

Quality Manual

Revision 1

TGM Incorporated

299 Old Forks Road, Hammonton, NJ 08037

(609) 561-0022 fax (609) 561-2972

OUR MISSION

1. To provide our customers with the highest levels of service; before, during, and after the sale.
2. To produce new and innovative methods and services that are the envy of our competition.
3. To measure our success through our customer's satisfaction.
4. To provide the best training for our employees.
5. To provide creative leadership which will open channels of communication for all employees to contribute their ideas for improving the process.
6. To provide the proper environment, methods, tools, and material, for our employees to accomplish their tasks most efficiently.
7. To develop the proper relationships with our suppliers to aid us in our quest for excellence.
8. To furnish the company with a reasonable profit to enable all the employees to be compensated for their efforts, and also provide financial means to invest in modern equipment that will keep our company on the cutting edge.

SCOPE

- 1.1 - This manual covers the establishment of an effective and economical quality control program for manufacturing.

- 1.2 - The control of quality of contract performance covering all supplies and services purchased.

- 1.3 - To document such control in the prescribed written procedures.

- 1.4 - To inspect as prescribed in attached Instructions for Inspection Procedure Section 1 and 2.

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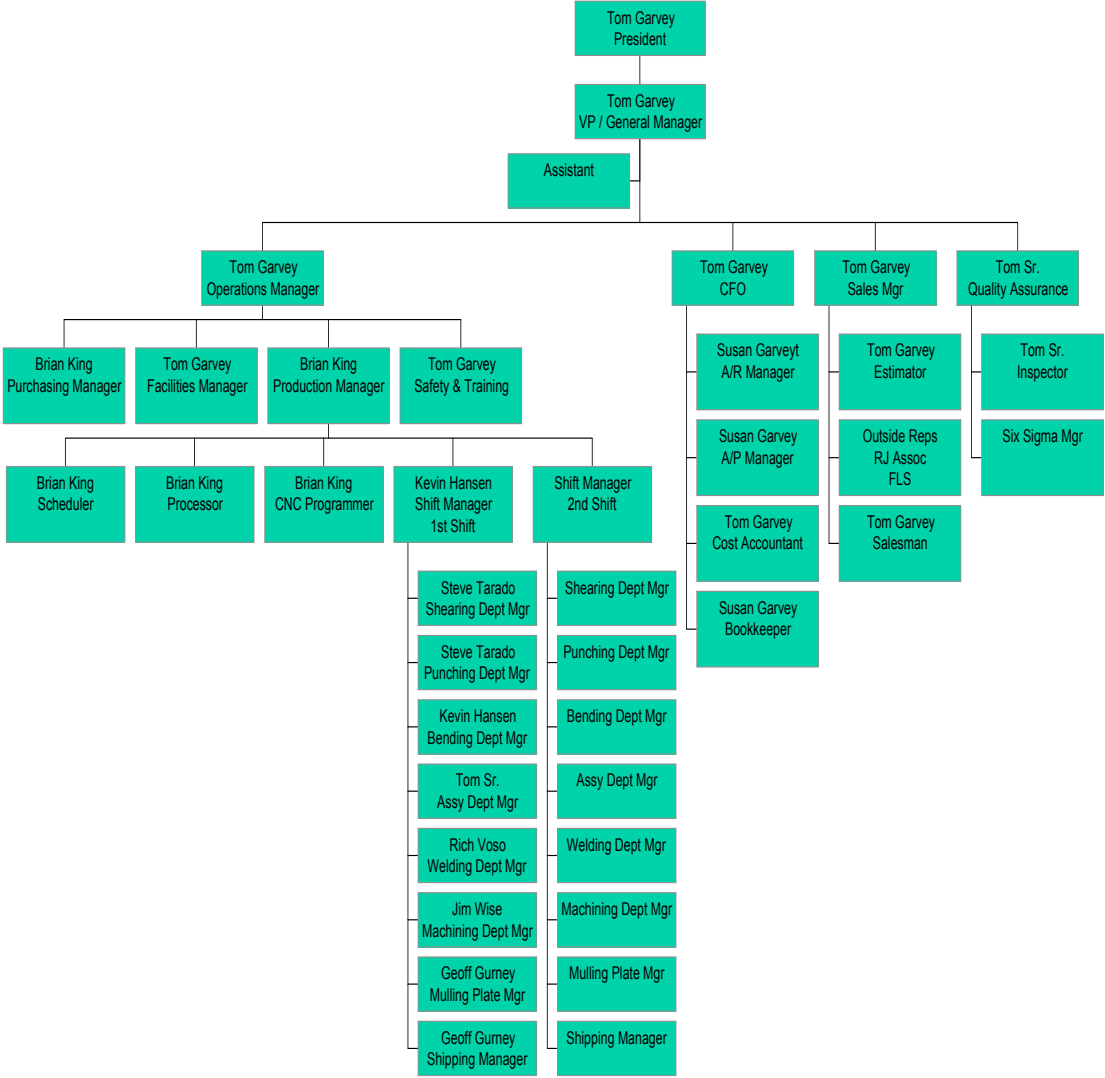
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Revision History

Rev	Decription of Change	Author	Effective Date
0	Intial Release	-	01/01/1999
1	Correct page references, add Revision History, add org chart	TG	08/14/2003
2			
3			
4			
5			
6			
7			
8			
9			
10			

TGM Inc. Organization Chart



Section 1

1. SECTION 1 PART 1

RECEIVING INSPECTION

1. Purpose

- 1.1 - To inspect all incoming materials, hardware, finishes, services, and parts.
- 1.2 - To use signature and report approval on receiver. See Section on forms #1000, page 11.
- 1.3 - To inspect all items to applicable drawings and Purchase Order specifications.
- 1.4 - To withhold any rejected material for disposition of material review board.
- 1.5 - To check for Government or Customer Source inspection when required.
- 1.6 - To check for verification Certificates where applicable.
- 1.7 - To perform inspection as outlined in Section 2, Part 1 of inspection Procedures.

SECTION 1 PART 2

IN PROCESS INSPECTION

1. Purpose

- 1.1 - To efficiently establish an economical and adequate control of inspection of parts and services to insure contract requirements during process of contract.
- 1.2 - To make all 1st piece inspection and record stamp of approval on process card, form 1005. See Section 2, Part 2, page 25 on 1st piece inspection.
- 1.3 - To continue the inspection during manufacture by sampling inspection during process of contract by operator and or designated inspector.
- 1.4 - To stop production in event of rejection or discrepancies from drawing requirements.
- 1.5 - To withhold rejected parts for material review.
- 1.6 - To inspect all gages, tools, jigs, etc. and record on tool and gage card. See Section 2, Page 28. Samples of Form #1015, Personal Tool Record, and Form #1020, Tool and Gage Record, are shown on Page 14 of Section 1.
- 1.7 - To perform inspection as outlined in Section 2 of Inspection Procedures.

**SECTION 1
PART 3**

FINAL INSPECTION

1. Purpose

- 1.1 To inspect and insure quality of finished parts and assemblies to control requirements.
- 1.2 To inspect where applicable, services, finishes, etc., to applicable Government specifications.
- 1.3 To maintain and make readily available all data on Purchase Orders, Inspection Forms, Certifications, etc., for contractor or government inspection.

**SECTION 1 CHANGE CONTROL AND PURCHASING CONTROL
PART 4**

1. Responsibility

- 1.1 Production Control and Estimating Department are responsible for latest revisions on drawings, specifications, etc.
- 1.2 Production Control and Estimating Department are responsible for issuance of change orders received while orders are in process. Issuance of paperwork, and reinspection of material affected.

2. Purchasing

- 2.1 All Purchase Orders for materials and services issued shall contain all specifications for such material or service as required by contract.
- 2.2 All Purchase Orders issued for Government Contracts shall contain when applicable, Government Contract Number, Government Specifications, Certification and when required, Government Source Inspection.
- 2.3 When applicable, Purchase Order should specify which of the following types of certification is required.
 1. Certification
 2. Certificate of Compliance

CALL AT 80-75
A-04466286B--

MPAN

875037

T G MFG CO.
RD #7 - 299 OLD FORKS RD
HAMMONTON NJ 08037

SOLID TO

SAME
TEL: 609-361-0022

COMM CODE 044C TOT 02/02	FLOOR LOCATION	DATE BILLED ✓
CERT CODE	BL NO./WEIGHT	PAID BY 21780

930
0001

VICE MO

XUNT

EDGCOMB TRK 14
03/22/93

FOB DELIVERED

PREPAID

DATE ENTERED	TIME	BY	DATE
03/10/93	P21		
15:48	387		322

N-2-1-7-8-4 40101

QUANTITY ORDERED	DESCRIPTION	UNITS SHIPPED	QTY. SHIPPED
A-3 SMT	ALUM SHEET 5052-H32 RRA250/B 2090 X 48 X 96 'STANDARD' 1-LIFT 5-E- <i>white Box</i>	3	121

- Charlotte, NC (704) 364-7381
- Charlottesville, VA (804) 588-8988
- Chicago, IL (708) 353-1970
- Cincinnati, OH (513) 784-4000
- Cleveland, OH (216) 522-3000
- Columbus, MS (615) 828-8121
- Des Moines, IA (515) 277-8611
- Indianapolis, IN (317) 833-1104
- Lincoln, NE (402) 466-0271
- Memphis, TN (901) 262-4200
- Minneapolis, MN (612) 537-4000
- Northbrook, TN (615) 488-8000
- Madison, WI (608) 833-7731
- Mobile, AL (205) 834-2801
- National Telecontract (800) 428-2824
- Philadelphia, PA (215) 838-4000
- Pittsburgh, PA (412) 787-3181
- Rochester, NY (516) 368-0911
- St. Louis, MO (314) 767-0911
- Syracuse, NY (315) 471-1888
- Victoria, BC (250) 426-8821
- York, PA (717) 765-1020

76-63

6-63

AND

DNCE.

Thank you for your order. Your signature hereunder acknowledges (1) your receipt of the material described herein unless you notify us in writing to the contrary within ten days, and (2) your assent to the terms and conditions of this contract, including the stated provisions as to exclusion of all express and implied warranties and limitations of remedy and liability, which are printed on the reverse side.

TAG NO.	HEAT NO.

RECEIVED BY	COMPANY NAME	DATE

CUSTOMER'S COPY

Example of Form #1000

FORM# 1010

T.G. MANUFACTURING INSPECTION REPORT

CO.

PART #

JOB #

DESC.

P.O. #

DATE 7/20/95

REV LEVEL

LOT SIZE

SAMPLE SIZE

FINISH
TYPE
COLOR
CLASS
TEXTURE

HARDWARE
TYPES
SIDE
QTY
TEST

WORKMANSHIP
BURRS
APPEARANCE
GRINDING
BENDING
WELDING
CLEANLINESS

POOR GOOD EXCELLENT

COMMENTS:

NO	DIMENSION	TOLERANCE	TOLERANCE VAR		COMMENTS/DEVIATIONS
			(OVER)	(UNDER)	
1					
2					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
24					
25					
26					
27					

ADDITIONAL COMMENTS AND NOTES:

INSPECTED BY:

SIGNATURE

ACCEPTED

by _____

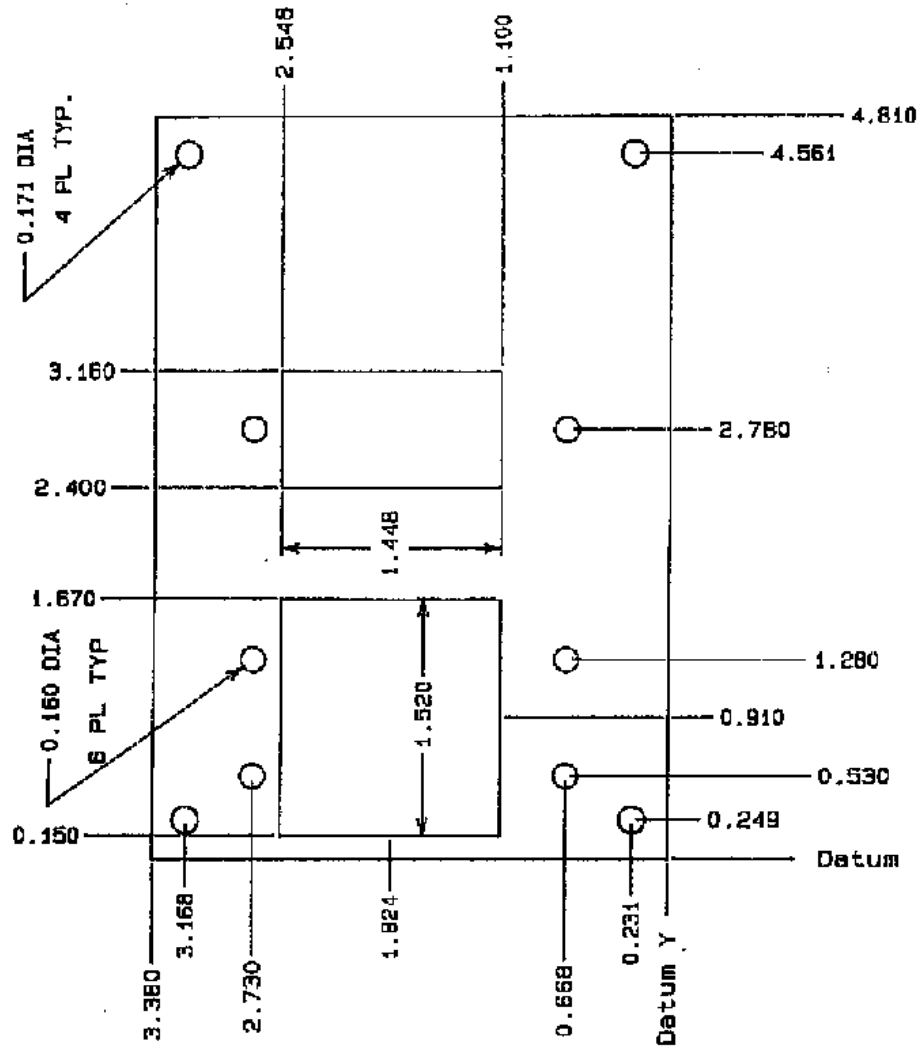
GREEN TAG NO. 1030

REJECTED

by _____

RED TAG NO. 1040

ROLM P/N 22D5402



Form 1050

FORM# 1060
ITEM CODE

STOCK

ITEM TYPE

(R)aw, (F)inished

DESC

UNIT

CONV FACTOR

VENDOR

PRICE

/

PRICE/UNIT

STOCK \$

DATE

JOBS OR PO INFO

QTY

BEGINNING BALANCE

MACHINE QUALIFICATION DATA
WELDING SCHEDULE

Date

T.G. Manufacturing Inc.

MACHINE SER. NO.

S. O. No.

SURFACE PREPARATION		MACHINE SETTINGS				
SHEET COMB.	TOP	Mat.	LEFT BANK		RIGHT BANK	
		Gauge	Preheat	Squeeze	Hold	
		Cond.	Weld	Preheat	Cool	
BOTTOM		Mat.	Postheat	Weld	Rec. Decay	
		Gauge	Weld Variar	Quench	Cur. Decay	
		Cond.	Cur. Decay	Postheat	Tip Pres.	
JOB NO.					Holder Top	
PART NO.					" Bot.	
NO. PIECES					Tip # Top Rad.	
OPERATOR NO.					" # Bot. Rad.	
COMPANY						
WELDED SPECIMENS	SHEAR STRENGTH POUNDS PER WELD	1	16	51	76	
		2	27	52	77	
		3	28	53	78	
		4	29	54	79	
		5	30	55	80	
		6	31	56	81	
		7	32	57	82	
		8	33	58	83	
		9	34	59	84	
		10	35	60	85	
		11	36	61	86	
		12	37	62	87	
		13	38	63	88	
		14	39	64	89	
		15	40	65	90	
		16	41	66	91	
		17	42	67	92	
		18	43	68	93	
		19	44	69	94	
		20	45	70	95	
		21	46	71	96	
		22	47	72	97	
		23	48	73	98	
		24	49	74	99	
		25	50	75	100	
Total of Shear Strengths						
Average of Shear Strengths						
Min. Value Obtained on Test						

Tested by

T.G.

CHANGE NOTICE

NO. _____

CUSTOMER _____

DATE RECEIVED _____ P.O. NO. _____ C.R.T. NO. _____

QUANTITY CHANGE _____ S.O. NO. _____ DESIGN CHANGE _____

ASS'Y PT. NO. _____ PT. NO. EFFECTED _____

Initials

- _____ I. Change Order Is Sent to Estimating Department.
 - _____ a. Production control department notified and job stopped immediately.
 - _____ b. Production department pulls job off floor and into production office until proper changes have been made.
 - _____ c. Estimating department notifies customer of delivery and price change if any.
 - _____ d. Estimating revises original quote card.

- _____ II. Accounting Department Notified.
 - _____ a. Original purchase order changed.
 - _____ b. Invoicing changed.
 - _____ c. History card changed.
 - _____ d. New cost record typed if necessary.

- _____ III. Processing Department.
 - _____ a. Change shipping papers.
 - _____ b. Change order register.
 - _____ c. Pull master process card.
 - _____ d. Pull copy of process card.
 - _____ e. Pull all prints.
 - _____ f. Change green copy.
 - _____ g. Review job.
 - _____ h. Make any necessary changes.
 - _____ i. Change master process card.
 - _____ j. Change copy of process card.
 - _____ k. Fill out new cost record.

- _____ IV. Purchasing Department.
 - _____ a. Buy any hardware or tools required.

- _____ V. Production Control Department.
 - _____ a. Reschedule job.
 - _____ b. Return form to estimating department.

PRODUCTION DEPARTMENT WILL NOT RELEASE JOB UNTIL THIS FORM HAS BEEN COMPLETED AND INITIALED BY EACH DEPARTMENT.

Form 1108E

SECTION 2

SECTION 2 Incoming Raw Material and Purchased Parts

PART 1

1. Weight check of shipment, measure size of sheets, estimate weight per sheet, multiply weight of sheet by quantity and compare with shipment weight.
2. Check thickness, dimensions, etc. to order or drawings.
3. Check quality of both sides of sheet or strip material for cinders in Aluminum, or marks, scratches and distortions.
4. Report approval on Receiver. Form #1000, see Section 1, page 11. For sample.
5. Report discrepancies or reason for rejection on Form #1081. See Section 1, page 19.
6. If any discrepancies appear, material is held by inspection department in withhold area until released or rejected by Material Review Board.
7. After clearing or rejection by Material Review Board, Inspection will stamp form 1081 either approved or rejected and send to office, for filing. Cleared material will be sent to stock room. Rejected material returned to Shipping or scrap.
8. After receiver is sent to office and checked against inventory records--No. 1060, Section 1, Page 17, and master P.O. List Receiver Copy is Forwarded to Accounts Payable.
- 9a. Laboratory chemical and physical analysis verification report when required for any purchased materials is filed in active certification file by material type, and size. After using up each lot of material, inventory card, No. 1060, is attached to Certification Copy and filed in inactive file.
- b. Purchasing Department is responsible for receipt of any required certifications and their approval by quality control.

SECTION 2

INSPECTION PROCEDURE

PART 2

USE FORM 1005 - PROCESS CARDS

1. Programming of Parts

- a. Have Program written by Processing department.
- b. Inspection department to check development and layout of Program Form No. 1050 and Form No. 1020, Section 1, Page 14. When applicable to special Tools or Fixtures.
- c. Revision of drawing and process layout is reviewed by processing department to customers order.

2. 1st Piece Inspection and In Process Inspection (Definition)

- a. Set up men will set up each operation and take drawing, process card, shop order, and 1st piece to an authorized inspector.
- b. Set up man can proceed with another Set Up while waiting for OK from inspector.
- c. No operation will be started until Set Up is passed by inspector.
- d. The purpose of in process inspection is to keep a running check during course of production. Total run should be broken into minimum of 4 equal segments. At the end of each segment the operator should advise inspection so that they can make a random inspection of a part from this segment before proceeding to production of next segment.
- e. Operators are warned not to proceed with production unless inspector's stamp of approval appears opposite Operation on Process Card #1005.

3. Shearing

- a. Check 1st Piece and Stamp Process Card where indicated.
 1. Check development of blank against approved development on process card.
 2. Check squareness, and size of blank.
 3. Check for excessive burrs and die breaks.
- b. In Process Inspection.
 1. Check in process production parts by roving inspector at prescribed intervals

- as explained in Part 2.
2. All parts on each order held in Withhold shall be scrapped or disposition made of after completion of each order.

4. Notching

- a. Have notching print drawn.
- b. Have inspection department check notching print and stamp approval thereof.
- c. Use stamping ink that will copy.
- d. Inspection department will inspect first piece to approve notching print.
- e. Check in process production as in Part 2.
- f. Check for excessive burrs.
- g. Check for excessive die breaks on edges.

5. Drilling, Countersinking, and Tapping

- a. Check countersink diameter to drawing and quality of countersink finish on 1st piece.
- b. Check countersink for excessive burrs.
- c. Check hole size to drawing after countersink.
- d. Check tapped holes with proper class go and no go gages.
- e. Check tapped holes for excessive burrs after tapping.

6. Deep Drawn Covers and Cans

- a. Check all dimensions to print, unless it is a predraw with finish draw to follow.
Check predraw to process drawing or specifications.
- b. Check for draw marks and die scratches and galling.
- c. Check dimensions to drawing after trimming operations.

7. Brake Bending

- a. Check dimensions taken from bend.
- b. Check for excess die marks.
- c. Check for correct radii.
- d. Parts with free state dimensions are to be held square or squared while checking.

8. Piercing

- a. After Program is made part must be pierced and then every dimension must be inspected on both X and Y axis, where applicable reported on Form 1050.
- b. Check for dents or marks caused by pills sticking to dies.
- c. Check for misaligned punch holes.
- d. Check for burrs on holes.
- e. Check for flatness of blanks before and after piercing.
- f. Check for excessive scratches and digs caused by piercing.
- g. Check hole diameters.

9. Deburring and Time Saving

- a. Check for burrs, and scratches.
- b. Check for distortion or bending.
- c. Check cleanliness of part.

10. Plating and Painting

- a. Check for consistency of color.
- b. Check for marks or scratches due to handling.
- c. Check against drawing for correct finish.
- d. Check for overspray.
- e. Check that all spec. accompany order.

11. Assembly

- a. Check that all required parts have been assembled to Purchase Order and Print.
- b. Check for scratches and marks due to handling during assembly.

12. Spot Welding

- a. Check drawing dimensions.
- b. Check for distortion, burnt welds, etc.
- c. At completion of welding, where requested a copy of test report should accompany parts. Where applicable, welding shall be inspected to MIL-T-5021 and MIL-W-6858.
- d. Have inspector check 1st piece and in process sampling.

e. Form #1084 Section 1, Page 18 will be filled out when required.

13. Complete Layout

a. When required a complete layout inspection report should be made on Form #1050 Page 16, 16A, 16B, Section 1.

14. Final Inspection

- a. Check by visual inspection for quality, burrs, finish. Check against drawings and customer order that all operations are complete and all parts assembled.
- b. Make spot checks of dimensions previously approved on in process inspection shown on process card.
- c. Stamp process card and shop order for transfer to shipping.
- d. Withhold any material rejected for management review.
- e. Requests for inspection records by customers or requests for variation to use to a customer should be reported on Form 1010.
- f. Where applicable use inspection process sheet.

15. Employees Tools and Gages (Personal)

- a. Have inspection department keep card #1015, Page 14, Section 1, on each employee's list of tools.
- b. Insert latest checking date of each tool on card #1015.
 - (1) Personal tools should be inspected for measuring 001 and over every month.
- c. Each tool to be labeled with an instrument calibration sticker. This label contains the date of the last calibration, due date for next calibration, and the inspectors name that performed the calibration.

16. Shop Tools and Gages Etc. Frequency of Check, Form 1020 Page 11, Section 1

- a. Gage Blocks, Angle Plates, Parallel, Surface Plates, V Blocks - - 1 year.
- b. Protractors, Squares - - 6 months.
- c. Vernier, Height Gages, Calipers, Depth Gages - - 4 months.
- d. Thread Gages, Ring Gages, Plug Gages - - 6 month.
- e. Micrometers, Comparators, Hite Check - - daily when in use or 2 months.
- f. Inspection department to have custody of all tools and gages and should inspect and record when released or used on Tool Record #1020.
- g. Master Gage Block should be certified against U.S. Bureau of Standards every 3 years. Certification to be filed by inspection department.
- h. Rejected tools or gages should be withheld for disposition to Material Review Board and Management.
- i. Drill fixtures and tools used in the process of parts to be checked by inspection prior to starting new jobs. Approval stamped on Tool and Gage Card # 1020.
- j. Form No. 1050, Page 16, Section 1, is used for layout of new Programs and tools stamped and filed for future reference.

k. Each tool and gage to be labeled with an instrument calibration sticker. This label contains the date of the last calibration, due date for next calibration, and the inspectors name that performed the calibration.

SECTION 2 PROCEDURE FOR NONCONFORMING MATERIAL

PART 3

1. Tag with red reject tag or mark with felt pen.
2. Place in withhold area pending disposition from Material Review Board.
3. Q.C. department to send inspection report Form #1082 to Material Review Board.
4. Material Review Board will determine the corrective action to be taken, then send inspection report back to Q.C. department with disposition.
5. Q.C. department will release, hold, or scrap at this time
6. Members of Material Review Board are:
 - a. Vice President
 - b. Quality Control Manager
 - c. Production Manager

SECTION 2 PROCEDURE FOR DRAWING CHANGE

PART 4

- 1. When a customer change order is received, it is sent to the estimating department, and fills out Form 1086. See Section 1, Page 22**
 - a. Estimating department calls production control department and has job stopped immediately.
 - b. Production control department pulls job immediately off floor and into production office until proper changes have been made.
 - c. Estimating department notifies customer of delivery and price change if any.
 - d. Estimating department revises original quote card.
- 2. Accounting department notified.**

- a. Original purchase order changed.
- b. Order Entry System Updated.