

## For high-vibration applications: EF800 series

The vibratory mechanisms such as those found in shaker screens, crushers, grinders constitute some of the most demanding applications for bearings. NTN-SNR has therefore developed a range of spherical roller bearings specifically designed to meet these critical requirements.

These bearings are:

- available in the 223xx series with a cylindrical or tapered bore,
- available with bore diameters of between 40mm and 170mm,
- available on request for the other series and bore dimensions.
- manufactured according to specification EF800 which sets out the special tolerances and radial clearance of spherical roller bearings.

### Requirements for your high-vibration applications

High vibration machinery (shaker screens, crushers, grinders, etc.) subject bearings to high levels of stress: heavy loads, radial acceleration, centrifugal forces, a highly polluted environment, etc. All this imposes specific resistance characteristics on the spherical roller bearings.

The high radial accelerations of these applications place a particular strain on the cage. The EF800 series, equipped with solid cages with a contoured profile around the cage pockets, guarantees the stability of the rolling elements in order to limit heat build-up. The capacity of the copper alloy to resist impacts makes the unit capable of withstanding the most testing of operating conditions.



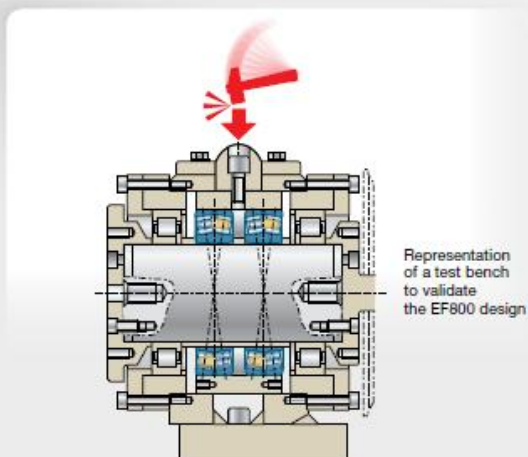
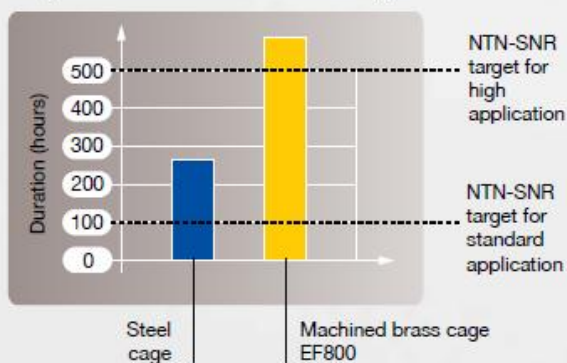
### Specific internal design, EF800 series

The absence of a central shoulder section on the inner ring enables maximum load capacity which in turn allows the EF800 series bearings to withstand the extreme wear stresses generated by high-vibration applications.

The lateral shoulders enable axial accelerations to be withstood in extreme cases and are subject to a specific surface roughness. The centred cage, on the rolling elements, eliminates all risk of seizure between the cage and the bearing rings in the event of thermal expansion due to the particular operating conditions of shaker screens.

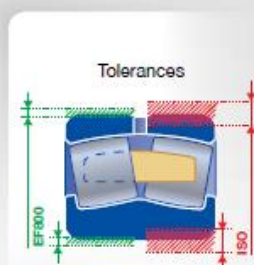
The many tests carried out on the NTN-SNR test benches have demonstrated the excellent behaviour of our bearings when subjected to intense vibratory conditions.

#### Comparative test result of EA vs EF800 cage



## Tolerances

### Characteristics of the EF800 serie



The EF800 specification sets out reduced bore tolerances for the cylindrical bores, for the tapered bores, for the outer diameters and for the radial clearance, compared to the tolerance ranges of the normal series. See table below.

- **Cylindrical bore:** reduced tolerances defined by the EF800 specification guaranteeing a slide fit of the ring over a shaft produced with type g6 or f6 tolerance.
- **Tapered bore:** reduced tolerances enabling limitation of the axial displacement of the inner ring when setting the clearance during assembly, thereby facilitating the assembly operations.
- **Outer diameter:** tolerances of the EF800 specification guaranteeing the fixed setting of the outer ring in its housing for a type P6 fit.

### Internal radial clearances

For vibratory applications, the generally recommended clearance is C4. In order to avoid any risk of preload on the bearings, linked to adjustment defects or deformation of the shaft or housing seating surfaces. NTN-SNR proposes a special radial clearance range in the C4 group, reduced to 2/3 greater than the tolerance.

This clearance range facilitates the achievement and control of the final radial clearance after assembly and takes account of the specific operating conditions for these materials.

In certain cases, applications may necessitate the use of a clearance other than group C4. Upon request, we can deliver bearings in groups C3, EF801 series or C0, EF802 series. For the EF801 and EF802 series, and for the EF800 series, the clearance range is reduced to 2/3 greater than the tolerance.

## Reduced tolerances, bore and external diameter

### Comparison of diameters tolerances • Normal series & EF800 series

Inner ring		Dimensions in mm.				
Nominal bore	Greater than	30	50	80	120	180
	Up to	50	80	120	180	250

#### Micron-scale differences

Cylindrical bore (d)	Normal series	0	0	0	0	0
		-12	-15	-20	-25	-30
Tapered bore (d) <th rowspan="2">Normal series</th> <td>39</td> <td>46</td> <td>54</td> <td>63</td> <td>72</td>	Normal series	39	46	54	63	72
		0	0	0	0	0
Cylindrical bore (d) <th rowspan="2">EF800 series</th> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	EF800 series	0	0	0	0	0
		-7	-9	-12	-15	-18
Tapered bore (d) <th rowspan="2">EF800 series</th> <td>25</td> <td>30</td> <td>35</td> <td>40</td> <td>46</td>	EF800 series	25	30	35	40	46
		0	0	0	0	0

Outer ring		Dimensions en mm.							
Nominal outside diameter	Greater than	80	120	150	180	250	315	400	500
	Up to	120	150	180	250	315	400	500	630

#### Micron-scale differences

Outside diameter	Normal series	0	0	0	0	0	0	0	0
		-15	-18	-25	-30	-35	-40	-45	-50
		EF800 series	-5	-5	-5	-10	-10	-13	-13
-13	-13		-18	-23	-23	-28	-30	-35	