



QM-C-7.1/Rubber/0012
Inspection Plan(Check Sheet)

Item: High Capacity Buffer Spring for Side Buffers of BG Coaches
Specn. : CK-210, Rev.03
Amd.:
Drg. No. & Alt.: SK-K2048

1. Firm's Name
2. Date (period) of Inspection
3. Contact Details
 - a) Contact No. and Date.
 - b) Order placing authority
 - c) Specification No:
(as mentioned in contract)
 - d) Drawing No:
(as mentioned in contract)
4. Quantity in order
5. Quantity offered for inspection on date
6. Consignee

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Inspecting official of RDSO



Summary of Results
Lot size – Upto 500 packs and above 500 packs.

S. No.	Parameters	Specified Value	Observation.	
			Max.	Min.
7.1	Visual Check	Rubber shall be smooth and free from foreign materials, pin holes, cracks & trapped air blisters etc. & marking. Pitting bulges, texture of material and other visual flow		
7.2	Dimensional Check	By go-No go gauges		
7.3	Physical properties before ageing			
7.3.1	Hardness	70±5 Shore A		
7.3.2	Tensile strength	Min 180 Kg/cm ²		
7.3.3	Elongation at rupture	Min 300%		
7.3.4	Modulus of elasticity at 200%	Min 40 Kg/cm ²		
7.3.5	Compression Set	Max. 30%		
7.3.6	Specific Gravity	1.0-1.25		
7.3.7	Ash content	5% max.		
	Physical properties after ageing at 70° C for 72+0/- 2 Hrs.			
	Change in properties			
	Hardness	+5/-0 Shore A		
	Tensile strength	±20%		
	Elongation at rupture	±20 %		
	Modulus of elasticity at 200%	±20%		
7.4	Static characteristics (As per clause 5.1)			
	Free height (4 springs +2 parting plates of 5.0 mm thickness each)	458±4mm		
	Pre compression force at 438mm height	750 Kg<F<2000Kg.		
	Compressive force at 423mm height.	1000kg<4000kg		
	Compressive force at 388 mm height.	5000kg<F<15000kg		
	Compressive force at 338 mm height.	65000kg<F<75000kg		
	Stored energy	>=1225 kgm		
	Absorbed Energy.	>=40% of stored energy.		

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7.5	Compression strength after clamping (As per clause 5.2)	Specified		
	Free height (4 springs +2 parting plates of 5.0 mm thickness each)	458 ±4 mm		
	Pre compressor force at 438mm height.	750kg<F<2000Kg.		
	Pre compressor force at 423mm height.	1000kg<F<4000Kg.		
	Pre compressor force at 388mm height.	5000kg<F<15000Kg.		
	Pre compressor force at 338mm height.	65000kg<F<75000Kg.		
	Stored energy between	>=1225 kgm.		
	Absorbed energy between stock height.	>=40% of stored energy.		
7.6	Endurance test			
7.6.1	Stored energy between 2t to 10t. 10000 times at frequency of 30 cycles /min(min)	Not less than 80% of the corresponding stored energy recorded during the compression strength after clamping		
7.6.2	Force required to obtain pack height of 423 mm	Not less than 1000 kg.		
7.7	Impact endurance test.			
	Stored energy Frequency = 30/ hour 500 blow of 1000 kg load from height of 1 meter.	Not less than 85% of the corresponding stored energy recorded under clause 5.0 and no sign of bond failure		
	Visual Examination	No bond failure.		

7.1 Visual Check:

Specified Sample Size – Upto 500 packs – 5 Packs (20 nos), above 500 – 10 Packs (40 nos.)

Actual Sample Size-

Pad No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Visual check																				

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7.2. Dimensional Check:

Specified Sample Size-Upto 500 packs – 5 Packs (20 Nos.) above 500–10 Packs (40 nos.)

Actual Sample Size-

Pad No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Visual check																					

7.3 Physical properties before ageing

specified sample size – Upto 500 packs – 1 pack (04 nos.) above 500 packs – 02 packs (08 nos)

Actual Sample Size –

7.3.1 Hardness:

Parameters	Specified value	1			2			3			4											
Hardness	70±5 Shore 'A'																					

7.3.2. Tensile Strength

Parameters	Specified value	1			2			3			4											
Load at break																						
Tensile Strength	180 kg/Sq. cm																					
Mid value																						

7.3.3 Elongation at rupture:

Parameters	Specified value	1			2			3			4											
Elongation %	300% (Min).																					
Mid value																						

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7.3.4 Modulus of elasticity at 200%:

Parameters	Specified value	1			2			3			4		
Load at 200% elongation													
200% Modulus of elasticity (kg/cm ²)	40.0 (Min) Kg/cm ²												
Mid value													

7.3.5 Compression Set:

Parameters	Specified value	1			2			3			4		
Original thickness of button.	6.0-6.6 mm												
Thickness after ageing													
Thickness of spacers	4.69-4.71mm												
Compression set	30% Max.												
Average value													

7.3.6 Specific gravity

Parameters	Specified	1	2	3	4
Specific Gravity.	1.0-1.25				

7.3.7 Ash Content.

Parameters	Specified value	1	2	3	4
Ash Content	5% max.				

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7.4 Change in physical properties after ageing for 72 hrs. at 70 deg. C.

Parameters	Specified value	1	2	3	4
Hardness	-0/+5				
Mid Value					
Tensile strength	$\pm 20\%$				
Mid value					
Elongation at Break	$\pm 20\%$				
Mid value					
Modulus at 200% elasticity	$\pm 20\%$				
Mid value					

7.4 Static Characteristics:

specified Sample Size – Upto 500 packs – 4 Pack (16 nos) above 500 Packs – 8 Packs (32 nos. Actual Sample Size.

Static characteristics		1	2	3	4
Free height (4 spring + 3 parting plate of 5.0 mm)	458 \pm 4mm				
Pre compression force at 438 mm height	750 kg<F15000kg.				
Compressive force at 423 mm height	1000kg<F<4000kg				
Compressive force at 388 mm height	5000kg<F<15000kg				
Compressive force at 388 mm height	65000kg<F<75000kg				
Stored energy	≥ 1225 kgm				
Absorbed Energy.	$\geq 40\%$ of stored energy.				

Test on whole spring assembly – (Graph are required to be plotted)

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7.5 Compression after clamping for 72 hrs. at 438±2 mm.

Specified sample Size – Upto 500 packs – 1 pack above 500 Packs – 2 packs

Actual Sample size –

	Compression strength after clamping		1	2	3	4
	Free height (4 spring + 2 parting plate of 5.0mm)	458±4				
	Pre compression force at 438 mm height	750 kg<F<15000kg.				
	Compressive force at 423 mm height	1000kg<F<4000kg				
	Compressive force at 388 mm height	5000kg<F<15000kg				
	Compressive force at 338 mm height	65000kg<F<75000kg				
	Stored energy	>=1225 kJm				
	Absorbed Energy.	>=40% of stored energy.				

7.6 Endurance Test:

Specified sample Size – Upto 500 Packs – 1 Pack, above 500 packs – 2 Packs

Actual Sample Size-

7.6	Endurance Test	Specified value	1	2
7.6.1	Stored energy between 2 t to 10 t	80% of the corresponding stored energy recorded during the compression strength after clamping under clause 5.3		
7.6.2	Force required to obtain pack height of 423 mm	Not less than 1000 kg.		

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7.7 Impact Endurance Test.

Specified Sample Size – Upto 500 packs 1 Pack, above 500 packs – 2 Packs

Actual Sample Size –

7.7	Endurance Test	Specified value	1	2
7.7.1	Stored energy	85% of the corresponding stored energy recorded under clause 5.4		
7.7.2	Visual examination	No bond failure		

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