

Spherical Roller Bearing with Machined Solid Brass Cage For General Industries Machinery

New Series With Patented Cage Technology
Superb Reliability and Performance



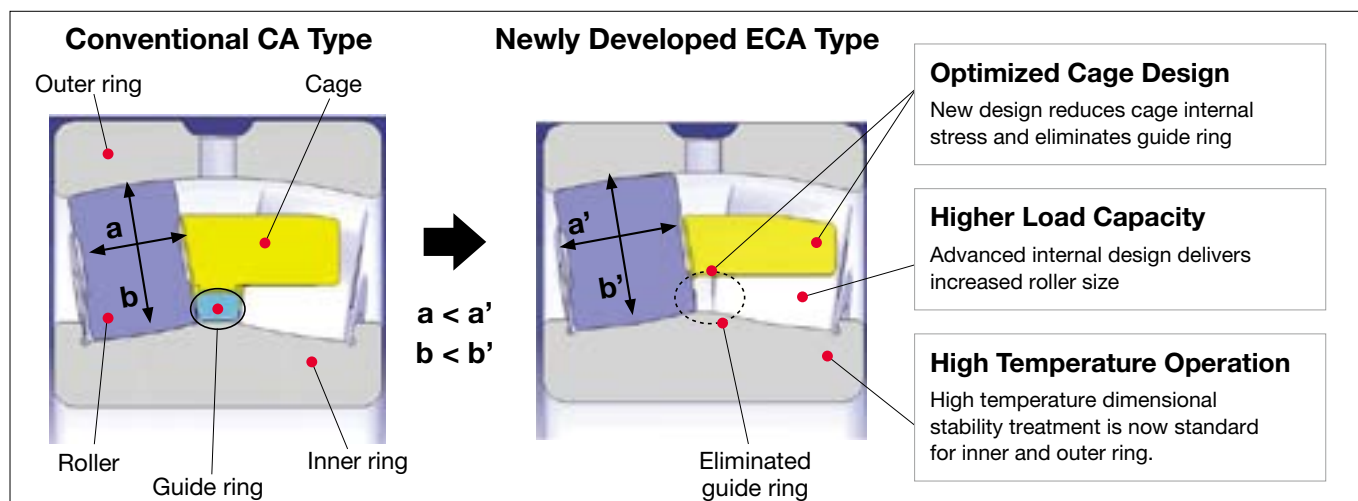
NEW SPHERICAL ROLLER BEARINGS WITH PATENTED CAGE DESIGN

Optimized design and advanced NSK technology to deliver a new level in performance and high load capacity across all applications.

- › Features next-generation precision machined solid brass cage with contoured roller pockets
- › Contoured roller pockets significantly reduce unnecessary roller motion during rotation.
- › NSK design advancement packs in more rollers of larger size for world-top-class load capacity
- › High cage strength (no loss in strength) with highly optimized geometry and roller guided cage design
- › Higher limiting speeds compared with EA type
- › High-temperature dimensional stability
- › Upgrade conventional SRB to NSK's new SRB to help achieve a reduction in total maintenance costs



CURRENT VERSUS NEW DESIGN



FEATURES

Performance increases over conventional CA type except special notes.

Dynamic Load Rating
47% up
(Maximum)

Static Load Rating
22% up
(Maximum)

Limiting speed
+22%^(*)
(Maximum)

Working Temp. up to
200°C

(*) compared with pressed EA type

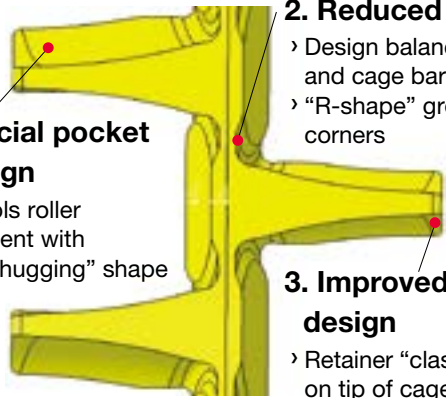
IDEAL FOR WIDE RANGE OF INDUSTRIAL APPLICATIONS

- | | | | |
|-----------------|------------------|-------------------------|-------------------|
| › Agriculture | › Gearbox | › Petrochemical | › Steel & Metal |
| › Cement | › Industrial Fan | › Material Handling | › Sugar Cane |
| › Elevator | › Palm Oil | › Mining & Construction | › Timber Industry |
| › Fish Industry | › Papermaking | | |

※Please consult NSK if very severe vibration condition is expected.

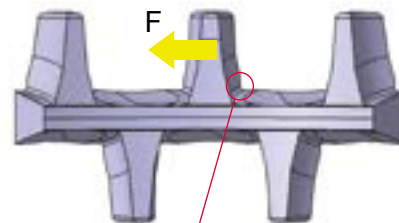
DESIGN OPTIMIZATIONS AND ADVANCEMENTS

Optimized Cage Design

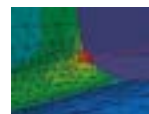
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- 1. Special pocket design**
 - Controls roller movement with "roller hugging" shape
 - 2. Reduced stress**
 - Design balances form fitting shape and cage bar strength
 - "R-shape" groove in cage bar corners
 - 3. Improved cage & roller design**
 - Retainer "clasp" (overlap allowance) on tip of cage bar prevents roller slip off (roller protrusion)

Results of FEM analysis

Load F: Energy at roller collision with 5G acceleration



Position of maximum generated stress



Maximum generated stress of ECA is not greater than that of CA.

AVAILABLE RANGE

With New Machined Brass Cage

222	08	E	CA	M	K	E4
Series	Bore	Extra capacity	Internal design	Cage	Tapered bore	Oil groove /holes

d: Bore, D: Outside, B: Width, r: Chamfer,
C_r: Basic dynamic load rating,
C_{0r}: Basic static load rating

Bearing Numbers		Boundary Dimensions (mm)				Basic Load Rating (N)		Speeds(min-1)		
Cylindrical bore	Tapered bore	d	D	B	r min.	C _r	C _{0r}	Thermal Reference Speed	Limiting Speeds	
									(*)Mechanical	Grease
22208ECAME4	22208ECAMKE4	40	80	23	1.1	108 000	93 000	7100	13000	6700
22308ECAME4	22308ECAMKE4		90	33	1.5	161 000	142 000	5600	9600	5300
22209ECAME4	22209ECAMKE4	45	85	23	1.1	113 000	105 000	6300	12000	6000
22309ECAME4	22309ECAMKE4		100	36	1.5	197 000	182 000	5000	8400	4500
22210ECAME4	22210ECAMKE4	50	90	23	1.1	119 000	113 000	6000	11000	5600
22310ECAME4	22310ECAMKE4		110	40	2	233 000	219 000	4800	8000	4300
22211ECAME4	22211ECAMKE4	55	100	25	1.5	143 000	136 000	5300	11000	5300
22311ECAME4	22311ECAMKE4		120	43	2	278 000	274 000	4300	7100	3800
22212ECAME4	22212ECAMKE4	60	110	28	1.5	171 000	165 000	5300	9500	4800
22312ECAME4	22312ECAMKE4		130	46	2.1	320 000	320 000	4000	6200	3600
22213ECAME4	22213ECAMKE4	65	120	31	1.5	212 000	219 000	4800	8500	4300
22313ECAME4	22313ECAMKE4		140	48	2.1	375 000	380 000	3800	6100	3200
22214ECAME4	22214ECAMKE4	70	125	31	1.5	216 000	220 000	4500	8000	4000
22314ECAME4	22314ECAMKE4		150	51	2.1	425 000	435 000	3600	5500	3000
22215ECAME4	22215ECAMKE4	75	130	31	1.5	229 000	232 000	4300	8000	4000
22315ECAME4	22315ECAMKE4		160	55	2.1	485 000	505 000	3400	5200	2800
22216ECAME4	22216ECAMKE4	80	140	33	2	264 000	275 000	4000	7100	3600
22316ECAME4	22316ECAMKE4		170	58	2.1	540 000	565 000	3200	4600	2600
21316ECAME4	21316ECAMKE4	85	170	39	2.1	355 000	375 000	3800	6000	3000
22217ECAME4	22217ECAMKE4		150	36	2	310 000	325 000	4000	6700	3400
22317ECAME4	22317ECAMKE4	90	180	60	3	600 000	630 000	3000	4500	2400
22218ECAME4	22218ECAMKE4		160	40	2	360 000	395 000	3800	6000	3200
22318ECAME4	22318ECAMKE4	95	190	64	3	665 000	705 000	2800	4300	2400
21318ECAME4	21318ECAMKE4		190	43	3	415 000	450 000	3600	5300	2800
22219ECAME4	22219ECAMKE4	100	170	43	2.1	415 000	450 000	3800	5600	3000
22319ECAME4	22319ECAMKE4		200	67	3	735 000	780 000	2600	4000	2200
22220ECAME4	22220ECAMKE4	110	180	46	2.1	455 000	490 000	3600	5300	2800
22320ECAME4	22320ECAMKE4		215	73	3	860 000	930 000	2400	4000	2000
22222ECAME4	22222ECAMKE4	120	200	53	2.1	605 000	645 000	3400	4800	2600
22322ECAME4	22322ECAMKE4		240	80	3	1030 000	1120 000	2200	3600	1900
22224ECAME4	22224ECAMKE4	130	215	58	2.1	685 000	765 000	3200	4500	2400
22324ECAME4	22324ECAMKE4		260	86	3	1190 000	1320 000	1900	3400	1700
22226ECAME4	22226ECAMKE4		230	64	3	820 000	940 000	2800	4000	2200

(*)When using limiting speeds (Mechanical), please refer to NSK catalog CAT.No.1103, '5.SPEEDS'.

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