

GOT PM?

Preventive Maintenance

PRESENTED BY:
Dorsey Holsinger

I NEED ANSWERS!!



Who does it?

What are the problems?

What needs to have PM?

What does it cost?

How often is it done?

What is PM?

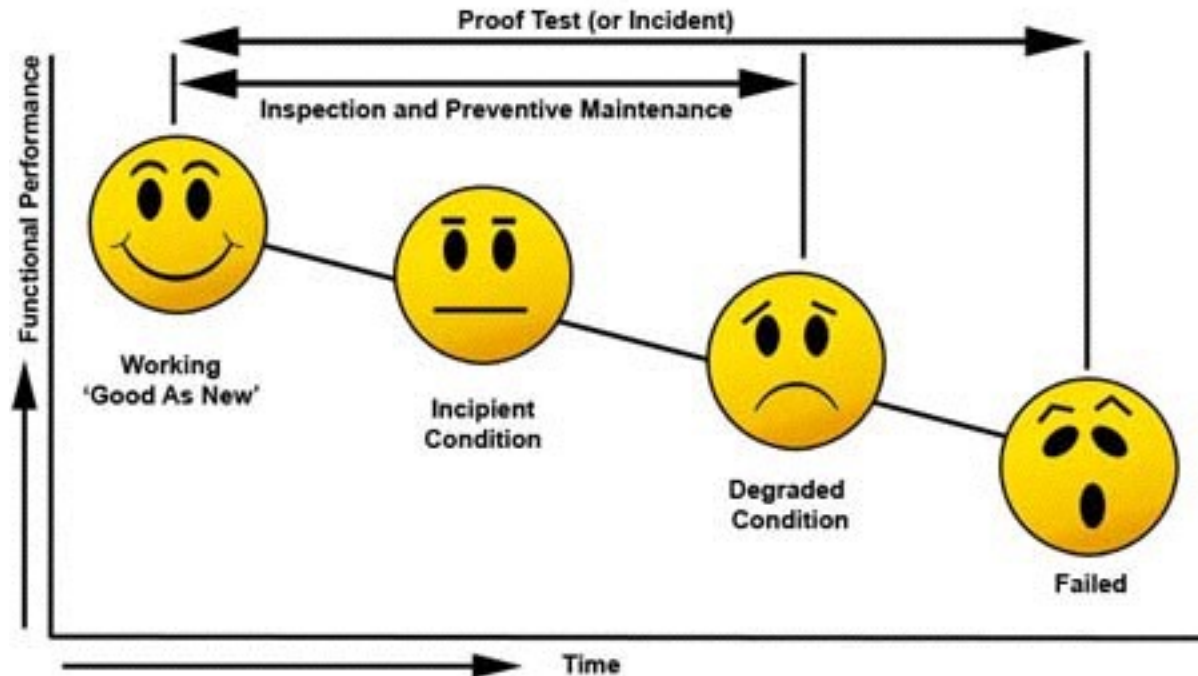
What are possible solutions?

How do I find out what needs to be done?

Preventive Maintenance (PM) vs No Preventive Maintenance

Planned maintenance
Proactive maintenance
Fewer and minor breakdowns
Less cost over time

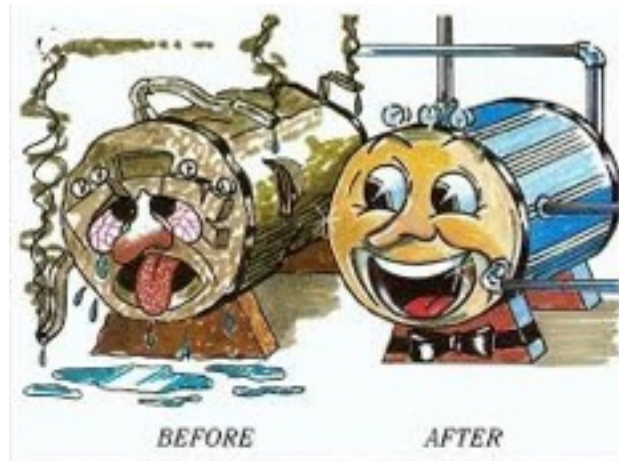
Unplanned maintenance
Reactive maintenance
More and major breakdowns
More cost over time



What is PM?

DEFINITION

Preventative maintenance is maintenance that is regularly performed on a piece of equipment to lessen the likelihood of it failing. Preventative maintenance is performed while the equipment is still working, so that it does not break down unexpectedly.





What needs PM in the kitchens?

School Kitchen Equipment



List Of Most Kitchen Equipment Items

Steamers, Washer, Dryer, Slicer, Braiser, Kettle, Dish Washer (Power Soak), Can Opener, Stove, Microwave, Convection Oven, Combi, Ice Machine, Disposal, Mixer, Warmer, Cooler, Ice Machine, Warmer and Cooler Display, Walk-in Cooler and Freezer, Food Processor, Hot and Cold Wells, Hot and Cool Flat Tops, Milk Box, Slushy or Smoothie Machine, Salad Dryer, Fryers, Electric Doors, Roll Carts and Bun Racks, Floor Scrubber Machine, Conveyor Oven, Therm and Hold Units, Serve Line **(40?)**

Who is responsible for performing PM?

- Maintenance person
- Operator



Maintenance Technician (No PM program)

What they can't do...

- They can't say when, how and where it will breakdown
- They can't say if they will have the parts to fix it
- They can't say how long it will be out of service
- They don't know what tools they will need

What they can do...

- They can respond to a call or work order based upon priority
- They can troubleshoot the equipment to find the problem
- They can order a component
- They can go get the part, if possible or wait for the mail
- They can remove and replace a component
- They can test for proper functioning
- They can order a component
- They can go get the part, if possible or wait for the mail
- They can remove and replace a component
- They can test for proper functioning

Kitchen Specialist (No PM program)

What they don't do commonly...

- Listen intently to unusual noises
- De-lime or de-scale on a regular basis
- Immediately report discrepancies
- Use proper cleaning materials and chemicals
- Keep doors closed on equipment
- Operate equipment properly



What they commonly do...

- Initially turn on equipment to highest temperature
- Leave equipment doors open
- Clean equipment while still hot
- Report equipment not working
- Make work order for equipment maintenance

Maintenance Technician and Kitchen Specialist With a PM Program (**Teamwork**)

Maintenance Technician

- Performs routine inspections (can predict possible failure)
- Scheduled component replacement (i.e. filters, floats)
- Scheduled cleaning (i.e. ice machine)
- Responds to work orders on minor anomalies

Kitchen Specialist

- Listens for unusual noises and reports it
- Visual inspection of equipment and reports cracks, leaks, etc.
- Keeps doors closed
- Turn off equipment when done using it
- Reports gas smells
- **Immediately** report the findings



- Scheduled Maintenance

- A. Replace filters
- B. Clean condensers
- C. Component Inspections
- D. Lubrication
- E. Visual Inspection

-Operator (1st indication)

- A. Cleaning
- B. Delimiting
- C. Filter cleaning
- D. Visual and Audio (Listen and look for the signs)

Where do we find out what to do?

- - Experience
- - Testing
- - Statistics
- - Manuals
- - Manufacturer

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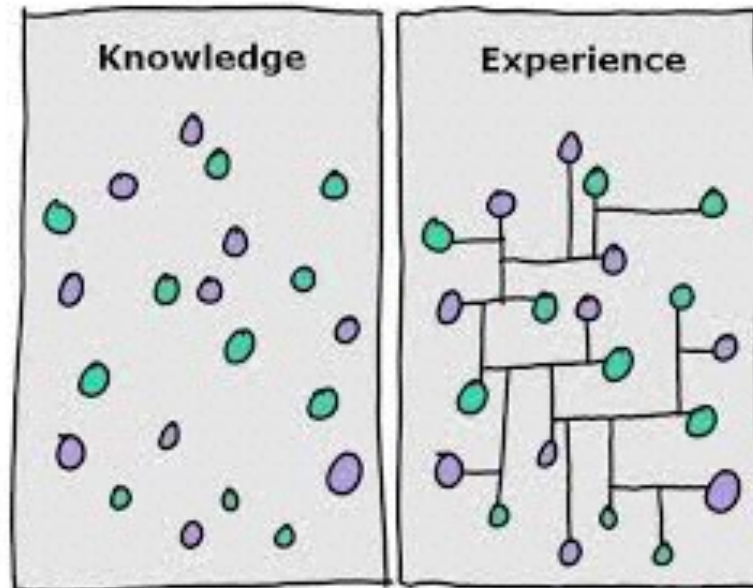


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“You say ‘dead.’ I say ‘low maintenance.’”

Experience

- Data collected from work orders on common repairs
- Years of working in the area of concern
- Work related experience from other jobs
- Training and education
- Common sense (good judgment)





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BENEFITS OF PREVENTATIVE MAINTENANCE

By: Lonnie Clayton

Preventative maintenance is something we all do on our vehicles to prolong their life. We change the oil every 3,000 miles, check the air in the tires, check the transmission fluid, make sure the radiator has plenty of coolant, and keep window cleaner in the wash tank. This is to make sure the performance and reliability of our vehicle is there when we need it. Ice machines are no different. They need periodic maintenance to assure maximum performance and efficiency. In this article we will highlight both procedures and benefits for maintaining your equipment.

To keep the overall operating cost down and efficiency up, regular preventative maintenance must be performed. Portions of the preventative maintenance can be performed by the customer or their maintenance staff. The more detailed portions as well as an annual cleaning and inspection should be done by a service technician with ice machine experience. In some areas where harsh water conditions exist it may be necessary to have the unit professionally cleaned more often than once a year. The installation of a properly sized water filtration or treatment system could reduce scale build up in the unit. This system will also require periodic maintenance and would be an excellent benefit to add to any preventative contract that you could sell the customer.

KM and Flaker-Preventative Maintenance:

In setting up your preventative maintenance schedule, use the following table as a guide.

Scheduled Time	Performed By:
Twice a Month	Customer
Once a Month	Customer
Quarterly	Customer or Service Technician
Semi-Annually	Customer or Service Technician
Annually	Service Technician

Twice a Month:

Procedure: Remove and clean the air filters using warm soapy water (air cooled models only). Wipe down the exterior with a neutral cleaner and check ice quality.

Benefit: Cleaning the filter gives adequate airflow across the condenser, resulting in maximum operating efficiency. Results are lower operating cost, reduced load on the compressor, and maximum production.

Once a Month:

Procedure: Check for any unusual water puddles or stains in the interior on compressor base. Examine the evaporator and reservoir and surrounding area for excessive calcium or lime deposits. Visually inspect the condenser coil. Clean with a brush if necessary. Check the flow pressure on the water filters with the unit in harvest. (If applicable.) Change the filters if needed. Wash the ice scoop.

Benefits: Spot early signs of potential freeze ups due to excessive scale build up. Helps to detect early signs of low production or efficiency. Reduces the time required for future cleanings. Assures proper water flow to the ice machine.

Quarterly:

ICE MACHINE

Procedures: Wash your hands and remove all the ice from the bin using the scoop. Clean the bin liner with a neutral cleaner. Rinse thoroughly after cleaning. Check and replace water filter if required. On KM models remove and clean the float switch and rubber boot.

Ice Machine Evaporator and Reservoir:

Turn off water supply and remove water supply pipe fitting from the water valve. Inspect and clean the water valve inlet screen. Wipe out the reservoir with a neutral cleaner and rinse thoroughly. Check the evaporator for calcium and lime deposits. Check the interior of the unit for unusual oil spots and water drips. Investigate any unusual findings and address them before a problem occurs.

Benefits: Keeps ice clean and tasting fresh by removing scale and bacteria from bin. Provides consistent ice quality. Ensures proper water flow to the ice machine, reduces cleaning time spent during annual professional cleanings. Keeps the machine performing at maximum production and efficiency.

Semi-Annually:

Procedure:

On remote condensers, you should check for a dirty or clogged condenser coil. Replace external water filters if not done so at earlier intervals. At this time you may want to have a qualified service technician to perform a professional cleaning and unit inspection.

Benefits: Maximum efficiency of equipment, proper production and quality of ice, lower operating cost and early detection of problems that could cause major failures resulting in equipment down time.

Annual:

Procedure: The customer should have his equipment professionally cleaned and inspected at least once per year. This allows an experienced service technician a chance to thoroughly clean and sanitize the unit as well as an opportunity to look for and detect items that may have been overlooked during earlier self performed inspections. For detailed information on cleaning please refer to the Instruction Manual

Benefits: Extended life and use of the equipment. Reliable production at the times when it is needed most. High quality ice, and most important, lower operating cost by maintaining maximum efficiency and operation of the refrigeration, electrical and water circuit components.

Many service companies provide scheduled Preventative Maintenance Contracts. Some of these can be customized to include these items, as well as regular water filter changes and other items. Although the up front cost may seem a bit high to the customer the benefits and additional life of the equipment provided by regular maintenance more than makes up for the cost of your maintenance program. At the same time it provides you with an extra source of income. So this is a win-win situation for both you and your customer.

KM-900 MECHANICAL BIN CONTROL SHIELD

Beginning in April 2001, Hoshizaki began installing mechanical bin controls on the smaller KM ice machines. This change included the KM-900 series. The first KM-900 series units that were built did not include a shield to protect the bin control from ice impacts, as well as unintentional contact from the ice scoop. It has been determined that the life and operation of the bin control could be increased by the installation of this shield. The shield also reduces the possibility of ice getting behind the actuator paddle, which will restrict the paddle movement. If you have one of the earlier units that does not have the white ABS shield, contact the Technical Support Department at 1-800-233-1940 for information about ordering this shield.

COMING NEXT MONTH...

1. Warranty Claim Processing

CAN OPENER

The Model #2 manual can opener, manufactured by the Edlund Company, must receive proper care and maintenance in order to function properly and to prevent any unsafe conditions over the life of the product or the life of any of its components. To ensure maximum life of the opener, the following care and maintenance procedures should be followed:

I. Cleaning Procedure

The can opener must be cleaned daily or after each extended use as follows:

- A. Remove all the food and can opening residues from the drive gear, the drive gear cavity, the knife and the area around the can stop using the stainless steel cleaning brush, (Edlund Model #ST-93). Regular use of this tool will help prevent unwanted product buildup and harmful bacteria growth.
- B. Wash the knife, gear and any splash area on the opener using soap and water.
- C. Thoroughly dry the knife, gear and can opener using a dry cloth or paper towel.
- D. Coat the knife and gear with non-sticking vegetable oil to prevent rusting when the can opener is not in use.

II. Maintenance Procedure

Periodically perform maintenance as follows to ensure sanitary and safe food handling requirements and to extend the life of your opener.

A. Check the shear blade or knife by running a fingernail over the cutting edge to make sure a sharp groove does not develop. A groove can cause metal can slivers. If a groove is found remove the two screws securing the knife to the knife holder and turn over to use the unused cutting edge or replace the blade with a new blade or knife. Place the knife support over the top of the knife and secure using the two knife holder screws. This inspection should be done when the can opener is cleaned. Please note: The Edlund knife is intentionally dull with rounded edges to prevent can slivers. However, the friction of metal-to-metal contact between the knife and the can will eventually cause the blade to sharpen itself. Check the knife regularly for sharp edges and grooves and remember, "Never sharpen can opener blades."

B. The drive gear should be inspected for wear monthly by first opening up a dent free #10 can with the opener. Inspect the can bead to see if the lines left by (tooth marks) the drive gear are narrow and evenly spaced, or if they are wide which indicates that the gear is slipping and may be removing metal from the can bead. If the gear is removing metal from the can bead, or "milling," inspect the gear for wear.

CAN OPENER



Edlund Company, Inc., 159 Industrial Parkway, Burlington, VT 05401 802-862-9661

M126



800-729-5051

If the teeth of the drive gear are dull, replace the drive gear using the procedure listed in Paragraph C below.

If the gear teeth appear to be sharp, inspect the arbor hole located below the gear by turning the opener upside down and determining if the hole is elongated or worn. If the hole is elongated, the opener is beyond repair and must be replaced.

C. Drive gear replacement is accomplished by first removing the knife and knife support from the knife holder. Place the can opener in the can opener base and place a nail, flathead screwdriver or other soft metal object to prevent rotation of the gear in the space on the right side of the gear between the gear and the edge of the gear slot. Remove the handle and arbor assembly from the gear by turning the handle counter-clockwise until the handle is detached from the drive gear. Remove the worn drive gear and gear washer from the gear slot and place the gear washer over the new gear with the word "up" toward the top of the can opener. Replace the gear and gear washer in the gear slot and insert the handle and arbor assembly back through the bushing and spring and into the threaded hole of the gear. Place a nail or soft metal object to prevent gear rotation in the space on the left side of the gear between the gear and the edge of the gear slot and rotate the handle clockwise until the assembly is tightened completely. Replace the knife and knife support and attach using the two knife holder screws.

D. To prevent premature wear of the arbor hole of the slide bar, place a small amount of non-sticking vegetable oil in the arbor hole located under the drive gear weekly or after each cleaning.

E. The can opener and base should be inspected weekly for any excessive wear or rust on any surface. If rust or wear is found to be excessive, replace the can opener and/or the base as required.

CHAPTER 6 PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING

A. MAINTENANCE

Maintenance on the steamer must be performed on a regular basis to keep the unit running properly. By following the maintenance instructions in this chapter and in the separate Installation Manual, problems with the steamer will be kept to a minimum. As with any preventative maintenance schedule, the frequency of steamer maintenance may need to be increased, depending on equipment usage and water quality. If problems do occur, refer to the Troubleshooting Guide in this chapter. For more information on products and services, contact your sales representative.

1. Maintenance Records

Make a file solely for maintenance records. Keep a written record of daily, weekly, monthly, and yearly maintenance. These records will protect warranty coverage, help personnel to know when to perform various maintenance procedures, and assist service personnel.

2. Daily Maintenance

a. Blowdown Steam Generator

Blowdown each steam generator at least every four hours according to the steam generator blowdown instructions in Chapter 5.

b. Clean the Steamer

Clean interior and exterior of the steamer according to the shutdown instructions in Chapter 5.

3. Weekly Maintenance

Clean Drain

CAUTION

Steam leaks, pressure buildup in the cooking compartment and poor steaming performance can be caused by a blocked drain line or screen. Blocked or slow drains are dangerous because hot water can collect in the compartment and spill out when opening the compartment door.

This steamer is equipped with a drain screen in the back of each cooking compartment. Never operate the steamer without the screens in place. The screen prevents large food particles from entering and blocking the drain line. Any blockage of the drain line can cause a pressure buildup in the compartment, resulting in steam leaks around the door gasket. Drain line blockage also adversely affects convection action of the steam in the compartment, which is necessary for optimum performance.

- a. Inspect the drain screen and drain line for blockage. Rotate the drain screen 90 degrees to inspect the drain opening. Clean the opening and restore the screen to its operating position.
- b. Clean drain with a USDA approved drain cleaner, once a week. Follow the instructions of the manufacturer of the cleaner.
- c. Flush drain with clean water.

STEAMER

4. Monthly/Weekly Maintenance

Descal Steam Generator

Steam generators should be descaled at least once a month, depending on scale buildup. Alternately, they can be descaled weekly with smaller amounts of solution, if this frequency better suits your maintenance schedule. If you have serious steam generator scale buildup, a water treatment system should be installed for the steamer or if this is not possible the frequency of descaling should be increased. This unit is equipped with a Descaling reminder light to assist in the scheduling of this maintenance. (Note: the descaling light has been factory set for an operating time of approximately 1 month, if weekly descaling has been chosen it will be necessary to have the descaling timer reset to reflect this schedule by a qualified service technician). When this light comes on arrangements should be made to descale the steam generator as soon as feasible. Cleveland Range, Inc. recommends the use of *DISSOLVE*[®] Descaler Solution, Cleveland Range Part Nos. 106174. No other system of steamer descaling should be used.

NOTE: Part No. 106174 is the Part No. for a case (8 1-gallon containers) of *DISSOLVE*[®] descaler. It is also available in 5-gallon containers as Part No. 1061741.

THESE INSTRUCTIONS ARE FOR USE WITH *DISSOLVE*[®] DESCALER SOLUTION Cleveland Range Part Nos. 106174 or 1061741 ONLY.

- **Health Hazard Data, Effects of Overexposure** – This product may cause a burning sensation to eyes or skin.
- **Emergency and First Aid Procedures** - In case of eye contact, immediately flush eyes with plenty of water. If irritation persists seek medical attention. In case of skin contact wash with soap and water. If inhaled, remove to fresh air and if burning persists, call a physician. If swallowed, drink 1 or 2 glasses of water and call a physician.
- **Spill or Leak Procedures** – Rinse with plenty of water to dilute. Sodium carbonate or calcium carbonate may be used to soak up liquid. Considered non-hazardous, spent material may be disposed of in a sewer system with water flush.

WARNING

The liquid solution in Cleveland Range Descaler Solution Part No. 106174 or 1061741 can be harmful if not handled properly. Follow these basic safety rules for handling and using this product.

Wear protective clothing when mixing or applying chemical cleaners.

Wear rubber gloves, and splash goggles.

Avoid breathing fumes. If liquid comes in contact with skin, wash with soap and water.

If chemical contacts eyes, flush with water. If irritation persists seek medical attention

If chemical is swallowed or ingested, drink 1 or 2 glasses of water and call a physician.

CAUTION

Do not use any other product or method of descaling other than the *DISSOLVE*[®] Descaler method using Part Nos. 106174 or 1061741.

STEAMER

Monthly/Weekly Maintenance (continued)

a. MODEL 24CGA6.2 and 24CGA10.2, ATMOSPHERIC STEAM GENERATOR DESCALING PROCEDURE (For *DISSOLVE*[®] Descaler Solution Part No. 106174 or 1061741) Monthly Intervals

1. This procedure will take approximately 1 hour and 30 minutes to complete. This entire procedure should be read and fully understood before beginning the actual descaling operation.
2. Zero the timers or, for manual only models, set the selector switch to OFF.
3. Open both doors to the cooking compartments.
4. Set the TIMED/MANUAL switches to TIMED.
5. Set the ON/OFF levers/switches to the OFF position. (The unit will undergo a normal blowdown cycle, which should take approximately 3 minutes to complete).
6. When the unit has completed draining, turn the ON/OFF levers/switches to ON to refill the unit. Do not start the timer. Leave the doors open.

NOTE: DO NOT HEAT THE UNIT DURING DESCALING.

7. While the unit is filling with water, remove the descaling port caps located at the top of the unit (See Figure 6-1), and add 1 gallon of *DISSOLVE*[®] descaler solution to each port.

- While adding liquid to the unit through the descaler inlets, pour it in slowly so as to avoid overflow.

8. After automatic fill has ended, turn OFF power at the external main power switch. See Figure 6-2. Add an additional 1-gallon of water to each port.
9. Replace the caps and let the unit stand for 1 hour.
10. At the end of 1 hour, set the ON/OFF levers/switches to the OFF position and turn the power ON at the external main power switch. After the 3-minute drain cycle, completes turn the unit back ON. After the filling has stopped, add 1½ gallons of water through each descale port, and then turn the unit OFF. This will start a blowdown cycle and drain any residue from the water level control assembly.
11. After the unit has drained completely, close the steamer doors and set the ON/OFF levers/switches to the ON position. The unit will fill with water.
12. Set the timers for 20 minutes, and turn them on (KEYPAD MODELS). The unit will come up to normal operating temperature.
13. At the end of 20 minutes of cooking, turn off the alarm (if necessary) and set the ON/OFF levers/switches to the OFF position. The unit will go through a 3-minute drain cycle.
14. This is the final blowdown to rinse the unit. The steamer is now ready for normal operation.
15. When done cleaning, reset the descale indicator light timer to zero by pressing the "DESCALE REQUIRED" lighted rocker switches, and resume normal operation.

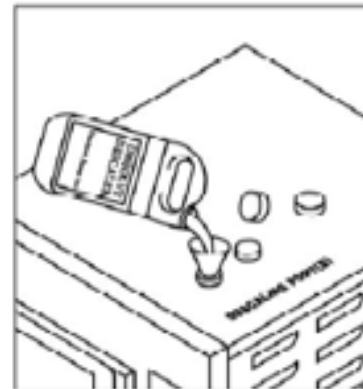


Figure 6-1 Descaling Port

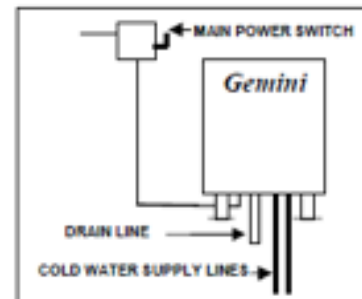


Figure 6-2 External Main Power Switch

How often is PM done?

- As often as necessary
- In accordance with the manual
- As scheduled

Daily
Weekly
Bi-weekly
Monthly
Bi-monthly
Quarterly
Semiannual
Annual



What does it cost?



Cost Comparison

Reactive (No PM)

- Short equipment Life
- Higher cost components
- Multiple damaged components
- Longer down time
- Larger inventory
- Higher risk of safety mishaps
- Potential for overtime hours

Proactive (PM)

- Longer use of equipment
- Lower cost components
- Single component damage
- Shorter or no down time
- More Labor
- Smaller inventory
- Fewer safety mishaps



What are the problems with initiating PM?

1. Tried to bite off more than what could be chewed
2. Leadership understanding and support
3. Lack of authority
4. Not enough resources (labor)
5. Parts cost
6. Conflict between PM and reactive maintenance
7. Equipment reliability (high maintenance)
8. Training
9. Employee commitment
10. Long exhaustive inspections

What are solutions to a successful PM program?

COUNTDOWN

10. Higher an outside source
9. Effective Scheduling
8. Early detection
7. Operator participation
6. Provide training and process expectations
5. PM software
4. Start Small
3. Increase labor
2. Leadership commitment

#1 SOLUTION

BUY EQUIPMENT THAT NEVER BREAKS DOWN!!



NOTE: If this is sold out, then just buy equipment that is known to be reliable

SUMMARY

A PM program that is properly established with the support of leadership will certainly be less costly and provide significant life expectancy out of kitchen equipment. Equipment breakdowns and idle time will be reduced. Equipment repair cost will be much less. Moral will be higher. Remember to start small so the undertaking is realistic, manageable and not frustrating.

