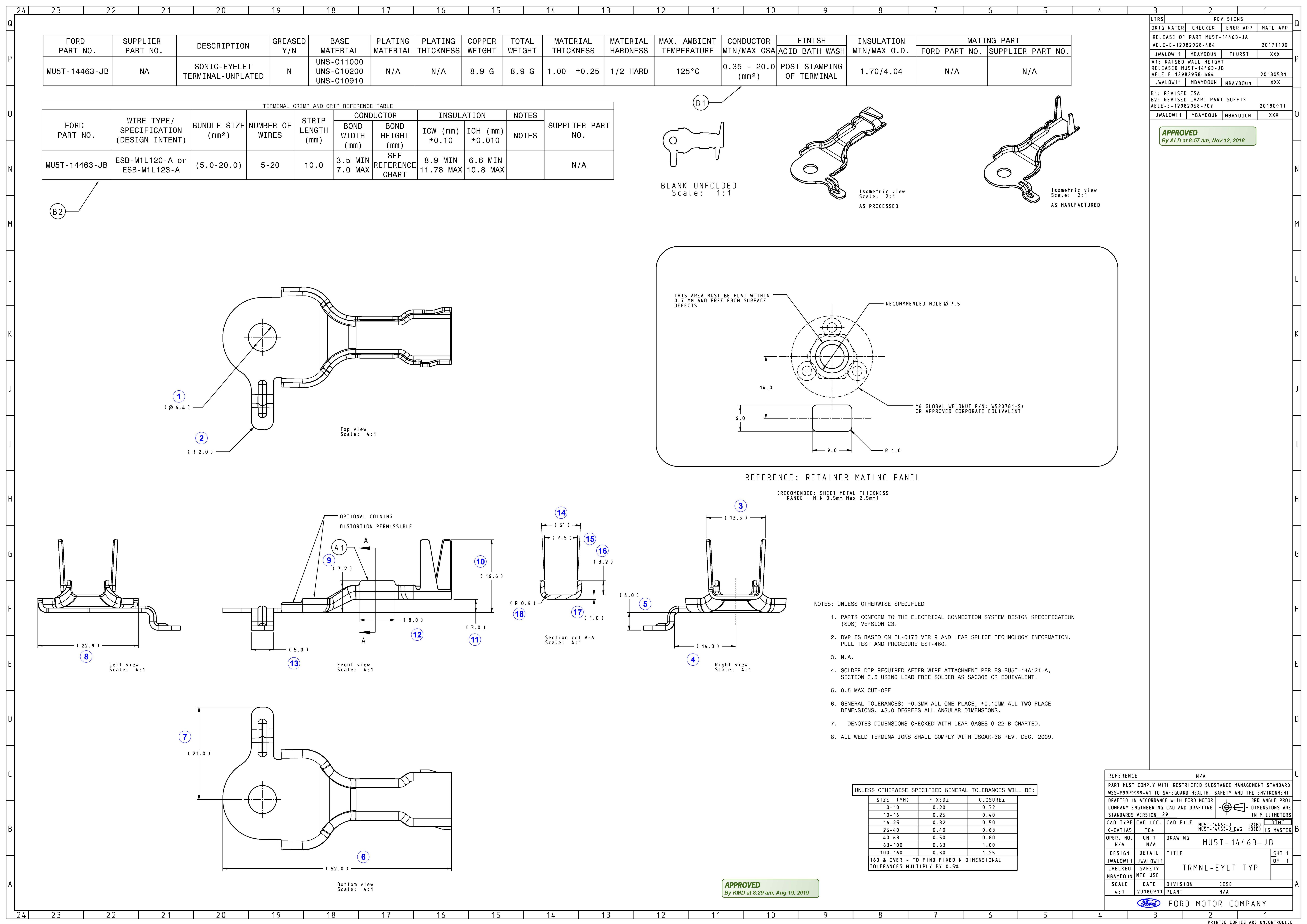






Part Submission Warrant

Part Name _ Eyelet Terminal - Loose Parts	Cust. Part Number_MU5T-14463-JB
Shown On Drawing No. MU5T-14463-JB	Org. Part Number MU5T-14463-JB
Engineering Change Level B2	Dated 9/11/18
Additional Engineering Changes N/A	Dated
	chase Order No Weight (kg) .0087 neering Change Level N/A Dated
ORGANIZATION MANUFACTURING INFORMATION	CUSTOMER SUBMITTAL INFORMATION
Royal Power Solutions (00-525-8322)	Nursan Otomotiv EOOD
Supplier Name & Supplier/Vendor Code	Customer Name/Division
125 Mercedes Drive Street Address	AKBAS, Gulcin Buyer/Buyer Code
Carol Stream IL 60188 USA	Automotive
City Region Postal Code Country	Application
MATERIALS REPORTING Has customer-required Substances of Concern information been reported? Submitted by IMDS or other customer format: 108611046	X Yes No
Are polymeric parts identified with appropriate ISO marking codes?	Yes No X n/a
REASON FOR SUBMISSION (Check at least one) X Initial Submission Engineering Change(s) Tooling: Transfer, Replacement, Refurbishment, or additional Correction of Disprepancy Tooling Inactive less than 1 year	Change to Optional Construction or Material Supplier or Material Source Change Change in Part Processing Parts Produced at Additional Location Annual Submission Other - please specify below
REQUESTED SUBMISSION LEVEL (Check One) Level 1 - Warrant only (and for designated appearance items, and Appeara Level 2 - Warrant with product samples and limited supporting data submitt Level 3 - Warrant with product samples and complete supporting data submitt Level 4 - Warrant and other requirements as defined by customer. Level 5 - Warrant and product samples and complete supporting data revie	ted to customer. mitted to customer.
SUBMISSION RESULTS The results for X dimensional measurements X material and function for these results meet all design record requirements: X Yes NO (If Mold / Cavity / Production Process Stamping	ctional testsappearance criteria statistical process package X NO" - Explanation Required
DECLARATION I affirm that the samples represented by this warrant are representative of our p Approval Process Manual 4th Edition Requirements. I further affirm that these s I also certify that documented evidence of such compliance is on file and availa	samples were produced at the production rate of <u>57600</u> / <u>8</u> hours.
EXPLANATION/COMMENTS:	
Is each Customer Tool properly tagged and numbered? Yes Jul Pull	No X N/A
Organization Authorized Signature	Date 1/12/22
	hone No. 630-766-2685 Fax No.
Title Quality Technician E-mail joe.ruvalcaba@royalpowe	SISOIUUOTIS.COTT
	SE ONLY (IF APPLICABLE)
Customer Signature	
Print Name	Customer Tracking Number (optional)





Checksheet 1870661 - In

	Royal socutions		F	roce	SS							
				tion Step Workcen AIDA-4			SPC Checksheet Contain	ner Text	Job No			
Date/Time	e 1/11/22 4:10 PM		Inspect		Ruvalca	ha Jo	Note oe Axel					
No	Specific	cation		Target	Limits	•		te	Note			
1 [Internal]	Diameter 6.4			6.40 mm	6.70 6.10	Ougi	6.35 6.36 6.35 6.36 6		Note			
10 [Internal]	Crimp height 16.6			16.60 mm	16.30		[16.35] [16.37] [16.35] [16	3.37 16.3	38			
11 [Internal]	Bend height 3.0			3.00 mm	3.30 2.70		2.86 2.88 2.87 2.85 2	2.86				
13 [Internal]	Tab width 5.0		5.00 mm	5.30 4.70		5.03 5.03 5.04 5.04 5	5.03					
3 [Internal]	Wing width 13.5		13.50 mm	13.20		[13.45] [13.47] [13.48] [13	3.49 13.4	17				
4 [Internal]	Tab bend location 14.0	14.00 mm	14.30 13.70		13.93 13.92 13.94 13	95						
5 [Internal]	Tab height 4.0		4.00 mm	4.30 3.70		3.83 3.85 3.87 3.85	3.83 3.85 3.87 3.85 3.87					
6 [Internal]	Part length 52.0		52.00 mm	52.30 51.70		51.99 51.98 51.99 51	.97 51.9	98				
7 [Internal]	Diameter to tab end 21	.0		21.00 mm	20.70		20.98 20.97 20.98 20	0.97 20.9	98			
8 [Internal]	Part width 22.9			22.90 mm	23.20 22.60		22.85 22.84 22.86 22	2.85 22.8	34			
9 [Internal]	Middle tab height 7.2			7.20 mm	7.50 6.90		7.25 7.29 7.23 7.25 7					
Material	C110						Pass					
Note 1	Parts conform to the el system design specific 23.						⊙ Pass ○ Fail					
Note 2	DVP is based on EL-0 splice Technology inforprocedure EST-460	-					⊙ Pass C Fail					
Note 3	N/A						Pass					
Note 4	Solder dip required after per ES-BU5T-14A121-Lead free solder as SA	A, section 3.5	using				⊙ Pass ○ Fail					
Note 5	0.5 max cut-off						Pass ○ Fail					
Note 6	General tolerances +/- place, +/- 0.10mm all t dimensions, +/- 3.0 de dimensions.	wo place grees all angu	ular				⊙ Pass ○ Fail					
Note 7	Denotes dimensions c gages G-22-B charted	hecked with L	ear				Pass ○ Fail					
Note 8	All weld terminations s USCAR-38 Rev. Dec 2	vith				Pass ○ Fail						
2	Tab radius (2.0)						Pass ○ Fail					
12	Middle tab widht (8.0)						O Pass O Fail					

14	Angle (6°)	● Pass ○ Fail
15	Width (7.5)	● Pass ○ Fail
16	Height (3.2)	● Pass ○ Fail
17	Thickness (1.0)	● Pass ○ Fail
18	Radius (0.9)	● Pass ○ Fail

Plex 1/11/22 4:10 PM JRuvalaba.rd



Royal Power Solutions 125 Mercedes Drive Carol Stream, IL 60188 Tel (630) 766-2685 Fax (630) 766-0401

Process Flow Chart

Part No MU5T-1	MU5T-14463-JB		B2	Name	Eyelet	Terminal - Loose Parts						
Customer NURS	AN	Customer Part	No U5T-14463-JB	Rev B2	Rev Date 9/11/18	Drawing No. MU5T-14463-JB						
MEA	MU5T-14463	3-JB-B2 - Appro	oved	Control F	Plan 7054 - Production - Active - Primary							
ore Team Miguel Av i	ila, Cliff Carlso	n, Kristine Dae				ı, Vince Lasseter, Jason ONeil, Joe Axel						
	Operation		Inspection		Dave Wiltfang	All Specifications						
			Receiving	посер	A - Material Procurement	All Specifications						
Apı	Stamp - Finish proved Workcenters:	AIDA-4, AIDA-5,										
AIL	DA-1											
			Transport Tooling to W	ork Center	B - Transport Tooling to Wo							
			Transport Material to W	Vork Center	C - Transport Material to W	fork Center						
			Setup		D - Set-up Work Center							
					D-A - Verify Correct Raw M							
					D-B - Verify Correct Tooling							
					D-C - Verify Correct Machir							
					D-D - Verify All Safety Guar							
					D-E - Confirm All Setup Par	rts Have been Scrapped						
			Quality First Piece		Visual 1 - Part loose							
					Visual Defect 1 - No Fractu	res on part						
					Visual Defect 2 - No Slug M	∕larks						
					Visual Defect 3 - No Burrs							
					Visual Defect 4 - No Slivers	s allowed on part						
					Visual Defect 5 - No excess	sive Tool Marks						
					Visual Defect 6 - No Bent P	Parts						
					1 [Internal] - Diameter 6.4 (Target: 6.4mm)						
					3 [Internal] - Wing width 13	.5 (Target: 13.5mm)						
					4 [Internal] - Tab bend locat	tion 14.0 (Target: 14mm)						
					5 [Internal] - Tab height 4.0	(Target: 4mm)						
					6 [Internal] - Part length 52.	.0 (Target: 52mm)						
					7 [Internal] - Diameter to tal	b end 21.0 (Target: 21mm)						
					8 [Internal] - Part width 22.9	9 (Target: 22.9mm)						
					9 [Internal] - Middle tab hei	ght 7.2 (Target: 7.2mm)						
					10 [Internal] - Crimp height	16.6 (Target: 16.6mm)						
					11 [Internal] - Bend height 3	3.0 (Target: 3mm)						

1	14 [Internal] - Angle (6°) (Target: 6Deg°)
	15 [Internal] - Width (7.5) (Target: 7.5mm)
	16 [Internal] - Height (3.2) (Target: 3.2mm)
	D-E - Confirm All Setup Parts Have been Scrapped
Operator - In-process Inspection	Visual 1 - Part loose
	Visual Defect 1 - No Fractures on part
	Visual Defect 2 - No Slug Marks
	Visual Defect 3 - No Burrs
	Visual Defect 4 - No Slivers allowed on part
	Visual Defect 5 - No excessive Tool Marks
	Visual Defect 6 - No Bent Parts
	1 [OP] - Diameter 6.4
	8 [Internal] - Part width 22.9 (Target: 22.9mm)
Quality - In-process Inspection	Visual 1 - Part loose
	Visual Defect 1 - No Fractures on part
	Visual Defect 2 - No Slug Marks
	Visual Defect 3 - No Burrs
	Visual Defect 4 - No Slivers allowed on part
	Visual Defect 5 - No excessive Tool Marks
	Visual Defect 6 - No Bent Parts
	3 [Internal] - Wing width 13.5 (Target: 13.5mm)
	3 [Internal] - Wing width 13.5 (Target: 13.5mm) 4 [Internal] - Tab bend location 14.0 (Target: 14mm)
	4 [Internal] - Tab bend location 14.0 (Target: 14mm)
	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm)
	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm)
	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm)
	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°)
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm)
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm)
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose Visual Defect 1 - No Fractures on part
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose Visual Defect 1 - No Fractures on part Visual Defect 2 - No Slug Marks
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose Visual Defect 1 - No Fractures on part Visual Defect 2 - No Slug Marks Visual Defect 3 - No Burrs
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose Visual Defect 1 - No Fractures on part Visual Defect 2 - No Slug Marks Visual Defect 3 - No Burrs Visual Defect 4 - No Slivers allowed on part
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose Visual Defect 1 - No Fractures on part Visual Defect 2 - No Slug Marks Visual Defect 3 - No Burrs Visual Defect 5 - No excessive Tool Marks
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose Visual Defect 1 - No Fractures on part Visual Defect 2 - No Slug Marks Visual Defect 3 - No Burrs Visual Defect 5 - No excessive Tool Marks Visual Defect 6 - No Bent Parts
Quality Last Piece	4 [Internal] - Tab bend location 14.0 (Target: 14mm) 5 [Internal] - Tab height 4.0 (Target: 4mm) 10 [Internal] - Crimp height 16.6 (Target: 16.6mm) 11 [Internal] - Bend height 3.0 (Target: 3mm) 14 [Internal] - Angle (6°) (Target: 6Deg°) 15 [Internal] - Width (7.5) (Target: 7.5mm) 16 [Internal] - Height (3.2) (Target: 3.2mm) Visual 1 - Part loose Visual Defect 1 - No Fractures on part Visual Defect 2 - No Slug Marks Visual Defect 3 - No Burrs Visual Defect 5 - No excessive Tool Marks Visual Defect 6 - No Bent Parts 1 [Internal] - Diameter 6.4 (Target: 6.4mm)

I	5 [Internal] - Tab height 4.0 (Target: 4mm)
	8 [Internal] - Part width 22.9 (Target: 22.9mm)
	10 [Internal] - Crimp height 16.6 (Target: 16.6mm)
	11 [Internal] - Bend height 3.0 (Target: 3mm)
	14 [Internal] - Angle (6°) (Target: 6Deg°)
	15 [Internal] - Width (7.5) (Target: 7.5mm)
	16 [Internal] - Height (3.2) (Target: 3.2mm)
Final Audit	H - Labels correct & cartons sealed properly
Transport to Final Location	I - Transport to Final Location
PPAP Layout	1 [Internal] - Diameter 6.4 (Target: 6.4mm)
	2 - Tab radius (2.0)
	3 [Internal] - Wing width 13.5 (Target: 13.5mm)
	4 [Internal] - Tab bend location 14.0 (Target: 14mm)
	5 [Internal] - Tab height 4.0 (Target: 4mm)
	6 [Internal] - Part length 52.0 (Target: 52mm)
	7 [Internal] - Diameter to tab end 21.0 (Target: 21mm)
	8 [Internal] - Part width 22.9 (Target: 22.9mm)
	9 [Internal] - Middle tab height 7.2 (Target: 7.2mm)
	10 [Internal] - Crimp height 16.6 (Target: 16.6mm)
	11 [Internal] - Bend height 3.0 (Target: 3mm)
	12 - Middle tab widht (8.0)
	, ,
	13 [Internal] - Tab width 5.0 (Target: 5mm)
	14 - Angle (6°)
	15 - Width (7.5)
	16 - Height (3.2)
	17 - Thickness (1.0)
	18 - Radius (0.9)
	Note 1 - Parts conform to the electrical connection system design specification (SDS) version 23.
	Note 2 - DVP is based on EL-0176 VER 9 and Lear splice Technology information. Pull test and procedure EST-460
	Note 3 - N/A
	Note 4 - Solder dip required after wire attachment per ES-BU5T-14A121-A, section 3.5 using Lead free solder as SAC305 or equivalent.
	Note 5 - 0.5 max cut-off
	Note 6 - General tolerances +/- 0.3 mm all one place, +/- 0.10mm all two place dimensions, +/- 3.0 degrees all angular dimensions.
	Note 7 - Denotes dimensions checked with Lear gages G-22-B charted
	Note 8 - All weld terminations shall comply with USCAR-38 Rev. Dec 2009.
	Material - C110
Production Workcenter Audit	Audit #1 - Verify Red Bin is at workcenter and used accordingly
	Audit #2 - Raw Material and/or Component Serial Numbers used correct in Control Panel

I	1	Audit #3 - Product Packaging
		Audit #4 - Parts at workcenter are Labeled as made
		Audit #5 - Lubrication specified on shop order
		Audit #6 - Part Picture in Plex
		Audit #7 - Scrap Label
		Audit #8 - Inspection Frequency



FAILURE MODE AND EFFECTS ANALYSIS

(Process FMEA)

Part Name:	Eyelet Terminal - Loose Parts	Internal Part Number:	MU5T-14463-JB-B2	External Part Number:	MU5T-14463-JB-B2
FMEA Date:	(Orig.) 7/3/18 (Rev.)1/12/22	Key Date:		Prepared By:	Daehler, Kristine
Note:		Process Responsibility:	Lasseter, Vince	FMEA Number:	MU5T-14463-JB
Core Team:	Miguel Avila, Cliff Carlson, Kris Durkin, Nathaniel Hollin, Vince La Axel Ruvalcaba, Miriam Sal	sseter, Jason ONeil, Joe	Model Year(s)/Vehicle(s):	Automotiv	e/Various

FMEA begins on page 2



FAILURE MODE AND EFFECTS ANALYSIS

(Process FMEA)

		UK	RE MODE AND EFFECTS ANALYSIS							5 (Process FMEA)								
Part Name:	Eyelet Termir	nal - Loose Parts			Internal Part Number: MU5T-14463-JB-B2			14463-JB-B2				al Part ımber:	MU5	T-1446:	3-J	B-E	32	
FMEA Date:	(Orig.) 7/3/18	(Rev.)1/12/22			ı	Key Date:						Prepar	ed By:	Dael	nler, Kri	sti	ne	
Note:				Process Responsibility:			Lasseter, Vince				FMEA Number:				MU5T-14463-JB			
Miguel Avila, Cliff Carlson, Kristine Nathaniel Hollin, Vince Lasseter, Core Team: Ruvalcaba, Miriam Sales,				Jas	son ÖNeil, Joe		Model Year(s)/Vehicle(s):											
Part Name:	Eyelet Terminal - Loose Parts Internal Part Number: MU5T-14463-JB-B2 External Part Number:							MU5T-14463-JB-B2										
Process Function/ Requirements	Potential Failure Mode	Potential Effects of Failure	E	C L S	Potential Causes/ Mechanisms of Failure	Current Pro Control Preventi	s (C Controls E		Е	R P N	Recommend Action(s)	Respons & Targ Comple Date	get etion Actions		Actions E C		D E T
20 (A) Receiving Material Procurement Requirements	Non- Conforming Material	Material Un-available for Production	5		Supplier's Error	Purchase O Specification tied to part specific requirement	ns	1	Internal Inspection Review of Required Material Certificate - Material is Tagged "Approved for use" if Meets PO requirements.	3	15	None						
20 (B) Transport Tooling to Work Center	Unfit for use. Being Worked on.	Machine Downtime Waiting for tool to be Prepared.	3		Un-Planned Maintenance, Un-Coordinated Tool Room Work	Tooling Maintenance Schedule	e	1	Production Meetings	5	15	None						
20 (C) Transport Material to Work Center	Wrong Material	Unfit for use,Production Interruptions.	4		Die Setter / Set- up Error		2	2	MSO Requirements. Material is Tagged "Approved for use". Tags are turned in for traceability.	2	16	None						
20 (D) Set-up Work Center (D-A) Verify correct material at machine, (D-B) Verify correct cooling, (D-C) Verify correct machine operating parameters, (D-D) Verify all safety guards are enabled, (D-E) Confirm all setup parts have been scrapped, (D-F) Submit samples to QA for approval.	Work Center is not available	Delayed Production	5		Customer Gives Short Lead Time Due-Date, Production Schedule Conflicts, Unscheduleed Maintenance.	Production capacity rep		2	Production Forman plans Schedule allowing sufficient time. Customer is provided with lead time.	4	40	None						

		Detential			Potential								Action Result			ts
Process Function/ Requirements	Potential Failure Mode	Potential Effects of Failure	S E V	C L S	Causes/ Mechanisms of Failure	Current Process Controls Prevention	0 C C	Current Process Controls Detection	D E T	Р	Recommend Action(s)	Responsibility & Target Completion Date	Actions Taken	E	С	D R E P T N
20 Quality First Piece	Non conforming Samples Incapable Process. Diameter to bend 14.0 +/- 0.30.	Delayed Production, Lost Time, Wasted material.	5		Set-up Error, Operator Documentation Error	Die Setter Completion of Royal Die " Die Setter Course" - Basic Set-up Requirements Defined on Part Specific MSO.	2	1st Article Approval.	3	30	None					
20 In-Process Operator Inspection	Nonconforming Sample, Incapable Process. Diameter go/no go pin gage 6.40 +/- 0.30	Wasted Set-up, Material, Operator Time. Dissatisfied Customer Containment requirements and corrective action measures Certification sort and expedited shipping changes Line down charges	5		Process Error, Material Shortage or High Waste. Operator Error. Tooling malfunction.	Control plan in- process inspection, Die Setter and Operator Training.	2	Operator Quality Control Monitoring.	6	60	None					
20 In-Process Quality Monitoring	Non- Conforming Product, Production Interruption. Tab height 4.0 +/- 0.30	Wasted Set-up, Material, Operator Time. Dissatisfied Customer Containment requirements and corrective action measures Certification sort and expedited shipping changes Line down charges	5		Process Error, Material Shortage or High Waste.Operator Error. Tooling malfunction.	Control plan Quality in- process, Quality Control Training.	2	Process/Product Monitoring per Part Specific Control Plans.	6	60	None					
20 Quality Last Piece	Non Conforming Product. Slug Marks Part width 22.9 +/- 0.30	Customer dis-satisfaction Containment requirements and corrective action measures Certification sort and expedited shipping changes Line down charges	5		Process Error, High Waste.	APQP Quality, Quality Control Training	2	Process/Product monitoring per Part Specific Control Plan.	6	60	None					
20 Final Product Output (H) Labels correct and cartons sealed properly	Nonconforming Product. Unidentified, Wrong count.	Shortage Customer dis- satisfaction Containment requirements and corrective action measures Certification sort and expedited shipping changes Line down charges	3		System Failure. Operator Error	Documented Manufacturing and Inspection Process.	2	Control Plan monitoring.	5	30	None					
20 (I) Transport to Final Location	Unidentified, Wrong Count, Damaged.	Damage and deformation of product Part contamination Wrong packaging Customer dissatisfaction Containment requirements and corrective action measures Certification sort and expedited shipping changes Line down charges	3		Damaged through Handling or Transit. Operator Error	MSO Packaging Requirements, Ship/Rec Training on Handling Requirements.	3	Visual Inspection.	5	45	None					



Control Plan

Control Plan Number	Control Plan Type	Part Numbe	r/Latest Change Level	Date (Orig.)	Date (Rev.)		
7054	Production	MU5T-144	1/11/22					
Key Contact/Phone Kris Daehler (630) 384-5529		Brendan I	ila, Cliff Carlson, Kristine Daehler, James Dawson Durkin, Nathaniel Hollin, Vince Lasseter, Jason Axel Ruvalcaba, Miriam Sales, Dave Wiltfang	Custor	mer Engineering Approval D	ate (If Req'd)		
Part Name/Description		Organization	n/Plant Approval Date (If Req'd)	Customer Quality Approval Date (If Req'd)				
MU5T-14463-JB-B2 (Eyelet Te	erminal - Loose Parts)	1/11/22						
Organization/Plant		Organization	n Code	Other Approval date (If Req'd)				
Royal Die & Stamping Co., Inc	c. / Royal Power CS	3000403						
Control Plan Number	Control Plan Type		Part Number/Latest Change Level		Date (Orig.)	Date (Rev.)		

Cor	ntrol Plan Nur 7054	mber		Control Plan Type Production	Part		Latest Change Level T-14463-JB-B2	Date (Orig.) /3/18		Date (Rev.) 1/11/22
				Characteristics				Methods	T	I	
Part/ Process Number	Operation	Machine / Device	No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	Reaction Plan
	Stamp - Finish Receiving	-	Α		Material Procurement		C110		1 each receiving	Certification	Notify material manager & quality immediately - Refer to procedure COP8
	Stamp - Finish Transport Tooling to Work Center	-	В		Transport Tooling to Work Center		Die # 1289		1 each Set Up	Tool ID	Perform adjustments and/or corrections
	Stamp - Finish Transport Material to Work Center	-	С		Transport Material to Work Center		Attribute		1 each Set Up		Perform adjustments and/or corrections
	Stamp - Finish	-	D		Set-up Work Center		Attribute	Visual	Each Setup		Perform adjustments and/or corrections
	Setup	-	D-A		Verify Correct Raw Material at Machine		Attribute	Visual	Each Setup		Perform adjustments and/or corrections
		=	D-B		Verify Correct Tooling		Attribute	Visual	Each Setup		Perform adjustments and/or corrections
		-	D-C		Verify Correct Machine Operating Parameters		Attribute	Visual	Each Setup		Perform adjustments and/or corrections
		-	D-D		Verify All Safety Guards are Enabled		Attribute	Visual	Each Setup		Perform adjustments and/or corrections
		-	D-E		Confirm All Setup Parts Have been Scrapped		Attribute	Visual	Each Setup		Perform adjustments and/or corrections

Con	trol Plan Nur 7054	nber		Control Plan Type Production	Part		Latest Change Level T-14463-JB-B2	Date (Orig.) /3/18		Date (Rev.) 1/11/22
Part/ Process		Machine		Characteristics		Special Char.	Product / Process Specification	Methods Evaluation Measurement	Sample	Control	
Number	Operation	Device	No.	Product	Process	Class	Tolerance	Technique	Size / Freq.	Method	Reaction Plan
	Stamp - Finish Quality First	-	Visual 1	Part loose			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
	Piece			See Print							
		-	Visual Defect 1	No Fractures on part			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
				Pay close attention at transition from	terminal body to cri	mps & be	tween crimps.		•	•	
		-	Visual Defect 2	No Slug Marks			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
				Must be free of Slug marks							
		-	Visual Defect 3	No Burrs			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
				Burr Height Cannot exceed 10% of ra	aw material thicknes	s. Measu	re if found.	,	•	•	
		1	Visual Defect 4	No Slivers allowed on part			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
				Parts Must be free of slivers		•					
		-	Visual Defect 5	No excessive Tool Marks			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	Visual Defect 6	No Bent Parts			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	1 [Internal]	Diameter 6.4			6.10 / 6.70 mm	Pin Gage	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	3 [Internal]	Wing width 13.5			13.20 / 13.80 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	4 [Internal]	Tab bend location 14.0			13.70 / 14.30 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	5 [Internal]	Tab height 4.0			3.70 / 4.30 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	6 [Internal]	Part length 52.0			51.70 / 52.30 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	7 [Internal]	Diameter to tab end 21.0			20.70 / 21.30 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	8 [Internal]	Part width 22.9			22.60 / 23.20 mm	Calipers	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup

Cor	itrol Plan Nui 7054	mber		Control Plan Type Production	Part		Latest Change Level 5T-14463-JB-B2	Date (Orig.) /3/18		Date (Rev.) 1/11/22
				Characteristics				Methods			
Part/ Process Number	Operation	Machine / Device	No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	Reaction Plan
		-	9 [Internal]	Middle tab height 7.2			6.90 / 7.50 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sampl & notify setup
		-	10 [Internal]	Crimp height 16.6			16.30 / 16.90 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sampl & notify setup
		-	11 [Internal]	Bend height 3.0			2.70 / 3.30 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sampl & notify setup
		-	14 [Internal]	Angle (6°)			3.00 / 9.00 Deg°	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sampl & notify setup
		-	15 [Internal]	Width (7.5)			7.20 / 7.80 mm	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sampl & notify setup
		-	16 [Internal]	Height (3.2)			2.90 / 3.50 mm	Drop Indicator	3 each set up [6x]	Checksheet	Nonconforming samples, Reject sampl & notify setup
		-	D-E		Confirm All Setup Parts Have been Scrapped		Attribute	Visual	1 each Set Up	Checksheet	Verify action has been completed
20	Stamp - Finish Operator -	-	Visual 1	Part loose			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP 8300
	In-process Inspection			See Print							
		-	Visual Defect 1	No Fractures on part			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP 8300
				Pay close attention at transition from	om terminal body to cri	mps & be	tween crimps.				
		-	Visual Defect 2	No Slug Marks			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP 8300
				Must be free of Slug marks							
		-	Visual Defect 3	No Burrs			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP 8300
				Burr Height Cannot exceed 10% of	f raw material thicknes	s. Measu	re if found.			_	
		-	Visual Defect 4	No Slivers allowed on part			Attribute	Visual	5 pcs every hour		Suspect Material - Refer to procedure QP 8300
				Parts Must be free of slivers							
		-	Visual Defect 5	No excessive Tool Marks			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP 8300
		-	Visual Defect 6	No Bent Parts			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP 8300

Con	trol Plan Nui 7054	nber		Control Plan Type Production	Part		Latest Change Level 5T-14463-JB-B2	Date (Orig.) /3/18		Date (Rev.) 1/11/22
				Characteristics	•			Methods		•	
Part/ Process Number	Operation	Machine / Device	No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	Reaction Plan
		-	1 [OP]	Diameter 6.4			6.10 / 6.70 [0.240" GO / 0.264" No Go]	Go/No-Go Gage	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP 8300
		-	8 [Internal]	Part width 22.9			22.60 / 23.20 mm	Calipers	3 pcs every hour	Checksheet	Suspect Material - Refer to procedure QF 8300
	Stamp - Finish Quality - In-	-	Visual 1	Part loose			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QF 8300
	process Inspection			See Print							
	Поробион	-	Visual Defect 1	No Fractures on part			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QF 8300
				Pay close attention at transition from	n terminal body to cri	mps & be	tween crimps.	•	•		•
		-	Visual Defect 2	-			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP 8300
				Must be free of Slug marks							
		-	Visual Defect 3	No Burrs			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QF 8300
				Burr Height Cannot exceed 10% of	raw material thicknes	s. Measu	re if found.			•	
		-	Visual Defect 4	No Slivers allowed on part			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QF 8300
				Parts Must be free of slivers							
		-	Visual Defect 5	No excessive Tool Marks			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	Visual Defect 6	No Bent Parts			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	3 [Internal]	Wing width 13.5			13.20 / 13.80 mm	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	4 [Internal]	Tab bend location 14.0			13.70 / 14.30 mm	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	5 [Internal]	Tab height 4.0			3.70 / 4.30 mm	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	10 [Internal]	Crimp height 16.6			16.30 / 16.90 mm	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	11 [Internal]	Bend height 3.0			2.70 / 3.30 mm	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP 8300

Con	trol Plan Nur 7054	nber		Control Plan Type Production	Part		Latest Change Level T-14463-JB-B2	Date (Orig.) /3/18		Date (Rev.) 1/11/22
				Characteristics				Methods			
Part/ Process Number	Operation	Machine / Device	No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	Reaction Plan
		-	14 [Internal]	Angle (6°)			3.00 / 9.00 Deg°	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	15 [Internal]	Width (7.5)			7.20 / 7.80 mm	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QF 8300
		1	16 [Internal]	Height (3.2)			2.90 / 3.50 mm	Drop Indicator	3 pcs every 2 hours [6X]	Checksheet	Suspect Material - Refer to procedure QF 8300
	Stamp - Finish Quality Last	-	Visual 1	Part loose			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QF 8300
	Piece			See Print			_				
		1	Visual Defect 1	No Fractures on part			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QF 8300
				Pay close attention at transition from	om terminal body to cr	imps & bet	ween crimps.				
		-	Visual Defect 2	No Slug Marks			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QI 8300
				Must be free of Slug marks							
		-	Visual Defect 3	No Burrs			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QF 8300
				Burr Height Cannot exceed 10% of	of raw material thicknes	ss. Measu	re if found.		•		
		-	Visual Defect 4	No Slivers allowed on part			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QI 8300
				Parts Must be free of slivers							
		-	Visual Defect 5	No excessive Tool Marks			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QI 8300
		-	Visual Defect 6	No Bent Parts			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	1 [Internal]	Diameter 6.4			6.10 / 6.70 mm	Pin Gage	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QF 8300
		=	3 [Internal]	Wing width 13.5			13.20 / 13.80 mm	Optical Projector	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QI 8300
		-	4 [Internal]	Tab bend location 14.0			13.70 / 14.30 mm	Optical Projector	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QF 8300
		-	5 [Internal]	Tab height 4.0			3.70 / 4.30 mm	Optical Projector	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QF 8300

Cor	itrol Plan Nur 7054	nber		Control Plan Type Production	Part		Latest Change Level T-14463-JB-B2	Date (Orig.) /3/18		Date (Rev.) 1/11/22
Dowl		Machina		Characteristics		Conside	Dundwet / Dungge	Methods			
Part/ Process Number	Operation	Machine / Device	No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	Reaction Plan
		-	8 [Internal]	Part width 22.9			22.60 / 23.20 mm	Calipers	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP- 8300
		-	10 [Internal]	Crimp height 16.6			16.30 / 16.90 mm	Optical Projector	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP 8300
		-	11 [internal]	Bend height 3.0			2.70 / 3.30 mm	Optical Projector	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP 8300
		-	14 [Internal]	Angle (6°)			3.00 / 9.00 Deg°	Optical Projector	3 pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP 8300
		-	15 [Internal]	Width (7.5)			7.20 / 7.80 mm	Optical Projector	3 pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP 8300
		-	16 [Internal]	Height (3.2)			2.90 / 3.50 mm	Drop Indicator	3 pieces upon job completion [6x]	Checksheet	Suspect Material - Refer to procedure QP 8300
20	Stamp - Finish Final Audit	-	Н		Labels correct & cartons sealed properly		Attribute	Visual	Each Container	Checksheet	Suspect Material - Refer to procedure QP 8300
20	Stamp - Finish Transport to Final	-	ı	Transport to Final Location			Attribute			Component Verification	
	Location			Move to Warehouse for customer	shipping						
20	Stamp - Finish PPAP	-	1 [Internal]	Diameter 6.4			6.10 / 6.70 mm	Pin Gage	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sampl & notify setup
	Layout	-	2	Tab radius (2.0)			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sampl & notify setup
		-	3 [Internal]	Wing width 13.5			13.20 / 13.80 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	4 [Internal]	Tab bend location 14.0			13.70 / 14.30 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	5 [Internal]	Tab height 4.0			3.70 / 4.30 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sampl & notify setup
		-	6 [Internal]	Part length 52.0			51.70 / 52.30 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sampl & notify setup
		-	7 [Internal]	Diameter to tab end 21.0			20.70 / 21.30 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sampl & notify setup

Cor	trol Plan Nur 7054	nber		Control Plan Type Production	Par		Latest Change Level T-14463-JB-B2	Date (Orig.) /3/18		Date (Rev.) 1/11/22
				Characteristics				Methods			
Part/ Process Number	Operation	Machine / Device	No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	Reaction Plan
		-	8 [Internal]	Part width 22.9			22.60 / 23.20 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	9 [Internal]	Middle tab height 7.2			6.90 / 7.50 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	10 [internal]	Crimp height 16.6			16.30 / 16.90 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	11 [Internal]	Bend height 3.0			2.70 / 3.30 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	12	Middle tab widht (8.0)			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	13 [Internal]	Tab width 5.0			4.70 / 5.30 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	14	Angle (6°)			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	15	Width (7.5)			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	16	Height (3.2)			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	17	Thickness (1.0)			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	18	Radius (0.9)			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Note 1	Parts conform to the electrical connection system design specification (SDS) version 23.			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Note 2	DVP is based on EL-0176 VER 9 and Lear splice Technology information. Pull test and procedure EST-460			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Note 3	N/A			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Note 4	Solder dip required after wire attachment per ES-BU5T-14A121-A, section 3.5 using Lead free solder as SAC305 or equivalent.			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup

Con	trol Plan Nui 7054	nber		Control Plan Type Part Production			Latest Change Level T-14463-JB-B2	Date (Orig.) 7/3/18			Date (Rev.) 1/11/22
				Characteristics				Methods			
Part/ Process lumber	Operation	Machine / Device	No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	Reaction Plan
		-	Note 5	0.5 max cut-off			Attribute	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Note 6	General tolerances +/- 0.3 mm all one place, +/- 0.10mm all two place dimensions, +/- 3.0 degrees all angular dimensions.			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Note 7	Denotes dimensions checked with Lear gages G-22-B charted			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Note 8	All weld terminations shall comply with USCAR-38 Rev. Dec 2009.			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
		-	Material	C110			Attribute	Certification	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject samp & notify setup
	Stamp - Finish Production	-	Audit #1		Verify Red Bin is at workcenter and used accordingly		Verify Red Bin is at workcenter and used accordingly	Visual	As Required	Verification	Notify Supervisor
	Workcenter Audit			Suspect, Rejected and Setup parts m	ust be placed in the	Red Bin.					
	Addit	-	Audit #2	Serial Numbers of Raw Material and/o used must match serial numbers load Panel			Serial Numbers of Raw Material and/or Components used must match serial numbers loaded in Control Panel	Visual	As Required	Verification	Notify Supervisor
				Serial Numbers of Raw Material and/o	or Components use	d must ma	atch serial numbers loaded in Cont	rol Panel	•		•
		-	Audit #3	Parts must be packaged per the job s	heet requirements		Parts are packaged per the shop order requirements	Visual	As Required	Verification	Notify Supervisor
				Parts are packaged per the shop orde	er requirements						
		-	Audit #4	Parts at workcenter are Labeled as m	ade		Part must be labeled once container is complete	Visual	As Required	Verification	Notify Supervisor
				Part must be labeled once container i	s complete						
		-	Audit #5	Lubrication must be specified on shop	o order		Lubrication must be specified on shop order	Visual	As Required	Verification	Notify Supervisor
				Lubrication must be specified on shop	o order				_		
		-	Audit #6	Part Picture must be in Plex			Part Picture must be in Plex	Visual	As Required	Verification	Notify Supervisor
				Part Picture must be in Plex		_			-	-	
		-	Audit #7		Scrap Label		Scrap Label Must be present where applicable	Visual	As Required	Verification	Notify Supervisor
		-	Audit #8		Inspection Frequency		Parts inspected per control Plan	Visual	As Required	Verification	Notify Supervisor



Royal Power Solutions 125 Mercedes Drive Carol Stream, IL 60188 Tel (630) 766-2685 Fax (630) 766-0401

Study Date: 11/16/21

Study Results for Gage 1051 (Optical Projector) on 11/16/21

GAGE LOG INFORMATION

Gage Log No: 2380752 Device Name: TRMNL-EYLT TYP - Reeled Parts

Gage ID: 1051 Operators: 3

Gage Log Type: Gage Study Operator Names: Ruvalcaba, Huerta, Huicochea

Trials: 3
Samples: 10

CHARACTERISTIC & VARIATION

LSL: 0.2 K1: .590818 USL: 1.2 K2: .523136

Tolerance: 1.000000 K3: .314559

Spec Description: Offset 0.7

Spec Description: Offset 0.7Part-to-Part Standard Deviation (

Average of All Ranges(\mathbf{R}): .001000

Measurement Standard Deviation Range of Part Average ($^{\mathbf{R}_{p}}$): .018889

Process Variation Standard

Deviation (${\bf O}_t$): .001161

MEASUREMENT UNIT ANALYSIS - GRR (Range Method)

GRR

Repeatability - Equipment Repeatability As % (EV/TV): 9.88

Variation (EV): .000591 Reproducibility As % (AV/TV): 5.55

 Reproducibility - Appraiser
 GRR % (GRR /TV): 11.33

 Variation (AV): .000332
 % PV (PV / TV): 99.36

 GageR&R (GRR): .000678
 Distinct Levels: 12.36

 Part Variation (PV): .005942
 GRR % of Tolerance/5.15: .35 %

 Total Variation (TV): .005980

Comments:



Royal Power Solutions 125 Mercedes Drive Carol Stream, IL 60188 Tel (630) 766-2685 Fax (630) 766-0401

Study Results for Gage A16006030 (Digital Caliper) on 11/15/21

GAGE LOG INFORMATION

Gage Log No: 2380076

Gage ID: A16006030

Gage Log Type: Gage Study

Study Date: 11/15/21

Device Name:

Operators: 3

Operator Names: Yeverino, Huerta, Huicochea

Trials: 3 Samples: 10

CHARACTERISTIC & VARIATION

LSL: 6.6

USL: 7.6

Tolerance: 1.000000

Spec Description: Wire Crimp Width 7.1

Part-to-Part Standard Deviation (

 O_{p} : .000543

Measurement Standard Deviation

(^σ_{m): .000051}

Process Variation Standard

Deviation (O_t): .000545

K1: .590818

K2: .523136

K3: .314559

Average of All Ranges(\overline{R}): .000333

X Difference (\overline{X}_{DIFF}): .000333

Range of Part Average(R_p): .008889

MEASUREMENT UNIT ANALYSIS - GRR (Range Method)

GRR

Repeatability - Equipment

Variation (EV): .000197

Reproducibility - Appraiser

Variation (AV): .000171

GageR&R (GRR): .000260

Part Variation (PV): .002796

Total Variation (TV): .002808

GRR % (GRR /TV): 9.27 % PV (PV / TV): 99.57

Repeatability As % (EV/TV): 7.01

Reproducibility As % (AV/TV): 6.07

Distinct Levels: 15.14

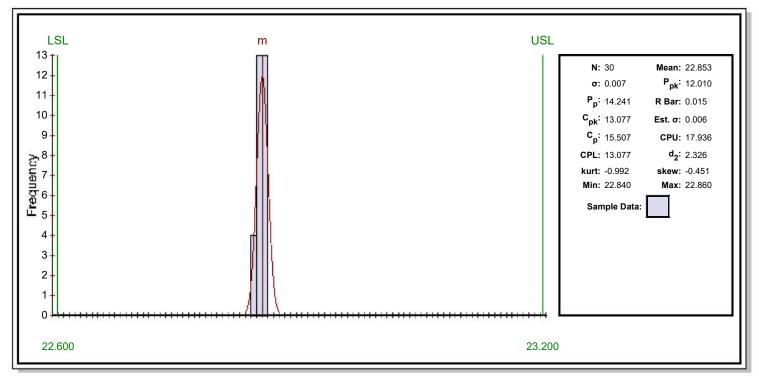
GRR % of Tolerance/5.15: .13 %

Comments:

Royal POWER SOLUTIONS Checksheet 1870553 - Capability Study												
	14463-JB-B2 Eyelet ninal - Loose Parts		S	ration tamp - inish	Inspection PPAP L			orkcenter AIDA-4	SPC Checksl	heet Containe	er Text	Job No
Date/Time 1/11/2	22 2:00 PM	Inspector		uvalcaba, J	oe Axel			Sample	6	Size 5	Note	
No	Specification	Targ	et	Limits	Gage			N	/leasurements	\$		Note
8 [Internal]	Part width 22.9	22.90 mn	n	23.20 22.60		22.86	22.	.84 22.84	1 22.86 22.8	36		
						22.85	22.	.86 22.8	5 22.85 22.8	35		
						22.84	22.	.86 22.8	5 22.86 22.8	36		
						22.85	22.	.86 22.80	3 22.85 22.8	36		
						22.85	22.	.85 22.8	5 22.86 22.8	35		
						22.84	22.	.86 22.8	5 22.86 22.8	35		

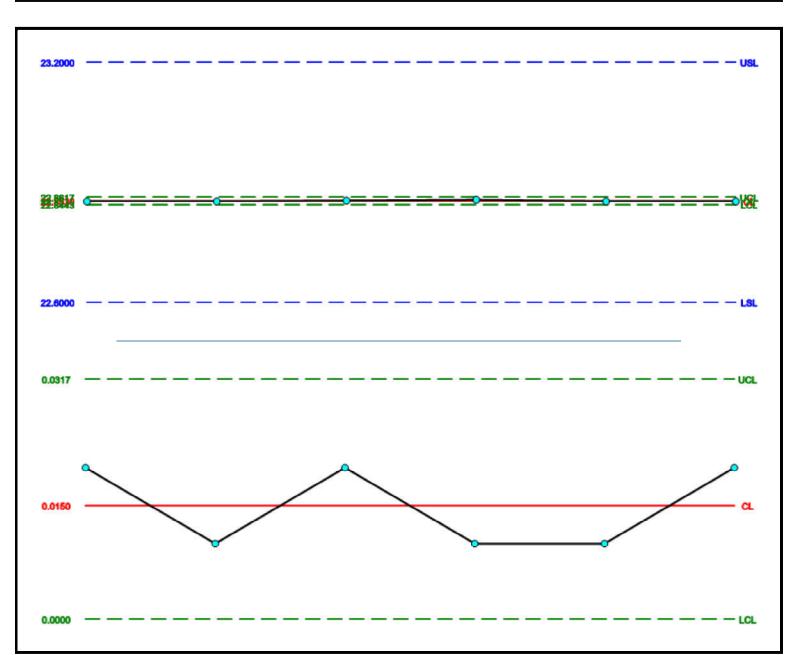
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Royal POWER SOLUTIONS Capabil	ity Study	- Histog	gram			
Part MU5T-14463-JB-B2 Eyelet Terminal - Loose Par	Operation Stamp - Finish	Inspection Step PPAP Layou	Workcenter AIDA-4	SPC Checksheet	Container Tex	Job No
Date/Time	Inspector	•			Note	
1/11/22 2:00 PM		Ruvalcaba	, Joe Axel			
Specification		23.20 mm	Checksheet Nu	ımber	Samples	Size
8 [Internal] - Part width 22.9 22.90 mm		22.60 mm	18	370553	6	5



Plex 1/11/22 3:30 PM JRuvalaba.rd Page 1

Royal POWER SOLUTIONS Capability Study - Xbar & Range Chart												
Part MU5T-14463-JB-B2 Eyelet Terminal - Loose Part	Operation Stamp - Finish	Inspection Step PPAP Layou	Workcenter AIDA-4	SPC Checksheet	Conta	iner Text	Job No					
Date/Time	Inspector					Note						
1/11/22 2:00 PM		Ruvalcaba	, Joe Axel									
Specification		23.20 mm	Checksheet Nu	ımber	Samp	les	Size					
8 [Internal] - Part width 22.9 22.90 mm		22.60 mm	18	870553		6	5					



Plex 1/11/22 3:33 PM JRuvalaba.rd Page 1

CERTIFICATE OF TEST

Customer: Royal Power Solutions

125 Mercedes Drive

Carol Stream, IL 60188

Customer Part No: 0394X2,5001102P

Description: C11000 .0394 H020

Specification:

ASTM B 152/B152M-19

Customer PO No: 30210

PMX Order No:

121877-1

PMX Bill of Lading: 00288903

Pallet | Tag No.:

789032 | M8Z33A-F

Chemical Composition (Wt %)

Test Date 09/05/21

Method (See below**)

Element

Spec Min. 99.9000

Spec Max. 100.000

Actual 99.9918

Dimensions	Units/Scale	Spec. Min.	Spec. Max.	Actual
Thickness	in	.0384	.0404	.0396
Width	in	2.497	2.503	PASS

Mechanical Pro	operties	Test Date 10/14/21 Method	Units/Scale	Spec. Min.	Spec. Max.	Actual	
Tensile Strength		ASTM-E8-16a	ksi	37.0	46.0	43.6	
Yield Strength	(REF)	ASTM-E8-16a	ksi	NA	NA	42.1	
Elongation	(REF)	ASTM-E8-16a	%	NA	NA	16	
Hardness 1 Hardness 2	(REF)	ASTM-E18-16	HRF	NA	NA	84	
Grain Size	(REF)	ASTM-E112-13	mm	NA	NA	.015	

Other Tests

Test Date Method

Units/Scale

Spec. Min.

Spec. Max.

Actual

We certify that these test results were obtained from samples of the material lots identified above. The test procedures and material production conform to chemical and mechanical requirements of applicable customer and ASTM specifications. This document may not be reproduced, except in full, without the written approval of PMX Industries, Inc. **Chemistry is analyzed according to methods ASTM-E1621 and/or ASTM-E-1251. Country of Melt and MFG:USA

Laboratory Supervisor

10/25/21

Date

PNX INDUSTRIES, INC. 5300 WILLOW CREEK DRIVE SW, CEDAR RAPIDS, IA 52404-4303

TEL: 319/368-7700 FAX: 319/368-7701 E-MAIL: Mary.Pasker@ipmx.com

ISO 9001:2015 REGISTERED

CERTIFICATE OF TEST

Customer: Royal Power Solutions

125 Mercedes Drive

Carol Stream, IL 60188

Customer Part No: 0394X2.5001102P

Description: C11000 .0394 H020

Specification:

ASTM B 152/B152M-19

Customer PO No: 30210

PMX Order No:

121877-1

PMX Bill of Lading: 00288903

Pallet | Tag No.:

789034 | M8Z33A-G

Chemical Composition (Wt %)

Test Date 09/05/21

Method (See below**)

Element

Spec Min. 99.9000

Spec Max. 100.000

Actual 99.9918

Dimensions	Units/Scale	Spec. Min.	Spec. Max.	Actual
Thickness	in	.0384	.0404	.0396
Width	in	2.497	2.503	PASS

Mechanical Pr	opertie	Test Date 10/14/21 Method	Units/Scale	Spec. Min.	Spec. Max.	Actual	
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Grain Size	(REF)	ASTM-E112-13	mm	NA	NA	.015	

Other Tests

Test Date Method

Units/Scale Spec. Min. Spec. Max.

Actual

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Laboratory Supervisor

10/25/21

Date

K INDUSTRIES, INC. 5300 WILLOW CREEK DRIVE SW, CEDAR RAPIDS, IA 52404-4303

TEL: 319/368-7700 FAX: 319/368-7701 E-MAIL: Mary.Pasker@ipmx.com

ISO 9001:2015 REGISTERED

CERTIFICATE OF REGISTRATION







Having been audited in accordance with requirements of

ISO 9001:2015 - ASQ/ANSI/ISO 9001:2015

SRI Quality System Registrar, 300 Northpointe Circle, Seven Fields, Pennsylvania, 16046, USA, hereby grants to:

PMX Industries, Inc.

Registration of the management system at its location:

5300 Willow Creek Drive SW Cedar Rapids, Iowa, 52404, USA

The conditions for maintaining this certificate of registration are set forth in the SRI registration agreements R20.3 and R20.4. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained by consulting the organization.

Scope of ISO 9001:2015 registration:

"Manufacture and supply of copper, copper alloys, and brass sheet,

strip, and ammunition cups."

Initial SRI Registration date:

December 19, 1996

Current registration period:

December 16, 2020 through December 15, 2023

Signed for SRI:

Christopher H. Lake, President & COO

Release Date:

December 16, 2020

Certificate Number:

020899

Registration Number:

0739-01





CERTIFICATE OF ACCREDITATION

ANSI National Accreditation Board

11617 Coldwater Road, Fort Wayne, IN 46845 USA

This is to certify that

PMX Industries, Inc. 5300 Willow Creek Drive SW Cedar Rapids, IA 52404

has been assessed by ANAB and meets the requirements of international standard

ISO/IEC 17025:2017

while demonstrating technical competence in the field of

TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of activities to which this accreditation applies

<u>L1170-1</u> Certificate Number

ANAB Approval
Certificate Valid Through: 12/28/2022

Certificate Valid Through: 12/28/2022 Version No. 004 Issued: 01/06/2020





SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

PMX Industries, Inc.

5300 Willow Creek Drive SW Cedar Rapids, IA 52404 Sean Clipperton 319-298-1453 sean.clipperton@ipmx.com

TESTING

Valid to: December 28, 2022 Certificate Number: L1170-1

Chemical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Optical Emission Spectrometry	ASTM E 1251	Copper Based Alloys	Thermo-Electron ARL-4460
X-Ray Spectrometry	ASTM E 1621	Copper Based Alloys	Thermo-Electron ARL-9900
Oxygen Analysis	ASTM E 1019	Copper Based Alloys	RO-416 LECO

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Micro Hardness (Vickers)	ASTM E 384	Copper Based Alloys	LECO LM-700 AT
Rockwell / Rockwell Superficial	ASTM E 18	Copper Based Alloys	A643T/B523T Wilson/Rockwell
Tension	ASTM E 345; ASTM E 8	Copper Based Alloys	MMHT-5K Tinius-Olsen
Preparation	ASTM E 3	Copper Based Alloys	
Conductivity	ASTM E 1004	Copper Based Alloys	Fischer Sigma Scope SMP 350
Surface Roughness	ASME B.46.1	Copper Based Alloys	SJ 210 Mitutoyo

Note:

1. This scope is formatted as part of a single document including Certificate of Accreditation No. L1170-1.







CERTIFICATE



This is to certify that

Royal Power Solutions

125 Mercedes Drive Carol Stream, IL 60188 United States of America

has implemented and maintains a Quality Management System.

Scope:

Design and manufacture of precision metal stampings. The assembly of components.

An audit, conducted and documented in a report, has verified that this quality management system fulfills the requirements of the following International Automotive Standard:

IATF 16949:2016

(with product design)

Certificate registration no. 269998 IATF16

Issuing date 2021-11-17

This certificate is valid until 2024-11-16

Date of revision 2021-12-31

IATF No. 0434818

(T)

2-IAO-QMC-01001

For and on behalf of DQS

Brad McGume

Brad McGuire

Managing Director, DQS Inc.

Michael Drechsel

Managing Director, DQS Holding GmbH

heeselvel

IATF Contract Office: DQS Holding GmbH, Konrad-Adenauer-Allee 8-10, 61118 Bad Vilbel, Germany Issuing Office: DQS Inc., 1500 McConnor Parkway, Suite 400, Schaumburg, IL 60173 USA



CERTIFICATE



This is to certify that

Royal Power Solutions

125 Mercedes Drive Carol Stream, IL 60188 United States of America

has implemented and maintains a Quality Management System.

Scope:

Design and manufacture of precision metal stampings. The assembly of components.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001: 2015

Certificate registration no. 269998 QM15

Date of original certification 2018-09-04

Date of revision 2021-12-31

Date of certification 2021-11-17

Valid until 2024-09-03





DQS Inc.

Brad McGure

Brad McGuire Managing Director



Accredited Body; DQS Inc., 1500 McConnor Parkway, Suite 400, Schaumburg, IL 60173 USA



Laboratory Scope

Royal Power Solutions (Carol Stream) Quality Laboratory is qualified to perform the following inspection, testing and calibration activities. All other activities are performed by accredited outside laboratories.

Inspection/Test/Calibration	Equipment Used	Method and/or Standard Used	
First Piece Inspection	Micrometers, Calipers, Indicators, Plug/Pin sets, Optical Comparators/Projectors, Vision and Touch Probe systems (Micro- Vu/OGP/Keyence), Dynes Solution, Force Gages, torque driver/wrenches and Profilometer	QSP-4.10.101	
In-process Inspection	Micrometers, Calipers, Indicators, Plug/Pin sets, Optical Comparators/Projectors, Vision and Touch Probe systems (Micro- Vu/OGP/Keyence), Dynes Solution, Force Gages, torque driver/wrenches and Profilometer	QSP-4.10.101	
Quality Last Piece Inspection	Micrometers, Calipers, Indicators, Plug/Pin sets, Optical Comparators/Projectors, Vision and Touch Probe systems (Micro- Vu/OGP/Keyence), Dynes Solution, Force Gages, torque driver/wrenches and Profilometer	QSP-4.10.101	
Calibrate Depth Micrometers	Jo Block Set, ID # 62444	QSP-4.11.118	
Calibrate Drop Indicators	Jo Block Set, ID # 62444	QSP-4.11.110	
Calibrate Digital Calipers	Jo Block Set, ID # 62444	QSP-4.11.116	
Calibrate Dial Calipers	Jo Block Set, ID # 62444	QSP-4.11.114	
Calibrate Height Gages	Jo Block Set, ID # 62444	QSP-4.11.111	
Calibrate Outside Micrometers	Jo Block Set, ID # 62444	QSP-4.11.109	
Calibrate Test / Drop Indicators	Jo Block Set, ID # 62444	QSP-4.11.114	
TRACKED DOCUMENT Revision:	5 Status: Approved Revision Date: 12/8/	/19 11:49 AM Owner: Vince Lassete	