**Process Controls**

*Control Characteristics:*

The [Your Company Name Here] Advanced Quality Planning Team will coordinate the designation of control characteristics, gauging requirements and SPC points with the customer's engineering and reliability as well as with [Your Company Name Here] quality, production and engineering.

Control characteristics will be selected on the basis of material function, design intent, the manufacturing process and any other factors which could cause nonconformance to specification. It is understood that the customer may specify control characteristics via drawings, specifications, reliability orders, reliability directives, purchased quality standards, failure prevention analysis programs or other methods. The quality assurance manager will approve all gauging and measuring techniques with preference given to variable measurements.

*Inspection Instructions*

Written inspection instructions shall be used at each inspection point. Each gage/fixture will also have its own instructions detailing proper gage use.

These instructions will include the characteristics to be checked, the engineering level, the degree of inspection, the method, the standard for approval, rejection and disposition. All instructions will be dated and signed by quality engineering or the quality assurance manager.

Quality assurance is responsible for writing and updating all instructions and for reviewing them once per year for accuracy and thoroughness. The quality coordinators are responsible for assuring that the instructions are available when a job is set up. The master file of all instructions will be available for review in quality assurance.

*In Process and Final Inspection/Tests*

In process and final inspections will be performed according to each part's process control plan. All applicable engineering standards test requirements will be identified on the control plan. Specific tests and frequencies will be detailed on each appropriate inspection instruction.

The quality assurance manager or quality engineer will write and update a plan for each part produced. These plans will detail each operation or process performed on that part and specify inspection points and the type of inspection, charts and documentation required.

First piece approval will be performed and documented per the part set-up procedure (appendix #8). Each inspection point will have inspection instructions. All reworked material will be re-inspected 100% for conformance to specifications. All containers will be audited prior to shipment for correct packaging, labeling and quality by the area department inspector. Where part characteristics are under statistical process control, final inspection will document their results on a control chart. The statistical analysis control center will compare the final inspection charts to the in process charts. If there is a difference the SPC coordinator will contact quality engineering for resolution with the area managers.

When an out of control condition is detected, it is the responsibility of the person identifying the out of control condition to halt production. If there is a conflict of opinion between quality personnel and production personnel as to whether to restart production, they will refer the matter to the next higher authority in each of the departments of quality and production. This process will continue until it is either resolved or reaches the level of quality director and plant manager. Then the matter will be resolved between them. At no time may production resume until the issue of restarting production has been resolved to the quality department's satisfaction.

*Part Set-Up Procedure*

When setting up a press in any department, or significant process change occurs, the following procedure shall be followed:

1. Die setters will:

* Get the master sample and last piece sample from the inspection area and fill out the master sample log sheet.
* Notify the floor inspectors as to what part is being set-up so they can bring the inspection instructions, check list and any gages or other equipment that is listed on the inspection instructions.
* Check the last piece sample to see if any defects were to be corrected by the tool room since the last press run.
* Set the dies to the master sample and run the correct number of parts as instructed by the inspection instructions.
* Using the inspection instructions, check the parts and record the results on the check list.
* If the parts are acceptable, sign the inspection checklist and one part to be used as the line sample.
* Inform the production section leader that the die setters are finished with the set-up operation.

2. Production Section Leaders will:

* Using the master sample, last piece sample and inspection instructions check the correct number of parts and record the results on the check list.
* If the parts are acceptable, sign the inspection checklist and the line sample that was signed by the die setters.
* If the parts are not acceptable, note the reason on the check list and inform the die setters of the defect. The entry shall be signed at the point the set up procedure will start over from #i-d.
* If the die setter disagrees with the section leader, the quality coordinator will be called to make an evaluation.

3. The floor inspectors will:

* Using the master sample, last piece sample and inspection instructions, check the correct number of parts and record the results on the check list.
* If the parts are acceptable, sign the inspection check list and the line sample that was signed by the die setter and production section leader. Inform production that the job has been ok'd.
* If the parts are not acceptable, note the reason on the check list and inform the die setter and production section leader of the defect. The entry shall be signed. At this point the set up procedure will start over.

4. If the set-up does not require a die setter (i.e. part number change or press 1-237) then set #1 is omitted and production will run the correct number of pieces as stated in the inspection instructions.

5. The master sample along with the line sample must be at the press when the job is running.

6. After the job is completed, the master sample and new last piece sample will be taken to the inspection area by a floor inspector.

7. All parts produced during set-up that are unacceptable will be scrapped by the die setter before production run begins.

*Finished Goods Audit Procedure.*

ii. Purpose

To assure that all parts shipped meet customer standards and are packaged and identified correctly.

iii. Scope

All finished goods, except anodized bumpers from department 331, that are going to be shipped to our customers or vendors. A lot will consist of either one skid, one carton, one cargo or one basket. If there is more than one carton on a skid the lot will consist of the entire skid. The audits will be performed in the audit area by the quality auditors.

iv. Content

a. The following must be checked and recorded on the audit check list for each lot.

* Record date.
* Record [Your Company Name Here] item number.
* Record customer part number and revision level (this information must come from the sample part and revision list or audit instructions.
* Record lot size as shown on the lot sampling table show in section 16.6 or as designated on the inspection instructions.
* Record sample size (from audit instruction).
* Check packaging and container identification per packaging manual.
  + Correct type of identification - (yes/no).
  + Correct location for identification – (yes/no).
  + Does part number and revision level on label? Match sample part (if correct record part

number and revision level, if incorrect mark no).

* + Is date on container legible - (yes/no)?
  + Does count on label match count in box - (yes/no)?
  + Are parts packed per packaging manual - (yes/no)?
* Record inspectors name from quality way label.
* Check parts for visual defects to the audit instructions for that part number or family.
* If all of the parts are visually acceptable and steps 1 through 7 of the audit procedure
* are correct, the lot will be accepted. Mark the check list "acc" and stamp the lot with
* an audit stamp. The lot can be released to the finished goods area.
* If one (1) or more parts are visually unacceptable or if any of the audit procedure
* steps 1 through 7 are incorrect, the lot is unacceptable. Mark the check list "rej" and
* record the reasons for rejection. All rejected lots must be identified with a reject tag and sent to the "quarantine area" for disposition.
* Sign off check list.

b. When a lot of parts are rejected, the production supervisor or the originating department must be notified.

*Lot Sampling Plan*

Whenever a lot sampling plan will be used to evaluate the product, the sample table below will be used as a guide for minimum requirements.

Acceptance criteria for lot sampling will be zero discrepancies.

Lot definition will be limited to the amount of product produced in a shift.

Sample Size per characteristic classification, acceptance number = 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Lot Size or Shipment Size*** | ***S/E/N*** | ***Critical*** | ***Major*** | ***Minor*** |
|  |  |  |  |  |
| 0-15 | 100% | 100% | 100% | 100% |
| 16-25 | 100% | 100% | 100% | 15 |
| 26-50 | 100% | 100% | 25 | 20 |
| 51-75 | 100% | 50 | 35 | 20 |
| 76-125 | 75 | 65 | 40 | 20 |
| 126-225 | 90 | 75 | 45 | 25 |
| 226-425 | 100 | 85 | 45 | 25 |
| 426-1300 | 110 | 90 | 50 | 25 |
| 1301-up | 115 | 90 | 50 | 25 |