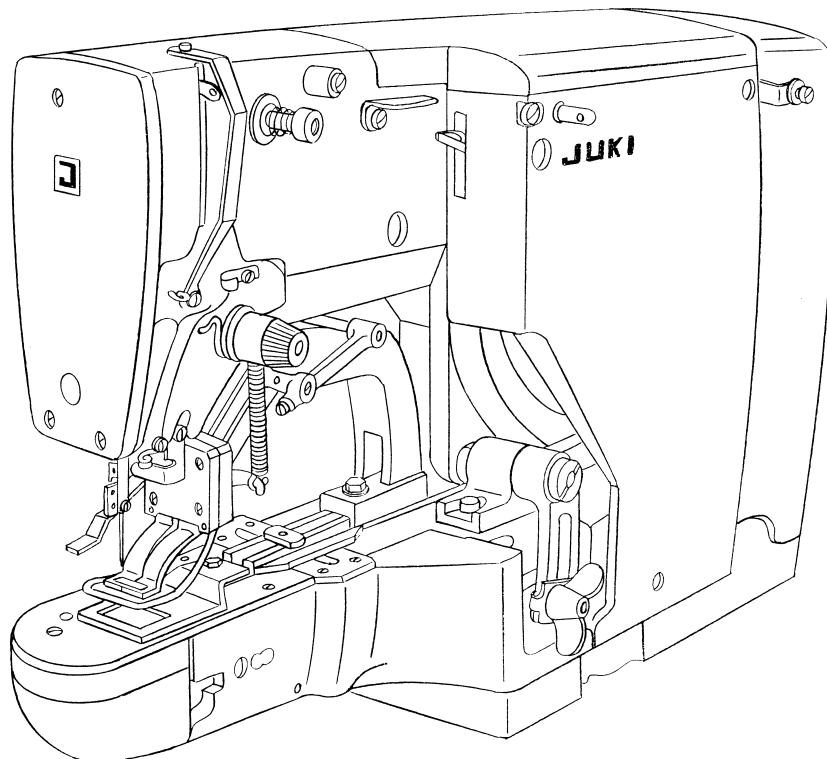


CLINTON SERVICE GUIDE

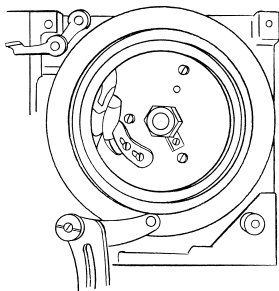
MODEL 890TKR

FOR

JUKI LK-980

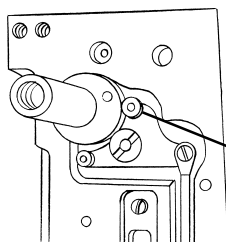


MACHINE PREPARATION



REMOVE ALL STOP MOTION CONTROL PARTS ON THE CAM SIDE. ONLY THE PARTS SHOWN REMAIN.

QUITE TODAS LAS PIEZAS DE CONTROL PARA DETENER EL MOVIMIENTO EN EL LADO DE LA VOLANTA. SÓLO DEBEN PERMANECER LAS PARTES MOSTRADAS.



REMOVE THE REMAINING STOP MOTION PARTS OFF THE MACHINE DRIVE SIDE AS SHOWN.

QUITE TODAS LAS PIEZAS RESTANTES DE DETENER EL MOVIMIENTO DE LA PARTE DE ACCIONAMIENTO DE LA MÁQUINA COMO SE MUESTRA.

DEJE EL PIVOTE DEL RODILLO.

LEAVE ROLLER ON PIVOT PIN.



Clinton Industries, Inc.
700 Washington Ave.
Carlstadt, N.J. 07072
Phone: 201-935-4242
Fax: 201-935-3615
Web Site: <http://www.clintonind.com>
Email: general@clintonind.com

STEP 1

GUIDE BUSHING & SLIDE ARM

02-3105-01
GUIDE BUSHING

10-1318-01
SLIDE ARM

NOTE:
INSERT SLIDE ARM
INTO FOOT CLAMP
AND WIPER SLOTS.

STEP 5

SYNCHRONIZER
11-0512-01

02-3184-03
COLLAR

33-2210-03
SCREW

10-1402-01
MOUNTING
PLATE ASS'Y

33-1806-01
L' WASHER

33-0106-04
SCREW

33-2210-08
SCREW

10-1401-01
DISC - MAGNET
ASSY

33-0106-10
SCREW

33-1806-01
L' WASHER

11-0505-01
PC BOARD

STEP 2

END PLATE

02-3100-01
END PLATE

30-2616-01
SCREW

01-1622-61
FLAT WASHER

30-2617-01
SCREW

NOTE:
LUBRICATE ALL
MOVING PARTS
BEFORE MOUNTING
THE END PLATE.

STEP 6

PULLEY & HANDWHEEL
10-1320-01

02-3108-01
PULLEY

01-2479-01
HANDWHEEL

01-3066-31
SCREW

33-2116-08
SET SCREW

STEP 3

TRIM CYLINDER

02-3104-01
BRACKET

33-2108-03
SET SCREW

01-3661-01
PIN

33-1620-02
HEX NUT

02-3241-01
BLOCK

NOTE:
EXISTING
SCREW & NUT

30-2616-01
SCREW

01-1622-61
FLAT WASHER

30-1783-01
ELBOW

30-2919-01
AIR CYLINDER

30-1783-01
ELBOW

STEP 7

PROXIMITY SWITCH
11-0510-02

30-2597-01
PROXIMITY
SWITCH

30-2599-01
MAGNET

02-3131-01
MAGNET
HOLDER

33-2106-03
SET SCREW

02-3130-01
BRACKET

30-0507-01
GROMMET

30-2458-01
COVER

30-2459-01
CONNECTOR

TO
SYNCHRONIZER
BOARD

* PART OF 10-1321-01

STEP 4

CLAMP LIFT CYLINDER

02-3122-01
BRACKET

33-0116-06
SCREW

01-1622-01
FLAT WASHER

33-0210-06
SCREW

30-1377-01
CLAMP

30-2594-01
AIR CYLINDER

33-4106-08
COTTER PIN

30-2126-01
CLEVIS PIN

01-4512-31
CLEVIS

33-1628-02
HEX NUT

30-2616-01
SCREW

01-1622-61
FLAT WASHER

30-1107-01
ELBOW

HEAVY DUTY FOOT SWITCH ASSEMBLY
11-0410-01

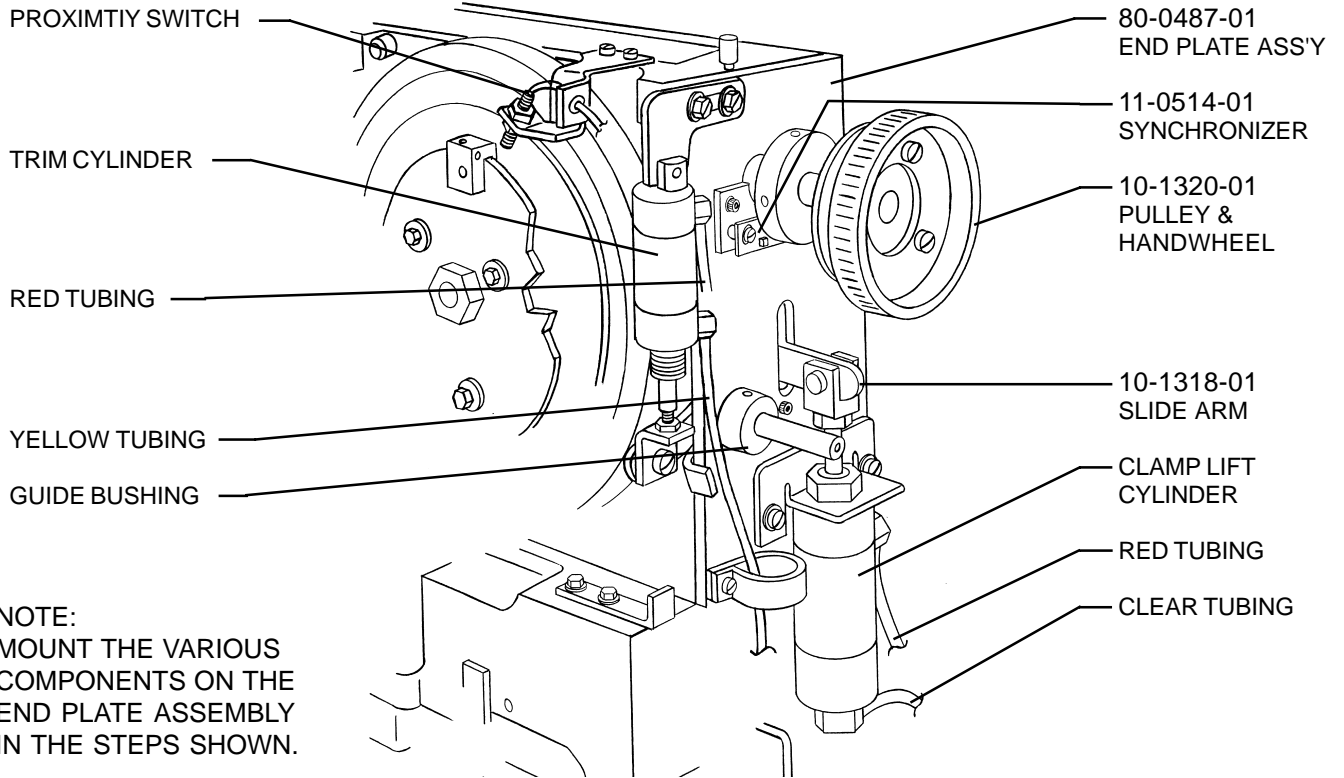
11-0380-01
CABLE
ASSEMBLY

30-2633-01
FOOT SWITCH

30-0519-01
PLASTIC TUBING

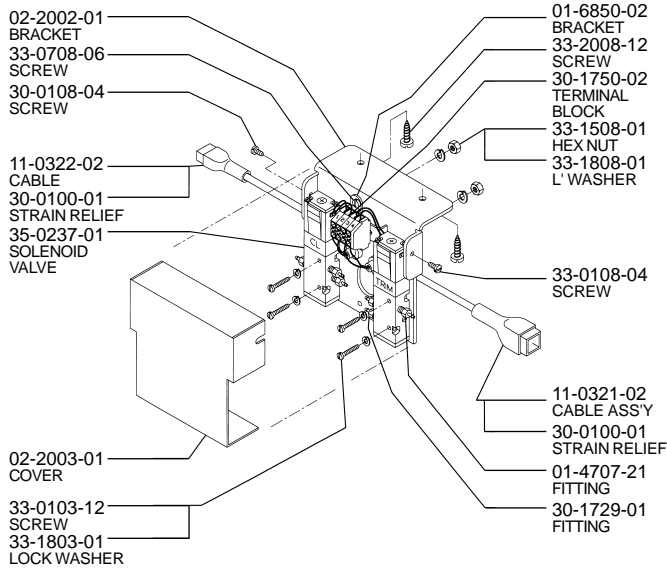
INS-2344

MACHINE ASSEMBLY
81-0827-01

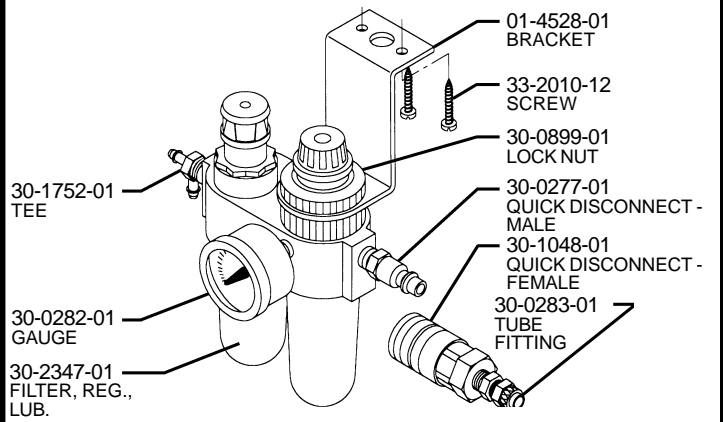


AIR CONTROL ASSEMBLY
81-0828-01

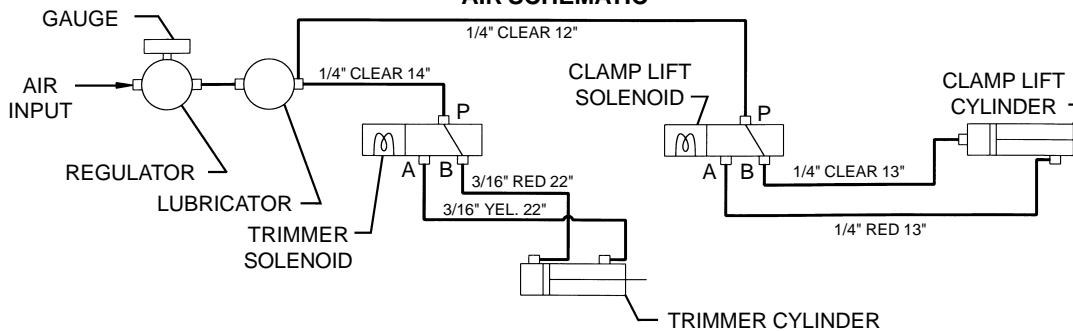
ML890TKR-3



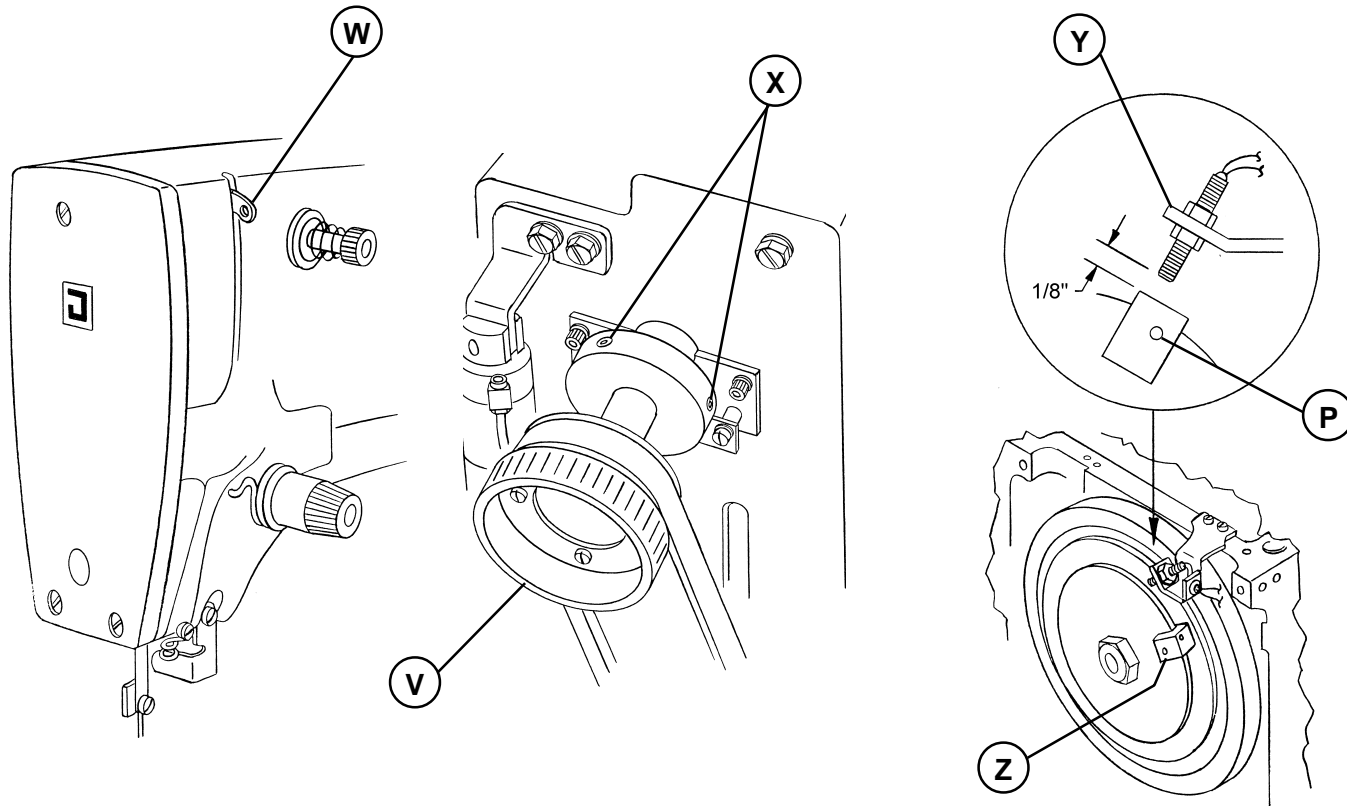
FILTER, OILER, REGULATOR, GAUGE ASSEMBLY
80-0181-10



AIR SCHEMATIC



TIMING INSTRUCTIONS



A. SYNCHRONIZER TIMING

1. TURN MACHINE HANDWHEEL (V) IN THE DIRECTION OF NORMAL ROTATION UNTIL THE TAKE-UP (W) REACHES IT'S UPPER MOST POSITION.
2. AT THIS TIME, WITH POWER ON, LOOSEN THE TWO SET SCREWS (X) AND TURN THE SYNCHRONIZER DISC COUNTERCLOCKWISE UNTIL THE MAGNET ON THE DISC IS ALIGNED WITH THE HALL SENSOR AND THE SYNCHRONIZER BOARD'S GREEN LIGHT GOES ON.

B. END OF CYCLE TIMING

A PROXIMITY SENSOR AND MAGNET IS USED TO DETECT THE END OF CYCLE ROUTINE. THE ADJUSTMENT DEPENDS ON THE SETTING OF THE END OF CYCLE (EOC) SENSOR.

1. ADJUST THE GAP BETWEEN THE PROXIMITY SENSOR (Y) AND MAGNET (P) TO APPROXIMATELY 1/8".
2. ROTATE, BY HAND, THE SEWING MACHINE HANDWHEEL SO THAT THE STITCH CAM IS IN THE START POSITION WITH THE NEEDLE IN THE UP POSITION.
3. TURN THE POWER ON AND NOTE THAT THE YELLOW LIGHT ON THE SYNCHRONIZER BOARD IS OFF.
4. POSITION THE MAGNET HOLDER (Z) ON THE STITCH CAM PLATE AWAY FROM THE PROXIMITY SENSOR BUT ON THE SIDE THAT IS OPPOSITE TO THE DIRECTION THAT THE STITCH CAM NORMALLY ROTATES. MAKE SURE THE YELLOW LIGHT IS STILL OFF.
5. SLOWLY MOVE THE MAGNET HOLDER TOWARDS THE PROXIMITY SENSOR UNTIL THE YELLOW LIGHT ON THE SYNCHRONIZER BOARD TURNS ON. LOCK THE MAGNET HOLDER IN PLACE AND SECURE WITH SCREW.
6. OPERATE THE MACHINE. CHECK THE MACHINE DECELERATION, TRIMMING AND STOPPING POSITION. IF NOT CORRECT THEN IT MAY BE NECESSARY TO MAKE PARAMETER CHANGES USING THE LCD DISPLAY.

A. CRONOMETRAJE DEL SINCRONIZADOR

1. GIRE LA RUEDA MANUAL (V) EN DIRECCIÓN DE LA ROTACIÓN NORMAL HASTA QUE LA TOMA (W) LLEGUE A SU POSICIÓN MÁS ALTA.
2. EN ESE MOMENTO, CON LA MÁQUINA ENCENDIDA, AFLOJE LOS DOS TORNILLOS COLOCADORES (X) Y GIRE EL DISCO SINCRONIZADOR EN SENTIDO CONTRARIO A LAS MANECILLAS DEL RELOJ HASTA QUE EL MAGNÉTICO DEL DISCO QUEDA ALINEADO CON EL SENSOR DEL HALL Y SE ENCIENDA LA LUZ VERDE DEL TABLERO DEL SINCRONIZADOR.

B. CRONOMETRAJE DEL FINAL DEL CICLO

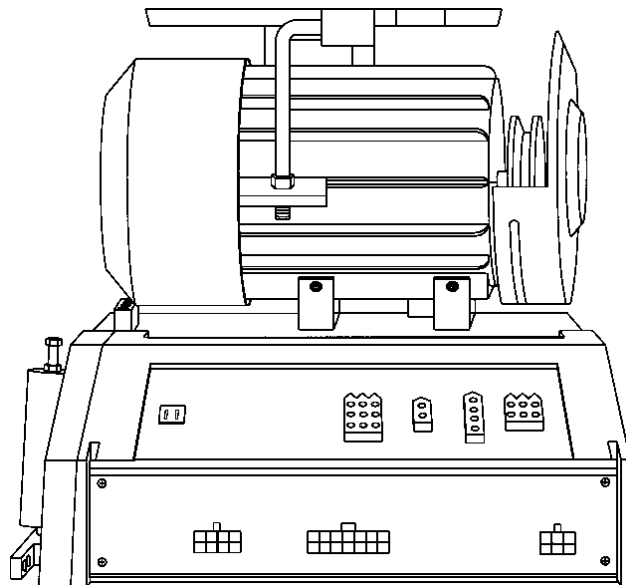
UN SENSOR DE PROXIMIDAD Y UN MAGNÉTICO SE USA PARA DETECTAR EL FINAL DEL CICLO HABITUAL. EL AJUSTE DEPENDE DE LA COLOCACIÓN DEL SENSOR DEL FINAL DEL CICLO (EOC).

1. DEJE UN ESPACIO DE 1/8 DE PULGADA ENTRE EL SENSOR DE PROXIMIDAD (Y) Y EL MAGNÉTICO (P).
2. ROTE A MANO LA RUEDA MANUAL DE LA MÁQUINA DE COSER PARA QUE LA VOLANTA DE LA PUNTADA SE COLOQUE EN LA POSICIÓN DE ARRANQUE CON LA AGUJA EN LA POSICIÓN ARRIBA.
3. ENCIENDA LA MÁQUINA Y ASEGÚRESE QUE LA LUZ AMARILLA DEL TABLERO DEL SINCRONIZADOR SE ENCUENTRE APAGADA.
4. POSICIONE EL RETENEDOR DEL MAGNÉTICO (Z) EN EL PLATO DE LA VOLANTA DE LAS PUNTADAS LEJOS DEL SENSOR Y EN EL LADO OPUESTO A LA DIRECCIÓN QUE ROTA NORMALMENTE DICHA VOLANTA. ASEGÚRESE QUE LA LUZ AMARILLA TODAVÍA ESTÉ APAGADA.
5. MUEVA LENTAMENTE EL RETENEDOR DEL MAGNÉTICO ACERCÁNDOLO AL SENSOR HASTA QUE LA LUZ AMARILLA DEL TABLERO DEL SINCRONIZADOR SE ENCIENDA. ASEGURE EN SU LUGAR EL RETENEDOR DEL MAGNÉTICO CON EL TORNILLO.
6. OPERE LA MÁQUINA. COMPRUEBE LAS POSICIONES DE DESACELERACIÓN, CORTE Y DETENIMIENTO DE LA MÁQUINA. SI NO SON CORRECTAS, PUEDE SER NECESARIO CAMBIAR EL PARÁMETRO MEDIANTE EL USO DE LA PANTALLA LCD.

ML890TKR-43A

CLINTON MODEL 890TKR A890 SERIES

SERVO MOTOR POSITIONER/TRIMMER FOR TACKER SEWING MACHINES



SERVICE MANUAL

40-0235-01



Clinton Industries, Inc.
700 Washington Ave.
Carlstadt, N.J. 07072
Phone: 201-935-4242
Fax: 201-935-3615
Web Site: <http://www.clintonind.com>
Email: general@clintonind.com



TABLE OF CONTENTS

SECTION	I - INTRODUCTION	1-1
SECTION	II - INSTALLATION	2-1
	A. MOTOR	2-1
	B. LCD DISPLAY	2-1
	C. SWITCH BOX	2-1
	D. POWER AND CABLE CONNECTIONS	2-1
	E. MOTOR ROTATION	2-2
SECTION	III - ADJUSTMENTS	3-1
	A. SYNCHRONIZER TIMING	3-1
	B. PROXIMITY SENSOR	3-1
SECTION	IV - PROGRAMMABLE LCD DISPLAY	4-1
	A. PARAMETER ADJUSTMENTS	4-1
	B. MASTER RESET	4-3
	C. PULLEY RATIO	4-3
	D. TEST PROGRAM	4-3
SECTION	V - CONNECTOR DIAGRAMS	5-1
SECTION	VI - DRAWINGS AND PARTS LIST	6-1
	A. MAJOR ASSEMBLIES	6-1
	B. MOTOR ASSEMBLY, DC SERVO	6-2
	C. CONTROL BOX ASSEMBLY	6-4
	D. SYNCHRONIZER ASSEMBLY	6-5
	E. SYNCHRONIZER ASSEMBLY	6-6
	F. END OF CYCLE SENSOR	6-7
	G. PROGRAMMABLE DISPLAY	6-7



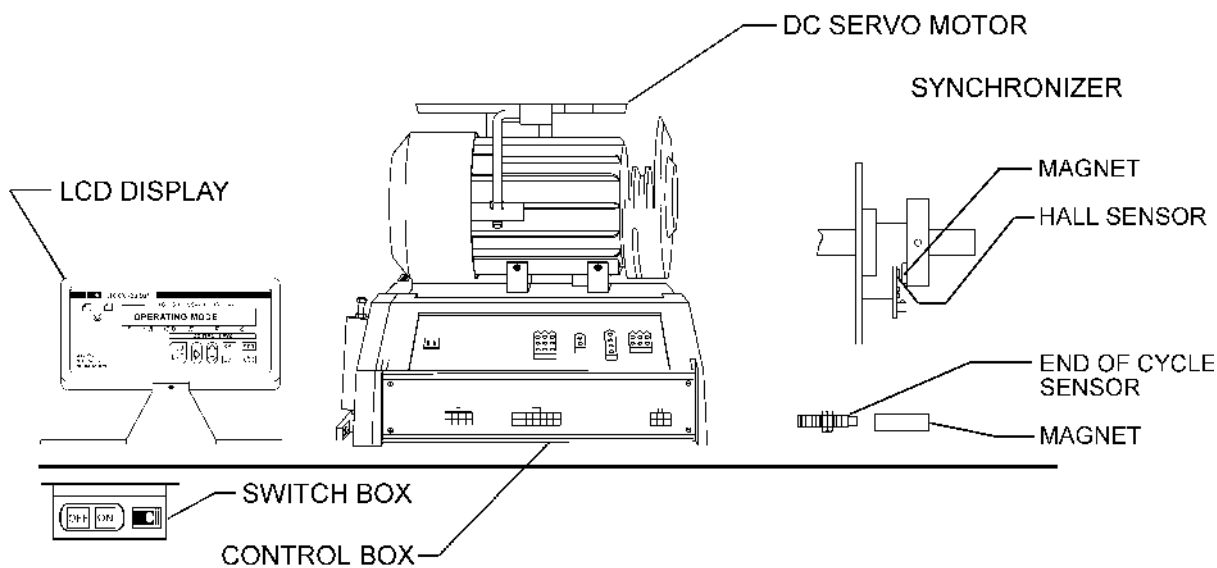
INTRODUCTION

A. SYSTEM DESCRIPTION

Clinton's Model 890TKR is an electronically controlled variable speed drive for industrial sewing machine tackers. The system consists of a brushless DC Servo motor, a hall effect synchronizer, end of cycle sensor, foot or hand switch and programmable LCD display.

The drive is used to replace the mechanical stop motion mechanism used in tackers. Air cylinders are used to operate the clamp lift and on some machines, the trimmer. No clutches or brakes are used. The result is a smooth, reliable and accurate stop motion system.

The components of the system are shown below.



B. OPERATION

A foot or hand switch is used to start the sew cycle. It is also used to drop the clamp without sewing. When the switch is fully depressed, the sew cycle begins.

Initially the machine sews at a speed of about 900 RPM for a few stitches to prevent skipped stitches. The speed and number of stitches can be adjusted. The machine then accelerates to maximum speed until the end of cycle sensor is sensed. At this time the machine decelerates to about 800 RPM. After sewing a few stitches, the synchronizer hall sensor detects needle up. The machine speed then ramps down during the final stitch and stops at needle up. During this time the trimmer is operated. The work clamp is lifted after the machine stops.



INSTALLATION

A. MOTOR INSTALLATION

Refer to instructions for specific machine being installed.

B. LCD DISPLAY

Mount the LCD display console at a convenient location on the table top.

C. SWITCH BOX

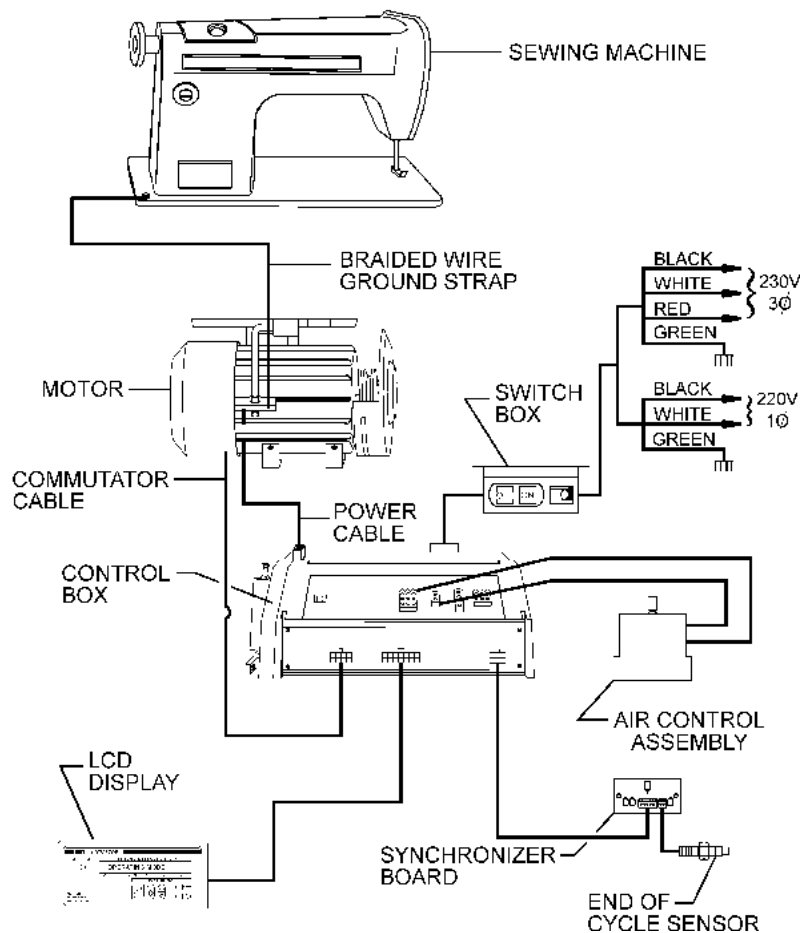
Install switch box at a convenient location under the table.

D. POWER AND CABLE CONNECTIONS

Refer to figure below and connect all cables as shown. The system can be operated from 230V, 3 phase or 230V, 1 phase power.

Caution: It is important that the ground wire be connected between the motor and sewing machine to prevent a static charge buildup.

CABLE DIAGRAM
890TKR





E. MOTOR ROTATION

Temporarily remove the "V" belt. Turn power on then move the pedal forward and note the direction of motor pulley rotation. If incorrect, do the following:

1. Turn power off.
2. Refer to section V-B, Hidden Parameters, and follow the instructions to change motor rotation. The parameter is in the "**** Toggle Switches" group.
3. Install the "V" belt.



ADJUSTMENTS

A. SYNCHRONIZER TIMING

A hall effect sensor/magnet is used to sense when the machine is in the Needle Up position. Refer to figure 3-1 below and adjust the disc as follows:

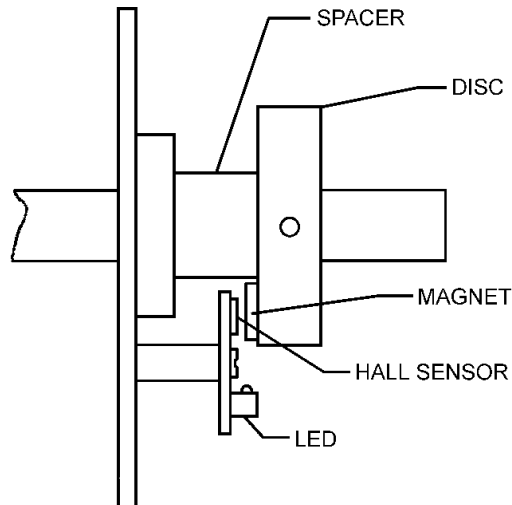


FIG. 3-1

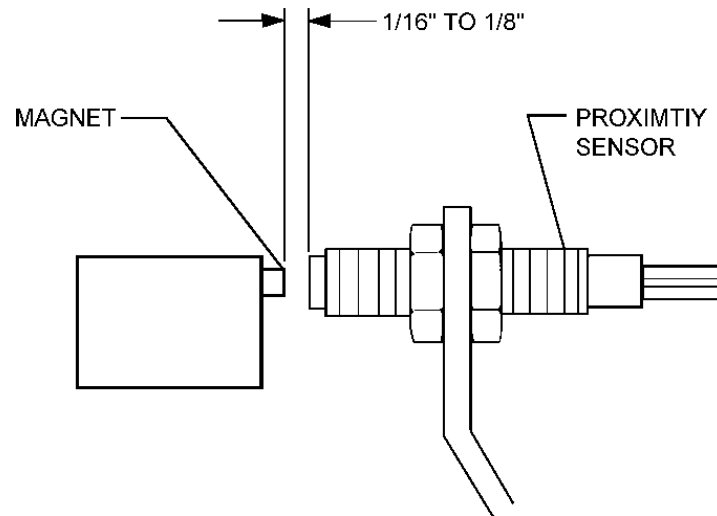
1. Turn power on.
2. Loosen the disc locking screws.
3. Rotate the machine handwheel until the takeup is in the proper position for trimming.
4. Rotate the disc in the direction that the machine normally turns until the green Led on the synchronizer PC board turns on. While turning, push the disc against the spacer.
5. Lock disc in place.

B. PROXIMITY SENSOR

A proximity sensor/magnet is used to sense the end of cycle. The sensor is activated a fixed number of stitches before the machine stops. The number of stitches is set by the "END COUNT" parameter. See section IV. The default count is three (3).

Adjust the proximity sensor and magnet as follows:

1. Adjust the gap between the proximity sensor and magnet to between 1/16" and 1/8". See figure 3-2.
2. Start with the machine in the home position and the takeup "UP".
3. Rotate the handwheel in the reverse direction, by hand, 3-1/2 stitches. If the "END COUNT" parameter has been changed, use this number plus 1/2 stitch.
4. Turn power on.
5. Move the magnet in the direction the cam normally rotates, until the amber light on the synchronizer board turns on. Lock the magnet holder in place.

**FIG. 3-2**

Operate the machine and check for positioning accuracy and speed. If the machine does not stop in the proper position, readjust the synchronizer disc. The speed of the machine, during the last stitch, can be changed with the "POSITION" parameter in the ****SPEEDS group. See section IV.



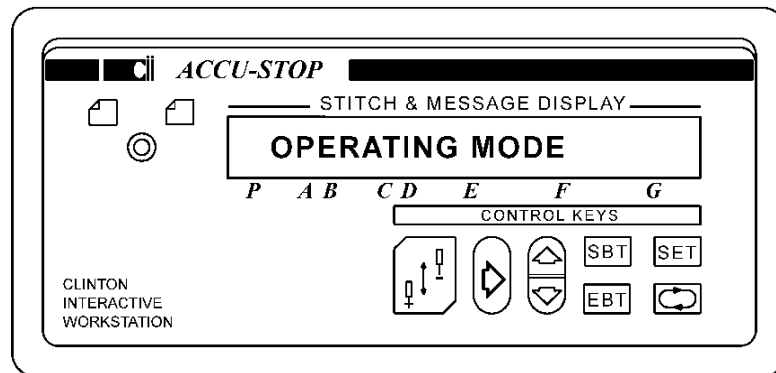
PROGRAMMABLE LCD DISPLAY

The LCD display, shown in figure below is used to program and set the various parameters of the 890TKR; SPEEDS, TIMERS, COUNTERS and TOGGLE SWITCHES.

Two (2) different modes of operation are available. They are:

1. Operating Mode
2. Programming Mode

When power is turn on, the display is in the operating mode.



The parameters are separated into 2 main groups, as shown in the following tables. They can be changed or reset to their default values, as described below. In addition, the LCD module can be used to display the pulley ratio and test the synchronizer, speed control and motor encoder.

A. PARAMETER ADJUSTMENTS

Table 1 is divided into four (4) subgroups, SPEEDS, TIMERS, COUNTERS and TOGGLE SWITCHES. Table 2 is divided into three (3) subgroups, SPEED, MISCELLANEOUS and TOGGLE SWITCHES. To change a parameter, follow the sequence described below.





1. Press the  key to enter the programming mode. Continue pressing this key until the parameter group that is to be changed is displayed. As an alternative; press the **SET** key to enter the programming mode and display the last changed parameter.
2. Press the **SET** key to step to the next parameter in the selected group.
3. Press the  key to increase or the  key to decrease the contents of the display parameter. Both keys are used to toggle parameters between states in the Toggle Switches group. Hold the key closed to make the display step automatically.
4. Press the  key to return to the operating mode.



TABLE 1

PARAMETER	DESCRIPTION	FACTORY SETTINGS			RANGE
		JUKI 980	SINGER 269	BROTHER	
	SPEED GROUP	RPM			RPM
SLOW STRT	Initial start speed. Sews at this speed for number of stitches set by soft strt count parameter.	700	700	700	150-1000
END SPEED	Speed for last stitch.	1600	1600	1600	800-2200
	TIMER GROUP	MISCELLANEOUS			
STRT DEL	Delays machine start to allow clamp to drop. When parameter "Pdl Start" is set to "Continuous", this is the time from the end of one cycle to the start of the next.	100	100	100	10-500
WAIT TIME		350	350	350	10-1000
	COUNTER GROUP	STITCHES			
SLOW STRT	Number of stitches sewn at slow strt speed at start of cycle. Number of stitches sewn after end of cycle sensor is detected.	2	2	2	0-25
END COUNT		3	3	3	1-200
	TOGGLE SWITCHES				
NOT N/U CLP	If set to "UP", clamp remains up if machine is not in up position. If set to "CONTINUE", machine will restart after "wait time" seconds when foot switch is held closed. If set to "ON", soft start feature is enabled. See soft start in speed group.	UP	UP	UP	UP/DOWN
PDL START		CONTINUE	CONTINUE	CONTINUE	CONTINUE/ NEUTRAL
SLOW ST		OFF	OFF	OFF	ON/OFF





TABLE 2

PARAMETER	DESCRIPTION	JUKI 980	SINGER 269	BROTHER	RANGE
	****SPEEDS	RPM			RPM
POSITION	Machine speed during the position cycle. If *** Tgl switch "position" is set to "w/ramp", position speed affects the slope of the ramp. If "no ramp" is selected, position speed is constant and can be changed by this parameter.	260	260	260	100-400
MAXIMUM	Maximum sewing machine speed.	2200	1700	2300	1000-2400
	****MISC	MISCELLANEOUS			
PF DUTY	Average voltage applied to Pr. Ft. solenoid. The voltage should be high enough to keep the solenoid energized without overheating.	3	3	3	2-10
TRIM ON	Percentage of last (position) stitch that trimmer is on.	10	10	10	4-10
TURNBAK	At end of cycle motor reverses to raise needle. Encoder increments are counted. 180 increments equals 1 revolution.	65	65	65	1-250
	****TOGGLE SWITCHES				
DIRECTION POSITION	Direction of motor rotation viewed from pulley. Select position with ramp or position at constant speed.	CCW W/RAMP	CW	CCW W/RAMP	CW/CCW W/RAMP NO RAMP ON/OFF
TURNBAK	Turns turnbak on or off. See turnbak parameter in ****MISC GROUP.	OFF	OFF	OFF	
SAFETY SW	Enables or disables safety switch.	DISABLED	DISABLED	DISABLED	ENABLED/DISABLED
SAFETY SW SEW	Determined by configuration of safety switch. If normally open type set to OPN; if normally closed set to CLS.	OPN	OPN	OPN	OPN/CLS
MOTOR	Determines type of motor. Type 2 is new design.	TYPE 2	TYPE 2	TYPE 2	TYPE 1/ TYPE 2





B. MASTER RESET

In some cases it may be necessary to reset all parameters to their default values. This is done as follows:





1. Turn power off, if it is on, then wait until the display goes blank.
2. Press the  key,  key and  key simultaneously. Keep pressed then,
3. Turn power on. The LCD displays "PUSH SET TO RESET".
4. Push the  key within 10 cycles.
5. The word "Programming" is displayed. The parameters will be reset to their default values after a few seconds.

C. PULLEY RATIO (RATIO BETWEEN MOTOR AND MACHINE PULLEYS)

During the initial setup and after power is first turned on, the pulley ratio must be calculated. The pedal must be moved to the maximum forward position to do this. While the ratio is being taken, the machine speed is limited for several stitches. After the ratio is taken, the machine will then accelerate to maximum speed.

Each time power is turned off then back on, the ratio is checked when the pedal is moved forward the first time. If the ratio has changed, because of a pulley change, then the ratio will be recalculated. The ratio can be displayed by pressing the  and  keys simultaneously. If the ratio is correct, a star (*) will be displayed after the ratio number.

D. TEST PROGRAM

A test program is available to test the speed control, synchronizer and encoder for proper operation. To select the program, press the  and  keys simultaneously. The word "Test Program" is displayed. Press the  key to toggle between each test, i.e. Treadle, Synchronizer or Encoder. Press the  key to activate whichever test is selected.

1. Treadle Test

- a. Move the pedal from neutral to heel 1 to heel 2. The display indicated each position.
- b. Move the pedal forward, slowly. As the pedal is moved a number (0 to 255) proportional to the position of the pedal is displayed. The lowest number should not be more than 8 and the highest number not less than 250 with the "Maximum Speed" pot set to its maximum clockwise position.
- c. With the pedal full forward, rotate the maximum speed pot ccw. The displayed count should decrease as the pot is turned. Return the pot to its maximum cw position.

2. Synchronizer

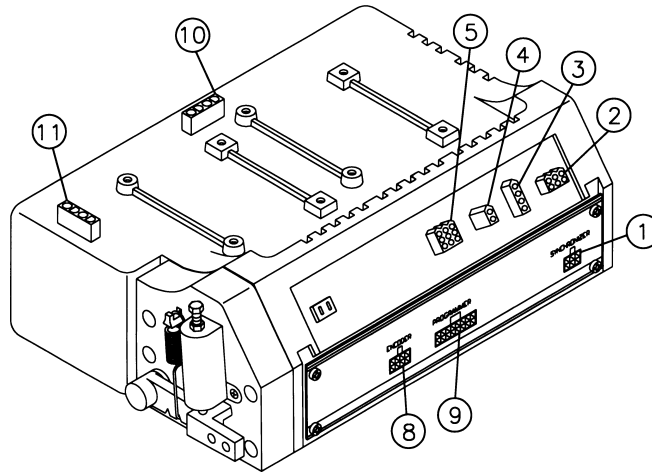
Rotate the handwheel. As the synchronizer passes through the UP, DOWN and TRIM position, the display will indicate each of these positions.

3. Encoder

Push the pedal forward as indicated. The speed will vary with pedal position but will not go to maximum speed. The pulley ratio will be displayed at all positions of the pedal and should agree, ± 1 or 2 counts, with the actual pulley ratio (see section D).

SECTION V**CONNECTOR DIAGRAMS**

Listed below are the pinouts for the Model AS 890 control box connectors.



NO.	TOTAL PINS	CONNECTOR	PIN NO.	FUNCTION
1	6	SYNCHRONIZER	1 2 3 4 5 6	+5 DOWN SENSOR UP SENSOR TRIM SENSOR GND LED
2	6	AUX INPUTS	1 2 3 4 5 6	+5 GND CHASSIS GND I 1 I 2 I 3
3	4	AUX OUTPUTS	1 2 3 4	+48 V R1 +48 V R2
4	2	FOOTLIFT	1 2	FOOTLIFT SOL. +48V
5	9	TRIM SOLENOIDS	1 4 2 5 3 6 7 8 9	NOT USED NOT USED TRIMMER SOL. - TRIMMER SOL. +(48V) NOT USED NOT USED NOT USED NOT USED NOT USED



NO.	TOTAL PINS	CONNECTOR	PIN NO.	FUNCTION
8	8	COMMUTATOR	1 2 3 4 5 6 7 8	+5 ENCODER (S1) ENCODER (S2) SIG. GND PHASE C PHASE B PHASE A -5V
9	16	LCD DISPLAY	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	EXIT1 CHASSIS GND +5V GND D0 D1 D2 D3 D4 D5 D6 D7 CA1 E ERD CA0
10	4	AC POWER 220V, 3 PHASE	1 2 3 4	PHASE A PHASE B PHASE C CHASSIS GND
11	4	MOTOR VOLTAGE	1 2 3 4	PHASE A PHASE B PHASE C CHASSIS GND



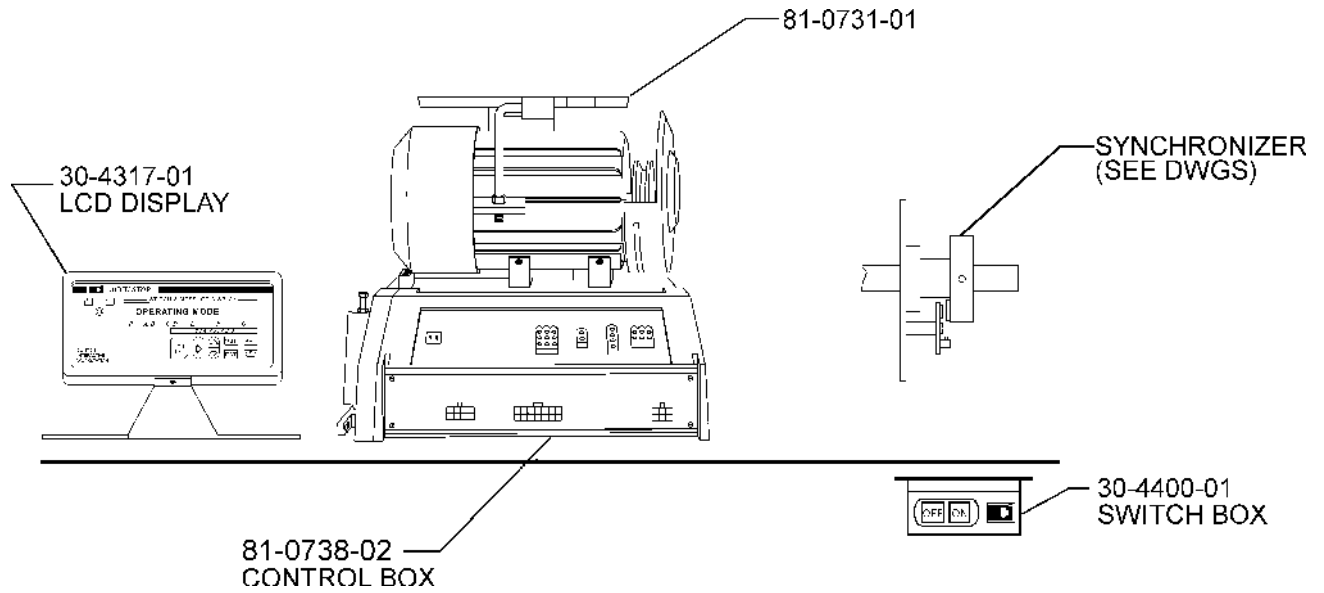
DRAWINGS AND PARTS LIST

MODEL 890TKR

81-0748-02 (WITH LCD)

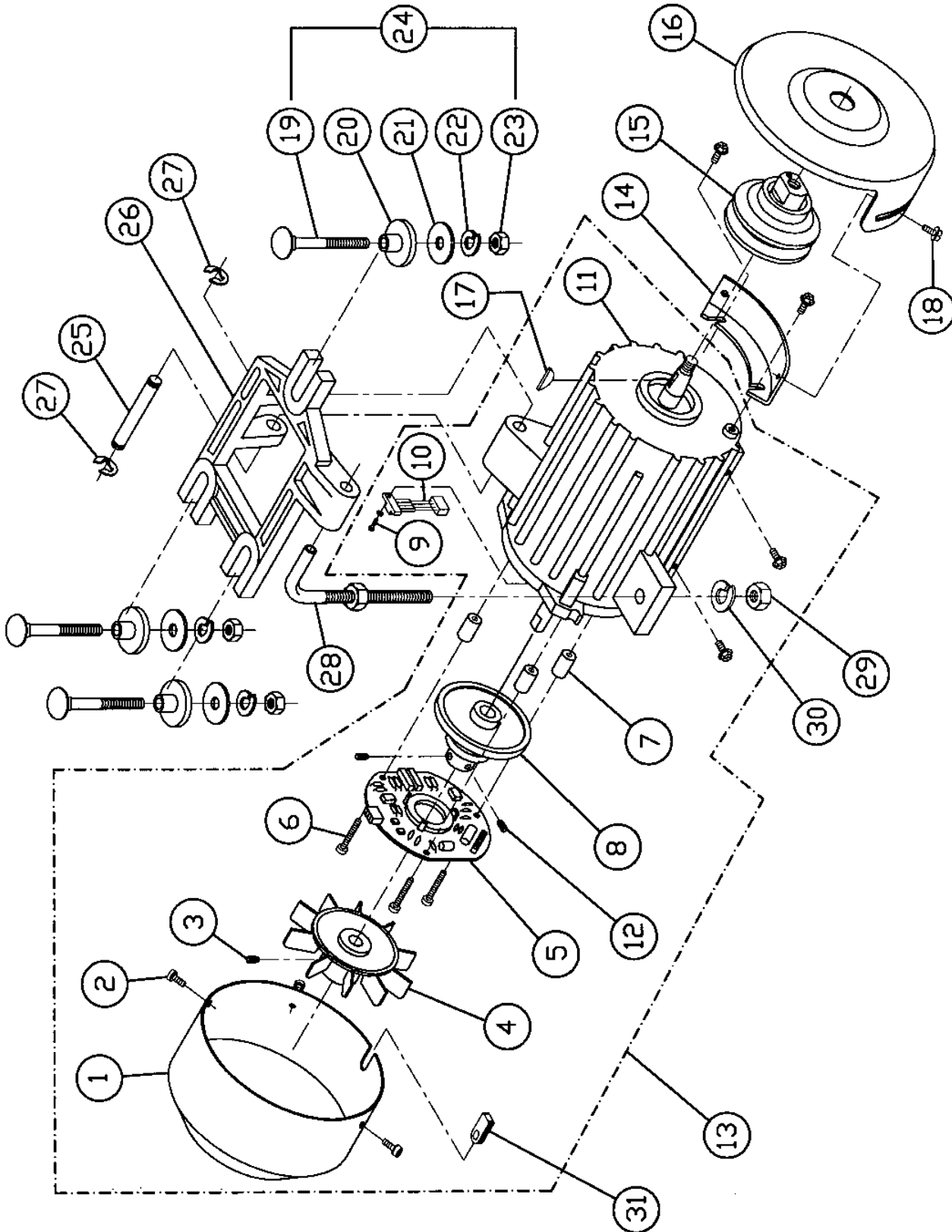
81-0787-02 (NO LCD)

A. MAJOR ASSEMBLIES





B. MOTOR ASSEMBLY DC SERVO
81-0731-01





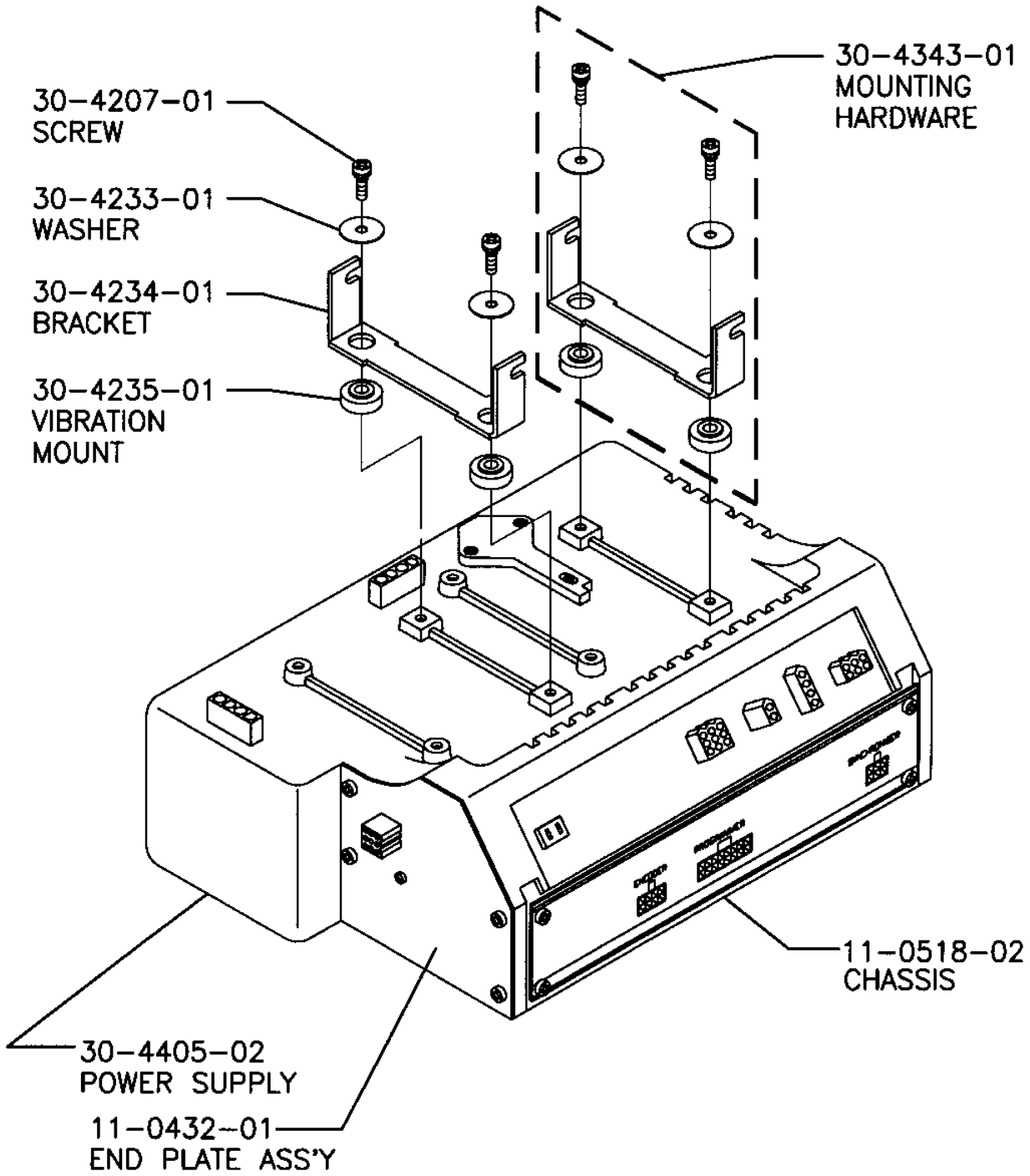
MOTOR ASSEMBLY PARTS LIST, DC SERVO

81-0731-01

ITEM	DESCRIPTION	PART NO.	QUANTITY
1	COVER	30-4433-01	1
2	SCREW	30-4434-01	3
3	SCREW, S.S.S.	30-4435-01	2
4	FAN	30-4436-01	1
5	PC BOARD, ENCODER	30-4437-01	1
6	SCREW	30-4438-01	3
7	SPACER	30-4439-01	3
8	ENCODER DISC	30-4440-02	1
9	SCREW	30-4441-01	1
10	ENCODER SENSOR	30-4442-01	1
11	MOTOR, DC	30-4443-01	1
12	SCREW, S.S.S.	30-4444-01	2
13	MOTOR/ENCODER ASSEMBLY	81-0732-01	1
14	BELT GUARD, FIXED	30-4445-01	1
15	PULLEY - 50MM	30-4204-50	1
	PULLEY - 60MM	30-4204-60	1
	PULLEY - 65MM	30-4204-65	1
	PULLEY - 70MM	30-4204-70	1
	PULLEY - 75MM	30-4204-75	1
	PULLEY - 80MM	30-4204-80	1
	PULLEY - 85MM	30-4204-85	1
	PULLEY - 90MM	30-4204-90	1
	PULLEY - 95MM	30-4204-95	1
	PULLEY - 100MM	30-4204-100	1
	PULLEY - 105MM	30-4204-105	1
	PULLEY - 110MM	30-4204-110	1
	PULLEY - 115MM	30-4204-115	1
	PULLEY - 120MM	30-4204-120	1
	PULLEY - 125MM	30-4204-125	1
	PULLEY - 130MM	30-4204-130	1
	PULLEY - 140MM	30-4204-140	1
	PULLEY - 150MM	30-4204-150	1
16	BELT GUARD, ADJUSTABLE	30-4203-01	1
17	KEY, PULLEY	30-4227-01	1
18	SCREW M5 X 10 HEX HD.	30-4206-01	2
19	BOLT, CARRAIGE	30-4298-01	3
20	SPACER	30-4332-01	3
21	WASHER, FLAT	30-4300-01	3
22	WASHER, SPLIT LOCK	30-4301-01	3
23	NUT, HEX	30-4229-01	3
24	HARDWARE KIT, MOTOR MOUNT	30-4337-01	1
25	PIN	30-4219-01	1
26	BRACKET, MOTOR MOUNT	30-4446-01	1
27	SNAP RING	30-4220-01	1
28	BOLT, ADJUSTING	30-4205-01	1
29	NUT, HEX	30-4210-01	1
30	WASHER, SPLIT LOCK	30-4218-01	1
31	GROMMET	30-4472-01	1

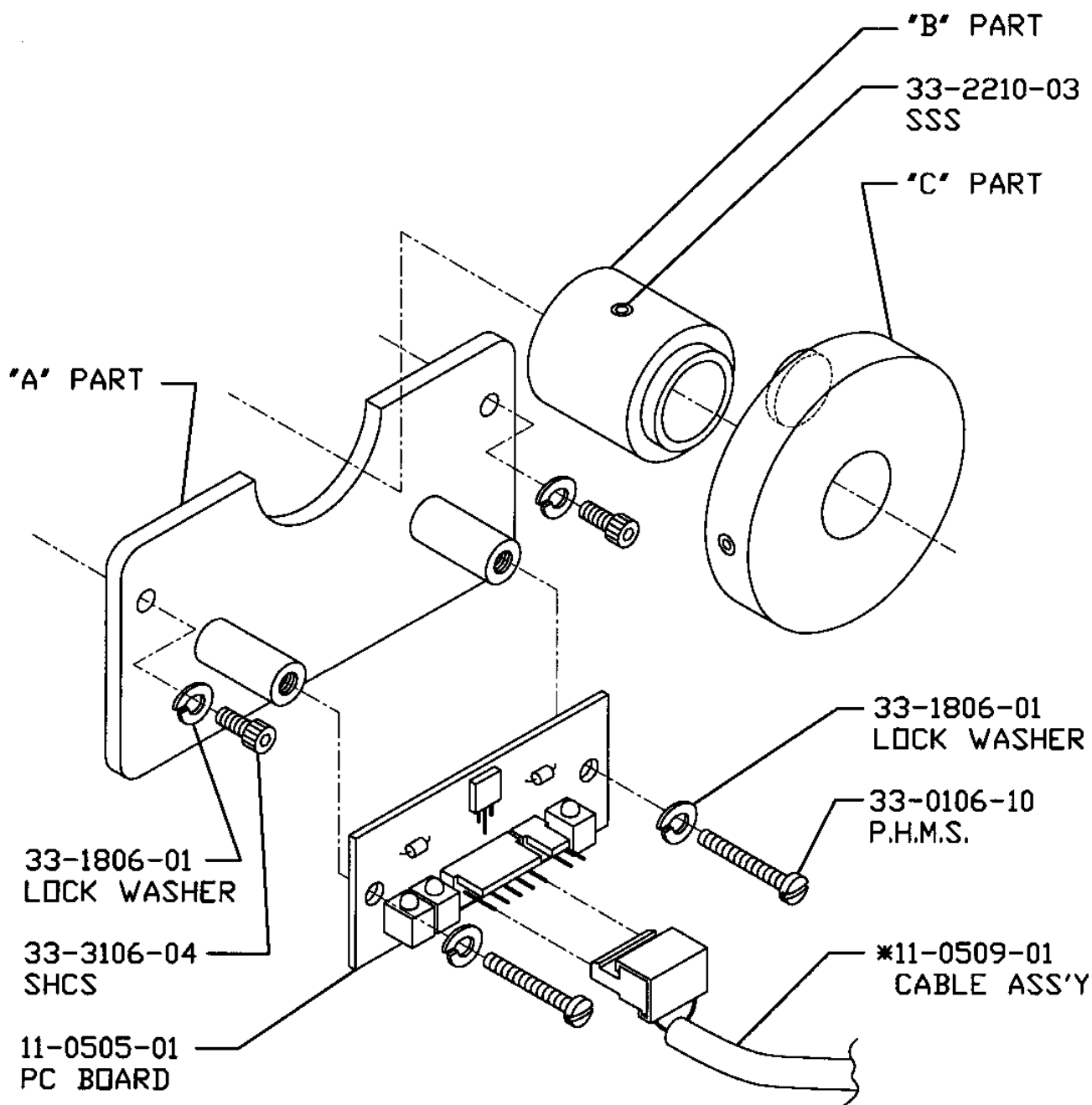


C. CONTROL BOX - DC SERVO
890TKR-FS, 890TKR-HS
81-0738-02





D. SYNCHRONIZER ASS'Y - 890TKR

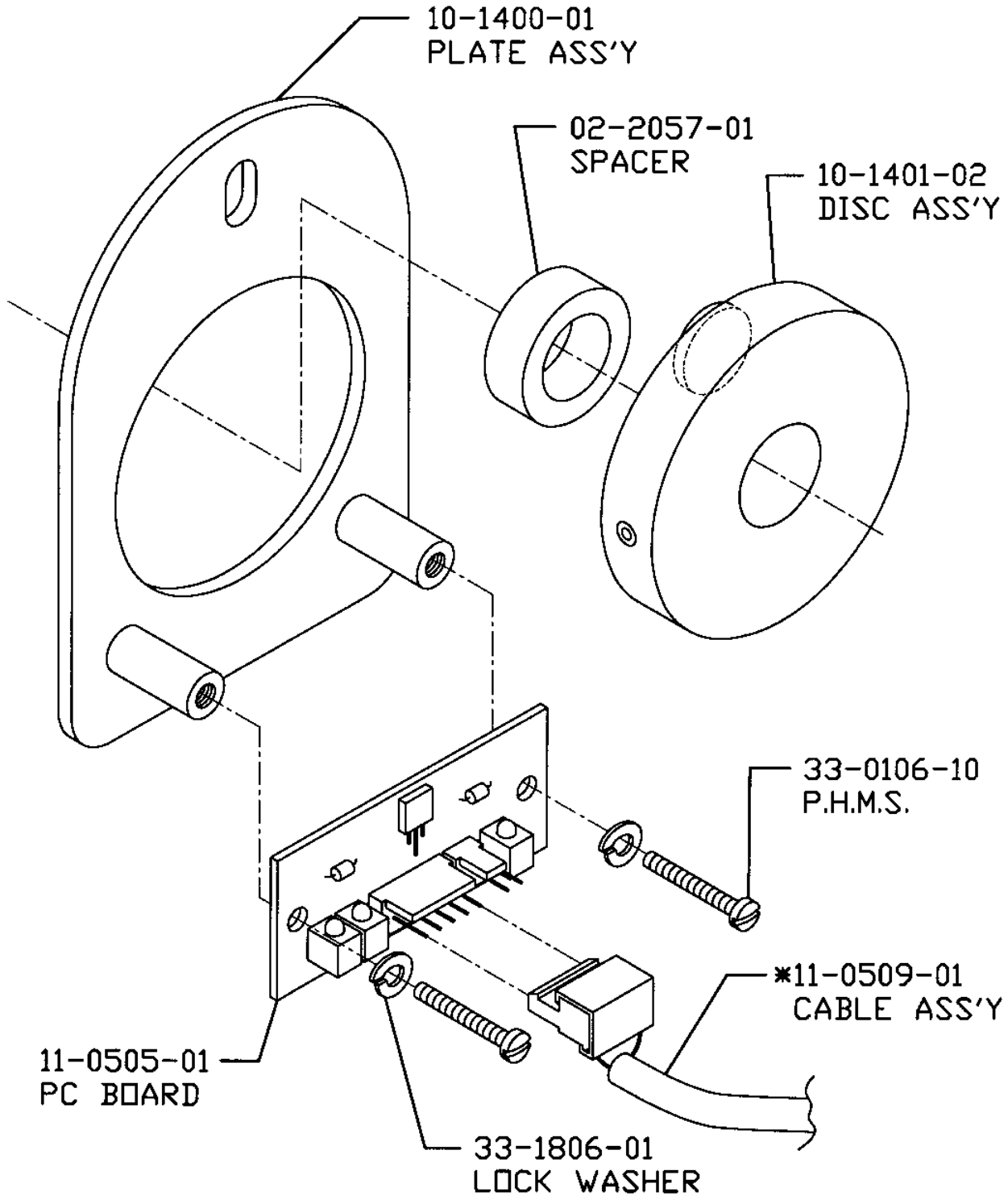


* NOT PART OF SYNCHRONIZER ASS'Y

11-0515-01	BROTHER LK430	10-1402-02	02-3184-02	10-1401-01
11-0514-01	JUKI LK280	10-1402-01		10-1401-03
11-0512-01	JUKI 980, 1850	10-1402-01	02-3184-03	10-1401-01
ASS'Y PART NO.	MACHINE	'A' PART	'B' PART	'C' PART



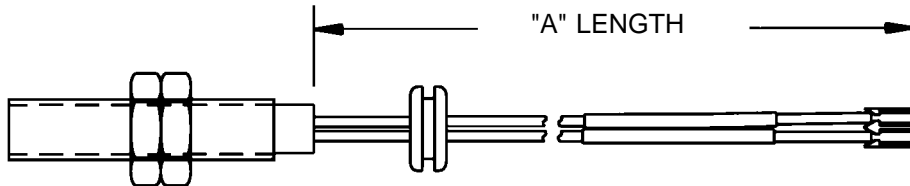
E. SYNCHRONIZER ASS'Y - 890TKR
SINGER 269
11-0513-01



* NOT PART OF
11-0513-01

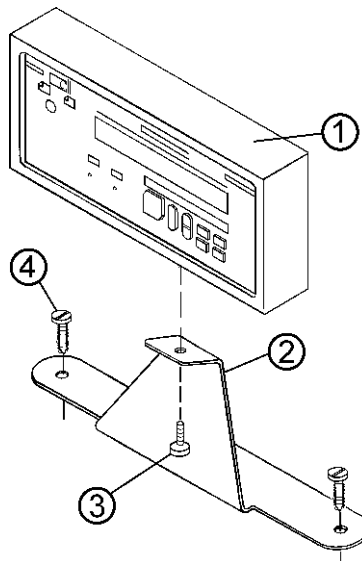


**F. END OF CYCLE SENSOR
MODEL 890TKR**



11-0510-03	16 "	BROTHER LK3-8430, SINGER 269
11-0510-02	8 "	JUKI 980
11-0510-01	12 "	SANLI LK-1999, JUKI LK-1850
PART NO.	" A " LENGTH	MACHINE

G. PROGRAMMABLE DISPLAY



ITEM	DESCRIPTION	PART NO.	QUANTITY
1	PROGRAMMABLE DISPLAY	30-4321-01	1
2	BRACKET, MOUNTING	30-4286-01	1
3	SCREW M4 X 12	30-4287-01	1
4	SCREW	30-4288-01	2