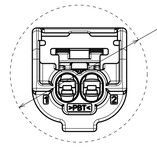
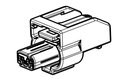
APPLICABLE COMPONENTS						
ITEM	DESCRIPTION	MANDATORY (YES/NO)	TERMINAL CAVITY MIN/MAX OD	PLATING/MATERIAL	FORD COMPONENT PART NO.	SUPPLIER COMPONENT PART NO.
1	TRC 8837/1.2mm (CAVITIES 1,2)	NO	0/3.5x4.5	REFERENCE TRC	N/A	N/A
2	WIRE SEAL	NO	N/A	SILICONE	HU5T-10C930-JA	A-0611-H (L2)
3	WIRE SEAL	NO	N/A	SILICONE	HU5T-10C930-HA	A-0611-G (K1)(L3)
4	WIRE SEAL	NO	N/A	SILICONE	HU5T-10C930-GA	A-0611-F (L4)
5	SEAL PLUG	NO	N/A	SILICONE	AU5T-10C930-CA	A0412



CAVITY IDENTIFICATION
(REAR VIEW)



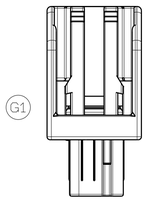
ISOMETRIC VIEW
SCALE 1:1

CONNECTOR ASSEMBLY CHART					
ASSEMBLY PART NO.'S				MATING COMPONENT	
FORD COMPONENT PART NO.	SUPPLIER COMPONENT PART NO.	MAX TEMP	VIBRATION CLASS	FORD COMPONENT PART NO.	SUPPLIER COMPONENT PART NO.
EU5T-14A464-TB	6189-7456	150°C	V3/V5	TBD	TBD
FU5T-14A464-DAB	6189-7457	150°C	V3/V5	TBD	TBD
EU5T-14A464-ADA	6189-7673	150°C	V3/V5	TBD	TBD
EU5T-14A464-AEA	6189-7674	150°C	V3/V5	TBD	TBD
JU5T-14A464-BPA	6189-7909	150°C	V3/V5	TBD	TBD
JU5T-14A464-BRA	6189-7910	150°C	V3/V5	TBD	TBD
MU5T-14A464-AVA	6189-8475	150°C	V3/V5	TBD	TBD

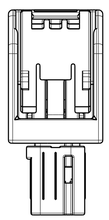
(C2) (N5) (H2) (H3) (P1)

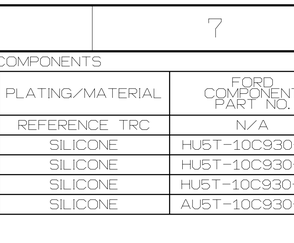
ITEM	PIA DESCRIPTION	COLOR	FORD COMPONENT PART NO.	SUPPLIER COMPONENT PART NO.	MATERIAL/SPEC NO.	RECYCLING CODE	WEIGHT	NUMBER OF ITEMS REQUIRED						
1	FEMALE HOUSING KEYA	BLACK	N/A	6185-5159	PBT/WSS-M99P23-B	PBT	2.2g	1		1				1 (F1)
1	FEMALE HOUSING KEYB	BLACK	N/A	6185-5163	PBT/WSS-M99P23-B	PBT	2.2g		1		1			
1 (N2)	FEMALE HOUSING KEYE	BLACK	N/A	6185-5514	PBT/WSS-M99P23-B	PBT	2.2g					1	1	
2	FEMALE TPA KEYA	NATURAL	N/A	6910-7258	PBT/WSS-M99P23-B	PBT	0.23g	1		1				1
2	FEMALE TPA KEYB	LIGHT GRAY	N/A	6910-7262	PBT/WSS-M99P23-B	PBT	0.23g		1		1			(F2)
2 (N1)	FEMALE TPA KEYE	BLUE	N/A	6910-7889	PBT/WSS-M99P23-B	PBT	0.23g					1	1	
3	PERIMETER SEAL	BROWN	N/A	7135-0698	HS=30	VMQ	0.05g	1	1	1	1	1	1	1 (F3)
4 (H1)(D2)	CPA	NATURAL	N/A	6910-7263	PBT/WSS-M99P23-B	PBT	0.52g	1	1			1		(F4)
5 (P3)	EXTENDED CPA	RED	N/A	6910-8399	PBT/WSS-M99P23-B	PBT	0.71g							1

(C1)

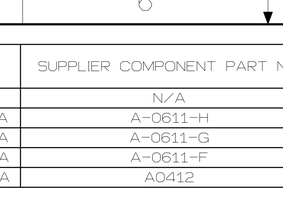


OPTION WITHOUT CPA





1 VIEW SHOWN WITH TPA IN LOCKED POSITION



2 VIEW SHOWN WITH EXTENDED CPA (P2)

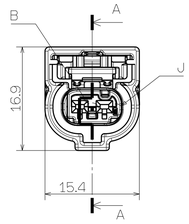
NOTE:

5 1. PARTS CONFORM TO THE ELECTRICAL CONNECTION SYSTEM DESIGN SPECIFICATION (SDS) REV.21, DATED JUN 2011.
6 (C2)(D1) 2. PARTS CONFORM TO THE LATEST LEVEL OF USCAR 2, REV5 DATED NOV 2007. FOR COMPONENT TEMPERATURE CLASS 4. FOR PERFORMANCE CRITERIA AND EXCEPTIONS, SEE SUMITOMO DVP&R.
7 3. MAXIMUM MATING FORCE FULLY POPULATED WITH Sn TERMINALS is 14.7(N) Ag TERMINAL is 10.5(N).
8 4. TERNIMAL EXTRACTION TOOLS: 23730003
9 5. SEALING SURFACES AS IDENTIFIED ON THIS DRAWING ARE SMOOTH AND FREE OF PARTING LINES.
10 6. CONNECTOR IS RATED AS ERGONOMIC CLASS 2 (HAND GRASP) BASED ON USCAR-25 REV 1. CONNECTOR PUSH SURFACE AREA IS 192.5mm².
11 7. N/A
12 (C3) 8. FOR INTERFACE VIEWS PLEASE SEE EWCAP
120-S-002-1-Z01
120-S-002-1-Z02
FOR HEADER BLADE INFORMATION SEE EWCAP DRAWING EWCAP-001.
13 (G2)(C4) 9. ---REMOVED---
10. ---REMOVED---
14 (N3)(L1)(G4) 11. ---REMOVED---
15

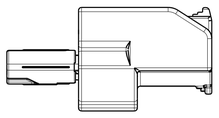
MOLD MARKER
MARK ALT.
LOCATION

Detail B (10:1)

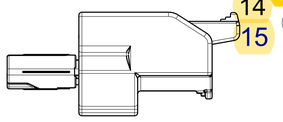
(N6)



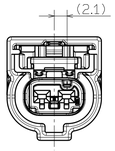
3 4



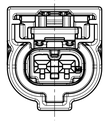
VIEW SHOWN WITH TPA IN PRE-STAGE POSITION



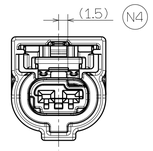
VIEW SHOWN WITH TPA IN PRE-STAGE POSITION W/ EXTENDED CPA



KEY A
EU5T-14A464-TB
EU5T-14A464-ADA



KEY B
EU5T-14A464-DAB
EU5T-14A464-AEA



KEY E
JU5T-14A464-BPA
JU5T-14A464-BRA

DETAIL J
SCALE 10:1 (J1)

MOLD CAVITY # (N7)

GENERAL TOLERANCES		
OVER	LESS THAN	
	10	±0.2
10	50	±0.3

LTRS	REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MATL APP	
H1 WAS TAN H2 WAS 6189-7473 H3 WAS 6189-7474 AELE-A-11783930-345				20141007
J. SANKARI	M. SPENCER	J. PITTENGER	SUMITOMO	
J1 ADDED VIEW TO SHOW LATEST REVISION AELE-E-11783930-353				20150422
J. KIM	B. NAGY	J. PITTENGER	SUMITOMO	
K1 WAS AU5T-14603-EA AELE-E-11783930-379				20151001
J. KIM	B. NATTER	J. PITTENGER	SUMITOMO	
RELEASED JU5T-14A464-BPA, -BRA L1 WAS DEC 2014 L2 WAS DU5T-10C930-GAA L3 WAS DU5T-10C930-YA L4 WAS AU5T-10C930-BA AELE-E-11783930-409				20161109
R.THOMAS	W. LYONS	J. PITTENGER	SUMITOMO	
UPDATE DRAWING VIEW TO REFLECT PART AELE-E-11783930-490				20190607
E.BLANCHARD	F.MAGDA	J. PITTENGER	SUMITOMO	
N1 WAS TBD N2 WAS TBD N3 REMOVED NOTE N4 ADDED KEY DIM N5 WAS V3 N6 ADDED VIEW N7 UPDATED NOTE AELE-E-11783930-498				20200211
E. FIELD	F.MAGDA	J. CHAPPELLE	SUMITOMO	
REMOVED REVISION A THRU G RELEASE MU5T-14A464-AVA P1 UPDATED ASSEMBLY CHART P2 ADDED VIEWS P3 ADDED 6910-8399 UPDATE DRAWING TO REFLECT PART AELE-E-11783930-523				20200909
E.FIELD	F.MAGDA	J. CHAPPELLE	SUMITOMO	

SEWS

SEWS RELEASE LEVEL: PRODUCTION (E1)
APPLICATION

SEWS DRAWING / PART NUMBER: SEE CHART
WEIGHT (g): SEE CHART (G3)(F5)

REFERENCE: 2WAY SEALED FEMALE 1.20mm

PART MUST COMPLY WITH MATERIAL SPECIFICATION WSS-M99P9999-A1 TO HELP SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT

DRAFTED IN ACCORDANCE WITH FORD MOTOR COMPANY ENGINEERING CAD AND DRAFTING STANDARDS CURRENT AT INITIAL RELEASE

3RD ANGLE PROJ
DIMENSIONS ARE IN MILLIMETERS

MU5T-14A464-AVA
JU5T-14A464-BRA
JU5T-14A464-BPA
EU5T-14A464-AEA
EU5T-14A464-ADA
FU5T-14A464-DAB

CAD TYPE	CAD LOC.	CAD FILE	
CATIA	METAPHASE	PRT EU5T-14A464-TB DWG EU5T-14A464-TB	DTMC IS MASTER
OPER. NO.	UNIT	DRAWING	
-----	mm	EU5T-14A464-TB	
DESIGN	DETAIL	TITLE	SHT 1 OF 1
JL	JL	SLV ASY WIR CONN FEM	
CHECKED	SAFETY		
MS	-----		
SCALE	DATE	DIVISION	
2:1	20121012	PLANT	

Ford Motor Company

DRW SIZE A1/D

DaimlerChrysler Ford GM

Production Part Approval
Dimensional Test Results

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS
SUPPLIER/VENDOR COI
NAME OF INSPECTION FACILITY:
Sumitomo Electric Wiring Systems Plt. 5

PART NUMBER: 6189-7456, 6189-7673
PART NAME: FOW120A02FA-B
DESIGN RECORD CHANGE LEVEL: EU5T-14A464-TB P3 09/09/20
ENGINEERING CHANGE DOCUMENTS: NA

ITEM	DIMENSION / SPECIFICATION	SPECIFICATION / LIMITS		TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)								OK	NOT OK
1	30.95	-0.30	0.30	5/21/21	16	30.97	30.96	30.97	30.98	30.97	30.95	30.99	31.00	O	
	30.95	-0.30	0.30			30.99	30.96	30.97	30.97	30.98	30.95	30.95	30.98	O	
2	35.45	-0.30	0.30			35.25	35.28	35.26	35.27	35.26	35.28	35.29	35.27	O	
	35.45	-0.30	0.30			35.27	35.28	35.29	35.27	35.26	35.27	35.28	35.29	O	
3	16.90	-0.30	0.30			16.89	16.89	16.89	16.91	16.89	16.89	16.88	16.88	O	
	16.90	-0.30	0.30			16.90	16.88	16.88	16.89	16.90	16.89	16.88	16.89	O	
4	15.40	-0.30	0.30			15.39	15.39	15.40	15.39	15.39	15.39	15.40	15.40	O	
	15.40	-0.30	0.30			15.40	15.39	15.38	15.38	15.38	15.39	15.39	15.39	O	
5										correct					
6										correct					
7										correct					
8										correct					
9										correct					
10										correct					
11										na					
12										correct					
13										na					
14										na					
15										na					

NOTE:

1. PARTS CONFORM TO THE ELECTRICAL CONNECTION SYSTEM DESIGN SPECIFICATION (SDS) REV.21. DATED JUN 2011.
(D1) 2. PARTS CONFORM TO THE LATEST LEVEL OF USCAR 2. REV5 DATED NOV 2007. FOR COMPONENT TEMPERATURE CLASS 4. FOR PERFORMANCE CRITERIA AND EXCEPTIONS. SEE SUMITOMO DVP&R.
3. MAXIMUM MATING FORCE FULLY POPULATED WITH Sn TERMINALS is 14.7(N) Ag TERMINAL is 10.5(N).
4. TERNIMAL EXTRACTION TOOLS: 23730003
5. SEALING SURFACES AS IDENTIFIED ON THIS DRAWING ARE SMOOTH AND FREE OF PARTING LINES.
6. CONNECTOR IS RATED AS ERGONOMIC CLASS 2 (HAND GRASP) BASED ON USCAR-25 REV 1. CONNECTOR PUSH SURFACE AREA IS 192.5mm².
7. N/A
(C3) 8. FOR INTERFACE VIEWS PLEASE SEE EWCAP 120-S-002-1-Z01 120-S-002-1-Z02 FOR HEADER BLADE INFORMATION SEE EWCAP DRAWING EWCAP-001.
(C4) 9. ---REMOVED---
10. ---REMOVED---
(G4) 11. ---REMOVED---

Blanket statements of conformance are unacceptable for any test results.

MARCH 2006

CFG-1003

prepared by:

SIGNATURE	TITLE	DATE
Cindy Meador	PPAP/ SQA Supervisor	5/21/2021

RPG1000201

"TORAY"

Innovation by Chemistry

Toray Resin Company, 821 W. Mausoleum Road, Shelbyville, Indiana 46176

Grade {PBT Toraycon}:	1401X34TNA
Lot:	R33207
Date:	03/08/2021

Certification of Properties

Test	Method	Unit	Specification	Result
Visual	-	-	Same as Std.	Good
Color	-	-	Same as Std.	Good
MFR	ISO 1133	g/10 min.	Min. 3.2 Max. 4.8	4.0
Tensile Strength	ISO 527	MPa	Min. 49	61.3
Tensile Elongation	ISO 527	%	Min. 24	57.5
Charpy, Notched	ISO 179	KJ/m2	Min. 2.7	3.6

Original Lot# R32892

Toray Resin Company certifies the above results are in accordance with our Quality Management System

See the BOL for ship date and quantity

PROCESS FLOW DIAGRAM

KEY CONTACT/DEPT. LOC. Debbie Gillenwater /-QA Dept.

PRODUCT : Molded Component Parts

PROCESS: Injection Molding Group 1
Supplier/Loc. SEWS-Scottsville#5
Mfg. Sup.: Alan Bomar
Prepared By: John Fraim

ISSUE/REVISION HISTORY		
DATE	CHANGE POINTS	CORE / DEVELOPMENT TEAM
6/04/1999	ISSUED WITH FORMAT CHANGES/UPDATED INFRO	T.Gravil, D. Lyons, T. Nall, K. Cantrell
1/8/2000	ISSUED WITH FORMAT CHANGES	T.Day
2/06/2001	Update Information	T.Gravil
3/13/2001	Update Information	T. Gravil, R. Ramsey, D.Lyons
4/7/2004	Update information	D Gillenwater, G Smith, J Renfrow
1/25/2005	Update Information	J Fraim L Roth, J Renfrow, D Gillenwater
8/25/2005	Update Information	J Fraim , J Saylors
9/27/2005	Update Information	D Karleskint
1/25/2008	Update process 101	J Fraim
3/30/2011	Update process - Packing	L. Roth
4/3/2014	Update process - Packing	L. Roth
4/18/2018	Update Operation sequence #'s. Remove Automatic bulk / Non bulk packaging and labeling operation (moved to FRK).	R. Gonzalez, L. Roth, P. Keith, A. Davidson
2/28/2020	Annual review	R. Gonzalez, A. Davidson, F. Jones, C. Basham, D. Hudson, D. Hall

SUPPLIER APPROVALS;
General Plant Manager Nobuaki Hagiwara
Quality Manager Leroy Roth
Other Approvals
CUSTOMER APPROVALS:(IF REQUIRED)

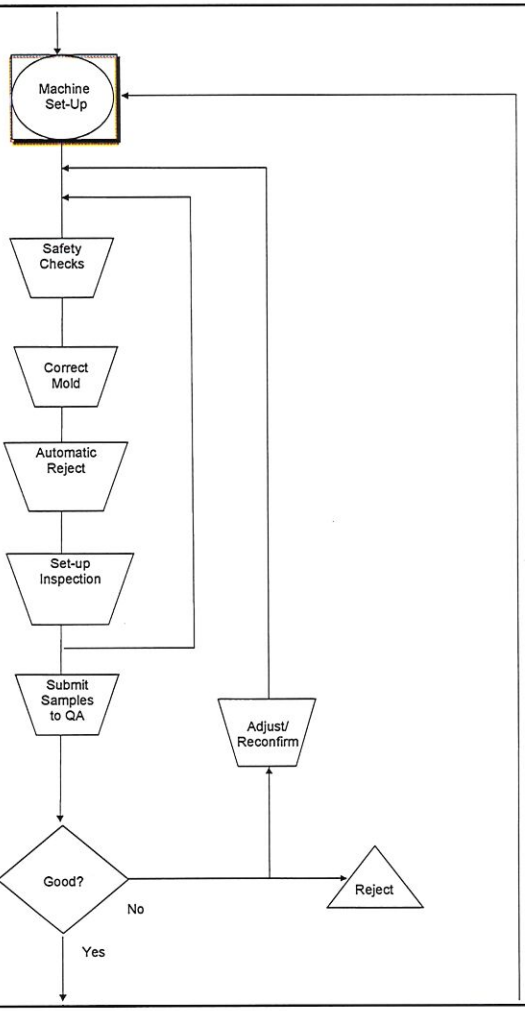
PART AD ASS'D | PART AD REC'D | OPERATION | INSPECTION | OPERATION/ INSPECTION | DECISION | STORAGE | DELAY | TRANSPORTATION | OPERATION STEP | OPERATOR

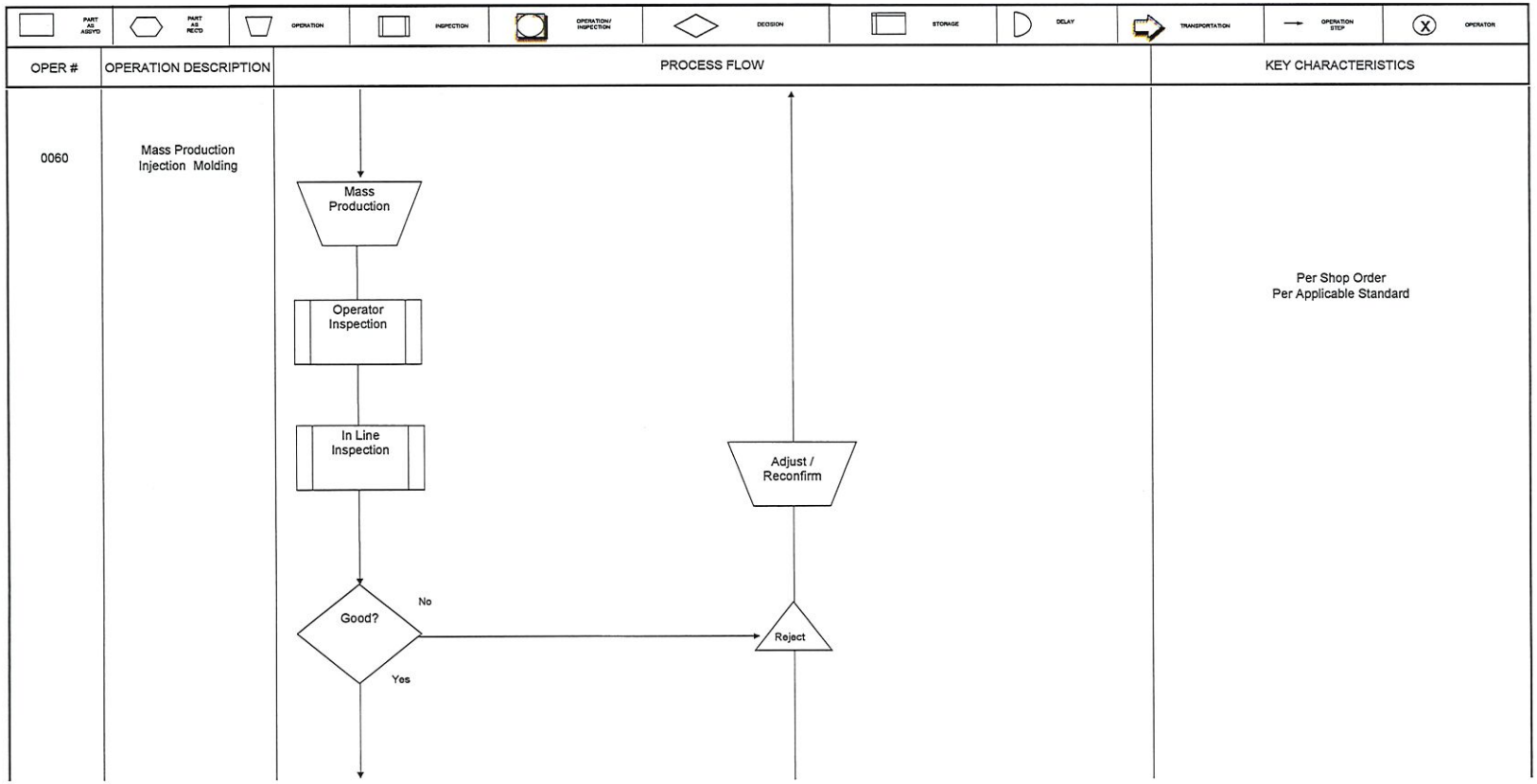
OPER #	OPERATION DESCRIPTION	PROCESS FLOW	KEY CHARACTERISTICS
010	Receive Raw Material	Purchased Raw Material	Visual Comparison Against Packing List Shipping-Receiving
	Reject for non-conformance	Good? No → Reject; Yes	Notify Quality Assurance Red Tag Procedure & Return to Vendor
0020	Quality Assurance Receiving Inspection	QA Receiving Inspection	
	Packaging, Identification, Visual Inspection, # Characteristics		Per QA Inspection Instruction Sheet-Receiving
	Reject for non-conformance	Good? No → Reject; Yes	Red Tag Procedure/Return to Vendor
0030	Raw Material Storage	Material Storage	
	Raw Material Inventory Assessment	Raw Material Inventory Assessment	

PART AS ADD'D | PART AS REC'D | OPERATION | INSPECTION | OPERATION/ INSPECTION | DECISION | STORAGE | DELAY | TRANSPORTATION | OPERATION STEP | OPERATOR

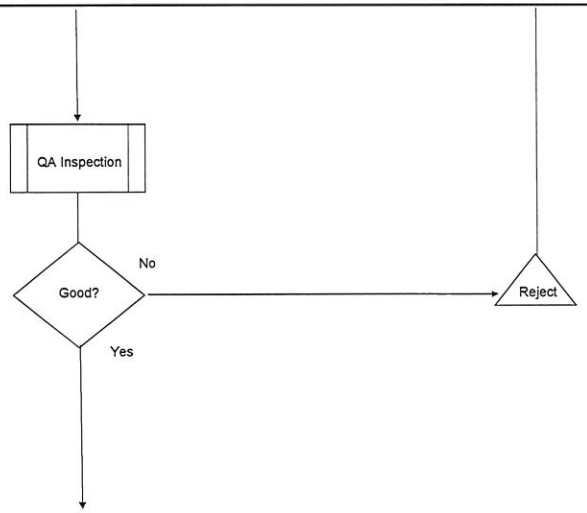
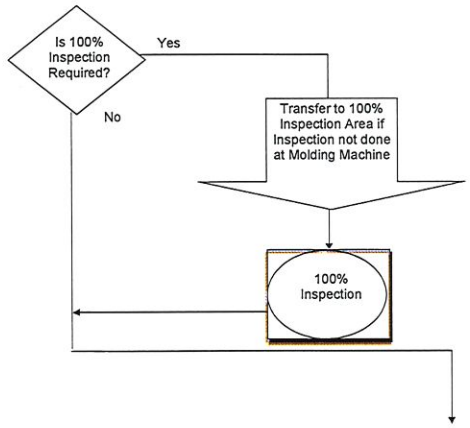
OPER #	OPERATION DESCRIPTION	PROCESS FLOW	KEY CHARACTERISTICS
	Material Staging	Deliver to Raw Material Staging Area	
0040	Raw Material Loading	MATERIAL LOADING	Injection Molding Machine

PART AS ASSY'D | PART AS RECD | OPERATION | INSPECTION | OPERATION/ INSPECTION | DECISION | STORAGE | DELAY | TRANSPORTATION | OPERATION STEP | OPERATOR

OPER #	OPERATION DESCRIPTION	PROCESS FLOW	KEY CHARACTERISTICS
0050	Set-up Injection Molding Machine		
	Raw Material Mold Numbers Process Parameters Regrind Ratio Raw Material Dryers		Per Shop Order Per Applicable Standard
			# Part Dimension / Function
	Reject for non-conformance		Make Adjustments, Reverify Parts, Mold Sent to Maintenance or Stop Production if applicable


PART AS ASSY'D
PART AS RECV'D
OPERATION
INSPECTION
OPERATION/ INSPECTION
DECISION
STORAGE
DELAY
TRANSPORTATION
OPERATION STEP
OPERATOR
OPER #
OPERATION DESCRIPTION
PROCESS FLOW
KEY CHARACTERISTICS
0060
Mass Production
Injection Molding
Mass Production
Operator Inspection
In Line Inspection
Good?
No
Yes
Reject
Adjust / Reconfirm
Per Shop Order
Per Applicable Standard

PART AS ASSY'D | PART AS REC'D | OPERATION | INSPECTION | OPERATION/ INSPECTION | DECISION | STORAGE | DELAY | TRANSPORTATION | OPERATION STEP | OPERATOR

OPER #	OPERATION DESCRIPTION	PROCESS FLOW	KEY CHARACTERISTICS
0070	Quality Assurance Inspection Reject for non-conformance		# Part Dimension / Function / Visual Notify Manufacturing Leader /QA Eng. Reject Tag Procedure
	Material Staging for Inspection 100% Inspection (when applicable)		Visual Inspection

PART AS ASS'D | PART AS REC'D | OPERATION | INSPECTION | OPERATION/ INSPECTION | DECISION | STORAGE | DELAY | TRANSPORTATION | OPERATION STEP | OPERATOR

OPER #	OPERATION DESCRIPTION	PROCESS FLOW	KEY CHARACTERISTICS
0080	Material Staging for Bulk Packaging / Labeling	Package and Labeling at Machine	Per Packaging Style and Shop Order
	Packaging and Labeling at Machine	Material Staging	
0090	Transfer Packaged Parts to Storage	Transfer to Finished Goods Storage; Transfer to Shipping	
0100	Finished Goods Storage	Finished Goods/ Storage.	
0110	Finish Goods Inventory Assessment	Finished Goods Inventory Assessment	
		Finished goods may be in-house or an off site warehouse.	
0120	Finished Goods Dock Audit (weekly) Random	Shipping Dock Audit	Quantity Identification
0130	Finished Goods Shipping	Finished Goods/ Shipping	Shipping Label
		Shipped to Customer	

POTENTIAL
FAILURE MODE AND EFFECTS ANALYSIS
(PROCESS FMEA)

ISSUE	DETAIL	DATE	AUTH
5/6/21	New AIAG format	5/6/21	R. Gonzalez

DEPARMENT	SIGNATURE	DATE
Division Manager:	N. Hagiwara	5/10/21
Quality Manager:	L. Roth	5/6/21

SUPPLIER: Sumitomo Electric Wiring Systems
PART NAME: Various resin/Connector molded parts
PART NO: Various resin/Connector molded parts

SUPPLIER C NA
MANUF. LOCA Scottsville #5 / Franklin
MODEL NA
PREPARED BY R. Gonzalez

PFMEA NO: #1 5/6/20 Updated to new AIAG format and confirmation with Control Plan
CORE TEAM: R. Gonzalez, A. Davidson, D. Hall, L. Roth, J. Fraim

PROCESS NUMBER	PROCESS FUNCTION REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEV	CLASS	POTENTIAL CAUSES(S) MECHANISM(S) OF FAILURE	OCC	CURRENT PROCESS CONTROLS PREVENTION	CURRENT PROCESS CONTROLS DETECTION	DET	RPN	RECCOMMENDED ACTION(S)	RESPONSIBILITY & TARGET COMPLETION DATE	ACTION RESULTS: ACTIONS TAKEN	SEV	OCC	DET	RPN
0010	Raw Material Receiving	1. Incorrect Raw Material	Raw Material shortage causing interruption to Inj. Molding scheduled production, leading to: *Parts shortage *Customer part delivery performance degraded.	4		Incorrect quantity shipped by Supplier	2	Supplier confirms material quantity or weight, and creates packing list.	Receiving Associate confirms BOL against Packing List (confirms each unit). Material is barcode scanned into system against open Purchase Order	6	48	NONE						
		2. Incorrect Raw Material Part Number Received	Raw Material shortage causing interruption to Inj. Molding scheduled production, leading to: *Parts shortage *Customer part delivery performance degraded.	4		Incorrect material part number shipped by Supplier	2	Supplier confirms material quantity or weight, and creates packing list.	Receiving Associate confirms BOL against Packing List (confirms each unit). Material is barcode scanned into system against open Purchase Order	6	48	NONE						
		3. Damaged Containers	Material rejected, insufficient material for production. Component produced from contaminated material. * Quality problem * Customer complaint	4		Improper Handling at point of origin and / or transportation. Improper Packaging	2	Packaging is designed to prevent damage.	Receiving associate visually confirms container for damage.	6	48	NONE						
0020	Quality Assurance Receiving Inspection	1. Raw Material Out of Specification	* Delay Scheduled Production * Brittle Parts * Customer part delivery performance degraded. * Customer compliant	7		Insufficient Supplier Process Controls	2	Supplier tests each lot of material for proper mechanical and chemical properties.	*SQA Receiving associate verifies Material cert to standard, and test Melt Flow each PBT lot. (IC) * Molding machine monitors detect process variation *QA Lab verifies product function each run.	5	70	Raw Material is confirmed to meet spec by material supplier and Melt Flow testing. QA Receiving Inspection. Molding Machine monitors will detect material variations, and QA tests the function of each part to confirm it meets the specification. No other correction action needed.						
		2. Incorrect Raw Material Color	* Delay Scheduled Production * Customer part delivery performance degraded. * Customer compliant	3		Mislabeled Raw Material Container.	2	Supplier confirms and matches color per their in process controls.	QA Receiving associate visually confirms per shipment / lot referencing master samples.	7	42	NONE						

PROCESS NUMBER	PROCESS FUNCTION REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEV	LASS	CAUSES(S) MECHANISM(S) OF FAILURE	OCC	PROCESS CONTROLS PREVENTION	PROCESS CONTROLS DETECTION	DET	RPN	RECCOMMENDED ACTION(S)	& TARGET COMPLETION DATE	ACTIONS TAKEN	SEV	OCC	DET	RPN
			Raw Material shortage causing interruption to			Incorrect quantity shipped by Supplier		Supplier confirms material quantity or weight, and creates	Receiving Associate confirms BOL against Packing List									
0030	Material Storage	1. Improper storage	*Difficulty in locating raw material *Raw material degradation.	2		*Incorrect storage location *Improper storage method.	2	Scanning system assign each part number to a specific warehouse location, controlling inventory and FIFO.	Scanning system assign each part number to a specific warehouse location, controlling inventory and FIFO.	5	20	NONE						
0040	Raw Material Loading	1. Incorrect Raw Material	* Discoloration of Parts * Brittle Parts * Impaired function of Part * Customer Complaint	7		Material handler selected incorrect raw material Mislabeled material Mixed material.	2	Shop order specifies required raw material. Barcode system confirms raw material part number when assigned to machine. Material received COA is confirmed to material spec.	* Barcode system * Visual confirmation of Raw Material ID against shop order each Set-up and Each shift.	2	28	Barcode system 100% confirms that the correct material is loaded at the machine and visual material ID checks are conducted each set-up and shift start. No other action is needed.						
	Material Drying (if required)	1. Material not dried correctly	* Burn mark, or weld line * Brittle Parts-Part breakage * Parts out of dimension.	3		Set-up operator failed to set correct process parameters : Oven Temp. Moisture Content Drying time.	2	1. Machine is interlocked not to operate if dryer is off. 2. Central Feed Dryer will alarm if power goes off. 3. Set-up operator verifies and visually confirms correct process parameters.	1. Parameters are reconfirmed by coordinator/leader and operator.	4	24	NONE						
		1. Incorrect Raw Material	* Parts out-of-specification * Discoloration of Parts * Brittle Parts * Impaired function of Part * Customer Complaint	5		Set-up Associate used incorrect raw material.	2	1. Barcode system confirms raw material matches shop order. Any mismatch prevents printing of labels.	1. Barcode system will detect wrong material . 2. Verify against Mold Book Condition Sheet & record on Condition Sheet Form and P chart. Confirmed with Material color codes & barrel colors.	5	50	NONE						
				5		Setup Operator selected incorrect central feed system raw material.	2	1: Central Feed System interlocks prevent incorrect material feed.	1: Barcode scan	5	50	NONE						
		2. Incorrect Mold placed in Machine	Incorrect Part Manufactured	2		Set-up Associate failed to use correct Mold	2	1. Barcode scan mold book to machine, any mismatch prevents printing of labels. 2.Set-up Associate instructions (shop order) & visual confirmation.	Verify against Mold Book Condition Sheet & record on Condition Sheet Form, Mold set up book and Critical check sheet	5	20	NONE						
		3. Improper Machine Process Parameters	Parts out-of-specification (Dim. & appearance) Short Shot, Discoloration of Parts, Brittle Parts, Impaired function of Part, Customer Complaint.	4		Set-up Associate failed to set correct process Parameters	3	1. Engineering established parameters selected by setup and automatically uploaded to machine. 2. Set-up Associate instructions (shop order) & visual confirmation.	1. Setup verify against Mold Book Condition Sheet & record on Condition Sheet Form 2. Leader/coordinator reverifies machine screen conditions match set up conditions.	5	60	NONE						

PROCESS NUMBER	PROCESS FUNCTION REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	S E V	L A S S	CAUSES(S) MECHANISM(S) OF FAILURE	O C C	PROCESS CONTROLS PREVENTION	PROCESS CONTROLS DETECTION	D E T	R P N	RECCOMMENDED ACTION(S)	& TARGET COMPLETION DATE	ACTIONS TAKEN	S E V	O C C	D E T	R P N
0050	Set-up Injection Molding Machine		Raw Material shortage causing interruption to			Incorrect quantity shipped by Supplier		Supplier confirms material quantity or weight, and creates	Receiving Associate confirms BOL against Packing List									
		4. Parts out-of-specification (Set-Up appearance checks): Broken pins, Damaged mold pins, Flash, Voids, Sinks, Short Shot, Holes, Weld Lines, Robot Damage and other visual defects. Confirmation of parts for contamination/grease/oil	Inj. Molding scheduled production interrupted. Impaired function of Part. Customer Compliant/Dissatisfaction.	3		Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel,screw, nozzle type,etc)	3	1.Monthly PM by machine maintenance. 2.Confirmation system for molding set-up parameters. 3.Set-up Operator instructions (shop order) & visual confirmation per CPC. 4.Confirmation of correct gate size, location, wear	1.Verify against Mold Book Condition Sheet & record on Condition Sheet Form. 2.Engineering validation of injection function changes per internal robust test procedure. 3. Metal detector checks at SOP/EOP (as applicable)	5	45	NONE						
				3		Improper Robot settings	3	1. Setup confirms robot setting per condition sheet. 2.Utilize soft drop conveyors. 3.Confirmation of Set-up of auxiliary equipment. 4.PM for robot clamp. 5.Utilization of pick and place robots where applicable.	1. Set-up operator visual confirms first 10 shots. 2.Molding operator checks last shot each basket and QA check at each SOP per GA003 & Inspection Standard. 3.Leader/ coordinator reverification of robot settings.	5	45	NONE						
				3		Machine Wear Improper cleaning at changeover or machine PM.	2		Set-up operator verifies & visually confirms machine clean each Mold change/Set-up per work instructions. Maintenance PM Mold Schedule	6	36	NONE						
				5		Damaged or broken pins due to Age/condition of Mold	2	Maintenance PM Mold, QA Confirmation function SOP/EOP, Operator each lot visual check, Mold condition settings.		5	50	SEWS maintains molds and follows strict PM schedule. Parts are also confirmed functionally to detect for out of spec parts due to broken molds.						
		5. Parts out-of-specification (QA appearance checks) Broken pins, Flash, Voids, Sinks, Short Shot, Holes, Weld Lines and other visual defects.	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Compliant/Dissatisfaction.	3	C, C# (IC / SW S / IM)	Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel,screw, nozzle type,etc).	3	1.Monthly PM by machine maintenance. 2.Confirmation system for molding set-up parameters. 3.Set-up Operator instructions (shop order) & visual confirmation per CPC. 4.Confirmation of correct gate size, location, wear	1.Verify against Mold Book Condition Sheet & record on Condition Sheet Form. 2..QA Visual Inspection per CPC and QA IIS at SOP per GA003 & Inspection Standard. 3.Engineering validation of injection function changes per internal robust test procedure. 4. Metal detector checks at SOP/EOP (as applicable)	5	45	SEWS strictly controls processing parameters and tolerance levels and tool condition. QA also verifies part dimension and function at the start and end of production. No other action needed.						
		6. Parts out-of-specification (QA function checks) : terminal insertion, terminal retention, retainer insertion, retainer retention, engagement with mating parts (clip, etc.). Hinge, Clip/lock, or Lance damage-(where Applicable).	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Compliant/Dissatisfaction.	3	C, C# (IC / SW S / IM)	Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel, screw, nozzle type,etc).	2	1. Condition adjustment restricted to engineering. 2. Confirmation system for molding set-up parameters.	1.Verify against Mold Book Condition Sheet & record on Condition Sheet Form. 2.QA Functional testing each SOP per GA003 & Inspection Standard 3. Engineering validation of injection function changes per internal robust test procedure.	5	30	SEWS strictly controls processing parameters and tolerance levels. QA also verifies part dimension and function at the start and end of production. No other action needed.						

PROCESS NUMBER	PROCESS FUNCTION REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEV	LASS	CAUSES(S) MECHANISM(S) OF FAILURE	OCC	PROCESS CONTROLS PREVENTION	PROCESS CONTROLS DETECTION	DET	RPN	RECCOMMENDED ACTION(S)	& TARGET COMPLETION DATE	ACTIONS TAKEN	SEV	OCC	DET	RPN
			Raw Material shortage causing interruption to			Incorrect quantity shipped by Supplier		Supplier confirms material quantity or weight, and creates	Receiving Associate confirms BOL against Packing List									
		7. Parts out-of-specification (QA Dimension Checks).	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Complaint / Dissatisfaction.	4		Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design	2	Confirmation system for molding set-up parameters. Set-up Operator instructions (shop order) & visual confirmation per CPC.	1. Verify against Mold Book Condition Sheet & record on Condition Sheet Form. 2. QA Dimensional measurement each SOP per GA003 & Inspection Standard	6	48	SEWS strictly controls processing parameters and tolerance levels. QA also verifies part dimension and function at the start and end of production. No other action needed.						
		8. Mixed Parts.	Mixed Parts delivered to the customer Customer Complaint / Dissatisfaction.	5		Trapped or scattered parts / start-up shots remaining in molding machine.	3	1. Process Change System for evaluating chute/conveyor changes for potentially scattered parts.	1. Set up checks at each change over.	5	75	SEWS performs checks of each machine prior to each SOP to ensure start up shots/previous product is not scattered in machine.						
0060	Mass Production Injection Molding	1. Parts out-of-specification (Operator appearance checks): Broken pins, Damaged mold pins, Flash, Voids, Sinks, Short Shot, Holes, Weld Lines, Robot Damage and other visual defects. Confirmation of parts for contamination/grease/oil	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Compliant/Dissatisfaction.	3		Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel,screw, nozzle type,etc).	3	1. Monthly PM by machine maintenance. 2.Confirmation system for molding set-up parameters. 3.Set-up Operator instructions (shop order) & visual confirmation per CPC. 4.Confirmation of correct gate size, location, wear.	1. Verify parts against CPC. 2. Metal detector alarm (as applicable).	6	54	SEWS strictly controls processing parameters and tolerance levels and tool condition. QA also verifies part dimension and function at the start and end of production. No other action needed.						
	Inline Inspection	1. Parts out-of-specification (In-Line Roving Patrol) Broken pins, Damaged mold pins, Flash, Voids, Sinks, Short Shot, Holes, Weld Lines, Robot Damage and other visual defects. Confirmation of parts for contamination/grease/oil	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Compliant/Dissatisfaction.	3		Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel,screw, nozzle type,etc)	3	1. Monthly PM by machine maintenance. 2.Confirmation system for molding set-up parameters. 3.Set-up Operator instructions (shop order) & visual confirmation per CPC. 4.Confirmation of correct gate size, location, wear.	1. Verify parts against CPC.	5	45	SEWS strictly controls processing parameters and tolerance levels and tool condition. QA also verifies part dimension and function at the start and end of production. No other action needed.						
		1. Parts out-of-specification (QA appearance checks) Broken pins, Flash, Voids, Sinks, Short Shot, Holes, Weld Lines and other visual defects	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Compliant/Dissatisfaction.	3	C, C# (IC / SWS / IM)	Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel,screw, nozzle type,etc).	3	1. Monthly PM by machine maintenance. 2.Confirmation system for molding set-up parameters. 3.Set-up Operator instructions (shop order) & visual confirmation per CPC. 4.Confirmation of correct gate size, location, wear.	1. Verify against Mold Book Condition Sheet & record on Condition Sheet Form. 2..QA Visual Inspection per CPC and QA IIS at MOP/EOP per GA003, Inspection Standard & any applicable Work Instruction and/or Quality Alert. 3.Engineering validation of injection function changes per internal robust test procedure.	5	45	SEWS strictly controls processing parameters and tolerance levels and tool condition. QA also verifies part dimension and function at the start and end of production. No other action needed.						

PROCESS NUMBER	PROCESS FUNCTION REQUIREMENTS	POTENTIAL FAILURE MODE	POTENTIAL EFFECT(S) OF FAILURE	SEV	LASS	CAUSES(S) MECHANISM(S) OF FAILURE	OCC	PROCESS CONTROLS PREVENTION	PROCESS CONTROLS DETECTION	DET	RPN	RECCOMMENDED ACTION(S)	& TARGET COMPLETION DATE	ACTIONS TAKEN	SEV	OCC	DET	RPN
0070			Raw Material shortage causing interruption to			Incorrect quantity shipped by Supplier		Supplier confirms material quantity or weight, and creates	Receiving Associate confirms BOL against Packing List									
	Quality Assurance Inspection Injection Molding	2. Parts out-of-specification (QA function checks) : terminal insertion, terminal retention, retainer insertion, retainer retention, engagement with mating parts (clip, etc.). Hinge, Clip/lock, or Lance damage- (where Applicable).	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Compliant/Dissatisfaction.	3	C, C# (IC / SWS / IM)	Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel, screw, nozzle type,etc).	2	1. Condition adjustment restricted to engineering. 2. Confirmation system for molding set-up parameters.	1. Verify against Mold Book Condition Sheet & record on Condition Sheet Form. 2..QA Visual Inspection per CPC and QA IIS at MOP/EOP per GA003, Inspection Standard & any applicable Work Instruction and/or Quality Alert. 3.Engineering validation of injection function changes per internal robust test procedure.	5	30	SEWS strictly controls processing parameters and tolerance levels. QA also verifies part dimension and function at the start and end of production. No other action needed.						
		3. Parts out-of-specification (QA Dimension Checks).	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Complaint / Dissatisfaction.	4	C, C# (IC / SWS / IM)	Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design.	2	Confirmation system for molding set-up parameters. Set-up Operator instructions (shop order) & visual confirmation per CPC.	1. Verify against Mold Book Condition Sheet & record on Condition Sheet Form. 2..QA Visual Inspection per CPC and QA IIS at MOP/EOP per GA003, Inspection Standard & any applicable Work Instruction and/or Quality Alert.	6	48	SEWS strictly controls processing parameters and tolerance levels. QA also verifies part dimension and function at the start and end of production. No other action needed.						
	Material Staging for 100% Inspection (where applicable)	1. Incorrect Storage Location	Wrong Part/Mixed Parts delivered to customer Compliant/Dissatisfaction	3		Material Handler failed to place product in correct location.	2	P- Material Handler verifies correct location per electronically scanning Part number into system (BPCS)		5	30	NONE						
	100% Inspection (where applicable)	1. Parts out-of-specification (Inspector) Broken pins, Damaged mold pins, Flash, Voids, Sinks, Short Shot, Holes, Weld Lines, Robot Damage and other visual defects. Confirmation of parts for contamination/grease/oil.	Inj. Molding scheduled production interrupted. Impaired function of Part Customer Compliant/Dissatisfaction.	3		Machine Parameters (Over adjustment & under adjustment, limited range) Material Instability Age of Mold Incorrect Mold Design Gate size, location, wear (affects material flow) or Combination of above. Flow variation due to change of injection function components (barrel,screw, nozzle type,etc).	3	1. Monthly PM by machine maintenance. 2.Confirmation system for molding set-up parameters. 3.Set-up Operator instructions (shop order) & visual confirmation per CPC. 4.Confirmation of correct gate size, location, wear.	1. Verify parts against CPC / TWI.	5	45	SEWS strictly controls processing parameters and tolerance levels and tool condition. QA also verifies part dimension and function at the start and end of production. No other action needed.						
0080	Packaging and labeling at Machine	1. Incorrect Box Label	Wrong Part delivered to internal customer Customer Complaint / Dissatisfaction.	5		Molding operator failed to place correct label on bag / box	3	To generate label requires to scan shop order against mold book and machine.	1. Set up confirms mold number and part number are correct. 2. QA confirmation against CPC	5	75	NONE						
		2. Incorrect Quantity	Impact assembly/packing process Cause inventory variation.	5		Set up failed to correctly set lot quantity	3	Lot quantity set in machine memory.	1. Lot quantity confirmed each SOP by set up. Details are recorded on the set up condition check sheet. 2. Bags are 100% counted by machine.	5	75	NONE						
	Material Staging for Non-Bulk Packing / Labeling	1. Incorrect Storage Location	Delay in locating material, possible delay of shipment.	3		Material Handler failed to place product in correct location.	2	P- Each part is assigned to a specific location though barcode scan system.		5	30	NONE						

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			Raw Material shortage causing interruption to			Incorrect quantity shipped by Supplier		Supplier confirms material quantity or weight, and creates	Receiving Associate confirms BOL against Packing List									
0090	Transfer packaged parts to storage	1. Incorrect Storage Location	Delay in locating material, possible delay of shipment.	3		Material Handler failed to place product in correct location.	2		Material Handler verifies correct location per electronically scanning Part number into system (BPCS).	5	30	NONE						
0100	Finished Goods Storage	1. Incorrect Storage Location	Wrong Part delivered to customer Customer Complaint / Dissatisfaction.	3		Material Handler failed to place product in correct location.	2		Material Handler verifies correct location per electronically scanning Part number into system (BPCS)	5	30	NONE						
		2. Deterioration of packaging.	Damaged to box, potential delay of shipment.	3		Environmental conditions, handling errors.	2	Climate controlled warehouse, FIFO barcode controlled, monthly shelf life assessment.	Weekly audit and inventory assessment.	5	30	NONE						
0110	Finished Goods Inventory (Shipping)	1. Finished Goods Shortage	Inj. Molding scheduled production interrupted & intermittent leading to: *Parts shortage *Customer part shortage & assembly line shutdown *Customer part delivery performance degraded. * Customer complaint	3		BPCS SYSTEM not 100% dependable	2	Inventory Control System.	Manual inventory taken, Operator manual / visual inventory.	5	30	NONE						
0120	Finished Goods Dock Audit- (Weekly) Random box per skid)	1. Incorrect Part in box.	Customer Complaint / Dissatisfaction.	3		Operator failed to verify shipping label present, clear, correct and legible.	2	Packing Barcode Scanning operation, confirming inventory label to shipping label.	Operator visually confirms per instructions.	5	30	NONE						
		2. Incorrect Quantity in box and / or Damaged Box.	Customer Complaint / Dissatisfaction.	3		Shipping Operator failed to verify no damaged boxes & correct quantity shipped.	2		Operator electronically scans Box Label number to Print AIAG part number, includes cross verification system.	5	30	NONE						
		3. Incorrect AIAG Label (where Applicable).	Customer Complaint / Dissatisfaction.	3		Operator failed to verify AIAG label present, clear, correct and legible.	4		Operator electronically scans Box Label number to Print AIAG part number, includes cross verification system.	5	60	NONE						
0130	Shipping Finished Goods	1. Missing Box Label	Possible delayed shipment or shortage or parts.	3		Operator failed to verify shipping label is present, clear, correct and legible	2		Operator visually checks for damage & scans label / verifies correct quantity acceptance.	5	30	NONE						
		2. Damaged Boxes	Customer Complaint / Dissatisfaction.	3		Shipping Operator failed to verify no damaged boxes shipped.	2		Operator visually checks for damage & scans label / verifies correct quantity acceptance.	5	30	NONE						
		3. Incorrect AIAG Label (where Applicable)	Customer Complaint / Dissatisfaction.	3		Operator failed to verify AIAG label present, clear, correct and legible.	3	Operator electronically scans Box Label number to Print AIAG part number.		5	45	NONE						

PROCESS QUALITY CONTROL TABLE

SUMITOMO ELECTRIC WIRING SYSTEMS, INC. - COMPONENTS DIVISION

PROTO TYPE ☐ PRE-LAUNCH ☐ PRODUCTION ☒

PRODUCT: ASSEMBLED MOLDED COMPONENTS

PROCESS: ASSEMBLY

SUPPLIER / LOCATION: SEWS PLANT 5 / PLANT FR1 — 2687 Old Gallatin Road, Scottsville, KY 42164

PQCT # : PC3 — 265 Garvin Lane, Franklin, KY 42134

KEY CONTACT / DEPART. LOC.: D. Gillenwater / L. Roth (Quality Assurance)

PHONE: (270) 237-5419 X8563 or X8555

SUPPLIER APPROVALS:

General Plant Manager

Quality Manager — Leroy Roth

Other Approvals

Customer Approval (if Required)

ISSUE / REVISION HISTORY

DATE	CHANGE POINTS	CORE/DEVELOPMENT TEAM
4/27/2021	Reviewed document per Open Operations Audit. Added child parts supply and master samples checks to section 0050, Corrected responsible persons section 0040, Added FIFO label to release product in section 0020. Added box weight check to 0070 for Franklin	L. Roth, L. Stuart
2/25/2021	Updated: QA Receiving Inspection: Subcontractor assembled parts product section. Setup Assembly machines (automatic) Good / No-Good master check samples to clarify missing component (seal). Shipping and finished goods to add correct and matching AIAG labels	L. Roth, L. Stuart
6/4/2020	Added roving In-Line patrol, reference to clip crack confirmation, etc.	L. Roth
4/27/2020	Updated process machine checksheets to match actual process, added box weigh process, combined	L. Stuart, P. Keith, B. Melton, N. Walker, M. Ryan
9/24/2019	Updated 30 - 80, 100 to match actual process	L. Stuart, P. Keith, B. Thompson, J. Riffe
4/26/2018	Annual review	R. Gonzalez, P. Keith, L. Higdon
1/30/2015	Update process 70 to include changeover using autobagger to cycle at changeover	L. Roth, L. Higdon
6/6/2014	Update process 50 to match actual process.	L. Roth , J. Fraim, M. Ryan
5/12/2014	Updated for threaded insert assembly process	L. Roth , J. Fraim, M. Ryan
4/8/2014	Added reference to Hopper Lock system (0040), Bag Lifter (0070)	L. Roth, B. Thompson
8/17/2012	Improved description of child part warehousing / staging process	L. Roth, P. Keith
5/18/2011	Clarify control method 0010,	L. Roth, A. Bomar, P. Keith, D. Hall
6/18/2010	Removed reference to Life Skills, added detail for bag to box scan, updated as applicable	L. Roth, A. Bomar, P. Keith, D. Hall
8/28/2008	Revised 0050 with correct visual inspection. Revised 0070 with correct bag count instructions.	D. Gillenwater, P. Keith, D. Hall, K. Keen
9/14/2007	Revised the frequency of QA Inspection #60 from end of lot to GA-003. GA003 is the detailed procedure for QA Lab. Added function where applicable.	D. Gillenwater, P. Keith, D. Hall, K. Keen
3/15/2001	MODIFIED TO INCLUDE 6188-0572	T. GRAVIL/ R.RAMSEY/ T. STEGER/ D. LYONS/ N. YAMAMOTO/ T. WIX
3/5/2001	UPDATED INFORMATION/ ADDED SUB-CONTRACTORS	T. GRAVIL/T. STEGER/D. LYONS/N. YAMAMOTO,T. WIX
2/6/2001	Created a separate PQCT for Assembly Process	T. GRAVIL/T. STEGER/D. LYONS/N. YAMAMOTO,T. WIX
9/4/1997	Issued with format changes	H. HATTORI, D. LYONS, Y. NIWA, A. DAVIDSON, R. BRENNINGTON, T. HALL, J. WYNAN, S. GREGORY, P. ZAMBORSKY

PART/ PROCESS NUMBER	PROCESS NAME/ OPERATION DESCRIPTION	MACHINE, DEVICE, JIG,TOOLS FOR ASSEMBLY	CHARACTERISTICS No.	CHARACTERISTICS PRODUCT	CHARACTERISTICS PROCESS	CHARACTERISTICS CI	RESPONSIBILITY	METHODS PRODUCT/ PROCESS SPECIFICATIONS	METHODS EVALUATION MEASUREMENT TECHNIQUE	SAMPLE SIZE	SAMPLE FREQUENCY	SAMPLE RESULTS FORMAT CONTROL METHOD	REACTION PLAN
0010	MATERIAL: RECEIVING PURCHASED MATERIAL (COMPONENTS, SEALS, TERMINALS, METAL CLIPS)	N/A	0010	COMPONENTS, SEALS, TERMINALS, METAL CLIPS FOR ASSEMBLY PROCESS	RECEIVING COMPONENT PARTS		SHIPPING / RECEIVING OPERATOR	1. CORRECT TYPE 2. DAMAGE FREE CONTAINER 3. CORRECT PART NUMBER & ALL APPROPRIATE DOCUMENTATION TO BE CORRECT.	VISUAL INSPECTION AGAINST PACKING LIST	100% VISUAL EACH CONTAINER	EACH RECEIPT	W/I: SRW-RECFLOW, BPCS	NOTIFY LEADER / COORDINATOR / SQA AS NEEDED- 1. RETURN TO SUPPLIER
0020	QUALITY ASSURANCE : MATERIAL RECEIVING INSPECTION WHERE APPLICABLE	SCANNER	0020	1. NO PACKAGING / SHIPPING DAMAGE 2. NO DEFECTS PER QA RECEIVING IIS 3. NO CONTAMINATION 4. CORRECT PART NUMBER 5. CORRECT COLOR (WHERE APPLICABLE)	QA RECEIVING INSPECTION QA RELEASE MATERIAL		RECEIVING QUALITY ASSURANCE OPERATOR	1. CORRECT TYPE 2. NO DEFECTS PER QA RECEIVING IIS 3. DAMAGE FREE CONTAINER 4. CONTAMINATION FREE MATERIAL 5. CORRECT PART NUMBER & CORRECT DOCUMENTATION. 5. CERTIFICATION RECORDS (WHERE APPLICABLE) RELEASE INSPECTED MATERIAL	VISUAL INSPECTION PER INSTRUCTION SHEET - QA RECEIVING WHERE APPLICABLE. QRW- CHEKINSEALS QRW - CHECKINRM QRW - CHEKKINRP	PER QRW-RAINBOW SQA SAMPLE PLAN EACH UNIT	EACH INCOMING SHIPMENT EACH INCOMING SHIPMENT	1. APPLICABLE INSPECTION INSTRUCTION SHEET- QA RECEIVING WHERE APPLICABLE. 2. BARCODE SCAN, FIFO LABELS	NOTIFY LEADER / COORDINATOR / QA ENGINEER AS NEEDED- 1. RETURN TO SUPPLIER 2. REJECT / HOLD TAG PROCEDURE 3. INITIATE PIR AS NEEDED

PROCESS QUALITY CONTROL TABLE

PART/ PROCESS NUMBER	PROCESS NAME/ OPERATION DESCRIPTION	MACHINE, DEVICE, JIG,TOOLS FOR ASSEMBLY	CHARACTERISTICS			CI		METHODS		SAMPLE		SAMPLE RESULTS FORMAT	REACTION PLAN
			No.	PRODUCT	PROCESS		RESPONSIBILITY	PRODUCT/ PROCESS SPECIFICATIONS	EVALUATION MEASUREMENT TECHNIQUE	SIZE	FREQUENCY	CONTROL METHOD	
	QA RECEIVING INSPECTION: SUB-CONTRACTOR ASSEMBLED PARTS	N/A		1. CORRECT PART NUMBER 2. NO DEFECTS PER QA RECEIVING IIS EXAMPLES INCLUDE:: * CORRECT APPEARANCE (PART /SEAL /RETAINER COLOR / COSMETIC) * RETAINER / SEALS / MBS CORRECT POSITION. * SEAL PRESENCE * INSPECTION MARK PRESENT	QA RECEIVING INSPECTION		RECEIVING QUALITY ASSURANCE OPERATOR	PER APPLICABLE QA RECEIVING INSPECTION SHEET	VISUAL OR AS SPECIFIED ON APPLICABLE QA RECEIVING INSPECTION SHEET	PER QRW-RAINBOW SQA SAMPLE PLAN	EACH INCOMING SHIPMENT	APPLICABLE INSPECTION INSTRUCTION SHEET-QA RECEIVING	NOTIFY LEADER / COORDINATOR / QA ENGINEER AS NEEDED- 1. RETURN TO SUPPLIER 2. REJECT / HOLD TAG PROCEDURE 3. INITIATE PIR AS NEEDED
								RELEASE INSPECTED MATERIAL	QRW - CHECKINPT	EACH UNIT	EACH INCOMING SHIPMENT	2. BARCODE SCAN, FIFO LABELS	
0025	MATERIAL TRANSFER (FOR FRANKLIN ASSEMBLY PRODUCT AS APPLICBLE)	SCANNER	0025	COMPONENTS, SEALS FOR ASSEMBLY PROCESS	TRANSFER OF COMPONENTS TO FRANKLIN		SHIPPING / RECEIVING OPERATOR AT COMPONENTS WAREHOUSE	TRANSFER ITEMS TO FRANKLIN ON TRUCK FOR STOCKING AT FRANKLIN WAREHOUSE LOCATION	SRFSEALS-(X)DOCUMENT IS USED TO IDENTIFY PARTS FOR TRANSFER TO FRANKLIN	NA	NA	W/I: SRW-RECFLOW, BPCS	NOTIFY LEADER / COORDINATOR / QA ENGINEER AS NEEDED
0030	COMPONENTS MATERIAL STORAGE (BOTH IN-HOUSE & PURCHASED)	SCANNER	0030	1. CORRECT PARTS / IDENTIFIED LOCATION	STORAGE OF CHILD PARTS (HOUSINGS / RETAINERS / SEALS, ETC)		SHIPPING / KANBAN OPERATOR	CORRECT STORAGE WAREHOUSE LOCATION	VISUAL JUDGEMENT BY TRAVELLER / BOX LABEL. SCAN TO LOCATION	PER CONTAINER	EACH RECEIPT	BARCODE SCANNING,	NOTIFY : SHIPPING / RECEIVING LEADER, SUPERVISOR & QA IF NEEDED
				1. CORRECT PARTS / IDENTIFIED LOCATION	PULLING OF CHILD PARTS (HOUSINGS / RETAINERS / SEALS, ETC)		SHIPPING / KANBAN OPERATOR	CORRECT PARTS, AYW - ASSYKANBAN	GENERATE PICKLIST FROM BARECODE SCANNING, PICK PARTS	PER CONTAINER	EACH REQUEST	BARCODE SCANNING,	NOTIFY : SHIPPING / RECEIVING LEADER, SUPERVISOR & QA IF NEEDED
				1. CORRECT PARTS / IDENTIFIED LOCATION	STAGING OF CHILD PARTS IN ASSEMBLY		KANBAN / JIT OPERATOR	CORRECT STAGING LOCATION	VISUAL VERIFICATION PER PICKLIST	PER CONTAINER	EACH RECEIPT	BARCODE SCAN TO ACP LOCATION	NOTIFY : ASSEMBLY LEADER / SUPERVISOR IF NEEDED
0040	SET-UP ASSEMBLY MACHINES (AUTOMATIC)	AUTOMATIC ASSEMBLY MACHINE	0040		SET-UP ASSEMBLY MACHINES (AUTOMATIC / SEMI AUTOMATIC PROCESS PARAMETERS)		ASSEMBLY LEADER / SETUP	PER APPLICABLE WORK INSTRUCTION	VISUAL COMPARISON PER APPLICABLE WORK INSTRUCTION	EACH MACHINE	PER SHOP ORDER	a) DAILY REPORT b) CHANGEOVER CHECKSHEET c) DAILY MACHINE CHECK SHEET d) SET-UP CHECK SHEET	NOTIFY LEADER / COORDINATOR / QA / MAINTENANCE OF ANY ABNORMALITY
		SCANNER, HOPPER LOCKS (IF APPLICABLE)		CHILD PARTS	SUPPLY CHILD PARTS TO ASSEMBLY MACHINE		LEADER / SETUP / ASSEMBLY OPERATOR	PER SHOP ORDER	SCAN CHILD COMPONENTS TO ASSEMBLY MACHINE. WHEN HOPPER LOCK OPENS, LOAD CHILD PARTS INTO MACHINE.	EACH UNIT	EACH UNIT	DAILY REPORT, BARCODE SCAN	NOTIFY LEADER / COORDINATOR / QA / MAINTENANCE OF ANY ABNORMALITY
		GOOD / NO-GOOD MASTER CHECK SAMPLES			ASSEMBLY MACHINE VERIFICATION		ASSEMBLY LEADER	PER MACHINE SPECIFIC SAMPLE CHECK WORK INSTRUCTION. CONFIRM MACHINE INSPECTION EQUIPMENT IS OPERATING CORRECTLY AND WILL DETECT: 1. MISSING COMPONENT (SEAL / RETAINER / CPA / MBS / LEVER / CLIP) 2. CORRECT KEYWAY (HOUSING / RETAINER / ETC) 3. COMPONENT POSITION (RETAINER / CPA / MBS / SEAL / LEVER / CLIP) 4. DOUBLE COMPONENT (SEAL / MBS / RETAINER) 5. COLOR (HOUSING / SEAL / RETAINER / OTHER COMPONENTS AS APPLICABLE) 6. DAMAGE (AS APPLICABLE) 7. OTHER FAILURE MODES AS IDENTIFIED BY ENGINEERING ON MACHINE SPECIFIC SAMPLE CHECK SHEET	RUN EACH MASTER CHECK SAMPLE THROUGH ASSEMBLY/INSPECTION MACHINE TO CONFIRM DETECTION	PER EACH AUTOMATIC MACHINE	EACH SOP EACH SHIFT (END OF SHIFT & CHANGEOVER), SOME SPECIFIED MACHINES ARE DAILY	SAMPLE CHECKSHEET	NOTIFY QA (SEWS) OR MAINTENANCE AS NEEDED 1. .REJECT / HOLD TAG PROCEDURE
0050	ASSEMBLY PRODUCTION	AUTOMATIC/SEMI AUTOMATIC ASSEMBLY MACHINES	0050	ASSEMBLED PARTS	AUTOMATIC ASSEMBLY		ASSEMBLY OPERATOR	PER APPLICABLE WORK INSTRUCTION	AUTOMATED ASSEMBLY EQUIPMENT.	100%	CONTINUOUS	100% AUTOMATED INSPECTION	NOTIFY LEADER / COORDINATOR / QA AS NEEDED- 1. REJECT / HOLD TAG PROCEDURE

PROCESS QUALITY CONTROL TABLE

PART/ PROCESS NUMBER	PROCESS NAME/ OPERATION DESCRIPTION	MACHINE, DEVICE, JIG,TOOLS FOR ASSEMBLY	CHARACTERISTICS				METHODS		SAMPLE		SAMPLE RESULTS FORMAT	REACTION PLAN
			No.	PRODUCT	PROCESS	CI	RESPONSIBILITY	PRODUCT/ PROCESS SPECIFICATIONS	EVALUATION MEASUREMENT TECHNIQUE	SIZE	FREQUENCY	CONTROL METHOD	
				ASSEMBLED PARTS	SUPPLY CHILD PARTS		ASSEMBLY OPERATOR	LOAD CHILD PARTS INTO HOPPER	SCAN CHILD COMPONENTS TO ASSEMBLY MACHINE. WHEN HOPPER LOCK OPENS, LOAD CHILD PARTS INTO MACHINE.	EACH UNIT	EACH UNIT	DAILY REPORT, BARCODE SCAN	NOTIFY LEADER / COORDINATOR / QA AS NEEDED.
				ASSEMBLED PARTS	MACHINE CHECKS		ASSEMBLY OPERATOR	PER APPLICABLE WORK INSTRUCTION	CONFIRM EACH ITEM PER THE CHECKSHEET, AYF - DAILYMACHINECHECK CONFIRM NUMBER OF BAGS IN BOX, CONFIRM SCRAP BIN IS CLEAN, CONFIRM ALL NEST ARE CLEAR OF DEBRIS, CONFIRM AIR PRESSURE, ETC.	PER EACH AUTOMATIC MACHINE	EACH SHIFT	MACHINE CHECK SHEET	NOTIFY QA OR MAINTENANCE AS NEEDED 1. .REJECT / HOLD TAG PROCEDURE
				ASSEMBLED PARTS	VISUAL INSPECTION		ASSEMBLY OPERATOR	1. CORRECT COMPONENTS (RETAINER / SPACER / MBS / SEAL, ETC) 2) CORRECT COMPONENT POSITION (RETAINER / SPACER / MBS / SEAL / LEVER, ETC) 3) INSPECTION MARK PRESENT 4) CORRECT PART NUMBER 5) CORRECT BAG / TRAY QUANTITY	VISUAL INSPECTION AGAINST CRITICAL POSITION CHECK SHEET	1 PC (1 UP MACHINE) 2 PC (2 UP MACHINE)	SOS and Start of Every Box	DAILY REPORT	NOTIFY LEADER / COORDINATOR / QA AS NEEDED- 1. REJECT / HOLD TAG PROCEDURE
				ASSEMBLED PARTS	AUTOMATED INSPECTION		AUTOMATIC	ASSEMBLY FIT & FUNCTION 1. MISSING COMPONENT (SEAL / RETAINER / CPA / MBS / LEVER / CLIP) 2. CORRECT KEYWAY (HOUSING / RETAINER / ETC) 3. COMPONENT POSITION (RETAINER / CPA / MBS / SEAL / LEVER / CLIP) 4. DOUBLE COMPONENT (SEAL / MBS / RETAINER) 5. COLOR (HOUSING / SEAL / RETAINER / OTHER COMPONENTS AS APPLICABLE) 6. DAMAGE (AS APPLICABLE) 7. OTHER FAILURE MODES AS IDENTIFIED BY ENGINEERING ON MACHINE SPECIFIC SAMPLE CHECK SHEET Note: Inspection mark etched on each part if passed automatic testing. **L-20 uses blue/black dot	AUTOMATED INSPECTION (INPECTION SENSORS, CAMERA INSPECTION SYSTEMS)	100%	CONTINUOUS	* 100% AUTOMATED INSPECTION / REJECTION * DAILY REPORT	NOTIFY LEADER / COORDINATOR / QA AS NEEDED- 1. REJECT / HOLD TAG PROCEDURE
				ASSEMBLED PARTS	ASSEMBLY MACHINE VERIIFICATION		ASSEMBLY OPERATOR	PER MACHINE SPECIFIC SAMPLE CHECK WORK INSTRUCTION. CONFIRM MACHINE INSPECTION EQUIPMENT IS OPERATING CORRECTLY AND WILL DETECT: 1. MISSING COMPONENT (SEAL / RETAINER / CPA / MBS / LEVER / CLIP) 2. CORRECT KEYWAY (HOUSING / RETAINER / ETC) 3. COMPONENT POSITION (RETAINER / CPA / MBS / SEAL / LEVER / CLIP) 4. DOUBLE COMPONENT (SEAL / MBS / RETAINER) 5. COLOR (HOUSING / SEAL / RETAINER / OTHER COMPONENTS AS APPLICABLE) 6. DAMAGE (AS APPLICABLE) 7. OTHER FAILURE MODES AS IDENTIFIED BY ENGINEERING ON MACHINE SPECIFIC SAMPLE CHECK SHEET	RUN EACH MASTER CHECK SAMPLE THROUGH ASSEMBLY/INSPECTION MACHINE TO CONFIRM DETECTION	PER EACH AUTOMATIC MACHINE	EACH SHIFT (END OF SHIFT & CHANGEOVER), SOME SPECIFIED MACHINES ARE DAILY	SAMPLE CHECKSHEET	NOTIFY QA OR MAINTENANCE AS NEEDED 1. .REJECT / HOLD TAG PROCEDURE
				ASSEMBLED PARTS	INLINE INSPECTION (ROVING PATROL)		INLINE INSPECTOR	1. NO DAMAGE (FROM GRIPPERS / INSERTION JIGS, ETC) 2. COMPONENT PRESENCE (SEAL / RETAINER / MBS / LEVER / CLIP, ETC) 3. COMPONENT POSITION (RETAINER / CPA / MBS / SEAL / LEVER / CLIP, ETC) 4. COMPONENT COLOR (HOUSING / SEAL / RETAINER, ETC) 5. CORRECT KEYWAY (HOUSING / RETAINER, ETC) 6. INSPECTION MARK LEGIBLE	VISUAL INSPECTION PER MACHINE SPECIFIC CRITICAL POSITION CHECKSHEET (CPC) AND/OR APPLICABLE WORK INSTRUCTION	1 PC (1UP MACHINE) 2 PC (2UP MACHINE) EACH INSPECTION ROUND	ROVING PATROL	DAILY REPORT	NOTIFY LEADER / COORDINATOR / QA LEADER AS NEEDED.

PROCESS QUALITY CONTROL TABLE

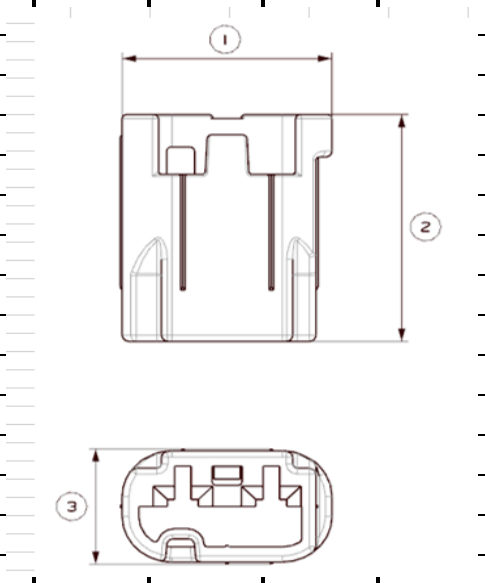
PART/ PROCESS NUMBER	PROCESS NAME/ OPERATION DESCRIPTION	MACHINE, DEVICE, JIG,TOOLS FOR ASSEMBLY	CHARACTERISTICS			CI	RESPONSIBILITY	METHODS		SAMPLE		SAMPLE RESULTS FORMAT	REACTION PLAN
			No.	PRODUCT	PROCESS			PRODUCT/ PROCESS SPECIFICATIONS	EVALUATION MEASUREMENT TECHNIQUE	SIZE	FREQUENCY	CONTROL METHOD	
0060	QA ASSEMBLY INSPECTION	N/A	0060	ASSEMBLED PRODUCT	PER QA INSPECTION INSTRUCTION SHEET ASSEMBLY		QA OPERATOR	ASSEMBLY APPEARANCE, FUNCTION AND MOLDING DEFECTS (TEST PER QAW-GA-003) VISUAL INSPECTION INCLUDES: 1. NO DAMAGE (FROM GRIPPERS / INSERTION JIGS, ETC) 2. COMPONENT PRESENCE (SEAL / RETAINER / MBS / LEVER / CLIP, ETC) 3. COMPONENT POSITION (RETAINER / CPA / MBS / SEAL / LEVER / CLIP, ETC) 4. COMPONENT COLOR (HOUSING / SEAL / RETAINER, ETC) 5. CORRECT KEYWAY (HOUSING / RETAINER, ETC) 6. INSPECTION MARK LEGIBLE	VISUAL: VERIFY RETAINER / SEAL INSERTED / MACHINE INSPECTION MARK. FUNCTION: WATERPROOF OTHER: AS APPLICABLE PER INSPECTION STANDARD.	ONE PIECE	Per QAW-GA-003	QA ASSEMBLY DATA ENTRY PROGRAM	NOTIFY SET-UP / LEADER / COORDINATOR 1. REJECT / HOLD TAG PROCEDURE
0070	ASSEMBLY PACKING / LABELING,	MACHINE BAGGER (IF APPLICABLE) , MACHINE COUNTER, LABELS & SCANNER, BAG LIFTER (IF APPLICABLE)	0070	1. CORRECT QUANTITY 2. CORRECT IDENTIFICATION 3. NO MIXED BAGS/PRODUCT	PACKING FINISHED PARTS		MACHINE OPERATOR	1. CORRECT LABEL (PART NUMBER.	1. CONFIRM LABELS MATCH SHOP ORDER AT MACHINE, SCAN SYSTEM	EACH BAG / CARTON	EACH BAG/BOX	BARCODE SCANNING PER AYW-SCANBAGTOBOX	NOTIFY SET-UP / LEADER / COORDINATOR, 1. REJECT TAG PROCEDURE
								2. NO MIXED BAGS IN BOX	2. SCAN EACH BAG LABEL TO BOX (SYSTEM DETECTION)				
								3A. BAG QUANTITY MATCHES LABEL QUANTITY	3A. MANUALLY COUNT FIRST BAG OF SHOP ORDER / COMPARE CORRECT QUANTITY PER BAG LABEL.	1 BAG	EACH STARTUP / SHIFT /	* MACHINE SPECIFIC OPERATION INSTRUCTION * ASSEMBLY DAILY REPORT * BARCODE SCANNING PER AYW-SCANBAGTOBOX	NOTIFY SET-UP / LEADER / COORDINATOR, 1. REJECT TAG PROCEDURE
								3B. CORRECT BOX QTY (CORRECT NUMBER OF BAGS IN BOX)	3B. SCAN EACH BAG LABEL TO BOX	EACH BAG			
								4. CORRECT PARTS IN BAG / BOX	4. CYCLE BAGGER / BOX FILL AT CHANGEOVER TO DROP PARTIAL BAG OF RESIDUAL PARTS / EJECT PARTIAL BOX (AS REQUIRED)	EACH CHANGE OVER	EACH CHANGEOVER	* MACHINE SPECIFIC CHANGE OVER CHECK SHEET	NOTIFY SET-UP / LEADER / COORDINATOR, 1. REJECT TAG PROCEDURE
	BOX WEIGHT (MACHINES WITH PRINT ON LABELS) @ FRANKLIN	SCALE		ASSEMBLED PRODUCT	WEIGH FINISHED GOODS BOX		MACHINE OPERATOR	5. CORRECT BAG/BOX QUANTITY	5. CONFIRM BOX WEIGHT (FRANKLIN)	EACH UNIT	EACH UNIT	ASSEMBLY DAILY REPORT	NOTIFY LEADER / CORDINATOR
0080	FINISHED PRODUCT STAGING	N/A	0080	ASSEMBLED PRODUCT	FINISHED PRODUCT STAGING		JIT OPERATOR	REPORT PRODUCTION, STAGE FINISHED GOODS	ELECTRONIC BPCS SYSTEM (SCANNING SYSTEM)	EACH CONTAINER / BOX	CONTINUOUS	ELECTRONIC BPCS SYSTEM (SCANNING SYSTEM)	NOTIFY LEADER / COORDINATOR REJECT TAG PROCEDURE
0085	BOX WEIGH	MACHINES & BAGGERS WITH PRINT ON BAG LABELS	0085	ASSEMBLED PRODUCT	WEIGH FINISHED GOOD BOX		TRAINED ASSOCIATE	PER WORK INSTRUCTION	CONFIRMATION OF BOX WEIGHT PER WORK INSTRUCTION	EACH BOX	CONTINUOUS	AYF - DAILYINSPLOG, CALIBRATED SCALE	NOTIFY LEADER / COORDINATOR 1. REJECT TAG PROCEDURE
0090	FINISHED GOODS STORAGE	N/A	0090	ASSEMBLED PRODUCT	WAREHOUSE / SHIPPING		WAREHOUSE / SHIPPING OPERATOR	1. TRANSFER TO MILK RUN TRUCK 2. CORRECT STORAGE LOCATION	ELECTRONIC BPCS SYSTEM (SCANNING SYSTEM)	EACH BOX	CONTINUOUS	ELECTRONIC BPCS SYSTEM (SCANNING SYSTEM)	NOTIFY : SHIPPING / RECEIVING LEADER, SUPERVISOR & QA IF NEEDED
0100	SHIPPING DOCK AUDIT	N/A	0100	1. LABEL 2. CARRIER 3. BOL / DELIVERY 4. PART# 5. PACKAGING 6. SKID 7. REQ. / PO# 8. CORRECT AIAG LABEL / BOX LABEL	SHIPPING DOCK AUDIT		RECEIVING / SHIPPING CLERK OR HIGHER	1. CORRECT LABEL 2. CORRECT CARRIER 3. CORRECT BOL/DELIVERY 4. CORRECT PART# 5. NO PACKAGING DAMAGE 6. SKID OF MATERIAL CORRECTLY STACKED 7. CORRECT REQ. / PO#	VISUAL COMPARISON	RANDOM BOX / PART / SHIPMENT	WEEKLY	SV5 SHIPPING DOCK AUDIT SHEET	NOTIFY : SHIPPING / RECEIVING DEPARTMENT, SUPERVISOR & QA IF NEEDED
0110	SHIPPING FINISHED ASSEMBLED GOODS	N/A	0110	1. PROPER LABEL 2. PROPER PART NUMBER	LABELING AND SHIPPING FINISHED GOODS		SHIPPING / RECEIVING OPERATORS	1. PRESENT, CORRECT, CLEAR AND LEGIBLE LABELS 2. CORRECT PART NUMBER 3. CORRECT AND MATCHING AIAG SHIPPING LABELS (for customers requiring 2 AIAG labels)	BAR-CODE SCANNER-BPCS SYSTEM	EACH BOX / CONTAINER	EACH BOX / CONTAINER	ELECTRONIC BPCS SYSTEM-OPERATOR SCANNING	NOTIFY SHIPPING LEADER
	ANNUAL LAYOUT			PER CUSTOMER DRAWING			PPAP GROUP	PER CUSTOMER DRAWING	PER CUSTOMER REQUIREMENTS	PER CUSTOMER REQUEST	PER CUSTOMER REQUEST	CUSTOMER PPAP	NOTIFY QA ENGINEER / MANAGER

CPK DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)
PART Name/Desc: **FOW120A02FA-B**
PART NO (s): **6189-7456, 6189-7673**
Mold #: **1843-A**

Tested by/Date: Robin Casada 5/6/2021
Design Rec. Change level/date:
EU5T-14A464-TB P3 9/9/2020
Eng. Change Documents: NA

CAVITY #: →	M57~M88								
	9.50 +0.2 -0.2	11.20 +0.5 -0.5	5.70 +0.2 -0.2						
1	9.533	#####	5.638						
2	9.532	#####	5.635						
3	9.531	#####	5.625						
4	9.521	#####	5.615						
5	9.521	#####	5.608						
6	9.522	#####	5.633						
7	9.527	#####	5.643						
8	9.529	#####	5.672						
9	9.525	#####	5.648						
10	9.526	#####	5.670						
11	9.528	#####	5.655						
12	9.526	#####	5.644						
13	9.528	#####	5.630						
14	9.528	#####	5.639						
15	9.529	#####	5.640						
16	9.531	#####	5.638						
17	9.525	#####	5.638						
18	9.520	#####	5.648						
19	9.517	#####	5.632						
20	9.517	#####	5.636						
21	9.524	#####	5.622						
22	9.524	#####	5.638						
23	9.532	#####	5.636						
24	9.517	#####	5.634						
25	9.515	#####	5.628						
26	9.514	#####	5.635						
27	9.518	#####	5.626						
28	9.516	#####	5.635						
29	9.510	#####	5.639						
30	9.507	#####	5.639						
31	9.506	#####	5.634						
32	9.499	#####	5.637						
33	9.501	#####	5.636						
34	9.500	#####	5.649						
35	9.539	#####	5.636						
36	9.539	#####	5.644						
37	9.539	#####	5.639						
38	9.521	#####	5.621						
39	9.521	#####	5.624						
40	9.519	#####	5.622						
41	9.512	#####	5.604						
42	9.511	#####	5.597						
43	9.511	#####	5.598						
44	9.513	#####	5.613						



CPK DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)
PART Name/Desc: **FOW120A02FA-B**
PART NO (s): **6189-7456, 6189-7673**
Mold #: **1843-A**

Tested by/Date: Robin Casada 5/6/2021
Design Rec. Change level/date:
EU5T-14A464-TB P3 9/9/2020
Eng. Change Documents: NA

CAVITY #: →	M57~M88								
	9.50 +0.2 -0.2	11.20 +0.5 -0.5	5.70 +0.2 -0.2						
45	9.513	#####	5.628						
46	9.513	#####	5.640						
47	9.524	#####	5.628						
48	9.523	#####	5.629						
49	9.523	#####	5.626						
50	9.521	#####	5.658						
51	9.522	#####	5.639						
52	9.525	#####	5.657						
53	9.514	#####	5.609						
54	9.507	#####	5.614						
55	9.510	#####	5.602						
56	9.506	#####	5.624						
57	9.507	#####	5.629						
58	9.508	#####	5.642						
59	9.524	#####	5.612						
60	9.525	#####	5.628						
61	9.526	#####	5.643						
62	9.516	#####	5.648						
63	9.522	#####	5.643						
64	9.517	#####	5.642						
65	9.497	#####	5.631						
66	9.498	#####	5.634						
67	9.496	#####	5.624						
68	9.504	#####	5.617						
69	9.508	#####	5.615						
70	9.510	#####	5.615						
71	9.516	#####	5.640						
72	9.518	#####	5.638						
73	9.516	#####	5.624						
74	9.533	11.28	5.625						
75	9.532	11.27	5.621						
76	9.531	11.28	5.610						
77	9.521	#####	5.633						
78	9.520	#####	5.614						
79	9.523	#####	5.613						
80	9.524	#####	5.662						
81	9.522	#####	5.643						
82	9.521	#####	5.648						
83	9.533	#####	5.616						
84	9.531	#####	5.635						
85	9.530	#####	5.625						
86	9.519	#####	5.645						
87	9.518	#####	5.631						
88	9.540	#####	5.620						

CPK DATA

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)
PART Name/Desc: **FOW120A02FA-B**
PART NO (s): **6189-7456, 6189-7673**
Mold #: **1843-A**

Tested by/Date: Robin Casada 5/6/2021
Design Rec. Change level/date:
EU5T-14A464-TB P3 9/9/2020
Eng. Change Documents: NA

CAVITY #: →	M57~M88								
	9.50 +0.2 -0.2	**11.20** +0.5 -0.5	**5.70** +0.2 -0.2						
89	9.527	#####	5.634						
90	9.527	#####	5.622						
91	9.527	#####	5.642						
92	9.521	#####	5.629						
93	9.521	#####	5.658						
94	9.520	#####	5.651						
95	9.537	#####	5.639						
96	9.537	#####	5.629						
97	9.535	#####	5.629						
98	9.537	#####	5.628						
99	9.539	#####	5.627						
100	9.537	#####	5.615						

average	9.52	11.26	5.63
minimum	9.50	11.24	5.60
maximum	9.54	11.28	5.67
range	0.04	0.04	0.07
std dev	0.01	0.01	0.01
LSL	**9.30**	**10.70**	**5.50**
NOM	**9.50**	**11.20**	**5.70**
USL	**9.70**	**11.70**	**5.90**
CPK	5.741301312	11.05357075	3.052905029

TPATO HOUSING RETENTION FORCE DATA

Specification: **SEE BELOW**

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)
PART Name/Desc: **FOW120A02FA-B**
PART NO (s): **6189-7456, 6189-7673**
Mold #: **1843-A**

Tested by/Date: Robin Casada 5/17/2021
Design Rec. Change level/date:
EU5T-14A464-TB P3 9/9/20
Eng. Change Documents: NA

PRE-ASSEMBLED STATUS TO EXTRACTION SPEC: 25.0 N MIN

CAVITY # →	M57	M58	M59	M60	M61	M62	M63	M64	M65	M66	M67	M68	M69	M70	M71	M72
1	36.2	36.3	38.7	37.9	39.5	36.8	42.0	37.8	38.0	38.3	40.6	38.5	33.8	38.0	42.0	37.0
2	37.9	38.2	37.9	40.7	38.8	39.0	41.3	37.9	39.6	41.1	38.7	40.4	38.2	38.8	37.7	37.7
3	40.0	38.0	39.0	36.6	36.2	38.9	40.3	35.5	38.2	38.1	40.5	37.3	39.0	38.9	41.6	37.2

CAVITY # →	M73	M74	M75	M76	M77	M78	M79	M80	M81	M82	M83	M84	M85	M86	M87	M88
1	39.6	35.6	37.0	36.7	39.3	38.2	36.5	38.2	37.7	36.5	38.8	37.8	37.8	36.6	37.9	37.8
2	40.8	39.5	40.1	41.0	41.4	38.9	43.6	39.9	38.9	41.0	39.6	41.6	39.1	38.2	42.7	41.0
3	37.5	38.4	34.2	36.4	38.9	39.0	38.7	40.6	38.8	38.5	39.3	36.8	35.1	38.2	36.4	36.6

AVERAGE 38.6
MIN 33.8
MAX 43.6

TPA TO HOUSING INSERTION FORCE DATA

Specification: **SEE BELOW**

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)
PART Name/Desc: **FOW120A02FA-B**
PART NO (s): **6189-7456, 6189-7673**
Mold #: **1843-A**

Tested by/Date: Robin Casada 5/17/2021
Design Rec. Change level/date:
EU5T-14A464-TB P3 9/9/20
Eng. Change Documents: NA

PRE-ASSEMBLED STATUS TO ASSEMBLED STATUS (WITHOUT TERMINALS) SPEC: 15.0 N MIN

CAVITY # →	M57	M58	M59	M60	M61	M62	M63	M64	M65	M66	M67	M68	M69	M70	M71	M72
1	33.2	34.5	34.4	33.8	36.0	37.4	35.3	35.2	35.0	38.6	39.5	36.5	35.6	33.1	34.6	32.0
2	36.9	40.4	36.7	36.5	40.1	36.7	39.6	35.4	34.1	42.7	38.6	37.6	39.0	41.0	43.4	38.3
3	36.8	40.6	33.4	33.6	34.3	36.3	36.9	34.2	35.3	37.3	36.3	39.9	32.3	35.8	37.2	36.7

CAVITY # →	M73	M74	M75	M76	M77	M78	M79	M80	M81	M82	M83	M84	M85	M86	M87	M88
1	35.3	41.3	36.5	34.8	34.0	33.5	35.3	33.4	33.8	36.4	37.9	34.6	32.9	37.7	39.5	32.4
2	37.8	42.1	43.9	35.9	41.7	41.7	39.5	43.7	36.9	44.2	41.2	43.9	39.0	39.4	37.8	38.0
3	33.5	37.0	35.3	38.3	37.8	40.3	37.2	38.3	37.7	40.7	36.7	39.2	35.6	38.5	40.1	36.7

AVERAGE 37.3
MIN 32.0
MAX 44.2

PRE-ASSEMBLED STATUS TO ASSEMBLED STATUS (WITH TERMINALS) SPEC: 60.0 N MAX

CAVITY # →	M57	M58	M59	M60	M61	M62	M63	M64	M65	M66	M67	M68	M69	M70	M71	M72
1	33.3	38.6	38.4	43.1	43.1	41.8	40.9	40.8	43.1	45.9	44.0	43.3	43.1	43.0	40.6	43.6
2	37.3	42.5	37.5	35.2	40.2	43.6	42.1	42.4	43.4	45.9	45.1	40.7	44.9	42.6	44.0	42.2
3	33.9	43.3	36.1	40.9	39.0	43.5	40.0	40.4	45.7	43.5	39.8	42.9	38.2	41.4	42.0	42.8

CAVITY # →	M73	M74	M75	M76	M77	M78	M79	M80	M81	M82	M83	M84	M85	M86	M87	M88
1	43.7	46.8	46.2	44.2	43.5	44.5	42.9	38.0	46.5	39.8	37.3	39.9	41.1	41.7	39.5	39.4
2	40.6	46.6	41.5	38.6	43.7	48.3	44.0	47.0	42.0	40.6	39.8	35.9	37.9	45.8	43.5	41.3
3	40.3	42.0	42.8	41.7	41.2	44.8	40.9	43.4	41.1	41.8	37.7	40.3	35.7	41.2	43.5	44.4

AVERAGE 41.7
MIN 33.3
MAX 48.3

TPA TO HOUSING RETENTION FORCE DATA

Specification: **SEE BELOW**

ORGANIZATION: SUMITOMO ELECTRIC WIRING SYSTEMS (PLT.5)
PART Name/Desc: **FOW120A02FA-B**
PART NO (s): **6189-7456, 6189-7673**
Mold #: **1843-A**

Tested by/Date: Robin Casada 5/18/2021
Design Rec. Change level/date:
EU5T-14A464-TB △P3 9/9/20
Eng. Change Documents: NA

ASSEMBLED STATUS TO PRE-ASSEMBLED STATUS (INITIAL) SPEC: 60.0 N MAX

CAVITY # →	M57	M58	M59	M60	M61	M62	M63	M64	M65	M66	M67	M68	M69	M70	M71	M72
1	34.7	31.2	33.6	31.4	30.5	27.7	31.7	32.0	30.1	33.9	33.0	34.4	25.5	29.1	27.7	33.8
2	37.1	33.5	36.9	35.1	36.5	38.9	34.6	37.0	39.0	35.7	36.7	34.6	36.6	37.7	33.5	34.6
3	34.9	35.6	35.0	34.5	34.9	34.2	35.2	34.6	36.3	33.7	34.5	37.2	35.4	33.4	33.1	35.3

CAVITY # →	M73	M74	M75	M76	M77	M78	M79	M80	M81	M82	M83	M84	M85	M86	M87	M88
1	35.0	33.1	31.1	33.3	34.4	33.8	32.0	36.4	33.9	29.7	34.0	34.6	28.2	31.6	33.1	33.9
2	37.9	34.1	32.6	34.7	37.7	36.7	36.7	35.3	35.0	37.8	34.8	32.9	35.3	34.4	38.1	34.7
3	34.9	32.4	33.8	36.9	34.6	33.8	33.8	34.7	37.9	34.8	33.1	33.5	35.3	34.1	33.4	32.6

AVERAGE 34.2
MIN 25.5
MAX 39.0

ASSEMBLED STATUS TO PRE-ASSEMBLED STATUS (SECOND) SPEC: 15.0 N MIN

CAVITY # →	M57	M58	M59	M60	M61	M62	M63	M64	M65	M66	M67	M68	M69	M70	M71	M72
1	21.4	21.5	19.4	22.3	31.8	18.5	18.6	18.4	15.5	25.7	15.3	21.3	22.7	21.2	21.6	21.2
2	18.5	22.9	20.3	21.4	20.3	29.2	20.2	21.1	22.8	23.6	22.2	21.5	19.2	22.0	36.6	21.6
3	23.2	21.8	20.6	20.0	20.8	24.6	26.5	20.1	22.1	21.4	19.9	22.4	21.1	21.2	20.7	20.4

CAVITY # →	M73	M74	M75	M76	M77	M78	M79	M80	M81	M82	M83	M84	M85	M86	M87	M88
1	19.9	25.5	19.4	23.6	21.9	23.5	19.4	22.8	20.8	25.5	23.4	21.9	26.3	18.9	28.0	19.3
2	22.9	20.8	28.4	18.4	22.9	22.4	26.9	20.0	22.5	29.0	20.0	22.1	24.2	20.9	18.9	17.4
3	20.7	21.0	21.8	22.4	19.9	20.2	24.3	22.5	22.4	24.0	23.5	21.8	22.5	21.1	21.7	23.9

AVERAGE 22.1
MIN 15.3
MAX 36.6

Sumitomo Electric Wiring Systems, Inc

Gage R&R Study

05/19/2021

Study Date: 5/18/2021 12:00:00 AM
Gage ID: SN1000104
Gage Desc: Profile Projector
Appraisers: 3 **Trials:** 3 **Parts:** 10
Study Type:
MSA Version: 4

Company Part No.: Mold 268
Part No.:
Part Desc: HW09-RET-06
Characteristic: Length
Specification Limits: **Min** 19.6 **Max** 20.02

☑ Approved **Pp (or Ppk) Target** **6-Sigma Proc Variation**

	Appr A: S. Disman			Appr B: M. Haddix			Appr C: T. Holland		
1	20.01	20.02	20.02	20.02	20.01	20.02	20.02	20.01	20.01
2	20.05	20.06	20.05	20.05	20.05	20.04	20.06	20.04	20.05
3	19.72	19.73	19.71	19.71	19.72	19.71	19.72	19.72	19.73
4	20.09	20.08	20.08	20.09	20.08	20.09	20.09	20.08	20.08
5	19.85	19.84	19.86	19.86	19.84	19.85	19.86	19.85	19.85
6	20.08	20.06	20.07	20.06	20.07	20.07	20.08	20.07	20.07
7	20.02	20.02	20.01	20.03	20.02	20.03	20.02	20.02	20.01
8	19.72	19.72	19.7	19.72	19.7	19.71	19.72	19.72	19.71
9	20.01	20.01	20	20.01	20	20.01	20	20.01	20
10	19.67	19.67	19.67	19.67	19.67	19.67	19.67	19.68	19.67

	Std. Dev.	% Contribution	% TV	% Tol		
Repeatability (EV):	0.006893	0.3%	5.3%	9.8%	**R bar:**	0.011667
Reproducibility (AV):	0.000000	0.0%	0.0%	0.0%	**UCL-R:**	0.030100
Appraiser x Part (INT):					**Study Variation:**	0.130217
GRR:	**0.006893**	**0.3%**	**5.3%**	**9.8%**	**Total Variation (TV):**	0.130217
Part-to-Part (PV):	0.130035	99.7%	99.9%	99.5%	**Tolerance/6 (Tol):**	0.070000
	number of distinct categories:		26.6	14.2		

* 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: E Sapp Date: 5/19/21

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GRR Analysis Sheet

Study Date: 5/18/2021 12:00:00 AM
Gage ID: SN1000104
Gage Desc: Profile Projector
Appraisers: 3 **Trials:** 3
Study Type: Long-AIAG 4

R bar A = 0.013000 X bar A = 19.920000
R bar B = 0.011000 X bar B = 19.919333
R bar C = 0.011000 X bar C = 19.920667
R bar = **0.0116670** X bar Diff = **0.001333**

Company Part No.: Mold 268
Part No.:
Part Desc: HW09-RET-06
Characteristic: Length
Specification Limits: 19.6 20.02
6 Sigma Process Variation:
Pp (or Ppk) Target:

Rp = **0.413334** Tol/6 = **0.070000**

Measurement Unit Analysis	% Total Variation (TV)	% Tolerance
Repeatability - Equipment Variation (EV) EV = R bar x K1 = **0.006893** Trials K1: 2 0.8862; 3 0.5908	% EV = 100 [EV / TV] = **5.3%**	% EV = 100 [EV / (Tol / 6)] = **9.8%**
Reproducibility - Appraiser Variation (AV) AV = $\sqrt{[(\text{X bar Diff} \times K2)^2 - (EV^2 / n \times r)]}$ = **0.000000** Appraisers 2 3; K2 0.7071 0.5231 Note: If a negative value is calculated under the square root sign, AV defaults to zero. n = number of parts; r = number of trials	% AV = 100 [AV / TV] = **0.0%**	% AV = 100 [AV / (Tol / 6)] = **0.0%**
Repeatability and Reproducibility (GRR) GRR = $\sqrt{(EV^2 + AV^2)}$ = **0.006893**	%GRR = 100 [GRR / TV] = **5.3%**	% GRR = 100 [GRR / (Tol / 6)] = **9.8%**
Part Variation (PV) PV = Rp x K3 = **0.130035** 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)] = **99.5%**
	In MSA4, for % Tolerance, PV = SQRT [(Tol / 6)^2 - (GRR)^2]	
	ndc = 1.41(PV/GRR) = **26.6**	ndc = 1.41(PV/GRR) = **14.2**
Total Variation (TV) TV = $\sqrt{(GRR^2 + PV^2)}$ = 0.130217	If the 6 sigma process variation is known, then TV = [6 sigma process variation] / 6.00 and PV = SQRT[(TV^2) - (GRR)^2].	

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WORK INSTRUCTION

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

PURPOSE:	APPLICATION:
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.	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 - WATERPROOFTEST	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 - WATERPROOFTEST	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			