IPA Braille:
An Updated Tactile Representation of the International Phonetic Alphabet

Print Edition
Overview, Tables, and Sample Texts

Edited by Robert Englebretson, Ph.D.

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By Robert Englebretson

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The sample passages in the Appendix are reprinted with the consent of the International Phonetic Association and by the kind permission of Cambridge University Press. (International Phonetic Association. 1999. *Handbook of the International Phonetic Association: A Guide to the Use of the International Phonetic Alphabet.* New York: Cambridge University Press.) These passages may not be further reproduced except by written permission of the copyright holder, Cambridge University Press.

Finally, I wish to acknowledge the huge debt of gratitude that I and other blind linguists owe to W. Percy Merrick and W. Potthoff for designing the original Braille International Phonetic Alphabet back in 1934, upon which the current work is very closely based. These two pioneering individuals opened doors to literacy and work for blind people in phonetics and related fields, and their important contributions must never be forgotten.

Foreword

By Fredric K. Schroeder, PhD.

President, International Council on English Braille

The International Phonetic Alphabet (IPA) is a standardized representation of the sounds of spoken language. The general principle of the IPA is to provide one symbol for each distinctive speech sound: consonants, vowels, diacritics that slightly modify the pronunciation of those sounds, and suprasegmentals, which indicate such qualities as length, tone, stress, and intonation. It is used by linguists, speech pathologists and therapists, foreign language teachers and students, singers, actors, lexicographers, and translators.

So, how do we represent the IPA in braille so that blind professionals and students in the language sciences can have full access to this critical system of phonetics? The answer is held in the pages of this publication. With the dedicated work and collaboration of several individuals, most notably the editor of this body of work, Dr. Robert Englebretson, currently Assistant Professor of Linguistics at Rice University, Houston, Texas, I am delighted to present the IPA Braille Code. Heartfelt thanks to Dr. Englebretson for his thoughtfulness and determination in unifying the disparate braille IPA codes previously used in the member countries of the International Council on English Braille (ICEB), and for presenting an up-to-date and consistent system which not only remains true to the print IPA, but also provides flexibility for current and future technologies. These are no small tasks to accomplish, and ICEB is grateful for his commitment to the project.

This endeavor was initiated by the Unified English Braille Linguistics Working Group, chaired by ICEB Secretary Jean Obi of Nigeria, and special thanks must go to Jean and her Group for their persistence and dedication in seeing this project to completion. The revision in draft form has had many tributes from linguistics teachers and students alike, lending credibility to our project and the years of work that so many individuals have contributed.

Thanks also to the Canadian National Institute for the Blind for producing the Braille edition including tactile representations of the glyphs.

On behalf of the International Council on English Braille, I am pleased to make this very important body of work available to professionals and students in phonetically-oriented fields of all types, providing a universally accessible format to working with the International Phonetic Alphabet.

Acclaim for IPA Braille

By Martha Pamperin, Chair
BANA (Braille Authority of North America) Literary Technical Committee,

I first learned something about the International Phonetic Alphabet (IPA) in the early 1960's when I was a graduate student with an interest in linguistics. I remember sitting in class, becoming more and more excited as I heard the instructor describe and illustrate the IPA. What a wonderful system, I thought, for transcribing the living sounds of language. As a single, blind, young woman, I was struggling to find a realistic career path. Maybe, I thought, this was it. Using my slate and stylus, I began making up braille symbols for the various IPA characters discussed, but I soon realized there were going to be too many IPA symbols to fit into the little spur of the moment system I was creating. Later, I spent some time trying to devise a sensible braille IPA code. However, I had neither the time nor the knowledge base that such a job would require. Because I had no way to read or write the IPA symbols, the door to any career path requiring use of IPA slammed shut. I am delighted that the braille readers of today and tomorrow now have this critical tool for the study of language. A path closed to me is now open for them because they have IPA Braille at their fingertips.

1. Introduction

This two-volume publication provides a comprehensive overview of the updated braille notation for the International Phonetic Alphabet (IPA Braille). It is designed specifically for students and professionals in linguistics and related fields, or anyone desiring a thorough presentation of the inkprint IPA (as revised to 2005 by the International Phonetic Association) and the braille symbols with which to transcribe it.

Beginning in 1886, the International Phonetic Association has overseen the development of a universally-recognized set of symbols to represent all of the sounds in human language. This set of symbols, now called the International Phonetic Alphabet (IPA) has become the standard means of transcribing speech into written form, especially in phonetically-oriented branches of the language sciences. It is widely used: in field linguistics, for the documentation of under-described or endangered languages that often have no written tradition; in language classrooms, to teach pronunciation skills to non-native speakers; in pronunciation guides of some dictionaries and textbooks, to represent the pronunciation of headwords; in clinical settings, by speech pathologists and researchers to transcribe disordered speech of various kinds; in branches of electrical and computer engineering, to annotate speech spectrograms and develop applications in speech recognition and synthesis; and in vocal music pedagogy, to teach diction for singing in foreign languages. In short, the IPA is useful in any endeavor where it is desirable or necessary to capture specific nuances of accent, voice quality, and intonation. Due to the variety of professional contexts in which the IPA is used, a braille version of the IPA is imperative for blind individuals studying or working in these fields.

While the core symbols of the IPA have remained relatively stable throughout the 20th century, a number of updates have occurred, based on new scientific discoveries about human speech physiology and acoustics, or due to newly documented sounds from previously undescribed languages. In the past twenty years, the International Phonetic Association has updated the IPA several times, including a major revision in 1989, which comprised the addition and withdrawal of a number of consonant and vowel symbols, and a thorough reworking of the modifiers and diacritics. Further changes and modifications were made in 1993 and 1996, followed by the addition of one new symbol in 2005. The major changes in the inkprint IPA over the past two decades have led to the obsolescence of previously published braille versions, and the lack of an up-to-date braille IPA has posed a serious disadvantage to braille readers pursuing study or employment in linguistics and other speech-related fields. This publication seeks to remedy this situation by offering a current and comprehensive braille version of the IPA, and thereby seeks to improve literacy and access for braille readers working in the above-mentioned fields.

The first braille version of the IPA was compiled by Merrick and Potthoff (1934) and published by what is now the Royal National Institute of Blind People in London. (See the References section for the full citation.) This pioneering work promoted braille literacy in linguistics, and opened up career possibilities for blind people in speech-related fields that rely on the IPA. The Merrick and Potthoff notation also became the basis of the braille IPA systems promulgated throughout the 20th century by braille authorities in Germany, France, and English-speaking countries. However, revisions to these codes did not keep pace with the development of the inkprint IPA, and by the 1990s had become obsolete. For example, the braille IPA chart available since 1990 from the Braille Authority of the United Kingdom (BAUK) only presented the symbols of the IPA revised to 1979. In an attempt to update to the 1993 revision of the inkprint IPA, in 1997 the Braille Authority of North America (BANA) broke from the Merrick and Potthoff system, adopting a completely new braille IPA for the United States and Canada (see Rule 18 of BANA 1997, as cited in the References section).

This led to the unfortunate situation where the braille IPA in Europe, as well as in the United Kingdom and other English-speaking countries, which is based on the original Merrick and Potthoff notation, was vastly different from the notation used in the United States and Canada. In addition, because the BANA 1997 notation was not devised in consultation with professional linguists who have a working knowledge of the IPA, it proved to be excessively cumbersome and not robust enough to be used in many professional capacities. The current revision corrects all of these shortcomings, unifies the braille IPA notation used in the U.S. and Canada with that used in the rest of the member countries of the International Council on English Braille (ICEB), and is in complete accord with the official inkprint IPA revised to 2005. As the International Phonetic Association publishes future updates and revisions to the IPA, the editor of this braille version intends to keep IPA Braille updated as well.

Due to the robust nature and wide international acceptance of the original Merrick and Potthoff braille IPA notation, the present IPA Braille maintains the same consonant and vowel symbols whenever possible. The symbols which have been added due to inkprint revisions are designed here to follow the same basic principles of the original Merrick and Potthoff code. The most drastic change has been a complete reworking of the braille representations of diacritics and modifiers. This was necessitated first and foremost because of the major changes to the nature and use of inkprint IPA diacritics over the years. Secondly, the revised braille diacritics are more systematic and user-friendly, and, in order to facilitate computer entry and automated print-to-braille forward- and back-translation, are in line with the composition of Unicode combining diacritics.

In addition to listing the braille equivalent for each of the symbols in the current inkprint IPA, the present volume offers braille readers an accessible introduction to standard typographic and articulatory phonetic terminology, in order to facilitate clear communication between blind and sighted users of the IPA. Additionally, Unicode values are given for each glyph, which, in conjunction with a Unicode-aware screen reader and keyboard mapping software, readily enable blind individuals to type IPA characters on a standard personal computer without sighted assistance, and to read IPA using speech or refreshable braille. Following the main body of the volume and References section is an Appendix of five sample passages illustrating IPA Braille in use, as transcribed into braille from examples presented in the *Handbook of the International Phonetic Association*. The volume concludes with an index providing a list of IPA symbols and their braille representations in pseudo-alphabetical order, as requested by print-to-braille transcribers who may not otherwise be familiar with the IPA, and who thus may find this alternative ordering easier when searching for unfamiliar glyphs.

The supplementary volume (braille version only) is produced on capsule paper, and provides detailed tactile illustrations of each inkprint IPA glyph along with its IPA Braille equivalent. This enables a braille reader to observe and study the shape of each inkprint IPA character, and to associate the shapes of the glyphs with their braille representations. Familiarity with the IPA glyphs is especially crucial for blind students who are learning the IPA in inkprint-oriented classrooms. The supplement is produced separately, so that individuals may download or purchase a hardcopy of either or both volumes, based on their specific needs. In general, a beginning student or someone with no background in phonetics will benefit from the details provided in the introductory volume. On the other hand, an advanced student or professional already well-versed in phonetics will not need these details, and will easily be able to learn IPA Braille from the supplement alone. All users will benefit from the side-by-side presentation of raised-print and braille IPA glyphs in the supplement. Its condensed presentation style also makes the supplement an ideal quick reference list of symbols.

2. The Symbols of the IPA

The official inkprint IPA chart is available online from the web site of the International Phonetic Association http://www.arts.gla.ac.uk/IPA/ipachart.html and is reprinted in numerous textbooks and reference works. It is divided into seven sections: Consonants (Pulmonic), Consonants (Non-Pulmonic), Other Symbols, Vowels, Diacritics, Suprasegmentals, and Tones & Word Accents. The layout of each section presumes a basic familiarity with articulatory phonetics and is formatted accordingly. This braille version does not aim to capture the visual layout of the official inkprint IPA chart, which would be challenging to accurately format in braille, and opaque to users with little to no background in phonetics. Instead, this publication maintains the sections as specified in the official chart, but presents the data of each section in a linear-table format. This method enables the presentation of all of the data on the inkprint chart in verbal rather than spatial terms, and allows for the addition of typographic descriptions and Unicode values for each symbol—features that are not present in the official inkprint chart. Each table contains the inkprint IPA glyph (print version only—tactile drawings of these glyphs are found in the braille Supplement volume), the IPA braille symbol, the dot numbers of the braille symbol, the Unicode value for the print IPA glyph, the typographic description of the inkprint glyph, the official IPA number for the glyph, and the meaning or articulatory description of the sound represented by the IPA symbol. For diacritics and some other modifiers, an additional field in the table entry shows an example of the diacritic combined with a base glyph, in order to illustrate the position of the diacritic in inkprint along with its representation in braille.

For more in-depth background and explanation of phonetics than is possible in this brief volume, the interested reader may consult any introductory phonetics textbook, such as Ladefoged (2005). Those interested in specific usage details for the alphabet should consult the official *Handbook of the International Phonetic Association* (1999). The tables in Appendix 2 of the *Handbook* have served as a model for the tables presented in the present publication of IPA Braille. For a comprehensive, detailed treatment of phonetic symbols, including older glyphs and additional symbols not found in the official IPA, see Pullum and Ladusaw (1996). See the References section for full citations of these sources.

2.1. Consonants (Pulmonic)

Pulmonic consonants are speech sounds that use air flowing out of the lungs (a pulmonic egressive airstream), which is then partially or fully blocked by the articulatory organs of the oral and nasal cavities. Pulmonic consonants are described in terms of three features: voice—whether the vocal folds of the larynx are vibrating (voiced) or not vibrating (voiceless); place of articulation—the point in the vocal tract where the airstream is blocked; and manner of articulation—the degree of airstream blockage. From the front of the mouth to the back, the eleven places of articulation that form the column headings in the standard inkprint IPA consonant chart are as follows: Bilabial (both lips), Labiodental (the upper teeth and lower lip), Dental (the tip of the tongue and the upper teeth), Alveolar (the tip or blade of the tongue and the alveolar ridge), Postalveolar (the tip or blade of the tongue and the region immediately behind the alveolar ridge), Retroflex (tongue-tip curled back), Palatal (the body of the tongue and the hard palate), Velar (the back of the tongue and the velum), Uvular (the back of the tongue and the uvula), Pharyngeal (the root of the tongue and the pharynx wall), and Glottal (the vocal folds in the larynx). The eight manners of articulation for pulmonic consonants that comprise the rows of the standard IPA chart are as follows: Plosive (complete blockage of the pulmonic airflow), Nasal (complete oral blockage of the airflow, but with a lowered velum to allow air to escape through the nose), Trill (a rapid, repeated closure of the articulators), Tap or Flap (a quick closure and release of the articulators—essentially one beat of a trill), Fricative (articulators are in close approximation so as to produce a sustained, turbulent airflow), Lateral Fricative (a fricative in which air escapes from the sides of the tongue), Approximant (articulators are positioned close enough to modulate the airflow, but not close enough to cause turbulence), and Lateral Approximant (an approximant in which air escapes from the sides of the tongue).

Table 2.1: Pulmonic Consonants

Glyph	**Braille**	**Dots**	**Unicode**	**Typographic Desc.**	**IPA#**	**Articulatory Desc.**
p	⠏	1234	U+0070	lowercase p	101	voiceless bilabial plosive
b	⠃	12	U+0062	lowercase b	102	voiced bilabial plosive
t	⠞	2345	U+0074	lowercase t	103	voiceless alveolar plosive
d	⠙	145	U+0064	lowercase d	104	voiced alveolar plosive
ʈ	⠲⠞	256-2345	U+0288	right-tail t	105	voiceless retroflex plosive
ɖ	⠲⠙	256-145	U+0256	right-tail d	106	voiced retroflex plosive
c	⠉	14	U+0063	lowercase c	107	voiceless palatal plosive
ɟ	⠔⠚	35-245	U+025F	barred dotless j	108	voiced palatal plosive
k	⠅	13	U+006B	lowercase k	109	voiceless velar plosive
ɡ	⠛	1245	U+0261	lowercase script g	110	voiced velar plosive
g	⠛	1245	U+0067	lowercase g	210	voiced velar plosive (alternate glyph)

GLYPH	**BRAILLE**	**DOTS**	**UNICODE**	**TYPOGRAPHIC DESC.**	**IPA#**	**ARTICULATORY DESC.**
q	⠟	12345	U+0071	lowercase q	111	voiceless uvular plosive
ɢ	⠔⠛	35-1245	U+0262	small capital g	112	voiced uvular plosive
ʔ	⠆	23	U+0294	glottal stop	113	glottal plosive
m	⠍	134	U+006D	lowercase m	114	voiced bilabial nasal
ɱ	⠖⠍	235-134	U+0271	left-tail m (at right)	115	voiced labiodental nasal
n	⠝	1345	U+006E	lowercase n	116	voiced alveolar nasal
ɳ	⠲⠝	256-1345	U+0273	right-tail n	117	voiced retroflex nasal
ɲ	⠿	123456	U+0272	left-tail n (at left)	118	voiced palatal nasal
ŋ	⠫	1246	U+014B	eng	119	voiced velar nasal
ɴ	⠔⠝	35-1345	U+0274	small capital n	120	voiced uvular nasal
ʙ	⠔⠃	35-12	U+0299	small capital b	121	voiced bilabial trill
r	⠗	1235	U+0072	lowercase r	122	voiced alveolar trill
ʀ	⠔⠗	35-1235	U+0280	small capital r	123	voiced uvular trill
ⱱ	⠖⠧	235-1236	U+2C71 or U+F25F	right-hook v	184	labiodental flap
ɾ	⠖⠗	235-1235	U+027E	fish-hook r	124	voiced alveolar tap
ɽ	⠲⠗	256-1235	U+027D	right-tail r	125	voiced retroflex flap

Glyph	**Braille**	**Dots**	**Unicode**	**Typographic Desc.**	**IPA#**	**Articulatory Desc.**
ɸ	⠨⠋	46-124	U+0278	phi	126	voiceless bilabial fricative
β	⠨⠃	46-12	U+03B2	beta	127	voiced bilabial fricative
f	⠋	124	U+0066	lowercase f	128	voiceless labiodental fricative
v	⠧	1236	U+0076	lowercase v	129	voiced labiodental fricative
θ	⠨⠹	46-1456	U+03B8	theta	130	voiceless dental fricative
ð	⠻	12456	U+00F0	edh	131	voiced dental fricative
s	⠎	234	U+0073	lowercase s	132	voiceless alveolar fricative
z	⠵	1356	U+007A	lowercase z	133	voiced alveolar fricative
ʃ	⠱	156	U+0283	esh	134	voiceless postalveolar fricative
ʒ	⠮	2346	U+0292	ezh	135	voiced postalveolar fricative
ʂ	⠲⠎	256-234	U+0282	right-tail s (at left)	136	voiceless retroflex fricative
ʐ	⠲⠵	256-1356	U+0290	right-tail z	137	voiced retroflex fricative
ç	⠖⠉	235-14	U+00E7	c cedilla	138	voiceless palatal fricative
ʝ	⠦⠚	236-245	U+029D	curly-tail j	139	voiced palatal fricative
x	⠭	1346	U+0078	lowercase x	140	voiceless velar fricative

Glyph	Braille	Dots	Unicode	Typographic Desc.	IPA#	Articulatory Desc.
ɣ	⠨⠛	46-1245	U+0263	gamma	141	voiced velar fricative
χ	⠨⠯	46-12346	U+03C7	chi	142	voiceless uvular fricative
ʁ	⠔⠼	35-3456	U+0281	inverted small capital r	143	voiced uvular fricative
ħ	⠖⠓	235-125	U+0127	barred h	144	voiceless pharyngeal fricative
ʕ	⠖⠆	235-23	U+0295	reversed glottal stop	145	voiced pharyngeal fricative or approximant
h	⠓	125	U+0068	lowercase h	146	voiceless glottal fricative
ɦ	⠦⠓	236-125	U+0266	hooktop h	147	voiced glottal fricative
ɬ	⠦⠇	236-123	U+026C	belted l	148	voiceless alveolar lateral fricative
ɮ	⠇⠐⠮	123-5-2346	U+026E	l-ezh ligature	149	voiced alveolar lateral fricative
ʋ	⠦⠧	236-1236	U+028B	script v	150	voiced labiodental approximant
ɹ	⠼	3456	U+0279	turned r	151	voiced alveolar approximant
ɻ	⠲⠼	256-3456	U+027B	turned r, right tail	152	voiced retroflex approximant
j	⠚	245	U+006A	lowercase j	153	voiced palatal approximant

GLYPH	**BRAILLE**	**DOTS**	**UNICODE**	**TYPOGRAPHIC DESC.**	**IPA#**	**ARTICULATORY DESC.**
ɰ	⠦⠍	236-134	U+0270	turned m, right leg	154	voiced velar approximant
l	⠇	123	U+006C	lowercase l	155	voiced alveolar lateral approximant
ɭ	⠲⠇	256-123	U+026D	right-tail l	156	voiced retroflex lateral approximant
ʎ	⠦⠽	236-13456	U+028E	turned y	157	voiced palatal lateral approximant
ʟ	⠔⠇	35-123	U+029F	small capital l	158	voiced velar lateral approximant

2.2. Consonants (Non-Pulmonic)

Non-pulmonic consonants are speech sounds with an airflow mechanism other than the lungs—i.e. they are produced by using the glottis or velum to create differentials in air pressure. These include implosives, clicks, and ejectives. Implosives and clicks each have their own set of glyphs, categorized by place of articulation as above. Ejectives do not have unique IPA glyphs associated with them, but are indicated by placing the apostrophe diacritic immediately after the homologous pulmonic consonant, as illustrated in the standard IPA chart and explained after the table of implosives and clicks below.

Table 2.2: Non-Pulmonic Consonants

Glyph	Braille	Dots	Unicode	Typographic desc.	IPA#	Articulatory Desc.
ɓ	⠦⠃	236-12	U+0253	hooktop b	160	voiced bilabial implosive
ɗ	⠦⠙	236-145	U+0257	hooktop d	162	voiced dental/alveolar implosive
ʄ	⠦⠔⠚	236-35-245	U+0284	hooktop barred dotless j	164	voiced palatal implosive
ɠ	⠦⠛	236-1245	U+0260	hooktop g	166	voiced velar implosive
ʛ	⠦⠔⠛	236-35-1245	U+029B	hooktop small capital g	168	voiced uvular implosive
ʘ	⠯⠏	12346-1234	U+0298	bull's eye	176	bilabial click
ǀ	⠯⠹	12346-1456	U+01C0	pipe	177	dental click
ǃ	⠯⠞	12346-2345	U+01C3	exclamation point	178	(post-)alveolar click
ǂ	⠯⠱	12346-156	U+01C2	double-barred pipe	179	palatoalveolar click
ǁ	⠯⠇	12346-123	U+01C1	double pipe	180	alveolar lateral click

Just as in the inkprint IPA, ejectives in IPA Braille do not have unique glyphs, but are notated by placing the IPA apostrophe diacritic ⠐⠄ (dots 5-3) immediately after the homologous pulmonic consonant. For example:

p’ ⠏⠐⠠ ejective bilabial plosive

t’ ⠞⠐⠠ ejective dental/alveolar plosive

k’ ⠅⠐⠠ ejective velar plosive

s’ ⠎⠐⠠ ejective alveolar fricative

2.3. Other Symbols

This section of the inkprint IPA chart consists of pulmonic consonants which are co-articulated or produced simultaneously. It also includes the epiglottal consonants, whose place of articulation is not generally listed on the pulmonic consonant chart itself.

Table 2.3: Other Pulmonic Consonants

GLYPH	BRAILLE	DOTS	UNICODE	TYPOGRAPHIC DESC.	IPA#	ARTICULATORY DESC.
ʍ	⠖⠺	235-2456	U+028D	turned w	169	voiceless labial-velar fricative
w	⠺	2456	U+0077	lowercase w	170	voiced labial-velar approximant
ɥ	⠲⠓	256-125	U+0265	turned h	171	voiced labial-palatal approximant
ʜ	⠔⠓	35-125	U+029C	small capital h	172	voiceless epiglottal fricative
ʡ	⠦⠆	236-23	U+02A1	barred glottal stop	173	epiglottal plosive
ʢ	⠔⠆	35-23	U+02A2	barred reversed glottal stop	174	voiced epiglottal fricative

GLYPH	**BRAILLE**	**DOTS**	**UNICODE**	**TYPOGRAPHIC DESC.**	**IPA#**	**ARTICULATORY DESC.**
ɧ	⠦⠫	236-1246	U+0267	hooktop heng	175	simultaneous voiceless postalveolar and velar fricative
ɺ	⠦⠼	236-3456	U+027A	turned long-leg r	181	voiced alveolar lateral flap
ɕ	⠦⠉	236-14	U+0255	curly-tail c	182	voiceless alveolopalatal fricative
ʑ	⠦⠵	236-1356	U+0291	curly-tail z	183	voiced alveolopalatal fricative
ɫ	⠖⠇	235-123	U+026B	lowercase l with tilde	209	velarized voiced alveolar lateral approximant

In the print IPA, affricates and double articulations may sometimes be represented as two symbols connected by a ligature or tie bar. When this occurs, IPA Braille uses ⠐ (dot 5) between the glyphs being joined. This symbol should be used to indicate any of the inkprint ligatures or ties. For example:

k͡p ⠅⠐⠏

t͜s ⠞⠐⠎

The braille representation of common (non-IPA) symbols for affricates and other sounds not shown here will be discussed below in Section 3.1.

2.4. Vowels

Vowels are speech sounds produced by modulating the airflow based on the shape of the oral cavity. The three articulatory features used in the description of vowels are: height—the relative height of the tongue and/or openness of the mouth; advancement—the relative position of the tongue toward the front or the back of the mouth; and lip rounding—whether the lips are rounded or unrounded. Moving from the top to the bottom of the mouth, the four height positions that comprise the row headings in the standard inkprint IPA vowel quadrilateral are: Close, Close-mid, Open-mid, and Open. The three positions of tongue advancement that make up the column headings in the standard inkprint IPA vowel quadrilateral are front, central, and back. (Some phonetic traditions may categorize vowels based on other features such as 'tense', 'lax', etc. The ones given here are the official terms used by the International Phonetic Association.)

Table 2.4: Vowels

GLYPH	BRAILLE	DOTS	UNICODE	TYPOGRAPHIC DESC.	IPA#	ARTICULATORY DESC.
i	⠊	24	U+0069	lowercase i	301	close front unrounded vowel
e	⠑	15	U+0065	lowercase e	302	close-mid front unrounded vowel
ɛ	⠜	345	U+025B	epsilon	303	open-mid front unrounded vowel
a	⠁	1	U+0061	lowercase a	304	open front unrounded vowel
ɑ	⠡	16	U+0251	script a	305	open back unrounded vowel

Glyph	**Braille**	**Dots**	**Unicode**	**Typographic Desc.**	**IPA#**	**Articulatory Desc.**
ɔ	⠣	126	U+0254	open o	306	open-mid back rounded vowel
o	⠕	135	U+006F	lowercase o	307	close-mid back rounded vowel
u	⠥	136	U+0075	lowercase u	308	close back rounded vowel
y	⠽	13456	U+0079	lowercase y	309	close front rounded vowel
ø	⠳	1256	U+00F8	slashed o	310	close-mid front rounded vowel
œ	⠪	246	U+0153	lowercase o-e ligature	311	open-mid front rounded vowel
ɶ	⠔⠪	35-246	U+0276	small capital o-e ligature	312	open front rounded vowel
ɒ	⠖⠡	235-16	U+0252	turned script a	313	open back rounded vowel
ʌ	⠬	346	U+028C	turned v (caret)	314	open-mid back unrounded vowel
ɤ	⠖⠕	235-135	U+0264	ram's horns	315	close-mid back unrounded vowel
ɯ	⠖⠥	235-136	U+026F	turned m	316	close back unrounded vowel
ɨ	⠴⠊	356-24	U+0268	barred i	317	close central unrounded vowel
ʉ	⠴⠥	356-136	U+0289	barred u	318	close central rounded vowel
ɪ	⠌	34	U+026A	small capital i	319	near-close near-front unrounded vowel

Glyph	Braille	Dots	Unicode	Typographic Desc.	IPA#	Articulatory Desc.
ʏ	⠔⠽	35-13456	U+028F	small capital y	320	near-close near-front rounded vowel
ʊ	⠷	12356	U+028A	upsilon	321	near-close near-back rounded vowel
ə	⠢	26	U+0259	schwa	322	mid central vowel
ɵ	⠴⠕	356-135	U+0275	barred o	323	close-mid central rounded vowel
ɐ	⠖⠁	235-1	U+0250	turned a	324	near-open central vowel
æ	⠩	146	U+00E6	ash	325	near-open front unrounded vowel
ɜ	⠖⠜	235-345	U+025C	reversed epsilon	326	open-mid central unrounded vowel
ɚ	⠢⠐⠗	26-5-1235	U+025A	right-hook schwa	327	rʒcolored mid central vowel
ɞ	⠦⠜	236-345	U+025E	closed reversed epsilon	395	open-mid central rounded vowel
ɘ	⠖⠑	235-15	U+0258	reversed e	397	close-mid central unrounded vowel

2.5. Diacritics

Diacritics are symbols that indicate subtle modifications in the pronunciation of a consonant or vowel. In the inkprint IPA, combining diacritics may take three positions relative to a base glyph: above (either directly above, or superscript after), at the same level (either superimposed on the base glyph, or immediately after), or below (either directly underneath, or subscript after). In IPA Braille, the combining diacritic symbol always comes after the base glyph being modified. The first cell of the braille combining diacritic is a placement indicator, representing the level of the diacritic by using one of the three dots in the right-hand column of the braille cell. ⠈ (dot 4) indicates that the diacritic appears above the base glyph—either directly above, or superscript after. ⠠ (dot 6) indicates that the diacritic appears below the base glyph—either directly beneath, or subscript after. ⠐ (dot 5) indicates that the diacritic is on the same level as the base glyph—either superimposed through the center of the glyph, or immediately after it. Because there are only three same-level IPA diacritics (⠐⠻ ‘superimposed tilde’ to indicate velarization/pharyngealization, ⠐⠗ ‘right-hook’ to indicate rhoticity, and ⠐⠄ ‘apostrophe’ to indicate an ejective), dot 5 also indicates the inkprint tie bar or ligature, and is placed between the two base glyphs which are tied or ligatured together for which there is no IPA symbol uniquely defined (see Section 3.1 below). In addition, other IPA modifiers (see Sections 2.6 and 2.7 below) are non-combining, meaning that they do not combine with a base glyph in any of these positions, but instead function as if they were letters. IPA Braille uses ⠸ (dots 456) as the first cell of most non-combining modifiers, including tone bars, intonation arrows, and prosodic grouping symbols illustrated below in Sections 2.6 and 2.7.

Some combining diacritics may occur at all three levels, and the level of the diacritic will determine its articulatory meaning. For example, the ~ (tilde) diacritic (written in IPA Braille as ⠈⠻, ⠐⠻, or ⠠⠻, depending on its position with respect to the base character) may occur at any of these three levels. When it occurs above a base glyph, e.g. [ã] ⠘⠷⠁⠈⠻⠘⠾ it indicates nasalization; when it is superimposed through a base glyph, e.g. [ɫ] ⠘⠷⠞⠐⠻⠘⠾ it indicates velarization or pharyngealization; and a tilde below a base glyph, e.g. [a̰] ⠘⠷⠁⠠⠻⠘⠾ indicates creaky voice.

Other combining diacritics may be placed either above or below the base glyph, depending on whether that glyph has a descender in print. For example, the ̥ (ring) diacritic (written ⠈⠫ or ⠠⠫ in IPA Braille, depending on whether it is positioned above or below the base glyph respectively) indicates that a voiced sound is being pronounced as voiceless. It occurs below inkprint glyphs that do not have descenders, e.g. [ḁ] ⠘⠷⠁⠠⠫⠘⠾, and it occurs above inkprint glyphs that have descenders, e.g. [ŋ̊] ⠘⠷⠫⠈⠫⠘⠾.

Note that IPA Braille diacritics are explicitly defined as multi-cell, composite characters, including the placement indicator (dot 4, 5, or 6). This is crucial for two reasons. First, as just discussed, the initial dot shows the vertical position with respect to the base glyph. Second, the initial dot clearly indicates that the braille symbol represents a combining diacritic, rather than a consonant or vowel that may happen to have the same IPA Braille dot configuration. For instance, as shown in the pulmonic consonant chart in Section 2.1, the IPA Braille symbol ⠫ (dots 1246) represents the voiced velar nasal ŋ (eng), and the IPA Braille symbol ⠻ (dots 12456) represents the voiced dental fricative ð (edh). In the above examples, the ~ (tilde) and ̥ (ring) diacritics are clearly distinct from the consonants [ð] and [ŋ] respectively, because of the initial placement dot that marks them as braille combining diacritics. This is true of many symbols in the following table, whose dot configurations may indicate a consonant or vowel if not preceded by a diacritic placement dot.

For purposes of consistency, the roots of many of the IPA Braille combining diacritics are identical to those defined in Unified English Braille (UEB), specifically the UEB symbols ⠌ (dots 34) ‘acute accent’, ⠡ (dots 16) ‘grave accent’, ⠻ (dots 12456) ‘tilde’, ⠒ (dots 25) ‘umlaut’, ⠩ (dots 146) ‘circumflex’, and ⠫ (dots 1246) ‘circle’. However, unlike their UEB counterparts, in IPA Braille the combining diacritic always comes after the glyph that it modifies, and always includes the IPA Braille placement dot to indicate its position relative to the base glyph as described above.

When a base glyph combines with two or more diacritics, IPA Braille transcribes them in order from lowest to highest level, followed by any non-combining modifiers. For example, the IPA segment [r̩̂ː] (lowercase r with vertical stroke below and circumflex above followed by a length mark) would be transcribed in IPA Braille as ⠘⠷⠗⠠⠆⠈⠩⠒⠘⠾, beginning with the base glyph, followed by the bottom-most combining diacritic, moving upward to the top-most combining diacritic, and then followed by the non-combining modifier. Similarly, the IPA segment [ɯ̥̃] (the close back unrounded vowel with ring below and tilde above) would be transcribed in IPA Braille as ⠘⠷⠖⠥⠠⠫⠈⠻⠘⠾. (These two examples come from the Croatian and Portuguese sample IPA passages presented in the Appendix. See the Appendix for more examples.)

Note that the right-most column in the following table gives an example of diacritic usage. These examples are for illustrative purposes only, as each of these combining diacritics may occur with any number of base glyphs besides the one depicted here in the example.

Table 2.5: Diacritics

GLYPH	BRAILLE	DOTS	UNICODE	TYPOGRAPHIC DESC.	IPA#	MEANING	EXAMPLE
ʼ	⠐⠄	5-3	U+02BC	apostrophe	401	ejective	tʼ ⠞⠐⠄
̥	⠠⠫	6-1246	U+0325	ring below	402A	voiceless	b̥ ⠃⠠⠫
̊	⠈⠫	4-1246	U+030A	ring above	402B	voiceless	g̊ ⠛⠈⠫
̬	⠠⠦	6-236	U+032C	wedge below	403	voiced	t̬ ⠞⠠⠦

GLYPH	BRAILLE	DOTS	UNICODE	TYPOGRAPHIC DESC.	IPA#	MEANING	EXAMPLE
ʰ	⠈⠓	4-125	U+02B0	superscript h	404	aspirated	tʰ ⠞ ⠈⠓
̤	⠠⠒	6-25	U+0324	umlaut below	405	breathy voiced	b̤ ⠃ ⠠⠒
̰	⠠⠻	6-12456	U+0330	tilde below	406	creaky voiced	ḛ ⠑ ⠠⠻
̼	⠠⠯	6-12346	U+033C	seagull below	407	linguolabial	t̼ ⠞ ⠠⠯
̪	⠠⠹	6-1456	U+032A	bridge below	408	dental	t̪ ⠞ ⠠⠹
̺	⠠⠖⠹	6-235-1456	U+033A	inverted bridge below	409	apical	t̺ ⠞ ⠠⠖⠹
̻	⠠⠶	6-2356	U+033B	square below	410	laminal	r̻ ⠗ ⠠⠶
̹	⠠⠕	6-135	U+0339	right half-ring below	411	more rounded	e̹ ⠑ ⠠⠕
̜	⠠⠪	6-246	U+031C	left half-ring below	412	less rounded	o̜ ⠕ ⠠⠪
̟	⠠⠬	6-346	U+031F	plus below	413	advanced	o̟ ⠕ ⠠⠬
̠	⠠⠤	6-36	U+0320	minus below	414	retracted	e̠ ⠑ ⠠⠤
̈	⠈⠒	4-25	U+0308	umlaut above	415	centralized	ë ⠑ ⠈⠒
̽	⠈⠭	4-1346	U+033D	over-cross above	416	mid-centralized	e̽ ⠑ ⠈⠭
̘	⠠⠱	6-156	U+0318	advancing sign below	417	advanced tongue root	e̘ ⠑ ⠠⠱
̙	⠠⠎	6-234	U+0319	retracting sign below	418	retracted tongue root	e̙ ⠑ ⠠⠎
˞	⠐⠗	5-1235	U+02DE	right hook	419	rhoticity	e˞ ⠑ ⠐⠗

GLYPH	**BRAILLE**	**DOTS**	**UNICODE**	**TYPOGRAPHIC DESC.**	**IPA#**	**MEANING**	**EXAMPLE**
ʷ	⠈⠺	4-2456	U+02B7	superscript w	420	labialized	eʷ ⠑⠈⠺
ʲ	⠈⠚	4-245	U+02B2	superscript j	421	palatalized	tʲ ⠞⠈⠚
ˠ	⠈⠨⠻	4-46-1245	U+02E0	superscript gamma	422	velarized	tˠ ⠞⠈⠨⠻
ˤ	⠈⠖⠆	4-235-23	U+02E4	superscript reversed glottal stop	423	pharyngealized	eˤ ⠑⠈⠖⠆
̃	⠈⠻	4-12456	U+0303	tilde above	424	nasalized	ẽ ⠑⠈⠻
ⁿ	⠈⠝	4-1345	U+207F	superscript n	425	nasal release	dⁿ ⠙⠈⠝
ˡ	⠈⠇	4-123	U+02E1	superscript l	426	lateral release	tˡ ⠞⠈⠇
̚	⠈⠙	4-145	U+031A	corner above	427	no audible release	t̚ ⠞⠈⠙
̴	⠐⠻	5-12456	U+0334	superimposed tilde	428	velarized or pharyngealized	ɫ ⠇⠐⠻
̝	⠠⠜	6-345	U+031D	raising sign below	429	raised	e̝ ⠑⠠⠜
̞	⠠⠣	6-126	U+031E	lowering sign below	430	lowered	e̞ ⠑⠠⠣
̩	⠠⠆	6-23	U+0329	vertical line below	431	syllabic	m̩ ⠍⠠⠆
̯	⠠⠾	6-23456	U+032F	arch below	432	non-syllabic	n̯ ⠝⠠⠾
͡	⠐	5	U+0361	top tie bar	433	affricate or double articulation	k͡p ⠅⠐⠏

2.6. Suprasegmentals

Suprasegmentals refer to features that go on top of (supra-) the consonants and vowels (segments) of spoken language. Suprasegmental signs are generally used to notate the prosody of speech sounds, syllables, words, or phrases, and indicate features such as stress, length, syllable breaks, and timing. IPA Braille precisely follows the inkprint IPA in the placement of these symbols. In other words, glyphs having to do with segment length come after the affected segment in braille, just as they do in print, glyphs indicating stress come before the affected syllable in braille, just as they do in print, and the symbols for major and minor intonation groups occur at the end of phrases, just as in print. See the sample IPA passages in the Appendix for specific examples.

Table 2.6: Suprasegmentals

Glyph	Braille	Dots	Unicode	Typographic Desc.	IPA#	Meaning	Example
ˈ	⠸⠃	456-12	U+02C8	vertical stroke (superior)	501	(primary) stress	
ˌ	⠸⠆	456-23	U+02CC	vertical stroke (inferior)	502	secondary stress	
ː	⠒	25	U+02D0	length mark	503	long	eː ⠑⠒
ˑ	⠐⠂	5-2	U+02D1	half-length mark	504	half-long	eˑ ⠑⠐⠂
̆	⠈⠯	4-12356	U+0306	breve above	505	extra-short	ĕ ⠑⠈⠯
.	⠄	3	U+002E	period	506	syllable break	
|	⠸⠳	456-1256	U+007C	vertical line	507	minor (foot) group	

Glyph	Braille	Dots	Unicode	Typographic Desc.	IPA#	Meaning	Example
‖	⠸⠿	456-123456	U+2016	double vertical line	508	major (intonation) group	
‿	⠸⠇	456-123	U+203F	bottom tie bar	509	linking (absence of a break)	

2.7. Tones & Word Accents

This section of the IPA chart consists of symbols to represent tone (the relative pitch on which a syllable is pronounced) and other features of lexical and phrasal intonation. The IPA provides two equivalent sets of symbols for indicating tone. One set consists of combining diacritics placed above the syllable nucleus, and the other consists of ‘tone letters’ placed immediately after the relevant syllable. IPA Braille provides representations for both methods.

Print tone letters consist of two lines: one line is vertical, providing a reference frame, and the other line intersects it, iconically depicting the relative height and level or contour of the tone. The IPA Braille tone letters likewise attempt to capture the iconic shape of the print tone bar glyphs as far as possible (although the order of vertical and intersecting lines is reversed). Each braille tone letter begins with ⠸ (dots 456) both to indicate a non-combining modifier, and also to represent the vertical reference bar in the inkprint symbol. The remaining cell(s) of the braille tone letter represent the height and shape of the pitch. Note that in the typographic descriptions of these tone letters, the numbers in parentheses indicate the commonly-used descriptions of these symbols based on a series of numbered pitch registers, where the digit 5 refers to the highest pitch register and the digit 1 to the lowest. In other words, the number “55” indicates a level tone that starts at the highest pitch register (5) and remains there, the number "13" refers to a contour tone that starts at the lowest pitch register (1) and rises to the mid register (3), and so on.

As with the suprasegmental symbols presented in the previous section, IPA Braille precisely follows the inkprint placement of these diacritics and modifiers: placing upstep and global intonation symbols before the affected segment, syllable, word, or phrase, placing a tone bar either before or after the syllable it modifies (depending on the inkprint text) and by using ⠈ (dot 4) to indicate a tone diacritic combined above a base glyph. See the sample IPA passages in the Appendix for specific examples.

Table 2.7: Tones and Word Accents

Glyph	**Braille**	**Dots**	**Unicode**	**Typographic Desc.**	**IPA#**	**Meaning**	**Example**
̋	⠈⠠⠌	4-6-34	U+030B	double acute accent above	512	extra high level tone	e̋ ⠑⠈⠠⠌
˥	⠸⠈⠉	456-4-14	U+02E5	extra-high (55) tone bar	519	extra high level tone	
́	⠈⠌	4-34	U+0301	acute accent above	513	high level tone	é ⠑⠈⠌
˦	⠸⠉	456-14	U+02E6	high (44) tone bar	520	high level tone	
̄	⠈⠉	4-14	U+0304	macron above	514	mid level tone	ē ⠑⠈⠉
˧	⠸⠒	456-25	U+02E7	mid (33) tone bar	521	mid level tone	
̀	⠈⠡	4-16	U+0300	grave accent above	515	low level tone	è ⠑⠈⠡

Glyph	Braille	Dots	Unicode	Typographic Desc.	IPA#	Meaning	Example
˨	⠸⠤	456-36	U+02E8	low (22) tone bar	522	low level tone	
̏	⠈⠠⠡	4-6-16	U+030F	double grave accent above	516	extra low level tone	ȅ ⠑ ⠈⠠⠡
˩	⠸⠠⠤	456-6-36	U+02E9	extra-low (11) tone bar	523	extra low level tone	
̌	⠈⠦	4-236	U+030C	wedge above	524	rising contour tone	ě ⠑ ⠈⠦
˩˥	⠸⠌	456-34	U+02E9 + U+02E5	rising (15) tone bar	529	rising contour tone	
̂	⠈⠩	4-146	U+0302	circumflex above	525	falling contour tone	ê ⠑ ⠈⠩
˥˩	⠸⠡	456-16	U+02E5 + U+02E9	falling (51) tone bar	530	falling contour tone	
᷄	⠈⠊	4-24	U+1DC4	macron-acute above	526	high -rising contour tone	e᷄ ⠑ ⠈⠊
˧˥	⠸⠊	456-24	U+02E7 + U+02E5	high-rising (35) tone bar	531	high-rising contour tone	
᷅	⠈⠔	4-35	U+1DC5	grave-macron above	527	low-rising contour tone	e᷅ ⠑ ⠈⠔
˩˧	⠸⠔	456-35	U+02E9 + U+02E7	low-rising (13) tone bar	532	low-rising contour tone	
᷈	⠈⠲	4-256	U+1DC8	grave-acute-grave above	528	rising-falling contour tone	e᷈ ⠑ ⠈⠲

Glyph	**Braille**	**Dots**	**Unicode**	**Typographic Desc.**	**IPA#**	**Meaning**	**Example**
˨˥˨	⠸⠲	456-256	U+02E8 + U+02E5 + U+02E8	rising-falling (151) tone bar	533	rising-falling contour tone	
↓	⠸⠮	456-2346	U+2193 or U+F19D	down arrow	517	downstep	
↑	⠸⠫	456-1246	U+2191 or U+F19C	up arrow	518	upstep	
↗	⠸⠙	456-145	U+2197	upward diagonal arrow	510	global rise	
↘	⠸⠴	456-356	U+2198	downward diagonal arrow	511	global fall	

2.8. Phonetic and Phonemic Enclosures

It is recommended by the International Phonetic Association, and is conventional in professional contexts, to always enclose IPA material in square brackets for phonetic transcription, and to enclose IPA material between forward slashes for phonemic transcription. This separates passages of IPA from standard orthography, and indicates to the reader the level of phonetic detail being represented. The IPA Braille equivalents of these symbols are as follows:

Table 2.8: Phonetic and Phonemic Enclosures

GLYPH	BRAILLE	DOTS	UNICODE	TYPOGRAPHIC DESC.	IPA#	MEANING
[	⠘⠷	45-12356	U+005B	left square bracket	901	begin phonetic transcription
]	⠘⠾	45-23456	U+005D	right square bracket	902	end phonetic transcription
/	⠘⠌	45-34	U+002F	slash	903	begin/end phonemic transcription

As in inkprint, these symbols should always be used in braille, to indicate that the enclosed material should be read as IPA Braille (instead of, say, a contracted literary braille code), and to indicate whether the material is of a phonetic or phonemic nature. In addition to the enclosure symbols listed above, the legislative bodies (braille authorities) responsible for oversight of the braille codes used for particular languages, countries, or regions, may stipulate additional rules for the presentation of non-local braille codes such as IPA Braille. For example, some braille authorities may specify the use of specific code-switch indicators to explicitly mark the transition from one braille code to another, e.g. one code-switch indicator to show that the text is now in IPA Braille rather than Unified English Braille, and then a different code-switch indicator to signal the end of the IPA Braille text and a return to Unified English Braille. Whenever possible, however, this editor recommends the avoidance of complex code-switch indicators; instead, the phonetic and phonemic enclosure signs themselves should be used for this purpose, in order to make the resulting text less cluttered and more reader-friendly. Editor’s recommendation aside however, the rules about whether, how often, and in what contexts code-switch indicators are to be used are ultimately up to the determination of each of the braille legislative bodies; interested readers and transcribers should check with their local braille authority for specific rules and recommendations for best practices of indicating that a glyph, word, or passage is written in IPA Braille rather than in the local braille code.

3. Non-IPA Symbols

The tables in Section 2 have presented IPA Braille equivalents for 180 glyphs—all of the symbols currently on the official IPA chart (including phonetic and phonemic enclosures). This is no easy task, considering that there are only 63 unique dot combinations in the braille cell. In other words, the number of official IPA characters is nearly three times the number of unique, single-cell braille dot combinations. In addition to the glyphs presented above, students and professionals in the language sciences will undoubtedly encounter many more phonetic symbols that are not officially endorsed by the International Phonetic Association, and thus are not listed in the above tables. For a full overview of most of these inkprint symbols, see Pullum and Ladusaw (1996). The current section offers recommendations for ways of dealing with non-IPA glyphs, including: using the existing resources of IPA Braille to represent them (Section 3.1), using a set of document-specific, transcriber-defined symbols (Section 3.2), and using temporary switch indicators to incorporate symbols such as punctuation and numerals from another braille code (Section 3.3).

3.1. Common Phonetic Symbols and Punctuation

Because IPA Braille includes a robust system for dealing with diacritics and modifiers, many of the frequently-encountered non-IPA symbols can nonetheless be easily represented. For instance, one widely-used system of transcribing postalveolar fricatives and affricates (especially in Americanist and Slavicist linguistic traditions) places the hacek ('wedge') diacritic over a base consonant. IPA Braille easily accommodates this by using the equivalent IPA Braille diacritic ⠈⠦ (dots 4-236) 'wedge above'. The IPA Braille representations of these consonants are therefore as follows:

Table 3.1: Non-IPA Symbols for Postalveolar Fricatives and Affricates

GLYPH	BRAILLE	DOTS	UNICODE	TYPOGRAPHIC DESC.	IPA#	ARTICULATORY DESC.
š	⠎⠈⠦	234-4-236	U+0161	s wedge	297	voiceless postalveolar fricative
ž	⠵⠈⠦	1356-4-236	U+017E	z wedge	296	voiced postalveolar fricative
č	⠉⠈⠦	14-4-236	U+010D	c wedge	299	voiceless postalveolar affricate
ǰ	⠚⠈⠦	245-4-236	U+01F0	j wedge	298	voiced postalveolar affricate

Another set of non-IPA symbols that can easily be accommodated by the existing resources of IPA Braille are the ligatured affricate symbols—previously used in the inkprint IPA, but now withdrawn in favor of non-ligatured affricates consisting of two glyphs. Using the 'tie bar' symbol ⠐ (dot 5), to indicate the ligature, the IPA Braille representations of these glyphs are therefore as follows:

Table 3.2: Non-IPA Symbols for Ligatured Affricates

Glyph	Braille	Dots	Unicode	Typographic Desc.	IPA#	Articulatory Desc.
ʦ	⠞⠐⠎	2345-5-234	U+02A6	t-s ligature	211	voiceless alveolar affricate
ʣ	⠙⠐⠵	145-5-1356	U+02A3	d-z ligature	212	voiced alveolar affricate
ʧ	⠞⠐⠱	2345-5-156	U+02A7	t-esh ligature	213	voiceless postalveolar affricate
ʤ	⠙⠐⠮	145-5-2346	U+02A4	d-ezh ligature	214	voiced postalveolar affricate
ʨ	⠞⠐⠦⠉	2345-5-236-14	U+02A8	t-curly-tail-c ligature	215	voiceless alveolopalatal affricate
ʥ	⠙⠐⠦⠵	145-5-236-1356	U+02A5	d-curly-tail-z ligature	216	voiced alveolopalatal affricate

IPA Braille defines the following punctuation symbols, which may be useful in the transcription of some phonetic and phonemic passages. (Note that the period is an official IPA symbol and was already listed in Table 2.6. It is repeated here for convenience.)

Table 3.3: Non-IPA Symbols for Punctuation

Glyph	Braille	Dots	Unicode	Typographic Desc.	IPA#	Meaning
.	⠄	3	U+002E	period	506	syllable break/period
,	⠂	2	U+002C	comma	491	pause/comma
-	⠤	36	U+002D	hyphen (dash)	n/a	morpheme break/hyphen
→	⠸⠕	456-135	U+2192	rightward arrow	n/a	rewrite arrow (is realized as)

Other punctuation symbols not specifically defined in IPA Braille must be either represented using a transcriber-defined symbol (see Section 3.2) or incorporated from another braille code using temporary switch indicators (see Section 3.3).

3.2. Transcriber-Defined Symbols

If a braille equivalent cannot be constructed for a non-IPA phonetic glyph using the existing resources of IPA Braille, the following transcriber-defined, document-specific symbols may be used instead. Each symbol consists of dots 46 followed by the lower-cell letters a-j. These symbols are available for use by transcribers on an ad-hoc, case-by-case basis when a symbol is used in inkprint that has no defined equivalent in IPA Braille. If a transcriber uses any of these symbols, a note must be included at the beginning of the document to state which print symbols they represent. The meanings of transcriber-defined symbols are only valid for the document in which they are defined. They may occur as listed here if they are representing letter-like symbols, or they may be used as combining diacritics by preceding them with the appropriate placement indicator (dot 4, dot 5, or dot 6) as discussed in Section 2.5. In other words, if a transcriber-defined symbol is being used to represent a combining diacritic, then it must be preceded by ⠈ (dot 4) to indicate that the diacritic appears above the base glyph (either directly above, or superscript after), ⠐ (dot 5) to indicate that the diacritic is on the same level as the base glyph (either superimposed or immediately after it), or ⠠ (dot 6) to indicate that the diacritic appears below the base glyph (either directly beneath, or subscript after). On the other hand, if it is being used as a consonant, vowel, or non-combining modifier, the two-cell symbol (dots 46 followed by lower-cell a-j) needs no placement dot.

Table 3.4: Transcriber-Defined Symbols

BRAILLE	DOTS	MEANING
⠨⠂	46-2	Transcriber-defined symbol 1
⠨⠆	46-23	Transcriber-defined symbol 2
⠨⠒	46-25	Transcriber-defined symbol 3
⠨⠲	46-256	Transcriber-defined symbol 4
⠨⠢	46-26	Transcriber-defined symbol 5
⠨⠖	46-235	Transcriber-defined symbol 6
⠨⠶	46-2356	Transcriber-defined symbol 7
⠨⠦	46-236	Transcriber-defined symbol 8
⠨⠔	46-35	Transcriber-defined symbol 9
⠨⠴	46-356	Transcriber-defined symbol 10

3.3. Temporary Code-Switch Indicators

The IPA does not include symbols for digits, upper-case letters, or most punctuation—and IPA Braille likewise makes no provision for these symbols, as they are rarely intermingled with IPA in inkprint. In cases where such symbols do occur within inkprint phonetic transcription, IPA Braille offers temporary switch indicators for just this purpose, to indicate to the reader a temporary switch from IPA Braille into the primary braille code of the document, whatever language or code that may be. If a transcriber uses temporary switch indicators, a note should occur at the beginning of the document, clearly stating which braille code is the default for non-IPA Braille (e.g. Unified English Braille, U.S. ASCII Braille, etc.)

Table 3.5: Temporary Switch Indicators

BRAILLE	DOTS	MEANING
⠰	56	The following symbol is non-IPA and should be read in accordance with the primary braille code of the document.
⠰⠰	56-56	The following passage is non-IPA and should be read in accordance with the primary braille code of the document. (Non-IPA passage is terminated by dots 56-23.)
⠰⠆	56-23	Terminates a passage of non-IPA text (previously opened by dots 56-56); return to IPA Braille.

For example, if an inkprint IPA word were to contain parentheses (to indicate an inaudible or unpronounced sound), IPA Braille would transcribe them either by using transcriber-defined symbols (see Section 3.2 above), or with a temporary switch indicator preceding the parentheses symbols in the default braille code. In such a case, assuming, say, the default braille code is Unified English Braille, where ⠐⠣ (dots 5-126) and ⠐⠜ (dots 5-345) are the left and right parenthesis symbols respectively, then IPA [ˌdɪs(ə)ˈgɹi] ('disagree' with the schwa in parentheses) would be written in IPA Braille as ⠘⠷⠸⠆⠙⠌⠎⠰⠐⠣⠢⠰⠐⠜⠸⠃⠛⠼⠊⠘⠾, where the UEB symbols for the left and right parentheses are incorporated by preceding each of them with a temporary code switch out of IPA Braille. See also the American English sample passage in the Appendix for the use of a temporary switch to precede a semicolon that occurs once in that passage.

4. Miscellaneous Usage Notes

IPA Braille is a separate braille code from other braille codes defined for specific regions or languages. No contractions are allowed in IPA Braille, and no native braille symbols should be used other than those specified in this publication (unless they are preceded by a temporary switch indicator as discussed in Section 3.3).

IPA Braille lines must not be hyphenated.

The use of phonetic or phonemic enclosure signs should be reproduced exactly as given in inkprint.

See the discussion in Sections 2-3 of this publication for specific details about each glyph, and see the Appendix of sample passages for a concrete illustration of IPA Braille in use.

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Appendix: Sample Passages

Part 2 of the *Handbook of the International Phonetic Association* contains extensive illustrations of the IPA as applied to 29 different languages. In addition to a thorough overview of the speech sounds in each language, and a discussion of the IPA conventions best suited for representing them, a brief sample passage is also presented. These samples typically consist of an IPA transcription of a recorded passage, usually a retelling of the "North Wind and the Sun" fable, recorded from a native speaker of each language—a favorite passage used for phonetic purposes since the late 19th century.

This appendix presents five of the 29 sample passages from the *Handbook*, transcribed into IPA Braille. They are reprinted here with the consent of the International Phonetic Association and by the kind permission of Cambridge University Press. (International Phonetic Association. 1999. *Handbook of the International Phonetic Association: A Guide to the Use of the International Phonetic Alphabet.* New York: Cambridge University Press.) They may not be further reproduced except by written permission of the copyright holder, Cambridge University Press.

These five passages were chosen to each highlight some aspect of IPA Braille, such as the use of most of the consonant and vowel symbols presented in Sections 2.1-2.4, and to clearly illustrate the use of combining diacritics, tone letters, and symbols for length, stress, and intonation. These passages serve as demonstrations that IPA Braille is indeed flexible, highly readable, and robust enough to fully and accurately capture all of the details of the official inkprint IPA.

Sample 1: American English (Narrow Transcription)

(*IPA Handbook*, page 44)

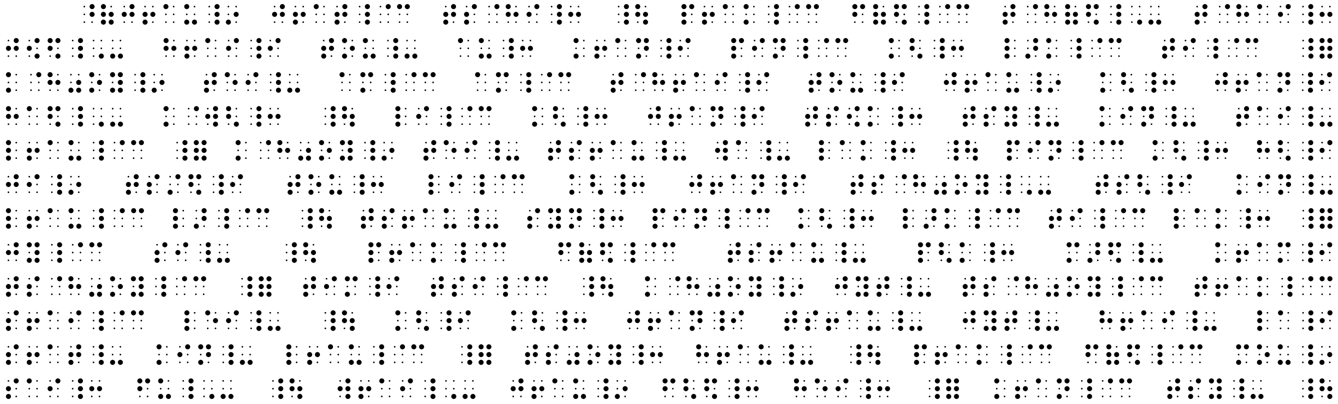
[ðə ˈnɔɹθ ˌwɪnd ən ə ˈsʌn wɚ dɪsˈpjuɾɪŋ ˈwɪtʃ wəz ðə ˈstɹɑŋgɚ, wɛn ə ˈtɹævlɚ ˌkem əˈlɑŋ ˈɹæpt ɪn ə ˈwɔɹm ˈklok. ðe əˈgɹid ðət ðə ˈwʌn hu ˈfɝst səkˈsidəd ɪn ˈmekɪŋ ðə ˈtɹævlɚ ˈtek ɪz ˈklok ˌɑf ʃʊd bi kənˈsɪdɚd ˈstɹɑŋgɚ ðən ðɪ ˈʌðɚ. ˈðɛn ðə ˈnɔɹθ ˌwɪnd ˈblu əz ˈhɑɹd əz hi ˈkʊd, bət ðə ˈmɔɹ hi ˈblu ðə ˈmɔɹ ˈklosli dɪd ðə ˈtɹævlɚ ˈfold hɪz ˈklok əˈɹaʊnd hɪm; ˌæn ət ˈlæst ðə ˈnɔɹθ ˌwɪnd ˌgev ˈʌp ði əˈtɛmpt. ˈðɛn ðə ˈsʌn ˈʃaɪnd ˌaʊt ˈwɔɹmli, ən ɪˈmidiətli ðə ˈtɹævlɚ ˌtʊk ˈɑf ɪz ˈklok. ən ˈso ðə ˈnɔɹθ ˌwɪnd wəz əˈblaɪʒ tɪ kənˈfɛs ðət ðə ˈsʌn wəz ðə ˈstɹɑŋgɚ əv ðə ˈtu.]

⠘⠷⠻⠢ ⠸⠃⠝⠣⠼⠨⠹ ⠸⠆⠺⠌⠝⠙ ⠢⠝ ⠢ ⠸⠃⠎⠬⠝ ⠺⠢⠐⠗ ⠙⠌⠎⠸⠃⠏⠚⠥⠖⠗⠌⠫ ⠸⠃⠺⠌⠞⠱ ⠺⠢⠵
⠻⠢ ⠸⠃⠎⠞⠼⠡⠫⠛⠢⠐⠗⠂ ⠺⠜⠝ ⠢ ⠸⠃⠞⠼⠩⠧⠇⠢⠐⠗ ⠸⠆⠅⠑⠍ ⠢⠸⠃⠇⠡⠫ ⠸⠃⠼⠩⠏⠞ ⠌⠝ ⠢ ⠸⠃⠺⠣⠼⠍
⠸⠃⠅⠇⠕⠅⠄ ⠻⠑ ⠢⠸⠃⠛⠼⠊⠙ ⠻⠢⠞ ⠻⠢ ⠸⠃⠺⠬⠝ ⠓⠥ ⠸⠃⠋⠢⠐⠗⠎⠞ ⠎⠢⠅⠸⠃⠎⠊⠙⠢⠙ ⠌⠝
⠸⠃⠍⠑⠅⠌⠫ ⠻⠢ ⠸⠃⠞⠼⠩⠧⠇⠢⠐⠗ ⠸⠃⠞⠑⠅ ⠌⠵ ⠸⠃⠅⠇⠕⠅ ⠸⠆⠡⠋ ⠱⠷⠙ ⠃⠊ ⠅⠢⠝⠸⠃⠎⠌⠙⠢⠐⠗⠙
⠸⠃⠎⠞⠼⠡⠫⠛⠢⠐⠗ ⠻⠢⠝ ⠻⠌ ⠸⠃⠬⠻⠢⠐⠗⠄ ⠸⠃⠻⠜⠝ ⠻⠢ ⠸⠃⠝⠣⠼⠨⠹ ⠸⠆⠺⠌⠝⠙ ⠸⠃⠃⠇⠥ ⠢⠵
⠸⠃⠓⠡⠼⠙ ⠢⠵ ⠓⠊ ⠸⠃⠅⠷⠙⠂ ⠃⠢⠞ ⠻⠢ ⠸⠃⠍⠣⠼ ⠓⠊ ⠸⠃⠃⠇⠥ ⠻⠢ ⠸⠃⠍⠣⠼ ⠸⠃⠅⠇⠕⠎⠇⠊ ⠙⠌⠙
⠻⠢ ⠸⠃⠞⠼⠩⠧⠇⠢⠐⠗ ⠸⠃⠋⠕⠇⠙ ⠓⠌⠵ ⠸⠃⠅⠇⠕⠅ ⠢⠸⠃⠼⠁⠷⠝⠙ ⠓⠌⠍⠰⠆ ⠸⠆⠩⠝ ⠢⠞ ⠸⠃⠇⠩⠎⠞ ⠻⠢
⠸⠃⠝⠣⠼⠨⠹ ⠸⠆⠺⠌⠝⠙ ⠸⠆⠛⠑⠧ ⠸⠃⠬⠏ ⠻⠊ ⠢⠸⠃⠞⠜⠍⠏⠞⠄ ⠸⠃⠻⠜⠝ ⠻⠢ ⠸⠃⠎⠬⠝ ⠸⠃⠱⠁⠌⠝⠙
⠸⠆⠁⠷⠞ ⠸⠃⠺⠣⠼⠍⠇⠊⠂ ⠢⠝ ⠌⠸⠃⠍⠊⠙⠊⠢⠞⠇⠊ ⠻⠢ ⠸⠃⠞⠼⠩⠧⠇⠢⠐⠗ ⠸⠆⠞⠷⠅ ⠸⠃⠡⠋ ⠌⠵
⠸⠃⠅⠇⠕⠅⠄ ⠢⠝ ⠸⠃⠎⠕ ⠻⠢ ⠸⠃⠝⠣⠼⠨⠹ ⠸⠆⠺⠌⠝⠙ ⠺⠢⠵ ⠢⠸⠃⠃⠇⠁⠌⠮ ⠞⠌ ⠅⠢⠝⠸⠃⠋⠜⠎ ⠻⠢⠞
⠻⠢ ⠸⠃⠎⠬⠝ ⠺⠢⠵ ⠻⠢ ⠸⠃⠎⠞⠼⠡⠫⠛⠢⠐⠗ ⠢⠧ ⠻⠢ ⠸⠃⠞⠥⠄⠘⠾

Sample 2: Hong Kong Cantonese

(*IPA Handbook*, page 60)

[jɐu˩˧ jɐt˥ tsʰi˧ | pɐk˥ fʊŋ˥ tʰʊŋ˩ tʰai˧ jœŋ˩ hɐi˧˥ tou˨ au˧ kɐn˧˥ pin˥ kɔ˧ lɛk˥ ti˥ ‖ kʰɵy˩˧ tei˨ am˥ am˥ tʰɐi˧˥ tou˧˥ jɐu˩˧ kɔ˧ jɐn˧˥ haŋ˩ kʷɔ˧ | li˥ kɔ˧ jɐn˧˥ tsœk˧ tsy˨ kin˨ tai˨ lɐu˥ ‖ kʰɵy˩˧ tei˨ tsɐu˨ wa˨ lak˧ | pin˥ kɔ˧ hɔ˧˥ ji˩˧ tsɪŋ˧˥ tou˧ li˥ kɔ˧ jɐn˧˥ tsʰɵy˩ tsɔ˧˥ kin˨ lɐu˥ lɛ˥ | tsɐu˨ syn˧ pin˥ kɔ˧ lɛk˥ ti˥ lak˧ ‖ jy˥ si˨ | pɐk˥ fʊŋ˥ tsɐu˨ pɔk˧ mɛŋ˨ kɐm˧˥ tsʰɵy˥ ‖ tim˧˥ tsi˥ | kʰɵy˩˧ jyt˨ tsʰɵy˥ tɐk˥ sɐi˥ lei˨ | kɔ˧˥ kɔ˧ jɐn˧˥ tsɐu˨ jyt˨ hɐi˨ la˧˥ sɐt˨ kin˨ lɐu˥ ‖ tsɵy˧ hɐu˨ | pɐk˥ fʊŋ˥ mou˩˧ sai˧ fu˩ | wɐi˩ jɐu˩˧ fɔŋ˧ hei˧ ‖ kɐn˥ tsy˨ | tʰai˧ jœŋ˩ tsʰɵt˥ lei˩ sai˧ tsɔ˧˥ jɐt˥ tsɐn˨ | kɔ˧˥ kɔ˧ jɐn˧˥ tsɐu˨ tsɪk˥ hak˥ tsʰɵy˩ tsɔ˧˥ kin˨ lɐu˥ lak˧ ‖ jy˥ si˨ | pɐk˥ fʊŋ˥ wɐi˩ jɐu˩˧ jɪŋ˨ sy˥ la˥ ‖]



⠞⠈⠓⠁⠊⠸⠒ ⠚⠪⠫⠸⠠⠤ ⠞⠎⠈⠓⠴⠕⠞⠸⠈⠉ ⠇⠑⠊⠸⠠⠤ ⠎⠁⠊⠸⠒ ⠞⠎⠣⠸⠊ ⠚⠖⠁⠞⠸⠈⠉ ⠞⠎⠖⠁⠝⠸⠤ ⠸⠳ ⠅⠣⠸⠊ ⠅⠣⠸⠒ ⠚⠖⠁⠝⠸⠊ ⠞⠎⠖⠁⠥⠸⠤ ⠞⠎⠌⠅⠸⠈⠉ ⠓⠁⠅⠸⠈⠉ ⠞⠎⠈⠓⠴⠕⠽⠸⠠⠤ ⠞⠎⠣⠸⠊ ⠅⠊⠝⠸⠤ ⠇⠖⠁⠥⠸⠈⠉ ⠇⠁⠅⠸⠒ ⠸⠿ ⠚⠽⠸⠈⠉ ⠎⠊⠸⠤ ⠸⠳ ⠏⠖⠁⠅⠸⠈⠉ ⠋⠷⠫⠸⠈⠉ ⠺⠖⠁⠊⠸⠠⠤ ⠚⠖⠁⠥⠸⠔ ⠚⠌⠫⠸⠤ ⠎⠽⠸⠈⠉ ⠇⠁⠸⠈⠉ ⠸⠿⠘⠾

Sample 3: Croatian

(*IPA Handbook*, page 69)

[‖ sjêʋeːrniː lědeniː ʋjêtar i‿sûːntse‿su‿se prěpirali o‿sʋǒjoj snǎːzi ‖ stôga ǒdlutʃeː da‿ǒnome ôd‿ɲiːx prǐpadne pôbjeda kǒjiː sʋǔːtʃeː | tʃôʋjeka pûːtnika ‖ ʋjêtar zǎpotʃe snâːʒno pǔːxati | a‿bǔduːtɕi da‿je tʃôʋjek tʃʋr̩̂ːsto dr̩̂ʒao ôdjetɕu | nǎʋali ôːn jôʃ jâtʃeː ‖ tʃôʋjek pâːk jôʃ jâtʃeː ot‿stûdeni prîtisnuːt | naʋǔːtʃeː nǎ‿sebe jôʃ ʋîʃeː ôdjetɕeː | dôk‿se ʋjêtar ne‿ǔmoriː i‿prěpustiː‿ga tâda sûːntsu ‖ ǒnoː u‿potʃěːtku zǎsija ǔmjereno ‖ kâd‿je tʃôʋjek skînuo suʋǐːʃak ôdjetɕeː | pǒʋiːsi ǒnoː jôʃ jâtʃeː ʒêgu | dôk‿se tʃôʋjek | u‿nemogǔːtɕnosti da‿ǒdoli sǔntʃeʋoːj toplǐni ne‿sʋǔːtʃeː | i‿ně‿podʑeː na‿kǔːpaɲe u‿rijěːku tekǔtɕitsu ‖ prîːtʃa pokǎzujeː da‿je‿tʃêːsto uspjěʃnijeː uʋjerǎːʋaːɲe | něgoli nǎːsiːʎe ‖]

⠘⠷⠸⠿ ⠎⠚⠑⠈⠩⠦⠧⠑⠒⠗⠝⠊⠒ ⠇⠑⠈⠦⠙⠑⠝⠊⠒ ⠦⠧⠚⠑⠈⠩⠞⠁⠗ ⠊⠸⠇⠎⠥⠈⠩⠒⠝⠞⠎⠑⠸⠇⠎⠥⠸⠇⠎⠑ ⠏⠗⠑⠈⠦⠏⠊⠗⠁⠇⠊ ⠕⠸⠇⠎⠦⠧⠕⠈⠦⠚⠕⠚ ⠎⠝⠁⠈⠦⠒⠵⠊ ⠸⠿ ⠎⠞⠕⠈⠩⠛⠁ ⠕⠈⠦⠙⠇⠥⠞⠱⠑⠒ ⠙⠁⠸⠇⠕⠈⠦⠝⠕⠍⠑ ⠕⠈⠩⠙⠸⠇⠿⠊⠒⠭ ⠏⠗⠊⠈⠦⠏⠁⠙⠝⠑ ⠏⠕⠈⠩⠃⠚⠑⠙⠁ ⠅⠕⠈⠦⠚⠊⠒ ⠎⠦⠧⠥⠈⠦⠒⠞⠱⠑⠒ ⠸⠳ ⠞⠱⠕⠈⠩⠦⠧⠚⠑⠅⠁ ⠏⠥⠈⠩⠒⠞⠝⠊⠅⠁ ⠸⠿ ⠦⠧⠚⠑⠈⠩⠞⠁⠗ ⠵⠁⠈⠦⠏⠕⠞⠱⠑ ⠎⠝⠁⠈⠩⠒⠮⠝⠕ ⠏⠥⠈⠦⠒⠭⠁⠞⠊ ⠸⠳ ⠁⠸⠇⠃⠥⠈⠦⠙⠥⠒⠞⠦⠉⠊ ⠙⠁⠸⠇⠚⠑ ⠞⠱⠕⠈⠩⠦⠧⠚⠑⠅ ⠞⠱⠦⠧⠗⠠⠆⠈⠩⠒⠎⠞⠕ ⠙⠗⠠⠆⠈⠩⠮⠁⠕ ⠕⠈⠩⠙⠚⠑⠞⠦⠉⠥ ⠸⠳ ⠝⠁⠈⠦⠦⠧⠁⠇⠊ ⠕⠈⠩⠒⠝ ⠚⠕⠈⠩⠱ ⠚⠁⠈⠩⠞⠱⠑⠒ ⠸⠿

⠞⠱⠕⠈⠩⠦⠧⠚⠑⠅ ⠏⠁⠈⠩⠒⠅ ⠚⠕⠈⠩⠱ ⠚⠁⠈⠩⠞⠱⠑⠒ ⠕⠞⠸⠇⠎⠞⠥⠈⠩⠙⠑⠝⠊ ⠏⠗⠊⠈⠦⠞⠊⠎⠝⠥⠒⠞ ⠸⠳ ⠝⠁⠦⠧⠥⠈⠦⠒⠞⠱⠑⠒ ⠝⠁⠈⠦⠸⠇⠎⠑⠃⠑ ⠚⠕⠈⠩⠱ ⠦⠧⠊⠈⠩⠱⠑⠒ ⠕⠈⠩⠙⠚⠑⠞⠦⠉⠑⠒ ⠸⠳ ⠙⠕⠈⠩⠅⠸⠇⠎⠑ ⠦⠧⠚⠑⠈⠩⠞⠁⠗ ⠝⠑⠸⠇⠥⠈⠦⠍⠕⠗⠊⠒ ⠊⠸⠇⠏⠗⠑⠈⠦⠏⠥⠎⠞⠊⠒ ⠸⠇⠛⠁ ⠞⠁⠈⠩⠙⠁ ⠎⠥⠈⠩⠒⠝⠞⠎⠥ ⠸⠿ ⠕⠈⠦⠝⠕⠒ ⠥⠸⠇⠏⠕⠞⠱⠑⠈⠦⠒⠞⠅⠥ ⠵⠁⠈⠦⠎⠊⠚⠁ ⠥⠈⠦⠍⠚⠑⠗⠑⠝⠕ ⠸⠿ ⠅⠁⠈⠩⠙⠸⠇⠚⠑ ⠞⠱⠕⠈⠩⠦⠧⠚⠑⠅ ⠎⠅⠊⠈⠩⠝⠥⠕ ⠎⠥⠦⠧⠊⠈⠦⠒⠱⠁⠅ ⠕⠈⠩⠙⠚⠑⠞⠦⠉⠑⠒ ⠸⠳ ⠏⠕⠈⠦⠦⠧⠊⠒⠎⠊ ⠕⠈⠦⠝⠕⠒ ⠚⠕⠈⠩⠱ ⠚⠁⠈⠩⠞⠱⠑⠒ ⠮⠑⠈⠩⠛⠥ ⠸⠳ ⠙⠕⠈⠩⠅⠸⠇⠎⠑ ⠞⠱⠕⠈⠩⠦⠧⠚⠑⠅ ⠸⠳ ⠥⠸⠇⠝⠑⠍⠕⠛⠥⠈⠦⠒⠞⠦⠉⠝⠕⠎⠞⠊ ⠙⠁⠸⠇⠕⠈⠦⠙⠕⠇⠊ ⠎⠥⠈⠦⠝⠞⠱⠑⠦⠧⠕⠒⠚ ⠞⠕⠏⠇⠊⠈⠦⠝⠊ ⠝⠑⠸⠇⠎⠦⠧⠥⠈⠦⠒⠞⠱⠑⠒ ⠸⠳ ⠊⠸⠇⠝⠑⠈⠦⠸⠇⠏⠕⠙⠦⠵⠑⠒ ⠝⠁⠸⠇⠅⠥⠈⠦⠒⠏⠁⠿⠑ ⠥⠸⠇⠗⠊⠚⠑⠊⠦⠒⠅⠥ ⠞⠑⠅⠥⠈⠦⠞⠦⠉⠊⠞⠎⠥ ⠸⠿ ⠏⠗⠊⠈⠩⠒⠞⠱⠁ ⠏⠕⠅⠁⠈⠦⠵⠥⠚⠑⠒ ⠙⠁⠸⠇⠚⠑⠸⠇⠞⠱⠑⠈⠩⠒⠎⠞⠕ ⠥⠎⠏⠚⠑⠈⠦⠱⠝⠊⠚⠑⠒ ⠥⠦⠧⠚⠑⠗⠁⠈⠦⠒⠦⠧⠁⠒⠿⠑ ⠸⠳ ⠝⠑⠈⠦⠛⠕⠇⠊ ⠝⠁⠈⠦⠒⠎⠊⠒⠦⠽⠑ ⠸⠿ ⠘⠾

Sample 4: French

(*IPA Handbook*, page 80-81)

The *Handbook* contains the following note preceding this transcription:

"The transcriptional style adopted in this illustration is a relatively narrow one, which reflects the particular pronunciation used in the recording of the passage made for the illustration."

[la biz e lə sɔlɛʲ sə dispytɛ ‖ ʃakɛ̃ asyʁɑ̃ kilɛtɛ lə ply fɔ̃ʁ̞ ‖ kɑ̃t ilzɔ̃ vy ɛ̃ vwɑjaʒœ ki savɑ̃sɛ ‖ ɑ̃vlope dɑ̃ sɔ̃ mɑ̃to ‖ iː sɔ̃ tɔ̃be dakɔ̈ʁ̥ kə səlɥi ki aʁivʁe ləpʁ̥əmje a lə lɥi fɛʁote ‖ səʁə ʁəgaʁde kɔ̈m lə ply fɔ̃ʁ̥ ‖ alɔ̈ʁ̞ la biz sɛ̝ miz a sufle də tut se fɔ̃ʁ̞s ‖ mɛ ply ɛl suflɛ ply lə vwɑjaʒœʁ̞ sɛʁɛ sɔ̃ mɑ̃totʊʁ̞ də lɥi ‖ finalmɑ̃ ɛl ʁənɔ̃sa lə lɥi fɛʁote ‖ alɔ̈ʁ̞ lə sɔlɛʲ kɔmɑ̃sa bʁ̥ije ‖ e o bu dɛ̞̃ mɔmɑ̃ lə vwɑjaʒœ ʁeʃofe ota sɔ̃ mɑ̃to ‖ ɛ̃si la biz dy ʁəkɔnɛt kə lə sɔlɛʲ ɛtɛ lə ply fɔ̃ʁ̞.]

⠘⠷⠇⠁ ⠃⠊⠵ ⠑ ⠇⠢ ⠎⠣⠇⠜⠈⠚ ⠎⠢ ⠙⠊⠎⠏⠽⠞⠜ ⠸⠿ ⠱⠁⠅⠜⠈⠻ ⠁⠎⠽⠔⠼⠡⠈⠻ ⠅⠊⠇⠜⠞⠜ ⠇⠢ ⠏⠇⠽ ⠋⠣⠈⠒⠔⠼⠠⠣ ⠸⠿ ⠅⠡⠈⠻⠞ ⠊⠇⠵⠣⠈⠻ ⠧⠽ ⠜⠈⠻ ⠧⠺⠡⠚⠁⠮⠪ ⠅⠊ ⠎⠁⠧⠡⠈⠻⠎⠜ ⠸⠿ ⠡⠈⠻⠧⠇⠕⠏⠑ ⠙⠡⠈⠻ ⠎⠣⠈⠻ ⠍⠡⠈⠻⠞⠕ ⠸⠿ ⠊⠒ ⠎⠣⠈⠻ ⠞⠣⠈⠻⠃⠑ ⠙⠁⠅⠣⠈⠒⠔⠼⠠⠫ ⠅⠢ ⠎⠢⠇⠲⠓⠊ ⠅⠊ ⠁⠔⠼⠊⠧⠔⠼⠑ ⠇⠢⠏⠔⠼⠠⠫⠢⠍⠚⠑ ⠁ ⠇⠢ ⠇⠲⠓⠊ ⠋⠜⠔⠼⠕⠞⠑ ⠸⠿ ⠎⠢⠔⠼⠢ ⠔⠼⠢⠛⠁⠔⠼⠙⠑ ⠅⠣⠈⠒⠍ ⠇⠢ ⠏⠇⠽ ⠋⠣⠈⠒⠔⠼⠠⠫ ⠸⠿ ⠁⠇⠣⠈⠒⠔⠼⠠⠣ ⠇⠁ ⠃⠊⠵ ⠎⠜⠠⠜ ⠍⠊⠵ ⠁ ⠎⠥⠋⠇⠑ ⠙⠢ ⠞⠥⠞ ⠎⠑ ⠋⠣⠈⠒⠔⠼⠠⠣⠎ ⠸⠿ ⠍⠜ ⠏⠇⠽ ⠜⠇ ⠎⠥⠋⠇⠜ ⠏⠇⠽ ⠇⠢ ⠧⠺⠡⠚⠁⠮⠪⠔⠼⠠⠣ ⠎⠜⠔⠼⠜ ⠎⠣⠈⠻ ⠍⠡⠈⠻⠞⠕⠞⠷⠔⠼⠠⠣ ⠙⠢ ⠇⠲⠓⠊ ⠸⠿ ⠋⠊⠝⠁⠇⠍⠡⠈⠻ ⠜⠇ ⠔⠼⠢⠝⠕⠈⠻⠎⠁ ⠇⠢ ⠇⠲⠓⠊ ⠋⠜⠔⠼⠕⠞⠑ ⠸⠿ ⠁⠇⠣⠈⠒⠔⠼⠠⠣ ⠇⠢ ⠎⠣⠇⠜⠈⠚ ⠅⠣⠍⠡⠈⠻⠎⠁ ⠃⠔⠼⠠⠫⠊⠚⠑ ⠸⠿ ⠑ ⠕ ⠃⠥ ⠙⠜⠠⠕⠈⠻ ⠍⠣⠍⠡⠈⠻ ⠇⠢ ⠧⠺⠡⠚⠁⠮⠪ ⠔⠼⠑⠱⠕⠋⠑ ⠕⠞⠁ ⠎⠣⠈⠻ ⠍⠡⠈⠻⠞⠕ ⠸⠿ ⠜⠈⠻⠎⠊ ⠇⠁ ⠃⠊⠵ ⠙⠽ ⠔⠼⠢⠅⠣⠝⠜⠞ ⠅⠢ ⠇⠢ ⠎⠣⠇⠜⠈⠚ ⠜⠞⠜ ⠇⠢ ⠏⠇⠽ ⠋⠣⠈⠒⠔⠼⠠⠣⠄⠘⠾

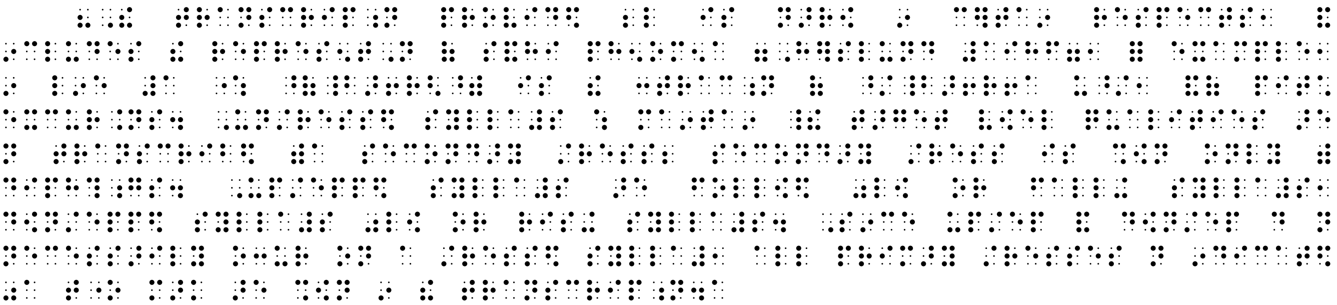
Sample 5: Portuguese

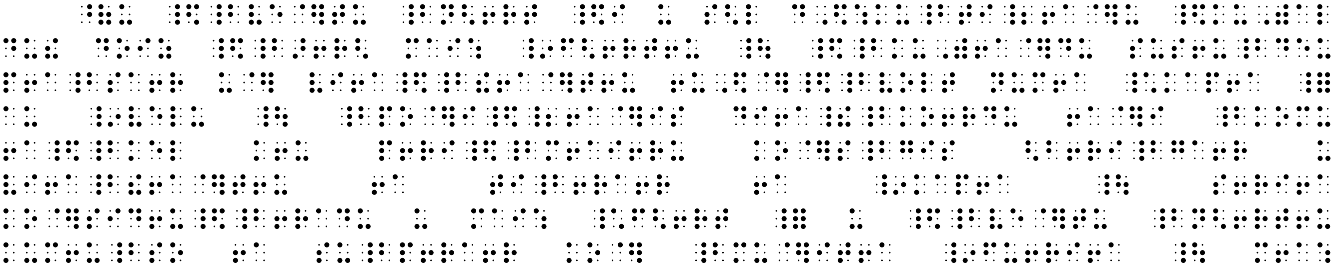
(*IPA Handbook*, page 129-130)

The *Handbook* contains the following note preceding this transcription. It is included here because it nicely illustrates the use of phonetic and phonemic enclosures:

“The transcription provided below is narrow in certain respects, and includes the representation of sandhi phenomena (Herslund 1986), for example, in line 1 where [ˈɛɾɔ] is the contraction of /ˈɛɾɐ u/, and of pitch excursions. Unstressed syllables which maintain their target vowel qualities are not transcribed with a secondary stress; secondary stress is shown only with diphthongs. Upstepped syllables are followed by low or falling syllables, downstepped syllables by low or rising syllables. Since upstep and downstep do not necessarily occur on a stressed syllable, all primary stresses not indicated by a tone mark are shown in the transcription.”

[u ↑ˈvẽtu ˈnɔɾt ↑i u sɔl d̥ʃkuˈtiˌɐ̃u ↑ku̯al duʒ doiz ↑ˈɛɾɔ maiʃ ˧fɔɾtɯ | ↑ˈku̯ɐ̃du susɯˈdeu pɐˈsaɾ ũ viɐ↑ˈʒɐ̃tɯ ũ̥ɾ↑ˈvolt numɐ ˥˩kapɐ ‖ au ˧velu | ˈpõi↑ˌɐ̃is diɐ↓ˈkoɾdu ɐ̃i ˈkomu ɐ↑ˈkel kɯ pɾi↑ˈmɐiɾu kõsˈgis ɔbɾiˈgaɾ u viɐˈʒɐ̃tɯ ɐ tiˈɾaɾ ɐ ˧kapɐ | sɾiɐ kõsidɯ↑ˈɾadu u maiʃ ˥˩fɔɾt ‖ u ↑ˈvẽtu ˈnɔɾtɯ kumɯˈso ɐ suˈpɾaɾ kõ ˈmũitɐ ˧fuɾiɐ | mɐʃ ↑ˈku̯ɐ̃tu maiʃ su˧pɾavɐ | maiz ↑u viɐ↓ˈʒɐ̃tɯ si ɐkõʃ↓ˈgava suɐ ˥˩kapɐ | ɐˈtɛ ↑kiu ˈvẽtu ˈnɔɾtɯ ˥˩d̥z̥ʃtiu ‖ ↑u sɔl bɾiˈʎo ẽˈtɐ̃u kõ ˈtodu ʃplẽ˧doɾ | i ↑imɯdiatɐˈmẽt u viɐ↑ˈʒɐ̃tɯ tiˈɾo ɐ ˥˩kapɐ ‖ u ↑ˈvẽtu ˈnɔɾtɯ tev ɐˈsĩ dɯ ʁ̥kuɲɯ↑ˈseɾ ɐ supɯɾiuɾiˈdad ↑du ˥˩sɔl ‖]





⠸⠫⠸⠃⠅⠥⠠⠾⠖⠁⠈⠻⠞⠥ ⠍⠁⠊⠱ ⠎⠥⠸⠔⠏⠖⠗⠁⠧⠖⠁ ⠸⠳ ⠍⠁⠊⠵ ⠸⠫⠥ ⠧⠊⠖⠁⠸⠮⠸⠃⠮⠖⠁⠈⠻⠞⠖⠥ ⠎⠊ ⠖⠁⠅⠕⠈⠻⠱⠸⠮⠸⠃⠛⠁⠧⠁ ⠎⠥⠖⠁ ⠸⠡⠅⠁⠏⠖⠁ ⠸⠳ ⠖⠁ ⠸⠃⠞⠜ ⠸⠫⠅⠊⠥ ⠸⠃⠧⠑⠈⠻⠞⠥ ⠸⠃⠝⠣⠖⠗⠞⠖⠥ ⠸⠡⠙⠠⠫⠵⠠⠫⠱⠞⠊⠧ ⠸⠿ ⠸⠫⠥ ⠎⠣⠇ ⠃⠖⠗⠊⠸⠃⠦⠽⠕ ⠑ ⠈⠻⠸⠃⠞⠖⠁⠈⠻⠥ ⠅⠕⠈⠻ ⠸⠃⠞⠕⠙⠥ ⠱⠏⠇⠑⠈⠻⠸⠔⠙⠕⠖⠗ ⠸⠳ ⠊ ⠸⠫⠊⠍⠖⠥⠋⠊⠁⠞⠖⠁⠸⠃⠍⠑⠈⠻⠞ ⠥ ⠧⠊⠖⠁⠸⠫⠸⠃⠮⠖⠁⠈⠻⠞⠖⠥ ⠞⠊⠸⠃⠖⠗⠕ ⠖⠁ ⠸⠡⠅⠁⠏⠖⠁ ⠸⠿ ⠥ ⠸⠫⠸⠃⠧⠑⠈⠻⠞⠥ ⠸⠃⠝⠣⠖⠗⠞⠖⠥ ⠞⠑⠧ ⠖⠁⠸⠃⠎⠊⠈⠻ ⠙⠖⠥ ⠔⠼⠠⠫⠅⠥⠿⠖⠥⠸⠫⠸⠃⠎⠑⠖⠗ ⠖⠁ ⠎⠥⠏⠖⠥⠖⠗⠊⠥⠖⠗⠊⠸⠃⠙⠁⠙ ⠸⠫⠙⠥ ⠸⠁⠎⠣⠇ ⠸⠿ ⠘⠷

Transcriber’s Index

The following index presents each print glyph as defined in IPA Braille, along with its braille representation and typographic description. Glyphs have been arranged in pseudo-alphabetical order whenever possible, or grouped by visual appearance and similarity. The purpose of this index is to provide a quick reference to the symbols of IPA Braille, and also to aid print-to-braille transcribers (many of whom may have little to no experience with the IPA) in finding the appropriate glyph.

Consonants and Vowels

The following list comprises all of the consonant and vowel symbols presented in this publication, along with their IPA Braille equivalents. Glyphs have been arranged in pseudo-alphabetical order, roughly based on their visual appearance.

a

a	⠁	lowercase a
ɐ	⠖⠁	turned a
ɑ	⠡	script a
ɒ	⠖⠡	turned script a
æ	⠩	ash

b

b	⠃	lowercase b
ɓ	⠦⠃	hooktop b
ʙ	⠔⠃	small capital b
β	⠨⠃	beta

c

c	⠉	lowercase c
č	⠉ ⠈⠦	c wedge
ç	⠖⠉	c cedilla
ɕ	⠦⠉	curly-tail c

d

d	⠙	lowercase d
ɗ	⠦⠙	hooktop d
ɖ	⠲⠙	right-tail d
ʣ	⠙ ⠐⠵	d-z ligature
ʤ	⠙ ⠐⠮	d-ezh ligature

ʥ	⠙⠐⠦⠵	d-curly-tail-z ligature
ð	⠻	edh

e

e	⠑	lowercase e
ə	⠢	schwa
ɚ	⠢⠐⠗	right-hook schwa
ɘ	⠖⠑	reversed e
ɛ	⠜	epsilon
ɜ	⠖⠜	reversed epsilon
ɞ	⠦⠜	closed reversed epsilon

f

f	⠋	lowercase f

g

g	⠛	lowercase g
ɡ	⠛	lowercase script g
ɠ	⠦⠛	hooktop g
ɢ	⠔⠛	small capital g
ʛ	⠦⠔⠛	hooktop small capital g

h

h	⠓	lowercase h
ħ	⠖⠓	barred h
ɦ	⠦⠓	hooktop h
ɧ	⠦⠫	hooktop heng
ɥ	⠲⠓	turned h
ʜ	⠔⠓	small capital h

i

i	⠊	lowercase i
ɨ	⠴⠊	barred i
ɪ	⠌	small capital i

j

j	⠚	lowercase j
ʝ	⠦⠚	curly-tail j
ǰ	⠚⠈⠦	j wedge
ɟ	⠔⠚	barred dotless j
ʄ	⠦⠔⠚	hooktop barred dotless j

k

k	⠅	lowercase k
k’	⠅⠐⠄	k apostrophe
k͡p	⠅⠐⠏	k-p ligature

l

l	⠇	lowercase l
ɫ	⠖⠇	lowercase l with tilde
ɬ	⠦⠇	belted l
ɭ	⠲⠇	right-tail l

ʟ	⠔⠇	small capital l
ɮ	⠇⠐⠮	l-ezh ligature
		m
m	⠍	lowercase m
ɱ	⠖⠍	left-tail m (at right)
ɯ	⠖⠥	turned m
ɰ	⠦⠍	turned m, right leg
		n
n	⠝	lowercase n
ɲ	⠿	left-tail n (at left)
ŋ	⠫	eng
ɳ	⠲⠝	right-tail n
ɴ	⠔⠝	small capital n
		o
o	⠕	lowercase o
ʘ	⠯⠏	bull's eye
ɵ	⠴⠕	barred o
ø	⠳	slashed o
θ	⠨⠽	theta
œ	⠪	lowercase o-e ligature
ɶ	⠔⠪	small capital o-e ligature
ɔ	⠣	open o
		p
p	⠏	lowercase p
p’	⠏⠐⠄	p apostrophe
ɸ	⠨⠋	phi
		q
q	⠟	lowercase q
		r
r	⠗	lowercase r
ɾ	⠖⠗	fish-hook r
ɺ	⠦⠼	turned long-leg r
ɽ	⠲⠗	right-tail r
ɹ	⠼	turned r
ɻ	⠲⠼	turned r, right tail
ʀ	⠔⠗	small capital r
ʁ	⠔⠼	inverted small capital r
		s
s	⠎	lowercase s
š	⠎⠈⠦	s wedge
s’	⠎⠐⠄	s apostrophe
ʂ	⠲⠎	right-tail s (at left)
ʃ	⠱	esh
		t
t	⠞	lowercase t

tʼ	⠞⠐⠄	t apostrophe
ʈ	⠲⠞	right-tail t
t͜s	⠞⠐⠎	t-s ligature
ʦ	⠞⠐⠎	t-s ligature
ʧ	⠞⠐⠱	t-esh ligature
ʨ	⠞⠐⠦⠉	t-curly-tail-c ligature

u

u	⠥	lowercase u
ʉ	⠴⠥	barred u
ʊ	⠷	upsilon
ɣ	⠨⠛	gamma
ɤ	⠖⠕	ram's horns

v

v	⠧	lowercase v
ⱱ	⠖⠧	right-hook v
ʋ	⠦⠧	script v
ʌ	⠬	turned v (caret)

w

w	⠺	lowercase w
ʍ	⠖⠺	turned w

x

x	⠭	lowercase x
χ	⠨⠯	chi

y

y	⠽	lowercase y
ʎ	⠦⠽	turned y
ʏ	⠔⠽	small capital y

z

z	⠵	lowercase z
ž	⠵⠈⠦	z wedge
ʑ	⠦⠵	curly-tail z
ʐ	⠲⠵	right-tail z
ʒ	⠾	⠑⠵h

ʔ

ʔ	⠆	glottal stop
ʡ	⠦⠆	barred glottal stop
ʕ	⠖⠆	reversed glottal stop
ʢ	⠔⠆	barred reversed glottal stop

|

ǀ	⠯⠹	pipe
ǂ	⠯⠱	double-barred pipe
ǁ	⠯⠇	double pipe
ǃ	⠯⠞	exclamation point

Non-combining Modifiers and Other Symbols

The following list comprises all of the non-combining modifiers presented in this publication, along with their IPA Braille equivalents. Because these are non-alphabetic symbols, no clear alphabetic ordering is possible. They have been grouped by function and visual appearance.

Length and Stress

ː	⠒	length mark
ˑ	⠐⠂	half-length mark
ˈ	⠸⠃	vertical stroke (superior)
ˌ	⠸⠆	vertical stroke (inferior)

Phrasing Symbols

|	⠸⠳	vertical line
‖	⠸⠿	double vertical line
‿	⠸⠇	bottom tie bar

Arrows

→	⠸⠕	rightward arrow
↓	⠸⠮	down arrow
↑	⠸⠫	up arrow
↗	⠸⠙	upward diagonal arrow
↘	⠸⠴	downward diagonal arrow

Tone Letters

˥	⠸⠈⠉	extra-high tone bar
˦	⠸⠉	high tone bar
˧	⠸⠒	mid tone bar
˨	⠸⠤	low tone bar
˩	⠸⠠⠤	extra-low tone bar
˩˥	⠸⠌	rising tone bar
˥˩	⠸⠡	falling tone bar
˧˥	⠸⠊	high-rising tone bar
˩˧	⠸⠔	low-rising tone bar
˧˥˧	⠸⠲	rising-falling tone bar

Punctuation-Like Symbols

,	⠂	comma
-	⠤	hyphen (dash)
.	⠄	period
/	⠘⠌	slash
[	⠘⠷	left square bracket
]	⠘⠾	right square bracket

Combining Diacritics

The following list consists of all of the combining diacritics illustrated in this publication. Since most of these are non-alphabetic symbols, they have been grouped as to their general position with respect to a base glyph. Please note that the example given in the right-hand column is for illustrative purposes only, since a given diacritic may combine with a wide range of base glyphs other than the one depicted in the example.

Combining Diacritics Above

ˠ	⠈⠨⠛	superscript gamma	tˠ ⠞⠈⠨⠛
ʰ	⠈⠓	superscript h	tʰ ⠞⠈⠓
ʲ	⠈⠚	superscript j	tʲ ⠞⠈⠚
ˡ	⠈⠇	superscript l	tˡ ⠞⠈⠇
ⁿ	⠈⠝	superscript n	dⁿ ⠙⠈⠝
ʷ	⠈⠺	superscript w	eʷ ⠑⠈⠺
ˤ	⠈⠖⠆	superscript reversed glottal stop	eˤ ⠑⠈⠖⠆
́	⠈⠌	acute accent above	é ⠑⠈⠌
̋	⠈⠠⠌	double acute accent above	e̋ ⠑⠈⠠⠌
̄	⠈⠉	macron above	ē ⠑⠈⠉
᷄	⠈⠊	macron-acute above	e᷄ ⠑⠈⠊
̀	⠈⠡	grave accent above	è ⠑⠈⠡
᷆	⠈⠔	grave-macron above	e᷆ ⠑⠈⠔
᷈	⠈⠲	grave-acute-grave above	e᷈ ⠑⠈⠲
̏	⠈⠠⠡	double grave accent above	ȅ ⠑⠈⠠⠡
̂	⠈⠩	circumflex above	ê ⠑⠈⠩
̌	⠈⠦	wedge above	ě ⠑⠈⠦
̆	⠈⠷	breve above	ĕ ⠑⠈⠷
̈	⠈⠒	umlaut above	ë ⠑⠈⠒
̃	⠈⠻	tilde above	ẽ ⠑⠈⠻
̽	⠈⠭	over-cross above	e̽ ⠑⠈⠭
̚	⠈⠙	corner above	t̚ ⠞⠈⠙
̊	⠈⠫	ring above	g̊ ⠛⠈⠫

Ties and Combining same-level diacritics

ʼ	⠐⠄	apostrophe	tʼ ⠞⠐⠄
̴	⠐⠻	superimposed tilde	ɫ ⠞⠐⠻
˞	⠐⠗	right hook	e˞ ⠑⠐⠗
͡	⠐	top tie bar	k͡p ⠅⠐⠏

Combining Diacritics Below

◌̤	⠠⠒	umlaut below	b̤ ⠃ ⠠⠒
◌̰	⠠⠿	tilde below	ḛ ⠑ ⠠⠿
◌̩	⠠⠆	vertical line below	m̩ ⠍ ⠠⠆
◌̥	⠠⠫	ring below	b̥ ⠃ ⠠⠫
◌̜	⠠⠪	left half-ring below	o̜ ⠕ ⠠⠪
◌̹	⠠⠕	right half-ring below	e̹ ⠑ ⠠⠕
◌̯	⠠⠾	arch below	n̯ ⠝ ⠠⠾
◌̬	⠠⠦	wedge below	t̬ ⠞ ⠠⠦
◌̼	⠠⠯	seagull below	t̼ ⠞ ⠠⠯
◌̪	⠠⠹	bridge below	t̪ ⠞ ⠠⠹
◌̺	⠠⠖⠹	inverted bridge below	t̺ ⠞ ⠠⠖⠹
◌̻	⠠⠶	square below	r̻ ⠗ ⠠⠶
◌̟	⠠⠬	plus below	o̟ ⠕ ⠠⠬
◌̠	⠠⠤	minus below	e̠ ⠑ ⠠⠤
◌̘	⠠⠱	advancing sign below	e̘ ⠑ ⠠⠱
◌̙	⠠⠎	retracting sign below	e̙ ⠑ ⠠⠎
◌̝	⠠⠜	raising sign below	e̝ ⠑ ⠠⠜
◌̞	⠠⠣	lowering sign below	e̞ ⠑ ⠠⠣