

JIS

JAPANESE INDUSTRIAL STANDARD

Wire rope slings for lifting purposes

JIS B 8817—1991

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by

Japanese Standards Association

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

JAPANESE INDUSTRIAL STANDARD

J I S

Wire Rope Slings for Lifting Purposes

B 8817-1991

1. Scope

This Japanese Industrial Standard specifies wire rope slings of which the eye parts are press-fitted with sleeves to be used for hoists and the like, hereafter referred to as "rope slings".

Remarks 1. Applicable standards to this Standard are shown below:

JIS B 0148-Glossary of Terms for Hoists

JIS B 2803-Hooks

JIS B 8818-Webbing Slings for Lifting Purposes

JIS G 3101-Rolled Steel for General Structure

JIS G 3445-Carbon Steel Tubes for Machine Structural
Purposes

JIS G 3525-Wire Ropes

JIS H 3300-Copper and Copper Alloy-Seamless Pipes and
Tubes

JIS H 4080-Aluminium and Aluminium Alloy Seamless Pipes
and Tubes

JIS Z 8601-Preferred Numbers

2. Corresponding International Standard to this Standard
is shown below:

ISO 7531-1987 Wire rope slings for general purposes -
Characteristics and Specifications

3. The units and numerical values given in { } in this Standard
are based on the traditional unit system and are appended
for reference values.

2. Definitions

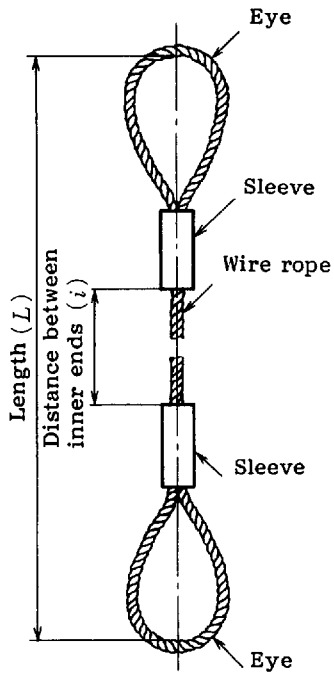
For the purposes of this Standard main definitions are in accordance with JIS B 0148 and to others the following apply:

- (1) basic working load The maximum load capable of loading for working on one rope sling.
- (2) working load The maximum load capable of loading for working on rope sling in each type of suspending.
- (3) mode coefficient In rope sling, the ratio of working load depending upon number of suspending ropes and suspending angle to the basic working load.
- (4) breaking load The maximum load which a rope sling has endured in tensile test.

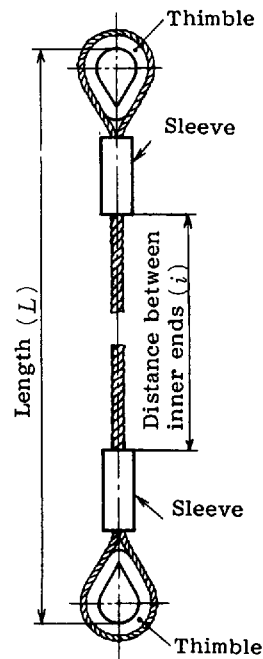
- (5) eye The parts of ring shape formed at both ends of rope sling.
- (6) sleeve The metallic tube to be used for press-fitting of eye part.
- (7) length The effective length of rope sling. It is expressed by L shown in Figs. 1, 2, 3 and 4.

Fig. 1. Single-leg rope sling⁽¹⁾ (basic type)

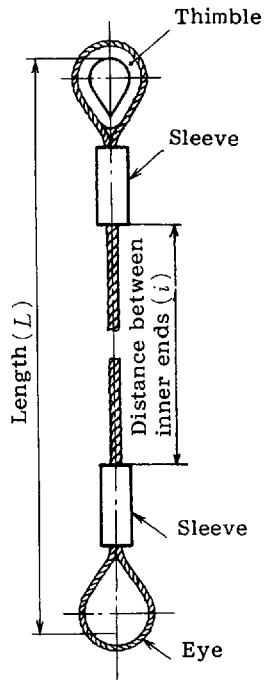
- (1) Without thimble at both ends
(SS)



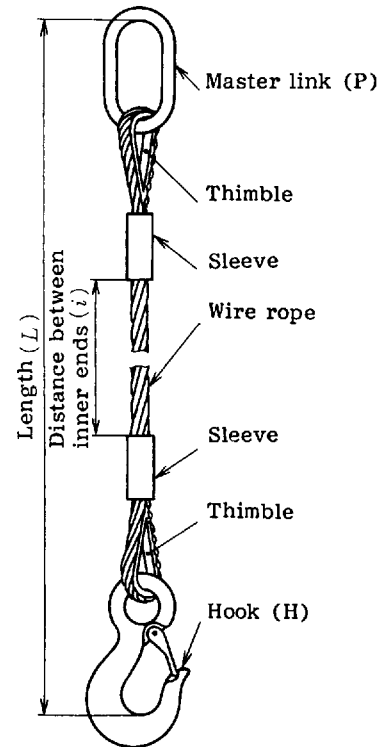
- (2) With thimbles at both ends
(TT)



(3) With thimble at one end
(TS)



(4) With thimbles of both ends and hook at one end
(TH)



Note ⁽¹⁾ Each figure shows an example.

Fig. 2. Two-legged rope sling⁽¹⁾

[Case of rope sling with thimbles at both ends and a hook at one end (PH2)]

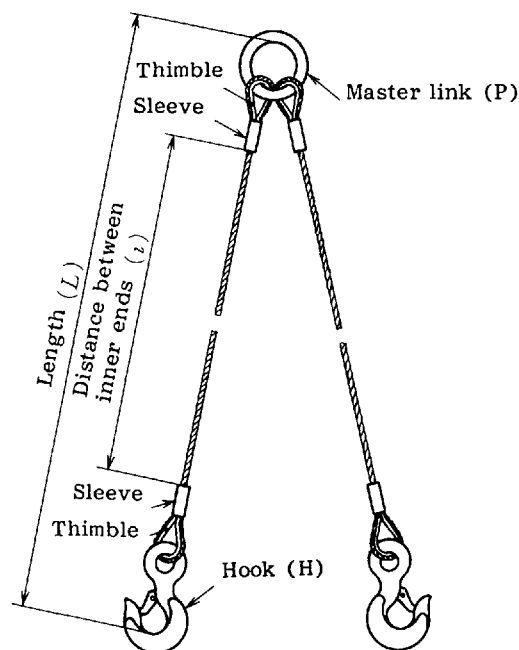
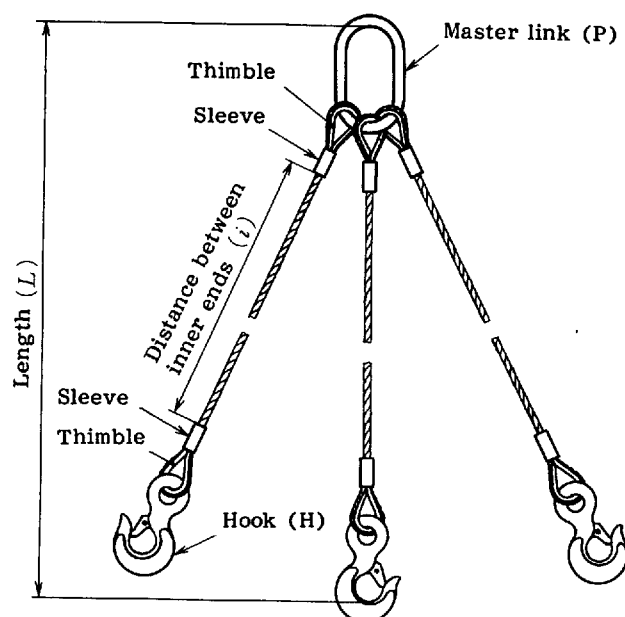


Fig. 3. Three-legged rope sling⁽¹⁾

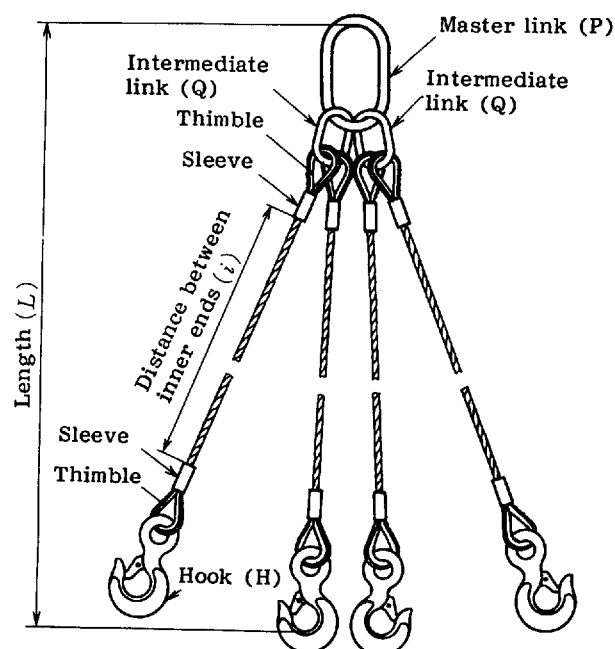
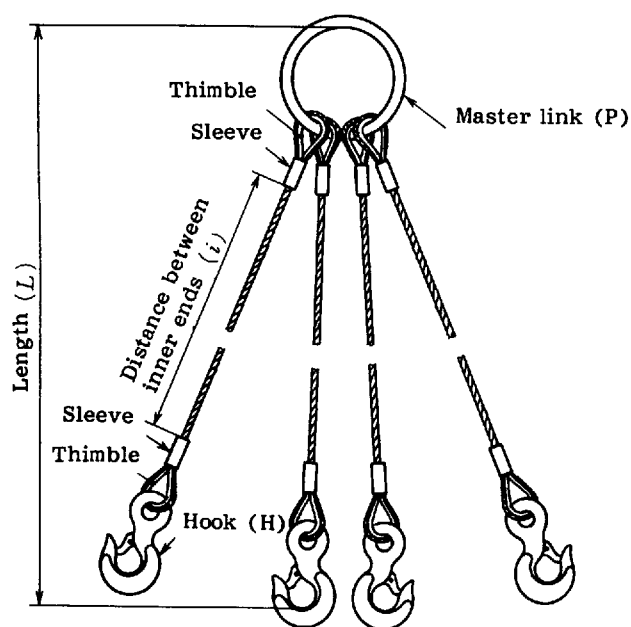
[Case of rope sling with thimbles at both ends and a hook at one end (PH3)]

Fig. 4. Four-legged rope sling⁽¹⁾

(Case of rope sling with thimbles at both ends and a hook at one end)

(1) With master link (PH4)

(2) With master link and intermediate link (PHQ4)



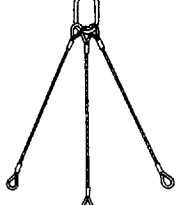
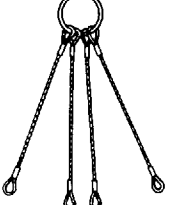
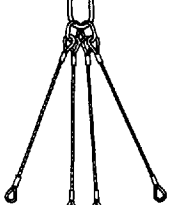
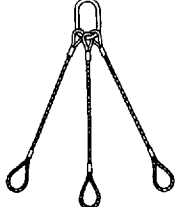
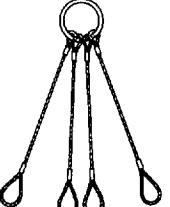
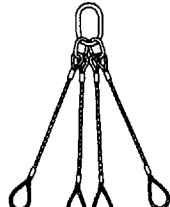
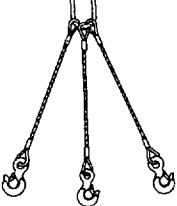
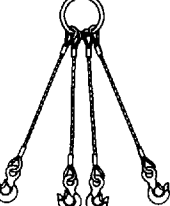
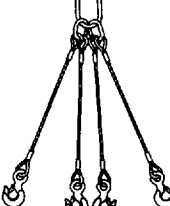
3. Classification

3.1 Classification of rope slings Rope slings shall be divided as follows according to the number of legs and the existence of thimble, combination of wire rope with master link, intermediate link and hook (hereafter referred to as "attached metal fittings") and to the classification of the wire ropes (hereafter referred to as "rope") specified in JIS G 3525.

- (1) The division according to number of legs, combination of attached metal fittings and existence of thimble, according to number of legs and their symbols are as shown in Table 1.

In the case where the attached metal fittings are used, the thimble shall be fitted.

Table 1. Division and symbols for rope slings

Division	Single-leg type				Two-legged type		Three-legged type		Four-legged type			
	Basic type		With master link		With master link		With master link		With master link		With master link and intermediate link	
	Shape ⁽¹⁾	Sym- bol	Shape ⁽¹⁾	Sym- bol	Shape ⁽¹⁾	Sym- bol	Shape ⁽¹⁾	Sym- bol	Shape ⁽¹⁾	Sym- bol	Shape ⁽¹⁾	Sym- bol
Without thimble at both ends		SS	—	—	—	—	—	—	—	—	—	—
With thimbles at both ends		TT		PT		PT2		PT3		PT4		PTQ4
With a thimble at one end		TS		PS		PS2		PS3		PS4		PSQ4
With thimbles at both ends and hook at one end		TH		PH		PH2		PH3		PH4		PHQ4

- (2) The symbols according to the attached metal fittings shall be in accordance with Table 2.

Table 2. Symbol for attached metal fittings

Name	Symbol
Master link	P
Intermediate link	Q
Hook	H

3.2 Classification of rope The classification according to the composing symbol of rope and the division of breaking load shall be as given in Table 3.

Table 3. Classification according to composing symbol and division of breaking load

Symbol according to classification of rope	Composing symbol of rope	Division
24 G	6 x 24	Class G
24 A		Class A
37 G	6 x 37	Class G
37 A		Class A
F 25 B	IWRC 6 x Fi (25)	Class B
F 29 B	IWRC 6 x Fi (29)	Class B

Remarks: The composing symbol of rope, and division are in accordance with JIS G 3525.

3.3 Classification and grade of master link The classification and grade of master link shall be in accordance with Appendix 1.

3.4 Grade of intermediate link The grade of intermediate link shall be the same with the grade of master link.

3.5 Classification and grade of hook The classification and grade of hook shall be in accordance with JIS B 2803.

4. Performance

4.1 Basic working load The basic working loads of rope slings shall be in accordance with Tables 5 to 8.

4.2 Proof load The proof load of rope sling shall be in accordance with Tables 5 to 8, and when tested according to 9.1, the result shall conform to the following:

- (1) There shall not be wire cut of rope, deformation of sleeve, crack and sliding of rope at sleeve part.
- (2) In the case where metal fittings are attached, the permanent set amount of metal fittings shall be not more than 0.25 %, and there shall not be defects harmful to use such as cracking and the like.

4.3 Breaking load Breaking load of rope sling shall be as follows:

- (1) The breaking load of rope sling removed of attached metal fittings, when tested according to 9.1, shall comply with the specifications of Table 5 to Table 8.
- (2) The breaking load of attached metal fitting shall be not less than four times the basic working load shown in Table 5 to Table 8.

4.4 When using for crane When using for crane and the like, it shall abide by the "a statute for labor safety" regardless of the above specifications.

5. Structure, shape and dimensions

5.1 Structure, shape and dimensions of rope sling The structure, shape and dimension of rope sling shall be as follows:

- (1) The structure, shapes and dimension of rope slings are shown in Figs. 1 to 4.
- (2) The diameter of rope shall be in accordance with Tables 5 to 8.
- (3) The length is decided in accordance with the agreement between the parties concerned.

The tolerance on length shall be the larger value among $\pm 2 \times$ (diameter of rope) at straight condition and the value given in Table 4.

Table 4. Tolerance on length

Unit: %	
Division	Tolerance
With thimbles at both ends	± 0.5
With thimble at one end	± 0.7
Without thimble at both ends	± 1.0

Remarks: Table 4 shall be observed regardless of the existence of attached metal fittings.

5.2 Shape and dimension of master link The shape and dimension of master link shall be in accordance with Appendix 1.

5.3 Shape and dimension of intermediate link The shape and dimension of intermediate link which is to satisfy the performance in 4., shall be in accordance with the agreement between the parties concerned.

5.4 Shape and dimension of hook The shape and dimension of hook shall be in accordance with JIS B 2803.

Table 5. Mechanical properties of rope sling using 6 x 24

Mechanical property	Basic working load		Proof load		Breaking load ⁽³⁾	
	24G	24A	24G	24A	24G	24A
Type of rope						
Diameter of rope ⁽²⁾ (mm)						
8	4.8 { 0.49 } max.	5.2 { 0.53 } max.	9.6 { 0.98 }	10 { 1.0 }	26 { 2.7 } min.	28 { 2.9 } min.
9	6.1 { 0.63 } max.	6.6 { 0.67 } max.	12 { 1.2 }	13 { 1.3 }	33 { 3.4 } min.	36 { 3.7 } min.
10	7.6 { 0.77 } max.	8.2 { 0.83 } max.	15 { 1.5 }	16 { 1.6 }	41 { 4.2 } min.	44 { 4.5 } min.
11.2	9.5 { 0.97 } max.	10 { 1.0 } max.	19 { 1.9 }	20 { 2.0 }	52 { 5.3 } min.	56 { 5.7 } min.
(12)	10 { 1.1 } max.	11 { 1.2 } max.	20 { 2.2 }	22 { 2.4 }	59 { 6.1 } min.	64 { 6.5 } min.
12.5	11 { 1.2 } max.	12 { 1.3 } max.	22 { 2.4 }	24 { 2.6 }	64 { 6.6 } min.	69 { 7.1 } min.
14	14 { 1.5 } max.	16 { 1.6 } max.	28 { 3.0 }	32 { 3.2 }	81 { 8.2 } min.	87 { 8.9 } min.
16	19 { 1.9 } max.	21 { 2.1 } max.	38 { 3.8 }	42 { 4.2 }	105 { 10.8 } min.	114 { 11.6 } min.
18	24 { 2.5 } max.	26 { 2.7 } max.	48 { 5.0 }	52 { 5.4 }	133 { 13.6 } min.	144 { 14.7 } min.
20	30 { 3.1 } max.	32 { 3.3 } max.	60 { 6.2 }	64 { 6.6 }	165 { 16.8 } min.	177 { 18.1 } min.
22.4	38 { 3.9 } max.	41 { 4.2 } max.	76 { 7.8 }	82 { 8.4 }	207 { 21.1 } min.	223 { 22.7 } min.
(24)	43 { 4.4 } max.	—	86 { 8.8 }	—	237 { 24.2 } min.	—
25	47 { 4.8 } max.	51 { 5.2 } max.	94 { 9.6 }	102 { 10.4 }	258 { 26.3 } min.	277 { 28.3 } min.
28	59 { 6.1 } max.	64 { 6.5 } max.	118 { 12.2 }	128 { 13.0 }	323 { 32.9 } min.	348 { 35.5 } min.
30	68 { 7.0 } max.	73 { 7.5 } max.	136 { 14.0 }	146 { 15.0 }	371 { 37.8 } min.	399 { 40.7 } min.
31.5	75 { 7.7 } max.	81 { 8.3 } max.	150 { 15.4 }	162 { 16.6 }	409 { 41.7 } min.	440 { 44.9 } min.
33.5	85 { 8.7 } max.	92 { 9.4 } max.	170 { 17.4 }	184 { 18.8 }	462 { 47.2 } min.	498 { 50.8 } min.
35.5	96 { 9.8 } max.	103 { 10.5 } max.	192 { 19.6 }	206 { 21.0 }	519 { 53.0 } min.	559 { 57.0 } min.
37.5	107 { 10.9 } max.	115 { 11.7 } max.	214 { 21.8 }	230 { 23.4 }	579 { 59.1 } min.	624 { 63.6 } min.
40	122 { 12.4 } max.	131 { 13.4 } max.	244 { 24.8 }	262 { 26.8 }	659 { 67.2 } min.	710 { 72.4 } min.
42.5	137 { 14.0 } max.	148 { 15.1 } max.	274 { 28.0 }	296 { 30.2 }	744 { 75.9 } min.	801 { 81.7 } min.
45	154 { 15.7 } max.	166 { 16.9 } max.	308 { 31.4 }	332 { 33.8 }	834 { 85.1 } min.	898 { 91.6 } min.
47.5	172 { 17.5 } max.	185 { 18.9 } max.	344 { 35.0 }	370 { 37.8 }	930 { 94.8 } min.	1 001 { 102.1 } min.
50	190 { 19.4 } max.	205 { 20.9 } max.	380 { 38.8 }	410 { 41.8 }	1 030 { 105.1 } min.	1 109 { 113.1 } min.

Notes (2) It shall be in accordance with JIS Z 8601. The diameters of rope given in parenthesis are not included in reference numbers so that they should not be used.

(3) It does not contain attached metal fittings.