

Custom Designed Solution for Quarries
Spherical Roller Bearings.

SNR - Industry



SNR Bearings

Thrive in Harsh Applications

The work done in a quarry is more than just the extraction of ore.

A complete mechanical process is required to obtain a product with a specific granularity.

At each step in the sequence, bearings play a vital role in a particularly demanding environment.

Transforming blocks of ore into granules

Once the blocks of ore are extracted, the first step is to reduce them to a size suitable for transportation and handling: this is the fragmentation process that involves crushing and then grinding.

Granules obtained are anything but uniform and need to be sorted in order to classify them. This is the screening process.

Bearings put to the test

In a quarry, bearings operate in an environment that is extremely demanding. Major difficulties include:

- **Heavy Radial Load**
Every day, quarry conveyor belts carry thousands of tons of ore. Corresponding belt bearings are subject to extremely heavy radial loads.
- **Contamination**

Bearings must constantly operate in a dusty, damp and abrasive atmosphere.

- **Impacts, Unbalanced Loads and Vibrations**

The irregular shape of the granules in the crushers and screens intensifies the unbalanced loads producing on-going vibrations as well as extremely violent impact loads.

- **High Temperature**

In quarrying machinery, shocks, vibrations and heavy loads generate temperatures that can exceed 100°C (212°F).

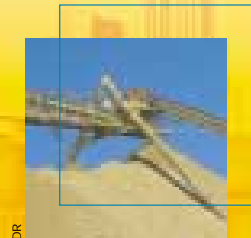
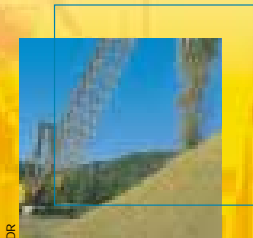
- **Rotating speed**

The speed is relatively low in most steps of the process.

- **Misalignment**

Potential misalignments between shaft and bearing housings are numerous in this type of environment.

To overcome the above difficulties, the number of moving parts in the bearing must be minimized, appropriate lubrication must be provided and the mechanical design and assembly must be flawless.



For Each Step In The Ore Preparation Process, SNR Has Just The Right Bearing

Primary and Secondary Grinding



Each type of grinder, depending on the grinding process used, determines the choice of bearing.

Percussion Hammer Mill

- SNR spherical roller bearings (EM) Series 22300, 23200, ..., J30
- Tapered or cylindrical bores

Jointed Percussion Hammer Mill

- SNR bearings special screen Series EF 800 (EM), J40
- Tapered or cylindrical bores

Jaw Compression Mill, for Eccentric Shaft

- SNR spherical roller bearings (EM) Series 23100, 23200, ..., J30
- Tapered or cylindrical bores

Jaw Compression Mill, for Main Support

- SNR spherical roller bearings (EM) Series 22300, 23200, ..., J30
- Tapered or cylindrical bores

Cage Mill

- SNR spherical roller bearings (EM) Series 22300, 23200, 24100, ..., J30
- Tapered bores

Autogenic Mill, Ball & Bar Mill, Rotary Mill

- SNR bearing Series EF 800

Primary and Secondary Crushing

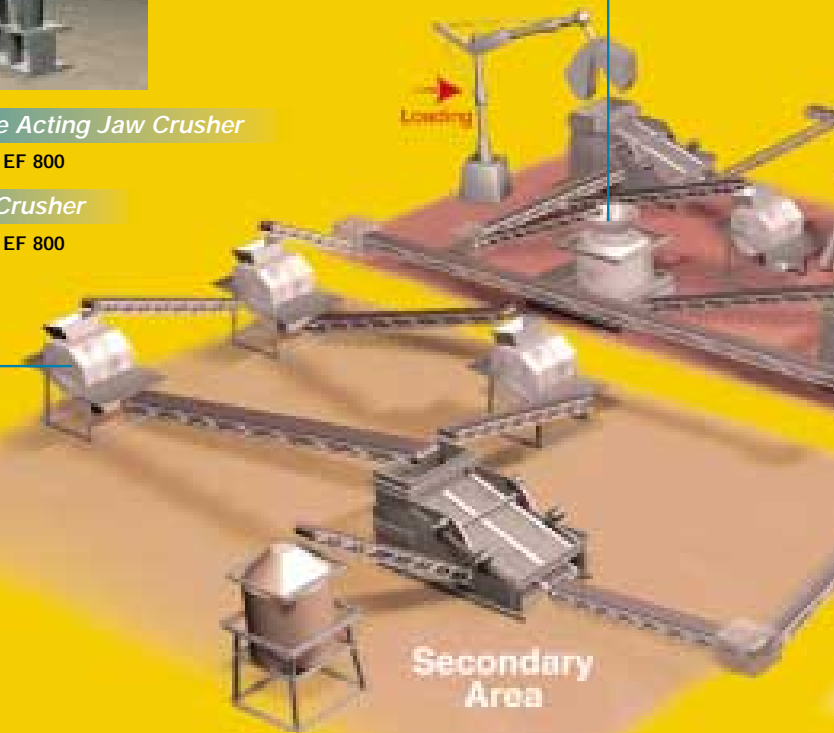


Single or Double Acting Jaw Crusher

- SNR bearing Series EF 800

2 Toothed-Roll Crusher

- SNR bearing Series EF 800



Primary and Secondary Screening



To extract the under-sized materials from the crushed ore, two successive screening techniques are used:

- Primary coarse mesh screening, with vibrating bars or rotating screens.

- Secondary fine mesh screening, with shaker screens using perforated metal plates, trellises or various types of polymers.

Whether the screen type used is disk, eccentric, unbalanced shaft, resonance or ellipsoid

- The SNR EF 800 product line will perform flawlessly in all these applications.



Ore Transport



Ore is carried from station to station by a number of means: loaders, washers, pumping units, conveyor belts.

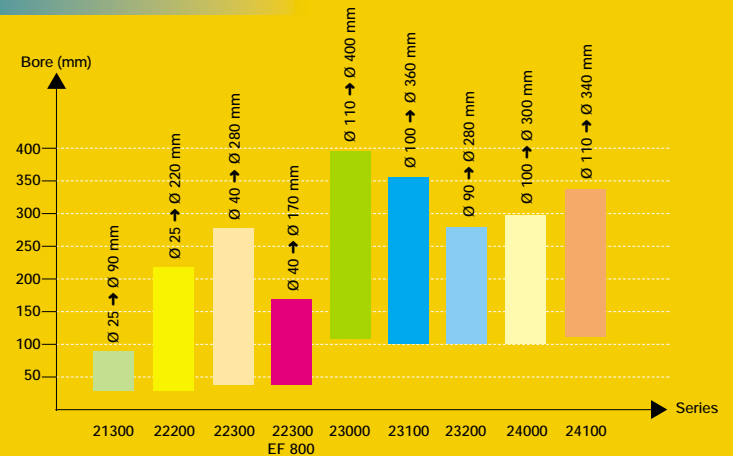
Alternating Conveyor with Apron or Belt

- SNR SNU-type cast-iron pillow blocks equipped with self-aligning ball bearings **Series 1200, 1300, 2200, 2300** or spherical roller bearings **Series 21..., 22... and 23...**
- SNR cast-iron self-aligning bearing mounted units

Pumping Units

- SNR SNU-type cast-iron pillow blocks
- SNR spherical roller bearings **Series 22200 and 22300 (EM or EA)**

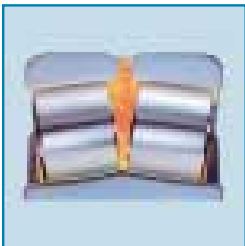
The SNR Line



Spherical Roller Bearings: Impervious to Vibrations

SNR offers an extensive line of spherical roller bearings, designed to withstand all stresses of a quarry environment.

SNR's considerable experience has enabled it to increase the life of its bearings to ensure optimum operation of your equipment.

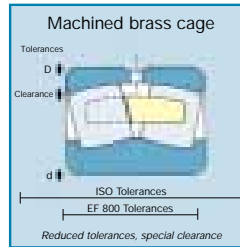


SNR-Lub: The Right Lubrication for Quarry Environment

For screening applications (Severe operating conditions: heavy loads and low speeds), SNR recommends SNR-LUB VX, high-viscosity grease with extreme-pressure additives.

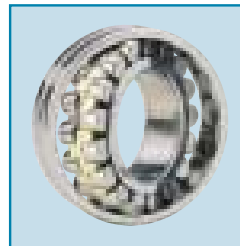
For other applications, SNR Engineers have developed SNR-LUB EP grease:

- Tailored to heavy loads at normal rotating speeds.
- Includes extreme-pressure additives for enhanced performance under load.
- Guarantees good bearing lubrication for continuous temperatures up to 120°C (250°F).



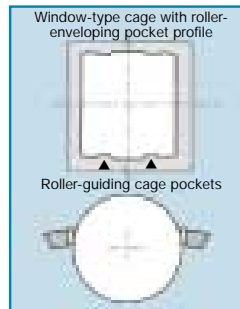
SNR EF 800 Special Shaker Screen Series

- Designed for particularly harsh applications.
- One-piece machined brass cage: provides high rigidity and resistance to vibration.
- Rolling-element centered cage: lessens the effect of thermal expansion.
- Maximum basic load rating: enhances the bearing life.
- Optimized bearing fitting: with reduced tolerances on the outside diameter and bore.
- Special radial clearance: J40 (C4) category is controlled to the upper two-thirds of the ISO tolerance (see diagram). This special tolerance is also available in the J30 (C3) clearance category.
- Recommended fits:
 - Interference fit in the housing, class P6.
 - Sliding fit on the shaft, class g6.



SNR EM (Machined Cage) Series

- One-piece machined brass cage: excellent resistance to impacts and vibrations.
- Cage centered on the rolling elements to prevent cage jamming due to thermal expansion.
- Bearing rings are subject to a specific heat treatment that ensures their dimensional stability at operating temperatures up to 200°C (390°F).



SNR EA (Steel Cage) Series

- Suitable for standard applications.
- The inner and outer rings are subject to a specific heat treatment that ensures their dimensional stability at operating temperatures up to 200°C (390°F).
- Window-type cage conforming closely to the contour of the rollers: ensures perfect roller guidance to avoid overheating.
- A larger gap between the 2 rows of rollers allows:
 - Expansion of the lubricant reserve.
 - Improvement of lubricant flow within the bearing.
 - Bearing life to be increased.

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