GRAYMILLS
PARTS WASHERS

INSTALLATION
and
OPERATING INSTRUCTIONS
for
GRAYMILLS PARTS CLEANING SYSTEMS

FOR SALES OR SERVICE CONTACT US AT:

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Table of Contents

Thank you for your purchase of an automatic cleaning system, the highest quality system available in the industry today. Your cleaning system was designed and built to provide many years of quality operation. In order to assure its reliable operation, it is important to adhere to the following general guidelines for safety, installation, operation, and maintenance of the system.

SAFETY CONSIDERATIONS

1. GRAYMILLS suggests using only biodegradable water-soluble detergents**. Do not use petroleum based solvents or flammable products with the cleaning system**.

2. Use Underwriters Laboratory approved and grounded receptacles to supply proper voltage and current requirements to the system.

3. Check that all control switches are in the off positions before energizing the system.

4. Disconnect the main power to the machine before any maintenance or service activity.

5. High voltages may be used by the machinery. Follow approved security and lockout procedures when personnel are working on the equipment.

6. Set up the washer in an appropriate area with adequate provisions for drainage.

7. Do not operate the cleaning system in an enclosed area without adequate ventilation.

8. Do not operate the cleaning system where flammable vapors may collect or be present.

9. Never stand in water while starting or operating the cleaning system.

10. Always use personal protective equipment when operating the Graymills cleaning system, such as eye protection, gloves, and so forth.

11. Parts will be hot immediately after the cleaning operation is concluded, and they may cause serious burns if improperly handled. Use insulated gloves or other suitable protection.

12. **Check the water level daily**. Never allow the water level to drop below the top of the pump head, or allow the heating system to operate without an adequate water level.

13. Keep the system clean. Pumps, heating systems, and spray nozzles could be damaged by the build up of sludge and other particulates.

14. Unauthorized modifications to the machine may result in personal injury and property damage, and will void its warranty.

15. This appliance must be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor must be run with the circuit

conductors and connected to the equipment-grounding terminal or lead on the appliance. A qualified electrician should be consulted if there is any doubt as to whether an outlet box is properly grounded.

RECEIVING THE CLEANING SYSTEM

1. Inspect the machine inside and out to ensure all packing materials have been removed. For equipment supplied with electrical heating elements, be sure to remove any support packing around the heating elements.

2. Inspect all electrical connections prior to applying power to the equipment. Vibration during transit may cause loose electrical connections upon arrival. Tighten as required.

INSTALLATION OF THE CLEANING SYSTEM

***///* WARNING \\\:** This appliance must be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance. A qualified electrician should be consulted if there is any doubt as to whether an outlet box is properly grounded.

1. Select a location that allows adequate access to all sides of the cleaning system. Access to heaters and thermostats will be necessary. The location of gas-heated burners should be considered in selecting a final location that is suitable for a hot operating environment and is free of flammable materials.

2. Level the machine at its operating position.

3. Some conveyor units are shipped in sections. The following guidelines should be used to assemble conveyor systems.

a. After the sections are level, attach the mating conduit sections and sockets, and pull electrical wires through the conduit.

b. Caulk the mating faces of conveyor sections with the provided silicone caulking to form a water-tight seal.

c. Caulk around the exhaust pipe fittings where steam exhaust is provided.

d. Guide the exhaust pipe and electrical conduit into corresponding sockets when joining the conveyor sections. Fasten the two units together with the supplied bolts.

e. Connect the conveyor chain with the included connectors.

f. **Apply silicone to all areas inside the joints.**

g. Complete all electrical connections at the terminal boxes and accessories.

4. **Consult a qualified electrician** for proper sizing and routing of the main electrical supply and ground connections to the equipment. Verify that incoming voltage is correct and line fuses are properly sized to meet the load requirements

of the equipment. Check voltages for compliance with local codes and regulations.

5. If the unit is equipped with a gas burner, **consult a qualified industrial HVAC or boiler technician for proper installation** of the gas source and start up of the burner. Normally, the gas supply pressure must be between seven and fourteen inches water column [0.25 - 0.50 psi]. Pressures may vary, refer to burner owners manual.

6. **Consult a qualified HVAC contractor** to insure that all fumes from the operation are safely and efficiently vented from the building in accordance with applicable codes.

7. If desired, remove the two-inch plug from the drain coupler, and connect a two-inch [NPT] ball valve into the drain coupler of the tank before filling. Close the valve.

8. Set up all options as required according to the configuration of the cleaning system that was selected. The basic description and maintenance guidelines for each of the available options are listed under the **CLEANING SYSTEM OPTIONS** section.

9. Fill each tank to a safe operating level with clean water in order to verify that no leaks have developed, and to check the proper rotation of the pump systems. A safe operating level is normally about one inch below the pump mounting plate, or the top of auxiliary tanks, as applicable. Never allow the water level to drop below the top of the vertical pump head.

10. **If the unit is equipped with water filters, insure that the lid clamps are tight** and the gages are properly installed.

11. Close and secure all doors and hatches.

12. Check that all switches, selectors, and buttons are in the off position. Pull all Emergency Stop buttons to the fully extended, or out, position. There may be more than one Emergency Stop button station on the machine according to the optional equipment purchased with the machine. (Emergency Stop buttons are standard on Tempest and Conveyor models. Econo models do not have this feature)

13. Check the direction of motor rotation. It will be necessary to initiate a short power pulse of about two seconds, and then check each motor to verify that it is rotating in the proper direction by viewing the rear of each motor; proper rotation is clockwise as viewed from the rear [fan] end of the motor. Check that all switches and controls are off and the emergency stop is reset. Push the power rest button and the cycle start button, and then use one of the following methods to pulse the system according to the controls supplied with the unit:

a. If the unit is equipped with a rotary timer switch on the control panel, rotate the timer slightly until the motor begins to turn, and then return the timer to the off position.

b. If the unit does not have a timer, rotate the selector switch for each motor momentarily to the on position, such as the wash pump switch, and then return the selector to the off position.

c. In lieu of either of the preceding methods, a qualified electrician may open the control box and carefully actuate each motor starter contactor momentarily, and then allow it to return to the off position.

For three phase models. If a motor is running backward, a qualified electrician must lock out the main power and secure it, then reverse two of the main leads in the control panel. Restore power to the cleaning system and repeat the checks of motor direction per the preceding instructions.

14. If the equipment will not be placed in use immediately after set up, then it should be drained and treated with rust preventive, such as WD-40, or other suitable compound.

PRIMARY CONTROLS FOR CLEANING SYSTEMS

1. The controls for all Graymills equipment utilize the same operating fundamentals, and vary only according to the options selected. Generally, each control panel is composed of a system of push buttons, rotary selector switches, and indicator lamps or red rocker switches. The fundamental operation of each system will respond to the following sequence.

2. Indicator Lamps. System indicator lamps are used to identify active operating conditions, or faults. Amber indicator lamps are normally supplied with special options and will be illuminated when the applicable function is active. Red lamps are used to identify the presence of fault conditions, such as a low water level.

3. Selector Switches. Rotary selector switches are generally used to manually activate the operation of each system function; such as, the heating system, pump, blower and so forth. Most selectors are back lit, either amber or white, when the on position is selected to indicate that the function is active. When required, a three-position selector will be used, and each of the positions will be labeled.

4. Emergency Stop. Tempest and Conveyor models will be equipped with at least one emergency stop button. When any of these operators are depressed, all powered devices will be stopped; for example, pump motors, blower motors, electric heaters, and burners. The primary Emergency Stop button, located on the control panel, will be held in the off position by a mechanical detent until manually pulled out to allow the system to be reset. Satellite Emergency Stop buttons are usually spring return buttons that will return to the reset position as soon as operation has been interrupted.

5. Power Reset Button. The Power Rest button is a green, illuminated push button that is used to reset the system circuit after the equipment system has

been stopped. After all faults have been cleared, and the Emergency Stop has been reset, then the Power Reset button must be depressed, and the lamp illuminated. The unit is then ready for activity.

6. Cycle Start Button. The Cycle Start button is a green, illuminated push button that is used to start operations after all faults have been cleared, the selector switches for all desired functions are in the on position, all emergency stop buttons have been reset, and the power reset button has been activated and is illuminated. It is used when the cleaning system is controlled by a programmable logic controller [PLC]. If the equipment does not operate when the cycle start button is pressed, then check all switches and indicator lamps in the order listed to reset the system.

7. Spring Wound Rotary Wash Timer. The wash timer is a mechanical timer with a control knob on the panel. Turn the knob clockwise to the desired wash cycle duration. Turn the knob counter-clockwise to end the cycle. Like the Cycle Start button described above, the washer functions after all the faults are cleared, Emergency Stops reset, and the Power Reset has been activated.

INITIAL START UP OF THE CLEANING SYSTEM

1. Review the preceding sections on **SAFETY CONSIDERATIONS**, **RECEIVING THE CLEANING SYSTEM**, and **INSTALLATION OF THE CLEANING SYSTEM** to insure that all procedures have been considered.

2. Fill each tank to a safe operating level with clean water. A safe operating level is normally about one inch below the pump mounting plate, or the top of auxiliary tanks, as applicable. Never allow the water level to drop below the top of the vertical pump head.

3. Add the appropriate detergent with adequate rust preventive to the water according to directions from the soap manufacturer.

4. Check that all switches, selectors, and buttons are in the off position.

5. Check that all Emergency Stop buttons are to the fully extended, or out, position. There may be more than one Emergency Stop button station on the machine according to the optional equipment purchased with the machine.

6. Turn the heat switch for the applicable tank to the on position. For machines with more than one tank, the individual switches will be labeled for each tank...

7. Set the thermostat for each tank to the desired operating temperature. The typical operating range for most units is from 140F to about 150F, according to limits of the system used and the cleaning compound manufacturer's suggested operating temperature range. Some cleaning systems are not designed for, and will not be able to achieve, the higher operating temperatures. A good starting set point for the initial start up is about 140F.

8. Override the heat timer if one is installed with the system...

9. If the unit is equipped with water filters, **insure that the lid clamps are tight** and the gages are properly installed.

10. Close and secure all doors and hatches.

11. Press the power reset button if installed. There should be no fault lights illuminated. If a fault is indicated, then the cause for the fault, such as low water, should be corrected, and then the power reset button should be pressed again to reset the control circuit. If no faults are indicated, start machine operation using the Cycle Start button or the Rotary Wash Timer Switch, depending upon how the machine is equipped.

a. Cycle Start Button. If the unit is equipped with a Cycle Start button, then press this green illuminated button to commence machine operation.

b. Rotary Wash Timer Switch. If the unit is equipped with a Rotary Wash Timer switch, then rotate the switch to the desired time setting to commence machine operation.

12. Allow the equipment to operate through a complete cycle.
13. Always turn off all heating system via the appropriate selector switches when leaving the equipment unattended for long periods such as overnight or weekends.

MINIMUM MAINTENANCE REQUIREMENTS

1. Certain minimum maintenance standards are recommended to keep the cleaning system in good operating condition. Refer to the following guidelines and the matching references listed under Cleaning System Options. A regular maintenance schedule is recommended, and a sample has been provided in the following tabulation. It may be necessary to clean the system more often for severe-duty applications.

2. Turn table or Conveyor Operation. Check the operation of the parts moving system; that is, the turntable or conveyor system as applicable to the cleaning system type. Operate the system while viewing the turn table or conveyor to assure that the sprockets, chains, and other power transmission parts are properly engaged and tracking as required. Look for excessive wear or other conditions that may require repair.

3. Strainers and Screens. Check all pump inlet screens and chip basket to verify that they are securely fastened and are not clogged. Check for damage in the perforated material. Brush the perforated material to remove deposits and build up. Rinse with fresh water.

4. Tank Cleanout. Proper cleanout of the solution tanks insure the efficient operation of the entire system, and will prevent damage to the heating system

and spray nozzles. Generally, the following guidelines will result in safe and efficient cleanout.

a. Set all switches and controls to the off position.

b. Disconnect main power to the machine; lock out and tag out.

c. Drain the tank by removing the plug or opening the drain valve as applicable.

d. Remove all sediment and sludge from the tank with a scoop or water hose. Insure the pump inlet strainer is not blocked and is free of obstructions.

e. Refill with water and cleaning compound. Restart per Initial Startup instructions.

5. Nozzle Maintenance. Check all spray nozzles as follows:

a. Unscrew nozzles and inspect each one for damage or plugged orifice.

b. Clean orifice with a small wire or compressed air.

c. Replace nozzles being sure to tighten snugly and to properly align the spray pattern.

6. Lubrication Points. Periodically service all lubrication points provided with basic components and options. Grease fittings will be provided for components such as pump motors, swing away spray bars, turn tables, conveyor belt bearings, and flange and pillow block bearings.

7. Surface Cleaning. The life and finish of the equipment will be increased by keeping the surfaces clean. Rinse the painted surfaces with fresh water and wipe down with a soft shop towel often to minimize rust and preserve the finish of the equipment.

CLEANING SYSTEM OPTIONS

1. Graymills cleaning systems are available with a wide variety of optional equipment. The preceding guidelines apply to the basic machine system. Following is a list of options that may be supplied with a cleaning system, and general guidelines for operation and maintenance. Usually, a rotary selector switch will be included in the control system and used to activate or disable the function of each option.

2. Oil Separators.

a. Oil Skimmer.

1] Description. The oil skimmer is used to remove oil and surface material from the solution tank and improve the longevity of the solution. A rotating disk is partially submerged in the solution. Oil adheres to the disk as it emerges from the solution tank, and stainless steel blades squeegee the oil off the disk and route it to a disposal container.

2] Maintenance. Periodically check the bolts which hold the disk to the drive shaft to insure they are tight and the disk rotates.

b. Oil Coalescer.

1] Description. Oil coalescers help extend the life of cleaning fluids by removing mechanically mixed and floating contaminates as well as solids from a charged system. The system includes a self contained reservoir and pump system to pick up solution from the cleaning system and return clean solution to it.

2] Maintenance. These systems are supplied with the manufacturer's owners manual that supplies complete operating and maintenance instructions.

3. Water Level Controllers.

a. Low Water Shut Off.

1] Description. The low water shut off is used to prevent damage to the heating system that may result from a low water condition. A float switch slides vertically on a shaft, and is adjustable with respect to height. The switch should be oriented so that power to the pump and heating systems is interrupted before either system can be damaged.

2] Maintenance. Inspect the assembly for correct placement. Periodically clean the shaft assembly so the float slides freely. Insure that the shaft collar rigidly supports the system. Check the orientation of the float to be sure it is reassembled in its original position, or the unit will not function correctly.

b. Automatic Water Fill.

1] Description. The automatic water fill is used to automatically replenish the water level in the solution tank. It includes a float switch that slides vertically on a shaft wired in conjunction with a solenoid-operated water supply valve. The float switch is adjustable with respect to height. Water supply pressure to the solenoid valve should be limited to **30 PSI or less**.

2] Maintenance. Inspect the assembly for correct placement. Each time the tank water is changed, clean the shaft assembly so the float slides freely. Insure that the shaft collar rigidly supports the system. Adjust the float so the upper solution level is about one inch from the top of the tank.

c. Faxon Float System.

1] Description. The Faxon water level control system uses signals from a common float to control the low water shut off and automatic water fill functions. The float is rigidly attached to a shaft, which in turn slides inside a barrel housing located above the tank. The two components of the system are mounted on the cleaning system: the primary float, and the solenoid-operated water supply valve. The float is adjustable with respect to height. Water supply pressure to the solenoid valve should be limited to **30 PSI or less**.

2] Maintenance. Inspect the assembly for correct placement. Each time the tank water is changed, clean the shaft assembly so the float stem slides freely in the barrel housing. Adjust the float so the upper solution level is about one inch from the top of the tank.

4. Filtration System.

1] Description. Water filter systems can extend the working life of the cleaning solution by removing sediment. These units may be supplied with either of two types of filter elements: a stainless steel perforated filter basket that may be cleaned and returned to service; or, a replaceable filter sock. The system includes pressure gages located on the filter canister; the top gage indicates the inlet pressure from the pump, and the lower gage indicates the pressure between the filter and the spray nozzles.

2] Maintenance. Record the pressure readings of the gages when a clean filter screen or new filter bag is installed. As the filter fills with debris, the inlet pressure from the pump will increase. In most applications, a rise of ten to fifteen psi above the initial readings indicates the need to clean the filter screen, or change the filter bag.

5. Heating Systems.

a. Electric Heating Elements.

1] Description. Electric heating elements are the most common method used to heat tank solution. One or more heating elements may be used, and are usually attached to the side of the tank via threaded couplers.

2] Maintenance. Deposits of lime from hard water and soap residue will collect on the cal rod heating surfaces during use. Brush the outside of the heating elements to remove residue. Rinse the bottom of the tank with fresh water to remove scale deposits. This will maximize the heater efficiency and life.

b. Gas-fired Immersion Tube.

1] Description. The immersion tube heating system utilizes a gas burner that fires into a length of serpentine radiant tubing that winds just above the tank bottom to maximize heat transfer to the water. The exhaust gas must be vented from the building via the immersion tube stub provided with the equipment. Instructions for the flue size and arrangement are provided with the burner manufacturer's installation and service instructions. After the burner has been fired and visually set, a flue gas analysis will be needed for final adjustment of the burner.

2] Maintenance. Brush the outside of the radiant tubes to remove lime deposits and soap residue. Rinse the radiant tube and the tank bottom with fresh water to remove scale deposits. This will maximize radiant tube efficiency.

c. Gas-fired Bottom Heater.

1] Description. The bottom heating system utilizes a gas burner that fires into a heater box that is attached to the tank bottom. The hot gas is directed through a circuitous route under the tank to maximize heat transfer to the water. The exhaust gas must be vented from the building via a tube stub provided with the equipment. Instructions for the flue size and arrangement are provided with the burner manufacturer's installation

and service instructions. After the burner has been fired and visually set, a flue gas analysis will be needed for final adjustment of the burner.

2. Maintenance. Keeping the tank bottom clean is critical to the efficiency and life of the burner box. Build up of residue on the tank bottom insulates the heater box from the tank and impedes heat transfer to the tank water. If the condition is allowed to progress, it is possible for the heater box to over heat and causes it to burn out. Clean the tank bottom often to remove sediment, lime deposits, and soap residue. Rinse the tank bottom with fresh water to remove scale deposits and sediment. This will maximize the bottom heat efficiency.

6. Steam Exhaust Systems.

As a result of the hot water used in cleaning systems, it is commonly necessary to vent the resulting steam outside the building. Often, the exhaust mover is supplied by Graymills, and there are commonly three types: in-line draft inducer, low volume blower, and tube-axial duct fan.

a. In-line Draft Inducer.

The in-line draft inducer provides positive draft to aid steam exhaust. It is supplied with a short length of vent tubing. The tubing should be mounted as near as possible to the vent chimney, and an extension added as necessary to direct the steam to its exhaust point. Maintenance and operating specifications are contained in the manufacturer's installation and service bulletin.

b. Low Volume Blower.

The low volume centrifugal blower is designed to move moderate volumes of steam through short-length duct work. It may be bolted directly to the machine or mounted on an exhaust box, and additional exhaust ducting must be added to direct the steam to its exhaust point. A connecting flange will be required to bolt the ducting to the blower housing. Maintenance and operating specifications are contained in the manufacturer's installation and service bulletin.

c. Tube-axial Duct Fan.

The tube-axial fan is designed to move higher volumes of steam through medium-length duct work. It is mounted on an exhaust box on the machine, and additional exhaust ducting must be added to direct the steam to its exhaust point. A connecting flange will be required to bolt the ducting to the fan housing. Maintenance and operating specifications are contained in the manufacturer's installation and service bulletin.

7. Air Blow-off Systems.

Air blow-off systems are supplied to accelerate drying parts using a system of air knives. Supply air is commonly generated through two self-contained methods: a regenerative blower, or a centrifugal blower.

a. Regenerative Blower.

The regenerative blower is directly connected to the motor shaft providing powerful force without undue friction. It is generally self-contained and

takes in air through an inlet filter, and then discharges air to a distribution plenum, thence to the individual air knives. Maintenance and operating specifications are contained in the manufacturer's installation and service bulletin.

b. Centrifugal Blower.

The centrifugal blower provides a combination of powerful air movement and maximum control. It is a belt driven blower that takes in air through an inlet filter, and then discharges air to individual air knives via a distribution plenum. Maintenance and operating specifications are contained in the manufacturer's installation and service bulletin.

8. Evaporative Waste Reduction System.

The evaporative waste system is a heat control option that allows water boil off in order to minimize the disposal volume of contaminated water. It is activated via a three-position rotary selector switch. This switch is used to turn the heat system on and off in the normal operating mode, and it can be used to select the waste mode. When the waste mode is activated, the waste lamp will be illuminated, the pump will not operate, and the heating system will operate continuously until one of three limits is reached:

a. Maximum boil off time expires: this is normally factory set to thirty hours.
b. Low solution level is indicated by the waste float.
c. Solution level drops below the over-temperature thermocouple.

After the boil off cycle is complete, allow the unit to cool, and then clean the inside of the tank and spray chamber. Fill the tank with fresh solution after it has been cleaned. Reset the thermostat.

9. Cabinet Washer Rinse Systems.

Cabinet washing systems may be constructed with a separate rinse system. There are two basic types of rinse systems: nonrecirculating, and recirculating. Each type offers independent rinse plumbing to rinse cleaning compound off parts after the wash cycle has been completed.

The nonrecirculating rinse system utilizes a fresh water supply from an independent water source. The rinse water may then be routed to a drain using one of two methods: overflow, and dedicated drain. When the design requires the overflow method, the rinse water is collected in the wash tank and the excess is drained through an overflow coupler. This dilutes the cleaning solution in the wash tank, and it must be replenished periodically. If the design specification requires separation of the wash and rinse water, then the wash tank is sealed from the spray chamber, and a system of diverter valves is used to route the rinse water to a dedicated drain and does not dilute the wash solution.

The recirculating rinse system includes dedicated tanks for both the wash and rinse solutions. Two diverter valves are used to return wash solution to the wash tank, and rinse solution to the rinse tank. The two systems

operate independently, and each tank system may include its own heat system, low water indicator, and automatic water fill actuators.

The diverter system used for the recirculating and nonrecirculating rinse to dedicated-drain systems includes two air actuated valves that are controlled by a programmable logic control [PLC]. The controller is used to establish times for the wash and rinse cycles, and the drain times necessary after each operation to allow the cabinet to drain completely. These times are set at the factory, but may be adjusted following the navigation flow chart and list of timers included with the electrical diagram. Consult the factory for assistance with changes to the factory-installed programs.

10. Programmable Timers.

Seven-day programmable timers are used to establish heating cycles, or to time oil skimmer operation. Two timer types are available: one-channel and two-channel units.

a. One-channel Timer.

The timer is a digital clock that allows a means of automatically turning the heating system on and off, such as before a shift begins, or at the end of the shift. It includes a manual override to operate the heating system independently of the timer. Refer to the timer manufacturer's operation instructions to program the timer during startup of the system. A memory backup is to maintain timer operation if power to the unit is interrupted.

b. Two-channel Timer.

The timer provides independent automatic control of the heating system and the oil skimmer. It includes a manual override to operate the heating system and oil skimmer independently of the timer. Refer to the timer manufacturer's operation instructions to program the timer during startup of the system. A memory backup is to maintain timer operation if power to the unit is interrupted.

11. Torque Limiting Drive Sprocket.

The torque limiting drive sprocket includes a clutch assembly that protects a conveyor system from overload damage, such as may be caused by a hang up. It is a friction clutch that allows the drive sprocket to turn independently of the conveyor when the torque load exceeds a preset level.

Initial adjustment of the drive sprocket requires loading the conveyor to the maximum anticipated load, and then tightening the torque limiting nut until the conveyor is moving at a constant speed and the sprocket is not slipping. At this point, tighten the sprocket nut an additional one-sixteenth of a turn, and lock the nut with the supplied external tooth lock washer.

RECOMMENDED MAINTENANCE SCHEDULE

Recommended Minimum Maintenance Schedule Parts Cleaning Systems				
The following maintenance schedule is the minimum recommended guideline to keep the cleaning system in good operating condition. More frequent service requirements may be necessary for severe-duty applications.				
Maintenance Item	**Daily**	**Weekly**	**Monthly**	**Reference Description**
Periodic Inspections - Operation & proper adjustment				
Oil Separators		X		Cleaning System Options
Water Level Controllers		X		Cleaning System Options
Filtration System			X	Cleaning System Options
Heating System			X	Cleaning System Options
Steam Exhuast System			X	Cleaning System Options
Air Blow-off System			X	Cleaning System Options
Evaporative Waste Reduction System			X	Cleaning System Options
Cabinet Washer Rinse System - Diverter Valve Operation	X			Cleaning System Options
Turntable or Conveyor Operation - as applicable	X	X		Minimum Maintenance Requirements
Torque Limiting Drive Sprocket			X	Cleaning System Options
Strainers and Screens			X	Minimum Maintenance Requirements
Tank Cleanout			X	Minimum Maintenance Requirements
Nozzle Maintenance			X	Minimum Maintenance Requirements
Lubrication Points				
Swing-away Spray Bars			X	Minimum Maintenance Requirements
Turntable Bearings			X	Minimum Maintenance Requirements
Conveyor Shaft-end Bearings			X	Minimum Maintenance Requirements
Pillow- and Flange-block Bearings			X	Minimum Maintenance Requirements
Surface Cleaning	X			Minimum Maintenance Requirements

DRAWINGS AND TECHNICAL MANUALS

1. A separate packet of detailed information is supplied with each machine. It includes information which is specific for each machine, such as drawings, electrical schematic, and individual manufacturer's instructions for components and options.