



Part Submission Warrant

Part Name <u>6-20 CIRCUIT HARNESS ASSEMBLY</u>		Cust. Part Number <u>2L1T-14A464-JA, 2L1T-14A464-EA</u>	
Shown on Drawing Number <u>2L1T-14A464-DA</u>		Org. Part Number <u>30700-1080 -1167</u>	
Engineering Change Level <u>AELE-E-11776560-883 (AB2)</u>		Dated <u>20150924</u>	
Additional Engineering Changes <u>N/A</u>		Dated <u>N/A</u>	
Safety and/or Government Regulation ☐ Yes ☒ No		Purchase Order No. <u>N/A</u>	Weight (kg) <u>0.00xx</u>
Checking Aid Number <u>None</u>		Checking Aid Eng. Change Level <u>N/A</u>	Dated <u>N/A</u>
ORGANIZATION MANUFACTURING INFORMATION		CUSTOMER SUBMITTAL INFORMATION	
Molex Incorporated - Nogales DUNS: 81-222-2818		Nursan	
Supplier Name & Supplier/Vendor Code		Customer Name/Division	
Calzada Industrial Nuevo Nogales S/N, Parque Industrial Nuevo Nogales		N/A	
Street Address		Buyer/Buyer Code	
Nogales	Sonora	84094	Mexico
City	Region	Postal Code	Country
Automotive Application		Application	
MATERIALS REPORTING			
Has customer-required Substances of Concern information been reported? ☒ Yes ☐ No			
Submitted by IMDS or other customer format:		<u>IMDS#: 1547774, 15345889</u>	
Are polymeric parts identified with appropriate ISO marking codes? ☒ Yes ☐ No ☐ n/a			
REASON FOR SUBMISSION (Check at least one)			
☒ Initial submission		☐ Change to Optional Construction or Material	
☐ Engineering Change(s)		☐ Sub-Supplier or Material Source Change	
☐ Tooling: Transfer, Replacement, Refurbishment, or additional		☐ Change in Part Processing	
☐ Correction of Discrepancy		☐ Parts produced at Additional Location	
☐ Tooling Inactive > than 1 year		☐ Other - please specify	
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 <u>assembly</u>			
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 16.000 pc / 8 hours. I also certify that documented evidence of such compliance is on file and available for your review. I have noted any deviation from this declaration below.			
EXPLANATION/COMMENTS: _____			
Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☒ n/a			
Organization Authorized Signature <u>Kevin Maechtlinger</u>		Date <u>5-Mar-2018</u>	
Print Name <u>Kevin Maechtlinger</u>		Phone No. <u>+49-7243-335-376</u>	
Title <u>Quality Engineer</u>		Fax No. <u>-</u>	
E-mail <u>kevin.maechtlinger@molex.com</u>			
FOR CUSTOMER USE ONLY (IF APPLICABLE)			
PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other _____			
Customer Signature _____		Date _____	
Print Name _____		Customer Tracking Number (optional) _____	



Initial Sample Inspection Report

Quality Control

SAMPLE DESCRIPTION: SLEEVE ASSEMBLY WIRE CONNECTOR FEMALE	INSPECTOR: Sgraciano	31-Jul-2017
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Drawing #: 2L1T-14A464-DA	REV: AB2 2015/09/24	VENDOR: MOLEX
Molex P/N: 30700-1080		
Ford P/N: 2L1T-14A464-JA		

No.	PRINT SPEC.					Actual Measurements						UNITS	GAGE #	LEGEND
	Nominal					1	2	3	4	5	6			
1	20.2	+	0.25	-	0.25	20.311	20.330	20.325	20.341	20.334	20.355	MM	I-011	1
2	2.54	+	-	-	-	2.552	2.537	2.538	2.525	2.529	2.522	MM	CMM-003	1
	2.54	+	-	-	-	2.514	2.527	2.528	2.545	2.526	2.527	MM	CMM-003	1
	2.54	+	-	-	-	2.542	2.531	2.536	2.538	2.533	2.540	MM	CMM-003	1
	2.54	+	-	-	-	2.531	2.542	2.520	2.525	2.526	2.517	MM	CMM-003	1
	2.54	+	-	-	-	2.533	2.525	2.531	2.535	2.543	2.537	MM	CMM-003	1
3	2.54	+	-	-	-	2.523	2.527	2.533	2.523	2.529	2.527	MM	CMM-003	1
	2.54	+	-	-	-	2.547	2.544	2.548	2.558	2.559	2.557	MM	CMM-003	1
	2.54	+	-	-	-	2.550	2.556	2.557	2.554	2.564	2.566	MM	CMM-003	1
	2.54	+	-	-	-	2.548	2.556	2.563	2.556	2.564	2.568	MM	CMM-003	1
	2.54	+	-	-	-	2.551	2.549	2.553	2.552	2.560	2.549	MM	CMM-003	1
4	3.00	+	0.13	-	0.13	2.945	2.951	2.967	2.958	2.938	2.964	MM	I-011	1
5	9.8	+	0.25	-	0.25	9.795	9.815	9.817	9.814	9.829	9.826	MM	I-011	1
6	24.22	+	0.90	-	0.90	24.049	24.051	24.074	24.071	24.086	24.055	MM	I-011	1
7	Housing Color " GRAY "					OK	OK	OK	OK	OK	OK		VISUAL	1
8	TPA Color " RED "					OK	OK	OK	OK	OK	OK		VISUAL	1
9	Circuit size " 8 "					OK	OK	OK	OK	OK	OK		VISUAL	1
10	Weight (kg)					0.0029								
11	Notes: 4,5,6,7,8,9,11,13,14					OK	OK	OK	OK	OK	OK			
12	Notes: 1,2,3,10,12,15,16,17					REVIEWED	REVIEWED	REVIEWED	REVIEWED	REVIEWED	REVIEWED			

DIMENSION "OUT OF TOLERANCE"

MARKED THUS "X"

LEGEND:

- 1 Accepted
- 2 Rejected
- 3 Conditional
- 4 Tool life QCC.



Initial Sample Inspection Report

Quality Control

SAMPLE DESCRIPTION: SLEEVE ASSEMBLY WIRE CONNECTOR FEMALE	INSPECTOR: Sgraciano	17-Oct-2017
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Drawing #: 2L1T-14A464-DA	REV: AB2 2015/09/24	VENDOR: MOLEX
Molex P/N: 30700-1167		
Ford P/N: 2L1T-14A464-EA		

No.	PRINT SPEC.				Actual Measurements						UNITS	GAGE #	LEGEND
	Nominal	Tolerance			1	2	3	4	5	6			
1	20.2	+	0.25	- 0.25	20.301	20.283	20.330	20.330	20.319	20.302	MM	I-011	1
2	1.50	+	0.13	- 0.13	1.483	1.498	1.481	1.495	1.498	1.496	MM	COMP-012	1
	1.50	+	0.13	- 0.13	1.484	1.497	1.502	1.510	1.509	1.509	MM	COMP-012	1
	2.54	+	-	- -	2.523	2.535	2.521	2.523	2.521	2.510	MM	CMM-003	1
	2.54	+	-	- -	2.572	2.560	2.562	2.562	2.559	2.568	MM	CMM-003	1
	2.54	+	-	- -	2.524	2.522	2.517	2.523	2.520	2.521	MM	CMM-003	1
	2.54	+	-	- -	2.535	2.517	2.532	2.534	2.530	2.530	MM	CMM-003	1
	2.54	+	-	- -	2.537	2.543	2.530	2.530	2.535	2.535	MM	CMM-003	1
	2.54	+	-	- -	2.558	2.560	2.561	2.568	2.564	2.562	MM	CMM-003	1
	2.54	+	-	- -	2.517	2.539	2.532	2.530	2.524	2.535	MM	CMM-003	1
	2.54	+	-	- -	2.528	2.521	2.519	2.516	2.510	2.511	MM	CMM-003	1
	2.54	+	-	- -	2.528	2.523	2.511	2.520	2.517	2.523	MM	CMM-003	1
	2.54	+	-	- -	2.514	2.523	2.531	2.534	2.524	2.527	MM	CMM-003	1
	2.54	+	-	- -	2.580	2.578	2.575	2.568	2.569	2.573	MM	CMM-003	1
	2.54	+	-	- -	2.518	2.519	2.515	2.525	2.518	2.521	MM	CMM-003	1
	2.54	+	-	- -	2.537	2.532	2.532	2.539	2.533	2.528	MM	CMM-003	1
	2.54	+	-	- -	2.532	2.523	2.530	2.521	2.531	2.529	MM	CMM-003	1
	2.54	+	-	- -	2.558	2.528	2.532	2.529	2.547	2.564	MM	CMM-003	1
	2.54	+	-	- -	2.534	2.523	2.533	2.540	2.565	2.541	MM	CMM-003	1
	2.54	+	-	- -	2.526	2.564	2.566	2.554	2.567	2.570	MM	CMM-003	1
	2.54	+	-	- -	2.551	2.542	2.561	2.536	2.557	2.554	MM	CMM-003	1
	2.54	+	-	- -	2.501	2.515	2.533	2.496	2.532	2.542	MM	CMM-003	1
	2.54	+	-	- -	2.527	2.554	2.532	2.511	2.549	2.540	MM	CMM-003	1
	2.54	+	-	- -	2.556	2.550	2.547	2.550	2.557	2.551	MM	CMM-003	1
	2.54	+	-	- -	2.517	2.563	2.555	2.565	2.558	2.543	MM	CMM-003	1
5	3.00	+	0.13	- 0.13	2.984	2.984	2.986	2.992	2.983	2.985	MM	I-011	1
6	9.8	+	0.25	- 0.25	9.832	9.864	9.803	9.856	9.872	9.884	MM	I-011	1
7	24.22	+	0.90	- 0.90	24.043	24.071	24.062	24.059	24.071	24.031	MM	I-011	1
8	Housing Color " GRAY "				OK	OK	OK	OK	OK	OK		VISUAL	1
9	TPA Color " RED "				OK	OK	OK	OK	OK	OK		VISUAL	1
10	Circuit size " 16 "				OK	OK	OK	OK	OK	OK		VISUAL	1
11	Weight (kg)				0.0045								
12	Notes: 4,5,6,7,8,9,11,13,14				OK	OK	OK	OK	OK	OK			
13	Notes: 1,2,3,10,12,15,16,17				REVIEWED	REVIEWED	REVIEWED	REVIEWED	REVIEWED	REVIEWED			

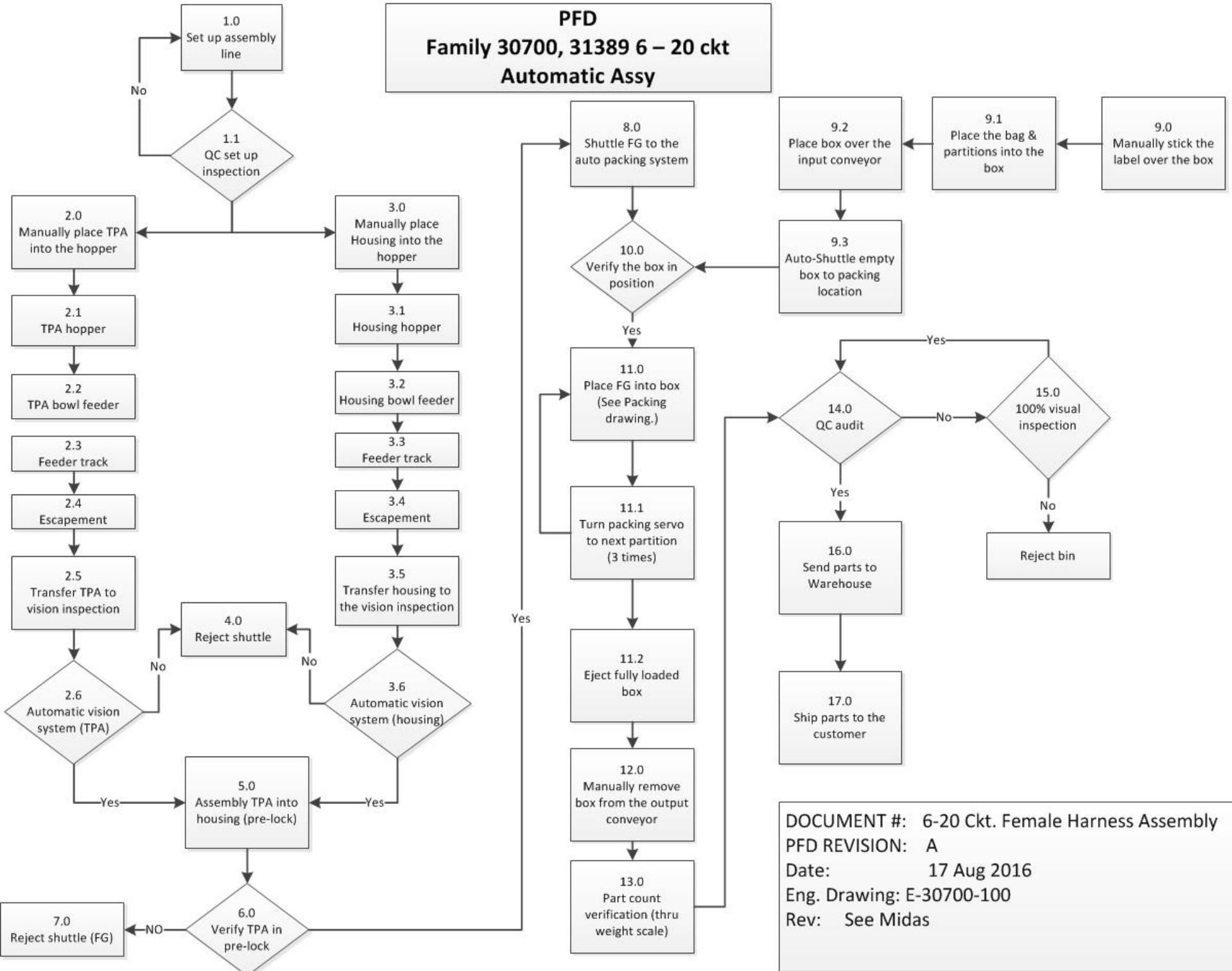
DIMENSION "OUT OF TOLERANCE"

MARKED THUS "X"

LEGEND:

- 1 Accepted
- 2 Rejected
- 3 Conditional
- 4 Tool life QCC.

PFD
Family 30700, 31389 6 – 20 ckt
Automatic Assy



DOCUMENT #: 6-20 Ckt. Female Harness Assembly
PFD REVISION: A
Date: 17 Aug 2016
Eng. Drawing: E-30700-100
Rev: See Midas

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Automotive

Control Plan

☐ Prototype

☐ Pre-Launch

☒ **Production**

Part Name: HDAC Harness Assembly				Product Engineering Designated Control Item () Yes (X) No					First Issued Date: September 6, 2016			Key Contact/ Phone #: Jesus Merino, Tel. 631-3111300 X 3111434 E-mail jmerino@molex.com	
Customer Part Number(s) & Eng. Level: N/A				Cardell / Molex Part Number(s) & Eng. Level: N/A / 30700 - 31389 Rev. See drawing in midas					Cardell Drawing Number & Rev. Level: N/A			Revised By: J. Merino	
									Customer Drawing Number & Rev. Level: N/A			Rev & Date Revised: Rev "B" October, 12 2017	
									Molex Drawing Number & Rev. Level: SD-30700-120				
Core Team: C. Ibarra (Sr. Q.E.), L. Soto (Lider), L. Islas (Q.E.), L. Espinoza (Manuf. Eng.)									Supplier Code: N/A			Filename: 30700,31389 6 - 20 circuitos-safe launch septiembre 6, 2016 rev A	
Proc. No.	Process Name	Seq. No.	Machine, Tools, For Mfg.	Characteristics					Evaluation Technique	Methods		Control Method	Reaction Plan
				Product	Process	Special Class	Resp.	Product/Process Specification		Size	Sample Freq.		
1.0	Set-Up assembly line			Correct housing part number.		No	Group Leader / Quality inspector	Correct housing part number: 30700-2060 to 2062; 30700-2080 to 2082; 30700-2100 to 2102; 30700-2120 to 2122; 30700-2140 to 2142; 30700-2160 to 2162; 30700-2180 to 2182; 30700-2200 to 2202; 30700-2147 to 2149; 30700-2167 to 2169; 30700-2187 to 2189 & 30700-2207 to 2209	Visual	5 PCs.	Each Set-Up , Each box is loaded in production line	Material label, drawing & work order	O20 (non conformance material), MG01 (Manufacturing process), NW04 (work orders), SU01 (Set-Up)
				Housing correct color		No	Group Leader / Quality inspector	Housing colors: Black, Gray and Natural	Visual	5 PCs.	Each Set-Up , Each box is loaded in production line	Material label, drawing & work order	O20 (non conformance material), MG01 (Manufacturing process), NW04 (work orders), SU01 (Set-Up)
				Correct TPA part number		No	Group Leader / Quality inspector	TPA correct part number: 30700-3060, 30700-3080, 30700-3100, 30700-3120, 30700-3140, 30700-3160, 30700-3180, 30700-3200, 30700-3140, 30700-3160, 30700-3180, 30700-3200	Visual	5 PCs.	Each Set-Up , Each box is loaded in production line	Material label, drawing & work order	O20 (non conformance material), MG01 (Manufacturing process), NW04 (work orders), SU01 (Set-Up)
				TPA correct color		No	Group Leader / Quality inspector	TPA color: RED	Visual	5 PCs.	Each Set-Up , Each box is loaded in production line	Material label, drawing & work order	O20 (non conformance material), MG01 (Manufacturing process), NW04 (work orders), SU01 (Set-Up)
1.1	QC Set-Up inspection			Correct set-Up loaded in machine		No	Quality inspector	Verify correct componet part numbers, checks for damages.	Visual	5 PCs.	Each Set- Up	Machine program, drawing, work order	SU01 (Set-Up)
				Correct TPA position		No	Quality inspector	TPA should need to be in pre-lock position	24.22 +/- 0.90 (see ford drawing 2L1T-14A464-DA)	5 PCs.	Each Set-Up.	Drawing, Digital indicator (5 PCs. dimensional).	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader
2.0	Manully place TPA into the hopper		TPA	Load correct TPA part number	Verify correct part# on component bin	No	Operator	TPA PIN:30700-3XXX Red Color, correct circuit number.	Visual	5 PCs.	Start-up	Assembly Drawing & Work order, WI PT-100	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader

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Automotive

Control Plan

☐ Prototype

☐ Pre-Launch

☒ **Production**

Part Name: HDAC Harness Assembly				Product Engineering Designated Control Item () Yes (X) No				First Issued Date: September 6, 2016				Key Contact/ Phone #: Jesus Merino, Tel. 631-3111300 X 3111434 E-mail jmerino@molex.com	
Customer Part Number(s) & Eng. Level: N/A				Cardell / Molex Part Number(s) & Eng. Level: N/A / 30700 - 31389 Rev. See drawing in midas				Cardell Drawing Number & Rev. Level: N/A				Revised By: J. Merino	
								Customer Drawing Number & Rev. Level: N/A				Rev & Date Revised: Rev "B" October, 12 2017	
								Molex Drawing Number & Rev. Level: SD-30700-120					
Core Team: C. Ibarra (Sr. Q.E.), L. Soto (Lider), L. Islas (Q.E.), L. Espinoza (Manuf. Eng.)								Supplier Code: N/A				Filename: 30700,31389 6 - 20 circuitos-safe launch septiembre 6, 2016 rev A	
Proc. No.	Process Name	Seq. No.	Machine, Tools, For Mfg.	Characteristics				Evaluation Technique	Methods			Reaction Plan	
				Product	Process	Special Class	Resp.		Product/Process Specification	Size	Sample Freq.		Control Method
					Avoid mix TPA's part numbers	No	Operator	TPA PIN:30700-3XXX Red Color, correct circuit number.	Visual	5 PCs.	Assembly Process	Vision System, Machine program	O20 (non conformance material). Stop machine, take out all TPA from machine
2.1	TPA hopper		TPA	TPA free of damage	Avoid damaged TPA (rub marks, Broken fingers)	No	Operator	TPA free of damaged or breakages	Visual	5 PCs.	Assembly Process	Hopper/Bowl design, quality acceptance criteria.	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader
2.2	TPA bowl feeder		TPA	TPA free of damage	Avoid damaged TPA (rub marks, Broken fingers)	No	Operator	TPA free of damaged or breakages	Visual	5 PCs.	Assembly Process	Bowl design, quality acceptance criteria.	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader
					Feed TPA in correct position.	No	Operator	TPA needs to be placed in correct position during feeding to machine track.	Visual	100%	Assembly Process	Bowl design	Stop process and notify group leader.
2.3	Feeder track	Process step											
2.4	Escapement	Process step											
2.5	Transfer TPA to vision system		TPA	Good TPA	Rub Marks	No	Operator	TPA free of tooling marks on visible surface	Visual	1 Pc. Random	Assembly Process	Feeder track design.	O20 (non conformance material), Stop process and notify group leader
					Broken fingers	No	Operator / Supplier	TPA with all fingers in place	Visual	1 Pc. Random	Assembly Process	Feeder track design.	O20 (non conformance material), Stop process and notify group leader
2.6	Automatic vision system (TPA)		TPA	Good TPA	Good parts rejected	No	Quality inspector	Accept good parts, reject bad parts	Vision Program	100%	Assembly Process	Golden samples	O20 (non conformance material), Stop process and notify group leader
					Non-conformance part accepted (blocked cavities)	Bad parts accepted	No	Quality inspector	Accept good parts, reject bad parts	Vision Program	100%	Assembly Process	Golden samples
3.0	Manually place housing into the hopper		Housing	Load correct housing part number	Verify correct part# on component bin	No	Operator	Correct housing part number: 30700-2XXXXX	Visual	5 PCs.	Start-up	Assembly Drawing & Work order, WI PT-100	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader
					Avoid mix Housing part numbers	No	Operator	Correct housing part number: 30700-2XXXXX	Visual	5 PCs.	Assembly Process	Assembly Drawing & Work order, WI PT-100	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader
3.1	Husing hopper		Housing	Housing free of damage	Avoid damaged Housing (rub marks, Broken fingers)	No	Operator	Housing free of damaged or breakages	Visual	5 PCs.	Assembly Process	Hopper/Bowl design, quality acceptance criteria.	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader
				Hopper malfunction	Avoid damaged Housing (rub marks, Broken, damaged)	No	Operator	Housing free of damaged or breakages	Visual	5 PCs.	Assembly Process	Hopper/Bowl design, Preventive and corrective maintenance.	Stop process and notify group leader.
3.2	Housing bowl feeder		Housing	Housing free of damage	Avoid damaged Housing (rub marks, Broken, damaged)	No	Operator	Housing free of damaged or breakages	Visual	5 PCs.	Assembly Process	Hopper/Bowl design, quality acceptance criteria.	O20 (non conformance material), SU01 (Set-Up), stop process and notify group leader
3.3	Feeder track	Process step											

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Automotive

Control Plan

☐ Prototype

☐ Pre-Launch

☒ **Production**

Part Name: HDAC Harness Assembly			Product Engineering Designated Control Item () Yes (X) No					First Issued Date: September 6, 2016			Key Contact/ Phone #: Jesus Merino, Tel. 631-3111300 X 3111434 E-mail jmerino@molex.com		
Customer Part Number(s) & Eng. Level: N/A			Cardell / Molex Part Number(s) & Eng. Level: N/A / 30700 - 31389 Rev. See drawing in midas					Cardell Drawing Number & Rev. Level: N/A			Revised By: J. Merino		
								Customer Drawing Number & Rev. Level: N/A			Rev & Date Revised: Rev "B" October, 12 2017		
								Molex Drawing Number & Rev. Level: SD-30700-120					
Core Team: C. Ibarra (Sr. Q.E.), L. Soto (Lider), L. Islas (Q.E.), L. Espinoza (Manuf. Eng.)								Supplier Code: N/A			Filename: 30700,31389 6 - 20 circuitos-safe launch septiembre 6, 2016 rev A		
Proc. No.	Process Name	Seq. No.	Machine, Tools, For Mfg.	Characteristics				Evaluation Technique	Methods			Reaction Plan	
				Product	Process	Special Class	Resp.		Product/Process Specification	Sample Size	Freq.		Control Method
3.4	Escapement			Process step									
3.5	Transfer Housing to vision system		Housing	Good housings	Rub Marks	No	Operator	TPA free of tooling marks on visible surface	Visual	1 Pc. Random	Assembly Process	Feeder track design.	O20 (non conformance material), Stop process and notify group leader
					Broken, Damaged.	No	Operator / Supplier	TPA with all fingers in place	Visual	1 Pc. Random	Assembly Process	Feeder track design.	O20 (non conformance material), Stop process and notify group leader
3.6	Automatic vision system (Housing)		Housing	Good housings (Polarization)	Good parts rejected	No	Quality inspector	Accept good parts, reject bad parts	Vision Program	100%	Assembly Process	Golden samples	O20 (non conformance material), Stop process and notify group leader
					Bad /incorrect parts accepted	No	Quality inspector	Accept good parts, reject bad parts	Vision Program	100%	Assembly Process	Golden samples	O20 (non conformance material), Stop process and notify group leader
4.0	Reject Shuttle (Components)		TPA / Housing	Reject Shuttle works O.K.	Jam reject parts	No	Operator	Reject parts should go to red bin	Visual	100%	Assembly Process	Golden samples (reject parts should go to red bin)	Stop process and notify group leader.
					Scratch assembly	No	Operator	Assembly should be free of damage	Visual	1 Pc. Random	Assembly Process	Golden samples (accepted parts should not be damaged)	Stop process and notify group leader.
					Good parts rejected	No	Operator	Good parts should need pass to pack area	Visual	100%	Assembly Process	Golden samples (accepted parts should pass to assembly area)	O20 (non conformance material), Stop process and notify group leader
					Bad /incorrect parts accepted	No	Operator	Accept good parts, reject bad parts	Vision Program	100%	Assembly Process	Golden samples (reject parts should go to red bin)	O20 (non conformance material), Stop process and notify group leader
5.0	Assembly TPA into the housing (Pre-Lock)		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	TPA should need to be assembled in pre-lock position	No	Operator	TPA should need to be in pre-lock position	24.22 +/- 0.90 (see ford drawing 2L1T-14A464-DA)	100%	Assembly Process	Vision System (100% position inspection), TPA assembly tooling design	O20 (non conformance material), stop process and notify group leader
					Missing TPA								
					TPA over inserted								
					TPA underinserted								
					TPA cosmetic damage	No	Operator		Visual	1 Pc. Random	Assembly Process	TPA assembly tooling design	O20 (non conformance material), Stop process and notify group leader
TPA with broken features			Final assembly should need to be free of damane	Vision Program	100%	Assembly Process	Vision System (100% TPA features)						

Molex

Automotive

Control Plan

☐ Prototype

☐ Pre-Launch

☒ **Production**

Part Name: HDAC Harness Assembly				Product Engineering Designated Control Item () Yes (X) No					First Issued Date: September 6, 2016			Key Contact/ Phone #: Jesus Merino, Tel. 631-3111300 X 3111434 E-mail jmerino@molex.com	
Customer Part Number(s) & Eng. Level: N/A				Cardell / Molex Part Number(s) & Eng. Level: N/A / 30700 - 31389 Rev. See drawing in midas					Cardell Drawing Number & Rev. Level: N/A			Revised By: J. Merino	
									Customer Drawing Number & Rev. Level: N/A			Rev & Date Revised: Rev "B" October, 12 2017	
									Molex Drawing Number & Rev. Level: SD-30700-120				
Core Team: C. Ibarra (Sr. Q.E.), L. Soto (Lider), L. Islas (Q.E.), L. Espinoza (Manuf. Eng.)									Supplier Code: N/A			Filename: 30700,31389 6 - 20 circuitos-safe launch septiembre 6, 2016 rev A	
Proc. No.	Process Name	Seq. No.	Machine, Tools, For Mfg.	Characteristics					Evaluation Technique	Methods		Control Method	Reaction Plan
				Product	Process	Special Class	Resp.	Product/Process Specification		Sample Size	Freq.		
					Housing Damage				Visual	1 Pc. Random	Assembly Process	TPA assembly tooling design	
6.0	Verify TPA in pre-lock		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts) Only good parts accepted	TPA should need to be assembled in pre-lock position	No	Operator	TPA should need to be in pre-lock position	24.22 +/- 0.90 (see ford drawing 2L1T-14A464-DA)	100%	Assembly Process	Vision System (100% position inspection), TPA assembly tooling design, Golden samples	O20 (non conformance material), stop process and notify group leader
					Good parts rejected	No	Operator	Good parts should need pass to pack area	Visual	100%	Assembly Process	Golden samples (accepted parts should pass to pakaging area)	O20 (non conformance material), Stop process and notify group leader
					Bad /incorrect parts accepted	No	Operator	Accept good parts, reject bad parts	Vision Program	100%	Assembly Process	Golden samples (reject parts should go to red bin)	O20 (non conformance material), Stop process and notify group leader
7.0	reject Shuttle (FG)		TPA+Housing	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts) Only good parts accepted	Good parts rejected	No	Operator	Good parts should need pass to pack area	Visual	100%	Assembly Process	Golden samples (accepted parts should pass to pakaging area)	O20 (non conformance material), Stop process and notify group leader
					Bad /incorrect parts accepted	No	Operator	Accept good parts, reject bad parts	Vision Program	100%	Assembly Process	Golden samples (reject parts should go to red bin)	O20 (non conformance material), Stop process and notify group leader
8.0	Shuffle FG to the auto packaing system		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Only pack accepted parts and correct qty	No	Operator	Final assembly should need to be free of damage	Visual	1 Pc. Random	Assembly Process	Feeder track design.	O20 (non conformance material), Stop process and notify group leader
9.0	Manually stick the label over the box		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Put correct label (correct P/N, Work order, and quantity)	No	Operator	Label should have correct information	Visual	100%	Assembly Process	Work order, Drawing, inspection plan	O20 (non conformance material), Stop process and notify group leader

Molex

Automotive

Control Plan

☐ Prototype

☐ Pre-Launch

☒ **Production**

Part Name: HDAC Harness Assembly			Product Engineering Designated Control Item () Yes (X) No					First Issued Date: September 6, 2016			Key Contact/ Phone #: Jesus Merino, Tel. 631-3111300 X 3111434 E-mail jmerino@molex.com		
Customer Part Number(s) & Eng. Level: N/A			Cardell / Molex Part Number(s) & Eng. Level: N/A / 30700 - 31389 Rev. See drawing in midas					Cardell Drawing Number & Rev. Level: N/A			Revised By: J. Merino		
								Customer Drawing Number & Rev. Level: N/A			Rev & Date Revised: Rev "B" October, 12 2017		
								Molex Drawing Number & Rev. Level: SD-30700-120					
Core Team: C. Ibarra (Sr. Q.E.), L. Soto (Lider), L. Islas (Q.E.), L. Espinoza (Manuf. Eng.)								Supplier Code: N/A			Filename: 30700,31389 6 - 20 circuitos-safe launch septiembre 6, 2016 rev A		
Proc. No.	Process Name	Seq. No.	Machine, Tools, For Mfg.	Characteristics				Evaluation Technique	Methods		Control Method	Reaction Plan	
				Product	Process	Special Class	Resp.		Product/Process Specification	Sample			Size
9.1	Place bag & partitions into the box			process step									
9.2	Place box over the input conveyor			process step									
9.3	Auto-shuttle empty box to packing location		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Box in correct position	No	Operator	Box should need to be placed in correct position	Visual	100%	Assembly Process	Presence sensor in conveyor	Stop process and notify group leader.
10.0	Verify the box in position			process step									
11.0	Place FG into box (see packaging drawing)		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Missing assemblies	No	Operator	Pack correct quantity	weigh count	100%	Assembly Process	Weight count / PCL control	O20 (non conformance material), Stop process and notify group leader
				Over fill partition									
11.1	Turn packing servo to next partition (3 times)		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Turno servo in correct time	No	Operator	Pack correct quantity	weigh count	100%	Assembly Process	Weight count / PCL control sensors	O20 (non conformance material), Stop process and notify group leader
11.2	Eject fully loaded box		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Eject box with correct quantity	No	Operator	Pack correct quantity	weigh count	100%	Assembly Process	Air pressure in cylinder, Cylinder stroke speed control	O20 (non conformance material), Stop process and notify group leader
12.0	Manually remove box from the output conveyor		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	get box with correct qty	No	Operator	Pack correct quantity	weigh count	100%	Assembly Process	work order, operator training Q.C. Audits	O20 (non conformance material), Stop process and notify group leader
13.0	part count verification (thru weight scale)		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	get box with correct qty	No	Operator	Pack correct quantity	weigh count	100%	Assembly Process	work order, operator training	O20 (non conformance material), Stop process and notify group leader
14.0	Q.C. audit		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Accept good parts and reject bad parts	No	Quality Inspector	Connector meets drawing specification	audit	10%	Each box	Work order, Inspection Plan,	O20 (non conformance material), INSP100 (Inspección en proceso e inspección final) Stop process and notify group leader

☐ Prototype☐ Pre-Launch

☐ **Production**

Part Name: HDAC Harness Assembly				Product Engineering Designated Control Item () Yes (X) No				First Issued Date: September 6, 2016				Key Contact/ Phone #: Jesus Merino, Tel. 631-3111300 X 3111434 E-mail jmerino@molex.com		
Customer Part Number(s) & Eng. Level: N/A				Cardell / Molex Part Number(s) & Eng. Level: N/A / 30700 - 31389 Rev. See drawing in midas				Cardell Drawing Number & Rev. Level: N/A				Revised By: J. Merino		
								Customer Drawing Number & Rev. Level: N/A				Rev & Date Revised: Rev "B" October, 12 2017		
								Molex Drawing Number & Rev. Level: SD-30700-120						
Core Team: C. Ibarra (Sr. Q.E.), L. Soto (Lider), L. Islas (Q.E.), L. Espinoza (Manuf. Eng.)								Supplier Code: N/A				Filename: 30700,31389 6 - 20 circuitos-safe launch septiembre 6, 2016 rev A		
Proc. No.	Process Name	Seq. No.	Machine, Tools, For Mfg.	Characteristics					Evaluation Technique	Methods			Reaction Plan	
				Product	Process	Special Class	Resp.	Product/Process Specification		Size	Sample			Control Method
											Freq.			
15.0	100% visual Inspection		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Sort any reject parts from Quality.	No	Operator	Segregate any defective part from box or lot	Visual inspection	100%	Each box	Work order, Inspection Plan, Q.C. Audits.	O20 (non conformance material), Scrap defective parts.	
16.0	Send parts to warehouse		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Storage parts in a safe place to avoid any degradation or damage and good inventory control.	No	Shipping Team	Storage parts in warehouse and load the correct localization in SAP	Visual / SAP System	100%	Every time parts are in 901 localization in SAP	W117	Report any no situation it not allows receive material in shipping warehouse to the supervisor.	
17.0	Shipping parts to the customers		Automatic machine 3105-30700-01 & 3105-30700-02	Final assembly 30700-1XXX / 31389-1XXX (6 -20 Ckts)	Sent to customer correct connector part number and quantity	No	Shipping Team	Send correct part number and quantity to any customer	Delivery note & SAP system	100%	Every time customer put an order in SAP	W101	Report any no situation it not allows receive material in shipping warehouse to the supervisor.	

[illegible]

Gage R&R for Resultado

Gage R&R Study - ANOVA Method

Gage R&R for Resultado

Gage name: I-021
Date of study: September/20/2016
Reported by: Perla Leal
Tolerance: ,90
Misc: 30700-1207

Two-Way ANOVA Table With Interaction

Source	DF	SS	MS	F	P
Pieces	9	0,635272	0,0705858	751,307	0,000
Operador	2	0,000376	0,0001878	1,999	0,164
Pieces * Operador	18	0,001691	0,0000940	4,228	0,000
Repeatability	60	0,001333	0,0000222		
Total	89	0,638672			

α to remove interaction term = 0,05

Gage R&R

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0,0000493	0,62
Repeatability	0,0000222	0,28
Reproducibility	0,0000270	0,34
Operador	0,0000031	0,04
Operador*Pieces	0,0000239	0,30
Part-To-Part	0,0078324	99,38
Total Variation	0,0078817	100,00

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)
Total Gage R&R	0,0070185	0,042111	7,91
Repeatability	0,0047140	0,028284	5,31
Reproducibility	0,0051997	0,031198	5,86
Operador	0,0017685	0,010611	1,99
Operador*Pieces	0,0048897	0,029338	5,51
Part-To-Part	0,0885010	0,531006	99,69
Total Variation	0,0887789	0,532673	100,00

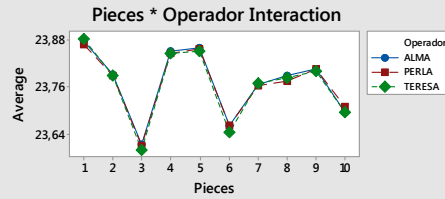
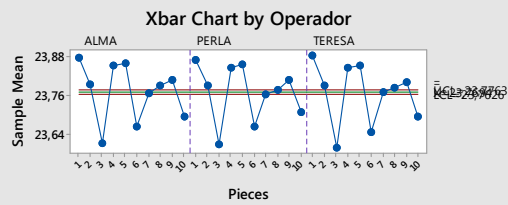
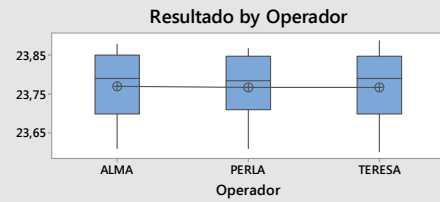
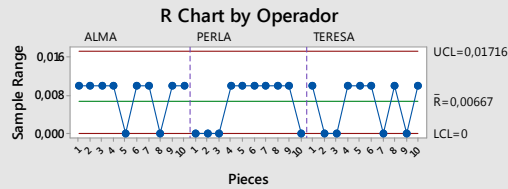
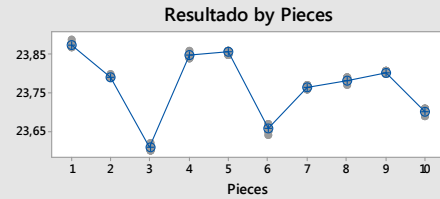
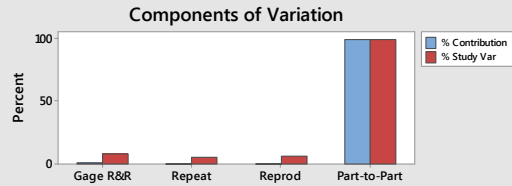
Number of Distinct Categories = 17

Gage R&R for Resultado

Gage R&R Machine-3105-30700-01

Gage name: I-021
Date of study: September/20/2016

Reported by: Perla Leal
Tolerance: ,90
Misc: 30700-1207



Pieces	PERLA			Pieces		TERESA		Pieces		ALMA	
1	23,87	23,87	23,87	1	23,89	23,88	23,9	1	23,88	23,87	23,88
2	23,79	23,79	23,79	2	23,79	23,79	23,8	2	23,79	23,79	23,8
3	23,61	23,61	23,61	3	23,6	23,6	23,6	3	23,61	23,62	23,61
4	23,84	23,85	23,85	4	23,84	23,85	23,9	4	23,85	23,85	23,86
5	23,86	23,85	23,86	5	23,86	23,85	23,9	5	23,86	23,86	23,86
6	23,66	23,67	23,66	6	23,65	23,65	23,6	6	23,66	23,67	23,66
7	23,76	23,76	23,77	7	23,77	23,77	23,8	7	23,77	23,76	23,77
8	23,78	23,78	23,77	8	23,79	23,78	23,8	8	23,79	23,79	23,79
9	23,81	23,81	23,8	9	23,8	23,8	23,8	9	23,8	23,81	23,81
10	23,71	23,71	23,71	10	23,7	23,7	23,7	10	23,69	23,7	23,7

Gage R&R Study - ANOVA Method

Gage R&R for Resultado_1

Gage name: I-021
Date of study: September-20-2016
Reported by: Perla Leal
Tolerance: ,90
Misc: Machine. 3105-30700-02

Two-Way ANOVA Table With Interaction

Source	DF	SS	MS	F	P
Piezas_1	9	0,634179	0,0704643	1412,77	0,000
Operador_1	2	0,000347	0,0001733	3,48	0,053
Piezas_1 * Operador_1	18	0,000898	0,0000499	2,81	0,001
Repeatability	60	0,001067	0,0000178		
Total	89	0,636490			

α to remove interaction term = 0,05

Gage R&R

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0,0000326	0,41
Repeatability	0,0000178	0,23
Reproducibility	0,0000148	0,19
Operador_1	0,0000041	0,05
Operador_1*Piezas_1	0,0000107	0,14
Part-To-Part	0,0078238	99,59
Total Variation	0,0078564	100,00

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)
Total Gage R&R	0,0057090	0,034254	6,44
Repeatability	0,0042164	0,025298	4,76
Reproducibility	0,0038490	0,023094	4,34
Operador_1	0,0020286	0,012172	2,29
Operador_1*Piezas_1	0,0032710	0,019626	3,69
Part-To-Part	0,0884524	0,530714	99,79
Total Variation	0,0886364	0,531819	100,00

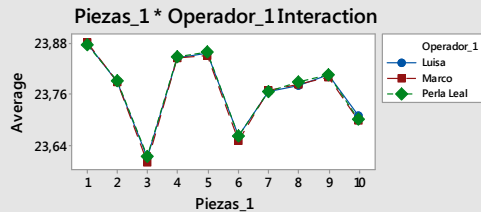
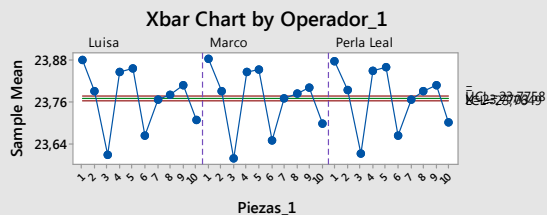
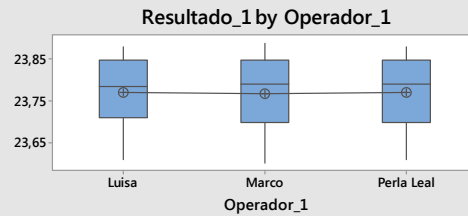
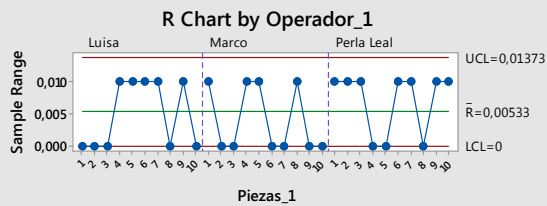
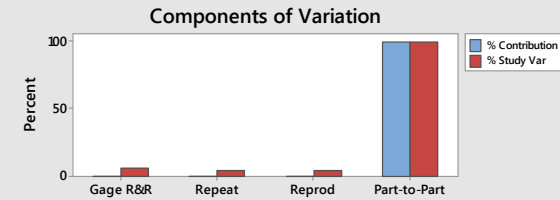
Number of Distinct Categories = 21

Gage R&R for Resultado_1

Gage R&R Machine 3105-30700-02, N/P 30700-1207

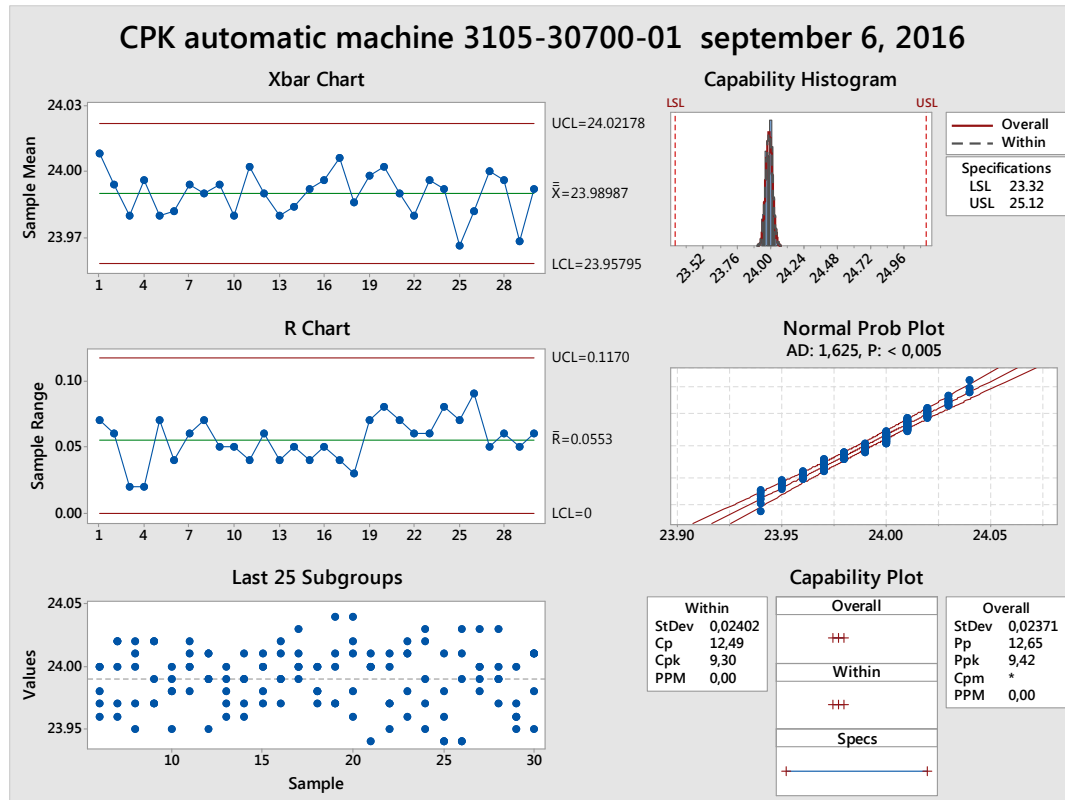
Gage name: I-021
Date of study: September-20-2016

Reported by: Perla Leal
Tolerance: ,90
Misc: Machine. 3105-30700-02



PIEZA S		PERLA		PIEZA S		LUISA		PIEZA S		MARC O	
1	23,88	23,87	23,88	1	23,88	23,88	23,88	1	23,89	23,88	23,88
2	23,79	23,79	23,8	2	23,79	23,79	23,79	2	23,79	23,79	23,79
3	23,61	23,62	23,61	3	23,61	23,61	23,61	3	23,6	23,6	23,6
4	23,85	23,85	23,85	4	23,85	23,85	23,85	4	23,84	23,85	23,85
5	23,86	23,86	23,86	5	23,85	23,86	23,86	5	23,86	23,85	23,85
6	23,66	23,67	23,66	6	23,67	23,66	23,66	6	23,65	23,65	23,65
7	23,76	23,76	23,77	7	23,76	23,77	23,77	7	23,77	23,77	23,77
8	23,79	23,79	23,79	8	23,78	23,78	23,78	8	23,79	23,78	23,78
9	23,81	23,81	23,81	9	23,81	23,8	23,8	9	23,8	23,8	23,8
10	23,7	23,7	23,7	10	23,71	23,71	23,71	10	23,7	23,7	23,7

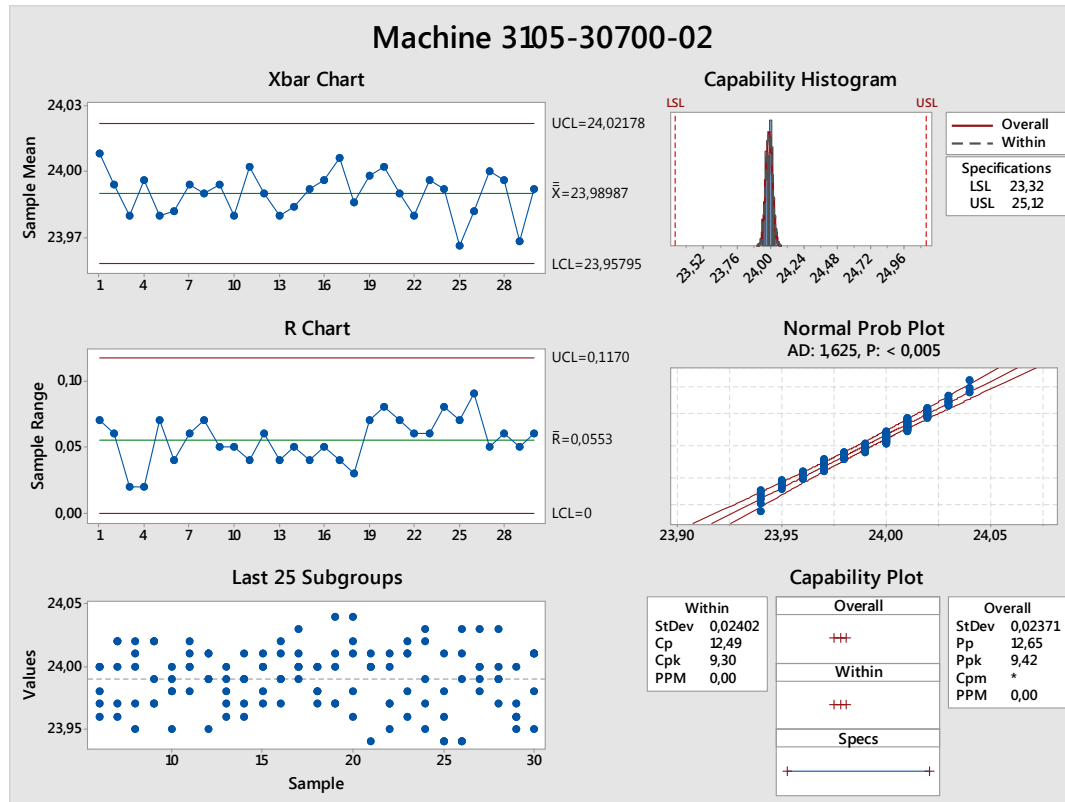
Initial Study-CPK
Sept-06-2016



P/N:	307001120		Initial	Study-CPK
was measured with height indicator				I-064
Specification 24.22+-0.90				
Max	25.12	Min	23.32	

Sample #	Result	Sample #	Result	Sample #	Result	Sample #	Result	Sample #	Result	Sample #	Result
1	24.04	26	23.97	51	24.00	76	23.99	101	23.94	126	23.94
2	24.00	27	24.00	52	24.02	77	24.01	102	24.00	127	23.94
3	24.00	28	24.00	53	24.01	78	23.97	103	24.00	128	23.99
4	24.03	29	23.96	54	23.98	79	23.99	104	24.00	129	24.03
5	23.97	30	23.98	55	24.00	80	24.02	105	24.01	130	24.01
6	24.02	31	23.97	56	24.01	81	24.00	106	24.00	131	24.00
7	24.00	32	23.96	57	23.99	82	23.99	107	23.97	132	24.00
8	23.98	33	24.00	58	23.95	83	24.01	108	23.95	133	23.99
9	23.96	34	24.02	59	23.99	84	24.03	109	24.01	134	24.03
10	24.01	35	24.02	60	24.01	85	24.00	110	23.97	135	23.98
11	23.97	36	23.97	61	23.98	86	23.98	111	24.02	136	23.99
12	23.99	37	24.00	62	23.96	87	23.98	112	24.01	137	24.00
13	23.98	38	24.02	63	24.00	88	24.00	113	24.01	138	23.99
14	23.99	39	24.01	64	23.97	89	23.97	114	23.96	139	24.03
15	23.97	40	23.95	65	23.99	90	24.00	115	23.98	140	23.97
16	23.99	41	23.97	66	23.97	91	24.01	116	24.02	141	23.97
17	24.00	42	23.99	67	24.01	92	23.97	117	23.97	142	23.96
18	23.99	43	24.02	68	23.99	93	23.97	118	23.99	143	23.95
19	23.99	44	24.02	69	23.96	94	24.00	119	23.95	144	24.00
20	24.01	45	23.97	70	23.99	95	24.04	120	24.03	145	23.96
21	24.00	46	23.98	71	23.98	96	23.98	121	24.01	146	24.01
22	23.97	47	24.00	72	24.01	97	24.02	122	23.98	147	24.01
23	24.01	48	23.95	73	24.00	98	24.04	123	23.94	148	24.01
24	23.98	49	23.99	74	24.00	99	24.01	124	23.96	149	23.98
25	23.94	50	23.98	75	23.97	100	23.96	125	23.94	150	23.95

Initial Study-CPK
Sept-15-2016



PIEZAS	Resultado
1	24,04
2	24
3	24
4	24,03
5	23,97
6	24,02
7	24
8	23,98
9	23,96
10	24,01
11	23,97
12	23,99
13	23,98
14	23,99
15	23,97
16	23,99
17	24
18	23,99
19	23,99
20	24,01
21	24

Initial Study-CPK
Sept-15-2016

22	23,97
23	24,01
24	23,98
25	23,94
26	23,97
27	24
28	24
29	23,96
30	23,98
31	23,97
32	23,96
33	24
34	24,02
35	24,02
36	23,97
37	24
38	24,02
39	24,01
40	23,95
41	23,97
42	23,99
43	24,02
44	24,02
45	23,97
46	23,98
47	24
48	23,95
49	23,99
50	23,98
51	24
52	24,02
53	24,01
54	23,98
55	24
56	24,01
57	23,99
58	23,95
59	23,99
60	24,01
61	23,98
62	23,96
63	24
64	23,97
65	23,99
66	23,97

Initial Study-CPK
Sept-15-2016

67	24,01
68	23,99
69	23,96
70	23,99
71	23,98
72	24,01
73	24
74	24
75	23,97
76	23,99
77	24,01
78	23,97
79	23,99
80	24,02
81	24
82	23,99
83	24,01
84	24,03
85	24
86	23,98
87	23,98
88	24
89	23,97
90	24
91	24,01
92	23,97
93	23,97
94	24
95	24,04
96	23,98
97	24,02
98	24,04
99	24,01
100	23,96
101	23,94
102	24
103	24
104	24
105	24,01
106	24
107	23,97
108	23,95
109	24,01
110	23,97
111	24,02

Initial Study-CPK
Sept-15-2016

112	24,01
113	24,01
114	23,96
115	23,98
116	24,02
117	23,97
118	23,99
119	23,95
120	24,03
121	24,01
122	23,98
123	23,94
124	23,96
125	23,94
126	23,94
127	23,94
128	23,99
129	24,03
130	24,01
131	24
132	24
133	23,99
134	24,03
135	23,98
136	23,99
137	24
138	23,99
139	24,03
140	23,97
141	23,97
142	23,96
143	23,95
144	24
145	23,96
146	24,01
147	24,01
148	24,01
149	23,98
150	23,95



>> FMEA submission Letter

Proprietary Information Statement

You have requested information that is confidential and proprietary to Molex, LLC. We are sorry for the inconvenience but some types of information cannot be routinely supplied. We appreciate your understanding in this regards. However, we want to reassure you that your business is important to us. Please note that relevant documents may be viewed in-person at the manufacturing site or in a Molex Design Center

With my best regards,

Kevin Maechtlinger

Molex, LLC

Office Location: Molex Elektronik GmbH – Germany

Phone +49 7243 335 - 376

Cell +49 174 335 8611

Email: Kevin.Maechtlinger@molex.com

Assy Part: 30700-1080

0307002080 HOUSING HARNESS GRAY 8 CKT
(0899921436)

0307003080 8 CKT TPA
(0899920273)

Assy Part: 30700-1167

0307002167 HDAC64 DR FEM HSNG 16 CKT GRY POL 1
(0899921451)

0307003160 HDAC64 FEM 16 CKT TPA
(0899920273)

Certificate ICC-116093

Idemitsu Chemicals U.S.A. Corporation
3000 Town Center. Suite 2820
Southfield, MI 48075 USA
Phone: (248) 355-9550 Fax: (248) 355-9330

CERTIFICATE OF QUALITY

16-Oct-17

Molex Inc.
700 Upland
Lincoln, NE 68521
USA

Material: XAREC
Grade: WA 212
Color: CD780916 GRAY
Batch/Lot No: FH0601QCJ1
Quantity kgs: 5,180.00
PO No: 1002628857
Cust Mtl: 899921436
Delivery Date: 17-Oct-17
Shipping Order: 13423

Feature	Units	Results	Limit		Method
		FH0601QCJ1	Minimum	Maximum	
Ash Content	%	30.0	28.0	32.0	ISO 3451-1A
Tensile Strength, Break 5mm/min.	MPa	111	95.0	-	ISO 527
Tensile Elongation,Break 5mm/min.	%	1.7	1.6	-	ISO 527
Granulation per 100 pellets	g	2.4	2.0	3.0	DOWN 101403
Melt Viscosity T5 , 400sec-1	Pa·s	265	165	369	DOWN 101821
Melt Viscosity T10 , 400sec-1	Pa·s	247	158	374	DOWN 101821
Melt Viscosity T5 , 1000sec-1	Pa·s	154	105	207	DOWN 101821
Melt Viscosity T10 , 1000sec-1	Pa·s	141	98	205	DOWN 101821



Data approved by:
Kazuhiro Nakata
Business Manager, Engineering Plastics

Certificate ICC-116261

Idemitsu Chemicals U.S.A. Corporation
3000 Town Center. Suite 2820
Southfield, MI 48075 USA
Phone: (248) 355-9550 Fax: (248) 355-9330

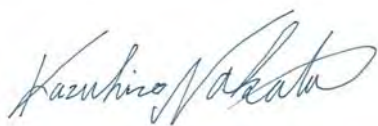
CERTIFICATE OF QUALITY

23-Jan-18

Molex Inc.
700 Upland
Lincoln, NE 68521
USA

Material: XAREC
Grade: N WA 7030-02
Color: CJ781101 STONE GRAY
Batch/Lot No: FK3001QCJ1
Quantity kgs: 3,700.00
PO No: 1002938894
Cust Mtl: 899921451
Delivery Date: 25-Jan-18
Shipping Order: 13659

Feature	Units	Results	Limit		Method
		FK3001QCJ1	Minimum	Maximum	
Ash Content	%	29.8	28.0	32.0	ISO 3451-1A
Tensile Strength, Break 5mm/min.	MPa	180	150	-	ISO 527
Tensile Elongation,Break 5mm/min.	%	2.4	2.2	-	ISO 527
Melt Viscosity T5 , 400sec-1	Pa·s	178	108	224	DOWN 101821
Melt Viscosity T10 , 400sec-1	Pa·s	133	68	199	DOWN 101821



Data approved by:
Kazuhiro Nakata
Business Manager, Engineering Plastics



MOLEX INC.
700 UPLAND
LINCOLN NE 68521
USA

The Verst Group
Ticona Polymers
1100 Burlington Pike
FLORENCE KY 41042
USA

Type 4 Certificate of Analysis

CELANEX 3300-2 ES3144 RED M0

Customer Part No.:	0899920273	Cert Issue Date:	28 Sep 2017
Formula No.:	3300-2	Qty Shipped:	2,500.000 KG
Catalog:	20000804	Order Item /date:	1896458 10 / 12 Sep 2017
Color No.:	ES3144	Delivery item/date:	85372118 900002 / 04 Oct 2017
Produced at:	Florence, KY, USA	Account #:	2066402
		Customer PO No.:	1002528663
		Rail car:	See Senders Inst.

Batch 0000975190

In reference to the above, this is to advise you that this is a standard product and meets the following requirements:

SPECIFICATIONS: CELANEX 3300-2 RED

BATCH RELEASE DATA	UoM	Value	Limit
Date when Batch Was Produced		20170831	
Ash Content	%(m)	30.71	28.00 - 32.00
Melt Visc. (scanning)@1000/s	Pascal sec	257.5	160.0 - 350.0
Melt Visc. (scanning)@400/s	Pascal sec	358.3	260.0 - 430.0

ANNUAL TESTS (REVISED ON)	UoM	Value	Limit
Flexural modulus (24 Nov 2016)	MPa	9370	min. 8000
Flexural Stress (24 Nov 2016)	MPa	203.8	min. 180.0
Izod Notched Impact Strength (24 Nov 2016)	kJ/m ²	7.62	min. 5.00
Tensile Stress at break (24 Nov 2016)	MPa	132.1	min. 100.0

COMMENTS

These test data are determined based on standard ISO and/or ASTM testing procedures.

Polyester Global Business Line

If you have questions regarding this letter, please call your Customer Service Team at 800-526-4960.