

Part Submission Warrant

Part Name **BCSFTOVAL-PA66HIRHSUV-NA** Cust. Part Number **151-04144**
Shown on Drawing No. **16-0407-001-CSU** Org. Part Number **15104144**
Engineering Change Level **02.1** Dated **10-Sep-24**
Additional Engineering Changes **n/a** Dated **n/a**
Safety and/or Government Regulation ☐ Yes ☒ No Purchase Order No. **n/a** Weight (kg) **0,0416**
Checking Aid No. **n/a** Checking Aid Engineering Change Level **n/a** Dated **n/a**

ORGANIZATION MANUFACTURING INFORMATION

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

Großer Moorweg 45
Street Address

Tornesch **25436** **Germany**
City Region 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: **1414723273**

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 **8-May-25**
Print Name **i.A. N. Lohse** +49 (0) 4122 701 5726 Fax No. **+49 4122 701 241**
Title **PRQM-QA** E-mail **Nescha.lohse@HellermannTyton.com**

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other
Customer Signature _____ Date _____
Print Name _____ Customer Tracking Number (optional) _____



AKRO-PLASTIC GmbH
Member of the Feddersen Group

Abnahmeprüfzeugnis/CoA

nach EN 10204-3.1 / according to EN 10204-3.1

PROBENIDENTIFIKATION / DESCRIPTION OF PRODUCT:

Nummer / Item number: 06593-S
Bezeichnung / Material: AKROMID A3 1 S3 natur (2847)

PRODUKTIONSDATEN / PRODUCTION DATA:

Charge / LOT: FS02 163800

PRÜFERGEBNISSE / TESTRESULTS:

Prüfung Testing	Norm Norm	Prüfbedingung Testing condition	Spezifikation Target Value	Istwert Actual Value	Einheit Unit
Water content Restfeuchte	DIN EN ISO 15512 Verf. B2		$\leq 0,15$	0,09	%
MVR MVR	DIN EN ISO 1133-1	275/5	$\geq 35,0$	58,4	cm ³ /10min
Tensile modulus Zug-E-Modul	DIN EN ISO 527-2/1A	1 mm/min / RT	2500 +/- 300	2490	MPa
Tensile stress at yield Streckspannung	DIN EN ISO 527-2/1A	50 mm/min / RT	68,0 +/- 6,0	64,4	MPa
Tensile strain at break Bruchdehnung	DIN EN ISO 527-2/1A	50 mm/min / RT	$\geq 15,0$	63,0	%
Charpy notched impact strength	DIN EN ISO 179-1/1eA	23°C	$\geq 8,0$	20,3	kJ/m ²

Freigabedatum / date of release:

Zusatzvermerke / remarks: Teilabnahmeprüfzeugnis / partial release 26.03.2025

Niederzissen, 26.03.2025 Gez. Abnahmebeauftragte / Inspection representative: i.V. Ute Bürger

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Die in diesem Material eingesetzten Rohstoffe entsprechen der Empfehlung der EU-Richtlinie 2000/53 des europäischen Parlamentes vom 18.09.2000 über Altfahrzeuge. Hiermit wird bestätigt, dass die Lieferung den Vereinbarungen bei der Bestellannahme entspricht. Das Abnahmeprüfzeugnis entbindet den Käufer nicht von der ihm obliegenden gesetzlichen Eingangskontrolle und stellt keine Zusicherung bestimmter Eigenschaften dar.
The raw material used in this material complies with the recommendations of the EU-Guideline 2000/53 of the European Parliament dated 18 September 2000 about old vehicles. It is confirmed herewith that the delivery meets the agreements on receipt of order.

Références : Toutes

Date : 16/01/20224

Objectifs de l'étude

Analyse des risques pour les process de HellermannTyton Morocco selon le flow chart : Réception MP et composants, Déshumédification (Centrale Matière), Injection, assemblage, Vissage, Emballage et expédition

Causes de l'étude :

Nouveau Projet ☒ Modification process ☒ Réclamation Client ☒
Modification produit ☒ Suivi Périodique ☒

Limites de l'étude :

Site HT Manufacturing

PARTICIPANTS : Permanents

Département :

Temporaire :

Département :

Hasnaa KHALIDI

Qualité

Mohamed ELJILALI

Production

Mohamed ELJILALI

Logistique

Bader BOUDHANE

Ingénierie

Othmane Zekri

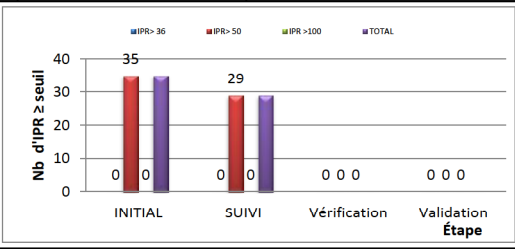
Maintenance

ANIMATEUR : B. BOUDHANE

Département : Ingénierie

Semaine		S3	S9	S18	S30	S36	S39	S42	S48	S51	S02	S06	S09	S12	S20	S22	S23	S34	S42	S47	S02	S06	S13	S18	S23	S30	S35	S43	S50	S03	
Prévisionnel																															X
Réalisé		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Légende	Réunion : R								Suivi : S							Vérification					Validation										
	étape 1 (IPR initial)								étapes 2 et 3 (IPR final)							étape 4 (Actions impl.)					étape 5 (Actions confirmées)										

B I L A N	Nb d'IPR	DATE :	INITIAL	SUIVI	Vérification	Validation
			17-janv	06-févr	16-juin	22-déc
		TOTAL	35	29	0	0
		G=9 et 10	0	0	0	0
		IPR> 36				
		5 ≤ G ≤ 8	35	29	0	0
		1 ≤ G ≤ 4	0	0	0	0
		IPR >100				



HellermannTyton		Control plan						DESIGNATION OF THE PART		TAPE CLIP WITH SHORT OVAL FIR TREE				Date of issue				
Done by : A.ELHAJBI		Control plan N° :			Phase			REFERENCE		151-04144		10/01/2024						
					Indice		#1,2	Drawing N°		16-0407-001-CSU		Revision date						
					Prototype	Pré-Series	Series	Customer		Divers				10/06/2024				
Synoptic		N° Flux	Step	Operations	Process parameters or product characteristics	Means of production or control	Special Feature	Specifications/ Tolerances	Evidence of control	Reference document	process tracking	Sample: Size and frequency of control			POKA YOKE	Maintenance	Rules of recation	Archiving
												1 - operators	2 - team leaders / Quality controllers	3 - Quality				
<div>10 - Raw material management and inserts (MP)</div> <div>10.10 - MP Reception → N C</div> <div>10.20 - MP control</div> <div>10.30 - MP Storage</div> <div>10.40 - MP command</div> <div>20 - Preparation of MP</div> <div>20.10 - Delivery of the MP</div> <div>30 - Preparation for production → N C</div> <div>30.10 - Mould preparation</div> <div>30.20 - mold mounting</div> <div>30.30 - Central material</div> <div>30.30.10 - Material mix</div> <div>30.30.20 - Material extraction</div> <div>40 - Machine tuning</div> <div>40.10 - Setting presses</div> <div>40.20 - Peripheral settings</div> <div>50 - Start-up series production → NC</div>		10	10.10	Raw material reception (MP)	Visual identification of the product + pallet number	Visual	/	/	Referred BL	BL	Acceptance procedure HTM-SUP-INT-010	1 by reception			N/A	Non-Compliant Processing HTM-SUP-INT-049	HTM-DOC-FOR-002	
			10.20	MP control	Presence of the CC	Document control (CC)	Viscosity Regulation on combustibility next products Resistivity according to material	Viscosity Regulation on combustibility next products Resistivity according to material	Validation du CC accepted label	CC	MP Tracking Table HTM-QUA-FOR-090			1 per batch		N/A	Non-Compliant Processing HTM-SUP-INT-049	HTM-DOC-FOR-002
			10.30	MP Storage	Location no.	Visual	/	/	SAP	SAP	Storage procedure HTM-SUP-INT-012 HTM-SUP-INT-013	whole stock 1 time per week				N/A	Non-Compliant Processing HTM-SUP-INT-049	HTM-DOC-FOR-002
			10.40	MP command	Quantity need MP	SAP	/	/	SAP	SAP		Visual				N/A	Non-Compliant Processing HTM-SUP-INT-049	HTM-DOC-FOR-002
		20	20.10	Preparation and delivery of PD	presence label accepted SAP	Visual	/	/	MP delivered in accordance with BP	Bon of Preparation	Feed flow HTM-SUP-PRO-007		MP used 1 time per shift			N/A	Non-Compliant Processing HTM-SUP-INT-049	HTM-DOC-FOR-002
		30	30.10	Mould preparation	Mold without version Version mold	Manual	/	/	Historical	Tacking mold interventions	Mold preparation procedure HTM-ENG-PRO-005		Audit of green carc: 1 per month			Preventive maintenance on mussels	Non-Compliant Processing HTM-SUP-INT-049	HTM-DOC-FOR-002
			30.20	Mold mounting	Mount settings	Visual + Manufacturing Control Range HTM-QUA-INT-005	/	/	Check-list of Starting HTM-PRD-FOR-052 validee	Mold folder (mold configuration sheet) + start-up checklist	Mold preparation procedure HTM-ENG-PRO-006	Every production start					Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
			30.30	Central material preparation	Product References and/or UNS Code	Visual	/	/	Check-list of Starting HTM-PRD-FOR-052 validee	Check-list of start-up	Mold preparation procedure HTM-ENG-PRO-007	Every production start				Curative maintenance	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
			30.30.10	Material mix	Product References and/or UNS Code	Gamme de contrôle fabrication HTM-QUA-INT-005	/	/	Check-list of Starting HTM-PRD-FOR-052 validee	Control range HTM-QUA-INT-005	Mold preparation procedure HTM-ENG-PRO-008	Every production start	Job Audit HTM-PRD-FOR-044 : frequencies according to the grid	Job audit HTM-PRD-FOR-044: 1 per week	HTM-ENG-FOR 183 List of Poka Yoke	Maintenance curative	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
			30.30.20	Material extraction	Product References and/or UNS Code	Display of T°C	T° mini and T° maxi	T° mini 75 and T° maxi 85	Check-list of Starting HTM-PRD-FOR-052 validee HTM-PRD-FOR-275	List of PMs to work or no with T° -> see doc displayed -> codified?	Mold preparation procedure HTM-ENG-PRO-009	Every production start				Maintenance 1st level	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
		40	40.10	Setting presses	Setting parameters -> tps hold, tps cooling, cycle tps, vit injection, pressure maintaining	Adjustment plug HTM-PRD-FOR-016	RJG	/	Check-list of Starting HTM-PRD-FOR-052 validee	Adjustment sheet HTM-PRD-FOR-016	HTM-PRD-BIT-003 Start-up series production		Job Audit HTM-PRD-FOR-044 : frequencies according to the grid	HTM-PRD-FOR-044 Job audit: 1 per week	HTM-ENG-FOR 183 List of Poka Yoke	Maintenance 1st level	Non-Compliant Processing Managing degraded modes	HTM-DOC-FOR-002
			40.20	Peripheral settings	Preheater, hot channel: T°C the rest N/A	Adjustment plug HTM-PRD-FOR-016	Maximum tolerances of T°C	Maximum tolerances of T°C	Check-list of Starting HTM-PRD-FOR-052 validee	Adjustment sheet HTM-PRD-FOR-016	HTM-PRD-BIT-003 Start-up series production				HTM-ENG-FOR 183 List of Poka Yoke	Maintenance 1st level	Non-Compliant Processing Managing degraded modes	HTM-DOC-FOR-002
		50	-	Start-up series production	1st feed	Visual	Lack of material Burr	no Lack of Material no burrs on functional parts	1st feed	HTM-QUA-INT-006 Défautbêque HTM-QUA-INT-005 Control range	HTM-PRD-BIT-003 Start-up series production		Sampling and validation 1st molded	Counter-validation 1st mold	HTM-ENG-FOR 183 List of Poka Yoke	Maintenance 1st level	Traitement de Non conforme HTM-PRD-INT-007	HTM-DOC-FOR-002
		60	-	Production	Adjustment plug settings RJG	Visual Machine monitoring settings	/	/	Validated palette (Signature Team Leader)	Control card by attribute filled according to the part	HTM-PRD-BIT-003 Start-up series production		According to rated control frequencies + each end of pallet	According to rated control frequencies	HTM-ENG-FOR 183 List of Poka Yoke	Maintenance 1st level	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002

Done by : A.ELHAJBI	Control plan						DESIGNATION OF THE PART			TAPE CLIP WITH SHORT OVAL FIR TREE			Date of issue				
							REFERENCE			151-04144			10/01/2024				
	Control plan N° :			Phase			Indice		#1,2	Drawing N°	16-0407-001-CSU		Revision date				
				Prototype	Pré-Series	Series	Customer			Divers			10/06/2024				
Synoptic	N° Flux	Step	Operaions	Process parameters or product characteristics	Means of production or control	Special Feature	Specifications/ Tolerances	Evidence of control	Reference document	process tracking	Sample: Size and frequency of control			POKA YOKE	Maintenance	Rules of recation	Archiving
<div><div>60 - Production</div><div>NC</div><div>80 - Product control</div><div>NC</div><div>90- End of production</div><div>NC</div><div>140 - Manual internal packaging</div><div>NC</div><div>10C - Production transfer</div><div>180 - Storage of finished products (PF)</div><div>NC</div><div>190 - Order preparation EDI</div><div>NC</div><div>210.10 - Flow shipping EDI</div><div>NC</div></div>	80	-	Product control	1-Note the Number of the plastic 2-Record the temperature oven 3-Raise the parameters injection 4- no lack of material 5- no Burr 6-No frost, bubble or flow trace, surface homogeneous, deformation of the room, no task on the surface of the room 7- weight of a feed: min 39,52g, max 42,43g	Packaged lot of matter Temperature indicated on the oven Adjustment sheet Visual Balance	CC CC CS	No lack of material See defect Min weight: 1,235 g Max weight: 1,325 g	Check-list of Starting HTM-PRD-FOR-052 validée	Product Folder	Product Audit Management HTM-QUA-INT-005 Rapport de Cqabilité annuel du processus	Every 8h	Each team DMS & DMF Each production batch	Each team Annual product audit	HTM-ENG-FOR 183 List of Poka Yoke	According to frequency of calibrations defined	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
	90	-	End of production	Last feed	Visual	Lack of material	no Lack of Material	Last feed + Validated palette (Signature Team Leader)	HTM-PRD-INT-003 OK Startup	HTM-PRD-INT-003		Sampling and validation last molded - last pallet	Last molded counter-validation	HTM-ENG-FOR 183 List of Poka Yoke	Maintenance 1st level	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
	100	100.10	Transfer	Pallets	Visual	/	/	Palette validée (Signature Team Leader)	Fiche de suivi	Procédure de stockage	100% des palettes				/	Non-Compliant Processing HTM-PRD-INT-007	/
	140	-	Manual internal packaging	Product References and/or UNS Code + scale	Packaging range	/	/	Visual	/	Assemble and Package					According to frequency of calibrations defined	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
	180	-	Storage finished products (PF)	Empty slot	Visual	/	/	glued label	SAP	Receive and Put in Stock	100% of products				/	Non-Compliant Processing HTM-PRD-INT-007	HTM-DOC-FOR-002
	190	-	EDI order preparation	Picking list	SAP	/	/	SAP	Expedition HTM-SUP-INT-008	Prepare an order	100% of UM and UC/100% of UM and UC				Preventive maintenance on trolleys	Non-Compliant Processing HTM-PRD-INT-007 Gestion des modes dégradés	HTM-DOC-FOR-002
	210	-	EDI Shipping	Shipping Notice (AVIEXP)	SAP	/	/	verification quantity of loaded Ums	Expedition HTM-SUP-INT-009	EDI Shipment Processing					/	Non-Compliant Processing HTM-PRD-INT-007 Managing degraded modes	HTM-DOC-FOR-002
	<div>Legend:</div> <div>NC: Treatment of non-compliant</div>																

HellermannTyton	CAPABILITE /CAPABILITY	N° RC
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OBJET / OBJECT : CAPABILITE REP / CAPABILITY REP :		PPAP	
Moyen utilisé / Means used :	Balance	Produit/Product :	151-04144
Date de contrôle/Control date :	24/11/2023	Désign./Part name :	TAPE CLIP WITH SHORT OVAL FIR TREE

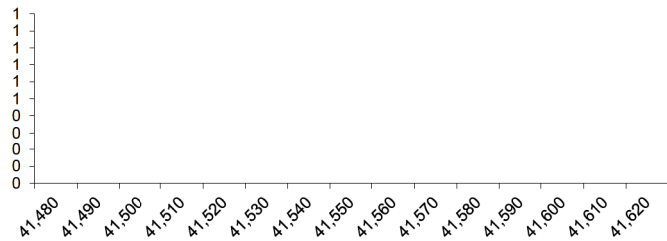
N° Empreinte/N° of Cavity :		Client/Customer :	LEAR
Nominale / Nom. :	41,600		
Tol.Sup / USL :	0,832	42,43	
Tol.Inf / LSL :	-2,080	39,52	IT : 2,912

n°	Values	n°	Values
1	41,51	61	41,53
2	41,52	62	41,55
3	41,53	63	41,55
4	41,55	64	41,55
5	41,55	65	41,56
6	41,55	66	41,53
7	41,56	67	41,51
8	41,53	68	41,52
9	41,51	69	41,53
10	41,52	70	41,55
11	41,53	71	41,55
12	41,55	72	41,55
13	41,55	73	41,56
14	41,55	74	41,53
15	41,56	75	41,51
16	41,53	76	41,52
17	41,51	77	41,53
18	41,52	78	41,55
19	41,53	79	41,55
20	41,55	80	41,55
21	41,55	81	41,56
22	41,55	82	41,53
23	41,56	83	41,51
24	41,53	84	41,55
25	41,51	85	41,55
26	41,52	86	41,55
27	41,53	87	41,56
28	41,55	88	41,53
29	41,55	89	41,51
30	41,55	90	41,52
31	41,56	91	41,53
32	41,53	92	41,55
33	41,51	93	41,55
34	41,52	94	41,55
35	41,53	95	41,56
36	41,55	96	41,53
37	41,55	97	41,51
38	41,55	98	41,52
39	41,56	99	41,55
40	41,53	100	41,56
41	41,51	101	41,53
42	41,52	102	41,51
43	41,53	103	41,52
44	41,55	104	41,53
45	41,55	105	41,55
46	41,55	106	41,51
47	41,56	107	41,52
48	41,53	108	41,53
49	41,51	109	41,55
50	41,52	110	41,55
51	41,53	111	41,51
52	41,55	112	41,52
53	41,51	113	41,53
54	41,52	114	41,55
55	41,53	115	41,55
56	41,55	116	41,55
57	41,55	117	41,55
58	41,55	118	41,57
59	41,56	119	41,56
60	41,55	120	41,55

Nombre de chiffres après la virgule pour l'intervalle de classe
/ Number of numbers after the point for class interval

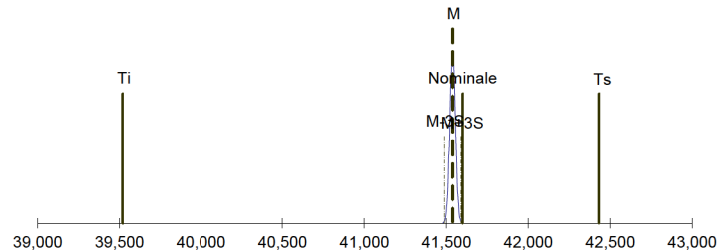
2

HISTOGRAMME / HISTOGRAM



Intervalle de classe / Class interval

COURBE DE GAUSS / GAUSS GRAPH



Moyenne/Average	41,538
Max	41,570
Min	41,510
Etendue/Spread	0,060
Ecart type	0,0167
Cm / Cp	29,02
Cmk / Cpk	17,82
% of samples out of tolerance	0,00%

Cp : Renseigne sur la dispersion / Dispersion informations $Cp = IT / (6 \times Ec.type)$

Cpk : Renseigne sur le centrage / Centrage informations

Cpk = Minimum de $[(Ts - Moyenne) / (3 \times Ec.type)] ; [(Moyenne - Ti) / (3 \times Ec.type)]$

Commentaires :

Excellent

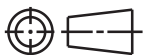
HellermannTyton		Production part approval MSA (R&R method)				HTM-LAB-FOR-163 Ind00	
UNS	151-04237		Gage Name: Balance Gage Number: WF20007715 Temperature 21 ± 2°C	Appraiser A / Opérateur A			
GPN	16-0407-011			OBD			
Désignation :				Appraiser B / Opérateur B			
TAPE CLIP WITH SHORT OVAL FIR TREE				YBD			
Standard part used for this R&R method				Appraiser C / Opérateur C			
98,40		Units		IJA			
		g					
Characteristic Classification		Definition	Trials	Parts quantity	Appraisers		Date Performed
Dimension		0,01	3	10	3		21/03/23

ENTER LOWER TOLERANCE IN D9													
APPRAISER TRIAL n°		PART										AVERAGE	
		1	2	3	4	5	6	7	8	9	10		
APPRAISER A	1	96,35	96,37	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3590
	2	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	3	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	AVE	96,350	96,363	96,360	96,370	96,330	96,370	96,360	96,350	96,360	96,370	x _a =	96,3583
	R	0,000	0,010	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	r _a =	0,0010
APPRAISER B	1	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	2	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	3	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	AVE	96,350	96,360	96,360	96,370	96,330	96,370	96,360	96,350	96,360	96,370	x _b =	96,3580
	R	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	r _b =	0,0000
APPRAISER C	1	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	2	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	3	96,35	96,36	96,36	96,37	96,33	96,37	96,36	96,35	96,36	96,37		96,3580
	AVE	96,350	96,360	96,360	96,370	96,330	96,370	96,360	96,350	96,360	96,370	x _c =	96,3580
	R	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	r _c =	0,0000
PART AVERAGE												X=	96,3581
		96,3500	96,3611	96,3600	96,3700	96,3300	96,3700	96,3600	96,3500	96,3600	96,3700	R _p =	0,0400
(r _a + r _b + r _c) / (# OF APPRAISERS) =												R=	0,0003
X _{DIFF} = (Max x - Min x) =												X _{DIFF} =	0,0003
* UCL _R = R x D ₄ =												UCL _R =	0,0009
Measurement Unit Analysis												% Tolerance (Tol)	
Repeatability - Equipment Variation (EV) / Répétabilité EV = R x K ₁ = 0,000 x 0,5908 = 0,000196933												% EV = 100 (EV/TV) = 100(0,000/0,013) = 1,56	
Reproducibility - Appraiser Variation (AV) / Reproductibilité AV = {(X _{DIFF} x K ₂) ² - (EV ² /nr)} ^{1/2} = {(0,000 x 0,5231) ² - (0,000 ² /(10 x 3))} ^{1/2} = 0,000170619 n = parts r = trials												% AV = 100 (AV/TV) = 100(0,000/0,013) = 1,36	
Repeatability & Reproducibility (GRR) GRR = {(EV ² + AV ²) ^{1/2} = {(0,000 ² + 0,000 ²) ^{1/2} = 0,000260564												% GRR = 100 (GRR/TV) = 100(0,000/0,013) = 2,07%	
Part Variation (PV) PV = R _p x K ₃ = 0,040 x 0,3146 = 0,012584												% PV = 100 (PV/TV) = 100(0,013/0,013) = 99,98	
Total Variation (TV) TV = sqrt(GRR ² +PV ²) = sqrt(0,000260564222977294 ² + 0,0125840000000002 ²) = 0,012586697												ndc = 1.41(PV/GRR) = 1.41(0,013/0,000) = 68	
												Gage discrimination acceptable	
Notes:													

* D4 =3.27 for 2 trials and 2.58 for 3 trials. UCL_R represents the limit of individual R's. Circle those that are beyond this limit. Identify the cause and correct. Repeat these readings using the same appraiser and unit as originally used or discard

For information on the theory and constants used in the form see MSA Reference Manual, Fourth edition.

CATIA V5



Revision Level

Drawing

State

Part

Revision Record

Changed

Date

Approved

Date

02.1

Design Release

C

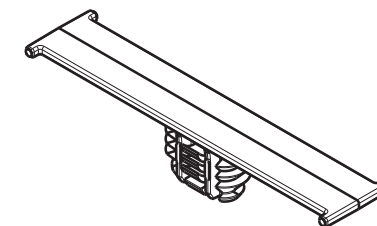
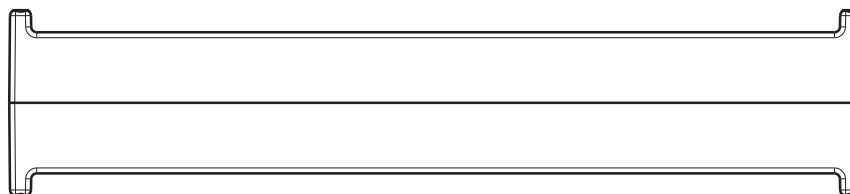
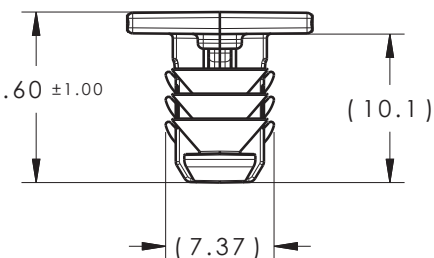
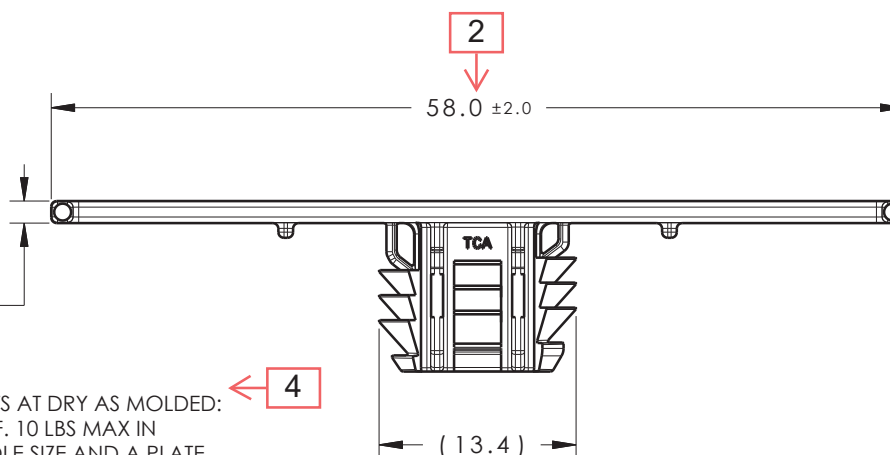
SEE ECN# 311527

KOR

10/09/24

EJF

10/09/24

ISOMETRIC VIEW
(SCALE 1:1)

REFERENCE:

PERFORMANCE REQUIREMENTS AT DRY AS MOLDED:

1. FIR TREE PUSH IN FORCE: REF. 10 LBS MAX IN EACH APPLICABLE OVAL HOLE SIZE AND A PLATE THICKNESS OF 1.8mm
2. FIR TREE PULL OUT FORCE: REF. 25 LBS MIN IN EACH APPLICABLE OVAL HOLE SIZE AND A PLATE THICKNESS OF 1.8mm
3. SHEET METAL THICKNESS RANGE: 0.60mm - 2.5mm
4. APPLICABLE OVAL HOLE SIZES:
 - A. 6.2 X 12.2mm
 - B. 6.5 x 12.5mm
 - C. 6.5 x 13.0mm
 - D. 7.0 x 12.0mm

02.1

Material

PA66HIRHS
COLOR: NATURAL

Units

millimeters

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Drawn

CJR

6/14/16

Approved

SJA

6/14/16

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Article/Type-No

BCSFTOVAL

Scale

2:1

Title

TAPE CLIP WITH SHORT OVAL FIR TREE

Project Number

16-0407

Drawing-No

PRODUCTION : Phase

Format

AH

16-0407-001-CSU

Sheet

1/1