

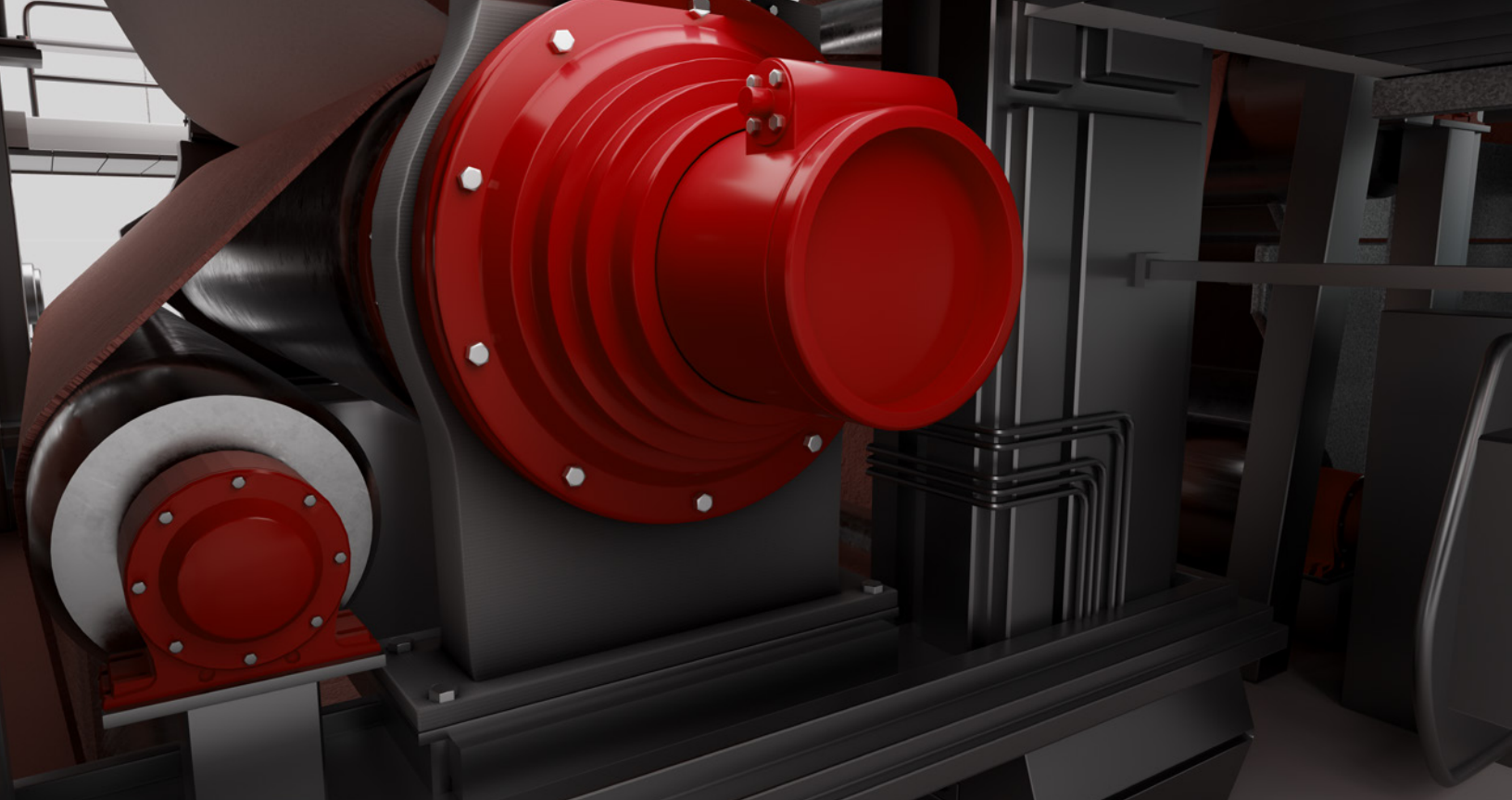


TRIPLE RING BEARINGS

FOR CONTROLLED CROWN ROLLS IN PAPERMAKING MACHINES



STAY IN MOTION. STAY IN CONTROL.



AT HIGH SPEEDS. UNDER HIGH LOADS. IN HIGH HEAT.

BEARINGS FOR PAPERMAKING MACHINERY

High speeds. Moisture. Intense heat. The forces at work on the bearings used throughout these massive mechanical marvels are extreme. And the stakes are high.

With throughput as great as thousands of feet per minute — hundreds of tons each day — a single bearing failure can bring the paper that flies across a machine's interdependent rolls to an abrupt halt. At a significant cost.

Reliability is paramount.

For NSK, product development and design is focused squarely on withstanding the manifold operating and environmental stresses of these applications with:

- › increasing capacities for high loads and high speeds
- › advanced materials for durability, wear resistance and longer life
- › lubrication and seal technology for smooth and clean running

Our product solutions are designed to optimize the performance of machinery and equipment, to assure predictable reliability and to deliver total cost-efficiency.

OUTSTANDING PERFORMANCE ENGINEERED IN

Triple ring bearings are highly specialized by design to be used exclusively for controlled crown rolls and other deflection-compensating rolls in presses and calendars of papermaking machines. Unlike conventional roll arrangements, these applications require the bearing to transmit drive torque while simultaneously supporting extremely high radial loads and accommodating roll deformation.

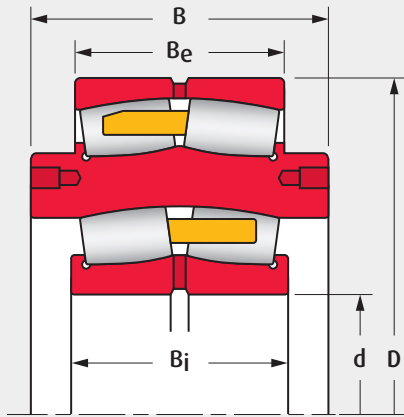
NSK offers two triple ring bearing designs, specific to machine builder, that support uniform nip pressure to achieve consistent sheet thickness and paper quality through:

- ➔ **Extremely high load capacity** with optimized load distribution to support enormous forces generated in presses
- ➔ **High dimensional and rotational accuracy** to maintain accurate roll positioning and consistent paper quality
- ➔ **High fatigue strength** derived from vacuum-melted, carburized steel
- ➔ **Creep prevention** with mitigated shaft and housing wear even under heavy cyclic loading
- ➔ **Simplified installation** with the rotating middle bearing ring mounted directly onto the roll drive mechanism

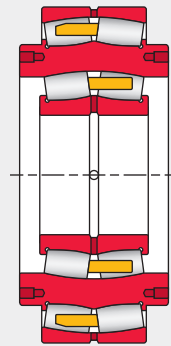


At right: triple ring bearing design with spherical roller inner and outer bearings. Cylindrical roller inner / spherical roller outer bearing designs are also available.

BEARING DIMENSIONS AND OPERATING VALUES



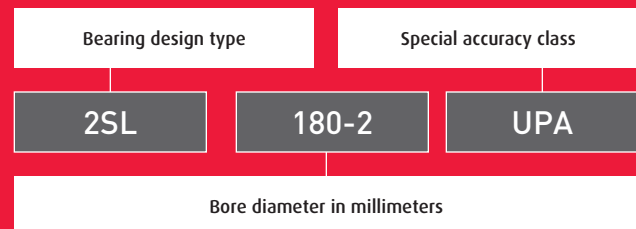
2SL design type



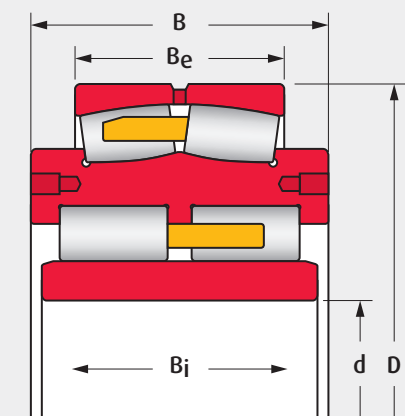
BOUNDARY DIMENSIONS					BASIC BEARING No.	BASIC LOAD RATINGS - kN			
mm						inner bearing		outer bearing	
d	D	B	B _i	B _e		dynamic	static	dynamic	static
180	460	160	153	118	2PSL 180-1 UPA	1 430	2 370	1 710	3 700
	480	215.9	140	160	2SL 180-2 UPA	1 490	2 500	2 440	5 050
200	520	241.3	160	180	2SL 200-2 UPA	1 820	3 050	2 920	6 050
220	600	279.4	180	200	2SL 220-2 UPA	2 200	3 750	3 600	7 600
240	600	225	205	160	2PSL 240-1 UPA	2 700	4 600	2 840	6 500
	620	279.4	200	200	2SL 240-2 UPA	2 760	4 800	3 700	7 500

DESIGN FEATURES:

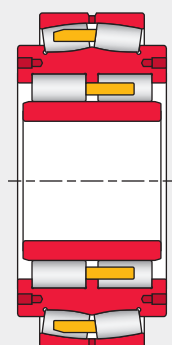
- › Special design multi-ring bearing comprised of 2 roller / cage assemblies with a driven middle ring
- › 2SL type: with spherical inner and outer roller / cage assemblies
- › 2PSL type: with cylindrical inner and spherical outer roller / cage assemblies
- › Manufactured from vacuum-melted, carburized steel
- › With heavy-duty, machined one-piece brass cages



- › Special dimensional tolerances and rotational accuracy
- › With inner / outer ring lubrication grooves and holes



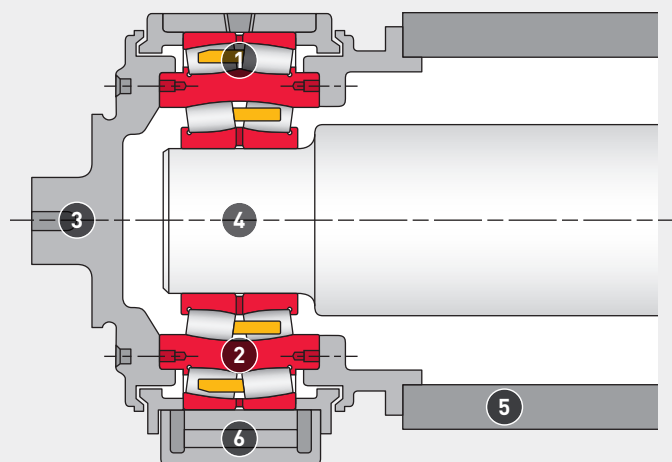
2PSL design type



BOUNDARY DIMENSIONS					BASIC BEARING No.	BASIC LOAD RATINGS - kN			
mm						inner bearing		outer bearing	
d	D	B	B _i	B _e		dynamic	static	dynamic	static
260	680	317.5	218	218	2SL 260-2 UPA	3 250	5 700	4 500	9 950
280	720	317.5	218	218	2SL 280-2 UPA	3 400	6 150	4 450	9 900
300	780	342.9	243	250	2SL 300-2 UPA	4 050	7 450	5 400	11 900
320	820	368.3	258	258	2SL 320-2 UPA	4 550	8 400	5 950	13 300
340	870	393.7	280	272	2SL 340-2 UPA	5 400	9 950	6 600	15 100
380	980	431.8	240	308	2SL 380-2 UPA	6 100	11 500	8 100	18 500

TRIPLE RING BEARING IN A CONTINUOUS CROWN ROLL

- 1 triple ring bearing, design type 2SL (spherical / spherical)
- 2 rotating middle ring (inner & outer rings are stationary)
- 3 roll drive
- 4 stationary roll shaft
- 5 rotating roll sleeve
- 6 bearing housing





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