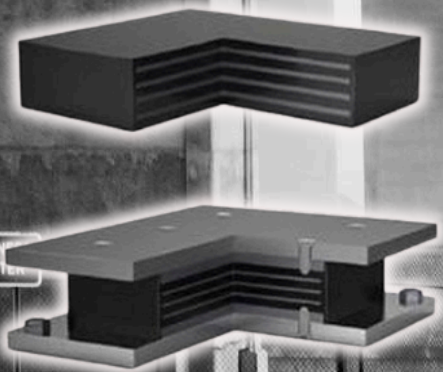
R.S.RUBBER
& ELASTOMERS

# BRIDGE BEARING PAD



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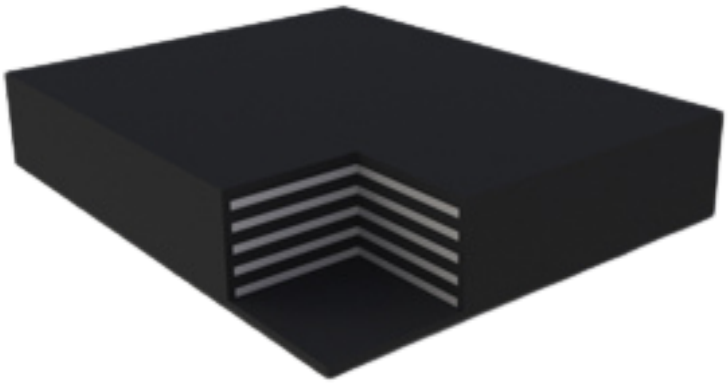
Elastomeric Bearings are designed and manufactured as per IRC: 83 (PART II) 1987 with its latest amendments, to meet the requirements of M.O.S.T. SPECIFICATION FOR ROAD & BRIDGE WORKS TO SECTION NO: 2000 TO CLAUSE NO: 2005 OF 1997 (ELASTOMERIC BEARING): AND TO INTERNATIONAL UNION OF RAILWAYS CODE NOU IC 772 R (USE OF RUBBER BEARINGS FOR RAILWAY BRIDGES)

Elastomeric Bearing consists of one or more internal layers of elastomer bonded to internal steel laminates that shall be cast as a signal unit in a mold and vulcanized under heat & pressure, to cater for translation and/or rotation of the superstructure by elastic deformation.

The row elastomer used in Bearings is Poly-chloroprene, either of the Brands: Neoprene WRT, Bayprene 110, Skyprene B5, & Denka S-40V in order to have low crystallization and adequate shelf life. The content of the Poly Chloroprene in the Bearing is not less than 60% and the ash content shall be less than 5%.

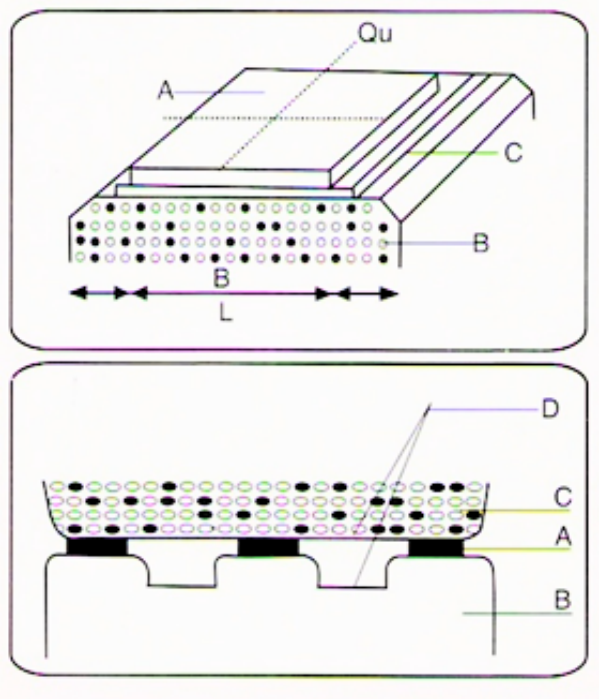
The steel laminates used in the bearings shall the specifications of IS: 226



# BEARING INSTALLATION

The installation of an Elastomeric Bearing will vary according to the type of construction whether the structure above the bearing is in-situ construction precast concrete beams or structural steel beams. In general, the bearing is placed on the surface provided at the right level. The lower and upper concrete surface between which the bearing is placed must be horizontal, parallel, clean, and flat.

For in-situ construction, the form Work must be constructed so as to prevent concrete flowing, from damaging the sides of the bearings. This is easily achieved by surrounding the bearing with expanded polystyrene & taping adequately between the top surface of the bearing & polystyrene. Polystyrene should be removed after the structure has been cast.




- A=ARORA Bearing
- L=Bearing length
- B=Bearing width support
- C=mortar bed
- l=Longitudinal axis of bridge
- Qu=longitudinal axis of bearing

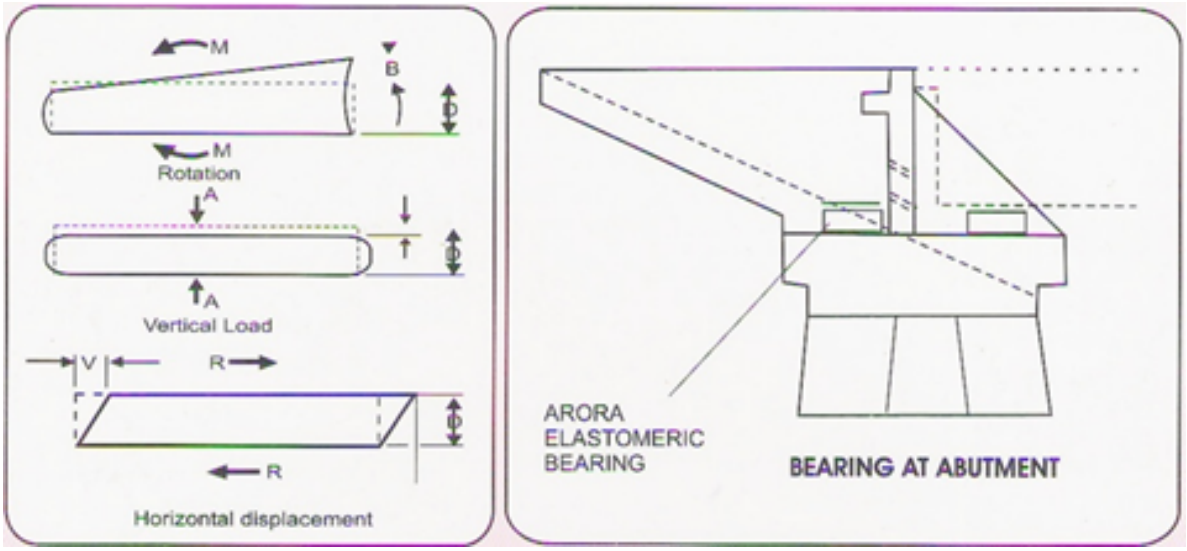
For precast concrete beams and structural steel beams seated on laminated bearings, the bearing must be physically restrained from moving during beam installation. For this purpose a skim coating before beam launching to take up minor irregularities between the two surfaces & no displacement of the bearing during erection of the beam or concreting.

A= Bearing, B = Abutment, C = Bridge Deck, D = Recesses for Flat Jacks Load-Carrying faces must be parallel

## FUNCTION

The function of Elastomeric Bearing is to transfer vertical & horizontal loading & to absorb bearing rotation & horizontal displacements.

An Elastomeric bearing takes up the following three different, kinds of deformation.




## DESIGN OF THE ELASTOMERIC BEARING

(Plan Dimension, Arrangement of Steel laminates & Layers of Layers of Elastomer)

·The overall length divided by overall width shall be less than (or) equivalent to two.

·The overall thickness shall be five times lesser than (or) Equivalent to the overall width: (or)

·The overall thickness shall be Greater than (or) equivalent to the overall width by ten.

·If the thickness of steel laminate is 3 mm. Then the thickness of the elastomer layer shall be either 8 (or) 10mm

·If the thickness of steel laminate is 4 mm, then the thickness of the elastomer layer shall be 12 mm.

·If the thickness of steel laminate is 6 mm, then the thickness of the elastomer layer shall be 16 mm.

·The thickness of the outer layer of elastomer (Top/Bottom) shall be

Half the thickness of a middle layer of the elastomer, Subject to a maximum of 6 mm, for any size.

·The side cover shall be 6 mm for all Bearings.

·Shape factor shall be greater than 6 and lesser than or equivalent to 12.

| Plan Dimension and Technical Data of the Bearing | | | | | |
|---|---|---|---|---|---|
| Code Reference | Dimension (Overall L x W) | Thickness (Maximum) | Thickness (Minimum) | Design Load (Maximum) | Design Load (Minimum) |
| RSI 001 | 250 mm x 160 mm | 32 mm | 16 mm | 350 kN | 70 kN |
| RSI 002 | 320 mm x 160 mm | 32 mm | 16 mm | 460 kN | 90 kN |
| RSI 003 | 320 mm x 200 mm | 40 mm | 24 mm | 580 kN | 120 kN |
| RSI 004 | 400 mm x 200 mm | 40 mm | 24 mm | 730 kN | 150 kN |
| RSI 005 | 400 mm x 250 mm | 48/50 mm | 24/30 mm | 920 kN | 180 kN |
| RSI 006 | 500 mm x 250 mm | 48/50 mm | 24/30 mm | 1160 kN | 230 kN |
| RSI 007 | 500 mm x 320 mm | 90 mm | 48 mm | 1500 kN | 300 kN |
| RSI 008 | 630 mm x 220 mm | 65 mm | 48 mm | 1900 kN | 380 kN |
| RSI 009 | 630 mm x 400 mm | 84 mm | 48 mm | 2400 kN | 480 kN |
| RSI 010 | 800 mm x 400 mm | 84 mm | 48 mm | 3100 kN | 600 kN |

- **10 KN IS EQUIVALENT TO 1 M. T.**
- **DESIGN LOAD OF THE BEARING IS EQUIVALENT TO 10 M Pa**
- **SHEAR MODULUS OF THE BEARING SHALL BE BETWEEN 0.8 & 1.2 M Pa**
- **ULTIMATE COMPRESSIVE STRENGTH OF THE BEARING SHALL BE MORE THAN 60 M Pa**
- **DIMENSION NOT MENTIONED ABOVE CAN ALSO BE DESIGNED AS PER THE REQUIREMENT**

| Physical Properties of the Elastomer used in Bearing | | | | |
|---|---|---|---|---|
| No. | Characteristics | Unit | Values | Testing Std |
| 1 | SHORE Hardness | Shore A | 55 to 65 | IS: 3400 (Part II) |
| 2 | Tensile Strength | MPa | 17 Minimum | IS: 3400 (Part I) |
| 3 | Elongation at break | % | 400 Minimum | IS: 3400 (Part I) |
| 4 | Compression set | % | 35 Maximum | IS: 3400 (Part X) |
| 5 | Accelerated Ageing | - | - | IS: 3400 (Part IV) |
| 5(a) | Change in Hardness | Shore A | 15 | |
| 5(b) | Change in Tensile strength | % | -15 | |
| 5(c) | Change in Elongation | % | -30 | |
| 6 | Adhesion Strength | kN/m | 7 Minimum | IS: 3400 (Part XIV) |
| 7 | Resistance to Ozone | - | No defect | IS: 3400 (Part XX) |



**ANY SIZE = AS PER THE ORDER CAN BE MADE**

R.S.RUBBER
& ELASTOMERS

MANUFACTURERS OF R. S. RUBBER AND ELASTOMERS
IS THE SISTER CONCERNED
OF

# R. S. ARORA RUBBER CORPORATION

(SINCE 1987)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