HellermannTyton

From: **Quality Assurance HellermannTyton GmbH**

Subject: PPAP Approval signature deadline

Dear customer:

As you are aware the PPAP process is an integral part of our business. With that in mind, we are informing our customers who are requesting a PPAP that there is a 30 day (calendar) deadline to which we are expecting your reply back with a signed copy of the PSW with a disposition regarding it´s validity. It is important that we maintain compliance to the current AIAG PPAP manual.

As a part of compliance a signed and approved PSW is essential for our records.

We reserve the right to consider that PPAP valid and complete, if we do not receive a signed copy of the PSW within 30 days (calendar).

Once you have received our PPAP information please e-mail us a copy of your disposition with the appropriate signatures as soon as possible to the following person:

nescha.lohse@HellermannTyton.de Quality Assistant phone: +49 (0) 4122 701 5726

Your cooperation is greatly appreciated!

Respecting the procedure as described above, the documentation with HellermannTyton PB-No.: **105721** with submission date 14.03.2024 will be considered as complete and valid automatically on **13.04.2024** unless otherwise disposed!

HellermannTyton GmbH internal remarks: PB-No.: **105721**

Part Describtion: 90RADMINICHNL GPN 161625

Part Submission Warrant

Part Name **90RADMINICHNL** Cust. Part Number **GU5T-14G317-TA**

Shown on Drawing No. **16-1625-011-CSU** Org. Part Number **15102061**

Engineering Change Level **01.2** Dated **02.02.2018**

Additional Engineering Changes **n/a** Dated **n/a**

Safety and/or Government Regulation ☐ Yes ☑ No Purchase Order No. **15102061** Weight (kg) **0,0042**

Checking Aid No. **n/a** Checking Aid Engineering Change Level **n/a** Dated **n/a**

ORGANIZATION MANUFACTURING INFORMATION

HellermannTyton GmbH **DUNS: 315430892**
Organization Name & Supplier/Vendor Code

Großer Moorweg 45
Street Address

Tornesch Region **25436** **Germany**
City Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

Nursan Kablo Donanimlari (**30471**)
Customer Name/Division

Nadiye BARUTÇU
Buyer/Buyer Code

various
Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? ☑ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format: **924908055**

Are polymeric parts identified with appropriate ISO marking codes? ☐ Yes ☐ No ☑ n/a

REASON FOR SUBMISSION (Check at least one)

- ☑ Initial Submission
- ☐ Engineering Change(s)
- ☐ Tooling: Transfer, Replacement, Refurbishment, or additional
- ☐ Correction of Discrepancy
- ☐ Tooling inactive > than 1 year
- ☐ Change to Optional Construction or Material
- ☐ Supplier or Material Source Change
- ☐ Change in Part Processing
- ☐ Parts Produced at Additional Location
- ☐ Other - please specify below

REQUESTED SUBMISSION LEVEL (Check one)

- ☐ Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.
- ☐ Level 2 - Warrant with product samples and limited supporting data submitted to customer.
- ☑ Level 3 - Warrant with product samples and complete supporting data submitted to customer.
- ☐ Level 4 - Warrant and other requirements as defined by customer.
- ☐ Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.

SUBMISSION RESULTS

The results for ☑ dimensional measurements ☑ material and functional tests ☐ appearance criteria ☑ statistical process package

These results meet all design record requirements: ☑ Yes ☐ No (If "No" - Explanation Required)

Mold / Cavity / Production Process **injection moulding / serial mold**

DECLARATION

I affirm that the samples represented by this warrant are representative of our parts which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of confidential - pcs / 24 hours.

I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from this declaration below.

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☑ n/a

Organization Authorized Signature **i.A.** N. Lohse Date 14-Mar-24

Print Name **i.A. N. Lohse** Phone No. +49 (0) 4122 701 5726 Fax No. +49 4122 701 241

Title **Quality Assistant** E-mail nescha.lohse@HellermannTyton.de

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☑ Approved ☐ Rejected ☐ Other

Customer Signature Date 15.03.2024

Print Name Nadiye BARUTÇU Customer Tracking Number (optional)

Production Part Approval, Dimensional Results

HellermannTyton

Internal PB-No.: **105721**

Production Part Approval
Dimensional Test Results

ORGANIZATION:	**HellermannTyton GmbH**	PART NUMBER:	**GU5T-14G317-TA**
SUPPLIER/VENDOR CODE:	**DUNS: 315430892**	PART NAME:	**90RADMINICHNL**
INSPECTION FACILITY:	**QS-Laboratory**	DESIGN RECORD CHANGE LEVEL:	01.2 02.02.2018
		ENGINEERING CHANGE DOCUMENTS:	
		NAME of LABORATORY:	

ITEM	DIMENSION / SPECIFCATION	SPECIFICATION / LIMITS	TEST DATE	QTY. TESTED	SUPPLIER TEST RESULTS (DATA)			OK	NOT OK
					mean	min	max		
1	59,5	± 2,0			59,2	59,2	59,2	✓	
2	59,5	± 2,0			59,2	59,0	59,5	✓	
3	16,0	± 0,25			16,12	16,00	16,15	✓	
	16,0	± 0,25			16,07	16,00	16,05	✓	
4	6,5	± 0,25			6,72	6,48	6,72	✓	
	6,5	± 0,25			6,65	6,25	6,69	✓	
5	1,5	± 0,5			1,5	1,5	1,6	✓	
6	1,75	± 0,25			1,84	1,79	1,9	✓	
7	15,25	± 0,25			15,31	15,22	15,35	✓	
8	16,0	± 0,5			15,3	15,2	15,4	✓	

Blanket statements of conformance are unacceptable for any test results.

This letter is done automatically and is valid without signature.

CREATOR	TITLE	DATE
i.A. N. Lohse	Quality Assistant	14-Mar-24

Production Part Approval, Material Test Results

HellermannTyton

Internal PB-No.: **105721**

Production Part Approval
Material Test Results

ORGANIZATION: **HellermannTyton GmbH**	PART NUMBER: **GU5T-14G317-TA**
SUPPLIER/VENDOR CODE: **DUNS: 315430892**	PART NAME: **90RADMINICHNL**
MATERIAL SUPPLIER:	DESIGN RECORD CHANGE LEVEL: 01.2 02.02.2018
*CUSTOMER SPECIFIED SUPPLIER/VENDOR CODE	ENGINEERING CHANGE DOCUMENTS:
*If source approval is req`d, include the Supplier (Source) Customer assigned code.	NAME of LABORATORY:

	MATERIAL SPEC. NO. / REV / DATE	SPECIFICATION / LIMITS	TEST DATE	QTY. TESTED	SUPPLIER TEST RESULTS (DATA)	OK	NOT OK
						☐	☐
9	**PP 20% talc**				**Material is PP 20% talc**	☑	☐
	Color: black				**Color of material is black**	☐	☐
						☐	☐
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Blanket statements of conformance are unacceptable for any test results.

This letter is done automatically and is valid without signature.

CREATOR	TITLE	DATE
i.A. N. Lohse	Quality Assistant	14-Mar-24

ChasePlastics®
Redefining Resin Distribution

Order Number
1258174

Material Certification

37359
Aptiv Manufacturing Management Services SA
Avenue of Luxembourg
Bascharage, LU L4940

RE: Purchase Order Number
DPO-0000400-1
Req. Ship Date
10/03/2018

This is to certify that the material(s) sent to you on the following shipment meets manufacturer's specifications when molded under the manufacturer's recommended processing guidelines.

ITEM NUMBER	ITEM DESCRIPTION	TRADEMARK	CUSTOMER ITEM #
T22P100-01INEX	Rhetech Polypropylene		UR0PPT20HSLE0

Quantity:	13,500.00	LBS	Lot Number:	1277P
Quantity:	712.00	LBS	Lot Number:	0589P

If you should require additional information, please feel free to contact us at 800-232-4273 or certifications@chaseplastics.com.

Chase Plastic Services, Inc.
Certification Administrator

This certification is generated and controlled by electronic means. No signature required.

Chase Plastic Services, Inc.
6467 Waldon Center Drive
Clarkston, Michigan 48346-1584
Email: Certifications@chaseplastics.com
(800) 232-4273 Fax: 248-620-7664

FMVSS 302 Flammability

RheTech
Polyolefin Compounding
A HEXPOL COMPANY

Danny Kim
RheTech – A HEXPOL Company
1500 E. North Territorial Road
Whitmore Lake, MI 48189
January 4, 2018

Chase Plastics
6467 Waldon Center Dr.
Clarkston, MI 48346

Attn: Quality Control

This material certification is to confirm that RheTech's T22P100-01INEX compound (22% talc reinforced, heat stabilized, non-UV stabilized, polypropylene, black, interior & exterior grade, non-emissions reduced) will pass FMVSS302 flammability requirements. Please see typical values below.

Customer Specification: FMVSS302
RheTech, Inc. Product Code: T22P100-01INEX

Property	Test Method	Specification	Typical Results 23°C/50%RH	Units
Flammability, Burn Rate 0.125 in (3.2 mm) thick specimen	FMVSS302 UL 94HB	4.0 (100) maximum	1.1 to 1.4 (27 to 37) pass	in/min (mm/min)

Sincerely,

Danny Kim
Product Development Engineer

Potential Failure Mode and Effects Analysis (Process FMEA)

FMEA Number: **FMEA-CAL-00.0-12**	Responsible Organization/Plant: **HellermannTyton MTY**	Organization Code: **NA**	Date (Orig.): **1/3/2018**	Date & Revision: **See footer**
Part Number/Latest Change Level: **Channels (Family of Products)**	Core Team: **Quality Assurance, Maintenance, Process, Materials, Production, Engineering**		Customer Part Number/Model Year(s)/Program **NA**	
Part Name/Description: **Channels (Family of Products)**	Organization/Plant Approval/Date: **NA**		Customer Engineering Approval/Date (If Requir **NA**	
Key Contact/Phone: **Quality Assurance / (81) 2353 5642**	Other Approval/Date (If Required): **NA**		Customer Quality Approval/Date (If Required): **NA**	

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Current Process: Potential Cause(s) of Failure	Occurrence	Current Process Controls P- Prevention D- Detection	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Action Results: Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
1 Incoming Inspection and Receiving	Ensure receipt and stock of usable materials	Incorrect quantities received	Delay in manufacturing	2		Supplier shipped wrong quantities	2	D - Incoming inspection	8	32	None						
				2		Wrong quantities entered to MRP	2	P - Work instruction; D - MRP system; Cycle counts	8	32	None						
		Material characteristics and/or colorant does not meet specifications (if required)	Cannot manufacture/ Non-conforming product	7		Supplier error Delay in Manufacturing	2	P - Material certifications prior to arrival; Supplier PPAP D - Incoming Inspection	8	112	Create Control Plan per product family.	Claudia Valdez Oct 15, 2017.	Control plans for families were created	7	1	7	49
		Material is incorrectly labeled	Delay in manufacturing	8		Supplier shipped with incorrect of missing label	2	D - Incoming inspection	8	128	Create Control Plan per product family.	Claudia Valdez Oct 15, 2017.	Control plans for families were created	8	1	7	56
				8		Material is labeled with wrong date code	2	P - Date code calendar; work instruction	8	128	Create Control Plan per product family.	Claudia Valdez Oct 15, 2017.	Control plans for families were created	8	1	7	56
		Incorrect Material Certification	Delay in Manufacturing	5		Supplier error	2	D - Incoming Inspection P - Certs Faxed Prior to Arrival	8	80	None						
		Contaminated/ damaged materials received (resin, bags, boxes, etc)	Delay in manufacturing/ Non-conforming product	5		Supplier error/Shipping damage	2	D - Incoming Inspection	8	80	None						
2 Material Storage	Move and store usable materials	MRP and rack location for material do not match	Delay in manufacturing/non-conforming product	2		Wrong location choosen	2	P - Work instruction; D - MRP system; Cycle counts	8	32	None						
		Materials not properly stored	Contamination/ moisture absorbtion	5		Poor packaging conditions/packing damage	2	P - Work instruction	8	80	None						
3 Materials Set Up	Ensure correct materials for production	Incorrect material and/or colorant set up	Delay in manufacturing/Non-conforming product	7		Material handler connects wrong material for the work order	3	P - Work Instruction; work order; ID proofing on material handling system D - Work Order Sign Off	6	126	Assure correct and definitive identification of resin feeding systems.	Romeo Silva	Permanently identify resin feeding tubing	7	2	5	70
		Material contamination	Non-conforming product	7		Equipment not properly purged or cleaned	2	P - Work Instruction D - Process start up; 1st piece approval; process inspections	7	98	None						
				5		Unlike materials mixed/foreign matter in material	2	P - Work Instruction; material ID and labels; magnets in blenders and hoppers; melt filters on nozzle D - Process start up; 1st piece approval; process inspections	8	80	None						
		Incorrect dryer set up	Over dry material/wet material/ Non-conforming product	5		Wrong dryer temperature used	2	P - Work Instruction D - Process start up; 1st piece approval; process inspections	8	80	None						
		Incorrect material ratio/Incorrect regrind	Non-conforming product	5		Wrong blender settings used	2	P - Work Instruction; Part process sheet D - Process start up; 1st piece approval; process inspections	8	80	None						
				5		Wrong regrind type used	2	P - Work Instruction; work order; material ID and labels D - Work Order Sign Off	8	80	None						
		Incorrect colorant ratio	Non-conforming product/ Breakage/ Color match failures	5		Wrong blender settings used	2	P - Work Instruction; work order D - Work Order Sign Off; Process start up; 1st piece inspection; process inspections	8	80	None						
		Incorrect packaging materials (bags, boxes, totes, labels, etc)	Customer dissatisfaction	4		Material handler chooses wrong packaging materials for the work order	2	P - Work instruction; work order; material ID and labels D - Work order sign off	8	64	None						

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Current Process: Potential Cause(s) of Failure	Occurrence	Current Process Controls P- Prevention D- Detection	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Action Results: Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
4 Moisture Inspection	Ensure acceptable material moisture levels for production	Unacceptable moisture levels	Cannot process/Non-conforming product	5		Lot/moisture variations	3	P - Dryers; Dryer automated monitoring and alarm; material certs D - Process start up; 1st piece approval; process inspections	5	75	None						
				5		Dryer malfunction	2	P - Preventive Maintenance; Work Instruction; Dryer automated montioring and alarm D - Process start up; 1st piece approval; process inspections	5	50	None						
5 Molding Machine Set Up	Ensure correct process and visually acceptable part for production	Incorrect tool//wrong conversion set up	Delay in manufacturing/ Customer dissatisfaction	7		Process tech chooses wrong mold for the work order	2	P - Work instruction; work order; tool ID tag D - Work order sign off; 1st piece approval	7	98	None						
		Incorrect tonnage/Incorrect press	Delay in manufacturing/Non-conforming product	3		Tool/press relationship not established	2	P - Capacity planning; Scheduling; Process sheets D - Process start up; work order sign off; 1st piece approval; process inspections	7	42	None						
		Water lines connected incorrectly/Limited water flow	Sticking in mold/Non-conforming product	7		Wrong hose hook up/tool or equipment issues	2	P - Work instruction; preventive maintenance D - Thermolator alarms; process start up; 1st piece approval; process inspections	5	70	None						
		Poor tool alignment	Non-conforming product/Insertion issues	6		Process tech does not hang tool correctly in press/Tool wear	2	P - Work instruction; preventive maintenance D - Process start up; 1st piece approval; process inspections	8	96	None						
		Wrong program selected in Machine panel	Non conforming product	7		Wrong program is recalled	2	P - Mold number & machine number; Production schedule; Process set-up sheet. D - Process start up; work order sign off; 1st piece approval; process inspections	7	98	None						
		Shorts	Non-conforming product/Cosmetic issues	7		Insufficient injection pressure	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	5	70	None						
				7		Plugged/Worn vents	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	7	98	None						
				5		Residue build-up	3	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	6	90	None						
				5		Moisture variation	3	P - Moisture testing; dryer; dryer automated monitor and alarm;material certs D - Process start up; 1st piece approval; process inspections	5	75	None						
		Flash	Non-conforming product/Cosmetic issues	5		Excessive injection pressure	3	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	6	90	None						
				5		Cycle interruptions	2	D - Process start up; 1st piece approval; process inspections	6	60	None						
				5		Clamp pressure on press	3	D - Process start up; 1st piece approval; process inspections	6	90	None						
				7		Worn/broken inserts	2	P - Preventive maintenance; tool evaluation D - Process start up; 1st piece approval; process inspections	7	98	None						
				7		Incorrect fit/broken ejector pin or blade	2	P - Preventive maintenance; tool evaluation D - Process start up; 1st piece approval; process inspections	7	98	None						

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Current Process: Potential Cause(s) of Failure	Occurrence	Current Process Controls P- Prevention D- Detection	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Action Results: Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
		Excess plastic	Non-conforming product	5		Hot excess runner	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	6	60	None						
		Breakage	Non-conforming product	6		Thermolator malfunction	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections; alarms	5	60	None						
				6		Barrel heat malfunction	2	P - Preventive maintenance D - Process start up; 1st piece approval; process inspections	6	72	None						
		Mismatch	Non-conforming product/Insertion issues	6		Poor tool alignment	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	8	96	None						
				6		Leader pin/sidelock wear	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	8	96	None						
		Deep ejector pins	Non-conforming product/Insertion issues	7		Excessive hold pressure	2	D - Process start up; 1st piece approval; process inspections	7	98	None						
				5		Thermolator malfunction	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	5	50	None						
				5		Cycle time too fast	2	P - Process sheet D - Process start up; 1st piece approval; process inspections	6	60	None						
		Plugged sprue tips/gates (hot manifold/valve-gated)	Unbalanced fill/non-conforming product	8		Material contamination	2	P - Magnets in blenders and hoppers; melt filters on nozzle D - Process start up; 1st piece approval; process inspections	8	128	Visual aid for parts where contamination could happen	Claudia Valdez	Visual aids created and quality alerts published on book.	8	2	6	96
				4		Mold heater malfunction	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	8	64	None						
				4		Valve gate malfunction	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	8	64	None						
		Elongated Sprues	Missing pawls/Non-conforming product	6		Inadequate cooling	2	D - Process start up; 1st piece approval; process inspections	6	72	None						
		Missing retainer tab (if present)	Non-conforming product	5		Thermolator malfunction	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections; alarms	5	50	None						
				5		Cycle time too fast	2	P - Process sheet D - Process start up; 1st piece approval; process inspections	6	60	None						
				5		Worn/broken inserts	3	P - Preventive maintenance; tool evaluation D - Process start up; 1st piece approval; process inspections	5	75	None						
				5		Washed out vents	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	8	80	None						
		Blocked through holes/windows	Non-conforming product	6		Incorrect fit/broken ejector pin or blade	3	P - Preventive maintenance; tool evaluation D - Process start up; 1st piece approval; process inspections	5	90	None						

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Current Process: Potential Cause(s) of Failure	Occurrence	Current Process Controls P- Prevention D- Detection	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Action Results: Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
		Sinks	Non-conforming product	6		Insufficient hold pressure	2	D - Process start up; 1st piece approval; process inspections	8	96	None						
				6		Cycle time too fast	2	P - Process sheet D - Process start up; 1st piece approval; process inspections	8	96	None						
		Burnt tips	Non-conforming/Cosmetic issues	4		Plugged/Worn vents	3	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	8	96	None						
		Sticking in the mold	Mold damage/part damage	5		Excessive mold temps	2	P - Work instruction; preventive maintenance D - Alarms; process start up; 1st piece approval; process inspections	5	50	None						
				5		Excessive hold pressure	2	D - Process start up; 1st piece approval; process inspections	6	60	None						
				5		Residue build-up	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	7	70	None						
				5		Mold heater malfunction	2	P - Process sheet; preventive maintenance D - Process start up; 1st piece approval; process inspections	7	70	None						
6 Line clearance and preparation for start up	Assure no mixing of materials and prepare for start of production	Components or parts mixing	Customer dissatisfaction	6		Line no free of previous job materials / documents.	2	P - Validation Record; WO start up record D - Process inspections	7	84	None						
7 Process Tech Inspections	Perform checks to ensure product and process quality	Pass non-conforming product	Customer dissatisfaction	6		Delay/failure to conduct inspections	2	P - Work instruction; Validation Record D - Process inspections; final inspections;	8	96	None						
				6		Inspection performed incorrectly/Discrepancy not reported	3	P - Work instruction; Validation Record D - Process inspections; final inspections	5	90	None						
				6		Non-conformances not found in random sampling	2	P - Inspection frequency D - Process inspections; final inspections	7	84	None						
				5		Machine alarms not set to ON mode (C-005-2018, C-011-2018)	2	P- Validations record D- Work order start up record	8	80	None						
8 Gate cut and visual inspection to the part	Gate must be cut flush to the part edge	Gate vestige (C-030-2017)	does not allow fitting of cover (mating part)	6		Wrong cut operation (method). Gate cut tool wear or damaged	2	P- Work Instruction D- Visual aids	7	84	None						
	Perform checks to ensure product and process quality	Pass non-conforming product	Customer dissatisfaction	6		Delay/failure to conduct inspections	2	P - Work instruction; Validation Record D - Process inspections; final inspections;	8	96	None						
				6		Inspection performed incorrectly/Discrepancy not reported	3	P - Work instruction; Validation Record D - Process inspections; final inspections	5	90	None						
				6		Non-conformances not found in random sampling	2	P - Inspection frequency D - Process inspections; final inspections	7	84	None						

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Current Process: Potential Cause(s) of Failure	Occurrence	Current Process Controls P- Prevention D- Detection	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Action Results: Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
9 Perform Assembly of the Component to the part	Assembly Components are assembled to the molded part (pins, bushings, etc.)	Assembly incorrect component in part	Customer dissatisfaction, unable to assembly	6		Wrong components feed to the line	2	P - Work Instruction, Work order D - Process and final inspections; Work Instruction.	8	96	None						
				6		Operator assembled in wrong side / position	2	P - Work Instruction, assembly fixture D - Process and final inspections; Work Instruction.	8	96	None						
				6		Missing components	2	P - Work Instruction; assembly fixture D - pokayoke; visual inspection	8	96	None						
				5		Damaged components (C-018-2018)	2	P- Visual or feeling. D- Quality Alerts	8	80	None						
				6		Machine / fixture component misplacing (wrong assembly).	2	P- Fixture validation record D- Visual check to part after assembly, Work Instructions.	7	84	None						
				6		Wrong assembly fixture used for the assembly	2	P - Operator inspections, Work Instruction. D - Process and final inspections; Work Instruction.	8	96	None						
10 First Piece Approval	Manufacturing a conforming part per specifications	Pass non-conforming product	Delay in manufacturing/Non-conforming product/ Customer dissatisfaction	5		Delay/failure to release 1st pc	2	P -Work instruction D - Work order sign off;	8	80	None						
				5		Testing/inspection performed incorrectly/Discrepancy not reported	2	P - Work instruction; Process start up; standards D - Process inspections; final inspections; Work order sign off	8	80	None						
		Non-conforming product Product Shipped	Part Non-Compliance / Not Functional	8		Inspection Not Performed by QA on SC Dimension (if required)	2	D/P - Dimensional inspection using calibrated gauges per Capability Dimensions Matrix. Test Instructions per each part (If required)	5	80	None						
11 Operator Inspections	Perform checks to ensure a conforming part per specifications	Pass non-conforming product	Customer dissatisfaction	6		Delay/failure to conduct inspections	2	P - Work instruction; Validation Record D - Process inspections; final inspections;	8	96	None						
				6		Inspection performed incorrectly/Discrepancy not reported	3	P - Work instruction; Validation Record D - Process inspections; final inspections	5	90	None						
				5		Non-conformances not found in random sampling	3	P - Inspection frequency (each part). D - Process inspections; final inspections; machine alarms	5	75	None						
		Film hinge does not function properly and/or cracks (if required).	Part Non-Compliance	6		Bad Product not Found in Random Sampling	2	D - Visual Inspections D - Process Inspections P - First Piece Approvals	6	72	None						
		Latch does not function/latch properly (if required)	Part Non-Compliance	6		Bad Product not Found in Random Sampling	2	D - Visual Inspections D - Process Inspections P - First Piece Approvals	6	72	None						
		Assembly Components falls Out/Not Inserted (if required)	Part Non-Compliance	6		Assembly Components not pressed in Properly (if required)	2	D - Visual Inspections D - Process Inspections P - First Piece Approvals	8	96	None						

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Current Process: Potential Cause(s) of Failure	Occurrence	Current Process Controls P- Prevention D- Detection	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Action Results: Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
		Non-conforming product Product Shipped	Part Non-Compliance / Not Functional	8		Inspection Not Performed by Operator on SC Dimension (if required)	2	D/P - Dimensional inspection using calibrated gauges per Capability Dimensions Matrix. First piece approval form. Test Instructions per each part (If required)	5	80	None						
12 Packaging	Conforming product is packaged according to work order requirements	Non-conforming product is packaged	Customer dissatisfaction	6		Process control parameters out of range	3	P - SPC and alarm on press; process sheet D - SPC and alarm on press; process inspections; final inspections;	5	90	None						
				6		Tool malfunction/wear	3	P - Preventive maintenance; in process PM's; SPC on press D - SPC on press; process inspections; final inspections	5	90	None						
				6		Press/equipment malfunction	2	P - Preventive maintenance; in process PM's; SPC on press D - SPC on press; process inspections; final inspections	5	60	None						
				6		Moisture variation	3	P - Moisture testing; dryer; dryer automated monitor and alarm;material certs D - Process start up; 1st piece approval; process inspections	5	90	None						
				6		Material contamination	2	P - Magnets in blenders and hoppers; melt filters on nozzle D - Process start up; 1st piece approval; process inspections	5	60	None						
		Start up scrap is packaged	Customer dissatisfaction	4		Product packaged from wrong bin.	4	P - Color bin ID; work instruction D - Color bin ID	8	128	Color bin and description added on WI	Claudia Valdez		4	2	8	64
		Mixed parts packaged	Customer dissatisfaction	4		Product from previous work order packaged	4	D - Process inspections; final inspections	8	128	Line clean up before start up was added on WI.	Claudia Valdez		4	2	8	64
		Incorrect quantities are packaged	Customer dissatisfaction	4		Improper scale set up	4	P - Work instruction D - Work order sign off; process inspections; final inspections	7	112	Scale weight method changed and clarified on WI.	Claudia Valdez. Sep 15, 2017.		4	2	7	56
				4		Scale out of calibration	1	P - Calibration schedule; calibration certs D - Process inspections; final inspections	7	28	None						
				4		Operator packs too many or too few parts/bags	4	P - Work instruction; scale set up D - Work order sign off; Process inspections; final inspections	8	128	Scale weight method changed and clarified on WI.	Claudia Valdez. Sep 15, 2017.		4	2	7	56
		Wrong labels/Missing labels/Bad placement	Customer dissatisfaction	3		Printer ribbon is not inserted properly	2	P - Work instruction; Work order sign off D - Work order sign off; Process inspections; final inspections	8	48	None						
				3		Excess labels are not removed from area	4	P - Work instruction D - Work order sign off; process inspections; final inspections	8	96	Line clean up before start up was added on WI.	Claudia Valdez. Sep 15, 2017.		2	2	8	32
				3		Operator forgets to apply label/puts it in the wrong location	4	P - Work instruction D - Process inspections; final inspections	8	96	Label placement steps and box place clarified on WI.	Claudia Valdez. Sep 15, 2017.		3	2	8	48
		Wrong packaging material used	Customer dissatisfaction	4		Operator does not use materials provided by material handler	4	P - Work order sign off D - Process inspections; final inspections	8	128	Material review versus WO clearly mentioned in WI.	Claudia Valdez. Sep 15, 2017.	Work Instructions	4	2	8	64

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Current Process: Potential Cause(s) of Failure	Occurrence	Current Process Controls P- Prevention D- Detection	Detection	RPN	Recommended Action	Responsibility & Target Completion Date	Action Results: Actions Taken Completion Date	Severity	Occurrence	Detection	RPN
13 Final Inspection	Perform checks to ensure product and process quality	Pass non-conforming product	Customer dissatisfaction	5		Delay/failure to conduct inspections	3	P - Work instruction; Final inspection record D - Process inspections; final inspections;	8	120	One lab tech per shift	Claudia Valdez		5	2	8	80
				6		Inspection performed incorrectly/Discrepancy not reported	3	P - Work instruction; Validation Record D - Process inspections; final inspections	5	90	None						
				5		Non-conformances not found in random sampling	3	P - Inspection frequency D - Process inspections; final inspections	6	90	Sampling size according to box qty.	Claudia Valdez		5	2	6	60
14 QA Testing	Perform testing to ensure product and process quality	Pass non-conforming product	Customer dissatisfaction	6		Delay/failure to conduct inspections	2	P - Work instruction; Weekly matrix D - Weekly matrix; Process inspections; final inspections;	8	96	None						
				6		Inspection performed incorrectly/Discrepancy not reported	3	P - Work instruction; Validation Record D - Process inspections; final inspections	5	90	None						
				6		Non-conformances not found in random sampling	2	P - Inspection frequency D - Process inspections; final inspections	7	84	None						
15 Finished Goods Storage	Move and store conforming finished goods until shipment	MRP and rack location for material do not match	Delay in shipment/Customer dissatisfaction	4		Wrong location choosen	2	P - Work instruction; D - MRP system; Cycle counts	8	64	None						
		Materials not properly stored	Damage to finished goods/Customer dissatisfaction	4		Poor packaging conditions/packing damage	2	P - Work instruction	8	64	None						
16 Shipping	Ship per customer requirements	Product is not shipped per requirements	Customer dissatisfaction	4		Incorrect product is picked	3	P/D - PO; MRP system; ; work instruction; shipping manifest	5	60	None						
				4		Wrong quantities are picked	3	P/D - PO; MRP system; ; work instruction; shipping manifest	5	60	None						
				4		Wrong or missing identification/paperwork	3	P/D - PO; MRP system; ; work instruction; shipping manifest	5	60	None						
		Product is shipped late	Customer dissatisfaction	4		Stock issues	3	P - planning; forecast D - MRP system	5	60	None						
				4		Delay in picking and shipping	3	P/D - PO; MRP system	5	60	None						
		Damaged product is shipped	Customer dissatisfaction	4		Poor product handling	2	P - Work instruction	8	64	None						
17 Annual Validation	Perform testing and inspection to ensure product and process quality	Pass non-conforming product	Customer dissatisfaction	6		Delay/failure to conduct inspections	2	P - Work instruction; Gauge Pack D - Gauge Pack;	8	96	None						
				6		Inspection performed incorrectly/Discrepancy not reported	2	P - Work instruction; Gauge Pack D - Gauge Pack	8	96	None						

Process Flow Diagram

Process Flow Diagram Number:	Responsible Organization/Plant:	Organization Code:	Date (Orig.):	Date & Revision:
PFD-CAL-00.0-12	**HellermannTyton MTY**	**NA**	**03/01/18**	**See Footer**
Part Number/Latest Change Level: **Channels (Family of Products)**	Core Team: **Quality Assurance, Maintenance, Process, Materials, Production, Engineering**		Customer Part Number/Model Year(s)/Program(s): **NA**	
Part Name/Description: **Channels (Family of Products)**	Organization/Plant Approval/Date: **NA**		Customer Engineering Approval/Date (If Required): **NA**	
Key Contact/Phone: **Quality Assurance/ (81) 23535642**	Other Approval/Date (If Required): **NA**		Customer Quality Approval/Date (If Required): **NA**	

	Process ■ "n"	Move ◆ "u"	Store ● "l"	Inspect ☒ "x"	Process Name/Operation Description	Product/Process Characteristics	Control Methods
1	■			☒	Incoming Inspection and Receiving Incoming materials are inspected and received. QA Inspects to assembly components (if required)	Material Characteristics, Color (if required), Quantity, Packaging Requirements, Lot Number are verified.	COC/COA MRP System Work Instruction(s)
2		◆	●		Material Storage	Material is moved to storage until use.	MRP System Work Instruction(s)
3	■	◆			Materials Set Up	Materials (resin,packaging) are moved to the press. Material ratio, colorant or assembly components (if required), and regrind collection are set up.	Work Instruction(s) Mattec; Work Order Material Process Log MRP System
4				☒	Moisture Inspection Material moisture level is tested.	Moisture level is verified to be within the acceptable range.	Work Instruction(s) Moisture Log
5	■				Molding Machine Set up	The mold is set in the press. The process is set up to produce an acceptable part.	Process Set Up Sheet Mattec
6	■				Line clearance and preparation for start up	Line free of previous job materials / documents.	Work Instruction(s) Mattec; Work Order Material Process Log MRP System
7				☒	Process Tech Inspections Techs perform checks to ensure process and product quality.	Control parameters, material ratio, and mold cavitation are verified. Parts are inspected for visual defects.	Work Instruction(s) Process Set Up Sheet Mattec Validation Record Form
8	■			☒	Gate cut (manual if applies) and part inspection	Flush gate cut to the part, inspect for visual defects.	Visual. Work Instructions and Visual Aids.

	Process ■ "n"	Move ◆ "u"	Store ● "l"	Inspect ☒ "x"	Process Name/Operation Description	Product/Process Characteristics	Control Methods
9	■				Perform Assembly of the components to the part	Assembly components to the molded part and verify quality (inspect for visual defects and correct assembly)	Work Instruction(s)
10				☒	First Piece Approval QA inspects and hangs acceptable parts at the press.	No burns, shorts, flash, warp, or part damage allowed. Verify presence of bushings (if required), verify film hinge function with no cracks and latching function (if required), check dimensionals for any SC dimensions on the part to print (if required), verify date.	Work Instruction(s) First Piece Label Test Instructions (If required)
11				☒	Operator Inspections Operators perform checks to ensure process and product quality.	Visual for defects,Regrind, verify film hinge function with no cracks and latching function (if required), Quantity, Boxes/Totes, Date, Date Code, and Bushing presence (if required). Perform dimensional on SC dimensions on the part to print (if required).	Work Instruction(s) First Piece Release Work Order Sign Off Validation Record Test Instructions (If required)
12	■				Packaging	Scale and water dispenser (if required) are set up for packing. Product is packaged and skid is loaded.	Work Instruction(s)
13				☒	Final Inspection QA performs checks to ensure process and product quality.	Parts are inspected for visual defects. Packaging materials, date code, water (if required), and quantity are verified.	Work Instruction(s) Final Inspection Form
14				☒	QA Testing QA performs testing to ensure process and product quality.	Parts and inspected for visual defects. Performance testing is completed as required.	Work Instruction(s) Weekly Matrix SPC Software
15		◆	●		Finished Goods Storage	Finished goods are moved to storage until shipment.	MRP System
16	■				Shipping	Product is shipped to the customer.	MRP System Shipping Manifest
17				☒	Annual Validation (as required) QA performs checks to ensure process and product quality.	Dimensional and performance testing is completed as required.	Work Instruction(s) Gauge Pack Dimensional Study SPC Software

☐ Prototype ☐ Pre-Launch ☑ Production

Control Plan

Control Plan Number: **CP-CAL-00.0-12**	Key Contact/Phone: **Quality Assurance / (81) 2353 5642**		Date (Orig.) **03/01/18**	Date (Rev.) **See footer**
Part Number/Latest Change Level: **Channels(Family of Products)**	Core Team: **Quality Assurance, Maintenance, Process, Materials, Production, Engineering**		Customer Engineering Approval/Date (If Req'd) **NA**	
Part Name/Description **Channels(Family of Products)**	Supplier/Plant Approval/Date **NA**		Customer Quality Approval/Date (If Req'd) **NA**	
Supplier/Plant: **HellermannTyton MTY**	Supplier Code: **NA**	Other Approval/Date (If Req'd) **NA**	Other Approval/Date (If Req'd) **NA**	

Quality Assurance	Team Supervisor	Material Handler	Process Technician	Operator	QA and/or Team Supervisor	Shipping and/or Receiving

Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for	CHARACTERISTICS NO.	CHARACTERISTICS PRODUCT	CHARACTERISTICS PROCESS	Special Char. Class	METHODS Product/Process Specification/	METHODS Evaluation/ Measurement	METHODS SIZE Size	METHODS SIZE Freq	METHODS Control Method	Reaction Plan
1	Incoming Receiving		1	Material Characteristics			Per Certificate of Analysis	Visual Material Cert	Each Lot	Each Lot	WI-CAL-00.2 Quality Inspections. Per each item Control Plan	Notify QA and Purchasing; Isolate lot per PR-CAL-01
			2	Packaging conditions			No damages on the external packaging	Visual	Each lot	Each lot	WI-CAL-00.2 Quality Inspections. Per each item Control Plan	Notify QA and Purchasing; Isolate lot per PR-CAL-01
			3	Color (If required)			Per color chip	Visual to color chip	Each lot	Each lot	WI-CAL-00,2 Quality Inspections. Each item Control Plan	Notify Receiving and Purchasing; Isolate lot PR-CAL-01
			4	Assembly components (If required)			Per Certificate of Compliance	Visual to Cert. Per print	Each Lot	Each Lot	WI-CAL-00.2 Quality Inspections. Per each item Control Plan	Notify QA and Purchasing; Isolate lot per PR-CAL-01
			5	Lot Number			Per Packing List	Visual	Each Lot	Each Lot	PR-MAT-01 Materials management. MRP System	Notify Purchasing and QA; Isolate lot per PR-CAL-01
			6	Packaging Requirements			Packaging meets requirements	Visual	Each lot	Each lot	WI-CAL-00.2 Quality Inspections. Per each item Control Plan	Notify Purchasing and QA; Isolate lot PR-CAL-01
2	Material Storage	Forklift	1		Material is moved to storage until use		All containers are identified and the in correct bin location.	Visual	Each container	Each container	PR-MAT-01 Materials management. MRP System	Adjust process; Isolate lot PR-CAL-01 (when applcable)
3	Materials Set Up	Material Handling System	1		Move Material to Material Handling System		Correct Material is set up in the Material Handling System per Work Order	Visual	Each Material Change	Each Material Change	WI-PRD-00.20 Dryer Set up, Work Order (BOM) Mattec or Material Process Log	Isolation per PR-CAL-01
			2		Set up material ratio and regrind collection		Correct material ratio is set up per the part process sheet	Visual to part process sheet	Each material change	Each material change	Work Order (BOM), Mattec or Material Process Log	Adjust ratio; Isolation PR-CAL-01
			3		Set up colorant (when needed)		Correct mix ratio setting is set up per Work Order	Visual to WO	Each material change	Each material change	Work Order (BOM), Mattec or Material Process Log	Adjust ratio; Isolation PR-CAL-01
			4		Move Packaging materials to the press		Correct boxes, bags, and labels brought to the press per work order	Visual to WO	Each material change	Each material change	Work Order (BOM), Mattec or Material Process Log	Adjust process; Isolation PR-CAL-01
		Product	5		Move assembly components to press (if required)		Correct product is at the press per work order	Visual	Each Run	Each Run	Work Order (BOM), Mattec or Material Process Log	Notify Supervisor, notify material handler. Isolation per PR-CAL-01
4	Moisture Inspection	Computrack 4000 XL (Moisture Analyzer)	1	Material Moisture Levels			Verify moisture levels are within the acceptable range.	Computrack 4000 XL	1 Sample/ material	Daily	WI-PRD-00.10 Moisture test Moisture Log F-PRD-00.10-1	Check and adjust dryers; Isolation PR-CAL-01

Quality Assurance		Team Supervisor	Material Handler			Process Technician	Operator			QA and/or Team Supervisor	Shipping and/or Receiving
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for	CHARACTERISTICS			Special Char. Class	METHODS				Reaction Plan
			NO.	PRODUCT	PROCESS		Product/Process Specification/	Evaluation/ Measurement	SIZE		Control Method
									Size	Freq	
5	Injection Molding Part	Injection Molding Machine	1		Machine Set-Up		Per Mattec, Set-Up Sheet, and Acceptable Visual Part with assembly components (if required) ; verify date	Review of Set-Up Specs	Each Set Up	Each Set Up	Work Order Sign Off F-PRD.00.12-2 Tool Evaluation. Each Part Process set-up sheet.	Recheck and adjust process; Isolation per PR-CAL-01
	Molding Machine Set-up	Injection Molding Machine	2		Mold set up		Correct mold set up per work order.	Visual	Each set up	Each set up	Work Order Sign Off F-PRD.00.12-2 Tool Evaluation. Each Part Process set-up sheet.	Recheck and adjust process; Isolation per PR-CAL-01
			3		Machine process alarms turn ON		Alarms must be set to ON.	Visual per each type of machine	Each set up	Each set up	WI-PRD-00.1 Mold Start-up procedure, Each press screens, F-PRD-00.21-1 Validation Record.	Recheck and adjust process; Isolation per PR-CAL-01
6	Line clearance and preparation for start up	Documents, forms, labels	1		Line free of previous job materials / documents.		Line must be clear and clean according to AV-PRD-06 and F-CAL-00.0-5	Visual to check list F-CAL-00.0-5	Each work order change	Each work order change	AV-PRD-06 Visual Aid for line cleanliness. F-CAL-00.0-5 Work Order start up checklist	Isolation per PR-CAL-01
			2		Prepare documents for Work Order		Documents should be: Mold book, Work Instructions, Visual Aids, Work Order, Validation record, Work Order start up, Labels.	Visual	Each work order change	Each work order change	F-CAL-00.0-5 Work Order start up checklist	Isolation per PR-CAL-01
			3		Machine process alarms turn ON		Alarms must be set to ON.	Visual per each type of machine	Each Set up	Each Set up	F-CAL-00.0-5 Work Order start up checklist	Adjust process; Isolation per PR-CAL-01
7	Process Tech Inspections	Injection Molding Machine	1	Part Quality			No Burns, Shorts, Flash, Warp or Part Damage Allowed	Visual Inspection	1 Shot	4x per Shift and 1 x per each start-up	WI-PRD-00.1 Part Process Sheet Mattec Validation Record	Adjust Process; WI-CAL-00.2 Recheck; Isolation per PR-CAL-01
			2	Process Set-Up			Work Order Matches MIU / Cavity Count Matches Actual / Cycle Time is to Standard or Adjusted Notes	Visual	Once	Shift	WI-PRD-00.1 Part Process Sheet Mattec Validation Record F-PRD-00.21-1	Adjust Process; WI-CAL-00.2 Recheck; Isolation per PR-CAL-01
			3		Process set up		Verify film hinge function with no cracks and latching function (if required). Per process sheet, Mattec, and acceptable	Review of Set-Up Specs, Visual, Hand Insertion Test	Each set up	Each set up	WI-PRD-00.1 F-PRD-00.21-1 Validation Record, Mattec Part Process Sheet	Recheck and adjust process; Isolation PR-CAL-01
			4	Material Ratio			Verify correct material ratio per the process sheet and clean collection area.	Visual to part process sheet	1 check	Per shift	WI-PRD-00.1 Part Process Sheet Mattec Validation Record F-PRD-00.21-1	Adjust Process; WI-CAL-00.2 Recheck; Isolation PR-CAL-01
			5	Mold Cavitation			Verify mold cavity count matches Mattec.	Visual to Mattec	1 check	Per shift	Mattec Validation Record F-PRD-00.21-1	Adjust Process; WI-CAL-00.2 Recheck; Isolation PR-CAL-01
8	Gate cut and part inspection	Visual	1	Gate cut flush to the part edge			Gate cut flush. According to drawing.	Visual	each part	each part	Operator Work Instructions Test Instructions per each part (If required)	Recheck; Isolation PR-CAL-01
		Injection Molding Machine	2	Part Quality			Verify film hinge function with no cracks and latching function (if required).	Visual/manual	Once	Per Shift	Operator Work Instructions Test Instructions per each part (If required)	Adjust Process/ Notify Supervisor and QA Recheck; Isolation PR-CAL-01
			3	Part Quality			Perform Dimensional on SC Dimensions on the Part to Print (if required)	Calibrated Gages	Once	Per Shift	Operator Work Instructions Test Instructions per each part (If required)	Adjust Process/ Notify Supervisor and QA Recheck; Isolation PR-CAL-01

Quality Assurance		Team Supervisor	Material Handler		Process Technician	Operator			QA and/or Team Supervisor	Shipping and/or Receiving
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for	CHARACTERISTICS NO.	CHARACTERISTICS PRODUCT	CHARACTERISTICS PROCESS	Special Char. Class	METHODS Product/Process Specification/	METHODS Evaluation/ Measurement	METHODS SIZE Size	METHODS SIZE Freq	METHODS Control Method	Reaction Plan
9	Assembly of components to part (if applicable)	Assembly Station, Fixture, handtool)	1		Set Up Press for components Insertion		Set-Up and validate Assembly Press (if required)	Visual to print and WI	Each Part	Each Part	IE-PRD-(part number)	Adjust Process; WI-CAL-00.2 Recheck: Isolation PR-CAL-01
		Assembly of Components	2	Assembly of Components			Verify assembly components are assembled on the part (if required)	Visual	each part	each part	Operator Work Instructions Test Instructions per each part (If required)	Adjust Process/ Notify Supervisor and QA Recheck; Isolation PR-CAL-01
10	First Piece Approval Visual	Injection Molding Machine	1	Part Quality			Check for visual defects(No Burns, Shorts, Flash, Warp or Part Damage Allowed), Verify Presence of assembled components (if required), verify date	Visual Inspection	1 Shot	Each Set Up	WI-CAL-00.2 Quality Inspections F-CAL.00.2-7 First Piece Release Label. Operator Work Instructions. Work order start form	Adjust Process; Re-inspect per WI-CAL-00.2 Retest; Isolation per PR-CAL-01
			2	Part Quality			Perform Dimensional on SC Dimensions on the Part to Print (if required)	Calibrated Gages	1 Shot	Each Set Up	WI-CAL-00.2 Quality Inspections F-CAL-00.2-7 & F-CAL-00.2-9 First Piece Release. Operator Instructions. SQC Pack Test Instructions per each part (If required)	Adjust Process; Re-inspect per WI-CAL-00.2 Retest; Isolation per PR-CAL-01
			3	Capability Study			Per Drawing / SQC Pack / Capability Dimensions	Calibrated Gages	1 Shot	Each Set Up	SQC Pack Software and Drawing Capability Dimensions Matrix.	Retest; Isolation per PR-CAL-01
11	Operator Inspections	Injection Molding Machine	1	Part Quality			Check for visual defects (flash, shorts, blocked heads, mismatch, color, etc) that will affect fit, form, or function	Visual	1 Shot	Per hour	F-PRD-00.21-1 Validation Record	Notify Process Tech, QA, and Production Lead/Supervisor Recheck; Isolation PR-CAL-01
		Regrind Collection	2	Regrind Collection			Verify correct percentage regrind and clean collection area	Visual	2 checks	Per shift	Validation Record F-PRD-00.21-1	Notify Process Tech, Production Lead/Supervisor, and QA (if applicable) Recheck; Isolation PR-CAL-01
		Resin and Assembly Materials (if apply)	3	Correct Materials			Verify materials per the work order	Visual to WO (BOM)	2 checks	Per shift	Work Order Sign Off F-PRD-00.21-1 Validation Record	Notify Material Handler, QA, and Production Lead/Supervisor Recheck; Isolation per PR-CAL-01
		Packaging Materials	4	Correct bag / Box / Tote and Labels			Verify packaging materials and label match the work order (WO number, part number, quantity, etc)	Visual to WO (BOM)	2 checks	Per shift	Work Order Sign Off F-PRD-00.21-1 Validation Record	Notify Material Handler, QA, and Production Lead/Supervisor Recheck; Isolation per PR-CAL-01
		Injection Molding Machine	5	Date Code			Verify Date Code	Visual	1 shot	per shift	F-PRD-00.21-1 Validation Record	Adjust Process/ Notify Supervisor and QA Recheck; Isolation per PR-CAL-01
		Scale	6	Box Quanity			Verify bag / box / tote quanity is correct per the Label	Scale Verification and / or Hand Count	2 checks	Per shift	AV-PRD-01 F-PRD-00.21-1 Validation Record	Adjust Process and notify QA and Production Lead/Supervisor Recheck; Isolation per PR-CAL-01

Quality Assurance		Team Supervisor	Material Handler		Process Technician	Operator			QA and/or Team Supervisor	Shipping and/or Receiving
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for	CHARACTERISTICS NO.	CHARACTERISTICS PRODUCT	CHARACTERISTICS PROCESS	Special Char. Class	METHODS Product/Process Specification/	METHODS Evaluation/ Measurement	METHODS SIZE		METHODS Control Method	Reaction Plan
									Size	Freq		
12	Packaging	Scale	1		Scale set up		Set the scale count for packaging.	Scale Verification	Each set up / 2 times per shift	Each set up / 2 times per shift	AV-PRD-01, AV-PRD-07 F-PRD-00.21-1 Validation Record	Notify QA and Production Lead/Supervisor Recheck; Isolation per PR-CAL-01
		Scale / Skid	2		Package and skid product.		Package product to quantities per the work order. Load skid correctly.	Scale to match standard pack. Skid must have heat treatment stamp.	Each container / Skid	Each container / Skid	Per each product Work Instruction.	Notify QA and Production Lead/Supervisor Recheck; Isolation per PR-CAL-01
13	Final Inspection	Injection Molding Machine	1	Part Quality			Check for Burns, Shorts, Flash and Warp	Work Order	1 box (according to sample size table)	per skid	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1	Recheck; Isolation per PR-CAL-01
		Assembly Machine (if required)	2	Part Quality			Verify assembly components are correctly assembled on the part (if required) Verify film hinge function with no cracks and latching function (if required).	Visual/manual	1 shot	Once per shift	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1	Recheck; Isolation per PR-CAL-01
		Part	3	Date Code on Part			Verify the Date is Correct	Visual	1 Shot	Per shift	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1	Recheck; Isolation per PR-CAL-01
		Packaging Materials	4	Correct Box or Tote			Correct packaging materials per the work order	Visual to WO	1 check	Per shift	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1	Recheck; Isolation PR-CAL-01
		Scale	5	Box Quanity			Bag / Box / Tote quanity is correct per the Label.	Scale Verification and / or Hand Count (Use different scale)	1 check	Per shift	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1	Recheck; Isolation PR-CAL-01
		Labeles	6	Box or tote Label			Per Work Order Check for Correct Label Placement; if Required	Visual match against WO	1 label	per skid	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1 AV-PRD-03	Recheck; Isolation PR-CAL-01

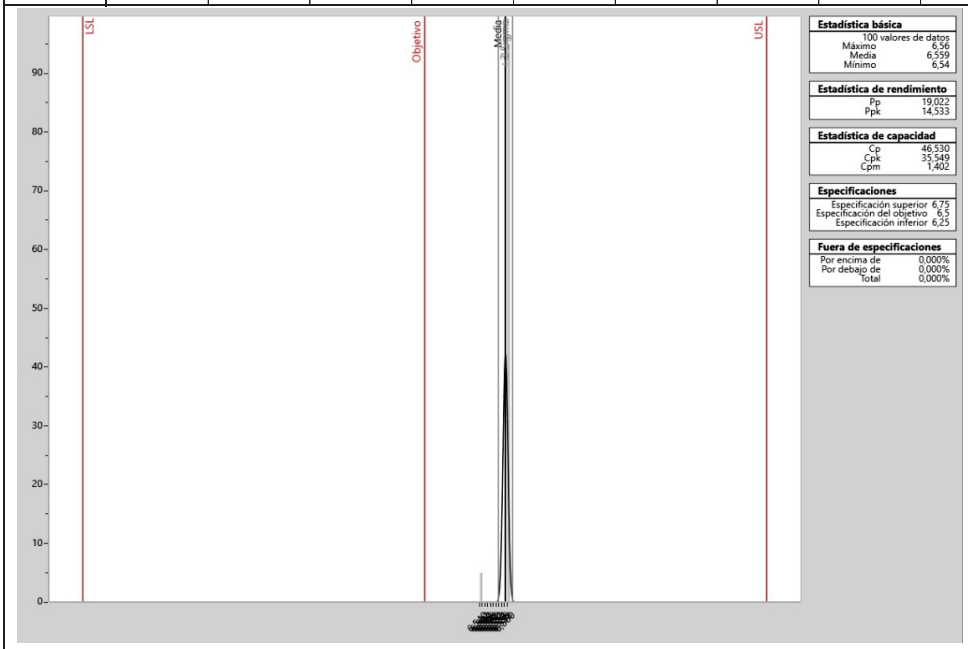
Quality Assurance		Team Supervisor	Material Handler			Process Technician	Operator			QA and/or Team Supervisor	Shipping and/or Receiving
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for	CHARACTERISTICS			Special Char. Class	METHODS				Reaction Plan
			NO.	PRODUCT	PROCESS		Product/Process Specification/	Evaluation/ Measurement	SIZE		Control Method	
									Size	Freq		
14	QA Testing	Injection Molding Machine	1	Part Quality			Check for visual defects (flash, shorts, blocked heads, mismatch, color, etc) that will affect fit, form, or function	Visual	1 shot	Per shift	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1 Visual aids for each PN	Adjust Process; WI-CAL-01.2 Retest; Isolation PR-CAL-01
			2	Part Quality			Check for presence of assembly components (if required), verify film hinge function with no cracks and latching function (if required).	Visual/manual	1 Shot	Each Set Up	WI-CAL-00.2 Quality Inspections Final Inspection F-CAL.00.2-1 Visual aids for each PN	Adjust Process; WI-CAL-01.2 Retest; Isolation PR-CAL-01
			3	Arrowhead, Fir Tree, or Stud Push In/On and Pull Out/Off (if required)			Verify feature performance requirements are met per the print	Tensile Tester	1 shot	Per Work order	ITS-0005; F-PE-0002; ITS-0010; F-PE-0001; ITS-0006; SQC pack.	Adjust Process; WI-CAL-01.2 Retest; Isolation PR-CAL-01
			4	Connector Push In and Pull Out (if required)			Verify feature performance requirements are met per the print	Tensile Tester	1 shot	Per Work order	ITS-0005; F-PE-0002; ITS-0010; F-PE-0001; ITS-0006; SQC pack.	Adjust Process; WI-CAL-01.2 Retest; Isolation PR-CAL-01
15	Finished Goods Storage		1		FG are moved to storage until shipment.		All skids are identified and at least one box per skid has the green Acceptance label	Visual	Each skid	Each skid	MRP System	Adjust process; Isolation PR-CAL-01 (when applicable)
16	Shipping		1		Move Parts to Shipping Dock, Ship Product to Warehouse		Per ERP System, Per Shipping Requirements	Visual	Each Skid	Each Shipment	MRP System; Shipping Manifest	Notify Supervisor
			2		Ship product to customer		Per Customer Requirements	Visual	Each skid	Each shipment	MRP System; Shipping Manifest	Notify Supervisor
17	Annual Validation (If Required)		1		Validation of Product		Re-Validation of Product to Customer Requirements	PPAP	Full dimensional plus capability	At Annual Validation	Gauge Pack; SQC Pack	Control of Non-Conforming Product PR-CAL-01
			2	Dimensional			Perform dimensional inspection per the print.	Calibrated gages/Per the dimensional study	1 shot	At Annual Validation	Gauge Pack and Dimensional Study	Notify Production, Engineering, Tooling (as required); Isolation PR-CAL.01
			3	Dimensional Capability (If required)			Verify dimension meets Cpk requirements	Calibrated gages/Per SPC Software	1 shot or 100pcs minimum	At Annual Validation	Gauge Pack; SQC Pack	Notify Production, Engineering, Tooling (as required); Isolation PR-CAL.01
			4	Arrowhead, Fir Tree, or Stud Push In/On and Pull Out/Off (If required)			Verify feature performance requirements are met per the print	Tensile Tester	1 shot	At Annual Validation	ITS-0005; F-PE-0002; ITS-0010; F-PE-0001; ITS-0006; SQC pack.	Notify Production, Engineering, Tooling (as required); Isolation PR-CAL.01
			5	Connector Push In and Pull Out (if required)			Verify feature performance requirements are met per the print	Tensile Tester	1 shot	At Annual Validation		Notify Production, Engineering, Tooling (as required); Isolation PR-CAL.01

HellermannTyton

Initial Process Study

Part No.	Part Description	Supplier	
151-02061	90 DEG RADIUS MINI CHANNEL	HellermannTyton	
Drawing No.	**Drawing Date**	**Drawing Revision**	**Inspection Facility**
16-1625-011-CSU	2/2/2018	1.2	HT-Monterrey
Production Date	**Material**	**Tool No.**	**Inspector**
7/31/2018	UR0PPT20HSLE0	M1060	Miguel Martínez

DATA	6,5 +/- 0,25 mm								
1-9	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
10-18	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
19-27	6.56	6.56	6.56	6.56	6.54	6.56	6.56	6.56	6.56
28-36	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
37-45	6.56	6.54	6.56	6.56	6.56	6.56	6.56	6.56	6.56
46-54	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
55-63	6.56	6.56	6.56	6.56	6.56	6.56	6.54	6.56	6.56
64-72	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
73-81	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
82-90	6.56	6.56	6.54	6.56	6.56	6.56	6.56	6.56	6.56
91-99	6.56	6.56	6.56	6.54	6.56	6.56	6.56	6.56	6.56
100-108	6.56								



R&R Study Results Using Specifications

1/11/2022

Gage number:	TGM-330	Done by:	April Gary
Gage description:	Caliper-6"	Part name:	151-01153
Gage type:	Caliper	Characteristics:	Length
Study name:	Annual Gage R & R	Specifications:	LSL=34 Nominal=35.5 USL=37
Study date:	01/11/2022	Number of Distinct Cate: 11.3	

Objective:

Comment:

	Interpretation guidelines
< 10%	generally considered to be an acceptable measurement system
10%-30%	may be acceptable based upon importance of application, cost of measurement device, cost of repair etc.
> 30%	considered to be not acceptable - every effort should be made to improve the measurement system

Results based on specifications

Measurement Unit Analysis — Specification Spread (USL-LSL)/6

Repeatability - Equipment Variation (EV)
EV = 0.005316 — %EV = 1.063

Reproducibility - Appraiser Variation (AV)
AV = 0.002612 — %AV = 0.5224

Repeatability & Reproducibility (R&R)
R&R = 0.005923 — %R&R = 1.185

Part Variation (PV)
PV = 0.5 — %PV = 99.99

Specification Spread (USL-LSL)/%10
(USL - LSL)0.5

Appraiser	Replicati	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10
April	1	35.45	35.44	35.45	35.45	35.47	35.5	35.3	35.54	35.47	35.43
April	2	35.46	35.44	35.45	35.45	35.46	35.49	35.29	35.54	35.47	35.43
April	3	35.46	35.42	35.42	35.46	35.47	35.5	35.3	35.54	35.46	35.43
Marreall	1	35.46	35.43	35.43	35.45	35.45	35.5	35.28	35.53	35.46	35.43
Marreall	2	35.46	35.44	35.43	35.45	35.46	35.48	35.28	35.53	35.46	35.43
Marreall	3	35.47	35.42	35.43	35.46	35.46	35.5	35.29	35.53	35.46	35.43
Felicia	1	35.45	35.44	35.42	35.45	35.46	35.5	35.3	35.53	35.47	35.43
Felicia	2	35.46	35.43	35.42	35.45	35.46	35.5	35.27	35.53	35.46	35.43
Felicia	3	35.46	35.43	35.41	35.45	35.46	35.51	35.28	35.53	35.46	35.43

GAGE pack

R&R Study Results Using Specifications

1/11/2022

Gage number:	TGM-760	Done by:	April Gary
Gage description:	Micro-Vu	Part name:	133-03809
Gage type:	Micro-Vu	Characteristics:	Length-Vision System
Study name:	Annual Gage R & R	Specifications:	LSL=39 Nominal=40 USL=41
Study date:	01/11/2022	Number of Distinct Cate	37.87838

Objective:

Comment:

Interpretation guidelines

< 10%	generally considered to be an acceptable measurement system
10%-30%	may be acceptable based upon importance of application, cost of measurement device, cost of repair etc.
> 30%	considered to be not acceptable - every effort should be made to improve the measurement system

Results based on specifications

Measurement Unit Analysis — Specification Spread (USL-LSL)/

Repeatability - Equipment Variation (EV)
EV = 0.01059283 — %EV = 3.177848

Reproducibility - Appraiser Variation (AV)
AV = 0.006445212 — %AV = 1.933564

Repeatability & Reproducibility (R&R)
R&R = 0.01239955 — %R&R = 3.719864

Part Variation (PV)
PV = 0.3331026 — %PV = 99.93079

Specification Spread (USL-LSL)/
(USL - LSL)/ = 0.3333333

Appraiser	Replicati	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10
Rob S.	1	39.388	39.594	39.212	39.643	39.636	39.746	39.647	39.76	39.755	39.754
Rob S.	2	39.38	39.589	39.142	39.634	39.629	39.739	39.666	39.766	39.773	39.755
Rob S.	3	39.386	39.588	39.135	39.636	39.673	39.754	39.668	39.777	39.772	39.758
Sam M.	1	39.375	39.582	39.141	39.633	39.625	39.739	39.658	39.754	39.737	39.749
Sam M.	2	39.376	39.584	39.129	39.632	39.627	39.741	39.655	39.764	39.765	39.752
Sam M.	3	39.382	39.587	39.136	39.631	39.629	39.74	39.651	39.766	39.675	39.754
April G.	1	39.372	39.586	39.141	39.637	39.631	39.743	39.649	39.769	39.737	39.751
April G.	2	39.376	39.588	39.141	39.637	39.63	39.745	39.657	39.75	39.756	39.751
April G.	3	39.376	39.487	39.14	39.636	39.629	39.739	39.656	39.768	39.768	39.751

GAGE pack

R&R Study Results Using Specifications

1/11/2022

Gage number:	TGM-850	Done by:	April Gary
Gage description:	Tensile Tester	Part name:	T30L
Gage type:	Tensile Tester	Characteristics:	Tensile Strength
Study name:	Annual Gage R & R	Specifications:	LSL=30 Nominal=80 USL=130
Study date:	01/10/2022	Number of Distinct Cate	19.14576

Objective:

Comment:

Interpretation guidelines	
< 10%	generally considered to be an acceptable measurement system
10%-30%	may be acceptable based upon importance of application, cost of measurement device, cost of repair etc.
> 30%	considered to be not acceptable - every effort should be made to improve the measurement system

Results based on specifications

Measurement Unit Analysis — Specification Spread (USL-LSL)/

Repeatability - Equipment Variation (EV)
EV = 1.18734 — %EV = 7.124041

Reproducibility - Appraiser Variation (AV)
AV = 0.2977762 — %AV = 1.786657

Repeatability & Reproducibility (R&R)
R&R = 1.224111 — %R&R = 7.344665

Part Variation (PV)
PV = 16.62165 — %PV = 99.7299

Specification Spread (USL-LSL)/
(USL - LSL)/ = 16.66667

Appraiser	Replicati	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10
April	1	54.641	56.102	51.765	51.187	50.959	50.051	51.567	49.102	49.628	48.566
April	2	54.819	56.19	52.352	51.425	48.538	50.544	50.13	49.605	51.879	48.018
April	3	53.191	55.972	52.223	52.87	52.502	52.725	52.259	51.16	50.35	50.48
Tamera	1	54.73	56.253	52.969	51.991	50.07	52.008	49.454	49.32	47.165	48.872
Tamera	2	53.913	55.003	52.11	49.633	51.468	49.594	48.458	50.673	49.348	49.969
Tamera	3	54.424	56.53	52.079	52.529	51.257	49.013	50.464	50.203	49.676	48.271
Marreall	1	54.515	56.371	50.573	50.161	51.652	48.507	51.987	49.378	50.964	51.958
Marreall	2	54.823	57.02	52.859	52.732	52.714	50.898	51.528	52.338	52.585	50.354
Marreall	3	52.751	56.443	53.168	52.174	47.928	50.357	51.051	49.128	50.839	50.807

GAGE pack

R&R Study Results Using Specifications

1/12/2022

Gage number:	TGM-983	Done by:	April Gary
Gage description:	Indicator	Part name:	151-01043
Gage type:	Indicator	Characteristics:	Height
Study name:	Annual Gage R & R	Specifications:	LSL=28.7 Nominal=29.7 USL=30.7
Study date:	01/12/2022	Number of Distinct Cate	21.17149

Objective:

Comment:

	Interpretation guidelines
< 10%	generally considered to be an acceptable measurement system
10%-30%	may be acceptable based upon importance of application, cost of measurement device, cost of repair etc.
> 30%	considered to be not acceptable - every effort should be made to improve the measurement system

Results based on specifications

Measurement Unit Analysis — Specification Spread (USL-LSL)/

Repeatability - Equipment Variation (EV)
EV = 0.008761562 — %EV = 2.628469

Reproducibility - Appraiser Variation (AV)
AV = 0.02034414 — %AV = 6.103242

Repeatability & Reproducibility (R&R)
R&R = 0.0221506 — %R&R = 6.64518

Part Variation (PV)
PV = 0.3325966 — %PV = 99.77897

Specification Spread (USL-LSL)/
(USL - LSL)/ = 0.3333333

Appraiser	Replicati	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10
Tamera M	1	29.55	29.615	29.594	28.7	29.192	29.622	29	29.601	29.618	29.617
Tamera M	2	29.605	29.612	29.596	28.747	29.179	29.614	29.018	29.62	29.624	29.612
Tamera M	3	29.607	29.61	29.597	28.728	29.196	29.633	29.044	29.62	29.629	29.615
April G	1	29.636	29.631	29.634	28.702	29.198	29.633	29.037	29.655	29.62	29.639
April G	2	29.643	29.635	29.634	28.756	29.196	29.631	29.031	29.657	29.621	29.646
April G	3	29.635	29.639	29.637	28.761	29.19	29.625	29.047	29.65	29.641	29.643
Sam M	1	29.646	29.639	29.65	28.759	29.197	29.659	29.066	29.667	29.664	29.649
Sam M	2	29.656	29.648	29.659	28.75	29.199	29.655	29.055	29.664	29.664	29.652
Sam M	3	29.644	29.636	29.658	28.755	29.194	29.657	29.056	29.666	29.665	29.656

GAGE pack

R&R Study Results Using Specifications

1/11/2022

Gage number:	TGM-1325	Done by:	April Gary
Gage description:	Artifact	Part name:	133-00878
Gage type:	CT Scannner Artifact	Characteristics:	Width
Study name:	Annual Gage R & R	Specifications:	LSL=10.6 Nominal=10.85 USL=11.1
Study date:	01/11/2022	Number of Distinct Cate	21.86764

Objective:

Comment:

	Interpretation guidelines
< 10%	generally considered to be an acceptable measurement system
10%-30%	may be acceptable based upon importance of application, cost of measurement device, cost of repair etc.
> 30%	considered to be not acceptable - every effort should be made to improve the measurement system

Results based on specifications

Measurement Unit Analysis

Specification Spread (USL-LSL)/

Repeatability - Equipment Variation (EV)
EV = 0.005099388

%EV = 6.119265

Reproducibility - Appraiser Variation (AV)
AV = 0.001657823

%AV = 1.989388

Repeatability & Reproducibility (R&R)
R&R = 0.005362102

%R&R = 6.434522

Part Variation (PV)
PV = 0.08316065

%PV = 99.79277

Specification Spread (USL-LSL)/
(USL - LSL)/ = 0.08333334

Appraiser	Replicati	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10
Joseph F	1	10.908	10.912	10.893	10.273	10.87	10.916	10.899	10.902	10.429	10.887
Joseph F	2	10.904	10.911	10.88	10.268	10.876	10.912	10.891	10.889	10.429	10.894
Joseph F	3	10.917	10.912	10.892	10.275	10.871	10.91	10.906	10.887	10.431	10.897
James P	1	10.908	10.904	10.89	10.285	10.873	10.925	10.899	10.9	10.442	10.895
James P	2	10.911	10.911	10.889	10.267	10.878	10.927	10.905	10.898	10.432	10.903
James P	3	10.898	10.915	10.893	10.27	10.865	10.93	10.903	10.899	10.436	10.899
Nick K	1	10.912	10.901	10.885	10.261	10.87	10.92	10.9	10.888	10.428	10.89
Nick K	2	10.912	10.908	10.89	10.272	10.881	10.92	10.912	10.893	10.429	10.896
Nick K	3	10.911	10.915	10.891	10.276	10.874	10.924	10.905	10.89	10.435	10.894

GAGE pack

R&R Study Results Using Specifications

2/2/2022

Gage number:	TGM-966	Done by:	April Gary
Gage description:	Global Performance 7-10-7	Part name:	133-00878
Gage type:	CMM Coordinate Measuring Machine	Characteristics:	Width
Study name:	Annual Gage R & R	Specifications:	LSL=92 Nominal=92.2 USL=92.4
Study date:	02/01/2022	Number of Distinct Cate	26.96861

Objective:

Comment:

	Interpretation guidelines
< 10%	generally considered to be an acceptable measurement system
10%-30%	may be acceptable based upon importance of application, cost of measurement device, cost of repair etc.
> 30%	considered to be not acceptable - every effort should be made to improve the measurement system

Results based on specifications

Measurement Unit Analysis — Specification Spread (USL-LSL)/6

Repeatability - Equipment Variation (EV)
EV = 0.002740363 — %EV = 4.110529

Reproducibility - Appraiser Variation (AV)
AV = 0.002146237 — %AV = 3.219342

Repeatability & Reproducibility (R&R)
R&R = 0.003480793 — %R&R = 5.22117

Part Variation (PV)
PV = 0.066576 — %PV = 99.86361

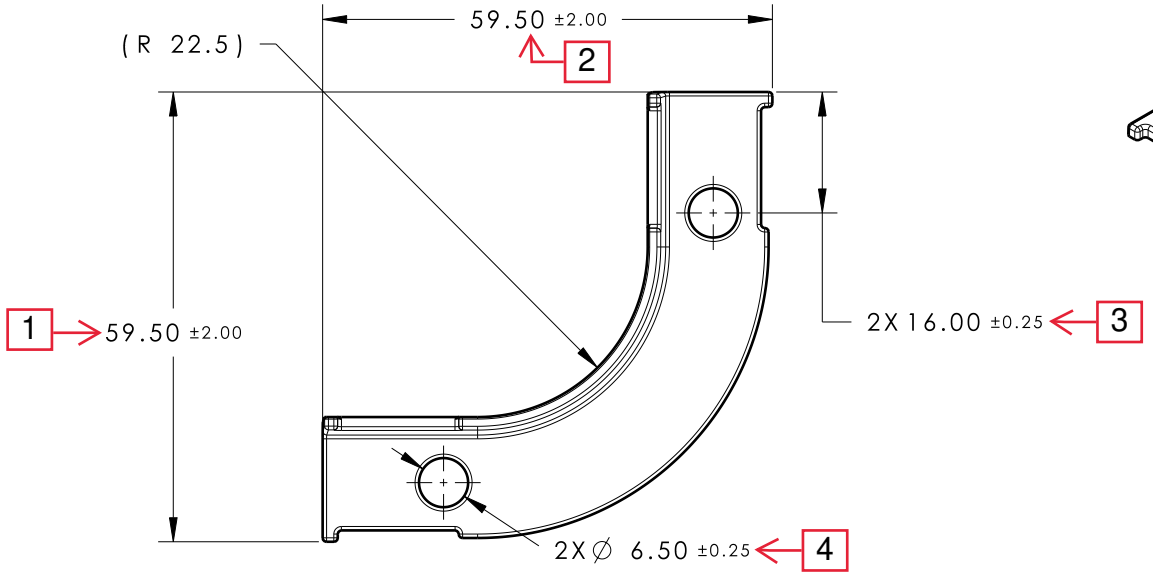
Specification Spread (USL-LSL)/
(USL - LSL)/ = 0.06666692

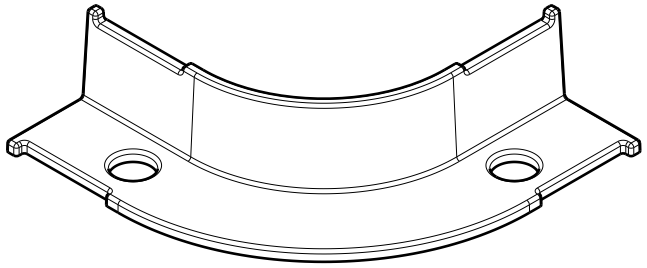
Appraiser	Replicati	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10
Rob S	1	92.1929	92.2152	92.2189	91.9201	92.2519	92.2244	92.1938	92.0249	92.2016	92.218
Rob S	2	92.1952	92.2132	92.2165	91.9193	92.2522	92.2293	92.1957	92.0237	92.2005	92.2198
Rob S	3	92.1906	92.219	92.2214	91.9209	92.2548	92.2294	92.1993	92.0237	92.2005	92.214
Sam M	1	92.1902	92.2104	92.2151	91.9194	92.2495	92.2209	92.1889	92.0335	92.195	92.2123
Sam M	2	92.1889	92.2116	92.2142	91.9187	92.2456	92.22	92.1887	92.0309	92.1939	92.2085
Sam M	3	92.1864	92.2112	92.2157	91.9192	92.2449	92.22	92.1881	92.0278	92.19559	92.2091
Nick K	1	92.1913	92.2089	92.2145	91.92	92.2462	92.2203	92.191	92.0315	92.194	92.21
Nick K	2	92.1868	92.2121	92.2167	91.9202	92.2554	92.2234	92.1941	92.0227	92.2004	92.2163
Nick K	3	92.1978	92.2168	92.22	91.9208	92.2536	92.2277	92.1938	92.0235	92.2084	92.218

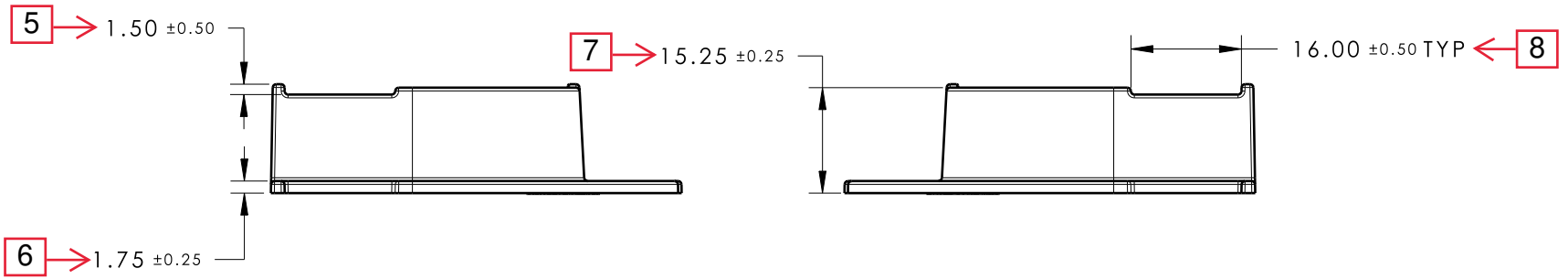
GAGE pack

CATIA V5

Revision Level			Revision Record	Changed	Date	Approved	Date
Drawing	State	Part					
01.2	Design Release		SEE ECN# 014293	EJF	2/2/18	EJH	2/2/18







GLOBAL PART NAME
90RADMINICHNL-PPT20-BK

Material
PP 20% TALC
COLOR: BLACK
9

Units **millimeters**

Tolerance defined on each dimension

Drawn	EJF	10/14/16
Approved	KVH	10/14/16

HellermannTyton
North America
Email: corp@htamericas.com
Web: www.hellermann.tyton.com

Article/Type-No 90RADMINICHNL

Title
90 DEG RADIUS MINI CHANNEL

Drawing-No Production : Phase
16-1625-011-CSU

Scale 1:1

Project Number 16-1625

Format AH

Sheet 1/1