

# The Flow Chart

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Simple to construct and easy to use, flow charts are as handy as training tools as error-reducers.

Process consistency is critical to producing good product at the right price. Easy-to-understand documentation, available on the shop floor, aids in implementing new processes or adjusting existing ones. Nonetheless, documented procedures often become too cumbersome to use effectively, affecting production. One simple remedy is the flow chart. Once a process for making good product is designed, the challenge becomes reproducing it consistently. The process flow chart is a useful tool for defining how to make a product over and over. Essentially, the flow chart is an outline, in sequence, of how to conduct a certain procedure.

Flow charts can be used:

- To simplify documentation.
- As a communication tool for establishing a process among a diverse workforce.
- As a training tool for operators to learn a particular way to work.
- To reduce errors due to operator inconsistencies.

Constructing a flow chart is simple, requiring the use of easily understood symbols and language. Indeed, any set of symbols can be used, and many software programs have different symbols for various activities. However, for standardization purposes, symbols must be used consistently.

To construct a flow chart, the following steps should be taken:

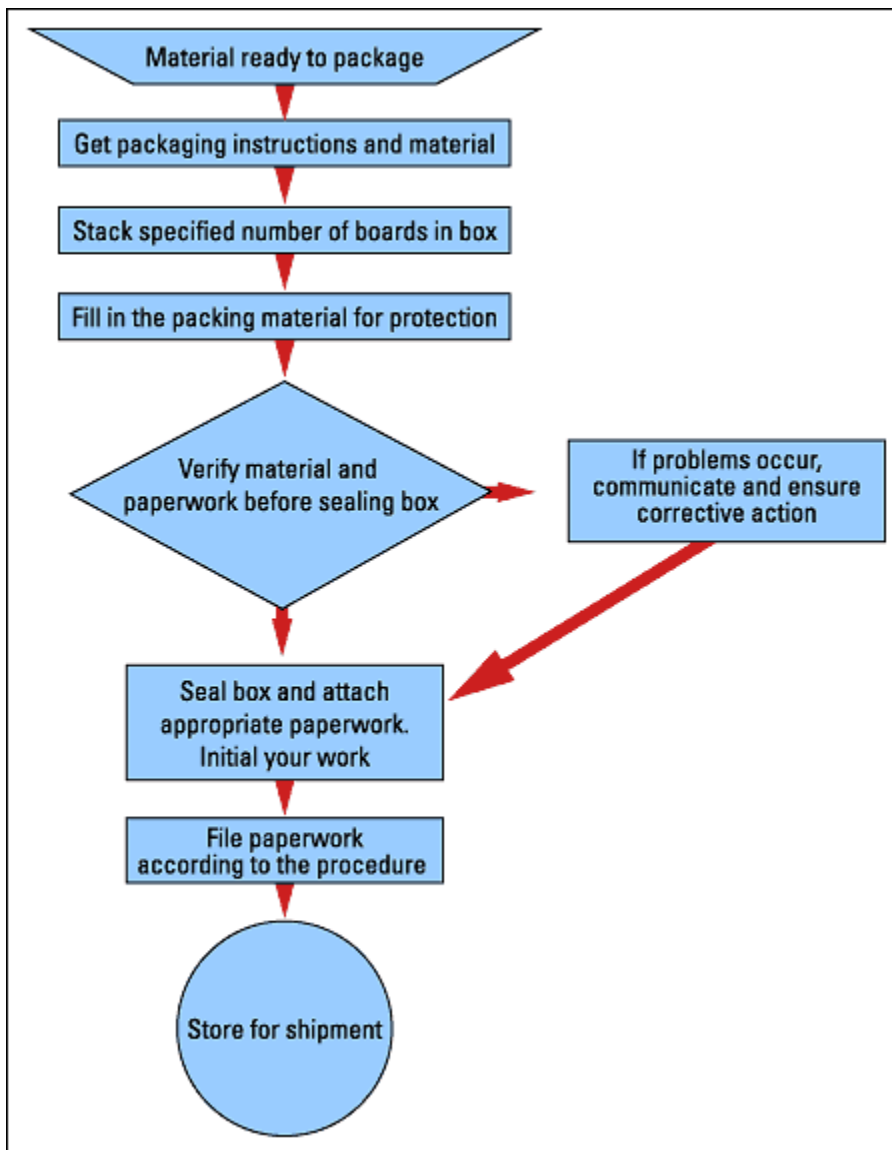
1. List, in any order, various tasks to be performed at any operation. The separation of tasks must be practical, neither too detailed nor trivial.
  - Identify areas where material is stored and areas where material waits for the next process step.
  - Identify "verification points" where material or work is checked for quality.
  - Identify where unacceptable work is done over or repaired.
2. Rearrange various activities into a sequence of operation (i.e., step 1, step 2, step 3, etc.).
3. Construct a flow chart using standard symbols.
4. Link each symbol using an appropriate arrow to represent the proper flow.
5. Label each symbol for the step it represents. While labeling the box, identify appropriate critical parameters with target and tolerances.
6. Validate the flow chart to ensure accuracy and completeness.

After completing the flow chart, one can review each process step for performance and waste. Identify each process step for its reject rate (in defects per unit produced), completion time, and other non-value activities such as excessive verification or wait time (in-process inventory levels). Based on such analyses, one

can prioritize processes for improvement. A team can be formed to attack various problems to reduce the cost of manufacturing.

To reduce waste of time and material, one can simplify tasks and eliminate unnecessary inspection, test, or waiting. Flow charts are well-suited for this task. An example of a process flow chart for Shipping is shown in the figure.

The flow chart for packaging represents several processes. Depending upon a company's product type, customer needs, packaging equipment, plant layout, and personnel skills, the details in the flow chart can vary. If necessary, pictures can be attached or key words can be translated into different languages. Line personnel and supervisors can work together to ensure sufficient details are represented in the flow chart so that reproducibility of the process and quality of the product are not diminished.



**CHART IT** - A sample process flow chart for Shipping.

Properly done, a flow chart shows specific tasks, but skips excessive detail