



Part Submission Warrant

Part Name	<u>MX64 ISO Receptacle Terminal</u>	Cust. Part Number	<u>EU5T-14474-CA</u>
Shown on Drawing Number	<u>9A8T-14474-AA</u>	Org. Part Number	<u>33468-0023</u>
Engineering Change Level	<u>AELE-E-11776560-525 (B)</u>	Dated	<u>N/A</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>0,0002</u>
Checking Aid Number	<u>N/A</u>	Checking Aid Eng. Change Level	<u>N/A</u>
		Dated	<u>N/A</u>

ORGANIZATION MANUFACTURING INFORMATION

Molex Incorporated DUNS: 94-4247394

Supplier Name & Supplier/Vendor Code

700 Kingbird Road

Street Address

Lincoln Nebraska 68521 USA

City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

Nursan

Customer Name/Division

N/A

Buyer/Buyer Code

N/A

Application

MATERIALS REPORTING

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

Submitted by IMDS or other customer format: IMDS ID: 238527452

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 D33467-4B Die Stamping Process

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 35100 / 1 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 Kevin Maechtlinger Date August 28, 2013

Print Name Kevin Maechtlinger Phone No. +49-7243-335-376 Fax No. -

Title Quality Engineer E-mail kevin.maechtlinger@molex.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature _____ Date _____

Print Name _____ Customer Tracking Number (optional) _____

TABLE 1 (B6)														(B3)	
GRIP STYLE	WIRE SIZE	GRIP CODE	FORD PART NUMBER	MOLEX PART NUMBER	REEL PAYOFF DIRECTION	DESCRIPTION	BASE MATERIAL	PLATING ID	LUBRICATION	APPROXIMATE WEIGHT	MATERIAL THICKNESS	MAXIMUM TEMPERATURE	WIRE SPECIFICATION	APPLICATION SPECIFICATION	MATING PARTS
SAE	18/20 AWG	B	9A8T-14474-AA	33467-0006	D	MX64 SAE RCPT. TERM. Au. LARGE GRIP	COPPER ALLOY	Au Lead Free	NO	0.22g	0.25mm	125° C	ESB-MIL123-A	AS-33468-001	DIRECT CONNECT
			9A8T-14474-CA	33468-0004	D	MX64 SAE RCPT. TERM. Sn. LARGE GRIP	COPPER ALLOY	Sn Lead Free	NO	0.22g	0.25mm	125° C	ESB-MIL123-A		
		A	9A8T-14474-BA	33467-0004	D	MX64 SAE RCPT. TERM. Au. SMALL GRIP	COPPER ALLOY	Au Lead Free	NO	0.21g	0.25mm	125° C	ESB-MIL123-A		
	22 AWG		9A8T-14474-DA	33468-0002	D	MX64 SAE RCPT. TERM. Sn. SMALL GRIP	COPPER ALLOY	Sn Lead Free	NO	0.21g	0.25mm	125° C	ESB-MIL123-A		
(B8) ISO	0.50/0.75 mm ²	B	EU5T-14474-DA	33467-0023	D	MX64 ISO RCPT. TERM. Au. LARGE GRIP	COPPER ALLOY	Au Lead Free	NO	0.22g	0.25mm	125° C	ES-AUST-1A348-AA 3TAD	AS-33468-002	
			EU5T-14474-CA	33468-0023	D	MX64 ISO RCPT. TERM. Sn. LARGE GRIP	COPPER ALLOY	Sn Lead Free	NO	0.22g	0.25mm	125° C	ES-AUST-1A348-AA 3TAD		
		A	EU5T-14474-BA	33467-0021	D	MX64 ISO RCPT. TERM. Au. SMALL GRIP	COPPER ALLOY	Au Lead Free	NO	0.21g	0.25mm	125° C	ES-AUST-1A348-AA 3TAD		
	0.35 mm ²		EU5T-14474-AA	33468-0021	D	MX64 ISO RCPT. TERM. Sn. SMALL GRIP	COPPER ALLOY	Sn Lead Free	NO	0.21g	0.25mm	125° C	ES-AUST-1A348-AA 3TAD		

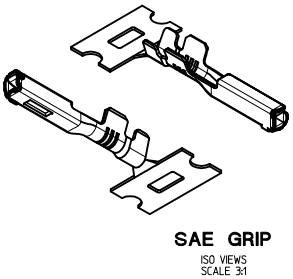
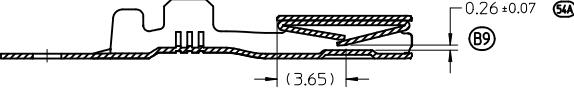
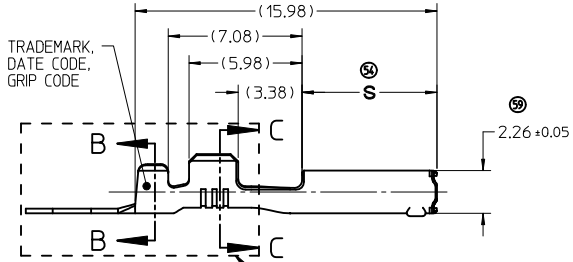
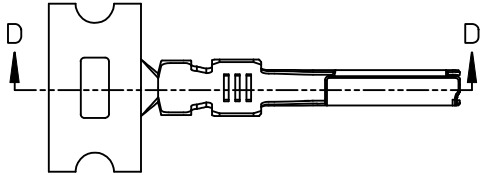
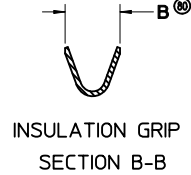


TABLE 2 (B7)				
FORD PART NUMBER	MOLEX PART NUMBER	DIM A ±0.3	DIM B ±0.3	DIM S
9A8T-14474-AA	33467-0006	3.0	2.9	6.97-7.27
9A8T-14474-CA	33468-0004	3.0	2.9	7.15 ±0.10
9A8T-14474-BA	33467-0004	2.3	2.3	6.97-7.27
9A8T-14474-DA	33468-0002	2.3	2.3	7.15 ±0.10
EU5T-14474-DA	33467-0023	2.7	3.1	6.97-7.27
EU5T-14474-CA	33468-0023	2.7	3.1	7.15 ±0.10
EU5T-14474-BA	33467-0021	2.3	2.8	6.97-7.27
EU5T-14474-AA	33468-0021	2.3	2.8	7.15 ±0.10

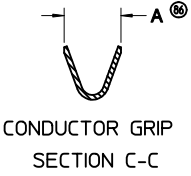


SECTION D-D

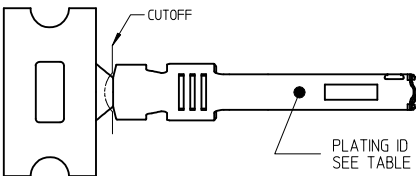
- NOTES: (UNLESS OTHERWISE SPECIFIED)
1. MATERIALS: SEE TABLE 1
 2. PACKAGING SPECIFICATION: PK-31300-516 AND PK-30907-759
 - (B3) 3. CRIMPING: SEE APPLICATION SPECIFICATION, TABLE 1
 4. CRIMPED LEAD MEETS THE FOLLOWING:
4.1. SAE/USCAR-21, MAY 2002
4.2. SAE/USCAR-2, REV. 3, APRIL 2001
4.3. SAE/USCAR-12, REV. 2
 - (B4) 5. GENERAL TOLERANCES:
± 0.3 ALL ONE PLACE DIMENSIONS
± 0.10 ALL TWO PLACE DIMENSIONS
± 3° ALL ANGULAR DIMENSIONS
 - (B5) 6. ALL DIMENSIONS EXCEPT THOSE SHOWN EXPLICITLY TO BE DIFFERENT ARE COMMON TO BOTH SAE AND ISO GRIP TERMINALS.



INSULATION GRIP
SECTION B-B



CONDUCTOR GRIP
SECTION C-C

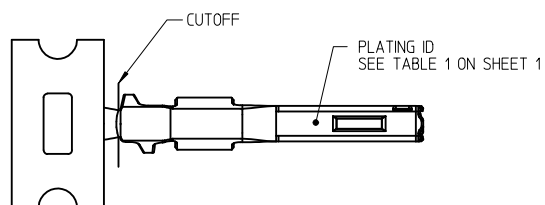


PART NUMBER		CAD TYPE	CAD LOC.	CAD FILE	IS MASTER	
SAE GRIP	(B8) ISO GRIP	X-OTHER	UNIT	DRAWING	9A8T-14474-AA	
9A8T-14474-AA	EU5T-14474-AA	OPER. NO.	mm	TITLE	SHT 1 OF 3	
9A8T-14474-BA	EU5T-14474-BA	DESIGN	---	TERMINAL WIRE		
9A8T-14474-CA	EU5T-14474-CA	CHECKED	SAFETY	SNAP ON FEMALE		
9A8T-14474-DA	EU5T-14474-DA	SCALE	DATE	DIVISION		
		5:1	2011/09/28	PLANT		

LTRS.	REVISIONS		
ORIGINATOR	CHECKER	ENGR APP	MATL APP
RELEASED			
AELE-E-11776560-211		20080714	
LPULLIAM	DHEMNANI	LEECE	
A1 ADD CAVITY SPECIFICATION SHEET 4			
A2 ADD TIN (Sn) PART NUMBERS			
AELE-E-11776560-226			
LPULLIAM	DHEMNANI	LEECE	
B1 REMOVED CRIMP SPECIFICATION, SHEET 2			
B2 REMOVED CRIMP LEAD CHECKING AID, SHEET 3			
B3 ADDED NOTE 3 REFERENCING CRIMPING DOCUMENTS			
B4 ADDED GENERAL TOLERANCING NOTE 4			
B5 ADDED NOTE 6			
B6 REVISED TABLE 1 TO SHOW BOTH SAE AND ISO GRIP REQUIREMENTS			
B7 ADDED TABLE 2			
B8 ADDED ISO GRIP PARTS NUMBERS			
B9 REMOVED DIMENSION T			
AELE-E-11776560-525			
KFERGUSON	DHEMNANI	LEECE	
REFERENCE ---			
PART MUST COMPLY WITH MATERIAL SPECIFICATION WSS-M99P9999-A1 TO HELP SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT.			
DRAFTED IN ACCORDANCE WITH FAO ENGINEERING DRAFTING STANDARD		3RD ANGLE PROJ DIMENSIONS IN MILLIMETERS	
CURRENT AT INITIAL RELEASE			
CAD TYPE	CAD LOC.	CAD FILE	
X-OTHER			IS MASTER
OPER. NO.	UNIT	DRAWING	
	mm	9A8T-14474-AA	
DESIGN	DETAIL	TITLE	
KFERGUSON	---	TERMINAL WIRE	SHT 1 OF 3
CHECKED	SAFETY	SNAP ON FEMALE	
BMOSE			
SCALE	DATE	DIVISION	
5:1	2011/09/28	PLANT	

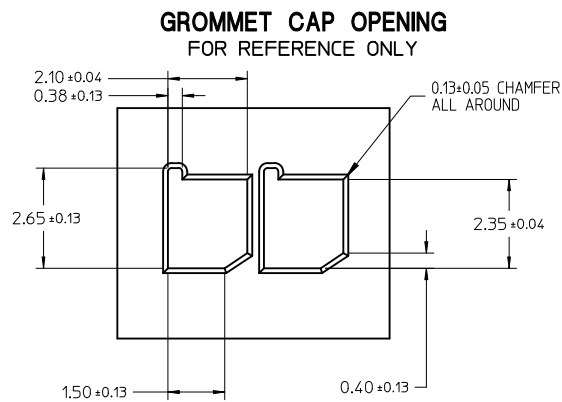


DRW SIZE A2/C



LTRS.	REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MATL APP	

REFERENCE		---	
PART MUST COMPLY WITH MATERIAL SPECIFICATION WSS-M99P9999-A1 TO HELP SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT.			
DRAFTED IN ACCORDANCE WITH FAO ENGINEERING DRAFTING STANDARD CURRENT AT INITIAL RELEASE		 3RD ANGLE PROJ. DIMENSIONS IN MILLIMETERS	
CAD TYPE	CAD LOC.	CAD FILE	IS MASTER
OPER. NO.	UNIT	DRAWING 9A8T-14474-AA	
DESIGN KFERGUSON	DETAIL ---	TITLE TERMINAL WIRE SNAP ON FEMALE	SHT 2 OF 3
CHECKED BMOSE	SAFETY		
SCALE 5:1	DATE 2011/09/28	DIVISION PLANT	



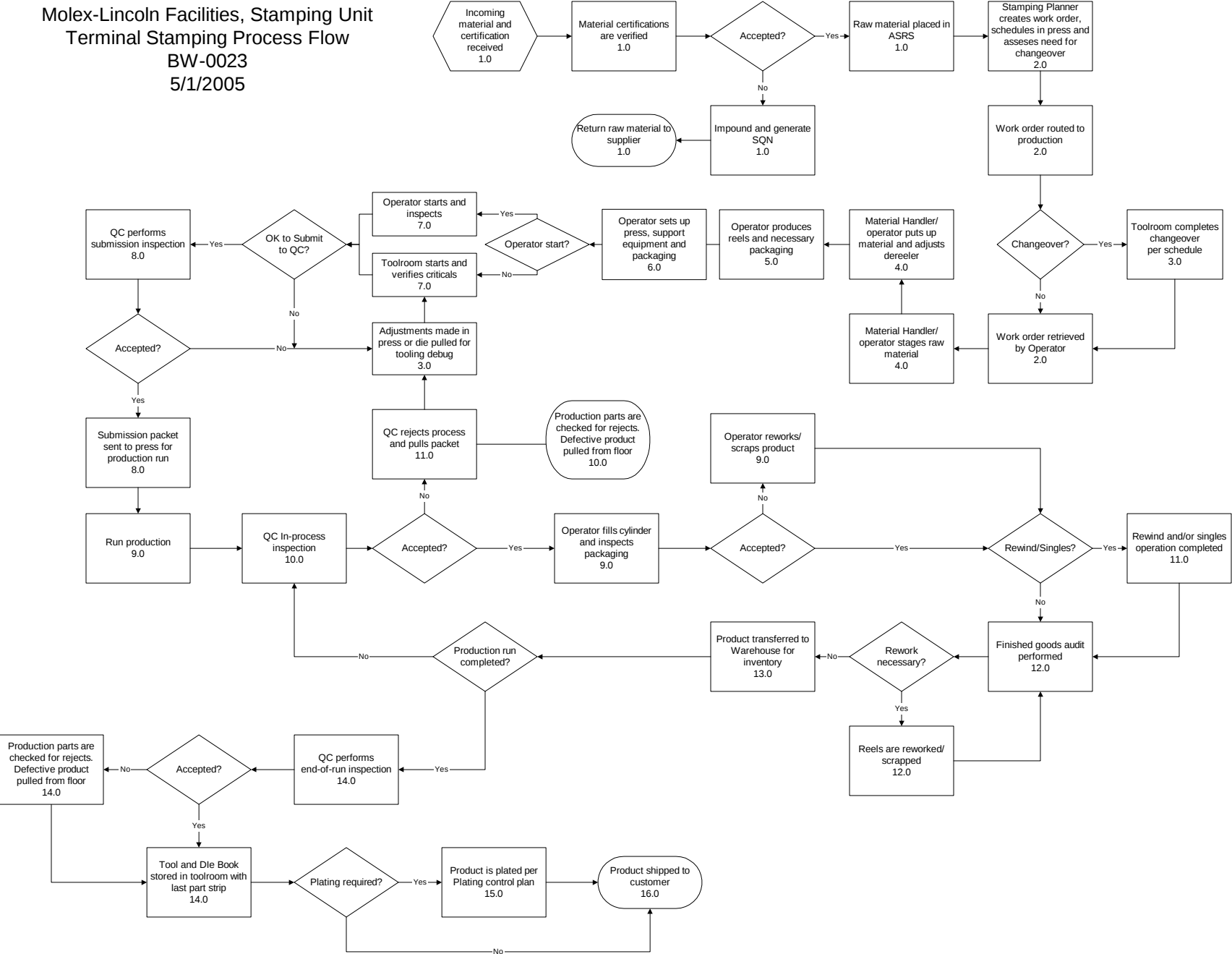
LTRS.	REVISIONS		
ORIGINATOR	CHECKER	ENGR APP	MATL APP



REFERENCE ---		PART MUST COMPLY WITH MATERIAL SPECIFICATION WSS-M99P9999-A1 TO HELP SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT.	
DRAFTED IN ACCORDANCE WITH FAO ENGINEERING DRAFTING STANDARD CURRENT AT INITIAL RELEASE		 3RD ANGLE PROJ DIMENSIONS IN MILLIMETERS	
CAD TYPE	CAD LOC.	CAD FILE	 IS MASTER
OPER. NO.	UNIT	DRAWING 9A8T-14474-AA	
DESIGN KFERGUSON	DETAIL ---	TITLE TERMINAL WIRE SNAP ON FEMALE	SHT 3 OF 3
CHECKED BMOSER	SAFETY		
SCALE 10:1	DATE 2011/09/28	DIVISION PLANT	

DRW SIZE A2/C

Molex-Lincoln Facilities, Stamping Unit
Terminal Stamping Process Flow
BW-0023
5/1/2005



Control Plan

☐ Prototype ☐ Pre-launch ☒ Production Control Plan Number BW0025		Key Contact/Phone Kyle Utemark (402) 475-1700				Date(Orig.) 97/03/21		Date 1/9/2013	
Part Number/Latest Change Level See Part Specific Inspection Standard		Core Team: Kyle Utemark, Mike Beinlich, Terry Orme, Todd Vogeler Jeff Vandusen, Bill Pohlmann, Craig Cassel				Customer Engineering Approval/Date (If Req'd) n/a			
Part Name / Description See Part Specific Inspection Standard		Supplier/Plant Approval/Date 1/9/2013				Customer Quality Approval/Date(If Req'd) n/a			
Supplier / Plant Molex Inc.-Stamping Dept. 700 Kingbird Road Lincoln, NE 68521 USA		Supplier Code Various		Other Approval Date (If Req'd) n/a		Other Approval Date (If Req'd) n/a			

Part / Process Number	Process Name / Operation/ Description	Machine, Device, Jig, Tools, For Mfg.	Characteristic		Special Char. Class	Methods					Reaction Plan	
						Product/Proces s Specification Tolerance	Evaluation Measurement Technique	Sample		Control Method		
			Product	Process				Size	Freq.		O.O.C.	O.O.S.
1	Incoming material and certification validation (Warehouse)		Yield or Tensile			Per raw material specifications	Cert validation	1	Each Shipment	Compare to specification, Entry into SAP	N/A	Write QN and dispoition product
2	Scheduling and work order routing (Planner/ Supervisor)			Press Type		Per SAP System and press availability	N/A	1	Per Work Order	Conformance to process requirements	N/A	N/A
3	Die set-up / change over and debug (Toolmaker)			Correct set-up change over		Per tool print	Visual	1	Per set-up / change over	Conformance to work instructions, submission inspection, record on submission log. Inspect per inspection standard	N/A	Redo set-up / change over, reinspect, resubmit, record on submission log and die log
4	Material Issue and setup (Material Handler)	Per Setup Instructions/SAP System/Shopfloor	Raw Material			Verify correct raw material to SAP system	Visual	1	Start-up, new spool or skid of material	Compare Mat. EDP to Shopfloor to raw material tag# on Shopfloor	N/A	Alert supervisor, get correct material

Control Plan

Part / Process Number	Process Name / Operation/ Description	Machine, Device, Jig, Tools, For Mfg.	Characteristic		Special Cha.r. Class	Methods					Reaction Plan	
						Product/Proces s Specification Tolerance	Evaluation Measurement Technique	Sample		Control Method		
			Product	Process				Size	Freq.		O.O.C.	O.O.S.
4	Set-up decoiler (Material Handler)			Correct set-up per work instructions		N/A	Visual	1	Per order	Conformance to Work Instruction	N/A	Redo set-up, or reject material
5	Reel production and Packaging Material Setup (Material Handler)		Correct Packaging per work instructions			Per Work Instruction				Conformance to Work Instruction	N/A	Redo set-up or reject material
6	Process set-up (Operator)	Per Setup Instructions		Correct set-up		Per Work Instruction	Visual	1	Per set-up	Conformance to work instructions, record on submission log	N/A	Redo set-up, resubmit, record on submission log
	Support Equipment Setup (Operator	Per Setup Instructions				Per Work Instruction	Visual	1	Per set-up	Conformance to work instructions, record on submission log	N/A	Redo set-up, See Maintenance if necessary.
7	Process start-up and inspection (Operator)		Inspect production characteristics per part / part specific inspection standard			Per part / part family specific inspection standard	Visual	1	Per die up	Compare with specifications on inspection standard	N/A	Reject process alert QC / Toolroom
	Process start-up and inspection (Toomaker)		Inspect toolroom criticals per part specific inspection standard			Per part / part family specific inspection standard	All methods per inspection standard	1	Per die up	Compare with specifications on inspection standard	N/A	Go to 3.0

Control Plan

Part / Process Number	Process Name / Operation/ Description	Machine, Device, Jig, Tools, For Mfg.	Characteristic		Special Cha.r. Class	Methods					Reaction Plan	
						Product/Proces s Specification Tolerance	Evaluation Measurement Technique	Sample		Control Method		
			Product	Process				Size	Freq.		O.O.C.	O.O.S.
8	Submission Inspection (QC)	Per part / part family specific inspection standard	Inspect per Inspection Standard			Per part / part family specific inspection standard	All methods per inspection standard	1	Per set-up / change over	Compare to submission sheet for correct part # and dimensions on inspection standard	N/A	Reject process, alert toolroom / operator, record on submission log
	Statistical validation of customer criticals at submission (QC)	Per part / part family specific inspection standard	Chart customer critical characteristic per part / part family specific inspection standard and BW0011		Customer defined criticals are noted on part / part family specific inspection standard	Per part / part family specific inspection standard	All methods per inspection standard and Work Instructions	Per product characti steristic specific control chart	Per product characte ristic specific control chart	Per Work Instructions	Per Work Instructions	Reject process, alert toolroom / operator, record on submission log, quarantine suspect product
9	Run Production (Stamping Operator)	Punch Press and die				Per die specific Setup Instructions and Stamping Wis					N/A	Rework or scrap
	Packaging Inspection (Stamping Operator)		Per Winding, Labeling work instruction			Per Work Instruction	Visual	1 reel	100%	Visual Inspection and comparison to Work Instruction	N/A	Rework or scrap
10	In process inspection (QC)		Inspect per part / part family specific inspection standard			Per part / part family specific inspection standard	Visual per Work Instruction	1 sample strip	Per hour	If suspect, compare with specifications on inspection standard, No results of an acceptable inspection are recorded	N/A	Reject process, alert toolroom / operator, record on submission log, quarantine suspect product

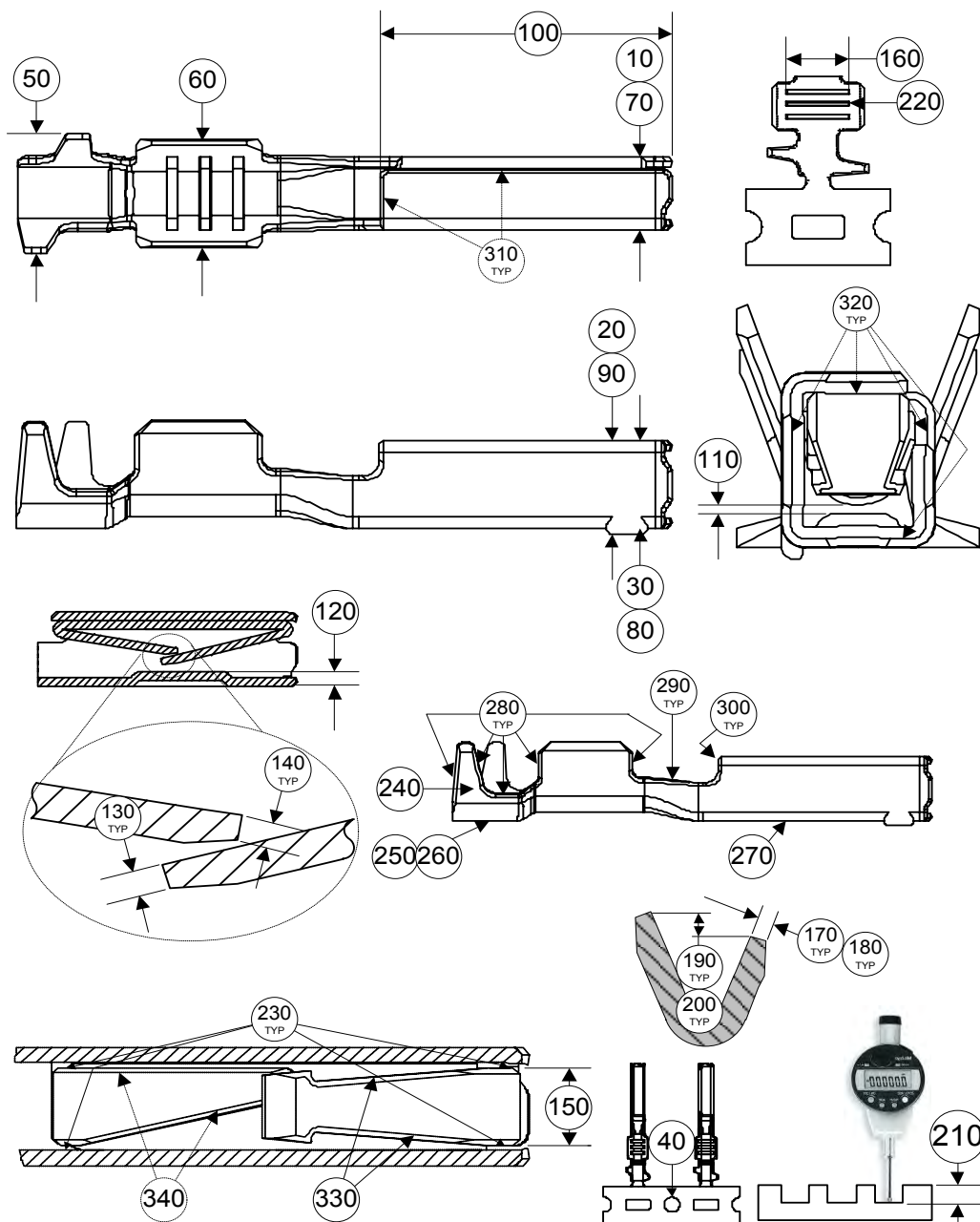
Control Plan

Part / Process Number	Process Name / Operation/ Description	Machine, Device, Jig, Tools, For Mfg.	Characteristic		Special Cha.r. Class	Methods					Reaction Plan	
						Product/Proces s Specification Tolerance	Evaluation Measurement Technique	Sample		Control Method		
			Product	Process				Size	Freq.		O.O.C.	O.O.S.
	Statistical validation of customer criticals in process (QC)	Per part / part family specific inspection standard	Chart customer critical characteristic per part / part family specific inspection standard		Customer defined criticals are noted on part / part family specific inspection standard	Per part / part family specific inspection standard	All methods per inspection standard	Per product characti steristic specific control chart	Per product characte ristic specific control chart	Conformance to work instruction	Per Work Instructions	Reject process, alert toolroom / operator, record on submission log, quaran tine suspect product
	Daily Inspection (QC)	Per part / part family specific inspection standard	Inspect per part / part family specific inspection standard			Per part / part family specific inspection standard	All methods per inspection standard	1	Per 8 hours	Compare with specifications on inspection standard and record on inspection record	N/A	Reject process, alert toolroom / operator, record on submission log, quaran tine suspect product
	Annual Layout Inspection	Per specific PN for all Transporatation Products	Per Sales, Restricted Sales, or Customer Drawing			Per Sales, Restricted Sales, or Customer Drawing Specifications & Tolerances		1 Sample , per Up	Annually	Compare to PPAP Drawing used for layout	Per Work Instructions	Reject process, alert toolroom / operator, record on submission log, quaran tine suspect product
11	Rewind Operation (Rewind/Singles Operator)	Rewind Table		Rewind per work instructions		Per Work Instruction	Visual	1 reel	100%	Visual Inspection per work instruction	N/A	Rework or scrap
	Singles Operation (Rewind/Singles Operator)	Singles Press		Single Terminals		Per Work Instruction					N/A	Reject process alert QC / Toolroom

Control Plan

Part / Process Number	Process Name / Operation/ Description	Machine, Device, Jig, Tools, For Mfg.	Characteristic		Special Cha.r. Class	Methods					Reaction Plan	
						Product/Proces s Specification Tolerance	Evaluation Measurement Technique	Sample		Control Method		
			Product	Process				Size	Freq.		O.O.C.	O.O.S.
12	Finished Goods Audit (FGA Auditor)		Inspect per work instructions			Per Work Instruction	Visual	25% of reels in cylinder	2 cylinders in every 7 produced for that EDP in skip lot	Per packaging work instructions	N/A	Remove skip lot, rework or scrap, quarantine suspect product
13	Product transferred to Warehouse (Warehouse Operator)					Correct parts and quantity	Visual	1	100%	Entry into Eskay system	N/A	Notify Stamping Lead or Supervisor
14	End-of-Run Inspection (QC)		Inspect per part / part family specific inspection standard			Per part / part family specific inspection standard	Visual	1 sample strip	End of Run	If supsect, compare with specifications on inspection standard, No results of an acceptable inspection are recorded	N/A	Reject process, alert toolroom / operator, record on submission log, quarantine suspect product
	Tool Room Metrics Review		Utilization, Efficiency, & Tup%	Tool repair time		Per criteria listed on Tool Room Repair Report	Per Shop Floor code times and good pieces	All Tools	Once per month	Conformance to criteria on Tool Room Repair Report	For each tool on the list identify current or needed actions/ projects need to reduce repair time	N/A
15	Plating (Plating Department)	Per plating control plan		Per plating control plan		Per plating control plan	Per plating control plan	Per plating control plan	Per plating control plan	Per plating control plan		Per plating control plan
16	Product shipment (Warehouse Operator)		Shipment to customer per Warehouse work instructions			Per shipset	Verification of EDP # and quantity	1	Per container	Conformance to work instructions and ship set	N/A	Notify lead or supervisor

Stamping Inspection Standard



Part Name:
MX 64 Receptacle Terminal, ISO Crimp

Revised:

Lincoln-Upland

Engineering #

33468-0024

Revision # **B**

Die# **D33467-4B**

Dwn. By: **Craig Cassel**

Date: **12/14/11**

#	CRIT	MVG	DEV	Characteristic	LSL	USL
10		G	GG	Box Width (S-300-G3)		
20		G	GG	Box Height with Orientation Features (S-300-G3)		
30		G	GG	Box Height without Orientation Features (S-300-G3)		
40		G	PG	Pilot Hole Diameter		
50		M	C	Insulation Crimp Spread, Dim. B		
60		M	C	Conductor Crimp Spread, Dim. A		
70		M	CO	Box Width		
80		M	CO	Box Height without Orientation Feature		
90		M	CO	Box Height with Orientation Features		
100		M	CO	Locking Length, Dim. S		
110		M	MS	Contact Gap, Dim. T		
120		M	MS	Formed Height In Die Strip		
130		M	MS	Primary Contact Coin Flat in Die Strip		
140		M	MS	Secondary Beam Coin Flat In Die Strip		
150		M	MS	Primary Beam Width In Die Strip		
160		M	MS	Serration Lengths in Die Strip, 3 Places,(SETUP ONLY)		
170		M	MS	Insulation Crimp Coin Flats, 2 Places, Dim. X		
180		M	MS	Conductor Crimp Coin Flats, 2 Places, Dim. W		
190		M	DG	Insulation Crimp Roll, Dim. Z		
200		M	DG	Conductor Crimp Roll, Dim. Y		
210		V	DG	Serration Depth In Die Strip: 3 Places,(SETUP ONLY)		
220		V	V	3 Bar Serrations Present		
230		V	V	Gap Between Sidewalls and Contact Beams, 4 places		
240		V	V	Tool ID Stamp, N2		
250		V	V	Crimp Stamp "B"		
260		V	V	Date Code Stamp		
270		V	V	Plating ID Stamp Present (Sn = Tin)		
280		V	V	Crimp Edge Coining		
290		V	V	Skirt Coining		
300		V	V	Box Edge Coining		
310		V	V	Box Tab Coining		
320		V	V	Box Nose Coining		
330		V	V	Primary Beam Edge Coining		
340		V	V	Secondary Beam Edge Coining		
350		V	V	NO Fractures, Burrs, Slivers, Toolmarks, Etc.		
360		V	V	Camber in a 36" Strip		
370						
380						
390						
400						
410						
420						

QC	INITIAL & DATE	QC	INITIAL & DATE	QC	INITIAL & DATE	QC Tech.	INITIAL & DATE	QE
Y. Urbina		D. Bender		C. Day		J. Folkerts		
J. Clatt		Q. Nguyen		A. Seyfert		G. Bell		
J. Gehle		M. Hesterwerth		D. Lindahl				
B. McFee		N. Nguyen						



File ID #
C2013

Molex Inc. Lincoln Operations
Gauge Repeatability & Reproducibility Data Sheet

Engineering Number1190

Gauge TypeCalipers

Number of Appraisers2

Part RevisionA

Gauge I.D.7568895

Number of Parts10

Part Description.093 Male Crimped Terminal

Quality EngineerTodd Vogeler

Number of Trials2

CharacteristicConductor Crimp Width

Completion Date6/20/2013

Appraiser 1 - Operator 1

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10	Within Trial			
											AVG	MAX	MIN	RANGE
Trial 1	0.1305	0.1230	0.1195	0.1275	0.1155	0.1260	0.1125	0.1185	0.1130	0.1185	0.12045	0.13050	0.11250	0.01800
Trial 2	0.1305	0.1230	0.1190	0.1275	0.1155	0.1255	0.1125	0.1185	0.1130	0.1190	0.12040	0.13050	0.11250	0.01800
Trial 3	0.1305	0.1230	0.1190	0.1270	0.1155	0.1260	0.1130	0.1185	0.1130	0.1185				
Xbar 1	0.13050	0.12300	0.11917	0.12733	0.11550	0.12583	0.11267	0.11850	0.11300	0.11867	Xdblbar 1 = 0.12042			
MAX 1	0.13050	0.12300	0.11950	0.12750	0.11550	0.12600	0.11300	0.11850	0.11300	0.11900				
MIN 1	0.13050	0.12300	0.11900	0.12700	0.11550	0.12550	0.11250	0.11850	0.11300	0.11850				
Range 1	0.00000	0.00000	0.00050	0.00050	0.00000	0.00050	0.00050	0.00000	0.00000	0.00050	Rbar 1 = 0.00025			

Appraiser 2 - Operator 2

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10	Within Trial			
											AVG	MAX	MIN	RANGE
Trial 1	0.1305	0.1230	0.1195	0.1275	0.1150	0.1255	0.1120	0.1185	0.1125	0.1185	0.12025	0.13050	0.11200	0.01850
Trial 2	0.1305	0.1230	0.1190	0.1270	0.1155	0.1255	0.1125	0.1185	0.1130	0.1185	0.12030	0.13050	0.11250	0.01800
Trial 3	0.1305	0.1230	0.1190	0.1275	0.1150	0.1255	0.1120	0.1185	0.1130	0.1190				
Xbar 2	0.13050	0.12300	0.11917	0.12733	0.11517	0.12550	0.11217	0.11850	0.11283	0.11867	Xdblbar 2 = 0.12028			
MAX 2	0.13050	0.12300	0.11950	0.12750	0.11550	0.12550	0.11250	0.11850	0.11300	0.11900				
MIN 2	0.13050	0.12300	0.11900	0.12700	0.11500	0.12550	0.11200	0.11850	0.11250	0.11850				
Range 2	0.00000	0.00000	0.00050	0.00050	0.00050	0.00000	0.00050	0.00000	0.00050	0.00050	Rbar 2 = 0.00030			

Part AVG	0.13050	0.12300	0.11917	0.12733	0.11533	0.12567	0.11242	0.11850	0.11292	0.11867	MAX Xbar 0.13050 MIN Xbar 0.11242			
											Rp = 0.01808			

Rdblbar = 0.00028
(MAX X/dblbar of 1 and 2) minus (MIN X/dblbar of 1 and 2)
0.12042 - 0.12028 =

Xdblbar 1 and 2 Difference
0.00013

UCLr = (Rdblbar*D4) = 0.00090 LCLr = 0

Trial	D4	Within Individual Trials				
2	3.267	Oper 1	MAX Xbar	0.12045	MIN Xbar	0.12040
3	2.575	Oper 2	MAX Xbar	0.12030	MIN Xbar	0.12025
D4 = 3.267		Of Oper. 1 and 2		0.12045	0.12025	

DepartmentQuality Assurance

SignatureTodd Vogeler

DispositionAccept

Date6/220/2013

Comments:

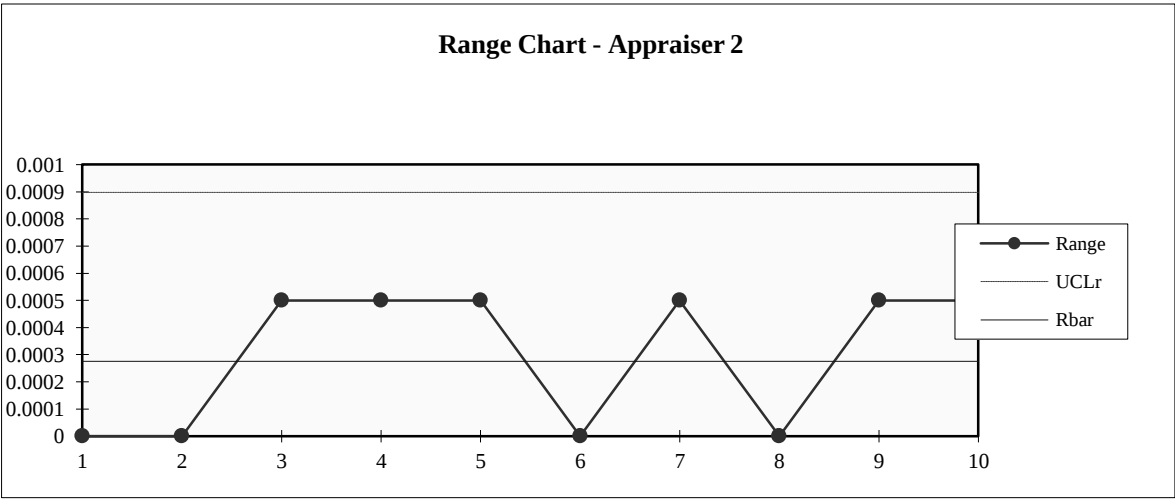
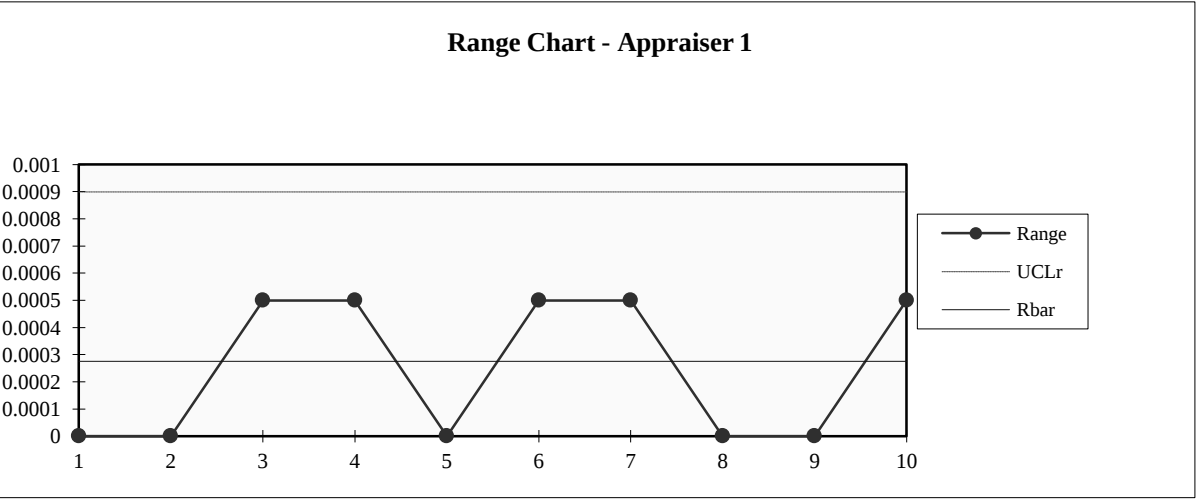
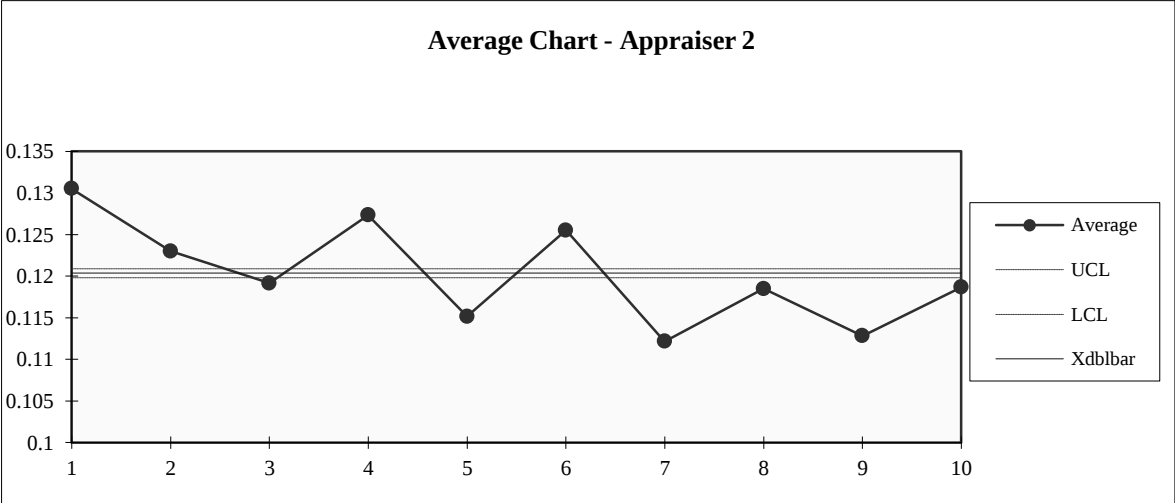
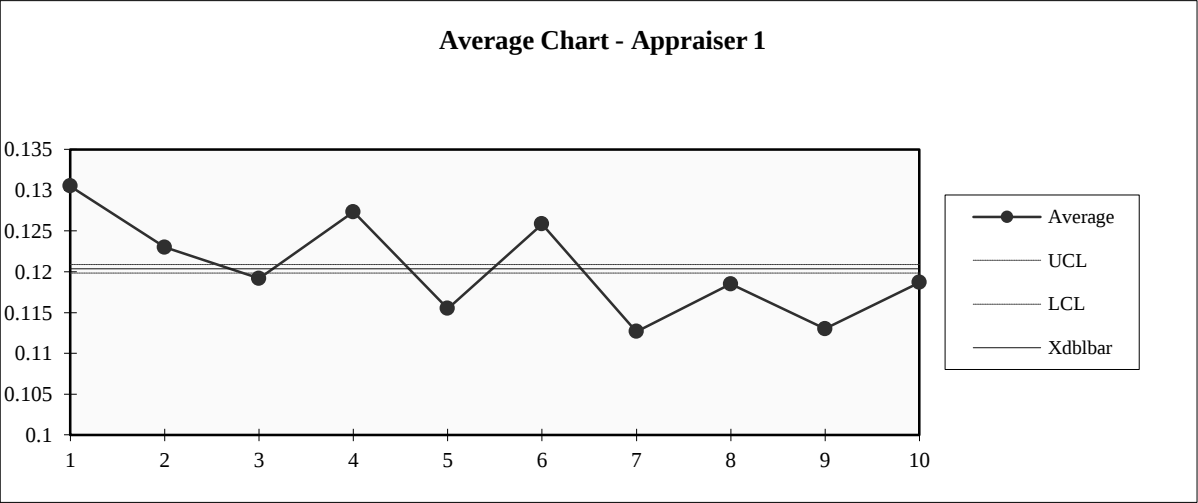
Gaga R and R, Rev. 05-06-09
QWF-0004

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QWF-0004

Measurement Unit Analysis	Causes	% Total Variation (TV)	% Print Tol.(PT)
Repeatability - Equipment Variation (EV) EV = $R_{dblbar} * K1 = 0.00125$ where $K1 = 4.56$	% EV = Variation due to the measurement gauge	= $100(EV/TV)$ = 4.28%	= $100(EV/PT)$ = 3.69%
Reproducibility - Appraiser Variation (AV) AV = $SQRT[(XbarDIFF * K2)^2 - (EV^2/nr)] = 0.00040$ where $K2 = 3.65$	% AV = Incremental bias attributed to each operator	= $100(AV/TV)$ = 1.36%	= $100(AV/PT)$ = 1.17%
Repeatability & Reproducibility - (R & R) R&R = $SQRT(EV^2 + AV^2) = 0.00132$	% R&R = Both causes listed above	= $100(R\&R/TV)$ = 4.49%	= $100(R\&R/PT)$ = 3.87%
Part Variation (PV) PV = $R_p * K3 = 0.02930$ where $K3 = 1.62$	% PV	= $100(PV/TV)$ = 99.90%	= $100(PV/PT)$ = 86.16%
Total Variation (TV) and Total Print Tolerance (PT) $TV = SQRT(R\&R^2 + PV^2) = 0.02932$ $PT = \text{Total Print Tolerance (USL - LSL)} = \mathbf{0.034}$ STD Dev. 0.0058183			

Control Charts



File ID #

Mic2013

Molex Inc. Lincoln Operations
Gauge Repeatability & Reproducibility Data Sheet

Engineering Number31475

Gauge TypeMicrometer

Number of Appraisers2

Part RevisionJ

Gauge I.D.293-340

Number of Parts10

Part Description.64 compliant pin

Quality EngineerTodd Vogeler

Number of Trials2

CharacteristicBlade thickness

Completion Date6/17/2013

Appraiser 1 - Operator 1

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10	Within Trial			
											AVG	MAX	MIN	RANGE
Trial 1	0.6290	0.6200	0.6250	0.6400	0.6340	0.6520	0.6390	0.6350	0.6190	0.6560	0.63490	0.65600	0.61900	0.03700
Trial 2	0.6280	0.6210	0.6240	0.6400	0.6340	0.6510	0.6390	0.6340	0.6190	0.6550	0.63450	0.65500	0.61900	0.03600
Trial 3	0.6280	0.6190	0.6240	0.6390	0.6330	0.6510	0.6400	0.6340	0.6180	0.6550				
Xbar 1	0.62833	0.62000	0.62433	0.63967	0.63367	0.65133	0.63933	0.63433	0.61867	0.65533	Xdblbar 1 =	0.63450		
MAX 1	0.62900	0.62100	0.62500	0.64000	0.63400	0.65200	0.64000	0.63500	0.61900	0.65600				
MIN 1	0.62800	0.61900	0.62400	0.63900	0.63300	0.65100	0.63900	0.63400	0.61800	0.65500				
Range 1	0.00100	0.00200	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	0.00100	Rbar 1 =	0.00110		

Appraiser 2 - Operator 2

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10	Within Trial			
											AVG	MAX	MIN	RANGE
Trial 1	0.6290	0.6190	0.6240	0.6410	0.6330	0.6500	0.6380	0.6330	0.6190	0.6550	0.63410	0.65500	0.61900	0.03600
Trial 2	0.6300	0.6180	0.6240	0.6400	0.6330	0.6500	0.6390	0.6350	0.6180	0.6550	0.63420	0.65500	0.61800	0.03700
Trial 3	0.6280	0.6200	0.6230	0.6400	0.6330	0.6490	0.6380	0.6340	0.6190	0.6540				
Xbar 2	0.62900	0.61900	0.62367	0.64033	0.63300	0.64967	0.63833	0.63400	0.61867	0.65467	Xdblbar 2 =	0.63403		
MAX 2	0.63000	0.62000	0.62400	0.64100	0.63300	0.65000	0.63900	0.63500	0.61900	0.65500				
MIN 2	0.62800	0.61800	0.62300	0.64000	0.63300	0.64900	0.63800	0.63300	0.61800	0.65400				
Range 2	0.00200	0.00200	0.00100	0.00100	0.00000	0.00100	0.00100	0.00200	0.00100	0.00100	Rbar 2 =	0.00120		

Part AVG	0.62867	0.61950	0.62400	0.64000	0.63333	0.65050	0.63883	0.63417	0.61867	0.65500	MAX Xbar	0.65500	MIN Xbar	0.61867
											Rp =	0.03633		

Rdblbar = 0.00115
(MAX X/dblbar of 1 and 2) minus (MIN X/dblbar of 1 and 2)
0.63450 - 0.63403 =

Xdblbar 1 and 2 Difference
0.00047

UCLr = (Rdblbar*D4) = 0.00376LCLr = 0

Trial	D4	Within Individual Trials				
2	3.267	Oper 1	MAX Xbar	0.63490	MIN Xbar	0.63450
3	2.575	Oper 2	MAX Xbar	0.63420	MIN Xbar	0.63410
D4 = 3.267		Of Oper. 1 and 2		0.634900.63410		

Department

Signature

Disposition

Date

Quality Assurance

Todd Vogeler

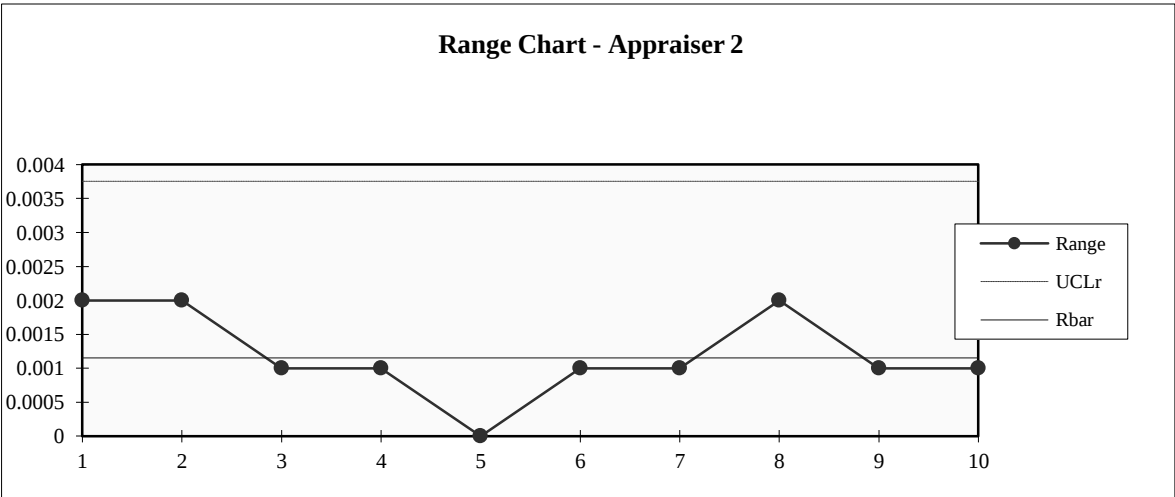
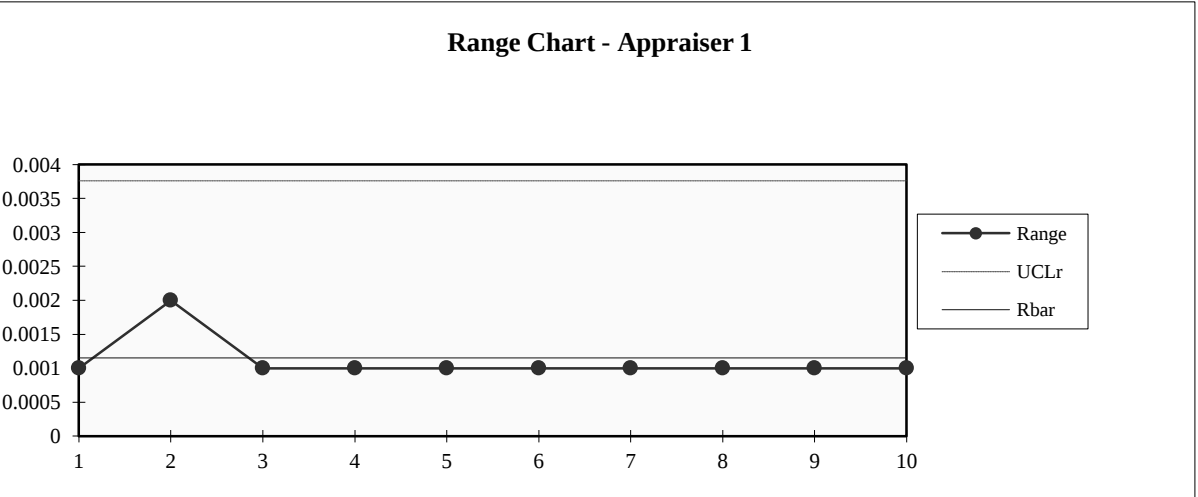
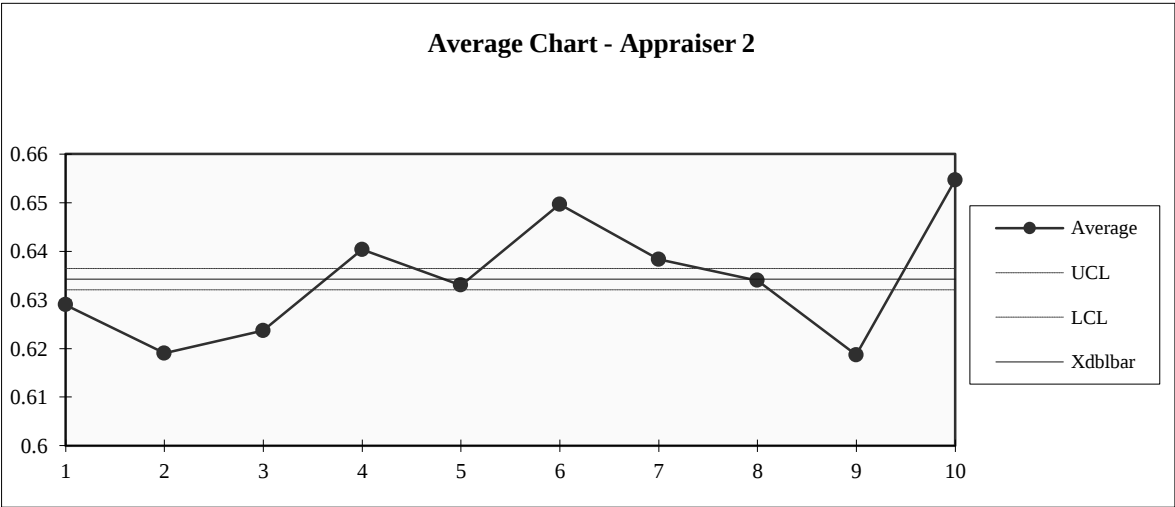
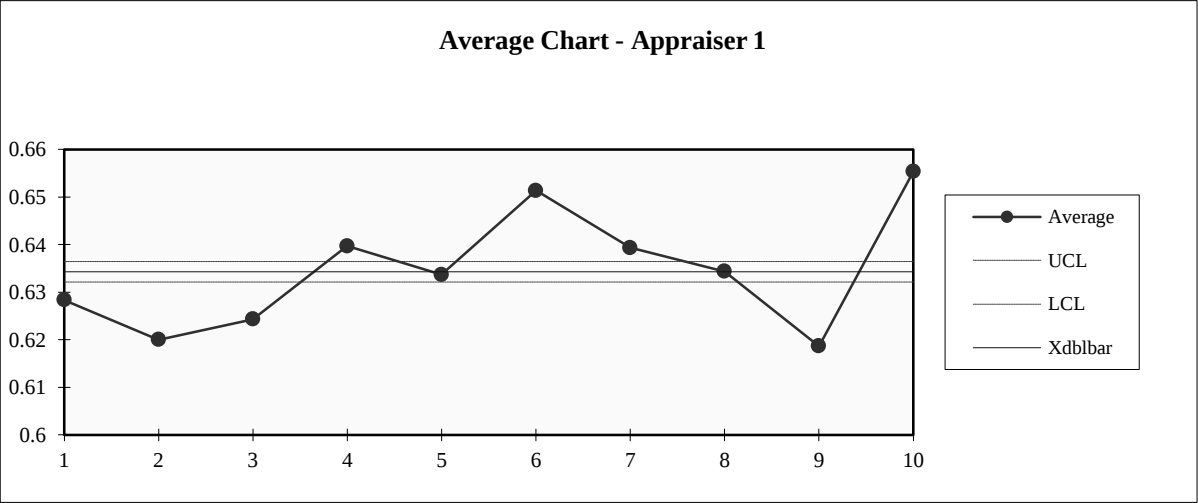
Accept

6/17/2013

Comments:

Measurement Unit Analysis	Causes	% Total Variation (TV)	% Print Tol.(PT)
Repeatability - Equipment Variation (EV) EV = $R_{dblbar} * K1 = 0.00524$ where $K1 = 4.56$	% EV = Variation due to the measurement gauge	= $100(EV/TV)$ = 8.87%	= $100(EV/PT)$ = 8.74%
Reproducibility - Appraiser Variation (AV) AV = $SQRT[(XbarDIFF * K2)^2 - (EV^2 / nr)] = 0.00124$ where $K2 = 3.65$	% AV = Incremental bias attributed to each operator	= $100(AV/TV)$ = 2.09%	= $100(AV/PT)$ = 2.06%
Repeatability & Reproducibility - (R & R) R&R = $SQRT(EV^2 + AV^2) = 0.00539$	% R&R = Both causes listed above	= $100(R\&R/TV)$ = 9.12%	= $100(R\&R/PT)$ = 8.98%
Part Variation (PV) PV = $R_p * K3 = 0.05886$ where $K3 = 1.62$	% PV	= $100(PV/TV)$ = 99.58%	= $100(PV/PT)$ = 98.10%
Total Variation (TV) and Total Print Tolerance (PT) TV = $SQRT(R\&R^2 + PV^2) = 0.05911$PT = Total Print Tolerance (USL - LSL) = 0.060STD Dev. <i>0.0116231</i>			

Control Charts



File ID #
DG2013

Molex Inc. Lincoln Operations
Gauge Repeatability & Reproducibility Data Sheet

Engineering Number33012

Gauge TypeDigital Indicator

Number of Appraisers2

Part RevisionA

Gauge I.D.MX0185

Number of Parts10

Part DescriptionMX 150 Female

Quality EngineerTodd Vogeler

Number of Trials2

CharacteristicCrimp roll

Completion Date6/17/2013

Appraiser 1 - Operator 1

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10	Within Trial			
											AVG	MAX	MIN	RANGE
Trial 1	0.1450	0.1040	0.0930	0.0760	0.0820	0.2010	0.0210	0.0780	0.0800	0.0900	0.09700	0.20100	0.02100	0.18000
Trial 2	0.1430	0.1070	0.0920	0.0780	0.0840	0.1970	0.0220	0.0790	0.0760	0.0880	0.09660	0.19700	0.02200	0.17500
Trial 3	0.1410	0.1010	0.0890	0.0820	0.0820	0.2000	0.0230	0.0810	0.0750	0.0900				
Xbar 1	0.14300	0.10400	0.09133	0.07867	0.08267	0.19933	0.02200	0.07933	0.07700	0.08933	Xdblbar 1 = 0.09667			
MAX 1	0.14500	0.10700	0.09300	0.08200	0.08400	0.20100	0.02300	0.08100	0.08000	0.09000				
MIN 1	0.14100	0.10100	0.08900	0.07600	0.08200	0.19700	0.02100	0.07800	0.07500	0.08800				
Range 1	0.00400	0.00600	0.00400	0.00600	0.00200	0.00400	0.00200	0.00300	0.00500	0.00200	Rbar 1 = 0.00380			

Appraiser 2 - Operator 2

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10	Within Trial			
											AVG	MAX	MIN	RANGE
Trial 1	0.1540	0.1080	0.0920	0.0790	0.0840	0.1950	0.0260	0.0790	0.0760	0.0900	0.09830	0.19500	0.02600	0.16900
Trial 2	0.1510	0.1030	0.0970	0.0760	0.0800	0.1880	0.0260	0.0760	0.0750	0.0910	0.09630	0.18800	0.02600	0.16200
Trial 3	0.1450	0.1000	0.0960	0.0750	0.0800	0.1870	0.0310	0.0770	0.0760	0.0890				
Xbar 2	0.15000	0.10367	0.09500	0.07667	0.08133	0.19000	0.02767	0.07733	0.07567	0.09000	Xdblbar 2 = 0.09673			
MAX 2	0.15400	0.10800	0.09700	0.07900	0.08400	0.19500	0.03100	0.07900	0.07600	0.09100				
MIN 2	0.14500	0.10000	0.09200	0.07500	0.08000	0.18700	0.02600	0.07600	0.07500	0.08900				
Range 2	0.00900	0.00800	0.00500	0.00400	0.00400	0.00800	0.00500	0.00300	0.00100	0.00200	Rbar 2 = 0.00490			

Part AVG	0.14650	0.10383	0.09317	0.07767	0.08200	0.19467	0.02483	0.07833	0.07633	0.08967	MAX Xbar 0.19467 MIN Xbar 0.02483			
											Rp = 0.16983			

Rdblbar = 0.00435
(MAX X/dblbar of 1 and 2) minus (MIN X/dblbar of 1 and 2)
0.09673 - 0.09667 =

Xdblbar 1 and 2 Difference
0.00007

	Trials	D4	Within Individual Trials				
	2	3.267	Oper 1	MAX Xbar	0.09700	MIN Xbar	0.09660
	3	2.575	Oper 2	MAX Xbar	0.09830	MIN Xbar	0.09630
UCLr =	D4 = 3.267		Of Oper. 1 and 2		0.09830	0.09630	

UCLr = (Rdblbar*D4) = 0.01421

LCLr = 0

DepartmentQuality Assurance

SignatureTodd Vogeler

DispositionAccept

Date6/17/2013

Comments:

Gaga R and R, Rev. 05-06-09
QWF-0004

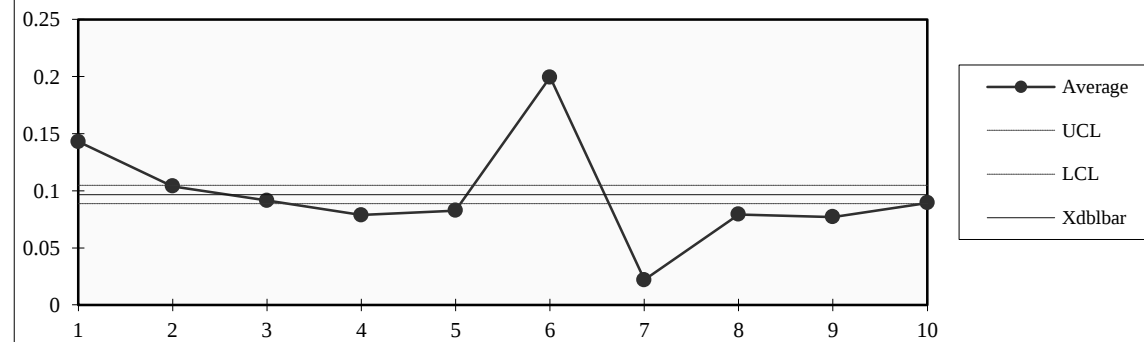
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QWF-0004

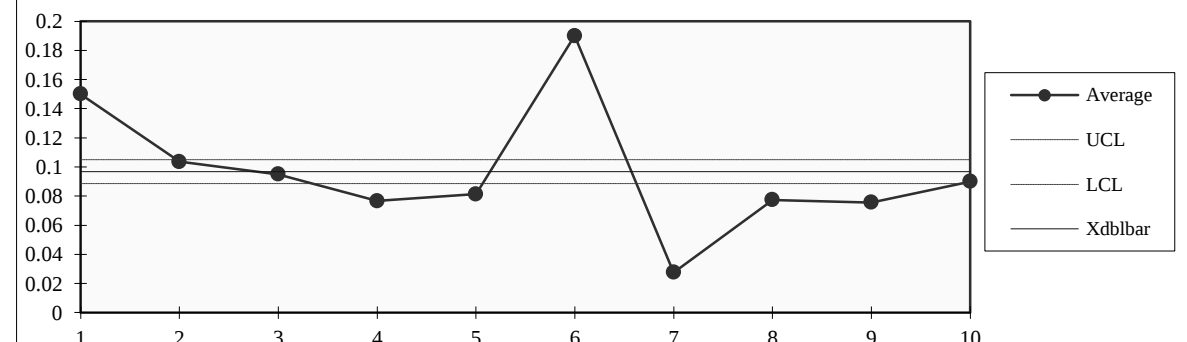
Measurement Unit Analysis	Causes	% Total Variation (TV)	% Print Tol.(PT)
Repeatability - Equipment Variation (EV) EV = $R_{dblbar} * K1 = 0.01984$ where $K1 = 4.56$	% EV = Variation due to the measurement gauge	$= 100(EV/TV)$ $= 7.19\%$	$= 100(EV/PT)$ $= 6.61\%$
Reproducibility - Appraiser Variation (AV) AV = $SQRT[(\bar{X}DIFF * K2)^2 - (EV^2/nr)] = 0.00000$ where $K2 = 3.65$	% AV = Incremental bias attributed to each operator	$= 100(AV/TV)$ $= 0.00\%$	$= 100(AV/PT)$ $= 0.00\%$
Repeatability & Reproducibility - (R & R) R&R = $SQRT(EV^2 + AV^2) = 0.01984$	% R&R = Both causes listed above	$= 100(R\&R/TV)$ $= 7.19\%$	$= 100(R\&R/PT)$ $= 6.61\%$
Part Variation (PV) PV = $R_p * K3 = 0.27513$ where $K3 = 1.62$	% PV	$= 100(PV/TV)$ $= 99.74\%$	$= 100(PV/PT)$ $= 91.71\%$
Total Variation (TV) and Total Print Tolerance (PT) $TV = SQRT(R\&R^2 + PV^2) = 0.27584$			
		PT = Total Print Tolerance (USL - LSL) = 0.300	STD Dev. 0.0433326

Control Charts

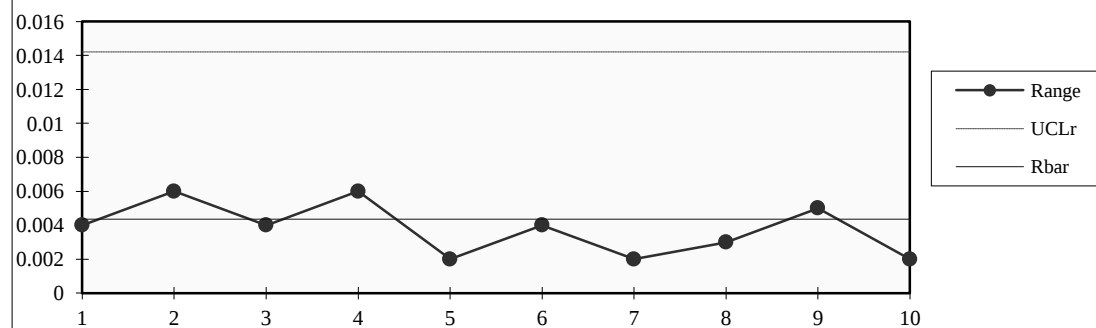
Average Chart - Appraiser 1



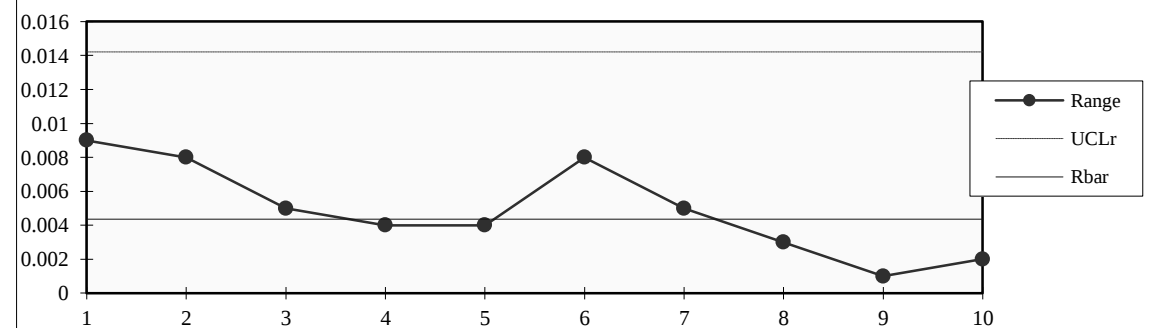
Average Chart - Appraiser 2



Range Chart - Appraiser 1



Range Chart - Appraiser 2



File ID #
Com2013

Molex Inc. Lincoln Operations
Gauge Repeatability & Reproducibility Data Sheet

Engineering Number4838

Gauge TypeComparitor

Number of Appraisers2

Part RevisionD

Gauge I.D.MX0081

Number of Parts10

Part Description.156 Crimped Terminal

Quality EngineerTodd Vogeler

Number of Trials2

CharacteristicCantilever height

Completion Date6/21/2013

Appraiser 1 - Operator 1

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10		Within Trial			
												AVG	MAX	MIN	RANGE
Trial 1	0.1591	0.1642	0.1613	0.1628	0.1627	0.1610	0.1615	0.1623	0.1633	0.1619	0.1617	0.16195	0.16415	0.15905	0.00510
Trial 2	0.1593	0.1642	0.1611	0.1627	0.1627	0.1609	0.1613	0.1624	0.1633	0.1621	0.1616	0.16193	0.16415	0.15930	0.00485
Trial 3	0.1590	0.1640	0.1611	0.1626	0.1626	0.1609	0.1613	0.1624	0.1633	0.1619	0.1617				
Xbar 1	0.15912	0.16408	0.16112	0.16267	0.16263	0.16088	0.16135	0.16233	0.16325	0.16193	Xdblbar 1 =	0.16194			
MAX 1	0.15930	0.16415	0.16125	0.16275	0.16265	0.16095	0.16150	0.16240	0.16325	0.16205					
MIN 1	0.15900	0.16395	0.16105	0.16260	0.16260	0.16085	0.16125	0.16225	0.16325	0.16185					
Range 1	0.00030	0.00020	0.00020	0.00015	0.00005	0.00010	0.00025	0.00015	0.00000	0.00020	Rbar 1 =	0.00016			

Appraiser 2 - Operator 2

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10		Within Trial			
												AVG	MAX	MIN	RANGE
Trial 1	0.1590	0.1638	0.1610	0.1627	0.1626	0.1609	0.1614	0.1624	0.1633	0.1619		0.16188	0.16380	0.15895	0.00485
Trial 2	0.1589	0.1640	0.1610	0.1625	0.1626	0.1608	0.1614	0.1623	0.1633	0.1617		0.16183	0.16400	0.15885	0.00515
Trial 3	0.1589	0.1641	0.1609	0.1627	0.1625	0.1608	0.1613	0.1623	0.1632	0.1618					
Xbar 2	0.15890	0.16397	0.16095	0.16260	0.16255	0.16083	0.16133	0.16233	0.16325	0.16178	Xdblbar 2 =	0.16185			
MAX 2	0.15895	0.16410	0.16100	0.16270	0.16260	0.16090	0.16135	0.16240	0.16330	0.16190					
MIN 2	0.15885	0.16380	0.16090	0.16245	0.16250	0.16080	0.16130	0.16230	0.16320	0.16170					
Range 2	0.00010	0.00030	0.00010	0.00025	0.00010	0.00010	0.00005	0.00010	0.00010	0.00020	Rbar 2 =	0.00014			

Part AVG0.159010.164030.161030.162630.162590.160860.161340.162330.163250.16186

MAX Xbar0.16403MIN Xbar0.15901

Rp =0.00502

Rdblbar = 0.00015
(MAX X/dblbar of 1 and 2) minus (MIN X/dblbar of 1 and 2)
0.16194 - 0.16185 =
UCLr = (Rdblbar*D4) = 0.00049 LCLr = 0

Xdblbar 1 and 2 Difference
0.00009

	Trials	D4	Within Individual Trials				
	2	3.267	Oper 1	MAX Xbar	0.16195	MIN Xbar	0.16193
	3	2.575	Oper 2	MAX Xbar	0.16188	MIN Xbar	0.16183
	D4 =	3.267	Of Oper. 1 and 2		0.16195		0.16183

Department

Signature

Disposition

Date

Quality Assurance

Todd Vogeler

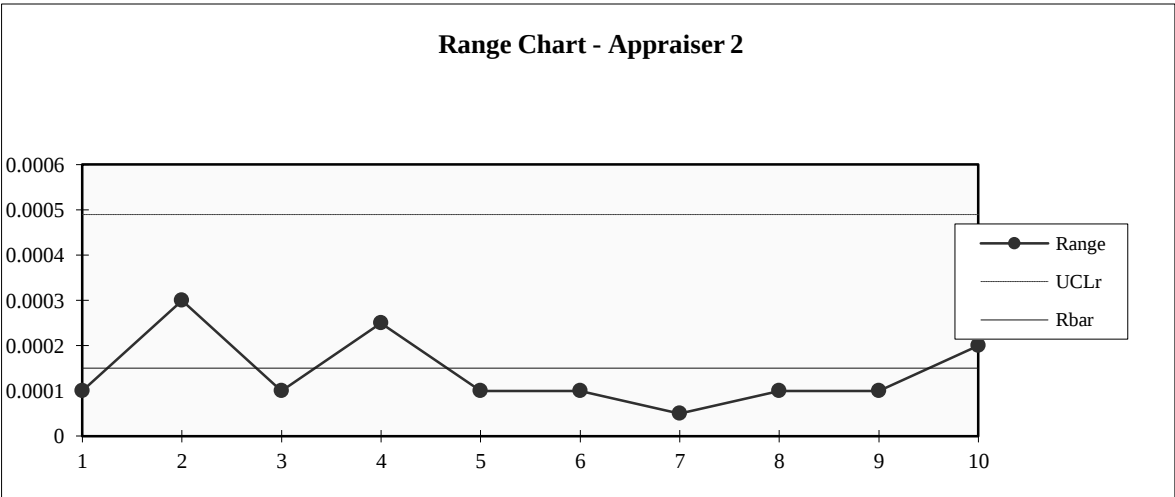
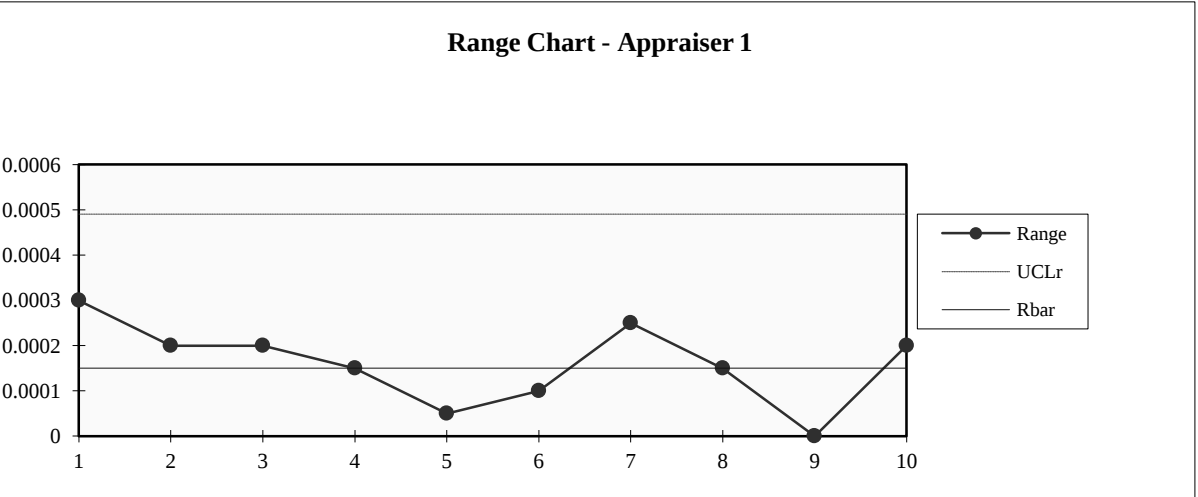
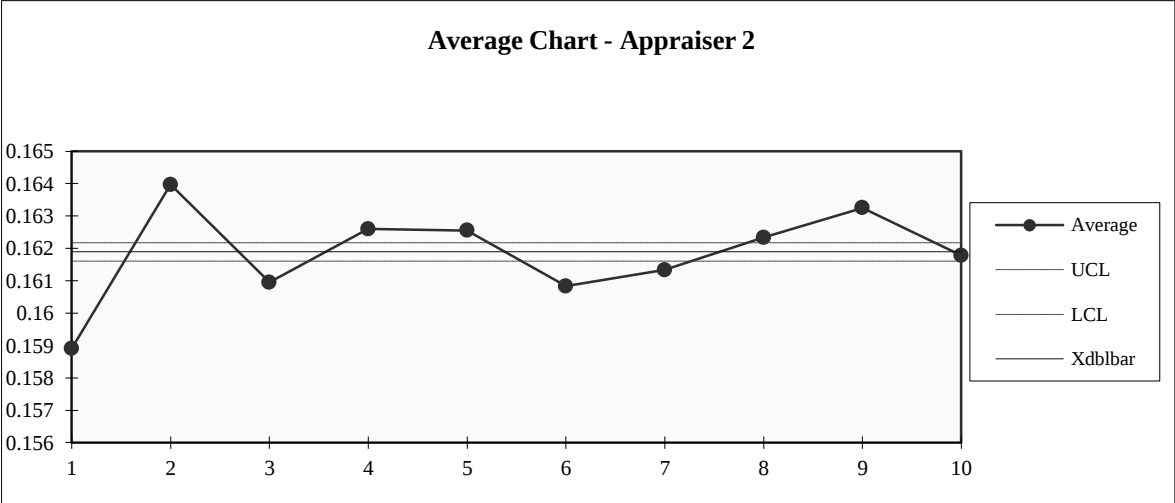
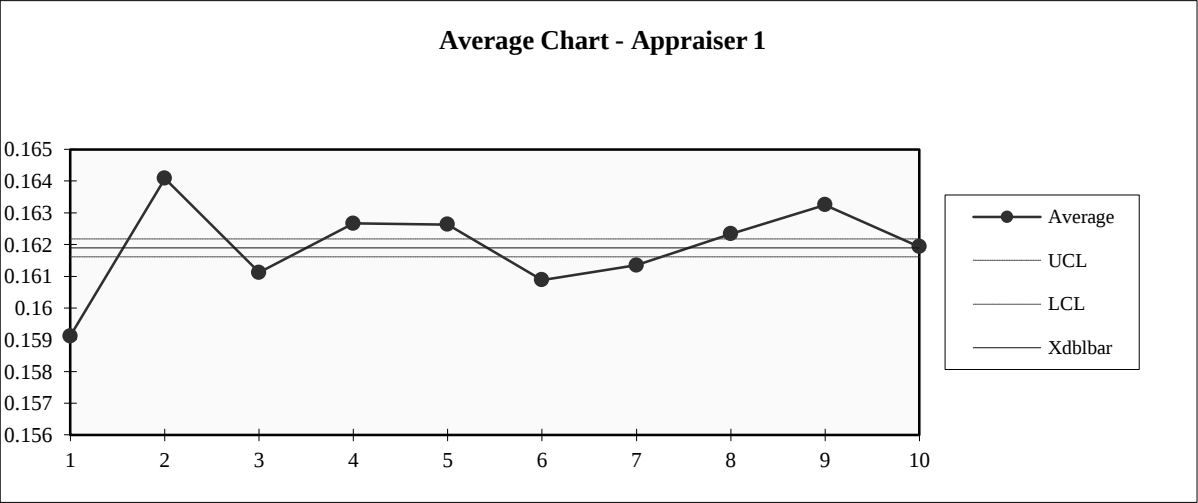
Accept

6/21/2013

Comments:

Measurement Unit Analysis	Causes	% Total Variation (TV)	% Print Tol.(PT)
Repeatability - Equipment Variation (EV) EV = $R_{dblbar} \cdot K1 = 0.00068$ where $K1 = 4.56$	% EV = Variation due to the measurement gauge	= $100(EV/TV)$ = 8.38%	= $100(EV/PT)$ = 6.84%
Reproducibility - Appraiser Variation (AV) AV = $SQRT[(\bar{X}DIFF \cdot K2)^2 - (EV^2/nr)] = 0.00028$ where $K2 = 3.65$	% AV = Incremental bias attributed to each operator	= $100(AV/TV)$ = 3.39%	= $100(AV/PT)$ = 2.77%
Repeatability & Reproducibility - (R & R) R&R = $SQRT(EV^2 + AV^2) = 0.00074$	% R&R = Both causes listed above	= $100(R\&R/TV)$ = 9.04%	= $100(R\&R/PT)$ = 7.38%
Part Variation (PV) PV = $R_p \cdot K3 = 0.00813$ where $K3 = 1.62$	% PV	= $100(PV/TV)$ = 99.59%	= $100(PV/PT)$ = 81.27%
Total Variation (TV) and Total Print Tolerance (PT) $TV = SQRT(R\&R^2 + PV^2) = 0.00816$ $PT = \text{Total Print Tolerance (USL - LSL)} = \mathbf{0.010}$ STD Dev. 0.0013468			

Control Charts



File ID #

MS2013

Molex Inc. Lincoln Operations
Gauge Repeatability & Reproducibility Data Sheet

Engineering Number43030

Gauge TypeMicroscope

Number of Appraisers2

Part RevisionF

Gauge I.D.MX0102

Number of Parts10

Part DescriptionMale microfit terminal

Quality EngineerTodd Vogeler

Number of Trials2

CharacteristicLock Tab Spread

Completion Date6/18/2013

Appraiser 1 - Operator 1

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10		Within Trial			
												AVG	MAX	MIN	RANGE
Trial 1	0.0894	0.0912	0.0909	0.0892	0.0932	0.0935	0.0910	0.0913	0.0893	0.0934		0.09124	0.09350	0.08922	0.00428
Trial 2	0.0893	0.0914	0.0908	0.0893	0.0935	0.0935	0.0911	0.0912	0.0893	0.0934		0.09128	0.09354	0.08925	0.00429
Trial 3	0.0893	0.0912	0.0909	0.0892	0.0935	0.0934	0.0910	0.0913	0.0894	0.0935					
Xbar 1	0.08930	0.09128	0.09087	0.08923	0.09341	0.09347	0.09101	0.09127	0.08935	0.09342	Xdblbar 1 =	0.09126			
MAX 1	0.08939	0.09137	0.09091	0.08931	0.09354	0.09354	0.09106	0.09131	0.08941	0.09350					
MIN 1	0.08925	0.09123	0.09080	0.08915	0.09320	0.09337	0.09096	0.09121	0.08931	0.09337					
Range 1	0.00014	0.00014	0.00011	0.00016	0.00034	0.00017	0.00010	0.00010	0.00010	0.00013	Rbar 1 =	0.00015			

Appraiser 2 - Operator 2

	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10		Within Trial			
												AVG	MAX	MIN	RANGE
Trial 1	0.0894	0.0912	0.0909	0.0894	0.0934	0.0933	0.0911	0.0911	0.0895	0.0935		0.09128	0.09346	0.08936	0.00410
Trial 2	0.0892	0.0913	0.0909	0.0892	0.0933	0.0933	0.0912	0.0912	0.0895	0.0935		0.09126	0.09346	0.08919	0.00427
Trial 3	0.0893	0.0911	0.0910	0.0893	0.0936	0.0934	0.0911	0.0913	0.0895	0.0935					
Xbar 2	0.08930	0.09123	0.09093	0.08933	0.09345	0.09335	0.09111	0.09120	0.08946	0.09349	Xdblbar 2 =	0.09128			
MAX 2	0.08936	0.09132	0.09104	0.08942	0.09357	0.09343	0.09118	0.09126	0.08947	0.09354					
MIN 2	0.08919	0.09113	0.09085	0.08924	0.09334	0.09331	0.09107	0.09112	0.08945	0.09346					
Range 2	0.00017	0.00019	0.00019	0.00018	0.00023	0.00012	0.00011	0.00014	0.00002	0.00008	Rbar 2 =	0.00014			

Part AVG0.089300.091250.090900.089280.093430.093410.091060.091230.089410.09346

MAX Xbar0.09346MIN Xbar0.08928

Rp =0.00418

Rdblbar = 0.00015
(MAX X/dblbar of 1 and 2) minus (MIN X/dblbar of 1 and 2)
0.09128 - 0.09126 = Xdblbar 1 and 2 Difference
0.00002

	Trials	D4	Within Individual Trials				
	2	3.267	Oper 1	MAX Xbar	0.09128	MIN Xbar	0.09124
	3	2.575	Oper 2	MAX Xbar	0.09128	MIN Xbar	0.09126
UCLr = (Rdblbar*D4) = 0.00048		D4 = 3.267	Of Oper. 1 and 2		0.09128		0.09124

Department

Signature

Disposition

Date

Quality Assurance

Todd Vogeler

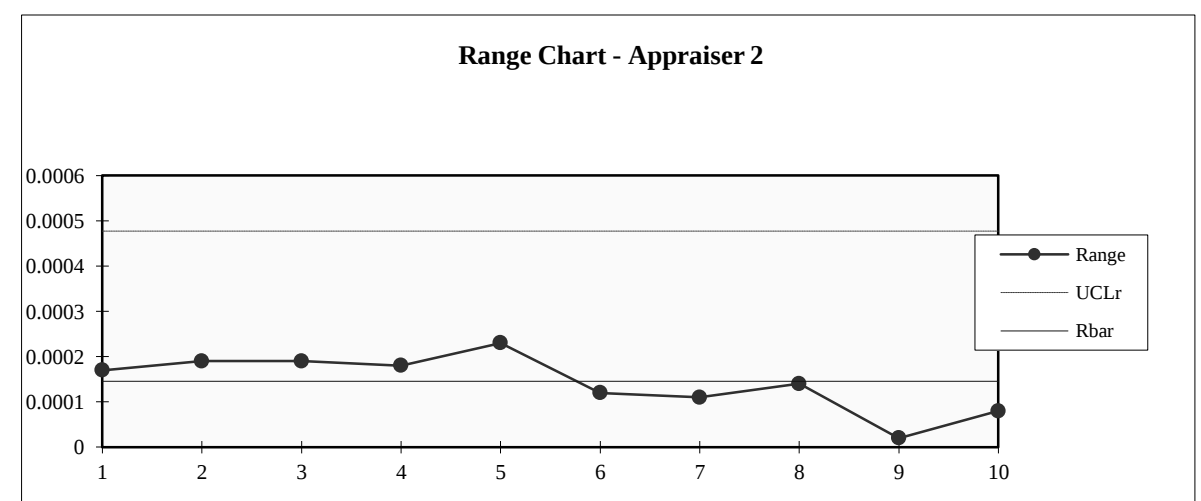
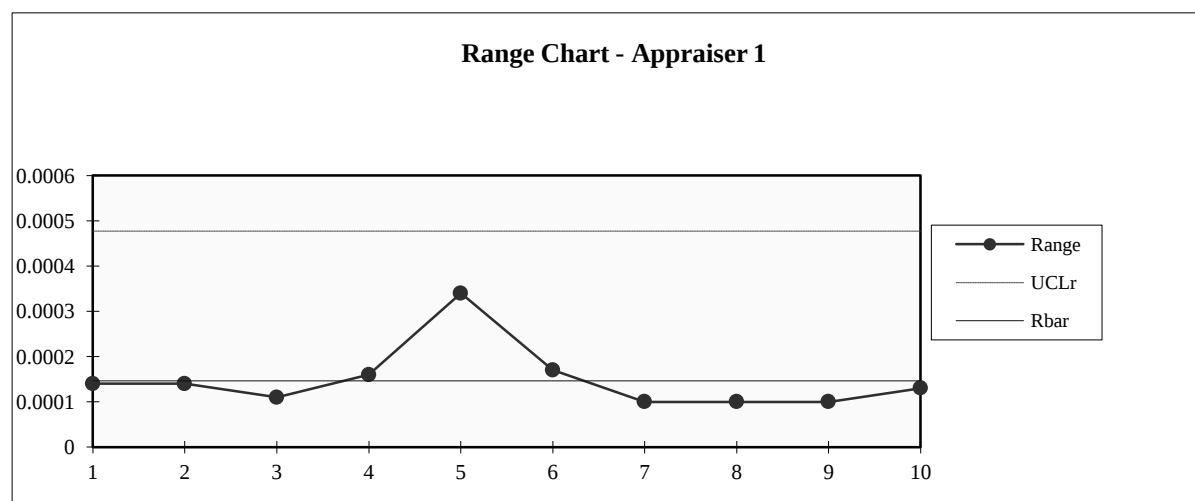
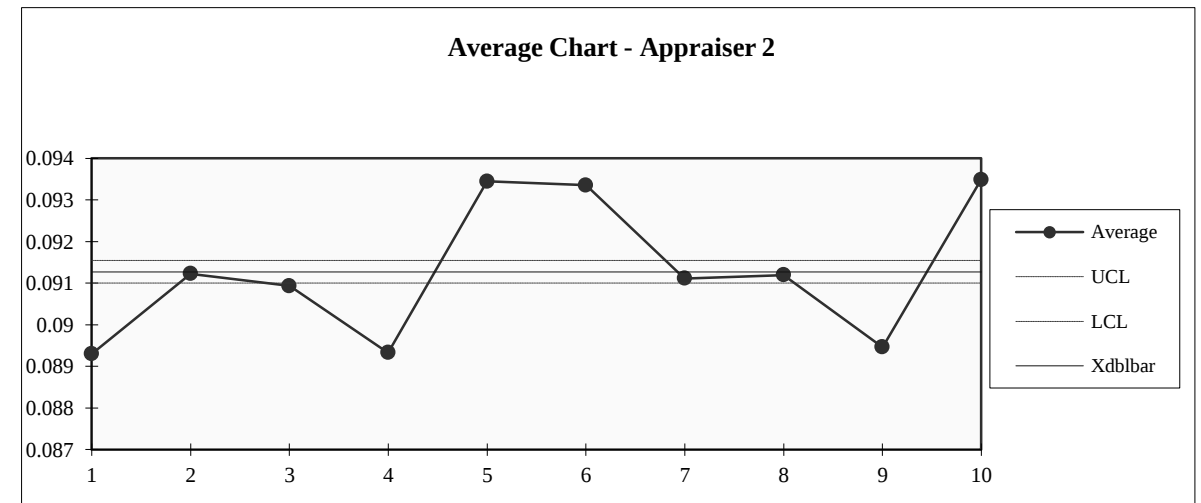
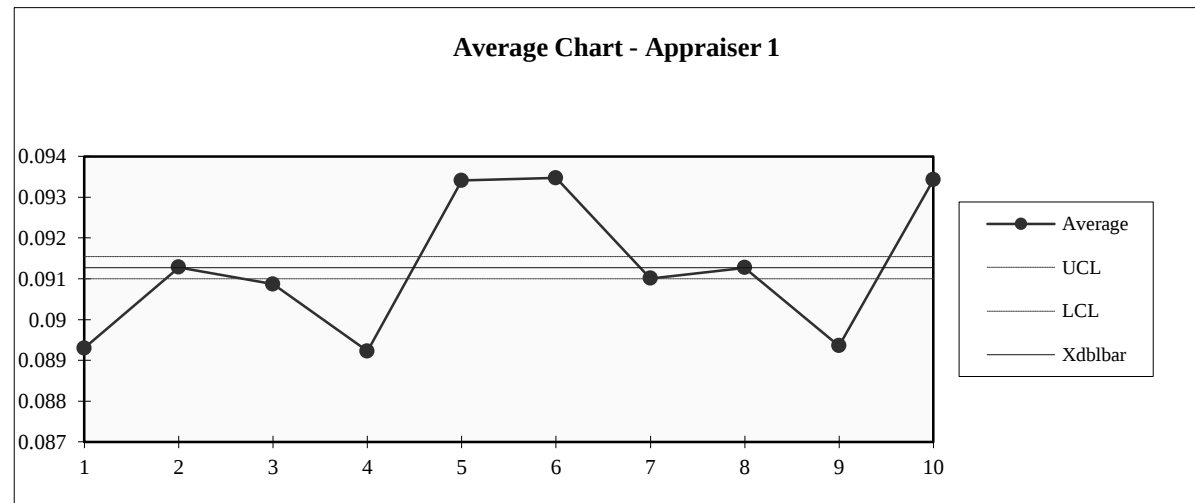
Accept

6/18/2013

Comments:

Measurement Unit Analysis	Causes	% Total Variation (TV)	% Print Tol.(PT)
Repeatability - Equipment Variation (EV) EV = $R_{dblbar} \cdot K1 = 0.00067$ where $K1 = 4.56$	% EV = Variation due to the measurement gauge	$= 100(EV/TV)$ $= 9.79\%$	$= 100(EV/PT)$ $= 8.32\%$
Reproducibility - Appraiser Variation (AV) AV = $SQRT[(\bar{X}_{barDIFF} \cdot K2)^2 - (EV^2/nr)] = 0.00000$ where $K2 = 3.65$	% AV = Incremental bias attributed to each operator	$= 100(AV/TV)$ $= 0.00\%$	$= 100(AV/PT)$ $= 0.00\%$
Repeatability & Reproducibility - (R & R) R&R = $SQRT(EV^2 + AV^2) = 0.00067$	% R&R = Both causes listed above	$= 100(R\&R/TV)$ $= 9.79\%$	$= 100(R\&R/PT)$ $= 8.32\%$
Part Variation (PV) PV = $R_p \cdot K3 = 0.00677$ where $K3 = 1.62$	% PV	$= 100(PV/TV)$ $= 99.52\%$	$= 100(PV/PT)$ $= 84.58\%$
Total Variation (TV) and Total Print Tolerance (PT) $TV = SQRT(R\&R^2 + PV^2) = 0.00680$			
		PT = Total Print Tolerance (USL - LSL) = 0.008	STD Dev. 0.0015992

Control Charts



Production Part Approval Dimensional Test Results

DAIMLERCHRYSLER



PART NUMBER: **33468-0023,-0024**
 PART NAME: **MX 64 ISO Receptacle Terminal**
 DESIGN RECORD CHANGE LEVEL: **B**
 ENGINEERING CHANGE DOCUMENT: **N/A**

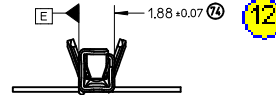
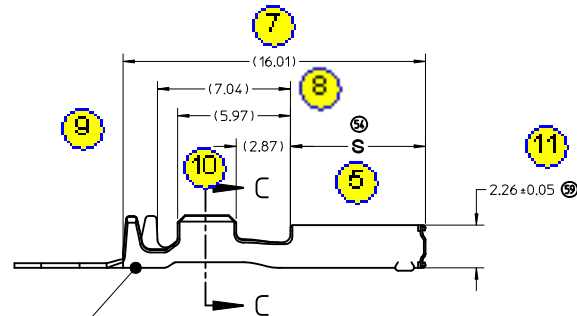
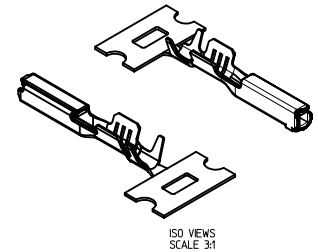
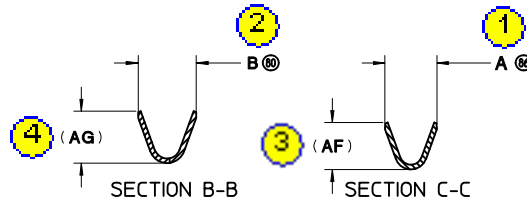
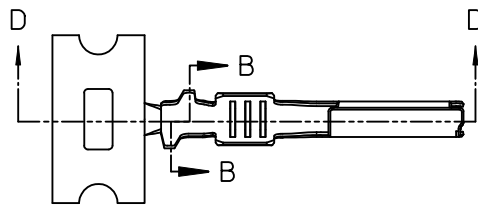
NAME OF INSPECTION FACILITY: **Lincoln-Upland-Stamping Dept.**
 ORGANIZATION NAME: **Molex Inc.**
 SUPPLIER/VENDOR CODE: **DUNS#-944247394**

#	DIMENSION / SPECIFICATION		SPECIFICATION LIMITS			TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)						OK	NOT OK
1	2.70	Dim. A	+	0.30	- 0.30	11/20/12	1	2.760						X	
2	3.10	Dim. B	+	0.30	- 0.30	11/20/12	1	3.143						X	
3	2.50	Dim. AF-Ref. Dim.	+	n/a	- n/a	11/20/12	1	2.497						X	
4	2.70	Dim. AG-Ref. Dim.	+	n/a	- n/a	11/20/12	1	2.684						X	
5	7.15	Dim. S	+	0.10	- 0.10	11/20/12	1	7.169						X	
6	0.26	Dim. T	+	0.07	- 0.07	11/20/12	1	0.237						X	
7	16.01	Ref. Dim.	+	n/a	- n/a	11/20/12	1	16.012						X	
8	7.04	Ref. Dim.	+	n/a	- n/a	11/20/12	1	7.047						X	
9	5.97	Ref. Dim.	+	n/a	- n/a	11/20/12	1	5.967						X	
10	2.87	Ref. Dim.	+	n/a	- n/a	11/20/12	1	2.870						X	
11	2.26		+	0.05	- 0.05	11/20/12	1	2.245						X	
12	1.88		+	0.07	- 0.07	11/20/12	1	1.881						X	
13	3.65	Ref. Dim.	+	n/a	- n/a	11/20/12	1	3.658						X	
14	8.89	Ref. Dim.	+	n/a	- n/a	11/20/12	1	8.883						X	

MARCH 2006

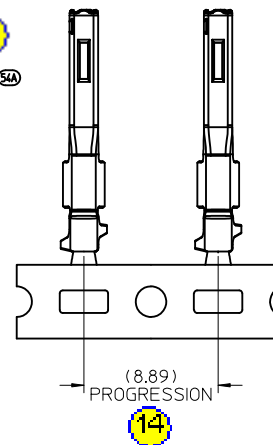
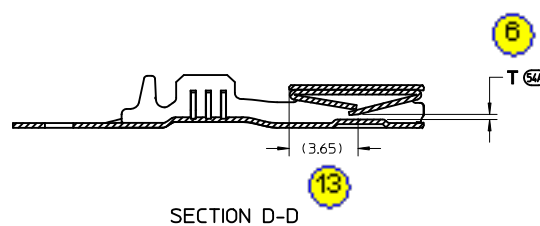
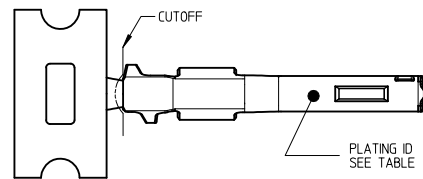
Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
<i>Craig S. Cassel</i>	Quality Technician	11/20/2012



- NOTES: (UNLESS OTHERWISE SPECIFIED)
- MATERIALS: SEE TABLE
 - PACKAGING SPECIFICATION: PK-31300-516 AND PK-30907-759
 - CRIMPING PER APPLICATION SPECIFICATION AS-33468-002
 - CRIMPED LEAD MEETS THE FOLLOWING:
 - SAE/J1939-21, MAY 2002
 - SAE/J1939-2, REV. 3, APRIL 2001
 - SAE/J1939-12, REV. 2
 - GMW #3191 AUGUST 22, 2000 (DRAFT) TEMPERATURE CLASS 3, APPLIES ONLY TO Au PARTS
 - PLATING NOTES:
 - TIN PLATING (ENTIRE TERMINAL)
 - ELECTRO REFLOW 190 - 330 MICROMETERS TIN OVER 0.25 - 0.76 MICROMETERS NICKEL
 - GOLD PLATING
 - UNDERPLATE OVERALL 125-225 MICROMETERS DUCTILE SULPHAMATE NICKEL
 - ELECTRODEPOSITED GOLD 0.76 - 15 MICROMETERS IN CONTACT AREAS
 - ELECTRODEPOSITED TIN MATTE FINISH 2.5 - 4.0 MICROMETERS IN CRIMP AREA
 - SILVER PLATING
 - UNDERPLATE OVERALL 125-225 MICROMETERS DUCTILE SULPHAMATE NICKEL
 - ELECTRODEPOSITED PURE SILVER 99.5% PURITY SEMI-BRIGHT FINISH WITH NO BRIGHTENERS OR CHROMATES 19 - 3.3 MICROMETERS IN CONTACT AREAS
 - ANTI-TARNISH TREATMENT FOR SILVER PLATED AREA: SYNTHETIC HYDROCARBON CONTACT SURFACE FINISH OR EQUIVALENT
 - ELECTRODEPOSITED TIN MATTE FINISH 2.5 - 4.0 MICROMETERS IN CRIMP AREA

TRADEMARK,
DATE CODE,
GRIP CODE



WIRE SIZE	GRIP CODE	PART NUMBER	REEL PAYOFF DIRECTION	DM A	DM B	DM S	DM T	DM AF	DM AG	BASE MATERIAL	PLATING ID
0.35 mm ²	A	33468-0021	D	2.3	2.8	7.15 ± 0.10	0.26 ± 0.07	(2.1)	(2.5)	COPPER ALLOY	Sn Lead Free
		33468-0022	B								
		33467-0021	D								
		33467-0022	B	2.3	2.8	6.97 ± 0.07	0.26 ± 0.07	(2.1)	(2.5)	COPPER ALLOY	Au Lead Free
		34736-0025	D								
		34736-0026	B								
0.5-0.75 mm ²	B	33468-0023	D	2.7	3.1	7.15 ± 0.10	0.26 ± 0.07	(2.5)	(2.7)	COPPER ALLOY	Sn Lead Free
		33468-0024	B								
		33467-0023	D								
		33467-0024	B	2.7	3.1	6.97 ± 0.07	0.26 ± 0.07	(2.5)	(2.7)	COPPER ALLOY	Au Lead Free
		34736-0027	D								
		34736-0028	B								

ENTER DESCRIPTION EC NO: UAU2012-0628 DRWN:KFERGUSON 2011/12/01 CHKD: APPR:BMOSER 2011/12/13	DESCRIPTION	QUALITY SYMBOLS ▽=0 ▽=0 ▽=0	GENERAL TOLERANCES (UNLESS SPECIFIED)		DIMENSION STYLE MM ONLY		SCALE 5:1	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION			
				mm	INCH	DRAWN BY KFERGUSON	DATE 2011/10/04	TITLE MX64 ISO RECEPTACLE TERMINAL				
			4 PLACES	± ---	± ---	CHECKED BY	DATE					
			3 PLACES	± ---	± ---	APPROVED BY BMOSER		DATE 2011/11/01		DOCUMENT NO. SD-33468-002		
			2 PLACES	± 0.10	± ---							
			1 PLACE	± 0.3	± ---	SHEET NO. 1 OF 1						
			ANGULAR ± 3 °									
DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		SIZE C		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION								

A.J. OSTER CO.

Brass Mill Products * Steel * Aluminum Mill Products

Originator RMH

A.J. OSTER, LLC - C.S.
 180 ALEXANDRA WAY
 CAROL STREAM, IL 60188
 (630) 260-1040

 *** CERTIFICATE OF CONFORMANCE ***

AJO ORD#: 4322545	CUST ORD#: 8413985-10	Quantity: 4188 / 1899	Date Shipped: 02-11-13
Customer name: MOLEX, INC./UPLAND FACILITY		Cust Part#: 435870080	SPEC CONFORMANCE: ROHS COMPLIANT
Description: CDA 19025 ET REFLOW CO	Temper: HR4	Gauge: .248920 MM +/- .0002	Width: 26.2890 MM +/- .002
		Camber: .062" MAX IN 6FT	Length:

CHEMICAL ANALYSIS

HEAT#..... 200427001
 COIL#..... 4069636
 CU..... 98.05140
 FE..... .00100
 NI..... .99000
 P..... .04100
 SN..... .86000
 ZN..... .04300

Tag Numbers
 4634064

PHYSICAL TEST RESULTS

TENSILE..... 524.19 NEWT/SQ.MM SURFACE RA
 YIELD..... 517.29 NEWT/SQ.MM 180 BEND -LNG
 ELONGATION..... 7.00- 8.
 GRAIN SIZE..... .0100-.0100
 RMS..... 4.00
 TIN COAT THICK. ET-96-113 MICRO

04.00- 4.00
 .0110

CERTIFICATION COMMENTS:
 NOTES-

NI-12 MICRO/IN.

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HERE IN HAS BEEN MADE TO
 CONFORM TO SPECIFICATION/ OR REQUIREMENTS OF YOUR ORDER.

02-11-13

DATE

APPROVED BY

CAPABILITY STUDY SUMMARY SHEET

PART NAME: MX 64 ISO Crimp Terminal
PART NUMBER: 33468-002*
OPERATION: Stamping
MATERIAL:
TOOL & DIE NUMBER D33467-4B
MEASUREMENT DEVICE: Nikon Microscope
DATE PRODUCED: 12/12/11

NOMINAL:	0.2600					
+TOL:	0.0700					
-TOL:	0.0700					
SAMPLE #	Contact Gap					
1	0.251					
2	0.231					
3	0.248					
4	0.228					
5	0.250					
6	0.239					
7	0.250					
8	0.231					
9	0.245					
10	0.235					
11	0.249					
12	0.239					
13	0.248					
14	0.230					
15	0.245					
16	0.239					
17	0.251					
18	0.235					
19	0.253					
20	0.240					
21	0.249					
22	0.236					
23	0.250					
24	0.231					
25	0.246					
26	0.236					
27	0.259					
28	0.229					
29	0.249					
30	0.235					
31	0.253					
32	0.238					
33	0.254					
34	0.241					
35	0.244					
36	0.242					
37	0.246					
38	0.242					
39	0.247					
40	0.243					
41	0.248					
42	0.230					
43	0.254					
44	0.236					
45	0.251					
46	0.237					
47	0.252					

CAPABILITY STUDY SUMMARY SHEET

PART NAME: MX 64 ISO Crimp Terminal
PART NUMBER: 33468-002*
OPERATION: Stamping
MATERIAL:
TOOL & DIE NUMBER D33467-4B
MEASUREMENT DEVICE: Nikon Microscope
DATE PRODUCED: 12/12/11

NOMINAL:	0.2600					
+TOL:	0.0700					
-TOL:	0.0700					
SAMPLE #	Contact Gap					
48	0.241					
49	0.256					
50	0.238					
51	0.260					
52	0.240					
53	0.248					
54	0.233					
55	0.250					
56	0.232					
57	0.252					
58	0.238					
59	0.244					
60	0.242					
61	0.253					
62	0.240					
63	0.245					
64	0.242					
65	0.247					
66	0.240					
67	0.257					
68	0.240					
69	0.259					
70	0.243					
71	0.250					
72	0.233					
73	0.251					
74	0.243					
75	0.247					
76	0.239					
77	0.257					
78	0.237					
79	0.258					
80	0.242					
81	0.244					
82	0.243					
83	0.244					
84	0.236					
85	0.244					
86	0.233					
87	0.249					
88	0.239					
89	0.257					
90	0.229					
91	0.249					
92	0.233					
93	0.244					
94	0.241					

CAPABILITY STUDY SUMMARY SHEET

PART NAME: MX 64 ISO Crimp Terminal						
PART NUMBER: 33468-002*						
OPERATION: Stamping						
MATERIAL:						
TOOL & DIE NUMBER D33467-4B						
MEASUREMENT DEVICE: Nikon Microscope						
DATE PRODUCED: 12/12/11						

NOMINAL:	0.2600					
+TOL:	0.0700					
-TOL:	0.0700					
SAMPLE #	Contact Gap					
95	0.244					
96	0.239					
97	0.245					
98	0.239					
99	0.259					
100	0.228					
101	0.256					
102	0.237					
103	0.246					
104	0.243					
105	0.244					
106	0.232					
107	0.244					
108	0.238					
109	0.245					
110	0.241					
111	0.254					
112	0.231					
113	0.248					
114	0.240					
115	0.256					
116	0.243					
117	0.252					
118	0.231					
119	0.249					
120	0.228					
121	0.256					
122	0.232					
123	0.249					
124	0.235					
125	0.246					
AVERAGE	0.243	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Cp	2.88	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Cpk	2.20	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Metrology Lab Work Instruction

Title: Metrology Lab Scope
5/13/2013
WI # QWL-0015 L
Approved: Brian Stimple
[Back to Index](#)

1.0 Purpose

To outline the functions, methods and equipment used by the First Piece Lab at the Lincoln Upland Facility.

1.1 Test and Evaluation Types

The Lincoln Upland First Piece Lab performs dimensional measurements of components and calibration/verification of measuring and test equipment. Methods for performing evaluations are described in work instructions including:

1.1.1 QWL-0020 First Piece Lab Submission Procedure

1.1.2 QWL-0021 First Article Inspection Procedure

1.1.3 QWL-0022 Annual Submission Procedure

1.1.4 QWL-0023 8 Shot Submission Procedure

1.1.5 QWL-0024 Gage R&R Procedure

1.1.6 QWL-0038 Capability Analysis Procedure

1.1.7 QWCAL-001 Calibration Administration

1.2 Equipment

The Lab performs testing and calibration/verification activities using the following measuring equipment.

Description	Serial#	Range	Resolution	Units	Cal Interval
OGP Flash 250	SVW2502946	8x12"	x.xxxxx	in/mm	12
Digital Micrometer	Various	0 to 1"	x.xxxxx	in/mm	12 months
Digital Indicators	Various	0 to 2"	x.xxxxx	in/mm	12 months
Gauge Blocks	771388	.050" to 4"	x.xxxxxx	in	12 months
Digital Calipers	Various	0 to 6"	x.xxxx	in/mm	12 months
Calibrated weights	2051878	.1 to 50	x.xxxx	grams	5 Years
Optical Comparator	TB12061772	6 x 6	x.xxxxx	in/mm	12 months
CMM - B&S GC	1011-1165UA	300x500x300	x.xxxxx	in/mm	12 months
Shimadzu XRF	Q23644401639S A	Material Specific	Material Specific	micro inches/microns	Per each use.

2.0 Application

2.1 Molex Lincoln Upland Facilities

3.0 Definitions

Laboratory - Body within the organization that are involved in the calibration of measuring and test equipment and in product testing that is outside of the production process.

Calibration - The set of operations which establish, under specified conditions, the relationship of between values indicated by a measurement instrument or measuring system, or values represented by a material measure, and the corresponding known measure of a measurement standard.

Verification - Confirmation by examination and provision of evidence that specified requirements have been met.

4.0 Associated Materials

4.1 ISO/TS 16949:2002

4.2 AIAG Measurement Systems Analysis (MSA) Reference Manual

4.3 Control of Monitoring and Measuring Devices Dpro 7.6-9-3104-0001.

5.0 Procedure

5.1 Dimension testing activities shall take place in an environment that is within the temperature range of 72 +10 / -10 degrees F. If the environmental temperature does not meet the above requirements, for the higher resolution* measuring equipment only, the Lab Supervisor shall take one or more of the following actions to ensure measurement accuracy or that the risks are understood to report approvers :

5.1.1 Verify that the gage bias at the deviated temperature, per methods described in the AIAG MSA reference manual. Disposition of the measuring device shall be documented on the Out-of-Calibration Assessment form per the Lincoln Calibrations SOP Dpro 7.6-9-3104-0001.

5.1.2 Take actions to get the environmental temperature within specified range

5.1.3 Make note of the deviation from temperature requirements on dimensional reports. *higher resolution means resolution of x.xxxxxx digits (English) or greater

5.2 Plating Chemistry Lab

5.2.1 The Plating Chemistry Lab is used for in-process control only and does not determine specific part compliance. The part compliance is determined by the in-process inspection equipment as defined by Plating work instructions.

2.0 **Application**

6.1 Out-of-Calibration Assessment form

7.0 Flow Chart

NA

8.0 Revision History

Rev Date Description

A	3/23/1999	New release
B	8/4/1999	Sec. 1.2; Added Optical Comparator and CMM Sec. 5.1; Added "for higher resolution* equipment only", "one or more of the following actions", "or that risks are understand to report approvers", & "higher resolution means resolution of x.xxxxxx digits (English) or greater". Deleted "as appropriate".
C	12/21/1999	Changed temperature tolerance from +/-7 degrees F.
D	11/28/2000	Added 1.1.9 and removed Omis II Mono Microscope
E	9/28/2001	Removed QWL-0016 and replaced with QWCAL-001. Removed X-Rays from list of equipment in 1.2. Changed temperature requirements from 68 deg. +/-10 to 72 deg. +/-10.
F	8/15/2002	Put X-Rays. back on list of equipment in 1.2. Added Plating work instruction number to Associated Materials. Changed work instruction list in 1.1 to current work instruction numbers.
G	6/23/2003	Calibration SOP - DPro4.11-9-3104-0001 Changed to: Control of Monitoring and Measuring Devices Dpro 7.6-9-3104-0001.
H	6/16/2005	1.2 Added description, serial#, resolution, units and cal interval to equipment list. Removed 1.2.10. Changed heading and title of document to include "Metrology Lab" Removed Plating lab work instruction in 4.4. Removed 1.2.1 thru 1.2.9 and replaced with table.
I	6/18/2008	Added element 5.2 plating chemistry lab statement.
J	10/30/2008	Changed item 1.0 from "Lab Scope" to "Purpose" to conform. with Dpro 4.5-9-3104-0003 and added sentence to describe document purpose. 10/30/08
K	8/8/2011	Updated equipment list for Metrology Lab. Removed S/Ns from calipers and micrometers. Changed to various. Changed interval for weights to 5 years.
L	5/13/2013	Removed QWL-0025 and 0026 referenced in 1.0. Added QWL-0038.



DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certificate No. CERT-03504-2004-AE-HOU-ANAB

This is to certify that

Molex Inc.
Global Commercial Products Division

at

700 Kingbird Road, Lincoln, NE 68521 USA

Additional locations:

Site Address	Site City	Site State & Zip Code	Site Main Activities
1400 West Bond	Lincoln	NE 68521	Assembly, Molding, Plating, Stamping, Warehousing

has been found to conform to the Management System Standard:

ISO 14001:2004

This Certificate is valid for the following product or service ranges:

**THE MOLDING, STAMPING, PLATING, AND ASSEMBLY
OF ELECTRICAL INTERCONNECT PRODUCTS**

Initial Certification date:

August 28, 2001

This Certificate is valid until:

August 26, 2013

Place and date:

Houston, Texas, August 26, 2010

for the Accredited Unit:

DET NORSKE VERITAS
CERTIFICATION INC., HOUSTON TEXAS



*The audit has been performed under the
supervision of*

Linda Markham-Nitz
Lead Auditor

David Laurie
Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.



DNV BUSINESS ASSURANCE MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 118260-2012-AQ-USA-ANAB

This is to certify that

Molex Inc.

at

1000 West Upland Avenue, Lincoln, NE 68521

Additional Locations:

Site Address	Site City	Site State	Site Main Activities
700 Kingbird Road	Lincoln	NE 68521	Manufacturing
1400 West Bond Circle	Lincoln	NE 68504	Manufacturing
2025 Taylor Road	Auburn Hills	MI 48326	Design, Testing, HR & Automotive Sales
2222 Wellington Court	Lisle	IL 60532	Sales, Design, Testing, Purchasing, HR
25 Parc Burospace	Bievres, Cedex	France	Design, Sales, Customer Complaint Handling

has been found to conform to the Management System Standard:

ISO 9001:2008

This Certificate is valid for the following product or service ranges:

Manufacture and Design of Electronic and Electrical Interconnect Products and Systems for Commercial and Automotive Industries

Initial Certification date:

May 02, 2012

Place and date:

Houston, Texas, September 26, 2012

This Certificate is valid until:

September 25, 2015

for the Accredited Unit:

DET NORSKE VERITAS

CERTIFICATION INC., HOUSTON TEXAS

The audit has been performed under the supervision of

Michael Kucko
Lead Auditor



Peter Herman
Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.



DNV BUSINESS ASSURANCE

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 115600-2012-AQ-USA-IATF

IATF Certificate No.: 0147404

Page 1 of 2

This is to certify that the Management System of:

Molex Inc.

1000 West Upland Avenue, Lincoln, NE 68521

Supporting Site Extensions: *See 2nd page*
Remote Supporting Functions: *See 2nd page*

has been found to conform to Technical Specification:

ISO/TS 16949:2009

having been audited in accordance with the:

Rules for the registration scheme for ISO/TS 16949:2009 – 3rd Edition.

This Certificate is valid for the following products/service ranges

**MANUFACTURE AND DESIGN OF ELECTRONIC AND ELECTRICAL
INTERCONNECT PRODUCTS AND SYSTEMS
EXCLUSIONS: NONE**

Initial Certification date:
02 May 2012

This Certificate is valid until:
25 September 2015

Guillermo Leon
Guillermo Leon
Lead Auditor



Place and Validity Start date:
Katy, Texas, 26 September 2012

for the Accredited Unit:
**DET NORSKE VERITAS
CERTIFICATION INC., KATY, TX, USA**


Peter Herman
Management Representative

Audit Conducted by DNV Office located in Katy, Texas, USA.



DNV BUSINESS ASSURANCE

APPENDIX TO CERTIFICATE

This Appendix refers to Certificate No.: 115600-2012-AQ-USA-IATF
IATF Certificate No.: 0147404
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Molex Inc.

1000 West Upland Avenue, Lincoln, NE 68521

Supporting Site Extensions:

Site Name	Site Address	Site City	Site State	Site Processes
Molex Inc.	700 Kingbird Road	Lincoln	NE 68521	Manufacture and Design of Electronic and Electrical Interconnect Products and Systems
Molex Inc.	1400 West Bond Circle	Lincoln	NE 68521	Manufacture and Design of Electronic and Electrical Interconnect Products and Systems

Remote Supporting Functions included in the certification:

Site Name	Site Address	Site City	Site State	Certification Body	Site Main Activities
Molex Inc.	25 Parc Burospace	Bievres	Cedex, France	DNV	Testing, Human Resources, Design
Molex Inc.	18 Parc Burospace	Bievres	Cedex, France	DNV	Automotive Sales
Molex Inc.	2025 Taylor Road	Auburn Hills	MI 48326	DNV	Design, Human Resources, Testing, Automotive Sales and Purchasing
Molex Inc.	2222 Wellington Court	Lisle	IL 60532	DNV	Customer Service, Human Resources, Purchasing, Sales and Testing