



2.Office Equipments

Because of the expanded use of personal computers, internet and other digital equipments, multi-function copy machines and printers are now used around the world as image outputting equipment. Such office equipment has many different bearings built into them to meet various needs.

Office equipments must be designed to meet strict precision standards, and those standards must be easy to maintain. Further, the equipment needs to be reliable, with a focus on ergonomics for the operators and comfort for the office staff. HCH has been involved in the design of various office equipment applications and can draw on its knowledge of this specialized field. As the need for quiet-operating products is great in office applications, HCH has developed a range of low noise bearings that enhance operators' comfort.

In order to meet the needs for more compact and lighter office equipments, we supply the Series 67 thin-type ball bearings that have smaller bearing cross section dimensions than the Series 68 deep-groove ball bearings. In addition, design can be optimized for sealed bearings and models with snap rings.



Higher capacity and down-sizing are technical trends of office equipments. Moreover, cleanliness and particle-emission performance of bearings become very important. HCH will be your reliable partner to solve all these difficulties.



General requirements for office equipments

High productivity

High productivity is one of the constant pressures within the office equipment industry. To increase profitability there is a trend to further increase the speed of the machines in order to get even higher outputs. This must be done while keeping a consistent high quality. HCH provides a wide range of solutions to meet customers' demands for improved productivity. Also, HCH's highly skilled application engineers could help to meet specific targets.



Increase service life

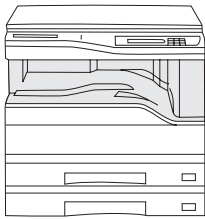
Office equipments long-term performance and maintenance free are important and critical since the repair is costly and not convenient. Consequently, long bearing life is a key requirement. Low operating temperature, high quality raw material, adequate lubrication and avoiding contamination are important factors in extending bearing service life. As the world's leading manufacturer of bearing solutions, HCH has a wide range of solutions and services to extend bearing service life and improve application profitability.



Environment concerning

Creation and maintenance of the best environmental conservation structure is one of the important social responsibilities for HCH. We not only comply with the requirements set forth in applicable governmental laws and regulations but also with customers' requirements and internal standards, as HCH deems necessary. For office equipments, environment protection, to a great extent, means reducing energy consumption. However, the most important for bearings is to reduce the friction inside by choosing low-friction grease, optimized seals and shields design. With HCH systematic quality control, we offer you with the best application solutions for your office equipment energy saving purpose.

2.1 Copy Machines & Printers



Copy machine manufacturers are driven by consumer needs for increased efficiency, multifunction and value for money devices. To meet this challenge, producers have looked at ways to:

- > Reduce noise levels
- > Environmental
- > Maintenance free
- > Cost reduction

In order to concentrate many different functions in a small space, HCH has been providing products that save space and are easy to maintain. These are made possible by the relation of key technology that helps us to realize highly reliable products.



HCH bearings for copy machines

Deep groove ball bearings, which are designed to meet strict precision standards, are mounted to support the copy machine shafts. Typically the bearings have metal shields. The precision of a ball bearing is determined by several factors, including the raceway roundness of the inner and outer rings, the sphericity of the balls, the tolerance of the balls and the quality of the raw materials used in each of the bearing's parts.

Improving precision demands uncompromising strictness on all counts. Building on expertise amassed over 30 years, HCH has developed high-precision technologies and efficient plant-line layouts, enabling it to produce all parts for its bearings in-house and to aim constantly for higher levels of precision.

Series 67 are designed to be thinner than those of Series 68. Both open and non-contact sealed models are available. Furthermore, shield models (ZZ) are compatible with bores of 10, 12, 15, and 17. The dimensional accuracy and rotating accuracy meet JIS class 0 standards. Open models have seal grooves on their outer rings (except for the 6700). The inner rings do not have seal grooves.

● Data of the mini-deep groove ball bearing under no load

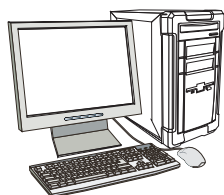
Tolerance in μm .

Clearance Code	MC1		MC2		MC3	
Clearance	min	max	min	max	min	max
	0	5	3	8	5	10
Clearance Code	MC4		MC5		MC6	
Clearance	min	max	min	max	min	max
	8	13	14	21	21	29



HCH deep groove ball bearings provide rotary motion of the copy machines and multi-function printers. The HCH deep groove ball bearings are highly heat resistant and have a long rating life. We offer you thin-wall bearings to meet your requirement for more compact design.

2.2 Computers



The ongoing popularization of computers is truly amazing. One computer per person is now the norm in offices and the development of the internet has accelerated the spread of computers into households. For many years, HCH has been producing rolling bearings for that most vital of tools for the modern world. With the unremitting growth in personal computers, minimizing the size of hard disks and cooling fans while maximizing their capacity has been and will

continue to be a primary focus.

HCH bearings for computer hard disk drives

Rather than their usual role as transferring force, the function of ball bearings in computers is supporting the accurate transfer of information. For this purpose, primary importance is placed not on load-carrying capability, but on accurate rotation without irregular motion throughout the entire service life of the bearings. The unique requirements of this function have necessitated specialized bearing designs, greases, seals and cages.

Requirements of HDDs, spindle motors and the bearings they contain

HDD	HDD spindle motor	Rolling bearing
Small size	Thin motors	Small width
High density,	Low NRRO,	Low NRRO,
High capability	High speed	High speed
High reliability	Long life	High quality clean material
Low noise	Low noise	Low noise
Low power consumption	Low power consumption	Low torque
Low cost	Low cost	Low cost



The design, manufacturing and quality assurance HCH incorporates throughout production minimize electric motor noise and years of trouble-free operation. HCH is committed to bringing advanced engineering support and products to the computer industry.



HCH bearings for computer fans

The bearings used in computer fans are usually with metal shields because they provide sufficient sealing at low cost. However, when high speed is demanded, the tightness between the metal shield and groove in the outer ring is not sufficient to prevent grease leakage. This reason has led to use of rubber seals, whose greater flexibility and resilience ensure adequate sealing and minimization of grease leakage.

In addition to their excellent sealing performance, rubber seals can contribute to limiting particle emission problems if they are made of an appropriate type of rubber.