



Part Submission Warrant

Part Name <u>Eyelet Terminal - Loose Parts</u>		Cust. Part Number <u>JU5T-14463-CBA</u>
Shown On Drawing No. <u>JU5T-14463-CBA</u>		Org. Part Number <u>R8696</u>
Engineering Change Level <u>B1</u>	Dated <u>4/14/22</u>	
Additional Engineering Changes <u>N/A</u>	Dated _____	
Safety and/or Government Regulation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Purchase Order No. <u>N/A</u>	Weight (kg) <u>.0044</u>
Checking Aid No. <u>N/A</u>	Checking Aid Engineering Change Level <u>N/A</u>	Dated _____

ORGANIZATION MANUFACTURING INFORMATION

Royal Power Solutions (00-525-8322)
Supplier Name & Supplier/Vendor Code

125 Mercedes Drive
Street Address

Carol Stream IL 60188 USA
City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

Nursan Otomotiv EOOD
Customer Name/Division

AKBAS, Gulcin
Buyer/Buyer Code

Ford
Application

MATERIALS REPORTING

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

Submitted by IMDS or other customer format: 1168628060 / 1 10/24/2022

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

REASON FOR SUBMISSION (Check at least one)

- | | |
|---|--|
| <input checked="" type="checkbox"/> Initial Submission | <input type="checkbox"/> Change to Optional Construction or Material |
| <input type="checkbox"/> Engineering Change(s) | <input type="checkbox"/> Supplier or Material Source Change |
| <input type="checkbox"/> Tooling: Transfer, Replacement, Refurbishment, or additional | <input type="checkbox"/> Change in Part Processing |
| <input type="checkbox"/> Correction of Discrepancy | <input type="checkbox"/> Parts Produced at Additional Location |
| <input type="checkbox"/> Tooling Inactive less than 1 year | <input type="checkbox"/> Annual Submission |
| | <input type="checkbox"/> Other - please specify below _____ |

REQUESTED SUBMISSION LEVEL (Check One)

- ☐ Level 1 - Warrant only (and for designated appearance items, and 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 and product samples and complete supporting data reviewed at supplier'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 stamping

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 57600 / 8 hours. I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from this declaration below.

EXPLANATION/COMMENTS: _____

Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☒ N/A

Organization Authorized Signature *Joe Ruvalcaba* Date 10/24/22
Print Name Ruvalcaba, Joe Axel Phone No. 630-766-2685 Fax No. _____
Title PPAP Technician E-mail joe.ruvalcaba@royalpowersolutions.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other _____

Customer Signature _____ Date _____

Print Name _____ Customer Tracking Number (optional) _____

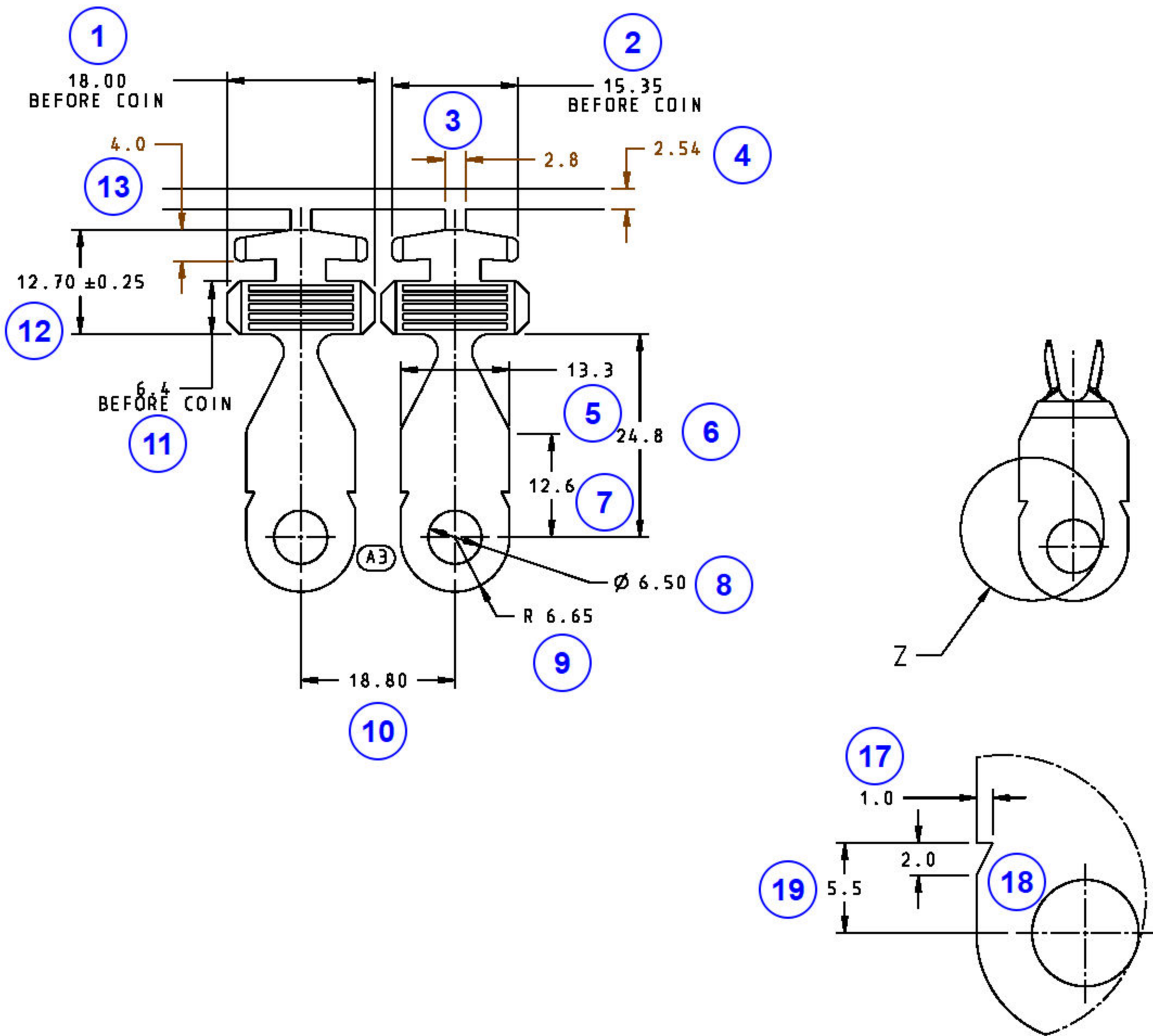
March
2006

CFG - 1001

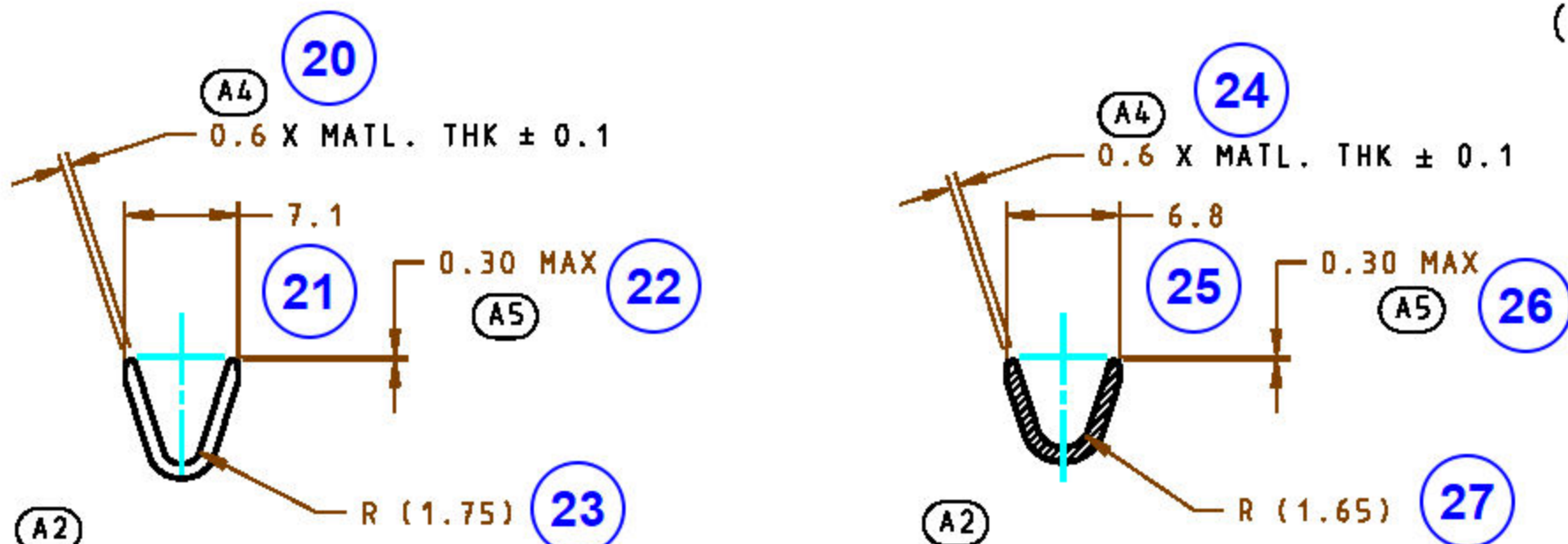
TERMINAL INFORMATION																
FORD PART NO.	SUPPLIER PART NO.	DESCRIPTION	GREASED Y/N	BASE MATERIAL	PLATING MATERIAL	PLATING THICKNESS	COPPER WEIGHT	TOTAL WEIGHT	MATERIAL THICKNESS	MATERIAL HARDNESS	MAX AMBIENT TEMPERATURE	CONDUCTOR MIN/MAX CSA SAE WIRE	INSULATION MIN/MAX OD SAE WIRE	MATING PARTS		
														FORD PART NO.	SUPPLIER PART NO.	DESCRIPTION
JU5T-14463-CBA	R8696	TRMNL-EYLT TYP	N	C110	TIN	0.001 MIN	4.40	4.41	1.02	H01	125°C	2.96/6.0	3.10/4.20	N/A	N/A	N/A

TERMINAL CRIMP & GRIP REFERENCE TABLE								
FORD PART NO.	WIRE TYPE/ SPECIFICATION (DESIGN INTENT)	WIRE SIZE	STRIP LENGTH (mm)	CONDUCTOR CRIMP INFO C.C.W. (mm) (+/-0.10)	CONDUCTOR CRIMP INFO C.C.H. (mm) (+/-0.05)	INSULATION CRIMP INFO I.C.W. (mm) (+/-0.10)	INSULATION CRIMP INFO I.C.H. (mm) (+/-0.10)	NOTES
JU5T-14463-CBA		10 GA	9.0	5.65	3.60	5.80	4.60	SEE NOTE 6
JU5T-14463-CBA		12 GA	9.0	5.65	3.30	5.80	4.70	SEE NOTE 6
JU5T-14463-CBA		3mm ²	9.0	5.65	3.40	5.80	4.30	SEE NOTE 6
JU5T-14463-CBA		4mm ²	9.0					SEE NOTE 7
JU5T-14463-CBA		5mm ²	9.0					SEE NOTE 7
JU5T-14463-CBA		6mm ²	9.0	5.65	4.40	5.80	5.25	SEE NOTE 6

REV	DESCRIPTION	DATE	APP.
0	RELEASED FOR PRODUCTION	2-3-2017	ERIK
A5	CHANGED TO AGREE AS MANUFACTURED	4-19-2017	ERIK
B1	UPDATED CHART	4-14-2022	TONY



VIEW Z
SCALE 4:1
(2 PLACES)



RECEIVED
ccarlson, 6/6/2022, 8:55:48 AM

Royal Die & Stamping Co., Inc. 125 Mercedes Dr., Carol Stream, IL 60188 USA (630)766-2685 FAX 0601		
SCALE: 2:1	MATERIAL: SEE CHART	DESIGNED: JSZALAY
CHECKED: TONY		DATE: 08-25-2016
CUSTOMER: ROYAL		REV: B1
		DWG NO.: TBD
TITLE: TRMNL-EYELET TYP		PART NUMBER: R8696

GENERAL NOTES:

- PARTS CONFORM TO THE ELECTRICAL CONNECTION SYSTEM DESIGN SPECIFICATION (SDS) VER. 20 EL0176
- GRIP PER FORD TERMINAL WIRE GRIP SPEC:ES-F6AB-14474-CA (10/12 GRIP) EXCEPT WITHLINE SERRATIONS, EXCEPT FOR CARRIER STRIPS -PARTS COMPLY WITH ES-DBAB-1293-A
- N/A
- TOLERANCES UNLESS OTHERWISE SPECIFIED
X.X = ±0.5
X.XX = ±0.3
ANGLES = ±3°
- 0.2mm MAX RADIUS PERMISSIBLE ON EDGES AND FILLETS SHOWN AS SHARP FOR STAMPING PART
- CRIMP VALUES ARE RECOMMENDATIONS. HARNESS SUPPLIER HAS CRIMP DEVELOPMENT RESPONSIBILITY
- HARNESS SUPPLIER HAS CRIMP DEVELOPMENT RESPONSIBILITY
- PARTS SUPPLIED LOOSE PIECE

APPROVED
By ALD at 12:51 pm, Jun 01, 2022

PO8BA
Royal Die & Stamping Co., Inc.
 125 Mercedes Dr., Carol Stream, IL 60188 USA (630)766-2685 FAX 0601
 ROYAL DIE PART NUMBER: R8696
 ROYAL DIE NUMBER:

REFERENCE EYELET TERMINAL (M6)			
PART MUST COMPLY WITH RESTRICTED SUBSTANCE MANAGEMENT STANDARD WSS-M99P9999-A1 TO SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT			
DRAFTED IN ACCORDANCE WITH FORD MOTOR COMPANY ENGINEERING CAD AND DRAFTING STANDARDS VERSION 28.1		3RD ANGLE PROJ DIMENSIONS ARE IN MILLIMETERS	
CAD TYPE: K-CATIAS	CAD LOC: TCE	CAD FILE: JU5T-14463-CB-DWG-01	DTM IS MASTER
OPER. NO.: ----	UNIT: MM	DRAWING: JU5T-14463-CBA	
DESIGN: JSZALAY	DETAIL: JSZALAY	TITLE: TRMNL-EYLT TYP	SHT 1 OF 1
CHECKED: ADUNLAP	SAFETY: ----		
SCALE: 2:1	DATE: 20160825	DIVISION: PLANT	

FORD MOTOR COMPANY

Production Part Approval Dimensional Test Results



ORGANIZATION: Royal Die & Stamping Co., Inc. SUPPLIER/VENDOR CODE:					PART NUMBER: R8696 PART NAME: Eyelet Terminal - Loose Parts							
INSPECTION FACILITY: Royal Die & Stamping Co., Inc. ADDITIONAL REMARKS:					DESIGN RECORD CHANGE LEVEL: B1 ENGINEERING CHANGE DOCUMENTS:							
ITEM	DIMENSION / SPECIFICATION	SPECIFICATION / LIMITS	TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)					REMARKS	OK	NOT OK
Material	C110	Attribute	10/24/22	1	Pass						X	
Note 1.	Parts conform to the electrical connection system design specification (SDS) Ver. 20 EL0176	Attribute	10/24/22	1	Pass						X	
Note 2.	-Grip per FORD terminal wire grip spec. ES-F6DB-14474-CA (10/12) Except with line serrations Except for carrier strip -Parts comply with ES-D8AB-1293-A	Attribute	10/24/22	1	Pass						X	
Note 3.	N/A	Attribute	10/24/22	1	Pass						X	
Note 4.	Tolerance unless otherwise specified X.X = 0.5 X.XX = 0.3 Angles = 3°	Attribute	10/24/22	1	Pass						X	
Note 5.	0.2mm Max radius permissible on edges and fillets shown as sharp for stamping part	Attribute	10/24/22	1	Pass						X	
Note 6.	Crimp values are recommendations. Harness supplier has crimp development responsibility	Attribute	10/24/22	1	Pass						X	
Note 7.	Harness supplier has has crimp development responsibility	Attribute	10/24/22	1	Pass						X	
Note 8.	Harness supplier has has crimp development responsibility	Attribute	10/24/22	1	Pass						X	
Plating	Tin	Attribute	10/24/22	1	Pass						X	
1	Wire Crimp Length (BLANK) 18.00 (BEFORE COIN)	18.30 mm 17.70 mm	10/24/22	5	17.84	17.82	17.83	17.82	17.83		X	
2	Ins Crimp Length (BLANK) 15.35 BEFORE COIN	15.65 mm 15.05 mm	10/24/22	5	15.51	15.51	15.51	15.52	15.52		X	
3	Cut-off Wire Width 2.8	3.30 mm 2.30 mm	10/24/22	5	2.67	2.67	2.67	2.66	2.65		X	
4	Strip Carrier Width 2.54	2.84 mm 2.24 mm	10/24/22	5	2.60	2.60	2.59	2.59	2.59		X	
5	Body Width 13.3	13.80 mm 12.80 mm	10/24/22	5	13.35	13.36	13.36	13.35	13.35		X	
6	Dia to Side Crimp (BLANK) 24.8	25.30 mm 24.30 mm	10/24/22	5	24.84	24.83	24.83	24.85	24.84		X	
7	Hole Location 12.6	13.10 mm 12.10 mm	10/24/22	5	12.67	12.68	12.68	12.67	12.69		X	
8	Diameter 6.50	6.80 mm 6.20 mm	10/24/22	5	6.49	6.49	6.49	6.49	6.49		X	
9	Radius 6.65	6.95 mm 6.35 mm	10/24/22	5	6.77	6.79	6.77	6.79	6.77		X	
10	Progression 18.80	19.10 mm 18.50 mm	10/24/22	5	18.80	18.80	18.79	18.79	18.80		X	
11	Wire Crimp Width (BLANK) 6.4 BEFORE COIN	6.90 mm 5.90 mm	10/24/22	5	6.55	6.56	6.56	6.55	6.55		X	
12	Wire Crimp to Ins Crimp Cut-off (BLANK) 12.70	12.95 mm 12.45 mm	10/24/22	5	12.71	12.70	12.71	12.70	12.71		X	
13	Ins Width (Blank) 4.0	4.50 mm 3.50 mm	10/24/22	5	4.04	4.03	4.03	4.04	4.05		X	
14	Bend Angle 90°	94.00 Deg° 90.00 Deg°	10/24/22	5	93.92	93.97	93.95	93.94	93.95		X	
15	Distance (20.7)	Attribute	10/24/22	1	Pass						X	
16	Dia to Bend 16.7	17.20 mm 16.20 mm	10/24/22	5	16.78	16.78	16.79	16.78	16.79		X	

Production Part Approval Dimensional Test Results



ORGANIZATION: Royal Die & Stamping Co., Inc. SUPPLIER/VENDOR CODE:					PART NUMBER: R8696 PART NAME: Eyelet Terminal - Loose Parts				
INSPECTION FACILITY: Royal Die & Stamping Co., Inc. ADDITIONAL REMARKS:					DESIGN RECORD CHANGE LEVEL: B1 ENGINEERING CHANGE DOCUMENTS:				

ITEM	DIMENSION / SPECIFICATION	SPECIFICATION / LIMITS	TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)	REMARKS	OK	NOT OK
17	Distance 1.0	1.50 mm 0.50 mm	10/24/22	5	0.98 0.98 0.99 0.99 0.97		X	
18	Distance 2.0	2.50 mm 1.50 mm	10/24/22	5	1.98 1.99 1.98 1.98 1.99		X	
19	Hole Location 5.5	6.00 mm 5.00 mm	10/24/22	5	5.51 5.49 5.50 5.49 5.50		X	
20	Wire Crimp Coin Width 0.60 x Mat THK [2x]	0.70 mm 0.50 mm	10/24/22	10	0.55 0.54 0.53 0.55 0.54 0.55 0.56 0.56 0.55 0.56		X	
21	Wire Crimp Width 7.1	7.60 mm 6.60 mm	10/24/22	5	7.03 7.04 7.04 7.03 7.03		X	
22	Wire Crimp Evenness .30 Max	0.30 mm Max	10/24/22	5	0.05 0.05 0.04 0.04 0.05		X	
23	Wire Crimp Radius (1.75)	Attribute	10/24/22	1	Pass		X	
24	Ins Crimp Coin Width 0.60 x Mat THK [2x]	0.70 mm 0.50 mm	10/24/22	10	0.57 0.56 0.57 0.56 0.55 0.56 0.54 0.55 0.56 0.55		X	
25	Ins Crimp Width 6.8	7.30 mm 6.30 mm	10/24/22	5	6.53 6.54 6.55 6.54 6.53		X	
26	Ins Crimp Evenness 0.30 Max	0.30 mm Max	10/24/22	5	0.07 0.06 0.08 0.07 0.06		X	
27	Ins Crimp Radius (1.65)	Attribute	10/24/22	1	Pass		X	

Blanket statements of conformance are unacceptable for any test results.

MARCH

CFG-1003

2006

SIGNATURETITLEDATE

Joe Axel Ruvalcaba
Joe Axel Ruvalcaba


PPAP Technician

10/24/22



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

Process Flow Chart

Part No R8696	Rev B1	Name Eyelet Terminal - Loose Parts		
Customer NURSAN	Customer Part No JU5T-14463-CBA	Rev B1	Rev Date 4/14/22	Drawing No. JU5T-14463-CBA
FMEA R8696-B1 - Approved		Control Plan 10044 - Production - Active - Primary		
Core Team Miguel Avila, Cliff Carlson, Kristine Daehler, James Dawson, Brendan Durkin, Nathaniel Hollin, Vince Lasseter, Jason O'Neil, Joe Axel Ruvalcaba, Miriam Sales, Dave Wiltfang				
Operation	Inspection Step	All Specifications		
 20: Stamp - Finish Approved Workcenters: B-100, B-082, B-112	Receiving	A - Material Procurement		
	Transport Tooling to Work Center	B - Transport Tooling to Work Center		
	Transport Material to Work Center	C - Transport Material to Work Center		
	Setup	D - Set-up Work Center		
		D-A - Verify Correct Raw Material at Machine		
		D-B - Verify Correct Tooling		
		D-C - Verify Correct Machine Operating Parameters		
		D-D - Verify All Safety Guards are Enabled		
		D-E - Confirm All Setup Parts Have been Scrapped		
		Keyence Instructions - Keyence Instructions		
	Quality First Piece	Visual 1 - 5 Serrations must be present at correct location - See Print		
		Visual 2 - Coin on wire and insulation crimps must be visually present (One-Sided Minimum: 0.1in)		
		Visual 3 - 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		
		Visual Defect 5 - No expose Raw material		
		Visual Defect 6 - No excessive Tool Marks		
		Visual Defect 7 - No Bent Parts		
D-E - Confirm All Setup Parts Have been Scrapped				
5 - Body Width 13.3 (Target: 13.3mm)				
8 - Diameter 6.50 (Target: 6.5mm)				
14 - Bend Angle 90° (Target: 90Deg°)				
16 - Dia to Bend 16.7 (Target: 16.7mm)				
17 - Distance 1.0 (Target: 1mm)				
18 - Distance 2.0 (Target: 2mm)				

Process Flow Chart

		19 - Hole Location 5.5 (Target: 5.5mm)
		20 - Wire Crimp Coin Width 0.60 x Mat THK [2x] (Target: 0.6mm)
		21 - Wire Crimp Width 7.1 (Target: 7.1mm)
		22 - Wire Crimp Evenness .30 Max (One-Sided Maximum: 0.3mm)
		24 - Ins Crimp Coin Width 0.60 x Mat THK [2x] (Target: 0.6mm)
		25 - Ins Crimp Width 6.8 (Target: 6.8mm)
		26 - Ins Crimp Evenness 0.30 Max (One-Sided Maximum: 0.3mm)
		Off-set - Crimp Offset Specification 1.5 (Target: 1.5mm)
Operator - In-process Inspection	Visual 1 - 5 Serrations must be present at correct location - See Print	
	Visual 2 [OP] - Coin on wire and insulation crimps must be visually present	
	Visual 3 - 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	
	Visual Defect 5 - No expose Raw material	
	Visual Defect 6 - No excessive Tool Marks	
	Visual Defect 7 - No Bent Parts	
	Keyence Instructions - Keyence Instructions	
	8 [OP] - Hole Diameter 6.50	
	21 - Wire Crimp Width 7.1 (Target: 7.1mm)	
	25 - Ins Crimp Width 6.8 (Target: 6.8mm)	
Quality - In-process Inspection	Visual 1 - 5 Serrations must be present at correct location - See Print	
	Visual 2 - Coin on wire and insulation crimps must be visually present (One-Sided Minimum: 0.1in)	
	Visual 3 - 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	
	Visual Defect 5 - No expose Raw material	
	Visual Defect 6 - No excessive Tool Marks	
	Visual Defect 7 - No Bent Parts	
	14 - Bend Angle 90° (Target: 90Deg°)	
	16 - Dia to Bend 16.7 (Target: 16.7mm)	
	21 - Wire Crimp Width 7.1 (Target: 7.1mm)	
	22 - Wire Crimp Evenness .30 Max (One-Sided Maximum: 0.3mm)	
	25 - Ins Crimp Width 6.8 (Target: 6.8mm)	
	26 - Ins Crimp Evenness 0.30 Max (One-Sided Maximum: 0.3mm)	

Process Flow Chart

Quality Last Piece	Off-set - Crimp Offset Specification 1.5 (Target: 1.5mm)
	Visual 1 - 5 Serrations must be present at correct location - See Print
	Visual 2 - Coin on wire and insulation crimps must be visually present (One-Sided Minimum: 0.1in)
	Visual 3 - 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
	Visual Defect 5 - No expose Raw material
	Visual Defect 6 - No excessive Tool Marks
	Visual Defect 7 - No Bent Parts
	8 - Diameter 6.50 (Target: 6.5mm)
	14 - Bend Angle 90° (Target: 90Deg°)
	16 - Dia to Bend 16.7 (Target: 16.7mm)
	21 - Wire Crimp Width 7.1 (Target: 7.1mm)
	22 - Wire Crimp Evenness .30 Max (One-Sided Maximum: 0.3mm)
	25 - Ins Crimp Width 6.8 (Target: 6.8mm)
	26 - Ins Crimp Evenness 0.30 Max (One-Sided Maximum: 0.3mm)
	Off-set - Crimp Offset Specification 1.5 (Target: 1.5mm)
Final Audit	H - Labels correct & cartons sealed properly
Transport to Final Location	I - Transport to Final Location
PPAP Layout	1 - Wire Crimp Length (BLANK) 18.00 (BEFORE COIN) (Target: 18mm)
	2 - Ins Crimp Length (BLANK) 15.35 BEFORE COIN (Target: 15.35mm)
	3 - Cut-off Wire Width 2.8 (Target: 2.8mm)
	4 - Strip Carrier Width 2.54 (Target: 2.54mm)
	5 - Body Width 13.3 (Target: 13.3mm)
	6 - Dia to Side Crimp (BLANK) 24.8 (Target: 24.8mm)
	7 - Hole Location 12.6 (Target: 12.6mm)
	8 - Diameter 6.50 (Target: 6.5mm)
	9 - Radius 6.65 (Target: 6.65mm)
	10 - Progression 18.80 (Target: 18.8mm)
	11 - Wire Crimp Width (BLANK) 6.4 BEFORE COIN (Target: 6.4mm)
	12 - Wire Crimp to Ins Crimp Cut-off (BLANK) 12.70 (Target: 12.7mm)
	13 - Ins Width (Blank) 4.0 (Target: 4mm)
	14 - Bend Angle 90° (Target: 90Deg°)
	15 - Distance (20.7)
	16 - Dia to Bend 16.7 (Target: 16.7mm)
	17 - Distance 1.0 (Target: 1mm)

Process Flow Chart

		18 - Distance 2.0 (Target: 2mm)
		19 - Hole Location 5.5 (Target: 5.5mm)
		20 - Wire Crimp Coin Width 0.60 x Mat THK [2x] (Target: 0.6mm)
		21 - Wire Crimp Width 7.1 (Target: 7.1mm)
		22 - Wire Crimp Evenness .30 Max (One-Sided Maximum: 0.3mm)
		23 - Wire Crimp Radius (1.75)
		24 - Ins Crimp Coin Width 0.60 x Mat THK [2x] (Target: 0.6mm)
		25 - Ins Crimp Width 6.8 (Target: 6.8mm)
		26 - Ins Crimp Evenness 0.30 Max (One-Sided Maximum: 0.3mm)
		27 - Ins Crimp Radius (1.65)
		Plating - Tin
		Material - C110
		Note 1. - Parts conform to the electrical connection system design specification (SDS) Ver. 20 EL0176
		Note 2. - -Grip per FORD terminal wire grip spec. ES-F6DB-14474-CA (10/12) Except with line serrations Except for carrier strip -Parts comply with ES-D8AB-1293-A
		Note 3. - N/A
		Note 4. - Tolerance unless otherwise specified X.X = 0.5 X.XX = 0.3 Angles = 3°
		Note 5. - 0.2mm Max radius permissible on edges and fillets shown as sharp for stamping part
		Note 6. - Crimp values are recommendations. Harness supplier has crimp development responsibility
		Note 7. - Harness supplier has has crimp development responsibility
		Note 8. - Harness supplier has has crimp development responsibility
	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
		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:	R8696-B1	External Part Number:	JU5T-14463-CBA
FMEA Date:	(Orig.) 10/24/22 (Rev.)10/24/22	Key Date:		Prepared By:	Daehler, Kristine
Note:		Process Responsibility:	Lasseter, Vince	FMEA Number:	R8696-B1
Core Team:	Miguel Avila, Cliff Carlson, Kristine Daehler, Brendan Durkin, Nathaniel Hollin, Vince Lasseter, Joe Axel Ruvalcaba, Miriam Sales, Dave Wiltfang		Model Year(s)/Vehicle(s):	Automotive/Various	

FMEA begins on page 2

Plex 10/24/22 9:20 AM JRuvalaba.RD



FAILURE MODE AND EFFECTS ANALYSIS

(Process FMEA)

Part Name:	Eyelet Terminal - Loose Parts	Internal Part Number:	R8696-B1	External Part Number:	JU5T-14463-CBA
FMEA Date:	(Orig.) 10/24/22 (Rev.)10/24/22	Key Date:		Prepared By:	Daehler, Kristine
Note:		Process Responsibility:	Lasseter, Vince	FMEA Number:	R8696-B1
Core Team:	Miguel Avila, Cliff Carlson, Kristine Daehler, Brendan Durkin, Nathaniel Hollin, Vince Lasseter, Joe Axel Ruvalcaba, Miriam Sales, Dave Wiltfang		Model Year(s)/Vehicle(s):	Automotive/Various	

Part Name:	Eyelet Terminal - Loose Parts	Internal Part Number:	R8696-B1	External Part Number:	JU5T-14463-CBA
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Process Function/ Requirements	Potential Failure Mode	Potential Effects of Failure	S E V	C L S	Potential Causes/ Mechanisms of Failure	Current Process Controls Prevention	O C C	Current Process Controls Detection	D E T	R P N	Recommend Action(s)	Responsibility & Target Completion Date	Action Results				
													Actions Taken	S E V	O C C	D E T	R P N
Material Procurement Requirements	Non-Conforming Material Material Thickness out of spec.	Material Un-available for Production	5		Supplier's Error	Purchase Order Specifications tied to part specific requirements.	1	Internal Inspection Review of Required Material Certificate - Material is Tagged " Approved for use" if Meets PO requirements.	3	15	None						
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	1	Production Meetings	5	15	None						
Transport Material to Work Center	Wrong Material	Unfit for use,Production Interruptions.	4		Die Setter / Set-up Error		2	MSO Requirements. Material is Tagged " Approved for use". Tags are turned in for traceability.	2	16	None						
Set-up Work Center	Work Center is not available	Delayed Production	5		Customer Gives Short Lead Time Due-Date, Production Schedule Conflicts, Unscheduled Maintenance.	Production capacity report.	1	Production Forman plans Schedule allowing sufficient time. Customer is provided with lead time.	5	25	None						
Manufacture to MSO Requirements	Lost Time or Setup Failure.	Wasted Set-up Material, Operator Time.	3		Operator Error, Tooling Malfunction.	APQP, Die Setter and Operator Training.	2	Operator Quality Control Monitoring.	6	36	None						

Process Function/ Requirements	Potential Failure Mode	Potential Effects of Failure	S E V	C L S	Potential Causes/ Mechanisms of Failure	Current Process Controls Prevention	O C C	Current Process Controls Detection	D E T	R P N	Recommend Action(s)	Responsibility & Target Completion Date	Action Results				
													Actions Taken	S E V	O C C	D E T	R P N
First Piece Process Approval to MSO Requirements	Non Conforming Samples, Incapable Process. Distance 2.0 +/- 0.50 out of spec.	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.	4	40	None						
In-Process Operator Monitoring	Non Conforming Product. High burr.	Lost Time, Dissatisfied Customer	5		Process Error, Operator Error, Tool Failure	APQP, Quality Control Training.	2	Process/Product monitoring per Part Specific Control Plan.	3	30	None						
In-Process Quality Monitoring	Non-Conforming Product, Production interruption Hole Location 5.5 +/-0.5 out of spec.	Dissatisfied Customer	5		Process Error, Material Shortage or High Waste. Operator Error.	APQP, Quality Control Training.	2	Process/Product Monitoring per Part Specific Control Plans.	3	30	None						
Quality Last Piece	Non Conforming Product. Slug marks	Lost Time, Dissatisfied Customer	5		Process Error, High Waste	APQP, Quality Control Training	1	Process/Product monitoring per Part Specific Control Plan.	4	20	None						
Final Product Audit	Nonconforming Product. Unidentified, Wrong count.	Shortage	3		System Failure. Operator Error	Documented Manufacturing and Inspection Process.	2	Control Plan monitoring.	5	30	None						
Transport to Final Location	Non conforming Product, Damaged.	Dissatisfied Customer	3		Damaged through Handling or Transit. Operator Error	MSO Packaging Requirements, Ship/Rec Training on Handling Requirements.	1	Visual Inspection.	6	18	None						
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Control Plan

Control Plan Number 10044	Control Plan Type Production	Part Number/Latest Change Level R8696-B1	Date (Orig.) 4/13/17	Date (Rev.) 10/29/22
Key Contact/Phone Kris Daehler (630) 384-5529		Core Team Miguel Avila, Cliff Carlson, Kristine Daehler, James Dawson, Brendan Durkin, Nathaniel Hollin, Vince Lasseter, Jason O'Neil, Joe Axel Ruvalcaba, Miriam Sales, Dave Wiltfang	Customer Engineering Approval Date (If Req'd)	
Part Name/Description R8696-B1 (Eyelet Terminal - Loose Parts)		Organization/Plant Approval Date (If Req'd) 10/29/22	Customer Quality Approval Date (If Req'd)	
Organization/Plant Royal Die & Stamping Co., Inc. / Royal Power CS		Organization Code 00007802	Other Approval date (If Req'd)	

Control Plan Number 10044			Control Plan Type Production			Part Number/Latest Change Level R8696-B1			Date (Orig.) 4/13/17		Date (Rev.) 10/29/22	
Part/ Process Number	Operation	Machine / Device	Characteristics			Special Char. Class	Methods				Reaction Plan	
			No.	Product	Process		Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method		
20	Stamp - Finish Receiving	-	A		Material Procurement		C110/TIN	Visual	1 each Set Up	Material Certification	Notify material manager & quality immediately - Refer to procedure COP8	
20	Stamp - Finish Transport Tooling to Work Center	-	B		Transport Tooling to Work Center		DIE# 01134	Visual	1 each Set Up	Tool ID	Perform adjustments and/or corrections	
20	Stamp - Finish Transport Material to Work Center	-	C		Transport Material to Work Center		C110/TIN	Visual	1 each Set Up	Checksheet	Perform adjustments and/or corrections	
20	Stamp - Finish Setup	-	D		Set-up Work Center		Attribute	Visual	1 each Set Up	Checksheet	Perform adjustments and/or corrections	
		-	D-A		Verify Correct Raw Material at Machine		C110/TIN	Visual	1 each Set Up	Checksheet	Perform adjustments and/or corrections	
		-	D-B		Verify Correct Tooling		DIE# 01134	Visual	1 each Set Up	Checksheet	Perform adjustments and/or corrections	
		-	D-C		Verify Correct Machine Operating Parameters		Attribute	Visual	1 each Set Up	Checksheet	Perform adjustments and/or corrections	
		-	D-D		Verify All Safety Guards are Enabled		Attribute	Visual	1 each Set Up	Checksheet	Perform adjustments and/or corrections	
		-	D-E		Confirm All Setup Parts Have been Scrapped		Attribute	Visual	1 each Set Up	Checksheet	Verify action has been completed	

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Control Plan Number 10044	Control Plan Type Production	Part Number/Latest Change Level R8696-B1	Date (Orig.) 4/13/17	Date (Rev.) 10/29/22							
Part/ Process Number	Operation	Machine / Device	Characteristics			Special Char. Class	Methods			Reaction Plan	
			No.	Product	Process		Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.		Control Method
		-	Keyence Instructions	Keyence Instructions			Attribute	Visual	3 each Set Up	Checksheet	Perform adjustments and/or corrections
20	Stamp - Finish Quality First Piece	-	Visual 1	5 Serrations must be present at correct location - See Print			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	Visual 2	Coin on wire and insulation crimps must be visually present			0.100 in Min Insulation hole 0.100" min	Visual	3 each setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	Visual 3	Part loose			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		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 crimps & between 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
		Part Must be free of Burrs									
		-	Visual Defect 4	No Slivers			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		Parts Must be free of slivers									
		-	Visual Defect 5	No expose Raw material			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	Visual Defect 6	No excessive Tool Marks			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	Visual Defect 7	No Bent Parts			Attribute	Visual	5 each Setup	Checksheet	Nonconforming samples, Reject sample & notify setup
-	D-E		Confirm All Setup Parts Have been Scrapped		Attribute	Visual	1 each Set Up	Checksheet	Verify action has been completed		
-	5	Body Width 13.3			12.80 / 13.80 mm	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup		
-	8	Diameter 6.50			6.20 / 6.80 mm	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup		
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Control Plan Number 10044	Control Plan Type Production	Part Number/Latest Change Level R8696-B1	Date (Orig.) 4/13/17	Date (Rev.) 10/29/22							
Part/ Process Number	Operation	Machine / Device	Characteristics			Special Char. Class	Methods				Reaction Plan
			No.	Product	Process		Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	
		-	14	Bend Angle 90°			90.00 / 94.00 Deg°	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	16	Dia to Bend 16.7			16.20 / 17.20 mm	Vision Inspection System height hole to form	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	17	Distance 1.0			0.50 / 1.50 mm	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	18	Distance 2.0			1.50 / 2.50 mm	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	19	Hole Location 5.5			5.00 / 6.00 mm	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	20	Wire Crimp Coin Width 0.60 x Mat THK [2X]			0.50 / 0.70 mm	Optical Projector	3 each set up [6x]	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	21	Wire Crimp Width 7.1			6.60 / 7.60 mm	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	22	Wire Crimp Evenness .30 Max			0.30 mm Max	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	24	Ins Crimp Coin Width 0.60 x Mat THK [2X]			0.50 / 0.70 mm	Optical Projector	3 each set up [6x]	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	25	Ins Crimp Width 6.8			6.30 / 7.30 mm	Vision Inspection System	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	26	Ins Crimp Evenness 0.30 Max			0.30 mm Max	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		-	Off-set	Crimp Offset Specification 1.5			1.00 / 2.00 mm Pre-control / Internal specification	Optical Projector	3 each Set Up	Checksheet	Nonconforming samples, Reject sample & notify setup
		20	Stamp - Finish Operator - In-process Inspection	-	Visual 1	5 Serrations must be present at correct location - See Print			Attribute	Visual	5 pcs every hour
-	Visual 2 [OP]			Coin on wire and insulation crimps must be visually present			0.100" go pin gage	Go Gage	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300
-	Visual 3	Part loose				Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300	
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Control Plan Number 10044			Control Plan Type Production	Part Number/Latest Change Level R8696-B1			Date (Orig.) 4/13/17		Date (Rev.) 10/29/22		
Part/ Process Number	Operation	Machine / Device		Characteristics			Methods				Reaction Plan
			No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	
				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 terminal body to crimps & between 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
		Part Must be free of Burrs									
		-	Visual Defect 4	No Slivers			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300
		Parts Must be free of slivers									
		-	Visual Defect 5	No expose Raw material			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual Defect 6	No excessive Tool Marks			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual Defect 7	No Bent Parts			Attribute	Visual	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Keyence Instructions	Keyence Instructions			Attribute	Visual	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	8 [OP]	Hole Diameter 6.50			6.20mm/6.80mm [0.244" Go / 0.268" No go]	Go/No-Go Gage	5 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	21	Wire Crimp Width 7.1			6.60 / 7.60 mm	Calipers	3 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300
-	25	Ins Crimp Width 6.8			6.30 / 7.30 mm	Calipers	3 pcs every hour	Checksheet	Suspect Material - Refer to procedure QP-8300		
20	Stamp - Finish Quality - In-process Inspection	-	Visual 1	5 Serrations must be present at correct location - See Print			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual 2	Coin on wire and insulation crimps must be visually present			0.100 in Min Insulation hole 0.100" min	Visual	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual 3	Part loose			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP-8300
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Control Plan Number 10044			Control Plan Type Production	Part Number/Latest Change Level R8696-B1			Date (Orig.) 4/13/17		Date (Rev.) 10/29/22		
Part/ Process Number	Operation	Machine / Device		Characteristics			Methods				Reaction Plan
			No.	Product	Process	Special Char. Class	Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	
				See Print							
		-	Visual Defect 1	No Fractures on part			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP-8300
				Pay close attention at transition from terminal body to crimps & between crimps.							
		-	Visual Defect 2	No Slug Marks			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 QP-8300
				Part Must be free of Burrs							
		-	Visual Defect 4	No Slivers			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP-8300
				Parts Must be free of slivers							
		-	Visual Defect 5	No expose Raw material			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual Defect 6	No excessive Tool Marks			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual Defect 7	No Bent Parts			Attribute	Visual	5 pcs every 2 Hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	14	Bend Angle 90°			90.00 / 94.00 Deg°	Vision Inspection System	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	16	Dia to Bend 16.7			16.20 / 17.20 mm	Vision Inspection System	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	21	Wire Crimp Width 7.1			6.60 / 7.60 mm	Vision Inspection System	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	22	Wire Crimp Evenness .30 Max			0.30 mm Max	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	25	Ins Crimp Width 6.8			6.30 / 7.30 mm	Vision Inspection System	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	26	Ins Crimp Evenness 0.30 Max			0.30 mm Max	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
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Control Plan Number 10044		Control Plan Type Production		Part Number/Latest Change Level R8696-B1			Date (Orig.) 4/13/17		Date (Rev.) 10/29/22		
Part/ Process Number	Operation	Machine / Device	Characteristics			Special Char. Class	Methods				Reaction Plan
			No.	Product	Process		Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	
		-	Off-set	Crimp Offset Specification 1.5			1.00 / 2.00 mm Pre-control / Internal specification	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
20	Stamp - Finish Quality Last Piece	-	Visual 1	5 Serrations must be present at correct location - See Print			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual 2	Coin on wire and insulation crimps must be visually present			0.100 in Min Insulation hole 0.100" min	Visual	3 pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual 3	Part loose			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
				See Print							
		-	Visual Defect 1	No Fractures on part			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
				Pay close attention at transition from terminal body to crimps & between crimps.							
		-	Visual Defect 2	No Slug Marks			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-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 QP-8300
				Part Must be free of Burrs							
		-	Visual Defect 4	No Slivers			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
				Parts Must be free of slivers							
		-	Visual Defect 5	No expose Raw material			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual Defect 6	No excessive Tool Marks			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Visual Defect 7	No Bent Parts			Attribute	Visual	5 Pieces upon job completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	8	Diameter 6.50			6.20 / 6.80 mm	Vision Inspection System	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	14	Bend Angle 90°			90.00 / 94.00 Deg°	Vision Inspection System	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP-8300
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Control Plan Number 10044			Control Plan Type Production	Part Number/Latest Change Level R8696-B1			Date (Orig.) 4/13/17		Date (Rev.) 10/29/22		
Part/ Process Number	Operation	Machine / Device	Characteristics			Special Char. Class	Methods				Reaction Plan
			No.	Product	Process		Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	
		-	16	Dia to Bend 16.7			16.20 / 17.20 mm	Vision Inspection System	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	21	Wire Crimp Width 7.1			6.60 / 7.60 mm	Vision Inspection System	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	22	Wire Crimp Evenness .30 Max			0.30 mm Max	Optical Projector	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	25	Ins Crimp Width 6.8			6.30 / 7.30 mm	Vision Inspection System	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	26	Ins Crimp Evenness 0.30 Max			0.30 mm Max	Optical Projector	3 pcs upon Job Completion	Checksheet	Suspect Material - Refer to procedure QP-8300
		-	Off-set	Crimp Offset Specification 1.5			1.00 / 2.00 mm Pre-control / Internal specification	Optical Projector	3 pcs every 2 hours	Checksheet	Suspect Material - Refer to procedure QP-8300
20	Stamp - Finish Final Audit	-	H		Labels correct & cartons sealed properly		Attribute	Visual	Each Container	Checksheet	Suspect Material - Refer to procedure QP-8300
20	Stamp - Finish Transport to Final Location	-	I	Transport to Final Location			Attribute			Component Verification	
Move to Warehouse for customer shipping											
20	Stamp - Finish PPAP Layout	-	1	Wire Crimp Length (BLANK) 18.00 (BEFORE COIN)			17.70 / 18.30 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	2	Ins Crimp Length (BLANK) 15.35 BEFORE COIN			15.05 / 15.65 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	3	Cut-off Wire Width 2.8			2.30 / 3.30 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	4	Strip Carrier Width 2.54			2.24 / 2.84 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	5	Body Width 13.3			12.80 / 13.80 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	6	Dia to Side Crimp (BLANK) 24.8			24.30 / 25.30 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	7	Hole Location 12.6			12.10 / 13.10 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
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Control Plan Number 10044			Control Plan Type Production			Part Number/Latest Change Level R8696-B1			Date (Orig.) 4/13/17		Date (Rev.) 10/29/22	
Part/ Process Number	Operation	Machine / Device	Characteristics				Special Char. Class	Methods				Reaction Plan
			No.	Product	Process	Product / Process Specification Tolerance		Evaluation Measurement Technique	Sample Size / Freq.	Control Method		
		-	8	Diameter 6.50			6.20 / 6.80 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	9	Radius 6.65			6.35 / 6.95 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	10	Progression 18.80			18.50 / 19.10 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	11	Wire Crimp Width (BLANK) 6.4 BEFORE COIN			5.90 / 6.90 mm	Calipers	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	12	Wire Crimp to Ins Crimp Cut-off (BLANK) 12.70			12.45 / 12.95 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	13	Ins Width (Blank) 4.0			3.50 / 4.50 mm	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	14	Bend Angle 90°			90.00 / 94.00 Deg°	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	15	Distance (20.7)			Ref	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	16	Dia to Bend 16.7			16.20 / 17.20 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	17	Distance 1.0			0.50 / 1.50 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	18	Distance 2.0			1.50 / 2.50 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	19	Hole Location 5.5			5.00 / 6.00 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	20	Wire Crimp Coin Width 0.60 x Mat THK [2x]			0.50 / 0.70 mm	Optical Projector	5 per dimensional (2)	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	21	Wire Crimp Width 7.1			6.60 / 7.60 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	22	Wire Crimp Evenness .30 Max			0.30 mm Max	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
		-	23	Wire Crimp Radius (1.75)			REF	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup	
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Part/ Process Number	Operation	Machine / Device	Characteristics			Special Char. Class	Methods				Reaction Plan
			No.	Product	Process		Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	
		-	24	Ins Crimp Coin Width 0.60 x Mat THK [2x]			0.50 / 0.70 mm	Optical Projector	5 per dimensional (2)	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	25	Ins Crimp Width 6.8			6.30 / 7.30 mm	Vision Inspection System	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	26	Ins Crimp Evenness 0.30 Max			0.30 mm Max	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	27	Ins Crimp Radius (1.65)			REF	Optical Projector	5 per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Plating	Tin			Attribute	Certification	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Material	C110			Attribute	Certification	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 1.	Parts conform to the electrical connection system design specification (SDS) Ver. 20 EL0176			Attribute	Certification	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 2.	-Grip per FORD terminal wire grip spec. ES-F6DB-14474-CA (10/12) Except with line serrations Except for carrier strip -Parts comply with ES-D8AB-1293-A			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 3.	N/A			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 4.	Tolerance unless otherwise specified X.X = 0.5 X.XX = 0.3 Angles = 3°			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 5.	0.2mm Max radius permissible on edges and fillets shown as sharp for stamping part			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 6.	Crimp values are recommendations. Harness supplier has crimp development responsibility			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 7.	Harness supplier has has crimp development responsibility			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
		-	Note 8.	Harness supplier has has crimp development responsibility			Attribute	Visual	1 Per Dimensional	PPAP Layout	Nonconforming samples, Reject sample & notify setup
20	Stamp - Finish Production Workcenter Audit	-	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
			Suspect, Rejected and Setup parts must be placed in the Red Bin.								
			Plex 10/24/22 9:22 AM JRuvalaba.RD								

Control Plan Number 10044	Control Plan Type Production	Part Number/Latest Change Level R8696-B1	Date (Orig.) 4/13/17	Date (Rev.) 10/29/22							
Part/ Process Number	Operation	Machine / Device	Characteristics			Special Char. Class	Methods				Reaction Plan
			No.	Product	Process		Product / Process Specification Tolerance	Evaluation Measurement Technique	Sample Size / Freq.	Control Method	
		-	Audit #2	Serial Numbers of Raw Material and/or Components used must match serial numbers loaded in Control 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/or Components used must match serial numbers loaded in Control Panel									
		-	Audit #3	Parts must be packaged per the job sheet requirements		Parts are packaged per the shop order requirements	Visual	As Required	Verification	Notify Supervisor	
		Parts are packaged per the shop order requirements									
		-	Audit #4	Parts at workcenter are Labeled as made		Part must be labeled once container is complete	Visual	As Required	Verification	Notify Supervisor	
		Part must be labeled once container is complete									
		-	Audit #5	Lubrication must be specified on shop order		Lubrication must be specified on shop order	Visual	As Required	Verification	Notify Supervisor	
		Lubrication must be specified on shop 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
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Royal Power Solutions
125 Mercedes Drive
Carol Stream, IL 60188
Tel (630) 766-2685
Fax (630) 766-0401

Study Results for Gage 15156081 (Digital Caliper) on 5/16/22

GAGE LOG INFORMATION

Gage Log No: 2475614
Gage ID: 15156081
Gage Log Type: Gage Study
Study Date: 5/16/22

Device Name:
Operators: 3
Operator Names: Yeverino, Huerta, Huicochea
Trials: 3
Samples: 10

CHARACTERISTIC & VARIATION

LSL: 0.5
USL: 0.5
Tolerance: .000000
Spec Description: Wire Crimp Width 7.1
Part-to-Part Standard Deviation (σ_p): .000611
Measurement Standard Deviation (σ_m): .000051
Process Variation Standard Deviation (σ_t): .000613

K1: .590818
K2: .523136
K3: .314559
Average of All Ranges (\bar{R}): .000333
X Difference (\bar{X}_{DIFF}): .000333
Range of Part Average (R_p): .010000

MEASUREMENT UNIT ANALYSIS - GRR (Range Method)

GRR

Repeatability - Equipment
Variation (EV): .000197
Reproducibility - Appraiser
Variation (AV): .000171
GageR&R (GRR): .000260
Part Variation (PV): .003146
Total Variation (TV): .003156

Repeatability As % (EV/TV): 6.23
Reproducibility As % (AV/TV): 5.40
GRR % (GRR / TV): 8.25
% PV (PV / TV): 99.66
Distinct Levels: 17.03
GRR % of Tolerance/5.15: .00 %

Comments:



Royal Power Solutions
125 Mercedes Drive
Carol Stream, IL 60188
Tel (630) 766-2685
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Study Results for Gage 01063 (Optical Projector) on 5/16/22

GAGE LOG INFORMATION

Gage Log No: 2475704
Gage ID: 01063
Gage Log Type: Gage Study
Study Date: 5/16/22

Device Name:
Operators: 3
Operator Names: Ruvalcaba, Huerta, Huicochea
Trials: 3
Samples: 10

CHARACTERISTIC & VARIATION

LSL: 0.5
USL: 0.5
Tolerance: .000000
Spec Description: Offset 0.7
Part-to-Part Standard Deviation (σ_p): .000543
Measurement Standard Deviation (σ_m): .000051
Process Variation Standard Deviation (σ_t): .000545

K1: .590818
K2: .523136
K3: .314559
Average of All Ranges (\bar{R}): .000333
X Difference (\bar{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

Repeatability As % (EV/TV): 7.01
Reproducibility As % (AV/TV): 6.07
GRR % (GRR /TV): 9.27
% PV (PV / TV): 99.57
Distinct Levels: 15.14
GRR % of Tolerance/5.15: .00 %

Comments:



Checksheet

2016654 - Capability Study

Part R8696-B1 Eyelet Terminal - Loose Parts		Operation Stamp - Finish	Inspection Step PPAP Layout	Workcenter B-082	SPC Checksheet Container Text		Job No	
Date/Time 10/24/22 10:16 AM	Inspector Ruvalcaba, Joe Axel		Description TERMINAL-EYELET TYP Loose-parts			Samples 6	Size 5	Note
Tooling								
No	Specification	Target	Limits	Gage	Measurements			Note
21	Wire Crimp Width 7.1	7.10 mm	7.60 6.60		7.04 7.03 7.03 7.04 7.03			
					7.04 7.03 7.04 7.04 7.03			
					7.04 7.03 7.04 7.04 7.04			
					7.03 7.04 7.03 7.04 7.03			
					7.04 7.03 7.04 7.04 7.04			
					7.04 7.04 7.04 7.04 7.03			

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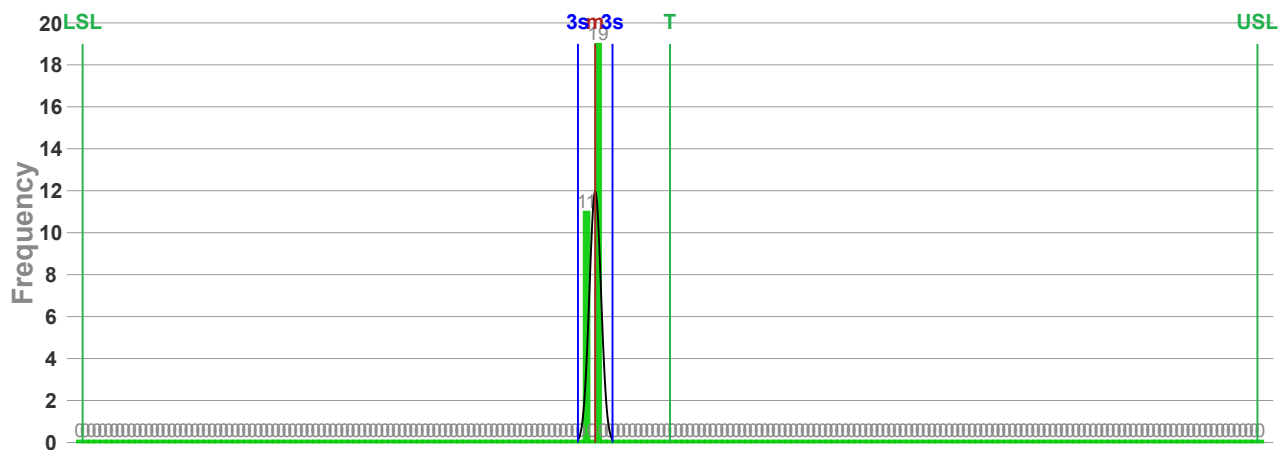
 <h2 style="display: inline;">Capability Study - Histogram</h2>			
Part R8696-B1 Eyelet Terminal - Loose Parts	Operation Stamp - Finish	Inspection Mode PPAP Layout	Workcenter B-082
Containers		Job No	
Specification 21 - Wire Crimp Width 7.1 (Target: 7.10 mm) 7.60 mm 6.60 mm	Date Range 10/24/2022 - 10/24/2022	Samples 6	Sample Size 5
Tooling			
Description TERMINAL-EYELET TYP Loose-parts			

Chart Statistics

Data	Specifications	Central Tendency	Dispersion	Distribution	Capability/Performance			Prediction
Min: 7.030	Tol.: 1.000	<u>Extended Limits</u>	<u>Extended Limits</u>	σ : 0.005	CR (1/Cp): 0.026	Pp: 34.007	ZU: 131.116	% Above: 0.000
Max: 7.040	USL: 7.600	UCLx: N/A	UCLr: N/A	+3 σ : 7.051	Cp (Tol/6 σ): 38.769	Ppk: 29.676	ZL: 101.496	% Below: 0.000
Mean: 7.036	Target: 7.100	EXDBar: 7.036	ERBar: 0.010	Mean: 7.036	Cpk: 33.832	kurt: -1.779	CPU: 43.705	% OoS: 0.000
Count: 30	LSL: 6.600	LCLx: N/A	LCLr: N/A	-3 σ : 7.022	σ_c (R/d2): 0.004	skew: -0.526	CPL: 33.832	% In Spec: 100.000
						d2: 2.326		

Histogram Chart




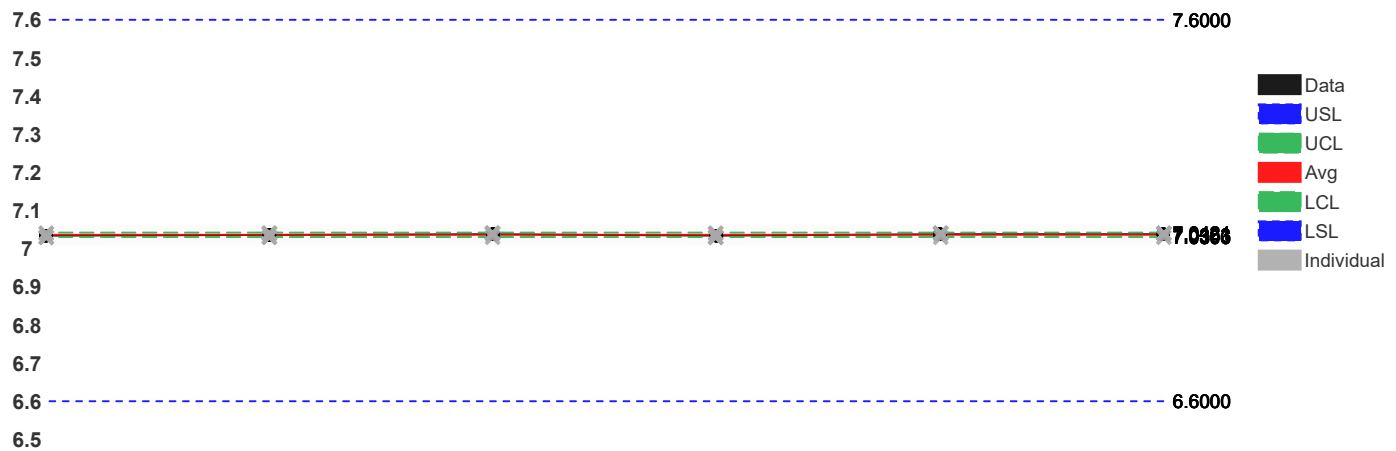
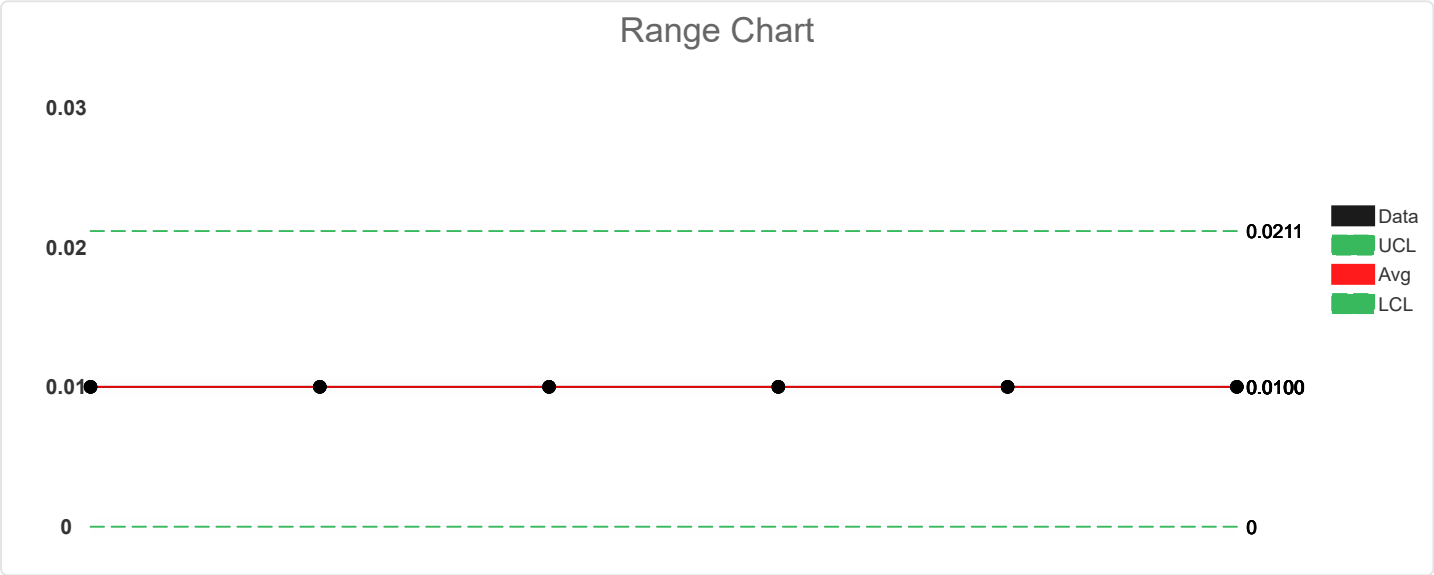
 Capability Study - Xbar & Range Chart			
Part R8696-B1 Eyelet Terminal - Loose Parts	Operation Stamp - Finish	Inspection Mode PPAP Layout	Workcenter B-082
Containers		Job No	
Specification 21 - Wire Crimp Width 7.1 (Target: 7.10 mm) 7.60 mm 6.60 mm	Date Range 10/24/2022 - 10/24/2022	Samples 6	Sample Size 5
Tooling			
Description TERMINAL-EYELET TYP Loose-parts			

Chart Statistics

Data	Specifications	Central Tendency	Dispersion	Distribution	Capability/Performance			Prediction
Min: 7.030	Tol.: 1.000	<u>Extended Limits</u>	<u>Extended Limits</u>	σ : 0.005	CR (1/Cp): 0.026	Pp: 34.007	ZU: 131.116	% Above: 0.000
Max: 7.040	USL: 7.600	UCLx: 7.042	UCLr: 0.021	+3 σ : 7.051	Cp (Tol/6 σ): 38.769	Ppk: 29.676	ZL: 101.496	% Below: 0.000
Mean: 7.036	Target: 7.100	EXDBar: 7.036	ERBar: 0.010	Mean: 7.036	Cpk: 33.832	kurt: -1.779	CPU: 43.705	% OoS: 0.000
Count: 30	LSL: 6.600	LCLx: 7.031	LCLr: 0.000	-3 σ : 7.022	σ_c (R/d2): 0.004	skew: -0.526	CPL: 33.832	% In Spec: 100.000
						d2: 2.326		

X Bar Chart





wieland

Wieland Metal Services, LLC
180 Alexandra Way
Carol Stream, IL, 60188

CERTIFICATE OF CONFORMANCE

WMS Order Number	329493
WMS Item #	214313
WMS Item Description	BR-CU11000-0.04-H01-Electro Tin-COIL-2.05--
Customer Name	ROYAL DIE & STAMPING
Cust Part #	040X2.0501101MTP

Cust PO#	37464-25
Quantity / UOM	822 / LB
Date Shipped	22-AUG-22

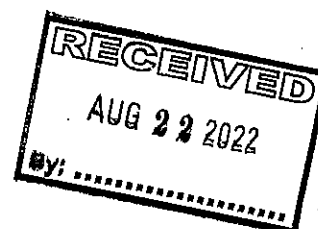
Lot Number#	Heat#	Mill Coil#	Num of Pieces#	Ship Qty / UOM	Ship Date	Country of Origin#
04-888162	168023001	E22083196M B62809 100806	1	822 / LB	22-AUG-22	US

Class: Chemical	Spec Min	Spec Max	Result	UOM
Cu	99.90000		99.94800	%
Class: Dimension	Spec Min	Spec Max	Result	UOM
Coil ID	16.00	16.00	16.00	Inch
Coil OD	38.00	58.00	43.00	inch
Class: Hardness	Spec Min	Spec Max	Result	UOM
Rockwell F	20.0		68.0	F
Class: Mechanic	Spec Min	Spec Max	Result	UOM
Elongation	.0		34.0	%
Tensile	34.00	42.00	35.00	KSI
Yield	.00		28.00	KSI
Class: Size	Spec Min	Spec Max	Result	UOM
Gauge	.03900	.04100	.04000	inch
Width	2.0470	2.0530	2.0500	inch
Class: Shape	Spec Min	Spec Max	Result	UOM
Camber	.0000	.1250	.0625	inch
Class: Plating	Spec Min	Spec Max	Result	UOM
Plating Thickness	40.0	100.0	55.3	micro inch
Underplate Thickness 1	30.0	80.0	38.1	micro inch

* 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
8/22/22

APPROVED BY
Hieter, Tim





Certificate US21/819944552

The management system of

Wieland Metals, Inc

567 Northgate Parkway
Wheeling 60090, United States

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities:

Manufacture of Copper and Copper Alloy Strip Products

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained by consulting the organization.

This certificate is valid from 20 January 2022 until 20 January 2025
and remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.
Issue 2. Certified since July 2021.
Certified since 31 January 2007 by former Certification Body.

The audit leading to this certificate commenced on 08/11/2021.
Previous issue certificate validity date was until 20/01/2022.

Authorized by:

Dan Seal

Dan Seal
Technical Accreditation Manager,
Knowledge Solutions
SGS North America, Inc.

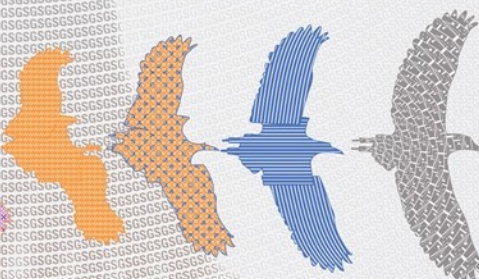
201 Route 17 North, Rutherford, NJ 07070, USA
t (201) 508-3000 f (201) 935-4555 www.us.sgs.com

This certificate remains the property of SGS and shall be returned upon request

Page 1 of 1



ANSI National Accreditation Board
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ISO/IEC 17021-1
MANAGEMENT SYSTEMS
CERTIFICATION BODY



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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 IATF 16
Issuing date	2021-11-17
This certificate is valid until	2024-11-16
Date of revision	2021-12-31
IATF No.	0434818



2-IAO-QMC-01001

For and on behalf of DQS

Brad McGuire
Managing Director, DQS Inc.

Michael Drechsel
Managing Director, DQS Holding GmbH

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 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