

Lifting angle and rated load of wire rope :

The maximum rated capacity of the sling wire ropes also differs in ratio to the lifting angle.
 While paying special attention to the lifting angle, always use the appropriate sized sling wire ropes!
 The following table shows the braking loads for JIS G3525 24-strand 6-ply (6x24) Type A wire ropes.

CORRELATION BETWEEN THE LIFTING ANGLE AND THE RATED LOAD OF THE WIRE ROPE WHEN 2-POINT LIFTING

D Wire rope dia. (mm)	σ Breaking load (ton)	W Rated load (for single length) Safety factor S=6						
			The rate of loading (%) differs in ratio to the lifting angle.					
			100%	96%	92%	86%	70%	50%
Maximum applicable loads (rated loads) for 2 wire ropes (ton).								
8	3.21	0.54	1.08	1.04	0.99	0.93	0.76	0.54
9	4.06	0.68	1.36	1.31	1.25	1.17	0.95	0.68
10	5.02	0.84	1.68	1.61	1.55	1.44	1.18	0.84
11.2	6.29	1.05	2.1	2.02	1.93	1.81	1.47	1.05
12.5	7.84	1.31	2.62	2.52	2.41	2.25	1.83	1.31
14	9.83	1.64	3.28	3.15	3.02	2.82	2.3	1.64
16	12.8	2.13	4.26	4.09	3.92	3.66	2.98	2.13
18	16.2	2.7	5.4	5.18	4.97	4.64	3.78	2.7
20	20.1	3.35	6.7	6.43	6.16	5.76	4.69	3.35
22.4	25.2	4.2	8.4	8.06	7.73	7.22	5.88	4.2
25	31.3	5.22	10.44	10.02	9.6	8.98	7.31	5.22
28	39.3	6.55	13.1	12.58	12.05	11.27	9.17	6.55
30	45.1	7.52	15.04	14.44	13.84	12.93	10.53	7.52
31.5	49.8	8.3	16.6	15.94	15.27	14.28	11.62	8.3
33.5	56.3	9.38	18.76	18.01	17.26	16.13	13.13	9.38
35.5	63.2	10.53	21.06	20.22	19.38	18.11	14.74	10.53

When lifting with 4 wire ropes, the above maximum applicable loads (rated loads) multiplied by 2 are the permissible limits.

How to determine the wire rope diameter and the rated capacity for a single length of wire rope:

1) $D = \sqrt{W \times C}$

2) $W = \frac{D^2}{C}$

Where D : Wire rope diameter
 W : Rated load (ton)
 C : Constant
 (Safety factor S = 6)

★ How to determine the wire rope diameter for a 3 ton load.

① $D = \sqrt{W \times C}$
 $D = \sqrt{3 \times 120} = \sqrt{360} = 19 \rightarrow \boxed{20 \text{ mm}}$

★ How to calculate the maximum capacity (rated load) of a φ 25 mm wire rope.

② $W = \frac{D^2}{C}$
 $W = \frac{25^2}{120} = \frac{625}{120} = 5.2 \rightarrow \boxed{5.2 \text{ tons}}$