Basic Hydraulics

Basic Hydraulics

Fluid Power Workhorse

Jay F. Hooper

Carolina Academic Press
Durham, North Carolina

Library of Congress Cataloging-in-Publication Data

Hooper, Jay F.
Basic hydraulics : fluid power workhorse /
Jay F. Hooper.
p. cm.
ISBN 978-1-59460-835-3 (alk. paper)
1. Fluid power technology. 2. Hydraulic fluids.
I. Title.

TJ843.H68 2010
621.2—dc22 2010023557

Carolina Academic Press
700 Kent Street
Durham, NC 27701
(919) 489-7486
www.cap-press.com

Printed in the United States of America

2023 Printing

Contents

Preface

This book was developed to instruct people who want to troubleshoot hydraulic machinery and hydraulic circuits. The material in this book assumes no prior knowledge of hydraulics and could be used by anyone who has an interest in this particular area of fluid power. This book does not cover the rebuilding of hydraulic components.

In order to firmly plant the concepts of what is going on in hydraulics, this information has an orientation to a "hands-on" approach. The text uses some generalizations and other approximations. This book is directed at the hourly worker on the factory floor or out in the field.

The objective of this basic hydraulics course is to train the current or prospective maintenance mechanic or technician in the basic hydraulic building blocks to be used in troubleshooting. This is done in a two-step fashion. If you have had no previous experience with pneumatics or hydraulics, then start right at the beginning of section one. If you have had previous experience with troubleshooting pneumatics, then look over and review the first section of the text, do all of the exercises (1–8) in the first section, and then start in earnest on section two. This hydraulic text is oriented to what you will run into in the field. Technical specs and other values are given in the text and then followed by their {standard} and [metric] equivalent, as you should be able to work in either measuring system in this field.

Jay F. Hooper
Salisbury, N.C.
December 2011

Introduction

This book is part of a course that prepares the student to display a working knowledge of hydraulic systems and to troubleshoot hydraulic problems. Upon successful completion of this course, the student will be able to:

- Read schematic prints
- Understand the components of hydraulic systems
- Recognize the names of hydraulic components and fittings
- Determine probable causes and solutions of problems
- Troubleshoot standard hydraulic circuits