



QM-C-7.1/RUBBER/0019

Inspection Plan(Check Sheet)

Item: Injection Moulded Silent Block for Centre Pivot
Specn. : RDSO/2007/CG-06, Rev.0
Amd.: Nil
Drg. No. & Alt.: CG-K7121, Alt.Nil

OFFER MEMO

<u>BATCH NO.</u>		DT:	
1.	Name of Manufacturer	:	
2.	Date of offer	:	
3.	RDSO File No.	:	
4.	Description of material	:	
5.	Drawing and alteration no.	:	
6.	Specification and Grade	:	
7.	P. O. No.	:	
8.	Total Quantity Ordered	:	
9.	Quantity earlier passed	:	
10.	Quantity now offered	:	
11.	Consignee	:	
12.	D.P.	:	
Whether testing equipment Measuring gauges due for calibration? YES / NO	1.	Dt. Of Inspection	:
	2.	Qty. accepted	:
	3.	Qty. rejected	:
	4.	Balance Order	:

Signature of firms Representative

Signature of Inspecting Official of RDSO



Lot size: 200 Nos
VISUAL & DIMENSIONAL CHECK SHEET

Quantity Inspected:		Nos.		(All Dimensions are in mm)	
a)	For Dimension check	:	Sample size	:	_____ Nos (8% specified)(Minimum of 10 Nos)
b)	For Visual Check	:	Sample size	:	_____ Nos (8% specified)(Minimum of 10 Nos)
c)	Marking	:	: Month, year of manufacture, Manufacturers initial or trade mark.		

Sr. No.	A	B	C	D	E	F	G	H
	Length of Inner cover	Length of Outer cover	Outside dia of outer cover	Inner dia of outside cover	Outside dia of inner cover	Inner dia upto a length of 40 mm from bottom.	Inner dia between 40 & 90 mm from bottom	Inner dia upto a length of 50 mm from top
	274.7 – 275.3	239.5 – 240.5	140 (+0.17 + 0.195)	133	107	80	75 (+0.1, +0.2)	90 (+0.15, +0.30)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

Signature of firms Representative

Signature of Inspecting Official of RDSO



VISUAL & DIMENSIONAL CHECK SHEET

Sr. No.	K	L	M	N	O	P	Q	R	VISUAL
	Difference in level of inner & outer cover at top	Height of bottom notch	Width of bottom notch	Radius of notch	Chamfer at out cover ends	height	Depth at y	Depth at Z	
	3.5- 6.5	28 – 28.5	20 – 20.1	10 R	5 * 15°	30	6	6	
1					A B				
2					A B				
3					A B				
4					A B				
5					A B				
6					A B				
7					A B				
8					A B				
9					A B				
10					A B				
11					A B				
12					A B				
13					A B				
14					A B				
15					A B				
16					A B				

Remarks:

Signature of firms Representative

Signature of Inspecting Official of RDSO



COMPRESSIVE LOAD TEST

Process	:	Compressive Load test with 14 tonnes load. (During Fourth Application)	
Requirement	:	1.	No damage to rubber or steel.
		2.	Deflection not more than 2 mm
		3.	Permanent Set not to exceed 0.5mm when measured 30 minutes after release of load.

Samples size: (1% Minimum or 3 Nos)

Actual Sample: Nos.

Observations:

Sample No.	Before Ageing Observations		
	Rubber/ Steel condition	Deflection (in mm)	Permanent set
1			
2			
3			

Remarks: Satisfactory

Signature of firms Representative

Signature of Inspecting Official of RDSO



TORSIONAL STIFFNESS

Process : Torsional I stiffness for 7 degree deflection.
(During Fourth Application)

Requirement : 1. Torque required should be within 25,000 to 40,000 kg-cm
2. Permanent Set not to exceed 1 degree.

Quantity inspected: Nos.

Samples size: 1% Minimum or 3 Nos

Observations:

Sample No.	Observations	
	Torsional Torque	Permanent set
1.		
2.		
3.		

Remarks: Satisfactory.

Signature of firms Representative

Signature of Inspecting Official of RDSO



ENDURANCE TEST

Endurance Test:

Endurance Test Specification:

1.	Radial Load	:	5,000 Kg to 15,000 Kg.
2.	Frequency	:	1 to 2 hz (i.e. 1 to 2 cycles / second)
3.	Total cycles	:	5,00,000 cycles
4.	Sample size	:	Specified: - One silent block for every 2500 Nos.
Specified Requirement			

After completion of two Lakh fifty thousand cycles there should not be any crack on the rubber or de-bonding from metal.
(The sample which has successfully passed 1st endurance test should be put up for 2nd endurance test by rotating 180 degree.)

OBSERVATION:

<u>1st RADIAL ENDURANCE</u>		<u>2nd RADIAL ENDURANCE</u>	
Date	No. of Cycles run	Date	No of cycles run

Observed after 1st Endurance Test of 2,50,000 Cycles;

Total cycles run: 250000

Sample No.	OBSERVATIONS.	
	<i>Cracks observed on rubber</i>	<i>De-bonding of Rubber from Inner or Outer metal</i>
1.		

Observed after completion of 5,00,000 cycles Endurance Test;

Total cycles run: 250000

Sample No.	OBSERVATIONS.	
	<i>Cracks observed on rubber</i>	<i>De-bonding of Rubber from Inner or Outer metal</i>
1.		

Balance B/F	:	Nos
Quantity Now Passed	:	Nos
Balance	:	Nos

Signature of firms Representative

Signature of Inspecting Official of RDSO



PROPERTIES OF RUBBER

	Sampling Tensile/elongation/modulus on 2 test slabs Hardness/compression set on 3 test buttons Bond strength on 3 samples						
1.	Physical Properties of Rubber						
Before Ageing							
<u>For Details of these values please see Pages 08 to 11</u>							
Specified		SB I		SB II			
		A		B		C	
Tensile Strength.	200 Kg/cm ² (min.)					---	
Elongation at Break.	300% (min.)					---	
200% Modulus	40 Kg/cm ² (min.)					---	
Hardness Shore A	70 ± 5						
Compression Set at 70° C +1/-0 for 24+0/-2 hrs.	20%						
Bond Strength	500 PSI Min.						
B.	After Ageing at 70° C +1/-0 for 72 hrs +0/-2 hrs.						
		Observed			Percentage Variation		
Specified Variation		A	B	C	A	B	C
T.S.	± 20%			---			---
E.B.	± 25%			---			---
200% Modulus	+20/-0 %			---			---
S.H.	+7, -0						
<u>For Details of these values please see Page. 10</u>							
		<u>Specified</u>	<u>Observed (average)</u>				
			A	B	C		
2.	Ash Content	: 7.00 % (max.)					
3.	Specific Gravity	: 1.25 (max.)					

Signature of firms Representative

Signature of Inspecting Official of RDSO



Sample size: 03 Nos.

Ash content:

Sl. no.	Empty Crucible (E)	Crucible + Sample (S)	Crucible + Ash (A)	$A - E$ Ash% = $\frac{\quad}{S - E}$
A.				
B.				
C.				

Specific Gravity:

Sl. No.	Weight in air (W)	Weight in water (W_o)	$\frac{W}{W - W_o}$ Sp. Gr. = $\frac{\quad}{\quad}$
A.			
B.			
C.			

Signature of firms Representative

Signature of Inspecting Official of RDSO



LOT NO.

& Part

Sampling: 03 Nos. of sample tested

	Hardness (Before ageing) Min. 6 mm thickness Min.12mm distance from edges	Hardness (After ageing)	Change in shore Hardness (After ageing)
A			
B			
C			

Compression Set

	Dia. 13 ± 0.5 mm	To Original 6.3 ± 0.3 mm	T1 Final mm	Ts Spacer mm	Compression Set $\frac{To - T1}{To - Ts} \times 100$	Mean
A						
B						
C						

Shear Bond Strength Test: Specified value, Min. 500 P.S.I. Test conducted as per IS: 3400 Part-14, 1984

SAMPLE	BOND STRENGTH (PSI)
A	
B	
C	

Signature of firms Representative

Signature of Inspecting Official of RDSO



LOT NO.

& Part

Sampling: 02 Nos. of sample tested

PHYSICAL PROPERTIES OF RUBBER USED IN INJECTION MOULDED SILENT BLOCK FOR CENTER PIVOT

Sample No. A

Before Ageing																	
	Thickness (2.0± 0.2) mm max.				Width (4.0± 0.1) mm	Area cm ²	Load in Kgs		Modulus 200% kg/cm ²	T.S. Kg/ cm ²	Median		Initial 20 ± 1 mm	Final In mm	Change In length	% E.B.	M E D I A N
	a	b	c	Min.			At 200%	At Break			200% Modulus Kg/ cm ²	Tensile Strength Kg/ cm ²					
1																	
2																	
3																	
After Ageing (at 70 ± 1°C for 72 +0/-2 hrs.																	
	Thickness (2.0± 0.2) mm max.				Width (4.0± 0.1) mm	Area cm ²	Load in Kgs		Modulus 200% kg/cm ²	T.S. Kg/ cm ²	Median		Initial 20 ± 1 mm	Final In mm	Change In length	% E.B.	M E D I A N
	a	b	c	Min.			At 200%	At Break			200% Modulus Kg/ cm ²	Tensile Strength Kg/ cm ²					
1																	
2																	
3																	

% Variation

Signature of firms Representative

Signature of Inspecting Official of RDSO



LOT NO.

& Part

Sampling: 02Nos. of sample tested

PHYSICAL PROPERTIES OF RUBBER USED IN INJECTION MOULDED SILENT BLOCK FOR CENTER PIVOT

Sample No. B

Before Ageing																	
	Thickness (2.0± 0.2) mm max.				Width (4.0± 0.1) mm	Area cm ²	Load in Kgs		Modulus 200% kg/cm ²	T.S. Kg/cm ²	Median		Initial 20 ± 1 mm	Final In mm	Change In length	% E.B.	M E D I A N
	a	B	c	Min.			At 200%	At Break			200% Modulus Kg/ cm ²	Tensile Strength Kg/ cm ²					
1																	
2																	
3																	
After Ageing (at 70 ± 1°C for 72 +0/-2 hrs.																	
	Thickness (2.0± 0.2) mm max.				Width (4.0± 0.1) mm	Area cm ²	Load in Kgs		Modulus 200% kg/cm ²	T.S. Kg/cm ²	Median		Initial 20 ± 1 mm	Final In mm	Change In length	% E.B.	M E D I A N
	a	B	c	Min.			At 200%	At Break			200% Modulus Kg/ cm ²	Tensile Strength Kg/ cm ²					
1																	
2																	
3																	

% Variation

Signature of firms Representative

Signature of Inspecting Official of RDSO