

## Constructing a Flow Chart

When selecting a QI tool, select the tool that will make your point at a glance. That is, don't get "bogged down" in statistics.

### Now It's Your Turn

*I'll bet you already know more about QI tools than you give yourself credit for knowing. Select the QI tool(s) that would be appropriate to answer the condition stated. If you are not sure of which one to use, come back to these questions after you have read this section.*

1. *Display the reduction in automobile deaths after the speed limit was reduced.\**
2. *Display the five major categories of the city's annual budget to determine if each area is "getting its fair share."\**
3. *Identify the major customer complaint from a recently completed customer survey.\**
4. *Show that customer returns have decreased since we've trained our sales employees.\**
5. *Display what our firm has to do to restock a returned item into inventory.\**
6. *Display the top three consumer satisfaction scores in a recently completed attitudinal survey.*
7. *Identify what could be the cause of consumer dissatisfaction with the quality of our food.*

## Constructing a Flow Chart

### Whatever You Choose to Call It

Process Flow Charts

Process Mapping

Flow Charting

Flow Diagrams

Continuous Improvement  
Through Training

The first problem-solving step is to develop an understanding of the situation. A *flow chart* is a picture that shows the sequence of steps required for a process. A flow chart is a communication device that helps people develop an objective understanding of the process.

\*The answers to these problems are in the appendix.

## Constructing a Flow Chart

### Process Flow Chart Steps in completion of a job

Circle



Beginning  
and Ending

Rectangle



Activities  
in Process

Diamond



Decision

Arrow



Direction  
of Flow

Delay



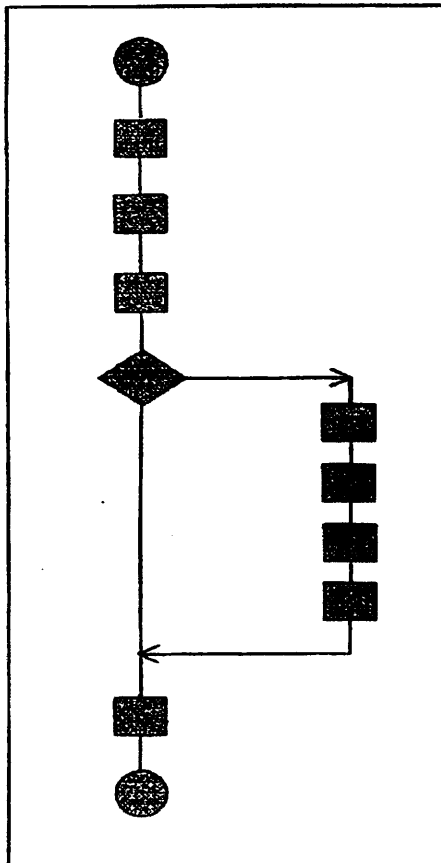
Wait

Storage



Hold

Think of a flow chart as a map to be followed in completing a job. Standard flow chart symbols are shown.



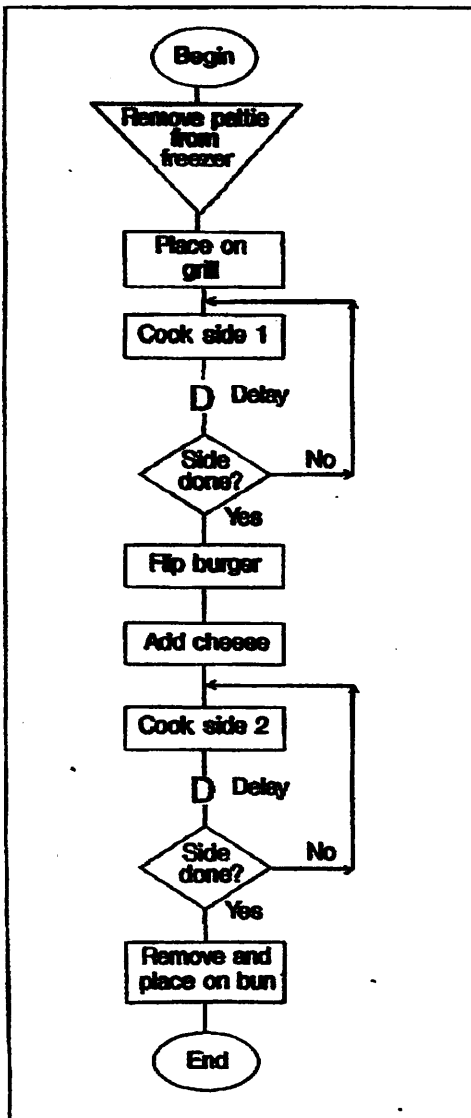
An example of a *process flow chart* is shown. Short flow charts with minimum detail are called *macro charts*.

Before constructing a process flow chart, map the process by:

- Defining customer needs.
- Identifying the methodology.
- Identifying key quality parameters.

Since a process flow chart is constructed *after* a detailed problem statement is developed, the beginning and ending boundaries of the process are usually known.

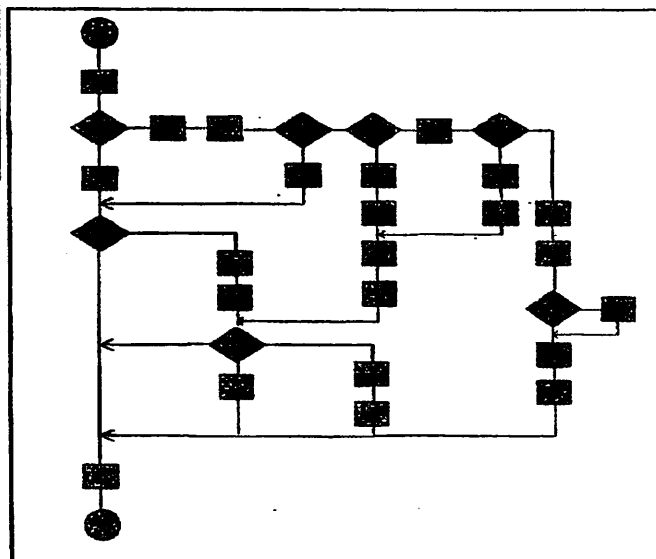
## Constructing a Flow Chart



Perhaps the most important point to remember is that you are conveying a picture for a CQI story. Detailed steps are left out of a macro flow chart to avoid overpowering the reader with excessive steps. If "massive" detail is needed to describe a particular step, then that step should be on a separate page.

The simplified flow chart on the left reflects the product flow in cooking a hamburger in a fast-food restaurant. You might want to question the *D* (delays) to find ways of eliminating them.

The macro flow chart shown is a "trap." The only thing the flow chart conveys is that the process is rather complex.

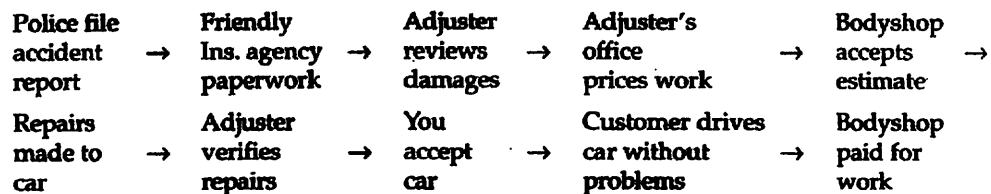


## Constructing a Flow Chart

After constructing a flow chart, analyze the chart to see where improvements can be made in the process. Eliminate nonvalue-added activities from the process.

1. Examine each decision symbol.
  - Is this check necessary?
  - Is this a complete check or do errors go undetected?
  - Is this duplication of effort?
2. Examine each activity.
  - Is this activity redundant?
  - What is the activity's value relative to its cost?
  - Eliminate signature cycles.
  - Is a storage really needed?
  - Would this be needed if we had no failures?
3. Examine each document.
  - Is this really necessary?
  - Is this data really needed?
  - How is this kept up to date?

Let's go back to the problem Friendly Texan Insurance Company was having regarding customer complaints on the lengthy time required for automobile claim payment. Suppose a QI team was formed and a macro level flow chart was developed of the process as shown.



This flow chart prompts several questions. First, what is the probability of the bodyshop getting paid for their work if each group (or person) gets their part of the job right 90 percent of the time?

The answer? Multiply .90 (that the police correctly file the accident report) times .90 (that Friendly Texan Insurance correctly completes the paperwork) times .90 (that adjuster..., etc.) for each of the 10 steps in the process. The flow chart indicates that the process will work correctly only 35 percent of the time (calculated as  $.90^{10} = .350$ ). It will not really make a difference if everyone at Friendly Texan Insurance works harder and makes fewer errors. There are simply too many steps in the system, and the system itself must be simplified.

Friendly Texan Insurance's QI team should carefully analyze this flow chart, not to "nit-pick it" but to find out what steps could be eliminated, and if steps could be combined. Note: This is a classic empowerment application. Why can't the insurance adjusters be empowered to perform more steps? If the customer is willing to accept a "cash" payment to live with the damage, then the process could be vastly speeded up.