

The ULTAGE series sealed spherical roller bearings [WA type] are designed to meet the demands of "long operating life," "improved reliability," and "improved easy handling," which are required for various types of industrial machinery.

1. Features

1) World class load capacity

Higher load capacity and longer operating life have been realized by adopting the internal specifications of the type EA, which includes maximum possible roller diameter size, maximum possible number of rollers, and a "basket-shaped" pressed steel cage.

2) Compact design with minimized seal volume

The standard seal design is a "contact type" dust resistant seal designed to minimize the volume of the seal within the bearing.

- (1) Foreign matter intrusion is prevented by the adoption of the specially designed contact type rubber seal.
- (2) Consistent dust resistance is achieved without changing the contact surface pressure of the seal with respect to the bearing alignment.

3) Standard adoption of long-life grease

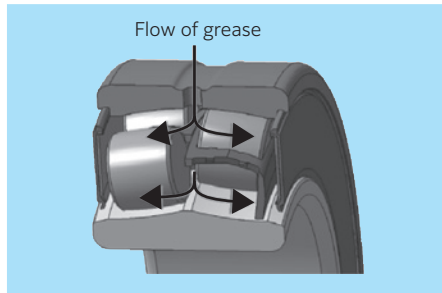
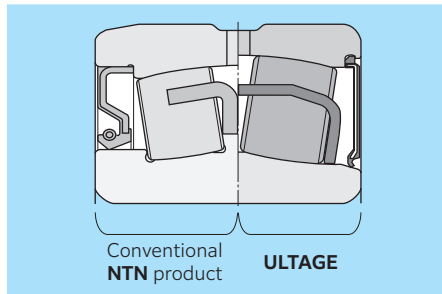
This bearing is filled with an ample amount of long-life grease to avoid the need for cleaning or filling the bearing with grease before assembling into the application.

- (1) Grease brand: Alvania EP Grease 2 (8A) with extreme-pressure additive for heavy loads

- (2) Grease amount: Space volume ratio 15 to 25 %

4) Standard adoption of oil inlet and groove

The bearing is able to be re-greased due to the oil inlet and oil groove that are standard in the outer ring.



3. Allowable speed

When grease is supplied : dn value $\leq 6 \times 10^4$
 When no grease is supplied : dn value $\leq 8 \times 10^4$

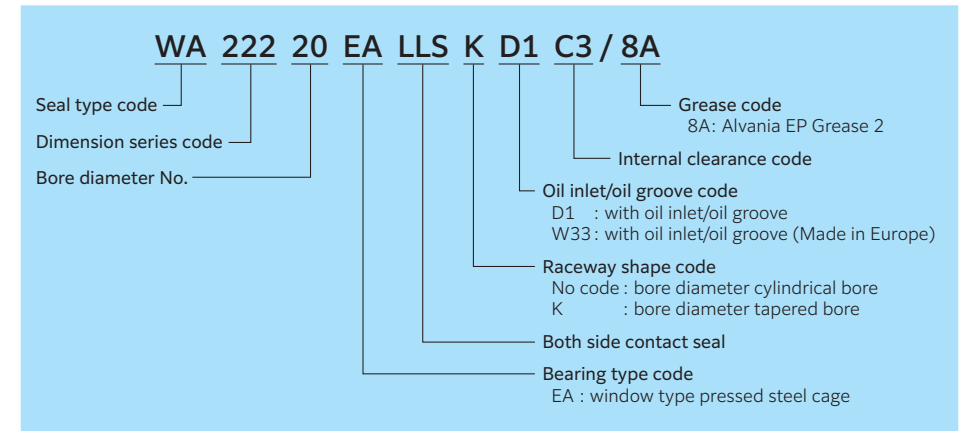
* dn value:

$[dn = \text{bearing bore diameter } d \text{ (mm)} \times \text{rotational speed } n \text{ (min}^{-1}\text{)}]$

4. Allowable temperature range

Bearing temperature: -20 to 110 °C

2. Part number



5. Allowable misalignment angle

1/115 (mm/mm)

6. Allowable axial load

$$F_a / F_r \leq e$$

F_a : Axial load

F_r : Radial load

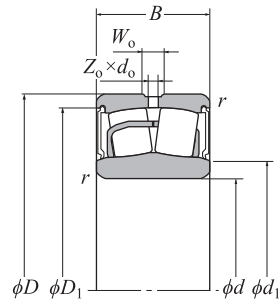
e : Constant (see dimension table)

If this bearing type is used for a vertical shaft or under a large axial load, the load on the rollers of the row that is not subject to the axial load can become small. This small load on the rollers can result in skidding of the rollers, which can cause bearing damage. If the ratio of the radial load exceeds the factor e in the dimension table ($F_a / F_r > e$), consult NTN Engineering.

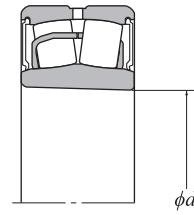
7. Handling precautions

- 1) The radial internal clearance on a sealed spherical roller bearing cannot be measured with a clearance (thickness) gauge. Please manage the clearance after assembly by measuring the movement in the axial direction shown in **Table 15.1** (A-159) in section "15. Bearing handling."
- 2) When the bearing misalignment exceeds the allowable misalignment (1/115), the rollers may come in contact with seal and cause seal deformation. It should be noted that the seal may come off when a large force is applied in this state.
- 3) Use Li-based mineral grease when re-greasing. Consult with NTN Engineering when using other types of grease.
- 4) When temperature mounting for assembly, the bearing temperature must be 100 °C or below. The method of immersing bearings in hot oil cannot be used for this bearing type.

● ULTAGE Sealed Spherical Roller Bearings [WA Type] NTN



Cylindrical bore



Tapered bore

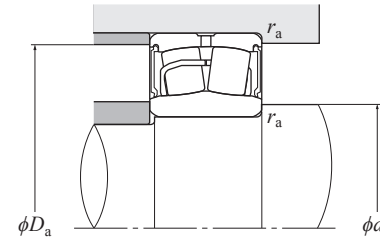
Number of oil inlets on outer ring

Z _o	
D1	W33
4	3

Boundary dimensions	Basic load rating		Fatigue load limit	Bearing number ²⁾		
	dynamic	static		Cylindrical bore	Tapered bore ³⁾	
mm	kN	kN	kN			
<i>d</i> <i>D</i> <i>B</i> <i>r_{s min}</i> ¹⁾ <i>W_o</i> <i>d_o</i> <i>C_r</i> <i>C_{0r}</i> <i>C_u</i>						
25	52 23 1	3 1.5	57.3 46.1	3.23	WA22205EALLSW33/8A	—
30	62 25 1	4 2	75.7 64.5	4.58	WA22206EALLSW33/8A	—
35	72 28 1.1	5 2	100 92.0	6.11	WA22207EALLSW33/8A	WA22207EALLSKW33/8A
40	80 28 1.1	5 2.5	116 105	7.78	WA22208EALLSD1/8A	WA22208EALLSKD1/8A
45	85 28 1.1	6 2.5	121 113	8.76	WA22209EALLSD1/8A	WA22209EALLSKD1/8A
50	90 28 1.1	6 2.5	130 124	10.1	WA22210EALLSD1/8A	WA22210EALLSKD1/8A
55	100 31 1.5	6 3	155 148	12.6	WA22211EALLSD1/8A	WA22211EALLSKD1/8A
60	110 34 1.5	7 3	187 181	15.4	WA22212EALLSD1/8A	WA22212EALLSKD1/8A
65	120 38 1.5	8 3.5	226 224	18.2	WA22213EALLSD1/8A	WA22213EALLSKD1/8A
70	125 38 1.5	7 3.5	235 240	20.1	WA22214EALLSD1/8A	WA22214EALLSKD1/8A
75	130 38 1.5	7 3.5	244 249	21.1	WA22215EALLSD1/8A	WA22215EALLSKD1/8A
80	140 40 2	8 3.5	278 287	24.0	WA22216EALLSD1/8A	WA22216EALLSKD1/8A
85	150 44 2	8 3.5	324 330	27.1	WA22217EALLSD1/8A	WA22217EALLSKD1/8A
90	160 48 2	10 4.5	384 398	30.2	WA22218EALLSD1/8A	WA22218EALLSKD1/8A
95	170 51 2.1	10 4.5	416 417	33.4	WA22219EALLSD1/8A	WA22219EALLSKD1/8A
100	180 55 2.1	11 5	472 495	36.9	WA22220EALLSD1/8A	WA22220EALLSKD1/8A
110	200 63 2.1	12 6	602 643	45.0	WA22222EALLSD1/8A	WA22222EALLSKD1/8A
120	215 69 2.1	12 6	688 753	49.9	WA22224EALLSD1/8A	WA22224EALLSKD1/8A
130	230 75 3	13 6	808 898	56.6	WA22226EALLSD1/8A	WA22226EALLSKD1/8A

1) Smallest allowable dimension for chamfer dimension *r*.
 2) "W33" indicates the made in Europe and have three oil inlets.
 3) "K" indicates bearings having a tapered bore with a taper ratio of 1:12.

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Dynamic equivalent radial load
 $P_r = XF_r + YF_a$

$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
X	Y	X	Y
1	Y ₁	0.67	Y ₂

Static equivalent radial load

$$P_{0r} = F_r + Y_0 F_a$$

For values of *e*, *Y*₁, *Y*₂ and *Y*₀ see the table below.

Installation-related dimensions					Constant	Axial load factors			Mass (approx.) kg		Amount of grease filled in (approx.) g
<i>d</i> ₁	<i>d</i> _a Min.	mm <i>D</i> _a Max.	<i>D</i> ₁	<i>r</i> _{as} Max.	<i>e</i>	<i>Y</i> ₁	<i>Y</i> ₂	<i>Y</i> ₀	Cylindrical bore	Tapered bore	
29	29	47	47	1	0.34	2.00	2.98	1.96	0.19	—	1.4– 2.4
36	36	56	56	1	0.31	2.15	3.20	2.10	0.30	—	2.0– 3.3
43	42	65	65	1.1	0.31	2.21	3.29	2.16	0.50	0.49	2.3– 3.9
48	47	73	73	1.1	0.27	2.47	3.67	2.41	0.58	0.57	3.1– 5.2
53	52	78	78	1.1	0.26	2.64	3.93	2.58	0.63	0.61	3.4– 5.7
58	57	83	83	1.1	0.24	2.84	4.23	2.78	0.70	0.68	3.4– 5.6
64	64	93	93	1.5	0.23	2.95	4.40	2.89	0.94	0.91	4.7– 7.9
70	69	102	102	1.5	0.24	2.84	4.23	2.78	1.25	1.22	6.6– 11.0
76	74	111	110	1.5	0.24	2.79	4.15	2.73	1.72	1.67	8.5– 14.2
82	79	116	116	1.5	0.22	3.01	4.48	2.94	1.78	1.73	9.6– 16.0
86	84	121	121	1.5	0.22	3.14	4.67	3.07	1.88	1.83	9.9– 16.4
93	91	131	131	2	0.22	3.14	4.67	3.07	2.32	2.27	12.0– 20.0
98	96	140	140	2	0.22	3.07	4.57	3.00	2.90	2.83	16.9– 28.1
103	101	149	147	2	0.23	2.90	4.31	2.83	3.68	3.59	20.0– 34.0
108	107	158	157	2.1	0.23	2.95	4.40	2.89	4.39	4.27	25.9– 43.2
115	112	168	165	2.1	0.24	2.84	4.23	2.78	5.40	5.25	28.8– 48.0
127	122	188	183	2.1	0.25	2.69	4.00	2.63	7.79	7.58	41.6– 69.3
138	132	203	197	2.1	0.25	2.74	4.08	2.68	9.76	9.48	52.8– 88.0
148	144	216	211	3	0.25	2.69	4.00	2.63	11.9	11.6	62.6–104.4