

HL989 instructions v3.0

1. safety precautions

Please read this technical information and the matching sewing machine instructions before use, with the correct use.

- (1) Power supply voltage and operating frequency: please follow the specifications indicated by the nameplate of motor and control box.
- (2) Electromagnetic wave interference: Please keep away from high frequency magnetic wave machine or radio wave transmitter, etc., so as not to cause the electromagnetic wave to interfere with the wrong action of this drive device.
- (3) Grounding: In order to prevent noise interference or leakage accidents, please do a good grounding project (including sewing machines, motors, control boxes, positioners).
- 1.2 When removing the motor or control box, do not pull in with electricity; there is dangerous high voltage in the control box, so wait more than 1 minute to open the control box cover.
- 1.3 To ensure personal safety, turn off the power supply during maintenance or needle-piercing operations.
- ⚠1.4 This symbol indicates that when the machine is installed, if there is an error, it will hurt the human body or the machine will be damaged. So there will be this sign where the machine is dangerous.
- ⚠ This symbol indicates that there is high voltage and so on, electrical danger will have this sign.
- 1.5 The warranty period of this device is one year under normal working condition and no human error.

2、 operation box

Mode Switch key		Click switch sewing mode: free seam mode / programming seam mode / pattern seam mode / overlay seam mode.
Set key		Click to enter the system settings interface.
Lock screen key		Switch lock screen, unlock. Other function keys fail in lock screen state.
Front fixing joint		Click switch: front fixed seam / front double fixed seam / front four fixed seam / close, and reinforcement needle number / fixed seam pattern number selection
Back fixation		Click switch: post-fixed / post-double-fixed / post-fixed / closed, and number of strengthened needles / fixed sewing pattern number selection
Pattern fixing		Short press to open or close pattern fixing function, long press to enter pattern fixing editing page
Pin pitch adjustment key		Click to adjust the needle spacing.
Motor speed		Click on the adjustable speed.
Piece key		Click to enter the piecework interface.
Clamp function keys		Turn on or off the clamp function.
Pinpoint Selection Key		Adjust the upper / lower stop needle function.
Cut line function keys		Turn on or off the shearing function.
Close stitch function keys		Cycle: front / back / back / back / close.
Lift the pin after cutting		Turn on or off the pin function after shearing.
Soft Start Key		Turn on or off the soft start function, the first few stitches will be slower after opening.
Auto lift foot key		Turn on or off the midway lifting foot function.
Bird nest keys		Turn on or off the bird nest function.

Note: the key style is standard graphics, and the actual graphics are mainly film pasting.

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P-118	Set number of stitches	Set number of stitches	1~10	1	2
P-119	Stitch stitch setting	Stitch stitch setting	50~150	110	2
P-126	Sewing loose threads to enable	0: invalid 1: valid	0/1	1	2
P-127	Delay before opening and loosening	Delay before opening and loosening	0~1000	100	2
P-128	Action time for seaming	Action time for seaming	0~1000	200	2
P-140	Delay before bird nest hook	Delay time from end of cut to hook action	0~500(ms)	50	2
P-141	Action time of bird nest hook	Time of action of hook electromagnet	0~500(ms)	50	2
P-142	Delay after bird nest hook	Delayed time of turn-off of hook electromagnet	0~500(ms)	50	2
P-143	Duty cycle of bird nest hook	Adjust the action of the hook electromagnet	0~100	100	2
P-144	Anti-bird nest inspiratory action time	Action time of suction valve	0~2000(ms)	250	2
P-145	Action time for bird nest alignment	Action time of tappet electromagnet	0~500(ms)	50	2

4.2.5 Press foot setting					
P-012	Middle pressure foot lift height (step effective)	Set the height of the pressing foot in the middle of sewing	0~100	60	2
P-013	Maximum lifting height (step effective)	Maximum height setting for post-shearing foot	0~100	65	2
P-014	Pressure foot lift speed (step effective)	Step speed of foot lifting	20~300(rpm)	200	2
P-015	Press release speed (step effective)	Step speed released by pressing foot	20~300(rpm)	120	2
P-016	Soft drop duty cycle	Soft drop duty cycle	0~100	30	2
P-024	Soft press foot drop function	Set the speed to prevent damage to the fabric from slowing down the foot drop	0/1	1	1
P-025	Soft foot press	Set the speed to prevent damage to the fabric from slowing down the foot drop	0/1/2	1	1
P-026	Press foot overthickness function (detection)	Fetal pressure foot enable setting 0: invalid 1: effective 2: effective after cutting	0/1	0	1
P-029	Soft drop time	Press foot soft drop time set, the longer the pressure foot down the slower	10~500(ms)	50	2
P-039	Turn-off time before soft drop	Turn-off time before soft drop	0~50(ms)	7	2
P-040	Pressure pin loosening function	When 0: lift the foot, the loose line does not move 1~10: the tire press foot loose action time	0~10(s)	2	2
P-046	Foot pressing delay	Delay to confirm that the pin has been lowered	0~800(ms)	100	2
P-047	Knee speed running	Knee pressure to judge speed	200~1000 (rpm)	500	2
P-048	Running knee height	Lift height of knee support foot	0~100	0	2
P-049	Hold time for lifting feet	Force off when lifting foot holds	1~60(s)	25	2
P-050	Total pressure output time of lifting foot	Total pressure output time of lifting foot	0~800(ms)	150	2
P-051	Duty cycle of lift pin output	Duty cycle of lift pin output	0~100	40	2
P-100	Knee function settings	Knee function setup 0: invalid 1: valid	0/1	1	2
P-101	Knee Zero Voltage	Zero position voltage value of knee pin	0~500 (0.01 V)	270	2
P-102	Maximum stroke voltage at knee	Maximum stroke voltage value of knee pin	0~500 (0.01 V)	60	2
P-105	Foot height function setting	Foot height sensor function settings 0: invalid 1: effective	0/1	1	2
P-106	Zero adjustment of foot height	Pressure foot height sensor zero voltage adjustment (pressure foot fall, feed teeth under the table board)	0~250 (0.01 V)	215	2
P-107	Sensitivity of over-thickness detection	Overthickness detection pin height sensor voltage setting (relative to zero voltage)	0~500 (0.01 V)	100	2
P-109	Full pressure duty cycle of pressure foot	Full pressure duty cycle of pressure foot (buffer when pressure foot absorbs)	50~100	80	2
4.2.6 Fixed seam setting					
P-009	Switches Switch Speed Limit	Speed Limit Speed Speed Rate of Switch	500~1500 (rpm)	800	1

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Note : 1. Function key icon: black icon indicates open, gray icon indicates close.

2. adjust the value addition and subtraction, click on the function value, pop up the value input interface, input value click OK determine.
3. mode key, click mode switch key, display the corresponding mode name, enter the corresponding mode interface.

3、 Mode setting

Number	Name of name	Parameter Description
1	System settings	When the screen is not locked, in the free sewing mode, overlap sewing mode, programming sewing mode and pattern sewing mode, press the "setting" key to enter the "system setting" interface.
2	Parameter adjustment	Click the "set" key to enter the system settings, and then click "system parameters", select the parameters, input values, and press "OK" button to confirm.
3	Debug mode	In the system setting interface, click the "system debugging" button to enter the debugging mode. To return from this mode to normal mode, press the "return key" to exit and enter normal mode.
4	Stitch length adjustment mode	After entering the "system debugging" mode normally, click "forward-stitch and reverse-stitch length", and click item p-7 to correct the stitch length of forward sewing; click item p-8 to correct the stitch length of reverse sewing, and press button "OK" to save and exit.
5	Restore factory settings	After entering the "system settings" mode normally, click "restore factory parameters", press "OK" button to restart the machine, or press "key" to cancel.
6	Pattern editing settings	After entering "pattern sewing" mode normally, press "pattern edit" button to display "D1", press "+", "-" keys to switch d1-d9, select the pattern number, and display "1 1 4.0 7", then can edit the stitch number, stitch length and repetition number of the first segment, and click to select the item to be set to modify; if the number of stitches in the current segment is zero, the next segment cannot be set; after setting the stitch length and stitch number of all segments, press "OK" to save.
7	Piecework mode: Add / subtract	In normal sewing mode, click the "piece count" key to edit the piece count quantity. Note: 1. Open parameter "P35" to make the piece function work; 2. Change parameter P38 to make piece counting function to be decrement function
8	Aging mode	Normally enter the "system settings" interface, and click the "system aging" button to modify the "mode selection", "auto running speed", "pause time" and "running time", press "OK" to save. P94 Parameter Description: 0: Time mode: running time p98, down time p97. 1: Stitch number mode: running stitch number p98, down time p97. 2: Simple mode: without synchronizer, the other treatment is the same as 0. 3: Aging mode: run for 1s, stop for 0.1s, speed 5000rpm. Others are the same as simple mode. The total time is 15 minutes. Note: the default aging mode of the control box is 3, which will damage the machine head. It is recommended not to use it. Change to 0 mode when aging.

4、 The system parameter table is as follows: click other buttons to enter the corresponding interface

4.1. Debugging mode		
Number	Name of name	Note
1	Motor Initial Angle Detection	Step forward on the pedal (or press the initial angle of the motor to detect), the electric opportunity rotates a few times, then the LCD screen displays the angle number, the display number represents the installation angle of the motor grating sheet.
2	Pedal zero calibration	Step on the zero calibration button, the system will conduct self-inspection
3	Cutting line action test	Step test
4	Zero reference calibration	Click the zero-bit benchmark button to enter the lower interface. 2 parameter P-6,P-75, appear The P-6 represents the zero pin distance correction value (50~150) and the P-75 represents the head reference position adjustment (0~240).At this interface, the default is 0, adjusting the value of the P-6 parameters so that each needle can be hit in the same position. Click on the alignment button to enter the lower interface. Appear three parameters P-7,P-8, needle distance. The P-7 represents the correction value of the stitch distance (50~150(%)), and the P-8 represents the correction value of the stitch distance (50~150(%)). Adjust the value of the P-7,P-8 under different needle spacing so that the actual value of the positive and inverted seam is the set needle spacing value

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P-018	Fixation after front joint	After the end of the front fixed seam immediately after stepping on the shear line after the fixed seam function setting 0: invalid 1: effective	0/1	0	1
P-019	Stop after the closure	Stop setting after end of front joint ; 0: invalid 1: valid	0/1	0	1
P-034	Standard Solid Seam Speed Mode	Standard Solid Seam Speed Mode Selection ; 0: Automatic 1: Pedal Control	0/1	0	2
P-045	Switches speed limit	The speed limit treatment of the inverted slit switch can prevent the inverted slit from breaking the needle 0: no speed limit 1: instantaneous speed limit 2: constant speed limit	0/1/2	0	1
P-053	Front seam velocity	Front seam velocity	100~3000(rpm)	2200	1
P-054	Repair of front fixing seam	Compensatory coefficient of the front fixed joint	80~120	100	1
P-055	Repair of the Back seam of the Front Fixer	Compensating factor of reverse joint of front fixed joint.	80~120	100	1
P-056	Post-fixation velocity	Post-fixation velocity	100~3000(rpm)	2200	1
P-057	Correct seam compensation for post-fixing joint	Compensatory coefficient of straight seam of post-fix joint	80~120	10	1
P-058	Compensation for Back-up Joint	Compensatory coefficient of back-fix joint	80~120	100	1
P-059	Continuous SeamSpeed	Continuous Seam Speed	100~3000(rpm)	2200	1
P-060	Fixed seam cancel speed limit switch	0: software has speed limit 1: software does not speed limit (large needle distance high speed needle trace may be unstable)	0/1	0	2

4.2.7 Pedal setting

P-041	Low speed speed	Pedal minimum speed	100~5000(rpm)	200	1
P-042	Choice of pedal curve	Pedal speed regulation function adjustment 0: normal 1: acceleration slow 2: acceleration fast	0/1/2	2	1
P-062	Start-up trip	The starting position of the pedal relative to the stroke when the pedal is neutral	10~5000 (0.1 degrees)	25	2
P-063	Start the acceleration	The position of the pedal starting to accelerate relative to the stroke of the pedal when it is neutral	10~100 (0.1 degrees)	50	2
P-064	Running high-speed travel	Travel to the highest speed pedal position relative to pedal neutrality	10~150 (0.1 degrees)	110	2
P-065	The rising stroke of the foot	The pedal position of the foot lift relative to the stroke when the pedal is neutral	-100~~10 (0.1 degrees)	-30	2
P-067	Cut-line action stroke 1	When there is no tire pressure foot function, start cutting line pedal position	-100~~10 (0.1 degrees)	-30	2
P-068	Cut-line action stroke 2	When the foot is lifted, the pedal position of the starting shear line is relative to the stroke when the pedal is neutral	-100~~10 (0.1 degrees)	-60	2
P-092	Pedal lift foot command time	Step after the pedal, press the foot command to confirm the time effectively	10~300(ms)	80	2
P-093	Pedal neutral position	Pedal neutral trim	-15~15	0	2

4.2.8 Spindle setting

P-001	Maximum pedal speed	Set the maximum pedal speed	200~5000 (rpm)	3700	1
P-002	Soft start enable	A few stitches at low speed at the beginning of sewing 0: close 1~9: number of soft start stitches	0~9	2	1
P-004	Fixed long seam velocity	Set maximum speed of fixed length seam	200~4000 (rpm)	3000	1
P-021	Soft Startup Speed 1	Soft Start 1 Pin Speed	100~3000 (rpm)	400	1
P-022	Soft Startup Speed 1	Soft Start Needle 2 Speed	100~3000 (rpm)	1000	1
P-023	Soft Startup Speed 1	Soft Start ~3~9 Pin Speed	100~3000 (rpm)	1500	1
P-027	Power-up location setting	Function setting of machine head automatically finding needle position when power on ; 0: invalid 1: effective	0/1	0	1
P-069	Lower pin position	Position adjustment of lower stop needle	0~240	175	1
P-070	Reverse lift function	Reverse lift function after cutting thread ; 0: invalid 1: effective	0/1	0	1
P-071	Reverse needle angle	Reverse needle angle	0~45(degrees)	20	1
P-080	Maximum sewing speed	Motor maximum speed setting	300~5000 (rpm)	4000	2
P-081	Percentage of pedal speed	Percentage of pedal acceleration	50~100	100	2
P-083	Aggressive function	For needle penetration ; 0: invalid 1~15: force adjustment	0~15	0	2
P-111	Too thick seam velocity	Speed Limit Treatment for Over Thickening	500~3000 (rpm)	1500	2

Note: the parameters in the table are standardized. If there is any discrepancy, please refer to the actual situation.

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4.2. System parameters					
Number	Name of name	Parameter Description	Range of parameters	Default	Parameter level
4.2.1 Panel settings					
P-028	signal mode for turn/lift switch	Setting of signal mode of turn/lift switch of machine head 0: always open 1: always close 2: invalid a protection	0/1/2	0	1
P-020	Function selection of machine head button	0: invalid 1: Manual thread cutting while standby 2: Manual presser foot after trimming	0/1/2	0	1
P-030	Baseline count enable	Bottom line counter 0: unavailable 1: available	0/1	0	1
P-031	Baseline initial value setting	Baseline initial value setting	200~4000(0.1 m)	1600	1
P-035	Multipliers	Added value of number of primary shears	0~50	0	1
P-036	Number of pieces initial setting	Number of pieces initial setting	0~1000	100	1
P-038	Piecework Selection Setting	0: piece plus 2: piece minus	0/1	0	1
P-082	Trial time	trial function 0: trial function invalid 10~1000: power on trial time	10~1000(hours)	0	3
P-090	Language Selection Settings	Language Selection Settings 0: Close 1: Chinese 2: English	0/1/2	1	2
P-091	Pin pitch change selection setting (step feeding)	Can I change the selection settings 0: Allow to change 1: Do not allow to change	0/1	0	2
P-113	Pitch setting	Needle distance setting: needle distance 5 mm model parameter range (1 mm ~5 mm) needle distance 7 mm model parameter range (17 mm)	10~50(70)	50	1
P-114	Fitting button function setting	Backstitch button function setting 0: Backstitch 1: Close stitch 2: Fill stitch 3: Backstitch + Fill stitch	0/1/2/3	0	1
P-115	Pin button function setting	Pin button function setting 0: reverse 1: close 2: stitch 3: reverse + stitch	0/1/2/3	2	2
P-117	Close stitch pitch setting	Head button stitch pitch setting	50~150	110	2
P-129	backlight brightness setting	Display backlight setting	0~10	5	2
P-135	Selection of Midway Slitting Function	0: valid 1: invalid	0/1	0	1
P-138	Setting of Lock Screen Function	0: valid 1: invalid	0/1	0	1
P-139	Screen time setting	Screen time setting	30~240(s)	60	1
P-153	Head button click mode	0: change the needle distance within the limit angle 1: change the needle distance at any angle (the needle distance may not coincide or break the needle)	0/1	0	2
P-154	Type of inverted seam key	Type selection of inverted seam button 0: General switch 1: stroke switch	0/1	0	3
P-155	Brightness adjustment of needle rod lamp	Brightness Adjustment of Iron Rod Lamp	0~5	5	2
P-156	Head refueling reminder time	0: invalid 15~300 0: power on	0~3000	0	3
P-161	1/2 patch button setting	1/2 stitch button setting 0: Backstitch1:Close stitch2: 1/2stitch	0/1/2	2	2
P-162	1/4 patch button setting	1/4 stitch button setting 0: Backstitch1:Close stitch 2:1/4 stitch	0/1/2	2	2

4.2.2 Function setting

P-010	Self-made Spacing Counting Mode	When 0: set the number of needles in each section, that is, set the value 1 fixed length sewing to be self-compiled, set the value as the number of patterns, that is, the total number of needles is the number × pattern needles.	0/1	1	1
P-037	Timeline	Timeline	0~800 ms	40	2
P-072	Adjustment of clamp strength	Adjust clamping force 0: clamping function invalid 1~9: dynamics adjustment	0~9	7	1
P-073	Clamp suction angle	Clamp suction angle	10~150 (degrees)	100	1
P-074	Clamp release angle	Clamp release angle	160~300 (degrees)	270	1
P-088	Loose wire suction angle	Loose wire suction angle	0~360 (degrees)	180	2
P-089	Loose release angle	Loose release angle	0~360 (degrees)	250	2

5. fault description

Fault display	Fault content	Possible causes of failure	Inspection items, processing
E011 E012	Motor signal malfunction	Motor position sensor signal malfunction	Electrical plugs are in good contact Damage to motor signal detection devices Sewing machine handwheel installed
E021 E023	Motor overload	Motor blocking Motor overload	Electrical plugs are in good contact Is the nose or thread cutting mechanism stuck Sewing fabric over gauge thickness Current detection signal is normal
E101	Hardware-driven failures	Abnormal current detection Direct drive device	System current detection circuit is working properly / Damage to drivers
E111 E112	Over-voltage system	Higher actual voltage Brake circuit fault Error in voltage detection	High incoming voltage Brake resistance works properly The system voltage detection loop works properly
E121 E122	Low voltage system	Lower actual voltage Error in voltage detection	Low incoming voltage The system voltage detection loop works properly
E131	Fault of Current Detection Circuit	Abnormal current detection	System current detection circuit is working properly
E133	OZ circuit fault	Abnormal OZ circuit	Does the system OZ loop work properly
E134	DBFLT fault	Automatic Resistance Circuit Unnormal	Damage to automatic resistance
E201	Excessive motor current	Abnormal current detection Abnormal operation of motor	System current detection circuit is working properly Motor signals are normal
E211 E212	Abnormal operation of motor	Abnormal operation of motor	Electrical plugs are in good contact Motor signal mismatch
E301	Poor operation box communication	Loss of Head Operating Box Communication Data	Operating box plugs are in good contact Damage to operating box devices
E302	Failure E2PROM operating box	Internal failure of operating box	Check that the box device is damaged
E303	SPI communication failures	Internal failure of operating box	Check for damage to main control panel
E304	HMI master-slave chip communication fault	Internal failure of operating box	Check that the box device is damaged
E402	Foot pedal ID malfunction	Pedal Identification Fault	Loose pedal joint
E403	Pedal Zero Correction Fault	Pedal zero correction beyond range	The pedal is not stopped when the pedal is damaged or corrected
E501	Troubleshooting switch	Turnover Switch	Drop the nose or check the flip switch
E502	Oil alarm failure	Oil alarm failure	Refueling tips
E601	Hardware-driven failures	Distribution Motor STEP2 Hardware Overcurrent	System current detection circuit is working properly / Damage to drivers
E602	Hardware-driven failures	Distribution Motor STEP2 Software Overcurrent	System current detection circuit is working properly / Damage to drivers
E603	Hardware-driven failures	Distribution Motor STEP2 Current Detection Circuit	System current detection circuit is working properly / Damage to drivers
E604	Motor signal malfunction	Initial mechanical angle STEP2 feeding motor	Electrical plugs are in good contact
E605	Motor signal malfunction	An initial encoder or rotor STEP2 a feeder motor is jammed	Electrical plugs are in good contact Is the machine stuck
E606	Hardware-driven failures	Electrical machinery STEP2 winding circuit	System current detection circuit is working properly / Damage to drivers
E607	Hardware-driven failures	Hardware overcurrent STEP1 voltage pin shearing motor	System current detection circuit is working properly / Damage to drivers
E608	Hardware-driven failures	Current STEP1 Software for Voltage Foot Shear Motor	System current detection circuit is working properly / Damage to drivers
E609	Hardware-driven failures	STEP1 Current Detection Circuit of Press Foot Shear Motor	System current detection circuit is working properly / Damage to drivers
E610	Motor signal malfunction	Initial mechanical angle STEP1 pin shearing motor	Pin shears motor plugs are in good contact
E611	Motor signal malfunction	An initial encoder or rotor STEP1 a pin shearing motor	Pin shears motor plugs are in good contact Is the machine stuck
E612	Hardware-driven failures	Circuit of winding of STEP1 motor for pin shearing motor	System current detection circuit is working properly / Damage to drivers
E613	Hardware-driven failures	Encoder or rotor stuck in operation STEP2 feeder motor	Electrical plugs are in good contact System current detection circuit is working properly / Damage to drivers
E614	Hardware-driven failures	An encoder or rotor stuck in STEP1 operation of a wire-cutting motor	Pin shears motor plugs are in good contact System current detection circuit is working properly / Damage to drivers
PoFF	Power-down display	Power off	Waiting for power to re-open

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4.2.2 Function setting					
P-010	Self-made Spacing Counting Mode	When 0: set the number of needles in each section, that is, set the value 1 fixed length sewing to be self-compiled, set the value as the number of patterns, that is, the total number of needles is the number × pattern needles	0/1	1	1
P-037	Timeline	Timeline	0~800 ms	40	2
P-072	Adjustment of clamp strength	Adjust clamping force 0: clamping function invalid 1~9: dynamics adjustment	0~9	7	1
P-073	Clamp suction angle	Clamp suction angle	10~150 (degrees)	100	1
P-074	Clamp release angle	Clamp release angle	160~300 (degrees)	270	1
P-088	Loose wire suction angle	Loose wire suction angle	0~360 (degrees)	180	2
P-089	Loose release angle	Loose release angle	0~360 (degrees)	250	2
P-103	Line tension/release switching	0: wire tension control 1: common loose wire electromagnet control	0/1	1	2
P-104	Figure - stop function enables	0: Invalid 1: Need to complete the current pattern needle count	0/1	0	2
P-110	Fabric thickness and tension control	Increase tension when sewing thick material	0~10	0	2
P-112	Compensatory coefficient of over-thick pitch	Overthick pitch compensation	50~150(%)	120	2
P-125	Fixed long seam parking shear mode	0: valid 1: invalid	0/1	0	2
P-136	Set the number of stitches	1~50 needles	1~50	4	1
P-137	Back-to-back times	1~10 times	1~10	1	1
P-150	Maximum gauge setting	Maximum needle distance setting; needle distance 5 mm model parameter range (1 mm ~5 mm) needle distance 7 mm model parameter range (1/7 mm)	10~70	50	2
P-151	Function switch for seaming protection	0: valid 1: invalid	0/1	0	2
P-152	Setting of needle spacing for seaming anti-stripping	Set parameter range of needle distance (1 mm~5 mm)	10~50	40	2