



## POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS ( PROCESS FMEA )

Customer :-		ENDURANCE TECHNOLOGIES .LTD					FMEA Number :-		FMEA/ETL/011					Process Responsibility :-		Prod / QA						
Part No :-		S1HT011070/XB					Key Date :-		.02/11/17					FMEA DATE		REV.NO <td colspan="5" rowspan="2">CHANGE DETAILS</td>		CHANGE DETAILS				
Part Name :-		Outer Spring					Core Team :-		Mr.Shashank,Mr.Chandrasekhar, Mr.Manikant,Mr.Yash,Mr.Paresh, Mr. Maheshwar, Mr.Parmanand					Prepared By :-		Manikant						
Item Code :-		FFFS70052					Supplier :-		Stump, Schuele & Somappa Springs Pvt Ltd					Recommended Action (S)		Responsibility & Target Date						
Process No	Process Function	Potential Failure Mode	Potential Effect (s) of Failure	SEV	Class	Potential Cause(s) / Mechanism(s) of Failure	Occur	Current process control		Detect	RPN	Recommended Action (S)	Responsibility & Target Date	Action Results								
	Requirments							Prevention	Detection					Action Taken	SEV	OCC	DET	RPN				
OP 05	Receipt & Inspection of raw material	Wrong grade of raw material supplied by the supplier	Next / Further : Component will not meet the drawing specification Customer : Customer dissatisfaction	8	--	Supplier not checked the material before loading	1	Supplier has to ensure the grade of material and identification of grade before loading	Verification of TC & DC and Identification tag as per PO before unloading	8	64	None	---	---	--	--	--	---				
		Wire dia not as per purchase order.	Customer dissatisfaction	8	--		1	Supplier has to ensure the wire dia of the material and identification of wire on the packing before loading	Verification of DC and Identification tag as per PO before unloading	8	64	None	---	---	--	--	--	---				
		Raw material received in damaged and / or rust condition	Next / Further : Unfit for production Customer : Customer dissatisfaction	8	--	1. Improper handling during transportation 2. Improper packing by the supplier	2	Supplier has to ensure the condition of packing as per the specification before loading	Visual Inspection of RM condition and packaging condition as per visual aid before unloading	8	128	None	---	---	--	--	--	---				
		Receipt of raw material without test certificate & identification	Next / Further : material will not be inward Customer : Not able to meet the customer schedule	2	--	Supplier does not sent the test certificate	2	Supplier has to ensure the test certificate should be sent along with all consignments before loading	Verification of TC & DC and Identification tag as per PO before unloading	8	32	None	---	---	--	--	--	---				
		The supplier test certificate doesn't match with the specification	Next / Further : material will not be inward Customer : Not able to meet the customer schedule	8	--	Supplier not checked the material with the specification before loading	1	Supplier has to ensure the test certificate matching with the specification	Verification of TC as per incoming Inspection standard	8	64	None	---	---	--	--	--	---				
	Storage of raw material	Raw material damaged and / or rusted	Next / Further : material will not be inward Customer : Not able to meet the customer schedule	8	--	Raw material not stored in good condition	1	1.Supplier has to ensure the raw matrial with good packaging & transport 2. SSS should store the material in proper location	periodic verification of raw material condition and proper packing & Oiling will be carried out	8	64	None	---	---	--	--	--	---				
		Mixup of raw material with other grade / size	Next / Further : material will not be inward Customer : Not able to meet the customer schedule	2	--	Raw material not identified and stacked properly	1	periodic verification of raw material for tag & stacking in the specifically allocated & Identified racks to be carried out	Identification of raw material by tag & stacking in the specifically allocated & Identified racks	8	16	None	---	---	--	--	--	---				

OP 10	Winding - RH	Free length less / More than the specification	Next / Further Operation: Load week / strong Customer : Not fit for assy and customer dissatisfaction	6	--	1.Improper pitch tool position & cams	2	1. Machine setting card 2. Setup approval to be done.	Inprocess inspection	6	72	None	---	---	--	--	--	---
		Inner / Outer diameter less / more than the specification	Next / Further Operation: Load week / strong Customer : Not fit for assy and customer dissatisfaction	7	--	1. Improper setting of coiling roller	2	1. Machine setting card 2. Setup approval to be done.	Inprocess inspection	6	84	None	---	---	--	--	--	---
		No of coils more / less than the specification	Next / Further Operation: Load week /strong Customer : customer dissatisfaction	7	--	Improper engagement of clutch during coiling	2	1. Machine setting card 2. Setup approval to be done.	Inprocess inspection	6	84	None	---	---	--	--	--	---
		Excess Burr	Next / Further : Poor appearance Customer : Customer dissatisfaction	7	--	Blunt tool	2	Regrinding of cuttingtool & coiling roller after the production of 100K pieces	Inprocess inspection by visual	7	98	None	---	---	--	--	--	---
		Tool / Roller / Surface marks	Next / Further : Reduced spring life Customer : Failure of spring in field	7	--	Improper alignment of feed rollers	2	Work instruction	Inprocess Inspection	7	98	None	---	---	--	--	--	---
		Mix up	Next / Further : Rejection Customer : Not fit for assy	7	--	Work instructions not followed	2	100% load sorting	Inprocess Inspection	4	56	None	---	---	--	--	--	---

OP 20 Stress Relieving

Duration less / more	Next / Further : Spring load will become strong / Weak Customer : Fitment & Functional Problem	6		1Duration of tempering time more / less than the specification	3	By Adjusting The Knob and locking System	Calibration Record	5	90	None	---	---	--	--	--	---
Temperature less / more	Next / Further : Spring load will become strong / Weak Customer : Fitment & Functional Problem	6		1.Improper Adjustment	3	Proper Set Up and locking System	Calibration Record	5	90	None	---	---	--	--	--	---
Tempering delay	Next / Further : Deformed / breakage Customer : Vehicle operable at Reduced level of performance	6		Due to over load, Machine b/d	2	Work instruction	Tmer Control	5	60	None	---	---	--	--	--	---
Delayed Tempering	Next / Further : Deformed / breakage Customer : Vehicle operable at Reduced level of performance	6		Due to over load, Machine b/d	2	Work instruction	Tmer Control	5	60	None	---	---	--	--	--	---
Diameter less / more than the specification	Next / Further : Spring load will become strong / Weak Customer : Fitment & Fuctional Problem	7		1.Furnace temprature more / less than the specification 2.Stress relieving duration more / less than the specification.	2	1. Setup approval to be done for the process & product parameters as per Work std / Machine setting card with a)Furnace temperature b) Duration c) Generator switch on instruction when the power	Inprocess inspection	6	84	None	---	---	--	--	--	---
		7		Power failure	4	Generater will be switched on within 5'		2	56	None	---	---	--	--	--	---
Improper stress relief	Next / Further : Spring load will become strong / Weak Customer : Fitment & Functional Problem	6		1.Furnace temprature more / less than the specification 2.Stress relieving duration more / less than the specification.	3	1. Setup approval to be done for the process & product parameters as per Work std / Machine setting card with a)Furnace temperature b) Duration c) Generator switch on instruction when the power failure	Inprocess inspection	5	90	None	---	---	--	--	--	---
		6		Power failure	3	Generator will be switched on within a 5'		5	90	None	---	---	--	--	--	---
Operation Missing	Next / Further : Spring may yield during functioning Customer : Fitment and Functional Problem	7	--	Working slip not followed	2	Work instruction	Inprocess inspection	6	84	None	---	---	--	--	--	---
Mixup	Next / Further : Rejection at next operation Customer : Not able to meet the customer schedule	6	--	Conveyor not cleaned before loading	2	Error proofing in Operation No.30	Inprocess inspection	6	72	None	---	---	--	--	--	---

OP 30 Grinding

Free length less / more than the specification	Next / Further : Spring load will become strong / weak Customer : Fitment and Functional Problem	6	--	VariationFeed rate of magazine plate	4	1. Setup approval to be done as per grinding advice card 2.Preventive maintenance of the machine 3.Periodical check of Magazine plate feed rate 4.Periodical Dressing of grinding wheel	Inprocess inspection	4	96	None	---	---	--	--	--	---
Axial squareness more than the specification	Next / Further : Rejected at final inspection Customer : Customer dissatisfaction	6	--	1.Excess clearance in magazine plate bush & spring 2.Improper setting of magazine plate	3	Clearance between bush and spring and magazine plate position to be checked during setup approval	Inprocess inspection	5	90	None	---	---	--	--	--	---
Solid height more than the specification	Next / Further : Rejected at final inspection Customer : Functional Problem	6	--	No of coils more than the specification during winding	3	Solid height to be checked during Set up approval	Inprocess inspection	5	90	None	---	---	--	--	--	---
Parallelism more than the specification	Next / Further : Rejected at final inspection Customer : Customer dissatisfaction	6	--	1.Excess clearance in magazine plate bush & spring 2.Improper setting of magazine plate	2	Clearance between bush and spring and magazine plate position to be checked during setup approval	Inprocess inspection	7	84	None	---	---	--	--	--	---
End coil gap more than the specification	Next / Further : Rejected at final inspection Customer : Fitment & Functional Problem	7	--	1.Excess clearance in magazine plate bush & spring 2.Improper setting of magazine plate	2	Clearance between bush and spring and magazine plate position to be checked during setup approval	Inprocess inspection	7	98	None	---	---	--	--	--	---
Tip thickness less than the specification	Next / Further : Rejected at final inspection Customer : Fitment & Functional Problem	6	--	1.Excess clearance in magazine plate bush & spring 2.Improper setting of magazine plate	3	Clearance between bush and spring and magazine plate position to be checked during setup approval	Inprocess inspection	5	90	None	---	---	--	--	--	---
Ground face angle less than the specification	Next / Further : Rejected at final inspection Customer : Fitment & Functional Problem	6	--	1.Excess clearance in magazine plate bush & spring 2.Improper setting of magazine plate	3	Clearance between bush and spring and magazine plate position to be checked during setup approval	Inprocess inspection	5	90	None	---	---	--	--	--	---
Grinding damage & Burr	Next / Further : Rejection at next operation Customer : Not able to meet the customer schedule	6	--	1.Misalignment of guide plate 2.Excess depth of cut 3. Improper dressing of grinding wheel	3	1.Magazine plate alignment , Depth of cut to be checked during Set up approval 2. Periodic Dressing of grinding wheel	Inprocess inspection	5	90	None	---	---	--	--	--	---
Breakage to grinding	Next / Further : Rejection at next operation Customer : Not able to meet the customer schedule	6	--	1.Misalignment of guide plate 2.Excess depth of cut 3. Improper dressing of grinding wheel	3	1.Magazine plate alignment , Depth of cut to be checked during Set up approval 2. Periodic Dressing of grinding wheel	Inprocess inspection	5	90	None	---	---	--	--	--	---
Operation Missing	Next / Further : Rejection at next operation Customer : Not able to meet the customer schedule	6	--	Working slip not followed	2	Pokayoke in Operation No.60	Inprocess inspection	8	96	None	---	---	--	--	--	---

OP 40

**Shot Peening**

Less Intensity		6	--	1. Duration less	2	Timer	Setup approval	5	60	None	---	---	--	--	--	---
		6	--	2. Shot size variation	2	Periodical seiving	Setup approval	5	60	None	---	---	--	--	--	---
		6	--	3. Shot level less	2	Setup for every batch	Visual Inspection	8	96	None	---	---	--	--	--	---
Insufficient Coverage	Next/Further Operation: Rework Customer : Customer dissatisfaction	6	--	1. Duration less 2. Less qty of shots 3. Ark height variation	2	Set Up approval & Periodical checking	Inprocess Inspection	5	60	None	---	---	--	--	--	---
Arc height variation		6	--	1. Shot level less 2. Shot sieving not done	2	1. Periodical seiving 2. Work Instruction	Inprocess Inspection	5	60	None	---	---	--	--	--	---
Shot size variation		6	--	1. Shot sieving not done Periodically	2	Periodical seiving	Inprocess Inspection	8	96	None	---	---	--	--	--	---
Shot level variation		6	--	Work insructions not followed	2	Shot level indicator	Inprocess Inspection	8	96	None	---	---	--	--	--	---
Delayed Shotpeening		5	--	Due to over load, Machine b/d	2	Work instruction	Visual Inspection	7	70	None	---	---	--	--	--	---
Shotpeening delay		5	--	Due to over load, Machine b/d	2	Work instruction	Visual Inspection	7	70	None	---	---	--	--	--	---
Mixup		6	--	Old batch spring held up in shotpeening M/c	2	Work instruction	Inprocess inspection	8	96	None	---	---	--	--	--	---
Operation Missing		7	--	Working slip not followed	2	Work instruction	Inprocess Inspection	7	98	None	---	---	--	--	--	---

OP 50	Stress Relieving-2	Tempering operation missing.	Next / Further : Spring may yield during functioning Customer : Fitment and Functional Problem	7	--	Working slip not followed	2	Root card.	Inprocess inspection	5	70	None	---	---	--	--	--	---
OP 60	Scragging	Free length Less / more than the specification	Next / Further : Load weak / strong Customer : Customer dissatisfaction	6	--	Not set to the proper height  Scragging Bush Wear out (Under size)	3	Setup approval	100% Inspection	5	90	None	---	---	--	--	--	--
		Deformation Bend / Buckling	Next/Further: Rework / Rejected Customer : Not fit for assy	6	--	Improper alignment of end fixture	2	100% load group identification	Inprocess Inspection	8	96	None	---	---	--	--	--	---
		Operation Missing	Next / Further :- Customer : Fitment and Functional Problem	7	--	Working slip not followed	2	100% load group identification	Inprocess Inspection	6	84	None	---	---	--	--	--	---
OP 70	100% Lo,e1, e2 Sorting	e1 More e2 More Length more/Les	Assembly problem Performance failure	6	--	Unskilled Operator Improper setting of machine Worn out contour gauge	4	Work instruction	100% Inspection with gauge	4	96	None	---	---	--	--	--	---
OP 80	Powder Coating	In house ( QS – FMEA – 001)																
OP 90	Final Inspection	Product parameters not meeting the specifications	Next / Further : Rework / Reject Customer : Fitment / Functional problem / Premature failure	6	--	1.Error in measuring instruments 2.Inspection standard not followed during Inprocess inspection 3. Final inspection not carried out	2	1.Calibration of Instruments as per the defined frequency 2.Product audit 3.Layout inspection	Final inspection as per the specified qty and frequency in the control plan	8	96	100% ID sorting will be done.	Production	100% ID sorting Started.	6	2	6	72
OP 100	Packing	1.Damage of parts	Next / Further : Rework / Reject Customer : Poor appearance and Premature fatigue failure	7	--	1.Wrong packing material used 2.Wrong packing method	1	Packing approval to be done Packing material and packing method	Product audit	8	56	None	---	---	--	--	--	---
		Shortage / excess no of packing	Next / Further : material will not be inwards at customer end Customer : Not able to meet the customer schedule	6	--	packing operator not followed the packing standard	2	Packing approval to be done for no parts		8	96	None	---	---	--	--	--	---
		Mix up	Next / Further : Reject Customer: Customer dissatisfaction	6	--	Old batch spring held up in Packing table	2	1.Work Instruction		8	96	None	---	---	--	--	--	---

Note : Next review Oct'21 or update against any complaints / improvements (Eg. PY /RPN/HD )

( Note : (1)Determining Review / Action Priorities

Having updated the rankings for severity, occurrence and detection, efforts are put to reduce the risk. Following guideline is given when prioritizing the actions;

- a). Failure modes with highest rankings- when severity is 9 or 10 the risk has to be addressed through existing design controls or recommended actions ( as documented in FMEA )
- b). For failure modes with severities of 8 or below, consideration is given to causes with highest occurrence or detection ranking..
- c). While recognizing acceptable risk, it is important to do a thorough analysis of severity, occurrence and detection and not on the basis of RPN.

# CONTROL PLAN

<input type="checkbox"/>	Prototype	<input type="checkbox"/>	Pre-launch	<input checked="" type="checkbox"/>	Production							
Control Plan Number :		Control Plan Number : CP/ ETL /011			Key Contact / Phone :		Udham Singh / 9729202173 udham.singh@ssssprings.com		Control plan Date	Rev.no	Change Details	
									02.11.2017	00	Originated	
									17.08.2019	1	DH grade added.	
									10.07.2020	02	Process parameter added at grinding	
Part Number / Latest Change Level :		SIHT011070/XB			Core Team :		Mr.Shashank,Mr.Chandrasekhar, Mr. Ahmed Pathan,Mr.Yash,Mr.Paresh, Mr. Maheshwar, Mr.Parmanand		30.04.21	03	100% ID sorting Started at OP90 against customer complain.	
Part Name / Description :		Outer Spring							14.07.22	04	Control for Scragging Bush height inspection added at process number 60	
Supplier / Plant : SS&S - HALOL		Customer : Endurance technology Ltd.			Supplier / Plant Approval / Date		02.11.17		-----	-----	-----	
					Other Approval / Date Req'd		(if -----)		Customer Quality Approval / Date (if Req'd)			-----

**Reaction Plan & Corrective action : 1. Reject and return to supplier , raise CAR for corrective & preventive action , 2. Stop production Quarantine the suspect parts and Check some more parts ( Sort if required ) / do 100 % inspection / Rework ( MF-WI-0011 ) / Reject / reset the parameters in consultation with Engineers and revalidate process ( if necessary )**

Part / Process No.	Process Name / Operation Description	Machine, Device, Jig Tools for Mfg.	Characteristics			Special Char. Class	Methods		Evaluation / Measurement Technique	Sample		Control Method & Error Proofing	Responsibility & Record	Reaction Plan & Corrective action		
			No.	Product	Process		Product/Process Specification/Tolerance as per drg	Stage specification of Product / Process parameters		Size	Freq.					
5	Receipt & Inspection of raw material	-----	1	Diameter of the wire	-----	-----	4.0 ± 0.030 mm	4.0 ± 0.030 mm	Verification of Sup.TC /Insp. report , DC and Identn tag	Once	Every Lot	Verification during Receipt	Stores Incharge, Goods Receipt Note / SAP	1		
			2	Grade	-----	-----	GR 3,SH As per IS 4454	SH/DH								
			3	Mechanical properties	-----	-----	GR 3,SH As per IS 4454	Tensile strength / Chemistry	As per Sampling Plan QS - WI - 100	Incoming Inspection & Cross verification	Quality Inspector, Inward inspection record Supplier TC	1				
			4	Diameter of the wire	-----	-----	4.0 ± 0.030 mm	4.0 ± 0.030 mm					Micrometer (0-25 mm,			
	Visual	-----	5	Appearance	-----	-----	Should be free from Oiled,Rust and Damage	Should be free from Oiled,Rust and Damage	Visual	-----	-----	-----	-----	-----		
	Storage of materials	-----	1	Appearance	-----	-----	-----	1.Should be free from Rust and Damage and to be Stacked in the allocated & identified racks with proper packing & Identification tag	Visual Verification	Once	Every week	Cross verification	Stores Incharge	2		
10	Winding RH	Winding machine TK-550 TK-590	1	Wire diameter	-----	-----	4.0 ± 0.030 mm	4.0 ± 0.030 mm	Micrometer	Once	Every setup	First Sample approval	operator MF-FR-001A/02	2		
			2	Outside Diameter.	-----	-----	28.25 mm Max	28.2 ± 0.2 mm	Vernier caliper	2Nos	Every setup & 30 Minutes	First Sample approval & PMC	Operator MF-FR-001A/02 MF-FR-005 - REV-02			
			3	Free Length	-----	-----	254 ± 2.0 mm	260-265mm	Vernier caliper							
			4	Total coils	-----	-----	27.10±0.25	26.9±0.20mm	Manual Count							
			5	Tool mark,Burr,breakage	-----	-----	Free from Tool mark,Burr,breakage	Free from Tool mark,Burr,breakage	Visual							
			6	Coil Direction	-----	-----	RH	RH	Visual	2Nos	Every setup	First Sample approval	Operator MF-FR-001A/02			
			7	Deflection @ 20 mm	-----	-----	16.3 ± 7% kgf	16.3 ± 7% kgf	Elasticometer							
			8	Deflection @ 40 mm	-----	-----	32.6 ± 7% kgf	32.6 ± 7% kgf	Elasticometer							
			9	Deflection @ 75 mm	-----	-----	65.3 ± 7% kgf	65.3 ± 7% kgf	Elasticometer							
			10	Deflection @ 85 mm	-----	-----	79.4 ± 7% kgf	79.4 ± 7% kgf	Elasticometer							
			11	Deflection @ 93 mm	-----	-----	90.6 ± 7% kgf	90.6 ± 7% kgf	Elasticometer							
			12	Spring rate K1	-----	-----	0.82 kgf/mm	0.82 kgf/mm	Elasticometer							
			13	Spring rate K2	-----	-----	1.41 kgf/mm	1.41 kgf/mm	Elasticometer							
			14	Solid Height	-----	-----	112.4mm Max	112.4mm Max	Elasticometer							
			15	-----	-----	Program No.	-----	-----	TK-550-3 TK-590-17	TK-550-3 TK-590-17	Visual	once	Every Setup		First sample approval	Operator MF-FR-001A/02
			16	-----	-----	Feed roller pressure	-----	-----	0.4 to 0.6 Mpa.	0.4 to 0.6 Mpa.	Visual	once	Every Shift		DPM Check sheet	Operator MF-FR-018

# CONTROL PLAN

<input type="checkbox"/> Prototype	<input type="checkbox"/> Pre-launch	<input checked="" type="checkbox"/> Production			Control plan Date	Rev.no	Change Details								
Control Plan Number :	Control Plan Number : CP/ ETL /011		Key Contact / Phone :	Udham Singh / 9729202173 udham.singh@ssssprings.com	02.11.2017	00	Originated								
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					10.07.2020	02	Process parameter added at grinding								
					30.04.21	03	100% ID sorting Started at OP90 against customer complain.								
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Part Name / Description :	Outer Spring				-----	-----	-----	-----	-----						
Supplier / Plant : SS&S - HALOL	Customer :	Endurance technology Ltd.			Supplier / Plant Approval / Date	02.11.17	-----	-----	-----	-----					
					Other Approval / Date Req'd	(if -----)	-----	-----	-----	-----					
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Reaction Plan & Corrective action : 1. Reject and return to supplier , raise CAR for corrective & preventive action , 2. Stop production Quarantine the suspect parts and Check some more parts ( Sort if required ) / do 100 % inspection / Rework ( MF-WI-0011 ) / Reject / reset the parameters in consultation with Engineers and revalidate process ( if necessary )															
Part / Process No.	Process Name / Operation Description	Machine, Device, Jig Tools for Mfg.	Characteristics			Special Char. Class	Methods		Evaluation / Measurement Technique	Sample		Control Method & Error Proofing	Responsibility & Record	Reaction Plan & Corrective action	
			No.	Product	Process		Product/Process Specification/Tolerance as per drg	Stage specification of Product / Process parameters		Size	Freq.				
20	Stress Relieving-1	Stress relieving Furnace	1	-----	Temperature	-----	-----	300° ± 20°c	Temperature Indicator	Once	Once in shift	Verification at setup.	Operator MF-FR-001A/02 MF-FR-10D	2	
			2	-----	Duration	-----	-----	10' Min	Timer						
			3	Outside Diameter.	-----	-----	28.25 mm Max	28.25 mm Max	Caliper	2 Nos					
30	Grinding	Grinding M/C SGM 12-1,2,3,4	1	Free Length	-----	-----	254 ± 2.0 mm	254-260 mm	Vernier caliper	2 nos	Every setup & 30 Minutes	First Sample approval & PMC	Operator MF-FR-052A MF-FR-005A - Rev - 02		
			2	Axial Squareness	-----	-----	6.16 mm Max	6.16 mm Max	Angle block & Feeler Gauge or Wire						
			3	Ends types	-----	-----	Squared & Ground 270° Min	Squared & Ground 270° Min	Visual						
			4	Appearance	-----	-----	Free from Burr,dent,breakage,damage & End coil damage	Free from Burr,dent,breakage,damage & End coil damage	Visual	5 Nos	Every Shift	First Sample approval	Operator MF-FR-052A		
			5	Tip thickness	-----	-----	1.00-1.33mm	1.00-1.33mm	Caliper/Height gauge						
			6	Parallelism (e2)	-----	-----	1.0 mm Max	1.0 mm Max	Dial Gauge/Surface plate						
			7	Solid height	-----	-----	112.4 mm Max	112.4 mm Max	Elasticometer		Every 4 hour.	PMC	Operator, MF-FR-005 A-Re-02		
			8	-----	Dressing of wheels	-----	-----	-----	Wheel Dresser						----
			9	-----	Dresser Unit	-----	-----	-----	Check for free movement	By hand Visual	Once	Every Shift	DPM Check sheet	Operator (MF-FR-018)	2
			10	-----	Dust Collector	-----	-----	-----	Check dust Extraction systems.	Visual					
			11	-----	Gap b/w grinding wheel & Guide plate < 5.0 mm	-----	-----	-----	< 5.0 mm	Feeler Gauge					
			12	-----	Before grinding Position	-----	-----	-----	250-350mm	Visual					
			13	-----	Before grinding Spring Length	-----	-----	-----	247-347mm	Visual					
			14	-----	Grinding Feed Speed	-----	-----	-----	1.2-1.6m/min	Visual			First Sample approval	Operator First sample report (MF-FR-052A)	
			15	-----	Finish Grinding time	-----	-----	-----	80-120 Sec.	Visual					
			16	-----	Total time of cycle	-----	-----	-----	150-300 Sec	Visual					
			17	-----	Magazine Plate Speed	-----	-----	-----	20-30 RPM	Visual					





# CONTROL PLAN

<input type="checkbox"/> <b>Prototype</b>		<input type="checkbox"/> <b>Pre-launch</b>		<input checked="" type="checkbox"/> <b>Production</b>						<b>Control plan Date</b>		<b>Rev.no</b>		<b>Change Details</b>		
Control Plan Number :		Control Plan Number : CP/ ETL /011				Key Contact / Phone :		Udham Singh / 9729202173 udham.singh@ssssprings.com		02.11.2017		00		Originated		
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Part Name / Description :		Outer Spring								10.07.2020		02		Process parameter added at grinding		
Supplier / Plant : SS&S - HALOL		Customer : Endurance technology Ltd.		Supplier / Plant Approval / Date Other Approval / Date (if Req'd)		02.11.17 -----				30.04.21		03		100% ID sorting Started at OP90 against customer complain.		
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Reaction Plan & Corrective action : 1. Reject and return to supplier , raise CAR for corrective & preventive action , 2. Stop production Quarantine the suspect parts and Check some more parts ( Sort if required ) / do 100 % inspection / Rework ( MF-WI-0011 ) / Reject / reset the parameters in consultation with Engineers and revalidate process ( if necessary )																
Part / Process No.	Process Name / Operation Description	Machine, Device, Jig Tools for Mfg.	Characteristics			Special Char. Class	Methods		Evaluation / Measurement Technique	Sample		Control Method & Error Proofing	Responsibility & Record	Reaction Plan & Corrective action		
			No.	Product	Process		Product/Process Specification/Tolerance as per drg	Stage specification of Product / Process parameters		Size	Freq.					
<i>m/c - Machine</i>		<i>QS-IP-FFFS70052 - Inspection plan</i>				<i>QS-FR-006 - Inspection flow sheet</i>			<i>QS-WI-001-Work instnction for Checking method</i>				<i>QS-WI-003- Work instnction for Sampling plan</i>			