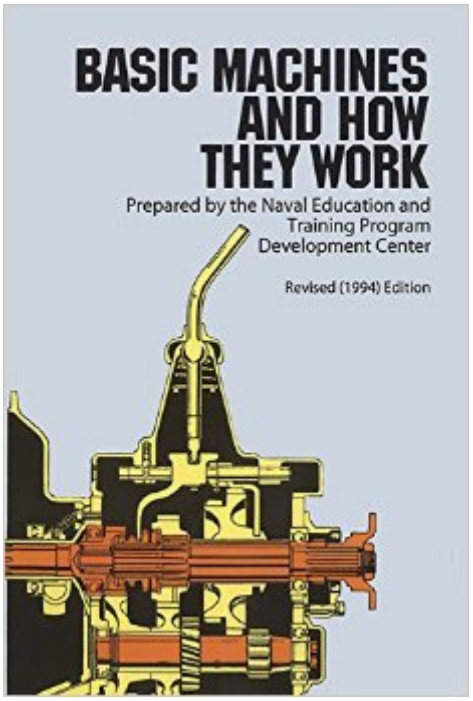
Basic Machines And How They Work



Synopsis

This revised edition of an extremely clear Navy training manual leaves nothing to be desired in its presentation. Thorough in its coverage of basic theory, from the lever and inclined plane to internal combustion engines and power trains, it requires nothing more than an understanding of the most elementary mathematics.Beginning with the simplest of machines â ” the lever â ” the text proceeds to discussions of the block and tackle (pulleys and hoists), wheel and axle, the inclined plane and the wedge, the screw, and different types of gears (simple, spur, bevel, herringbone, spiral, worm, etc.). A chapter on the concept of work discusses the measurement of work, friction, and efficiency; this is followed by investigations of power, force, and pressure, with explanations of the uses of scales, balances, gauges, and barometers. The fundamentals of hydrostatic and hydraulic machines (such as the hydraulic braking system and the hydraulic press) are discussed in detail.The remaining chapters cover machine elements (bearings and springs), basic mechanisms (gear differential, couplings, cams, clutches), the internal combustion engine and power trains (including explanations of various transmission systems â ” synchromesh, auxiliary, etc.).Every concept is clearly defined, and discussions always build easily from elementary theory to specific applications familiar to anyone with the slightest interest in mechanics. Important concepts, machine components, and techniques are clearly illustrated in more than 200 diagrams, drawings, and cross-sections that reveal inner workings â ” all of these help to clarify even further an already clear and well-organized presentation.Although it was originally designed for use in U.S. Naval Training Schools, this book can be used to great advantage as a basic text in mechanical engineering in standard technical schools, and it will be immensely valuable even to lay readers who desire a basic knowledge of mechanics.

Book Information

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Customer Reviews

In a sense, you probably already paid for this book. Since it was produced in 1964 by the U.S. Government, it was paid for with tax money and it generally cannot be copyrighted. ("Ever since 1895, statutory provisions have prohibited the assertion of copyright in any publication of the U.S. Government. The provisions have been only slightly modified since their enactment.")There is a free pdf version of this book online. You can search for the book by name, or go to this link (spelled out since the ’Zon does not permit certain links - and probably for good reason): bee eye tea dot el why forward-slash lowercase-ess uppercase-dee uppercase-A the-numeral-one lowercase-double-u uppercase zee.However you get a copy of the book, it is worth having.

I borrowed this book from a friend and held on to it for almost six months, and in that time I poured over it. It’s EXTREMELY useful if you’re doing model building or playing with simulators and stuff. I use it with LEGOs and LEGO Mindstorm robotics kits. It taught me ALL SORTS of secrets about motion and principles behind gears and gear-driven mechanisms. Just a great book, I highly reccommend it if you’re looking for a great reference for basic mechanical devices. I had to buy my own copy to have.

I don’t know how the military does it, but somehow they are able to train people quickly and effectively whereas academia gives long-winded answers that get most students lost in derivations.Buy this book if you, like me, want to understand simple machines (levers to engines). It’s straight to the point, the way I like it.

As a Mechanical Engineering student I found the book to be extremely useful. I was already familiar with most of the theories from Dynamics and Statics, but it was cool to see how non textbooks refer to certain things (IE rather than saying the pivot point they call it the fulcrum). While we generally go over gear theories and calculations in Dynamics, we certainly don’t get into their classifications so that was another useful piece of knowledge that I picked up. The last two chapters were extremely knowledgeable, since neither was in any of my textbooks. The last two chapters covered power trains and the internal combustion engine and were surprisingly in depth. I would highly recommend this book for any Engineering student seeking to get an out of the textbook perspective on your

Mechanics classes, or to pick up some information on the inner workings of the engine.

Good, clear illustrations. Internal combustion engine explanation is especially good. Exploded views, cutaway diagrams, and metaphorical examples help to explain the concepts. Progression from simple-to-complex is well-paced, too.

Good basic info about the internal combustion engine but could use a revision. There is alot of talk about the side valve, Briggs and Stratton type engines but very little discussion about overhead valves and NO information about overhead cam engines. Other than the need for a revision this is a pretty decent book.

I was in the Navy so I’m partial I guess but I think this is a great book for anyone. Great basics of machines, physics and mechanics. A really good introduction or refresher. If you’re thinking about going in to Engineering or Physics get this book and commit to knowing this stuff really really well. It will serve you the rest of your life/career.Math needed is simple algebra. Good diagrams and pictures and great examples for added context.

I bought this book as part of my goal to re-learn some basic engineering skills.I found it helpful and informative, but extremely long winded.Given that it’s written for the navy, it’s very insular in it’s context, centering around naval usages.It also lacks a textbook style succinctness and instead sounds like a lecture to a group of children or like an educational video from the 70’s with drastic over-simplification and a certain Norman Rockwell feel to it.Above said, the basic principals and their associated formulas ARE clearly communicated along with their relevant applications.Happy with this book, but do not feel the naval context is clearly communicated in the description, nor the style of its format.

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