

Standard Handbook of Lubrication Engineering. Edited by J. J. O'Connor and J. Boyd, McGraw-Hill Book Company, Inc., New York, N. Y., 1969. (\$27.50)

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With 1044 pages, 933 tables and figures, 59 authors and 45 chapters, this book sponsored by The American Society of Lubrication Engineers is the most extensive volume yet available in the field of lubrication.

The subject matter is divided into four major parts: (1) lubrication principles; (2) general practices; (3) lubrication of specific equipment; and (4) lubrication in specific industries. The first of these four parts gives a technical background for considering the fundamental design, material selection, lubricant characteristics, surface chemistry, friction, wear, and hydrodynamic concepts in a lubricated contact.

The last three parts then consider application questions. Particularly useful among these are chapters giving specific lubrication recommendations for such applications as steel mills, railroads, construction machinery, marine equipment, automobiles, machine tools, metalworking, bearings, and gears. These recommendations generally are very practical in their industrial approach. One table on selection of machine tool lubricants, for instance, gives suggested oils and greases for 23 machine tool parts (ways, hydraulic system, headstock, etc.) in 14 types of machine tools (turret lathe, grinder, broach, etc.). Another

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tabulation gives guides for lubrication scheduling and selection for 42 typical components of construction machinery.

Some functions normally expected of a "handbook" are not as well carried out. Typical compositions and detailed physical properties either are not given or are obscure for lubricants such as the common industrial circulating oils, industrial and military synthetic oils, or even the SAE automotive oils. Similar property tabulations would also seem appropriate for the gases, water, liquid metals and process fluids being more frequently employed as bearing lubricants. No conversion tables are given for the many confusing units of viscosity always encountered in this field. Although many useful film-type bearing design charts are provided, background mathematical relations are generally not given for hydrodynamic and elastohydrodynamic lubrication.

Several portions suffer from the lapse in time since their preparation. The new ASTM system for viscosity index values over 100 is not included. The longer fatigue life available now in almost all ball and roller bearings resulting from vacuum processing the steels is not reflected in the ball bearing chapter. No means are given for considering turbulent performance in hydrodynamic bearings. The abbreviated one and two-page coverage of several subjects also reflects organizational difficulties with so many sources of material. Hopefully, these points will be corrected in a future edition.

Meanwhile, this handbook should find wide use as a background starting reference by any engineer dealing with practical lubrication questions. It should be especially helpful for day-to-day problems encountered by plant engineers, plant lubrication and maintenance personnel, and manufacturing engineers.