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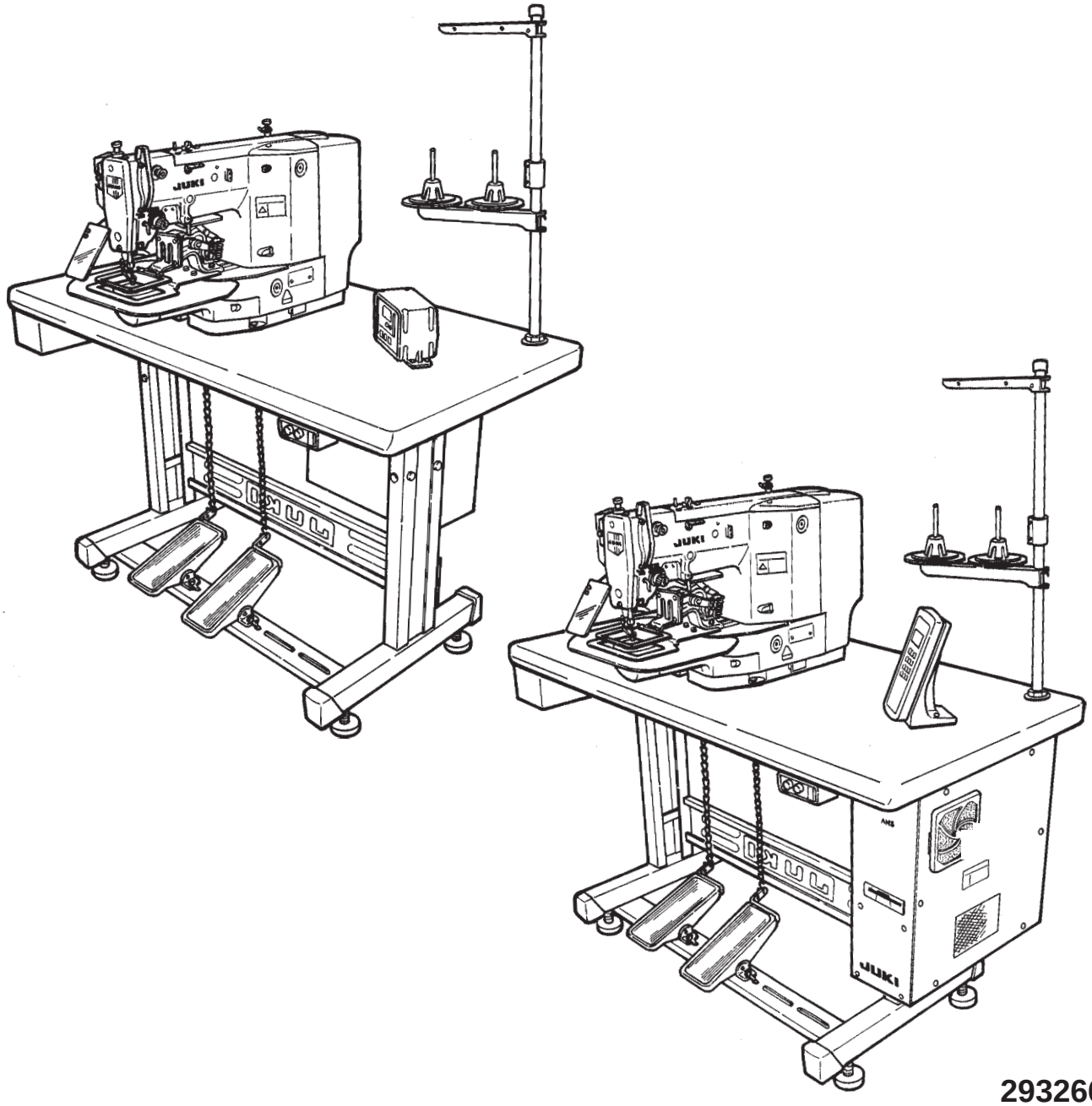
Computer-controlled High Speed
Bar Tacking Industrial Sewing Machine

LK-1910 / LK-1920

Computer-controlled High Speed Bar Tacking
Industrial Sewing Machine with Input Function

LK-1930

ENGINEER'S MANUAL



29326600
No.E329-03

PREFACE

This Engineer's Manual is written for the technical personnel who are responsible for the service and maintenance of the machine.

The Instruction Manual for these machines intended for the maintenance personnel and operators at an apparel factory contains operating instructions in detail. And this manual describes "Standard Adjustment", Adjustment Procedures", "Results of Improper Adjustment", and other important information which are not covered in the Instruction Manual.

It is advisable to use the relevant Instruction Manual and Parts List together with this Engineer's Manual when carrying out the maintenance of these machines.

This manual gives the "Standard Adjustment" on the former page under which the most basic adjustment value is described and on the latter page the "Results of Improper Adjustment" under which stitching errors and troubles arising from mechanical failures and "How To Adjust" are described.

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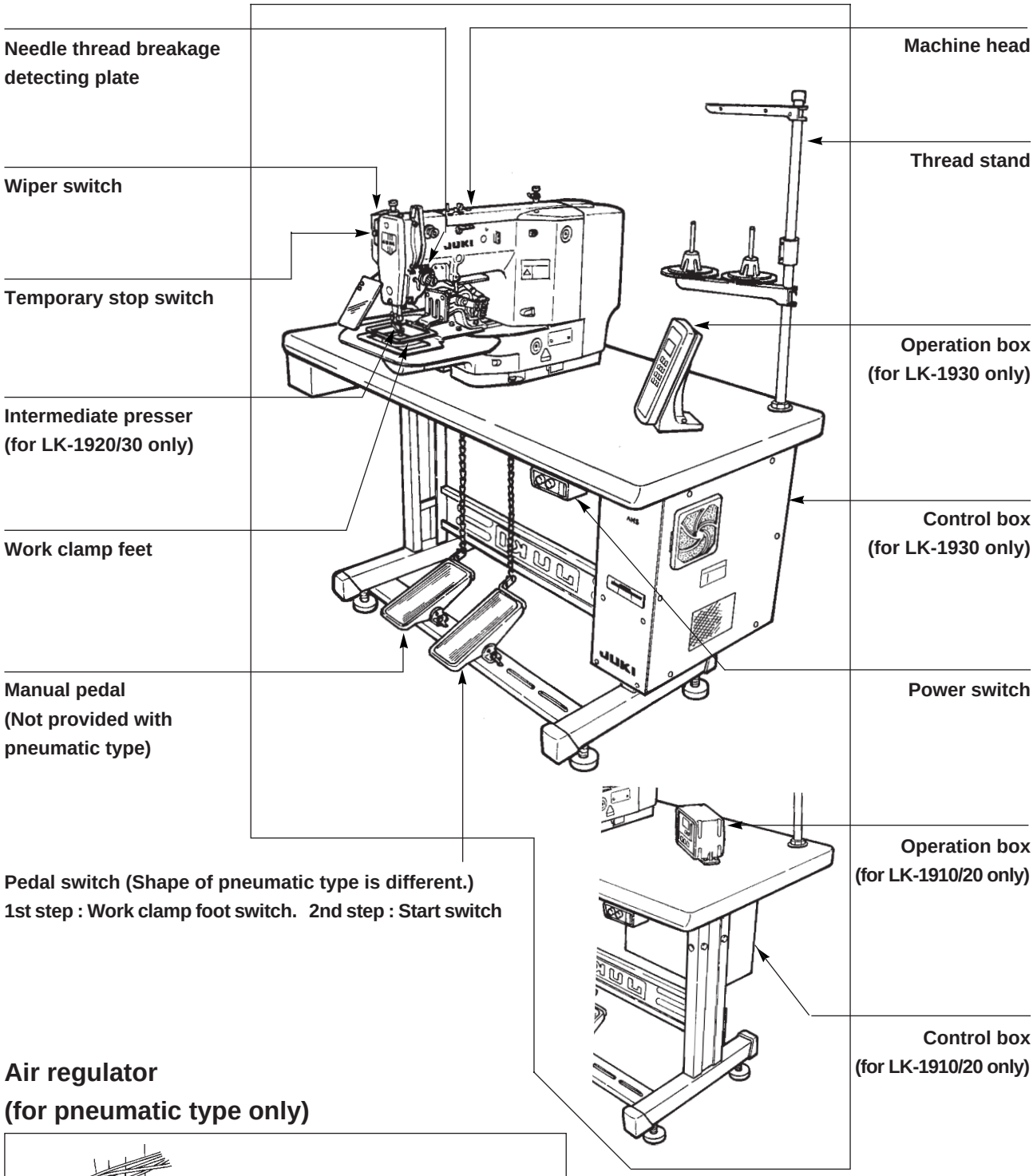
1. SPECIFICATIONS

Specifications	LK-1910	LK-1920	LK-1930
Sewing area	X (lateral) direction 100 mm Y (longitudinal) direction 60 mm		
Max. sewing speed	* 2,500 rpm (When sewing pitch is less than 3 mm.)		
Stitch length	0.1 to 10.0 mm (adjustable in 0.1 mm step)		0.1 to 12.7 mm (adjustable in 0.1 mm step)
Feed motion of work clamp foot	Intermittent feed (2-shaft drive by stepping motor)		
Needle bar stroke	41.2 mm		
Needle	DPx5, DPx17		
Lift of feeding frame	Standard 18 mm Max. 22 mm (Pneumatic type : max. 25 mm)		
Hook	2-fold semi-rotary hook (oil wick lubrication)		
Intermediate presser stroke		Standard 4 mm (Adjustable in the range of 0 and 4 to 10 mm)	
Lift of intermediate presser		18 mm	
Lubricating oil	New Defrix Oil No. 2 (equivalent to ISO VG 32) (supplied by oiler)		
Memory of pattern data	EEP-ROM (32k byte)		
			3.5 inch micro floppy disk (2DD, 2HD) Memory pattern : 44 to 691 patterns
Enlarging/Reducing facility	Allows a pattern to be enlarged or reduced on the X axis and Y axis independently when sewing a pattern.		
	20% to 200% (1% step)		1% to 400% (1% step)
Temporary stop function	Used to stop machine operation during a stitching cycle		
Thread breakage detection function	Used to detect needle thread breakage to automatically stop machine.		
Enlarging/Reducing method	Increasing/decreasing the stitch length method.		Increasing/decreasing stitch length or the number of stitches can be selected.
Max. sewing speed limitation	The max. sewing speed can be set limited to any value within a range of 200 to 2,500 rpm using the up/down key. (100 rpm steps)		The max. sewing speed can be set limited to any value within a range of 200 to 2,500 rpm using the external variable resistor.
Pattern selection	1 to 99 patterns can be selected by specifying the desired pattern Nos. (In case of EEP-ROM)		
			1 to 999 patterns can be selected by specifying the desired pattern Nos. (In case of floppy disk)
Bobbin thread counter	Tells the time to replace the bobbin by the bobbin thread counter. (Max. 9,999 pcs.)		
Memory back-up	In case of a power interruption, the pattern being used will automatically be stored in memory.		
2nd origin setting facility			Using the jog switch, a 2nd origin (needle position after a sewing cycle) can be set in the desired position within the sewing area. The set 2nd origin is also stored in memory.
Needle-up stop facility			When the needle does not stop in its upper position, the needle can be brought up to the upper position by turning again the needle threading switch.
Sewing machine motor	400W servo motor		
Dimensions	W : 1,200 mm L : 700 mm H : 1,160 mm (Use the standard table and stand.)		
Weight	Machine head 46 kg, Control box 16.5 kg		Machine head 46 kg, Control box 18 kg
Power consumption	600 W		
Operating temperature range	5˚C to 35˚C		
Operating humidity range	35% to 85% (No dew condensation)		
Line voltage	Rated voltage ±10% 50/60 Hz		
Air pressure used	0.5 to 0.55 MPa (5 to 5.5 Kg/cm^2) (For pneumatic type only)		
Air consumption	1.3 R/min (For pneumatic type only)		
Needle bar reverse rotation stop function	After the completion of sewing, the needle can be stopped in its upper position by rotating the needle bar in the reverse direction.		

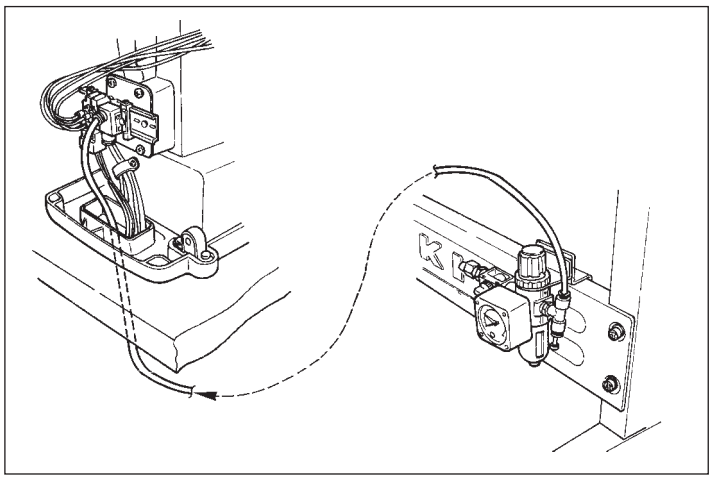
*** Reduce the max. sewing speed in accordance with the sewing conditions.**

2. CONFIGURATION

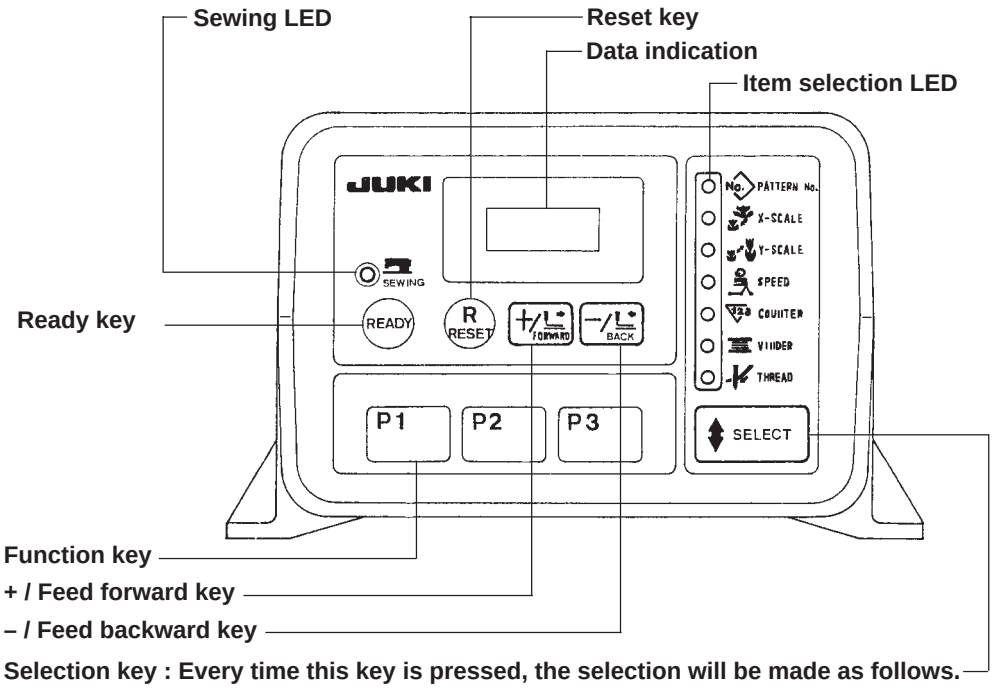
(1) Names of main unit



Air regulator (for pneumatic type only)



(2) Name of the switches on the operation box (LK-1910, 1920)

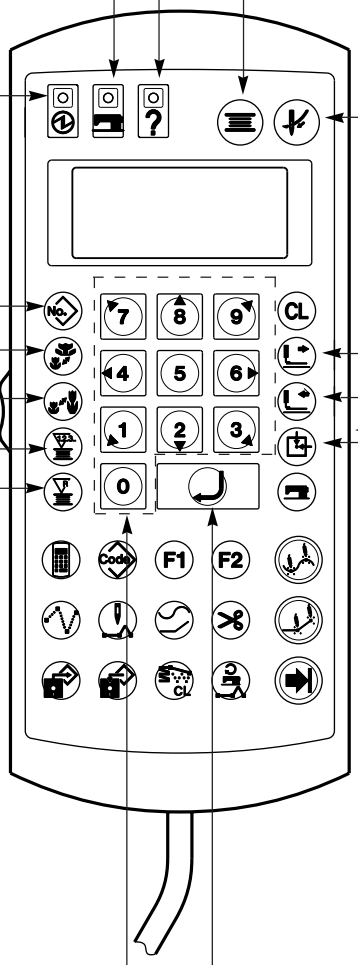


Pattern No. → X Scale → Y Scale → Speed → Counter → Bobbin winder → Bobbin winder → Threading

Finction of the operation panel

Switch name / Action (operation) state	Ready key	Reset key	Selection key	+ Forward/ - Backward key	P1, P2, P3 keys
Normal	Change-over : Standby state → Sewing state	Returns the set value to the standard value.	Pattern No. ↓ X scale ↓ Y scale ↓ Speed ↓ Counter ↓ Bobbin winder ↓ Threading	Addition or subtraction of the set value	Calling P1 to P7 keys which have been registered.
Memory switch	Change of set value (Decided)	Returns the set value to the standard value.	Set No. → Set value	Addition or subtraction of the set value	Move : Level 1 → Level 2 (Selection + P3)
Registration of P key	Setting → Registration (Decided)	Clears all the set values.	Set No. → Set value	Addition or subtraction of the set value	Selection of the P key to be registered.
Registration of combination (C)	Setting → Registration (Decided)	Clears all the set values.	Set No. → Set value	Addition or subtraction of the set value	Selection of P1 to P7 keys to be registered
Test mode	Solenoid and solenoid valve action (When checking output)	–	CP-1 ↓ CP-2 ↓ CP-3 ↓ CP-4 ↓ CP-5	Addition or subtraction of the set value	Change-over of the input line (P1 or P2 key)
Confirmation of pattern stitching	–	Origin retrieval → Travel to the sewing start	–	Feed forward or feed backward	–
Counter	–	Reset of count value	–	Addition or subtraction of the set value	–
Bobbin winder	Change-over : Standby state → Bobbin thread winding state	Stop of bobbin thread winding	Stop of bobbin thread winding	Stop of bobbin thread winding	Stop of bobbin thread winding
Threading	Change-over : Standby state → Threading state	–	–	–	–

(3) Names of the switches for the sewing machine operation (LK-1930)



Sewing-ready LED
Lights up when sewing is ready.

Power LED
Lights up when the power is ON.

Pattern No. key
Used to change the sewing pattern.

X scale key
Sets the value of the lateral direction.

Y scale key
Sets the value of the longitudinal direction.

Speed volume

Bobbin thread setting key
Sets the value on the bobbin thread counter.

Bobbin thread replacement key
Used to reset the bobbin thread counter.

Numerical key

Error LED
Lights up when an error occurs.

Thread winding key
Used for the bobbin thread winding.

Needle threading key
Makes easy to thread the needle.

Forward key
Advances the feed by one stitch.

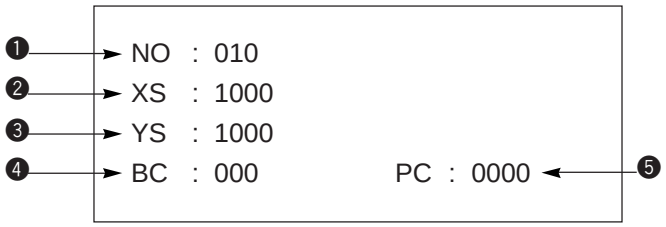
Backward key
Retreats the feed by one stitch.

Contrast volume
Adjusts the light and shade of indication.

Return to origin key
The needle position moves from the desired position to the sewing start.

Enter key
Used to change the sewing state to the setting state.

(4) Names of display indications (LK-1930)



❶ Indication of Pattern No. : Can be changed by No. key and Numerical key.
❷, ❸ Enlargement / reduction indication : Indication of 1000 shows 100%.
- X (Y) – : 100% fixed.
- X (Y) P : Enlargement / reduction can be made by increasing / decreasing the pitch.
- X (Y) S : Enlargement / reduction can be made by increasing / decreasing the number of stitches.

❹ Bobbin thread counter : Set by key and numerical key.
❺ Production counter : By pressing CL key, push key to clear the counter to 0000.

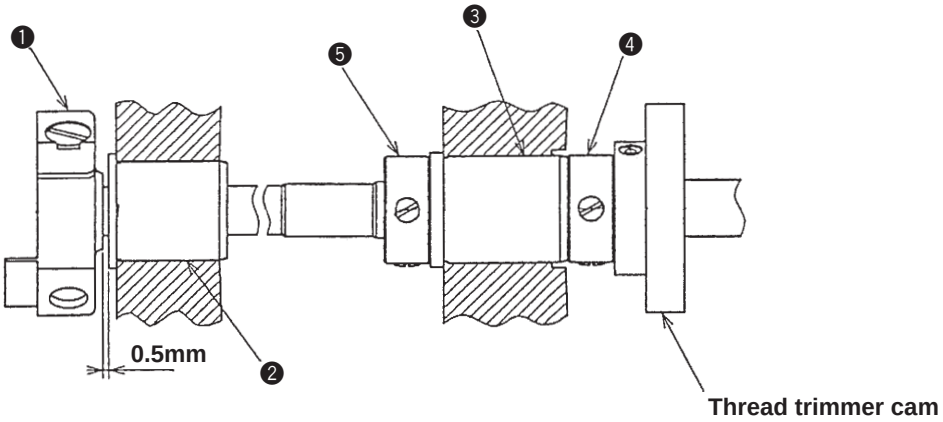
3. ADJUSTMENTS

(1) Adjustment of the main shaft components

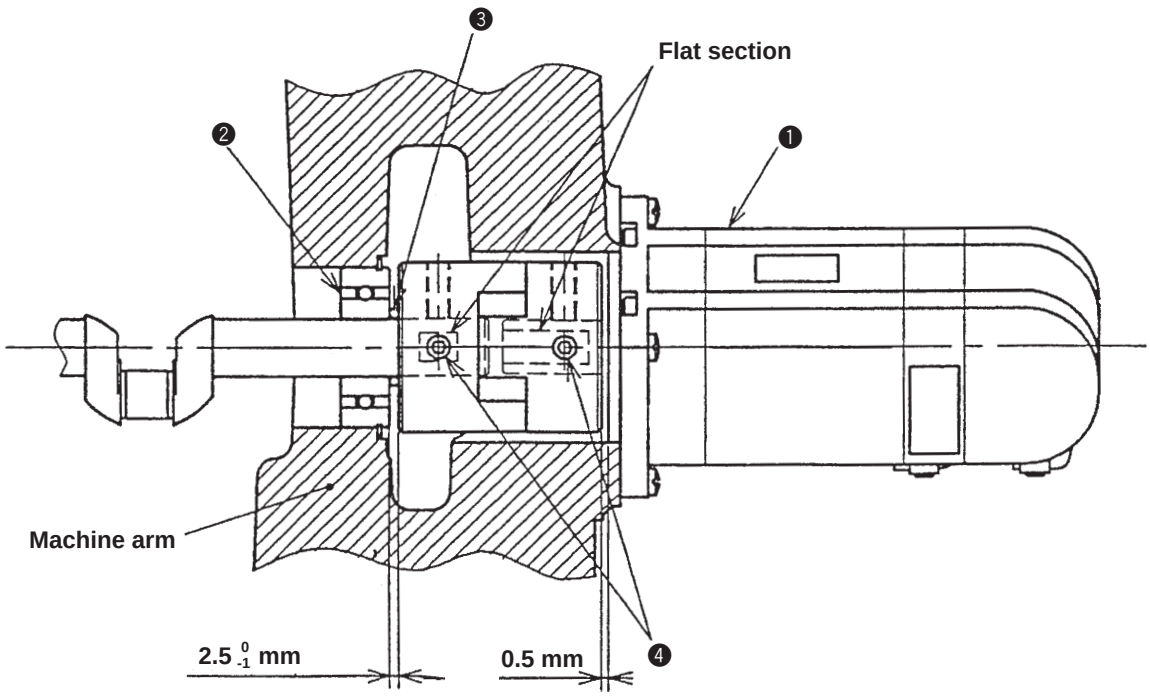
Standard Adjustment

1) Adjusting the play of the main shaft

For the standard adjustment, clearance provided between the counter weight and the main shaft front bushing is 0.5 mm.



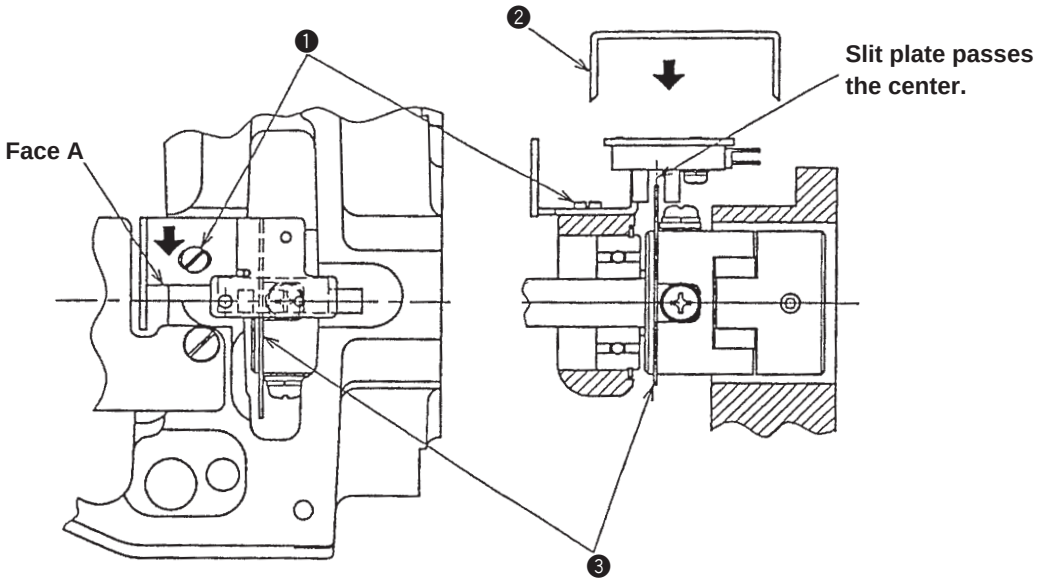
2) Installing the main motor



Adjustment Procedures	Results of Improper Adjustment
1) Push counterweight ❶ to main shaft front bushing ❷, insert a clearance gauge of 0.5 mm between main shaft intermediate bushing ❸ and thrust collar A ❹ and fix thrust collar A ❹ with screw while pressing it to main shaft intermediate bushing ❸ side. 2) Remove the clearance gauge and fix thrust collar B ❺ so as to lightly insert main shaft intermediate bushing ❸ between thrust collar A ❹ and thrust collar B ❺.	
1) Making the clearance between servo motor ❶ and the coupling 0.5 mm, fit screw No. 1 ❹ to the flat section. Then install the motor. 2) Insert rubber ring ❸ (RO1524240100) between main shaft rear bearing ❷ and the coupling. making the clearance between the main shaft rear bearing and the coupling 2.5 mm, fit screws No. 1 ❹ to the flat section. Then install the motor. **(Caution) When engaging the respective couplings, be sure to align the two positions of the screws in the direction of rotation.**	○ If the position of the couplings is not correct, the main shaft does not stop at the normal angle. ○ If the installing clearance of the couplings is plus, the moving clearance of the couplings in the axial direction is lost, and a torque is applied to the main shaft.

Standard Adjustment

3) Adjusting the main shaft sensor

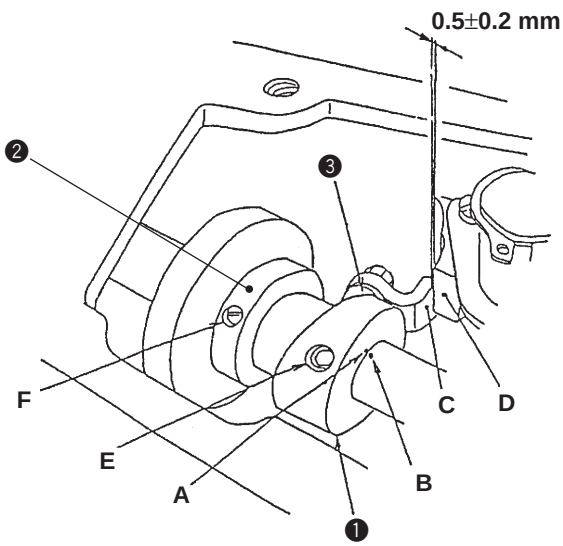


(2) Adjusting the intermediate presser components (LK-1920, 1930)

Standard Adjustment

1) Adjusting the position of the intermediate presser cam

1. Align engraved dot A of intermediate presser cam ❶ with engraved dot B of the main shaft in the direction of rotation.
2. Clearance provided between section C of the intermediate presser driving arm and section D of the machine arm boss is 0.5 ±0.2 mm in the state that the clearance becomes narrowest (lower dead point of intermediate presser).
3. Fit closely intermediate presser cam ❶ and intermediate presser cam stopper ❷.



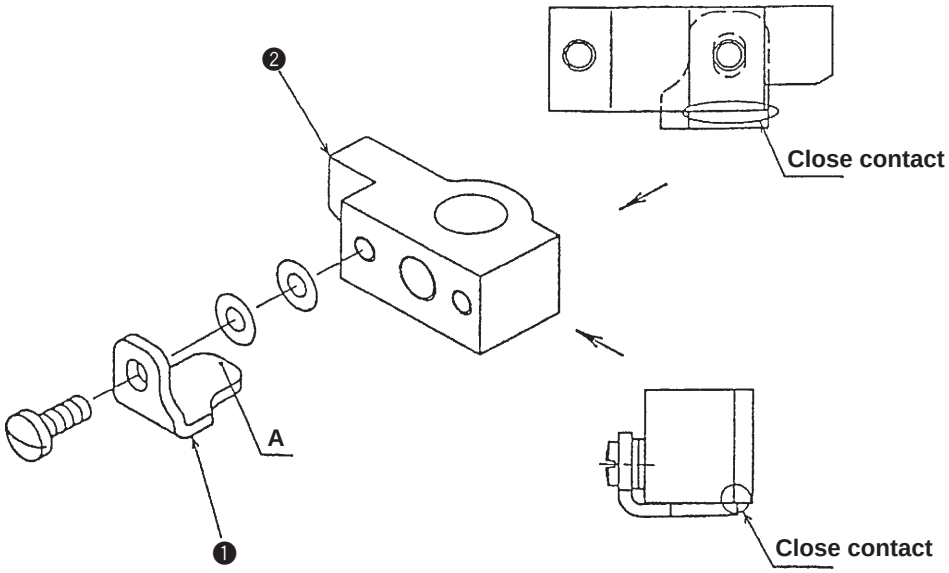
Adjustment Procedures	Results of Improper Adjustment
1) Remove sensor cover ❷. 2) Fit the sensor installing base to face A. Tighten setscrew ❶ so that slit plate ❸ passes the center of the sensor without interfering with each other and put the sensor cover.	○ If the main shaft sensor is not properly installed, the sensor may be damaged or error may ocur.

Adjustment Procedures	Results of Improper Adjustment
1) Turn the main shaft engraved dot A of the main shaft comes just above. 2) Insert a thickness gauge of 0.5 mm between section C of the intermediate presser driving arm and section D of machine arm boss and make a state that section C of the intermediate presser driving arm, thickness gauge and section D of the machine arm boss come in close contact altogether. 3) Turn intermediate presser cam ❶ while lightly pressing it to intermediate poresser roller ❸ so that engraved dot A of intermediate presser cam ❶ is aligned with engraved dot B of the main shaftin the direction of rotation. Then tighten two setscrews E. 4) Closely fit intermediate presser cam stopper ❷ to intermediate presser cam ❶ and tighten two setscrews F.	○ If the position of the intermediate presser cam in the direction of rotation is not proper, stitch skipping, needle breakage, etc. will occur. ○ If the clearance provided between the intermediate presser driving arm and the machine arm boss is too small, they come in contact with each other during sewing, and noise may occur. If the clearance is too large, pressure of the intermediate presser is increased. As a result, maloperation or trouble will be caused.

Standard Adjustment

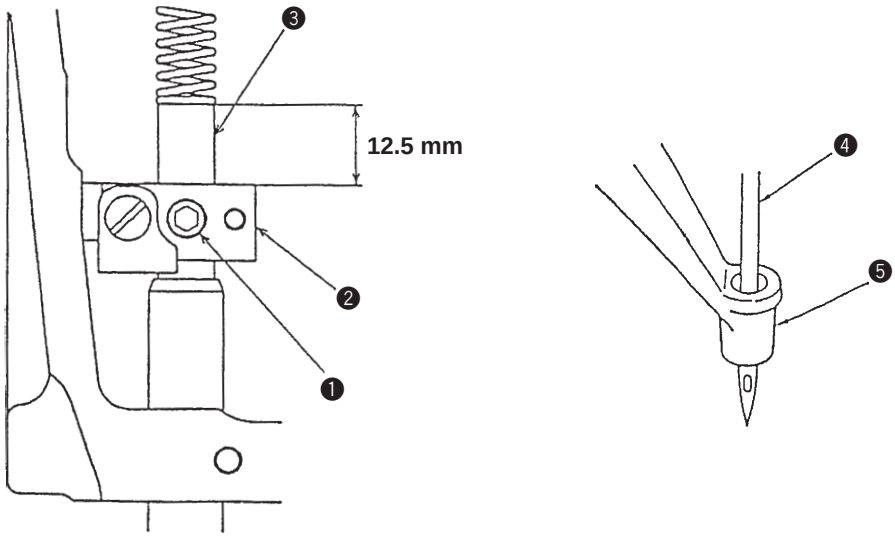
2) Installing the intermediate presser bar guide bracket support plate

1. Be sure to install intermediate presser bar guide bracket support plate ❶ so that top end section A of intermediate presser bar guide bracket support plate comes in close contact with the bottom face of intermediate presser guide bracket ❷.



3) Adjusting the position of the intermediate presser bar guide bracket

1. Protruding amount of intermediate presser bar ❸ from intermediate presser bar guide bracket ❷ is 12.5 mm.
2. Needle passes the center of the intermediate presser.

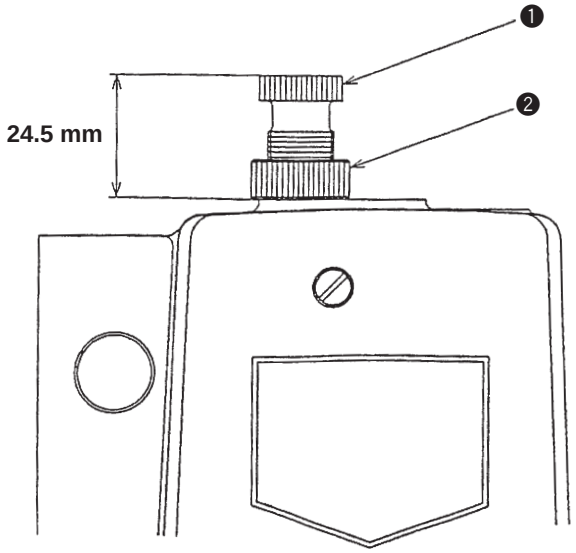


Adjustment Procedures	Results of Improper Adjustment
1) Lightly press upward intermediate presser bar guide bracket support plate and tighten the screw in a state that section A comes in close contact with the bottom face of intermediate presser bar guide bracket ❷.	○ If section A does not come in close contact, the intermediate presser bar guide bracket support plate is likely to be broken.
1) Tighten setscrew ❶ so that the protruding amount of intermediate presser bar ❸ from intermediate presser bar guide bracket ❷ is 12.5 mm and needle ❹ passes the center of intermediate presser ❺. **(Caution) Keep the tightening torque of setscrew ❶ at 390 to 490 N·cm (40 to 50 kgf·cm).**	○ If the protruding amount of the intermediate presser bar is excessively large, breakage of the intermediate presser spring or intermediate presser lifting failure will occur. ○ If tightening torque is excessive, the intermediate presser bar is deformed and maloperation will occur.

Standard Adjustment

4) Height of the intermediate presser adjusting screw

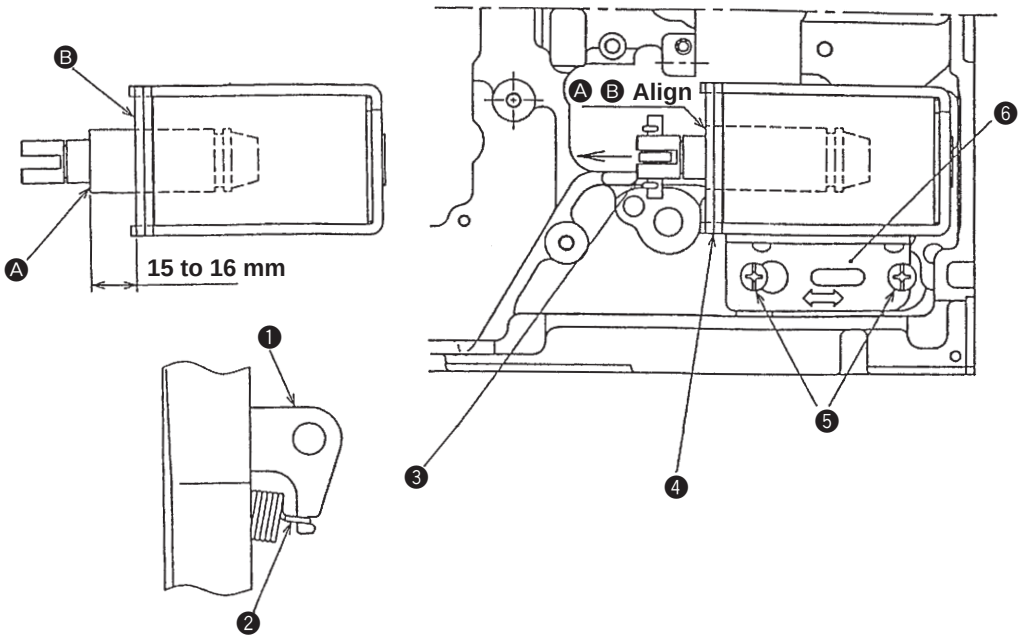
Height of the intermediate presser adjusting screw is 24.5 mm for the standard adjustment value.



Adjustment Procedures	Results of Improper Adjustment
1) Turn intermediate presser adjusting screw ❶ to adjust the height and fix it with intermediate presser adjusting nut ❷. 2) When the height is increased, the pressing pressure is decreased. **Caution : 1. Adjust the height within the range of 24.5 to 40 mm.** **2. When using the intermediate presser stroke with the value larger than the standard adjustment value (4 mm), be sure to set the height of the intermediate presser to the minimum (24.5 mm).**	

Standard Adjustment

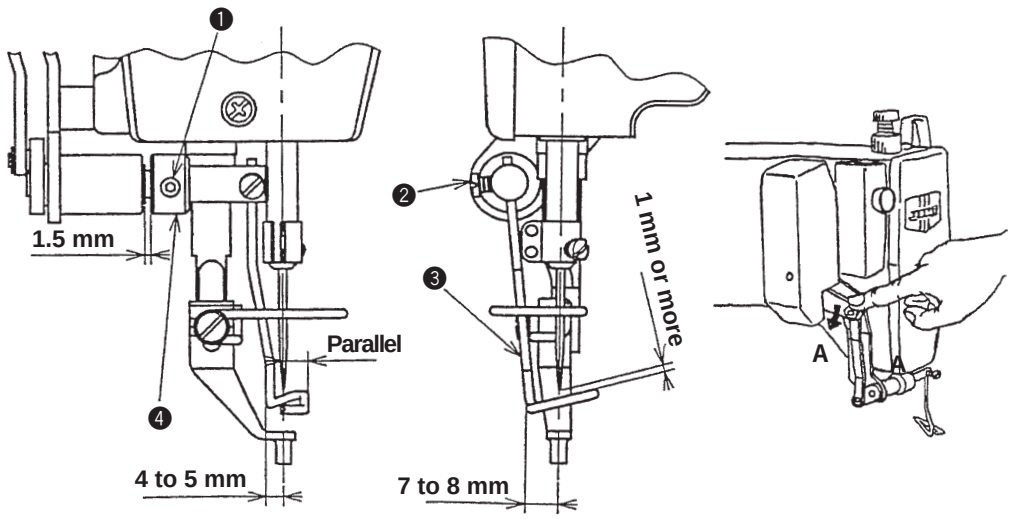
5) Adjusting the position of the intermediate presser solenoid



(3) Adjusting the wiper components

Standard Adjustment

1) Adjusting the position of the wiper



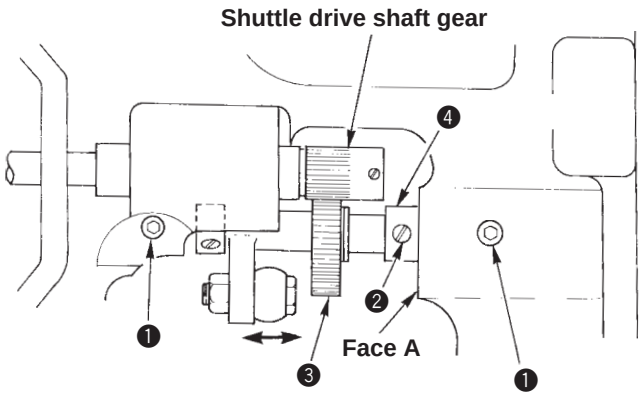
Adjustment Procedures	Results of Improper Adjustment
1) Remove the motor cover and remove intermediate presser lifting spring ❷ from intermediate presser lifting spring retainer ❶. 2) Tilt the machine head. 3) Turn the hand pulley to bring the needle bar to its lower dead point. In this state loosen setscrews ❺ and move solenoid installing base ❻ in the direction of ⟺ to adjust so that face Ⓐ of plunger ❸ is aligned with face Ⓑ of solenoid frame ❹ when plunger ❸ is lightly pulled in the direction of ←. 4) Turn the hand pulley to bring the needle bar near its upper dead point. 5) After the adjustment, hook intermediate presser lifting spring ❷ to intermediate presser lifting spring retainer ❶. * **When hooking internediate presser lifting spring ❷ to intermediate presser lifting spring retainer ❶, protruding amount of plunger ❸ from solenoid frame ❹ becomes 15 to 16 mm.**	○ If face Ⓐ enters further than face Ⓑ, abnormal noise will occur when operating the sewing machine. ○ If the protruding amount is excessive, the intermediate presser may not come down at the time of sewing start.

Adjustment Procedures	Results of Improper Adjustment
1) Determine the height of the wiper when the needle bar is at its upper stop position. Loosen setscrew ❶ in the wiper shaft cap and turn the wiper shaft cap so that the wiper comes almost below the needle. Then temporarily tighten setscrew ❶. 2) Loosen setscrew ❷ and adjust so that clearance provided between the needle and the wiper should be 1 mm or more. Then tighten setscrew ❷ at the position where the angle of the wiper is parallel to the needle. 3) Loosen wiper shaft cap setscrew ❶ and press down the link until it hits in the direction of A. Adjust the longitudinal position to 7 to 8 mm in front of the needle. Adjust the lateral position to 4 to 5 mm from the root of the wiper to the center of the needle. Then tighten setscrew ❶.	

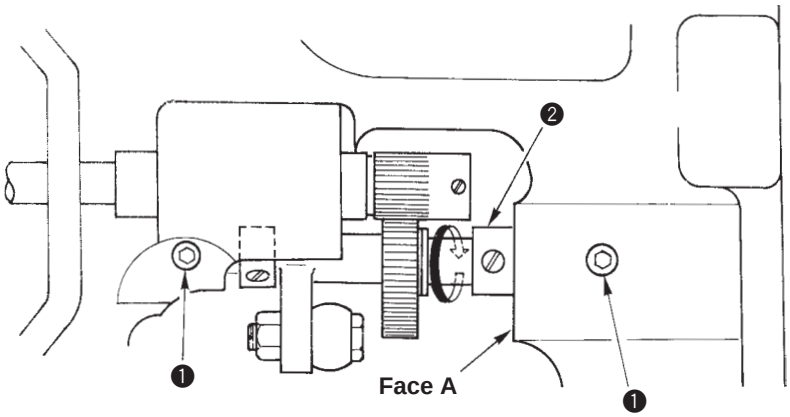
(4) Adjustment of the shuttle driver shaft components

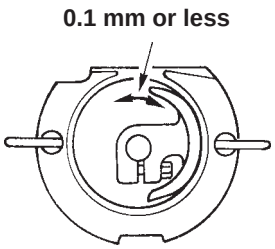
Standard Adjustment

1) Adjusting the longitudinal position of the oscillator

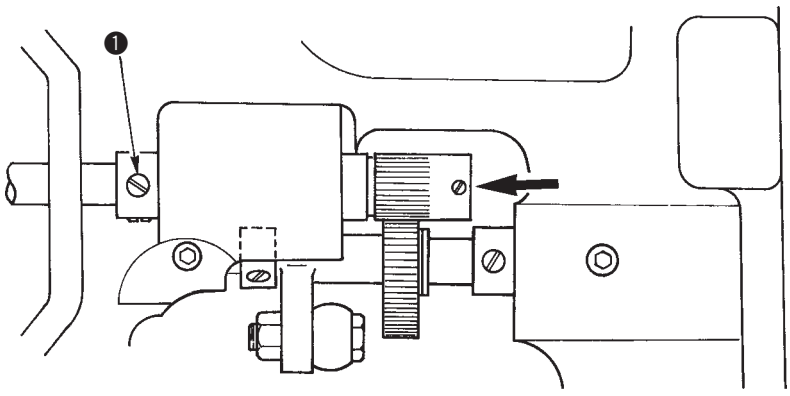


2) Adjusting the backlash of the oscillator gear





3) Removing the play of the shuttle driving shaft



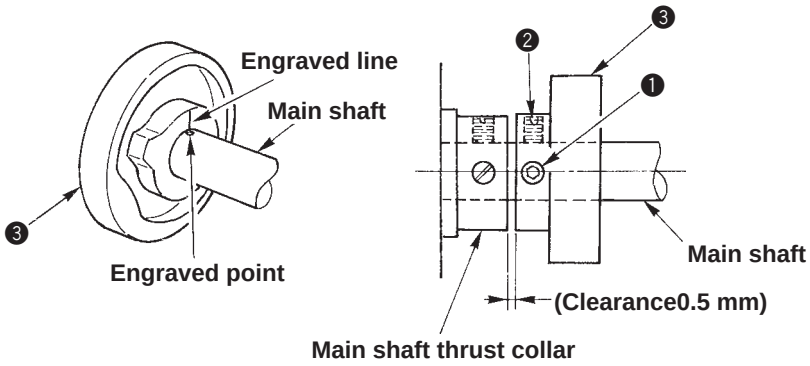
Adjustment Procedures	Results of Improper Adjustment
1) Loosen setscrews ❶ and ❷. 2) When turning the main shaft several times, oscillator ❸ moves in the direction of arrow, and it moves naturally to the position without the load. 3) Temporarily tighten setscrews ❶. 4) Make thrust collar (large) ❹ come in contact with face A of the bed, and tighten setscrew ❷.	○ If the longitudinal position of the oscillator is not correct, it will cause the seizure of the oscillator or main shaft crank components.
1) Loosen setscrews ❶. 2) Closely fitting thrust collar (large) ❷ to face A of the bed, turn it in the direction of arrow to adjust the backlash. Adjust the backlash so that it is 0.1 mm or less at the tip end of the shuttle driver, and the shuttle driver smoothly rotates. 3) Tighten setscrews ❶. **(Caution) Be sure to keep the rotating direction shown in the figure when removing the backlash.**	○ If the backlash is excessive, the shuttle noise wil be increased. ○ If the backlash is too small, it will cause the seizure of the oscillator or main shaft crank components. ○ When adjusting the backlash, if the longitudinal position of the oscillator is not correct, it will cause the seizure of the oscillator or main shaft crank components.
1) Play in the axial direction of the shuttle driver shaft Loosen two thrust collar setscrews ❶ and tighten them while pressing the shuttle driver shaft in the direction of arrow.	

(5) Adjustment of the thread trimmer mechanism components

Standard Adjustment

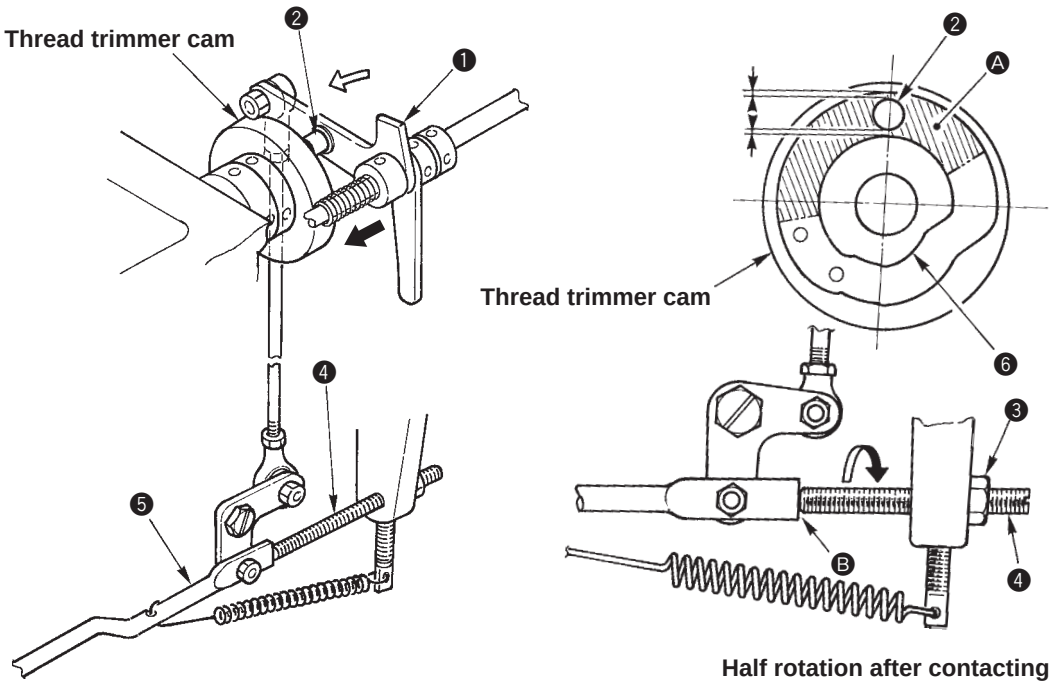
1) Adjusting the thread trimmer cam

1. Position of the direction of the main shaft :
   Adjust the clearance between the main shaft thrust collar and thread trimmer cam ❸ to 0.5 mm.
2. Position of the direction of the rotation :
   Align the engraved point of the main shaft with the engraved line of thread trimmer cam ❸.



2) Adjusting the thread trimmer link stopper screw

1. Make sure that thread trimmer roller ❷ has a clearance against the both end faces of the slit of thread trimmer cam ❻ and smoothly enters the slt when pushing cam installing link ❶ in the direction of arrow (⬅) in the approach run section (in the range of Ⓐ) of the thread trimmer cam.

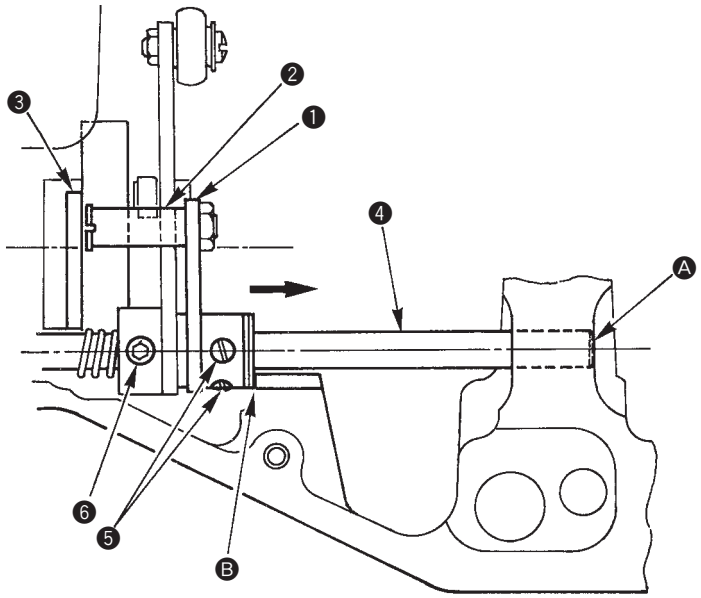


Adjustment Procedures	Results of Improper Adjustment
1) Determine the position of thread trimmer cam ❸, and tighten screw No. 1 ❶ of the thread trimmer cam from the upper side of the sewing machine. 2) Turn the main shaft by 1/4 rotation in the normal direction, and tighten screw No. 2 ❷ of the thread trimmer cam from the upper side of the sewing machine as well.	○ Thread trimming failure will occur. ○ Lock of the sewing machine will occur at the sewing start or at the time of thread trimming. ○ Returning the initial position of the thread trimmer mechanism is delayed, and poor-tightened stitch of the first stitch at the sewing start will occur. **(Caution) When the lock of the sewing machine has occured, check the play of the axial direction of the main shaft, position and timing of the thread trimmer cam or related components.**
1) Tilt the sewing machine head. 2) Turn the main shaft and fit thread trimmer roller ❷ to approach run section Ⓐ of slit ❻ of the thread trimmer cam. 3) Loosen nut ❸ and loosen thread trimmer link stopper screw ❹ to the position where it separates from section Ⓑ of thread trimmer connecting bar ❺. 4) Pressing cam installing link ❶ in the direction of arrow, lightly fit thread trimmer roller ❷ to the thread trimmer cam. (It does not enter the slit of the cam.) 5) Start tightening thread trimmer link stopper screw ❹. The top end of thread trimmer link stopper screw ❹ comes in contact with section Ⓑ of thread trimmer connecting bar ❺, and when tightening further, cam installing link ❶ turns in the direction of arrow (⇦). Then thread trimmer roller ❷ which was lightly fit to the thread trimmer cam enters slit ❻ of the thread trimmer cam. 6) Screw further thread trimmer link stopper screw ❹ by half turn from the point where thread trimmer roller ❷ entered slit ❻ of the thread trimmer cam. Then tighten nut ❸ to fix it. At this time, fix thread trimmer link stopper screw ❹ so that it does not turn together with nut ❸ and tighten nut ❸.	○ Thread trimming failure will occur. ○ Lock of the sewing machine will occur at the sewing start or at the time of thread trimming. ○ Returning the initial position of the thread trimmer mechanism is delayed, and poor-tightened stitch of the first stitch at the sewing start will occur. **(Caution) When the lock of the sewing machine has occured, check the play of the axial direction of the main shaft, position and timing of the thread trimmer cam or related components.**

Standard Adjustment

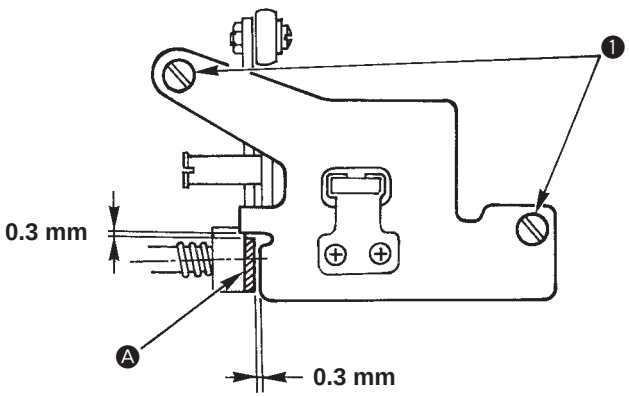
3) Position of the thread trimmer shaft

Make sure that the rear end of thread trimmer shaft ❹ aligns with the processed face Ⓐ of the sewing machine arm in the state that tension release pin ❷ of tension release arm ❶ is separated from tension release notch ❸ (thread trimmer stopper support comes in contact with the section Ⓑ of the sewing machine arm stopper.).



4) Position of the cam installing link stopper

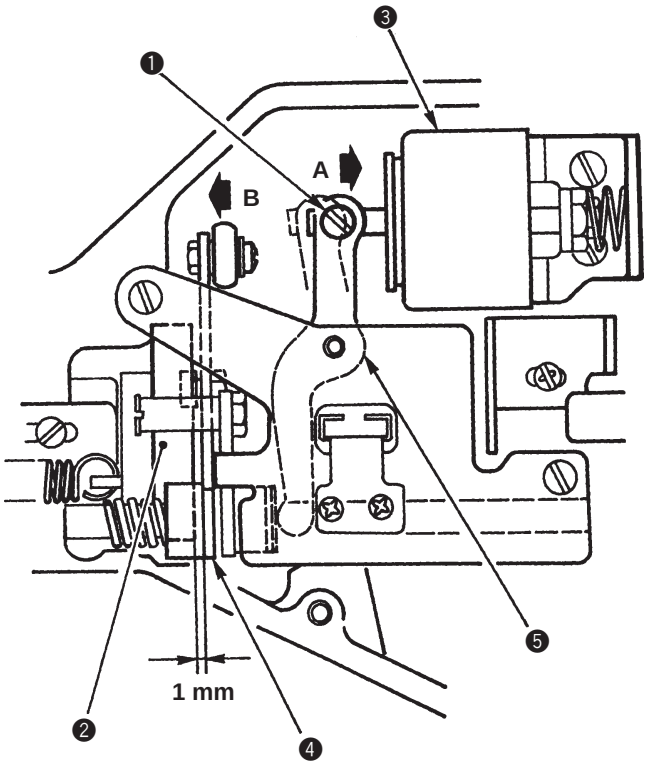
1. Clearances between notch Ⓐ of the cam installing link and the cam installing link are 0.3 mm each in the state that the thread trimmer is separated “thread trimmer stopper support comes in contact with the section Ⓑ of the sewing machine arm stopper” (see the previous item 3).).



Adjustment Procedures	Results of Improper Adjustment
1) Loosen setscrew ❻ in the cam installing link. (The thread trimmer shaft is possible to rotate.) Loosen two setscrews ❺ in the tension release arm thrust collar. 2) Align the rear end of thread trimmer shaft ❹ with the processed section Ⓐ of the sewing machine arm, and tighten two setscrews ❺ in the tension release arm thrust collar. 3) Push the cam installing link in the direction of arrow (➡). Then removing the play, tighten setscrew ❻ in the cam installing link.	○ If thread trimmer shaft ❹ is mitakenly adjusted, the receiving amount of thread trimmer shaft ❹ becomes improper, causing thread trimmer failure or sewing machine lock due to twisting. ○ If a play occurs, it will lead to the defective disk floating.
1) In the state that the thread trimmer is separated, loosen two setscrews ❶ in the cam installing link stopper, and adjust the respective clearances to 0.3 mm each. Then tighten the setscrews ❶.	○ Sewing machine lock or thread trimmer failure will occur.

5) Position of the thread trimmer magnet arm

1. When thread trimmer magnet ❸ draws, the clearance between the roller attaching face of cam installing link ❹ and the cam face of thread trimmer cam ❷ is 1 mm.



Adjustment Procedures	Results of Improper Adjustment
1) Loosen adjusting screw ❶ in the thread trimmer magnet and make thread trimmer magnet ❸ draw in the direction of A at the approach run section of thread trimmer cam ❷ [refer to 2) Adjusting the thread trimmer link stopper screw, p.17]. At this time, adjust the position of thread trimmer magnet arm ❺ so that a clearance of 1 mm is provided between the cam face of thread trimmer cam ❷ and the roller attaching face of cam installing link ❹. Then tighten screw ❶.	○ Thread trimmer roller enters the slit of thread trimmer cam, causing thread trimmer failure or sewing machine lock. ○ Returning to the initial position of the thread trimmer is delayed, and release of the tension release disk floating is also delayed, causing poor-tightened stitches at the sewing start or stitch skipping.

Standard Adjustment

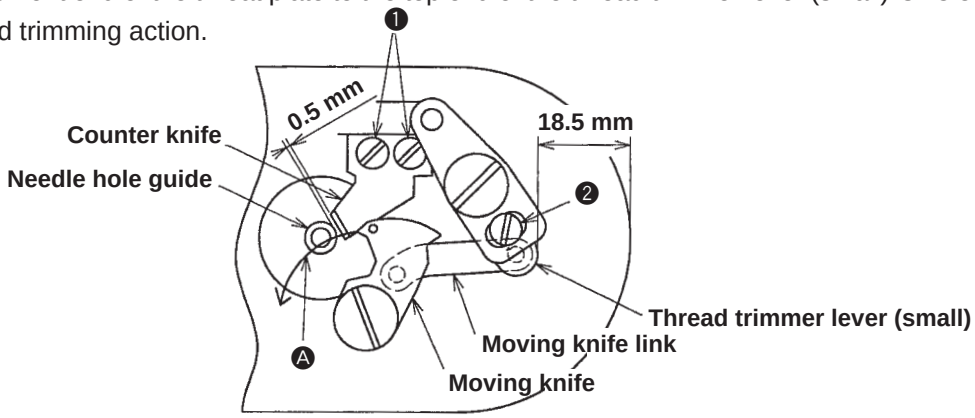
6) Position of the moving and counter knives

Position of the counter knife :

Clearance between the counter knife and the needle hole guide is 0.5 mm.

Position of the moving knife :

Distance from the front end of the throat plate to the top end of the thread trimmer lever (small) is 18.5 mm before thread trimming action.



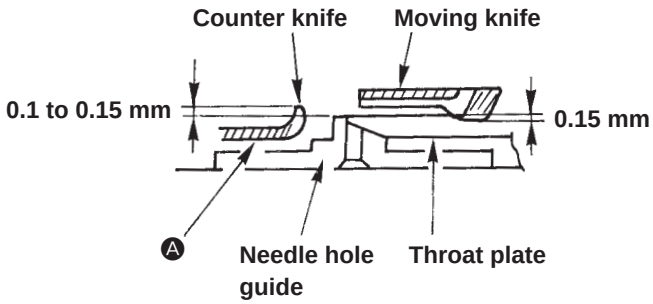
7) Height of the moving and counter knives

Moving knife :

Engagement amount of the needle hole guide with the blade section of the moving knife is 0.15 mm.

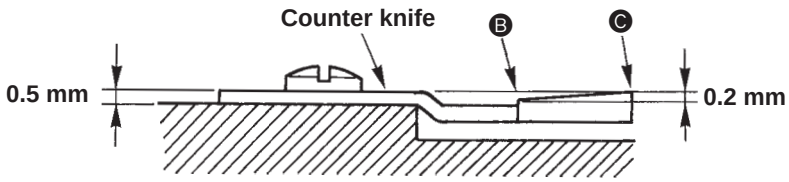
Counter knife :

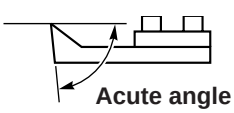
Level difference between the needle hole guide and the blade section of the counter knife is 0.1 mm to 0.15 mm.



8) Inclination of the blade point of the counter knife

In order to cut two threads (needle thread and bobbin thread) in uniformity, the blade face of the counter knife is slanting by 0.2 mm.



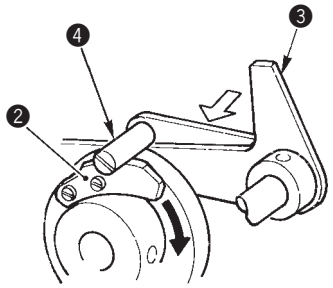
Adjustment Procedures	Results of Improper Adjustment
1) Position of the counter knife Loosen counter knife setscrews ❶ to adjust it. 2) Position of the moving knife Loosen screw ❷ to adjust it. **(Caution) Under the normal operation, the moving knife passes inside the needle hole guide as Ⓐ shown in the figure.**	○ When the clearance is 0.5 mm or less : When the moving knife pulls threads, blade point of the counter knife cuts the threads and needle/bobbin threads are cut short. ○ When the clearance is 0.5 mm or more : Length of the remaining thread under the cloth after thread trimming is lengthened.
1) Adjusting the height of the moving knife Adjust the height according to the thickness of the washer described in the table below when the height is not proper. Select and use the below-mentioned parts. 2) Adjusting height of the counter knife. Adjust the height by forcing section Ⓐ with a screwdriver or the like.	○ If the level difference (0.25 to 0.3 mm) between the moving knife and counter knife is small, it will cause thread trimming failure. ○ If the level difference (0.1 to 0.15 mm) between the needle hole guide and the counter knife is large, when the moving knife pulls threads, blade point of the counter knife cuts the threads and needle/bobbin threads are cut short.
1) Grind side C when the thread on the side B is not cut, and grind side B when the thread on the side C is not cut. **(Caution) When grinding the side, make the angle more acuter than 90 degrees.**  **Acute angle**	○ When the slant is less than 0.2 mm : The thread on side C is not cut. ○ When the slant is more than 0.2 mm : The thread on side B is not cut.

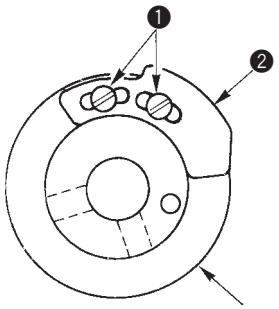
Part No.	Name of part	Thickness
B242328000A	Moving knife washer	0.4 mm
B242328000B	Moving knife washer	0.5 mm
B242328000C	Moving knife washer	0.6 mm
B242328000D	Moving knife washer	0.7 mm

(6) Adjustment of the tension release components

Standard Adjustment

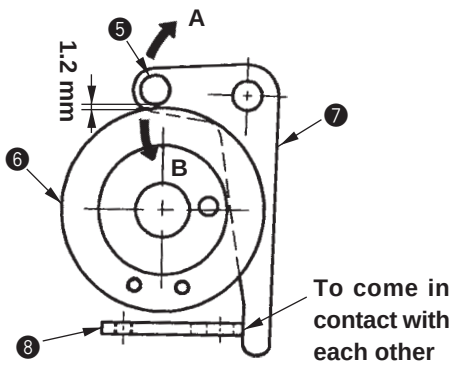
1) Installing position of the tension release notch

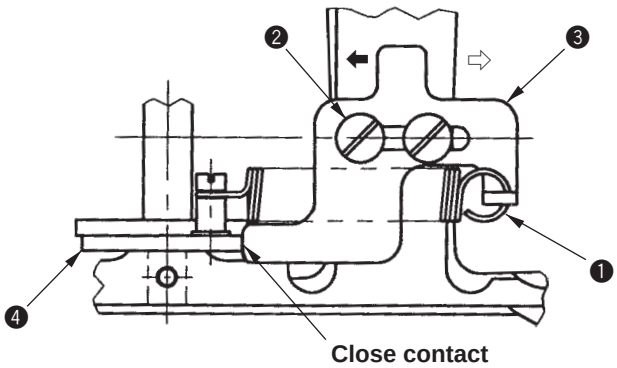




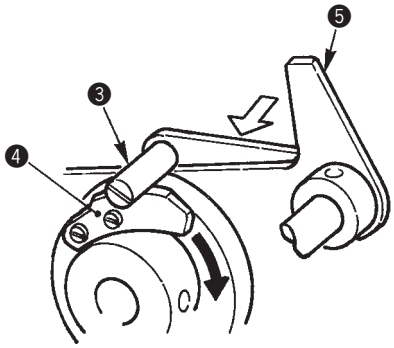
2) Position of the tension release stopper

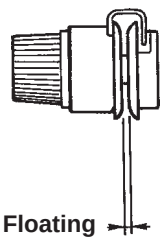
When tension release arm ❼ is moved in the direction A in the state that the cam installing link is separated from thread trimmer cam ❻ (in the state that tension relase arm ❼ comes in contact with tension release link ❽), adjust the clearance between the periphery of thread trimmer cam ❻ and tension release arm pin ❺ to 1.2 mm.

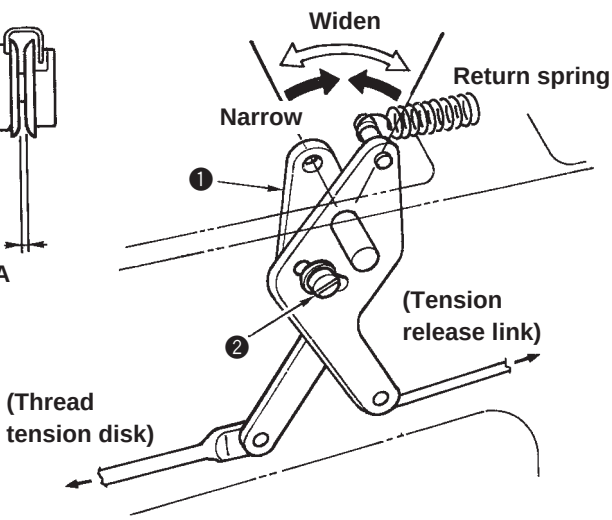




3) Floating amount of the thread tension disk





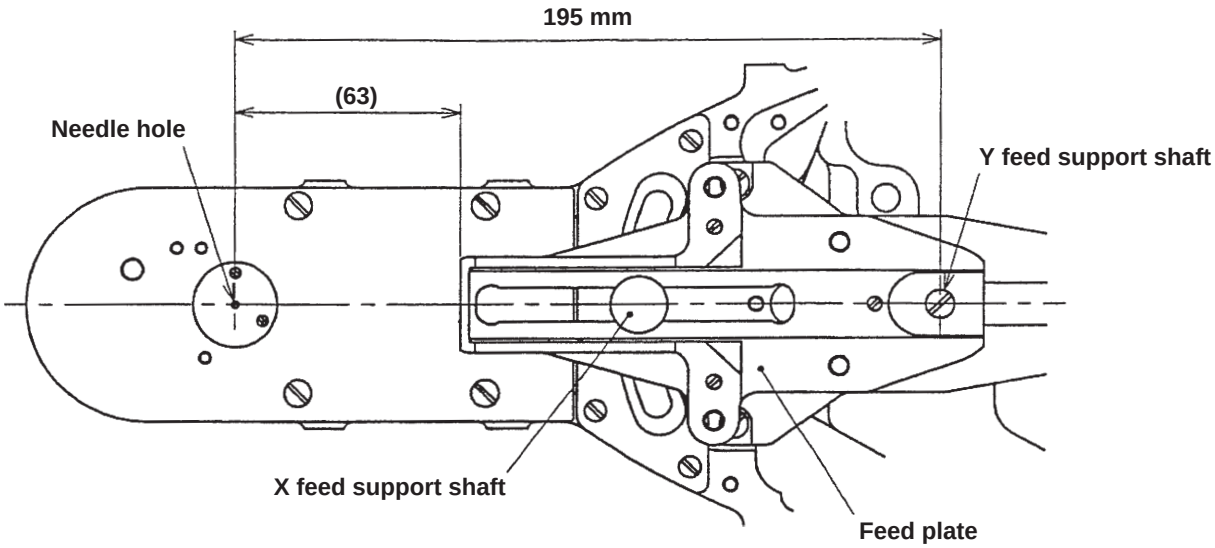


Adjustment Procedures	Results of Improper Adjustment
1) Loosen two setscrews ❶ in the tension release notch, and move tension release notch ❷ to the center of the long slit. Then securely tighten two setscrews ❶ to fix it. 2) After the adjustment, pushing cam installing link ❸ in the direction of arrow (⇦) by hand, rotate the main shaft in the normal direction (➡), and ride tension release pin ❹ on tension release notch ❷. After that, let go of the hand, and make the main shaft in the normal direction. Make sure that tension release pin ❹ separates from tension release notch ❷ at the position where the thread take-up lever has passed the upper dead point.	○ Length of remaining needle thread after thread trimming will be shortened. Also, the length will vary. ○ Needle thread may slip off from the needle at the sewing start.
1) Remove tension release return spring ❶. 2) Loosen two setscrews ❷. If the tension release stopper with tension release adjusting arm closely contacted is pushed in the direction of arrow (⇨), the learance will be narrowed. If pushing it in the direction of arrow (➡), the clearance will be widened. 3) Adjust the clearance to 1.2 mm, tighten setscrews ❷, and hook tension release return spring ❶. 4) After the adjustment, tension release arm ❼ slightly comes down in the direction of B by the tare. Move tension release arm ❼ in the direction of A or B and make sure that there is a play. **(Caution) After adjusting the position of the tension release stopper, check to be sure of the thread tension disk floating amount described in the next item 3).**	○ If the clearance is excessive, when adjusting the disk floating amount to rather excessive, the disk cannot close completely when the disk floating is relesed, causing stitch failure. ○ If the clearance is too small, malfunction of the thread trimmer shaft (a load is produced) will occur, causing thread trimming failure or machine lock.
1) Remove the arm cover, and make sure that tension release pin ❸ rides on tension release notch ❹. 2) If the pin does not ride on the notch, push cam installing link ❺ by hand in the ⇨ direction, and rotate the main shaft in the normal direction to make the state shown in the figure. 3) Under the state shown in the figure, loosen setscrew ❷ in the tension release adjusting arm. Floating amount of the thread tension disk will vary by moving tension release adjusting arm ❶ to the right or left. Disk floating amount A : S type : 0.6 to 0.8 mm H type : 0.8 to 1.0 mm **(Caution) If disk floating amount is too small, the length of remaining thread after thread trimming will vary. If the disk floating amount is excessive, disk closing failure after the release of disk floating will occur.**	○ If the disk floating amount is too samll, the length of remaining needle thread after thread trimming will be shortened or the length will vary to a great extent. ○ If the disk floating amount is excessive, the disk can not close completely after the release of disk floating, causing stitch failure.

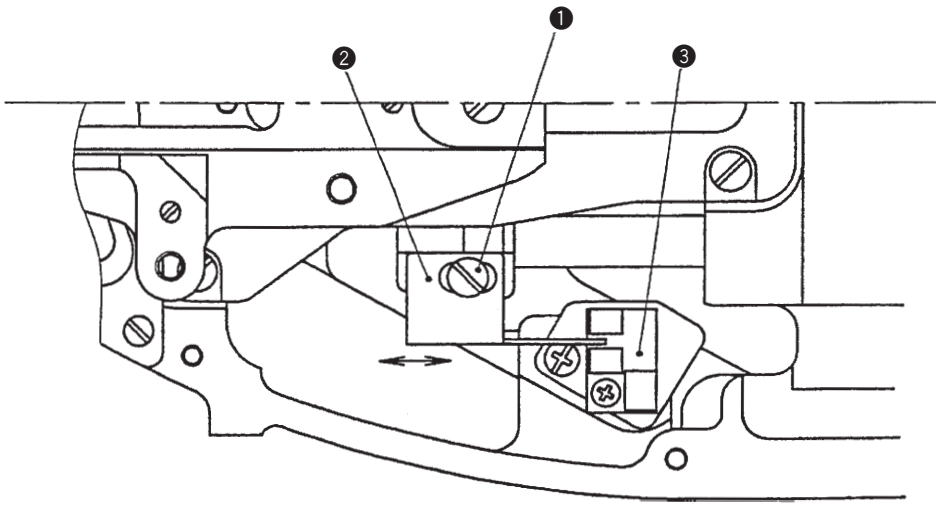
(7) Adjusting the sensor components

Standard Adjustment

1) Mechanical origin

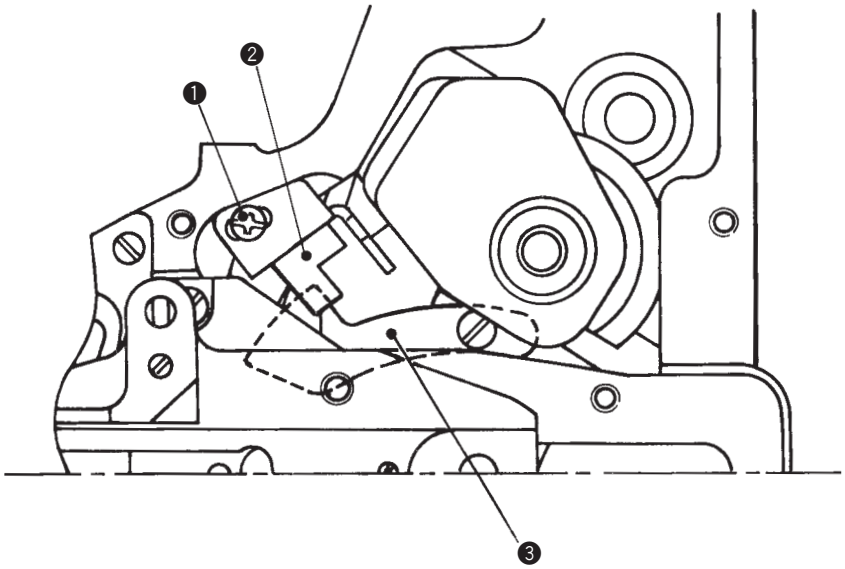


2) Adjusting the Y origin sensor



Adjustment Procedures	Results of Improper Adjustment
Mechanical origin is as shown in the figure on the left side. In the lateral direction, the center of needle hole, the center of X feed support shaft and the center of Y feed support shaft become a straight line. Fit the point by adjusting 2) Y origin sensor and 3) X origin sensor.	○ Maximum area cannot be secured. ○ Distortion of stitching shape will occur.
* 1) Select “Test mode No. 2 Origin retrieval”. (For LK-1910/20 only) * 2) Simultaneously pressing [ ] and ( ) in the operation panel, turn ON the power. (For LK-1930 only) * 3) Press [1] in the operation panel. (For LK-1930 only) 4) Every time depressing the pedal, the origin is retrieved. Loosen sensor slit setscrew ❶ and shift the position of Y sensor slit ❷ to set the feed plate to the position of origin. **(Caution) After the adjustment, make sure that Y sensor slit ❷ does not interfere with Y sensor ❸.** *** : Selection of model**	

3) Adjusting the X origin sensor

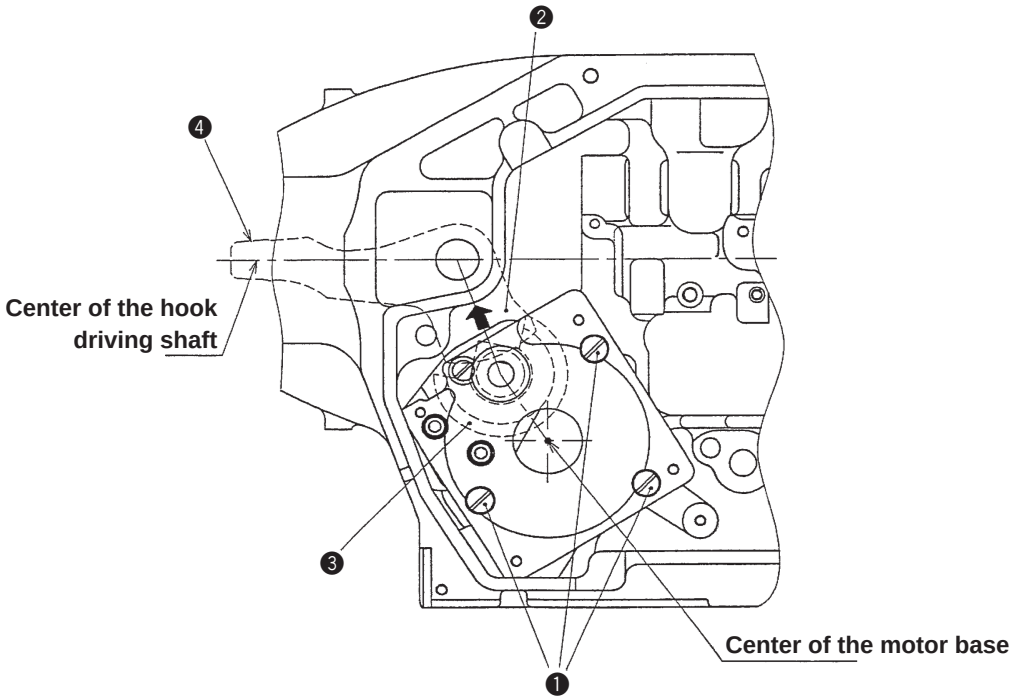


Adjustment Procedures	Results of Improper Adjustment
* 1) Select “Test mode No. 2 Origin retrieval”. (For LK-1910/20 only) * 2) Simultaneously pressing [ ] and ( ) in the operation panel, turn ON the power. (For LK-1930 only) * 3) Press [1] in the operation panel. (For LK-1930 only) 4) Every time depressing the pedal, the origin is retrieved. Loosen sensor installing base setscrew ❶ and shift the position of X sensor ❷ to set the feed plate to the position of origin. **(Caution) After the adjustment, make sure that X sensor slit ❸ does not interfere with X sensor ❷.** *** : Selection of model**	

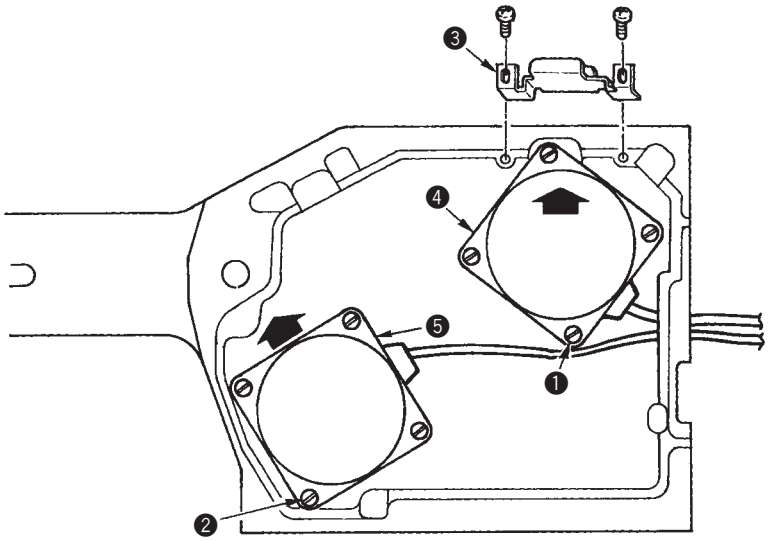
(8) Adjustment of the feed mechanism components

Standard Adjustment

1) Adjusting the position of the X motor base

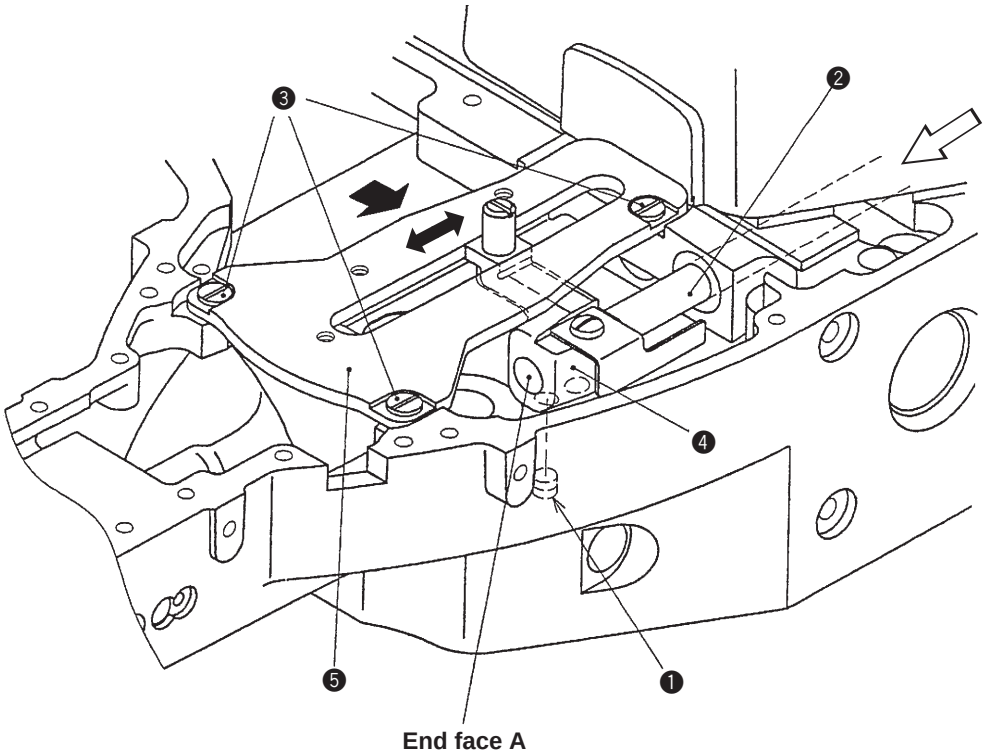


2) Adjusting the positions of the X motor and the Y motor (adjusting the backlash of the driving gear)

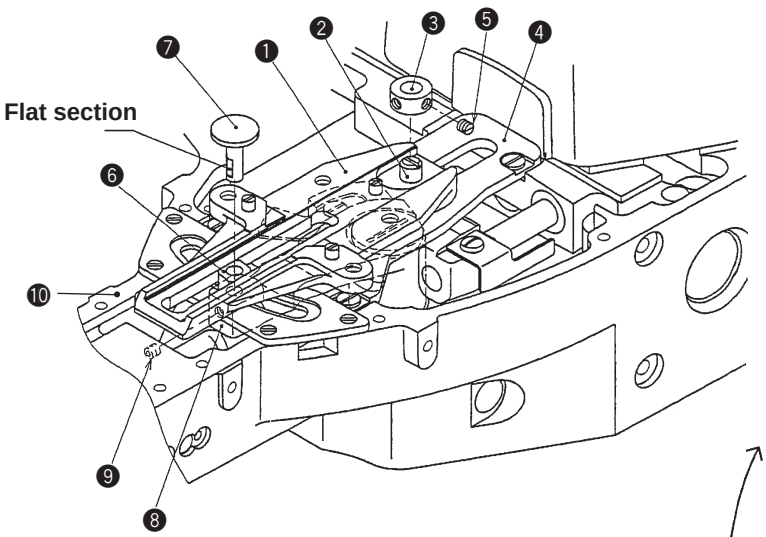


Adjustment Procedures	Results of Improper Adjustment
1) Loosen three setscrews ❶, strongly push the X motor base in the direction of arrow (➡), and tighten again setscrews ❶. **(Caution) When removing setscrews ❶ and the X motor base, the position of engagement of X feed arm gear section ❷ and motor base gear section ❸ is shifted. When the position is shifted, install the X motor base so that motor base gear section ❸ is placed almost in the center of the X motor base when X feed arm ❹ is aligned with the center of the hook driving shaft.**	○ If the pushing is not sufficient, the backlash of the gear will become large, and the accuracy of the needle entry will be lowered. Also, it will cause the failure of the feed. ○ If the position of the engagement of gear is shifted, maximum area cannot be secured.
1) Remove felt presser ❸ and loosen four setscrews ❶. Lightly push Y motor ❹ in the direction of arrow (➡), and tighten again setscrews ❶. 2) Loosen four setscrews ❷ and lightly push X motor ❺ in the direction of arrow (➡). Then tighten again setscrews ❷.	○ If the pushing is not sufficient, the backlash of the gear will become large, and the accuracy of the needle entry will be lowered. Also, it will cause the failure of the feed.

3) Installing the feed plate support plate



4) Installing the feed plate



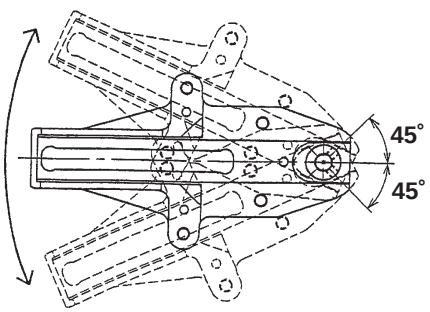
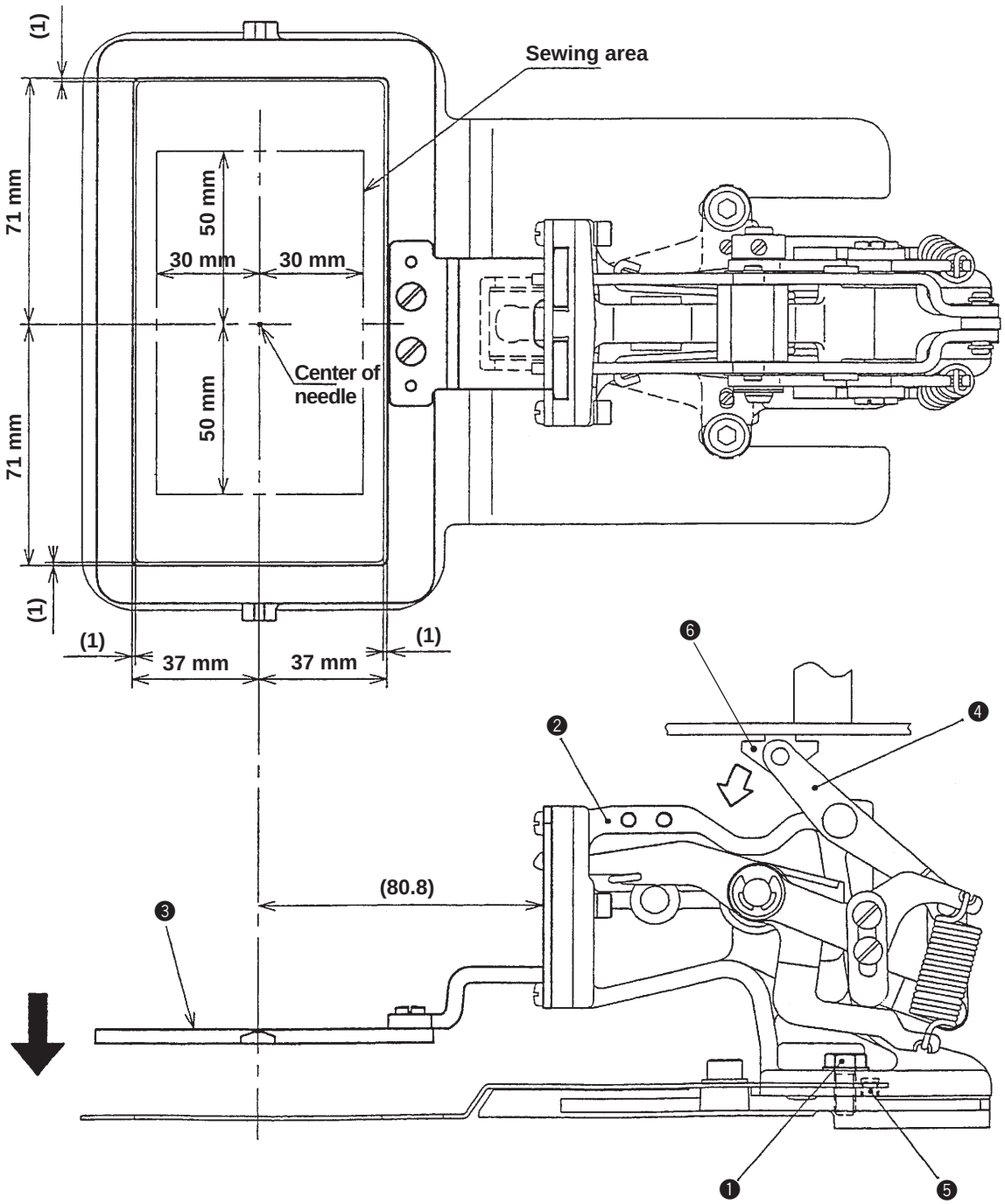


Fig. 1

Adjustment Procedures	Results of Improper Adjustment
1) Loosen two Y feed arm setscrews ❶. 2) Push Y feed shaft ❷ in the direction of arrow ⇦. 3) Loosen three setscrews ❸ in the feed plate support plate, and lightly press the feed plate support plate in the ➡ direction. Moving Y feed arm ❹ in the ⟷ direction making Y feed shaft ❷ as a guide, fix feed plate support plate ❺ to the position where there is no torque. 4) Align Y feed shaft ❷ with end face A of Y feed arm ❹ and securely tighten Y feed arm setscrews ❶.	○ The load of the feed will become large, causing the failure of the feed. ○ Noise of feeding cloth is increased at the time of sewing unless the feed plate support plate is pressed in the ➡ direction.
1) Insert feed plate ❶ into Y feed support shaft ❷. 2) Enter thrust collar ❸ to Y feed support shaft ❷, push feed plate ❶ to feed plate support plate ❹, and remove the thrust. Then tighten two setscrews ❺. **(Caution) When tightening setscrews ❺, move feed plate ❶ in the direction of arrow and tighten the setscrews so that the position of the setscrews becomes as shown in Fig. 1.** 3) Place square block ❻ in the slot portion of feed plate ❶ and insert X feed support shaft ❼ into X feed arm ❽. **(Caution) 1. Adjust the flat section to the position of the screw.** **2. The square block ❻ is a selective part. Select a square block which is rather tight against the slot portion of feed plate ❶.** **B1414232000 ..... Loose** **B141423200A ..... Medium** **B141423200B ..... Tight** 4) Lightly push the flange section of X feed support shaft ❼ to feed plate ❶ in the state that a spacer of 0.25 mm is inserted between feed plate ❶ and X slide plate ❿, and tighten setscrew ❾.	○ The load of the feed will become large, causing the failure of the feed or noise.

5) Installing the feed bracket

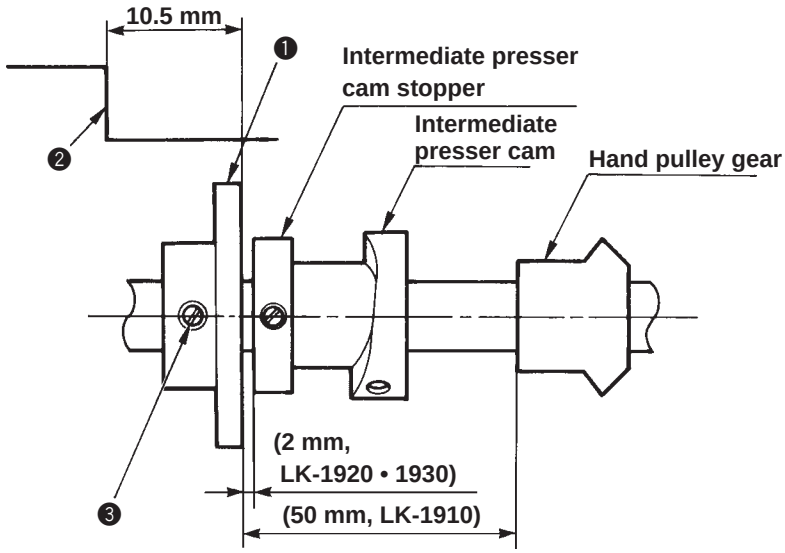


Adjustment Procedures	Results of Improper Adjustment
1) Select “Test mode No. 2 Origin retrieval”. (For LK-1910/20 only) 2) Simultaneously pressing [ ] and ( ) in the operation panel, turn ON the power. (For LK-1930 only) 3) Press [1] in the operation panel. (For LK-1930 only) 4) Depress the pedal to retrieve the origin. 5) Tighten two setscrews ❶ to install feed bracket ❷. (Perform the same for the pneumatic type.) * For the magnet type, push outer frame ❸ in the direction of arrow ➡ and feed bracket upper link ❹ turns in the direction of arrow ⇨, which makes it easy to install the feed bracket. **(Caution) 1. When installing, place feed plate pin ❺ in the hole of feed bracket ❷.** **2. Install slider ❻ so that it is oriented as shown in the figure on the left.**	○ If the installing dimension is not proper, maximum sewing area cannot be secured.

(9) Adjusting the bobbin thread winder components

Standard Adjustment

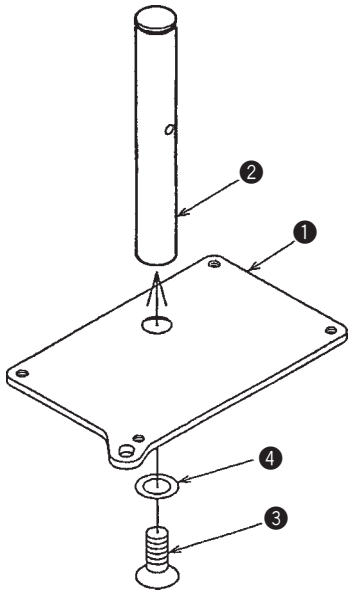
1) Adjusting the position of the bobbing winder driving wheel



(10) Adjusting the presser components

Standard Adjustment

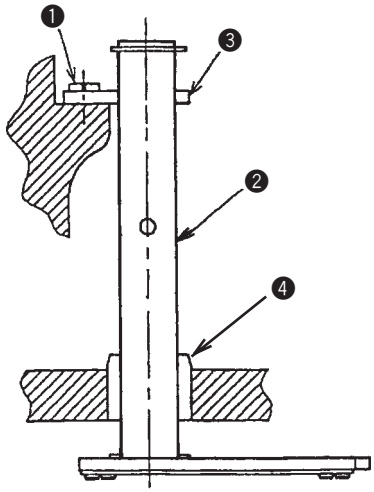
1) Joining of the presser plate and the presser shaft (Solenoid type)



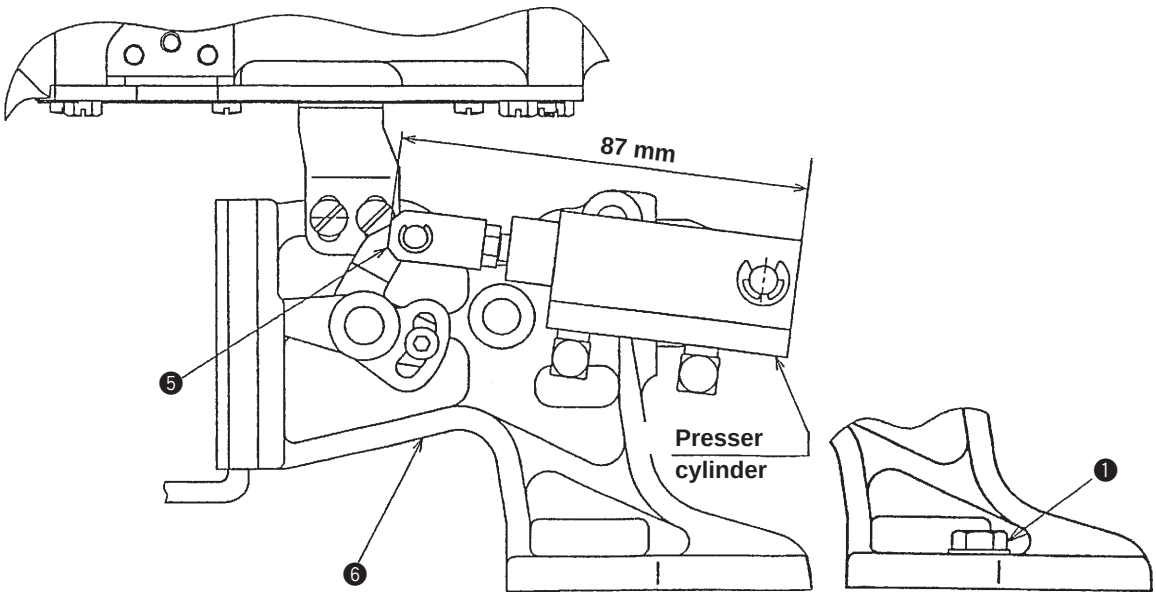
Adjustment Procedures	Results of Improper Adjustment
1) Adjust the position of bobbin winder driving wheel ❶ so that the clearance provided between bobbin winder driving wheel ❶ and arm cover installing face ❷ should be 10.5 mm, and tighten setscrews ❸ (2 places).	○ If the clearance is small, it will cause worn-out of the bobbin thread winder components or seizure. ○ If the clearance is excessive, due to slipping of the bobbin thread winder, the worn-out will occur.

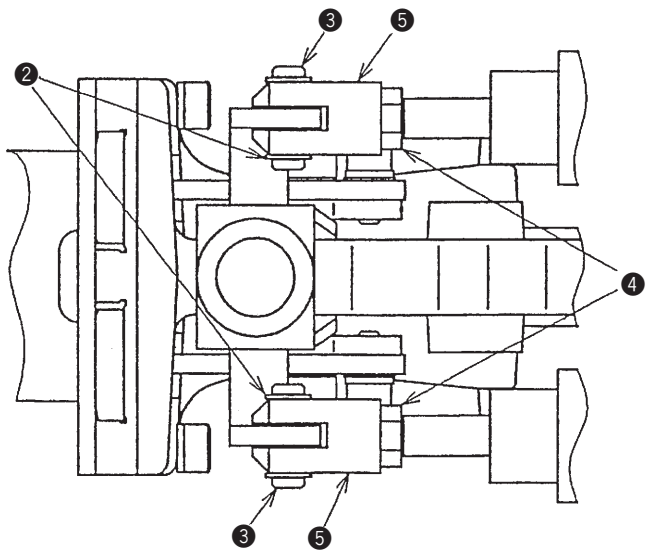
Adjustment Procedures	Results of Improper Adjustment
1) When joining presser plate ❶ to presser shaft ❷, put washer ❹ between the presser plate and oval counter-sunk screw ❸. Adjust the number of pieces of washer ❹ so that there is no difference in level between oval counter-sunk screw ❸ and the bottom face of presser plate ❶ after tightening the screw.	

2) Adjusting the position of the presser shaft guide (Solenoid type)



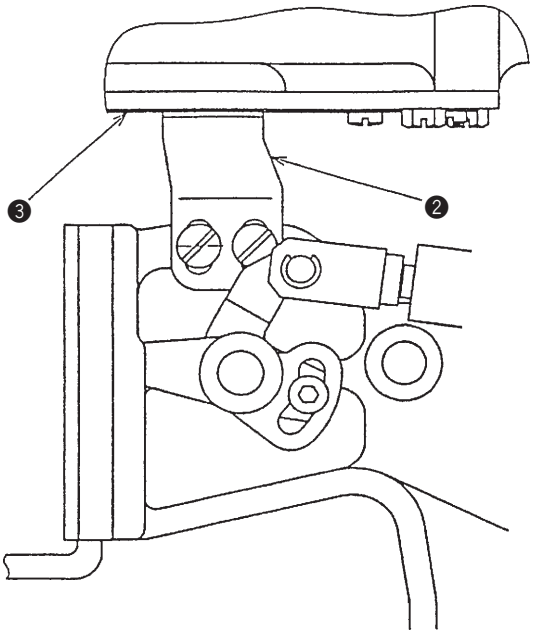
3) Adjusting the presser cylinder (Pneumatic type only)



Adjustment Procedures	Results of Improper Adjustment
1) Loosen two attaching screws ❶. Apply grease to the inside of presser shaft bushing ❹ and the inside of presser shaft guide ❸, and fix presser shaft guide ❸ to the presser shaft in the state that no load is applied to presser shaft ❷. Then tighten attaching screws ❶.	○ If the adjustment is not correct, the presser shaft guide interferes with the presser shaft and the presser shaft may fail to work.
1) Loosen two setscrews ❶ and remove feed bracket ❻. 2) Remove E rings ❷ and remove knuckle pins ❸. 3) Loosen nuts ❹ and turn cylinder knuckle ❺ to adjust. 4) After the adjustment, tighten nuts ❹, place knuckle pins ❸ and attach E rings ❷. 5) Install feed bracket ❻. (For installing, refer to “(8)-5 Installing the feed bracket”.) 	○ If the adjustment of the cylinder is not correct, the failure of presser lifting or contact of components will occur.

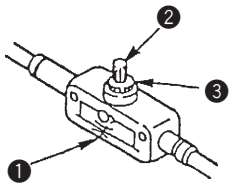
4) Height of the slider (Pneumatic type only)

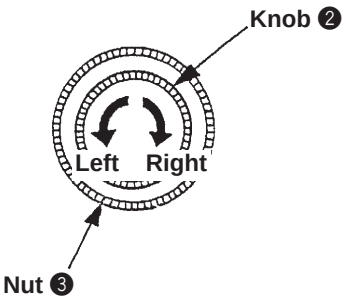
1. Closely attach the top end of slider ❷ to presser plate sheet ❸.

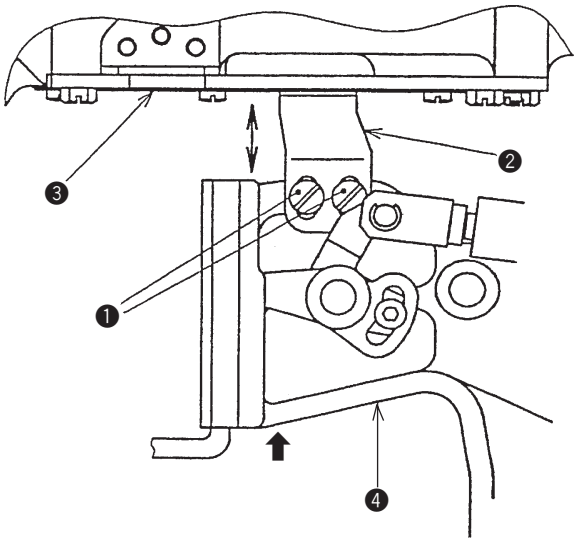


5) Adjusting the speed controller

1. Lowering speed of the presser is properly adjusted.
2. When using as 2-step presser, lowering speed of the left and right can be adjusted.





Adjustment Procedures	Results of Improper Adjustment
1) Adjust the height of slider ❷ using four setscrews ❶. To position the height, press slider ❷ to presser plate sheet ❸ in the state that feed bracket ❸ is lightly lifted in the ⬆ direction when the presser goes up. **(Caution) Under the normal state, a slight clearance is provided between slider ❷ and presser plate sheet ❸. This case is not abnormal.**  	○ If the height of the slider is incorrect, malfunction of the feed will occur.
1) Adjst the knob ❷ of speed controller ❶ which is located on the way of the air tube as follows. Presser down side : Loosen nut ❸, turn knob ❷ counterclockwise until it goes to the end, turn it clockwise four times, and tighten nut ❸. 2) To increase the speed of lowering the presser, turn knob ❷ counterclockwise. 3) To decrease the speed of lowering the presser, turn knob ❷ clockwise.	○ Speed of lowering action of the feeding frame becomes too fast or too slow.

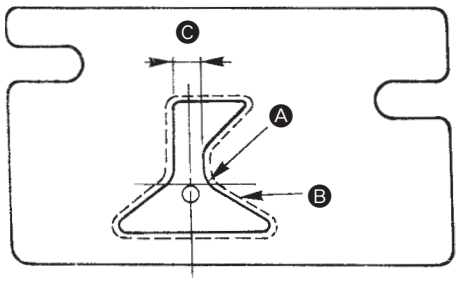
(11) Adjustment of the sewing components

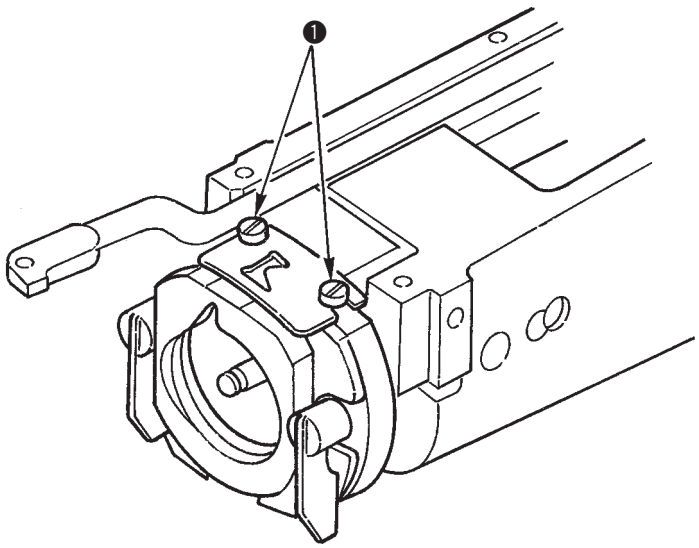
Standard Adjustment

1) Adjusting the position of the shuttle upper spring

Align the center of the needle with the center of slit width Ⓒ for the lateral position. Align the rear end of the needle with angle section Ⓐ for the longitudinal position.

(Caution) If there is a scratch on section Ⓑ polish there with buff or the like as it will cause thread breakage, hangnail of thread, stain on thread, etc. Especially pay attention to the rear side.

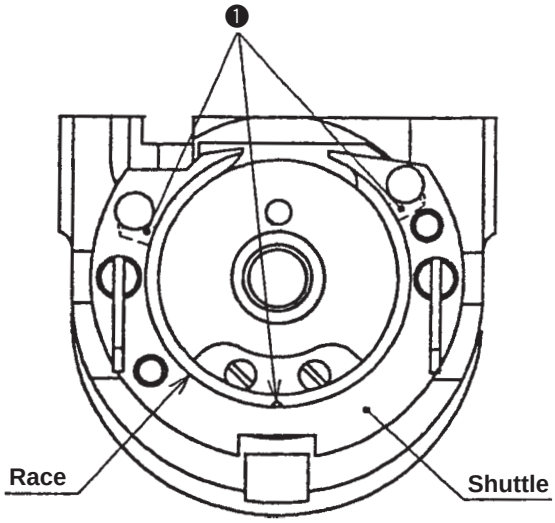


Adjustment Procedures	Results of Improper Adjustment
1) Remove the feed bracket, feed plate and throat plate, and adjust with screws ❶. **(Caution) The lateral position will vary when the shuttle is adjusted. Perform the adjustment of the position of the shuttle upper spring after performing the standard adjustment of the shuttle without fail.**  	○ If the shuttle upper spring is slid laterally or longitudinally, needle thread will be caught in the shuttle. ○ If the spring is excessively placed in the rear, the moving knife may fail to catch needle thread. ○ If the spring moves excessively to the left, the moving knife may fail to catch bobbin thread.

Standard Adjustment

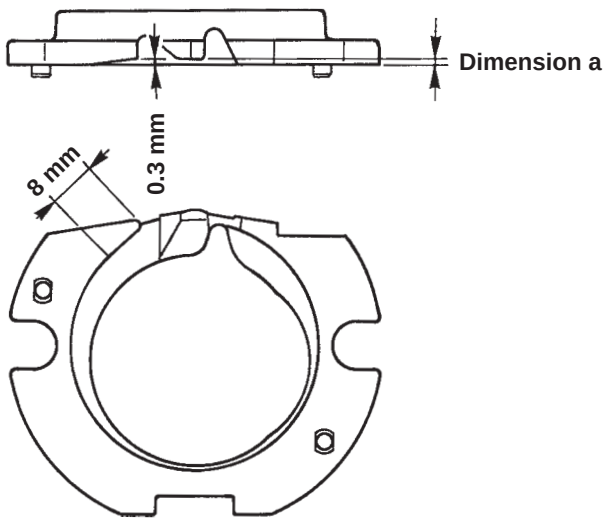
2) Shuttle felt

Three pieces of shuttle felt ❶ are inserted into the hole of the shuttle race. When setting the inner hook and rotating it along with the shutle race, make sure whether the felt is applying a load.



3) Shape of the shuttle race ring

If the blade point of the inner hook is excessively worn out, remove the shuttle race ring, and make sure that the dimension of the slanting section on the reverse side is 0.3 x 8 mm.



Adjustment Procedures	Results of Improper Adjustment
1) If shuttle felt ❶ is protruding, or is replaced with a new one, push it into the hole with tweezers or the like. **(Caution) Do not put it excessively into the hole. Align the height with the race face.**	○ If the shuttle felt is protruding, a rotating load is applied to the inner hook, causing stitch failure. ○ If the shuttle felt is lacking, or is excessively pushed into the hole, shuttle lubrication will be insufficient, causing shuttle-heating or worn-out of the shuttle.
1) If the dimension of 0.3 x 8 mm is not set right, readjust with oilstone.	

Dimension A (mm)	Part No.	Name of part	Remarks
0.8	14103253	Shuttle race ring A	Optional
1.3	14103352	Shuttle race ring B	Provided as standard for S and H types.
1.7	14103659	Shuttle race ring C	Optional
1.9	B1817210DA0	Shuttle race ring D	Optional

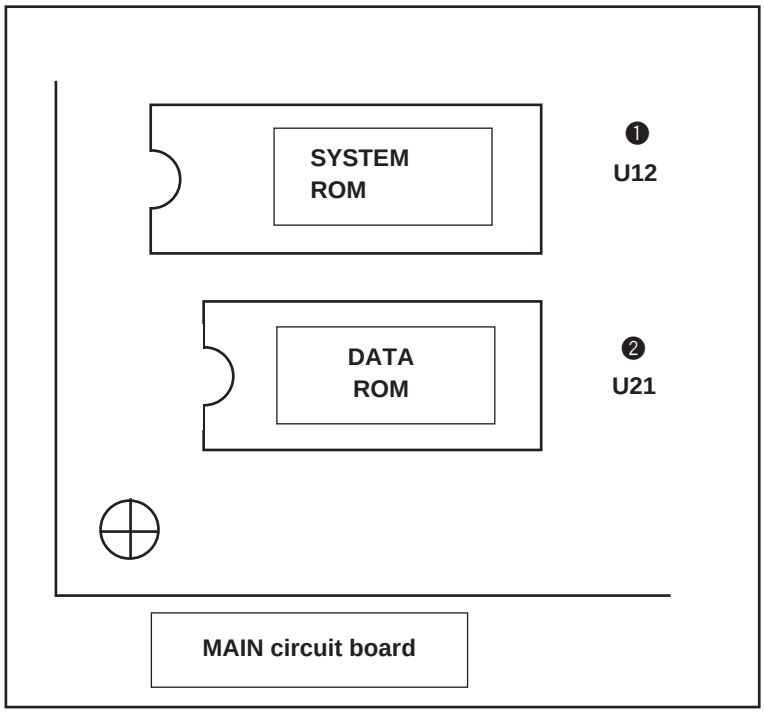
4) List of replacement components for standard and heavy-weight materials

<< Replacement components for LK-1910, -1920, and -1930 >>

No	Type / Parts	Part No.	
		S type (Standard)	H type (Heavy-weight materials)
1	Needle	DPx5#14	DPx17#18
2	Needle bar	B1401210000	←
3	Needle bar thread guide	B1405210000	B1406210000
4	Needle hole guide (Hole diameter)	B2426284M00 (ø1.6)	14109607 (ø2.3)
5	Shuttle driver	B1812210D00	←
6	Bobbin	B1505210D00	←
7	Bobbin case	B1828210DAA	←
8	Inner hook	B1818210D0A	B1818210D0B
9	Inner hook presser asm. (Level difference)	14103352 (1.3 mm)	←
10	Link type thread take-up lever asm.	B1901210DC0	←
11	Counterweight	B1206210D00	←
12	Shuttle upper spring	B1815980000	←
13	Moving knife	B24212800A0	←
14	Counter knife	B2424280000	←
15	Needle clamp screw	SS7080510TP	←
16	Intermediate presser	B1601210D00A	←
17	Feeding frame (Magnet type) (Air type)	B2553210D00 B2554210D00	←
18	Feed plate	14218002	←
19	Thread tension No. 2 asm.	B23022800A0	B23022050A0

4. STITCHING PATTERN (LK-1910, 1920)

(1) . Service pattern



- ○ Three kinds of service patterns (No. 50, 51 and 52) are registered in LK-1910 / 20 beforehand.
- ○ Data are registered in SYSTEM_ROM of ❶.
- ○ Patterns in SYSTEM_ROM are fixed data and cannot be edited with the input device (PGM-20) or the like.

(2) . Patterns for users

1) ROM for patterns for users (❷ **DATA_ROM**)

- ○ No pattern is registered. Create and register the pattern with the input device for use.

2) Specifications

- ○ Available pattern No. ..... 1 to 99
- ○ Available number of patterns ... 64 (excluding service pattern)
- ○ Max. number of stitches ..... 10,000 stitches
- ○ When using No. 50, 51 and 52, contents of DATA_ROM are preceded.
  (When removing DATA_ROM, service pattern is read out.)

3) Input device

PGM-20

* Settings when creating patterns of LK-1910/20 are as follows.
  (For the details, see Instruction Manual for the input device.)

- ○ Model setting ..... LK-1910/1920 (Some versions cannot select the model setting. In this case, select LK-1900.)
- ○ Max. sewing area ..... X (lateral) direction 100 mm X Y (longitudinal) 60 mm

4) Storage medium

○ Standard DATA_ROM (U21)
256k bit EEP-ROM (58C256)
Part No. : HL011940000

○ In addition to the standard DATA_ROM, the following ROM is available.
1) Data ROM of existing AMS-205, 206.
64k bit EEP-ROM (58C65)

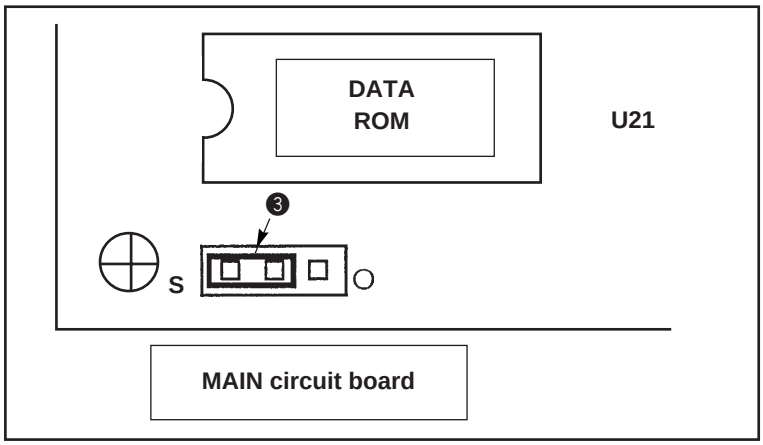
*** When using the above ROM, change of the switch on MAIN circuit board is required. (Change the jumper post of ❸ from S to ○.)**



Setting of standard 58C256



Setting of 58C65 for AMS-205, 206



(Caution) 1. When changing DATA_ROM, make sure of setting of jumper post of ❸. If it is mistaken, correct data cannot be read.

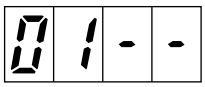
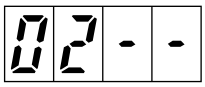
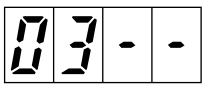
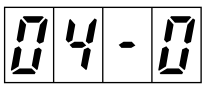
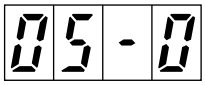
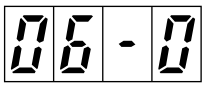
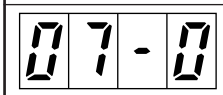
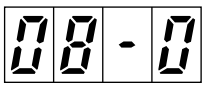
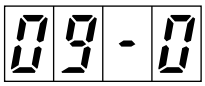
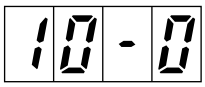
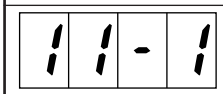
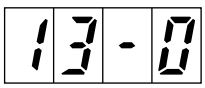
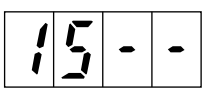
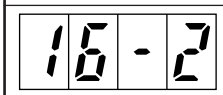
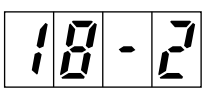
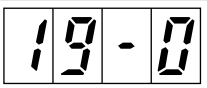
2. When desiring to use data of LK-1900, write the data in the standard DATA_ROM by means of input device (PGM-20).

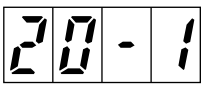
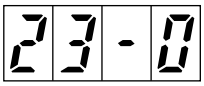
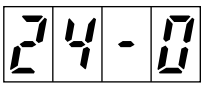
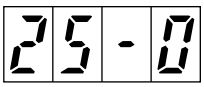
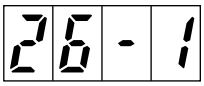
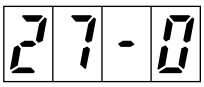
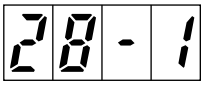
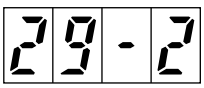
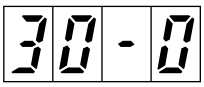
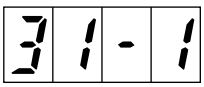
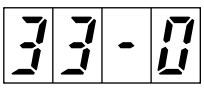
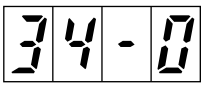
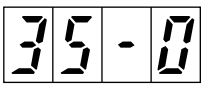
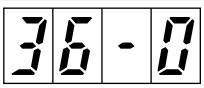
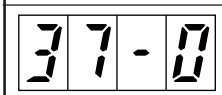
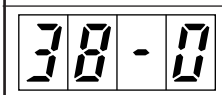
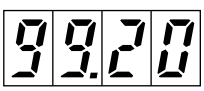
*** DATA ROM (EP-ROM, 27C256) of LK-1900 cannot be used as it is.**

5. MEMORY SWITCH (LK-1910, 1920)

○ **Purpose of the memory switch ....** The memory switches are able to set the various performance of the sewing machine by means of programming. The contents are separated in the user level (U) and the service level (S).

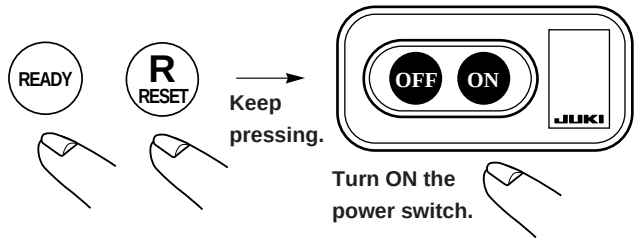
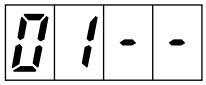
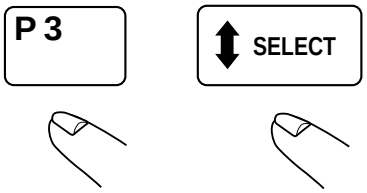
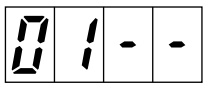
○ **List of items of memory switches**

No.	Level	Function	Setting range	State at the time of delivery
	U	Setting of upper limit of sewing speed (Setting in unit of 100 r.p.m.)	200 to 2,500 r.p.m.	2,500 r.p.m.
	U	Setting of soft start speed (Start-up speed of 1st to 5th stitch at sewing start is set in unit of 100 r.p.m.)	1st stitch : 200 to 900 2nd stitch : 200 to 2,500 3rd stitch : 200 to 2,500 4th stitch : 200 to 2,500 5th stitch : 200 to 2,500	200 r.p.m. 600 r.p.m. 1,000 r.p.m. 2,500 r.p.m. 2,500 r.p.m.
	U	Setting of calling service pattern data	Pattern No. 50 to 52 can be individually set. 0 : Ineffective 1 : Effective	No. 50 : 1 No. 51 : 1 No. 52 : 1
	U	Selection of key lock mode X/Y scale, display of max. speed limitation, and whether to change can be set. (Prevention of maloperation)	0 : OFF 1 : ON (Key lock)	0
	U	Selection of counter action Production counter : adding counter Bobbin thread counter : subtracting counter	0 : Production counter 1 : Bobbin thread counter	0
	U	Selection of needle bar stop position Upper dead point stop : After up-position stop, needle bar rotates reversely and stops near its upper dead point. (Stop position is higher.)	0 : Up position stop (53˚) 1 : Upper dead point stop (0˚)	0
	U	Selection of reference point of enlargement/reduction	0 : Origin 1 : Sewing start point	0
	U	Whether to execute origin retrieval after completion of sewing (When sewing with normal pattern No.)	0 : No 1 : Yes	0
	U	Whether to execute origin retrieval after completion of sewing (When sewing with cycle pattern)	0 : No 1 : Yes	0
	U	Selection of pedal specifications	0 : 1 pedal 1 : 2-step pedal 2 : 1 pedal (PK-57) 3 : 3-step pedal (right precedence) 4 : 3-step pedal (left precedenc) 5 : 3-step pedal (no precedence)	Solenoid type : 0 Pneumatic type : 3
	U	Selection of output of wiper solenoid	0 : No 1 : Yes	1
	S	Selection of prohibition of presser lifting after completion of sewing	0 : Lifting 1. : Prohibited	0
	S	Setting of range of feed travel limit (Setting separated in domains of +X, -X, +Y, and -Y)	X : 0 to ± 50 Y : 0 to ± 30 (Unit : 1 mm)	+X : 50 -X : 50 +Y : 30 -Y : 30
	U	Selection of input of midway stop switch (When selecting panel reset key, input of midway stop is performed only during sewing operation.	0 : Ineffective 1 : Operation panel reset key 2 : Machine head switch	2
	U	Selection of feed timing When thread is not well-tightened, set 1 or 0 to increase effect. (Main shaft angle sets start of feeding.)	0 : 161˚ Slow 1 : 149˚ 2 : 137˚ 3 : 125˚ Fast	2
	S	Selection of control of simultaneous jump feed with thread trimming (Normally, use 0.)	0 : Yes 1 : No	0

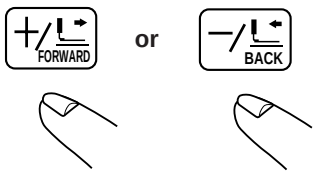
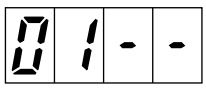
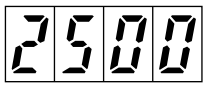
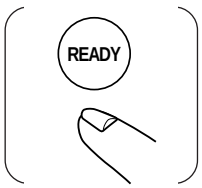
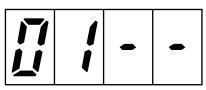
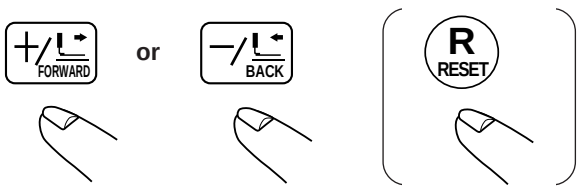
No.	Level	Function	Setting range	State at the time of delivery
	S	Needle thread breakage detection function is provided or not. (Detected at 8 stitches at sewing start and 3 stitches in midway)	0 : No 1 : Yes	1
	S	Selection of whether to execute intermediate presser control (Intermediate presser action delay is omitted and the cycle-time is shortened by setting "without intermediate presser control" when initial setting of LK-1920. Approximately 0.1 sec)	0 : No 1: Yes	LK-1910 : 0 LK-1920 : 1
	U	Selection of upper/lower sweeping of wiper	0 : Wiper sweeps above intermediate presser. 1 : Wiper sweeps below intermediate presser.	0 LK-1920 only
	U	Selection of air pressure detection	0 : No 1 : Yes	Solenoid type : 0 Pneumatic type : 1
	U	Origin correction when using presser of AMS-206 (Automatic shift to Y = -12 mm immediately after origin retrieval)	0 : No 1 : Yes	1
	U	Selection of basting mode Sewing data of pattern is read to “jump feed” and point of inflection to “sewing” respectively, and operation is performed.	0 : Normal 1 : Basting	0
	U	Selection of output of optional disk floating solenoid	0 : No 1 : Yes	1
	S	Do not change setting	0 : 1 : 2 :	2
	S	Selection of automatic preparation action when turning the power ON (Mode that pattern reading is executed and the condition is put in sewing when turning the power ON.)	0 : No 1 : Yes	0
	U	Making use of inversion command of pattern data, select whether to use inversion presser or thread tension controller No. 3 drive.	0 : Connection with inversion clamp presser 1 : Connection with thread tension controller No. 3	1
	U	Selection of presser lifting timing after completion of sewing	0 : Thread trimming presser lifting after return to origin 1 : Presser lifting immediately after thread trimming	0
	U	Selection of action of return to sewing start point If it is made effective, the machine traces sewing pattern and returns to sewing start point (only when inversion presser is used.).	0 : Normal 1 : Trace	0
	U	Selection of output of needle cooler	0 : No 1 : Yes	0
	S	Selection of thermal protect detection (Normally use “0”.)	0 : Yes 1 : No	0
	U	Selection of control of thread trimming command of pattern data (Even when it is ineffective, it is effective when stopping in midway or the like.)	0 : Yes 1 : No	0
	U	Selection of control of thread trimming device (In any case, thread trimming is not possible.)	0 : Yes 1 : No	0
	S	Selection of model at the time of delivery (Initial setting)	10 : LK-1910 / S 11 : LK-1910 / A 20 : LK-1920 / S 21 : LK-1920 / A (/ S : Magnet type) (/ A : Pneumatic type)	Depending on the specifications When changing, all memory switches are initialized to default values.

(1) Operating method (LK-1910, 1920)

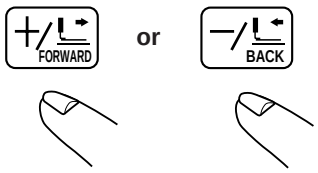
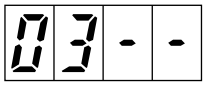
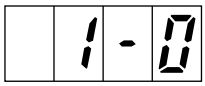
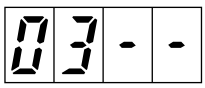
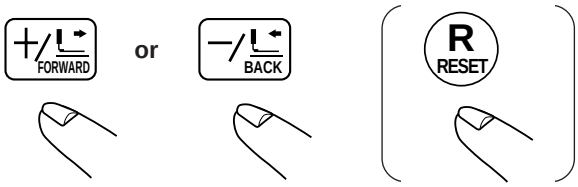
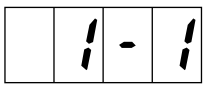
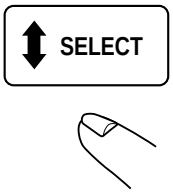
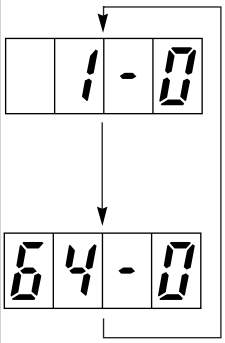
1) How to start the memory switches

Step	Operation method	Indication	Explanation
1			Pressing (READY) key and (R RESET) key, turn ON the power switch. (Start of the level 1) Immediately after turning
2			ON the power switch, simultaneously press [P 3] key and [SELECT] key. (The level moves to the level 2.)

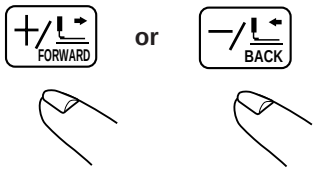
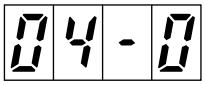
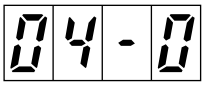
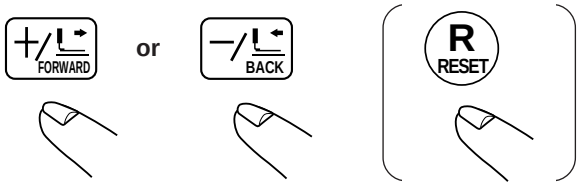
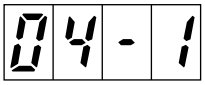
① Operation when both the latter first digit and second digit on the indication are "- -".

Step	Operation method	Indication	Explanation
① -1		[Ex.] When No. 01 is indicated. 	Press down [FORWARD] and [BACK] keys to select the indication No. desired to change.
① -2		 Sewing LED Lights up.	Press down (READY) key to light up the sewing LED.
			In step ① -2, if pressing down (READY) key again, the indication returns to the indication No.
① -3		(Example) When the max. speed limit is 1,800 r.p.m. 	Press down [FORWARD] and [BACK] keys to change and check the contents. (The setting returns to the initial setting by pressing down (R RESET) key.)
① -4		 Sewing LED Put out.	After setting, press down (READY) key and put out the sewing LED. Then register the contents.

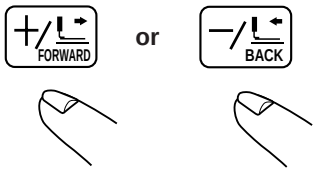
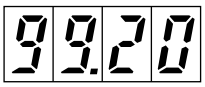
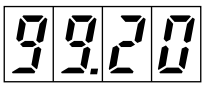
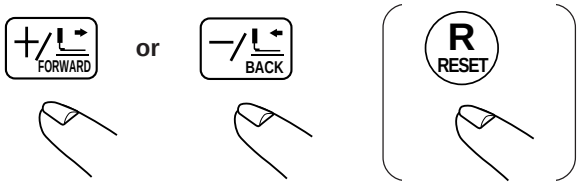
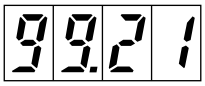
② Operation when the indication is “0 3 - -”.

Step	Operation method	Indication	Explanation
② -1			Press down FORWARD or BACK key to select the indication No. 3.
② -2		SEWING Sewing LED Lights up. 	Press down READY key to light up Sewing LED.
		SEWING Sewing LED Put out. 	When the step is ② - 2, if READY key is pressed twice, Sewing LED is put out and the indication returns to No. 03.
② -3		[Ex.] Calling of the standard pattern data to pattern No. 1 is possible. 	Press down FORWARD or BACK key to change whether or not to call the standard pattern data. (The setting returns to the initial value by pressing down R RESET key.)
② -4			Every time SELECT key is pressed, the pattern No. increases by one. (Pattern Nos. : 1 to 64) When the pattern No. is changed to the No. desired, change whether or not to call the standard pattern by operating the step ② - 3. After the pattern No. 64, the pattern No. returns to the Pattern No. 1.
② -5		SEWING Sewing LED Put out.	After setting, press down READY key to put out Sewing LED and register.

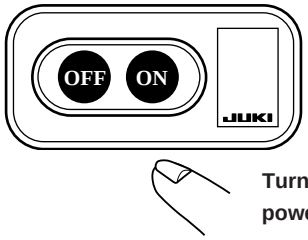
③ Operation when the latter second digit is “–” and first digit is “Numeral”

Step	Operation method	Indication	Explanation
③ -1		[Ex.] When the indication No. is No. 04. 	Press down FORWARD or BACK key to select the indication No. 04.
③ -2		SEWING Sewing LED Lights up. 	Press down READY key to light up Sewing LED.
③ -3			Press down FORWARD or BACK key to change the set value. (The setting returns to the initial value by pressing down R RESET key.)
③ -4		SEWING Sewing LED Put out.	After setting, press down READY key to put out Sewing LED and register.

濼 Operation when the indication section is “99.”

Step	Operation method	Indication	Explanation
濼-1		[Ex.] When the indication No. is No. 99. 	Press down FORWARD or BACK key to select the indication No. 99.
濼-2		SEWING Sewing LED Lights up. 	Press down READY key to light up Sewing LED.
濼-3			Press down FORWARD or BACK key to change the set value. (The setting returns to the initial value by pressing down R RESET key.)
濼-4		SEWING Sewing LED Put out.	After setting, press down READY key to put out Sewing LED and register.

2) How to finish the memory switches

Step	Operation method	Indication	Explanation
1	 **Turn OFF the power switch.**		Turn OFF the power.

6. HOW TO USE THE MEMORY SWITCH (LK-1930)

(1) Memory switch

The memory switchs mean switches which are able to set the various performances of the sewing machine by means of programming.

There are two different start levels, level 1 and level 2, for the memory switches according to the function level as described below.

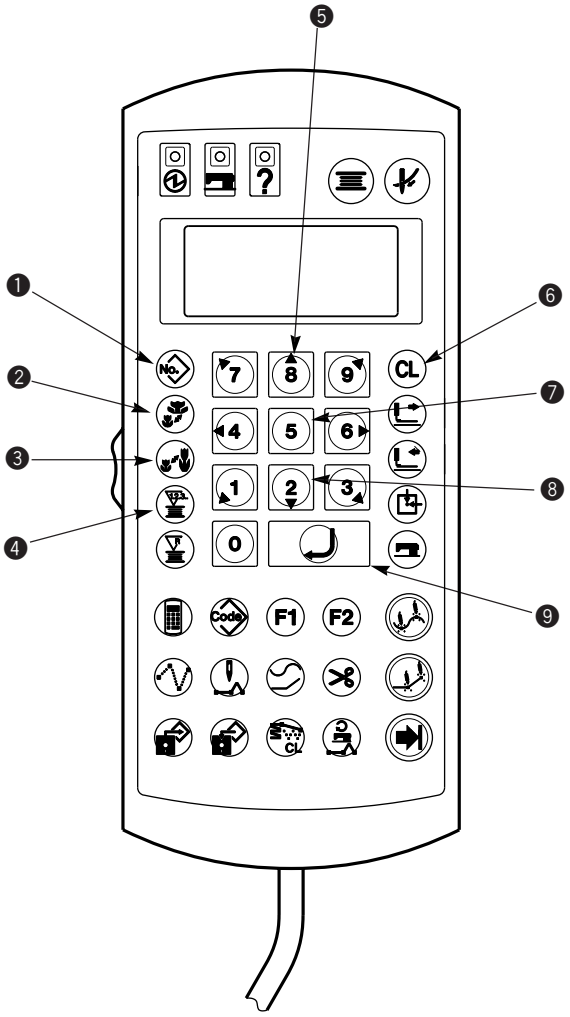
Level 1 : The function that allows selection of performances or change of set values which are supposed to be comparatively frequently changed is actuated. The contents of the function by the level 1 are described in the instruction manual.
(Example : Intermediate presser operation mode, bobbin thread counter mode, etc.)

Level 2 : The function that allows setting of special performances at the time of modification or more detailed operation is actuated. Also, level 2 actuates while including the function that actuates on the level 1.

(2) Explanation of the operation panel to be used

The functions of the operation panel to be used are as described below.

Names of the switches for the memory switches



❶ Key for indication of changing function No.
❷ Key for changing set item 1
❸ Key for changing set item 2
❹ Key for changing set item 3
❺ Key for update (+1) and level 2 starting
❻ Key for memory switch setting mode cancel
❼ Key for update and level 1 starting
❽ Key for update (-1)
❾ Key for memory switch setting mode end

(3) How to start the memory switches

Perform the start of the memory switches as described below.

[How to start the level 1]

Step 1 : Turn ON the power switch while keeping the [5] key on the operation panel held depressed.

The displays on the operation panel give the indications as shown below.

002. SCALE CONV
INC/DEC STITCH

Fig. 2

[How to start the level 2]

Step 1 : Turn ON the power switch while keeping the [8] key on the operation panel held depressed.

The displays on the operation panel give the indications as shown below.

> MEMORY SW MENU <
1. INITIALIZE
2. SET UP
3. EXIT

Fig. 3

(4) How to change the contents of each setting

The sequence of the way of change when starting level 1 and level 2 is shown in the figures below.

Step 1 : Start of the level 1
Start setting of the memory switch following the starting way of the memory switch.

Step 2 : Press the indication of changing function No. [No.] key, and select the function No. to be changed with [8] or [2] key.

Step 3 : Press the set item change indication keys, [←], [→] or [CLR] key, and select the item desired to change.

Step 4 : Change the setting of the selected item using the [8] or [2] key.

Step 1 : Start of the level 2
Start the level 2 following the starting way of the memory switch.

Step 1 : The display gives the indication as shown below, and the level 2 starts.

> MEMORY SW MENU <
1. INITIALIZE
2. SET UP
3. EXIT

If the above displays are given, select [2], SET UP.

When the settings of the respective items have completed, write in the memory the contents of setting following the steps below.
Refer the way of write-in to the next item.

①

Fig. 4

(5) Write-in of the contents of setting

After setting the respective items, write in the memory the contents of setting following the way of operation as described below.

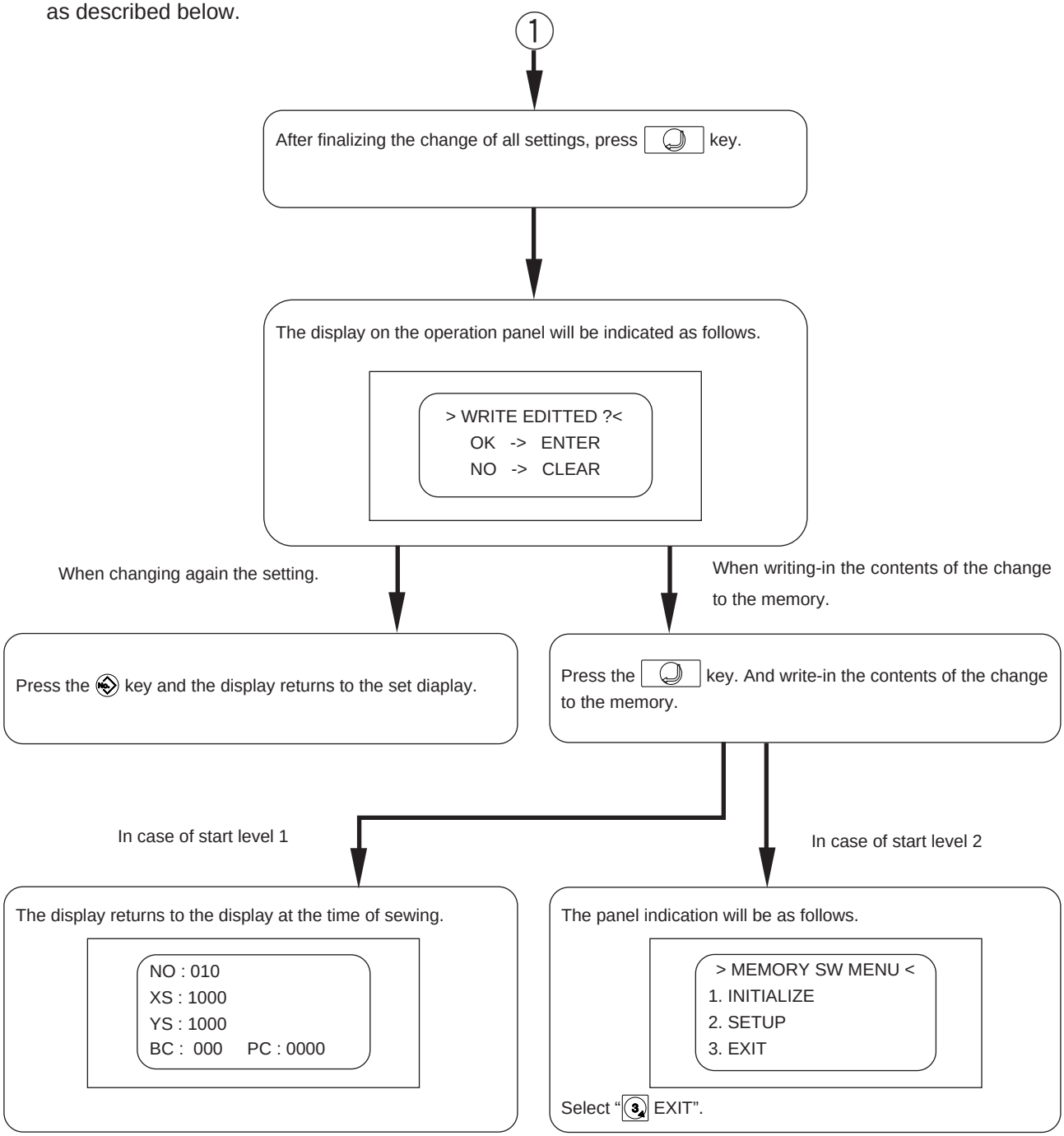


Fig. 5

(6) Writing/reading of the contents of the memory switches onto the floppy disk

It is possible to write the contents of the memory switches onto the floppy disk or to read the memory switches written onto the floppy disk.

Writing/reading of the memory switches can be performed by the operation procedures as shown in the figure below.

How to start writing of the memory switches onto the floppy disk (FD)

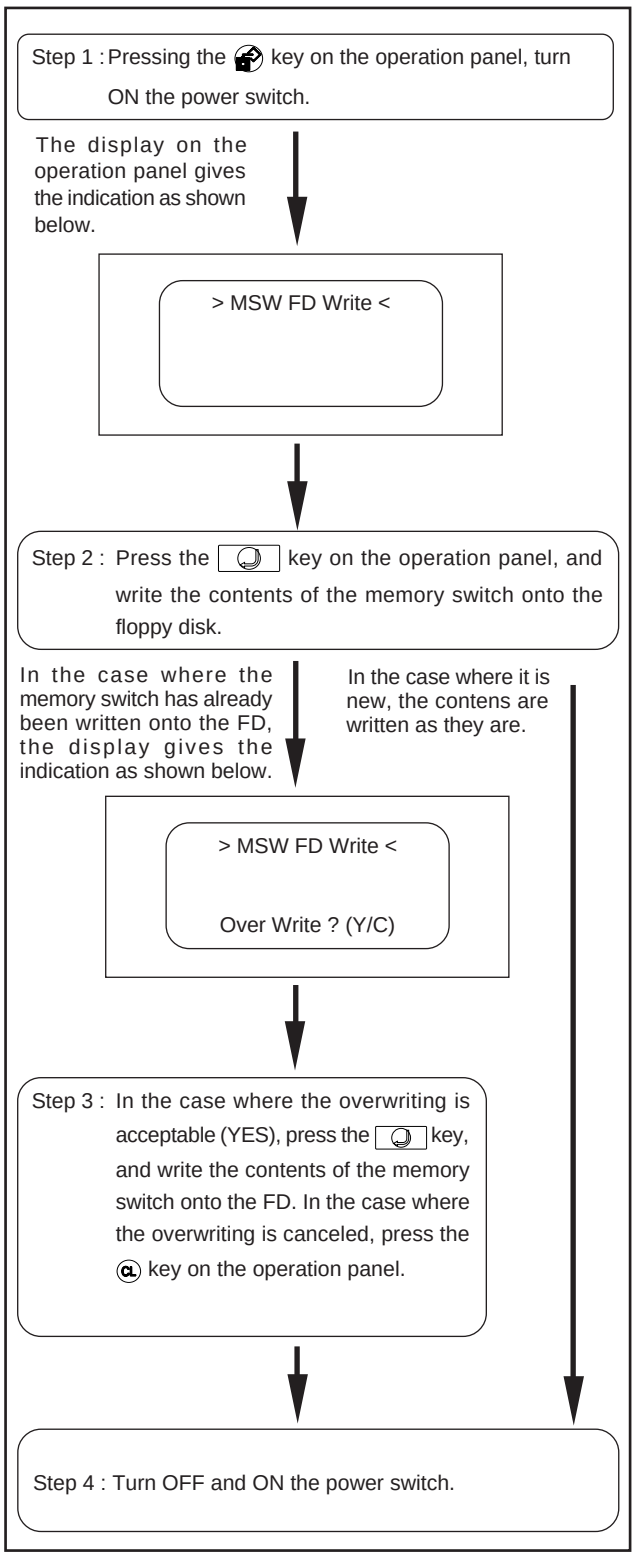


Fig. 6

How to start reading of the memory switches from the floppy disk (FD)

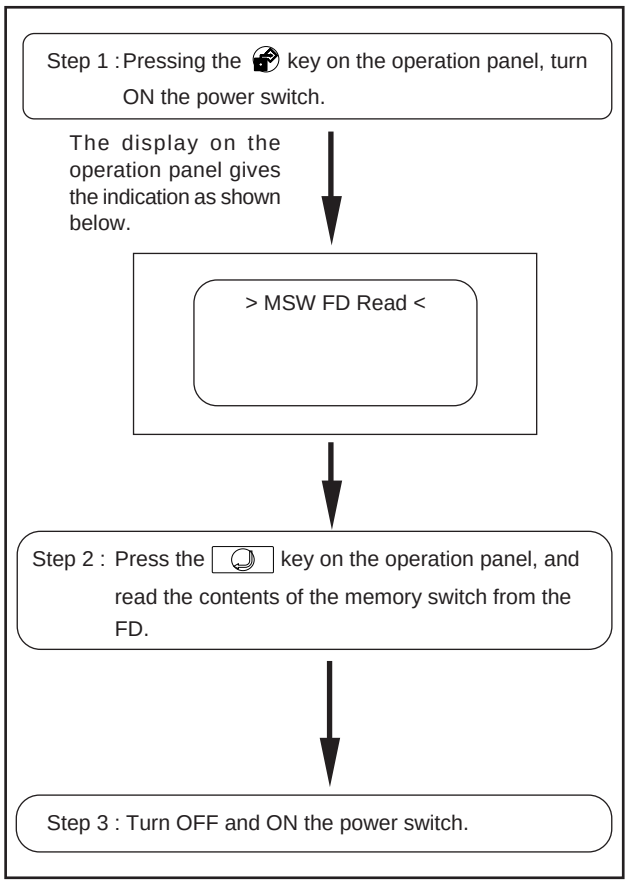


Fig. 7

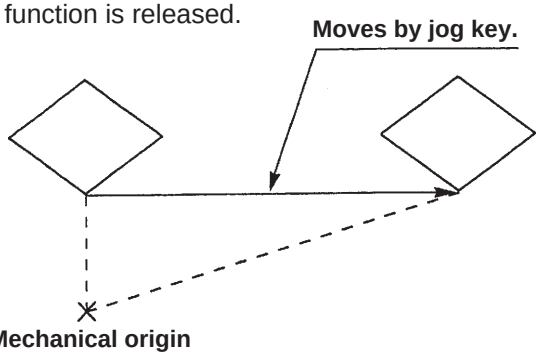
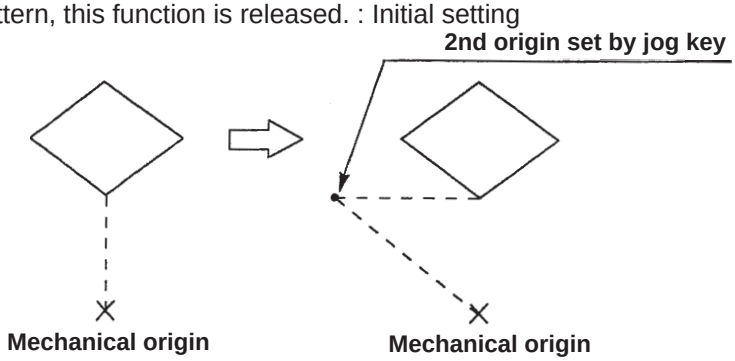
Only one writing of contents of the memory switch for one floppy disk (FD) is possible. If you desire to write plural contents of setting, prepare the number of floppy disks you desire.

7. DESCRIPTION OF THE MEMORY SWITCHES (LK-1930)

NOTE : The contents of the memory switches may vary due to the revision of the system ROM.
(Following contents are applied to the Revision 008 of the System ROM.)

(1) Setting of the language indication		
Function No. : 001		Function : Specifies the language indication on the panel dispaly.
Item : 1 Language specification		(Set level 2)
Indication	JPN (Katakana)	[Contents] Japanese (Katakana indication)
	ENG (English)	[Contents] English : Initial setteing

(2) Setting of the enlargement/reduction function		
Function No. : 002		Function : Pattern enlargement/reduction mode setting
Item : 1 Selection of increase/decrease method		(Set level 1)
Indication	OFF	[Contents] Prohibition of enlargement/reduction
	STITCH	[Contents] Increase/decrease of the number of stitches (Pitch fixed) : Initial setting
	PITCH	[Contents] Increase/decrease of the stitching pitch (Number of stitches fixed)

(3) Jog function setting		
Function No. : 003		Function : Jog mode is set.
Item : 1 Mode specification		(Set level 1)
Indication	OFF	[Contents] Moving of the feeding frame cannot be made with jog keys, ①, ②, ③, ④, ⑥, ⑦, ⑧ and ⑨.
	PARA	[Contents] A sewing pattern can be moved to a specified position by using jog keys ①, ②, ③, ④, ⑥, ⑦, ⑧ and ⑨ → the return-to-origin key. If the 2nd origin is set in the sewing pattern, the 2nd origin also moves. If pressing the [ ] key two times or reading another sewing pattern, this function is released. <Example> 
	2ND	[Contents] The 2nd origin is set to the place specified by the jog keys, ①, ②, ③, ④, ⑥, ⑦, ⑧ and ⑨ → the return-to-origin key. If the 2nd origin is set in the sewing pattern, the machine does not stop at the 2nd origin in the sewing pattern. If pressing the [ ] key two times or reading another sewing pattern, this function is released. : Initial setting <Example> 
Item : 2 Use of the fixed turn-out position		(Set level 2) Complementary explanation → P90
Indication	OFF	[Contents] The fixed turn-out position is not used. : Initial setting
	ON	[Contents] Based on the coordinate set in the EEP-ROM, the 2nd origin common to each sewing pattern is used. The machine does not stop at the 2nd origin in the sewing pattern. Also, the movememt of the feeding frame cannot be made by the jog key. Refer the setting way of the fixed turn-out position to P90.

(4) Mechanical origin retrieval		
Function No. : 007		Function : This function sets the operation of the mechanical origin retrieval.
Item : 1 Setting the operation of each sewing cycle		(Set level 2)
Indication	OFF	[Contents] Not operative : Initial setting
	ON	[Contents] Origin retrieval is made for each sewing cycle.
Item : 2 Operation setting at the time of the moving limit error		(Set level 2)
Indication	ON	[Contents] Origin retrieval is made when returning from the moving limit. (Initial setting)
	OFF	[Contents] No operation

(5) Return to origin operation		
Function No. : 008		Function : This function sets the returning route to the sewing start when pressing the return to origin switch.
Item : 1 Operation mode setting		(Set level 1)
Indication	ROUTE	[Contents] The machine returns to the sewing start point through the shortest distance. : Initial setting
	HOME &	[Contents] The machine moves to the sewing start point along the pattern data after the origin is retrieved.
	TRACE	[Contents] The machine moves to the sewing start along the pattern data in the reverse direction. : Inversion specification • Initial setting
Item : 2Setting of the return to the upper dead point only at the time of origin retrieval and return to origin (Needle UP in the reverse rotation)		(Set level 1)
Indication	OFF	[Contents] Without stopping at the upper dead point : Initial setting
	ON	[Contents] With stopping at the upper dead point : Inversion specification initial

(6) Counter indication setting		
Function NO. : 009		Function : Counter indication setting
Item : 1 Bobbin thread counter indication setting		(Set level 1)
Indication	UP	[Contents] UP counter setting (When one cycle stitching completes, the value shown on the bobbin thread counter increases by 1 count. The counter counts the bobbin thread from 000 to 999.) If the counter set value other than “000” is set, when the set value has come equal to the counter set value, the sewing machine stops. : Initial setting
	DOWN	[Contents] DOWN counter setting (When one cycle stitching completes, the value shown on the bobbin thread counter decreases by 1 count. The counter counts the bobbin thread from 999 to 000.) If the counter set value other than “000” is set, the counter starts counting down from the set value and if the counter value has become “0000”, the sewing machine stops.
Item : 2 Production counter indication setting		(Set level 1)
Indication	OFF	[Contents] Does not indicate the production counter.
	ON	[Contents] Indicates the production counter. : Initial setting
Item : 3 Number of counter digits setting		(Set level 2)
Indication	3 FIG	[Contents] This function makes the number of indicating digits 3 digits. : Initial setting
	4 FIG	[Contents] This function makes the number of indicating digits 4 digits.

(7) Setting of pattern data reading operation		
Function No. : 010		Function : Pattern data reading operation mode is set.
Item : 1 Pattern data reading operation setting		(Set level 2)
Indication	SETUP	[Contents] Pattern data can be read under the sewing setting state. (the sewing LED goes out.) : Initial setting
	READY	[Contents] Pattern data can be read under the sewing ready state. (the sewing LED lights up.)
Item : 2 Constant pattern data reading mode setting		(Set level 2)
Indication	OFF	[Contents] Constant pattern data reading function is inoperative. (The backup data becomes effective, and if the pattern No. desired is the same, the pattern data is not read from the floppy disk.) : Initial setting
	ON	[Contents] Constand pattern data reading function is operative. (Pattern data is constantly read from the floppy disk.

(8) Pattern read-in order setting		
Function No. : 011		Function : ※ This function sets the reading-in order of the SATRA data and the standard sewing machine data.
Item : 1 Reading-in order setting		(Set level 2)
Indication	FD > STR	[Contents] Retrieval is made in the order of sewing machine data → Satra data. : Initial setting
	STR > FD	[Contents] Retrieval is made in the order of Satra data → sewing machine data.
Item : 2 Read-in media setting		(Set level 2)
Indication	FD	[Contents] This function retrieves the data of floppy.
	PROM	[Contents] This function retrieves the data of PROM.
	FD > PROM	[Contents] This function performs retrieval in the order of data of floppy → data of PROM. : Initial setting
	PROM > FD	[Contents] This function performs retrieval in the order of data of PROM → data of floppy.
By this setting, read-in speed is increased when using data of floppy or data of PROM. ※ Standard data specifications of the numerical controlled sewing machines for the shoe industry.		

(9) Speed change in idling operation		
Function No. : 012		Function : This function sets the speed change of the jump speed when the machine runs idle.
Item : 1 Jump speed changing function		(Set level 2)
Indication	OFF	[Contents] The machine performs jumping at a constant speed at all times. : Initial setting
	ON	[Contents] 2-step speed changing function is possible. While the machine performs jumping of the sewing data, the jump speed can be decreased by turning ON the pedal switch.

(10) Selection of thread trimming after turning ON the temporary stop switch		
Function No. : 013		Function : This function sets the thread trimming operation when operating the temporary stop switch.
Item : 1 Thread trimming setting		(Set level 1)
Indication	AUTO	[Contents] Thread trimmer automatically actuates. (When the temporary stop switch is pressed, the sewing machine temporarily stops as well as the thread trimmer actuates.)
	NDL	[Contents] Manual 1 (When the temporary stop switch is pressed, the sewing machine temporarily stops. In this state, the thread trimmer is actuated by turning ON “needle threading switch”.)
	STOP	[Contents] Manual 2 (When the temporary stop switch is pressed, the sewing machine temporarily stops. In this state, the thread trimmer is again actuated by pressing “the temporary stop switch”. At this time, the thread trimmer can also be actuated by operating “needle threading switch”) : Initial setting

(11) Input command time out		
Function No. : 016		Function : This function sets the length of time of the external input command time out (time to wait for input).
Item : 1 Setting of the length of time to wait for external input		(Set level 2)
Indication	0	[Contents] There is no time-out. (Time-out of the external input command is not valid, and the input is being waited forever. It is possible for the sewing machine to be in the temporary stop state by operating the temporary stop switch.) : Initial setting
	0 to 655	[Contents] Setting of length of time to wait for input (the input is being waited for the time of this set value x 100 mse. If there is no input, the sewing machine is in the temporary stop state.)

(12) Thread trimming command control		
Function No. : 018		Function : Setting of effective/ineffective thread trimming command in the sewing pattern.
Item : 1 Setting of effective thread trimming command or ineffective thread trimming command		(Set level 2)
Indication	ON	[Contents] Thread trimming command is rendered effective. : Initial setting
	OFF	[Contents] Thread trimming command is rendered ineffective. (In this case, when the machine temporarily stops, and the needle thread is broken, the thread trimmer is actuated.)

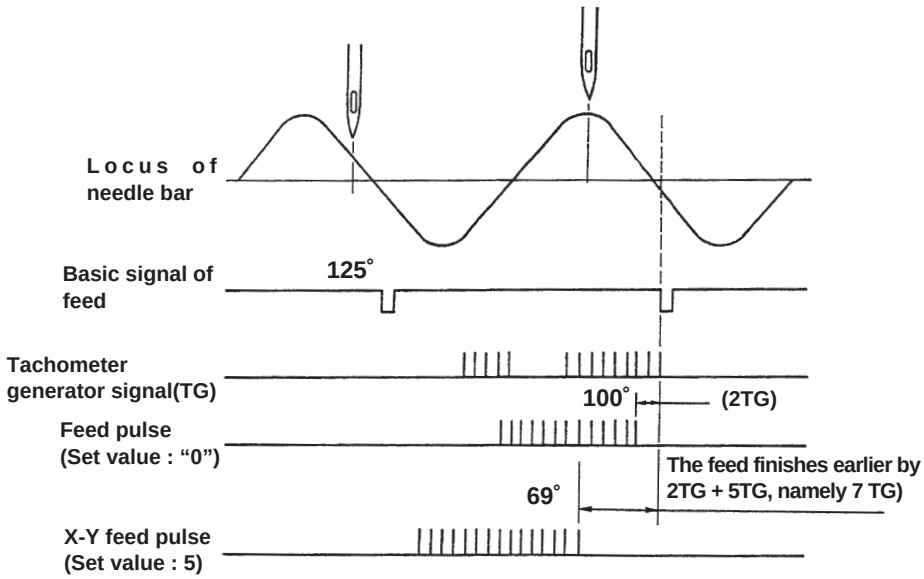
(13) Stop control at the time of the sewing end		
Function No. : 019		Function : The machine is temporarily stopped at the end of a sewing pattern.
Item : 1 Stop control setting		(Set level 2)
Indication	OFF	[Contents] Temporary stop operation at the end of a sewing pattern is rendered ineffective. : Initial setting
	ON	[Contents] Temporary stop operation at the end of a sewing pattern is rendered effective. At this time, closing/opening of the feeding frame is not possible. However, tracing of the sewing pattern is possible by the feed forward/backward key. The sewing is in the state of the end by depressing the start pedal at the position of the end.

(14) Bank function setting		Complementary explanation → P.91
Function No. : 021		Function : This function sets bank operation.
Item 1 : With/without the bank operation and setting of the number of banks		(Set level 2)
Indication	0	[Contents] Bank function is ineffective. (Bank function does not work.) : Initial setting
	1 to 16	[Contents] This function sets the number of banks to be used.
Item : 2 Pattern data read-in method setting		(Set level 2)
Indication	SEQ	[Contents] Consecutive-number reading (From the specified pattern No., as many as patterns specified in the item 1 are read in bank consecutively.) : Initial setting
	PANEL	[Contents] Specified-number reading (From the operation panel, bank Nos. and pattern Nos. are specified and read in the bank. However, the bank numbers are from 0 to 9.)
Item : 3 Selection setting		(Set level 2)
Indication	EXT	[Contents] Setting by an external input terminal (A bank pattern corresponding to the bank No. (0 to F binary) selected by the external input terminal is sewn. Initial setting
	PANEL	[Contents] The bank is specified from the operation panel. (By combination of [PATTERN NO.] key + [NUMERIC] key, the bank number can be specified.)
	ROT	[Contents] Specifying the bank + Automatic update from the operation panel (Bank No. is automatically updated from the bank number set in the set value 1 whenever one cycle of sewing is completed, and the sewing is made.)

(15) Combination function setting		Complementary explanation → P.91
Function No. : 022		Function : Mode selection of the combination function
Item : 1 This function sets the operation mode of combination function		(Set level 2)
Indication	NO USE	[Contents] Combination mode is ineffective. : Initial setting
	OVERLAP	[Contents] Patterns are combined at the center of the origin. Refer to P96 <Example 1>.
	O + PAUSE	[Contents] Patterns are combined at the center of the origin, and a temporary stop is added. Refer to P96 <Example 2>.
	APPEND	[Contents] Patterns are combined at the sewing end and sewing start. Refer to P96 <Example 3>.
	A + PAUSE	[Contents] Patterns are combined at the sewing end and sewing start, and a temporary stop is added. Refer to P96 <Example 4>.

(16) Setting of F1 . F2 keys		
Function No. : 023		Function : Setting of F1 and F2 keys on the operation panel can be made. This function can set the keys which are used often during inputting.
Item : 1 Setting of F1 key		(Set level 1)
Indication	-1	[Contents] Not registered.
	1 to 999	[Contents] Register the desired function No. The function No. is the “Function No. described in the instruction manual. : Initial setting 2
Item : 2 Setting of F2 key		(Set level 1)
Indication	-1	[Contents] Not registered
	1 to 999	[Contents] Register the desired function No. The function No. is the “Function No.” described in the instruction manual . : Initial setting 25

(17) Setting of the stopping position of main shaft		
Function No. : 027		Function : This function selects whether the main shaft is stopped at the upper dead point of the needle UP in the reverse rotation or the upper position.
Item : 2 Setting of the upper position or the upper dead point stop		(Set level 1)
Indication	UDET	[Contents] Main shaft stops at the upper position. : Initial setting
	AUDET	[Contents] Main shaft stops at the upper dead point.
Item : 3 Setting of the holding mode of the servo-motor at the stopping position of the main shaft : This function is not used with the standard machine.		(Set level 1)
Indication	OFF	[Contents] Holding control is not performed. : Initial setting
	ON	[Contents] Holding control is performed. (Excluding main body input mode)
	ALWAYS	[Contents] Holding control is always performed.

<table>
<tr><td colspan="3">(18) Feed control</td></tr>
<tr><td colspan="2">Function No. : 029</td><td>Function : Setting of the synchronized control of the sewing machine and the X-Y feed</td></tr>
<tr><td colspan="3">Item : 1 Setting of the sewing pitch to the sewing speed (Set level 1)</td></tr>
<tr><td rowspan="4">Indication</td><td>0</td><td>[Contents] 2500 r.p.m. / 3.0 mm : Initial setting</td></tr>
<tr><td>1</td><td>[Contents] 2000 r.p.m. / 3.0 mm</td></tr>
<tr><td>2</td><td>[Contents] 1700 r.p.m. / 3.0 mm</td></tr>
<tr><td>3</td><td>[Contents] 1300 r.p.m. / 3.0 mm</td></tr>
<tr><td colspan="3">Item : 2 Selection of the feed timing (Set value 1)</td></tr>
<tr><td>Indication</td><td>-4 to 9</td><td>[Contents] The feed start timing can be advanced by -4 to 9 TG pulses (in a unit of 8˚) so as to adapt to the maerial thickness.
-4 : Retards ⟷ 9 : Advances
(Thin materials) (Thick materials)
(0 : Initial setting)


[Explanation]
The X – Y feed is controlled on the basis of the basic signal of feed and the tachometer generator signal (TG). In case of the feed pulse, the feed finishes feeding earlier by 2 pulses of TG signal of the next feed base pulse.
By this set value, the finish of the feed can be set so as to finish earlier. Accordingly, the feed can finish the feeding when the needle is in a higher position than the standard state.
However, when the time of the feed moving is full such as 2,500 r.p.m. / 3.00 mm or excessive sewing pitch, this setting will be ineffective.To make this setting effective, it is necessary to reduce the sewing speed in the item 1 : setting of the sewing pitch to the sewing speed.</td></tr>
</table>

(19) Feeding frame control 1		Complementary explanation → P.99
Function No. : 030		Function : Feeding frame device setting
Item : 1 Setting at the automatic opening/closing		(Set level 2)
Indication	0 to 99	[Contents] Action sequence is set when the feeding frame automatically opens/closes in case of operating the preparation key, threading key, etc. Initial setting “0”
Item : 2 Setting of opening/closing control at the time of pedal operation		(Set level 1)
Indication	0 to 99	[Contents] Action sequence is set when opening/closing the feeding frame at the time of pedal operation. (Set level 1) 0 : Monolithic feeding frame 1 : Separate-type feeding frame Feeding frame can be lowered from either right- or left-side. 2 : Separate-type feeding frame The right-side is prior. Feeding frame can be lowered in the order of right- to left-side. 3 : Separate-type feeding frame The left-side is prior. Feeding frame can be lowered in the order of the left- to right-side. 4 to 99 : Monolithic feeding frame
Item : 3 Setting of opening/closing control at the time of pedal operation when temporary stopping		(Set level 1)
Indication	0 to 99	[Contents] Action sequence is set when opening/closing the feeding frame at the time of pedal operation when temporary stopping. 0 : Monolithic feeding frame 1 : Separate-type feeding frame Feeding frame can be lowered from either right- or left-side. 2 : Separate-type feeding frame The right-side is prior. Feeding frame can be lowered in the order of right- to left-side. 3 : Separate-type feeding frame The left-side is prior. Feeding frame can be lowered from left- to right-side. 4 to 99 : Monolithic feeding frame

(20) Feeding frame control 2		Complementary explanation → P.101
Function No. : 031		Function : Feeding frame setting
Item : 1 Setting of the order of the feeding frame at the completion of the sewing		(Set level 2)
Indication	0 to 99	[Contents] Initial setting 0 (release at all times) : when item “RELEASE” setting only.
Item : 2 Setting of the action of the feeding frame at the completion of the sewing		(Set level 1)
Indication	ATSTART	[Contents] Feeding frame is opened after the completion of the sewing. (After moving to the sewing start point, the feeding frame is opened and waits.) : Initial setting
	HOLD	[Contents] Feeding frame is not opened after the completion of the sewing. (After moving the sewing start point, the feeding frame is kept lowered and waits. It is opened by pedal operation.)
	ATEND	[Contents] Feeding frame is opened immediately after the completion of the sewing. (After the completion of the sewing, the feeding frame is opened and moves to the sewing start point.)
Item : 3 Setting of the constant lowering of the feeding frame		(Set level 1)
Indication	OFF	[Contents] Constant lowering action is rendered ineffective. : Initial setting
	ON	[Contents] Constant lowering action is rendered effective. Feeding frame is in the lowering state at all times, and is not operative by the pedal operation.

(21) Pedal control 1		Complementary explanation → P.102
Function No. : 032		Function : Setting of the pedal operation mode
Item : 1 Setting of the latch operation of the pedal 1 (Set level 1) Setting of the operation mode of the pedal 1 (right-side pedal when using the PK-47 device)		
Indication	FLIP ※ 1	[Contents] No latch operation (The feeding frame is lowered while depressing the pedal.) : Solenoid type initial setting
	LATCH ※ 2	[Contents] Latch operation is made. (The feeding frame comes down by the first depress of the pedal, and it goes up by the second depress of the pedal.) : Pneumatic type initial setting
Item : 2 Setting of the latch operation of the pedal 2 (Set level 1) Setting of the operation mode of the pedal 2 (left-side pedal when using the PK-47 device)		
Indication	FLIP	[Contents] No latch operation (The feeding frame is lowered while depressing the pedal.)
	LATCH	[Contents] Latch operation is made. (The feeding frame comes down by the first depress of the pedal, and it goes up by the second depress of the pedal.) : Initial setting
Item : 3 Setting of the latch operation of the pedal 3 (Set level 1) Setting of the operation mode of the pedal 2 (Second-step of the left-side of the pedal when using the PK- 47 device)		
Indication	FLIP	[Contents] No latch operation (The feeding frame is lowered while depressing the pedal.)
	LATCH	[Contents] Latch operation is made. (The feeding frame comes down by the first depress of the pedal, and it goes up by the second depress of the pedal.) : Initial setting

AS for the ※ 1 and ※ 2, refer to page 102.

(22) Pedal control 2		Complementary explanation → P.102
Function No. : 033		Pedal 4 is not used.
Item : 1 Setting of the latch operation of the pedal 4 (Set level 1) Setting of the operation mode of the pedal 4 (input of the optional pedal)		
Indication	FLIP	[Contents] No latch operation (The feeding frame is lowered while depressing the pedal.)
	LATCH	[Contents] Latch operation is made. (The feeding frame comes down by the first depress of the pedal, and it goes up by the second depress of the pedal.) : Initial setting

(23) Chuck error detection control 2		
Function No. : 034		This function is not used.
Item : 1 Check sensor setting (Set level 2)		
Indication	OFF	[Contents] Without chucking error detection control : Initial setting
	ON	[Contents] With chucking error detection control

(24) Intermediate presser control		
Function No. : 035	Function : Setting of the intermediate presser operation mode	
Item : 1 Intermediate presser control		(Set level 1)
Indication	SEW	[Contents] Intermediate presser is operative. (The intermediate presser comes down by the sewing data when the machine runs.) : Initial setting
	TRIAL	[Contents] Intermediate presser is operative. (The intermediate presser comes down by the sewing data both when the feed goes forward and backward.)
	OFF	[Contents] Intermediate presser is inoperative and fixed at the lifting position. (Set level 2)
Item : 2 Lowering timing		(Set level 1)
Indication	START	[Contents] The intermediate presser is lowered immeadiately before the sewing machine starts. (The intermediate presser is lowered when the sewing machine starts rotating.) : Initial setting
	O. PRSR	[Contents] The intermediate presser is lowered simultaneously with the feeding frame. (The intermediate presser comes down simultaneously when the last feeding frame of the sequence of feeding frame is lowered.)

(25) Wiper control		
Function No. : 036	Function : Wiper operation mode setting	
Item : 1 Operation mode setting : Normally, use at the standard setting.		(Set level 2)
Indication	OFF	[Contents] Wiper operation is rendered ineffective.
	Mg	[Contents] Signal of the magnet type wiper is rendered effective. : Initial setting
	AIR	[Contents] Signal of the pneumatic type wiper is rendered effective.
Item : 2 Sweeping position setting		(Set level 2)
Indication	UNDER	[Contents] Below-sweeping (Wiper sweeps below the intermediate presser.) : This function is operative when the optional side-sweeping wiper is used.
	BETWEEN	[Contents] Above-sweeping (Wiper sweeps above the intermediate presser.) : Initial setting
Item : 3 Sweeping position setting 2		(Set level 2)
Indication	UDET	[Contents] Wiper sweeps when the needle bar stops up.: Initial setting.
	AUDET	[Contents] Wiper sweeps when the needle bar stops at the upper dead point. It is possible when the main shaft stop position is set to its upper dead point.

(26) Thread clamp control : This function is not used with the standard LK-1930.		
Function No. : 037	Function : Wiper operation mode setting	
Item : 1 Thread clamp control		(Set level 2)
Indication	OFF	[Contens] The thread clamp is made inoperative. : Initial setting
	ON	[Contens] The thread clamp is made operative.
Item : 2 Thread clamp release operation timing		(Set level 2)
Indication	0 to 15	[Contens] The number of stitches to be sewn, from the state where the thread clamp retains the needle thread to the point at which it releases the thread, is specified. : Initial setting 0

(27) Thread breakage detector control		
Function No. 038		Function : Thread breakage detector operation mode setting
Item : 1 Device control		(Set level 1)
Indication	OFF	[Contents] The thread breakage detecting device is ineffective.
	ON	[Contents] The thread breakage detecting deviceon effective. Initial setting
Item : 2 Setting the number of stitches required to stop the machine (at the sewing start)		(Set level 2)
Indication	0 to 15	[Contents] When thread breakage or slip-off of the thread occurred at the sewing start, the number of stitches required to stop the sewing machine from the detection to the stop is set. : Initial setting 8
Item : 3 Setting the number of stitches required to stop the machine (during normal operation)		(Set level 2)
Indication	0 to 15	[Contents] The number of stitches required to stop the sewing machine after the detection of thread breakage during normal operation is specified. : Initial setting 3

(28) Air pressure drop detecting control		
Function No. : 039		Function : Air pressure drop detector setting
Item : 1 Detecting operation mode setting		
Indication	OFF	[Contents] The air pressure drop detecting function is rendered ineffective. (Magnet type initial setting)
	ON	[Contents] The air pressure drop detecting function is rendered effective. (Pneumatic type initial setting)

(29) Material end detection control : This function is not used with the LK-1930.		
Function No. : 040		Function : Material end detector setting
Item : 1 Detection control		(Set level 2)
Indication	OFF	[Contents] The material end detection function is rendered ineffective. : Initial setting
	ON	[Contents] The material end detection function is rendered effective.
Remarks : Input terminal number is set with the function No. 74.		

(30) Tension controller No. 3 optional control		
Function No. : 041		Function : Setting of the tension controller No. 3
Item : 1 Device control		(Set level 2)
Indication	OFF	[Contents] The tension controller No. 3 control is rendered ineffective.
	ON	[Contents] The tension controller No. 3 control is rendered effective. : Initial setting

(31) Thread trimming control		
Function No. : 044		Function : Thread trimmer setting
Item : 1 Device control		(Set level 2)
Indication	OFF	[Contents] Thread trimming operation is not made in any case. (Thread trimming operation is not made at the time of temporary stop and thread breakage.)
	ON	[Contents] Thread trimming operation is made. : Initila setting
Item : 2 Feed operation control at the time of thread trimming		(Set level 2)
Indication	ON	[Contents] This function moves cloth (feed) simultaneously at the time of thread trimming to prevent defective thread trimming. : Initial setting
	OFF	[Contents] Feed operation is not performed at the time of thread trimming.
Item : 3 Needle hole guide diameter setting		(Set level 2)
Indication	16 to 40 (mm)	[Contents] By setting the inner diameter of needle hole guide used, feed amount at the time of thread trimming is set to proper amount. : Initial setting 16

(32) Inverting mechanism control : It is effective when using the inverting device (FU02).		
Function No. 045		Function : Inverting mechanism setting
Item : 1 Device control		(Set level 2)
Indication	OFF	[Contents] The inverting mechanism control is rendered ineffective. (Even when an inversion pattern is used, the inverting mechanism control is not performed.)
	ON	[Contents] The inverting mechanism control is performed. : Initial setting
Item : 2 Automatic inversion Y coordinate setting		(Set level 2)
Indication	0 to 999 (x 0.1 mm)	[Contents] Inverting position (coordinate of Y direction) is set when the inversion is made automatically. (Initial setting 170.)

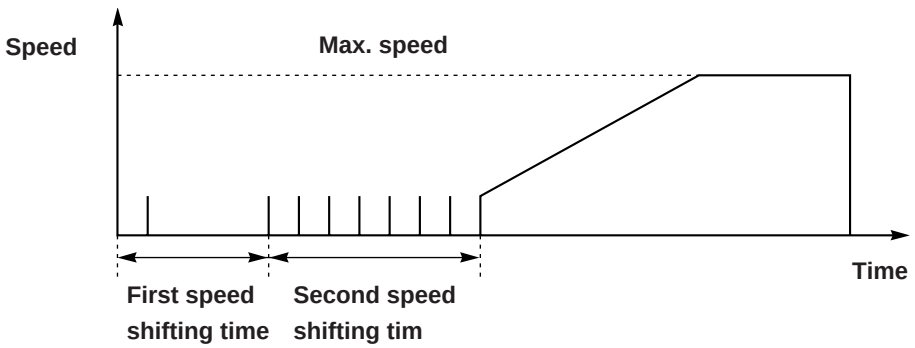
(33) Bobbin thread replacing device control : It is effective only when the bobbin thread replacing device is attached.		
Function No. : 047		Function : Bobbin thread replacing device setting
Item : 1 Device control		(Set level 2)
Indication	OFF	[Contents] Bobbin thread replacing device control is not made. : Initial setting
	ON	[Contents] Bobbin thread replacing device control is made.

(34) Sewing machine speed control 1		
Function No. : 050		Function : Starting speed of the sewing machine (start of sewing to after 2 stitches) is set.
Item : 1 Soft-start 1		(Set level 1)
Indication	2 to 9 X 100 r.p.m	[Contents] Starting speed of the sewing machine is set. (Initial setting 2)
Item : 2 Soft-start 2		(Set level 1)
Indication	2 to 25 X 100 r.p.m	[Contents] Speed after 1 stitch when the sewing machine is actuated is set. (Initial setting 6)
Item : 3 Soft-start 3		(Set level 1)
Indication	2 to 25 X 100 r.p.m	[Contents] Speed after 2 stitches when the sewing machine is actuated is set. (Initial setting 10)

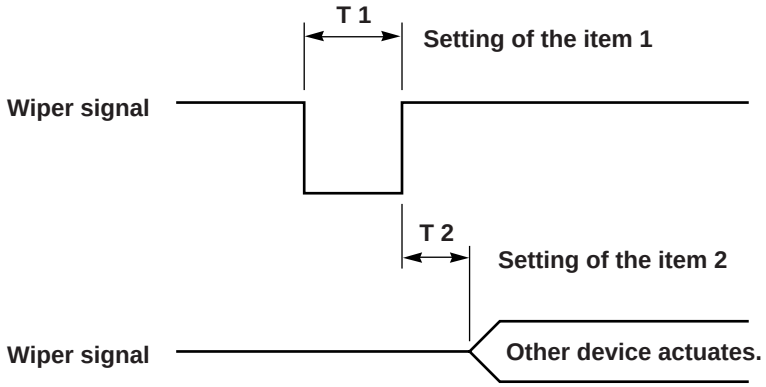
(35) Sewing machine speed control 2		
Function No. : 051		Function : Starting speed (after 3 stitches to after 4 stitches) of the sewing machine is set.
Item : 1 Soft-start 4		
Indication	2 to 25 X 100 r.p.m	[Contents] Speed after 3 stitches when the sewing machine is actuated is set. (Initial setting 25)
Item : 2 Soft-start 5		
Indication	2 to 25 X 100 r.p.m	[Contents] Speed after 4 stitches when the sewing machine is actuated is set. (Initial setting 25)

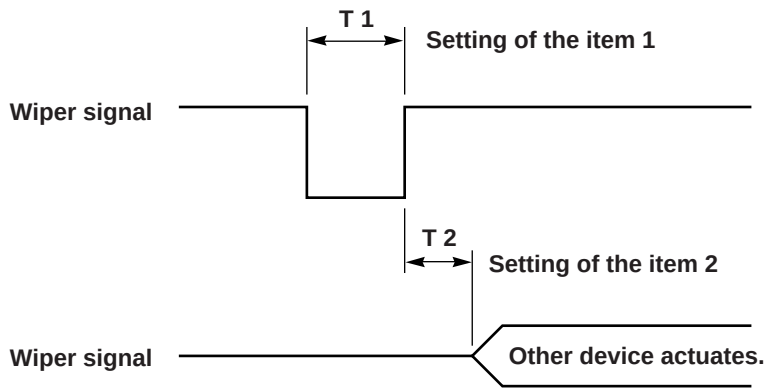
(36) X-Y JOG feed speed shifting time : Normally use this function without changing the standard setting.		
Function No. : 052		Function : The accelerating time is set when the key is consecutively pressed for the consecutive forward/backward of the feed or the like.
Item : 1 First speed shifting time of JOG mode		(Set level 2)
Indication	1 to 99 x 100 ms	[Contents] Setting of the length of time from the JOG speed to the medium speed : Initial setting 4
Item : 2 Second speed shifting time of JOG mode		(Set level 2)
Indication	1 to 99 x 100 ms	[Contents] Setting of the length of time from the medium speed to the start of acceleration to the maximum speed : Initial setting 12
Item : 3 Third speed shifting time of JOG mode		(Set level 2)
Indication	5 to 99 x 100 ms	[Contents] Setting of the length of time to the maximum speed : Initial setting 50

Outline of X-Y JOG feed



(37) Key input time function		
Function No. : 053		Function : Setting the interval of the time that a consecutively pressed key reads in repeatedly
Item : 1 First interval time : Normally use this function without changing the standard setting.		(Set level 2)
Indication	1 to 99 x 100 ms	[Contents] Setting of the interval time between the time when the first key is ON and the second one. : Initial setting 4
Item : 2 Second interval time : Normally use this function without changiing the standard setting.		(Set value 2)
Indication	1 to 99 x 100 ms	[Contents] Setting of the interval time after the third time of the read-in of the key : Initial setting 1
Item : 3 Third interval time		(Set level 2)
Indication	1 to 99 x 100 ms	[Contents] The length of time until the action is consecutively made at the time of forward/backward of the feed (the case where forward/backward of the feed is made even when the key is released.). : Initial setting 30

(38) Magnet type wiper operation time function		
Function No. : 054		Function : Time setting of the magnet type wiper operation
Item : 1 Wiper-on time		(Set level 2)
Indication	0 to 999 ms	[Contents] Setting of the wiper ON time : Initial setting 50
Item : 2 Wiper return waiting time		(Set level 2)
Indication	0 to 999 ms	[Contents] Setting of the length of time between the completion of wiper operation and the operation of the next device : Initial setting 100 

(39) Pneumatic type wiper operation time function : This function is not used with the standard machine.		
Function No. : 055		Function : Time setting of the pneumatic type wiper operation
Item : 1 Wiper-on time		(Set level 2)
Indication	0 to 999 ms	[Contents] Setting of the wiper ON time : Initial setting 100
Item : 2 Wiper return waiting time		(Set level 2)
Indication	0 to 999 ms	[Contents] Setting of the length of time between the completion of the wiper operation and the operation of the next device : Initial setting 100 

(40) Intermediate presser operation time function : Use this function without changing the standard setting.		
Function No. : 056		Function : Time setting of the intermediate presser operation
Item : 1 Setting the length of waiting time after the intermediate presser has come down.		(Set level 2)
Indication	0 to 999 ms	[Contents] If the sewing machine starts running immediately after the intermediate presser has operated, the intermediate presser is likely to interfere with the needle bar since the intermediate presser has a mechanical delay. To prevent this, the sewing machine starts to run after the length of time specified for this item has passed. : Initial setting 50
Item : 2 Setting the length of waiting time after the intermediate pesser has gone up.		(Set level 2)
Indication	0 to 999 ms	[Contents] After the intermediate presser has gone up, and after the specified time in this item has passed, the next operation is made. : Initial setting 150

(41) Feeding frame connection setting 1 : This function is not used with the standard machine.		
Function No. : 063		Function : Setting of the output device of the drive signal of feeding frame
Item : 1 Setting of the feeding frame 1		(Set level 2)
Indication	0	[Contents] No connection
	1 to 16	[Contents] Output of the feeding frame is set to the terminal number. By this setting, the signal output device of the feeding frame 1 can be freely changed. : Initial setting 1
Item : 2 Setting of the feeding frame 2		(Set level 2)
Indication	0	[Contents] No connection
	1 to 16	[Contents] Output of the feeding frame is set to the terminal number. By this setting, the signal output device of the feeding frame 2 can be freely changed. : Initial setting 2
Item : 3 Setting of the feeding frame 3		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Output of the feeding frame is set to the terminal number. By this setting, the signal output device of the feeding frame 2 can be freely changed.

(42) Feeding frame connection setting 2 : This function is not used with the standard machine.		
Function No. : 064		Function : Setting of the output device of the drive signal of feeding frame
Item : 1 Setting of the feeding frame 4		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Output of the feeding frame is set to the terminal number. By this setting, the signal output device of the feeding frame 4 can be freely changed.
Item : 2 Chuck sensor setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Set to the chuck sensor input terminal number. By this setting, the signal input device of the chuck sensor can be freely changed.
Item : 3 Setting of the output at the time of start		(Set level 2)
Indication	LOW	[Contents] Active LOW output (When the power is ON, the feeding frame goes up when the feeding frame signal is in the low level.) : Initial setting
	HIGH	[Contents] Active HIGH output (When the power is ON, the feeding frame goes up when the feeding signal is in the high level.)

(43) Intermediate presser connection setting : This function is not used with the standard machine.		
Function No. : 065		Function : Setting of the output device of the drive signal of intermediate presser lifter
Item : 1 Intermediate presser lifter setting (Set level 2)		
Indication	0	[Contents] No connection
	1 to 16	[Contents] Output of the intermediate presser lifter is set to the terminal number. By this setting, the signal output device of the intermediate presser lifter can be freely changed. : Initial setting 3
Item : 2 Setting of the actuator of adjusting the height of intermediate presser This function is not used with LK-1930. (Set level 2)		
Indication	0	[Contents] No connection
	1 to 16	[Contents] Output of the device for adjusting the height of intermediate presser is set to the terminal number. By this setting, the signal output device of the device for adjusting the height of intermediate presser can be freely changed. : Initial setting 4
Item : 3 Setting of the output at the time of start (Set level 2)		
Indication	LOW	[Contents] Active LOW output (When the power is ON, the presser goes up when the presser signal is in the low level.) : Initial setting
	HIGH	[Contents] Active HIGH output (When the power is ON, the presser goes up when the presser signal is in the high level.)

(44) Wiper and thread clamp connection setting : This function is not used with the standard machine.		
Function No. : 066		Function : Setting of the output device of the drive signal of wiper and thread clamp
Item : 2 Wiper setting (Set level 2)		
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Output of the feeding frame is set to the terminal number. By this setting, the signal output device of the wiper can be freely changed.
Item : 3 Thread clamp setting (Set level 2)		
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Output of the thread clamp is set to the terminal number. By this setting, the output device of output signal of the thread clamp can be freely changed.

(45) Inverting clamp connection setting : Use this function without changing the standard setting.		
Function No. : 069		Function : Setting of the output device of the drive signal of the inverting clamp
Item : 1 Inverting device setting (Set level 2)		
Indication	0	[Contents] No connection
	1 to 16	[Contents] Output of the inverting clamp is set to the terminal number. By this setting, the signal output device of the inverting clamp can be freely changed. : Initial setting 5

(46) Bobbin thread replacing device connection setting : Not used.		
Function No. : 072		Function : Setting of the output/input devices of the bobbin thread replacing device
Item : 1 Setting of the signal output of the start of replacement		(Set level 2)
Indication	0	[Contents] No connection : Initital setting
	1 to 16	[Contents] Output device of the signal of the start of replacement is set to the terminal number. By this setting, output signal device of the signal of the start of replacement can be freely changed.
Item : 2 Setting of the input of the signal during the replacement		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Input device of the signal during the replacement is set to the terminal number. By this setting, the input device of the signal during the replacement can be freely changed.
Item : 3 Setting of the error detection signal input		(Set level 2)
Indication	0	[Contents] No connection (Error detection is not made.) : Initial setting
	1 to 16	[Contents] Input device of the signal of error occurring is set to the terminal number. By this setting, the input device of the signal of error occurring can be freely changed.

(47) Tension controller No. 3 connection setting : Use this function without changing the standard setting.		
Function No. : 073		Function : Setting of the output device of the drive signal of tension controller No. 3
Item : 1 Setting of the drive device		(Set level 2)
Indication	0	[Contents] No connection
	1 to 16	[Contents] The output device of tension controller No. 3 is set to the terminal number. By this setting, the signal output device of the tension controller No. 3 can be freely changed. : Initial setting 6

(48) Material end detection device connection setting : This function is not used with the standard machine.		
Function No. : 074		Function : Setting of the input device of the signal of material end detection device.
Item : 1 Material end detection sensor		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of material end detection signal is set to the terminal number. By this setting, the signal input device of the material end detection device can be freely changed.

(49) Bank selection connection setting : This function is not used with the stndard machine. Supplementaly explanation : P91		
Function No. : 075		Function : Setting of the number of terminals when the bank selection is made by the external signal.
Item : 1 Setting of the number of terminals for bank selection		(Set level 2)
Indication	1	[Contents] Can be used up to 2 patterns.
	2	[Contents] Can be used up to 4 patterns. : Initial setting
	3	[Contents] Can be used up to 8 patterns.
	4	[Contents] Can be used up to 16 patterns.
Item : 2 Setting of the starting position of the terminal for bank selection		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The starting position of the terminal for bank selection is set. By this setting, only the number of the terminals specified in the item 1 can be used as the terminal for bank selection.

(50) External output terminal connection setting 1 : This function is not used with the standard machine.		
Function No. : 076		Function : Setting of the output device of the external output terminal
Item : 1 Output terminal 0 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 0 is set to the terminal number. By this setting, the signal output device of the external output 0 can be freely changed.
Item : 2 Output terminal 1 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 1 is set to the terminal number. By this setting, the signal output device of the external output 1 can be freely changed.
Item : 3 Output terminal 2 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 2 is set to the terminal number. By this setting, the signal output device of the external output 2 can be freely changed.

(51) External output terminal connection setting 2 : This function is not used with the standard machine.		
Function No. : 077		Function : Setting of the output device of the external output terminal
Item : 1 Output terminal 3 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 3 is set to the terminal number. By this setting, the signal output device of the external output 3 can be freely changed.
Item : 2 Output terminal 4 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 4 is set to the terminal number. By this setting, the signal output device of the external output 4 can be freely changed.
Item : 3 Output terminal 5 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 5 is set to the terminal number. By this setting, the signal output device of the external output 5 can be freely changed.

(52) External output terminal connection setting 3 : This function is not used with the standard machine.		
Function No. : 078		Function : Setting of the output device of the external output terminal
Item : 1 Output terminal 6 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 6 is set to the terminal number. By this setting, the signal signal device of the external output 6 can be freely changed.
Item : 2 Output terminal 7 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 7 is set to the terminal number. By this setting, the signal output device of the external output 7 can be freely changed.
Item : 3 Output terminal 8 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 8 is set to the terminal number. By this setting, the signal output device of the external output 8 can be freely changed.

(53) External output terminal connection setting 4 : This function is not used with the standard machine.		
Function No. : 079		Function : Setting of the output device of the external output terminal
Item : 1 Output terminal 9 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 9 is set to the terminal number. By this setting, the signal output device of the external output 9 can be freely changed.
Item : 2 Output terminal 10 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 10 is set to the terminal number. By this setting, the signal output device of the external output 10 can be freely changed.
Item : 3 Output terminal 11 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 11 is set to the terminal number. By this setting, the signal output device of the external output 11 can be freely chnged.

(54) External output terminal connection setting 5 : This function is not used with the standard machine.		
Function No. : 080		Function : Setting of the output device of the external output terminal
Item : 1 Output terminal 12 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 12 is set to the terminal number. By this setting, the signal output device of the external output 12 can be freely changed.
Item : 2 Output terminal 13 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 13 is set to the terminal number. By this setting, the signal output device of the external output 13 can be freely changed.
Item : 3 Output terminal 14 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 14 is set to the terminal number. By this setting, the signal output device of the external output 14 can be freely changed.

(55) External output terminal connection setting 6 : This function is not used with the standard machine.		
Function No. : 081		Function : Setting of the output device of the external output terminal
Item : 1 Output terminal 15 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The output device of the external output 15 is set to the terminal number. By this setting, the signal output device of the external output 15 can be freely changed.

(56) External input terminal connection setting 1 : This function is not used with the standard machine.		
Function No. : 082		Function : Setting of the input device of the external input terminal
Item : 1 Input terminal 0 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 0 is set to the terminal number. By this setting, the signal input device of the external input 0 can be freely changed.
Item : 2 Input terminal 1 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 1 is set to the terminal number. By this setting, the signal input device of the external input 1 can be freely changed.
Item : 3 Input terminal 2 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 2 is set to the terminal number. By this setting, the signal input device of the external input 2 can be freely changed.

(57) External input terminal connection setting 2 : This function is not used with the standard machine.		
Function No. : 083		Function : Setting of the external input terminal
Item : 1 Input terminal 3 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 3 is set to the terminal number. By this setting, the signal input device of the external input 3 can be freely changed.
Item : 2 Input terminal 4 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 4 is set to the terminal number. By this setting, the signal input device of the external input 4 can be freely changed.
Item : 3 Input terminal 5 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 5 is set to the terminal number. By this setting, the signal input device of the external input 5 can be freely changed.

(58) External input terminal connection setting 3 : This function is not used with the standard machine.		
Function No. : 084		Function : Setting of the input device of the external input terminal
Item : 1 Input terminal 6 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 6 is set to the terminal number. By this setting, the signal input device of the external input 6 can be freely changed.
Item : 2 Input terminal 7 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 7 is set to the terminal number. By this setting, the signal input device of the external input 7 can be freely changed.
Item : 3 Input terminal 8 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 8 is set to the terminal number. By this setting, the signal input device of the external input 8 can be freely changed.

(59) External input terminal connection setting 4 : This function is not used with the standard machine.		
Function No. : 085		Function : Setting of the input device of the external input terminal
Item : 1 Input terminal 9 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 9 is set to the terminal number. By this setting, the signal input device of the external input 9 can be freely changed.
Item : 2 Input terminal 10 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 10 is set to the terminal number. By this setting, the signal input device of the external input 10 can be freely changed.
Item : 3 Input terminal 11 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 11 is set to the terminal number. By this setting, the signal input device of the external input 11 can be freely changed.

(60) External input terminal connection setting 5 : This function is not used with the standard machine.		
Function No. : 086		Function : Setting of the input device of the external input terminal
Item : 1 Input terminal 12 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 12 is set to the terminal number. By this setting, the signal input device of the external input 12 can be freely changed.
Item : 2 Input terminal 13 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 13 is set to the terminal number. By this setting, the signal input device of the external input 13 can be freely changed.
Item : 3 Input terminal 14 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 14 is set to the terminal number. By this setting, the signal input device of the external input 14 can be freely changed.

(61) External input terminal connection setting 6 : This function is not used with the standard machine.		
Function No. : 087		Function : Setting of the input device of the external input terminal
Item : 1 Input terminal 15 setting		(Set level 2)
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] The input device of the external input 15 is set to the terminal number. By this setting, the signal input device of the external input 15 can be freely changed.

(62) Pedal control 3		Supplementaly explanation : P.103
Function No. : 098		Function : Pedal operation mode is set.
Item : 1 Setting of pedal 1 operation active		(Set level 1)
Indication	HIGH	HIGH active (operates when switch is opened.) : Solenoid type : Initial setting
	LOW	LOW active (operates when switch is closed.) : Pneumatic type : Initial setting
Item : 2 Setting of pedal 2 operation active		(Set level 1)
Indication	HIGH	HIGH active
	LOW	LOW active : Initial setting
Item : 3 Setting of pedal 3 operation active		(Set level 1)
Indication	HIGH	HIGH active
	LOW	LOW active : Initial setting

(63) Pedal control 4		Supplementaly explanation : P.103
Function No. : 099		Function : Pedal operation mode is set.
Item : 1 Setting of pedal 4 operation active		(Set level 1)
Indication	HIGH	HIGH active
	LOW	LOW active : Initial setting

(64) Needle cooler control		
Function No. : 109		Function : Needle cooler control is set.
Item : 1 Whether needle cooler control is provided or not is set. (Set level 2)		
Indication	OFF	[Contents] Output signal for solenoid valve is not transmitted : Initial setting
	ON	[Contents] Output signal for solenoid valve is transmitted.
Item : 2 Output destintion of needle cooler is set. (Set level 2)		
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Output terminal for solenoid valve is set.

(65) Heat-wire thread trimming control : Not used with the standard sewing machine.		
Function No. : 110		Function : Heat-wire thread trimming control.
Item : 1 Whether heat-wire thread trimming control is provided or not is set. (Set level 2)		
Indication	OFF	[Contents] Heat-wire thread trimming control is not performed. : Initial setting
	ON	[Contents] Heat-wire thread trimming control is performed.
Item : 2 Input terminal of thread trimming completion signal is set. (Set level 2)		
Indication	0	[Contents] No connection : Initial setting
	1 to 16	[Contents] Input terminal is set.

(66) Setting of the feeding frame operation timing		
Function No. : 111		Function : Timing after the feeding frame has come down is set.
Item : 1 Delay time after output of feeding frame lowering signal is set. (Set level 2)		
Indication	0 to 999 X 1 mS	[Contents] Delay time from output of feeding frame lowering signal to lowering of intermediate presser is set. Initial setting : 170 mS (If the setting is 170 mS or less, the intermediate presser may come in contact with the feeding frame.)
Item : 2 Setting of feeding frame lowering sensor : Not used with the standard machine. (Set level 2)		
Indication	0 to 999 X 1 mS	[Contents] Sensor to securely detect lowering of the feeding frame is used and the delay time when the machine is actuated is set. : Initial setting : 500 mS

(67) Setting of needle thread tension disk floating control		
Function No. : 112		Function : Setting of disk floating solenoid (optional) control
Item : 1 Whether solenoid operation is provided or not is set. (Set level 2)		
Indication	OFF	[Contents] No output : Initial setting
	ON	[Contents] Output is performed.
Item : 2 Delay time setting (ON) (Set level 2)		
Indication	0 to 999 X 1 mS	[Contents] Delay time before operating the solenoid is set. : Initial setting : 100 mS
Item : 3 Delay time setting (OFF) (Set level 2)		
Indication	0 to 999	[Contents] Delay time from completion of solenoid operation to the next control is set. : Initial setting : 0 mS

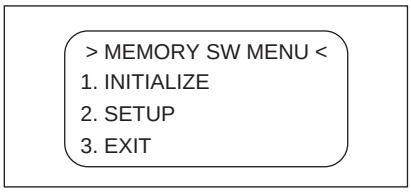
8. INITIALIZATION OF THE MEMORY SWITCH (LK-1930)

(1) HOW TO INITIALIZE

When the first setting state of the memory switch is not known, or the sewing machine fails to operate well, the contents set in the memory switch can be restored to the state at the time of delivery by means of the following operation.

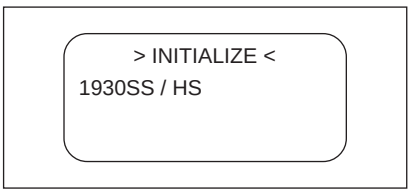
Step 1 : Pressing the [8] key on the operation panel, turn ON the power switch.

Step 2 : The panel indication will be as follows :



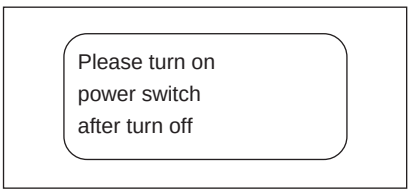
Press "[1] Initialize" key.

Step 3 : The panel indication will be as follows :



Press the [8] or [2] key to indicate the model name used. Then press the [↵] key.

Step 4 : The panel indication will be as follows :



If turning ON the power, the panel indication will be back to the indication at the time of sewing.

(2) TABLE OF THE INITIAL SETTING

The initial value of the memory switch is as shown in the following table.

Function No.	Function	Item	Start level	Initial setting			
				1930 SS / HS	1930 SA / HA	1930 SS / HS -FU02S	1930 SA / HA -FU02S
001	Indicating language setting	1. Language specification	2	ENG	←	←	←
002	Scale function setting	1. Selection of enlargement/reduction method	1	STITCH	←	←	←
003	Jog function setting	1. Mode specification	1	2ND	←	←	←
		2. Use of fixed retracted position	2	OFF	←	←	←
007	Mechanical origin retrieval	1. Operation of each sewing cycle	2	OFF	←	←	←
		2. Operation at the time of move limit error	2	ON	←	←	←
008	Return-to-origin operation	1. Mode setting	1	Route	←	TRACE	←
		2. Return at needle bar upper dead point	1	OFF	←	ON	←
009	Counter indication setting	1. Bobbin thread counter indication	1	Up	←	←	←
		2. Production counter indication	1	ON	←	←	←
		3. Number of digits	2	3 FIG	←	←	←
010	Pattern read-in operation	1. Read-in operation setting	2	Set up	←	←	←
		2. Constant read-in	2	OFF	←	←	←
011	Order of pattern read-in	1. Order of read-in	2	FD>SAR	←	←	←
		2. Read-in media setting	2	FD>PROM	←	←	←
012	Idling operation	1. Speed changing function	2	OFF	←	←	←
013	Thread trimming after temporary stop	1. Thread trimming operation after temporary stop	1	STOP	←	←	←
016	External input command	1. Length of time-out	2	0	←	←	←
018	Thread trimming command	1. Thread trimming in sewing pattern	2	ON	←	←	←
019	Termination command	1. Temporary stop after completion of sewing	2	OFF	←	←	←
021	Bank function	1. Number of banks	2	0	←	←	←
		2. Read-in (memory) method	2	SEQ	←	←	←
		3. Selection method	2	Ext	←	←	←
022	Pattern combination function	1. Mode	2	NO USE	←	←	←
023	F1, F2 key setting	1. F1 key	1	2	←	←	←
		2. F2 key	1	25	←	←	←
027	Upper position control of main motor	2. Change-over of upper position, upper dead point	1	UDET	←	←	←
		3. Holding mode of the servo motor at the main shaft stop position is set.	1	OFF	←	←	←
028	Speed control of main motor	1. Acceleration mode	1	0	←	←	←
029	XY synchronized control of main motor	1. Sewing pitch to sewing speed	1	0	←	←	←
		2. Timing delay setting	1	0	←	←	←
030	Feeding frame control 1	1. Order at the time of automatic opening/closing	2	0	←	←	←
		2. Order of opening/closing at the time of pedal operation	1	0	1	0	2
		3. Order of closing/opening at the time of temporary stop	1	0	1	0	2
031	Feeding frame control 2	1. Opening order at the completion of sewing	2	0	←	←	←
		2. Opening control at the completion of sewing	1	ATSTART	←	←	←
		3. Constant holding	1	OFF	←	←	←
032	Pedal input control 1	1. Pedal 1	1	FLIP	LATCH	FLIP	LATCH
		2. Pedal 2	1	Latch	←	←	←
		3. Pedal 3	1	Latch	←	←	←
033	Pedal input control 2	1. Pedal 4	1	Latch	←	←	←

Function No.	Function	Item	Start level	Initial setting			
				1930 SS / HS	1930 SA / HA	1930 SS / HS -FU02S	1930 SA / HA -FU02S
034	Chuck error detection	1. Control	2	OFF	←	←	←
035	Intermediate presser control	1. Control	1	SEW	←	←	←
		2. Lowering timing	1	START	←	←	←
036	Wiper device control	1. Setting of operation device	1	Mg	←	←	←
		2. Sweeping position	2	BETWEEN	←	←	←
		3. Setting 2 of sweeping position	2	AUDET	←	←	←
037	Thread clamp device control	1. With/without control	2	OFF	←	←	←
		2. Opening operation timing	2	0	←	←	←
038	Thread breakage detection	1. With/without control	1	ON	←	←	←
		2. Number of stitches required to stop the machine at the sewing start	2	8	←	←	←
		3. Number of stitches required to stop the machine during normal operation	2	3	←	←	←
039	Air pressure detection	1. With/without detection	1	OFF	ON	←	←
040	Material end detection	1. With/without detection	2	OFF	←	←	←
041	Tension controller No. 3	1. With/without control	2	ON	←	←	←
044	Thread trimming device	1. With/without control	2	ON	←	←	←
		2. Feed operation control at the time of thread trimming	2	ON	←	←	←
		3. Setting of needle hole guide diameter	2	16	←	←	←
045	Inverting mechanism	1. With/without control	2	ON	←	←	←
		2. Automatic inverting Y coordinate	2	170 (pulses)	←	←	←
047	Bobbin thread replacement device	1. With/without control	2	OFF	←	←	←
50	Sewing machine speed control 1	1. Soft start 1 2 (X 100 r.p.m)	1	2 (x 100 rpm)	←	←	←
		2. Soft start 2 6 (X 100 r.p.m.)	1	6 (x 100 rpm)	←	←	←
		3. Soft start 3 10 (X 100 r.p.m)	1	10 (x 100 rpm)	←	←	←
51	Sewing machine speed control 2	1. Soft start 4 25 (X 100 r.p.m)	1	25(x 100 rpm)	←	←	←
		2. Soft start 5 25 (X 100 r.p.m)	1	25(x 100 rpm)	←	←	←
052	XY jog feed control	1. First step time	2	4 (x 100 ms)	←	←	←
		2. Second step time	2	12 (x 100 ms)	←	←	←
		3. Third step time	2	50 (x 100 ms)	←	←	←
053	Key input time setting	1. First interval time	2	4 (x 100 ms)	←	←	←
		2. Second interval time	2	1 (x 100 ms)	←	←	←
		3. Third interval time	2	30 (x 100 ms)	←	←	←
054	Magnet type wiper Setting of operation time	1. Energized time	2	50 (ms)	←	←	←
		2. Time to wait for return	2	100 (ms)	←	←	←
055	Pneumatic type wiper Setting of operation time	1. Energized time	2	100 (ms)	←	←	←
		2. Time to wait for return	2	100 (ms)	←	←	←
056	Setting of operation time of intermediate presser	1. Time to wait for lowering	2	50 (ms)	←	←	←
		2. Time to wait for raising	2	150 (ms)	←	←	←
063	Feeding frame device connection 1	1. Output terminal number of feeding frame device 1	2	1	←	←	←
		2. Output terminal number of feeding frame device 2	2	2	←	←	←
		3. Output terminal number of feeding frame device 3	2	0	←	←	←
064	Feeding frame device connection 2	1. Output terminal number of feeding frame device 4	2	0	←	←	←
		2. Input terminal number of chuck sensor	2	0	←	←	←
		3. Output when the power is ON.	2	LOW	HIGH	LOW	HIGH
065	Intermediate presser device connection	1. Output terminal number of intermediate presser device	2	3	←	←	←
		2. Output terminal number of height adjusting device	2	4	←	←	←
		3. Output when the power is ON.	2	LOW	←	←	←
066	Wiper device connection	2. Output terminal number of pneumatic type wiper	2	0	←	←	←
		3. Output terminal number of thread clamp device	2	0	←	←	←
069	Inverting device connection	1. Output terminal number of inverting device	2	5	←	←	←

Function No.	Function	Item	Start level	Initial setting			
				1930 SS / HS	1930 SA / HA	1930 SS / HS -FU02S	1930 SA / HA -FU02S
072	Bobbin thread replacement device connection	1. Output terminal number of replacement start signal	2	0	←	←	←
		2. Input terminal number of replacement being made signal	2	0	←	←	←
		3. Input terminal number of error signal	2	0	←	←	←
073	Tension controller No. 3 connection	1. Output terminal number to drive unit	2	6	←	←	←
074	Material end detection device connection	1. Input terminal number of sensor signal	2	0	←	←	←
075	Bank selection connection	1. Number of selection terminals	2	2	←	←	←
		2. Terminal number of start of selection	2	0	←	←	←
076	External output connection 1	1. Output terminal number of external output 0	2	0	←	←	←
		2. Output terminal number of external output 1	2	0	←	←	←
		3. Output terminal number of external output 2	2	0	←	←	←
077	External output connection 2	1. Output terminal number of external output 3	2	0	←	←	←
		2. Output terminal number of external output 4	2	0	←	←	←
		3. Output terminal number of external output 5	2	0	←	←	←
078	External output connection 3	1. Output terminal number of external output 6	2	0	←	←	←
		2. Output terminal number of external output 7	2	0	←	←	←
		3. Output terminal number of external output 8	2	0	←	←	←
079	External output connection 4	1. Output terminal number of external output 9	2	0	←	←	←
		2. Output terminal number of external output 10	2	0	←	←	←
		3. Output external number of external output 11	2	0	←	←	←
080	External output connection 5	1. Output terminal number of external output 12	2	0	←	←	←
		2. Output terminal number of external output 13	2	0	←	←	←
		3. Output terminal number of external output 14	2	0	←	←	←
081	External output connection 6	1. Output terminal number of external output 15	2	0	←	←	←
082	External input connection 1	1. Input terminal number of external input 0	2	0	←	←	←
		2. Input terminal number of external input 1	2	0	←	←	←
		3. Input terminal number of external input 2	2	0	←	←	←
083	External input connection 2	1. Input terminal number of external input 3	2	0	←	←	←
		2. Input terminal number of external input 4	2	0	←	←	←
		3. Input terminal number of external input 5	2	0	←	←	←
084	External input connection 3	1. Input terminal number of external input 6	2	0	←	←	←
		2. Input terminal number of external input 7	2	0	←	←	←
		3. Input terminal number of external input 8	2	0	←	←	←
085	External input connection 4	1. Input terminal number of external input 9	2	0	←	←	←
		2. Input terminal number of external input 10	2	0	←	←	←
		3. Input terminal number of external input 11	2	0	←	←	←
086	Ecxternal input connection 5	1. Input terminal number of external input 12	2	0	←	←	←
		2. Input terminal number of external input 13	2	0	←	←	←
		3. Input terminal number of external input 14	2	0	←	←	←
087	External input connection 6	1. Input terminal number of external input 15	2	0	←	←	←

Function No.	Function	Item	Start level	Initial setting			
				1930 SS / HS	1930 SA / HA	1930 SS / HS -FU02S	1930 SA / HA -FU02S
098	Pedal control 3	1. Setting of pedal 1 operation active	1	HIGH	LOW	HIGH	LOW
		2. Setting of pedal 2 operation active	1	LOW	←	←	←
		3. Setting of pedal 3 operation active	1	LOW	←	←	←
099	Pedal control 4	1. Setting of pedal 4 operation active	1	LOW	←	←	←
		2. Setting of start switch operation active	1	LOW	←	←	←
109	Needle cooler control	1. Whether needle cooler control is provided or not is set.	2	OFF	←	←	←
		2. Setting of output destination of needle cooler	2	0	←	←	←
110	Heat-wire thread trimming control	1. Whether heat-wire thread trimming control is provided or not is set.	2	OFF	←	←	←
		2. Setting of input terminal of thread trimming completion signal.	2	0	←	←	←
111	Setting of feeding frame operation timing	1. Delay time after signal output of lowering of feeding frame	2	170(ms)	←	←	←
		2. Setting of feeding frame lowering sensor	2	500(ms)	←	←	←
112	Setting of needle thread tension disk floating control	1. Whether to operate disk floating solenoid or not is set.	2	OFF	←	←	←
		2. Delay time setting (ON)	2	100	←	←	←
		3. Delay time setting (OFF)	2	0	←	←	←

(Caution) 1 For the subclasses not described in the above table, the setting may vary.
2. The contents of setting may vary according to the revision of System ROM.
(The above table is for System ROM Revision 008.)

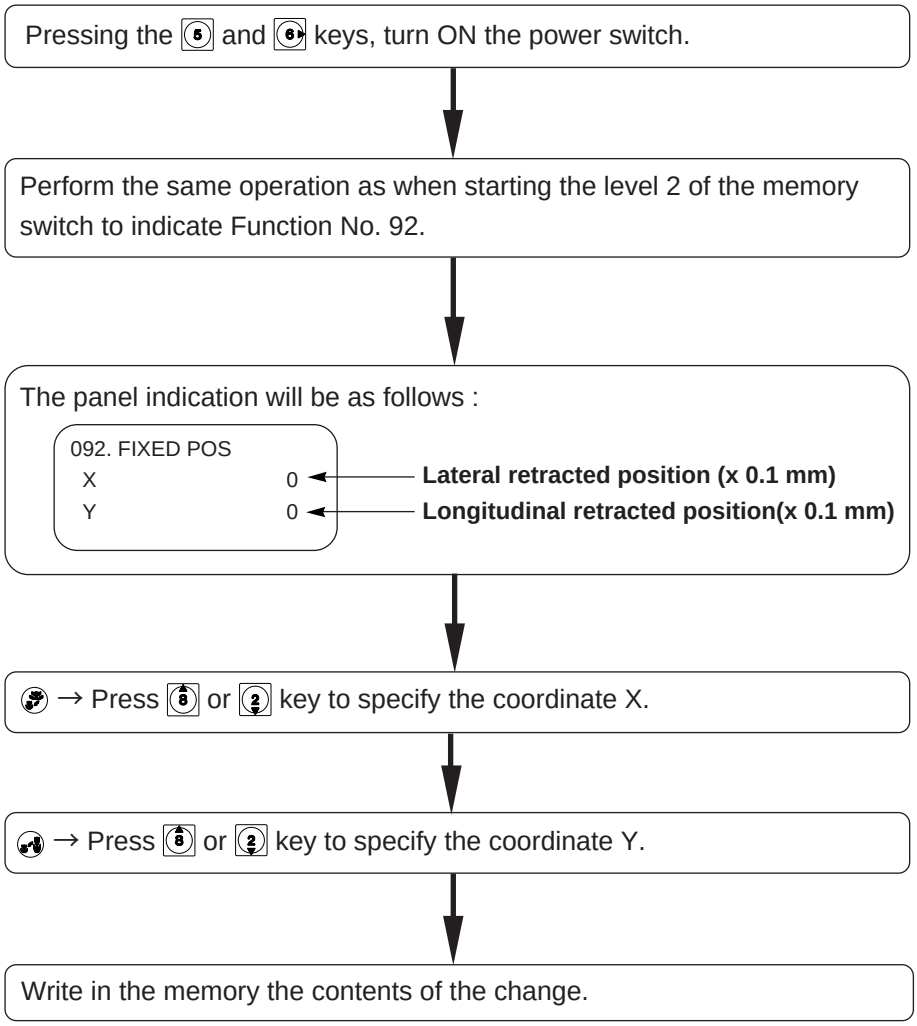
9. COMPLEMENTARY EXPLANATION OF FUNCTION NOS. (LK-1930)

(1) Fixed retracted position setting (Function No. 003)

Regardless of the 2nd origin in the sewing pattern, a 2nd origin (fixed retracted position) common to each sewing pattern can be set with the memory switch.

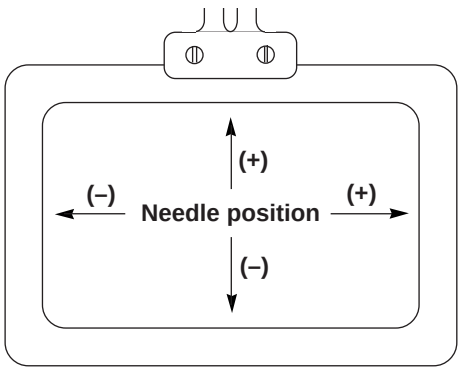
When the item 2 “Fixed retracted position setting” of the function No. 003 of the memory switch is set to “ON”, the newly set fixed retracted position will become effective, and even if any sewing pattern is read in, the feeding frame waits at the same position.

Setting of the fixed retracted position



(Caution) 1. The coordinate X, when the needle position is on the right side of the origin, is (+), and, on the left side of it, (–).

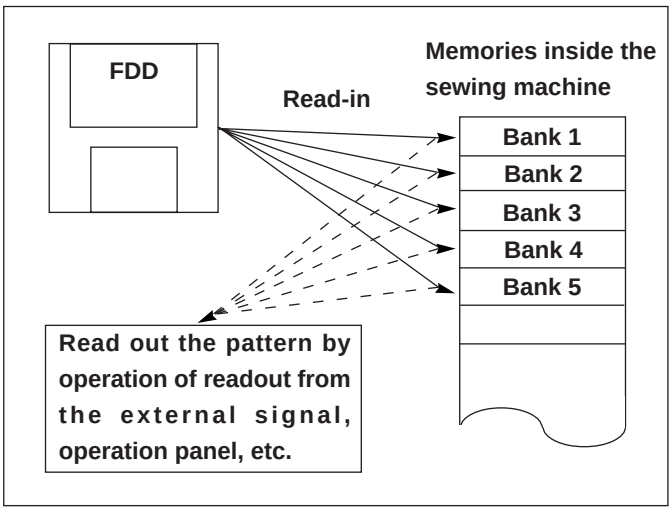
2. The coordinate Y, when the needle position is in the rear of the origin, is (+), and , in front of it, (–).



(2) How to use the bank function (Function No. 021 and 075)

Bank function

The bank function means that plural patterns in the floppy disk can be stored in the memory of the sewing machine main unit and instantly change the patterns from the external signal or operation panel and that plural patterns can be sewn. (Refer to the right figure.)



[Setting to use the bank function]

To use the bank function, it is necessary to set some of the contents of the memory switch.
The necessary contents to be set are described as follows :

[Setting item when using the bank function]

When using the bank function, following setting of the memory switch is necessary :
As for the way of change of the memory switch, refer to the item “How to use the memory switch” P56.
Function No. of the memory switch which is necessary for setting.

Function No.	Function	Item	Remarks
21	Bank function	1	Number of banks Effective/ineffective setting
		2	Read-in method setting
		3	Selection method setting
75	Bank selection connection setting	1	Number of selectable patterns
3	Jog function	2	Start terminal number of signal for selection
92	Coordinate of fixed retracted position (Caution)	2	Fixed retracted position setting
		1	X fixed retracted position
		2	Y fixed retracted position

Table 1

(Caution) Be careful as the start level of the function No. 92 is different from that of the other function Nos.
The way of starting is given in the explanation of each function.

[Explanation of the contents of setting]

Function No. 21 Bank function setting

In these items, setting of the bank function operation is made.
The contents of setting for each item is described as follows :

Item 1 : Setting of with/without bank operation and number of banks

In this item, with/without bank function and number of banks are set.The number of banks used means to set the number of patterns desired to be read in the memory of the sewing machine side. Set values are 1 to 16. If “0” is set, the bank function does not work.

Item 2 : Setting of read-in method

[Consecutive number read-in] (SEQ)

Patterns are read in the memory of the sewing machine side from bank No. 0 by turns in the order of the specified pattern numbers

At this time, the pattern desired to be read in should be stored in the floppy disk with consecutive pattern numbers.

Perform the read-in method same as the normal pattern read-in operation.

[Read-in from panel] (PANEL)

Specify the bank No. from the panel and any pattern data in the floppy disk can be read in the bank at random.

(How to operate)

Press the ⓝ key and input the desired pattern number using the numeric keys from 0 to 9.

Next, specify the pattern No. desired to read in using the "ⓝ key + Numeric keys from 0 to 9".

By this operation, any pattern data can be read in the desired bank.

However, the maximum bank numbers are 10 as the numeric keys are from 0 to 9.

Item 3 : Setting of selection method

[Read-in from external signal] (EXT)

Selection of bank can be possible by the external signal input.

The numbers of banks possible to select are up to 16 banks.

For the standard machine, as shown in the table 2, there are only two input lines. Therefore, the maximum 4 banks can be selected.

The connection device and connecting way will be explained in a separate item.

[Operation panel] (PANEL)

Specify the desired bank number from the operation panel, and the sewing can be made.

In a state that the sewing LED is lit up, select using the "ⓝ key + Numeric keys from 0 to 9"

In this case, 10 bank selections can be made as the numeric keys are from 0 to 9.

[Automatic update] (ROT)

Specify the desired bank number from the operation panel, and the sewing can be made. Also, the bank number is automatically updated every cycle.

Same as the [operation panel] mode, it is possible to directly specify the bank using the "ⓝ key + Numeric keys from 0 to 9"

In this case, the bank number is updated from the directly specified bank number.

Function No. 75 Bank selection connection setting

[Read-in from the external signal] This setting is made when (EXT) is specified .

Item 1 : Selection of the number of terminals for bank selection

This function sets the number of signal lines to be used for changing the bank numbers.

For the standard machine, the signals to be input are only two. Therefore, the set value is 1 or 2 only.

If more input signals are necessary, an optional input/output expansion circuit board is necessary.

Item 2 : Start number of the selection terminal

This setting specifies the terminal number to be used for input signal.

The input terminal numbers are controlled from No. 1 in order.

The numbers to be used for bank selection are from No. 1 to No. 16.

For the standard machine, input terminals are only two. 1 or 2 can be specified.

The relation with the item 1 is as follows :

In case the set value is 1 in the item 1

In this case, if “1” is set in the item 2, use the signal from the input terminal 1 and two bank numbers can be used by turning ON/OFF.

Also, if “2” is set, use the signal from the input terminal 2 and two bank numbers can be used by turning ON/OFF.

In case the set value is 2 in the item 1

In this case, if “1” is set in the item 2, use the signals from the input terminals 1 and 2 (binary code) and up tp 4 patterns can be used.

Also, if “2” is set, the result is same as using the signal from the input terminal 2 only. Two bank numbers can be used by turning ON/OFF.

Function No. 003 Jog function setting

Fixed retracted position setting

Be sure to use this fixed retracted position when using the bank function.

The reason is as follows :

In case of LK, the machine under normal operation stops at the sewing start position when turning ON the power.

However, this is possible only when the sewing pattern is one. As in the case of the bank function, the sewing start point of the pattern to be sewn next does not always corespond with that of the previously sewn pattern. Accordingly, the waiting position at the sewing start should be the same position by all means using this fixed retracted position.

Fot this purpose, use the fixed retracted position.

Item 2 : Fixed retracted position setting (ON)

By this setting, the machine always moves to the position of X and Y coordinates set by the memory switch function No. 92 after completion of the sewing and enters in a standby state.

Setting of the memory switch function No. 92 will be explained in the next item.

Normally, the memory switch of No. 92 is set to X : 0 and Y : 0. And, the machine stops at the origin.

Function No. 092 Jog function, Coordinate of the fixed retracted position

When the item 2 of the memory switch function No. 003 Jog function is effective, the set value of X and Y coordinates is set as the fixed retracted position. And the feeding frame stops always at the specified position after completion of the sewing and enters in a stanby state.

Item 1 : X coordinate setting Actual setting position -32767 to +32767 (X0.1 mm)

When selecting the fixed retracted position in the item 2 of function No. 003, the read-in pattern is set so that the set coordinate becomes the X coordinate value of the fixed retracted position. (Initial setting 0)

Item 2 : Y coordinate setting Actual setting position -32767 to +32767 (X0.1 mm)

When selecting the fixed retracted position in the item 2 of function No. 003, the read-in pattern is set so that the set coordinate becomes the Y coordinate value of the fixed retracted position.

(Caution) Start level of the coordinate of the fixed retracted position of function No. 092 Jog function is different. Start as follows :

[How to start Function No. 92]

Pressing 5 + 6 keys, turn ON the power switch.

After then, operate same as “How to start the level 2” of “How to start the memory switch” P.57.

Explanation of the input terminal for selection

Here, input which is possible for input with the standard LK is explained.

[Pin arrangement]

Bank number selection signal from the external is input through J16 mounted on MAIN circuit board in the control box.

Pin arrangement is as follows :

MAIN circuit board J16		
Pin No.	Signal name	Function
10	+ 5 V	Power source + 5 V
11	OP_INPUT	Input signal (+ 5 V)
12	GND	Ground

Table 2

[Logic of signal]

All input of signal is +5V signal. Logic is the positive logic (Effective, Active) when the input signal is OFF (OV, Low level).

The input signal is pulled up in the inside of circuit board,and becomes ON (+5V) state when released.

[Relation between the combination of input signal and bank numbers]

The relation between input terminal and bank number is shown by the binary as shown in the table below.

Bank No.	Input signal
0	ON
1	ON
2	OFF
3	OFF

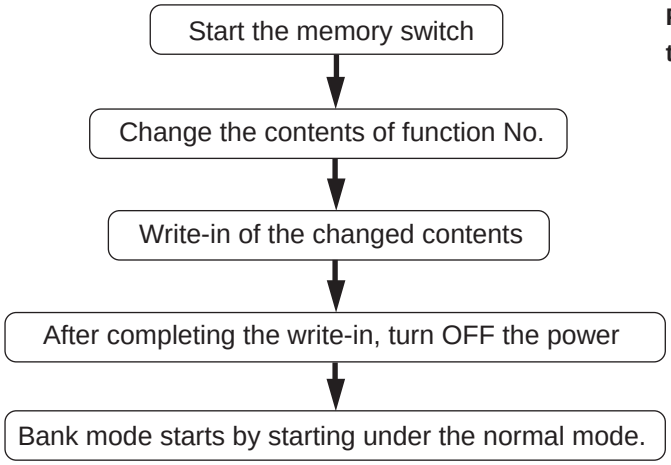
Table 3

[Form of connector for signal input]

Connector forms used for the input connectors are as follows :

Manufacturer name	Name	Manufacturer form	JUKI Part No.
MOREX	Receptacle	5557-24R	HK034610024
MOREX	Female terminal	5556T2L	HK03464000A

[Setting flow chart when using the bank function]



Flow chart until the bank function is set is as shown in the figure left.

[Panel indication after setting the bank function]

After setting the memory switch, when the machine is started under the bank mode, the panel indication will be as follows :

No : 000	BNK-BLK
XS : 000	EXT
YS : 000	
BC : 000	PC : 0000

By this panel indication, the bank function is effective and the bank mode is actuated.

[Explanation of panel indication under the bank mode]

No : 000	BNK-BLK
XS : 000	EXT
YS : 000	
BC : 000	PC : 0000

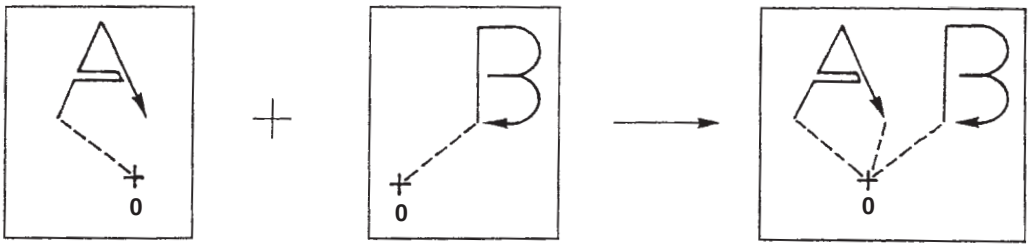
According to the contents of the setting of the item 3 of Function No. 21 of the memory switch, following indications are given :

When “EXT” is set : EXT
When “PANEL” is set : PANEL
When “ROT” is set : ROT

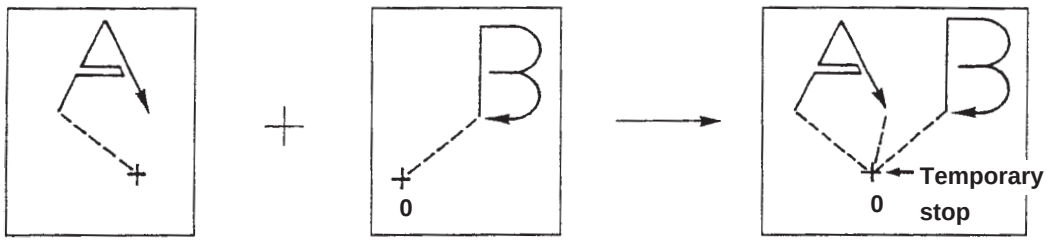
(3) Combination function

Reading plural patterns from the floppy disk and sewing in a combined state using the combination function can be made.

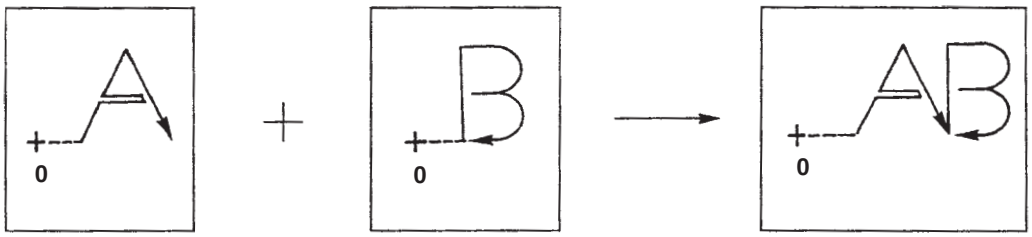
<Example 1> Correspond the origins of both patterns with each other and combine the two patterns.



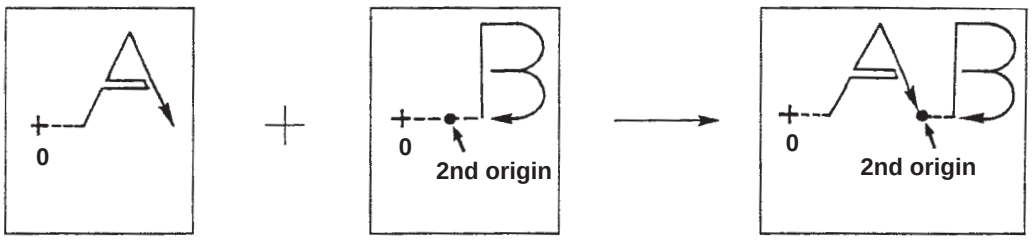
<Example 2> Correspond the origins of both patterns with each other including inserting a temporary stop and combine the two patterns.



<Example 3> Correspond the sewing start with the sewing end and combine the two patterns.

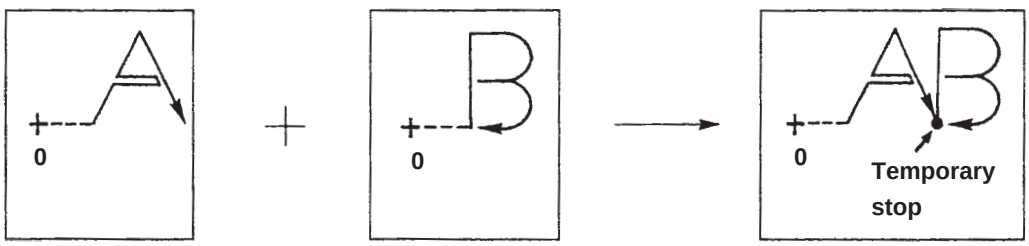


(Caution) Jump feed to the sewing start after the second pattern is neglected.



(Caution) Jump feed to the 2nd origin after the second pattern is neglected.
Also, the machine does not stop at the 2nd origin.

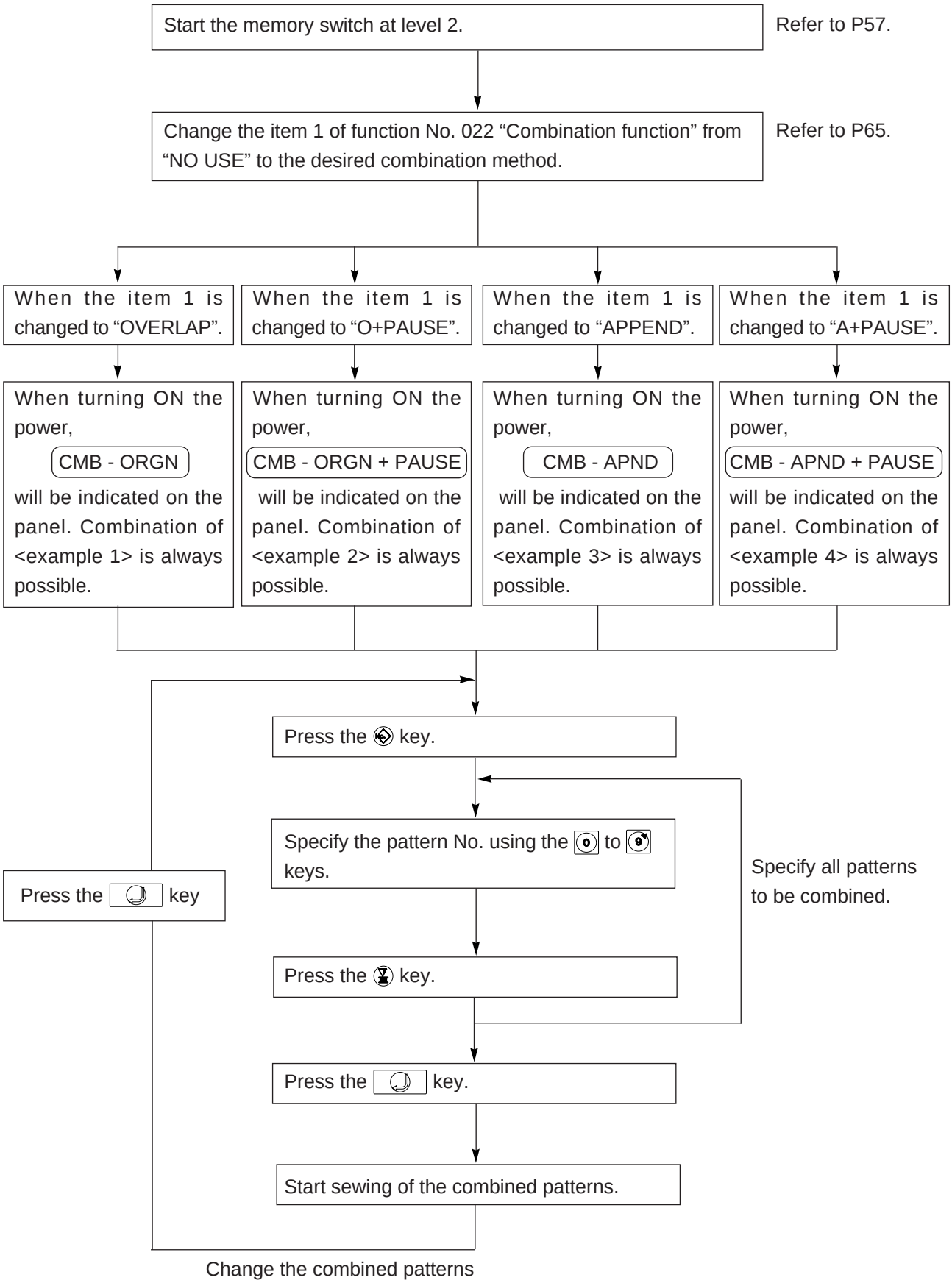
<Example 4> Correspond the sewing start and the sewing end including inserting a temporary stop and combine the two patterns.



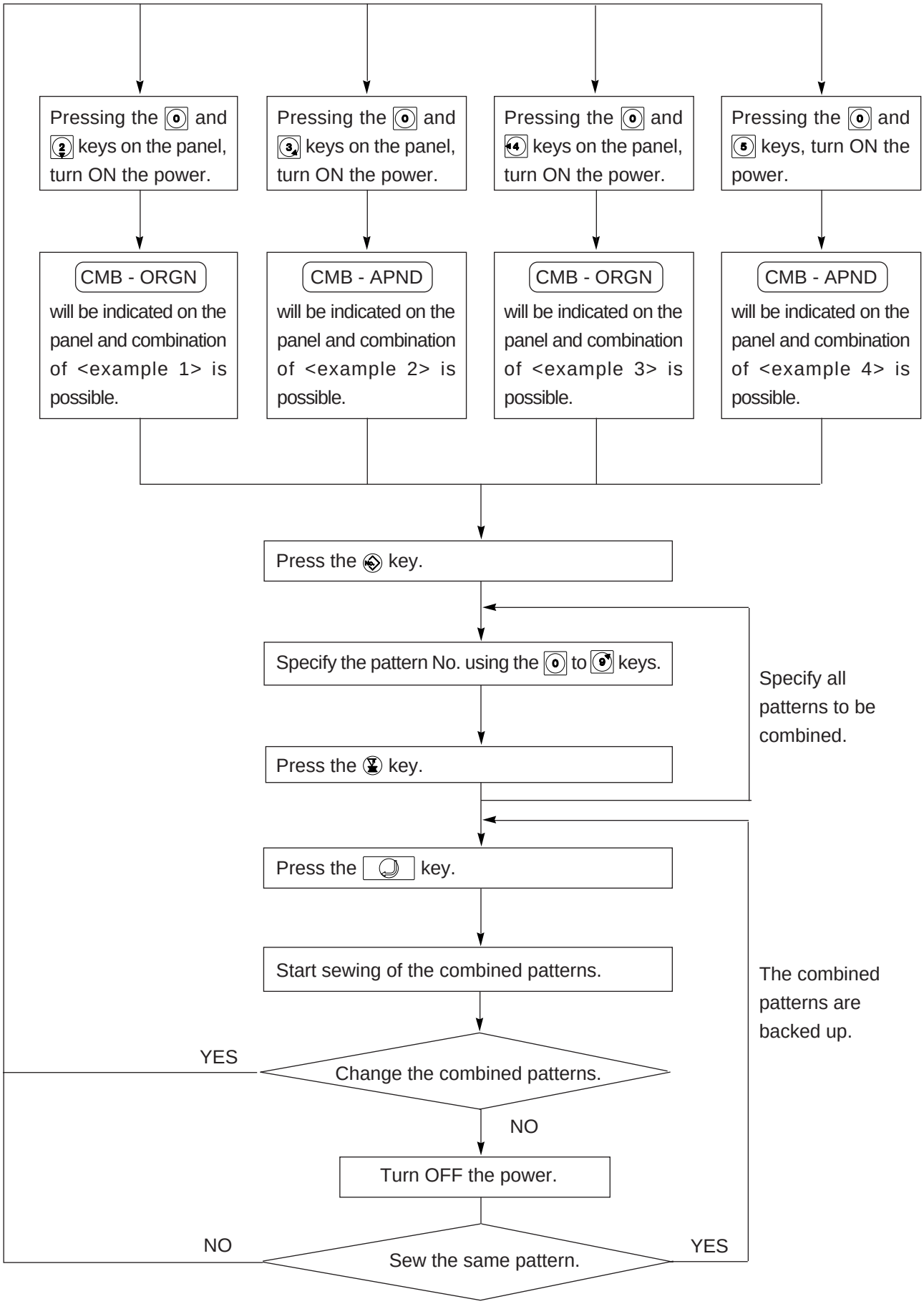
Starting method of the combination function

There are two starting methods of the combination function. Use the starting methods according to the sewing condition.

<Starting method 1> In case the change of combination pattern is frequently made, change the setting of memory switch so that the combination function always actuates.



<Starting method 2> In case of sewing the same combined patterns for a long period of time, start the combination function using the operation panel.



(4) How to set the sequence of the feeding frame operation (Function Nos. 030 to 033, 98, 99)

The LK-1930 can change the operating way of the feeding frame and pedal using the memory switch. The setting of the desired operation of the feeding frame and pedal can be made by changing the function Nos. 30 to 33,98,99 of the memory switch.

Function No. 30 Feeding frame control (1)

This memory switch can specify the operation order of the feeding frame when the feeding frame automatically operates and when it operates by means of the pedal.

Item 1 : Can set the operation order of the feeding frame when the work clamp foot works regardless of the pedal operation when using the preparation key, threading key, etc.
Set value : 0 to 99 (However, at the time of the initial setting, all release or all clamp only.)

Item 2 : Selects the operation order of the feeding frame at the time of opening / closing by means of the pedal. (Refer to the table 1.)

[Memory switch setting level table 1]

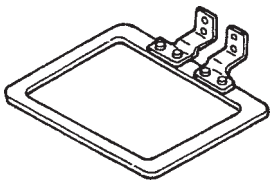
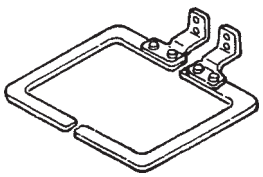
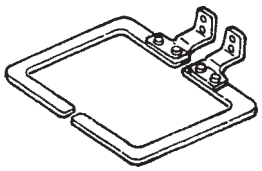
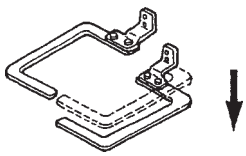
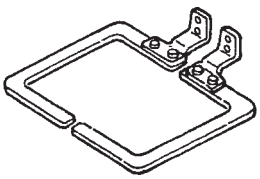
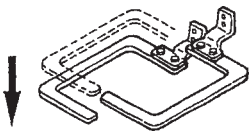
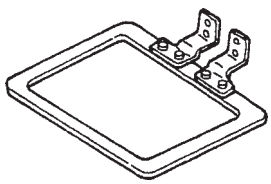
Setting	Contents	Priority order	Description
0	 Monolithic feeding frame	None	
1	 Separate type feeding frame	Coming down either from the right- or left-side is possible.	The feeding frame, right, comes down by the right-side pedal, and left, comes down by the left-side pedal.
2	 Separate type feeding frame	 Comes down from the right side	The feeding frame, right, comes down by the right-side pedal, and left, comes down by the left-side pedal. However, the feeding frame, left, does not come down if the feeding frame, right, has not come down.
3	 Separate type feeding frame	 Comes down from the left side.	The feeding frame, left, comes down by the right-side pedal, and right, comes down by the left-side pedal. However, the feeding frame, right, does not come down if the feeding frame, left, has not come down.
4 to 99	 Monolithic feeding frame	None	Same as the setting “0”. Set these set values when special operations are necessary for special orders. In this case, modification of the program is necessary.

Table 1

Item 3 : Selects the operation order of the feeding frame when opening / closing by the pedal after the temporary stop by the temporary stop command. Refer to the table 2.

[Memory switch setting level table 2]

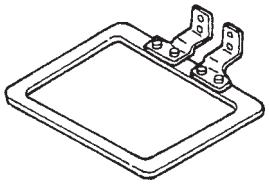
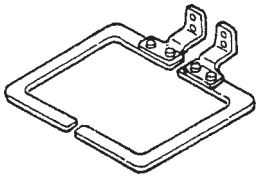
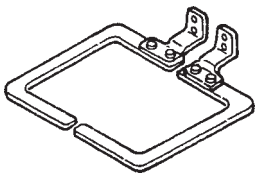
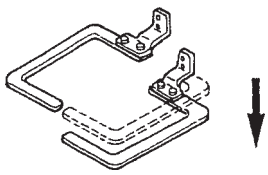
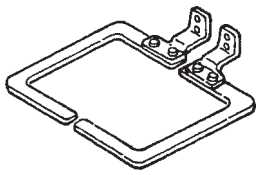
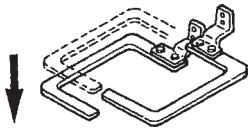
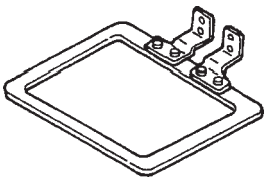
Setting	Contents	Priority order	Description
0	 Monolithic feeding frame	None	
1	 Separate type feeding frame	Coming down either from the feeding frame, right, or left, is possible.	When temporary stopping, the feeding frame, right, comes down by the right-side pedal, and left, comes down by the left-side pedal.
2	 Separate type feeding frame	 Comes down from the right side.	When temporary stopping, the feeding frame, right, comes down by the right-side pedal, and left, comes down by the left-side pedal. However, the feeding frame, left, does not come down if the feeding frame, right, has not come down.
3	 Separate type feeding frame	 Comes down from the left side.	When temporary stopping, the feeding frame, left, comes down by the right-side pedal, and right, comes down by the left-side pedal. However, the feeding frame, right, does not come down if the feeding frame, left, has not come down.
4 to 99	 Monolithic feeding frame	None	Same as the setting “0”. Set these set values when special operations are necessary for special order. Modification of program is necessary.

Table 2

Function No. 31 Feeding frame control (2)

This function sets the release of the feeding frame when the sewing is completed.

Item 1 : Control of the release of the feeding frame at the time of completion of the sewing.
This function sets the operation order when the feeding frame goes up after completing the sewing.
Set value 0 to 99 (Standard state is all release only.)

Item 2 : This function sets the operation of the feeding frame at the time of completion of the sewing. (Refer to the table 3 below.)

[Memory switch setting level table 3]

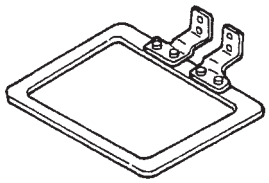
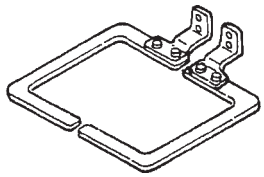
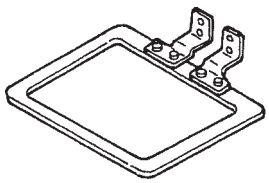
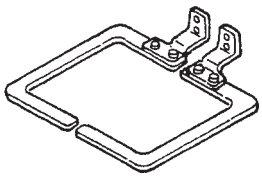
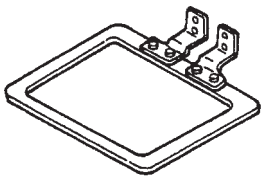
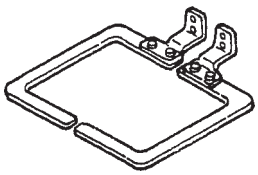
Setting	Kinds of applicable feeding frames		Description
ATSTART	 Monolithic feeding frame	 Separate type feeding frame	After completing the sewing, the feeding frame moves to the point of the sewing start, and wait in the state that the feeding frame is kept up.
HOLD	 Monolithic feeding frame	 Separate type feeding frame	After completing the sewing, the feeding frame moves to the point of the sewing start, and wait in the state that the feeding frame is kept down. The feeding frame is released by the pedal.
ATEND	 Monolithic feeding frame	 Separate type feeding frame	After completing the sewing, the feeding frame is released. From the sewing end to the sewing start, the feeding frame moves while keeping the feeding frame held released. After moving to thd sewing start, wait while keeping the feeding frame held released.

Table 3

Item 3 : Constant lowering function
This function can constantly keep the feeding frame held lowered.
Setting OFF : Standard set value Up/down of the feeding frame is possible.
Setting ON : At the time of the origin retrieval, after moving to the point of the sewing start, or in other cases, the feeding frame is kept lowered. Opening/closing by pedal is not possible.

Function No. 32 Pedal input control (1)

This function sets the way of pedal operation.

Item 1 : Sets the pedal operation of the pedal 1 (feeding frame, right).
Set value FLIP or LATCH (Refer to the table 4.) Initial setting : { Solenoid type : Non latch / Pneumatic type : Latch }
Item 2 : Sets the pedal operation of the pedal 2 (feeding frame, left).
Set value FLIP or LATCH (Refer to the table 4.) Initial setting : LATCH (Solenoid type : Not used)
Item 3 : Sets the pedal operation of the pedal 3 (stroke presser 1).
Set value FLIP or LATCH (Refer to the table 4.) Initial setting : LATCH
(However, this function is not used with the LK-1930.)

Function No. 33 Pedal input control (2)

This function sets the way of pedal operation. (This function sets the continuation of the function No. 32.)

Item 1 : Sets the pedal operation of the pedal 4 (stroke presser 2).
Set value 0 or 1 (Refer to the table 4.) Initial setting : LATCH
(However, this function is not used with the LK-1930.)

[Explanation of the operations of the respective settings]

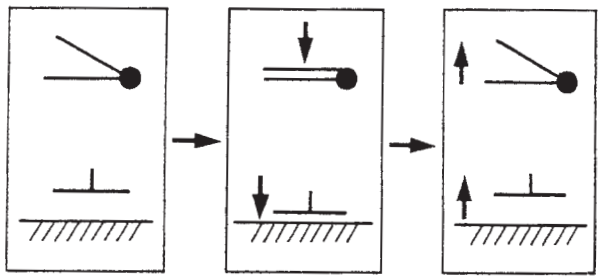
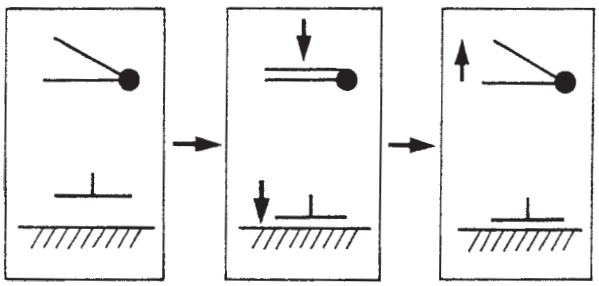
Setting	Description	Remarks
FLIP	The feeding frame is lowered only when the pedal is depressed.	
LATCH	If the pedal is depressed for the first time, the feeding frame is lowered, and kept lowered even when the pedal is released. If the pedal is depressed for the second, the feeding frame will be raised.	

Table 4

Function No. 98 Pedal input control (3)

Setting of pedal operating method is performed.

Item 1 : Pedal operation active of the pedal 1 (feeding frame, right) is set.
Set value : LOW/HIGH Intial setting

Item 2 : Pedal operation active of the pedal 2 (feeding frame, left) is set. (Pneumatic type only)
Set value : LOW/HIGH Initial setting : LOW

Item 3 : Pedal operation active of the pedal 3 (stroke presser) is set.
Set value : LOW/HIGH Initial setting : LOW
(Not used with LK-1930.)

Function No. 99 Pedal input control (4)

Pedal operating method is set.(Continuation of the function No. 99 is set.)

Item 1 : Pedal operation active of the pedal 4 (stroke presser 2) is set.
Set value : LOW/HIGH Initial setting : LOW
(Not used with LK-1930.)

Item 2 : Pedal operation active of the pedal 5 (start) is set.
Set value : LOW/HIGH Initial setting : LOW

[Description of operation of each setting]

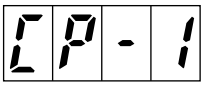
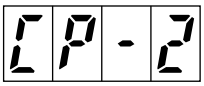
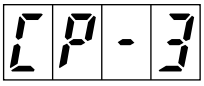
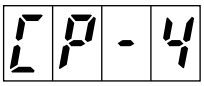
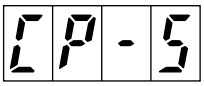
Setting (active)	Description	Remarks
LOW	Contact of the pedal switch operates at the time of “open → close”.	
HIGH	Contact of the pedal switch operates at the time of “close → open”.	

10. TEST MODE (LK-1910, 1920)

○ **Purpose of the test mode**

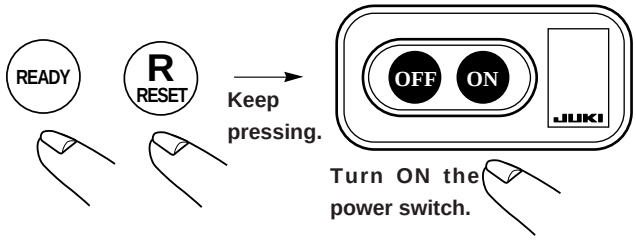
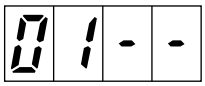
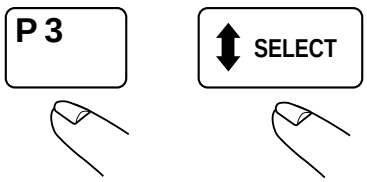
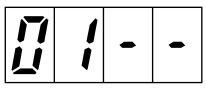
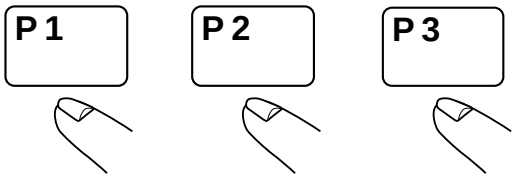
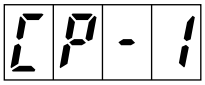
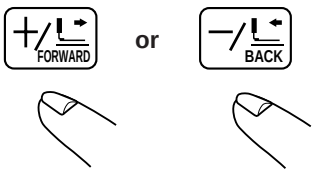
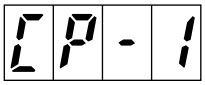
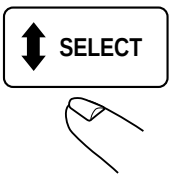
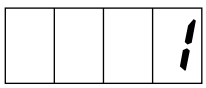
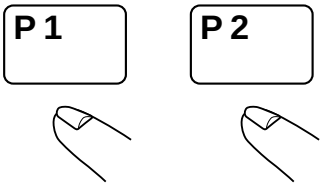
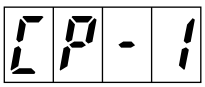
This mode is set to facilitate the electrical check for the maintenance work.

○ **List of items of the test mode**

Indication No.	Item	Description
	Input signal check	State of input of the switch and the sensor will be indicated by 8 LEDs.
	Origin retrieval	For origin adjustment, return to origin operation, feeding operation and origin sensor will be indicated.
	Continuos operation	Initial setting of the operation conditions will be performed, and the mode will move to the continuous aging mode.
	Number of revolutions of main shaft check	Output of the specified number of revolutions will be made, and the actual number of revolutions will be indicated. (No adjustment)
	Solenoid and solenoid valve output check	Output of solenoid and solenoid valve will be checked.

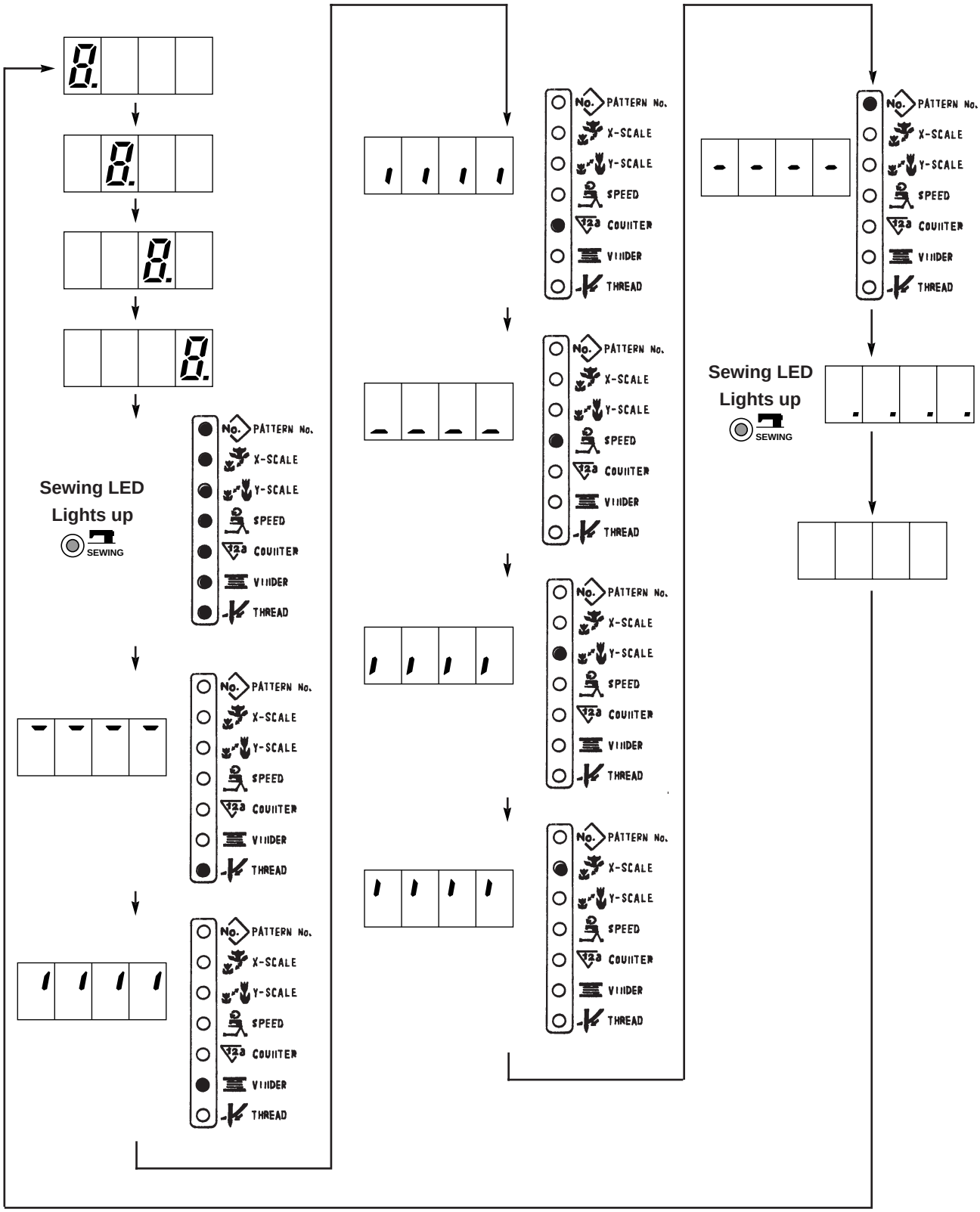
(1) Operating method

1) How to start the test mode

Step	Operation method	Indication	Explanation
1			Pressing (READY) key and (R RESET) key, turn ON the power switch. (Starting of the user level of memory switch)
2			Immediately after turning ON the power switch, simultaneously press [P 3] key and [SELECT] key. (Moving to the service level of memory switch)
3		Refer to ① Indicating output test.	Further, simultaneously press down [P 1] key, [P 2] key and [P 3] key. Then the mode will move to the test mode, and the indicating output test will be immediately started.
4	Press either key of the above ones. 		By operation of either key, the indication will move to the selection of other test function.
5		(Example) If the test program No. to be selected is CP-1. 	Test program No. will be changed by pressing down [FORWARD] or [BACK] keys.
6			Test program No. will be decided by pressing down [SELECT] key.
7			When [P 1] key and [P 3] key are simultaneously pressed down, the step will return to the step 5. However, when test No. CP-3 is selected, it cannot be returned to the step 5. At this time, turn OFF the power switch.

Indicating output test

Order of the indicating output test after moving to the test mode is shown as follows.



2) How to check each test program No.

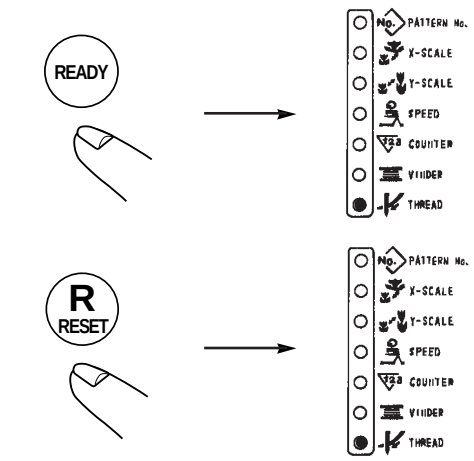
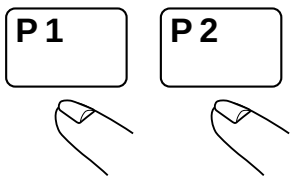
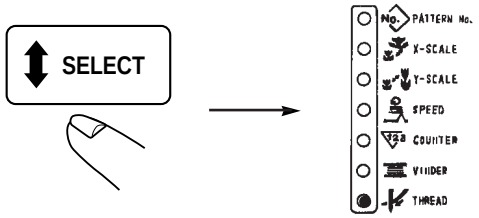
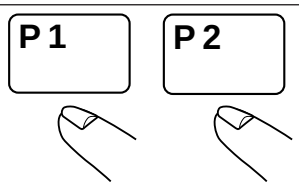
① CP-1 (input signal check)

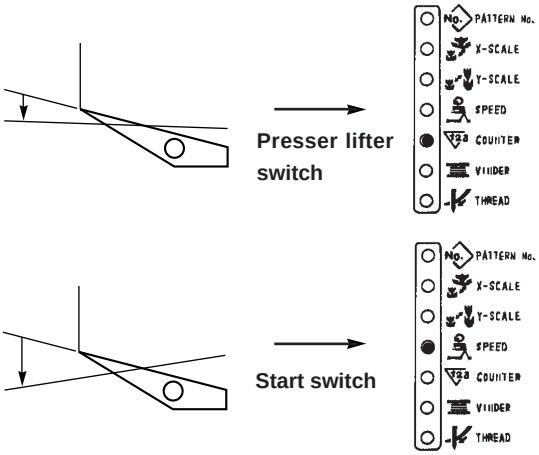
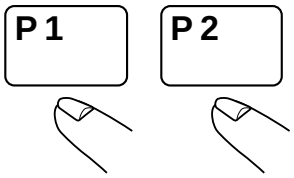
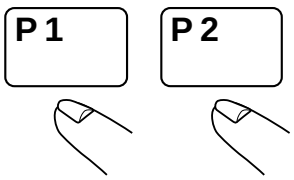
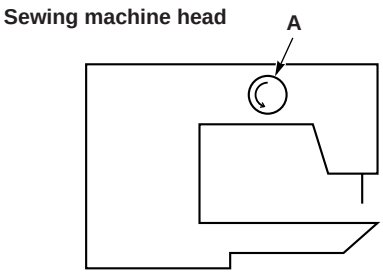
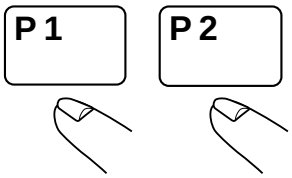
State of input of switches and sensors is indicated on the 8 LEDs.

LED indication table ..... Table of LED assignment of each switch and sensor

Input line No.	Kind of LED							
	THREADING	WINDER	COUNTER	SPEED	Y SCALE	X SCALE	PATTERN NO.	SEWING
1	–	READY	RESET	+/ FORWARD	–/ BACK	P1	P2	P3
2	–	SELECT	–	–	–	–	–	–
3	–	TEMPORARY STOP SW	PRESSER (R) SW	START	PRESSER (L) SW	–	–	–
4	–	AIR PRESSURE SW	X ORIGIN	Y ORIGIN	–	–	–	THREAD BREAKAGE DETECTION
5	–	FEED REFERENCE	TG	NEEDLE UP	NEEDLE DOWN	UP DEAD POINT	–	–

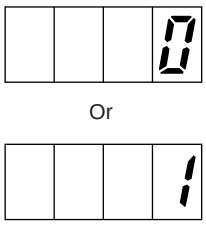
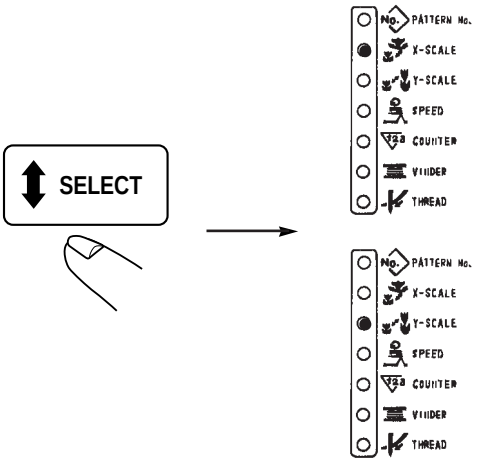
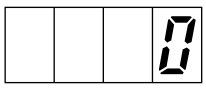
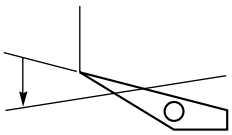
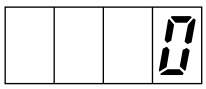
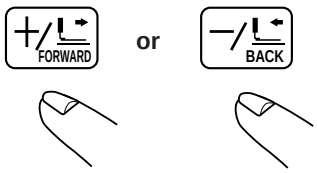
(Caution) 1. PRESSER (L) SW and AIR PRESSURE SW are provided for the pneumatic type only.
2. FEED REFERENCE signal is reference signal on the software and different from the start of feeding.
3. FEED REFERENCE signal is 125° to 155° at main shaft angle.
4. TG (tachometer generator) outputs 45 pulses by one rotation of main shaft. (360° ÷ 45 = 8°)
5. NEEDLE UP position is 46° to 62° at main shaft angle.
6. NEEDLE DOWN position is 80° to 123° at main shaft angle.
7. UP DEAD POINT is 340° to 10° at main shaft angle.

Indicating section (input line No.)	Checking measure	Explanation
1		State of the input line No. 1 key will be indicated on LED. [Example] **Check the (READY) key.** [Example] **Check the (R RESET) key.** As for the other keys, refer to the input line No. 1 of the above table.
2	 Simultaneously press.	Update of the input line No. 1 to 2
3		State of the input line No. 2 key will be indicated on LED. [Example] **Check the (SELECT) key.**
4	 Simultaneously press.	Update of the input line No. 2 to 3

Indicating section (input line No.)	Checking measure	Explanation
3		State of the input line No. 3 switch will be indicated on LED. [Example] **Check the presser lifter switch.** [Example] **Check the start switch.**
4	 Simultaneously press.	Update of the input line No. 3 to 4 (Refer to the adjustment of the sensor components.)
5	 Simultaneously press.	Update of the input line No. 4 to 5
5		Turn the hand pulley (A in the left figure) by one revolution in the direction of arrow. Feed start 1 time TG 45 times Needle upper position 1 time Needle lower position 1 time Upper dead point 1 time } Light up
1	 Simultaneously press.	Update of the input line No. 5 to 1

② **CP-2 (origin retrieval)**

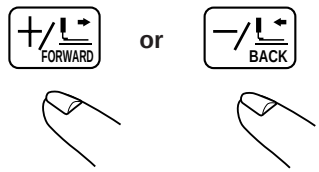
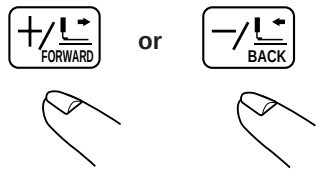
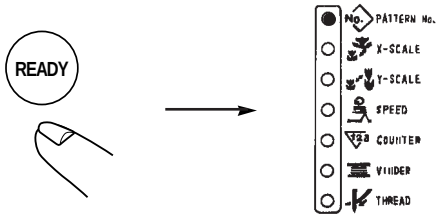
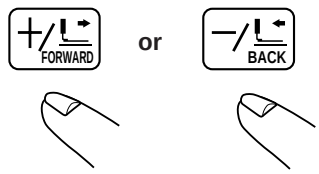
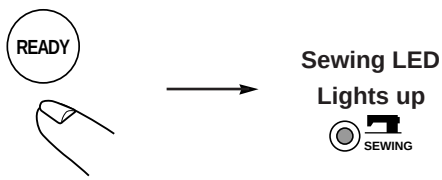
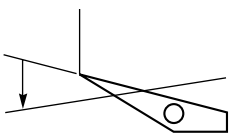
For origin adjustment, state of origin retrieval, feeding operation and origin sensor will be indicated.

Step	Indicating section	Checking measure	Explanation
1	 "0" or "1" will be indicated according to the state of the sensor.		JOG movement of the X/Y axes can be changed by pressing down the SELECT key.
2		 **Start switch**	Depress the pedal switch, and the sensor will execute the origin retrieval.
3			[JOG movement] Makes the selected axis move in the direction of +/- one by one pulse.

* Except for upper position (or upper dead point), error "E 3" will be indicated, and the origin retrieval will be not executed even when the pedal switch is depressed. At this time, return the position to the upper position using the hand pulley.

③ CP-3 (continuous operation)

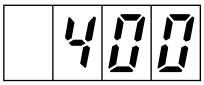
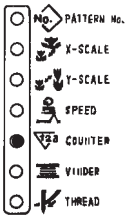
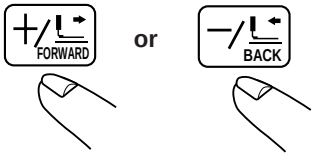
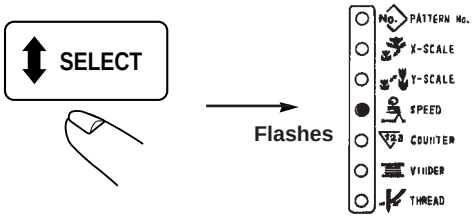
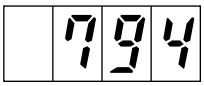
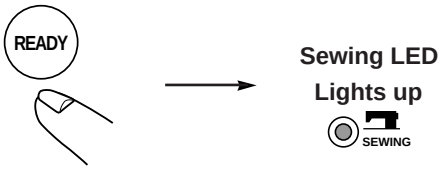
Performs the initial setting of the operation conditions, and moves to the continuous operation mode.

Step	Indicating section	Checking measure	Explanation
1	C 10		A time of pause is set by pressing down FORWARD or BACK key Setting range : 0 to 9,900 ms (in a unit of 100 ms)
2	C A0		By pressing down READY key, the time of pause is updated and the setting moves to the automatic origin retrieual setting
3	C A2		Setting moves to automatic origin retrieval setting by pressing down FORWARD or BACK key. Setting range : A0 ... Ineffective (initial setting) A1 ... Every 100 times A2 ... Every time
4	0		Automatic origin retrieval is updated and setting moves to pattern No. setting by pressing down READY key. (When setting for the first time, “0” is indicated. In other cases, pattern No. that has been previously set is indicated.)
5	10		Pattern No. will be set by pressing down FORWARD or BACK key.
6	10		Pattern No. is updated and the mode moves to the continuous operation mode by pressing down READY key.
7	10		Continuous operation can be stopped at the time of pause by depressing the pedal switch.

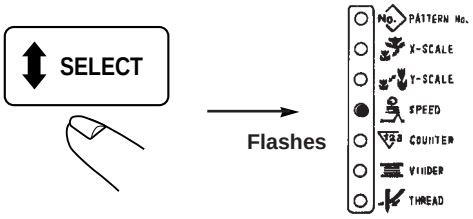
* When “CP-3” is selected, it is not able to return to the other test modes. Turn OFF the power and turn ON the power again in accordance with the starting way of the test mode.

④ CP-4 (checking the number of revolutions of main shaft)

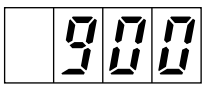
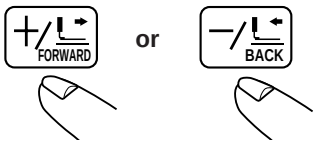
Output of the specified number of revolutions is made and the actual number of revolutions is indicated.

Step	Indicating section	Checking measure	Explanation
1		**Lights up** 	Initial state “SPEED” LED of the setting item lights up. If there is no change, move to the step 3.
2	(Example) When the number of revolutions is set to 800 r.p.m. 		Set value of the number of revolutions is set by pressing down FORWARD or BACK key.
3			The indication is changed to the indication of the actual value by pressing down SELECT key. “SPEED” LED of the setting item flashes on and off.
4			The sewing machine rotates and the actual value of the number of revolutions is indicated by pressing down READY key. “SPEED” LED of the setting item is kept flashing.
5			The sewing machine stops by pressing down R RESET key.

If following operation is made when the step is above-mentioned “step 4”, the indication can be changed to the indication of the specified number of revolutions.

Indicating section	Checking measure	Explanation
		The output is changed to the output of the specified number of revolutions by pressing down [SELECT] key. “SPEED” LED of the setting item lights up.

Further, following operation is made in the abovementioned state, the specified number of revolutions can be changed as well.

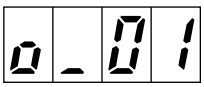
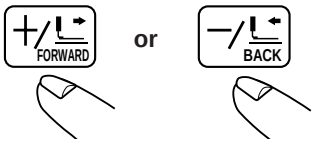
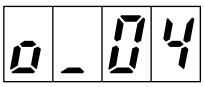
Indicating section	Checking measure	Explanation
		Even while the sewing machine is rotating, the number of revolutions is changed by pressing down [FORWARD] or [BACK] key.
		The specified number of revolutions is updated by pressing down (READY) key.

⑤ CP-5 (Solenoid and solenoid valve output check)

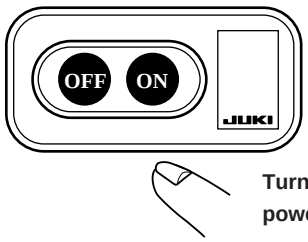
Checks the output of solenoid and solenoid valve.

Output No. Table

Output No.	Solenoid and solenoid valve
01	Feeding frame solenid (and solenoid valve, right / left ..... depending on pedal specifications)
02	Feeding frame solenoid valve, right
03	Feeding frame solenoid valve, left
04	Intermediate presser solenoid
05	Inversion (thread controller No. 3), solenoid valve (optional)
06	Thread trimmer solenoid
07	Wiper solenoid
08	Disk-floating solenoid (optional)
09	–
10	–
11	–
12	–

Step	Indicating section	Checking measure	Explanation
1			Output No. is increased or decreased by pressing down [+/FORWARD] or [−/BACK] key.
2			Output is ON while [READY] key is being pressed down. (However, output is automatically turned OFF when the key is continuously being pressed for 1 to 7 seconds.) In addition, ineffective out is not output depending on machine model setting.

3) How to finish test mode

Step	Operation method	Indication	Explanation
	 **Turn OFF the power switch.**		Turn OFF the power.

11. TEST MODE (LK-1930)

(1) How to start the test mode

1) Pressing the ⓑ and [ ] keys, turn ON the power.

```
TEST MODE
1 XY SNS        4 AGING
2 INPUT         5 SPEED
3 OUTPUT
```

Display of test mode selection

2) If the display is shown, input the function Nos. ([1] to [4]) of the test mode from the operation panel.

3) When the power is turned OFF, the test mode finishes.

(2) Test mode function

(2)-1 Function No. 1 : Origin check function

The position of the origin of the sewing machine can be confirmed.
When replacing the components relating to the origin (XY sensor, slit plate, etc.), be sure to adjust.
As for the adjustment, refer to P101 to P104.

(2)-2 Function No. 2 : Input check function

Signal of the respective switches and sensor can be confirmed.

1) When the test mode is selected on the display, select the [2] key.

   The indication will be shown as follows.

```
INPUT  CHECK
00     104      10111111
1110              110111
11111111
```

[Indication on the display]

```
INPUT  CHECK
 ＊＊    ＊＊＊   ＊＊＊＊＊＊＊＊
 ①       ②       ③
 ＊＊＊＊   ＊＊＊＊＊＊
 ④          ⑤
 ＊＊＊＊＊＊＊＊
 ⑥
```

① : Key code from operation panel
② : Value of variable registor
③ : Input of switch
④ : X, Y sensors and external input signal
⑤ : Signal from Servo circuit board
⑥ : Signal from external input circuit board (Optional)

[Explanation of the indication]

Indication ① Indication of key code from operation panel

Two digits of the number corresponding to the key will be shown when operation panel is pressed.

Codes corresponding to each key are as shown in the following table.

Switch name	Code	Switch name	Code	Switch name	Code	Switch name	Code	Switch name	Code
Bobbin thread winder	01	0 key	10	Pattern No.	20	Input selection	25	Data deletion	35
		1 key	11	X scale	21	Code	26	Speed change	36
Threading	02	2 key	12	Y scale	22	F1	27	Curve point	37
Clear	03	3 key	13	Bobbin thread set	23	F2	28	End point	38
Advance	04	4 key	14	Bobbin thread replacement	24	Jump	29	Execution/End	39
Retract	05	5 key	15			Point sewing	30		
Return-to-origin	06	6 key	16			Linear sewing	31		
Test	07	7 key	17			Thread trimming	32		
	08	8 key	18			Read-out	33		
		9 key	19			Write-in	34		

Indication ② Value of variable resistor

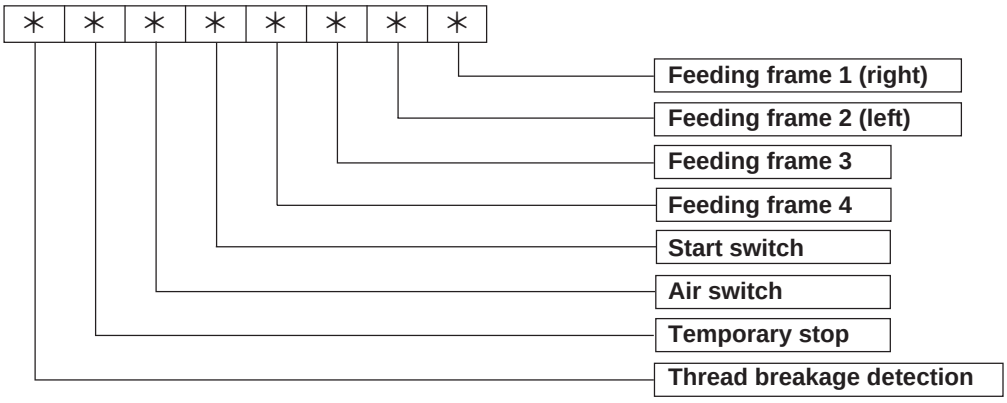
Value of the variable resistor located on the left side of operation panel is shown.

The value indicated is from 0 to 255. (However, in some cases, “0” or “255” will not be shown because of the unstable work of the variable resistor.)

Indication ③ Switch input

Pedal, temporary stop switch, etc. are shown.

The indication will be as follows.

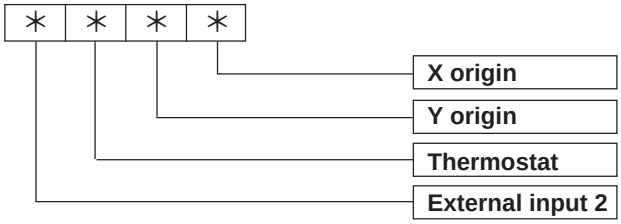


※ Normally, when the “1” switch is ON, “0” is shown.
For the temporary stop switch and the feeding frame 1 switch, when the “0” switch is ON, “1” is shown.

Indication ④ Sensor input

X and Y sensors, and external input signal are shown.

The indication is as follows.



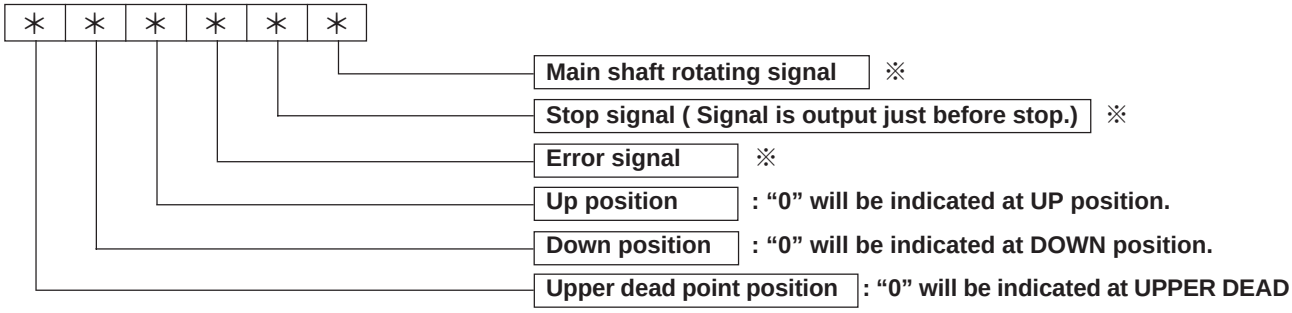
"0" will be indicated when the sensor is covered.

: When temperature rise is detected, "1" is indicated.

: When the signal is transmitted, "1" is indicated.

Indication ⑤ Sensor input

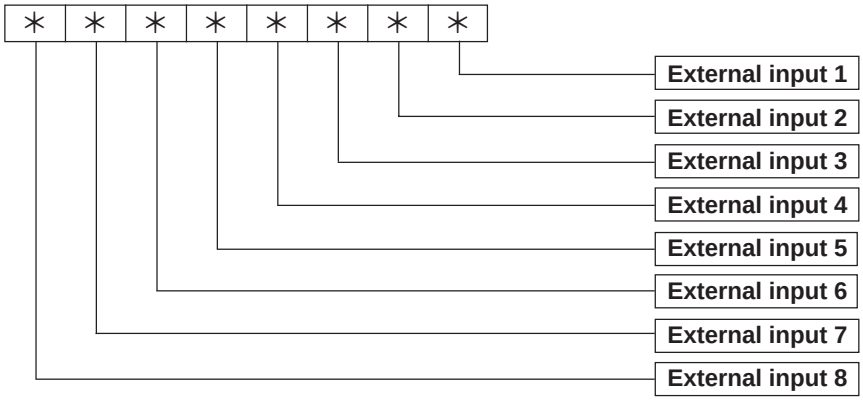
Input signal from SERVO circuit board is shown.



※ The siganl cannot be changed from outside as the signal comes out from SERVO circuit board.

Indication ⑥ External input terminal (Only when Optional circuit board is attached.)

External input signal, when the option is attached, is shown.



※ When the optional circuit board is not attached, always "1" is shown.

(2)-3 Function No. 3 : Output check function

Operation of the devices can be confirmed by outputting signals to the respective outputs from operation panel.

1) Select the [3] key when selection of the test mode is shown.

```
OUTPUT  CHECK

0            00000000
```

[Display indication]

```
OUTPUT  CHECK

0            00000000
①            ②
```

① Step indication Output check is composed of four steps from 0 to 3.
The current step is shown.

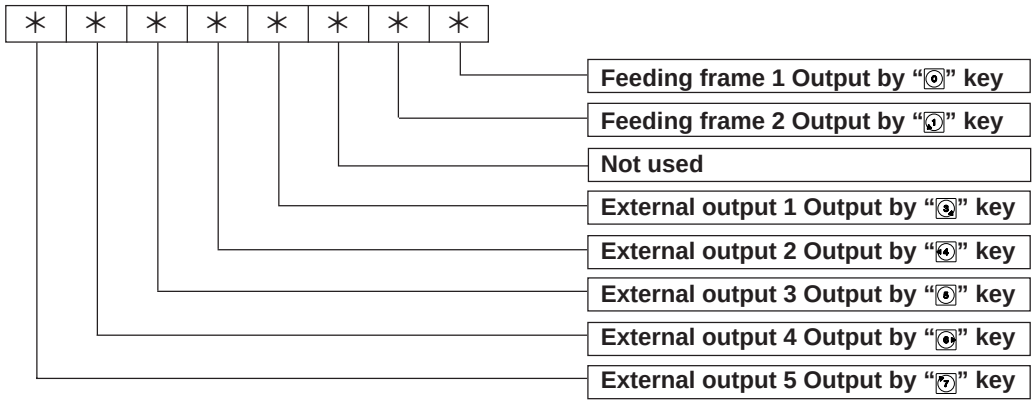
② Input state is shown “0” or “1”.
Indication digit changes according to the respective steps.
When the indication is “1”, the signal is being output.

2) When depressing the feeding frame switch, the step indication of indication ① is updated.
By pressing the keys from [0] to [7], the keys output signals to the respective output terminals.

[Indication on the dispaly]

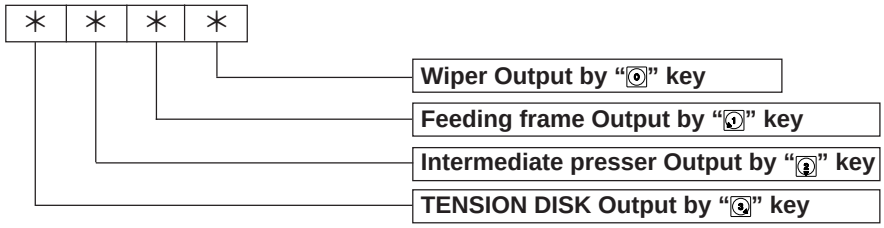
○ Step “0”

Output check of air system (No output with the magnet type machine head)



○ Step “1”

Output signal of magnet components is output.



○ Step “2”

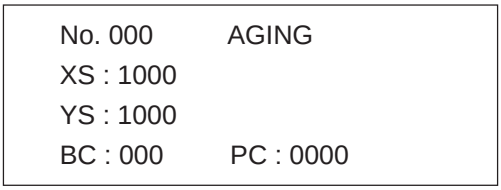
○ Step “3”

Output when the optional is attached (Standard type machine does not work.)

(2)-4 Function No. 4 : Aging function

This function actuates under continuous operation mode of the sewing machine.

1) Input the [4] key when the test mode selection is shown on the display.



2) Set the pattern No. same as the normal operation, and press the [↵] key

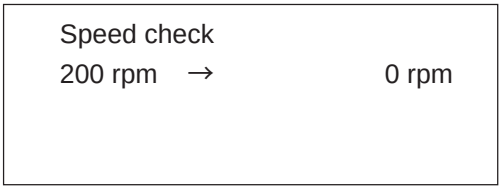
3) When the sewing machine is started, the continuous mode begins.
   ※ Every finish of one cycle, there is an interval of approximate 5 seconds.

(2)-5 Function No.5 : Main shaft speed check function

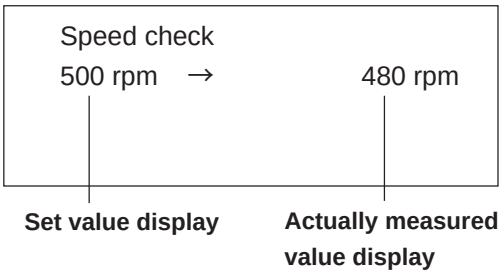
※ **Make sure that there is nothing to interfere since the needle bar gose up and comes down.**

Speed of the main shaft is set with the operation panel and actually measured value is displayed. (Adjusting function is not provided)

1) Input [5] key when the mode selection screen is displayed.



2) Set the speed variable resistor Max.
3) Set the speed (200 to 2,500 rpm) with [8] and [2] keys.

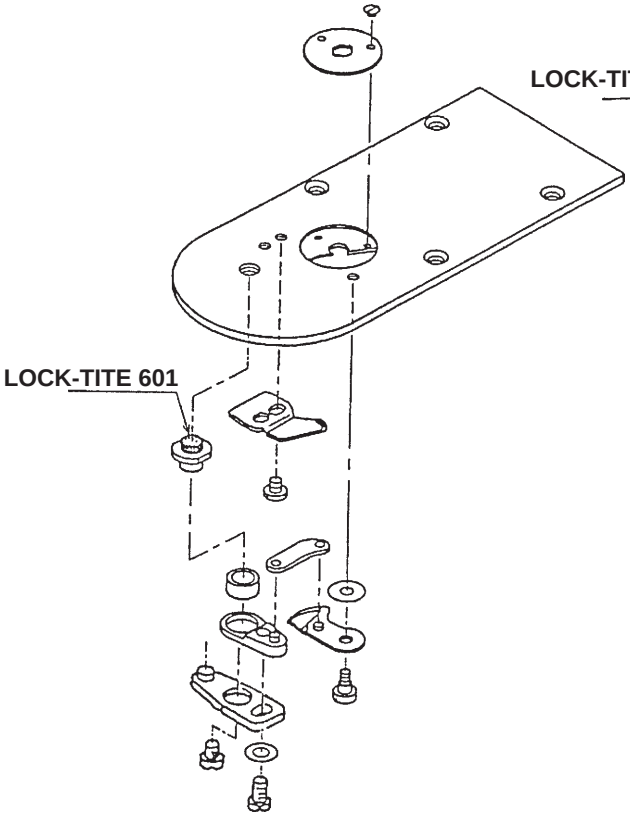


4) Operate the pedal in the order of presser → start to actuate.
5) The machine stops by operating the temporary stop switch.

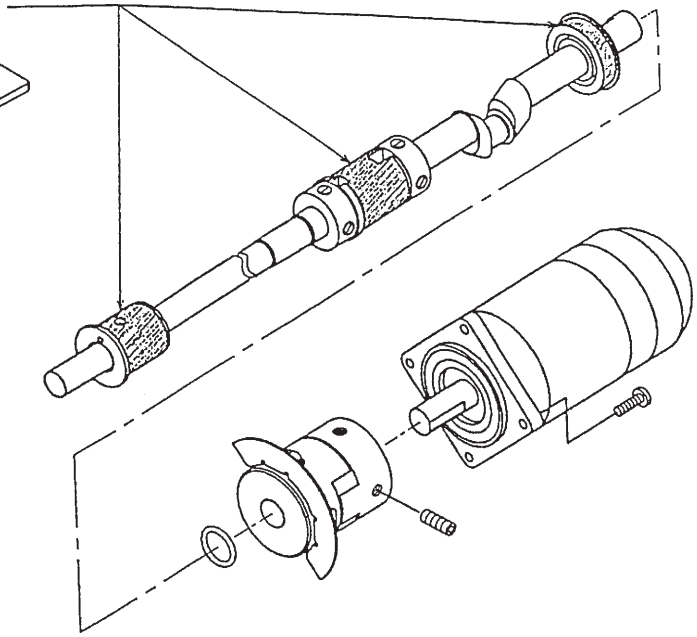
12. PARTS GREASE OR LOCK-TIGHT PAINT IS APPLIED

Apply grease periodically (one time/half yearly) to the parts shown in the figure.
Be sure to apply grease to each sliding parts not shown in the figure when overhauling or re-assembling.

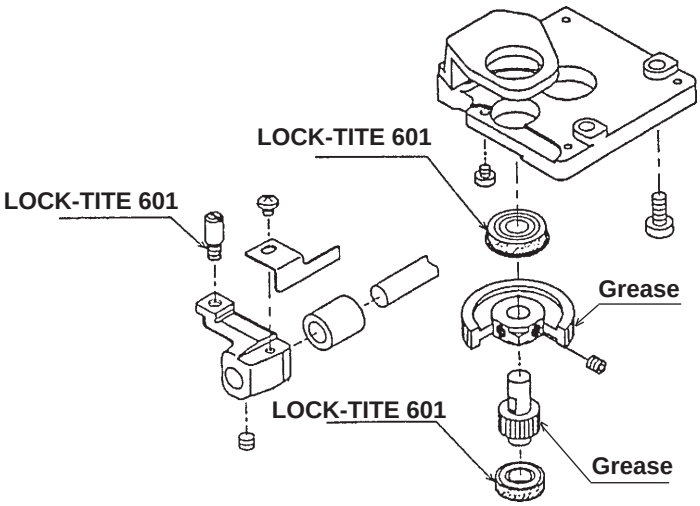
THREAD TRIMMING COMPONENTS



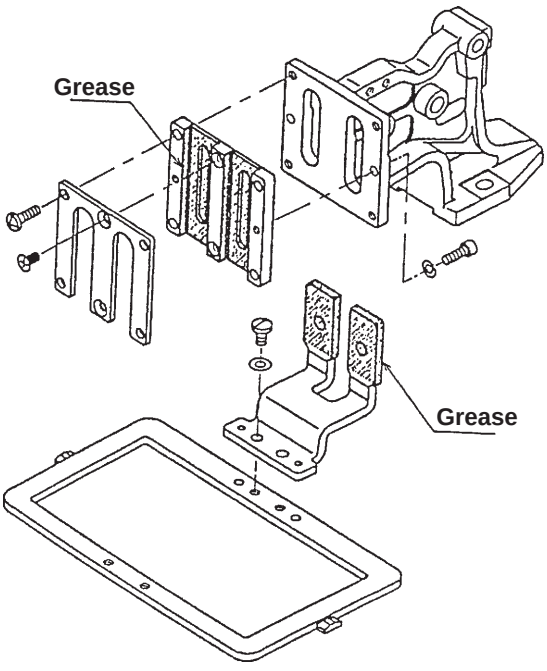
MAIN SHAFT COMPONENTS



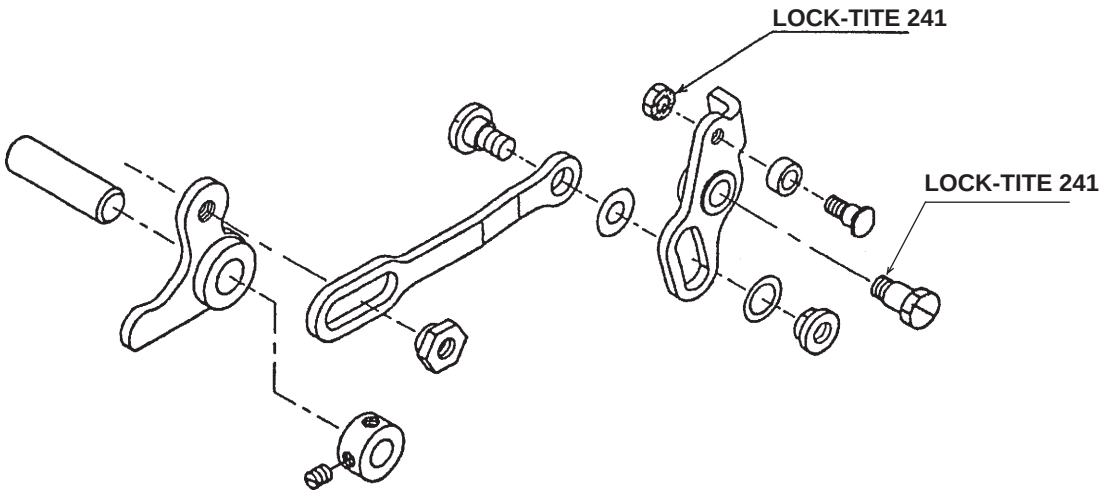
FEED MECHANISM COMPONENTS



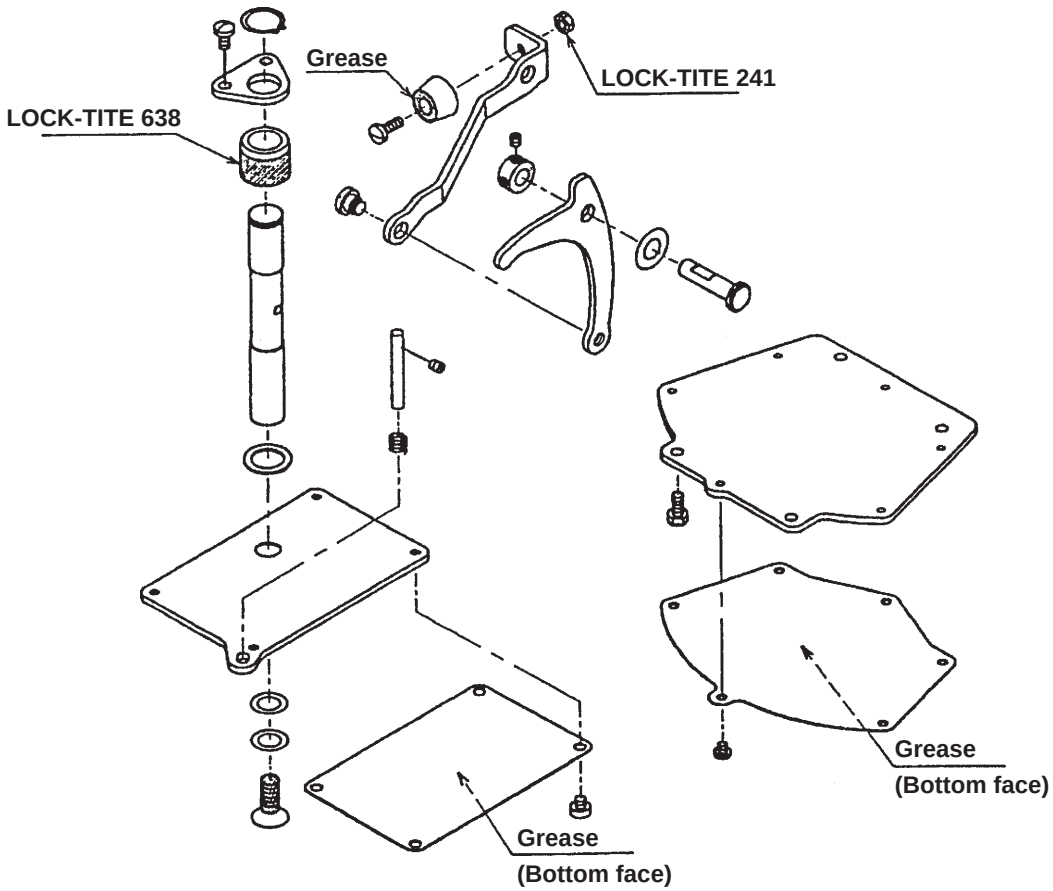
FEED BRACKET COMPONENTS



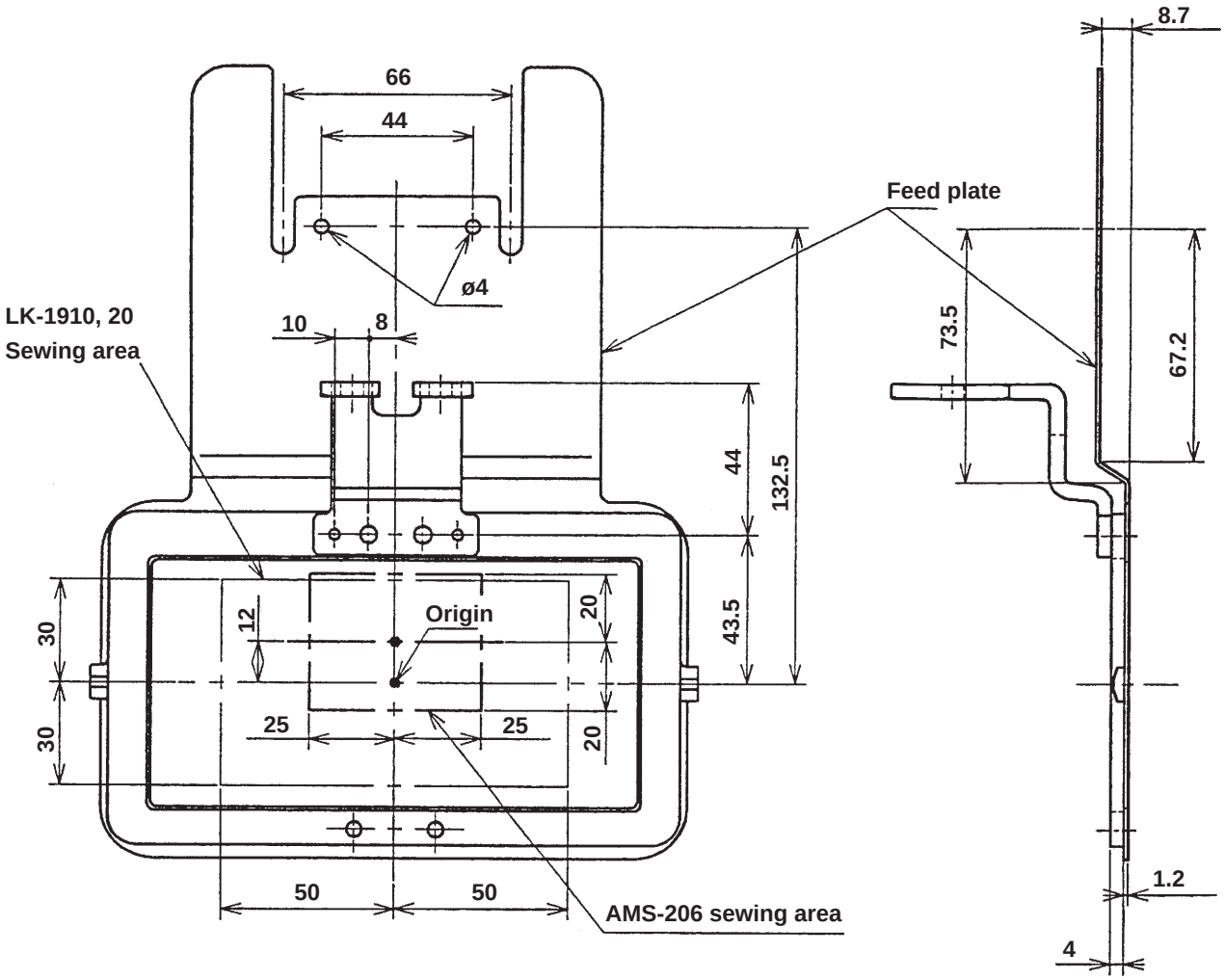
INTERMEDIATE PRESSER COMPONENTS



PRESSER COMPONENTS



13. PRESSER DIMENSIONS



MEMO

14. HOW TO USE OPTIONALS

(1) Needle cooler (Pneumatic type only)

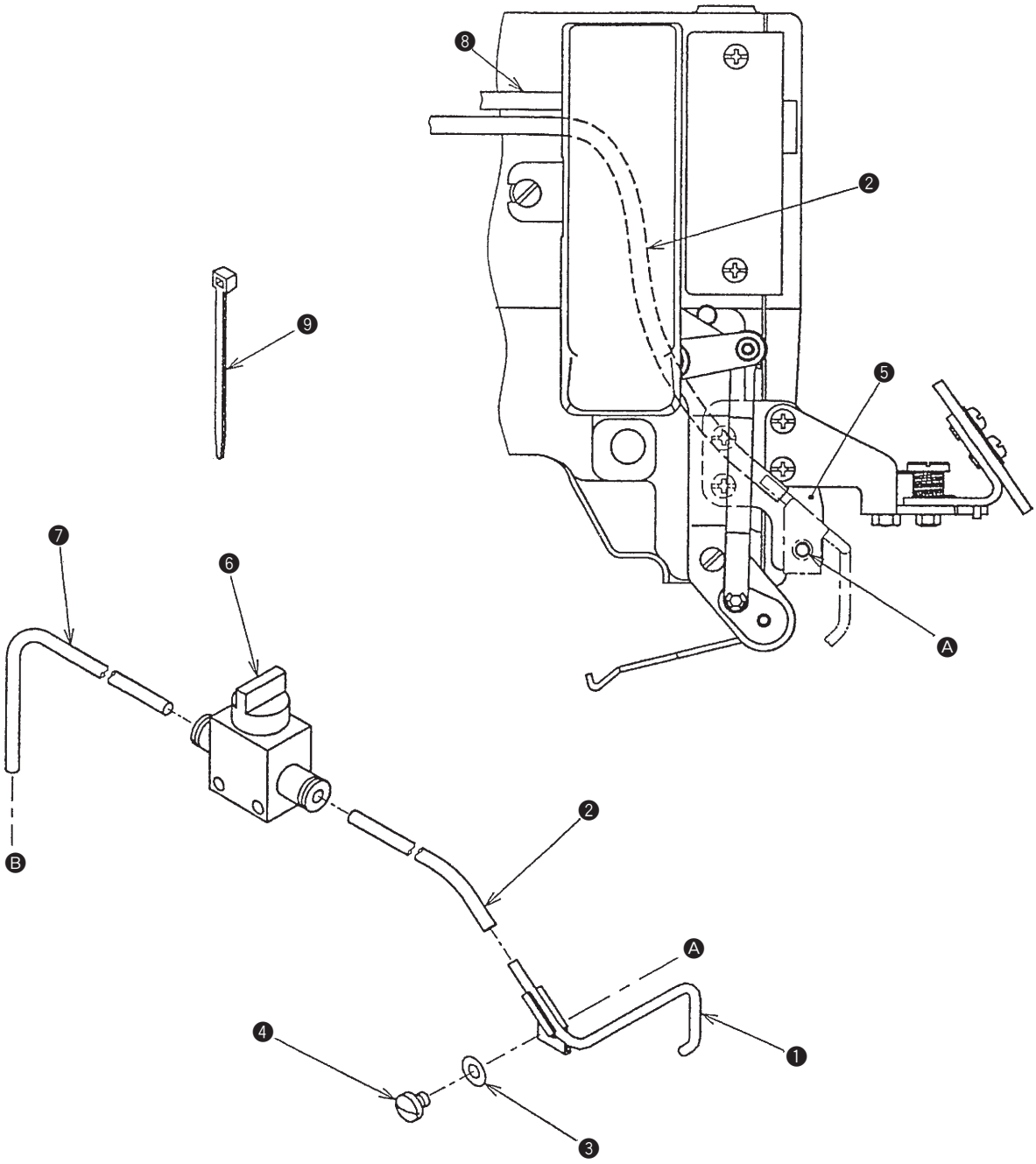
Standard Adjustment

1. When synthetic thread is used and thread breakage or stitch skipping due to needle heat occurs, use the needle cooler to cool needle.

1) Installing procedure of the needle cooler

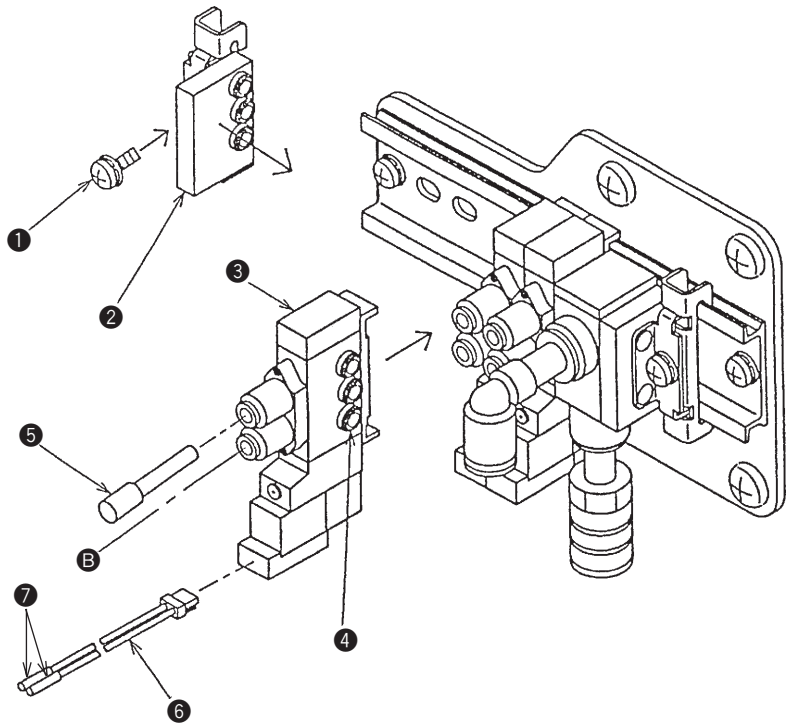
① Installing the needle cooler compl.

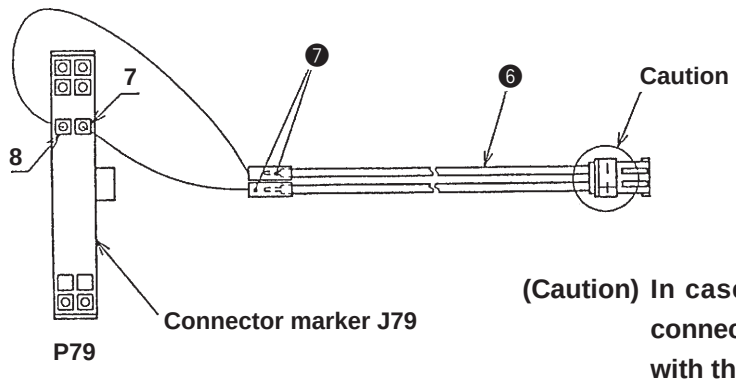
Fig. 1



Adjustment Procedures	Results of Improper Adjustment
1) Insert air tube ❷ into needle cooler compl. ❶. 2) As shown in Fig. 1, lay air tube ❷ and install needle cooler compl. ❶ to tap A of eye guard installing plate ❺ through washer ❸ with setscrew ❹. 3) Install hand valve ❻ to air tube ❷ and install air tube ❼. 4) Install air tubes ❷ and ❼ to wiper cord ❽ with three wire clip bands ❾. **(Caution) ❶, ❷, ❸, ❹, ❻, ❼ and ❾, and ❸, ❹, ❺, ❻, and ❼ described on the next page are included in needle cooler asm. (14225056).**	

② Installing the solenoid valve





(Caution) In case of LK-1930, the connector connecting No. varies in accordance with the memory switch setting.

2) How to use the needle cooler

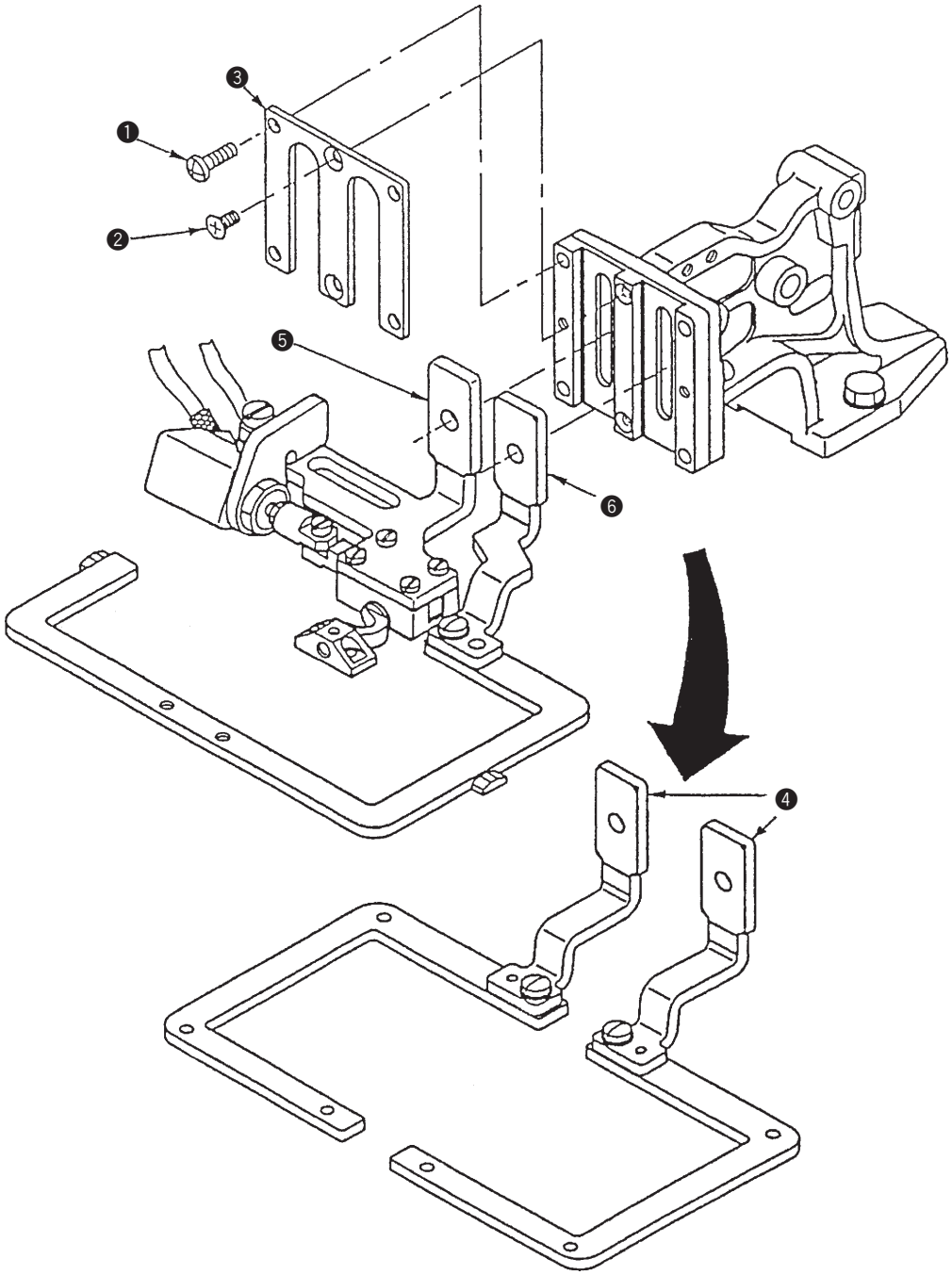
○ Needle cooler blows air while the main shaft is rotating.

Adjustment Procedures	Results of Improper Adjustment
1) Remove the motor cover. 2) Loosen setscrew ❶ and remove manifold ❷. 3) Install solenoid valve ❸, install manifold ❷ again and tighten setscrew ❶. **(Caution) When installing the solenoid valve and manifold, be sure to securely insert bushings ❹ so that they do not fall. In addition, be careful so that there is no clearance in respective parts since air leakage occurs from the clearance.** 4) Insert plug ❺ into the upper joint of solenoid valve ❸ and insert air tube (❼ described on p.123) of the needle cooler into the lower joint Ⓑ. 5) Insert solenoid valve connector asm. ❻ into solenoid valve ❸. 6) Insert pin contact ❼ of solenoid valve connector asm. ❻ into the connector (connector marker J79) of the solenoid valve cable asm. **(Caution) 1. In case of LK-1910 and LK-1920, when inserting pin contact ❼ into the connector, insert "+" side (red) of solenoid valve connector asm. ❻ into No. 7 and "–" side (black) into No. 8 as shown in the figure on the left side.** **2. In case of LK-1930, connect to the connector connecting No. designated by the memory switch. (See p.83.)**	
1) When installing of the needle cooler is completed, set the needle cooler control to operative using the memory switch. * Refer to Instruction Manual for setting the memory switch. **(Caution) For LK-1910 and 1920, when bobbin thread winding, close the hand valve (❻ described on p.123).**	

(2) Inverting clamp device (FU-02S, FU-02L)

Standard Adjustment

1) Installing the inverting clamp device

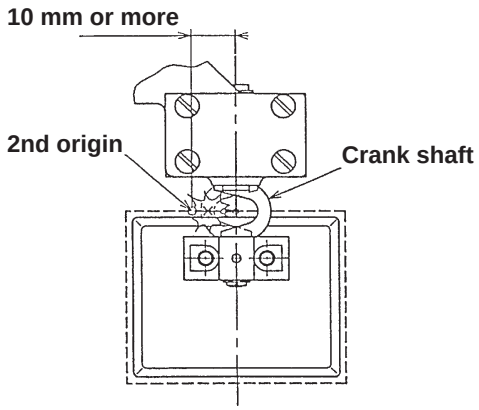


Adjustment Procedures	Results of Improper Adjustment
1) Remove four setscrews ❶ and two oval counter-sunk screws ❷ and remove cloth presser slide plate lid ❸. 2) Remove work clamp feet (left/right) ❹ installed as standard and install intermediate presser for inversion ❺ and feeding frame for inversion ❻ after applying enough grease to the respective sliding parts. 3) Install the cloth presser slide plate lid ❸ using setscrews ❶ and oval counter-sunk screws ❷. 4) Perform air piping and wiring. (Refer to the instruction manual for FU-02S and FU-02L.) **(Caution) Wiper installed as standard comes in contact with the inverting clamp device. Be sure to remove it.**	○ If grease is not applied when installing, ❺ and ❻ may not move.

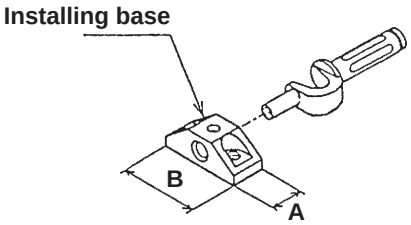
2) How to use the inverting clamp device

1. When using the inverting clamp device, it is required to change the mode to the inverting clamp mode with the memory switch. (Refer to Instruction Manual for LK-1910 / 20.)

(1) When creating the pattern, be careful about the contact of clamp shaft with needle.



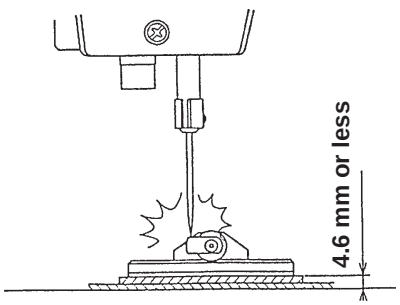
(2) Minimum size of the label is lateral 24 mm x longitudinal 16 mm.
In addition, there are several sizes of installing base as shown in the table.



Dimension A [mm]	Installing base	
	B=20 mm	B=24 mm
5		D431421WJ0B
6		
7	D430121XB00	D431421WZ00
8		D431421WK00
9		
10	D431421YF00	B4314210000 → Standard

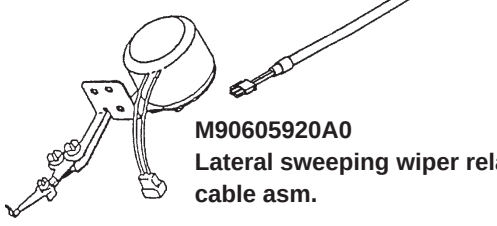
When dimension A is used below 10 mm, process the top end of crank shaft to make it shorten.

(3) Thickness of cloth including label should be 4.6 mm or less. If the thickness is 4.6 mm or more, it is dangerous since crank shaft coms in contact with needle when jump feed is performed.



(4) When using wiper, use the lateral sweeping type one.

B21012200A0
Wiper asm.



M90605920A0
Lateral sweeping wiper relay cable asm.

Adjustment Procedures	Results of Improper Adjustment
1) When sewing is completed, crank shaft is inverted to the original state and presser goes up. To prevent interference with needle, it is recommended to input a point being 10 mm away from the center of crank shaft as the 2nd origin when creating a pattern. 2) When creating a pattern, and performing input by the optional inverting, make sure that the number of inverting rotations of the crank shaft is the odd number. 3) It is possible for the inverting clamp device to correspond with cloth thickness up to 10.1 mm by setting the needle upper dead point mode with the memory switch.	○ When the number of optional inverting rotations is the even number, the crank shaft does not return to the initial position and it may come in contact with needle when sewing causing needle breakage.

(3) Tension controller No. 3 (Pneumatic type)

Standard Adjustment

1. In case thread-tightness is partially not good due to difference in cloth thickness, hitch stitch, etc., needle thread tension can be increased at desired position by using the tension controller No. 3.

1) Installing the tension controller No. 3 (B50192220B0)

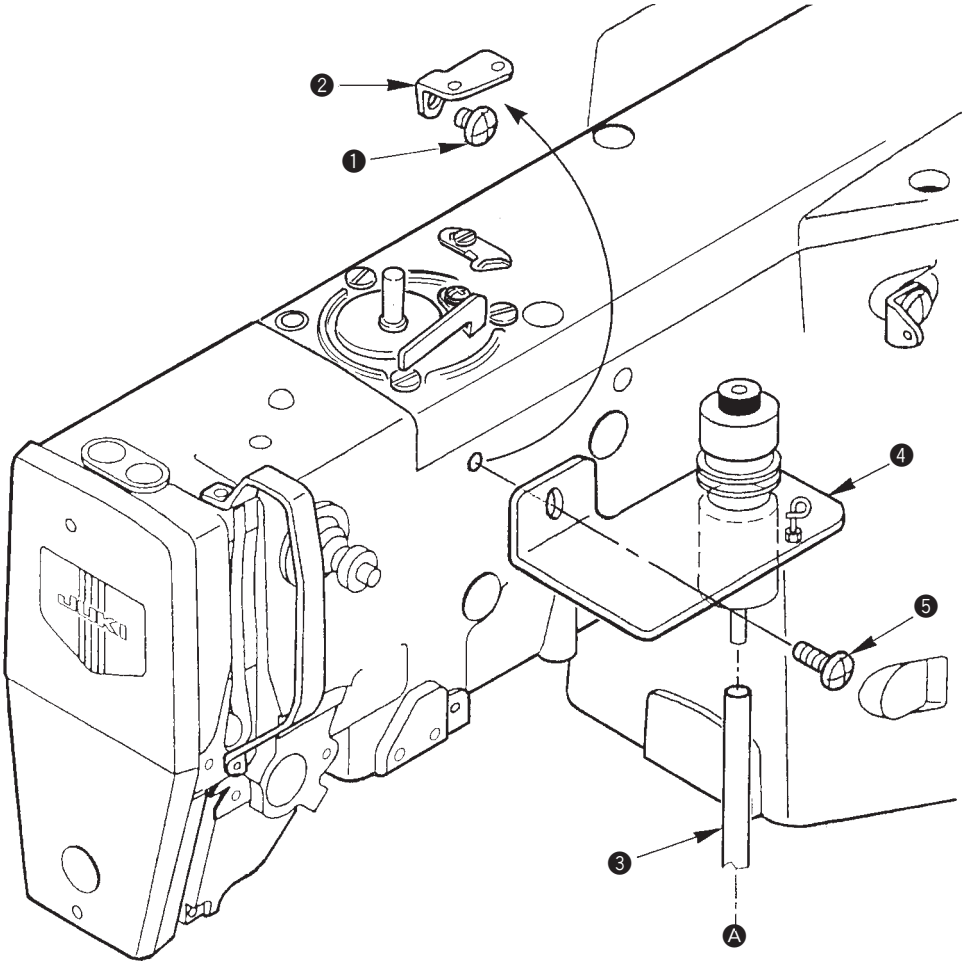
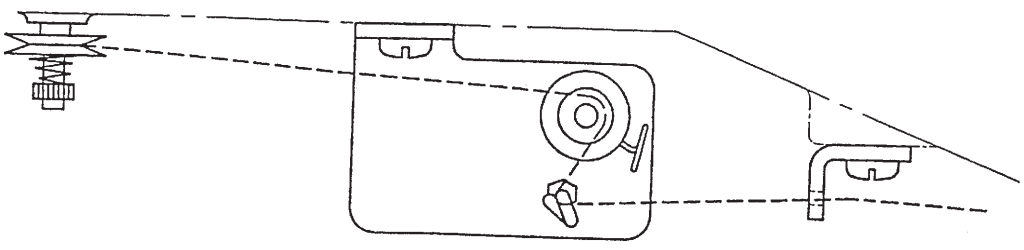
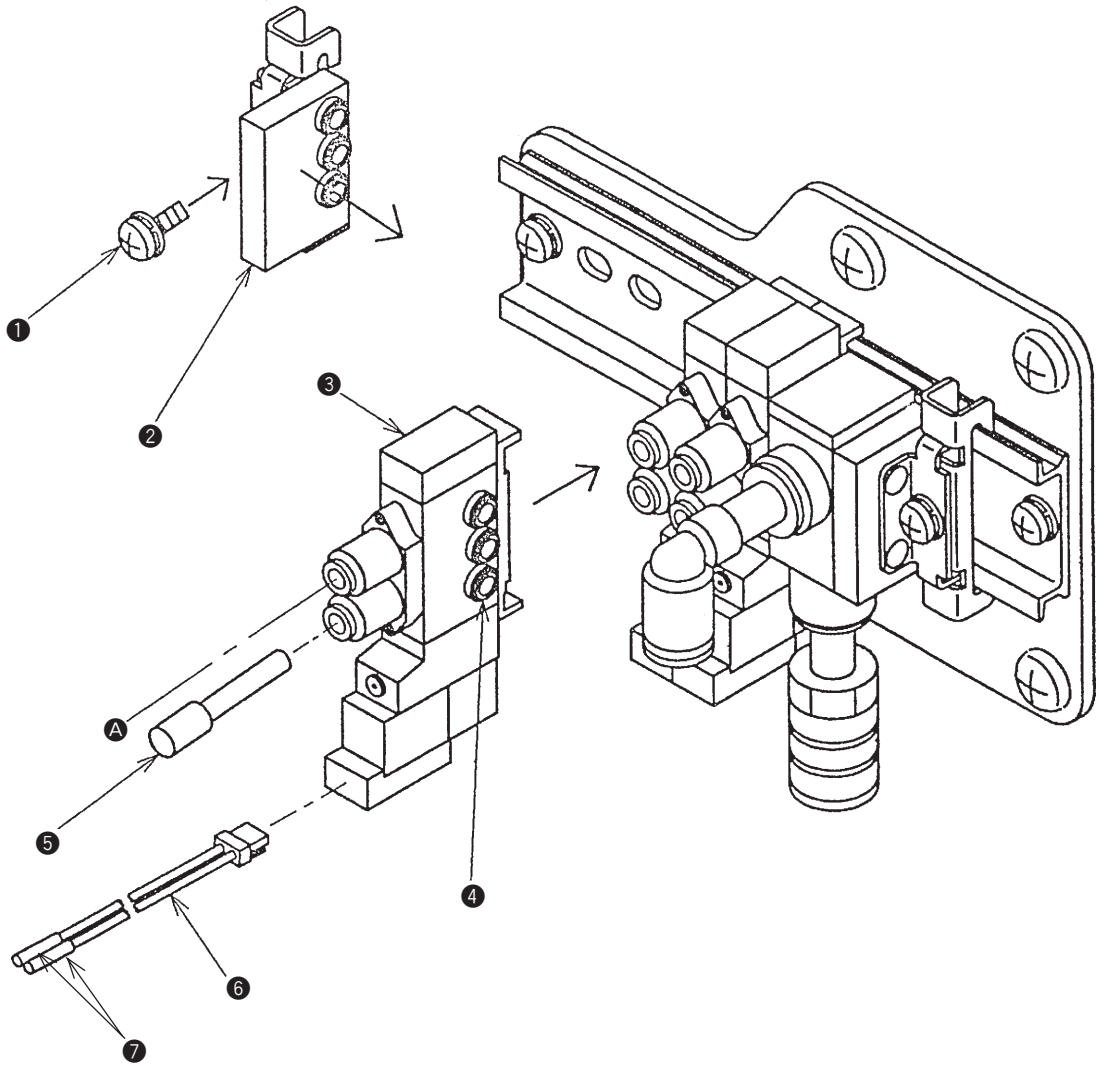


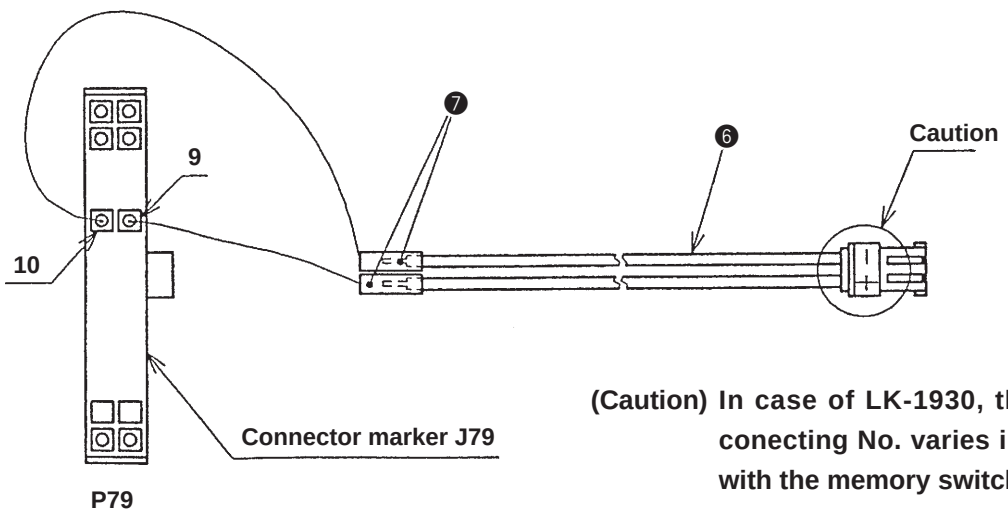
Fig. 1



Adjustment Procedures	Results of Improper Adjustment
1) Loosen setscrew ❶ and remove thread guide plate ❷. 1) Install air tube ❸ to tension controller No. 3 ❹ and install the controller almost horizontally to the machine arm with setscrew ❺. * Refer to Fig. 1 for threading. **(Caution) ❸, ❹ and ❺ only are included in tension controller No. 3 asm. (B50192220B0).** **Prepare separately ❸(solenoid valve : PV150209000), ❺(plug : PX500014000) and ❻ (solenoid valve connector asm. : 14204754) described on the next page.**	

① **Installing the solenoid valve**





(Caution) In case of LK-1930, the connector conecting No. varies in accordance with the memory switch setting.

Adjustment Procedures	Results of Improper Adjustment
1) Remove the motor cover. 2) Loosen setscrew ❶ and remove manifold ❷. 3) Install solenoid valve ❸ and again install manifold ❷ and tighten setscrew ❶. **(Caution) When installing the solenoid valve and manifold, be sure to securely insert bushings ❹ so that they do not fall. In addition, be careful so that there is no clearance in respective parts since air leakage occurs from the clearance.** 4) Insert plug ❺ into the lower joint of solenoid valve ❸ and insert air tube (❸ described on p.131) of the needle cooler to the upper joint Ⓐ. 5) Insert solenoid valve connector asm. ❻ into solenoid valve ❸. 6) Insert pin contact ❼ of solenoid valve connector asm ❻ into connector (connector marker J79) of the solenoid valve cable asm. **(Caution) 1. In case of LK-1910 and LK-1920, when inserting pin contact ❼ into the connector, insert "+" side (red) of solenoid valve connector asm. ❻ into No. 9 and "–" side (black) to No. 10 as shown in the figure on the left.** **2. In case of LK-1930, connect to the connector connecting No. designated by the memory switch. (See p.77.)**	

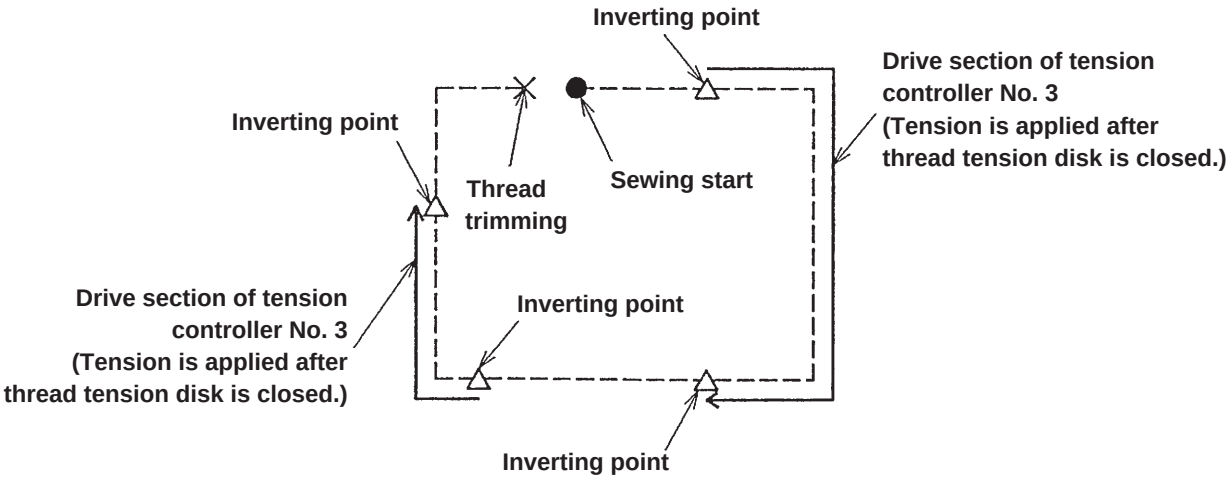
2) How to use the tension controller No. 3

① Confirmation of the memory switch

② Creation of the pattern (LK-1910, 1920)

○ To drive the tension controller No. 3, it is required to input an inverting point in the sewing pattern.

* For inputting the inverting point, input device PMG20 which is separately available and ROM writer are required.



* Disk of tension controller No. 3 always rises at the sewing start and sewing end, and there is no limit of number of inverting points.

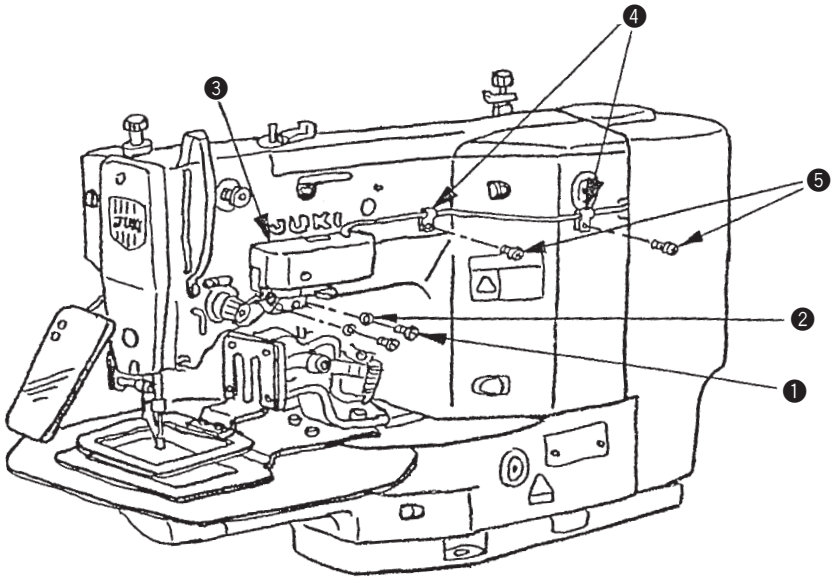
③ Creation of the pattern (LK-1930)

○ To drive the tension controller No. 3, it is necessary to input the tension controller No. 3 command in the sewing pattern.

* Tension controller No. 3 command can be inputted in the floppy disk **only** with main unit input or input device PGM20.

Adjustment Procedures	Results of Improper Adjustment
1) In case of LK-1910 and LK-1920, when installing of the tension controller No. 3 is completed, set No. 31 (selection of inverting clamp and tension controller No. 3) of memory switch to “1” (0 : inverting clamp, 1 : tension controller No. 3). * Set value is “1” at the time of delivery. * Refer to Instruction Manual for setting of the memory switch. **(Caution) In case of LK-1910 and 1920, the tension controller No. 3 and the inverting clamp cannot be used simultaneously.** 2) Refer to Instruction Manual for the PGM20 for input, change, etc. of the pattern.	

(4) Disk floating device for basting stitch

Standard Adjustment
1) Installing disk floating device **2) How to use disk floating device** 

Adjustment Procedures	Results of Improper Adjustment
1) How to install ① Fix disk-floating device ❸ using attaching screw ❶ and washer ❷. ② Extend cord laterally and clamp two places of the cord on the way to the rear motor cover with cord clamp ❹ and screw ❺. ③ Fix the cord coming to the circuit board to the other cord with the clip band supplied as accessory. **(Caution) Attaching screws ❶ and ❺ are different in length. So, do not mistake. Length of attaching screw ❶ is 9 mm, and that of screw ❺ 7 mm.** 2) How to use ① When performing jump feed, the disk floating device is actuated and the needle thread tension is released. ○ In case of LK-1910 and LK-1920 If memory switch function (selection of basting) No. 27 is set 0 → 1, pattern sewing data is read for jump feed and curved point for sewing, and they are operated respectively. ○ In case of LK-1930 If memory switch function (setting of needle thread disk floating control) No. 112 is set to “ON”, the pattern inputted using “sewing machine rotation” function is operated at the time of sewing.	○ When adjusting the disk floating amount, change the insertion of claw by inclining the disk floating device.

15. TABLE OF ERROR INDICATION (LK-1910, 1920)

Error indication	Name of error	Description	Corrective measure	Remarks
E 1	Pattern No. error	The specified pattern No. has not been registered in the data ROM.	Check the pattern No.	The service pattern is registered in SYSTEM ROM.
E 2	Enlargement error	The sewing pitch is beyond 10 mm.	Check the scale rate and sewing pitch.	
E 3	Needle bar upper position error	The needle bar is shifted from the upper position.	Turn the hand pulley, and return the needle bar to the upper position.	
E 4	Sewing area over	The sewing area is beyond the limit.	Check the pattern and scale rate.	
E 5	Stop on the way	Stop on the way while the sewing machine is running.	• Re-sewing by retreat of the feed → start • Thread trimming action using the temporary stop switch or reset • Return-to-origin action by reset after thread trimming action	
E 7	Machine lock error Abnormal voltage error	The main shaft of the sewing machine does not rotate due to some troubles.	• Turn OFF the power switch, and remove the cause of trouble. • Check the power source voltage.	
E 8	Pattern data error	The pattern data reading from the data ROM cannot be made.	Check the mounting of EEP-ROM (contact failure, direction of mounting, etc.).	
E 9	Needle thread breakage detection error	The needle thread has been broken during sewing.	• Retreat of the feed after threading and re-sewing • Return-to-origin action by reset	For the pneumatic type only
E AA	Air pressure drop error	The air pressure is dropped.	Turn OFF the power switch, and check the air pressure.	
E EE	Memory write-in error	The data writing to the memory for the back-up cannot be made.	Defective memory (Replace the MAIN circuit board.)	
E	Time-out error	MAIN circuit board is uncontrollable due to some troubles.	Defective MAIN circuit board (Replace the MAIN circuit board.)	
E H	Overheat error	Temperature in the control box is abnormally high.	Turn OFF the power switch, and check whether the fan filter is clogged, and the power source voltage. Turn ON the power after the temperature has dropped properly.	

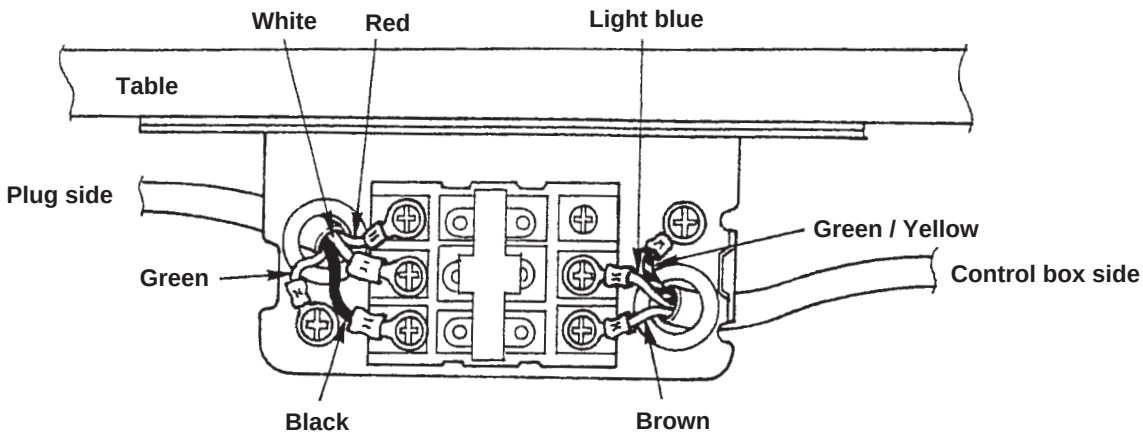
16. ERROR MESSAGE TABLE (LK-1930)

Error No.	Indicator lamp	Error description	How to reset
E3	ServoMotor Alert	Main shaft motor failure	After turning OFF the switch, remove the trouble.
E4	ServoMotorFeeder Sync error	Timing of main shaft and feed is not correct.	After turning OFF the switch, remove the trouble.
E10	No Pattern Found	The pattern is not found in the floppy disk.	Set again the correct pattern No.
E11	No Disk In Drive	The floppy disk has not been loaded.	Set the floppy disk.
E12	Err Has Occurred When Reading	Error has occurred due to some reasons when reading from the floppy disk.	Read again with the ready switch.
E13	Err Has Occurred When Writing	Error has occurred due to some reasons when writing in the floppy disk.	Write again with the ready switch.
E14	The Write-ptct Tab Is Locked	The write-protect tab of the floppy disk is locked.	Release the write-protect tab of the floppy disk, and write again.
E15	Formatting Error	Initializing of the floppy disk cannot be made.	Initialize the floppy disk again, or the floppy disk is broken.
E16	The FD Is Full	The floppy disk is full.	Replace with a new initialized floppy disk, write again.
E17	The ROM Is Full	Data ROM is one piece.	Replace the EEP-ROM with a new one.
E18	Illegal media Type	Data ROM is a different type.	Use a correct ROM.
E19	File Size Is Over	Processing is impossible since the pattern data size is too large.	The pattern cannot be used since it exceeds the specified limit.
E20	Scaling Range 10 Through 4000	Scaling range of X, Y is beyond the setting range.	Change to the correct set value, and read again with the ready switch.
E21	Processing Aborted	During data computation temporary stop key is pressed or computation failure has occurred.	Read again with the ready switch.
E22	Maximum No of Stitch Excd	Due to too many data, computation is impossible.	The pattern is too large, and cannot be used.
E25	Reset Counter	Bobbin thread counter has reached to the set value.	Reset the bobbin thread counter with the bobbin thread replacement key.
E26	Cut Speed Range 01 Through 40	Set value of the feeding speed of milling is not correct.	Change to the correct set value.
E27	Combination No Data Stored	Under combination mode, no data is read in.	After specifying pattern No., read the pattern data.
E30	Needle Pos Err	Main shaft is not at the upper dead point or upper position.	Return to the upper position by ON/OFF of the threading key.
E31	AirPressure Drop	Air pressure dropped. Air is not supplied. Air relay cable is removed.	After turning OFF of the power, set the air pressure to 0.5 to 0.55 MPa (5 ~ 5.5kgf/cm^2), or insert the connector.
E32	Air Pressure, OK	Air pressure is OK.	Automatically indicated when the air is returned.
E33	Travel OverLimit	Feeding frame is beyond the sewing range.	During sewing: Release with the return-to-origin switch.

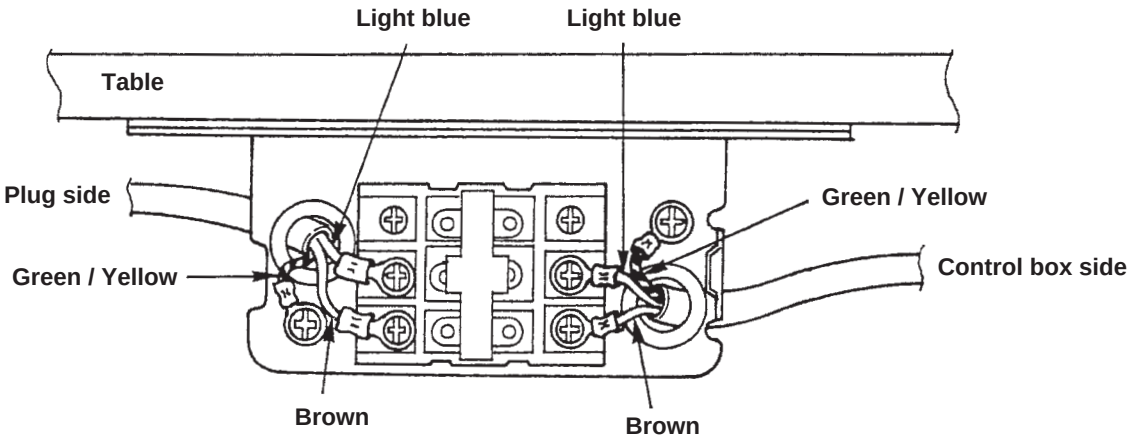
Error No.	Indicator lamp	Error description	How to reset
E34	Travel Limit Correct Pattern	After computation in case of offset, 2-line sewing, etc., this occurs when the travel limit is over.	Correct the pattern while it is input.
E35	Wait For Input Timeout	External input signal is not input within the set time.	Make sure the external input signal. Return to the sewing start point with the return-to-origin switch.
E36	Fan Alarm	The temperature inside the electrical box has risen.	Turn OFF the power switch. Then, clean up the fan of the electrical box.
E37	Fan Alarm Cancel	The temperature rise error has been reset.	his message will automatically appear on the display when the temperature rise error is reset.
E40	Feeding Frame Lifted	When a pattern is input, feed forward/ backward key is operated while the feeding frame is lifted.	After the feeding frame has come down, operate the forward/backward key.
E41	Due To A Misoperation	Indicated when operation on the program is not operative.	Usually, this error does not occur.
E42	Calculation Error	In case of circle sewing, arc sewing, etc., input of turning point is input to the linear or the like.	Input again.
E43	The Data Contain The Max Stch Lg	Read-in data contain data beyond the max. stitch length.	Read again the correct data.
E44	Stch No. Limit Process Intrpt	Dut to too many input data, memory range is over.	The input pattern should be input by separating in small division. Or, if the input pattern is too big, separate the number of stitches into the limit of stitches.
E45	The Data Read Contain An Error	Pattern data read is broken.	Floppy disk is broken or error at the time of read is considered. Read again.
E46	A Hardware Err Has Occurred	Error occurred when the sewing machine is operated at the time that feed forward/ backward key does not operate properly.	Failure of the electrical components. Turn OFF the power, and contact our business office or dealers.
E50	Stopkey Accepted	Temporary stop key is pressed, and the machine is in a state of stopping.	Re-start with start switch, or move to the sewing start point using return-to-origin key, and start again the sewing.
E51	Stopkey Accepted Not Trimmed Yet	Temporary stop key is pressed, and the machine is in a state of stopping without thread trimming.	Make thread trimming using threading or temporary stop switch. Then, the machine is in a state of temporary stop.
E52	Thread Broken	Needle thread breakage is detected, and the machine stopped.	Thread the needle thread, and start again.
E90	No MSW Data Found	No data on the memory switch is stored on a floppy disk.	Load another floppy disk on which memory switch data are written.
E91	The MSW Data Contain An Error	The memory switch data is for another model of machine or of a predecessor version.	Load another floppy disk on which data are written using your machine.
E100 to E107	AMS-Panel Connection Error	Connection error of operation panel and MAIN circuit board	There are troubles in operation panel or MAIN circuit board.

17. POWER SWITCH CONNECTION DIAGRAM

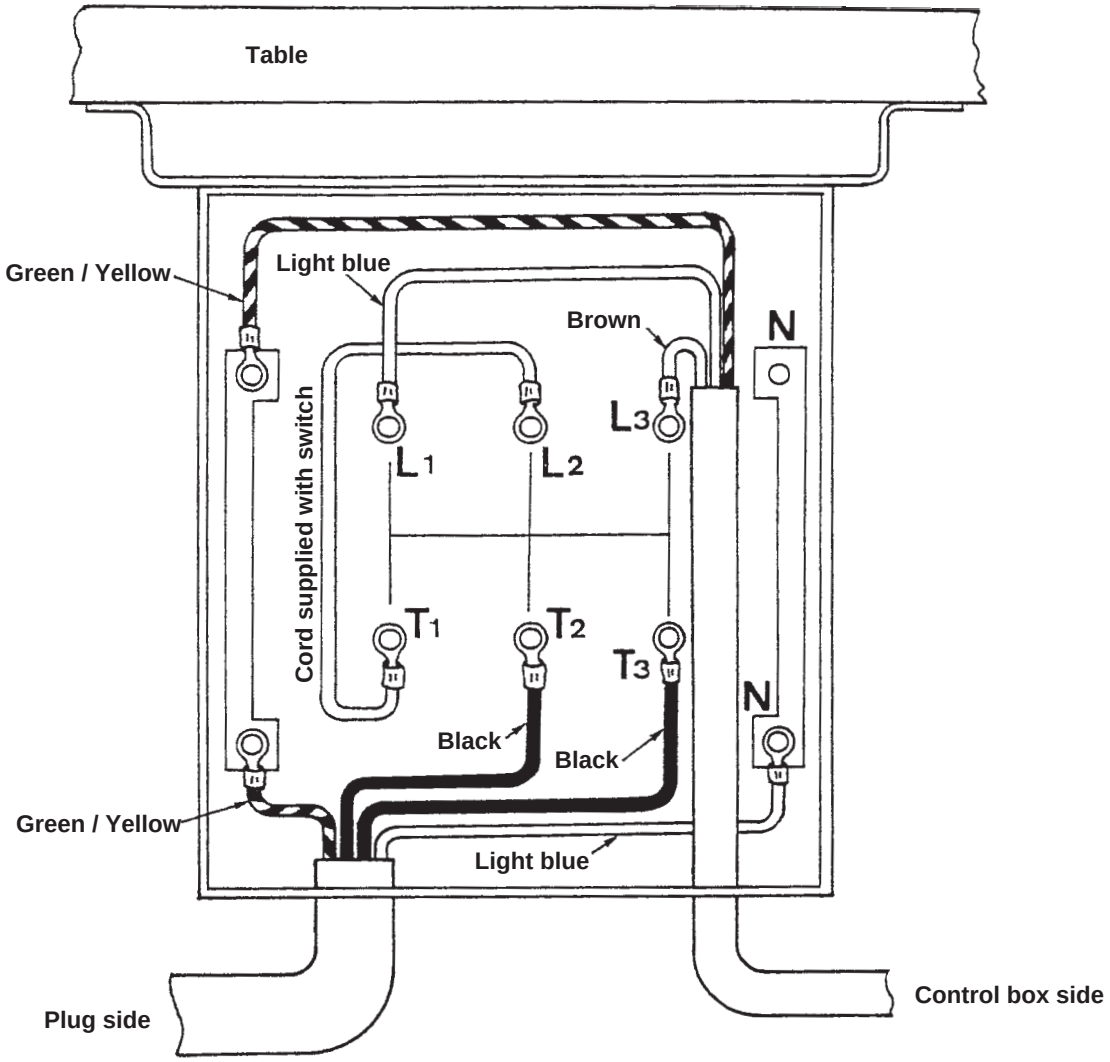
(1) For 3-phase 200, 220 and 240V



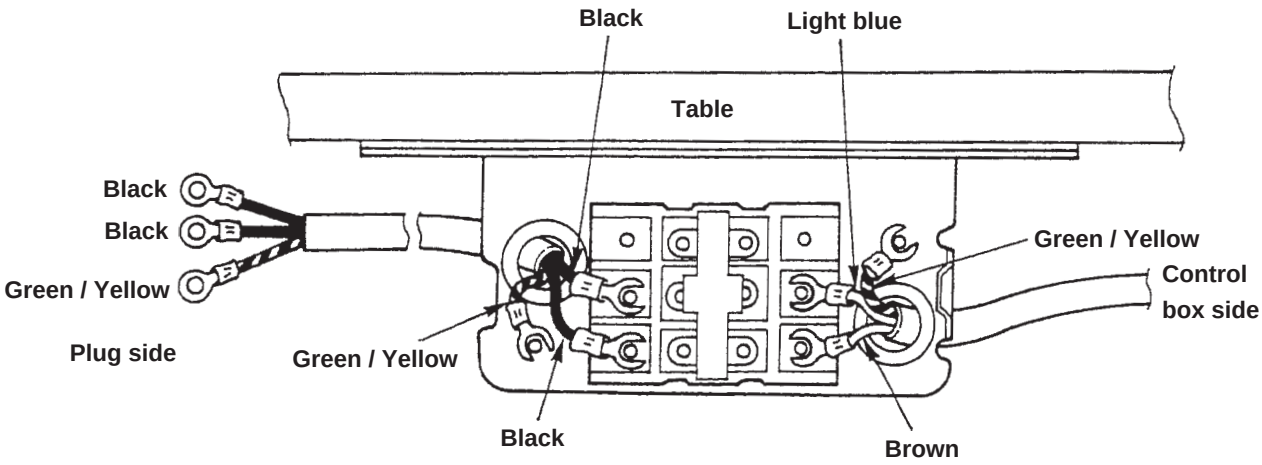
(2) For single-phase 100V, 110V and 120V
200V, 220V and 240V



(3) For 3-phase 220V, 240V, 380V, 400V and 415V



(4) For single-phase 220V, 240V, 380V, 400V and 415V

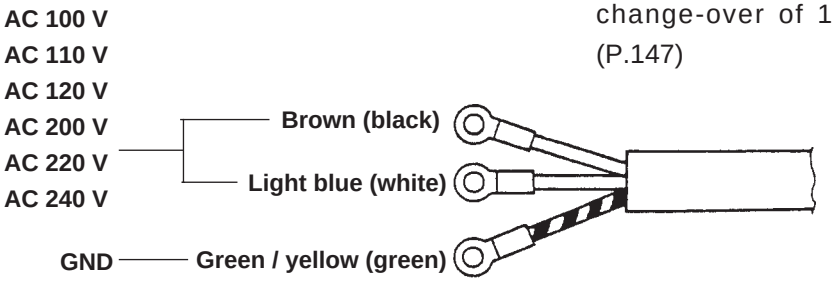


18. CONNECTION OF THE POWER PLUG

(1) Overseas market : 100V series
200V series

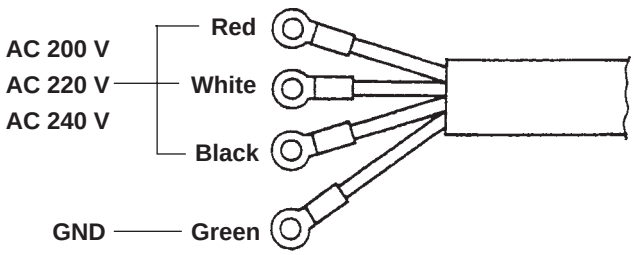
1) **1 ϕ 100V (Single phase 100V) , 1 ϕ 200V (Single phase 200V)**
1 ϕ 110V (Single phase 110V) , 1 ϕ 220V (Single phase 220V)
1 ϕ 120V (Single phase 120V) , 1 ϕ 240V (Single phase 240V)

When changing the voltage used, it is nessary to change the wiring of the terminal board and connecting/ disconnecting of the voltage change-over cord. Refer to “voltage change-over of 100 to 240V”. (P.147)



2) **3 ϕ 200V (3-phase 200V)**
3 ϕ 220V (3-phase 220V)
3 ϕ 240V (3-phase 240V)

When changing the voltage used, it is nessary to change the wiring of the terminal board.
Refer to “voltage change-over of 100 to 240V”. (P.147)

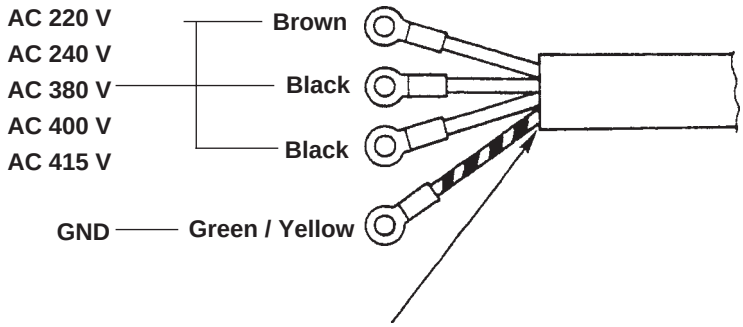


(2) Overseas market : 380V series

1) 3-phase

3 ϕ 220V	(3-phase 220V)
3 ϕ 240V	(3-phase 240V)
3 ϕ 380V	(3-phase 380V)
3 ϕ 400V	(3-phase 400V)
3 ϕ 415V	(3-phase 415V)

When changing the voltage used, it is necessary to change the wiring of the terminal board. Refer to “voltage change-over of 220 to 415V”. (P.147)

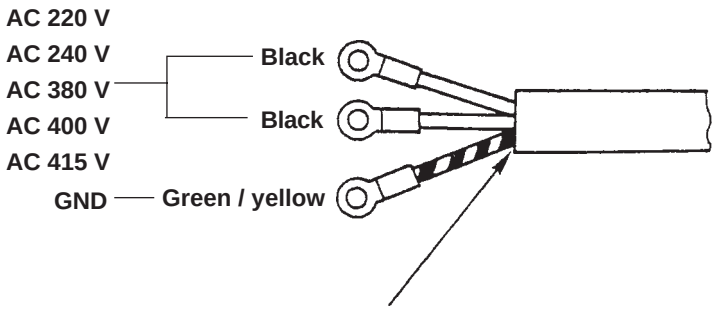


Note : The light blue line for the neutral line is cut.

2) Single phase

1 ϕ 220V	(Single phase 220V)
1 ϕ 240V	(Single phase 240V)
1 ϕ 380V	(Single phase 380V)
1 ϕ 400V	(Single phase 400V)
1 ϕ 415V	(Single phase 415V)

When changing the voltage used, it is necessary to change the wiring of the terminal board. Refer to “voltage change-over of 220 to 415V”. (P.147)



Note : The light blue line for the neutral line is cut.
Also, the brown line is cut.

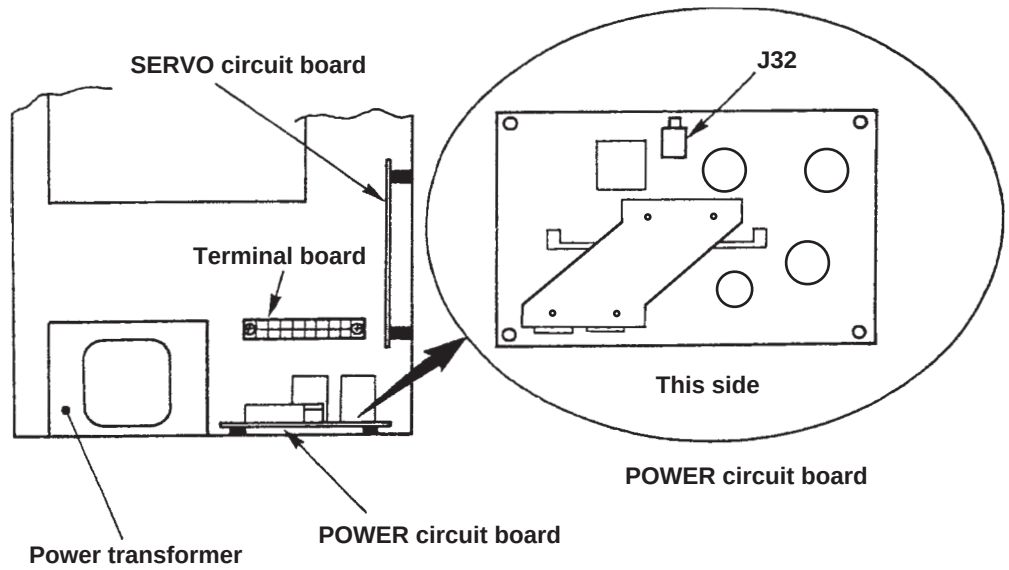
19. CHANGE OF THE POWER VOLTAGE

(1) Change of the voltage from 100 to 240 V

For the 100 and 200 V specifications, power voltages as shown on the right table can be used.
However, when 100, 110 and 120 V are used, “voltage-change cord” is necessary. Refer to the below-stated “Change of voltage for 100 V”.

Green (White)	Green (Blue)	Input voltage	Remarks
Terminal No.			
1	2	100	Refer to (Note 1)
1	3	110	Refer to (Note 1)
1	4	120	Refer to (Note 1)
1	5	200	Refer to (Note 2)
1	6	220	Refer to (Note 2)
1	7	240	Refer to (Note 2)

(Caution) 1. Change of voltage for 100 V spec
When the power voltage 100 V, 110 V or 120 V is used, it is necessary to insert “voltage-change cord” (M90215800A0) into J32 on POWER circuit board.
2. When the 100V spec. is used for 200V, 220V or 240V, be sure to disconnect the “voltage-change cord” of J32 on the POWER circuit board.



(2) Change of the voltage from 220 to 415 V

Green (White)	Green (Black)	Green (Blue)	Input voltage	Remarks
Terminal No.				
1	2	4	220	
1	2	5	240	
1	2	6	380	
1	2	7	400	
1	2	8	415	

(Caution) White and black lines connected to “1” and “2” on the terminal board are not necessary to change the connection. Change the blue line only.

20. MAINTENANCE AND INSPECTION

(1) Replacing the printed circuit boards

Types of printed circuit boards

① MAIN circuit board (Control box)
② SERVO circuit board (Control box)
③ PMDC circuit board (Control box) (For LK-1930 only)
④ POWER circuit board (Control box)

1) MAIN circuit board

Acts as the brain of this machine and outputs the control signals to control the floppy disk driver unit, and to follow the program to operate the sewing machine head and the operation panel.

① Turn OFF the power switch, and open the control box cover.
② Remove all connectors (J10 to J24) from the MAIN circuit board.
③ Remove four fixing screws from the circuit board and replace the circuit board with a new one.
④ Install the new MAIN circuit board by reversing the above disassembly order. Connect the connectors matching the numbers indicated on the circuit board and the numbers attached to the connectors.

(Caution) The battery for the data back-up is mounted on the MAIN circuit board. Be sure not to place the circuit board on metal plate or the like. Never wrap the MAIN circuit board with a sheet of aluminum foil.

2) SERVO circuit board

The SERVO circuit board receives the control signals from the MAIN circuit board, and actuates the servo motor for main shaft of the sewing machine.

① Turn OFF the power switch, and open the control box cover.
② Remove all connectors (J1 to J5) from the SERVO circuit board.
③ Remove four fixing screws (fixed from outside of the control box) from radiating plate, and replace with a new circuit board.
④ Install the new circuit board by reversing the above disassembly order.

3) PMDC circuit board (For LK-1930 only)

The PMDC circuit board receives the stepping motor driving signals from the MAIN circuit board, and acts to drive the X and Y stepping motors.

① Turn OFF the power switch,and open the control box cover.
② Remove all connectors (J60 to J62) from the PMDC circuit board.
③ Remove four fixing screws on the radiating plate, and remove four studs attaching the MAIN circuit board. Then replace with a new circuit board.
④ Install the new circuit board by reversing the above disassembly order. Install the circuit board so that the connector J60 is positioned on the left side.

(Caution) Be sure to securely tighten the fixing screws. The tightening torque has been specified to 14 kg at the time of delivery.

4) POWER circuit board

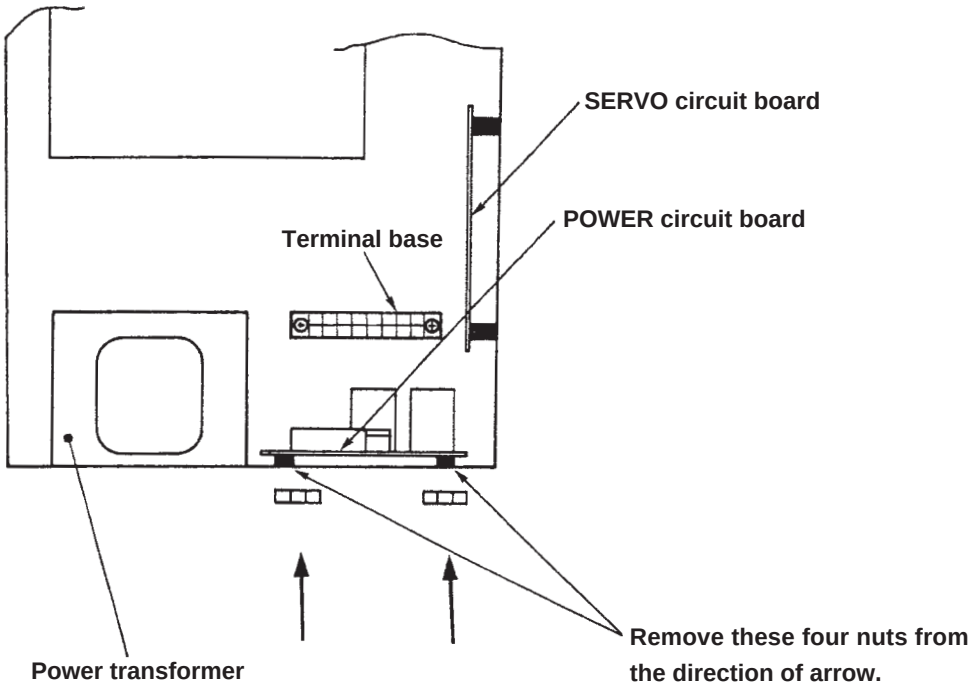
This circuit board supplies voltage to each unit in the control box.

① Turn OFF the power switch, and open the control box cover.

② Remove all connectors (J30 to J38) from the POWER circuit board.

③ Remove four nuts from the underside of the control box and remove the circuit board as shown in the figure below.

To remove the POWER circuit board, remove the nuts located underside of the control box, and remove the circuit board as shown in the figure below.



21. TROUBLES AND CORRECTIVE MEASURES

(1) Mechanical parts

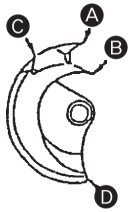
Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
1. Wiper cannot spread a thread.	Wiper interferes with the needle.	Inaccurate positioning of the wiper	Correct the position of the wiper.
	Wiper interferes with the intermediate presser.	Inaccurate positioning of the wiper	Correct the position of the wiper.
2. Abnormal noise	Backlash between the oscillator and the hook driving shaft is large.		Adjust the oscillator shaft.
	Clearance between the inner hook and the shuttle driver is large.		Adjust the clearance between the inner hook and the shuttle driver.
3. Deformation in sewn pattern	Backlash in X feed gear is large.	Backlash between the X feed arm and the motor base is excessive.	Properly adjust the backlash in the motor base.
		Backlash between the X stepping motor and the motor base is excessive.	Properly adjust the backlash in the X stepping motor.
	Backlash in Y feed gear is large.		Properly adjust the backlash in the Y feed gear.
	Travelling torque in X direction is excessive.	Motor base is excessively pressed to the X feed arm.	Properly adjust the backlash in the motor base.
		X stepping motor is excessively pressed to the motor base.	Properly adjust the backlash in the X stepping motor.
		Friction between the X slide plate and the feed plate	Properly adjust the attaching position of the slide block stud.
	Travelling torque in Y direction is excessive.	Stepping motor is excessively pressed to the Y feed shaft.	Properly adjust the backlash in the Y stepping motor.
		Friction between the Y feed arm and the feed plate support plate	Properly adjust the position of the feed plate support plate.
	Pressing pressure is high or low. (Pneumatic type)	Regulator is not properly adjusted.	Properly adjust the regulator.
		Supply air pressure is low.	Properly adjust the supply air pressure.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
	Defective adjustment of the X sensor position		Properly adjust the position of the X sensor.
	Defective adjustment of the Y slit plate		Properly adjust the position of the sensor slit plate.
4. Feeding frame does not go up or come down.	Supply air pressure is low. (Pneumatic type)		Properly adjust the supply air pressure.
	Defective adjustment of the regulator (Pneumatic type)		Properly adjust the regulator.
	Contact between the feeding frame and the presser foot	Whole part of the feeding frame is not pressing the material to be sewn.	Make the pressing shape so as to press uniformly.
	Presser lifter solenoid fails to work properly.	Trouble of the presser lifter solenoid	Replace the presser lifting solenoid.
		Defective connection of the presser lifter solenoid	Check the connection of the connector.
	Presser lifter solenoid valve fails to work properly.	Trouble of the solenoid valve	Replace the solenoid valve.
		Defective connection of the solenoid valve	Check the connection of the connector.
5. Intermediate presser does not come down.	Intermediate presser solenoid fails to work properly.	Trouble of the intermediate presser solenoid	Replace the intermediate presser solenoid.
		Defective connection of the intermediate presser solenoid	Check the connection of the connector.
6. Intermediate presser fails to work during sewing.	Defective adjustment of the position of the intermediate presser cam		Properly adjust the position of the intermediate presser cam.

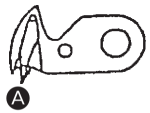
(2) With regard to sewing

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
1. Thread comes off at the start of sewing	Stitch skipping at the 1st stitch		Decrease the sewing speed at the start of sewing.
		Penetration registance of the thread against the cloth is small.	Lower the needle count to be used.
	Length of thread remaining at the needle is not sufficient.	Tension controller No. 1 provides an excessive tension.	Properly adjust the tension controller No. 1.
		Tension release timing is excessively retarded.	Properly adjust the position of the tension release notch.
		Rising amount of tension disk No. 2 is small.	Properly adjust the rising amount of the tension disk No. 2.
		Stroke of the thread take-up spring is large.	Properly adjust the stroke of the thread take-up spring.
		Tension of the thread take-up spring is low.	Properly adjust the tension of the thread take-up spring.
		Level difference between the needle hole guide and the counter knife is excessively high.	Properly adjust the heigt of the counter knife.
		Needle thread tension is high and the thread is excessively stretched.	Properly adjust the needle thread tension.
		Thread spreading section of the moving knife has scratches.	Polish the thread spreading section of the moving knife with buff or replace the knife.
		Level difference between the needle hole guide and the counter knife is excessively high.	Properly adjust the height of the counter knife.
	Length of bobbin thread remaining is not sufficient.	Lower face of the needle hole guide has scratches.	Polish the needle hole guide with buff or replace it.
		Thread spreading section of the moving knife has scratches.	Polish the thread spreading section of the moving knife with buff or replace the knife.
		Shuttle upper spring has scratches.	Polish the shuttle upper spring with buff or replace it.
		Bobbin thread tension is too high.	Properly adjust the bobbin thread tension.
		Bobbin or bobbin case has scratches.	Polish with buff or replace it.
	Material to be sewn is not properly stretched.		Remove the slack of the material to be sewn.
		Clearance between the intermediate presser and the material to be sewn is large.	Properly adjust the height of the intermediate presser.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
	Threading the needle bar thread guide is wrong.		Perform threading again.
	Bobbin runs idle and the bobbin thread is drawn out.		Strengthen the idle prevention spring.
		Defective initial position of the moving knife	Properly adjust the initial position of the moving knife.
2. Needle breakage	Clearance between the needle receiving section of the shuttle driver and the needle is defective.		Properly adjust the clearance between the needle and the shuttle driver.
	Clearance between the needle and the inner hook is defective.		Properly adjust the clearance between the needle and the inner hook.
	Feed timing is defective.	Feed timing against cloth pressure is retarded.	Change the feed timing using the memory switch.
	Needle strikes the moving knife.		Properly adjust the position of the moving knife.
	Needle strikes the intermediate presser.		Properly adjust the holding position of the intermediate presser bar.
	Needle strikes the wiper.		Properly adjust the installing position of the wiper.
	Needle is bent.	Needle thread tension is too high.	Properly adjust the tension.
	Needle is too thin.		Change the needle No. to the suitable one to the material.
3. Stitch skipping	Clearance between the needle and the inner hook is excessive.		Properly adjust the clearance between the needle and the inner hook.
	Maladjustment of the needle to the inner hook timing		Properly adjust the needle to the inner hook timing.
	Clearance between the needle receiving section of the shuttle driver and the needle is defective.		Properly adjust the clearance between the needle and the shuttle driver.
	Material to be sewn is not properly stretched.	Clearance between the intermediate presser and the material to be sewn is large.	Properly adjust the height of the intermediate presser.
			Remove the slack of the material to be sewn.
	Needle is bent or blunt.		Replace the needle.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
	Needle thread loop falls down.		Attach the needle with the long groove orienting slightly to the right by approximately 20°.
	Needle thread loop falls down.	Feed timing is too fast.	Change the feed timing using the memory switch.
4. Thread breakage	Scratches on the inner hook 	Scratches on section Ⓐ (Contact of the inner hook and the needle)	After polishing the blade point of the inner hook with oil-stone, polish it with polishing powder. Properly adjust the clearance between the needle and the inner hook.
		Scratches on section Ⓑ (Scratches occur when the needle is bent or broken.)	After polishing the blade point of the inner hook with oil-stone, polish it with polishing powder.
		Scratches on section Ⓒ (Needle scratches the inner hook when removing the inner hook.)	After polishing the blade point of the inner hook with oil-stone, polish it with polishing powder.
		Scratches on section Ⓓ	After polishing the blade point of the inner hook with oil-stone, polish it with polishing powder.
	Thread enters into the shuttle.	Position of the shuttle upper spring is wrong.	Properly adjust the position of the shuttle upper spring.
		Blade point section Ⓐ of the inner hook is round. 	Replace the inner hook.
		Position of the shuttle is wrong.	Properly adjust the position of the shuttle.
		Needle thread tension is too low.	Properly adjust the needle thread tension.
		Thread take-up spring tension is too low.	Properly adjust the thread take-up spring.
		Length of the remaining needle thread is too long.	Properly adjust the tension controller No. 1.
	Scratches on the shuttle driver		Remove the scratches and polish with buff, or replace the shuttle driver.
	Clearance between the shuttle driver and the inner hook is too small.		Properly adjust the clearance between the shuttle driver and the inner hook.
	Scratches on the needle hole guide		Remove the scratches and polish with buff, or replace the needle hole guide.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
	Finish of needle eyelet is rough.		Replace the needle.
	Thread take-up spring is maladjusted.	Stroke of the thread take-up spring is too large.	Properly adjust the thread take-up spring.
		Thread take-up spring tension is too high.	Properly adjust the thread take-up spring.
	Rotation of the inner hook is defective.	Race face of the shuttle is clogged with thread waste.	Remove the inner hook and remove the thread waste.
		Oil amount is insufficient.	Supply oil to the shuttle components.
5. Thread comes off at the time of thread trimming	Thread release timing is defective.	Thread release timing is delayed.	Properly adjust the position of the thread release notch.
		Rising amount of the tension disk No. 2 is small.	Properly adjust the rising amount of the tension disk No. 2.
	Thread spreading section of the moving knife has scratches.		Paying attention to the blade section, polish with polishing powder.
	Shuttle upper spring has scratches.		Remove the scratches.
	Level difference between the needle hole guide and the counter knife is too high.	Thread is cut before trimming with the blade section of the moving knife.	Properly adjust the height of the counter knife.
	Clearance between the needle hole guide and the counter knife is too small.	Thread is cut before trimming with the blade section of the moving knife.	Properly adjust the position of the counter knife.
	Lower face of the needle hole guide has scratches.	Thread is cut with the needle hole guide.	Remove the scratches and polish with buff, or replace needle hole guide.
	Thread spreading timing of the moving knife is defective.		Properly adjust the initial position of the thread trimmer cam and the moving knife.
	Thread take-up spring tension is too low.		Properly adjust the thread take-up spring.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
6. Defective thread trimming	Sharpness of the knife is defective.	Worn-out of the moving and counter knives	Replace the moving and counter knives.
		Engagement of the moving knife and counter knives is defective.	Properly adjust the height and position of the moving and counter knives.
		Parallel of the blade section of counter knife is defective.	Properly adjust the parallel of the blade section of counter knife.
		Attaching position of the counter knife is defective.	Properly adjust the attaching position of counter knife.
	Two needle threads are cut. (Short thread waste remains inside the cylinder arm cap.)	There is a burr on thread spreading section Ⓐ of the moving knife. The shape of thread trimming becomes ⌒ and thread waste remains. 	Paying attention to the blade section, polish with polishing powder.
		Shuttle upper spring has scratches. (The shape of the thread trimming becomes ⌒ and thread waste remains.)	Remove the scratches.
	Moving knife does not spread threads.	Initial position of the moving knife is maladjusted.	Properly adjust the initial position of moving knife.
		Position of the thread trimmer cam is defective.	Properly adjust the position of thread trimmer cam.
		Position of the shuttle upper spring is defective.	Properly adjust the position of shuttle upper spring.
	Stitch skipping at the final stitch.	Clearance between the needle and the inner hook, and timing of the needle to the inner hook are defective.	Properly adjust the timing abd clearance.
		Height of the intermediate presser is too high.	Properly adjust the height of intermediate presser.
		Needle thread loop falls down.	Attach the needle with the long groove orienting slightly to the right by approximately 20˚.
	Bobbin thread is not cut.	Bobbin thread tension is too low.	Stengthen the bobbin thread tension.
		Needle hole of the needle hole guide is too large.	Replace the needle hole guide with a new one having a smaller hole diameter.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
7. Poor tense stitches	Defective adjustment of the tension controller No. 2	Tension of the tension controller No. 2 is low.	Properly adjust the tension of tension controller No. 2.
	Tension controller No. 2 is floating.		Properly adjust the thread release mechanism.
	Thread take-up spring is maladjusted.		Properly adjust the tension and stroke of thread take-up spring.
	Clearance between the inner hook and the shuttle driver is defective.	Clearance between the inner hook and the shuttle driver is small.	Properly adjust the clearance between the inner hook and the shuttle driver.
	Selection of the needle to be used is improper.	Needle to be used is thin.	Replace the needle with a thicker one.
	Selection of the needle hole guide is improper.	Hole diameter of the needle hole guide to the needle to be used and thread is small.	Replace the needle hole guide with a new one having a larger needle hole diameter.
	Shape of the feed plate is defective.	Material to be sewn is stiff and closely comes in contact with the throat plate, and there is no clearance between them to pass the thread.	Raise the material to be sewn by means of the feed plate.
		Material to be sewn is highly elastic and closely comes in contact with the throat plate, and there is no clearance between them to pass the thread.	Raise the material to be sewn by means of the feed plate.
	Feed timing is defective.	Feed timing is too fast.	Change the feed timing using the memory switch.
8. Defective stitches with the synthetic thread	Thread breakage due to heat	Sewing speed is too fast.	Decrease the maximum speed.
		Needle is too thick.	Use a thinner needle or a super needle for the synthetic thread.
			Apply silicon.
			Use the needle cooler.
	Thread makes burrs.	Thread path is defective.	Polish the thread path of each component with polishing powder.
		Finish of needle eyelet is defective.	Replace the needle.
		Needle thread loop falls down.	Move the thread guide A to the left.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
	Thread floating occurs at the sewing start.	Penetration resistance of the thread against the cloth is too small.	Use a thinner needle.
	Stitch skipping due to the heat	Sewing speed is too fast.	Change the maximum speed.
		Needle is too thin.	Use a thicker needle.
		Needle thread loop falls down.	Attach the needle with the long groove orienting slightly to the right by approximately 20˚.
			Use the needle cooler.
	Uneven stitch tightness due to the stretch of thread	Sewing speed is too fast.	Change the maximum speed.
		Tension of the tension controller No. 2 is too high.	Decrease the tension of the tension controller No. 2.

(3) Electrical parts (Also, refer to Block diagram.)

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
1. The display fails to light.	1-1) The power is not supplied to POWER circuit board.	1-A) Disconnected J30 connector	Securely connect the connector.
		1-B) Fuse F1, F2 has blown.	Replace the blown fuse after removing the cause. (10 A)
	1-2) Voltage of + 5 is not supplied to MAIN circuit board.	2-A) Disconnected J37 connector POWER circuit board	Securely connect the connector.
		2-B) Disconnected J10 connector (MAIN circuit board) (J10 for LK-1930, J16 for LK-1910/20)	
		2-C) Fuse F3 has blown.	Replace the blown fuse after removing the cause. (10 A)
	1-3) Operation panel ⟷ MAIN circuit board has not been connected.	3-A) Disconnected J14 connector (MAIN circuit board) (J14 for LK-1930, J23 for LK-1910/20)	Securely connect the connector.
2. Connection error of operation panel occurs. (For LK-1930 only)	2-1) Operation panel ⟷ Connection failure of MAIN circuit board	2-A) Disconnected J14 connector (MAIN circuit board)	Check or replace the connector.
		2-B) Failure with MAIN circuit board	Operate or replace the MAIN circuit board.
3. Key of operation panel fails to work.	3-1) Failure with the switch		Execute the input check mode to identify the defective switch, and replace the (membrane switch) switch or operation circuit board. ( ) : for LK-1930 only
	3-2) Failure with the circuit board		Replace the operation circuit board.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
4. After (Enter key) is ON, thefeeding frame is kept lowered and fails to move. (LK-1930) (Ready key) fails to be in a sewing state. (LK-1910/20)	4-1) Voltage of +85 V is not supplied to (PMDC circuit board). (LK-1930) (MAIN circuit board for LK-1910/20)	1-A) Disconnected J37 connector (For LK-1930 only) (POWER circuit board)	Securely connect the connector.
		1-B) Disconnected J61 connector (For LK-1930 only) (PMDC circuit board)	
		1-C) Disconnected J62 connector (For LK-1930 only) (PMDC circuit board)	
		1-D) Fuse F4 has blown.	Replace the blown fuse after removing the cause. : Replace fuse (5A) for LK-1910/20. : Replace fuse (7A) for LK-1930.
	4-2) MAIN ⟷ PMDC circuit board have not been connected. (For LK-1930 only)	2-A) Disconnected J24 connector (MAIN circuit board)	Securely connect the connector.
		2-B) Disconnected J60 connector (PMDC circuit board)	
	4-3) (PMDC circuit board) ⟷ X side stepping motor have not been connected. (LK-1930) (MAIN circuit board for LK-1910/20)	3-A) Disconnected J62 connector (For LK-1930 only) (PMDC circuit board)	Securely connect the connector.
		3-B) Disconnected J14 connector	
	4-4) Failure with the circuit board		Replace the PMDC circuit board. (For LK-1930 only)
	4-5) (PMDC circuit board) ⟷ Y side stepping motor have not been connected. (LK-1930) (MAIN circuit board for LK-1910/20)	5-A) Disconnected J62 connector (For LK-1930 only) (PMDC circuit board)	Securely connect the onnector.
		5-B) Disconnected J15 connector (Inside the table stand)	
	4-6) Failure with the circuit board		Replace the MAIN circuit board. (For LK-1910/20 only)

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
5. Feeding frame fails to work.	5-1) Pedal switch ⟷ MAIN circuit board have not been connected.	1-A) Disconnected J19 (or J20) connector (MAIN circuit board (LK-1930) J26 (or J18) : (LK-1910/20)	Securely connect the connector.
	5-2) Defective pedal switch		Replace the defective switch after checking the failure by the input check program.
	5-3) Defective circuit board		Replace the MAIN circuit board.
	5-4) The pedal used does not correspond with the memory switch. (LK-1910/20)		Check the memory switch No. 10.
6. "Err has occurred When reading" appears on the display. (For LK-1930 only)	6-1) Defective floppy disk		Replace the floppy disk.
	6-2) Defective FDD		Replace the FDD.
	6-3) Defective circuit board		Replace the MAIN circuit board.
7. "The FD has not been loaded" appears on the display. (For LK-1930 only)	7-1) The power is not supplied to FDD.	1-A) Disconnected J12 connector (MAIN circuit board)	Securely connect the connector.
		1-B) Disconnected FDD connector (FDD pin 4)	
	7-2) FDD ⟷ MAIN circuit board have not been connected.	2-A) Disconnected J13 connector (MAIN circuit board)	
		2-B) Disconnected FDD connector (FDD pin 34)	
	7-3) Defective circuit board		Replace the MAIN circuit board.
8. "E1 error" appears on the display. (For LK-1910/20 only)	8-1) Pattern No. has not been registered.		Check the pattern No.
	8-2) Defective DATA ROM (U21)		Replace the DATA ROM.
	8-3) Defective circuit board		Replace the MAIN circuit board.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
9. "E3 ServoMotor Alert" appears on the display. (LK-1930) "E7 error" appears on the display while the main shaft is not locked. (LK-1910/20)	9-1) The power for driving is not supplied to the motor.	1-A) Disconnected J8 connector Disconnected J28 connector	Securely connect the connector.
	9-2) The power for driving is not supplied.	2-A) Disconnected J9 connector Disconnected J33 connector	
	9-3) The power for the control is not supplied.	3-A) Disconnected J6 connector Disconnected J36 connector	
	9-4) Encoder signal from the motor is not supplied.	4-A) Disconnected J2 connector Disconnected J29 connector	
	9-5) MAIN and SERVO circuit boards have not been connected. (For LK-1930 only)	5-A) Disconnected J11 connector Disconnected J1 connector	
10. "E30 Needle Pos Err" cannot be released. (LK-1930) "E3 Needle bar upper position error" cannot be released. (LK-1910/20)	10-1) MAIN and SERVO circuit board have not been connected.	1-A) Disconnected J11 connector Disconnected J1 connector	Securely connect the connector.
11. Main shaft rotates for approximately 2 seconds at low speed and stops.	11-1) Signal from the main shaft sensor is not tranferred.	1-A) Disconnected J4 connector	Securely connect the connector.
		1-B) Defective main shaft sensor	Replace the sensor.
		1-C) Defective SERVO circuit board	Replace the circuit board.
12. “ServoMotor Alert” appears on the display.	12-1) MAIN ⟷ SERVO circuit board have not been connected.	1-A) Disconnected J1 connector (SERVO circuit board)	Securely connect the connector.
		1-B) Disconnected J11 connector (MAIN circuit board)	
	12-2) Defective circuit board		Replace the SERVO or MAIN circuit board.

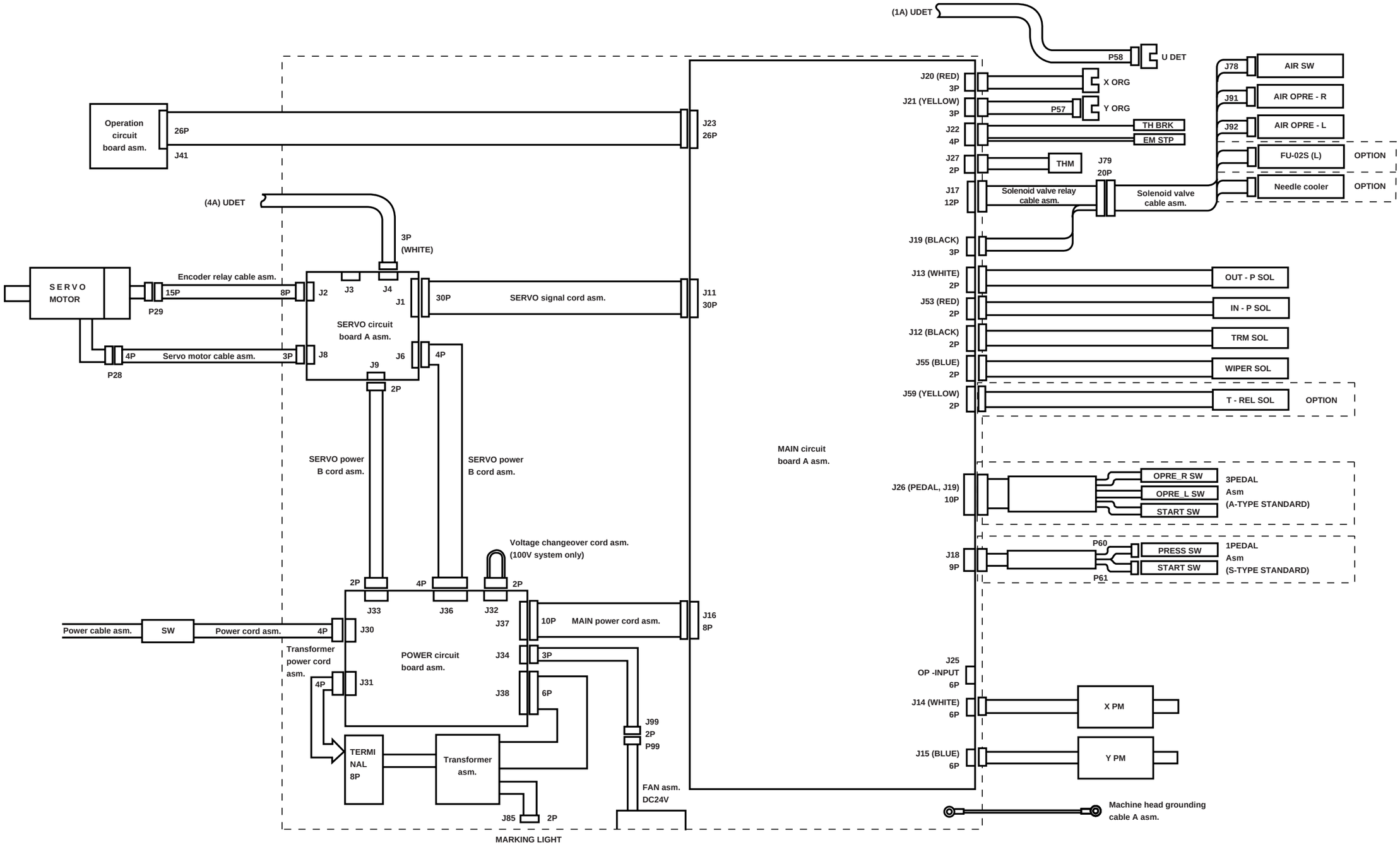
Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
13. "StopKey Accepted Not trimmed yet" cannot be released. (LK-1930) "E5 (Temporary stop)" cannot be released. (LK-1910/20)	13-1) Temporary stop switch ⟷ MAIN circuit board have not been connected.	1-A) Disconnected J16 connector	Securely connect the connector.
		1-B) Disconnected J22 connector (LK-1930 only)	
		1-C) Disconnected J81 connector (LK-1910/20)	
14. Thread breakage detection fails to work. (E9) (Detection within 8 stitches at the sewing start and 3 stitches during sewing cannot be detected.)	14-1) Thread breakage detection mode is rendered ineffective.	1-A) 1-A) Item 1 of memory switch No. 38 is set to "NO". (LK-1930)	Set the item 1 of memory switch No.38 to “ON”.
		1-B) Memory switch No. 20 is set to "0". (LK-1910/20)	Set the memory switch No. 20 to "1".
	14-2) The machine head has not be grounded.		Check the grounding conductor of the machine head, and connect it.
	14-3) Thread breakage detecting plate and thread take-up spring is separated when stopping.		Adjust correctly the position of thread breakage detecting plate.
	14-4) Defective circuit board		Replace the MAIN circuit board.
15. "AirPressure Drop" cannot be released. (LK-1930) "E AA" cannot be released. (LK-1910/20)	15-1) Air sensor ⟷ MAIN circuit board have not been connected.	1-A) Disconnected J19 connector (LK-1910/20) Disconnected J17 connector (LK-1930)	Securely connect the connector.
		1-B) Disconnected J79 connector	Securely connect the connector.
16. Origin retrieval is made, but the presser does not come down. (Feeding frame) (Magnet type only)	16-1) Presser magnet ⟷ MAIN circuit board have not been connected.	1-A) Disconnected J18 connector	Securely connect the connector.
		1-B) Disconnected J13 (sensor connecting cord) connector	Securely connect the connector.
		1-C) Disconnected J79, J91, and J92 connectors (LK-1910/20)	
	16-2) Defective circuit board		Replace the MAIN circuit board.

Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
17. Origin retrieval is made, but the presser does not come down. (Feeding frame) (Pneumatic type only)	17-1) Solenoid magnet ⟷ MAIN circuit board have not been connected.	1-A) Disconnected J17 connector	Securely connect the connector.
		1-B) Disconnected J79 (LK-1930)	Securely connect the connector.
	17-2) The power for air drive is not supplied (+24 V) (LK-1930)	1-A) Defective POWER circuit board	Replace the POWER circuit board.
	17-3) Defective circuit board		Replace the MAIN circuit board.
18. Thread trimmer fails to work.	18-1) Thread trimming mode is rendered ineffective.	1-A) Memory switch No. 37 or 38 is set to ineffective. (LK-1910/20)	Set the memory switch No. 38 to effective "0".
		1-B) Item 1 of memory switch No. 18 is set to "NO". (LK-1930)	Set the item 1 of memory switch No. 18 to “ON”.
		1-C) Item 1 of memory switch No. 44 is set to "NO". (LK-1930)	Set the item 1 of memory switch No. 44 to “ON”.
	18-2) Defective circuit board		Replace the MAIN circuit board.
	18-3) Thread trimming solenoid fails to work. (LK-1910/20)	3-A) Disconnected J12	Replace the MAIN circuit board.
19. Wiper fails to work.	19-1) Wiper mode is not correct.	1-A) Item 1 of memory switch No. 36 is set to "Air" or "OFF" (LK-1930) (In case of the magnet type)	Set the item 1 of memory switch No. 36 to “Magnet”.
		1-B) Head wiper switch is set to "OFF".	Set the head wiper switch to "ON".
		1-C) Memory switch No. 11 is set to "0". (LK-1910/20)	Set the memory switch No. 11 to effective "1".
	19-2) Wiper magnet ⟷ MAIN circuit board are not connected.	2-A) Disconnected J18 connector	Securely connect the connector.
		2-B) Disconnected J55 connector	
	19-3) Defective circuit board		Replace the MAIN circuit board.

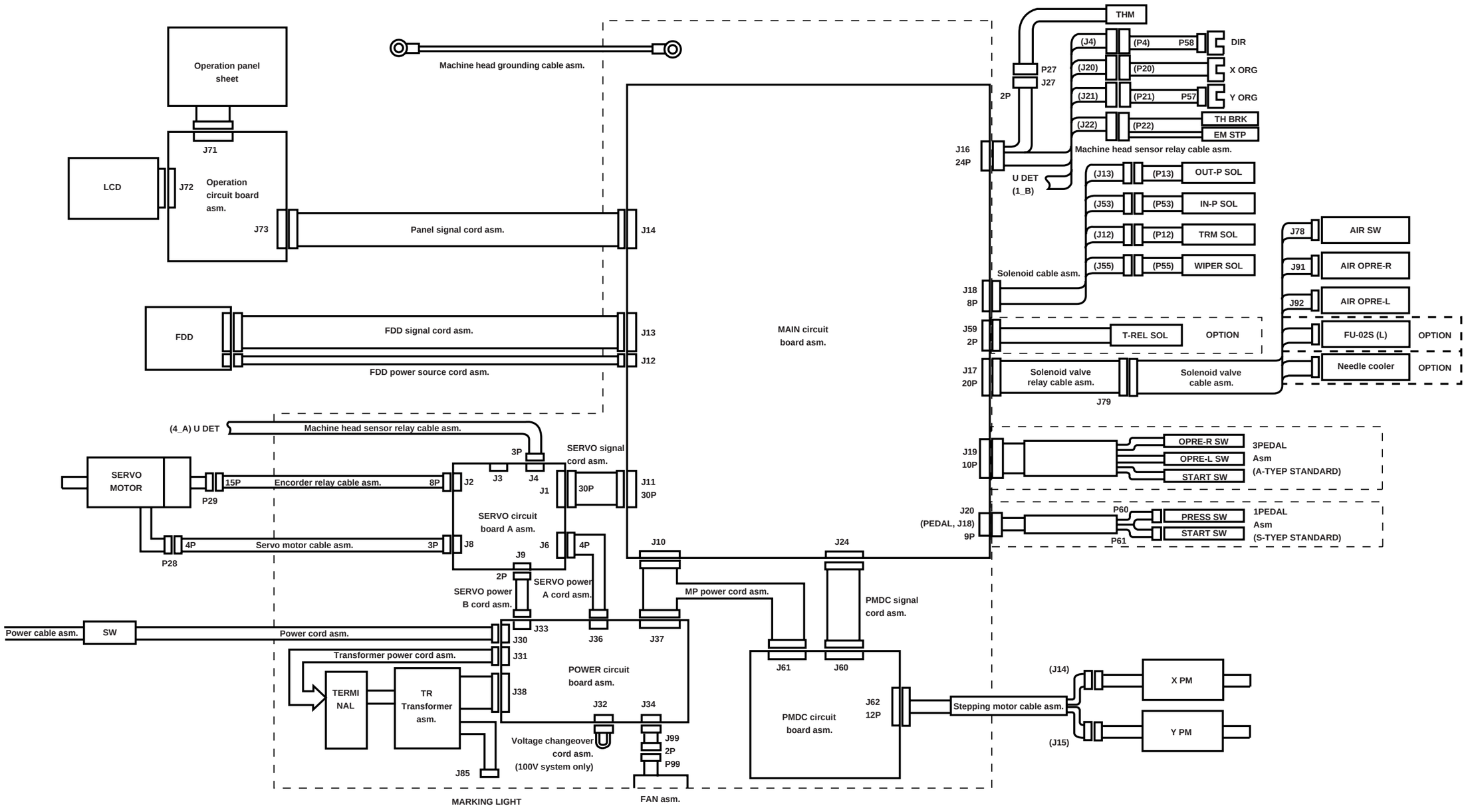
Troubles	Cause (1)	Cause (2)	Checking order and adjusting method
20. After turning ON the power, the machine moves in a wrong direction at the first origin retrieval.	20-1) Sewing machine model setting is improper. (For LK-1930 only)		Return the memory switch to the initial condition.
	20-2) MAIN circuit board ⟷ X, Y sensor have not been correctly connected.	2-A) Improperly connected J20 and J21 connectors	Check the connection of the connectors.
	20-3) MAIN circuit board ⟷ X, Y motor have not been correctly connected.	3-A) Improperly connected J14 and J15 connectors	Check the connection of the connectors.
21. Even when turning ON the power, the machine entirely fails to work.	21-1) Sewing machine model setting is improper.		Return the memory switch to the initial condition.
	21-2) The main power is not supplied.	2-A) Fuse F1 or F2 has blown.	Replace the blown fuse after removing the cause. (10A)
	21-3) Defective circuit board		Replace the MAIN, POWER or PMDC circuit board.
22. Others (The machine does not operate normally.)	22-1) The machine operation mode is improper.		Return the memory switch to the initial condition.
	22-2) Defective circuit board		Replace the PMDC, MAIN, POWER or SERVO circuit board.
23. In case of the magnet type, the origin retrieval is made while the feedin frame is kept raised. After the origin retrieval is made, the feeding frame comes down. (For LK-1930 only)	23-1) Memory switch setting is for the pneumatic type.		Set the memory switch to the magnet type by initializing the memory switch.
24. Fan alarm cannot be released. (LK-1930) "EH" (overheat error) cannot be released. (LK-1910/20)	24-1) Thermostat ⟷ MAIN circuit board are not connected.	1-A) Disconnected J16 connector (LK-1930)	Securely connect the connector.
		1-B) Disconnected J59 connector	Securely connect the connector.

22. CIRCUIT DIAGRAM

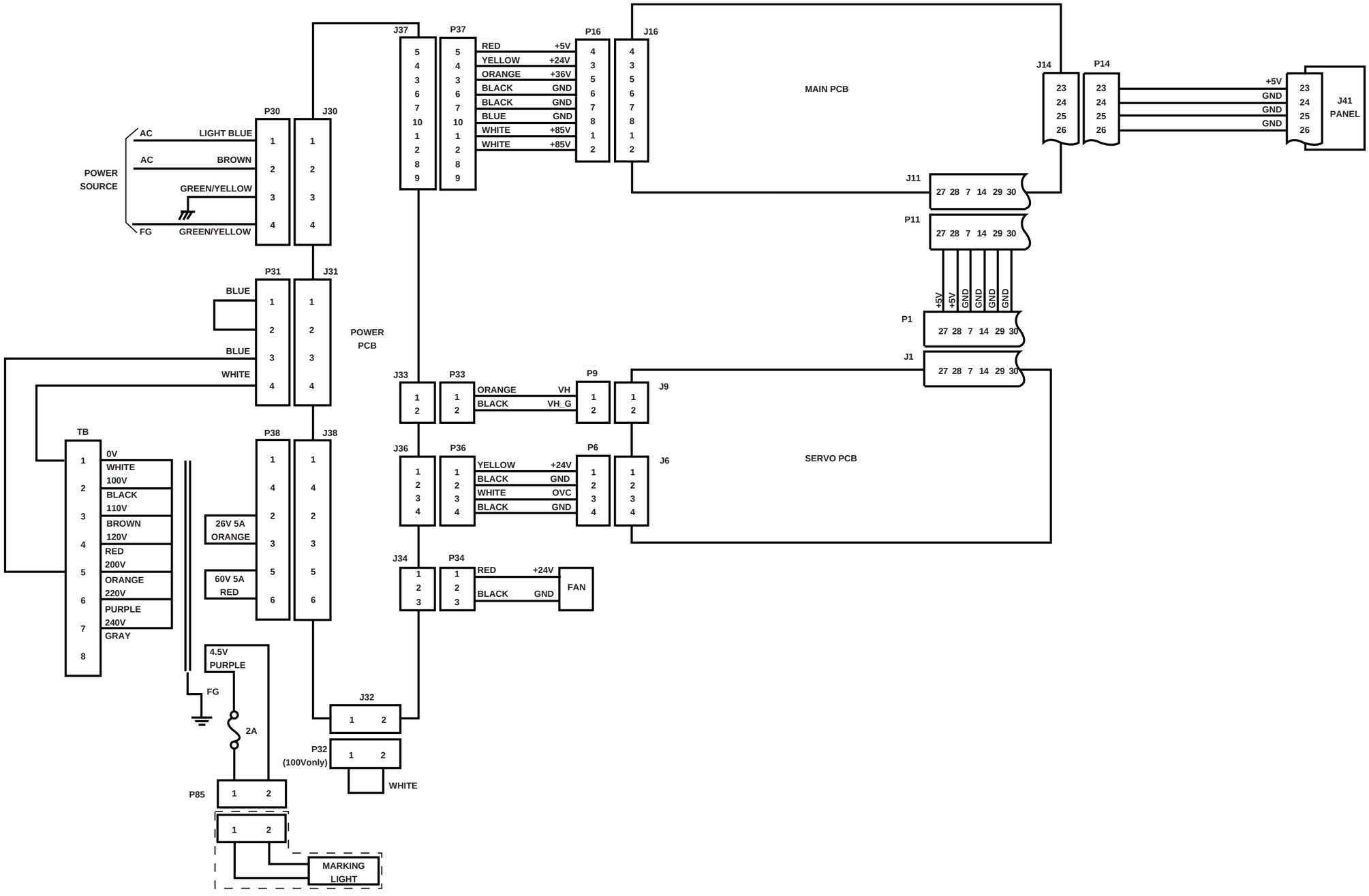
(1) Block diagram (LK-1910, 1920)



(2) Block diagram (LK-1930)

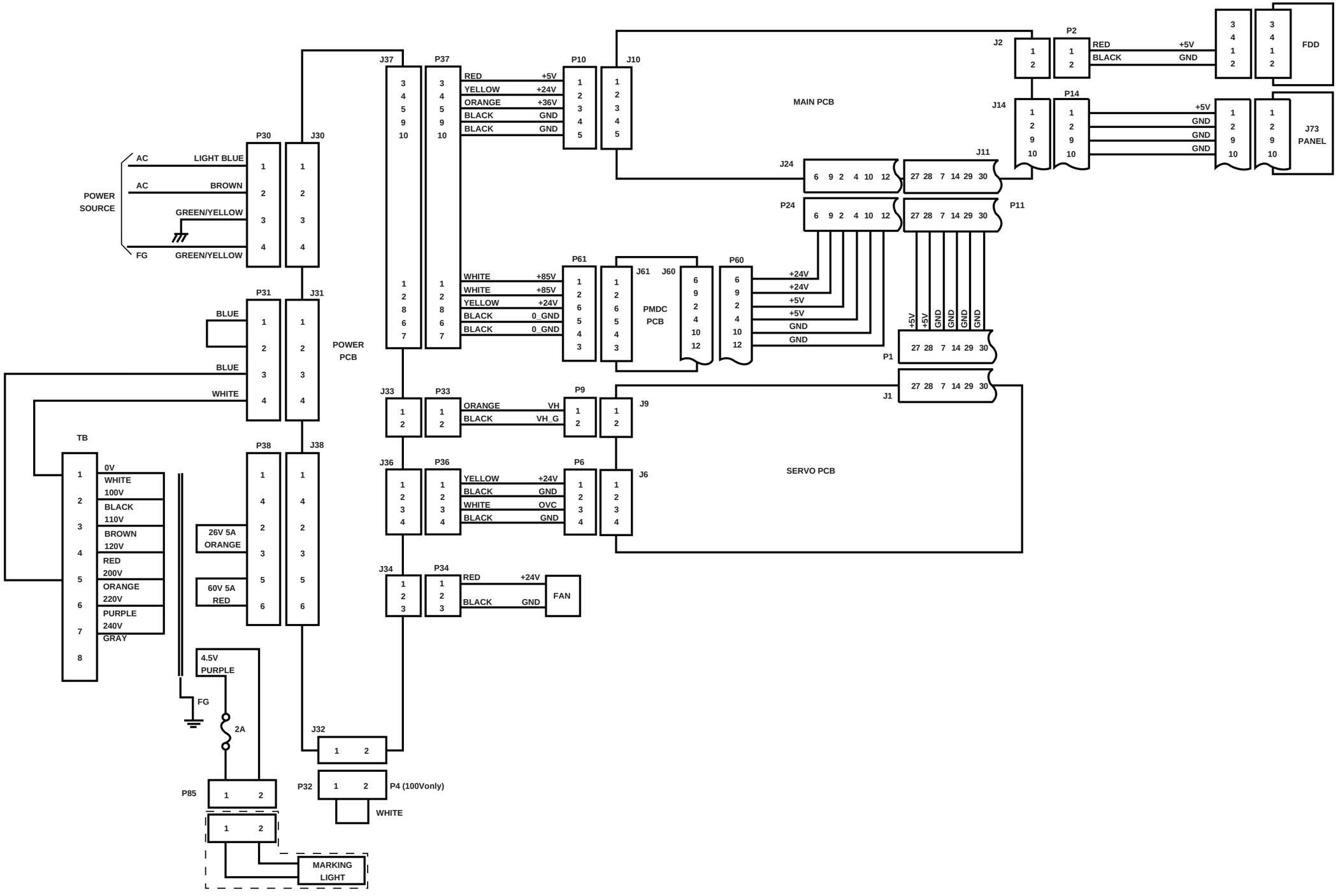


(3) Power circuit diagram A (LK-1910, 1920)



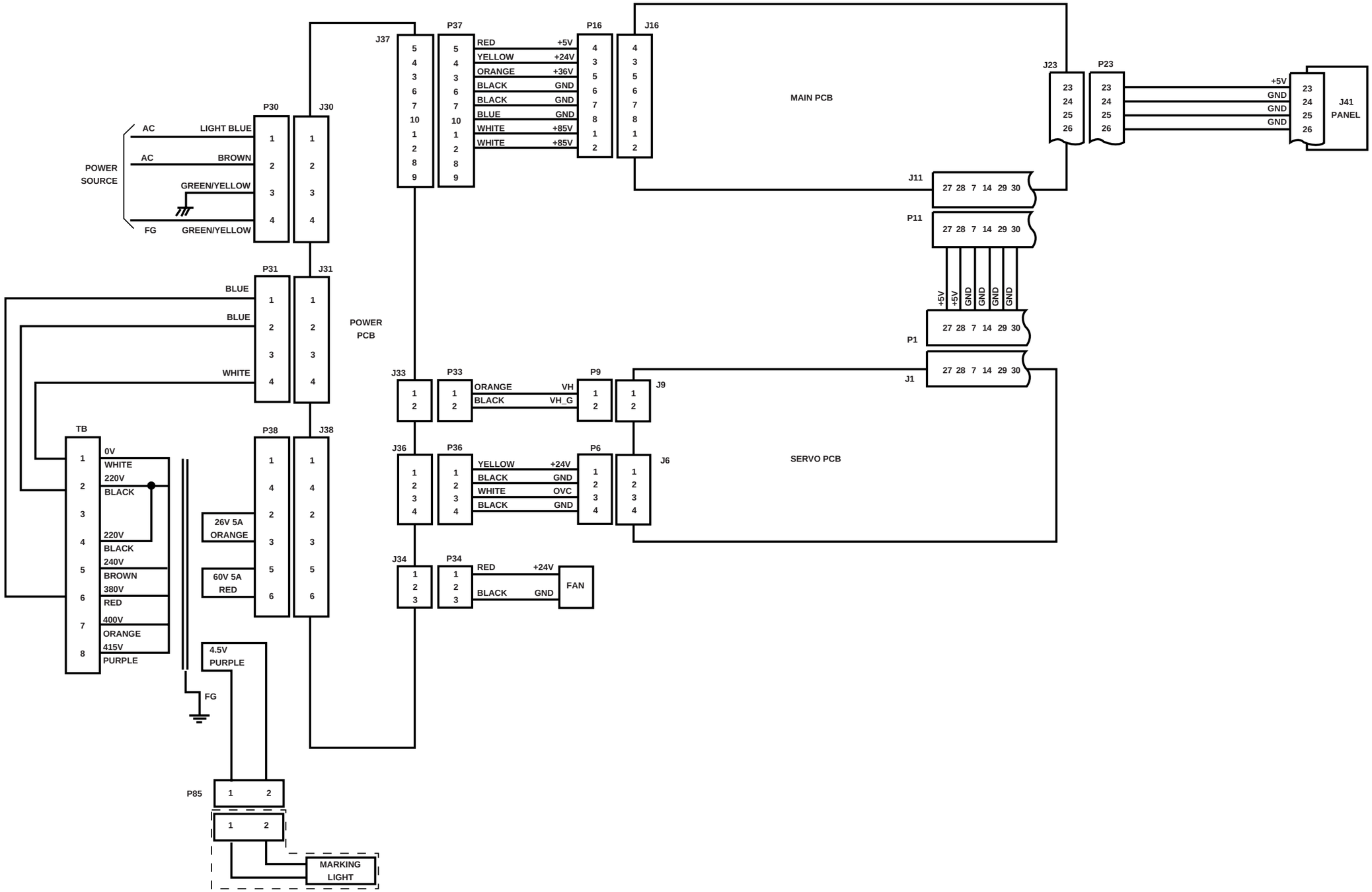
(Caution) 1. The above diagram shows the wiring when AC200V is input.

(4) Power circuit diagram A (LK-1930)



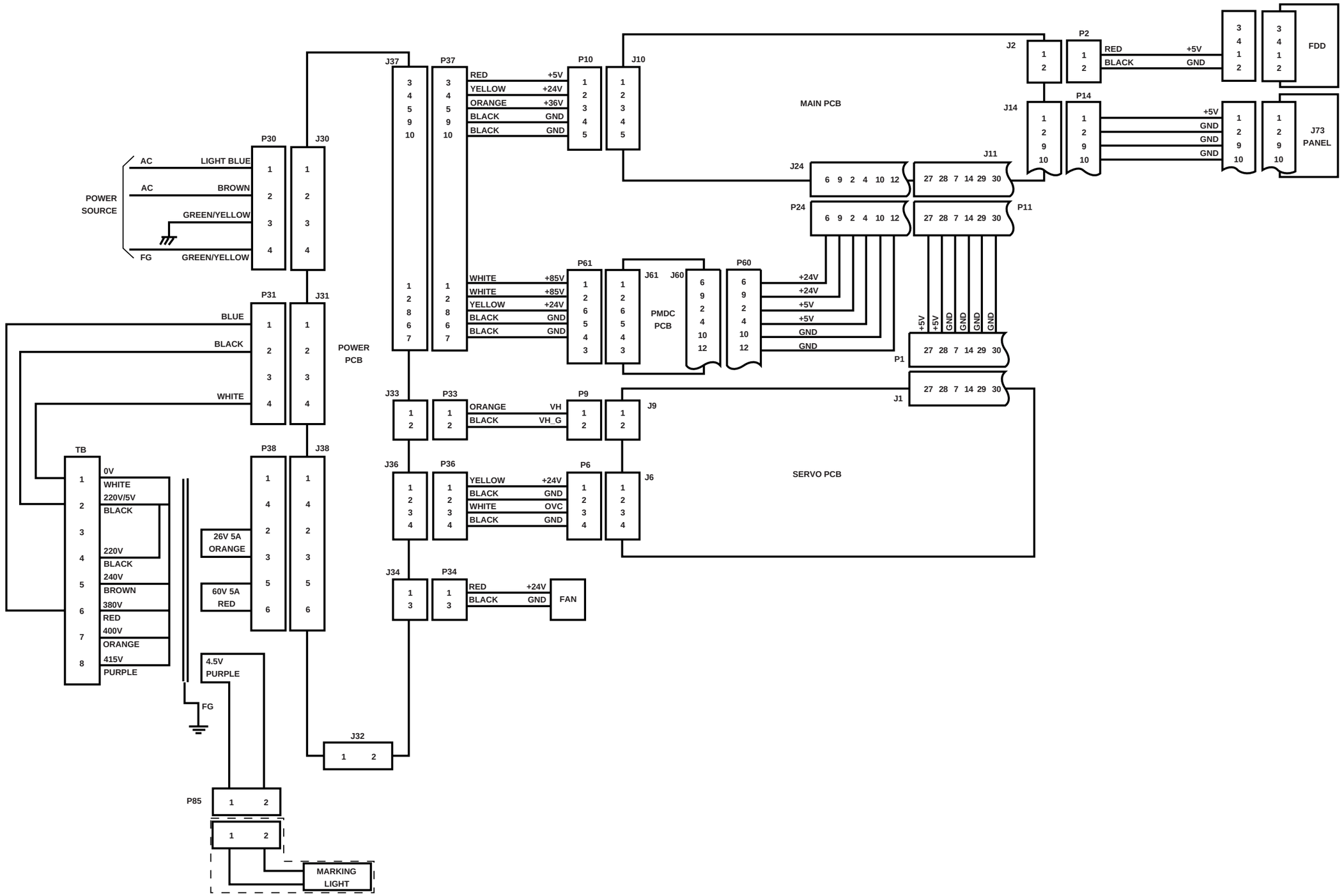
(Caution) 1. The above diagram shows the wiring when AC200V is input.

(5) Power circuit diagram B (LK-1910, 1920)



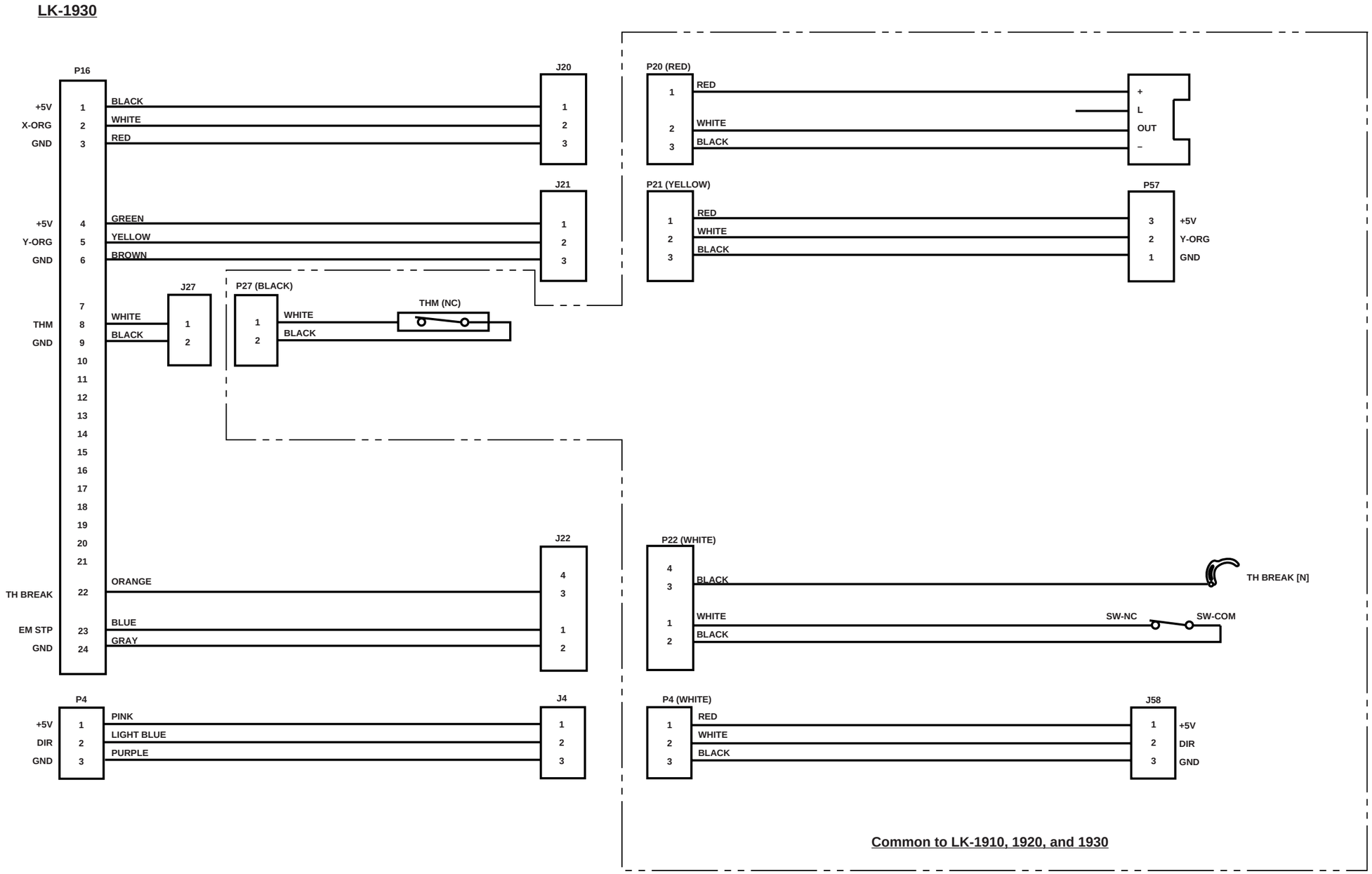
(Caution) 1. The above diagram shows the wiring when AC380V is input.

(6) Power circuit diagram B (LK-1930)



(Caution) 1. The above diagram shows the wiring when AC380V is input.

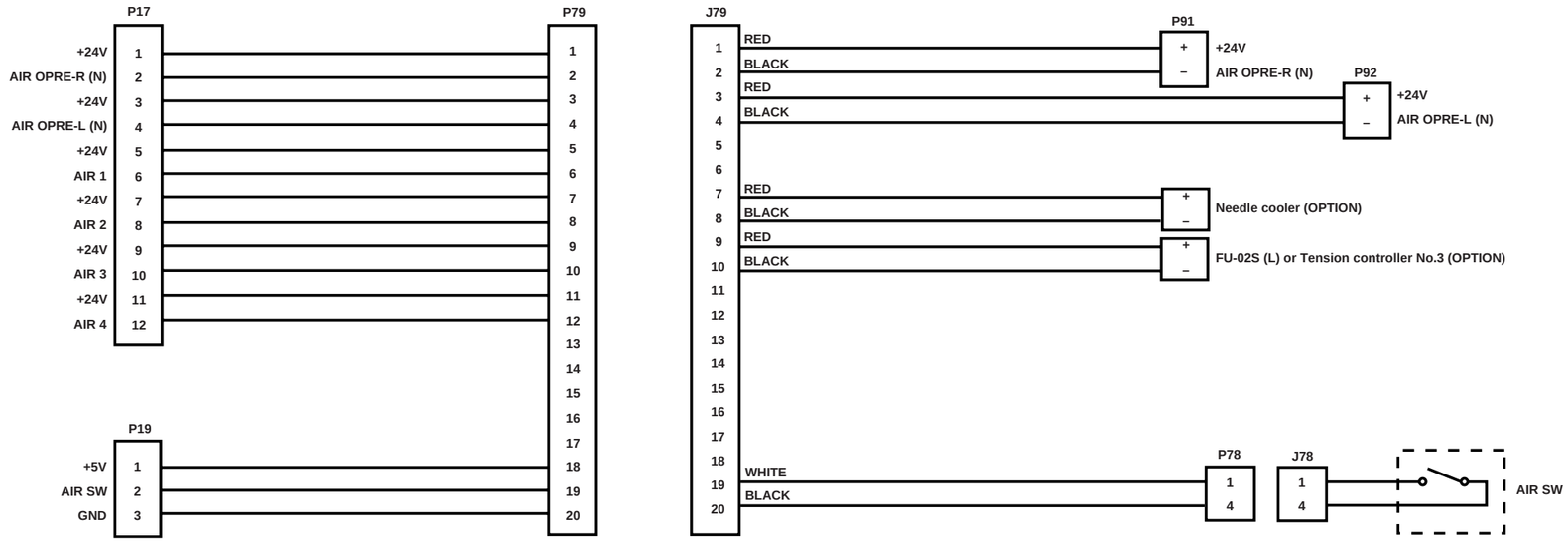
(7) Head sensor circuit diagram



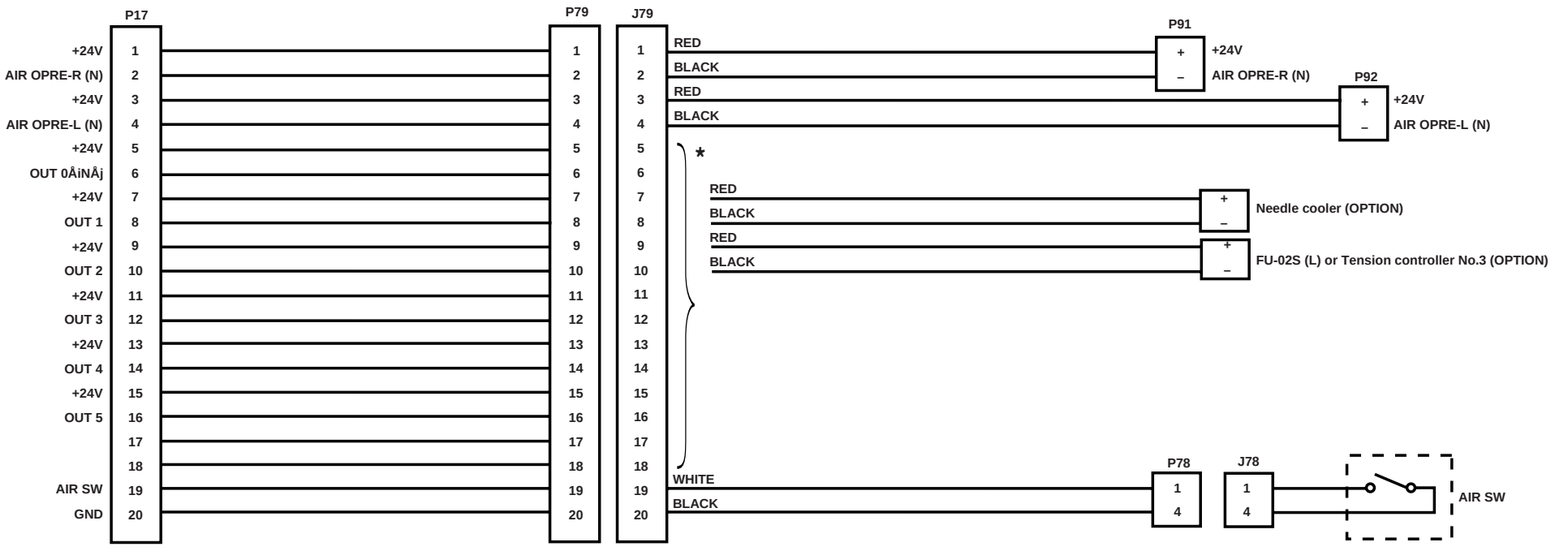
(Caution) 1. Numerals in [ ] are common to LK-1910, 1920 and 1930.

(8) Solenoid valve circuit diagam

LK-1910, 1920



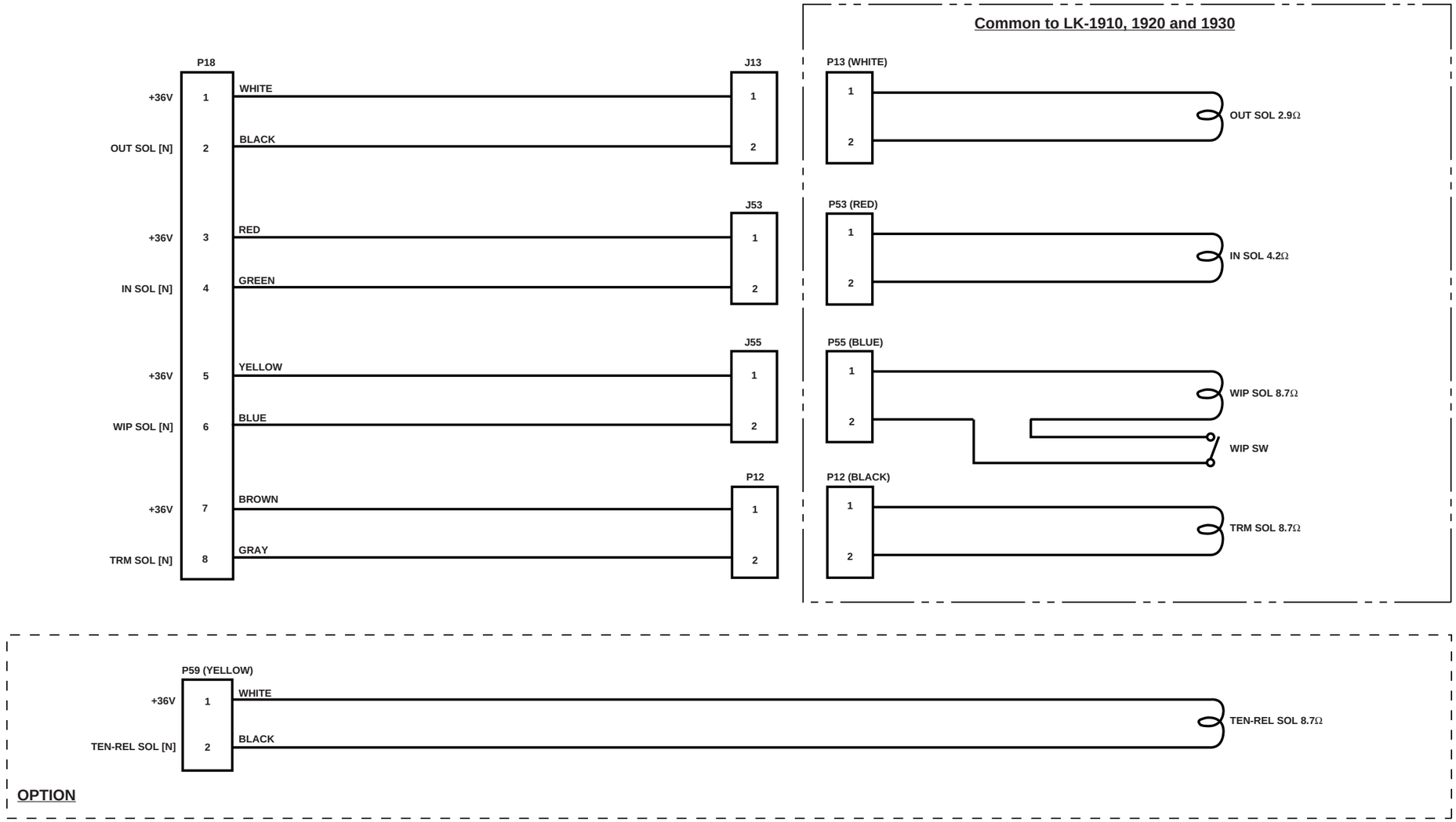
LK-1930



*** In case of LK-1930, connector connecting No. of such optionals as inverting clamp (FU-02S (L)), tension controller No. 3, and needle cooler varies in accordance with the memory switch setting.**

(9) Solenoid circuit diagram

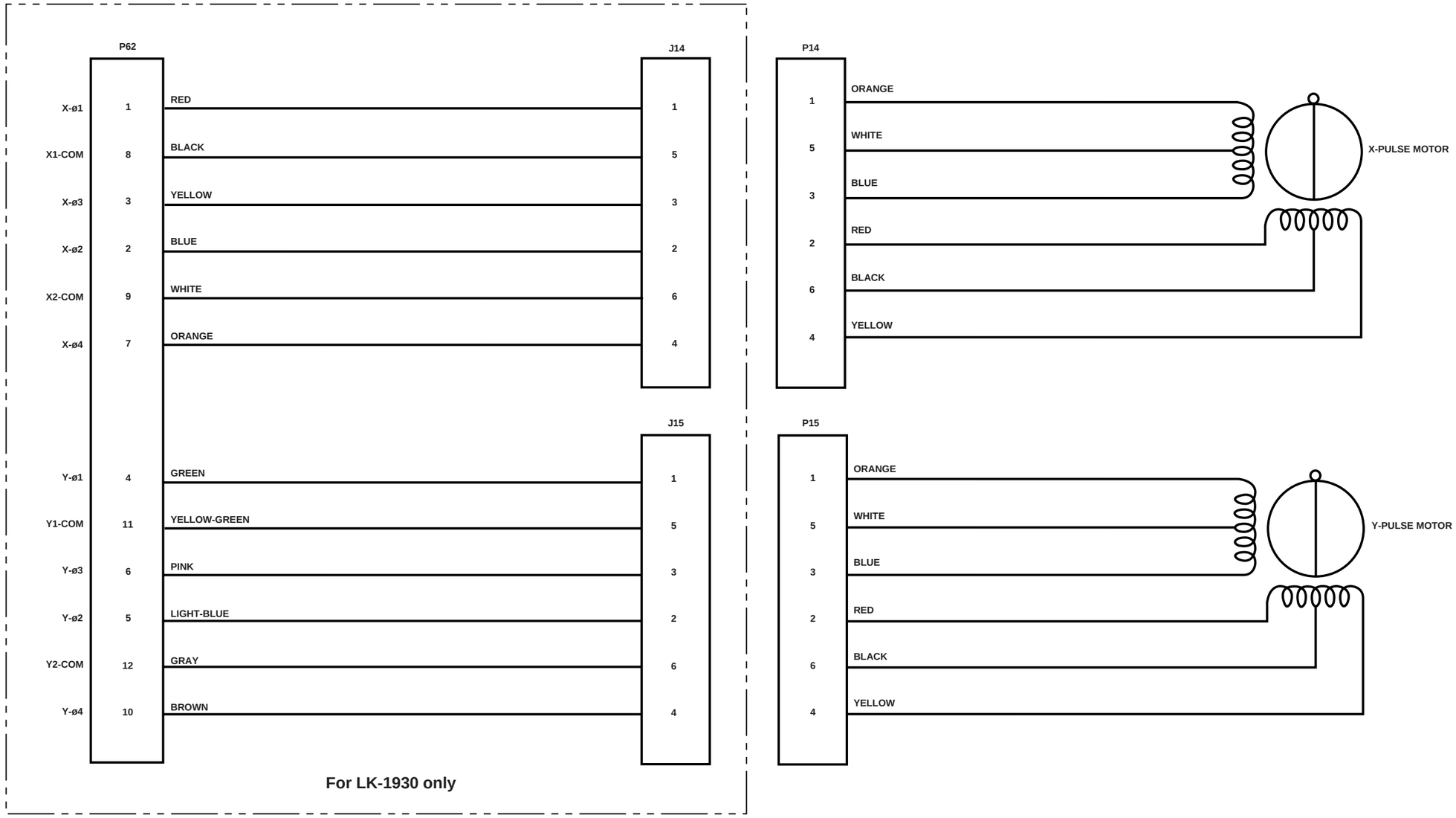
LK-1930



(Caution) 1. "TEN-REL SOL" is optional.

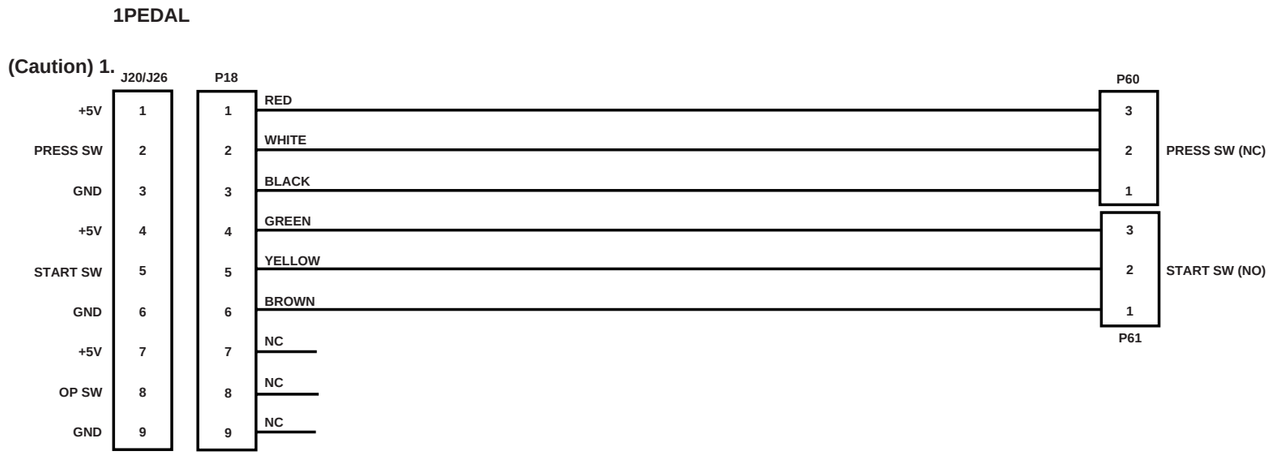
2. Numerals in [ ] are common to LK-1910, 1920 and 1930.

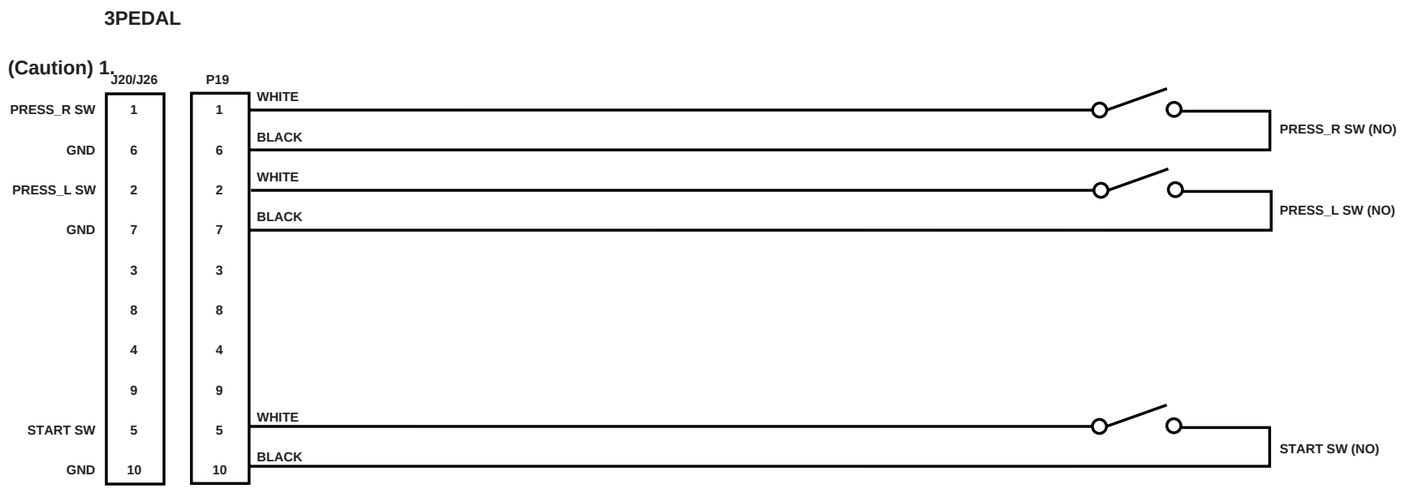
(10) Stepping motor circuit diagram



For LK-1930 only

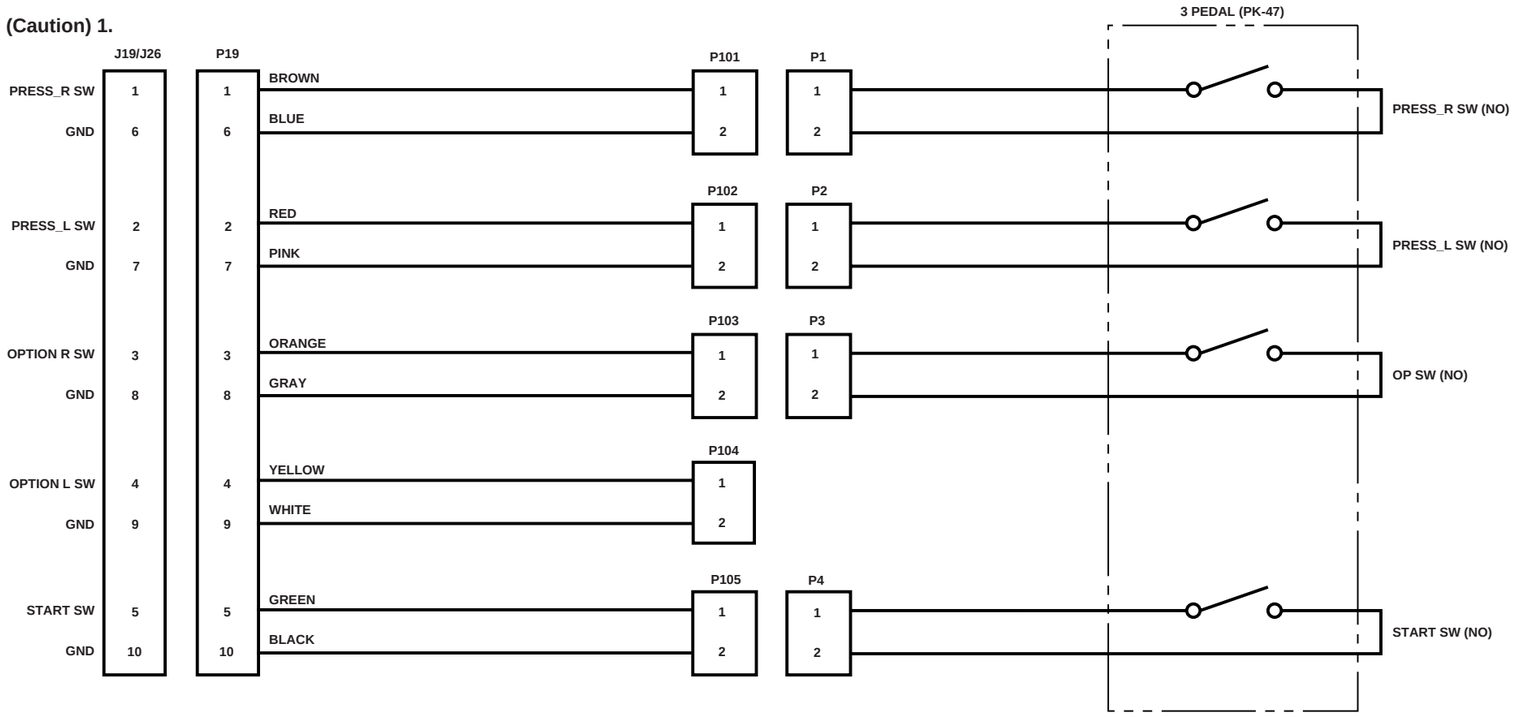
(11) Pedal switch circuit diagram





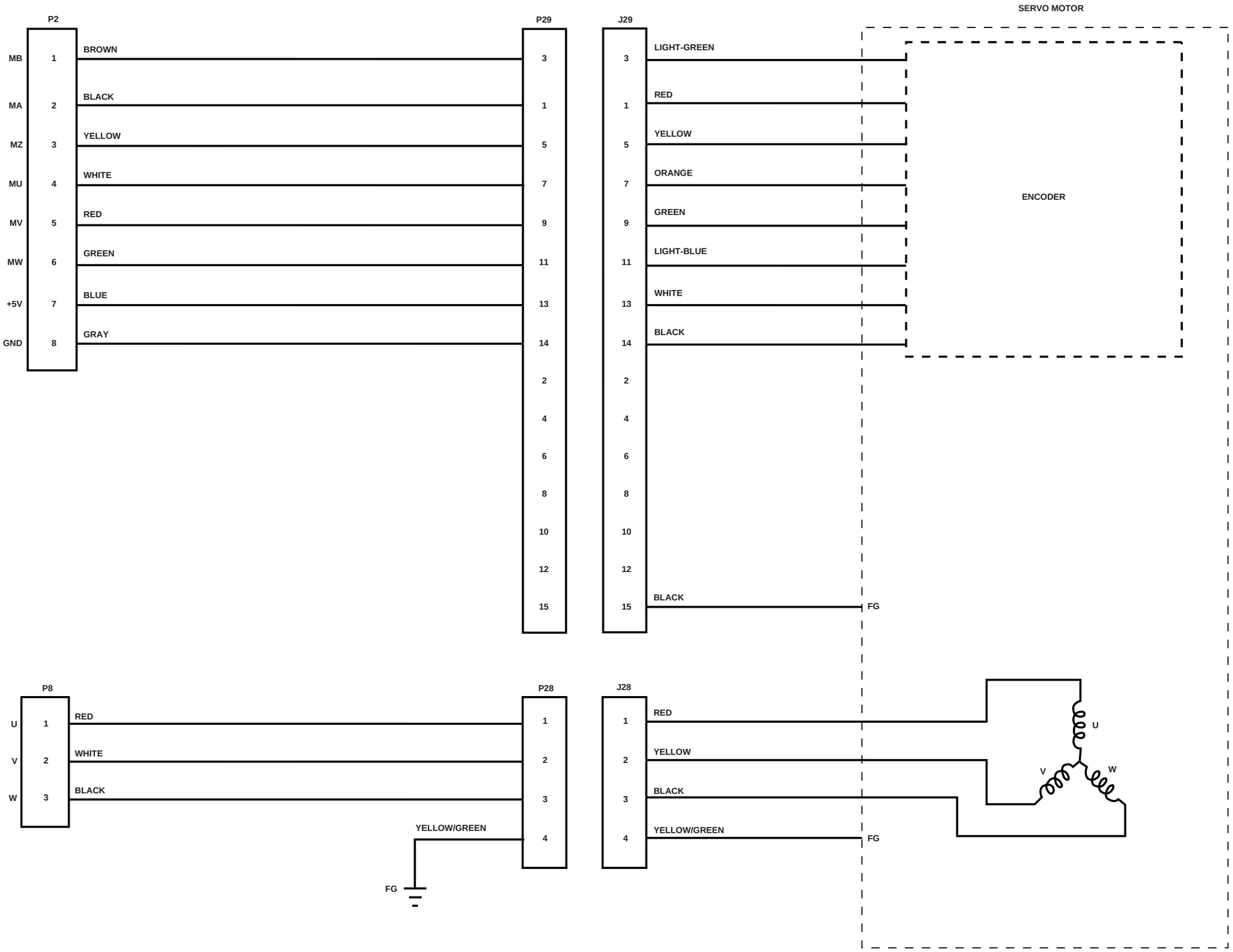
(Caution) 1. J20 is for LK-1930, and J26 is for LK-1910 and 1920.

(12) 3-step PK pedal circuit diagram

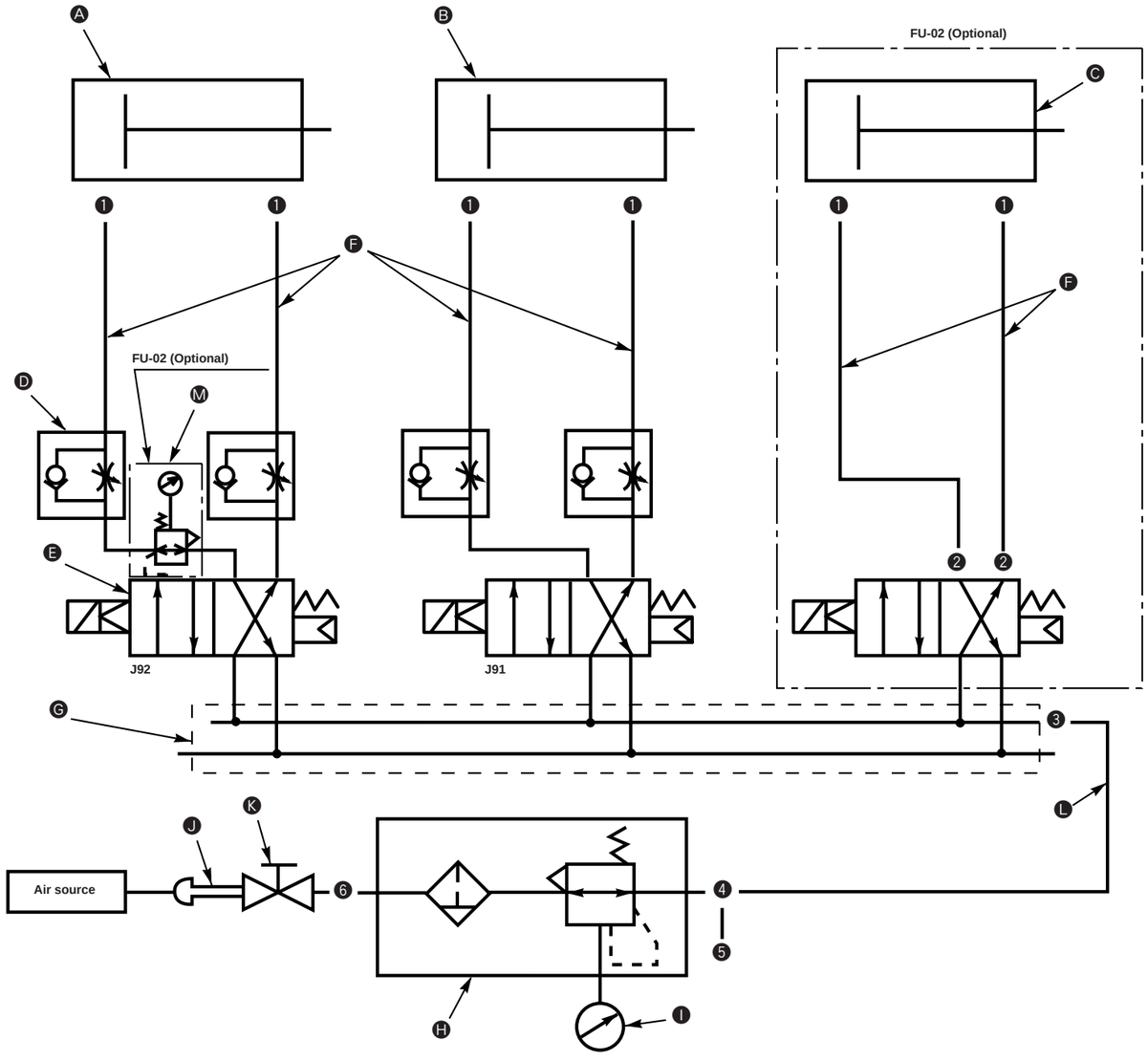


(Caution) 1. J26 is for LK-1910 and LK-1920, and J19 for LK-1930.

(13) Servo motor circuit diagram



(14) Pneumatic system circuit diagram

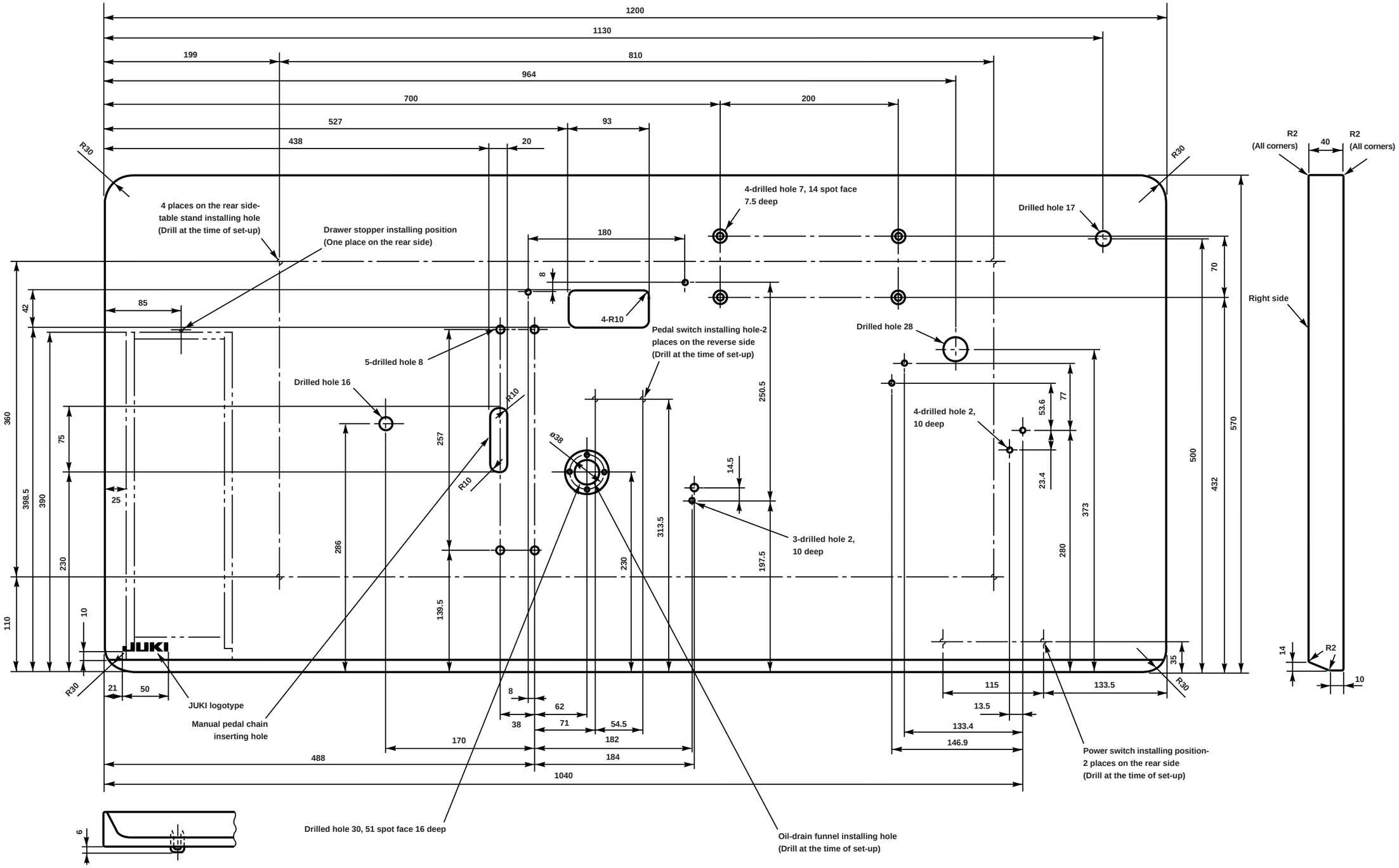


Ⓐ	Cloth presser cylinder (left)
Ⓑ	Cloth presser cylinder (right)
Ⓒ	Inverting cylinder
Ⓓ	Speed controller
Ⓔ	Solenoid valve
Ⓕ	ø4 air tube
Ⓖ	Manifold
Ⓗ	Filter regulator
Ⓘ	Pressure gauge
Ⓙ	Quick-coupling joint plug Quick-coupling jypint socket
Ⓚ	Air cock
Ⓛ	ø6 air tube
Ⓜ	Regulator

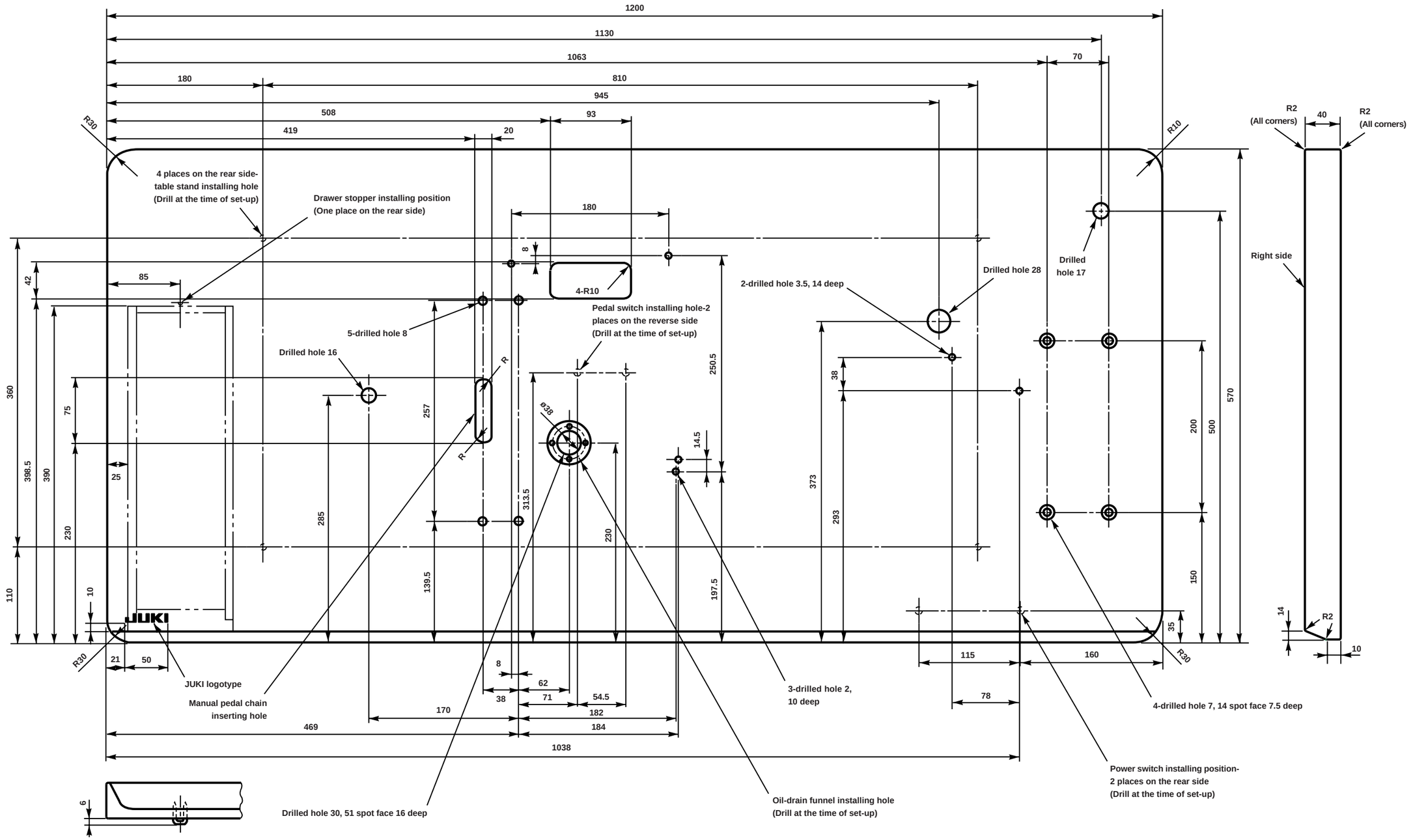
❶	Hose elbow
❷	Hose nipple
❸	Reducer elbow
❹	Double ported T
❺	Plug
❻	Barrel nipple

23. DRAWING OF THE TABLE

(1) LK-1910, 1920



(2) LK-1930


1200
1130
1063
70
180
810
945
508
93
419
20
R30
R10
R2
(All corners)
40
R2
(All corners)
4 places on the rear side-table stand installing hole (Drill at the time of set-up)
Drawer stopper installing position (One place on the rear side)
180
8
4-R10
Drilled hole 17
Right side
85
42
Drilled hole 28
2-drilled hole 3.5, 14 deep
Pedal switch installing hole-2 places on the reverse side (Drill at the time of set-up)
5-drilled hole 8
Drilled hole 16
R
250.5
38
360
75
257
ø38
14.5
373
200
500
570
398.5
390
25
285
313.5
230
293
230
139.5
197.5
150
110
10
35
14
R2
10
JUKI
R30
21
50
115
160
R30
8
62
38
71
54.5
78
170
182
469
184
1038
JUKI logotype
Manual pedal chain inserting hole
3-drilled hole 2, 10 deep
4-drilled hole 7, 14 spot face 7.5 deep
Power switch installing position-2 places on the rear side (Drill at the time of set-up)
6
Drilled hole 30, 51 spot face 16 deep
Oil-drain funnel installing hole (Drill at the time of set-up)

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04 · 09 Printed in Japan (E)