

# **CHRISTIE INCORPORATED**

## **INSTRUCTIONS**

FOR

**INSTALLATION, OPERATION, AND MAINTENANCE**

OF

**AUTOWIND-3R FILM HANDLING SYSTEM**

(P/N: 193932-001)

WITH

**MK/MKE MAKE-UP TABLE**

(AFTER SERIAL NUMBER 4720)

**AND ALL WITH RETROFIT KIT P/N: 193439-001**

**CHRISTIE INCORPORATED**

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**Operator's Manual  
AUTOWIND-3R Film Handling System  
TD549**

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## APPENDIX A: ASSEMBLY DIAGRAMS AND PARTS LISTS

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## 1. INTRODUCTION

### 1.1. CONTENTS OF THE MANUAL

This manual contains installation, operation, and operator maintenance procedures for CHRISTIE Autowind-3R Film Handling System with MK/MKE Make-Up Table or MARS Make-Up and Rewind System. The manual is applicable to all systems with serial number greater than serial number 4720, and to all systems with Retrofit Kit 193439-001 installed. The material covered includes:

- general description
- installation procedures
- principles of operation
- alignment and checkout procedures
- operating the Autowind
- maintenance and adjustments
- troubleshooting.

### 1.2. PURPOSE OF THE MANUAL

This manual provides information suitable for various purposes. For details on operating the projector and for general information, see:

- *Section 2: General Description*
- *Section 3: Installation and Assembly*
- *Section 4: Principles of Operation*
- *Section 5: Alignment and check-out*
- *Section 6: Operating the Autowind.*

Before performing adjustments and periodic maintenance during normal operation, see:

- *Section 6: Periodic Maintenance*
- *Section 7: Calibration, Alignment, and Adjustments.*

If a problem occurs, see:

- *Section 8: Troubleshooting.*

Additional reference information is contained in the appendix.



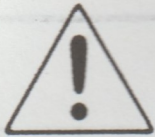
### 1.3. SPECIAL NOTICES

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Three kinds of specific notices are used within this manual to emphasize specific information.

#### 1.3.1. WARNING

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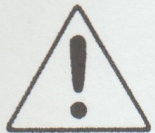


**WARNING:** Indicates the presence of a hazard that can cause personal injury if the hazard is not avoided.

**WARNING**

#### 1.3.2. CAUTION

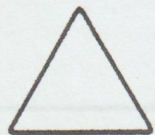
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**CAUTION:** Indicates the presence of a hazard that could cause damage to projection system.

#### 1.3.3. NOTE

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**NOTE:** Provides additional information.



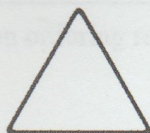
## 2. GENERAL DESCRIPTION

The Autowind-3R film handling system is a reliable, easy-to-operate film handling system. The Autowind automatically rewinds film as it is projected, eliminating the need for manual rewinding. This system accommodates up to 25,000 feet of continuous 35-mm film on each of three platters, providing approximately 4½ hours of uninterrupted operation from each platter.

The Autowind-3R system contains three individually controlled horizontal platters. Film feeds from one platter through the projector and back onto another platter, where it automatically rewinds as the show is in progress. Each platter is driven by its own torque motor. Each torque motor is controlled by a solid-state, plug-in speed-control card. These cards are located in the hinged door of the control panel for easy access and adjustment.

The Autowind system contains a make-up table. Film feeds to the make-up table from conventional 2000/6000-foot reels onto the Autowind. Film segments are spliced together to make one continuous program. The make-up table can also unload film from the Autowind back onto the original reels for shipping. Controls for loading or unloading the Autowind are on the make-up table.

Once a show has been loaded, the Autowind system operates automatically.



The Autowind-3R system requires 115-V single-phase 50/60-Hz power (a model for use with 230-V single-phase power is also available). Christie recommends that a separate circuit be provided for each Autowind.

### 2.1. UNPACKING

The Autowind is normally shipped, uncrated, by van lines within the United States. This method ensures expert handling during transit and delivery to the projection booth. For shipment by truck or airline, or for export, the system is crated.

When the Autowind-3R Film Handling System is received:

1. Consult bill of lading or shipping documents to verify that correct number of pieces has been received.
2. Thoroughly inspect each item for damage that might have occurred during shipment. Any damage discovered should be reported immediately to transport company for inspection and filing of claim.





Do not accept a shipment until all equipment has been completely inspected!

## 2.2. PROBLEM RESOLUTION



On rare occasions, an Autowind system installation, operation, or maintenance problem that is not addressed in this manual may occur. If this happens, contact Christie Incorporated directly.

### 2.2.1. CONTACTING CHRISTIE

To order parts or request information from Christie, use the address, telephone number, or Fax number given on the inside front page of this document. Include:

- Autowind model and serial number.
- Part name and part number, as shown in this manual.
- Purchase order number.

The purchase order number is essential for replacement parts requested under warranty. Christie issues credit for defective parts received. Please request return authorization number from Christie for defective parts.

### 2.2.2. ORDERING REPLACEMENT PARTS

When ordering replacement parts, contact your dealer directly.



### 3. INSTALLATION PROCEDURES



Operators are urged to read this instruction manual thoroughly and understand the procedures described herein before assembling and installing the Autowind system.

The Autowind should be assembled and leveled in the area where it is to be operated, near the projector. The Autowind can be installed on either side of the projector. If space in the projection booth is limited, the Autowind can be installed in an adjoining room. However, additional film transport roller assemblies should be installed to transmit the film from the Autowind to the projector and back when the distance between the Autowind and the projector is greater than 10 feet. Film transport roller assemblies (P/N 195856-002) must be ordered separately.

#### 3.1. AUTOWIND ASSEMBLY INSTRUCTIONS

##### 3.1.1. MAIN COLUMN

1. Attach main column (item 1 in Figure 3-1) to base (item 20 in Figure 3-1), using four  $\frac{3}{8}$  x 1.0-inch hex head cap screws, lock washers, and flat washers. Make sure that base is perpendicular to column. Tighten securely.
2. Using carpenter's level, verify that platter disks are level front to back and side to side. Adjust leveling feet (item 29 in Figure 3-1) if necessary. Erratic operation can result if platter is not level.

##### 3.1.2. DRIVE MOTORS

There are three drive motors.

1. Verify that two flanged bushings (items 5 in Figure 3-2) are in place.
2. Place spring (item 3 in Figure 3-2) in spring housing (item 4 in Figure 3-2).
3. Push motor assembly (item 20 in Figure 3-2) toward support arm, depressing motor tension spring.
4. Align holes in motor mounting bracket with holes in platters support arm. Use long-nosed pliers or any other tapered instrument to align holes.
5. Insert motor assembly mounting bolt (item 6 in Figure 3-2) upward through holes until mounting bolt protrudes through top of assembly. Insert locking pin (item 7 in Figure 3-2).



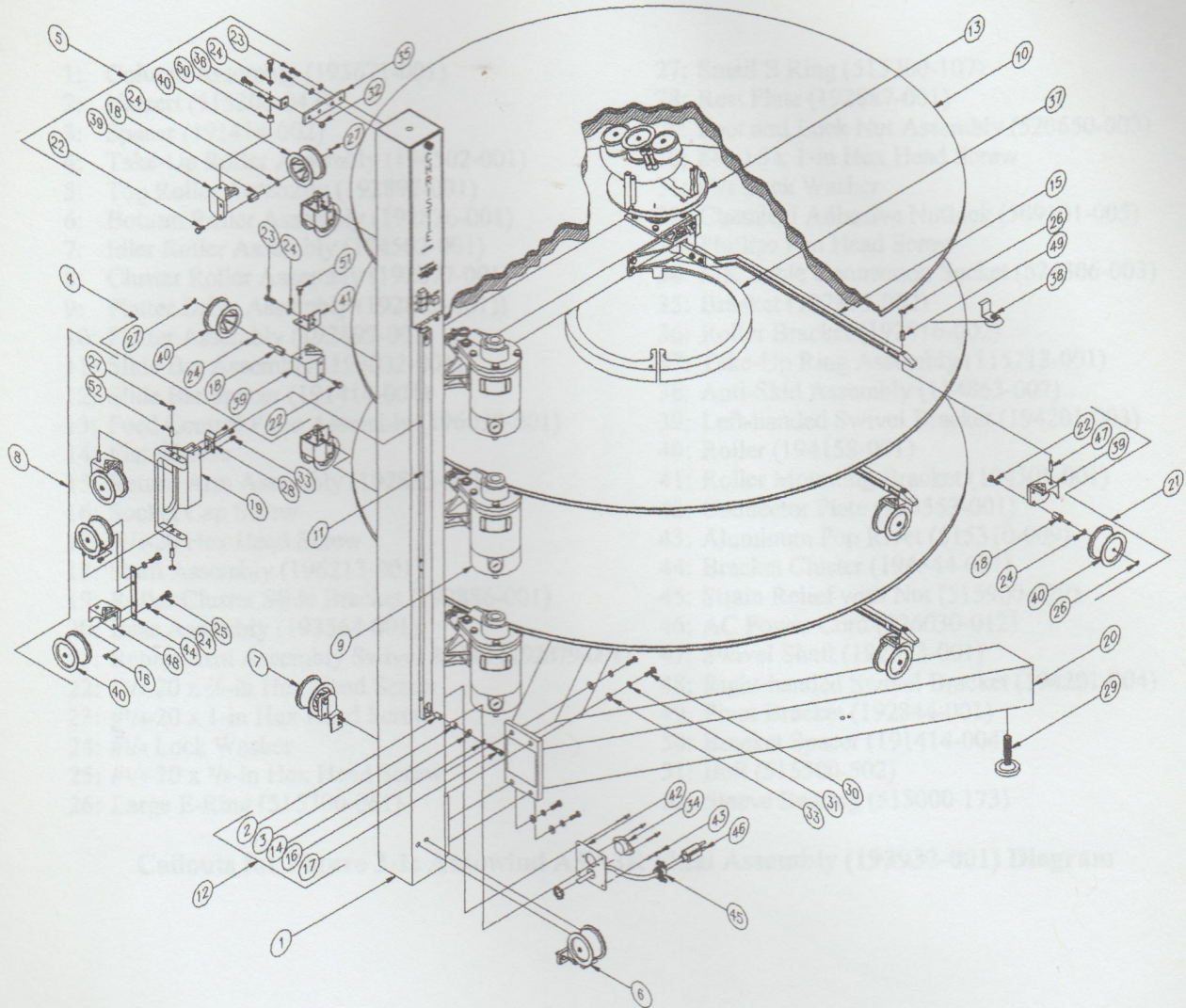


Figure 3-1: Autowind AW-3R Final Assembly (193932-001) Diagram



- 1: Column Assembly (193671-001)
- 2: Nutsert (515200-047)
- 3: Spacer (191414-002)
- 4: Take-Up Roller Assembly (194502-001)
- 5: Top Roller Assembly (192897-001)
- 6: Bottom Roller Assembly (192876-001)
- 7: Idler Roller Assembly (194502-001)
- 8: Cluster Roller Assembly (192877-001)
- 9: Platter Drive Assembly (192862-001))
- 10: Platter Assembly (192899-001)
- 11: Slide Bar Assembly (193032-001)
- 12: Slide Bar Spacer (191414-004)
- 13: Feed Control Plate Assembly (196050-001)
- 14: Flat Washer
- 15: Return Arm Assembly (192835-001)
- 16: Socket Cap Screw
- 17: #1/4-20 Hex Head Screw
- 18: Shaft Assembly (196213-001)
- 19: Roller Cluster Slide Bracket (192886-001)
- 20: Base Assembly (193564-001)
- 21: Return Arm Assembly Swivel Roller (192879-001)
- 22: #1/4-20 x 1/2-in Hex Head Screw
- 23: #1/4-20 x 1-in Hex Head Screw
- 24: #1/4 Lock Washer
- 25: #1/4-20 x 7/8-in Hex Head Screw
- 26: Large E-Ring (515700-061)
- 27: Small E Ring (515700-107)
- 28: Rest Plate (192887-001)
- 29: Foot and Lock Nut Assembly (520650-003)
- 30: #3/8-16 x 1-in Hex Head Screw
- 31: #3/8 Lock Washer
- 32: Chemical Adhesive Nutlock (509101-005)
- 33: Phillips Pan Head Screw
- 34: MK Table Connection Socket (524306-003)
- 35: Bracket (192875-002)
- 36: Roller Bracket (192816-002)
- 37: Take-Up Ring Assembly (115713-001)
- 38: Anti-Skid Assembly (114863-002)
- 39: Left-handed Swivel Bracket (194201-003)
- 40: Roller (194158-001)
- 41: Roller Mounting Bracket (194501-001)
- 42: Connector Plate (193553-001)
- 43: Aluminum Pop Rivet (515310-009)
- 44: Bracket Cluster (194544-001)
- 45: Strain Relief with Nut (515900-029)
- 46: AC Power Cord (526030-012)
- 47: Swivel Shaft (192813-001)
- 48: Right-handed Swivel Bracket (194201-004)
- 49: Pivot Bracket (192844-001)
- 50: Bracket Spacer (191414-004)
- 51: Bolt (515500-502)
- 52: Sleeve Bearing (515000-173)

**Callouts for Figure 3-1: Autowind AW-3R Final Assembly (193932-001) Diagram**



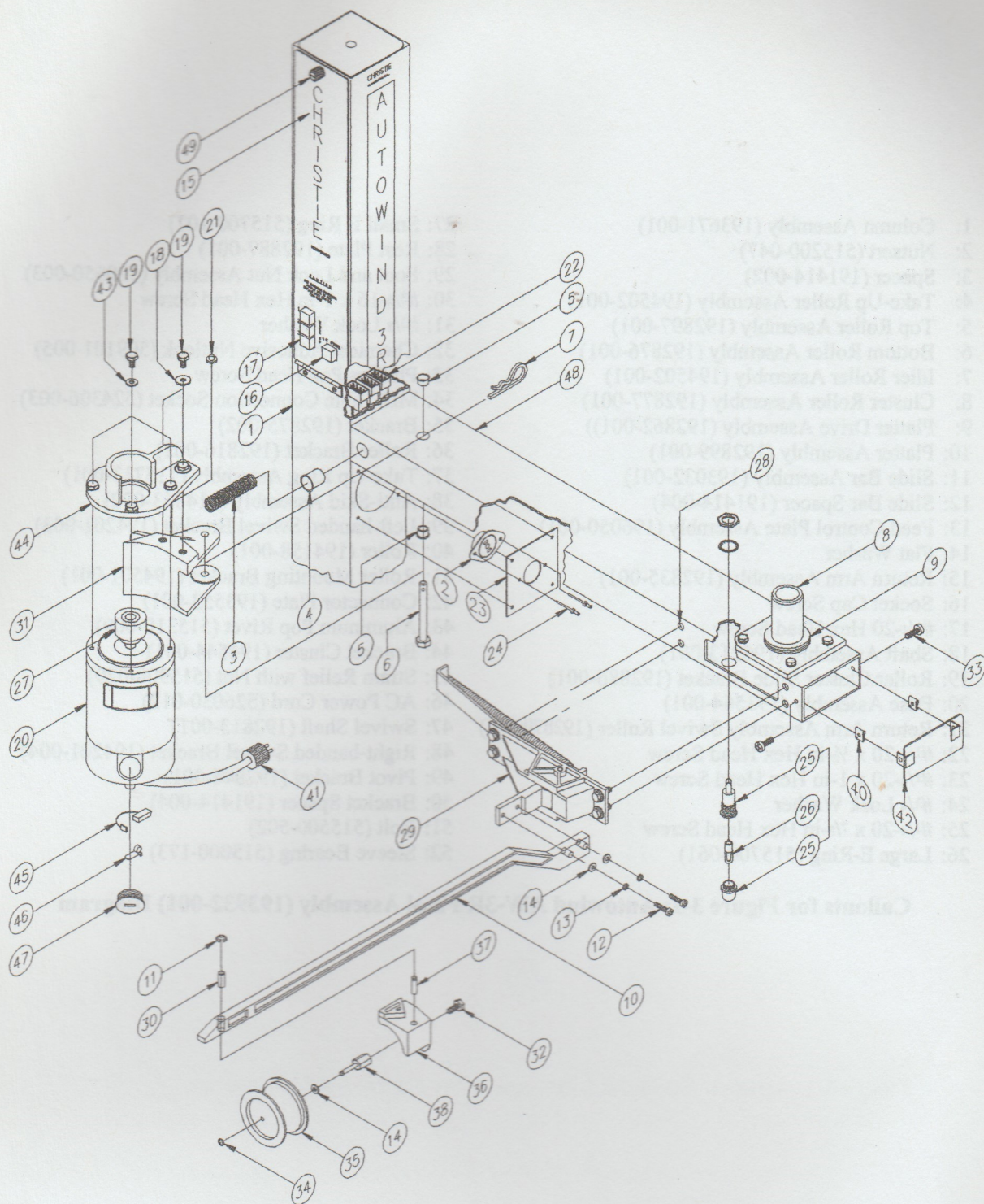


Figure 3-2: Platter Arm Assembly



## 3.3 MAKE-UP TABLE ASSEMBLY



- |   |                                       |
|---|---------------------------------------|
| 1: Column Assembly (193671-001)                 | 25: Indicator (546700-037)            |
| 2: Female Receptacle (524303-001)               | 26: Bulb (546536-001)                 |
| 3: Motor Tension Spring (515610-025)            | 27: Drive Wheel (192826-001)          |
| 4: Spring Housing (192477-001)                  | 28: Nutsert (515200-047)              |
| 5: Flanged Bushing (515000-174)                 | 29: Return Arm Mechanism (192859-001) |
| 6: Motor Assembly Mounting Bolt (115419-001)    | 30: Sleeve Bearing (515000-173)       |
| 7: Cotter Pin (515000-117)                      | 31: Pivot Bracket (192844-001)        |
| 8: Platter Axle (196051-001)                    | 32: Hex Screw                         |
| 9: Thrust Bearing Assembly (515000-157 to -159) | 33: Sheet Metal Screw                 |
| 10: Return Arm Assembly (192835-001)            | 34: Small E-Ring (515700-107)         |
| 11: Large E-Ring (515700-061)                   | 35: Roller (194158-001)               |
| 12: 8-32 x 5/8" Pan Head Screw                  | 36: Swivel Bracket (194201-003)       |
| 13: #10 Lock Washer                             | 37: Swivel Shaft (192813-001)         |
| 14: #10 Flat Washer                             | 38: Shaft Assembly (196213-001)       |
| 15: Control Module Assembly (194911-001)        | 39: Captive Screw                     |
| 16: ON/OFF Switch (578000-042)                  | 40: Speed Nut Clip (515700-112)       |
| 17: Make-Up Mode Select Switch (192994-001)     | 41: Three-Prong Plug (524203-022)     |
| 18: 1/4" Washer                                 | 42: End Cap (193665-001)              |
| 19: 1/4-20 x 1/2" Bolt                          | 43: Lock Washer                       |
| 20: Motor with Plug (192890-001)                | 44: Motor Support (192839-001)        |
| 21: Rubber Bumper (518800-008)                  | 45: Motor Brush (599000-089)          |
| 22: AW3 Column Harness (192880-080)             | 46: Motor Brush Spring (599000-091)   |
| 23: Socket Plate (193552-001)                   | 47: Cap                               |
| 24: Pop Rivet (515310-009)                      | 48: Platter Support Arm (193669-001)  |

### Callouts Figure 3-3: Platter Feed Control Assembly (196050-001) Diagram Arm Assembly



### 3.1.3. PLATTERS

---

There are three platters.

1. Clean all dirt from platter axle (item 8 in Figure 3-32).
2. Apply thin film of Lubriplate to platter axle.
3. Install thrust bearing and thrust washers (item 9 in Figure 3-32) on axle.
4. Lubricate axle, bearing, and thrust washers with Lubriplate 130-AA.
5. Install platter: Place platter over axle and slightly depress motor tension spring (item 3 in Figure 3-32) until platter is seated on thrust washers.
6. Repeat steps 1 - 5 for remaining two platters.

### 3.1.4. FEED CONTROL PLATE

---

1. Remove dust plug from platter axle; save, and reinstall when platter deck is not in use.
2. Place feed-control plate into platter axle until oriented as shown in Figure 3-3 (item 16). Keying system in both parts assists in orienting feed-control plate.

### 3.1.5. RETURN ARMS

---

Install three return arms (item 10 of Figure 3-2) as shown in Figure 3-2, with roller positioned towards the floor, by securing two screws and washers (items 12, 13, and 14 of Figure 3-2).

### 3.1.6. COLUMN ROLLERS

---

There is a take-up roller (item 4 in Figure 3-1) for each platter. In addition, there is an adjustable roller (item 5 in Figure 3-1) at the top of the column for feed (*to* the projector), and an adjustable roller (item 6 in Figure 3-1) at the bottom for take-up (*from* the projector). Note that the orientation to these rollers can be adjusted depending on the relative positions of the Autowind and the projector. Refer to item 6 and the breakdowns of items 4 and 5 in Figure 3-1 for the complete roller installation.

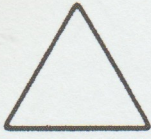
### 3.1.7. SLIDE BAR AND ROLLER CLUSTER ASSEMBLY

---

Mount the cluster roller assembly (item 19 in Figure 3-1) on the slide bar (item 11 in Figure 3-1) and install as shown. Use two hex head  $\frac{1}{4}$ -20 x 1.5 in (3.81 cm) bolts, two spacers, two flat washers, and two lock washers (install spacers between column and slide bar). The slide bar is positioned in its lowest position for 35mm and its highest position for 70mm operation. (Optional conversion kit required for 70mm film usage).



### 3.2. MAKE-UP TABLE ASSEMBLY



The make-up table must be connected to the Autowind system only while loading and unloading film. The make-up table may be disconnected and moved at any other time.

1. Assemble table legs (see items 52 and 90 in Figure 3-4) to make-up tabletop. Use two  $\frac{3}{8}$ -16 x 1.75 in (3.91 cm) bolts, two lock washers, and two washers to attach each leg to inner side of appropriate side plate.
2. Assemble horizontal bars (see item 45 in Figure 3-4) between legs. Use two  $\frac{3}{8}$ -16 x 1.75 in (3.91 cm) bolts, two lock washers, and two washers to attach each horizontal bar to rear legs.
3. Refer to Figure 3-4. Install roller post (item 43) onto make-up table horizontal bars using two each standoffs (see item 44), screws (see item 28), and wing nuts (see item 15), and four washers (see item 67).
4. Install Snap-On swivel rollers onto post. (Refer to items E and H in Figure 5-1). Adjust top roller to height of selected platter.
5. With table standing in normal position, cut temporary restraining strap on drive motor and let motor hang free.
6. Lift motor. Install flat belt over both pulleys.
7. Release motor; motor is now supported by belt.
8. Ensure that motor pulleys are correctly aligned and belt runs true over crown of each pulley.

Run cable assembly from make-up table to vertical column of Autowind and insert six-pin plug into bottom receptacle of vertical column.



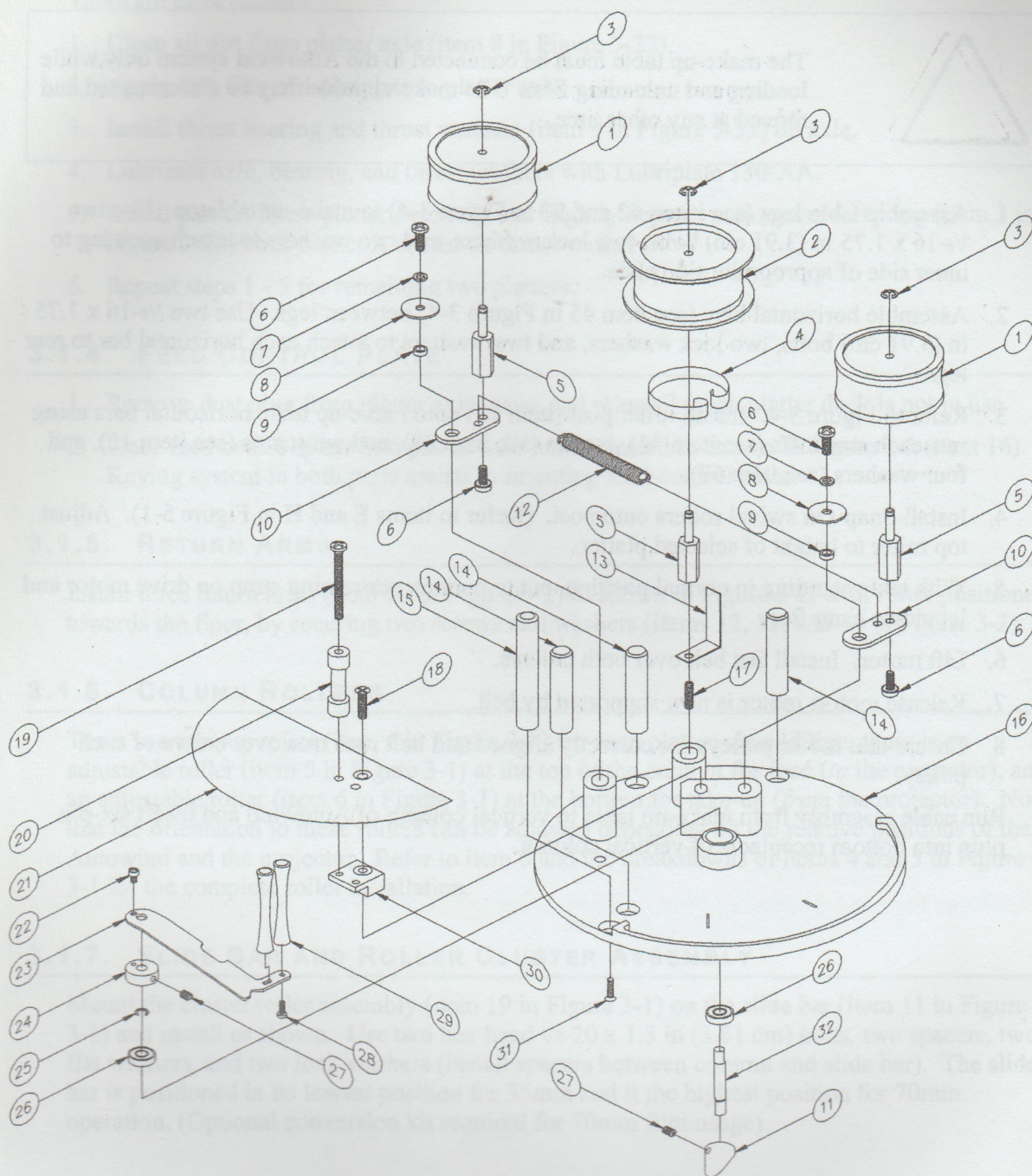
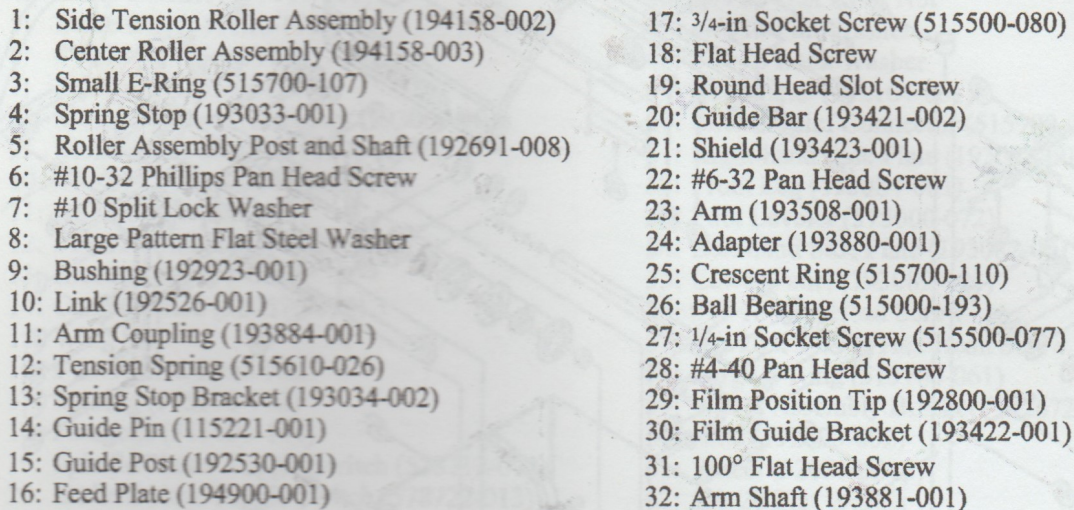


Figure 3-3: Platter Feed Control Assembly (196050-001) Diagram



- 
- |  |                                      |
|--|--------------------------------------|
| 1: Side Tension Roller Assembly (194158-002)   | 17: 3/4-in Socket Screw (515500-080) |
| 2: Center Roller Assembly (194158-003)         | 18: Flat Head Screw                  |
| 3: Small E-Ring (515700-107)                   | 19: Round Head Slot Screw            |
| 4: Spring Stop (193033-001)                    | 20: Guide Bar (193421-002)           |
| 5: Roller Assembly Post and Shaft (192691-008) | 21: Shield (193423-001)              |
| 6: #10-32 Phillips Pan Head Screw              | 22: #6-32 Pan Head Screw             |
| 7: #10 Split Lock Washer                       | 23: Arm (193508-001)                 |
| 8: Large Pattern Flat Steel Washer             | 24: Adapter (193880-001)             |
| 9: Bushing (192923-001)                        | 25: Crescent Ring (515700-110)       |
| 10: Link (192526-001)                          | 26: Ball Bearing (515000-193)        |
| 11: Arm Coupling (193884-001)                  | 27: 1/4-in Socket Screw (515500-077) |
| 12: Tension Spring (515610-026)                | 28: #4-40 Pan Head Screw             |
| 13: Spring Stop Bracket (193034-002)           | 29: Film Position Tip (192800-001)   |
| 14: Guide Pin (115221-001)                     | 30: Film Guide Bracket (193422-001)  |
| 15: Guide Post (192530-001)                    | 31: 100° Flat Head Screw             |
| 16: Feed Plate (194900-001)                    | 32: Arm Shaft (193881-001)           |

**Callouts for Figure 3-3: Platter Feed Control Assembly (196050-001) Diagram**



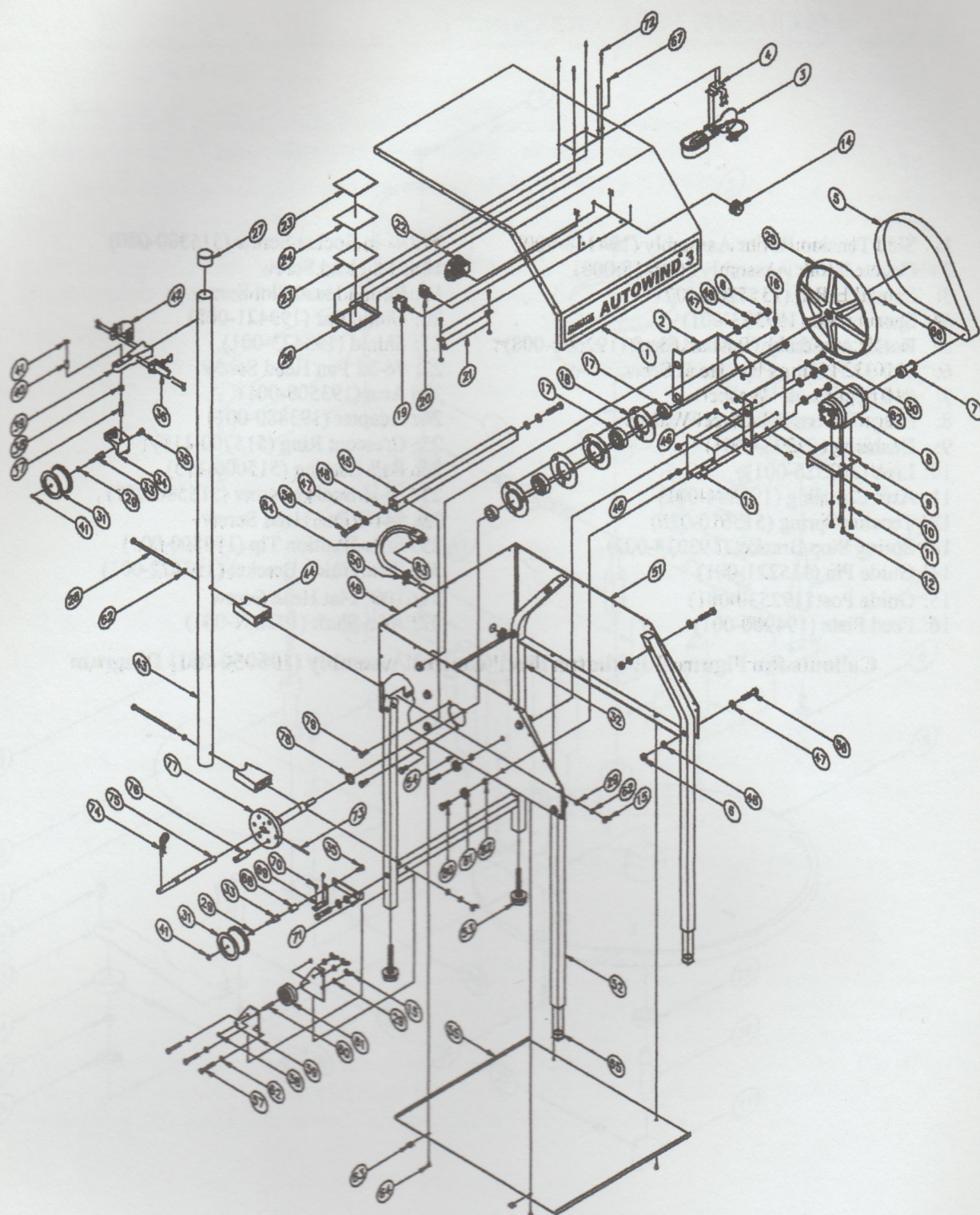


Figure 3-4: Make-Up Table Assembly (193052-003) Diagram



- |   |  |
|---|--|
| 1: Top Wrap (193071-001)                            | 43: Roller Post (192158-002)             |
| 2: Motor Bracket and Shaft (193062-001)             | 44: Stand-Off (192270-001)               |
| 3: Lamp (546650-002)                                | 45: Horizontal Bar Assembly (192155-001) |
| 4: Lamp Bracket (193117-001)                        | 46: #1/4-20 Hex Head Nut                 |
| 5: Drive Belt (515000-190)                          | 47: #3/8-16 Flat Washer                  |
| 6: #3/8-16 Hex Head Nut                             | 48: #3/8-16 Lock Washer                  |
| 7: Pulley (193055-001)                              | 49: Rear Panel (192164-001)              |
| 8: Motor and Lead Assembly (193060-001)             | 50: Strain Relief Connector (515900-029) |
| 9: Motor Pivot Bracket (193054-001)                 | 51: Right-hand Side Plate (193082-002)   |
| 10: #1/4-20 x 7/8-in Hex Head Screw                 | 52: Front Leg (193084-001)               |
| 11: 10-32 Flat Washer                               | 53: Foot Leveler (515000-072)            |
| 12: #10-32 Phillips Pan Head Screw                  | 54: Left-hand Side Plate (193082-001)    |
| 13: Bracket (193097-001)                            | 55: Lower Panel (193089-001)             |
| 14: Control Knob (520570-058)                       | 56: #3/8-16 Hex Head Screw               |
| 15: Wing Nut  | 57: #1/4-20 x 1-3/4-in Hex Head Screw    |
| 16: #5/16-18 Hex Head Nut                           | 58: Large E-Ring (515700-061)            |
| 17: Bearing (515000-142)                            | 59: Wheel Assembly Bracket (192672-002)  |
| 18: Flangette (515000-144)                          | 60: Axle (192673-002)                    |
| 19: Spindle/Platter Toggle Switch (578712-012)      | 61: Wheel (520810-210)                   |
| 20: Brake/Switch Toggle Switch (578722-013)         | 62: #1/4-20 Flat Washer                  |
| 21: Resistor (555750-003)                           | 63: Speed Nut (515700-112)               |
| 22: MK3 Speed Control Assembly (193067-001)         | 64: #8-1/2 Phillips Pan Head Screw       |
| 23: Viewer Safety Window (191826-001)               | 65: Plastic Glide (515000-299)           |
| 24: Mylar Screen (192024-001)                       | 66: Set Screw                            |
| 25: Drive Wheel (192224-001)                        | 67: Screw with Washer                    |
| 26: View Screen Retainer (191823-001)               | 68: Spacer (192948-004)                  |
| 27: Electrical Connector Plug (515000-179)          | 69: Swivel Bracket (192815-002)          |
| 28: #1/4-20 x 6-in Hex Head Screw                   | 70: Film Guide (192804-001)              |
| 29: #1/4-20 Lock Washer                             | 71: Bottom Roller Bracket (193072-001)   |
| 30: #1/4-20 x 5/8-in Hex Head Screw                 | 72: Pop Rivet (515310-002)               |
| 31: High-Speed Flanged Roller Assembly (194209-001) | 73: Locking Screw (192167-002)           |
| 32: Rear Leg (193083-001)                           | 74: Cotter Pin (515000-117)              |
| 33: Shaft Assembly (196213-001)                     | 75: Reversible Shaft (192159-001)        |
| 34: Swivel Bracket (194201-003)                     | 76: Drive Pin (192160-001)               |
| 35: #1/4-20 x 1-3/8-in Hex Head Screw               | 77: Machined Shaft/Hub (192254-001)      |
| 36: Tension Latch (515700-103)                      | 78: Spacer (192168-002)                  |
| 37: Swivel Shaft (192813-001)                       | 79: #5/16-18 x 3/4-in Hex Head Screw     |
| 38: Roller Assembly Spacer (191414-006)             | 80: #3/8-16 x 1-in Hex Head Screw        |
| 39: Roller Support (192827-002)                     | 81: Grommet Clamp (518508-021)           |
| 40: Sleeve Bearing (515000-173)                     | 82: Bushing (192792-001)                 |
| 41: Small E-Ring (515700-107)                       | 83: Plug with Cable Clamp (524206-004)   |
| 42: Strap Clamp with Hinged Bracket (192175-001)    | 84: Cable Assembly (192945-002)          |

**Callouts for Figure 3-4: Make-Up Table Assembly (193052-003) Diagram**







## 4. PRINCIPLES OF OPERATION

A film-position sensor controls the speed of the platter that feeds film to the projector, and a return arm underneath the platter controls the speed of the platter that receives film from the projector. (See Figure 3-3.) Each platter is independently driven by its own direct-current (DC) permanent magnet torque motor.

Each drive motor is controlled by its individual motor speed control card, located in the control assembly (Figure 4-1). This motor-control card operates in conjunction with a control sensor assembly (item 21 in Figure 3-3), located at the end of each platter support arm. The control sensor consists of an IR-emitting diode (LED) source with a photo-diode mounted opposite the IR-LED.

The IR-LED maintains a constant preset intensity. A rotating variable-density filter, driven by either the film-position sensor or the return arm, operates between the LED and the photo-diode. Increased intensity on the photo-diode causes an increased current to flow to the motor speed-control card; in the same manner, decreased light causes a decrease in current.

The current is amplified and converted to DC for the drive motor. The control system provides precise and smooth control of the platter speeds without employing mechanical contacts that are subject to wear or pitting.



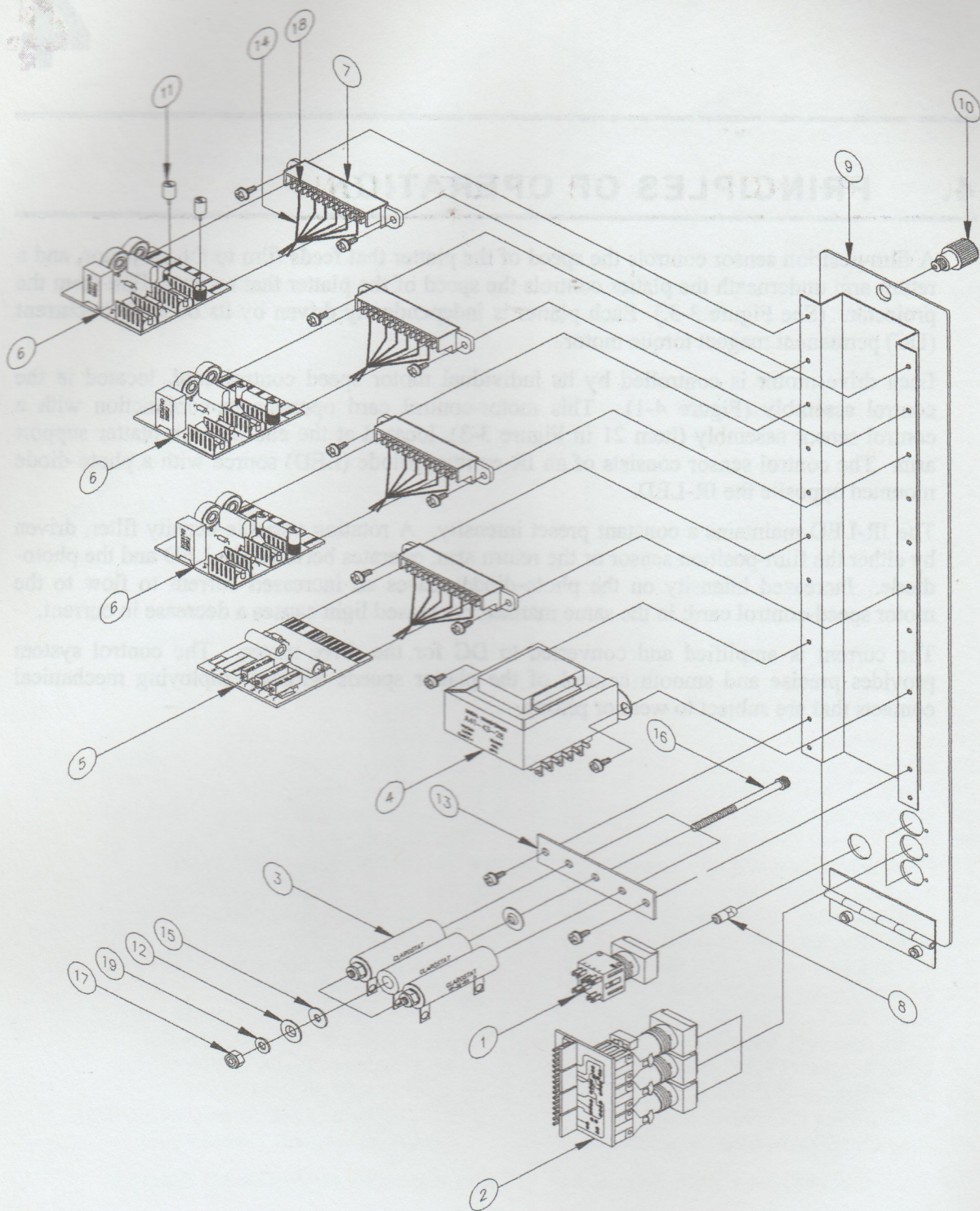


Figure 4-1: Door Panel and Control Modules Assembly Diagram



5

## 5. ALIGNMENT AND CHECKOUT PROCEDURES

- |   |   |
|---|---|
| 1: OFF/ON Switch (578000-076)                                       | 10: Captive Screw (515700-117)                |
| 2: Make-Up/Brake-Down Mode (194871-001)<br>Selector Switch Assembly | 11: Fuse (546105-008)                         |
| 3: Resistor (555030-903)  | 12: Steel Washer (515810-404)                 |
| 4: Step-down Transformer (194548-002)                               | 13: Resistor Mounting Bracket (192882-001)    |
| 5: LED Card (117509-001) or -004 for IR sensors.                    | 14: Door Module Harness Assembly (192870-001) |
| 6: Motor Control Card (192883-001)                                  | 15: Silastic Washer (100425-001)              |
| 7: Socket (524715-005)  | 16: Socket Head                               |
| 8: OFF/ON Indicator Light Bulb (546536-002)                         | 17: Self-Locking Nut                          |
| 9: Panel Door Module (194911-001)                                   | 18: Push-In Connector Pin (524900-040)        |
|   | 19: Flat Washer                               |

**Callouts for Figure 4-1: Door Panel and Control Modules Assembly Diagram**

## 5.2. AUTOWIND CONTROLS

The Autowind control assembly (item 15 in Figure 3-2) is on the side of the column (item 1 in Figure 3-2), above the slide bar (item 11 in Figure 3-1). The controls are:

- **AC POWER ON/OFF SWITCH WITH PILOT LIGHT (item 16 in Figure 3-2)**  
This switch must be set to ON, and the pilot light must come on, before the Autowind can operate. However, the power switch does not have to be set to ON for operation of the autowind from the make-up table.
- **MAKE-UP MODE SWITCHES (item 17 in Figure 3-2)**  
The platters are numbered consecutively from top to bottom. Push the #1, #2, or #3 switches to select the platter that will be used to make up or tear down the program.



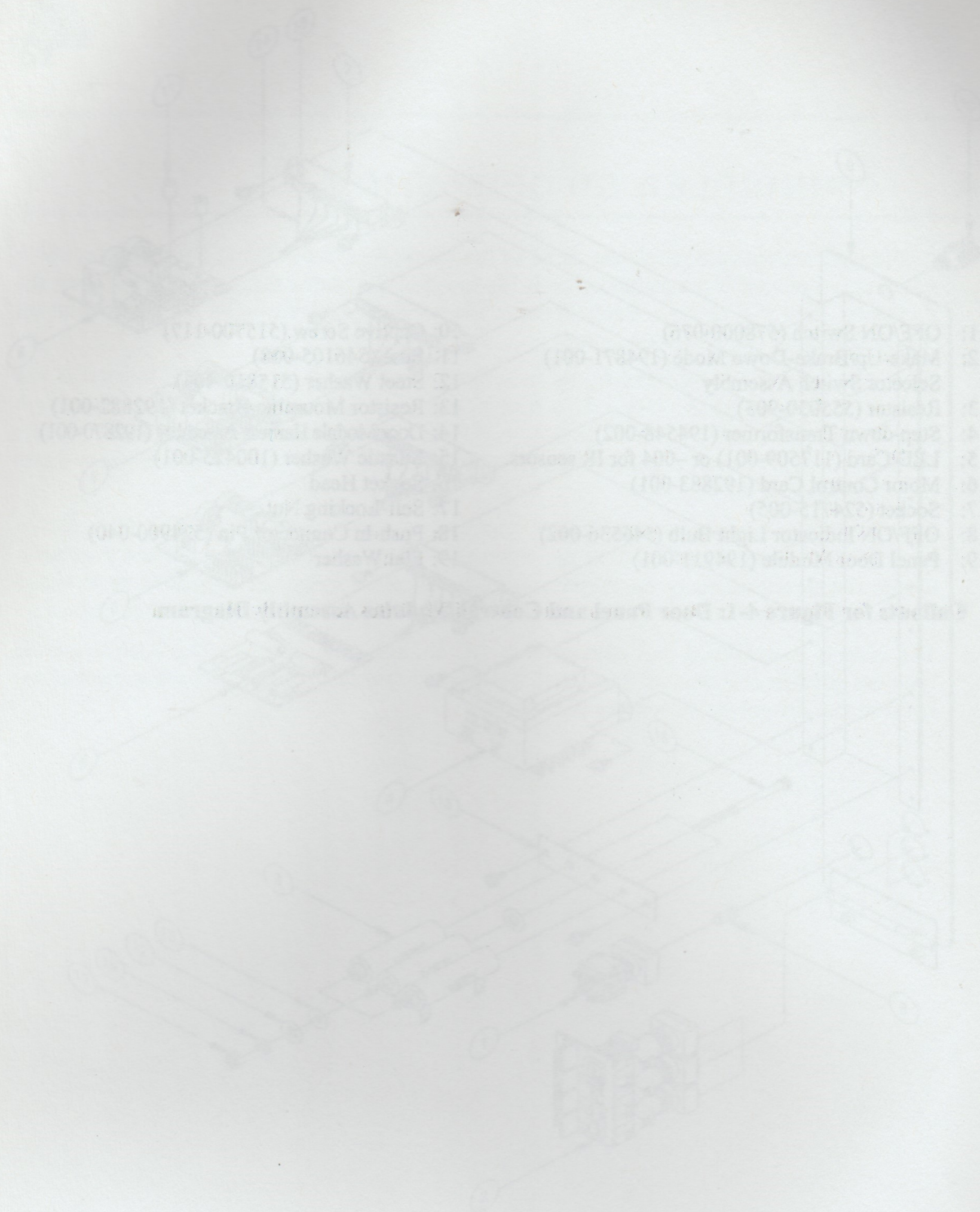


Figure 4-1: Door Panel and Control Modules Assembly Diagram



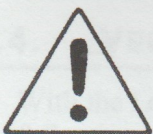
## 5. ALIGNMENT AND CHECKOUT PROCEDURES



These procedures are to be performed *without* film in the projection system.

### 5.1. PLUGS

1. Plug 115-V, 15-amp, AC plug from base of Autowind column (item 46 in Figure 3-1) into corresponding grounded wall outlet. (The Autowind-3R Film Handling System can be configured for other voltages; contact Christie for more information.)
2. Insert six-pin plug from make-up table into receptacle on Autowind column (item 34 in Figure 3-1).



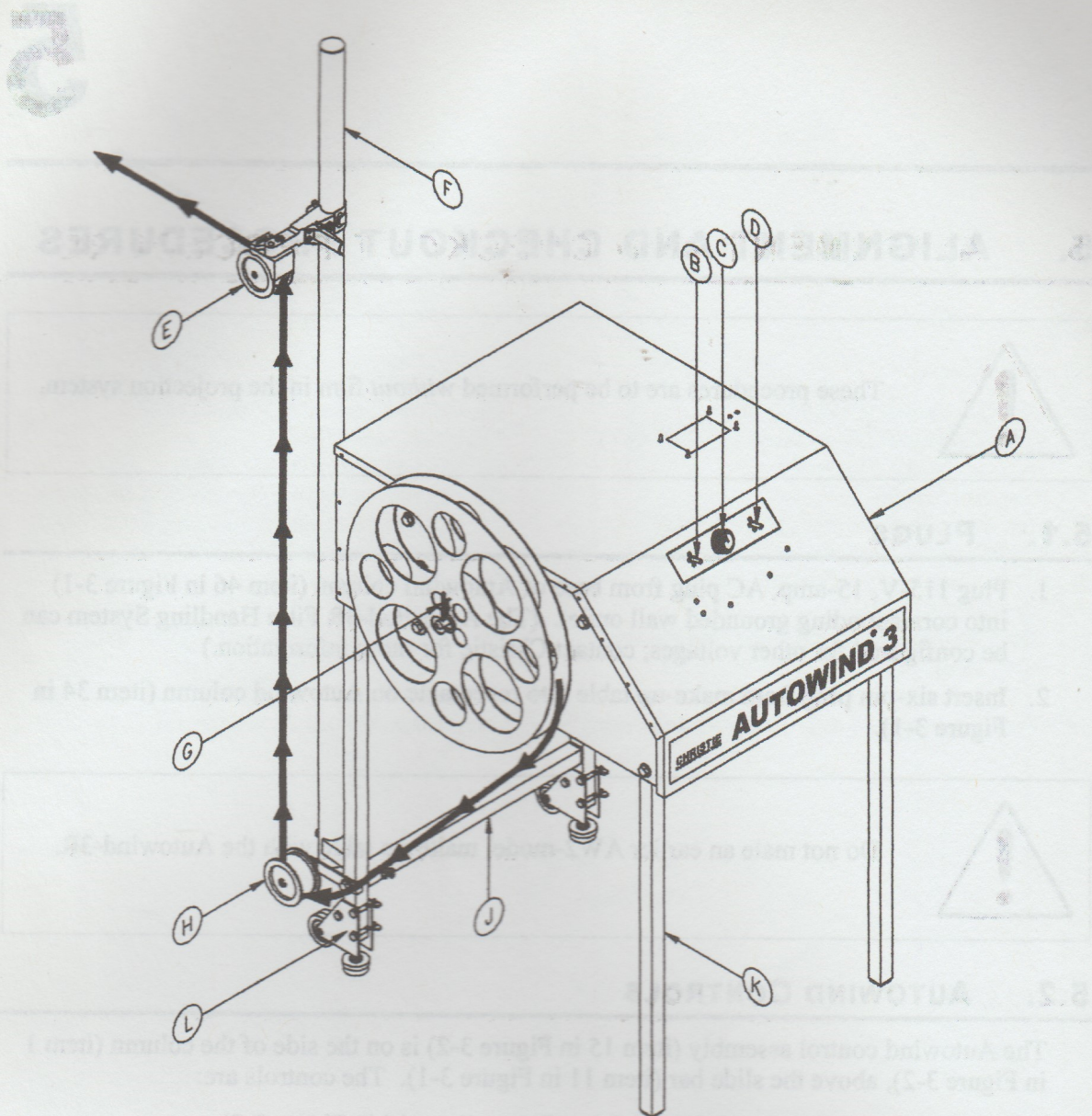
Do not mate an earlier AW2-model make-up table with the Autowind-3R.

### 5.2. AUTOWIND CONTROLS

The Autowind control assembly (item 15 in Figure 3-2) is on the side of the column (item 1 in Figure 3-2), above the slide bar (item 11 in Figure 3-1). The controls are:

- AC POWER ON/OFF SWITCH WITH PILOT LIGHT (item 16 in Figure 3-2)  
This switch must be set to ON, and the pilot light must come on, before the Autowind can operate. However, the power switch does not have to be set to ON for operation of the Autowind from the make-up table.
- MAKE-UP MODE SWITCHES (item 17 in Figure 3-2)  
The platters are numbered consecutively from top to bottom. Push the #1, #2, or #3 switches to select the platter that will be used to make up or tear down the program.





- A: Make-Up tabletop
- B: Left (LOAD SPINDLE/OFFLOAD PLATTER) Control Panel Switch
- C: Speed Control Knob
- D: Right (RUN/OFF/BRAKE) Control Panel Switch
- E: Top Swivel Roller
- F: Roller Post
- G: Film Reel
- H: Bottom Swivel Roller
- J: Horizontal Support Bar
- K: Front Leg
- L: Rear Leg Roller

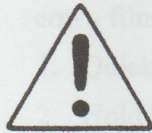
Figure 5-1: Make-Up Table and Film Track to Autowind



### 5.3. MAKE-UP TABLE CONTROLS

The make-up table control panel is located on the front of the make-up table console (item A in Fig. 5-1). The controls are:

- **LOAD SPINDLE/OFFLOAD PLATTER SWITCH (item B in Figure 5-1)**  
This switch is located on the left side of the panel. It selects the drive motor of the platter or spindle. This is a three-position switch; it is OFF in the center position.
- **RUN/OFF/BRAKE SWITCH (item D in Figure 5-1)**  
This switch energizes the make-up table and controls braking. To stop both the platter and the reel spindle when unloading film:
  1. Quickly switch from RUN to BRAKE.
  2. Hold in that position until the platter stops.
  3. Release the switch toggle to turn the make-up table OFF.
- **SPEED CONTROL KNOB (item C in Figure 5-1)**  
This switch controls the platter or spindle speed when making up or tearing down. When turned fully counterclockwise, it is in the OFF position.



Always turn the speed control to OFF after completing a sequence to avoid a full-speed start.

### 5.4. VERIFYING LOAD SPINDLE/LOAD PLATTER OPERATION

With the LOAD SPINDLE/OFFLOAD PLATTER switch in the OFF (center) position, perform the following steps:

1. Push make-up mode switch (item 17 in Figure 3-2) to select desired platter.
2. Set left make-up table control panel switch (item B in Figure 5-1) to LOAD PLATTER (Down). Set right control panel switch (item D in Figure 5-1) to RUN (Up).
3. Gradually turn speed control knob (item C in Figure 5-1) clockwise. Verify that correct platter does rotate counterclockwise. Maximum platter speed should be about 60 RPM.
4. Turn speed control knob OFF.
5. Set left control panel switch (item B in Figure 5-1) to LOAD SPINDLE (Up). Set right control panel switch (item C in Figure 5-1) to RUN (Up).
6. Turn speed-control knob clockwise. Verify that make-up table spindle turns in counterclockwise direction.
7. Push right control panel switch downward to BRAKE position and hold it there. Observe that spindle continues to turn; spindle torque will be proportional to speed-control knob setting. Release left control panel switch and let it return to OFF position.

Repeat steps 1 - 7 for each platter. The make-up table may be disconnected from the Autowind column if desired.



## 5.5. MARS MAKE-UP AND REWIND SYSTEM

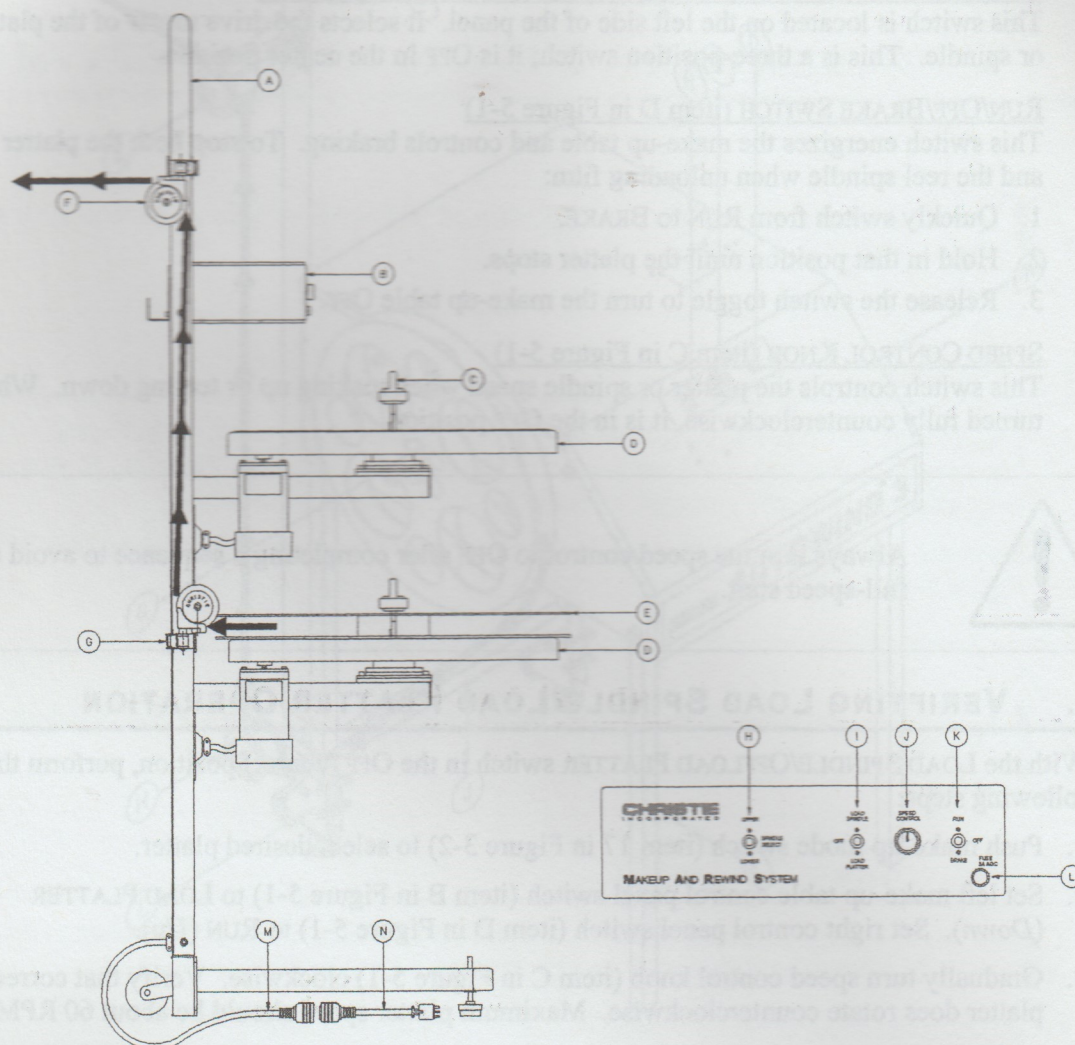


Figure 5-2: MARS Make-Up Table and Film Track to Autowind



## **MARS TABLE CONTROLS**

The make-up table control panel is located at the front of the pedestal (Item B in Fig B-1).

The controls are:

- **Upper / Lower Spindle Select Switch (Item H in Fig. B-1)**  
Selects the drive motor of the upper or lower spindle to be loaded with film.
- **Load Spindle / Load Platter Switch (Item I in Fig. B-1)**  
Selects a drive motor of the spindle (MARS) or platter (AW3).
- **Speed Control Knob (Item J in Fig. B-1)**  
Controls the spindle or platter speed when making up or tearing down. Turning the knob fully counterclockwise (12 o'clock) places it in the off position.
- **Run / Off / Brake Switch (Item K in Fig. B-1)**  
Energizes the MARS and controls braking. To stop the platter and the spindle when tearing down film:
  1. Quickly switch from Run to Brake.
  2. Hold the toggle switch in the brake position until the platter stops.
  3. Release the brake position to turn MARS Off.

## **VERIFYING LOAD SPINDLE / LOAD PLATTER OPERATION**

With the Load Spindle / Load Platter Switch in the Off position, perform the following steps:

1. At the platter column push the make-up/break-down mode switch (Item 17 in Fig. 3-2) to select the desired platter disc.
2. At the MARS table Set the Upper or Lower Spindle Select Switch to the desired position.
3. Set the Load Spindle / Load Platter Switch to LOAD PLATTER. Set the Run / Brake Switch to RUN.
4. Gradually turn the Speed Control Knob clockwise. Verify that the correct platter disc rotates counterclockwise.
5. Turn the Speed Control Knob OFF.
6. Set the Load Spindle / Load Platter Switch to LOAD SPINDLE. Set the Run / Brake Switch to RUN.
7. Gradually turn the Speed Control Knob clockwise. Verify that the correct MARS table spindle rotates counterclockwise.



8. Push the Run / Off / Brake Switch to the BRAKE position and hold it there. Observe that the spindle continues to turn; spindle torque will be proportional to speed – control knob setting. Release the Brake position and allow it to return to OFF.

Repeat steps 1 – 8 for each platter disc and MARS spindle.

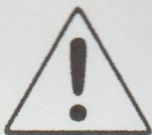


If any of the above procedures does not check out properly, refer to the Troubleshooting Guide (Section 8) and Schematics (Appendix A).

## 5.6. POST-INSTALLATION CHECKOUT PROCEDURES

To verify proper operation of the newly installed Autowind-3R Film Handling System:

1. Load five- to ten-minute film onto Autowind.
2. Run film through projector to (take-up) and from (feed-out) all three platters.



If any speed settings are incorrect or if the system malfunctions in some other manner, execute the troubleshooting procedures in Section 8 of this manual.



## 6. OPERATING THE AUTOWIND

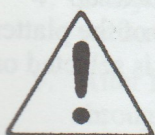


These procedures require film in the projection system. For the initial checkout of the Autowind, Christie strongly recommends the use of a 5- to 10-minute film to test the operation of all platters before loading a full show onto the system.

### 6.1. LOADING AND UNLOADING FILM

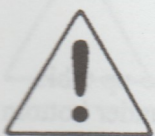
#### 6.1.1. LOADING FILM ONTO THE AUTOWIND

1. Position make-up table four to five feet from Autowind. Place post end toward platters. Connect make-up table to Autowind as described in Section 5.1.
2. Place take-up ring (item 37 in Figure 3-1) onto selected platter. Push corresponding make-up mode switch (item 17 in Figure 3-2).
3. Place first reel of film on make-up table spindle (see Figure 5-1). Verify that film comes off reel with clockwise rotation of table spindle.
4. Pull film leader from reel. Thread film under lower roller and over top roller. Ensure that rollers caster toward reel and platter, respectively.
5. Draw film toward take-up ring and place end of film in take-up ring slot.



The film leader must be long enough to run from the Autowind to the projector and back to the Autowind.

6. Adjust height of top swivel roller (item 5 in Figure 3-1) so that film clears edge of platter.

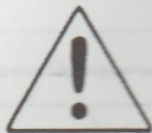


Adjust height carefully. If the film track is too low, the film could be scratched; if the track is too high, the film could "climb" the take-up ring.

7. Set left switch on make-up table to LOAD PLATTER (*Down*). Set right switch to RUN (*Up*).



8. Gradually rotate speed control knob to increase speed and wind film from reel to platter. When reel is empty, turn speed control to OFF and push brake switch to stop platter.
9. Place next film reel on reel spindle. Cut off leader and splice film to tail end of preceding film.



Always splice film with tape on both sides of the film.

After the splice is made, use a white or yellow marking crayon or tape to mark the splice for future reference.

10. Again set right switch to RUN, turn speed control to start loading platter, and let run until reel is empty.
11. Repeat steps 8 through 10 above until entire length of film is loaded onto platter. (The Autowind system with 52-inch platters can accommodate approximately 25,000 feet of film.)
12. Place anti skid clips around periphery of wound film after complete make-up. Moisten cups with water so they will adhere securely to platter.

#### 6.1.2. LOADING NEW SHOWS

---

1. Transfer film from standard 2,000-foot shipping reels onto 6,000-foot reel on rewind bench. During this sequence, inspect film for bad splices, cue marks, and other defects.
2. Perform necessary splices on rewind bench as usual.
3. Place 6,000-foot reel on make-up table reel spindle and transfer to Autowind platter.

During the transfer period, prepare another 6,000-foot reel on the rewind bench. In the intermission following the first feature, break the splice and rewind the second feature on a different platter.

Transfer film from one platter to another by properly threading and driving the take-up platter. Use the make-up table speed control knob to regulate the take-up speed of the platter. Before beginning the transfer, verify that the appropriate make-up mode switch is selected on the door module assembly.

#### 6.1.3. UNLOADING FILM FROM THE AUTOWIND

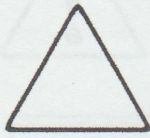
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Film can be removed from any platter. Push the appropriate make-up mode switch (item 17 in Figure 3-2) to select the platter.

1. Place empty 2,000- or 6,000-foot reel on make-up table reel spindle.
2. Grasp outside end of film on platter to be unloaded. Draw film toward make-up table. Thread film over top roller, which has been adjusted to correct height, and under bottom roller. Attach film to empty reel on reel spindle.
3. Set left switch to LOAD SPINDLE (*Up*) and right switch to RUN (*Up*).



4. Turn speed control knob slowly clockwise from OFF. Spindle will rotate and pull film from platter. Watch for splice as reel fills.
5. When splice appears to be 6 to 8 turns from coming off platter, quickly switch from RUN to BRAKE and hold switch until platter stops.
6. Turn speed control knob back to OFF.

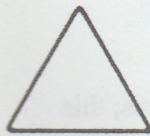


If the splice is already on the shipping reel set the left switch to LOAD PLATTER and the right switch to RUN, and slowly turn the speed control knob clockwise. (This operation reverses the platter rotation and pulls the film back onto the platter until the splice reappears.) Turn the speed control knob back to OFF.

7. Open film splice.
8. Splice leader to film on reel.
9. Splice tail to end of film coming from Autowind.
10. Remove full reel from reel spindle and place it in its film can.
11. Repeat steps 1 through 10 until all film has been transferred from Autowind to original reels.

## 6.2. FILM THREADING PROCEDURE

1. Pinch ends of take-up ring together and lift straight up from platter being used.
2. Place take-up ring on empty platter. (With the Autowind system, film can be fed from any platter and rewind back onto any other empty platter of the system).
3. Grasp end of film from inside of loop that was just removed from slot in take-up ring. Thread film around feed arm (item 23 in Figure 3-3). As film is pulled, platter will turn and feed film as required (POWER ON switch set to ON).
4. Carry film to vertical column of Autowind. Thread onto top and bottom rollers of the vertical column.
5. After film has been threaded through top roller assembly (item 5 in Figure 3-1), pull through enough film to reach to projector and back to Autowind.
6. Thread film through projector as usual.

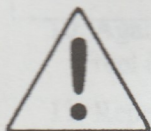


If a check for proper projector threading or framing is desired at this point, start the projector or run it manually for a few frames.

7. Return film start through bottom roller assembly (item 6 in Figure 3-1) and cluster roller (item 8 in Figure 3-1) to Autowind platter where take-up ring was previously placed.
8. Move return arm to vertical column and hold it in position.



9. Place film around return roller. Insert end of film into slot of take-up ring.
10. Remove any excess film slack:
  - a) While guiding film onto return arm roller, move return arm slowly away from vertical column. When arm is 14 to 16 inches away from vertical column, platter will begin to turn slowly.
  - b) Allow platter to rotate at a slow speed until all slack is removed from film coming from projector.
  - c) Release arm when slack has been eliminated.



Ensure that the take-up arm is set in such a position that the platter motor starts simultaneously with the projector. This is especially important for 70-mm films. To set the take-up arm in this position, turn the platter clockwise until the platter motor begins to pull the film.

The Autowind system is now ready for operation with the projector. Before starting the projector, check to ensure that **all** of the steps already described in this manual have been completed.

### 6.3. AUTOWIND SYSTEM OPERATION

---

#### 6.3.1. OPTIMIZING OPERATIONS

---

Christie makes the following recommendations for optimum Autowind operation and performance:

- If two separate films are being used split the program onto two platters, with one film on each platter, after the Autowind system is loaded. This enables a smoother feed of the film from the platter and reduces the possibility of oscillation due to dirt, static electricity, and old or brittle film.
- Keep the projection booth temperature close to 70°F (23°C). At lower temperatures, the film tends to become brittle and stiff; this can cause oscillation and erratic operation of the feed arm.

#### 6.3.2. RUNNING THE SYSTEM

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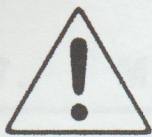
1. Verify that power switch is pushed in to ON position and pilot light is ON.
2. Start projector. Observe both feed and return platter on Autowind.

During the initial start-up, there may be some oscillation of the return and feed arms; this condition should settle to a reasonable equilibrium within one or two minutes.

During the first six to eight revolutions of the feed sequence, the film feed may lag somewhat. This is normal. When the platter attains normal speed, the feed control arm will settle to its proper operating position, approximately midway between start and maximum speed.



A malfunction is occurring if the film wraps around the center feed control assembly more than three or four times during the first 10 to 20 revolutions. Stop the projector immediately and check the platter speed (see Section 5.4).



- Unless a serious malfunction occurs, do not turn the projector off until the take-up arm and platter have had time to settle into a steady operating motion. If the projector is turned off too quickly after startup, the momentum of the platter may cause film breakage.
- Similarly, do not "inch" the projector by rapidly turning the motor on and off.

## 7.1. PREVENTIVE MAINTENANCE

Christie strongly recommends execution of the maintenance procedures described in this section at least as often as indicated.

### 7.1.1. DRIVE MOTORS

1. At least every six months, remove drive motor brush caps and brushes, use compressed air to blow carbon dust from motors.



A platter drive motor will short to ground if too much carbon dust accumulates inside the motor. This procedure is essential to protect drive motors from grounding out.

2. At least every six months or after 1,500 hours of operating time, whichever comes first, check drive motor brushes.
3. Replace drive motor brushes when brushes have worn to 1/4-inch length or less. This prevents damage to commutator.
4. Check rubber on drive motor wheels annually. Replace any that show excessive wear. If wheel rubber wears too thin, motor cannot apply proper pressure to platter drive hub, and drive wheel may slip.



When the Autowind system is ready for operation, the film feed will be in the "Ready" position. The film feed will be in the "Ready" position when the film is in the "Ready" position. The film feed will be in the "Ready" position when the film is in the "Ready" position.

When the Autowind system is ready for operation, the film feed will be in the "Ready" position. The film feed will be in the "Ready" position when the film is in the "Ready" position. The film feed will be in the "Ready" position when the film is in the "Ready" position.



Ensure that the take-up arm is set in such a position that the platter motor starts simultaneously with the projector. This is especially important for 35mm film. To set the take-up arm in this position, turn the platter stock stop until the platter motor begins to pull the film.

The Autowind system is now ready for operation with the projector. Before starting the projector, check to ensure that all of the steps already described in this manual have been completed.

## 5.3. AUTOWIND SYSTEM OPERATION

### 5.3.1. OPTIMIZING OPERATIONS

Christie makes the following recommendations for optimum Autowind operation and performance:

- If two separate films are being used split the program onto two platters, with one film on each platter, after the Autowind system is loaded. This reduces the risk of the film from the platter and reduces the possibility of oscillation due to film, static electricity, and old or brittle film.
- Keep the projection booth environment close to 70°F (21°C). At lower temperatures, the film tends to become brittle and stiff; this can cause oscillation and erratic operation of the film arm.

### 5.3.2. RUNNING THE SYSTEM

1. Verify the power switch is pushed in to ON position and pilot light is ON.
2. Start projector. Observe both feed and return platters on Autowind.

During the initial start-up, there may be some oscillation of the return and feed arms; this condition should settle to a reasonable equilibrium within one or two minutes.

During the first six to eight revolutions of the feed sequence, the film feed may lag somewhat. This is normal. When the platter reaches normal speed, the feed control arm will settle to its proper operating position, approximately midway between start and maximum speed.



## 7. MAINTENANCE AND ADJUSTMENTS

The Autowind-3R Film Handling System is a simple and highly reliable system when properly installed and aligned. The reliability of the Autowind is increased by the presence of the third platter: If one platter malfunctions, operation can continue with the other two platters.

Furthermore, the motor control cards is interchangeable: They can be plugged into any of the three connectors (see items 6 and 7 in Figure 4-1). The drive motors (item 9 in Figure 3-1) is also interchangeable, and is mounted for easy removal and replacement.

Always perform basic preventive maintenance procedures at regularly scheduled intervals to maintain peak system performance of the Autowind-3R Film Handling System.

### 7.1. PREVENTIVE MAINTENANCE

Christie strongly recommends execution of the maintenance procedures described in this section at least as often as indicated.

#### 7.1.1. DRIVE MOTORS

1. At least every six months, remove drive motor brush caps and brushes; use compressed air to blow carbon dust from motors.



A platter drive motor will short to ground if too much carbon dust accumulates inside the motor. This procedure is essential to protect drive motors from grounding out.

2. At least every six months or after 1,500 hours of operating time, whichever comes first, check drive motor brushes.
3. Replace drive motor brushes when brushes have worn to 1/4-inch length or less. This prevents damage to commutator.
4. Check rubber on drive motor wheels annually. Replace any that show excessive wear. If wheel rubber wears too thin, motor cannot apply proper pressure to platter drive hub, and drive wheel may slip.



### 7.1.2. PLATTERS

---

1. Clean platter surfaces with an all-purpose cleaner; use detergents and water for normal dust and dirt. Do not use abrasive cleaners.
2. Use solvents to remove wax and grease build-up, but avoid contact with rollers or bearings.
3. Clean feed control plate and rollers regularly with soft bristle brush to remove dust accumulation.

### 7.1.3. ROLLERS

---

The rollers are made of a Teflon composition that normally requires no lubrication. A coating of light-machine oil is applied to the roller shaft at the factory in order to prevent corrosion and ensure quiet, smooth operation. Apply drop of light-machine oil if a squeak develops.

Roller bearings are used on the make-up table swivel rollers because of the heavy loads and high speeds. These roller bearings are lubricated at the factory with LUBRIPLATE 130-AA grease.

### 7.1.4. SPARE PARTS

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Christie recommends that the items described on the spare-parts list be kept in the projection booth.

### 7.1.5. FILM GUIDE SHIELD

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The film guide shield prevents dirt, film pieces, tape, and other debris from jamming or interfering with the operation of the film position sensor. Periodic cleaning of the film guide assembly is necessary. Christie recommends that the shield be cleaned at least once a week.

1. Use long dry bristled brush.
2. Stroke away from feed plate to keep foreign matter out of film sensor bearing area.

If the shield needs more thorough cleaning, remove the complete assembly (see following section) and wash it with an agent such as standard dishwashing detergent. A solvent may be necessary to remove wax buildup.

### 7.1.6. REMOVING AND INSTALLING FILM GUIDE SHIELD

---

1. To remove film guide assembly (items 19, 20, 21, and 30 in Figure 3-3), loosen #10 Philips head screw (item 18 in Figure 3-3) completely and lift film guide from feed control plate.
2. Disassemble film guide assembly.
3. Clean shield. Rinse thoroughly and let dry completely before reinstalling.
4. Place shield (item 21 in Figure 3-3) on film guide bracket (item 30 in Figure 3-3). Match holes to align pieces.



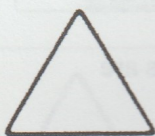
5. Secure by installing screw and guide bar (items 19 and 20 in Figure 3-3).
6. Reinstall completed assembly on feed control plate and secure in place with same #10 Philips head screw (item 18 in Figure 3-3).

#### 7.1.7. STATIC ELECTRICITY

Today's polyester film based prints, when run in conventional carpeted, air-conditioned projector booths, have been known to generate static electricity on the film which can cause oscillation and erratic operation of the platter system. To prevent static electricity buildup:

- Spray carpet and area around Autowind with static remover spray (commercially available in aerosol cans).
- Check electrical grounding of platter disks to a known earth ground.
- Anti-Static grounding rollers, which mount to center feed plate on the Autowind, are available from Christie (P/N: 196088-001).

These precautions remove most static electricity and ensure smoother operation of the Autowind system.



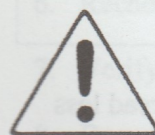
A film tension failsafe (196270-001) is available from Christie to prevent damage to the platter or projector in case of a film wrap.

#### 7.2. MOTOR SPEED CONTROL ADJUSTMENTS



The Autowind-3R Film Handling System must be leveled prior to making any speed control adjustments.

Before adjusting motor speed control, complete system checkout as described in Section 5.6.

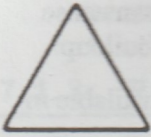


If any speed settings are incorrect or if the system malfunctions in some other manner, execute the troubleshooting procedures in Section 8 of this manual.



For correct alignment and adjustment of all speed control mechanism components:

### Calibration of older Cds-photocell control sensor systems.



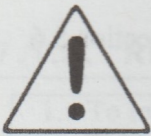
**NOTE:** This type of control sensor utilizes the adjustable LED power cards.

1. Turn power OFF.



When variable density filter is set in correct position, film position sensor arm may not be positioned directly over 0° mark on center feed plate. This does *not* affect operation; filter STOP position setting controls operation.

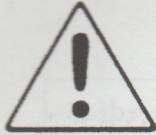
2. Verify that film sensor and return arm mechanism work freely and that no parts are dragging or improperly touching.
3. Remove appropriate motor speed control card and turn POWER ON.
4. Set film position sensor over 70° mark on feed control plate and hold in place. Allow at least five minutes after power is applied for control sensor to reach equilibrium.
5. Read resistance across pins 12 and 14 of motor speed control card connector (see Figure 3-1). If necessary, adjust LED intensity to obtain approximately 70 K $\Omega$  by turning the appropriate LED potentiometer. (Turn potentiometer clockwise to decrease resistance, CCW to increase resistance). Allow sufficient time for control sensor photocell to stabilize. When set in this manner, the LED calibrates the complete control system to the correct values.



Do not adjust LED intensity to increase or decrease motor speeds.

6. Check resistance value at 100° mark or full speed settings. Resistance should read less than 60 K $\Omega$ .
7. Turn motor speed control Hi-Pot 75% CW; turn motor speed control Lo-Pot 50% CW.
8. Turn power OFF. Install motor speed control card. Turn power ON.

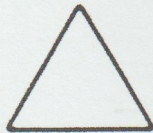


**WARNING**

**Do not touch card when power is on! Doing so may expose user to electrical shock.**

9. Set film position sensor to 70° mark and use Hi-Pot to adjust platter speed to 20±1 rpm. (Turn Hi-Pot clockwise to increase speed).
10. Set film position sensor to 20° mark and use Lo-Pot to adjust platter speed so that it just begins to move.
11. Reset film position sensor to 70° mark and allow one minute for system to stabilize. Re-check platter speed; if necessary, use Hi-Pot to reset to 20±1 rpm.
12. Move return arm toward Autowind column, platter should come to a stop.
13. Platter should not creep in the rest position.

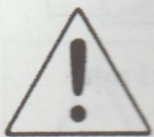
### Calibration of IR-LED/photo-diode control sensor systems.



**NOTE:** The sensors LEDs are pre-calibrated at the factory – no adjustment of LED current is necessary (LED card should have fixed value resistors). The only adjustments are the LOW and HIGH pots on the Speed Control Boards.

1. Turn on power.
2. Insert center feed plate in upper platter, and prop the sensor arm at 20°.
3. Adjust LOW pot until the motor starts to hum.
4. Prop the sensor arm at maximum (all the way to the stop).
5. Using a tachometer, adjust the HIGH pot for 27 RPM for a standard platter. (For high-speed platters, adjust the HIGH pot for 40 RPM as the default)
6. Recheck LOW setting.
7. Verify proper operation of return arm.
8. Repeat steps 1-7 for the other platter levels.
9. Close access panel.





The Autowind is a demand system. The platter operates at varying speeds to enable the film to feed to the projector at a constant speed. Film "sticking" caused by static, wax, bad splices, or some other problem may cause the film position sensor to move to different positions during operation. Further, the film condition and the diameter of the film on the platter cause the film to enter the feed plate at varying angles.

**Do not** change speeds to accommodate these conditions. Once the motor speeds have been set, they will meet all operating conditions in either feed-out or take-up mode for both 35-mm and 70-mm operation.

### 7.3. MAKE-UP TABLE ADJUSTMENT

1. Adjust starting speed of speed control by setting control knob about  $\frac{1}{8}$  inch from OFF detent.
2. Insert small trimming screwdriver through hole in panel face near MAX.
3. Turn screw until motor barely stops. (Turn screw CW to increase speed.)



## 8. TROUBLESHOOTING

This section helps the user to identify and, where possible, correct system malfunctions. The sections below are organized by component. For each component, the manual lists symptoms associated with possible problems, and then presents a table containing probable causes and steps to be taken to correct the problem.

Christie suggests that, when using these troubleshooting procedures to correct a malfunction, users copy the appropriate tables, record observations, and include them with maintenance/repair records for future reference.

|   |                          |  |
|---|--------------------------|--|
| A | Defective power supply   | Check power supply voltage and current. If voltage is low, replace power supply. |
|   | Defective power cord     | Check power cord for damage. If damaged, replace power cord.                     |
| B | Defective control switch | Check control switch for proper operation. If defective, replace control switch. |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| C | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| D | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| E | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| F | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| G | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| H | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| I | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| J | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| K | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |
| L | Defective control unit   | Check control unit for proper operation. If defective, replace control unit.     |
|   | Defective control cable  | Check control cable for damage. If damaged, replace control cable.               |

Table 8-1: Troubleshooting for Player Refuses to Run



## 8.1. AUTOWIND PLATTER

### 8.1.1. MALFUNCTION: PLATTER DOES NOT RUN

The platter does not run when the system is on.

|   | Probable Cause                                | Corrective Action  |
|---|---|--|
| A | No A-C voltage.                               | Provide necessary 100-120 volts AC to unit; verify that unit is plugged in and switch is set to ON.  |
| B | Platter-mode switch is at inappropriate mode. | Set mode switch to correct mode.   |
| C | Drive motor not plugged in.                   | Plug drive motor assembly into assembly.   |
| D | Blown fuse on motor control card.             | Replace fuse.  |
| E | Defective motor control card.                 | Test motor control card in another connector; replace if necessary.  |
| F | Defective control sensor.                     | 1) Verify that LED is working; replace LED card if necessary.<br>2) Test control sensor in another connector; replace sensor if necessary. |
| G | Motor brushes worn or making poor contact.    | Check drive motor brushes. Replace if worn below $\frac{1}{4}$ inch or worn unevenly.  |
| H | Motor is fouled.                              | Blow carbon dust out of motor.   |
| I | Motor is defective.                           | Replace motor.   |
| J | Defective wiring or connections.              | Check drive motor assembly power connection.   |
| K | Drive wheel loose.                            | Check condition of drive wheel; replace or tighten as required.  |
| L | Defective platter mode switch.                | Check P/C board ON switch. If runners are burned off, replace switch.  |

Table 8-1: Troubleshooting for Platter Refuses to Run



**8.1.2. MALFUNCTION: PLATTER RUNS TOO SLOW**

The platter is running at less than 25 RPM for maximum feed/return.

|   | Probable Cause                                 | Corrective Action   |
|---|--|---|
| A | Photocell resistance not properly adjusted.    | Measure and adjust resistance as described in Section 7.2.  |
| B | Motor speed control not properly adjusted.     | Check and adjust motor speed control as described in Section 7.2.   |
| C | Platter binding.                               | 1) Check platter level; level if necessary.<br>2) Check platter bearings for condition and lubrication. Replace or re-lubricate as required.  |
| D | Drive wheel slipping.                          | 1) Check spring tension on drive assembly. Replace as required.<br>2) Check vertical position of drive wheel to insure full contact with platter drive surface.<br>3) Check wheel condition for wear or dirt. Clean or replace as required. |
| E | Axle binding.                                  | Check axle assembly spring and bushing condition; lubricate replace if necessary.   |
| F | Motor brushes worn or making poor contact.     | Check drive motor brushes. Blow out residual carbon dust. Replace if worn below 1/4 inch or worn unevenly.  |
| G | AC line voltage too low (less than 105 volts). | Check AC voltage. If too low, install Variac or step-up transformer to provide 110-120 VAC.   |

**Table 8-2: Troubleshooting for Autowind Platter Too Slow**



**8.1.3. MALFUNCTION: PLATTER RUNS TOO FAST**

The platter is running at greater than 25 RPM for maximum feed or take-up.

|   | Probable Cause                                     | Corrective Action  |
|---|--|--|
| A | Photocell resistance not properly adjusted.        | Measure and adjust resistance as described in Section 7.2.   |
| B | Motor speed control not properly adjusted.         | Check and adjust motor speed control as described in Section 7.2.  |
| C | AC line voltage too high (more than 120 volts AC). | Check AC voltage. If too high, install Variac or step-down transformer to provide 100-120 volts, AC.     |
| D | Light leaking into control sensor.                 | 1) Verify that end cap is on securely.<br>2) Verify that ambient light or work light is not responsible. |

**Table 8-3: Troubleshooting for Autowind Platter Too Fast**

**8.1.4. MALFUNCTION: PLATTER RUNS ALL THE TIME**

The platter runs constantly.

|   | Probable Cause                                   | Corrective Action   |
|---|--|---|
| A | Drive motor shorted.                             | Replace drive motor.  |
| B | Motor-speed control is not properly adjusted.    | Check motor speed control. Adjust as described in Section 7.2.  |
| C | Faulty control sensor.                           | Replace control sensor.   |
| D | Light is leaking into control sensor.            | 1) Verify that end cap is on securely.<br>2) Verify that ambient sunlight or work light is not responsible. |
| E | Film-position sensor is sticking in ON position. | Determine cause of sticking and correct.  |

**Table 8-4: Troubleshooting for Platter Runs Constantly**



### 8.3. MAKE-UP TABLE

The make-up table does not operate.

|   | Probable Cause                           | Corrective Action   |
|---|--|---|
| A | Table not plugged into column.           | Plug make-up table into column. Verify that column has power.                     |
| B | Broken or missing belt.                  | Replace drive belt; check alignment.  |
| C | Motor speed control improperly adjusted. | Adjust motor speed control.   |
| D | Defective motor speed control sensor.    | Replace motor speed control sensor assembly.                                      |
| E | Worn motor brushes.                      | Replace motor brushes.  |
| F | Motor drive slipping.                    | Ascertain that all drive components are securely tightened and in good condition. |

Table 8-7: Troubleshooting for Make-Up Table

### 8.4. FILM BREAKAGE

Film breaks in make-up or tear down mode.

|   | Probable Cause         | Corrective Action   |
|---|------------------------|---|
| A | Excessive film tension | Make sure that Make-Up selector switch has been selected for appropriate platter level. Reduce speed as needed to reduce tension. |
| B | High-speed start       | Reset speed control after braking.  |

Table 8-8: Troubleshooting for Excessive Film Breakage



## A.1: AUTOWIND-3R FILM HANDLING SYSTEM

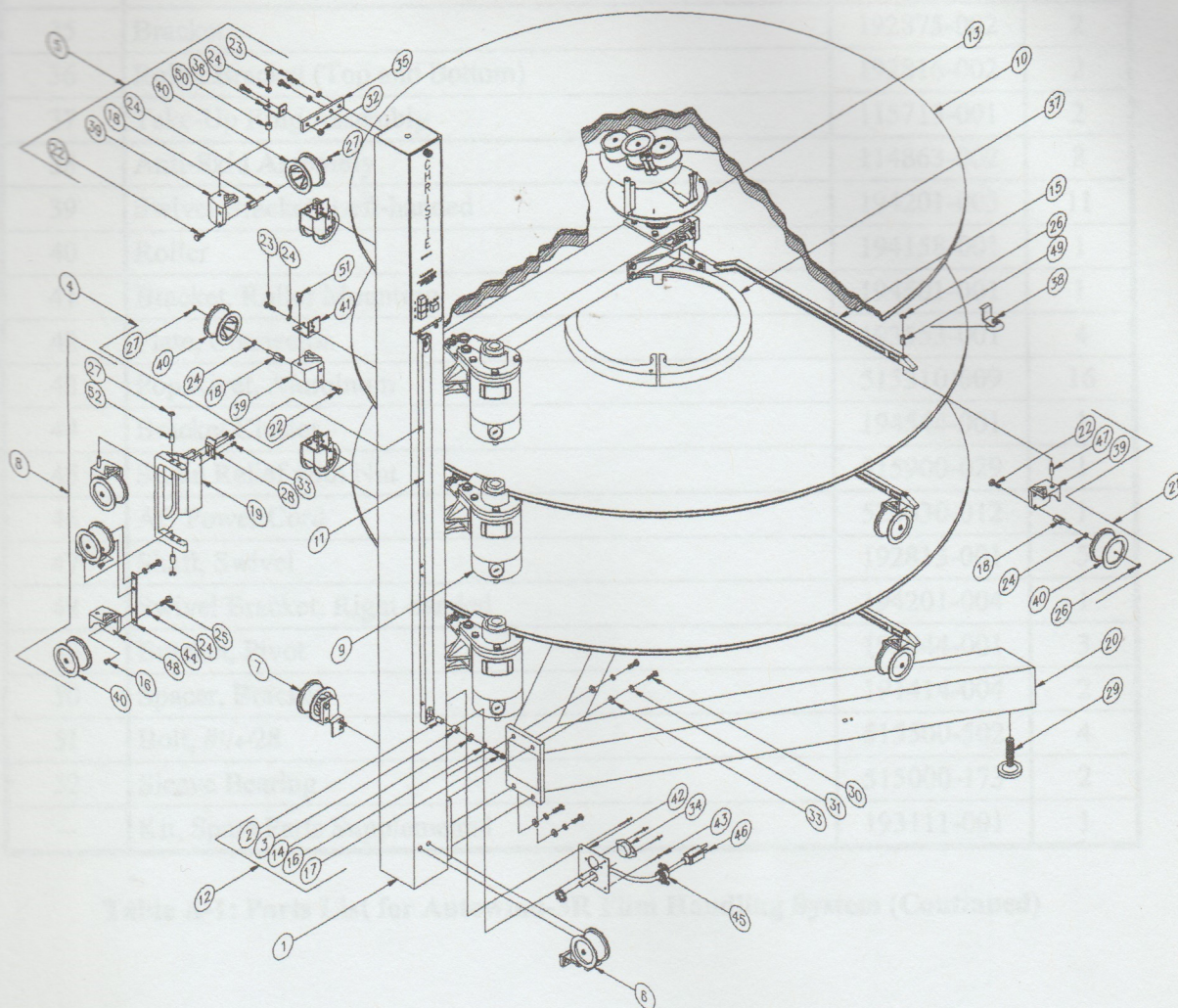


Figure A-1: Autowind-3R Film Handling System (193932-001)



| #  | Item Description                | Part Number | Qty. |
|----|---------------------------------|-------------|------|
| 35 | Bracket                         | 192875-002  | 2    |
| 36 | Roller Bracket (Top and Bottom) | 192816-002  | 2    |
| 37 | Take-Up Ring Assembly           | 115713-001  | 2    |
| 38 | Anti-Skid Assembly              | 114863-002  | 8    |
| 39 | Swivel Bracket, Left-handed     | 194201-003  | 11   |
| 40 | Roller                          | 194158-001  | 1    |
| 41 | Bracket, Roller Mounting        | 194501-001  | 1    |
| 42 | Plate, Connector                | 193553-001  | 4    |
| 43 | Pop Rivet, Aluminum             | 515310-009  | 16   |
| 44 | Bracket Cluster                 | 194544-001  | 1    |
| 45 | Strain Relief with Nut          | 515900-029  | 1    |
| 46 | AC Power Cord                   | 526030-012  | 1    |
| 47 | Shaft, Swivel                   | 192813-001  | 5    |
| 48 | Swivel Bracket, Right-handed    | 194201-004  | 1    |
| 49 | Bracket, Pivot                  | 192844-001  | 3    |
| 50 | Spacer, Bracket                 | 191414-004  | 2    |
| 51 | Bolt, #1/4-28                   | 515500-502  | 4    |
| 52 | Sleeve Bearing                  | 515000-173  | 2    |
| -- | Kit, Spare Parts Supplemental   | 193111-001  | 1    |

Table A-1: Parts List for Autowind-3R Film Handling System (Continued)



## A.6: PLATTER SUPPORT ARM

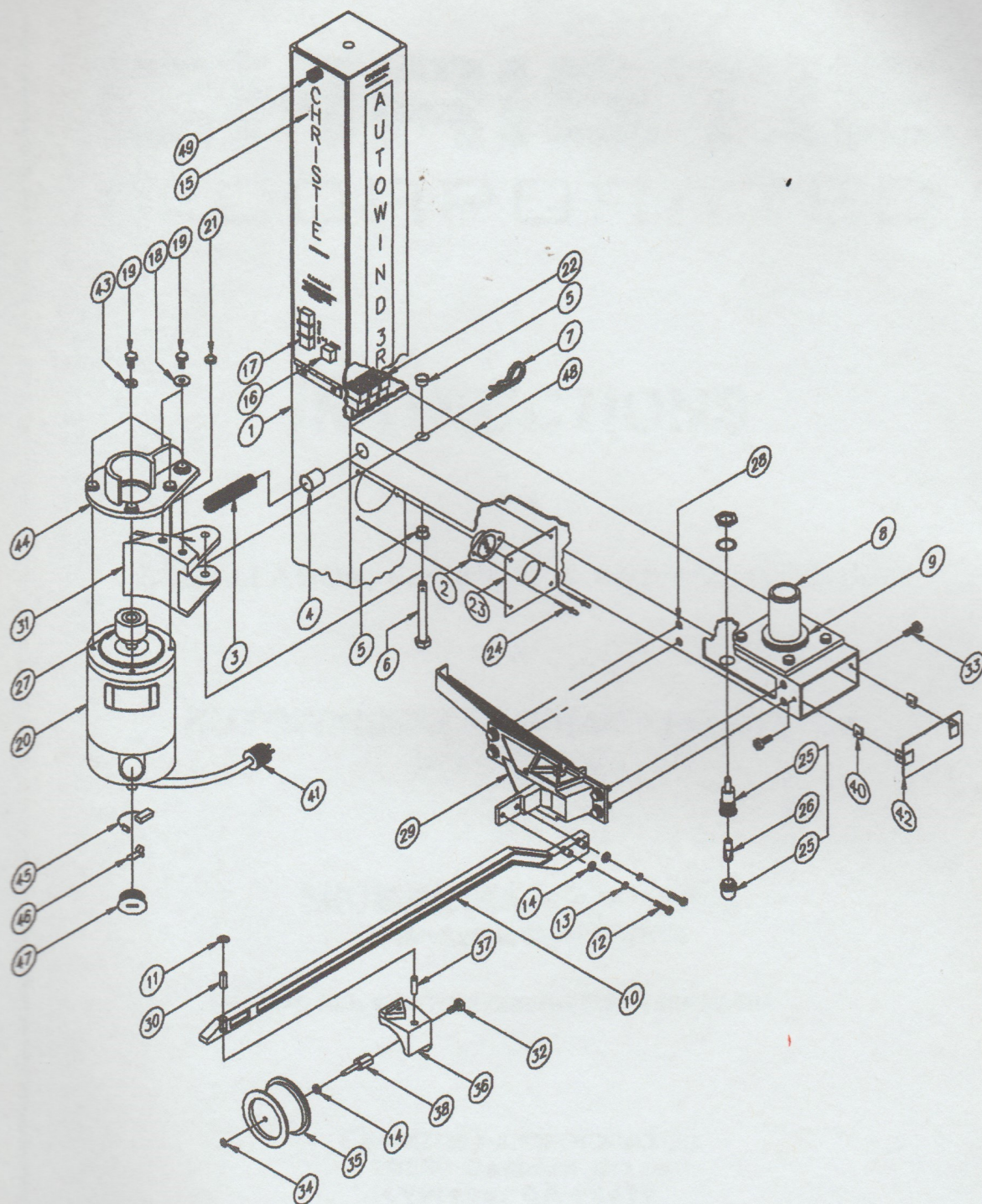


Figure A-6: Platter Support Arm



A-6: PLATTER SUPPORT ARM



Figure A-6: Platter Support Arm