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MAINTENANCE
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EQUIP #
JAGENBERG

614

Two-Drum Winder Type 26-12

Operating Instructions

JAGENBERG-WERKE AG · DÜSSELDORF

JAGENBERG

Machine Type: 26 - 12

Specification: Foundation drawing DK 301 - P 2228
Wiring diagram. DK 301 - EA 735

Serial No.: 30.20943 Delivery: 1968

Customer: The Bato Company Inc.
Flushing New York

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This

OPERATING MANUAL

for JAGENBERG equipment must be treated confidentially.
It is intended only for the use by competent people in your
shop. Passing on to a third party is not allowed and is
bound to indemnification.

JAGENBERG-WERKE AG

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Note:

The designations "right" and "left" as used in this manual are to be understood as seen in the direction of the web run.

The machine has right-hand drive. However, the illustrations in this manual show a machine with left-hand drive so that some of the figures are valid in a reflected sense.

Seitenzahl

Ausführung

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1. General

The machine slits the material being unwound into several webs which are subsequently rewound.

1.1 Technical Data

The machine is designed for slitting and rewinding newsprint with a basis weight of 52 gsm.

The web speed depends on the type of paper and basis weight. The maximum web speed is about 3000 fpm (900 m/min).

Maximum parent roll diameter 63" (1600 mm)

Maximum rewind diameter 50" (1270 mm)

Nominal trim width 83" (2100 mm)

Minimum slitting width 4" (100 mm)

Number of top slitters 6

Unwind: arranged for shaftless unwinding

Rewind: 2 pairs rewind shaft bearings
for rewind shafts 3" dia.
(shafts themselves will be
procured locally)

Drive: will be procured by customer

Power supply: 220 V, 3-phase AC, 60 cycles

3. Web Tension Control

This equipment chiefly comprises a sensing roll, control and regulating valves and automatically regulates the amount of braking force applied to the unwinding parent roll. Through intermittent inflow to or exit from the brake cylinder of compressed air, braking is so regulated that the web tension remains constant.

During winding, the brake cylinder will in the main be vented at intervals, since with decreasing parent roll diameter, decreasing brake force is required to keep the web tension constant.

The web tension is determined by the variable counter-pressure of the impulse roll.

3.1 Operating Instructions

Set the required web tension - which depends on the web width and the paper or board caliper - via handwheel of micro pressure regulator 3815 (Fig. 38). The pressure set is indicated on pressure gauge 3810.

The brake pressure and thereby the web tension will be regulated automatically during winding.

Since the actuating valve 0804 will normally apply full pressure to the brake, this could lead to a jerky start-up or even to a web break when starting up if the web is at that moment slack (is not under tension - e.g. when a new mill roll has been threaded). To prevent this jerky start, micro regulating valve 3840 (fig. 38b) has been inserted in the system. This valve has a handle which can be set to position I = no pressure on brake at all, to position II = full air pressure on brake, and to any intermediate position.

When starting up with a slack web, set the handle of valve 3840 so that about 30 - 40 psi (2-3 atm) pressure is applied to the brake (pressure is indicated on pressure gauge on unwind brake).

As soon as web is under tension, move handle to position II, and automatic web tension control will now take over.

3.2 Compensomat (Fig. 20)

This consists chiefly of a special spring steel metal sheet over which the web slides. The compensomat is intended chiefly for such cases when parent rolls must be unwound which do not run true, i.e. which have a considerable beat. This untruth causes considerable variations in the web tension and the purpose of the metal sheet is to compensate or subdue this variations.

Operating Instructions

If the compensomat is to be used, remove the guide roll from the machine and install in its place the clamping brackets with brace and metal sheet.

Subsequently, loosen the clamping screws of the brackets slightly; so pivot the metal sheet against the web (Fig. 20e) that the angle of wrap is not greater than 150° (not even during the winding operation) and the angle is as small as possible.

If local conditions permit, the angle of wrap should be chosen less than 150° , because this will give even more favourable results.

Once the metal sheet has been adjusted, tighten the clamping screws on brackets 2040.

4. Slitter Roll

The slitter roll carries a full complement of slitter bushings. To set slitters, unlock bushings by deflating the clamping hoses (press pin of back pressure valve).

Adjust bushings (Fig. 05d) to place a cutting edge of a groove into the location of each cut to be made. Mark the groove thus positioned with a piece of chalk and measure from there to the next slit.

Lock bushings in place by inflating clamping hoses (use filling valve, Fig. 05f). Air pressure in the hoses should be about 60 psig. (4 atm). Check with pressure gauge and adjust reduction valve 3834 to provide 60 psig. (4 atm).

4.1 Regrinding Slitter Bushings

First remove slitter roll from machine as follows:

Place supporting rods in tap holes in right and left-hand bearings of slitter roll. Remove Allen screws on slitter roll coupling. Unbolt bearing covers and roll slitter roll with its bearing bushings onto supporting rods. Then carefully lift slitter roll with sling and lifting tackle and deposit on wooden supports. Loosen set screws of end rings and draw off end rings and slitter bushings.

For grinding slitter bushings, see attached special instructions. Mounting of slitter bushings and installation of slitter roll in machine is done in reverse order as described above.

5. Top Slitters (figs. 05c and 05e)

The cutting edges of slitter blades and bushings should overlap about $1/16"$ and have a shear angle of about 0.5° . The top slitters are set at the factory and need overlap adjustment only after blade changes.

5.1 Positioning of Slitters

Position top slitters units roughly according to the number of cuts and widths to be slit.

Use hand lever to insert slitter blade carefully into selected cutting groove and adjust elastic lateral pressure against cutting edge (spring action to be about $.020"$). Loosen lock screw on slitter holder and retighten when positioned correctly. Make sure that the slitter blade can still be rotated smoothly by hand when the slitter is engaged.

5.2 Slitter Engagement

The top slitter are divided into two gangs:

Gang No. 1 - the two trim slitters.

Gang No. 2 - all other slitters

The trim slitters usually remain in engaged position (petcock on air cylinder open).

The remaining slitters are engaged by opening Valve 3820 on operator's desk by turning Lever to Position "Slitters engage" or released by turning Lever to Position "Slitters disengage". Top slitter units not in use are cut out by closing the petcocks at their air cylinders.

5.3 Slitter Knife Changing

The slitter knife blade must be removed from the hub for grinding. Remove the Spring Ring from its groove with a screwdriver, unscrew the Knurled Nut and lift off the Retaining Plate, Rubber Ring and Knife Blade. (Fig. 05c). Use suitable circular knife grinder and observe Grinding Instructions L 16e.

To replace slitter blade on hub and holder reverse sequence described above. After mounting slitter unit on top slitter bar loosen the two hexagon nuts and readjust overlap to about $1/16"$.

The retaining plate and rubber ring give the slitter blade "initial tension" which can be adjusted by turning the knurled nut (loosen spring ring). This tension should be as light as possible to avoid excessive blade wear.

7. Winder Drum Torque Control (= Reel Density Control)

This unit automatically regulates the speed differential (torque) between the front and rear winder drums, which in turn influences the reel density or winding hardness.

As the roll diameter increases, the diameter of the variable pulley on the front winder drum is increased via an adjusting mechanism. As a consequence, the rpm of the front winder drum decrease in comparison to the rpm of the rear winder drum. The adjusting mechanism is driven by an electric tightener which is switched on and off via electro-pneumatic controls.

For each position of the rider roll, there is a certain diameter of the belt pulley (which depends on the pre-set lead or lag in speed of the front winder drum). When the rider roll alters its position (increasing reel diameter), a difference in pressure is generated via the micro-regulating valves; to this is added a constant pressure from the mixing relay valve 3819 (normally 0.8 atm = abt. 12 psig).

Through this pressure variation (pressure differential plus constant pressure) the contact pressure gauge 3817 switches on the electric tightener of the adjusting mechanism via contactors. As soon as the pressure has been balanced again, i.e. when the diameter of the belt pulley corresponds to the position of the rider roll, the tightener is shut off again.

7.1 Operating Instructions

The contacts of the pressure gauge 3817 must be set for 0.6 and 1 atm (abt. 9 and 15 psig) (adjustment required only once).

Set selector switch "Automatic" to "On".

The range of torque control between front and rear winder drums is 1 % at the maximum reel diameter. Depending on requirements (desired reel density, type of paper or board, basis weight) this differential can be applied for the lead or lag of the front winding drum by alteration of the pressure in the mixing and relay valve 3819:

The respective lead or lag is indicated on the pressure gauge 3818. When the front winder drum lags behind the rear winder drum, the rolls will be wound softer; however, wrinkles and creases will occur if the lag has been chosen too large. (Front and rear winder drum are here used in sense of looking at the rewind station against the direction of web travel)

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Baustein

Bezeichnung d. Maschine (Typ)

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For the normal case, the mixing relay valve is to be so adjusted that with the rider roll lowered, a lead of 0.3 % (corresponding to 0.8 atm = 12 psig) is indicated on the pressure gauge 3818.

In such case the automatic regulating range during the winding operation will begin at 0.3 % lead and end at 0.7 % lag of the front winder drum.

7.2 Range of Adjustment

Possible settings through alteration of the pressure at the mixing relay valve:

Automatic regulating range from to (Rider roll lowered) (max. reel dia.)			Pressure set at Mixing relay valve
Adjusting range	0.62 % V	0.38 % N	0 atm (0 psig)
	0.3 % V	0.7 % N	0.8 atm (12 psig)
	0.02 % N	1.02 % N	1.6 atm (23 psig)

V = lead N = lag
of the front winder drum

7.3 Automatik "off"

The automatic regulation of the winder drum torque can be shut off by setting the selecting switch for automatic regulation to "Off". The peripheral speed of the front winder drum can then be regulated by the pushbuttons "Harder" and "Softer".

8. Spreading Equipment

The machine is equipped with a tubular spreader bar in front of the slitting station and a sectionally adjustable D-type spreader bar following the slitting station.

The tubular spreader bar (Fig. 21) has a fixed bow or camber which can be turned into the web to a greater or lesser degree as required. The bow should always point in the direction of web travel. Settings of the spreader bar are made via handwheel 2109. If the web forms wrinkles before entering the slitting station, set the spreader bar against the web sufficiently to remove these wrinkles.

The sectionally adjustable spreader bar (Fig. 24) is supported on a number of spindles across the machine width and the D-type spreader bar itself is flexible.

The purpose here is to obtain a spreading action at the slits to improve roll separation after ejection. The curvature on the spreader bar can be varied across the width by screwing the lead screws 2405 in or out to a greater extent as required. Adjustment of the lead screws is made with the swivel wrench 2416 on the infeed side of the winder.

Handwheel 2412 raises or lowers the whole spreader bar assembly.

9. Sequence of Operations

9.1 Threading

Set main air valve 3826 (Fig. 38) to 85 psig. (6 atm).

Fig. 01 shows the threading pattern of the machine.

For threading, first release unwind brake (micro regulating valve 3840; hand lever to position I "brake released") and raise rider roll (rotary slide valve 3808; hand lever to position I "rider roll up"). Then disengage top slitters except trim slitters (rotary slide valve 3820; hand lever to position I "slitters retracted").

Make a tail of the web abt. 20" - 24" wide. Engage threading tapes (valve 0816 on winder frame; hand lever to position II "threading tapes on").

Start motor at crawl speed. Thread tail over guide and sensing roll, tubular spreader bar, slitter roll, adjustable spreader bar and place it onto threading tapes. The tapes will carry the web underneath the rear drum. The web will be carried up between the drums by blower air from nozzles.

As soon as the web travels smoothly, engage top slitters (rotary slide valve 3820; hand lever to position II "slitters engaged"). When the slit web reaches the valley between the drums, shut off main drive.

9.2 Preparation of Rewind Shaft

The rewind shaft can be pulled from the finished set to the left or the right side.

If the shaft is to be pulled to the left, place it in the valley between the drums with the retaining and tensioning collars to the right. The collars must be on the left side if the shaft is to be pulled to the right.

Before inserting the shaft, remove tension and retaining collars and slip the cores onto the shaft. Lock retaining collar with hexagon nut and turn tensioning collar until the cores are snug. Now tighten hexagon nut of tensioning collar; adjust retaining collar if necessary.

9.3 Loading of Rewind Shafts or Stub Shafts (optional)

Disengage threading tapes (valve on winder frame; set lever to "threading tapes off") and open rewind shaft gates (valve 3812; set lever to "ejector retract - gates open"). Place rewind shaft in drum valley.

Now lift rewind shaft (set lever of valve 0816 on machine frame to III "threading tapes off - rewind shaft lift up") and wrap tail of web around cores. When slitting narrow webs glue them onto the cores.

Proceed as follows with stub shafts:
Slip one core over each stub shaft and place into drum valley in place of full shaft; subsequently insert the remaining cores and tighten retaining and tensioning collars ("rewind shaft lift down").

Lower rewind shaft (set lever to II "threading tapes off - rewind shaft lift down") and close rewind shaft gates (valve 3823; set lever to "ejector retract - gates close").

9.4 Trim Removal System (optional)

Set the suction studs in the machine according to the location of the trim strips. Then introduce trim strips into the suction studs and start motor of suction fan.

Note: Suction fan motor must be running before main drive is started.

9.5 Winding

Set hand lever of micro regulating valve 3840 to about 30 - 40 psig (2 - 3 atm) (see sect. 3.1).

Gently lower rider roll (hand lever of rotary slide valve 3808 to position II "rider roll down") until it rests on the wrapped cores.

Switch on drive motor and start winding operation at lowest speed. Then move hand lever of micro regulating valve 3840 to position II "brake under pressure", set hand lever of rotary slide valve 3808 to position III "winding" and then regulate nip pressure of rider roll with hand-wheel of mixing relay valve 3811.

Nip pressure of the rider roll

This pressure is generated by the weight of the rider roll and influences the density (hardness) of the rewinding rolls.

The nip pressure is regulated as follows through pneumatic counterloading or counterbalancing of the rider roll weight:

- a) Automatically regulated nip pressure with increasing roll diameter. In this case, the nip pressure is constantly being reduced, i.e. the counterbalancing pressure is increased, by the automatically controlled micro pressure regulator 3812.
- b) With handwheel of mixing relay valve 3811, additional counterbalancing pressure is set as required, additionally reducing the nip pressure (hand lever of rotary slide valve 3808 in position III "winding").

The total counterloading pressure set (reduced nip pressure of the rider roll) is indicated on pressure gauge 3807.

At the start of the winding operation, the counterbalancing pressure set with the handwheel should be at least 7 psig (0.5 atm) to ensure that the roller chains of the rider roll will always be under slight tension.

Set the required web tension with handwheel of micro pressure regulator 3815 (see sect. 3).

Set tubular spreader bar and adjustable spreader bar as required (see sect. 8).

When these settings have been made, raise lowering unit (hand lever of rotary slide valve 3816 to position II "lowering unit raised").

Only when the lowering unit - which serves as nip-guard in raised position - has been raised can the winder be accelerated up to the permissible maximum speed (regulate rpm speed of drive motor).

9.6 Prepare Rolls for Ejection

When the rolls have reached the required diameter reduce main drive to crawl speed and stop drive motors.

Lower nip guard (set lever to "lowering unit down"). Sever web and tack tails to the rolls.

Now make the following settings at the control desk:

Lever of micro regulating valve 3840 to position I "brake vented"

Lever to "rider roll up"

Lever to "ejector retract - gates open"

Lever to "slitters retract" (top slitters swivel away from the slitter roll).

This setting is required only when the next set will be wound from a new parent roll.

Lever to "lowering unit raised".

9.7 Roll Ejection and Lowering

Lever to "ejector eject - gates open". The ejector roll is operational only under the following conditions:

Rider roll in raised position (1 valve opened)

Shaft gates opened (2 valves opened)

Nip guard down (1 valve open)

When roll set has been ejected, set lever to "lowering unit down"; rolls are lowered to floor level.

Now remove collars from the rewind shaft and pull the shaft. A new shaft fitted with cores can now be placed into the winder drum valley.

Seitenachse

Ausführung

Befehlein

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9.8 General Remarks

By pressing the "emergency stop" button, the drive will be disconnected from the machine. At the same time the brakes on the drive and on the unwind (emergency braking of unwind brake) will take hold.

The brake on the drive is released automatically as soon as the main drive is started. The emergency brake on the unwind is released automatically after a preset time of 1 - 20 sec.

When the winder is not in use, it is advisable to rest the rider roll on the winder drums. Protect the rolls by placing some soft material between rider roll and winder drums.

Check all screws periodically and tighten when necessary.

The winder must not be operated without nip guard (raised lowering device)!

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10. Lubrication

Observe the attached Lubrication Chart. The chart shows the types of oil and grease recommended for the various lubrication points.

Equal products of other brands may be used.

10.1 Type and frequency of lubrication

Both are indicated on the figures by symbols and the corresponding item numbers of the Lubrication Chart. The symbols mean:

○	= daily	∞	as required
◉	= weekly	▽	oil change
●	= monthly	⋈	oil drip lubrication
■	= yearly	*	as per special instructions or lubrication chart (remarks must be strictly observed).

Examples:

0919 ◉ 17 = Part No. 0919 must be lubricated weekly with the lubricant listed under item 17 in the lubrication chart.

0920 * 12 = Part No. 0920 must be lubricated as per instructions (Remarks) stated under item 12 of the lubrication chart.

10.2 Oil change

The oil in the gear boxes (drive, unwind) must be changed periodically. Instructions are contained in the lubrication chart.

Oil must be filled through a strainer. No foreign matter must enter the gear boxes.

10.3 Maintenance and Servicing of the
Pneumatic Equipment in the Control Desk

10.31 Oil mist lubricators in control desk

These units must be supplied with lubricating oil of a viscosity of 4 - 6 E at 50°C (e.g. Shell-Tellus Oil 29).

The regulating screws (knurled screws) of the oil mist lubricators should be so set that one drop of oil is misted about every 20 to 25 sec.

10.32 Water trap

The condensate in the compressed air is collected in the water trap (in control desk). This water must be drained at regular intervals. In the course of longer intervals, condensate will also form in the distributor tank, which must also be drained off. In both cases, first remove the cover plate of the vertical control desk panel, shut off the main pressure reducing valve (air input to control desk) and then screw out the corresponding water drain screws.

10.33 Micro pressure regulators and mixing relay valves

Under normal operating conditions, these units require no regular maintenance or servicing. If trouble develops, this is almost always due to compressed air which has not been properly cleaned.

In such cases, clean the valves as per enclosed special instructions.

It is advisable to entrust lubrication of the machine to the same person who also lubricates the other machinery in the plant. This will ensure that the winder is properly lubricated.