

Part Submission Warrant

Part Name	RET WIR CONN	Cust. Part Number	DU5T-14E042-HA	DU5T-14E042-HA
Shown on Drawing No.	12-0304-001-CSU	Org. Part Number	151-01144	
Engineering Change Level	012249	Dated	19-Dec-12	
Additional Engineering Changes	n/a	Dated	n/a	
Safety and/or Government Regulation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Purchase Order No.	151-01144	Weight (kg) 0,0019
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

City

Region

25436

Postal Code

Germany

Country

Production Location: USA

CUSTOMER SUBMITTAL INFORMATION

Nursan Otomotive EOOD

Customer Name/Division

(30712)

Hyusein Tahir

Buyer/Buyer Code

Ford

Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported?

☒ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format:

ID: 749678237

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: We hereby affirm that our production rate is able to fulfil customer demands.

Is each Customer Tool properly tagged and numbered?

☐ Yes ☐ No ☒ n/a

Organization Authorized Signature i.A.

Stefan Fölster

Date 18-Sep-18

Print Name i.A. S. Fölster

+49 (0) 4122 701 5722

Fax No. +49 4122 701 241

Title Quality Assistant

E-mail Stefan.Foelster@HellermannTyton.de

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature Date

Print Name Customer Tracking Number (optional)

18-Sep-18

HellermannTyton

36612

Performance Test Results

[illegible]

Blanket statements of conformance are unacceptable for any test results.

<u>SIGNATURE</u>	<u>TITLE</u>	<u>DATE</u>
 i.A. S. Fölster	Quality Assistant	18-Sep-18

Current Material Certificate



Letter 1 of 1
Page 1 of 13

DuPont Washington Works
Certification Office
P.O. Box 1217
Washington, WV 26181-1217

March 20, 2018

HELLERMANN TYTON CORP
QUALITY ASSURANCE
6701 W GOOD HOPE RD
MILWAUKEE - WI 53223-4620

DU PONT ORDER NO: 4877465
CUSTOMER PO NO: 110656-18
DELIVERY DATE: 03/20/18
DELIVERY NO: 179667513
FAX NUMBER:

THIS IS TO ADVISE THAT THE PRODUCT LISTED BELOW HAS BEEN CLASSIFIED STANDARD PRODUCT. TEST DATA
ARE ATTACHED WHICH SHOW COMPLIANCE TO THE INDICATED SPECIFICATION.

QUALITY ASSURANCE MANAGER

<u>PRODUCT(S)</u>	<u>LOT(S)</u>	<u>QTY</u>		<u>SPECIFICATION(S)</u>
		<u>Kgs</u>	<u>Lbs</u>	
ZYTEL® MT409AHS BKD10 KG HOPPER TRUCK NYLON RESIN	N86SCGT301	10180.17	22443.21	FORD WSS-M4D706-B1 ASTM D6779 PA0161
CPN:UR0IMHSUVD HOPPER	N86SCGT302	10249.84	22596.80	DUPONT STANDARD SPEC FCA USA LLC MS.50017 / MS-DB-41 GENERAL MOTORS GMW16447P-PA66-T2 GENERAL MOTORS GMW16558P-PA66-T1

THIS PRODUCT CERTIFICATION IS NON-TRANSFERABLE AND IS VALID ONLY TO THE FIRST END-USER PURCHASING THIS PRODUCT DIRECTLY FROM DUPONT OR FROM A DUPONT-AUTHORIZED DISTRIBUTOR. PRODUCT AND/OR PRODUCT CERTIFICATION OBTAINED FROM AN UNAUTHORIZED SOURCE IS ASSUMED COUNTERFEIT, AND DUPONT MAKES NO WARRANTIES AND ASSUMES NO LIABILITY IN CONNECTION WITH THE USE OF PRODUCT OR PRODUCT CERTIFICATION OBTAINED FROM AN UNAUTHORIZED SOURCE. Call 1-800-441-0575 for a list of authorized distributors in your area. Copyright © 2006 E.I. du Pont de Nemours and Company. All Rights Reserved. Property of E.I. du Pont de Nemours and Company. No portion of this work may be reproduced in whole or in part by any electronic, mechanical or other means, including xerography, photocopy, or any information storage or retrieval system, or otherwise distributed without the express permission of E.I. du Pont de Nemours and Company.

Current Material Certificate

DU PONT ORDER NO: 4877465
Page 6 of 13

DU PONT STANDARD SPECIFICATION

Product: ZYTEL® MT409AHS BK010 KG HOPPER TRUCK NYLON RESIN

TESTS	TEST METHOD	LIMITS		RESULTS
		MIN	MAX	
<u>LOT TEST</u>		<u>LOT NO: N85QGT301</u>		
Melt Viscosity, Pa.s	ISO 11443	40	120	76 (D1)
Water Content at Packout, %	ISO 15512		0.18	0.11
<u>PERIODIC TEST</u>		<u>LAST TEST DATE: December 2017</u>		
Deflection Temperature @1.80 MPa, °C	ISO 75-1&2			63
Density, g/cm3	ISO 1183/Method A			1.11
Notched Charpy Impact @ 23°C, kJ/m2	ISO 179/1eA			17.0
Temp of melting,2nd melt,10°C/min °C	ISO 11357			262
Tensile Modulus, Mpa	ISO 527-1&2			2390
Tensile Stress @ Yield, 50 mm/min, MPa	ISO 527-1&2			60.1
<u>HISTORICAL TEST</u>				
Flammability (Burn Rate 1 of 5), mm/min	ISO 3795			B/22.1
Flammability (Burn Rate 2 of 5), mm/min	ISO 3795			B/24.2
Flammability (Burn Rate 3 of 5), mm/min	ISO 3795			B/23.9
Flammability (Burn Rate 4 of 5), mm/min	ISO 3795			B/22.8
Flammability (Burn Rate 5 of 5), mm/min	ISO 3795			B/25.4
Flammability, mm/min	ISO 3795		100	B/23.7
Plaque Thickness, mm	ISO 3795			2.15

(D1) PERFORMED AT 280°C WITH A SHEAR RATE OF 1000/SEC AND A DWELL TIME OF 300 SECS USING AN ORIFICE WITH AN L/D RATIO OF 20:1 RESULTS ARE CORRECTED TO 0.13% MOISTURE.

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Current Material Certificate

DU PONT ORDER NO: 4877465

Page 7 of 13

DU PONT STANDARD SPECIFICATION

Product: ZYTEL® MT409AHS BK010 KG HOPPER TRUCK NYLON RESIN

TESTS	TEST METHOD	LIMITS		RESULTS
		MIN	MAX	
<u>LOT TEST</u>				<u>LOT NO: N85SGT302</u>
Melt Viscosity, Pa.s	ISO 11443	40	120	69 (01)
Water Content at Packout, %	ISO 15512		0.18	0.12
<u>PERIODIC TEST</u>				<u>LAST TEST DATE: December 2017</u>
Deflection Temperature @1.80 MPa, °C	ISO 75-1&2			63
Density, g/cm3	ISO 1183/Method A			1.11
Notched Charpy Impact @ 23C, kJ/m2	ISO 179/1eA			17.0
Temp of melting,2nd melt,10°C/min °C	ISO 11357			262
Tensile Modulus, Mpa	ISO 527-1&2			2390
Tensile Stress @ Yield, 50 mm/min, MPa	ISO 527-1&2			60.1
<u>HISTORICAL TEST</u>				
Flammability (Burn Rate 1 of 5), mm/min	ISO 3795			B/22.1
Flammability (Burn Rate 2 of 5), mm/min	ISO 3795			B/24.2
Flammability (Burn Rate 3 of 5), mm/min	ISO 3795			B/23.9
Flammability (Burn Rate 4 of 5), mm/min	ISO 3795			B/22.8
Flammability (Burn Rate 5 of 5), mm/min	ISO 3795			B/25.4
Flammability, mm/min	ISO 3795		100	B/23.7
Plaque Thickness, mm	ISO 3795			2.15

(01) PERFORMED AT 280°C WITH A SHEAR RATE OF 1000/SEC AND A DWELL TIME OF 300 SECS USING AN ORIFICE WITH AN L/D RATIO OF 20:1 RESULTS ARE CORRECTED TO 0.13% MOISTURE.

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**POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(PFMEA)**

PFMEA Number: **MFMEA-43**

Part Number / Name: Customary Mounts Responsibility: HellermannTyton Prepared by: Quality Assurance
 Model Year(s) / Vehicle(s): NA Key Date: 3/11/1994 PFMEA Date Org: 3/11/1994 Rev. Date: See Footer
 Core Team: Quality Assurance, Manufacturing, Automation, Receiving-Shipping Rev. Level: See Footer

Item & Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Class	Potential Cause(s)/ Mechanism(s) of Failure	Occurrence	Current Design Controls -Prevention -Detection	Detection	R P N	Recommended Action(s)	Responsibility & Target Completion Date	Action Results				
													Actions Taken	Severity	Occurrence	Detection	R P N
1-4 Incoming Receiving	Cert matches material and P.O. request	Unacceptable Moisture Levels	Cannot Manufacture	5	PTC	Shipping Damage	2	D - Incoming Inspection P - Material Certs	8	80	None						0
				5	PTC	Material lot received with moisture to high/low	2	D - Incoming Inspection P - Material Certs	8	80	None						0
		Improperly labeled	Delay in Manufacturing	4		Material lot received does not match cert	2	D - Incoming Inspection P - Material Certs	8	64	None						0
5-8 Material Movement Central Material	Acceptable material for production	Unacceptable Moisture Levels	Part Non-Compliance	5		Dryer malfunction	2	D - Dryer Alarms D - Moisture Testing P - Filter Cleaning P - Moisture Testing	5	50	Upgrade to Novatech system. Increase Moisture test freq.	Maintenance - 3/4/13 Mike Wendt - 8/30/13	New Dryer system New moisture analyzers	5	2	2	20
		Contamination	Part Non-Compliance	5		Foreign Matter in Material	2	D - Visual Inspections P - Material Handling Work Instruction	8	80	Develop new material handling procedure	Mike Wendt - 8/30/13	Added color-coded container	5	2	6	60
			Part Non-Compliance	5		Unlike Materials Mixed Together	2	D - Visual Inspections P - Material Handling Work Instruction	8	80	New material ID system	John Gleason 1/1/13	Material ID added to WO, New process for stickers on Material	5	2	5	50
		Incorrect Material	Part Non-Compliance	6		Wrong material hook-up at press	2	D/P - Visual to Work Order	8	96	Upgrade to Novatech system.	Maintenance - 3/4/13	ID proofing in new system upgrade	6	2	5	60

9 Molding Machine Set-up	Instructions for production	Work Order Set Up Incorrectly	Delay in Manufacturing	4		Work Order read incorrectly	2		D/P - Work Order D - Set-up Verification	8	64	Electronic Shift Log	John Gleason/Ross H. - 6/13	Computers added to work station. Sharepoint logs implemented	4	2	5	40
10-11 First Piece Acceptance	Product conforms per specifications before production.	First Piece Not Hung	Delay in Manufacturing	8		First Piece Not Submitted	1		D- Visual/No First Piece at press. P-Training of Production Personnel	5	40	None						0
12 Validation Testing	Validation and documentation of new tooling	Validation is Not Completed	Part Non- Compliance	8		Validation Testing Forgotten	1		D/P-PPAP Matrix	2	16	None						0
13-14 Setup / In process checks Injection Molding Process	Manufacturing a conforming part per specifications	Sinks	Part Non- Compliance	3		Insufficient Hold Pressure	2		D- Visual Inspections P - First Piece Approvals	8	48	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemen- ted Quality tree	3	2	7	42
				3		Cycle Time Too Fast	2		D- Visual Inspections P - First Piece Approvals	8	48	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemen- ted Quality tree	3	2	7	42
		Incorrect Blending	Part Non- Compliance / and Color Match Failures	5		Material blended incorrectly at press	2		D/P - Visual to Work Order	8	80	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemen- ted Quality tree	5	2	7	70
		Burning	Part Non- Compliance / Cosmetic Issues / Short	3		Plugged/Worn Vents	3		D- Visual Inspections P - First Piece Approvals P - In process PM's	8	72	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemen- ted Quality tree	3	3	7	63
		Sticking in mold	Part Non- Compliance / Mold Damage	5			2		D- Visual Inspections P - First Piece Approvals	8	80	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemen- ted Quality tree	5	2	7	70
				5		Excessive Hold Pressure	2		D- Visual Inspections P - First Piece Approvals	8	80	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemen- ted Quality tree	5	2	7	70
				5		Water hooked up incorrectly	2		D-Visual Inspection	8	80	Implemented Water Maps - Ongoing implementation of pre plumbing molds	Rich Staszewski On going for water map and pre plumbing	T18L- completed 6/26/09 Ongoing for other molds	5	2	6	60

		5		Heater band malfunctions	3	D - Visual Inspection D - Process Inspection P - PM	5	75	None						0
Excess Plastic	Part Non-Compliance	5		Hot Excess Runner	2	D - Visual Inspections P - Process Inspections	8	80	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemente d Quality tree	5	2	7	70
Blocked thru holes/windows	Part Non-Compliance	5		Broken Insert/Ejector Blade	2	D - Visual Inspection P - Final Inspection	8	80	Increase Visual inspection	John Gleason/Dean Anderson - 7/14	Implemente d Quality tree	5	2	7	70
Missing Retainer tab insert (If Present)	Part Non-Compliance	5		Thermolator Malfunction	1	D - Visual Inspections D - Process Inspections P - First Piece Approvals	6	30	Add audible warning	Manit. - 9/13	Audible alarms added to all Thermolator to detect temp. dev.	5	1	3	15
		5		Improper start-up	1	D - Visual Inspection D - LPA at startup P - Final Inspections	8	40	Increase frequency of functional testing (insertion).	John Gleason/Dean Anderson - 7/14	Implemente d Quality tree	5	1	7	35
		5		Cycle Time Too Fast	1	D - Visual Inspections P - Final Inspections	8	40	None						0
		5		Worn inserts	2	D - Visual Inspections P - Final Inspections	8	80	None						0
		5		Washed out vents	2	D - Visual Inspections P - Final Inspections	8	80	None						0
Shorts	Part Non-Compliance / Cosmetic Low Extraction force	6		Insufficient Injection Pressure compatibility of Press / mold	3	D- Visual Inspections P - First Piece Approvals P - In process PM's	8	144	Gauges to Detect insertion force	Dean Anderson - 11/13	Developed and implemented Go/No Gauges	6	3	5	90
		6		Plugged/Worn Vents	3	D- Visual Inspections P - First Piece Approvals P - In process PM's	8	144	Gauges to Detect insertion force	Dean Anderson - 11/13	Developed and implemented Go/No Gauges	6	3	5	90
		6		Residue Build-Up	3	D- Visual Inspections P - First Piece Approvals P - In process PM's	8	144	- PM Schedule - Gauges	Mike Wendt - 9/12 Dean Anderson - 11/13	Ice Blasting to clean mold per shift Go/No Go Gauges	6	2	5	60
		6		Lot / Moisture Variations	3	D- Visual Inspections D - First Piece Approvals P - Material Certs P - Moisture Analysis	8	144	Develop moisture testing schedule	Mike Wendt - 8/13	Purchased Moisture Analyzers. Implemente d testing procedure	6	2	5	60

		6		Process Interruption	2	D- Visual Inspections D - First Piece Approvals P - Material Certs P - Moisture Analysis	4	48	None						0
Flash	Part Non-Compliance / High Insertion Force Failures / Cosmetic	6		Excessive Injection Pressure	3	D- Visual Inspections P - First Piece Approvals P - In Process PM's	8	144	Increase frequency of functional testing (insertion).	John Gleason/Dean Anderson - 7/14	Impleme d Quality tree - Go/No Go Gauge	6	3	5	90
		6		Incorrect Tonnage	3	D- Visual Inspections P - First Piece Approvals P - In Process PM's	8	144	- Upgrade Presses (Replace Van Dorn) - Capacity Plan/Controls on Routing Changes - Increase visual inspection	Rick R - Ongoing - John Gleason - John Gleason/Dean Anderson - 7/14	Replaced Toggle with hydraulic/ele ctric clamp style. Introduce MIE Group to manage proper routing Go/No Gauge	6	2	5	60
Mold Mismatch	Parting Line Flash	6		Poor Mold Alignment	2	D - Visual Inspections D - Process Inspections P - First Piece Approvals P - In Process PM	8	96	- Increase Visual inspections - Gauge	-John Gleason/Dean Anderson - 7/14 - Dean Anderson - 11/13	- Quality tree - Go/No Go gauges	6	2	5	60
		6		Leader Pin/Sidelock Wear	2	D - Visual Inspections D - Process Inspections P - First Piece Approvals P - In Process PM	8	96	-PM - Increase Visual Inspection	Dan Sheeran - 11/12 - John Gleason/Dean Anderson - 7/14	- Tech now conduct inspections doing cleaning schedule - Quality Tree	6	1	7	42
Deep ejector pins	Part Non-Compliance	6		Excessive Hold Pressure	3	D - Visual Inspections D - Process Inspections P - First Piece Approvals P - In Process PM	8	144	- Increase Visual inspections	- John Gleason/Dean Anderson - 7/14	- Quality Tree	4	3	7	84

				6		Thermolator Malfunction	2	D - Visual Inspections D - Process Inspections P - First Piece Approvals P - In Process PM	8	96	Add audible warning	Manit. - 9/13	Audible alarms added to all Thermolator to detect temp. dev.	4	2	3	24
				3		Fast Cycle Time	2	D - Visual Inspections D - Process Inspections P - First Piece Approvals P - In Process PM	8	48	None						0
		Plugged Sprue Tips / Gates (Hot Manifold)	Part Non- Compliance / Unbalanced Fill	3		Material Contamination	2	D- Visual Inspections D - Process Inspections P - Magnets in Hopper and Melt Filters on Nozzle	8	48	None						0
				3		Mold Heater Malfunction	2	D- Visual Inspections D - Process Inspections	8	48	None						0
		Start up scrap packaged	Customer Dissatisfaction	3		Operator packages parts too soon	4	P - Visual Inspection P - Work Instructions D - Final Inspection D - Process Inspection	8	96	- Scrap Handling Procedure -Automate Program	- John Gleason - 1/1/13 - Randy Olhoff - 6/18/10	- Scrap handling procedure - Reversing Conveyors	3	3	7	63
15-16 Packaging	Package product per customers specifications	Incorrect or Missing Date Code on the Box	Traceability Loss	3		Wrong/no date code on package	3	D - Visual Inspections D - Final Inspections P - Date Code Calendar P - Work Instructions	7	63	None						0
		Greasy Parts Packaged	Part Non- Compliance	4		Ejector Pin / Machine Grease	1	D - Visual Inspection D - Process Inspection P - PM	8	32	None						0
		Incorrect / Missing Labels	Customer Dissatisfaction	3		Printer Ribbon not Inserted Properly	2	D - Visual Inspections D - Final Inspections P-Work order sign-off	8	48	- Improved Procedure	- John Gleason - 7/14 - Mike Wendt/Gary Schultz - 5-14	- Electronic shift log - Supervisor Check List	3	3	5	45
				3		Wrong Labels Placed on Product	4	D - Visual Inspections D - Final Inspections P - LPA P-Work order sign-off	8	96	- Improved Procedure	- John Gleason - 7/14 - Mike Wendt/Gary Schultz - 5-14	- Electronic shift log - Supervisor Check List	3	3	5	45

				3		Excess Labels not Removed From Production Area	4	D - Visual Inspections D - Final Inspections P - LPA P-Work order sign-off	8	96	- Improved Procedure	- John Gleason - 7/14 - Mike Wendt/Gary Schultz - 5-14	- Electronic shift log - Supervisor Check List	3	3	5	45
				3		Wrong label provided	4	D - Visual Inspections D - Final Inspections P - LPA P-Work order sign-off	8	96	- Improved Procedure	- John Gleason - 7/14 - Mike Wendt/Gary Schultz - 5-14	- Electronic shift log - Supervisor Check List	3	3	5	45
		Insufficient Packaging	Customer Dissatisfaction	3		Insufficient Packaging Supplies	3	D - Visual Inspection D - Final Inspection	8	72	None						0
		Incorrect Quantity in Box	Customer Dissatisfaction	4		Improper Scale Set Up	3	D - Visual Inspection D - Final Inspection	5	60	None						0
				4		Scale Out of Calibration	1	D - Visual Inspection D - Final Inspection P - Calibration Schedule	5	20	None						0
		Parts mixed	Customer Dissatisfaction	4		Operator mixed product from previous work order	2	D - Visual Inspection D - Final Inspection	6	48	None						0
17 Final and Live Inspection	Product conforms per specifications after production run.	Bad Product Shipped	Customer Dissatisfaction	7		Inspection Not Performed by QA	1	D/P - Final and Live Inspection	1	7	None						0
				7		Bad Product not Found in Random Sampling	2	D /P- Final and Live Inspection	7	98	None						0
18 QA Testing	Validation and documentation of product per specifications	QA Testing Incomplete	Part Non-Compliance	6		Testing Not Performed by QA	1	D/P - Weekly Matrix, First Piece Acceptance. P- Daily Production Meeting./Training Quality Personnel.	3	18	None						0
19-20 Material Movement Shipping	Ship product per specifications to warehouse	Shipped Incorrectly	Customer Dissatisfaction	5		Late Shipment	2	D - Visual Inspection D - Final Inspection	8	80	None						0
				5		Damaged Shipment	2	D - Visual Inspection D - Final Inspection	8	80	None						0

				5		Customer Specific Requirements Not Met	2	D - Visual Inspection P - Final Inspection	8	80	None						0
21 Annual Validation (if required)	Meet customer requirements	Annual Validation not Completed	Customer Dissatisfaction	5		Customer Specific Requirements Not Met	2	D/P - PPAP Matrix P-Training Quality Personnel	2	20	None						0

PROCESS FLOW DIAGRAM

Part Description: Customary Mounts
 HT Dwg.# and Rev: Various
 Customer P/N and Rev: Various
 Customer Name: Various

Program Name: NA
 Created By: Gwendolyn Benz
 Creation Date: 10/22/07

	Process "n"	Move "u"	Store "l"	Inspect "x"	Operational Description:	Special Characteristics / Descriptions	Control Methods
1	■				Incoming Receiving QA Receives C of A from Raw Material Supplier	C of A	ERP System
2	■				Incoming Receiving Receive in Raw Materials From Suppliers	Quality Approval of Material	ERP System
3				☒	Incoming Receiving Shipping and Receiving Inspects Raw Material	Review Container, Packaging, Lot Numbers and Quantity of Material	ERP System
4				☒	Incoming Receiving QA Inspects Color of Material (If Needed)	Review Color of Material	ERP System
5		◆			Material Movement	Move Raw Materials into Storage	ERP System
6			●		Material Storage	Store Raw Materials Until Needed	FIFO By Lot
7		◆			Material Movement	Move Materials to material handling system and Verify Correct Material Moisture Check on Silo Materials perTS- WI-MAX4000XL.	Material Process Log F-PRD-8.1-4 and Moisture Log F-QA-10.3-9
8	■				Material Ratio	Verify Correct Material	Material Process Log F-PRD-8.1-4
9	■				Molding Machine Set Up	Verify Mold Machine is Set Up	Per Set-Up Instructions
10				☒	QA Completes First Piece Approval (Injection Molding)	Short Shots, Any Flash, Warpage, or Burning.	First Piece Acceptance F-QA-10.3-5
11	■				Quality Approval of First Piece	Hang First Piece	Visual At Press
12				☒	Validation Testing	Validate Parts	Measurements - Refer to Control Plan
13	■				Work Order Set up LPA	Validate materials, labels, etc. to Work Order LPA Random Audit	Visual, Signed Set-Up Stamp on Work Order F-PRD-9
14				☒	In Process Checks (Injection Molding)	Short Shots, Any Flash, Warpage, or Burning.	Per Control Plan

15				<input checked="" type="checkbox"/>	Final Product and Packaging is Verified	Check Parts for Visual Defects Seals, Quantity, Bags, Boxes, Date Code Verified.	Label (Initialed and Dated) on Box / Share Point / F-PRD-1.1
16	■				Full Skid / Order Complete	Verify Product is Skidded Properly and Mark Ready for Inspection	Label Placed on Skid
17				<input checked="" type="checkbox"/>	Final Inspection	Quality Approval of Final Product	F-QA-10.4-21/ Share Point
18				<input checked="" type="checkbox"/>	QA Testing	Verify Part Testing Has Been Completed	Per Control Plan
19		◆			Material Movement	Move Skid To Shipping Dock	Ready for Movement cone / ERP System
20	■				Material Movement	Ship Product to Warehouse	Shipping Manifest/ ERP System
21				<input checked="" type="checkbox"/>	Annual Validation (If Required)	PPAP Parts on Yearly Basis if Required	PPAP Matrix

☐ Prototype ☐ Pre-Launch ☒ Production

Control Plan

Control Plan Number: MCP 43			Key Contact/Phone: 414.355.1130				Date (Orig.) 08/21/07		Date (Rev.) See Footer			
Part Number/Latest Change Level: Customary Mounts - Various			Core Team: Quality Assurance, Manufacturing, Automation, Receiving-Shipping				Customer Engineering Approval/Date (If Req'd) NA					
Part Name/Description Customary Mounts - Various			Supplier/Plant Approval/Date NA				Customer Quality Approval/Date (If Req'd) NA					
Supplier/Plant: HellermannTyton MKE		Supplier Code: NA		Other Approval/Date (If Req'd) NA				Other Approval/Date (If Req'd) NA				
Quality Assurance		Team Supervisor		Material Handler		Processing Technician		Operator		QA and/or Team Supervisor		Shipping and/or Receiving
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for MFG.	CHARACTERISTICS			Special Char. Class	METHODS					Reaction Plan
			NO.	PRODUCT	PROCESS		Product/Process Specification/ Tolerance	Evaluation/ Measurement Technique	SIZE		Control Method	
									Size	Freq		
1-4	Incoming Receiving		1	Material Characteristics			Per Certificate of Analysis	Visual Material Cert	Each Lot	Each Lot	ERP System	Isolate lot PR-QA-13.1-2
			2	Quantity			Per Packing List	Gaylord Count	Each Lot	Each Lot	ERP System	Notify Purchasing
			3	Packaging Requirements			Packaging meets Requirements	Gaylord Visual	Each Lot	Each Lot	WI-SR-10.2-1	Notify Purchasing and QA
			4	Lot Number			Per Packing List	Gaylord Visual	Each Lot	Each Lot	ERP System	Notify QA
			5	Material Color			Per Color Chip	Material Visual	Each Lot	Each Lot	ERP System	Isolate lot PR-QA-13.1-2
5-7	Material Movement	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	Material Process Log F-PRD-8.1-4	Isolate Lot PR-QA-13.1-2
			2		Check moisture in Silo Materials		Perform Moistures per TS-WI-MAX4000XL	Computrac Max 4000XL Tester	1 Sample/ Material	Daily	Moisture Log F-QA-10.3-9	Check and Adjust Dryers / Control of Non-Conforming Product PR-QA-13.1-2
8	Material Ratio	Material Handling System	1		Material Ratio		Set Up Per Work Order	Visual	Each Material Change	Each Material Change	Material Process Log F-PRD-8.1-4	Isolation PR-QA-13.1-2 Adjust Ratio
			2		Colorant (When Needed)		Mix Ratio Setting / Set Up Per Work Order	Ratio Setting	Each Lot	Each Colorant	Material Process Log F-PRD-8.1-4	Isolation PR-QA-13.1-2 Adjust Ratio
9	Molding Machine Set up	Injection Molding Machine	1		Machine Set-Up		Per Mattec, Set-Up Sheet, and Acceptable Visual Part	Review of Set-Up Specs	Each Set Up	Each Set Up	Machine Set-Up Sheet F-PRD-9.6-1	Adjust Process/Recheck Isolation PR-QA-13.1-2
10-11	First Piece Approval Visual	Injection Molding Machine	1	Part Quality			Check for Burns, Shorts, Flash and Warp that will effect Fit, Form or Function of the Mount	Visual Inspection	1 Shot	Each Set Up	First Piece Acceptance F-QA-10.3-5	Adjust Process
			2	Stud Verification (If Required)			Check M6 and M5 Studs on Fixture for size	WI-QA-10.4-8	1 Shot	Each Set Up	First Piece Acceptance F-QA-10.3-5	Retest / Control of Non-Conforming Product PR-QA-13.1-2
												Notify Supervisor and Tool Room
												Retest / Control of Non-Conforming Product PR-QA-13.1-2

Quality Assurance		Team Supervisor	Material Handler		Processing Technician		Operator		QA and/or Team Supervisor		Shipping and/or Receiving	
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for MFG.	CHARACTERISTICS			Special Char. Class	METHODS					Reaction Plan
			NO.	PRODUCT	PROCESS		Product/Process Specification/ Tolerance	Evaluation/ Measurement Technique	SIZE		Control Method	
Size	Freq											
12	Initial Validation Testing	Injection Molding Machine	1	Dimensional			Perform Dimensional on the Part to Print	Calibrated Gages per Dimensional Study	1 Shot	At Initial Validation	Dimensional Study F-QA-10.4-2	Control of Non-Conforming Product PR-QA-13.1-2
			2	Push In / Push On Force (If Needed)			Per Drawing / SQC Pack	Force Tester or Tensometer	1 Shot	At Initial Validation	SPC Software	Control of Non-Conforming Product PR-QA-13.1-2
			3	Pull Out/Pull Off Force (If Needed)			Per Drawing / SQC Pack	Force Tester or Tensometer	1 Shot	At Initial Validation	SPC Software	Control of Non-Conforming Product PR-QA-13.1-2
			4	Dimensional Capability			Per Drawing / SQC Pack	Calibrated Gages	100pcs	At Initial Validation	SPC Software	Control of Non-Conforming Product PR-QA-13.1-2
			5	Connector Clip Push On/Pull Off Forces (If required)			Per Drawing / SQC Pack	Calibrated Gages	1 Shot	At Initial Validation	SPC Software	Control of Non-Conforming Product PR-QA-13.1-2
13	Work Order Set-Up TEAM SUPERVISOR or PROCESSING TECH	Packaging Equipment	1	Packaging Requirements			Set-Up Packaging Requirements per Work Order	Visual	1	Each Work Order	Signed Set-Up Stamp on Work Order	Adjust Process Control of Non-Conforming Product PR-QA-13.1-2
	Layered Process Audit	Production Process	2		Production process		Per questions on LPA form F-PRD-9	Visual	1	Shift	Layered Process Audit Form F-PRD-9	Adjust Process Control of Non-Conforming Product PR-QA-13.1-2 (if applicable)
14	In process Checks Processing Tech Completed Visual Process Inspection	Injection Molding Machine	1	Part Quality			No Burns, Shorts, Flash, Warp or Part Damage Allowed.	Visual Inspection	1 Shot	4 x per Shift and 1 x per each start-up	Share Point or Shift Log F-PRD-1.1	WI-PRD-13.1-3 Adjust Process/ Notify Supervisor and QA
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2
		Injection Molding Machine	2	Process Set-Up			Work Order Matches MIU / Cavity Count Matches Actual / Cycle Time is to Standard or Adjusted Notes	Visual	Once	Per Shift	Share Point or Shift Log F-PRD-1.1	WI-PRD-13.1-3 Adjust Process/ Notify Supervisor and QA
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2
15-16	Packaging Packaging Operator Process Inspections	Injection Molding Machine	1	Visual Appearance			Check Parts for Visual Defects	Visual	1 Shot	Per Hour	Inspection Label (Initialed and Dated)	Adjust Process/ Notify Supervisor and QA
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2

Quality Assurance		Team Supervisor	Material Handler			Processing Technician		Operator		QA and/or Team Supervisor		Shipping and/or Receiving
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for MFG.	CHARACTERISTICS			Special Char. Class	METHODS					Reaction Plan
			NO.	PRODUCT	PROCESS		Product/Process Specification/ Tolerance	Evaluation/ Measurement Technique	SIZE		Control Method	
									Size	Freq		
		Waters in Bag (If Needed)	2	Amount of Water Added Per Bag			Per Work Order	Scale WI-PRD-10.3-1	1 measurement	2 Times Per Shift	Inspection Label (Initialed and Dated) / Share Point or F-PRD-1.1	Notify Supervisor and Quality Assurance / Adjust Process
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2
		Sealer (If needed)	3	Proper Bag Seal			Bag Must Have a Complete and Un-Wrinkled Seal	Visual and Pull at Seams	1 bag	Twice per Shift	Inspection Label (Initialed and Dated) / Share Point or F-PRD-1.1	Adjust Process/ Notify Supervisor or QA
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2
		Stamper	4	Date Code Stamp			Bag and Box Must Have Correct Date Code S-PRD-8.1-6	Visual	Once	Per Shift	Inspection Label (Initialed and Dated)	Adjust Process/ Notify Supervisor and QA
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2

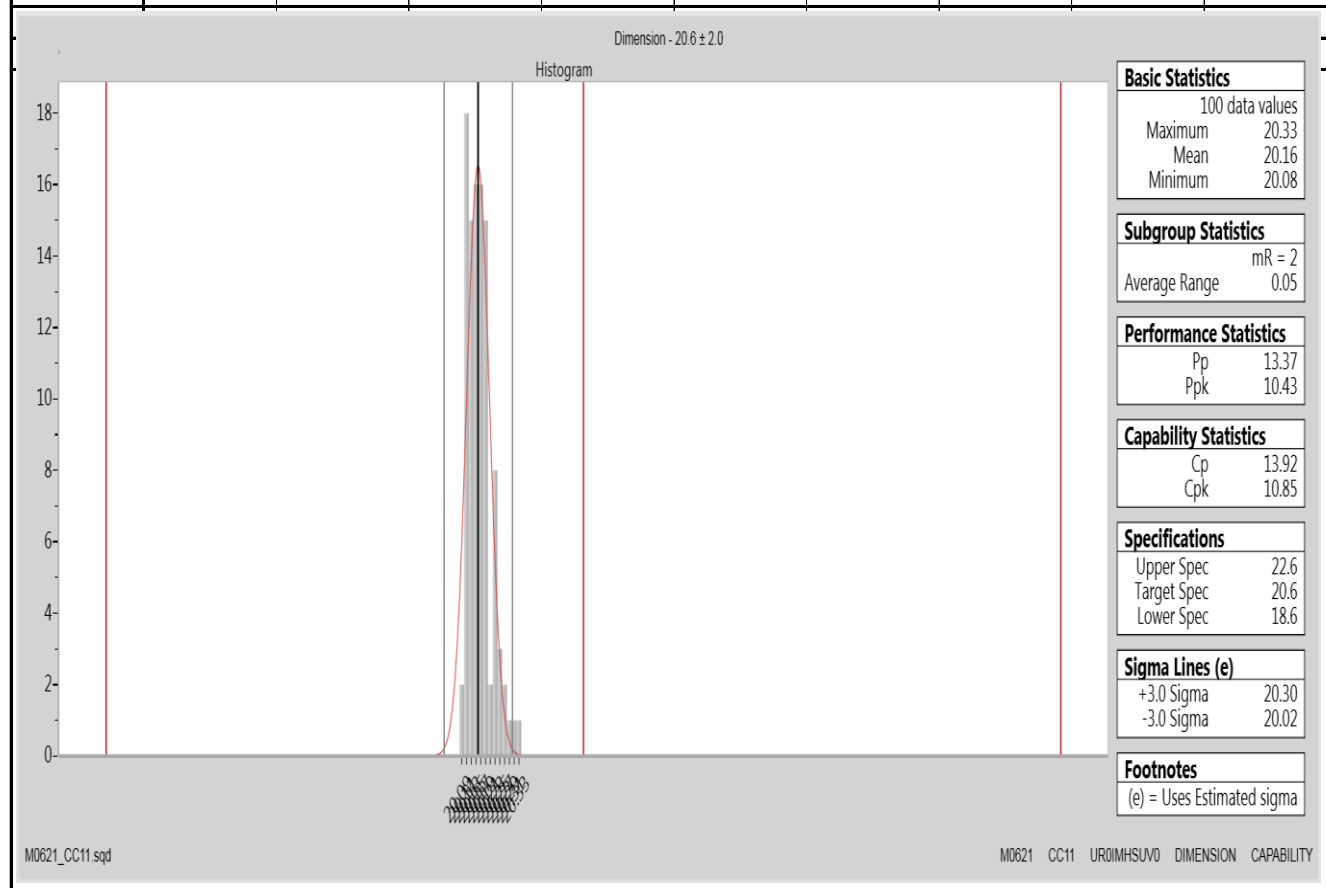
Quality Assurance		Team Supervisor	Material Handler		Processing Technician		Operator		QA and/or Team Supervisor		Shipping and/or Receiving	
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for MFG.	CHARACTERISTICS			Special Char. Class	METHODS					Reaction Plan
			NO.	PRODUCT	PROCESS		Product/Process Specification/ Tolerance	Evaluation/ Measurement Technique	SIZE		Control Method	
									Size	Freq		
		Labels	5	Bag and Box Labels			Bag and Box Labels Must Match Work Order	Visual	Twice	Per Shift	Inspection Label (Initialed and Dated)	Adjust Process/ Notify Supervisor and QA
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2
		Scale/Conveyor Check	6	Scale/Conveyor Verification for Count			Verify Scale is Counting Correctly/ Conveyor has correct number of parts	Using Scales to Package Product WI-PRD-16 or Hand Count	Twice	Per Shift	Inspection Label (Initialed and Dated) / Share Point or F-PRD-1.1	Adjust Process/ Notify Supervisor and QA
												Recheck / Control of Non-Conforming Product PR-QA-13.1-2
17	Final Inspection at Cell	Injection Molding Machine	1	Part Quality			Check for Burns, Shorts, Flash and Warp	Work Order	1 Shot	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
		Labels	2	Box Label			Per Work Order Check for Correct Label Placement; if Required	Visual match	1 label	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
		Labels	3	Bag Label			Per Work Order Check for Correct Label Placement; if Required	Visual match	1 label	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
		Waters in Bag (If Needed)	4	Water Verification			Verify Water is in Bag where required	Visual	1 Bag	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
		Sealer	5	Proper Bag Seal			Bag Must Have a Complete Seal Where Required	Visual and Pull at Seams	1 bag	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
		Correct Amount of Parts in Box	6	Quantity in Box			Boxes Must Have Specified Amount of Bags per Box	Hand Count	1 Sample	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
		Packaging	7	Packaging Requirements			Verify per Work Order correct Box	Visual	1 check	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
		Stamp	8	Date Code Stamp / Printer			S-PRD-8.1-6	Visual match	1 check	Twice per 24 hours	Share Point or Final Inspection F-QA-10.4-21	Control of Non-Conforming Product PR-QA-13.1-2
18	QA Daily Testing	Injection Molding Machine	1	Part Quality			Check for Burns, Shorts, Flash and Warp that will effect Fit, Form or Function of the Mount	Visual Inspection	1 Shot	Daily	Weekly Matrix F-QA-10.3-8	Adjust Process
												Retest / Control of Non-Conforming Product PR-QA-13.1-2

Quality Assurance		Team Supervisor	Material Handler		Processing Technician		Operator		QA and/or Team Supervisor		Shipping and/or Receiving	
Part / Process Number	Process Name / Operation Description	Machine, Device, Jig, Tools for MFG.	CHARACTERISTICS			Special Char. Class	METHODS					Reaction Plan
			NO.	PRODUCT	PROCESS		Product/Process Specification/ Tolerance	Evaluation/ Measurement Technique	SIZE		Control Method	
									Size	Freq		
		Injection Molding Machine	2	Push In / Push On Force (If Needed)			Per Drawing / SQC Pack	Force Tester or Tensometer	1 part	Weekly	SPC Software	Adjust Process
		Injection Molding Machine	3	Pull Out/Pull Off Force (If Needed)			Per Drawing / SQC Pack	Force Tester or Tensometer	1 part	Weekly	SPC Software	Retest / Control of Non-Conforming Product PR-QA-13.1-2
		Injection Molding Machine										Adjust Process
		Injection Molding Machine										Retest / Control of Non-Conforming Product PR-QA-13.1-2
19-20	Shipping		1		Shipping		Per Shipping Requirements	Visual	Each Skid	Each Shipment	Shipping Manifest and ERP System	Notify Supervisor
21	Annual Validation (If Required)		1		Validation of Product		Re-Validation of Product to Customer Requirements	PPAP	Per Customer Requirements	Per Customer Requirements	PPAP Matrix	Control of Non-Conforming Product PR-QA-13.1-2

Initial Process Study

Part No. 151-01144	Part Description CC11		Supplier HellermannTyton
Drawing No. 12-0304-001-CSU	Drawing Date 12/19/2012	Drawing Revision 03	Inspection Facility HT-Milwaukee
Production Date 3/28/2018	Material UR0IMHSUV0	Tool No. M0621	Inspector FB

DATA	20.6 +/- 2.0 mm								
1-9	20.18	20.13	20.10	20.15	20.13	20.18	20.14	20.22	20.19
10-18	20.17	20.10	20.15	20.22	20.21	20.31	20.18	20.25	20.21
19-27	20.18	20.12	20.11	20.19	20.33	20.14	20.18	20.12	20.17
28-36	20.18	20.17	20.22	20.18	20.12	20.12	20.14	20.17	20.24
37-45	20.10	20.14	20.12	20.15	20.16	20.14	20.09	20.11	20.13
46-54	20.22	20.17	20.11	20.14	20.14	20.10	20.15	20.18	20.14
55-63	20.10	20.11	20.28	20.16	20.18	20.16	20.19	20.16	20.14
64-72	20.10	20.18	20.17	20.10	20.13	20.14	20.11	20.10	20.22
73-81	20.13	20.16	20.16	20.15	20.16	20.10	20.13	20.24	20.19
82-90	20.13	20.10	20.15	20.18	20.13	20.08	20.22	20.12	20.27
91-99	20.12	20.27	20.23	20.11	20.17	20.17	20.10	20.22	20.11
100-108									



Gage R&R

R&R Study Results Using Specifications

2/1/2018

Gage number:	TGM-628	Done by:	Donna Szczepanski
Gage description:	Scale	Part name:	151-01314
Gage type:	Scale	Characteristics:	weight
Study name:	Anova Gage R & R	Specifications:	LSL=2.4 Nominal=2.5 USL=2.6
Study date:	01/25/2018	Number of Distinct Categories:	116.6139

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 = 0.003189476

%EV = 0.966438

Reproducibility - Appraiser Variation (AV)

AV = 0.002463516

%AV = 0.7390556

Repeatability & Reproducibility (R&R)

R&R = 0.004030096

%R&R = 1.20903

Part Variation (PV)

PV = 0.03333067

%PV = 99.99269

Specification Spread (USL-LSL)/

(USL - LSL) = 0.0333333

Appraiser	Replication	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10
Donna	1	2.5679	2.568	2.5509	2.5709	2.5694	2.5403	2.5431	2.5706	2.5696	2.5382
Donna	2	2.568	2.5682	2.5511	2.5709	2.5683	2.5409	2.5431	2.5703	2.5696	2.5384
Donna	3	2.5671	2.5688	2.5511	2.5708	2.5691	2.5406	2.5436	2.5705	2.5698	2.5388
Taleila	1	2.5671	2.5677	2.551	2.5708	2.569	2.5406	2.5434	2.5696	2.57	2.5385
Taleila	2	2.5676	2.5682	2.5512	2.5711	2.569	2.5409	2.543	2.5705	2.5696	2.5385
Taleila	3	2.5676	2.5685	2.5513	2.5712	2.5695	2.5403	2.5433	2.5707	2.57	2.5387
Rob	1	2.568	2.5687	2.5516	2.5703	2.5691	2.5408	2.5438	2.5709	2.5698	2.5387
Rob	2	2.5685	2.5689	2.5519	2.5716	2.5698	2.5416	2.5436	2.5708	2.5701	2.539
Rob	3	2.5681	2.5691	2.5514	2.5715	2.5698	2.5415	2.5439	2.5705	2.5703	2.539

Gage R&R

ANOVA report HellermannTyton

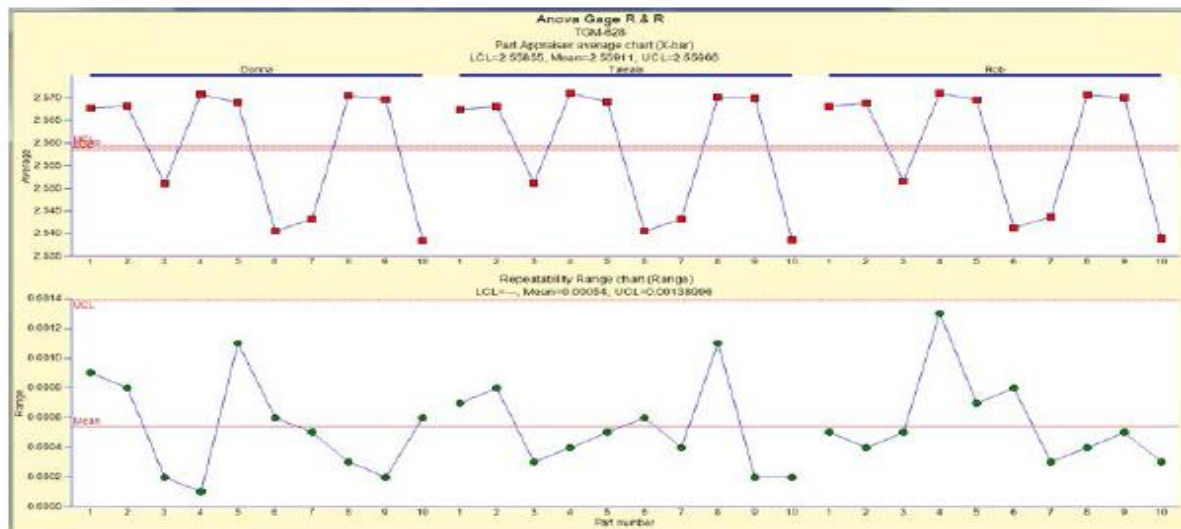
2/1/2018

Gage number: TGM-628
Study name: Anova Gage R & R
Study date: 1/26/2018
Appraisers: 3
Parts: 10
Replications: 3
Alpha: 0.1

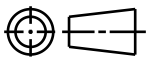
Source	DF	SS	MS	F	Significant	P-value
App (AV)	2	4.458e-06	2.229e-06	20.79	Significant	1.382e-07
Parts (PV)	9	0.01542	0.001713	1.598e+04	Significant	0
AV x PV	18	9.363e-07	5.202e-08	0.4852	Not significant	0.9549
Error (EV)	60	6.433e-06	1.072e-07			
Total (TV)	89	0.01543				

	Confidence limits	1 sigma	UCL	% of study parameters	% of tolerance	% contribution study param
Repeatability (EV)	0.0002677	0.0003074	0.0003623	2.227	0.9221	0.0496
Reproducibility (AV)	0.0001354	0.0002667	0.001201	1.931	0.8002	0.03735
AV x PV	0	0	7.22e-05	0	0	0
Gage R&R (EV+AV)	0.0003215	0.000407	0.001235	2.949	1.221	0.08694
Part variation (PV)	0.008802	0.0138	0.02374	99.96	41.39	99.91
Total variation (TV)		0.0138				

nrc = 47.5 (-> 47)



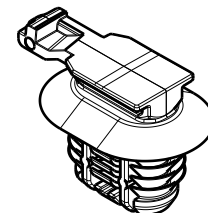
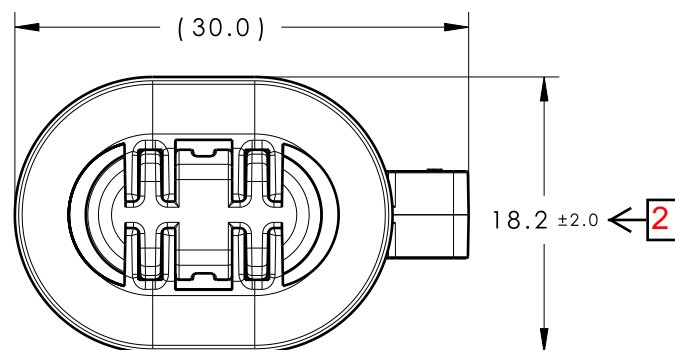
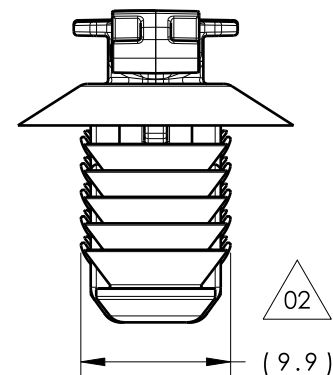
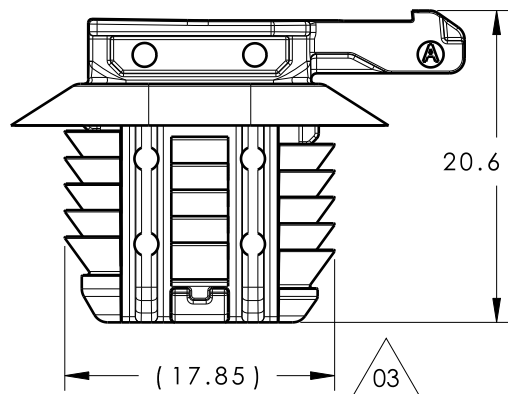
CATIA V5



REFERENCE:

PERFORMANCE REQUIREMENTS AT DRY AS MOLDED:

1. FIR TREE PUSH IN FORCE: 10 lbs MAX IN AN OVAL HOLE THAT IS 9.0mm X 17.0mm AND A SHEET METAL THICKNESS OF 1.8mm .
2. FIR TREE PULL OUT FORCE: 35 lbs MIN IN AN OVAL HOLE THAT IS 9.0mm X 17.0mm AND A SHEET METAL THICKNESS OF 1.8mm
3. SHEET METAL THICKNESS RANGE: 0.60mm - 6.50mm
4. APPLICABLE OVAL HOLE SIZES:
 - A. 9.0 X 16.0mm
 - B. 9.0 X 17.0mm

Isometric View
Scale 1:1

Revision Level		Revision Record	Changed	Date	Approved	Date
Drawing	Part					
03	B	SEE ECN# 012249	SJA	12/19/12	KVH	12/19/12

Material
PA66HIRHS
COLOR: BLACK

5

Units millimeters

Tolerance defined on
each dimension

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HellermannTyton.

Drawn SJA 8/24/12

Approved KVH 8/27/12

HellermannTyton

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

Article/Type-No CC11

Title
9X16 AND 9X17 OVAL HOLE CONNECTOR
CLIP

Drawing-No PRODUCTION : Phase

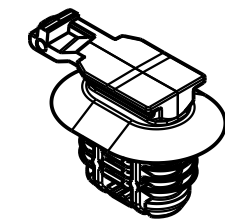
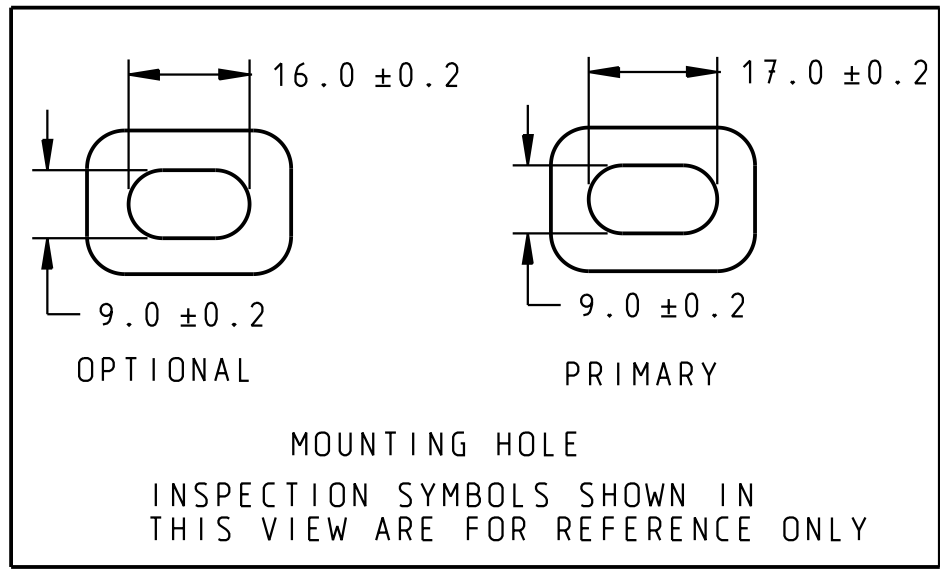
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Scale 2:1

Project Number
12-0304

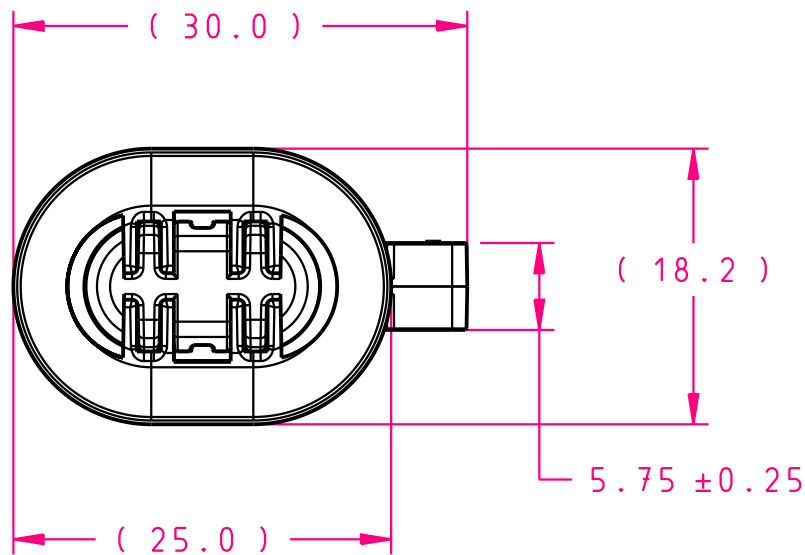
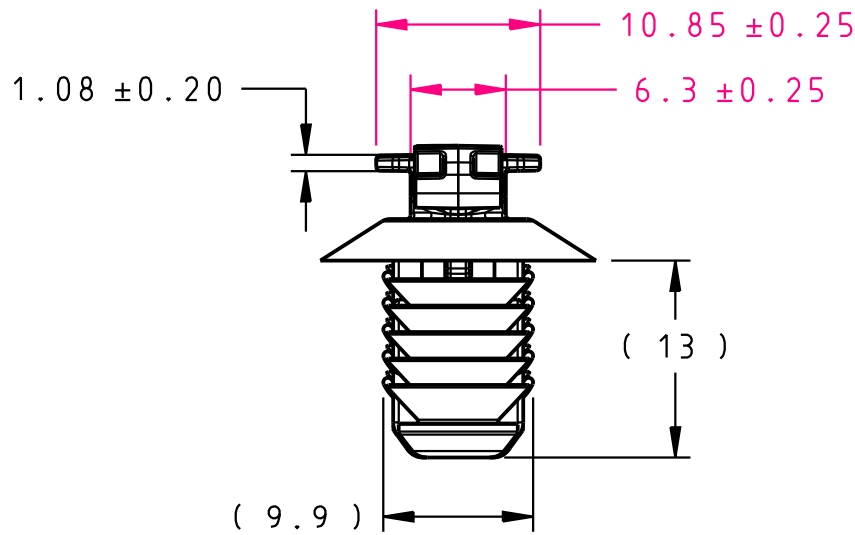
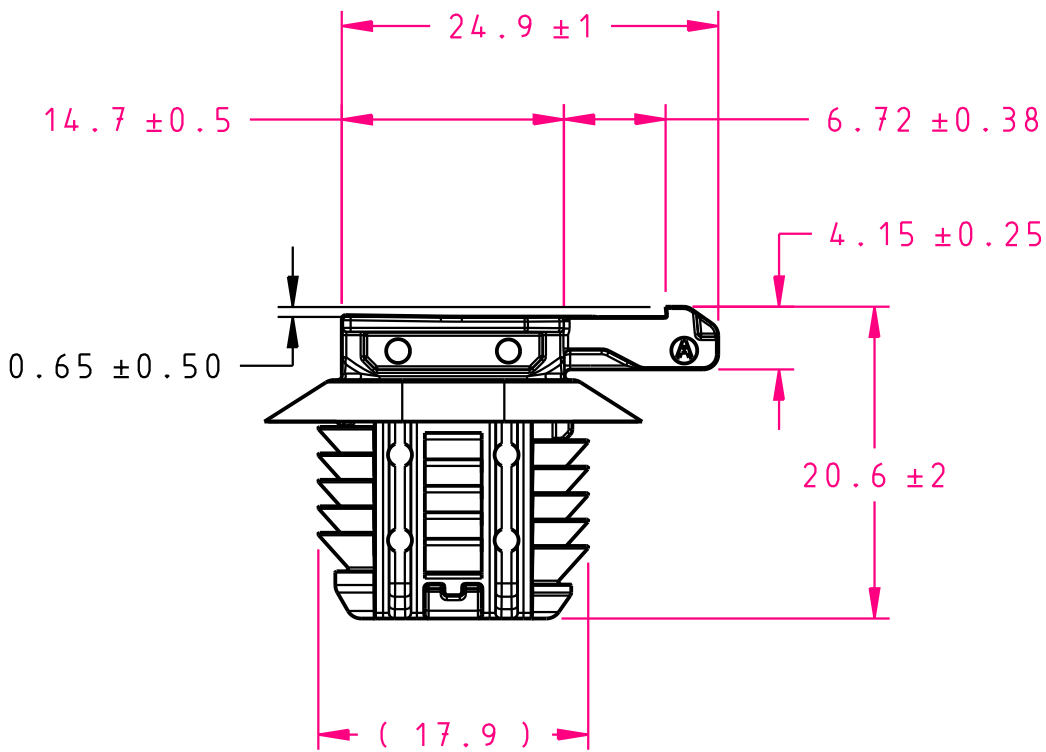
Format AH

Sheet 1/1



ISOMETRIC VIEW
SCALE 1:1

LTRS	REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MATL APP	
RELEASED: DU5T-14E042-HA				
AELE-E-1178954-726				
S. ADAMS	K.VAN HULST	R. VITALI		
A1: ADDED NOTE				
AELE E 12982958 540			20180108	
TPUSILO	EHAFTARS	RVITALI	RVITALI	



UNLESS OTHERWISE SPECIFIED:

PART MUST BE FREE OF BURRS, FLASH AND SHARP EDGES THAT MAY AFFECT THE FUNCTION, SAFE HANDLING, INSTALLATION OR REMOVAL OF THE PART.

PART AS RECEIVED AT THE FORD PLANT OR SERVICE PART PACKAGER/WAREHOUSE SHALL BE FREE OF ANY CORROSION ALIGNED WITH THE FORD CUSTOMER SERVICE DIVISION (FCSD) PACKAGING AND SHIPPING GUIDE. CORROSION INHIBITORS OR FOREIGN MATERIALS DETRIMENTAL TO THE INSTALLATION OR FUNCTION OF THE PART MUST BE REMOVABLE BY INTENDED CLEANING METHOD.

ENGINEERING APPROVAL OF SAMPLES FROM EACH SUPPLIER IS REQUIRED PRIOR TO AUTHORIZATION OF PART PRODUCTION

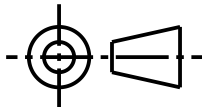

CHANGES TO DESIGN, COMPOSITION OR PROCESSING OF THE PART PREVIOUSLY APPROVED FOR PRODUCTION REQUIRE PRIOR APPROVAL FROM FORD MOTOR COMPANY PRODUCT ENGINEERING
REFER TO ISO/TS 16949.

FOR CURRENT RELEASE STATUS SEE THE WERS ENGINEERING NOTICE

SOURCES FOR MATERIALS DEFINED BY FORD MATERIAL SPECIFICATIONS SHALL BE SELECTED FROM THE FORD MOTOR COMPANY ENGINEERING MATERIAL APPROVED SOURCE LIST

A1 FOR PPAP REFER TO HELLERMANN TYTON 2D DRAWING.
FORD DRAWING FOR REFERENCE ONLY.

HellermannTyton®

REFERENCE		CC 11	
PART MUST COMPLY WITH RESTRICTED SUBSTANCE MANAGEMENT STANDARD WSS-M99P9999-A1 TO SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT			
DRAFTED IN ACCORDANCE WITH FORD MOTOR COMPANY ENGINEERING CAD AND DRAFTING STANDARDS VERSION 28.0			3RD ANGLE PROJ DIMENSIONS ARE IN MILLIMETERS
CAD TYPE	CAD LOC.	CAD FILE	DTMC
K-CATIA5	TCe	DU5T-14E042-HA	IS MASTER
OPER. NO.	UNIT	DRAWING	
---	mm	DU5T-14E042-HA	
DESIGN	DETAIL	TITLE RET WIR CONN	SHT 1
S. ADAMS	S. ADAMS		OF 1
CHECKED	SAFETY		
KVH	---		
SCALE	DATE	DIVISION	
2:1	20130614	PLANT	
 FORD MOTOR COMPANY			

NOTES:
MATERIAL: WSK-M4D706-A
COLOR: BLACK

REFERENCE:
PERFORMANCE REQUIREMENTS AT DRY AS MOLDED:
1. FIR TREE PUSH IN FORCE: 10 lbs MAX IN AN OVAL HOLE THAT IS 9.0mm X 16.0mm AND A SHEET METAL THICKNESS OF 1.8mm .
2. FIR TREE PULL OUT FORCE: 35 lbs MIN IN AN OVAL HOLE THAT IS 9.0mm X 17.0mm AND A SHEET METAL THICKNESS OF 1.8mm
3. SHEET METAL THICKNESS RANGE: 0.60mm - 5.00mm
4. APPLICABLE OVAL HOLE SIZES:
A. 9.0 X 16.0mm
B. 9.0 X 17.0mm