

Film-Tech

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ESP-3

Electronic Platter Manual

CFS/Rentec

ESP-3

- Electronic Platter Manual -

CFS/Rentec, Inc.

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Section 1. Introduction

1.1 General Description

The *ESP-3* is a fully electronic platter which requires minimal personnel attendance to operate. By using sensors and other electronic devices, the need for mechanical parts like swing arms has been eliminated. This minimizes any chance of error with the *ESP-3*. The one-handed threading simplifies use of the *ESP-3* even more. The threading diagram of the center feed plate has been imprinted directly onto the plate to eliminate any errors for proper sensor reading.

The *ESP-3* will, after film has been threaded, operate itself for the duration of the event. By controlling the motor with a combination of a sensor on the feed-out plate and an optical sensor on the accumulator, the *ESP-3* can regulate the speed of the dish for a smooth pay-out of film. The threading of the feed-out / take-up mechanism on the *ESP-3* is quite simple. The number of rollers have been decreased from the conventional platters by making the side rollers to guide the film to and from the dish moveable. These rollers will slide up or down the rails and will lock into position for the appropriate dish location. When the rollers are located at the appropriate dish, the *ESP-3* platter will automatically sense this and switch to the desired action, whether it be take-up or feed-out. The LED status display will show which event each dish has been selected for (see figure 5).

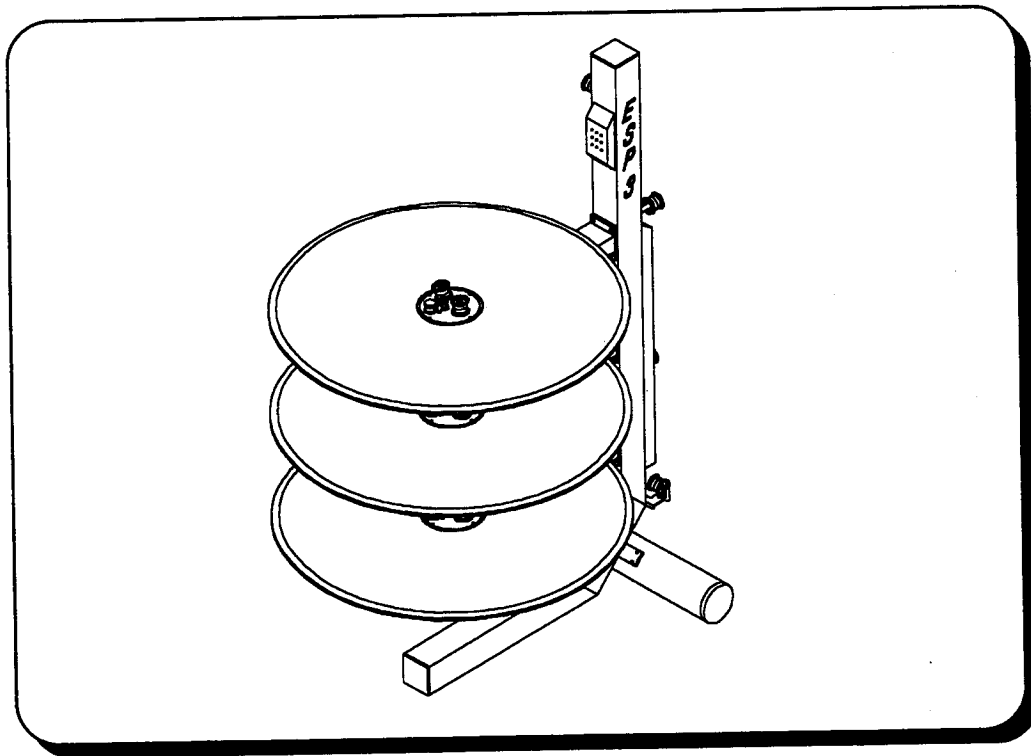


Figure 1, ESP-3 Platter.

Section 2. Installation and Setup

2.1 Initial Power-up

When the ESP-3 arrives, the post assembly and dishes will come in separate boxes. Remove from containers and install the leg to the bottom of the post. Set the post upright and using a level, straighten up the post.

Install the three dishes by setting them on the spindle at the ends of each arm (see Section 2.2). Place the centerpiece assembly in the middle of the dish. Rotate the centerpiece gently until the connectors mate with each other and the plate will fall down into place and lay about the same height as the top of the dish.

Plug in all motors at the jacks, either on the face of the post under each arm or on the side of the post. **Note:** *The jacks located on the arms are for make-up table only.*

After assembly has been completed and all connections are made, make sure the Main Power Switch is turned to the **OFF** position and plug in the main power cord to the proper single phase voltage source (depending whether U.S. or foreign requirements).

2.2 Dish Installation and Setup

The dishes are made of aluminum. If dropped, they will dent. To place dishes on to the spindle located on the end of the arm, you will need two people. First, pull the motor back until it locks on the catch assembly. With each person facing the other on opposite ends of the dish, set the dish on the spindle. Gently rock the dish and let it slide down the spindle until it stops. After the dish has slid down and is resting on the base of the spindle, release the motor catch and the rubber drive wheel will land against the vertical drive surface of the dish.

2.3 Make-Up Table Link

The MUT-3 make-up table needs to be connected to the ESP-3 to operate correctly together. There are connector jacks located on the side of each arm of the ESP-3. Plug the supplied cable on the make-up table into the jack on the dish. This tells the ESP-3 that specific dish will now be used and controlled by the make-up table. Plug the power cord into the correct single phase voltage source (depending whether U.S. or foreign requirements).

Section 3. Operation

3.1 Main Controls and Breakers

The main power switch is located on the top rear of the ESP-3's post. This switch allows all power to flow into the machine. The Main power circuit breaker for the transformer along with the three others for the motor circuit boards are located adjacent to the main power switch in the same location (see figure 2). The circuit breakers should never need to be serviced. If CB1, CB2 or CB3 have been tripped, call a service technician.

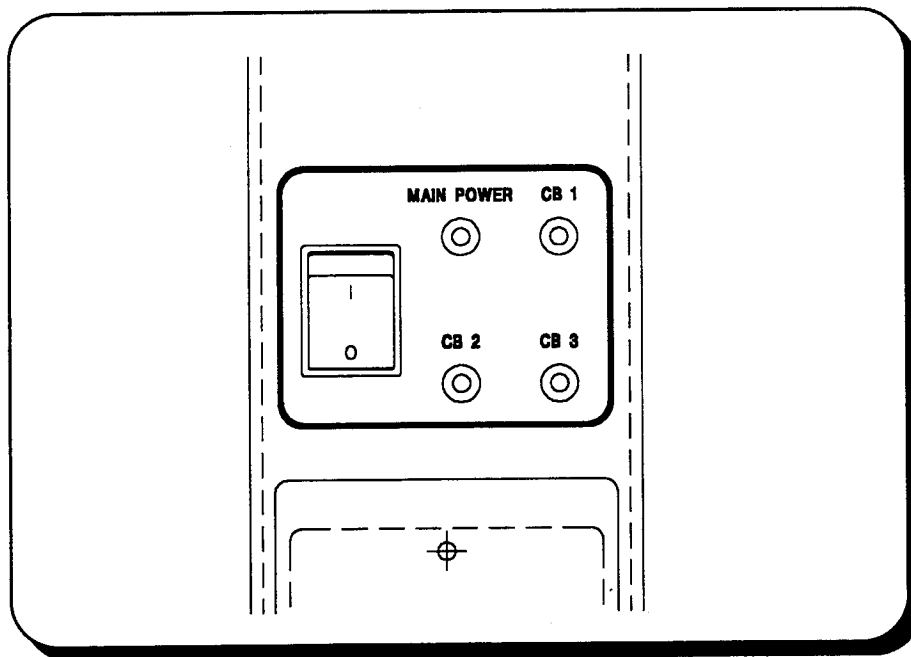


Figure 2, Main Controls and Circuit Breakers.

3.2 Motor and Drive Assembly

The motor and drive assemblies are located under the dish and are mounted through each arm. The rubber wheel attached to the motor, drives a vertical surface under the dish with tension applied to it by a torsion spring. This spring keeps the proper amount of pressure applied to the drive surface to eliminate any slipping due to tension.

To disengage the motor assembly from the drive surface, a catch has been supplied for each arm. When the motor is pulled back, the catch will capture the motor and hold it until the catch has been released. By depressing the raised button on the catch, the motor will come back into contact with the drive surface (see figure 3).

NOTE: There is tension on the motor assembly. Hold the motor and guide it slowly to regulate the speed of engagement after releasing the catch.

NOTE: The motor assembly must be disengaged from the dish when using the make-up table for film dismantling.

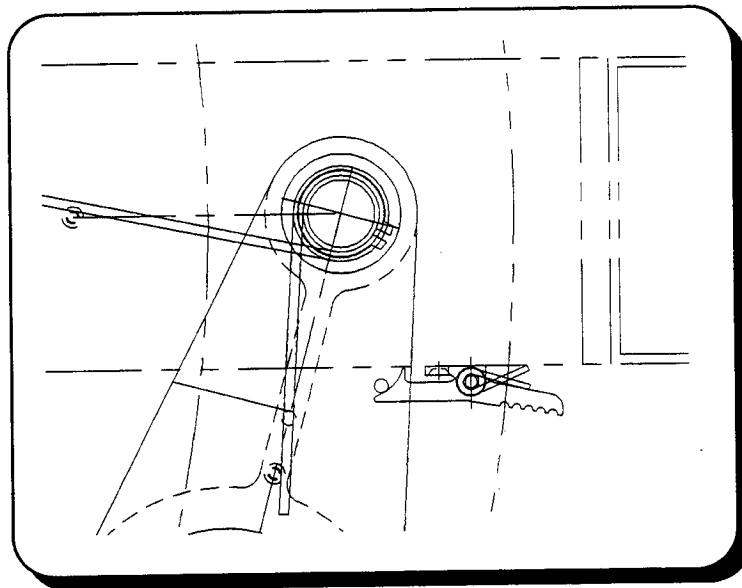


Figure 3, Motor Catch Assembly.

3.3 Accumulator

The accumulator, located at the rear of the ESP-3, regulates the speed of the take-up motor. The optical sensor reads the location of the accumulator slide roller and will compensate by adjusting the motor rate. **Note: Operator should never touch grayscale with bare hands.**

3.4 Take-up / Feed-out

The Take-up / feed-out assembly consists of a series of rollers of two different colors (refer to threading diagram drawing 202-0010). The gray series of rollers lie primarily on the rear face of the post and are for take-up threading only from the projector to the A-500 take-up ring. The black series of rollers lie primarily on the side face of the post and are for feed-out threading only from the center feed plate to the projector. The side rollers relating to each dish will slide. The closest slide roller to the dish is gray in color and should be moved to the dish that will be taking-up the film. The slide roller located to the side rear is black in color and should be moved to the dish that will be feeding-out the film.

The take-up section requires the **A-500** take-up ring to be mounted with its pins through the holes located in the dish. The first 3 to 4 inches of film needs to be inserted into the split in the ring. After the pins are pressed into the dish's locating holes, the film will be locked into the ring. The dish will now be properly set up for the take-up procedure.

The feed-out section requires the center feed plate assembly (see Section 3.5) to be installed in the dish being used for the feed-out process. **NOTE:** The center feed plate can be removed and located on another dish for that dish to be used for feed out and can be left in the dish being used for take-up.

3.5 Center Feed Plate

The center feed plate assembly (see figure 4) is the mechanism that controls the rate of speed the film travels off the dish. There are two center feed plate assemblies per ESP-3 platter. The infra-red sensor detects the location of the film loop and adjusts accordingly. The threading path for the center feed plate is silkscreened right onto the plate for ease of threading but can be also found on the threading diagram drawing 202-0010. **NOTE:** The center feed plate can be removed and located on another dish for that dish to be used for feed out and can be left in the dish being used for take-up.

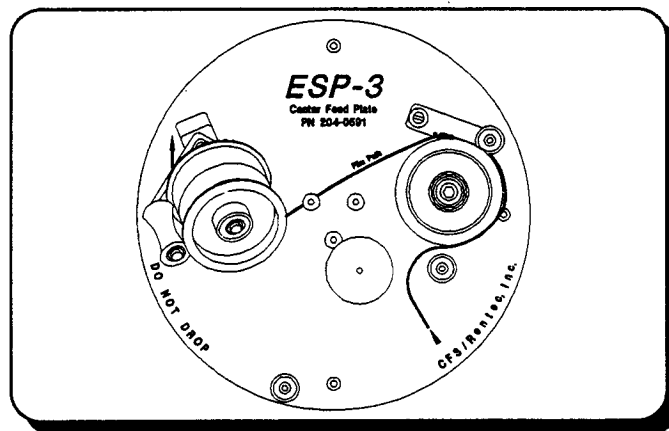


Figure 4, Center Feed Plate.

3.6 LED Status Display Panel

The LED status display panel (see figure 5) indicates each dishes operating mode. Using three different colors of LED's, the operator can easily determine the operation:

Green.....Feed-out.

Yellow.....Make-up.

Red.....Take-up.

Green Blinking..Feed out plate not properly installed or not working.

Red Blinking.....Accumulator dropped down to off position or anytime take-up is off.

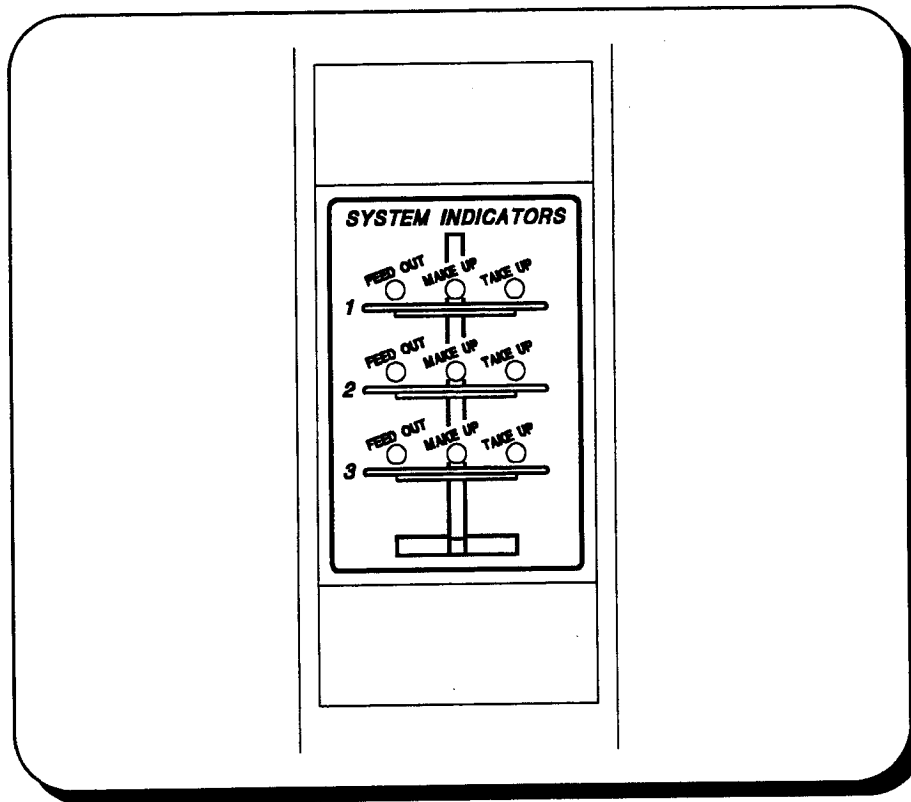


Figure 5, LED Status Display Panel.

3.7 Rear Access Panel

The rear access panel allows access into the electronics cavity where the main central processing board is located. This can be accessed by turning the fastener 90 degrees and the panel will hinge downward. NOTE: This area should only be opened and serviced by a qualified technician. No serviceable parts inside.

3.8 Fail Safe Roller

The fail safe roller is mounted on the lower side of the ESP-3 platter post. The film is threaded around this roller (see drawing 202-0010). When too much tension is applied to the film, the roller will engage a switch sending a closure to the customer supplied automation or projector control.

3.9 Make-Up Table

The MUT-3 make-up table is a system that will allow the transferring of reels of film to the ESP-3 platter or transfer the film back on to a reel from the ESP-3. It can also be use to transfer from reel to reel or to slowly view an area of the film using the portable light box (PN 837 for 35mm or 837-C for 70mm).

When spooling film onto the ESP-3, the motor needs to be engaged for the MUT-3 to control the motor speed. The motor assembly must be disengaged from the dish when using the make-up table for film dismantling.

The MUT-3 make-up table needs to be connected to the ESP-3 to operate correctly together. There are connector jacks located on the side of each arm of the ESP-3. Plug the supplied cable on the make-up table into the jack on the dish. This tells the ESP-3 that specific dish will now be used and controlled by the make-up table. Plug the power cord into the correct single phase voltage source (depending whether U.S. or foreign requirements).

The controls on the MUT-3 make-up table consist of a Main Power Switch, a Take-Up / Make-Up Switch, and a Speed Adjustment Pot. (see Figure 6).

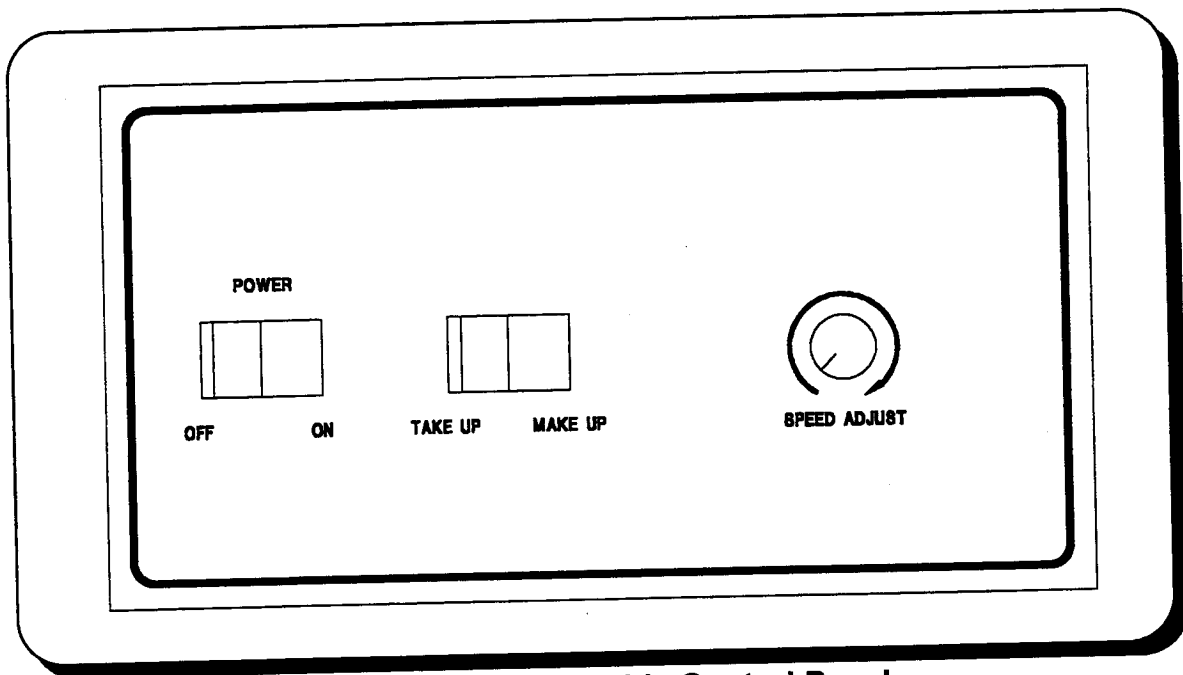


Figure 6, Make-Up Table Control Panel.

Section 4. Maintenance

4.1 Periodic Maintenance and Cleaning

An overall cleaning is recommended for keeping all the sensors working properly and to keep the film from picking up extra dust. The dish should be wiped down at least every two weeks or when necessary depending on the film booth conditions. Do not blow direct air onto the sensors, rather, use a swab and some isopropyl alcohol and lightly clean the lens. Do not oil bearings.

Do not touch grayscale with bare hands and never use cleaning fluid or alcohol on it, this will ruin the image. To clean, wipe gently with a soft non-abrasive cloth.

4.2 Trouble Shooting Guide

Symptom	Suggested Remedy
No power	Check plug, main power switch, and main circuit breaker.
Dish not turning	Check motor for voltage. Check motor for engagement of drive wheel.
Circuit breakers tripped	Turn main power to OFF and reset the tripped breaker. Turn power back to ON and run as usual. If the circuit breaker trips again, contact service technician.

4.3 Sensor Adjustment

The sensors are located on each center feed plate assembly. This area should only be serviced by a qualified technician. No serviceable parts inside.

4.4 Motor Adjustment

The motor controller (drawing 204-0589) is located in the ends of each arm. This area should only be serviced by a qualified technician. No serviceable parts inside. If needs to be serviced, unscrew underside bolts and slide out. Disconnect the plug from the controller tray.

4.5 Central Control Board

Located on the post's upper rear door. This area should only be serviced by a qualified technician. No serviceable parts inside.

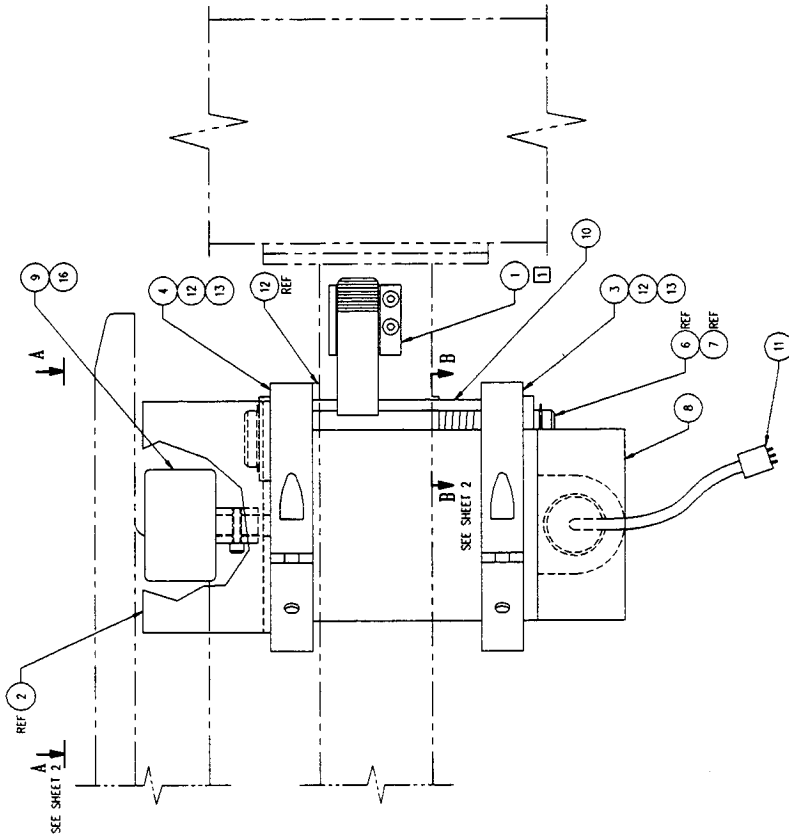
4.6 Aura Dish Light

The dish light located under the top two arms consist of a strip with 3 lamps. The PN for the strip itself is **IL/03/P1/IL5** and the PN for each lamp is **IL5** (See drawing 204-0592).

Section 5. Appendix (Listing of Drawings)

1	103-0001	Assembly, general, ESP-3 platter
2	600-0122	Schematic, ESP-3 platter
3	202-0010	Diagram, film path threading, ESP-3 platter
4	204-0593	Assembly, motor and drive
5	204-0613	Assembly, motor catch
6	204-0592	Assembly, dish light
7	204-0616	Assembly, failsafe roller
8	204-0536	Assembly, accumulator
9	204-0567	Assembly, take-up / feed-out
10	204-0591	Assembly, center feed-out plate
11	204-0589	Assembly, electronics tray
12	204-0605	Assembly, dish and hub
13	105-0002	Assembly, general, MUT-3 make-up table
14	600-0123	Schematic, MUT-3 make-up table
15	202-0009	Diagram, film path threading, MUT-3 make-up table
16	A-500	Assembly, take-up ring

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B	EXPANDED DMG PRESENTATION AND ADDED SHEET 2.	PC		01/02/97



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1	9 216-0155			
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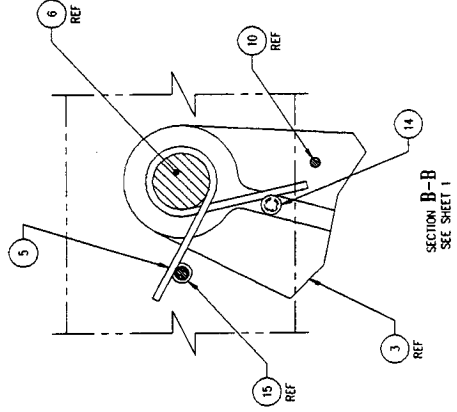
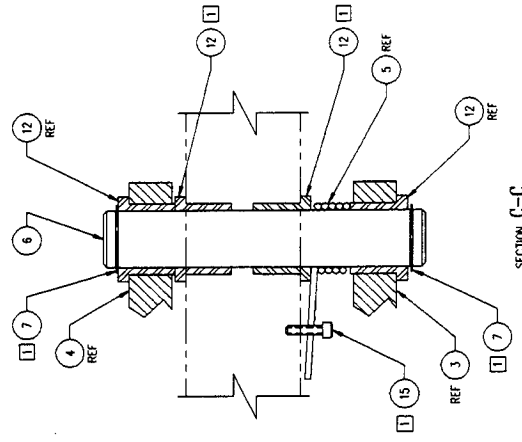
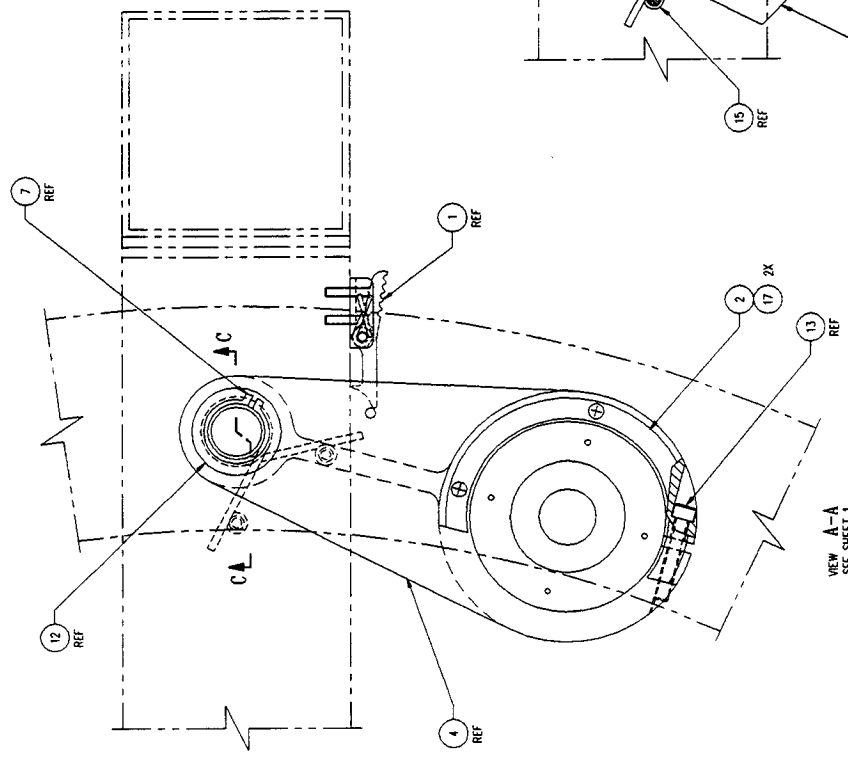
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☐ MOUNTING HARDWARE TO BE USED AT NEXT ASSEMBLY LEVEL.



VIEW A-A
SEE SHEET 1

SECTION B-B
SEE SHEET 1

SECTION C-C

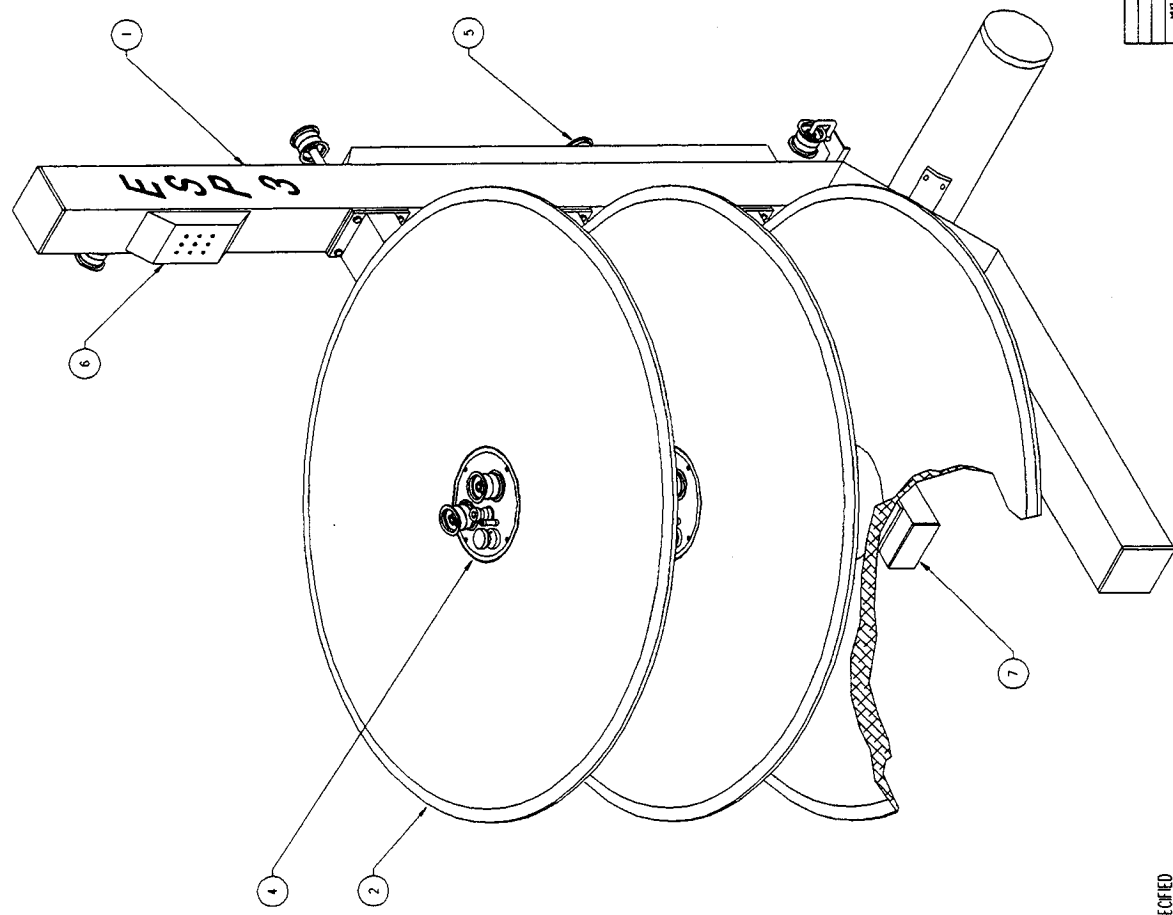
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SHEET NO.	2
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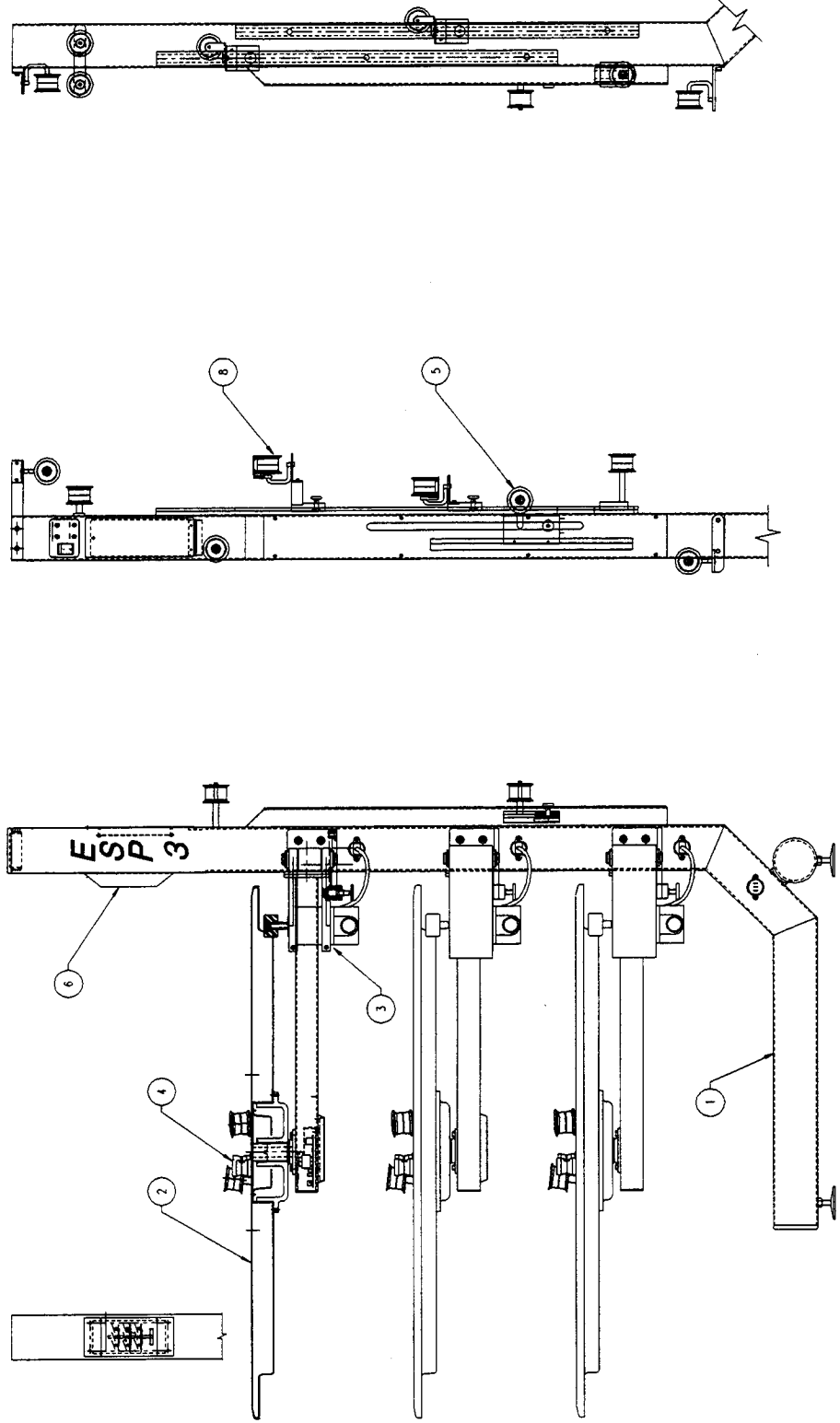
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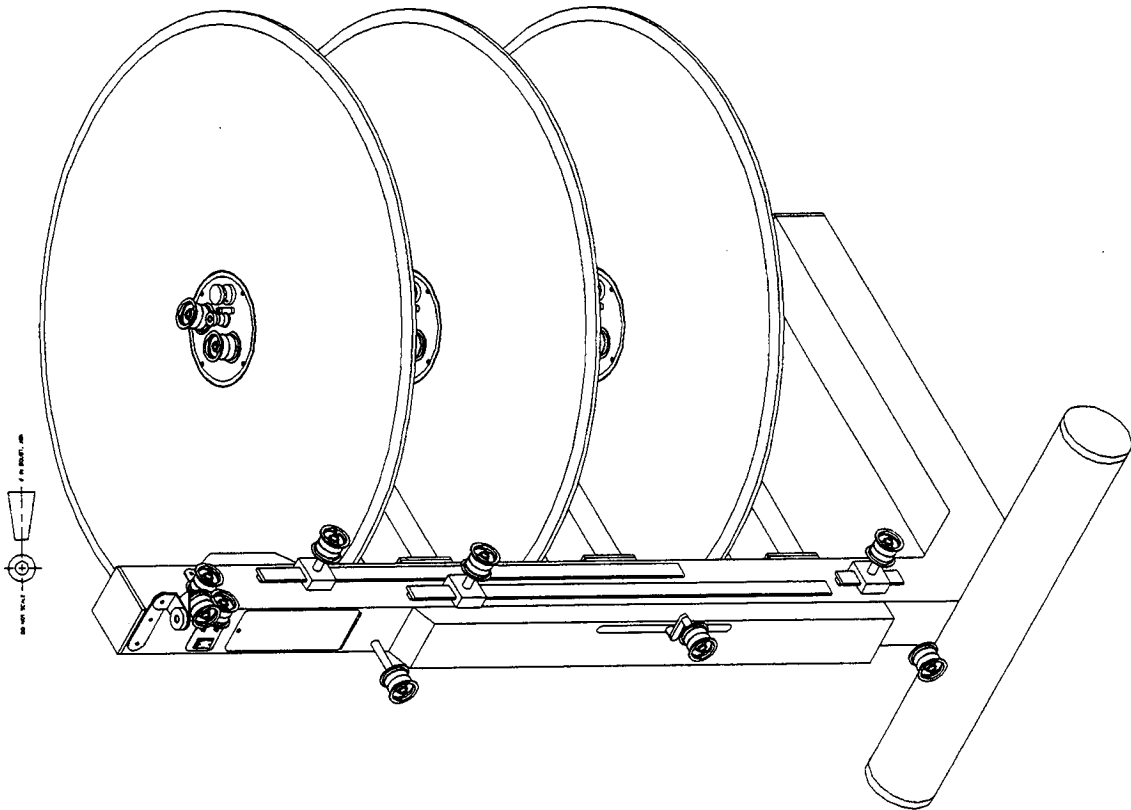
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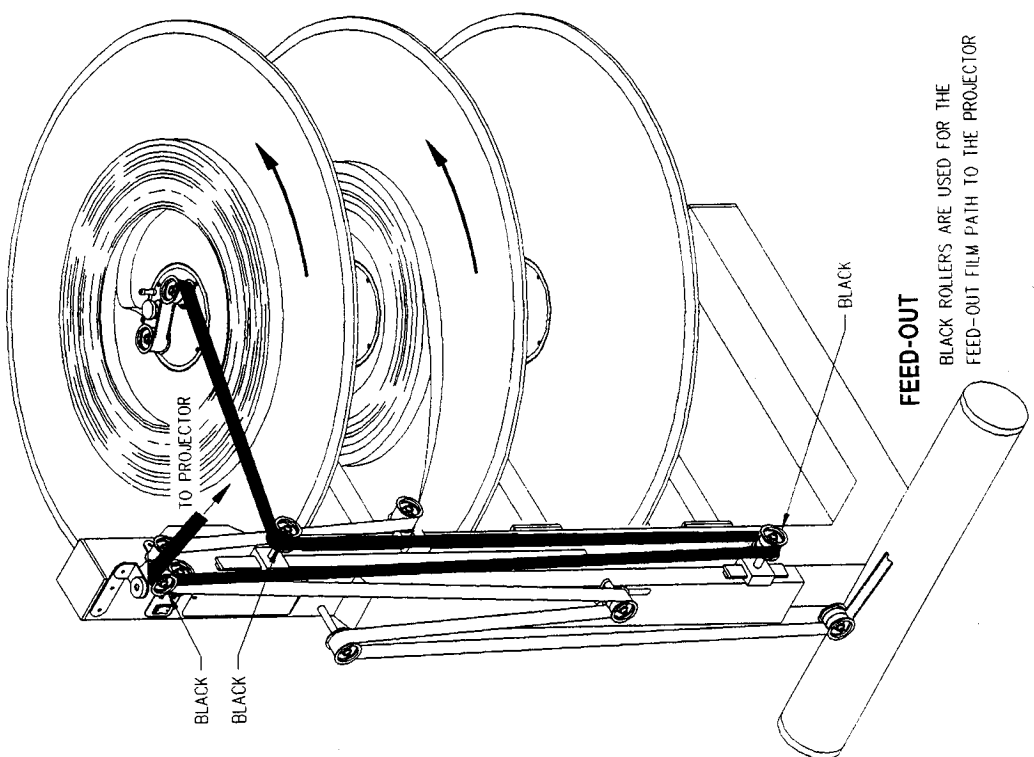
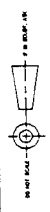
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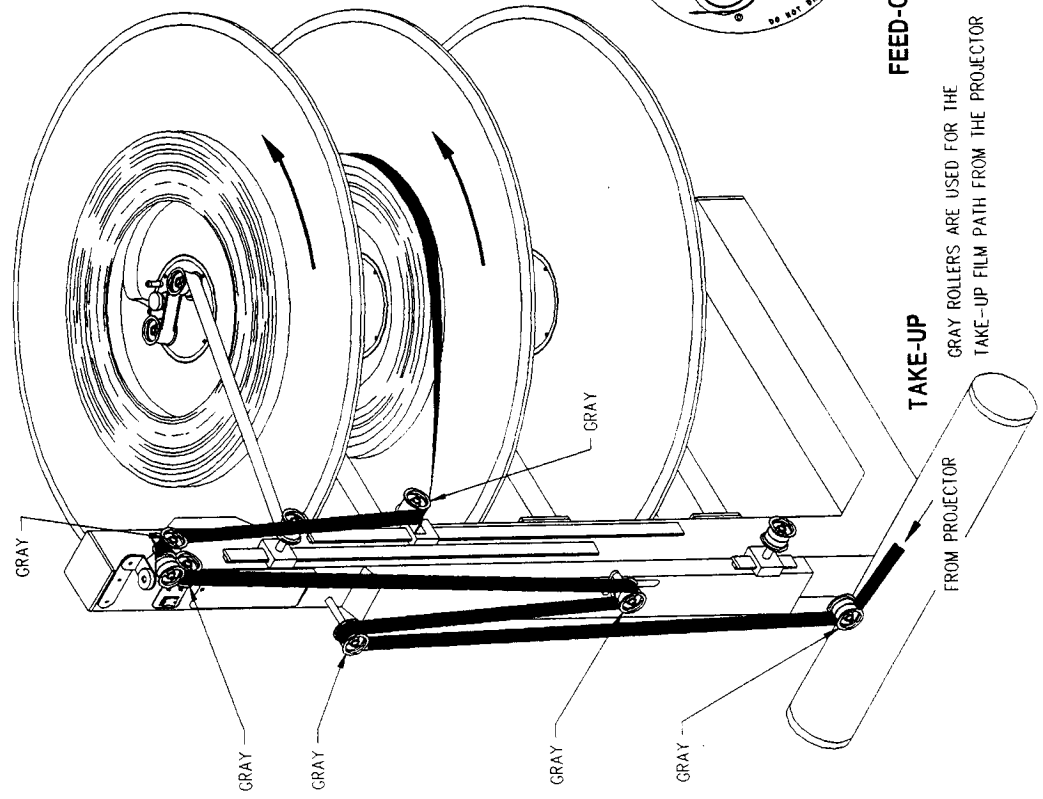
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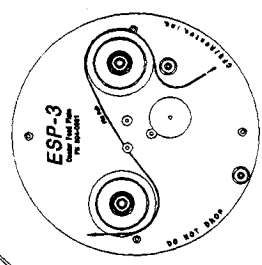
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FEED-OUT
BLACK ROLLERS ARE USED FOR THE
FEED-OUT FILM PATH TO THE PROJECTOR



TAKE-UP
GRAY ROLLERS ARE USED FOR THE
TAKE-UP FILM PATH FROM THE PROJECTOR



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THE BELL & HOWELL COMPANY 1000 AVENUE OF THE SCIENCES BERKELEY, CALIF. 94710	

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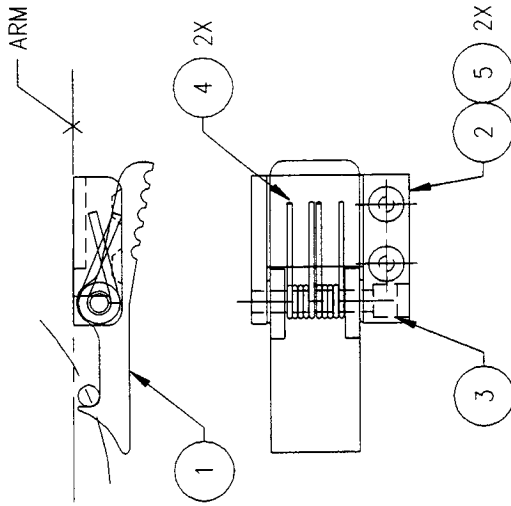
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	1	3	372-0813	SCREW, #8-32 X 1.000, SHCS, STAINLESS			
	1	2	210-1662	BRACKET, MTG.			
	1	1	210-1661	CATCH			

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FINISH

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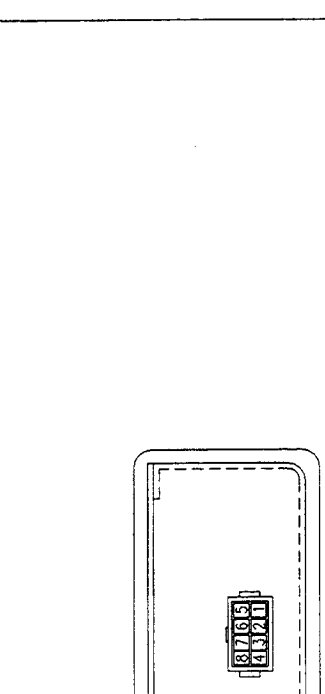
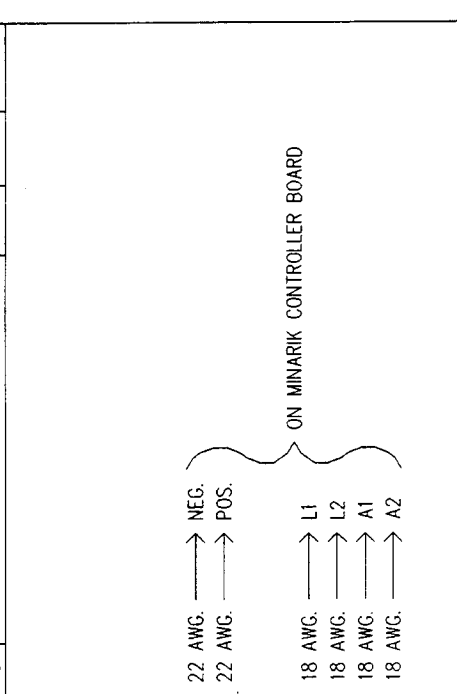
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TECHNOLOGY

SHEET 1 OF 1

AUTOCAD
C:\E:\NAME 2040613R

REV 0

REVISIONS			
REV	DESCRIPTION	BY	APPR
0	PRODUCTION REL.		



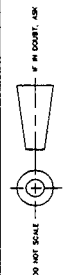
ITEM NO.	QTY	DESCRIPTION	MANUFACTURER	APPROX. WT. (LBS.)	DISK #
6	1	LUG			
7	1	PIN, MALE	MOLEX		
8	1	CONNECTOR, RECEPTICAL	MOLEX		
1	1	CONTROLLER, 110V	MINARIK		
4	3	SCREW, #4-40 X .125 SOC.FLAT.HD.			
1	2	COVER			
1	1	TRAY			

INTERPRET	DRAWING PER ANSI Y14.5M-1982	SCALE	SHEET SIZE	DATE	PROJECT	MPL #
CONFORMITY	UNLESS OTHERWISE SPECIFIED	1/1	11x17	5/11/96	P-100-180	
SYMMETRY	±.015					
FINISH	DIMENSION LIMITS HELD BEFORE FINISH					
PERIODICITY	MACHINED FLEET FACE .015-.030					
PARALLELISM	ALL DIMENSIONS ARE IN INCHES					
FINISH						

ASSEMBLY,
ELECTRONICS TRAY, 110V
ESP-3 PLATTER

DWG. NO.	REN NO.	SHEET	OF	REV
204-0624-C		1	1	0

Upland, Calif.
(909) 981-1398



DO NOT SCALE

NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG

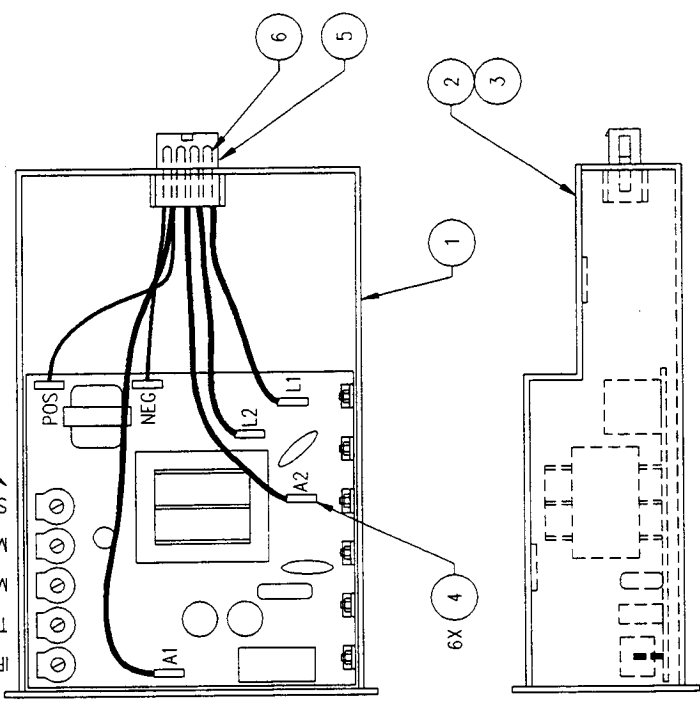
PLACE DRAWING NO. IN LOCATION SHOWN

D/N

REV	DESCRIPTION	BY	APPR	DATE
0	PRODUCTION REL.			



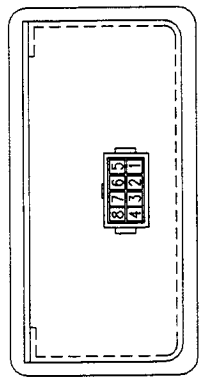
IR COMP
TORQUE
MIN SPD
MAX SPD
SIG ADJ
ADJ. POTS



J1

1	BLK 22 AWG.	→	NEG.
2	RED 22 AWG.	→	POS.
3			
4	BRN 18 AWG.	→	L1
5	BLU 18 AWG.	→	L2
6	BLK 18 AWG.	→	A1
7	RED 18 AWG.	→	A2
8			

ON MINARIK CONTROLLER BOARD



QTY	ITEM NO.	DESCRIPTION	MANUFACTURER	APPROX. WT. (G)	REF. DES.
1	792-0016	PIN MALE	MOLEX		
1	792-0015	CONNECTOR, RECEPTAL	MOLEX		
6	4	LUG			
4	375-0020	SCREW, #4-40 X .125 SOC.FLAT HD.			
1	217-1085	COVER			
1	757-0009	CONTROLLER, 230V W/ TRAY	MINARIK		

CONDUCTIVITY	UNLESS OTHERWISE SPECIFIED	FINISH	PERPENDICULARITY	PARALLELISM	FINISH
±.015 H-.005 H/16					

SCALE	DATE	PROJECT	MPL. #
1/1	C	P-100-180	

DWG. NO.	REN NO.
204-0618-C	

ASSEMBLY,	DISK #
ELECTRONICS TRAY, 230V ESP-3 PLATTER	

SHEET	OF	REV
1	1	0

NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG

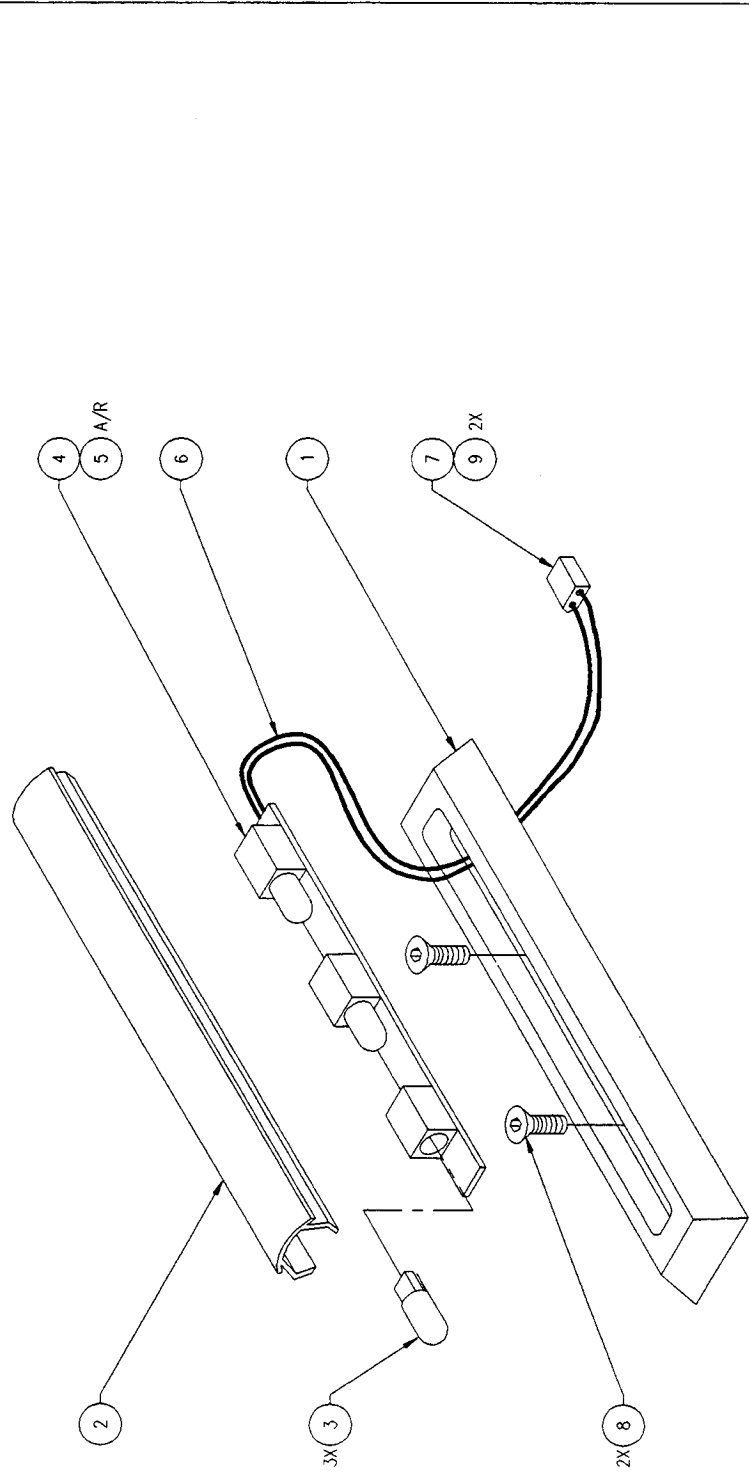
PLACE DRAWING NO. IN LOCATION SHOWN



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(909) 981-1398

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Any party accepting this document does so in confidence and agrees that it

REVISIONS			
REV	DESCRIPTION	BY	DATE
0	PRODUCTION REL.		



QTY	ITEM	DESCRIPTION	MANUFACTURER	APPROX. WT. (Grs.)	REF. DES.
1	1	COVER LIGHT			
1	2	HOUSING, AURA LIGHT			
1	3	LAMP			
1	4	TAPE, DOUBLE SIDED, 3/8" WIDE			
1	5	WIRE, 2 COND., CLEAR			
1	6	CONNECTOR, 2 POS.			
1	7	SCREW, #6-32 X .375, SOCFI THD			
2	8	HOUSING, AURA LIGHT			
2	9	PLATTER			

QTY	ITEM	DESCRIPTION	MANUFACTURER	APPROX. WT. (Grs.)	REF. DES.
1	1	COVER LIGHT			
1	2	HOUSING, AURA LIGHT			
1	3	LAMP			
1	4	TAPE, DOUBLE SIDED, 3/8" WIDE			
1	5	WIRE, 2 COND., CLEAR			
1	6	CONNECTOR, 2 POS.			
1	7	SCREW, #6-32 X .375, SOCFI THD			
2	8	HOUSING, AURA LIGHT			
2	9	PLATTER			

CONDUCTIVITY	✓
SYMMETRY	✓
PLATNESS	✓
PERPENDICULARITY	✓
PARALLELISM	✓

1. DEBURR & BREAK ALL SHARP CORNERS
 NOTES: UNLESS OTHERWISE SPECIFIED
 DO NOT SCALE DIM
 PLACE DRAWING NO. IN LOCATION SHOWN

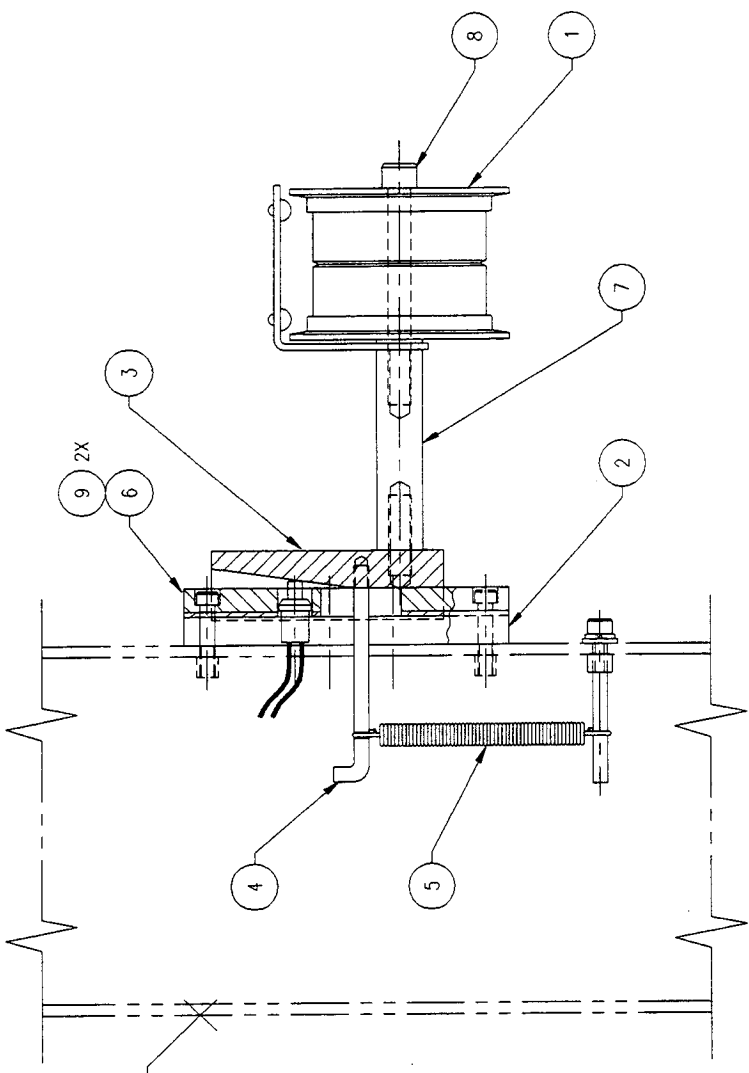
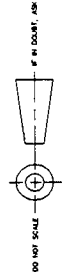
D/N

Upland, Calif.

204-0592-C
 ESP-3 PLATTER

1 OF 1

REVISIONS			
REV	DESCRIPTION	BY	DATE
0	PRODUCTION REL.		



POST FOR REF. ONLY

QTY.	ITEM PER ASSY.	ITEM NO.	PART NUMBER	MASTER PARTS LIST	SCALE	SHEET NO.	DATE	PROJECT	MPL #	DISK #
2	9	371-0044	SCREW, #6-32 X .750, SHCS		1/1	C	6/25/96	P-100-180		
1	8	371-0112	SCREW, 1/4-20 X 2.500, SHCS							
1	7	210-1649	STANDOFF							
1	6	210-1640	RAIL							
1	5	332-0015	SPRING, EXTENSION							
1	4	210-1665	CATCH, SPRING							
1	3	216-0175	BLOCK, SLIDE							
1	2	217-1127	SPACER, RAIL							
1	1	204-0340	ASSEMBLY, ROLLER, 35mm W/ NIPPLE KEEPER							

CONCENTRICITY	UNLESS NOTED OTHERWISE	3X	3X	3X	3X	3X	3X	3X	3X	3X
☉	CONCENTRICITY	±.015	±.005	±.016	±.016	±.016	±.016	±.016	±.016	±.016
☉	SYMMETRY									
☉	FLATNESS									
☉	PERPENDICULARITY									
☉	PARALLELISM									

APPROVED	DATE	BY	CHK	CHK	CHK	CHK	CHK	CHK	CHK	CHK
APPROVED	6/25/96	YLD								
APPROVED										
APPROVED										

ASSEMBLY,
FAILSAFE ROLLER
ESP-3 PLATTER

DWG. NO. 204-0616-C
REN. NO.

MANUFACTURER
APPROX. WT. (O.S.)
REF. DES.

APPROVED

DATE

BY

CHK

CHK

CHK

CHK

CHK

CHK

CHK

CHK

CHK

CHK

NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG

PLACE DRAWING NO. IN LOCATION SHOWN

D/N

0

1

OF

1

REV

Upland, Calif.
PART 401-1108

U

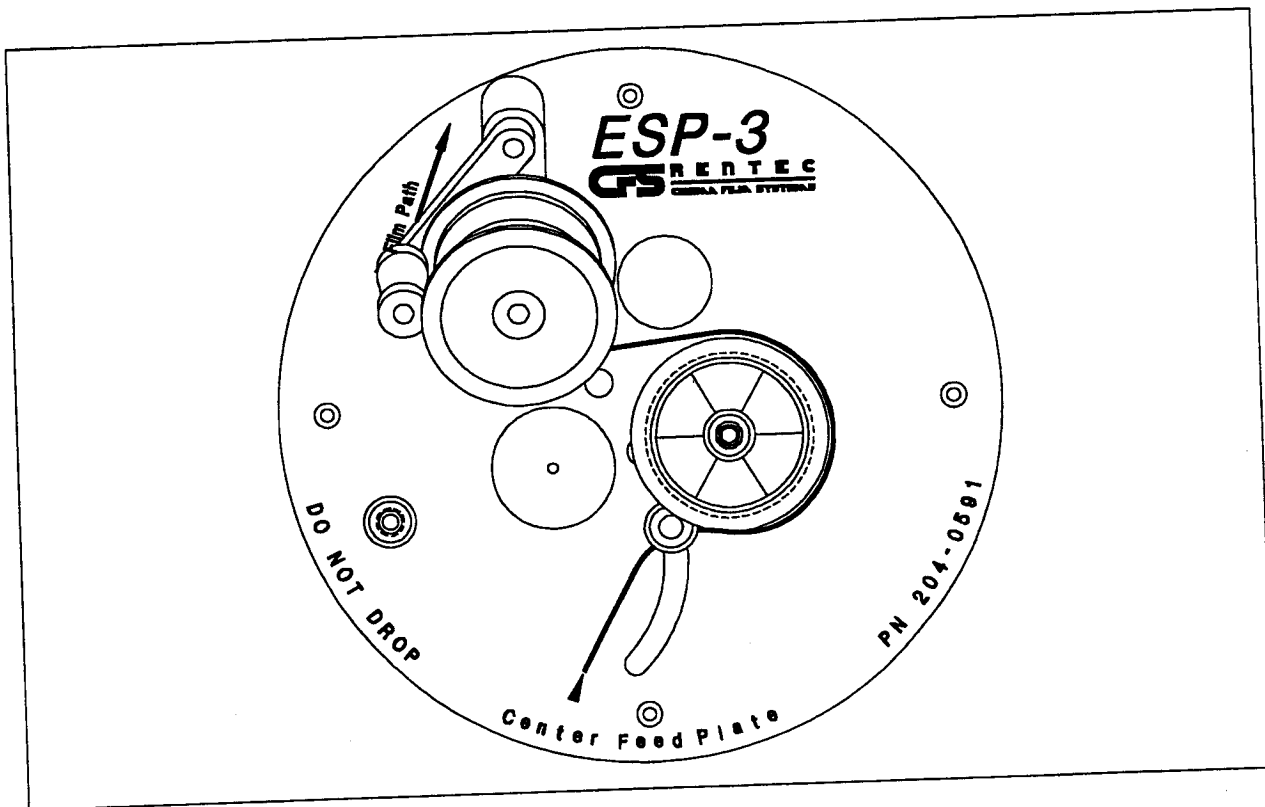
Platter feed-out head upgrade

This package contains the latest feed-out plate assembly upgrade (PN 204-0591) for the ESP-3 electronic platter.

This new assembly contains a motion sensor that allows the platter to operate only when there is film motion. This is a valuable new addition designed to counter any damage that could occur due to the new style polyester films currently being supplied by the studios.

The installation of the plate is simple. Simply remove the old plate as you would for any dish transfer and replace it with the new assembly by dropping it into place. The installation is finished. **No further calibration is required and is not recommended.**

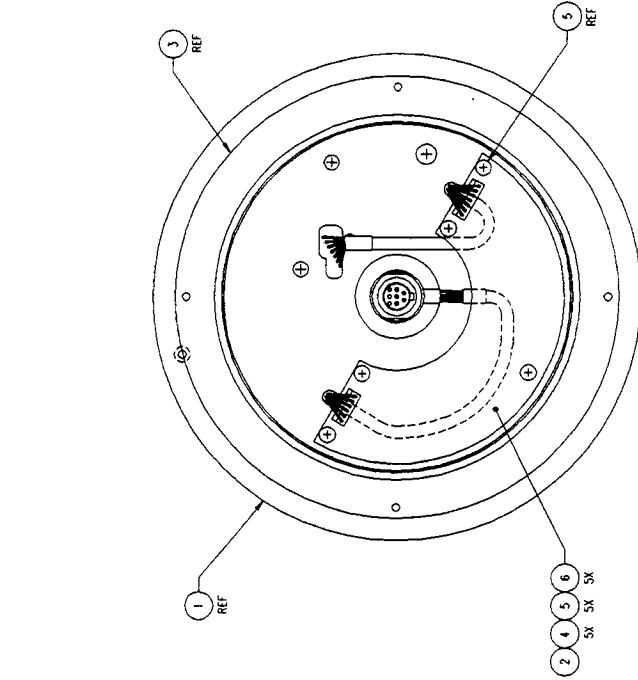
Upon initial installation the feed-out head will be in the off state. As soon as it senses film motion, it will turn on and activate normal operation. On shutdown, the sensor will automatically turn off after 5 seconds of no film motion.



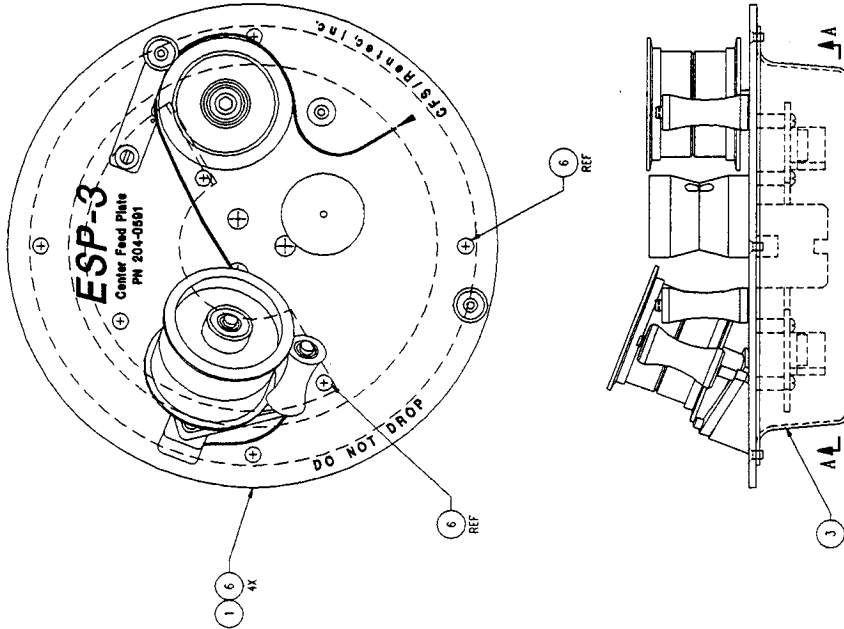
Please refer to the accompanying returned goods authorization form for proper handling of the old feed out plates.

DO NOT SCALE FROM PHOTO

REV	DESCRIPTION	BY	APPR	DATE
0	PRODUCTION REL.			



SECTION A-A



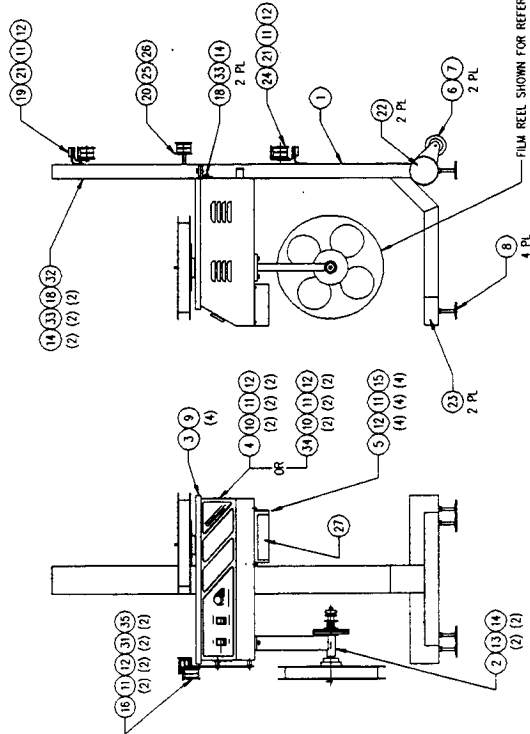
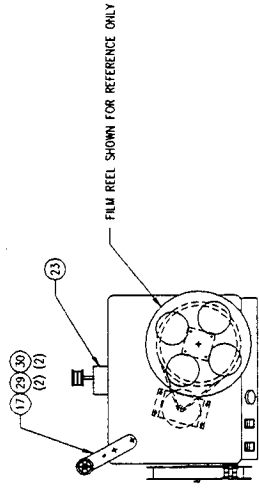
NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DIM

PLACE DRAWING IN: []

NO.	REV.	DESCRIPTION	DATE	BY	APPR.
9	1375-1040	SCREW, FLAT HEAD, 6-32 X .25			
5	1370-1040	SCREW, PAN HEAD, 6-32 X .25			
4	1307-0003	STANDOFF, THREADED, 6-32 X .50			
3	217-1079	SPINNING CUP, ELECTRONICS			
2	613-0033	ASSEMBLY, PC BOARD, CIRCULAR			
1	204-0590	ASSEMBLY, FEED OUT PLATE			

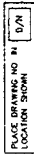
NO.	REV.	DESCRIPTION	DATE	BY	APPR.
1	1	MULTIPLE DRAWING PER AWS 114.5M-1987 SCALE 1/1			
2	1	REVISION			
3	1	REVISION			
4	1	REVISION			
5	1	REVISION			
6	1	REVISION			
7	1	REVISION			
8	1	REVISION			
9	1	REVISION			

REV	DATE	BY	APPR	DESCRIPTION
				ASSEMBLY, FEED OUT MECHANISM ESP-3 PLATTER



- 1 110 OPERATION
- 2 220 OPERATION

NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DIMS



REV	DESCRIPTION	DATE	BY	APPR
0	PRODUCTION REL.			
A	ADD P/1, 35	11/19/86	HJ	



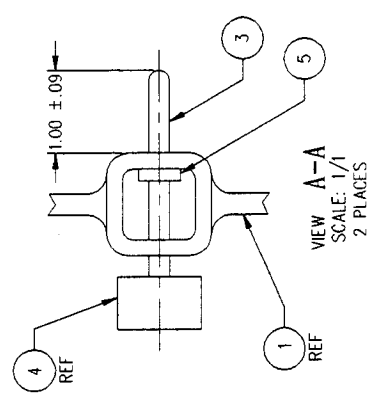
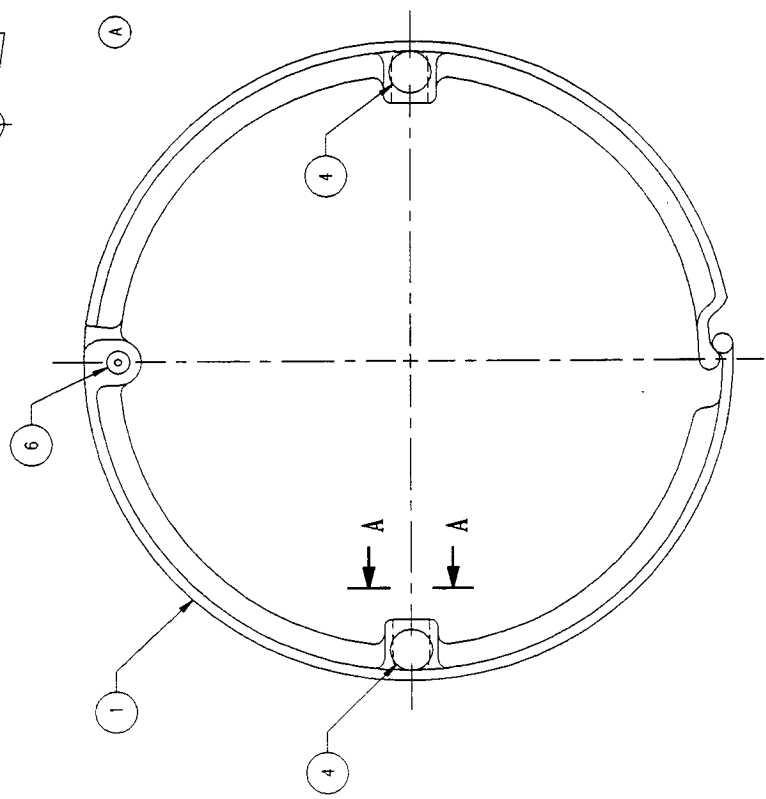
REV	DESCRIPTION	DATE	BY	APPR
0	PRODUCTION REL.			
A	ADD P/1, 35	11/19/86	HJ	

QTY	REV	PART NUMBER	DESC	UNIT	NOTES
2		210-270-B	SPACER, ROLLER ARM, SICE		
1		801-890-2-1	ASST. BRASSER, 207		
1		201-230-C	WASHER, 1/4 X 3/8		
2		321-0027	WASHER, EXTENSION POST		
2		541-0080	SCREW, SCS, CAP, 1/4 X 20 X 1.75		
2		570-1605	WASHER, FLAT, #10		
1		287-334	SCREW, PHNHD, 10-32 X 1.00		
1		277-1015	AC ADAPTER, PORTA-LIGHT		
1		210-270-B	PORTA-LIGHT		
1		210-270-B	SPACER, SICE, CAP, 1/4 X 20 X 3.25		
1		210-270-B	ASST. SWHEL ROLLER LOWER		
2		210-270-B	ASST. SWHEL ROLLER, 4 PL		
2		210-270-B	CAP, ROLLER BEARING, 2 PL		
2		210-270-B	SCREW, SCS, CAP, 10-32 X .75		
1		201-830-B	ASST. ROLLER, .5mm W/BEARINGS		
1		191-270-C	ASST. SWHEL ROLLER, UPPER		
4		173-0254	BALL, HEX, 3/8 X .180		
1		173-0254-C	ASST. ROLLER, BEAR		
1		201-830-C	ASST. ROLLER, SICE		
4		210-270-B	SCREW, 10-32 X .50, SHRS		
8		210-270-B	WASHER, 3/8 X 3/4 X .180		
10		210-270-B	WASHER, 1/4 X 3/8 X .180		
10		210-270-B	WASHER, 1/4 X 1/4		
2		193-0002	BALL, HEX, 1/4 X .50		
4		376-1310	SCREW, PHLHD, 10-32 X 1.25		
4		893-0005	FOOT, LEVER, 3/8-16 X 1 1/2		
2		271-1150	SCREW, SHOULDER, 3/8 X 1 1/2 X 3/4-20		
2		841-0094	WHEEL, Y BAR, RUBBER		
1		272-1726-6	ROLLER, LIGHT TARK		
1		201-830-B	ASST. ROLLER, SICE		
1		201-830-B	ASST. ROLLER, SICE, .5mm		
1		201-830-B-1	ASST. ROLLER, LOWER, .5mm		
1		203-0381-0	POST, MOUNTING		
1		203-0381-0	POST, MOUNTING		

1	1	203-0381-0	POST, MOUNTING	
1	1	203-0381-0	POST, MOUNTING	
<p>WINDUP DRAWING FOR AHS 714-1150-100-181</p> <p>DATE: 11/19/86</p> <p>BY: HJ</p> <p>APPR: [Signature]</p>				<p>REV #</p> <p>1</p>
<p>DESCRIPTION: ROLLER P-100-181</p>				<p>QTY: 1</p>
<p>ASSEMBLY, 35mm ESP MAKE-UP TABLE</p>				<p>REV #</p> <p>1</p>
<p>TOTAL #</p>				<p>REV #</p> <p>1</p>



REVISIONS				
REV	DESCRIPTION	BY	APPR	DATE
A	RESTRUCTURED CASTING & MACHINE DWG			08/06/96
	PRESENTATION: DEL ITEM NO. 2 (VM-12-100-2)			
	DEL -1 FROM ITEM NO. 1 P/N (VM-12-100-1)			



ITEM NO.	DESCRIPTION	QTY	UNIT	SCALE	SHEET NO.	DATE	PROJECT	DISK #
1	BOLT, SHOULDER, 3/8" LG, 5/16-18 X 1/2				1/2	08/07/96	P-100-187	
2	RETAINER, PUSH PIN							3701061
3	KNOB, PUSH PIN							
4	SHAFT, PUSH PIN							
5	RING, MACHINE, MAKE UP							
6	ASSEMBLY, RING, MAKE UP							

ITEM NO.	DESCRIPTION	QTY	UNIT	SCALE	SHEET NO.	DATE	PROJECT	DISK #
1	BOLT, SHOULDER, 3/8" LG, 5/16-18 X 1/2				1/2	08/07/96	P-100-187	
2	RETAINER, PUSH PIN							3701061
3	KNOB, PUSH PIN							
4	SHAFT, PUSH PIN							
5	RING, MACHINE, MAKE UP							
6	ASSEMBLY, RING, MAKE UP							

ITEM NO.	DESCRIPTION	QTY	UNIT	SCALE	SHEET NO.	DATE	PROJECT	DISK #
1	BOLT, SHOULDER, 3/8" LG, 5/16-18 X 1/2				1/2	08/07/96	P-100-187	
2	RETAINER, PUSH PIN							3701061
3	KNOB, PUSH PIN							
4	SHAFT, PUSH PIN							
5	RING, MACHINE, MAKE UP							
6	ASSEMBLY, RING, MAKE UP							

NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG

PLACE DRAWING NO. IN LOCATION SHOWN

D/N

TOTAL WT.

APPLICATION

FINAL ASSY

NET ASSY

SPP-3

INTERPRET DRAWING PER ANSI Y14.5M-1982

SCALE: 1/2

DATE: 08/07/96

PROJECT: P-100-187

DISK #

DWG. NO. A-500

REN. NO.

MANUFACTURER

ALTERNATE NUMBER

REF. DES. NO.

REV 1 OF 1

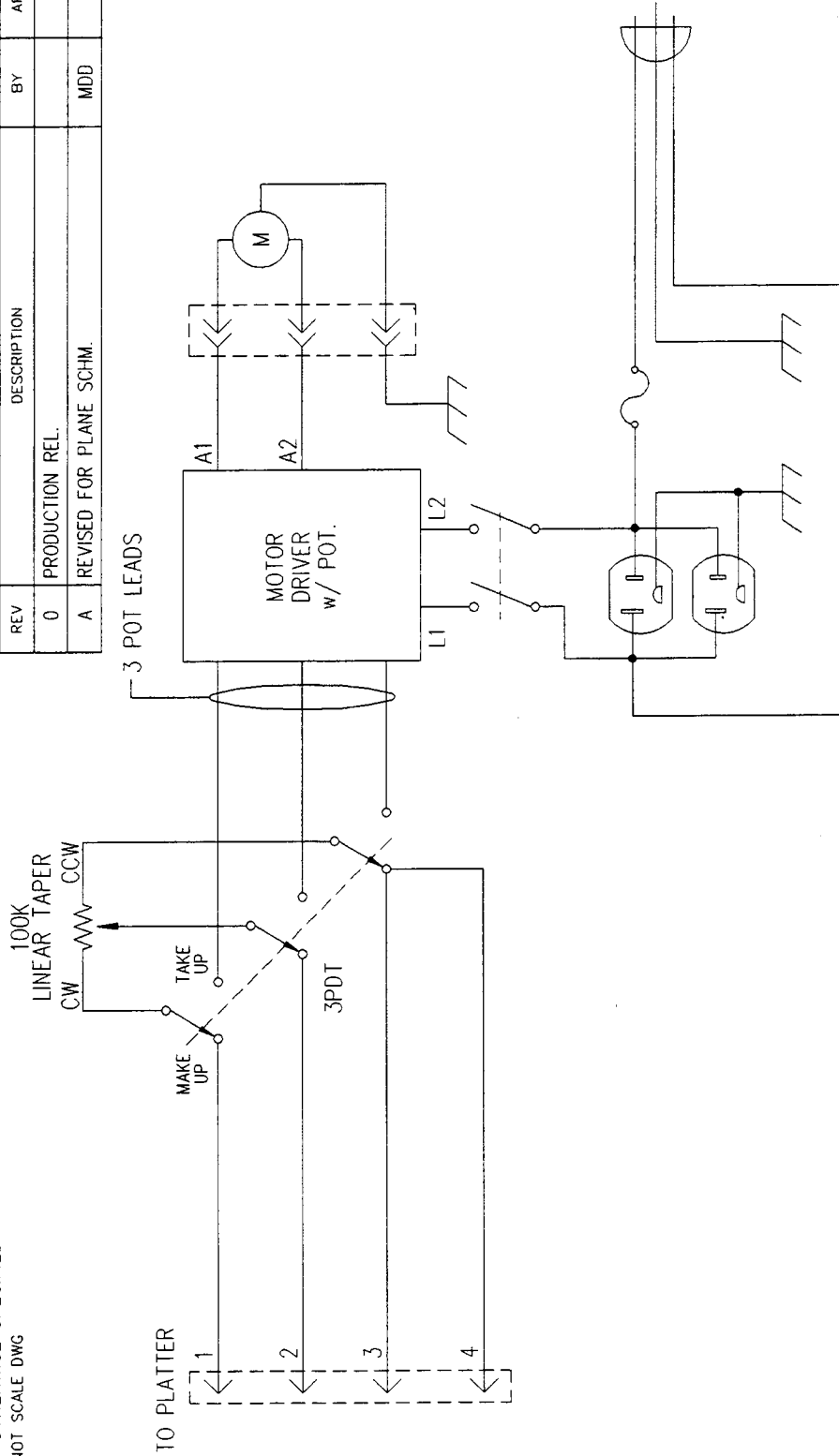
SHEET AUTOCAD A5000

Updram, Coll. (609) 981-1998

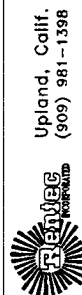
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NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG

REVISIONS			
REV	DESCRIPTION	BY	DATE
0	PRODUCTION REL.		
A	REVISED FOR PLANE SCHM.	MDD	9/20/96

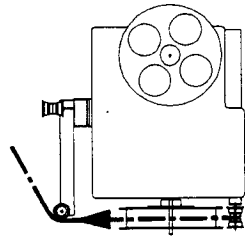


INTERPRET DRAWING PER ANSI Y14.5M-1982		SCALE	NONE	SHEET SIZE	B	DATE	PROJECT	MPL #	DISK #
⊙	CONCENTRICITY	.XX	ANGLES	DRAWN BY	M.DANNENBERG	6/20/96	P-100-181		
≠	SYMMETRY	±.015 ±.005	±1/16	CHECKED BY					
▭	FLATNESS	DIMENSION LIMITS HELD BEFORE FINISH		APPROVED					
⊥	PERPENDICULARITY	MACHINED FILET RADI 015-030		APPROVED					
∥	PARALLELISM	ALL DIMENSIONS ARE IN INCHES		APPROVED					
FINISH	<p>NOTICE</p> <p>The data in this document incorporate proprietary rights of CFS/RENTEC INCORPORATED 781 N. Benson Ave., Suite E, Upland, California 91786. Any party who reproduces or disseminates this information shall not be duplicated in whole or in part, nor disclosed to others without the express written consent of CFS/RENTEC INCORPORATED.</p>								
105-0002	NEXT ASSY.	<p>DWG. TITLE</p> <p>SCHEMATIC, MUT-3 MAKE-UP TABLE</p>							
	APPLICATION	<p>DWG. NO.</p> <p>600-0123-C</p> <p>REN NO.</p>							
TOTAL WT.		<p>SHEET 1 OF 1</p> <p>AUTOCAD FILENAME 6000123C</p>							

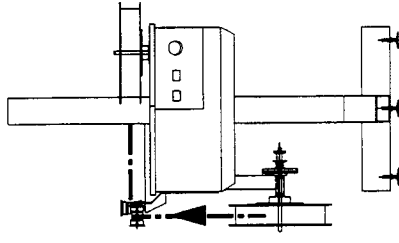


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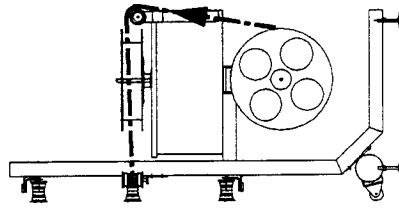
REVISIONS			
REV	DESCRIPTION	BY	DATE
0	PRODUCTION REL		



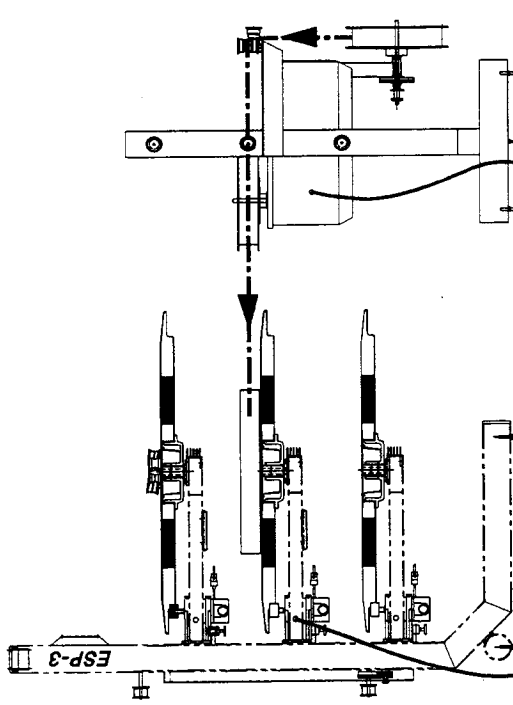
TOP VIEW



FRONT VIEW



LEFT VIEW



REAR VIEW

PLATTER CONTROL CABLE

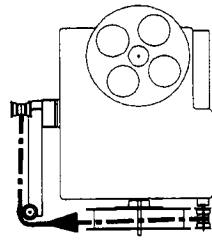
MAKE-UP MODE TO MIDDLE PLATTER

REV NO	PART NUMBER	DATE	SCALE	HOME	REV D	DATE	PROJECT	UN #	MANUFACTURE	DATE	REV
0	INTERPRET DRAWING FOR ANS	11/15/1981	1/8"	HOME	REV D	11/15/81	P-100-181	100	BOB		0
TITLE: FILM THREADING INSTRUCTIONS, 202-0009-D PART NO: 202-0009-D DATE: 11/15/81 PROJECT: P-100-181 UN: 100											
DESIGNED BY: J. J. JAGGER CHECKED BY: J. J. JAGGER APPROVED BY: J. J. JAGGER DATE: 11/15/81 PROJECT: P-100-181 UN: 100											
TITLE: FILM THREADING INSTRUCTIONS, 202-0009-D PART NO: 202-0009-D DATE: 11/15/81 PROJECT: P-100-181 UN: 100											

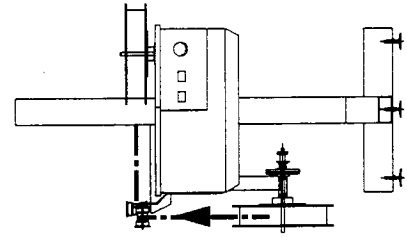
NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING



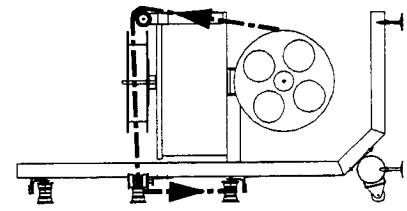
REVISIONS		
REV.	DESCRIPTION	DATE
0	PRODUCTION REL.	



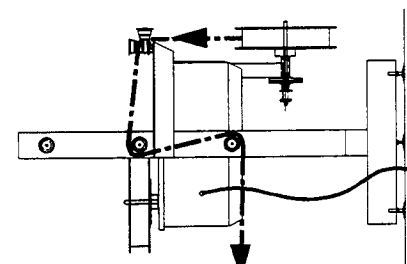
TOP VIEW



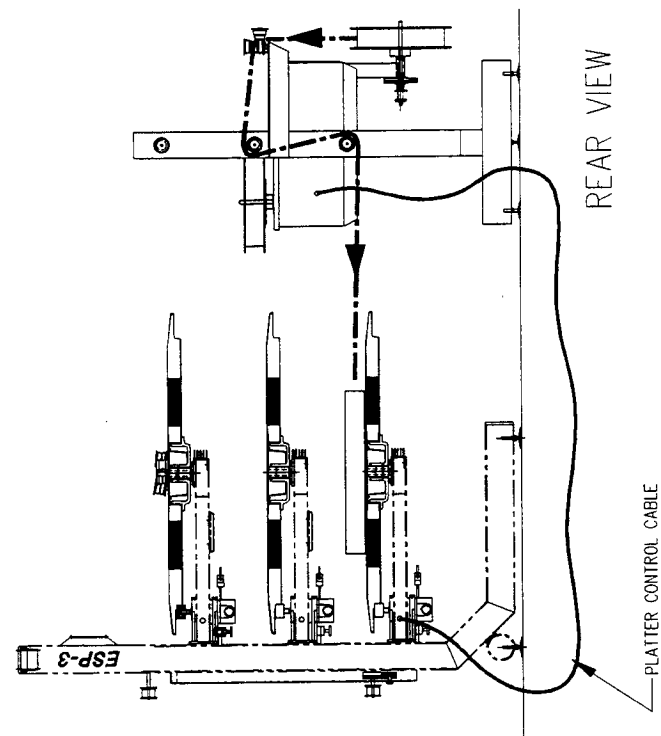
FRONT VIEW



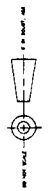
LEFT VIEW



REAR VIEW



MAKE-UP MODE TO BOTTOM PLATTER



REV. NO.	DATE	DESCRIPTION	PROJECT	NO.	DATE	BY	DATE	BY	DATE
0			P-100-181						

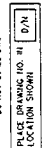
DESIGNER	CHECKED BY	DATE	SCALE	NO.	REV.

PROJECT NO.	DATE	DESCRIPTION	PROJECT	NO.	DATE	BY	DATE	BY	DATE
			P-100-181						

REV. NO.	DATE	DESCRIPTION	PROJECT	NO.	DATE	BY	DATE	BY	DATE
0			P-100-181						

REV. NO.	DATE	DESCRIPTION	PROJECT	NO.	DATE	BY	DATE	BY	DATE
0			P-100-181						

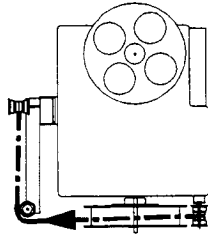
NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DIMS.
LOCATION SHOWN



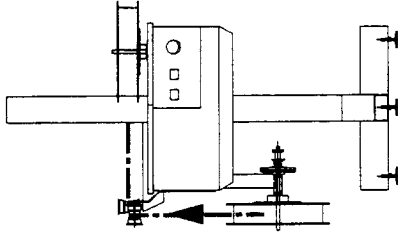


REVISIONS

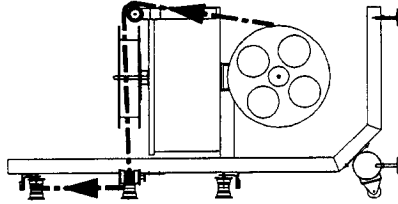
REV	DESCRIPTION	BY	APPR	DATE
0	PRODUCTION REL.			



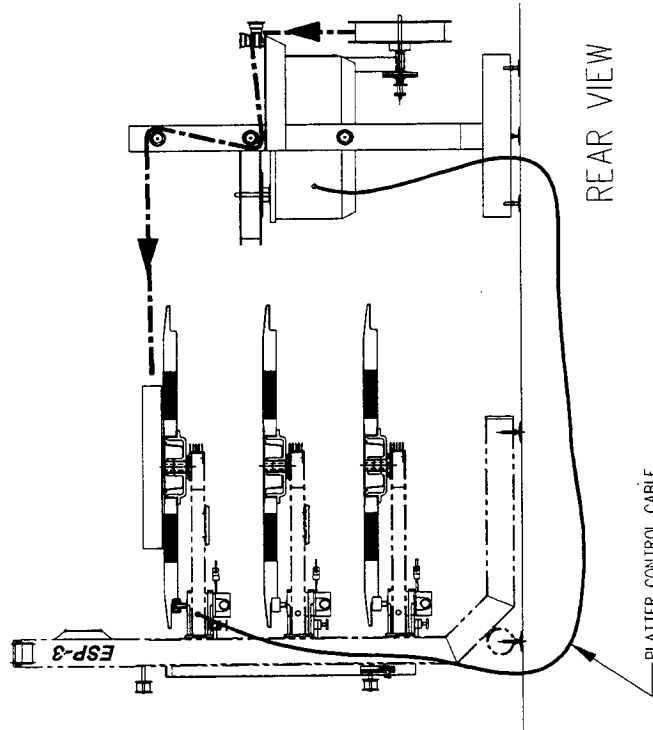
TOP VIEW



FRONT VIEW



LEFT VIEW



REAR VIEW

PLATTER CONTROL CABLE

MAKE-UP MODE TO TOP PLATTER

REV	DESCRIPTION	DATE	BY	APPR	DATE
0	PRODUCTION REL.				

REV	DESCRIPTION	DATE	BY	APPR	DATE
0	PRODUCTION REL.				

REV	DESCRIPTION	DATE	BY	APPR	DATE
0	PRODUCTION REL.				

REV	DESCRIPTION	DATE	BY	APPR	DATE
0	PRODUCTION REL.				

NOTES: UNLESS OTHERWISE SPECIFIED

PLEASE DRAWING TO BE D/A

LOCATION FOR SHOWN

00 AND SCALE SHOWN

PLATE NO. 202-0009-D

REV. 3

DATE 7

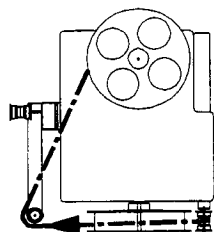
BY

APPR

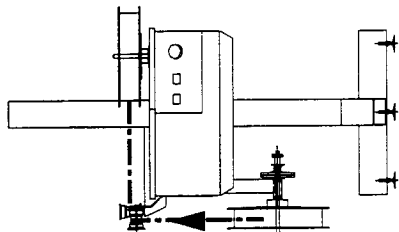
DATE

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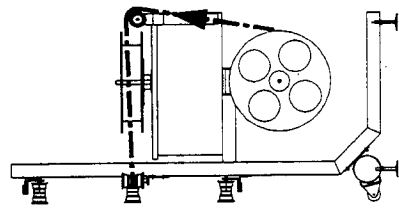
REVISIONS		BY	DATE
REV	DESCRIPTION		
0	PRODUCTION REL.		



TOP VIEW



FRONT VIEW



LEFT VIEW

REWIND MODE REEL TO REEL

NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DIMS

PLACE DRAWING NO. IN	0.75
LOCATION SHOWN	

REV	DATE	DESCRIPTION	BY	DATE
0				

PROJECT	P-100-1B1	DATE	04/28/78
DWG TITLE	THREADING INSTRUCTIONS, MAKE-UP TABLE		
DATE	04/28/78	BY	
APPROVED		APPROVED	
APPROVED		APPROVED	
APPROVED		APPROVED	

MANUFACTURER	DATE	APPROVED	DATE

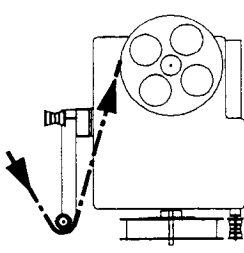
2020-0009-D	0
2020-0009-D	0

UPHOLD, CALIF.	981-1998
981-1998	2020009D

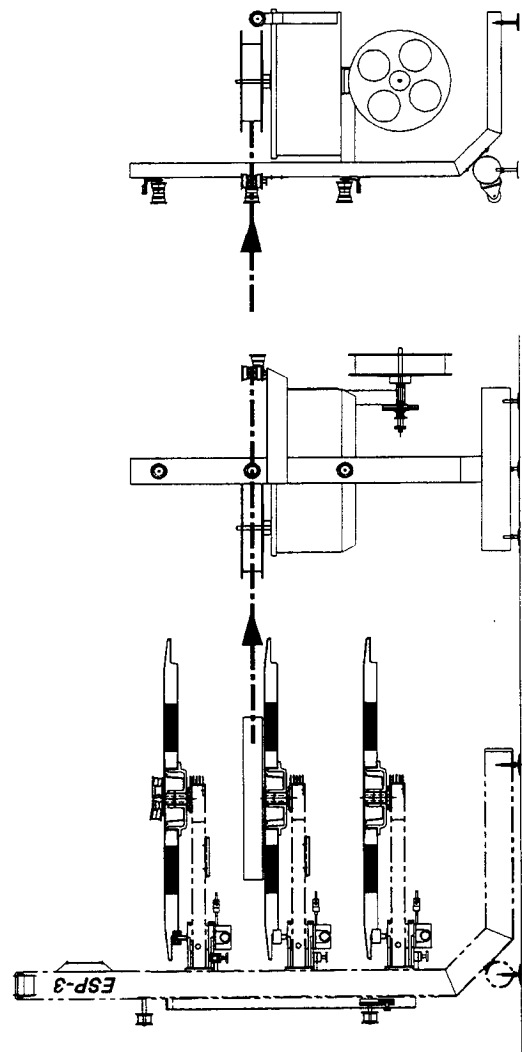


REVISIOS

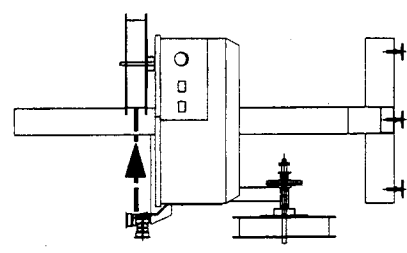
REV	DESCRIPTION	DATE	BY	APPR
0	PRODUCTION REL.			



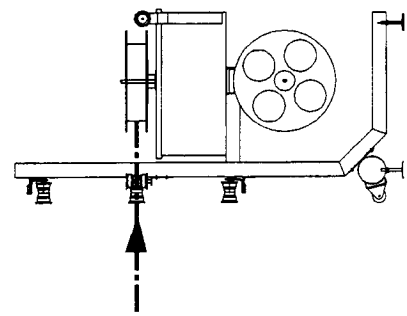
TOP VIEW



REAR VIEW



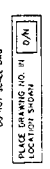
FRONT VIEW



LEFT VIEW

TAKE-UP MODE FROM MIDDLE PLATTER

NOTES UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES



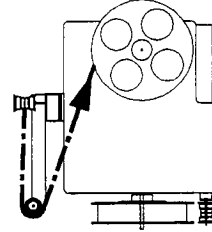
FORM NO. 45	DATE	REVISED	REVISION	MANUFACTURE	DATE	REV.
PREPARE DRAWING PER ANSI Y14.5M-1983	SCALE	NONE	<input type="checkbox"/> FULL	PROJECT	P-100-181	W.P. #
PROJECT	TITLE		DATE	DRAWN	DATE	DATE
XXXX-XXXXX	XXXX-XXXXX	XXXX-XXXXX	XXXX-XXXXX	XXXX-XXXXX	XXXX-XXXXX	XXXX-XXXXX
OTHER INFORMATION: FILM THREADING INSTRUCTIONS, MAKE-UP TABLE						

Upland, Calif.
95188

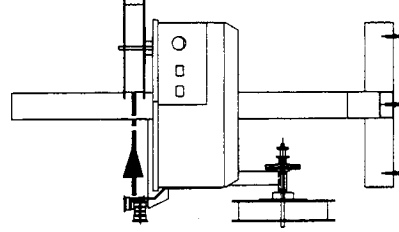
SHEET	OF	REV.
5	7	0

PROJ. NO. 2020009D

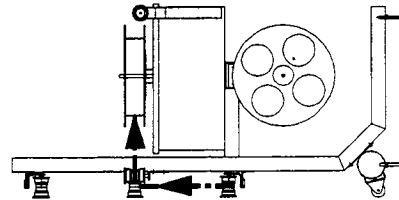
REV	DESCRIPTION	BY	APPR	DATE
0	PRODUCTION REL.			



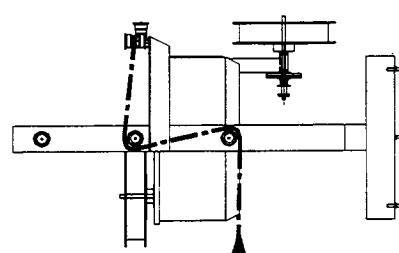
TOP VIEW



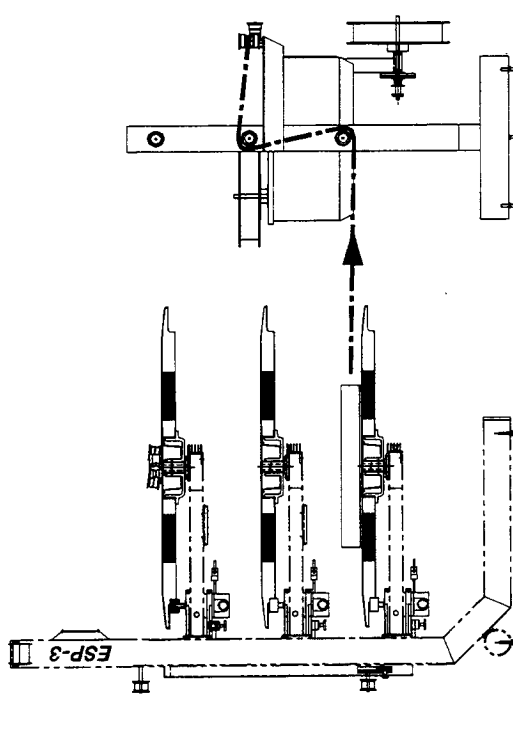
FRONT VIEW



LEFT VIEW



REAR VIEW



TAKE-UP MODE FROM BOTTOM PLATTER

REV	DESCRIPTION	DATE	BY	APPR	DATE
0	PRODUCTION REL.				

PROJECT	P-100-181	W/F #	
DESCRIPTION	FILM TREADING INSTRUCTIONS, MAKE-UP TABLE		
DATE	10/15/58	ORDER BY	
ORDER NO.	100-100000	ORDER DATE	
REV	0	REV	0

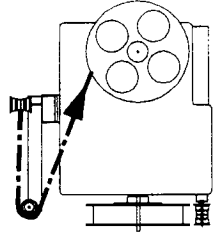
MANUFACTURER	GEORGE W. BROWN
DATE	10/15/58
REV	0

NOTES: UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING

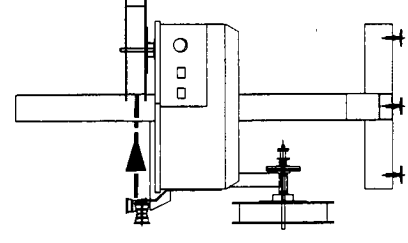
PLEASE DRIVING NO. 41 D/H LOCATION SHOWN

UNIT: INCHES 1/8 INCH

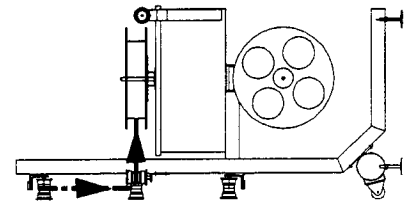
REVISIONS		
REV.	DESCRIPTION	DATE
0	PRODUCTION REL.	
	BY	APPR.



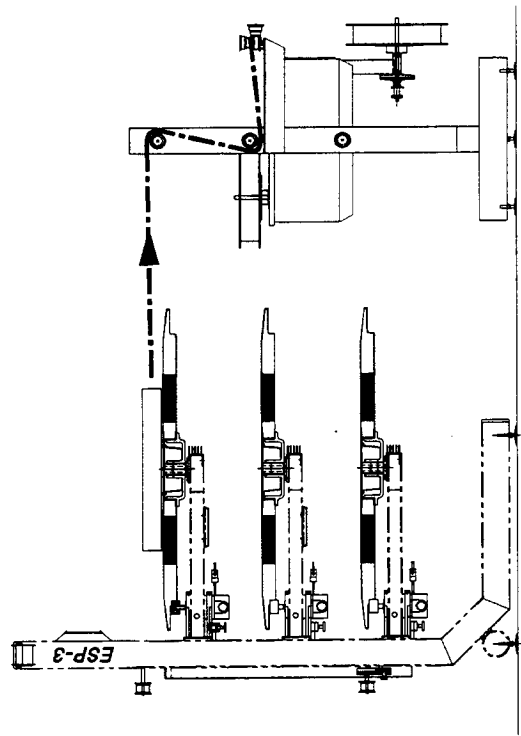
TOP VIEW



FRONT VIEW



LEFT VIEW



REAR VIEW

TAKE-UP MODE FROM TOP PLATTER

PART NUMBER			DESCRIPTION		
INTERPRET DRAWING PER AWS 115.94-180 SCALE NONE			PROJECT P-100-181		
DATE 12/05/76			DATE 12/05/76		
DRAWN BY			CHECKED BY		
APPROVED BY			APPROVED BY		
DATE 12/05/76			DATE 12/05/76		
SCALE 1:1			SCALE 1:1		
SHEET NO. 1			SHEET NO. 1		
TOTAL SHEETS 1			TOTAL SHEETS 1		
DATE 12/05/76			DATE 12/05/76		
DRAWN BY			CHECKED BY		
APPROVED BY			APPROVED BY		
DATE 12/05/76			DATE 12/05/76		
SCALE 1:1			SCALE 1:1		
SHEET NO. 1			SHEET NO. 1		
TOTAL SHEETS 1			TOTAL SHEETS 1		
DATE 12/05/76			DATE 12/05/76		
DRAWN BY			CHECKED BY		
APPROVED BY			APPROVED BY		
DATE 12/05/76			DATE 12/05/76		
SCALE 1:1			SCALE 1:1		
SHEET NO. 1			SHEET NO. 1		
TOTAL SHEETS 1			TOTAL SHEETS 1		
DATE 12/05/76			DATE 12/05/76		

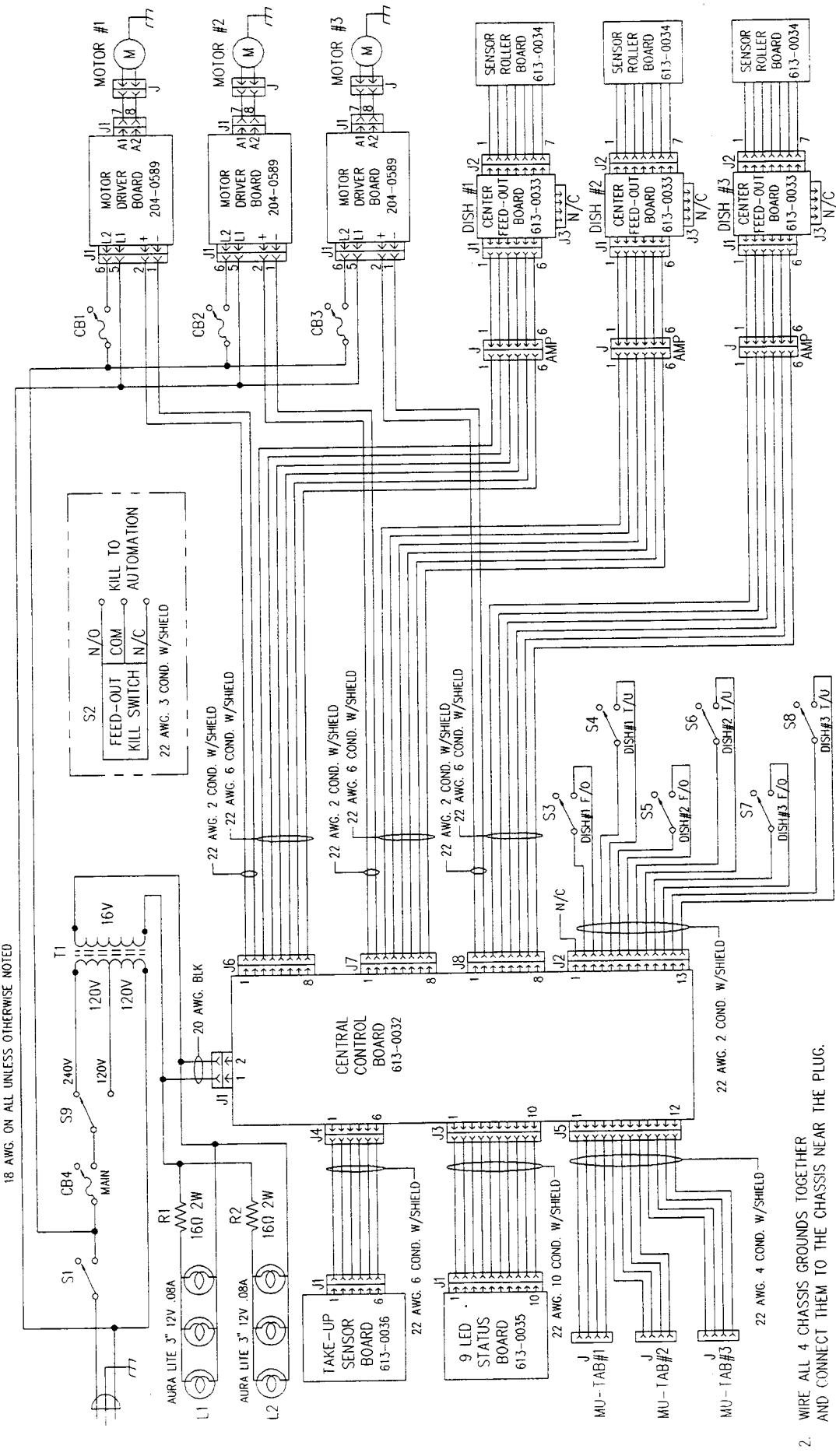
DATE NO. 202-0009-D
REV. NO. 0

UPWARD, CHIEF
(909) 981-1388
FAXLINE 20200090

NOTES: UNLESS OTHERWISE SPECIFIED
 CO AND SCALE SHOWN
 LOCATIONS SHOWN

REV	DESCRIPTION	BY	APPR	DATE
0	PRODUCTION REL.			

REV	DESCRIPTION	BY	APPR	DATE
0	PRODUCTION REL.			



18 AWG. ON ALL UNLESS OTHERWISE NOTED

2. WIRE ALL 4 CHASSIS GROUNDS TOGETHER AND CONNECT THEM TO THE CHASSIS NEAR THE PLUG.

1. REFER TO #612-0006 FOR PARTS LISTING SCHEMATIC FOR REFERENCE ONLY.

NOTES: UNLESS OTHERWISE SPECIFIED DO NOT SCALE DWG

PLACE DRAWING NO. IN LOCATION SHOWN

D/N

TOTAL WT.

612-0006
NEXT ASSY.

103-0001
FINAL ASSY.

APPROVED

APPROVED

DATE

5/30/96

SCHEMATIC,
GENERAL
ESP-3 PLATTER

DWG. NO.
600-0122-C

REN NO.

REV

0

SHEET 1 OF 1
AUTOCAD
FILENAME 6000122C

Upland, Calif.
(909) 981-1398

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UNLESS OTHERWISE SPECIFIED

CONCENTRICITY

SYMMETRY

PLATINUM

PERIODICITY

PARALLELISM

FINISH

ALL DIMENSIONS ARE IN INCHES

UNLESS OTHERWISE SPECIFIED

± 0.15 ± 0.05 ± 0.16

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED

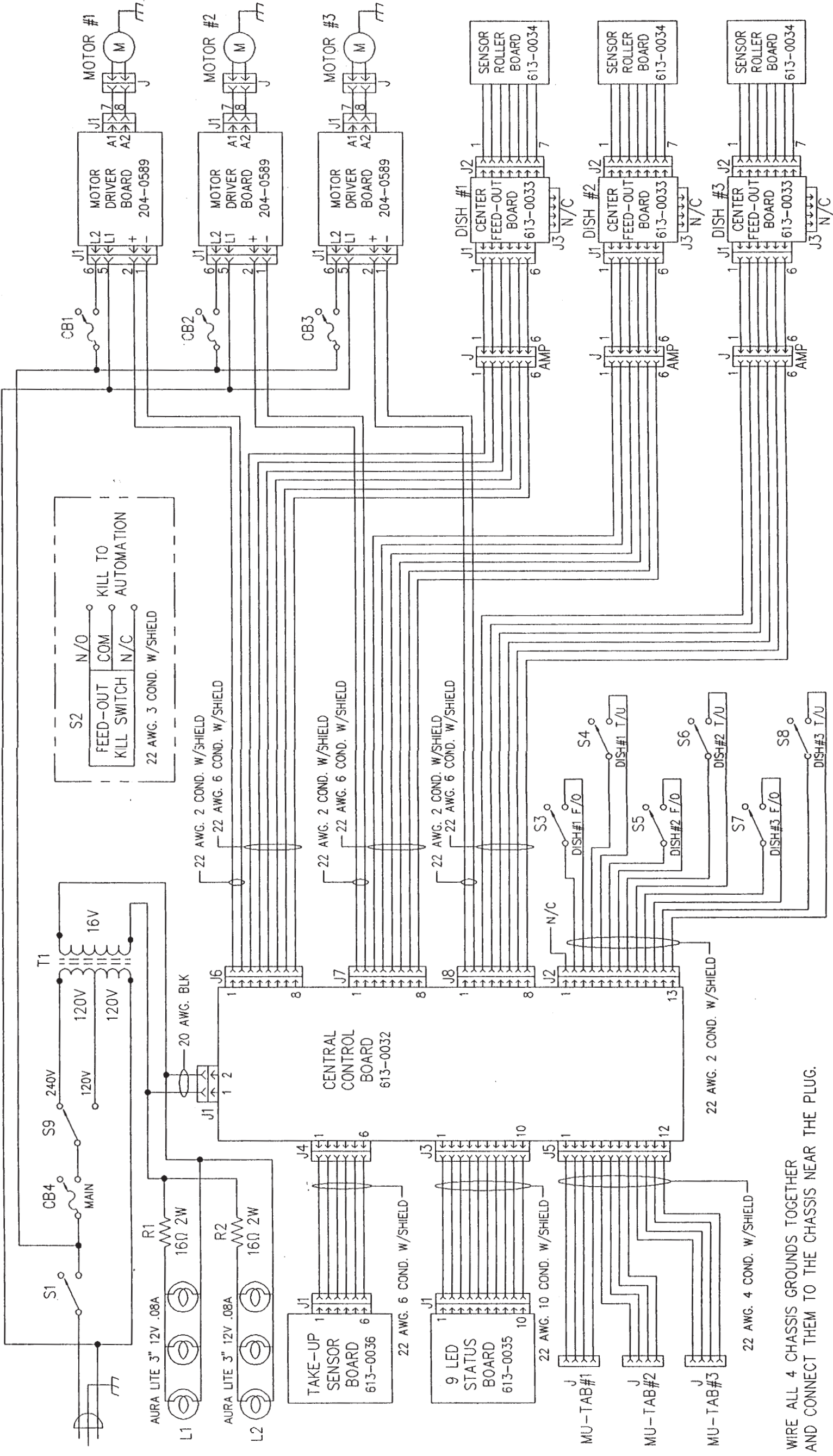
UNLESS OTHERWISE SPECIFIED

REVISIONS

REV	DESCRIPTION	BY	APPR	DATE
0	PRODUCTION REL.			



18 AWG. ON ALL UNLESS OTHERWISE NOTED



2. WIRE ALL 4 CHASSIS GROUNDS TOGETHER AND CONNECT THEM TO THE CHASSIS NEAR THE PLUG.

1. REFER TO #612-0006 FOR PARTS LISTING SCHEMATIC FOR REFERENCE ONLY.

NOTES: UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG

PLACE DRAWING NO. IN LOCATION SHOWN

INTERPRET DRAWING PER ANSI Y14.3M-1982	SCALE	NONE	SHEET SIZE	C	DATE	PROJECT	P-100-180	MPL #	DISK #
CONCENTRICITY	UNLESS OTHERWISE SPECIFIED	ANGLES	DRAWN BY M. DANNEBERG 5/30/96		CHECKED BY	DWG. NO. 600-0122-C			
SYMMETRY	$\pm 0.15 \pm 1/16$	DIMENSION LIMITS HELD BEFORE FINISH	APPROVED		REN NO. 600-0122-C				
FLATNESS	MACHINED FILED RADI 0.05-0.30	APPROVED	APPROVED		DWG. TITLE SCHEMATIC, GENERAL				
PERPENDICULARITY	ALL DIMENSIONS ARE IN INCHES	APPROVED	APPROVED		REN. NO. 600-0122-C				
PARALLELISM	FINISH	APPROVED	APPROVED		DWG. TITLE SCHEMATIC, GENERAL				
TOTAL WT.	APPLICATION	TOTAL WT.		DWG. TITLE SCHEMATIC, GENERAL		DWG. TITLE SCHEMATIC, GENERAL		DWG. TITLE SCHEMATIC, GENERAL	
NOTICE		The data in this document incorporate proprietary rights of RENTEC INCORPORATED, 1822 West 11th Street, Upland, California 91786. Any party accepting this document does so in confidence and agrees that it shall not be duplicated in whole or in part without the written consent of RENTEC INCORPORATED.		Upland, Calif. (909) 981-1398		Upland, Calif. (909) 981-1398		Upland, Calif. (909) 981-1398	
DO NOT SCALE DWG		DO NOT SCALE DWG		DO NOT SCALE DWG		DO NOT SCALE DWG		DO NOT SCALE DWG	
NOTES: UNLESS OTHERWISE SPECIFIED		NOTES: UNLESS OTHERWISE SPECIFIED		NOTES: UNLESS OTHERWISE SPECIFIED		NOTES: UNLESS OTHERWISE SPECIFIED		NOTES: UNLESS OTHERWISE SPECIFIED	
DO NOT SCALE DWG		DO NOT SCALE DWG		DO NOT SCALE DWG		DO NOT SCALE DWG		DO NOT SCALE DWG	
PLACE DRAWING NO. IN LOCATION SHOWN		PLACE DRAWING NO. IN LOCATION SHOWN		PLACE DRAWING NO. IN LOCATION SHOWN		PLACE DRAWING NO. IN LOCATION SHOWN		PLACE DRAWING NO. IN LOCATION SHOWN	
D/N		D/N		D/N		D/N		D/N	
SHEET 1 OF 1		SHEET 1 OF 1		SHEET 1 OF 1		SHEET 1 OF 1		SHEET 1 OF 1	
AUTOCAD FILENAME 6000122C		AUTOCAD FILENAME 6000122C		AUTOCAD FILENAME 6000122C		AUTOCAD FILENAME 6000122C		AUTOCAD FILENAME 6000122C	

CFS/RENTEC PRODUCT WARRANTY
One Year Limited Warranty

CFS/Rentec, Inc. warrants its products against defects in workmanship and materials under normal use for a period of one year from the date of purchase by the original purchaser. This warranty is superseded by manufacturer's warranties for parts manufactured elsewhere and used in CFS/Rentec, Inc.'s products. During the warranty period, any part that is determined by an authorized technician to be defective in material or workmanship and returned to the site of the manufacture (shipping costs prepaid) will be as the exclusive remedy, repaired or replaced at CFS/Rentec, Inc.'s option.

Responsibility for the conveyance of the product to the manufacturer is that of the purchaser. If the product is damaged in transit, the purchaser must file the claim with the carrier.

CFS/Rentec, Inc. will make a good faith effort for prompt repair, replacement or other adjustment with respect to any product that proves to be defective within the warranty period.

EXCLUSIONS

The warranty on products manufactured by CFS/Rentec, Inc. will not apply to defects resulting from:

- Improper or inadequate maintenance by the customer.
- Unauthorized modifications or misuse.
- Operation outside of the environmental specifications for the product.
- Improper site preparation and maintenance.
- Use of products from other manufacturers in conjunction with those purchased from CFS/Rentec, Inc.

The warranty period begins either on the date of customer purchase or, if the purchase price includes installation by an authorized technician on the date of installation.

Any liability for consequential and incidental damages is expressly disclaimed. CFS/Rentec, Inc.'s liability in all events is limited to, and shall not exceed the purchased price paid.

Many countries, states and localities have codes and/or regulations governing sales, construction, installation and/or use of products for certain purposes, which may vary from those in neighboring areas. While CFS/Rentec, Inc.'s attempts to ensure that its products comply with such codes, it cannot guarantee compliance and cannot be responsible for how the product is installed or used. Before purchase and/or use of a product, please review the product application, national, state and local codes/regulations and be sure that the product, installation and use will comply with them.

CFS/RENTEC, INC. FIELD SERVICE AGREEMENT

For all equipment manufactured by CFS/Rentec, Inc. requiring on-site servicing:

For on-site evaluation and/or repair by an authorized technician, a labor fee of \$375.00 per day applies. The customer is also responsible for all associated travel and living expenses. If a part or parts are deemed to be defective by the authorized technician and warranted under the standard one-year warranty, then conditions stated in that warranty apply. If, however, the parts are not warranted under the standard warranty the customer is responsible for the purchase of the parts from CFS/Rentec, Inc. as well as the conveyance of the parts to the site.