Partnering for Quality

Quality Manual

Revision 4

This manual belongs to:

_____

President's message

Integrated Metal Components, Inc is committed to producing the highest quality products in the industry. We achieve this by setting superior standards for production and service.

IMC seeks out the best people in the industry and provides on-going training and cross-training opportunities. Employees are encouraged to get involved in all facets of the company and are regularly informed of sales, scheduling and profits. Our profit sharing program offers incentive for producing products that meet or exceed the requirements of our customers.

Our precision equipment provides our employees the best possible resources with which to perform their tasks efficiently. It is the combined effort of all our employees that allows us to produce the quality our customers have come to expect.

Another competitive advantage of IMC is our choice of trusted key suppliers. These collaborative partnerships ensure our mutual long-term success.

We are committed to creating a service culture that can only succeed if quality is built into our procedures. Every employee is an integral part of this endeavor.

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Glenn Heard, President

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IMC's Mission:

Create partnerships through incomparable service with the fastest engineered quality product.

Introduction

At IMC we seek to create a culture of quality that is practiced by all employees, encouraged in our suppliers and recognized by customers.

We have adopted a theme of partnership for our Quality Manual as we believe that our success starts with good teamwork, depends on our key suppliers and employees and ends with customer satisfaction.

It is each employee's responsibility to understand and participate in the company's quality system.

Our quality system helps us achieve our objectives. We can only be successful if we work together, with each individual understanding his or her unique role and responsibilities.

Our commitment to our customer

By listening to the customer we formulate a business plan that focuses on eight key points.

- Exceptional Quality
- On time delivery
- Outstanding Customer Service
- Integrity
- Developing partnerships
- Competitive pricing
- Consistent performance
- On going improvement

The wants and needs of the customer take priority, and all of our training and systems are designed to further these key points.

We offer our customers engineering services such as full color 3-D solid geometry and two dimensional drawings. We can produce prototype parts for evaluation in as little as one week, depending on the complexity.

In order to maximize performance we take great care and consideration when choosing our employees, as we consider them our most valuable resource. We recruit, train and retain the best of the best in our industry.

Our Quality Policy

IMC is committed to quality. It is our primary approach toward achieving our corporate objectives of growth, profitability, customer service, and employee involvement.

Our quality policy, developed by management and employees, embodies the following principles:

Quality provides value to IMC customers by…

- letting customers know we care.
- delivering the best value for the product.
- enabling customers to work directly with us.
- instilling in customers confidence in our products.

Quality provides value to IMC employees by…

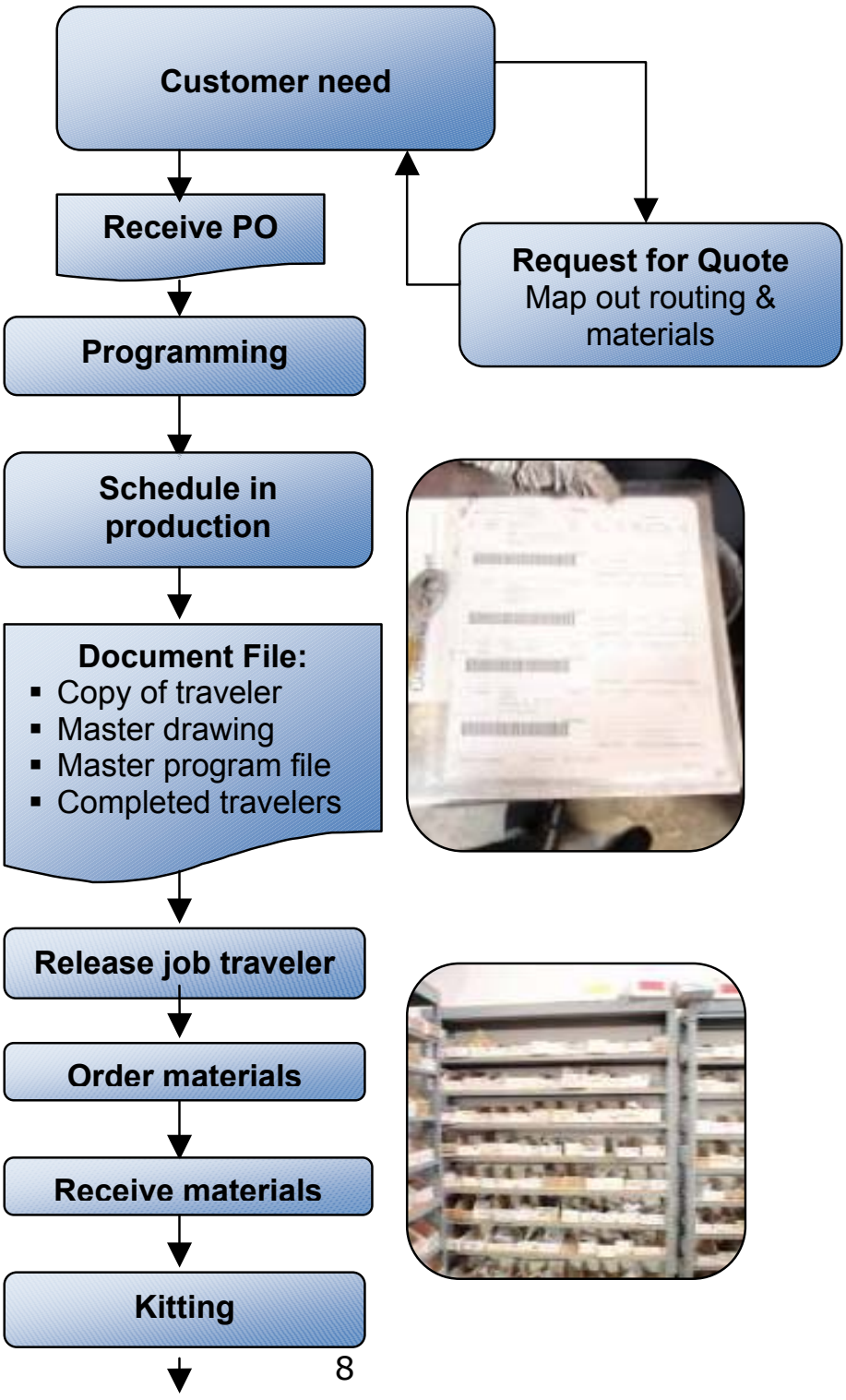
- enhancing job stability.
- creating lower stress levels from less rework.
- enabling us all to work as a team.
- providing pride of workmanship, production, and reputation.

Quality enables IMC to meet customer needs by…

- improving on-time delivery.
- supporting zero defects.
- alleviating or eliminating the need for incoming inspection by customers.

What we do

Our processes begin and end with our customers. Here is a flow-chart that represents our processes. Each product has unique process flow, and this chart shows the range of value-added activities that we provide to our customers.



Shear

Punching:
Punch Press /
Laser / Saw

**Deburring /
Graining**

Machining:
- Notching
- Drilling
- Tapping
- Milling

Forming
(press brake)

**Welding or
resistance welding**

**Hardware insertion
/ Assembly**

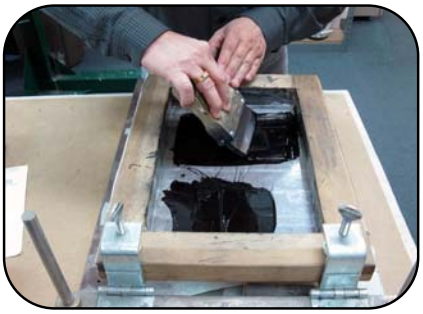
Inspection: in-process

Coating

Masking / Plugging

Chromate / painting

Pretreatment / Powder coating



Screen printing

Final assembly / part marking

Final inspection

Packaging

Delivery

Satisfied customers

How we do it

We have defined processes to ensure that we get repeatable, error-free products. We do not believe that we can "inspect-in" quality. Inspections are performed to give us feedback that our processes are working correctly.

Here are the practices that every employee is responsible to know and follow.

General Processing Requirements

The job traveler and drawing are how we communicate processing requirements.

A master copy of the drawing is kept in Sales. It is stamped in red and may contain authorized red-lined signatures.

Each sequence on the traveler must be bought-off prior to starting the next step.

If the routing sequence needs to be changed, employees authorized for buy-off may approve the change by initialing and dating the change on the traveler. *See 1st Piece Buy-Off section on next page.*

At the start of the job, clock in through our E2 Shop System by entering your employee number.

When you are finished with your portion of the job, or have reached the end of your shift, clock out in E2.

When the operation is completed, the person completing the step signs-off on the traveler, in ink, and records the number of units completed.

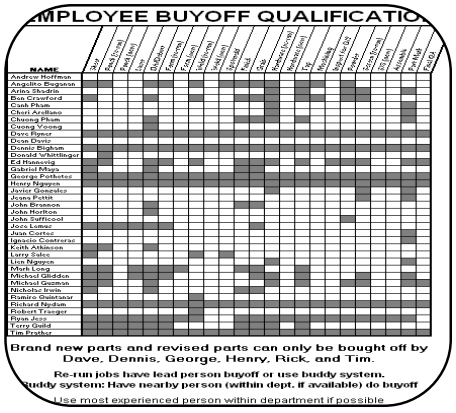
Calibration

We use calibrated equipment to perform in-process and final inspections.

This equipment is verified with a current calibration sticker.

If a measuring instrument is dropped, possibly damaged, or does not appear to be reading accurately, take it to Quality to have it checked against a known standard.

1st Piece Buy-Off



The first piece produced at the start of every operation must be inspected by an authorized person.

We have posted who is authorized to perform the buy-off for each operation.

The buy-off is then recorded on the traveler.

This step ensures that we make products correctly every time!

Identification and Traceability Requirements

We must be able to identify material and product at all stages of the process from receipt until ready for delivery.

Once material is released to a job, we use material tags to tie each component to the job and part number.

Always check the material tag against the job traveler at the start of each operation, to ensure that you have the correct material.

Handling and Storage Requirements

It is important that material and products be handled at all times in a manner to prevent physical damage or loss of job integrity. All components must be handled in a manner to prevent them from becoming dirty. This may include the use of gloves when handling finished product.

Generally, parts must be free from dirt, chips, foreign material, grease, nicks, cracks, burrs, and other debris. If you are concerned about the cosmetic appearance of a part, have someone from Quality check it over and sign off on it.

We transport components and parts using pallets or bins. We use cardboard, foam sheets or foam blocks when stacking coated parts to prevent scratching the surface.

Equipment Maintenance

Each operator must ensure that preventive maintenance is carried out and recorded for each machine in accordance to the individual machine's preventive maintenance schedule.

Operators must notify a Manager if maintenance is required outside the scope of the daily preventive maintenance. Should an employee see something that needs to be repaired or replaced, they must fill out a Maintenance Request Form and have it approved by their supervisor or a manager prior to turning it in to the basket.

Every employee is responsible for keeping their immediate work area and their equipment neat and clean.

Typically, the last 5-10 minutes of the shift are used to perform departmental housekeeping tasks.

Safety

IMC takes safety very seriously. There is an active Safety Committee that meets monthly.

Minutes of the safety meetings are posted for all employees to read as well as a safety board to keep employees informed of important safety issues.

Product quality standards

IMC has established a system of specifying surface finish requirements to ensure we communicate and achieve our customers' requirements.

We have defined four classes of finish, A through D, based on our customer's requirements. Our customer's requirements take precedence over any internal specifications.

These finishes are defined on the Master copy of the drawing or in the notes on the 1st page of the traveler.

Class	Definition
A	A cosmetic part where any defect detracts from the perceived product quality. The part is usually visible to the end user.
B	A cosmetic part where a significant defect will detract from the perceived product quality. The part is sometimes visible to the end user.
C	A part that has minor cosmetic requirements only. The part is not visible to the end user under normal conditions.
D	A part that has no cosmetic requirements. The part is infrequently seen by the end user.

If you are unclear about the requirement, ask your supervisor or Quality Manager.

The following four pages of this Manual define the finish requirements and how to inspect for them.

CLASS A: Highest Quality Finish

Example:	Electronic front panel.
Inspection:	18” for 10 seconds under normal shop light (5 seconds at a 45 degree angle and 5 seconds at a 90 degree angle)
Handling:	Use care, use protective wrap, do not slide
Processing:	Break all corners and sharp edges
Packaging:	Package each part individually in protective wrapping and either box or palletize
Unacceptable Conditions:	• Tool marks, scratches, pits, spot welds, sharp edges, burrs, or fisheyes • Incomplete or inconsistent graining or discoloration • No more than 3 particles less than .010” per square foot of surface • Any printed or applied symbols rendered illegible by smearing, fading, misalignment, voids, specks, fill-ins, flow marks, or other flaws which affect clarity or legibility • All unacceptable criteria listed for Class B and C

CLASS B: Good Quality Finish

Example: Exposed electronic chassis.

Inspection: Viewing distance at arms length for 5 seconds under normal shop light

Handling: Handle with care, use protective wrap, do not slide

Processing: Break all corners and sharp edges

Packaging: Package every or every other part in protective wrapping, and either box or palletize

Acceptable Conditions:

- Small, light scratches not more than .100” long, .003” deep. Minimal die marks not more than .010” deep.
- Normal tool marks around area of hardware
- Normal spot weld marks, small pits not readily seen.

Unacceptable Conditions:

- Inconsistent or wrong grain direction, unless part is to be painted.
- Step marks or burrs over .008”
- Scratches, gouges, cracks or fractures at bends
- Incomplete coverage of plate or paint
- Partial contamination: 5 per viewing surface, less than.015”
- Any run, splatter, stain, crack, craze or other applied finish defect which is readily visible from most viewing angles

CLASS C: Normal Quality Finish

Example: Internal electronic chassis and brackets

Inspection: Viewing distance 24” under normal shop light

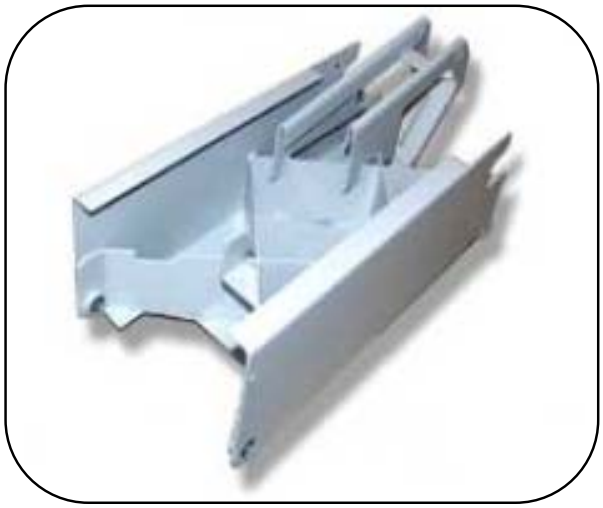
Handling & Packaging: Bulk package, use protective wrapping when necessary to protect finish

Acceptable Conditions:

- Light tool marks, pits and scratches
- Step marks, spot welds or any other machine marks which are generally considered to be a normal result of the manufacturing process

Unacceptable Conditions:

- Heavy burrs greater than.010”
- Fractures or cracks at bends
- Sharp or ragged edges
- Incomplete coverage of plate or paint

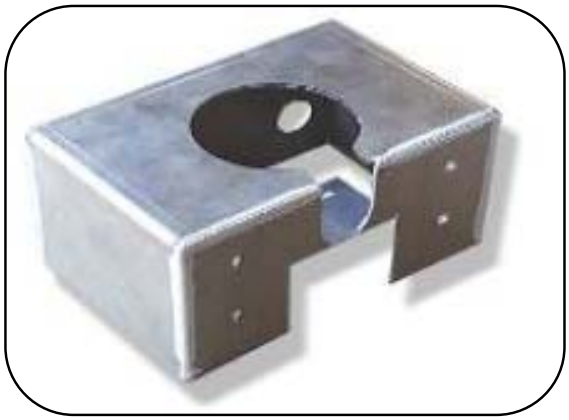


CLASS D: Shop Grade Quality Finish

Example: Structural mechanical component

Unacceptable Conditions:

- Cracks at bends
- Broken welds
- Any condition that would exhibit poor workmanship, or impair the functionality of the part
- Plating or painting that exposes the base metal



Continuous improvement

Every employee is responsible to use the best methods to ensure we meet customer requirements.

We strive to make our operation as effective and efficient as possible. Our quality system helps us be effective by communicating what we need to do and how to do it.

Lean manufacturing methods

We have expanded our efficiency by adopting the habits of "cellular" manufacturing. This means that we arrange workstations so that product can be processed progressively from one workstation to another without waiting for a batch to be completed or requiring additional handling between operations.

Communication

Because our work instructions are living documents, they are identified with revision levels in the text. These ongoing revisions help us identify improvements and ways to communicate to ensure that we do things correctly.

Our quality communication takes many forms. One way is a weekly shop meeting where employees hear how we are doing and are able to offer suggestions for improvement.

Metrics

Some of the metrics we track to measure our improvements are:

- Internal defects expressed in Defective Parts Per Million (DPPM)
- External DPPM a measure of customer returns
- On time delivery
- Sales volume

Learning from our errors

When we do make mistakes, we use it as an opportunity to improve.

If you believe something is not correct, identify the items with a yellow Alert Tag and check with any person on the Qualified Buy-off List.

When we do identify errors, we not only correct them but also look at ways to prevent them from happening again.

We communicate this information through our weekly meetings, job traveler instructions, training and drawing red-lines.

Partnering with suppliers

We believe in mutually beneficial, long-term relationships with our key suppliers. We depend on our suppliers for raw materials as well outside services such as plating, painting and machining.

Close supplier partnerships enable us to meet all of our customers' needs in a timely and cost-effective manner.

Never-ending improvement

Some of the other ways we seek to continuously improve include:

- Tapping into our most valuable resource with an employee suggestion box.
- Mounting machines on wheels when possible to move them where they can be used most efficiently.
- Posting reference information, such as the Employee Buy-off Qualification list, for easy access.
- Expanding our capacities by investing in new equipment and processes.
- Offering voluntary in-house scheduled classes for employees to improve math, blue print, and precision instrument reading skills.
- Developing our employees' skills through cross-training.

IMC

Partners in Quality