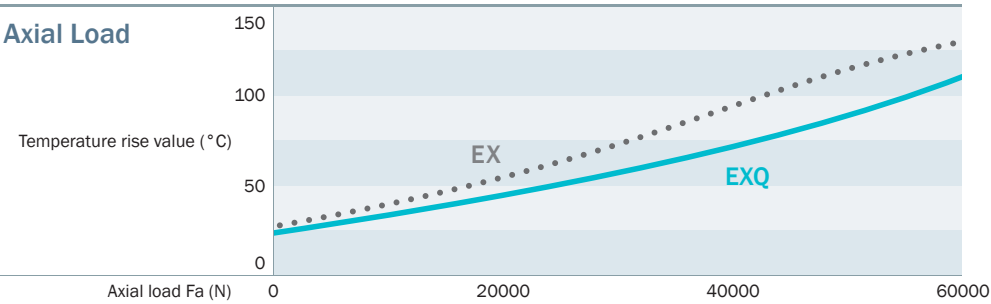


EXQ Series vs. Conventional EX Series Performance Comparison

Temperature Increase Test vs. Axial Load

Test Bearing
22312EXQ and 22312EX

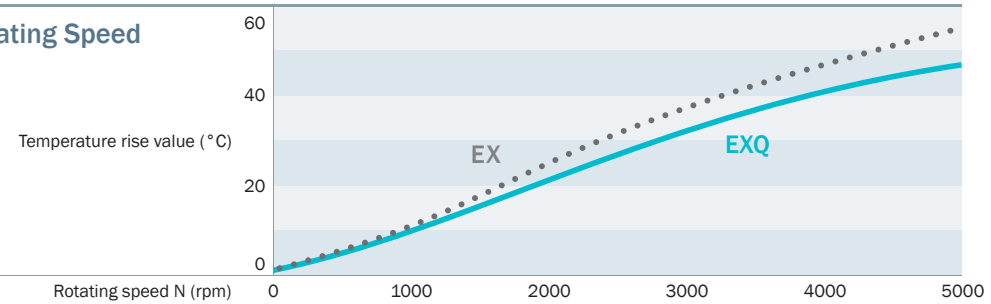
- Test Condition
- Radial load 58500N
 - Axial load 0~58500N
 - Rotating speed 2100rpm
 - Lubrication amount 0.6L/min



Temperature Rise Test vs. Rotating Speed

Test Bearing
22312EXQ and 22312EX

- Test Condition
- Radial load 11700N
 - Axial load 4200N
 - Rotating speed 500~5000rpm
 - Lubrication amount 0.6L/min



Impact Resistance Test

Test Bearing
22312EXQ-V and 22312EXQ

- Test Condition
- Vibration cycle 119cpm
 - Vibration acceleration 200G
 - Temperature 20°C



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CATALOG NO. B3207E-1
2018.03.M.T.

High Axial Load Capacity, High Speed, Long Life
Spherical Roller Bearings

EXQ SERIES



Spherical Roller Bearings

EXQ SERIES

High Axial Resistance Load Performance

Internal specifications have been optimized to greatly improve axial resistance load performance.

Low Temperature Rise and Higher Permissible Rotation

Heat generation of the bearing has been reduced by stabilizing the roller movement during rotation, realizing the world's highest permissible rotation.

Long Life

Long life has been realized by optimized internal specifications and using high cleanliness steel.

Service Temperature of 200°C

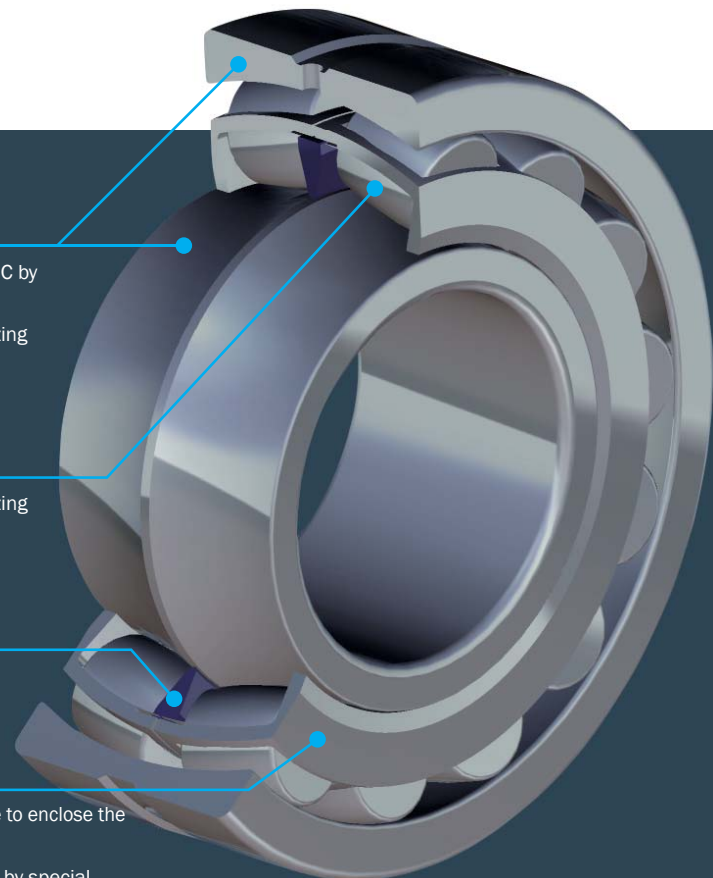
Standardized heat stabilization treatment and service temperature up to 200°C.

High Impact Resistance Performance (EXQ-V Specifications)

The EXQ-V specifications are available, which have greatly improved impact resistance performance of a stamped steel cage by applying a special surface heat treatment.

Dimension accuracy and radial internal clearance of the EXQ-V are special specifications for vibrating applications.

Target range: see the Dimension Table.



Outer & Inner Rings

- Capable of continuous operating temperatures up to 200°C by standardized heat stabilization treatment.
- Axial load carrying capability has been improved by optimizing the curvature of the raceway profile.
- Longer bearing life has also been achieved.

Rollers

- Axial load carrying capability has been improved by optimizing the curvature of the rolling contact surface.
- Longer bearing life has also been achieved.

Floating Guide Ring

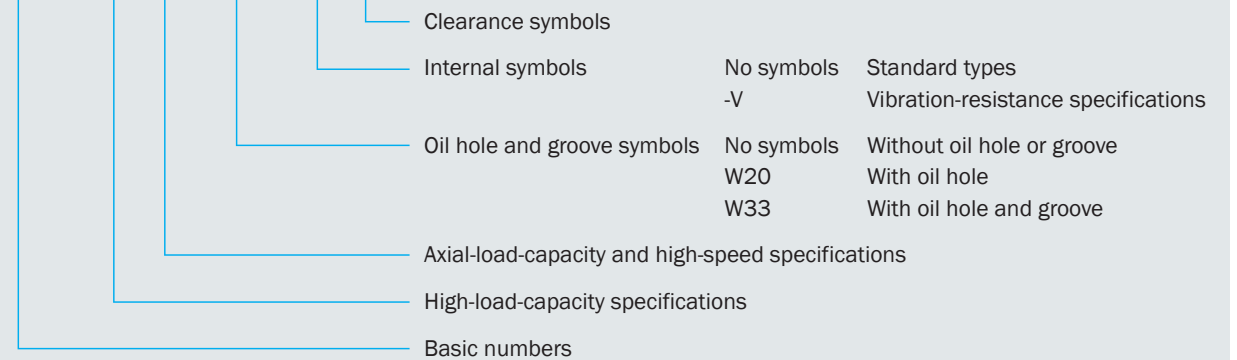
- Provided with a floating guide ring to control the roller movement.

Cages

- Provided with a high-strength, high-rigidity steel pressed cage to enclose the entire roller.
- Impact resistance performance has been greatly improved by special surface hardening treatment (EXQ-V specifications)

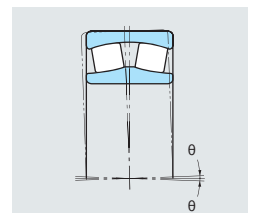
Configuration of Bearing Number

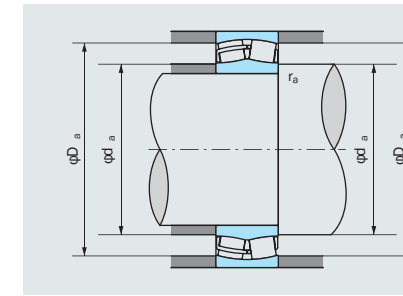
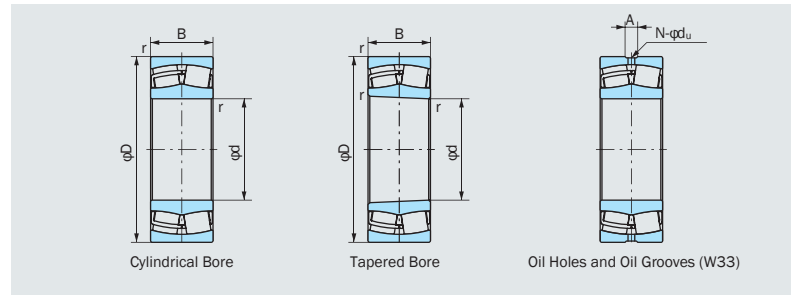
22205 EX Q W33 -V C3



Precautions for Use

- When using under an operating condition with an axial, it is desirable to ensure $F_a/F_r \leq 0.8$.
When using under an operating condition of $F_a/F_r > 0.8$, consult NACHI.
 - When using under a fluctuating load condition or at high rotating speed, consult NACHI in advance.
 - If rotated under no load, skidding may occur between the roller and raceway, damaging the bearing. To prevent this condition, a radial load of 0.015 Cr must be applied.
 - Under general service conditions, it is permissible to operate with up to a 2° misalignment angle θ . This can vary slightly depending on the dimension series and operating conditions. For verification of a specific operating condition, please consult NACHI.
- *Note also that there may be restrictions depending on the machine structure around the bearing.





Dynamic equivalent radial load
 $Pr = XFr + YFa$

Fa / Fr ≤ e		Fa / Fr > e	
X	Y	X	Y
1	Y ₁	0.67	Y ₂

Static equivalent radial load
 $P_0 = Fr + Y_0 Fa$
 Value of Y₀ to be obtained from the following table.

Values of e, Y₁ and Y₂ to be obtained from the following table.

Main Dimensions (mm)				Bearing Number		Basic Dynamic Load Rating Cr(N)	Basic Static Load Rating Cor(N)	Permissible Rotating Speed (min ⁻¹)		Dimensions of Oil Holes and Grooves			Mounting Related Dimensions (mm)			Axial Load Factor				Mass (kg) Cylindrical Bore (Reference)	Bearing Number	
d	D	B	r (min.)	Cylindrical Bore ^(Note)	Tapered Bore			Grease Lubrication	Oil Lubrication	Hole Diameter du	Groove Width A	Hole Count N	da (min.)	Da (max.)	ra (max.)	Constant e	Y ₁	Y ₂	Y ₀		Cylindrical Bore ^(Note)	Tapered Bore
25	52	18.0	1.0	22205EXQ	22205EXQK			63,000	48,000	11,600	13,700											
30	62	20.0	1.0	22206EXQ	22206EXQK	84,500	65,000	9,400	11,600													
	72	19.0	1.1	21306EXQ	21306EXQK	83,000	62,500	8,800	10,000													
35	72	23.0	1.1	22207EXQ	22207EXQK	112,000	88,500	8,300	10,000													
	80	21.0	1.5	21307EXQ	21307EXQK	96,000	76,000	7,700	8,900													
40	80	23.0	1.1	22208EXQ	22208EXQK	126,000	102,000	7,400	8,900													
	90	23.0	1.5	21308EXQ	21308EXQK	119,000	95,500	6,600	7,900													
	90	33.0	1.5	22308EXQ	22308EXQK	185,000	151,000	5,800	7,000													
45	85	23.0	1.1	22209EXQ	22209EXQK	133,000	110,000	6,600	7,900													
	100	25.0	1.5	21309EXQ	21309EXQK	150,000	124,000	5,500	6,600													
	100	36.0	1.5	22309EXQ	22309EXQK	230,000	182,000	5,000	5,900													
50	90	23.0	1.1	22210EXQ	22210EXQK	142,000	122,000	6,200	7,500													
	110	27.0	2.0	21310EXQ	21310EXQK	178,000	151,000	5,000	5,900													
	110	40.0	2.0	22310EXQ	22310EXQK	280,000	235,000	4,700	5,600													
55	100	25.0	1.5	22211EXQ	22211EXQK	171,000	144,000	5,800	7,000													
	120	29.0	2.0	21311EXQ	21311EXQK	200,000	165,000	5,000	5,900													
	120	43.0	2.0	22311EXQ	22311EXQK	325,000	263,000	4,200	5,000													
60	110	28.0	1.5	22212EXQ	22212EXQK	210,000	179,000	5,300	6,300													
	130	31.0	2.1	21312EXQ	21312EXQK	238,000	193,000	4,200	5,000													
	130	46.0	2.1	22312EXQ	22312EXQK	390,000	330,000	4,000	4,700													
65	120	31.0	1.5	22213EXQ	22213EXQK	246,000	209,000	4,700	5,600													
	140	33.0	2.1	21313EXQ	21313EXQK	270,000	232,000	4,000	4,700													
	140	48.0	2.1	22313EXQ	22313EXQK	415,000	355,000	3,500	4,200													
70	125	31.0	1.5	22214EXQ	22214EXQK	257,000	220,000	4,400	5,600													
	150	35.0	2.1	21314EXQ	21314EXQK	310,000	260,000	3,500	4,200													
	150	51.0	2.1	22314EXQ	22314EXQK	480,000	415,000	3,300	4,000													
75	130	31.0	1.5	22215EXQ	22215EXQK	265,000	234,000	4,400	5,300													
	160	37.0	2.1	21315EXQ	21315EXQK	340,000	298,000	3,500	4,200													
	160	55.0	2.1	22315EXQ	22315EXQK	550,000	475,000	3,100	3,800													
80	140	33.0	2.0	22216EXQ	22216EXQK	299,000	269,000	4,000	4,700													
	140	44.4	2.0	23216EXQ	23216EXQK	335,000	335,000	3,600	4,600													
	170	39.0	2.1	21316EXQ	21316EXQK	380,000	339,000	3,300	4,000													
	170	58.0	2.1	22316EXQ	22316EXQK	595,000	520,000	2,900	3,600													
85	150	36.0	2.0	22217EXQ	22217EXQK	355,000	320,000	3,700	4,500													
	150	49.2	2.0	23217EXQ	23217EXQK	395,000	405,000	3,500	4,300													
	180	41.0	3.0	21317EXQ	21317EXQK	415,000	372,000	3,300	4,200													
	180	60.0	3.0	22317EXQ	22317EXQK	665,000	585,000	2,600	3,400													
90	160	40.0	2.0	22218EXQ	22218EXQK	410,000	375,000	3,500	4,200													
	160	52.4	2.0	23218EXQ	23218EXQK	470,000	482,000	3,400	4,400													
	190	43.0	3.0	21318EXQ	21318EXQK	460,000	410,000	3,100	3,800													
	190	64.0	3.0	22318EXQ	22318EXQK	745,000	660,000	2,600	3,200													
95	170	43.0	2.1	22219EXQ	22219EXQK	465,000	420,000	3,300	4,000													
	170	55.6	2.1	23219EXQ	23219EXQK	500,000	510,000	3,100	3,800													
	200	45.0	3.0	21319EXQ	21319EXQK	500,000	461,000	3,000	3,600													
	200	67.0	3.0	22319EXQ	22319EXQK	815,000	725,000	2,400	3,000													

