

PROTOLABS Part Submission Warrant

Part Name: _____ Part Number: _____
 Part Revision Level: _____ Date: _____
 Additional Engineering Changes: _____ Date: _____
 Purchase Order No.: _____

SUPPLIER MANUFACTURING INFORMATION
 Supplier Company Name: _____
 Additional Manufacturing Site: _____
 Street Address: _____
 City: _____ State: _____ Zip: _____

REASON FOR SUBMISSION
 Initial submission (New Parts and Part Number Changes)
 Correction of Non-conformance or discrepancy
 Other: please specify _____

REQUESTED SUBMISSION LEVEL (Check)
 Standard
 Custom - Standard Level, include _____ as customer

SUBMISSION INFORMATION
 This results for: PFMEA (Quality Inspection Report) Protolabs Material Production and Quality Certification
 process flow diagram master sample (IM only) sample production parts (IM only)
 control plan Measurement Systems Analysis qualified laboratory documentation

Is this a multicavity tool? YES NO How many Cavities? _____ Number of parts submitted by cavity: _____

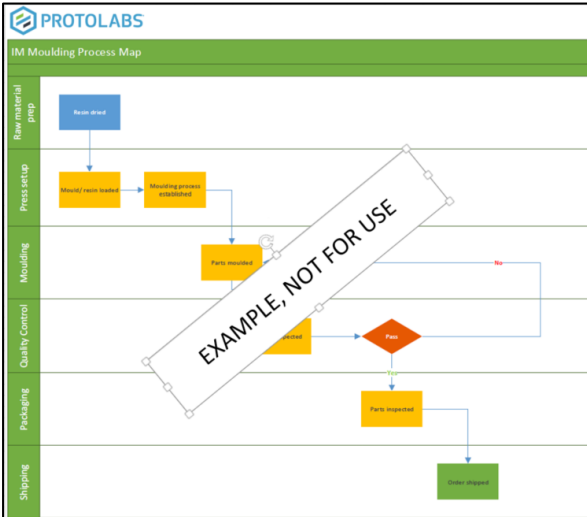
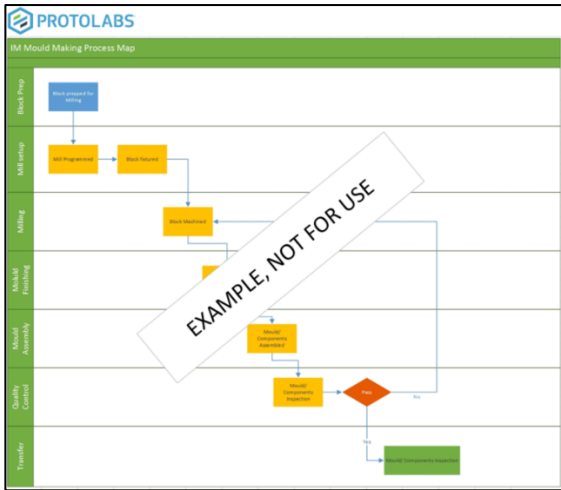
DECLARATION
 I affirm that this part identified herein was manufactured in accordance with Protolabs manufacturing systems and quality procedures utilizing the customer provided 2D CAD file to electronically create CNC machining instructions resulting in reproduction of the part in the injection mould. Any deviations to this warrant submission are noted in the explanation/comment section.

EXPLANATION/COMMENT: _____

Part Name: _____ Job Title: _____ Phone No.: _____
 Supplier Authorized Signatures: _____ Date: _____ Email: _____

FOR CUSTOMER USE ONLY

Initial Part Warrant Disposition: Quality/Supplier Quality _____ Date: _____
 Rejected Approved Quality/Supplier Quality Management _____ Date: _____
 Final Part Warrant Disposition: Quality/Supplier Quality _____ Date: _____
 Rejected Approved _____ Date: _____
 Part Approve Name: _____ PPAP Tracking Number: _____



PROTOLABS Product/ Process Failure and Effects Analysis Form (PFMEA)

Name: _____ Core Team: _____

Injection Mould Making Process
Quality and Engineering

Process Step/Part	Potential Failure Mode	Potential Failure Effects	SEVERITY	Potential Causes	OCURRENCE	Current Controls	DETECTION	D P C T O R N
Block Prep	Block direction incorrect Material incorrect	Delay in process	2	Operator error	2	Work instructions / Training	1	2
Mill Setup	Incorrect fixture setup Paperwork incorrect	Delay in process	4	Operator error	2	Work instructions / Training	2	1
Milling	Incorrect program selected Mill inaccurate Tool failure	Mould geometry incorrect Operator error	2	Operator error	2	QC Inspection Preventative maintenance	2	16
Mould Finishing	Paperwork incorrect Mould direction incorrect	Operator error	2	Operator error	2	QC Inspection	2	16
Mould Assembly	Mould assembly incorrect Delay in process	Operator error	2	Operator error	2	Work instructions / Training QC Inspection	3	16

FMEA RANKINGS	SEVERITY	OCURRENCE	DETECTION
1	Hazardous - no warning	> 1 in 2	Absolute Uncertainty
2	Hazardous - w/ warning	1 in 3	Very Remote
3	Very High	1 in 8	Remote
4	High	1 in 20	Very Low
5	Moderate	1 in 90	Low
6	Low	1 in 400	Moderate
7	Very Low	1 in 2,000	Moderately High
8	Minor	1 in 5,000	High
9	Very Minor	1 in 80,000	Very High
10	None	1 in 1,500,000	Almost Certain

PROTOLABS Product/ Process Failure and Effects Analysis Form (PFMEA)

Process / Product Name: _____ Injection Moulding - Moulding Process
 Core Team: _____

Process Step/Part	Potential Failure Mode	Potential Failure Effects	SEVERITY	Potential Causes	OCURRENCE	Current Controls	DETECTION	D P C T O R N
Raw Material Prep	Wet resin Contaminated resin	Poor part cosmetics	4	Mill setup incorrect	2	QC Inspection	2	16
Press Setup	Incorrect resin Incorrect mould setup	Wrong part material Part dimensions incorrect	5	Operator error	2	Work instructions / Training QC Inspection	2	20
Moulding	Poor moulding process established Paperwork incorrect Press mechanical issue Molds run press variations (ie, mould temperature) Part count error	Poor part cosmetics Part dimensions incorrect Part dimensions more or less Part properties Part not packed Parts not packed	4	Operator error	2	Work instructions / Training QC Inspection	2	16
Packaging	Paperwork incorrect	Operator error	2	Operator error	2	Work instructions / Training	2	16

FMEA RANKINGS	SEVERITY	OCURRENCE	DETECTION
1	Hazardous - no warning	> 1 in 2	Absolute Uncertainty
2	Hazardous - w/ warning	1 in 3	Very Remote
3	Very High	1 in 8	Remote
4	High	1 in 20	Very Low
5	Moderate	1 in 90	Low
6	Low	1 in 400	Moderate
7	Very Low	1 in 2,000	Moderately High
8	Minor	1 in 5,000	High
9	Very Minor	1 in 80,000	Very High
10	None	1 in 1,500,000	Almost Certain

PROTOLABS Control Plan

Process Step	Process Step Equipment	Control Characteristic	Measurements, Tolerances, Specifications	Measurement Method	Sample Size	Where in the Process Step	Control Method	Action On Failure
Block Prep	NA	Mould material and size	Per customer order and mould design	Visual	Per mould	Start-up	Work instruction	Reject
Mill Setup	CNC Mill	Mould alignment within mill	Equipment specification	Visual	Per mould	Start-up	Work instruction	Re-fixture
Milling	CNC Mill	Milling accuracy	3D	Visual	Per mould	Post milling	Work instruction	Reject
Mould Finish	Hand tools	Correct finish	Per customer order	Visual	Per mould	Post finishing	Work instruction	Reswork if possible, else Reject
Mould Assembly	Pin Cutter	Pin length Mould component function	Per mould design	Visual	Per mould	Post polishing	Work instruction	Reswork if possible, else Reject

PROTOLABS Control Plan

Process Step	Process Step Equipment	Control Characteristics	Measurements, Tolerances, Specifications	Measurement Method	Sample Size	Where in the Process Step	Control Method	Action On Failure
Raw Material Prep	NA	Part material	Per customer order	Visual	Per lot	Start-up	Work instruction	Repeat
Press Setup	Hold press (per storage requirement)	Press parameters such as temperature, etc.	Per resin manufacturer's guidelines			Start-up	Work instruction	Adjust process
Injection Mould	Hold press	Z Dimension	Part specific	Caliper	One part	Final inspection	Work instruction	Repeat
		Y Dimension		Caliper	One part	Start-up	Work instruction	Adjust process
		X Dimension		Caliper	One part	Final inspection	Work instruction	Repeat
		Complex	Per workmanship standards	Visual	One part	Final inspection	Work instruction	Repeat
Packaging	NA	Packaging configuration	Part specific	Visual	Per lot	Final inspection	Work instruction	Repeat packaging
		Label information	Customer part number, date, material code & mould & PCR quantity	Visual	Per lot	Start-up	Work instruction	Repeat labelling

Document reference

PROTOLABS
Manufacturing. Accelerated.

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Customer	
Description	
Drawing Number	
CAD DATA	
Report No.	

CAD view

Geometry Group

Position DIM #	+ TOL	- TOL	NOMINAL	Measured	Deviation	Error
TYPE						

Position DIM #	+ TOL	- TOL	NOMINAL	Measured	Deviation	Error
TYPE						

Position DIM #	+ TOL	- TOL	NOMINAL	Measured	Deviation	Error
TYPE						

• Proto Labs uses a standard manufacturing process based on the supplied CAD model.
• Tolerances expected and generally achieved for this part is as stated in the Proto Labs ProtoQ.
If you have questions please contact us at +44 1952 683047 to be directed to a customer quality representative (CQR) or send an email to customerservice@protolabs.co.uk

PROTOLABS

Quality Inspection Report

EXAMPLE, NOT FOR USE

Z - Tolerance window = 2.677/2.655
in for this dimension.
2.666 in nominal

Previous checks:

3/20/2017 9:26 PM	2.664 in
3/20/2017 9:27 PM	2.661 in

If you have questions please contact us at 1.877.479.3680 to be directed to a customer quality representative (CQR) or send an email to qualitysupport@protolabs.com

proto labs
Real Parts. Really Fast.

3/21/2017 11:46 AM
Order/Lot # 250006, Page 1 of 0

QC EXAMPLE, NOT FOR USE

Statement of Uncertainty

3/16/2017 WO # 20170674-W01

Dear Tyler Walsh

In accordance with our lab procedures, we perform uncertainty tests on our lab equipment. The following measurement instruments were used to inspect your parts. The level of measurement uncertainty reflects 95 percent confidence.

Ctrl #	Description	Model/Size	Uncertainty	Deg/Freedom	Ref Only
2097	Global Advantage CMM	5-7-5	0.00344	2	No

* The stated uncertainty of the measured values has not been taken into account for the pass/fail indicators.
* On pieces of equipment where only one uncertainty value was required, the value is listed under "val," where callipers were used for measurement, the uncertainty values are listed as: "val" = inside, "X" = outside, "Y" = step, "Z" = depth.
* On Control # 1206, the value listed under "Z" is the uncertainty value for field of view.

As a protection to our clients and QC Group, LLC, all client data, reports, and drawings are considered and treated as confidential. All rights of publication of this statement, conclusions, or extractions from our reports are reserved unless prior written consent is given.

Form N/S.10.03 Rev D 11/24/15 Page 2 of 2

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Material, Production and Quality Certificate

Proto Labs, Inc declares to the Customer identified by [redacted] that the resin and colorant (if applicable) listed below were used in the manufacturing records, the resin and colorant (if applicable) listed below were used in the manufacturing records for the order specified. Proto Labs' declaration relies solely on the information provided by its suppliers, and Proto Labs does not independently verify the accuracy of the information provided by its suppliers.

Proto Labs declares to the customer that the parts listed below were made in accordance with Proto Labs' manufacturing processes.

Proto Labs certifies that the parts listed below were produced by its standard process using the customer provided CAD file to electronic data interchange (EDI) instructions resulting in a reproduction of the part in the injection mold.

Proto Labs uses (0% regrind)

Customer: [redacted] X Geomix
Customer PO #: 155529
Order/Lot #: 263455
Part Number/Name: 640003 - Strip Holder
Quantity: 10000
Manufacture Date: 3/21/2017
Shipping Address: 6020 Kull Center Parkway
Site 213
Pleasanton
94566
US
Resin: Makrolon 2407-550115 (Clear PC)
Resin Manufactured By: PolyOne
Resin Lot #: 03PM6A0710

Kevin Ashton
Kevin Ashton
Quality Manager
Proto Labs, Inc

As provided in Proto Labs' Terms and Conditions of Sale (the "Terms and Conditions"), Proto Labs assumes no responsibility for the selection of any materials for the goods purchased by Customer and Customer is solely responsible for ensuring that selected materials meet any regulatory requirements or specifications. Nothing in this certificate shall be deemed to expand Proto Labs' obligations or liabilities under the Terms and Conditions or limit Proto Labs' rights under the Terms and Conditions.