Part Submission Warrant

Part Name	Terminal Wire Snap-On Male	Cust. Part Number	BU5T-14421-HA
Shown on Drawing Number	BU5T-14421-HA	Org. Part Number	34781-0004
Engineering Change Level	AELE E 11776560 402 (B3)	Dated	October 3, 2011
Additional Engineering Changes	N/A	Dated	N/A
Safety and/or Government Regulation	☐ Yes ☑ No	Purchase Order No.	N/A
Weight (kg)	0.0004		
Checking Aid Number	N/A	Checking Aid Eng. Change Level	N/A
Dated	N/A		

ORGANIZATION MANUFACTURING INFORMATION

Molex Incorporated DUNS: 944247394
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

Automotive Application
Application

MATERIALS REPORTING

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

Submitted by IMDS or other customer format: IMDS ID# 145339271

Are polymeric parts identified with appropriate ISO marking codes? ☐ Yes ☐ No ☑ n/a

REASON FOR SUBMISSION (Check at least one)

- ☑ Initial submission
- ☐ Engineering Change(s)
- ☐ Tooling: Transfer, Replacement, Refurbishment, or additional
- ☐ Correction of Discrepancy
- ☐ Tooling Inactive > than 1 year
- ☐ Change to Optional Construction or Material
- ☐ Sub-Supplier or Material Source Change
- ☐ Change in Part Processing
- ☐ Parts produced at Additional Location
- ☐ 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 stamp

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 _60000_/__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 February 27, 2017

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)

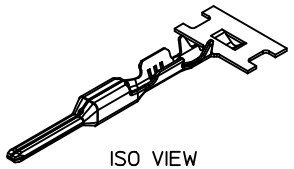
TABLE 1
TERMINAL INFORMATION

FORD PART NO.	SUPPLIER PART NO.	DESCRIPTION	GREASED Y/N	BASE MATERIAL	PLATING MATERIAL	PLATING THICKNESS	COPPER WEIGHT	TOTAL WEIGHT	MATERIAL THICKNESS	MATERIAL HARDNESS	MAX AMBIENT TEMPERATURE	CONDUCTOR MIN/MAX CSA	INSULATION MIN/MAX OD	MATING PARTS		
														FORD PART NO.	SUPPLIER PART NO.	DESCRIPTION
BU5T-14421-HA	34781-0004	MX150 MALE TERMINAL 0.35/0.5 mm², B-WIND	N	C19400	TIN	0.5-1.00 µm	0.29 gm	0.30 gm	0.30mm	H04	125°C	0.376/0.563 mm²	1.2/1.7 mm	BU5T-14474-UA	34780-0004/34780-1004	MX150 FEMALE TERMINAL 0.35/0.5 mm², B/D-WIND
	34781-1004	MX150 MALE TERMINAL 0.35/0.5 mm², D-WIND														

B2 B1

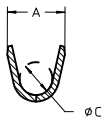
TABLE 2

FORD PART NO.	SUPPLIER PART NO.	DIM A ±0.3	DIM B ±0.3	DIM C ±0.3	DIM D ±0.10
BU5T-14421-HA	34781-0004	2.5	2.7	0.9	1.54
	34781-1004				

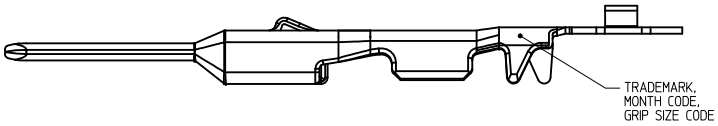


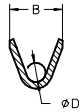
ISO VIEW
SCALE 4:1

LTRS.	REVISIONS			
	ORIGINATOR	CHECKER	ENGR APP	MATL APP
A	RELEASED BU5T-14421-HA AELE E 11776560 332 DATE: 20100701			
	KFERGUSON	ADHIR	GLEECE	
B1	UPDATED MATING PART B2 UPDATED CONDUCTOR/INSULATION INFORMATION B3 CHANGED CS-34781-001 TO AS-34781-001 AELE E 11776560 402 DATE:			
	KFERGUSON	ADHIR	GLEECE	

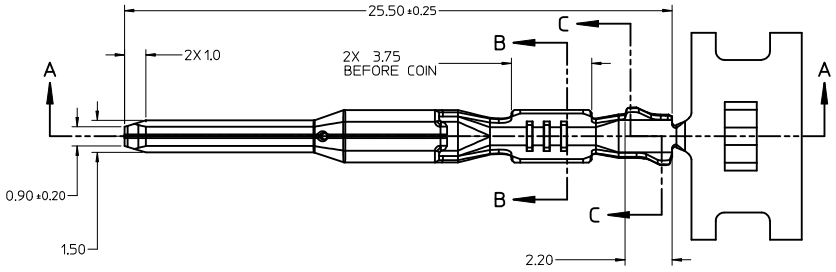


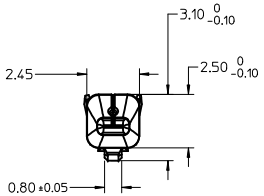
SECTION C-C

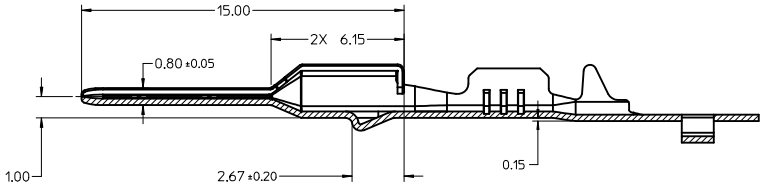




SECTION B-B







SECTION A-A

GENERAL NOTES: (UNLESS OTHERWISE SPECIFIED)

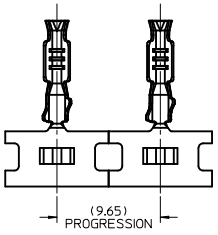
1. MEETS CRIMP PERFORMANCE SPECIFICATION SAE/USCAR-21 (REV. 2, OCT. 2008)
2. MEETS PERFORMANCE STANDARD FOR AUTOMOTIVE ELECTRICAL CONNECTOR SYSTEMS SAE/USCAR-2 REV. 5 (NOVEMBER 2007), TEMPERATURE CLASS 3
3. MEETS WIRING COMPONENT DESIGN GUIDLINES SAE/USCAR-12 REV. 2 (DECEMBER 2001)
4. MEETS ELECTRICAL CONNECTION SYSTEM DESIGN SPECIFICATION (SDS) REV 14 (1/2007)
5. TIN PLATING (ENTIRE TERMINAL) :

   BASE LAYER: ELECTRODEPOSITED ADVANCED TIN BARRIER
   THICKNESS 0.25 - 1.00 MICROMETERS

   TIN LAYER: ELECTRODEPOSITED REFLOW TIN
   100% TIN NO BRIGHTENERS
   THICKNESS 0.50 - 1.00 MICROMETERS

6. GENERAL TOLERANCE: ±0.3 ALL ONE PLACE DIMENSIONS
   ±0.10 ALL TWO PLACE DIMENSIONS
   ±3° ALL ANGUALR DIMENSIONS.
7. REFERENCE AS-34781-001 FOR CRIMP INFORMATION

B3

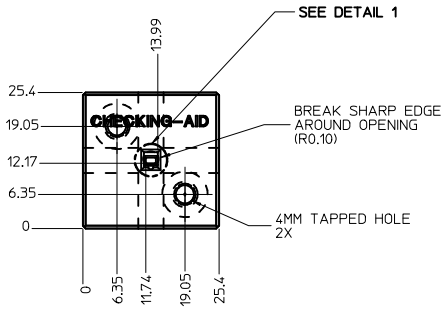


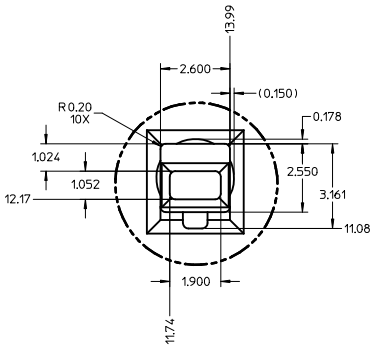
SCALE 4:1

BU5T-14421-HA	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	BU5T-14421-HA	
	DESIGN LPULLIAM / DETAIL LP / TITLE	TERMINAL WIRE SNAP ON MALE	SHT 1 OF 3
	CHECKED ADHIR / SAFETY		
	SCALE 8:1 / DATE 2006/08/24 / DIVISION / PLANT		

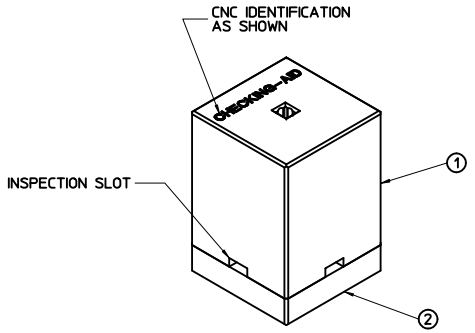
DRW SIZE A1/D

LTRS.	REVISIONS		
ORIGINATOR	CHECKER	ENGR APP	MATL APP



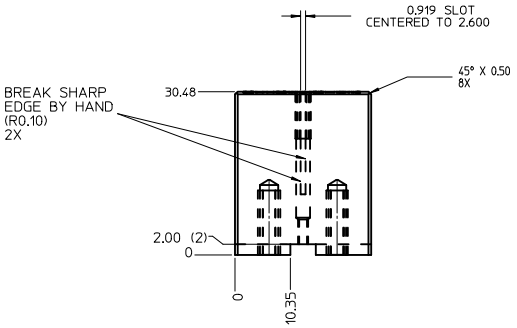


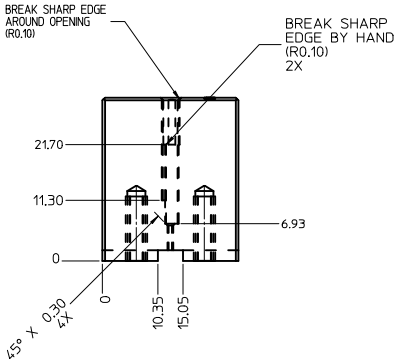
DETAIL 1
SCALE 10:1

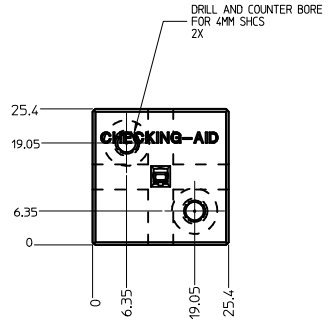


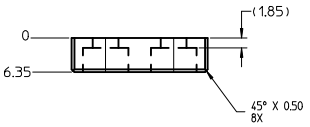
CHECKING-AID
2 PIECE ASSEMBLY
A2 TOOL STEEL HARDEN AND
GRIND TO ROCKWELL C 56-58

CHECKING-AID TOLERANCE
X.XXX = 0.005
X.XX = 0.03
X.X = 0.3







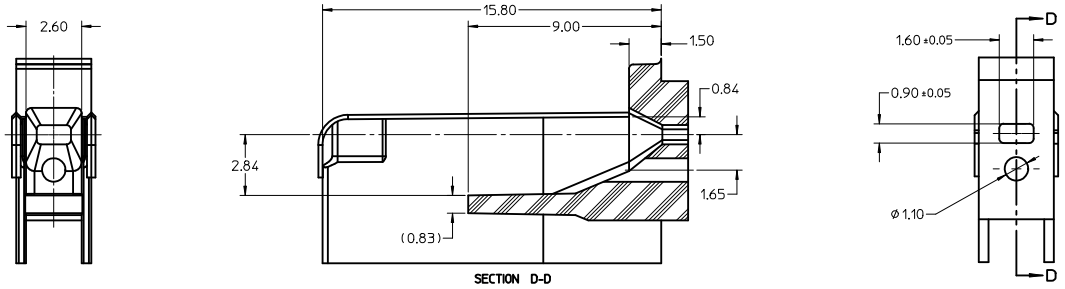


DETAIL 2
CAP

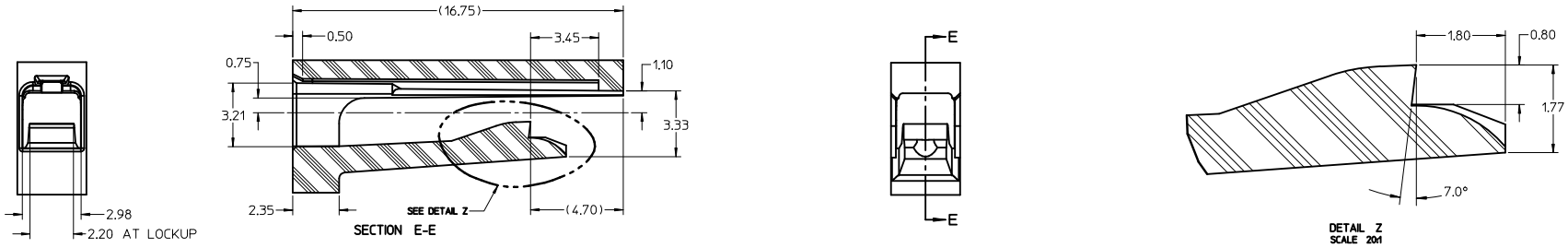
REFERENCE ---			
PART MUST COMPLY WITH MATERIAL SPECIFICATION WSS-M99P9999-A1 TO HELP SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT.			
DRAFTED IN ACCORDANCE WITH FAO ENGINEERING DRAFTING STANDARD CURRENT AT INITIAL RELEASE		3RD ANGLE PROJ DIMENSIONS IN MILLIMETERS	
CAD TYPE	CAD LOC.	CAD FILE	IS MASTER
OPER. NO.	UNIT	DRAWING BU5T-14421-HA	
DESIGN LPULLIAM	DETAIL LP	TITLE TERMINAL WIRE SNAP ON MALE	SHT 2 OF 3
CHECKED ENGINEER	SAFETY		
SCALE 2:1	DATE 2006/08/24	DIVISION PLANT	

DRW SIZE A1/D

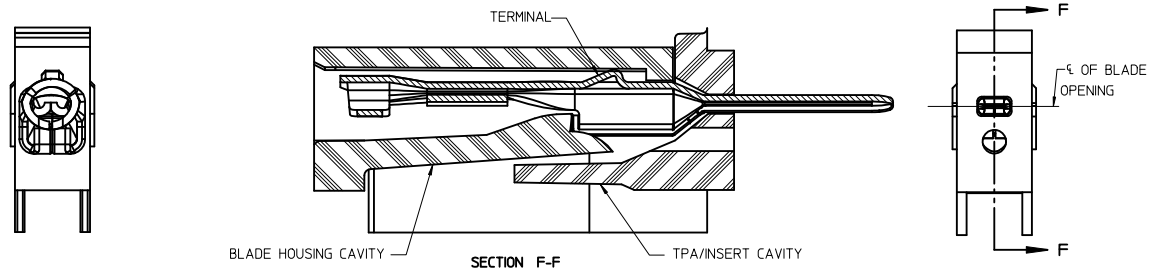
LTRS.	REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MATL APP	



TPA / INSERT DETAIL



HOUSING DETAIL



BLADE CAVITY ASSEMBLY VIEWS

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. TOLERANCES: LINEAR ±0.10
   ANGULAR 3°
2. ALL DRAFT WITHIN TOLERANCE
3. MAX RADII ON ALL CORNERS SHOWN SHARP: 0.10
4. MAX FLASH PERMISSIBLE: 0.1
5. EJECTOR PIN MARKS PERMISSIBLE IF FLUSH TO 0.25 BELOW SURFACE
6. MATERIAL: HOUSING/FINGER SPECIFICATION ENGINEERED FOR MATERIAL WITH THE FOLLOWING PROPERTIES:
   A. FLEXURAL MODULUS = 4,500 TO 9,400 MPa PER ASTM TEST D790
   B. ELONGATION AT YIELD = 2.3% OR BETTER PER ASTM TEST D638 TYPE V
7. CAVITY SPEC FOR USE ONLY WITH MOLEX BLADE TERMINAL PART NUMBERS SPECIFIED ELSEWHERE ON THIS DRAWING

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 BU5T-14421-HA	
DESIGN LPULLIAM	DETAIL LP	TITLE TERMINAL WIRE SNAP ON MALE	SHT 3 OF 3
CHECKED BMOSER	SAFETY		
SCALE 8:1	DATE 2006/08/24	DIVISION PLANT	

DRW SIZE A1/D

Production Part Approval
Dimensional Test Results

PART NUMBER:	BU5T-14421-HA
PART NAME:	Terminal Wire Snap On Female, 0.35/0.5 mm^2
DESIGN RECORD CHANGE LEVEL:	B3
NAME OF INSPECTION FACILITY:	Lincoln-Upland-Stamping Dept.
ENGINEERING CHANGE DOCUMENTS:	N/A
ORGANIZATION NAME:	Molex Inc.
SUPPLIER/VENDOR CODE:	DUNS#-944247394

Ford Drawing No. BU5T-14421-HA | **Die No. D33011-4C**

Molex Part No. 34781-0004,-1004

#	DIMENSION / SPECIFICATION		SPECIFICATION LIMITS				TEST DATE	QTY-TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)							OK	NOT OK
1	2.50	Dim-A	+	0.30	-	0.30	11/17/16	1	2.542							X	
2	2.70	Dim-B	+	0.30	-	0.30	11/17/16	1	2.701							X	
3	0.90	Dim-C	+	0.30	-	0.30	11/17/16	1	0.873							X	
4	1.54	Dim-D	+	0.30	-	0.30	11/17/16	1	1.567							X	
5	1.50		+	0.10	-	0.10	11/17/16	1	1.492							X	
6	0.90		+	0.20	-	0.20	11/17/16	1	0.883							X	
7	1.00		+	0.30	-	0.30	11/17/16	2	0.985	0.980						X	
8	3.75		+	0.10	-	0.10	11/17/16	2	3.750	3.746						X	
9	25.50		+	0.25	-	0.25	11/17/16	1	25.511							X	
10	2.20		+	0.10	-	0.10	11/17/16	1	2.203							X	
11	15.00		+	0.10	-	0.10	11/17/16	1	15.006							X	
12	0.80		+	0.05	-	0.05	11/17/16	1	0.796							X	
13	6.15		+	0.10	-	0.10	11/17/16	2	6.142	6.137						X	
14	0.15		+	0.10	-	0.10	11/17/16	1	0.138							X	
15	2.67		+	0.20	-	0.20	11/17/16	1	2.683							X	
16	1.00		+	0.10	-	0.10	11/17/16	1	0.978							X	
17	2.50		+	0.00	-	0.10	11/17/16	1	2.499							X	
18	3.10		+	0.00	-	0.10	11/17/16	1	3.100							X	
19	2.45		+	0.10	-	0.10	11/17/16	1	2.457							X	
20	0.80		+	0.05	-	0.05	11/17/16	1	0.792							X	
21	9.65	Ref-Dim.	+	0	-	0	11/17/16	1	9.649							X	
N1	Note 1								Complies							X	
N2	Note 2								Complies							X	
N3	Note 3								Complies							X	
N4	Note 4								Complies							X	
N5	Note 5								Complies							X	
N6	Note 6								Complies							X	
N7	Note 7								Complies							X	

MARCH
2006

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
Craig S - Cassel	Quality Technician	11/17/2016

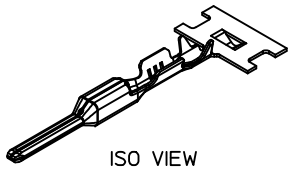
TABLE 1
TERMINAL INFORMATION

FORD PART NO.	SUPPLIER PART NO.	DESCRIPTION	GREASED Y/N	BASE MATERIAL	PLATING MATERIAL	PLATING THICKNESS	COPPER WEIGHT	TOTAL WEIGHT	MATERIAL THICKNESS	MATERIAL HARDNESS	MAX AMBIENT TEMPERATURE	CONDUCTOR MIN/MAX CSA	INSULATION MIN/MAX OD	MATING PARTS		
														FORD PART NO.	SUPPLIER PART NO.	DESCRIPTION
BU5T-14421-HA	34781-0004	MX150 MALE TERMINAL 0.35/0.5 mm², B-WIND	N	C19400	TIN	0.5-1.00 µm	0.29 gm	0.30 gm	0.30mm	H04	125°C	0.376/0.563 mm²	1.2/1.7 mm	BU5T-14474-UA	34780-0004/34780-1004	MX150 FEMALE TERMINAL 0.35/0.5 mm², B/D-WIND
	34781-1004	MX150 MALE TERMINAL 0.35/0.5 mm², D-WIND														

B2 B1

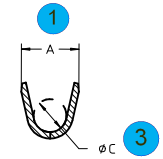
TABLE 2

FORD PART NO.	SUPPLIER PART NO.	DIM A ±0.3	DIM B ±0.3	DIM C ±0.3	DIM D ±0.10
BU5T-14421-HA	34781-0004	2.5	2.7	0.9	1.54
	34781-1004				

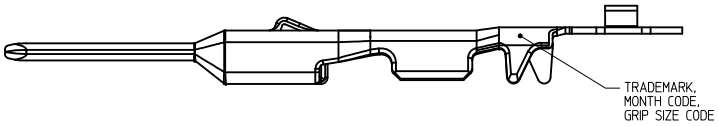


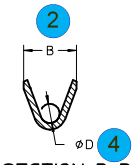
ISO VIEW
SCALE 4:1

LTRS.	REVISIONS			
	ORIGINATOR	CHECKER	ENGR APP	MATL APP
A	RELEASED BU5T-14421-HA AELE E 11776560 332 DATE: 20100701			
	KFERGUSON	ADHIR	GLEECE	
B1	UPDATED MATING PART			
B2	UPDATED CONDUCTOR/INSULATION INFORMATION			
B3	CHANGED CS-34781-001 TO AS-34781-001 AELE E 11776560 402 DATE:			
	KFERGUSON	ADHIR	GLEECE	

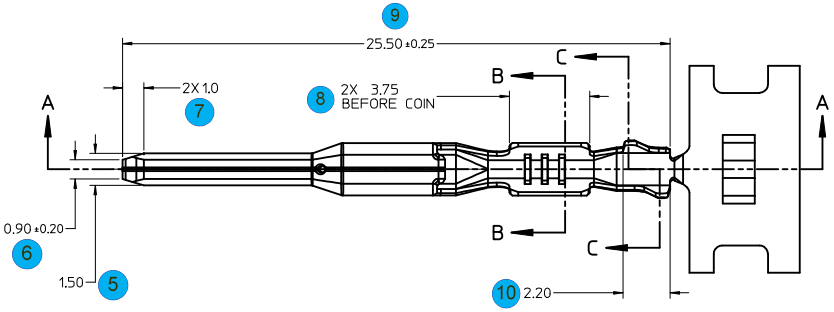


SECTION C-C





SECTION B-B



GENERAL NOTES: (UNLESS OTHERWISE SPECIFIED)

N1 1. MEETS CRIMP PERFORMANCE SPECIFICATION SAE/USCAR-21 (REV. 2, OCT. 2008)

N2 2. MEETS PERFORMANCE STANDARD FOR AUTOMOTIVE ELECTRICAL CONNECTOR SYSTEMS SAE/USCAR-2 REV. 5 (NOVEMBER 2007), TEMPERATURE CLASS 3

N3 3. MEETS WIRING COMPONENT DESIGN GUIDLINES SAE/USCAR-12 REV. 2 (DECEMBER 2001)

N4 4. MEETS ELECTRICAL CONNECTION SYSTEM DESIGN SPECIFICATION (SDS) REV 14 (1/2007)

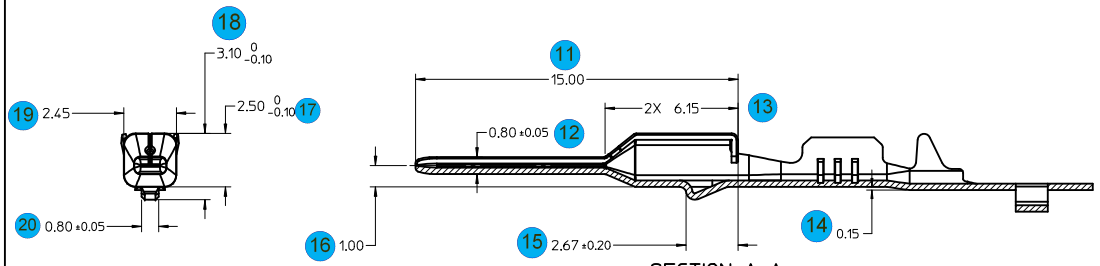
N5 5. TIN PLATING (ENTIRE TERMINAL) :

BASE LAYER: ELECTRODEPOSITED ADVANCED TIN BARRIER
THICKNESS 0.25 - 1.00 MICROMETERS

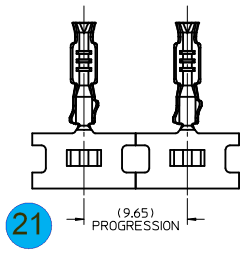
TIN LAYER: ELECTRODEPOSITED REFLOW TIN
100% TIN NO BRIGHTENERS
THICKNESS 0.50 - 1.00 MICROMETERS

N6 6. GENERAL TOLERANCE: ±0.3 ALL ONE PLACE DIMENSIONS
±0.10 ALL TWO PLACE DIMENSIONS
±3° ALL ANGUALR DIMENSIONS.

N7 7. REFERENCE AS-34781-001 FOR CRIMP INFORMATION
B3



SECTION A-A

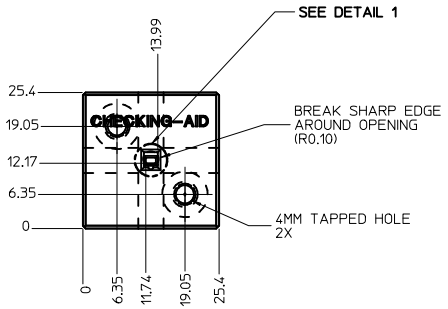


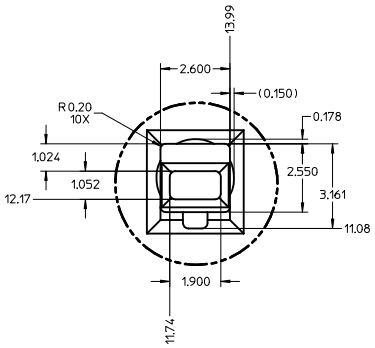
SCALE 4:1

BU5T-14421-HA	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	BU5T-14421-HA	
	DESIGN LPULLIAM / DETAIL LP / TITLE	TERMINAL WIRE SNAP ON MALE	SHT 1 OF 3
	CHECKED ADHIR / SAFETY		
	SCALE 8:1 / DATE 2006/08/24 / DIVISION / PLANT		

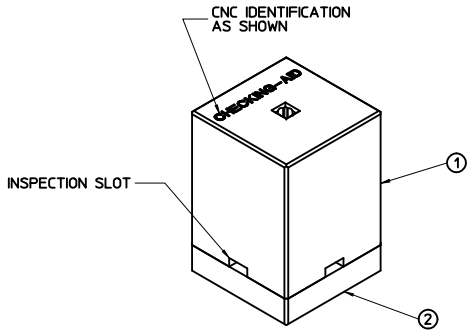
DRW SIZE A1/D

LTRS.	REVISIONS		
ORIGINATOR	CHECKER	ENGR APP	MATL APP



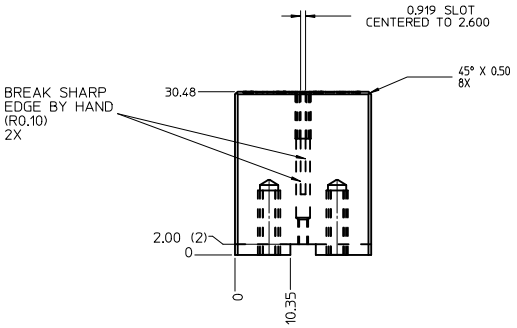


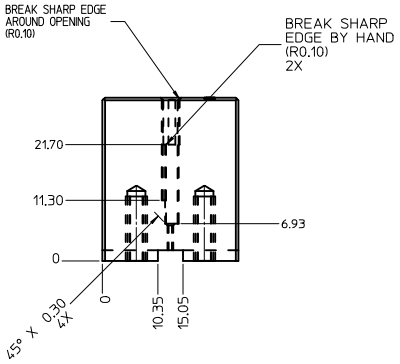
DETAIL 1
SCALE 10:1

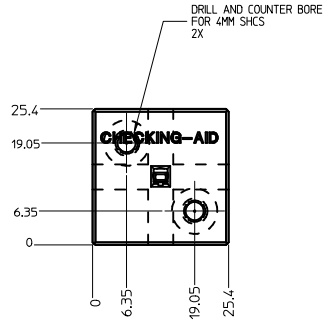


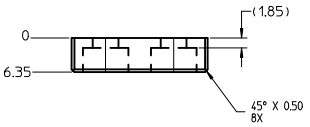
CHECKING-AID
2 PIECE ASSEMBLY
A2 TOOL STEEL HARDEN AND
GRIND TO ROCKWELL C 56-58

CHECKING-AID TOLERANCE
X.XXX = 0.005
X.XX = 0.03
X.X = 0.3







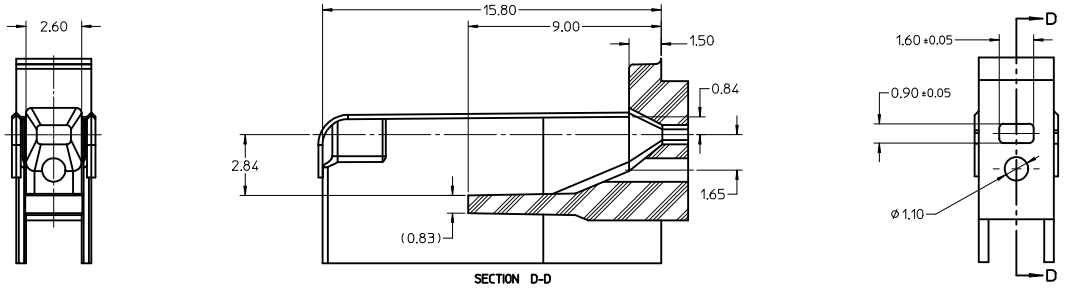


DETAIL 2
CAP

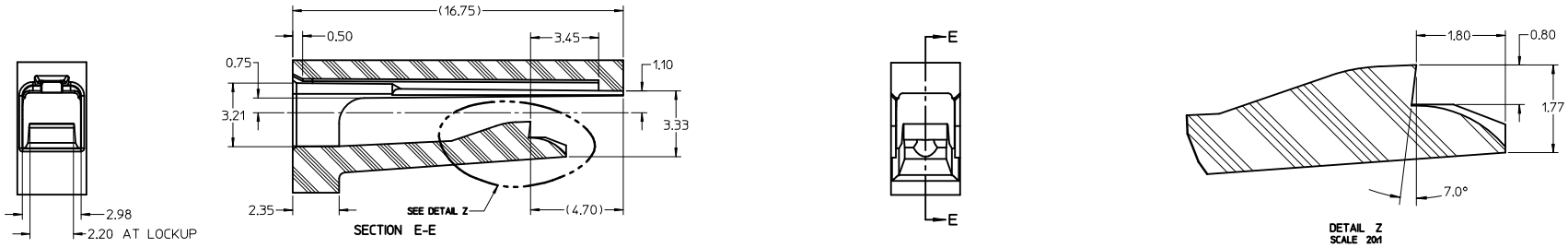
REFERENCE ---			
PART MUST COMPLY WITH MATERIAL SPECIFICATION WSS-M99P9999-A1 TO HELP SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT.			
DRAFTED IN ACCORDANCE WITH FAO ENGINEERING DRAFTING STANDARD CURRENT AT INITIAL RELEASE		3RD ANGLE PROJ DIMENSIONS IN MILLIMETERS	
CAD TYPE	CAD LOC.	CAD FILE	IS MASTER
OPER. NO.	UNIT	DRAWING BU5T-14421-HA	
DESIGN LPULLIAM	DETAIL LP	TITLE TERMINAL WIRE SNAP ON MALE	SHT 2 OF 3
CHECKED ENGINEER	SAFETY		
SCALE 2:1	DATE 2006/08/24	DIVISION PLANT	

DRW SIZE A1/D

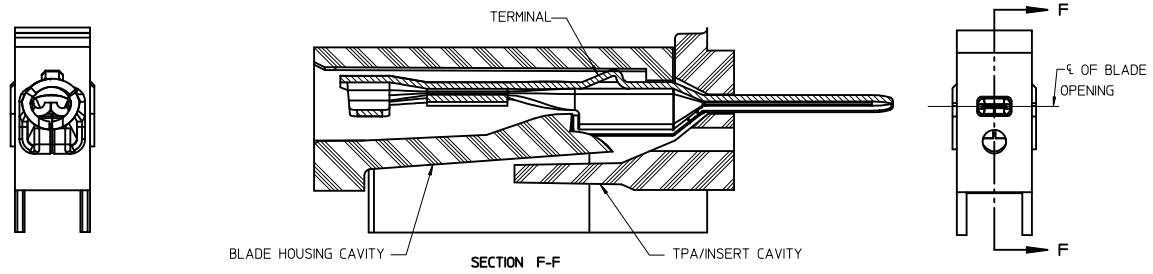
LTRS.	REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MATL APP	



TPA / INSERT DETAIL



HOUSING DETAIL



BLADE CAVITY ASSEMBLY VIEWS

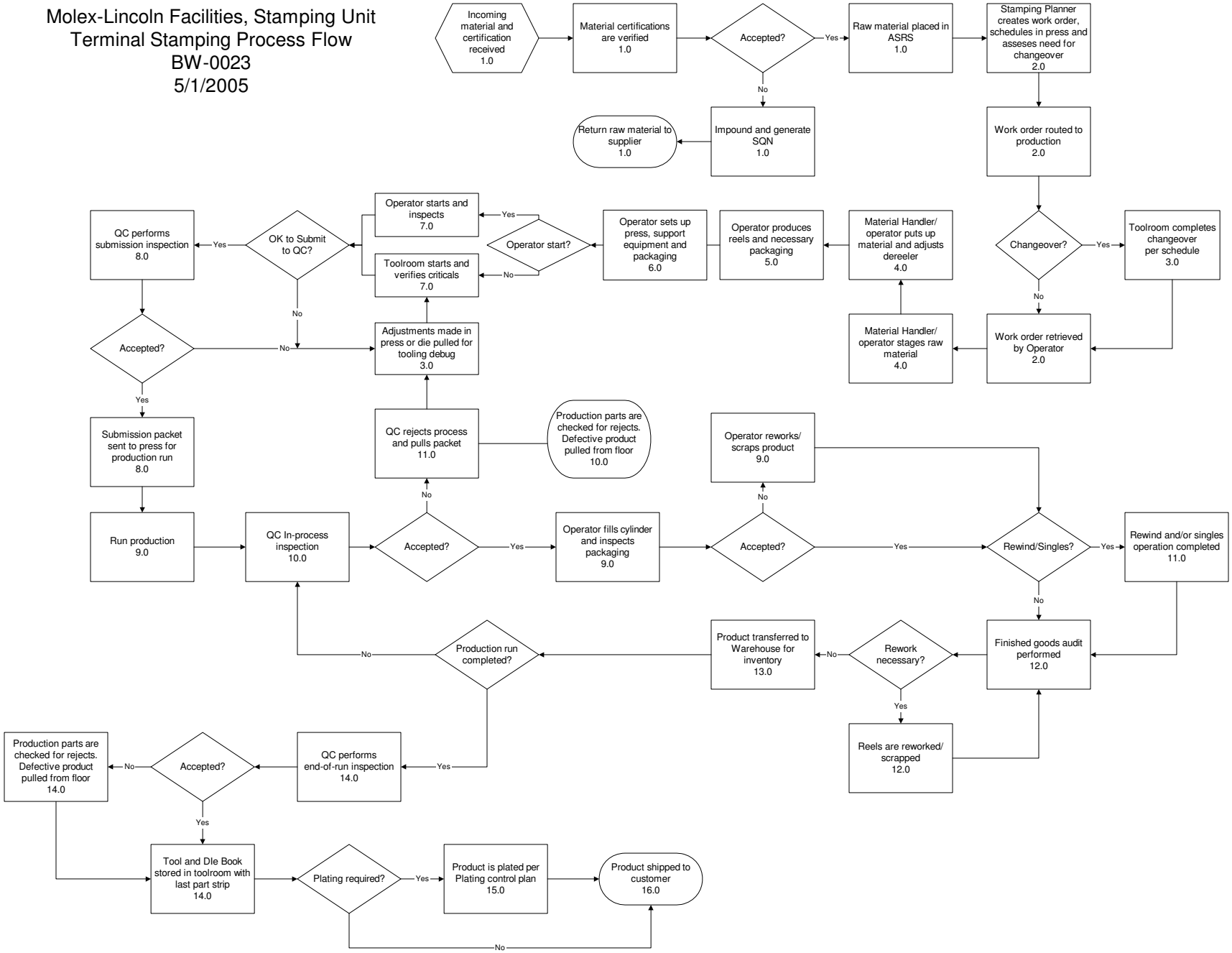
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. TOLERANCES: LINEAR ±0.10
   ANGULAR 3°
2. ALL DRAFT WITHIN TOLERANCE
3. MAX RADII ON ALL CORNERS SHOWN SHARP: 0.10
4. MAX FLASH PERMISSIBLE: 0.1
5. EJECTOR PIN MARKS PERMISSIBLE IF FLUSH TO 0.25 BELOW SURFACE
6. MATERIAL: HOUSING/FINGER SPECIFICATION ENGINEERED FOR MATERIAL WITH THE FOLLOWING PROPERTIES:
   A. FLEXURAL MODULUS = 4,500 TO 9,400 MPa PER ASTM TEST D790
   B. ELONGATION AT YIELD = 2.3% OR BETTER PER ASTM TEST D638 TYPE V
7. CAVITY SPEC FOR USE ONLY WITH MOLEX BLADE TERMINAL PART NUMBERS SPECIFIED ELSEWHERE ON THIS DRAWING

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 BU5T-14421-HA	
DESIGN LPULLIAM	DETAIL LP	TITLE TERMINAL WIRE SNAP ON MALE	SHT 3 OF 3
CHECKED BMOSER	SAFETY		
SCALE 8:1	DATE 2006/08/24	DIVISION PLANT	

DRW SIZE A1/D

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



☐ Prototype ☐ Pre-launch ☒ Production Control Plan Number BW0025	Key Contact/Phone Kyle Utemark (402) 475-1700	Date(Orig.) 97/03/21	Date 6/10/2016
Part Number/Latest Change Level See Part Specific Inspection Standard	Core Team: yle Utemark, Mike Beinlich, Blaine Bergantzel, Todd Vogel Jeff (No Suggestions), 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/Process 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 disposition 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 Setup/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, re-inspect, resubmit, record on submission log and die log
4	Material Issue and setup (Material Handler)	Per Setup Instructions/SAP System/MII	Raw Material			Verify correct raw material to SAP system	Visual	1	Start-up, new spool or skid of material	Compare Mat. EDP to SAP	N/A	Alert supervisor, get correct material

Comment: No Change in Test/Inspection Method. Clarification Purposes Only

☐ Prototype ☐ Pre-launch ☒ Production Control Plan Number BW0025	Key Contact/Phone Kyle Utemark (402) 475-1700	Date(Orig.) 97/03/21	Date 6/10/2016
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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/Process 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 (Operator,Materia l 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 (Toolmaker)		Inspect tool room 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

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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/Process 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 tool room / 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 characteristic specific control chart	Per product characteristic specific control chart	Per Work Instructions	Per Work Instructions	Reject process, alert tool room / operator, record on submission log, quarantine suspect product
9	Run Production (Stamping Operator)	Punch Press and die				Per die specific Setup Instructions and Stamping WI's					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

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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/Process Specification Tolerance	Evaluation Measurement Technique	Sample		Control Method		
			Product	Process				Size	Freq.		O.O.C.	O.O.S.
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 tool room / operator, record on submission log, quarantine suspect product
	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 characteristic specific control chart	Per product characteristic specific control chart	Conformance to work instruction	Per Work Instructions	Reject process, alert tool room / operator, record on submission log, quarantine 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	Daily	Compare with specifications on inspection standard and record on inspection record	N/A	Reject process, alert tool room / operator, record on submission log, quarantine suspect product

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Part Number/Latest Change Level See Part Specific Inspection Standard	Core Team: yle Utemark, Mike Beinlich, Blaine Bergantzel, Todd Vogel Jeff (No Suggestions), 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	Process		Product/Process Specification Tolerance	Evaluation Measurement Technique	Sample Size	Sample Freq.	Control Method	O.O.C.	O.O.S.
	Annual Layout Inspection	Per specific PN for all Transportation 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 tool room / operator, record on submission log, quarantine suspect product
11	Rewind Operation	Rewind Table		Rewind per work instructions		Per Work Instruction	Visual	1 reel	100%	Visual Inspection per work instruction	N/A	Rework or scrap

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Part Number/Latest Change Level See Part Specific Inspection Standard	Core Team: yle Utemark, Mike Beinlich, Blaine Bergantzel, Todd Vogel Jeff (No Suggestions), 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/Process 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	Per Sap	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 suspect, compare with specifications on inspection standard, No results of an acceptable inspection are recorded	N/A	Reject process, alert tool room / operator, record on submission log, quarantine suspect product
	Tool Room Metrics Review		Utilization, Efficiency	Tool repair time		Per criteria listed on Tool Room Repair Report	Per MII 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

Comment: No Change in Test/Inspection Method. Clarification Purposes Only

☐ Prototype ☐ Pre-launch ☒ Production Control Plan Number BW0025	Key Contact/Phone Kyle Utemark (402) 475-1700	Date(Orig.) 97/03/21	Date 6/10/2016
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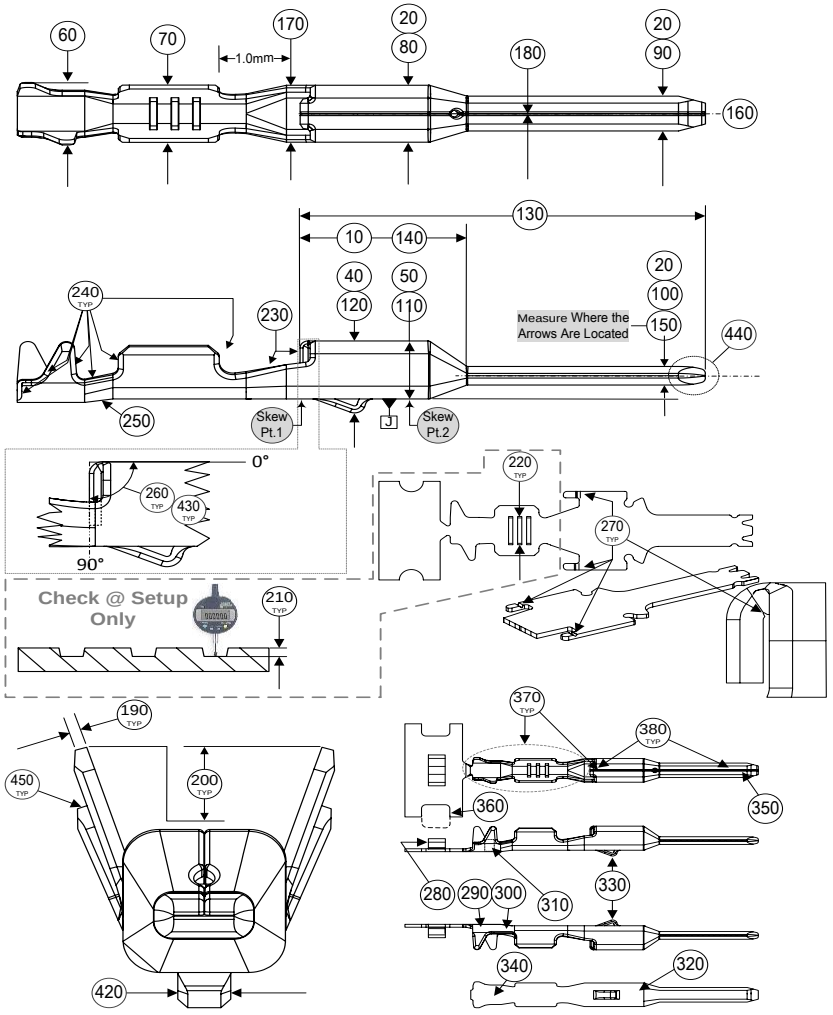
Supplier / Plant Molex Inc.-Stamping Dept. 700 Kingbird Road Lincoln, NE 68521 USA	Supplier Code Various	Other Approval Date (If Req'd) n/a	Other Approval Date (If Req'd) n/a

Part / Process Number	Process Name / Operation/ Description	Machine, Device, Jig, Tools, For Mfg.	Characteristic		Special Char.. Class	Methods					Reaction Plan	
			Product	Process		Product/Process Specification Tolerance	Evaluation Measurement Technique	Sample Size	Sample Freq.	Control Method	O.O.C.	O.O.S.
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 ship set	Verification of EDP # and quantity	1	Per container	Conformance to work instructions and ship set	N/A	Notify lead or supervisor

Comment: No Change in Test/Inspection Method. Clarification Purposes Only

Stamping Inspection Standard



MVG Key			DEV Key												CRIT Key		
	M	Measure		C	Caliper	DG	Drop Gage	MM	Micrometer	SP	Solder Pot	TT	Tensile Tester				
	V	Visual		CO	Comparator	FC	Force Gage	MS	Microscope	SR	Steel Rule				ST	Statistical	
	G	Gage		CB	Camber Board	FG	Feeler Gage	PG	Pin Gage	SS	Smart Scope				MT	Msmt. Technique	

QC	Initial/Date	QC	Initial/Date	QC	Initial/Date	QC	Initial/Date	QC Tech	Initial/Date
Y. Urbina		Q. Nguyen		T. Hong		J. Manske		G. Bell	
J. Clatt		A. Nguyen		S. Bui		J. Fenster		A. Seyfert	
B. McFee		L. Fosler		R. Lopez Juarez				QE's	
D. Bender		S. Dao		Dave Mason					

Part Name:
MX 150 Blade Terminal_ISO Crimp_PLATED

Revised:

Lincoln-Upland

Engineering #
34781-1004

Revision #	**B**
Die#	**D33011-4C**
Dwn. By:	**Craig Cassel**
Date:	**1/26/17**

#	Eng#	CRIT	MVG	DEV	Characteristic	LSL	USL
10			G	GG	Box Length (S284-G3)		
20			G	GG	Blade Thickness & Width, and Box Width (S284-G2)		
30			G	GG	Blade Position (S284-G1)		
40			G	GG	Box Height With Orientation Feature(S284-G4)		
50			G	GG	Box Height Without Orientation Feature(S284-G2)		
60	104		M	C	Insulation Crimp Spread Dim. B		
70	94		M	C	Conductor Crimp Spread Dim. A		
80	87		M	C	Box Width		
90	63		M	C	Blade Width		
100	82		M	C	Blade Height		
110	89		M	C	Box Height Without Orientation Feature		
120	84		M	C	Box Height With Orientation Feature		
130	50		M	CO	Blade Tip to Back of Box		
140	50a		M	CO	Box Length		
150	83		M	CO	Datum -J- to Blade CL(Skew @ Skew Pt's; Measure @ Arrows)		
160	64		M	CO	Blade CL Offset from Box		
170	V9		M	MS	Transition Area Width		
180			M	MS	Seam Gap		
190	103		M	MS	Insulation Crimp Coin Flats		
200	95100		M	DG	Crimp Roll, Insulation & Conductor		
210	5		V	DG	Serration Depth, 3 Places		
220	11		V	MS	Serration Length, 3 Places Dim. M		
230			M	MS	Skirt & Transition Edge Coin Flat:1-2		
240			V	V	Crimp Edge Coin Flat: 1-6		
250	126		V	V	Insulation Crimp Step		
260			M	MS	Box Tab Angles(Slightly Bent In is OK)		
270	V5		V	V	Scoreline Present on Both Tabs		
280	40		V	V	Carrier Bump Pointing Down ↓		
290	V6		V	V	Die Stamp		
300	40		V	V	Wire ID Stamp		
310	V2		V	V	Date Code Stamp		
320	V2		V	V	Plating Stamp		
330	V2		V	V	Orientation Feature Coining		
340			V	V	NO Insulation Crimp Hole		
350			V	V	No Drain Hole Present		
360	V5		V	V	Square Pilot Hole		
370			V	V	No Slivers in Serration, Crimp, or Seam Areas		
380			V	V	Seam Coining		
390			V	V	NO Fractures, Burrs, Toolmarks, Slugs, Etc.		
400	N4c		V	V	Camber in a 18" Length		
410			V	FC	Blade Seam Bend Test for Slivers		
420	89a		M	C	Orientation Feature Width		
430			G	GG	90° Bend Gage(33011 G3-1)		
440			G	CO	MX150 Blade Template Overlay		
450	97		M	MS	Conductor Crimp Coin Flats		

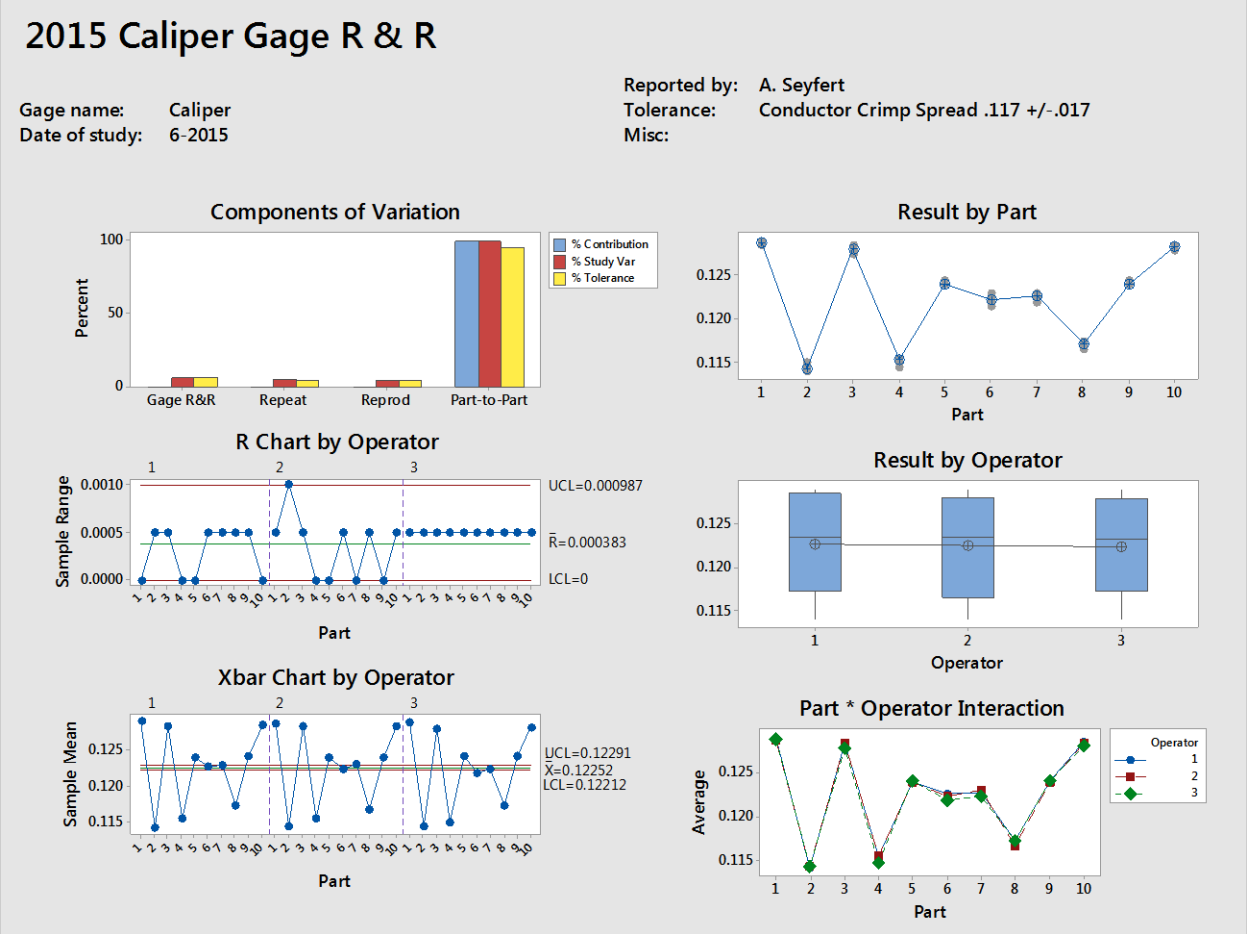
>> FMEA submission Letter

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

Anova Gage Study Form



Gage R&R Study - ANOVA Method

```
Gage R&R for Result

Gage name:        Caliper
Date of study:    6-2015
Reported by:      A. Seyfert
Tolerance:        Conductor Crimp Spread .117 +/-.017
Misc: S/N 07568895
```

Two-Way ANOVA Table With Interaction

Source	DF	SS	MS	F	P
Part	9	0.0023415	0.0002602	1342.26	0.000
Operator	2	0.0000011	0.0000005	2.75	0.091
Part * Operator	18	0.0000035	0.0000002	2.79	0.002
Repeatability	60	0.0000042	0.0000001		
Total	89	0.0023502			

Anova Gage Study Form

α to remove interaction term = 0.05

Gage R&R

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0.0000001	0.42
Repeatability	0.0000001	0.24
Reproducibility	0.0000001	0.18
Operator	0.0000000	0.04
Operator*Part	0.0000000	0.14
Part-To-Part	0.0000289	99.58
Total Variation	0.0000290	100.00

Process tolerance = 0.034

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)	%Tolerance (SV/Toler)
Total Gage R&R	0.0003496	0.0020976	6.49	6.17
Repeatability	0.0002635	0.0015811	4.89	4.65
Reproducibility	0.0002297	0.0013784	4.27	4.05
Operator	0.0001064	0.0006383	1.98	1.88
Operator*Part	0.0002036	0.0012217	3.78	3.59
Part-To-Part	0.0053746	0.0322474	99.79	94.85
Total Variation	0.0053859	0.0323155	100.00	95.05

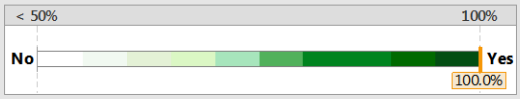
Number of Distinct Categories = 21

Procedure element and criteria	Accept or Reject	
5.3.17: %Contribution to be < 1	Accept: 0.42%	Criteria meet
5.3.18: %Study Variation to be < 10%	Accept: 6.49%	Criteria meet
5.3.19: # Distinct Categories to be > 10	Accept: 21	Criteria meet

Attribute Gage Study Form

Attribute Agreement Analysis for Camber Board S/N 33144-G1
Summary Report

Is the overall % accuracy acceptable?

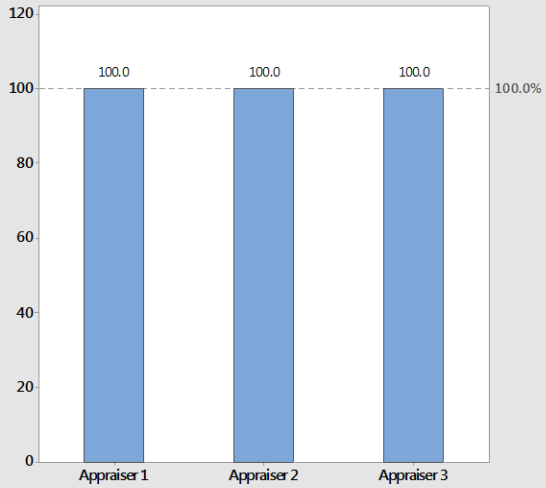


The appraisals of the test items correctly matched the standard 100.0% of the time.

Misclassification Rates

Overall error rate	0.0%
Good rated Bad	0.0%
Bad rated Good	0.0%
Mixed ratings (same item rated both ways)	0.0%

% Accuracy by Appraiser



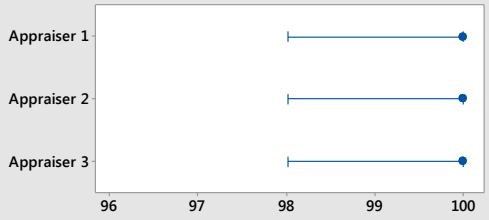
Comments

Consider the following when assessing how the measurement system can be improved:
- Low Accuracy Rates: Low rates for some appraisers may indicate a need for additional training for those appraisers. Low rates for all appraisers may indicate more systematic problems, such as poor operating definitions, poor training, or incorrect standards.
- High Misclassification Rates: May indicate that either too many Good items are being rejected, or too many Bad items are being passed on to the consumer (or both).
- High Percentage of Mixed Ratings: May indicate items in the study were borderline cases between Good and Bad, thus very difficult to assess.

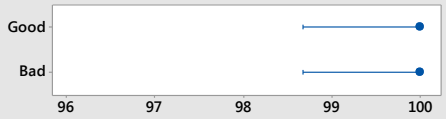
Attribute Agreement Analysis for Camber Board S/N 33144-G1
Accuracy Report

All graphs show 95% confidence intervals for accuracy rates.
Intervals that do not overlap are likely to be different.

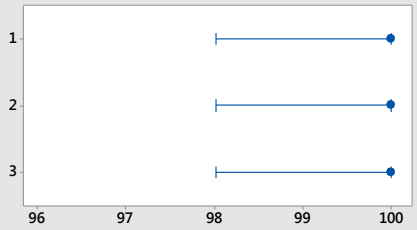
% by Appraiser



% by Standard

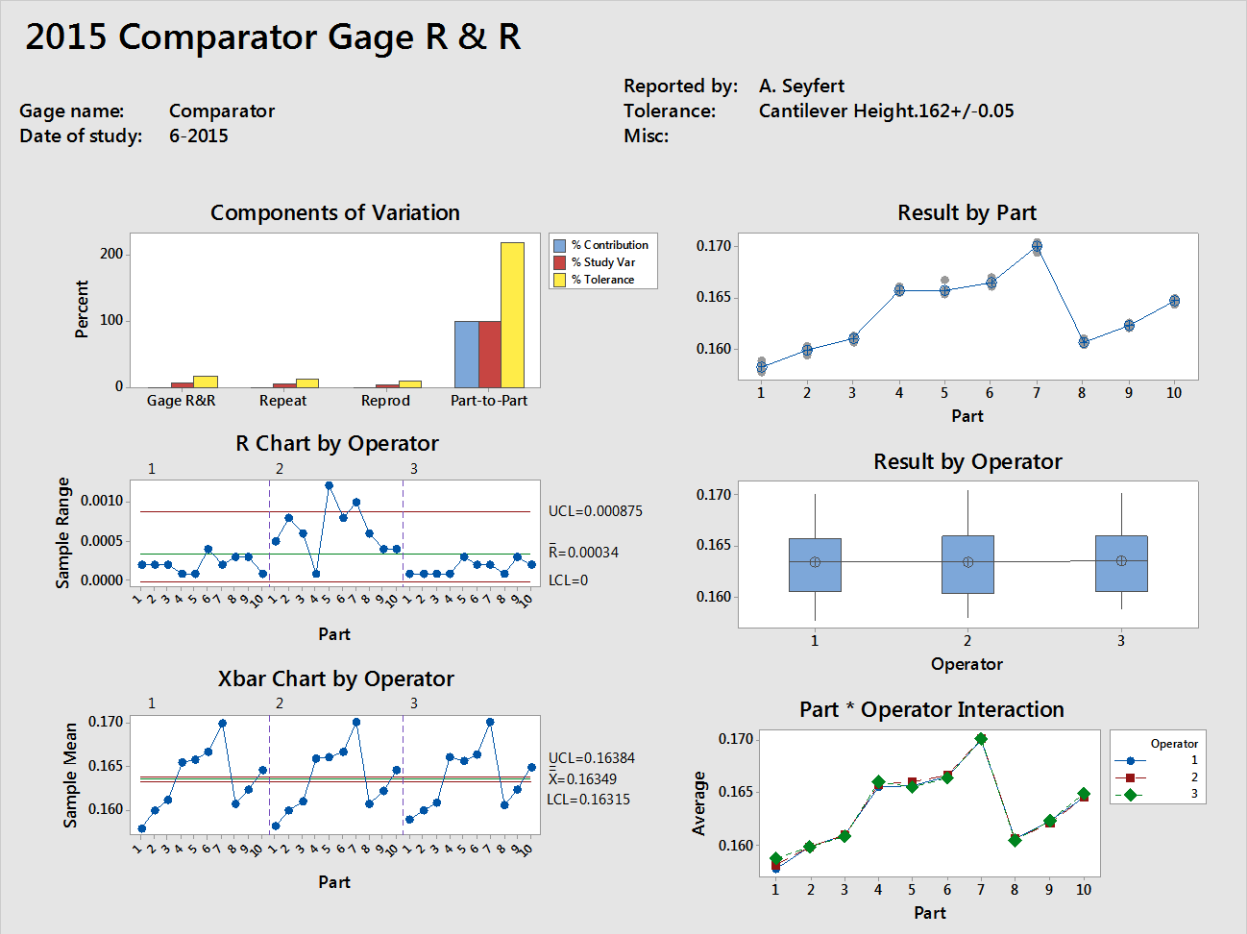


% by Trial



% by Appraiser and Standard

Anova Gage Study Form



Gage R&R Study - ANOVA Method

```
Gage R&R for Result

Gage name:        Comparator
Date of study:    6-2015
Reported by:      A. Seyfert
Tolerance:        Cantilever Height.162+/-0.05
Misc:  S/N MX0080
```

Two-Way ANOVA Table With Interaction

Source	DF	SS	MS	F	P
Part	9	0.0010909	0.0001212	816.332	0.000
Operator	2	0.0000003	0.0000001	0.953	0.404
Part * Operator	18	0.0000027	0.0000001	2.575	0.003
Repeatability	60	0.0000035	0.0000001		
Total	89	0.0010973			

α to remove interaction term = 0.05

Anova Gage Study Form

Gage R&R

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0.0000001	0.65
Repeatability	0.0000001	0.43
Reproducibility	0.0000000	0.22
Operator	0.0000000	0.00
Operator*Part	0.0000000	0.22
Part-To-Part	0.0000135	99.35
Total Variation	0.0000135	100.00

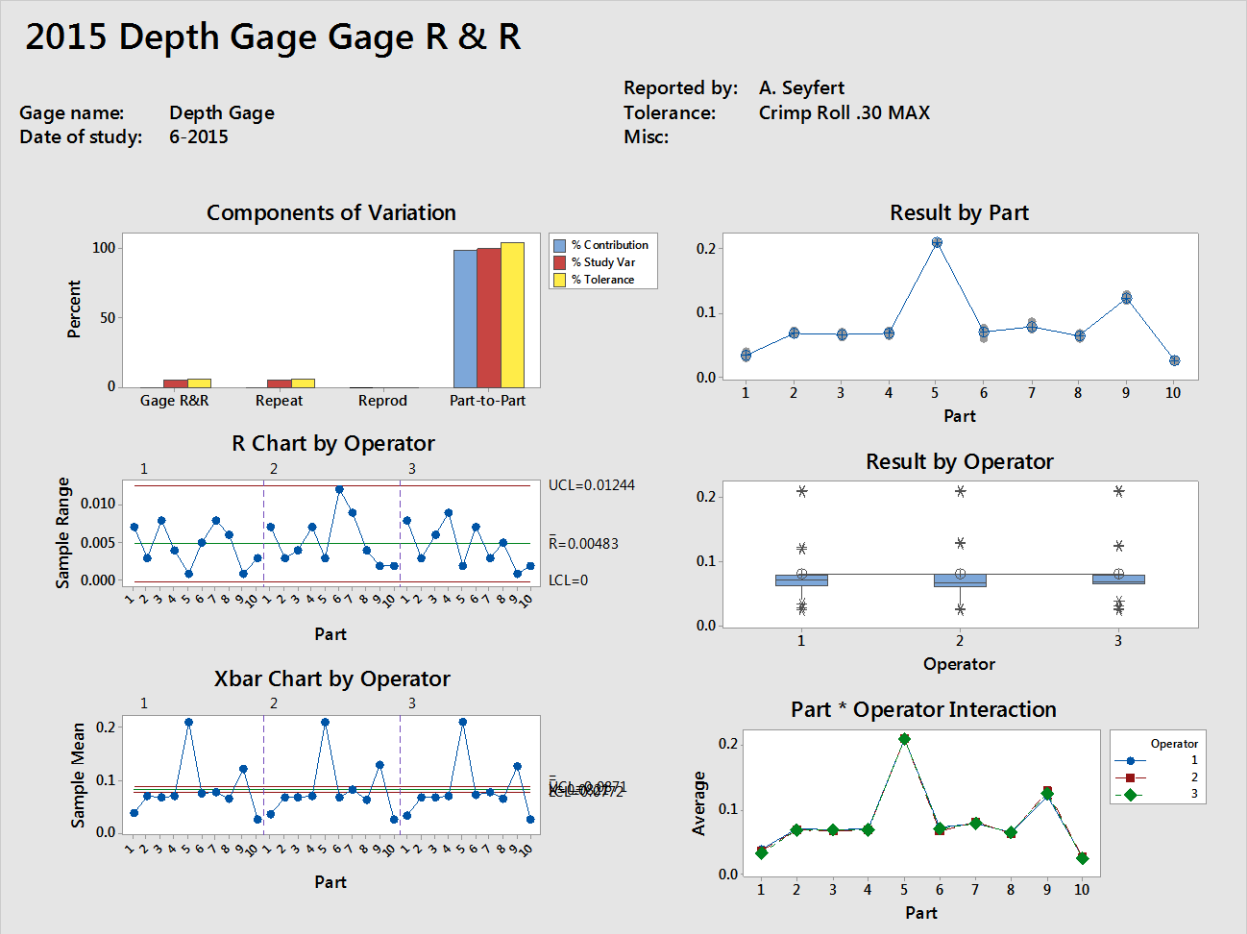
Process tolerance = 0.01

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)	%Tolerance (SV/Toler)
Total Gage R&R	0.0002965	0.0017793	8.06	17.79
Repeatability	0.0002401	0.0014408	6.53	14.41
Reproducibility	0.0001740	0.0010439	4.73	10.44
Operator	0.0000000	0.0000000	0.00	0.00
Operator*Part	0.0001740	0.0010439	4.73	10.44
Part-To-Part	0.0036676	0.0220056	99.67	220.06
Total Variation	0.0036796	0.0220774	100.00	220.77

Number of Distinct Categories = 17

Procedure element and criteria	Accept or Reject	
5.3.17: %Contribution to be < 1	Accept: .65%	Criteria meet
5.3.18: %Study Variation to be < 10%	Accept: 8.06%	Criteria meet
5.3.19: # Distinct Categories to be > 10	Accept: 17	Criteria meet

Anova Gage Study Form



Gage R&R Study - ANOVA Method

```
Gage R&R for Result

Gage name:        Depth Gage
Date of study:    6-2015
Reported by:      A. Seyfert
Tolerance:        Crimp Roll .30 MAX
Misc:  S/N 00987
```

Two-Way ANOVA Table With Interaction

Source	DF	SS	MS	F	P
Part	9	0.224120	0.0249022	1738.56	0.000
Operator	2	0.000013	0.0000065	0.46	0.641
Part * Operator	18	0.000258	0.0000143	1.68	0.069
Repeatability	60	0.000511	0.0000085		
Total	89	0.224902			

α to remove interaction term = 0.05

Anova Gage Study Form

Two-Way ANOVA Table Without Interaction

Source	DF	SS	MS	F	P
Part	9	0.224120	0.0249022	2525.33	0.000
Operator	2	0.000013	0.0000065	0.66	0.518
Repeatability	78	0.000769	0.0000099		
Total	89	0.224902			

Gage R&R

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0.0000099	0.36
Repeatability	0.0000099	0.36
Reproducibility	0.0000000	0.00
Operator	0.0000000	0.00
Part-To-Part	0.0027658	99.64
Total Variation	0.0027757	100.00

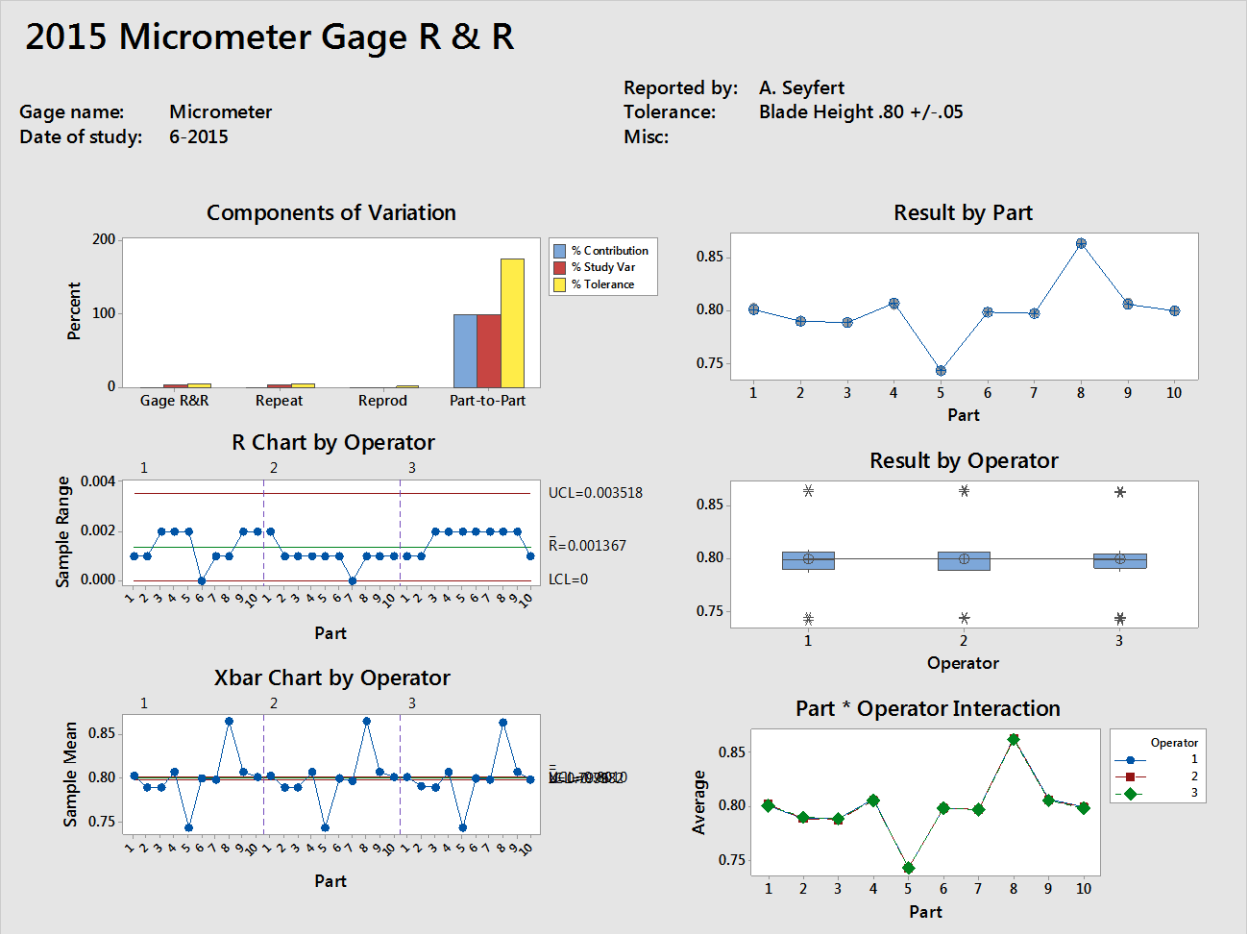
Process tolerance = 0.3

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)	%Tolerance (SV/Toler)
Total Gage R&R	0.0031402	0.018841	5.96	6.28
Repeatability	0.0031402	0.018841	5.96	6.28
Reproducibility	0.0000000	0.000000	0.00	0.00
Operator	0.0000000	0.000000	0.00	0.00
Part-To-Part	0.0525911	0.315546	99.82	105.18
Total Variation	0.0526847	0.316108	100.00	105.37

Number of Distinct Categories = 23

Procedure element and criteria	Accept or Reject	
5.3.17: %Contribution to be < 1	Accept: .36%	Criteria meet
5.3.18: %Study Variation to be < 10%	Accept: 5.96%	Criteria meet
5.3.19: # Distinct Categories to be > 10	Accept: 23	Criteria meet

Anova Gage Study Form



Gage R&R Study - ANOVA Method

```
Gage R&R for Result

Gage name:        Micrometer
Date of study:    6-2015
Reported by:      A. Seyfert
Tolerance:        Blade Height .80 +/-.05
Misc: S/N 293-340
```

Two-Way ANOVA Table With Interaction

Source	DF	SS	MS	F	P
Part	9	0.0686756	0.0076306	6844.74	0.000
Operator	2	0.0000033	0.0000016	1.47	0.257
Part * Operator	18	0.0000201	0.0000011	1.73	0.059
Repeatability	60	0.0000387	0.0000006		
Total	89	0.0687376			

α to remove interaction term = 0.05

Two-Way ANOVA Table Without Interaction

QWF-0017 08-09-13

Anova Gage Study Form

Source	DF	SS	MS	F	P
Part	9	0.0686756	0.0076306	10133.7	0.000
Operator	2	0.0000033	0.0000016	2.2	0.121
Repeatability	78	0.0000587	0.0000008		
Total	89	0.0687376			

Gage R&R

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0.0000008	0.09
Repeatability	0.0000008	0.09
Reproducibility	0.0000000	0.00
Operator	0.0000000	0.00
Part-To-Part	0.0008478	99.91
Total Variation	0.0008485	100.00

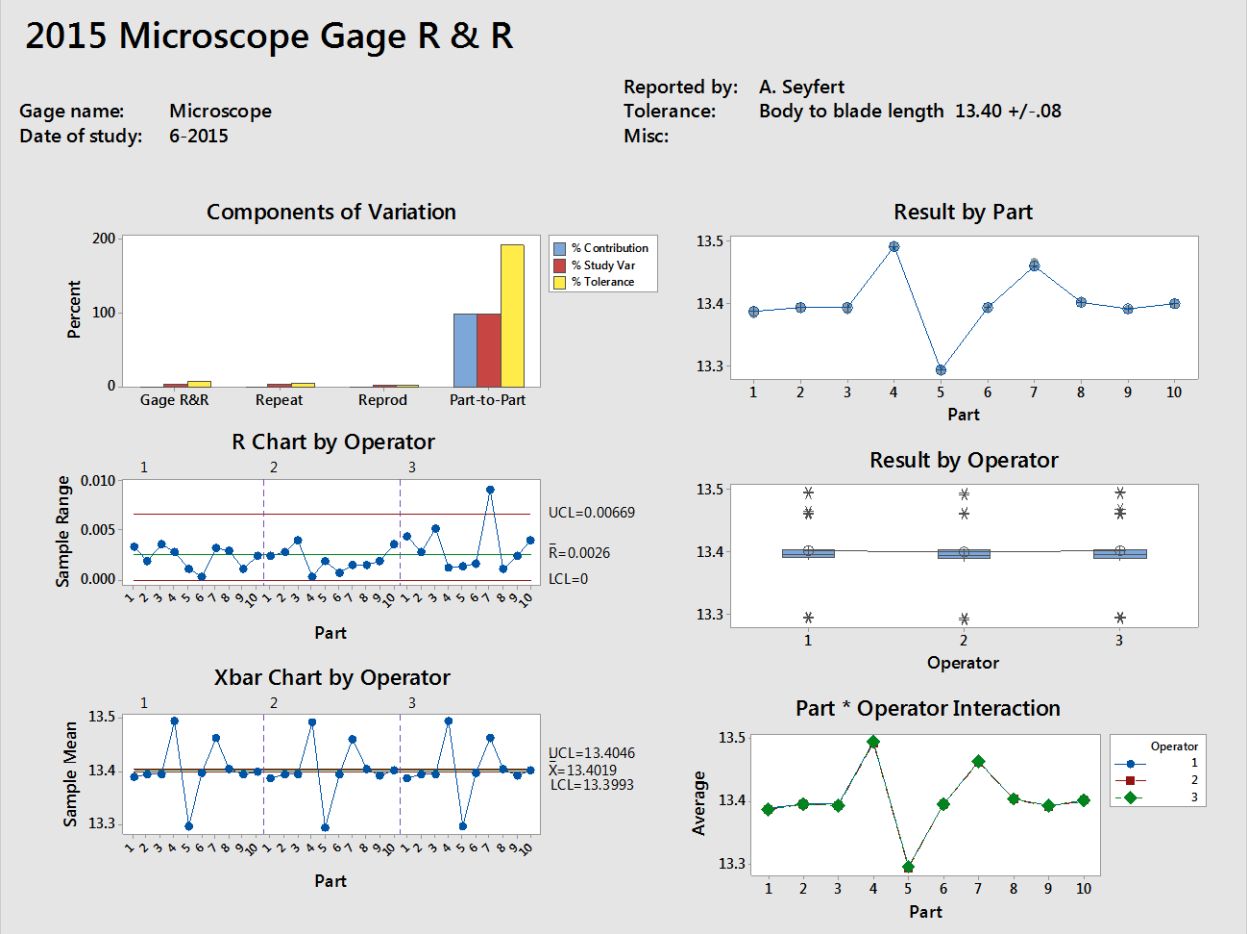
Process tolerance = 0.1

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)	%Tolerance (SV/Toler)
Total Gage R&R	0.0008845	0.005307	3.04	5.31
Repeatability	0.0008678	0.005207	2.98	5.21
Reproducibility	0.0001713	0.001028	0.59	1.03
Operator	0.0001713	0.001028	0.59	1.03
Part-To-Part	0.0291164	0.174698	99.95	174.70
Total Variation	0.0291298	0.174779	100.00	174.78

Number of Distinct Categories = 46

Procedure element and criteria	Accept or Reject	
5.3.17: %Contribution to be < 1	Accept: .09%	Criteria meet
5.3.18: %Study Variation to be < 10%	Accept: 3.04%	Criteria meet
5.3.19: # Distinct Categories to be > 10	Accept: 46	Criteria meet

Anova Gage Study Form



Gage R&R Study - ANOVA Method

```
Gage R&R for Result

Gage name:       Microscope
Date of study:   6-2015
Reported by:     A. Seyfert
Tolerance:       Body to blade length  13.40 +/-.08
Misc:  S/N 3432589
```

Two-Way ANOVA Table With Interaction

Source	DF	SS	MS	F	P
Part	9	0.217393	0.0241548	14822.6	0.000
Operator	2	0.000029	0.0000143	8.8	0.002
Part * Operator	18	0.000029	0.0000016	0.6	0.887
Repeatability	60	0.000164	0.0000027		
Total	89	0.217615			

α to remove interaction term = 0.05

Anova Gage Study Form

Two-Way ANOVA Table Without Interaction

Source	DF	SS	MS	F	P
Part	9	0.217393	0.0241548	9765.45	0.000
Operator	2	0.000029	0.0000143	5.78	0.005
Repeatability	78	0.000193	0.0000025		
Total	89	0.217615			

Gage R&R

Source	VarComp	%Contribution (of VarComp)
Total Gage R&R	0.0000029	0.11
Repeatability	0.0000025	0.09
Reproducibility	0.0000004	0.01
Operator	0.0000004	0.01
Part-To-Part	0.0026836	99.89
Total Variation	0.0026865	100.00

Process tolerance = 0.16

Source	StdDev (SD)	Study Var (6 × SD)	%Study Var (%SV)	%Tolerance (SV/Toler)
Total Gage R&R	0.0016934	0.010160	3.27	6.35
Repeatability	0.0015727	0.009436	3.03	5.90
Reproducibility	0.0006277	0.003766	1.21	2.35
Operator	0.0006277	0.003766	1.21	2.35
Part-To-Part	0.0518034	0.310820	99.95	194.26
Total Variation	0.0518311	0.310986	100.00	194.37

Number of Distinct Categories = 43

Procedure element and criteria	Accept or Reject	
5.3.17: %Contribution to be < 1	Accept: 0.11%	Criteria meet
5.3.18: %Study Variation to be < 10%	Accept: 3.27%	Criteria meet
5.3.19: # Distinct Categories to be > 10	Accept: 43	Criteria meet

A.J.OSTER, CO

Brass , Steel & Aluminum Mill Products
A.J. Oster, LLC
180 Alexandra Way
, Carol Stream, US, 60188-2068

****

CERTIFICATE OF CONFORMANCE 4266-6370

****

AJO Order Number#	104374
Oster Item#	144171
Oster Item Description	BR-CU19400-0 0118-H04-ELEC TIN REFLOW-C
Customer Name:	MOLEX LLC
Cust Part#:	648930501

Customer Compliance	REACH/RoHS 2

Cust PO#	1001714982-10
Quantity:	682
Date Shipped:	28-JAN-17

Lot Number#	Heat#	Mill Coil#	Num of Pieces#	Country of Origin#
04-24159	218490000	E17011953O B82711 223723	5	US

COC Requirements: Customer Part #	648930501

Class: Chemical	Spec Min	Spec Max	Result	UOM
Cu	97.00000		97.52000	%
Fe	2.10000	2.60000	2.24000	%
P	.01500	.15000	.02700	%
Pb	.00000	.03000	.00200	%
Zn	.05000	.20000	.15000	%
Class: Mechanic	**Spec Min**	**Spec Max**	**Result**	**UOM**
Elongation	3.0		7.5	%
Tensile	60.00	70.00	63.00 / 434	KSI / MPA
Yield	53.00		60.00 / 413	KSI / MPA
Class: Size	**Spec Min**	**Spec Max**	**Result**	**UOM**
Gauge	.01140	.01220	.01160	Inch
Width	1.2779	1.2819	1.2799	Inch
Class: Plating	**Spec Min**	**Spec Max**	**Result**	**UOM**
Plating Thickness	20.0	39.0	33.5 / .85	micro inch / µm
Underplate Thickness 1	10.0	39.0	23.5 / .60	micro inch / µm

* UNLESS OTHERWISE IS NOTED, THE CHEMICAL ANALYSIS DATA ON THIS CERTIFICATE OF CONFORMANCE IS OF THE BARE BASE METAL AS PROVIDED FROM OUR SUPPLIER. WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HERE IN HAS BEEN MADE TO CONFORM TO SPECIFICATION OR REQUIREMENTS OF YOUR ORDER.

DATE

1/28/17

APPROVED BY

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 178179-2015-AQ-USA-IATF

Valid until:
01 May, 2015 – 30 April, 2018

IATF Certificate No.: 0208730

This is to certify that the management system of

Molex Inc.

700 Kingbird Road, Lincoln, NE. 68521
and, if applicable, the remote support locations as mentioned in the Appendix accompanying this Certificate

has been found to conform to quality management system standard:
ISO/TS 16949:2009

This certificate is valid for the following Scope:
Manufacture and Design of Electronic and Electrical Interconnect Products and Systems.

EXCLUSION: NONE

Place and date:
Katy, TX. 01 May 2015

For the issuing office:
DNV GL - Business Assurance
Katy, TX, USA

Robert Kozak
Management Representative

Certificate No.: 178179-2015-AQ-USA-IATF
IATF Certificate No.: 0208730
Place and date: **Katy, TX.** 01 May 2015

Appendix to Certificate

Molex Inc.
Remote Support Locations included in the certification are as follows:

Name	Address	RSL Activities	Certification Body
Molex Inc.	2025 Taylor Road Auburn Hills, MI. 48326	Design, Engineering, Procurement, Sales, Testing	DNV GL
Molex Inc.	BP 72-25 Parc Burospace 91570 Bievres, France	Design, Engineering, Sales, Testing	DNV GL
Molex Inc.	2222 Wellington Court Lisle, IL. 60532	Customer Service, Procurement, Sales	DNV GL