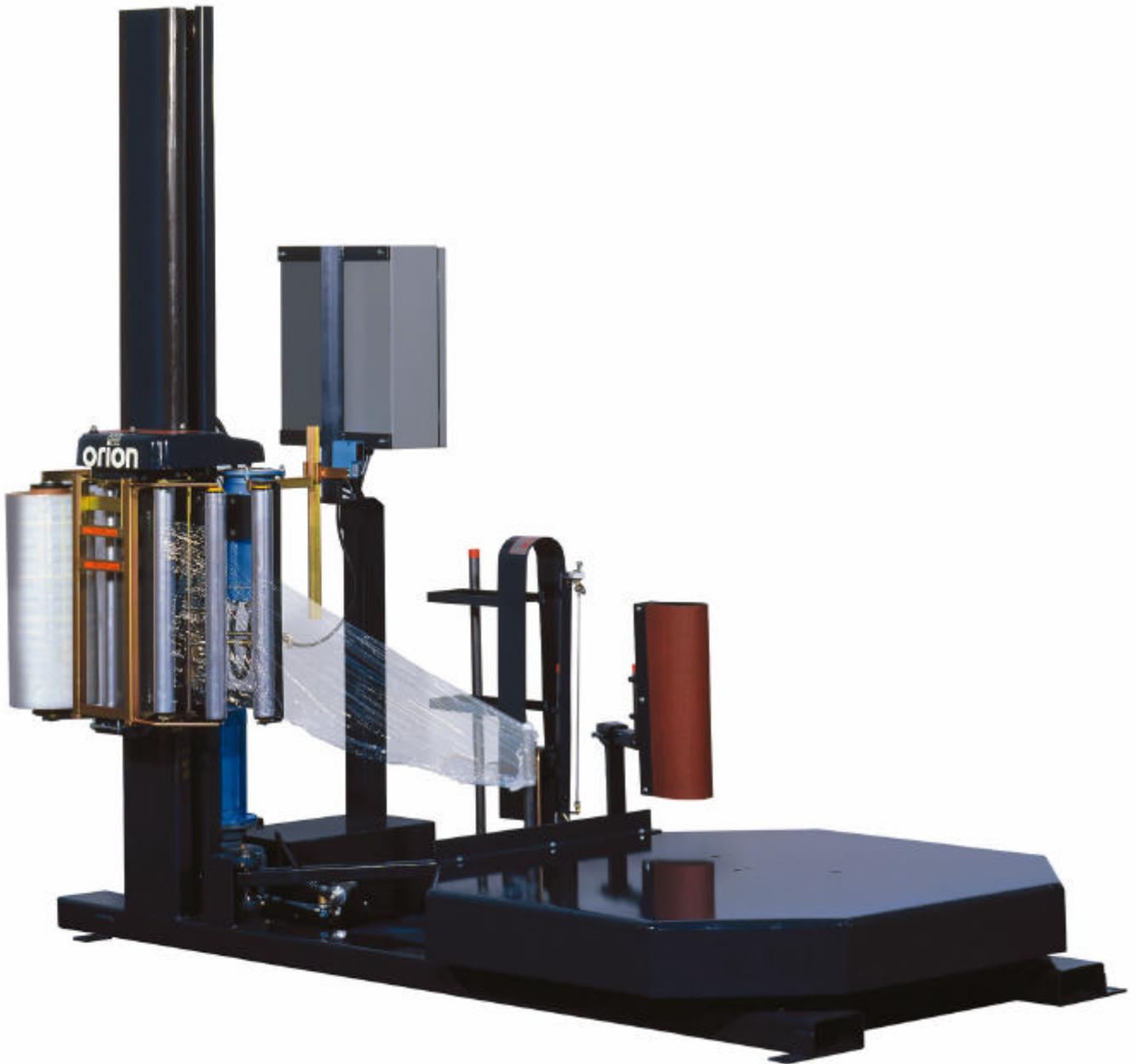




orion
ANYTHING LESS IS A GAMBLE



MODEL HPA66

SERIAL No. 2005-8899999

2270 Industrial, Montreal (Laval), Canada, H7S 1P9

Tel.: (450) 667-9769, Fax: (450) 667-6320



INSTRUCTION **MANUAL**

**FOR ALL INQUIRIES
PLEASE CONTACT
OUR LOCAL DISTRIBUTOR**

**FOR UNITED STATE ONLY
1-800-333-6556**

Thank you for choosing ORION stretch-wrapping equipment. It is a wise choice, which will benefit your company now and in the future.

ORION uses a unique combination of functional, rugged steel structure and sophisticated control systems to offer equipment high in durability and low in maintenance requirements. Our advance control systems mean that Orion equipment can be operated safely and efficiently without the need for special operator expertise.

Please read this manual carefully and keep it handy. Following these simple operating instructions will insure the safe and efficient performance of this machine while simple maintenance procedures will guarantee a long and productive life of the equipment.

Notice:

Our manual covers standard features of the machine. Certain options may not be fully covered due to their unique application.

In order to acquire more information about custom made features of your machine and to provide quicker service, the following information is required when making an inquiry:

1)Model

2)Serial Number **2005-8899999**

3)Subassembly (see PART LIST)

SAFETY:

ORION'S stretch wrappers should be operated with caution and common sense as any other industrial equipment. To prevent injury and/or electrical shocks, careful operation of the machine and awareness of its many automatic functions is required.

NOTE: All electrical power and compressed air must to be disconnected prior to all inspection, maintenance or repair work.

ORION PACKAGING INC.

ORION PACKAGING SYSTEMS INC.
AUTOMATIC SPECIFICATIONS - EFFECTIVE MARCH 15,2000

ORION VORTEX@ SERIES MODEL HPA-66

Spiral Platform Automatic Rotary Turntable System

Maximum Load Size	48" w x 48" L x 80" H
Minimum Load Size	30" W x 30" L x 26" H*
Weight Capacity	5,000 lbs. Dynamic; 20,000 lbs. Static
Utilities	115/1/60 20 Amp Electrical Service, 3 CFM Compressed Air @ 80 PSI
Turntable	48" x 48" Octagonal Formed & Welded Steel Plate with Skirt Precision, Heavy Duty, Ring Bearing Turntable Support
Turntable Drive	0 - 14 RPM Variable Turntable Speed Electronically Adjustable Acceleration/Deceleration (Soft Start) Variable Speed Drive Motor Heavy Duty ANSI Chain & Sprocket Turntable Drive
Control Features	CSA Approved, NEMA 12 Control Panel State-of-the-Art Allen Bradley MicroLogix Programmable Logic Controller User Friendly Controls with Non-Proprietary Pushbuttons, and Switches Lanyard Switch for Customer Installation to Allow Remote Cycle Start Insta-Sense™ Film Broken / Out Sensing Logic with Indicator Light Revo-Logic™ Exact Wrap Counting Electronic Film Tension Control Adjustment on the Panel End of Cycle Film Force Release Separate Top and Bottom Wrap Count Selectors Variable Speed & Separate Film Carriage Up/Down Controls Film Carriage Raise/Lower Switch (Manual) Cycle Pause for Stopping the Wrap Cycle Without Resetting Photocell for Automatic Load Height Detection Turntable Jog Pushbutton
Film Delivery	20" Orion Insta-Thread™ Powered Prestretch Film Delivery System Precision Ground, Polyurethane Pre-Stretch Rollers for Consistent, Maximum Film Yield 245% Standard Pre-Stretch Ratio (Adjustable from 100% to 425%) Easy & Safe to Operate Self-Threading Carriage Design Electronic Film Tension Control Adjustment on the Panel Full Authority Film Dancer Bar with Variable Speed Output (Non-Wearing Sensor) Heavy Duty ANSI Chain & Sprocket Ratio Control
Film Carriage Drive	Heavy Duty ANSI Chain Carriage Lift Variable Speed Drive Motor Multi-Point UHMW Precision Carriage Guidance System
Structural Features	100% Structural Steel Construction Throughout Non-Proprietary, Locally Obtainable Components Throughout Easy Access to All Components Open Mechanical Design for Ease of Maintenance Forklift Portable Base Design Structural Steel Mast
Film Tail Treatment	Pneumatic Film Clamping Device Impulse Wire Film Cutting Pneumatic Load Seeking Brush Down System
Estimated Shipping Weight	1,800 lbs

Visit our Distributor Support Website at www.support@orionpackaging.com

MACHINE UNLOADING INSPECTION & INSTALLATION

UNLOADING

Machine can be easily unloaded and transported by a forklift with a minimum capacity of 2500 lbs.

1. Carefully insert the forks into the lifting tubes to the maximum possible depth. Depending on the model, a forklift access may be either at the turntable end of the machine frame, the tower end or both. In case of the mongoose machine or the conveyor, enter the forks under the frame.
2. Lift the machine (or other part of system) only to the necessary height to move it with no bouncing or friction on the floor.
3. Sit the machine down assuring uniform contact with the floor, which is necessary to ensure correct and smooth operation.

INSPECTION

1. Remove all packing and supporting additions - these may include the blocks under the carriage and the restraining bar over the table.

NOTE: when removing the stretchwrap film covering the machine, care must be taken not to cut any of the electrical wires and rubber covering on the multistretch rollers.

2. Perform a visual inspection of the electrical and mechanical parts for loosened joints and / or broken connections. Any suspected shipping damage must be reported immediately to the freight carrier.

Items that are vulnerable to damage and must be inspected are as follows:

- Motors and transmissions
- Junction boxes
- Electrical conduits
- Proximity and limit switches
- Photocells

3. Check under the turntable (H-series models only) to ensure that there is no crippling of the movable parts i.e. casters, center axle or drive assembly.

4. Verify the following:

- Turntable or rotary arm drive system to confirm that the reducer to drive the chain is snug and properly aligned.
- Verify the wires tight conduits for crushed sections or loose fittings.
- Verify the carriage to be sure that it is correctly aligned with the tower and verify the tension on the lift chain.
- Verify all the dials and knobs on the control panel for smooth action.

MACHINE INSTALLATION

After the visual inspection has been completed the electrical power and the compressed air may be connected as specified on the diagrams supplied with the machine.

An electrical diagram is provided with each machine in the envelope attached to the panel box.

ASSEMBLY PROCEDURE

The structural frames of the machine have to be installed on a leveled floor.

Locate the main wrapper section into its final position, keeping the tower assembly* away from any traffic.

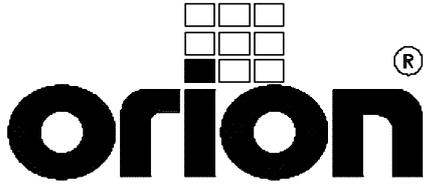
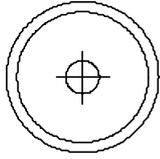
The wrapper mainframe section must be bolted to the floor by the 1/2" concrete floor anchors (leg & shield or expandable type).

Conveyor sections (where applicable) have to be positioned, leveled** and bolted to the floor. Any wiring that has been disconnected to facilitate transport is marked with a number located on the junction box to which the wiring must be reconnected. It allows identification of the proper position of the infeed and outfeed conveyor sections. Any wire run that appears too short or long may indicate that the position of the mechanical components is incorrect. Verify the status of all assemblies before proceeding.

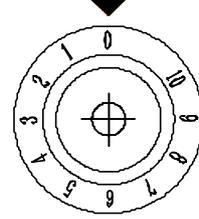
CAUTION: improper placement and alignment of the conveyor section(s) and/or electric photocells may lead to equipment malfunction and damage.

* The tower deviation from vertical must not exceed 1/4" on the distance of 10 feet (angle: 0 degrees 6').

START
AUTO CYCLE

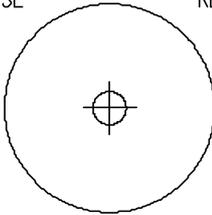


FILM TENSION



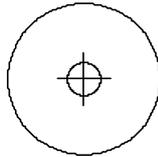
STOP

1x
PAUSE



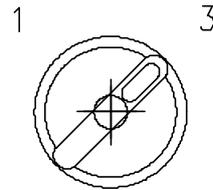
2x
RESET

POWER

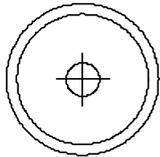


TOP WRAPS

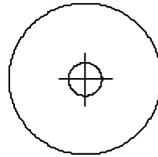
2



T. TABLE / TOWER
JOG

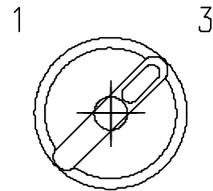


MACHINE
ALARM

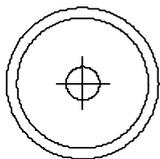


BOTTOM WRAPS

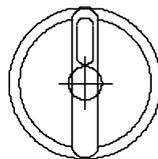
2



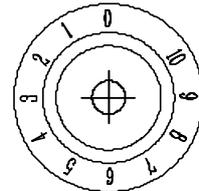
CLAMP
OPEN / CLOSE



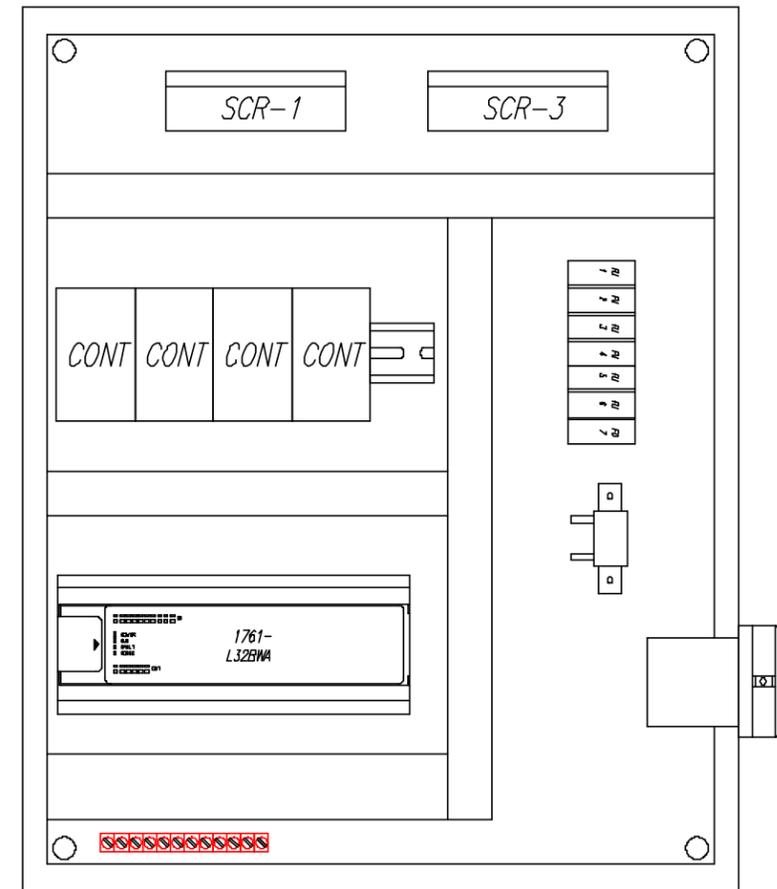
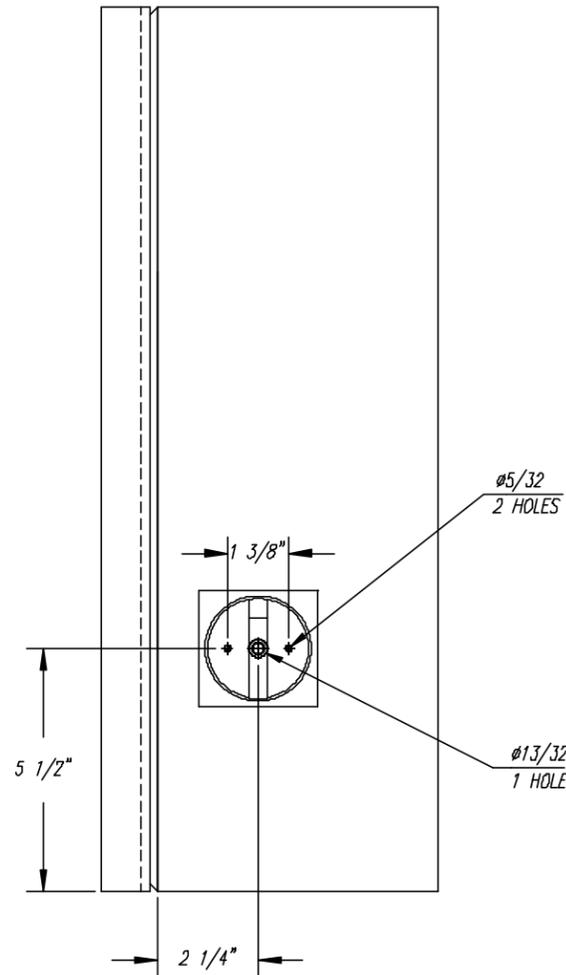
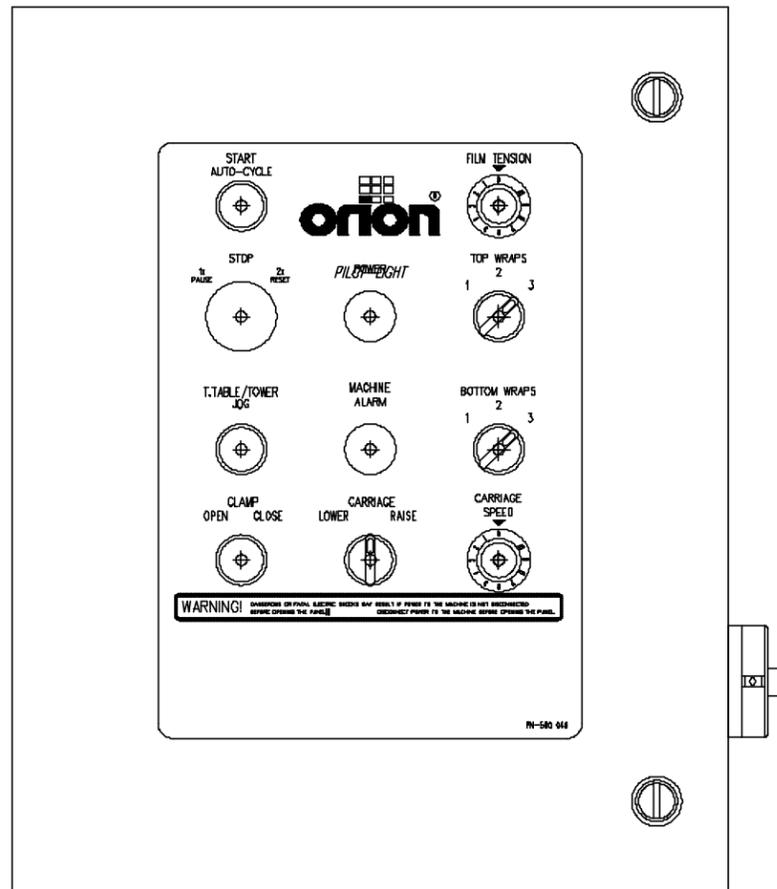
CARRIAGE
LOWER RAISE



CARRIAGE
SPEED



WARNING! DANGEROUS OR FATAL ELECTRIC SHOCKS MAY RESULT IF POWER TO THE MACHINE IS NOT DISCONNECTED BEFORE OPENING THE PANEL. DISCONNECT POWER TO THE MACHINE BEFORE OPENING THE PANEL.

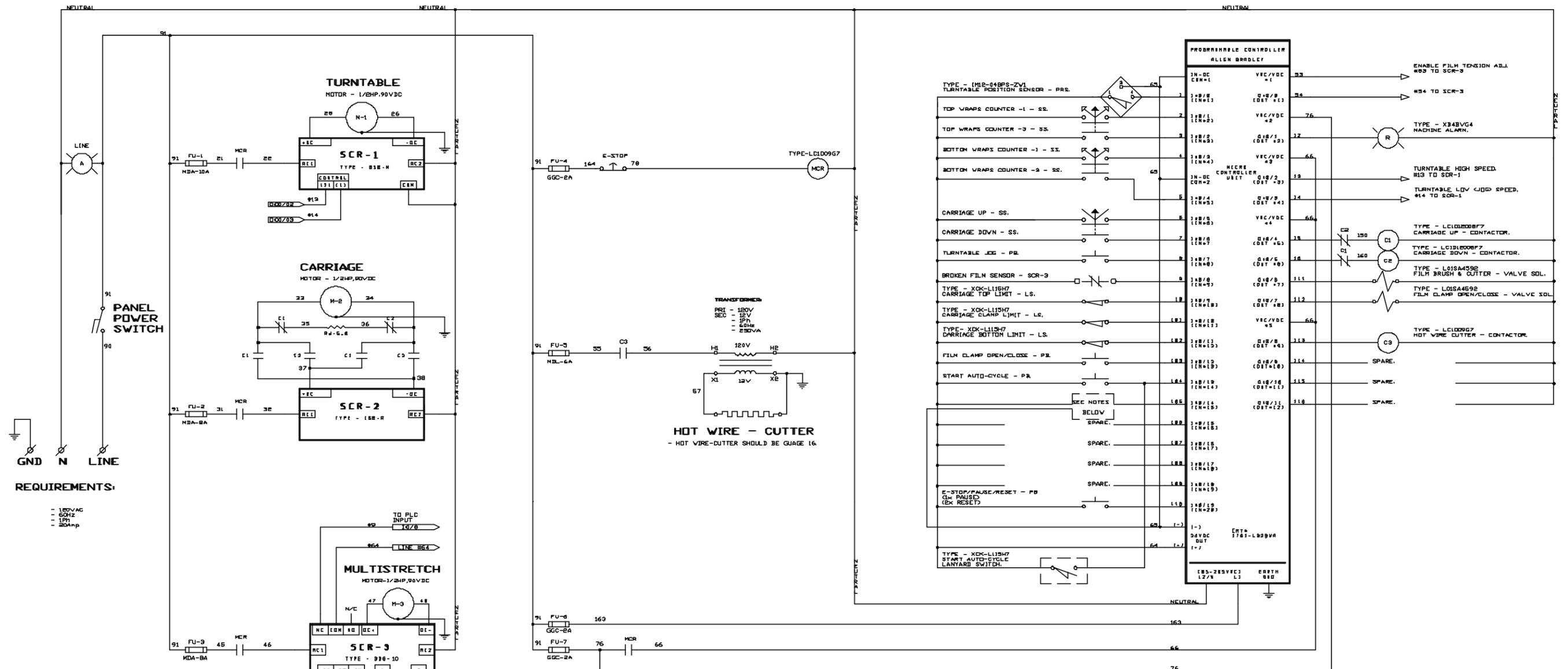


HPA66-17 STD PANEL LAYOUT (5412 ES201606)
 PANEL SIZE 20x16x06

NOTES:

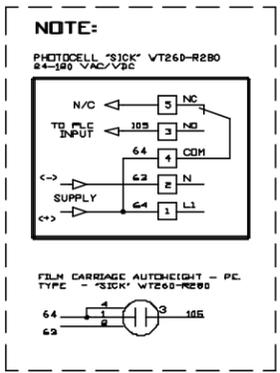
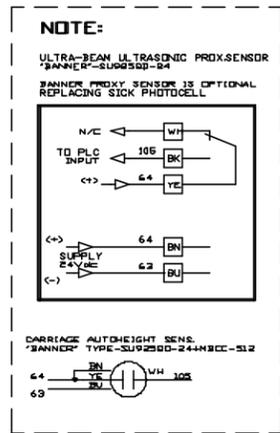
- 1: SCR-2 (168-A) IS LOCATED ON ENCLOSURE DOOR
- 2: FU-2 & FU3
 MDL-8A (20" CARRIAGE)
 MDL-10A (30" CARRIAGE OR HEAVY FILM GAUGE UPGRADE)
- 3: 336-10 (20" CARRIAGE)
 336-8 (30" CARRIAGE OR HEAVY FILM GAUGE UPGRADE)

<p>ORION PACKAGING INC. 2270 INDUSTRIEL BOULEVARD, LAVAL, QUEBEC, CANADA, H7S 1P8 TEL: (450) 667-9789</p>	ORION PACKAGING INC.		
	2270 INDUSTRIEL BOULEVARD, LAVAL, QUEBEC, CANADA, H7S 1P8 TEL: (450) 667-9789		SCALE: 1:2
	TITLE: HPA66-17		STANDARD
	SIZE: B	DOCUMENT NO: 302 449/L	REV: 4
DATE: NOV-09-2004	SHEET: 1 OF 1	FILENAME: HPA66-17.DWG	BASE:



REQUIREMENTS:

- 120VAC
- 60Hz
- 1PH
- 20Amp



1. FUSES FU-2 AND FU-3
- MDA-BA (60" CARRIAGE)
- MDA-10A (30" CARRIAGE OR
HEAVY FILM GAUGE UPGRADE)
2. BOARD SCR-3
- 336-10 (20" CARRIAGE)
- 336-8 (30" CARRIAGE OR
HEAVY FILM GAUGE UPGRADE)

<p>ORION PACKAGING INC. 2270 INDUSTRIEL BOUL., LAVAL QUEBEC, CANADA, H7S 1P9 TEL: (450) 887-9789</p>	<p>2270 INDUSTRIEL BOUL. LAVAL, Q.C., CANADA H7S 1P9 TEL: (450) 887-9789 FAX: (450) 887-4301 APPR. BY: S.M. DRAWN BY:</p>		<p>SCALE: NTS</p>
	<p>TITLE: HPA66-17</p>		<p>DATE: SEPT-10-2004 FILENAME: HPA66-1710WS</p>
<p>SIZE: B</p>	<p>DOCUMENT NO. JOB # STANDARD 302 449</p>	<p>REV: 4</p>	<p>SHEET: 1 OF 1 BASE:</p>

CONTROL PANEL

The control panel layout is custom designed for each particular installation. Please before proceeding be familiar with location of the EMERGENCY button and all functions, switches and pushbuttons.

POWER SWITCHES

Main Disconnect Switch

ON - connects the power source to the machine.

OFF - disconnects the power source.

Power Switch

When the power switch is not actuated, all the inputs of the machine are operative but the outputs will remain disabled. This is a useful aspect for troubleshooting since the signal may be traced at the PLC without having the machine operate. When the power switch is activated, the outputs are enabled and the machine will resume normal operation.

Operation Mode Selector Switch

The two settings on the operation mode selector switch are:

MANUAL: Manual operation for use during the machine testing, set-up, or troubleshooting.

AUTO: Automatic operation when using the programmed commands of the automatic cycle.

When the switch is set to **MANUAL** the manual control switches are enabled. In order to begin machine testing or operational set-up, the operation mode MUST be set to **MANUAL**. This will permit the operator to use the manual switches described in this section.

When the mode selector switch is set to **AUTO**, the programmed commands stored in the PLC are operate and the **START** button may be pressed to permit normal automatic operation. The **STOP** button may be pressed to stop the cycle during operation. The mode selector switch may be switched from **AUTO** to **MANUAL** during the cycle for a transfer to manual operation.

START AND STOP SWITCHES (EMERGENCY STOP)

The **START** switch is used to start the cycle once the load is on the turntable (or under the rotary arm). The cycle may be stopped at anytime by pressing the **STOP** button.

NOTICE: In case of emergency, use the **STOP** button, which interrupts all the machine electrical circuits (except multistretch drive). If the **STOP** pushbutton is pressed in the middle of the cycle, the carriage and turntable (rotary arm) may be returned to their home position by using the buttons in the **MANUAL** mode.

REWRAP SELECTOR

The REWRAP selector is a pushbutton switch that restarts the wrapping cycle during the automatic operation. The REWRAP will work only when the operation switch is set to **AUTO**, and a load is in the proper position for wrapping on the turntable (process conveyor).

CLAMP JOG

The Clamp Jog is a bistable pushbutton (except "MA" type machines*) that opens the clamp when pressed once and closes when pressed again. The mono-stable action is achieved through the use of a four-way pneumatic valve mounted on turntable (or process conveyor frame) next to the clamp.

The **CLAMP JOG** will work only when the Operation Selector Switch is set to **MANUAL**.

*"MA" MODELS HAVE 3 POSITIONS RETURN SPRING SWITCH

CONVEYOR CONTROL SWITCHES

Conveyor Jog Switches

The Conveyor Control Switches are the pushbutton type switches activating the conveyor when depressed. Each conveyor section has its own switch. Standard configuration is: Infeed, Process and Exit Conveyor.

In case of extra conveyors (optional), the pushbutton switches will bear the number corresponding with particular conveyor (ex: Infeed # 2, # 3, etc. and Exit # 2, # 3 etc.).

Conveyor Reverse /Forward Switch

The conveyors reverse switch is a monostable two positions switch that reverses the flow direction of all/or chosen conveyor when activated. This Control Switch may be used & when the Operation Selector Switch is set to **MANUAL**.

SPIRAL WRAP SWITCH

The SPIRAL WRAP switch has two positions:

UP - in this position the cycle will end after completing the specified number of top wraps, therefore, the machine will only wrap the load once, going up.

UP/DOWN - in this position the cycle will be completed after the load is wrapped in both the up and down directions.

TOP WRAP FIRST (OPTIONAL)

The carriage rises faster at the beginning of the cycle to wrap the top of the load (see electrical diagram provided with the machine).

CARRIAGE CONTROL SWITCH

The CARRIAGE CONTROL switch is a three position type switch with the following settings:

RAISE - raises the carriage until the top limit switch on the tower is attained.

LOWER - lowers the carriage until the bottom limit switch on the tower is attained.

This switch is normally positioned in the middle where the carriage remains stationary. Turning to the RAISE or LOWER will activate the carriage to move in its respective direction.

TURNTABLE (ROTARY TOWER) JOG

The Turntable (Rotary Tower) Jog switch is a pushbutton which will rotate the turntable (rotary arm) in a clockwise direction (as viewed from the top) when is held depressed. When the switch is released the turntable (rotary tower) will stop. The switch is inoperative during the wrap cycle.

FILM TENSION

Film tension may be adjusted using the Film Tension Control Knob. It has a range of tension from 0 to 10: low range from 0 to 4, 4 to 8 is the most useful range for most of the films used by our customers and 8 to 10 considered as a very high range which may break some films).

NOTE: Lighter loads may require lower tension settings than heavier loads.

Film tension is controlled through the dancer bar system. Occasionally the Feed Back Proximity Sensor may need some adjustment. Adjustment of feed back is shown on drawing # 001.

Adjustment instructions:

- remove the carriage cover
- unbolt the two nuts holding the proximity switch (item # 1)
- turn the Proximity sensor (item # 2) until the moment when the motor starts to turn (or hums)
- tighten on the nuts securing the Proximity Sensor.

NOTE: The condition in which the motor hums but does not turn must be maintained even after all elements are tightened. If not, the adjustment procedure must be repeated.

CARRIAGE SPEED

There are two carriage speed controls on the panel:

CARRIAGE SPEED UP & CARRIAGE SPEED DOWN

The carriage speed controls can be used to control the amount of overlap the film will have on itself during a wrap. It is recommended to start with a RAPID upward wrap in order to stabilize the load early in the cycle.

The control potentiometers have settings from 0 to 10, the higher settings being the fastest. High settings will mean less film overlap because of faster carriage speed, and low settings will mean more film overlap because of lower carriage speed.

TOP AND BOTTOM WRAPS

There are two bistable, three position type switches controlling the number of wraps that may be put at the top and bottom of the load.

TOP WRAPS: 1,2,3

BOTTOM WRAPS: 1,2,3

These switches may be set before the automatic cycle begins, and in their different positions will wrap respectively 1,2 or 3 turns of the film on the top or on the bottom of the load.

PHOTOSWITCHES

Photoswitches are placed on the machine to monitor the motion and location of the loads on the conveyors. For each optional, additional conveyor on the machine an additional photoswitch will be added.

The photoswitches are located as follows (shown on the machine layout) :

Load Height Sensing Photoswitch: located on the carriage and stops it from moving higher than the highest point on the load. The photoswitch position on the track can be adjusted in order to make the carriage pass the top of the load and make the film overlap the top.

Turntable Load Location Photoswitch: is the middle one of the three photoswitches that are pointed at the turntable from behind the tower. Its purpose is to stop the load on the turntable/process conveyor in a suitable position for wrapping. The turntable conveyor or process conveyor is programmed to stop approximately 1.5 seconds after this photoswitch is activated.

Turntable or Process Conveyor Safety Photoswitches: these are the three photoswitches pointed at the turntable or process conveyor from behind the tower. Their purpose is to prevent the cycle from starting if the load is not properly positioned on the turntable or process conveyor.

Infeed and Outfeed Photoswitches: these are located approximately one foot from the side of each conveyor in the middle of the section. Their purpose is to monitor the position of the loads as load transfers are occurring. When the photoswitch is activated there is a delay of approximately 1.5 seconds before the conveyor stops.

NOTE: When testing the conveyor without the load the photoswitch must be kept activated for at least 1.5 seconds in order to have the conveyor stop. For a downstream conveyor, when the load is moved out the photoswitches range there will be delay of about 5 seconds before an upstream conveyor is activated to move load.

LIMIT SWITCHES.

There are three limit switches located on the tower. The top-most and bottom-most switches limits the motion of carriage determinate by location of the elevator's drive and idler sprocket. The middle limit switch purpose is to activate the clamp to open, once the carriage reaches its level.

CAUTION: These limit switches are factory adjusted. When setting the machine, please double check their proper position.

PROXIMITY SWITCH

Proximity Switch is located under the turntable next to the lock, or on the perch ("MA" type machine). Its purpose is to monitor the turntable or rotary arm position, and to signal the controller every time the turntable or rotary arm passes the home position. The proximity switches proper adjustment ensures that turntable or rotary tower will stop in the correct position for the lock to be activated (only turntable machine).

CAUTION: The Proximity Switch is factory adjusted and should not need any further adjustment unless it has been disturbed.

SYSTEM START-UP

Notice: It is advisable to test-run the equipment with several pallet loads before make the attempt to wrap with film. Please position a worker at the EMERGENCY STOP push button.

Start up of the machine (system) may determine the need for the adjustment of:

- pallet sensor eyes (automatic systems only)
- load height stop photoswitch (on the carriage)
- conveyor acceleration/deceleration
- turntable speed & jog speed
- turntable speed acceleration/deceleration
- turntable home position (rotary tower home position)
- film tail treatment devices (automatic systems).

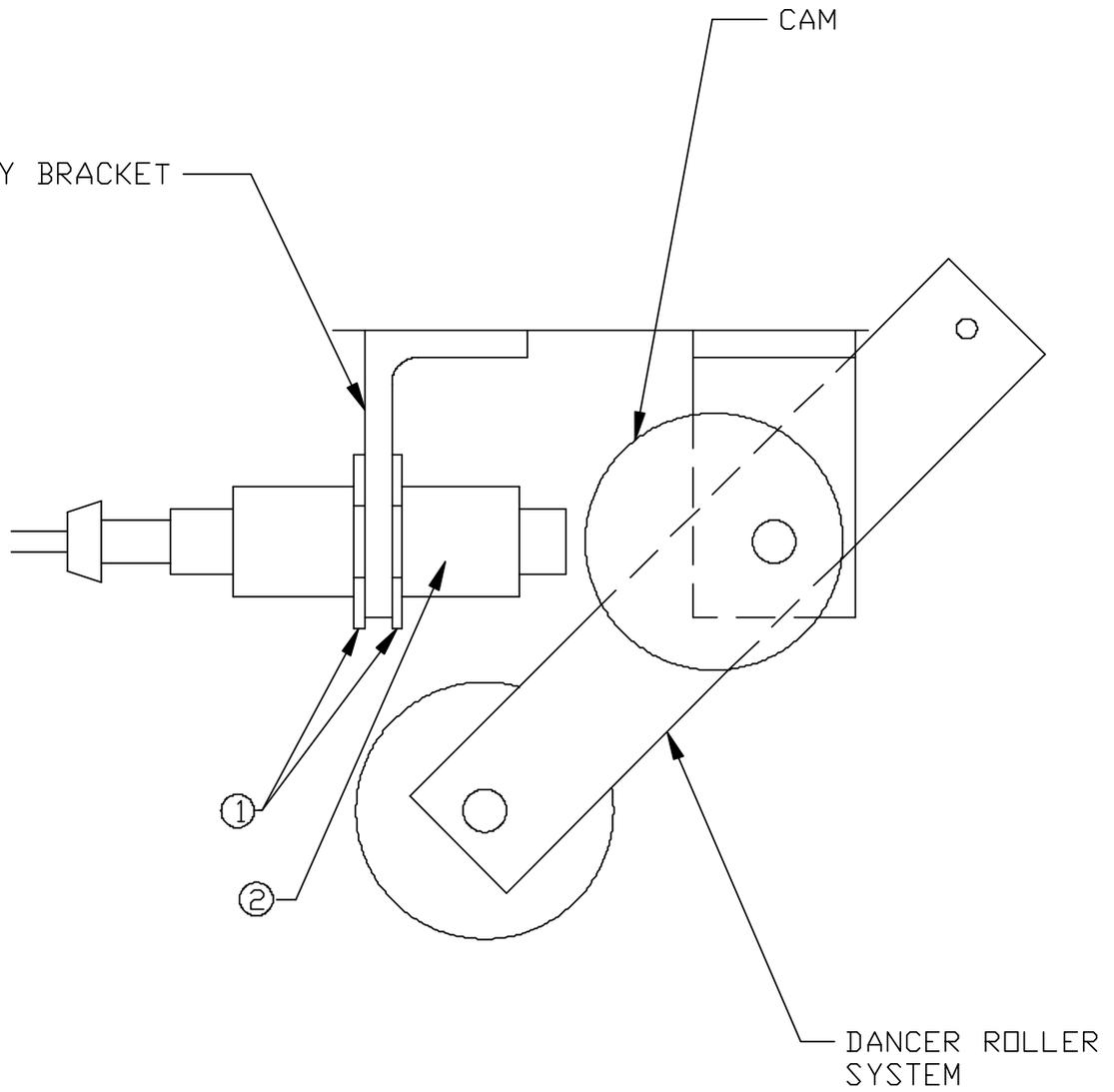
MACHINE WRAPPING TEST

Before the test procedure adjust the wrapping cycle parameters i.e. top wraps, bottom wraps, height photocell on/off, film tension, carriage speed (those two parameters may be adjusted during the wrapping cycle).

When there is no photocell, verify the top limit switch position.

PROXIMITY BRACKET

CAM



DANCER ROLLER SYSTEM

PROXIMITY SENSOR
FEED BACK ADJUSTMENT

DWG. # 001

LOADING THE FILM

The film roll can be loaded on the carriage mandrel from either end of the roll. When using tacky film, please verify that the inward tacky surface of the film is inward on the load.

1. Disconnect power (turn off power switch).
2. Swing up the top mandrel spool.
3. Put the roll of film on the bottom mandrel.
4. Install the top mandrel on top of the roll to prevent upward movement.
5. Pull the handle marked PULL TO OPEN to open film distributor cradle.
6. Pass the roped tail of the film through opening (as shown on the film quick threading pattern DWG. # 418180 Fig.1).
7. Close the film distributor cradle by pushing bar marked PUSH TO CLOSE.
8. When the film feeding is completed (fig. 2) – turn the power switch on.
9. Peel off the first few winds of the film (multistrech will run due to displacement of the dancer roller) and fix the film end onto the load.

The system is now ready to begin the first wrapping cycle.

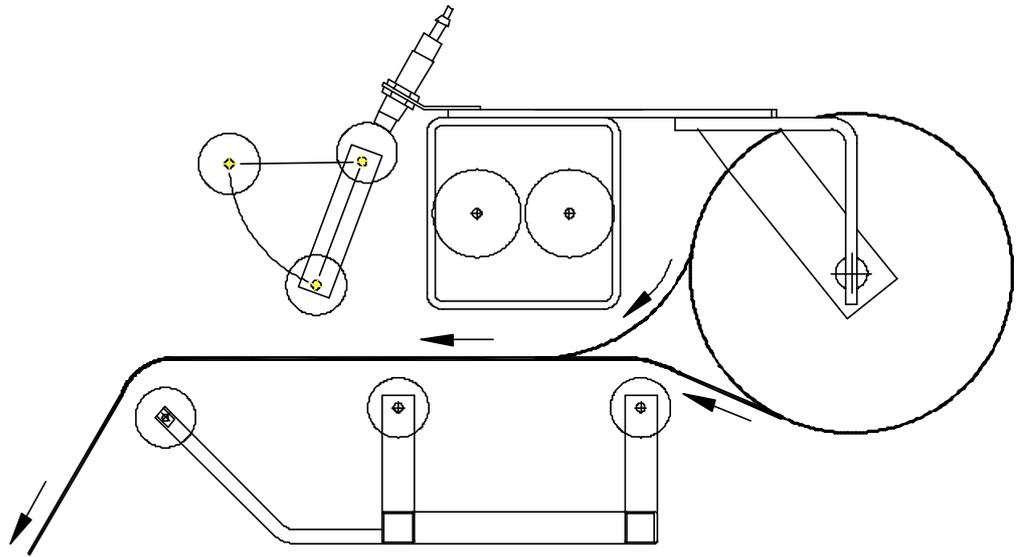


Fig. 1 OPEN CRADLE

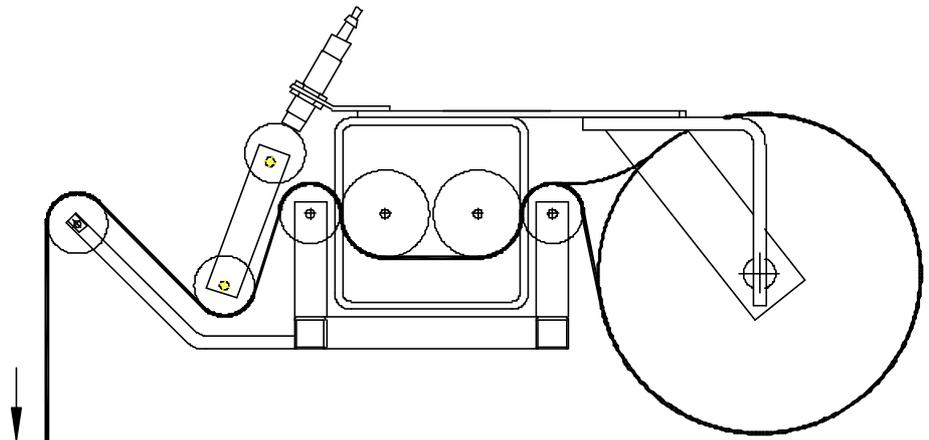


Fig. 2 CLOSED CRADLE

FILM QUICK THREADING

DWG # 418180

MACHINE MAINTENANCE

All general information about machine maintenance is based on normal machine working conditions: indoor, moderate dust and low moisture environment, and maximum rotation of 32 RPM of turntable/rotary arm.

They should be regarded as guidelines, reviewed and corrected according to requirements of actual use and conditions.

MOTOR MAINTENANCE

An occasional inspection of the brushes should be made in order to establish a wear rate. Replacement brushes should be installed before old brushes wear to 9/16" long, measured on the long side. After replacing brushes run the motor near rated speed for at least 1/2 hour with no load to seat the new brushes.

Failure to properly seat the new brushes may cause commutator damage and rapid wear of the new brushes. If the commutator becomes rough, scored or out of shape, a competent motor shop should disassemble it and resurface the commutator.

With every third brush change, have a competent motor shop resurface the commutator and blow the carbon dust out of the motor.

REDUCER OIL CHANGE

All external cap screws and plugs on the reducing transmission should be checked for tightness after the first week. It is recommended to change the oil every six months or at least 1800 hours of operation, whichever comes first. When adding or changing oil, the transmission should never be filled above the oil level mark indicated, because leakage and overheating may occur. Below is the list of the type of lubricant that should be used.

List of recommended reducer oils

Manufacturer	Lubricant
American Oil Co..	American Cyl Oil no: 196-L
Cities Service Oil Co.	Citgo Cyl Oil 100-5
Gulf Oil Corp.	Gulf Senate 155
Mobil Oil Corp.	Mobil 600 W Suer-r Cyl. Oil
Philips Oil Corp.	Andes S 180
Texaco Inc.	624 + 650T Cyl.Oil
Shell Oil Co.	Velvata Oil J82
Union Oil of Cal.	Red Line Worm Gear Lube 140

RING BEARING MAINTENANCE (when applicable)

The ring bearing (located under the turntable) should be re-lubricated internally and externally.

Internally: by injecting grease into all the lubrication nipples in succession until a collar of fresh grease appears around the perimeter of the ring. The re-lubrication interval suggested for these bearings, used in Stretch Wrapping Machinery is 750 hours, with a maximum period of 6 months. The lubricant should be fresh and applied in sufficient quantities to make sure all surfaces are lubricated.

Externally: by lubricating and wiping the chain drive with oily cloth. The frequency of lubrication depends on entirely upon the usage of the machine and environment in which the machine is placed (dust, moisture etc.).

Machines working under extremely dirty conditions should be lubricated every 400 operating hours but at minimum, every 2 months. Longer lubrication intervals may occur only when machine is working under very clean and dry conditions but should be not be longer than 6 months.

List of recommended lubricants for the ring bearing lubrication

Manufacturer	Lubricant
BP	Energrease LS2
Castrol	Speeroll AP2
Esso	Beacon 2
Gulf	Crown Grease 2
Mobil	Mobilus 2
Shell	Avania Grease R2
Texaco	Glissando FT 2
Valvoline	LB-2

TOWER RACEWAYS MAINTENANCE

The film distributor (carriage) is sliding on the plastic guides attached behind its back plate. The section of the tower on which the plastic guides move (raceways) should be cleaned and re-greased approximately every 600 hours of machine operation.

NOTICE: If the machine works in a dusty and corrosive environment, the raceways should be re-greased more often (at least every 100 hours).

CHAIN MAINTENANCE

To clean the chain, wipe it with an oily cloth every month. When machine is working in a dusty and damp environment, it may be necessary to repeat the cleaning operation more often.

As the chain lubricants please use the most common chain lubricants on the market.

With time, the chain will tend to stretch. A loose chain should be tightened at the chain tensioner, or by moving the reducer on its mounting plate.

NOTICE: Chain tension first adjustment must be done after the first two weeks of machine usage.

PNEUMATIC SYSTEM MAINTENANCE (when applicable)

The air supply system must be checked weekly and must be free from the moisture. In cold environments, it may be necessary to drain the air supply system daily.

CAM FOLLOWER MAINTENANCE (when applicable)

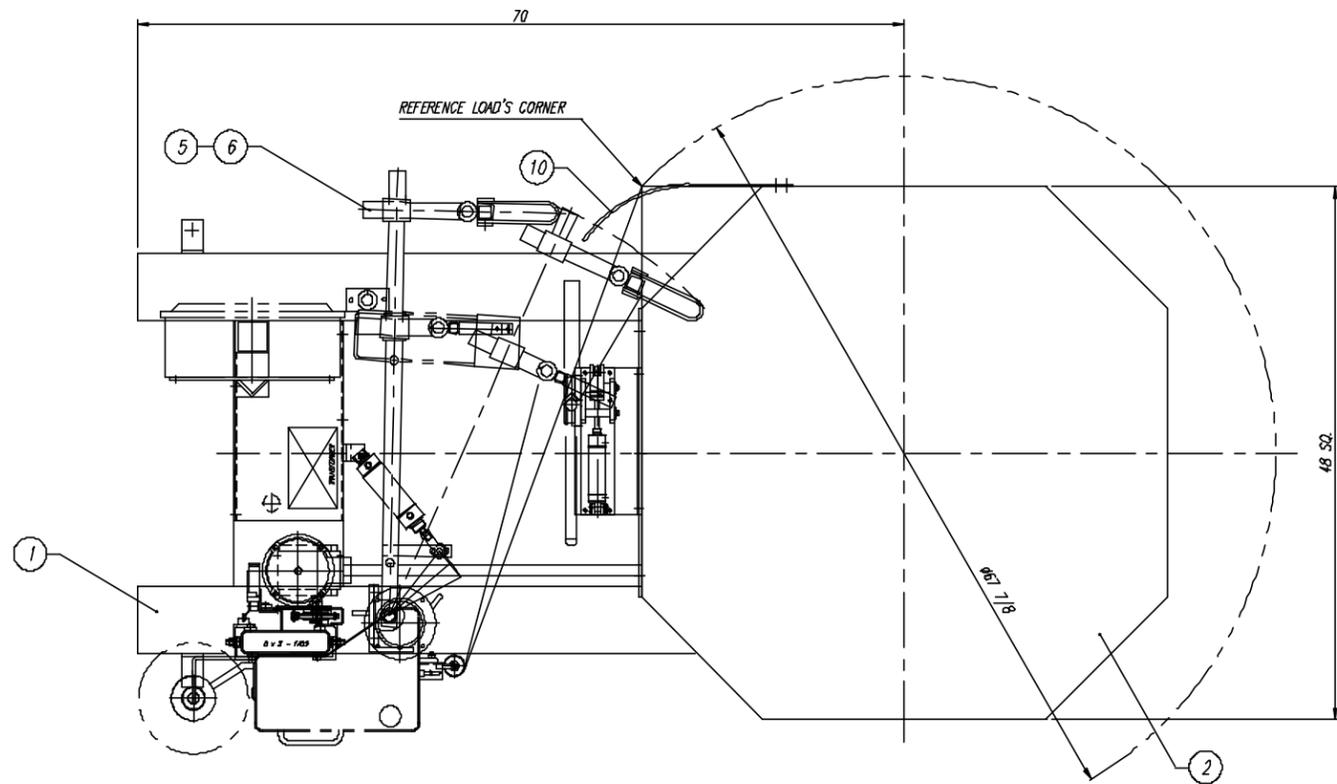
The cam followers have deep grease pockets and do not need frequent relubrication. The portion of the tower on which the cam followers run, should be cleaned and regreased every 300 hours of operation. If the machine operates in a dusty or corrosive environment the tower should be relubricated more often.

SEMI-AUTOMATIC STANDARD ASSEMBLY PART LIST

Note :

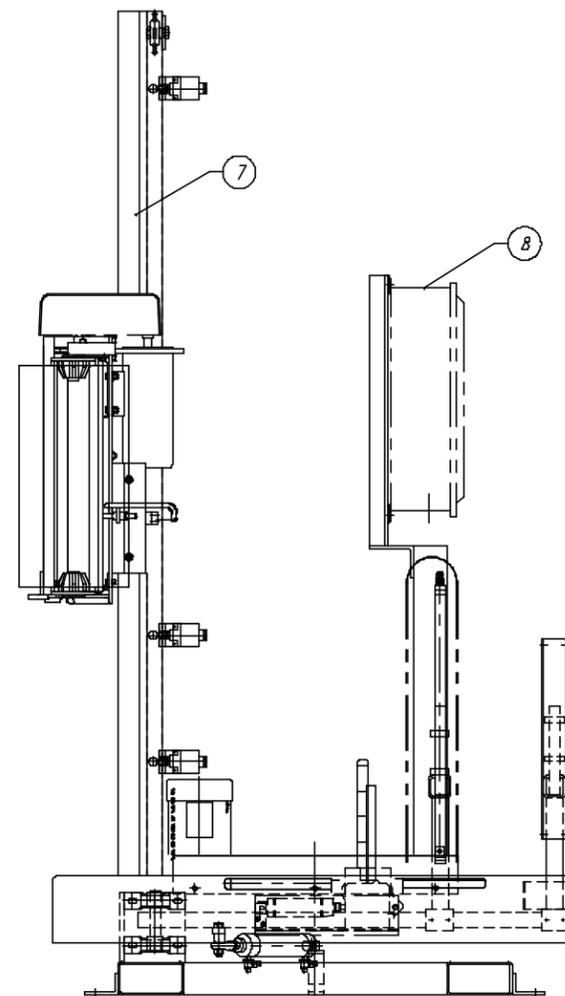
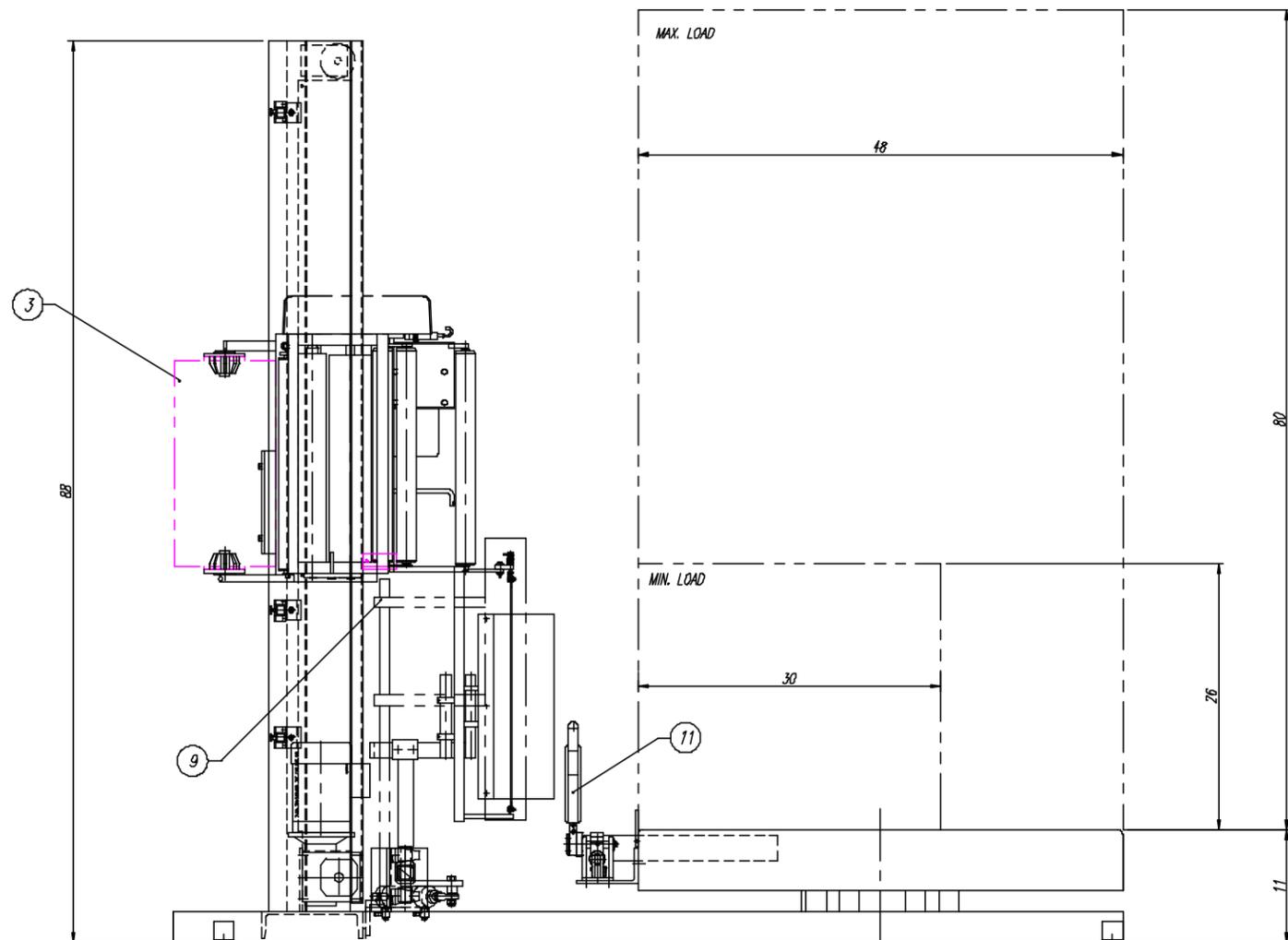
*** Quantity listed in order of part number**

**** The names given to the parts are generic**



NOTE :

1. TURNTABLE PASS HEIGHT : 11"
2. TURNTABLE SPEED : 0 - 14 RPM VARIABLE
3. MAX. LOAD SIZE : 48"W x 48"L x 80"H
4. MIN. LOAD SIZE : 30"W x 30"L x 26"H (36"H FOR 30" FILM)
5. MAX. LOAD WEIGHT : 5,000 lbs.
6. AIR COMPRESSED RED'D : 30 CFM @ 80 psi.
7. POWER REQUIREMENTS : 115 VAC, 1 Ph, 60 Hz, 20 AMP
8. MACHINE COLOR : 2-TONE ORION STANDARD GREY (PLATINUM & DARK GREY)
9. 20" INSTA-THREAD FILM CARRIAGE (30" OPTIONAL)
10. 48" OCTAGONAL STEEL TURNTABLE WITH SKIRT
11. 20" FILM TAIL TREATMENT (30" OPTIONAL)

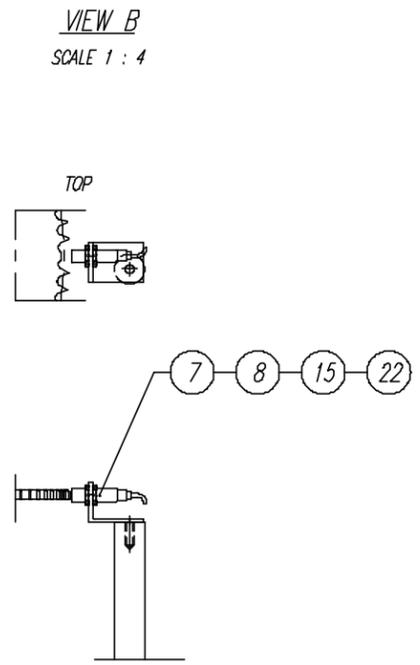
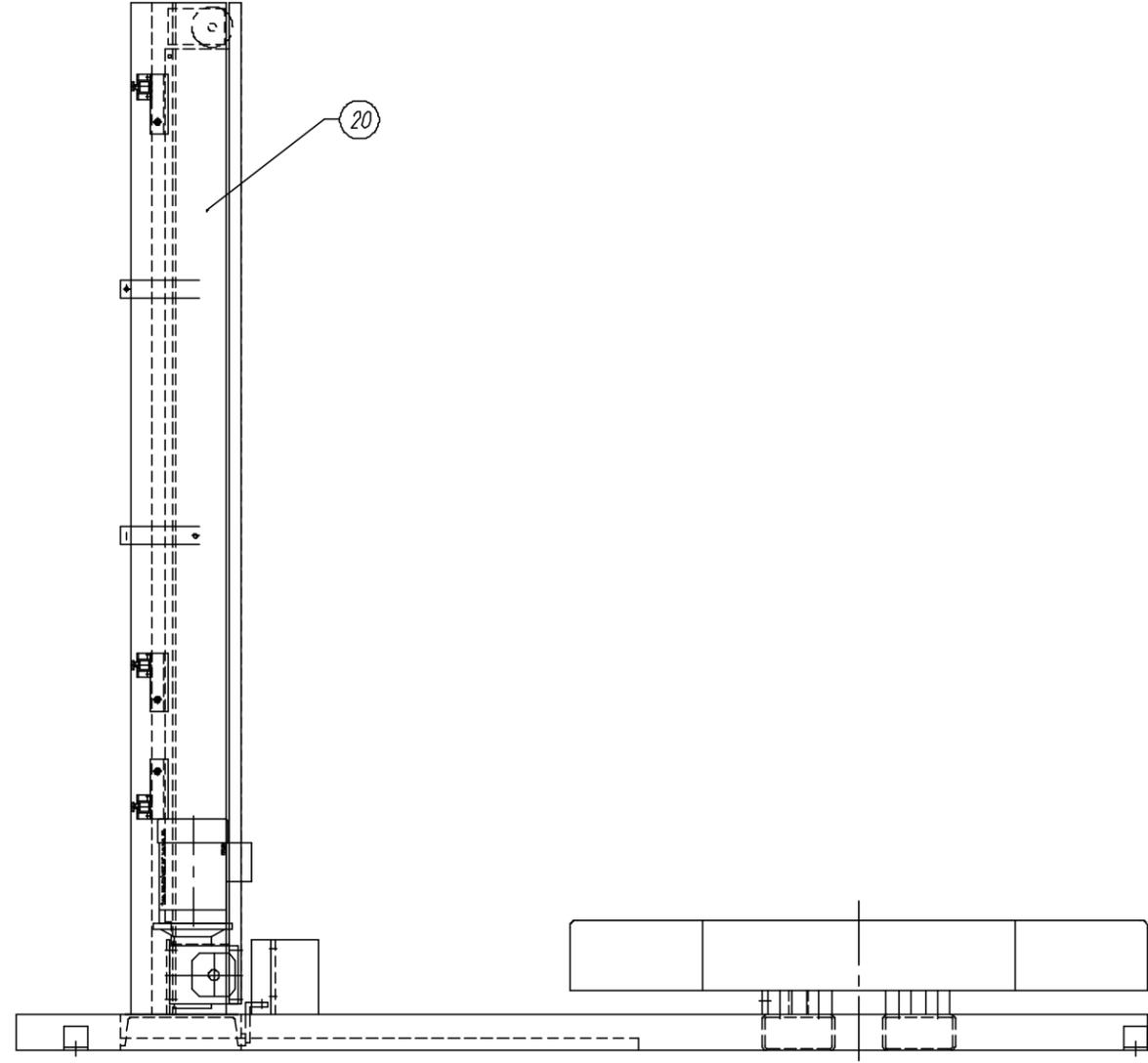
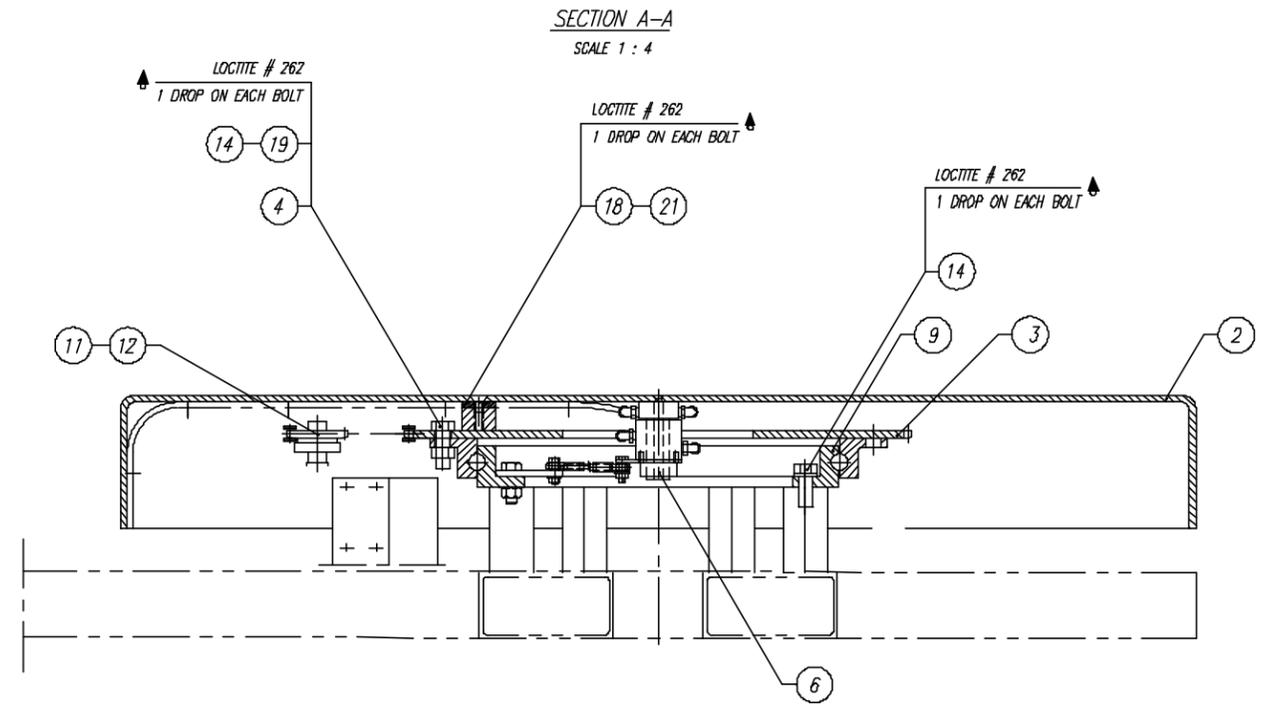
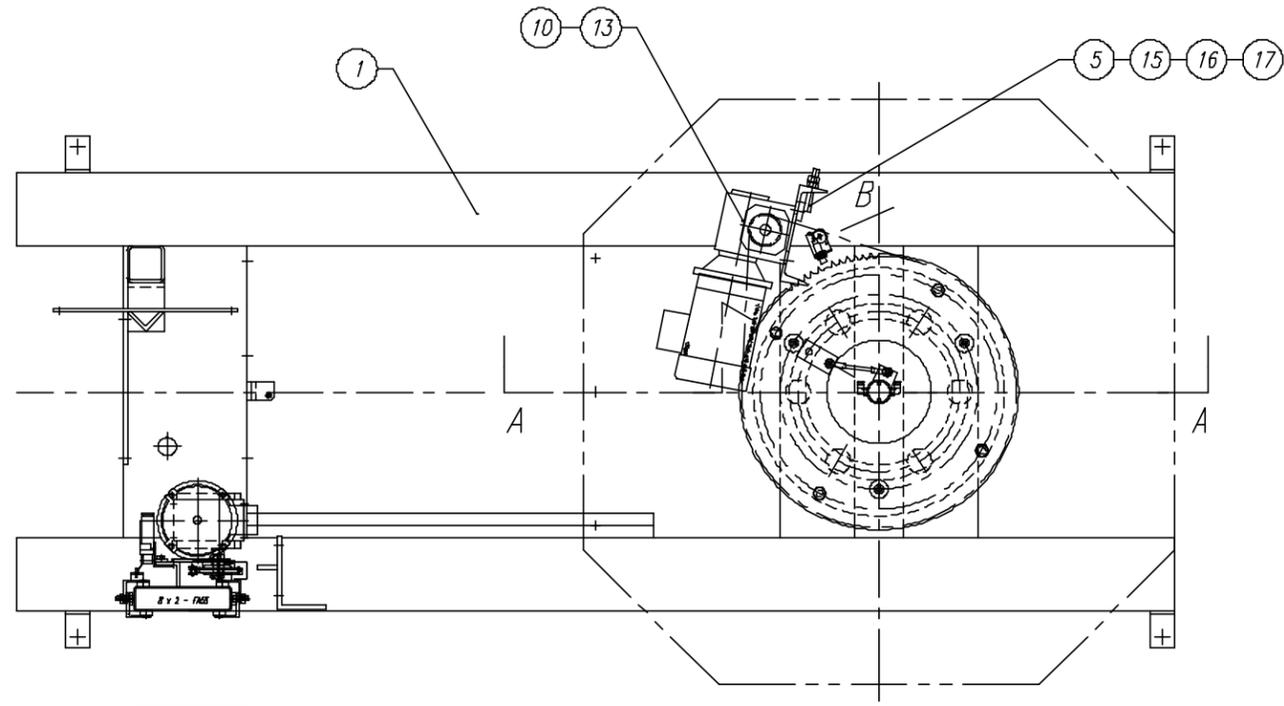


11	FOLDING FILM CLAMP			1
10	CLAMP GUARD			1
9	FILM CUTTER GUARD			1
8	ELECTRICAL CONTROL PANEL			1
7	TUBULAR TOWER 8 x 2			1
6	OPTIONAL : 30" FILM TAIL TREATMENT			1
5	20" FILM TAIL TREATMENT			1
3	20" INSTA-THREAD CARRIAGE - FLR/17			1
	OPTIONAL : 30" INSTA-THREAD CARR. - FLR/17			
2	48 OCTAGONAL TURNTABLE			1
1	HPA66/17 BASE			1

No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
REMARKS:					
REMARKS:					

HPA66/17 - LAYOUT

<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL.: (450) 667-9769</p>	DATE: FEB-28-2003	SCALE: 1 : 8
	DRAWN BY: J-NICOLAS BACON	MACHINE TYPE: HPA66/17
	CHECKED BY: -	DRAWING SIZE: D
	ASSEMBLY DWG.: -	JOB No.: STD



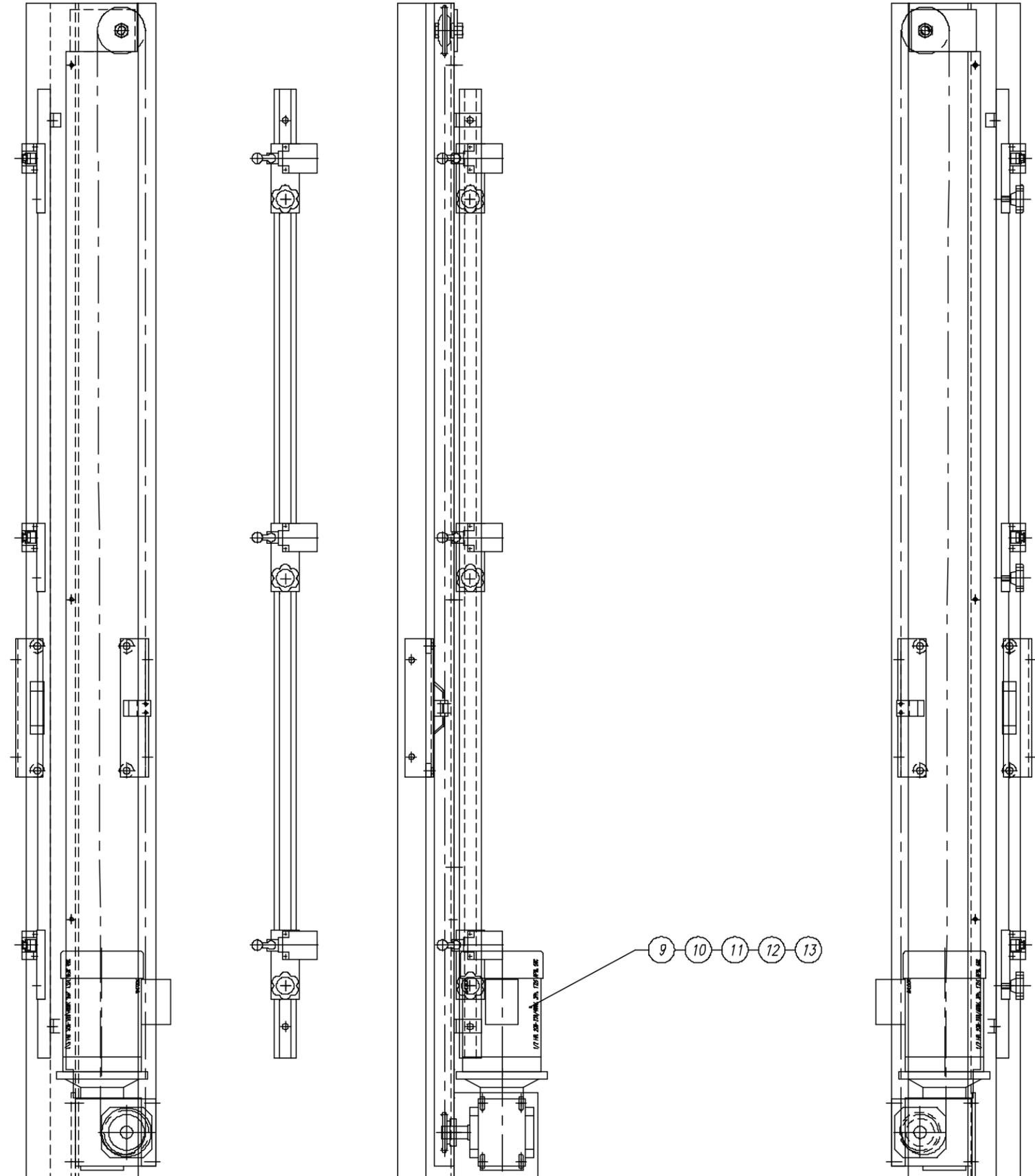
22	HEX HEAD SCREW	010382	1
21	TURNTABLE SPACER	435566	3
20	TUBULAR WELDED TOWER (8 x 2) ASS'Y	427708	1
19	HEX NUT	012846	4
18	FLAT SOCKET CAP SCREW	013363	3
17	HEX HEAD SCREW	010291	4
16	HEX NUT	011266	2
15	SPRING WASHER	012724	5
14	HEX HEAD SCREW	010329	10
13	ELECTRIC MOTOR	010036	1
12	CHAIN	010009	1
11	SPROCKET	010343	1
10	REDUCER	015191	1
9	BEARING	015136	1
8	PROXIMITY SWITCH	013848	1
7	PROXIMITY SWITCH BRACKET	435117	1
6	DUAL PASSAGE ROTORSEAL ASSEMBLY	420074	1
5	CHAIN TIGHTENER	412261	1
4	CENTERING BUSHING	402388	4
3	SPROCKET	410561	1
2	TURNTABLE	416080	1
1	HPA66 WELDED TOWER - BASE WELDING	436954	1

No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
REMARKS:					
REMARKS:					

HPA66 WELDED TOWER - BASE ASS'Y

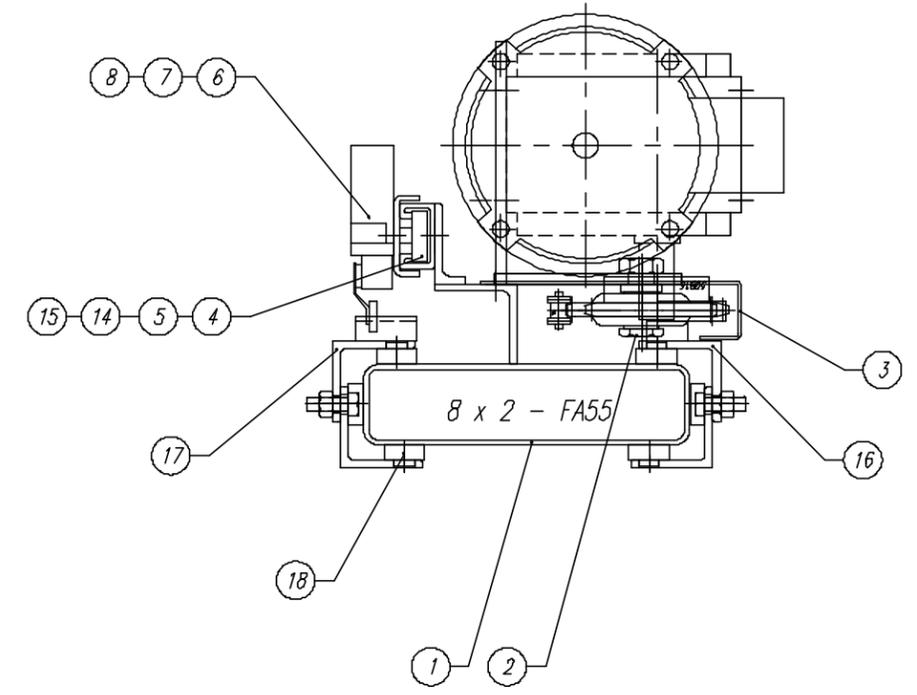
<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL: (450) 667-9789</p>	DATE: FEB-28-2003	SCALE: 1 : 8
		MACHINE TYPE: HPA66/17
		DRAWING SIZE: D
ASSEMBLY DWG.: 436756 D	JOB No.: STD	DRAWING No.: 436593M

"W"



VIEW "W"

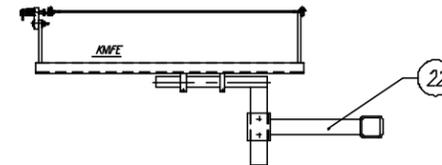
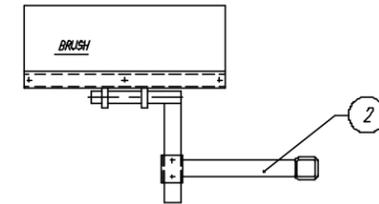
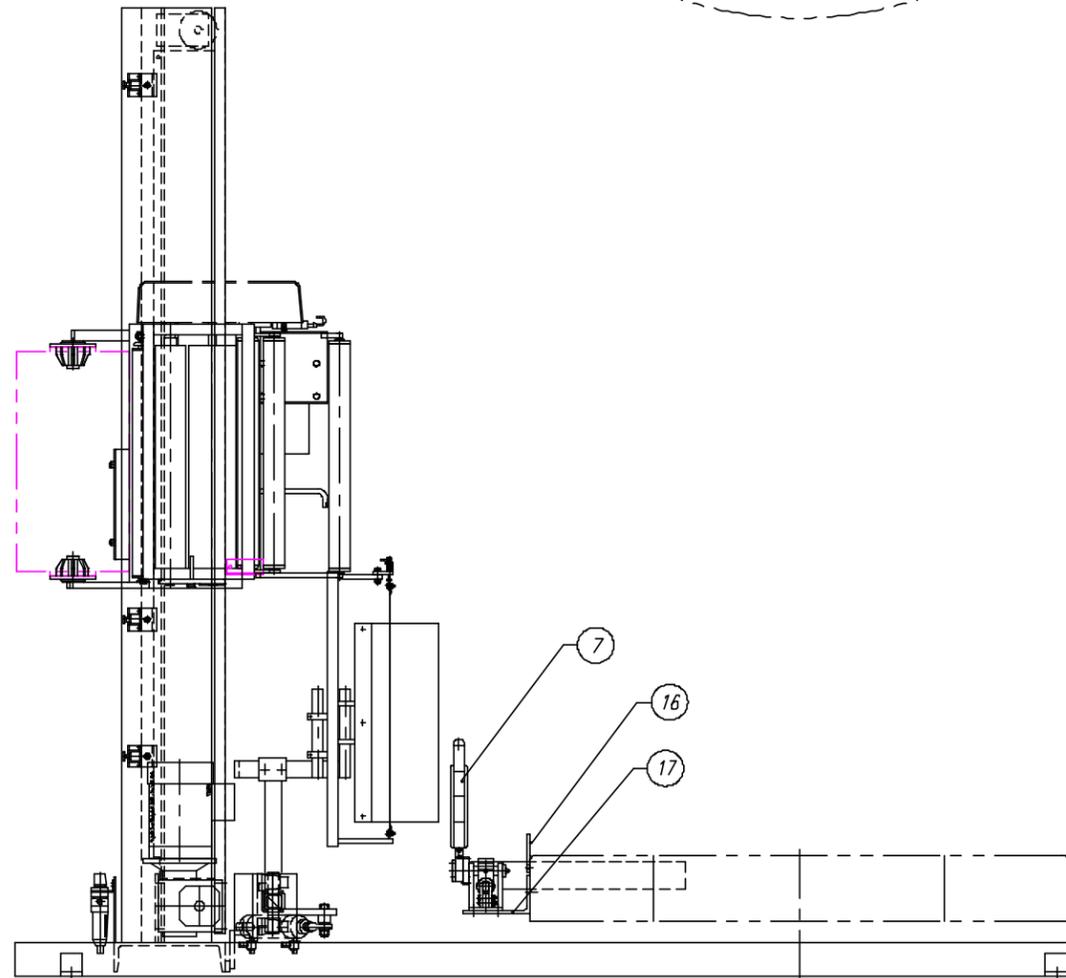
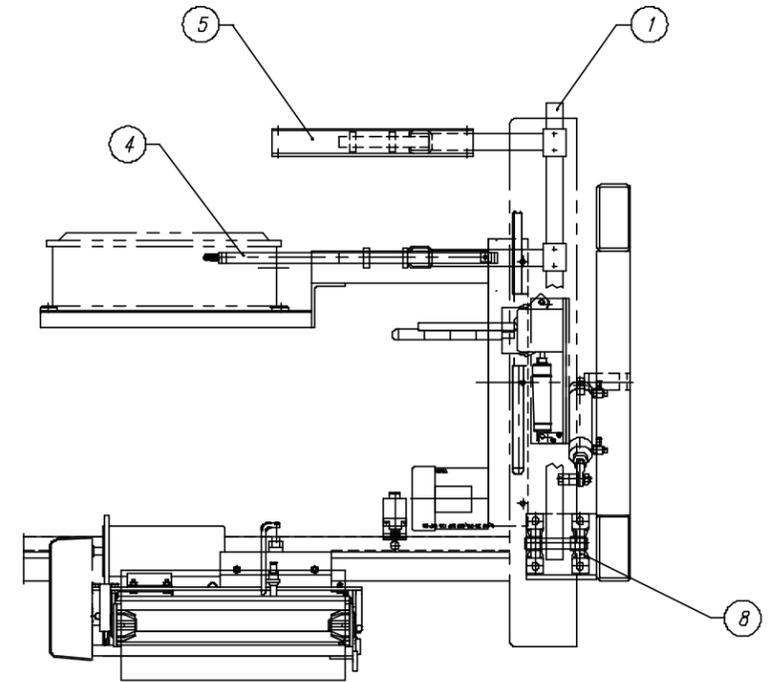
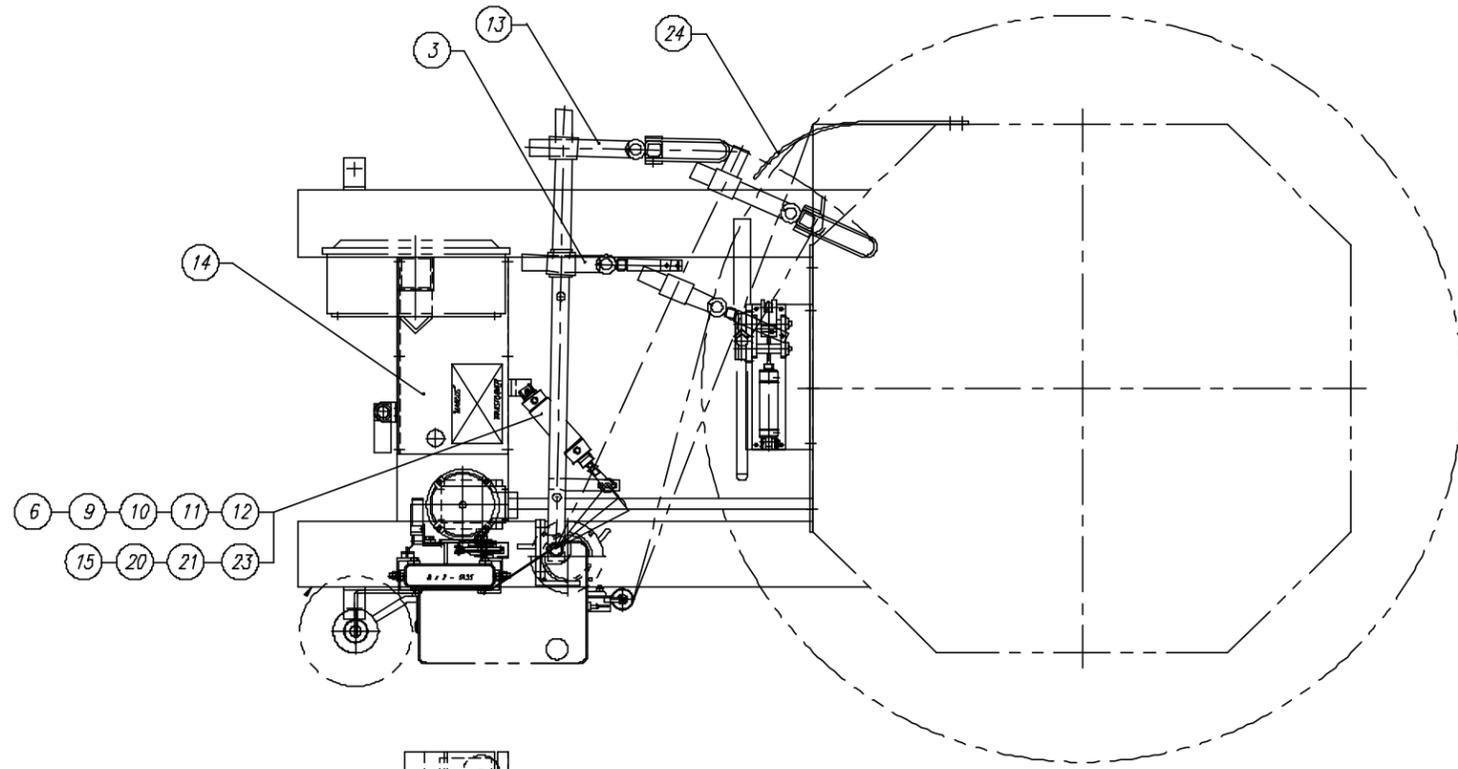
1 : 3



18	SLIDE BUTTON	420001	12		
17	CARRIAGE ATTACHMENT ANGLE WITH ACTUATOR	424814	1		
16	CARRIAGE CHAIN ATTACHMENT ANGLE	420000	1		
15	CHANNEL GUIDE	220518	3		
14	LIMITSWITCH HOLDER	260816	3		
13	CONNECTING LINK	010009	2		
12	ROLLER CHAIN	010009	1		
11	SPROCKET	011218	1		
10	REDUCER	015700	1		
9	ELECTRIC MOTOR	010036	1		
8	HEX. NUT	012726	6		
7	PAN PHILL SCREW	012481	6		
6	LIMIT SWITCH	010123	3		
5	BLACK KNOB	010092	3		
4	LIMIT SWITCH CHANNEL	409047	1		
3	CHAIN GUARD L - R	426375	1		
2	IDLER SPROCKET ASS'Y	420809	1		
1	TUBULAR TOWER 8 x 2 WELDING	427695	1		
No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
REMARKS:					
REMARKS:					

TUBULAR WELDED TOWER 8 x 2 ASS'Y

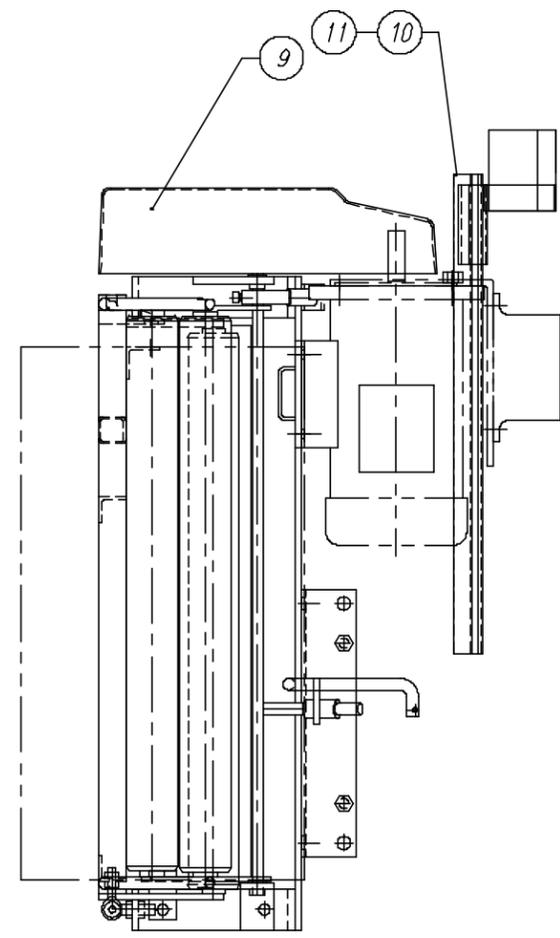
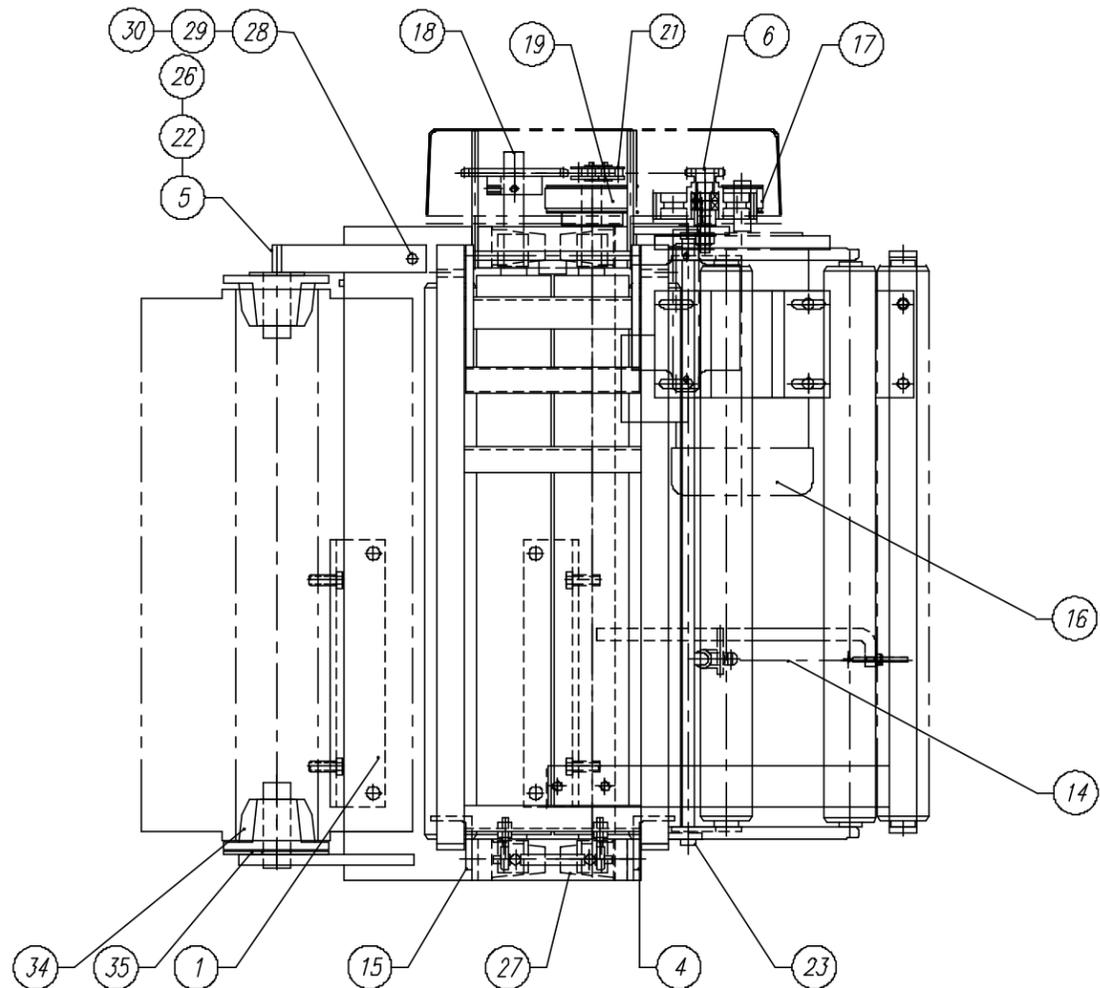
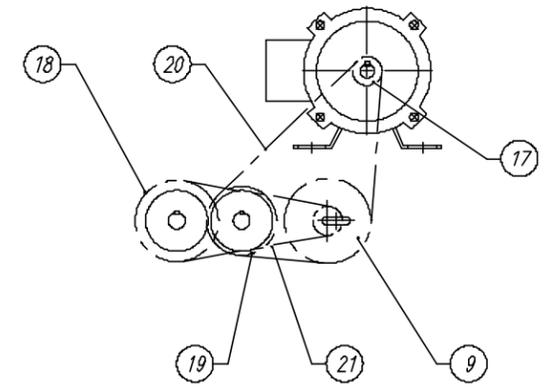
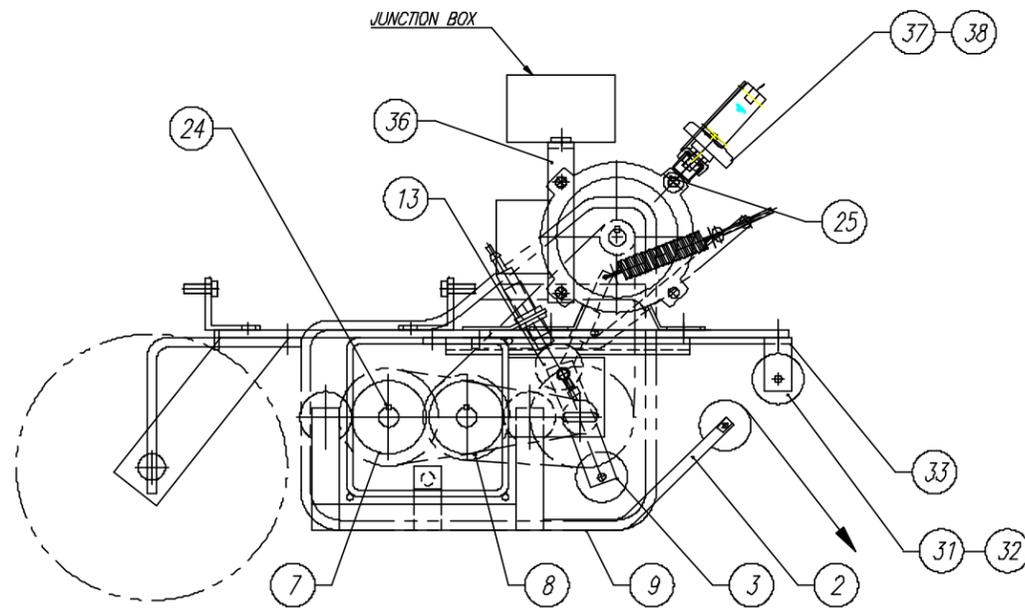
<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P8 TEL.: (450) 667-9769</p>	DATE:	APR-25-2000	SCALE:	1 : 6	
	DRAWN BY:	S. KUBICKA	MACHINE TYPE:	HPA66	
	CHECKED BY:	G. STACHURA	DRAWING SIZE:	D	
	ASSEMBLY DWG.:	-	JOB No.:	STD	DRAWING No.:



24	CLAMP GUARD	426579	2		
23	TRUST WASHER	014610	2		
22	BRUSH HOLDER	412236	1		
21	HEX. JAM NUT	012587	1		
20	HEX. NUT	011128	1		
17	CLAMP BASE	413718	1		
16	LOAD BUMPER	428606	1		
15	SPACER	425747	1		
14	GUARD	416706	1		
13	ARM SEGMENT	410589	1		
12	HEX-SOCKET CAP SCREW	012834	1		
11	HEX. HEAD BOLT	015485	1		
10	ROD END	013813	1		
9	AIR CYLINDER	014167	1		
8	BEARING	011191	2		
7	FILM CLAMP ASSEMBLY LEFT HAND	414502	1		
6	FLAT WASHER	012584	1		
5	20" BRUSH ASS'Y	417539	1		
4	20" HOT WIRE CUTTER ASS'Y	417750	1		
3	KNIFE ARM SEGMENT	419650	1		
2	BRUSH HOLDER	412236	1		
1	BRUSH-KNIFE ARM	425746	1		
No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
REMARKS:					
REMARKS:					

FILM TAIL TREATMENT DEVICE 20"

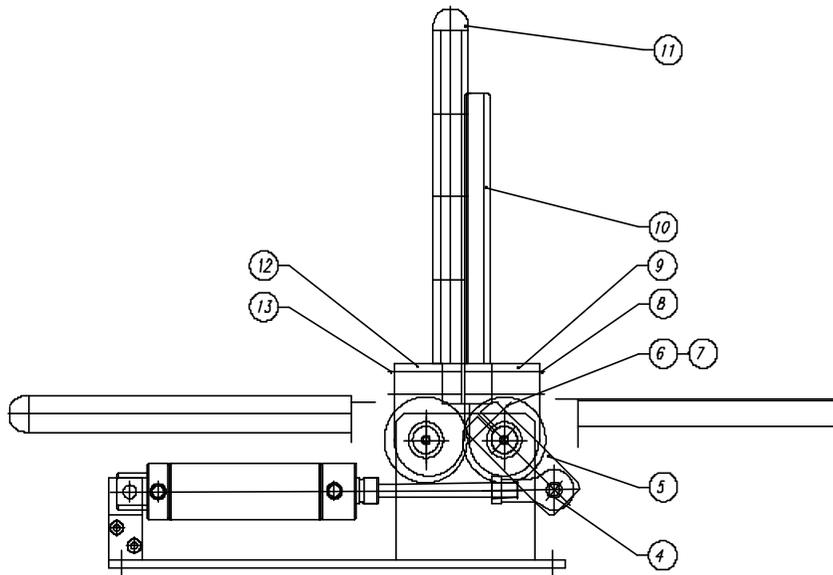
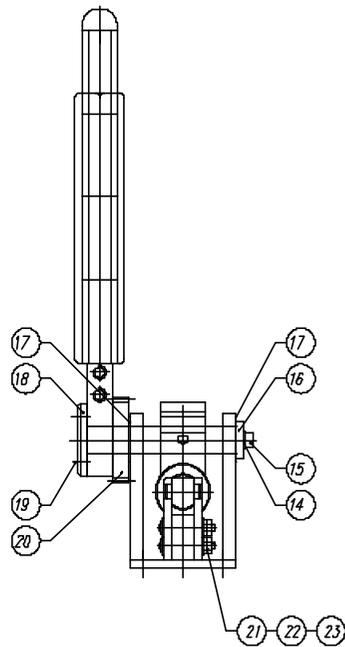
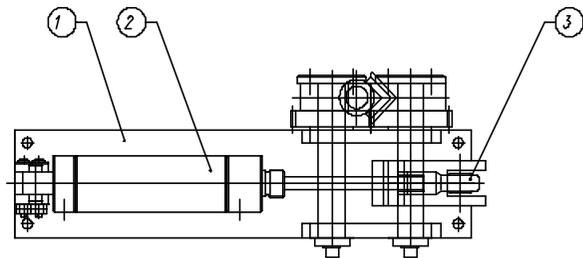
<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL.: (450) 667-9769</p>	DATE: NOV. 16/1999	SCALE: 1 : 8
	DRAWN BY: GREGORY STACHURA	MACHINE TYPE: HPA66
	CHECKED BY:	DRAWING SIZE: D
	ASSEMBLY DWG.:	JOB No.: STD/14



38	BLACK KNOB	010092	1	
37	NUT FLAT SQUARE	017853	1	
36	JUNCTION BOX BRACKET	427674	1	
35	BOTTOM SPOOL	432323	2	
34	BOTTOM SPOOL WASHER	432322	1	
33	20" ROLLER BRACKET FLR	427276	1	
32	IDLE ROLLER SHAFT	413249	1	
31	ALUMINUM ROLLER 1.9 - 20"	402789	1	
30	HEX. NUT	012689	1	
29	FLAT WASHER	012221	1	
28	SOCK. HD. CAP SCREW	010259	1	
27	PILLOW BLOCK	011192	4	
26	FLAT WASHER	012323	1	
25	HEX. HEAD CAP SCREW	010293	1	
24	SQ. KEY	010227	3	
23	FL.BRONZE BUSHING	014247	2	
22	SELF SEATING RETAINING RING	013860	2	
21	CHAIN	013397	1	
20	TIMMING BELT	011151	1	
19	PULLEY	431672	1	
18	SPROCKET (245 %)	428647	1	
17	PULLEY	431477	1	
16	ELECTRIC MOTOR	015240	1	
15	CRADLE ROLLER OPENING LOCK	409469	2	
14	TENSION SCREW ASS'Y	433628	1	
13	PROXIMITY SENSOR CAM	413744	1	
12				
11	PHOTOCELL HOLDER FLR, FRL	432739	1	
10	PHOTOCELL CHANNEL	430889	1	
9	FIBERGLASS COVER - MIRROR	414854	1	
8	RUBBER ROLLER - 2 (20" FILM)	420917	1	
7	RUBBER ROLLER - 1 (20" FILM)	420916	1	
6	SPROCKET/PULLEY ASS'Y	431475	1	
5	TOP MANDREL FLR	414853	1	
4	DANCER ROLLER BRACKET FLR	414852	1	
3	DANCER ROLLER ASSEMBLY - 20 MIRROR	414843	1	
2	CRADLE ROLLER ASSEMBLY - 20 MIRROR	426137	1	
1	BACK PLATE - 20 INSTA - MIRROR	427606	1	
No.	DESCRIPTION	DWG SIZE	PART No.	Q'ty WEIGHT
REMARKS:				
REMARKS:				

INSTA-THREAD 20" FILM CARRIAGE ASS'Y (FLR)

<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL.: (450) 667-9769</p>	DATE:	JULY-02-03	SCALE:	1 : 4	
	DRAWN BY:	S. KUBICKA	MACHINE TYPE:	HPA66	
	CHECKED BY:		DRAWING SIZE:	D	
	ASSEMBLY DWG:		JOB No.:	STD	DRAWING No.:

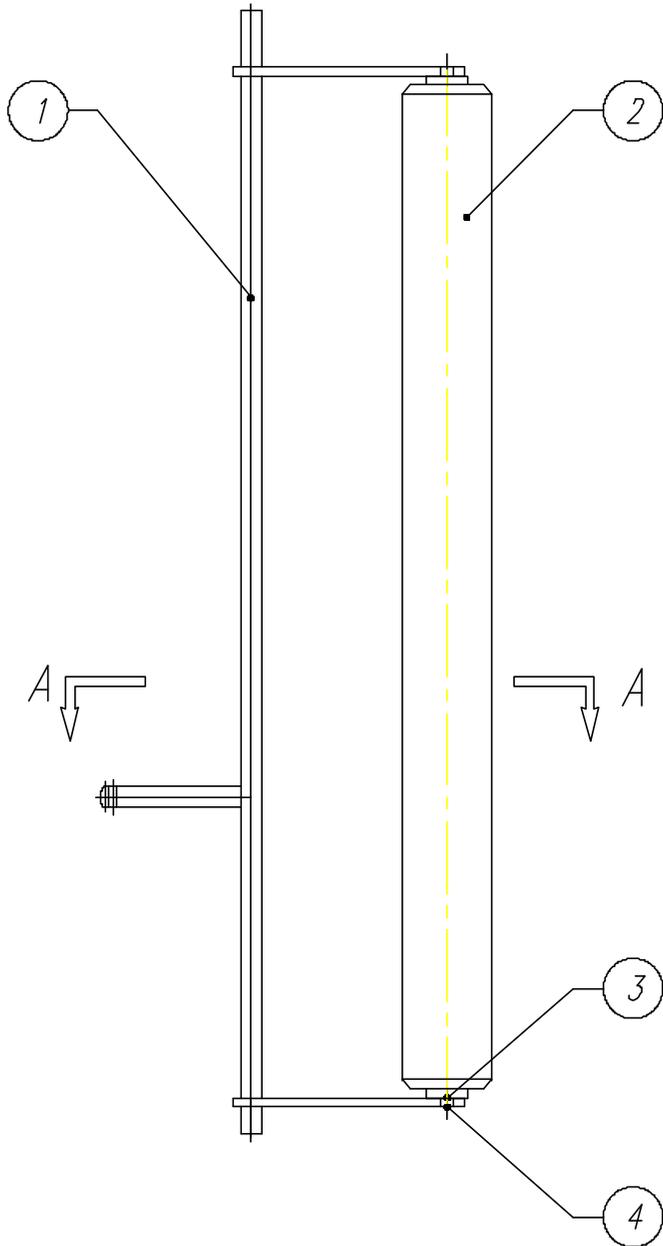


23	FLAT WASHER	013335	4	
22	HEX NUT	012726	4	
21	PAN PHL	012858	2	
20	SPUR GEAR	011384	2	
19	FLAT CAP SCREW	012871	6	
18	CLAMP JAW PIVOT SHAFT	260558	2	
17	THRUST WASHER	010193	4	
16	FLAT WASHER	011381	2	
15	HEX SOCKET SCREW	010286	2	
14	SPRING WASHER	011393	2	
13	HEX SOCKET SCREW	012834	2	
12	SMOOTH JAW HOLDER	401184	1	
11	SMOOTH JAW	400810	1	
10	JAW WITH RUBBER	400811	1	
9	JAW WITH RUBBER HOLDER	401185	1	
8	HEX SOCKET SCREW	012686	2	
7	SPRING WASHER	011390	1	
6	HEX HEAD SCREW	012406	1	
5	CLAMP YOKE	421689	1	
4	SPRING PIN	010264	1	
3	ROD END	011201	1	
2	AIR CYLINDER	014150	1	
1	CLAMP BASE	414465	1	

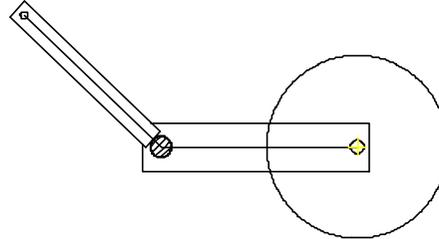
No.	DESCRIPTION	QTY	PART No.	C'y	WEIGHT
REMARKS:					
REMARKS:					

FILM CLAMP ASSEMBLY - L.H.

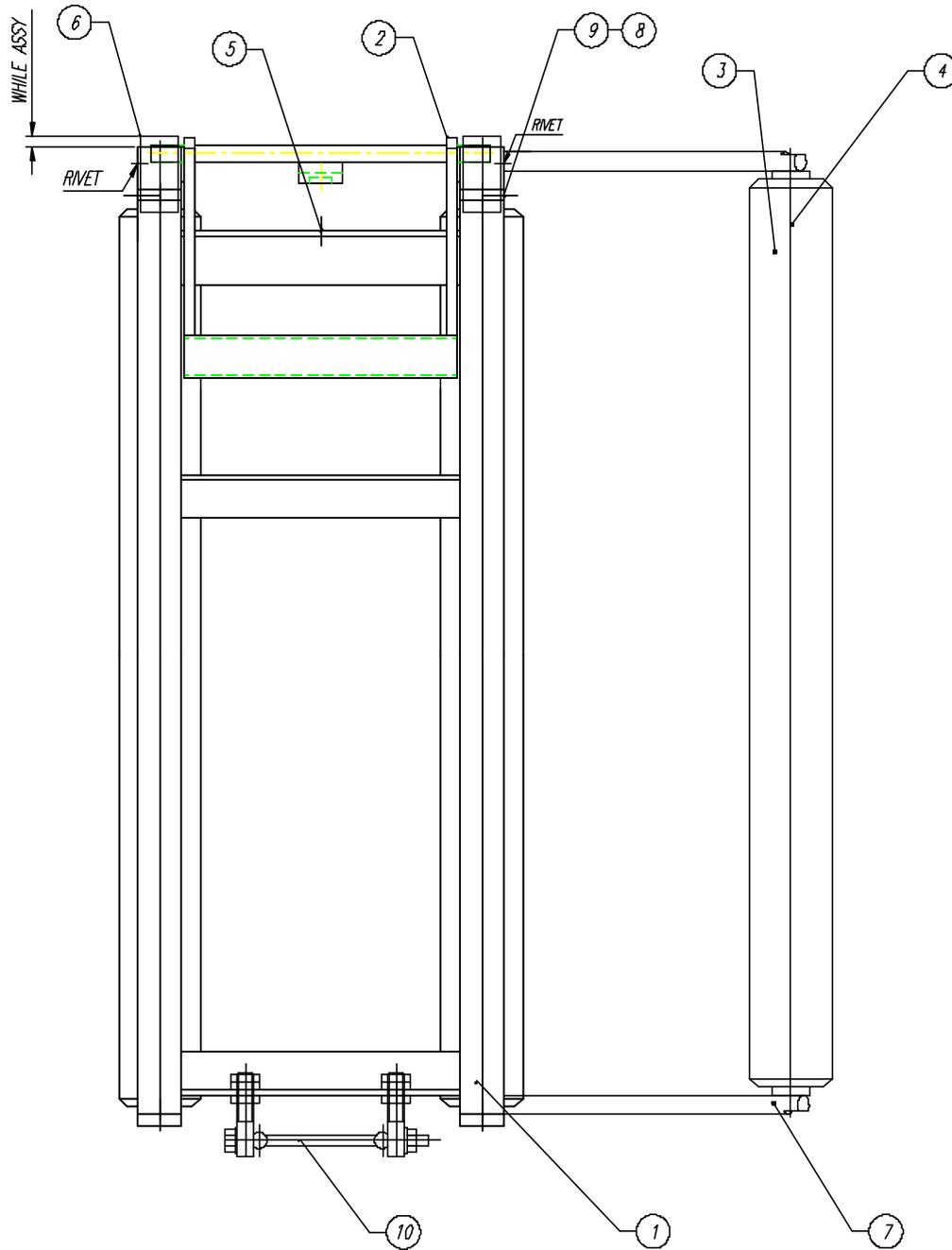
<p>ORION PACKAGING INC. 2270 INDUSTRIAL LANE DUNCANS, CANADA, H7B 1P9 TEL: (614) 667-0788</p>	DATE:	DEC-13-1996	SCALE:	1 : 2
	MACHINE TYPE:	FA, VA		
	DRAWING SIZE:	D		
	ASSEMBLY QTY:	JOB No.:	STD	DRAWING No.:



A - A



4	HEX HEAD SCREW		012475	2		
3	FLANGE NUT		014164	2		
2	ALUMINIUM ROLLER 1.9 DIA - 20		402789	1		
1	DANCER ROLLER CRADLE - 20 (FLR)		414851	1		
No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT	
REMARKS:						
REMARKS:						
DANCER ROLLER ASSEMBLY - 20 (FLR)						
 PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL.: (514) 667-9769		DATE:	JAN-23-1997	SCALE:	1 : 4	
				MACHINE TYPE:	ALL/12	
		DRAWING SIZE:	A			
ASSEMBLY DWG.:	438636M	JOB No.:	STD - 12.1		DRAWING No.:	414843M



10	CRADLE HINGE ASS'Y	426200	1	
9	HEX NUT	013451	2	
8	HEX SOCK. CAP SCREW	015020	2	
7	HEX SOCK. BUTT. HEAD SCREW	015133	2	
6	POLYETHYLENE	015023	2	
5	SPRING	013994	1	
4	IDLE ROLLER SHAFT	413249	3	
3	ALUMINIUM ROLLER 1.9 DIA - 20 LG	402789	3	
2	LOCK	412542	1	
1	CRADLE ROLLER FRAME - 20" (FLR)	426138	1	

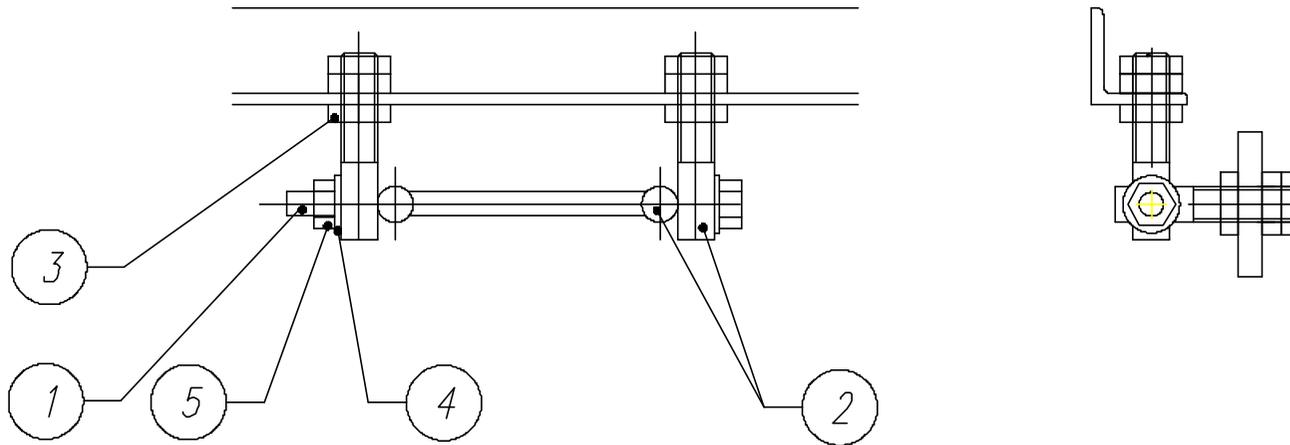
No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
-----	-------------	-----------	----------	------	--------

REMARKS:

REMARKS:

CRADLE ROLLER ASSEMBLY - 20 (FLR)

<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL.: (514) 667-0769</p>	DATE:	DEC-13-99	SCALE:	1 : 2
			MACHINE TYPE:	H,L/14
			DRAWING SIZE:	C
ASSEMBLY DWG.:	JOB No.:	STD	DRAWING No.:	426137M



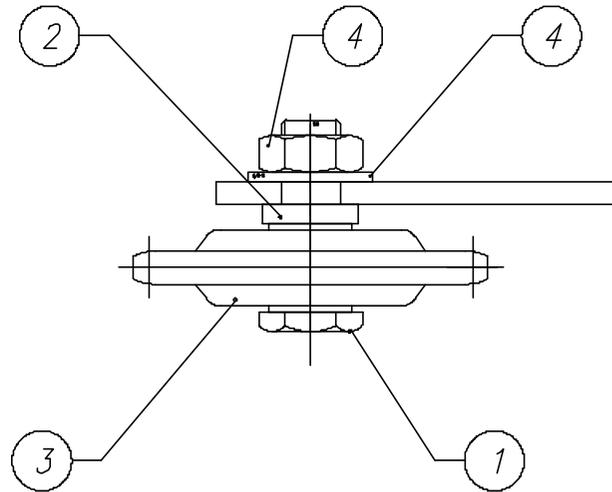
5	HEX. SELF-LOCKING NUT		015098	1	
4	FLAT WASHER		012221	2	
3	HEX. JAM NUT		012582	12	
2	SPECIAL BOLT		415938	4	
1	HEX. HEAD SCREW		015099	1	
No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT

REMARKS:

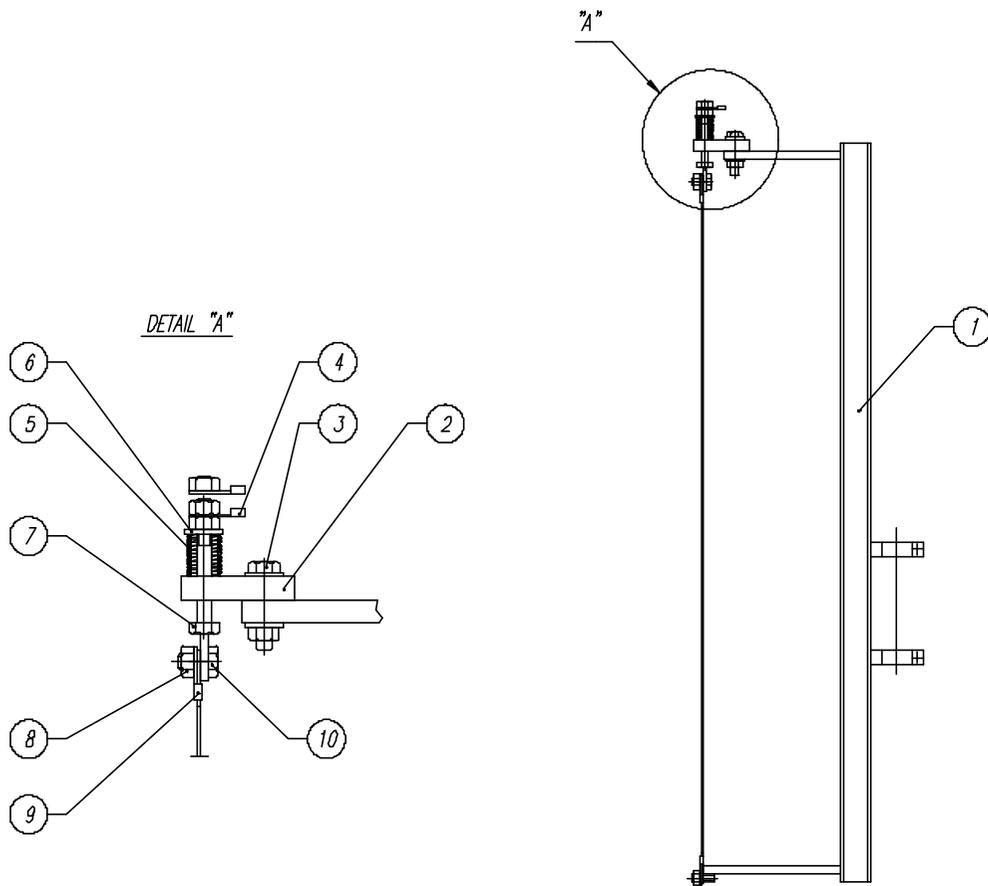
REMARKS:

CRADLE HINGE ASS'Y

<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL.: (514) 667-9769</p>	DATE:	SCALE:
	DEC-15-1999	1 : 2
		MACHINE TYPE: ALL
		DRAWING SIZE: A
ASSEMBLY DWG.: -	JOB No.: STD	DRAWING No.: 426200M



5	FLAT WASHER		012930	1	
4	HEX JAM NUT		014987	1	
3	IDLER SPROCKET		010008	1	
2	SPACER		420131	1	
1	HEX HEAD SCREW		420869	1	
No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
REMARKS:					
REMARKS:					
<i>IDLER SPROCKET ASSEMBLY</i>					
<p>PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P9 TEL.: (514) 667-9769</p>		DATE:	<i>JAN-06-1999</i>	SCALE:	<i>1 : 2</i>
		DRAWN BY:	<i>ROGER F.</i>	MACHINE TYPE:	<i>M/14</i>
		CHECKED BY:		DRAWING SIZE:	<i>A</i>
		ASSEMBLY DWG.:	<i>-</i>	JOB No.:	<i>STD</i>



10	HEX. HEAD CAP SCREW	012722	1
9	CUTTING WIRE	402745	1
8	HEX. NUT	012689	5
7	WIRE ATTACHMENT	409351	1
6	FLAT WASHER	012221	1
5	COMPR. SPRING	013995	1
4	TERMINAL RING	010693	1
3	HEX. HEAD CAP SCREW	012793	1
2	HOT WIRE BRACKET	409350	1
1	20" CUTTING WIRE BRACKET	417752	1

No.	DESCRIPTION	DWG SIZE	PART No.	Q'ty	WEIGHT
-----	-------------	----------	----------	------	--------

REMARKS:

REMARKS:

20" HOT WIRE CUTTER ASS'Y

<p>ORION PACKAGING INC. 2270 INDUSTRIEL, LAVAL QUEBEC, CANADA, H7S 1P8 TEL.: (514) 667-9769</p>	DATE: OCT-30-1997	SCALE: 1 : 4
		MACHINE TYPE: ALL-66
		DRAWING SIZE: B
ASSEMBLY DWG: -	JOB No.: 13405	DRAWING No.: 417750M

APPENDIX

TURNTABLE & TOWER MOTOR CONTROL BOARD ADJUSTMENTS

66 & 55 SERIES EQUIPMENT (850M & 850DM Board)

INTRODUCTION

The 850M and 850 DM Motor Control Boards are DC/SCR drives that are used in 66 & 55 series Orion stretch wrapping equipment. The following calibration instructions apply to all 66 & 55 series turntable and rotary tower type machinery, but it will be important to note specific reference to your particular Orion model for best calibration results.

The 850M and 850DM boards feature two selectable pre-set speeds (1 & 2), and four potentiometers (marked 1,2,A and D).

The instructions are in the suggested order of adjustment, and intended to be made after installation of the board in the control enclosure. Please refer to the attached sketch of the board for identification of the adjustment points.

INSTALLATION

This unit is equipped with an aluminum chassis, which serves as a heatsink. This should be oriented with the printed circuit board in a vertical plane for optimum convection cooling.

Connectors are to .250" quick-disconnect terminals. Standard units require 120 VAC supply. AC line attaches to terminals **AC1**, **AC2**. Motor Armature attaches to terminals **DC+**, **DC-**. The standard unit is suitable for permanent magnet shunt style DC motors with 90 V armature rating.

ADJUSTMENTS

Acceleration: (RV3) The pot marked **A** is the control for the acceleration or electronic soft start feature.

For an initial setting, turn the **A** pot fully counter-clockwise (CCW) until a faint “clicking” sound is heard, then approximately 2 turns (or revolutions) clockwise (CW). CW adjustment of this potentiometer softens the start and lengthens the time required for the turntable/tower to reach its preset speed.

Speed Control: (RV1) The pot marked **1** controls the turntable/tower jog speed₁.

Simply activate the turntable/tower jog function, adjusting the jog speed (pot 1) as the turntable/tower rotates. This should be set for approximately 2 to 3 RPM. Please note that this setting should be made with a load on the turntable (turntable type models only). A CW turn increases the jog speed, while CCW decreases jog speed.

Speed Control: (RV2) The pot marked **2** is the control for the high speed₂ for the turntable/tower during the wrap cycle once acceleration is complete.

This speed can be as high as 12 RPM. However, you should note that if it is set too high, you may see chopping of the current to the turntable/tower drive motor which will cause pulsating, half-speed operation of the turntable/tower drive itself. If this is seen, please decrease the setting of pot **2**, until it is no longer in effect.

For best calibration results, it is recommended that you make this adjustment while the machine is in cycle. After starting a wrap cycle, set the film carriage speed control to the “0” (minimum) position. This will prevent the film carriage from rising and completing its cycle. Then simply adjust the high speed (pot **2**) as the turntable/tower rotates. A CW turn increases speed, a CCW turn decreases speed.

1 Speed Control 1 = Turntable/Tower Jog Speed
Selected by a 120 VAC signal applied from terminal (1) to (C)

2 Speed Control 2 = Turntable/Tower High Speed
Selected by a 120 VAC signal applied from terminal (2) to (C)

Deceleration: (RV4) The pot marked **D** is the deceleration control. Functionally, it is the opposite of acceleration, except that it is a more critical setting, in that our machine logic requires that we decelerate from speed 2 to speed 1 during the course of the final revolution of the turntable/tower before shutoff.

For an initial setting, start with the **D** pot set fully CCW. Then, cycling the machine; observe the transition to jog speed at the end of the cycle, prior to the stop of the turntable/tower at the home position. Gradually increase the **D** pot setting (CW) until the turntable/tower only jogs approximately 1/8 to 1/4 revolution before reaching home position. CW adjustment of this potentiometer quickens the stop and shortens the deceleration time required for the turntable/tower to settle to its preset jog speed. CCW softens the stop and lengthens the time required for the turntable/tower to settle to its preset jog speed.

Thus, the deceleration control is important in that if the deceleration time is too short, we will prematurely reach jog speed and jog an excessive amount of time to the home position before shutoff.

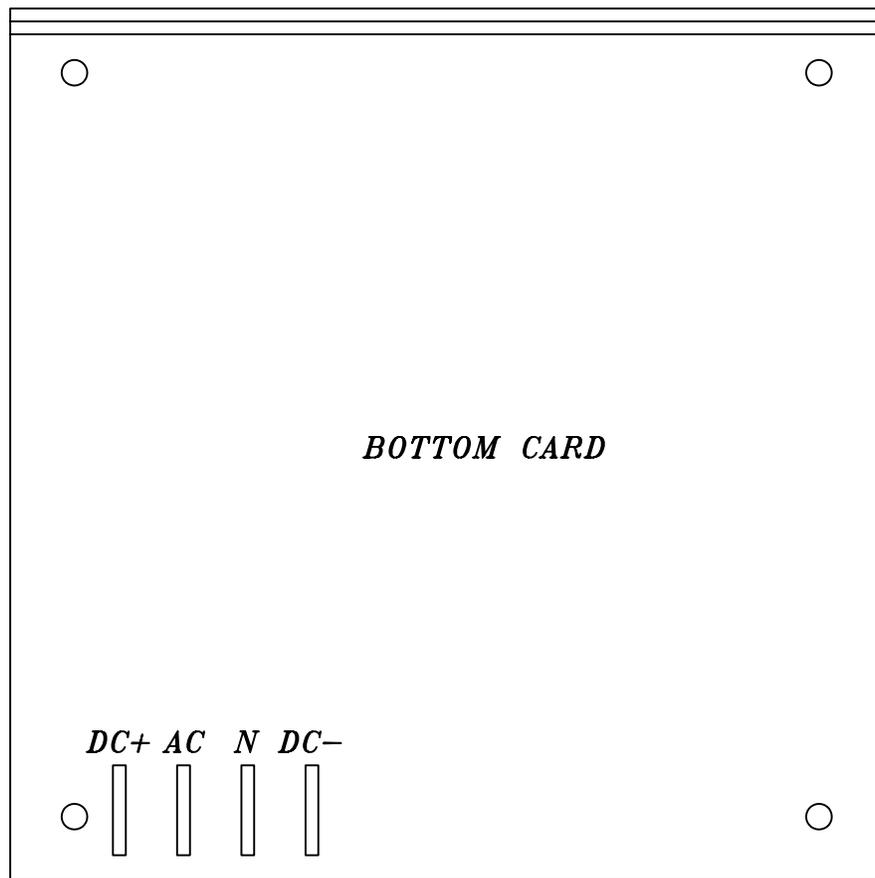
Conversely, if the deceleration time is set too long, the turntable/tower will not settle to the jog speed and thus will be going too fast to align properly and the momentum will take the turntable/tower beyond the start position. As you can imagine, any time the wrap speed is changed, you will need to make a corresponding change in the setting of the pot marked **D** (for deceleration).

Note: The 850DM requires a jumper from the **W** pin to the **CW** pin for speed 2 to operate.

TROUBLE SHOOTING & REPAIR

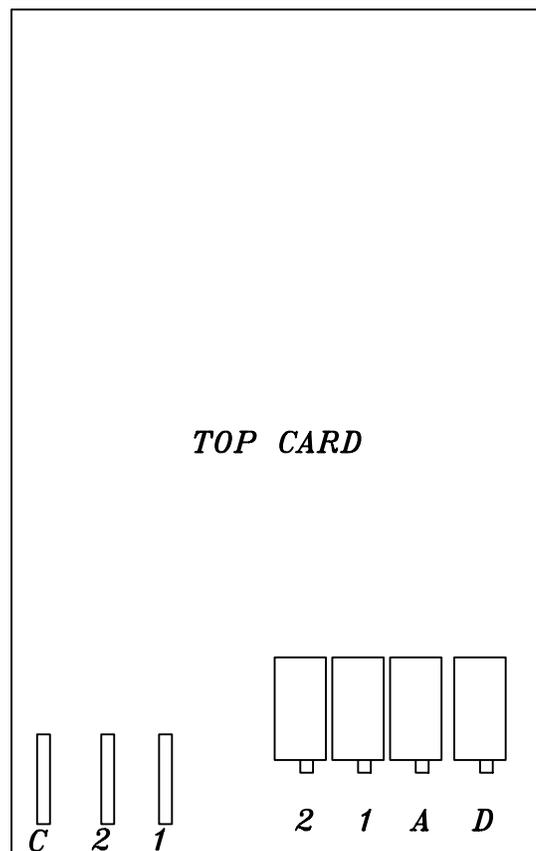
In most cases, repair will require parts replacement. If user intends to, and is equipped to perform repairs, spare parts are available from Orion Parts & Service.

Damage is usually visually evident on the 850M board. Replacing the obviously damaged board frequently restores operation. However, if damage is not evidently visible, swapping boards will determine if the board is at fault.



DC+ : ARMATURE CONTROL.
AC : AC INPUT - LINE.
N : AC INPUT - NEUTRAL.
DC- : ARMATURE CONTROL.

1 : CONTROL - LINE. LOW SPEED
1 : LOW SPEED ADJ.
2 : CONTROL - LINE. HIGH SPEED
2 : HIGH SPEED ADJ.
C : CONTROL - COMMON.
(REQUIRES A JUMPER TO "N")



*850M TWO SPEED 120VAC/90VDC
 MOTOR CONTROL BOARD*

MULTISTRETCH MOTOR CONTROL BOARD CALIBRATION INSTRUCTIONS FOR 336-8/10 BOARD

Adjustments

Bias: (RV3) The **RV3** pot controls the system bias.

This control injects an offset voltage that adds or subtracts from the voltage reference defined by the External Tension Adjustment (Film Tension Potentiometer). This will allow extremes of adjustment to be set to levels consistent with proper operation. Typically, the bias will be used to center the operating range in linear portion of its characteristics.

Note: This adjustment is normally made at the factory and should not require field adjustment. For reference, the factory test procedure calls for a voltage setting of 1.3 volts DC at the cathode of Z1 (Zener Diode) achieved by adjusting the **RV3** pot.

Span: (RV1) The **RV1** pot controls the system loop gain.

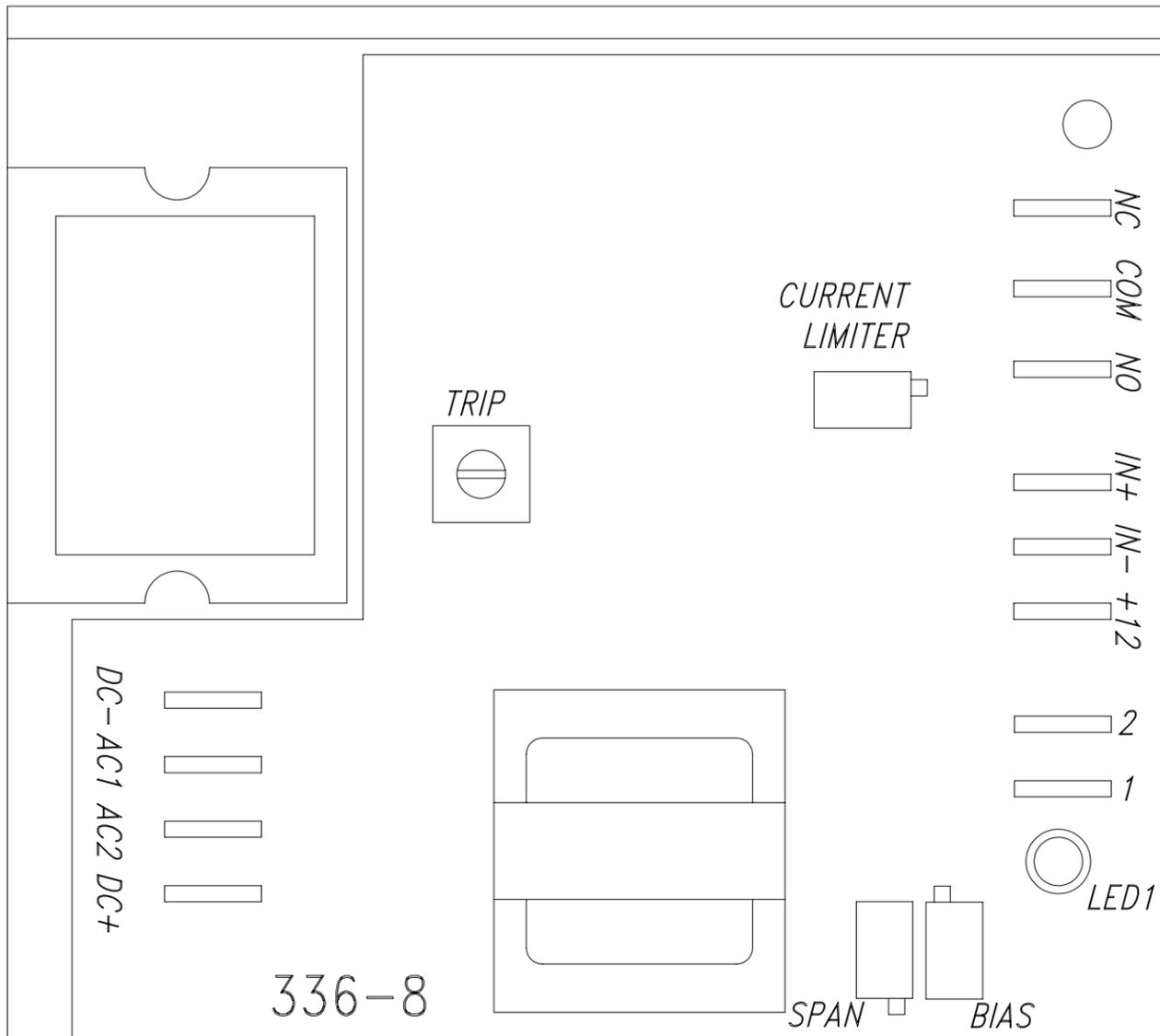
The system loop gain may be adjusted if the motor continues to be energized when the dancer arm is unloaded and at rest. With the machine stopped, the pot should be adjusted to ensure that the motor is de-energized in this condition, and so that a light pull on the free end of the film causes the film to feed freely. CCW adjustment of this pot will increase the response time, in effect softening the motor tension response plus decreasing the maximum motor speed attainable. CW adjustment will decrease the response time, in effect sharpening the motor response time plus increasing the maximum motor speed attainable.

Current Limit: (RV4) The **RV4** pot controls the torque (amperage) that the 336 board will allow to the motor.

To protect the unit against damage should the motor stall, jam, or current demands exceed its rating, a current limiting circuit is included which keeps motor current at

a safe level regardless of motor load or input from the tension-arm. This pot is factory pre-set to suit ½ hp motors. Should changes be required in the field, proceed as follows: Monitor the motor current. Advance the pot slowly until the desired current is achieved. This should not exceed 125% of the motor nameplate rating. Do not stall the motor for more than a few seconds, or damage may occur.

Trip: The output relay located on SCR Board (Outputs: Com, NO, NC) is energized when the current flowing between **DC “+”** and **DC “-“** overshoots the level selected on the pot marked **“Trip.”** It de-energizes when the current falls below the normal current by approximately 5% or when power to the board breaks.



DC+: ARMATURE CONTROL

AC1: AC INPUT

AC2: AC INPUT

DC-: ARMATURE CONTROL

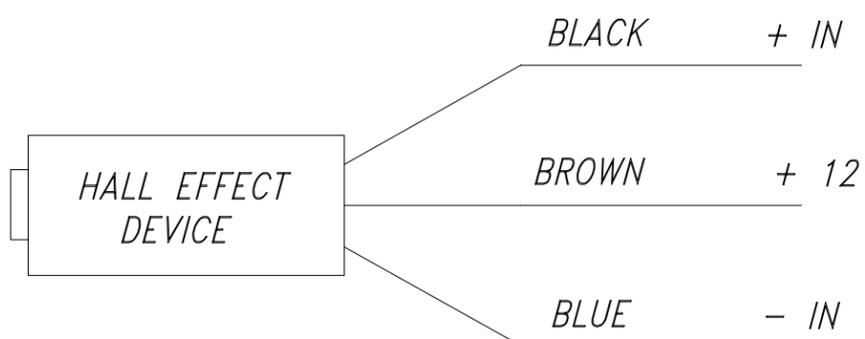
POTENTIOMETER

SPAN: HALL EFFECT SENSITIVITY CONTROL

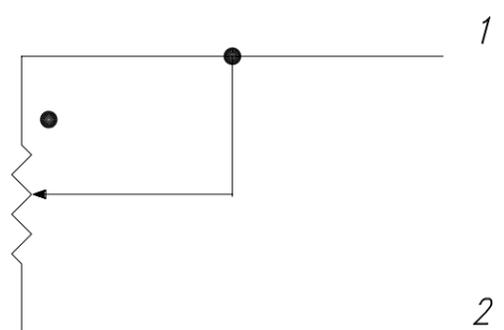
BIAS: SYSTEM BIAS (FACTORY SET)

TRIP: END OR BROKEN FILM SENSING CIRCUITRY.
TRIP LEVEL (FACTORY SET)

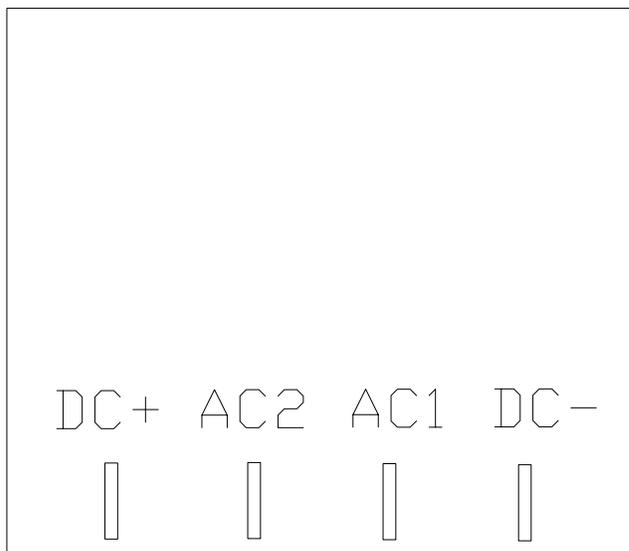
CURRENT LIMITER: (FACTORY SET)



*FILM TENSION ADJUSTMENT
REMOTE POTENTIOMETER*



*336-8
MULTISTRETCH BOARD*



DC - OUT

DC + OUT

AC2 IN

AC1 IN (NEUTRAL)

168-A CARRIAGE UP/DN
SINGLE SPEED BOARD