# Babel support for the German language (pre-1996 orthography)

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#### Abstract

This manual documents babel language support for German (pre-1996 orthography), including support for the Austrian and Swiss varieties of German. The manual is part of the babel-german bundle.

## 1 Aim and usage

The babel 'language definition file' germanb.ldf documented in this manual provides the babel package with all language specific strings, settings and commands needed for writing German texts, including texts in the Austrian and Swiss varieties of German, in *traditional* (1901–1996) spelling. For contemporary ('reformed'. i. e., post-1996) German orthography support, please refer to the complementary ngermanb manual.¹ The 'language definition file' also assures that the correct hyphenation patterns for the respective language or variety are used (see sec. 3 for details).

In order to use the language definitions provided here, you need to use the babel package and pass the respective language name as an option, either of

- \usepackage[german]{babel}
- \usepackage[austrian]{babel}
- \usepackage[swissgerman]{babel}
- \usepackage[swissgerman.toss]{babel}<sup>2</sup>

New feature in v. 2.10!

Using multiple varieties in parallel is possible; consult the babel manual [2] for details.

<sup>\*</sup>Current maintainer. Please report issues via https://github.com/jspitz/babel-german.

<sup>&</sup>lt;sup>1</sup> The file german.ldf started as a re-implementation of the package german.sty (v. 2.5b), which was originally developed by Hubert Partl (cf. [5]) and later maintained by Bernd Raichle (cf. [6]). Johannes Braams did the initial re-implementation.

<sup>&</sup>lt;sup>2</sup> See sec. 4 on the toss modifier.

#### 2 Shorthands

For all three varieties of German, the character " is made active in order to provide some shorthand macros. Some of these shorthands address a peculiarity of pre-1996 German spelling: consonantial character combinations that change in the context of hyphenations. Other shorthands are provided for frequently used special characters as well as for better control of hyphenation, line breaks and ligatures.

Table 1 provides an overview of the shorthands that are provided by babel-german for german, austrian and swissgerman.

Table 1: Shorthands provided by germanb.ldf

- "a Umlaut  $\langle \ddot{a} \rangle$  (shorthand for \"a). Similar shorthands are available for all other lower-and uppercase vowels (umlauts: "a, "o, "u, "A, "0, "U; tremata: "e, "i, "E, "I).
- "s German  $\langle \mathfrak{B} \rangle$  (shorthand for \ss{}); but cf. sec. 4.
- "z German  $\langle \beta \rangle$  (shorthand for \ss{}). The difference to "s is the uppercase version; but cf. sec. 4.
- "ck  $\langle ck \rangle$ , hyphenated as  $\langle k-k \rangle$ .
- "ff  $\langle ff \rangle$ , hyphenated as  $\langle ff-f \rangle$ ; this is also implemented for  $\langle l \rangle$ ,  $\langle m \rangle$ ,  $\langle n \rangle$ ,  $\langle p \rangle$ ,  $\langle r \rangle$  and  $\langle t \rangle$ . Please refer to sec. 4 for why this does not include  $\langle s \rangle$ .
- "S \uppercase{"s}, typeset as  $\langle SS \rangle$  ( $\langle B \rangle$  must be written as  $\langle SS \rangle$  [or  $\langle SZ \rangle$ , see below] in uppercase writing).
- "Z \uppercase{"z}, typeset as  $\langle SZ \rangle$  ( $\langle f \rangle$  must be written as  $\langle SZ \rangle$  [or  $\langle SS \rangle$ , see above] in uppercase writing).
- "| Disable ligature at this position (e.g., at morpheme boundaries, as in Auf"|lage).
- An additional breakpoint that does still allow for hyphenation at the breakpoints preset in the hyphenation patterns (as opposed to \-).
- "= An explicit hyphen with a breakpoint, allowing for hyphenation at the other points preset in the hyphenation patterns (as opposed to plain -); useful for long compounds such as IT"=Dienstleisterinnen.
- "~ An explicit hyphen without a breakpoint. Useful for cases where the hyphen should stick at the following syllable, e.g., bergauf und "~ab.
- A breakpoint that does not output a hyphen if the line break is performed (consider parenthetical extensions as in (pseudo"~)""wissenschaftlich).

New feature in v. 2.9!

- "/ A slash that allows for a linebreak. As opposed to \slash{}, hyphenation at the breakpoints preset in the hyphenation patterns is still allowed.
- "' German left double quotes  $\langle ", \rangle$ .
- "' German right double quotes (").
- "< French/Swiss left double quotes  $\langle \alpha \rangle$ .
- "> French/Swiss right double quotes (»).

Table 2 lists some babel macros for quotation marks that might be used as an alternative to the quotation mark shorthands listed above.

Table 2: Alternative commands for quotation marks (provided by babel)

```
German left double quotes \langle ,, \rangle.
\glqq
          German right double quotes \langle " \rangle.
\grqq
          German left single quotes \langle , \rangle.
\glq
          German right single quotes (')
\ara
          French/Swiss left double quotes («).
\flqq
          French/Swiss right double quotes (»).
\frqq
          French/Swiss left single quotes \langle \cdot \rangle.
\fla
          French/Swiss right single quotes (>).
\frq
          The straight quotation mark character (").
\da
```

## 3 Hyphenation patterns

The question which hyphenation patterns are used by Babel in case of the varieties of German needs some elaboration. There is a set of established hyphenation patterns for pre- and post-1996 German orthography that has been available wit TEX distributions for a long time (currently, these are shipped in form of the dehypht and dehyphn files). These patterns, though, have many flaws (they produce wrong hyphenations, and not much is known about their construction). Therefore, a group of people developed completely new patterns that do much better, the so-called 'experimental' new hyphenation patterns of German, distributed in the dehyph-exptl package [3]. As opposed to the old patterns, the new ones undergo constant improvement. The price for this, however, is that hyphenation and thus the typeset document is subject to change with, and only due to, pattern updates.

Modern engines (i. e., xetex and luatex) have already embraced those new patterns, i. e., they are activated on these engines by default. The classic TeX engines (tex/pdftex), however, haven't: they continue to use the old patterns. The reason for this is one of TeX's quality standards: refrain, if ever possible, from changing the output of user's documents in the wake of software updates. An exception is (pre-1996) Swiss German: here, the classic engines use the 'experimental' patterns by default (since there were no patterns available previously anyway).

This all means that you need to explicitly activate the new patterns for a given document with the classic engines and in case of german and austrian, should you want to use it instead of the old ones. With Babel, this can be done quite easily by means of the hyphsubst [4] package, like this (please refer to [3] and [4] for details):

```
\RequirePackage[german=german-x-latest]{hyphsubst}
\documentclass{...}
...
\usepackage[german]{babel}
```

For austrian, the code needs to be adapted accordingly.

## 4 Variety-specific options

New feature in v. 2.10! In Swiss (and Liechtensteinian) German writing, the use of  $\langle \mathfrak{B} \rangle$  is rather uncommon. Swiss writers would normally use  $\langle ss \rangle$  where German or Austrian writers use the  $\langle \mathfrak{B} \rangle$  character (e. g.,  $Bu\beta e$  vs. Busse). When texts (or names) from other German speaking areas are quoted, however, the spelling and hence the  $\langle \mathfrak{B} \rangle$  is often maintained (particularly in scholarly writing where the spelling of quoted text is not supposed to be touched).

We assume that Swiss writers will normally input  $\langle ss \rangle$  directly when they mean  $\langle ss \rangle$ , and we assume furthermore that the  $\langle \beta \rangle$ -related shorthands "s and "z are useful also for Swiss writers when they actually need  $\langle \beta \rangle$ , the more so since the  $\langle \beta \rangle$  is not as directly accessible on Swiss keyboards as it is on German and Austrian ones. On the other hand, there might be occasions where writers want to transfer a text from German or Austrian Standard into Swiss Standard German and adapt the spelling on the fly, i. e., transform all  $\langle \beta \rangle$  into  $\langle ss \rangle$ .

For this special case, we provide an option to make the  $\langle B \rangle$ -related shorthands "s and "z expand to the respective digraphs³,  $\langle ss \rangle$  and  $\langle sz \rangle$ , rather than to  $\langle B \rangle$ . This is not the default behavior with swissgerman since, as mentioned, there are situations when the  $\langle B \rangle$  is (and has to be) used in Swiss writing, and normally, no shorthand is needed to input (or output) two simple  $\langle s \rangle$  characters. You can opt-in (and out) digraphical expansion of "s and "z on a global and local level:

- To globally switch on the digraphical expansion, use the Babel modifier toss (read: 'to  $\langle ss \rangle$ ') with swissgerman. I. e., pass swissgerman. toss (rather than swissgerman) as babel option.
- To switch on the digraphical expansion only locally, you can use the boolean switch \tosstrue. Likewise, \tossfalse switches off (both locally and globally set) digraphical expansion.

Both these changes result in the following deviant behavior of two shorthands:

- "s Expands to digraph  $\langle ss \rangle$
- "z Expands to digraph (sz)

One further note related to the use of  $\langle ss \rangle$  in Swiss German. As opposed to other consonantial letters, the  $\langle s \rangle$  is excluded from the three consonant rule (*Dreikonsonantenregel*) of traditional German spelling which prescribes that one of three identical consonants has to be omitted if a vowel follows the three consonants (i. e., *Schiffahrt*, not *Schifffahrt*), except if the word is hyphenated (*Schiff-fahrt*); the shorthands "ff etc. account for that. This does not apply to  $\langle s \rangle$ ! In that case, always all three consonants are spelled out (e. g., *Kongressaal*), not *Kongressaal*). This is why we don't provide a shorthand for the  $\langle sss \rangle$  case.

<sup>&</sup>lt;sup>3</sup>In graphematics, the term *digraph* denotes two characters that make a functional pair (which means, depending on the theoretical assumptions: they represent a single sound or they are semantically distinctive).

## 5 Implementation

#### 5.1 General settings

First, we define some helper macros that help us to identify later on which variety of German we are currently dealing with.

```
1 \def\bbl@opt@german{german}
2 \def\bbl@opt@germanb{germanb}
3 \def\bbl@opt@austrian{austrian}
4 \def\bbl@opt@swissgerman{swissgerman}
```

If germanb.ldf is read via the deprecated babel option germanb, we make it behave as if german was specified.

```
5\ifx\CurrentOption\bbl@opt@germanb
   \def\CurrentOption{german}
   \ifx\l@german\@undefined
     \@nopatterns{German (trad. orthography)}
     \adddialect\l@german0
9
10
   \let\l@germanb\l@german
11
   \AtBeginDocument{%
12
     \let\captionsgermanb\captionsgerman
13
     \let\dategermanb\dategerman
14
     \let\extrasgermanb\extrasgerman
15
      \let\noextrasgermanb\noextrasgerman
16
17 }
18\fi
```

The macro \LdfInit takes care of preventing that this file is loaded more than once with the same option, checking the category code of the @ sign, etc.

```
19 \LdfInit\CurrentOption{captions\CurrentOption}
```

If germanb.ldf is read as an option, i.e. via \usepackage command, german could be an 'unknown' language, so we have to make it known. We check for the existence of \l@german and issue a warning if it is unknown.

```
20 \ifx\l@german\@undefined
21 \@nopatterns{German (trad. orthography)}
22 \adddialect\l@german0
23 \fi
```

We set austrian as a dialect of german, since the Austrian variety uses the same hyphenation patterns as Germany's Standard German. If no German patterns are found, we issue a warning.

```
24\ifx\CurrentOption\bbl@opt@austrian
25\ifx\l@german\@undefined
26\inv \adddialect\l@austrian0
27\inv \adddialect\l@austrian0
28\inv \else
29\inv \adddialect\l@austrian\l@german
30\inv \fi
31\fi
```

For the Swiss variety, we attempt to load the specific swissgerman hyphenation patterns and fall back to german if those are not available. If no patterns are found, we issue a warning.

```
32 \ifx\CurrentOption\bbl@opt@swissgerman
    \ifx\l@swissgerman\@undefined
      \int x \leq \operatorname{degerman} \
        \@nopatterns{Swiss German (trad. orthography) and German (trad. orthography)}
35
        \adddialect\l@swissgerman0
36
37
        \@nopatterns{Swiss German (trad. orthography)}
38
        \adddialect\l@swissgerman\l@german
39
      \fi
40
41 \fi
42\fi
```

### 5.2 Language-specific strings (captions)

The next step consists of defining macros that provide language specific strings and settings.

\@captionsgerman

The macro \@captionsgerman defines all strings used in the four standard document classes provided with LaTeX for German. This is an internal macro that is inherited and modified by the following macros for the respective language varieties.

```
43 \@namedef{@captionsgerman}{%
   \def\prefacename{Vorwort}%
44
   \def\refname{Literatur}%
45
   \def\abstractname{Zusammenfassung}%
46
   \def\bibname{Literaturverzeichnis}%
47
48
   \def\chaptername{Kapitel}%
   \def\appendixname{Anhang}%
49
   \def\contentsname{Inhaltsverzeichnis}%
50
_{51} \def\listfigurename{Abbildungsverzeichnis}%
52 \def\listtablename{Tabellenverzeichnis}%
_{53} \def\indexname{Index}%
54 \def\figurename{Abbildung}%
55 \def\tablename{Tabelle}%
   \def\partname{Teil}%
56
   \def\enclname{Anlage(n)}%
57
   \def\ccname{Verteiler}%
58
   \def\headtoname{An}%
   \def\pagename{Seite}%
   \def\seename{siehe}%
   \def\alsoname{siehe auch}%
   \def\proofname{Beweis}%
   \def\glossaryname{Glossar}%
65 }
```

\captionsgerman

The macro \captionsgerman is identical to \@captionsgerman, but only defined if german is requested.

```
66 \ifx\CurrentOption\bbl@opt@german
67 \@namedef{captionsgerman}{%
68 \@nameuse{@captionsgerman}%
69 }
70 \fi
```

\captionsaustrian

The macro \captionsaustrian builds on \@captionsgerman, but redefines some strings following Austrian conventions (for the respective variants, cf. [1]). It is only defined if austrian is requested.

```
71\ifx\CurrentOption\bbl@opt@austrian
72 \@namedef{captionsaustrian}{%
73 \@nameuse{@captionsgerman}%
74 \def\enclname{Beilage(n)}%
75 }
76\fi
```

\captionsswissgerman

The macro \captionsswissgerman builds on \@captionsgerman, but redefines some strings following Swiss conventions (for the respective variants, cf. [1]). It is only defined if swissgerman is requested.

```
77 \ifx\CurrentOption\bbl@opt@swissgerman
78 \@namedef{captionsswissgerman}{%
79 \@nameuse{@captionsgerman}%
80 \def\enclname{Beilage(n)}%
81 }
82 \fi
```

#### 5.3 Date localizations

\month@german

The macro \month@german defines German month names for all varieties.

```
83 \def\month@german{\ifcase\month\or
84    Januar\or Februar\or M\"arz\or April\or Mai\or Juni\or
85    Juli\or August\or September\or Oktober\or November\or Dezember\fi}
```

\dategerman

The macro \dategerman redefines the command \today to produce German dates. It is only defined if german is requested.

```
86 \ifx\CurrentOption\bbl@opt@german
87 \def\dategerman{\def\today{\number\day.~\month@german
88 \space\number\year}}
89 \fi
```

\dateswissgerman

The macro \dateswissgerman does the same for Swiss German dates. It is only defined if swissgerman is requested. The result is identical to German.

```
90 \ifx\CurrentOption\bbl@opt@swissgerman
91 \def\dateswissgerman{\def\today{\number\day.~\month@german
92 \space\number\year}}
93 \fi
```

The macro \dateaustrian redefines the command \today to produce Austrian versions of the German dates. Here, the naming of January ("Jänner") differs from the other German varieties. The macro is only defined if austrian is requested.

```
94\ifx\CurrentOption\bbl@opt@austrian
_{95} \ \ensuremath{\def\day}{\number\day.~\ifnum1=\month}
     J\"anner\else \month@german\fi \space\number\year}}
97\fi
```

#### 5.4 Extras

\extrasgerman \extrasaustrian \extrasswissgerman \noextrasaustrian \noextrasswissgerman

The macros \extrasgerman, \extrasaustrian and \extrasswissgerman, respectively, will perform all the extra definitions needed for the German language or the respective variety. The macro \noextrasgerman is used to cancel the actions of \extrasgerman. \noextrasaustrian and \noextrasswissgerman behave analoguously.

First, the character " is declared active for all German varieties. This is done once, \noextrasgerman later on its definition may vary.

```
98 \initiate@active@char{"}
```

Depending on the option with which the language definition file has been loaded, the macro \extrasgerman, \extrasaustrian or \extrasswissgerman is defined. Each of those is identical: they load the shorthands defined below and activate the " character.

```
99 \@namedef{extras\CurrentOption}{%
    \languageshorthands{german}}
101\expandafter\addto\csname extras\CurrentOption\endcsname{%
   \bbl@activate{"}}
```

\tossfalse 103\newif\iftoss\tossfalse

toss For Swiss German, we allow optionally to expand the  $\langle \beta \rangle$ -related shorthands the Swiss \tosstrue way, i. e. as  $\langle ss \rangle$  (globally, if the modifier toss is used or locally if \tosstrue.).

```
_{104}\newif\ifbbl@toss\bbl@tossfalse
\@expandtwoargs\in@{,toss,}{,\bbl@mod@swissgerman,}
    \ifin@
107
     \tosstrue
108
109
   \addto\extrasswissgerman{%
110
     \iftoss\bbl@tosstrue\else\bbl@tossfalse\fi}
111
112\fi
```

Next, again depending on the option with which the language definition file has been loaded, the macro \noextrasgerman, \noextrasaustrian or \noextrasswissgerman is defined. These deactivate the " character and thus turn the shorthands off again outside of the respective variety.

```
113 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
114 \bbl@deactivate{"}}
115 \ifx\CurrentOption\bbl@opt@swissgerman
116 \addto\noextrasswissgerman{\bbl@tossfalse}
117\fi
```

In order for TEX to be able to hyphenate German words which contain 'ß' (in the OT1 position ^^Y) we have to give the character a nonzero \lccode (see Appendix H, the TEXbook).

```
118 \expandafter\addto\csname extras\CurrentOption\endcsname{%
119 \babel@savevariable{\lccode25}%
120 \lccode25=25}
```

The umlaut accent macro \" is changed to lower the umlaut dots. The redefinition is done with the help of \umberlautlow.

```
121 \expandafter\addto\csname extras\CurrentOption\endcsname{%
122 \babel@save\"\umlautlow}
123 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
124 \umlauthigh}
```

The German hyphenation patterns can be used with \lefthyphenmin and \righthyphenmin set to 2.

```
125 \providehyphenmins{\CurrentOption}{\tw@\tw@}
```

For German texts we need to assure that \frenchspacing is turned on.

```
126 \expandafter\addto\csname extras\CurrentOption\endcsname{%
127 \bbl@frenchspacing}
128 \expandafter\addto\csname noextras\CurrentOption\endcsname{%
129 \bbl@nonfrenchspacing}
```

#### 5.5 Active characters, macros & shorthands

The following code is necessary because we need an extra active character. This character is then used as indicated in table 1.

In order to be able to define the function of ", we first define a couple of 'support' macros.

We save the original double quotation mark character in \dq to keep it available, the math accent \" can now be typed as ".

Furthermore, we define some helper macros for contextual  $\langle \mathfrak{G} \rangle$  handling.

```
130 \begingroup \catcode'\"12
131 \def\x{\endgroup}
132 \def\dq{"}
133 \def\\@SS{\mathchar"7019 }
134 \def\bbl\@ss{\ifbbl\@toss ss\else\textormath\\ss}\\\@SS\}\fi\)
135 \def\bbl\@SS\SS\
136 \def\bbl\@SZ\\ifbbl\@toss sz\else\textormath\\ss\\\\@SS\}\\fi\)
137 \def\bbl\@SZ\SZ\
138 \\
139 \X
```

Now we can define the doublequote shorthands: the umlauts,

```
 140 \le lare@shorthand \{german\} {\textormath {\ \a} \allow hyphens } {\dot a} $$ 141 \le lare@shorthand \{german\} {\textormath {\ \a} \allow hyphens } {\dot a} $$ $$ 141 \le lare@shorthand \{german\} {\textormath \a} $$ $$ 141 \le lare@shorthand \{german\} {\textormath \a} $$ $$ 141 \le lare@shorthand \{german\} {\textormath \a} $$ 141 \le lare@shorthand \{german\} {\textormath \a} $$ 141 \le lare@shorthand {\textormath \a} $$$ 141 \le lare@shorthand
```

```
_{142} \declare@shorthand{german}{"u}{\text{u}}\declare@shorthand{german}{"u}}
\label{lem:conditional} $$143 \leq are@shorthand{german}{"A}{\text{A}}\allowhyphens}{\dot A}}
{\tt 144 \backslash declare@shorthand\{german\}{"0}{\backslash textormath\{\backslash "\{0\}\backslash allowhyphens}\{\backslash ddot\ 0\}\}}
tremata,
146 \ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{\ensuremath{
147 \ensuremath{\E}}{\dot E}
148 \declare@shorthand{german}{"i}{\text{xtormath}}%
                                                                                        {\ddot\imath}}
149
\label{lem:initial} $$150 \declare@shorthand{german}{"I}{\text{\textormath}\T{I}}{\dot\ I}}$
German ß,
151 \declare@shorthand{german}{"s}{\bbl@ss}
{\tt 152 \backslash declare@shorthand\{german\}\{"S}\{\backslash bbl@SS\}}
{\tt 153 \setminus declare@shorthand\{german\}\{"z\}\{\setminus bbl@sz\}}
_{154} \declare@shorthand{german}{"Z}{\bbl@SZ}
German and French/Swiss quotation marks,
155 \declare@shorthand{german}{"'}{\glqq}
{\tt 156 \backslash declare@shorthand\{german\}\{"\,'\}\{\backslash grqq\}}
_{157} \declare@shorthand{german}{"<}{\flqq}
158 \declare@shorthand{german}{">}{\frqq}
discretionary commands
\label{localize} $$159 \declare@shorthand{german}{"c}{\text{\textormath}\bbl@disc\ck}{c}$$
160 \declare@shorthand{german}{"C}{\textormath{\bbl@disc CK}{C}}
161 \declare@shorthand{german}{"F}{\textormath{\bbl@disc F{FF}}{F}}
164 \declare@shorthand{german}{"m}{\textormath{\bbl@disc m{mm}}{m}}
\label{lem:math} $$165 \leq \ensuremath{\hbl@disc\ M\{MM\}}_{M}}$
166 \declare@shorthand{german}{"n}{\text{\textormath}\{bbl@disc n{nn}}{n}}
167 \declare@shorthand{german}{"N}{\textormath{\bbl@disc N{NN}}}{N}}
{\tt 170 \setminus declare@shorthand\{german\}\{"r}\{\setminus textormath\{\setminus bbl@disc\ r\{rr\}\}\{r\}\}\}
{\tt 172 \setminus declare@shorthand\{german\}\{"t\}\{\setminus textormath\{\setminus bbl@disc\ t\{tt\}\}\{t\}\}}
{\tt 173 \setminus declare@shorthand\{german\}\{"T\}\{\setminus textormath\{\setminus bbl@disc\ T\{TT\}\}\{T\}\}}
(we need to treat "f a bit differently in order to preserve the ff-ligature)
174 \declare@shorthand{german}{"f}{\text{\textormath}(bbl@discff)}{f}}
_{175}\def\bl@discff{\epsilon_{M}}
176 \afterassignment\bbl@insertff \let\bbl@nextff= }
177 \def\bbl@insertff{%
           \if f\bbl@nextff
                 \expandafter\@firstoftwo\else\expandafter\@secondoftwo\fi
179
            {\tt \{\coloredge for the allow hyphens\}\{f\bb\end{figure} ff \end{figure} \label{figure} $$ {\tt f\bb\end{figure} ff \end{figure} $$ {\tt f\bb\end{figure} ff \end{figure} $$ f\bb\end{figure} $$ f\be\end{figure} 
181 \let\bbl@nextff=f
```

and some additional commands (hyphenation, line breaking and ligature control):

```
182 \declare@shorthand{german}{"-}{\nobreak\-\bbl@allowhyphens}
183 \declare@shorthand{german}{"|}{%
184 \textormath{\penalty\@M\discretionary{-}{}{\kern.03em}%
185 \allowhyphens}{}}
186 \declare@shorthand{german}{""}{\hskip\z@skip}
187 \declare@shorthand{german}{"~}{\textormath{\leavevmode\hbox{-}}{-}}
188 \declare@shorthand{german}{"-}{\penalty\@M-\hskip\z@skip}
189 \declare@shorthand{german}{"'}{\textormath
190 {\bbl@allowhyphens\discretionary{/}{}{/}\bbl@allowhyphens}{}}

\mdqon All that's left to do now is to define a couple of commands for reasons of compatibility
\mdqoff with german.sty.
\ck
191 \def\mdqon{\shorthandon{"}}
192 \def\mdqoff{\shorthandoff{"}}
193 \def\ck{\allowhyphens\discretionary{k-}{k}{ck}\allowhyphens}
```

The macro \ldf@finish takes care of looking for a configuration file, setting the main language to be switched on at \begin{document} and resetting the category code of @ to its original value.

194 \ldf@finish\CurrentOption

#### 5.6 austrian.ldf, german.ldf and swissgerman.ldf

Babel expects a  $\langle lang \rangle$ .ldf file for each  $\langle lang \rangle$ . So we create portmanteau ldf files for austrian, german and swissgerman.<sup>4</sup> These files themselves only load germanb.ldf, which does the real work:

195 \input germanb.ldf\relax

## **Change History**

| Version 1.0a  | with the Adobe fontencoding, the             |
|---|--|
| General: Incorporated Nico's  | dieresis-accent is located                   |
| comments 1  | elsewhere, modified germanb 1                |
| Version 1.0b  | Version 1.1a                                 |
| General: fixed typo in definition for austrian language found by        | General: Modified the documentation somewhat |
| Werenfried Spit nspit@fys.ruu.nl . 1 Version 1.oc                       | Version 2.0                                  |
| General: Fixed some typos 1   | General: Modified for babel 3.0 1            |
| Version 1.1   | Now use $\addialect$ for austrian . 5        |
| \noextrasgerman: Added \dieresis 8 General: When using PostScript fonts | Now use \adddialect if language undefined5   |

<sup>&</sup>lt;sup>4</sup> For austrian and german, this is not strictly necessary, since babel provides aliases for these languages (pointing to germanb). However, since babel does not officially support these aliases anymore after the language definition files have been separated from the core, we provide the whole range of ldf files for the sake of completeness.

| Version 2.0a                                     | Version 2.4  |
|--|--|
| General: Removed some problems in                | \@captionsgerman: \headpagename                              |
| change log 1                                     | should be \pagename 6  |
| Version 2.ob                                     | Version 2.5  |
| \extrasgerman: added some comment                | General: Update or $\LaTeX$ 2 $\varepsilon$ 1                |
| chars to prevent white space 8                   | Version 2.5c   |
| \noextrasgerman: added some                      | General: Now use \@nopatterns to                             |
| comment chars to prevent white                   | produce the warning 5  |
| space 8  | Removed the use of \filedate and                             |
| Version 2.1                                      | moved the identification after the                           |
| General: Removed bug found by van                | loading of babel.def   |
| der Meer   | Version 2.6a   |
| Version 2.2                                      | \noextrasgerman: All the code to                             |
| \@captionsgerman: \pagename should               | handle the active double quote has                           |
| be \headpagename6                                | been moved to babel.def 9                                    |
| Removed \global definitions 6                    | Removeed \3 as it is no longer in                            |
| \extrasgerman: Save all redefined                | germanb.ldf  |
| macros 8   | correct values 9   |
| \noextrasgerman: Try to restore                  | General: \umlautlow and \umlauthigh                          |
| everything to its former state 8                 | moved to glyphs.dtx, as well as                              |
| General: Removed global assignments,             | \newumlaut (now \lower@umlaut 9                              |
| brought uptodate with german.tex                 | Moved all quotation characters to                            |
| v2.3d  | glyphs.dtx9  |
| Version 2.2a                                     | Moved the identification to the top                          |
| General: Renamed babel.sty in                    | of the file  |
| babel.com  | Rewrote the code that handles the                            |
| Version 2.2d                                     | active double quote character 1                              |
| General: Removed use of                          | Use \ddot instead of \@MATHUMLAUT . 9                        |
| \@ifundefined5                                   | Version 2.6b   |
| Version 2.3                                      | $\ensuremath{\texttt{Qcaptionsgerman}}$ : Added $\proofname$ |
| General: Rewritten parts of the code to          | for AMS-LATEX 6  |
| use the new features of babel                    | Version 2.6c   |
| version 3.1                                      | \noextrasgerman: Use decimal number                          |
| Version 2.3e                                     | instead of hat-notation as the hat                           |
| \@captionsgerman: Added                          | may be activated 9   |
| \prefacename, \seename and                       | General: added the \allowhyphens 9                           |
| \alsoname 6                                      | Moved \german@dq@disc to                                     |
| $\verb \mathcolor=  Added \month@german : 7  \\$ | babel.def, calling it \bbl@disc 9                            |
| General: Added \save@sf@q macro and              | Version 2.6d   |
| rewrote all quote macros to use it . 9           | \@captionsgerman: Construct control                          |
| Added warning, if no german                      | sequence on the fly 6  |
| patterns loaded 5                                | \noextrasgerman: Construct control                           |
| Brought up-to-date with german.tex               | sequence \extrasgerman or \extrasaustrian on the fly 8       |
| v2.3e (plus some bug fixes) [br] 1               | General: Moved the definition of                             |
| Version 2.3h                                     | \atcatcode right to the beginning 1                          |
| General: moved definition of                     | Now use \ldf@finish to wrap up . 11                          |
| \allowhyphens, \set@low@box and                  | Now use \LdfInit to perform initial                          |
| \save@sf@g to babel.com 9                        | checks   |

| Replaced \undefined with                  | Do not use \@namedef when                                  |
|---|--|
| @undefined and \empty with                | \noextras is already defined and                           |
| \@empty for consistency with $\LaTeX$ . 1 | should not be overwritten 9                                |
| Version 2.6f                              | \noextrasswissgerman: Added                                |
| \ck: Now use \shorthandon and             | \noextrasswissgerman 8                                     |
| \shorthandoff 11                          | General: Added support for variety                         |
| \dateaustrian: use \definstead of         | swissgerman 1  |
| \edef 8                                   | Generate portmanteau files                                 |
| Use \edef to define \today to save        | austrian.ldf,german.ldf and                                |
| memory 8                                  | swissgerman.ldf 11   |
| \dategerman: use \def instead of \edef 7  | Revised austrian support 1                                 |
| Use \edef to define \today to save        | Revised documentation: Turn the                            |
| memory                                    | babel manual chapter into a                                |
| General: Copied the coding for "f         | self-enclosed manual 1 Version 2.7b                        |
| from german.dtx version 2.5d 10           | General: Do not warn about missing                         |
| use \SS instead of SS, removed            | swissgerman patterns if                                    |
| braces after \ss 10                       | swissgerman is not loaded 6                                |
| Version 2.6i                              | Version 2.8  |
| \noextrasgerman: Deactivate               | \@captionsgerman: Define                                   |
| shorthands outside of German 8            | trans-variational base captions                            |
| Version 2.6j                              | which are loaded and modified by                           |
| \@captionsgerman: Added                   | the varieties 6  |
| \glossaryname 6                           | \captionsaustrian: Only define                             |
| \noextrasgerman: Now use                  | \captionsaustrian if austrian is                           |
| \providehyphenmins to provide a           | requested 7  |
| default value                             | \captionsgerman: Only define                               |
| Version 2.6k                              | \captionsgerman if german is                               |
| \noextrasgerman: Turn frenchspacing       | requested 6  |
| on, as in german.sty9                     | \captionsswissgerman: Only define                          |
| Version 2.6l                              | \captionsswissgerman if                                    |
| General: Making germanb behave like       | swissgerman is requested                                   |
| german needs some more work               | \dateaustrian: Only define<br>\dateaustrian if austrian is |
| besides defining \CurrentOption5          | requested 8  |
| Version 2.6m                              | \dategerman: Only define \dategerman                       |
| General: Corrected a typo 5               | if german is requested                                     |
| Version 2.7                               | \dateswissgerman: Only define                              |
| \@captionsgerman: Changed \enclname       | \dateswissgerman if swissgerman                            |
| in austrian to $Beilage(n)$ 6             | is requested 7   |
| Split \captionsgerman from                | General: Only add Austrian dialect if                      |
| \captionsaustrian and                     | austrian is loaded 5                                       |
| \captionsswissgerman 6                    | Version 2.9  |
| \dateswissgerman: Added                   | General: Add "/ shortcut for breakable                     |
| \dateswissgerman7                         | slash (taken from dutch.ldf) 10                            |
| \extrasswissgerman: Added                 | Do not attempt to load \l@austrian,                        |
| \extrasswissgerman 8                      | which does not exist 5                                     |
| \noextrasgerman: Deactivate               | Version 2.10   |
| shorthands also outside of                | \noextrasgerman: Implement boolean                         |
| austrian and swissgerman 8                | switch \tosstrue/\tossfalse to                             |

| customize $\langle \mathfrak{G} \rangle$ -related shorthands | in Swiss German context 8     |
|--|-------------------------------|
| in Swiss German context 8                                    | General: Add helper macros to |
| Implement modifier toss to                                   | identify the current option 5 |
| customize $\langle \mathfrak{G} \rangle$ -related shorthands | Improvements to the manual 1  |

## References

- [1] Ammon, Ulrich et al.: Variantenwörterbuch des Deutschen. Die Standardsprache in Österreich, der Schweiz und Deutschland sowie in Liechtenstein, Luxemburg, Ostbelgien und Südtirol. Berlin, New York: De Gruyter.
- [2] Braams, Johannes and Bezos, Javier: Babel. http://www.ctan.org/pkg/babel.
- [3] Deutschsprachige Trennmustermannschaft: dehyph-exptl Experimental hyphenation patterns for the German language. https://ctan.org/pkg/dehyph-exptl.
- [4] Heiko Oberdiek: hyphsubst Substitute hyphenation patterns. https://ctan.org/pkg/hyphsubst.
- [5] Partl, Hubert: German T<sub>F</sub>X, TUGboat 9/1 (1988), p. 70-72.
- [6] Raichle, Bernd: German. http://www.ctan.org/pkg/german.
- [7] Manuel Pégourié-Gonnard et al.: hyph-utf8 Hyphenation patterns expressed in UTF-8. https://ctan.org/pkg/hyph-utf8.