only. If the display starts blinking there is no parameter for that number.

Note: When pressing the (+ and -) keys  to change number values, if the shift key  is pressed and held in at the same time, the number will reverse.



Method 1 Display

All parameter numbers can be selected in all modes.

Method 2 Display

Only the parameter numbers in the P-Mode can be selected.

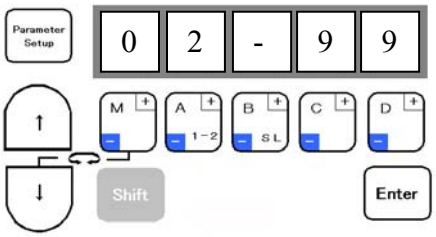
Method 2 Display

Only the parameter numbers in the A-Mode can be selected.

Example of Method 1

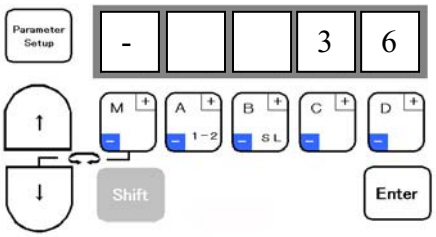
Note: Refer to the function list for parameter numbers.

Normal Display



1. Press the parameter setup key Parameter Setup

Next Display (Number Selection)

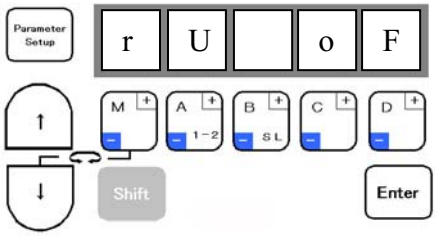


2. Press the (+ and -) keys A 1-2 B SL C D to display the number of the parameter you want to change.

Note: In this example we will use parameter 36, (rU) function.

3. After your selection, press the enter key Enter

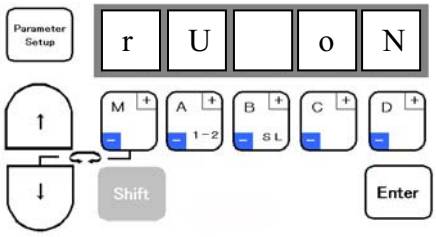
Next Display (Function and Setting)



This is the reverse function setting.

4. Press the D-key D to change the setting from of to on.

Next Display (After Changing the Setting)

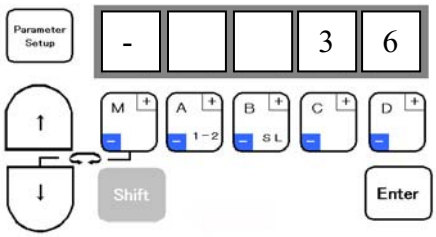


Note: The blinking dot in the display above the D-key D indicates that the parameter has been changed.

5. Press the enter key Enter to save the change.

Note: The reverse function is often used on walking foot machines so the needle is higher after trimming.

Next Display (Parameter Number)

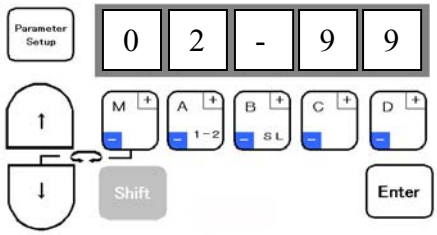


The display shows the parameter number for the (rU) function.

6. Press the parameter setup key Parameter Setup to return to the normal mode.

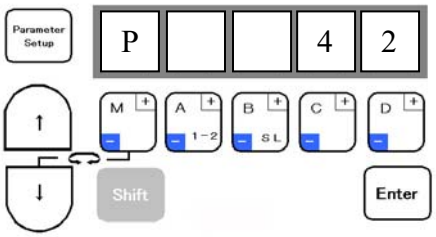
Example of Method 2

Normal Display



1. Press the parameter setup key 

Next Display (Mode and Number Selection)



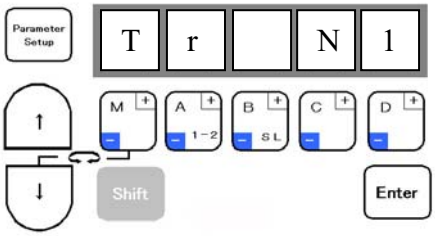
2. Press the down arrow key  1 time for the P-Mode.

3. Press the (+ and -) keys  to display the number of the parameter you want to change.

Note: In this example we will use parameter 42, (TR) function.

4. After your selection, press the enter key 

Next Display (Function and Setting)

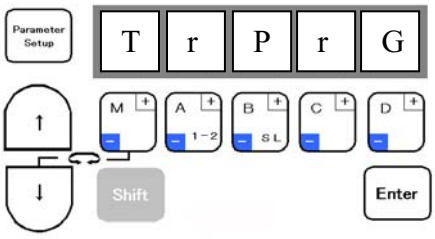


This is the trimmer function setting.

5. Press the D- key  to change the setting from N1 to PrG.

Note: When in a program mode like the P-Mode, if the down  or up  arrow keys are used, the functions are displayed like the previous XC-FMFY model.

Next Display (After Changing the Setting)



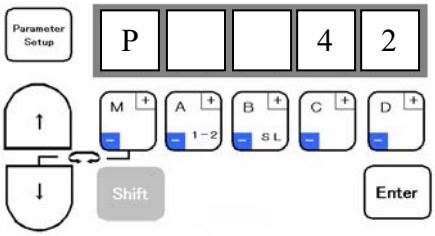
The blinking dot in the display above the D-key  indicates that the parameter has been changed.

6. Press the enter key 

to save the change.

Note: This is the trimmer function setting for all lockstitch machines other than Mitsubishi.

Next Display (Parameter Number)



The display shows the parameter number for the (PrG) function.

7. Press the parameter setup key to return to the normal mode.

Function List and Parameter Numbers

Refer to the Technical Documents for details on each function.
The numbers in the table are used with the direct number call function.

P mode (For sewing machine): [↓]+[↑] key

name	Function	No.
H.	Maximum speed	0000
L.	Low speed	0001
T.	Thread trimming speed	0002
N.	Start tacking speed	0003
V.	End tacking speed	0004
M.	Medium speed	0005
S.	Slow start speed	0006
SLN.	No. of slow start stitches	0007
SLM.	Slow start operation mode	0008
SLP.	Slow start when power is turned ON	0009
SH.	One shot	0010
SHM.	One shot operation mode	0011
PSU.	No. of stitches after PSU input	0012
PSD.	No. of stitches after PSD input	0013
PS1.	Sensor input signal PS1 operation mode	0014
1.	No. of stitches after PS1 input	0015
PS2.	Sensor input signal PS2 operation mode	0016
2.	No. of stitches after PS2 input	0017
PSN.	Restart after PSD,SEN input PSN	0018
SEN.	Input sensor function valid / invalid	0019
SE.	Setting stitch amount to stop by "SEN"	0020
FUM.	Presser foot lift momentary	0021
FU.	FUM operation mode	0022
FCT.	Time setting for FUM operation mode	0023
FD.	Time to motor drive after presser foot lifter bring down	0024
FO.	Full wave time of presser foot lifter output	0025
S3D.	Delay time of presser foot signal S3 input	0026
FUD.	Presser foot lifting output chopping duty	0027
PFU.	Presser foot lifting output when power is turned ON	0028
FL.	Cancel the presser foot lifting with full heeling	0029
S3L.	Cancel presser foot lifting with light heeling	0030
S2L.	Cancel of thread trimming operation	0031
S6L.	Thread trimming protection signal (S6) logical changeover	0032
AT.	Automatic operation	0033
TL.	Thread trimmer cancel	0034
TLS.	Auto-stop of preset stitch sewing before trim	0035
RU.	Reverse run needle lifting after thread trimming	0036
R8.	RU reverse run angle	0037
TB.	Thread trimming with reverse feed	0038
TBJ.	Not used.	0039
S2R.	Full heeling, S2 signal operation mode	0040
IL.	Cancel of interlock after full pedal heeling	0041
TR.	Thread trimming mode	0042
POS.	Thread trimming validity at neutral pedal	0043
P1P.	Operation when power is turned ON during 1 position setting.	0044
P2P.	Operation when power is turned ON during 2 position setting.	0045
C8.	Needle stop position before fabric	0046
K8.	Reverse run angle from DOWN position to UP position	0047
E8.	On angle of virtual "TM"	0048
S8.	On start angle of virtual "TM"	0049
SNM.	Setting sensor "SEN" input function	0050
KD.	Virtual down setting	0051
KDU.	Virtual width of up and down signal	0052
PSJ.	Not used.	0053
D8.	Needle DOWN position stop angle	0054
U8.	Needle UP position stop angle	0055

A mode (For servo motor) : [↓]+[A] key

name	Function	No.
GA.	Gain high/low selection	0100
PDC.	Pedal curve	0101
AC.	Acceleration time simple setting	0102
ACT.	Acceleration time	0103
DC.	Deceleration time simple setting	0104
DCT.	Deceleration time	0105
SC.	S-character cushion	0106
SCT.	S-character cushion time setting	0107
S2M.	Full heeling S2 signal operation mode when power is turned on or after thread trimming	0108
PL.	Sewing machine shaft/motor shaft speed setting selection	0109
MR.	Setting motor pulley diameter	0110
SR.	Setting sewing machine pulley diameter	0111
NOS.	Random stop is available without thread trimming.	0112
STM.	First priority stop => speed control	0114
BKT.	Brake time	0115
B8.	Weak brake angle	0116
BNR.	Reduction of weak brake sound	0117
BKS.	Weak brake force	0118
BKM.	Weak brake mode	0119
BK.	Weak brake	0120

B mode (For counter/speed display) : [↓]+[B] key

name	Function	No.
S.	Display sewing speed	0200
N.	Down counter setting count amount	0201
D.	Down counter display count amount	0202
P.	Up counter setting count amount	0203
U.	Up counter display count amount	0204
CUP.	Up counter the selection of setting mode	0205
USC.	Up counter the selection of counter operation	0206
UCM.	Up counter changing sewing pattern	0207
UPC.	Up counter valid / invalid	0208
NXU.	Up counter operation after counting over	0209
CDN.	Down counter the selection of setting mode	0210
DSC.	Down counter the selection of counter operation	0211
DCM.	Down counter changing sewing pattern	0212
DNC.	Down counter valid / invalid	0213
NXD.	Down counter operation after counting over	0214
PCM.	Counter condition turning on power switch	0215
PRN.	Setting Thread trimming times "N"	0216
CNU.	Setting Number of stitches "N"	0217
CCI.	Count modification (to use IO1, IO2)	0218
PMD.	Display condition turning on power switch	0219
CCM.	Reset for Up / Down counter during operation	0220

Program mode [I] (Save mode of the setting data): [↓]+[↑]+[B]+[C] key

name	Function	No.
SAVE1	Save mode of the setting data 1	-
SAVE2	Save mode of the setting data 2	-
CCR	Copy of the current data	-
CU1	Copy of user's 1 data	-
CU2	Copy of user's 2 data	-

Program mode [R] (Reset): [↓]+[B]+[C] key

name	Function	No.
RESET.	Reset	-

Program mode [1] (Mitsubishi sewing machine): [↓]+[A]+[B] key

name	Function	No.
280M	LS2-1280-M1T(W)	-
:	**:**	-
LOAD1	Load of the saved setting data1	-

Program mode [2] (Chain stitch sewing machine): [↓]+[C]+[D] key

name	Function	No.
YU2	YAMATO VC2600,VC2700 class	-
:	**:**	-
JMH	JUKI	-

Program mode [3] (other lock stitch sewing machine): [↓]+[A]+[D] key

name	Function	No.
D697	DÜRKOPP ADLER 697-15000 class	-
:	**:**	-
750	SINGER	-

C mode (For setting input/output signal to function): [↓]+[C] key

name	Function	No.
IA.	IA input function selection	0300
IAL.	IA input logic changeover	0301
IAA.	IA input alternating operation	0302
IB.	IB input function selection	0303
IBL.	IB input logic changeover	0304
IBA.	IB input alternating operation	0305
IC.	IC input function selection	0306
ICL.	IC input logic changeover	0307
ICA.	IC input alternating operation	0308
ID.	ID input function selection	0309
IDL.	ID input logic changeover	0310
IDA.	ID input alternating operation	0311
IE.	IE input function selection	0312
IEL.	IE input logic changeover	0313
IEA.	IE input alternating operation	0314
IF.	IF input function selection	0315
IFL.	IF input logic changeover	0316
IFM.	Setting the function for IF	0317
RFS.	Set condition of RS F/F for IF	0318
RFR.	Reset condition of RS F/F for IF	0319
RFN.	RS F/F reset stitch amount for IF	0320
IG.	IG input function selection	0321
IGL.	IG input logic changeover	0322
IGA.	IG input alternating operation	0323
IH.	IH input function selection	0324
IHL.	IH input logic changeover	0325
IHA.	IH input alternating operation	0326
II.	II input function selection	0327
IIL.	II input logic changeover	0328
IIA.	II input alternating operation	0329
IJ.	IJ input function selection	0330
IJL.	IJ input logic changeover	0331
IJA.	IJ input alternating operation	0332
IK.	IK input function selection	0333
IKL.	IK input logic changeover	0334
IKA.	IK input alternating operation	0335
IL.	IL input function selection	0336
ILL.	IL input logic changeover	0337
ILA.	IL input alternating operation	0338
IM.	IM input function selection	0339
IML.	IM input logic changeover	0340
IMA.	IM input alternating operation	0341
IN.	IN input function selection	0342
INL.	IN input logic changeover	0343
INA.	IN input alternating operation	0344
IO.	IO input function selection	0345
IOL.	IO input logic changeover	0346
IOA.	IO input alternating operation	0347
IP.	IP input function selection	0348
IPL.	IP input logic changeover	0349
IPA.	IP input alternating operation	0350
IQ.	IQ input function selection	0351
IQL.	IQ input logic changeover	0352
IQA.	IQ input alternating operation	0353
IR.	IR input function selection	0354
IRL.	IR input logic changeover	0355
IRA.	IR input alternating operation	0356
I1.	I1 input function selection	0357
I1L.	I1 input logic changeover	0358
I1M.	Setting the function for I1	0359
I1O	Special setting for input signal "I1"	0360
I1F	Special setting for input signal "I1" is ON	0361
I1C	RS F/F clear setting	0362
1CT	RS F/F delay time setting	0363
F1P	Input signal I1 virtual F/F circuit operation 1	0364
F1C	Input signal I1 virtual F/F circuit operation 2	0365
F1S	Input signal I1 virtual F/F circuit operation 3	0366
R1S	Set condition of RS F/F for I1	0367
R1R	Reset condition of RS F/F for I1	0368
R1N	RS F/F reset stitch amount for I1	0369
I2.	I2 input function selection	0370
I2L.	I2 input logic changeover	0371
I2M.	Setting the function for I2	0372
I2C	RS F/F clear setting	0373
2CT	RS F/F delay time setting	0374
R2S	Set condition of RS F/F for I2	0375
R2R	Reset condition of RS F/F for I2	0376
R2N	RS F/F reset stitch amount for I2	0377

C mode (For setting input/output signal to function): [↓]+[C] key

name	Function	No.
I4.	I4 input function selection	0378
I4L.	I4 input logic changeover	0379
I4A.	I4 input alternating operation	0380
I5.	I5 input function selection	0381
I5L.	I5 input logic changeover	0382
I5A.	I5 input alternating operation	0383
I6.	I6 input function selection	0384
I6L.	I6 input logic changeover	0385
I6A.	I6 input alternating operation	0386
I7.	I7 input function selection	0387
I7L.	I7 input logic changeover	0388
I7A.	I7 input alternating operation	0389
OA.	OA output function selection	0390
OAL.	OA output logic changeover	0391
OAC.	OA output chopping operation	0392
OAT.	OA output forced OFF	0393
DA.	OA output delay time	0394
OB.	OB output function selection	0395
OBL.	OB output logic changeover	0396
OBC.	OB output chopping operation	0397
OBT.	OB output forced OFF	0398
DB.	OB output delay time	0399
OC.	OC output function selection	0400
OCL.	OC output logic changeover	0401
OCC.	OC output chopping operation	0402
OCT.	OC output forced OFF	0403
DC.	OC output delay time	0404
OD.	OD output function selection	0405
ODL.	OD output logic changeover	0406
ODC.	OD output chopping operation	0407
ODT.	OD output forced OFF	0408
DD.	OD output delay time	0409
OF.	OF output function selection	0410
OFL.	OF output logic changeover	0411
FUD.	Presser foot lifter output chopping duty	0412
FO.	Presser foot lifter FU full wave output time	0413
FU.	Presser foot lifter FU momentary mode	0414
DF.	OF output delay time	0415
O1.	O1 output function selection	0416
O1L.	O1 output logic changeover	0417
O1C.	O1 output chopping function	0418
O1T.	O1 output forced OFF	0419
D1.	O1 output delay time	0420
O2.	O2 output function selection	0421
O2L.	O2 output logic changeover	0422
O2C.	O2 output chopping function	0423
O2T.	O2 output forced OFF	0424
D2.	O2 output delay time	0425
O3.	O3 output function selection	0426
O3L.	O3 output logic changeover	0427
O3C.	O3 output chopping function	0428
O3T.	O3 output forced OFF	0429
D3.	O3 output delay time	0430
O4.	O4 output function selection	0431
O4L.	O4 output logic changeover	0432
O4T.	O4 output forced OFF	0433
D4.	O4 output delay time	0434
O5.	O5 output function selection	0435
O5L.	O5 output logic changeover	0436
O5T.	O5 output forced OFF	0437
D5.	O5 output delay time	0438
O6.	O6 output function selection	0439
O6L.	O6 output logic changeover	0440
O6C.	O6 output chopping function	0441
O6T.	O6 output forced OFF	0442
D6.	O6 output delay time	0443
O7.	O7 output function selection	0444
O7L.	O7 output logic changeover	0445
O7C.	O7 output chopping function	0446
O7T.	O7 output forced OFF	0447
D7.	O7 output delay time	0448
OM.	OM output function selection	0449
OML.	OM output logic changeover	0450
OMT.	OM output forced OFF	0451
DM.	OM output delay time	0452
ON.	ON output function selection	0453
ONL.	ON output logic changeover	0454
ONT.	ON output forced OFF	0455

C mode (For setting input/output signal to function): [↓]+[C] key

	name	Function	No.
	DN.	ON output delay time	0456
	OO.	OO output function selection	0457
	OOL.	OO output logic changeover	0458
	OOT.	OO output forced OFF	0459
	DO.	OO output delay time	0460
	OP.	OP output function selection	0461
	OPL.	OP output logic changeover	0462
	OPT.	OP output forced OFF	0463
	DP.	OP output delay time	0464
	OQ.	OQ output function selection	0465
	OQL.	OQ output logic changeover	0466
	OQT.	OQ output forced OFF	0467
	DQ.	OQ output delay time	0468
	O.R.	OR output function selection	0469
	O.RL.	OR output logic changeover	0470
	O.RT.	OR output forced OFF	0471
	DR.	OR output delay time	0472
	PO.	Full wave output time for each output	0473
	POD.	Output chopping duty except of FU output	0474
	OTT.	Forced OFF timer setting function for each output	0475
	FCT.	Time setting for FUM operation mode	0476
	A1.	Logic [AND] module input function selection	0477
	A1L.	Logic [AND] module setting of Hi/Low logic	0478
	A1A.	Logic [AND] module Alternate	0479
	N1.	Logic [AND] module output function selection	0480
	N1L.	Logic [AND] module setting of Hi/Low logic	0481
	N2.	Logic [AND] module output function selection	0482
	N2L.	Logic [AND] module setting of Hi/Low logic	0483
	A2.	Logic [AND] module input function selection	0484
	A2L.	Logic [AND] module setting of Hi/Low logic	0485
	A2A.	Logic [AND] module Alternate	0486
	N3.	Logic [AND] module output function selection	0487
	N3L.	Logic [AND] module setting of Hi/Low logic	0488
	N4.	Logic [AND] module output function selection	0489
	N4L.	Logic [AND] module setting of Hi/Low logic	0490
	A3.	Logic [AND] module input function selection	0491
	A3L.	Logic [AND] module setting of Hi/Low logic	0492
	A3A.	Logic [AND] module Alternate	0493
	N5.	Logic [AND] module output function selection	0494
	N5L.	Logic [AND] module setting of Hi/Low logic	0495
	N6.	Logic [AND] module output function selection	0496
	N6L.	Logic [AND] module setting of Hi/Low logic	0497
	OR.	Logic [OR] module input function selection	0498
	ORL.	Logic [OR] module setting of Hi/Low logic	0499
	ORA.	Logic [OR] module Alternate	0500
	R1.	Logic [OR] module output function selection	0501
	R1L.	Logic [OR] module setting of Hi/Low logic	0502
	R2.	Logic [OR] module output function selection	0503
	R2L.	Logic [OR] module setting of Hi/Low logic	0504
	CSP.	Variable speed command for digital input	0505
	CSG.	Variable speed command for digital input (Gray code)	0506
	LB.	Thread release + backstitch output	0507
	T1C.	Virtual output OT1 forced OFF function	0508
	T1T.	Forced OFF timer setting function for virtual output OT1	0509
	T2C.	Virtual output OT2 forced OFF function	0510
	T2T.	Forced OFF timer setting function for virtual output OT2	0511
	T3C.	Virtual output OT3 forced OFF function	0512
	T3T.	Forced OFF timer setting function for virtual output OT3	0513
	D11.	ON delay time setting function for virtual output OT1	0514
	D12.	OFF delay time setting function for virtual output OT1	0515
	D21.	ON delay time setting function for virtual output OT2	0516
	D22.	OFF delay time setting function for virtual output OT2	0517
	D31.	ON delay time setting function for virtual output OT3	0518

	name	Function	No.
	D32.	OFF delay time setting function for virtual output OT3	0519
	CPK.	Feed pulse output (CP) cancel function	0520
	CP.	Setting CP pulse amount	0521
	CPC.	Prohibited angle of output CP pulse	0522
	PSW.	Panel switch operation prohibit	0523
	CKB.	O4, O5 output cancel during backtack term	0524
	CPB.	CP output cancel during backtack term	0525
	C.	Speed setting for the [SPC] output	0526
	D.	Speed setting for the [SPD] output	0527
	E.	Speed setting for the [SPE] output	0528
	CNF.	F key function on control panel	0529
	PDS.	Variable speed pedal changeover setting	0530
	VC2	Speed instruction VC2 cancellation	0531

D mode (For tacking setting mode): [↓]+[D] key

	name	Function	No.
	D1.	Operation mode during tacking	0600
	D2.	Operation mode during start tack completion	0601
	CT.	Stop time at each corner during start and backtacking	0602
	BM.	Tack alignment	0603
	BT1.	No. of stitch compensation for start tacking alignment	0604
	BT2.	No. of stitch compensation for start tacking alignment	0605
	BT3.	No. of stitch compensation for end tacking alignment	0606
	BT4.	No. of stitch compensation for end tacking alignment	0607
	BTP.	No. of tacking stitches (+) 15 stitches function	0608
	BTO.	No. of tacking stitches addition stitches function	0609
	BTT.	Full heeling function immediately after start tacking stop	0610
	CSJ.	Not used.	0611
	SPN.	The speed operation mode when both the medium speed signal and S5V signal is ON	0612
	BTM.	Set table types of tacking	0613
	S7M.	Input signal S7 operation mode during preset stitching	0614
	S7U.	Manual backstitch ON timing 1	0615
	S7D.	Manual backstitch ON timing 2	0616
	7BD.	The OFF timing setting of output B when the backstitching signal (S7) is OFF setting.	0617
	BTN.	The maximum tacking stitches (maximum stitches is 99 stitches)	0618
	BCC.	No. of end tacking stitches during direct heeling	0619
	TLS.	Operation mode during thread trimmer cancel signal [TL] setting	0620
	BTS.	Input signal BTL quick pressing operation	0621
	BS.	Input signal SB and EB quick pressing operation	0622
	BTD.	Operation when input signal BTL is ON	0623
	BD.	Operation when input signal SB and EB tacking OFF are set	0624
	PNE.	End tacking cancel mode with input signal PSU	0625
	BZ.	The buzzer of control panel validity	0626

	name	Function	No.
E mode (For H/W checking mode): [↓]+[↑]+[A] key	**1.**	Error code (The last error code)	0700
	2.	Error code (The second to last code)	0701
	3.	Error code (The third to last code)	0702
	4.	Error code (The fourth to last code)	0703
	P.	Total integration time of power on	0704
	M.	Total integration time of motor run	0705
	IA.	Input display	0706
	IB.	Input display	0707
	IC.	Input display	0708
	ID.	Input display	0709
	IE.	Input display	0710
	IF.	Input display	0711
	IG.	Input display	0712
	IH.	Input display	0713
	II.	Input display	0714
	IJ.	Input display	0715
	IK.	Input display	0716
	IL.	Input display	0717
	IP.	Input display	0718
	IQ.	Input display	0719
	IR.	Input display	0720
	I1.	Input display	0721
	I2.	Input display	0722
	I4.	Input display	0723
	I5.	Input display	0724
	ECA.	Encoder signal display (A phase)	0725
	ECB.	Encoder signal display (B phase)	0726
	UP.	Detector signal display (UP signal)	0731
	DN.	Detector signal display (DN signal)	0732
	DR.	Display the angle from down position	0733
	VC.	Display the voltage of VC	0734
	V2.	Display the voltage of VC2	0736
	OAD.	Output signal display	0737
	OBD.	Output signal display	0738
	OCD.	Output signal display	0739
	ODD.	Output signal display	0740
	OFD.	Output signal display	0741
	O1D.	Output signal display	0742
	O2D.	Output signal display	0743
	O3D.	Output signal display	0744
	O4D.	Output signal display	0745
	O5D.	Output signal display	0746
	O6D.	Output signal display	0747
	O7D.	Output signal display	0748
	OPD.	Output signal display	0749
	OQD.	Output signal display	0750
	ORD.	Output signal display	0751
	OAO.	Solenoid output	0752
	OBO.	Solenoid output	0753
	OCO.	Solenoid output	0754
	ODO.	Solenoid output	0755
	OFO.	Solenoid output	0756
	O1O.	Solenoid output	0757
	O2O.	Solenoid output	0758
	O3O.	Solenoid output	0759
	O4O.	Solenoid output	0760
	O5O.	Solenoid output	0761
	O6O.	Solenoid output	0762
	O7O.	Solenoid output	0763
	OPO.	LED output for G500 type control panel	0764
	OQO.	LED output for G500 type control panel	0765
	ORO.	LED output for G500 type control panel	0766
	WT.	Rated output display	0767
	VL.	Voltage display	0768
	TP.	Model display	0769
	DV.	Data version No.	0770
	RV.	Software version No.	0771
	T.	Display previous simple setting selected.	0772

	name	Function	No.
F mode (Cutter setting mode): [↓]+[↑]+[B] key	**COA.**	Set No. of stitches A for cutter output	0800
	COB.	Set No. of stitches B for cutter output	0801
	COC.	Set No. of stitches C for cutter output	0802
	X.	No. of stitches for BT output ON after sensor OFF setting	0803
	Y.	No. of stitches for sewing machine stop after BT output ON setting	0804
	Z.	No. of stitches for BT output OFF after start of stitching setting	0805
	SD.	Delay time to when SL output turns from OFF to ON	0806
	ED.	Delay time to when SL output turns from ON to OFF	0807
	SLH.	No. of set stitches during SL output ON selection mode	0808
	SLK.	SL output start position setting	0809
	SLT.	SL output start position during SLS function ON setting	0810
	SLL.	Speed limit M except tacking and SL ON	0811
	SLS.	SL output operation during motor stop	0812
	O1B.	OT1 output blower output setting	0813
	O2M.	OT2 output chain-off output setting	0814
	O3M.	OT3 output cutter output setting	0815
	I2M.	Mesh judgment control with I*2 input	0816
	CTY.	Setting I*3 signal for manual cutter output	0817
	CTM.	Status of cutter output photo switch (I*2) signal according to OT3 output	0818
	CTR.	Turn OT3 output ON/OFF per set No. of stitches when I*3 signal is ON	0819
	CSC.	Automatic cutter output prohibit during sensor ON	0820
	CEC.	Automatic cutter output prohibit during sensor OFF	0821
	CTS.	Cutter output prohibit when sensor is ON while stopped	0822
	CAT.	Automatic thread trim setting after cutter sensor is turned off	0823
	CTL.	Set I*1 input, OP1 output to cutter BT specifications input/output	0824
	NMD.	Preset stitching operation after operation signal OFF	0825
	RLM.	ROL output mode	0826
	RLN.	No. of stitches setting for auxiliary feeding rear roller	0827

	name	Function	No.
G mode (Thread trimming timing setting mode): [↓]+[↑]+[C]	**TR.**	Thread trimming mode	0900
	TRM.	Motor operation mode during thread trimming	0901
	LTM.	Thread trimming output (T) output mode	0902
	LLM.	Thread release output (L) output mode	0903
	TS.	Thread trimming output start angle	0904
	TE.	Thread trimming output angle	0905
	LS.	Thread release output start angle	0906
	LE.	Thread release output angle	0907
	T1.	Thread trimming output start time	0908
	T2.	Thread trimming output time	0909
	L1.	Thread release output start time	0910
	L2.	Thread release output time	0911
	R1.	Thread release output start time (Output TF start time)	0912
	R2.	Thread release output time (TF output time)	0913
	R3.	Not used.	0914
	W1.	Wiper output start time	0915
	W2.	Wiper output time	0916
	WMD.	Wiper output operation mode	0917
	F1.	Presser foot lifting output start time	0918
	FD.	Time to motor drive after presser foot lifter bring down	0919
	IL.	Interlock time during thread trimming	0920
	IT.	Interlock time during no thread trimming	0921
	TDS.	Motor rotation after motor stop before thread trimming	0922
	TD.	Motor stop time during lockstitch and R output time during chain stitch	0923
	RUS.	Delay setting before reverse run during RU setting	0924
	RT.	Delay time before reverse run during RU setting	0925
	RUM.	Not used.	0926
	WS1.	Wiper output OFF trimming with (S1) signal	0927
	S2T.	Operation mode with thread trimming signal to shift the needle stop position and return to the original needle stop position before the thread trimming signal	0928
	S2P.	Operation mode with thread trimming signal when shifting the needle stop position before the thread trimming signal	0929
	MAN.	Solenoid output OT1 manual/automatic change	0930
	HOF.	Setting of no. of stitches during MAN [OFF] setting	0931
	WB.	Weak brake ON simultaneously with wiper output (W)	0932
	TDT.	Motor rotation operation when LTM function is set to T1, T2 or T3	0933
	C1.	Not used.	0934
	C2.	Not used.	0935
	C3.	Not used.	0936
	T3.	Not used.	0937
	T4.	Not used.	0938
	T5.	Not used.	0939
	PET.	Not used.	0940
	P9U.	Not used.	0941
	HHC.	Not used.	0942
	PAA.	Not used.	0943
	STL.	Not used.	0944
	L8.	Not used.	0945
	PEK.	Not used.	0946

	name	Function	No.
H mode (Setting speed limit setting mode): [↓]+[↑]+[D] key	**LHH.**	Upper limit of maximum speed [H]	1000
	LHL.	Lower limit of maximum speed [H]	1001
	LLH.	Upper limit of low speed [L]	1002
	LLL.	Lower limit of low speed [L]	1003
	LTH.	Upper limit of thread trimming speed [T]	1004
	LTL.	Lower limit of thread trimming speed [T]	1005
	LNH.	Upper limit of start/end tacking (condensed stitching) speed	1006
	LNL.	Lower limit of start/end tacking (condensed stitching) speed	1007
	LMH.	Upper limit of medium speed [M]	1008
	LML.	Lower limit of medium speed [M]	1009
	LSH.	Upper limit of slow start speed [S]	1010
	LSL.	Lower limit of slow start speed [S]	1011

	name	Function	No.
J mode (Panel switch cancel mode): [↓]+[↑]+[A]+[B] key	**MAC.**	Simple setting mode for Mitsubishi thread trimming sewing machine prohibit	1100
	TRC.	[P],[G] mode thread trimmer mode TR prohibit	1101
	CWC.	Rotation direction changeover prohibit	1102
	12C.	1-2 position changeover prohibit	1103
	SLC.	Slow start changeover prohibit	1104
	SPC.	Speed setting key changeover prohibit	1105
	JKC.	Not used.	1106
	SBC.	Start tacking validity changeover prohibit	1107
	SNC.	No. of start tacking stitches changeover prohibit	1108
	EBC.	End tacking validity changeover prohibit	1109
	ENC.	No. of end tacking stitches changeover prohibit	1110
	SKC.	Start tacking type changeover prohibit	1111
	EKC.	End tacking type changeover prohibit	1112
	TSC.	Pattern stitching validity changeover prohibit	1113
	TNC.	Pattern stitching No. of stitches and times changeover prohibit	1114
	MDC.	Pattern mode pattern changeover prohibit	1115
	BAC.	Prohibit the all of key switches on control switch panel	1116
	BPC.	Prohibit the teaching mode key switches on control switch panel	1117
	BSC.	Prohibit the following key switches on control switch panel	1118
	PSW.	Panel switch operation prohibit	1119
	BKC.	Prohibit the key switches on the control switch panel before thread trimming	1120
	NSV.	Save No. used for “number call function”	1121
	CMP.	Blink or not in comparison with the data set to the next CMS setting	1122
	CMS.	Setting the data area for comparing	1123

	name	Function	No.
K mode (Various setting mode): [↓]+[↑]+[A]+[C] key	**P21.**	Operation during 2 - 1 position changeover	1200
	IO1.	Sewing machine speed during solenoid input signal [IO1] setting	1201
	COR.	Speed specification when COR input is ON	1202
	RND.	Speed specification when RND input is ON	1203
	NTL.	Setting the thread trimming key of control switch panel (mark of scissors) valid or invalid, when the preset stitching is active.	1204
	CNM.	Decelerate per step when Continuous is set with control panel XC-E500-Y	1205
	KD2.	DN signal is valid during the virtual DOWN control	1206
	IOD.	Validity of operation delay when IO1 signal is input	1207
	S7B.	Delay to motor drive after B output ON	1208
	UFD.	Delay when S2 signal is U or UF	1209
	E8R.	Not used.	1210
	MRA.	Not used.	1211
	PAP.	UP position needle lifting at the power is turned ON	1212
	ST1.	One stitch operation mode during UCR setting	1213
	IT1.	Setting one stitch operation, when "S01" signal is set	1214
	S6M.	Operation mode during thread trimming protection signal (S6) input/release	1215
	S6A.	Thread trimming protection signal (S6) operation mode	1216
	KTM.	End tacking mode when TR function is set to chain stitch	1217
	KDM.	Lock stitch tacking menu display	1218
	UFP.	U, UF signal needle lift prohibit at position other than set position	1219
	UPB.	Weak brake validity when UP signal is ON	1220
	ESB.	Weak brake forced OFF when stopped with ES signal	1221
	UPS.	UP position detection stop	1222
	UP2.	Stop status after low speed detection	1223
	K.	Low speed detection speed	1224
	NAN.	Deceleration mode	1225
	ESF.	Presser foot lifter operation during emergency stop	1226
	PRC.	OP output and OP1 output prohibit at restart	1227

K mode (Various setting mode): [↓]+[↑]+[A]+[C] key

	name	Function	No.
	TS6.	S2 signal validity when S6 signal is ON.	1228
	PNC.	Speed loop stopping control when the machine is overrun with the preset stitching	1229
	MFN.	Input port IL, I1 and I2 software noise filter validity	1230
	PFN.	All input port software noise filter validity	1231
	SEF.	No. of stitches for noise removal during sensor input setting	1232
	PSM.	Deceleration state during PSU, PSD signal ON	1233
	2ST.	Low stitching speed validity when the preset stitching is two stitches	1234
	PSS.	No. of set stitch stitching speed when PSU, PSD, SEN signal is ON	1235
	PSK.	Speed at PSU, PSD, SEN signal is ON	1236
	PUF.	No. of stitches for removing noise when PSU signal is ON	1237
	PDF.	No. of stitches for removing noise when PSD signal is ON	1238
	CDR.	Zigzag during continuous tacking	1239
	ZNC.	No. of stitches of zigzag stitch (sway width) setting	1240
	BRC.	BCR operation after thread trimming	1241
	USN.	Actual No. of USR operations	1242
	2RW.	W output mode during S2R=OFF setting	1243
	BTC.	O1 output prohibit during tacking and thread trimming	1244
	PR.	OP output prohibit/permit changeover with input I1 during operation	1245
	P1R.	OP1 output prohibit/permit changeover with input I1 during operation	1246
	TBC.	B output OFF prohibit mode during thread trimming	1247
	KTL.	KS3 output and TF output prohibit during TL input ON	1248
	FLC.	Presser foot operation of F, S2, S3 signal is OFF when FUM function is ON, FU function is M or C.	1249
	SPT.	T output, L output protection function	1250
	FW.	Wiper output W ON simultaneously with presser foot lifting output FU	1251
	PS1.	Input signal check function when power is turned on	1252
	B2O.	Setting program stitch of the control switch panel.	1253
	TOB.	Setting "OT1" output while "B" output is ON	1254
	2SL.	Not used.	1255
	NCK.	Setting output at FWD input ON	1256
	UDN.	Needle lift function is invalidated, excluding the needle down position.	1257
	FSL.	The set value of full speed	1258
	UPR.	Not used.	1259
	HWG.	Operation gain for the big inertia sewing machine	1260
	PPS.	Stop by pedal neutrality under operation PSU, PSD, PS1, PS2	1261
	PCB.	Not used.	1262
	TQT.	Not used.	1263
	E8T.	Not used.	1264
	WBO.	Not used.	1265
	R3D.	Not used.	1266
	MEA.	Not used.	1267
	OCS.	Not used.	1268
	STP.	Step sequence valid or not	1269
	STS.	execution line Number for step sequence	1270

O mode (For setting input/output signal to function): [↓]+[↑]+[B]+[D]

	name	Function	No.
	IA.	IA input function selection	1300
	IAL.	IA input logic changeover	1301
	IAA.	IA input alternating operation	1302
	IB.	IB input function selection	1303
	IBL.	IB input logic changeover	1304
	IBA.	IB input alternating operation	1305
	IC.	IC input function selection	1306
	ICL.	IC input logic changeover	1307
	ICA.	IC input alternating operation	1308
	ID.	ID input function selection	1309
	IDL.	ID input logic changeover	1310
	IDA.	ID input alternating operation	1311
	IE.	IE input function selection	1312
	IEL.	IE input logic changeover	1313
	IEA.	IE input alternating operation	1314
	IF.	IF input function selection	1315
	IFL.	IF input logic changeover	1316
	IFM.	Setting the function for IF	1317
	RFS.	Set condition of RS F/F for IF	1318
	RFR.	Reset condition of RS F/F for IF	1319
	RFN.	RS F/F reset stitch amount for IF	1320
	IG.	IG input function selection	1321
	IGL.	IG input logic changeover	1322
	IGA.	IG input alternating operation	1323
	IH.	IH input function selection	1324
	IHL.	IH input logic changeover	1325
	IHA.	IH input alternating operation	1326
	II.	II input function selection	1327
	IIL.	II input logic changeover	1328
	IIA.	II input alternating operation	1329
	IJ.	IJ input function selection	1330
	IJL.	IJ input logic changeover	1331
	IJA.	IJ input alternating operation	1332
	IK.	IK input function selection	1333
	IKL.	IK input logic changeover	1334
	IKA.	IK input alternating operation	1335
	IL.	IL input function selection	1336
	ILL.	IL input logic changeover	1337
	ILA.	IL input alternating operation	1338
	I1.	I1 input function selection	1339
	I1L.	I1 input logic changeover	1340
	I1M.	Setting the function for I1	1341
	I1O	Special setting for input signal "I1"	1342
	I1F	Special setting for input signal "I1" is ON	1343
	I1C	RS F/F clear setting	1344
	1CT	RS F/F delay time setting	1345
	F1P	Input signal I1 virtual F/F circuit operation 1	1346
	F1C	Input signal I1 virtual F/F circuit operation 2	1347
	F1S	Input signal I1 virtual F/F circuit operation 3	1348
	R1S	Set condition of RS F/F for I1	1349
	R1R	Reset condition of RS F/F for I1	1350
	R1N	RS F/F reset stitch amount for I1	1351
	I2.	I2 input function selection	1352
	I2L.	I2 input logic changeover	1353
	I2M.	Setting the function for I2	1354
	I2C	RS F/F clear setting	1355
	2CT	RS F/F delay time setting	1356
	R2S	Set condition of RS F/F for I2	1357
	R2R	Reset condition of RS F/F for I2	1358
	R2N	RS F/F reset stitch amount for I2	1359
	I4.	I4 input function selection	1360
	I4L.	I4 input logic changeover	1361
	I4A.	I4 input alternating operation	1362
	I5.	I5 input function selection	1363
	I5L.	I5 input logic changeover	1364
	I5A.	I5 input alternating operation	1365

	name	Function	No.
Q mode (Speed command, speed limit, thread break detector setting mode): [↓]+[A]+[C] key	**VCS.**	Virtual S1 operation with VC1 levels	1400
	VCL.	Setting of VC1 and VC2 where virtual S1 turns ON	1401
	VCD.	Input voltage hysteresis during virtual S1 signal ON/OFF by VC1 and VC2 level	1402
	V1R.	VC1 curve reversal mode	1403
	V15.	VC1 input 5V/12V changeover mode	1404
	VC2.	VC2 operation mode	1405
	V2R.	VC2 curve reversal mode	1406
	V25.	VC2 input 5V/12V changeover mode	1407
	VL1.	Speed limiter curve inflection point 1 percentage	1408
	VP1.	Speed limiter curve inflection point 1 point	1409
	VP2.	Speed limiter curve inflection point 2 point	1410
	FLM.	Operation speed limit specification mode 1	1411
	2LM.	Operation speed limit specification mode 2	1412
	LMD.	Speed command value correctly by middle speed digital during speed limit process	1413
	HMD.	Speed limit with digital speed setting on operation panel	1414
	E8C.	Ignore detector error	1415
	TH.	Thread break sensor valid	1416
	TST.	Operation after thread break sensor detection	1417
	B.	Speed to ignore thread break sensor	1418
	THS.	No. of stitches to ignore thread break sensor after starting stitching	1419
	THF.	Number of stitches for judgment of thread break.	1420
	RFU.	Operation mode with F input during sewing machine operation	1421
	S7C.	Output of backtacking output (B) during OT1 output ON inhibited	1422
	LIM.	Medium speed (M) limit mode during OT1 output ON	1423
	O1P.	Simultaneously ON of OP1 output during OT1 output ON	1424
	LVB.	Disregard of S3 signal of Lever Unit	1425
	PD1.	1 step heeling setting for the internal lever unit	1426
	VCSET.	Adjustment mode for the internal lever unit	1427
	MTJ.	Not used.	1428
	MOA.	Not used.	1429
	MOB.	Not used.	1430
	MOC.	Not used.	1431
	VCA.	VC assist, valid or not	1432
	VCP.	Strength of VC assist	1433

	name	Function	No.
S mode (Simple sequence mode): [↓]+[A]+[C] key	**KSM**	KS1, KS2 output run mode	1500
	SQS	Simple sequence start conditions	1501
	SQE	Simple sequence forced end conditions	1502
	NS1	Selection of Stitch amount and Time till ON	1503
	NE1	Selection of Stitch amount and Time till OFF	1504
	S1S	Simple sequence output starting point setting	1505
	S1E	Simple sequence output end point setting	1506
	NS2	Selection of Stitch amount and Time till ON	1507
	NE2	Selection of Stitch amount and Time till OFF	1508
	S2S	Simple sequence output starting point setting	1509
	S2E	Simple sequence output end point setting	1510
	NS3	Selection of Stitch amount and Time till ON	1511
	NE3	Selection of Stitch amount and Time till OFF	1512
	S3S	Simple sequence output starting point setting	1513
	S3E	Simple sequence output end point setting	1514
	NS4	Selection of Stitch amount and Time till ON	1515
	NE4	Selection of Stitch amount and Time till OFF	1516
	S4S	Simple sequence output starting point setting	1517
	S4E	Simple sequence output end point setting	1518
	K11	KS1 output start [Time]/[No. of Stitches] setting	1519
	K12	KS1 output [Time]/[No. of Stitches] setting	1520
	K21	KS2 output start [Time]/[No. of Stitches] setting	1521
	K22	KS2 output [Time]/[No. of Stitches] setting	1522
	K31	KS3 output start [Time]/[No. of Stitches] setting	1523
	K32	KS3 output [Time]/[No. of Stitches] setting	1524
	K41	KS4 output start [Time]/[No. of Stitches] setting	1525
	K42	KS4 output [Time]/[No. of Stitches] setting	1526
	K1M	KS1 output run mode	1527
	K1D	Run prohibit during KS1 output ON	1528
	K1C	K11, K12 time clear during KS1 output ON	1529
	K2C	K21, K22 time clear during KS2 output ON	1530
	K3C	K31, K32 time clear during KS3 output ON	1531
	KSL	Increase the number of K11 through K42 by ten	1532
	KL1	Sequence output time setting/No. of stitch setting each by ten times setting	1533
	KL2	Sequence output time setting/No. of stitch setting each by ten times setting	1534
	KL3	Sequence output time setting/No. of stitch setting each by ten times setting	1535
	KL4	Sequence output time setting/No. of stitch setting each by ten times setting	1536

MOST FREQUENTLY USED FUNCTIONS IN THE P-MODE

P-MODE
PRESS AND HOLD IN THE ↓ + ↑ ARROW KEYS UNTIL THE DISPLAY STOPS FLASHING

H HIGH SPEED (0-8999)

T TRIM SPEED (0-499)

N START BACKTACKING SPEED (0-2999)

V END BACKTACKING SPEED (0-2999)

M MEDIUM SPEED (0-8999)

PSU MACHINE STOP WITH NEEDLE UP AND TRIM WITH SENSOR (0-99)

PSD MACHINE STOP WITH NEEDLE DOWN AND NO TRIM WITH SENSOR (0-99)

FUM PRESSER FOOT REMAINS UP AFTER TRIM (OF/ON)

S6L INTERNAL THREAD TRIMMER SAFETY CIRCUIT (HI/LO)

AT CANCEL VARIABLE SPEED WITH TREADLE (OF/ON)

RU REVERSE AFTER TRIM (OF/ON)

R8 DEGREE OF REVERSE AFTER TRIM (0-360)

MOST FREQUENTLY USED FUNCTIONS IN THE A-MODE

A-MODE
PRESS AND HOLD IN THE ↓ + A KEYS UNTIL THE DISPLAY STOPS FLASHING

GA TORQUE GAIN FOR MOTOR (H, L, LL) HIGH, LOW, VERY LOW

BK WEAK BREAK AFTER STOP (OF/ON)

BKM BRAKE FORCE (E, H) E=LIGHT BRAKE H=STRONG BRAKE

MOST FREQUENTLY USED FUNCTIONS IN THE B-MODE (WHEN USING THE XC-G500Y)

B-MODE (UP/DOWN COUNTER)
PRESS AND HOLD IN THE ↓ + B KEYS UNTIL THE DISPLAY STOPS FLASHING

N DOWN COUNTER SETTING AMOUNT (0-9999)

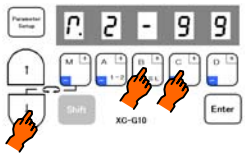
DNC DOWN COUNTER FUNCTION (OF/ON)

P UP COUNTER SETTING AMOUNT (0-9999)

UPC UP COUNTER FUNCTION (OF/ON)

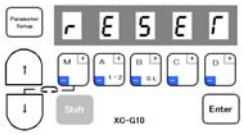
To return all settings to the factory settings ..... Function setting [RESET]

(1)



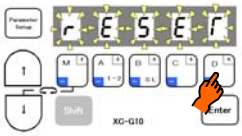
* Enter program mode [R]
([↓] + [B] + [C] keys)

(2)



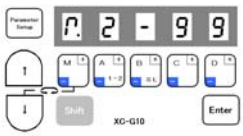
* Program mode [R] will be entered.

(3)



* [RESET] will flicker when the [D] key is held down, and the reset process will be executed.

(4)



* The data will be set to the factory setting when the [D] key is pressed over 2 seconds or more, and then the normal mode will be returned to. (Process is completed)

Description

A. All settings will be returned to the factory settings when the [D] key is held down for two or more seconds while [RESET] is displayed. The display will return to the normal mode.

B. To return to the normal mode from the [RESET] display without executing the reset process, press the [↑] key while holding down the [↓] key. In this case, the settings will not be returned to the factory setting.

Caution

When this function is set, the contents of all settings to this point will be cleared, and will return to the factory settings. Please take care when using this function.

TROUBLESHOOTING

LOCATED IN THE E-MODE
PRESS AND HOLD IN THE ↓ + ↑ + A KEYS UNTIL THE DISPLAY STOPS FLASHING

ERROR CODES

1	LAST ERROR CODE
2	SECOND TO LAST ERROR CODE
3	THIRD TO LAST ERROR CODE
4	FOURTH TO LAST ERROR CODE

POWER DURATION

P	POWER ON TIME X 10
M	MOTOR ON TIME X 10

INPUT SWITCHES

IG	RUN INPUT (TREADLE TOE DOWN)
IH	TRIMMER INPUT (FULL TREADLE HEEL)
II	PRESSER FOOT INPUT (LIGHT TREADLE HEEL)
IE	BACKTACK SWITCH
I2	HIGH WALK SWITCH (LU2-4710/4730)

DRIVE MOTOR

ECA	MOTOR ENCODER A-PHASE
ECB	MOTER ENCODER B-PHASE

SYNCHRONIZER

UP	SYNCHRONIZER UP POSITION
DN	SYNCHRONIZER DOWN POSITION

DOWN POSTION DISPLAY

DR	DISPLAY OF THE DOWN POSITION IN RELATION TO THE UP POSITION

VARIABLE RESISTERS

VC	VC (TREADLE UNIT)
V2	V2 (VARIABLE RESISTOR ON LU2-4710/4730)

SOLENOID OUTPUTS (PRESS THE D-KEY TO CHECK)

OAO	TRIMMER
OBO	WIPER
OCO	BACKTACK
ODO	TENSION RELEASE (HIGH WALK ON LU2-4710/4730)
OFO	PRESSER FOOT

OTHER

TP	TYPE OF CONTROL BOX
T	DISPLAY OF CURRENT MACHINE TYPE SELECTED

Error Codes

When the control box detects an error, the error code is flickered on the control switch panel display.
Confirm the error code, and investigate with the following table.

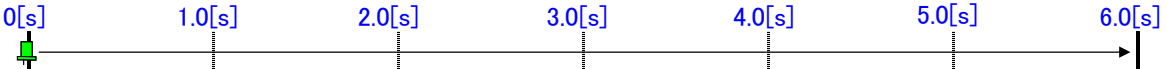
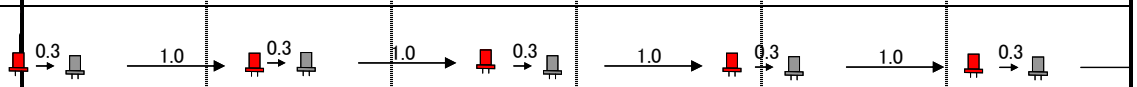
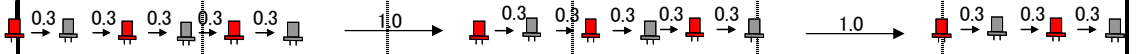
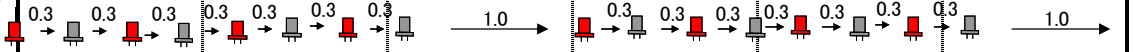
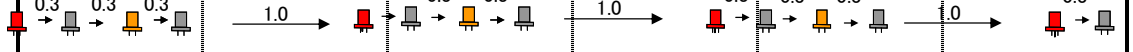
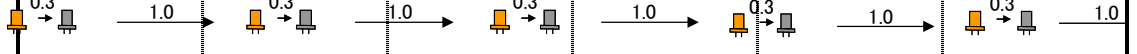
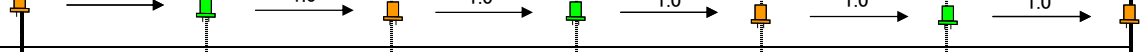
Error code	Probable cause	Inspection
PWr.oF /POWER.OF	Is the power voltage too low? Is the power supply capacity too small? Note: It does this display when power supply is turned OFF, but this is not an error.	Check the power voltage. Check the power supply capacity.
E 1 / E1	Is the wire to the motor short-circuited? Is the sewing machine load torque too high?	Check the motor wiring. Check the sewing machine.
E2 / E2	Is the power voltage too high? Is the sewing machine inertia too high?	Check the power voltage. Lengthen the deceleration time.
E3 / E3	Is the connector to the motor encoder securely inserted? Are the signals from the motor encoder correct? Is the sewing machine locked? Is the motor locked?	Check the connector insertion. Check the ECA and ECB signal. (Refer to the E mode.) Check the sewing machine. Check the motor.
E4 / E4	Is the motor connector securely inserted? Are the signals from the motor connector correct?	Check the motor connector insertion. Check the motor connector.
E6 / E6	Is an extraordinary signal inputted? (The signal as it repeats ON/OFF at the high frequency.) Does the noise from outside enter an input signal?	Check the input signal. Removes a noise source.
E8 / E8	Is the position detector connector securely inserted? Are the signals from the detector correct? (UP/DOWN signal interruption)	Check the detector connector insertion. Check the detector UP/DOWN signals. (Refer to the E mode.)
E9 / E9	Is the solenoid wiring short-circuited? Solenoid defect (coil defect)	Check the solenoid wiring. Replace the solenoid.
E 11 / E11	Is the fuse for +12V power supply broken?	Check the fuse for the 12V power supply.
*E11 error code is not confirmed on the control switch panel when it happens, but the status display LED on the control box flickers in red as the interval of 0.3 sec. It will be confirmed in error code history after returning to a normal condition.		

n5 / M5	An error of the copy mode using the control switch panel. Is the control switch panel connector securely inserted? The voltage or the type of control switch panel is difference.	 Check the connector insertion. Check the voltage and the type are right.
nA / MA	The position data of the lever unit is defective. When power supply is turned ON, the pedal is not neutral position.	The pedal is neutralized. (It returns automatically 1 second later.) (Refer to the VCSET setting (page 36).)

Others	Probable cause	Inspection
The sewing machine does not run when the pedal pressed.	Are the operation signals from the lever unit broken? Is the input signal S6 broken ?	Check the lever unit signal. (Refer to [E] mode S1 signal.) Check the status display LED. If flickering, reset the signal. Confirm the sewing machine connector.
The sewing machine does not run at the high speed.	It does not display 99 in normal mode. Is the variable speed voltage with the pedal toed down low? Is the motor pulley diameter too small?	Change 99 using control box [D] key. Check the variable speed voltage. (Refer to [E] mode.) Check the motor pulley diameter.(Refer to [5]-3)
The thread is not trimmed even with heeling.	Is the thread trimming signal (S2) from the lever unit broken? Is the cancel thread trimmer operation S2L(mode[P]) ON? Is the trim key of the control switch panel OFF?	Check the signal S2. (Refer [E] mode.) Set S2L(mode[P]) to OFF. Set the trim key to ON.
The presser foot lifter output does not operate.	Is the light heeling signal (S3) or the thread trimming signal (S2) from the lever unit broken? Is the presser foot lift signal (F) broken? Is the presser foot output (FU) broken?	Check signals S2 and S3. (Refer [E] mode.) Check signal F. (Refer [E] mode.) Check FU output. (Refer [E] mode.)

LED displays
The error code is identified by blinking pattern of LED on front cover

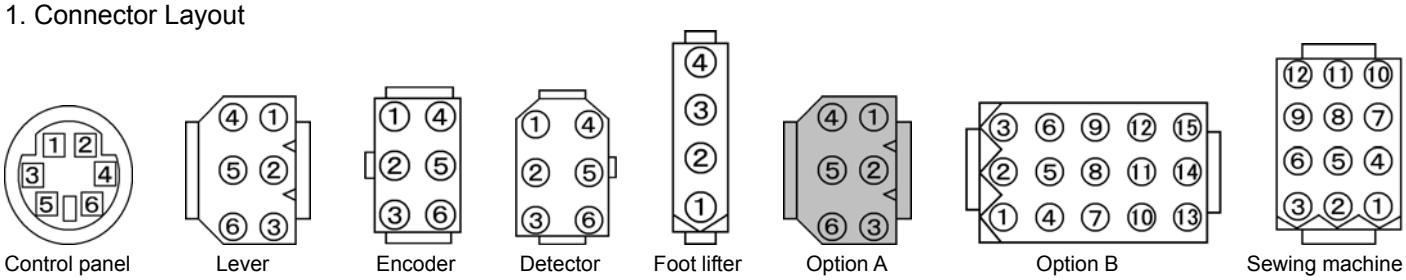
Red LED　Green LED　Orange LED　Turn off

Error code	Cause	LED lighting type
Normal condition	-	
E0 UV	The power voltage is too low. The voltage source capacity is small. [Note] It is a situation when the power supply is turned off.	
E1 OC	The wire to the motor is short-circuited. The load torque of the sewing machine is too high.	
E2 OV	The power voltage is too high. The sewing machine inertia is too high.	
E3 LK	The connector to the motor encoder is not securely inserting. The signals from the motor encoder are not correct. The sewing machine is locked.	
E4 CON	The connector(4 pins) to the motor encoder is not securely inserting. The signals from the motor encoder are not correct.	
E6 FIL	An extraordinary signal was inputted. (The signal as it repeats ON/OFF at the high frequency.) The noise from outside is entering an input signal.	
E8 DET	The position detector connector is not securely inserting. The signals from the detector are not correct.	
E9 SOL	The solenoid wiring is short-circuited. Solenoid defect (coil defect)	
M5 EEP	An error of the copy mode using the control panel. The control panel connector is not securely inserting. The voltage or the type of control panel is different.	
MA PDL	The position data of the internal lever unit is defective. When power supply is turned ON, the pedal is not neutral position. CPU board is changed.	
E11 12V	The fuse for +12V power supply is broken.	
E7 ETC	An unexpected error occurred.	

How to Use the Option Connector

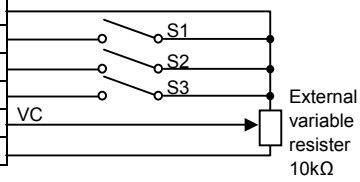
Variable operations are possible by adding external signals to the option connector.
A current of approximately 1.5 mA flows through the switches used for the input signal, so please use a switch for low current.

1. Connector Layout



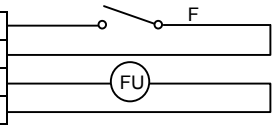
Lever

Signal name	Factory setting	
0V	0V	1
IG	S1 : Run (Variable speed)	2
IH	S2 : Thread trimming	3
I I	S3 : Presser foot lifter	4
VC	VC : Variable speed command	5
+12V	+12V	6



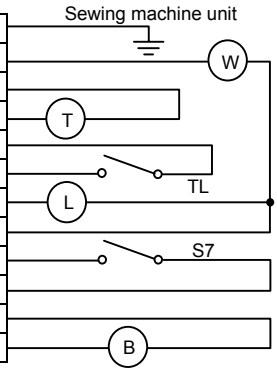
Presser foot lifter

0V	0V	1
IF	F : presser foot input	2
OF	FU+ : presser foot lifter output +	3
	FU- : presser foot lifter output -	4



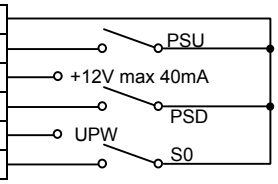
Sewing machine

Ground	Ground	1
OB	W : Wiper output	2
+24V/(+30V)	+24V	3
OA	T : Thread trimming output	4
0V	0V	5
ID	TL : Thread trimmer cancel input	6
OD	L : Thread release output	7
+24V/(+30V)	+24V	8
IE	S7 : Backstitch input	9
0V/(+5V)	0V	10
+24V/(+30V)	+24V	11
OC	B : Backstitch output	12



Option A (Black)

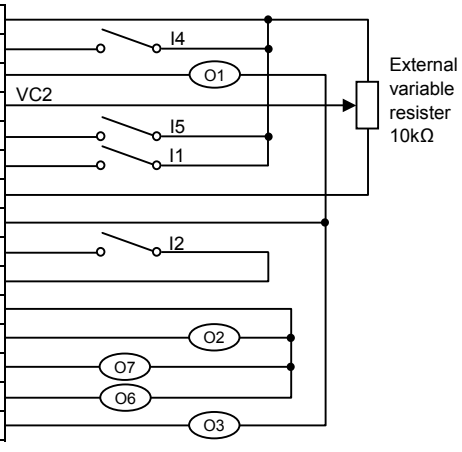
0V	0V	1
IA	PSU : Up position stop input	2
+12V/(+5V)	+12V	3
IB	PSD : Down position stop input	4
O4	UPW : Needle Up position output	5
IC	S0 : Low speed input	6



Note 1 : Pin number 5 is for the signal output.

Option B

0V	0V	1
I4	No setting	2
O1	OT1 : Output	3
VC2	VC2 : Variable speed command	4
I5	No setting	5
I1	IO1 : Input	6
+5V/(+12V)	+5V	7
+24V/(+30V)	+24V	8
I2	U : Needle lift signal	9
0V	0V	10
+24V/(+30V)	+24V	11
O2	NCL : Needle cooler output	12
O7	No setting	13
O6/CP	No setting	14
O3	TF : "TF" output	15



Note 2 : Pin number 3,12,15 are for the solenoid output.

Note 3 : Pin number 13,14 are for the air valve output. (not for the solenoid output)

Communication / Control panel

RXD1	1
RXD0	2
TXD1	3
0V	4
+12V	5
TXD0	6

Encoder

0V	1
EA	2
EB	3
+12V	4
Ground	5
-	6

Detector

0V	1
-	2
Ground	3
UP	4
DN	5
+12V	6

HOW TO TURN ON AN OUTPUT AT TREADLE TOE DOWN

THE CONTROL BOX IS ALREADY SET UP TO DO THIS FUNCTION WITHOUT ANY CHANGES

FOR THE WIRING, PUT THE 2 WIRES FROM THE SOLENOID YOU ARE USING INTO PINS 11 AND 12 ON THE OPTION B PLUG.

REFER TO THE OPTION CONNECTOR REFERENCE PAGE

HOW TO WIRE UP A SENSOR TO STOP THE MOTOR

THE INPUTS ON THE CONTROL BOX ARE A SINKING TYPE, MAX. 40MA, 5 OR 12 VDC

ALL SENSORS WILL USUALLY HAVE 3 WIRES

POWER WILL USUALLY BE A RED OR BROWN WIRE
0-VOLT WILL USUALLY BE A BLACK OR BLUE WIRE
SIGNAL WILL USUALLY BE A WHITE OR BLACK WIRE

MOST SENSORS HAVE THE COLOR CODES AND OPERATING VOLTAGES ON THEM

ON THE OPTION A PLUG
0-VOLT TO PIN 1
SIGNAL TO PIN 2
POWER TO PIN 3

REFER TO THE CONNECTOR LAY-OUT PAGE

IN THE P-MODE, SET PSU TO THE NUMBER OF STITCHES YOU WANT (0-99) UNTIL THE MOTOR STOPS

NOTE: IF THE SENSOR WORKS IN REVERSE, YOU MAY HAVE A LIGHT OR DARK OPERATE MODE SWITCH ON YOUR SENSOR, IF NOT GO TO THE C-MODE (↓ + C) AND CHANGE IAL FROM OF TO ON

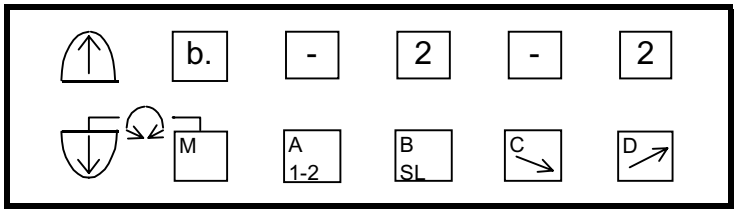
INSTRUCTIONS FOR INSTALLING BACKTACK SWITCH AA-G003-925 ON XC-GMFY CONTROL BOX

INSERT PLUG FROM SWITCH TO OPTION A ON XC-GMFY CONTROL BOX

HOW TO TURN ON THE BACKTACK FUNCTION ON CONTROL BOX

1. FROM THE NORMAL MODE (DISPLAY HAS A ROTATING CIRCLE ABOVE THE M-KEY) PRESS THE UP ARROW KEY 1 TIME

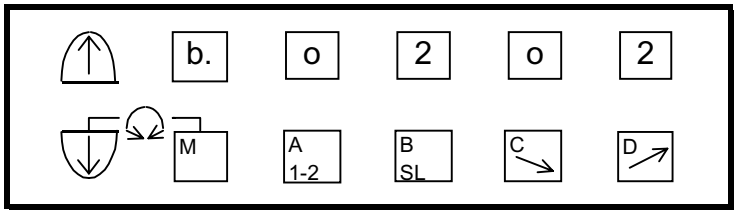
DISPLAY WILL LOOK SIMILAR TO THIS



2. PRESS THE A-KEY TO TURN ON THE START BACKTACK

3. PRESS THE C-KEY TO TURN ON THE END BACKTACK

DISPLAY WILL LOOK SILIMAR TO THIS



THE A-KEY TURNS ON OR OFF THE START BACKTACK

THE C-KEY TURNS ON OR OFF THE END BACKTACK

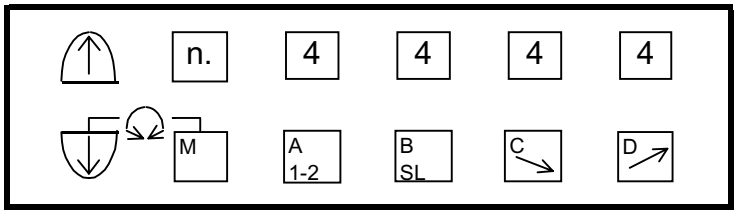
THE B-KEY SELECTS THE TYPE OF START BACKTACK

THE D-KEY SELECTS THE TYPE OF END BACKTACK

TYPES OF BACKTACK ARE SINGLE, DOUBLE, TRIPLE, ETC.

4. PRESS UP ARROW KEY 1 TIME

DISPLAY WILL LOOK SIMILAR TO THIS



5. USE THE A-KEY AND B-KEY TO SELECT THE AMOUNT OF FORWARD AND REVERSE STITCHES FOR THE START BACKTACK

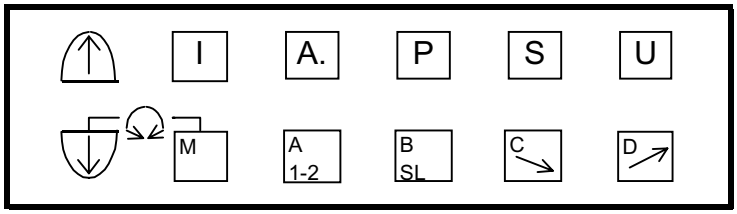
6. USE THE C-KEY AND D-KEY TO SELECT THE AMOUNT OF FORWARD AND REVERSE STITCHES FOR THE END BACKTACK

7. PRESS THE DOWN ARROW KEY 2 TIMES TO RETURN TO THE NORMAL MODE

FUNCTION SETTINGS FOR BACKTACK SWITCH (LOCATED IN THE C-MODE)

1. PRESS AND HOLD THE DOWN ARROW AND C-KEY FOR 2 OR MORE SECONDS

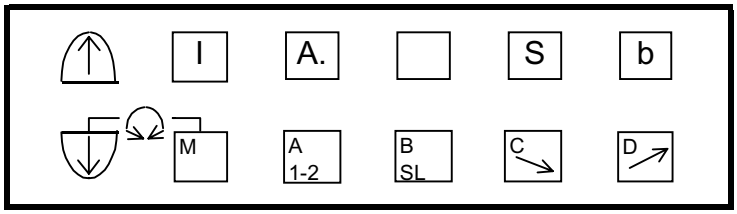
DISPLAY WILL LOOK SIMILAR TO THIS



2. USE THE D-KEY TO SELECT S b (START BACK TACK CANCEL)

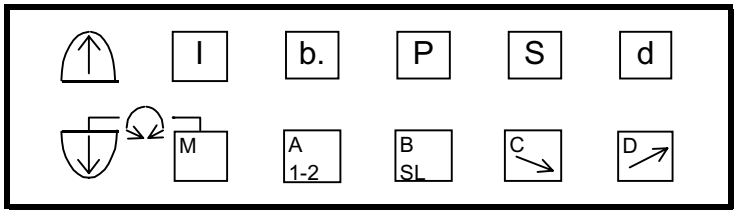
NOTE: THE D-KEY MOVES FORWARD THROUGH THE LIST OF FUNCTIONS AND THE C-KEY BACKWARDS THROUGH THE LIST OF FUNCTIONS

DISPLAY WILL LOOK SIMILAR TO THIS



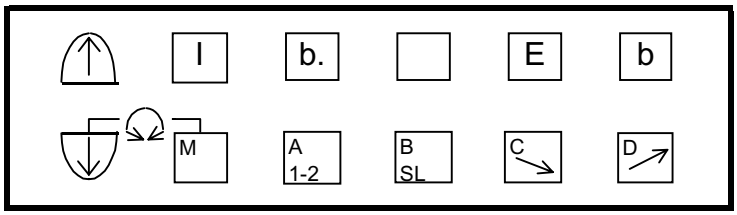
3. PRESS THE DOWN ARROW KEY 3 TIMES

DISPLAY WILL LOOK SIMILAR TO THIS



4. USE THE D-KEY TO SELECT E b (END BACKTACK CANCEL)

DISPLAY WILL LOOK SIMILAR TO THIS



5. PRESS THE DOWN ARROW AND UP ARROW KEYS TO RETURN TO THE NORMAL MODE

BACKUP OF PARAMETER DATA

1. WITH THE POWER OFF, PRESS AND HOLD IN THE ↓- KEY AND THEN POWER UP

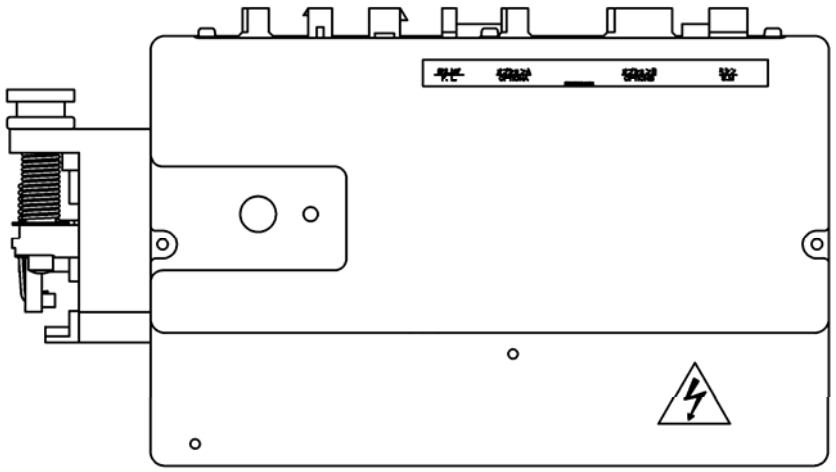
2. PRESS AND HOLD IN THE ↓ + A + B + D- KEYS UNTIL THE DISPLAY STOPS FLASHING

DISPLAY WILL SHOW “BAKUP”

3. PRESS AND HOLD IN THE D-KEY UNTIL THE DISPLAY STOPS FLASHING

NOW WHEN DOING A CONTROL BOX RESET, THE BACKED UP PARAMETERS WILL BE READ

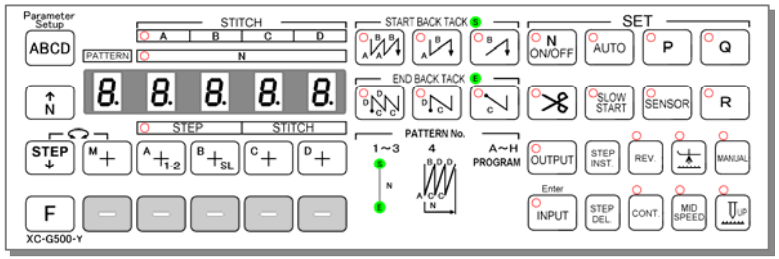
Up load and Down load program using XC-G500



Read (ABCD Key)

Write (N Key)

XC-G500 control panel



Reading / Writing method

Read: 1. Press ABCD + Power supply ON

2. Press F --- (Execution)

Write: 1. Press N ON/OFF + Power supply ON

2. Press F --- (Execution)

Current data Teaching data User customize data Back-up data Step data	Setting is the "I" mode. Function [CCR] ON/OFF (Factory setting is ON.)	Current data Teaching data User customize data Back-up data Step data
User 1 data Step data	Function [CU1] ON/OFF (Factory setting is ON.)	User 1 data Step data
User 2 data Step data	Function [CU2] ON/OFF (Factory setting is ON.)	User 2 data Step data

Possible to read and write in the area in XC-E500

The following LEDs on the panel light in response to the setting CCR, CU1, CU2 during “Read” or “Write”

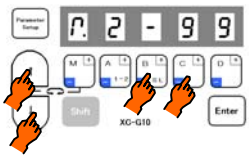
When [CCR] is ON : When [CU1] is ON : When [CU2] is ON :

*Note : LEDs do not light as described in the explanation above when "XC-E500 control panel" is connected to G servo.

To save the setting data

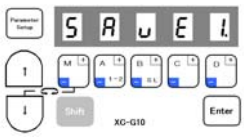
1. How to use the program mode [I]
   To save the setting data ..... function setting [SAVE*]
   (Two types of data, [SAVE1] and [SAVE2] can be saved. The [SAVE1] data can be read out with [LOAD1], and the [SAVE2] data with [LOAD2].)

(1)



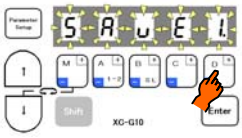
* Enter program mode [I]
  ([↓] + [↑] + [B] + [C] key)

(2)



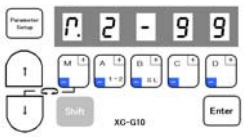
* Program mode [I] will be entered.

(3)



* When the [D] key is held down, [SAVE1.] will flicker, and the save process will be executed.

(4)



* Press [D] key over 2 seconds or more, and then the normal mode will be returned to. (Process is completed)

Description

A. The currently set data can be saved as simple settings. Saving of the data is completed when the [D] key is held down for two or more seconds while [SAVE*] is displayed and the display returns to the normal mode.

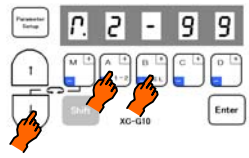
B. To return to the normal mode from the [SAVE*] display without saving the data, press the [↑] key while holding down the [↓] key. The set data will not be saved.

C. The saved setting data is saved in the program mode {1} simple setting [LOAD1] or [LOAD2], and can be read out by selecting [LOAD1] or [LOAD2] with program mode [1].
(As the factory setting, the [280M] data is saved in the simple settings [LOAD1] and [LOAD2].)

> Caution
> When this function setting [SAVE*] is used, the settings saved in the program mode [1] simple setting [LOAD*] before the new data was set will all be cleared. The current setting data will be newly saved in the simple setting [LOAD*]. Check the current setting data before starting operation.

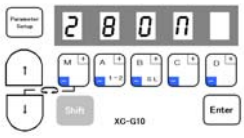
D. Reading the setting data saved with the [SAVE*] function
The setting data saved with the [SAVE*] function above can be read out with the following procedure (program mode [1]).

(1)



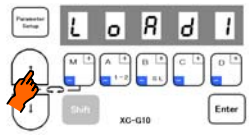
* Enter program mode [1]
  ([↓]+[A]+[B] key)

(2)



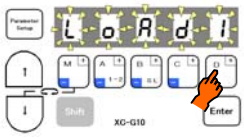
* Program mode [1] will be entered.

(3)



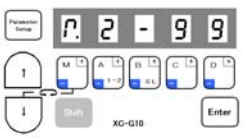
Press the [↑] key and set the function to [LOAD1].

(4)



* When the [D] key is held down, [LOAD1] will flicker, and the loading process will be executed.

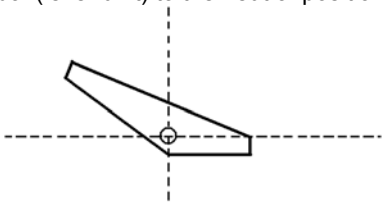
(5)



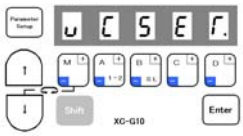
* Press [D] key (2 seconds or more) to return to the normal mode. (Process is completed)

To adjust the position data for the lever unit ... Function setting [VCSET]
(When error "MA" is displayed)

(1) Set the pedal (lever unit) to the neutral position.

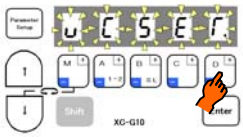


(2) Call out the program mode [Q] function [VCSET].
(This can be called with mode call or direct number call).
(Direct call number = "1427")



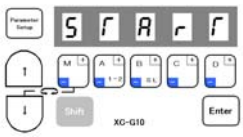
* Enter program mode [Q]
([↓] + [A] + [C] keys)

(3)



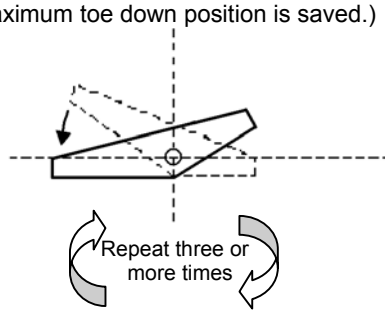
[VCSET] will flicker when the [D] key is held down.

(4)

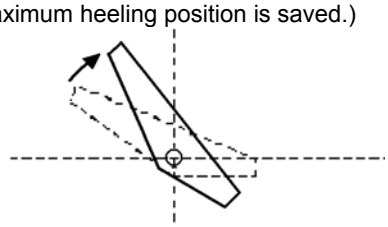


The display will change to [START].
(The neutral position is saved at this point.)

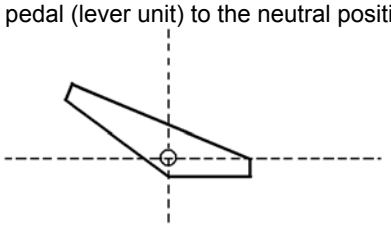
(5) Fully toe down the pedal (lever unit).
(The maximum toe down position is saved.)



Fully heeling the pedal (lever unit).
(The maximum heeling position is saved.)



(6) Return the pedal (lever unit) to the neutral position.



Return to normal mode
Press: [↓] + [↑]

For direct number call: Set with Enter and then press Parameter Setup.

Description

The lever's neutral, toe down and heeling positions can be adjusted.
If the [D] key is held down when the pedal is at the neutral position, the display will flicker and change to the [START] display. (The neutral position is saved at that point.)
After that, repeat the pedal toe down and heeling operation three or more times. (The maximum toe down position and maximum heeling position are saved at this time.)
When finished, always return the pedal to the neutral state, and then return to the normal mode.

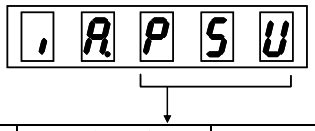
Caution

- To enter the [VCSET] state with mode call and then return to the normal mode, press down the [↓] and [↑] keys simultaneously. The lever unit's neutral, toe down and heeling positions are not adjusted in this case.
- If the position data for the lever unit is faulty, the error "MA" will appear.
  Confirm the neutral position of the pedal (lever unit), and then save the neutral, toe down and heeling positions again with the above steps.

Table of input/output functions for signals in the C mode

C mode input signal setting table

<Example> Input signal



: It is possible to set in [O] mode.

No.	Setting name	Setting value	Digital display	Specification
1	Nothing signal	NO		The sewing machine will do nothing even if input NO is turned ON.
2	Low speed run signal	S0		If input S0 is turned ON, the sewing machine will run at the speed set in low speed L.
3	Variable speed run signal	S1		This signal is equivalent to full toe down when using the pedal. It is operated at the speed which was set with the [C] [D] key of operation panel when the automatic operation AT is ON input S1 at the time of ON.
4	Medium speed run signal	S5		If input S5 is turned ON, the sewing machine will run at the speed set in medium speed M.
5	High speed run signal	S4		If input S4 is turned ON, the sewing machine will run at the speed set in high speed H.
6	Stop position random run signal	RND		If input RND is turned ON, the sewing machine will run at the speed set in low speed L, and when stopping the sewing machine will stop at random regardless of the needle position.
7	Correction stitching signal	COR		If input COR is turned ON, correction stitching will be performed at the speed set in low speed L.
8	Thread trimmer signal	S2		This signal is equivalent to full heeling when using the pedal. When S2 is ON and thread trimming or needle UP position stop has been completed, the wiper will operate. After that, the automatic presser foot lifting will function while the signal is ON.
9	1 stitch signal	S01		If input S01 is turned ON, 1 stitch operation will start.
10	Needle lift signal	U		If input U is turned ON, the needle lift operation will start.
11	Half-stitch signal	UD		If input UD is turned ON, half-stitch operation will start.
12	Constant angle [reverse run/forward run] signal	BC		The needle is stopped just above the fabric to confirm the fabric puncture position. Each time the signal turns ON, the operation will alternate between forward - reverse - forward run. If the pedal is toed down or the external run signal (S1) turns ON after that, forward run will start from that position. The needle position stop angle can be set with needle position stop angle C8 in the [B] mode.
13	Constant angle [reverse run/forward run] signal	BCR		The needle is stopped just above the fabric to confirm the fabric puncture position. Each time the signal is turned ON, the operation will alternate between forward - reverse - forward run. If the pedal is toed down or the external run signal (S1) turns ON after stopping at a external run signal (S1) turns ON after stopping at a forward run position, forward run will start after reverse run. If stopped at a reverse run position, the sewing machine will forward run from that position. The needle position stop angle can be set with needle position stop angle C8 in the [P] mode.
14	Constant angle reverse run signal	USR		Reverse run needle lift will be performed to the set angle. The set angle can be adjusted from the DOWN position to UP position with reverse run angle K8 in the [P] mode. This is effective for blind stitch sewing machine.
15	Needle lift, presser foot lift signal	UF		If input UF is turned ON, the presser foot will lift after needle lifting.
16	Presser foot lifter signal	S3		If input S3 is turned ON after trimming, the presser foot will lift. If input S3 is turned ON before trimming, the presser foot will lift, after delay time. The delay time is set by S3D the [P] mode.
17	Presser foot lifter signal	F		If input F is turned ON, the presser foot lifter operation will start.

Note 1 ↓

Note 2 ↑

Note 1. The setting name will display in the descending order with each press of the [D] key.
2. The setting name will display in the ascending order with each press of the [C] key.

Table of input/output functions for signals in the C mode

	No.	Setting name	Setting value	Digital display	Specification
	18	Needle UP position priority stop signal	PSU	P SU	If input PSU is turned ON while the sewing machine is running, the needle will stop at the UP position after swing PSU stitches and thread trimming. The no. of stitches after PSU input is set by PSU the [P] mode.
Note 1 ↓	19	Needle DOWN position priority stop signal	PSD	P SD	If input PSD is turned ON while the sewing machine is running, the needle will stop at the DOWN position after swing PSD stitches. The no. of stitches after PSD input is set by PSU the [P] mode.
	20	Emergency stop signal	ES	E S	If input ES is turned ON while the sewing machine is running, all running states will be canceled, and the sewing machine will stop with the brakes.
	21	One shot signal	SH	S H	If input SH is turned ON, one shot operation will start. The operation mode set in [P] mode SHM function will be entered .
	22	Reverse run signal	CW	C B	If input CW is turned ON while running with pedal toe down or external run signal, reverse run will be enabled while the signal is ON.
	23	Thread trimmer protection signal	S6	S 6	If input S6 is turned ON while the sewing machine is running, the sewing machine will stop. If input S6 is turned ON during thread trimming, the operation will be completed, and operation will not be possible until input S6 is turned OFF.
	24	Thread trimmer cancel signal	TL	T L	If pedal full heeling or thread trimmer signal S2 is turned ON while input TL is ON, the thread will not be trimmed. After the thread trimmer interlock time passes, the presser foot lifting operation will start. When TLS of [D] mode is ON, and TL signal is turned ON a little time, next thread trimming is prohibited only once.
↑	25	Low speed signal	SPL	S P L	If input SPL is turned ON while the sewing machine is running, the sewing machine will run at the speed set in low speed setting L while the signal is ON.
	26	Medium speed signal	SPM	S P M	If input SPM is turned ON while the sewing machine is running, the sewing machine will run at the speed set in medium speed setting M while the signal is ON.
Note 2	27	End tacking speed signal	SPB	S P b	If input SPB is turned ON while the sewing machine is running, the sewing machine will run at the speed set in end tacking speed V while the signal is ON.
	28	High speed signal	SPH	S P H	If input SPH is turned ON while the sewing machine is running, the sewing machine will run at the speed set in high speed setting H while the signal is ON.
	29	Variable speed signal	SPV	S P U	If input SPV is turned ON while the sewing machine is running, the sewing machine will run at a speed proportional to the variable speed voltage VC while the signal is ON.
	30	Tacking cancel signal	BTL	b T L	If input BTL is turned ON, start and end tacking will be prohibited while the signal is ON. When BTS of [D] mode is ON, and BTL signal is turned ON a little time, next tacking is prohibited only once.
	31	Start tacking cancel signal	SB	S b	If input SB is turned ON, start tacking will be prohibited while the signal is ON. When BS of [D] mode is ON, and SB signal is turned ON a little time , next start tacking is prohibited only once.
	32	End tacking cancel signal	EB	E b	If input EB is turned ON, end tacking will be prohibited while the signal is ON. When BS of [D] mode is ON , and EB signal is turned ON a little time , next end tacking is prohibited only once.

Note 1. The setting name will display in the descending order with each press of the [D] key.
2. The setting name will display in the ascending order with each press of the [C] key.

Table of input/output functions for signals in the C mode

	No.	Setting name	Setting value	Digital display	Specification
	33	Backstitching during run signal	S7	S 7	If input S7 is turned ON while the sewing machine is running, backstitching (reverse feed) will start. Nothing will happen if input S7 is turned ON while the sewing machine is stopped.
Note 1	34	Backstitching during run signal	UDS	U d S	If input UDS is turned ON while the sewing machine is running, backstitching (reverse feed) will start. Half-stitch operation will start if input UDS is turned ON while the sewing machine is stopped.
	35	Backstitching during run signal	US	U S	If input US is turned ON while the sewing machine is running, backstitching (reverse feed) will start. Needle lift operation will start if input US is turned ON while the sewing machine is stopped.
	36	Backstitching signal [when running when stopped]	BSL	b S L	If input BSL is turned ON when the sewing machine is running or stopped, backstitching (reverse feed) will start.
	37	Backstitching signal when running	UCR	U C r	If input UCR is turned ON while the sewing machine is running, backstitching (reverse feed) will start. 1 stitch operation will start if input UCR is turned ON while the sewing machine is stopped.
	38	Backstitching signal when running	UBR	U b r	If input UBR is turned ON while the sewing machine is running, backstitching (reverse feed) will start. 1 stitch operation with backstitching (reverse feed) will start if input UBR is turned ON while the sewing machine is stopped.
	39	Thread trimmer output confirmation signal	TON	T o n	The thread trimmer output T can be turned ON or OFF only when the sewing machine is stopped. (Thread trimmer solenoid confirmation signal)
	40	Needle cooler output during rotation forced [OFF] signal	NCL	n C L	If input NCL is turned ON, the needle cooler output NCL during sewing machine rotation will forcibly be turned OFF.
	41	1 position priority signal	P12	P 1 2	1 position will be set forcibly.
	42	Weak brake [ON] signal	BK	b K	If input BK is turned ON, the weak brake will turn ON. Use this with the BK of the [D] mode set to [OF].
Note 2	43	Sensor input signal	SEN	S E n	This is the cloth edge sensor input.
	44	Wiper output cancel signal	WL	W L	If input WL is turned ON, the wiper output W will not be output.
	45	Slow start signal	SL	S L	If the SL signal is ON, the slow start operation will be valid. Use this with the normal mode [B,SL] key set to [OF].
	46	Preset stitching forced [ON] signal	N	n	If input N is turned ON, preset stitching will start forcibly from that point.
	47	Continuous tack stitching forced [ON] signal	CBT	C b r	If input CBT is turned ON, continuous backstitching will start forcibly from that point.
	48	Non-stitching feed input	FWD	F U d	If input FWD is turned ON, output OT3, output NCL and output FU will be turned ON forcibly. Output ROL and output PUL will be turned OFF forcibly.
	49	Up counter clear signal	CCU	C C U	If input CCU is turned ON, it clears an up counter in [0].
	50	Down counter clear signal	CCD	C C d	If input CCD is turned ON, it clears an down counter in [the setting value].
	51	Signal output to virtual output 1 during operation	IR1	i r 1	If input IR1 is turned ON, output OT1 turns ON only when the sewing machine is running.
	52	Signal output to virtual output 2 during operation	IR2	i r 2	If input IR2 is turned ON, output OT2 turns ON only when the sewing machine is running.

Note 1. The setting name will display in the descending order with each press of the [D] key.
2. The setting name will display in the ascending order with each press of the [C] key.

No.	Setting name	Setting value	Digital display	Specification
53	Signal output to virtual output 3 during operation	IR3	i-3	If input IR3 is turned ON, output OT3 turns ON only when the sewing machine is running.
54	Signal output to virtual output 1 when stopped	IS1	iS1	If input IR1 is turned ON, output OT1 turns ON only when the sewing machine is stopped.
55	Signal output to virtual output 2 when stopped	IS2	iS2	If input IR2 is turned ON, output OT2 turns ON only when the sewing machine is stopped.
56	Signal output to virtual output 3 when stopped	IS3	iS3	If input IR3 is turned ON, output OT3 turns ON only when the sewing machine is stopped.
57	Signal output to virtual output 1	IO1	io1	If input IO1 is turned ON, output OT1 will always be turned ON.
58	Signal output to virtual output 2	IO2	io2	If input IO2 is turned ON, output OT2 will always be turned ON.
59	Signal output to virtual output 3	IO3	io3	If input IO3 is turned ON, output OT3 will always be turned ON.
60	Signal output to virtual output 4	IO4	io4	If input IO4 is turned ON, output OT4 will always be turned ON.
61	Signal output to virtual output 5	IO5	io5	If input IO5 is turned ON, output OT5 will always be turned ON.
62	Signal output to virtual output 6	IO6	io6	If input IO6 is turned ON, output OT6 will always be turned ON.
63	Signal output to virtual output 7	IO7	io7	If input IO7 is turned ON, output OT7 will always be turned ON.
64	Signal output to virtual output 8	IO8	io8	If input IO8 is turned ON, output OT8 will always be turned ON.
65	Signal output to virtual output 9	IO9	io9	If input IO9 is turned ON, output OT9 will always be turned ON.
66	Signal output to virtual output A	IOA	ioA	If input IOA is turned ON, output OTA will always be turned ON.
67	Signal output to virtual output B	IOB	iob	If input IOB is turned ON, output OTB will always be turned ON.
68	Signal output to virtual output C	IOC	ioC	If input IOC is turned ON, output OTC will always be turned ON.
69	Signal output to virtual output D	IOD	iod	If input IOD is turned ON, output OTD will always be turned ON.
70	Signal output to virtual output E	IOE	ioE	If input IOE is turned ON, output OTE will always be turned ON.
71	Signal output to virtual output F	IOF	ioF	If input IOF is turned ON, output OTF will always be turned ON.
72	Signal output to virtual output G	IOG	ioG	If input IOG is turned ON, output OTG will always be turned ON.
73	End tacking speed run signal	S5V	S5V	If input S5V is turned ON, the sewing machine will run at the speed set in end tacking speed V.
74	Thread break detector input signal	THI	THI	It is possible to use as the input signal of thread break detector.
75	Sensor stop input signal 1	PS1	PS1	If input PS1 is turned ON while the sewing machine is running, the needle will stop after swing set stitches. The operation mode at stopping is set by PS1 in the P mode. The no. of stitches after PS1 input is set by [1.] in the P mode.
76	Sensor stop input signal 2	PS2	PS2	If input PS2 is turned ON while the sewing machine is running, the needle will stop after swing set stitches. The operation mode at stopping is set by PS2 in the P mode. The no. of stitches after PS2 input is set by [2.] in the P mode.
77	Variable speed run signal set to medium speed setting	SVM		The sewing machine can be operated at the variable speed set to medium speed M when this signal SVM is turned ON and during ON while machine operates.
78	Needle Down signal	D		When needle down signal D is turned ON, needle down operation will start.
79		URT		Not used

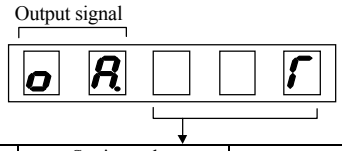
Note 1 ↓

Note 2 ↑

Note 1. The setting name will display in the descending order with each press of the [D] key.
2. The setting name will display in the ascending order with each press of the [C] key.

C mode output signal setting table

<Example>



No.	Setting name	Setting value	Digital display	Specification
1	Output for slow start	SL		During the no. of the setting stitches, SL output is turned ON. The setting no. of stitches can select SLN on [P] mode or HOF on [G] mode by setting SLH on [F] mode
2	Run output 1	OP		OP output is turned ON while the sewing machine is running (not including needle lifting during thread trimming) .
3	Run output 2	OP1		OP1 output is turned ON while the sewing machine is running. (not including needle lifting during thread trimming) OP1 output will turn ON during needle lifting when directly heeling.
4	Run output 3	OP2		OP1 output is turned ON while the pedal is toed down, the external operation signal (S0, S1, SH), full pedal heeling or thread trimming signal (S2) is ON.
5	Output for run signal	S1		S1 output is turned ON when the run signal is ON except during on 1 stitch sewing.
6	Output for blower	VAC		VAC output is turned ON during pedal full heeling or while thread trimmer signal S2 is ON.
7	Output for needle cooler	NCL		NCL output is turned ON while the sewing machine is running (including needle lifting).
8	Output for vacuum signal	VCM		VCM output is turned ON during pedal full heeling or while thread trimmer signal S2 is ON while the sewing machine is stopped.
9	Output for signal during tacking	BT		BT output is turned ON during tacking.
10	Roller lift output	ROL		ROL output is turned ON when presser foot lifter output FU is ON, backstitching output B is ON, or when input IO2 signal is ON. ROL output is turned ON while tacking and while thread trimming if RLM of [F] mode is ON.
11	Thread trimmer output	T		Thread trimming starts.
12	Thread release output	L		Thread release operation starts.
13	Wiper output	W		Wiper operation starts.
14	Backstitch output (Condensed stitch)	B		Backstitching (reverse feed) starts. (Condensed stitch)
15	[CH2] output	CH		CH2 output for chain stitches. Refer to "Technical manual"
16	[TF] output	TF		TF output for chain stitches.
17	[KS1] output	KS1		Behind operation signal ON, KS1 output is turned ON after the setting delay time.
18	[KS2] output	KS2		After the motor stopped, KS1 output is turned ON after the setting delay time.
19	[KS3] output	KS3		After trimming and stopped up position, KS3 output is turned ON after setting delay time.
20	[KS4] output	KS4		Simple sequence output 4
21	[TB] output	TB		TB output for chain stitches.
22	Presser foot lifter output	FU		Presser foot lifter operation starts. The operation mode set in the [P] mode FUM function and FU function will be entered.

Note 1

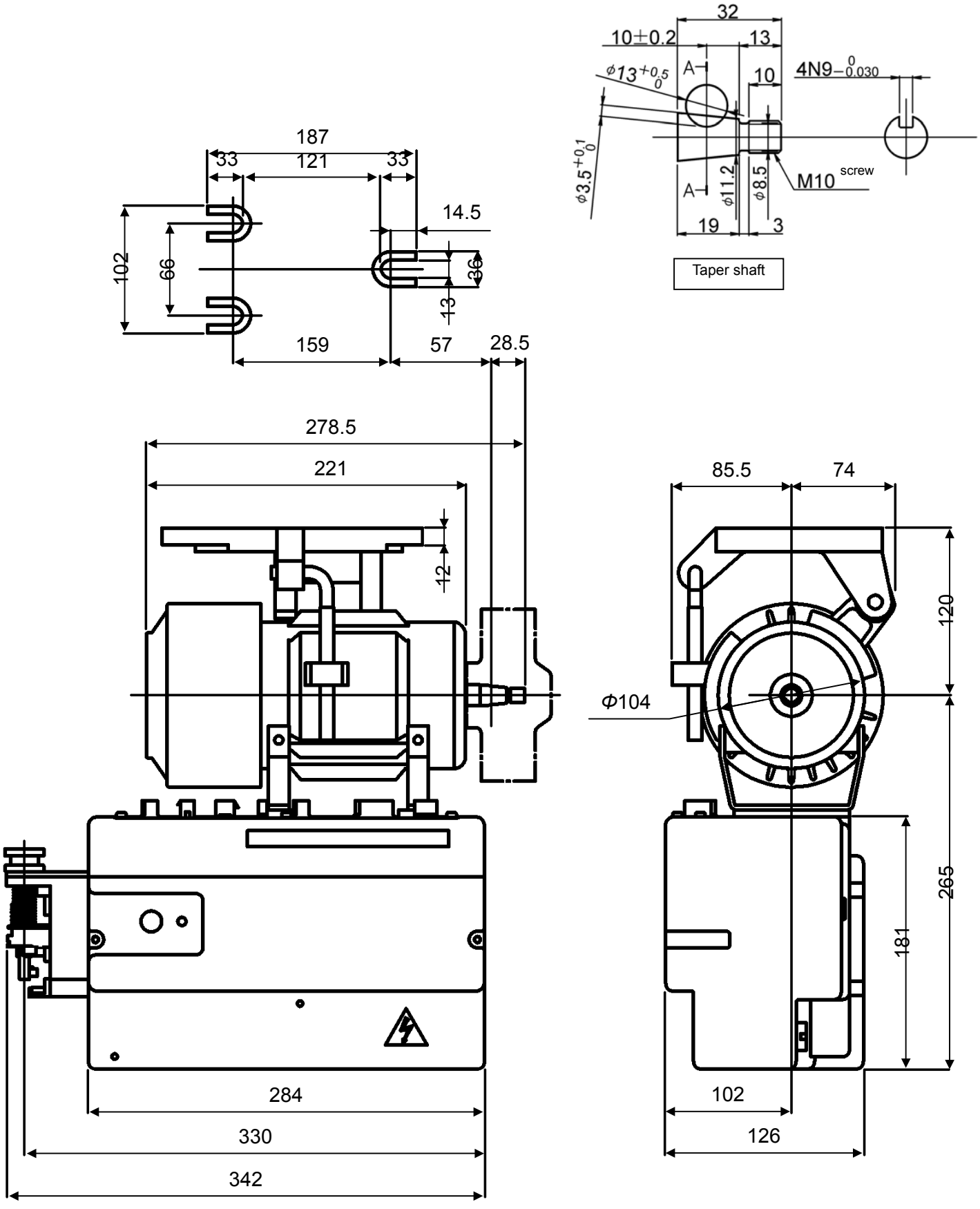
Note 2

Note 1. The setting name will display in the descending order with each press of the [D] key.
2. The setting name will display in the ascending order with each press of the [C] key.

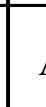
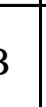
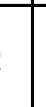
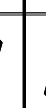
No.	Setting name	Setting value	Digital display	Specification
23	Output for UP position when stopped	UC		UC output is turned ON if at the needle UP position when the sewing machine is stopped.
24	Needle UP position output	UPW		UPW output is turned ON if at the UP position when the, sewing machine is stopped, and while moving from the UP position to the DOWN position when the sewing machine is running.
25	Needle DOWN position output	DNW		DNW output is turned ON if at the DOWN position when the, sewing machine is stopped, and while moving from the DOWN position to the UP position when the sewing machine is running.
26	Output for error occurrence confirmation	ERR		This is output when an error occurs. (Note that this is not output when error code E9 occurs.)
27	Output for power [OFF] confirmation	IPF		Not used.
28	Puller output	PUL		PUL output is turned ON during the presser foot lifter operation, during the IO2 output is ON.
29	Count up output	CUP		When +1 up counter does, the [CUP] output is turned on.
30	Thread break detector output	THO		When detecting thread break detector, THO output is turned ON. (When re-operation, the signal is turned off)
31	Vacuum output for holding thread	FUW		FUW output is turned ON during the presser foot lifter operation or during wiper operation.
32	[NO] output	NO		Nothing is output.
33	Virtual output 1	OT1		OT1 output is turned ON according to each input specifications while inputs IO1, IR1 and IS1 are ON.
34	Virtual output 2	OT2		OT2 output is turned ON according to each input specifications while inputs IO2, IR2 and IS2 are ON.
35	Virtual output 3	OT3		OT3 output is turned ON according to each input specifications while inputs IO3, IR3 and IS3 are ON.
36	[OT4]output	OT4		OT4 output is turned ON according to each input specification while input IO4 is ON.
37	[OT5]output	OT5		OT5 output is turned ON according to each input specification while input IO5 is ON.
38	[OT6]output	OT6		OT6 output is turned ON according to each input specification while input IO6 is ON.
39	[OT7]output	OT7		OT7 output is turned ON according to each input specification while input IO7 is ON.
40	[OT8]output	OT8		OT8 output is turned ON according to each input specification while input IO8 is ON.
41	[OT9]output	OT9		OT9 output is turned ON according to each input specification while input IO9 is ON.
42	[OTA]output	OTA		OTA output is turned ON according to each input specification while input IOA is ON.
43	[OTB]output	OTB		OTB output is turned ON according to each input specification while input IOB is ON.
44	[OTC]output	OTC		OTC output is turned ON according to each input specification while input IOC is ON.
45	[OTD]output	OTD		OTD output is turned ON according to each input specification while input IOD is ON.
46	[OTE]output	OTE		OTE output is turned ON according to each input specification while input IOE is ON.
47	[OTF]output	OTF		OTF output is turned ON according to each input specification while input IOF is ON.
48	[OTG]output	OTG		OTG output is turned ON according to each input specification while input IOG is ON.
49	[CUE] output	CUE		This output becomes ON when Up-counter becomes end. This output becomes OFF when "CCU" input is turned on.
50	[CDE] output	CDE		This output becomes ON when Down-counter becomes end. This output becomes OFF when "CCD" input is turned on.
51	Output for the PSU counting	PSU		Output signal for the during PSU counting. PSU output will turn ON during the PSU counting.
52	Output for the PSD counting	PSD		Output signal for the during PSD counting. PSU output will turn ON during the PSD counting.
53	Output for the PS1 counting	PS1		Output signal for the during the sensor input signal PS1 counting. PS1 output will turn ON during the PS1 operation.
54	Output for the PS2 counting	PS2		Output signal for the during the sensor input signal PS2 counting. PS1 output will turn ON during the PS2 operation.
55	[SPC] output for the reached setting speed	SPC		SPC output is turned ON when reached setting speed. The setting speed is set by [C.] in the C mode.
56	[SPD] output for the reached setting speed	SPD		SPD output is turned ON when reached setting speed. The setting speed is set by [D.] in the C mode.
57	[SPE] output for the reached setting speed	SPE		SPE output is turned ON when reached setting speed. The setting speed is set by [E.] in the C mode.
58	Always ON output	HI		In case of the power on, [HI] output is always ON.

Note 1

Note 2


32
10±0.2
13
A
10
4N9 0 -0.030
φ13 +0.5 0
φ3.5 +0.1 0
A
φ11.2
φ8.5
M10 screw
19
3
Taper shaft
187
33
121
33
14.5
102
66
36
13
159
57
28.5
278.5
221
12
85.5
74
120
φ104
265
181
284
330
342
102
126

Digital Display Reference

Numeral	0	1	2	3	4	5	6	7	8	9
Digital display										
Character	A	B	C	D	E	F	G	H	I	J
Digital display										
Character	K	L	M	N	O	P	Q	R	S	T
Digital display										
Character	U	V	W	X	Y	Z				
Digital display