

EDWIN LOWE LTD. BIRMINGHAM, UK.

**THE PREFABRICATED BEARING HOUSING ASSEMBLY (CARTRIDGE)
- HOW IT EVOLVED FROM THE VERY EARLY BEARING HOUSING**

HISTORY OF THE PRESSED STEEL BEARING HOUSING

The humble bearing housing for steel rollers has a very long history and has been produced in many different designs, and by many different methods - ever since the first belt conveyor system incorporating steel rollers was installed by Thomas Robins in 1891, to help ship iron ore from Thomas Edison's iron ore mines in Ogden, New Jersey, USA.

It has been produced in a variety of forms, such as:

- A simple machined recess, within the end of the roller tube - i.e. the end of the roller tube is machined within the bore/inside diameter - to a depth sufficiently deep to accommodate the required bearing specification.
- A machined solid casting - i.e. a cylindrical block of cast iron, which has been machined to the required profile, for a roller bearing housing.
- A machined rough steel casting - a rough casting is produced to the approximate profile of a 'top hat', which is then mounted upon a lathe/machining centre and then machined at various points, to create the required roller bearing housing.
- A machined rough pressing - the 'top hat' steel casting replaced by a rough pressing, to the same profile, which then underwent the same series of machining operations to arrive at the final specification of the roller bearing housing.
- More recently - since approximately the 1970s (further refined during the 1980s) - as a deep drawn pressing, finished in all respects and requiring no further operations, before being assembled onto the roller tube.

Although it might be difficult to believe - some of these older methods of producing roller bearing housings are still used in some parts of the world today!

THE PRECISION PRESSED STEEL BEARING HOUSING

- Based upon preliminary work carried out during the 1970s - Edwin Lowe Ltd were instrumental here in the UK in perfecting the manufacturing presswork technique during the 1980s for precision pressed steel bearing housings.
- Over a period of years the company manufactured a comprehensive range of steel bearing housings from lighter weight 6204/20 mm specifications, up to and including heavier duty 6308/40 mm specifications.
- This range of housing specifications (upon which our equivalent range of bearing housing assemblies/cartridges is based) - covers the majority of ISO international standards and all North American CEMA standards up to and including CEMA F.

EVOLUTION OF THE PREFABRICATED ASSEMBLY/CARTRIDGE

- Assembling components into the pressed steel bore of a bearing housing, is an assembly process which takes place around a vertical axis, via a series of vertical assembly operations - i.e. presswork!
- During the 1980s one of our customers approached us to enquire about the possibility of Edwin Lowe Ltd assembling bearings into the bearing housings - prior to despatching the housings to the customer concerned. This was the start of the development of the bearing housing cartridge.
- To continue the development process - the company designed a series of three lip shaft contact seals in polyurethane - the design of which also incorporates additional grease barriers within the body of the seals. The modern version of this original design is now the standard sealing system for all of our cartridges.

(Please refer to our other informal discussion paper entitled “Shaft Surface Condition - Bearing Seat and 3 Lip Sealing Arrangement”).

- Having established the technique of assembling bearings and seals into the bore of a pressed housing - it simply remained to design an external component which would perform two separate and distinct functions, viz:
 - A locking mechanism to physically “lock” all components in situ within the bore of the bearing housing.
 - Also strong enough to withstand the tough working environment of the roller on the conveyor system, and in particular to provide external protection from impact against the roller face, during operation on the conveyor system.
- Prototype cartridges were produced for test purposes during the early/mid 1980s and high volume manufacturing commenced during the early 1990s.
- It was at this point that the company also started to design and install automated assembly equipment for the high speed/high volume production of their complete range of bearing housing cartridges.
- The company now has two fully automated production lines in our state of the art facility here in Birmingham, UK.

(Please refer to also to our other informal discussion paper entitled “Cartridge Production Capacity”).

A V Cook
Edwin Lowe Ltd
Birmingham, England
05.03.14