



## 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/ETPL/FOCS70053		Key Contact / Phone :		Udham Singh / 9729202173 udham.singh@sssprings.com		02.11.2017	00	Originated						
Part Number / Latest Change Level :		53BHT00807-XA		Core Team :		Mr.Manikant,Mr.Chandrasekhar,Mr.Dixit,Mr.Yash ,Mr.Shashank, Mr. Maulesh		30.06.2019	1	Tolerance revised at grinding from 235.00 ± 2.0 mm to 235.00 ± 1.50 mm and at 100% length inspection from 233.3 ± 2 mm to 233.3 ± 1.50 mm and process parameter added in winding and grinding						
Part Name / Description :		Outer Spring						08.08.2019	2	RM grade change from IS 4454 - Gr3 to DH grade.						
Supplier / Plant : SS&S - HALOL		Customer : ETPL		Supplier / Plant Approval / Date Other Approval / Date (if Req'd)		02.11.17		28.04.2022	3	Grinding wheel minimum thickness control added						
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	Stress relieving Furnace	1	-----	Temperature	-----	-----	300° ± 20°c	Temperature Indicator	Once	Once in shift	Verification @ setup Inprocess inspection	MF-FR-10D Operator First sample report (MF-FR-051 Rev-01)	2		
			2	-----	Duration	-----	-----	12' Min	Timer							
			3	Outer Copil diameter Bigger side	-----	-----	54.00 mm Max	54.00 mm Max	Caliper	2 Nos						
30	Grinding	Grinding M/C SGM 12	1	Free Length	-----	-----	233.3 ± 2.0 mm	235.00 ± 1.50 mm	Vernier caliper	2 nos	Every setup & 30 Minutes	First Sample approval & Inprocess inspection	Operator First sample report (MF-FR-052A) & PMC ( MF-FR-005A - Rev - 02 )	2		
			2	Axial Squareness	-----	-----	6.63 mm Max	6.63 mm Max	Angle block & Feeler Gauge or Wire							
			3	Ends types	-----	-----	Squared & Ground 270° Min	Squared & Ground 270° Min	Visual							
			4	Burr,dent,breakage,damage & End coil damage	-----	-----	Free from Burr,dent,breakage,damage & End coil damage	Free from Burr,dent,breakage,damage & End coil damage	Visual	-----	-----	-----	-----	-----	-----	-----
			5	Tip thickness	-----	-----	2.13-2.83	2.13 Min.	Caliper/Height gauge	once	Every Setup	FSA & Inprocess inspection	(MF-FR-052A)	-----		
			6	-----	Dressing of wheels	-----	-----	Wheel Dresser	-----	once	Every 4 hour.	-----	(MF-FR-005 A-Re-02)	-----		
			7	-----	Grinding wheel Thickness	-----	-----	Minimum to be maintained 15mm	Caliper	once	Every 4 hour.	-----	(MF-FR-005 A-Re-02)	-----		
			8	-----	Dresser Unit	-----	-----	Check for free movement	By hand Visual	-----	-----	-----	-----	-----		
			9	-----	Dust Collector	-----	-----	Check dust Extraction systems.	Visual	-----	-----	-----	-----	-----	-----	
			10	-----	Gap b/w grinding wheel & Guide plate < 5.0 mm	-----	-----	< 5.0 mm	Feeler Gauge	-----	-----	-----	-----	-----	-----	
			11	-----	Work table speed	-----	-----	25-30 RPM	Visual	-----	-----	-----	-----	-----	-----	
40	Shot peening	Shot Peening Machine (SP-05)	1	-----	Shot Size	-----	-----	0.87mm	Profile Projector	Once	Every Batch	T.C verified.	Quality inspector	2		
			2	-----	Arc Height	-----	-----	0.40 mm Min.	Almen Dial Gauge		Every week	Checked with Almen strip	Operator Shotpeening record MF-FR-10F			
			3	-----	Duration	-----	-----	25 Minutes min.	Timer		-----	-----				
			4	-----	Coverage	-----	-----	95 % ( minimum )	Comparison with Std Photograph	-----	-----	-----	-----		-----	
			5	-----	Amperage	-----	-----	12-15 amp	12-15 amp	Visual	-----	-----	-----		-----	
			6	-----	Residual Stress Check	-----	-----	-100 'to -1000 Mpa	-----	XRD	-----	-----	-----		-----	-----
			7	-----	Sieveing	-----	-----	-----	-----	Sieve Analyser	-----	-----	-----		-----	-----
50	Scragging	Hydraulic press	1	-----	Setting Height	-----	158 mm	158 mm	-----	Once	Every Batch	First Sample	Operator	2		
			2	-----	Bend	-----	No Bend	No Bend	Visual	100%	Every Batch	First Sample	Operator	2		

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			No.	Product	Process		Product/Process Specification/Tolerance as per drg	Stage specification of Product / Process parameters		Size	Freq.					
60	100% Lo,e1, e2 & ID Sorting	Manual	1	Free Length			233.3 ± 2.0 mm	233.3 ± 1.50 mm	Vernier caliper / Length Gauge	100%	Every Batch	First Sample	Operator	2		
			2	e1			6.63 mm Max	6.63 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		
			4	Inside diametr D1			36.5+ 0.50 mm	Go-36.70, Nogo-37.0	Plug gauge	100%	Every Batch	First Sample	Operator	2		
			5	Inside diametr D2			35.10 + 0.50 mm	Go-35.30, Nogo-35.60	Plug gauge	100%	Every Batch	First Sample	Operator	2		
70	In House (HAL-CP-PC001)															
80	Final Inspection	Measuring & Tessting Equipment	1	Product parameter	-----	-----	As per drg	As per QS-IP-FCOS 70053	QS-WI-001	QS-WI-003	Every batch	QS-FR-006	QA Inspector ( QS-FR-006 )	2		
90	Packing	Packing materials	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		
			3	Parts mix up	-----	-----	Free from other parts	Free from other parts	Visual	100%	Every batch	Final stage	Operator	2		
			4	Quantity	-----	-----	-----	28no's / plastise bin	Visual	100%	Every batch	Final stage	Operator	2		
<i>m/c - Machine</i>		<i>FCOS 70053 - 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>					