						POTENTIA	L FAI	LURE MODE AND E		'SIS								
	Customer :-	ENDURANCE TECH	NOLOGIES .LTD															
	Part No:-	- S1HT01107O/XB				FMEA Number :FMEA/6	ETL/011		Process Responsibility : Pro	od / QA								
	Part Name :-	Outer Spring				Key Date : .02/11/17			-			30.04.21	02	100% ID sorting customer comple		at OP9	0 again:	st
	Item Code :-	FFFS70052					Mr.Sh	ashank,Mr.Chandrasekhar,				24.04.2019	01	Recommended a FMEA 4th edition			odated a	ıs per
	Cumplion	Stumma Sahuala	. 9. Comenno Curingo Dut I	4.4		Core Team :		nikant,Mr.Yash,Mr.Paresh, Mr. hwar, Mr.Parmanand	Prepared By :Manikant			02.11.2017	00	Originated				
	Supplier	Stumpp, Schueie	& Somappa Springs Pvt L	itu			iviaries	nwar, Mr.Parmanand				FMEA DATE	REV.NO		CHANGE	DETAIL	_S	
Process	Process Function	Potential Failure	Potential Effect (s) of Failure	SEV	Class	Potential Cause(s) / Mechanism(s) of	Occur	Current proces	ss control	Detect	RPN	Recommended	Responsibility &		Action	Results		
No	Requirments	Mode	Potential Effect (s) of Failure	SE	Ö	Failure	ő	Prevention	Detection	Det	꿉	Action (S)	Target Date	Action Taken	SEV	осс	DET	RPN
		Wrong grade of raw material supplied by the supplier	Next / Further : Component will not meet the	8	_	Supplier not checked	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.	drawing specification Customer : Customer dissatisfaction	8	-	the material before loading	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						
	Receipt & Inspection of raw material	Raw material received in damged and / or rust condition	Next / Further : Unfit for production Customer : Customer dissatisfaction	8	_	Improper handling during transportation 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					_	
OP 05		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	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			-			
	material	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						

		Free length less / More than the	Next / Further Operation: Load week / strong Customer: Not fit for assy and customer dissatisfaction	6	 1.Improper pitch tool postion & cams	2	Machine setting card Setup approval to be done.	Inprocess inspection	6	72	None	 		 	
		Inner / Outer diameter less / more	Next / Further Operation: Load week / strong Customer : Not fit for assy and customer dissatisfaction	7	 Improper setting of coiling roller	2	Machine setting card Setup approval to be done.	Inprocess inspection	6	84	None	 		 	
OP 10	Winding - RH	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	Machine setting card 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 aligment of feed rollers	2	Work instruction	Inprocess Inspection	7	98	None	 		 	
		Mix up	Next / Further : Rejection Customer : Not fit for assy	7	 Work insturctions not followed	2	100% load sorting	Inprocess Inspection	4	56	None	 	-	 	

		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	 	 	
OP 20	Stress Relieving	Diameter less / more than the specification		7	1.Furance temprature more / less than the specification 2. Stress relieving duration more / less than the specification.	2	Setup approval to be done for the process & product parameters as per Work std / Machine setting card with a)Furnace temperature 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.Furance temperature more / less than the specification 2.Stress relieving duration more / less than the specification.	3	Setup approval to be done for the process & product parameters as per Work std / Machine setting card with a)Furnace temperature Duration Generator switch on instruction when the power failure		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 followwed	2	Work instruction	Inprocess inspection	6	84	None	 	 1	
		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	 	 1	

		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	Setup approval to be done as per grinding advice card Preventive maintenance of the machine S.Periodical check of Magazine plate feed rate 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 clerance 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	 	 1	
		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 clerance 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	 	 	
OP 30	Grinding	End coil gap more than the specification	Next / Further : Rejected at final inspection Customer : Fitment & Functional Problem	7	1.Excess clerance 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 clerance 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 clerance 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.Misallignment of guide plate 2.Excess depth of cut 3. Improper dressing of grinding wheel	3	Magazine plate allignment , Depth of cut to be checked during Set up approval 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.Misallignment of guide plate 2.Excess depth of cut 3. Improper dressing of grinding wheel	3	1.Magazine plate allignment , 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	 	 	

				6	-	1. Duration less	2	Timer	Setup approval	5	60	None	 	 	
		Less Intensity		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:	6		Duration less Less qty of shots Ark height variation	2	Set Up approval & Periodical checking	Inprocess Inspection	5	60	None	 	 1	
		Arc height variation	Rework Customer: Customer dissatisfaction	6		1.Shot level less 2.Shot sieving not done	2	1.Periodical seiving 2.Work Instruction	Inprocess Inspection	5	60	None	 	 1	
		Shot size variation		6		1.Shot sieving not done Periodically	2	Periodical seiving	Inprocess Inspection	8	96	None	 	 -	
OP 40	Shot Peening	Shot level variation		6	-	Work insturctions not followed	2	Shot level indicator	Inprocess Inspection	8	96	None	 	 -	
		Delayed Shotpeening	Next / Further : Corrosion,Rust & Pits Customer:Rust or Damage and not fit for assy , Customer : dissatisfaction	5	-	Due to over load, Machine b/d	2	Work instruction	Visual Inspection	7	70	None	 	 1	
		Shotpeening delay	Next / Further : Corrosion,Rust & Pits Customer:Rust or Damage and not fit for assy , Customer : dissatisfaction	5	-	Due to over load, Machine b/d	2	Work instruction	Visual Inspection	7	70	None	 	 -	
	Mixu	Mixup	Next / Further : Rejection at next operation Customer : Not able to meet the customer schedule	6		Old batch spring held up in shotpeening M/c	2	Work instruction	Inprocess inspection	8	96	None	 	 1	
		Operation Missing	Next / Further : Spring may yield during functioning Customer : Fitment and Functional Problem	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						
		Free length Less / more than the specification	Next / Further : Load weak / strong Customer : Customer dissatisfaction	6	Not set to the proper height Improper tempering	3	Setup approval	100% Inspection	5	90	None			_		-	-
OP 60	Scragging	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 (Q	S – 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	Calibration of Instruments as per the defined frequency Product audit 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
		1.Damage of parts	Next / Further : Rework / Reject Customer : Poor appearance and Premeture fatigue failure	7	1.Wrong packing material used 2.Wrong packing method	1	Packing approval to be done Packing material and packing method		8	56	None						
OP 100		Shortage / excess no of packing	Next / Further : material will not be inwarded 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	Product audit	8	96	None			-			
		Mix up	Next / Further : Reject	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 P	LAN						
	Prototype	☐ Pre-launch	~	Production				Control plan Date	Rev.no			Change		
						TIAL	m Singh / 9729202173	02.11.2017	00			Origin	ated	
Control 1	Plan Number :	Control Plan Number : CP/ E	CTL /011		Key Contact / Phone:		n.singh@ssssprings.com	17.08.2019	1			DH grade	added.	
								10.07.2020	02			Process parameter		
Part Nur	iber Change Level :	S1HT01107O/XB				Mr.Shas	hank,Mr.Chandrasekhar,	30.04.21	03	11	00% ID sortin	ng Started at OP9	0 against customer comp	olain.
					Core Team :		Yash,Mr.Paresh, Mr. Maheshwar, Mr.Parmanand							
Part Nan	ne / Description :	Outer Spring												
Supplier		Customer :	Endurance tech	analogy I td	Supplier / Plant Appro Other Approval / Date		02.11.17							
SS&S - I	ALOL	Customer .	Endurance teen	mology Eta.	Req'd)	(11		Customer Quality Approval	/ Date (if Req'd)					
	Plan & Corrective act e process (if necessary		upplier , raise C	AR for corrective & prevent	ive action, 2. Stop prod	uction Quarantine t	he suspect parts and Check some n	nore parts (Sort if required)	/ do 100 % inspection /	Rework (MF	-WI-001I) / Rej	ect / reset the parame	ters in consultation with Engine	eers and
	process (in necessar)	,		Characteristics			Method	ds		S	ample			n . n .
Part / Process No.	Process Name / Operation Description	Machine, Device, Jig Tools for Mfg.	No.	Product	Process	Special Char. Class	Product/Process Specification/Tolerance as per drg	Stage specification of Product / Process parameters	Evaluation / Measurement Technique	Size	Freq.	Control Method & Error Proofing	Responsibility& Record	Reaction Plan & Corrective action
			1	Diameter of the wire			4.0 ± 0.030 mm	$4.0\pm0.030~mm$	Verification of Sup.TC /Insp. report , DC and	Once	Every Lot	Verification during	Stores Incharge, Goods Receipt	1
	Receipt & Inspection		2	Grade			GR 3,SH As per IS 4454	SH/DH	Identn tag	0.100	2101) 201	Receipt	Note / SAP	•
	of raw material		3	Mechanical properties			GR 3,SH As per IS 4454	Tensile strength / Chemistry	Verification of Sup TC					
			4	Diameter of the wire			4.0 ± 0.030 mm	$4.0\pm0.030\;mm$	Micrometer (0-25 mm,		ampling Plan WI - 100	Incoming Inspection & Cross verification	Quality Inspector, Inward inspection record	1
5	Visual		5	Appearance			Should be free from Oiled,Rust and Damage	Should be free from Oiled,Rust and Damage	Visual	Qs-	W1 - 100	& Cross verification	Supplier TC	
	Storage of materials		1	Appearance				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
			1	Wire diameter			$4.0 \pm 0.030 \text{ mm}$	$4.0\pm0.030\;mm$	Micrometer	Once	Every setup	First Sample approval	operator MF-FR-001A/02	
			2	Outside Diameter.			28.25 mm Max	28.2 ± 0.2 mm	Vernier caliper					
			3	Free Length			$254 \pm 2.0 \text{ mm}$	260-265mm	Vernier caliper	2Nos	Every setup &	First Sample	Operator MF-FR-001A/02	
			4	Total coils			27.10±0.25	26.9±0.20mm	Manual Count	21103	30 Minutes	approval & PMC	MF-FR-005 - REV-02	
			5	Tool mark,Burr,breakage			Free fromTool mark,Burr,breakage	Free from Tool mark,Burr,breakage	Visual					
			6	Coil Direction			RH	RH	Visual					
			7	Defliction @ 20 mm		•	16.3 ± 7% kgf	16.3 ± 7% kgf	Elasticometer					
		Winding machine	8	Defliction @ 40 mm		•	32.6 ± 7% kgf	32.6 ± 7% kgf	Elasticometer					
10	Winding RH	TK-550 TK-590	9	Defliction @ 75 mm		•	65.3 ± 7% kgf	65.3 ± 7% kgf	Elasticometer					2
		111 370	10	Defliction @ 85 mm		•	79.4 ± 7% kgf	79.4 ± 7% kgf	Elasticometer	2Nos	Every setup	First Sample approval	Operator	
			11	Defliction @ 93 mm		•	90.6 ± 7% kgf	90.6 ± 7% kgf	Elasticometer				MF-FR-001A/02	
			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		
			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	

PREPARED By : Mr. Shashank

APPROVED By : Mr. Udham Singh.

Control Part Notice Control Part Notice Control Part Notice Control Part Notice Pa								CONTROL P	LAN						
Martin		Prototype	☐ Pre-launch	V	Production										
Column Part Column Part Column Part P							Udho	m Singh / 0720202173	02.11.2017	00			Origin	ated	
Part	Control F	lan Number :	Control Plan Number : CP/ I	ETL/011		Key Contact / Phone :			17.08.2019	1			DH grade	added.	
Martin M									10.07.2020	02			Process parameter	added at grinding	
No information No i			S1HT01107O/XB				Mr Shas	hank Mr Chandrasekhar.			1	00% ID sortin	•		plain.
Note Property of part Prop						Core Team :	Mr.Manikant,Mr.	Yash,Mr.Paresh, Mr. Maheshwar,							
No. Part	Part Nam	e / Description :	Outer Spring					Mr.Parmanand							
Second Part Part	Supplier	Plant :	Customer	Endurance tech	anology I td										
Profession Pro						Req'd)									
Private Name				upplier , raise C	AR for corrective & preven	tive action, 2. Stop prod	uction Quarantine t	he suspect parts and Check some	more parts (Sort if required)	/ do 100 % inspection / l	Rework (MF	-WI-001I) / Reje	ect / reset the parame	ters in consultation with Engin	eers and
Probability					Characteristics			Metho	ds		S	ample			Reaction Plan &
New Science Relations Sense relations promises 2 Section Deratices Sense relations promises 2 Section Deratices Sense relations promises 2 Section Sec	Process			No.	Product	Process	Special Char. Class				Size	Freq.		Responsibility& Record	Corrective
1				1		Temperature			300° ± 20° c	Temperature Indicator	0				
Significant	20	Stress Relieving-1	Stress relieving Furnace	2		Duration			10 ' Min	Timer	Office	Once in shift	Verification at setup.	MF-FR-001A/02	2
Park				3	Outside Diameter.			28.25 mm Max	28.25 mm Max	Caliper	2 Nos			MF-FR-10D	
Part				1	Free Length			254 ± 2.0 mm	254-260 mm	Vernier caliper					
Secretary Secr				2	Axial Squareness			6.16 mm Max	6.16 mm Max				F: . 0		
Appearance				3	Ends types			Squared & Ground 270° Min	Squared & Ground 270° Min	Visual	2 nos				
A				4	Appearance			Burr,dent,breakage,damage & End	Burr,dent,breakage,damage &	Visual				MF-FR-005A - Rev - 02	
A				5	Tip thickness			1.00-1.33mm	1.00-1.33mm	Caliper/Height gauge					
Signature Sign				6	Parallelism (e2)			1.0 mm Max	1.0 mm Max		5 Nos	Every Shift			
S				7	Solid height			112.4 mm Max	112.4 mm Max	Elasticometer					
SGM 12-1,2,3,4 9				8		Dressing of wheels			Wheel Dresser			Every 4 hour.	PMC		
10	30	Grinding		9		Dresser Unit			Check for free movement	By hand Visual					2
11				10		Dust Collector				Visual			DPM Check sheet		
13				11					< 5.0 mm	Feeler Gauge					
13				12		Before grinding Position	1		250-350mm	Visual	Once	Every Shift			
14				13					247-347mm	Visual	Office	Every Sint			
15 Finish Grinding time 80-120 Sec. Visual approval (MF-FR-052A) 16 Total time of cycle 150-300 Sec Visual				14		Grinding Feed			1.2-1.6m/min	Visual			First Sample		
				15					80-120 Sec.	Visual					
17 Magazine Plate Speed 20-30 RPM Visual				16		Total time of cycle			150-300 Sec	Visual					
				17		Magazine Plate Speed			20-30 RPM	Visual					

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							CONTROL P	LAN						
	Prototype	☐ Pre-launch	V	Production				Control plan Date	Rev.no			Change I	etails	
						Lidha	n Singh / 9729202173	02.11.2017	00			Origina	ited	
Control I	lan Number :	Control Plan Number : CP/ I	ETL/011		Key Contact / Phone :		singh@ssssprings.com	17.08.2019	1			DH grade	added.	
								10.07.2020	02			Process parameter a	dded at grinding	
Part Nun		S1HT01107O/XB				Mr.Shasl	nank,Mr.Chandrasekhar,	30.04.21	03	10	00% ID sortin	g Started at OP9	against customer comp	olain.
	hange Level :				Core Team :	Mr.Manikant,Mr.	Yash,Mr.Paresh, Mr. Maheshwar,							
Part Nam	e / Description :	Outer Spring					Mr.Parmanand							
Supplier		Customer :	Endurance tech	mology Ltd	Supplier / Plant Appro Other Approval / Date		02.11.17							
SS&S - H					Req'd)			Customer Quality Approval						
	Plan & Corrective act process (if necessary		supplier , raise C	AR for corrective & prevent	ive action, 2. Stop prod	uction Quarantine t	ne suspect parts and Check some	nore parts (Sort if required)	/ do 100 % inspection / l	Rework (MF-	-WI-001I) / Rej	ect / reset the paramet	ers in consultation with Engine	eers and
Part /	Process Name /	Machine, Device, Jig Tools for		Characteristics	1		Metho	ds	Evaluation /	Sa	ımple	Control Method &		Reaction Plan &
Process No.	Operation Description	Mfg.	No.	Product	Process	Special Char. Class	Product/Process Specification/Tolerance as per drg	Stage specification of Product / Process parameters	Measurement Technique	Size	Freq.	Error Proofing	Responsibility & Record	Corrective action
			1		Shot Size			0.60 mm	Profile Projector		Every Batch		Quality inspector	
			2		Arc Height			0.30 - 0.38mm	Almen Dial Gauge		Every week	Checked with Almen strip		
			3		Duration			20 Minutes min.	Timer	Once			Operator	
40	Shot peening	Shot Peening Machine (SP-02/03/04)	4	Coverage				95 % (minimum)	Comparison with Std Photograph		Every Batch	Shotpeening record	MF-FR-10F	2
			5		Amperage		12-15 amp	12-15 amp	Visual					
			6	Residual Stress Check			-100 'to -1000 Mpa		XRD		Once In Quater	R & D	andXRD logbook.	
			7	Sieveing					Sieve Analyser		Once in 48 hours		Operator (PMC board)	
50	Stress Relieving-2	Stress relieving Furnace	1		Temperature			200°- 220° C	Temperature Indicator	Once	Once in shift	Verification @ setup	Operator	2
	Ü		2		Duration			8' Minimum	Timer			Inprocess inspection	MF-FR-10D	
60	Scragging	Hydrualic press	1		Setting Height		161mm	161mm		Once	Every Batch	First Sample	Operator	2
	26 5	, ,	2		Bend		No Bend	No Bend	Visual	100%	Every Batch	First Sample	Operator	2
			1	Free Length			$254 \pm 2.0 \text{ mm}$	254 ± 2.0 mm	Length Gauge	100%	Every Batch	First Sample	Operator	2
70	100% Lo,e1, e2 Sorting	Manual	2	e1			6.16 mm Max	6.16 mm Max	Angle block & Feeler Gauge or Wire	100%	Every Batch	First Sample	Operator	2
			3	e2			1.00 mm Max	1.00 mm Max	Dial Gauge/Surface plate	100%	Every Batch	First Sample	Operator	2
80	Powder Coating						In House (HA	L-CP-PC001)						
		Measuring &Tessting	1	Product parameter			As per drg	As per QS-IP-FFFS70052	QS-WI-001	QS-WI-003	Every batch	QS-FR-006	QA Inspector (QS-FR-006)	2
90	Final Inspection	Equipment	2	100% ID sorting			19.5±0.25 mm	19.5±0.25 mm	Plug Gauge	100%	Every batch	First Sample	Operator	2
			1	Parts damage			Free from damage	Free from damage	Visual	100%	Evey batch	Final stage	Dispatch peoples	2
			2	Less Qty			As per the invoice	As per the invoice	Visual	100%	Every batch	Final stage	Operator	2
100	Packing	Packing materials	3	Parts mix up			Free from other parts	Free from other parts	Visual	100%	Every batch	Final stage	Operator	2
			4	Quantity				As per packing std.	Visual	100%	Every batch	Final stage	Operator	2
m/c - M	achine	QS-IP-FFFS70052 - Inspection	on plan		QS-FR-006 - Inspe	ction flow sheet		QS-W1-001-Work instuction	for Checking method			QS-WI-003- Work in	stuction for Sampling plan	
				•	1			•						

PREPARED By : Mr. Shashank

APPROVED By : Mr. Shashank

							CONTROL P	LAN							
□ P:	Prototype	☐ Pre-launch	V	Production				Control plan Date	Rev.no			Change I	etails		
			•		1			02.11.2017	00			Origin	ited		
Control Plan Nu	umber :	Control Plan Number : CP/ F	ETL/011		Key Contact / Phone :		m Singh / 9729202173 .singh@ssssprings.com	17.08.2019	1			DH grade	added.		
								10.07.2020	02			Process parameter a	dded at grinding		
Part Number		S1HT01107O/XB						30.04.21	03	1	00% ID sortin	g Started at OP9	against customer comp	plain.	
/ Latest Change	t Change Level: Core Team: Mr.Manikant,Mr.Yash,Mr.Paresh, Mr. Maheshwar,														
Part Name / Des	Core Team : Mr.Manikant,Mr.Yash,Mr.Paresh, Mr. Maheshwar,														
Tart Name / Des	ame / Description : Outer Spring Mr.Parmanand														
Supplier / Plant	t:				Supplier / Plant Approv		02.11.17								
SS&S - HALOL		Customer :	Endurance tech	nology Ltd.	Other Approval / Date Req'd)	(if		Customer Quality Approval	/ Date (if Req'd)						
Reaction Plan & revalidate proce			upplier , raise CA	AR for corrective & prevent	tive action, 2. Stop produ	uction Quarantine t	he suspect parts and Check some i	more parts (Sort if required)	/ do 100 % inspection / I	Rework (MF	-WI-001I) / Rej	ect / reset the parame	ers in consultation with Engin	eers and	
Part /				Characteristics			Metho	ds		S	mple			Reaction Plan &	
Process Pro	rocess Name / ration Description	Machine, Device, Jig Tools for Mfg.	No.	Product	Process	Special Char. Class	Product/Process Specification/Tolerance as per drg	Stage specification of Product / Process parameters	Evaluation / Measurement Technique	Size	Freq.	Control Method & Error Proofing	Responsibility& Record	Corrective action	

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APPROVED By : Mr. Udham Singh.