



Honel Structural Products

(Pty) Ltd.



SLIDING BEARINGS AND EXPANSION JOINTS





Introduction

30th March 2001

Dear Client,

From 1 April 2001 the structural products division of Federal Mogul Large Bearings (Pty) Ltd formally trading as Glacier Bearings SA (Pty) Ltd, will trade under the name "Honel Structural products (Pty) Ltd." As stated in previous correspondence the "Glacier" brand name will no longer be used.

This has come about due to a management buy out of the structural division together with its staff and technology. This includes the various licenses for the technology, designs and patents as well as the extensive history and track record. The company was first established in 1899 in the UK and in 1967 in South Africa. Under this new banner our dedication to customer satisfaction will be enhanced. We, at Honel, are totally committed to our local and export markets, as well as to providing engineering excellence and a range of cost-effective products manufactured in our South African facility.

The "Glacier" brand name may create some confusion as Glacier industrial products still markets their wrapped bushes in South Africa. However the bushes are not to be confused with the structural products that formally carried the "Glacier" brand name. These structural products together with their long history and product technology will continue to be marketed solely by "Honel Structural products (Pty) Ltd."

Should you have any questions or concerns about the changes regarding the buy-out please do not hesitate to make contact with me personally on the telephone number below.

A handwritten signature in black ink, appearing to read "James Davey".

James Davey
Managing Director
031 7011355/ 083 630 2126

HONEL STRUCTURAL PRODUCTS COMPANY PROFILE

The Name Change

From 1 April 2001 the structural products division of Federal Mogul Large Bearings (Pty) Ltd formally trading as Glacier Bearings SA (Pty) Ltd, will trade under the name "Honel Structural products (Pty) Ltd." As stated in previous correspondence the "Glacier" brand name will no longer be used.

This has come about due to a management buy out of the structural division together with its staff and technology. This includes the various licenses for the technology, designs and patents as well as the extensive history and track record of Glacier Metal Company, a company, which was originally established in the UK in 1899. Under our new banner our dedication to customer satisfaction will be enhanced. We, at Honel, are totally committed to our local and export markets, as well as to providing engineering excellence and a range of cost-effective products manufactured in our South African facility.

The Products & Testing

A full range of catalogues is available in electronic form our web site www.honel.co.za or in hard copy form. As can be seen we are manufacturers of a number of products, which include expansion joints and bridge bearings. Bridge bearings are designed and manufactured using the original Glacier design code.

Design standards used are to BS5400 or AASHTO.

Iron & Steel Corporation (ISCOR) produce materials used in the manufacture of bearings and expansion joints in South Africa. These are manufactured to BS4360 Grades, 43A & 55C, which meet the requirements of BS5400. These materials have been purchased from this supplier since our involvement in bearings and expansion joints with great success. However, we still find it necessary to import a great deal of steel from Germany to satisfy our high design specifications.

Management Structure

A Company organogram is available on request although the fundamental change in the management structure is that the structural products section will now function autonomously. This will facilitate better focus on the structural products. The key management and supervisory staff of the structural products company remain unchanged.

Quality Assurance

The company has been assessed in accordance with ISO 9001 requirements. A copy of the certificate is available on request.

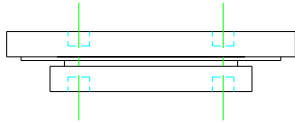
Experience

The factory in South Africa has been producing expansion joints since 1973, and bridge bearings since 1967. A customer job reference has been enclosed. Bridge bearing supply has been restricted to South Africa since 1967 to 1998; this was due to past license agreements. This no longer is the case.

The Factory

The main factory is situated in Pinetown; this is approximately 25 kilometers from Durban. All expansion joints and bearings are designed and manufactured in these premises.

Products offered by Honel



A - Series: Sliding Bearings

A Series

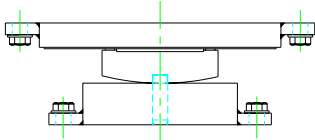
No rotation

Standard load range

100kN(10tons) – 2 000kN(200 tons)

Standard Seating pressure

6.4 – 11.3 Mpa



D - Series: Line Rocker Bearings

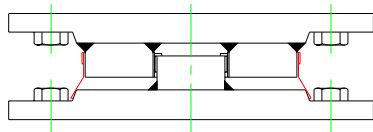
D series

Sliding and fixed bearings with rotation about one horizontal axis

Rotation angle 1.14° (0.02 RAD)

Standard load range

100kN(10tons) – 8 500kN(850 tons)



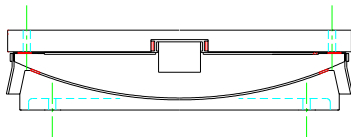
F - Series: Guide Bearings

F series

Sliding bearing for horizontal loading but no vertical load capacity

Standard load range

100kN(10tons) – 1 000kN(100 tons)



G - Series: Spherical Bearings

G Series

Sliding with rotation about vertical and horizontal axis

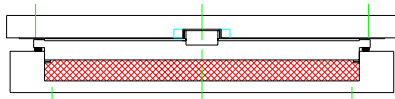
Rotation angle 2° (0.035 RAD)

Standard load range

500kN(50tons) – 30 000kN(3 000 tons)

Standard Seating pressure

11.8 – 20.2 Mpa



K - Series: Pot Bearings

K Series

Sliding with rotation about vertical and horizontal axis

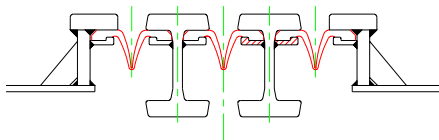
Rotation angle $.57^\circ$ (0.01 RAD)

Standard load range

560kN(56tons) – 30 900kN(3 090 tons)

Standard Seating pressure

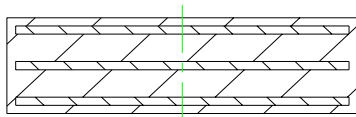
17.9 – 19.3 Mpa



Expansion Joints

Expansion Joints

Movements 80- 640mm



Elastomeric Bearings

Elastomeric Bearings

Rotation about longer axis angle $.57^\circ$ (0.01 RAD)

Nominal rotation about shorter axis

Standard load range

100kN(10tons) – 5 000kN(500 tons)

Standard Seating pressure 4 – 15 Mpa

Teflon Slide & Resilient Slip Joints

Bearings for movement between sub-structures and super-structure of buildings and reservoirs etc.

Standard load range

30kN/m(3tons/m) – 360kN/m(36tons/m)

Special Bearings

Designed to you Specifications.

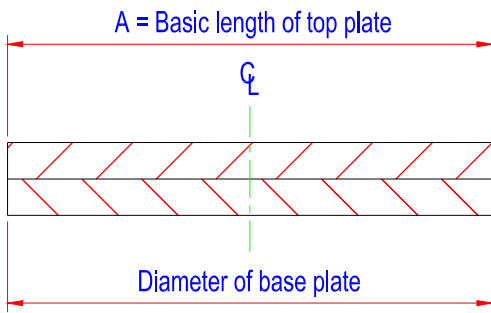
Preset

A certain amount of confusion frequently arises over the interpretation of the term 'preset'. This is due to two different definitions, 'Preset' is sometimes regarded as being the degree of permanent shortening, whereas HONEL ALWAYS DEFINE -PRESET' AS THE AMOUNT BY WHICH THE TOP PLATE IS DISPLACED RELATIVE TO THE CENTRE LINE OF THE BASE PLATE AT ASSEMBLY.

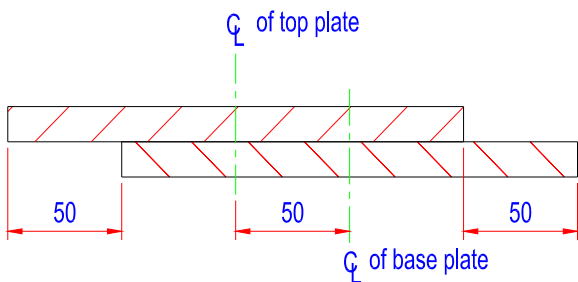
The following typical example demonstrates the relationship between translation, permanent shortening, and preset. Assume a KC 400 bearing subject to:

Permanent shortening of deck: 50mm. Allowance for expansion and i contraction due to temperature changes: ± 15 mm.

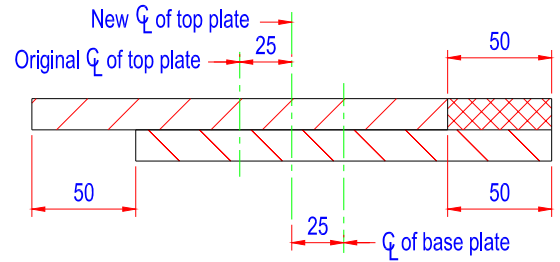
1. Basic schematic arrangement of bearing for nil translation.



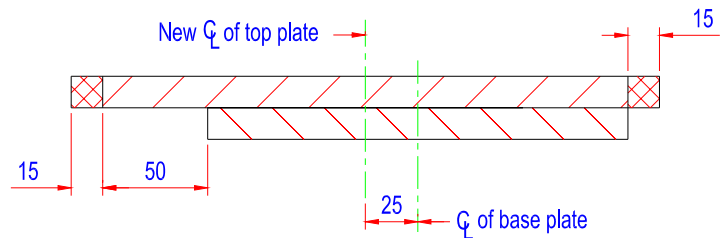
2. Top plate offset to cater for 50mm permanent shortening of the deck.



3. Length of top plate increased by 50mm to cover exposed area of base plate.



4. A further ± 15 mm added, to cater for



expansion and contraction of the deck due to temperature changes. Total length of top plate is now A + 80mm.

From the above it can be seen that:

a) Total translation = 65 + 15 = 80

b) Preset = 25mm

(= 1/2 of permanent shortening)

Bearing Code is KC 400/100 with 25mm Preset

INSTALLATION

Glacier 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.

STORAGE

Honel 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.

HANDLING

Robust transportation brackets are fitted to all bearings to ensure that the working surfaces are maintained in close contact before and during installation. The transport brackets are normally finished in red paint. Unless special bracketing has been specified, the brackets should not be used for slinging or suspending bearings beneath beams. Due to unpredictable conditions which may occur during transportation or handling on site, the alignment and presetting (if applicable) of the assembly should be checked against the drawing. Do not endeavour to rectify on site. The bearings should either be returned to Glacier or, where practical, a Glacier engineer should be called in to inspect and reassemble. Bearings too heavy to be lifted by hand should be properly slung using lifting equipment.

PRESETTING

If bearings are required to be preset, e.g. 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.

CAST-IN-SITU STRUCTURES

Care must be taken to ensure that damage does not occur due to either the formwork or contamination by concrete seepage. The interface between the top plate and formwork should be protected and sealed. Owing to the loading effects of a wet concrete mass, top plates should be propped to prevent rotation and plate distortion. Bearing top plates of PTFE sliding bearings are especially vulnerable in this respect.

BEARING REMOVABILITY

Where possible, bearings should be fixed in such a manner as to facilitate removal. Honel 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 TRANSPORTATION BRACKETS

These brackets, normally painted red should only be removed when the bearing is properly installed and ready for operation. Fixing bearings via permanent seating plates to concrete

For cast-in-situ structures ensure the bearing working surfaces are protected and supported to avoid distortion and rotation

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