BD Tech Concepts llc

Technical Writing, Editing, and Diagrams
Document Conversion and Typesetting
LaTeX Consulting and System Programming

Brian Dunn

August 27, 2021

Impress with Professional Documentation

Every communication which you have with a customer is a form of marketing, including downloadable reference material and documentation, white papers, journal articles, and owners' manuals. Excellent technical literature is accurate, well-organized, and impressive in appearance, helping establish your company's authority and professionalism.

BD Tech Concepts llc will edit, format, and typeset your documents to a higher standard. Principles from engineering, programming, typesetting, design, and American-English grammar are applied with professional document-creation tools to meet your company's need for quality technical literature, freeing you and your staff to return to what you do best.

Specialties:

- LaTeX programming — Advanced document-creation and typesetting system. Optimal typesetting quality, stability, and programming flexibility. Single-source, with conversion to multiple output formats — pdf, epub, html/css.
- Technical writing and editing — books, monographs, manuals, white papers, case studies, journal articles, diagrams, illustrations, and procedures.
- Realtime embedded software for industrial controls.

Contents

List of Figures

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Technical Writing and Communications

Research — Evaluate — Clarify — Document — Communicate

BD TECH CONCEPTS LLC provides technical writing and communications services, including:

- Technical editing for books, monographs, white papers, case studies, journal submissions, and engineering/business proposals.
  - (See: Technical Editing)
- Document design, layout, editing, and proofing.
  - (See: Book & Monograph Design)
- Diagrams and illustrations.
  - (See: Diagrams)
- Document conversion.
  - (See: Printed Document to PDF Conversion)
- Owner's manuals for real-world devices.
  - (See: Owner's Manuals and Procedures)
- Software documentation.
  - (Example: LaTeX to HTML Converter — the lwarp package)
  - (Also: LaTeX tocdata package)
- Patent applications with diagram callouts linked to the text.
- Software test procedures and state-machine analysis.
  - (See: Software-Related Documentation)

Specialties:

- LaTeX — programmable advanced document-creation and typesetting system.
- Real-time embedded software engineering — industrial controls.

Also see: About Us.

Improved Technical Communications

Marketing

- Create a great impression by improving your technical and marketing documents. Potential customers, purchasing managers, and applications engineers are influenced by the quality of your technical literature.
- Publish nicely edited, formatted, and typeset technical books, white papers, case studies, and journal submissions.

Sales

- Remove objections, avoid misunderstandings, and create superior proposals by including thorough documentation, including user-interface and operating-logic design illustrations and state diagrams.

Engineering

- Free your staff to work on developing new products instead of worrying about polishing documentation to publication quality.
- Improve product design through user-interface and operating-logic analysis and diagramming.
- Develop software from a full specification, including outlier conditions.
- Preserve institutional memory to speed the design of subsidiary products and survive personnel turnover.
- Re-publish quality journal articles on your own company's home page, with improved technical editing and typesetting.

Production

- Develop multilingual training aids with documentation which has been designed for clear translation.
- Help ensure employee safety with clearly presented warnings.
- Improve performance with easy-to-locate information.

Quality Control

- Work from clear and complete specifications, including full software test procedures.

Customer Service

- Reduce returns and support costs through clear customer communications.

Legal

- Improve patent applications with professional typesetting to USPTO requirements, and quality diagrams automatically and permanently cross-referenced to the text.
- Reduce legal issues and negative press by providing complete, clear, and consistent documentation and warnings.

BD TECH CONCEPTS LLC — Translating "Engineer" into "Human!"

Technical Editing

Applications for Technical Editing

- Books, Monographs, Texts
- White Papers
- Case Studies
- Journal Articles
- Patent Applications
- Engineering Proposals
- Catalogs and Brochures
- Operating Manuals

Improved Technical Content

- Improved typesetting of mathematics, tables, units, fractions, and user-interface controls.
- Mathematics typeset according to math or engineering standards, as appropriate.
- Consistent formatting of dimensions v.s. quantities, and ranges of numbers with units.
- Improved diagrams and photos. Suggestions for additional diagrams or illustrations to clarify content.
- Consistent and improved labeling of warnings, cautions, and notes. Suggested additions or change of importance.
- Consistency checks between different statements in different sections of the document.
- Catch missing exponents, units, labels, specifications.
- Verify unit conversions.
- Verify significant digits.
- Verify trademark v.s. copyright.
- Consistent type-case for brand and product names.
- Define any undefined acronyms.
- Clarify procedural instructions to reduce misinterpretation.
- State-machine tables or diagrams to clarify and specify all possible user-interface interactions.
- Highlighted description lists or paragraph headings to quickly locate and identify important content.
- Repeated text is factored to a common source to avoid minor differences between instances.
- Diagram labels may be converted to numbered “pins” and an accompanying table. The pins take less space on the diagram, and the table allows easier translation or updates since text is not placed directly on the diagram. Patent applications require numbered diagram pins, and references to these pins are automatically maintained and updated as changes occur, permanently maintaining the link between the diagram and the text. See Labels, pins, call-outs, patent-application diagrams.

Improved Text

- Spelling
- Grammar
  - Dropped articles
  - Insure / ensure / assure, effect / affect, etc.
  - Simplification and rearrangement of complex sentences for improved clarity.
- Punctuation
  - Hyphenation of compound adjectives.
  - Hyphen / number range / minus sign / en-dash / em-dash
  - Opening / closed quote marks / inch mark / angular seconds / double prime
  - Apostrophe / foot mark / angular minutes / prime
  - End-of-sentence space / flexible-width inter-word space / fix-width unbreakable space / short unbreakable space
  - Serial comma, Harvard comma, Oxford comma
  - × vs x (“times” vs “lower-case x”)
- Structural organization
  - Sectioning
  - Cross-references with active hyper-links.
  - Footnotes and end-notes
  - Figures and captions
  - Equations
  - Table-of-Contents, List-of-Figures, List-of-Tables
  - Indexes
  - Glossaries
  - Bibliography
  - PDF meta-data

Repair of Broken Documents

- Conversion from bitmaps and scanned images to real text, tables, equations, and vector diagrams.
- Repair and establish consistent labels, units, and captions.
- Prevent diagrams, illustrations, and photos from overlapping nearby text.
- Re-organize out-of-order or broken section, figure, or equation numbering.
- Correct broken itemized, enumerated, and description lists.
- Strip and reapply formatting to fix inconsistent styling.
- Fix or verify inconsistent or obsolete contact information and hyperlinks.

Book & Monograph Design

> "... if you have a technical-writing project that is stalled, or one that needs a new look, Brian Dunn at BD TECH CONCEPTS can help you."
>
> *Sprucing Up Content*
> GEAR TECHNOLOGY MAGAZINE

Be the expert

Prove your professional authority by self-publishing your own technical book or monograph. Whether available for free download, or printed and sent ahead to prospective clients, the fact that you literally "*wrote the book*" means instant recognition and credibility. An early investment in authoring your own book can yield results for years to come.

> "[Writing the book] has served me well over the past 28 years. Initially it got me job interviews (22 interviews out of 25 copies sent out in 1989) and as late as last month I used it as material in a training class in Texas."
>
> *Charles D. Schultz, p.e.*
> BEYTA GEAR SERVICE

Example Technical Book Design

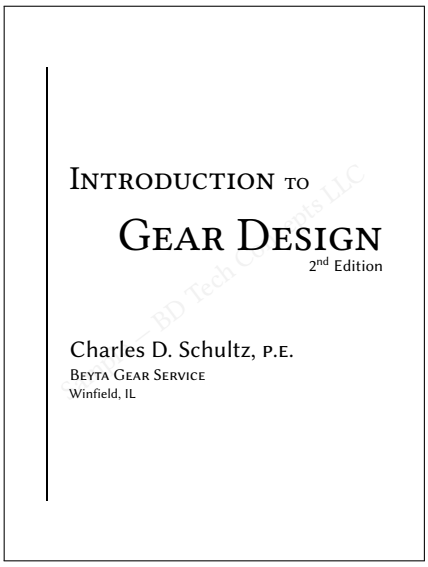
Figure 1 shows an example book project, single-sourced from one LaTeX document-system source to create a printed version, a tablet version, and an HTML website version.

Downloadable samples include:

- Formatted for screen and print: *Introduction to Gear Design* — Print — PDF
- Formatted for hand-held tablet: *Introduction to Gear Design* — Tablet — PDF
- HTML website: *Introduction to Gear Design* — Website — HTML

Converted from an old scanned printout, this book now has all-new diagram conversions along with improved editing, numbering, typesetting, internal/external hyperlinks, and formatting for print, tablet, or HTML. Used with permission.

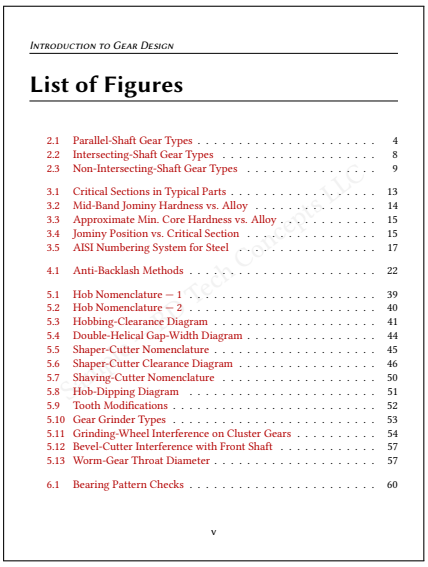
> "Both versions look good ... I very much like the work you have done ... Thanks for your hard work."
>
> *Charles D. Schultz, p.e.*
> BEYTA GEAR SERVICE



Introduction to Gear Design

2nd Edition

Charles D. Schultz, P.E.
Beyta Gear Service
Winfield, IL



List of Figures

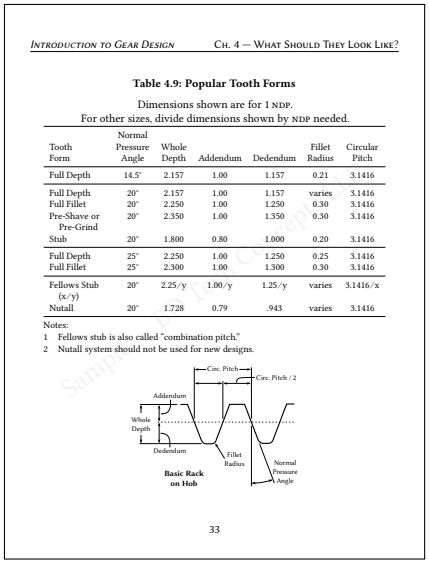


Table 4.9: Popular Tooth Forms

Dimensions shown are for 1 NDP.
For other sizes, divide dimensions shown by NDP needed.

Tooth Form	Normal Pressure Angle	Whole Depth	Addendum	Dedendum	Fillet Radius	Circular Pitch
Full Depth	14.5°	2.157	1.00	1.157	0.21	3.1416
Full Depth	20°	2.157	1.00	1.157	varies	3.1416
Full Fillet	20°	2.250	1.00	1.250	0.30	3.1416
Pre-Shave or Pre-Grind	20°	2.350	1.00	1.350	0.30	3.1416
Stub	20°	1.800	0.80	1.000	0.20	3.1416
Full Depth	25°	2.250	1.00	1.250	0.25	3.1416
Full Fillet	25°	2.300	1.00	1.300	0.30	3.1416
Fellows Stub (x/y)	20°	2.25/y	1.00/y	1.25/y	varies	3.1416/x
Nutall	20°	1.728	0.79	.943	varies	3.1416

Notes:
1 Fellows stub is also called "combination pitch."
2 Nutall system should not be used for new designs.

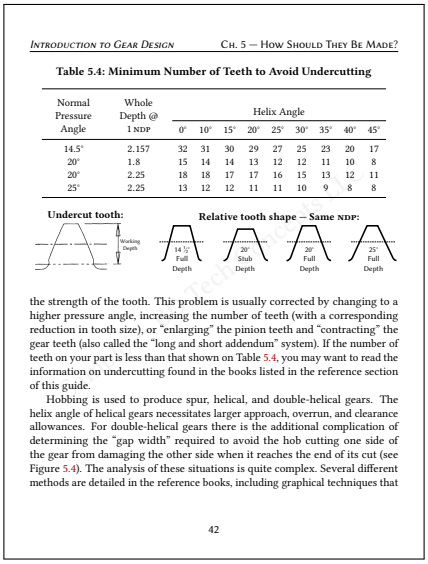


Table 5.4: Minimum Number of Teeth to Avoid Undercutting

Normal Pressure Angle	Whole Depth @ 1 NDP	Helix Angle 0°	10°	15°	20°	25°	30°	35°	40°	45°
14.5°	2.157	32	31	30	29	27	25	23	20	17
20°	1.8	15	14	14	13	12	12	11	10	8
20°	2.25	18	18	17	17	16	15	13	12	11
25°	2.25	13	12	12	11	11	10	9	8	8

Undercut tooth:

Relative tooth shape — Same NDP:

the strength of the tooth. This problem is usually corrected by changing to a higher pressure angle, increasing the number of teeth (with a corresponding reduction in tooth size), or "enlarging" the pinion teeth and "contracting" the gear teeth (also called the "long and short addendum" system). If the number of teeth on your part is less than that shown on Table 5.4, you may want to read the information on undercutting found in the books listed in the reference section of this guide.

Hobbing is used to produce spur, helical, and double-helical gears. The helix angle of helical gears necessitates larger approach, overrun, and clearance allowances. For double-helical gears there is the additional complication of determining the "gap width" required to avoid the hob cutting one side of the gear from damaging the other side when it reaches the end of its cut (see Figure 5.4). The analysis of these situations is quite complex. Several different methods are detailed in the reference books, including graphical techniques that

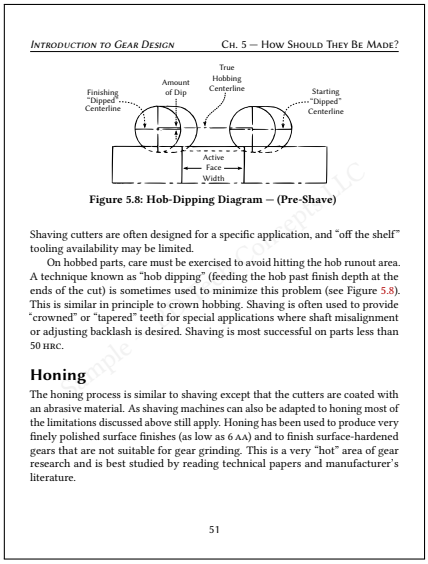


Figure 5.8: Hob-Dipping Diagram — (Pre-Shave)

Shaving cutters are often designed for a specific application, and "off the shelf" tooling availability may be limited.

On hobbed parts, care must be exercised to avoid hitting the hob runout area. A technique known as "hob dipping" (feeding the hob past finish depth at the ends of the cut) is sometimes used to minimize this problem (see Figure 5.8). This is similar in principle to crown hobbing. Shaving is often used to provide "crowned" or "tapered" teeth for special applications where shaft misalignment or adjusting backlash is desired. Shaving is most successful on parts less than 50 HRC.

Honing

The honing process is similar to shaving except that the cutters are coated with an abrasive material. As shaving machines can also be adapted to honing most of the limitations discussed above still apply. Honing has been used to produce very finely polished surface finishes (as low as 6 AA) and to finish surface-hardened gears that are not suitable for gear grinding. This is a very "hot" area of gear research and is best studied by reading technical papers and manufacturer's literature.

Hyperlinks are colored, including in-text Figure and Table references, and each entry in the Table of Contents, List of Figures, and List of Tables.

Figure 1: Book Design — *Introduction to Gear Design*

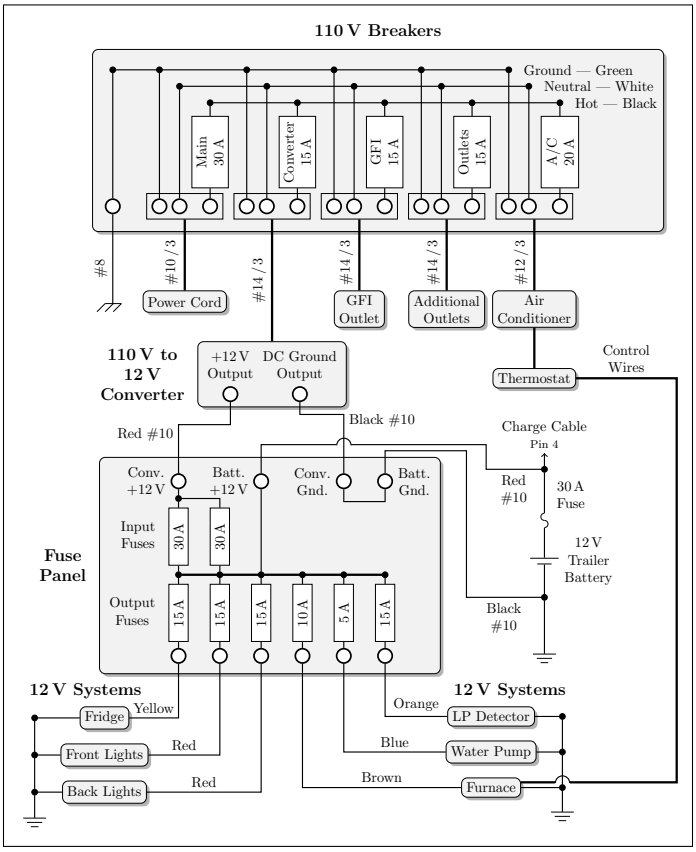


Figure 2: Wiring Diagram — Camping Trailer Electrical System

Owner's Manuals and Procedures

A reformat of your product's owner's manuals can create a great impression for potential customers.

A third-person editorial review of your owner's manuals can result in a cleaner document, better-informed customers, and reduced service calls.

Improved cross-references, enhanced diagrams, additional notes and explanations, and an outsider's perspective on the operation of your product — all help bring your product manuals up to a professional standard.

Examples

- Real-world products and devices:
  - Sample: Camping trailer owner's manual:
    Camping Trailer Manual — PDF, including Figure 2, a sample wiring diagram.
    Camping Trailer Manual — HTML (This is a sample conversion from LaTeX to HTML via the LaTeX to HTML Converter — the lwarp package.)
  - Sample: Automatic door-closer installation manual:
    Automatic Door Closer Installation Manual — PDF
    Figure 3 show a side view of one possible installation, along with the door and frame. See the manual for additional installation options and diagrams.

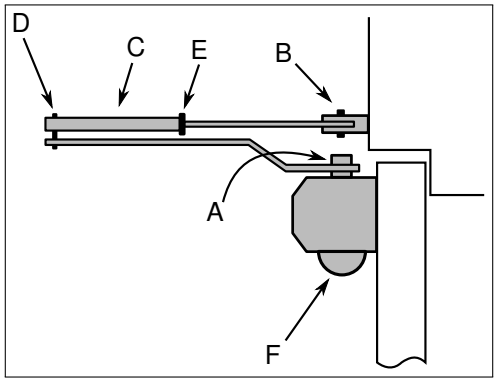


Figure 3: Parts Diagram — Automatic Door Closer — Side View

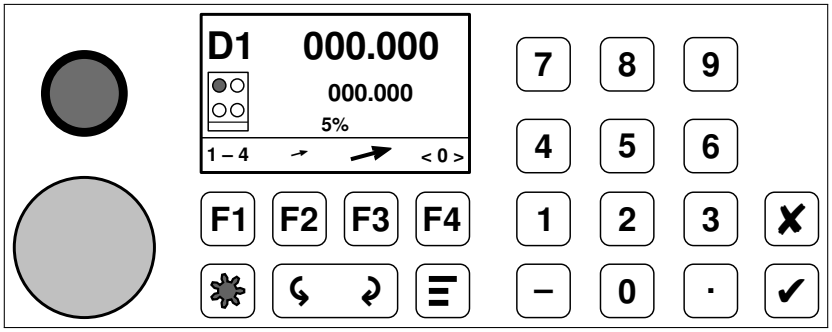


Figure 4: Control Box — Front Panel

- Industrial controls and related software:
  - Sample: CNC Control Box:
    CNC Control Box — Setup Instructions — PDF
    A redesigned CNC sub-component control-box front panel is shown in Figure 4. The new panel includes international key and display icons, a more intuative key placement, and an accompanying operating-logic redesign which provides a simpler and more consistent user experience.
  - Sample: Fryer user's manual:
    Fryer — User's Manual — PDF
    Figure 5 is a diagram from the fryer's user's manual. An all-new operating logic and improved key icons resulted in a superior product design. See State machines for a discussion of the benefits provided by this product-design process.
- Single-source documentation suite — information factoring and re-use:
  Documentation integrity and ease of updates are each improved by the proper factoring and automated re-use of common blocks of information. When done at too fine of a level, context is lost, and when done at too coarse of a level, re-usability is lost.
  - Sample:
    Initial Specification — PDF
    Final Operating Specification — PDF
    Software Test Procedure — PDF
    Fryer — User's Manual — PDF

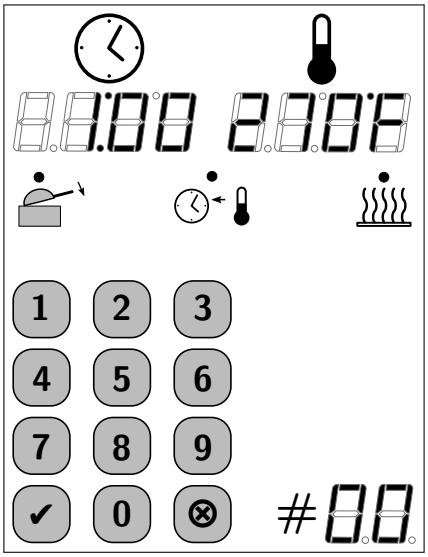


Figure 5: Fryer — Front Panel

Software-Related Documentation

User's Manual and Source-Code Documentation

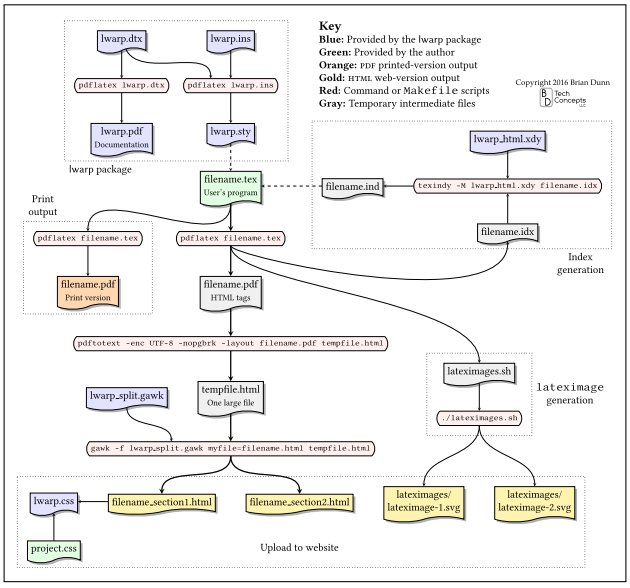


Figure 6: Lwarp Manual — Sample Diagram

Figure 6 is an excerpt from a prior version of the Lwarp v0.901 Manual (2.5 MB PDF). This manual is a combined user's manual and source-code documentation, an example of "literate programming".

For more information, see LaTeX to HTML Converter — the lwarp package.

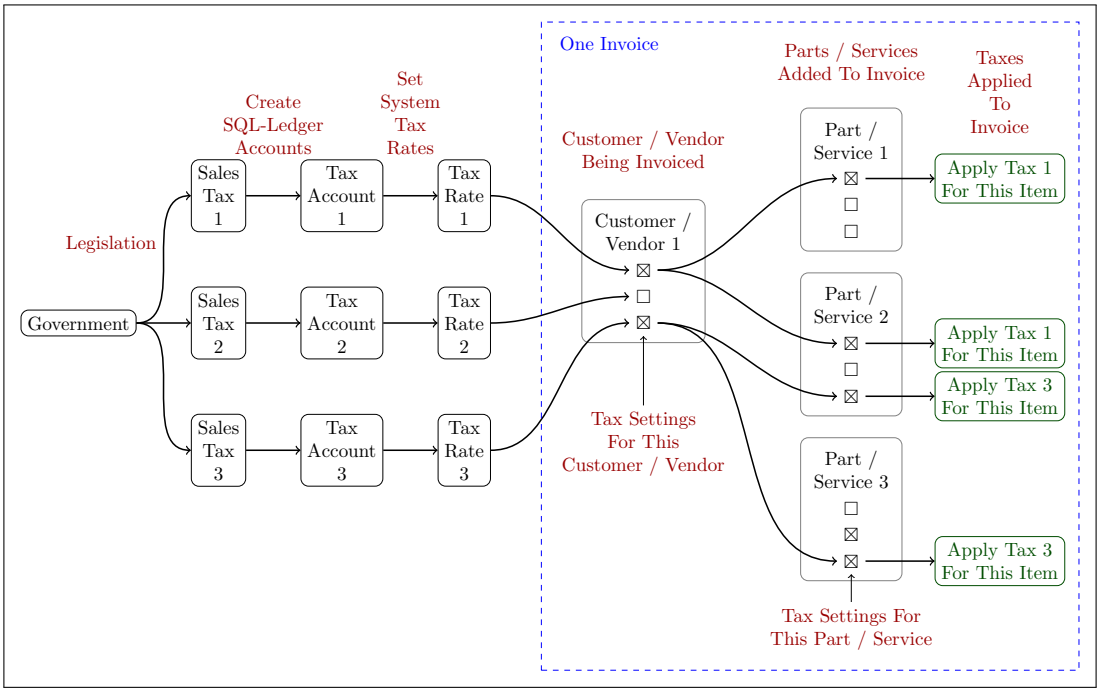


Figure 7: Conceptual Logic — SQL-LEDGER — Handling Sales Taxes

Operating Procedures

- Elaborate software operating procedures benefit from the inclusion of additional diagrams to help explain the logical connections of the various functions and processes which are involved. Typesetting is used to indicate user-interface functions, and screen images are used to highlight important selections.

  – Sample: How to set up sales-tax handling in the SQL-LEDGER® double-entry accounting system:
  SQL-LEDGER — Handling Sales Taxes — PDF
  Figure 7 demonstrates a conceptual-logic diagram, showing the relationship between the various legislated sales-taxes, their software accounts, their software tax-rate settings. Also shown is how several at a time may be selected/deselected for a particular customer/vendor account, and also for a collection of parts/services on a particular invoice. The flowing arrows show the application of individual sales taxes through the various accounts and selections for each individual item on the invoice.

- Diagrams are also used to illustrate the changing state of the system as a the user progresses through the required operations. Typesetting is used to highlight user-entry typing, display, warnings and notes.

  – Sample: How to move the Debian operating system to a new harddrive:
  Moving Debian “Wheezy” and grub2 to a New Drive — PDF
  Copying an entire operating system to a new harddrive can involve several steps, during which entire groups of directories are added and removed at different times. Figure 8 is one of several which help the user keep track of what is going where during the transfer process.

Test procedures

Each time software is changed, it should be validated for proper operation before being released for general use. This important function must be carefully thought out. A thorough test procedure will test each software function, including

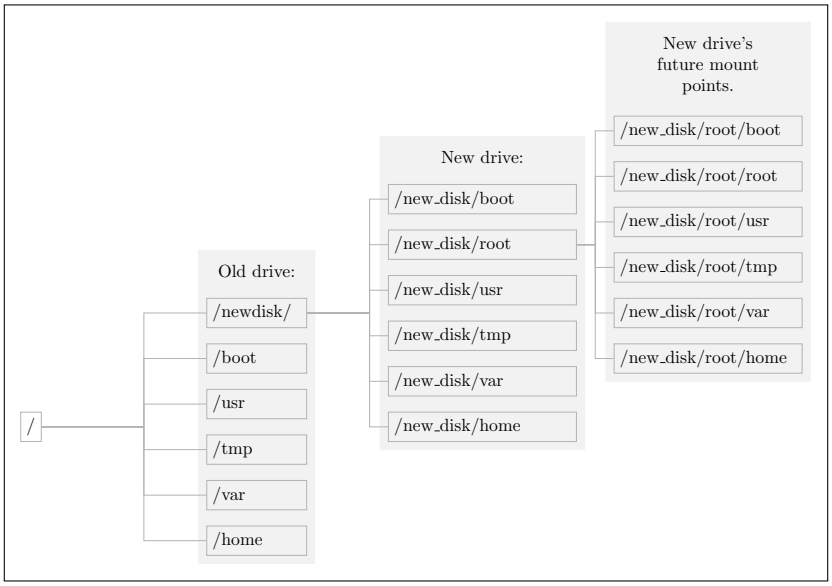


Figure 8: Directory Tree — OS Transfer to a New Drive

all hardware interfaces plus associated noise and error handling conditions, and the proper software response to each possible input given each possible current state.

- Sample: Software test procedure:

  Fryer — Software Test Procedure — PDF

  Illustrated in the PDF and in Figure 9 are:

  - an overview of the product,
  - the use of a state machine in tabular form (also see Figure 10 for the same information in diagram form,)
  - statements of specification,
  - a checklist for each state's actions,
  - additional tests to perform where necessary,
  - ESD noise and power-loss recovery testing, and
  - typeset user-interface buttons and displays.

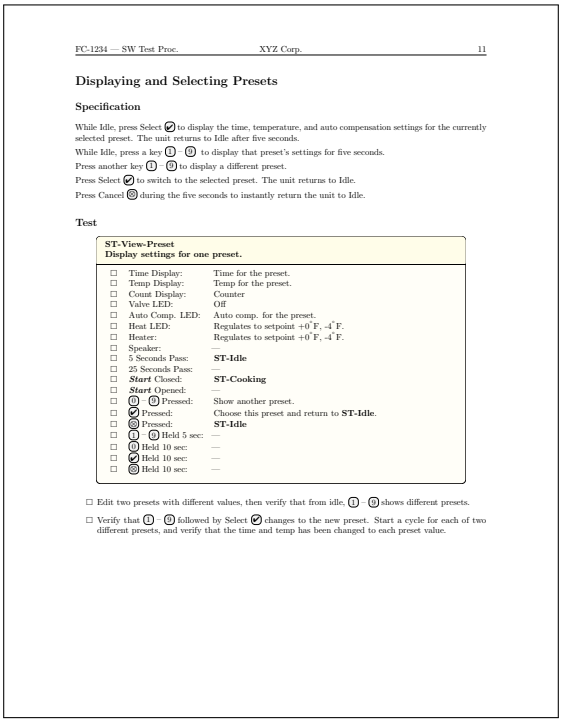
State machines

It is useful to create a state machine including every possible combination of input, output, and software state. The creation of this state machine can, in itself, reveal design flaws or force decisions about combinations which nobody had thought of before.

The state machine, if created and incorporated into the initial design process, can be used as a guide for the software engineers to ensure that they have a complete description of the correct action of the program.

When described in graphical format, the state machine makes a valuable part of the software test procedure, describing in an easy-to-use visual format the correct operation of the program.

When converted to a table format, the state machine may be implemented in software, resulting in an easily maintained piece of code, readily adaptable to design changes or future product versions. A software state machine also avoids the nightmare of large blocks of heavily nested conditional code and its associated mysterious functional glitches.



FC-1234 — SW Test Proc. XYZ Corp. 11

Displaying and Selecting Presets

Specification

While Idle, press Select ✔ to display the time, temperature, and auto compensation settings for the currently selected preset. The unit returns to Idle after five seconds.

While Idle, press a key ① - ⑩ to display that preset's settings for five seconds.

Press another key ① - ⑩ to display a different preset.

Press Select ✔ to switch to the selected preset. The unit returns to Idle.

Press Cancel ⊘ during the five seconds to instantly return the unit to Idle.

Test

ST-View-Preset
Display settings for one preset.

☐	Time Display:	Time for the preset.
☐	Temp Display:	Temp for the preset.
☐	Count Display:	Counter
☐	Valve LED:	Off
☐	Auto Comp. LED:	Auto comp. for the preset.
☐	Heat LED:	Regulates to setpoint +0°F, -4°F.
☐	Heater:	Regulates to setpoint +0°F, -4°F.
☐	Speaker:	—
☐	5 Seconds Pass:	**ST-Idle**
☐	25 Seconds Pass:	—
☐	***Start*** Closed:	**ST-Cooking**
☐	***Start*** Opened:	—
☐	⑪ - ⑳ Pressed:	Show another preset.
☐	✔ Pressed:	Choose this preset and return to **ST-Idle**.
☐	⊘ Pressed:	**ST-Idle**
☐	① - ⑩ Held 5 sec:	—
☐	0 Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊘ Held 10 sec:	—

☐ Edit two presets with different values, then verify that from idle, ① - ⑩ shows different presets.

☐ Verify that ① - ⑩ followed by Select ✔ changes to the new preset. Start a cycle for each of two different presets, and verify that the time and temp has been changed to each preset value.

Figure 9: Software Test Procedure

- Sample: State machines and user-interface:

  Fryer — Final Operating Specification — PDF

  A sample state machine in diagram form is in Figure 10. States are in shown in green, machine actions in red, and movement to/from other states is in blue. Key icons or text show the user-initiated or other actions required to move to another state. The same information may be presented in tabular form, as shown previously in Figure 9.

Design reviews

During the process of creating a state machine to describe a piece of software, certain functional and user-interface design improvements can become evident, especially in embedded software with minimal front-panel interfaces, resulting in a cleaner and easier-to-use product.

Universal icons instead of English-language text, consistent state-transition actions, simpler key combinations and editing methods, more meaningful visual and audible feedback, unplanned special-case situations, error handling, and in some cases a reduction in the total number of keys or feedback LEDs — all are possible improvements from a full design review.

Even something as simple as a change of the icon on a key's label can make it more obvious what that key does — such as converting a right arrow into a curved clockwise arrow to illustrate that the key causes something to rotate, or using a small arrow icon for a key which produces smaller changes, and a larger arrow icon for a key which produces larger changes.

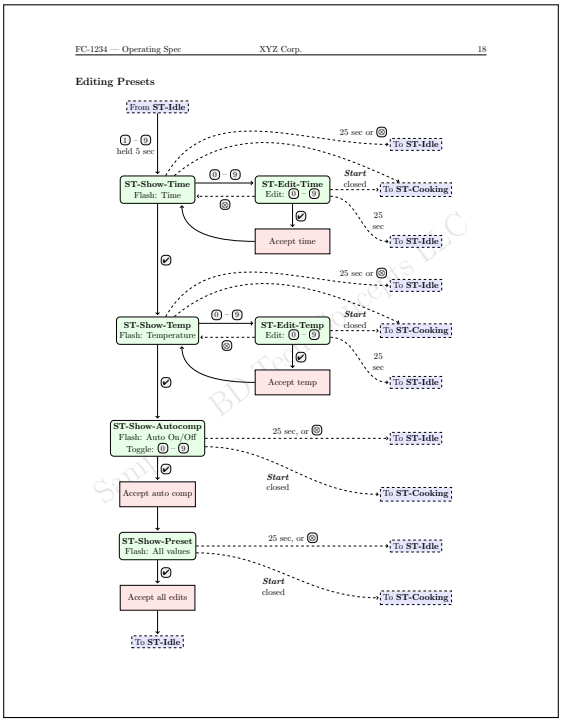


Figure 10: State Machine — Editing Presets

Sales Literature

Load Cells

Load cells are physical transducers used to convert a force into an electrical signal, and have many industrial and scientific applications.

Sample load cells white paper A white paper serves to educate your customers, showing them *how* and *why* a product may benefit them, whereas a data sheet or catalog shows them *which* product to use.

A white paper may include a theory of operation, authoritative references to external sources, technical diagrams, math, algorithms, test results, and other science- or engineering-related information.

Sample: Load Cells — Introduction and Applications — White Paper — PDF

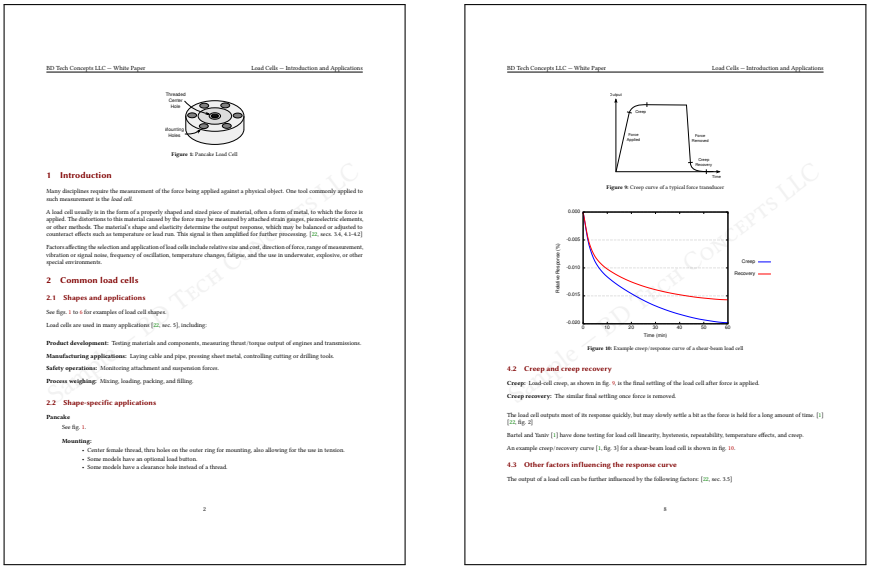


Figure 11: Load Cells — White Paper

Roboshop Conveyors

"Looks great! You obviously know what you're doing. You've cleaned up the problems that you advised me about and I like what you did. The separation of the pictures, the slanted background, the improved text and general arrangement is much better. The size is great and it does matter!"

F.G.
ROBOSHOP, INC.

Sample Roboshop sales brochure Roboshop Sales Brochure — PDF

Cleaned up an original document, making it 15% of its original file size. Reformat and layout. Improved contrast and brightness in some of the images. Optical character-recognition conversion from image to text. Light editing, including improved formatting of fractions and units. See Figure 12.

Original text and images ©Roboshop, Inc.

Figure 12: Sales Brochure — Roboshop, Inc.

Terminal Block Enclosure

Sample specification sheet Terminal Block Specification Sheet — PDF

Figure 13 shows a specification sheet for a 4-pole terminal block. (See the PDF for a high-quality image.)

- The layout has been reformatted to place the more general information near the top, and the specific details near the bottom.
- Proper contrast is used in the title, making the brochure easy to identify when mixed with others of the same style.
- Benefits are highlighted.
- Fractions, units, and numeric ranges are correctly typeset.
- Proper inch marks are used (v.s. quote marks).
- Backgrounds have been added for the heading and the main body.
- Sufficient page margin/bleed is provided to allow for printer crop/margins or A4/letter format printing.

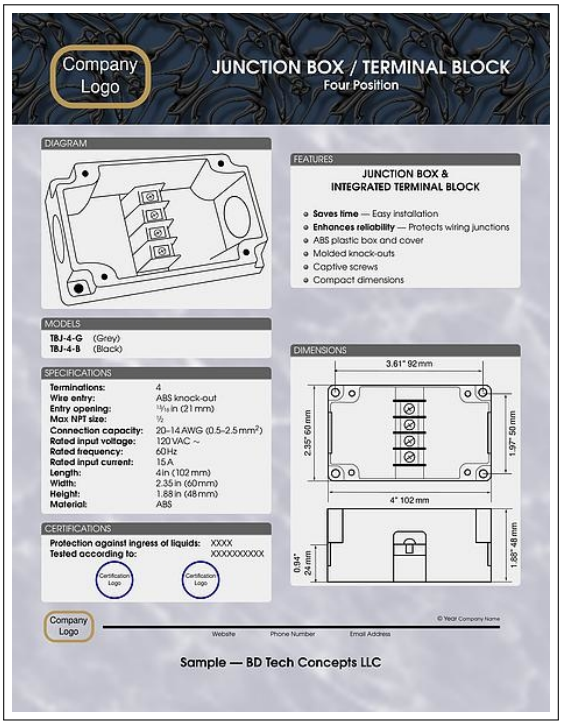


Figure 13: Specification Sheet — Terminal Block

Lamp and Resistor Order Form

Sample order form Lamp Order Form — PDF

Figure 14 shows an order form for a lamp and resistor combination. (See the PDF for a high-quality image.)

- Diagram has been re-rendered from a hand-drawn original.
- Options have re-organized for consistency.
- Dimensions have been adjusted for more specificity.

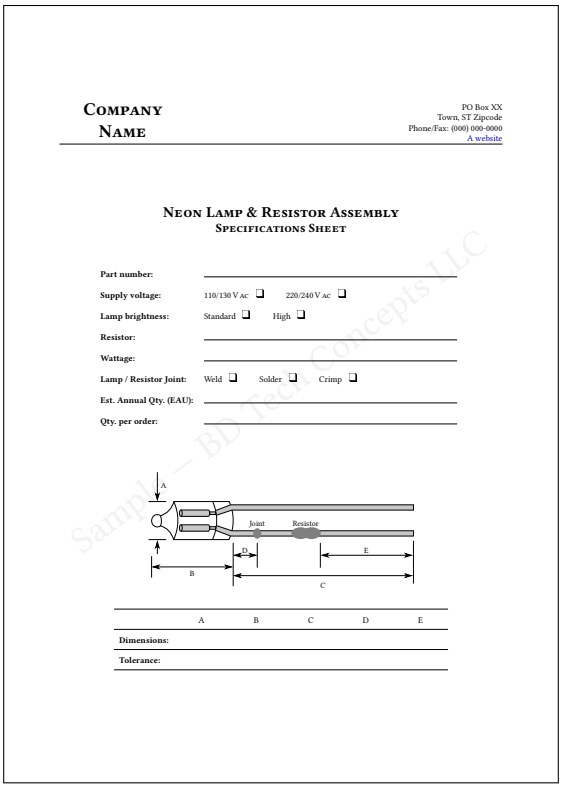


Figure 14: Order Form — Lamp and Resistor

American Go Association

Thousands of years old, *go* (also known as *wei-qi* and *baduk*) is the oldest board game still played in its original form. A very small number of simple rules allow even young children to learn the game, and yet generations of study are still yielding new strategies. It was only very recently that a computer was finally able to beat the strongest human players.

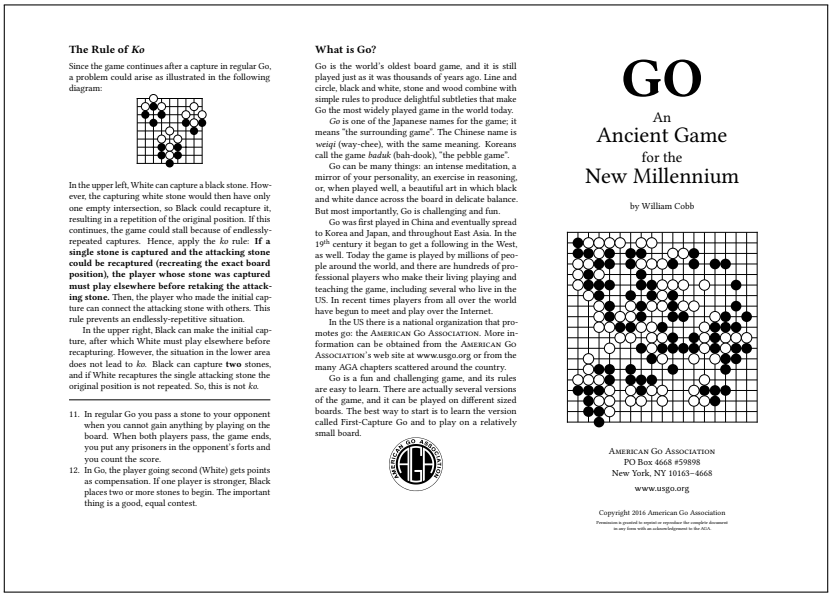
Katsushika Hokusai — From the series, *Uma Zukushi.*

Figure 15: Lacquer Go Board

The American Go Association is the official national organization of American go players, cooperating with similar national organizations around the world.

The AGA logo and the following brochures were updated for the AGA with new editing, layout, and typesetting.

AGA logo The AGA logo has been converted from a high-resolution scan of the original 1982 version, which was created by hand on a drafting board using pre-fabricated lettering and ink drawings. This scan was cleaned for dust, converted to a vector line drawing, then given additional custom editing to produce an optimal result while preserving the human touch and historical feel of the original.



The Rule of *Ko*

Since the game continues after a capture in regular Go, a problem could arise as illustrated in the following diagram:

In the upper left, White can capture a black stone. However, the capturing white stone would then have only one empty intersection, so Black could recapture it, resulting in a repetition of the original position. If this continues, the game could stall because of endlessly-repeated captures. Hence, apply the *ko* rule: **If a single stone is captured and the attacking stone could be recaptured (recreating the exact board position), the player whose stone was captured must play elsewhere before retaking the attacking stone.** Then, the player who made the initial capture can connect the attacking stone with others. This rule prevents an endlessly-repetitive situation.

In the upper right, Black can make the initial capture, after which White must play elsewhere before recapturing. However, the situation in the lower area does not lead to *ko*. Black can capture **two** stones, and if White recaptures the single attacking stone the original position is not repeated. So, this is not *ko*.

11. In regular Go you pass a stone to your opponent when you cannot gain anything by playing on the board. When both players pass, the game ends, you put any prisoners in the opponent's forts and you count the score.
12. In Go, the player going second (White) gets points as compensation. If one player is stronger, Black places two or more stones to begin. The important thing is a good, equal contest.

What is Go?

Go is the world's oldest board game, and it is still played just as it was thousands of years ago. Line and circle, black and white, stone and wood combine with simple rules to produce delightful subtleties that make Go the most widely played game in the world today.

Go is one of the Japanese names for the game; it means "the surrounding game". The Chinese name is *weiqi* (way-chee), with the same meaning. Koreans call the game *baduk* (bah-dook), "the pebble game".

Go can be many things: an intense meditation, a mirror of your personality, an exercise in reasoning, or, when played well, a beautiful art in which black and white dance across the board in delicate balance. But most importantly, Go is challenging and fun.

Go was first played in China and eventually spread to Korea and Japan, and throughout East Asia. In the 19th century it began to get a following in the West, as well. Today the game is played by millions of people around the world, and there are hundreds of professional players who make their living playing and teaching the game, including several who live in the US. In recent times players from all over the world have begun to meet and play over the Internet.

In the US there is a national organization that promotes go: the AMERICAN GO ASSOCIATION. More information can be obtained from the AMERICAN GO ASSOCIATION's web site at www.usgo.org or from the many AGA chapters scattered around the country.

Go is a fun and challenging game, and its rules are easy to learn. There are actually several versions of the game, and it can be played on different sized boards. The best way to start is to learn the version called First-Capture Go and to play on a relatively small board.

GO

An
Ancient Game
for the
New Millennium

by William Cobb

AMERICAN GO ASSOCIATION
PO Box 4668 #59898
New York, NY 10163–4668
www.usgo.org

Figure 16: Promotional Brochure — American Go Association

AGA promotional brochure AGA Promotional Brochure — PDF

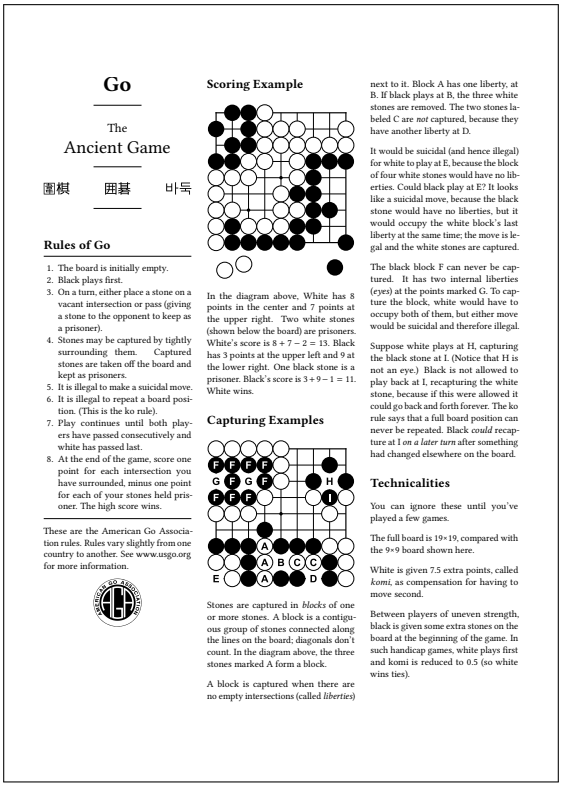
Formatted as a two-sided tri-fold brochure, this document (fig. 16) serves as an introduction to the game of *go*.

Technical terms are in *italics*, the board layouts are typeset with pre-existing tools, and space is reserved for local club contact information. Full justification and carefully selected margins form an elegant tri-fold layout.

AGA rules brochure AGA Rules Brochure — PDF

Formatted as a single-sided letter paper printout, this brochure (fig. 17) presents the basic rules of traditional *go* with several example positions and associated explanations.

A fully-justified multi-column layout is used, and again space is reserved for local club contact information.



Go

The
Ancient Game

圍棋　囲碁　바둑

Rules of Go

1. The board is initially empty.
2. Black plays first.
3. On a turn, either place a stone on a vacant intersection or pass (giving a stone to the opponent to keep as a prisoner).
4. Stones may be captured by tightly surrounding them. Captured stones are taken off the board and kept as prisoners.
5. It is illegal to make a suicidal move.
6. It is illegal to repeat a board position. (This is the ko rule).
7. Play continues until both players have passed consecutively and white has passed last.
8. At the end of the game, score one point for each intersection you have surrounded, minus one point for each of your stones held prisoner. The high score wins.

These are the American Go Association rules. Rules vary slightly from one country to another. See www.usgo.org for more information.

Scoring Example

In the diagram above, White has 8 points in the center and 7 points at the upper right. Two white stones (shown below the board) are prisoners. White's score is 8 + 7 − 2 = 13. Black has 3 points at the upper left and 9 at the lower right. One black stone is a prisoner. Black's score is 3 + 9 − 1 = 11. White wins.

Capturing Examples

Stones are captured in *blocks* of one or more stones. A block is a contiguous group of stones connected along the lines on the board; diagonals don't count. In the diagram above, the three stones marked A form a block.

A block is captured when there are no empty intersections (called *liberties*) next to it. Block A has one liberty, at B. If black plays at B, the three white stones are removed. The two stones labeled C are *not* captured, because they have another liberty at D.

It would be suicidal (and hence illegal) for white to play at E, because the block of four white stones would have no liberties. Could black play at E? It looks like a suicidal move, because the black stone would have no liberties, but it would occupy the white block's last liberty at the same time; the move is legal and the white stones are captured.

The black block F can never be captured. It has two internal liberties (*eyes*) at the points marked G. To capture the block, white would have to occupy both of them, but either move would be suicidal and therefore illegal.

Suppose white plays at H, capturing the black stone at I. (Notice that H is not an eye.) Black is not allowed to play back at I, recapturing the white stone, because if this were allowed it could go back and forth forever. The ko rule says that a full board position can never be repeated. Black *could* recapture at I *on a later turn* after something had changed elsewhere on the board.

Technicalities

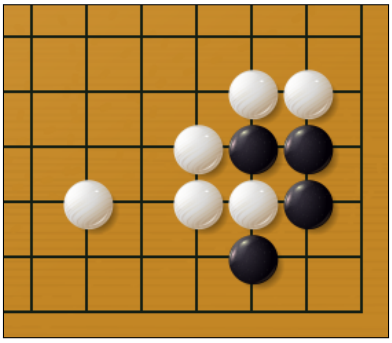
You can ignore these until you've played a few games.

The full board is 19×19, compared with the 9×9 board shown here.

White is given 7.5 extra points, called *komi*, as compensation for having to move second.

Between players of uneven strength, black is given some extra stones on the board at the beginning of the game. In such handicap games, white plays first and komi is reduced to 0.5 (so white wins ties).

Figure 17: Rules Brochure — American Go Association



Problem 1-2, from *Gokyo Shumyo* — Hayashi Genbi

Figure 18: The Corner Challenge

Diagrams

Software Documentation

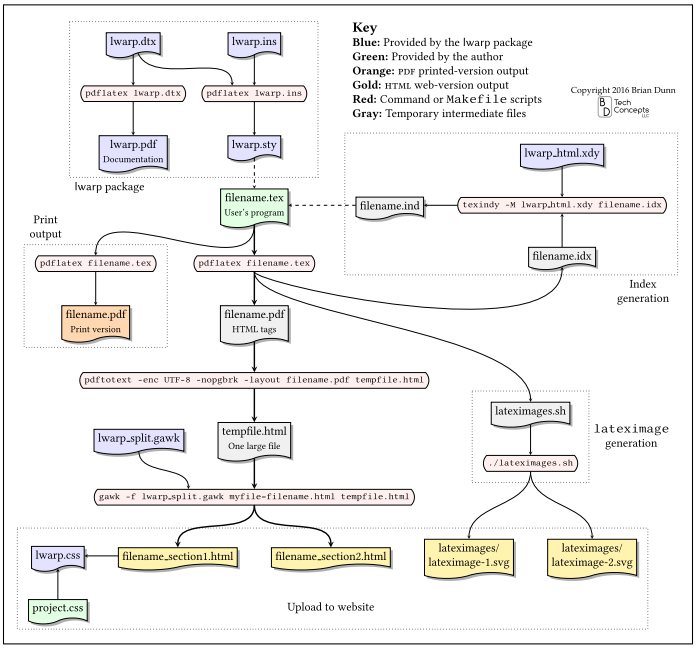


Figure 19: Lwarp Package — File Structure

Labels, pins, call-outs, patent-application diagrams

Save time and energy! Diagram pins may be automatically cross-referenced to the patent application's text, permanently linking them together, and avoiding the need to manually renumber every time there is a change in the diagram's annotations. Patent application figures may be created from drawings, photographs, or CAD views. Formatting to U.S. Patent and Trademark Office standards is also available.

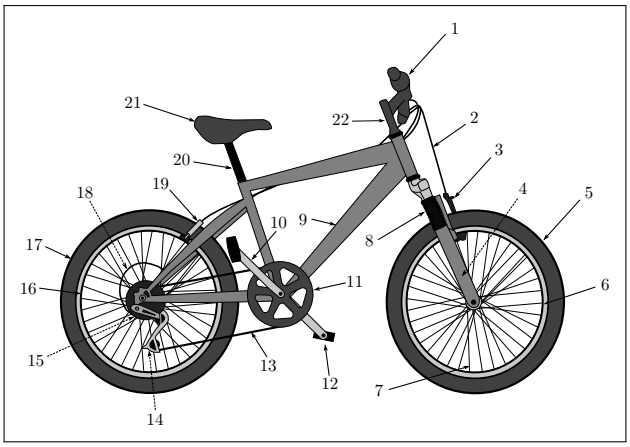


Figure 20: Diagram Label Pins — Mountain Bicycle

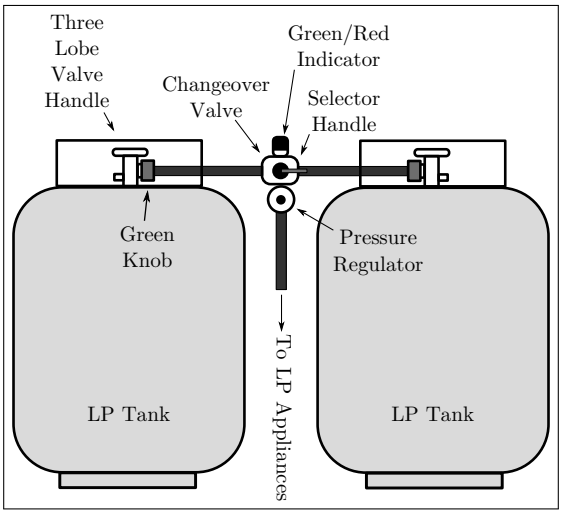


Figure 21: Diagram Label Pins — LP Gas System

Mathematical and dimensional figures

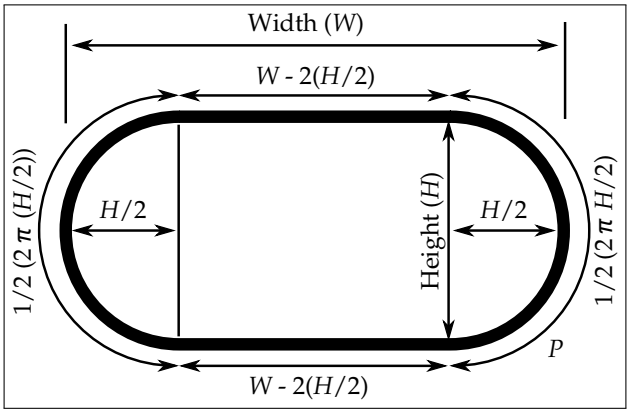


Figure 22: Flat-Oval Pipe Dimensions

Connection diagrams

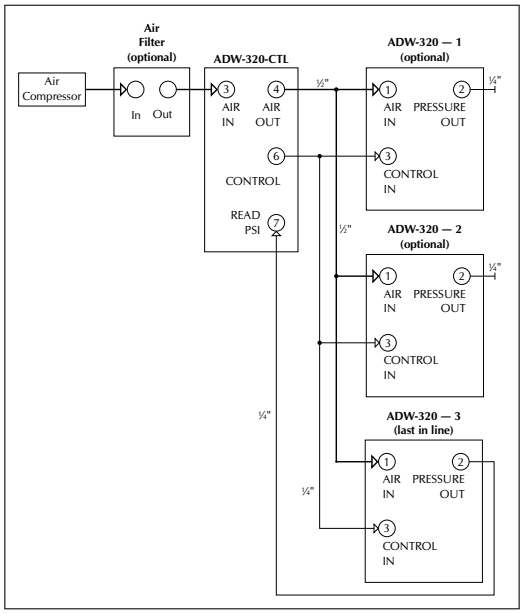


Figure 23: Pressure-Control Air Connections

Processes, relationships, and state machines

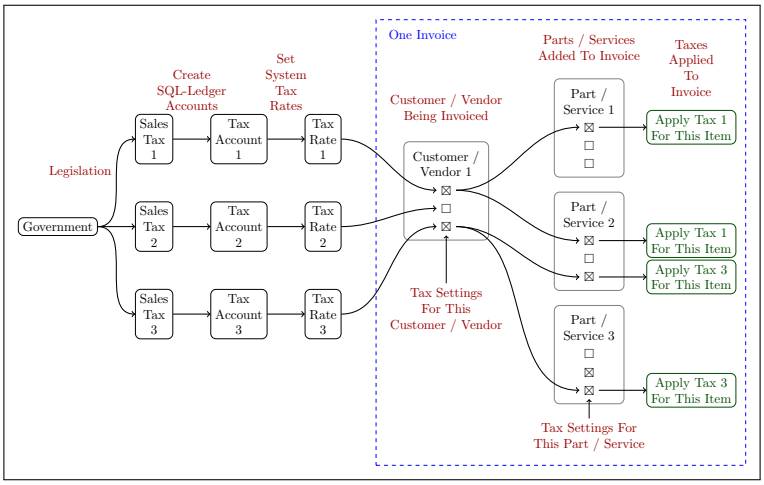


Figure 24: SQL-Ledger Tax Overview

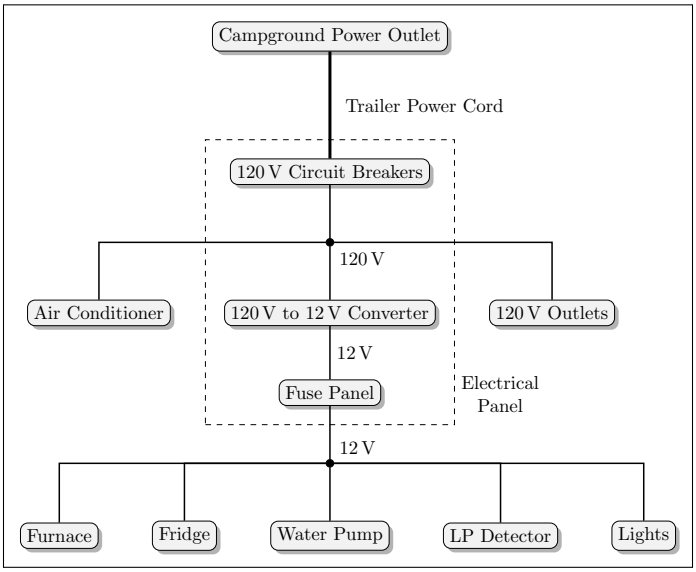


Figure 25: Electrical System Overview

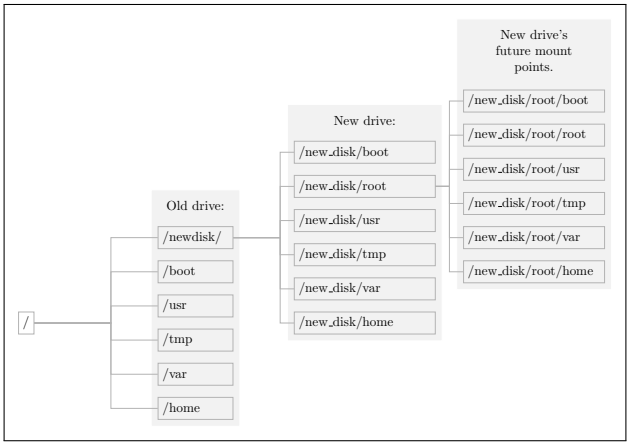


Figure 26: Directory Structure

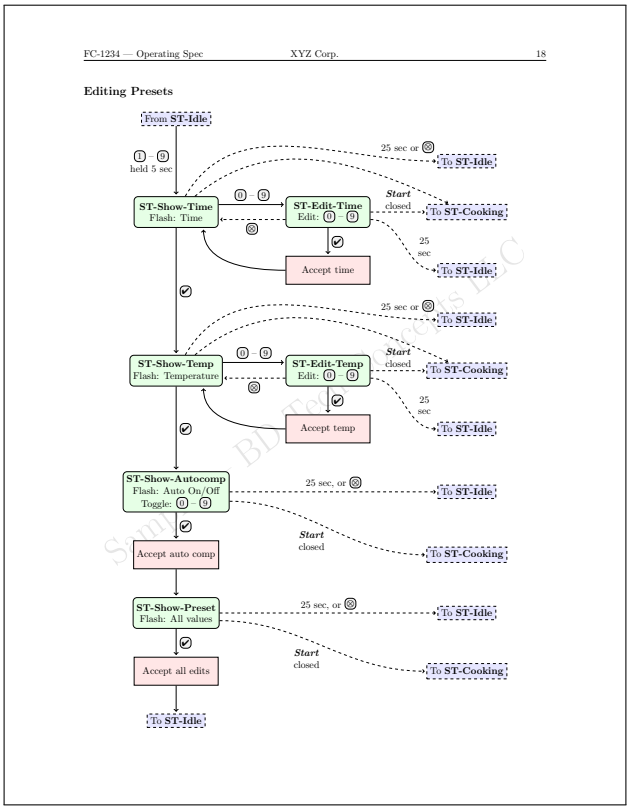


Figure 27: State-Machine Diagram

Conversions to vector line drawings

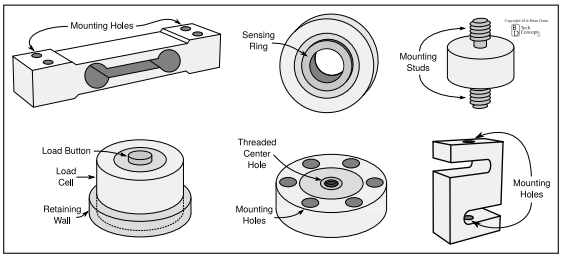
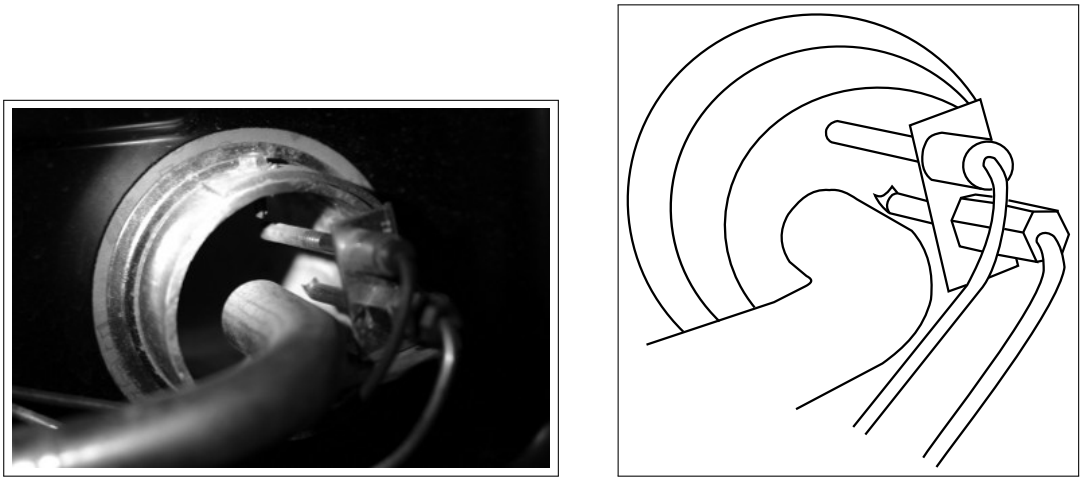
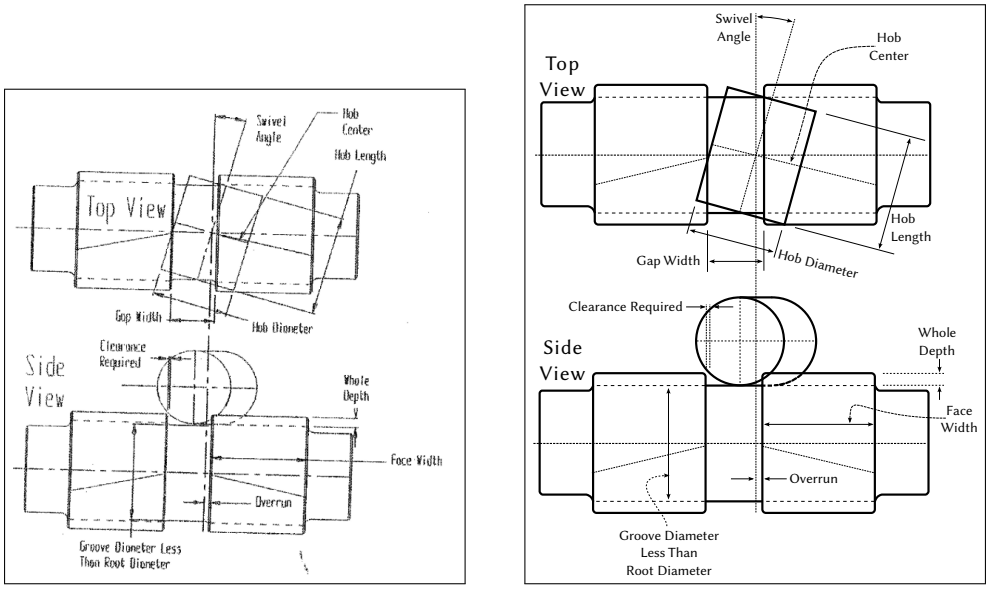


Figure 28: Load Cell Diagrams — Vector Conversions



Conversion from a photograph to a line drawing clarifies the important details, leaves open space for labels and pins, and is more easily reproduced in a black/white print.

Figure 29: Gas and Sensor Lines — Vector Conversion



Retracing a diagram from an old scan allows for improvements in clarity, such as improved labeling and the rerouting of pin arrows.

Figure 30: Double-Helical Gap-Width Diagram — Vector Conversion

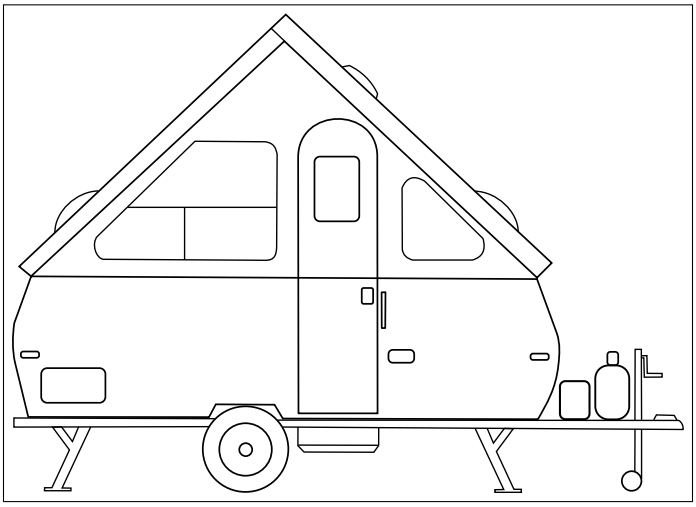


Figure 31: Camping Trailer — Side View — Line Drawing

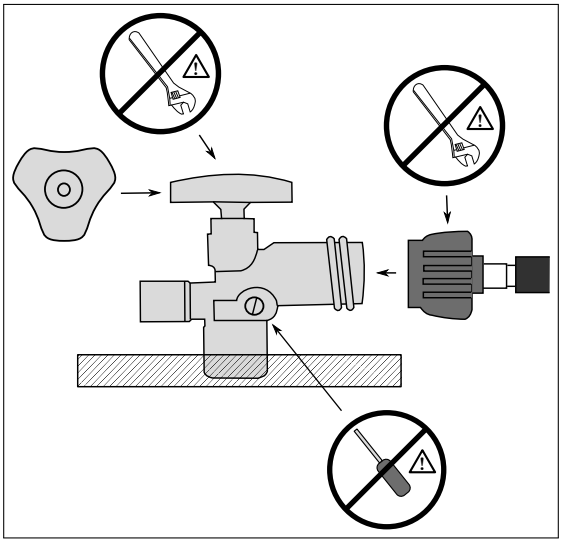


Figure 32: LP Tank Valve — Handle and Connection — Line Drawing

Printed Document to PDF Conversion

- Text scanning, optical character recognition, and typesetting
- Diagram conversion from bit-mapped scans to high-quality vector diagrams
- Photographic enhancements for high-quality reproduction.

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Gear Technology Magazine

Introduction to Gear Design

Converted from an old scanned printout, this book now has all-new diagram conversions along with improved editing, numbering, typesetting, internal/external hyperlinks, and formatting for print, tablet, or HTML. Used with permission.

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Beyta Gear Service

For more information, see Book & Monograph Design.

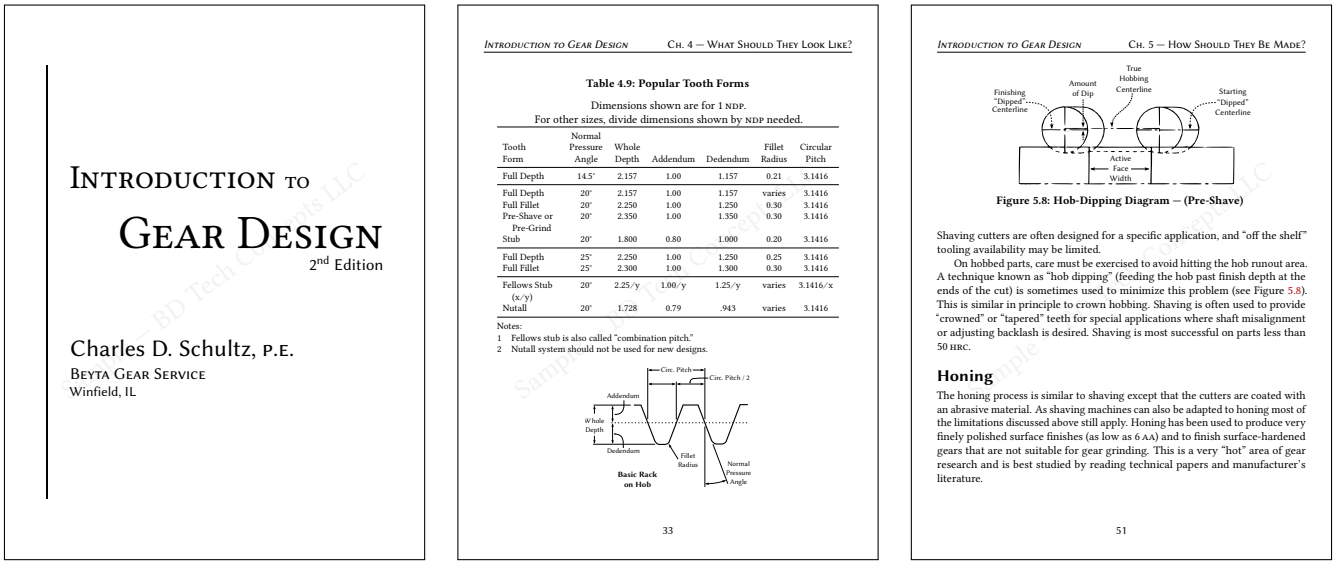


Figure 33: PDF Conversion — *Introduction to Gear Design*

Slide Rule Guide

"Thanks, it looks great! Very impressive conversion!"

W.S.
THE SLIDE RULE UNIVERSE

An example of a document from 1956, scanned with optical character recognition, typeset with the LaTeX document system, presented with scalable vector graphics (SVG) format for display and print quality.

The full document: 1956 Data Guide — "Slide Rule Guide" — PDF, Mario G. Salvadori and Jerome H. Weiner, originally edited by Joseph L. Leon — Data-Guide, Inc. 1956. Document in the public domain.

Scanned from the original document:

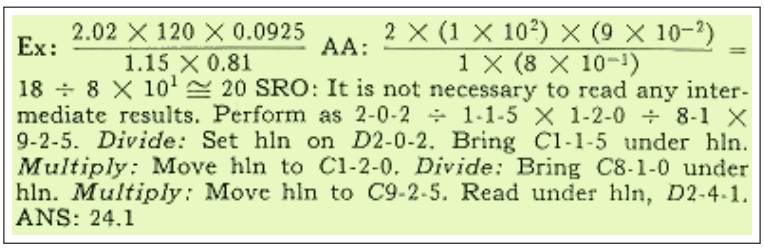

Ex: $\frac{2.02 \times 120 \times 0.0925}{1.15 \times 0.81}$ AA: $\frac{2 \times (1 \times 10^2) \times (9 \times 10^{-2})}{1 \times (8 \times 10^{-1})} =$ $18 \div 8 \times 10^1 \cong 20$ SRO: It is not necessary to read any intermediate results. Perform as 2-0-2 ÷ 1-1-5 × 1-2-0 ÷ 8-1 × 9-2-5. *Divide:* Set hln on *D*2-0-2. Bring *C*1-1-5 under hln. *Multiply:* Move hln to *C*1-2-0. *Divide:* Bring *C*8-1-0 under hln. *Multiply:* Move hln to *C*9-2-5. Read under hln, *D*2-4-1. ANS: 24.1

Figure 34: PDF Conversion — *Slide Rule Guide* — Before

Electronic format from the final document:

Ex:

$$\frac{2.02 \times 120 \times 0.0925}{1.15 \times 0.81}$$

AA:

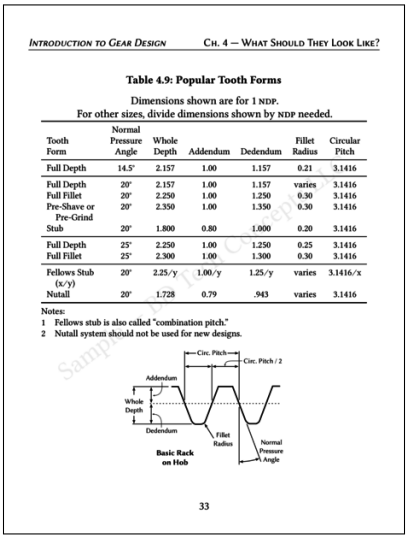
$$\frac{2 \times (1 \times 10^2) \times (9 \times 10^{-2})}{1 \times (8 \times 10^{-1})} = 18 \div 8 \times 10^1 \cong 20$$

SRO: It is not necessary to read any intermediate results. Perform as 2-0-2 ÷ 1-1-5 × 1-2-0 ÷ 8-1 × 9-2-5.

1. Divide: Set *HLN* on *D*2-0-2. Bring *C*1-1-5 under *HLN*.
2. Multiply: Move *HLN* to *C*1-2-0.
3. Divide: Bring *C*8-1-0 under *HLN*.
4. Multiply: Move bin to *C*9-2-5.
5. Read under *HLN*, *D*2-4-1.

ANS: 24.1

Figure 35: PDF Conversion — *Slide Rule Guide* — After



INTRODUCTION TO GEAR DESIGN CH. 4 — WHAT SHOULD THEY LOOK LIKE?

Table 4.9: Popular Tooth Forms

Dimensions shown are for 1 NDP.
For other sizes, divide dimensions shown by NDP needed.

Tooth Form	Normal Pressure Angle	Whole Depth	Addendum	Dedendum	Fillet Radius	Circular Pitch
Full Depth	14.5°	2.157	1.00	1.157	0.21	3.1416
Full Depth	20°	2.157	1.00	1.157	varies	3.1416
Full Fillet	20°	2.250	1.00	1.250	0.30	3.1416
Pre-Shave or Pre-Grind	20°	2.350	1.00	1.350	0.30	3.1416
Stub	20°	1.800	0.80	1.000	0.20	3.1416
Full Depth	25°	2.250	1.00	1.250	0.25	3.1416
Full Fillet	25°	2.300	1.00	1.300	0.30	3.1416
Fellows Stub (x/y)	20°	2.25/y	1.00/y	1.25/y	varies	3.1416/x
Nutall	20°	1.728	0.79	.943	varies	3.1416

Notes:
1 Fellows stub is also called "combination pitch."
2 Nutall system should not be used for new designs.

33

Figure 36: Gear-Tooth Forms

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Book & Monograph Design has a technical book design, formatted for tablet use. A properly formatted PDF file has advantages over the EPUB format when complicated math and diagrams are involved.

Classical Documents has samples of a more general nature. Technical book samples are below.

Book Design

See Book & Monograph Design for an example of a technical book edit and redesign, including text scan-to-PDF conversion and vector-diagram conversions.

White Paper

See Sample load cells white paper for an example technical white paper.

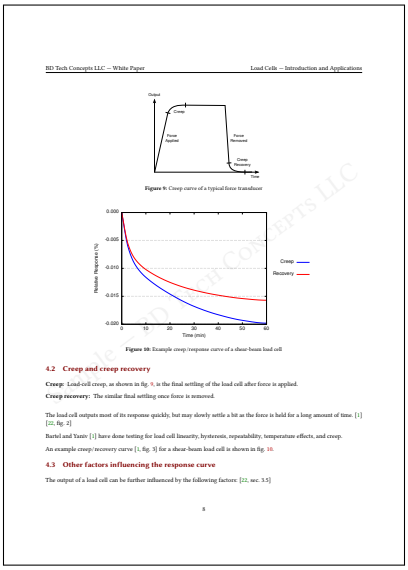


Figure 37: Load Cells — Creep Recovery

Front Panel Illustration and Call-Outs

Sample: CNC Control Box Setup — PDF

Call-outs are identifiers used to specify the specific user-interface elements being discussed in the text. In this example, each call-out is used to point to a piece of information in the display, is used again in a small table of descriptions of each element, and yet again in the accompanying text.

Additional Keys

While in Idle Mode, the numeric keypad, the keys F2–F4, ✱, and the jog keys ↺ ↻ are inactive.

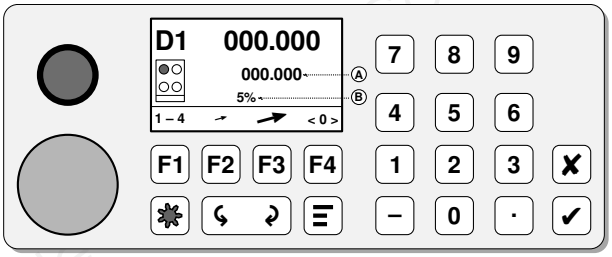
Program Mode

Entering Program Mode

Program Mode is used to set the "work-zero" positions of each drive to match a new part which is to be cut.

1. From Idle Mode, press and hold the ☰ key for four seconds.
2. The display changes to the programming display, shown here.

Figure 2: Program Mode — Display



Ⓐ Absolute angle — relative to "up"
Ⓑ Movement speed or step size

While in Program Mode, the display continues to show the selected drive and its angle relative to work-zero, but it also displays the drive's absolute angle relative to "up" Ⓐ, and the speed or step size Ⓑ which the drive will move when using the jog keys. Icons above the keys F2–F4 indicate that these keys are now active.

Selecting the Drive

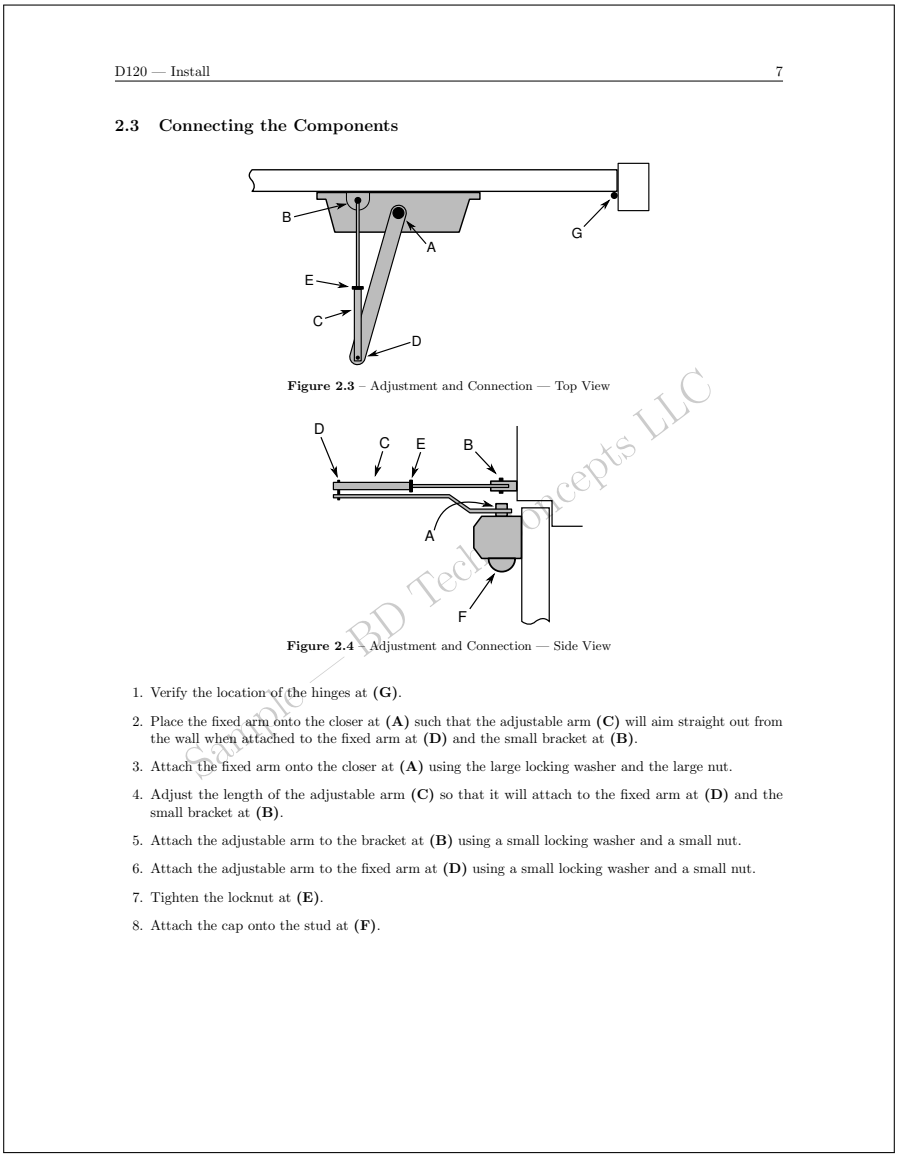
1. Select a drive with F1.
2. The display changes to the next the drive and shows that drive's relative angle and absolute angle.

Figure 38: Front-Panel Illustration and Call-Outs

Diagram Call-Outs and Installation Sequence

Sample: Automatic Door Closer Installation Manual — PDF

Diagram call-outs ("pins") may refer to the same part in several views at the same time. As seen in the PDF document, these views are repeated in mirror-image to assist with left/right opening doors. Each installation is on its own set of pages, with the same instructions and callouts repeated again for each set. Repeating these instructions in mirror-image reduces confusion and helps to avoid improper installations.



D120 — Install 7

2.3 Connecting the Components

Figure 2.3 – Adjustment and Connection — Top View

Figure 2.4 – Adjustment and Connection — Side View

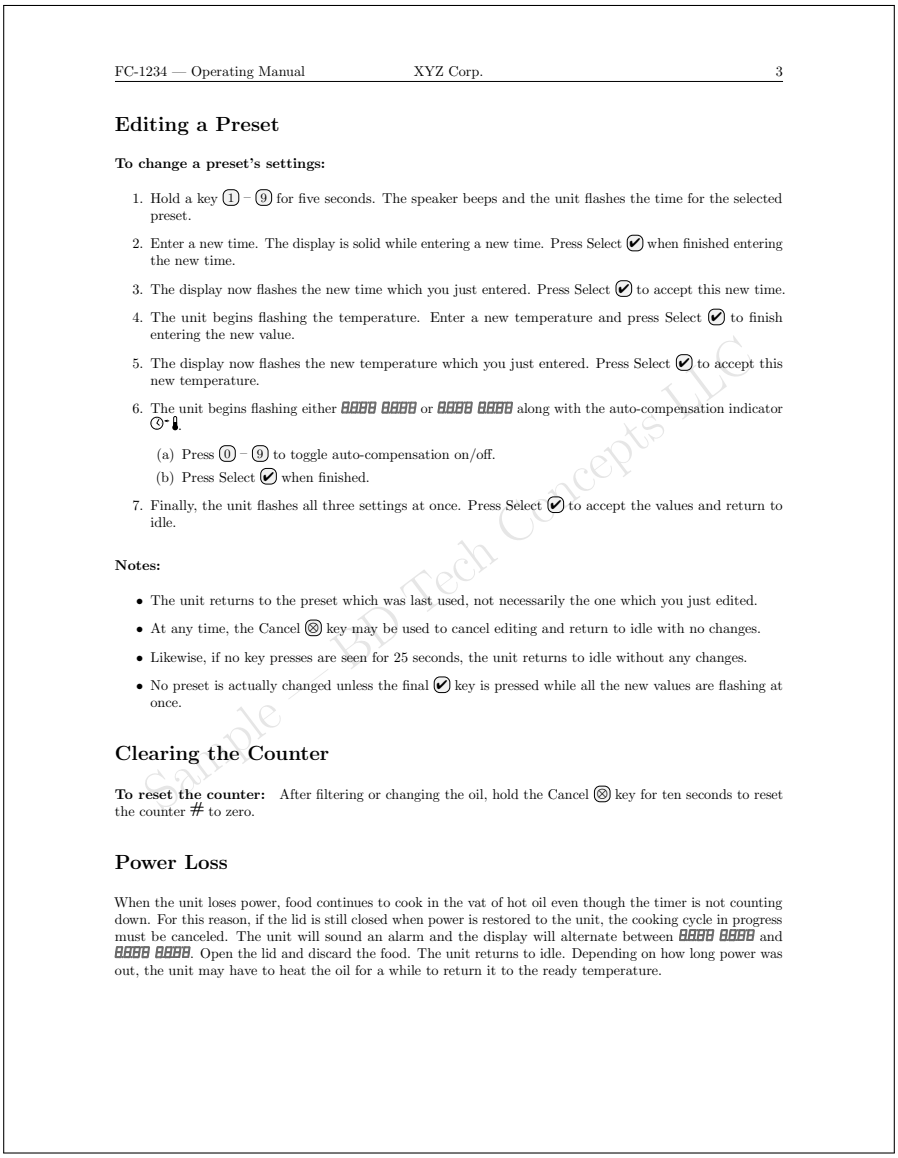
1. Verify the location of the hinges at **(G)**.
2. Place the fixed arm onto the closer at **(A)** such that the adjustable arm **(C)** will aim straight out from the wall when attached to the fixed arm at **(D)** and the small bracket at **(B)**.
3. Attach the fixed arm onto the closer at **(A)** using the large locking washer and the large nut.
4. Adjust the length of the adjustable arm **(C)** so that it will attach to the fixed arm at **(D)** and the small bracket at **(B)**.
5. Attach the adjustable arm to the bracket at **(B)** using a small locking washer and a small nut.
6. Attach the adjustable arm to the fixed arm at **(D)** using a small locking washer and a small nut.
7. Tighten the locknut at **(E)**.
8. Attach the cap onto the stud at **(F)**.

Figure 39: Connection Instructions — Automatic Door Closer

Operating Sequences and Inline Key/Display Icons

Sample: Fryer FC-1234 User's Manual — PDF

Printing the key icons directly inline in the text helps the user to quickly locate the corresponding key on the unit. Likewise, visually replicating the LED display in the text shows the user exactly what each message looks like.



FC-1234 — Operating Manual XYZ Corp. 3

Editing a Preset

To change a preset's settings:

1. Hold a key (1) – (9) for five seconds. The speaker beeps and the unit flashes the time for the selected preset.
2. Enter a new time. The display is solid while entering a new time. Press Select (✔) when finished entering the new time.
3. The display now flashes the new time which you just entered. Press Select (✔) to accept this new time.
4. The unit begins flashing the temperature. Enter a new temperature and press Select (✔) to finish entering the new value.
5. The display now flashes the new temperature which you just entered. Press Select (✔) to accept this new temperature.
6. The unit begins flashing either 8888 8888 or 8888 8888 along with the auto-compensation indicator.
   (a) Press (0) – (9) to toggle auto-compensation on/off.
   (b) Press Select (✔) when finished.
7. Finally, the unit flashes all three settings at once. Press Select (✔) to accept the values and return to idle.

Notes:

- The unit returns to the preset which was last used, not necessarily the one which you just edited.
- At any time, the Cancel (⊗) key may be used to cancel editing and return to idle with no changes.
- Likewise, if no key presses are seen for 25 seconds, the unit returns to idle without any changes.
- No preset is actually changed unless the final (✔) key is pressed while all the new values are flashing at once.

Clearing the Counter

To reset the counter: After filtering or changing the oil, hold the Cancel (⊗) key for ten seconds to reset the counter # to zero.

Power Loss

When the unit loses power, food continues to cook in the vat of hot oil even though the timer is not counting down. For this reason, if the lid is still closed when power is restored to the unit, the cooking cycle in progress must be canceled. The unit will sound an alarm and the display will alternate between 8888 8888 and 8888 8888. Open the lid and discard the food. The unit returns to idle. Depending on how long power was out, the unit may have to heat the oil for a while to return it to the ready temperature.

Figure 40: Display and Key Representations

Problems and Mathematics

"Thanks, it looks great! Very impressive conversion!"

W.S.
THE SLIDE RULE UNIVERSE

Sample: "Slide Rule Guide" — PDF

By Mario G. Salvadori and Jerome H. Weiner, originally edited by Joseph L. Leon — Data-Guide, Inc. 1956. (Document in the public domain.)

Special typesetting is used to present example problems in an attractive format. A consistent structure is used to present each example math problem, how to mentally compute an approximate answer, then how to perform the operations necessary to arrive at the exact answer.

Ex:

$$\frac{2.02 \times 120 \times 0.0925}{1.15 \times 0.81}$$

AA:

$$\frac{2 \times (1 \times 10^{2}) \times (9 \times 10^{-2})}{1 \times (8 \times 10^{-1})} = 18 \div 8 \times 10^{1} \cong 20$$

SRO: It is not necessary to read any intermediate results. Perform as 2-0-2 ÷ 1-1-5 × 1-2-0 ÷ 8-1 × 9-2-5.

1. Divide: Set *HLN* on *D*2-0-2. Bring *C*1-1-5 under *HLN*.
2. Multiply: Move *HLN* to *C*1-2-0.
3. Divide: Bring *C*8-1-0 under *HLN*.
4. Multiply: Move bin to *C*9-2-5.
5. Read under *HLN*, *D*2-4-1.

ANS: 24.1

Figure 41: Problem Example and Mathematics

Page Layout and Table

From *Slide Rule Guide*, by Mario G. Salvadori and Jerome H. Weiner, originally edited by Joseph L. Leon — Data-Guide, Inc. 1956. (Document in the public domain.)

Chapter XVI

TRIGONOMETRIC FUNCTIONS

XVI-A SCALES

The *S* scale for sines and cosines; the *T* scale for tangents (or cotangents) and the *ST* scale for the sine or tangent of small angles.

XVI-B READING THE SCALES

Angles (θ) measured in degrees, are indicated by the numbered marks. On many slide rules, the *S* and *T* scales have two angles associated with the numbered marks: θ (values of θ increase from left to right) and $(90^\circ - \theta)$; values of $(90^\circ - \theta)$ increase from right to left and are sometimes printed in red.

Ex: On the *S* scale, mark: $\underline{70|20}$ represents both $\theta = 20^\circ$ and $(90^\circ - \theta) = 70^\circ$.

Angles not numbered on the scale are positioned by counting the number of primary marks in the space between labeled angles.

Ex: 24° is located on the fourth primary mark between labeled angles 20° and 25°.

Fractions of angles are located between primary marks and may be expressed either in tenths of degrees or minutes (60 min. = 1 deg.) depending upon the make of the slide rule.

	DEGREES			MINUTES		
Number of marks	1	4	9	1	2	5
Number of spaces	2	5	10	2	3	6
Value of space	0.5	0.2	0.1	30′	20′	10′

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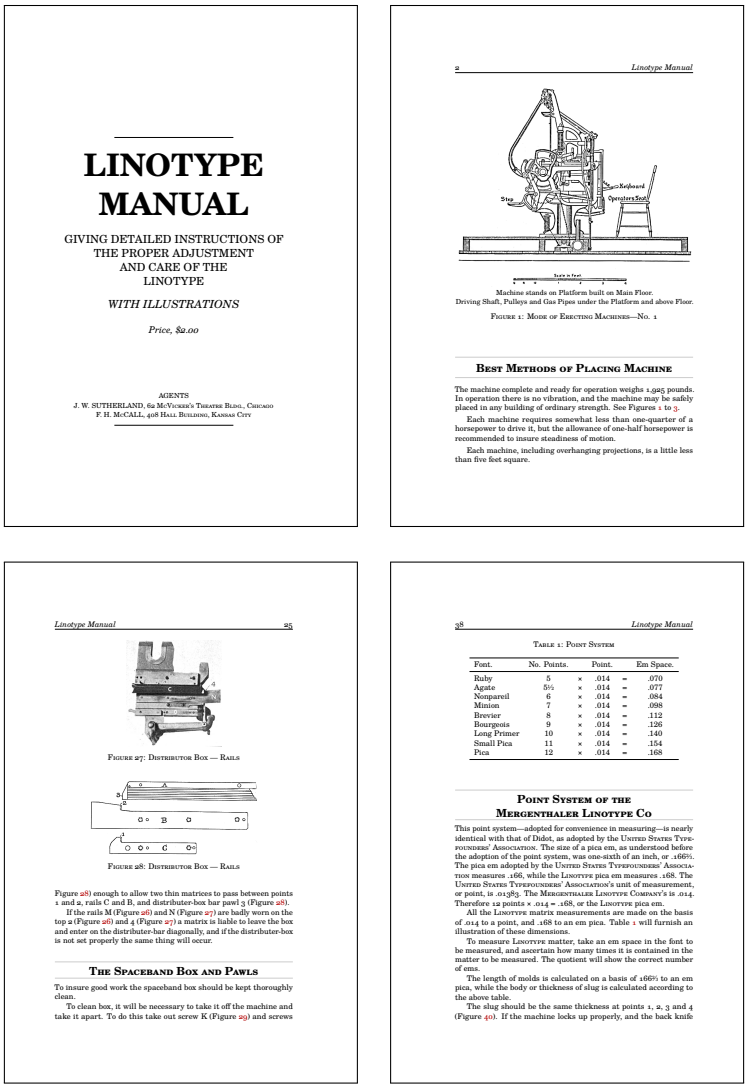
Figure 42: Instruction Manual — Examples and Table

Linotype Manual

Sample: Linotype Manual — 3.4 M PDF

Re-typeset by BD TECH CONCEPTS LLC with image enhancements, corrected figure numbering, and additional List-of-Figures and List-of-Tables.



LINOTYPE MANUAL

GIVING DETAILED INSTRUCTIONS OF THE PROPER ADJUSTMENT AND CARE OF THE LINOTYPE

WITH ILLUSTRATIONS

Price, $2.00

AGENTS
J. W. SUTHERLAND, 62 McVICKER'S THEATRE BLDG., CHICAGO
F. H. McCALL, 408 HALL BUILDING, KANSAS CITY

Machine stands on Platform built on Main Floor.
Driving Shaft, Pulleys and Gas Pipes under the Platform and above Floor.

FIGURE 1: MODE OF ERECTING MACHINES—NO. 1

BEST METHODS OF PLACING MACHINE

The machine complete and ready for operation weighs 1,925 pounds. In operation there is no vibration, and the machine may be safely placed in any building of ordinary strength. See Figures 1 to 3.

Each machine requires somewhat less than one-quarter of a horsepower to drive it, but the allowance of one-half horsepower is recommended to insure steadiness of motion.

Each machine, including overhanging projections, is a little less than five feet square.

FIGURE 27: DISTRIBUTOR BOX — RAILS

FIGURE 28: DISTRIBUTOR BOX — RAILS

Figure 28) enough to allow two thin matrices to pass between points 1 and 2, rails C and B, and distributer-box bar pawl 3 (Figure 28).

If the rails M (Figure 26) and N (Figure 27) are badly worn on the top 2 (Figure 26) and 4 (Figure 27) a matrix is liable to leave the box and enter on the distributer-bar diagonally, and if the distributer-box is not set properly the same thing will occur.

THE SPACEBAND BOX AND PAWLS

To insure good work the spaceband box should be kept thoroughly clean.

To clean box, it will be necessary to take it off the machine and take it apart. To do this take out screw K (Figure 29) and screws

TABLE 1: POINT SYSTEM

Font.	No. Points.		Point.		Em Space.
Ruby	5	×	.014	=	.070
Agate	5½	×	.014	=	.077
Nonpareil	6	×	.014	=	.084
Minion	7	×	.014	=	.098
Brevier	8	×	.014	=	.112
Bourgeois	9	×	.014	=	.126
Long Primer	10	×	.014	=	.140
Small Pica	11	×	.014	=	.154
Pica	12	×	.014	=	.168

POINT SYSTEM OF THE MERGENTHALER LINOTYPE CO

This point system—adopted for convenience in measuring—is nearly identical with that of Didot, as adopted by the UNITED STATES TYPEFOUNDERS' ASSOCIATION. The size of a pica em, as understood before the adoption of the point system, was one-sixth of an inch, or .166⅔. The pica em adopted by the UNITED STATES TYPEFOUNDERS' ASSOCIATION measures .166, while the LINOTYPE pica em measures .168. The UNITED STATES TYPEFOUNDERS' ASSOCIATION's unit of measurement, or point, is .01383. The MERGENTHALER LINOTYPE COMPANY's is .014. Therefore 12 points × .014 = .168, or the LINOTYPE pica em.

All the LINOTYPE matrix measurements are made on the basis of .014 to a point, and .168 to an em pica. Table 1 will furnish an illustration of these dimensions.

To measure LINOTYPE matter, take an em space in the font to be measured, and ascertain how many times it is contained in the matter to be measured. The quotient will show the correct number of ems.

The length of molds is calculated on a basis of 166⅔ to an em pica, while the body or thickness of slug is calculated according to the above table.

The slug should be the same thickness at points 1, 2, 3 and 4 (Figure 40). If the machine locks up properly, and the back knife

In the public domain.

Figure 43: Book Design — *Linotype Manual*, by F. H. McCall

Classical Documents

Businesses and self-published authors greatly benefit from outsourcing document editing, design, and typesetting. Rather than wrestling with a word processor, have BD TECH CONCEPTS LLC organize and format your work for you, using an advanced programmable document-typesetting system.

See how Technical Editing can improve your book in general grammar and spelling, and structural organization and cross-referencing.

Book & Monograph Design has a technical book design, formatted for tablet use. A properly formatted PDF file has advantages over the EPUB format when complicated math and diagrams are involved.

Technical Documents has samples of a more technical nature. Traditional book samples are below.

The following sample documents were sourced from HTML format and processed in multiple stages into the LaTeX document system for layout of the final printed pages. Processing included an automatic document conversion, replacement of left-over artifacts of the conversion process, and extensive custom-designed algorithmically-controlled processing to convert multi-level HTML index reference links to proper page references for the final printed index.

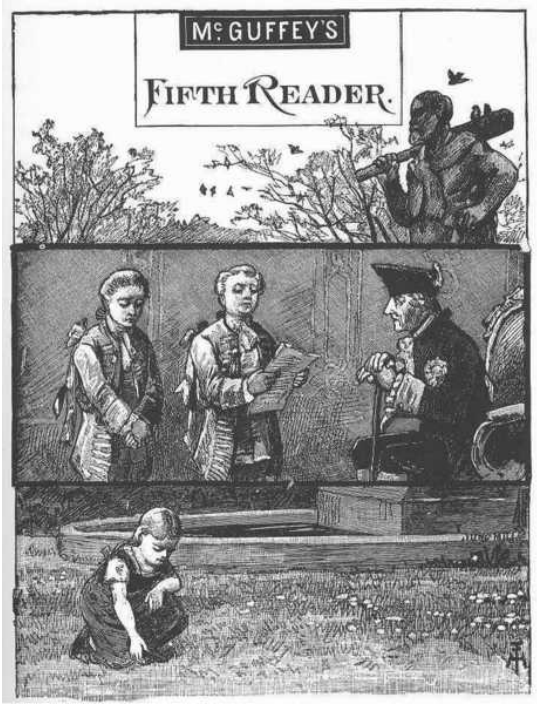
***McGuffey's Fifth Eclectic Reader*, by William Holmes McGuffey**

The full book: McGuffey's Fifth Eclectic Reader — 6 M PDF

A school child's reader from the 1800s.

Being a collection of works, a LaTeX macro was developed to automatically generate a chapter heading with title, an optional lead-in with the author's name and an optional suffix, and birth/death years if given, plus a table-of-contents entry with author, and an index entry sorted by last name. Likewise for illustrations. (See LaTeX tocdata package.)

Also demonstrated are the advanced typesetting of verse, dialog, and essays, special sections for remarks, exceptions, and examples, and the use of diacritics for phonetic symbols.



In the public domain.

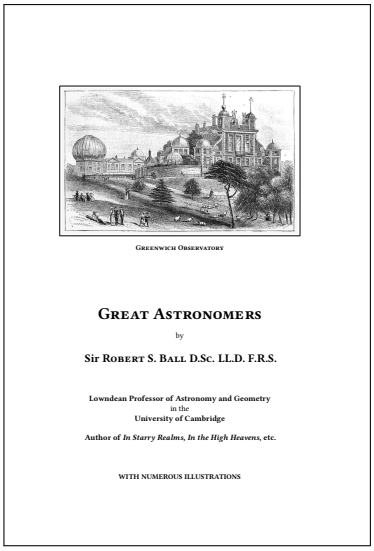
Figure 44: From *McGuffey's Fifth Eclectic Reader* by William Holmes McGuffey

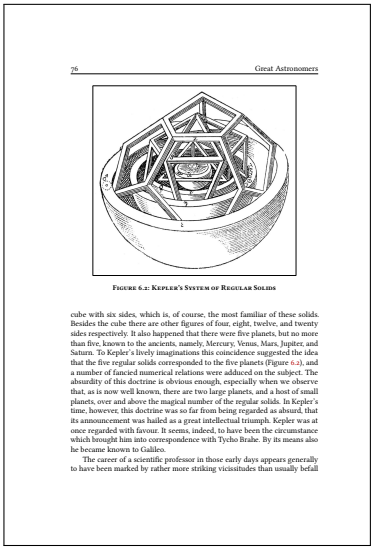
Great Astronomers, by Sir Robert S. Ball

The full book: Great Astronomers — 10 M PDF

An interesting and highly-readable survey of historic astronomers and their work.

Typeset for a 6 × 9" double-sided page. 270 pages, including portraits, photos, and several diagrams.





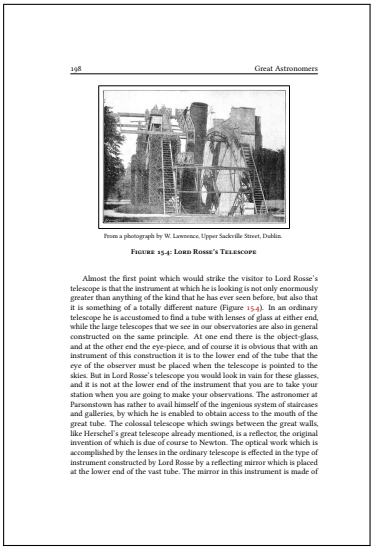


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Figure 45: From *Great Astronomers*, by Sir Robert S. Ball

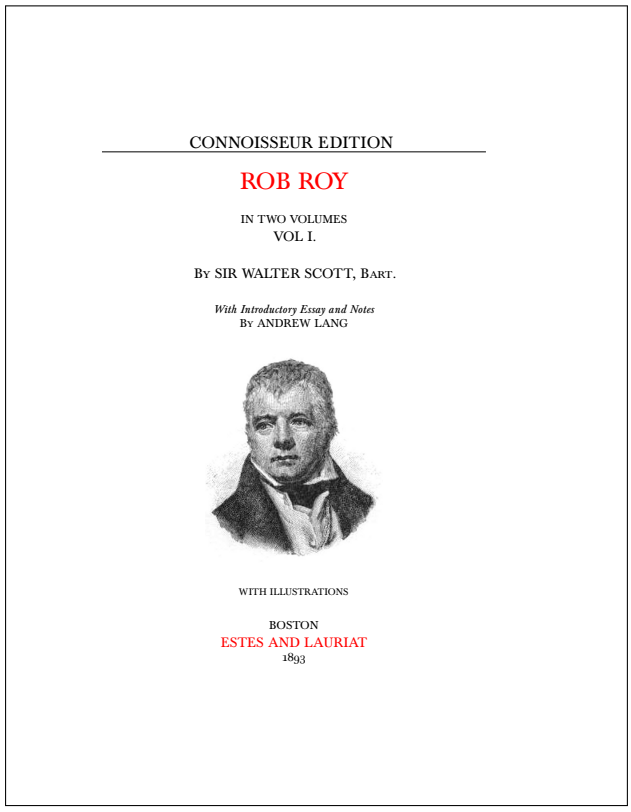
Rob Roy, by Sir Walter Scott

The full book: Rob Roy — 3 M PDF

An historical novel.

Typeset in the style of the original, for double-sided letter paper. 500+ pages, including historical notes and research.

Updated 2016-03-07: Now includes a glossary and additional edits.



CONNOISSEUR EDITION

ROB ROY

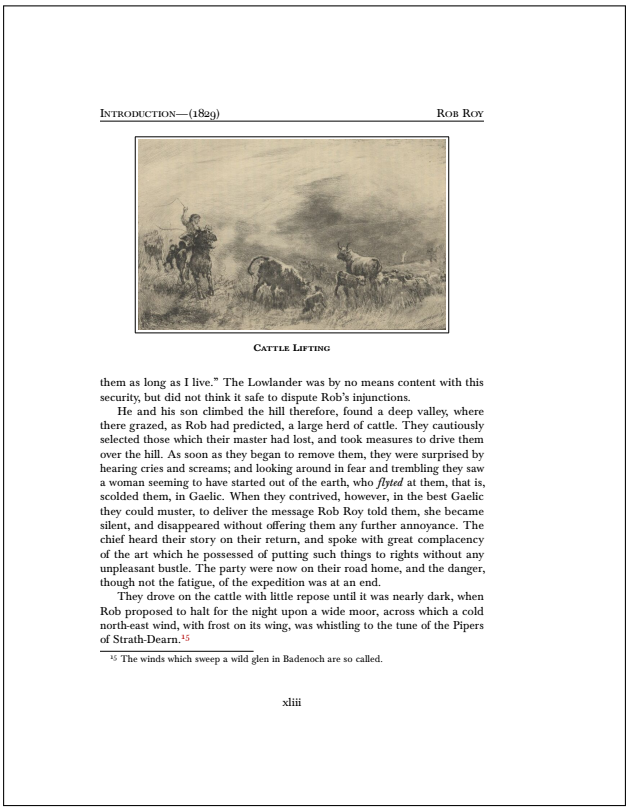
IN TWO VOLUMES
VOL I.

BY SIR WALTER SCOTT, BART.

With Introductory Essay and Notes
BY ANDREW LANG

WITH ILLUSTRATIONS

BOSTON
ESTES AND LAURIAT
1893



INTRODUCTION—(1829) ROB ROY

CATTLE LIFTING

them as long as I live." The Lowlander was by no means content with this security, but did not think it safe to dispute Rob's injunctions.

He and his son climbed the hill therefore, found a deep valley, where there grazed, as Rob had predicted, a large herd of cattle. They cautiously selected those which their master had lost, and took measures to drive them over the hill. As soon as they began to remove them, they were surprised by hearing cries and screams; and looking around in fear and trembling they saw a woman seeming to have started out of the earth, who *flyted* at them, that is, scolded them, in Gaelic. When they contrived, however, in the best Gaelic they could muster, to deliver the message Rob Roy told them, she became silent, and disappeared without offering them any further annoyance. The chief heard their story on their return, and spoke with great complacency of the art which he possessed of putting such things to rights without any unpleasant bustle. The party were now on their road home, and the danger, though not the fatigue, of the expedition was at an end.

They drove on the cattle with little repose until it was nearly dark, when Rob proposed to halt for the night upon a wide moor, across which a cold north-east wind, with frost on its wing, was whistling to the tune of the Pipers of Strath-Dearn.[45]

[45] The winds which sweep a wild glen in Badenoch are so called.

xliii

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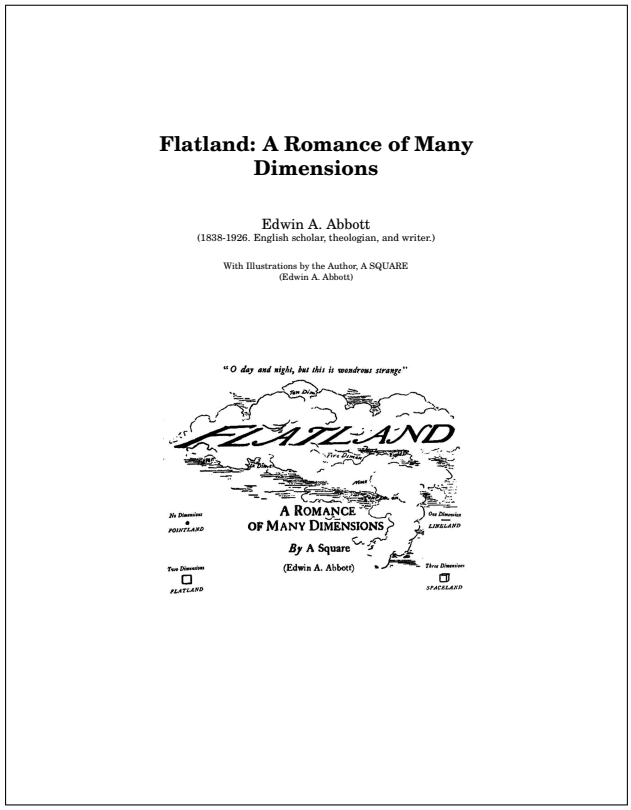
Figure 46: From *Rob Roy*, by Sir Walter Scott

***Flatland*, by Edwin A. Abbott**

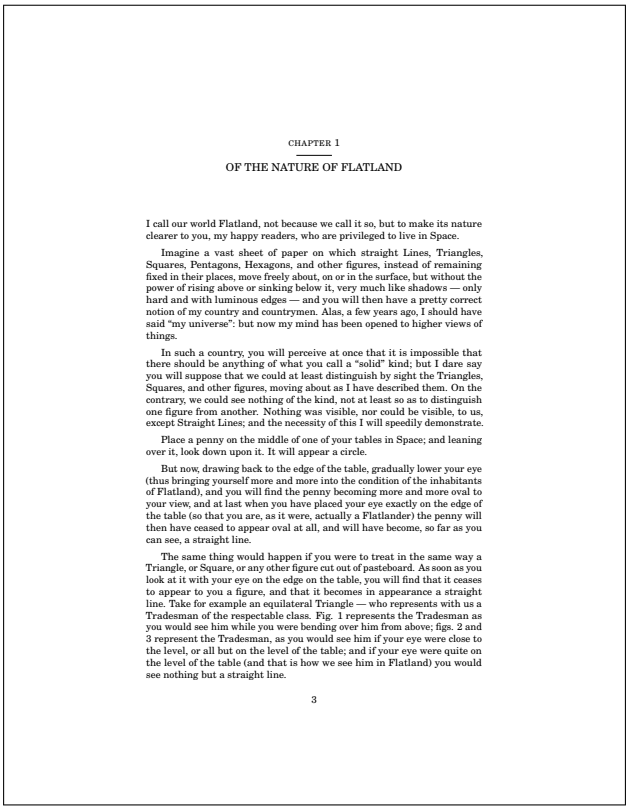


Flatland: A Romance of Many Dimensions

Edwin A. Abbott
(1838-1926. English scholar, theologian, and writer.)

With Illustrations by the Author, A SQUARE
(Edwin A. Abbott)

"O day and night, but this is wondrous strange"



CHAPTER 1

OF THE NATURE OF FLATLAND

I call our world Flatland, not because we call it so, but to make its nature clearer to you, my happy readers, who are privileged to live in Space.

Imagine a vast sheet of paper on which straight Lines, Triangles, Squares, Pentagons, Hexagons, and other figures, instead of remaining fixed in their places, move freely about, on or in the surface, but without the power of rising above or sinking below it, very much like shadows — only hard and with luminous edges — and you will then have a pretty correct notion of my country and countrymen. Alas, a few years ago, I should have said "my universe": but now my mind has been opened to higher views of things.

In such a country, you will perceive at once that it is impossible that there should be anything of what you call a "solid" kind; but I dare say you will suppose that we could at least distinguish by sight the Triangles, Squares, and other figures, moving about as I have described them. On the contrary, we could see nothing of the kind, not at least so as to distinguish one figure from another. Nothing was visible, nor could be visible, to us, except Straight Lines; and the necessity of this I will speedily demonstrate.

Place a penny on the middle of one of your tables in Space; and leaning over it, look down upon it. It will appear a circle.

But now, drawing back to the edge of the table, gradually lower your eye (thus bringing yourself more and more into the condition of the inhabitants of Flatland), and you will find the penny becoming more and more oval to your view, and at last when you have placed your eye exactly on the edge of the table (so that you are, as it were, actually a Flatlander) the penny will then have ceased to appear oval at all, and will have become, so far as you can see, a straight line.

The same thing would happen if you were to treat in the same way a Triangle, or Square, or any other figure cut out of pasteboard. As soon as you look at it with your eye on the edge on the table, you will find that it ceases to appear to you a figure, and that it becomes in appearance a straight line. Take for example an equilateral Triangle — who represents with us a Tradesman of the respectable class. Fig. 1 represents the Tradesman as you would see him while you were bending over him from above; figs. 2 and 3 represent the Tradesman, as you would see him if your eye were close to the level, or all but on the level of the table; and if your eye were quite on the level of the table (and that is how we see him in Flatland) you would see nothing but a straight line.

3

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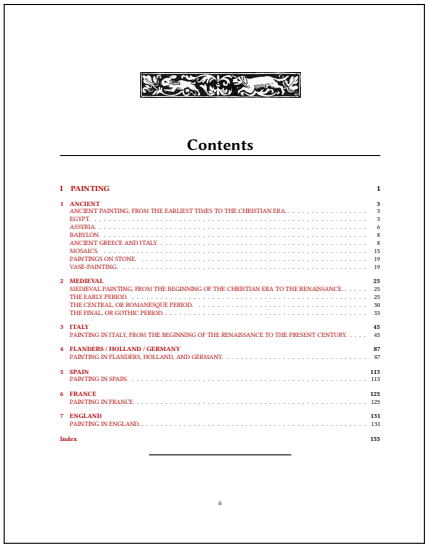
Figure 47: From *Flatland*, by Edwin A. Abbott

A History of Art for Beginners and Students



Contents

List of Figures

Chapter 2

MEDIEVAL

MEDIEVAL PAINTING, FROM THE BEGINNING OF THE CHRISTIAN ERA TO THE RENAISSANCE.

The Middle Ages extend from the latter part of the fifth century to the time of the Renaissance, or about the fifteenth century. The painting of this period has little to attract attention if regarded only from an artistic stand-point, for we may truly say that, comparing it with the Greek art which had preceded it, or with the Italian art which followed it, that of the Middle Ages had no claim to the beautiful. On the other hand, it is full of interest to students, because it has its part in the history of art; therefore I shall give a mere outline of it, so that this link in the chain which unites ancient and modern painting may not be entirely wanting in our book.

Early medieval painting, down to about A.D. 950, consists principally of paintings in burial-places, mosaics (usually in churches), and of miniatures, or the illustration and illumination of MSS., which were the books of that time, and were almost without exception religious writings. This period is called the Early Period of the Middle Ages, and the pictures are often called the works of Early Christian Art.

About 1050 a revival of intellectual pursuits began in some parts of Europe, and from that time it may be said that the Renaissance, or new birth of art and letters, was in its A B Cs, or very smallest beginnings. The period between 950 and 1250 is often called the Central or Romanesque Period of the Middle Ages, and it was during this time that glass-painting originated; it is one of the most interesting features of art in medieval times.

From 1250 to 1400 comes the Final or Gothic Period of the Middle Ages, and this has some very interesting features which foretell the coming glory of the great Renaissance.

THE EARLY PERIOD.

The paintings of the catacombs date from the third and fourth centuries after Christ. The catacombs, or burial-places of the early Christians, consist of long, narrow, subterranean passages, cut with regularity, and crossing each other like streets in a city. The graves are in the sides of these passages, and there are some larger rooms or chambers into which the narrow passages run. There are about sixty of the catacombs in and near Rome; they are generally called by the name of some saint who is buried in them. The paintings are in the chambers, of which there are sometimes several quite near each other. The reason for their being in these underground places was that Christians were so persecuted under the Romans, that they were obliged to do secretly all that they did as Christians, so that no attention should be attracted to them.

The principal characteristics of these pictures are a simple majesty and earnestness of effect; perhaps spirituality is the word to use, for by these paintings the early Christians desired to express their belief in the religion of Christ, and especially in the immortality of the soul, which was a very precious doctrine to them. The catacombs of Rome were more numerous and important than those of any other city.

Many of the paintings in the catacombs had a symbolic meaning, beyond the plainer intention which appeared at the first sight of them: you will know what I mean when I say that not only was this picture of Moses striking the rock intended to represent an historical fact in the life of Moses, but the flowing water was also regarded as a type of the blessing of Christian baptism.

The walls of the chambers of the catacombs are laid out in such a manner as to have the effect of decorated apartments, just as was done in the pagan tombs, and sometimes the pictures were a strange union of pagan and Christian devices.

The above cut, from the Catacomb of S. Domitilla, has in the centre the pagan god Orpheus playing his lyre, while in the alternate compartments of the border are the following Christian subjects: 1, David with the Sling; 2, Moses

Figure 71: The Marriage Contract. *No. 1 of The Marriage a la Mode. By Hogarth. In the National Gallery.*

were laid in state at the Royal Academy, and then buried in St. Paul's Cathedral, near the tomb of Sir Christopher Wren.

It is to be regretted that the colors used by Sir Joshua Reynolds are now much faded in many of his pictures. Those in the National Gallery, in London, are, however, in good preservation. Naturally, since so many of his pictures were portraits they are in the collections of private families in England, and but few of them are seen in European galleries. There is an excellent opportunity to study his manner in the pictures at the South Kensington Museum, where there are several portraits, some pictures of children, and the "Graces Decorating a Statue of Hymen."

It is very satisfactory to think of a great artist as a genial, happy man, who is dear to his friends, and has a full, rich life outside of his profession. Such a life had Sir Joshua Reynolds, and one writer says of him: "They made him a knight—this famous painter; they buried him 'with an empire's lamentation;' but nothing honors him more than the 'folio English dictionary of the last revision' which Johnson left to him in his will, the dedication that poor, loving Goldsmith placed in the 'Deserted Village,' and the tears which five years after his death even Burke could not forbear to shed over his memory."

Tadeusz Gainsborough (1727–1788) was born in Sudbury, in Suffolk, and when still quite young went to London, and studied under Francis Hayman, who was not an eminent painter. Gainsborough became one of the most important masters of the English school, especially in landscape painting and the representation of rustic figures. His portraits were not as good in color as those of Sir Joshua Reynolds: they have a bluish-gray hue in the flesh tints; but they are always graceful and charming. His landscapes are not like those of any other master. They are not exact in the detail of leaves and flowers—a botanist could find many faults in them—but they are like nature in spirit: they seem to have the air blowing through them, they are fresh and dewy when it is morning in them, and quiet and peaceful when evening comes under his brush. In many of his pictures he put a cart and a white animal.

His rustic figures have the true country life in them: they seem to have fed upon the air, and warmed themselves in the sun until they are plump and rosy as country lads and lasses should be. His best *genre* pictures are the "Cottage Girl," the "Woodman and Dog in a Storm," the "Cottage Door," and the "Shepherd Boy in a Shower." He painted a picture of a "Girl and Pigs," for which Sir Joshua Reynolds paid him one hundred guineas.

In character Gainsborough was very attractive, though somewhat contradictory in his moods. He was generous and genial, lovable and affectionate; he was also contradictory and impulsive, not to say capricious. His wife and he had little quarrels which they settled in this wise: When Gainsborough had spoken to her unkindly, he would quickly repent, and write a note to say so, and address it to his wife's spaniel, called "Fristnam," and sign it with the

By L. E. JONES.

Index

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Figure 48: From *A History of Art for Beginners and Students*, by Clara Erskine Clement

Document Formats

LaTeX Document-Typesetting System See LaTeX to HTML Converter — the lwarp package for information about a new native LaTeX-HTML5 generation package.

Advantages of LaTeX:

- Publication-quality document-creation and typesetting system.
- Easy-to-use commands for common actions.
- Full support for cross-referencing, indexing, bibliography, book-sized documents, and technical information.
- Excellent typesetting of mathematics.
- Extensive documentation and community support.
- Heavily used in the fields of science and engineering.
- Often used "behind the scenes" to generated well-typeset output for other programs.
- Stable document format — The first widely-used version was LaTeX 2.09, released in 1985. The next, and current, version is LaTeX 2_ε, released in 1994. Work continues on LaTeX 3, designed to be backwards-compatible, much of which is available for use in LaTeX 2_ε right now.
- Updated with thousands of packages, covering every area of technical documentation.
- Programming language — LaTeX is a token-based macro-expansion virtual machine, with an emphasis on document design and typesetting. LuaLaTeX has been also been developed, allowing user-programmable Lua code, integrated into LaTeX internals.
- Plain-text document source:
  - Document contents and structuring commands may be manipulated via regular-expression search/replace. This is especially powerful when working on document format conversions.
  - Easy version control and source management.
  - Crash-proof safety. No document corruption or losses.
  - Age-resistant accessibility. No frequently-changed proprietary format breaking your documents.
  - Explicit and visible control tags. No hidden behaviors changing things behind the scene.
  - LaTeX code is easily produced by external programming, including simple shell scripts or `awk` code.
- Available on every major platform and operating system.

$$\int z^n \arctan z \, dz = \frac{z^{n+1}}{n+1} \arctan z - \frac{1}{n+1} \int \frac{z^{n+1}}{1+z^2} \, dz \qquad (n \neq -1)$$

$$i^n \operatorname{erfc} z \sim \frac{2}{\sqrt{\pi}} \frac{e^{-z^2}}{(2z)^{n+1}} \sum_{m=0}^{\infty} \frac{(-1)^m \, (2m+n)!}{n! \, m! \, (2z)^{2m}} \qquad \left(z \to \infty, |\arg z| < \frac{3\pi}{4}\right)$$

- Website mathematics are typeset by LaTeX, then converted to SVG format for website display, or are displayed via MathJax. HTML *ALT* tags carry the LaTeX source for the math expression. (Copy/paste the above expressions into a text editor to see the LaTeX source.)
- SVG format output scales and prints beautifully for everything from hand-held display to full-page PDF. (Change the font or window size in your browser to watch the formulas scale smoothly, and print this website to see full-resolution mathematics on the printout, subject to browser support.)
- Avoids the typesetting limitations of MathML format.
- SVG format has wider e-reader and browser support than MathML.
- MathJax display is optional, allowing widespread browser support so long as network access is available, or where MathJax is installed locally.

OpenOffice / LibreOffice Suite

- Open Document Format (ODF) has been adopted by numerous world-wide government agencies.
- May be converted to DOC format.

Output Formats

- PDF formatted for full-page documents — Extra margin for binding. Full table of contents, index, cross-references, diagrams, mathematics.
- PDF formatted for tablet or hand-held — Reduced page size, no paper margins, increased font size. Preserves table of contents, index, cross-references, diagrams, and mathematics.
- HTML5 with SVG diagrams and mathematics, or MathJax mathematics.
- ODT and related — Open Document word-processing text and related formats, for stability and portability.

Projects

BD TECH CONCEPTS LLC is currently or recently has been involved in the following projects:

LaTeX lwarp package — Native LaTeX to HTML5 generation: Using the LaTeX lwarp package, academic and technical authors may produce the best possible LaTeX documents with full control over exact formatting and typesetting, while still easily generating a web version from the same source. Native LaTeX is used all the way to the final generation of HTML5 tags, allowing the author to use a deeper set of packages and custom macros compared to other methods, along with all `pdflatex` graphics types. Math is converted to SVG images for smooth display scaling, accompanied by its LaTeX source stored in the `ALT` tag, allowing copy/paste of LaTeX math into other applications. The MathJax tools may also be used to display math. See LaTeX to HTML Converter — the lwarp package.

LaTeX keyfloat package: Provides a key/value interface for LaTeX floats, subfloats, and rows of floats. See LaTeX keyfloat package.

LaTeX tocdata package: Adds information such as an author or artist to each line of a Table of Contents or List of Figures entry, as well as section headings and figures. Support is provided for the titletoc and tocloft packages. See LaTeX tocdata package.

LaTeX dtxdescribe package: For LaTeX package authors. Adds `\DescribeCounter`, `\DescribeBoolean`, etc. for describing additional object types, with enhanced index options. Also provides environments for generating examples, displaying source code, displaying user interfaces, and sidebars. Also provides formatting for LaTeX object names. See LaTeX dtxdescribe package.

LaTeX docsurvey package: A survey of documentation for LaTeX programmers. See Publications.

Native LaTeX to AsciiDoc generation: A previous iteration of the lwarp package used native LaTeX macros to generate AsciiDoc markup, which was then converted to DocBook or XHTML output. See LaTeX to AsciiDoc / DocBook / XHTML Conversion for more details.

Inconsolata LGC Markup — A font for editing document-markup languages: A modified version of the popular Inconsolata font, previously enhanced by others to add Greek and Cyrillic, plus bold and italic variants (useful for syntax highlighting). Slightly enhanced to more clearly distinguish between glyphs commonly used in the markup of text documents. See Inconsolata LGC Markup — Font for details, or to download the font.

DejaVu Markup — A font for editing document-markup languages: A modified version of the DejaVu San Mono font. Slightly enhanced to more clearly distinguish between glyphs commonly used in the markup of text documents. See DejaVu Markup — Font for details, or to download the font.

Also see Publications.

LaTeX to HTML Converter — the lwarp package

Lwarp

LaTeX HTML5

The lwarp package converts LaTeX to HTML by using LaTeX to process the user's document and directly generate HTML tags. External utility programs are only used for the final conversion of text and images. Math may be represented by SVG images or MathJax. More than 500 LaTeX packages and classes are supported, of which more than 60 also support MathJax.

Documents may be produced by DVI or PDF LaTeX, LuaLaTeX, XeLaTeX; by several CJK engines, classes, and packages; or by customized systems such as perltex and pythontex. A *texlua* script automates compilation, index, glossary, and batch image processing, and also supports *latexmk*. Configuration is semi-automatic at the first manual compile. Support files are self-generated. Print and HTML versions of each document may coexist.

Assistance is provided for HTML import into EPUB conversion software and word processors.

Requirements include the commonly-available POPPLER utilities (included with MiKTeX) and PERL. Detailed installation instructions are included for each of the major operating systems and TeX distributions.

A quick-start tutorial is provided, as well as extensive documentation for special cases, a general index, and a troubleshooting index. Automatic testing of package load order and image generation offers useful advice for resolving errors.

SVG math and many other generated images include LaTeX expressions in the `alt` tags. MATHJAX may be used with advanced equation numbering under the direct control of lwarp.

Complicated tables are supported, which copy/paste well into LIBREOFFICE WRITER.

Supported classes and packages include memoir and koma-script, cleveref, caption, mdframed, siunitx, and many popular packages for tabulars, floats, graphics, theorems, the title page, bibliography, indexing, footnotes, and editorial work.

TeX is a self-modifying tokenized macro-expansion language. Since lwarp is written directly in LaTeX, it is able to interpret the document's meaning at a deeper level than external conversions which merely approximate TeX. HTML5 and CSS3 are leveraged to provide advanced features such as booktabs trim, multicolumns, side-by-side minipages, and JAVASCRIPT-free navigation.

Lwarp technology white paper

For an introduction to the technology used by the lwarp package to convert HTML to LaTeX, please see the publication *Producing HTML directly from LaTeX: the lwarp package*.

Latest News

v0.901: Improved `tabular` columns, `\newcolumntype`. Improved float caption CSS. Added new MATHJAX 3.2 packages.

v0.900: Updates for amsmath, changes, froufrou, lipsum.

v0.899: Minor improvements for graphics, keyfloat, multicol.

v0.898: Produces fewer underfull `\hbox` warnings. Improves wrapfig and keyfloat.

v0.897: Added rollback for siunitx v2. Improved fixme, float. Added centerlastline, decorule, fancypar, froufrou, pbalance. Verified works as-is with fnpct.

v0.896: Many fixes and improvements. Now prints theorem footnotes next to theorems. Accessibility improvements. Improved citation back references. Updated chemfig, bigdelim, xetexko. Added ccicons, classicthesis, orcidlink, enotez. Verified support for doi, doipubmed.

v0.895: Updated multirow, acro, fancyhdr, changes. Improved epsfig, rotating. Greatly improved MATHJAX emulation for siunitx. Added MATHJAX emulation for isomath, mattens, maybemath, skmath, tensor. Added epsf, impnattypo, isotope, lpic, luavlna, mdwmath, pinlabel, rlepsf, tikz-imagelabels, xevlna. Verified to work as-is: tensind.

v0.894: Improved warning messages for MATHJAX. Added MATHJAX emulation for backnaur, colortbl, nicematrix. Improved MATHJAX for booktabs. Updated menukeys.

v0.893: Fixed pstricks `pspicture*`. Fixed tikz font macros. braket: Now uses the MATHJAX extension. Added esvect, fixmath, keystroke, mathastext, menukeys, picinpar, plimsoll, repltext, selectp, seqsplit, simplebnf, statistics, swfigure. Added MATHJAX emulation for mathspec. Verified to work as-is for apxproof, syntaxdi, venndiagram.

v0.892: Added MATHJAX `\left` and `\right` support for additional delimiters for fourier, libertinust1math, newpxmath, newtxmath, newtxsf, unicode-math. Updated textpos. xcolor: Fixed optional args for `\fcolorbox` and related. Added fvextra, minted.

v0.891: Fixed alltt and verbatims with LATEX lists. Fixed fancyvrb, listings, babel-french. Added MATHJAX textmacros extension. Added back page references for biblatex and hyperref. Added Greek options for mathdesign, mathpazo, mathptmx, newpxmath, newtxmath. Improved MATHJAX for colonequals, mathdesign, mathdots, mathfixs, mathtools, multiobjective, nicefrac, shuffle, units. unicode-math: Added Greek macros, as well as macros for the first several categories listed in *`texdoc unimath-symbols`*. Improved symbol shape macros with Greek. Improved documentation. Added bussproofs, cmbright, fourier, kpfonts, kpfonts-otf, libertinust1math, scalerel, txgreeks.

v0.89: Adapted to upcoming LATEX kernel changes. Improvements for MATHJAX. Updated caption, thmtools. Imrpoved MATHJAX for centernot, mathtools, mismath, SIunits, siunitx, statmath. Added MATHJAX emulation for accents, hepunits, hhtensor, mathalpha, mathdesign, mathpazo, mathptmx, mleftright, newpxmath, newtxmath, newtxsf, pxfonts, shuffle, txfonts, upgreek, ushort. Verified to work as-is: authoraftertitle.

v0.88: Fixed `\ref*`, `\chaptername`, starred macros for cleveref and varioref, xfakebold. Improved varioref. Added option for various ways to display index links. Added gindex, xindex. Verified to work as-is with varindex. Added fbox, shadethm, tcolorbox, termcal, thmbox, thmtools.

v0.87: MATHJAX improvements for physics, mathtools, nccmath, mhchem, cancel. Added citeref, drftcite, jurabib, multibib, splitbib. Verified to work as-is with bibtopic, collref, mciteplus.

v0.86: MATHJAX: Updated to v3. Fixed forward references. Improved equation numbering. Added support for starred macros, and starred macros for mathtools, nccmath, physics. Improved filename generation. Fixed labels in `eqnarray` and `lateximage`. Fixed nccmath, xcolor.

v0.85: Fixed fontspec for non-Latin languages. Fixed idxlayout, mathtools, titlesec, url.

v0.84: Added optional previous/next page links. Numerous fixes.

v0.83: Fixes for memoir, update for physunits.

v0.82: Improved footnotes with MATHJAX. Added MATHJAX emulation for endnotes, marginnote, nccfoots, pagenote, parnotes, sidenotes. xpinyin: Added pinyin with modern HTML. luatexko: Added `\dotemph`, `\ruby`, `\uline`, etc. Fixed amsmath, soul, ulem, endnotes. Updated chemfig, draftwatermark. Verified to work as-is with tocvsec2, tableof. Added etoc (nullified).

v0.81: Improved MATHJAX emulation processing speed. Added MATHJAX emulation for accsupp, axessibiltiy, colonequals, decimal, dotlessi, econometrics, engtlc, multiobjective, physunits, SIunits, stackrel, statmath. Updated axessibility to 2020/01/08 version. Updated gridset to v0.3. Fixed SIunits for math mode. Added DotArrow, nolbreaks, luamplib, returntogrid, statex2, tagpdf. Verified to work as-is with icomma, mathpunctspace, textualicomma.

v0.80: biblatex and url now create hyperlinks. Added docs and warning messages about slow MATHJAX. Added MATHJAX emulation for accessibility, autobreak, centernot, extarrows, fouridx, gensymb, leftidx, mathcomp, mathdots, mathfixs, mismath, nccmath, noitcrul, pdfcomment, relsize, rmathbr, subsupscripts, xfrac. Improved MATHJAX emulation for unicode-math. Added fewerfloatpages, ghsystem, hhline, mismath, nccmath.

v0.79: Now supports nested tabulars. Added or improved MATHJAX emulation for amsmath, ar, arydshln, bm, bigdelim, bigstrut, booktabs, braket, mathtools, multirow, physics, siunitx, slashed, unicode-math, xfakebold. Fixed minor issues with graphicx, caption, multirow, siunitx, booktabs, transparent, subcaption, floatrow. Updated epigraph, xurl. Added widetable, witharrows, steinmetz, awesomebox, catoptions, svg, supports svg-extract, parcolumns, pdfcolparcolumns, parallel, pdfcolparallel, pdfcol, pdfcolfoot, pdfcolmk.

v0.78: Fixed support files, graphics `alt` tags, babel-french hyperlinks, media9, media15, and multimedia. Added accessibility.

v0.77: Updated booktabs, chemformula.

v0.76: Updated MATHJAX, xr, xr-hyper, acro. Verified to work as-is with xcite. Improved documentation regarding multiple projects in the same directory.

v0.75: Fixes for `\normalcolor`, `minipage \linewidth`. Fixes for keyfloat and wrapfig.

v0.74: Added to tutorial. Improved support for HTML `alt` text. Improved SVG math. Improved lyluatex. Tested to work as-is with mathspec, unicode-math.

Sample Output

This website:

- Check the HTML code of these web pages for examples of the lwarp generator's output.
- Download a 7 MB PDF print version of this website, to compare with the online HTML version.

Technical book conversion:

Print PDF: *Introduction to Gear Design* — Print — PDF

Tablet PDF: *Introduction to Gear Design* — Tablet — PDF

HTML version: *Introduction to Gear Design* — Website — HTML

Sample camping trailer manual:

PDF print version: Camping Trailer Manual — PDF

HTML version: Camping Trailer Manual — HTML

Download

Download the lwarp package from the lwarp page on CTAN — the Comprehensive TEX Archive Network, or use your TEX distribution's update tools.

The lwarp v0.901 manual is also available here.

Supported LaTeX Packages Table 1 lists some of the various LaTeX features which may be used. Hundreds of packages have been adapted for lwarp, and many more work without modification.

Package names are colored according to their support level:

name: Supported as-is.

name: Modifed to work with HTML output, and also as print output in SVG math or `lateximage` environments.

name: Emulated for HTML output.

name: Ignored for HTML output, but provides source-level compatibility.

MJ: Supported as-is for MathJax, subject to limitations.

MJ: Emulated for MathJax using custom macros, subject to limitations.

MJ: Ignored by MathJax, but may be used in the document source.

Table 1: LaTeX lwarp package — Supported features

Category	Status and supported features.
Engines:	DVI LaTeX, pdfLaTeX, XeLaTeX, LuaLaTeX, upLaTeX
Compiling:	*latexmk*, *perltex*, *pythontex*, *make*, etc.
Classes:	article, book, report, scrartcl, scrbook, scrreprt, memoir, CJK-related as listed below.
Koma-script:	scrextend, scrhack, scrlayer. Others as listed below.
Memoir:	memhfixc
Languages:	babel, cjkpunct, impnattypo, luavlna, polyglossia, xeCJK, xevlna.
Chinese:	CTeX, ctex, upzhkinsoku, xpinyin, zhlineskip, zhspacing.
Japanese:	upLaTeX, LuaTeX-ja, gentombow, lltjext, plarray, plarydshln, plautopatch, plext, plextarray, plextarydshln, plextcolortbl, plextdelarray, pxatbegshi, pxeveryshi, pxftnright, pxgentombow, pxjahyper, pxpdfpages, pxpgfrcs, pxpgfmark, tascmac, zxjatype. bxjsarticle and related, ltjsarticle and related, luatexja, luatexja-fontspec, ujarticle and related, utarticle and related.
Korean:	kotex, luatexko, xetexko.
Page layout:	2in1, 2up, a4, a4wide, a5comb, addlines, anysize, atbegshi, balance, blowup, booklet, bophook, bounddvi, bxpapersize, canoniclayout, centerlastline, changelayout, changepage, chngpage, clrdblpg, continue, draftcopy, draftfigure, draftwatermark, ebook, everyshi, fancyhdr, fancytabs, flippdf, fullminipage, fullpage, fwlw, geometry, gmeometric, grid, grid-system, gridset, layaureo, layout, layouts, leading, lscape, ltxgrid, nccfancyhdr, notespages, nowidow, pagegrid, pagesel, parallel, parcolumns, pbalance, pdfcolparallel, pdfcolparcolumns, pdfcrypt, pdflscape, pdfprivacy, preview, ragged2e, returntogrid, rmpage, scrlayer-scrpage, scrpage2, setspace, selectp, textarea, threadcol, thumb, thumbs, titleps, tocenter, turnthepage, twoup, typearea, underlin, vmargin, watermark, widows-and-orphans, zwpagelayout.

lwarp Supported Functions — continued

Category	Status
Sectioning:	Adds `FileDepth` for splitting the HTML output. Files may be numbered sequentially or named according to section name. Common short words and punctuation are removed from the filenames. anonchap, bsheaders, decorule, fncychap, froufrou, hypbmsec, indentfirst, quotchap, section, sectionbreak, secdot, sectsty, titlesec, tocvsec2.
Table of contents, figures, tables:	Supported, with hyperlinks. etoc, minitoc, multitoc, shorttoc, tableof, titletoc, tocbasic, tocbibind, tocdata, tocloft, tocstyle, tocvsec2.
Title page:	`\maketitle`, `titlepage`, authblk, authoraftertitle, titling.
Front & back matter:	abstract, appendix.
Indexing:	*makeindex*, *xindy*, and *xindex* are supported, with hyperlinks. gindex, hvindex, idxlayout, imakeidx, index, makeidx, repeatindex, splitidx, varindex, xindex.
Glossary:	gloss, glossaries and *xindy*, nomencl.
Bibliography:	babelbib, bibtopic, backref, biblatex, bibunits, chapterbib, cite, citeref, collref, drftcite, hypernat, jurabib, mcite, mciteplus, multibib, natbib, notes2bib, splitbib, showtags.
Cross-references:	bookmark, breakurl, cleveref, fancyref, hypdestopt, hyperref, perpage, prettyref, titleref, url, varioref, xcite, xr, xr-hyper, xurl, zref.
Margin notes:	marginal, marginfit, marginfix, scrlayer-notecolumn, versonotes.
Footnotes:	Adds `FootnoteDepth` to print footnotes at section breaks. MATHJAX emulation for `\footnote`, and also as marked in the following: bigfoot, dblfnote, endheads, endnotes[MJ], enotez[MJ], fixfoot, fnbreak, fnpara, fnpct, fnpos, footmisc, footnote, footnotebackref, footnoterange, footnpag, manyfoot, marginnote[MJ], nccfoots[MJ], pagenote[MJ], parnotes[MJ], pdfcolfoot, pfnote, sepfootnotes, sidenotes[MJ], tablefootnote.
Math:	Converted to SVG images with HTML `<alt>` tags containing the LaTeX source for the math expression. MATHJAX supported as an alternative. amsmath[MJ]: $\mathcal{AMS}$ environments are supported. User-defined macros are available during converson, due to native LaTeX processing.
Theorems:	Native LaTeX theorems, amsthm, apxproof, ntheorem, shadethm, theorem, thmbox, thmtools.

lwarp Supported Functions — continued

Category	Status
Additional math:	Math fonts via SVG images, accents[MJ], amscd[MJ], amscdx, autobreak[MJ], autonum, backnaur[MJ], bm[MJ], braket[MJ], breqn[MJ], bussproofs[MJ], cases[MJ], centernot[MJ], cmbright[MJ], colonequals[MJ], decimal[MJ], delarray, DotArrow[MJ], dotlessi[MJ], dotlessj[MJ], esvect[MJ], extarrows[MJ], fixmath[MJ], fouridx[MJ], fourier[MJ], guass, hhtensor[MJ], icomma[MJ], isomath[MJ], jkmath, kpfonts[MJ], kpfonts-otf[MJ], leftidx[MJ], libertinust1math[MJ], mathalpha[MJ], mathastext[MJ], mathcomp[MJ], mathdesign[MJ], mathdots[MJ], mathfixs[MJ], mathpazo[MJ], mathptmx[MJ], mathpunctspace[MJ], mathspec[MJ], mathtools[MJ], mattens[MJ], maybemath[MJ], mdwmath[MJ], mismath[MJ], mleftright[MJ], multiobjective[MJ], nccmath[MJ], nicematrix[MJ], noitcrul[MJ], newpxmath[MJ], newtxmath[MJ], newtxsf[MJ], pb-diagram, pxfonts[MJ], resizegather[MJ], rmathbr[MJ], scalerel[MJ], shuffle[MJ], skmath[MJ], stackrel[MJ], statex2[MJ], statistics, statmath[MJ], subsupscripts[MJ], tensind, tensor[MJ], textualicomma[MJ], txfonts[MJ], txgreeks[MJ], unicode-math[MJ], upgreek[MJ], ushort[MJ], witharrows[MJ], xfakebold[MJ], xy. Many others work as-is.
Display math with `\displaymathother`:	Complicated math objects in display math, such as tikz-cd, etc.
Units and fractions:	nicefrac[MJ], SIunits[MJ], siunitx[MJ], units[MJ], unitsdef, xfrac[MJ].
Floats:	Appear where declared. capt-of, caption, cutwin, dblfloatfix, endfloat, fewerfloatpages, fix2col, flafter, float, floatflt, floatrow, fltrace, ftcap, hypcap, keyfloat, morefloats, multicap, newfloat, nonfloat, picinpar, placeins, rotfloat, stfloats, subcaption, subfig, subfigure, subfloat, swfigure, topcapt, trivfloat, wrapfig.
Tabular:	`tabular` environment, array[MJ], arydshln[MJ], bigdelim[MJ], bigstrut[MJ], booktabs[MJ], colortbl[MJ], ctable, dcolumn, diagbox, hhline[MJ], longtable, ltablex, ltxtable, multirow[MJ], supertabular, tabularx, tabulary, threeparttable, threeparttablex, widetable, xltabular, xtab.
Graphics:	graphics and graphicx. `\includegraphics` supports `width`, `height`, `origin`, `angle`, and `scale` tags, and adds `class`. References to PDF files are changed to SVG, other image types are accepted as well. `\rotatebox` and `\scalebox` are supported as well as HTML can handle. rotating is emulated but all objects are unrotated in HTML. `picture`, tikz, and xy are converted to an SVG image. asymptote, curves, datatool, eepic, epsf, epsfig, epstopdf, figsize, fitbox, grffile, lpic, luamplib, media9, movie15, multimedia, overpic, pict2e, pinlabel, psfrag, psfragx, pst-eps, pstool, pstricks, rlepsf, rviewport, svg, svg-extract, tikz, tikz-3dplot, tikz-imagelabels, xy
xcolor:	Full package color names, any color models, and mixing. `\textcolor`, `\colorbox`, `\fcolorbox`. Enhanced for HTML compatibility.
Lists:	Standard LaTeX environments, enumerate, enumitem, eqlist, hang, listliketab, paralist.
Environments:	Standard LaTeX environments.
Paragraphs, `minipage`, `\parbox`:	Some HTML5-imposed limitations. Nested minipages are supported. eqparbox, fancypar, minibox, pbox, shapepar.
Quotations:	copyrightbox, csquotes, epigraph, quoting, verse.

lwarp Supported Functions — continued

Category	Status
Verbatim:	fancyvrb, fvextra, moreverb, shortvrb, verbatim.
Frames:	boxedminipage, boxedminipage2e, fancybox, fbox[MJ], framed, mdframed, niceframe, shadow, tcolorbox[MJ], vertbars.
Multi-columns:	adjmulticol, multicol, multicolrule, vwcol.
Margins:	fullwidth, hanging, midpage.
Line numbering:	fnlineno, lineno.
Direct formatting:	`\emph`, `\textsuperscript`, `\textbf`, etc are supported. `\bfseries`, etc. are only supported in some cases. cancel[MJ], ellipsis, embrac, enparen, hyphenat, lettrine, lips, lua-check-hyphen, luacolor, magaz, moresize, nolbreaks, normalcolor, pdfcol, pdfcolmk, pdfrender, realscripts, relsize[MJ], scalefnt, seqsplit[MJ], soul, soulpos, soulutf8, stackengine, textfit, thinsp, trimclip, truncate, ulem, umoline, underscore, uspace, xellipsis.
Acronyms:	acro, acronym.
Ordinals:	engord, fmtcount, nth.
Text ligatures:	Ligatures for symbols are supported. Ligatures for f, q, t are intentionally turned off because many simpler browsers do not display them correctly. Modern full-featured browsers re-create these ligatures on-the-fly.
Horizontal space:	HTML output for thin-unbreakable, unbreakable, `\enskip`, `\quad`, `\qquad`, `\hspace`.
Rules:	`\rule` with width, height, raise, text color.
HTML reserved characters:	`\&`, `\textless`, and `\textgreater` are converted to HTML entities.
Fonts:	Used as-is. Appear in SVG math expressions or embedded image environments. fontaxes, nfssext-cfr, slantsc, tabfigures. Tested to work as-is: Special font macros in cfr-lm and others which use nfssext-cfr. Also see the math section for math and MathJax support for math font packages.
Symbols:	Native LaTeX diacriticals, academicons, amssymb[MJ], bbding, ccicons, chemgreek, dingbat, euro, eurosym, fontawesome, fontawesome5, gensymb[MJ], latexsym[MJ], marvosym, metalogo, metalogox, pifont, textalpha, textcomp[MJ], textgreek, typicons, xunicode.
Files:	attachfile, attachfile2, hyperxmp, inputtrc, intopdf, pdfpages, pdfx, xmpincl.
Science and engineering:	algorithm2e, algorithmicx, ar[MJ], askmaps, axodraw2, bitpattern, blochsphere, bodegraph, bohr, bytefield, chemfig, chemformula, chemgreek, chemmacros, chemnum, circuitikz, econometrics[MJ], elements, engtlc[MJ], fast-diagram, gh-system, hepnicenames, heppennames, hepunits[MJ], isotope[MJ], karnaughmap, karnaugh-map, keystroke, listings, listingsutf8, linop, menukeys, mhchem[MJ], minted, pgfgantt, phfqit, physics[MJ], physunits[MJ], plimsoll[MJ], qcircuit, register, simplebnf, simpler-wick, slashed[MJ], steinmetz[MJ], structmech, struktex, syntaxdi, tikz-karnaugh, tikzcodeblocks, venndiagram
Arts and humanities:	foreign, forest, lyluatex, musicography, nameauth, octave, phonrule, piano, schemata, semantic-markup, tikz-dependency, vowel, xpiano

lwarp Supported Functions — continued

Category	Status
Academic:	academicons, classicthesis, doi, doipubmed, orcidlink[MJ], termcal
Admonitions:	awesomebox, notes.
Editorial:	changebar, changelog, changes, easy-todo, easyReview, ed, errata, fixme, fixmetodonotes, pdfcomment[MJ], pdfmarginpar, todo, todonotes, tram, xechangebar.
Accessibility:	accessibility[MJ], accsupp[MJ], axessibility[MJ], pdfcomment[MJ], repltext[MJ], tagpdf.
Package handling:	catoptions.
Debug:	chkfloat, cmdtrack, dprogress, lipsum, lua-visual-debug, mwe, refcheck, srcltx, srctex, vpe, xbmks.
Working as-is:	Various utility, calculation, file, and text-only packages, such as calc, fileerr, somedefs, trace, xspace. Also, most math-only packages, including specialized typesetting for various fields of science and engineering.

LaTeX keyfloat package

The keyfloat package provides a key/value user interface for quickly creating figures, or custom float types, with a single image each, figures with arbitrary contents, tables, subfloats, rows of floats, floats [H]ere, in the [M]argin, or with text [W]rapped around them.

Key/value combinations may specify a caption and label, a width proportional to `\linewidth`, a fixed width and/or height, rotation, scaling, a tight or loose frame, an `\arraystretch`, a continued float, additional supplemental text, and an artist/author's name with automatic index entry. When used with the `tocdata` package, the name also appears in the List of Figures.

Floats may be placed into a row environment, and are typeset to fit within the given number of columns, continuing to the next row if necessary. Nested sub-rows may be used to generate layouts such as two small figures placed vertically next to one larger figure.

Subfloats are supported by two environments. As an example, a typical command to include a figure with a framed image of half `\linewidth` could be:

```
\keyfig[hbp]{f,lw=.5,c={A caption},l={fig:label}}{image}
```

Keyfloat introductory white paper

For an introduction to the keyfloat package, please see the publication A key/value interface for generating LaTeX floats: the keyfloat package.

Latest News

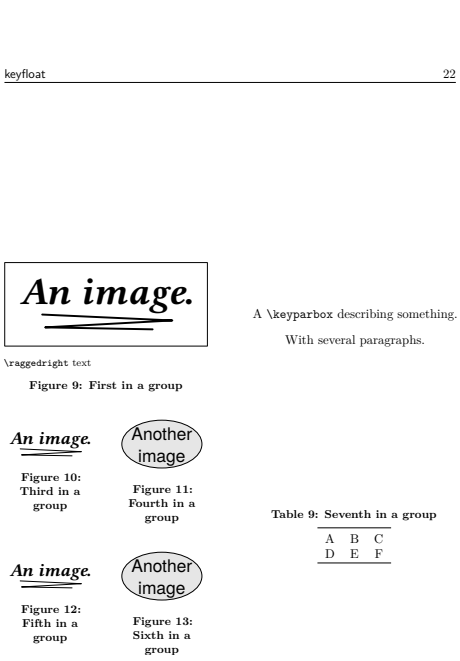
v2.01: Added keyfloats and keysubfloats [M] and [W]. Fixed KomaScript, font and color. Improved vertical space.

v2.00: Added custom float types and float authors.

Download

Download the keyfloat package from the keyfloat page on CTAN — the Comprehensive TeX Archive Network, or use your TeX distribution's update tools.

The keyfloat v2.01 manual is also available here.



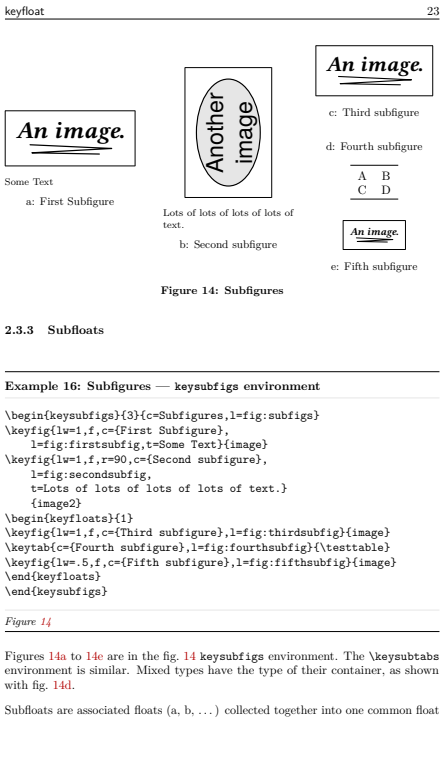


Figure 49: keyfloat Samples

LaTeX tocdata package

Anthologies may be printed with the author alongside each title in the table of contents. Many commonly-recommended methods for doing this with LaTeX place the author above or below the title and page number, but seldom on the same line.

The tocdata package provides some basic infrastructure to help add some information to a line in the table of contents.

This function requires the use of either the titletoc or tocloft packages.

Additionally, user-level macros are provided which add the author's name to a chapter or section, and add the artist's name and optional additional text to a figure. Author and artist names are also added to the index.

tocdata works with the TOC/LOF formatting of the default LaTeX classes, memoir, koma-script, and with titletoc, tocloft, tocbasic, and tocstyle.

Latest News

v2.03: Fix for starred sections, supports additional classes and packages.

v2.02: Fix for section name formatting.

v2.01: Fix for LaTeX core section entries.

v2.00: Adds custom float types and float authors.

v0.12: Adds improved spacing, improved paragraph handling, and optional text alignment.

Download

Download the tocdata package from the tocdata page on CTAN — the Comprehensive TeX Archive Network, or use your TeX distribution's update tools.

The tocdata v2.03 manual is also available here.

Contents

List of Illustrations

Figure 50: tocdata Samples

LaTeX dtxdescribe package

The doc package includes tools for describing macros and environments in LaTeX source `.dtx` format. The dtxdescribe package adds additional tools for describing booleans, lengths, counters, keys, packages, classes, options, files, commands, arguments, and other objects. dtxdescribe also works with the regular document classes, for those who do not wish to use the ltxdoc class and `.dtx` files.

Each item is given a margin tag similar to `\DescribeEnv`, and is listed in the index by itself and also by category. Each item may be sorted further by an optional class. All index entries except code lines are hyperlinked.

The `dtxexample` environment is provided for typesetting example code and its results. Contents are displayed verbatim along with a caption and cross-referencing. They are then input and executed, and the result is shown.

Environments are also provided for displaying verbatim or formatted source code, user-interface displays, and sidebars with titles.

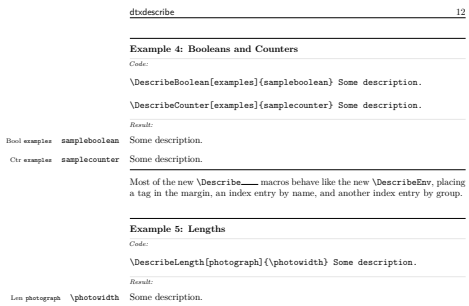
Macros are provided for formatting the names of inline LaTeX objects such as packages and booleans, as well as program and file names, file types, internet objects, the names of certain programs, a number of logos, and inline dashes and slashes.

dtxdescribe works with the ltxdoc class, but also works with the standard classes as well, except that the `macro` and `environment` environments are not supported. Either *makeidx* or *splitidx* may be loaded by the user. makeidx will be used by default.

Download

Download the dtxdescribe package from the dtxdescribe page on CTAN — the Comprehensive TeX Archive Network, or use your TeX distribution's update tools.

The dtxdescribe v1.02 manual is also available here.



dtxdescribe 12

Example 4: Booleans and Counters

Code:

```
\DescribeBoolean[examples]{sampleboolean} Some description.

\DescribeCounter[examples]{samplecounter} Some description.
```

Result:

Bool examples **sampleboolean** Some description.

Ctr examples **samplecounter** Some description.

Most of the new \Describe___ macros behave like the new \DescribeEnv, placing a tag in the margin, an index entry by name, and another index entry by group.

Example 5: Lengths

Code:

```
\DescribeLength[photograph]{\photowidth} Some description.
```

Result:

Len photograph **\photowidth** Some description.

Lengths have a leading backslash, but are otherwise described the same as the rest of the objects.

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Figure 51: dtxdescribe Samples

LaTeX to AsciiDoc / DocBook / XHTML Conversion

- A previously-written tool chain: LaTeX → AsciiDoc → DocBook → XHTML
- LaTeX directly generates AsciiDoc output.
- Scalable vector graphics (SVG) diagrams and mathematics.
- Format and content which responds to viewing media type (hand-held, tablet, screen, print).
- CSS customization
- Superceded by: LaTeX to HTML Converter — the lwarp package.

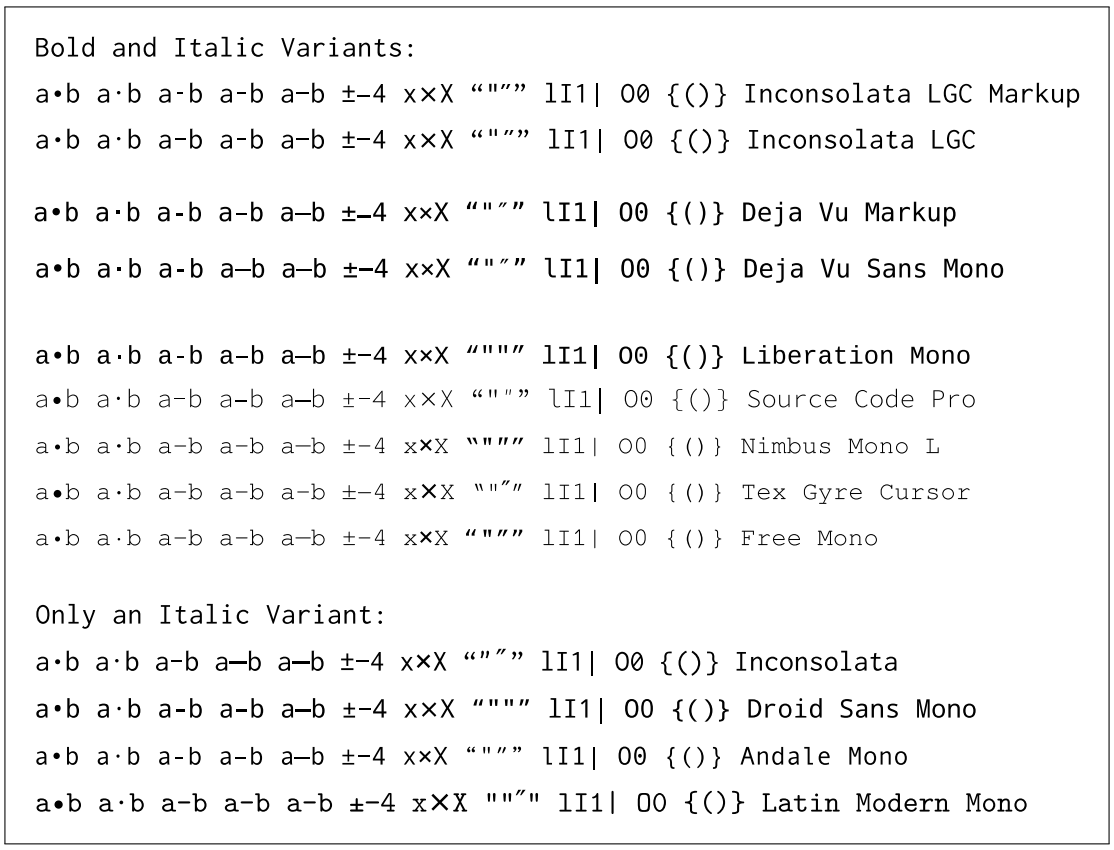

Figure 52: Mono-spaced Font Comparison — Inconsolata

Inconsolata LGC Markup — Font

The popular Inconsolata font is a mono-spaced font commonly used by programmers, and it already provides a clear differentiation between most glyphs, such as O and 0 for example.

Others have added Greek and Cyrillic glyphs, along with bold and italic versions useful for syntax highlighting, thus forming the Inconsolata LGC font.

Text-document markup languages (such as LaTeX, AsciiDoc, or markdown) have additional requirements. The ability to distinguish between the various kinds of quote marks and dashes becomes important. Most mono-spaced fonts do not clearly distinguish between each of these look-alike characters, as seen in Figure 52.

The following changes have been made to create the Inconsolata LGC Markup font:

- Shortened the hyphen to distinguish from the en-dash and em-dash.
- Lowered the minus to distinguish from the en-dash.
- The upright apostrophe and quote are replaced with simple vertical shapes, distinguishing from the text quotes and prime characters.
- Bolder bullet to distinguish from the center dot / multiply character.
- Numerous additional glyphs were corrected to pass font verification.

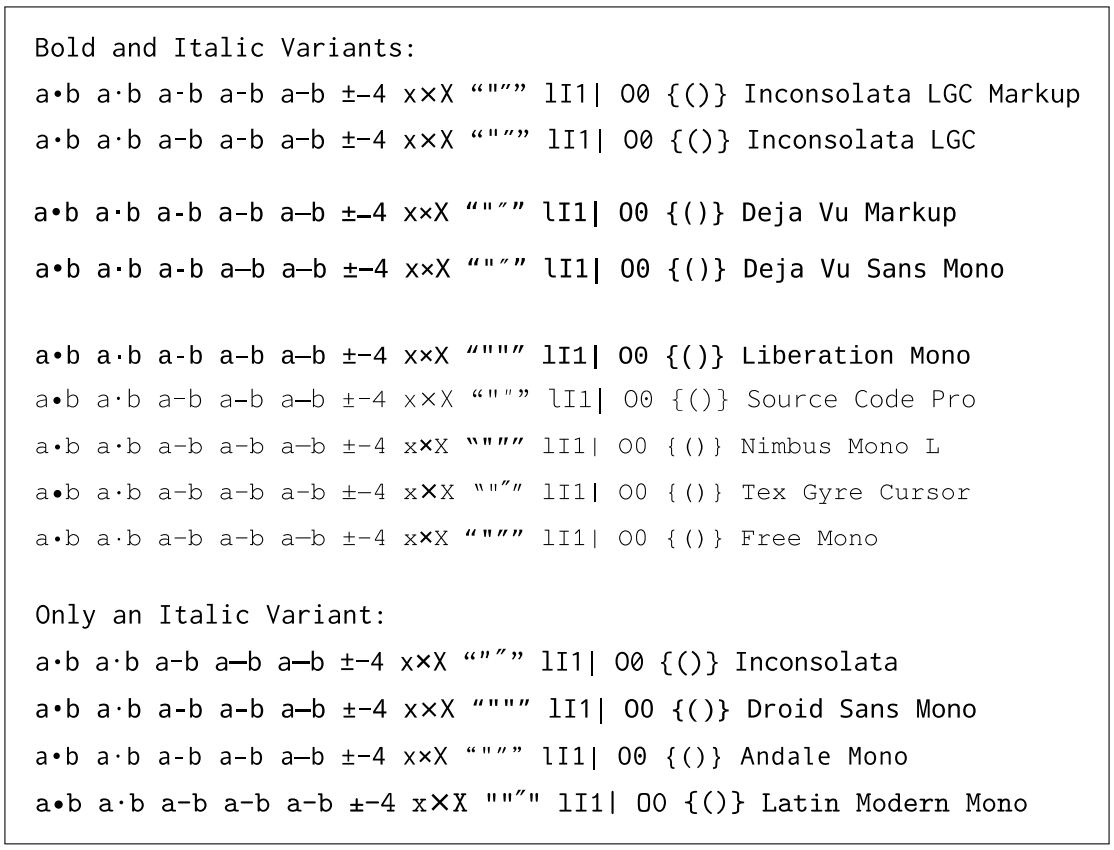

Figure 53: Mono-spaced Font Comparison — DejaVu

Visit the Inconsolata LGC Markup font's web page at the Font Library.

Or, directly download the Inconsolata LGC Markup ZIP file right here.

Also see the DejaVu Markup — Font.

DejaVu Markup — Font

DejaVu Sans Mono is a mono-spaced font useful for programmers, and it already provides a clear differentiation between most glyphs, such as `O` and `0` for example. Compared to Inconsolata, DejaVu has a wider range of glyphs and a slightly cleaner design.

Text-document markup languages (such as LaTeX, AsciiDoc, or markdown) have additional requirements. The ability to distinguish between the various kinds of quote marks and dashes becomes important. Most mono-spaced fonts do not clearly distinguish between each of these look-alike characters, as seen in Figure 53.

The following changes have been made to create the DejaVu Markup font:

- Shortened the endash to distinguish from the hyphen and em-dash.
- Lowered the minus to distinguish from the en-dash.

Visit the DejaVu Markup font's web page at the Font Library.

Or, directly download the DejaVu Markup zip file right here.

Also see the Inconsolata LGC Markup — Font.

Publications

Related to LaTeX:

***Programming LaTeX — A survey of documentation and packages*:**

An overview of LaTeX books and documentation for those interested in programming LaTeX. Also available at CTAN as the docsurvey package.

Published in TUGBOAT — The Communications of the TeX Users Group, vol. 38, no. 1, 2017.

***Producing HTML directly from LaTeX: the lwarp package*:**

A white paper describing the technology used to make LaTeX generate HTML.

Published in TUGBOAT — The Communications of the TeX Users Group, vol. 38, no. 1, 2017.

***A key/value interface for generating LaTeX floats: the keyfloat package*:**

An introduction to the use of key/value options to create a wide variety of LaTeX floats.

Published in TUGBOAT — The Communications of the TeX Users Group, vol. 38, no. 1, 2017.

Additional publications:

***Load Cells — Introduction and Applications*:**

A sample white paper.

Also see Tech Notes, Projects, Software-Related Documentation, and Owner's Manuals and Procedures.

Tech Notes

The following are technical notes of interest to the users of LaTeX, general markup languages, the Linux operating system, and so on.

For LaTeX: LaTeX notes

For Linux: Linux notes

LaTeX notes

Transparency and colors

When including a PNG file with transparency, LaTeX may distort the rest of the colors on the same page due to a conflict between RGB and CMYK color spaces. The methods mentioned online for fixing this color shift for lualatex are slightly out of date now with lualatex having made some recent changes.

To fix the color shift, place the following near the start of the document preamble. This code works with pdflatex, xelatex, and recent versions of lualatex. Older versions of lualatex will not need the line below which is commented as "for new versions".

```
% to fix colors while transparency is in use:
\usepackage{iftex}
\ifXeTeX
        \usepackage{eso-pic}
        \AddToShipoutPicture{%
        \makeatletter%
        \special{%
        pdf: put @thispage <</Group << /S /Transparency /I true /CS /DeviceRGB>> >>}
        \makeatother%
        }
\else
\ifLuaTeX
        \edef\pdfpageattr {\pdfvariable pageattr}% for newer versions
        pdfpageattr {/Group << /S /Transparency /I true /CS /DeviceRGB>>}
\else% pdflatex
        \pdfpageattr {/Group << /S /Transparency /I true /CS /DeviceRGB>>}
\fi
\fi
```

Editor fonts

See DejaVu Markup — Font and Inconsolata LGC Markup — Font for monospaced editor fonts which have been slightly adjusted from their originals to more clearly distinguish between the various dashes, quotes, apostrophes, primes, bullet, and center dots/multiply. These fonts may be useful to anyone using a text markup language such as LaTeX, Asciidoc, markdown, or pandoc, especially when marking up text where there is an important difference in meaning between the various dash lengths, or scientific literature where a prime mark should not be a quote mark.

TeX-Live installation on Linux — PATH to texbin

The "vanilla" Tex Live install recommends setting *PATH* to point directly to the Tex Live binaries, but some recommend an indirect symbolic link through */opt* instead:

in /opt, each time a new install occurs: *ln -s /usr/local/texlive/20xx/bin/x86_64-linux /opt/texbin*

in ~/.cshrc, once only: *setenv PATH $HOME/bin:/opt/texbin:$PATH*

in ~/.bashrc, once only: *PATH=/opt/texbin:$PATH* (at the end)

Likewise for root's *.bashrc* and *.cshrc*.

Multiple versions of TeX Live may be installed, selecting one at a time simply by changing the single symbolic link in */opt*.

TeX-Live fonts

TeXLive has so many fonts that they can really slow down the font-selection boxes in graphics editors. Many fonts are available both as Type-1 and also OpenType or TrueType. To have Linux only use OT or TT fonts, skipping Type-1:

1. Copy the *texlive-fontconfig.conf* file to */etc/fonts/conf.d/09-texlive.conf*.
2. Comment out Type-1 fonts: *<!-- ...type1.. -->*
3. Run *fc-cache -fsv* to inform Linux of the new fonts.

To keep Type-1 fonts but remove the most problematic:

1. *tlmgr remove --dry-run -no-depends collection-fontsextra*
2. *tlmgr remove --dry-run allrunes*
3. *tlmgr remove --dry-run drm*
4. etc.

Use *-dry-run* to preview the results, and remove *-dry-run* to make the changes. Run *fc-cache -fsv* to inform Linux of the new fonts.

Package-writing tools

Of interest to those using the *.dtx* format of literate programming:

Dating a package revision:

```
\changes{v0.00}{2016/01/01}{\ 2016/01/01}
```

The forced space before the date causes the change log to sort the date to the front of the "General" category. While the next version is in-progress, the new version's date can be entered as "PENDING".

Describing packages, files, options, booleans, etc: The LaTeX `doc` and `ltxdoc` tools provide `\DescribeMacro` and `\DescribeEnviro` which typeset the name in the margin and create index entries, both for the name of the macro or environment, and also under the category "environments" as needed. Additional tools may be useful to describe other objects:

```
\newcommand{\DescType}[1]{\raggedleft{\scriptsize#1}\quad}

\newcommand{\DescribePackage}[1]{%
\leavevmode%
\marginpar{\DescType{Pkg}\bfseries\textsf{#1}}%
\index{#1 (package)}%
\index{packages:>#1}%
\ignorespaces%
}
```

Similar for (operating-system) command, file, option, boolean, length, and counter, each of which will appear in the index under its own name, and also under each category. A more advanced verison of these functions is found in the LaTeX dtxdescribe package, which also adds sorting objects by class.

Margin tags: Useful to draw attention to the destination of cross-references, for example.

```
\newcommand{\margintag}[1]{%
\marginpar{\textcolor{blue!70!black}{#1}} %
}
```

Warning tags: To print a warning symbol and text tag in the margin:

```
\makeatletter
\newcommand{\watchout}[1][]{%
\@bsphack%
\marginpar{\textcolor{blue!70!black}{#1}
\hspace*{\ fill }\includegraphics[height=3ex]{symbol_warning.pdf}}
\@esphack%
}
\makeatother
```

Typesetting package and environment names: To make names for `packages` and `environments` stand out:

```
\newcommand{\pkg}[1]{\textsf{#1}}
\newcommand{\env}[1]{\texttt{#1}}
```

Likewise for BRAND names, *Publications*, ACR acronyms, and so on.

Linux notes

Font rendering

If your Linux fonts look ugly, check the following:

Ref: `https://wiki.archlinux.org/index.php/Font_Configuration`

File (Debian): *`~/.config/fontconfig/fonts.conf`*

Compose keys, keyboard repeat, mouse acceleration

To directly enter characters such as the em-dash or ä:

Place in *.cshrc*, *.bashrc*, *.icewm/startup*, and any other desktop/windowing startup locations on your system:

```
setxkbmap -option compose:lwin
```

lwin selects the left "windows" key as the compose key. When this key is pressed, followed by other special keys, a final character is sent to the operating system. Examples include <compose>--- for the em-dash and <compose>"a for ä.

This is also a good place to set the keyboard repeat and mouse acceleration, for those window managers which may not provide their own tools to do so:

```
xset r rate 300 20
xset m 3/2
```

KDE debug messages

Bothered by extraneous KDE debug messages?

```
kdebugdialog
```

While this may be used to stop KDE messages, other warning messages may still appear in the console, and would have to be dealt with separately.

Apache2 configuration

Changes have been made to the Apache2 configuration files.

Later versions of the Apache2 web server have changed the management of its configuration files. This can affect web applications served from your own machine, even when only used by yourself on your own local machine.

httpd.conf is no longer used.

To add a configuration file:

1. Add *filename.conf* to */etc/apache2/conf-available/*
2. *a2enconf <filename>* to activate the additional configuration file.
3. *service apache2 reload* to restart the server.

Kmail migration to Claws Mail

While there are a few scripts which try to help change from Kmail's email format to Claws Mail's MH format, Kmail has a few features which can cause problems. In particular, Kmail allows mail folders in either of two formats: *maildir* or *mbox*. The claws-mail conversion scripts tend to work only with the *maildir* format.

1. Ensure each Kmail folder is in *maildir* format instead of *mbox*:

   In the file system, look in the *Mail* file directory for a subdirectory for each Kmail mail folder, in which case that folder is in *maildir* format. If the Kmail mail folder does not exist as a filesystem subdirectory, then that Kmail

folder is in *mbox* format, and it must be converted to *maildir* instead. Do so by using Kmail to rename the current *mbox* format Kmail folder, such as by appending "*_old*" to its name. Create a new Kmail mail folder, being sure that the new folder is in *maildir* format. Copy the messages from the old to the new folder, then delete the old.

2. Remove any spaces from each Kmail folder name, possibly replacing each by an underscore.
3. Possibly flatten the folder tree.
4. Try the conversion script from http://users.claws-mail.narkive.com/vHT20O8Y/migration-from-kmail by Hanno Böck.

About Us

Brian Dunn — Technical Writer, Software Engineer, LaTeX Programmer, Image Processor

I'm a software engineer and technical writer with excellent skills in the art and science of document typesetting and in the field of embedded industrial controls programming. I provide services for companies making real-world products who wish to save time and resources by outsourcing the final design of their technical documentation and literature.

Documentation is an important part of programming, and unlike many other programmers I actually enjoy producing inline code documentation and external software test procedures, state diagrams, user-interface descriptions, and so on. I also want these documents to look great, since they'll be seen by current users trying to learn how to use the product, as well as potential customers doing their research before deciding what to buy. Clarity, completeness, organization, visual appeal, and grammar — these are things which matter.

Products which I have programmed include industrial controllers for time and temperature, product conveyor motors and solenoids, various display and key interfaces, and industrial networking. These are used in applications such as large dust-control factory air filters, numerous grills and ovens, an automated coffee maker for the railroad industry, a medical UV-treatment light timer, and test equipment such as a pulse-width timer. Each of these has been coded to allow them to survive real-world environments, including power interruption, noise injection, faulty sensors and controls, and programming/memory corruption.

Product documentation (manuals and/or literature) which I have written, edited, or reformatted and typeset include applications such as CNC bearings, mounts, and control software, HVAC equipment, metal-working shear, metal-working lathes, vacuum-testing equipment, a parts washer, pumps, mixers, heat-transfer coils, test equipment, food-production equipment and conveyors, motor speed limiters, an automatic door closer, a fryer control, PLC controller and industrial computer installations, RFID hardware, and a camping trailer user's manual.

Scientific white papers which I have typeset have been for industries such as vacuum testing, hardness testing, optics, robotic control, and HVAC ducts, heat-transfer, and heat-storage units. I have also re-typeset a book about mechanical gear design.

In the process of doing all the above, I have also improved or redesigned a variety of diagrams and illustrations — both as simple as converting a low-resolution scan into a proper line drawing, and as complicated as explaining the logic behind a concept.

Having run a portrait photography business on the side (ref: the above image), I am also able to apply image-processing skills to technical documentation, greatly improving customer-supplied photography and logos as needed. Additional skills include business management, marketing, and accounting principles.

Finally, still being a programmer, I have recently been expanding the LaTeX document-creation system to generate HTML code directly from a LaTeX document, allowing the creation of a high-quality print version accompanied by an accurate HTML version of the same document for publication on the Internet.

Business Description

- Providing services in the area of technical writing and communications.
- Illinois-registered Limited Liability Company (LLC).
- Federal tax number (EIN) registered with the IRS.
- Fixed-price invoicing via 1099, based on units of output, billed according to a standard price schedule.

Background

- Decades of programming experience, including assembly, C, and FORTH languages.
- Embedded industrial-controls software engineering:
  - Microcontrollers — Assembly and C languages.
  - A wide range of commercial products.
  - Real-world survivability — adapting to power loss, electrostatic discharge, memory corruption, sensor malfunction, etc.
  - Libraries of re-usable code.
  - State-machine logic.
  - Application programs, software test procedures, software design reviews.
- Advanced LaTeX document-creation system programming — More than a decade of experience:
  - LaTeX to HTML Converter — the lwarp package — HTML generated directly by LaTeX.
  - Algorithmically-generated LaTeX code:
    - SQL database queries, automatically linked to related LaTeX documents.
    - Automated assembly of modular directories of pieces of code and images into final document, converted to an HTML website.
  - LaTeX to AsciiDoc converter, written entirely in LaTeX / TeX, allowing access to the DocBook tool chain, including XHTML and EPUB output.
- Complete FORTH compiler programming:
  - Token and subroutine-threaded full FORTH compilers — written in themselves.
  - Related development tools, including full editor.
  - Multi-tasking / multi-user programming on 8-bit microprocessors.
- HTML / CSS
- SQL
- *AWK*, *CSH*
- Linux systems administration.

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