



10. Conveyors

Machines and equipments used to transport, lift or convey loads of all kinds have to meet special requirements. The working environment in the transmission industry is extraordinary and specific in different environment. For bulk conveyors, the equipments are constantly exposed to extreme temperatures, dust, contaminants and humidity that can cause costly, unplanned stops. What is more, shock loads and high torque add to this pressure. For warehouse conveyors, since they are working in house, the work environment is much better than bulk conveyors. However, special attention must be paid due to the in-house working condition such as the noise and vibration concerning as well as the working efficiency. For both bulk conveyors and warehouse conveyors, bearings are not only applied in the electric motors, but the rolling rollers as well. For unit conveyors, they are usually working in the precise production. Bearings for electric motors are their main application; bearings for rollers are usually not demanded.

One of the most important requirements for conveyor manufacturers and endusers efficient assembly. To meet this requirement, HCH has developed a range of solutions to facilitate this step in the manufacturing and assembling process. These solutions are also characterized by inventiveness, ease of use and a minimal need for maintenance. They not only lead to a cost-effective operation, with these solutions we are also able to help increasing our customers' productivity and strengthening their competitiveness. And when the product's total life-cycle costs are kept at the lowest possible level, raised revenues and optimized profitability can be achieved.



Wherever people or loads need to be moved, a wide variety of HCH bearings are used. All of these products must be able to withstand rough environmental conditions such as heat, cold, humidity and salt water.



General requirements for transmission

Productivity

It goes without saying that increased productivity is the key to increased profitability. For transmission equipment end-users, a smooth production process with a consistent, high-level output means secured deliveries and satisfied customers. In addition, transmission equipment producers facing global competition and environmental scrutiny seek ways to enhance efficiency and reduce costs. To meet these productivity demands from HCH customers, we rely on our experience and application-specific expertise to optimize seals solutions and clearance etc., which can help you to less unplanned downtime and most cost-effective lifecycle, further results in a wide range of enhanced productivity.



Save power by reducing friction

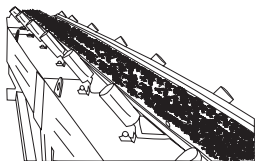
For wide using of transmission and rising cost of energy, reducing energy consumption is of ever increasing importance. We can work with you to discover the golden opportunities in designs to increase torque or downsize, enhance operational reliability and improve energy efficiency.



Environment

Environmental concern has played one of the most important roles in most transmission producers and end-users' agenda especially under recent legal regulation in different countries. Meeting the environmental challenges is important for the company's image towards shareholders, customers, employees and the general public. Protecting the environment is also central to HCH's thinking. Bearing products with environmental material, seals and lubricants ensure our products are not harmful to surroundings of the transmission equipment. Furthermore, our low friction bearings made from precise manufacturing and optimized seal structure and low friction grease further decrease the power consumption of the transmission equipment.

10.1 Bulk Conveyors



All equipments in the material transferring are working under massive stress. The heavy loads and harsh working environments constantly put machinery into the dirt and other contaminants. Because bulk handling conveyors are considered as slow moving applications, bearing speed and temperatures are typically not a factor. However, heavy loads, shock loads and contamination can significantly reduce bearing service life. The usual problems in bulk conveyors are as following:

- > Loose parts (loose toggle parts, loose screen mesh)
- > Unbalance
- > Lack of lubrication
- > Impacts



HCH bearings for bulk conveyors

HCH improved materials to enhance performance. The materials from which the bearing components are made determine to a large extent the performance and reliability of rolling bearings. HCH knows very well of bulk conveyors' working environment that fatigue phenomenon will occur to the bearing material after a duration of operation. To delay the advent of material fatigue and prevent shock loads damage, HCH takes special care of its raw material used in bearings.

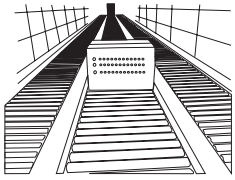
The raw material applied in the bearing rings and rolling elements is 100% from the company that sell the same quality material to world leading bearing manufacturers in Japan and Europe. Also, HCH's latest computerized heat treatment system and technology distinguish HCH brand bearings from others. It helps the bearing material to reach the characteristics of high level of hardness, high rolling contact fatigue resistance, excellent wear resistance, dimensional stability and excellent mechanical strength which are essential to delay the advent of material fatigue.

HCH bearings' optimized seal structure and clearance, customized grease reduce the cost of the maintenance. HCH knows that the slow speed makes difficult between rolling elements and raceways. In addition, the rolling bearings in continuous transferring processes are continuously exposed to extremely heavy loads. We have a variety of appropriate and high quality greases to prevent bearings' metal-to-metal contact. What is more, our optimized seal structure prevents the bearings from the threat of cooling water entering into the bearing cavity, which can dilute the lubricant and corrode the bearing. For this application, please also consult our engineers for clearance selection to avoid unnecessary creep.



HCH knows that the bulk conveyor industry expects high reliable products, also increased productivity and cost-effectiveness. The challenge is to be able to monitor performance and identify potential problems at an early stage. Thus, to understand the nature of problem is critical.

10.2 Warehouse Conveyors



Warehouse conveyors are one of the most frequently used conveyor systems. They are used to transport parts in package form of boxes or pallets. They are most often indoors and are relatively slow speed moving, so speed and operating temperature are typically not factors in bearing selection. With the fast development in this industry, the fully automatic warehouse handling becomes realistic. However, costly shutdowns for maintenance are inevitable due to the wear of equipment components or contaminants get baked onto the bearings.

This and other problems are constant challenges to this industry. As a long-time partner to conveyor producers all over the world, HCH, with our competencies and abundant bearing application knowledge, offers a wide range of solutions, resulting in reduced costs for maintenance, and increased productivity.

HCH bearings for warehouse conveyors

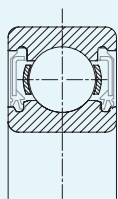


In order to delay the advent of material fatigue, HCH bearing's ring and rolling element materials adopt following properties: high level of hardness, high rolling contact fatigue resistance, good wear resistance, dimensional stability, good mechanical strength. HCH's bearing material is applying clean and homogenous steel with an absolute minimum number of inclusions. To maximize the benefits of this improved steel, HCH developed new heat treatment procedures. These new procedures further improved the wear resistance of HCH's high quality bearings.



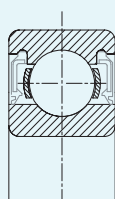
Working together with HCH, you can enhance performance by increasing torque and external load carrying capability, and achieve more compact and lighter arrangements. With our wide range of solutions, we put our competencies and business experience into practice.

HCH current seals design



"V" sealing groove (inner ring)

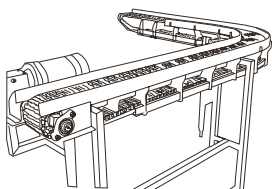
HCH previous seals design



No sealing groove (inner ring)

Together, HCH's seal structure adopts an optimized design with three lips that can better prevent dust and water entering inside. Moreover, due to the low speed in the warehouse conveyors, and to avoid the metal-to-metal contact inside bearings, HCH has a variety of excellent grease types to meet our customer's satisfaction of maintenance reduction. In addition, with abundant experience of application knowledge, we can supply greases with anti-water function to the places that are moist.

10.3 Unit Conveyors



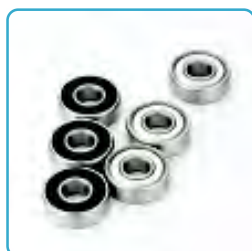
Unit conveyors are conveyor systems, often modular, used to transport parts, boxes, and other individual pieces or assemblies around a warehouse, factory or other facilities. They are most often indoors and are relatively slow moving, so speed and operating temperatures are typically not factors in bearing selection. Total rolling resistance (friction), bearing noise, maintenance requirements and personnel safety are more often the features considered when choosing bearings

for unit conveyors.

Unit conveyors are also getting progressively more “high tech” with needs for precision speed control and placement of the items being conveyed and integration of weighing and tracking systems into the equipment.

In assembly system, unit conveyor makes production more efficient, rapid and safer. All conveyors in the range are modular in design which together with the extensive choice of ancillary conveyor equipment enables the user to create a tailor made conveyor system to suit their own specific requirements.

HCH continuously provides unique bearing application knowledge. For unit conveyors, this results in a wide range of safe and reliable solutions, all aiming to reduce overall costs and meet new environmental demands.



HCH bearings for unit conveyors

For unit conveyor equipment manufacturers, the stability and maintenance reduction are considered to be the most important since they can save cost. The unit conveyors are usually running continuously with low speed, so reliability with low vibration is critical. Therefore, naturally, HCH's solutions for the converter process focus on performance and operational reliability.

HCH purchases clean and homogenous steel with an absolute minimum number of inclusions from the world top-level steel manufacturer. To maximize the benefits of this improved steel, HCH developed new heat treatment procedures. These new procedures further improved the wear resistance of HCH's high quality bearings.

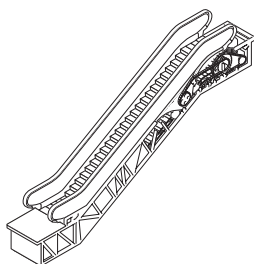
Moreover, aiming at total cost-efficiency and increased productivity, HCH has developed more efficient bearing designs and arrangements as well as improved sealing and lubrication systems. Try a quiet running, low friction and bearing requiring virtually no maintenance in your unit conveyor!



Unit conveyors are expected to work smoothly and reliably, and costly downtime should be kept to a minimum. Proper bearing selection, lubrication, and maintenance are key factors in maximizing the service life of the bearings.

10.4 Lifts

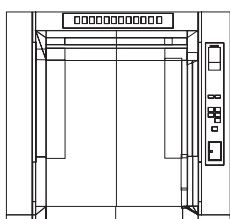
Lifts are usually divided into elevators and escalators, carrying both people and goods.



Escalators

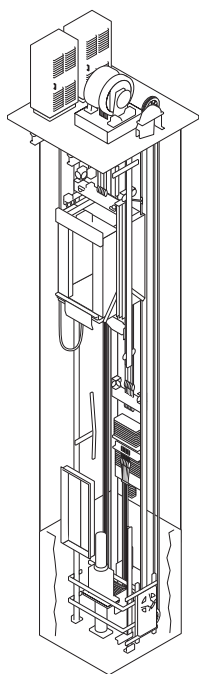
There are well over 100 bearings in a typical escalator, with two bearings used to support each stair and several contained in the drive motor, transmission and handrail assemblies. The majority of these bearings are deep groove ball bearings operating at low speeds and moderate loads.

As the majority of escalators are installed in controlled indoor environments, contamination and temperature are generally not big concerns. Bearings in escalators are, however, required to be quiet running, highly reliable and low maintenance. HCH supplies bearings meeting all of these criteria. In addition, HCH can provide products and systems that allow improved control and ease of maintenance of the escalator.



Elevators

Another type of popular lift is elevators which can be classified as either traction or hydraulic types. In traction elevators, cables and electric motors are used to raise and lower the car. In hydraulic elevators, a hydraulic cylinder is used to control the car's ascent and descent. Both types of elevators use multiple bearing types, and safety and reliability are the primary concerns in bearing selection. The modern elevators are also required to be very quiet, thus the bearings must generate as little noise as possible.

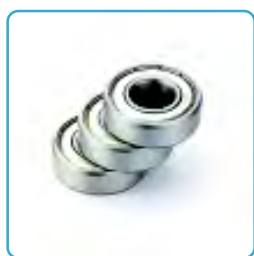


HCH bearings for lifts

HCH rolling bearings help to ensure reliable and trouble-free function for long periods of time. For years, lift producers worldwide have turned to HCH for competitive solutions. For years, HCH continuously strives to improve the quality of its products. Our expertise in bearings, services, seals, lubrication systems makes us a strong partner. With reliable standard products and solutions, we can help increase your productivity, reduce your operational costs and manage your environmental impact.



Please consult HCH bearing application expertise and engineers to select the appropriate clearance for your specific industry and work environment to prevent the creep of bearings.



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.