



***Spin-dried...
quickly, efficiently,
delicately.***

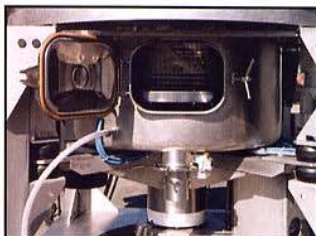


ROUSSELET
centrifugation

**The RCPC-VX centrifuge
for fresh vegetables, delicatessen garnishings,
leafy and other fragile food products**



PIVOTING LID



INSPECTION DOOR

Manufactured by Rousselet & Cie S.A. of France to be rugged and sanitary, the product contact areas and external shell of RCPC-VX centrifuges are made of stainless steel. The centrifuge is equipped with a pivoting safety interlocked lid arrangement allowing complete access to the inner basket area, pusher plate, and inner circumference of the discharge chamber for complete cleaning of all areas. Easy access to the area below the pusher plate allows for pressure washing or CIP operations to ensure total cleanliness.

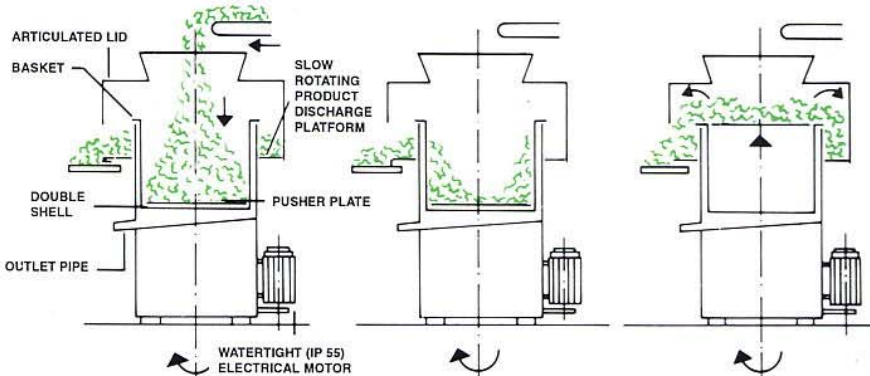
***Spin-dries up to 5,800 pounds per hour of
fresh salad products, fruits or vegetables.***

OPERATING PRINCIPLE

1. Loading: Low speed rotation adjustable in conjunction with feeding arrangements.

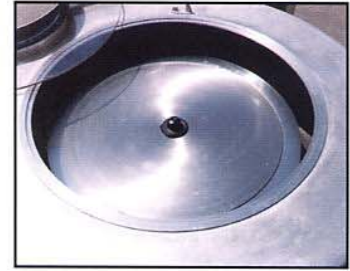
2. Spinning: Increase speed to effect drying after feed has been interrupted (Low speed spin for salad products).

3. Unloading: Low speed rotation in conjunction with pusher plate function to effect gentle discharge of dried product.



ADVANTAGES:

Drying of the product without distortion, damage or reduction in the quality of the input product.



PUSHER PLATE RAISED



PUSHER PLATE LOWERED

Breakthrough Design

The RCPC-VX centrifuge has been designed to fit into an integrated automatic treatment line for quick drying without damage to delicate vegetables, salad and fruit products. Developed in close conjunction with the food processing industry, this machine represents a breakthrough in drying technology, maintaining the quality and hygienic requirements necessary in the food industry.

Flexible

Design of the RCPC-VX centrifuges allows them to be simply adapted on site to suit changes in product by adjusting speeds and discharge cycle parameters.

Field Tested and Proven

The RCPC 60 VX, for example, has been field tested to produce excellent results at sustained rates of 1,100 to 4,400 pounds per hour, depending on the type of product

being handled. Products have included such things as:

- Leafy salad products
- Cauliflower, celery, mushrooms, carrots, tomatoes, onions
- Chives, dill, parsley
- Sliced gherkins, capers, sweet peppers, soy beans

Why this Machine is Special

The Rousselet centrifugation system achieves high quality and high volume spin drying of fresh fruits and vegetables through a patented design. This result is partially obtained via a discharge method that pushes product to a more slowly rotating basket before it exits the machine.

The Manufacturer

Rousselet & Cie S.A. is a French company which has been in business since 1905. They produce a variety of electro-mechanical products, including centrifuges, for the industrial market.

TECHNICAL DATA

CENTRIFUGE TYPE	HEIGHT / IN.	WIDTH / IN.	LENGTH / IN.	WEIGHT / LBS.	BASKET DIA. / IN.	BASKET HT. / IN.	MOTOR POWER
RCPC 60 VX	60.2"	45.7"	51.2"	1,760	23.6"	16.7"	5 HP
RCPC 70 VX	71.7"	54.3"	62.2"	2,090	27.6"	20.7"	7½ HP
RCPC 100 VX	81.7"	77.6"	90.0"	8,000	39.4"	23.7"	20 HP

Exclusive U.S. Distributor for the Food Industry



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OPERATING INSTRUCTIONS

ROUSSELET CENTRIFUGE MODEL RCPC n VX

These instructions describe essential functions that must be mastered in order to properly and safely operate the Rousselet centrifugation system. They cover how to turn on and turn off the machine as well as what to do in case a load becomes unbalanced.

MAKING SURE YOU HAVE THE NECESSARY CONNECTIONS:

1. In order to operate the Rousselet centrifugation system must have the following connections:
 - 460 volt power wired to the Rousselet centrifuge's PLC control panel
 - Power, either electrical or hydraulic, to the infeed and discharge systems
 - 90-105 PSI air pressure to the Rousselet centrifuge's control valve
 - A flexible coupling clamped to the bottom of the water drain outlet
2. The centrifuge and infeed and discharge systems must be securely bolted to the floor per the manufacturers' specifications.
3. It is highly recommended that the pedestals for the operator's control station and the PLC control panel also be securely bolted to the floor.

TURNING ON THE MACHINE:

1. Make sure that the plant's power to the infeed and discharge systems is turned on, and that the electrical power and air to the Rousselet centrifuge are turned on.
2. Turn the red rotary knob on the outside of the PLC control panel to the "on" position. This is denoted by a bar symbol which indicates a closed electrical circuit. The "off" position is denoted by a circle symbol signifying an open electrical circuit through which current does not flow.
3. Power to the centrifuge can be verified by looking under the unit's outer shell. When the power is on, the rotating bezel (or crown) will move at about 12 RPM.
4. Small indicator lights at the two clean-out doors should be glowing yellow, indicating that the safety interlock is engaged. The doors cannot be opened when the interlock is engaged.
5. The centrifuge will not start unless the pivoting lid is clamped down into position and both clean-out doors are closed.
6. To close the pivoting lid, center the support arm between the locating tabs, engage the metal loop of the De-Sta-Co type clamp in the notch, and pull down completely on the red plastic-coated handle. This action will compress the hydraulic plunger. When the De-Sta-Co clamp is disengaged the pivoting lid's support arm will automatically rise.

7. To close the clean-out doors engage the pivoting bolt in the door's cupped slot. Tighten the thumb wheels until the door is snugly closed. The rubber seal around the door should be somewhat compressed by this action.
8. The centrifuge also will not start if the air-line is turned off or disconnected.
9. To make sure that you have air pressure to the unit, open the pneumatic control box attached to the centrifuge's leg (using the supplied key) and look at the pressure gauge. It should read between 5 and 7 bars, which is equivalent to 75 to 105 PSI. If this is not the case, check for a disconnected line or the plant's air supply valve being in the off position. The centrifuge will not operate if the air pressure drops below 5 bars.
10. Select the desired program number by pressing the rocker switches located under the clear plastic cover on the outside of the PLC control box.
11. Press the "on" or start button on the operator control station to begin processing.

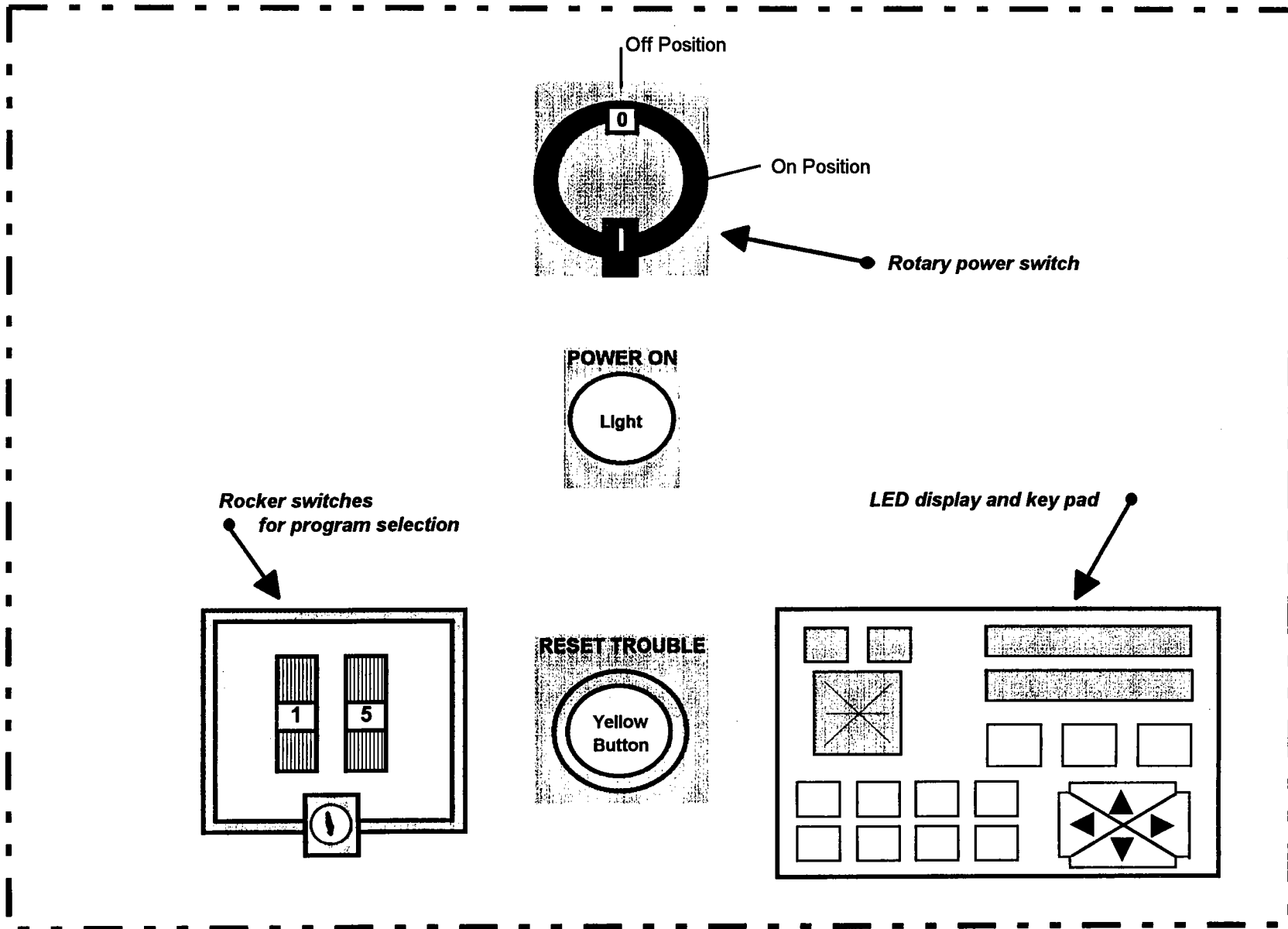
TURNING OFF THE MACHINE:

1. Never intentionally turn off the centrifuge with the pusher plate in the up position. Doing so can damage the centrifuge's basket when the machine is restarted.
2. After the last batch of product has been discharged from the machine, and the pusher plate is at the bottom of its stroke, the machine may be turned off. **Note** that in order to meet this requirement, you may need to stop or interrupt the flow of product into the Rousselet feed system (such as turning off the feed device).
3. Turn off the machine by depressing the "off" or stop button on the **operator control station**. The green cycle light will go out and the yellow "off" indicator will come on.
4. Turned off in this fashion, the dynamic braking system in the PLC control panel will decelerate the basket and bring it to a controlled stop. If the machine is turned off by turning the rotary switch on the PLC control panel, the dynamic braking system will not be in operation. The basket will continue to rotate until friction gradually overcomes its inertia.
5. A "short" push of the off button puts the control program on hold and causes it to remain in the current segment with whatever number of seconds are left.
6. A "long" push of the off button—for about 1 second—causes the control program to be reset to its beginning. This logic may also be used to change the program selection, as explained in next section.
7. Whenever shutting down the line, such as at the end of a shift, also turn off the power switch (red rotary knob) on the PLC control panel.

WHAT TO DO IF A LOAD BECOMES UNBALANCED:

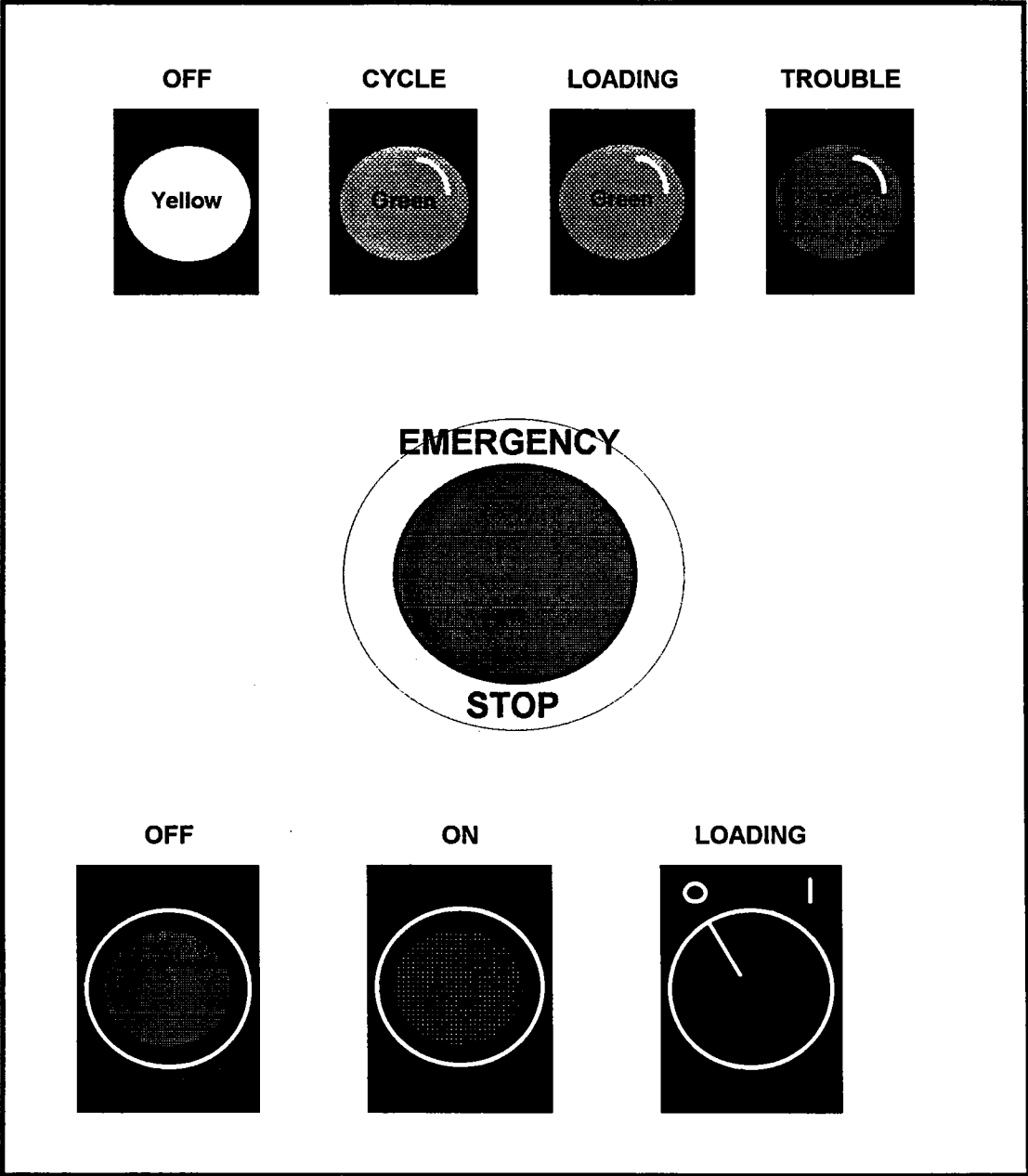
1. A proximity sensor located on one of the centrifuge's support legs monitors the movement of the centrifuge on its suspension. If the movement exceeds about 1/2 inch, the sensor will trip a relay in the PLC control panel and shut down the centrifuge.

FEATURES OF ROUSSELET PLC CONTROL PANEL



OPERATING INSTRUCTIONS

ROUSSELET OPERATOR CONTROL STATION



OPERATING INSTRUCTIONS

2. The sensitivity of the relay (marked KS1) in the PLC control panel can be adjusted via a rotary knob after reading the instructions in the Rousselet manual. Just remember, that the less sensitive it is, the more damage an out-of-balance load can do to the basket before the relay will shut down the machine.
3. When the proximity sensor does shut down the machine, the Rousselet's **dynamic braking system** will be activated, bringing basket rotation to a stop. See footnote at the end of this section.
4. The control program will remain in the segment where the load became unbalanced with whatever number of seconds are left. Generally imbalances will occur during the spin drying cycle, but they can also occur during the ramp-up cycle.
5. If **you** ever decide to shut down the centrifuge— say because the proximity sensor became disabled— do so from the operator control station. If power is turned off from the PLC control box, the dynamic braking system will also be shut down, and the basket will continue to rotate until friction gradually overcomes its inertia.
6. After the machine comes to a stop **you will have a decision to make**: to either try to finish drying the current batch of product or to dump that batch and resume normal processing.
7. If you choose to **finish drying the current batch**, you will restart the machine by pressing the “on” or start button on the operator control station. The basket will try to spool up to the required RPM. If the load is still unbalanced, the machine will shut down again. This kind of restart procedure may take several iterations to be successful. It may be a good idea to open the pivoting lid and try to redistribute the product with a food-grade, sanitized paddle or rake.
8. Another alternative is to **dump the current batch** in order to resume normal processing. To accomplish this you must do five things:
 - Go over to the PLC control panel and use the rocker switches to select the dump program you have previously written (read **To Create a “Dump” Program** in the Programming Instructions section),
 - At the operator control station give the “off” or stop button a long push of about 1 second— this will reset the control program,
 - Push the “on” or start button to start the dump program's operation— you will notice that the display on the PLC control panel now shows the dump program's number,
 - When the product is discharged from the centrifuge, use a sanitary scraper bar to route the product off the discharge belt and into a sanitary tote,
 - After all product is removed from the system, (you do not want partially dry product going into your packaging line) restart the normal program by setting the rocker switches on the PLC control panel to the desired program number, and then push the “off” and “on” switches of the operator control station as described above.
9. Whichever method you choose to handle an out-of-balance load condition, you should practice a drill until it can be done quickly, safely, and in a sanitary manner.

FOOTNOTE: the PLC controls will also shut down the centrifuge if the ramp-up or ramp-down phases are too short, causing the motor to draw too high an amperage. In either of these cases the “trouble” light will illuminate on the operator control station. The solution in such cases is to reprogram the offending step(s) with longer times.

CLEANING THE MACHINE:

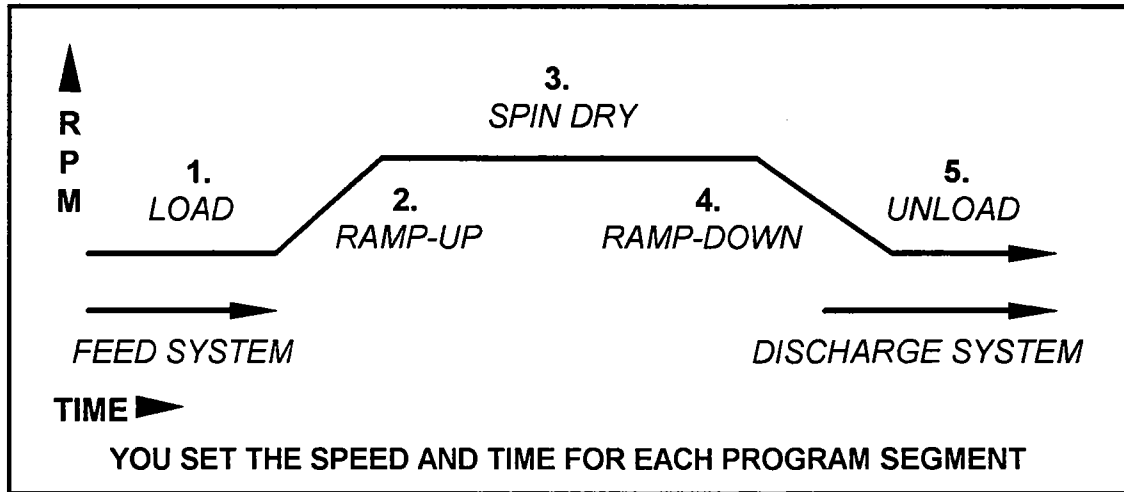
Your experience in cleaning food processing machinery should serve as a guide in how to approach the cleaning of the Rousselet centrifuge. Nevertheless, the suggestions shown below may prove helpful.

1. **Warning:** never attempt to put any part of your body or any tool or extraneous item into the feed opening of the centrifuge when it is running. When the centrifuge is stopped, always lock out the red rotary knob on the PLC control panel in the "off" position (which is depicted by a circle symbol), before attempting to clean the interior of the centrifuge.
2. The Rousselet centrifuge is equipped with a CIP fitting; however, manual cleaning will also be necessary to thoroughly sanitize all product contact surfaces.
3. A recommended procedure would be to use the CIP system in conjunction with a special control program as the first step, then to be followed by additional manual cleaning. To create a special cleaning program read *To Set A New Program* in the Programming Instructions section.
4. In order for the CIP system, which utilizes one vertically oriented spray bar, to be effective, the basket should be turning slowly and the pusher plate operated through several up-and-down cycles.
5. The spray bar, located outside the basket, will dislodge food particles from the walls of the basket, blowing them inward. Collected material can be brought to the top by the pusher plate and ejected into the outer shell by the rotational speed of the basket and pusher plate.
6. If you prefer not to have electrical power on during cleaning, the basket can be rotated by hand through an open clean-out door. Be sure you have **locked out** the rotary power switch on the PLC control panel before you put anything through the open clean-out door. A long shackled padlock will work for this purpose.
7. There is some time delay, after stopping the centrifuge, before the interlock on the clean-out doors is disengaged. You can wait until the lock is released, or you can open the pneumatic control box on the centrifuge and depress the silver colored pressure release pins to open the locks on the clean-out doors.
8. The pusher plate can be cycled manually by depressing the silver colored pressure release pins in the pneumatic control box. One pin controls upward movement, and the other the downward movement.
9. **Remember to secure** the doors on all control boxes before using water or cleaning solutions in their immediate areas.
10. The manual portion of the cleaning process should begin at the top of the centrifuge with the pivoting lid opened. As you work downward in the machine, the two clean-out doors on the side can be used to access necessary areas. All water and food material can be washed out of the centrifuge through the drain opening at the bottom of the outer shell.

MAINTENANCE PROCEDURES:

1. There is very little to maintain on the Rousselet centrifuge system.
2. The major serviceable components are the drive belts and the bearings.
3. No maintenance is required on the centrifuge's suspension system.
4. **SPECIAL NOTE:** It is easy to overlook maintenance of the oil supply for the pusher plate shaft. Located inside the pneumatic control box are two glass canisters. The one on the left, containing the gauze, is the air filter. The one on the right is the oil supply. Check the oil supply at least once a week. It should be kept filled to the indicator line with the same type of high grade oil you use on other pneumatic equipment in the plant.
5. Consult the Rousselet maintenance manual for more information on maintenance procedures.
6. In order to maximize system availability, some spare parts should be stocked at the plant site. Consult with the manufacturer for a list of recommended parts.
7. If a centrifuge basket should become seriously damaged, the centrifuge cannot be operated until a replacement is installed. These baskets are custom made and deliveries can take a long time. It would therefore be reasonable insurance to stock one or two spare baskets at each plant site. A replacement spare should be ordered whenever an on-site spare is used.

PROGRAMMABLE FUNCTIONS ROUSSELET CENTRIFUGE MODEL RCPC n VX



The Rousselet centrifuge may be programmed to control the operation of the infeed and discharge systems and each of the five stages in the drying process:

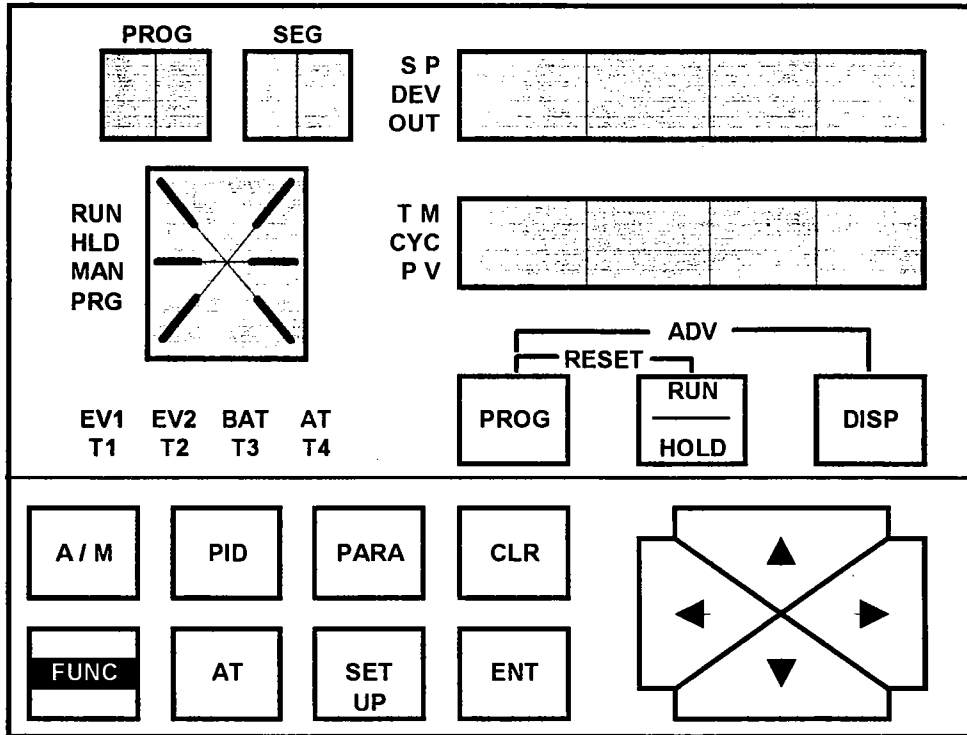
1. **Load** - when the basket is programmed at a low speed (about 80 RPM) to receive product from the infeed system. Typically a timed event, such as operation of the feed system, will accompany this section of the program.
2. **Ramp-up** - a fairly short duration segment that allows the centrifuge basket to accelerate from the slow loading RPM to full operating speed of the drying cycle. Longer ramp-up times produce lower peak load on the electrical system.
3. **Spin Dry** - generally the longest segment of the program and when the product is spun at its highest RPM. The maximum speed is 690 RPM, but most products will dry adequately with fewer revolutions per minute. During this stage all surface water will be ejected from the rotating basket.
4. **Ramp-down** - the time during which the basket is decelerated by the centrifuge's dynamic braking system. Typically the programmer will choose a target speed equal to the unloading speed in the next program segment. The pusher plate may be programmed to begin its upward movement at the end of this segment. Longer ramp-down times produce lower peak load on the dynamic braking system.
5. **Unload** - the last segment of a complete program cycle when the basket is programmed at a low speed (about 80 RPM) and the pusher plate ejects product onto the rotating bezel (or crown) of the centrifuge. From there the product is gently swept onto the discharge belt. As in the loading cycle, the pusher plate is controlled by a timed event. It should be noted that raising and lowering the pusher plate occurs during a single cycle.

Note: a timed event is an operation that can be sequenced to coincide with a particular program segment, typically including pusher plate & feed/discharge system functions.

PROGRAMMING INSTRUCTIONS

ROUSSELET CENTRIFUGE MODEL RCPC n VX

Instructions are programmed using the key pad and LED display (depicted below) located on the Rousselet PLC control panel.



TO SET A NEW PROGRAM:

After the centrifuge is stopped and the pusher plate is at the bottom of its stroke:

1. Push **PROG** key to advance to a new program (1.. 2.. 3.. etc.). Use ↓ key to go back to previous programs (6.. 5.. 4.. etc.). The number of each program will appear in the **PROG** box on the display panel. Generally when creating a new program you will want to choose the lowest available program number that is not being used. An unused program number is easy to identify because only dashes appear in the speed (**SP**) and time (**TM**) windows of the display panel. There are no numeric values displayed.
2. Once the desired program number has been selected, hold **FUNC** key and depress **PROG** key to enter the programming mode. The **PRG** symbol will light up on the left side of the display panel. As the number in the **SEG** window shows, you are now in program segment one.

3. Depress **ENT** key to access the speed parameter. This parameter controls the rotational speed of the centrifuge basket. Speed is measured in revolutions per minute.
4. Use cursor pad to set the speed value. Refer to next section to learn *how the cursor pad works*.
5. Depressing **ENT** key will save the speed value and automatically move the blinking light to the time (**TM**) window.
6. The time parameter controls the length of time each operation —also called a program segment— will be performed. Time is measured in minutes and seconds. Eighty seconds is displayed in the time window as 1.20.
7. Use cursor pad to set the time value.
8. Depressing **ENT** key saves (stores) the time value for this segment.
9. Use **→** key to advance to next program segment. The steps discussed in steps 3-8 will be repeated for program segments 2, 3, 4, and 5. **Note:** skip this instruction after the desired parameters have been entered in all five program segments.
10. Depress **DISP** key to exit programming mode after all five program segments have been entered. The **PRG** indicator light will now go out.
11. Depress **PROG** and **RUN/HOLD** keys together to reset. The display now shows the next higher program number, in case you need to create or modify more programs.

HOW THE CURSOR PAD WORKS:

1. The cursor pad is the section of the control panel that contains four arrows. By pushing on these arrows you can select digits and set values for the speed and time settings. You can also use the arrows to move between programs, and program segments, and to access other parameters such as timed events, T_n , that you want to set.
2. When setting speed and time values push the left arrow (**←**) or right arrow (**→**) buttons to move between the *digits*, that is between the 1's, 10's, and 100's places, etc. A blinking light will appear in the selected digit's location.
3. Once you have selected a digit, you can set the speed or time *value* by pushing the up arrow (**↑**) or down arrow (**↓**) to increase or decrease the value of the chosen digit. **Note:** you cannot choose a value below zero.
4. When accessing other programmable functions you will use just the up (**↑**) or down (**↓**) arrows. Pressing an arrow repeatedly will rotate through the available functions lighting up the associated indicator light.

TO CYCLE (REPEAT) THE SAME PROGRAM:

1. Any program can be automatically linked to another program. As soon as the centrifuge finishes program **X** it can go to program **Y**. In most situations, you will want the centrifuge to go through the *same* cycle over and over. To accomplish this you need to link the program to itself, thereby endlessly repeating the cycle.

2. When in programming mode for the desired program, push the ↓ key to run through the programmable options until the program link (**P.LI n**) indicator light appears.
3. Press **ENT** to access the program link parameter. The blinking light will now move to the second row.
4. Use cursor pad to enter the number of the program you want to run immediately following the current program. If repeat is desired enter the current program number.
5. Press **ENT** to store the program number.
6. Press **DISP** to exit programming mode. The **PRG** light will go out.
7. Depress **PROG** and **RUN/HOLD** keys together to reset.

TO ENTER TIMED EVENTS:

1. Timed events include operation of the pusher plate and running of the infeed or discharge conveyors. Timed events may be programmed to start during a particular program segment and run for a specified duration.
2. Push **PROG** key to advance to a new program (1.. 2.. 3.. etc.). Use ↓ key to go back to previous programs (6.. 5.. 4.. etc.). The number of each program will appear in the **PROG** box on the display panel.
3. Once the desired program number has been selected, hold **FUNC** key and depress **PROG** key to enter the programming mode. The **PRG** symbol will light up on the left side of the display panel.
4. Select which timed event you want to control by using the ↓ key to run through the options until **T1**, **T2**, or **T3** light appears. (**Note:** the T2 parameter is used **exclusively** for the pusher plate control. When T2 is activated it will raise and then lower the pusher plate in one cycle.)
5. Use → key to advance to the desired program segment.
6. Press **ENT** to access the T_n parameter in that segment.
7. Use the cursor pad to enter the number of seconds into the program segment you want to delay until the timed event should begin. If you want to start at the beginning of the program segment you would enter **0** in the top row of the display.
8. Press **ENT** again to move to the second row of the display.
9. Use the cursor pad to enter the duration of the timed event, measured in seconds, in the bottom row. See note below regarding events that span program segments.
10. Depress **ENT** key to store the T_n value.
11. Repeat the above procedure for other timed events you want the Rousselet computer logic to control.
12. Press **DISP** to exit programming mode. The **PRG** light will go out.
13. Depress **PROG** and **RUN/HOLD** keys together to reset.

Note: If the duration would cause the timed event to run over into the next program segment, enter zero as the delay time in the **next segment** and the remaining seconds as the duration. Use the formula:

Remaining seconds = event duration + prev. segment delay - prev. segment time.

TO CHANGE SEGMENT IN EXISTING PROGRAM:

1. Push **PROG** key to advance to desired program (1.. 2.. 3.. etc.). Use ↓ key to go back to previous programs (6.. 5.. 4.. etc.). The number of each program will appear in the **PROG** box on the display panel.
2. Once the desired program number has been selected , hold **FUNC** key and depress **PROG** key to enter the programming mode. The **PRG** symbol will light up on the left side of the display panel. You are now in program segment one.
3. Use → key to advance to desired segment.
4. Use **ENT** to access the program segment.
5. Use cursor pad to set new values.
6. Depress **ENT** after every entry.
7. Press **DISP** when ready to exit programming mode. The **PRG** light will go out.
8. Depress **PROG** and **RUN/HOLD** keys together to reset.

TO CREATE A "DUMP" PROGRAM:

1. A dump program can be used whenever you wish to eject the contents of the Rousselet basket and resume normal processing. Such need might arise when a batch has gotten out of balance and the centrifuge balks at restarting.
2. Select a new program number and enter the programming mode (see steps 1 and 2 under **TO SET A NEW PROGRAM**)
3. Press **ENT** key to access the segment to be programmed.
4. Use cursor pad to set **zero** values in the speed and time windows.
5. Depress **ENT** after every entry.
6. Use → key to advance to the next segment (you will program all 5 segments).
7. Repeat steps 3 through 6 to place **zero** values in program segments 2 and 3.
8. In segment 4 you can program the basket to start spinning so that it is fully up to the desired speed by the time program segment 5 begins.
9. In program segment 5 set the discharge speed at about 70 RPM and the time value.
10. Follow instructions under **TO ENTER TIMED EVENTS** to set the **T2** parameter to operate the pusher plate.
11. Press **DISP** when ready to exit programming mode. The **PRG** light will go out.
12. Depress **PROG** and **RUN/HOLD** keys together to reset.

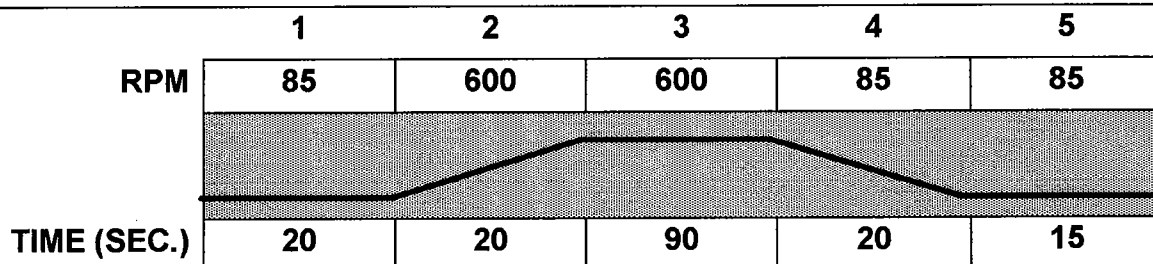
SAMPLE PROGRAMS

ROUSSELET CENTRIFUGE MODEL RCPC n VX

These sheets contain sample programs that must be adjusted for your environment.

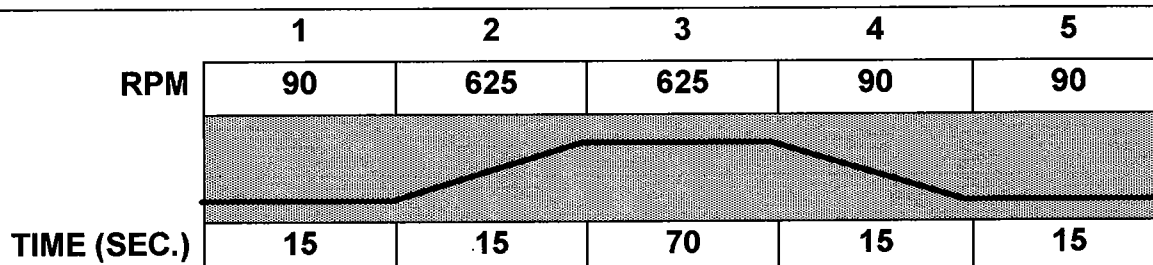
	SEGMENT →	1	2	3	4	5
PROG. NUM.		LOAD	RAMP - UP	SPIN DRY	RAMP-DOWN	UNLOAD

1	PURPOSE: Snipped chives
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T1 - DELAY	2	0			
T1- DURATION	20	2			
T2 - DELAY				18	0
T2 - DURATION				17	15

2	PURPOSE: Chopped iceberg lettuce
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T1 - DELAY	2				
T1- DURATION	13				
T2 - DELAY					0
T2 - DURATION					13

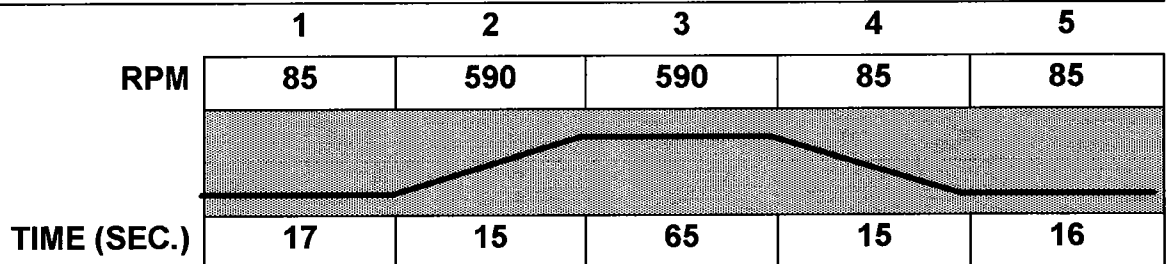
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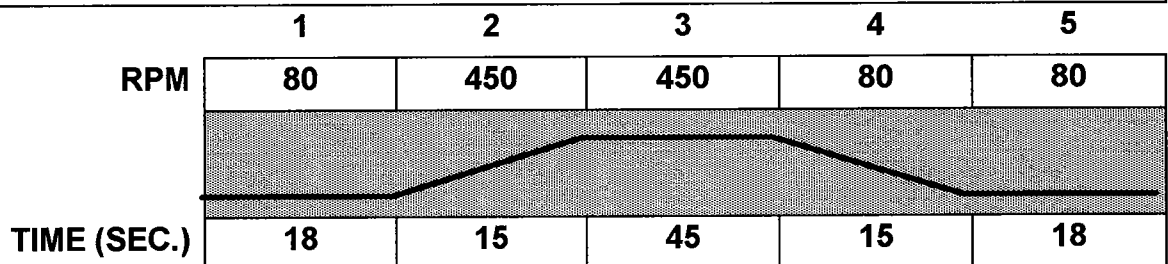
	SEGMENT →	1	2	3	4	5
PROG. NUM.		LOAD	RAMP- UP	SPIN DRY	RAMP- DOWN	UNLOAD

3	PURPOSE: Chopped romaine lettuce
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T1 - DELAY	0				
T1- DURATION	17				
T2 - DELAY					0
T2 - DURATION					15

4	PURPOSE: Fresh whole spinach
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T1 - DELAY	0				
T1- DURATION	18				
T2 - DELAY					0
T2 - DURATION					16

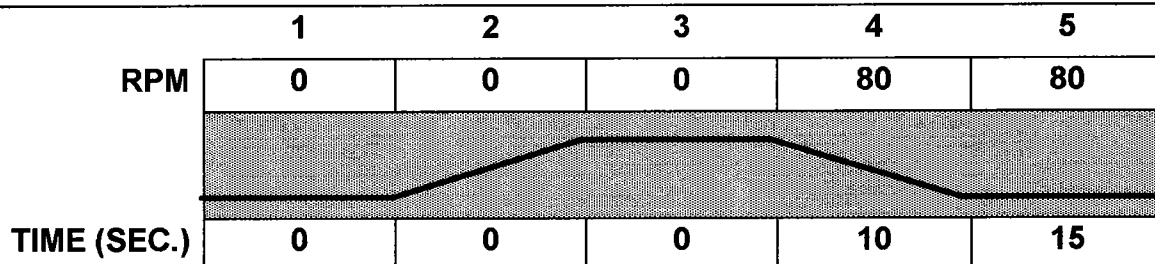
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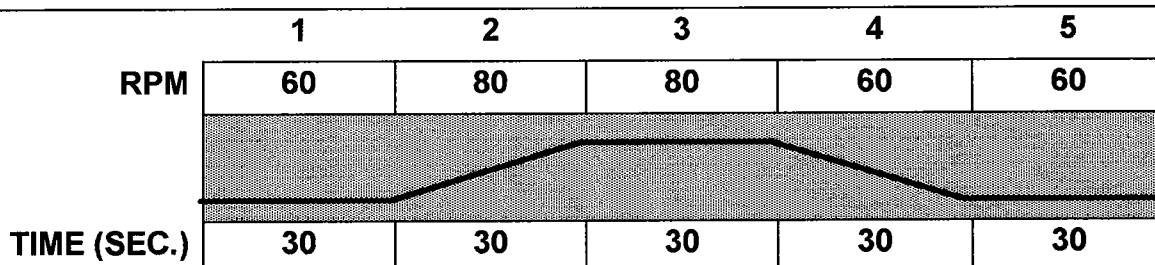
	SEGMENT →	1	2	3	4	5
PROG. NUM.		LOAD	RAMP- UP	SPIN DRY	RAMP- DOWN	UNLOAD

5	PURPOSE: Dump program for out-of-balance loads
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T1 - DELAY					
T1- DURATION					
T2 - DELAY					0
T2 - DURATION					15

6	PURPOSE: Cleaning program with movement of pusher plate
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T1 - DELAY					
T1- DURATION					
T2 - DELAY	10	5	5	5	5
T2 - DURATION	15	15	15	15	15

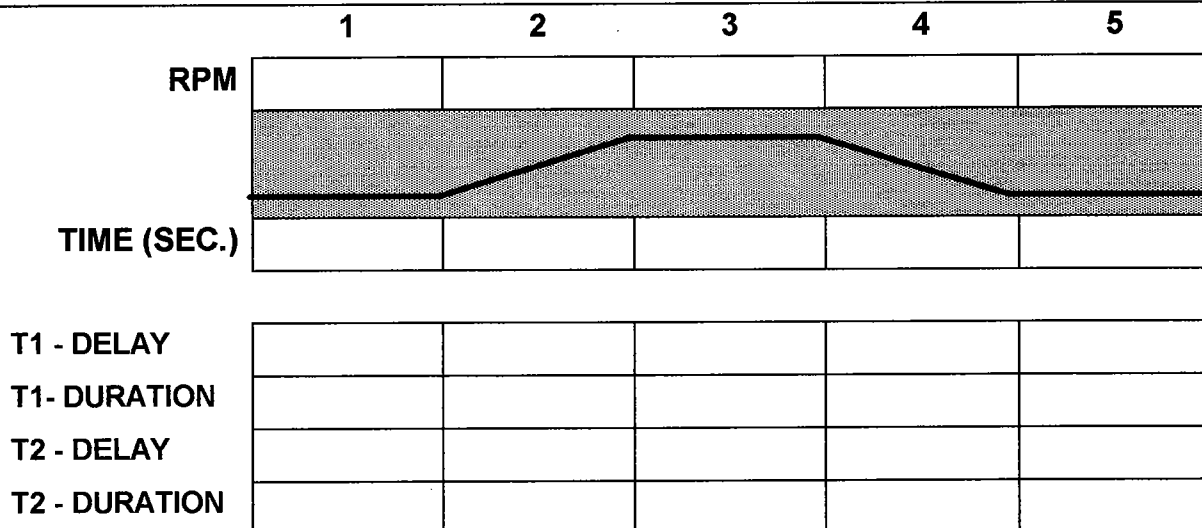
PROGRAMMING WORKSHEET

ROUSSELET CENTRIFUGE MODEL RCPC n VX

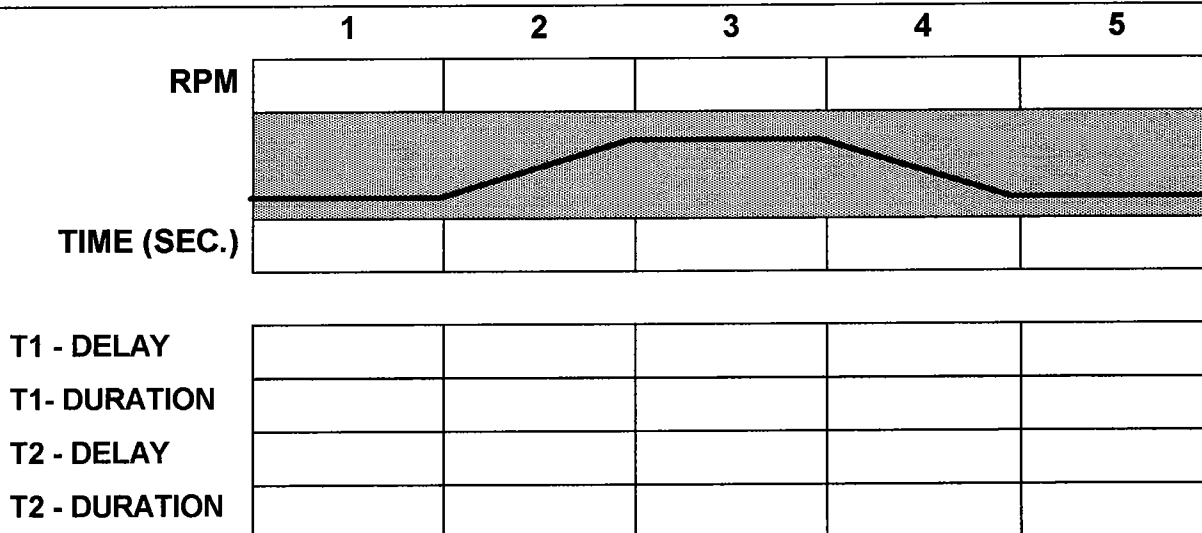
You should test programs with an empty centrifuge before running them with product.

	SEGMENT →	1	2	3	4	5
PROG. NUM.		LOAD	RAMP- UP	SPIN DRY	RAMP- DOWN	UNLOAD

	PURPOSE:
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	PURPOSE:
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ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
— QUIZ —

PROGRAMMABLE FUNCTIONS

1. Name the five program segments (or drying stages):
2. What is a timed event? Give an example.
3. Name a typical loading and unloading RPM.
4. What is the maximum speed of the Rousselet centrifuge?
5. What controls the basket deceleration during the ramp-down program segment?
6. How can you decrease the electrical load on the system?

PROGRAMMING INSTRUCTIONS

7. What two attributes can be programmed for each of the five program segments (or drying stages)?
8. Where are the programming controls located on the Rousselet centrifugation system?
9. How do you advance to a new program number?
10. How do you go backwards to a program number?
11. How do you know whether a particular program number is already being used?

ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
— QUIZ —

12. What combination of keys must you depress to enter the programming mode?
13. How do you exit the programming mode?
14. How do you know you are in the programming mode?
15. How do you access the speed parameter of the control program?
16. Name two functions that the ENT key performs.
17. What two controls on the keypad are used to select digits?
18. How do you increase a digit's value?
19. How do you decrease a digit's value?
20. How do you access the program link (P.LI n) function?
21. How do you make a program repeat itself?
22. Once you are in programming mode, how do you access the timed event parameter?
23. What timed events can be controlled by the Rousselet PLC?

ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
— QUIZ —

24. What two parameters do you enter when programming a timed event (hint: they are different than setting up a program segment)?
25. What is unusual about programming a dump program?
26. If you made a cleaning program what would be unusual about it?

<i>OPERATING INSTRUCTIONS</i>

27. What must be connected before you can turn on the Rousselet centrifuge?
28. How can you tell if the centrifuge is turned on?
29. What must be closed in order for the centrifuge to operate?
30. What else can cause the centrifuge not to operate even though the power is turned on and the doors and lid are closed?
31. How do you select which program number to run?
32. From where should you always turn off the centrifuge?
33. Where should the pusher plate be, before you turn off the centrifuge?
34. What else is turned off if you turn off the centrifuge from the PLC control panel?

**ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
— QUIZ —**

35. What happens if a batch gets out of balance?
36. What two choices do you have if a batch gets out of balance?
37. How do you restart the current batch?
38. How do you dump the current batch and start over?
39. What else besides out-of-balance can cause the machine to shut down?
40. What should you do before starting manual cleaning of the centrifuge?
41. In order for the CIP system to be effective what must happen?
42. How can you make the pusher plate go up and down?
43. What must you do prior to using water around the centrifuge?
44. Where can maintenance instructions be found?

**ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
ANSWERS TO QUIZ**

PROGRAMMABLE FUNCTIONS SECTION

1. Load, ramp-up, spin dry, ramp-down, unload
2. An operation that can be sequenced to coincide with a particular program segment. Examples include: operation of pusher plate, and infeed or discharge systems.
3. 80 RPM
4. 690 RPM
5. The dynamic braking system
6. By choosing longer ramp-up and ramp-down times.

PROGRAMMING INSTRUCTIONS SECTION

7. Speed measured in rpm, and time measured in seconds.
8. On the Rousselet PLC control panel.
9. By pressing the PROG key on the keypad.
10. By pressing the down arrow (↓) key.
11. Dashes appear in the speed and time windows of all five program segments.
12. The FUNC and PROG keys (which stand for function and program).
13. By pressing the DISP key (which stands for display).
14. The PRG symbol on the left side of the display lights up.
15. By pressing ENT after you are in programming mode.
16. To provide access to a program segment or to save a value.
17. The left (←) and right (→) arrow keys.
18. Press the up arrow (↑) key.

**ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
ANSWERS TO QUIZ**

19. Press the down arrow (↓) key.
20. When in programming mode, push the down arrow (↓) key to run through the programmable options until the "P.LI n" symbol lights up.
21. Link the program to its own program number (link it to itself).
22. By pressing the down arrow (↓) key to run through the programmable options until the correct T_n symbol lights up.
23. T1, T2, and T3; or the operation of the infeed system, pusher plate, and discharge system respectively.
24. You enter the delay and duration.
25. You set values equal to zero in at least three program segments.
26. The pusher plate would be cycled in more than one program segment.

<i>OPERATING INSTRUCTIONS SECTION</i>
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27. 460 v power, electrical or hydraulic power to the infeed and discharge systems, 90-105 PSI air pressure, and flexible drain coupling.
28. The rotating bezel (or crown) is moving and the indicator lights on the clean-out doors are glowing yellow.
29. Both clean-out doors and the pivoting lid.
30. Not having the air line connected or the air control valve turned on.
31. Depress the rocker switches on the PLC control panel until the desired number appears.
32. From the operator control station.
33. At the bottom of its stroke.
34. The dynamic braking system.

**ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
ANSWERS TO QUIZ**

35. The proximity sensor engages the dynamic braking system and stops the machine.
36. Restart the current load or dump the current load and start over.
37. Press the "on" button and wait to see if the machine will get up to full speed without tripping the sensor again. If the machine shuts down again you may have to redistribute the load and restart the machine.
38. Select the dump program, push the "off" button for 1 second, then press "on"; scrape the product off the discharge belt; select the normal program, push the "off" button for 1 second, then press "on."
39. The motor drawing too much amperage from too short a ramp-up or ramp-down.
40. Make sure the rotary power switch on the PLC control panel is locked out.
41. The basket must be rotated slowly and the pusher plate must go up and down.
42. Open the pneumatic control box and operate the pressure release pins, or use a special cleaning program.
43. Close all cabinet doors on the PLC control panel, operator control station, and pneumatic control box, and place waterproof protective covers over control boxes.
44. In the Rousselet maintenance manual.

**ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
QUIZ AND ANSWER SHEET**

PROGRAMMABLE FUNCTIONS SECTION

- Q1 Name the five program segments (or drying stages):
A1 Load, ramp-up, spin dry, ramp-down, unload
- Q2 What is a timed event? Give an example.
A2 An operation that can be sequenced to coincide with a particular program segment. Examples include: operation of pusher plate, and infeed or discharge systems.
- Q3 Name a typical loading and unloading RPM.
A3 80 RPM
- Q4 What is the maximum speed of the Rousselet centrifuge?
A4 690 RPM
- Q5 What controls the basket deceleration during the ramp-down program segment?
A5 The dynamic braking system
- Q6 How can you decrease the electrical load on the system?
A6 By choosing longer ramp-up and ramp-down times.

PROGRAMMING INSTRUCTIONS SECTION

- Q7 What two attributes can be programmed for each of the five program segments (or drying stages)?
A7 Speed measured in rpm, and time measured in seconds.
- Q8 Where are the programming controls located on the Rousselet centrifugation system?
A8 On the Rousselet PLC control panel.
- Q9 How do you advance to a new program number?
A9 By pressing the PROG key on the keypad.
- Q10 How do you go backwards to a program number?
A10 By pressing the down arrow (↓) key.
- Q11 How do you know whether a particular program number is already being used?
A11 Dashes appear in the speed and time windows of all five program segments.
- Q12 What combination of keys must you depress to enter the programming mode?
A12 The FUNC and PROG keys (which stand for function and program).
- Q13 How do you exit the programming mode?
A13 By pressing the DISP key (which stands for display).
- Q14 How do you know you are in the programming mode?
A14 The PRG symbol on the left side of the display lights up.
- Q15 How do you access the speed parameter of the control program?
A15 By pressing ENT after you are in programming mode.
- Q16 Name two functions that the ENT key performs.
A16 To provide access to a program segment or to save a value.

**ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
QUIZ AND ANSWER SHEET**

- Q17 What two controls on the keypad are used to select digits?
A17 The left (←) and right (→) arrow keys.
- Q18 How do you increase a digit's value?
A18 Press the up arrow (↑) key.
- Q19 How do you decrease a digit's value?
A19 Press the down arrow (↓) key.
- Q20 How do you access the program link (P.LI n) function?
A20 When in programming mode, push the down arrow (↓) key to run through the programmable options until the "P.LI n" symbol lights up.
- Q21 How do you make a program repeat itself?
A21 Link the program to its own program number (link it to itself).
- Q22 Once you are in programming mode, how do you access the timed event parameter?
A22 By pressing the down arrow (↓) key to run through the programmable options until the correct T_n symbol lights up.
- Q23 What timed events can be controlled by the Rousselet PLC?
A23 T1, T2, and T3; or the operation of the infeed system, pusher plate, and discharge system respectively.
- Q24 What two parameters do you enter when programming a timed event (hint: they are different than setting up a program segment)?
A24 You enter the delay and duration.
- Q25 What is unusual about programming a dump program?
A25 You set values equal to zero in at least three program segments.
- Q26 If you made a cleaning program what would be unusual about it?
A26 The pusher plate would be cycled in more than one program segment.

OPERATING INSTRUCTIONS SECTION

- Q27 What must be connected before you can turn on the Rousselet centrifuge?
A27 460 v power, electrical or hydraulic power to the infeed and discharge systems, 90-105 PSI air pressure, and flexible drain coupling.
- Q28 How can you tell if the centrifuge is turned on?
A28 The rotating bezel (or crown) is moving and the indicator lights on the clean-out doors are glowing yellow.
- Q29 What must be closed in order for the centrifuge to operate?
A29 Both clean-out doors and the pivoting lid.
- Q30 What else can cause the centrifuge not to operate even though the power is turned on and the doors and lid are closed?
A30 Not having the air line connected or the air control valve turned on.

**ROUSSELET CENTRIFUGE PROGRAMMING AND OPERATIONS
QUIZ AND ANSWER SHEET**

- Q31 How do you select which program number to run?
A31 Depress the rocker switches on the PLC control panel until the desired number appears.
- Q32 From where should you always turn off the centrifuge?
A32 From the operator control station.
- Q33 Where should the pusher plate be, before you turn off the centrifuge?
A33 At the bottom of its stroke.
- Q34 What else is turned off if you turn off the centrifuge from the PLC control panel?
A34 The dynamic braking system.
- Q35 What happens if a batch gets out of balance?
A35 The proximity sensor engages the dynamic braking system and stops the machine.
- Q36 What two choices do you have if a batch gets out of balance?
A36 Restart the current load or dump the current load and start over.
- Q37 How do you restart the current batch?
A37 Press the "on" button and wait to see if the machine will get up to full speed without tripping the sensor again. If the machine shuts down again you may have to redistribute the load and restart the machine.
- Q38 How do you dump the current batch and start over?
A38 Select the dump program, push the "off" button for 1 second, then press "on"; scrape the product off the discharge belt; select the normal program, push the "off" button for 1 second, then press "on."
- Q39 What else besides out-of-balance can cause the machine to shut down?
A39 The motor drawing too much amperage from too short a ramp-up or ramp-down.
- Q40 What should you do before starting manual cleaning of the centrifuge?
A40 Make sure the rotary power switch on the PLC control panel is locked out.
- Q41 In order for the CIP system to be effective what must happen?
A41 The basket must be rotated slowly and the pusher plate must go up and down.
- Q42 How can you make the pusher plate go up and down?
A42 Open the pneumatic control box and operate the pressure release pins, or use a special cleaning program.
- Q43 What must you do prior to using water around the centrifuge?
A43 Close all cabinet doors on the PLC control panel, operator control station, and pneumatic control box, and place waterproof protective covers over control boxes.
- Q44 Where can maintenance instructions be found?
A44 In the Rousselet maintenance manual.