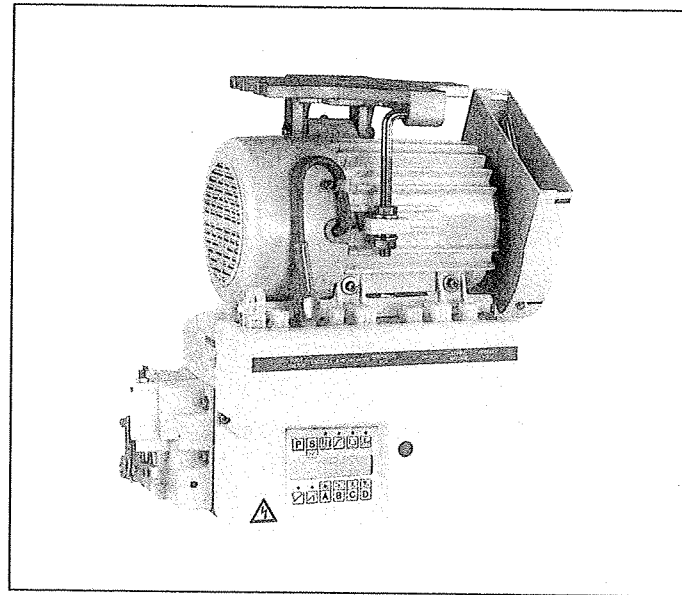


AC 伺 服 馬 達
AC SERVO MOTOR
AC MOTOR SERVO

使 用 說 明 書
OPERATION MANUAL
MANUAL DE LA OPERACIÓN

MODEL : HVP- 60 SERIES



中 國 語

ENGLISH

ESPAÑOL

From the library of: Diamond Needle Corp




Safety Instructions

Model : HVP - 60 Series

CPU 2.5 Edition

ENGLISH

1. Users are asked to read this operating manual completely and carefully before installation or operation.
2. All the instructions marked with the signs  must be absolutely observed or executed; otherwise, bodily injuries might occur.
3. The motors should be installed and pre-operated by persons with appropriate training only.
4. An extension cable with multi-outlet for power connection is not to be used.
5. When connecting power supply cords to power sources, it's necessary to make sure that the power voltage is lower than 250 VAC and matches the rated voltage indicated on the motor's name plate.
6. The earth wire of power cord must be connected to the system ground of the production plant by proper sizes of conductors and terminals. This connections should be fixed permanently.
7. All the moving portions must be guarded by the parts provided.
8. After first turning on the power, operate the sewing machine at low speed and check that the direction of rotation is correct.
9. Turn off the power prior to the following operations:
 - 1) Connecting or disconnecting any connectors on the control box.
 - 2) Threading needle.
 - 3) Raising the machine arms.
 - 4) Repairing or doing any mechanical adjustment.
 - 5) Machines rest.
10. Repairs and high level maintenance work may only be carried out by electronic technicians with appropriate training.
11. All the spare parts for repairing must be provided or approved by the manufacturer.
12. To maintain its good performance, any defects will be repaired free of charge during this period for one years working or two years after manufacturing date under the condition with normal operation.

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APPENDIX:

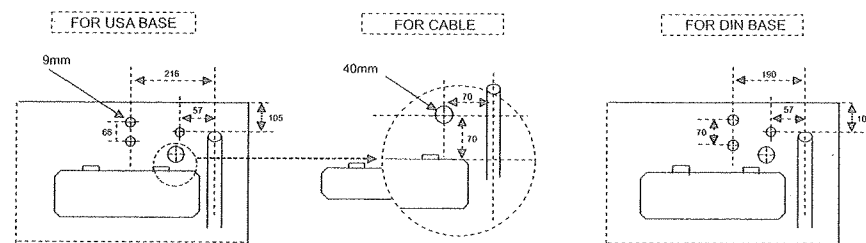
A. Basic diagrams of connector panel

1.HVP-60-3-7W	A1
2.HVP-60-3-BR (T8)	A1
3.HVP-60-3-11 (Y6)	A2
4.HVP-60-3-27	A2
5.HVP-60-3/4-66 (07) (V7) (V8)	A3
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7.HVP-60-3/4-98	A4
8.HVP-60-3/4-LT (46)	A4

B. Service Center International

1. Installation

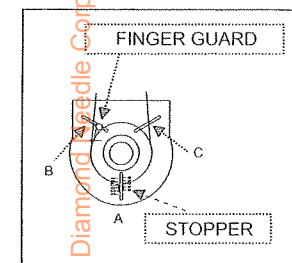
1.1 Installation of Motor



- 1.1.1 Drill 3 - ϕ 9mm and 1- ϕ 40mm holes in the machine table as the diagram above.
- 1.1.2 The motor should be mounted so that the pulley of motor and machine is properly aligned.

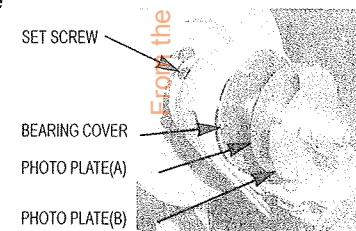
1.2 Installation of Belt Cover

- 1.2.1 Install the Belt Cover onto the bracket
- 1.2.2 Adjust the stopper A on the cover to a proper position so that the V-belt will not drop even if it is released.
- 1.2.3 For CE type, the finger guard at slot B (Lockstitch Machine) or slot C (Interlock Stitch machine) must be adjusted to remain 10mm space to the V-belt.



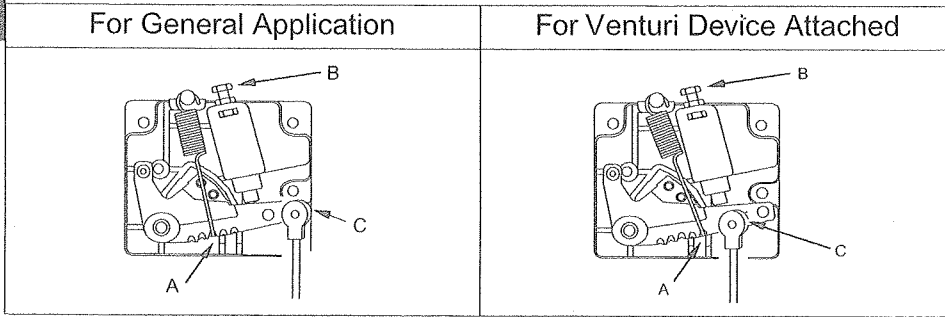
1.3 Installation of Synchronizer

- 1.3.1 Mounting the synchronizer onto the flange of machine pulley and fasten the rotor by setting screws so that no vibration is found at rotating.
- 1.3.2 Positioning adjustment:
 - a. Needle Up Position: Rotate the machine pulley to reach mechanical needle up position and turn the photo plate (A) until its red mark is aligned with the red mark on the bearing cover plate.
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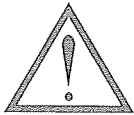


1.4 Regulating the force required to operate the foot pedal

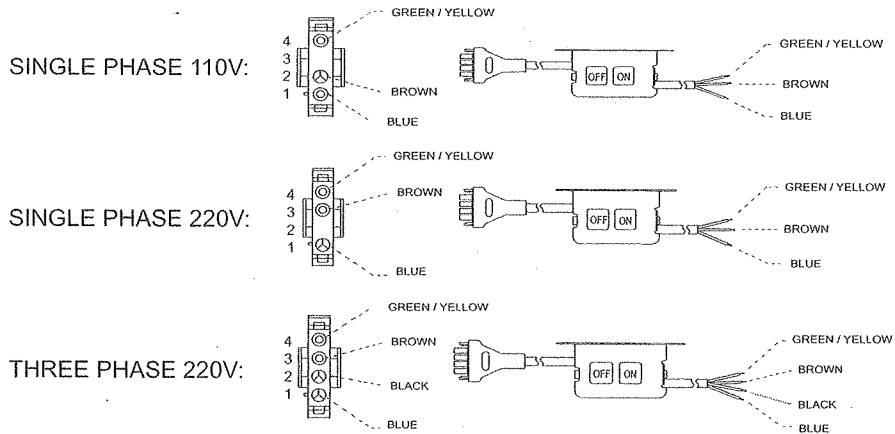
- 1.4.1 Downward force adjustment: Spring A
 1.4.2 Heeling back force adjustment: Bolt B
 1.4.3 Pedal stroke adjustment: Holes C
 1.4.4 In case of connecting with an air switch on the pedal rod to activate a Venturi Device, please shift the position for A and C as shown below.



1.5 Power Connection



- Attention:**
- For countries which power supply are not stable we would suggest that you should install a power stabilizer.
 - Check the name plate rating to ensure conformance to the line voltage.
 - Make sure that the power cords don't touch the V-belt while the machine is operating.



2. Operation

2.1 Digital display on the Key Board

ARABIC NUMERALS	0	1	2	3	4	5	6	7	8	9
DIGITAL DISPLAY										

ENGLISH ALPHABET	A	B	C	D	E	F	G	H	I	J
DIGITAL DISPLAY										
ENGLISH ALPHABET	K	L	M	N	O	P	Q	R	S	T
DIGITAL DISPLAY										
ENGLISH ALPHABET	U	V	W	X	Y	Z				
DIGITAL DISPLAY										

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3.2	Parts list	23

4. Operation Panel C-30 / L-300

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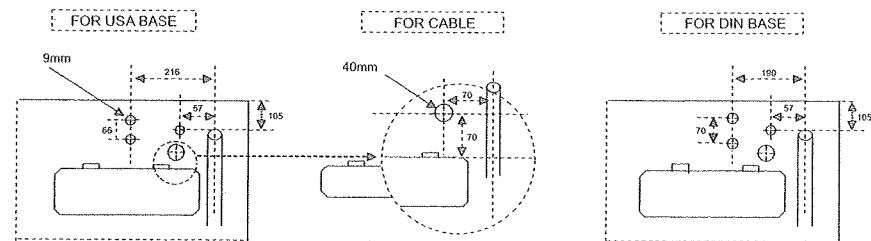
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7.	HVP-60-3/4-98	A4
8.	HVP-60-3/4-LT (46)	A4

B. Service Center International

1. Installation

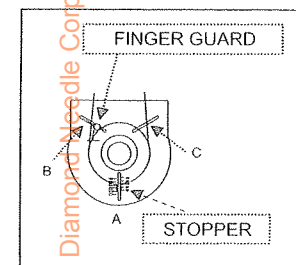
1.1 Installation of Motor



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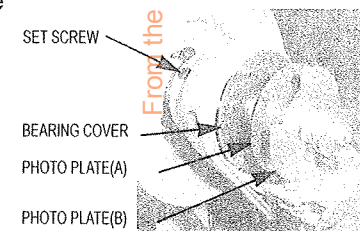


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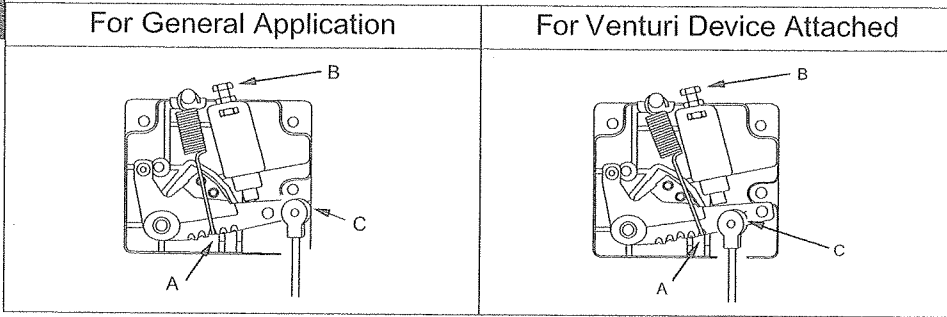
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Rotate the machine pulley to reach mechanical needle up position and turn the photo plate (A) until its red mark is aligned with the red mark on the bearing cover plate.
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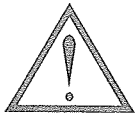


1.4 Regulating the force required to operate the foot pedal

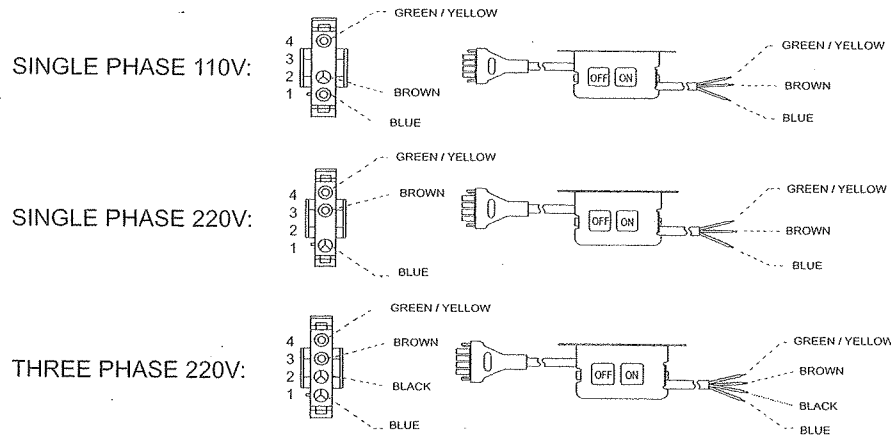
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2. Operation

2.1 Digital display on the Key Board

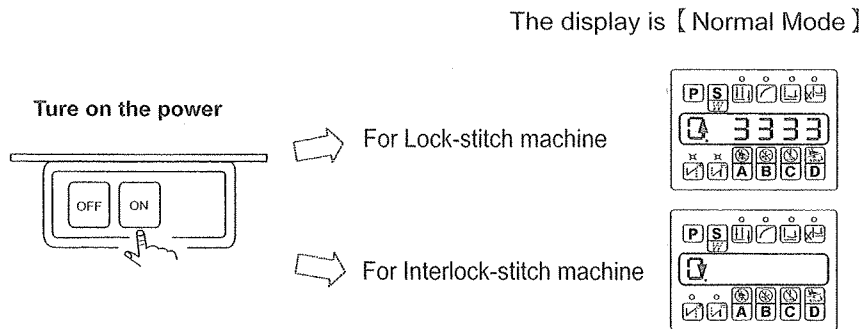
ARABIC NUMERALS	0	1	2	3	4	5	6	7	8	9
DIGITAL DISPLAY	0	1	2	3	4	5	6	7	8	9

ENGLISH ALPHABET	A	B	C	D	E	F	G	H	I	J
DIGITAL DISPLAY	A	B	C	d	E	F	G	H	I	J
ENGLISH ALPHABET	K	L	M	N	O	P	Q	R	S	T
DIGITAL DISPLAY	k	L	m	n	o	P	q	r	S	t
ENGLISH ALPHABET	U	V	W	X	Y	Z				
DIGITAL DISPLAY	U	v	w	X	Y	Z				

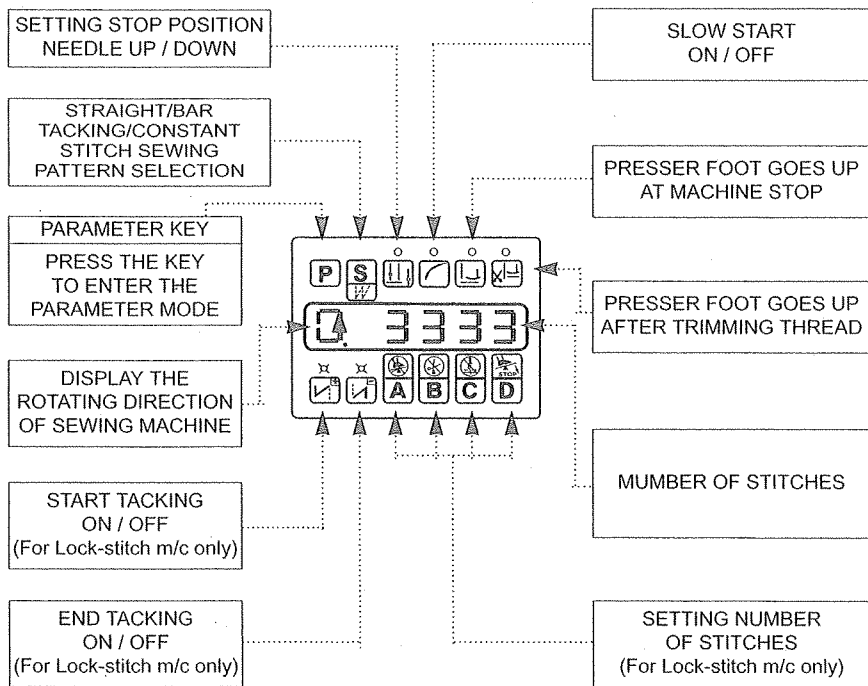
From the library of Diamond Speed Corp

2.2 Operation mode V.S. Key Board

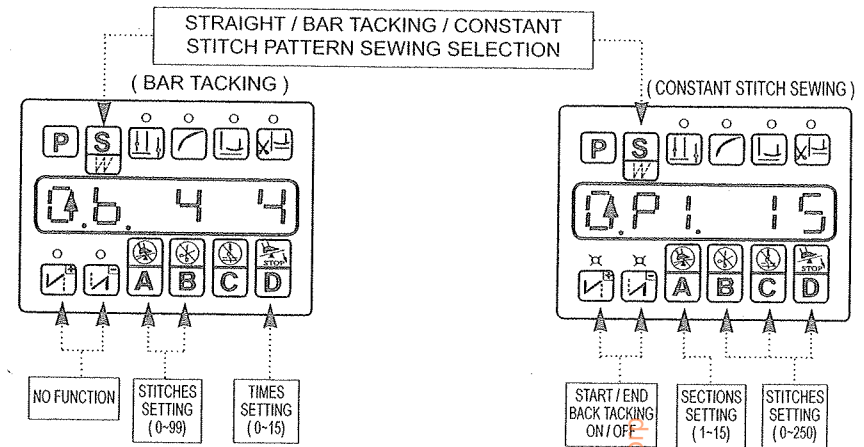
2.2.1 How to enter the [Normal Mode] :



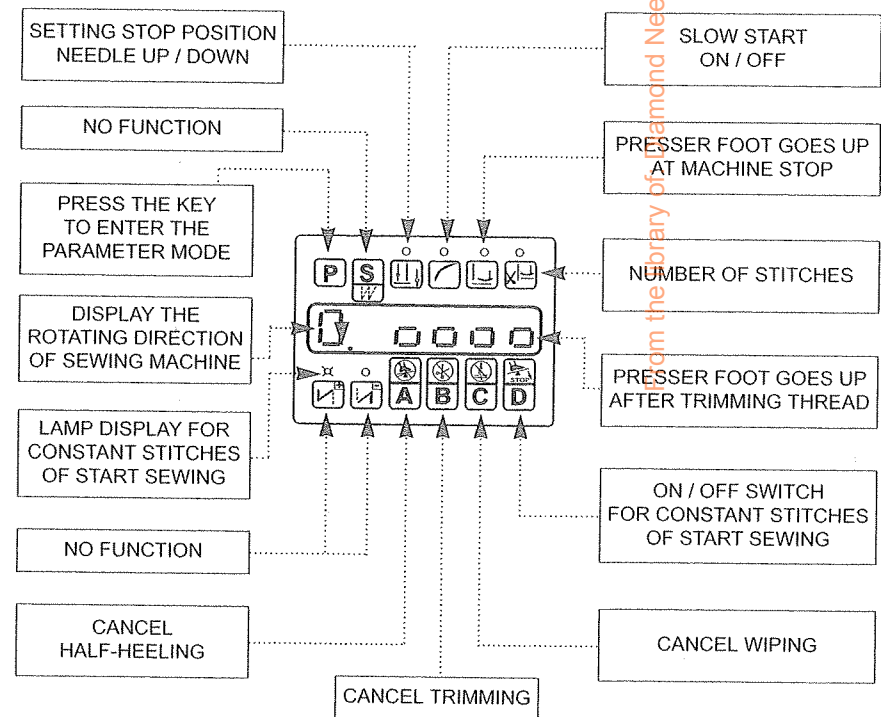
2.2.2 Key Functions in the [Normal Mode] for lock-stitch machines:



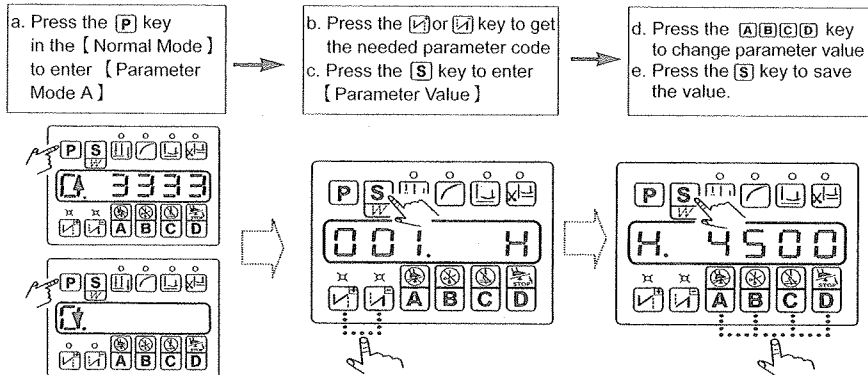
2.2.3 Key Functions in the BAR TACKING / CONSTANT STITCH sewing pattern:



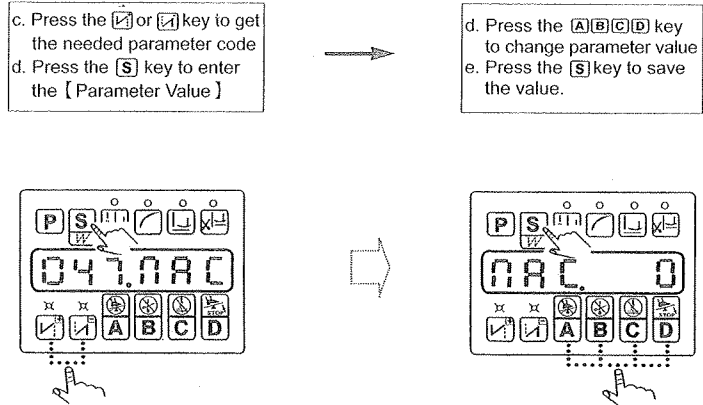
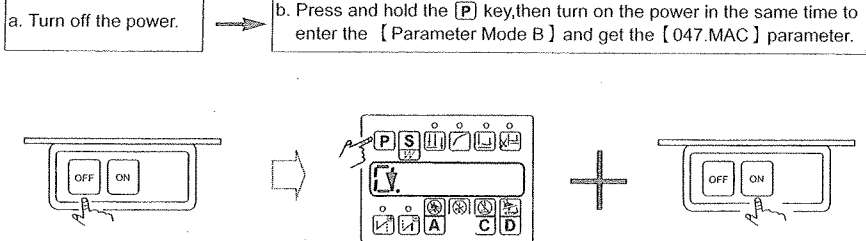
2.2.4 Key Functions in the [Normal Mode] for interlock-stitch machines:



2.2.5 How to enter the [Parameter Mode A] (Parameter Code 1~46)

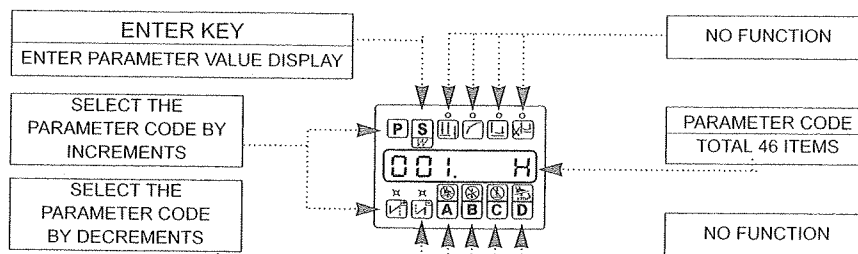


2.2.6 How to enter the [Normal Mode B] (Parameter Code 1~122)

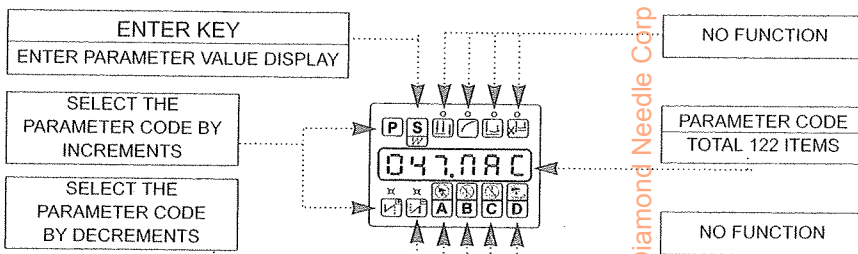


2.2.7 Key Functions in the [Parameter Mode A or B]

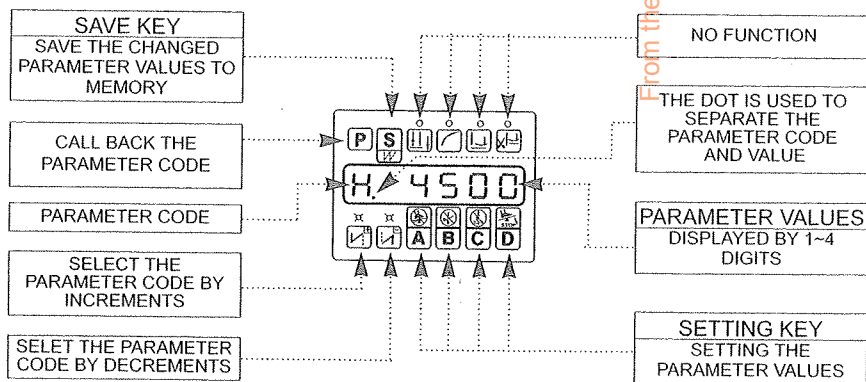
A. Key functions in [Parameter Mode A] display:



B. Key functions in [Parameter Mode B] display:



C. Key functions in the [Parameter Value] display:



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2.3 Speed adjustment

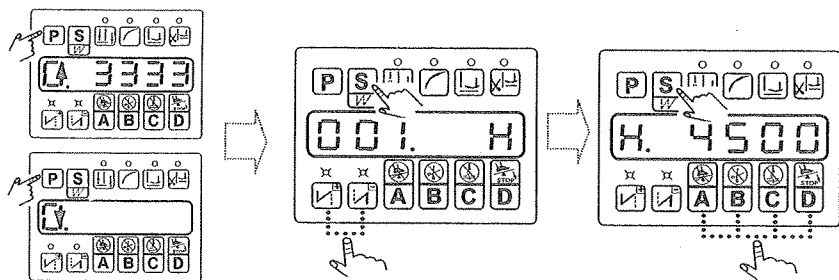
Note 1 : Digital Scale in terms of sewing speed (s.p.m.)

SPEED/ SCALE	KEY	A	B	C	D
PARA. CODE					
[001.H]		1000	100	10	1
[Other]		1000	100	50	25

Note 2 : Be sure to press the [S] key to save the changed values; otherwise they will be lost after turning off the power.

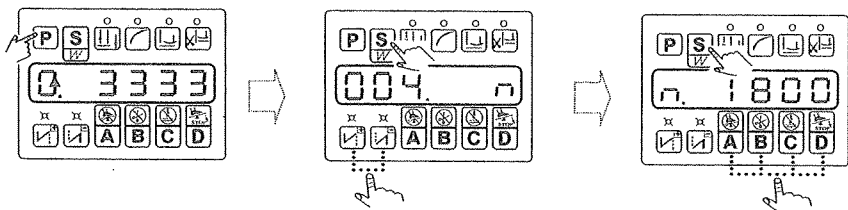
2.3.1 How to set the «Maximum Sewing Speed»

- Press the [P] key in the [Normal Mode] to enter the [Parameter Mode A].
- Press the [V] or [W] key to get [001.H] parameter and then press the [S] key to enter the [Parameter Value].
- Press the [A][B][C][D] key to adjust the Maximum Sewing Speed.
- Press the [S] key to save value.



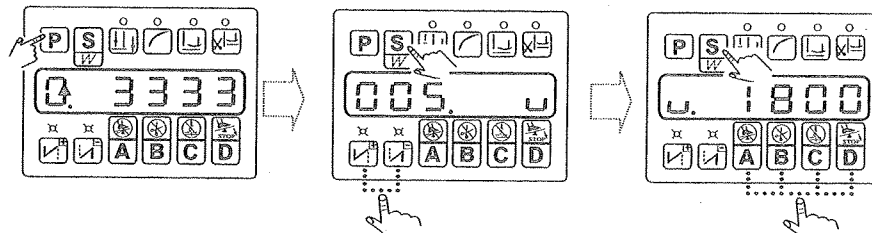
2.3.2 How to set the «Start Tacking Speed»

- Press the [P] key in the [Normal Mode] to enter the [Parameter Mode A].
- Press the [V] or [W] key to get [004.N] parameter and then press the [S] key to enter the [Parameter Value].
- Press the [A][B][C][D] key to adjust the Start Tacking Speed.
- Press the [S] key to save value.



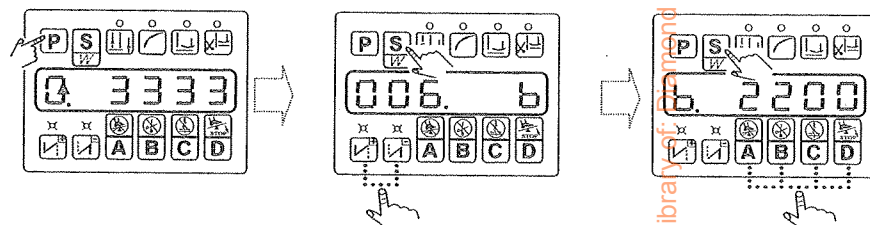
2.3.3 How to set the «End Tacking Speed»

- Press the [P] key in the [Normal Mode] to enter the [Parameter Mode A].
- Press the [V] or [W] key to get [005.V] parameter and then press the [S] key to enter the [Parameter Value].
- Press the [A][B][C][D] key to adjust the End Tacking Speed.
- Press the [S] key to save value.



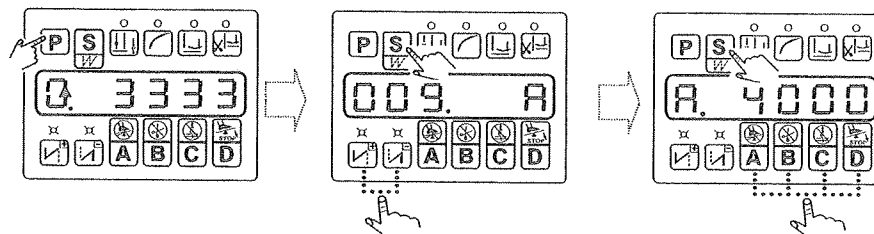
2.3.4 How to set the «Bar Tacking Speed»

- Press the [P] key in the [Normal Mode] to enter the [Parameter Mode A].
- Press the [V] or [W] key to get [006.B] parameter and then press the [S] key to enter the [Parameter Value].
- Press the [A][B][C][D] key to adjust the Bar Tacking Speed.
- Press the [S] key to save value.



2.3.5 How to set the «Constant-Stitch Sewing Speed»

- Press the [P] key in the [Normal Mode] to enter the [Parameter Mode A].
- Press the [V] or [W] key to get [009.A] parameter and then press the [S] key to enter the [Parameter Value].
- Press the [A][B][C][D] key to adjust the Constant-Stitch Sewing Speed.
- Press the [S] key to save value.



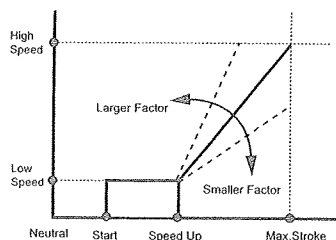
2.3.6 How to adjust the 《Acceleration Factor》 of straight sewing

a. Press the [P] key in the [Normal Mode] to enter the [Parameter Mode A]

b. Press the [F1] or [F2] key to get [002.PSL] parameter and then press the [S] key to enter the [Parameter Value]

c. Press the [C] or [D] key to adjust Acceleration Factor
d. Press the [S] key to save value.

Speed Up Curve



Limitation of Acceleration Factor

High Speed	Adjustable Range of Acceleration Factor									
	30%	40%	50%	60%	70%	80%	90%	100%		
1000										
2000										
3000										
4000										
4500										
5000										
6000										

2.3.7 How to display the 《Current Straight Sewing Speed》

a. Press the [P] key in the [Normal Mode] to enter the [Parameter Mode A]

b. Press the [F1] or [F2] key to get [045.SP] parameter and then press the [S] key to enter the [Parameter Value]

c. Display the current straight sewing speed

2.4 Basic Pattern Sewing for Lockstitch Machine

2.4.1 How to perform 《START / END TACKING》 :

a. Press the [F1] key to select 《START TACKING》 in the [Normal Mode]

b. Press the [A][B] key to set the stitch number of A and B for 《START TACKING》

c. Press the [F2] key to select 《END TACKING》 in the [Normal Mode]

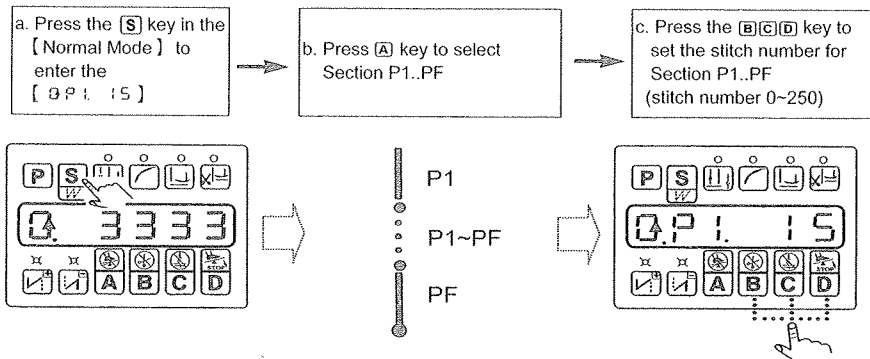
d. Press the [C][D] key to set the stitch number of C and D for 《END TACKING》

2.4.2 How to perform 《BAR TACKING》 :

a. Press the [S] key in the [Normal Mode] to enter the [3b 4 4] Mode

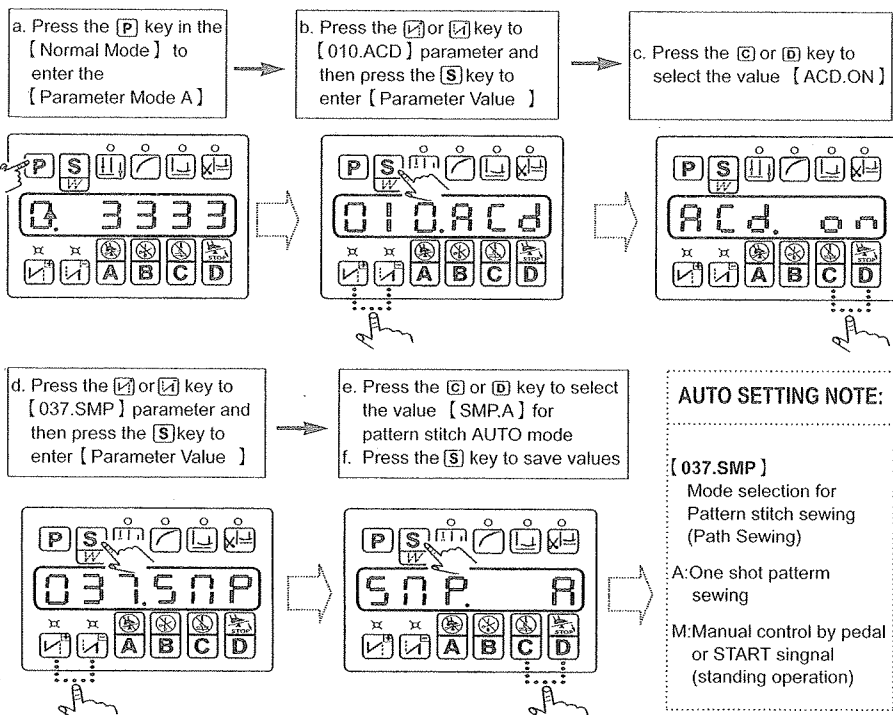
b. Press the [A][B][C][D] key to set the stitch number of AB (0-99) and times of D (0-15)

2.4.3 How to perform the 《CONSTANT-STITCH SEWING》 :



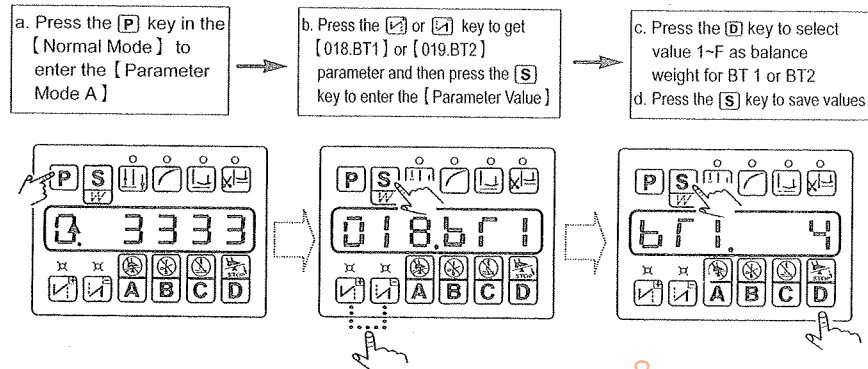
Note: The stitch number to section P1,P2,P3,P4 are defaulted in 15 stitches. Changing to "0" is necessary on the section skipped.

2.4.4 How to perform 《ONE-SHOT PATTERN SEWING》 :

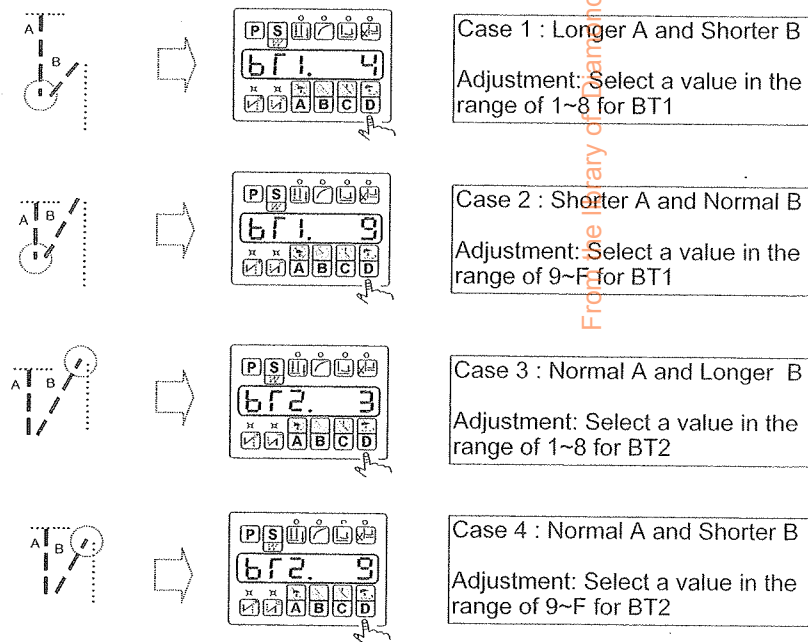


2.5 Stitch balance of Bar Tacking for Lockstitch Machine

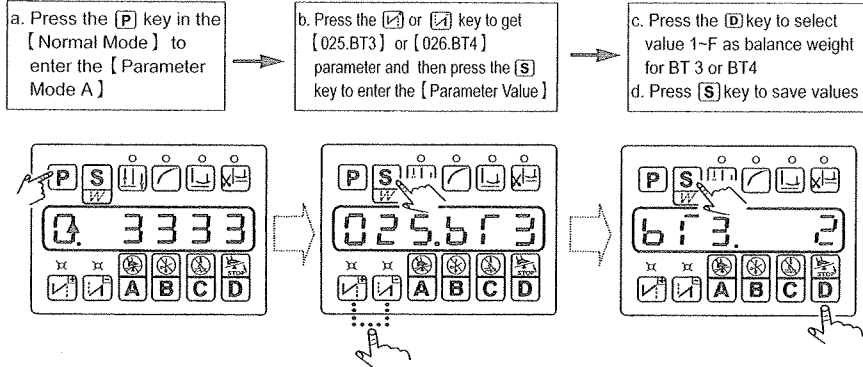
2.5.1 Stitch balance for 《Start Tacking》



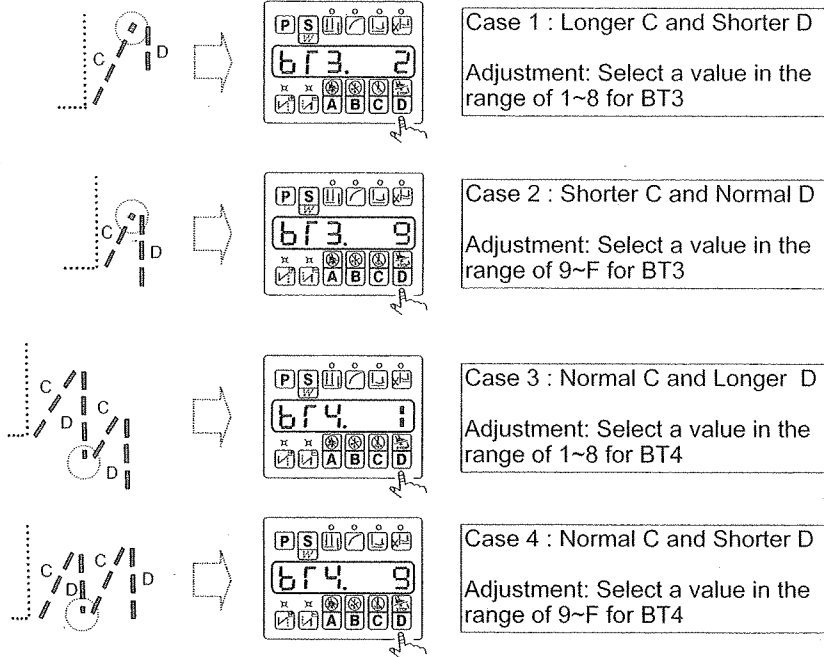
Example: Step 1 : Setting stitch numbers for Start Tacking A and B=3
 Step 2 : Sewing the pattern in normal speed
 Step 3 : If unbalanced situation is appeared please correct it as below:



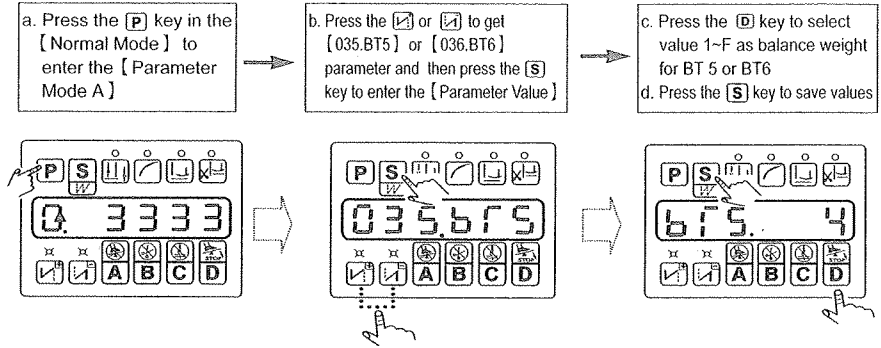
2.5.2 Stitch balance for «End Tacking»



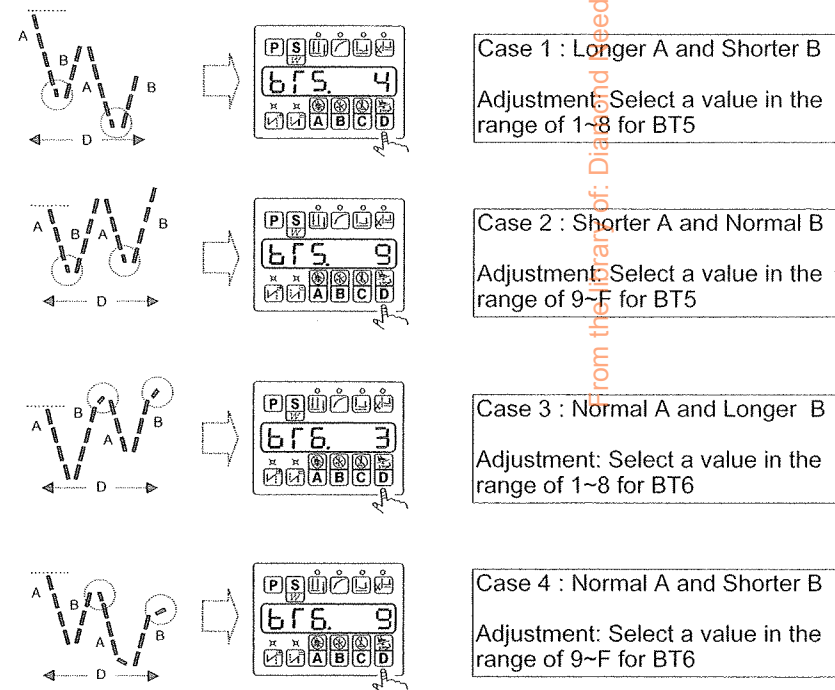
Example: Step 1 : Setting stitch numbers for End Tacking C and D=3
Step 2 : Sewing the pattern in normal speed
Step 3 : If unbalanced situation is appeared please correct it as below:



2.5.3 Stitch balance for «Bar Tacking»



Example: Step 1 : Setting stitch numbers for Bar Tacking A=B=4 and D=4
Step 2 : Sewing the pattern in normal speed
Step 3 : If unbalanced situation is appeared please correct it as below:



2.6 Basic parameter setting for Interlock Stitch Machine

2.6.1 How to set «Direction Of Motor Rotation» :

a. Press the [P] key in the [Normal Mode] to enter [Parameter Mode A]

b. Press the [↔] or [↔] key get the parameter code [046.DIR]

c. Press the [S] key to enter [Parameter Value]

d. Press the [↔] key to change parameter value

e. Press the [S] key to save values

2.6.2 How to set «Machine Code» :

Step a. & b. : Doing the same steps of a and b of Item 2.2.6 to enter the [Parameter Mode B]

c. Press the [S] key to enter the [Parameter Value]

d. Press the [↔] key to set Machine Code.

Basic Machine Codes List for Interlock Stitch machine:

Machine Brand	Available Code	Preset Code	Machine Brand	Available Code	Preset Code
BROTHER	3	3	SIRUBA	20~23,56	21
DINO'S UT DEVICE	32~34	34	SHING LING	31	31
GOLDEN WHEEL	76~79	76	SHING RAY	31	31
HO MEI UT DEVICE	29~31	31	SUNSHINE	29~31	31
KANSAI SPECIAL	69~72	69	UNION SPECIAL	37~39	38
KINGTEX	40~43	40	WOOSUN	29~31	31
PEGASUS	5~12	6	YAMATO	54~57	54

2.6.3 How to set «Running Delay Time» :

Step a. & b. : Doing the same steps of a and b of Item 2.2.6 to enter the [Parameter Mode B]

c. Press the [↔] or [↔] key to get the parameter code [066. FD]

d. Press the [S] key to enter the [Parameter Value]

e. Press the [↔] key to set the needed value within the range of 10~990 ms

f. Press the [S] key to save values

2.6.4 How to set «Half-Heeling Cancel» function for foot lifting

Step a. & b. : Doing the same steps of a and b of Item 2.2.6 to enter the [Parameter Mode B]

c. Press the [↔] or [↔] key to get the parameter code [070.HHC]

d. Press the [S] key to enter the [Parameter Value]

e. Press the [↔] key to set the value [HHC. ON] for disable foot lifting by half-heeling pedal.

f. Press the [S] key to save values

2.6.5 How to set «Fine Positioning» for needle up position (For built-in synchronizer only)

Step a. & b. : Doing the same steps of a and b of Item 2.2.6 to enter the [Parameter Mode B]

c. Press the [↔] or [↔] key to get the parameter code [114.UEG]

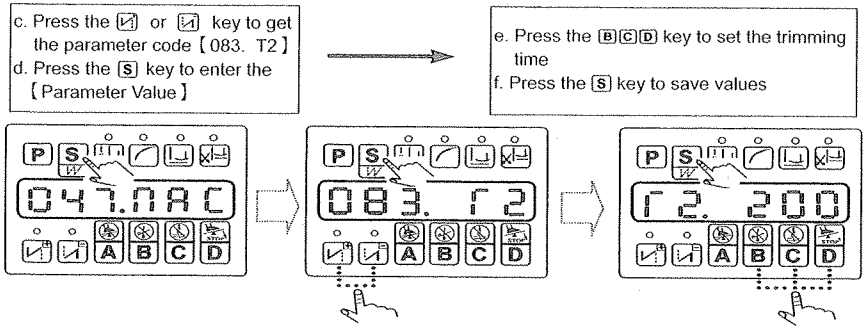
d. Press the [S] key to enter the [Parameter Value]

e. Press the [↔] key to set the needed value to get accurate needle up positioning

f. Press the [S] key to save values

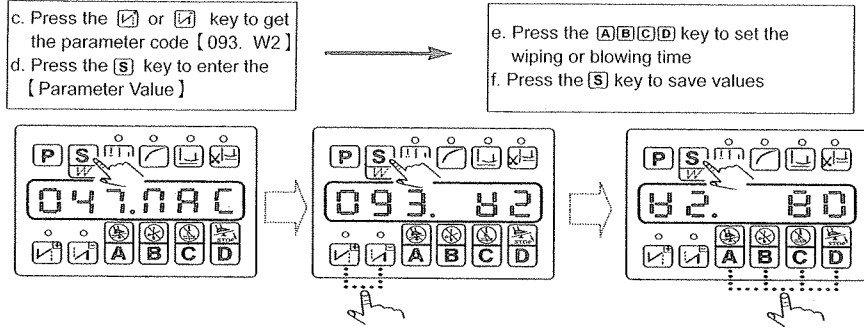
2.6.6 How to set «Trimming Time» :

Step a. & b. : Doing the same steps of a and b of Item 2.2.6 to enter the [Parameter Mode B]



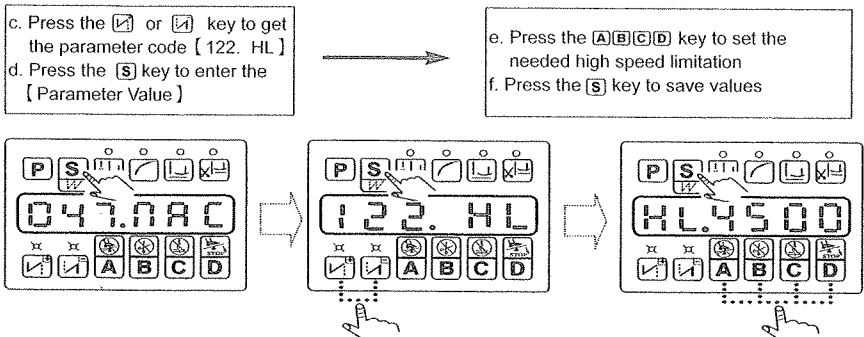
2.6.7 How to set «Wiping or Blowing Time» :

Step a. & b. : Doing the same steps of a and b of Item 2.2.6 to enter the [Parameter Mode B]



2.6.8 How to set «High Speed Limit» :

Step a. & b. : Doing the same steps of a and b of Item 2.2.6 to enter the [Parameter Mode B]



2.7 Parameter Table:

2.7.1 Parameter in [Parameter Mode A and B]

PARAMETER CODE	PARAMETER FUNCTION	RANGE / UNIT	DEFAULT	KEY	DESCRIPTION
[001. H]	Maximum sewing speed (H)	150-8000spm	4500	A,B,C,D	Maximum speed adjustments.
[002. PSL]	Speed curve adjustment (PSL)	1-100%	80	C,D	The larger the value the faster to up speed.
[003. NUD]	Needle UP / DOWN (NUD)	UP / DN	DN	C,D	DN : Needle stops at down position UP : Needle stops at up position
[004. N]	Start Back-Tacking speed (N)	100-6375 spm	1800	A,B,C,D	Start Back-Tacking speed adjustment.
[005. V]	End Back-Tacking speed (V)	100-6375 spm	1800	A,B,C,D	End Back-Tacking speed adjustment.
[006. B]	Bar-Tacking speed (B)	100-6375 spm	2200	A,B,C,D	Repeat Back-Tacking speed adjustment.
[007. S]	Soft start speed (S)	100-3000 spm	400	A,B,C,D	Slow start speed adjustment.
[008. SLS]	Stitch numbers for soft start (SLS)	0-99 Stitches	2	C,D	Slow start stitches setting.
[009. A]	Automatic Constant-Stitch sewing speed (A)	300-6375 spm	4000	A,B,C,D	Valid only at the [037.SMP] is set A.
[010.ACD]	Automatic sewing End Back-Tacking (ACD)	ON / OFF	ON	C,D	Valid only at the last seam of constant-stitch sewing
[011.RVM]	Back-Tacking Mode selection (RVM) J=JUKI B=BROTHER	J / B	J	C,D	J mode : Active when motor stops or running B mode:Active only when motor running.
[012.SMS]	Mode selection for Start Back-Tacking (SMS)	A / M / SU / SD	A	D	A : One shot sewing. M : Control by pedal, can stop at middle way. SU:One shot sewing but motor stops at needle up at the end of each seam. SD:One shot sewing but motor stops at needle down at the end of each seam.
[013.TYS]	Mode selection at the end of Start Back-Tacking (TYS)	CON / STP / TRM	CON	D	CON: At the end Start Back-Tacking, machine continues sewing if pedal press or START signal on (standing operation). STP: At the end of Start Back-tacking, machine stops and must re-start by pedal command. TRM: Making the trimming cycle once the End Back-Tacking finished.(Mini Back-tacking)
[014.SBT]	Start Back-Tacking selection (SBT)	ON / OFF	ON	C,D	Valid only when the C-30 panel is disconnected.
[015.SBA]	Setting stitches A of Start Back-Tacking (SBA)	0-15 Stitches	3	C,D	
[016.SBB]	Setting stitches B of Start Back-Tacking (SBB)	0-15 Stitches	3	C,D	
[017.SBN]	Setting turns of Start Back-Tacking (SBN)	0-4 times	2	C,D	
[018.BT1]	Stitch balance for Start Back-Tacking 1 (BT1)	14:12:24:0.114:1.12:1:14:2:0:stitches	4	C,D	BT1=0 : Invalid BT1=1-8 : Increase stitches of reverse seam
[019.BT2]	Stitch balance for Start Back-Tacking 2 (BT2)	14:12:24:0.114:1.12:1:14:2:0:stitches -1:12:2:14:stitches every 14-stitch adjusted	3	C,D	BT2=0 : Invalid BT2=1-8 : Increase stitches of forward seam
[020.SME]	Mode selection for End Back-Tacking (SME)	A / SU / SD	A	D	A : One shot sewing. SU:One shot sewing but machine stops up position by CT timer at the end of each seam. SD:One shot sewing but machine stops down position by CT timer at the end of each seam.
[021.EBT]	End Back-Tacking selection (EBT)	ON / OFF	ON	C,D	Valid only when the C-30 panel is disconnected.
[022.EBC]	Setting stitches C of End Back-Tacking (EBC)	0-15 Stitches	3	C,D	
[023.EBD]	Setting stitches D of End Back-Tacking (EBD)	0-15 Stitches	3	C,D	

The values are pre-set for HVP-60-3-7W

PARAMETER CODE	PARAMETER FUNCTION	RANGE / UNIT	DEFAULT	KEY	DESCRIPTION
[025.BT3]	Stitch balance for End Back-Tacking 3 (BT3)	1/4, 1/2, 3/4, 1.0, 1 1/4, 1 1/2, 1 3/4, 2.0 stitches	2	C.D	BT3=0:Invalid, BT3=1~8:Increase stitches of forward seam BT3=9~F: Increase stitches of reverse seam
[026.BT4]	Stitch balance for End Back-Tacking 4 (BT4)	-1/4, -1/2, -3/4, -1.0, -1 1/4, -1 1/2, -1 3/4, stitches every 1/4 stitch adjusted	1	C.D	BT4=0:Invalid, BT4=1~8:Increase stitches of reverse seam BT4=9~F: Increase stitches of forward seam
[027. CT]	Setting time interruption at each section end of Back-Tacking (CT)	0~990 ms	50	B.C.D	Corner stop timer. Valid only at SMS,SME,SMB setting SU / SD.
[028.SB5]	15 stitches plus on Start / End Back-Tacking (SB5)	ON / OFF	OFF	C.D	Additional 15 stitches are added to the Start and End Back-Tacking stitches.
[029.SB9]	0~99 stitches plus on Start / End Back-Tacking (SB9)	0~99 stitches	0	C.D	Additional setting stitches are added to the Start and End Back-Tacking stitches.
[030.BCC]	Added 1 stitch to the C-segment of End Back-Tacking (BCC)	ON / OFF	ON	C.D	ON: Valid, OFF: Invalid
[031.SMB]	Mode selection for Bar-Tacking (SMB)	A/M/SU/SD	A	D	A: One shot sewing. M: Control by pedal, can stop at middle way. SU:One shot sewing but motor stops at needle up by CT timer at end of each seam. SD:One shot sewing but motor stops at needle down by CT timer at end of each seam.
[032.BAR]	Bar-Tacking selection (BAR)	ON / OFF	OFF	C.D	ON: Perform, OFF: Not perform
[033.BRC]	Setting stitches of Bar-Tacking (BRC)	0~99 stitches	4	C.D	One setting for all seams
[034.BRN]	Setting seam times of Bar-Tacking (BRN) (=Initial times)	0~15 Times	4	C.D	Setting the seam times of Bar-Tacking.
[035.BT5]	Stitch balance for Bar-Tacking 5 (BT5)	1/4, 1/2, 3/4, 1.0, 1 1/4, 1 1/2, 1 3/4, 2.0 stitches	4	C.D	BT5=0:Invalid, BT5=1~8:Increase stitches of reverse seam BT5=9~F: Increase stitches of forward seam
[036.BT6]	Stitch balance for Bar-Tacking 6 (BT6)	-1/4, -1/2, -3/4, -1.0, -1 1/4, -1 1/2, -1 3/4, stitches every 1/4 stitch adjusted	3	C.D	BT6=0:Invalid, BT6=1~8:Increase stitches of forward seam BT6=9~F: Increase stitches of reverse seam
[037.SMP]	Mode selection for Constant-Stitch sewing (Path Sewing) (SMP)	A / M	M	C.D	A: One shot pattern sewing. M: Manual control by pedal or START signal (standing operation)
[038. PM]	Constant-Stitch sewing selection (PM)	ON / OFF	OFF	C.D	ON: Perform, OFF: Not perform
[039. PS]	Setting stitches for Section 1 of constant-stitch sewing	0~250 Stitches	15	B.C.D	Stitches setting of seam P1~PF
	Setting stitches for Section 2 of constant-stitch sewing	0~250 Stitches	15	B.C.D	
	Setting stitches for Section 3 of constant-stitch sewing	0~250 Stitches	15	B.C.D	
	Setting stitches for Section 4 of constant-stitch sewing	0~250 Stitches	15	B.C.D	Valid only when the Operation Panel C-30 is disconnected and [038. PM] set ON
	Setting stitches for Section 5~F	0~250 Stitches	0	B.C.D	
[040.WON]	Wiper function selection (WON)	ON / OFF	ON	C.D	ON : Perform, OFF: Not perform
[041. TM]	Trimmer function selection (TM)	ON / OFF	ON	C.D	ON : Perform, OFF: Not perform
[042.FSM]	Presser Foot UP/DOWN at intermediate stop (FSM)	UP / DN	DN	C.D	UP: At intermediate stop, presser foot goes up DN: At intermediate stop, presser foot keeps down
[043.FTM]	Presser Foot UP/DOWN after trimming (FTM)	UP / DN	DN	C.D	UP: After Trimming stop, presser foot goes up DN: After Trimming stop, presser foot keeps down
[044. PN]	Numbers of sewing piece (PN)	0~9999	0	C.D	Counting the products quantity.
[045. SP]	Sewing speed (SP)	CW / CCW	0		Showing the current sewing speed.
[046.DIR]	Direction of motor rotation (DIR)	CW / CCW	CCW	C.D	CCW:Lockstitch, CW:Overlock,Interlock-stitch

2.7.2. Parameter in [Parameter Mode B] only

The values are pre-set for HVP-60-3/4-66

PARAMETER CODE	PARAMETER FUNCTION	RANGE / UNIT	DEFAULT	KEY	DESCRIPTION
[047.MAC]	Machine Code (MAC)	0~82	6	C.D	Machine code setting.
[049.SPD]	Machine's pulley dimension (SPD)	50~200mm	65	B.C.D	Setting machine pulley size.
[050.MPD]	Motor's pulley dimension (MPD)	50~150mm	100	B.C.D	Setting motor pulley size.
[054.BK]	Motor braked at normal stop (BK)	ON / OFF	OFF	C.D	ON: Motor stop with brake function.
[057.TRU]	The back angle when Motor finish the trimming sequence.(Lockstitch M / C only)	ON / OFF	OFF	C.D	Valid only when the LK mode is selected in the [078.TRM] ON:When motor finished the trimming cycle, enable the motor backward function.
[058.TR8]	Motor returned angles after trimming (TR8)	0~255 Degree	40	B.C.D	Valid when [057. TUR] set ON.
[064.FO]	Full-On time setting for Foot Lifter (FO)	0~990ms	400	B.C.D	Properly set the value to keep good performance of Foot Lifter is essential.
[065.FC]	Duty-Cycle time setting for Foot Lifter (FC)	10~90%	50	C.D	Properly set the value to keep good performance of Foot Lifter is essential.
[066.FD]	Running-Delay time setting (FD)	0~990ms	120	B.C.D	If Foot Lifter is installed, set 120 ms min.
[070.HHC]	Cancel Foot Lifting at Half-Heeling pedal (HHC)	ON / OFF	OFF	C.D	ON: Pedal half heeling without foot lifting function.
[075.SFM]	Emergency stop mode for Trimming protection (SFM) N.O=1=Normal Opened. N.C.=0=Normal Closed	N.C./N.O.	NC	C.D	Trimmer device protection for Interlock Stitch machine. Properly setting the value according to the machine brand and model.
[078.TRM]	*Motor running mode at trimming sequence (TRM) *Motor stops in turning back of CHINA-STITCH M/C	LK,RK,KA,KB	KA	D	LK: Trimming from needle down to up. RK: Turning back to up stop (For Non-UT device Interlock stitch machine) KA: Interlock Stitch machine trimming mode. KB: Special Interlock Stitch machine trimming mode.
[082.T1]	Delayed timing prior to trimmer engaged (T1)	0~990ms	100	B.C.D	Trimming sequence setting.
[083.T2]	Extended timing of trimming beyond up-stop (T2)	0~990ms	340	B.C.D	
[086.L1]	Delayed timing prior to tension release engaged (L1)	0~990ms	80	A.B.C.D	Tension release sequence setting.
[087.L2]	Extended timing of tension release beyond up-stop (L2)	0~1500ms	340	B.C.D	
[092.W1]	Delayed timing prior to wiper engaged (W1)	0~990ms	80	A.B.C.D	Time setting between needle up to wiper active.
[093.W2]	Setting timing of wiping (W2)	0~9990ms	50	B.C.D	Wiper sequence.
[094.WEF]	Delayed timing prior to Foot Lifter engaged (WEF)	0~990ms	40	B.C.D	Time setting between wiper active to presser foot active.
[114.UEG]	Stop angles in pulse from edge to up-stop (UEG)	5~250 Pules	180	B.C.D	Fine adjust the needle stops at up position. (40 is the central value)
[116.DRU]	Reverse angles through Needle down (DRU)	0~255 Degrees	180	B.C.D	Valid only when the RK mode is selected in the Parameter Code [078.TRM]
[121.ANU]	Needle goes up as power turned on (ANU)	ON / OFF	ON	C.D	ON: Power turned on, needle goes up automatically.
[122. HL]	Maximum sewing speed limiter (HL)	150~8000spm	4500	A.B.C.D	The available high speed will be limited by this parameter value.

3. Maintenance

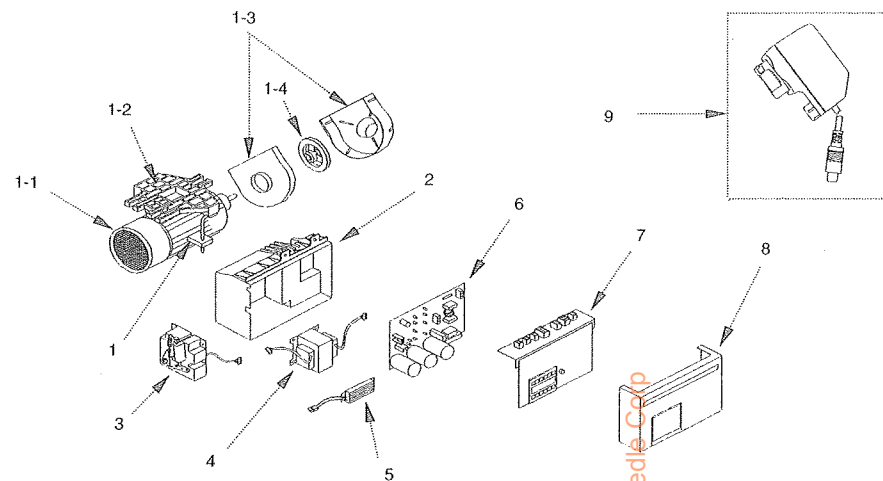
3.1 Error code and Measurement

- 3.1.1 HVP-60 Servo Motors are manufactured under strictly quality control, so as no any problem would be happened during their warrantee period.
- 3.1.2 Most of the trouble made at set up machines are caused by improper parameter setting or signal output arrangement.
- 3.1.3 When machines run in abnormal situation, technician has to resolve the problem according to the Service Manual presented or contact with the nearest Service Center that is authorized by the manufacturer.
- 3.1.4 To expedite a trouble shooting at site, some specific problems listed in the TABLE 1 could be quickly eliminated by the hints of Error Code displayed on the Keyboard.

TABLE 1

ERROR CODE	PROBLEM	WHAT TO DO / MEASUREMENT
E1	Power Module is faulty. Abnormal over current or voltage. Braking Resistor is damaged, or F1 fuse is blown.	System will be shut down until the power reset on. Please check the Power Board or Braking Resister in detail.
E2	E2prom r / w is malfunction.	System will be shut down until the power reset on. Please exchange the part no. U19
E7	a. Bad connection at the motor connector. b. Synchronizer signal error. c. Machine locked.	System will be shut down until the power reset on. Please check the motor connectors, Synchronizer and machine situation.
E9	Machine solenoid is shorted.	All the signal outputs will be inhibited. Motor still can run. Please check machine's solenoids.
E11	When the power is turned on, Auto Needle Up is malfunction.	Setting automatically moved to " No Synchronizer Mode ", and then motor can run by random stop position.
E12	When the power is turned on, without synchronizer signal.	Please check the synchronizer.
E14	The fabric is missing when using PSU function at setting PSN=OFF. (It means PSU is always on.)	Motor stops. Please check the fabric
E15	The fabric is missing when using PSD function at setting PSD=OFF. (It means PSD is always on.)	
E16	Machine's UT device safety switch (sensor) is malfunction.	Motor stops. Please check the safety switch
POWOFF	Power switch is turned off.	All the signal outputs will be inhibited. Motor stops until the power reset on.

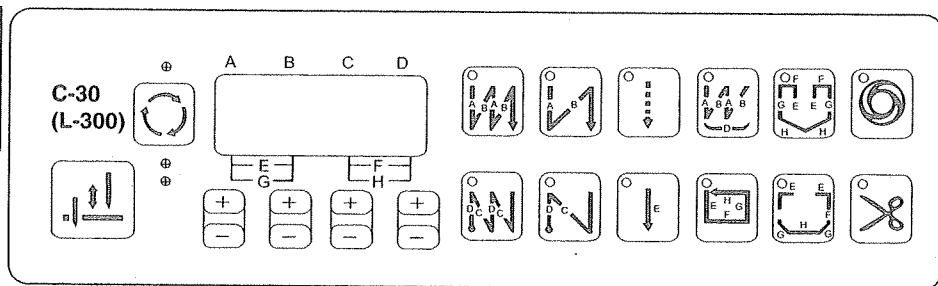
3.2 Parts list



REF.NO.	ORDER CODE	PART NAME	SPEC.	REF.NO.	ORDER CODE	PART NAME	SPEC.
1	2VP14431013J1	MOTOR ASSEMBLY	100-120 V	7	2VP603087W001	MAIN BOARD	HVP-60-3-7W
	2VP34432013J1	MOTOR ASSEMBLY	200-240V		2VP60308BR001	MAIN BOARD	HVP-60-3-BR
	2VP34432013J2	MOTOR ASSEMBLY	200-240V		2VP6030811001	MAIN BOARD	HVP-60-3-11
1-1	315ECV030	END COVER			2VP6030827001	MAIN BOARD	HVP-60-3-27
1-2	2VPBTV01002	MOUNTING BASE			2VP6030866001	MAIN BOARD	HVP-60-3/4-66
1-3	2VPBGV040	BELT COVER ASSEM.			2VP6030870001	MAIN BOARD	HVP-60-3/4-70
	2VPBGV050	BELT COVER ASSEM.			2VP6030898001	MAIN BOARD	HVP-60-3/4-98
1-4	2CL2PYB180V	PULLEY	70 mm		2VP60308LT001	MAIN BOARD	HVP-60-3/4-LT
	2CL2PYB030V	PULLEY	90 mm				
	2CL2PYB050V	PULLEY	100 mm				
2	2VP60007001	BOX HOUSING		8	315MPB210	BOX COVER	
3	2VP60106001	PEDAL UNIT	REGULAR				
	2VP60106003	PEDAL UNIT	CE TYPE				
4	321TFS250	TRANSFORMER	100-120 V	9	2VP115002900	SYNCHRONIZER	#500-29
	321TFS230	TRANSFORMER	200-240 V		2VP115003000	SYNCHRONIZER	#500-30
5	2VP60104101	CEMENT RESISTER	100-120 V				
	2VP60104201	CEMENT RESISTER	200-240V				
6	2VP60103101	POWER BOARD	100-120V				
	2VP60103201	POWER BOARD	200-240V				

4. Operation Panel C-30 / L-300

4.1 Panel Diagram



4.2 Function of key

FUNCTION	KEY	OPERATION OF SEWING MACHINE
Start / End Back Tacking Selection		1. Double tacking 2. Start Back Tacking function will be available for all Free and Constant-stitch Sewing.
		1. Single tacking 2. Start Back Tacking function will be available for all Free and Constant-stitch Sewing.
		1. Double tacking 2. End Back Tacking function will be available for all Free and Constant-stitch Sewing.
		1. Single tacking 2. End Back Tacking function will be available for all Free and Constant-stitch Sewing.
Free Sewing		1. As the treadle is toed down, machine will start sewing. Once the treadle returns to neutral, machine will stop immediately. 2. As the treadle is heeled back, the trimmer will automatically cut the thread.
Bar Tack Sewing		Once the treadle is toed down, all the seams of Bar Tacking will be completed with D times, and then the thread will automatically be trimmed.

Constant-stitch Sewing	 OR OR OR 	1. As the treadle is toed down, Constant-stitch Sewing E, F, G or H performs section by section. 2. Once the treadle returns to neutral intermediately in any one section, the machine will stop immediately. When the treadle is toed down again the balanced stitches of E, F, G or H goes on. 3. If the parameter [010.ACD] is set ON, the machine will not stop and automatically go trimming at the end of the last section E, F, G or H.																																																												
Stitch Setting Selection		A, B, C, D stitch setting are in range of 0 to 9, E, F, G, H stitch setting are in range of 0 to 99. <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td></tr> <tr><td>4</td><td>4</td><td>4</td><td>4</td></tr> <tr><td>E</td><td>F</td><td>G</td><td>H</td></tr> <tr><td>15</td><td>15</td><td>15</td><td>15</td></tr> <tr><td>E</td><td>F</td><td>G</td><td>H</td></tr> </table> Means A=B=C=D=4 stitches. <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td></tr> <tr><td>15</td><td>15</td><td>15</td><td>15</td></tr> <tr><td>E</td><td>F</td><td>G</td><td>H</td></tr> <tr><td>15</td><td>15</td><td>15</td><td>15</td></tr> <tr><td>E</td><td>F</td><td>G</td><td>H</td></tr> </table> Means E=F=15 stitches. <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>A</td><td>B</td><td>C</td><td>D</td></tr> <tr><td>15</td><td>15</td><td>15</td><td>15</td></tr> <tr><td>E</td><td>F</td><td>G</td><td>H</td></tr> <tr><td>15</td><td>15</td><td>15</td><td>15</td></tr> <tr><td>E</td><td>F</td><td>G</td><td>H</td></tr> </table> Means G=H=15 stitches.	A	B	C	D	4	4	4	4	E	F	G	H	15	15	15	15	E	F	G	H	A	B	C	D	15	15	15	15	E	F	G	H	15	15	15	15	E	F	G	H	A	B	C	D	15	15	15	15	E	F	G	H	15	15	15	15	E	F	G	H
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Needle Up / Forward Stitch Correction		1. At the pattern of Free Sewing, one touch of the key will correct half-stitch. 2. At the Constant-stitch Sewing, if machine stops intermediately in one section, one touch of the key will raise the needle to up position, if machine stops at the end of section, one touch of the key will correct one stitch forward.																																																												
One-Shot-Sewing Selection		At the Constant-stitch Sewing, automatic sewing for each section is available by one shot to the pedal.																																																												
Trimming Selection		Setting the trimming function to be enable or disable.																																																												