



MAUSER
S P E Z I A L

MH2645

Single needle lockstitch flat bed machines with
integrated driver for medium-heavy duty applications

Instruction Manual - Operator Control Panel



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Quick SH01 AC Servo System

User Manual

Safety Instruction

Please read this manual carefully, also with related manual for the machine head before use. For perfect operation safety, installing and operating this product by trained personnel is required. When install and operate this product, precaution must be taken as following.

1. To avoid the false by electromagnetic interference. Please keep the product away from arc welding equipment or electro pulse generator.
2. Please don't operate in room temperature is above 45°C or under 0°C .
3. Please don't operate in room humidity is below 30% or above 95% or dew and mist of places.
4. Install the control box and other components, turn off the power and unplug the power cord.
5. To prevent interference or leakage accidents, please do the ground work, the power cord ground wire must be securely connected to an effective way to earth.
6. All parts for the repair provided by the Company or approved before use.
7. Maintenance and Repairs must be done by specially trained personnel. Performing any maintenance action, you must turn off the power and unplug the power cord. There are dangerous high voltage control box, you must turn the power off and wait five minutes before opening the control box.
8. The marked ⚠ in this manual are safety precautions, which must be paid attention to and strictly observed to avoid unnecessary damage.

1. Installation Instructions

1.1 Product specifications

Product Type	SH01	Supply Voltage	AC 220 ± 20% V
Power frequency	50Hz/60Hz	Maximum output power	750W

1.2 Interface plug connections

The pedals and the machine head of the connector plug are mounted to the corresponding position in the controller back of socket, as shown in Figure 1-1.

Please check if the plug is inserted firmly.

① Pedals socket; ② Machine head solenoid socket; ③ Foot lifter solenoid socket

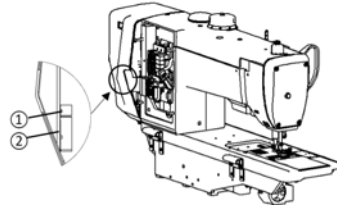


Fig.1-1 Controller Socket Diagram



The use of the normal force are not inserted into the plug and socket, please check whether the matching, direction or needle insertion direction is correct! Please pay attention to the distinction .

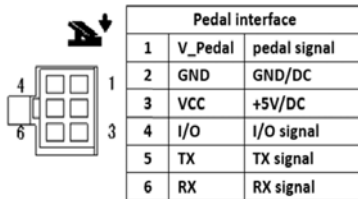
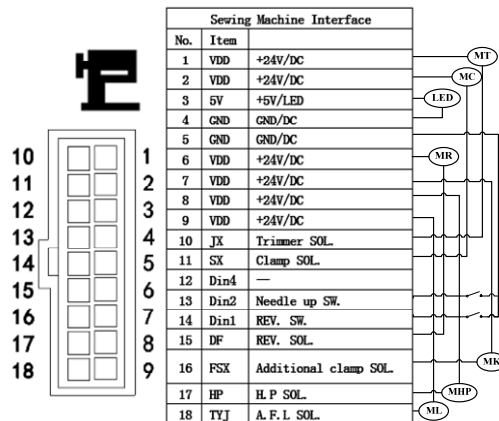


Fig.1-2 Controller Interface Definition



1.3 Adjust the Pedal:

Components of the pedal: see figure 1-3

A: Spring for toeing forward force adjustment

B: Bolt for heeling backward force adjustment

C: Treadle/Pedal arm

D: Pitman Rod for Pedal

Term of adjustment	Adjustment result
1 Toeing forward force adjustment	Spring A move to right=force increased Spring A move to left=force decreased
2 Heeling backward force adjustment	Bolt B turn  =force decreased Bolt B turn  =force increased
3 Treadle stroke adjustment	Rod D secure at right=stroke is longer Rod D secure at left=stroke is shorter

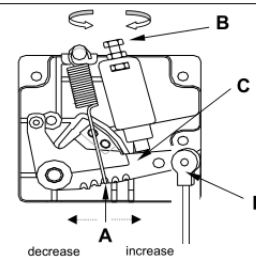


Figure 1-3

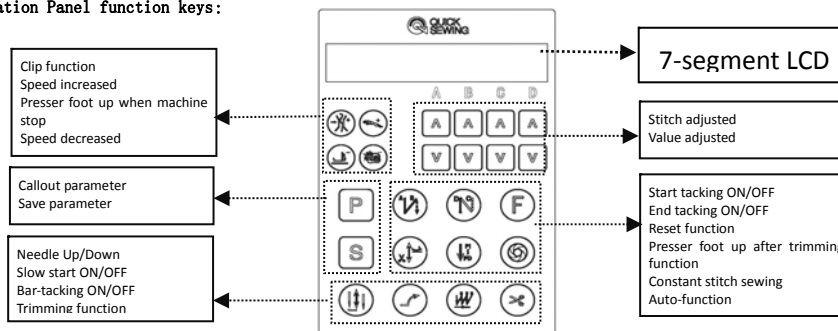
1.4 Wiring and Grounding

We must prepare the system grounding project, please a qualified electrical engineer to be construction. Product is energized and ready for use; you must ensure that the power outlet the AC input is securely grounded. The grounding wire is yellow and green lines, it must be connected to the grid and reliable security protection on the ground to ensure safe use, and prevent abnormal situation.

: All power lines, signal lines, ground lines, wiring not to be pressed into other objects or excessive distortion, to ensure safe use!

2. Operation Panel Instructions

2.1 Operation Panel function keys:



2.2 Panel Key functions

No.	key	function	Operation of sewing Machine
1		Enter/Exit parameter area	Press and hold this key for 5 seconds in standby mode to enter parameter area; press this key in parameter mode to go back to the previous menu or standby mode.
2		Enter parameter value/ Saveing	Press this key in parameter area to enter parameter value area. Also act as the parameter value saving key
3		Start back-tacking selection	Single start back tacking (A,B sections)
4		Constant stitch sewing	Constant stitch sewing setting : LED OFF=Constant stitch sewing is disable. It means free sewing. 1). When the treadle is toeing down, machine will start sewing. If the treadle returns to neutral, machine will stop immediately. 2). When the treadle is heeling back, the trimming cycle will be finished automatically. LED ON=Constant stitch sewing enable. 1). When the treadle is toeing down, constant-stitch sewing performed section by section. 2). If the treadle returns to neutral intermediately in any one section, the machine will stop immediately. After the treadle toed down again, the balanced stitches of sections goes on. 3).If the end back-tacking is set ON, the machine will not stop and automatically start trimming cycle and end back tacking at the end of the last section. 4).When use P1~PS function, P1 default setting is 16 stitches,other unused sections must set 0 stitch.
5		End back-tacking selection	Single end back-tacking (C,D sections)

No.	key	function	Operation of sewing Machine
6		W sewing or Bar tacking	When the treadle is toeing down, all the seams of Bar tacking in A、B、C sections will be completed with D times, and the trimming cycle will be finished automatically Note: When the bar tack sewing start, it will not stop until the trimming cycle finished, except for the treadle heeled back to cancel the action.
7		Trimming Cycle selection	Enable or disable the trimming cycle.
8		Factory reset	Press this key, The machine automatically returns to the factory default value.
9		One-shot sewing (AUTO)	1). In Free sewing and Bar-tack sewing : One press of this key makes beep sound but no function; also LED does not lighten up. 2). In Constant-stitch sewing : a. One-shot to the pedal, automatic performed number of stitches of sections. b. Toeing down the pedal again to finish the rest sections until it finish the pattern.
10		Presser foot up/down after trimming cycle	Presser foot action after trimming LED ON= Automatic lift the presser foot after trimming LED OFF=Presser foot not active after trimming..
11		Needle Up/Down When motor stop	Needle stop setting LED ON= Stop at up position LED OFF=Stop at down position
12		Slow start or soft start	1).When function turn on, soft start only activated at first run of motor start. After trimming cycle finish, it will be activated again on next motor start. 2). Speed of the soft start can be set by parameter [007. S]. 3). Number of stitches can be set by parameter [008.SLS].
13		Clamp cycle selection	Clamp function is enabled (icon on) or disabled.
14		Speed increased	Press this key ,the speed is increased. (Note : The maximum speed must be less than and equal P02)
15		Presser foot up/down when machine stop	Presser foot action when motor stop LED ON=Motor stop, presser foot goes up automatically. LED OFF=Presser Foot not active when motor stop.
16		Speed decreased	Press this key, the speed is reduced (Note : The minimum speed must be greater than and equal P01)
17		Value increment key	A、B、C、D section value increment key, range in 0~ F.(Note); In parameter value adjustment mode, press this key to increase the corresponding value.
18		Value decrement key	A、B、C、D section value decrement key, range in 0~ F.(Note); In parameter value adjustment mode, press this key to decrease the corresponding value.

3 General Parameter table

3.1 Table 1: 【parameter mode A】 parameter from P--001 to P--120

1、 Under 【normal mode】, press and hold key P about 5seconds will take you into the first parameter code 【P--001】 of 【mode A】; 2、 Press  or  to get the parameter needed. e.g. : 【P--002】; 3、 Press S to enter 【parameter value】, in this area, press  or  key to make value adjustment; 4、 Press S key to save the value and return to 【P--XXX】. (Note: 1、 Press P key to go back to 【normal mode】 after press S key to save the value.2、 If you do not need to save the changed value, press the P key twice to exit 【normal mode】)				
Paramete code	Range/selec tion	Default	Parameter description	remark
P001	100~800	310	low speed	
P002	200~5000	2800	Maximum sewing speed	
P003	200~5000	1500	Automatic Constant-stitch sewing speed	
P004	200~5000	1500	Manual back-tacking speed	
P005	100~800	400	Inching speed	
P006	100~500	180	Trimmer speed	
P007	0 / 1	0	Soft start mode selection: 0: after trimming, soft start automatic running on next sewing; 1: Toe down the pedal, soft start automatic running	
P008	1~9	1	Slow Start stitch	
P009	100~800	400	Slow Start speed	
P010	200~3000	1000	Start back-tacking speed	
P011	200~3000	1000	End Back-tacking speed	

P012	200~3000	1000	Bar-Tacking speed	
P013	1~120	30	Stitch balance for start back-tacking 1	
P014	1~120	29	Stitch balance for start back-tacking 2	
P015	1~120	30	Stitch balance for end back-tacking 1	
P016	1~120	29	Stitch balance for end back-tacking 2	
P017	1~120	30	Stitch balance for Bar-tacking 1(W sewing)	
P018	1~120	29	Stitch balance for Bar-tacking 2(W sewing)	
P019	1~999	90	Setting time interruption at each section end of bar-tacking(ms)	
P020	10~359	75	The reference angle for back-tacking or bar-tacking	
P021	0 / 1 / 2 / 3	3	Start back-tacking mode selection: 0: One shot sewing 1: Pedal control and motor can stop at middle way. 2: One shot sewing but motor stops at needle Up by[CT]P19 timer at end of each seam. 3: One shot sewing but motor stops at needle down by [CT]P19 timer at end of each seam.	
P022	0 / 1 / 2	0	Mode selection at the end of Start back-tacking: 0: at the end of start back-tacking,it continues sewing if pedal pressed . 1: at the end of start back-tacking,Machine stops and must re-start by pedal command.2:making the trimming cycle once the start back-tacking finished.	
P023	0/1/2/3	3	Mode selection for end back-tacking: 0: one shot sewing。 1: invalid 2: One shot sewing but machine stops up position by[CT]P19 timer at the end of each seam. 3: One shot sewing but machine stops down position by[CT]P19 timer at the end of each seam.	
P024	0/1 / 2 / 3	3	Mode selection for bar-tacking(W sewing)。 0: One shot sewing. 1: Pedal control and motor can stop at middle way. 2: One shot sewing but motor stops at needle up by[CT]P19 timer at end of each seam.3: One shot sewing but motor stops at needle down by [CT]P19 timer at end of each seam.	
P025	0~90	0	The stitches Added to the C segment of End back-tacking	
P035	0/1	0	Automatic sewing End back-tacking: 0: valid; 1: invalid	
P036	1~100	1	Setting the multiple to the value of P38	
P037	1~9999	9999	Count setting for stitches.	
P038	0~6	1	Stitch count mode selection: 0: invalid 1: count up by stitches ,when count over,counter will be auto-reset. 2: count down by stitches ,when count over,counter will be auto-reset 3: count up by stitches.when count over,motor stops and the counter must be reset by the external switch or the P key on the panel. 4: Count down by stitches.when count over,motor stops and the counter must be reset by the external switch or the P key on the panel. 5: count up by stitches.when count over and after trimming. motor stops and the counter must be reset by the external switch or the P key on the panel. 6: Count down by stitches.when count over and after trimming, motor stops and the counter must be reset by the external switch or the P key on the panel.	
P039	1~100	1	Setting the multiple to the value of P41	
P040	1~9999	9999	Count setting for trimming	
P041	0~6	1	trimming count mode selection: 0: invalid 1: Count up by trimming.When count over, counter will be auto-reset. 2: Count down by trimming. When count over,Counter will be auto-reset 3: Count up by trimming. When count over,motor stops and the counter must be reset by the external switch or the P key on the panel. 4: Count down by trimming. When count over,motor stops and the counter must be reset by the external switch or the P key on the panel.	
P042	0 / 1 / 2 / 3	2	Speed curve adjustments: 0: ramp curve;1: two-stage slope ;2: the exponential curve; 3: S-type curve	
P043	200~4000	1000	The turning point speed of two-stage slope.	
P044	0~1024	800	The turning point sampling voltage of the pedal when two-stage slope (Between parameter P50 and P51)	

P045	1 / 2	1	The type of the exponential curve: 1: square 2: rooting	
P046	0~1024	120	Trimming point of pedal	
P047	0~1024	300	Footer lifting point of pedal	
P048	0~1024	470	Neutral point of pedal	
P049	0~1024	480	Motor running point of pedal in low speed.	
P050	0~1024	620	Accelerated point of pedal	
P051	0~1024	940	Max speed point of pedal	
P052	0~800	100	The running delay time of footer lifting	
P053	0 / 1	0	Trimming works at neutral pedal: 0:off; 1:on	
P054	0 / 1	1	Cancel foot lifting at half-heeling pedal: 0:no foot lifting;1:foot lifting	
P055	0 / 1	1	Cancel foot lifting at full-heeling pedal: 0:no foot lifting;1:foot lifting	
P058	0~800	100	Running-delay time setting (ms)	
P059	0 / 1	1	Needle goes up as power turned on: 0: invalid; 1: automatic needle up at power on	
P060	0 / 1	1	Automatic back-tacking setting: 0: invalid; 1: valid	
P061	0 / 1	0	Back-tacking mode selection for manual button: 0: Juki mode. Active when motor stop or running. 1: Brother mode. Active only when motor running.	
P062	0 / 1	1	Auto-test mode selection: 0: by stitch; 1: by time	
P063	0 / 1	0	Direction of motor rotation: 1: CCW; 0: CW	
P064	0 / 1	0	Wiper function selection: 0: invalid; 1: valid	
P065	0 / 1	0	Clamp function selection: 0: invalid; 1: valid	
P066	0 / 1 / 2 / 3	0	Special mode selection: 0: normal mode 1: simple sewing mode(without synchronizer) 2: motor initial angle measurement 3: Automatically setting the ratio between motor and machine 4: special test mode	
P069	1~800	150	Half stitch time setting	
P070	1~800	180	One stitch time setting	
P071	0 / 1 / 2	1	Function for the needle up switch(inching button):0:mixed control by time (half stitch/one stitch/multiple stitches) : 1: half stitch; 2: one stitch	
P074	1~100	26	Acceleration time, unit 10ms	
P075	1~100	30	Deceleration time, unit 10ms	
P078	0/2	2	Safety switch setting:0:invalid; 2: valid	
P079	0~500	0	The presser foot slow down setting:0: disable; 100: enable	
P080	0~30	5	The fourth solenoid setting : 2: wiper; 6: clamp	
P081	0~500	160	Clamping force adjustment	
P119	1, 2	2	User setting code	
P120	0~9999	0	Factory setting reset (machine code)	

Note: make sure Press and hold P key about 5 seconds for parameter P119,P120 setting.

3.2 Table 2: 【parameter mode B】 parameter from P--121 to P--300

1、 If machine on,Power OFF first.Turn on the power,Press and hold P key to access the first parameter code【P--121】 of【parameter mode B】 when LCD displays 【8888888】; 2、 Use  or  key to find the parameter 【P--122】. 3、 Press S key to access 【value area】.Use  or  key to set the value. 4、 Press S key to save the value. (Note: 1、 Press P key to go back to 【normal mode】 after press S key to save the value.2、 If you do not need to save the changed value, press the P key twice to exit 【normal mode】)				
Paramete code	Range/selec tion	Default	Parameter description	remark
P121	0~9999	1000	the ratio between motor and machine: 0.001	
P123	0~359	68	Needle UP position stop angle	
P124	0~359	75	Needle Down position stop angle	
P125	200~360	360	Middle stop upper position setting	
P126	200~360	330	Stop position after trimming (motor can stop with a reverse angle)	
P127	0~240	0	Revers angle before sewing	
P129	0 / 1	0	Trimming mode selection: 0: lockstitch machine;1: interlock or overlock	
P132	5-359	25	Trimming output start angle TS (the reference point base on needle down position)	

P133	10-359	235	Trimming output end angle TE (this value should be bigger than TS)	
P139	5-359	230	Thread release start angle LS (base on needle down position)	
P140	10-359	260	Thread release end angle LE (this value should be more than LS)	
P143	1~999	20	Delayed time prior to wiper engaged (ms)	
P144	1~9999	45	Setting time of wiping (ms)	
P146	1-359	120	Thread clamp start angle	
P147	0-359	320	Thread clamp end angle	
P148	1-359	120	The angle of presser foot solenoid off during thread clamping	
P149	0~9999	0	Delayed time prior to blowing engaged (ms)	
P150	1~9999	50	Setting time of blowing (ms)	
P151	0~2	2	Motor lock selection when machine stopped	
P152	0~3000	1000	Motor lock time when machine stopped (ms)	
P153	0~20	10	the current of motor locked	
P159	0~4095	950	Lower threshold for quick stroke adjustment potentiometer	
P160	0~4095	2250	Upper threshold for quick stroke adjustment potentiometer	
P161	200~3500	800	lower speed setting for lower threshold of stroke	
P162	200~3500	3000	Upper speed setting for Upper s threshold of stroke	
P165	0~9999	2000	Solenoid current detection threshold setting	

3.3 monitor parameter table

1. Press and hold  key and  key to access the first parameter 【10-XXXX】 of 【monitor mode】.
2. Press  key or  key to find the parameter you want to check.
3. Press P key to go back to 【normal mode】.

No.	Description	No.	Description	No.	Description
10	Counter for stitches	22	The phase current	26	The ratio between motor and machine
11	Counter for sewing pieces	23	Initial electrical angle	27	The total used time(hours) of motor
20	DC voltage	24	Machine angle	28	The sampling voltage of interaction
21	Machine speed	25	The sampling voltage of pedal	29	Software version

3.4. The Warning Message

Alarm code	Description	Corrective
P o B o F F	Power is off	Please wait for 30 seconds, then turn on the power switch.
A - n U P	Safety switch alarm	Adjust the machine to the correct position.
A L A - 1	Fuel filling warning	Fuel filling. Press P key to clear.
A L A - 2	Count over for stitches	The counter reaches the limit. Press P key to reset the counter.
A L A - 3	Count over for sewing pieces	The counter reaches the limit. Press P key to reset the counter.
A L A - 4	Emergency stop	Press the key of emergency stop to clear.
A L A - 5	Lift needle locking	Then press the needle lifting locking button, can eliminate the needle lifting locking state.

3.5 Error code Table

If the error code appears, please check the following items first:

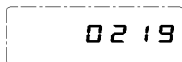
1. Make sure the machine has been connected correctly;
2. Reload the factory setting and try again.

Error Code	Description	Solution
Err-01	Over Current Protection	Please check whether the supply voltage is normal. If the normal voltage range for 220V controller is 170V-250V. Then please restart the motor. If the machine still have this problem, maybe the control box have some problem, please contact with dealer. Non professionals are forbidden to open the controller shell to avoid electric shock.
Err-02	Motor Rotation Obstruction Warning	Please check whether the head is stuck or the sewing materials is too thick, and whether the machine is lack of lubricating oil and the reason for heavy load. Then check whether the Hall electric machine is damaged. If every-thing is good. Please contact with dealer. Non professionals to ban open controller housing to avoid the electric shock.

Err-03	The AC input Power down Protection	Please check whether the power plug is firmly inserted, and then check whether the fuse is good. Non professionals to ban open controller housing to avoid the electric shock.
Err-04	Hall Signal Abnormal	Please check whether the plug connection of the motor hall is reliable, whether the Hall signal line is broken, and whether the pin is deformed. Non professionals to ban open controller housing to avoid the electric shock.
Err-05	Up synchronizer failure	Please check whether the synchronizer plug connection is reliable, whether the synchronizer signal cable is broken, and whether the pin is deformed. Non professionals to ban open controller housing to avoid the electric shock.
Err-07	Pedal Signal Abnormality	Please check whether the pedal plug is falling off, loose, damaged, and whether there is any foreign matter wrapped on the machine head. After troubleshooting, restart the system. If it still fails to work normally, please replace the electric control.
Err-08	Safety switch Warning	Please put the machine head with correct normal position, the warning disappears directly.
Err-09	under-Voltage during idle mode	Disconnect the controller power and check if the input voltage is too low(lower than 120V) . If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer.
Err-10	under-Voltage during running	
Err-11	Over-Voltage during idle mode	Disconnect the controller power and check if the input voltage is too high(higher than 264V) . If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer.
Err-12	Over-Voltage during running	
Err-13	FLASH R/W failure	Turn off the power first, and restart the system 30 seconds later. If it still fails to work normally, please replace the controller and inform the manufacturer.
Err-14	Motor overload	First, turn off the power, check whether the machine head machinery or load is too heavy, if it is too heavy, please clear it; check whether the initial angle of the motor deviates too much, and retest the initial angle of the motor. After the above problems are solved, restart the system. If it still fails to work normally, please replace the electric control.
Err-15	Short circuit of solenoid voltage 32V	First, turn off the power, and check whether the solenoid or cable is damaged or short. Replace in time if damaged and short. Restart the system after confirmation. If it still fails to work, please replace the controller and inform the manufacturer.
Err-16	Motor current measuring failure	Turn off the power first, and restart the system 30 seconds later. If it still fails to work normally, please replace the controller and inform the manufacturer.
Err-18	Communication failure	Check whether the connection between the control panel and the controller is off, loose or broken, and restart the system after it returns to normal. If it still fails to work normally, please replace the controller and inform the manufacturer.
Err-19	DSP E2Prom R/W error	Turn off the power first, and restart the system 30 seconds later. If it still fails to work normally, please replace the controller and inform the manufacturer.
Err-20	Motor initial angle detection fault	First, turn off the power, check whether the motor cable is good, then check whether the motor encoder and the motor body are good, if not, replace them. After the above problems are eliminated, restart the system. If the system still fails to work normally, please replace the controller and notify the manufacturer.
Err-21	Overspeed fault	
Err-22	Reverse failure	
Err-24	Refueling time protection	After refueling, reset the protection time to remove the error
Err-26	Parameter range overflow	After factory reset to remove the error
Err-27	Sector fault	Disconnect the power supply, and check whether the power plug of the motor falls off, loosens or is damaged, and whether there is any foreign matter wrapped on the head. After troubleshooting, the restart system still cannot work normally. Please replace the controller and inform the manufacturer.
Err-28	Location overshoot	Turn off the power first, and restart the system 30 seconds later. If it still fails to work normally, please replace the controller and inform the manufacturer.
Err-29	assertion failure	
Err-30	Midway reversal	

4 Special Functions

4.1 Up needle position adjustment

1		Step 1: Press  key, then enter the monitor mode of mechanical angle. The 7-segment LCD shows 0219, which means the current default up needle position of the system.
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2		Step 2: Turn the hand wheel and adjust to the correct up needle position of the machine head, and the needle position angle is shown simultaneously.
3		Step 3: Press and hold key about 5 seconds. The system automatically saves the new Up needle position and returns to 【normal mode】 .

4.2 One key to restore the factory default setting

1		Press and hold key about 5 seconds. The machine begins to restore the factory default settings.
2		The 7-segment LCD shows 【-----】 .it means that parameters are being restored. The controller must not be powered off or unplugged at this time.
3		The machine returns to 【normal mode】 after restored the factory default settings. Please reset the power of the system after factory restoration.

4.3 Pedal sensitivity adjustment

Pedal starts moving from the initial position(P048) where the motor stops, slowing forward to the low speed point (P049) where the motor run as the minimum speed (P001), continuing to the accelerated point (P50) where the motor start to speed up, until the max speed point (P051) where the motor run up to the maximum speed (P002). And when the pedal steps back to the foot lifter position (P047), the presser foot lift. Continuing back to the auto trimming position (P046), the line is cut. Adjusting the corresponding parameters, user can acquire the proper pedal response to fit the personal habit.

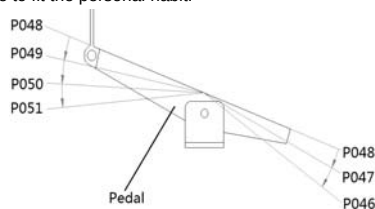


Figure 4-1 Pedal position parameters

5、 7-Segment Display Characters Compare Table :

5.1、 Arabic Numerals :

实际数值: Actual.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.
七段显示器: Display.										

5.2、 English Alphabet:

英文数字: (Actual) °	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.
七段显示器: (Display) °										
英文数字: (Actual) °	K.	L.	M.	N.	O.	P.	Q.	R.	S.	T.
七段显示器: (Display) °										
英文数字: (Actual) °	U.	V.	W.	X.	Y.	Z.				
七段显示器: (Display) °										

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