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OPERATING INSTRUCTION MANUAL

PART 1

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MAIN PARTS OF THIS INSTRUCTION MANUAL

PART I

TEXT OF INSTRUCTIONS

PART II

SPARE PARTS LISTS (NUMERICALLY ARRANGED ACCORDING TO PART NO.)

PART III

DRAWINGS & BILLS OF MATERIAL

PART IV

APPENDIX (SPECIAL INSTRUCTIONS AND INSTRUCTIONS OF SUB-SUPPLIERS).

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1 GENERAL

The machine slits the incoming web into several longitudinal webs which are then rewound. The operating speed depends on the grade of material, the base weight, and the quality of the unwinding roll.

1.1 TECHNICAL DATA

Material:	Various papers with a base weight of 13 - 51.5 lbs/1300 sq.ft.
Maximum operating speed:	4000 ft./min. 1005 m/min.
Maximum rewind diameter:	54 in. 1370 mm.
Maximum trim width:	90 in. 2300 mm.
Minimum trim width:	63 in. 1600 mm.
Minimum slitting width for individual webs:	2 in. 50 mm.
Number of slitter pairs:	5
Rider roll diameter:	7.68 in. 195 mm
Winder drum diameter:	11.81 in. 300 mm.
Minimum rewind diameter for ejecting:	10.6 in. 270 mm.
Adjustment range of rewinder:	15 3/4 in./side 400 mm./side
Main drive:	2 motor
Drive rating:	75 hp each
Power supply:	575 volts 3 phase 60 hz

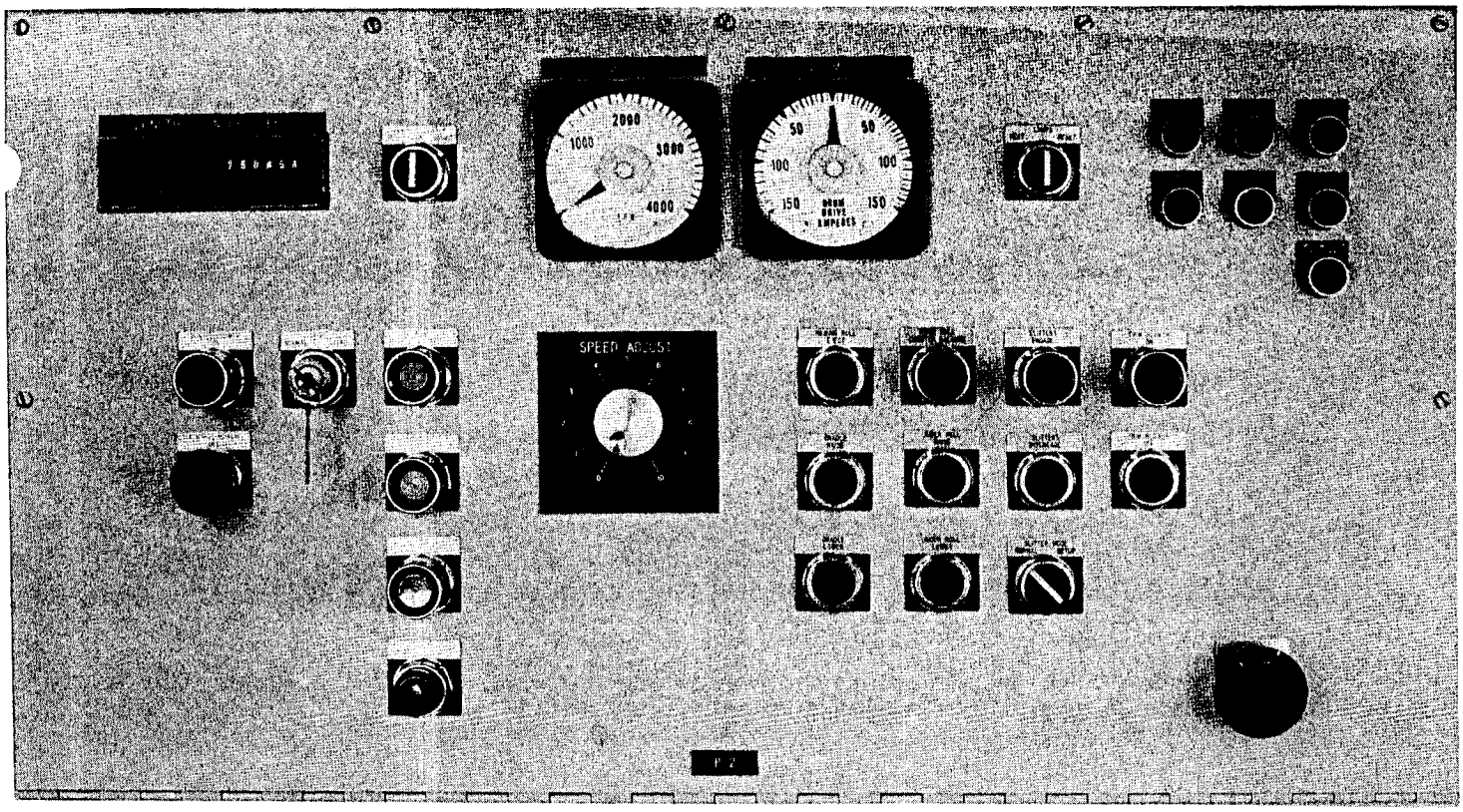
1000
2000
3000
4000
50
100
150
SPEED ADJUST

FIG. 1

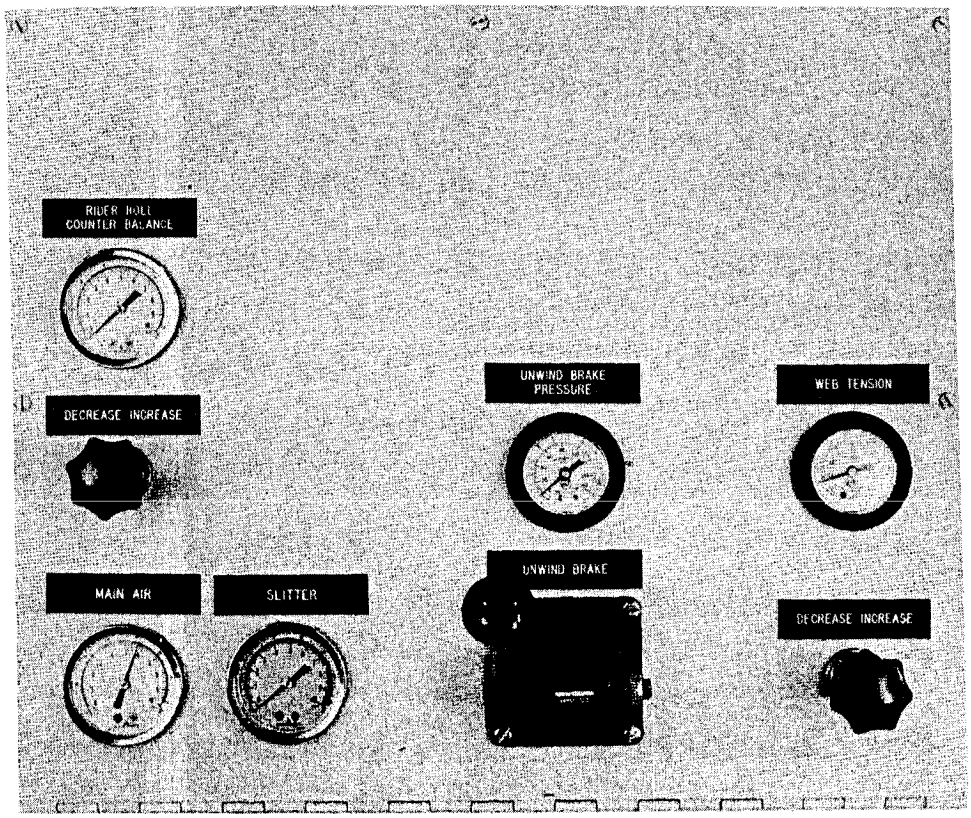
RIDER ROLL
COUNTER BALANCE
DECREASE INCREASE
MAIN AIR
SLITTER
UNWIND BRAKE
PRESSURE
UNWIND BRAKE
WEB TENSION
DECREASE INCREASE

FIG. 2

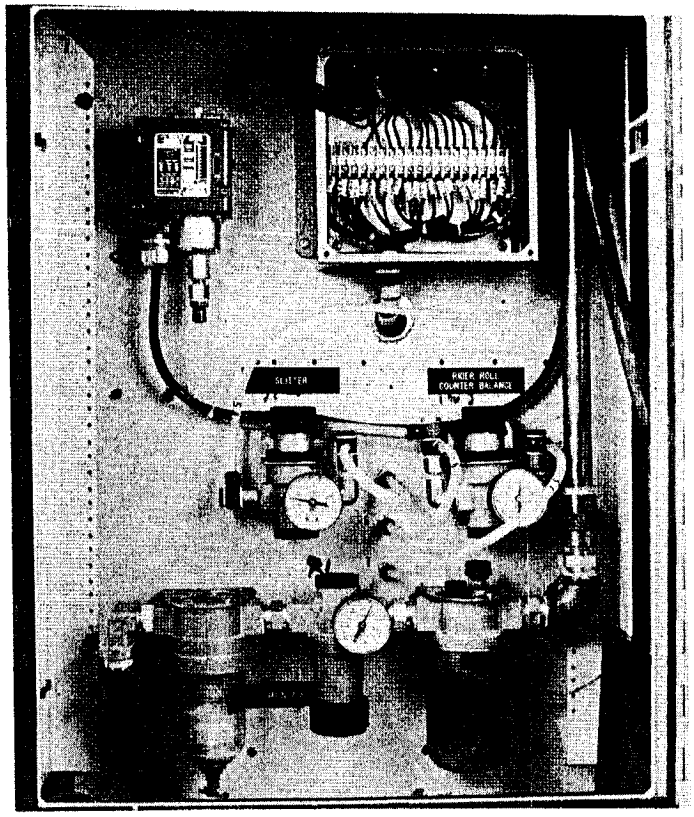
SLITTER
IDLER ROLL
COUNTER BALANCE

FIG. 3

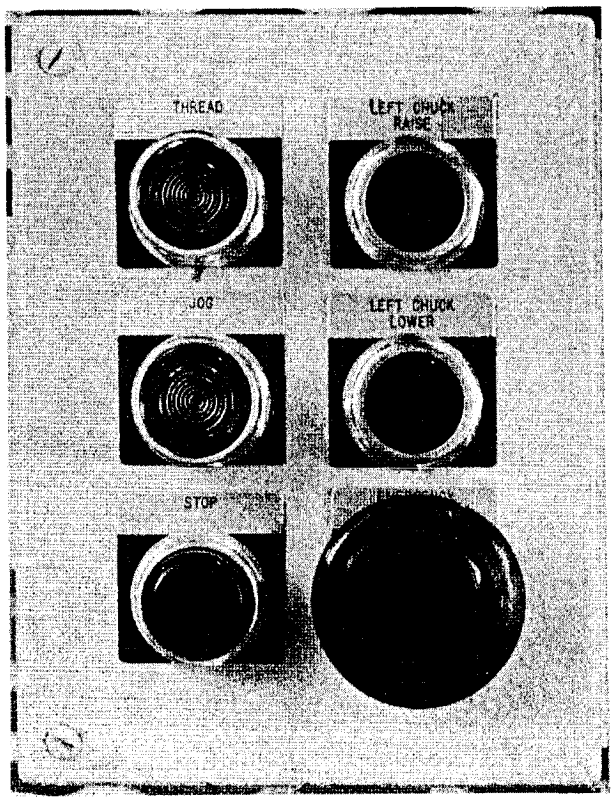
THREAD
LEFT CHUCK
RAISE
JOG
LEFT CHUCK
LOWER
STOP

FIG. 4

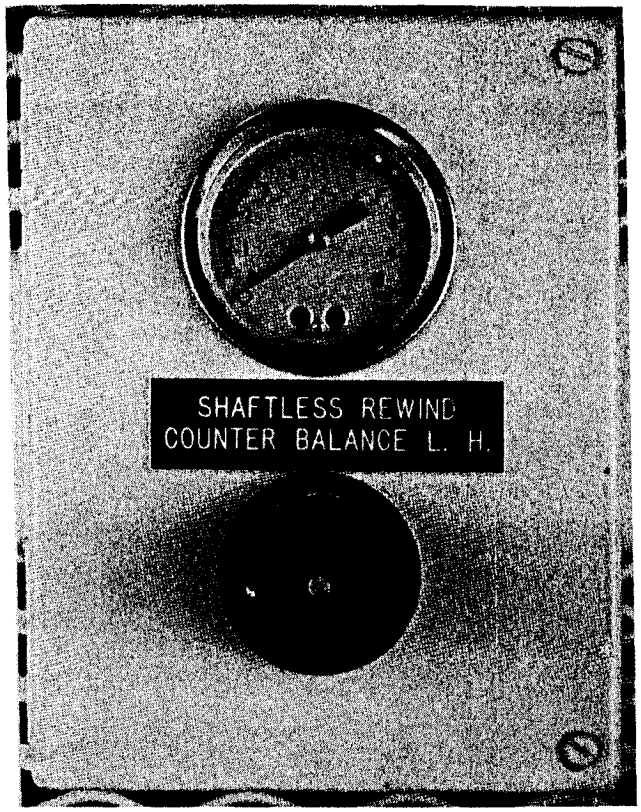

FIG. 5

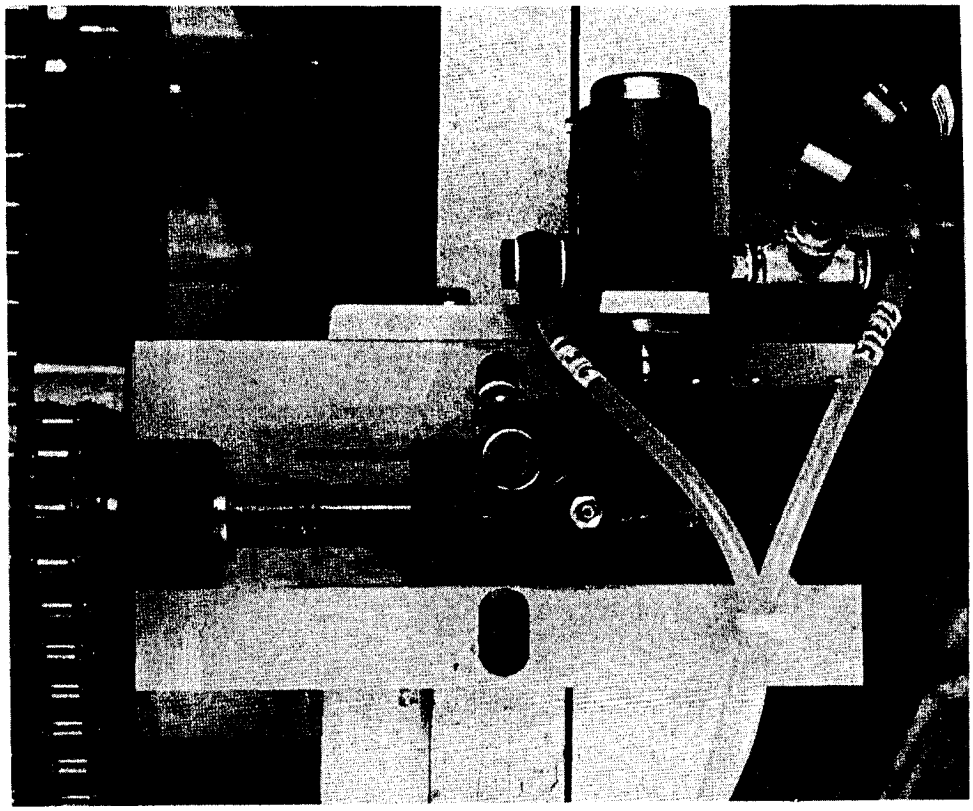

FIG. 6

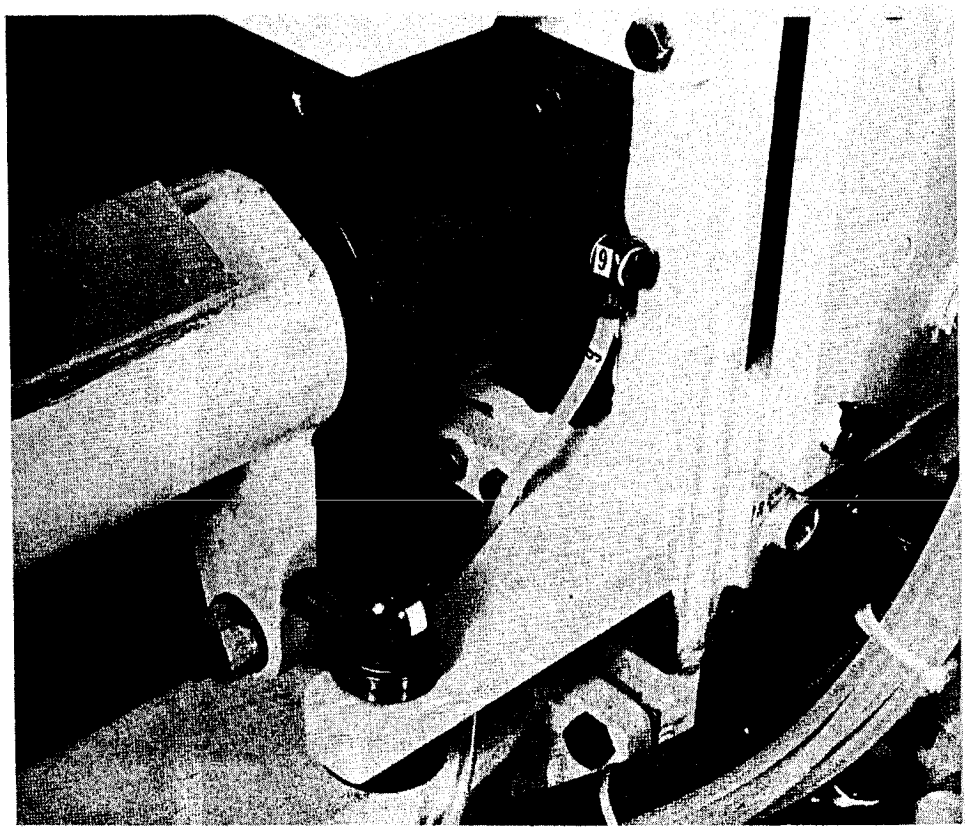

FIG. 7

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1.2 TERMINOLOGY

Front: The front of the winder is where the lowering cradle is located.

Back: The back of the winder is where the lead-in roll is located.

Right and Left: The right side and left sides are determined when facing in the direction of web travel.

Drive side: The side on which the drive is located.

This machine has a right-hand drive.

Counterbalance pressure: The term counterbalance means that, as counterbalance is increased, load is reduced, i. e., rider roll counterbalance pressure is increased, nip pressure is reduced.

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2.0 SEQUENCE OF OPERATION

This section gives a step-by-step sequence for each machine operation. For more detailed information on functions, see individual sections.

2.1.1 POWER UP:

1. Check machine to be sure that it is free of all foreign objects, i. e., cores, brooms, etc.
2. Turn slitter stop knob to set up position.
3. Turn on main air supply.
4. Turn power on at main control cabinet.
5. Turn drive lockout key switch to "normal" position.
6. Pull out on control power "off" knob.
7. Push control power "on" button.
8. Turn lamps selector switch to reset.
9. Machine is now powered up and ready for other operating modes.

2.1.2 REWIND AND SLITTING

1. Set slitter width per section 6.6.2.
2. Thread web per section 6.9.1.
3. Push cradle raise button.
4. Push rider roll lower button.
5. Set speed adjustment potentiometer to desired setting.

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6. SET ROLL SIZE BY LENGTH OR DIAMETER

   a. By length:

      (1) Set adjustable roll diameter switch to maximum up position.

      (2) Turn length counter selector switch to reset.

      (3) Set thumb wheels to desired length.

   b. By diameter:

      (1) Set length counter selector switch to off position.

      (2) Set adjustable roll diameter switch to desired roll diameter setting.

7. Set rider roll counterbalance pressure.

8. Set web tension pressure.

9. Set unwind brake pressure to starting pressure.

10. Push thread, then run

11. Increase unwind brake pressure to full.

12. Machine will automatically stop at desired length or roll diameter.

13. Push cradle lower button.

14. Cut and tag off web.

15. Push cradle raise button.

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2.1.3 EJECT AND LOWERING ROLL SET

1. Retrack shaftless rewind chucks, right hand and left hand.
2. Push chucks raise buttons, right hand and left hand.
3. Push rider roll raise button.
4. Push rewind roll eject button.
5. Push cradle lower button.

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3.0 LUBRICATION

The primary principle of proper maintenance is the correct and regular lubrication of equipment with properly chosen lubricants. For lubricating the machine, observe the following documentation and recommendations.

3.1 LUBRICATION DIAGRAM

Shown on the lubrication diagram are the lubricating points, designated by item number and componant description.
For an explanation of lubrication type and recommended grades, see section 3.2 (LUBRICATION TABLE and RECOMMENDED LUBRICANTS).
The lubricants named therein have proven themselves on our equipment and we therefore recommend that these or equivalents be used.

Item	Componant Description	Lubrication Table Ref.
1 --	Winder Drum Bearings	8
2 --	Cradle Bushings	8
3 --	Ejector Bushings	8
4 --	Rider Roll Bearings	8
5 --	Rider Roll Cam Followers	8
6 --	Rider Roll Rack & Pinion	7
7 --	Shaftless Rewind	8
8 --	Shaftless Rewind Cam Followers	8
9 --	Tension Roll Bearings	8
10 --	Guide Roll Bearings	8

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3.1 (continued)

Item	Componant Description	Lubrication Table Ref.
11 --	Slitter Roll Bearings	8
12 --	Top Knife Beam Bearings	8
13 --	Slitter Drive Belt Idlers	8
14 --	Winder Drum Drive Belt Idlers	8
15 --	Main Drive Coupling	See Part 4 for instructions
16 --	Spreader Rolls	See Part 4 for instructions
17 --	Shaftless Rewind & Rider Roll Guide Shafts	See Section 3.3
18 --	Cradle and Ejector Rod Ends	8
19 --	Condensate Trap and Oil Mister	See Part 4 for instructions Daily checking required
20 --	Rider Roll Counterbalance	5 , 8
21 --	Sprockets	7
22 --	Roller Chain	7

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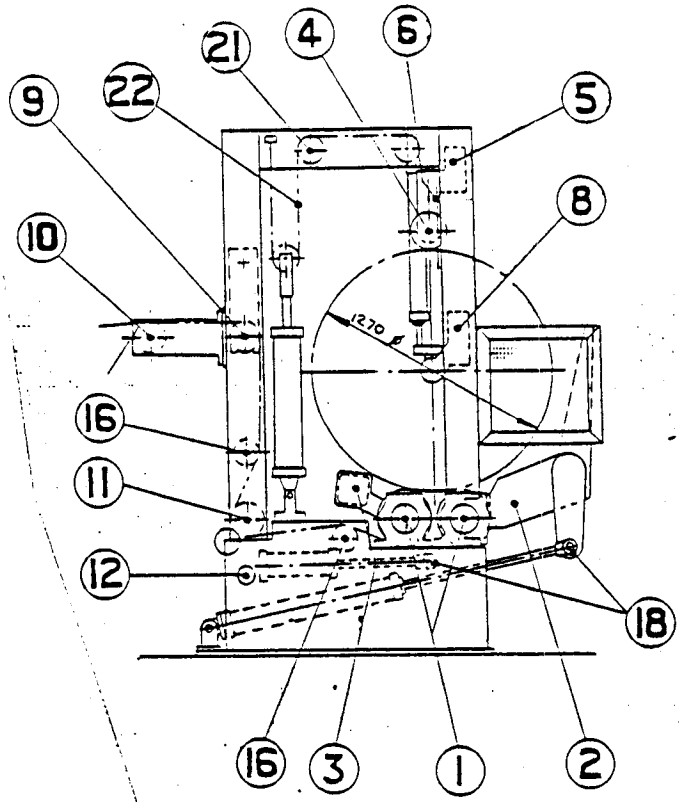
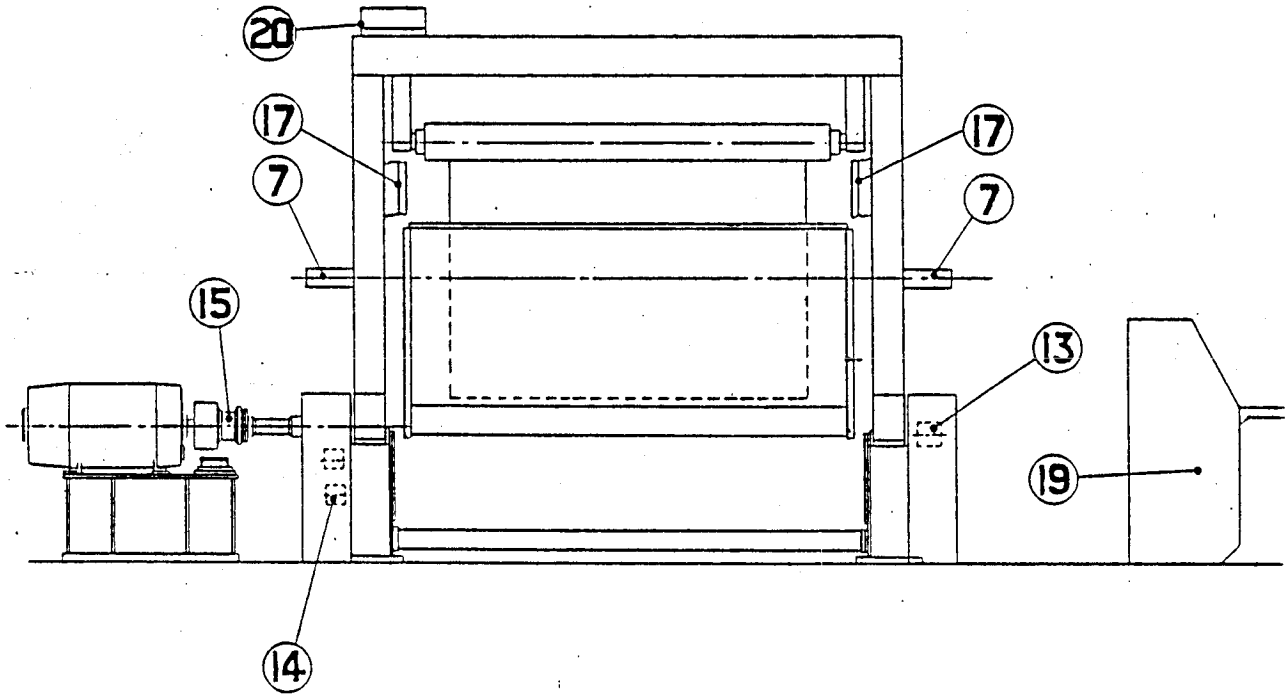
3.1 (continued)





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3.2 LUBRICATION TABLE and RECOMMENDED LUBRICANTS

Consult suppliers for equivalent grades by manufacturers other than Mobil

No.	Lubricants Fields of application Type of application	Special Remarks	Recommended Grade of MOBIL Lubricant
1	HYDRAULIC OIL Oil mist lubricators Hydraulic power packs JAGENBERG hydraulic transmission clutches	Hydraulic oil change after 1500 operating hours at least once a year. Clutches and JAGENBERG gear boxes see special instruction manual. Oil mist lubricators so set regulating screw that one drop is misted for 300 l air	D.T.E. 22 D.T.E. 24 D.T.E. 25
2	GEAR BOX OIL PIV variable transmissions Systems A R and RS with suffix desig. "G"	Systems A R and RS with suffix "G"	D.T.E. Oil Medium
		for types without suffix "G"	Mobilfluid 125
3	GEAR BOX OIL Boehringer-Sturm hydraulic transmission	See special instruction manual.	D.T.E. Oil Heavy
4	GEAR BOX OIL Spur and bevel gearbox (circulation system) Gear chain transmiss. (splash lubrication)	First oil change after 200 operating hours, thereafter every 4000 operating hours or once yearly whichever occurs first.	Mobilgear 627
5	GEAR and LUBRICATION OIL (adherent oil) Joint connections Open slide bearings Guide tracks Adjusting spindles	Joints: regrease weekly Opens slide bearings: daily Guide tracks: anti-friction grease can also be used.	Mobil Vactra Oil No. 4
6	GEAR BOX OIL Worm gears (alternative for oils as per item 5)	First oil change after 50 operating hours, thereafter every 4000 operating hours or once yearly whichever occurs first.	Compound DD Mobilgear 632

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No.	Lubricants Fields of application Type of application	Special Remarks	Recommended Grade of MOBIL Lubricant
7	ADHERING LUBRICANT w/ SOLVENT ADDITIVE Roller chains, bolt chains, exposed gears, gear racks, wire ropes	Clean roller chains and bolt chains in trichlorethylene or cleansing petrol (gas) bath after 4000 operating hours or at least yearly. Apply lubricant thinly. Only blank spots should be relubricated in between.	Mobiltac A
8	LUBRICATING GREASE Anti-friction bearings Slide bearings Cardan shafts (nipples grease filling)	Regrease Cardan and similar jointed shafts every 200 operating hours. Anti-friction bearings etc: regrease monthly to semi-annually, depending on operating conditions. Bearings in drying tunnel: see special instruction manual. Normally, grease filling should be washed out every three years and replaced with new grease. Slide bearings must be regreased daily.	Mobilux 2
9	LUBRICATING GREASE (high temp. resistant) Anti-friction bearings and motors in drying tunnel Threading chains		Mobiltemp SHC 100 Mobilgrease 23
10	LUBRICATING OILS /HIGH BEARING TEMPERATURES Drying cylinder brgs. (central lubrication)	Change oil after every 1000 operating hours.	Mobil Glygoyle 30 ED 62/36
11	GEAR BOX OIL with HIGH CORROSION PROTECTION FACTOR RES Stations (labeling machines	Check oil every 300 hours of operation; if necessary, drain condensate. Change oil after every 2000 to 5000 operating hours (as per recommendations of supplier), but at least once a year.	Grade on request

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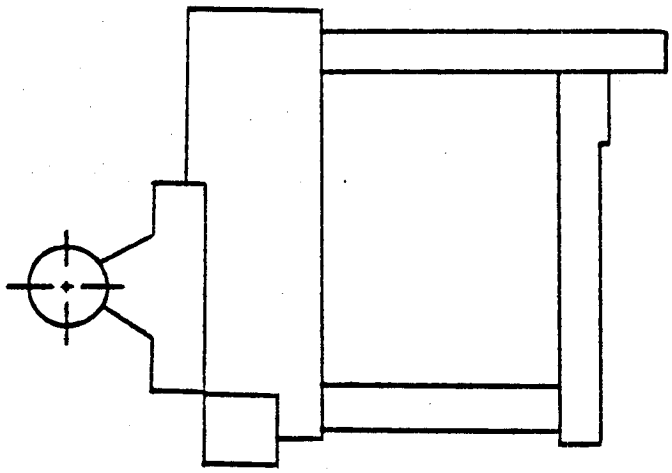
3.3 SHAFTLESS REWIND and RIDER ROLL GUIDE SHAFTS

It is recommended that a visual inspection, cleaning and light oiling be done on the bearing guide shafts for the shaftless rewind and rider roll on a daily basis. These shafts should be free of dirt or any other particles that could cause sticking.



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3.4 LUBRICATION INSTRUCTIONS - FRONT WINDER DRUM HARMONIC DRIVE

It is recommended that the harmonic drive housing fluid be replaced after the first 100 operating hours and thereafter every 500 operating hours or 3 months, whichever occurs first.

Fluid should be a Type "F" automatic transmission fluid.

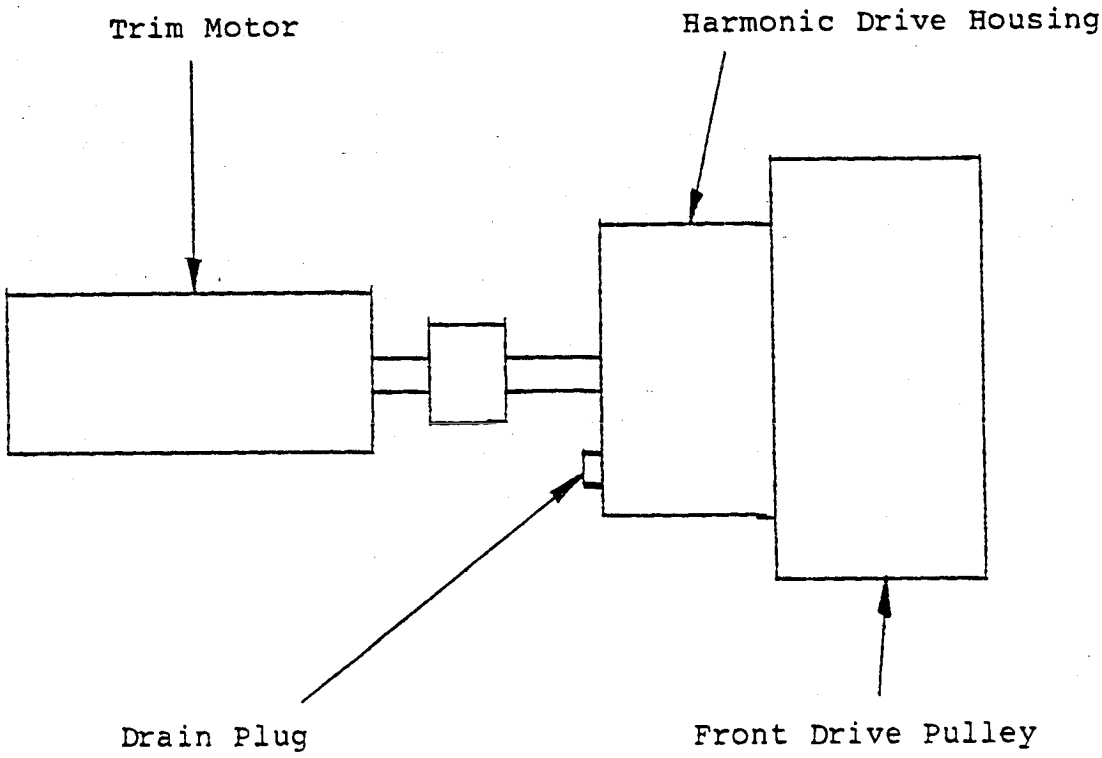
Procedure:

1 - With drain plug at 6 o'clock position, remove plug and drain out old fluid.

2 - Rotate to 12 o'clock position and fill unit with fluid. Do not install plug at this time.

3 - Rotate unit to the 4 o'clock position to drain off excess fluid. Proper fluid amount will remain in unit when the flowing out has stopped.

4 - Reinstall drain plug.



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5. DESCRIPTION AND FUNCTION OF CONTROLS

SEE PNEUMATIC SCHEMATIC 84.1503.25008
DEVICE NUMBERS IE:(V102)

5.1.1 OPERATOR'S PNEUMATIC CONTROL PANEL (See Fig. 2)

Description: Located on the front of the pneumatic console.

Function: Contain all pneumatic control for building

5.1.2 RIDER ROLL COUNTERBALANCE INCREASE/DECREASE (V102)

Description: This regulator is a summing regulator, adding the air pressure from two (2) sources and giving an output equal to the total of the two (2) inputs.

Function: To set the desired additional counter-balancing.

5.1.3 RIDER ROLL PRESSURE GAGE (G102) (See Fig. 2)

Description: Dual range pressure gage (0-120 PSI) (0-8 bars).

Function: When starting to wind, rider roll pressure gage (G102) shows the manually set counterbalance pressure.

When the rewind roll diameter is increasing, the automatic control counterbalancing regulator R201 (see section 6) begins to add counterbalancing pressure, so that the total counterloading pressure is then indicated. The change in counterbalance during roll build-up can be monitored. When the rider roll is in the full "up" position, gage G102 will indicate the air pressure that is holding it up. That pressure is the same as main air.

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5.1.4 MAIN AIR PRESSURE GAGE (G104) (See Fig. 2)

Description: Dual range pressure gage (0-140 PSI) (0-10) bars.

Function: To display axial loading on slitter blades as set by regulator R3 (See Feg. 3) factory setting 40 PSI.

5.1.5 SLITTER AXIAL LOADING GAGE (G103) (See Fig. 2)

Description: Dual range pressure gage (0-140 PSI) (0-10 bars)

Function: To display axial loading on slitter blades as set by regulator R3 (See Fig. 3) factory setting 40 PSI.

5.1.6 UNWIND BRAKE HAND LEVER VALVE (V101) (See Fig. 2)

Description: This valve is a lever operated, 3-way pressure regulating valve. Air pressure is increased, decreased or maintained at the output port according to the lever position. In the two end positions of the hand lever, the brake will be either vented or fully pressurized.

Function: Before starting to wind, when the web is slack, initial pressure should be applied until slack is removed since failure to do this could lead to a jerky startup or even a web break. In the two end positions of the hand lever, the brake will be either vented or fully pressurized (up--vented, down--fully pressurized). An initial braking force can be set with the hand lever in the middle position.

The initial pressure set by the hand lever depends on web width, type and weight of paper.

After the web has been tensioned, when starting winding operation, set the hand lever position to "brake pressurized" (full down). Now, the Constamat will take over and automatically control web tension.

5.1.7 BRAKE PRESSURE GAGE (G101) (See Fig. 2).

Description: Dual range pressure gage (0-140 PSI) (0-10 bars).

Function: To display pressure on unwind brake for torque values, see manual for unwind stand.

5.1.8 WEB TENSION REGULATING VALVE (V100) (See Fig. 2)

Description: This valve is a knob-controlled, 3-way pressure regulating valve. Air pressure is increased or decreased by rotating the knob.

Function: To set the desired web tension for Constamat auto tension control.

5.1.9 TENSION CONTROL PRESSURE GAGE (G100) (See Fig. 2).

Description: Dual range pressure gage (0-140 PSI) (0-10 bars).

Function: To display pressure that is counterbalancing the rider roll. The pressure indicated is the sum total of the initial setting of valve (V100) and the automatic counterbalancing regulator (R201).

5.1.10 SHAFTLESS REWIND COUNTERBALANCE REGULATING VALVE (R200 & R210) (See Fig. 5).

Description: Self-relieving pressure regulator with locking knob control. There are two regulators, one mounted in a control box on each side of the machine.
Function: To counterbalance core chuck carriages so that, as the rewind roll diameter increased, they move upwards in their guides without load to the rewind roll.

5.1.11 SHAFTLESS REWIND PRESSURE GAGE (G200 & G210) (See Fig. 2)

Description: Dual range pressure gage (0-140 PSI) (0-10 bars).

Function: To indicate pressure on shaftless rewind cylinder.

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5.1.12 MAIN AIR SUPPLY (R1) (SEE FIG. 2).

Description: Lubricator control unit consisting of three parts: (1) filter, (2) regulator, (3) oil fogger, located inside console below operator control panel.

Function: To provide clean, regulated, lubricated air. The regulator sets main system operating pressure factory setting (5.6 bars) 80 PSI.

5.1.13 RIDER ROLL COUNTERBALANCE PRESSURE REGULATOR (R2) (See Fig. 3).

Description: Self-relieving pressure regulator with locking knob control. Located inside console below operator control panel.

Function: To set a maximum counterbalance pressure that can be seen by the rider roll, to prevent the rider roll from lifting off the rewinding roll entirely, near the end of the winding operation due to excessive counterloading pressure.

5.2 OPERATOR DESK (P2) FAULT AND STATUS INDICATORS

Consists of seven indicator lights located in the upper right hand corner of the P2 operator's desk.

5.2.1 DRIVE FAULT LIGHT

The red DRIVE FAULT light flashes when an overload or failure has occurred in the Reliance drive. This

condition must be corrected by an electrician and the TEST/RESET selector switched to the RESET position before the drive can be restarted.

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5.2.2 DRIVE SECURED STATUS LIGHT

The green DRIVE SECURED light is lit when the drive has been electrically locked off to enable safe maintanence work to be performed on the machine. All of the following conditions are required to illuminate the light:

1. DRIVE LOCKOUT key-operated selector switch in the LOCKOUT position,
2. Drive main contactors de-energized, and
3. Drive at zero speed,

5.2.3 EJECTOR ENABLED Status Light

The amber EJECTOR ENABLED light flashes when all of the necessary interlocks are made to allow the finished rolls to be ejected by pushing of the REWIND ROLL EJECT button. All of the following conditions are required to flash the light:

1. Drive not running,
2. EMERGENCY STOP light is not illuminated,
3. Roll lowering cradle is in the max up position,
4. Rewind chucks are in the max up position, and
5. Rider roll is in the max up position.

The EJECTOR ENABLED light remains illuminated continuously when the ejector is not in the fully retracted position.

5.2.4 EMERGENCY STOP INTERLOCK FAULT LIGHT

The red EMERGENCY STOP INTERLOCK light flashes during and after the machine has been emergency stopped. Any one of the following conditions will flash the light;

1. One of the EMERGENCY STOP buttons has been pushed (These buttons illuminate and remain repressed until pulled out.),
2. Drum brake fails to release after starting,
3. Rewind chucks reach their max up limit switch (by winding too large a finished roll), or
4. DRIVE SECURED light is illuminated.

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5.2.5 STARTUP INTERLOCK FAULT LIGHT

The red STARTUP INTERLOCK light flashes when any of the various interlocks are missing which allow the machine to be started in thread or jog modes. Any one of the following conditions will flash the light;

1. EJECTOR ENABLED status light is illuminated continuously indicating the the rewind roll ejector is not retacted,
2. AIR PRESSURE FAULT light is illuminated, or
3. Rewind brake failed to release when machine was started.

5.2.6 RUN INTERLOCK FAULT LIGHT

The red RUN INTERLOCK light flashes when any of the various interlocks are missing which allow the machine to go from thread mode into run mode. Any one of the following conditions will flash the light:

1. Slitters not engaged,
2. Rewind chucks not engaged.
3. Roll cradle not up,
4. No web in machine

5.2.7 AIR PRESSURE FAULT LIGHT

The red AIR PRESSURE FAULT light flashes when the plant air pressure supply to the winder drops below the recommended value. This condition causes a normal stop of the machine. It must be corrected and the TEST/RESET selector switched to the RESET position before the drive can be restarted.

5.3 OPERATOR DESK (P2) PUSHBUTTON CONTROLS (See Fig. 1)

5.3.1 CONTROL POWER ON ILLUMINATED PUSHBUTTON

Push the CONTROL POWER ON button, illuminating its amber light, to energize control power and threrby enable all machine and drive functions.

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5.3.2 CONTROL POWER OFF MAINTAINED CONTACT PUSHBUTTON

Push the CONTROL POWER OFF button, extinguishing the control power on light, to de-energize control power. The button remains depressed after being pushed and must be pulled out before turning control power on again.

This button should not be pushed while the machine is operating except to provide a "fail-safe stop" function. In the unlikely event that the NORMAL STOP and EMERGENCY STOP buttons fail to stop the machine because of a catastrophic failure in the drives power module, the CONTROL POWER OFF button may be pushed to provide an assured means of removing power from the drive motors. This would cause the machine to coast to a stop due to friction and the brakes on the drum and unwind.

5.3.3 DRIVE LOCKOUT KEY OPERATED SELECTOR SWITCH

The DRIVE LOCKOUT key operated selector switch provides the ability to electrically lock the drive off to allow safe maintenance work to be performed on the machine. Rotate the switch to the LOCKOUT position, illuminating the DRIVE SECURED status light and remove the key to electrically disable the drive. Should lockout be selected while the machine is running, the drive will emergency stop.

5.3.4 STOP ILLUMINATED PUSHBUTTON

Pushing the STOP button while in thread or run mode de-energizes the normal stop interlock which causes the machine to slow down at a controlled deceleration rate to stop while maintaining web tension control.

The red STOP light will be illuminated continuously during this stopping interval to provide a visual indication that the drive is in the normal stopping mode.

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The STOP light flashes after the machine has stopped if the normal stop interlock is still deenergzed for any of the following reasons;

1. Preset reached on length counter,
2. AIR PRESSURE FAULT light is flashing,
3. Max. rewind roll diameter limit switch actuated,
4. Lowering cradle stop cable has been stepped on, or
5. STOP button is pushed.

5.3.5 JOG ILLUMINATED PUSHBUTTON

Pushing and holding the JOG button, illuminating its amber light, causes the drive to operate in jog mode if the following conditions are met:

1. CONTROL POWER ON button is illuminated,
2. DRIVE SECURED status light is not illuminated,
3. STOP button light is not flashing,
4. EMERGENCY STOP fault light is not flashing,
5. STARTUP INTERLOCK fault light is not flashing,
6. DRIVE FAULT light is not flashing,
7. RUN button light is not illuminated, and
8. START/THREAD button light is not illuminated.

5.3.6 THREAD ILLUMINATED PUSHBUTTON

Pushing the THREAD button, illuminating its amber light, causes the drive to operate in thread mode if the following conditions are met:

1. CONTROL POWER ON button is illuminated,
2. DRIVE SECURED status light is not flashing,
3. STOP button light is not flashing,
4. EMERGENCY STOP fault light is not flashing,
5. STARTUP INTERLOCK fault light is not flashing,
6. DRIVE FAULT light is not flashing,
7. RUN button light is not illuminated, and
8. JOG button light is not illuminated.

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5.3.7 RUN ILLUMINATED PUSHBUTTON

Pushing the RUN button, illuminating its amber light, causes the drive to operate in run mode if the following conditions are met:

1. Drive was operating in thread mode, and
2. RUN INTERLOCK fault light is not illuminated.

When in run mode, the machine will accelerate to the speed determined by the setting of the SPEED ADJUST potentiometer. This speed will be indicated on the SPEED meter in feet per minute.

5.3.8 EMERGENCY STOP ILLUMNINATED MAINTAINED CONTACT PUSHBUTTON

Pushing the EMERGENCY STOP button causes the drive to stop by regenerative braking under current limit control. This pushbutton provides the fastest means of stopping the drive. It should only be pushed in case of an emergency and not as a routine way of stopping the drive during production. The button remains depressed after pushing and illuminates to provide a visual indication why the drive emergency stopped. The button must be pulled out to extinguish the light and enable the emergency stop interlock to be reset. The EMERGENCY STOP INTERLOCK fault light will flash during and after emergency stop to provide a visual indication why the drive has stopped.

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5.3.9 LENGTH COUNTER OFF/ON/RESET SELECTOR SWITCH

The LENGTH COUNTER OFF/ON/RESET selector switch is located to the right of the length counter unit. The length counter totalizes the length of the rewind roll in feet. With the selector switch in the OFF position, the counter will remain at zero while the machine is running.

With the selector switch in the ON position, the counter will totalize the footage when the machine is in the run mode and while stopping from the run mode.

When the machine is at standstill, rotating the selector switch to the RESET position will zero the reading on the counter.

Once the machine is in the "run" mode, the OFF and RESET functions are locked out until the machine is at a standstill again.

5.3.10 LAMPS TEST/OFF/RESET SELECTOR SWITCH

The TEST/OFF/RESET selector switch is located to the left of the fault and status lights. Rotate the selector to the TEST position to illuminate all the fault and status lights as well as the lights on the illuminated pushbuttons. This TEST function assures that none of the lamps has burnt out.

Rotate the selector to the RESET position to extinguish the following flashing lights:

1. DRIVE FAULT light,
2. STARTUP INTERLOCK fault light,
3. EMERGENCY STOP INTERLOCK light,
4. STOP button light, and
5. AIR PRESSURE FAULT light.

Of course, RESET is only possible if all machine conditions are right for the various lights.

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5.3.11 REWIND ROLL EJECTOR PUSHBUTTON

The REWIND ROLL EJECTOR button is enabled only when the EJECTOR ENABLED status light is flashing. Push and hold the EJECTOR button to cause the roll ejector to push the rewind roll onto the lowering cradle.

Release the EJECTOR button to cause the roll ejector to return to its fully retracted position.

5.3.12 CRADLE LOWER PUSHBUTTON

Pushing and holding the CRADLE LOWER button causes the lowering cradle to move to the fully down position if the following conditions are met:

1. CONTROL POWER ON button is illuminated,
2. AIR PRESSURE FAULT light is not flashing,
3. CRADLE RAISE button is not pushed, and
4. Machine is not in run mode or stopping from run mode.

5.3.13 CRADLE RAISE PUSHBUTTON

Pushing and holding the CRADLE RAISE button causes the lowering cradle to move to the fully up position if the following conditions are met:

1. CONTROL POWER ON button is illuminated,
2. AIR PRESSURE FAULT light is not flashing,
3. CRADLE LOWER button is not pushed,
4. Stop cable has not been actuated (If the stop cable has been stepped on, the STOP button light will be flashing.), and
5. EMERGENCY STOP INTERLOCK fault light is not flashing.

5.3.15 RIDER ROLL RAISE PUSHBUTTON

Pushing and releasing the RIDER ROLL RAISE button will cause the rider roll to travel to its fully up position if the following conditions are meet;

1. Machine is not running or stopping from run mode,
2. EMERGENCY STOP INTERLOCK fault light is not flashing, and
3. RIDER ROLL LOWER button is not pushed.

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5.3.16 RIDER ROLL LOWER PUSHBUTTON

Pushing and holding the RIDER ROLL LOWER button will cause the safety latches to release and the rider roll to travel downward until it comes to rest on the rewind roll or core if the following conditions are met:

1. Machine is not running or stopping from run mode,
2. EMERGENCY STOP INTERLOCK fault light is not flashing,
3. Roll ejector is fully retracted (the EJECTOR ENABLED light is illuminated continuously if the ejector is not against its fully retracted limit switch),
4. Stop cable has not been actuated (If the stop cable has been stepped on, the STOP button light will be flashing.), and
5. RIDER ROLL LOWER button is not pushed.

If the LOWER button is released while lowering the rider roll will stop and remain in its current position. From this position, the rider roll can be either lowered further, raised or have counterbalance pressure applied.

5.3.17 SLITTER ENGAGE ILLUMINATED PUSHBUTTON

Pushing the SLITTER ENGAGE button, illuminating its amber light, will cause the male slitters to travel into the female slitters and then apply side thrusting if the following conditions are met:

1. AIR PRESSURE FAULT light is not flashings, and
2. SLITTER DISENGAGE button is not pushed.

5.3.18 SLITTER DISENGAGE PUSHBUTTON

Pushing the SLITTER DISENGAGE button will cause the removal of the side trusting and then the retracting of the male slitters. The slitters will also be disengaged by a emergency stop while in run mode.

5.3.19 TRIM BLOWER ON ILLUMINATED PUSHBUTTON

Pushing the TRIM BLOWER ON button, illuminating its amber light, starts the suction fan for trim removal.

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5.3.20 TRIM BLOWER OFF PUSHBUTTON

Pushing the TRIM BLOWER OFF button shuts off the trim removal fan.

5.4 OPERATOR DESK (P2) POTENTIOMETERS AND INDICATORS

5.4.1 SPEED ADJUST POTENTIOMETER

The SPEED ADJUST potentiometer is located in the middle of the operator's desk. When in the RUN mode, the machine will accelerate and run at the speed determined by the setting of this potentiometer. The range of adjustment is from 100 FPM to 3300 FPM.

The pot can be adjusted while the machine is running to change the speed to any desired setting. The relationship of the potentiometer position to machine speed is linear. Therefore, the machine will run at approximately one-half speed with the pot in its mid position.

5.4.2 SPEED INDICATOR

The analog SPEED indicator is located at the top of the operator's desk and indicates the actual machine speed on its 0 to 4000 feet per minute scale.

The face of the indicator is fitted with a screwdriver adjustment for mechanically zeroing the pointer when the machine is stopped.

5.4.3 DRIVE AMPERES INDICATOR

The analog DRIVE AMPERES indicator is located at the top of the operator's desk and indicates the actual drive motor current on its 150-0-150 d-c amperes scale. The pointer rotates clockwise from zero in the motoring mode and counterclockwise in the regenerative mode.
The full load current rating of the motor is 84 amperes. With the machine running at a constant speed, the indicated current is directly proportional to web tension.

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During acceleration, the indicated current will be greater than that required for web tension because the motor must add inertia into the driven rolls, rewind roll and unwind roll. The drive is designed to operate at up to 150% of rated current (that is, 126 amperes) during acceleration. The drives current limit circuitry will not allow the current to exceed this value.

During deceleration, the indicated current will be less than that required for web tension because the motor must absorb some of the inertia from the driven rolls, and rewind roll.

During emergency stop, the indicated current will be in the regenerative direction at a value up to the 150% current limit value.

The face of the indicator is fitted with a screwdriver adjustment for mechanically zeroing the pointer when the machine is stopped.

5.4.4 LENGTH COUNTER UNIT

The LENGTH COUNTER is a Kessler-Ellis electronic preset counter mounted at the top left corner of the operator's desk. This counter is used to totalize the rewind roll footage and also to initiate a normal stop at the preset preset footage value selected on the thumbwheel switches. Additional footage accumulates after the preset value is reached as the winder decelerates to a stop.

The LENGTH COUNTER OFF/ON/RESET selector switch located to the right of the counter controls the counter's operation. See section 5.3.9 for the description of the operation of this switch.

The LENGTH COUNTER unit counts pulses originating from a proximity sensor mounted to a toothed wheel on the front drum. One revlution of the front drum yields 31 pulses. These pulses are fed to a rate multiplier which converts the pulse rate to the one pulse per foot needed by the length counter.

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5.5 CONTROL STATION (R511) PUSHBUTTON CONTROLS See Fig. 4

5.5.1 THREAD ILLUMINATED PUSHBUTTON

Pushing the THREAD button, illuminating its amber light, causes the drive to operate in thread mode if the following conditions are meet;

1. CONTROL POWER ON button is illuminated,
2. DRIVE SECURED status light is not flashing,
3. STOP button light is not flashing,
4. EMERGENCY STOP fault light is not flashing,
5. STARTUP INTERLOCK fault light is not flashing,
6. DRIVE FAULT light is not flashing,
7. RUN button light is not illuminated, and
8. JOG button light is not illuminated.

5.5.2 JOG ILLUMINATED PUSHBUTTON

Pushing and holding the JOG button, illuminating its amber light, causes the drive to operate in jog mode if the following conditions are meet;

1. CONTROL POWER ON button is illuminated,
2. DRIVE SECURED status light is not illuminated,
3. STOP button light is not flashing,
4. EMERGENCY STOP fault light is not flashing,
5. STARTUP INTERLOCK fault light is not flashing,
6. DRIVE FAULT light is not flashing,
7. RUN button light is not illuminated, and
8. START/THREAD button light is not illuminated.

5.5.3 STOP ILLUMINATED PUSHBUTTON

Pushing the STOP button while in thread or run mode deenergizes the normal stop interlock which causes the machine to slow down at a controlled deceleration rate to a stop while maintaining web tension control.

The red STOP light will be illuminated continuously during this stopping interval to provide a visual indication that the drive is in the normal stop mode for any of the following reasons:

1. Preset reached on length counter,
2. AIR PRESSURE FAULT light is flashing,
3. Max rewind roll diameter limit switch actuated,
4. Lowering cradle stop cable has been stepped on, or
5. STOP button is pushed.

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5.5.4 LEFT CHUCK RAISE PUSHBUTTON

Pushing the LEFT CHUCK RAISE pushbutton causes the left chuck to go to the full up position if the machine is not running.

5.5.5 LEFT CHUCK LOWER PUSHBUTTON

Pushing and holding the LEFT CHUCK LOWER pushbutton causes the left chuck to go to the full down position if the machine is not running.

5.5.6 EMERGENCY STOP ILLUMINATED MAINTAINED CONTACT PUSHBUTTON

Pushing the EMERGENCY STOP button causes the drive to stop by regenerative braking under current limit control. This pushbutton provides the fastest means of stopping the drive. It should only be pushed in case of an emergency and not as a routine way of stopping the drive during production. The button remains depressed after pushing and illuminates to provide a visual indication why the drive emergency stopped. The button must be pulled out to extinguish the light and enable the emergency stop interlock to be reset. The EMERGENCY STOP INTERLOCK fault light will flash during and after emergency stop to provide a visual indication why the drive has stopped.

5.6 CONTROL STATION (R512) PUSHBUTTON CONTROLS (See Fig. 4

5.6.1 THREAD ILLUMINATED PUSHBUTTON

Pushing the THREAD button, illuminating its amber light, causes the drive to operate in thread mode if the following conditions are met;

1. CONTROL POWER ON button is illuminated,
2. DRIVE SECURED status light is not flashing,
3. STOP button light is not flashing,
4. EMERGENCY STOP fault light is not flashing,
5. STARTUP INTERLOCK fault light is not flashing,
6. DRIVE FAULT light is not flashing,
7. RUN button light is not illuminated, and
8. JOG button light is not illuminated.

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5.6.2 JOG ILLUMINATED PUSHBUTTON

Pushing and holding the JOG button, illuminating its amber light, causes the drive to operate in jog mode if the following conditions are meet;

1. CONTROL POWER ON button is illuminated,
2. DRIVE SECURED status light is not illuminated,
3. STOP button light is not flashing,
4. EMERGENCY STOP fault light is not flashing,
5. STARTUP INTERLOCK fault light is not flashing,
6. DRIVE FAULT light is not flashing,
7. RUN button light is not illuminated, and
8. START/THREAD button light is not illuminated.

5.6.3 STOP ILLUMINATED PUSHBUTTON

Pushing the STOP button while in thread or run mode deenergizes the normal stop interlock which causes the machine to slow down at a controlled deceleration rate to a stop while maintaining web tension control.

The red STOP light will be illuminated continuously during this stopping interval to provide a visual indication that the drive is in the normal stopping mode.

The STOP light flashes after the machine has stopped if the normal stop interlock is still deenergzed for any of the following reasons:

1. Preset reached on length counter,
2. AIR PRESSURE FAULT light is flashing,
3. Max rewind roll diameter limit switch actuated,
4. Lowering cradle stop cable has been stepped on, or
5. STOP button is pushed.

Pushing the RIGHT CHUCK RAISE pushbutton causes the right chuck to go to the full up position if the machine is not running.

5.6.4 RIGHT CHUCK RAISE Pushbutton

Pushing the RIGHT CHUCK RAISE pushbutton causes the right chuck to go to the full up position if the machine is not running.

5.6.5 RIGHT CHUCK LOWER PUSHBUTTON

Pushing and holding the RIGHT CHUCK LOWER pushbutton causes the right chuck to go to the full down position if the machine is not running.

5.6.6 EMERGENCY STOP ILLUMINATED MAINTAINED CONTACT PUSHBUTTON

Pushing the EMERGENCY STOP button causes the drive to stop by regenerative braking under current limit control. This pushbutton provides the fastest means of stopping the drive. It should only be pushed in case of an emergency and not as a routine way of stopping the drive during production. The button remains depressed after pushing and illuminates to provide a visual indication why the drive emergency stopped. The button must be pulled out to extinguish the light and enable the emergency stop interlock to be reset. The EMERGENCY STOP INTERLOCK fault light will flash during and after emergency stop to provide a visual indication why the drive has stopped.

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OPTIONS

5.6.7 RIGHT / LEFT CHUCK EXTEND PUSHBUTTON (OPTION)

Momentarily pushing the Right / Left Chuck Extend push-button causes the left chuck to travel 75 mm from its fully retracted position to its fully extended position. The pushbutton's red light will illuminate when the chuck reaches its fully extended position.

5.6.8 RIGHT / LEFT CHUCK RETRACT ILLUMINATED PUSHBUTTON (OPTION)

Momentary pushing of the Right / Left chuck retract pushbutton causes the left chuck to travel 75 mm from its fully extended position to its fully retracted position. The pushbutton's red light will illuminate when the chuck reaches its fully retracted position.

5.6.9 RIGHT / LEFT CHUCK POSITION OVERRIDE PUSHBUTTON (OPTION)

The "Position Override" pushbutton is used in conjunction with its "Extend" or "Retract" pushbutton to set up chuck position to accommodate narrower or wider rewind rolls. The range of travel of the motorized chucks is greater than the 75 mm of travel between the extended and retracted positions.

To set up the chuck for narrower rolls, first push the "Extend" pushbutton so that the chuck travels to its extended position, causing its red light to illuminate. Then, simultaneously push and hold both the "Extend" and "Override" position pushbuttons, causing the chuck to further extend towards the center of the machine. Release the buttons when the desired position is reached. This is the new extended position for the chuck.

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6.1A WINDER DRUMS and VARIABLE DRIVE

The winder drums support the rewinding roll set. The first winder drum in the web travel direction is provided with Venta grooves to prevent the formation of air pockets between web and drum. Both winder drums have a tungsten carbide coating to provide a positive driving surface.

The winder drum set is driven by one primary motor, direct coupled with the rear winder drum and a belt drive to the front winder drum pulley. The front drum speed is variable through additional speed control by the front winder drum trim motor and harmonic drive.

With this feature, the front winder drum speed differential can effectively be varied from 1:1 (matched speed with rear drum) to an overspeed of .3 % in relation to the rear drum. This system enables variable control of desired roll set density and winding hardness.

6.1A.1 OPERATING INSTRUCTIONS

Set the desired front drum differential (overspeed) by adjusting the trim motor pontentiometer located in the main drive control panel.
Note: The greater the differential overspeed, the greater the density of the roll set.

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6.1 WINDER DRUMS

The winder drums support the rewinding roll set. The first winder drum in the web travel direction is provided with Venta grooves to prevent the formation of air pockets between web and drum. Both winder drums have a tungsten carbide coating to give them a rough driving surface.

The winder drum set is driven by one motor. The first drum is connected directly to the motor and travels at line speed. The second drum is driven from the first by means of a flat belt. It travels at 102% of line speed. This differential is to ensure roll density and winding hardness to be obtained.

6.2 RIDER ROLL

During the winding operation, the rider roll rests on the rewinding roll set. Its weight exerts a nip pressure which influences the density of the rewinding rolls. The nip pressure is greatest when the rewinding diameter is small; this is to form a hard center at the beginning of the roll. As the rewound roll diameter increases, the counterbalance on the rider roll is automatically increased, thereby reducing nip pressure on the roll. The counterbalancing pressure on the rider roll is influenced by two components:

(a) Automatic, regulated, counterbalancing pressure (See Section 6.2.3. The pressure regulating valve (R201) regulates the counterbalancing pressure in accordance with the rewind diameter. (See Fig.6).

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(b) The manually set, counterbalancing pressure valve V102, located on the operator's control desk.

6.2.1 OPERATING INSTRUCTIONS

Set the required additional counterbalancing pressure with the knob of the pressure regulating valve (V102). Initial pressure should be at least 0.5 bars (7 PSI) so that the roller chain supporting the rider roll is always under tension.

When starting to wind, pressure gage (G102) on the operator's control desk indicated a manual setting of a counterbalancing pressure. Increasing roll diameter automatically regulates the counterbalance pressure that is added to the manually set pressure so that the total counterbalancing pressure is that which is indicated on gage (G102).

6.2.2 LIMITATIONS OF COUNTERBALANCE PRESSURE

To prevent the rider roll from lifting off of the rewind rolls entirely near the end of the winding operation due to excessive counterbalance of pressure, pressure reducing valve (R2) which is mounted inside of the operator's control desk, is set at the time of installation by the field engineer. After an extended period of operation, this valve may have to be reset as the setting may prove to be too high when the slipstick characteristics of the cylinders change, i. e., the system gets broken in and friction and drag are reduced.

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6.2.3 INITIAL SETTING AND ADJUSTMENT OF RIDER ROLL COUNTER-BALANCING

1. Since valve (V102) limits the maximum counterbalancing it is first necessary to open valve (V102) for the initial setting procedure. After setting, return the valve again to the required limited counterbalancing pressure.

2. Lower the rider roll onto cores placed in winder drum valley.

3. Push rider roll counterbalance button on operator's panel (See Fig.1).

4. Determine counterbalancing pressure at which the rider roll floats, using pressure regulator (R2) (See Fig. 3).

5. Read and note the counterbalancing pressure on gage (G102).

6. Raise the rider roll, by hand, to maximum roll diameter position.

7. Set regulator positioning bracket so that the rider ball on the pressure regulator (R201) is riding on the flat.

8. Set pressure regulator so that the pressure on gage (G211) is slightly below pressure that was indicated in Step #5.

   This is done by the adding or substracting of shims between the rider ball assembly and the regulator stem (See Fig. 6).

9. Reset valve to its required additional counter-balancing pressure position.

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6.2.4 RIDER ROLL SAFETY INTERLOCK

For reasons of operator safety, the rider roll is equipped with safety interlocks, i.e., if a chain breaks or there is loss of air supply. This safety interlock is always in effect when the rider roll is in its full up position.

If a chain breaks or air supply is lost, the rider roll carriages are stopped by he latches and further lowering is prevented.

The rider roll safety interlock is released only for that period during which pushbutton "rider roll down" is actuated.

6.3 LEAD ROLL

The purpose of the lead roll, mounted on rear uprights, is to feed the web to the tension controlling roll at a constant angle.

6.4 CONSTAMAT

This roll automatically controls web tension. The tension of the web coming from the unwind reel must be kept constant over the idler, sensing and slitter rolls to the rewind core. This is the factor which must be regulated. Regulation is made with a control unit: The Web Tension control equipment (integral regulation). The arrangement is shown in Fig. 8, 6.4.1.

The purpose of this pneumatic web tension regulation is to control the pressure in the diaphragm cylinder (C215) of the unwind brake so that the pre-selected web tension (with pressure reducing valve (V100) between unwind and rewind remains constant, i. e., independent of unwind diameter and speed (acceleration, constant speed, deceleration).

The force exerted through diaphragm cylinder (C213) and the force of the web draw act against each other. The force coming from the diaphragm valve corresponds to the pre-selected reference value. When the force of the web tension is larger than the force exerted by the diaphragm valve, lever F pivots counterclockwise and actuating valve

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(V204) vents the diaphragm cylinder (C215) of the unwind brake. The pressure drops and the web tension drops to the desired reference value. When the force coming from the web draw is smaller than the force exerted by diaphragm cylinder (C213), left F pivots clockwise and compressed air flows to diaphragm cylinder (C215) of the unwind brake through the actuating valve. The pressure increases, and the web draw increases to the desired reference value.

The reference value for the web tension is pre-selected with pressure reducing valve (V100) at the control console and should be selected according to experience for the different types of paper or board. It must be kept in mind that for heavier basis weights the reference value should be higher than for lighter basis weights.

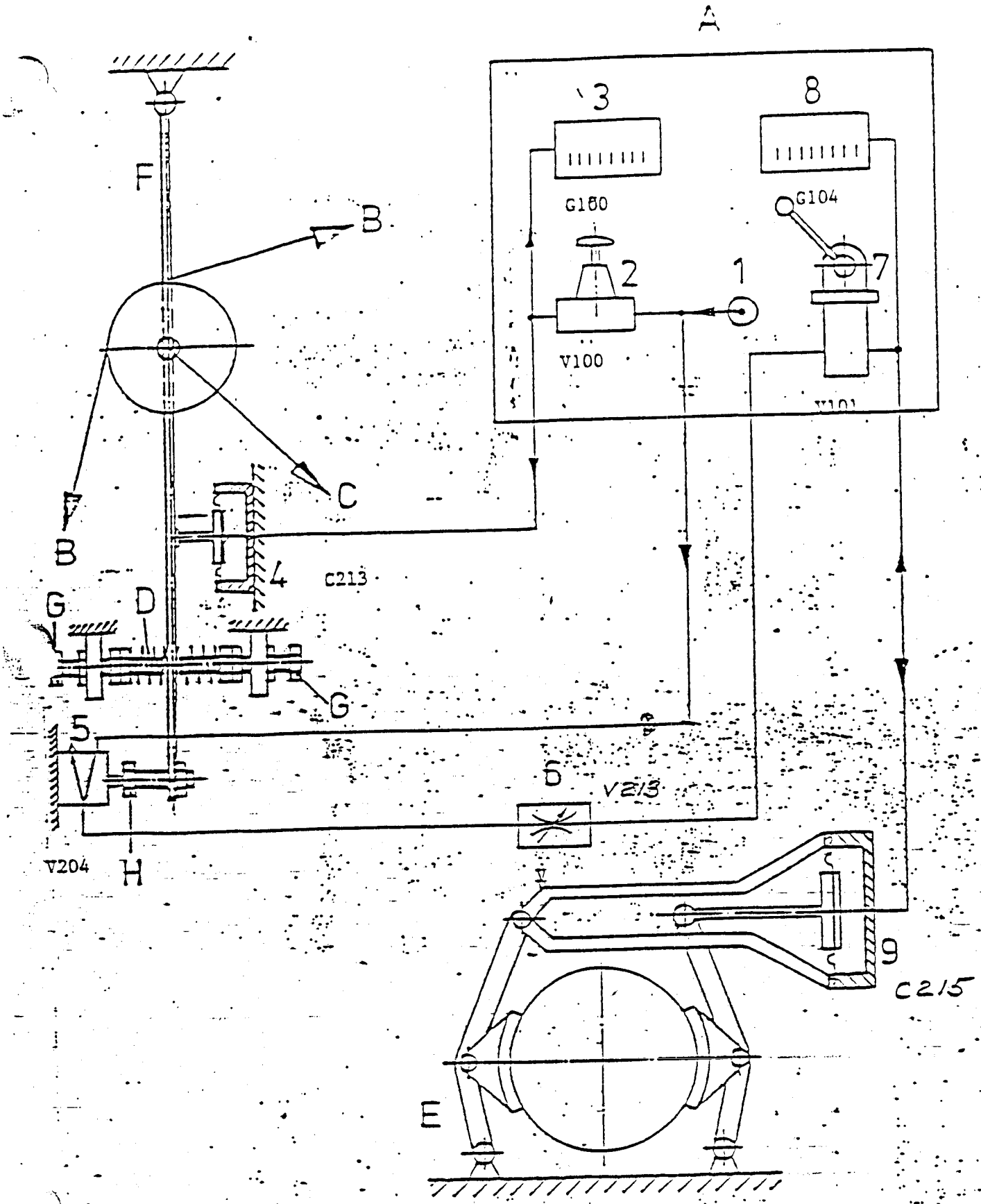
A flow control valve (V223) is installed behind actuating valve (V204). Brake variations which may occur can be eliminated by reducing the line cross section with this flow control valve.

To obtain a lighter start-up of the winder, a start-up assistance is installed between the throttle valve and the unwind brake. With this start-up assistance (fine regulating valve (V101), an initial brake pressure is set which avoids a breaking of the paper web during the start-up.

After starting up, the hand lever of the start-up assistance is slowly pivoted down, and the automatic regulation starts to operate.

The start-up assistance also helps the starting up the machine after making a splice on the parent reel.

FIG. 6


A
3
8
G160
G104
2
1
7
V100
V101
F
B
C
B
4
C213
G
D
G
5
6
V213
V204
H
9
C215
E

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6.4.1 FUNCTION AND SETTING OF REGULATION (See Fig. 8)

1 = Supply line MFI-B4

2 = Pressure reducing valve (V100) (reference value of web tension)

3 = Web tension indication (pressure gauge) (G100)

4 = Diaphragm cylinder (diaphragm cylinder on sensing roll) (C213)

5 = Actuating or control valve (V204)

6 = Throttle valve (V223)

7 = Micro-regulating valve (start-up assistance) (V101)

8 = Brake pressure indication (pressure gauge) (G101)

9 = Diaphragm cylinder on the unwind brake (C215)

A = Operator console

B = Web

C = Force Vector

D = Compression Spring

E = Unwind Brake

F = Constamat Level Arm

G = Adjusting Screw (Arm Travel Limits)

H = Adjusting Screw (Control Valve)

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6.4.2 INITIAL SETTING

Regulation for the Constamat is set as follows:

1. Set pressure on diaphragm cylinder (C213) to 0 psi/bar. Controlled by valve (V100) located on the operator's pneumatic console, marked "web tension increase/ decrease" (See Fig. 2).

2. Set the sensing roll parallel to the lead-in roll with setting screws "G" and compress pressure springs "D" equally.

3. Turn back setting screws "G" until a stroke of about +/- .020 in (+/-0.5 mm) results at adjusting screw "H".

4. Set start-up assistance hand valve (V101), located on the operator's pneumatic console, marked "Unwind Brake" to full pressure, handle down.

5. Open flow control valve (V223) completely, located on the Constamat.

6. Set adjusting screws "H" so that the pressure on gage (G100), located on the operator's pneumatic console, is increased when moving lever "F" manually to the left hand side, and is decreased when moving the lever to the right hand side.

7. Close flow control valve (V223) and open it by half a turn.

8. Set the desired web tension control by valve (V100) marked "Web Tension Increase/Decrease".

9. Set start-up assistance valve (V101), marked "Unwind Brake", to start position, full up. Pressure on gage (G101) reads "0" psi.

10. Ready for start-up.

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6.4.3 OPERATING INSTRUCTIONS

Set the required web tension depending on type and basis weight of paper or board by means of valve (V100), located on the operator's pneumatic control console. Pressure gauge (G100) indicates the pre-determined pressure.

During the winding process, the brake torque and therefore the web tension is controlled automatically.

The maximum brake torque becomes effective through pressurization of the brake prior to starting up the winding operation, i. e., if the web is slack. Since start-up can therefore lead to a web break, a possibility is provided for setting an initial brake torque with the hand lever of fine regulation valve (V101). The brake is de-pressurized or fully pressurized in the two end positions of this hand lever (down--fully pressurized, up--depressurized).

The initial pressure set with the hand lever of the fine regulation valve (V101) should amount to approximately 7-15 psi (.5-1 BAR) and depends on web width as well as on the grade and basis weight of the paper.

After the web has been tensioned during start-up of the winding operation, the hand lever of the fine regulation valve (V101) must be shifted to position "brake pressurized," full down. After that, the brake torque is controlled automatically through the sensing roll and the actuating valve (V204).

6.5 BOWED ROLL AHEAD OF SLITTING SECTION

This roll is used to eliminate wrinkles, soft spots, baggy center, distortion and similar web handling problems. This roll conditions the web for slitting.

6.5.1 OPERATING INSTRUCTION

The bow is turned in and out of the web by the use of the wrench mounted adjustment located on the operator side of the machine. The more the bow is turned into the web, the more spreading action, control for baggy center, takes place.

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6.6 SLITTING STATION

When slitting the web, the slitter roll is the bottom or mating tool for the top slitters. To obtain cleanly cut edges of the web, the top and bottom slitter must overlap by about 1.5 mm (.060 inch). This adjustment is made by means of a screw and lock-nut arrangement on the drive side of the machine.

At this location is also an eccentric stop which can be set to keep the slitter bar from rotating into the slitting position. The red know should be left in the non-slitting position unless it is certain that all top and bottom slitters are aligned. Engaging slitters that are not aligned will damage top and bottom slitters, with the result of a poor slit quality.

6.6.1 OPERATING INSTRUCTION

To engage slitter, push button marked "slitters engaged", yellow lighted button on electrical control panel (See Fig. 1). Note: Be sure slitters have been set and aligned and that red stop know is in the slit position.

The top slitters will rotate into the bottom slitters and, after a fixed time (about 1.5 seconds) controlled by the programmable controller, the top slitters will move axially.

To disengage slitters, push button marked "slitters disengaged), located on the electrical control panel.

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6.6.2 SLITTING WIDTH SET-UP

Definitions of terminology used in slitting width set-up:

Cut width = the width of a roll, i. e., CUT 1, CUT 2, CUT 3, etc.).

Total slit width = total of cores and shims (if used).

Trim width = web width after trim and before separation.

Separation = the space between cuts at the winder drums.

Set-up steps"

1. Set center line of web and center line of winder. This is done by use of the unwind stand, covered in a separate manual.

   Note: On the end of the slitter roll (drive side) is a black vee groove. To aid in set-up, this vee groove has two important relationships.

   a. From center line of vee groove to center line of the rewinder is 1000 mm. (39-3/8").

   b. From center line of vee groove to zero setting on scale is 50 mm. (1.968").

2. Set position of core stop chuck using scale on shaftless rewinder as follows:

$$\frac{1900 \text{ mm.} - \text{total slit width (mm)}}{2} = \text{scale setting (mm)}$$

3. Load cores (shims, if required) into drum valley.

4. Clamp cores axially by cranking in of the left side core chuck.

5. Bleed air from slitter roll (drive side).

6. Set the slitter selector switch, on electrical control panel (See Fig. 1), to set up mode. This will allow the beam to rotate, but no axial movement will take place.

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7. Set bottom slitter for trim (left side). Use black vee groove on end of slitter roll as datum and set cutter surface X distance from vee groove.

   $$\frac{\text{Trim width}}{2} + 1000 \text{ (mm)} = \text{X distance.}$$

8. Setting bottom slitter for Cut 1 (left to right), use black vee groove as datum and set cutter surface for Cut 1 dimension.

   X distance - width of Cut 1 = Cut 1 dimension.

   Repeat this step as required for total cuts.

9. Setting bottom slitter for CWT 2 (left to right), use black vee groove as datum and set cutter surface for Cut 2 dimension.

   X distance - (width of Cut 1 + width of Cut 2) = Cut 2 dimension.

   Repeat this step as required for total cuts.

10. Inflate slitter roll from right hand to maximum of 4 bars (56 psi).

11. Turn red stop now for the knife beam, located on the right hand end of machine, to the set-up position. This will stop the beam from rotating just short of engagement.

12. Press pushbutton marked "slitters engaged", located on the electrical control panel (See Fig. 1). This will rotate the knife beam to the set-up position.

13. The top slitter holders are loaded onto the beam from the right side and set up left to right. Position the top slitter cutting surface 1.5 mm (0.06") away from the bottom slitter cutting surface and lock to the beam. Repeat this step as required for each slit.

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14. Turn red stop knob to slit position. This will engage slitters; recheck side clearance.

15. At control panel, push button marked "slitter disengaged".

16. Turn slitter selector switch to "slit mode".

17. Slit width set-up is complete. The machine is ready for web.

6.6.3 RE-GRINDING AND ADJUSTING SLITTER BLADES

Bottom Slitters:

First remove bottom slitter by unscrewing and removing collar on right hand end of slitter shaft assembly.

Clamp bottom slitters into a switchable re-grinding jig. For grinding instruction, see L57 in Appendix. After grinding, re-install and replace locking collar.

Top slitters:
To remove blade from blade hub, remove locking pin, hold hub and rotate blade clockwise. Be aware of edge of blade; it can cut fingers as well as paper.

Mount the slitter blade in a suitable grinding jig. For grinding instruction, see L52 in Appendix.

When the slitter blade has been re-ground and re-mounted again, the top slitter must be adjusted as follows:
With the socket head screw loose, rotate the eccentric bushing so that the top and bottom slitters overlap about 1.5 mm (.060"). Tighten socked head. The slitter beam must be in the slit position to make this setting.

6.6.4 REMOVAL OF ROTATING SLITTER ROLL

To remove slitter roll for replacement or re-grinding, remove the top slitter to prevent damage and provide more room. Then, place a lifting strap around roll (no chains) and support with lifting device.

Remove end bearing caps and roll out of bearing housing onto support guides.

Carefully lift out the slitter roll assembly and place on wooden supports.

6.7 BOWED ROLLS AFTER SLITTING STATION

The dual bowed roll system gives a positive method of controlling web inter-leaving after slitting.

6.8 WINDER DRIVE

The machine is driven by one DC motor which is connected to the rear winder drum by couplings.

The front drum is driven from the rear drum by a flat belt.

6.8.1 WINDER BRAKES

The machine is equipped with the following emergency or parking brakes:

Unwind brake
Rider Roll Brake

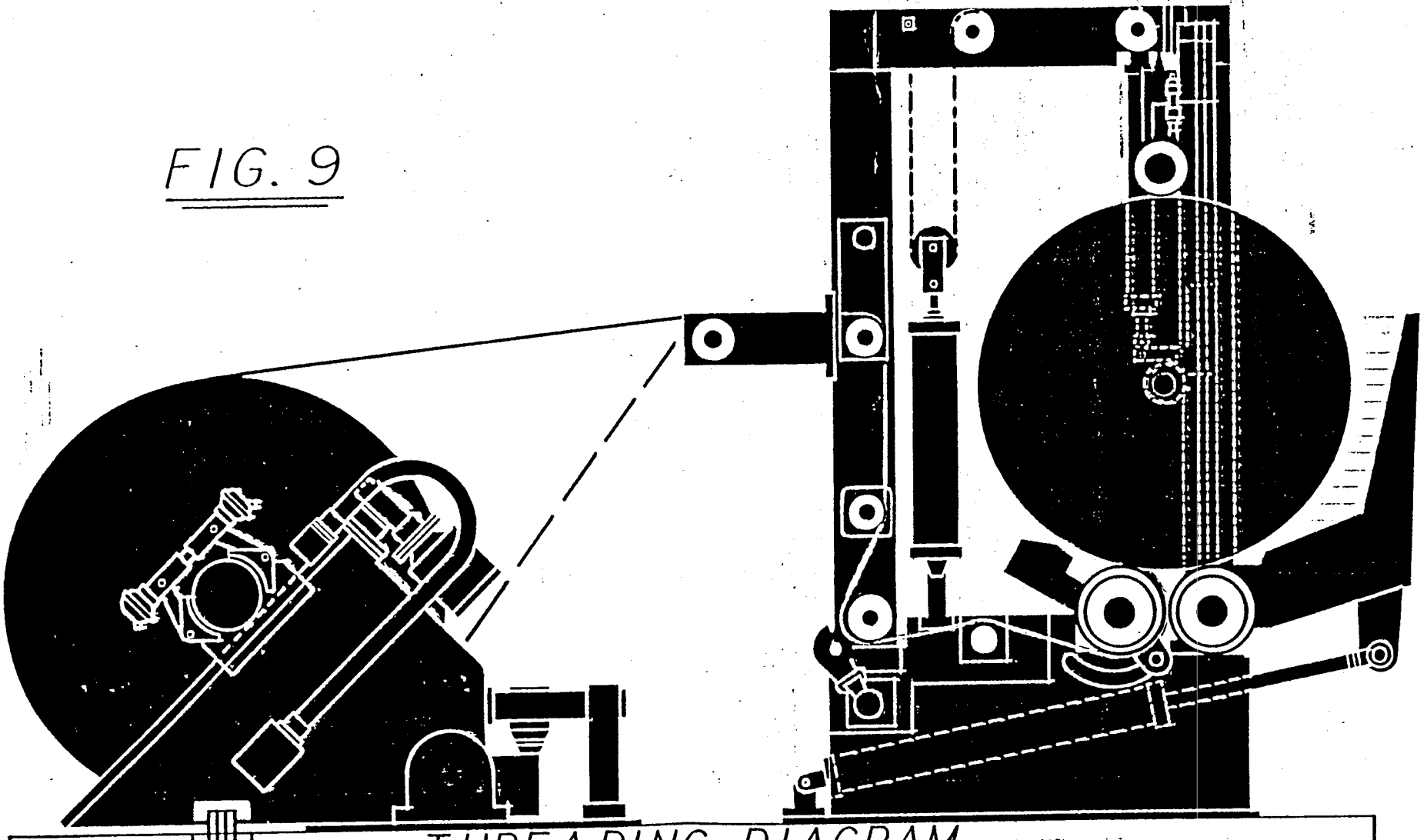
Winder drum brake (holding brake) on front winder drum.

The purpose of the winder drum brake on the main drive is to generate a part of the brake torque necessary for a rapid stop (emergency stop) of the machine. The larger part of the brake torque is generated through field reversal of the drive motor.

6.9 THREADING TABLE

The threading table facilitates threading web into the machine, from just after the slitter stations to the cores in the winder drum valley, by means of compressed air.

FIG. 9



— THREADING DIAGRAM —

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6.9.1 OPERATING INSTRUCTION

Make a threading tail on the web. Turn the drive on in the "thread" mode, using pushbutton marked "thread" in one of three locations (on the main panel (See Fig. 2) on either control box mounted on the machine upright at the cradle end. Turn on thread air with ball valve located on the left side of the machine. With the machine threaded per threading diagram (see Fig. 9) up to the slitter roll, thread web over threading table and under bowed roll. Feed web slowly into machine until it comes out at the cores. Turn on trim blower located on main control panel. Push button marked "slitter engaged", located on main control panel (see Fig. 1); continue to thread until slit web is drawn past cores. Hit the "stop" button or use cable switch to stop machine. Cut web and fix to cores.

6.10 SHAFTLESS REWIND

The core chucks of the shaftless rewind guide the rolls from both sides during the winding operation. By two operator control hand wheels, a high lateral force is exerted to the cores through the core chucks so that the core lengths are pressed together.
The core chuck and core chuck arbors are changeable.

The adjustment range of the shaftless rewinder is 800 mm. (31-1/2"), i.e., 400 mm. (15-3/4") on each side.

6.10.1 SETTING COUNTERBALANCE

The complete weight of the shaftless rewinder carriage assembly is counterbalanced by pneumatic cylinders (C216) L.H. and (C217) R.H.

The counterbalance pressure is set by pressure regulators (R200) L.H. and (R210) R.H. (See Fig. 5)

The counterbalance pressure is indicated on pressure gages (G200) L.H. and (G210) R.H.
The counterbalance pressure should be set by the pressure regulators so that the assembly floats.

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6.10.2 OPERATING INSTRUCTION

The pushbuttons to raise or lower the core chuck carriages are located on a control panel at each side of the cradle end of the machine. To raise chuck, press and hold button marked "Raise Chuck". To lower chucks, press and hold button marked "Lower Chuck". Each side of the machine is controlled individually from inside and outside of the cradle (See Fig. 4 and Fig. XX)

6.11 PNEUMATICS

6.11.1 FUNCTION

The pneumatic scheme and the flow of the compressed air through the valves is shown on the Pneumatic Diagram 84.1503.25008.

The compressed air flows into the valves and from there either into the upper or lower chamber of the air cylinders. The air forces the pistons either forward or backward and consequently the connected operating elements move into the respective working position.

6.11.2 MAINTENANCE OF PNEUMATIC DEVICES

Oil mist lubricators

Oil mist lubricators must be filled with a lubricating oil of a viscosity of ISO-VG 46 (e.g. Shell Tellus oil).

The regulating screws (knurled screws) should be so set that one drop of oil is misted every 20-25 seconds.

Condensate trap

The moisture contained in this compressed air is collected in condensate trap. This water should be drained at regular intervals by removing the drain screw.

Further valves

Under normal conditions regular maintenance work is not required. Troubles which may occur are practically always due to the use of not properly cleaned air.

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In case of trouble in the valves, these should be cleaned as per the attached special instructions.

6.12 LOWERING CRADLE

The lowering cradle is located in the front of the machine. It lowers the finished roll set to the floor. The cradle is operated by 2 air cylinders. When the cradle is up, it forms a guard to prevent access to the machine.

6.12.1 OPERATING INSTRUCTIONS

To raise lowering cradle, pushbutton marked "Raise Cradle", located on the main electrical control panel (See Fig. 1).

To lower the cradle, push and hold button marked "Lower Cradle". The machine must be stopped then.

6.13 EJECTOR

The ejector beam pushes the finished roll set out of the winder drum valley into the lowering cradle. The ejector beam is mounted so that it pivots about the center of the first winder drum. The movement is powered by compressed air cylinders.

6.13.1 OPERATING INSTRUCTION

1. Stop winder when rolls reach desired diameter; this can be done in one of three ways:

   a. The pre-set length counter on main console (See Fig. 1).

   b. The maximum roll diameter switch located on the left front upright.

   c. Operator control with any stop button.

Note: Because of the time required to come to a complete stop, the rolls will grow in diameter and length. This increase must be gaged on experience, because roll weight, diameter and speed all affect stopping time.

2. Raise rider roll full up.

3. Retrack and raise the right-hand and left-hand core chucks.

4. Lower lowering cradle.

5. Cut webs and tack to rolls.

6. Tape incoming slit webs.

7. Raise lowering cradle.

8. Eject rolls by pushing and holding button marked "Roll Eject".

9. When the rolls are in the cradle, it may be lowered to the floor. See "Sequential Switching", Section 2.1.3 where sequences are described.

6.14 HOLDING BRAKE ON DRIVE MOTOR

The purpose of the holding brake is to hold tension on the web after a normal stop.

6.14.1 MODE OF OPERATION

When the stop is pushed and the machine slows to near zero speed, the brake comes on.

If the electrical power is lost, the holding brake will bring the machine to a controlled stop.

During the ejecting operation, the brake is released to allow the drum to rotate. After ejecting, the brake is reset.

6.15 SAFETY SWITCH

The safety switch is located in the lowering cradle and is tripped by the operator's foot.

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6.15.1 FUNCTION AND RESETTING

When a new web is being threaded into the machine, the web tail is picked up by the operator at the front of the winder drum, wrapped around the cores and tacked tothem. During the threading procedure, the machine is operating at thread speed (slow, about 60 fpm). If there is a problem, the operator would step on the cable, and the machine drive will stop.

If the machine is stopped using the cable switch, it must be reset before the drives will start. Resetting is done from the cradle by pushing button marked "Stop/Reset", located on the machine uprights on either side of the machine.

From the control console, resetting is done by pushing button marked "Reset".

6.16 ROLL DIAMETER INDICATION

For winding rolls of a given diameter, the adjustment roll diameter switch located on the left hand upright is used.

6.16.1 OPERATING INSTRUCTION

With the hand knob, position the pointer to the desired roll diameter on the scale and lock in place. This setting actually may vary, based on speed at the time of switch actuation and web thickness.

6.16.2 MAXIMUM ROLL DIAMETER

This is 1270 mm (50") and is limited by the upstop on the adjusting roll diameter switch.

6.17 WEB LENGTH INCICATOR

This counter is used to totalize the rewind roll footage and also to initiate a normal stop at the preset footage value selected.

CONWIND
- 2300 -

SPARE PARTS

PART 2

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LISTING OF SPARE REQUIREMENTS FOR STRATHMORE (2300) CONWINDER

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PART NUMBER	DESCRIPTION	LEVEL 1	LEVEL 2	UNIT COS
302.592	SCREW,SOC.SET DOG PT. M12 X 35	3.00	13.00	$.00
336.130	CHAIN,ROLLER 12B 1X19.05X11.68	.00	5.00	$.00
3448.19090	CYLINDER, DIAPHRAGM	1.00	2.00	$.00
3452.10352	SEALS (SET) F/484.271 MICRO.	1.00	1.00	$.00
3463.04850	VALVE,PRESSURE REGULATING	1.00	1.00	$.00
3467.02504	SWITCH,PROXIMITY 8025AL10N2CPX	.00	1.00	$.00
351.103	BEARING,BALL GROOVED #16005	6.00	26.00	$.00
351.164	ROLLER BEARING 6004	.00	1.00	$.00
351.218	GROOVED BALL BEARING 6006-2Z	2.00	4.00	$.00
351.220	BEARING,BALL GROOVED #6008-2Z	4.00	12.00	$.00
351.400	GROOVED BALL BEARING 6208-2Z	2.00	4.00	$.00
351.401	GROOVED BALL BEARING	2.00	2.00	$.00
351.404	GROOVED BALL BEARING 6212-2Z	2.00	4.00	$.00
352.579	BEARING #2209 2RS SPECIAL	2.00	2.00	$.00
352.672	SPHERICAL ROLLER BEARING	2.00	2.00	$.00
353.014	ROLLER BEARING 22209C	2.00	2.00	$.00
353.015	BEARING,SELF-ALIGN'G #222 10	2.00	2.00	$.00
353.224	ROLLER BEARING	2.00	4.00	$.00
353.703	TAPERED ROLLER BEARING 302 06	1.00	2.00	$.00
353.704	BEARING,ROLLER 302 07	1.00	2.00	$.00
355.018	BEARING,BALL AXIAL 511 08	2.00	4.00	$.00
355.116	THRUST BALL BEARING	2.00	4.00	$.00
363.484	SPRING 23 DIA X 49.5 MM	.00	2.00	$.00

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PART NUMBER / DESCRIPTION	LEVEL 1	LEVEL 2	UNIT COST
372.023 FELT RING 25	2.00	2.00	$.00
372.030 RING,FELT 40	.00	2.00	$.00
372.032 SEAL,FELT	2.00	2.00	$.00
372.033 RING,FELT 48	.00	2.00	$.00
372.034 RING,FELT 50	4.00	4.00	$.00
372.036 RING,FELT 55	2.00	2.00	$.00
372.039 RING,FELT 65	4.00	8.00	$.00
372.042 RING,FELT 75	8.00	16.00	$.00
372.049 RING,FELT 95	2.00	4.00	$.00
372.216 SEAL 8 X 24 #2232	2.00	2.00	$.00
374.045 SHAFT SEAL A 20X40X7	1.00	1.00	$.00
374.094 SHAFT SEAL A 70X90X10	1.00	1.00	$.00
384.140 VALVE,AIR STRAIGHT 43M	1.00	1.00	$.00
416.678 CLAMPING SLEEVE DSL40 X 56	1.00	2.00	$.00
417.218 RIVET BLIND CHERRY AAPQ-68	25.00	50.00	$.00
433.22E002 ROD END ELGESS GIHR20DO	1.00	1.00	$.00
436.134 MASTER LINK 12B	.00	4.00	$.00
436.135 HALF LINK 12B	.00	4.00	$.00
436.955 CHAIN ANCHOR FORM A 6 DIA	1.00	2.00	$.00
437.02E011 CHAIN (FOR COUPLING) #C60-16	.00	1.00	$.00
443.22E003 CYLINDER ROD END	1.00	2.00	$.00
443.22E004 ROD END (ELGES GIHR (35DO)	1.00	2.00	$.00
451.114 BUSHING,DU 12X14X10 MB 1210DU	2.00	2.00	$.00

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PART NUMBER DESCRIPTION	LEVEL 1	LEVEL 2	UNIT COST
451.144			
BUSHING, DU 16X18X15 MB 1615DU	2.00	4.00	$.00
451.160			
BUSHING, DU 20X23X25 MB 2025DU	1.00	1.00	$.00
451.181			
BUSHING, DU 30X34X20 MB 3020DU	2.00	2.00	$.00
452.03E001			
SEE 3430.26042	4.00	8.00	$.00
452.04E001			
SEE 3430.26043	4.00	8.00	$.00
452.739			
COLLAR BUSH 20 X 12	1.00	1.00	$.00
452.740			
COLLAR BUSH 20 X 15	1.00	1.00	$.00
471.045			
RING, SEALING 90X50	2.00	2.00	$.00
471.048			
SEALING RING	4.00	4.00	$.00
471.071			
SEALING RING	2.00	2.00	$.00
471.377			
NILOS RING/6005Z	6.00	26.00	$.00
484.09E024			
4 WAY VALVE 1/4 SOLENOID 220V	2.00	4.00	$.00
484.09E062			
4 WAY VALVE 1/4" DOUBLE SOL	1.00	2.00	$.00
484.221			
VALVE R1/4"	1.00	1.00	$.00
484.25E003			
VALVE, CHECK 1/4" NPT	1.00	2.00	$.00
487.30E002			
CONNECTOR, QUICK "CK"	2.00	4.00	$.00
487.30E004			
QUICK CONNECTOR TYPE CK	2.00	4.00	$.00
487.33E002			
CONNECTOR, QUICK "LCK"	5.00	10.00	$.00
487.33E004			
CONNECTOR, QUICK "LCK"	2.00	4.00	$.00
487.33E005			
CONNECTOR, QUICK "LCK"	1.00	2.00	$.00
487.34E002			
CONNECTOR, QUICK "TCK"	3.00	6.00	$.00
487.34E003			
QUICK CONNECTOR TYPE TCK	2.00	4.00	$.00
487.37E010			
CONNECTOR RING, QUICK "LK"	2.00	4.00	$.00

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PART NUMBER / DESCRIPTION	LEVEL 1	LEVEL 2	UNIT COST
487.38E002 CONNECTOR, QUICK BULKHEAD "SCK"	5.00	10.00	$.00
488.10E001 REGULATOR, PRESSURE 1/4"	1.00	2.00	$.00
489.10E003 TUBING, PLASTIC "PP"	10.00	20.00	$.00
491.60E030 AIR CYL, R2N, 3 1/4"BX28"SX1"R	1.00	1.00	$.00
53.3400.21006 BRAKE LINING 210X100X10	2.00	4.00	$.00
53.3440.17002 DIAPHRAGM	2.00	2.00	$.00
53.3440.19015 WASHER, SPRING	3.00	13.00	$.00
55.3400.15001 DIAPHRAGM CYLINDER TYPE 9	1.00	2.00	$.00
701.412 BLADE, SLITTER 130MM OD	3.00	10.00	$.00
701.575 PIN F/SLITTER BLADE M4X15.5	10.00	20.00	$.00
701.624 RING, SEAL #90	3.00	13.00	$.00
702.067 CUTTING BUSHING 240X100X10/60	5.00	23.00	$.00
729.157 AIR HOSE (AB-2300)	1.00	4.00	$.00
729.16E AIR HOSE ASSEMBLY	.00	.00	$.00
782.003 TAPPED BUSHING	1.00	1.00	$.00
82.1503.04003 NUT-BLOCK	.00	1.00	$.00
82.1503.27003 SCREW, ADJUSTING (100 MM)	.00	1.00	$.00
820.972 SWITCH, PROXIMITY NJ10/PG9	.00	1.00	$.00
83.1503.03005 BUSHING, (43.5)	.00	2.00	$.00
83.1503.03006 GEAR	1.00	2.00	$.00
83.1503.03015 WIPER (62)X(70)	4.00	4.00	$.00
83.1503.03017 RETAINER (9)	1.00	2.00	$.00
83.1503.03021 LINING, BRAKE	1.00	1.00	$.00

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PART NUMBER DESCRIPTION	LEVEL 1	LEVEL 2	UNIT COST
83.1503.04006 SCREW,SHAFT (304)	.00	1.00	$.00
83.1503.04013 STRIP,WARE (142)	1.00	1.00	$.00
83.1503.06021 BUSHING, ROLL SUPPORT (75)	1.00	2.00	$.00
83.1503.08005 BUSHING (60)	1.00	2.00	$.00
83.1503.08009 RETAINER (9)	1.00	2.00	$.00
83.1503.08011 GUIDE TUBE RIGHT HAND (595)	.00	1.00	$.00
83.1503.08012 GUIDE TUBE LEFT SIDE (595)	.00	1.00	$.00
83.1503.08013 GUIDE NUT (90)	1.00	2.00	$.00
83.1503.08025 BUSHING (20)	1.00	2.00	$.00
83.1503.08050 SPINDLE (580)	1.00	2.00	$.00
83.1503.09020 LATCH,UPPER (70)X(205)	.00	1.00	$.00
83.1503.09022 LATCH, LOWER (70) X (320)	.00	1.00	$.00
83.1503.09060 CHAIN ANCHOR (104)	1.00	2.00	$.00
83.1503.21007 SLEEVE,BEARING (90)	1.00	2.00	$.00
83.1503.27004 STOP,BUTTON (13)	.00	2.00	$.00
83.1503.27007 SPRING,COMPRESSION	.00	1.00	$.00
85.1503.02085 SPHERICAL BEARING W/ADAP. SLV.	1.00	2.00	$.00
85.1503.03019 CAM FOLLOWER	1.00	2.00	$.00
85.1503.05047 DBL. V BELT HEX SEALED LIFE II	1.00	1.00	$.00
85.1503.08041 SCALES (2 PIECES = 1 SET)	.00	1.00	$.00
85.1503.08047 CHUCK MOTOR	1.00	1.00	$.00
85.1503.17014 DRIVE BELT 2350X60 ENDLESS	1.00	1.00	$.00
85.1503.27007 SPRING-COMPRESSION	2.00	2.00	$.00

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LISTING OF SPARE REQUIREMENTS FOR STRATHMORE (2300) CONWINDER

02/05/86

PART NUMBER	DESCRIPTION	LEVEL 1	LEVEL 2	UNIT COST
E337.024	WIRE ROPE (1/8" DIA)	3.00	3.00	$.00
THE TOTAL ACCUMULATED COSTS FOR EACH LEVEL IS		.00	.00	

CONWIND
- 2300 -

DRAWINGS & BILLS OF MATERIAL

PART 3

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LIST OF DRAWINGS

Text	Drawing No.	B. O. M.	Description
2	Need		General Assembly
	81.1503.01038	1503.01041	Frame Assembly
6.1	81.1503.02001	1503.02020	Winder Drum
6.2	81.1503.03035	1503.03040	Rider Roll Assy.
6.2.3	81.1503.04001	1503.04018	Rider Roll Counter Balance
-	81.1503.05049	1503.05049	Spreader Roll V-Belt Drive
6.6	81.1503.06001	1503.06026	Slitter Roll Assy.
6.4	81.1503.07001	1503.07012	Tension Control Roll Assy.
5.6.8	81.1503.08046	1503.08078	Shaftless Rewinder
		1503.08054	Chuck Adapter 5"
6.2.2	81.1503.09001	1503.09035	Rider Roll Suspension Assy.
6.2.4	82.1503.09018	1503.09036	Safety Device (Rider Roll)
6.12	81.1503.12001	1503.12038	Cradle Actuator Assy.
	82.1503.12027	82.1503.12027	Cable Switch Assy.
6.13	81.1503.13001	1503.13017	Ejector Assy.
	81.1503.15001	1503.15032	Winder Cover
6.5	81.1503.16001	1503.16001	Spreader Roll Before Slitter

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6.6	81.1503.17001	1503.17013	Slitter Roll Belt Drive
	81.1503.18001	1503.18013	Front & Rear Drum Drive
	81.1503.18009	1503.18014	Winder Drive Assembly
6.3	81.1503.19001	1503.19011	Guide Roll Assy.
6.6	81.1503.21001.	1503.21018	Top Knife Beam Assy.
6.6	81.1503.22001	1503.22008	Knife Blade Assy.

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LIST OF DRAWINGS

Text	Drawing No.	B. O. M.	Description
	81.1503.25001	1503.25038	Pneum. Console Assy.
	81.1503.25007	1503.25007	Cradle & Ejector Pneumatic Piping
	84.1503.25008		Pneumatic Schematic
2.5	81.1503.25035	1503.25035	Pneumatic Panel Assy
	81.1503.25017	1503.25017	Pneumatic Control Panel
	81.1503.25049	1503.25049	Rider Roll Pneumatic Piping
5.	81.1503.25030	1503.25030	Pneumatic Control Panel Shaftless Rewind
6.9	82.1503.26039	1503.26039	Paper Guiding Assy.
6.4	81.1503.27017	1503.27017	Tension Control
6.16 -	82.1503.28048	1503.28047	Adj. Switch Assy.
	82.1503.28014	82.1503.28014	Switch DOG Assy.
	82.1503.28051	1503.28052	Shock Absorber Assy. 3"
	82.1503.28051	1503.28055	Shock Absorber Assy. 5"