Changes for the Better

MITSUBISHI ELECTRIC AUTOMATION, INC.

XC-G SERIES

PRODUCT APPLICATIONS

CLICK HERE FOR CONTENTS

Contents

Using Program Modes or Parameter Call Function to Customize User Settings

Program Mode Method

The Normal Mode has the rotating circle

When entering into one of the program modes, **press and hold in** the proper keys until the display stops flashing

To return to the Normal Mode from any Program Mode, press the ↓ + ↑ momentarily

P-Mode ↓ + ↑ General Settings

A-Mode ↓ + A

B-Mode ↓ + B

C-Mode ↓ + C

D-Mode ↓ + D

E-Mode ↓ + ↑ + A Troubleshooting

F-Mode ↓ + ↑ + B

G-Mode ↓ + ↑ + C

H-Mode ↓ + ↑ + D

J-Mode ↓ + ↑ + A + B

Q-Mode ↓ + A + C

R-Mode ↓ + B + C Reset Mode

S-Mode ↓ + B + D

K-Mode ↓ + ↑ + A + C

I-Mode ↓ + ↑ + B + C Parameter Save

Parameter Call Function Method (New Way for G-Series)

1. Press the parameter setup key 

2. Press the A, B, C, or D keys 

to put in the parameter number.

3. After that, press the enter key 

4. Press the D-key 

to change the setting.

Note: The blinking dot in the display above the D-key 

indicates that the parameter has been changed.

5. Press the enter key 

to save the change.
Note: You must press the Enter Key.

6. Press the parameter setup key 

to return to the normal mode.
Note: You can change more parameters if needed before returning to the normal mode.

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

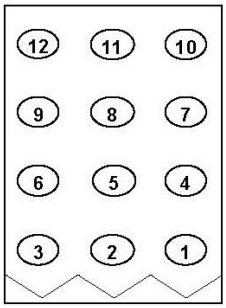
Wiper Solenoid goes to pins 2 and 3

Backtack Solenoid goes to pins 11 and 12

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

SEWING MACHINE

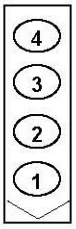
Ground	Ground	1
OB	W : Wiper output	2
+ 24V/ + 30V	+ 24V	3
OA	T : Thread trimming output	4
0V	0V	5
ID	TL : Thread trimmer cancel input	6
OD	L: Thread release output	7
+ 24V/ + 30V	+ 24V	8
IE	S7 : Backstitch input	9
0V	0V	10
+ 24V/ + 30V	+ 24V	11
OC	B : Backstitch output	12



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 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

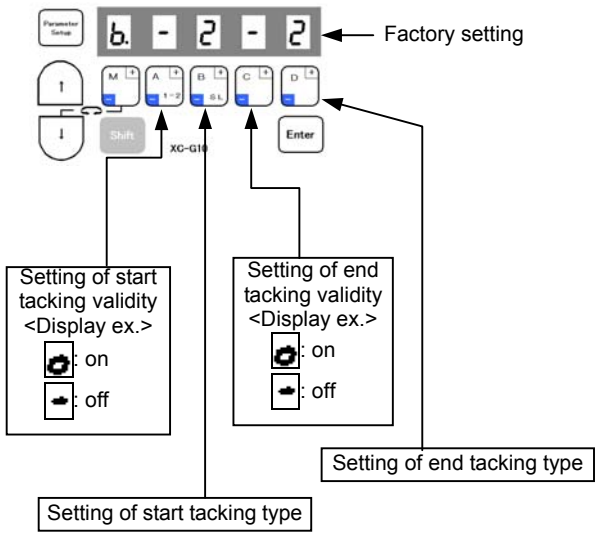
Press and hold in the ↓ + A keys until the display stops flashing

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

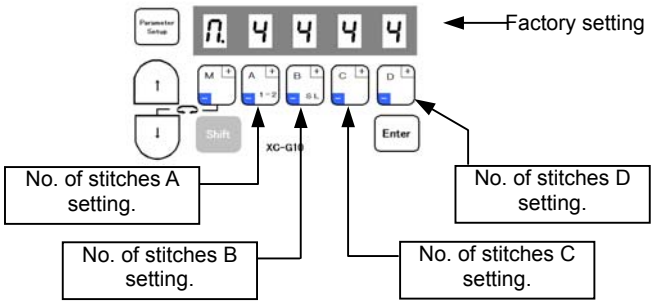
When the [↑] key is turned ON, b. will display above the [M] key, and the tacking setting mode will be entered.



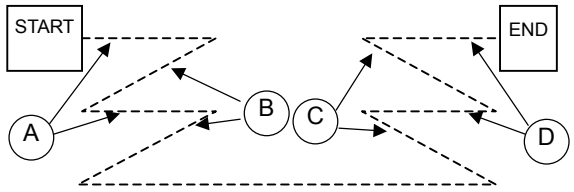
Setting of tacking type < Display ex. >		start tacking	end tacking
0	: No tacking		
1	: V tacking (Once tacking)		
2	: N tacking (Double tacking)		
3	: M tacking (Triple tacking)		
4	: W tacking (4 repeat tacking)		
5	: 5 repeat tacking		
6	: 6 repeat tacking		

Number of back tacking stitches

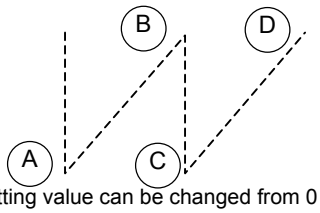
When the [↑] key is turned ON again, n. will display above the [M] key indicator, and the No. of stitches can be set.]



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

Settings for the Juki LU-2210

For use with the G-series Servo Motor Controllers

Program by Mode or Direct Parameter Number

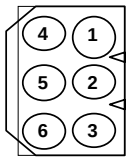
Parameter Number	Program Mode	Function	Function Details	Factory Setting	New Setting
0	P	H	High speed	4000	**3500**
3	P	n	Start tacking speed	1700	**1200**
4	P	v	End tacking speed	1700	**1200**
5	P	M	High walk speed	1700	**2000**
21	P	FUM	Foot up after trim (optional)	OF	**ON**
36	P	RU	Reverse after trim	OF	**ON**
37	P	R8	Amount of reverse	30	**40**
42	P	TR	Trimmer setting for lockstitch	M1	**PRG**
100	A	GA	Torque gain	L	**H**
300	C	IA	High walk input knee switch (optional)	PSU	**IO2**
302	C	IAA	High walk knee switch (push on/push off)	OF	**ON**
309	C	ID	Needle up input button	TL	**U**
312	C	IE	Back tack input button	S7	**S7**
370	C	I2	High walk input button	U	**IO2**
372	C	I2M	High walk input (push on/push off)	NO	**AL**
378	C	I4	Back tack cancel input button	NO	**BTL**
421	C	O2	High walk output	NCL	**OT2**
1405	Q	VC2	High walk variable resistor	VC	**LM**
1408	Q	VL1	Per cent of high speed	67	**56**
1409	Q	VP1	Speed ramp start	40	**39**
1410	Q	VP2	Speed ramp end	70	**42**
1423	Q	LIM	Middle speed when high walk is on	OF	**ON**

Wiring for the Juki LU-2210

Locate the wiring from your machine head for each input button and output solenoid
Use the pins and plugs as needed that are furnished with the control box for your wiring
The reference chart below will guide you where to insert the wiring from your machine to the control box

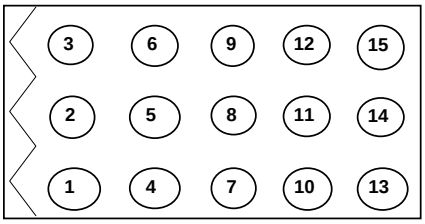
OPTION A

SIGNAL/SETTING	FUNCTION	PIN
0V	0V	1
IA (IO2)	High Walk Input Knee Switch (Optional)	2
+12V/(+5V)	+12V	3
IB		4
O4		5
IC		6



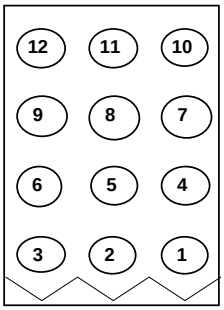
OPTION B

SIGNAL/SETTING	FUNCTION	PIN
0V	Variable Resistor 0 Volt	1
I4 (BTL)	Back Tack Cancel Input Button	2
O1		3
VC2	Variable Resistor Signal	4
I5		5
I1		6
+5V(12V)	Variable Resistor Voltage	7
+24V/+30V	+24V	8
I2 (IO2)	High Walk Input Button	9
0V	0V	10
+24V/+30V	+24V	11
O2 (OT2)	High Walk Output	12
O7		13
O6		14
O3		15



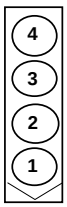
SEWING MACHINE

SIGNAL/SETTING	FUNCTION	PIN
Ground	Ground	1
OB		2
+24V/+30V	+24V	3
OA (T)	Trimmer Output	4
0V	0V	5
ID (U)	Needle Up Input Button	6
OD (L)	Tension Release Output	7
+24V/+30V	+24V	8
IE (S7)	Back Tack Input Button	9
0V	0V	10
+24V/+30V	+24V	11
OC (B)	Back Tack Output	12



PRESSER FOOT

SIGNAL/SETTING	FUNCTION	
		1
		2
OF (FU)	FU+ : presser foot lifter output +	3
	FU- : presser foot lifter output -	4



Settings for the Juki LU-1510N-7

For use with the G-series Servo Motor Controllers

Program by Mode or Direct Parameter Number

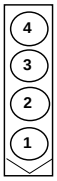
Parameter Number	Program Mode	Function	Function Details	Factory Setting	New Setting
0	P	H	High speed	4000	**3000**
3	P	n	Start tacking speed	1700	**600**
4	P	v	End tacking speed and high walk dial speed 2	1700	**600**
5	P	M	Middle speed and high walk dial speed 1	1700	**1800**
21	P	FUM	Foot up after trim (optional)	OF	**ON**
36	P	RU	Reverse after trim	OF	**ON**
37	P	R8	Amount of reverse	30	**48**
42	P	TR	Trimmer setting for lockstitch	M1	**PRG**
100	A	GA	Torque gain	L	**H**
309	C	ID	Back tack cancel input button	TL	**BTL**
312	C	IE	Back tack input button	S7	**S7**
357	C	I1	High walk input button	IO1	**IO1**
359	C	I1M	High walk input (push on/push off)	NO	**AL**
378	C	I4	High walk speed 1 for dial	NO	**SPM**
381	C	I5	High walk speed 2 for dial	NO	**SPB**
416	C	O1	High walk output	OT1	**OT1**
1423	Q	LIM	Middle speed when high walk is on	OF	**ON**
1423	K	2SL	Varible speed during spm and spb speed	OF	**ON**

Wiring for the Juki LU-1510N-7

Remove the required connectors and pins.
You will be working with the 12 and 15 pin connectors from the machine and the connector from the valve assembley.
Idenify which wires come from where. (ex. wires from the trimmer)
Pin the nessessary wires using the pins furnished with the control box.
Using the diagram below, insert the wires in the connectors furnished with the control box.

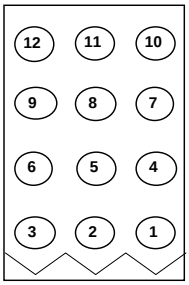
PRESSER FOOT

Input/Output name	Function	Pin
OF	Presser foot lifter output (+) from valve	3
	Presser foot lifter output (-) from valve	4



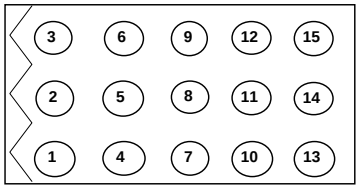
SEWING MACHINE

Input/Output name	Function	Pin
	Earth Ground (Green/Yellow) from Juki 12-pin	1
		2
+24V/+30V	Trimmer Output from Juki 12 pin (+24V)	3
OA	Trimmer Output from Juki 12 Pin (-)	4
		5
ID	Back Tack Cancel (Yellow) from Juki 15 pin	6
OD	Tension Release Output (-) from Juki 12 pin	7
+24V/+30V	Tension Release Output (+24V) from Juki 12 pin	8
IE	Back Tack Input (Brown) from Juki 15 pin	9
0V	0V	10
+24V/+30V	Back Tack Output from valve (+24V)	11
OC	Back Tack Output from valve (-)	12



OPTION B

Input/Output name	Function	Pin
0V	0V (green/black) from Juki 12 pin	1
I4	SPM Speed 1 (white) from Juki 12 pin	2
O1	High Walk - (white) from valve and LED - (Grey) from Juki 15 pin	3
		4
I5	SPB Speed 2 (red) from Juki 12 pin	5
I1	High Walk Input (Pink) from Juki 15 pin	6
		7
+24V/+30V	High Walk and Back Tack (Red) from valve (+24V)	8
I2	Needle Up Input (Orange) from Juki 15 pin	9
0V	0V (Red) from Juki 15 pin	10
+24V/+30V	LED + (white) from Juki 15-Pin	11
		12
		13
		14
		15



General settings for the Durkopp 767

For use with the G-series Servo Motor Controllers

Program by Mode or Direct Parameter Number

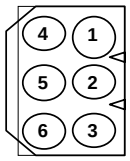
Parameter Number	Program Mode	Function	Function Details	Factory Setting	New Setting
0	P	H	High speed	4000	**3500**
3	P	n	Start tacking speed	1700	**1200**
4	P	v	End tacking speed	1700	**1200**
5	P	M	Middle speed	1700	**2000**
21	P	FUM	Foot up after trim (optional)	OF	**ON**
36	P	RU	Reverse after trim	OF	**ON**
37	P	R8	Amount of reverse	30	**48**
42	P	TR	Trimmer setting for lockstitch	M1	**PRG**
100	A	GA	Torque gain	L	**H**
300	C	IA	High walk input knee switch (optional)	PSU	**IO2**
302	C	IAA	High walk knee switch (push on/push off)	OF	**ON**
303	C	IB	Short stitch/long stitch input button	PSD	**IOB**
305	C	IBA	Short stitch/long stitch (push on/push off)	OF	**ON**
306	C	IC	Auxiliary tension input button	SO	**IOC**
308	C	ICA	Auxiliary tension (push on/push off)	OF	**ON**
309	C	ID	Standard input (extra)	TL	**IOD**
312	C	IE	Back tack input button	S7	**S7**
357	C	I1	Special input (extra)	IO1	**IO1**
359	C	I1M	Special input (push on/push off)	NO	**AL**
370	C	I2	High walk input button	U	**IO2**
372	C	I2M	High walk input (push on/push off)	NO	**AL**
378	C	I4	Back tack cancel input button	NO	**BTL**
381	C	I5	Needle up input button	NO	**U**
395	C	OB	Standard output (extra)	W	**OTD**
416	C	O1	Special output (extra)	OT1	**OT1**
421	C	O2	High walk output	NCL	**OT2**
426	C	O3	Needle cooler output	TF	**NCL**
439	C	O6	Auxiliary tension output (air only)	NO	**OTC**
444	C	O7	Short stitch/long stitch output (air only)	NO	**OTB**
1405	Q	VC2	High walk variable resistor	VC	**LM**
1408	Q	VL1	Per cent of high speed	67	**60**
1409	Q	VP1	Speed ramp start	40	**39**
1410	Q	VP2	Speed ramp end	70	**60**
1423	Q	LIM	Middle speed when high walk is on	OF	**ON**

General wiring for the Durkopp 767

Locate the wiring from your machine head for each input button and output solenoid
Use the pins and plugs as needed that are furnished with the control box for your wiring
The reference chart below will guide you where to insert the wiring from your machine to the control box

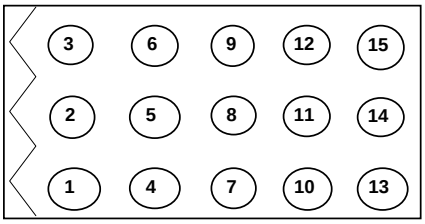
OPTION A

SIGNAL/SETTING	FUNCTION	PIN
0V	0V	1
IA (IO2)	High Walk Input Knee Switch (Optional)	2
+12V/(+5V)	+12V	3
IB (IOB)	Short Stitch/Long Stitch Input Button	4
O4 (UPW)	Needle Up Output Pluse Signal	5
IC (IOC)	Auxiliary Tension Input Button	6



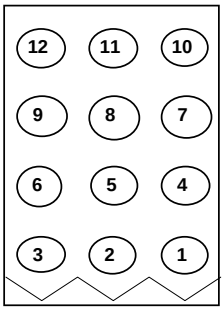
OPTION B

SIGNAL/SETTING	FUNCTION	PIN
0V	Variable Resistor 0 Volt	1
I4 (BTL)	Back Tack Cancel Input Button	2
O1 (OT1)	Special Output (Extra)	3
VC2	Variable Resistor Signal	4
I5 (U)	Needle Up Input Button	5
I1 (IO1)	Special Input (Extra)	6
+5V(12V)	Variable Resistor Voltage	7
+24V/+30V	+24V	8
I2 (IO2)	High Walk Input Button	9
0V	0V	10
+24V/+30V	+24V	11
O2 (OT2)	High Walk Output	12
O7 (OTB)	Short Stitch/Long Stitch Output (Air Only)	13
O6 (OTC)	Auxiliary Tension Output (Air Only)	14
O3 (NCL)	Needle Cooler Output	15



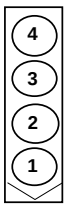
SEWING MACHINE

SIGNAL/SETTING	FUNCTION	PIN
Ground	Ground	1
OB (OTD)	Standard Output (Extra)	2
+24V/+30V	+24V	3
OA (T)	Trimmer Output	4
0V	0V	5
ID (IOD)	Standard Input (Extra)	6
OD (L)	Tension Release Output	7
+24V/+30V	+24V	8
IE (S7)	Back Tack Input Button	9
0V	0V	10
+24V/+30V	+24V	11
OC (B)	Back Tack Output	12



PRESSER FOOT

SIGNAL/SETTING	FUNCTION	
		1
		2
OF (FU)	FU+ : presser foot lifter output +	3
	FU- : presser foot lifter output -	4



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

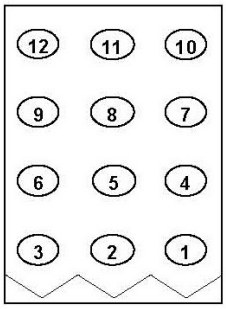
Wiper goes to pins 2 and 3

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

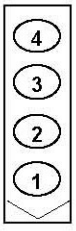
Ground	Ground	1
OB	W : Wiper output	2
+ 24V/ + 30V	+ 24V	3
OA	T : Thread trimming output	4
0V	0V	5
ID	TL : Thread trimmer cancel input	6
OD	L: Thread release output	7
+ 24V/ + 30V	+ 24V	8
IE	S7 : Backstitch input	9
0V	0V	10
+ 24V/ + 30V	+ 24V	11
OC	B : Backstitch output	12



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

PRESSER FOOT

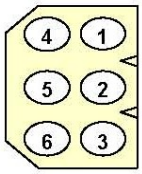
OV	0V	1
IF	F : presser foot input	2
OF	FU+ :presser foot lifter output +	3
	FU- : presser foot lifter output -	4



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

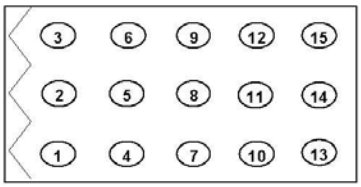


5VDC on pin 7

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)

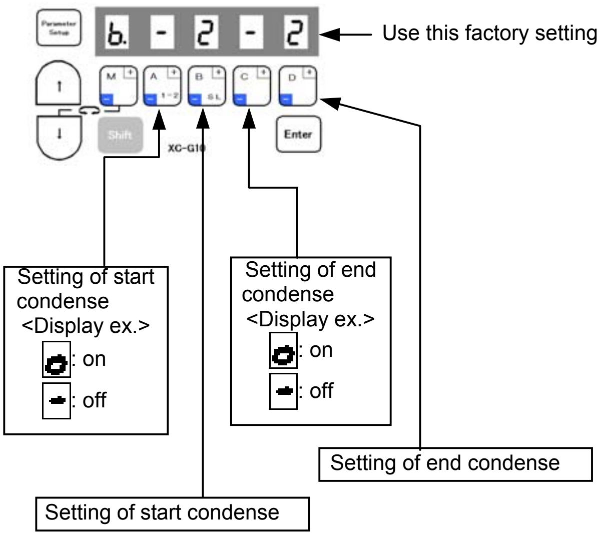
W2 8ms---x10 (Changeable from 0-998ms---x10) (Duration of the wiper on time)

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

End

Condensed stitching mode

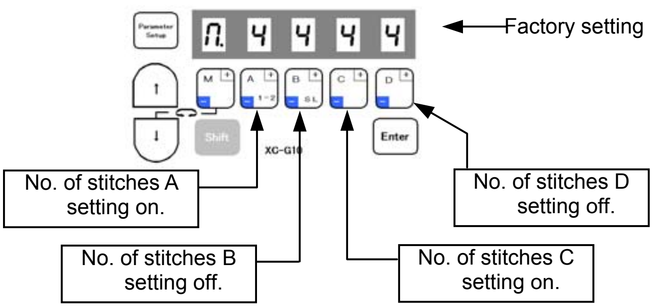
When the [↑] key is turned ON, b. will display above the [M] key, and the condensed stitching mode will be entered.

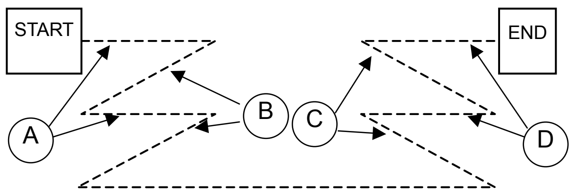


Setting of condense type < Display ex. >		start tacking	end tacking
0 :	No tacking		
1 :	V tacking (Once tacking)		
2 :	N tacking (Double tacking)		
3 :	M tacking (Triple tacking)		
4 :	W tacking (4 repeat tacking)		
5 :	5 repeat tacking		
6 :	6 repeat tacking		

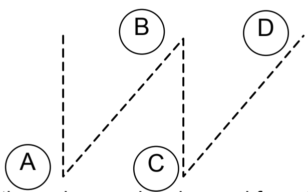
Number of condensed stitches setting mode

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 means solenoid is on and B or D 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

Sensor Controlled Tape Cut and Stop
Single Solenoid Type, Double Solenoid Type, and Push Pull Type

For use with the G-series Servo Motor Controllers

Program by Mode or Direct Parameter Number

Tape Cutter (A) Settings for Single Solenoid Type					
Parameter Number	**Program Mode**	**Function**	**Function Details**	**Factory Setting**	**New Setting**
0	P	H	High speed	4000	**0-8999**
12	P	PSU	Motor stop stitch count after the sensor is uncovered	0	**0-99**
42	P	TR	Trimmer setting	M1	**NO**
370	C	I2	Sensor tape cut signal (option B/pin 9)	U	**IO2**
371	C	I2L	Use only if tape cutter works in reverse	OF	**OF**
378	C	I4	Sensor motor stop signal (option B/pin 2)	NO	**PSU**
379	C	I4L	Use only if motor stop works in reverse	OF	**ON**
381	C	I5	Manual tape cut	NO	**IO3**
426	C	O3	Tape cut output 3 (option B/pin15)	TF	**OT3**
800	F	COA	Chain on stitch count for tape cutter	0	**0-99**
802	F	COC	Chain off stitch count for tape cutter	0	**0-99**
806	F	SD	Tape cut output duration time	0	**0-500**
815	F	O3N	Stitch count function	OF	**ON**
817	F	CTY	Manual tape cut mode	OF	**ON**
818	F	CTN	Tape cutter mode	OF	**ON**

Note: On the option B plug wiring, jump pin 9 to pin 2
Note: The COC stitch count must be equal to or less than the PSU stitch count

Tape Cutter (B) Settings for Push/Pull Solenoid Type (in addition to tape cutter (A) settings)					
421	C	O2	Tape cut output 2 (option B/pin 12)	NCL	**OT3**
422	C	O2L	Tape cut output 2 (normally closed)	OF	**ON**

Tape Cutter (C) Settings for Double Solenoid Type (in addition to tape cutter (A) settings)					
339	C	IM	Internal input	NO	**IO1**
341	C	IMA	Internal input (push on/push off)	OF	**ON**
449	C	OM	Internal output	NO	**OT3**
416	C	O1	Tape cut output 1 (option B/pin 3)	OT1	**OT1**
421	C	O2	Tape cut output 2 (option B/pin 12)	NCL	**OT1**
422	C	O2L	Tape cut output 2 (normally closed)	OF	**ON**

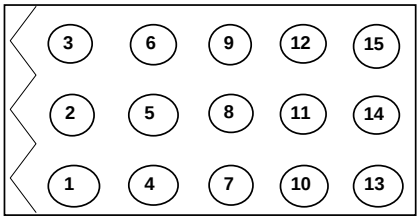
Wiring for Tape Cut and Stop

Locate the wiring for each input (sensor) and output (cutter)
Use the pins and plugs as needed that are furnished with the control box for your wiring
The reference chart below will guide you where to insert the wiring from your machine to the control box

OPTION B

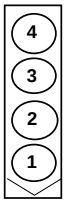
SIGNAL/SETTING	FUNCTION	PIN
0V	Manual Tape Cut 0 volt	1
I4 (PSU)	Sensor Motor Stop Signal	2
O1 (OT1)	Tape Cut Output 1	3
VC2		4
I5 (IO3)	Manual Tape Cut Signal	5
I1		6
+5V(12V)	Sensor Power	7
+24V/+30V	+24V	8
I2 (IO2)	Sensor Tape Cut Signal	9
0V	Sensor 0 volt	10
+24V/+30V	+24V	11
O2 (OT1)(OT3)	Tape Cut Output 2	12
O7		13
O6		14
O3 (OT3)	Tape Cut Output 3	15

Note: Jump pin 9 to pin 2



PRESSER FOOT

SIGNAL/SETTING	FUNCTION	
		1
		2
OF (FU)	FU+ : presser foot lifter output +	3
	FU- : presser foot lifter output -	4



Sensor Control for Air Saver or Air Motor Vacuum Devices

For use with the G-series Servo Motor Controllers

Program by Mode or Direct Parameter Number

Chain Cutter Vacuum or Air Motor Settings					
0	P	H	High speed	4000	**0-8999**
12	P	PSU	Motor stop stitch count after the sensor is uncovered	0	**0-99**
42	P	TR	Trimmer setting	M1	**NO**
324	C	IH	Vacuum at full treade heel	S2	**IO1**
339	C	IM	Internal input	NO	**IO6**
340	C	IML	Internal input (normally closed)	OF	**ON**
342	C	IN	Internal input	NO	**IO1**
370	C	I2	Sensor vacuum signal (option B/pin 9)	U	**IO2**
371	C	I2L	Use only if vacuum works in reverse	OF	**OF**
378	C	I4	Sensor motor stop signal (option B/pin 2)	NO	**PSU**
379	C	I4L	Use only if motor stop works in reverse	OF	**ON**
416	C	O1	Vacuum output (option B/pin 12)	OT1	**OT1**
426	C	O3	Air motor output (option B/pin15)	TF	**OT1**
449	C	OM	Internal output	NO	**OT2**
453	C	ON	Internal output	NO	**KS1**
800	F	COA	Vacuum off stitch count at start (air saver)	0	**0-99**
802	F	COC	Vacuum on before stop stitch count	0	**0-99**
813	F	O1B	Vacuum mode function	OF	**ON**
806	F	SD	Vacuum/air motor on/off pluse signal	0	**60**
815	F	O3N	Stitch count function	OF	**ON**
818	F	CTN	Tape cutter mode	OF	**ON**
1501	S	SQS	Sequence mode	NO	**GO**
1505	S	S1S	Sequence 1 start/end	KS	**IN**
1519	S	K11	Sequence 1 start time	7	**0**
1520	S	K12	Sequence 1 end time	7	**0-99**
1533	S	KL1	Sequence 1 additional time x10	OF	**ON**

Note: On the option B plug wiring, jump pin 9 to pin 2

Note: The COC stitch count must be equal to or less than the PSU stitch count

If the treadle is not released after the motor stop, re-start is possible if you add these settings

321	C	IG	Sew start signal	S1	**IOA**
477	C	A1	Internal logic input	NO	**S1**
480	C	N1	Internal logic output	NO	**OTA**
482	C	N2	Internal logic output	NO	**OT2**

If using the sensor for auto start and stop, add these settings

21	P	FUM	Foot up after stop (optional)	OF	**ON**
33	P	AT	High speed after sensor is uncovered	OF	**ON**
345	C	IO	Internal input	NO	**S4**
516	C	D21	Start delay without foot (optional)	0	**0-99**
457	C	OO	Internal output	NO	**OT2**
919	G	FD	Start delay after foot down (optional)	0	**0-998**

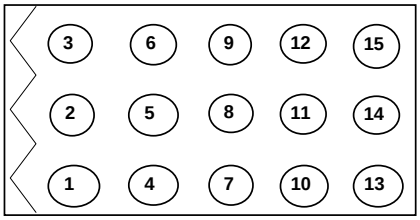
Wiring for Air Saver or Air Motor Vacuum Devices

Locate the wiring for each input (sensor) and output (vacuum or air motor)
Use the pins and plugs as needed that are furnished with the control box for your wiring
The reference chart below will guide you where to insert the wiring from your machine to the control box

OPTION B

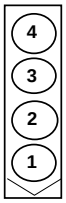
SIGNAL/SETTING	FUNCTION	PIN
0V		1
I4 (PSU)	Sensor Motor Stop Signal	2
O1		3
VC2		4
I5		5
I1		6
+5V(12V)	Sensor Power	7
+24V/+30V	+24V	8
I2 (IO2)	Sensor Vacuum or Air Motor Signal	9
0V	Sensor 0 volt	10
+24V/+30V	+24V	11
O2 (OT1)	Vacuum Output	12
O7		13
O6		14
O3 (OT1)	Air Motor Output	15

Note: Jump pin 9 to pin 2



PRESSER FOOT

SIGNAL/SETTING	FUNCTION	
		1
		2
OF (FU)	FU+ : presser foot lifter output +	3
	FU- : presser foot lifter output -	4



Sensor Controlled Auto Stop or Start

For use with the G-series Servo Motor Controllers

Program by Mode or Direct Parameter Number

Auto Stop					
0	P	H	High speed	4000	**0-8999**
12	P	PSU	Motor stop stitch count after the sensor is uncovered	0	**0-99**
21	P	FUM	Foot up after stop (optional)	OF	**ON**
42	P	TR	Trimmer setting	M1	**NO**
378	C	I4	Sensor motor stop signal (option B/pin 2)	NO	**PSU**
379	C	I4L	Use only if motor stop works in reverse	OF	**ON**

If the treadle is not released after the motor stop, re-start is possible if you add these settings

321	C	IG	Sew start signal	S1	**IOA**
477	C	A1	Internal logic input	NO	**S1**
480	C	N1	Internal logic output	NO	**OTA**
482	C	N2	Internal logic output	NO	**OT2**

If using the sensor for auto start also, add these settings

21	P	FUM	Foot up after stop (optional)	OF	**ON**
33	P	AT	High speed after sensor is uncovered	OF	**ON**
370	C	I2	Sensor start signal (option B/pin 9)	U	**IO2**
371	C	I2L	Use only if start signal works in reverse	OF	**OF**
345	C	IO	Internal input	NO	**S4**
516	C	D21	Start delay without foot (optional)	0	**0-99**
457	C	OO	Internal output	NO	**OT2**
919	G	FD	Start delay after foot down (optional)	0	**0-998**

Note: On the option B plug wiring, jump pin 9 to pin 2

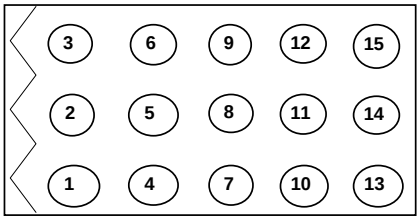
Wiring for Auto Stop or Start

Locate the wiring for the sensor
Use the pins and plugs as needed that are furnished with the control box for your wiring
The reference chart below will guide you where to insert the wiring from your machine to the control box

OPTION B

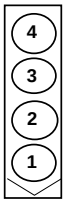
SIGNAL/SETTING	FUNCTION	PIN
0V		1
I4 (PSU)	Sensor Motor Stop Signal	2
O1		3
VC2		4
I5		5
I1		6
+5V(12V)	Sensor Power	7
+24V/+30V	+24V	8
I2 (IO2)	Sensor Motor Start Signal	9
0V	Sensor 0 volt	10
+24V/+30V	+24V	11
O2		12
O7		13
O6		14
O3		15

Note: Jump pin 9 to pin 2



PRESSER FOOT

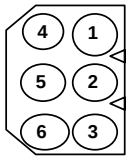
SIGNAL/SETTING	FUNCTION	
		1
		2
OF (FU)	FU+ : presser foot lifter output +	3
	FU- : presser foot lifter output -	4



Factory Connector Layout for the XC-GMFY

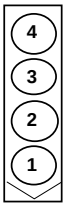
LEVER

SIGNAL NAME	FACTORY SETTING	PIN
0V	0V	1
IG	S1 : Run (Variable speed)	2
IH	S2 : Thread trimming	3
II	S3 : Presser foot lifter	4
VC1	VC : Variable speed command	5
+12V/(5V)	+12V	6



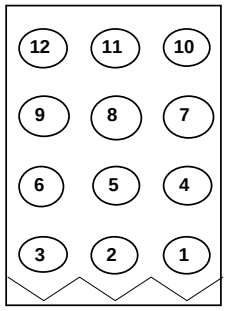
PRESSER FOOT

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



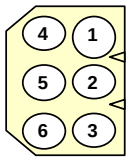
SEWING MACHINE

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	0V	10
+24V/+30V	+24V	11
OC	B : Backstitch output	12



OPTION A

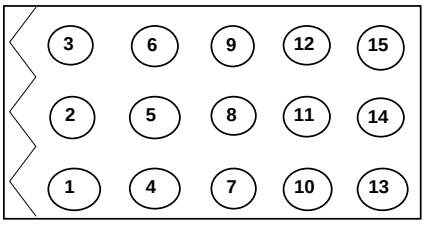
0V	0V	1
IA	PSU: Up position stop input	2
+12V/(+5V)	+12V	3
IB	PSD: Down position stop input	4
O4	UPW : Needle Up position output	5
IC	S0: Low speed input	6



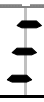
OPTION B

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



Digital Display Reference Chart

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										

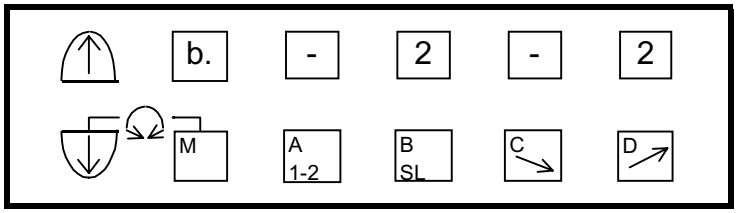
INSTRUCTIONS FOR INSTALLING BACKTACK SWITCH AA-G003-925 ON XC-GMFY CONTROL BOX

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

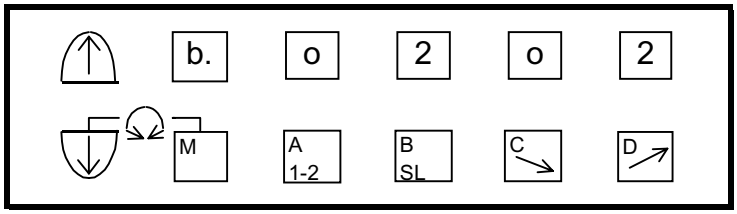
DISPLAY WILL LOOK SIMILAR TO THIS



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

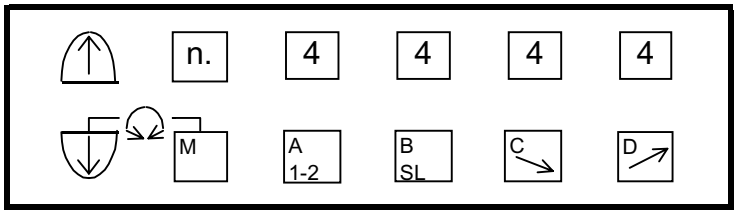
THE B-KEY SELECTS THE TYPE OF START BACKTACK

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

USING THE XC-G500-Y FOR UP COUNTING USING THE TRIM SIGNAL

COUNTER FUNCTION: ONE COUNT PER TRIM SIGNAL (LOCATED IN THE B-MODE)

1. ENTER THE B-MODE BY PRESSING AND HOLDING IN THE DOWN ARROW AND THE B-KEY FOR 2 OR MORE SECONDS
2. USING THE DOWN ARROW KEY FIND THE SETTING P
3. USING THE C AND D-KEYS CHANGE THE 99 TO 0
4. USING THE DOWN ARROW KEY FIND THE SETTING U
5. USING THE C AND D-KEYS CHANGE THE 99 TO 0 IF NEEDED
6. USING THE DOWN ARROW KEY FIND THE SETTING UPC
7. USING THE D-KEY CHANGE THE OF TO ON
8. PRESS THE DOWN ARROW AND THE UP ARROW KEYS TOGETHER TO EXIT THE B-MODE

TO MAKE THE XC-G500-Y DISPLAY THE STITCH COUNT

1. ENTER THE C-MODE BY PRESSING AND HOLDING IN THE DOWN ARROW AND THE C-KEY FOR 2 OR MORE SECONDS
2. USING THE UP ARROW KEY FIND THE SETTING CNF
3. USING THE D-KEY CHANGE THE FUNCTION SE TO UP
4. PRESS THE DOWN ARROW AND THE UP ARROW KEYS TOGETHER TO EXIT THE C-MODE
5. PRESS AND HOLD THE F-KEY THEN THE STEP-KEY
6. PRESS THE F-KEY TO DISPLAY STITCH COUNT
   SINCE THE COUNTING IS TRIGGERED 1 TIME PER TRIM SIGNAL, RUN THE MACHINE AS NORMAL AND WHEN THE BOBBIN RUNS OUT MAKE NOTE OF THE COUNT AMOUNT.
7. PRESS AND HOLD THE STEP-KEY THEN THE F-KEY
8. ENTER THE B-MODE BY PRESSING AND HOLDING IN THE DOWN ARROW AND THE B-KEY FOR 2 OR MORE SECONDS
9. USING THE DOWN ARROW KEY FIND THE SETTING P
10. USING THE A, B, C, AND D-KEYS, ENTER THE TARGET COUNT FOR THE UP COUNTER
11. PRESS THE DOWN ARROW AND UP ARROW KEYS TOGETHER TO EXIT THE B-MODE
12. PRESS AND HOLD IN THE F-KEY THEN THE STEP KEY
13. PRESS THE F-KEY
14. PRESS THE P-KEY
15. PRESS THE P-KEY TO RESET AND CLEAR THE STITCH COUNT AFTER THE TARGET VALUE HAS BEEN REACHED

NOTE: THE BUZZER WILL COME ON AFTER THE TARGET STITCH COUNT HAS BEEN REACHED AND WILL BEEP 5 TIMES. THE MACHINE WILL STILL BE ABLE TO RUN UNTIL THE TREADLE IS FULLY HEELED BACK FOR THE TRIMMER CYCLE. AT THAT TIME THE MACHINE WILL NOT RUN UNTIL THE P-KEY HAS BEEN PRESSED TO CLEAR THE COUNTER.

USING THE XC-G500-Y FOR UP COUNTING USING A CERTAIN AMOUNT OF REVOLUTIONS TO TRIGGER THE UP COUNTER 1 TIME

COUNTER FUNCTION: STITCH COUNT TYPE (LOCATED IN THE B-MODE)

1. ENTER THE B-MODE BY PRESSING AND HOLDING IN THE DOWN ARROW AND THE B-KEY FOR 2 OR MORE SECONDS
2. USING THE DOWN ARROW KEY FIND THE SETTING P
3. USING THE C AND D-KEYS CHANGE THE 99 TO 0
4. USING THE DOWN ARROW KEY FIND THE SETTING U
5. USING THE C AND D-KEYS CHANGE THE 99 TO 0 IF NEEDED
6. USING THE DOWN ARROW KEY FIND THE SETTING CUP
7. USING THE D-KEY CHANGE THE FUNCTION FROM CU TO ST
8. USING THE DOWN ARROW KEY FIND THE SETTING UPC
9. USING THE D-KEY CHANGE THE OF TO ON
10. USING THE DOWN ARROW KEY FIND THE SETTING CNU
11. USING THE C, AND D-KEYS CHANGE THE 1 TO, FOR EXAMPLE 10
    THIS SETTING WILL MAKE THE COUNTER COUNT 1 TIME PER 10 REVOLUTIONS
12. PRESS THE UP ARROW AND THE DOWN ARROW KEYS TOGETHER TO EXIT THE B-MODE

TO MAKE THE XC-G500-Y DISPLAY THE STITCH COUNT

1. ENTER THE C-MODE BY PRESSING AND HOLDING IN THE DOWN ARROW AND THE C-KEY FOR 2 OR MORE SECONDS
2. USING THE UP ARROW KEY FIND THE SETTING CNF
3. USING THE D-KEY CHANGE THE FUNCTION SE TO UP
4. PRESS THE DOWN ARROW AND THE UP ARROW KEYS TOGETHER TO EXIT THE C-MODE
5. PRESS AND HOLD THE F-KEY THEN THE STEP-KEY
6. PRESS THE F-KEY TO DISPLAY STITCH COUNT
   SINCE THE COUNTING IS TRIGGERED 1 TIME PER 10 REVOLUTIONS, RUN THE MACHINE AS NORMAL AND WHEN THE BOBBIN RUNS OUT MAKE NOTE OF THE COUNT AMOUNT.
7. PRESS AND HOLD THE STEP-KEY THEN THE F-KEY
8. ENTER THE B-MODE BY PRESSING AND HOLDING IN THE DOWN ARROW AND THE B-KEY FOR 2 OR MORE SECONDS
9. USING THE DOWN ARROW KEY FIND THE SETTING P
10. USING THE A, B, C, AND D-KEYS, ENTER THE TARGET COUNT FOR THE UP COUNTER
11. PRESS THE DOWN ARROW AND UP ARROW KEYS TOGETHER TO EXIT THE B-MODE
12. PRESS AND HOLD IN THE F-KEY THEN THE STEP KEY
13. PRESS THE F-KEY
14. PRESS THE P-KEY

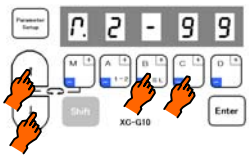
15. PRESS THE P-KEY TO RESET AND CLEAR THE STITCH COUNT AFTER THE TARGET VALUE HAS BEEN REACHED

    NOTE: THE BUZZER WILL COME ON AFTER THE TARGET STITCH COUNT HAS BEEN REACHED AND WILL BEEP 5 TIMES. THE MACHINE WILL STILL BE ABLE TO RUN UNTIL THE TREADLE IS FULLY HEELED BACK FOR THE TRIMMER CYCLE. AT THAT TIME THE MACHINE WILL NOT RUN UNTIL THE P-KEY HAS BEEN PRESSED TO CLEAR THE COUNTER.

To save and read custom user settings

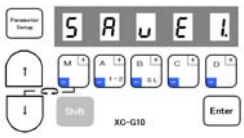
1. How to use the program mode [I]
   To save the setting data ..... function setting [SAVE*]
   (Two types of data, [SAVE1] and [SAVE2] can be saved. The [SAVE1] data can be read out with [LOAD1], and the [SAVE2] data with [LOAD2].)

(1)



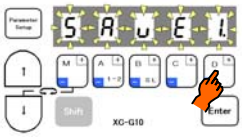
* Enter program mode [I]
  ([↓] + [↑] + [B] + [C] key)

(2)



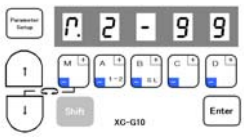
* Program mode [I] will be entered.

(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.

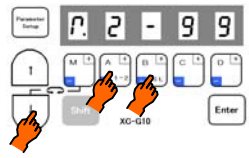
B. To return to the normal mode from the [SAVE*] display without saving the data, press the [↑] key while holding down the [↓] key. The set data will not be saved.

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.

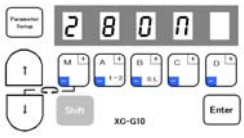
D. Reading the setting data saved with the [SAVE*] function
The setting data saved with the [SAVE*] function above can be read out with the following procedure (program mode [1]).

(1)



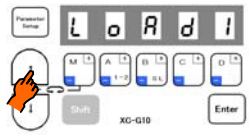
* Enter program mode [1]
  ([↓]+[A]+[B] key)

(2)



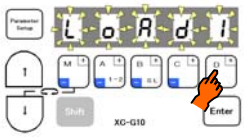
* Program mode [1] will be entered.

(3)



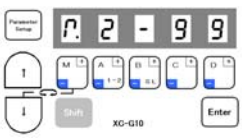
Press the [↑] key and set the function to [LOAD1].

(4)



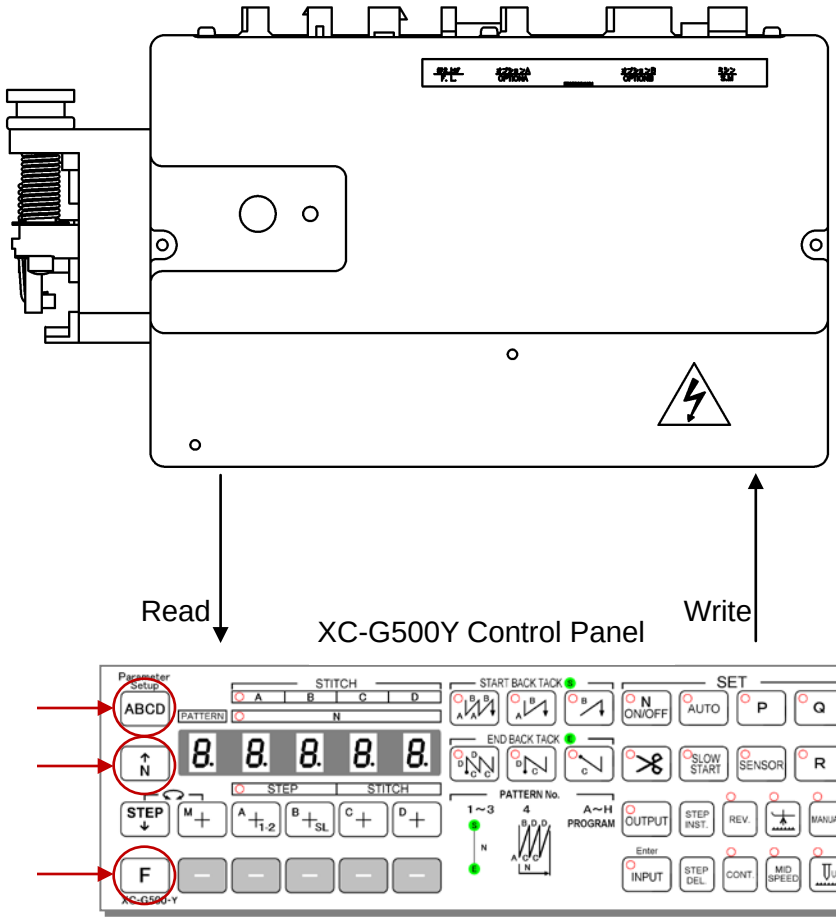
* When the [D] key is held down, [LOAD1] will flicker, and the loading process will be executed.

(5)



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

Upload and Download Parameters using the XC-G500-Y



Reading/transferring parameter data from the control box on the machine to the XC-G500Y control panel:

1. Press and hold in the ABCD key while turning the Power supply ON

The display on the XC-G500Y control panel will show “READ”

2. Press the F key and the control panel will read/transfer the data from the control box on the machine. Wait until the data transfer is completely done.

Writing/transferring parameter data from the XC-G500Y control panel to the control box on the machine:

1. Press and hold in the N ON/OFF key while turning the Power supply ON

The display on the XC-G500Y control panel will show “WRITE”

2. Press the F key and the control panel will write/transfer the data to the control box on the machine. Wait until the data transfer is completely done.

How to use BROTHER'S built-in detector by LIMI-SERVO X

(1). MODEL

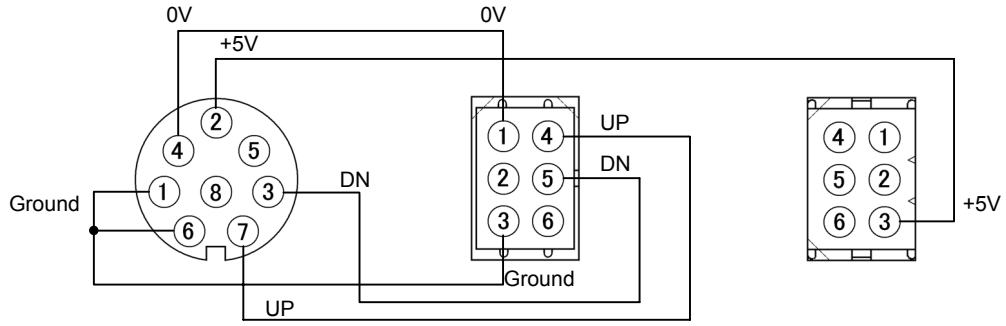
(a) Applicable brother built-in type detector
brother control box: MODEL MD-803, MD-813

(b) MITSUBISHI LIMI-SERVO MOTOR
LIMI-SERVO X MODEL XC-GMFY control box

(2). How to connect

(a) Set up for over-change connector
First, turn off the power. After 10 min. of turning off, screw down and remove the front cover. Power for brother's built-in detector is +5v, so open the cover of MITSUBISHI LIMI-SERVO control box, and change from +12v to +5v inside connector (JP3).

(b) Connect by relay cable (XC-CBL-BR-4)



TO BROTHER BUILT-IN DETECTOR CONNECTOR	TO LIMI-SERVO DETECTOR CONNECTOR	TO LIMI-SERVO OPTION A CONNECTOR
8 PIN DIN TYPE	MOLEX CONNECTOR	MOLEX CONNECTOR
HOSIDEN CONNECTOR	CONNECTOR 1991-06P1	CONNECTOR 1261P1
TCS8086-01-5201	TERMINAL 1380TL	TERMINAL 1380TL
	OR AMP CONNECTOR	OR AMP CONNECTOR
	CONNECTOR 770361-1	CONNECTOR 770090-1
	TERMINAL 770147-1	TERMINAL 770147-1

How to use JUKI'S built-in detector by LIMI-SERVO X

(1). MODEL

(a) JUKI'S built-in detector

THE models for JUKI'S control box j1aeas

(b) MITSUBISHI'S SERVO MOTOR

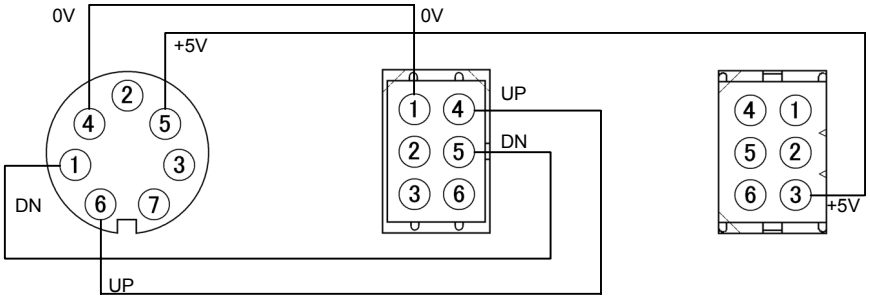
LIMI-SERVO X MODEL XC-FMFY control box

(2). How to connect

(a) Set up the dc5v/12v changeover switch

First, turn off the power. If turned off the power, the voltage is high, and please wait 10 more minutes after you turned off, please take off the front cover to screw down by plus driver. The power for JUKI'S built-in detector is +5v, open the control panel for MITSUBISHI LIMI-SERVO X, change over the inside connector (JP3) from side +12v to side +5v.

(b) Connection with junction wire (XC-CBL-JK-4)



TO JUKI BUILT-IN DETECTOR CONNECTOR 7 PIN DIN TYPE HOSIDEN CONNECTOR TCS8076-01-5201	TO LIMI-SERVO DETECTOR CONNECTOR MOLEX CONNECTOR CONNECTOR 1991-06P1 TERMINAL 1380TL OR AMP CONNECTOR CONNECTOR 770361-1 TERMINAL 770147-1	TO LIMI-SERVO OPTION A CONNECTOR MOLEX CONNECTOR CONNECTOR 1261P1 TERMINAL 1380TL OR AMP CONNECTOR CONNECTOR 770090-1 TERMINAL 770147-1

Detector compatibility <Matrix list>

"◎" mark: original (enclosed), "○" mark: Connection possible, "△" mark: Caution required, "×" mark: Connection not possible

	Control box series	XC-G Series	XC-F Series	XC-E Series	XC-B Series	XC-A Series		XC Series		ZK-A Series	LF-A Series	ZK Series	LF Series		
	Control box type / Detector type	XC-GMF	XC-FMF	XC-EMF XC-EN	XC-BMF XC-BMBL XC-BFL XC-BN	XC-AFL XC-AN	XC-AMF XC-AM	XC-M XC-FL XC-N	XC-MF	ZK-AMBL	LF-AMDF LF-AM	ZK-MBL ZK-FL ZK	LF-M	LF-MDF (DIP switch 32P side)	LF-MDF (DIP switch 64P side)
General detector	XC-KE-01P	◎	◎	◎	○ Note1	×	×	×	×	×	×	×	×	×	×
	XC-KB-12P	○	○	○	◎	○	× Note2	○	× Note2	○	× Note2	○	○	× Note2	×
	XC-KB-12	○	○	○	○	◎	△ Note3	○	△ Note3	○	△ Note3	○	○	△ Note3	×
	XC-KB-22	×	×	×	×	○	○	○	○	○	○	○	○	○	×
	XC-K-12P	○	○	○	◎	○	× Note2	○	× Note2	○	× Note2	○	○	× Note2	×
	XC-K-22	×	×	×	×	○	◎	○	◎	○	◎	○	○	○	×
	XC-K-12	○	○	○	○	◎	△ Note3	◎	△ Note3	◎	△ Note3	○	○	△ Note3	×
	LA-K-22	×	×	×	×	○	○	○	○	○	○	○	○	◎	×
	LA-K-12	○	○	○	○	○	△ Note3	○	△ Note3	○	△ Note3	◎	◎	△ Note3	×
Mitsubishi Sewing machine detector	XC-K-2000 XC-K-1002	○	○	○	○	○	× Note2	○	× Note2	○	× Note2	○	○	× Note2	×
	XC-K-1000 XC-K-1001	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	XC-K-230-E XC-K-230-F	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	XC-K-180	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	XC-K-230-C XC-K-230-D	○	○	○	○ Note4	×	×	×	×	×	×	×	×	×	○
	LA-K-180	○	○	○	○	○	○	○	○	○	○	○	○	○	×
	XA-K-230-C XA-K-230-D	○	○	○	○ Note4	×	×	×	×	×	×	×	×	×	○
	LA-K-190	○	○	○	○	○	○	○	○	○	○	○	○	○	×

Note1 : The detector does not have a PG signal, so when using a pulse output (CP output) with the XC-BFL or XC-BMF, the pulse output cannot be output.

Note2 : The ground from the sewing machine is connected to the control box's TM signal (thread trimming position), so this cannot be connected.
However, this can be used if the detector's ground wire is cut off (pin removed), etc., and the ground is not connected.

Note3 : The detector does not have a TM signal (thread trimming position), so this cannot be used with a sewing machine that uses the thread trimming position TM signal.

Note4 : When using the pulse output (CP output) with the XC-BFL or XC-BMF, the pulse output will be double at 64 pulses.