

# User and assembly instructions

**Sandra Jansen**, Chief Illustrator at ZINDEL Technical Documentation and Multimedia, shares her experiences and gives practical examples.

The core business of ZINDEL Technical Documentation and Multimedia is the creation of technical documentation for customers from various industries. Based in Hamburg, the company, which celebrated its 10<sup>th</sup> business anniversary in July 2003, offers a full service so that all the steps involved in creating user manuals, installation and repair instructions, and spare parts catalogues are provided as an in-house service. Technical illustration plays an important role in this portfolio.

An essential factor of ZINDEL's philosophy is the quality of its services. By creating convincing and easy-to-understand information, the company meets not only its legal requirements but also the needs of its customers. At the same time, the documentation must be delivered on time and at a fair price. Like other service providers, ZINDEL's staff must cope with complicated tasks under time and cost pressures.

Another challenge is that ZINDEL serves customers from diverse branches of industry, with varied demands of the documentation produced. ZINDEL must consider not only all relevant industry standards but also a wide range of legal requirements. This article explores the factors that influence the creation of user instructions, taking as an example a well-known customer of ZINDEL, Metabo.

## Who is Metabo?

Metabo-Elektra Beckum in Germany is the manufacturer of electrical tools and accessories that are sold in more than 100 countries worldwide. In its facility in Meppen, around 330 employees develop and manufacture woodworking machinery, welding and cutting tools, and equipment for home, workshop and garden. Of course, these are products that demand thoroughly and professionally created user and assembly instructions so that safe operation

is guaranteed. ZINDEL has been exclusively creating documentation for Metabo's Elektra-Beckum range of products since 1998, some of which has been awarded the TÜV/DOCcert certificates for 'User-friendly Documentation'.

## What are the regulations for technical documentation?

There are several categories of compulsory regulations for the field of technical documentation:

- European guidelines and national laws
- European standards (EN) and national standards (DIN in Germany)
- Rules for accident prevention and other similar guidelines.

The service provider must know and comply with these, but the product manufacturer must also follow product-specific requirements and inform the service provider of them.

## Are graphical or textual instructions preferred?

The regulations do not state whether graphical or text-oriented instructions are preferred. However, experience suggests that it is easier for an end-user to understand, for example, a work step shown in a graphic than one explained in a long piece of text.

If the documentation has to be localised for export, a manufacturer can save a lot on translation costs by using **purely** graphical instructions. For Metabo, textual instructions would have to be translated into 14 languages!

Graphical instructions can also be revised cost-effectively, since only one instruction sheet or manual is needed for all countries. As a side-effect, this reduces printing costs.

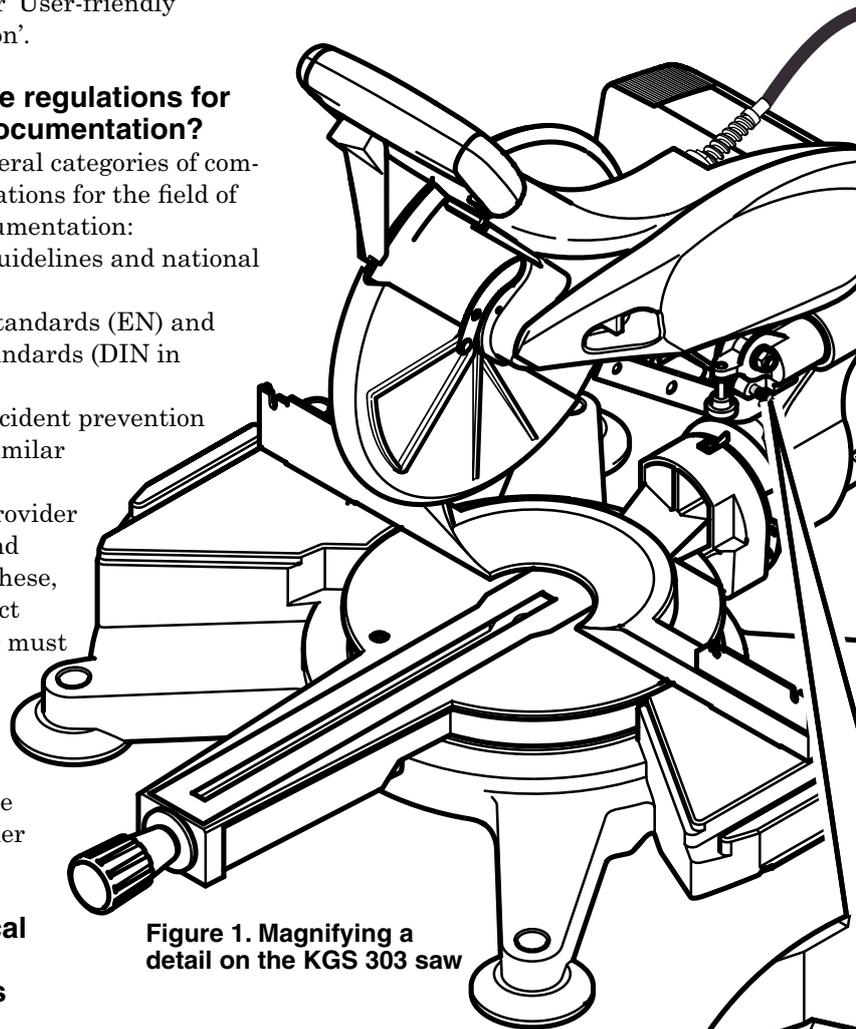


Figure 1. Magnifying a detail on the KGS 303 saw

Nonetheless, the decision to use purely graphical instructions cannot be taken lightly. After all, purely graphical instructions are not simply instructions where the text has been left out. On the contrary, more effort is needed to create easily understandable and self-explanatory

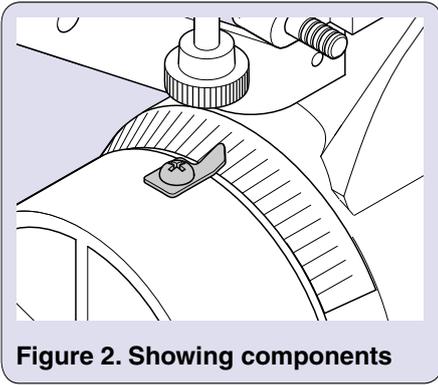


Figure 2. Showing components

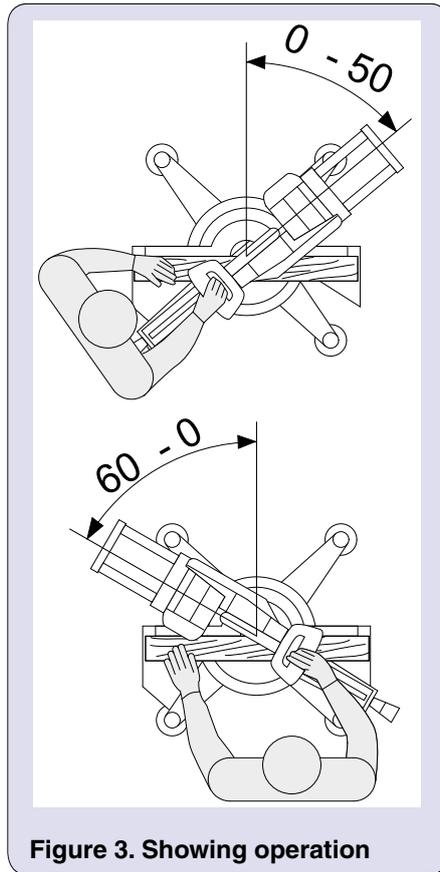


Figure 3. Showing operation

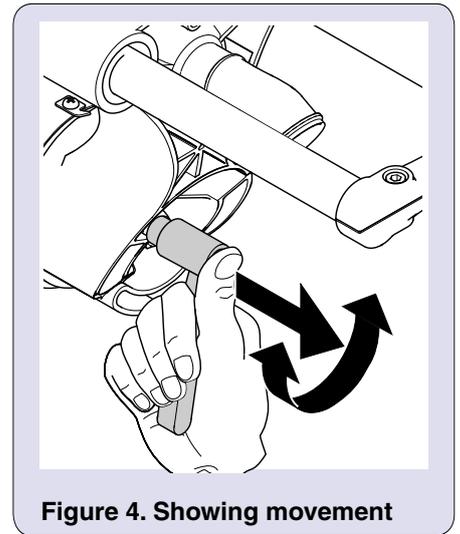


Figure 4. Showing movement

stand-alone graphics. In addition, purely graphical instructions are not suitable for all kinds of products because some issues cannot be depicted graphically and, therefore, must have accompanying text.

For the product manufacturer, purely graphical instructions require more thorough proofreading. Sometimes, clearance is given simply because the product is depicted correctly but this is in no way sufficient. The manufacturer must instead check if the graphics really ensure correct and safe handling and usage of the product.

To summarise, purely graphical

instructions offer great benefits in terms of time- and cost-effectiveness but they are not suitable for all products. At the same time, it is not advisable to create purely textual instructions either. Rather, the use of graphics in combination with text secures maximum comprehensibility for the user of a machine, fulfilling all legal requirements in a cost-effective manner.

### What should be depicted?

Before planning and creating the graphics, some research is needed. What should we draw and how? In what order should the graphics be arranged? What are the dangers we must warn users about? Which machine can be combined with which accessories, and which parts belong together at all? How must the machine be operated overall? This — rather conceptual — part is one of the essential first steps before the actual illustration process starts.

### What illustration techniques should be used?

User instructions demand specific illustration techniques, depending on what is to be depicted. While exploded-view drawings in a parts

catalogue help the reader to identify every single component shown, this kind of illustration is used sparingly in user manuals. The purpose of a user manual is to show single operational steps and so it requires illustration techniques that support these steps.

Since documentation for technical equipment can be rather voluminous (depending on the complexity of the product), it is often created only in black and white to reduce costs. However, even without using colour, there are plenty of ways to direct the reader's attention to a specific detail in an illustration. This is a strength of technical illustration compared with photography: only significant elements are shown in the drawings, while insignificant details are omitted.

Emphasising only the key details is an especially important technique in line-art illustrations for user instructions. For example, a magnifier can indicate an important detail, and greyscale fillings can highlight certain parts of the illustration (Figures 1 and 2). In addition, selected elements can be drawn at a larger scale to accentuate them. Drawings can include parts of the operator's body, showing how to stand at the machine and operate the controls (Figure 3). Arrows can be used to indicate the direction in which, for example, a switch should be turned (Figure 4).

Generally, no matter which technique is being used most, it is advisable to depict each operational step in a separate illustration. Too much information in a single graphic

## 'Why do you want to draw everything again ...?'

might confuse the reader, as might switching between perspectives.

### How can design data be used in manuals?

As described above, emphasising the key details is the essential point in the creation of illustrations for user manuals. When drawing from scratch, the illustrator can draw as abstractly as needed. However, many industrial manufacturers now ask their service providers to use design data from three-dimensional (3D) computer-aided design (CAD) systems. A common question in this context is 'Why do you want to draw everything again when we have already drawn the complete machine in our CAD system?'

However, when 3D CAD data is used for illustrations in user manuals, the illustrator is faced with a

challenge: **all** details of the machine are included in the CAD file and **all** at the original scale used by the design engineer. How can the technical illustrator then manipulate these drawings (for example, to delete superfluous lines and details, or to enlarge important portions of an illustration) without having access to a CAD station?

ZINDEL's illustrators use IsoDraw CADprocess for this purpose. Metabo supplies data from the SolidDesigner CAD system in Initial Graphics Exchange Standard (IGES) format, which IsoDraw CADprocess can read. The illustrators can select the assemblies they need and manipulate them in the 3D window. It then takes only the push of a button to convert them into technical illustrations automatically.

The automated process includes the removal of hidden lines and the application of correct line weights (thick-thin technique). This reduces the illustration work drastically, enabling the illustrator to concen-

trate on the special stylistic devices needed for instructions. These can be realised easily with the drawing tools in IsoDraw CADprocess, which were designed specifically to meet the needs of technical illustrators. The product includes a library of standard parts, such as screws and hands, in all perspectives.

For service providers under pressure to save time and money, tools such as IsoDraw CADprocess can play a valuable role in meeting the client's quality standards within commercial constraints. ■

Sandra Jansen has been working as a Technical Illustrator for five years and joined the ZINDEL team in 1999.  
E-mail: info@zindel.de  
Website: www.zindel.de  
Metabo-Elektra Beckum in the UK:  
www.elektrabeckum.co.uk  
For information on IsoDraw CADprocess, contact Kirsty Reader at Granthams Graphic Technology.  
Phone: 01772 250207.  
E-mail: Kirsty.Reader@granthams.co.uk.  
Alternatively, visit www.itedo.com.

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