

ROUGH TERRAIN CRANE

GR-120N-1-00111

“X” TYPE OUTRIGGER

TOTAL RATED LOADS

(1) With outriggers set

[BOOM]

Unit: Tonne

Outriggers fully extended (4.7m)						
A \ B	5.3m	9.0m	12.7m	16.4m	20.1m	23.8m
1.0m	12.00	6.00				
1.5m	12.00	6.00	6.00			
2.0m	12.00	6.00	6.00	5.00		
2.5m	10.00	6.00	6.00	5.00	4.50	
3.0m	8.20	6.00	6.00	5.00	4.50	
3.5m	7.00	6.00	6.00	5.00	4.50	3.00
4.0m	6.10	6.00	6.00	5.00	4.50	3.00
4.5m		5.20	5.10	5.00	4.10	3.00
5.0m		4.65	4.60	4.50	3.80	3.00
5.5m		4.15	4.10	4.00	3.50	3.00
6.0m		3.75	3.70	3.60	3.25	2.80
7.0m		3.05	3.00	2.90	2.75	2.40
8.0m		2.70(7.7m)	2.45	2.40	2.35	2.15
9.0m			1.90	2.05	2.05	1.90
10.0m			1.55	1.70	1.75	1.65
11.0m			1.25	1.45	1.55	1.45
12.0m			1.20(11.4m)	1.25	1.35	1.30
13.0m				1.00	1.15	1.15
14.0m				0.85	1.00	1.05
15.0m				0.70	0.85	0.95
16.0m					0.70	0.80
17.0m					0.60	0.70
18.0m					0.50	0.60
19.0m					0.45(18.7m)	0.50
20.0m						0.45
22.0m						0.30
22.3m						0.27
a (°)	0 ~ 82					

A = Boom length B = Working radius
a = Boom angle range (for the unladen condition)

[BOOM]

Unit: Tonne

Outriggers middle extended (4.3m)						
A \ B	5.3m	9.0m	12.7m	16.4m	20.1m	23.8m
1.0m	12.00	6.00				
1.5m	12.00	6.00	6.00			
2.0m	12.00	6.00	6.00	5.00		
2.5m	10.00	6.00	6.00	5.00	4.50	
3.0m	8.20	6.00	6.00	5.00	4.50	
3.5m	7.00	6.00	6.00	5.00	4.50	3.00
4.0m	6.10	6.00	6.00	5.00	4.50	3.00
4.5m		5.20	5.10	5.00	4.10	3.00
5.0m		4.65	4.60	4.50	3.80	3.00
5.5m		4.15	4.10	4.00	3.50	3.00
6.0m		3.75	3.70	3.60	3.25	2.80
7.0m		2.90	3.00	2.90	2.75	2.40
8.0m		2.50(7.7m)	2.30	2.40	2.35	2.15
9.0m			1.80	1.90	2.05	1.90
10.0m			1.45	1.55	1.65	1.65
11.0m			1.15	1.25	1.35	1.45
12.0m			1.05(11.4m)	1.10	1.10	1.20
13.0m				0.80	0.90	1.00
14.0m				0.60	0.75	0.85
15.0m				0.50	0.60	0.75
16.0m					0.50	0.60
17.0m					0.40	0.50
18.0m					0.30	0.43
19.0m					0.25(18.7m)	0.35
20.0m						0.25
a (°)	0 ~ 82					

A = Boom length B = Working radius

a = Boom angle range (for the unladen condition)

[BOOM]

Unit: Tonne

Outriggers middle extended (3.5m)						
A \ B	5.3m	9.0m	12.7m	16.4m	20.1m	23.8m
1.0m	12.00	6.00				
1.5m	12.00	6.00	6.00			
2.0m	12.00	6.00	6.00	5.00		
2.5m	10.00	6.00	6.00	5.00	4.50	
3.0m	8.20	6.00	6.00	5.00	4.50	
3.5m	7.00	6.00	6.00	5.00	4.50	3.00
4.0m	6.10	6.00	6.00	5.00	4.50	3.00
4.5m		4.75	4.70	5.00	4.10	3.00
5.0m		3.85	3.85	4.10	3.80	3.00
5.5m		3.25	3.25	3.50	3.50	3.00
6.0m		2.75	2.75	3.00	3.15	2.80
7.0m		2.05	2.00	2.25	2.40	2.40
8.0m		1.65(7.7m)	1.50	1.70	1.85	1.90
9.0m			1.10	1.30	1.45	1.50
10.0m			0.80	1.00	1.15	1.20
11.0m			0.60	0.80	0.90	0.97
12.0m			0.40(11.4m)	0.60	0.70	0.77
13.0m				0.45	0.55	0.62
14.0m				0.30	0.40	0.50
15.0m				0.25	0.30	0.40
16.0m					0.20	0.30
17.0m						0.20
a (°)	0 ~ 82			21 ~ 85		36 ~ 82

A = Boom length B = Working radius

a = Boom angle range (for the unladen condition)

[BOOM]

Unit: Tonne

Outriggers middle extended (2.5m)						
A \ B	5.3m	9.0m	12.7m	16.4m	20.1m	23.8m
1.0m	12.00	6.00				
1.5m	12.00	6.00	6.00			
2.0m	12.00	6.00	6.00	5.00		
2.5m	8.00	6.00	6.00	5.00	4.50	
3.0m	5.70	5.50	5.50	5.00	4.50	
3.5m	4.25	4.30	4.30	4.50	4.50	3.00
4.0m	3.45	3.35	3.35	3.55	3.70	3.00
4.5m		2.60	2.65	2.90	3.05	3.00
5.0m		2.10	2.15	2.35	2.55	2.60
5.5m		1.75	1.75	1.95	2.15	2.25
6.0m		1.45	1.40	1.65	1.80	1.95
7.0m		1.00	0.95	1.15	1.30	1.40
8.0m		0.70(7.7m)	0.65	0.85	0.95	1.05
9.0m			0.40	0.60	0.70	0.77
10.0m			0.20	0.40	0.50	0.60
11.0m				0.25	0.35	0.40
12.0m					0.20	0.30
13.0m						0.20
a (°)	0 ~ 82		19 ~ 82	33 ~ 82	44 ~ 82	50 ~ 82

A = Boom length B = Working radius
a = Boom angle range (for the unladen condition)

[BOOM]

Unit: Tonne

Outriggers minimum extended (1.7m)						
A \ B	5.3m	9.0m	12.7m	16.4m	20.1m	23.8m
1.0m	8.00	6.00				
1.5m	7.00	6.00	6.00			
2.0m	5.50	5.40	5.50	5.00		
2.5m	3.70	3.80	3.55	3.20	3.20	
3.0m	2.70	2.85	2.65	2.60	2.60	
3.5m	2.10	2.00	2.00	2.05	2.10	2.10
4.0m	1.60	1.55	1.55	1.60	1.70	1.75
4.5m		1.20	1.20	1.25	1.40	1.45
5.0m		0.90	0.95	1.00	1.15	1.25
5.5m		0.70	0.75	0.80	0.95	1.05
6.0m		0.55	0.55	0.65	0.80	0.90
7.0m		0.25	0.20	0.40	0.55	0.60
8.0m						0.35
a (°)	0 ~ 82	18 ~ 82	50 ~ 82	56 ~ 82	60 ~ 82	63 ~ 82

A = Boom length B = Working radius

a = Boom angle range (for the unladen condition)

JIB

Unit: ton

Outriggers fully extended (4.7m) -360°-												
C D	23.8m Boom + 3.6m Jib						23.8m Boom + 5.5m Jib					
	5°		25°		45°		5°		25°		45°	
E (°)	B (m)	M	B (m)	M	B (m)	M	B (m)	M	B (m)	M	B (m)	M
82	3.8	1.50	4.7	1.20	5.9	0.90	3.9	0.85	6.2	0.70	7.2	0.60
80	4.8	1.50	5.7	1.20	6.8	0.90	5.0	0.85	7.3	0.70	8.2	0.60
75	7.3	1.50	8.1	1.20	9.2	0.90	7.7	0.85	9.9	0.70	10.6	0.55
70	9.7	1.25	10.4	1.00	11.4	0.85	10.3	0.85	12.2	0.65	12.8	0.53
65	12.0	1.05	12.5	0.90	13.4	0.77	12.6	0.80	14.3	0.60	15.0	0.50
60	14.2	0.90	14.6	0.80	15.4	0.70	14.8	0.66	16.3	0.55	17.0	0.48
55	16.2	0.71	16.4	0.66	17.0	0.65	16.9	0.58	18.0	0.50	18.9	0.45
50	18.0	0.53	18.2	0.50	18.5	0.50	18.8	0.47	19.6	0.42	20.5	0.40
45	19.7	0.38	19.8	0.36	19.8	0.36	20.5	0.34	21.1	0.31	22.0	0.31
40	21.1	0.25	21.2	0.25			22.3	0.23	23.2	0.21		
35	22.3	0.16	22.4	0.16								
a (°)	34 ~ 82				44 ~ 82		39 ~ 82				44 ~ 82	

Outriggers middle extended (4.3m) -Over sides-												
C D	23.8m Boom + 3.6m Jib						23.8m Boom + 5.5m Jib					
	5°		25°		45°		5°		25°		45°	
E (°)	B (m)	M	B (m)	M	B (m)	M	B (m)	M	B (m)	M	B (m)	M
82	3.8	1.50	4.7	1.20	5.9	0.90	3.9	0.85	6.1	0.70	7.1	0.60
80	4.8	1.50	5.7	1.20	6.9	0.90	5.0	0.85	7.2	0.70	8.2	0.60
75	7.3	1.50	8.1	1.20	9.2	0.90	7.7	0.85	9.9	0.70	10.6	0.55
70	9.7	1.25	10.4	1.00	11.4	0.85	10.2	0.85	12.2	0.65	12.8	0.53
65	12.0	1.05	12.5	0.90	13.4	0.77	12.6	0.80	14.3	0.60	15.0	0.50
60	14.2	0.80	14.5	0.77	15.3	0.65	14.8	0.66	16.3	0.55	17.0	0.48
55	16.1	0.55	16.4	0.55	16.9	0.53	16.8	0.52	18.0	0.45	18.8	0.40
50	17.9	0.38	18.1	0.38	18.4	0.37	18.7	0.36	19.6	0.33	20.5	0.32
45	19.6	0.26	19.7	0.26	19.8	0.24	20.5	0.24	21.1	0.22	21.9	0.21
40	21.0	0.15	21.1	0.15								
a (°)	39 ~ 82				44 ~ 82		44 ~ 82					

B = Working radius
E = Boom angle

C = Jib length
M = Total rated loads

D = Jib offset
a = Boom angle range (for the unladen condition)

JIB

Unit: ton

Outriggers middle extended (3.5m) -Over sides-												
C D E (°)	23.8m Boom + 3.6m Jib						23.8m Boom + 5.5m Jib					
	5°		25°		45°		5°		25°		45°	
	B (m)	M	B(m)	M	B(m)	M	B (m)	M	B (m)	M	B (m)	M
82	3.8	1.50	4.7	1.20	5.9	0.90	3.9	0.85	6.1	0.70	7.2	0.60
80	4.8	1.50	5.7	1.20	6.8	0.90	5.0	0.85	7.3	0.70	8.2	0.60
75	7.3	1.50	8.1	1.20	9.2	0.90	7.7	0.85	9.9	0.70	10.6	0.55
70	9.6	1.10	10.3	1.00	11.4	0.85	10.2	0.85	12.2	0.65	12.8	0.53
65	11.8	0.74	12.4	0.70	13.3	0.65	12.5	0.68	14.2	0.52	14.9	0.45
60	13.9	0.48	14.4	0.46	15.2	0.43	14.6	0.42	16.2	0.37	16.9	0.35
55	15.9	0.28	16.2	0.27	16.8	0.26	16.9	0.25	17.9	0.22	18.7	0.21
a (°)	54 ~ 82						54 ~ 82					

Outriggers middle extended (2.5m) -Over sides-												
C D E (°)	23.8m Boom + 3.6m Jib						23.8m Boom + 5.5m Jib					
	5°		25°		45°		5°		25°		45°	
	B (m)	M	B(m)	M	B(m)	M	B (m)	M	B (m)	M	B (m)	M
82	3.8	1.50	4.7	1.20	5.9	0.90	3.9	0.85	6.1	0.70	7.2	0.60
75	7.2	1.10	8.0	0.90	9.1	0.80	7.7	0.85	9.8	0.65	10.5	0.50
70	9.5	0.58	10.1	0.50	11.1	0.45	10.0	0.50	12.0	0.40	12.7	0.35
65	11.6	0.25	12.1	0.22	13.1	0.20	12.2	0.20				
a (°)	64 ~ 82						64 ~ 82			69 ~ 82		

B = Working radius
E = Boom angle

C = Jib length
M = Total rated loads

D = Jib offset
a = Boom angle range (for the unladen condition)

PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE EXTENDED:

- The values in parentheses are for GR-120N
- The total rated loads shown are for the case where the crane is set horizontally on firm level ground. They include the weights of the slings and hooks.
The values above the bold lines are based on the crane strength while those below are based on the crane stability.
- Since the total rated loads are based on the actual working radii including the deflection of the boom, operations should be performed in accordance with the working radii.
- Perform job operations in accordance with the boom angle, irrespective of the boom length.
- The total rated load for the single top shall be the value obtained by subtracting the weight of the main hook from the total rated load of the boom and must not exceed 1.8t.
- High-speed unwind function (only on cranes fitted with winches without free-fall device) should be performed only when lowering the hook alone and sudden braking operations must be avoided.
- As a rule, free-fall operation (only on cranes fitted with winches with free-fall device) should be performed only when lowering the hook alone. If a hoisted load must be lowered by free-fall operation, the load must be kept below $1/5^{\text{th}}$ of the total rated load and sudden braking operations must be avoided.
- The table below shows the standard number part of lines for each boom length. When using with other than this number part of lines, the load line should not exceed 1.5t for the main winch, and 1.8t for the auxiliary winch.

A	5.3m	9.0m	12.7m	16.4m	20.1m	23.8m	Jib/Single top
H	8(4)	4	4	4	4	4	1
K	12t Hook						1.8t Hook
L	90kg						25kg

The values in parentheses are for GR-120N

A = Boom length
K = Hook type

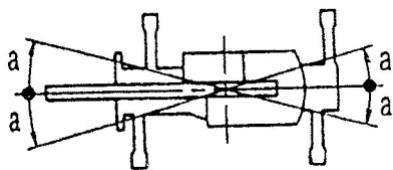
H = No. of part-lines
L = Hook weight

- The hoisting performance for the "Over sides" range will differ according to the extended width of the outriggers. Operations should be performed in accordance with the performance corresponding to the extended width. Also, although the hoisting performances for the "Over front" and "Over rear" ranges are equivalent to those of the "outriggers fully extended" condition, the front and rear ranges (angle a) will differ according to the width to which the outriggers are extended in the left and right directions.

Extended width	Middle extended (4.30m)	Middle extended (3.5m)	Middle extended (2.5m)	Minimum extended (*)
Angle a°	35	25	15	5

* = 1.7m X-type outrigger

1.64m H-type outrigger



- Total rated loads below bold lines do not exceed 75% of tipping loads.
- Special weather caution: Refer to the operation and maintenance manual.
- Refer to crane manual.

[2] Without outriggers

Unit: Tonne

Stationary						
B (m)	5.3m Boom		9.0m Boom		12.7m Boom	
	K	G	K	G	K	G
1.0	3.60	2.80	3.60	2.80		
1.5	3.60	2.80	3.60	2.80	3.60	2.80
2.0	3.40	2.80	3.40	2.80	3.40	2.80
2.5	3.10	2.15	3.10	2.10	3.10	2.05
3.0	2.65	1.60	2.60	1.55	2.55	1.50
3.5	2.30	1.25	2.20	1.20	2.10	1.10
4.0	2.00	0.90	1.90	0.80	1.70	0.70
4.5			1.60	0.50	1.40	0.40
5.0			1.30		1.10	
5.5			1.10		0.95	
6.0			0.90		0.80	
7.0			0.50		0.50	
a (°)	0 – 82		26 – 82	50 – 82	52 – 82	63 - 82

Unit: Tonne

Creep (travelling at 1.6km/h or less)						
B (m)	5.3m Boom		9.0m Boom		12.7m Boom	
	K	G	K	G	K	G
1.0	3.20	2.00	3.20	2.00		
1.5	3.20	2.00	3.20	2.00	3.20	2.00
2.0	3.00	2.00	3.00	2.00	3.00	2.00
2.5	2.80	1.55	2.75	1.50	2.65	1.45
3.0	2.40	1.10	2.30	1.05	2.20	1.00
3.5	2.00	0.85	1.90	0.75	1.80	0.65
4.0	1.70	0.60	1.65	0.50	1.50	0.40
4.5			1.40	0.30	1.25	
5.0			1.15		1.00	
5.5			0.95		0.85	
6.0			0.80		0.70	
7.0			0.45		0.45	
a (°)	0 – 82		26 – 82	50 – 82	52 – 82	66 - 82

B = Working radius K = Front G = 360°
A = Boom angle range (for the unladen condition)

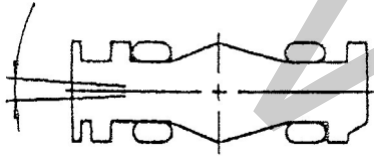
PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE NOT MOUNTED:

1. The total rated loads shown are for the case where the tire air pressure on firm level ground is as specified 875kPa (8.75kgf/cm²), and the crane is completely spring-locked. They include the weights of the slings and hooks (main hook: 90kg, auxiliary hook: 25kg). The values above the bold lines are based on the crane strength while those below are based on the crane stability. The foundation, working conditions, etc. should be taken into consideration for actual work.
2. Since the total rated loads are based on the actual working radii including the deflection of the boom and the tires, operations should be performed in accordance with the working radii.
3. The table below shows the standard number of part lines for each boom length. When using the other than this number of part lines, the load per line should not exceed 1.5t for the main winch, and 1.8t for the auxiliary winch.

A	5.3m	9.0m	12.7m	Single top
H	4	4	4	1

A = Boom length H = No. of part-lines

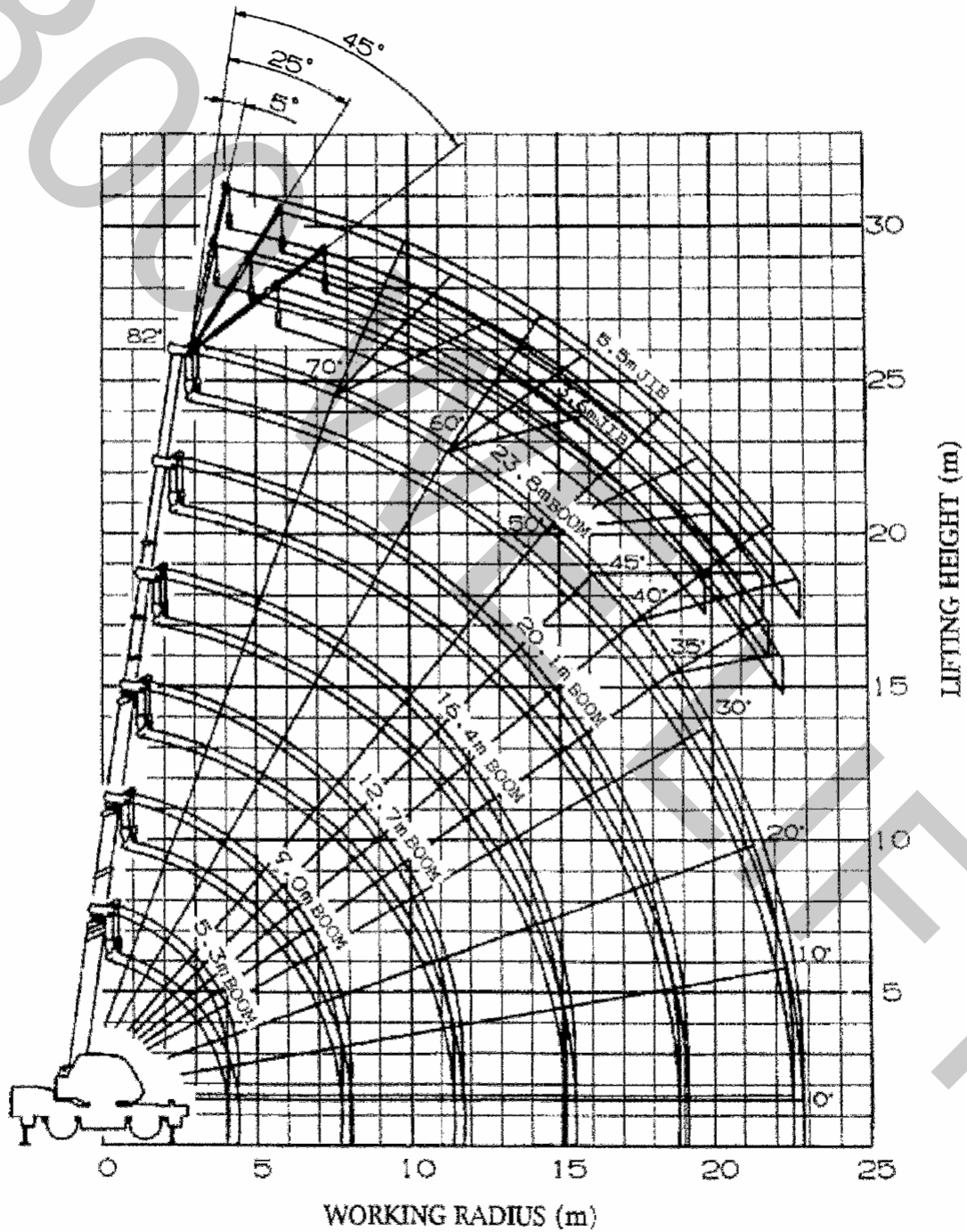
4. If the spring lock is not available or not used, no load can be hoisted in the over-side area. "Over front" crane operations should be performed only when the AML "over from area indicator lamp" is lit. The boom must be kept inside a 2° area over front of the carrier when performing "Over front" crane operations without the outriggers.



5. The total rated load for the single top shall be the value obtained by subtracting the weight of the main hook from the total rated load of the boom and must not exceed 1.8t.
6. High-speed unwind function (only on cranes fitted with winches without free-fall device) and free-fall operations (only on cranes fitted with winches with free-fall device) should not be performed without outriggers. Booms over 12.7m in length and jibs should not be used without outriggers.
7. The "Drive, Speed selection" switch should be set to "4-wheel / Lo" for creeping while hoisting a load.
8. When creeping while hoisting a load, the swing brake should be applied, the load should be kept as close to the ground as possible but not touching the ground and the speed should be kept at 1.6km/h or less. In particular, any abrupt steering, starting or braking must be avoided.
9. Crane operations should not be performed when creeping while hoisting a load.
10. Free-fall operation should not be performed without outriggers.
11. Stationary load capacities do not exceed 75% of tipping load. CREEP 1.6km/h load capacities do not exceed 66 2/3% of tipping loads.
12. Special weather caution: refer to the operation and maintenance manual.
13. Refer to crane manual.

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WORKING RADIUS - LIFTING HEIGHT

**NOTES:**

1. The deflection of the boom is not incorporated in the figure above.
2. The figure above is for the case where the outriggers are fully extended (360°).