Film-Tech

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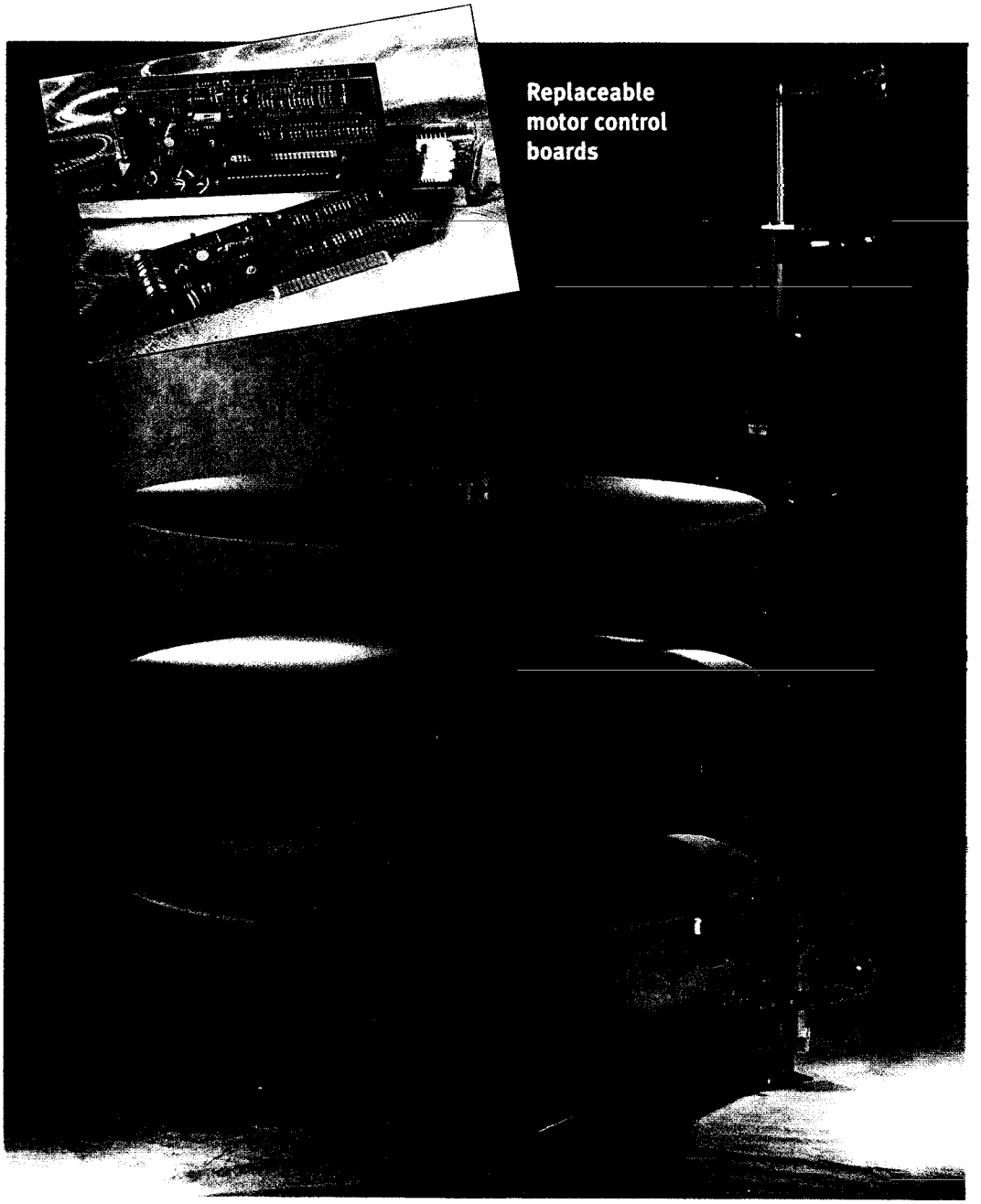
www.film-tech.com

Platter System
LP280



The "smartest" digital platter system...with easily replaceable motor control boards!

- Interchangeable motor control boards slide in and out for easy maintenance
- Signal lights tell you power supplied to boards is OK
- Easy to run, simple to repair
- Totally digital technology

SPECO
Systems & Products Engineering Company

709 N. 6th St. Kansas City, KS 66101 1-800-633-5913 • e-mail: info@speco-usa.com

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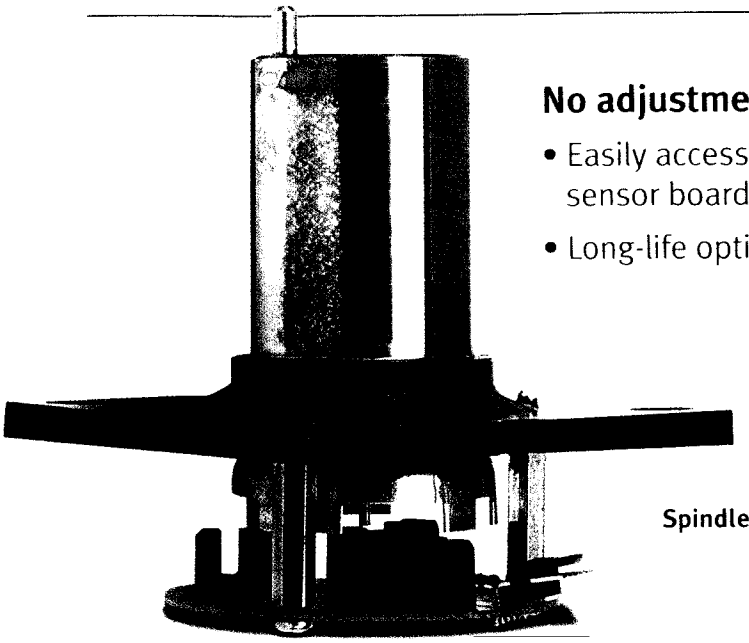
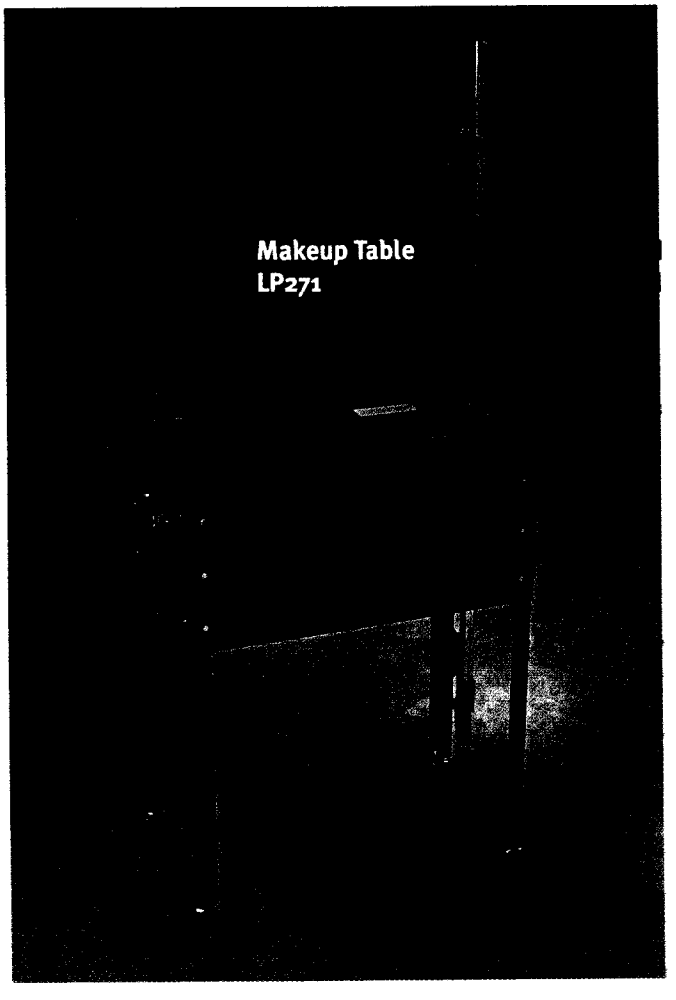


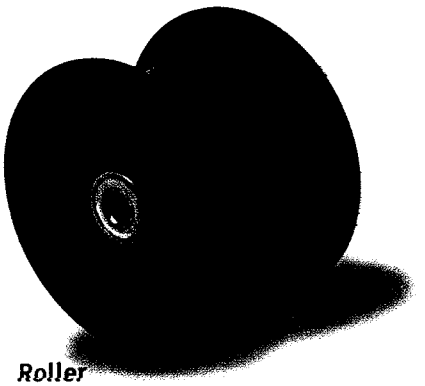
No adjustments necessary...ever!

- Easily accessible and replaceable sensor board
- Long-life optical sensors

Spindle Assembly



Makeup Table
LP271



Roller
021-0015-05

New roller means less static buildup.

- Conductive plastic carries static charge away from film
- Available with or without bearings
- Durable and long-lasting

An integral part of the digital platter system...

- All steel construction
- Locking casters
- Controls platter deck speed in emergencies

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DIGITAL PLATTER SYSTEM
LP 280

1 No adjustments, including replacement speed control sensors and motor control boards.

2 No switching for pay-out and take-up mode selection. When film thread-up is complete, system is ready to run.

3 Minimal assembly required. Simply attach base legs, level the system and install the platters.

4 Long life, solid state digital optical sensors for pay-out and take-up speed controls.

5 Solid state status display indicates function of each platter (pay-out, take-up, and work table tasks).

6 Electronic brake for each platter during take-up function.

7 Pay-out and take-up functions are independent.

8 Pay-out overtension failsafe senses head wraps for system shut down – available on all units.

9 Long life, permanent magnet DC motors. Cool and efficient pulse drive.

10 Motor control boards are plug-in type, readily accessible and easy to replace. With three identical boards, one becomes a virtual spare.

11 End-of-show take-up failsafe switch signals automation system to shut down.

12 Motors may be disengaged from platters to facilitate film break-down.

13 Magnetic return to "Off" position on pay-out control arm stops platter when film runs out.

14 If electronic speed control fails, work table can be used to run platter unit until repairs can be made.

15 Anti-Static conductive platter surfaces and film rollers.

16 Maintains steady motor speeds with varying power line voltages (surges and brownouts).

SPECO
Systems & Products Engineering Company

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LP 280
DIGITAL SWITCHLESS FILM TRANSPORTATION SYSTEM

TABLE OF CONTENTS

LP 280 MANUAL
SECTION A: SYSTEM DESCRIPTION

The LP 280-3 Platter System is self-configuring. When a film path is completed from a payout platter to the projector and back to the takeup platter, it is ready to operate.

When a removable payout assembly is inserted into a platter's spindle, that platter is designated as the payout platter. Likewise, when the takeup roller assembly is positioned at the level of a platter, that platter is designated as the takeup platter.

Each motor has a Motor Control Board installed on a Mother Board. All the active electronics are located on an easily accessible panel, located near the top front of the column. A single thumb screw secures the panel.

Three status lights on the front of the panel indicate the function of each platter. The payout light is red, the takeup light is green and the worktable function light is yellow.

Makeup and Breakdown functions are performed by the LP 271B Work Table. A toggle switch, one at each platter level, routes a motor to platter functions (payout and takeup) when the switch actuator is up and to the worktable when the actuator is down. Makeup or Breakdown functions are selected by a switch on the Work Table.

Line power to the Work Table is protected by a separate fuse on the column's power junction box.

MOTOR CONTROL BOARD

Each of the three plug-in Motor Control Boards are essentially independent, with its own motor power supply and logic power supply. The only shared components are the power transformer and the Takeup Control Assembly.

Green indicator lamps near the top edge of the Motor Control Board show the presence of 65 volt motor power and 12 volt logic and control power.

AC lines from the power transformers are protected by resettable PTC fuses. Should an overload to one of the on-board power supplies occur, the fuses will limit the current to a safe low level. When the overload is removed, the fuse will cool and restore power automatically.

Motor speed is controlled by Pulse Width Modulation, or the percentage of time that power is applied to the motor. Signals from the payout and takeup assemblies consist of three optical switch lines. Different combinations of "on" and "off" switches generate digital numbers that are presented to a digital-to-analog (D/A) converter which then generates precise analog voltages.

The analog voltage forms one input to a voltage comparator. The other input is a sawtooth ramp. For the time that the analog voltage is higher than the sawtooth ramp, gate drive is applied to a MOSFET power transistor. The MOSFET is an efficient switch that turns motor power on and off with very little heat generation.

The rate of ramp generation is approximately 20 Khz.

An optical switch in the payout assembly goes "high" when the removable payout is installed, to cause the D/A to select the payout lines for processing.

A microswitch, actuated by the takeup roller assembly, goes "low" to select the takeup lines for processing.

If both a payout assembly and the takeup roller are on the same platter, the takeup mode will be dominant and the presence of the payout assembly will be ignored. Both lights will be lit on the control panel, but the payout light will be meaningless.

In the takeup mode, when the required motor speed goes to zero, a relay on the Motor Control Board puts a short across the motor lines to act as an electrical brake. This will occur when the takeup roller raises slightly above the half-way point and also when the roller is at its lowest point.

PAYOUT SPEED CONTROL

Motor speed of the payout platter is controlled by the position of the control arm on the payout assembly. When the control arm is at its counter-clockwise stop, motor speed is zero. Maximum motor speed occurs when the control arm is at its clockwise stop.

The shaft that rotates with the control arm causes an encoder cup to rotate. This cup rotates through the slots of the three optical interrupters, mounted on a printed circuit board. Notches cut in the cup's wall allow light to shine across the slots, turning the interrupters "on".

The pattern of notches makes eight different combinations of "on" and "off" interruptions as the payout control arm rotates the encoder cup. These combinations generate eight digital numbers, one representing zero speed and the other seven represent speeds from slowest to fastest.

Since the speed generated by a certain combination rarely matches the required motor speed, the control arm assumes an angle that puts the encoder cup on the transition between two adjacent speeds. The control arm "dithers" slightly between the lower and higher speeds to produce the required average speed.

A fourth optical interrupter is turned "off" when a payout assembly is inserted and indexed at the platter spindle to cause the D/A converter on the Motor Control Board to decode the signals from the payout encoder. The four optical interrupters have their light-emitting diodes (LED's) connected in series and are powered from the related Motor Control Board.

TAKEUP SPEED CONTROL

Motor speed of the takeup platter is related to the vertical position of the Takeup Control Assembly roller located at the back of the Platter System. The fastest speed occurs when the roller is at its lower position and motor speed drops as the roller is raised.

When the roller is at the very bottom of its travel and slightly above half-way up and higher, a "zero" speed signal is generated that applies an electrical brake to the takeup platter's motor.

Encoder function of the Takeup Control Assembly is similar to the payout encoder, with three optical interrupters mounted on a printed circuit board. Three vertical vanes move up and down with the Takeup Control Assembly roller. The vanes are notched in a pattern and travel through the slots of the optical interrupters to generate seven steps of speed signals.

Like the payout encoder, the roller on the Takeup Control Assembly positions the vanes on the transition between two adjacent speeds. The roller "dithers" slightly up and down to develop the required average takeup motor speed.

The three optical interrupters have their light-emitting diodes (LED's) connected in series and are powered from the Motor Control Board that is in takeup mode.

MOTHERBOARD

The Mother Board is mounted on a panel which is located on the front of the platter column. The three Motor Control Boards plug into card edge connectors located on the Mother Board, identified as TOP (J1), CENTER (J2), and BOTTOM (J3).

Cables from the three payout spindle assemblies plug onto red, six-pin headers, (J9) for TOP, (J8) for CENTER, and (J7) for the BOTTOM. The TOP cable is labeled (1), the CENTER is (2), and the BOTTOM is (3).

Cables routing motor power plug onto white, six-pin headers, (J4) for the TOP motor, (J5) for the CENTER motor and (J6) for the BOTTOM motor. These cables are marked 1, 2, and 3 respectively.

The TAKEUP CONTROL ASSEMBLY connects to a red, five-pin header, (J11).

The work lights plug onto a white, three-pin header, (J12).

The remote-mounted power transformer plugs onto a white, seven-pin header, (J10).

Primary 120V power plugs onto two quick-disconnect terminals, (E1, and E2).

The only electronic components mounted on the MOTHER BOARD are the nine LED status lamps. These are mounted to the back of the board along with a transient suppressor mounted near (J10).

The top row of status lamps is for the TOP platter, the center row is for the CENTER platter, and the bottom row is for the BOTTOM platter.

1) Open the top of the shipping carton and cut all four vertical corners for access to the system

2) Attach the V-base. (Shipped in a separate box.)

3) Tip the column up to the vertical position. Remove packing material and fasteners, then position the Platter System at its intended operating point.

4) Make the column plumb by adjusting the three leveling screws. (Two screws located on V-base and one located on Column.)

5) Install platters on the arm spindles.

6) Two motor-tension springs, shipped with the system, must be placed behind each motor.

PRELIMINARY TESTS

1) Connect to AC power supply, the two work lights should be lit.

2) Check that all three toggle switches are up. (Up position is the Payout-Takeup position.)

3) Install a payout control assembly in one platter and position the take-up roller at one of the remaining two platters not containing the payout control assembly. The status lights should reflect these actions.

4) Both platters should be stopped. Moving the payout control arm clockwise should cause the payout platter to rotate counter-clockwise at increasing speeds.

5) Slowly raise the take-up speed control on the back of the column. The take-up platter should rotate counter-clockwise rapidly at first and at slower speeds as the roller is raised further. At approximately the half-way point of the roller travel, the platter should stop quickly with the electronic brake.

6) As the speed control roller is lowered, the platter speed should increase and brake quickly at the bottom.

7) Perform these checks so all three platter decks are tested in both payout and take-up modes.

PAYOUT FILM THREADING

When threading film through the payout assembly, the toggle switch on the side of the column may be set to the WORK TABLE position so the platter won't rotate if the control arm moves. Be sure to return the switch to the PAYOUT/TAKEUP position after the film is completely through the payout assembly.

If the TAKEUP roller is at the PAYOUT platter, this will also inhibit the payout platter from turning while threading up the payout assembly.

When paying out film from the top platter, the weight of the film may cause the payout control arm to actuate slightly even if the projector is not running. If this occurs, simply route the film through the payout roller located on the column for the center platter and/or bottom platter.

TAKEUP PLATTER FUNCTIONS

When wrapping film around the take-up ring on the take-up platter, the platter is difficult to turn due to braking in the take-up mode. This may also be overcome by temporarily setting the toggle switch to the WORK TABLE position. Be sure to return the switch to the PAYOUT/TAKEUP position after the initial wraps around the take-up ring are made.

When film threading through the projector and back to the take-up platter is complete, move the take-up platter by hand until the TAKEUP speed control roller begins to raise, then the take-up platter will turn, causing the speed control roller to raise to about the half-way point of its total travel. Then the electronic brake will cause the platter to stop quickly. Now the system is ready to function normally with the projector.

At the end of a feature, after the film leaves the projector, the take-up speed roller will drop to the bottom and cause the take-up platter to brake. The take-up speed roller may be manually raised to cause the take-up platter to turn until the tail end of the film is on the platter.

WORK TABLE FUNCTIONS

The LP 280 Platter System works with the LP 271 Work Table to make up and break down prints. A ten-pin rectangular receptacle near the bottom of the column mates with the cable from the Work Table.

To connect a platter motor to the Work Table, put the PAYOUT & TAKEUP/WORKTABLE toggle switch to the WORK TABLE position. This will also light the yellow work table indicator lamp on the front panel.

It is not necessary to have a Motor Control Board installed to perform work table functions, but the work table indicator lamp will not light.

In the breakdown mode, a spring-loaded, brake toggle switch on the work table will slow down or stop the break down platter. The switch puts a short across the platter motor.

If a Motor Control Board should fail during a feature presentation, the work table may be employed to turn a payout or takeup platter as an emergency measure until a new Motor Control Board is installed for that platter. Careful and constant monitoring of platter speed, controlled by the speed control on the work table, is required.

FAIL SAFES

There are two failsafes built into the LP 280 Platter System, one for payout problem detection and the other to detect takeup failure. Both employ microswitches and their leads are accessible in the power junction box at the bottom of the platter column.

PAYOUT OVERTENSION FAILSAFE

This failsafe detects failure of the payout system to deliver film to the projector at the required rate. A roller in the payout film path is normally at its lowest position, applying pressure on a normally open microswitch to force it closed. If film wraps around the payout assembly, the roller will climb along a vertical track. This will relieve pressure against the microswitch and it will revert to an open state. This event can cause an automation system to stop the projector and remove power from the platter system.

TAKEUP FAILSAFE

The takeup failsafe microswitch is located in the takeup assembly. When the takeup speed control roller is above its lowest position, the microswitch is normally closed. When the roller drops to the bottom due to a failure of the takeup system, or at the end of a feature, the roller assembly puts pressure on the microswitch and it goes to an open state. This event can cause an automation system to stop the projector.

GENERAL

The three motor control boards are identical. Since only two boards are used at any given time, the third board may be used as a spare to replace a suspected defective board.

NOTE: When removing or installing a motor control board, always remove the 120V power from the platter system

NOTE: When removing a motor control board from the mother board, always pull up from the under side edge, avoiding any contact with board components.

When installing a motor control board, push in from the back edge of the board, avoiding any contact with board components. Be sure the board is fully inserted into its connector.

CAUTION: Voltages as high as 70V are present on the motor control board. Avoid contact with any board components while power is applied to the platter system.

Outlined below are various system malfunctions and suggested corrective measures.

PROBLEM: Platter turns continuously and does not respond to payout or takeup control

SUGGESTION:

1) Cable not properly connected to payout or take up encoder p.c. board, either at the encoder p.c. board or at the mother board.

The payout encoder boards are accessible by removing the arm cover, held on by two thumb screws under the platter arm.
The take up encoder board is accessible by removing the four 1/4-20 bolts that secure the take up assembly to the back of the platter column.

2) Payout or takeup encoder p.c. board is defective. Replace defective board and ship defective board back to SPECO.

3) Motor control board is defective. Check by substitution and replace board. If board is defective ship back to SPECO.

PROBLEM: Platter speed does not change smoothly from slowest to fastest rate.

SUGGESTION:

1) Payout or takeup encoder p.c. board is defective. Replace defective board and ship back to SPECO.

2) Motor control board is defective. Replace defective board and ship back to SPECO.

PROBLEM: Platter will not turn in both payout and takeup modes.

SUGGESTIONS:

1) Check that the PAYOUT-TAKEUP/WORK TABLE toggle switch is in the PAYOUT-TAKEUP position.

2) Check status lights on the front panel. If not lit, Motor control board may be defective.

3) Check that the motor power plug is properly inserted into its receptacle.

4) Open the front panel and observe the two green power supply status lamps near the top of the motor control boards. If either lamp is not lit, the board is defective. Replace defective board and ship back to SPECO.

5) Check the motor with a work table in the makeup mode and the toggle switch in the WORK TABLE position.

6) Toggle switch or motor power cables may be defective. Pull the white cable housing off the Mother Board and check for approximately 15 Ohms between pins 1 (red wire) and 2 (brown wire).

7) Motor control Board may be defective. Check by substitution with a known good board.

PROBLEM: Platter will not turn in payout mode

SUGGESTION:

1) Check that the payout control assembly is properly installed and the control arm moves freely.

2) Check that the take up roller is not installed at the payout platter.

3) Check that the green payout light on the front panel comes on when a payout control assembly is installed in the payout spindle and the lights goes out when it is removed. If not, the payout encoder p.c. board or the Motor control board may be defective.

PROBLEM:	Platter will not turn in takeup mode

SUGGESTION:

1) Check that the red takeup light on the front panel is lit. If not, pull the white cable housing off the mother board and check for continuity between pin 3 (black wire) and pin 4 (white wire). If no continuity exists, the microswitch may be defective or out of adjustment. With a properly functioning switch, a click will be heard when the brass microswitch actuator is pushed in and another click will be heard when the force on the actuator is removed.

2) The Motor Control Board or the takeup encoder board my be defective.

PROBLEM:	Platter work lights are not lit and status lights on the front panel won't come on.

SUGGESTION:

1) Check the platter fuse in the power junction box.

2) Check that primary power is applied to the platter system.

3) Check that the power transformer cable housing is connected to mother board header (J10).

4) The power transformer may be defective.

LP 280 MANUAL
SECTION E REPLACEMENT PARTS

As a general rule, SPECO does not encourage field repairs of electronic assemblies. To maintain a high level of product performance, SPECO prefers to repair these items at our manufacturing facility. Requests for replacement assemblies are filled as promptly as possible. Warranty replacements require prompt return of defective items with a requested RMA number. Non-warranty items may be repaired or replaced at our option.
Proprietary information on assemblies including schematic diagrams and part lists is available on request.

REPLACEMENT ASSEMBLIES

1)	Payout spindle assembly, complete.	626-0080-56
	Payout encoder p.c. board only	SP 31
2)	Takeup speed control assembly, complete.	626-0080-57
	Takeup encoder p.c. board only	SP 45
	Failsafe microswitch	130-0004-03
3)	Payout control assembly (Brain)	720020
4)	Motherboard panel assembly	626-0080-59
	Mother board, P.C. board only	SP 43
5)	Toggle switch/Takeup microswitch assembly, complete.	626-0080-58
	Toggle switch only	626-0080-11
	Microswitch only	910-115
6)	Motor Control Board	SP42
7)	Payout overtension failsafe, complete.	23000
	Microswitch only	130-0004-03
8)	Motor assembly, complete.	250-0130-25 Ass'y
	Motor only	250-0130-25
	Drive roller	020-0051-22A
9)	Power transformer assembly	50211

REPLACEMENT CABLE ASSEMBLIES

Cable assembly, Motherboard to toggle switch	
Top (P4)	626-0080-24
Middle (P5)	626-0080-25
Bottom (P6)	626-0080-26
Cable assembly, Motherboard to payout spindle	
Top (P9)	626-0080-20
Middle (P8)	626-0080-21
Bottom (P7)	626-0080-22
Cable assembly, Motherboard to takeup assembly (P11)	626-0080-23
Cable assembly, Work table to toggle switch assembly	626-0080-19
Cable assembly, Motor receptacle to toggle switch assembly Note: (3) required in total	626-0080-18
Cable assembly, Motherboard to work lights (P12)	626-0080-52
Cable assembly, Motherboard to power junction box (E1, E2)	626-0080-53
Cable assembly, Takeup failsafe to power junction box	626-0080-54

REVISIONS				
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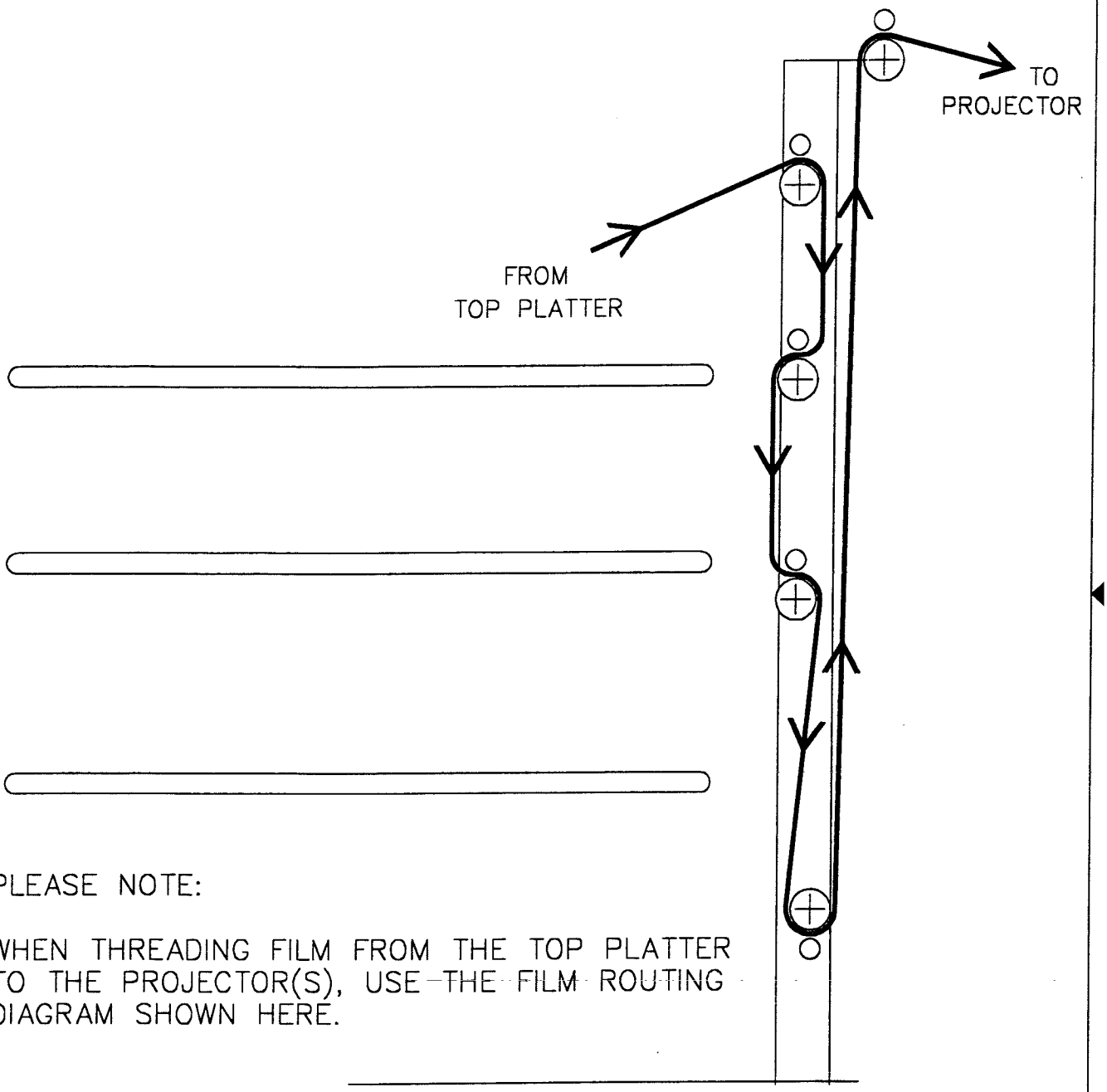

PLEASE NOTE:

WHEN THREADING FILM FROM THE TOP PLATTER TO THE PROJECTOR(S), USE THE FILM ROUTING DIAGRAM SHOWN HERE.

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TOLERANCE UNLESS NOTED:
.XX +/-.01
.XXX +/-.005
ANGLE +/- 1/2 DEG.

SIZE	PART NO.	TITLE
A		LP270 - 280 FILM THREADING ROUTE DIAGRAM

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--	RJC		1 OF 1

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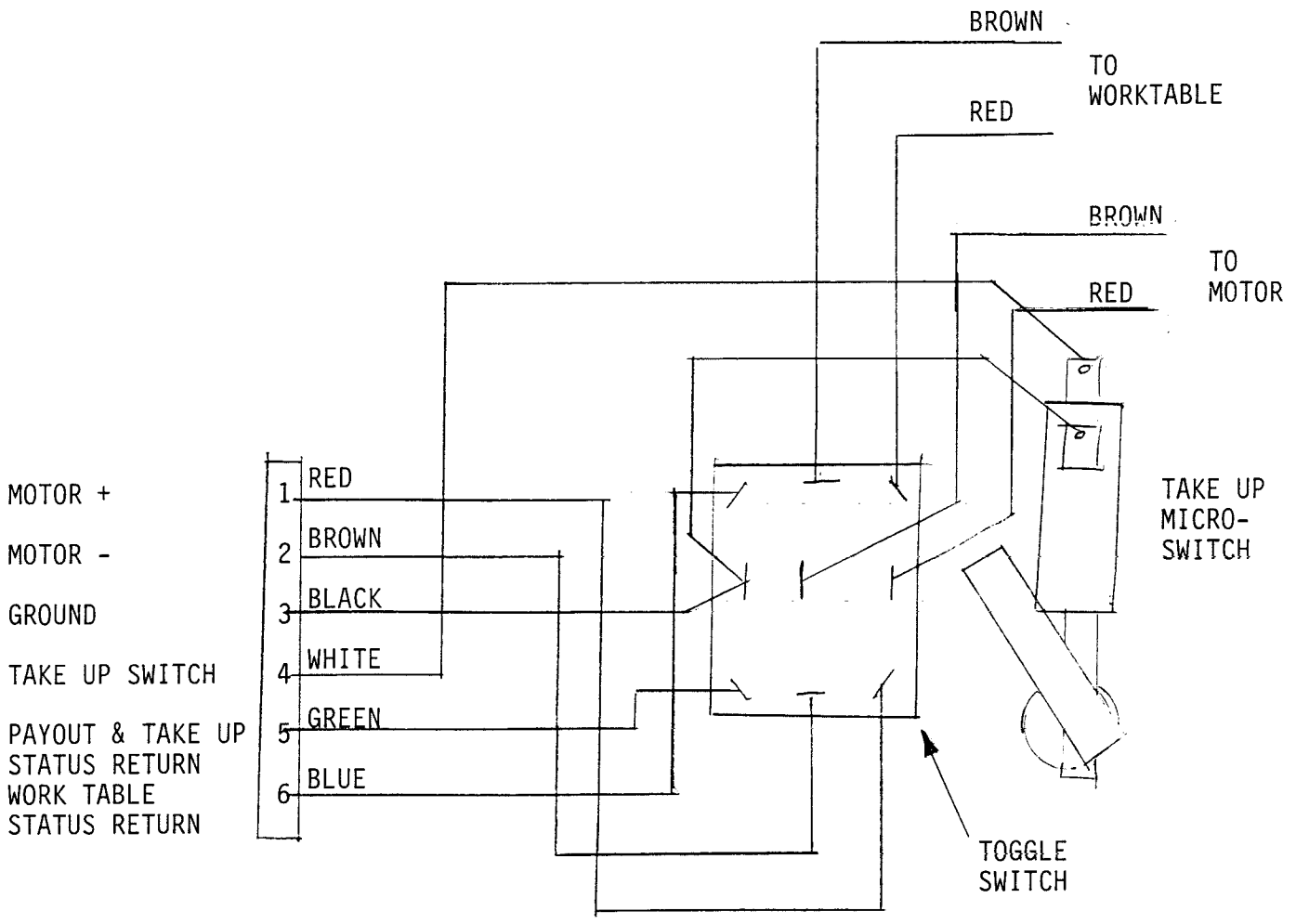
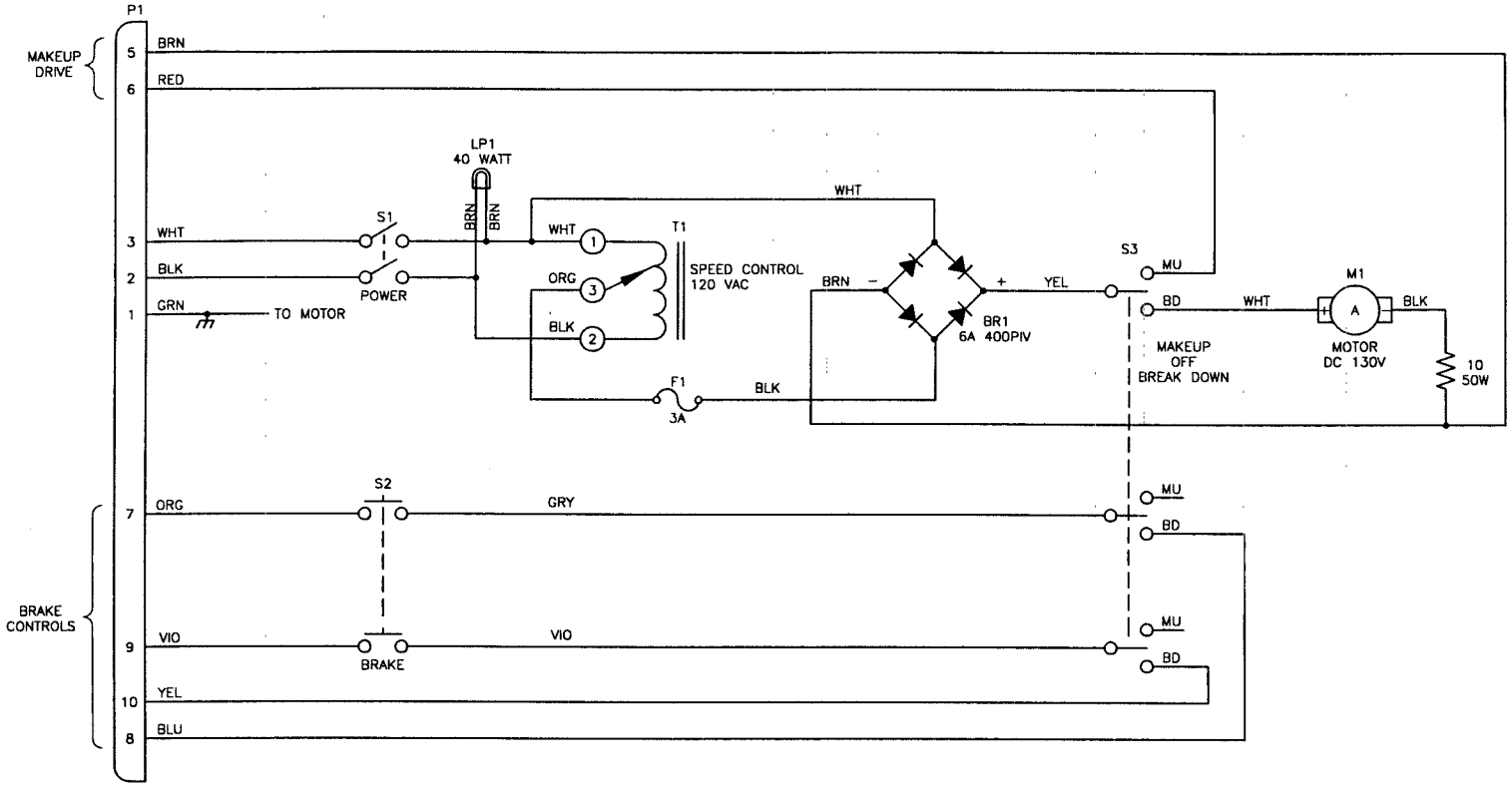
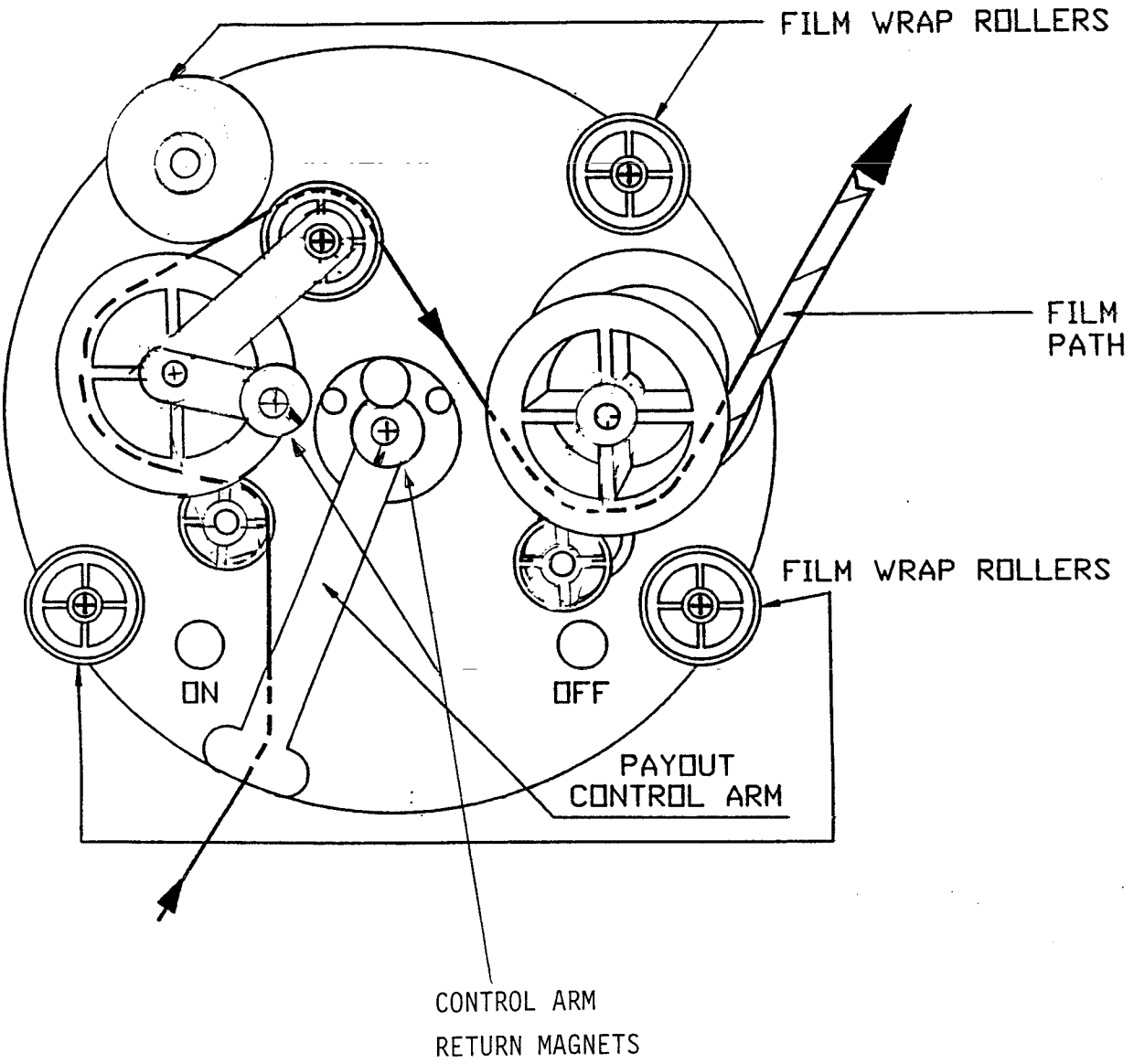
ORG



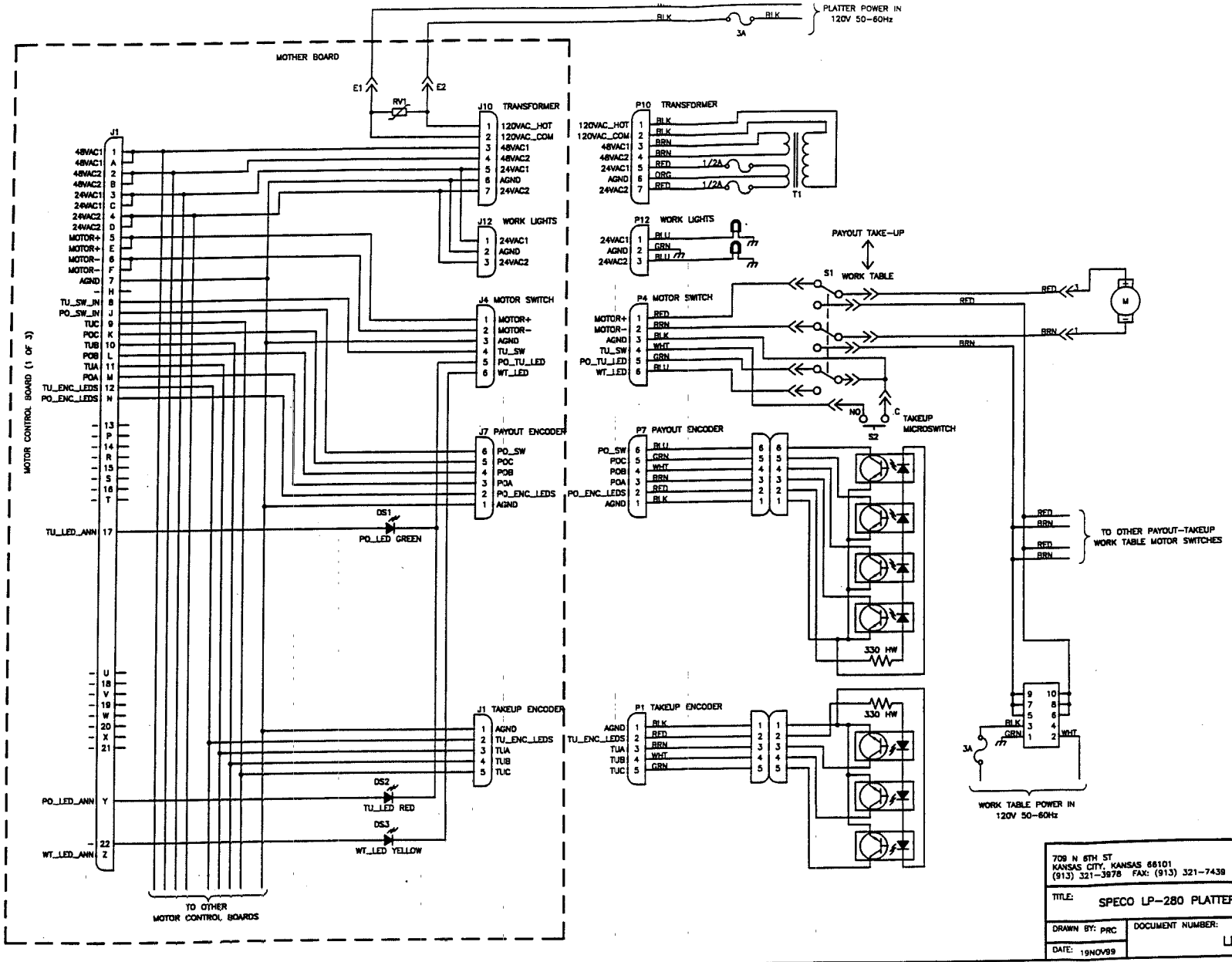
MOTOR TOGGLE / TAKE UP MICROSWITCH ASSEMBLY



709 N 6TH ST KANSAS CITY, KANSAS 66101 (913) 321-3978 FAX: (913) 321-7439	SPECO	
TITLE: WORK TABLE WIRING DIAGRAM		
DRAWN BY:	DOCUMENT NUMBER: LP-271B	REV: B
DATE: 19NOV99		



PAY OUT CONTROL ASSEMBLY



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TITLE: SPECO LP-280 PLATTER SYSTEM WIRING DIAGRAM

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DATE: 19NOV99		

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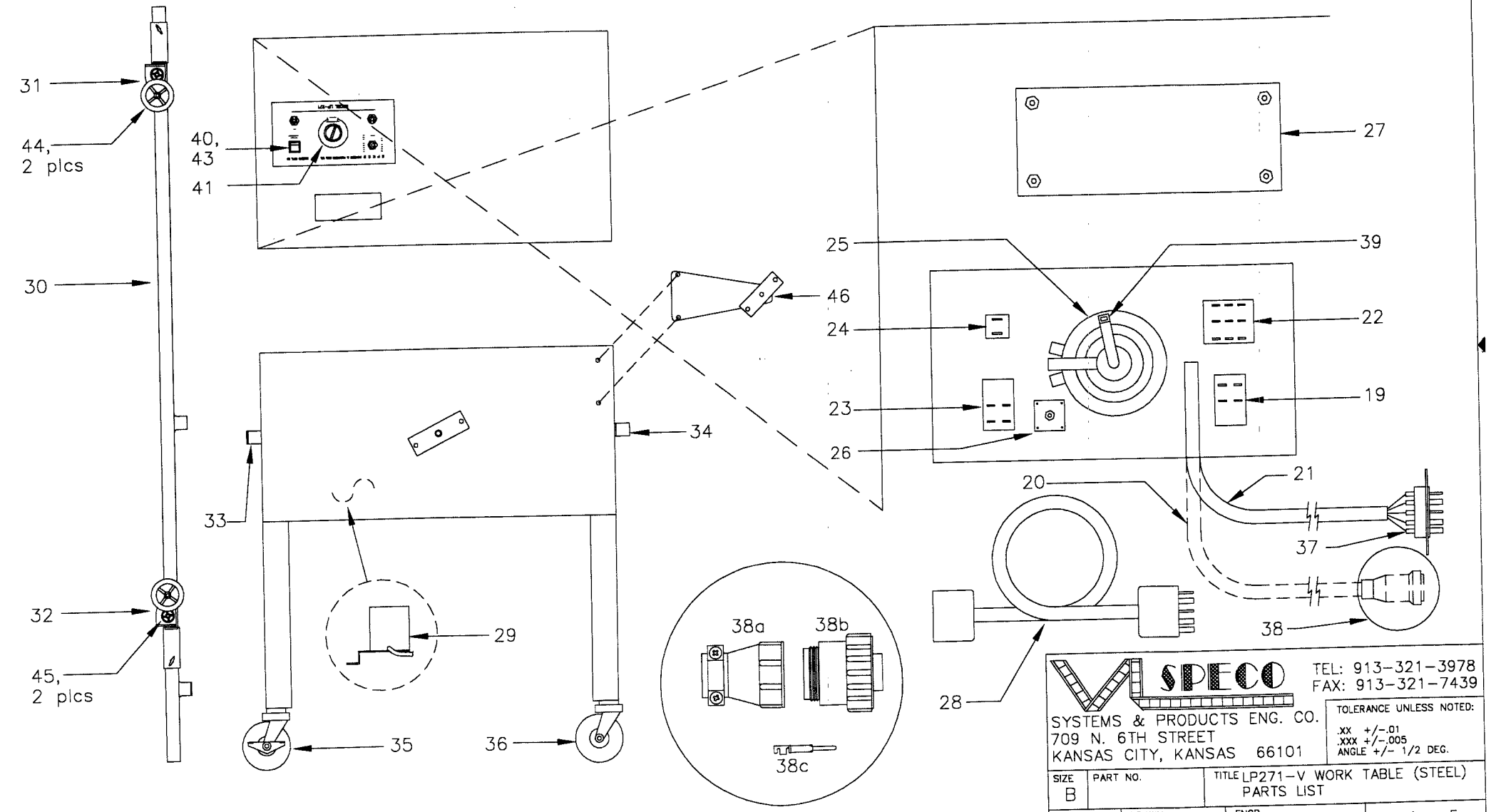

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TOLERANCE UNLESS NOTED:
.XX +/-.01
.XXX +/-.005
ANGLE +/- 1/2 DEG.

SIZE	PART NO.	TITLE
B		LP271-V WORK TABLE (STEEL) PARTS LIST

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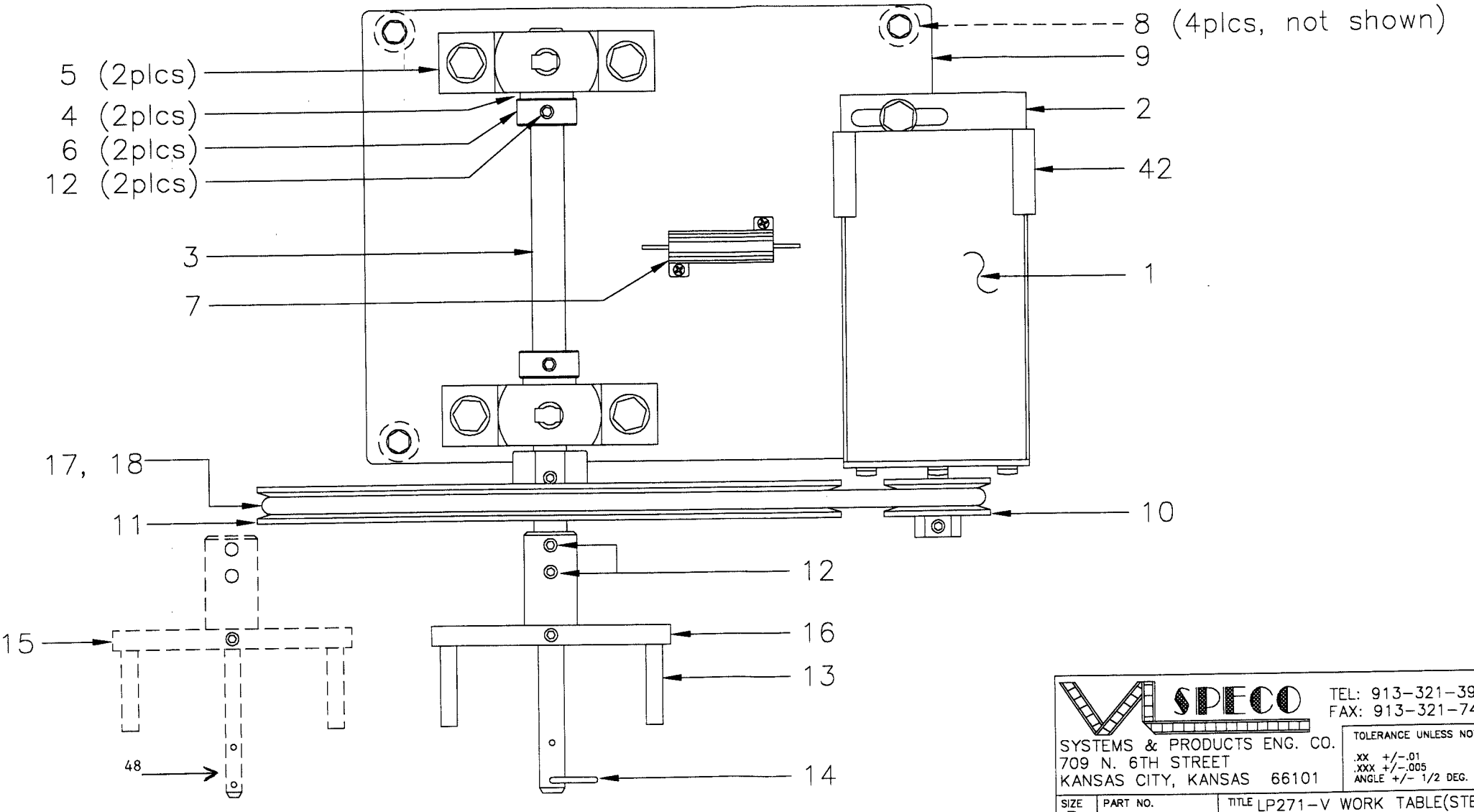

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.XX +/-.01
.XXX +/-.005
ANGLE +/- 1/2 DEG.

SIZE	PART NO.	TITLE	
B		LP271-V WORK TABLE(STEEL) PARTS LIST	
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REVISIONS				
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		RELEASED	12/9/98	

LP 271-V WORK TABLE (STEEL)

PARTS LIST

1. 250-0002-12 MOTOR, BODINE 130V
1A. 250-0130-25 MOTOR, LEESON 130V
2. 50054 BRACKET, MOTOR MOUNT
3. 50146 DRIVE SHAFT
4. 50190 THRUST BEARING
5. 50188 PILLOW BLOCK
6. 50187 SHAFT COLLAR
7. 195-0152-56 RESISTOR
8. 50112 STANDOFF
9. 50111 PLATE, MOTOR BASE
10. 50185 PULLEY, 2"
11. 50186 PULLEY, 11"
12. 50233 SET SCREW
13. 020-0052-02 DRIVE PIN
14. 50210 SPRING CLIP
15. 50181 SPINDLE ASSEMBLY, 5/16"
16. 50219 SPINDLE ASSEMBLY, 1/2" (ELR WARNER BROS)
17. 50189 V-BELT
18. 142-41 5/16" ROUNDTHANE BELT

SPECO
SYSTEMS & PRODUCTS ENG. CO.
709 N. 6TH STREET
KANSAS CITY, KANSAS 66101
TEL: 913-321-3978
FAX: 913-321-7439

TOLERANCE UNLESS NOTED:
.XX +/-.01
.XXX +/-.005
ANGLE +/- 1/2 DEG.

SIZE	PART NO.	TITLE	SCALE	DRAWN BY	ENGR APPROVAL	SHEET
A		LP271-V WORK TABLE (STEEL) PARTS LIST	--	RJC		3 OF 5

REVISIONS				
C.O.	REV	DESCRIPTION	DATE	APPROVED
		RELEASED	12/9/98	

LP 271-V WORK TABLE

PARTS LIST (CONTINUED)

19. 130-0014-02 BRAKE SWITCH
20. 50243 CABLE ASSEMBLY, W/ROUND CONNECTOR, FIXED
21. 480-0018-10 CABLE ASSEMBLY, W/RECTANGULAR PLUG
22. 130-0014-03 MODE SWITCH
23. 130-0014-01 POWER SWITCH
24. 134-9003-00 WORK TABLE FUSE HOLDER
25. 120-0004-01 VARIABLE TRANSFORMER
26. 109-9003-01 BRIDGE RECTIFIER
27. 50069 SPLICING WINDOW
28. 001-0036-02 10'CABLE ASSY, MALE&FEMALE PLUGS (UNITS SN236 AND UP)
29. 50242 LIGHT SOCKET ASSY
30. POST, WORK TABLE
31. 50093 UPPER FILM ROLLER ASSY
32. 50143 LOWER FILM ROLLER ASSY W/SPRING
33. 50153 BRACKET, CABLE
34. 50100 HANDLE
35. 50091 CASTER, LOCKING
36. 50090 CASTER, NON-LOCKING
37. 129-0057-10 CONNECTOR, RECTANGULAR, 10 PIN MALE
38. X625349 CONNECTOR, ROUND, MODULAR ASSY, COMPLETE

38a. X625-009 SHELL

38b. X625-004 BODY

38c. X617-003 PIN

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.XX +/-.01
.XXX +/-.005
ANGLE +/- 1/2 DEG.

SIZE	PART NO.	TITLE	
A		LP271-V WORK TABLE (STEEL) PARTS LIST	
SCALE --	DRAWN BY RJC	ENGR APPROVAL	SHEET 4 OF 5

REVISIONS				
C.O.	REV	DESCRIPTION	DATE	APPROVED
	RELEASED REV A	ADD DUMMY END REWIND ASSY	12/9/98 1/14/00	

LP 271-V WORK TABLE

PARTS LIST (CONTINUED)

39. 124-0004-99 VARIABLE TRANSFORMER BRUSH
40. A34-1302-00 3 AMP FUSE
41. 340-0003-01 SPEED CONTROL KNOB
42. 626-0075-01 LEESON MOTOR BRUSH & SPRING
43. 340-0004-01 FUSE HOLDER CAP ONLY
44. 021-0015-01 2" ROLLER
45. 021-0014-06 1" KEEPER ROLLER
46. 28025 DUMMY END REWIND ASSY - OPTIONAL 28025
47. 50193 TENSION SPRING FOR 50143
48. 50199 SHAFT ONLY 5/16 DRIVE

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TOLERANCE UNLESS NOTED:
.XX +/-.01
.XXX +/-.005
ANGLE +/- 1/2 DEG.

SIZE	PART NO.	TITLE	
A		LP271-V WORK TABLE (STEEL) PARTS LIST	
SCALE --	DRAWN BY RJC	ENGR APPROVAL	SHEET 5 OF 5

mtrassy5.dwg

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Systems & Products Engineering Company
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LP 280 DIGITAL PLATTER SYSTEM
EXPORT MODEL

The main difference between the LP 280 export and domestic models is in the power transformers. The domestic model has a 120 volt, 50-60 cycle primary winding to match North American power standards.

The export model's power transformer is designed to accommodate power sources in most other countries. The primary winding is 240 volt, 50-60 cycles with taps for 220 and 200 volts. Therefore, it will provide optimal operation with various power sources. Another tap on the primary winding provides 120 volts for the LP 271 worktable.

The only other change is the surge suppressor, located on the LP-280 motherboard. Its higher voltage rating accommodates 200-240 volt power sources.

Primary voltage taps are selected by wire-nutting the violet wire on the transformer cable that plugs onto the motherboard to the appropriate primary tap.

The tap colors are:

Brown	200 Volts
Red	220 Volts
Orange	240 Volts

Note: Unused taps MUST be protected with insulated wire nuts

On the export transformer, the low voltage windings to the motherboard connector are yellow for the 48 volt winding and green for the 24 volt winding. The center tap on the 24 volt winding is blue.

LP 280 EXPORT MODEL POWER WIRING