Why Manage the Maintenance Inventory?

By Joel Levitt

There is a common misconception that computerization can somehow get your inventory situation under control 'once and for all.' The fact is that without physical and procedural controls and the will to use them computerization will only make the situation worse. The wonderful advantages of computers flow only to organizations committed to the controls. Once controls are in place computerization will greatly simplify the clerical work and the analysis.

The maintenance inventory is designed to support the performance of the maintenance function. The building, stocking and upkeep of a maintenance storeroom must reduce the overall cost of providing maintenance. Decisions about inventory always lead back to an economic justification. Economic justifications include avoidance of expensive downtime or avoidance of breakdowns that will cause loss of customer goodwill. Both can impact the bottom line. Non-economic justification of high inventory usually covers holes in the control of the maintenance function.

The following problems indicate that inventory is not under proper control. Review your operation to see if these symptoms are present.

20 Symptoms of Inadequate Inventory Control	**Yes or No**
1. Stock-outs on critical parts when they are needed	
2. Inventory for units no longer in service	
3. Inventory on shelf for 1 year or more	
4. Inventory cannot be reconciled (unit number where parts were used)	
5. Parts can be added to or taken from inventory without proper paperwork or computer entry.	
6. Purchase orders issued after item was received	
7. Routinely items purchased with petty cash on a rush basis.	
8. Little knowledge of location, inventory level, turnover.	
9. No established min/max, reorder points, E.O.Q's.	
10. No competitive bids or sweetheart deals with certain vendors (not partnerships)	
11. Parts purchased but never used, no accountability of parts used.	
12. No proper storage, unlimited access to parts room.	
13. No physical inventory taken	
14. Excessive hoarding of parts outside of parts room by mechanics.	
15. No knowledge of the current value of the inventory	
16. No analysis of equipment to estimate spare part requirements	
17. No knowledge of quantity on hand at the moment	
18. Constant calls to vendors for emergency drop-offs	

19. Field reengineering changes parts needed without changing bill of materials.	
20. Bad relationships between stores, maintenance and purchasing.	

The elements of Inventory control, these elements include

1. Building adequate storage with limited access.
2. Requirement that all parts removed are recorded on WOs or equivalent document.
3. All parts must be received, price checked, physically checked, counted and signed for (unless a partnership method has been designed).
4. Parts are assigned locations
5 Periodic physical inventories are taken to verify quantity and location.
6. Some means for recording usage, price history, where used and substitutions.
7. Periodically, parts are shopped and vendors evaluated.
8. Periodically applications and specifications of parts reviewed
9. Periodically, part usage and lead-time is reviewed to adjust min/max and economical order quantity.
10. Parts are divided into classes for different treatment.
11.Parts are described logically so that they can be found
12. Information is available so that questions can be answered
13. Parts for assets that are retired are reviewed for use elsewhere or disposed of.

Rules of a computer aided maintenance stockroom

- All parts removed are recorded on WOs (work orders) or equivalent document: The system facilitates this element by entering all items used on WOs, and charging them to units. With more complete systems the stock room can actually charge the part to the unit and WO at the time it's given to the mechanic.

- All parts must be received, priced, physically checked, counted and signed for: Much of the checking, such as exact part number ordered, price, quantity ordered, etc. is very easy to do and will probably get done more often. The exception is when you have a vendor partnership where the vendor performs some of these functions.

- Parts are assigned locations; physical inventory verifies quantity and location: All parts' locations are logged on the inventory system. Parts are easier to find and count for physical inventory. Systems can usually generate a physical inventory form sorted by location with the part number, description, location and a place for the physical count. Large stockrooms can benefit from hand held computers with counting software (similar to supermarket inventory systems).

- Some means for recording usage, price history, where used and substitutions: Usage and price history are automatically captured by the system (requires no additional steps). Where used and substitutions can usually be entered into the part Masterfiles. In some cases the system will capture the asset the WO has been pulled for and associate the part with that asset.

- Parts are divided into classes for different treatment: Certain systems can set-up the ABC classes of parts through analysis of yearly dollar volumes. Categories for critical parts are important such as “Insurance policy spares” (parts that could shut-down a section, process or the whole plant) and “critical parts” (parts that can shut down a whole machine).

- The parts master files should include the basic information needed to manage the parts and answer questions. These include the ways that the parts are found and/ or identified. They would include manufacturer (not necessarily vendor), generic type (bearing, seal, belt, etc), where used (what asset the part is used on), vendor, when used last, and critically (see above).

- Periodically, parts are shopped, specifications reviewed and vendors evaluated: Since the system can easily generate parts catalogs periodic shopping of higher volume items is a great deal easier. Performance reporting is also possible from some of the systems.

- Periodically, part usage and lead time is reviewed to adjust min/max and economical order quantity: The real power of computerization lies in its ability to capture and analyze usage data and apply preset formulas to determine E.O.Q's.

- Parts for units out of service are reviewed for use elsewhere or disposed of: Outside information such as asset retirement, changes in asset make-up usually have to be manually factored in. If the system has where-used as a data element in the part Masterfiles it may have the ability to isolate all parts used on the retiring unit for review.

How Computerized Inventory Control can reduce stock-out and obsolete parts

The computer system can apply the check for minimum stock level every time a part is requested. If the parts are actually ordered then stock- outs can be reduced to the level that you set. Inventory levels can be adjusted up or down by allowing more or less stock-out conditions. Once everything is settled down, fine-tuning for seasonal variation and for age of equipment can bring inventory into line.

On the other end of the scale we are concerned with inventory that hasn't been used. The system can easily print parts that have not been used in 6 months, 1 year, or 2 years. These parts can be investigated (see if they are hard to get `insurance' stock). If they are available from outside sources you can try to sell or trade them for usable stock.

These symptoms indicate holes or voids in your organization's control of inventory. In small fleets, factories, and medium sized buildings you may have to put up with some of these situations because of inadequate volume to justify the control structure/people. However even the smallest operations can justify some level of control.

Ideas for layout of the storeroom	**Yes or No**
Self-closing gate with fencing around area (The idea is to show the organization	

values the inventory)	
If no computer or part room clerk put usage log sheet where it cannot be missed	
Number all shelve units, shelves, bins and drawers	
Drawer units make more efficient use of space then shelves and protect items better	
Give all materials a home. Consider how the part is picked.	
Make space for returns, incoming and outgoing rebuilds	
Have a cage or area for reserved parts or for staging special incoming parts	
Heavy parts down low, fast moving parts near window	
Low value small parts outside room for free access	
Arrange by family in order of popularity	
Put items next to each other that are used together	
Set up each shelving unit like a book left to right, top to bottom	
Consider keeping top shelves empty for over stocks and expansion	
Store in manufacturer's cartons after removing wires, strapping, shrink-wrap, etc.	

Ideas for Part numbering and descriptions

There are several excellent ways to set up a part number and description. As computer software becomes more sophisticated, the structure for these fields becomes less important. In the older computer systems bearing, thrust and thrust bearing would be filed in different locations. In these obsolete technologies the order and wording of the description becomes critical and inflexible.

The advent of full text searches means that if you are searching for thrust bearings you will get hits no matter where the words bearing and thrust appear in the description string. In fact the searches are like Internet search engine results sets, which would find bearing even if it spelled wrong! In the modern systems the description becomes more of a list of key words that anyone might use to find the part.

Part descriptions and structure are critical in the former case and important in the latter case.

Description
As mentioned previously the description depends on the vintage of the computer system and software. Traditional systems required rigid descriptors. Even capitalization was important to some systems. The description had 3 parts.

Part 1: Category of part- bearing, bushing, gear, socket, belt, flange, flat stock, pipe, Connector, housing, actuator, valve

Part 2: Type- Thrust, bevel, timing, right angle, Gate, 45°, sealed, oil less, class 8

Part 3: Specifications, size and materials- Stainless steel, ¾", black iron, 4X4X1/4, 440 3ph

Part numbering system

XX- General category such as electrical, mechanical, supplies, consumables, etc	XX- Specific category such as bearing, Fastener, or OEM part Also called commodity code. Can be swapped--	XX- Some firms add in a class of asset such as pumps. --Can be swapped	XXXXXX Part number

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