655 Orion Integrated Digital Wrapper

OPERATING INSTRUCTIONS

Description

General Description

The system is an integrated control for a Stretch-Wrap machine. It includes three dc motor controls:

- Carriage with solid state reversing.
- Turn-table control, fully programmable via keyboard interface.
- Film Tension control, fully programmable via keyboard interface.

The Control comprises three principal sub-assemblies:

- Keyboard and display - for setting and viewing the system parameters. (Type 655.1)
- Microprocessor board (Type 655.2)
- Power Board / Chassis (Type number 656)

These items are mounted and wired in a Nema 12 enclosure mounted to the machine. The Membrane switch/display operator's interface is on the door of this enclosure.

Reference Drawings:

655.HU - Hook-up Drawing
656.GA – Power Chassis Assembly
655.GA – Digital Wrap Control General Assembly

Description of Sub-Assemblies

- **KEYBOARD AND DISPLAY Type 655.1**

This board contains 12 pushbuttons and 3 seven-segment displays (three digits). It is used to start an automatic wrapping cycle, or operate manually and to set and adjust the control parameters (carriage speed, tension, turntable speed,...).

The keyboard communicates with the microprocessor board through 40-pin connector (**P1**).

- **MICROPROCESSOR BOARD Type 655.2**

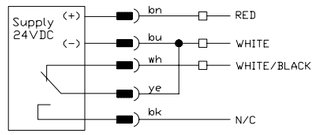
This board contains the control section of each drive: carriage, turntable and Film tension control section.

- **POWER BOARD (CHASSIS) Type 656**

This board contains the power section of each drive: Carriage, Turntable and Film Tension control section. The chassis serves as a Heat sink.

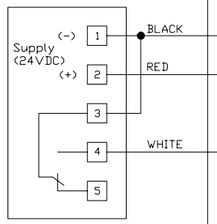
OPTIONAL

ULTRASONIC CARRIAGE
AUTO-HEIGHT SENSOR
TYPE- 'BANNER' SU9250D-24 + MBCC-512



STANDARD

CONNECTIONS OF THE
CARRIAGE AUTO HEIGHT
PHOTO CELL.
TYPE- 'SICK' WT32-R230



TENSION MOTOR
JUNCTION BOX

PVC 16/3
3-CONDUCTOR CABLE

BLACK — WHITE
RED — RED
WHITE — WHT/BLK STRIPE
JUMPER

CARRIAGE LIMIT SWITCH

PVC 16/3
3-CONDUCTOR CABLE

BLACK
RED — BLUE
WHITE — BLK/WHT STRIPE

HALL EFFECT TRANSDUCER

3-CONDUCTOR CABLE
SIGNAL
BLUE — RED/BLK
BLACK — BLACK
BROWN — GRN/BLK

MULTISTRETCH MOTOR
GRN
M3

BLACK — ORN/BLK
RED — ORANGE
BLUE/BLK TRACE — SPARE

CONNECTIONS FOR J1

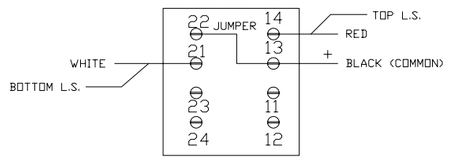
PIN 1: RED
PIN 2: BLACK/WHITE STRIPE
PIN 3: BLACK
PIN 4: WHITE
PIN 5: WHITE/BLACK STRIPE
PIN 6: GREEN/BLACK
PIN 7: NO CONNNECTION
PIN 8: BLUE
PIN 9: RED/BLACK

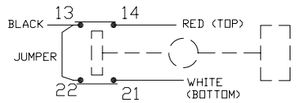
SOW 18/12

TYPE 655
CONTROL PANEL

ORANGE/BLACK — 48
ORANGE — 47
J1
BLUE — 25
BLACK — 26
RED — 34
WHITE — 33
J4

CONNECTION FOR 3
POSITION LIMIT SWITCH





CARRIAGE MOTOR
GRN
M2

SJ 16AWG 3/C

CARRIAGE MOTOR
JUNCTION BOX

RED — RED
BLACK — WHITE
BLUE
BLACK
BLACK
WHITE
RED

LIQUID TIGHT
CONDUIT

14 GA. WIRE

3 CONDUCTOR CABLE

CONNECTIONS FOR J4

PIN 1: BLACK
PIN 2: WHITE
PIN 3: RED
PIN 4: NO CONNECTION

THIS APPLIES TO L77 ONLY.

TURNTABLE MOTOR
GRN
M1

RED — WHITE
BLACK — BLACK

PULSE PICK-UP

BLUE
BLACK — SIGNAL
BROWN
3-CONDUCTOR CABLE

THIS APPLIES TO H77 ONLY.

TURNTABLE MOTOR
GRN
M1

RED — RED
BLACK — ORANGE

PULSE PICK-UP

3-CONDUCTOR CABLE
BLUE — BLUE
BLACK — SIGNAL — BLACK
BROWN — WHITE

WHT/BLK TRACE — SPARE

16/7 PVC

PLEASE NOTE:
THESE DRAWING SUPERSEDES 655.hu.rev 5.dwg

DATE REVISED:	OCT-06-2000	7
DATE REVISED:	SEPT-25-2000	6
DATE REVISED:	SEPT-08-2000	5
DATE REVISED:	AUG-20-2000	4
DATE REVISED:	AUG-09-2000	3
DATE REVISED:	JULY-14-2000	2
DATE REVISED:	JUNE-20-2000	1

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APPR. BY: J.B.S. DRAWN BY: J. ALEXANDER

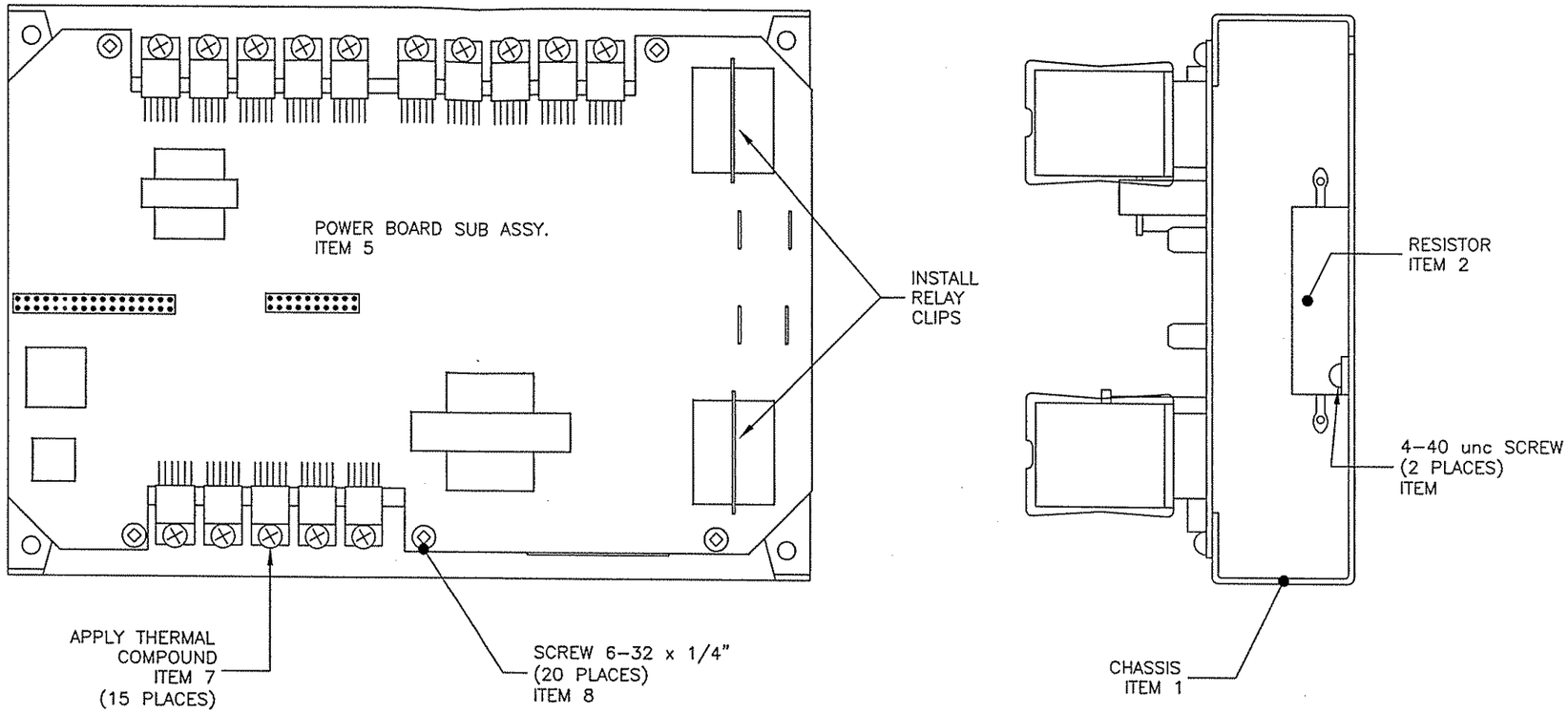
SCALE: NTS

TITLE: HL77-14 "STD"

SIZE: C | DOCUMENT NO: JOB # STD 301 981/2 | REV: 7

DATE: SEE ABOVE | SHEET: 2 OF 7

FILENAME:: 655.HU.REV 7.DWG | BASE:



ASSEMBLY NOTES

APPLY THERMAL COMPOUND BETWEEN THE CHASSIS AND SEMICONDUCTORS WHERE SEMICONDUCTORS ARE FASTENED TO THE CHASSIS BY SCREWS.

MAKE CERTAIN THAT THE RELAYS ARE HELD SECURELY IN PLACE BY THE CLIPS SUPPLIED WITH THE SOCKET.

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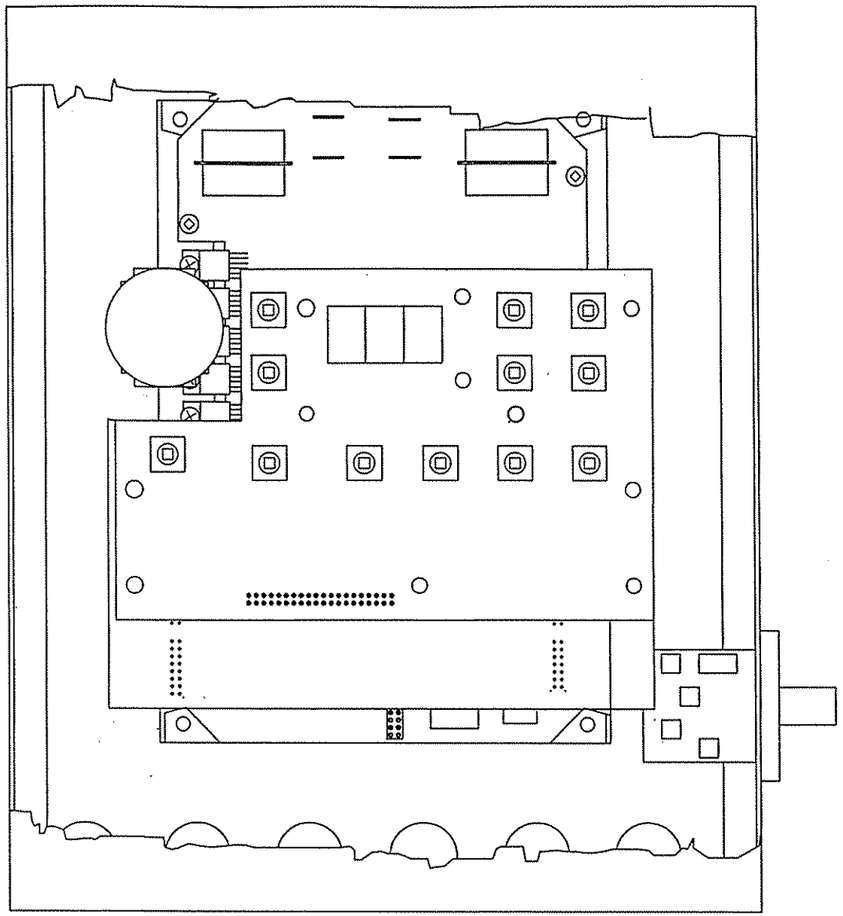
SCALE: 1:1

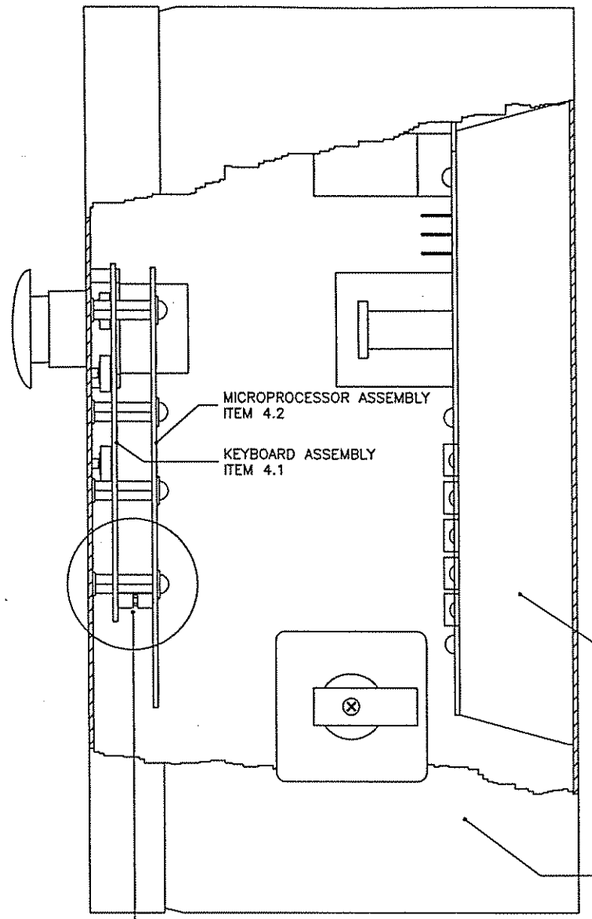
TITLE: HL77-14 "STD"

SIZE: C | DOCUMENT NO: JOB # STD 301 981/7 | REV: 1

DATE: MAY-11-2000 | SHEET: 7 OF 7

FILENAME:: 656.CA.DWG | BASE:

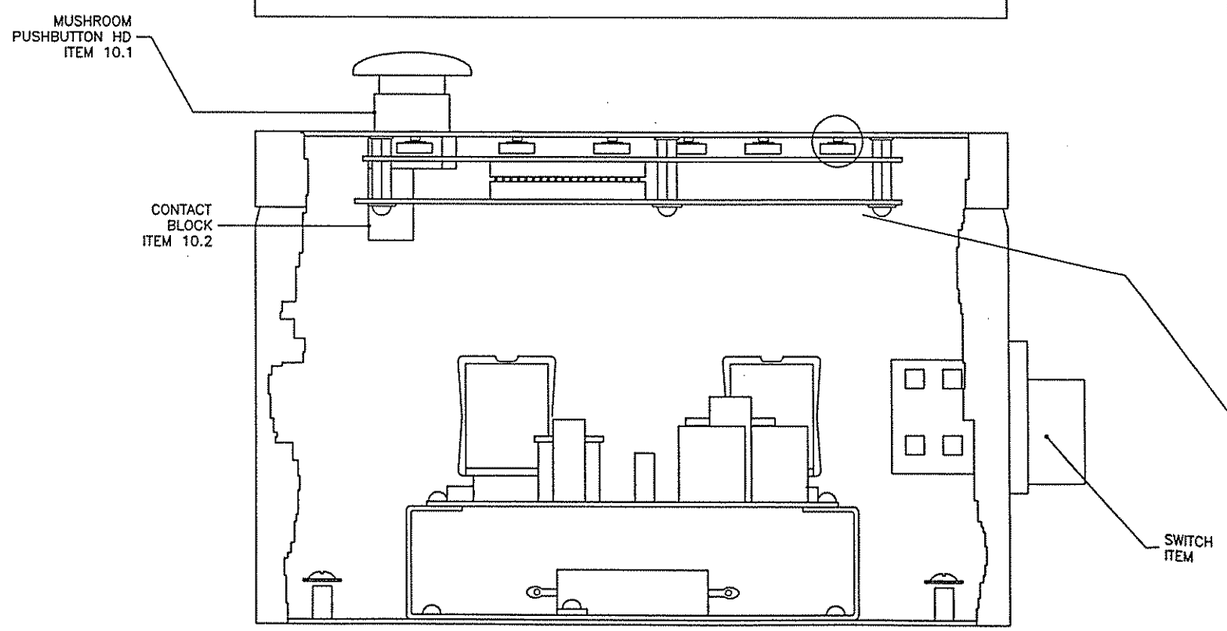


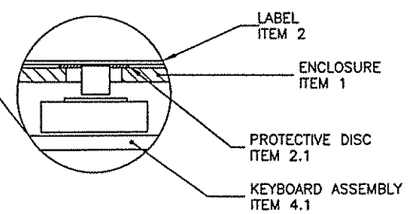


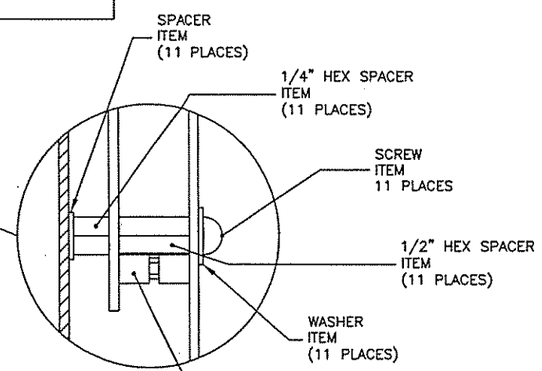
ASSEMBLY NOTES

REFER TO THE MOUNTING INSTRUCTIONS PROVIDED WITH THE ON/OFF SWITCH BY THE MANUFACTURER.

ATTACH A PROTECTIVE DISC BETWEEN THE LABEL AND THE SWITCH.
PLACE A 1/32" SPACER BETWEEN THE 1/4" HEX SPACER AND THE ENCLOSURE.







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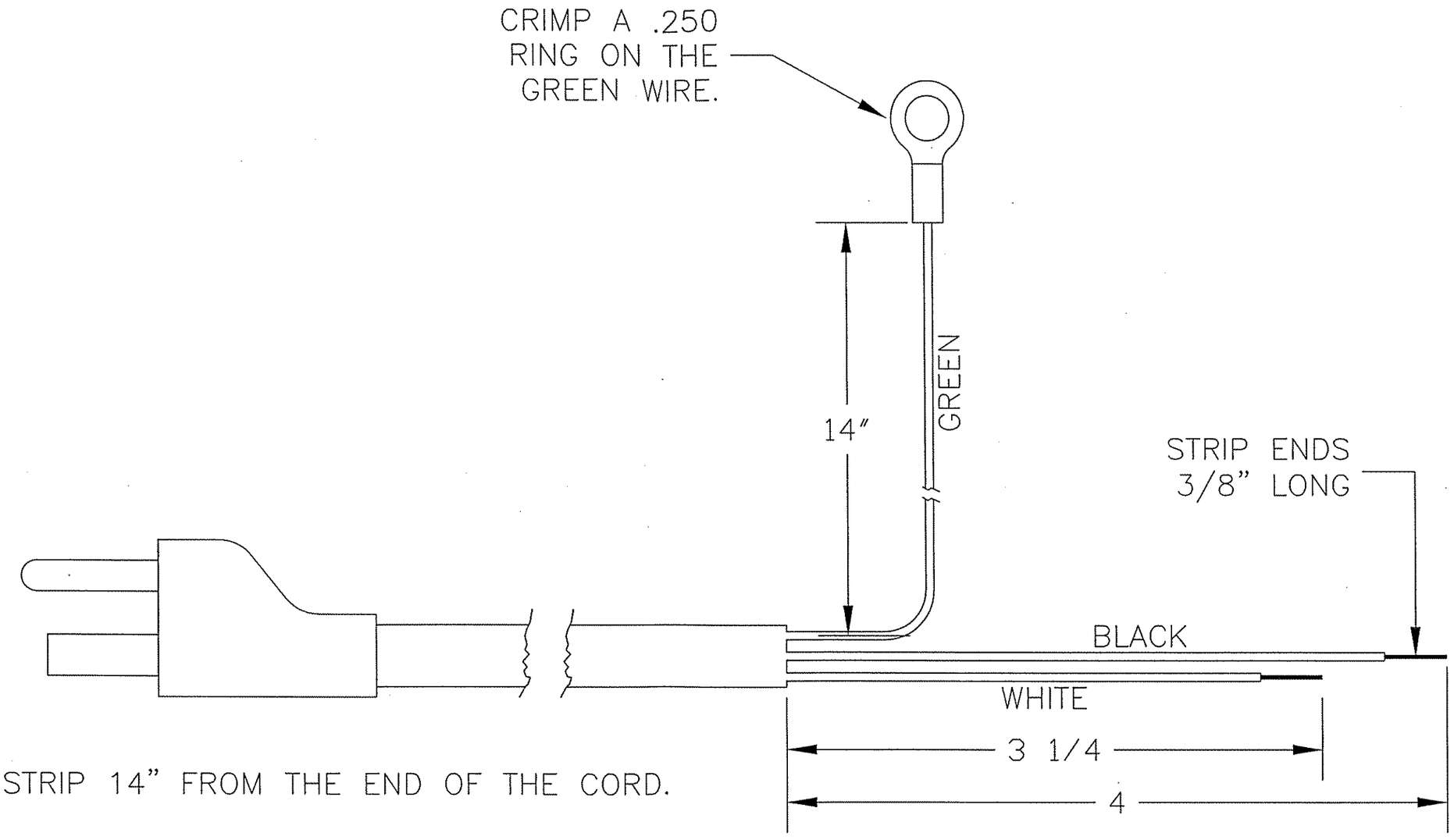
SCALE: 1:1

TITLE: HL77-14 "PACKAGE CONTROL"

SIZE: D | DOCUMENT NO: JOB # STD 301 981/6 | REV: 1

DATE: MAY-11-2000 SHEET: 6 OF 7

FILENAME: 655.DADWG BASE:



STRIP 14" FROM THE END OF THE CORD.

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SCALE: NTS

TITLE: HL77-14 'STD'

SIZE: A | DOCUMENT NO: JOB # STD 301 981/5 | REV: 1

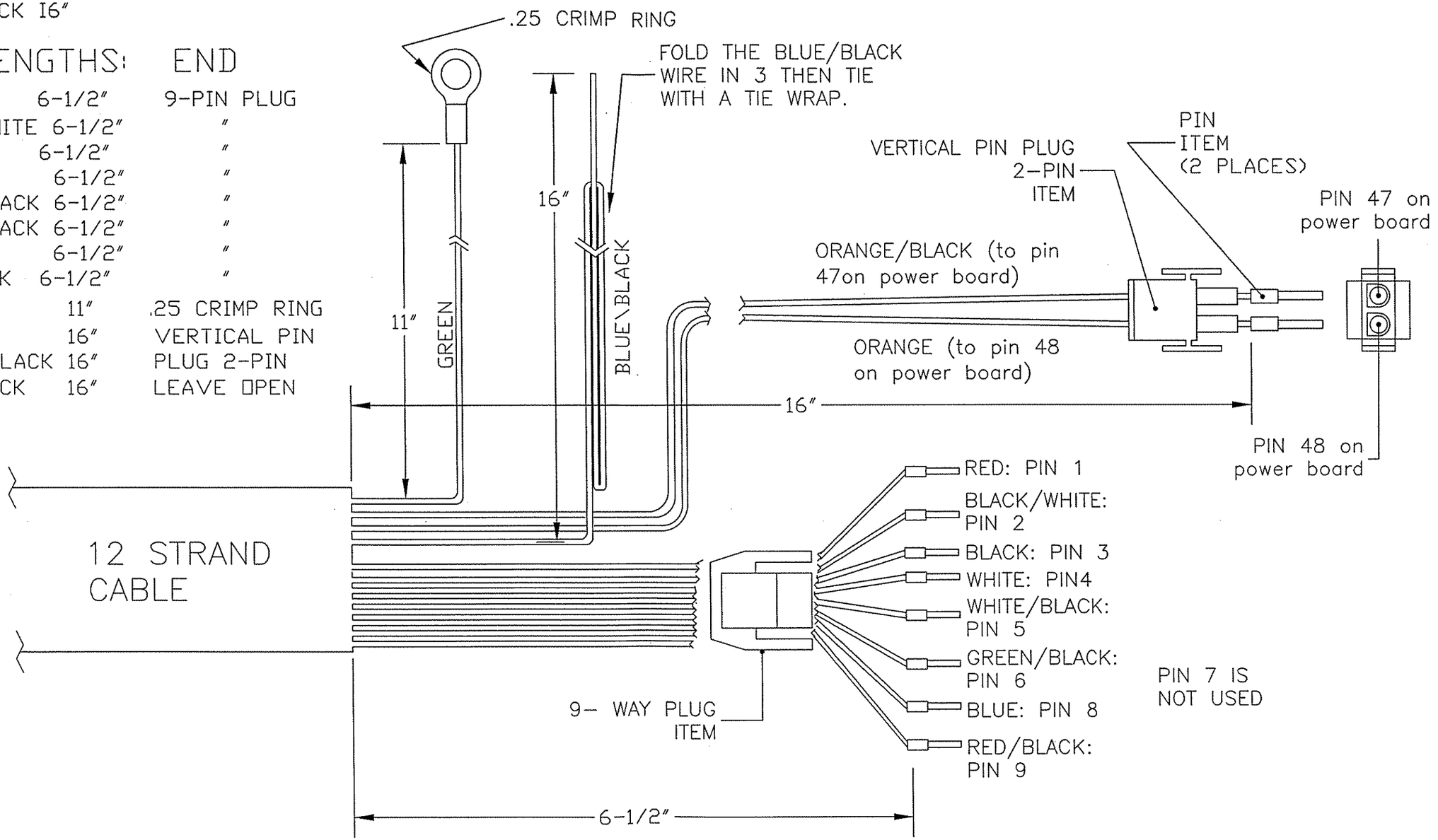
DATE: MAY-11-2000 | SHEET: 5 OF 7

FILENAME:: 655.CF.1.DWG | BASE:

TRIM THE OUTER INSULATION OF THE CABLE BACK 16″

WIRE LENGTHS: END

RED	6-1/2″	9-PIN PLUG
BLACK/WHITE	6-1/2″	″
BLACK	6-1/2″	″
WHITE	6-1/2″	″
WHITE/BLACK	6-1/2″	″
GREEN/BLACK	6-1/2″	″
BLUE	6-1/2″	″
RED/BLACK	6-1/2″	″
GREEN	11″	.25 CRIMP RING
ORANGE	16″	VERTICAL PIN
ORANGE/BLACK	16″	PLUG 2-PIN
BLUE/BLACK	16″	LEAVE OPEN



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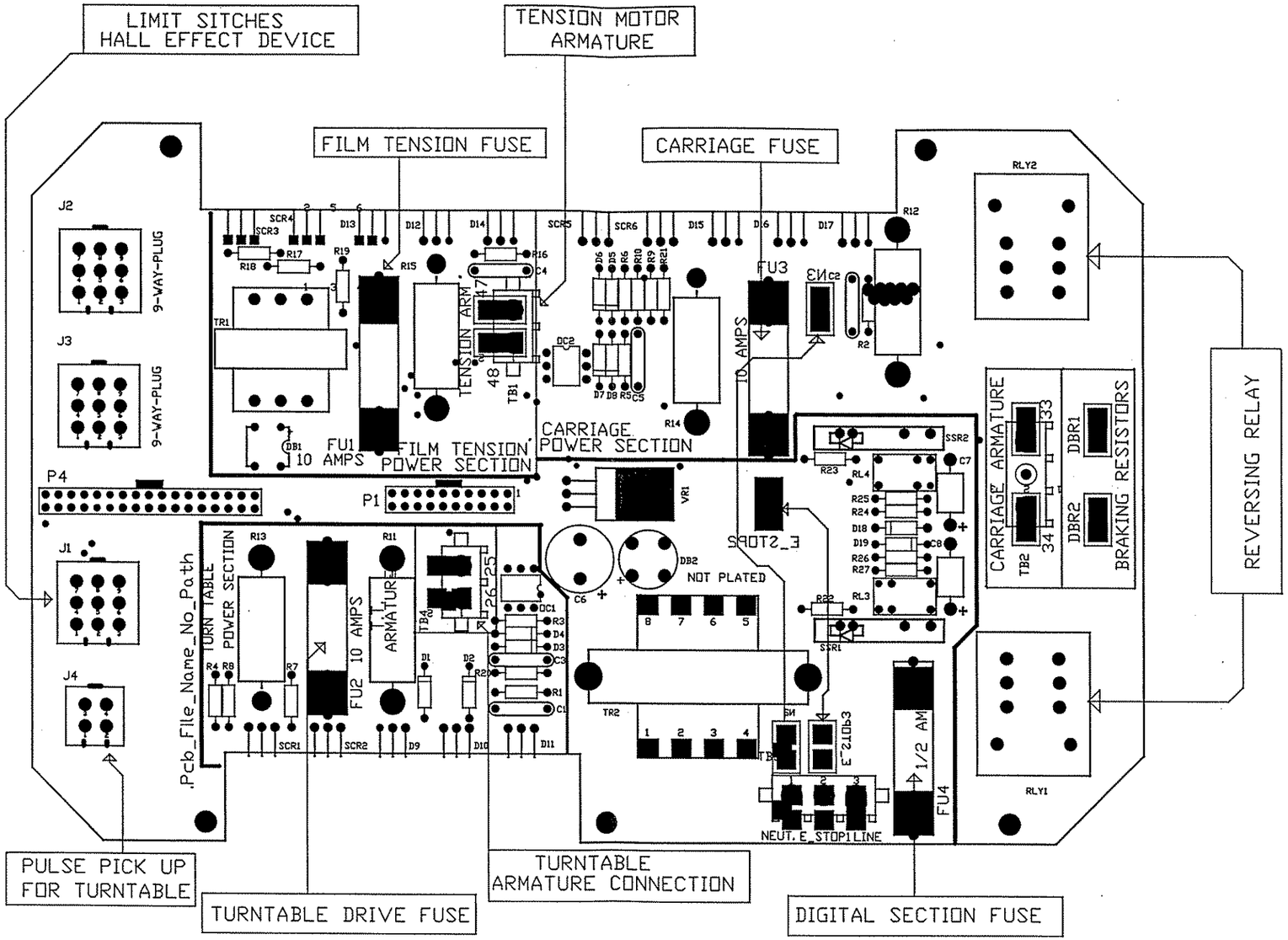
SCALE: NTS

TITLE: HL77-14 "STD"

SIZE: B | DOCUMENT NO: JOB # STD 301 981/4 | REV: 1

DATE: MAY-11-2000 | SHEET: 4 OF 7

FILENAME:: 655.CF.2.DWG | BASE:



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SCALE: 1:1

TITLE: HL77-14 "STD"

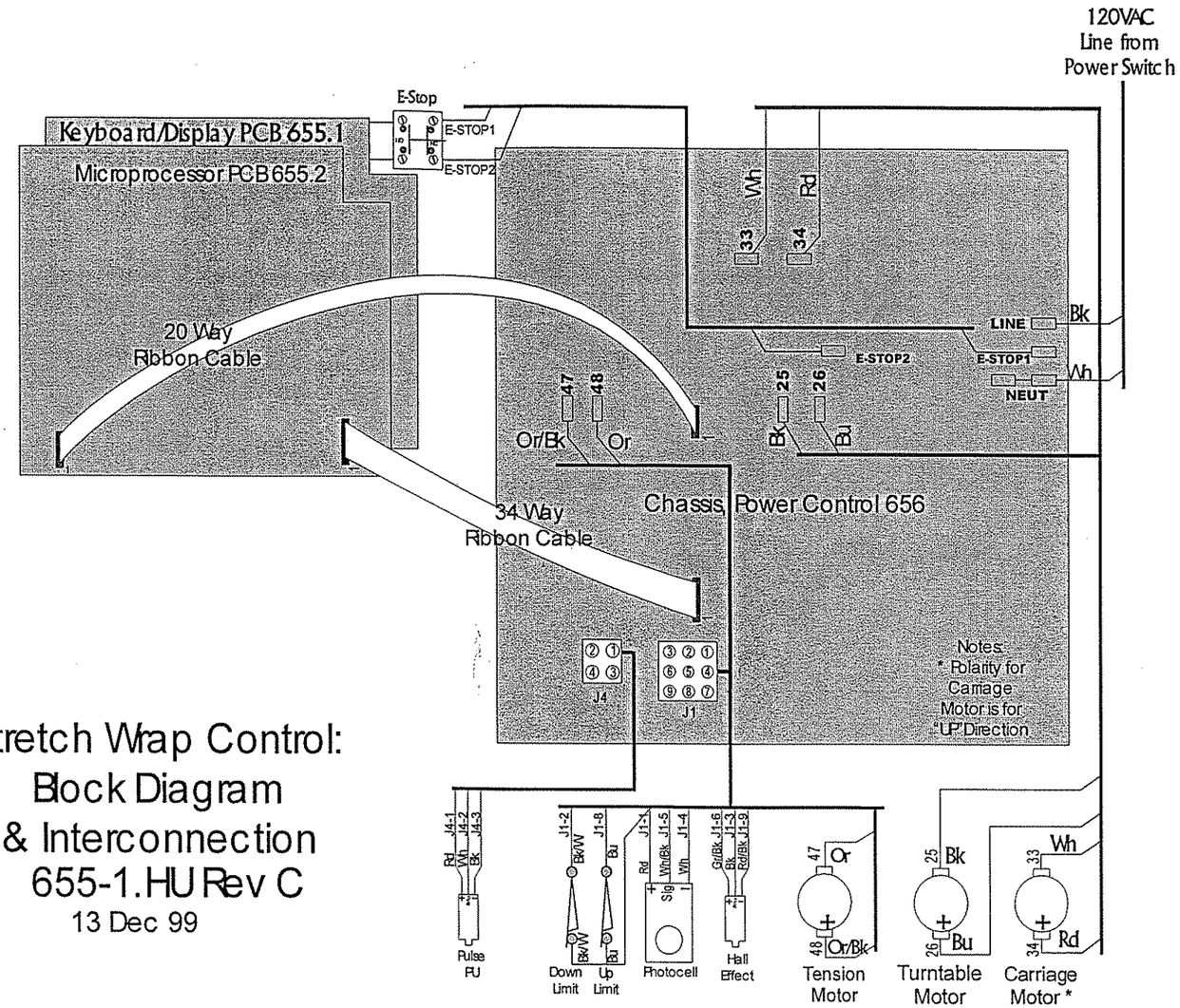
SIZE: B | DOCUMENT NO: JOB # STD 301 981/3 | REV: 1

DATE: MAY-11-2000 | SHEET: 3 OF 7

FILENAME:: 665pc3rev6.DWG | BASE:

Stretch Wrap Control:
Block Diagram
& Interconnection
655-1.HU Rev C

13 Dec 99



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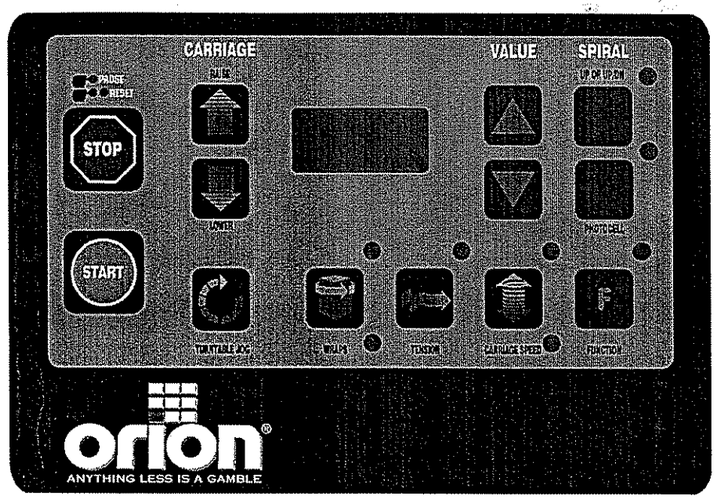
SCALE: NTS

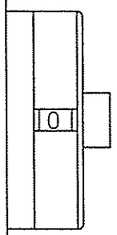
TITLE: HL77-14 "STD"

SIZE: C | DOCUMENT NO: JOB # STD 301 981/2 | REV: 1

DATE: MAY-11-2000 | SHEET: 2 OF 7

FILENAME:: 655-1.hu.revc.DWG | BASE:





5412 ESCH121006
PANEL SIZE 12 X 10 X 06

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SCALE: NTS

TITLE: HL77-14 "STD"

SIZE: B | DOCUMENT NO: JOB # STD 301 981/1 | REV: 1

DATE: MAY-11-2000 | SHEET: 1 OF 7

FILENAME:: HL77-14L.STD | BASE:

Maintenance

The Three principal sub assemblies cover the operation. To assure continuity of operation, spares should be available of:

- The Keyboard display
- The Microprocessor Board
- The Power Chassis
- Replacing Sub Assemblies

The connections are all via plugs, and misconnection is unlikely or impossible, but in any case take note of the configuration when removing items.

Repair and Replacement should only be done by experienced personnel who are aware of the dangers of working on line-operated equipment. Power must be removed when changing sub-assemblies, and the technician should dissipate any static charges before handling parts, by touching the grounded cabinet.

The Power Sub-Assembly can be removed by undoing four screws securing the chassis to the backplate. Then, unplug the various Amp connectors, by squeezing the retaining ears on the side of the plugs. Unplug the two ribbon connectors, and the disconnect terminal in the centre of the PCB, and remove the unit. It can be replaced by reversing the procedure.

The Microprocessor board on the inside of the cabinet door is held in place by 11 #6 screws. When these are removed the microprocessor board can be unplugged from the keyboard/display by gently rocking and pulling it away. The keyboard display can be removed by releasing the 11 nylon hex threaded spacers holding it to the studs.

Board-Level Maintenance
In general, repair is beyond the scope of field service, without special equipment. However, the Power Chassis does contain replaceable items – the three motor fuses (MDA 10 Amp) the control fuse (AGC ½ Amp) and the Carriage Reversing Relays.

Trouble-Shooting

The Keyboard Display will give a fair indication of the trouble area. If the Turntable can be Manually Raised/Lowered, we would assume the Carriage Section to be Functional. If the Turntable can be Jogged, this too should be intact. If the Film Control responds to a light pull on the film, feeding freely, this section is OK. If only one of these functions does not respond, the fuses can be examined. If blown, they should be replaced only with the recommended types. If they immediately blow again, it is probable that one or more of the Power Devices is shorted. If the proper Devices are on hand they could be replaced. If there are problems Reversing the Carriage drive, and/or the Relays show signs of burned contacts, these should be replaced.
If the Display is unlit, or does not respond to keyboard input, it is likely that the problem lies with the Microprocessor PCB.
There is also the possibility of problems with external limit switches, pulse pickups, or the Hall device. This should be apparent by problems with particular functions, failure to respond to limits, etc. Operating the devices manually and measuring the resistance of switches or the output of the pickup will assist in diagnosis. The Hall effect device calibration is described on Page 2. If there is no input from the Hall device this will be apparent when observing the input and moving the Hall Device.

Spares

- Fuse MDA 10
- Fuse AGC 3
- Relay P&B K10P-11A15-120
- SCR Teccor S6020L (All Drives)Diode D6020L (All Drives)

SPIRAL UP ONLY

Whatever selected "**top wraps first**" or "**bottom wraps first**", we have the following cycle:

1. Film carriage wraps bottom applying selected number of buttomn wraps;
2. Film carriage moves to the top
3. Applies selected number of top wraps;
4. Turn table decelerates and stops in home position;

When the up only mode selected "SPIRAL LED" goes OFF.

SPIRAL UP/DOWN

When the Up/Down Mode Selected "SPIRAL LED" goes ON.

- If "**top wraps first**" selected (**p02=0**), we have the following cycle:

1. Film carriage moves to the top
2. Applies selected number of top wraps;
3. Film carriage moves to the bottom;
4. Applyies selected number of bottom wraps;
5. Turn table decelerates and stops in home position;

- If "**bottom wraps first**" selected (**p02=1**), we have the following cycle:

1. Applies selected number of bottom wraps;
2. Film carriage moves to the top
3. Applies selected number of top wraps;
4. Film carriage moves to the bottom;
5. Turn table decelerates and stops in home position;

Safety : Film Broken

N.B. this feature works only when machine is running ... (During Cycle)

If the film is lost during cycle, Machine will be immediately* stopped and screen displays **FLM.**
* when we start a new cycle, machine waits three(3) seconds to conclude that film is gone.
In this state we can:

- move the carriage UP /DOWN manually
- JOG the Turn Table manually ...
- And start a New Cycle

Moving The Carriage and Table Manually

To move the Carriage Up or Down using the **Carriage up** and **Down** pushbuttons or to **adjust** the **Turn Table** using the **JOG** pushbutton, the machine must be stopped. If a cycle is being processed, those two pushbuttons are disabled.

When the **Carriage Up** pushbutton is pressed, the carriage will go up until the pushbutton is released or the Carriage top limit switch is activated. Screen Displays **UP.**

When the **Carriage Down** pushbutton is pressed, the carriage will go down and it will stop only when it has reached the Carriage Down limit switch. Screen Displays **dn.**

A delay of one **(1) second** is elapsed before **carriage** can **reverse** direction.

When the **JOG** pushbutton is pressed, the **Table** turns at a **preset speed** until the button is released. Screen Displays **JOG.**

Display Screen

Display Contents

Screen	Description
End	Machine is stopped
PAU	Machine in a Pause after pressing STOP Button ONCE (Display will Flash).
UP	Carriage is Moving UP
dn	Carriage is Moving Down
PSU	asks user to enter password code to have access to Function parameters edition.
DEF	While getting default settings and then it displays the present machine state.
eXt	While exiting Function Parameters Edition then it displays present machine state.
Pxx	When selecting function parameter
xxx	When editing machine parameters values
JOG	When jogging the Turn Table Manually

Display Refresh

Display is refreshed every **3 seconds.** If we finished editing, it displays the present machine cycle state (PAU for a Pause State, End When Machine stopped, UP when Carriage moving UP, dn while Carriage moving Down, Wraps# when wrapping).

SELECT A WRAPPING PATTERN

N.B. this feature works only when machine is stopped ... (Off Cycle)

Now operator can select up to three (3) wrapping cycles by using the **SPIRAL** pushbutton and the Function parameter **P02**:

- Spiral Up Only
- Up/down with Top Wraps first
- and Up/Down with Bottom wraps first.

Exit Function

We have two possibilities to exit the Function Editing Mode:

- Once the editing is complete, the **select function** button would be pressed again and choose parameter P11 to exit Function Editing and return to the operator's menu. New values will be saved at this time.

If 30 seconds elapsed without any editing activity we will exit the Function editing mode, save the new values and return to the operator's menu.

Function parameters

DESCRIPTION	PARAMETER	DATA RANGE
Table Speed High	P00	From 0 to 100
Table Speed Low	P01	From 0 to100
TopBottom Wraps First	P02	0 " Top Wraps First" or 1 "Bottom Wraps First
Not Implemented	P03	0
Table Acceleration Time	P04	From 0 to100
Table Deceleration Time	P05	From 0 to 100
Table Pulses Per Rotation	P06	From 0 to 250
Not Implemented	P07	0
Not Implemented	P08	0
Not Implemented	P09	0
Not Implemented	P10	0
Exit	P11	When selected we **exit** Function
Get Default	P12	when Selected we **load** Default settings

Parameter Saving

New Settings are saved if they are changed and when **One** of the following events Occurs:

- Press JOG Pushbutton
- Press START Pushbutton
- 30 Sec. after we enter editing mode (no button pressed)

Select Function

The **Select Function** pushbutton is used to access "in shop" settings - such as Turntable speeds and acceleration, deceleration times, Offset and Gain of the tension control and the maximum speed of the carriage drive. Editing these parameters is allowed only when machine is stopped.

Because those parameters are not available to the operator, they are protected using a 3-digit password number (**range form 0 to 250**). (Present **Password** is _____). **See Note Below.**

When the **select function** push button is selected, the Screen displays **PSU (asking the user to enter the password)**. Using the **up** and **down** arrows, the proper 3-digit number code must be selected: when it is selected, the **Select Function** pushbutton must be pressed again and the Function **LED** will start flashing.

Now the **In House Setting Menu** has been accessed. The parameters are identified by a 3-digit code Pxx where xx is a number between 0-12. Use the **up** and **down** arrows to select a parameter . Once the desired parameter is selected, Press **select function** button would be **used** to toggle between the Data and the Parameter mode. The **Up** or **Down** arrows would be used to set the right value (Data) in the Parameter. Once the value is entered, the **select function** pushbutton would be pressed again to return to the Select Parameter Mode.
While editing Function Parameters, the Function LED continuously flashes.

NOTE: The password is available from the Authorized Orion Distributor.

Get Default Settings

***N.B.** this feature works only when machine is stopped ... (Off Cycle)*

Now user can load a specific Default Settings Set by selecting the Function parameter **P12**. Screen displays **DEF**. The Old Machine Settings are lost.

• Present Default Settings

DESCRIPTION	Default Value	DATA RANGE
Top Wraps	02	From 1 to10
Down Wraps	02	From 1 to 10
Tension	10	From 0 to100
Carriage Speed Up	65	From 0 to100
Carriage Speed Down	65	From 0 to100
SpiralModeSelector	0	0 "UP/DOWN" or 1 "UP ONLY"
Table Speed High	78	From 0 to 100
Table Speed Low	06	From 0 to100
Table Acceleration Time	10	From 0 to100
Table Deceleration Time	10	From 0 to 100
Table Pulses Per Rotation	96	From 0 to 250
TopBottomWrapsFirst	0	0 "Top Wraps First" or 1 "Bottom Wraps First"

Revised May 15 2000

Select And Edit The Number Of Wraps

There are two settings for the number of wraps: the number of wraps executed at the bottom and top of the carriage travel.

Pressing once on the **Set # Wraps** pushbutton, will turn ON the **LED** located beside the bottom right corner of the pushbutton. This indicates that the bottom wrap variable is selected. By using the **Up** or **Down** arrows the value can be changed. The value will vary from 1 to 10.

To select the top wrap variable, the **Set # Wraps** must be pressed twice or until the **LED** located beside the top right corner is **ON**. By using the **Up** or **Down** arrows the value can be changed. The value will vary from 1 to 10.

For changes on-th-fly, a delay of 1 (one) second will be elapsed before New TOP/BOTTOM Wraps Settings will be effective

When the right values of top and bottoms wraps are selected, press the **Set # Wraps** pushbutton until the 2 **LED**'s are **OFF**.

Select And Edit The Tension Value

To select the tension variable, the **Set Tension** must be pressed. The **Set Tension LED**, located beside the top right corner of the pushbutton, must be **ON**. Once the pushbutton is pressed and the **LED** is **ON**, the **Up** and **Down** arrows can be used to change the value. The value will vary from 0 to 100 (0-100%).

Select And Edit The Carriage Speeds

There are two settings for the Carriage speed: the **Carriage Up** and the **Carriage Down** speeds.

By pressing once on the Carriage Speed pushbutton, The **LED** located beside the bottom right corner of the pushbutton will turn **ON**. This means that the Carriage speed down variable is selected. By using the **Up** or **Down** arrows the value can be changed. The value will vary from 0 to 100 (0-100%).

To select the **Carriage Up** variable, the **Carriage Speed** must be pressed twice or until the **LED** located beside the top right corner is **ON**. By using the **Up** or **Down** arrows the value can be changed. The value will vary from 0 to 100 (0-100%).

Parameter Saving

The new values are saved when **One** of the following events Occurs:

- Press JOG Pushbutton
- Press START Pushbutton
- 30 Sec. after we enter editing mode (no button pressed).

For changes made on-the-fly, new values will be saved at the end of the current machine cycle.

Change-On-The-Fly

N.B. this feature works only when machine is running ... (During Cycle)

Now operator can adjust machine working parameters (carriage speeds, Photocell On/Off, tension, wraps numbers) during the cycle. Function parameters are allowed only when machine is stopped.
Changes are saved only at the end of the current machine cycle.
While editing, screen Displays the parameter being edited. Screen is refreshed 3 seconds later to display the present machine cycle state.

Pause/Stop

***N.B.** this feature works only when machine is running ... (During Cycle)*

Now operator can put the machine in a pause state by pressing the **E-STOP** button **ONCE**. Machine conserves the present machine cycle parameter values. Screen displays **PAU** and Flashes while no edition is performed. Machine will remain in pause state until either:

- we press the **START** button: **Machine** will **continue** its interrupted cycle and **Screen** displays the present Machine **cycle State.**
- Or, we press **STOP** button. **Machine** will **stop** completely and **Screen** displays **End.** Machine is ready for a new wrapping cycle.

Photocell

N.B. this feature works only when machine is running ... (During Cycle)

Now we can use either CarriageUpLimit Mechanical Switch or the Photocell to detect carriage reaching the up limit. It is Normally Open. **Photocell** is **Enabled or Disabled** by Pushbutton PHOTOCELL . When enabled **Photocell Led** goes **ON.**

Parameter Editing & Saving

***N.B.** The following settings are available to the operator. Edition can be performed on-the-fly.*

Pushbutton Description

- **START**
  The Start pushbutton is used to start or continue a wrapping cycle.
- **E-STOP**
  The Stop pushbutton is used to pause and stop a wrapping cycle before it is completed.
- **TURNTABLE JOG**
  The Jog pushbutton is used to jog the turntable Manually at a preset speed .
- **CARRIAGE RAISE**
  The Carriage up pushbutton is used to Manually move the carriage up.
- **CARRIAGE LOWER**
  The Carriage down pushbutton is used to Manually move the carriage down.
- **WRAPS**
  This pushbutton is used to program the number of top and bottom wraps that the turntable will perform during a cycle.
- **TENSION**
  This pushbutton will set the tension of the wrapping film.
- **CARRIAGE SPEED**
  This pushbutton is used to set the carriage up and down speed.
- **FUNCTION**
  This pushbutton is used for in house programming and adjustments. Access is limited to authorized users by a password code.
- **SPIRAL**
  This pushbutton is used to select between "**up/down**" and "**up only**" spiral wrapping patterns
- **PHOTOCELL**
  This pushbutton is used to Enable and Disable the Photocell.
- **VALUE UP and DOWN Arrows**
  Those pushbuttons are used to change the value of parameters displayed on the SSD.

CURRENT LIMIT
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. The current limit is set at the factory to suit 1/2 HP motors.
The motor Armature attaches to Quick Disconnect Terminals 25(+),26(-) or to an Amp 2 pin connector in later models. The unit is suitable for permanent magnet shunt style DC motors with 90 V armature rating, rated at up to 3/4HP.

CARRIAGE CONTROL SECTION:

The carriage control is a DC Motor control designed to operate in direct or reversing mode at pre-set speeds defined by the user through the keyboard section. The unit requires a 90 V armature, permanent magnet dc motor as output device.

Two Relays and a Dynamic braking Resistor (DBR) are used for motor reversing and braking The brake resistor is bolted to the chassis beneath the PCB. The circuit is equipped with anti-plug protection.

CURRENT LIMIT
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. The current limit is set at the factory to suit 1/2 HP motors.

CONNECTION

The Motor Armature attaches to quick-disconnect terminals 33(+), 34(-), or to a 3 pin Amp Connector in later models. The unit is suitable for permanent magnet shunt style DC motors with 90 V armature rating, rated at up to 3/4HP.

Operation

Keyboard Description

The keyboard is used to control and monitor all the parameters of a Stretch Wrap Machine. It will also be used for in house calibration.

3. FILM TENSION CONTROL SECTION

The film tension drive is a solid state DC motor control specially designed for use in Constant Tension Mode on stretch-wrap packaging machines. The unit functions as a pay-off drive, unwinding the pre-stretched film as the table and pallet rotate, and continuously regulating tension as the diameter of the wrapped item changes. Since the typical pallet load is of square cross section, the effective diameter changes abruptly with rotation; the film tension is monitored by a tension-arm, held in place by spring pressure. As the film tension changes, the arm moves, rotating a cam, and the cam orientation is sensed by a Hall-Effect transducer. The transducer signal varies with the separation between its sensing head and the cam surface. The amplified transducer signal controls motor torque, increasing or decreasing it so as to restore the tension-arm to its previous position, and to maintain tension at its preset level. The system response is tailored so that these small corrections are smooth, continuous and largely imperceptible. The tension defaults to Minimum when the external Tension Adjustment circuit is opened. The control offers the feature of a film-break to be described later.

ADJUSTMENTS:

The film tension can be set by the operator using the digital interface, as described on page 4. In addition to the above-mentioned digtal tension adjust, there are 3 trimming potentiometers on the microprocessor PCB (on the inside of the cabinet door) as follows:

ZERO (RV2)

This control injects an offset voltage, which adds or subtracts from the tension voltage reference; this will allow the *extremes* of adjustment from the digital interface to be set to levels consistent with proper operation. Typically, the "Zero" will be used to centre the operating range in the linear portion of its characteristics. 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 1.30 Volts DC at the cathode of Z1 (zener diode) relative to Circuit Common*, achieved by adjusting RV3. The machine should be stopped and the film removed for this adjustment.

Common is taken on the chassis inside the cabinet; - connect to end of R15 - large resistor in the Film Tension Section next to Fuse FU1, at the end adjacent to D12.

SPAN (RV1)

This controls the system loop gain, and may be adjusted if the motor continues to turn when the dancer arm is unloaded. The potentiometer should be adjusted to ensure that the motor is de-energised in this condition, with the machine stopped, and so that a light pull on the free end of the film causes it to feed freely.

CURRENT LIMIT

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. It is set at the factory to suit 1/2 HP motors.

FILM BREAK FEATURE

An on--board comparator and relay detect "film break" or "no-film" by monitoring armature voltage. Potentiometer **RV3** adjusts the relay trip level.

CONNECTION

The Motor Armature attaches to terminals 47(+), 48(-) (may by Quick Disconnect or Amp Mate-n-Lock connector). The unit is suitable for permanent magnet shunt style DC motors with 90 V armature rating, rated at up to 3/4HP.

The Hall-Effect transducer connects to terminals +12 (Brown) IN+ (Black), IN- (Common) (Blue).

TURNTABLE CONTROL SECTION:

The turntable control is a DC Motor control designed for use as a table-drive on pallet wrapping machines, where long and repeatable acceleration and deceleration times, and remotely selectable pre-set speeds are required. The unit requires a 90 V armature, permanent magnet dc motor as output device.

755 Orion Integrated Digital Control Center

OPERATING INSTRUCTIONS

Description

General Description

The system is an integrated control for a Stretch-Wrap machine. It includes three DC motor controls:

- Carriage Control, reversing.
- Turntable control, fully programmable via keyboard interface.
- Multistretch control, fully programmable via keyboard interface.

The 755 Control comprises three principal sub-assemblies:

- Keyboard and display - for setting and viewing the system parameters. (Type 755.1 Fig. 1)
- Microprocessor board - overall system control (Type 755.2 Fig. 2)
- Motor Control and Interface Assembly (MCIA) (Type number 755.3 Fig. 3)

These items are mounted and wired in a Nema 12 enclosure mounted to the machine. The Membrane switch/display operator's interface is on the door of this enclosure.

Reference Drawings:

HL77-16 DWG. # 302 296/1
HL77-16 DWG. # 302 317/1

Description of Sub-Assemblies

- **KEYBOARD AND DISPLAY Type 755.1**

This board contains 12 pushbuttons and three, seven-segment display modules (three digits). It is used to start an automatic wrapping cycle, or to operate the machine manually, and also to set and adjust the control parameters (carriage speed, film tension value, and turntable speed…). It mounts on the enclosure door, behind the Membrane Label.
The keyboard communicates with the microprocessor board through a 28-pin connector (**P1**).

- **MICROPROCESSOR BOARD Type 755.2**

Contains the system microprocessor, E^2PROM memory.
This board generates the reference and control signals for the three machine drives: Carriage, Turntable and Multistretch. It plugs into, and mounts behind the Keyboard/Display above. Connection to the MCIA (below) is by a 20-way ribbon cable.

- **MOTOR CONTROL AND INTERFACE ASSEMBLY (MCIA) Type 755.3**

This assembly comprises a motherboard, power supplies and card rack, into which plug the three Distinct DC Motor controls. These latter regulate the function of the machine (Multistretch, Turntable and Carriage). The Mother Board houses the reversing relays for the Carriage, and connectors to interface with machine. It also includes two regulated DC supplies - +5 VDC for the Microprocessor Board, and +24VDC for the Hall Effect Device (which senses position of Multistretch dancer roller).

End of Film Broken

N.B. this feature works only when machine is running ... (During Cycle)

If the film ends or is broken during cycle, Machine will be immediately stopped and screen displays FLM.
With machine in End or Broken Film state (display will show FLM) it is possible to:

- move the carriage UP /DOWN manually
- JOG the Turn Table manually ...
- Re-Start Cycle.

Maintenance

The three principal sub-assemblies cover the operation. To assure continuity of operation, spares should be available of:

- The Keyboard display (type 755.1)
- The Microprocessor Board (type 755.2)
- The Motor Control Interface Assembly which comprises:
  - Mother Board Assembly (type 755.3)
  - Multistretch Drive (type 755.4)
  - Carriage Drive (type 755.5)
  - Turntable Drive (type 755.6)

Replacing Sub Assemblies:
The connections are mostly plug-in, and misconnection is unlikely, but, in any case, takes note of the configuration when removing items.
Repair and Replacement **should only be done by experienced personnel who are aware of the dangers of working on line-operated equipment**. **Power must be removed when changing sub-assemblies, and the technician should dissipate any static charges before handling parts, by touching the grounded cabinet**.

The MBIA can be removed by undoing four screws securing the chassis to the backplate. Then, unplug the various terminal connectors, and unplug the ribbon connector and the disconnect terminals, and remove the unit. It can be replaced by reversing the procedure.
The three DC Drive controls can be individually replaced, by removing two securing screws and un-plugging. Each control is protected by an on-board AGC-8 fuse, accessible when the control is unplugged.

The Microprocessor board on the inside of the cabinet door connects by ribbon-cable to the MCIA. This should be unplugged before removing the PCB. The Microprocessor Board is held in place by six #6 nylon nuts. When these are removed, the microprocessor board can be unplugged from the keyboard/display by gently rocking and pulling it away. The keyboard display can be removed by releasing the six nylon hex threaded spacers holding it to the studs.

Board-Level Maintenance:
In general, repair is beyond the scope of field service, without special equipment. However, the Mother Board does contain replaceable items – the control fuse (AGC ½ Amp), and the Carriage Reversing Relays.

SELECT A WRAPPING PATTERN

N.B. this feature works only when machine is stopped ... (Off Cycle)

Operator can select up to three (3) wrapping cycles by using the SPIRAL pushbutton and the Function parameter P02:

- Spiral Up Only
- Up/down with Top Wraps first
- Up/Down with Bottom wraps first.

SPIRAL UP ONLY

Whatever selected "top wraps first" or "bottom wraps first", the following will happen:

1. Film carriage wraps bottom applying selected number of bottom wraps;
2. Film carriage moves to the top
3. Applies selected number of top wraps;
4. Turntable decelerates and stops in home position;

When the up only mode selected "SPIRAL LED" goes ON.

SPIRAL UP/DOWN

When the Up/Down Mode Selected "SPIRAL LED" goes OFF.

- If "top wraps first" selected (p02=0), the following will happen:

1. Film carriage moves to the top
2. Applies selected number of top wraps;
3. Film carriage moves to the bottom;
4. Applies selected number of bottom wraps;
5. Turntable decelerates and stops in home position;

- if "bottom wraps first" selected (p02=1), the following will happen:

1. Applies selected number of bottom wraps;
2. Film carriage moves to the top
3. Applies selected number of top wraps;
4. Film carriage moves to the bottom;
5. Turntable decelerates and stops in home position;

Parameter Saving

New Settings are saved if they are changed and when **One** of the following events Occurs:

- Press JOG Pushbutton
- Press START Pushbutton
- 30 Sec. after we enter editing mode (no button pressed)

Moving The Carriage and Table Manually

To move the Carriage Up or Down using the Carriage up and Down pushbuttons or to adjust the Turntable using the JOG pushbutton, the machine must be stopped. If a cycle is being processed, those two pushbuttons are disabled.

When the Carriage Up pushbutton is pressed, the carriage will go up until the pushbutton is released or the Carriage top limit switch is activated. Screen Displays UP.

When the Carriage Down pushbutton is pressed, the carriage will go down and it will stop only when it has reached the Carriage Down limit switch. Screen Displays dn.

A delay of one (1) second must elapse before the carriage can reverse direction.

When the JOG pushbutton is pressed, the Turntable turns at a preset speed (Low) until the button is released. Screen Displays JOG.

Display Screen

Display Contents

Screen	Description
End	Machine is stopped
PAU	Machine in a Pause after pressing STOP Button ONCE (Display will Flash).
UP	Carriage is Moving UP
dn	Carriage is Moving Down
PSU	asks user to enter password code to have access to Function parameters edition.
DEF	While getting default settings and then it displays the present machine state.
eXt	While exiting Function Parameters Edition then it displays present machine state.
Pxx	When selecting function parameter
xxx	When editing machine parameters values
JOG	When jogging the Turn Table Manually

Display Refresh

Display is refreshed every 3 seconds. When finished editing, it displays the present machine cycle state (PAU for a Pause State, End When Machine stopped, UP when Carriage moving UP, dn while Carriage moving Down, Wraps # when wrapping).

- **Default Settings**

DESCRIPTION	Default Value	DATA RANGE
Top Wraps	02	From 1 to10
Bottom Wraps	02	From 1 to 10
Tension	10	From 0 to100
Carriage Speed Up	65	From 0 to100
Carriage Speed Down	65	From 0 to100
SpiralModeSelector	0	0 “UP/DOWN” or 1 “UP ONLY”
Table Speed High	78	From 0 to 100
Table Speed Low	06	From 0 to100
Table Acceleration Time	10	From 0 to100
Table Deceleration Time	10	From 0 to 100
Table Pulses Per Rotation	96	From 0 to 250
TopBottomWrapsFirst	0	0 “Top Wraps First” or 1 “Bottom Wraps First”

Exit Function

There are two ways to exit the Function Editing Mode:

- Once the editing is complete, press the select function button again and choose parameter P11 to exit Function Editing and return to the operator’s menu. New values will be saved at this time.

- If 30 seconds elapse without any editing activity, the program exits the Function editing mode, saves the new values and returns to the operator’s menu.

Function parameters

DESCRIPTION	PARAMETER	DATA RANGE
Table Speed High	P00	From 0 to 100
Table Speed Low	P01	From 0 to100
TopBottom Wraps First	P02	0 “ Top Wraps First” or 1 “Bottom Wraps First
Not Implemented	P03	0
Table Acceleration Time	P04	From 0 to100
Table Deceleration Time	P05	From 0 to 100
Table Pulses Per Rotation	P06	From 0 to 250
Not Implemented	P07	0
Not Implemented	P08	0
Not Implemented	P09	0
Not Implemented	P10	0
Exit	P11	When selected we exit Function
Get Default	P12	when Selected we load Default settings

Select Function

The Select Function pushbutton is used to access "in shop" settings - such as Turntable speeds, Acceleration, Deceleration times, Offset and Gain of the Tension Control and the maximum speed of the Carriage Drive. Editing these parameters is permitted only when machine is stopped.

Because those parameters are not available to the operator, they are protected using a 3-digit pass-code (range from 0 to 250). (For Password contact your local distributor).

When the Select Function push button is depressed, the Screen displays PSU (asking the user to enter the password). Using the up and down arrows, the proper 3-digit number code must be entered: when it is entered, the Select Function pushbutton must be pressed again and the Function LED will start flashing.

The In-House Setting Menu has now been accessed. The parameters are identified by a 3-digit code Pxx where xx is a number between 0 -12. Use the up and down arrows to select a parameter. Once the desired parameter has been selected, press the select function button to toggle between the Data and the Parameter mode. The Up or Down arrows are used to set the desired value (Data) in the Parameter. Once the value is entered, press the select function pushbutton again to return to the Select Parameter Mode.

While Function Parameters are being edited, the Function LED continuously flashes.

Get Default Settings

N.B. this feature works only when machine is stopped ... (Off Cycle)

The user can now load a specific Default Settings Set by selecting the Function parameter P12. Screen displays DEF. The Old Machine Settings are overwritten.

Select And Edit The Number Of Wraps

There are two settings for the number of wraps: the number of wraps executed at the bottom and top of the load.

Pressing once on the Set # Wraps pushbutton, will turn ON the LED located beside the top right corner of the pushbutton. This indicates that the top wrap variable is selected. By using the Up or Down arrows the value can be changed. The value can be set from 1 to 10.

To select the bottom wrap variable, the Set # Wraps must be pressed twice or until the LED located beside the bottom right corner is ON. By using the Up or Down arrows the value can be changed. The value can be set from 1 to 10.

For changes "on-the-fly", a delay of 1 (one) second must elapse before New TOP/BOTTOM Wraps Settings will be effective

When the required values for top and bottoms wraps have been selected, press the Set # Wraps pushbutton until the 2 LED's are OFF.

Select And Edit The Film Tension Value

To select the film tension variable, press the Set Tension button. The Set Tension LED, located beside the top right corner of the pushbutton, must be ON. Once the pushbutton is pressed and the LED is ON, the Up and Down arrows can be used to change the value. The value may be set from 0 to 100 (0 -100%).

Select And Edit The Carriage Speeds

There are two settings for the Carriage speed: the Carriage Up and the Carriage Down speeds.

By pressing once on the Carriage Speed pushbutton, The LED located beside the top right corner of the pushbutton will turn ON. This means that the Carriage speed up variable is selected. By using the Up or Down arrows the value can be changed. The value will vary from 0 to 100 (0-100%).

To select the Carriage Down variable, the Carriage Speed must be pressed twice or until the LED located beside the bottom right corner is ON. By using the Up or Down arrows the value can be changed. The value will vary from 0 to 100 (0-100%).

Parameter Saving

The new values are saved when **One** of the following events Occurs:

- Press JOG Pushbutton
- Press START Pushbutton
- 30 Sec. after we enter editing mode (no button pressed).

For changes made on-the-fly, new values will be saved at the end of the current machine cycle.

FEATURES

Change-On-The-Fly

N.B. this feature works only when machine is running ... (During Cycle)

Now operator can adjust machine working parameters (carriage speeds, Photocell On/Off, tension, wraps numbers) during the cycle. Function parameters are allowed only when machine is stopped.
Changes are saved only at the end of the current machine cycle.
While editing, screen displays the parameter being edited. Screen is refreshed 3 seconds later to display the present machine cycle state.

Pause / Stop

N.B. this feature works only when machine is running ... (During Cycle)

Now operator can put the machine in a pause state by pressing the E-STOP button ONCE. Machine conserves the present machine cycle parameter values. Screen displays PAU and Flashes while no edition is performed. Machine will remain in pause state until either:

- Press the START button: Machine will continue its interrupted cycle and Screen displays the present Machine cycle State.
- Or, press STOP button. Machine will stop completely and Screen displays End. Machine is ready for a new wrapping cycle.

Auto-Height Photocell

N.B. this feature works only when machine is running ... (During Cycle)

Now it is possible to use either Carriage Up Limit Mechanical Switch or the Photocell to detect that the carriage has reached the top of the load or the upper limit. The Photocell is Enabled or Disabled by the PHOTOCELL Pushbutton. When enabled, the Photocell Led goes ON.

Parameter Editing & Saving

N.B. The following settings are available to the operator. Edition can be performed on-the-fly.

Keyboard Description

The keyboard is used to control and monitor all the parameters of a Stretch Wrap Machine. It will also be used for in house calibration. See Fig 1.

Pushbutton Description

- **START**
  The Start pushbutton is used to start or continue a wrapping cycle.
- **E-STOP**
  The Stop pushbutton is used to pause and stop a wrapping cycle before it is completed.
- **TURNTABLE JOG**
  The Jog pushbutton is used to jog the turntable Manually at a preset speed.
- **CARRIAGE RAISE**
  The Carriage Up pushbutton is used to move the carriage up Manually.
- **CARRIAGE LOWER**
  The Carriage Down pushbutton is used to move the carriage down Manually.
- **WRAPS**
  This pushbutton is used to program the number of top and bottom wraps that the turntable will perform during a cycle.
- **TENSION**
  This pushbutton will set the tension of the wrapping film.
- **CARRIAGE SPEED**
  This pushbutton is used to set the carriage up and down speed.
- **FUNCTION**
  This pushbutton is used for in house programming and adjustments. Access is limited to authorized users by a password code.
- **SPIRAL**
  This pushbutton is used to select between "up/down" and "up only" spiral wrapping patterns
- **PHOTOCELL**
  This pushbutton is used to Enable and Disable the Load Auto-height Photocell.
- **VALUE UP and DOWN Arrows**
  Those pushbuttons are used to change the value of parameters displayed on the SSD.

CARRIAGE CONTROL SECTION:

The carriage control is a DC Motor control designed to operate in direct or reversing mode at pre-set speeds defined by the user through the keyboard section. The unit requires a 90 V armature, permanent magnet dc motor as output device.

Two Relays and a Dynamic braking Resistor (DBR) are used for motor reversing and braking. The brake resistor is bolted to a card-rack side plate, part of the MBIA. The circuit is equipped with anti-plug protective interlocks.

CURRENT LIMIT

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. The current limit is set at the factory to suit 1/2 HP motors.

CONNECTION

The Motor Armature attaches to quick-disconnect terminals 33(+), 34(-), on the MBIA Mother Board. The unit is suitable for permanent magnet shunt style DC motors with 90 V armature rating, sized at up to 3/4HP.

3. MULTISTRETCH CONTROL SECTION

The Multistretch drive is a solid state DC motor control specially designed for use in Constant Tension Mode on stretch-wrap machines. The unit functions as a pay-off drive, unwinding the pre-stretched film as the turntable and pallet rotate, and continuously regulating tension as the diameter of the wrapped load changes. Since the typical pallet load is of square cross section, the effective diameter changes abruptly with rotation; the film tension is monitored by a tension-arm, held in place by spring pressure. As the film tension changes, the arm moves, rotating a cam, and the cam orientation is sensed by a Hall-Effect transducer. The transducer is powered at 24VDC by a regulated supply on the MCIA. The transducer signal varies with the separation between its sensing head and the cam surface – the output range is from about 0.5 to 3.5 volts DC. The amplified transducer signal controls motor torque, increasing or decreasing it so as to restore the tension-arm to its previous position, and to maintain tension at its preset level. The system response is tailored so that these small corrections are smooth, continuous and largely imperceptible. The tension defaults to Minimum when the external Tension Adjustment circuit is opened. The control offers a film-break detection feature to be described later.

ADJUSTMENTS:
The operator, using the digital interface - as described on page 4 - can set the film tension. In addition to the above-mentioned digital tension adjust, there are three trimming potentiometers. These trimmers are accessible through the faceplate of the plug-in control, (See Fig. 3), function as follows:

- ZERO (RV1)

This control injects an offset voltage, which adds or subtracts from the Tension Voltage Reference; this will allow the extremes of adjustment from the digital interface to be set to levels consistent with proper operation.
Typically, the “Zero” will be used to centre the operating range in the linear portion of its characteristics. 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 1.15 Volts DC across Zener Z1, achieved by adjusting RV3. The machine should be stopped and the film removed for this adjustment.

- SPAN (RV2)

This controls the system loop gain, and may be adjusted if the motor continues to turn when the dancer arm is unloaded. The potentiometer should be adjusted to ensure that the motor is de-energised in this condition, with the machine stopped, and so that a light pull on the free end of the film causes it to feed freely.

- TRIP

An on-board comparator detects “film break” or “no-film” by monitoring armature voltage. Potentiometer RV3 adjusts the relay trip level. The comparator output is fed back to the Microprocessor Board, and a Film Break Signal will cause the Machine to Pause if an Automatic Cycle is in progress.

CURRENT LIMIT
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. It is set at the factory to suit 1/2 HP motors.

CONNECTION

The Motor Armature attaches to terminals (+) (-) accessible through the faceplate of the plug-in module. The unit is suitable for permanent magnet shunt style DC motors with 90 V armature rating, sized at up to 3/4HP.

TURNTABLE CONTROL SECTION:

The turntable control is a DC Motor control designed for use as a turntable drive of wrapping machines, where long and repeatable acceleration and deceleration times, and remotely selectable pre-set speeds are required. The unit requires a 90 V armature, permanent magnet dc motor as output device.

CURRENT LIMIT
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. The current limit is set at the factory to suit 1/2 HP motors.
The motor Armature attaches to Quick Disconnect Terminals (+), (-)accessible through the faceplate of the plug-in module. The unit is suitable for permanent magnet shunt style DC motors with 90 V armature rating, sized at up to 3/4HP.

MACHINE WRAPPING TEST

Notice: It is advisable to test-run the equipment with several pallet loads before attempting to wrap using film. Please position the operator beside the EMERGENCY STOP push button.

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

- load height stop photoswitch (on the carriage)
- top limit switch position
- bottom limit switch position
- roping bar height adjustment

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).

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 (multistretch 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.

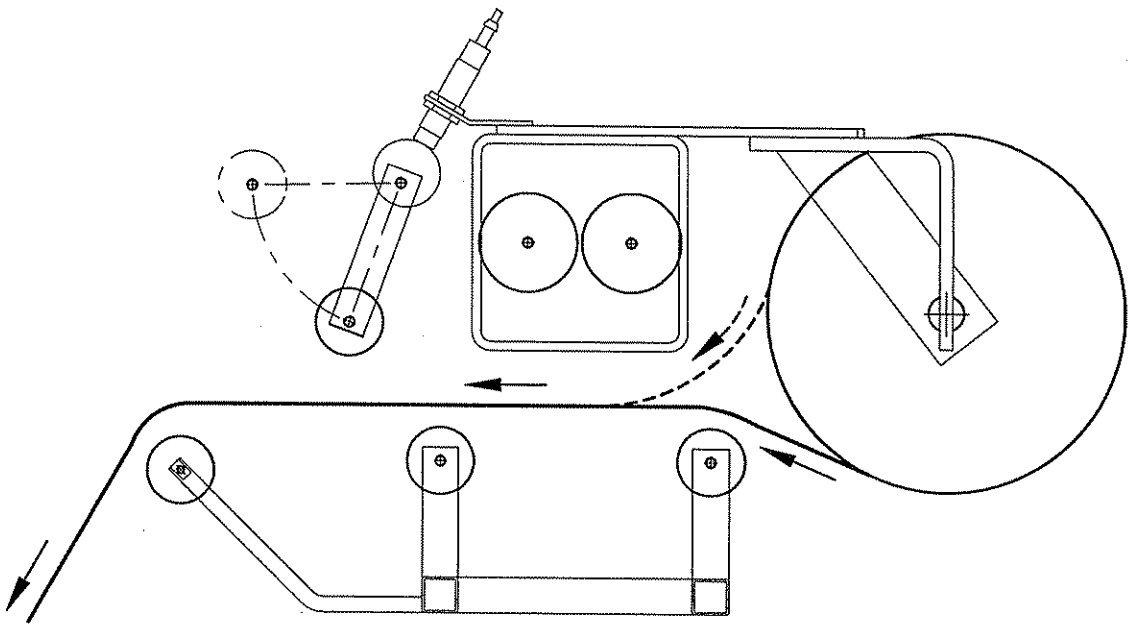


Fig. 1 OPEN CRADLE

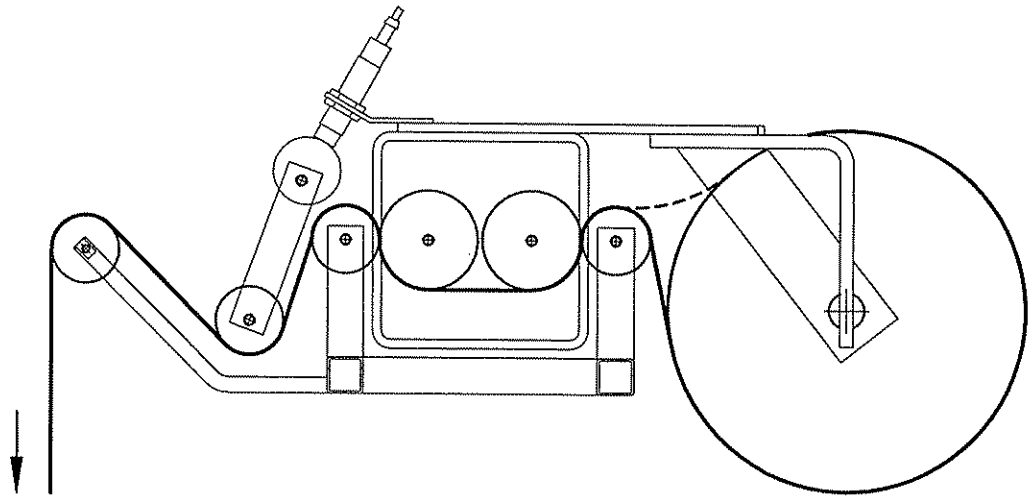


Fig. 2 CLOSED CRADLE

FILM QUICK THREADING

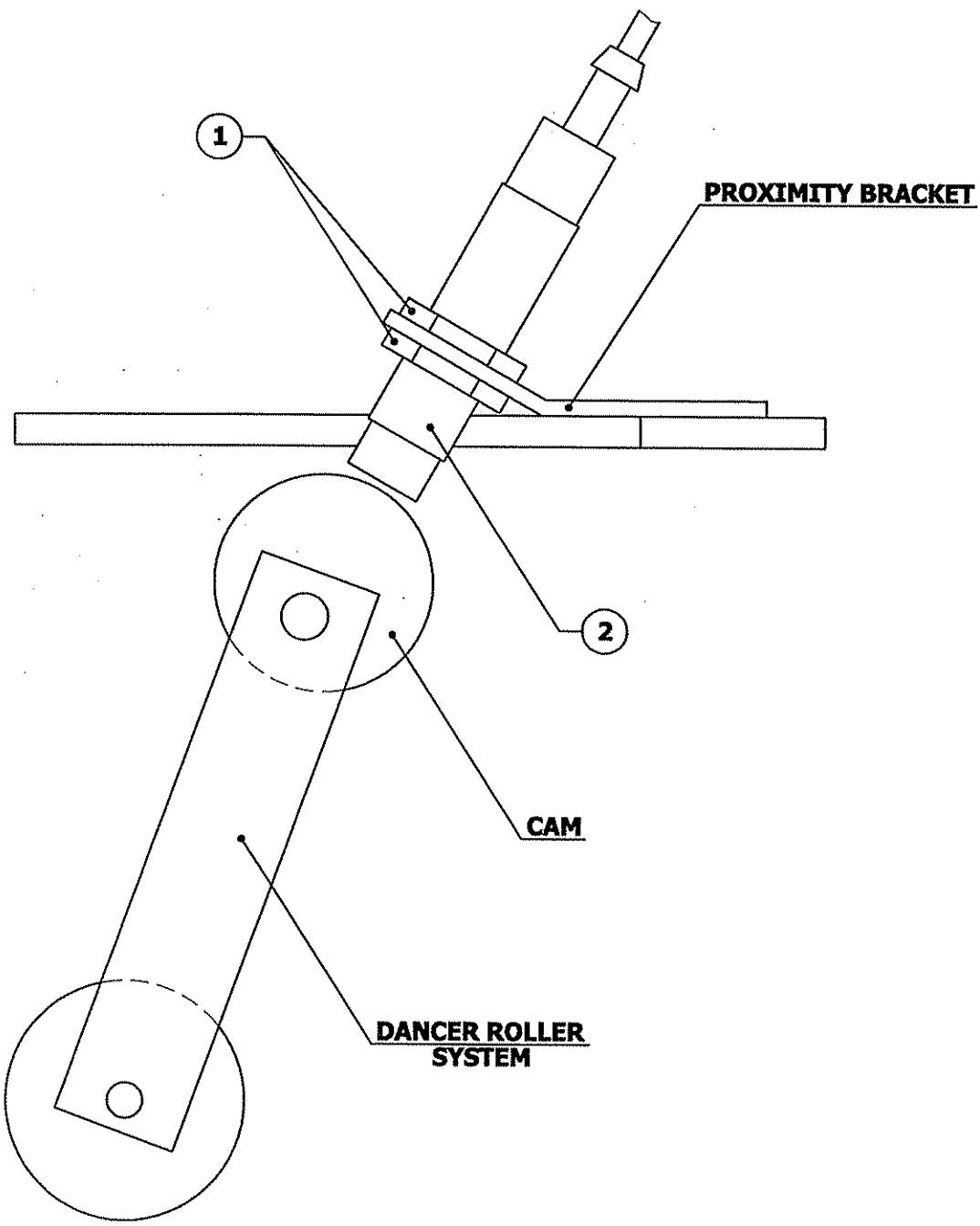
UPDATED FEB-15-99 DWG #418180

PROXIMITY SENSOR ADJUSTMENT

Occasionally the Feed Back Proximity Sensor may need some adjustment. The position of the feed back proximity sensor against the cam is shown on drawing # 419139.

Adjustment instructions:

- remove the carriage cover
- unbolt the two nuts holding the proximity switch - item # 1
- turn the Proximity sensor - (item # 2) to create the gap between the cam and the front side of proximity sensor about 1/8 "
- tighten on the nuts securing the Proximity Sensor
- turn the trim pot SPAN (Board 336-8 or 336-9) adjust the moment when motor starts to turn when dancer roller moved from its home position up to 1 1/2".



PROXIMITY SENSOR FEED BACK ADJUSTMENT

UPDATED FEB-15-99 DWG #419139

MACHINE MAINTENANCE

All general information about machine maintenance is based on normal machine working conditions: indoors, 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 Suerr 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.

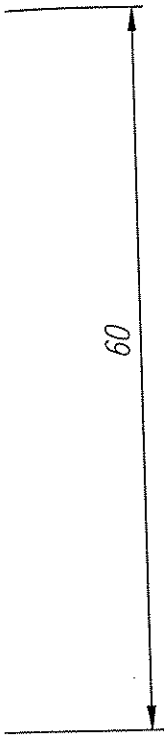
PNEUMATIC SYSTEM MAINTENANCE (when applicable)

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 and lubricate using SAE #10 oil.
The air lubricator should be filled to approximately 3/4" of its full capacity.

SEMI-AUTOMATIC STANDARD ASSEMBLY PART LIST

NOTE:

- Quantities listed in order of part number.
- The names given to the parts are generic.



THIS DRAWING REPLACES DRAWING # 426328 B

No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
4	CONTROL PANEL –	–	–	1	–
3	INSTA-THREAD LT CARRIAGE –	C	425219	1	96.2
2	HINGE TOWER 6 x 2 ASSEMBLY –	C	426297	1	183.8
1	L77-13C BASE ASSEMBLY –	C	426921	1	990.3

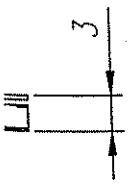
REMARKS: –

REMARKS: –

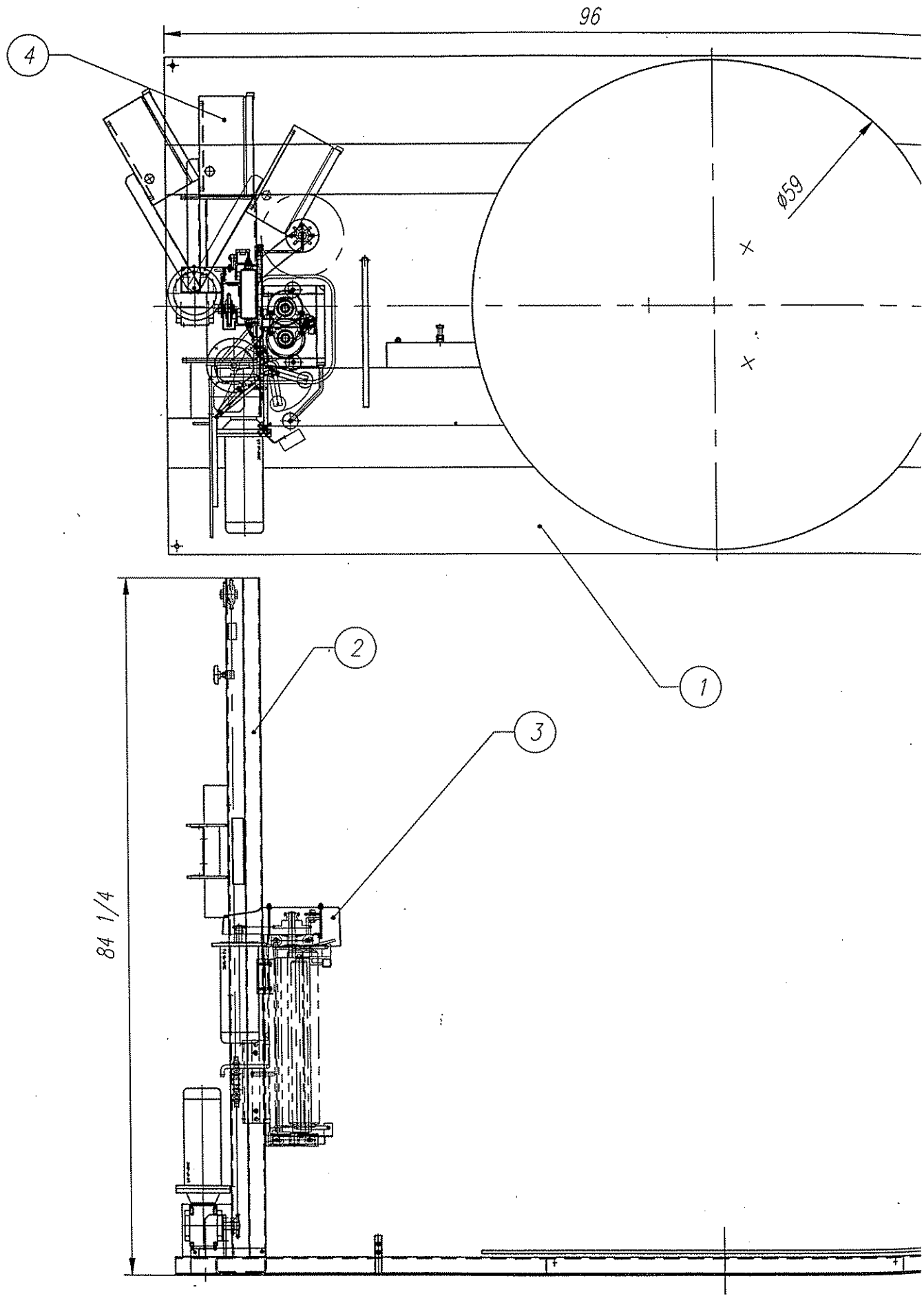
L77/13C WRAPPER LAYOUT

orion
PACKAGING INC.
2270 INDUSTRIEL, LAVAL
QUEBEC, CANADA, H7S 1P9
TEL.: (450) 667-9769

	DATE: FEB. 16/2000	SCALE: 1 : 16
	DRAWN BY: GREGORY STACHURA	MACHINE TYPE: L77/13C
	CHECKED BY:	DRAWING SIZE: B
ASSEMBLY DWG.: –	JOB No.: STD/13C	DRAWING No.: 426735



ORG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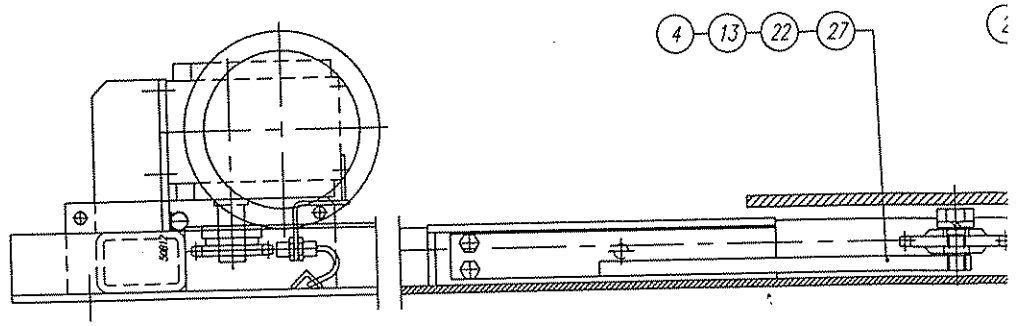

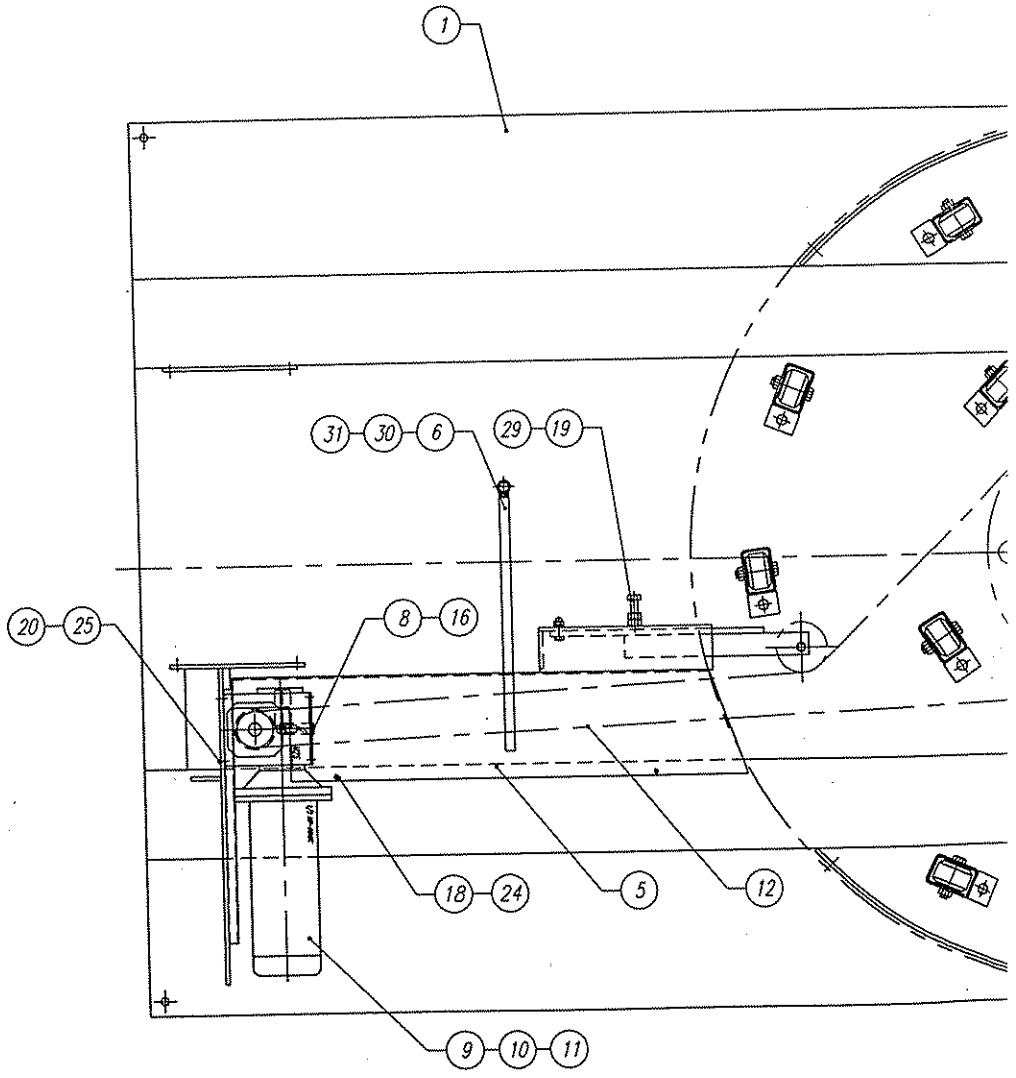

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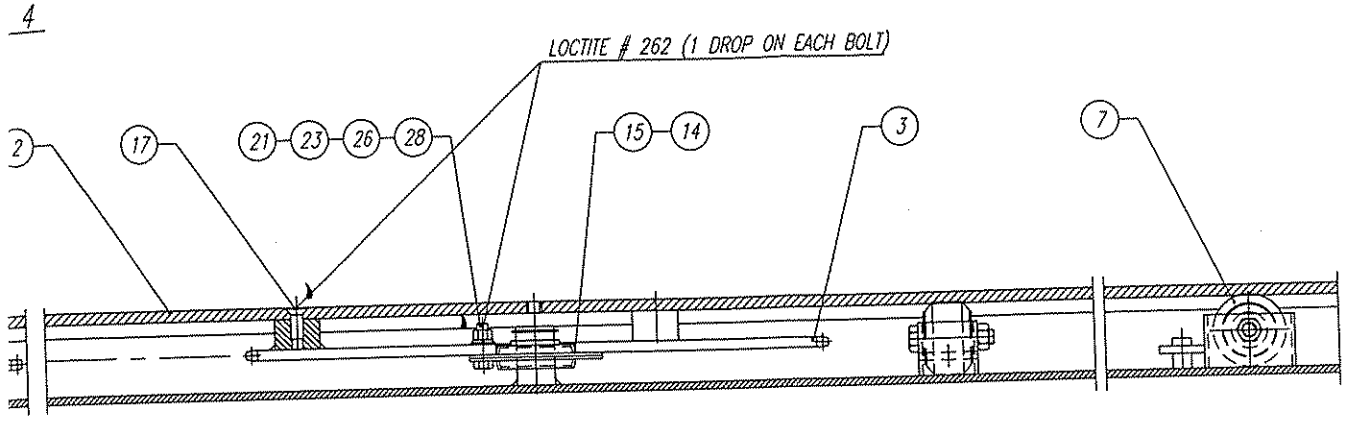
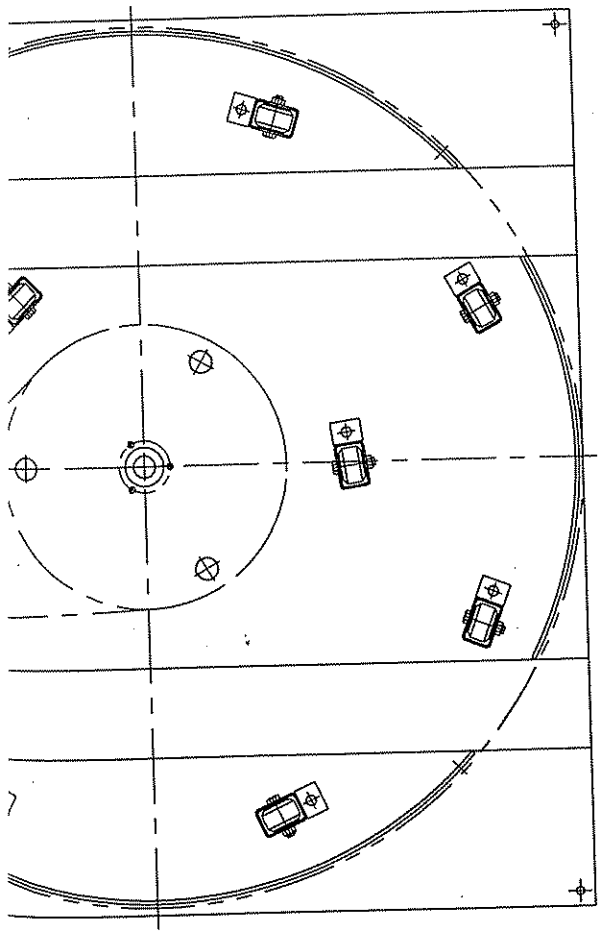




No.	DESCRIPTION	DWG SIZE	PART No.	Q'ty	WEIGHT
31	HEX. NUT		013407	2	
30	HEX. HEAD SCREW		014157	2	
29	HEX NUT		011266	1	
28	HEX NUT		011128	3	
27	SPRING WASHER		012721	1	
26	SPRING WASHER		011390	3	
25	SPRING WASHER		012724	4	
24	SPRING WASHER		011393	2	
23	FLAT WASHER		010948	3	
22	HEX HEAD SCREW		010329	1	
21	HEX HEAD SCREW		012406	3	
20	HEX HEAD SCREW		010291	4	
19	HEX. HEAD SCREW FULLY THREADED		013989	1	
18	PAN PHILL		012049	2	
17	FLAT SOCKET SCREW		013842	3	
16	PROXIMITY SWITCH		013848	1	
15	STAMP HOUSING FLANGE BEARING		013654	1	
14	EXTERNAL RETAINING RING		013655	1	
13	IDLER SPROCKET		010008	1	
12	CHAIN		010009	1	
11	SPROCKET		010074	1	
10	REDUCER		015191	1	
9	EL. MOTOR		015240	1	
8	PROXIMITY SWITCH BRACKET	A	423499	1	
7	"DURA-GLIDE" CASTER 2.33" DIA. – ASSEMBLY	A	416055	11	
6	ROPING BAR	A	413868	1	
5	CHAIN GUARD	A	421338	1	
4	CHAIN TIGHTENER ARM	A	411592	1	
3	SPROCKET	A	406338	1	
2	59" DIA. TURNTABLE DISK (REVOLOGIC)	B	414904	1	
1	L66/14 H BASE- WELDING	C	422398	1	

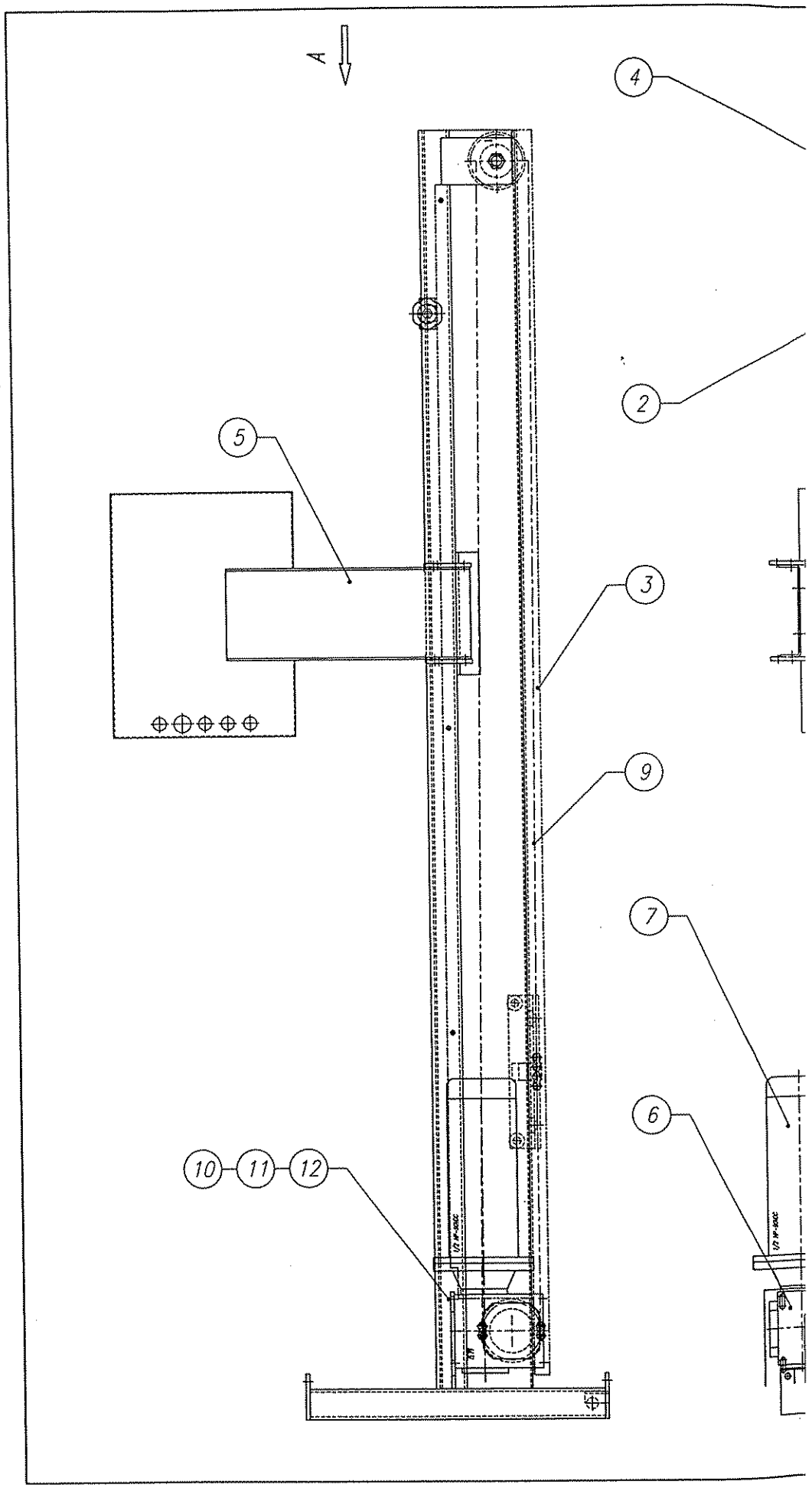
REMARKS: 12 RPM

REMARKS: –

L77/13C H BASE ASSEMBLY

orion
PACKAGING INC.
2270 INDUSTRIEL, LAVAL
QUEBEC, CANADA, H7S 1P9
TEL.: (514) 667-9769

DATE: FEB. 16/2000		SCALE: 1 : 8
DRAWN BY: G. STACHURA		MACHINE TYPE: L77/13C
CHECKED BY:		DRAWING SIZE: C
ASSEMBLY DWG: 426735	JOB No.: STD	DRAWING No.: 426921


A
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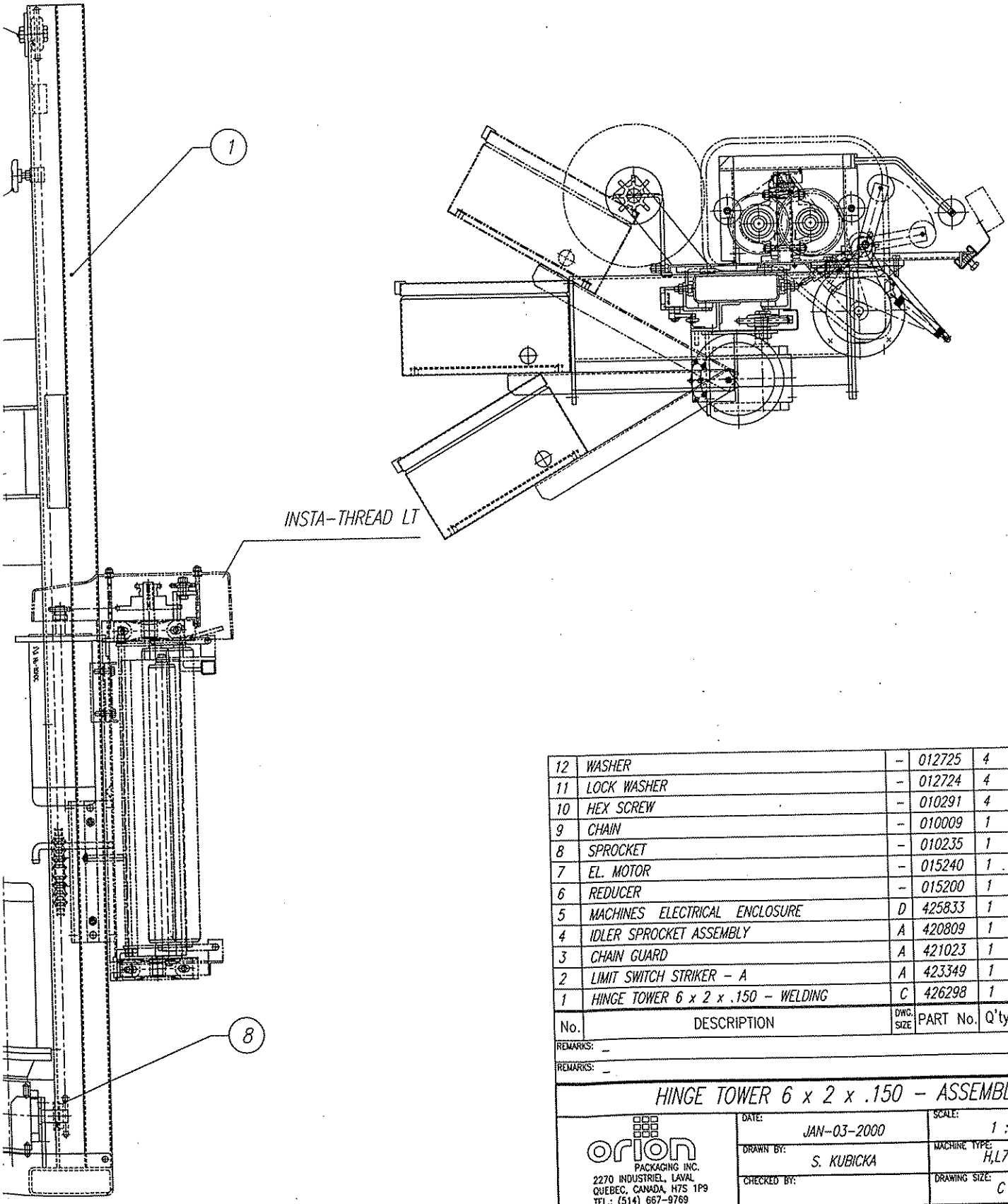
VIEW – A



No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
12	WASHER	–	012725	4	
11	LOCK WASHER	–	012724	4	
10	HEX SCREW	–	010291	4	
9	CHAIN	–	010009	1	
8	SPROCKET	–	010235	1	
7	EL. MOTOR	–	015240	1	
6	REDUCER	–	015200	1	
5	MACHINES ELECTRICAL ENCLOSURE	D	425833	1	
4	IDLER SPROCKET ASSEMBLY	A	420809	1	
3	CHAIN GUARD	A	421023	1	
2	LIMIT SWITCH STRIKER – A	A	423349	1	
1	HINGE TOWER 6 x 2 x .150 – WELDING	C	426298	1	

REMARKS: –

REMARKS: –

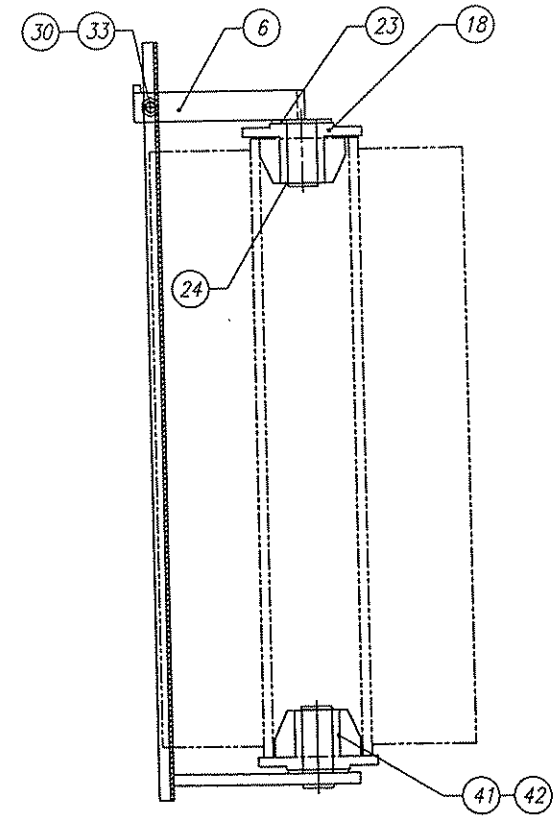
HINGE TOWER 6 x 2 x .150 – ASSEMBLY

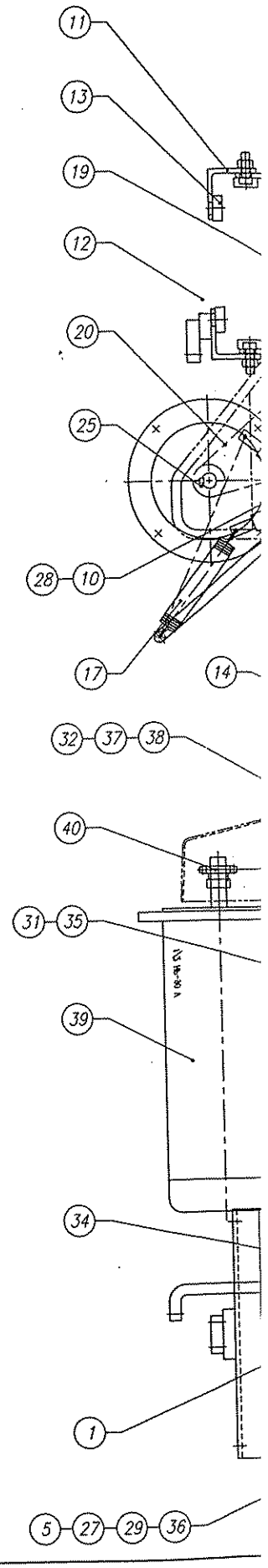
orion
PACKAGING INC.
2270 INDUSTRIEL, LAVAL
QUEBEC, CANADA, H7S 1P9
TEL.: (514) 667-9769

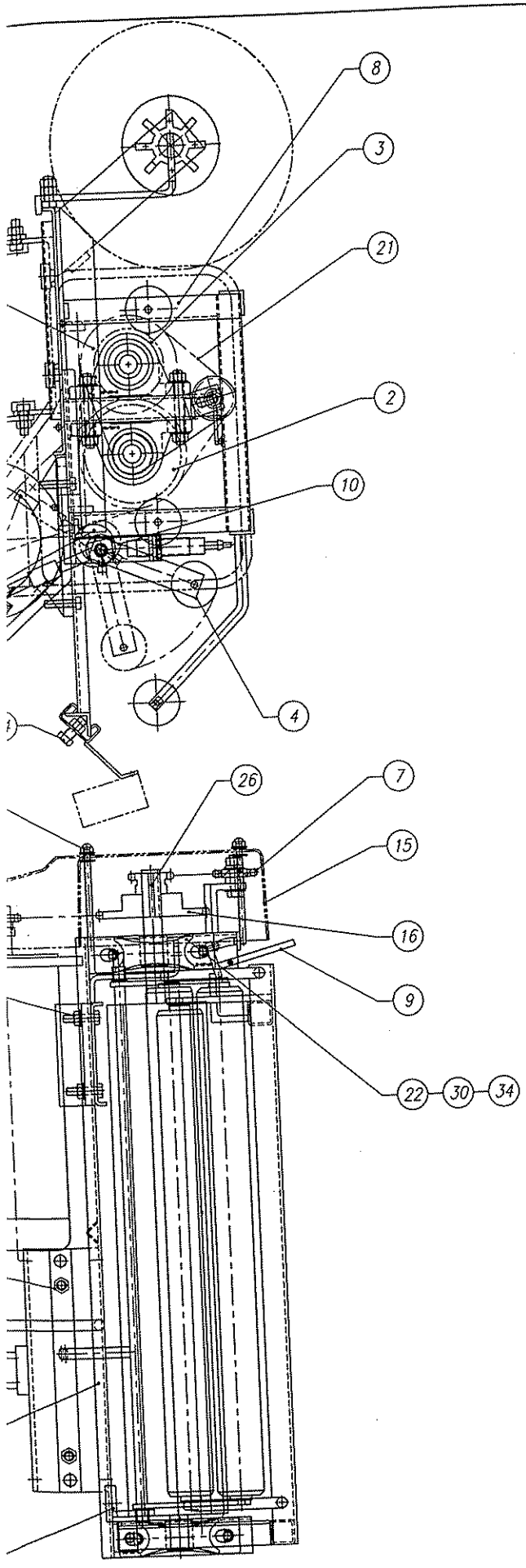
DATE: JAN-03-2000		SCALE: 1 : 6
DRAWN BY: S. KUBICKA		MACHINE TYPE: H,L77/13.1B
CHECKED BY:		DRAWING SIZE: C
ASSEMBLY DWG.: 426296 B	JOB No.: STD	DRAWING No.: 426297

PRESTRETCH CHANGE AVAILABILITY

No.	DESCRIPTION	PART No.	WEIGHT	PRESTRETCH %%	
19	DRIVE SPROCKET	011460		290 %	
		011459		275 %	
		011458		260 %	
		011457		245 %	
		011456		230 %	
		011455		215 %	
		011454		200 %	STD
		011453		185 %	
		010968		170 %	
		011452		155 %	
		011451		140 %	
		013134		125 %	
		012403		110 %	
		012402		95 %	
		010748		80 %	
		013157		65 %	
		010975		50 %	







No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
42	WASHER	A	425793	1	
41	BOTTOM SPOOL	A	425792	1	
40	SPROCKET	–	013928	1	
39	EL. MOTOR	–	015240	1	
38	RUBBER GROMMET 1/4 I.D.	–	–	3	
37	DOMED NUT	–	014195	3	
36	HEX NUT	–	012689	5	
35	HEX NUT	–	013407	4	
34	HEX NUT	–	012582	12	
33	HEX NUT	–	011128	2	
32	FLAT WASHER	–	012221	3	
31	FLAT WASHER	–	012725	4	
30	FLAT WASHER	–	014481	9	
29	LOCK WASHER	–	011393	2	
28	SOCKET HEAD CAP SCREW	–	010259	3	
27	HEX HEAD SCREW	–	011382	2	
26	SQ. KEY	–	010295	1	
25	SQ. KEY		010295	2	
24	SELF SEATING EXT. RETAINING RING	–	013860	2	
23	FLAT WASHER	–	012323	1	
22	PILLOW BLOCK	–	011192	4	
21	CHAIN	–	010583	1	
20	CHAIN	–	010583	1	
19	DRIVE SPROCKET	–	011454	1	
18	SPOOL	A	405855	1	
17	EXTENSION SPRING	B	403118	1	
16	DUAL SPROCKET	A	419649	1	
15	FIBERGLASS COVER	B	422323	1	
14	PHOTOCELL BRACKET	B	422594	1	
13	SLIDE BUTTON	A	420001	12	
12	CARRIAGE CHAIN ATTACHMENT ANGLE (5x2-TOWER)	A	420000	1	
11	CARRIAGE ATTACHMENT ANGLE (2"-TH'K TOWER)	A	419999	1	
10	PROXIMITY SENSOR CAM	A	413744	1	
9	CRADLE LOCK	A	421524	2	
8	CRADLE ROLLER ASSEMBLY	A	423088	1	
7	CHAIN TENSIONER	A	421547	1	
6	FILM TOP MANDREL	A	423087	1	
5	DANCER BOTTOM BRACKET	A	422182	1	
4	DANCER ROLLERS ASSEMBLY – 20 (FRL)	A	414194	1	
3	OMNISTRETCH RUBBER ROLLER 2 3/4 – 20	B	423086	1	
2	OMNISTRETCH RUBBER ROLLER 4 1/8 – 20	B	423085	1	
1	INSTA-THREAD LT BACK (6 x 2 -20 – FRL)	C	425218	1	

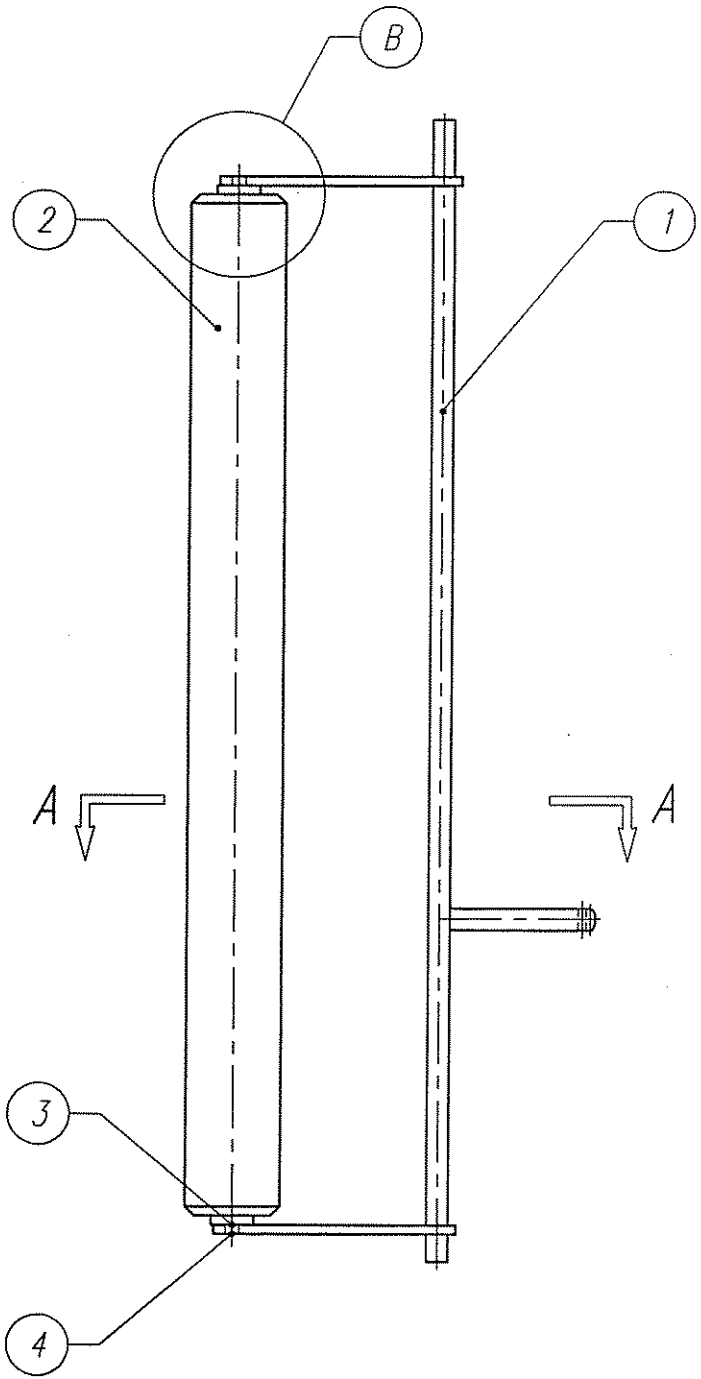
REMARKS: –

REMARKS: –

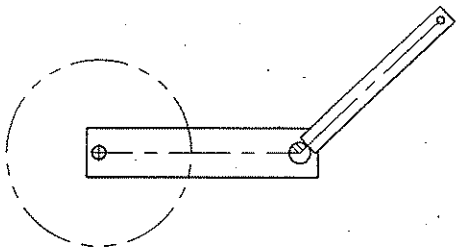
INSTA-THREAD LT – 20" (6x2-FRL)

orion
PACKAGING INC.
2270 INDUSTRIEL, LAVAL
QUEBEC, CANADA, H7S 1P9
TEL.: (514) 667-9769

DATE: NOV-16-1999		SCALE: 1 : 4	
DRAWN BY: M. G. GOLA		MACHINE TYPE: H,L/14	
CHECKED BY:		DRAWING SIZE: C	
ASSEMBLY DWG.: LAYOUT	JOB No.: STD	DRAWING No.: 425219	

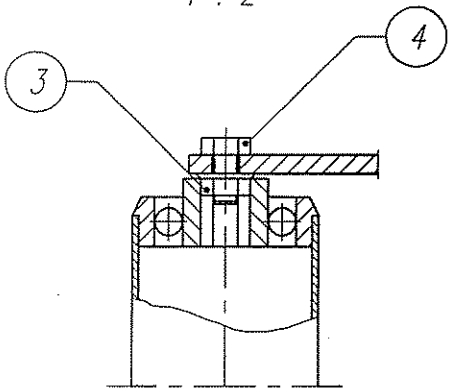


A – A



DETAIL "B"

1 : 2



No.	DESCRIPTION	DWG. SIZE	PART No.	Q'ty	WEIGHT
4	HEX HEAD SCREW		012475	2	
3	FLANGE NUT		014164	2	
2	ALUMINIUM ROLLER – 20	A	402789	1	
1	DANCER ROLLER CRADLE – 20 (FRL)	A	414195	1	

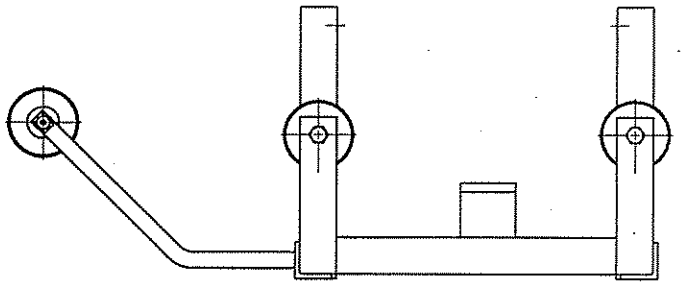
REMARKS:

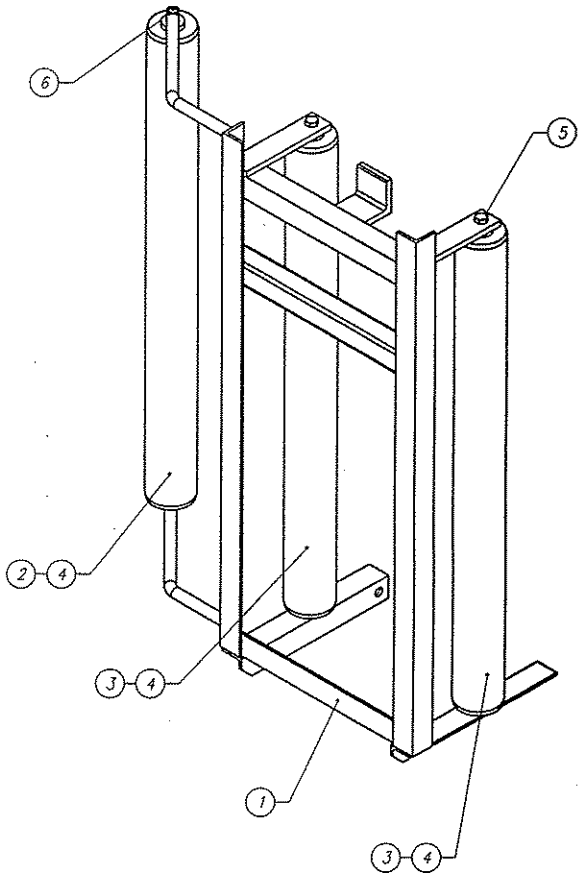
REMARKS:

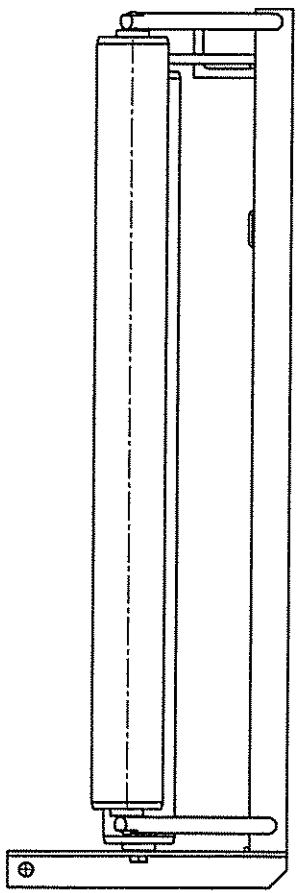
DANCER ROLLER ASSEMBLY – 20 (FRL)

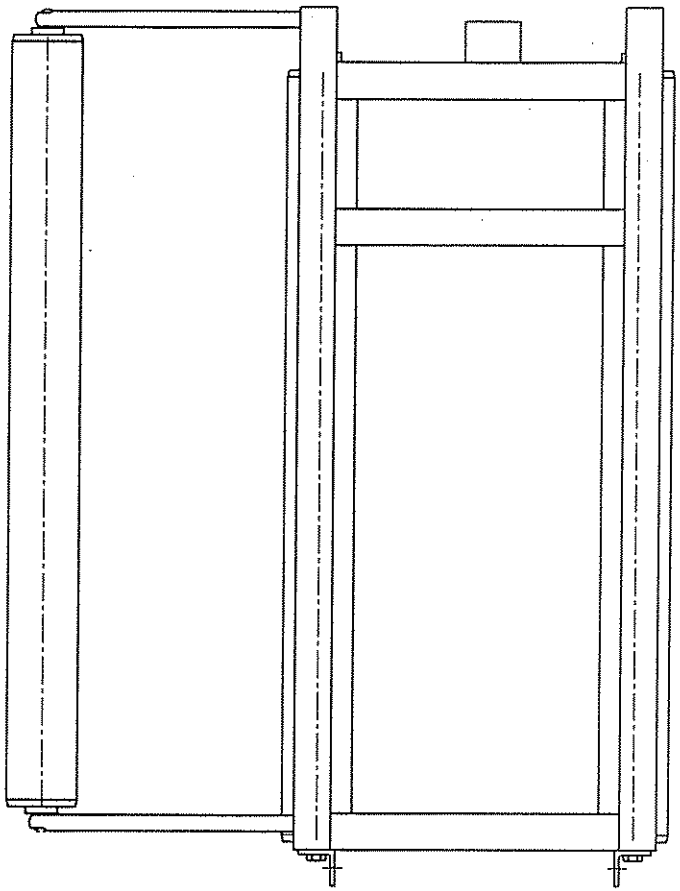
orion
PACKAGING INC.
2270 INDUSTRIEL, LAVAL
QUEBEC, CANADA, H7S 1P9
TEL.: (514) 667-9769

ASSEMBLY DWG.:	DATE: SEP. 29/1998	SCALE: 1 : 4
	DRAWN BY: ROGER F.	MACHINE TYPE: ALL/12
	CHECKED BY:	DRAWING SIZE: A
	JOB No.: STD – 12.1	DRAWING No.: 414194









No.	DESCRIPTION	DWG SIZE	PART No.	Q'ty	WEIGHT
6	HEX SOCK BUTT.HEAD SCREW		015021	2	
5	HEX HEAD SCREW		015009	4	
4	ALU. ROLLER (ECONOMY) 1.9 - 20		015185	3	
3	IDLE ROLLER SHAFT	A	423121	2	
2	IDLE ROLLER SHAFT	A	421232	1	
1	CRADLE ROLLER FRAME (20-FRL)	C	423089	1	

REMARKS:

REMARKS:

CRADLE ROLLER ASSEMBLY (20-FRL)

orion
PACKAGING INC.
2270 INDUSTRIEL, LAVAL
QUEBEC, CANADA, H7S 1P9
TEL.: (514) 667-9769

ASSEMBLY DWG.: 423081	JOB No.: STD	DRAWING No.: 423088
CHECKED BY:	DRAWN BY: ROGER F.	DRAWING SIZE: C
DATE: MAR-10-1999		MACHINE TYPE: H,L/13
		SCALE: 1 : 2.5