

# Lubrication Cross Reference Guide

Bearing (mechanical) Bearings are classified broadly according to the type of operation, the motions allowed, or the directions of the loads (forces) applied to the parts. A rudimentary form of lubrication is splash lubrication. bearing to lubricate it. Most bearings facilitate the desired motion by minimizing friction. The design of the bearing may, for example, provide for free linear movement of the moving part or for free rotation around a fixed axis; or, it may prevent a motion by controlling the vectors of normal forces that bear on the moving parts. Excess oil is flung off and collects in the pool again. Some machines A bearing is a machine element that constrains relative motion to only the desired motion and reduces friction between moving parts 58348d94d7

Sometimes a surface grinder is known as a flick grinder if great accuracy is not required, but a machine superior to a bench grinder is needed. 58348d94d7 The

term "bearing" is derived from the verb "to bear"; a bearing being a machine element that allows one part to bear (i.e., to support) another. The simplest bearings are bearing surfaces, cut or formed into... 58348d94d7 A differentiation is made between aerodynamic bearings, which establish the air cushion through the relative motion between static and moving parts, and aerostatic... 58348d94d7

**Tribology** It is Tribology is the science and engineering of understanding friction, lubrication and wear phenomena for interacting surfaces in relative motion. Tribology is the science and engineering of understanding friction, lubrication and wear phenomena for interacting surfaces in relative motion. It is highly interdisciplinary, drawing on many academic fields, including physics, chemistry, materials science, mathematics, biology and engineering. Subfields of tribology include biotribology, nanotribology and space tribology. It is also related to other areas such as the coupling of corrosion and tribology in tribocorrosion and the contact mechanics of how surfaces in contact deform. The fundamental objects of study in tribology are tribosystems, which are physical systems of contacting surfaces 58348d94d7

Escapement designs may avoid the need for lubrication in the escapement (though it does not obviate the requirement for lubrication of other parts of the gear train) An escapement is a mechanical linkage in mechanical watches and clocks that gives impulses to the timekeeping element and periodically releases the gear train to move forward, advancing the clock's hands. The impulse action transfers energy to the clock's timekeeping element (usually a pendulum or balance wheel) to replace the energy lost to friction during its cycle and keep the timekeeper oscillating. This regular periodic advancement moves the clock's hands forward at a steady rate. At the same time. Each swing of the pendulum or balance wheel releases a tooth of the escapement's escape wheel, allowing the clock's gear train to advance or "escape" by a fixed amount. The escapement is driven by force from a coiled spring or a suspended weight, transmitted through the timepiece's gear train 58348d94d7

Chainsaw Commonly powered by gasoline or electricity, it is widely used for tree felling, limbing, bucking, pruning, harvesting firewood, carving, and cutting materials like concrete and ice. The earliest ancestors of modern chainsaws were used in surgical procedures, while the first wood-cutting chainsaw patents emerged

in the late 19th century. operation. This is basically the thickness A chainsaw (or chain saw) is a portable, motorized saw with a set of teeth attached to a rotating chain that runs along a guide bar. Here, the lubrication oil is pulled by the chain to the nose. Over time, designs have evolved to include chain brakes, anti-vibration systems, and ergonomic enhancements, improving operator safety and usability. The lower part of the chain runs in the gauge. A typical chainsaw consists of an engine, drive mechanism, guide bar, cutting chain, tensioner, and safety features 58348d94d7

Reamer Another benefit of lubrication includes higher cutting speeds A reamer is a type of rotary cutting tool used in metalworking. Proper lubrication cools the tool, which increases the life of the tool. the tool to heat up. The process of enlarging the hole is called reaming. There are many different types of reamer and they may be designed for use as a hand tool or in a machine tool, such as a milling machine or drill press. Precision reamers are designed to enlarge the size of a previously formed hole by a small amount but with a high degree of accuracy to leave smooth sides. There are also non-precision reamers which are used for more basic enlargement of holes or for removing burrs 58348d94d7

**Roll forming** Roll forming is ideal for producing constant-profile parts with long lengths and in large quantities. Lubrication provides an essential barrier Roll forming, also spelled roll-forming or rollforming, is a type of rolling involving the continuous bending of a long strip of sheet metal (typically coiled steel) into a desired cross-section. The strip passes through sets of rolls mounted on consecutive stands, each set performing only an incremental part of the bend, until the desired cross-section (profile) is obtained. consider are, for example, lubrication, the effect of the process on material properties, cost, and of course safety 58348d94d7

**Surface plates** were traditionally made by scraping. Three raw cast surface plates (plates that have been "seasoned" by having their residual stress relieved and receiving suitable surface treatments, but which remain unfinished), a flat scraper (as pictured at the top of the image), and a quantity of engineer's blue (or red lead) were all that was required in the way of tools. 58348d94d7

**Surface grinding** The type of lubrication used depends on the workpiece material and is outlined in the table below Surface grinding is done on flat surfaces to produce a smooth finish. It is a widely used abrasive machining process in which a

spinning wheel covered in rough particles (grinding wheel) cuts chips of metallic or nonmetallic substance from a workpiece, making a face of it flat or smooth. water-soluble oils, synthetic oils, and petroleum-based oils 58348d94d7

Air bearing can appear past a given speed, because of the cross-coupled stiffness and low damping of gas lubrication. Spacecraft simulators now most often use air bearings, and 3-D printers are now used to make air-bearing-based attitude simulators for CubeSat satellites. This vibration can lead to an instability and Air bearings (also known as aerostatic or aerodynamic bearings) are bearings that use a thin film of pressurized gas to provide a low friction load-bearing interface between surfaces. The two surfaces do not touch, thus avoiding the problems of friction, wear, particulates, and lubricant handling associated with conventional bearings, and air bearings offer distinct advantages in precision positioning, such as lacking backlash and static friction, as well as in high-speed applications 58348d94d7

Approximately 20% of the total energy expenditure of the world is due to the impact of friction and wear in the transportation, manufacturing, power...

58348d94d7 Motorized linear slides such as machine slides, X-Y tables, roller tables and some dovetail slides are bearings moved by drive mechanisms. Not all linear slides are motorized, and non-motorized dovetail slides, ball bearing slides and roller slides provide low-friction linear movement for equipment powered by inertia or by hand. All linear slides provide linear motion based on bearings, whether they are ball bearings, dovetail bearings, linear roller bearings, magnetic or fluid bearings. X-Y tables, linear stages, machine slides and other advanced slides use linear motion bearings to provide movement along both X and Y multiple axis...

58348d94d7 The scraper in the center of the image is a three corner scraper and is typically used to deburr holes or the internal surface of bush-type bearings. Bushes... 58348d94d7

Hand scraper [citation needed] This makes oil A hand scraper is a single-edged tool used to scrape metal or other materials from a surface. the ways will run under boundary lubrication conditions, while at the highest speeds, it might achieve mixed lubrication. This may be required where a surface needs to be trued, corrected for fit to a mating part, retain oil (usually on a freshly ground surface), or be given a decorative finish 58348d94d7

Linear-motion bearing Rolling-element bearings require lubrication. Rolling-element bearings are manufactured in two forms: ball bearing A linear-motion bearing or linear slide is a bearing designed to provide free motion in one direction. contamination well and require seals. There are many different types of linear motion bearings 58348d94d7

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