

# TECHNICAL INFORMATION

捲尺編號

JAPANESE INDUSTRIAL STANDARD (JIS) 1ST CLASS

## INSPECTION RECORD LIST (A)

Commodity	WHITE TAPE		
Length	100m	Temperature	20°C
Tape No.	W1 10375	Tension	100N
Length on tape	Real length (m)	Length on tape	Real length (m)
0~ 5m	4.99995	0~ 55m	54.99935
0~ 10m	9.99985	0~ 60m	59.99930
0~ 15m	14.99985	0~ 65m	64.99925
0~ 20m	19.99980	0~ 70m	69.99925
0~ 25m	24.99970	0~ 75m	74.99920
0~ 30m	29.99965	0~ 80m	79.99920
0~ 35m	34.99955	0~ 85m	84.99915
0~ 40m	39.99955	0~ 90m	89.99910
0~ 45m	44.99945	0~ 95m	94.99910
0~ 50m	49.99935	0~ 100m	99.99905

Above tape was manufactured under the Japanese Industrial Standard and inspected using our 1st class Standard Tape Measure No.2264 approved by National Research Laboratory of Metrology under the Measurement Law (Ministry of International Trade and Industry).

Date of inspection: 17-10-20

YAMAYO MEASURING TOOLS CO., LTD.  
INSPECTION SECTION, TECHNICAL DIV.  
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### FORMULA OF CORRECTIONS

- Temperature correction formula:  $C_t = L \alpha (T - 20)$
- Tension correction formula:  $C_p = (\text{Expansion}) \times (P - P_0) L$
- Looseness correction formula:  $-C_s = \frac{(mg)^2 L^3}{24P^2} = \frac{(Mg)^2 L}{24P^2}$

#### Note

T: Temperature at time of measurement (°C)  
 P: Tension at time of measurement (N)  
 P<sub>0</sub>: Tension of tape (N)  
 L: Length on tape (mm)  
 m: Weight per unit of length of tape (kg/mm)  
 M: Weight of tape supported between two measuring point (kg)  
 g: Acceleration of gravity 9.80665 (m/s<sup>2</sup>)

- C<sub>t</sub>: Value after temperature correction
  - C<sub>p</sub>: Value after tension correction
  - -C<sub>s</sub>: Value after looseness correction
- α: Coefficient of linear expansion of tape (1/°C)

### PROPERTIES OF THE TAPE

(\* Nylon coated layer or paint is not included)  
 (\*\* Modulus of elasticity)

Material		SK85
Thickness × width	[mm × mm]	0.27 × 13
Sectional area *	[mm <sup>2</sup> ]	2.52 ± 1 %
Weight	× 10 <sup>-6</sup> [kg/mm]	20.45 ± 2 %
Coefficient of linear expansion	× 10 <sup>-6</sup> [1/°C]	11.5
Young's modulus **	× 10 <sup>4</sup> [N/mm <sup>2</sup> ]	20.29
Expansion of tape	× 10 <sup>-4</sup> [1/N]	0.0196

### Temperature Correction (B)

unit (mm)

Length on tape (m)	Temperature						
	-10°C (50°C)	-5°C (45°C)	0°C (40°C)	5°C (35°C)	10°C (30°C)	15°C (25°C)	20°C
0~ 5	-1.7	-1.4	-1.2	-0.9	-0.6	-0.3	0.0
0~ 10	-3.5	-2.9	-2.3	-1.7	-1.2	-0.6	0.0
0~ 15	-5.2	-4.3	-3.5	-2.6	-1.7	-0.9	0.0
0~ 20	-6.9	-5.8	-4.6	-3.5	-2.3	-1.2	0.0
0~ 25	-8.6	-7.2	-5.8	-4.3	-2.9	-1.4	0.0
0~ 30	-10.4	-8.6	-6.9	-5.2	-3.5	-1.7	0.0
0~ 35	-12.1	-10.1	-8.1	-6.0	-4.0	-2.0	0.0
0~ 40	-13.8	-11.5	-9.2	-6.9	-4.6	-2.3	0.0
0~ 45	-15.5	-12.9	-10.4	-7.8	-5.2	-2.6	0.0
0~ 50	-17.3	-14.4	-11.5	-8.6	-5.8	-2.9	0.0
0~ 55	-19.0	-15.8	-12.7	-9.5	-6.3	-3.2	0.0
0~ 60	-20.7	-17.3	-13.8	-10.4	-6.9	-3.5	0.0
0~ 65	-22.4	-18.7	-15.0	-11.2	-7.5	-3.7	0.0
0~ 70	-24.2	-20.1	-16.1	-12.1	-8.1	-4.0	0.0
0~ 75	-25.9	-21.6	-17.3	-12.9	-8.6	-4.3	0.0
0~ 80	-27.6	-23.0	-18.4	-13.8	-9.2	-4.6	0.0
0~ 85	-29.3	-24.4	-19.6	-14.7	-9.8	-4.9	0.0
0~ 90	-31.1	-25.9	-20.7	-15.5	-10.4	-5.2	0.0
0~ 95	-32.8	-27.3	-21.9	-16.4	-10.9	-5.5	0.0
0~ 100	-34.5	-28.8	-23.0	-17.3	-11.5	-5.8	0.0

### Tension Correction (C)

unit (mm)

Length on tape (m)	Tension			
	100N	150N	200N	250N
0~ 5	0.0	0.5	1.0	1.5
0~ 10	0.0	1.0	2.0	2.9
0~ 15	0.0	1.5	2.9	4.4
0~ 20	0.0	2.0	3.9	5.9
0~ 25	0.0	2.5	4.9	7.4
0~ 30	0.0	2.9	5.9	8.8
0~ 35	0.0	3.4	6.9	10.3
0~ 40	0.0	3.9	7.8	11.8
0~ 45	0.0	4.4	8.8	13.2
0~ 50	0.0	4.9	9.8	14.7
0~ 55	0.0	5.4	10.8	16.2
0~ 60	0.0	5.9	11.8	17.6
0~ 65	0.0	6.4	12.7	19.1
0~ 70	0.0	6.9	13.7	20.6
0~ 75	0.0	7.4	14.7	22.1
0~ 80	0.0	7.8	15.7	23.5
0~ 85	0.0	8.3	16.7	25.0
0~ 90	0.0	8.8	17.6	26.5
0~ 95	0.0	9.3	18.6	27.9
0~ 100	0.0	9.8	19.6	29.4

### Looseness Correction (D)

Length on tape (m)	Looseness			
	100N	150N	200N	250N
0~ 5	0.0	0.0	0.0	0.0
0~ 10	-0.2	-0.1	0.0	0.0
0~ 15	-0.6	-0.3	-0.1	-0.1
0~ 20	-1.3	-0.6	-0.3	-0.2
0~ 25	-2.6	-1.2	-0.7	-0.4
0~ 30	-4.5	-2.0	-1.1	-0.7
0~ 35	-7.2	-3.2	-1.8	-1.1
0~ 40	-10.7	-4.8	-2.7	-1.7
0~ 45	-15.3	-6.8	-3.8	-2.4
0~ 50	-20.9	-9.3	-5.2	-3.4
0~ 55	-27.9	-12.4	-7.0	-4.5
0~ 60	-36.2	-16.1	-9.0	-5.8
0~ 65	-46.0	-20.5	-11.5	-7.4
0~ 70	-57.5	-25.5	-14.4	-9.2
0~ 75	-70.7	-31.4	-17.7	-11.3
0~ 80	-85.8	-38.1	-21.4	-13.7
0~ 85	-102.9	-45.7	-25.7	-16.5
0~ 90	-122.2	-54.3	-30.5	-19.5
0~ 95	-143.7	-63.9	-35.9	-23.0
0~ 100	-167.6	-74.5	-41.9	-26.8

Re: 1. In case of measuring in the temperature of ( ) in chart (B), the minus sign (-) shown in the chart has to be converted into plus sign (+).  
 2. All the figures shown in above chart (B), (C) and (D) are the value which have been rounded to two decimal places.

Should be there any question about the mentioned allowance, please contact us with above tape number.

How to use Correction Tables

Example

Measured 30m in 30°C on flat place.  
 Pulled the tape with 150N tension.

Real length = (Chart A: Real length at 30m length on tape) +  
 (Chart B: Value at 30m in 30°C) + (Chart C: Value at 30m in 150N)

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