

JIS

JAPANESE INDUSTRIAL STANDARD

**KATAKANA Character Set
for Optical Recognition**

JIS X 9003—1980

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

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KATAKANA Character Set for Optical Recognition X 9003-1980
(Reaffirmed: 1985)1. Scope

This Japanese Industrial Standard specifies the printed image shapes and sizes of Katakana characters and symbols for use in optical character recognition.

2. Definitions of Terms

The definitions of principal used in this Standard are as follows:

- (1) character The figure for denoting information. Katakana characters, symbols, etc. are all included in the classification of the character.
- (2) character shape The shape of an individual character.
- (3) font A set of character shapes uniformly specified for a group of characters.
- (4) character shape by skeletal lines A shape formed by a line or lines showing the framework of a character. Skeletal shape, for short.
- (5) printing frame The smallest rectangle which can encircle any individual skeletal shape.
- (6) stroke width The width of character strokes forming a character shape.
- (7) base line A horizontal line drawn as a gauge line to determine the relative vertical position of characters printed on the same line, or the minor bottom line of a printing frame.
- (8) reference line A straight line perpendicular to the base line drawn as a gauge line to determine the relative horizontal position of printed characters.

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3. Kind of Font and Name

The kind of font shall be one and its name OCR-K.

4. Character Sizes

The sizes of characters shall be indicated by the width " W " and the height " H " of the printing frame as shown in Table 1.

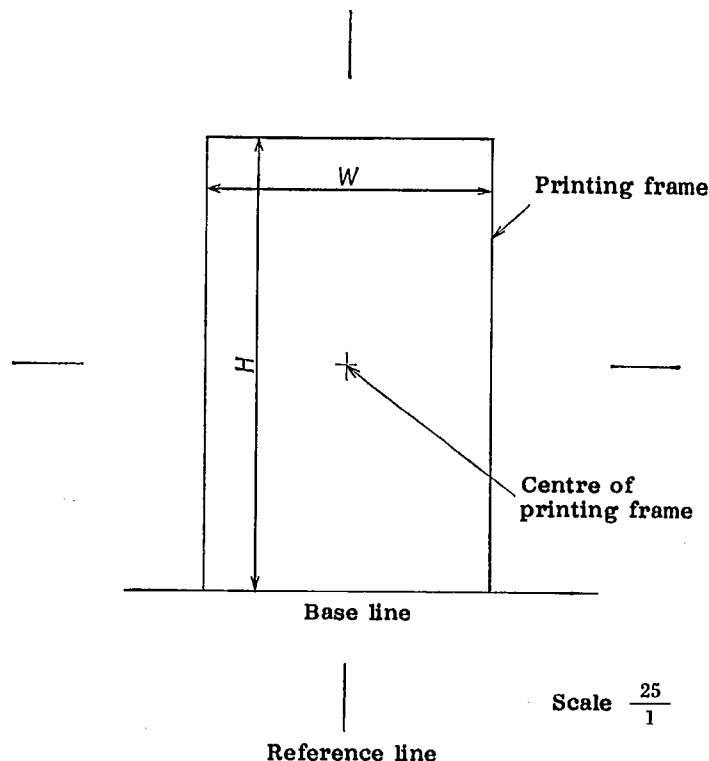


Table 1. Character Sizes

Size designation		Unit: mm	
		W	H
Size	I	1.54	2.40

5. Character Set

The character set specified in this Standard as Katakana font consists of 46 Katakana capital letters (hereafter called capital letters), 11 symbols and 9 Katakana small letters (hereinafter called small letters) as shown in Tables 2, 3 and 4, respectively.

Table 2. Capital Letters

ア	イ	ウ	エ	オ
カ	キ	ク	ケ	コ
サ	シ	ス	セ	ソ
タ	チ	ツ	テ	ト
ナ	ニ	ヌ	ネ	ノ
ハ	ヒ	フ	ヘ	ホ
マ	ミ	ム	メ	モ
ヤ		ユ		ヨ
ラ	リ	ル	レ	ロ
ワ				ヲ
ン				

Table 3. Symbols

㇏	Voiced sound symbol
㇏	Semi-voiced sound symbol
・	Katakana full stop
、	Katakana comma
ー	Prolonged sound symbol
・	Conjunctive symbol
「	Opening bracket
」	Closing bracket
	Space (SP)
■	Character-erasing symbol
--	Lone-erasing symbol

Remark: Each of the upper 8 symbols shall be treated as one symbol and shall not overlap other characters.

Table 4. Small Letters

ア	イ	ウ	エ	オ
ヤ	ユ	ヨ	ツ	

6. Position of Characters

The bottom line of the printing frame is the base line, and the bisector perpendicular to the printing frame is the reference line.

The relative vertical positions of characters printed on the same line shall be determined by the base line. The relative horizontal position of a printed character shall be determined by the reference line.

7. Skeletal Shape and Dimension

The skeletal shapes of characters specified in this Standard shall consist of straight lines and circular arcs, and their dimensions shall be as shown in Figures and Tables in the Appendix.

8. Stroke Width and Shape

The stroke width of capital letters and symbols shall be 0.35 mm with the skeletal line as the core, and the stroke width of small letters likewise 0.31 mm. The character shape is the figures formed by, or the locus of, two respective circles with radii of 0.175 mm and 0.155 mm, respectively, moving along the skeletal lines with their centres on the skeletal lines.

9. Vertical Position of Katakana Comma

A Katakana comma shall be located either in its nominal vertical position or in the position 0.51 mm below the nominal vertical position.

10. Space (SP)

A space shall be a printing position where a blank is intentionally provided on a printing line. The width of a space is equal to the printing pitch.

11. Symbols for Erasing Character and Line

11.1 Symbol for Erasing Character The character erasing symbol may be used, to erase the character already printed, overlapping correctly the same character, or may be treated as an independent character for recognition.

11.2 Symbol for Erasing Line The line erasing symbol shall be used to erase the consecutive line of characters already printed, covering all characters to be erased.

12. Mixed Use with Alphanumeric Characters

12.1 Alphanumeric Characters Capable for Mixed Use The Katakana font may be used together with the OCR-A numeric subset or OCR-B subset 2 in the Size I fonts, both specified in JIS X 9001. However, in case mixed use with OCR-B, one and the same font shall be employed in the common use of a Katakana full stop and a period, a Katakana comma and a comma, a prolonged sound symbol and a hyphen (minus and subtraction symbol).

12.2 Relative Position of Characters Adjustment for the relative positions of alphanumeric fonts and Katakana font shall be as follows:

- (1) The base line for OCR-A font shall be considered regarded as equivalent to that for Katakana font.
- (2) The straight line connecting two basic points for OCR-B font shall be regarded as situated 0.13 mm below the base line for Katakana font and parallel to it.
- (3) The reference line for OCR-A and OCR-B shall be regarded as equivalent to that for Katakana Font.

Appendix

The skeletal shapes and their dimensions shall be specified in the Appendix Figures, and the correspondence between the figure numbers and the characters shall be as given in the Table below. The skeletal shapes in the Appendix Figures shall be indicated in the following way:

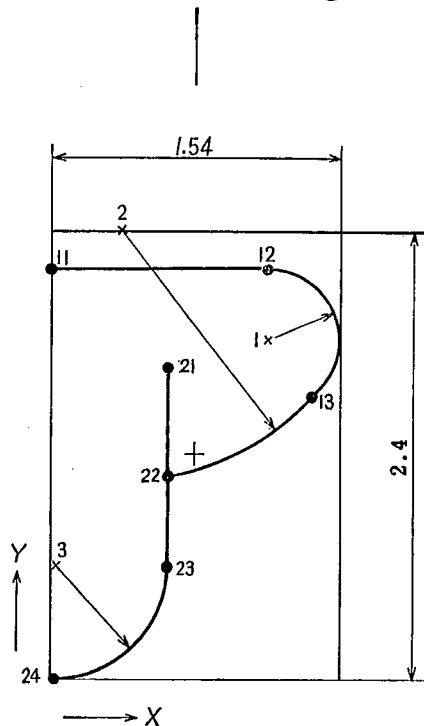
- (1) The unit is a millimeter.
- (2) The left bottom corner of the printing frame shall be the original point for the angular coordinates with X as the horizontal axis and Y as the vertical axis.
- (3) Mark ($\times$) is the reference point that the centre of curvature of an arc of a skeletal line.
- (4) Mark ($\cdot$) shall be the reference point that represents an end point of a skeletal line an intersection of a straight line and a circular arc or that of a circular arc and another circular arc.
- (5) Coordinates X and Y to indicate the reference points and the radius of curvature R shall be as given in the table of each Figure. However, the coordinates X and Y at the point of mark ($\times$) indicate approximate reference values. A reference point for the centre of curvatures shall be indicated by one digit and a reference point for the end points and the connected points by two digits.

Table of Correspondence between Characters
and Appendix Figure Numbers

Kinds	Katakana	Appendix Figure No.	Katakana	Appendix Figure No.	Katakana	Appendix Figure No.	Katakana	Appendix Figure No.	Katakana	Appendix Figure No.
Capital letters	ア	1	イ	2	ウ	3	エ	4	オ	5
	カ	6	キ	7	ク	8	ケ	9	コ	10
	サ	11	シ	12	ス	13	セ	14	ソ	15
	タ	16	チ	17	ツ	18	テ	19	ト	20
	ナ	21	ニ	22	ヌ	23	ネ	24	ノ	25
	ハ	26	ヒ	27	フ	28	ヘ	29	ホ	30
	マ	31	ミ	32	ム	33	メ	34	モ	35
	ヤ	36			ユ	37			ヨ	38
	ラ	39	リ	40	ル	41	レ	42	ロ	43
	ワ	44							ヲ	45
	ン	46								
Symbols	〃	47	°	48	・	49	/	50	-	51
	・	52	「	53	」	54		55	■	56
	---	57								
Small letters	ア	58	イ	59	ウ	60	エ	61	オ	62
	ヤ	63	ユ	64	ヨ	65	ツ	66		

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Appendix Fig. 1. Capital Letter 7

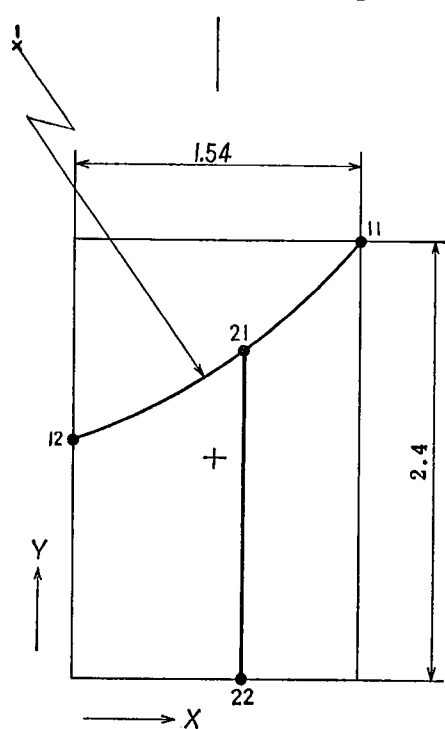


Unit: mm

Reference point	X	Y	R
1	(1.16)	(1.82)	0.38
2	(0.39)	(2.40)	1.34
3	(0.04)	(0.60)	0.60
11	0.00	2.20	
12	1.16	2.20	
13	1.40	1.52	
21	0.63	1.68	
22	0.63	1.08	
23	0.63	0.58	
24	0.07	0.00	

Scale $\frac{25}{1}$

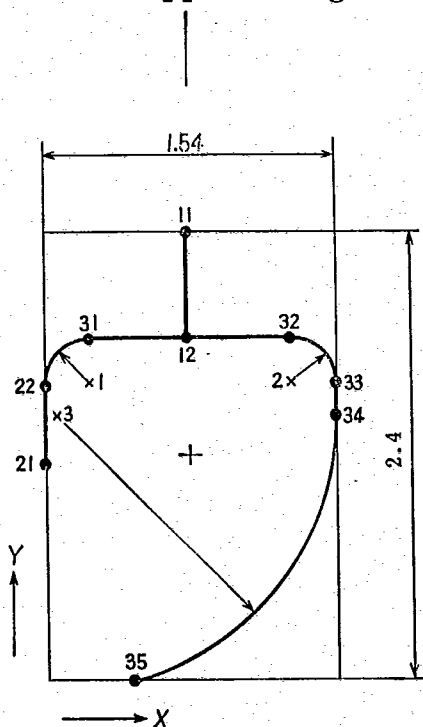
Appendix Fig. 2. Capital Letter 4



Unit: mm

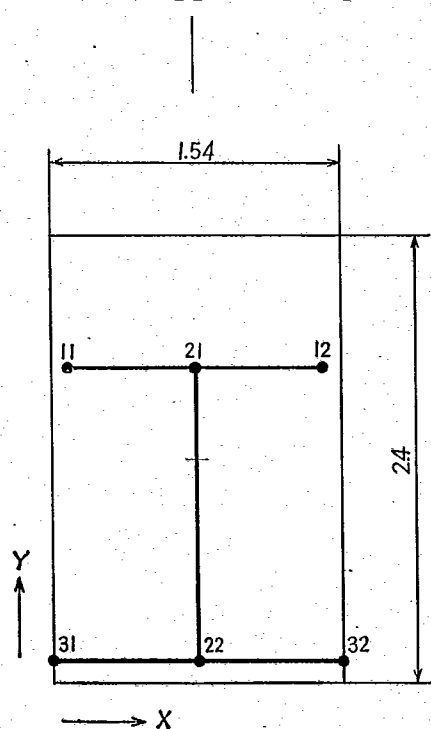
Reference point	X	Y	R
1	(-1.20)	(4.62)	3.52
11	1.54	2.40	
12	0.00	1.30	
21	0.92	1.79	
22	0.92	0.00	

Scale $\frac{25}{1}$

Appendix Fig. 3. Capital Letter Ψ 

Unit: mm

Reference point	X	Y	R
1	(0.24)	(1.60)	0.24
2	(1.30)	(1.60)	0.24
3	(0.06)	(1.42)	1.48
11	0.77	2.40	
12	0.77	1.84	
21	0.00	1.16	
22	0.00	1.60	
31	0.24	1.84	
32	1.30	1.84	
33	1.54	1.60	
34	1.54	1.42	
35	0.46	0.00	

Scale $\frac{25}{1}$ Appendix Fig. 4. Capital Letter Ξ 

Unit: mm

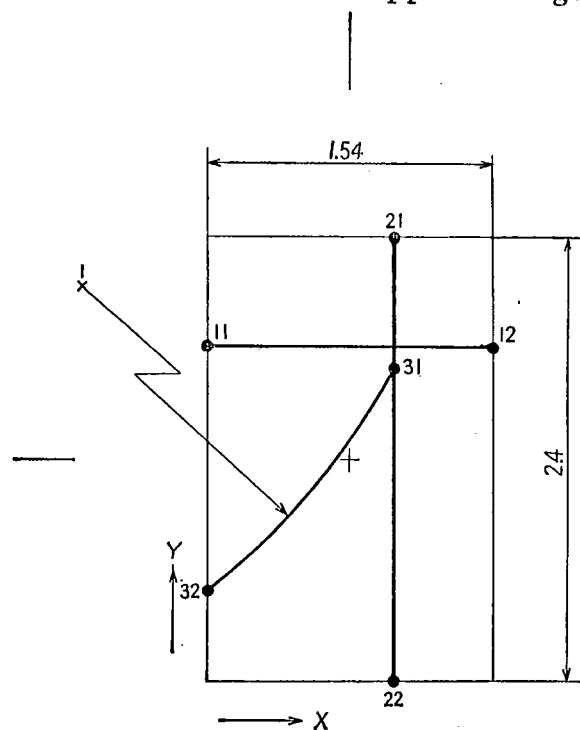
Reference point	X	Y	R
11	0.09	1.70	
12	1.45	1.70	
21	0.77	1.70	
22	0.77	0.12	
31	0.00	0.12	
32	1.54	0.12	

Scale $\frac{25}{1}$

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Appendix Fig. 5. Capital Letter オ

Unit: mm

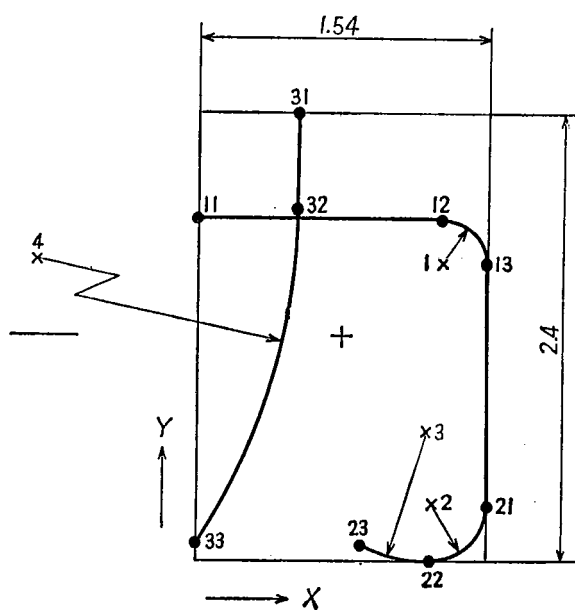


Reference point	X	Y	R
1	(-2.39)	(3.50)	3.84
11	0.00	1.82	
12	1.54	1.82	
21	1.00	2.40	
22	1.00	0.00	
31	1.00	1.69	
32	0.00	0.49	

Scale $\frac{25}{1}$

Appendix Fig. 6. Capital Letter カ

Unit: mm

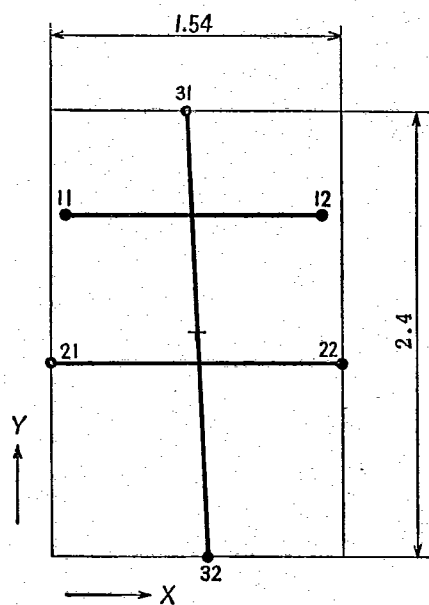


Reference point	X	Y	R
1	(1.30)	(1.60)	0.24
2	(1.24)	(0.30)	0.30
3	(1.22)	(0.70)	0.70
4	(-2.78)	(1.92)	3.32
11	0.00	1.84	
12	1.30	1.84	
13	1.54	1.60	
21	1.54	0.30	
22	1.24	0.00	
23	0.89	0.08	
31	0.55	2.40	
32	0.55	1.85	
33	0.00	0.08	

Scale $\frac{25}{1}$

Appendix Fig. 7. Capital Letter κ

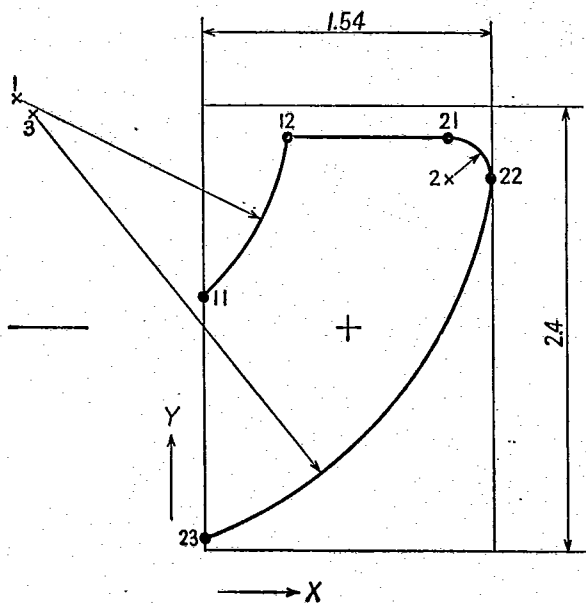
Unit: mm



Reference point	X	Y	R
11	0.08	1.84	
12	1.45	1.84	
21	0.00	1.04	
22	1.54	1.04	
31	0.73	2.40	
32	0.83	0.00	

Scale $\frac{25}{1}$ Appendix Fig. 8. Capital Letter ζ

Unit: mm

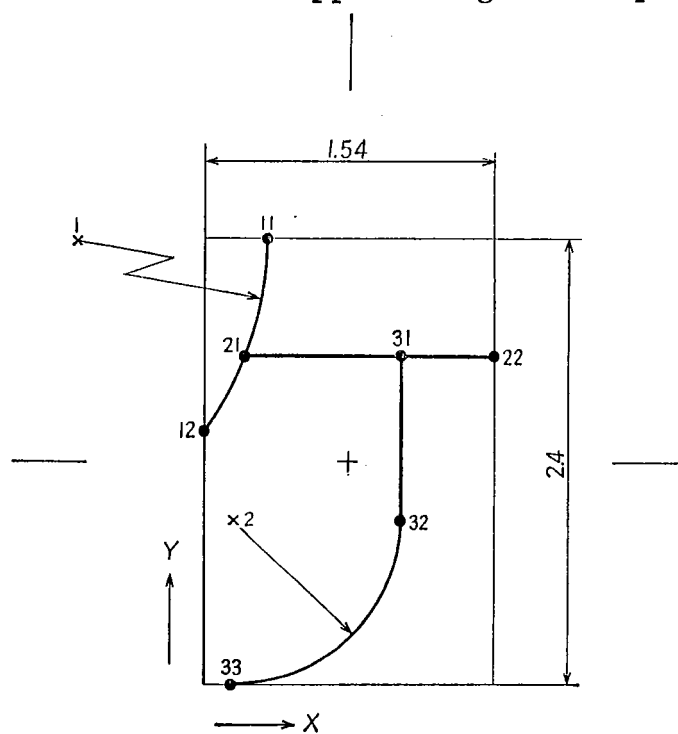


Reference point	X	Y	R
1	(-0.99)	(2.44)	1.46
2	(1.32)	(2.02)	0.22
3	(-0.91)	(2.36)	2.47
11	0.00	1.36	
12	0.46	2.24	
21	1.32	2.24	
22	1.54	2.02	
23	0.00	0.06	

Scale $\frac{25}{1}$

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Appendix Fig. 9. Capital Letter ケ

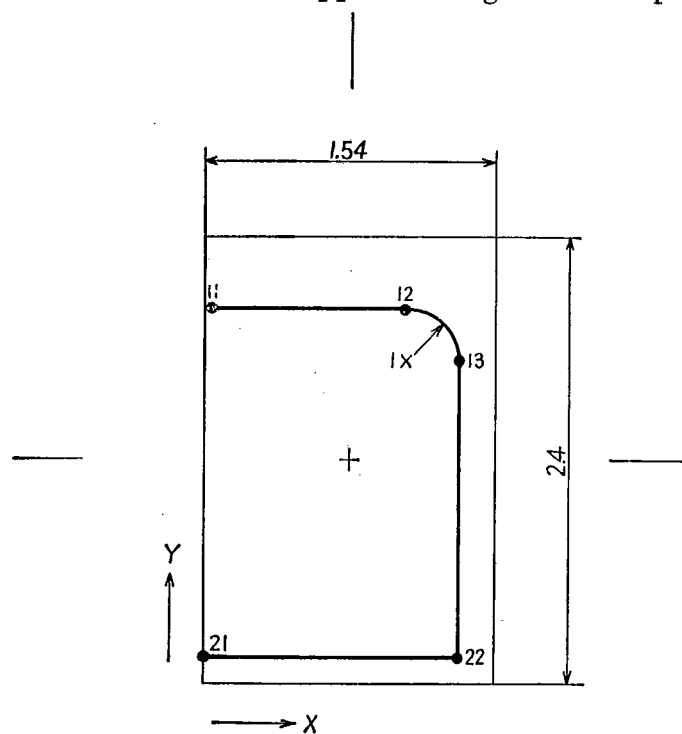


Unit: mm

Reference point	X	Y	R
1	(-1.42)	(2.40)	1.76
2	(0.16)	(0.89)	0.89
11	0.34	2.40	
12	0.00	1.36	
21	(0.23)	1.78	
22	1.54	1.78	
31	1.05	1.78	
32	1.05	0.89	
33	0.16	0.00	

Scale $\frac{25}{1}$

Appendix Fig. 10. Capital Letter コ



Unit: mm

Reference point	X	Y	R
1	(1.08)	(1.75)	0.28
11	0.04	2.03	
12	1.08	2.03	
13	1.36	1.75	
21	0.00	0.14	
22	1.36	0.14	

Scale $\frac{25}{1}$