

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.:			
99550	with submission date	23.09.2022	will be considered as complete and valid auto-
atically on	23.10.2022	unless otherwise disposed!	

Part Submission Warrant

Part Name <u>Door Connector Comb Bridge</u>		Cust. Part Number <u>H1BT-14197-AAB</u>
Shown on Drawing No. <u>H1BT-14197-AAB</u>		Org. Part Number <u>13304037</u>
Engineering Change Level <u>0</u>	Dated <u>10.03.2017</u>	
Additional Engineering Changes <u>n/a</u>	Dated <u>n/a</u>	
Safety and/or Government Regulation ☐ Yes ☒ No	Purchase Order No. <u>13304037</u>	Weight (kg) <u>0,0007</u>
Checking Aid No. <u>n/a</u>	Checking Aid Engineering Change Level <u>n/a</u>	Dated <u>n/a</u>

ORGANIZATION MANUFACTURING INFORMATION		CUSTOMER SUBMITTAL INFORMATION	
HellermannTyton GmbH	DUN	DUNS: 315430892	Nursan Kablo Donanimlari (30471)
Organization Name & Supplier/Vendor Code		Customer Name/Division	
Großer Moorweg 45		Nadiye BARUTÇU	
Street Address		Buyer/Buyer Code	
Tornesch	25436	Germany	various
City	Region	Postal Code	Country
		Application	

MATERIALS REPORTING

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

Submitted by IMDS or other customer format: 611203274

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 23-Sep-22

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 _____

Print Name _____ Customer Tracking Number (optional) _____

HellermannTyton
Internal PB-No.: **99550**

[illegible]

This letter is done automatically and is valid without signature.

<u>CREATOR</u>	<u>TITLE</u>	<u>DATE</u>
i.A. N. Lohse	Quality Assistant	23-Sep-22

Abnahmeprüfzeugnis/CoA

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

AKRO-PLASTIC GmbH

Ein Unternehmen der Feddersen-Gruppe

PROBENIDENTIFIKATION / DESCRIPTION OF PRODUCT:

Nummer / Item number: 02179-O

Bezeichnung / Material: AKROMID A3 1 S3 schwarz (1139)

PRODUKTIONSDATEN / PRODUCTION DATA:

Charge / LOT: POC03 138599

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		$\leq 0,15$	0.08	%
Tensile modulus Zug-E-Modul	DIN EN ISO 527-2/1A	1 mm/min / RT	2550 +/- 300	2420	MPa
Tensile strain at break Bruchdehnung	DIN EN ISO 527-2/1A	50 mm/min / RT	35,0 +/- 15,0	33.4	%
Tensile strain at yield Streckdehnung	DIN EN ISO 527-2/1A	50 mm/min / RT	$\geq 4,0$	8.1	%
Tensile stress at yield Streckspannung	DIN EN ISO 527-2/1A	50 mm/min / RT	64,0 +/- 5,0	59.2	MPa
Charpy notched impact strength Charpy Kerbschlagzähigkeit	DIN EN ISO 179-1/1eA	23°C	15,0 +/- 3,0	14.3	kJ/m ²

Freigabedatum / date of release: 26.07.2022

Zusatzvermerke / remarks:

Niederzissen, 26.07.2022

Gez. Abnahmebeauftragte / Inspection representative: i.V. Ute Bürger

Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig.

This document is generated electronically and is valid without signature.

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.

P-FMEA	X	A-00	Project- No	variable	Revision date	2020.08.28
D-FMEA			Nr projektu		Data przeglądu	
Group Assignment		fastening elements (elementy mocujące)	Drawing number	variable	Revision by	M. Krysztofowicz
Grupa produktowa			Nr rysunku		Zaktualizowane przez	
Part No		variable	Ind. of Drwg. /date	variable		
Nr artykułu			Wydanie / data			
Part Description		variable	Version of FMEA	3		
Nazwa artykułu			Wersja FMEA			
FMEA Core Team		T.Maćkowiak, D.Bojański (Prod), M.Krysztofowicz, K. Tomaszewska (DJ), M.Handzel (UR)	Original Issue Date	09.09.2013		
Zespół FMEA			Data pierwszego wydania			
Process Responsibility		HT - Kotunia			FMEA is electronic generated and administrated. No signature required.	
Zakład produkcyjny						
Prepared by		M. Krysztofowicz			FMEA jest dokumentem generowanym elektronicznie - nie wymaga podpisu.	
Autor						

Feature / System / Process Etap procesu	Location	Potential failure Potencjalna wada	Potential consequences of failure Potencjalny skutek wady	Klasa	Potential cause Potencjalne przyczyny wad	Current status Stan obecny					Recommended rectifying measures Zalecane działania	Responsible / Date Odpowiedzialny / Data	Improved stage Wyniki podjętych działań				
						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
Goods receipt	HT PL	no stocks	unable to start manufacture	N	poor stock control	P: SAP - automatic control of stock D: SAP - automatic control of stock	8	3	2	48							0
	HT PL	incorrect goods	use wrong material	N	wrong labeling by incoming	D: production inspection, machine control (setting card)	8	1	3	24							0
Raw material storage	HT PL	incorrect material issued	delayed production	N	Stores error	P: SAP - automatic dedicated location D: production check	3	1	7	21							0
	HT PL	incorrect moisture content	prolonged drying	N	damage of the bag	D: visual control	2	1	7	14							0
	HT PL	material degradation	can't process	N	to long storing time	P: SAP - storage time control (FIFO) D: quality inspection on final product	8	1	3	24							0

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						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL			N	wrong storing condition	P: storage requirements for each raw material D: quality inspection on final product	8	1	6	48							
Raw material supply for Injection moulding	HT PL	incorrect raw materials mixture	can't process	N	pick up error	P: Identification labels system, SAP - FIFO control D: operator self check	8	1	3	24							
	HT PL		no function of the part	N	missing specification	P: SAP master data D: Production specification, on board information, Operator can't process	6	1	7	42							
	HT PL	material contamination	functional degradation	N	machine and accessories not clean enough	P: material mixing instruction D: visual check - PA pos. 9	7	1	7	49							
	HT PL		process stop	N	granulates of different material	P: material mixing instruction, setting card D: maschine self check	7	2	4	56							

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						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)			RPN	Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
Injection moulding	HT PL	part not fully moulded	functional degradation or missing function	N	improper moulding parameters	P: setting card, master program, 'start-stop' instruction, sturt-up checklist D: machine self control, visual check - PA pos. 2	8	3	3	72	Integration injection machine with Mold Master system by signal cable (continuous monitoring the temperature of the hot runners work - controlled by injection machine)	M. Nowak / 28.02.2020	Integrated injection machine with Mold Master system by signal cable	8	3	2	48
	HT PL		functional degradation or missing function	N	wrong separation of rejected parts (machine construction)	P: checklist of technical acceptance of the machine before first use D: machine self control, visual check - PA pos. 2	8	2	3	48							0
	HT PL		functional degradation or missing function	N	mould damage	P: setting card, master program, 'start-stop' instruction, sturt-up checklist D: machine self control, visual check - PA pos. 2	8	2	4	64	1. Update quality control instruction, requirement regarding functional chcek to be implemented. 2. Mould maintenance preventing program update - o-rings replacement every planned maintenance.	1. M. Maćkowska / 03.09.2018 2. P. Szukalski / 28.09.2018	1. Quality control instructions updated. 2. Mould maintenance preventing program updated.	8	2	3	48

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						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL		functional degradation or missing function	N	improper mould venting	P: setting card, master program, 'start-stop' instruction, start-up checklist, mould preventive maintenance D: machine self control, visual check - PA pos. 2	8	2	4	64						0	
	HT PL	overmoulding or flash on part	functional degradation or missing function	N	improper moulding parameters, mould damage	P: setting card, master program, 'start-stop' instruction, sturt-up checklist D: machine self control, visual check - PA pos. 3	8	2	3	48						0	
	HT PL			N	mould (mould elements) construction	P: mould maintenace, D: visual check - PA pos. 3	8	2	3	48						0	
	HT PL	mould misalignment	heavy handling/processing	N	improper sliding bolt	P: mould maintenace, D: visual check - PA pos. 4	4	1	7	28						0	
	HT PL		functional degradation	N	mould damage	P: mould maintenace, D: visual check - PA pos. 4	7	2	7	98						0	

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						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL	flow lines, silver marks, air bubble	optical degradation	N	improper mould parameters	P: setting card, master program D: visual check - PA pos. 5, 7	3	2	7	42							0
	HT PL		optical degradation	N	improper mould temperature	P: setting card, master program D: visual check - PA pos. 5, 7	3	2	7	42							0
	HT PL		optical degradation	N	incorrect material moisture content (improper dryer set-up)	P: dryer set-up instruction, D: visual check - PA pos. 5, 7	3	2	7	42							0
	HT PL		optical degradation	N	improper mould venting	P: Production 24h trial D: visual check - PA pos. 5, 7	3	2	7	42							0
	HT PL		functional degradation	N	improper mould venting	P: mould maintenace, setting card, master program D: Individual testing according to PA	7	2	7	98							0
	HT PL		functional degradation	N	mould construction	P: Production 24h trial D: visual check - PA pos. 5, 7 Individual testing according to PA	7	2	7	98							0
	HT PL	burnings	optical degradation	N	improper mould venting	P: mould maintenace D: visual check - PA pos. 6	3	3	7	63							0
	HT PL		optical degradation	N	improper moulding parameters	P: setting card D: visual check - PA pos. 6	3	2	7	42							0
	HT PL	contamination	optical degradation	N	machine and accessories not clean enough	P: daily machine maintenace D: visual check - PA pos. 7, 9	3	2	7	42							0

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						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL		increased sensitiveness to break	N	material contamination	P: octabins, containers D: visual check - PA pos. 7, 9 Individual testing according to PA	7	1	7	49							0
	HT PL			N	Insufficient running reserve at material change	P: Start-up checklist D: visual check - PA pos. 7, 9 Individual testing according to PA	7	1	7	49							0
	HT PL	brittleness	no function of the part	N	too long procesing time	P: Start/Stop instruction D: Individual testing according to PA	6	1	7	42							0
	HT PL			N	mould heater damage	P: Mould maintenance D: Individual testing according to PA	6	1	7	42							0
	HT PL			N	incorrect material moisture content	P: dryer set-up instruction, D: Individual testing according to PA	6	1	7	42							0
	HT PL			N	incorrect nozzle diameter	P: Start/Stop instruction D: Individual testing according to PA	6	1	7	42							0
	HT PL			N	improper mould venting	P: Production 24h trial D: Individual testing according to PA	6	2	7	84							0
	HT PL			N	improper moulding parameters	P: setting card D: Individual testing according to PA	6	2	7	84							0
	HT PL		no function of the part (broken part)	N	improper process of release/transport part at moulding area (from tool to conveyor belt)	P: setting card D: Individual testing according to PA	6	2	7	84							0

Feature / System / Process Etap procesu	Location	Potential failure Potencjalna wada	Potential consequences of failure Potencjalny skutek wady	Klasa	Potential cause Potencjalne przyczyny wad	Current status Stan obecny					Recommended rectifying measures Zalecane działania	Responsible / Date Odpowiedzialny / Data	Improved stage Wyniki podjętych działań				
						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL	deformation	optical and functional degradation	N	defective production equipment	P: Start-up checklist D: visual check - PA pos. 8	7	2	6	84							0
	HT PL			N	improper moulding parameters (deformed by mould - difficulties with release the part)	P: setting card, master program, start-up checklist D: machine self control, visual check - PA pos. 8, functional test by gauge if required	6	2	7	84							0
	HT PL			N	not effective cooling system (deformed by mould - difficulties with release the part)	P: setting card, master program, start-up checklist D: machine self control, visual check - PA pos. 8, functional test by gauge if required	6	2	7	84	Integration injection machine with Mold Master system	M. Nowak 2020.03.31	Implemented integration injection machine with Mold Master system	6	2	5	60
	HT PL			N	incorrect construction of conveyor belt	P: daily machine maintenance D: visual control	6	2	7	84	Implement new conveyor belt equipment (new belt with additional safety bar)	M. Nowak 06.09.2019	Implemented new conveyor belt equipment (new belt with additional safety bar)	6	1	7	42
	HT PL			N	mould elements damage (difficulties with release the part)	P: daily machine maintenance D: machine self control, visual control	6	2	7	84	Integration injection machine with Mold Master system	M. Nowak 2020.03.31	Implemented integration injection machine with Mold Master system	6	2	5	60
				N	mould construction	P: Production 24h trial D: visual check - PA pos. 5, 7 Individual testing according to PA	6	2	7	84							

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						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL	mixed parts caused by various tool insert	missing/ wrong parts at customer side	N	malfunction of robot	P: Start/Stop instruction, setting card D: machine self check	6	6	2	72							0
	HT PL			N	wrong direction of conveyer belt caused by backflow of defective parts	P: Start/Stop instruction D: machine self check	6	2	2	24							0
	HT PL			N	Bad parts taken by conveyer belt from full red box	P: daily machine maintenace D: visual control	6	1	7	42							0
	HT PL			N	wrong tool inserts	P: tool system marking instruction D: visual and functional check - PA, CP	6	2	7	84	1. Implementation of the instruction of the inserts change over 2. Implementation of the new gauge.	1. P. Szukalski 06.02.2019 2. M.Maćkowska 28.01.2019	1. Implemented of the instruction of the inserts change over 2. Implemented new gauge. Updated quality control documents	6	2	5	60
	HT PL	mixed parts	goods wrongly identified	N	disorder in the workplace	P: workplace check list D: operator visual self checks	3	3	7	63							0
	HT PL		wrong parts at customer side	N	disorder in the workplace	P: workplace check list D: operator visual self checks	3	3	7	63							0
	HT PL	dirty parts	optical degradation	N	disorder in the workplace	P: daily machine maintenace D: visual self check by operator	3	1	7	21							0
Packaging	HT PL	improper quantity of water	insufficient mechanical features	N	improper dosing equipment	P: packaging specification D: measuring test of the dosing quantity	6	1	7	42							0

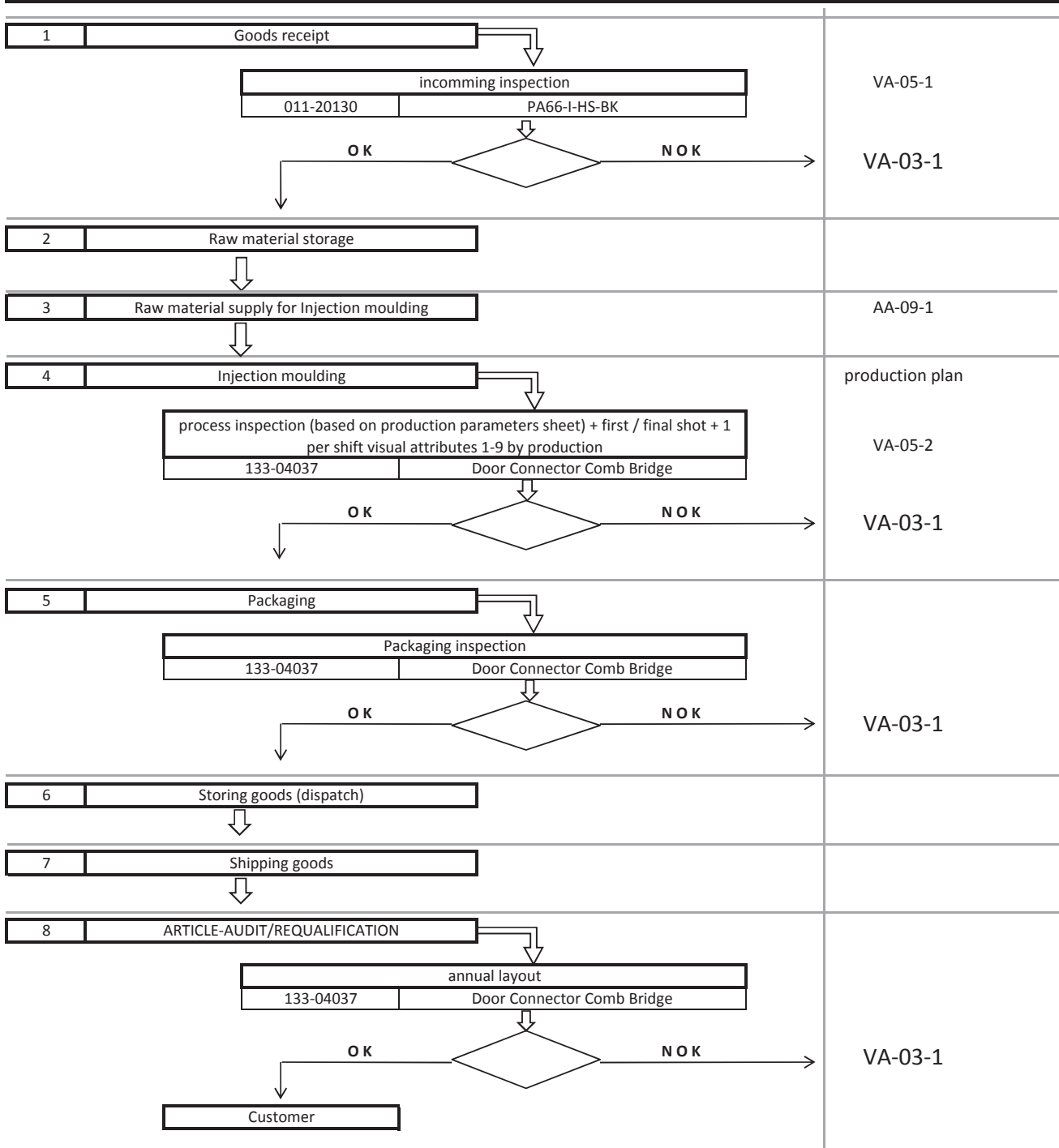
Feature / System / Process Etap procesu	Location	Potential failure Potencjalna wada	Potential consequences of failure Potencjalny skutek wady	Klasa	Potential cause Potencjalne przyczyny wad	Current status Stan obecny					Recommended rectifying measures Zalecane działania	Responsible / Date Odpowiedzialny / Data	Improved stage Wyniki podjętych działań				
						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL	improper welding seam	open bags, improper moisture content	N	incorrect adjustment of the equipment	P: packaging instruction, Poka-yoke on heaters D: visual self check by operator	6	2	10	120	1. Standardization of the settings for all welding machines 2. Implementation preventive program for welding machines	1. A. Biadasz 2020.10.15 2. M. Madaj 2020.10.19	1. Implemented standardization of the settings for all welding machines 2. Implemented preventive program for welding machines	6	1	10	60
	HT PL			N	heating device defective	P: maintenance preventive plan D: visual self check by operator	6	1	6	36							0

Feature / System / Process Etap procesu	Location	Potential failure Potencjalna wada	Potential consequences of failure Potencjalny skutek wady	Klasa	Potential cause Potencjalne przyczyny wad	Current status Stan obecny					Recommended rectifying measures Zalecane działania	Responsible / Date Odpowiedzialny / Data	Improved stage Wyniki podjętych działań					
						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN	
	HT PL	improper printing/bag stamp	goods wrongly identified	N	defective or incorrectly adjusted stamps, wrong bags or labels	P: packaging specification D: visual check, barcode check by scanner	6	2	4	48							0	
	HT PL	no label	goods without identification	N	Human mistake	P: packaging instruction D: operator self check, visual check by dispatcher	3	2	7	42							0	
	HT PL	incorrect number of pcs.	delivery of short or excess quantities	N	Wrong set up of weight scale	P: weight scale set up instruction D: operator self check, first bag quantity control (VP)	2	2	7	28							0	
	HT PL			N	Weight scale defect	P: measurement equipment preventive calibration D: operator self check	2	2	7	28							0	
	HT PL			N	missing detailed packaging specification	P: measurement equipment preventive calibration D: operator self check	2	2	7	28							0	
	HT PL			N	Human mistake	P: packaging instruction D: operator self check	2	2	7	28	Implement counter on the conveyor belt	M. Handzel 2020.10.11	Implemented counter on the conveyor belt		2	2	6	24
	HT PL	mixed parts	missing/ wrong parts at customer side	N	disorder in the workplace	P: workplace check list, packaging specification D: operator visual self checks, first bag control by QC (VP)	3	3	7	63							0	

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						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)			RPN	Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
	HT PL	deformation parts	functional degradation	N	not improper packaging instruction	P: packaging instruction D: operator self check	7	2	7	98							0

Feature / System / Process Etap procesu	Location	Potential failure Potencjalna wada	Potential consequences of failure Potencjalny skutek wady	Klasa	Potential cause Potencjalne przyczyny wad	Current status Stan obecny					Recommended rectifying measures Zalecane działania	Responsible / Date Odpowiedzialny / Data	Improved stage Wyniki podjętych działań				
						Preventive and test measures Obecne środki detekcji / prewencji	SEV (S)	OCC (O)	DET (D)	RPN			Implemented measures Wdrożone działania	SEV (S)	OCC (O)	DET (D)	RPN
Storing goods (dispatch)	HT PL	no storage	no delivery to customer	N	incorrect master-data	P: trial production D: SAP order control status	7	2	2	28						0	
	HT PL			N	delivery delay	P: safety stock in logistic center D: SAP order control status	7	3	2	42						0	
	HT PL			N	blocked stock	P: safety stock in logistic center D: SAP order control status	7	3	2	42						0	
	HT PL	shipment delay	delivery of short quantities	N	damaged packaging	P: packaging instruction D: visual self check by operator and dispatcher	2	4	7	56						0	
	HT PL	wrong storage location	wrong direction of shipment	N	Human mistake	P: storage location marking D: shiping direction automatic control in SAP	7	1	1	7						0	
Shipping goods	HT PL	incorrect despatch gate	wrong parts to logistic center	N	mixed shipping documentation	P: shipimng location marking D: visual self check, shipping checklist	7	2	7	98						0	
	HT PL	Incorrect loading	box damage at logistic center	N	Human mistake	P: box loading standard D: visual self check, shipping checklist	2	2	7	28						0	
	HT PL		goods damage at logistic center	N	Human mistake	P: box loading standard D: visual self check, shipping checklist	4	1	7	28						0	

PFC-No: 13304037	Process Flow Chart Door Connector Comb Bridge	HellermannTyton part-no: 133-04037 drw-no: H1BT-14197-AAB PFMEA No: A-00
REV: 2017-11-14		
reviewed: 2017-11-14 GPN: 15-0175		
PROCESS	CONTROLS	PROCEDURE



CONTROL PLAN

☐ Prototyp ☐ Pre-launch ☒ Production

Control Plan No: 13304037			Key Contact / Phone +48 63 2237 322			Date reviewed: 2017-11-14		Date rev. 2017-11-14	
Part No / latest changelev 133-04037 project:			Core Team:			Customer Engineering Approval / date			
Part name/Description: Door Connector Comb Bridge PGroup: A-00			Supplier / Plant approval date			Customer Quality Approval / Date			
Supplier Plant Kotunia			other approval date / Drawing H1BT-14197-AAB			other Approval / Date			

Part / Process No	Process name / Operation description	Machine	No / Product / Process Characteristics	SC	Part / Process Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Department	Reaction Plan
1	Goods receipt - incoming inspection - VA-05-1									VA-03-1
	011-20130 PA66-I-HS-BK		1-0 Part Type		CMR / SD-33-1	100%	Each batch	visual	Warehouse	
			2-0 Quantity		CMR / SD-33-1	100%	Each batch	visual	Warehouse	
			3-0 Visual damages		SD-33-1	100%	Each batch	visual	Warehouse	
			302-0 residual moisture		max 0,15%	1	1 lot	COA	QS	
			304-0 notch impact strength		12 - 18 KJ/m2	1	1 lot	COA	QS	
		305-0 yield stress		59 - 69 Mpa	1	1 lot	COA	QS		
2	Raw material storage									VA-03-1
	011-20130 PA66-I-HS-BK		1-0 Part Number		Ensure all items identify and segregate - labels.	all	Each supply	visual	Warehouse	
3	Raw material supply for Injection moulding									VA-03-1
	011-20130 PA66-I-HS-BK		1-0 Part Type		Box description	100%	Each batch	visual	Production	
					FIFO - AA-09-1	100%	Each batch	visual	Production	
4	Injection moulding - process inspection (based on production parameters sheet) +first / final shot + 1 per shift visual attributes 1-9 by production - VA-05-2									VA-03-1
	133-04037 Door Connector Comb Bridge		1-0 sink marks		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			2-0 shortage		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			3-0 flashes		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			4-0 mould misalignment		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			5-0 moulding lines		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			6-0 burnings		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			7-0 dirt		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			8-0 deformation		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			9-0 inclusions		PA-13304037-1	1 shot	1 shift	Master Samples no 50-9623, visual	QS	
			56-0 date stamp		CP-13304037-1	1 shot	1 shift	manual / visual	QS	
			65-0 shot weight		RK-13304037-1	1 shot	1 shift	SG01 scale counter / manual	QS	

CONTROL PLAN

Control Plan No: 13304037			Key Contact / Phone +48 63 2237 322			Date reviewed: 2017-11-14		Date rev. 2017-11-14		
Part No / latest changelev 133-04037 project:			Core Team:			Customer Engineering Approval / date				
Part name/Description: Door Connector Comb Bridge PGroup: A-00			Supplier / Plant approval date			Customer Quality Approval / Date				
Supplier Plant Kotunia			other approval date / Drawing H1BT-14197-AAB			other Approval / Date				
Part / Process No	Process name / Operation description	Machine	No / Product / Process Characteristics	SC	Part / Process Specification / Tolerance	Sample Size	Frequenz	Evaluation / Measurement Technique Control Method	Department	Reaction Plan
5	Packaging inspection									VA-03-1
	133-04037 Door Connector Comb Bridge		16-0 bag sealing		VP-13304037-1	1 bag	1 start off	manual / visual	QS	
			17-0 label		VP-13304037-1	1 bag	1 start off	manual / visual	QS	
			18-0 quantity		VP-13304037-1	1 bag	1 start off	SG04 scale counter / manual	QS	
			45-0 mixed parts in pack unit		VP-13304037-1	1 bag	1 start off	manual / visual	QS	
6	Storing goods (dispatch)									VA-03-1
	133-04037 Door Connector Comb Bridge		1-0 Part Number		Ensure all boxes identify and segregate - labels and storage location	1	Each pallet	visual	Warehouse	
7	Shipping goods									VA-03-1
	133-04037 Door Connector Comb Bridge		1-0 Pre-shipment audit		SD-16-1 - check list	all	Each shipment	visual	Warehouse	
8	ARTICLE-AUDIT/REQUALIFICATION - annual layout									VA-03-1
	133-04037 Door Connector Comb Bridge		Complete dimensional and functional test acc. Drawing (min. 1 part-No for mentioned part group)		SD-18-01 - product audit	3 shots	12 months	manual / visual	Lab	

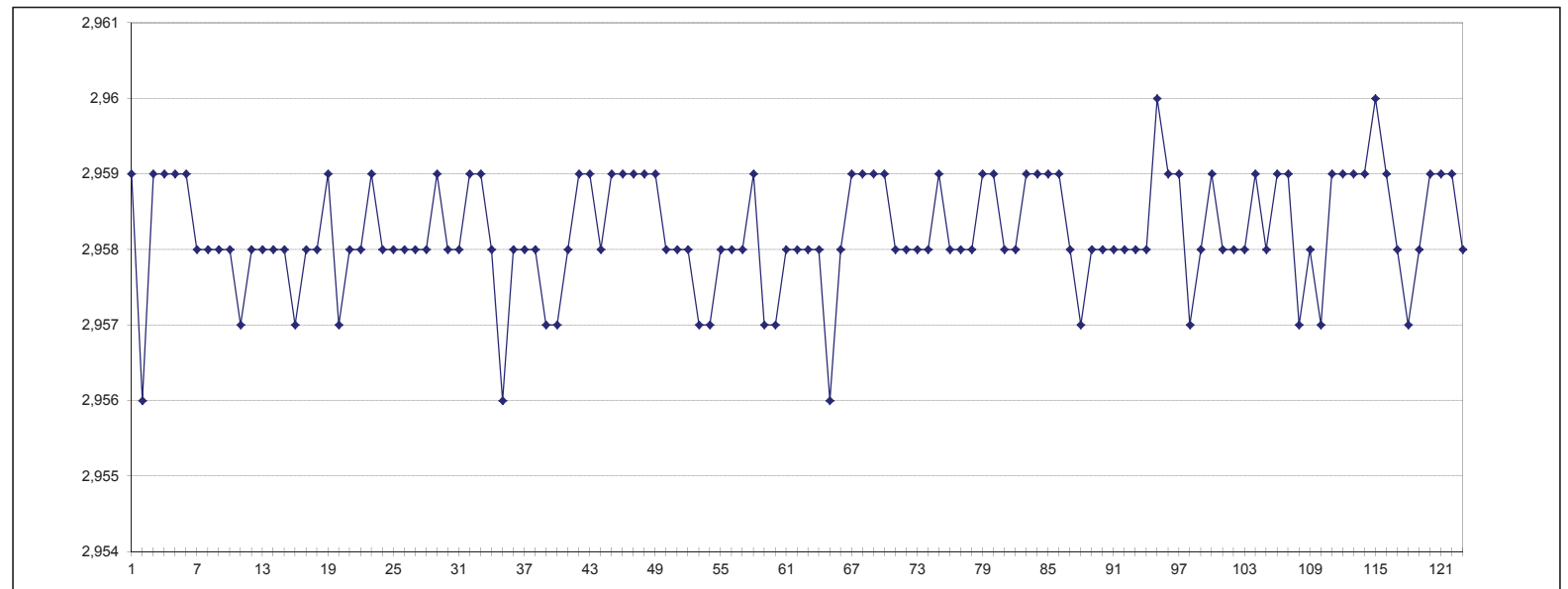
No.:	weight (g)	No.:	weight (g)	No.:	weight (g)	No.:	weight (g)
1	2,959	41	2,958	81	2,958	121	2,959
2	2,956	42	2,959	82	2,958	122	2,959
3	2,959	43	2,959	83	2,959	123	2,958
4	2,959	44	2,958	84	2,959	124	2,958
5	2,959	45	2,959	85	2,959	125	2,958
6	2,959	46	2,959	86	2,959		
7	2,958	47	2,959	87	2,958		
8	2,958	48	2,959	88	2,957		
9	2,958	49	2,959	89	2,958		
10	2,958	50	2,958	90	2,958		
11	2,957	51	2,958	91	2,958		
12	2,958	52	2,958	92	2,958		
13	2,958	53	2,957	93	2,958		
14	2,958	54	2,957	94	2,958		
15	2,958	55	2,958	95	2,960		
16	2,957	56	2,958	96	2,959		
17	2,958	57	2,958	97	2,959		
18	2,958	58	2,959	98	2,957		
19	2,959	59	2,957	99	2,958		
20	2,957	60	2,957	100	2,959		
21	2,958	61	2,958	101	2,958		
22	2,958	62	2,958	102	2,958		
23	2,959	63	2,958	103	2,958		
24	2,958	64	2,958	104	2,959		
25	2,958	65	2,956	105	2,958		
26	2,958	66	2,958	106	2,959		
27	2,958	67	2,959	107	2,959		
28	2,958	68	2,959	108	2,957		
29	2,959	69	2,959	109	2,958		
30	2,958	70	2,959	110	2,957		
31	2,958	71	2,958	111	2,959		
32	2,959	72	2,958	112	2,959		
33	2,959	73	2,958	113	2,959		
34	2,958	74	2,958	114	2,959		
35	2,956	75	2,959	115	2,960		
36	2,958	76	2,958	116	2,959		
37	2,958	77	2,958	117	2,958		
38	2,958	78	2,958	118	2,957		
39	2,957	79	2,959	119	2,958		
40	2,957	80	2,959	120	2,959		

article:	Door Connector Comb Bridge
articleno.:	13304037
drawing:	H1BT-14197-AAB
measuring equipment:	scale
characteristic:	shot weight
unit of measurement:	Gramm

acceptable tolerance (+/-) **3,5** [⁰/₀₀]

MAX	2,9600
MIN	2,9560
R	0,0040
S	0,0008
x/	2,9582
LT	2,9479
TU	2,9686
valid +/-	0,0104

ppk **4,56** (demand: >= 1.67)



REPEATABILITY AND REPRODUCIBILITY ANALYSIS REPORT

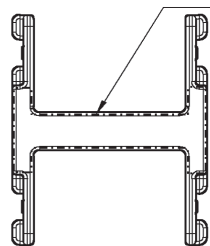
acc. to MSA 4th Edition

NON DESTRUCTIVE TEST

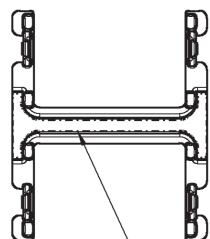
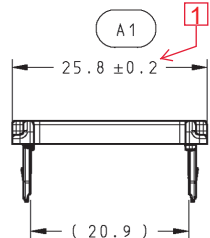
Specimen :	Plastic reference part (93-0077)	Gage type :	Weight scale PSG01 (range:0-600g) KERN max 6kg (WF1314947)	Plant :	Kotunia
Part. No. :	010-77038	Gage number :		Date :	2021-04-09
Characteristic :	Unit weight (±1% of quantity)	performed by:	Katarzyna Tomaszewska	approved by:	Michał Krysztofowicz
Tolerance :	0,0054 Units kg	Signature:	<i>Katarzyna Tomaszewska</i>		<i>Michał Krysztofowicz</i>
# of operators:	3	# of trials:	3	# of parts:	10

OPERATOR		A:			B:			C:			RESULTS	
TRIAL #		P	A	R	T							AVG
A	1	0,3034	0,3040	0,2992	0,2960	0,2964	0,3012	0,3002	0,3040	0,2960	0,3002	A ₁
	2	0,3034	0,3038	0,2992	0,2962	0,2964	0,3012	0,3002	0,3040	0,2960	0,3000	A ₂
	3	0,3034	0,3040	0,2996	0,2960	0,2964	0,3012	0,3004	0,3040	0,2960	0,3000	A ₃
	Average	0,3034	0,3039	0,2993	0,2961	0,2964	0,3012	0,3003	0,3040	0,2960	0,3001	X _A 0,3001
	Range	0,0000	0,0002	0,0004	0,0002	0,0000	0,0000	0,0002	0,0000	0,0000	0,0002	R _A 0,0001
B	1	0,3032	0,3040	0,2990	0,2960	0,2964	0,3012	0,3004	0,3040	0,2960	0,3000	0,3035
	2	0,3036	0,3040	0,2990	0,2962	0,2962	0,3012	0,3004	0,3042	0,2958	0,3000	0,3035
	3	0,3034	0,3040	0,2992	0,2960	0,2964	0,3010	0,3002	0,3040	0,2960	0,3000	0,3035
	Average	0,3034	0,3040	0,2991	0,2961	0,2963	0,3011	0,3003	0,3041	0,2959	0,3000	X _B 0,3000
	Range	0,0004	0,0000	0,0002	0,0002	0,0002	0,0002	0,0002	0,0002	0,0002	0,0000	R _B 0,0002
C	1	0,3032	0,3040	0,2992	0,2960	0,2964	0,3012	0,3004	0,3040	0,2960	0,3000	0,3035
	2	0,3032	0,3038	0,2990	0,2960	0,2964	0,3012	0,3002	0,3040	0,2960	0,3000	0,3035
	3	0,3032	0,3038	0,2990	0,2960	0,2962	0,3012	0,3000	0,3040	0,2960	0,3000	4,0000
	Average	0,3032	0,3039	0,2991	0,2960	0,2963	0,3012	0,3002	0,3040	0,2960	0,3000	X _C 0,3000
	Range	0,0000	0,0002	0,0002	0,0000	0,0002	0,0000	0,0004	0,0000	0,0000	0,0000	R _C 0,0001
PART		0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	R _{PART} = 0,0080
		R = R _A + R _B + R _C / No of operators = 0,0001 + 0,0002 0,0001 / 3										R = 0,0001
		X _{DIFF} = [Max (X) _{ABC}] - [Min (X) _{ABC}] = 0,300 - 0,300										X _{DIFF} = 0,0001
		UCL _R = R * D ₄ = 0,0001 * 2,58										UCL _R = 0,0003
		D ₄ = 3,27 for 2 trials 2,58 for 3 trials										

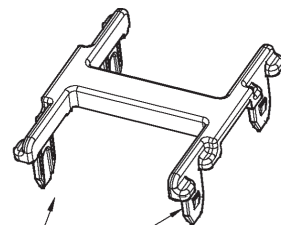
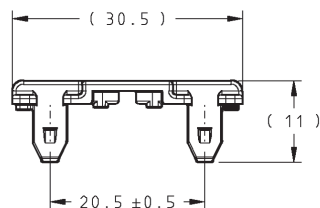
Measurement Unit Analysis				Total Variation Method	Tolerance Method
Repeatability : Equipment Variation (EV)					
EV = R * K ₁		Trials	K ₁	% EV = 100[EV/TV]	% EV = 100[EV/(tol/6)]
EV = 0,0001		3	0,5908	% EV = 3,11	% EV = 8,75
Reproducibility : Appraiser Variation (AV)					
AV = [(X _{DIFF} * K ₂) ² - (EV ² / nr)] ^{1/2}		(n parts, r trials)		% AV = 100[AV/TV]	% AV = 100[AV/(tol/6)]
AV = 0,0000		Oper	K ₂	% AV = 1,55	% AV = 4,37
		3	0,5231		
Repeatability & Reproducibility (GRR)					
GRR = (EV ² + AV ²) ^{1/2}				%GRR=100[GRR/TV]	%GRR=100[GRR/(tol/6)]
GRR = 0,0001				%GRR = 3,48	%GRR= 9,78
Part Variation (PV)					
PV = R _{PART} * K ₃		Parts	K ₃	% PV = 100[PV/TV]	
PV = 0,0025		10	0,3146	% PV = 99,94	
Total Variation (TV)				CONCLUSION: Gage system is satisfactory.	
TV = (GRR ² + PV ²) ^{1/2}					
TV = 0,0025					
Number of Distinct Categories (ndc)					
ndc = 1.41(PV / GRR)					
ndc = 40,54					
- %GRR < 10% with ndc ≥ 5		Gage system is satisfactory.			
- %GRR is between > 10% and < 30% or ndc < 5		May be acceptable based upon importance of application, cost of gage, cost of repairs, etc.			
- %GRR > 30%		Gage system is not satisfactory. Identify the causes and take corrective action.			
Remarks:					



MARKING:
FORD TRADE MARK
PART NUMBER
DATE CLOCK
CAVITY NO



MARKING AREA:
SUPPLIER CODE: ECLNF
MATERIAL



SUITABLE FOR
CONNECTOR 1 (SUMITOMO) BUST-14489-L AND
CONNECTOR 2 (SUMITOMO) BUST-14489-M

NOTES:

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

MATERIAL: PA66 ACC. WSS M4D706-B1; COLOR: BLACK

MATERIAL CODE >PA66< TO APPEAR ON PART PER ISO 1043-1 AND ISO 1043-2 (REFERENCING ISO 11469, PLASTIC AND/OR ISO 1629, RUBBER).

WEIGHT: 1GR

PERFORMANCE REQUIREMENTS:
ASSEMBLY FORCE FOR COMB TO CONNECTOR: 15N MAX. EACH SLOT
RETENTION FORCE FOR COMB OF CONNECTOR 28N MIN. EACH SLOT
TESTING WITH PART PRIOR BEING STORED AT CONDITION
EQUILIBRIUM +23°C ± 5°C AND 50% ± 10% REL. HUMIDITY

PARTS TESTED ACC. TO FORD CETP00.00-E-412 (DVP)

GENERAL NOTES:

THE MASTER SOURCE OF INFORMATION FOR THIS DRAWING IS IN A PC COMPUTER DATABASE. CHANGES ARE NOT PERMITTED WITHOUT JOINT AUTHORIZATION FROM THE WORLDWIDE FASTENER STANDARDS COMMITTEE AND THE RELEVANT ENGINEERING CAD ACTIVITY.

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

ENGINEERING APPROVAL OF PRODUCTION SAMPLES FROM EACH SUPPLIER REQUIRED PRIOR TO AUTHORIZATION OF INITIAL PRODUCTION. FOR SAMPLE REQUIREMENTS SEE ENGINEERING RELEASE.

DIMENSIONS AND INSTRUCTIONS WHICH ARE NOT DEFINED ARE LEFT FOR SUPPLIERS DISCRETION. PROVIDING THE FUNCTION OF THE PART IS NOT IMPAIRED.

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 THE INTENDED CLEANING METHOD

GENERAL TOLERANCES ACC. DIN16742-A1310 PAGE 15 TG6

PART TO CONFORM TO WSS-M99P1111-A STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

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

FOR CURRENT RELEASE STATUS, SEE THE WERS ENGINEERING NOTICE

REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MATL APP
RELEASED			
EE00 E 13161198 000		20160531	
M.KROHN	YBENMESS	MLOZADA	MVAZAN
A1 REDUCED WIDTH A2 UPDATED ASSEMBLY FORCES			
RELEASED -AAB			
EE00 E 13335178 000		20170310	
M.KROHN	YBENMESS	MLOZADAL	MVAZAN

HellermannTyton

REFERENCE		DI-B479-H1BT-14A005-BB-ADIEG-001	
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 28.1		 3RD ANGLE PROJ DIMENSIONS ARE IN MILLIMETERS	
CAD TYPE	CAD LOC.	CAD FILE	DTMC
K-CATIA5	TCe	H1BT-14197-AA-DWG-01	IS MASTER
OPER. NO.	UNIT	DRAWING	
N/A	N/A	H1BT-14197-AAB	
DESIGN	DETAIL	TITLE	
M.KROHN	M.KROHN	CLP WIR	
CHECKED	SAFETY		
YBENMESS	MFG USE	N/A	
SCALE	DATE	DIVISION	ESEE
2:1	20160519	PLANT	N/A
 FORD MOTOR COMPANY			