

SPACEA™ Series High Corrosion-resistant Resin Bearings Aqua-Bearing™

A new bearing featuring a special fluororesin coat equipped to meet a broad range of applications in water, alkali and strong acid environments.



Patent Pending



High Corrosion-resistant Resin Bearings “Aqua-Bearing™”

The NSK High Corrosion-resistant Resin Bearings “Aqua-Bearing™” is one of the special environments bearings SPACEA™ Series “Corrosion-resistant Bearings” suitable for a broad range of applications in environments which include water, alkali and strong acid environments.



Outer/Inner Rings

A special fluoro-resin coating, offering improved durability which exceeds that of conventional fluoro-resin

Balls

Ceramic balls or special glass balls

Cage

High corrosion-resistant fluoro-resin

1. Features of the Aqua-Bearing™

● **High corrosion-resistance**

Compared to conventional resin bearings, such as polyethylene (PE) and polyphenylene sulfide (PPS), the high corrosion-resistance of the new bearings is equivalent to that of ceramics (see Table 1).

● **Long life**

Excellent durability in acid solvents, in excess of 1,000 fold the resistance of stainless steel bearings (SUS440C), and five times or more that of conventional PE bearings (see Figure 1).

● **Oil free**

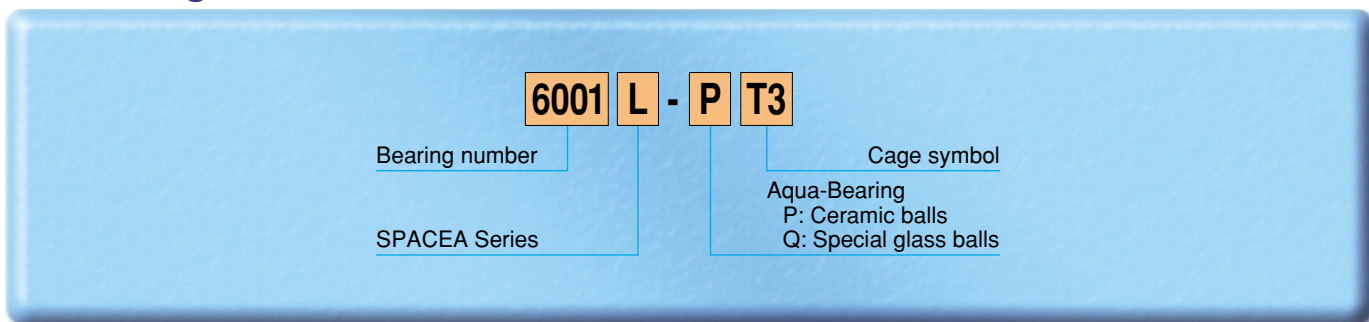
No need to supply grease or oil because of the special fluoro-resin is self-lubricating.



Applications

- Cleaning equipment for semiconductor
- Cleaning equipment for liquid crystal
- Cleaning equipment for hard disk
- Metal plating equipment
- Etching equipment
- Food processing equipment

2. Bearing Nomenclature



3. Standard Bearing Numbers

Bearing Numbers	Boundary Dimensions (mm)		
	Bore Diameter $d^{+0.05}_0$	Outside Diameter $D^0_{-0.05}$	Width $B^0_{-0.12}$
6000	10	26	8
6001	12	28	8
6002	15	32	9
6003	17	35	10
6004	20	42	12
6005	25	47	12

Note: Radial internal clearance is 0.04–0.18 mm.

Bearing Numbers	Boundary Dimensions (mm)		
	Bore Diameter $d^{+0.05}_0$	Outside Diameter $D^0_{-0.05}$	Width $B^0_{-0.12}$
6900	10	22	6
6901	12	24	6
6902	15	28	7
6903	17	30	7
6904	20	37	9
6905	25	42	9

Note: Radial internal clearance is 0.04–0.18 mm.

4. Performance

Table 1 Corrosion Resistance

The corrosion resistance of the Aqua-Bearing is superior to that of conventional resin bearings (PE and PPS), and equivalent to that of ceramic bearings.

	Aqua-Bearing	PE	PPS	Ceramics
Strong sulfuric acid	○	△	△	○
Hydrochloric acid	○	○	○	○
Aqua regalis	○	△	×	○
15% Acetic acid	○	△	△	○
75% Aqua fortis	○	×	×	○
40% Chromic acid	○	×	△	○
Halogen gas	○	×	○	○

Corrosion-resistance evaluation ○: Not corroded; △: Partially corroded; ×: Corroded

Figure 1 Results of Durability Tests in Strong Acid Environments

Compared to the other bearing types, durability of the Aqua-Bearing in strong acid environments is excellent.

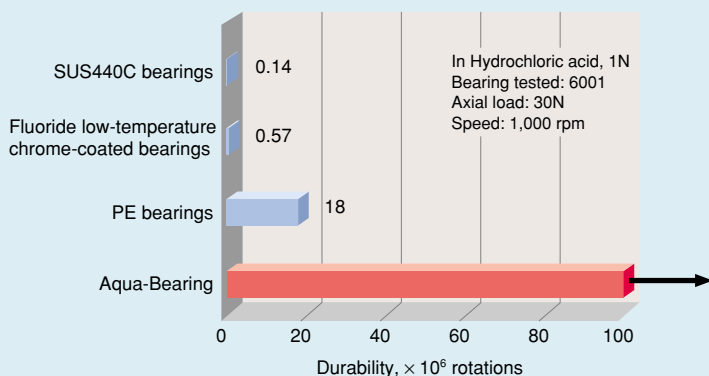
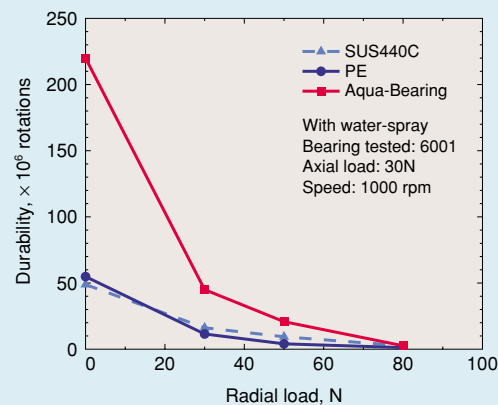


Figure 2 Results of Water-spray Durability Tests

Remarkable endurance can be observed under light-load conditions.



Handling precautions

1. Specifications for fluoride or organic solvent environments, please contact NSK.
2. Environments with elevated temperatures (40°C or more), please contact NSK for fitting precautions.

3. Bearing load should be less than approximately 1% of the basic dynamic load rating.
4. Limiting speed should be less than approximately 20,000 dmn where: