



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 EA type, 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.

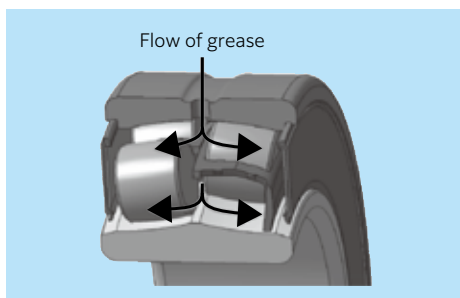
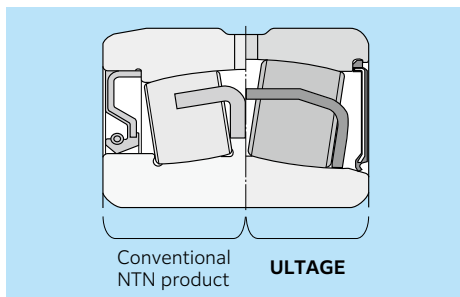
### 3) Standard adoption of long-life grease

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.

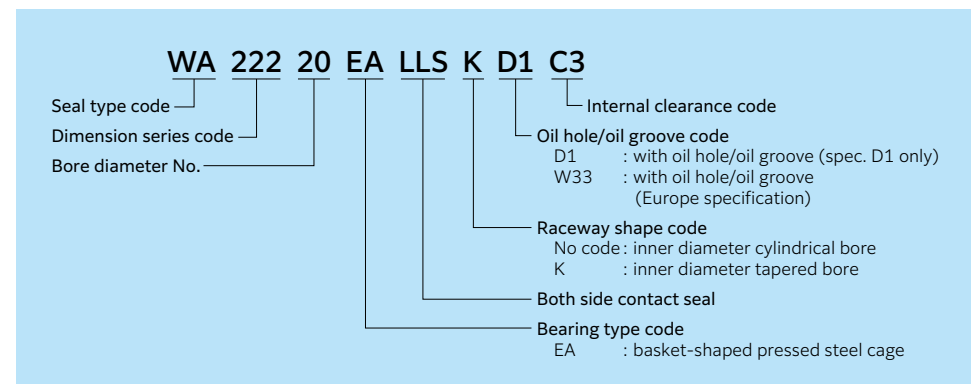
- (1) Grease brand: Shell Alvania EP Grease 2 (8A) with extreme-pressure additive for heavy loads
- (2) Grease amount: Space volume ratio 15 to 25%

### 4) Standard adoption of oil holes

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



## 2. Part number



## 3. Allowable speed

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

\*  $d_n$  value:  
 $[d_n = \text{bearing bore diameter } d \text{ (mm)} \times \text{rotational speed } n \text{ (mm}^{-1}\text{)}]$

## 4. Allowable temperature range

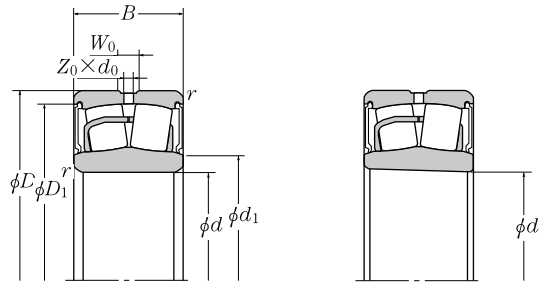
Bearing temperature:  $-20 \sim 110^\circ\text{C}$

## 5. Allowable misalignment angle

1/115 (mm/mm)

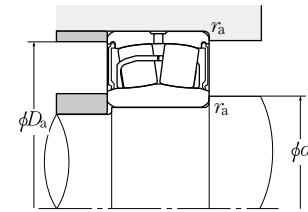
## 6. Handling precautions

- 1) The radial internal clearance on an ULTAGE series sealed spherical roller bearing with tapered bore 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  $100^\circ\text{C}$  or below. The method of immersing bearings in hot oil cannot be used for this bearing type.



Number of oil holes on outer ring

Z <sub>0</sub>	
D1	W33
4	3



Dynamic equivalent radial load  
 $P_r = X F_r + Y F_a$

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

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.

Boundary dimensions					Basic load rating			Fatigue load limit kN C <sub>u</sub>	Bearing number	
mm					dynamic kN C <sub>r</sub>	static kN C <sub>0r</sub>	Cylindrical bore		Tapered bore <sup>2)</sup>	
d	D	B	r <sub>s min</sub> <sup>1)</sup>	W <sub>0</sub>	d <sub>0</sub>					
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) Indicates bearings with a tapered bore having a taper ratio of 1 / 12.

Installation-related dimensions					Constant $e$	Axial load factors			Mass (approx.) kg		Amount of grease filled in (approx.) g
mm						Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>	Cylindrical bore	Tapered bore	
d <sub>1</sub>	d <sub>a min</sub>	D <sub>a max</sub>	D <sub>1</sub>	r <sub>s max</sub>							
29	30	46	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	91	93	1.5	0.23	2.95	4.40	2.89	0.94	0.91	4.7 ~ 7.9
70	69	101	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	129	131	2	0.22	3.14	4.67	3.07	2.32	2.27	12.0 ~ 20.0
98	96	139	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