

# Special Roller Bearings in Bucket Wheel Reclaimers



## Examples of Application Engineering

WL 21 512 EA



VOEST-Alpine Bucket Wheel Reclaimer VARL 1800

source: VAMH

Voest-Alpine Materials Handling (VAMH) is a fully owned subsidiary of the Sandvik Materials Handling (SMH) who itself in turn is part of Sandvik AB's Mining and Construction Division. VAMH's engineering and technology centre in Zeltweg, Austria is the hub for their worldwide activities in open pit mining and bulk material handling. VAMH's range of products for the mining industry includes bucket wheel excavators, belt wagons, spreaders, conveying systems, transport crawlers, hopper & cable reel cars and auxiliary equipment.

For bulk material handling VAMH offers all types of Stackers, Reclaimers (Bucket Wheel and Scraper Type), combined Stacker/Reclaimers for longitudinal and circular stockpiles and covered storage (sheds or domes). For ports and terminals VAMH provides the complete range of bulk shiploaders, grab type and continuous type ship unloaders. For the first time in 1997, VOEST-ALPINE Materials Handling was selected as the successful supplier for the delivery of new bucket wheel reclaimers for Hamersley Iron

Pty. Ltd (HI)'s Tom Price Mine and the Dampier Port - each machine equipped with FAG split spherical roller bearings and housings. Since then, FAG supplied split spherical roller bearings and housings for follow-up orders in Australia as well as for various VAMH machines operating around the world including sites in Brazil and China.

**So far FAG supplied more than 7 sets of bearings and housings including replacement bearings used in the bucket wheel reclaimer VARL 1800.**

## Bearing Arrangement

The following FAG bearings and housings are used:

Locating bearing side:

- **BND3160-Z-T-AF-S**
- **23160-B-MB**

Floating bearing side:

- **Z-144899.01.SGC3084-H-BL**
- **23084-B-K-MB**
- **H3084X-HG**

Replacement bearing:

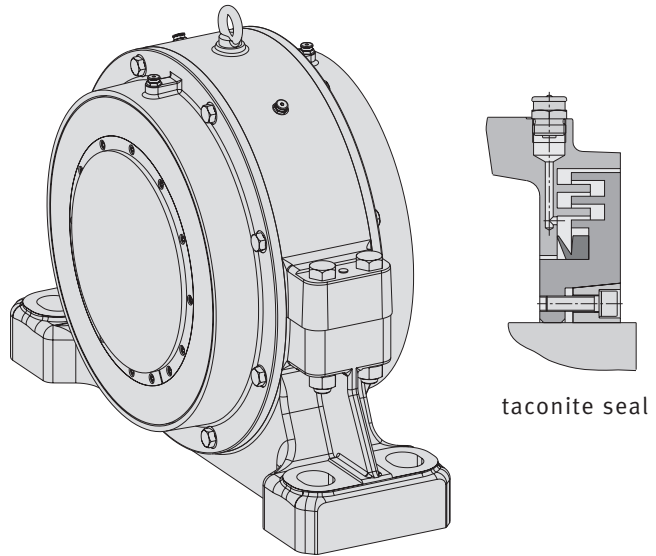
- **230SM400-MA**

For the case of replacing of the floating bearings, FAG provided split spherical roller bearings, because the access here is not easy. FAG split spherical roller bearings allow a tremendous reduction in downtime. This time in turn represents productivities and profitabilities.



FAG Split Spherical Roller Bearing

The housings are made of cast steel. While the BND-housings are unsplit, the SGC-housing is a split version with 2 separate covers. It is designed in that way, that the unsplit as well as the split bearing can be mounted. Due to the harsh environmental conditions – most of all dust – the housings are equipped with a special sealing system. The so called Taconite seal is a combination of a labyrinth ring and a V-ring. By the constantly relubricating the housing, grease floats through the V-ring and the labyrinth outwards. Thus contamination of the interior of the housing is prevented. The sealing effect is supported by means of additionally relubricating the labyrinth.



taconite seal

FAG housing **SGC3084BL.144899A**

## Lubrication and Maintenance

A lithium soap based grease of consistency class 2 with mineral base oil and EP additives is used for bearing lubrication. The base oil viscosity is at least  $450 \text{ mm}^2/\text{s}$  at  $40^\circ\text{C}$ . The following greases meet these requirements:

- FAG Arcanol LOAD400
- FAG Arconal LOAD1000

The grease quantity for the initial fill is 8 kg. The pillow block housing is connected to a central lubrication system.

The relubrication quantity for the bearing via the lubrication connection on the outer closed cover (BND3160TAF) or in the housing cap (SGC3084.144899A) is 2g/h.

The labyrinth on the inner housing side (BND3160TAF) and the labyrinths on both sides of the SGC-housing also have to be relubricated with 2g/h.

The bearing temperature is checked with a built-in - thermometer in regular intervals. To detect wear at an early stage, the radial clearance is checked every six months.

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