COLEX®

Photo•Processing•Equipment

Roller Transport Processors

Operating Manual

Introduction

Congratulations on your purchase of a Colette Pro Roller Transport Paper Processor. This reliable machine, **made in America**, represents the ultimate merger of up to the minute electronic technology with proven processing techniques. Some unique features of the Colette Pro Roller Transport Processors are:

- Microprocessor control system
- One-Touch Duratrans
- Fully Submerged Roller Design
- Heavy Duty Rollers
- Self Cleaning Crossovers
- Heavy Duty Sideplates
- Infra-red replenishment scanner
- Space Saving Design
- Computer Design and Manufacture for Maximum Precision

This manual is intended to make your Colex Roller Transport Paper processor easy to understand and operate. Read it carefully, follow the procedures, and your processor will give you years of virtually trouble free service.

For additional product information and a listing of local service centers please contact:

Colenta America Corporation
347 Evelyn Street
Paramus, NJ 07652
Telephone: (201) 265-5670
Fax: (201) 265-7093

Colex Roller Transport Processors

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Safety Advisement and Precautions

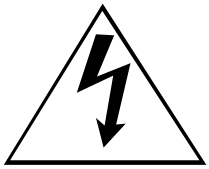
Modern photo processing equipment is simple and safe to operate. The following precautions should be taken in the operation of all machinery:

Mechanical:

- Processors should not be left to operate unattended. When no one is on the lab premises, the power and water supplies to the processor should be turned **off.**

- Be careful not to let loose clothing or jewelry become tangled in operating parts of processing equipment.

- Whenever possible, turn equipment off before attempting to service it.



Electrical:

- Disconnect power at wall outlet before attempting to service electrical components.

- Remove loose jewelry before working on electrical equipment, to prevent it from coming in contact with power.

- All equipment installations **must be thoroughly grounded.**

- Any water and chemistry spilled in the base section of the processor must be wiped up immediately, to prevent possible short circuiting of electric components.

Chemical:

- Follow all the safety precautions listed by photographic chemical manufacturer.

- Use eye and hand protection when mixing chemicals or performing routine maintenance on the chemical racks or tanks.

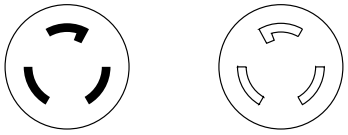
- Ensure proper ventilation in chemical mixing area.

- Wipe up spilled chemicals promptly. Avoid spills and contamination by using the optional rack carrier tray, available as an accessory. **The carrier tray should be rinsed clean after each use**.

Specifications

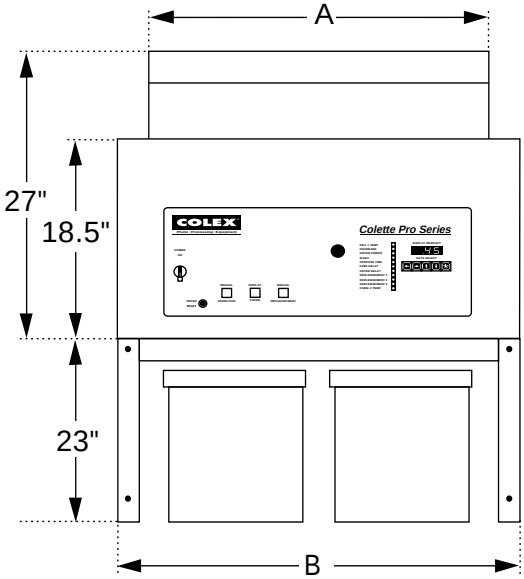
Colette Pro RA-4 or B&W Model Size:	20"	26"	32"
Speed, in minutes	20	20	20
Dry to Dry, in minutes	5	5	5
Tank Capacity in Gallons	2.1	2.4	3.0
Water, GPM	1.5	1.5	1.5
Power/Current Draw 220V 1ø	15A	20A	25A
NEMA Receptacle Type	L7-15R	L6-20R	L6-30R
Dimensions: Dryer Width "A"	27"	32.5"	38"
Total Width "B"	33"	38.5"	44"

NEMA Receptacle **NEMA Plug** (Supplied)

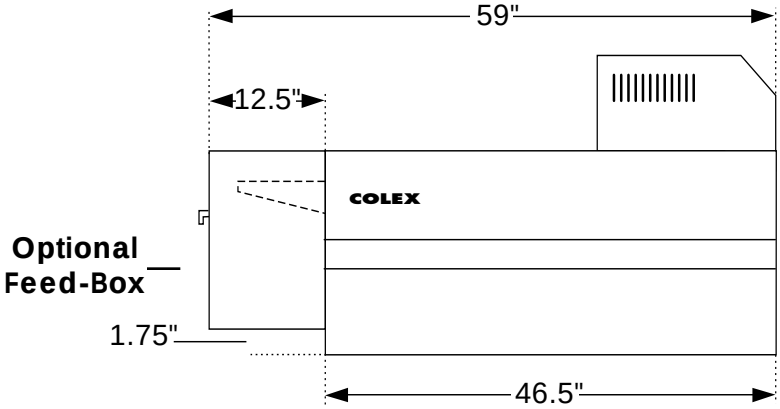


The purchaser must supply the wall receptacle for the processor. Be sure to check amperage rating at time of purchase.

Dimensions



Optional Colex T-Stand



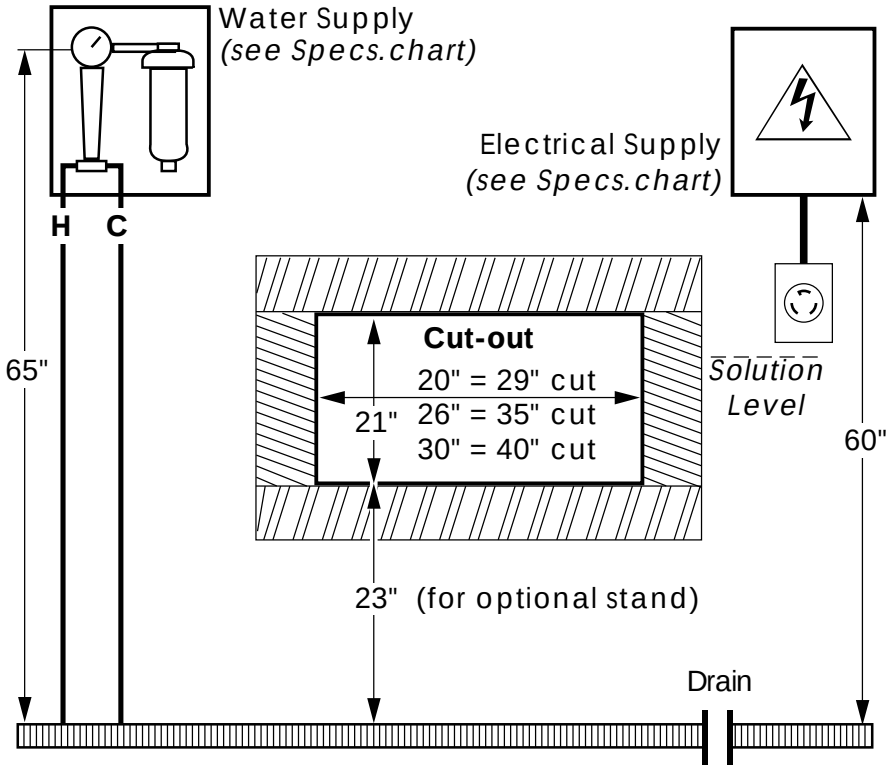
RTK RA-4 **20" 26" 32"**

Tank Configurations & Capacities in gallons:

Developer	Bleach/Fix.	Wash	Wash
2.1	**2.1**	**2.1**	**2.1**
2.4	**2.4**	**2.4**	**2.4**
3.0	**3.0**	**3.0**	**3.0**

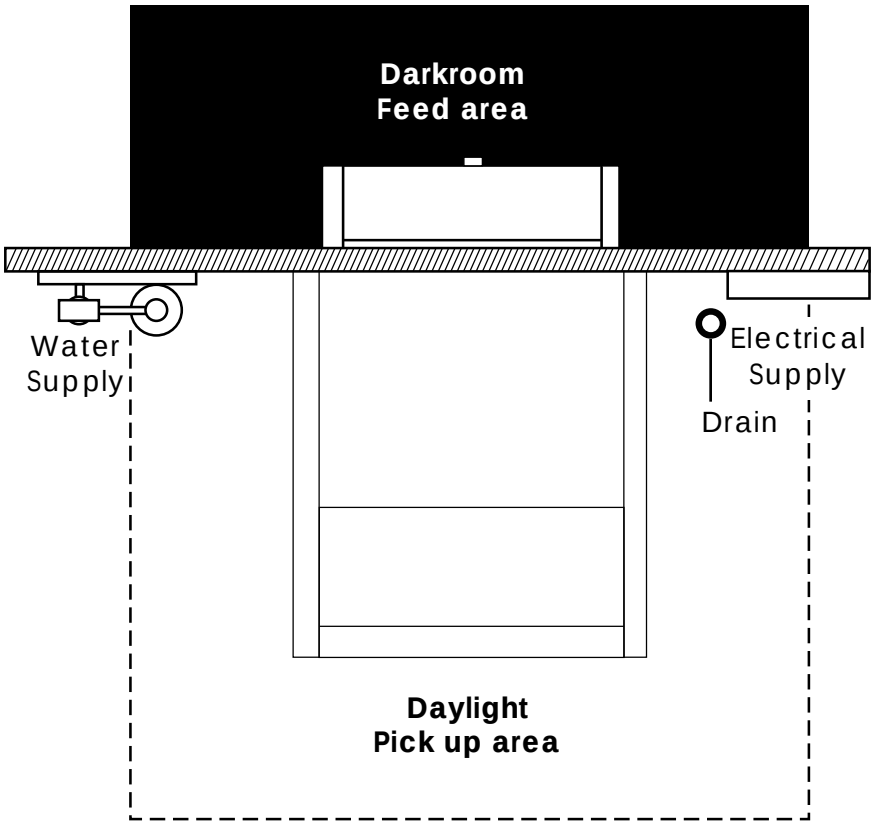
Service Locations and Wall Cut-out

NOTE: The location of the water supply and electrical supply are only recommendations. The actual locations may be reversed or both supplies can be located on the same side of the machine if necessary, although this is NOT recommended for safety reasons.



Location for Darkroom feeding & daylight delivery

A minimum distance of two feet is recommended around the processor for safe operation and routine maintenance.

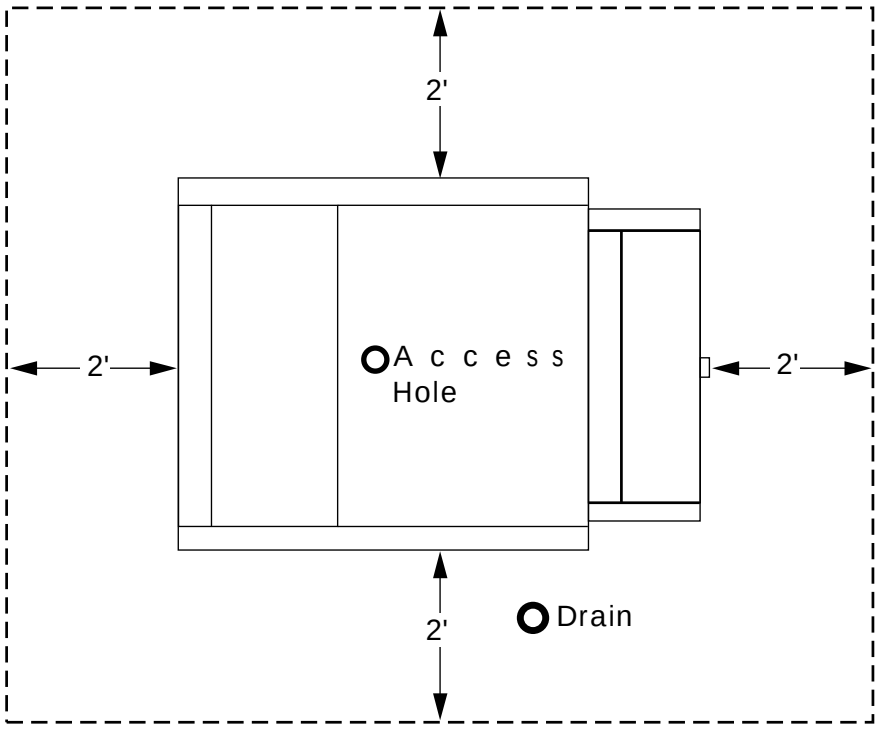


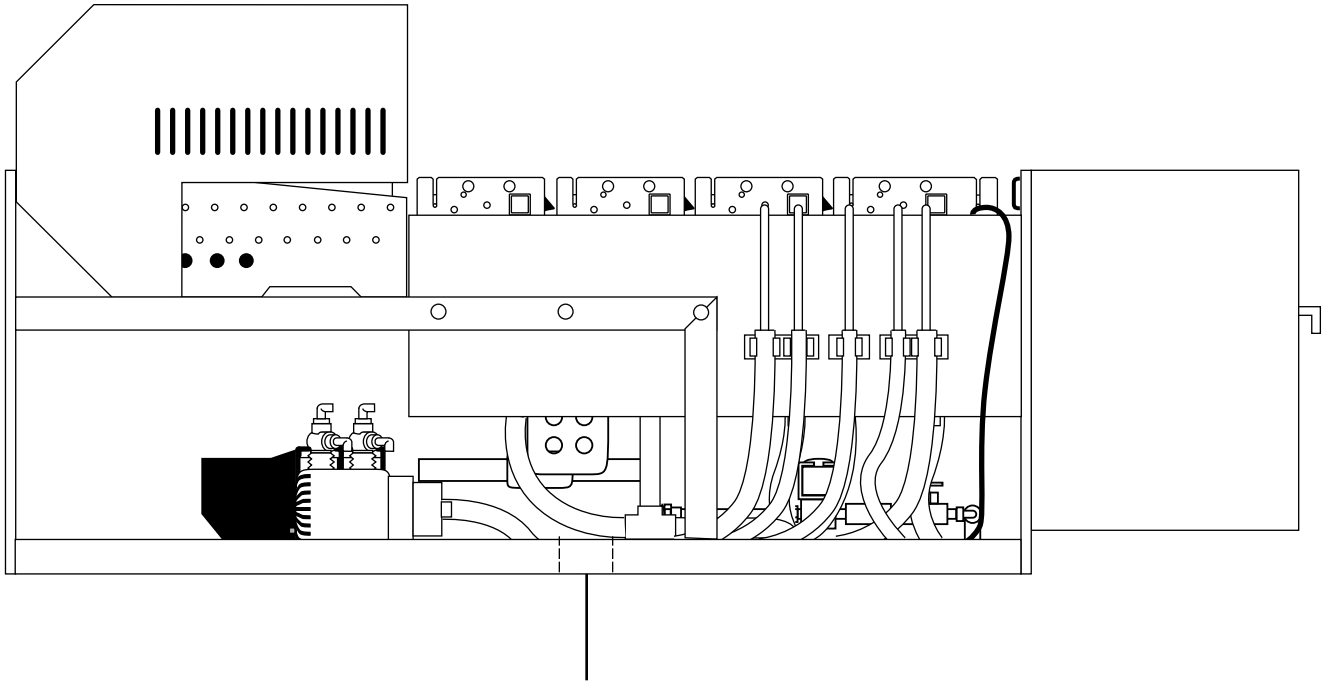
Service Locations & Hook-up

A minimum distance of two feet is recommended around the processor for safe operation and routine maintenance.

An access hole is provided at the center of the processor base for running the drain, water and replenishment hoses.

The location of the drain is recommended within 12" of the processor. The actual location may vary according to conditions of the processing area.

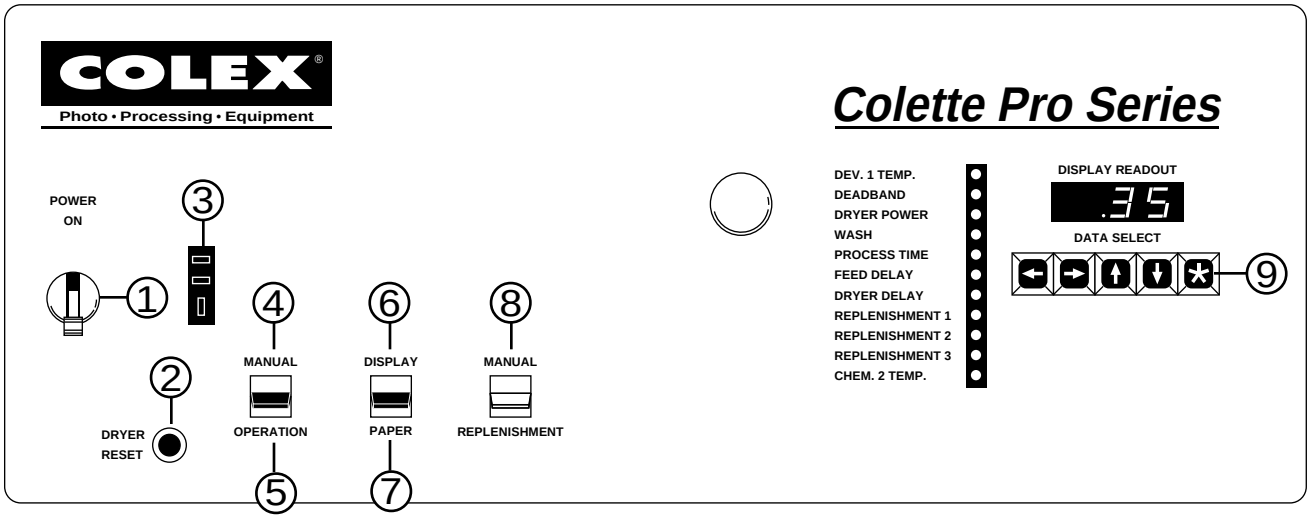




Water Supply: Tempered = 1/2" reinforced flex tubing.

The drain, water and replenishment hose access opening is located in the center of the processor base.

Introduction to Controls



1 Main Power Switch
Displayed in OFF position.

2 Dryer Reset
Depress if thermostat triggers shutdown as a result of temperatures which exceed internal safety limit.

3 Roll Takeup Power Supply

4 UP - Manual Operation - Pg. 2.7
Continuous operation of transport, recirculation pumps and dryer. Automatic replenishment system is turned off. Can be used as a trouble-shooting aid.

5 DOWN - Automatic Operation - Pg. 2.7
Automatic operation of transport, recirculation pumps and dryer.

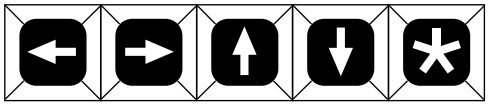
6 UP - Display mode - Pg. 2.8
Slow transport speed for display materials.

7 DOWN - Manual Speed - Pg. 2.7
Normal transport speed for paper materials.

8 UP - Manual Replenishment - Pg. 2.7
Continuous cycling of replenishment pumps while depressed.

9 Display & Programing Keypad - Pg. 2.2

Keypad Functions



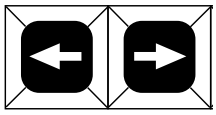
Functions:

The keypad is used to view current control readings and settings, and to change settings. Functions controlled by the keypad include:

- Process Temperature
- Temperature Deadband
- Dryer Temperature
- Wash Timing
- Process Time
- Feed Delay Time
- Dryer Delay Time
- Replenishment Rates
- Infra-red Scanner Pulse Count

Programming the microprocessor control with the keypad is almost as easy as setting a digital clock:

Left/Right Arrow Keys



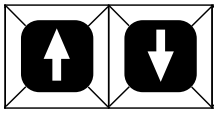
Use the **Left** and **Right Arrow Keys** to change the function that you are viewing, As you press the keys, you will note that the indicator light moves to a different function for each key press. In this mode, the display will show the **actual reading** for the indicated function. For example, when "Dev. 1" is indicated, the actual tank temperature for Dev. 1 is displayed.

Asterisk Key

Use the asterisk key to display the **Setpoint** for the indicaterd function. This is the programmed value that you wish the processor to maintain.

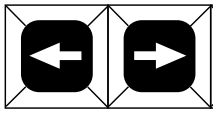
Keypad Functions

Up/Down Arrow Keys



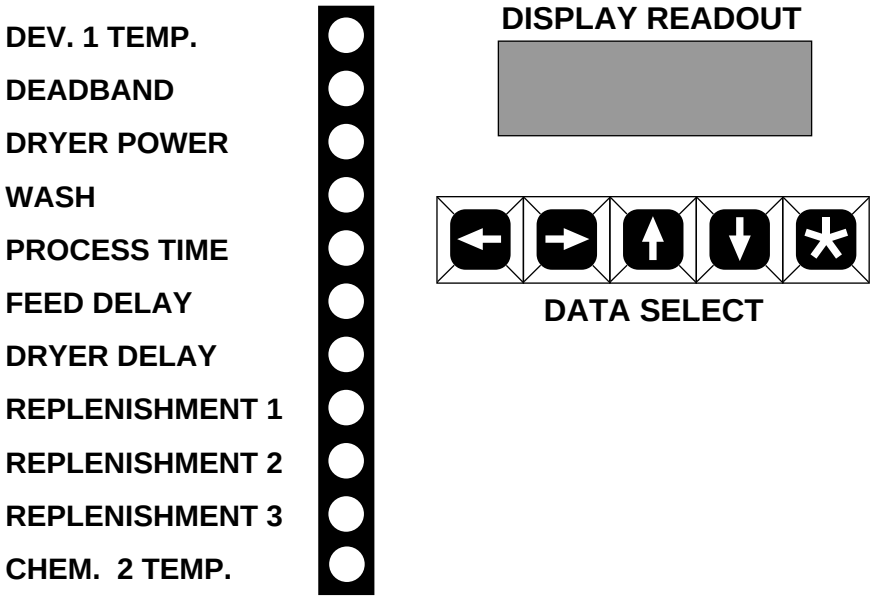
When the asterisk key has been pressed, the **Up** and **Down Arrow Keys** light up. This indicates that they may now be used to raise or lower the setpoint for the indicated function. A quick key press will change the setpoint by one digit. Holding the key in will cause the setpoint to change at an accelerating rate.

Left/Right Arrow Keys



When you have finished viewing or programming the setpoint, press either the left or right arrow keys to change to another function indicator. Any changes made to the setpoint before changing functions will be permanent until reprogrammed. If no key is pressed, the display will revert to the Dev. 1 temperature display after five minutes.

Programming Technique



Normally, the microprocessor control panel is delivered fully programmed. Should any changes be required, they can be easily made.

Temperature Control

1. The control panel normally displays the actual (first) developer tank temperature. To see the temperature controller setting, press the asterisk (*) key once. When the temperature controller setpoint is displayed, the up and down arrows are illuminated. This indicates that it is possible to raise or lower the setpoint by simply pressing the proper arrow key. Holding the key in will cause the setpoint to change at a faster rate.

Deadband Setting

Note: The recommended deadband setting for waterless processors is 0.3°C.

2. When the setpoint has been programmed, the deadband settings may be checked by pressing the asterisk key a second time. The deadband is the temperature tolerance for turning heaters on. The recommended deadband setting is 0.2 °C., which is equal to ±0.1 °C. Although it is possible to change the deadband setting, such changes are *not recommended.* Too tight a deadband setting will cause more excessive wear on heating and cooling components with no actual gain in performance.

NOTE: The last three process settings are disabled on the Colette Pro processors for RA-4 and Black & White materials.

Temperature Indication

When the developer tank is **heating**, its indicator light will **flash slowly.**
When the developer tank is cooling the indicator light will flash **rapidly.**
When the tank is at the **set temperature**, the light will **glow steadily.**

Dryer Temperature

3. To view the dryer temperature, press the left arrow until the dryer indicator is illuminated. The current dryer temperature will be displayed.

To view the dryer temperature setpoint, press the asterisk key. The dryer power percentage set point will be displayed, followed by the letter 'P' to indicate percentage and the up and down arrows will be illuminated, to indicate that the dryer setpoint may be changed, if so desired.

The setting for dryer temperature is expressed in percentage of total dryer power. The relationship between dryer power percentage and dryer temperature output is affected by several variable factors, such as room temperature, room humidity and workload. As a general rule, use the lowest possible percentage (of total temperature output) to achieve drying. The higher the percentage setting the hotter the dryer will get.

Programming Technique

Process Time
(Dry to dry)

5. Process time is displayed when its indicator is illuminated. This is the time for which the machine will run after the last sheet of paper has been fed into it. The control panel counts down after paper has been fed, so the time displayed is the number of minutes remaining before the processor will shut itself off. (Minutes are expressed as decimals by the control , so "6.5" means six minutes, 30 seconds). To change the process time, press the asterisk key and use the up or down key.

Feed Delay

6. Feed delay time is displayed when its indicator is illuminated. This is the time for which the panel waits after the last piece of paper has cleared the sensor bar before sounding the paper feed tone. This delay may be set by pressing the asterisk key and using the up and down arrows: 15 sec. paper & 30 sec. display.

Dryer Delay

7. Dryer delay time is displayed when its indicator is illuminated and the asterisk key is depressed. This is the number of minutes for which the processor delays turning the dryer on after a print has been fed into the processor. The dryer delay must be at least *2 minutes shorter than the process time, this allows the heating elements to reach maximum operating efficiency. The display counts down the time remaining before the dryer will come on. To change the setting, use the asterisk key and up and down arrows. The maximum dryer delay time setting is always two minutes shorter than the current dry to dry time.

Replenisher Time

8. Replenisher time is the number of seconds the replenishment pump will run once the infrared area sensing system has triggered it. The display counts down the remaining seconds when the pump is running. Use the asterisk and up and down arrow keys to change this setting.

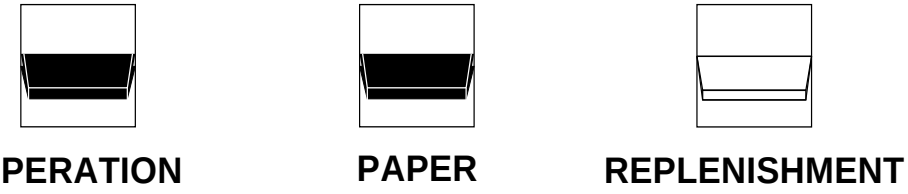
Pulse Count

9. The last function displayed is the replenishment pulse count, which is displayed when none of the indicator lights is on. Pulse count is the number of replenishment pulses needed to trigger the replenishment pump. This is a factory setting and changes are not recommended. However the pulse count display is a useful tool for troubleshooting replenishment problems.

*To achieve optimum performance, the optional infra-red heating elements take slightly longer than resistive heaters. Therefore, we recommend at least 3 minutes be provided for warm-up.

NOTE:The operating temperature may need to be raised for long rolls. ***CAUTION****: It is recommended that the dryer be set to the minimum operating temperature to avoid excessive curling of cut-sheet materials in the dryer section.*

Control Switches



Whenever the processor is switched on, the control system automatically starts the tempering system and recirculation pumps The transport motor will briefly operate at regular intervals to ensure uniformity.

Normal Operations (paper) Mode

When paper is fed the processor automatically turns the drive motor on, and opens the water solenoid. The dryer turns on after a preset time has passed (dryer delay). The processor then shuts down automatically after the last print has emerged from the dryer. The infrared replenishment system operates to ensure precise replenishment for the amount of paper fed.

Manual Mode

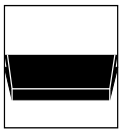
The manual mode allows manual operation of the drive motor, and dryer. This mode is not intended for general use. It is used for systems diagnostics and as a backup should there be a problem with the automatic electronics.

Manual Replenishment

The replenishment pushbutton enables the operator to replenish the chemistry manually. The switch should not be operated for more than 45 seconds at a time, to avoid overheating the replenishment pump motors. For any amount of replenishment larger than a few hundred milliliters, do not use the pumps, simply replenish by placing the required amount directly into the processor tank.

"Dura" Speed Capability

DISPLAY



PAPER

Duratrans is Kodak's trade name for a display print material coated on a translucent plastic base. Duraclear RA is a similar material with a clear film base. These materials may be rear-illuminated for use as a display transparency. These materials are processed in standard RA-4 chemistry, but a longer development time than the standard time must be used, and a higher replenishment rate than normal must also be used. Therefore, any processor used for Duratrans must be equipped with a variable speed motor, and a means of changing the replenishment. On Colex roller transport processors these functions are accomplished automatically on the control panel by the **DISPLAY** switch. This switch will automatically select the correct motor speed for the material selected.

Using DISPLAY Mode

When the DISPLAY switch is pressed the following changes are made to the normal process parameters:

- Dryer and drive motor are automatically switched to manual. Both dryer and drive motor will operate continuously *until the DISPLAY key is deactivated* at the end of the process run.
- Motor speed is slowed to provide the correct processing times for display materials.
- Replenishment is automatic.

Adjusting Replenishment Rates

"Display" materials require approximately 2.5 times the normal replenishment rate used for ordinary color paper. Since the processor transport speed is slowed down from 45 seconds development to 110 seconds, no replenishment change should be required.

NOTE: Always return the processor to normal Automatic operation after the end of the Display Material run.

The Chemical Replenishment System

Function

Whenever photographic material is processed, chemical constituents of the developer are used up and by-products are left behind in the processing solution. Replenisher solutions are formulated to restore the chemical to its original activity and to dilute the by-products to the proper level. It is therefore necessary to add the proper amount of replenisher for the amount of paper that has been processed.

Infra-red Scanning

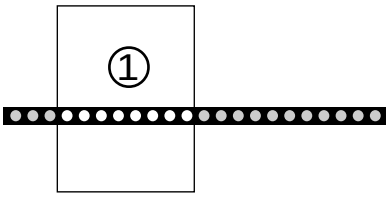
This task is performed automatically on the processor by the Infra-Red sensor pairs located on the scanner bar. (#1) These sensors emit pulses of infra-red light which have no effect on photographic emulsions. When paper is beneath the scanner bar, the pulses are reflected and are sensed by the sensor.

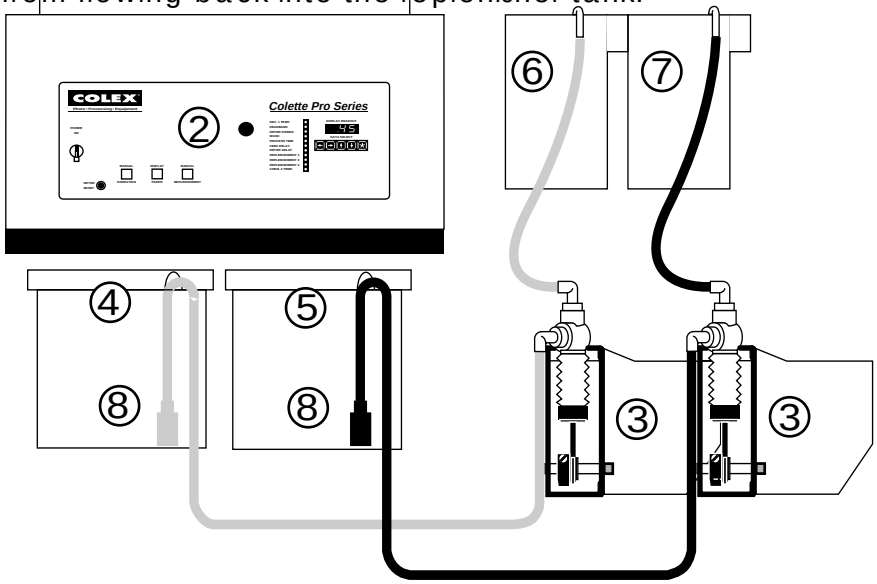
Pulse Count Function

The pulses are then transmitted to the control panel (#2), where they are counted by the microprocessor. When the number of pulses reaches the amount that has been programmed on the microprocessor, the replenishment timer function is started .

Replenishment Timer Function

The replenishment timer runs the replenishment pump(s) (#3) for the number of seconds that have been preset on the microprocessor (#2). Any number from 5 to 39 seconds may be set on the computer. When the replenishment pumps are activated, the replenisher solutions are drawn through footvalves located at the bottom of the replenisher tanks (#4 & 5) to the processor tanks (#6 &7). The footvalves (#8) contain a filter and a checkvalve which prevents chemistry from flowing back into the replenisher tank.

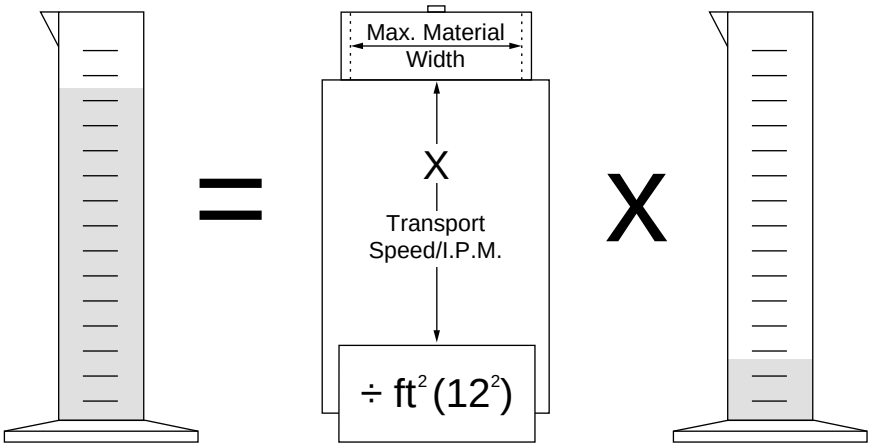




Calibration

Replenishment Calculation

The pulse count and scan rate of the replenishment system have been preset at the factory to cause the replenishment pumps to start every minute if all the sensors in the scanner bar are activated. Therefore, the replenishment system must be calibrated to provide replenishment for an area of paper equal to the width of the processor in inches multiplied by the speed in inches per minute.



The calculations illustrated above translate into the following formula:

$$\text{Replenishment} = \frac{\text{Max. Width x Speed}}{144\ (\text{ft}^2)} \times \text{Repl. Rate (ml/ft}^2\text{)}$$

It should be remembered that all replenishment rates given by chemical manufacturers are merely suggestions, and should be verified by careful observation of quality control plots. If the plots trend upwards, the chemistry is overactive, and you may need to lower replenishment rates. If they trend downward, the chemistry is underactive, and replenishment rates need to be raised. Once the equipment is installed, replenishment rates may be modified by changing the replenishment timer setting on the front control panel, and adjusting the pump output volume if necessary.

The Chemical Replenishment Rates

Recommended replenishment rates for RA-4 paper.

Process Step	Time	Temperature	Replenishment Rate (mL/ft²)	
			Paper	Film
Developer	45sec.	35°C (+/-.3°C)	15	35
Bleach-fix	45sec.	38°Max.	23	53

Please note: The figures listed are suggestions only. They represent mL/cycle and are based on a replenishment rate prescribed as a suggested starting point. Actual replenishment rates will vary with operating conditions.

Refer to Kodak RA-4 process manual for information regarding process monitoring and the calculation of utilization percentage as it affects the replenishment rates. *Utilization percentage can significantly affect the quality of the processed materials and therefore must be taken into account when determining operable replenishment rates.*

For **B&W**, use the recommended replenishment rates listed by the chemical manufacturer. The rates given may be used in the formula on the previous page to determine your initial replenishment rate. Further testing may reveal slight deviations from the manufacturers recommendations.

Checking the Replenishment Rates

Fill graduate.

To check the actual replenisher volume delivered by the replenishment system, use a 500 ml graduated cylinder. Remove the replenishment tube from the processor tank that you are testing and insert it into the graduated cylinder, being careful not to allow any chemical to overflow the graduate.

Insert paper.

Insert sufficient paper under the scanner bar to fill the entire width of the scanner area. This will activate the replenishment pumping cycle. *Insert the paper far enough that the sensors are activated, but not so far that it actually feeds into the processor. A piece of writing paper may be used if you don't have any photo paper. Be sure not to let it go into the chemistry.*

Determine the amount pumped.

When the replenisher pumps stop, turn the main power switch off**.** Remove the replenishment tube from the graduated cylinder. Read the volume of chemistry in the cylinder to determine the amount pumped during the replenishment cycle. Compare this amount with the amount which you have calculated for your processor's width and speed. If the values are within 5% of each other, leave the replenishment time at its programmed value. If the values differ by more than 5%, divide the amount pumped by the programmed time to determine the amount pumped per second. Divide the number from the table by this value to determine the number of seconds to program on the replenishment timer.

Check your results.

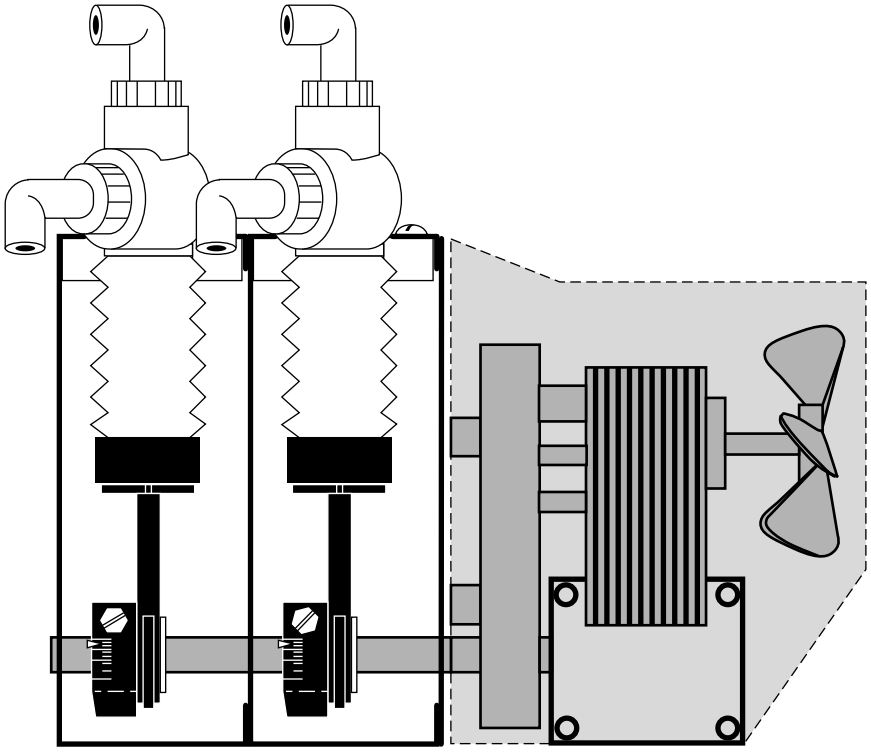
If a number other than the programmed value needs to be set to obtain the correct replenishment, repeat these steps using the newly programmed replenishment time to confirm your calculations.

Replace the replenishment tubes in their respective tanks and remove paper from below the scanner bar before turning the main power switch on.

The Replenishment Pump

Gorman Rupp • Replenishment Pump

Both the Single and Double Metering Pumps are cam operated bellows pumps. The pump head is mounted on a single pump motor. An eccentric cam activates the cam of each pump head as it rotates. The amount of chemistry pumped may be adjusted by means of the adjustment screw located on each cam. This adjustment changes the length of the pump stroke and therefore the amount of chemistry pumped per stroke. The stroke adjustment pointer is numbered in percent for ease of setting, and is directly proportional to the amount of chemistry pumped by the stroke.



Adjustment Procedure

The adjustment screw may be turned to the percentage of the rated output using a standard screwdriver. Exact rates depend upon particular application which is best determined with an on-site testing and calibration procedure. Reproducible results cannot be obtained below 10% of maximum stroke length.

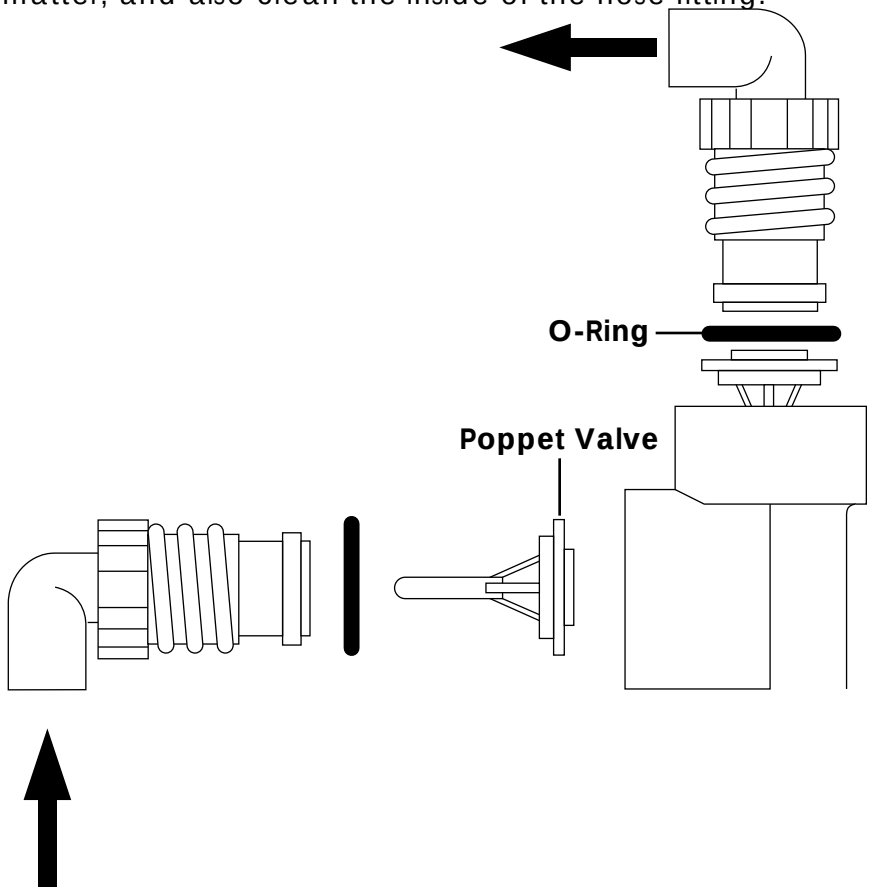
Replacement Pump
RA-4 *Double* - Z02017
RA-4 NP *Triple* - Z02018

Do not restrict flow with control valves, unless authorized and modified by a factory representative.

Cleaning The Poppet Valve

Check-valve Cleaning

The poppet valves are designed in such a way that chemistry can only flow in one direction through them, without flowing backwards. However, if dirt or chemical crystals become trapped between the check-valve and check-valve stem, backflow is possible, and an erratic replenishment rate can result. Replenishment rates should be checked every month or so to be sure that they are correct. Should they be erratic, a simple cleaning will often solve the problem. Clamp off the replenishment hoses on both sides, unscrew the hose fittings, and remove the poppet valves and springs, then rinse them with water. Examine the area between the valve stems and poppet valves for any foreign matter, and also clean the inside of the hose fitting.



Poppet Valve Reassembly

Once the poppet valves have been cleaned, proceed to re-assemble the pump. Be careful to replace the poppet valves back the same way you found them, since they must face in the correct direction if they are to work properly. The narrow end of the checkvalve should point away from the direction of chemical flow arrow engraved on the top of the pump.

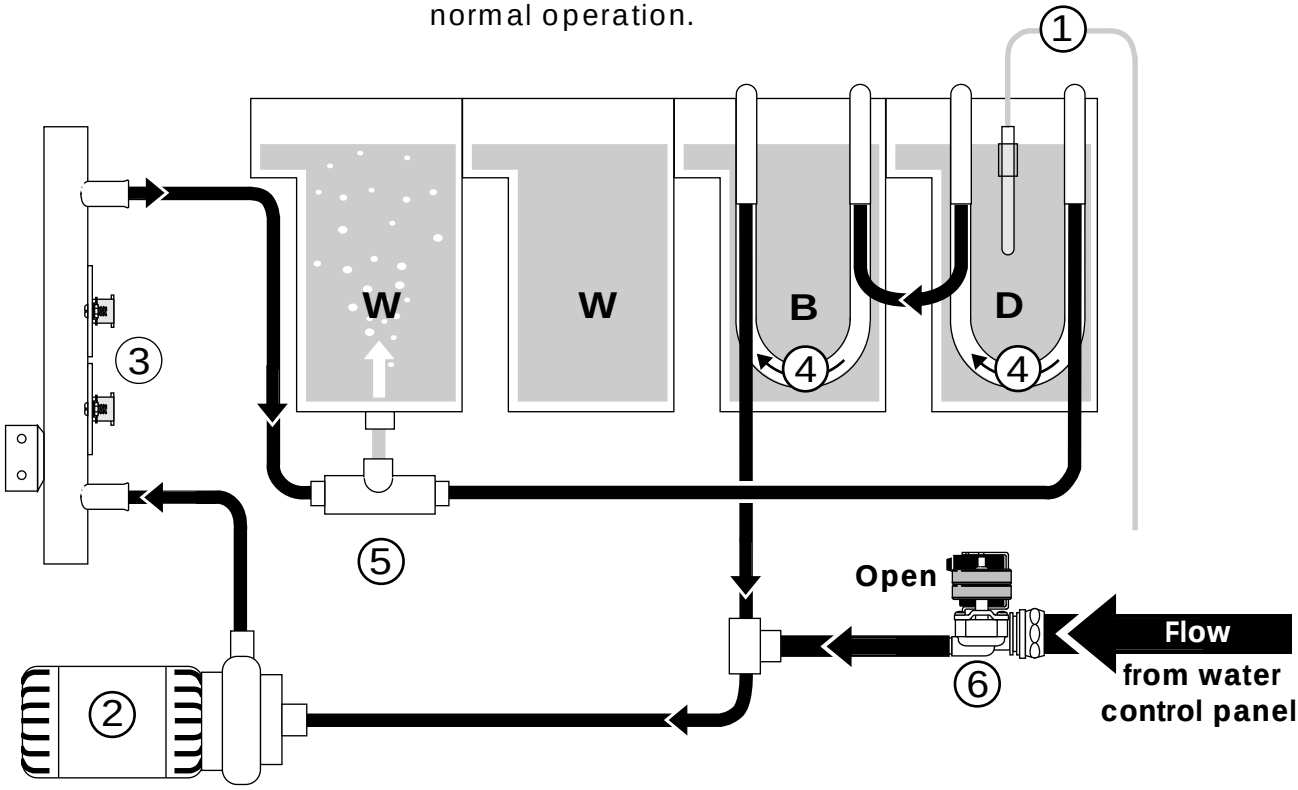
The Tempering System

Temperature Sensing

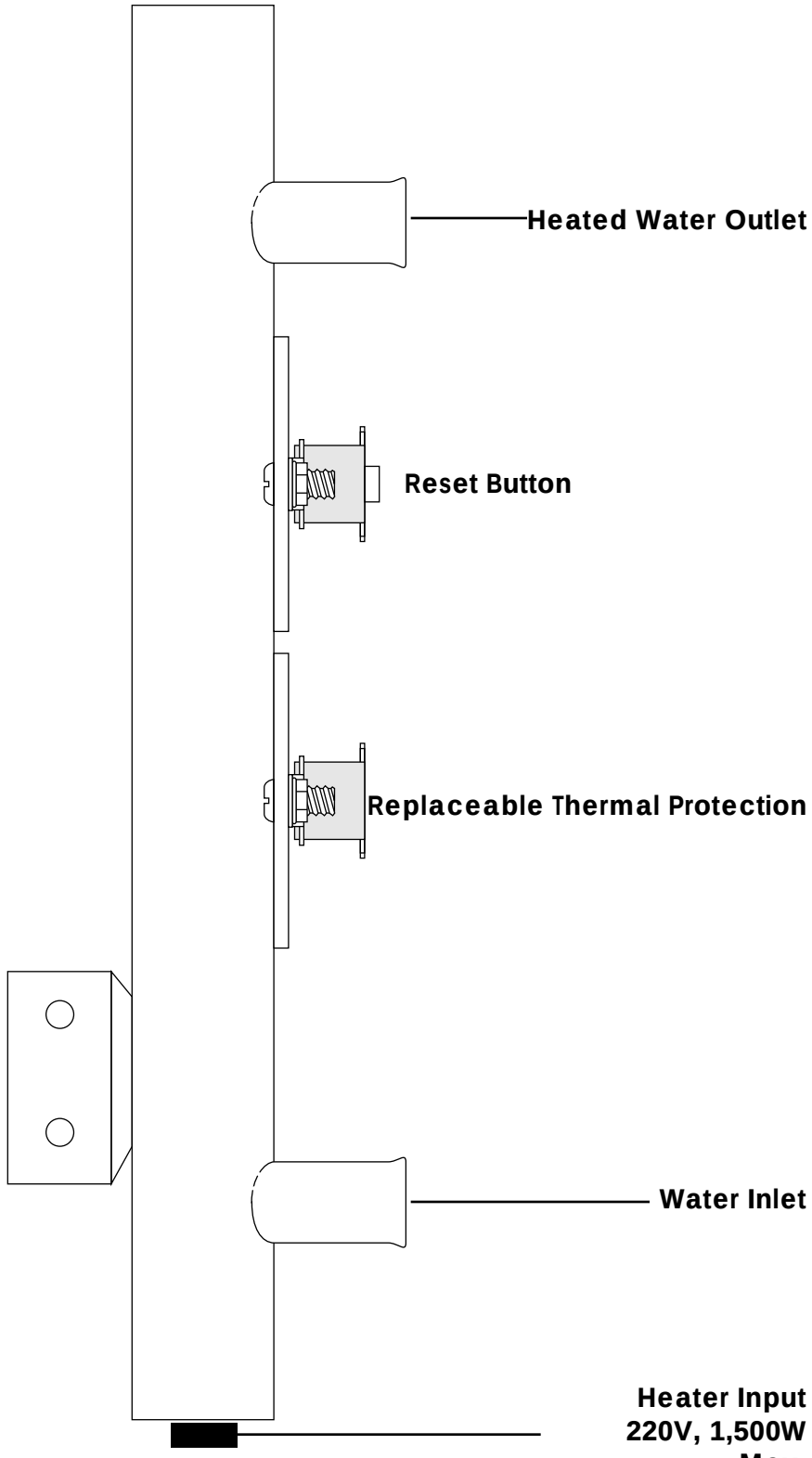
When the Developer or Bleach drops below the correct processing temperature, the thermostat probe (#1) senses the temperature change and activates the temperature controller in the Control Panel.

Solution Heating

The Control Panel in turn activates the Circulation Motor (#2) and the Heater (#3). The Circulation Motor pumps the tempered water through the Heat Transfer Coil (#4). The recirculation system is also activated to ensure even tempering throughout the entire tank. In standby mode, the system briefly engages the transport motor at regular intervals, to prevent the possible buildup of chemical by-products in the tank during periods of low usage. The system also includes an air purging "T" vent (#5) and a tempering system filler solenoid (#6 shown in the off position - *with the magnet disengaged*) which should be left in the off position during normal operation.



The Heatron Heat Exchanger



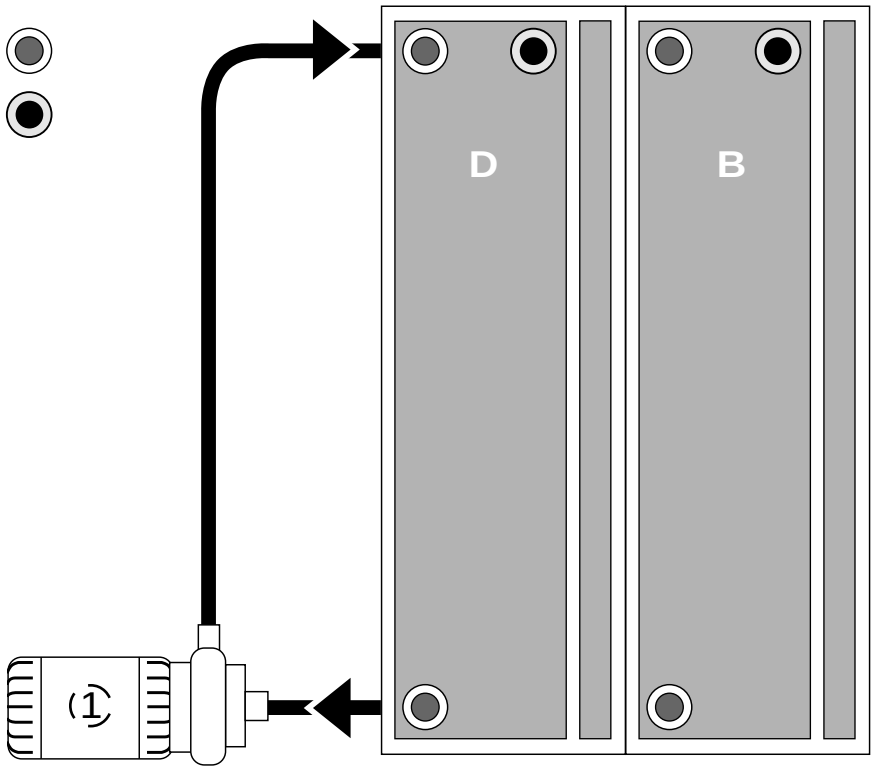
Heatron Heat Exchanger
800W / Z00721
1,500W / Z00722

The Chemical Recirculation System

Standard Recirculation

Filtered Dispersion Pipe

Standpipe to drain



Bleach tank configurations are the same as that of the developer tank.

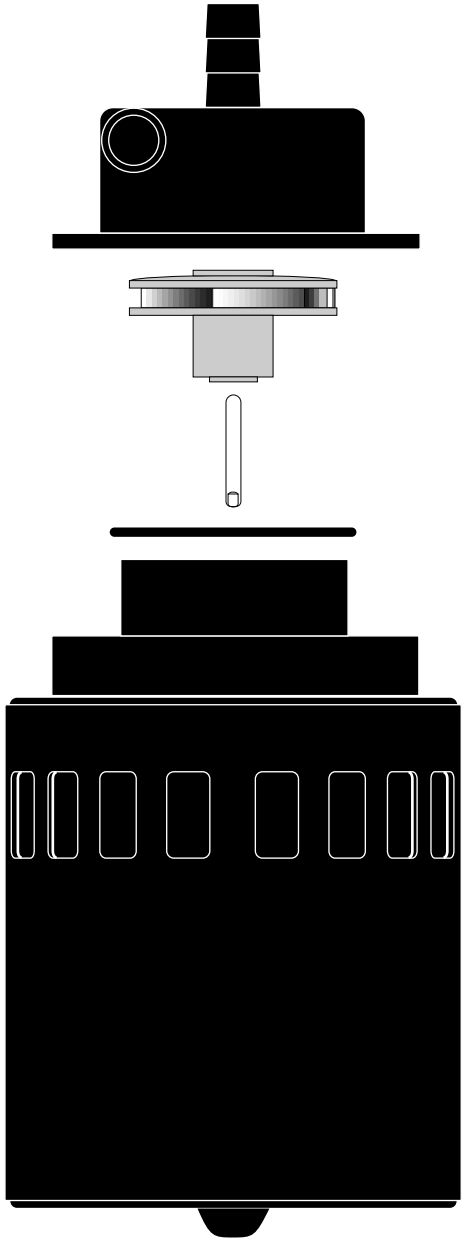
The chemical recirculation system is activated whenever material is in the processor and when the tempering or cooling systems are activated. Even temperatures are created by cross circulation technique. The recirculation pumps (#1) draw the chemistry from one area of the tank and redistributes it to another.

WARNING!

Do not reverse the pipe positions - fluids will expel from the processor. All Colette Pro processors have been water tested and are shipped with the pipes in the proper position.

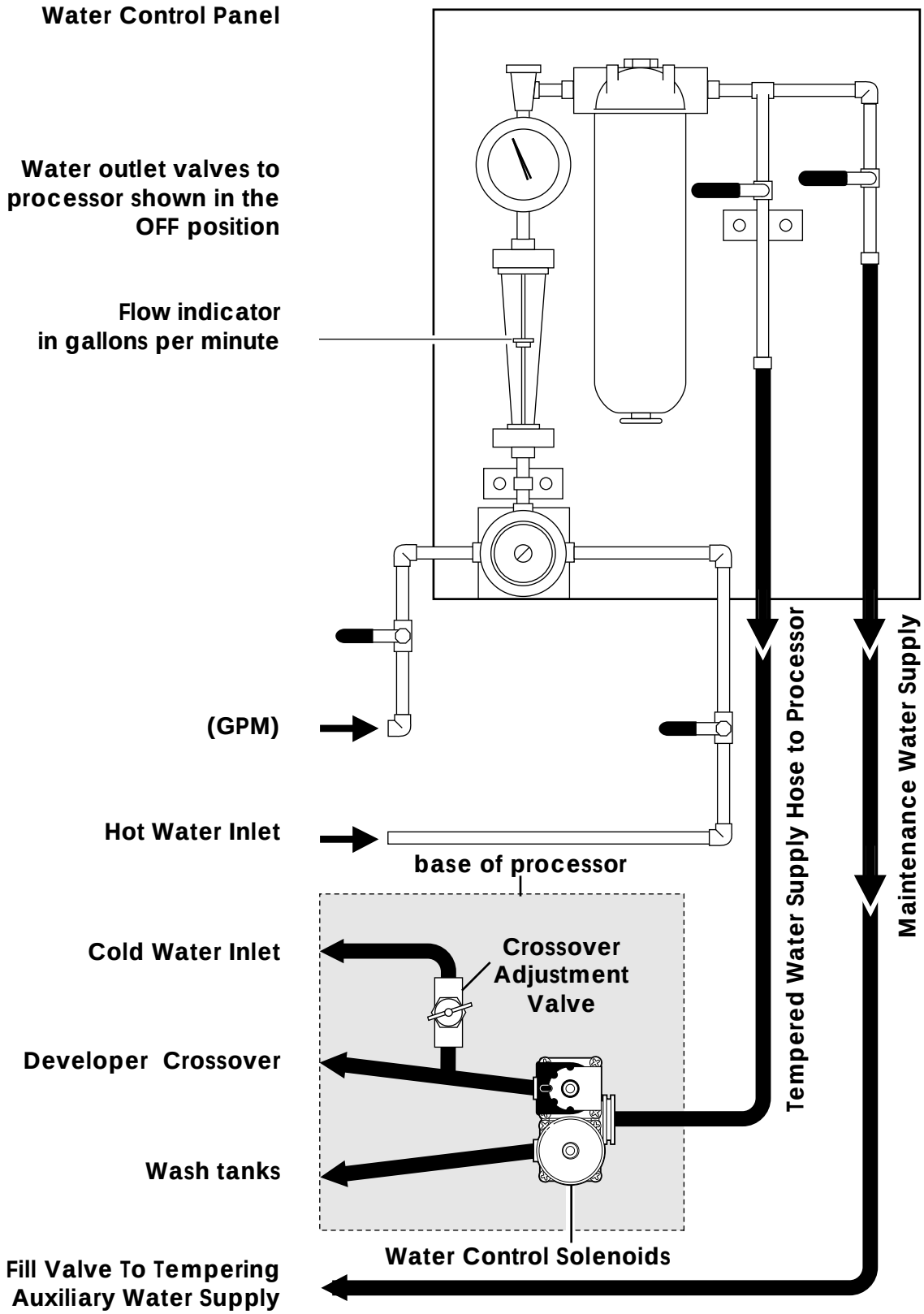
The Recirculation Pump

The recirculation pumps are magnetically driven to ensure trouble-free operation. Since the pump impeller is not connected to the motor by a drive shaft, leaks rarely occur. As is the case with all pumps, it is important that this pump be operated only when there is liquid in the tank. To prevent damage to this pump, **Do Not Run Dry.**



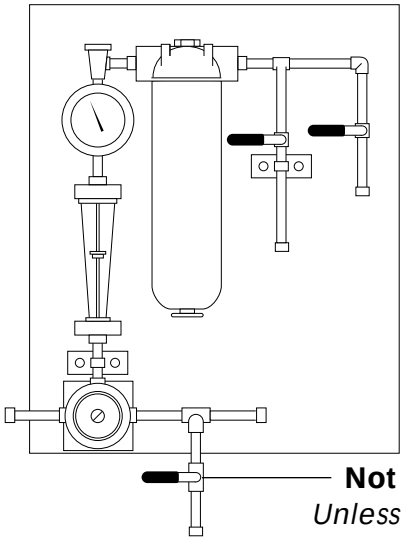
Replacement Pump
Gorman Rupp - Z02021

The Water Control System



The Wash Water System

Water Control Panel



Not required for Colette Pro
Unless cooling option is installed

All water going into the processor originates at the water control panel. The water panel should be set about 5° Celsius below the actual process temperature, or at 92° F. for Kodak RA-4.

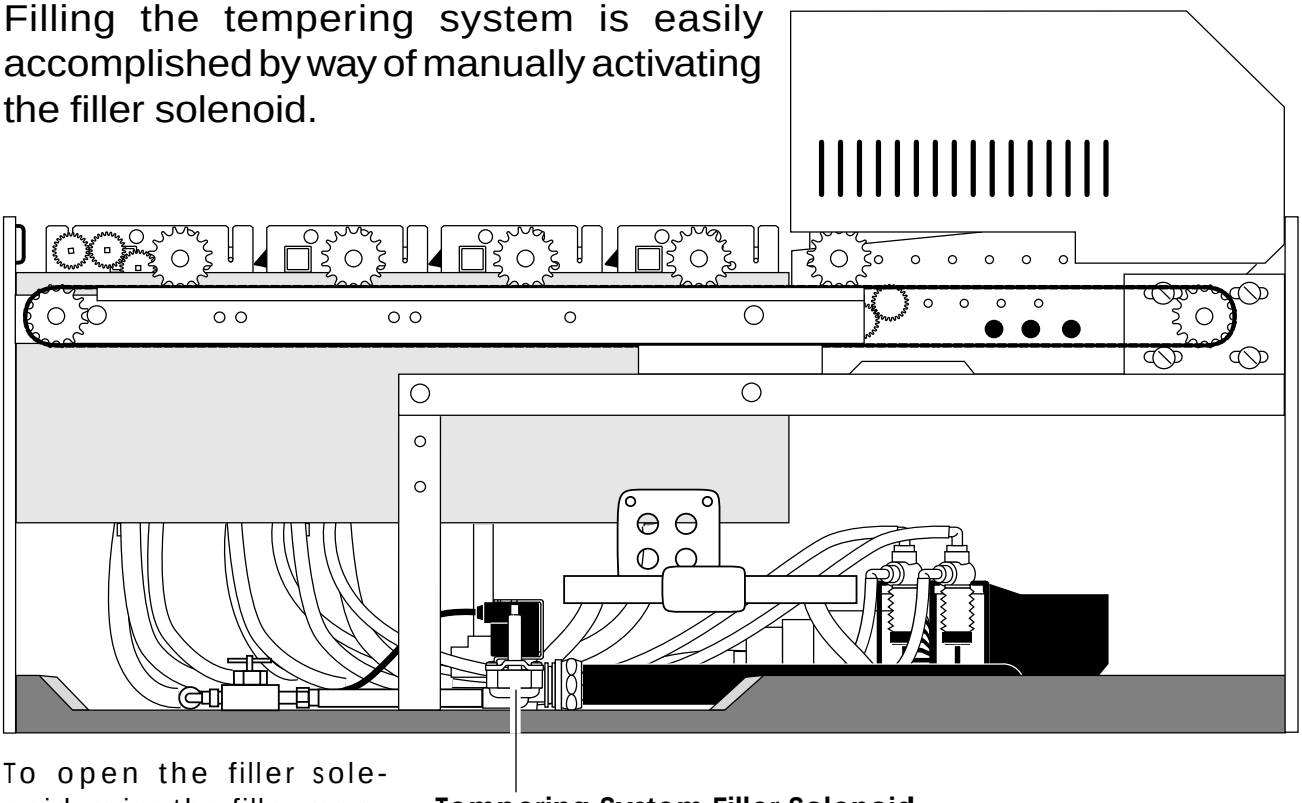
Water Solenoid
(See Water Control System Diagram 4.4)

The water solenoid is located on the processor base section, under the tank section. The hose from the solenoid is connected to the Developer/Bleach Crossover Wash Control Valve and the Wash System Supply Valve. The Developer/Bleach Crossover Wash Control Valve is used to regulate the flow rate in the chemical crossover troughs. The Water System Supply Valve is used to control the amount of water passing through the wash tanks.

IMPORTANT: Proper adjustment of crossover wash flow is critical. Too low a flow rate will not wet the rollers. Too much flow will result in water overflowing the trough and diluting the developer and bleach tanks. The crossover wash flow should be checked periodically before starting the processor. Please refer to the procedure on the following page for instruction on crossover flow adjustment.

Filling the Tempering System

Filling the tempering system is easily accomplished by way of manually activating the filler solenoid.

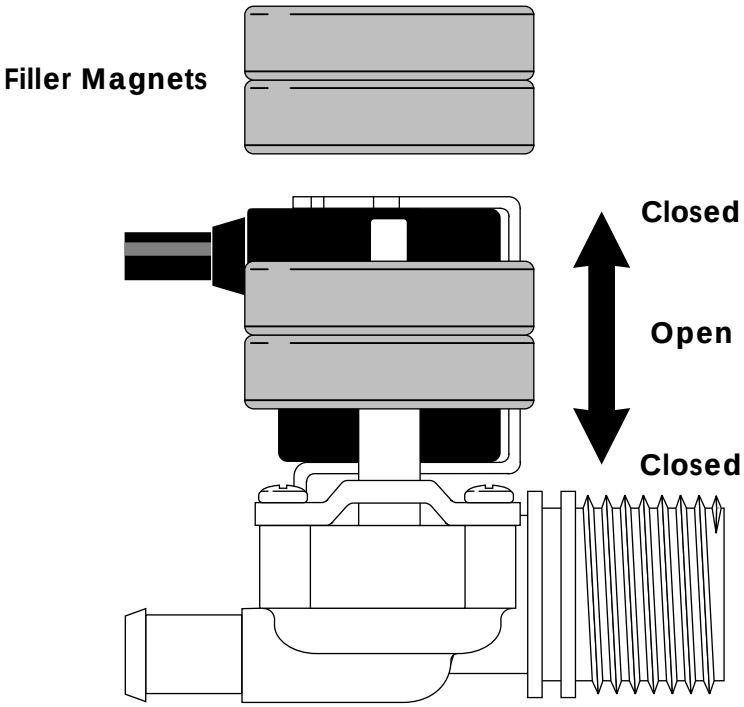


Tempering System Filler Solenoid

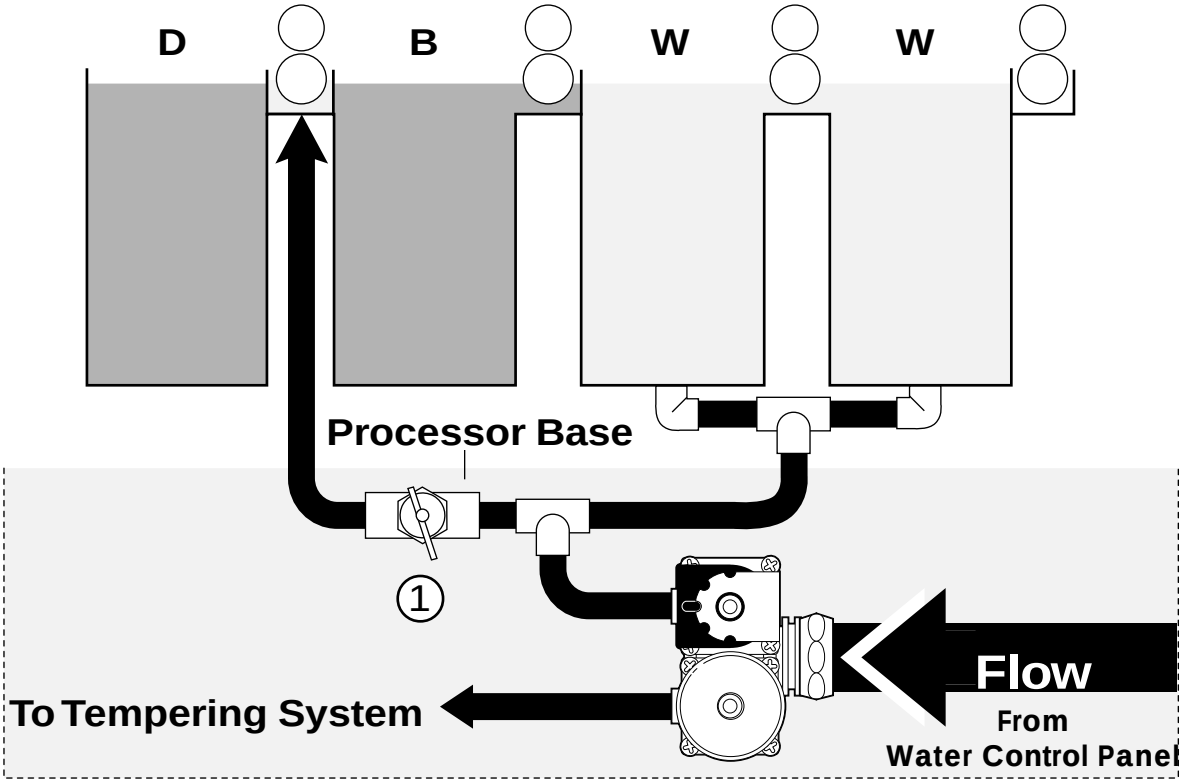
To open the filler solenoid, raise the filler magnets to the center position of the solenoid shaft. As the magnets are positioned near the center of the shaft you will hear the solenoid activate, allowing water to pass into the system.

NOTE: Filling of the tempering system cannot be accomplished without the filler magnet, it is therefore highly recommended that the filler magnet be stored on the solenoid post.

Caution! *Do Not run heating and recirculation system when dry.*



Crossover Flow Adjustment



base.

Determining the proper Crossover Flow

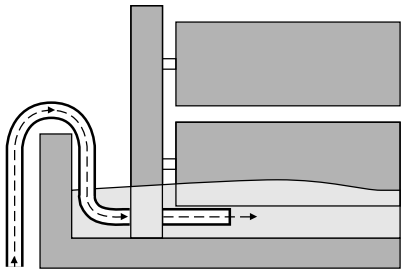
1. Set the Mode switch to **manual** to start the water flow.

2. Adjust the water flow at the water control panel to 1 gallon per minute. See illustration on page 4.4.

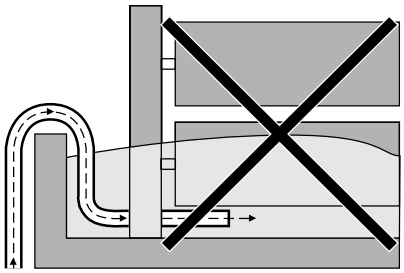
NOTE: *The water flow rate on the water control panel should not exceed 2 gallons per minute.*

3. Examine the flow into the crossover trough (the side near the drive chain). Some agitation of the water should be present, but the water should not come within 1/8" of the top lip of the trough. If necessary, use the Crossover Adjustment Valve (1) located on the drive side of the processor to adjust the crossover flow. *Additional adjustment to the water flow rate at the water control panel may be necessary to obtain proper crossover agitation.*

The Water Control Solenoids and the Crossover Flow Adjustment Valves are located on the drive side of the processor



Correct Water Flow



Flow Set Too High

Filter and Overflow Standpipes

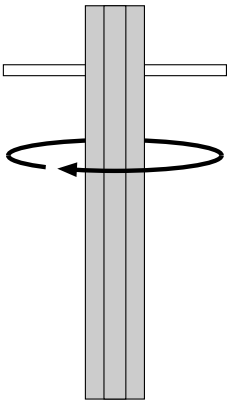
Filter Replacement

Filtration and overflow are achieved by means of standpipes screwed into the bottom of the tank, on the side away from the drive chain. The filter is covered by a tubular nylon mesh filter material and held in place using nylon tie wraps. The filter is screwed into the return line from the recirculation pump, and is located toward the rear (dryer side) of the tank. **The filter should be removed and cleaned by backflushing with running water at least once a month.**

Draining the Tank

The overflow standpipe is screwed into the tank drain. To drain the tank, simply unscrew the standpipe. Remove the standpipe slowly to prevent any splashing of the chemistry as it surges down the drain. A hexagon shaped key is provided for this purpose.

Hexagon Key



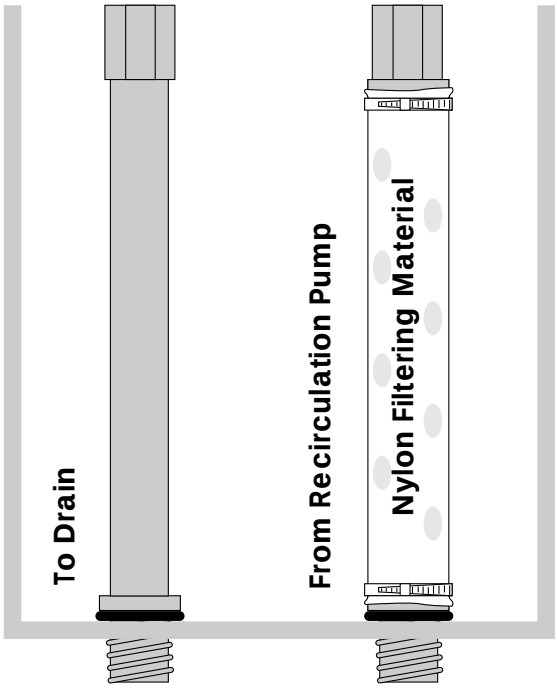
DO NOT OVER TIGHTEN !

WARNING!

Do not reverse the pipe positions - fluids will expel from the processor. All Colette Pro processors have been water tested and are shipped with the pipes in the proper position.

When replacing filter material always fully tighten the tie wraps to avoid leakage or spraying of chemistry.

Standpipes



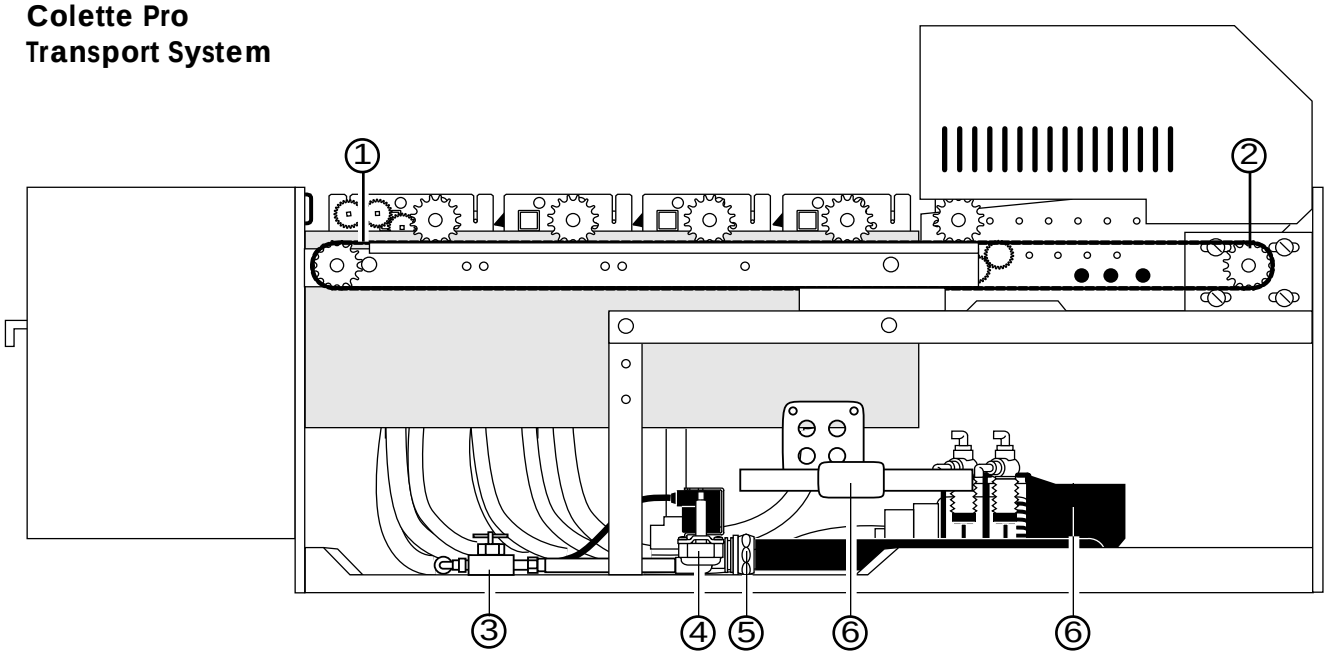
"O" Rings

Replacement Filter Material

Z90435

The Transport System

Colette Pro
Transport System



1	Rack Transport Chain
2	Drive Motor
3	Crossover Flow Adjustment Valve
4	Water Supply Solenoid
5	Water Supply Inlet
6	Tempering System Heater
7	Replenishment Pump

The Processor racks

Unique Rack Design

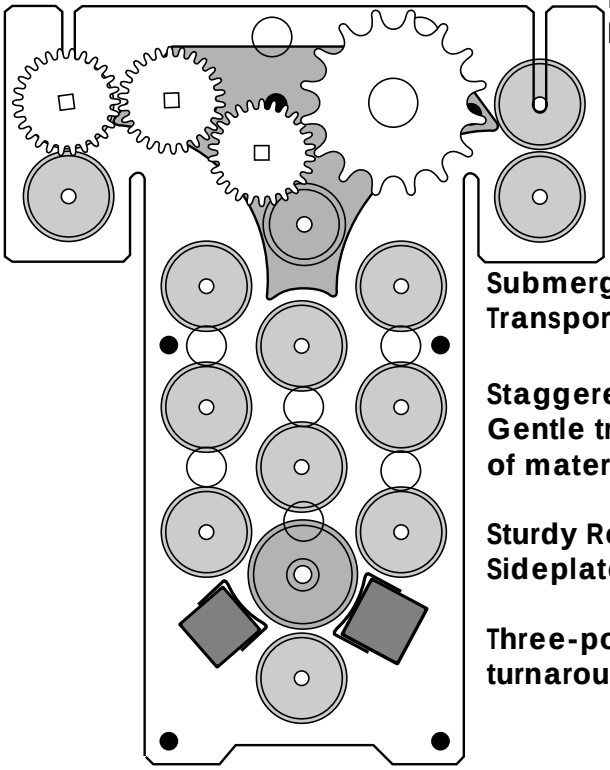
Reinforced Crossover Section

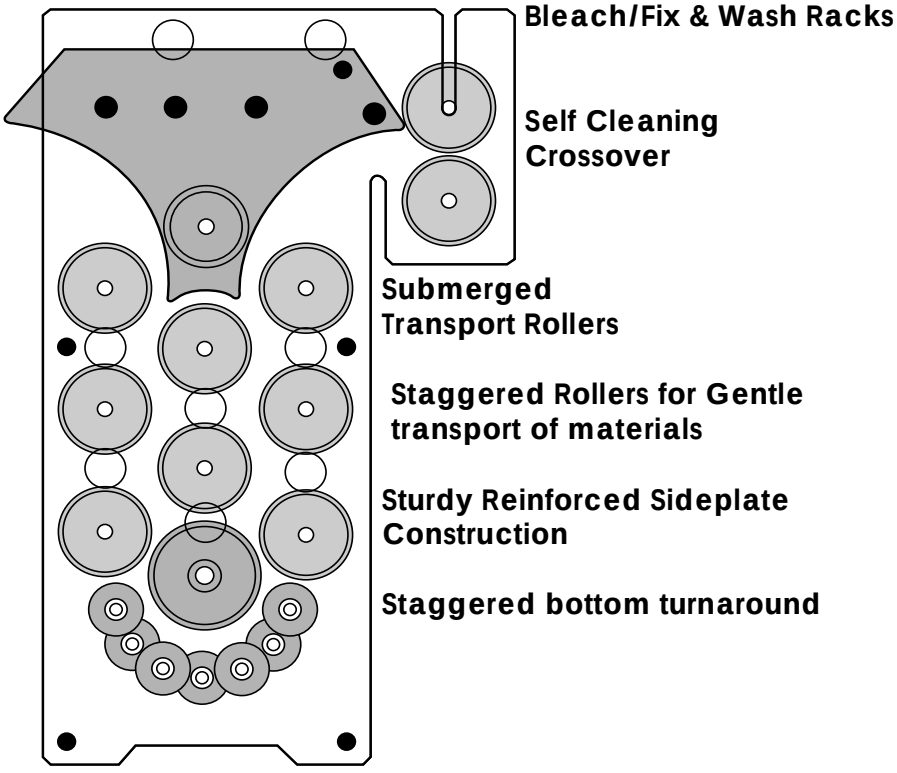
The Standard Colex features not found in other competitive systems are: self cleaning crossovers, submerged racks, staggered rollers and the sealed tank concept.

The self Cleaning Crossovers rinse and squeegee the material as it is passed from one solution to another, thereby removing excessive carryover and reducing contamination.

The Submerged Racks reduce oxidation and crystallization of chemistry, eliminating the scratches or abrasions from hardened solids in suspension.

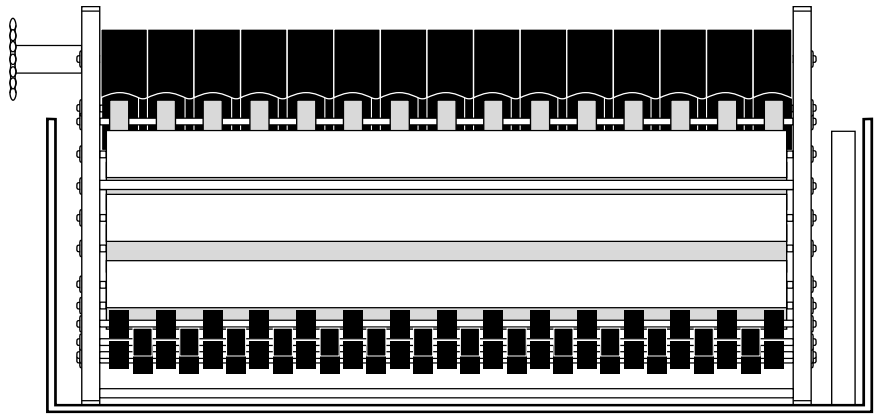
The Staggered Rollers permit the material to transport through the system without emulsion pressure, further reducing the possibility of scratches and marks.

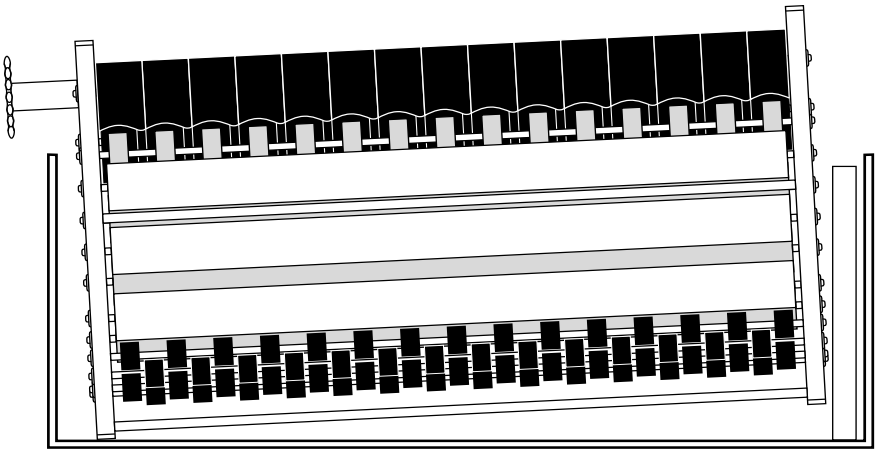




Processor Rack Removal & Replacement

Rack Removal





The procedure for removing and installing the rack is a simple operation. Normally two persons can easily accomplish the task of rack removal and replacement.

Rack Removal

Carefully remove the rack, so as not to cause any splashing. *Remove the rack sections with the transport hooks provided with the processor.* Removing the rack will be easier if you lift both sides at the same rate, this will keep the rack from binding inside the tank . Always take notice of rack orientation when removing and replacing the racks. *All chemistry racks should be kept well away from the other chemistry racks. The Developer Rack can be easily contaminated by very small amounts of bleach!*

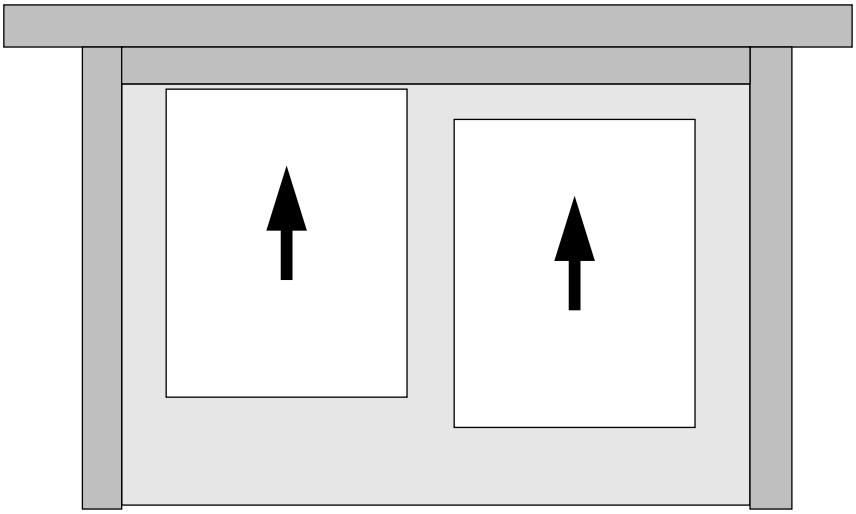
Rack Replacement
(Not recommended when the tanks are empty!)

Take extra care when replacing the rack sections and lower the racks **slowly**, this is especially **important when the tanks are empty**. *Be sure that the drive sprocket is correctly seated on the chain.*

Sheet Paper Feeding

Sheet paper should be fed into the processor **emulsion** (light-sensitive) **side down.** It is better to feed prints into the processor with the long side as the length, and the shorter side as the width, as illustrated below. Simply push the paper forward into the feed opening until the paper catches the feed rollers and the rollers start to pull it into the processor. Be sure that your hands are clean and dry before touching photo paper.

Do Not attempt to feed prints smaller than 4 x 5 inch test strips, as they may not travel through the racks properly.



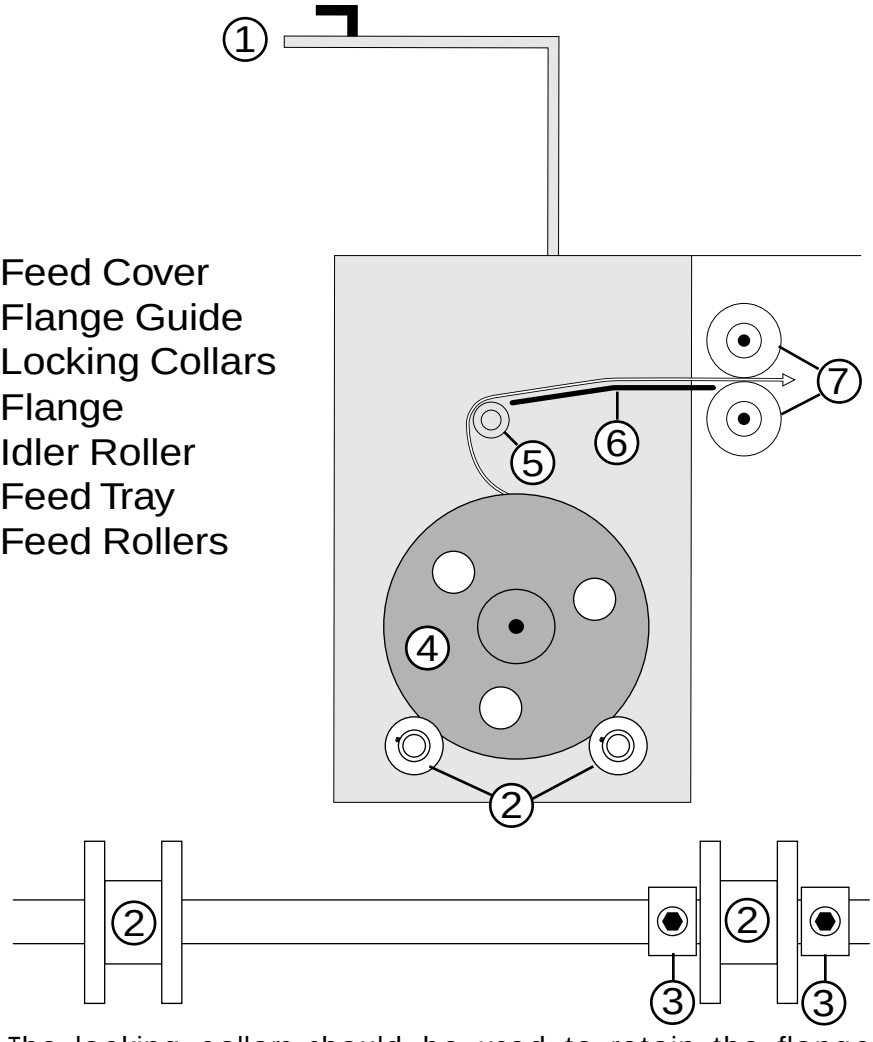
Prints may be fed into the processor side by side. It is best to let one print "lead" the other by an inch or two, as shown above. This helps both prints to travel through the processor without any side to side motion.

Roll Paper Feeding

If roll paper is to be processed, an optional **Roll Feed/Takeup** system should be used. This consists of a cradle which holds the roll paper straight so that it feeds into the processor evenly, and a motorized take-up that winds the processed paper onto a roll as it comes out of the dryer. It is recommended that the flanges always be used on the paper core whenever roll paper is processed, to ensure even feeding. The **Feed Cover** allows the darkroom lights to be turned on while roll paper is being processed

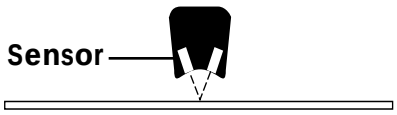
Failure to properly employ a Roll Feed/Takeup for long roll processing may damage the paper, in severe cases damage to the processor may result.
Feed Roll Paper emulsion down, threaded between feed rollers.

1 Feed Cover
2 Flange Guide
3 Locking Collars
4 Flange
5 Idler Roller
6 Feed Tray
7 Feed Rollers

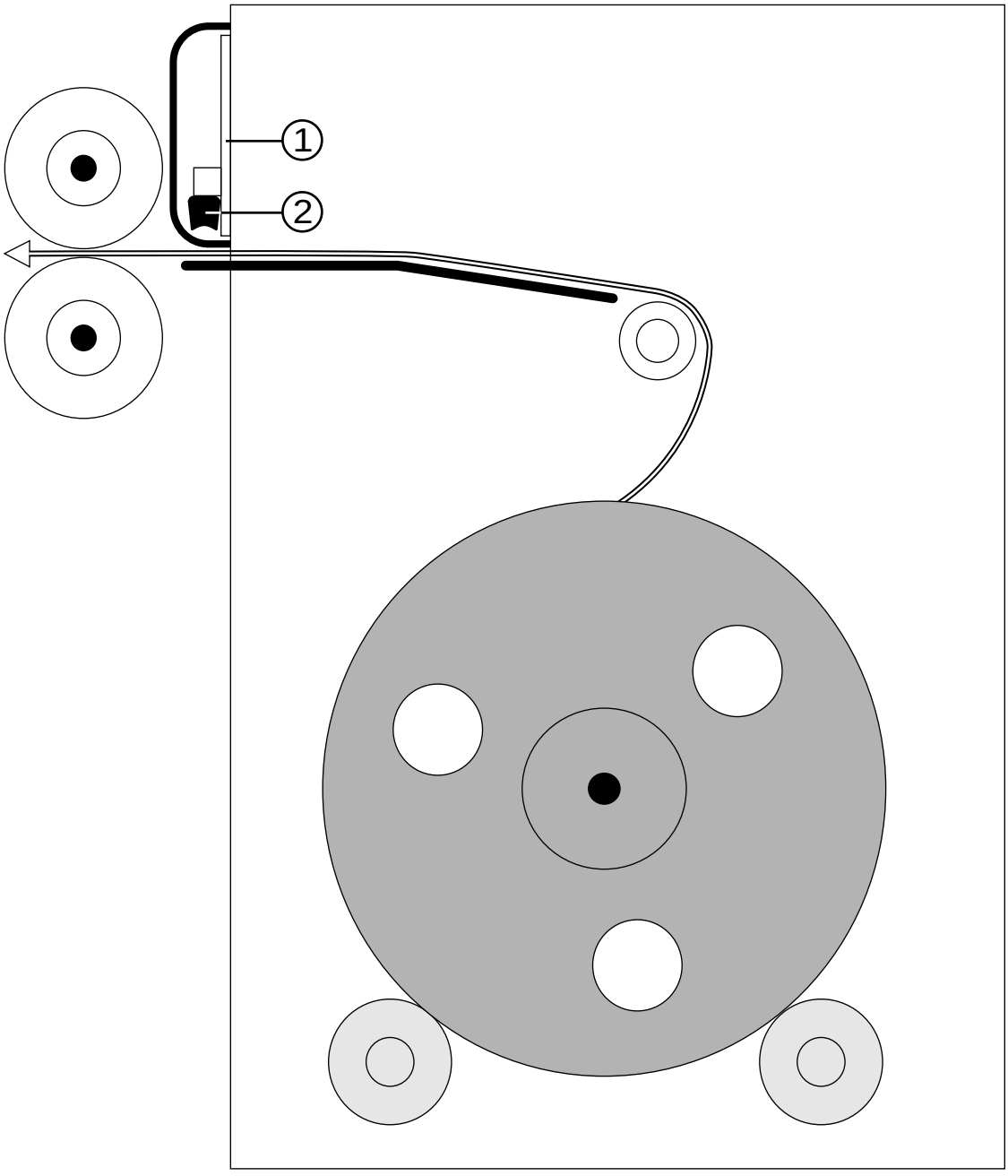


The locking collars should be used to retain the flange guides, when long rolls are to be fed into the processor. *It is necessary to retain the guides at only one side of the flange.*

Paper Sensor & Scanner Bar



The unit has internal (#1) Scanner Bar equipped with a row of Infrared sensors (#2). These sensors continually read from left to right, searching for any indication of material being inserted into the machine. As material passes beneath the sensors the width and length of the material is calculated by the electronic feedback (pulses) from the sensors. After a predetermined amount of pulses the replenishment system will pump one cycle of replenishment into the chemistry tanks.



Daily Maintenance Schedule

Start-up

1. **Before Start-up:** Turn water supply on at the water control panel.
2. **Start Machine**.
3. **Before Production**: Check tempered water supply temperature at the water control panel and adjust if needed.
4. **Before Production**: Check water flow rate (GPM) at the water control panel and adjust if needed.
5. **Before Production**: Fill a spray bottle similar to those used for window cleaner with warm water and lightly spray the crossover roller and drive gear sections of each rack to remove any chemical deposits. *DO NOT SPRAY ENTRY ROLLERS!*
6. **Before Production**: Check chemistry solution levels and top off with water if needed.
7. **Before Production**: Check crossover flow **(manual mode)** and adjust if needed.
8. **Before Production**: Check replenishment supply and mix chemistry if needed.
9. **Before Production**: Confirm that process temperature has been achieved at display, and check that transport system is running smoothly.
10. **Before Production**: Confirm scanner bar and replenishment pump operation by running a few (1-2 rows across full machine width) clean-up sheets, fogged or old emulsion paper (*RA-4 ONLY!*) which you have saved.
11. **Before Production**: Run a process control strip and take appropriate action if necessary.

Shut-down

1. **Before Shut-down**: Purge the wash tanks. This will help prevent the build-up of algae.
2. **Before Shut-down**: Turn water supply off at water control panel.
3. **Shut machine off** at control panel.

Weekly Maintenance Schedule

1. Remove wash racks and all removable crossover rollers. Clean the rollers with water and a Scotchbrite pad or similar product. **Do Not** use steel wool or highly abrasive products. Inspect and clean if necessary, the crossover trough & trough drainage hole *located at the base of drain stem*.

2. One at a time - remove each chemical filter standpipe (*not the drain standpipe* - page 4.6) from each tank by unscrewing it with the hexagonal wrench. Backflush each filter to loosen and remove any debris. Replace each filter pipe (**do not overtighten!**) before proceeding to remove and clean the next filter standpipe.

   WARNING!
   Do not reverse the pipe positions - fluids will expel from the processor. All Colette Pro processors have been water tested and are shipped with the pipes in the proper position.

3. Examine the base of the processor for leaks or chemical spills. If any are found, confirm that the power to the processor is off before cleaning them up. Check hose fittings and tighten or replace the hose & clamps if necessary.

4. Examine the feed tray, remove any paper trimmings and dirt which may have settled on the loading surface. Be sure the feed tray surface is dry before loading any materials for processing. **DO NOT spray cleaning substances directly onto Feed Tray!** *The Feed Tray should be cleaned with a pre-moistened cloth or paper towel.*

5. Clean the outside of the processor with Fantastic or similar spray cleaner. **DO NOT spray cleaning substances directly onto Control Panel!** *The Control Panel should be cleaned with a pre-moistened cloth or paper towel.*

Caution! ***Chemical solutions may be hazardous. Use adequate hand and eye protection when handling components used in chemical solutions.***

Monthly Maintenance Schedule

1. Change the filter cartridge in the Water Control Panel.

2. Check all fittings.

3. Inspect recirculation pumps.

4. In manual mode test and confirm replenishment pump operation, and inspect replenishment lines for kinks which may restrict flow and reduce pump life.

5. Check and confirm proper settings for Developer Temperature, Deadband, Dryer Temperature, Process Run Time, Paper Feed Delay, Replenishment Pump Time, and Replenishment Pulse Count.

Every three months

1. Lubricate the processor drive chain with a light machine oil.

2. Replace chemical filter pipe material.

3. Remove the replenishment filter foot valves from the replenishment tanks and clean the filter screens. Replace them after cleaning.

4. The dryer rack may be removed from the processor and compressed air may be used to blow dust off the foam rubber rollers. The clear plastic covers may be cleaned with a dish detergent. **Do not** use a glass cleaner, as this can scratch the plastic covers.

Caution! ***Chemical solutions may be hazardous. Use adequate hand and eye protection when handling components used in chemical solutions.***