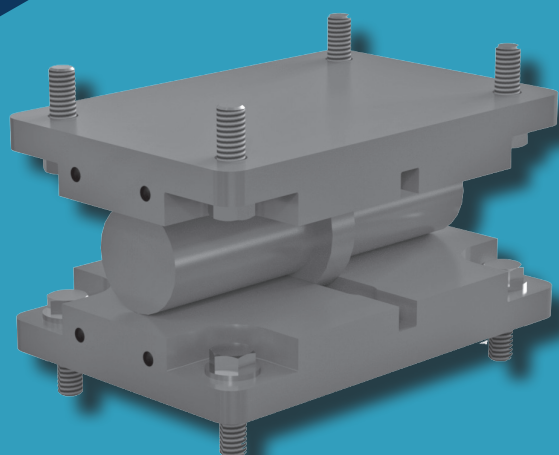


ROLLER BEARINGS

J

BS5400-9



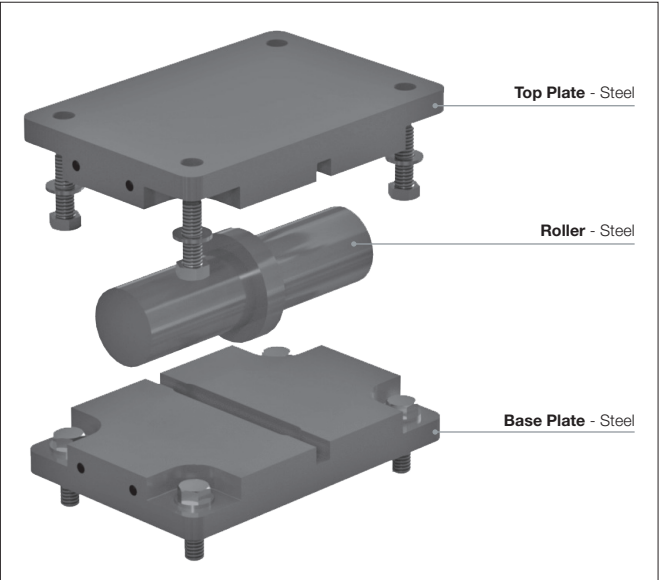
J - Series

Description

The J Series of structural bearings is designed to accommodate the very low friction requirements of some structures. Very low friction resistance is achieved by the use of hard high tensile corrosion resistant faced roller and plate elements.

These elements are assembled to low carbon steel plates which distribute the bearing loads to the adjacent structure. The use of corrosion resistant rollers and plates makes the use of grease boxes unnecessary for the prevention of corrosion - dust shields are available if required.

Bearing Details - Exploded View



Technical Data

Roller Bearing Type	Transition Hardness	Surface Hardness	Standard Deviation of the Surface Hardness
Rb	≥ 300 HV 1	490 to 620 HV 20	≤ 25 HV 20
Rc	≥ 300 HV 1	500 to 650 HV 20	≤ 25 HV 20

Roller Bearing Type	Coefficient of Rolling Friction	Allowable Hertzian Pressure
Rb	0.015 - 0.010	1850 - 1600
Rc	0.015 - 0.010	2000 - 1700

Roller Bearing Type	Material According to Section 2.1.1.1 (or equivalent)	Load Case H	Load Case Hz
Rb	Cast Steel / Hot Rolled Structural Steel	180 / 210	200 / 240
Rc	Heat Treatable Steel, Cast Steel	210	240

Roller Bearings - Rb & Rc

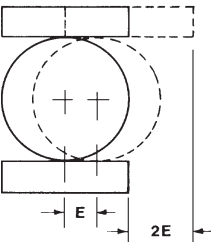
Rotation and Movement

Rotation of $\pm 2^\circ$ about the roller axis is permissible. The roller is maintained in position relative to the roller plates during assembly and installation by means of machined location elements. The type of element depends on the required roller movement.

As with all roller bearings of this type, horizontal translation produces eccentricity of load relative to the adjacent structures. The load eccentricity is equal to half the movement of the superstructure relative to a fixed point.

See Fig. 2

E = Eccentricity of roller
2E = Movement of structure



Applied Loads

Experience has shown that the transverse load capacity of the bearing must not be utilized to maintain the alignment of curved structures or to resist loadings due to crossfall.

Ekspan can provide special bearings for these conditions.

Attachment

Various attachment methods are illustrated on the page opposite on typical roller details. Bearings can be supplied with any combination of the methods shown for the top and base plates. Please contact us if you require a bearing design to accommodate your needs. We can provide you with dimensional information and outline drawings to assist your specification.

J - Series

Support and Installation

The structural members adjacent to the bearing must provide a uniform support to the bearing top and base plates respectively.

The bearings are supplied with the elements securely clamped together, correctly aligned and locked in position by brackets. This condition must be maintained until the bearings are fully installed, after which the brackets must be removed. Bearings are normally supplied in the mid-position.

The bearings must be installed with the axis of the roller perpendicular to the direction of the resultant movement. The axes of two or more rollers in a line must be parallel to one another, and should preferably be on a common axis.

On cast in-situ structures, it is preferable that the bearings are positioned and fully grouted on to their seatings before the

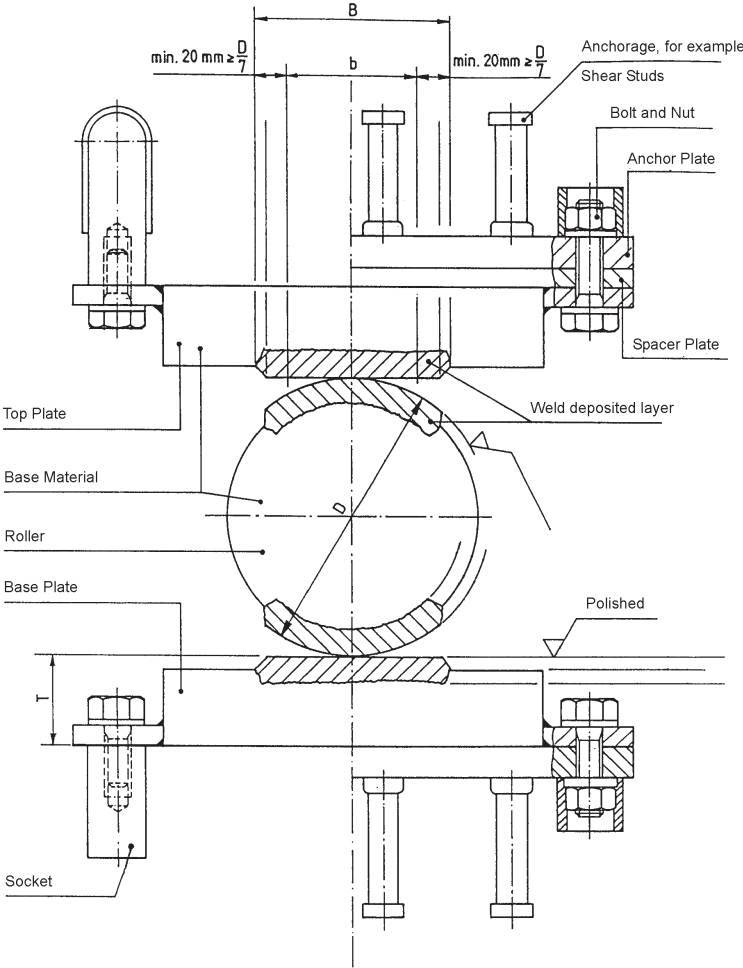
Roller Bearings - Rb & Rc

formwork is assembled and the superstructure cast. On structures with separate pre-fabricated desk components, it is preferable that the bearings be attached to these components first, then lowered on to the seating, levelled and finally grouted in position.

The weight of the structure must be supported outside the bearing until the grout has cured sufficiently to provide uniform support to the bearing.

Other methods of installation are acceptable to suit construction methods, provided that the correct alignment of the bearings is maintained in the completed structure, and the bearings are uniformly supported before the structural loads are applied.

Support and Installation



HANDLING, STORAGE, INSTALLATION & MAINTENANCE

Installation

CONSIDER THE EFFECTS IF BEARINGS ARE NOT CORRECTLY INSTALLED

Our structural bearings are manufactured to close tolerances by skilled technicians working in clean conditions. To obtain the requisite performance from bearings it is imperative that they are properly handled at the work site and installed with the same care as when they were assembled in the factory. The following notes will assist those responsible for specifying and supervising the installation of structural bearings.

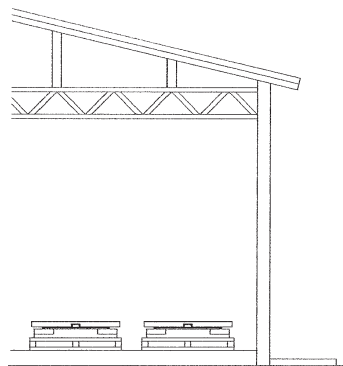
Please note that Ekspan are able to provide installation and supervision.

Bearings must be installed with precision to meet the bridge and bearing design criteria.

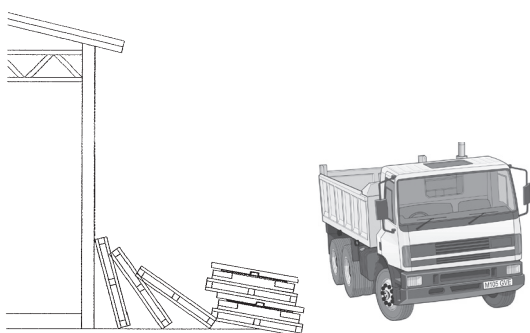
Storage

Our structural bearings are protected from contamination under normal working conditions by an efficient sealing system. Care should be taken in storage to prevent contamination and damage to the working surfaces.

CORRECT



INCORRECT

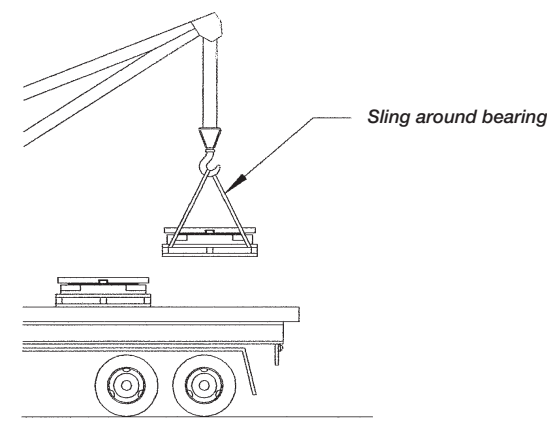


Handling

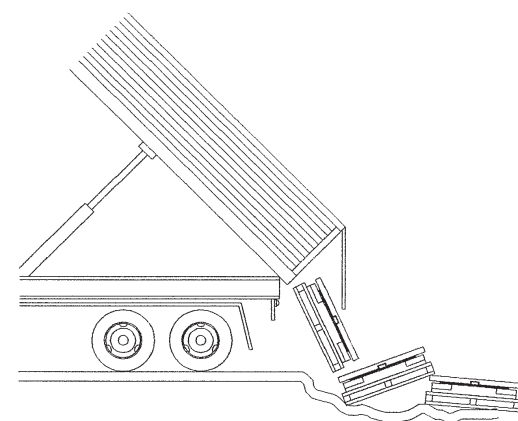
Robust transportation devices are fitted to all bearings to ensure that the components are maintained in their correct relative positions before and during installation. The devices are normally finished in red paint. Unless special devices have been specified, they should not be used for slinging or suspending the bearings beneath beams.

Due to unpredictable conditions, which may occur during transportation or handling on site, the alignment and presetting (if applicable) of the assembled bearing should be checked against the drawing. Do not endeavour to rectify any discrepancies on site. The bearing should either be returned to Ekspan or, where practical, an Ekspan engineer should be called in to inspect and reassemble. Bearings too heavy to be lifted by hand should be properly slung using lifting equipment.

CORRECT



INCORRECT



HANDLING, STORAGE, INSTALLATION & MAINTENANCE

Presetting

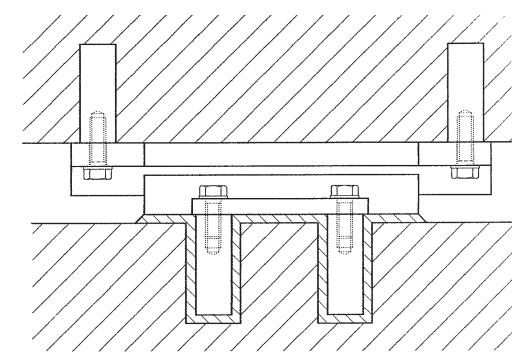
If bearings are required to be preset eg where once only large movements may occur during stressing operations, this should be specified as a requirement and should only be carried out in our works prior to despatch. Do not attempt this operation on site.

Bedding

Bearings must be supported on a flat rigid bed. Steel spreader plates must be machined flat and smooth to mate exactly with the bearings' upper and lower faces. Bearings may also be bedded on epoxy or cement mortar or by dry packing. Whichever system is preferred for the particular structure it is of extreme importance that the final bedding is free from high or hard spots, shrinkage, voids, etc.

Unless there is a specific design requirement, the planar surfaces must be installed in a horizontal plane. The correct installation of bearings is vital for the bearing performance. Costly repairs become necessary all too often due to inadequate specification or poor site supervision. The bearings should not be loaded until the bedding mortar has cured.

Fixing bearings to concrete using permanent anchor plates

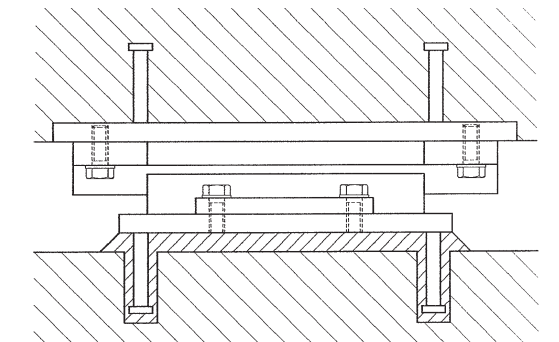


Cast-In-Situ Structures

Care must be taken to ensure that the bearings are not damaged by the formwork or contaminated by concrete seepage. The interface between the top plate and the formwork should be protected and sealed.

Owing to the loading effects of a wet concrete mass, the top plates should be propped to prevent rotation and plate distortion.

Fixing cast-in-situ structures ensure that the bearing working surfaces are protected and supported to prevent distortion and rotation.



Bearing Removability

Where possible, bearings should be fixed in such a manner as to facilitate removal. Our bearings have generally been designed with this in mind. However, when selecting the bearing type preferred, the removability feature should be highlighted in your enquiry.

Removal of Transport Brackets

These brackets, normally painted red should only be removed once the bearing is properly installed and ready for operation.

Bearing Installation Check List

DO -

1. Handle carefully and where necessary with adequate craneage.
2. Store in a clean dry place.
3. Ensure that the bearings are installed in the correct location and orientation.
4. Ensure that the bearings are installed on a flat rigid bed before the design loads are applied.
5. Ensure that the fixings are uniformly tightened.
6. Complete any site coatings and make good paint damaged during handling and installation.
7. Protect working surfaces during the placing of in-situ concrete.
8. Keep the bearings and surrounding areas clean.
9. Remove any temporary transit clamps etc. before the bearings are required to operate.
10. Take special care to support top plates when casting in-situ concrete.

HANDLING, STORAGE, INSTALLATION & MAINTENANCE

DO NOT -

1. Dismantle the bearing on site.
2. Leave bearings uncovered.
3. Attempt to modify without our approval.
4. Install without qualified supervision.

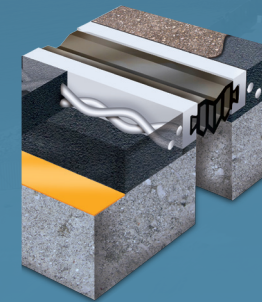
Site Coating

Care should be taken to ensure that working surfaces are not damaged in any site coating operation. After installation damaged coatings must be repaired irrespective of any call for site coatings. Exposed fixing bolts should be protected after final tightening. Any tapped holes exposed after removal of transportation brackets etc. (coloured red) should be sealed with self-vulcanizing silicone sealant.

Routine Maintenance of Bearings

1. Immediately following installation bearings shall be inspected to ensure that all aspects of 'Installation of bearings' have been adhered to and bearings shall subsequently be re-inspected not less frequently than every two years after their installation.
2. Paint and /or other specified protective coatings must be maintained in good and efficient condition and free from scratches or chips. Any areas of the protective coating showing damage or distress must be rectified.
3. Areas surrounding the bearings must be kept clean and dry and free from the adverse effects of external influences such as airborne debris or water/salt (for example emanating from leaking joints).
4. The wearing surfaces of the bearing must be checked to ensure that they are continuing to operate efficiently.
5. Fixing bolts must be checked for tightness.
6. Any bedding material showing signs of distress or ineffectiveness must be replaced and the reason for its failure investigated and corrected.
7. Routine inspections shall include a check that translational and rotational capacities of the bearing have not been exceeded and show no sign of being likely to exceed the requirements specified at the design stage.

USL EKSPAN - PRODUCT RANGE

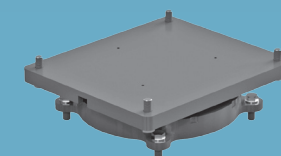


EXPANSION JOINTS - CD 357

Uniflex - Buried
BP1 - Buried
FEBA - Flexible Plug
Britflex NJ - Nosing
EC & EW - Joint Seal
Transflex & Transflex HM - Mat

T-MAT - Mat
Britflex BEJ - Modular
Britflex MEJS - Modular
LJ - Longitudinal Joint
ES - Joint Seal
 Aqueduct/Immersed Joint

Open Type Joint - Rail Joint
Britflex UCP - Footbridge Joint
Finger Joint
Roller Shutter Joint

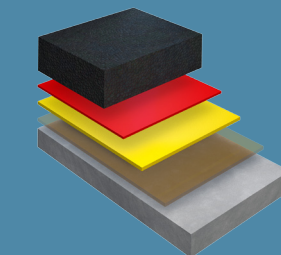


STRUCTURAL BEARINGS

EKE - Elastomeric (EN1337-3)
KE - Pot (EN1337-5)
DE - Linear Rocker (EN1337-6)
GE - Spherical (EN1337-7)
FE - Restraint & Guide (EN1337-8)
EA - Sliding Bearing

D - Linear Rocker (BS5400-9)
F - Restraint & Guide (BS5400-9)
G - Spherical (BS5400-9)
J - Roller (BS5400-9)
K - Pot (BS5400-9)
Link Bearing (BS5400-9)

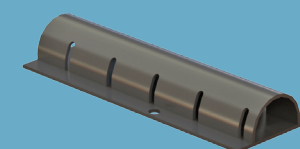
EKR - Rubber Pad & Strip
EQF - Sliding Bearing
Bespoke Bearings



STRUCTURAL WATERPROOFING - CD 358

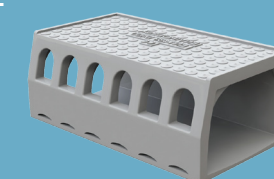
Pitchmastic PmB
 Polyurethane (Pu)
 Waterproofing System
Britdex MDP
 Methyl Methacrylate (MMA)
 Waterproofing System

Britdex CPM Tredseal
 Combined Waterproofing and
 Anti Skid Surfacing (MMA)
Uradeck BC
 Combined Waterproofing and
 Anti Skid Surfacing (Pu)



SUB-SURFACE BRIDGE DRAINAGE

Ekspan 325 Channel
Ekspan 302 System
ES Seal System
DriDeck



SURFACE BRIDGE DRAINAGE

Envirodeck

GROUP BRANDS



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E&OE

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