







PROCESS QUALITY CONTROL SHEET - II

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APPROVED BY	CHECKED BY	PREPARED BY
PKJ	AW	RAJESH

ENDURANCE TECHNOLOGIES PVT.LTD

PART NAME		REBOUND SPRING (K55G)		PERSON IN CHARGE		Dy. General Manager - Operations		SUPPLIER CODE		HELICAL SPRINGS			
PART NO.		S2KH015020		CORE TEAM		PK/J AA/ AW/ PS/ RK/ OP		REVISION DATE		08.05.2024			
								REVISION NO.		04			
// PROTOTYPE // PRE LAUNCH // PRODUCTION //										PAGE NO.		01 of 02	

PROCESS NAME	OPN NO.	CHECK POINT	SPEC.	RESP.	CONTROL CHARACTERISTIC					MANUFACTURING CONDITION CONTROL					ILLUSTRATION		
					INSPECTION TOOL	MEASURING FREQUENCY	RECORDING SHEET	SPECIAL Char. Class	Cp/Cpk result	RECORDING FREQUENCY	CHECK POINT	SPEC.	RESP.	METHOD		MEASURING FREQUENCY	RECORDING SHEET
Receiving Inspection																	
Raw material receiving inspection	10	Wire Dia	ø3.40 ± 0.03	Inspector	DMM	Every Coil	HS06QFO01			Every Coil							
		Material	Grade- 3 as per IS 4454 part1	Inspector	Supplier RMTc	Every Lot	HS06QFO01			Every Lot							
		Tensile Strength	183 Kg/mm2 – 202 kg/mm2.	Inspector	Tensile Testing Machine	1 Coil per Heat	HS06QFO01			1 Coil per Heat							
		Appearance	Free from visual defect	Inspector	Visual	Every Coil	HS06QFO01			Every Coil							
Coiling																	
Coiling	20	Wire Dia	ø3.40 ± 0.03	Inspector	MM	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO04			5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	Wire Guide	No Worn Out	Operator	Visual	2500000 Pcs	Tool history card	
		Outside Dia	18.50 ± 0.10	Inspector	VC	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO07			5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	Rotary Cutter	No Worn Out	Operator	Visual	100000 Pcs	Tool history card	
		No. of Total Coils	3.75 – 3.80	Inspector	Visual Count.	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO08			5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	Feed Roller	No Worn Out	Operator	Visual	2500000 Pcs	Tool history card	
		Direction of winding	RH	Inspector	Visual	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO09			5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	Wire Straightner	No Worn Out	Operator	Visual	2500000 Pcs	Tool history card	
		Free length	20.30 ± 0.20 (E to B)	Inspector	VC	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO10			5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	Coiling pins	No Worn Out	No Worn Out	Visual	2500000 Pcs	Tool history card	
		Concentricity	Coil shift Not allowed	Inspector/operator	Concentricity Pin gauge	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO10										
		Appearance	Free from burrs, sharp edges & tool marks	Inspector	Visual & pin gauge	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO11			5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	mandril	No Worn Out	No Worn Out	Visual	100000 Pcs	Tool history card	
Back end Closing	0.1	Inspector	Visual	5 Pcs/ Setup & 3 Pcs/ 4 Hrs.	HS06QFO03 HS06QFO11			5 Pcs/ Setup & 3 Pcs/ 4 Hrs.									
Stress Relieving																	
Stress Relieving	30	Temperature	300° ± 10°	Operator	Temp. controller	Every lot	HS06QFO05			Temp. Contriller	Calibration	QA Lab	Out sources	Once in a year	Calibration certificate		
		Time Duration	30 Minutes	Operator	Timer	Every lot	HS06QFO05			Timer	Validation	QA Lab	Inhouse	During validation	Validation record		
GRINDING																	
End Grinding	40	Grinding Angle	270°-330°	Inspector/Operator	Visual	5 Pcs/ Setup & 5 Pcs/ 2 Hrs.	HS06QFO04			Grinding Wheel Surface	Smooth & Parell	Operator	Wheel alignment block	During shift start	--		
		Free length	17.9 ± 0.20	Inspector/Operator	VC	5 Pcs/ Setup & 5 Pcs/ 2 Hrs.	HS06QFO04			Wheel Dressing	Smooth & Parell	Operator	Visual	During setup	--		
		Squareness e1	0.5mm Max.	Inspector/Operator	RA & FG	5 Pcs/ Setup & 5 Pcs/ 2 Hrs.	HS06QFO04										
		Parallelism e2	0.40mm MAX.	Inspector/Operator	Dial	5 Pcs/ Setup & 5 Pcs/ 2 Hrs.	HS06QFO04										
		Solid Height	14.3 mm Max.	Inspector	LTM	2 Pcs/ Setup	HS06QFO04										
		Tip Thickness	0.85-1.13	Inspector	VC/Dial	5 Pcs/ Setup & 5 Pcs/ 2 Hrs.	HS06QFO04										
Appearance	Free from burrs, & other visual defects	Inspector/Operator	Visual	5 Pcs/ Setup & 5 Pcs/ 2 Hrs.	HS06QFO04												
SHOT PEENING																	
Shot Peening	50	Peening Time	15-20 Minutes	Operator	Timer	Every Lot	---										
		Peening Coverage	90% Min.	Operator	Visual	Every Lot	---										
		Almen Arc Height	0.30-0.40	Operator	Gauge	Once in a shift	---										
STRAIN- AGING																	
Strain- aging	60	Temperature	250° ± 10°	Operator	Temp. controller	Every lot	HS06QFO05										
		Time Duration	15-20 Minutes	Operator	Timer	Every lot	HS06QFO05										

SCRAGGING														
SCRAGGING	70	SCRAGGING HT	15	Operator	stopper	Ensure during Set up	HS06QFO05							
SURFACE FINISH- OILING														
Surface Finish- Oiling	80	Proper rust preventive oil on part	Nox Rust Gr- 823 (Daubert)	Operator	Visual	100%	---							
FINAL INSPECTION/ PDI														
Final Inspection	90	Wire Dia	ø 3.40 ± 0.03	Inspector	MM	5 Pcs per lot	HS06QFO09							
		Inside Dia. D1	ø 11.3 +0.3/-0.0	Inspector	VC/ Pin Gauge	5 Pcs per lot (20 Nos check with pin gauge & record 5 nos)	HS06QFO09							
		Inside Dia. D2	ø 11.3 +0.3/-0.0	Inspector	VC/ Pin Gauge	5 Pcs per lot (20 Nos check with pin gauge & record 5 nos)	HS06QFO09							
		Coil OD	ø 18.60 Max.	Inspector	VC	5 Pcs per lot	HS06QFO09							
		Free length	17.7 ± 0.5	Inspector	VC	5 Pcs per lot	HS06QFO09							
		Squareness e1	0.50 mm Max.	Inspector	RA & FG	5 Pcs per lot	HS06QFO09							
		Parallelism e2	0.40mm MAX.	Inspector	Dial	5 Pcs per lot	HS06QFO09							
		Solid Height	14.3mm Max.	Inspector	LTM	5 Pcs per lot	HS06QFO09							
		No. of Active Coils	2.2 Ref.	Inspector	Visual Count.	5 Pcs per lot	HS06QFO09							
		No. of Total Coils	4.2 Ref.	Inspector	Visual Count.	5 Pcs per lot	HS06QFO09							
		Direction of winding	RH	Inspector	Visual	5 Pcs per lot	HS06QFO09							
		Load at 2.0 mm def.	39.3 Kg ± 7%	Inspector	LTM	5 Pcs per lot	HS06QFO09							
		Load at 3.3 mm def.	64.9 Kg ± 7%	Inspector	LTM	5 Pcs per lot	HS06QFO09							
		Spring Rate	19.67 Kg/mm	Inspector	LTM	5 Pcs per lot	HS06QFO09							
		Scragging Height	15 mm	Inspector	LTM	5 Pcs per lot/ Ensure during set up	HS06QFO09							
		Tip Thickness	0.85-1.13	Inspector	VC	5 Pcs per lot	HS06QFO09							
		End Condition	Square & Ground (270° Min)	Inspector	Visual	5 Pcs per lot	HS06QFO09							
		Shot Peening	90% Coverage	Inspector	Visual	5 Pcs per lot	HS06QFO09							
Surface Finish	Oiled	Inspector	Visual	5 Pcs per lot	HS06QFO09									
Material	Grade-DH as per IS 4454 part1	Inspector	RMTC	5 Pcs per lot	HS06QFO09									
Appearance	Sharp edge /burr / scratch /Bend /damage Not allowed	Inspector	Visual	5 Pcs per lot	HS06QFO09									
PACKING & DISPATCH														
Packing & Dispatch	100 & 110	Qty. per bin	2000 Nos	Operator	Counting	Every lot	--							
		No damage during transport	Packing as per WI	Operator	Visual	Every lot	--							

