

Charts WG Report to UTC #188

Liang Hai, UTC Charts Working Group

July 26, 2026

Meetings: May 1, May 15, May 29, June 12, July 10, July 24.

Meeting participants: Asmus Freytag, Huang Junliang, Jan Kučera, Ken Whistler, Kushim Jiang, Liang Hai (vice-chair), Michel Suignard (chair).

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1. Version 18.0 plan

As [planned](#), the PDF “owner password” protection (also known as the “permissions password”) has been removed from the code chart files. This is already the case in the 18.0 beta charts.

We are committed to publish the modernized collation and casing charts for 18.0. We are working on the modernized names list charts, but no commitment yet for 18.0.

1.1 New publishing practice

Based on the earlier consensus [187-C54](#) about archiving the “unversioned” charts per version, we are now proposing how exactly all the files currently under unicode.org/charts/

will (or will not) be migrated to new locations. The goal is to minimize the complexity of both the migration and long-term maintenance. Therefore, instead of a minimal approach of only moving the “unversioned” charts to the new location (which, eg, would force the index page to change how chart files are linked), we plan to do a more thorough migration as outlined below.

The /cgi-bin/Code2Chart API will be revised to emphasize the latest published version and point directly to versioned locations (eg, /Public/<version>/charts/PDF/U0000.pdf instead of /Public/PDF/U0000.pdf). But it will not have version-specific behavior when queried from versioned index pages (/Public/<version>/charts/index.html), and we don’t plan to make it aware of the draft version yet.

1.1.1 Becoming versioned

Files outlined in this section will be migrated from /charts/ to **/Public/<version>/charts/**. The 18.0 version of these files (except nameslist/ and the French charts) are already available under /Public/draft/charts/, which corresponds to /Public/18.0.0/charts/. The current version of these files will be migrated to /Public/17.0.0/charts/, and the current URLs will be redirected to the latest versioned locations.

These old URLs under /charts/ will do a **permanent (301) redirect** to the new “latest” URLs under /Public/latest/charts/, which then get handled by the existing, annually revised **temporary (302) redirect** from /Public/latest/ to /Public/<version>/. URLs under /Public/<version>/charts/ will be configured to declare the corresponding /Public/latest/charts/ URLs as **canonical** with an HTTP header.

Main charts:

- index.html
- About.html
 - Making this page versioned allows us to centralize versioned documentation so that, for example, we can link from chart PDFs to this page and simplify the PDF cover pages.
- PDF/U*.pdf
 - Including the 5 evergreen charts: UD800.pdf, UDC00.pdf, UE000.pdf, UF0000.pdf, U100000.pdf.

Auxiliary charts:

- collation/

- case/
- nameslist/

French charts:

- fr/index.html
- fr/PDF/U*.pdf
 - Including the 5 evergreen charts.

1.1.2 Already versioned

Delta charts are already published in versioned directories, therefore we plan to keep them where they are.

- PDF/Unicode-*/

1.1.3 Staying unversioned

Misc files related to the main charts:

- fonts.html
 - Font acknowledgements.
- PDF/UBOOP.pdf
 - Easter egg.

Character name index, owned by Robin Leroy:

- charindex.html
- charindex-draft.html
- aboutcharindex.html

Character name index in French, owned by the French names list translators:

- fr/charindex.html

Unihan database:

- unihan.html
- unihangridindex.html
- unihanrsindex.html

- unihansearch.html

2. ISO/IEC 10646 code charts

Per WG2 recommendation M73.03 (see [WG2 N5354](#)) and SC2 approval, ISO/IEC 10646's code charts will no longer be embedded in its core text PDF, but will become normatively referenced external files hosted on the Unicode website. For example, code charts of the upcoming 7th edition will be hosted at <https://unicode.org/iso10646/edition7/charts/>.

Both the consolidated and block-by-block charts will be available. An example of the cover pages can be found in [WG2 N5363R](#) (page 7), which contains exactly the same Terms of Use as used by the Unicode Standard.

Michel will be responsible for generating and publishing these code charts. Note that this plan implies a resource commitment of this WG going forward.

3. Public feedback

3.1 [PRI #548](#): Unicode 18.0 Beta Review

Date/Time: Thu May 28 11:40:27 PDT 2026

ReportID: [ID20260528114027](#)

Name: Night Koo

Report Type: Public Review Issue

Opt Subject: Update annotations for CJK Strokes UVS

Following the acceptance of UVS for CJK Strokes block, I suggest to update the annotations as follow to match existing glyphs under the variants whenever possible:

31C0 ↗ CJK STROKE T

- 2nd stroke of 5201 𠂇
- ~ 31C0 FE00 ◆ dotted T form
- 2nd stroke of 51B0 𠂆

31C6 𠂇 CJK STROKE HZG

- 1st stroke of 7FBD 羽
- ~ 31C6 FE00 ◆ curved Z form
- 1st stroke of 5201 𠂇
- ~ 31C6 FE01 □ rising H form
- 1st stroke of 4E5F 也

31C9 ㄣ CJK STROKE SZWG

- 3rd stroke of 5F13 弓
- ~ 31C9 FE00 ◆ slanted S form
- 2nd stroke of 9A6C 𠂇

31CF ㄥ CJK STROKE N

- 3rd stroke of 5927 大
- ~ 31CF FE00 ◆ curved starting N form
- 1st stroke of 5165 入 G source
- ~ 31CF FE01 ◆ flat N form
- 2nd stroke of 5EF4 ㄣ

31D0 ㄏ CJK STROKE H

- 1st stroke of 5927 大
- ~ 31D0 FE00 ◆ rising H form
- 1st stroke of 4E03 匕

31D1 ㄣ CJK STROKE S

- 4th stroke of 4E2D 中
- ~ 31D1 FE00 ◆ slanted S form
- 2nd stroke of 4E11 丑

31D2 ㄣ CJK STROKE P

- 1st stroke of 4E42 乂
- ~ 31D2 FE00 ㄣ flat P form
- 1st stroke of 4E4F 𠂇

31D4 ㄣ CJK STROKE D

- 3rd stroke of 4E38 丸
- ~ 31D4 FE00 ◆ to bottom left form
- 2nd stroke of 5FC4 𠂇

31D5 ㄣ CJK STROKE HZ

- 2nd stroke of 56DB 四
- ~ 31D5 FE00 ◆ slanted Z form
- 4th stroke of 4ECA 今

31D7 ㄣ CJK STROKE SZ

- 2nd stroke of 5C71 山
- ~ 31D7 FE00 ◆ slanted S form
- 2nd stroke of 4E1C 东

31DB ㄣ CJK STROKE PD

- 1st stroke of 5DE1 巡
- ~ 31DB FE00 ◆ slanted SD form
- 1st stroke of 5973 女

31DC ㄣ CJK STROKE PZ

- 4th stroke of 248E5 𠄎
- ~ 31DC FE00 ♦ upwards T form
- 3rd stroke of 516C 公
- 4th stroke of 5F18 弘

31DD □ CJK STROKE TN

- stylistic alternative of N stroke in some fonts
- ~ 31DD FE00 ♦ horizontal H curved N form
- 1st stroke of 5165 入 non-G source
- ~ 31DD FE01 > upwards T flat N form
- Last stroke of 8FB6 乚

31E5 □ CJK STROKE SZP

- 8th stroke of 594A 隹
- ~ 31E5 FE00 ♦ slanted S form
- 3rd stroke of 4E13 专

Comments: Reviewed by the CJK WG. The current tooling for maintaining NamesList.txt doesn't allow an annotation to be placed below a standardized variation sequence. Otherwise these have been implemented for 18.0.

Date/Time: Mon June 15 17:11:42 PT 2026

ReportID: [ID20260615171142](#)

Name: Ben Denckla

Report Type: Public Review Issue

Opt Subject: asymmetric detail in new Hebrew points

DAGESH HAZAQ MUDGASH provides the detail "used in texts that distinguish dagesh hazaq from dagesh qal"

SHEVA NA MUDGASH provides no such detail. The analogous detail would be "used in texts that distinguish sheva na from sheva nach" (or naḥ (h with combining dot below) instead of nach if Unicode is allowed here)

In my opinion, either both of these code points should have these details, or neither should. I.e. I can't see any reason for an asymmetry.

Comments: Fixed for 18.0.

Date/Time: Wed June 17 23:53:57 PT 2026

ReportID: [ID20260617235357](#)

Name: Jett Trang

Report Type: Public Review Issue

Opt Subject: N5344R2 Seal: Glyph confusion for U+3F80D & 3F80E.

Reference: ISO/IEC JTC 1/SC 2/WG2 N5344R2

Issue: > In the proposed Small Seal block, the THX reference glyphs for U+3F80D and U+3F80E lack clear visual distinction.

The separation of these two characters into distinct code points is based on Duan, Ngyok-dzoi's (DYC) theory, which differentiates the components "彖" (U+5F56) and "彖" (U+27C32). Although modern paleography suggests this distinction may be a fabrication by Duan, N5344R2 still separates them to reflect this textual tradition.

Recommendation: To maintain logical consistency and prevent user confusion, the reference glyphs must visually reflect this encoding separation. Currently, the THX glyphs for both code points appear nearly identical.

If strict adherence to raw source scans is not mandatory, I recommend modifying the THX glyph for U+3F80E to align with the distinct component structure shown in its DYC column. I acknowledge, however, that your team may have already noted this issue and retained the current glyphs purely to maintain strict fidelity to the original printed texts.

Comments: THX column of U+3F80E has been updated for 18.0.

Date/Time: Mon July 06 14:06:54 PT 2026

ReportID: [ID20260706140654](#)

Name: Marc Lodewijck

Report Type: Public Review Issue

Opt Subject: PRI #548 Minor issues in references to standards

I noticed a few issues related to the naming and dating of some referenced standards in the Unicode code charts. I am reporting them here in case corrections are deemed appropriate.

1/ Publication year of ISO/IEC 13751

Reference found:

ISO/IEC 13751:2000 -> should be ISO/IEC 13751:2001

Location: in the comment line for U+234A

Issue: The correct designation should be ISO/IEC 13751:2001, not ISO/IEC 13751:2000. Although the standard was finalized in late 2000, its official publication date in the ISO catalogue is February 1, 2001, and the registered designation is therefore ISO/IEC 13751:2001.

2/ Use of "ISO" vs "ISO/IEC" in jointly developed standards

The following standards were jointly developed by ISO and IEC, and ISO/IEC is the official designation registered in the ISO catalogue. In several places, the charts use ISO alone instead of ISO/IEC.

A/ ISO 8859-6 -> should be ISO/IEC 8859-6

- In the subheader and notice line preceding U+0621
- In the subheader preceding U+0640
- In the subheader preceding U+064B

B/ ISO 8859-8 -> should be ISO/IEC 8859-8

- In the subheader preceding U+05D0

C/ ISO 9995-7 -> should be ISO/IEC 9995-7

- In an alias line for U+21E7
- In an alias line for U+21E8
- In an alias line for U+2318
- In a comment line for U+237D
- In the subheader preceding U+2380
- In the subheader preceding U+2396
- In a comment line for U+2425
- In the notice line preceding U+2BEC

3/ ISO 7000 incorrectly labeled as ISO/IEC

Reference found:

ISO/IEC 7000 -> should be ISO 7000

Location: in the comment line for U+1F4D6

Issue: ISO 7000 was not jointly developed by ISO and IEC. The correct reference is therefore ISO 7000-0790 (without "/IEC").

#####

No issues were found with references to the following standards (ISO or ISO/IEC as appropriate):

ISO 1004:1995

ISO 2047

ISO 5426-2

ISO 6438

ISO 7000:2012

ISO 15919

ISO/IEC 646

ISO/IEC 6429:1992

ISO/IEC 8859-1

Comments: Fixed for 18.0.

Date/Time: Mon Jul 20 14:00:46 PDT 2026

ReportID: [ID20260720140046](#)

Name: Philippe Verdy

Report Type: Public Review Issue

Opt Subject: PRI 548: U+1DB16 name "BARS" (plural)

There's a typo in the proposed character name (in the new block <https://www.unicode.org/charts/PDF/Unicode-18.0/U180-1DB00.pdf> pending for Unicode 18.0), there's a missing plural (these are two separate orthogonal bars, intersecting in the middle, this is not a single bar going in two directions):

U+1DB16 LEIBNIZIAN CONGRUENCE-2 WITH HORIZONTAL AND VERTICAL BAR

should be:

U+1DB16 LEIBNIZIAN CONGRUENCE-2 WITH HORIZONTAL AND VERTICAL BARS

The same is true in the English namelist.txt file (part of the UCD).

This should be fixed (at least in English) when synchronizing both standards, at least in the final document that will be voted soon by ISO WG2, or by sending an errata notification to their next meeting.

As for now we don't have the French namelist for ISO/IEC 10646, whose translation is probably ongoing (but can't be reviewed for now), I suggest

that the namelist in French (needed for ISO WG2) be reviewed (or open to submissions) during the review process (initially it could be translated semi-automatically before or during the alpha review, but should be informally vetted during the beta public review). However, this may be delayed until the next released update of ISO/IEC 10646 (which also still has not been published for Unicode 17.0 since more than one year, not even in English; I think that the WG2 has accepted longer schedules, even if the ISO WG2 coordinates with the UTC by their votes).

As well the ISO WG2 would have less work to do for that French translation that they'll publish later in their next published update of ISO/IEC 10646

But may be you'll allow translating and vetting the French namelist after Unicode 18.0 release, in the next CLDR submission period.

Comments: The singular form is intentional. Making it plural could create a different ambiguity. We do not recommend changing the name.

3.2 Proposal documents

[L2/26-149](#): Leibniz Unicode Characters Project

Comments: Two suggestions about U+1CED5 haven't been acted on because the character is not part of 18.0. Additional suggestions for annotations in the names list have been taken into account and added into NamesList.txt, as appropriate. Michel has addressed the glyph cropping issue.

3.3 [PRI #544](#): Other Feedback for UTC #188

Date/Time: Sun May 17 10:06:24 PT 2026

ReportID: [ID20260517100624](#)

Name: Huang Junliang

Report Type: Report Error in Publication/Data

Opt Subject: Seal code charts

Huang Junliang has reviewed the code charts for Seal once again; here is his report:

...

Found 19 issue(s) in seal.csv:

- Line 206 3D0CC: character is empty
- Line 628 3D272: character is empty
- Line 647 3D285: character is empty
- Line 892 3D37A: character is empty

- Line 2434 3D980: character is empty
- Line 2936 3DB76: character is empty
- Line 4451 3E161: character is empty
- Line 5281 3E49F: radical out of order – previous 267, got 264
- Line 6059 3E7A9: radical out of order – previous 523, got 296
- Line 6452 3E932: radical out of order – previous 322, got 321
- Line 6737 3EA4F: character is empty
- Line 6757 3EA63: character is empty
- Line 7070 3EB9C: character is empty
- Line 7751 3EE45: character is empty
- Line 8165 3EFE3: character is empty
- Line 8956 3F2FA: character is empty
- Line 9049 3F357: character is empty
- Line 9092 3F382: character is empty
- Line 9594 3F578: character is empty
- ...

Please check.

Comments: Both the “radical out of order” issues and the issues of missing modern glyph have been fixed for 18.0.

Date/Time: Fri May 29 17:34:57 PT 2026

ReportID: [ID20260529173457](#)

Name: Eiso Chan

Report Type: Report Error in Publication/Data

Opt Subject: Feedback on PRI #544

I help TCA provide feedback on the Small Seal code charts below.

TCA agrees with Kushim’s suggestions for two characters. In fact, the issue with U+3EC25 was already included in the 22 adjustments (2 radicals and 18 Modern CJK) that Selena submitted on April 24 for ISO/IEC 10646 CD 4.

After checking the newly released Unicode 18.0 Beta version, They noticed that these 22 items still need to be updated as below. Therefore, they provided the following list here, along with the new Modern CJK issue for U+3FB84 raised by Kushim.

Here is the complete list for your review:

(Note: Values after the arrow (→) are the suggested corrections.)

Raical(SealSources.txt)

U+3DDF7 kSEAL_Rad 157.3DDF1→158.3DDF7

U+3DDF8 kSEAL_Rad 158.3DDF8→158.3DDF7
 U+3DDF9 kSEAL_Rad 158.3DDF8→158.3DDF7
 U+3DE44 kSEAL_Rad 168.3DE31→169.3DE44
 U+3DE45 kSEAL_Rad 169.3DE45→169.3DE44
 U+3DE46 kSEAL_Rad 169.3DE45→169.3DE44
 # Modern CJK
 U+3E894 kSEAL_MCJK 824E 鯨→26A84 鯨
 U+3E9FB kSEAL_MCJK 9B1F 鬢→29BF4 鬢
 U+3EA95 kSEAL_MCJK 5D99 嶙→21F64 嶙
 U+3EB4D kSEAL_MCJK 787E 礮→2558C 礮
 U+3EC24 kSEAL_MCJK 298B2 駛 → 298EC 駛
 U+3EC28 kSEAL_MCJK 9A02 驛→2994D 驛
 U+3EF54 kSEAL_MCJK 61C7 懇→22846 懇
 U+3F153 kSEAL_MCJK 703C 瀼→2416D 瀼
 U+3F160 kSEAL_MCJK 6F35 漱→6F4A 漱
 U+3F161 kSEAL_MCJK 6E2F 港→23FD1 港
 U+3F163 kSEAL_MCJK 6FD4 瀾→24164 瀾
 U+3F167 kSEAL_MCJK 6E98 湍→23E46 湍
 U+3F2DB kSEAL_MCJK 95E4 闌→28DE4 闌
 U+3F80A kSEAL_MCJK 867B 虻→8771 虻
 U+3F8FD kSEAL_MCJK 587E 塾→2150A 塾
 U+3FA4E kSEAL_MCJK 6235 戩→947A 鎧
 U+3FAFB kSEAL_MCJK 8F54 輶→283CF 輶
 U+3EC25 kSEAL_MCJK 298CA 駢→2992D 駢

Comments: This feedback has been addressed for 18.0.

Date/Time: Mon June 08 17:41:12 PT 2026

ReportID: [ID20260608174112](#)

Name: Harriet Riddle

Report Type: Report Error in Publication/Data

Opt Subject: PRI 544

Some NamesList.txt annotation addition suggestions for Charts WG (lines starting with +):

223F SINE WAVE
= alternating current
+ x (ac current - 23E6)
2240 WREATH PRODUCT
+ x (vertical tilde - 2E2F)

[...]

2264 LESS-THAN OR EQUAL TO
x (less-than sign - 003C)
+ x (angle with underbar - 29A4)
2265 GREATER-THAN OR EQUAL TO
x (greater-than sign - 003E)
+ x (reversed angle with underbar - 29A5)

[...]

227C PRECEDES OR EQUAL TO
+ x (precedes above single-line equals sign - 2AAF)
+ x (precedes above equals sign - 2AB3)
227D SUCCEEDS OR EQUAL TO
+ x (succeeds above single-line equals sign - 2AB0)
+ x (succeeds above equals sign - 2AB4)
227E PRECEDES OR EQUIVALENT TO
+ x (precedes above almost equal to - 2AB7)
227F SUCCEEDS OR EQUIVALENT TO
+ x (succeeds above almost equal to - 2AB8)

[...]

22DC EQUAL TO OR LESS-THAN
+ x (slanted equal to or less-than - 2A95)

22DD EQUAL TO OR GREATER-THAN
+ x (slanted equal to or greater-than - 2A96)

[...]

237C RIGHT ANGLE WITH DOWNWARDS ZIGZAG ARROW
+ = azimuth

[...]

2393 DIRECT CURRENT SYMBOL FORM TWO
+ x (straightness - 23E4)

[...]

23E4 STRAIGHTNESS
+ = direct current symbol form one
+ x (direct current symbol form two - 2393)
23E5 FLATNESS
23E6 AC CURRENT
+ x (sine wave - 223F)

[...]

29A4 ANGLE WITH UNDERBAR
+ x (less-than or equal to - 2264)
29A5 REVERSED ANGLE WITH UNDERBAR
+ x (greater-than or equal to - 2265)

[...]

2AB7 PRECEDES ABOVE ALMOST EQUAL TO
+ x (precedes or equivalent to - 227E)
2AB8 SUCCEEDS ABOVE ALMOST EQUAL TO
+ x (succeeds or equivalent to - 227F)

[...]

2E2F VERTICAL TILDE
* used for Cyrillic yerik
x (combining vertical tilde - 033E)
+ x (wreath product - 2240)
x (cyrillic payerok - A67F)

Comments: Done for 18.0.

Date/Time: Sun July 05 07:27:52 PT 2026

ReportID: [ID20260608174112](#)

Name: Wyatt Carpenter

Report Type: Report Error in Publication/Data

Opt Subject: Formal alias for click consonants

I am no expert in this, but I hear the names Unicode uses for certain click consonants is obsolete now that the IPA has standardized its vocabulary. For instance the "retroflex click" character <ɻ> is apparently known as an alveolar click by everyone now, and the "alveolar click" <ɸ> is now known as the palatal click. It may be worth consulting with the IPA about this and creating formal aliases to correct the names. It wouldn't be so bad to have the current names, except that they actively indicate the wrong one.

This also presumably affects 1DF0A LATIN LETTER RETROFLEX CLICK WITH RETROFLEX HOOK, A71D ' modifier letter raised exclamation mark, and 107B9 modifier letter retroflex click with retroflex hook

Unicode Technical Note #27: "Known Anomalies in Unicode Character Names" should also be updated, if my info is true.

Comments: Annotations showing the IPA naming are already in place. See also the [official IPA chart](#).

3.4 Other feedback

We had a discussion about the representative glyph of U+20C4 OMANI RIAL SIGN. Many type designers had commented on the wide aspect ratio. Currency symbols usually have a tall aspect ratio, which works well in tabular layouts because that easily allows the symbol to be designed on the same width as digits.

We consider the situation to be similar to U+20AC “€” EURO SIGN, where the logo designed by the central bank is not the most likely shape used in practice. Note that the representative glyphs of currency symbol characters don't necessarily follow the official logo designs either.

The Charts WG invites a UTC discussion whether we should revise the representative glyph for 18.0, accordingly. But we don't recommend adding specific annotations for this character.

See also the recently revised [official guidelines](#) about the Omani rial sign, especially page 18 and following.