

**ISO/IEC JTC 1/ SC 2 /WG2**  
**Universal Multiple-Octet Coded Character Set (UCS) -ISO/IEC 10646**  
**Secretariat: ANSI**

**Doc Type:** Working Group Document

**Title:** Addition of medical symbols and enclosed numbers

**Sources:** Japanese National Body

**Project:** --

**Status:** Proposal

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Universal Multiple-Octet Coded Character Set  
International Organization for Standardization

**Doc Type:** Working Group Document  
**Title:** Addition of medical symbols and enclosed numbers  
**Source:** JCS Committee, Japanese Standards Association (JSA)  
**Status:** JCS proposal  
**Date:** 1999-09-13

This document proposes sixty seven symbols, and discusses the rationale for their inclusion.

A new Japanese Industrial Standard, JIS X0213 is being developed in Japan, and it will be published by the end of this year. The new standard will include all characters in this proposal, so the adoption of them is very important in the view to keep upward compatibility with the Japanese products.


DOUBLE PLUS and TRIPLE PLUS are often used at the medical field. Fifteen technical characters are used by the dentists. DOUBLE CIRCLED DIGIT ONE to DOUBLE CIRCLED DIGIT EIGHT are also used by dentists to indicate a tooth position. But in generally, enclosed numbers are used for any kind of use, so JCS committee decided to include double circled numbers up to ten because of the entire. Two more kinds of enclosed circled numbers are also proposed. Circled numbers and negative circled numbers. They are usually used in any kind of publications and newspapers. Circled numbers are strongly requested by the Japanese government in order to make machine readable of Japanese laws and regulations. So the final draft JIS X0213 adopts circled number up to fifty and negative circled number up to twenty.


The characters proposed to be added here are given below, with proposed code positions. The proposal summary form is appended thereafter.


MISCELLANEOUS TECHNICAL


239B  DOUBLE PLUS

239C  TRIPLE PLUS


239D  DENTIST SYMBOL LIGHT VERTICAL AND TOP RIGHT


239E  DENTIST SYMBOL LIGHT VERTICAL AND BOTTOM RIGHT

239F  DENTIST SYMBOL LIGHT VERTICAL WITH CIRCLE


23A0  DENTIST SYMBOL LIGHT DOWN AND HORIZONTAL WITH CIRCLE


23A1  DENTIST SYMBOL LIGHT UP AND HORIZONTAL WITH CIRCLE


23A2  DENTIST SYMBOL LIGHT VERTICAL WITH TRIANGLE


23A3  DENTIST SYMBOL LIGHT DOWN AND HORIZONTAL WITH TRIANGLE


23A4  DENTIST SYMBOL LIGHT UP AND HORIZONTAL WITH TRIANGLE


23A5  DENTIST SYMBOL LIGHT VERTICAL AND WAVE


23A6  DENTIST SYMBOL LIGHT DOWN AND HORIZONTAL WITH WAVE


23A7  DENTIST SYMBOL LIGHT UP AND HORIZONTAL WITH WAVE


23A8  DENTIST SYMBOL LIGHT DOWN AND HORIZONTAL


23A9  DENTIST SYMBOL LIGHT UP AND HORIZONTAL


23AA  DENTIST SYMBOL LIGHT VERTICAL AND TOP LEFT


23AB  DENTIST SYMBOL LIGHT VERTICAL AND BOTTOM LEFT


23AC  DOUBLE CIRCLED DIGIT ONE


23AD  DOUBLE CIRCLED DIGIT TWO


23AE  DOUBLE CIRCLED DIGIT THREE


23AF  DOUBLE CIRCLED DIGIT FOUR


23B0  DOUBLE CIRCLED DIGIT FIVE


23B1  DOUBLE CIRCLED DIGIT SIX


23B2  DOUBLE CIRCLED DIGIT SEVEN


23B3  DOUBLE CIRCLED DIGIT EIGHT


23B4  DOUBLE CIRCLED DIGIT NINE


23B5  DOUBLE CIRCLED NUMBER TEN


27D1  CIRCLED NUMBER TWENTY TWO


27D2  CIRCLED NUMBER TWENTY THREE


27D3  CIRCLED NUMBER TWENTY FOUR


27D4  CIRCLED NUMBER TWENTY FIVE


27D5  CIRCLED NUMBER TWENTY SIX


27D6  CIRCLED NUMBER TWENTY SEVEN


27D7  CIRCLED NUMBER TWENTY EIGHT


27D8  CIRCLED NUMBER TWENTY NINE


27D9  CIRCLED NUMBER THIRTY


27DA  CIRCLED NUMBER THIRTY ONE


27DB  CIRCLED NUMBER THIRTY TWO


27DC  CIRCLED NUMBER THIRTY THREE


27DD  CIRCLED NUMBER THIRTY FOUR


27DE  CIRCLED NUMBER THIRTY FIVE

27DF  CIRCLED NUMBER THIRTY SIX


27E0  CIRCLED NUMBER THIRTY SEVEN

27E1  CIRCLED NUMBER THIRTY EIGHT

27E2  CIRCLED NUMBER THIRTY NINE

27E3  CIRCLED NUMBER FORTY

ENCLOSED ALPHANUMERICS

27D0  CIRCLED NUMBER TWENTY ONE

- 27E4  CIRCLED NUMBER FORTY ONE
- 27E5  CIRCLED NUMBER FORTY TWO
- 27E6  CIRCLED NUMBER FORTY THREE
- 27E7  CIRCLED NUMBER FORTY FOUR
- 27E8  CIRCLED NUMBER FORTY FIVE
- 27E9  CIRCLED NUMBER FORTY SIX
- 27EA  CIRCLED NUMBER FORTY SEVEN
- 27EB  CIRCLED NUMBER FORTY EIGHT
- 27EC  CIRCLED NUMBER FORTY NINE
- 27ED  CIRCLED NUMBER FIFTY
- 27EE  NEGATIVE CIRCLED NUMBER ELEVEN
- 27EF  NEGATIVE CIRCLED NUMBER TWELVE
- 27F0  NEGATIVE CIRCLED NUMBER THIRTEEN
- 27F1  NEGATIVE CIRCLED NUMBER FOURTEEN
- 27F2  NEGATIVE CIRCLED NUMBER FIFTEEN
- 27F3  NEGATIVE CIRCLED NUMBER SIXTEEN
- 27F4  NEGATIVE CIRCLED NUMBER SEVENTEEN
- 27F5  NEGATIVE CIRCLED NUMBER EIGHTEEN
- 27F6  NEGATIVE CIRCLED NUMBER NINETEEN
- 27F7  NEGATIVE CIRCLED NUMBER TWENTY

## **A. Administrative**

### **1. Title**

Addition of medical symbols and enclosed numbers

### **2. Requester's name**

JCS Committee, JSA

### **3. Requester type (Member body/Liaison/Individual contribution)**

Individual contribution

### **4. Submission date**

1999-09-13

### **5. Requester's reference (if applicable)**

Final Draft JIS X0213 (to appear)

### **6. This is a complete proposal**

Yes

## **B. Technical - General**

### **1a. This proposal is for a new script ? Name ?**

No.

### **1b. The proposal is for addition of character(s) to an existing block ? Name ?**

Yes.

MISCELLANIOUS TECHNICAL

ENCLOSED ALPHANUMERICS

### **2. Number of characters in proposal**

MISCELLANIOUS TECHNICAL: 17

ENCLOSED ALPHANUMERICS: 50

### **3. Proposed category**

A

### **4. Proposed level of implementation and rationale**

1

**Is a rationale provided for the choice ?** Yes

**If Yes, reference:** Enclosed

### **5. Is a repertoire including character names provided ?**

Yes

### **5a. Are the names in accordance with the 'character naming guidelines' in Annex K of ISO/IEC 10646-1 ?**

Yes

### **5b. Are the character shapes attached in a reviewable form ?**

Yes

### **6. Who will provide the appropriate computerized font for publishing the standard ?**

JCS Committee

**If available now, identify source(s) for the font and indicate the tools used.**

96 x 96 dots bitmap

**7a. Are references (to other character sets, dictionaries, descriptive texts, etc.) provided ?**

Yes

**7b. Are published examples (such as samples from newspapers, magazines, or other sources) of use of proposed characters attached ?**

Yes

**8. Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc.?**

### **C. Technical - Justification**

**1. Has this proposal for addition of character(s) been submitted before ?**

No

**2. Has contact been made to members of the user community ?**

Yes

**If Yes, with whom ?**

Japan Association for Medical Informatics  
Management and coordination Agency

**If Yes, available relevant documents ?**      Enclosed

**3. Information on the user community for the proposed characters is included ?**

Yes

**Reference**      JCS Committee

**4. The context of use for the proposed characters**

Common

**If Yes, where ? Reference**      Japanese Laws

**5. Are the proposed characters in current use by the user community ?**

Yes

**If Yes, where ? Reference**      Japanese Laws

**6. After giving due considerations to the principles in "Principles and Procedures" document must the proposed characters be entirely in the BMP ?**

Yes

**If Yes, is a rationale provided ?**      Yes

**If Yes, Reference**      See above

**7. Should the proposed characters be kept together in a contiguous range (rather than being scattered) ?**

Yes

**8. Can any of the proposed characters be considered a presentation form of an existing**

**character or character sequence ?**

No

**9. Can any of the proposed character(s) be considered to be similar (in appearance of function) to an existing character ?**

No

**10. Does the proposal include use of combining characters and/or use of composite sequences ?**

No

**11. Does the proposal contain characters with any special properties such as control function or similar semantics ?**

No

## **D. SC2/WG2 Administrative**

**To be completed by SC2/WG2**

**1. Relevant SC2/WG2 document numbers:**

**2. Status (list of meeting number and corresponding action or disposition)**

**3. Additional contact to user communities, liaison organizations etc.**

**4. Assigned category and assigned priority/time frame**

**Other Comments**









Table 1 Examples of tooth designations under different systems

Tooth	Tooth-numbering system				
	Zsigmondy/ Palmer	Mühlreiter	Haderup	Universal	FDI
Permanent maxillary right lateral incisor	2	2I	2+	7	12
Permanent mandibular left first molar	6	M1	-6	19	36
Primary mandibular right canine	III C	d1C	03-	R	83

FAS 34

The same method of recording teeth was also described by Palmer<sup>6</sup> (Warren, Ohio) in 1870. Not aware of Zsigmondy's earlier publication, Palmer<sup>7</sup> claimed the authorship of this tooth-numbering system. Therefore, in English-speaking countries it is generally known as *Palmer's notation*.<sup>8,9</sup>

In 1870, Mühlreiter<sup>10</sup> (Salzburg, Austria) combined the uppercase letters *I, C, P, and M* (abbreviations for *permanent incisors, canines, premolars, and molars*, respectively) with numerals (*1* for canines; *1* or *2* for incisors and premolars; *1, 2, or 3* for molars) for tooth designation. The position of the letter relative to the numeral indicates if the tooth is maxillary or mandibular and left or right. Primary teeth are indicated by placement of a *d* immediately before the uppercase letter.

In 1887, Haderup<sup>11</sup> (Copenhagen, Denmark) proposed a system that omitted the placement of angular symbols around numerals and introduced plus signs (for indicating maxillary teeth) or minus signs (for mandibular teeth). Left and right sides are indicated by placement of the sign before (left side) or after (right side) the numeral. Primary teeth were originally indicated by addition of an *l* immediately before the numeral; after a few years, however, the *l* was replaced by a *0*. Variations in the notation of primary teeth are the use of Roman numerals. Haderup's system has been very popular in Scandinavia.<sup>8</sup>

The Universal system, which has been widely used throughout the United States, assigns the numerals *1* to *32* consecutively to the permanent teeth in a clockwise sequence. Numbering starts at the maxillary right third molar (*1*), follows the dental arch until the maxillary left third molar (*16*), continues at the

mandibular left third molar (*17*), and ends at the mandibular right third molar (*32*). The primary teeth are designated in a similar matter, but with the letters *A* through *T*. In place of letters, Goodman<sup>12</sup> proposed the use of numerals *41* through *60* for the 20 primary teeth.

Many other systems, including language-adapted methods, have been also used over the years. However, none of these methods complies with the five basic requirements set by the FDI.<sup>2</sup> Following these standards, a tooth-designating system should be simple to understand and to teach; easy to pronounce in conversation and dictation; readily communicable in print and by wire; easily adaptable to typewriter or data-processing keyboards; and easily adaptable to standard charts used in general practice.

If these requirements are considered, many features of the traditional systems have disadvantages. For example, the use of grid signs, like in Zsigmondy's method, is a major obstacle to fast communication and data processing. Although arabic numerals (*0* to *9*) are used even in countries that do not have the Roman alphabet, neither alphabetical characters (*A, B, C*, etc) nor Roman numerals (*I, II, III*, etc) are used universally. Language-dependent methods, on the other hand, are limited to certain countries. The disadvantages of the Universal system have been summarized by Hrabowsky and Sim<sup>13</sup>: "Its major drawback is the necessity for memorizing 32 digits and 20 characters and associating these 52 unrelated symbols with individual teeth. Not only can this prove to be a source of confusion, but it also precludes instant recognition of particular teeth and quadrants." In 1890, at an international dental meeting in Paris, a commission appointed to consider different notation methods came to the

General Dentistry

conclusion "that any system of numbering [the permanent teeth] by thirty-two was inconvenient, confusing, and difficult to memorize. It was therefore unanimously rejected."

FDI two-digit system for designating teeth

Because of the shortcomings of the existing tooth-numbering systems, the General Assembly of the FDI, at its 58th annual session in 1970, accepted a resolution proposing that the two-digit system of designating teeth be adopted worldwide. (Of 56 representatives, 38 voted in favor of and 11 against the resolution; seven abstained.) The FDI believed that only this system seemed to comply with the requirements mentioned earlier.

In the two-digit system, which was originally described by Viohl in 1966—and in slightly different versions by Pirquet in 1924 and by Denton in 1963—each tooth is identified by a unique two-digit combination. The first digit specifies one of the four quadrants of the mouth, starting with the maxillary right segment and proceeding in a clockwise sequence. Because the permanent teeth are the main concern of dentistry, the corresponding quadrants are allotted the digits 1 through 4; for the primary teeth, the quadrants 5 through 8 have been chosen. The second digit indicates the tooth within the quadrant. In every quadrant, the (permanent) teeth are numbered, mesial to distal, from 1 through 8, beginning with the middle incisor and ending with the third molar (Fig 1). To describe a single tooth, two digits are always used—the first for the quadrant and the second for the particular tooth (Fig 2).

The two digits of the FDI system should be pronounced separately, eg, one-eight (written as 18), not eighteen. This makes a translation into other languages easy because it requires only the mastery of the digits from one to eight in the required language. Furthermore, if the digits are pronounced independently, confusion with the Universal system can be prevented.

The same principles of notation apply to the primary teeth. Teeth within the same quadrant are allotted the digits 1 (first incisor) through 5 (second molar) (Fig 3). The permanent mandibular right first molar is therefore described as 36 and the primary mandibular left canine as 73.

The FDI system has two features in common with the notation systems described by Zsigmondy/Palmer and Haderup: (1) Teeth anatomically similar in dentition are characterized by the same number (eg, lateral incisors: 2; canines: 3; and first premolars: 4);

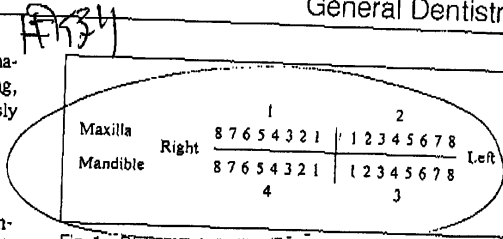


Fig 1 Division of the quadrants and designation of the single permanent tooth in the FDI tooth-numbering system.

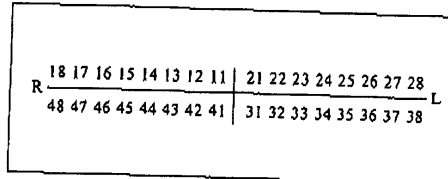


Fig 2 Notation of the permanent teeth in the FDI system. The grid is included for clarification.

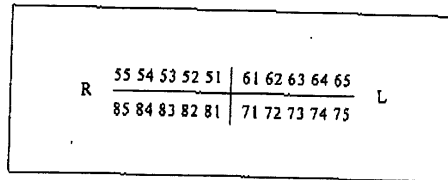


Fig 3 Notation of the primary teeth in the FDI system. The grid is included for clarification.

and (2) Counting starts with the central incisor (1) and ends with the third molar (8). However, in place of an angular symbol or a plus or minus sign, a digit that precedes the one designating the specific tooth is used to indicate the quadrant. By determining a clockwise sequence of the four quadrants, the FDI showed consideration for the Universal system. In doing so, the FDI's binomial system represents a compromise between the principles of notation shared by Zsigmondy/Palmer and Haderup systems and those of the Universal system.

Possible modifications of the two-digit system

Because the Universal system uses in part the same written numbers as the two-digit system (although they should at least be pronounced in a different manner), this similarity can be a source of confusion in those countries where the Universal system is used. Tooth 11 (one-one), for example, indicates in the two-digit system the permanent maxillary right central incisor.

Handwritten mark: ← 出展

### 前歯 1 歯欠損ブリッジ その 4 健全歯抜髄と SK 支台例・補管

症例 120

① 2 ③ 欠損, ③ C, 処置歯

4/1	③	再診	36
		X線 (D) 2 F, 歯根の傾斜あるも、湾曲なし	48×2
	① 2 ③	① アルジネート imp	50
4/5		再診	36
		麻技即時根充, 浸麻キシロカイン Ct 1.8 ml, CV, セメント裏装	278
4/8		再診	36
		失 PZ (3/4 冠)	655
	③	PW, 歯肉圧排	655
	① 2 ③	遠 imp (シリコーンパテ・インジェクション)	275
		補診 ① 2 ③, ワンピースキャスト製作予定)	70
		リテーナー set, EZ	100+4×2
	① 2 ③	BT (中心位, バイトワックス)	70
4/14	① 2 ③	再診	36
		ブリッジ set	90
		① 14 K・3/4 冠, カセ	835+4
	③	③ 14 K・金属裏装 SK, カセ	762+4
	②	② 14 K・金属裏装ポンティック	745
	② ③	② ③ 人工歯 (陶歯)	66×2
		補綴物維持管理料 (① 2 ③ Br)	500
実日数 4 日			計 5,473 点

**【保険解説】**

- 健全歯を支台歯としてブリッジを製作するにあたり、なんらかの理由により健全歯に対し抜髄処置を必要とした場合には、その部位の歯を③で囲む。
- 前歯部ポンティックは金属材料と人工歯料との合計により算定する。人工歯は陶歯片側の場合、1歯につき66点、両側の場合2本1組で131点を算定する。
- 前歯継続歯用陶歯にはピン陶歯、リバースピン陶歯などが含まれる。
- 前歯部 14 K 金属裏装継続歯は、ブリッジの支台としてのみ使用される。
- リテーナーは100点 (支台歯とポンティック数の合計5歯以下) の算定ができる。
- リテーナーに人工歯を使用した場合はリテーナーの

所定点数に含まれ算定できない。

7. ① 2 ③ のブリッジの適用の判定

(1) ブリッジの抵抗力 (r) の判定

① 2 ③

$$R : 2 \quad 5 = 7$$

$$F : 1 = 1$$

$$FS : = 0$$

$$r = R(7) - [F(1) + FS(0)] = 7 - 1 = 6$$

(2) 支台歯のバランスの判定

$$\text{①} = 2 > 1/3$$

$$\text{③} = 5 > 1/3$$

(両支台とも 1/3 を超えている)

診療報

診療科目	
診療時間	
性別	1男 2女
年齢	
職業	
住所	
電話	
保険	
その他	

症例 145

欠損歯がなく 1 歯相当分の間隙のある場合のブリッジ・補管

④△⑤ 欠損

4/1	④△⑤	再診	36
		X線 (D) IF, 複根歯, 根はやや短縮なるを確認	48
		⑥アルジネート imp	50
4/7	④△⑤	再診	36
		生 PZ (FCK), 浸麻・シタネスト Ct 1.8 ml	290×2
		BT (中心位, バイトワックス)	70
		補診 (④△⑤) ワンピースキャスト製作予定)	70
		連 imp (寒天・アルジネート)	275
		平行測定	50
		リテーナー-set, 仮せ	100+4×2
4/14	④△⑤	再診	36
		ブリッジ set	90
		④△⑤ 12%金バラ・FCK, カセ	(583+4)×2
		④△⑤ 12%金バラ・構造ポンティック	583
		補綴物維持管理料 (④△⑤ Br)	500
実日数 3 日			計 3,706 点

【保険解説】

- 欠損歯がなくとも、1 歯相当分の間隙がある場合にはブリッジの製作ができる。なお、半歯程度の間隙の場合は隙とする。
- 1 歯相当分の間隙がある場合のブリッジの設計は、実態に応じた近似の歯種の指数をもってこれにあてる。
- 欠損歯数が 2 歯でも、間隙が広く 3 歯並べなくてはならない場合には、ブリッジは認められない。
- 隙は欠損歯数に入らないので、2 歯欠損+隙でもブリッジは認められる。
- 補綴隙は、それを必要とする場合に限り、前歯部にはレジン隙を、臼歯部には金属隙を使用して差し支えないが、その費用はいずれも補綴隙の所定点数 30 点により算定する。なお総義歯には認められない。
- レセプトには、歯冠修復および欠損補綴の「その他」の欄に隙 30×回数を記入する。
- ポンティックの形態は隣接支台歯の何れかの形態を模して決定する。

【症例解説】

- 歯間部の間隙の状態によっては、MTM (Mill Tooth Movement) により間隙を調整したのち、リッジを行ったほうが効果的な場合がある。ただし、MTM は保険では認められない。
- ブリッジの適用の判定
  - ブリッジの抵抗力 (r) の判定
 
$$R : 4 \times 4 = 8$$

$$F : 4 = 4$$

$$FS : = 0$$

$$r = R(8) - (F(4) + FS(0)) = 4$$
  - 支台歯のバランスの判定
 
$$④ = 4 > 4/3$$

$$⑤ = 4 > 4/3$$
 (両支台とも 1/3 以上を超えている)

診療報酬明細書

(歯科)

平成 9 年 4 月分

都道府 区 診療報酬コード F  
請求者

3 歯科 1 社・国 3 老人 1 専独 2 本外  
2 公費 4 退職 2 3 保 6 家外

Table with columns for patient details: 患者氏名, 生年, 性別, 年齢, 保険者番号, etc.

Table with columns for insurance details: 保険者番号, 被保険者証番号, etc.

Table with columns for patient status: 氏名, 性別, 年齢, 職業上の事由, etc.

Table with columns for insurance status: 保険者種別, 保険者名, etc.

Table with columns for treatment details: 診療科目, 診療内容, 診療日, etc.

Table with columns for procedure codes and descriptions: 処置コード, 処置内容, etc.

Table with columns for procedure codes and descriptions: 処置コード, 処置内容, etc.

Table with columns for procedure codes and descriptions: 処置コード, 処置内容, etc.

Table with columns for procedure codes and descriptions: 処置コード, 処置内容, etc.

Table with columns for procedure codes and descriptions: 処置コード, 処置内容, etc.

Table with columns for procedure codes and descriptions: 処置コード, 処置内容, etc.

Table with columns for procedure codes and descriptions: 処置コード, 処置内容, etc.

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- 36
48x2
50
36
278
36
655
655
275
70
+4x2
70
36
90
835+4
762+4
745
66x2
500
473点

診療報酬明細書 (歯科)

平成 9 年 4 月分

都道府県 医療機関コード 県番号

3 歯科 1 社・国 3 老人 1 2 3 単独 2 本外 2 公費 4 退職 2 3 併 6 家外

Table with columns for patient name, address, and insurance type.

Table for insurance details including insurance number and policy type.

Table for patient demographics including sex, age, and date of birth.

Table for medical history and special items.

Table for treatment dates and patient status.

Table for treatment codes and descriptions.

Main table for dental procedures with columns for procedure codes and quantities.

Table for dental X-ray procedures.

Table for dental treatment fees and materials.

Summary table for total charges and payments.