

Single Row Deep Groove Ball Bearings

Detail Introduction :

Single Row Deep Groove Ball Bearings in addition to open, there are steel plate dust cover bearings, plus rubber seal bearings, or in the outer diameter of the outer ring with a stop ring bearings.

Generally more steel plate stamping cage, the main applicable cage are steel plate stamping cage (waveform, crown-shaped ... single row; S-shaped ... double row); copper alloy or phenolic resin cutting cage, synthetic resin forming cage.

Single-row deep groove ball bearing structure is simple, easy to use, characterized by small friction resistance, high speed, can withstand radial load, but when increasing the bearing radial clearance, has a certain angular contact ball bearing performance, can withstand diameter, axial combined load. In the high speed and should not use thrust ball bearings, can also be used to withstand pure axial load.

Single Row Deep Groove Ball Bearing in various industries have a very wide range of applications, can be said to be the use of a very high rate of bearing, greatly promoting the development of various industries.

Application of single row deep groove ball bearings.

Really because single row deep groove ball bearing friction torque is small, so it is very suitable for requiring high speed rotation, low noise, low vibration, etc., for example

1. Automotive: rear wheels, transmissions, electrical device components.
2. Electrical: general-purpose motors, household appliances.
3. Others: instrumentation, internal combustion engines, construction machinery, railroad vehicles, loading and unloading machinery, agricultural machinery, and various industrial machinery.

About Single Row Deep Groove Ball Bearing main features.

Single row deep groove ball bearings inner and outer ring raceway are arc-shaped deep groove, groove radius is slightly larger than the ball radius, mainly used to bear radial load, but also can bear a certain axial load. When the radial clearance of the bearing is increased, it has the function of angular contact ball bearing and can bear larger axial load, and it is suitable for high speed rotation. Bearing in the shell hole and shaft relative tilt $8^\circ \sim 16^\circ$, still can work normally, but affect its service life. In the case of high speed and inappropriate use of thrust ball bearings, these bearings can be used to bear pure axial load.

Single Row Deep Groove Ball Bearing generally use a two-part composite steel plate stamping keep frame, but large size or high speed bearings are used solid keep frame, this keep frame with stamping keep frame as by the ball guide, high speed deep groove ball bearing keep frame usually by the inner ring or outer ring retaining edge guide.

Compared with other types of bearings of the same size, single row deep groove ball bearings friction coefficient is small, vibration and noise is also lower, the limit speed is high, high precision, is the user's preferred type of bearing selection. However, this type of bearing is not shock-resistant, not suitable for bearing heavy loads.

Single Row Deep Groove Ball Bearings simple structure, easy to use, is the largest production volume, the widest range of applications of a class of bearings, its production accounted for more than 70% of total bearing production, is the highest use rate of all bearing types a bearing. NTN bearing process is advanced, excellent technology, reliable quality, the research and development and production of single row deep groove ball bearing harvested the majority of manufacturers unanimously recognized, is the long-term use of many well-known enterprises equipment.

You can learn more about single row deep groove ball bearings from the following aspects.

1.Single Row Deep Groove Ball Bearing Design features and characteristics

Single Row Deep Groove Ball Bearing are very widely used. A deep groove is formed on each inner and outer ring of the bearing enabling them to sustain radial and axial loads in either direction as well as well as the complex loads which result from the combination of these forces. Single Row Deep Groove Ball Bearing are suitable for high speed applications.

In addition to unsealed bearings, single row deep groove ball bearing include ball bearings with greased sealed inside (sealed or shielded) and bearings with a snap ring that simplify structure around the bearing and design. Table 1 shows the construction and special characteristics of various sealed single row deep groove ball bearings.

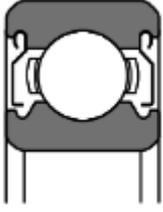
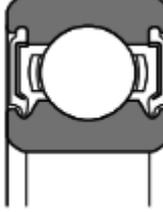
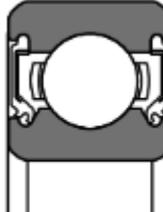
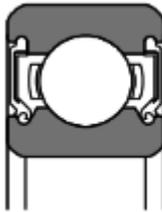
Types and codes		Shielded type Non-contact type ZZ	Sealed type Non-contact type LLB	Contact type LLU	Low torque type LLH
Construction					
		Metal shield plate is affixed to the outside ring; the inner ring incorporates a V-groove and labyrinth clearance.	The outer ring incorporates synthetic rubber molded to a steel plate; seal edge is aligned with V-groove along inner ring surface with labyrinth clearance	The outer ring incorporates synthetic rubber molded to a steel plate; seal edge contacts V-groove along inner ring surface.	Basic construction is the same as LLU type, but a specially designed lip on the edge of the seal prevents foreign matter penetration; low torque construction.
Performance comparison	Torque	Small	Small	Higher	Medium
	Dust proofing	good	Better than ZZ-type	Excellent	Much better than LLB-type
	Water proofng	Poor	Poor	Very good	good
	High speed capacity	Same as open type	Same as open type	Limited by contact seals	Much better than LLU-type
	Allowable temp.range	Depends on lubricant	-25 ??120 ?	-25 ??110 ?	-25 ??120 ? -

Table 1

1) Please consult NTN Engineering about applications which exceed the allowable temperature range of products listed on this table.

Note: This chart lists double shielded and double sealed bearings, but single shielded (Z) and single sealed (LB, LU, LH) are also available.

Grease lubrication should be used with single shielded and single sealed bearings.

2.Single Row Deep Groove Ball Bearing Standard cage types

As shown in Table 2, pressed steel cages are generally used for most single row deep groove ball bearings. Larger size deep groove ball bearings, and bearings operating at high rotational speeds often utilize a machined metallic cage.

Single Row Deep Groove Ball Bearing

Bearing series	Pressed cages	Machined cages
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67	6700? 6706	?
68	6800? 6834	6836? 68?600
69	6900? 6934	6936? 69?500
160	16001?16052	16056? 16072
60	6000? 6052	6056? 6084
62	6200? 6244	?
63	6300? 6344	?
64	6403? 6416	?

Table 2

3. Other deep groove ball bearing enhancements

Bearings with snap rings

A snap ring groove or snap ring groove with snap ring combination are optional enhancements for the outer diameter of most deep groove ball bearings. Snap rings allow for simpler axial positioning and installation in the housing. Snap rings can be utilized with both open type and sealed or shielded deep groove ball bearings. Consult NTN Engineering.

Expansion compensating bearings (creep prevention bearings)

NTN offers the innovative Expansion Compensating (EC) feature to help with bearing retention when mounted in light alloy housings which is often a problem at elevated temperatures due to property differences between the bearing steel and the housing. This functionality is achieved by machining circumferential grooves into the outer diameter of an otherwise standard outer ring. These grooves are filled with an optimized polymer which has an expansion rate higher than that of the typical light alloy housing. The net result is a more consistent interference fit across a wide operating temperature range. This more consistent fit condition helps prevent the bearing from rotating within the housing (known as bearing creep) which helps ensure good performance and long life.

(1) Allowable load

As a result of having grooves machined in the outer diameter, the ring strength is lower compared with a standard bearing. Thus, in order to prevent outer ring fracture, it is necessary to limit the maximum load applied to the bearing to be equal to or less than the allowable load C_p (see dimension table).

(2) Fit with housing

Table 3 shows the recommended fits for bearings with light metal alloy housings. In cases where the bearing is going to be interference fit with the housing, it is very important not to damage the polymer material. Therefore, it is essential that the lip of the housing diameter be given a 10-15° chamfer as shown in Fig. 2. Furthermore, as shown in Fig. 2, it is also advisable to apply the interference fit using a press in order not to force the bearing into the housing in a misaligned position.

Condition		Suitable bearing	Housing bore tolerance class
Load type, etc.	Housing material		

Rotating outer ring load	Light alloys such as Al alloy and Mg alloy	Deep groove ball bearings Cylindrical roller bearings	H6
Rotating inner ring load			
Indeterminate Load			
Light load	Light alloys such as Al alloy and Mg alloy	Thick-walled type deep groove ball bearings	N6
Normal load			
Rotating outer ring load			
Indeterminate Load			
Heavy load Impact load			

Table 3

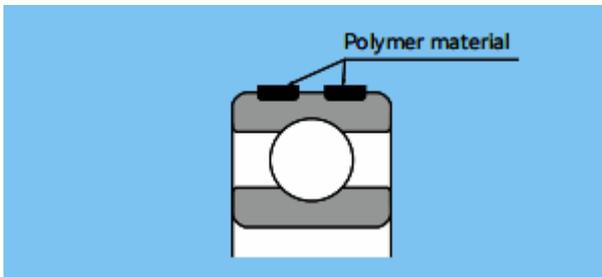


Fig. 1

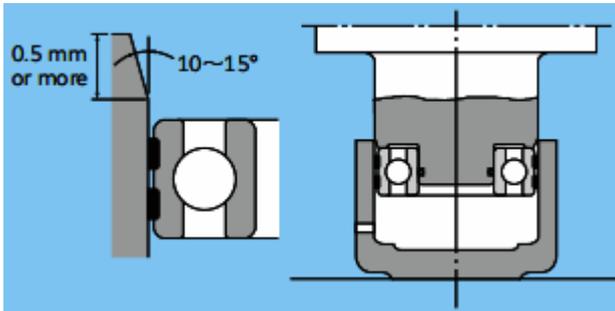


Fig. 2

(3) Radial internal clearance

Radial internal clearance are the same as those for standard deep groove ball bearings. With standard fit and application conditions, a C3 clearance is used. For more detailed information concerning this bearing and the availability of roller bearings contact NTN Engineering

(4) Allowable temperature range

?20 to 120°C

AC bearings (creep prevention bearings)

NTN Offers the AC type bearing which performs a similar function to the EC bearing. AC bearings have the same outer diameter dimensions as standard bearings with the addition of two O-rings located in circumferential grooves on the outside diameter of the outer ring. (Fig. 3) While the EC bearing is more beneficial when using a light alloy housing at elevated temperatures, AC bearings are suitable for applications where a “tight fit” is not possible but outer ring creeping exists under rotating load on the outer ring. AC bearing can also be installed as a floating side bearing to accommodate expansion of shaft by heat as it is more axial. Before installing the bearing into the housing, a high viscosity oil (base oil viscosity, 100 mm²/s or more) or grease must be applied to the space between two O-rings. This lubricant forms a thin oil layer on the bearing outer ring which prevents contact between the outer ring and housing, lowers the friction, and can minimize the occurrence of creeping by utilizing the friction force of the O-rings.

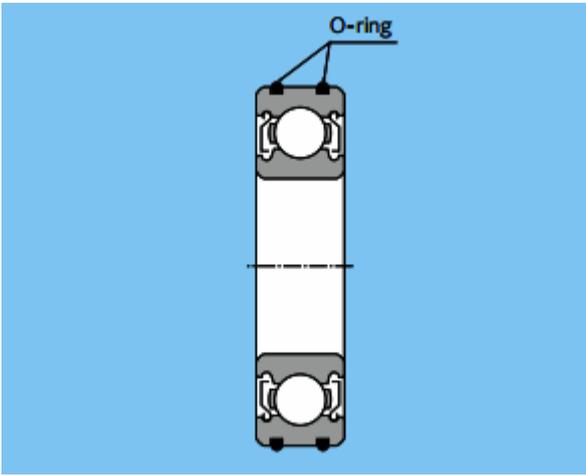


Fig. 3

(1) Allowable load

As is the case with the EC bearing, the load applied to an AC bearing shall be limited to C_p (see dimension table) in order to ensure the strength limit of the modified outer ring is not exceeded.

(2) Housing dimensions and shape Fig. 4 shows the recommended shape of steel housings, and Table 4 shows the dimensions.

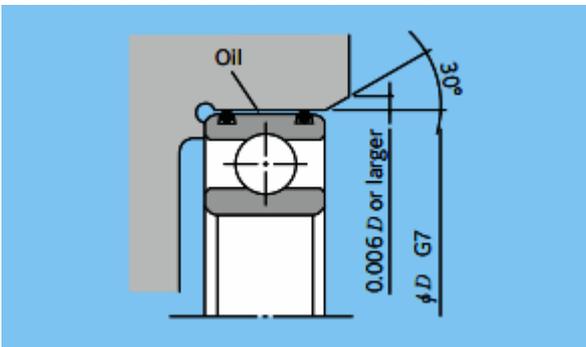


Fig. 4

Housing bore tolerance	G7
Housing bore entrance chamfer	Max. 30°
Housing bore chamfer undercut	0.006D or larger
Housing bore surface roughness Ra	2.5
Housing bore roundness	1/2 of bearing housing dimension tolerance

(3) Allowable temperature range

25 to 120°C

Complete guide to NTN single row deep groove ball bearings.

NTN bearings are famous bearings in the industry, with a wide variety of bearings, each with very good practicality, can be very good support as well as reduce friction, bringing great convenience to industrial production.

NTN single row deep groove ball bearings, the following will provide you with detailed answers to common questions: 1.

1. What is single row deep groove ball bearings?

Single Row Deep Groove Ball Bearing are a very high use rate of bearings, but also the most common type of rolling bearings. This kind of bearing mainly bear radial load, also can bear radial load and axial load at the same time. When it only bears radial load, the contact angle is zero. When single row deep groove ball bearing has a large radial clearance, with angular contact bearing performance, can withstand large axial load, single row deep groove ball bearing friction coefficient is very small, the limit speed is also very high.

Single row deep groove ball bearing raceway plus the raceway and steel ball between the extremely good fit, making single row deep groove ball bearings even in high speed conditions in addition to bear radial load, but also can bear two-way axial load. Mainly used to withstand radial load, but also can withstand smaller axial load, shaft axial only limit in the axial clearance range allows the inner

ring relative to the outer ring tilt 8'-15'.

Single Row Deep Groove Ball Bearing because of its simple structure, low cost and many other advantages are widely used in all walks of life, it has a unique nature, and a wealth of types.

2. What are the advantages of single row deep groove ball bearings?

1. Simple structure, low manufacturing cost, easy to achieve high manufacturing accuracy.
2. Small coefficient of friction, high speed.
3. mainly used to bear radial load, but in the bearing radial clearance increases, with the nature of angular contact ball bearings, can withstand the two directions of the alternating axial load.
4. Single Row Deep Groove Ball Bearing keep frame more steel plate stamping wave-shaped keep frame, large bearings more car metal solid keep frame.
5. single row deep groove ball bearings are the most representative rolling bearings, widely used, very durable, without frequent maintenance.
6. With a certain ability to adjust the heart, the size range and the form of a variety of changes.

3. What are the main types of deep groove ball bearings?

1?Single row deep groove ball bearings

2?Single row deep groove ball bearing with dust cover

3?Single row deep groove ball bearing with dust cover and sealing ring

4?Single row deep groove ball bearings with stop groove and stop ring on the outer ring

5?Deep groove ball bearing with ball loading gap

6?Double row deep groove ball bearings

Of course, deep groove ball bearings have other classification methods, such as according to the size of the size can be divided into miniature bearings, small bearings, small and medium-sized bearings, medium and large bearings, large bearings, extra-large bearings, etc.. Single row deep groove ball bearing type code for 6, double row deep groove ball bearing code for 4. Its structure is simple, easy to use, is the most common production, the most widely used type of bearings.

4. What is the scope of application of single row deep groove ball bearings?

In the modern industry, in the rolling bearing category, Single Row Deep Groove Ball Bearing is the most representative of a bearing, a wide range of uses, suitable for high-speed turning, even extremely fast turning bend, and very durable, the limit of running speed is faster, easy to achieve the accuracy of the production, the model range of variation, strictly speaking Can make tailor-made, this big momentum of single row deep groove ball bearing, its model is not possible single, model diversity, also makes the single row deep groove ball bearing in the use of the process is highly favored, and the load bearing, also have a certain amount.

Therefore, single row deep groove ball bearings are widely used in gearboxes, instruments, motors, household appliances, internal combustion engines, transportation vehicles, agricultural machinery, construction machinery, engineering machinery, roller skates, yo-yo balls, etc.

5. What is the installation method of single row deep groove ball bearings?

1. press fit: bearing inner ring and shaft to make a tight fit, outer ring and bearing seat hole is a looser fit, the press can be used to press the bearing first on the shaft, and then the shaft together with the bearing into the bearing seat hole, press fit in the bearing inner ring end face, pad a soft metal material to do the assembly sleeve (copper or soft steel), bearing outer ring and bearing seat hole tight fit, inner ring and shaft for a looser fit, the bearing can be pressed into the bearing seat hole first Bearing seat hole, when the outer diameter of the assembly sleeve should be slightly smaller than the diameter of the seat hole. If the bearing collar and shaft and seat hole are tight fit, the inner ring and outer ring should be pressed into the shaft and seat hole at the same time, the structure of the assembly sleeve should be able to tighten the bearing inner ring and outer ring end face.

2. Heating fit: by heating the bearing or bearing seat, the use of thermal expansion will be a tight fit into a loose fit installation method. Is a common and labor-saving installation method. This method is suitable for the installation of the bearing with a large amount of interference. Before the hot installation, put the bearing or separable bearing collar into the oil tank and heat it evenly at 80-100?, then take it out of the oil and install it on the shaft as soon as possible, in order to prevent the inner ring end face and shaft shoulder from being tight after cooling, the bearing can be tightened axially

again after cooling. When the outer ring of the bearing is tightly fitted with the bearing seat made of light metal, the hot method of heating the bearing seat is used to avoid abrasion of the fitting surface. When heating the bearing with oil tank, there should be a mesh fence at a certain distance from the bottom of the box, or hanging the bearing with a hook, the bearing cannot be put on the bottom of the box to prevent sinking impurities into the bearing or uneven heating, the oil tank must have a thermometer, strict control of the oil temperature shall not exceed 100 °C to prevent the occurrence of tempering effect, so that the hardness of the collar is reduced.

6. How to maintain single row deep groove ball bearings?

1. Clean: Clean environment is very important for single row deep groove ball bearing. Single Row Deep Groove Ball Bearing rotating surface and rolling element surface roughness precision is about 1/10 μm, rolling surface between the lubrication layer is usually 0.2~1 μm, larger than the lubricant particle size of the particle type impurities will be rolling elements of excessive pressure and local pressure in the spherical roller bearing steel, will eventually lead to permanent material fatigue

2. detection: in the use of the process through the hot dry up sensing bearing working temperature, if found that the temperature exceeds the prescribed limit will automatically alarm, to prevent the occurrence of burning shaft situation. With high temperature often indicates that the bearing has been in abnormal condition. High temperatures are also harmful to the bearing lubricant. Causes of high temperature bearings include: bearing lubrication is not enough, lubricant is not qualified, it contains impurities, excessive load, the internal clearance of the bearing is not enough oil seal generated friction, etc.

7. Single Row Deep Groove Ball Bearing what are the precautions when using?

1. Keep single row deep groove ball bearing and its turnover clean: Even a small dust invisible to the naked eye can have an adverse effect on the bearing, therefore, bearing should keep the surrounding clean to avoid dust intrusion.

2. Please use carefully: If there is a strong impact on the imported bearing in the process of use, it will cause damage and dent, which will result in accidents, and in serious cases there will be rupture or breakage.

3. Use proper import operation tools: Avoid exchanging with existing tools or tools, you must use proper tools.

4. Pay attention to the corrosion of single row deep groove ball bearing: when operating single row deep groove ball bearing, the sweat on your hand will cause rust, please pay attention to operate with clean hands, so it is better to wear gloves.

8. What is the working principle of single row deep groove ball bearing?

Single row deep groove ball bearing is widely used in industry, it is one kind of rolling bearing, mainly used to bear pure radial load, also can bear radial load and axial load at the same time, the coefficient of friction is very small, the extreme speed is also very high.

In fact, from the structure of single row deep groove ball bearings we can basically understand the working principle of the bearing. Single row deep groove ball bearings are composed of inner ring, outer ring, roller and cage, the inner ring and outer ring to achieve relative movement, is to rely on the roller rolling between the inner ring and outer ring to achieve, the role of the cage is to keep the roller is not dropped out, so the role of the bearing is to achieve the relative movement of the supported shaft (connected with the inner ring) and frame (connected with the outer ring).

Video: <https://www.youtube.com/watch?v=MUXFTobPsw8>

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