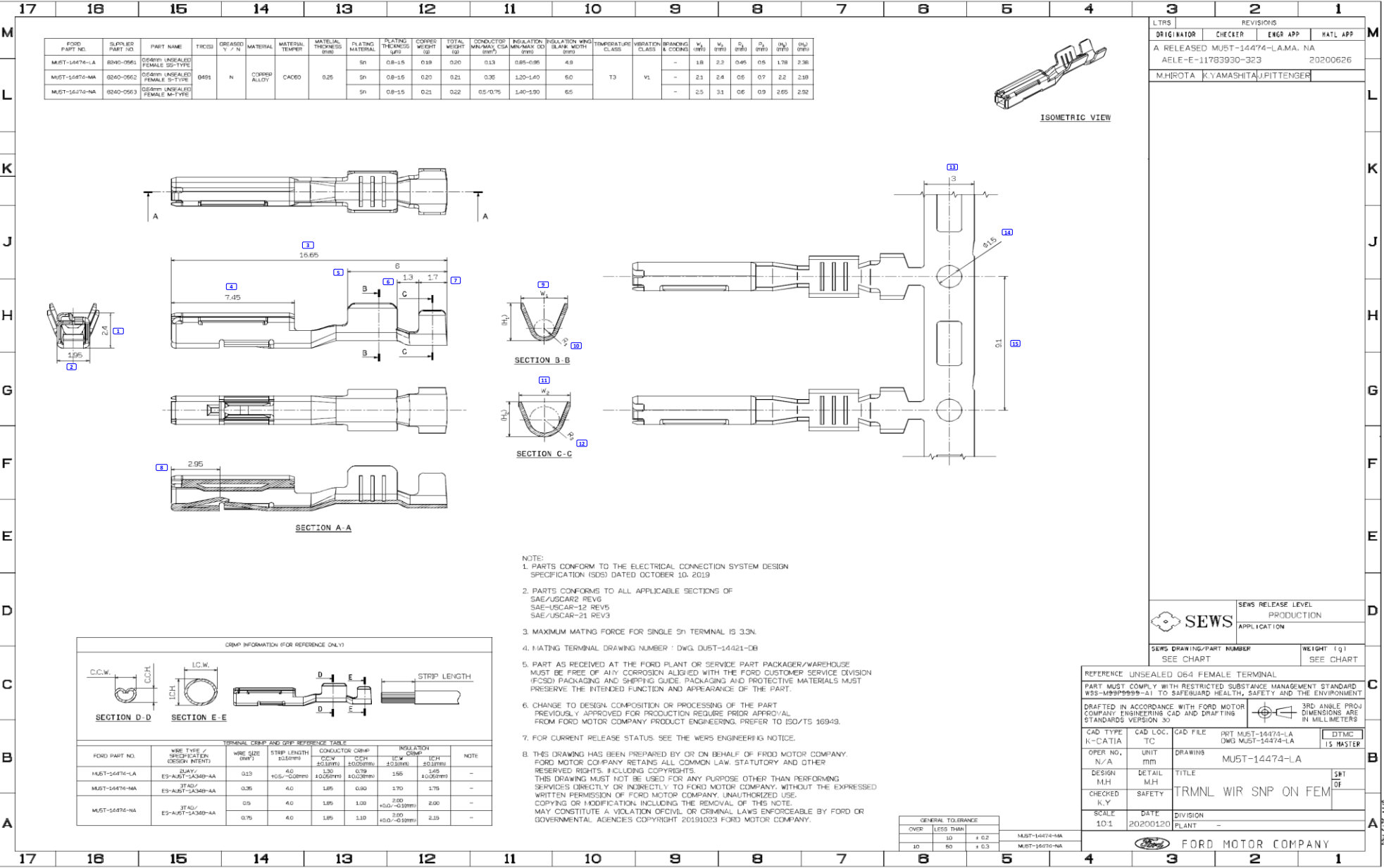




LTRS		REVISIONS	
ORIGINATOR	CHECKER	ENGR APP	MATL APP
A RELEASED MUST-14474-L.A.M.A. NA			
AELE-E-11783930-323 20200626			
M.HIROTA K.YAMASHITA J.PITTENGER			

SEWS		SEWS RELEASE LEVEL	
		PRODUCTION	
		APPLICATION	
SEWS DRAWING/PART NUMBER		WEIGHT (g)	
SEE CHART		SEE CHART	

REFERENCE: UNSEALED 064 FEMALE TERMINAL			
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 30		3RD ANGLE PROJ DIMENSIONS ARE IN MILLIMETERS	
CAD TYPE	CAD LOC.	CAD FILE	PRT MUST-14474-LA DWG MUST-14474-LA
K-CATIA	TC		DTMC IS MASTER
OPER NO.	UNIT	DRAWING	MUST-14474-LA
N/A	mm		
DESIGN	DETAIL	TITLE	TRMNL WIR SNP ON FEM
M.H	M.H		SPT OF
CHECKED	SAFETY		
K.Y			
SCALE	DATE	DIVISION	
10:1	20200120	PLANT	-
FORD MOTOR COMPANY			

Production Part Approval Dimensional Test Results

[illegible]

Blanket statements of conformance are unacceptable for any test results.

MESSRS

PN 8240-0563

P. 6

2021/11/20 01:10:55

ORDER
SHINSHO CORPORATION NAGOYA SHITEN

CERTIFICATE OF INSPECTION

No. 2-3F3040~ 10 (3)

CUSTOMER
SUMITOMO ELECTRIC WIRING SYSTEMS, IN

COMMODITY TRCA60 STRIP

DATE 2021-11-19

SPECIFICATION						MANUFACTURING No.		SIZE OF ARTICLE				ORDER QUANTITY		MASS		
5-4255G TRCA60 H						2-68777		0.25 X 48. XCOIL								
TEST ITEM REQUIREMENT	TEST PIECE (mm)			TENSION TEST			HARD- NESS HV	SPRING LIMIT (T)	BENDING (L)	BENDING (T)	ELECT. CONDUCT % IACS	TIN (MICRO)		PEELING TEST		
	5-LENGTH	THICKNESS	CUT DIA OR WIDTH	TENSILE STRENGTH (N/MM2)	YIELD STRENGTH (N/MM2)	ELON- GATION (%)						A	B			
CHARGE No.	LOT No.			630. MIN 680. MAX	MIN MAX	10.0 MAX MAX	180 220	350 MIN	150 -0.6T	180 -0.6T	40.0 MIN	0.8 -1.5				
C4543	88127 -1			50.			651		17.0	196	571	GOOD	GOOD	43.2	1.1 1.1	GOOD
"	-2			50.			651		17.0	200		GOOD	GOOD		1.1 1.2	GOOD
CHEMICAL COMPOSITION (%)																
REQUIREMENT	NI	SI	ZN	SN	CU										APPEARANCE	
	1.0 MIN 3.0 MAX	0.2 MIN 0.6 MAX	0.5 MAX	0.3 MAX	RE MAX										MEASUREMENT	GOOD
CHARGE No. (6457) C4543	1.79	0.40	1.09	0.09	RE										SURFACE	GOOD

U99621

We certify that these products meet your specific requirements and this statements are correct and accurate.

KOBELCO

KOBELCO STEEL, LTD.
CHOFU PLANT
14-1 MINATOMACHI CHOFU SHIMONOSEKI JAPANManager of Quality
Assurance Section

Y. Inoue

Sumitomo Electric Wiring Systems, INC.-Components Division

PROCESS FLOW DIAGRAM

PRODUCT : Various Metal Stamping Parts
PROCESS: Metal Stamping

KEY CONTACT/DEPT. LOC. Debbie Gillenwater/L. Roth -QA Dept.
PHONE (270) 237-5419-X8563 & 8201 FAX (270) 237-4653

SUPPLIER APPROVALS:
General Plant Manager/Above: *[Signature]*

10.1.16 Updated Operation Description of 0050. E.Skaggs, K. Wilson, A. Weeks

10.1.16 Updated Key Characteristics of 0010, 0020, 0050, 0070, 0080, 0100, 0130, and 0160. E.Skaggs, K. Wilson, A. Weeks.

04.10.14 Revised set-up operation & characteristics D. Gillenwater

02.25.14 Revised terminology to match PTMEACVP D. Gillenwater

12.13.13 Remove sections 110, 120 and 150. L.R, J.F, D.G

5.12.11 Remove In-Line Terminal Clean/Supervisor Audit L. Roth, K. Chapman

8/31/06 Removed the name of cleaning sub-contractor D. Karleskint

4/1/05 GLOBAL QUALITY & ORG UPDATES D. Karleskint, K.

2/17/05 FORMAT CHANGES/UPDATED INFO D. Karleskint

2/9/00 ISSUED WITH FORMAT CHANGES T. DAY

6/04/99 ISSUED W/FORMAT CHANGES/UPDATES T. GRAVIL, D.

DATE CHANGE POINTS CORE/DEV. TEAM

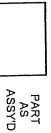
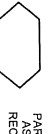
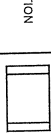
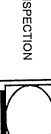
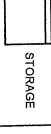
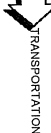
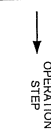
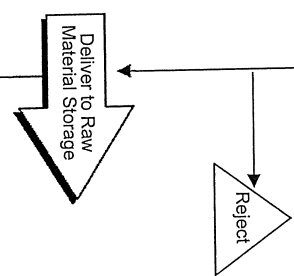
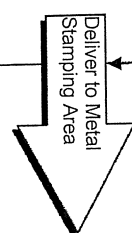
ISSUE/REVISION HISTORY

Manufacturing Manager/Above: *[Signature]*
Quality Manager/Above: *[Signature]*

Customer Approval if required:

PART ASSEMBLY	PART AS RECD	OPERATION	INSPECTION	OPERATION/INSPECTION	STORAGE	DELAY	TRANSPORTATION	OPERATION STEP	OPERATOR
OPER #	CI #	OPERATION DESCRIPTION	PROCESS FLOW						
0010	#	Raw Material Receiving (Metal Coils)							
		Reject							
		Raw Material Receiving							
0020	#	Raw Material Receiving Inspection	KEY CHARACTERISTICS						
		Packaging	Visual Comparison Against Packing List Shipping-Receiving Red Tag Procedure Abnormal Handling Procedures Per Inspection Instruction Sheet-Receiving						

Sumitomo Electric Wiring Systems,INC.-Components Division

OPER #	CI #	OPERATION DESCRIPTION	PROCESS FLOW						KEY CHARACTERISTICS	
										
		Identification Visual Inspection Characteristics							Per Inspection Instruction Sheet-Receiving Per Inspection Instruction Sheet-Receiving Per Inspection Instruction Sheet-Receiving Red Tag Procedure Abnormal Handling Procedures	
0030		Raw Material Storage							Per Raw Material Lot Control Sheet	
0040		Metal Stamping Loading Raw Material							Per Raw Material Lot Control Sheet Per Shop Order and Barcode confirmation	

Sumitomo Electric Wiring Systems, INC.-Components Division

PART AS ASSY'D		PART AS RECD		OPERATION		INSPECTION		OPERATION/ INSPECTION		STORAGE		DELAY		TRANSPORTATION		OPERATION STEP		OPERATOR	
OPER #	CI #	OPERATION DESCRIPTION				PROCESS FLOW										KEY CHARACTERISTICS			
0050		Metal Stamping Die/Machine Set-up Machine/Die PM Raw Material Machine Number Tool / Die Number Safety Checks				Machine Set-Up										Per Shop Order & Barcode scanning Per Maintenance Schedule Per Shop Order & Barcode scanning Per Production Schedule Per Shop Order Per Daily Machine Check Per Pressline Checksheet			
		Material Straighttner Raw Material Vision System In-Line / Vision Inspection System Winder Set-Up				Initial Inspection- Mfg.										Per Material Straighttner set-up Per Raw Material Vision set-up Per In-Line Inspection Set-Up and /or Vision System Set-up Per Winder Set-up Sheet			
0060		Manufacturing Initial Inspection (Start Up)				Initial Inspection- Mfg.										# Part Appearance/Dimension/Function per Visual Inspection and Terminal Inspection Sheets			

- Per Shop Order & Barcode scanning
- Per Maintenance Schedule
- Per Shop Order & Barcode scanning
- Per Production Schedule
- Per Shop Order
- Per Daily Machine Check
- Per Pressline Checksheet
- Per Material Straightner set-up
- Per Raw Material Vision set-up
- Per In-Line Inspection Set-Up and /or Vision System Set-up
- Per Winder Set-up Sheet
- # Part Appearance/Dimension/Function per Visual Inspection and Terminal Inspection Sheets

Sumitomo Electric Wiring Systems, INC.-Components Division

PART AS ASSY'D	PART AS RECD	OPERATION	INSPECTION	OPERATION/ INSPECTION	STORAGE	DELAY	TRANSPORTATION	OPERATION STEP	OPERATOR
OPER #	CI #	OPERATION DESCRIPTION	PROCESS FLOW				KEY CHARACTERISTICS		
0070	#	Quality Assurance Inspection (Mass Production)	QA Inspection Good No Good Reject				# Part Appearance/Dimension/Function per Visual Inspection and Terminal Inspection Sheets Per Red Tag Procedure Per Defective Terminal Procedure, Backtrack & Recall Procedure Abnormal Handling Procedures		
0080		Metal Stamping Production Checks (Manufacturing)	Mass Production Operator Inspection Good No Good				# Part Appearance/Dimension/Function per Visual Inspection Sheets # Part Appearance/Dimension/Function per Visual Inspection Sheets Stop Production- Make Adjustments, Revert or Die Sent to Maintenance		

Sumitomo Electric Wiring Systems, INC.-Components Division

PART ASSTD		PART ASSTD RECD		OPERATION		INSPECTION		OPERATION/INSPECTION		STORAGE		DELAY		TRANSPORTATION		OPERATION STEP		OPERATOR			
OPER #	CI #	OPERATION DESCRIPTION				PROCESS FLOW										KEY CHARACTERISTICS					
																Per Red Tag Procedure Per Defective Terminal Procedure, Backtrack & Recall Procedure Abnormal Handling Procedures					
0090		QA / Set Up Critical Defect Inspection Prior to Change Point														# Part Appearance/Dimension/Function per Global Quality Standard					
																Per Red Tag Procedure					
																Per Defective Terminal Procedure, Backtrack & Recall Procedure					
0100		Finished Product Packing / Labeling														Per Operator Check Sheet					
																Per Barcode Scanning System					
0130		Finished Goods Storage														Per ERP LX Electronic System					

Sumitomo Electric Wiring Systems, INC.-Components Division

PART ASSEMBLY		PART ASSEMBLY RECORD		OPERATION		INSPECTION		OPERATION/INSPECTION		STORAGE		DELAY		TRANSPORTATION		OPERATION STEP		OPERATOR	
OPER #	CI #	OPERATION DESCRIPTION				PROCESS FLOW								KEY CHARACTERISTICS					
0140		Warehouse Stock Assessment				Stock Assessment Finished Goods/Shipping Shipped to Customer								Per Weekly Stock Assessment Sheet					
0160		Shipping Finished Goods												Shipping Label PER ERP LX System					
0170		Annual Layouts				Part Layout								Per Customer Drawing/Request					

PROCESS RESPONSIBILITY: KELLY CHAPMAN / KELLY WILSON / ALAN BOMAR

5/13/2020	Update line 53 for new 064 female GET terminal.	E. Skaggs, K. Wilson, Paul Todd, J. Frain
2/26/2019	Updated 0050 for Improper Raw Material Welder Set-Up	E. Skaggs, K. Wilson, A. Meeks.
2/27/2018	Updated 0050 to replace job titles Setup Operator and Operator to Press Line Technician and Floater	E. Skaggs, K. Wilson, A. Meeks.
10/1/2016	Updated 0050 Current Process Controls	E. Skaggs, K. Wilson, A. Meeks.
2/5/2016	Update 0050 for Improper Grease Machine System Set-Up	K. Wilson, E. Skaggs
5/15/2015	Update 0050 for Raw Material Vision System to verify correct program	K. Wilson, E. Skaggs, L. Roth
5/28/2014	Updated RI 0020 clarified: Press-side automated camera system	M. Ryan, L. Roth
4/10/2014	Added Raw Material Camera System, added Manufacturing Manager/above signature line	D. Gillenwater, K. Chapman, K. Wilson, C. Stark
2/25/2014	Revised process terminology to match PFMEA/Control Plan and Process Flow. Added annual layout.	D. Gillenwater
11/15/2013	Removed non applicable sections 110, 120 and 150 and updated detection ratings.	D. GILLENWATER, J. FRAM, K. CHAPMAN, K. WILSON, B. BLANKENSHIP
10/31/2012	Added missing information to recommended actions column	L. Roth, D. Gillenwater, K. Chapman
5/13/2011	UPDATED AND REVISED	L. ROTH, K. CHAPMAN, K. WILSON
3/26/2010	UPDATED AND REVISED	D. GILLENWATER, L. ROTH, K. CHAPMAN, K. WILSON
9/1/2009	ADDED CUT / CRUSHED TERMINAL WINDING DEFECT IN STEP 50 AND HORIZONTAL WINDER. Updated current controls with previous recommended controls and process responsibility. (blue color updates)	D. GILLENWATER, K. CHAPMAN, K. WILSON
5/31/2007	UPDATED AND REVISED	D. KARLESKINT, L. ROTH, D. GILLENWATER, K. WILSON,
8/28/2006	REMOVED THE NAME OF THE CLEANING SUB-CONTRACTOR	D. KARLESKINT, L. ROTH, D. GILLENWATER, K. WILSON,
6/30/2006	REDUCED OCCURRENCE OF DEFORMED TERMINALS (DUE TO CLAIM COUNTERMEASURE)	D. KARLESKINT, L. ROTH, D. GILLENWATER, K. WILSON,
8/4/2005	ISSUED WITH INFORMATION UPDATES & CHANGES	D. KARLESKINT, L. ROTH, D. GILLENWATER, K. WILSON,
2/11/2005	UPDATED AND REVISED	D. KARLESKINT, L. ROTH, D. GILLENWATER
2/6/2001	ISSUED WITH INFORMATION UPDATES & CHANGES	T. Gravil
6/28/2000	ISSUED WITH INFORMATION UPDATES & CHANGES	T. Gravil
11/8/1999	ISSUED WITH FORMAT CHANGES/UPDATED INFO	T. GRAVIL, M. INAGAKI, R. HERNANDEZ, A. BROACH, K. WILSON, T. WIX
ISSUE/ REVISION HISTORY DATE	CHANGE POINTS	
	CORE/DEV. TEAM	

General Plant Manager/above:

 7-23-2020

Manufacturing Manager/above:

 7/27/20

ITEM: METAL COMPONENTS

Quality Manager/above:

 7/29/20

MODEL YEAR(S)/VEHICLE(S):

Other Approvals:

VARIOUS

CUSTOMER APPROVALS:(IF REQUIRED)

PROCESS NUMBER	CI	PROCESS FUNCTION	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	CLSA S	POTENTIAL CAUSE(S)/MECHANISM(S) OF FAILURE	OCUR	CURRENT PROCESS CONTROLS	D E T E C T I O N	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTIONS TAKEN	S O C I E T Y	R P N
0010	#	RAW MATERIAL RECEIVING (METAL COILS)	1. WRONG MATERIAL	1. PROCESSING PROBLEMS	1	INCORRECT MATERIAL PART NUMBER SHIPPED BY SUPPLIER.	2	2. P. SUPPLIER CONFIRMS MATERIAL QUANTITY OR WEIGHT AND CREATES PACKING LIST. D-RECEIVING ASSOCIATE CONFIRMS BOL AGAINST PACKING LIST (CONFIRMS EACH UNIT). MATERIAL IS BARCODE SCANNED INTO SYSTEM AGAINST OPEN PURCHASE ORDER.	3	6	NONE			

PROCESS NUMBER	CI	PROCESS FUNCTION	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEVERITY	CAUSAL FACTORS	POTENTIAL CAUSE(S)/MECHANISM(S) OF FAILURE	OCUR	CURRENT PROCESS CONTROLS	D E T E C T I O N	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTIONS TAKEN	STATUS	OPEN	R P N
0020			2. WRONG QUANTITY	2. SHORTAGE AND/OR OVERAGE OF RAW MATERIAL	1		2. INCORRECT QUANTITY SHIPPED BY SUPPLIER	2	2. P. SUPPLIER CONFIRMS MATERIAL QUANTITY OR WEIGHT AND CREATES PACKING LIST. D-RECEIVING ASSOCIATE CONFIRMS BOL AGAINST PACKING LIST (CONFIRMS EACH UNIT). MATERIAL IS BARCODED AND SCANNED INTO SYSTEM AGAINST OPEN PURCHASE ORDER.	3	NONE					
			3. DAMAGED MATERIAL	3. DAMAGED COILS	2		3. IMPROPER HANDLING AT POINT OF SHIPMENT AND/OR TRANSPORTATION	2	3. VISUAL CHECK USING WORK INSTRUCTIONS AND VISUAL AIDS (WIL SRW-REC/FLOW)	8	NONE					
			1. MISLABELED AND/OR UNIDENTIFIED RAW MATERIAL	1. DEFECTIVE PARTS, DAMAGE TO PRODUCTION TOOLING	6		1. SUPPLIER INCORRECTLY IDENTIFIED COIL OR LABEL BECAME DETACHED	2	1. CONFIRMATION OF PROPER IDENTIFICATION (EACH UNIT). MEASURE RAW MATERIAL DIMENSION (EACH LOT) AGAINST CONTROLLED INSPECTION SHEET DIMENSIONS.	6	NONE					
			2. DISCOLORATION	2. VISUAL DEFECT	2		2. IMPROPER SUPPLIER PROCESSING, EXTENDED EXPOSURE TO ELEMENTS.	2	2. COMPARISON OF LOT SAMPLE TO QA REFERENCE PRESS-SIDE AUTOMATED CAMERA SYSTEM	3	NONE					
			3. DEFECTIVE RAW MATERIAL APPEARANCE	3. VISUAL DEFECT	4		3. IMPROPER SUPPLIER PROCESSING.	2	2. COMPARISON OF LOT SAMPLE TO QA REFERENCE PRESS-SIDE AUTOMATED CAMERA SYSTEM	3	NONE					
			4. DIMENSIONAL DEFECTS	4. DEFECTIVE PARTS, DAMAGE TO PRODUCTION TOOLING, POTENTIAL CRIMPING ISSUES AT CUSTOMER	8		4. SUPPLIER PROCESSING PROBLEMS, OR PRODUCT MISIDENTIFICATION.	2	4. MEASURE RAW MATERIAL DIMENSION (EACH LOT) AGAINST CONTROLLED INSPECTION SHEET DIMENSIONS.	6	NONE					
0030		RAW MATERIAL STORAGE	5. MATERIAL CERTIFICATIONS	5. PART FAILURE	1		5. WRONG MATERIAL CONTENT (BRASS, COPPER)	2	5. CONFIRMATION OF CERTIFICATE OF ANALYSIS	8	NONE					
			6. DAMAGED MATERIAL	6. DAMAGED COILS, DIFFICULTY IN PROCESSING MATERIAL	2		3. IMPROPER HANDLING AT POINT OF SHIPMENT AND/OR TRANSPORTATION	2	6. ORW-CHECKINRM, ORW-DAMAGEDPACK, QA RECEIVING INSPECTION DATA SHEET, REJECT TAG PROCEDURE PRESS-SIDE AUTOMATED CAMERA SYSTEM	3	NONE					
		RAW MATERIAL STORAGE	1. INCORRECT STORAGE LOCATION	1. DIFFICULTY IN LOCATING RAW MATERIAL, PRODUCTION DELAY.	1		1. PLACEMENT IN INCORRECT LOCATION	2	1. SCANNING SYSTEM ASSIGNS EACH PALLET TO A SPECIFIC WAREHOUSE LOCATION, CONTROLLING INVENTORY AND FIFO WEEKLY CYCLE COUNT	3	NONE					
			2. IMPROPER STORAGE	2. RAW MATERIAL DEGRADATION	4		2. IMPROPER STORAGE METHOD	2	1. SCANNING SYSTEM ASSIGNS EACH PALLET TO A SPECIFIC WAREHOUSE LOCATION. MATERIAL STORED IN AN AUTOMATIC CONTROLLED ENVIRONMENT.	3	NONE					

PROCESS NUMBER	CI	PROCESS FUNCTION	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEVERITY	CLASSES	POTENTIAL CAUSE(S)/MECHANISM(S) OF FAILURE	OCUR	CURRENT PROCESS CONTROLS	DET E C	K P N	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTIONS TAKEN	SEV	OCG	DET E C	K P N
			3. EXCEEDS SHELF LIFE	3. RAW MATERIAL DEGRADATION	4		3. LOW VOLUME	2	3. SCANNING SYSTEM ASSIGNS EACH PALLET TO A SPECIFIC WAREHOUSE LOCATION, CONTROLLING INVENTORY AND FIFO QA SHELF LIFE SYSTEM	2	24	NONE						
0040		METAL STAMPING LOADING RAW MATERIAL	1. WRONG RAW MATERIAL STAGED AT MACHINE. 2. MATERIAL MISSING LABEL	1. DEFECTIVE PARTS, DAMAGE TO PRODUCTION TOOLING, POTENTIAL CRIMPING ISSUES AT CUSTOMER 2. LACK OF LOT TRACEABILITY	8		OPERATOR ERROR	2	1. MATERIAL DIMENSIONAL CHECK PER APPLICABLE STANDARD. RAW MATERIAL BARCODE SCAN	2	32	NONE						
					3		2. LABEL BECAME DETACHED	3	2A. VERIFY LABEL PRESENCE AND RECORD LOT/ COIL TAG INFORMATION.	6	54	NONE						
0050	#	METAL STAMPING DIE / MACHINE SET-UP	1. WRONG DIE SELECTION 2. IMPROPER MACHINE SET-UP 3. IMPROPER RAW MATERIAL WELDER SET-UP (WHERE APPLICABLE)	1. PRODUCE WRONG TERMINAL 2. OUT-OF-SPEC TERMINAL 3a. DIE MISFEED FLOW OUT OF WELD JOINT TO CUSTOMER. 3b.	2		1. INCORRECT SHOP ORDER INFORMATION 2. INCORRECT PROCESS PARAMETER SETTINGS 3a-1 INCORRECT WELD PROGRAM. 3a-2 DAMAGED ELECTRODE TIP (MORE THAN 20 WELDS.) 3b. DETECTION WASN'T FOLLOWED PER WORK INSTRUCTION MSW- WELDRANWATSAMP.	2	1. PRESSLINE CHANGEOVER CHECK SHEET AND BPCS. 2. PRESSLINE CHANGEOVER CHECKSHEET (PRESS LINE TECHNICIAN / DIE MAINT). ENTER AND CONFIRM SET POINTS ON PRESS LINE CHECK SHEET (PRESS LINE TECHNICIAN / FLOATER). PERFORM DIMENSIONAL CHECKS BEFORE STARTING PRODUCTION. AUTOMATIC INSPECTION SYSTEM	4	15	NONE						
					6			3	3.a. 1 RM PROGRAMS ARE SELECTED PER THE RM NUMBER. THE RM PROGRAMS ARE PASSWORD PROTECTED FOR ENGINEERING ONLY 3.a.2 ELECTRODE TIP/WELD COUNT TRACKED BY WELDER. 3.b.1 WELD DETECTION SENSOR. 3.b.2 RETAIN CUT WELD SAMPLE AND TRACEABILITY FOR MACHINE NUMBER.	3	63	NONE						
			3. IMPROPER RAW MATERIAL VISION SYSTEM SET-UP (where available)	3. VISUAL DEFECT TERMINAL SHIPPED TO CUSTOMER	5		3.1 INCORRECT INSPECTION SYSTEM PARAMETER SETTINGS	3	3.1. ENTER AND CONFIRM SET POINTS PER RAW MATERIAL # ON PRESS LINE CHECK SHEET 3.1 RECORD AND CONFIRM CORRECT RM PROGRAM IS ENTERED 3.2 RM PROGRAMS PASSWORD PROTECTED FOR ENGINEERING ONLY	3	45	NONE						
							3.2 EQUIPMENT NOT OPERATING	3	EQUIPMENT HARDWIRED TO PREVENT PRESS RUNNING WITHOUT CAMERA SIGNAL.	3	45							

PROCESS NUMBER	PROCESS FUNCTION	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEV	CLASS	POTENTIAL CAUSE(S)/MECHANISM(S) OF FAILURE	OCUR	CURRENT PROCESS CONTROLS	DET	RPN	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTIONS TAKEN	SEV	DET	RPN
		4. IMPROPER IN LINE /VISION SYSTEM SET-UP	4. OUT-OF-SPEC TERMINAL SHIPPED TO CUSTOMER	6	4	4. INCORRECT INSPECTION SYSTEM PARAMETER SETTINGS	3	4. ENTER AND CONFIRM SET POINTS PER PRESS LINE CHECK SHEET. VALIDATE IN LINE SETTINGS WITH CONTROLLED TERMINAL SAMPLES. AUTOMATED PROGRAM IS PASSWORD PROTECTED BY ENGINEERING	3	54	NONE					
			5. OUT-OF-SPEC TERMINAL OR DAMAGE TERMINAL SHIPPED TO CUSTOMER	6		INCORRECT LINE GUIDE INSTALLED.	3	1. VALIDATE IN LINE SETTINGS WITH CONTROLLED TERMINAL SAMPLES. 2. PRESSLINE CHANGEOVER CHECKSHEET (PRESS LINE TECHNICIAN / DIE MAINT). ENTER AND CONFIRM SET POINTS ON PRESS LINE CHECK SHEET (PRESS LINE TECHNICIAN / FLOATER). PERFORM DIMENSIONAL CHECKS BEFORE STARTING PRODUCTION.AUTOMATIC INSPECTION SYSTEM	3	54	NONE					
		5. IMPROPER WINDER SET-UP	5A. BENT / DEFORMED / CUT OR CRUSHED TERMINALS	4		5a. INCORRECT WINDER TENSION 5b. MATERIAL GUIDE POSITION	2	5a. TENSION SETTING LOCKED PER ENGINEERING. WORK INSTRUCTION FOR WINDER SETUP.	7	56	NONE					
				8		WINDER PROGRAM NOT SET TO CUT TERMINAL STRIP ON CARRIER BETWEEN TERMINALS	1	WINDER SET-UP. SAMPLE MIS-CUT ALARM	3	24	NONE					
			5B. LOOSE WINDINGS	4		5a. INCORRECT WINDER TENSION 5b. INCORRECT GUIDE ARM ADJUSTMENT 5c. REEL QUALITY	2	5a. VISUAL COMPARISON PER WI PA WINDER OPER 5b. TENSION CONTROL 5c. VISUAL COMPARISON PER THE PACKING JUDGEMENT STANDARD	6	48	NONE					
			5C. DAMAGED REEL	4		5C. INCORRECT SENSOR POSITION	2	5a. VISUAL COMPARISON PER WI PA and NOXON WINDER OPER 5b. TENSION CONTROL 5c. VISUAL COMPARISON PER THE PACKING JUDGEMENT STANDARD	6	48	NONE					
			5D. INCORRECT QUANTITY	4		5D. INCORRECT PROGRAM PARAMETER	2	5a. VISUAL COMPARISON PER WI PA WINDER OPER - A 5b. CONFIRMATION OF CORRECT WINDER RECIPE AT EACH SHIFT PER THE PRESS LINE CHECK SHEET. 5c. CHANGEOVER PRESSLINE CHECKSHEET	6	48	NONE					
		IMPROPER GREASE MACHINE SYSTEM SET-UP (where applicable)	HIGH INSERTION NOTICED BY CUSTOMER	4		TERMINAL SHIPPED TO CUSTOMER WITHOUT GREASE	2	ENTER AND CONFIRM SET POINT PER WORK INSTRUCTION AND GREASE MACHINE CHECK SHEET. MACHINE CHECKS EACH TERMINAL FOR GREASE AND WILL STOP THE PROCESS IF NO GREASE IS DETECTED.	4	32	None					
		NO INTERLEAF PAPER	BENT / DEFORMED TERMINALS	4		PAPER JAM, PAPER TEAR OR END OF PAPER	3	AUTOMATED ALARM	2	24	NONE					

PROCESS NUMBER	CI	PROCESS FUNCTION	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEVERITY	CLASS	CAUSE(S)/MECHANISM(S) OF FAILURE	OCCURRENCE	CURRENT PROCESS CONTROLS	DETECTABLE	RECOMMENDED ACTION(S)	RESPONSIBILITY	ACTIONS TAKEN	STATUS	DATE	PERSON	
			INCORRECT PAPER LENGTH (TRAVERSE WINDER ONLY)	INTERLOCKING TERMINALS	5		INCORRECT PARAMETERS ENTERED	2	1. AUTOMATIC PROGRAM FOR WINDER (PARAMETERS SET BY ENGINEERING). 2. VISUAL COMPARISON EACH REEL PER APPLICABLE STANDARD	3	NONE						
0060	#	MANUFACTURING INITIAL INSPECTION (Start Up)	1. DEFORMED, BENT, CRACKED, ETC.) 2. SLIVERS / BURRS ON TERMINALS. 3. TERMINAL DIMENSIONALLY OUT OF SPECIFICATIONS	1. DEFECTIVE TERMINAL SHIPPED TO CUSTOMER. 2. SHORT CIRCUIT- ELECTRICAL FAILURE 3. CONTACT, GAP, INSERTION, RETENTION, SERRATIONS- PART FAILURE	7		1. BROKEN DIE PUNCH, INCORRECT DIE SET UP, SCRAP IN DIE. 2a. INCORRECT DIE SETTING 2b. MATERIAL VARIATION 3a. INCORRECT DIE SETTING 3b. MATERIAL VARIATION	2	1. DIMENSIONAL / VISUAL INSPECTION PER DOCUMENTED ON TERMINAL INSPECTION SHEET. (MICROSCOPE / KEYENCE SYSTEM / AUTOMATED OGP MEASUREMENT) 1. DIMENSIONAL / VISUAL INSPECTION PER DOCUMENTED ON TERMINAL INSPECTION SHEET. (MICROSCOPE / KEYENCE SYSTEM / AUTOMATED OGP MEASUREMENT) 1. DIMENSIONAL / VISUAL INSPECTION PER DOCUMENTED ON TERMINAL INSPECTION SHEET. (MICROSCOPE / KEYENCE SYSTEM / AUTOMATED OGP MEASUREMENT)	2 2 2	NONE NONE NONE						
0070	#	QUALITY ASSURANCE INSPECTION (MASS PRODUCTION)	1. DEFORMED, BENT, CRACKED, ETC.) 2. SLIVERS / BURRS ON TERMINALS. 3. TERMINAL DIMENSIONALLY OUT OF SPECIFICATIONS	1. DEFECTIVE TERMINAL SHIPPED TO CUSTOMER. 2. SHORT CIRCUIT- ELECTRICAL FAILURE 3. CONTACT, GAP, INSERTION, RETENTION, SERRATIONS- PART FAILURE	7		1. BROKEN DIE PUNCH, INCORRECT DIE SET UP. 2a. INCORRECT DIE SETTING 2b. MATERIAL VARIATION	2	1. DIMENSIONAL / VISUAL INSPECTION PER DOCUMENTED ON TERMINAL INSPECTION SHEET. (MICROSCOPE / KEYENCE SYSTEM / AUTOMATED OGP MEASUREMENT) 1. DIMENSIONAL / VISUAL INSPECTION PER DOCUMENTED ON TERMINAL INSPECTION SHEET. (MICROSCOPE / KEYENCE SYSTEM / AUTOMATED OGP MEASUREMENT)	2 2	NONE NONE						

PROCESS NUMBER	CI	PROCESS FUNCTION	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEV	CLAS	POTENTIAL CAUSE(S)/MECHANISM(S) OF FAILURE	DCUR	CURRENT PROCESS CONTROLS	DET E C	K P N	RECOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTIONS TAKEN	SEV	OCCT	K P N
0130		FINISHED GOODS STORAGE	PARTS SCAN TO WRONG LOCATION	DELAY IN PICKING PARTS	3		OPERATOR ERROR	3	WEEKLY CYCLE COUNT AND INVENTORY REPORT	8	54	NONE					
0140		WAREHOUSE STOCK ASSESSMENT	INCORRECT PHYSICAL QUANTITIES VERSUS ELECTRONIC SYSTEM	DELAY IN PICKING PARTS	3		OPERATOR ERROR	3	WEEKLY CYCLE COUNT AND INVENTORY REPORT	6	54	NONE					
0160		SHIPPING FINISHED GOODS	1. INCORRECT ADDRESS LABEL 2. INCORRECT AIAG LABEL	1. NOT MATCH PACKAGING LIST 1a. DOES NOT MATCH BOX LABEL 2. CUSTOMER CAN NOT IDENTIFY THEIR PART	2 2 6		1. FAILURE TO MATCH SHIPPING LABEL TO PACKAGING LABEL OPERATOR ERROR / BOX LABEL ERROR 2. LABEL DID NOT PRINT PROPERLY	3	1. VISUAL VISUAL CHECK AIAG LABEL AUTOMATED GENERATED FROM BOX LABEL SCAN PER DRAWING	8 8 3 8	48 48 36 48	NONE NONE NONE NONE					
0170		ANNUAL LAYOUTS	PRODUCT NOT MEET CUSTOMER DRAWING	DIMENSION OUT OF SPEC	2		DIE CONDITION, DIE PROCESSING	3		8	48	NONE					

CONTROL PLAN

☐ Prototype ☐ Pre-Launch

☒ Production

Control Plan Number 0002 Metal Stamping		Key Contact/Phone L. Roth/J. Renfrow (270) 237-5419 x 8555 or 8568		Date (Orig.) 9/13/2007	Date (Rev.) 2/26/2019
Part Number/Latest Change Level Various		Core Team D. Gillenwater, L. Roth, K. Chapman, K. Wilson, E. Skaggs, A. Meeks		Customer Engineering Approval/Date (If Req'd.)	
Part Name/Description Various		Supplier/Plant Approval/Date D. Gillenwater <i>D. Gillenwater 5/20/19</i>		Customer Quality Approval/Date (If Req'd.)	
Supplier/Plant Sumitomo Electric Wiring Systems	Supplier Code	Other Approval/Date (If Req'd.) A. Bomar <i>K. Chapman 5/22/19</i>		Other Approval/Date (If Req'd.)	

8-7-18 Updated 0050 with Material Jig and 0080 with Straightness Check

10-1-16 Updated 0080, 0100, 0130, 0140, and 0160 Methods.

10-1-16 Updated 0050 Product/Process/Specification Tolerance, Responsible person, Machine/Device/Jig/Tools for MFG, Characteristics, Methods

8-2-15 Added Grease Machine System to 0050

4-10-14 added Raw Material vision system, and Lab Keyence system.

12.13.13 removed non applicable sections 110, 120 and 150

Revision History:

5.12.11: Remove In-Line Terminal cleaning process, update work instructions & forms

2-26-19 Updated 0050 with Raw Material Welder

2-27-2018 Updated with Press Line Technicians and Floaters

10-1-16 Updated 0060 Responsible Person, Machine/Device/Jig/Tools for MFG,

7-16-14 removed XRE analysis requirement for receiving inspection for section 20

5-29-14 updated section 0020 with Rainbow info

2.25.14 Revised process terminology to match PFMEA/Control Plan/Process Flow

9/2/11: Added annual Layouts

10/2/12: Added mating parts ID

PART / PROCESS NUMBER	PROCESS NAME / OPERATION DESCRIPTION	Responsible	MACHINE, DEVICE, JIG, TOOLS FOR MFG.	CHARACTERISTICS			SPECIAL CHAR. CLASS	METHODS				REACTION PLAN	
				NO.	PRODUCT	PROCESS		PRODUCT / PROCESS SPECIFICATION / TOLERANCE	EVALUATION / MEASUREMENT TECHNIQUE	SAMPLE			CONTROL METHOD
										SIZE	FREQ.		
0010	Raw Material Receiving (Metal Coils)	Shipping / Receiving Operator	Bar Code Scanner		Metal Coils	Incoming Receiving		1) Correct material type & Part Number, & all documentation to be correct 2) Damage free	Visual comparison of labels against Packing List, visual inspection of product	Per Pallet	Each Receipt	W/I:SRW-RECFLOW	1. Notify Leader/Coordinator/SQA as needed. 2. Return to Supplier
0020	Raw Material Receiving Inspection	QA Receiving			Metal Coils	Material Identification (Metal Coils)		1) Correct Material type & Part Number, & All Documentation to be Correct	Visual Comparison of Labels against Packing List	Per Pallet	Each Receipt	W/I: QRW-CHECKINRM FORM: QA Receiving Inspection Data Sheet (QRF-IDSRM)	Notify Leader/Coordinator as needed. 1. Reject / Hold Tag Procedure 2. Return to supplier 3. Initiate PIR as needed
		QA Receiving			Metal Coils	QA Incoming Inspection (Visual)		1) No Discoloration 2) Contaminant Free 3) No Damage 4) Dry	Visual	Per QRW- RAINBOW SQA Sample Plan	Each Receipt	W/I: QRW-DAMAGEDPACK FORM: QA Receiving Inspection Data Sheet (QRF-IDSRM)	Notify Leader/ Coordinator/QA Engineer as needed. 1. Reject / Hold Tag Procedure 2. Return to supplier 3. Initiate PIR as needed
		QA Receiving	Calipers, Micrometer		Metal Coils	QA Incoming Inspection (Dimensional)		1) Width 2) Thickness	Dimensional check	Per QRW- RAINBOW SQA Sample Plan	Each Receipt	W/I: QRW-CHECKINRM FORM: QA Receiving Inspection Data Sheet (QRF-IDSRM)	Notify Leader/ Coordinator/QA Engineer as needed. 1. Reject / Hold Tag Procedure 2. Return to supplier 3. Initiate PIR as needed
		QA Receiving			Metal Coils	QA Incoming Inspection (Characteristics)		1) Material Certs meet specification (Tensile, Elongation, Hardness, etc as applicable)	1) Confirm per QA Receiving Inspection Instruction Sheet	Per Lot	Each Lot	FORM: QA Receiving Inspection Data Sheet (QRF-IDSRM)	Notify Leader/ Coordinator/QA Engineer as needed. 1. Reject / Hold Tag Procedure 2. Return to supplier 3. Initiate PIR as needed

PART / PROCESS NUMBER	PROCESS NAME / OPERATION DESCRIPTION	Responsible	MACHINE, DEVICE, JIG, TOOLS FOR MFG.	CHARACTERISTICS			SPECIAL CHAR. CLASS	METHODS					REACTION PLAN
				NO.	PRODUCT	PROCESS		PRODUCT / PROCESS SPECIFICATION / TOLERANCE	EVALUATION / MEASUREMENT TECHNIQUE	SAMPLE		CONTROL METHOD	
										SIZE	FREQ.		
0030	Raw Material Storage	Shipping / Receiving	Forklift		Metal Coils	Store Raw Material		Place material in rack location	Correct location per scan	Per Pallet	Each Receipt	MICS Barcode Scan System	Notify Shipping/Receiving Leader/Supervisor & QA as needed
0040	Metal Stamping Loading Raw Material	Press Line Technician	Bar Code Scanner			FIFO Inventory System		Pull FIFO	MICS Scan System	Per Pallet	Each Time	MICS Barcode Scan System	Notify Supervisor / Engineer as needed.
		Press Line Technician	Forklift, Barcode Scanner			Material Confirmation		Confirm Material matches Shop Order requirement.	MICS Scan (Shop Order vs. pallet label)	Per Pallet	Each time	MICS Barcode Scan System	Stop Setup, Notify Supervisor or Engineer. Refer to Reject / Hold Procedure as needed
0050	Metal Stamping Die/Machine Set-Up	Machine Maintenance				Preventive Maintenance		Per Preventive & Predictive Maintenance Program	Per Work Order	Each M/C	Per Procedure	FORM: Work Order	Notify Supervisor / Maintenance as necessary.
		Die Maintenance				Preventive Maintenance		Per TMW-Terminal PM Frequency	Die Trouble Report & Repair Record	Each Die	Per Procedure	FORM: Die Trouble Report	Notify Supervisor / Engineer as needed.
		Press Line Technician				Material Confirmation		Confirm Pallet Tag vs. die specific Press Line Check Sheet	Visual	1st Coil	Each Setup	FORM: Terminal Inspection Sheet	Notify Supervisor / Engineer as needed.
		Press Line Technician	Caliper / Micrometer			Dimensional Confirmation		Measure per Die specific Press Line Check Sheet. 1. Thickness 2. Width	Measurement	1st Coil	Each Setup	FORM: 1. Terminal Inspection Sheet	Notify Supervisor / Engineer as needed. 1. Reject / Hold Tag Procedure 2. Return to supplier as needed 3. Initiate PIR as needed
		Press Line Technician				Visual Confirmation		1) No Damage 2) No Discoloration	Visual	Per Pallet	Each Time	W/I: MSW-RAWMATMEAS-INSPEC	Notify Supervisor / Engineer / SQA as needed. 1. Reject / Hold Tag Procedure 2. Return to supplier as needed 3. Initiate PIR as needed
		Press Line Technician	Forklift			Place Material on Rotarian		Center skid front to back, left to right	Visual	Each pallet	Each Time	W/I: MSW-NoxonRotOper; MSW- CoilMate; MSW-PGRotarian(need to update).	Notify Supervisor / Engineer as needed.
		Press Line Technician	Material Jig			Placement of Material Jig			Visual	Each pallet	Each Time	MSW-CoilSlideOff; MSW- NoxonArborSystem; MSW- RawMatSet-up	Notify Supervisor / Engineer as needed.
		Press Line Technician				Set Material Straightner (if applicable)		Set straigher per work instruction	Visual	Each Setup	Each Setup	W/I: MSW-RawMatStraight;MSW- NoxonRotOper	Notify Supervisor / Engineer as needed.
		Press Line Technician	Raw Material Welder (where applicable)			Weld Raw Materials (if applicable)		Weld raw material per work instruction	Per Work Instruction	Each Raw Material Coil	Material Changes (if applicable)	MSF-MatWelderCkSh; MSF- WeldQualityCk; MSF- OperCheckSheet; MSW- NoxonRBXMatWeld; MSW- WeldRawMatSamp	Notify Supervisor / Engineer as needed.
		Press Line Technician	Raw Material Inspection (where applicable)			Set Raw Material Inspection system		Select correct program	Per Work Instruction	Each Raw Material	Each Setup	W/I: MSW-Material Vision System	Notify Supervisor / Engineer as needed.
		Press Line Technician	Die Cart		Metal Stamping die	Die Number Confirmation		Confirm correct Die is selected.	Visual comparison of Shop Order to Die Number/Die rack/book	Each Die	Each Setup	FORM: STAMPING-CHANGEOVER- CK_new	Notify Supervisor / Engineer as needed.

PART / PROCESS NUMBER	PROCESS NAME / OPERATION DESCRIPTION	Responsible	MACHINE, DEVICE, JIG, TOOLS FOR MFG.	CHARACTERISTICS			SPECIAL CHAR. CLASS	METHODS					REACTION PLAN
				NO.	PRODUCT	PROCESS		PRODUCT / PROCESS SPECIFICATION / TOLERANCE	EVALUATION / MEASUREMENT TECHNIQUE	SAMPLE		CONTROL METHOD	
										SIZE	FREQ.		
		Press Line Technician	Die Cart			Set Die in Press		Position Die / Clamp	Per Work Instruction	Each Die	Each Setup	W/I : MSW-InstallDieToPressSafety.	Notify Supervisor / Engineer as needed.
		Press Line Technician				Set Process Parameters		1) Feed Unit Release Angle 2) Die Height 3) Feed Length 4) Material Thickness Dial (if applicable). 5) Scrap Monitor	Per work instruction	Each Die	Each Setup	FORM: Press Line Changeover Check Sheet (Die specific)	Adjust and requalify as needed per standard.
		Press Line Technician	Inspection Systems (Inline)			Set Inspection Systems (TSJ & UIS)		1) Select correct inspection system per Die Specific Pressline Checksheet 2) Connect and Power system 3) Select correct program	Per Die specific press line checksheet	Each Die	Each Setup	W/I: MSW-AIDPS4, MSW -UIS; FORM: Pressline Check Sheet	Notify Supervisor / Engineer as needed.
		Press Line Technician	Inspspection System (Vision)			Set Inspection Systems (Vision)		1) Select correct inspection system per Die Specific Pressline Checksheet 2) Connect and Power system 3) Select correct program	Per Die specific press line checksheet	Each Die	Each Setup	W/I: MSW-TSMaleVisionSys; MSW-TwoRowMaleVisionSys; MSW-VS05 FORM: Pressline Check Sheet	Notify Supervisor / Engineer as needed.
		Press Line Technician	Inspection System Check Samples			Verify Inspection System Operation		Using defect samples, confirm inspection system detection ranges.	Confirm system detection by using controlled samples	Each System	Each Setup	W/I: MSW-Sample Check , FORM: MSF-In-Line Check Sheet Curl, MSF In-Line Check sheet Box, MSF-Vision System Checksheet, MSF-2ROWIn-Line Check Sheet", MSF-1Row2Controllers, MSF-2RowVisionSYS Check Sheet,	Notify Supervisor / Engineer as needed.
		Press Line Technician	Grease Machine (where applicable)			Set Grease Machine System (where applicable)		1) Set grease machine in press line between inspection system and winding equipment 2) Connect and Power system	Set per Work Instruction	Grease System	Each Setup	MSW-SLEGreaseMach, MSW-SLEGreaseMachCK, MSF-GreaseMachCheck	Notify Supervisor / Engineer as needed.
		Press Line Technician				Set Up Terminal Winding Equipment (If applicable)		1) Set Material Guides 2) Set Winder Parameters 3) Reel size 4) Paper Size	Set per Press Line Check Sheet.	Each Winder	Each Setup	W/I: PA WINDER OPER, Traverse Winder Setup; MSW-TraverseWinder4Reel; MSW-NoxonWinder FORM: Press Line Checksheet	Notify Supervisor / Engineer as needed.
0060	Manufacturing Initial Inspection (Start Up)	Press Line Technician	Magnification			Visual Inspection		1) No Dents / Marks 2) No Damage 3) No slivers / burrs	Visual	1 piece	Each Setup	FORM: Terminal Inspection Sheet, Visual Check Sheet	Adjust and requalify as needed per standard. Notify Supervisor / Engineer as needed.

PART / PROCESS NUMBER	PROCESS NAME / OPERATION DESCRIPTION	Responsible	MACHINE, DEVICE, JIG, TOOLS FOR MFG.	CHARACTERISTICS			SPECIAL CHAR. CLASS	METHODS					REACTION PLAN
				NO.	PRODUCT	PROCESS		PRODUCT / PROCESS SPECIFICATION / TOLERANCE	EVALUATION / MEASUREMENT TECHNIQUE	SAMPLE		CONTROL METHOD	
										SIZE	FREQ.		
		Press Line Technician	Slip Gage, Depth Gage, Profile, Calipers, Micrometers, Carrier Curve Board			Dimensional Inspection		Correct Dimensions	Measure dimensions called out on Terminal Inspection Sheet (Die specific)	1 piece	Each Setup	FORM: Terminal Inspection Sheet	Adjust and requalify as needed per standard. Notify Supervisor / Engineer as needed.
		Press Line Technician	Force Gage, Mating Part			Functional Inspection		Terminal insertion/ retention /contact force/ (as needed) Mating Terminal ID on Change Over Check. Mating Housing on QA DieMatingBin	Confirm terminal function for items specified on Terminal Inspection Sheet (Die specific)	1 piece	Each Setup	FORM: Terminal Inspection Sheet	Adjust and requalify as needed per standard. Notify Supervisor / Engineer as needed.
0070	Quality Assurance Inspection (Mass Production)	QA Operator	Magnification		Metal Terminal	Visual Inspection		1) No damage, dents, marks 2) No slivers or burrs	Visual comparison against Visual Inspection Sheet (Die specific)	1 piece	Per QAW-GA-003	FORM: Visual Inspection Sheet	Notify Stamping Supervisor / Engineer, QA Coordinator as needed.
		QA Operator	Slip Gage, Depth Gage, Profile, Calipers, Micrometers, Carrier Curve Board, OGP Keyence		Metal Terminal	Dimensional Inspection		Correct Dimensions	Measure dimensions called out on Terminal Inspection Sheet	1 piece	Per QAW-GA-003	FORM: QA Terminal Inspection Sheet	Notify Stamping Supervisor / Engineer, QA Coordinator as needed.
		QA Operator	Force Gage, Mating Terminal, Mating Housing		Metal Terminal	Functional Inspection		Terminal insertion/ retention /contact force/gap (as needed). Mating Terminal ID List, Mating Housing ID on QA DieMatingBin Location	Confirm terminal function for items called out on Terminal Inspection Sheet (Die specific)	1 piece	Per QAW-GA-003	FORM: QA Terminal Inspection Sheet	Notify Stamping Supervisor / Engineer, QA Coordinator as needed.
0080	Metal Stamping Production Checks (Manufacturing)	Press Line Technician and Floater	Magnification		Metal Terminal	Visual Inspection		1) No damage, dents, marks 2) No slivers or burrs	Visually confirm items called out on die specific visual inspection sheet	10 Piece Strip	Per MSW-RainbowInsp	FORM: MSF-Operator Check Sheet, Visual Inspection Sheet	Notify Supervisor / Engineer as needed.
		Press Line Technician and Floater	Slip Gage		Metal Terminal	Dimensional Inspection (If applicable)		Per Die Specific Visual Inspection sheet	Slip Gage	1 Piece	Per MSW-RainbowInsp	FORM: MSF-Operator Check Sheet.	Notify Supervisor / Engineer as needed.
		Press Line Technician and Floater	Force Gage		Metal Terminal	Function Inspection (If Applicable)		Per Die Specific Visual Inspection sheet (Insertion/Retention to mating terminal)	Force Gage	1 Piece	Per MSW-RainbowInsp	FORM: MSF-Operator Check Sheet.	Notify Supervisor / Engineer as needed.
		Press Line Technician and Floater				Winding Condition		Per Judgement Standard	Visually confirm winding quality	Each Reel	Per MSW-RainbowInsp	W/I : MSW-Judgement Standard for Terminal Packing FORM: TMG Press Operator Check Sheet; MSW-MaterialJoint	Notify Supervisor / Engineer. Follow Reject Tag procedure
		Press Line Technician and Floater	Straightness Check			Visual Inspection		Per Operator Check Sheet	Visual	Rainbow Tag	Per MSW-RainbowInsp	MSW-Str8Chk; MSF-Str8Chk	Notify Supervisor / Engineer. Follow Reject Tag procedure
		Press Line Technician and Floater				Confirm Winder Settings		Per Die specific Press Line Check Sheet	Visual	Each Shift	Each Shift	FORM: Press Line Check Sheet (die specific)	

PART / PROCESS NUMBER	PROCESS NAME / OPERATION DESCRIPTION	Responsible	MACHINE, DEVICE, JIG, TOOLS FOR MFG.	CHARACTERISTICS			SPECIAL CHAR. CLASS	METHODS					REACTION PLAN
				NO.	PRODUCT	PROCESS		PRODUCT / PROCESS SPECIFICATION / TOLERANCE	EVALUATION / MEASUREMENT TECHNIQUE	SAMPLE		CONTROL METHOD	
										SIZE	FREQ.		
		Press Line Technician and Floater				Safety Checks		Per Daily Machine Checksheet (Press Specific)	Visual		Each Shift	FORM: Daily Machine Check List; MSF-MachCheckListAidaPress; MSF- MachCheckListBruPress; MSF- MachCheckListKyoripress	Notify Supervisor / Engineer / Safety Dept.
0090	QA / Set Up Critical Defect Inspection Prior to Change Point	QA Leader / QA Operator/ Press Line Technician	Slip Gage, Calipers, Force Gage, Micrometer, Profile Projector, Magnification			Change Point Critical Defect Inspection		1. Terminal Gap (Female) 2. Serrations 3. Insertion 4. Visual (Cracks, Burrs, Marks)	Visual Confirmation of Part Quality, Critical Dimensional and Functional confirmation	1 Piece	Each Change Point	W/I: QAW-GA-003	Notify Supervisor / Engineer / QA Follow Reject Tag procedure
0100	Finished Product Packing / Labeling	Press Line Technician and Floater	Staple Gun, Bar Code Scanner			Pack and Label Finished Product		1. Correct Box Quantity 2. Correct Reel / Box Labels 3. Correct Parts 4. Undamaged Parts 5. No Contamination	Visual Inspection, MICS Scan System	Each Reel / Each Box	Each Reel / Each Box	W/I: MSW-FullBox; MSW- InspectLabelTape; MSW- JudgStanForTermPack;MSW- LabelHand; MSW-ScanReelLabel FORM: MSF-0PERCHECKSHEET,	Notify Supervisor / Engineer / QA Follow Reject Tag procedure
0130	Finished Goods Storage	Shipping / Receiving Operator	Fork Lift, BarCode Scanner			Place Finished Goods in Correct Location		Material Placed in Correct Storage Location	Visual Comparison / BPCS Electronic System	Each Pallet	Each Pallet	ERPLX Electronic System	Notify Shipping / Receiving Supervisor & QA as needed
0140	Warehouse Stock Assessment	Supervisor or Above				Warehouse Inventory Assessment		Cycle Count of Internal Inventory	Visual	Finished Goods Inventory	Each Inventory	ERPLX Electronic System	Notify Supervisor / Leader if as needed
0160	Shipping Finished Goods	Shipping / Receiving Operator	Fork Lift, Bar Code Scanner			Shipping Finished Goods		1. Labels Present, Correct & Legible 2. Correct AIAG Labels 3. Correct Part Number 4. No Box Damage	Visual, Bar Code Scanner	Each Container	Each Shipment	Electronic ERPLX System, Shipping Operator Scanning	Notify Shipping / Receiving Supervisor & QA as needed
0170	Annual Layouts	PPAP Group			Per Customer Drawing			Per Customer Drawing	Per Customer Requirements	Per Customer Request	Per Customer Request	Customer PPAP	Notify QA Engineer/QA Manager

CPK DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)

Tested by/Date: Robin Casada 4/28/2020

PART Name/Desc: TERFO-064FM-SN

Design Rec. Change level/date:

PART NO (s): 8240-0563

MU5T-14474-LA

6/26/20

Mold #: TD106-M

Eng. Change Documents: NA

CAVITY #: ↓

SE1	2.40		1.95				SE2	2.40		1.95			
	+0.20	-0.20	+0.20	-0.20				+0.20	-0.20	+0.20	-0.20		
1	2.40		1.92					2.37		1.91			
2	2.39		1.92					2.38		1.91			
3	2.39		1.92					2.38		1.90			
4	2.40		1.92					2.38		1.90			
5	2.39		1.91					2.38		1.91			
6	2.39		1.92					2.38		1.91			
7	2.39		1.92					2.38		1.91			
8	2.39		1.92					2.38		1.90			
9	2.39		1.92					2.37		1.90			
10	2.40		1.92					2.37		1.91			
11	2.39		1.92					2.38		1.90			
12	2.40		1.92					2.38		1.91			
13	2.39		1.92					2.38		1.91			
14	2.39		1.92					2.38		1.91			
15	2.39		1.92					2.37		1.91			
16	2.39		1.92					2.37		1.91			
17	2.40		1.92					2.39		1.91			
18	2.39		1.92					2.38		1.92			
19	2.39		1.92					2.38		1.91			
20	2.39		1.92					2.38		1.91			
21	2.40		1.92					2.38		1.91			
22	2.39		1.92					2.39		1.91			
23	2.39		1.92					2.38		1.91			
24	2.39		1.92					2.37		1.91			
25	2.39		1.91					2.38		1.91			
26	2.40		1.92					2.38		1.91			
27	2.39		1.92					2.38		1.91			
28	2.38		1.91					2.38		1.91			
29	2.39		1.92					2.38		1.91			
30	2.39		1.92					2.38		1.91			

CPK DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)

Tested by/Date: Robin Casada 4/28/2020

PART Name/Desc: TERFO-064FM-SN

Design Rec. Change level/date:

PART NO (s): 8240-0563

MU5T-14474-LA

6/26/20

Mold #: TD106-M

Eng. Change Documents: NA

CAVITY #: ↓

SE1	2.40		1.95				SE2	2.40		1.95			
	+0.20	-0.20	+0.20	-0.20				+0.20	-0.20	+0.20	-0.20		
31	2.39		1.92					2.38		1.91			
32	2.39		1.92					2.38		1.90			
33	2.39		1.92					2.38		1.91			
34	2.39		1.92					2.38		1.91			
35	2.39		1.92					2.38		1.91			
36	2.39		1.92					2.38		1.91			
37	2.39		1.92					2.38		1.91			
38	2.39		1.92					2.37		1.91			
39	2.39		1.92					2.38		1.91			
40	2.39		1.91					2.37		1.91			
41	2.39		1.92					2.38		1.91			
42	2.40		1.92					2.38		1.91			
43	2.39		1.92					2.37		1.90			
44	2.39		1.91					2.38		1.91			
45	2.39		1.91					2.38		1.91			
46	2.39		1.92					2.39		1.91			
47	2.40		1.92					2.38		1.91			
48	2.40		1.92					2.38		1.90			
49	2.39		1.92					2.38		1.91			
50	2.40		1.92					2.37		1.91			
51	2.39		1.91					2.38		1.90			
52	2.40		1.92					2.38		1.91			
53	2.39		1.92					2.38		1.91			
54	2.39		1.92					2.37		1.90			
55	2.40		1.91					2.38		1.91			
56	2.39		1.92					2.38		1.91			
57	2.39		1.92					2.37		1.91			
58	2.39		1.91					2.38		1.91			
59	2.39		1.92					2.38		1.91			
60	2.40		1.92					2.38		1.91			

CPK DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)

Tested by/Date: Robin Casada 4/28/2020

PART Name/Desc: TERFO-064FM-SN

Design Rec. Change level/date:

PART NO (s): 8240-0563MU5T-14474-LA  6/26/20Mold #: TD106-M

Eng. Change Documents: NA

CAVITY #: 

SE1	2.40		1.95				SE2	2.40		1.95			
	+0.20	-0.20	+0.20	-0.20				+0.20	-0.20	+0.20	-0.20		
61	2.39		1.92					2.37		1.91			
62	2.40		1.92					2.38		1.91			
63	2.40		1.92					2.38		1.91			
64	2.40		1.92					2.38		1.91			
65	2.40		1.92					2.38		1.90			
66	2.39		1.91					2.38		1.91			
67	2.40		1.92					2.38		1.91			
68	2.40		1.92					2.37		1.90			
69	2.40		1.92					2.38		1.90			
70	2.39		1.92					2.38		1.91			
71	2.39		1.92					2.38		1.90			
72	2.39		1.92					2.38		1.91			
73	2.40		1.92					2.38		1.91			
74	2.39		1.92					2.38		1.90			
75	2.39		1.92					2.38		1.91			
76	2.39		1.92					2.38		1.91			
77	2.39		1.92					2.38		1.91			
78	2.39		1.92					2.38		1.91			
79	2.39		1.92					2.38		1.91			
80	2.39		1.91					2.37		1.90			
81	2.39		1.92					2.38		1.91			
82	2.39		1.92					2.37		1.91			
83	2.39		1.92					2.38		1.91			
84	2.39		1.92					2.38		1.90			
85	2.39		1.92					2.38		1.90			
86	2.39		1.91					2.38		1.91			
87	2.39		1.92					2.37		1.90			
88	2.40		1.92					2.37		1.90			
89	2.40		1.92					2.37		1.91			
90	2.39		1.92					2.38		1.90			

CPK DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)

Tested by/Date: Robin Casada 4/28/2020

PART Name/Desc: TERFO-064FM-SN

Design Rec. Change level/date:

PART NO (s): 8240-0563MU5T-14474-LA  6/26/20Mold #: TD106-MEng. Change Documents: NACAVITY #: 

SE1	2.40		1.95				SE2	2.40		1.95			
	+0.20	-0.20	+0.20	-0.20				+0.20	-0.20	+0.20	-0.20		
91	2.39		1.91					2.38		1.90			
92	2.40		1.92					2.37		1.90			
93	2.39		1.92					2.37		1.90			
94	2.40		1.92					2.37		1.91			
95	2.40		1.92					2.37		1.91			
96	2.40		1.92					2.37		1.91			
97	2.40		1.92					2.37		1.91			
98	2.40		1.92					2.37		1.91			
99	2.39		1.92					2.37		1.90			
100	2.40		1.92					2.37		1.91			

average	2.39	1.92	2.38	1.91
minimum	2.38	1.91	2.37	1.90
maximum	2.40	1.92	2.39	1.92
range	0.02	0.01	0.02	0.02
std dev	0.00	0.00	0.00	0.00

LSL	2.20	1.75	2.20	1.75
NOM	2.40	1.95	2.40	1.95
USL	2.60	2.15	2.60	2.15

CPK	13.34718664	16.63719561	11.83333333	11.61842615
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Sumitomo Electric Wiring Systems, Inc

Gage R&R Study

01/26/2022

Page 1 of 2

Study Date: 1/25/2022 12:00:00 AM

Company Part No.: Mold 268

Gage ID: B17085920

Part No.:

Gage Desc: 0 - 150 Caliper

Part Desc: HW09-RET-04

Appraisers: 3

Trials: 3

Parts: 10

Characteristic: Length

Study Type:

Specification Limits: Min 19.7 Max 20.1

MSA Version: 4

☒ Approved

Pp (or Ppk) Target

6-Sigma Proc Variation

	Appr A: A. Zappa			Appr B: D. Nipper			Appr C: M Haddix		
1	20.07	20.08	20.06	20.07	20.07	20.08	20.06	20.07	20.05
2	20.03	20.03	20.03	20.03	20.03	20.03	20.03	20.03	20.03
3	19.66	19.65	19.66	19.65	19.66	19.65	19.65	19.65	19.66
4	20.06	20.05	20.06	20.05	20.06	20.05	20.06	20.06	20.05
5	19.78	19.79	19.78	19.79	19.78	19.79	19.78	19.79	19.79
6	20.06	20.06	20.06	20.04	20.05	20.05	20.05	20.06	20.05
7	20.07	20.07	20.08	20.08	20.07	20.07	20.07	20.07	20.08
8	19.63	19.62	19.62	19.62	19.61	19.63	19.63	19.63	19.62
9	20.07	20.07	20.07	20.06	20.06	20.07	20.07	20.07	20.06
10	19.67	19.66	19.65	19.66	19.65	19.67	19.66	19.65	19.66

	Std. Dev.	% Contribution	% TV	% Tol		
Repeatability (EV):	0.005908	0.2%	4.2%	8.9%	R bar:	0.010000
Reproducibility (AV):	0.000571	0.0%	0.4%	0.9%	UCL-R:	0.025800
Appraiser x Part (INT):					Study Variation:	0.141695
GRR:	0.005936	0.2%	4.2%	8.9%	Total Variation (TV):	0.141695
Part-to-Part (PV):	0.141570	99.8%	99.9%	99.6%	Tolerance/6 (Tol):	0.066667
number of distinct categories:			33.6	15.8		

* Limit of individual R's (range values). An (*) is used to identify those sets of measurements that have a Range value that exceeds the UCL-R limit value. Correct by repeating those readings using the same appraiser and part or discard the values and recalculate the study results and the value UCL-R.

Comments:

Approved By:



Date:

1/26/2022

GRR Analysis Sheet

Study Date: 1/25/2022 12:00:00 AM Gage ID: B17085920 Gage Desc: 0 - 150 Caliper Appraisers: 3 Trials: 3 Study Type: Long-AIAG 4		Company Part No.: Mold 268 Part No.: Part Desc: HW09-RET-04 Characteristic: Length Specification Limits: 19.7 20.1 6 Sigma Process Variation: Pp (or Ppk) Target:																					
R bar A = 0.009000 X bar A = 19.908333 R bar B = 0.011000 X bar B = 19.906000 R bar C = 0.010000 X bar C = 19.906333 R bar = 0.0100000 X bar Diff = 0.002333		Rp = 0.450001 Tol/6 = 0.066667																					
Measurement Unit Analysis		% Total Variation (TV)	% Tolerance																				
Repeatability - Equipment Variation (EV) $EV = R \text{ bar} \times K1$ $= 0.005908$ <table border="1"> <tr><td>Trials</td><td>K1</td></tr> <tr><td>2</td><td>0.8862</td></tr> <tr><td>3</td><td>0.5908</td></tr> </table>		Trials	K1	2	0.8862	3	0.5908	$\% EV = 100 [EV / TV]$ $= 4.2\%$	$\% EV = 100 [EV / (Tol / 6)]$ $= 8.9\%$														
Trials	K1																						
2	0.8862																						
3	0.5908																						
Reproducibility - Appraiser Variation (AV) $AV = \sqrt{[(X \text{ bar Diff} \times K2)^2 - (EV^2 / n \times r)]}$ $= 0.000571$ <table border="1"> <tr><td>Appraisers</td><td>2</td><td>3</td></tr> <tr><td>K2</td><td>0.7071</td><td>0.5231</td></tr> </table> Note: If a negative value is calculated under the square root sign, AV defaults to zero. <table border="1"> <tr><td>n = number of parts</td></tr> <tr><td>r = number of trials</td></tr> </table>		Appraisers	2	3	K2	0.7071	0.5231	n = number of parts	r = number of trials	$\% AV = 100 [AV / TV]$ $= 0.4\%$	$\% AV = 100 [AV / (Tol / 6)]$ $= 0.9\%$												
Appraisers	2	3																					
K2	0.7071	0.5231																					
n = number of parts																							
r = number of trials																							
Repeatability and Reproducibility (GRR) $GRR = \sqrt{(EV^2 + AV^2)}$ $= 0.005936$		$\% GRR = 100 [GRR / TV]$ $= 4.2\%$	$\% GRR = 100 [GRR / (Tol / 6)]$ $= 8.9\%$																				
Part Variation (PV) $PV = Rp \times K3$ $= 0.141570$	<table border="1"> <tr><td>Parts</td><td>K3</td></tr> <tr><td>2</td><td>0.7071</td></tr> <tr><td>3</td><td>0.5231</td></tr> <tr><td>4</td><td>0.4467</td></tr> <tr><td>5</td><td>0.4030</td></tr> <tr><td>6</td><td>0.3742</td></tr> <tr><td>7</td><td>0.3534</td></tr> <tr><td>8</td><td>0.3375</td></tr> <tr><td>9</td><td>0.3249</td></tr> <tr><td>10</td><td>0.3146</td></tr> </table>	Parts	K3	2	0.7071	3	0.5231	4	0.4467	5	0.4030	6	0.3742	7	0.3534	8	0.3375	9	0.3249	10	0.3146	$\% PV = 100 [PV / TV]$ $= 99.9\%$	$\% PV = 100 [PV / (Tol / 6)]$ $= 99.6\%$
Parts	K3																						
2	0.7071																						
3	0.5231																						
4	0.4467																						
5	0.4030																						
6	0.3742																						
7	0.3534																						
8	0.3375																						
9	0.3249																						
10	0.3146																						
		In MSA4, for % Tolerance, $PV = \text{SQRT}[(Tol / 6)^2 - (GRR)^2]$																					
		$ndc = 1.41(PV/GRR)$ $= 33.6$	$ndc = 1.41(PV/GRR)$ $= 15.8$																				
Total Variation (TV) $TV = \sqrt{(GRR^2 + PV^2)}$ $= 0.141695$		If the 6 sigma process variation is known, then TV $= [6 \text{ sigma process variation}] / 6.00$ and $PV = \text{SQRT}[(TV^2) - (GRR)^2]$.																					

FUNCTION DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)

Tested by/Date: R. Casada 5/1/2020

E. Skaggs 5/19/2020

PART Name/Desc: **TERFO-064FM-SN**

Design Rec. Change level/date:

PART NO (s): **8240-0563**

MU5T-14474-LA

A

6/26/2020

Mold #:

TD106-M

Eng. Change Documents:

NA

TERMINAL TO TERMINAL INSERTION DATA		
Specification:		
3.3 N MAX		
	SE1	SE2
Sample#	DATA	
1	2.40	2.00
2	1.90	2.10
3	2.20	2.20
4	2.50	2.10
5	2.60	2.40

Average	2.32	2.16
Min.	1.90	2.00
Max.	2.60	2.40

TERMINAL TO TERMINAL RETENTION DATA		
Specification:		
3.3 N MAX		
	SE1	SE2
Sample#	DATA	
1	1.50	1.90
2	1.70	2.10
3	1.90	1.80
4	2.30	1.90
5	1.80	1.90

Average	1.84	1.92
Min.	1.50	1.80
Max.	2.30	2.10

CONTACT FORCE SE1			
Specification:			
	CONTACT FORCE 3.5 N MIN	CHANGE POINT 0.055-0.135	GAP SPEC: 0.44 ± 0.03
Sample#	DATA		
1	4.363	0.122	0.430
2	5.335	0.085	0.430
3	4.629	0.106	0.430
4	5.315	0.092	0.430
5	5.148	0.114	0.450

Average	4.958	0.10
Min.	4.36	0.09
Max.	5.34	0.12

TERMINAL TO HOUSING INSERTION DATA		
Specification:		
10.0 N MAX		
	SE1	SE2
Sample#	DATA	
1	2.50	2.30
2	3.40	2.80
3	3.40	2.90
4	3.40	3.90
5	2.90	3.20

Average	3.12	3.02
Min.	2.50	2.30
Max.	3.40	3.90

TERMINAL TO HOUSING RETENTION DATA		
Specification:		
30.0 N MIN		
	SE1	SE2
Sample#	DATA	
1	86.30	84.60
2	80.20	87.30
3	79.70	80.80
4	89.10	78.20
5	77.40	87.10

Average	82.54	83.60
Min.	77.40	78.20
Max.	89.10	87.30

CONTACT FORCE SE2			
Specification:			
	CONTACT FORCE 3.5 N MIN	CHANGE POINT 0.055-0.135	GAP SPEC: 0.44 ± 0.03
Sample#	DATA		
1	4.697	0.10	0.44
2	4.344	0.07	0.44
3	3.942	0.07	0.44
4	4.031	0.07	0.44
5	4.089	0.07	0.44

Average	4.2206	0.08
Min.	3.94	0.07
Max.	4.70	0.10

WORK INSTRUCTION

AREA:	QUALITY ASSURANCE LAB
TITLE	LABORATORY SCOPE - SCOTTSVILLE (SV5, SV5-2, SV5-Franklin)

PURPOSE: To summarize the testing capabilities available at Scottsville Plant (SV5, SV5-2, SV5-Franklin), and to clarify the equipment, tests performed, standards, recording method and reaction plan.	APPLICATION: Scottsville (SV5, SV5-2, SV5-Franklin)
	RULE ENFORCER: QA Coordinator / Above

SV5 Tests Performed

TESTS PERFORMED	EQUIPMENT USED	TEST METHODS / STANDARD	RECORDING METHOD	REACTION METHOD
Melt Flow Rate	Tinius Olsen Extrusion Plastometer	QRW - MELTFLOW	Melt Index Record	Reject Tag Procedure
Waterproof Test	Waterproof Tester	QAW - WATERPROOFTST	Inspection Data Sheet	Reject Tag Procedure
Moisture Analysis (Reference Only)	Moisture Tester	F-A-SV5-010	Moisture Test Data Sheet	Reject Tag Procedure
Insertion / Retention Test	Force Gage Instron Tester	QAW - INSERTRETPROC QAW - InstronOperation	Inspection Data Sheet Data storage	Reject Tag Procedure
Dimensional Measurement	Profile / Caliper / Micrometer / Depth Gage / Keyence Measurement System	Inspection Instruction Sheet	Inspection Data Sheet	Reject Tag Procedure
Part Weight	Scale	Inspection Instruction Sheet	Inspection Data Sheet	Reject Tag Procedure
Freeze Test	Freezer	SWS Inspection Standard	Inspection Data Sheet	Reject Tag Procedure

SV5 - Franklin Tests Performed

TESTS PERFORMED	EQUIPMENT USED	TEST METHODS / STANDARD	RECORDING METHOD	REACTION METHOD
Melt Flow Rate	Tinius Olsen Extrusion Plastometer	QRW - MELTFLOW	Melt Index Record	Reject Tag Procedure
Waterproof Test	Waterproof Tester	QAW - WATERPROOFTST	Inspection Data Sheet	Reject Tag Procedure
Insertion / Retention Test	Force Gage Instron Tester	QAW - INSERTRETPROC QAW - InstronOperation	Inspection Data Sheet Data storage	Reject Tag Procedure

WORK INSTRUCTION

AREA:	QUALITY ASSURANCE LAB			
TITLE	LABORATORY SCOPE - SCOTTSVILLE (SV5, SV5-2, SV5-Franklin)			
Dimensional Measurement	Caliper / Micrometer / Depth Gage / Keyence Measurement System	Inspection Instruction Sheet	Inspection Data Sheet	Reject Tag Procedure
Part Weight	Scale	Inspection Instruction Sheet	Inspection Data Sheet	Reject Tag Procedure
Freeze Test	Freezer	SWS Inspection Standard	Inspection Data Sheet	Reject Tag Procedure

SV5 (Building 2) Tests Performed

TESTS PERFORMED	EQUIPMENT USED	TEST METHODS / STANDARD	RECORDING METHOD	REACTION METHOD
Hardness Test	Hardness Tester	H-A-001	Hardness Test Data Sheet	Reject Tag Procedure
Dimensional Measurement	Profile / Caliper / Micrometer / Depth Gage / Nikon MM-400	Inspection Instruction Sheet	Inspection Data Sheet	Reject Tag Procedure
Contact Force Test	Contact Force Gage	MSW-Force Gage	Inspection Data Sheet	Reject Tag Procedure
Dimensional Measurement	Profile / Keyence System / OGP / Caliper / Micrometer / Depth Gage / Slip Gages	SWS Inspection Standard	Inspection Data Sheet	Reject Tag Procedure

Equipment Calibrations

	EQUIPMENT USED	TEST METHODS / STANDARD	RECORDING METHOD	REACTION METHOD
Calipers, Micrometers, Depth Gages, Weigh Scales, other process tools/jigs.	Certified Gages (Gage Blocks & Weights)	Per Calibration Procedure	Calibration Record and Gagetrak	Reject Tag Procedure
Keyence Microscope	Certified Gages			
Force Gages	Certified Weights			
Freezer	Certified Meter			
Melt Indexer	Outside Vendor			
Moisture Analyzer	Outside Vendor			
Water Pressure Gage	Outside Vendor			
Hardness Tester	Outside Vendor			
Optical Comparator (Profile)	Outside Vendor			
Keyence Measurement Scope	Outside Vendor			
OGP	Outside Vendor			
NIKON MM-400	Outside Vendor			
INSTRON Tensile Tester	Outside Vendor			



CERTIFICATE



This is to certify that

Sumitomo Electric Wiring Systems

Components Business Unit
2687 Old Gallatin Road
Scottsville, KY 42164
United States of America

has implemented and maintains a **Quality Management System**.

Scope:

The design and manufacture of connectors, connector components, and terminals.

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. 10001349 IATF 16

Main certificate registration no. 10003837 IATF 16

Issuing date 2021-06-23

This certificate is valid until 2024-06-22

IATF No. 0406733



2-IAO-QMC-01001

For and on behalf of DQS

Brad McGuire
Managing Director, DQS Inc.

Michael Drechsel
Managing Director, DQS Holding GmbH



Annex to certificate registration no.: 10001349 IATF16
IATF-No.: 0406733

Sumitomo Electric Wiring Systems

Components Business Unit
2687 Old Gallatin Road
Scottsville, KY 42164
United States of America



Remote Location

Scope

10003837

Sumitomo Electric Wiring Systems
1018 Ashley Street
Bowling Green, KY 42102
United States of America

Information Technology, Internal Audit
Management, Management Review, Policy
Making, Purchasing, Quality System
Management, Strategic Planning and Training.

10004404

Sumitomo Electric Wiring Systems
27360 Drake Road
Farmington Hills, MI 48331
United States of America

Product Design, Purchasing, and Warranty
Management.

10004405

Sumitomo Wiring Systems (USA), Inc.
7500 Viscount Drive, Suite 192
El Paso, TX 79925
United States of America

Customer Service.

10004406

Sumitomo Wiring Systems (USA), Inc.
39555 Orchard Hill Place
Suite L60
Novi, MI 48375
United States of America

Contract Review.

10013991

Sumitomo Electric Wiring Systems
120 Industrial Drive
Scottsville, KY 42164
United States of America

Warehousing.

10017459

Sumitomo Wiring Systems, Ltd.
Components Group
1820 Nakanoike, Mikkaichi-cho
Suzuka-City
Mie Pref 513-8631
Japan

Product Design.



Annex to certificate registration no.: 10001349 IATF16
IATF-No.: 0406733

Sumitomo Electric Wiring Systems

Components Business Unit
2687 Old Gallatin Road
Scottsville, KY 42164
United States of America



Extended manufacturing site

10012558
Sumitomo Electric Wiring Systems
796 Smith Grove Rd.
Scottsville, KY 42164
United States of America

10015246
Sumitomo Electric Wiring Systems
265 Garvin Lane
Franklin, KY 42134
United States of America