

Section 25 – Preventative Maintenance Program

PURPOSE Preventative Maintenance (PM) Programs are implemented to ensure that machinery and equipment is serviced according to the manufacturer's specifications and / or to meet all legislative requirements.

SCOPE We will ensure that all equipment used or operated is operating at its full capacity and not being burdened with undue stresses caused by poorly / under serviced equipment.

RESPONSIBILITIES

Health and Safety Coordinator Responsibilities:

- Comply with all the requirements as defined under the Occupational Health and Safety Act and Regulations.
- Distribute and communicate information to the appropriate parties regarding any nonconformance or deficiencies reported.

Senior Management Responsibilities:

- Take all measures reasonably necessary in the circumstances to protect employees from vehicles and equipment failures and breakdowns.
- Review Occupational Health and Safety Act and Regulations to ensure compliance within the PM Program.
- Ensure the appropriate PM is completed for all equipment or machinery is implemented across all areas of responsibility.
- Ensure that the equipment, materials and protective devices are provided, maintained in good condition and used as prescribed.

Project Manager Responsibilities:

- Arrange for specific PM to be scheduled and followed up.
- Ensure appropriate PM requirements are completed for all equipment or machinery as required.
- Develop the PM Program for all workplaces and sites level equipment and vehicles.
- Ensure equipment, materials and protective devices are provided, maintained and used as required at site and office locations.
- Provide required protective devices, measures and procedures required by the Occupational Health and Safety Act and Regulations.

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Superintendent Responsibilities:

- Ensure appropriate PM requirements are completed for all equipment or machinery as required.
- Ensure equipment, materials and protective devices are provided, maintained and used as required at site and office locations.
- Provide required protective devices, measures and procedures required by the Occupational Health and Safety Act and Regulations.

Foreman Responsibilities:

- Complete or schedule all equipment or machinery PM as required with the Superintendent and/or Project Manager.
- Ensure known site related hazards are defined and appropriate PM requirements are completed for all equipment or machinery as required.
- Take prompt and appropriate action when contraventions with the use or maintenance equipment or machinery been identified.
- Take every precaution reasonable in the circumstances for the protection of a worker.
- Where so prescribed, provide a worker with written instructions as to the measures and procedures to be taken for protection of the worker

Workers Responsibilities:

- Report any damage or malfunctioning equipment or machinery immediately to your supervisor.
- Works in the manner and with the protective devices, measures and procedures required by the Occupational Health and Safety Act and Regulations.
- Report to his or her Supervisor any contravention of the Occupational Health and Safety Act and Regulations or the absence/defect in any equipment or protective device.

PROCEDURE

Preventive maintenance is predetermined work performed to a schedule with the aim of preventing wear and tear or sudden failure of equipment components.

A good preventative maintenance program reduces downtime. Long-term benefits of a reliable and well-documented preventative maintenance program include:

- Improve system reliability
- Decrease cost of replacement
- Fewer production stoppages
- Fewer large scale repairs
- Increased life expectancy for equipment
- Less need for standby equipment
- Identification of equipment with high maintenance costs (leads to checking and correction or outdated equipment)

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- Better spare parts control
- Greater work safety – reduce injury
- Lower manufacturing costs

The successful maintenance program is:

- Well organized and scheduled
- Controls hazards
- Defines operational procedures
- Trains key personnel

The Preventive Maintenance Program will address the following:

1. Machinery and Equipment Inventory
2. Preventive Maintenance Schedule
3. Preventive Maintenance Activities

The First Step in Preventive Maintenance is to develop a comprehensive listing of all equipment and machinery where capital investment costs on tools or equipment will be the criteria to be included under this list.

Capital investment costs will be defined as product costing more than 3500 dollars.

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Once an inventory of equipment and machinery has been conducted the **Project Manager** will audit the equipment and machinery and develop time schedules for maintenance. Use the equipment's manuals and previous experience/history to outline all maintenance and repair activities and do this for each equipment.

Once complete, the **Project Manager** will ensure that the schedule is met, documented and conducted by competent service providers.

DISTRIBUTION

The Preventative Maintenance Program shall be reviewed by **Senior Management, Project Manager** and the **Health and Safety Coordinator** on an annual basis or more frequently as required to ensure that the program is in compliance with applicable legislation/ standards and that it is achieving the desired result of a safe and healthy workplace.

RECORDS

The maintenance program shall contain a recording system. Part of this system should be made up of inventories and schedules. In Addition, the recording system should document what maintenance work was done, when, and by whom. Need to keep records of all maintenance activities, indicating the machine(s) involved, type of maintenance and date on which performed.

Ensure that all maintenance activities are well documented. Keep records of staff training, regular repairs, purchases, pre-operation inspection findings, etc. Documents should show that the preventative maintenance program supports all other prerequisite programs.

Project Manager will maintain all records on file for the life of the machinery or equipment.

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MACHINERY AND EQUIPMENT INVENTORY

PROCEDURE

An inventory of equipment and machinery will be used by the Health and Safety Coordinator in consultation with the Project Manager of maintenance to implement and maintain the Preventive Maintenance Program. An inventory of machinery and equipment used and developed by the Project Manager and in consultation with the Health and Safety Coordinator where **capital investment costs on tools or equipment will be the criteria to be included under this list.** This items to be reviewed when developing the inventory include:

- **Mobile equipment** (e.g., trucks, dump trucks, trailers, and other material handling equipment)
- **Heavy Equipment** (e.g., pavers, loaders, rollers, excavators, skid steers)

A Machinery and Equipment Inventory will be developed and used to document the inventory.

Required Information

The Machinery and Equipment Inventory will be completed by the Project Manager and the Health and Safety Coordinator to provide the following information for all machinery and equipment used in each specific work area of the shop:

- The name of the machinery or equipment
- The serial number
- The required maintenance activities per manufacturer's instructions
- The required frequency of the maintenance activities per manufacturer's instructions
- The date of last service

Completion of Machinery and Equipment Inventory

The following steps should be taken when completing the Machinery and Equipment Inventory:

1. When recording the name of the machinery or equipment, both the common name used by employees for the machinery or equipment as well as the formal name (provided by the manufacturer) should be recorded. If a model number is identified on the machinery or equipment, also include the model number.
2. The asset or serial number for the specific piece of equipment must be recorded to distinguish between specific pieces of equipment with the same common or formal names.
3. The required preventive maintenance activities and frequency will be determined through a review of:

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- The manufacturer's recommendations contained in any Operating Manuals available for the specific machinery or equipment
 - Applicable legislative requirements or industry standards
 - Current maintenance activities being performed
 - Discussions with Managers or technicians and maintenance personnel
4. The completed Machinery and Equipment Inventory will be reviewed with the Health and Safety Coordinator, Project Manager and workers for the work area to ensure accuracy and completeness.

The completed Machinery and Equipment Inventory will be maintained by the Project Manager and will ensure the inventory is kept current.

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PREVENTIVE MAINTENANCE SCHEDULE

PROCEDURE

A preventive maintenance schedule will be developed in conjunction with the preventive maintenance inventory and implemented to ensure that preventive maintenance activities are planned, scheduled and performed by appropriately qualified personnel at the required intervals.

Preventive maintenance schedules will be developed for each work required piece of equipment by the Project Manager and Health and Safety Coordinator.

Each schedule will address all items included on the Machinery and Equipment Inventory and will assign specific dates and assign responsibility for the performance of the preventive maintenance activities from the manufacturer's recommendations and legislative requirements.

Items to be considered when developing the schedule include:

- The specific parts of machinery or equipment to be reviewed and the required frequency of review (as indicated on the Machinery and Equipment Inventory)
- The effect preventive maintenance activities will have on production schedules (as these activities should be scheduled to minimize their effect on production scheduling)
- The required qualifications of the person(s) assigned responsibility for performing the preventive maintenance activities (i.e., the activity to be performed by maintenance personnel, machinery or equipment operators or by an external specialty contractor)

Only appropriately qualified personnel will be designated to perform preventive maintenance activities.

The Preventive Maintenance Schedule will be used to document the process conducted by the qualified personnel will be designated to perform preventive maintenance activities.

Copies of the completed Preventive Maintenance Schedule will be provided to the operators and site personnel.

The completed Preventive Maintenance Schedule will be maintained by the Project Manager and they will ensure the schedule is kept current.

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PREVENTIVE MAINTENANCE ACTIVITIES

PROCEDURE

Preventive Maintenance Activities will be performed by appropriately qualified personnel for each piece of equipment based on the Preventive Maintenance Schedule.

Documentation

Preventive Maintenance records will be used to document all preventive maintenance activities. This package should also be used to document damaged or worn parts observed during routine preventive maintenance activities.

Preventive Maintenance Procedures

Preventative Maintenance schedules will be developed for all equipment as required. Documentation of these maintenance activities must be maintained upon completion of the Preventive Maintenance.

Preventative Maintenance Lockout/ Tagout Procedures

1. Certified mechanics are to conduct work that required lockout and tagout
2. Place disconnected device in the OFF position and test for potential energization
 - If it a mobile piece of equipment, use the chocks to ensure no inadvertent movement
 - If applicable, shut off air supply, release residual air pressure, remove the hose
 - Lockout gas, steam, or other valves at the point of operation and open others to bleed off residual pressure
 - Drain or bleed off hydraulic lines
 - Block or otherwise immobilize gravity devices and mechanisms under tension or pressure such as rams, springs or fly wheels
3. Install appropriate locking devices
4. Verify Zero-Energy - test operation switches to verify that the equipment cannot be restarted, if lockout has not occurred, do not proceed
5. Remove all lockout and tagout devices (locks, tags, blocks, chains, etc.) once work completed, and the equipment is inspected/safe
6. Lockout and tagout devices are only to be removed by the worker who installed them
7. Re-energize equipment as applicable and have the operator test run the equipment to ensure that everything is working properly

The completed Preventive Maintenance Records will be maintained by the Project Manager and they will ensure the schedule is kept current.

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Preventative Maintenance Defective Machinery and Equipment

In the event that a machinery, vehicle or piece of equipment is found to be damaged or defective, the supervisor will:

- Notify the maintenance department of the machinery/equipment/vehicle immediately for repair
- arrange for replacement.

Regardless of the situation, the below procedures should be followed:

1. Worker/Operator to report deficiencies/damage to supervisor
2. Worker/Operator and supervisor to inspect the broken machinery/piece of equipment to decide what type of action is required. (e.g. Repair on site, remove from use, etc.)
3. Turn off/deactivate machinery/equipment/vehicle (complete “lock-out” as required) and complete entry into log book (as required).
4. Supervisor to ensure machinery/ equipment is placed in safe, secure location and is unavailable to workers/operators.
5. If dealing with damaged/defective equipment, supervisor must make arrangements to get the machinery/equipment in good working order. Only competent and trained persons are authorized to repair defective tools and equipment and, upon repair, authorize them as approved for use.
6. If equipment is rented, Supervisor or Management to contact the rental company to return the machinery/equipment.
7. The lock out tag (if attached) shall stay affixed to the machinery or equipment until all required inspections, maintenance and service activities are completed.
8. Once the machinery, equipment or vehicle has received the necessary inspection, maintenance and/or service, an approved for use the approving maintenance person shall notify the Supervisor to identify it as ready for use.