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KATO

Kato KR20H-III

20 Tonne City Top Rough Terrain Crane

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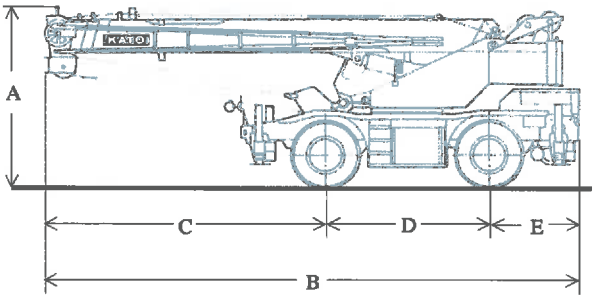
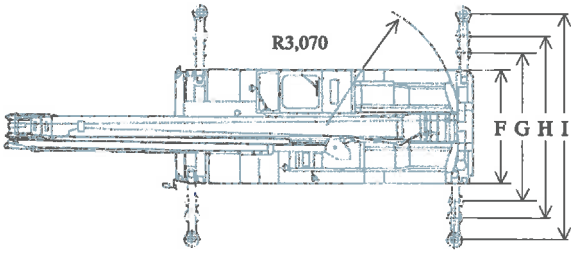
Kato KR-20H-III Rough Terrain Crane

Specification

CRANE SPECIFICATION

Name and Type
Kato KR-20H-III Rough Terrain Crane





Carrier	A	B	C	D	E	F	G	H	I
Kato KR-20H-III	3,470	10,330	5,370	3,200	1,760	2,490	3,600	4,700	5,800

measurement: mm

CRANE CAPACITY

20.0 Tonne @ 3.5m	8.4m Boom	With Outriggers	
16.0 Tonne @ 3.5m	14.5m Boom	With Outriggers	
9.0 Tonne @ 6.0m	20.6m Boom	With Outriggers	
6.8 Tonne @ 7.0m	26.7m Boom	With Outriggers	
3.0 Tonne @ 14.0m	8.4m Boom ~ 26.7m Boom	Rooster Sheave with Outriggers	
3.0 Tonne @ 12.0m	26.7m Boom + 7.0m Jib	(5° Offset)	
2.4 Tonne @ 13.0m	26.7m Boom + 7.0m Jib	(17° Offset)	
2.0 Tonne @ 14.0m	26.7m Boom + 7.0m Jib	(30° Offset)	

Boom Length	8.4m (Main Boom) 26.7m (4 Stage Boom)
Fly Jib Length	7.0m (5°, 17°, 30° Offset)
Maximum Reach	26.9m (26.7m Boom) 34.4m (26.7m Boom + 7.0m Jib)
Hoisting Line Speed	
Main Winch	110m/min (@ 3rd layer)
Auxiliary Winch	102m/min (@ 2nd layer)
Hoisting Hook Speed	
Main Winch (Parts of Line; 7)	15.7m/min (@ 3rd layer)
Auxiliary Winch (Parts of Line; 1)	102.0m/min (@ 4th layer)
Boom Derricking Angle	0°~80°
Slewing Speed	3.5 rpm

HOISTING ROPES

Main	4 x F (a+39) 16 ø x 150m
Auxiliary	4 x F (a+39) 16 ø x 75m
Hook	20 Ton 7 Rope Parts of Line 3 Ton 1 Rope Parts of Line

SAFETY DEVICES

Kato ACS MS-10B
(Auto stop fitted with voice alarm for all operation),
Boom free fall prevention device, Overhoist prevention,
Drum lock, Drum hold safety device, Auto brake device,
Hook sway prevention device,
Outrigger lock device for all valves,
Boom angle indicator, Slewing lock device and others

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Kato KR-20H-III Rough Terrain Crane

Specification

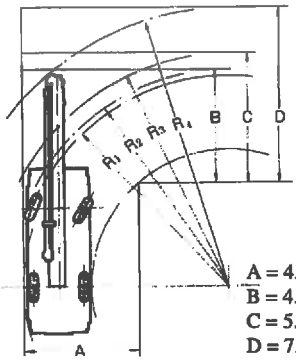
CARRIER SPECIFICATION

Name and Type
Kato KR-20H-III Rough Terrain Crane

Make	Kato
Model	KR-20H-III
Drive System	4x4
ENGINE	
Make	Mitsubishi
Model	6D14T
No. of Cylinders	6
Piston Displacement	6,557 cc
Maximum Horsepower	185 ps @ 2,800 rpm
Maximum Torque	57 kg-m @ 1,600 rpm
Transmission	Powershift 3 forward and 1 reverse with Hi-Low selector
DRIVING ABILITY	
Maximum Travelling Speed	45 km/hr
Uphill Ability	0.6 (tan θ)
Minimum Turning Radius	8.5m (2 Wheel Steering) 4.9m (4 Wheel Steering)
GENERAL	
Dimensions:	
Overall Length	10,330 mm
Overall Width	2,490 mm
Overall Height	3,470 mm
Distance Between Axles	3,200 mm
Treads	
Front:	2,060 mm
Rear :	2,060 mm
Gross Vehicle Weight	22,960 kg
Fuel Tank Capacity	250ℓ
Maximum Passengers	2
Tyre Size	14.0-24-24PR

Minimum Road Width for Right-Angle Turn

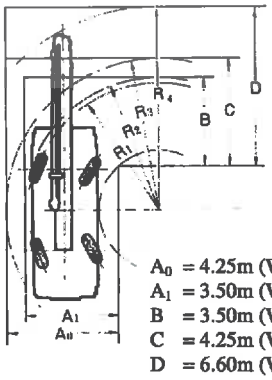
Right Turn in 2-Wheel Steering



R_1 = 8.5m
(Minimum turning radius)
R_2 = 8.8m
(Turning radius of extremely outer tyre)
R_3 = 9.4m
(Chassis turning radius)
R_4 = 11.3m
(Boom end turning radius)

A = 4.6m (Width of entrance)
B = 4.6m (Width of wheel exit)
C = 5.3m (Width of chassis exit)
D = 7.3m (Width of exit at end of boom)

Right Turn in 4-Wheel Steering Mode



R_1 =4.9m
(Minimum turning radius)
R_2 = 5.2m
(Turning radius of extremely outer tyre)
R_3 = 5.85m
(Chassis turning radius)
R_4 = 8.1m
(Boom end turning radius)

A_0 = 4.25m (Width of entrance)
A_1 = 3.50m (Width of wheel entrance)
B = 3.50m (Width of wheel exit)
C = 4.25m (Width of chassis exit)
D = 6.60m (Width of exit at end of boom)

Note:
The above values are based on calculations.

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Rated Lifting Capacity Chart (1)

Working Radius (m)	On Outriggers							
	With Fully Extended Outriggers				With Intermediately Extended Outriggers (4.7m)			
	360° Full Range				Over Side			
	8.4m Boom	14.5m Boom	20.6m Boom	26.7m Boom	8.4m Boom	14.5m Boom	20.6m Boom	26.7m Boom
2.0	20.00	16.00			20.00	16.00		
3.0	20.00	16.00			20.00	16.00		
3.5	20.00	16.00	9.00		20.00	16.00	9.00	
4.0	18.50	15.50	9.00		18.50	15.50	9.00	
4.5	16.50	14.20	9.00	6.80	16.50	14.20	9.00	6.80
5.0	15.00	13.10	9.00	6.80	15.00	13.10	9.00	6.80
5.5	13.70	12.10	9.00	6.80	12.30	12.10	9.00	6.80
6.0	12.50	11.20	9.00	6.80	10.40	10.00	9.00	6.80
6.5	11.50	10.40	8.50	6.80	8.70	8.50	8.50	6.80
7.0		9.70	8.00	6.80		7.40	8.00	6.80
8.0		8.15	7.10	6.10		5.70	6.25	5.90
9.0		6.45	6.40	5.50		4.55	5.05	5.30
10.0		5.25	5.80	5.00		3.70	4.15	4.40
12.0		3.65	4.15	4.20		2.45	2.95	3.20
14.0			3.05	3.30			2.10	2.35
16.0			2.30	2.55			1.50	1.70
18.0			1.75	1.95			1.05	1.25
20.0				1.50				0.90
22.0				1.20				0.65
24.0				0.90				0.45
25.0				0.80				
Critical Boom Angle	-	-	-	-	-	-	-	-

Unit: Metric Ton

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Rated Lifting Capacity Chart (1)

Working Radius (m)	With Intermediately Extended Outriggers (3.6m)				With Retracted Outriggers (Blocked on Vertical cyls.)			
	Over Side				Over Side			
	8.4m Boom	14.5m Boom	20.6m Boom	26.7m Boom	8.4m Boom	14.5m Boom	20.6m Boom	26.7m Boom
2.0	20.00	16.00			10.50	9.50		
3.0	20.00	16.00			10.50	9.50	6.50	
3.5	18.80	16.00	9.00		8.20	7.60	6.50	
4.0	14.50	13.60	9.00		6.50	6.10	6.50	4.00
4.5	11.50	11.10	9.00	6.80	5.35	4.90	5.50	4.00
5.0	9.50	9.10	9.00	6.80	4.45	4.10	4.60	4.00
5.5	8.00	7.65	8.10	6.80	3.75	3.40	3.90	4.00
6.0	6.90	6.50	7.00	6.80	3.20	2.85	3.30	3.50
6.5	6.00	5.60	6.15	6.30	2.70	2.40	2.85	3.05
7.0		4.85	5.40	5.60		2.05	2.50	2.65
8.0		3.75	4.25	4.50		1.40	1.85	2.10
9.0		2.90	3.40	3.60		0.90	1.40	1.65
10.0		2.25	2.75	3.00		0.55	1.05	1.30
11.0		1.75	2.25	2.45			0.75	1.00
12.0		1.35	1.80	2.05				0.75
13.0			1.50	1.70				
14.0			1.20	1.40				
15.0			0.95	1.15				
16.0			0.75	0.95				
17.0			0.55	0.75				
18.0				0.60				
19.0				0.45				
Critical Boom Angle	-	-	-	35°	-	33°	50°	58°

Unit: Metric Ton

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Rated Lifting Capacity Chart (2)

Boom Angle (°)	26.7m Boom + 7m Jib With Fully Extended Outriggers - 360° Full Range					
	Offset 5°		Offset 17°		Offset 30°	
	Work Radius/m	Load	Work Radius/m	Load	Work Radius/m	Load
80.0	6.2	3.00	7.5	2.40	8.8	2.00
75.0	9.4	3.00	10.5	2.40	11.7	2.00
73.0	10.6	3.00	11.5	2.40	12.8	2.00
70.5	12.0	3.00	13.0	2.40	14.0	2.00
65.0	14.9	2.40	15.8	2.00	16.8	1.75
60.0	17.4	2.00	18.2	1.75	19.2	1.60
55.0	19.8	1.75	20.5	1.55	21.3	1.50
53.0	20.7	1.55	21.4	1.50	22.1	1.35
50.0	21.9	1.35	22.7	1.30	23.2	1.20
45.0	23.8	1.05	24.5	1.05	25.0	0.95
40.0	25.6	0.80	26.2	0.80	26.6	0.75
35.0	27.2	0.65	27.7	0.62	27.9	0.60
30.0	28.6	0.50	29.0	0.50	29.0	0.45
25.0	29.8	0.41	30.0	0.40		
23.6	30.0	0.40				
Critical Boom Angle	-		-		-	

Boom Angle (°)	26.7m Boom + 7m Jib With Intermediately Extended Outriggers (4.7m) – Over Side					
	Offset 5°		Offset 17°		Offset 30°	
	Work Radius/m	Load	Work Radius/m	Load	Work Radius/m	Load
80.0	6.2	3.00	7.5	2.40	8.8	2.00
75.0	9.4	3.00	10.5	2.40	11.7	2.00
70.5	12.0	3.00	13.0	2.40	14.0	2.00
66.5	14.1	2.55	15.0	2.10	16.1	1.95
63.5	15.5	2.10	16.5	1.90	17.6	1.70
60.0	17.2	1.65	18.2	1.55	19.2	1.40
55.0	19.6	1.15	20.5	1.10	21.2	1.05
50.0	21.7	0.85	22.6	0.80	23.1	0.75
45.0	23.6	0.60	24.5	0.55	24.9	0.55
40.0	25.4	0.40	25.9	0.40	26.4	0.40
Critical Boom Angle	30°		30°		30°	

Boom Angle (°)	26.7m Boom + 7m Jib With Intermediately Extended Outriggers (3.6m) – Over Side					
	Offset 5°		Offset 17°		Offset 30°	
	Work Radius/m	Load	Work Radius/m	Load	Work Radius/m	Load
80.0	6.2	3.00	7.5	2.40	8.8	2.00
75.0	9.4	3.00	10.5	2.40	11.7	2.00
73.5	10.4	3.00	11.3	2.40	12.5	2.00
72.0	11.1	2.65	12.2	2.40	13.3	2.00
71.0	11.6	2.45	12.7	2.20	13.8	2.00
68.0	13.0	1.95	14.2	1.75	15.3	1.55
65.0	14.6	1.50	15.6	1.40	16.7	1.25
60.0	16.8	1.00	18.0	0.90	18.9	0.85
55.0	19.3	0.60	20.2	0.55	21.1	0.50
53.0	20.0	0.50	21.0	0.45	21.9	0.40
Critical Boom Angle	48°		48°		48°	

Unit: Metric Ton

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Rated Lifting Capacity Chart (3)

Working Radius (m)	Stationary on Rubber							
	8.4m Boom		14.5m Boom		20.6m Boom		26.7m Boom	
	Over Front	360° Full Range	Over Front	360° Full Range	Over Front	360° Full Range	Over Front	360° Full Range
3.0	12.20	8.20	8.70	7.20				
3.5	10.70	7.20	8.70	7.00				
4.0	10.00	5.90	8.70	5.60	6.20	4.50		
4.5	8.80	4.80	8.00	4.50	6.20	4.50		
5.0	7.75	3.90	7.20	3.70	6.20	4.10	4.00	2.70
5.5	6.90	3.30	6.40	3.10	5.70	3.50	4.00	2.70
6.0	6.10	2.80	5.65	2.60	5.30	3.00	4.00	2.70
6.5	5.20	2.40	4.90	2.15	4.85	2.60	4.00	2.70
7.0			4.30	1.80	4.50	2.25	3.80	2.40
8.0			3.30	1.25	3.75	1.70	3.35	1.80
9.0			2.55	0.80	3.00	1.25	2.95	1.35
10.0			2.05	0.45	2.45	0.90	2.50	1.05
11.0			1.60		2.00	0.60	2.15	0.75
12.0			1.25		1.60		1.85	
13.0					1.30		1.55	
14.0					1.10		1.30	
15.0					0.85		1.10	
16.0					0.65		0.90	
17.0					0.50		0.75	
18.0							0.55	
Critical Boom Angle	-	-	-	33°	-	50°	35°	60°

Working Radius (m)	Pick & Carry (Maximum 2 km/h)							
	8.4m Boom		14.5m Boom		20.6m Boom		26.7m Boom	
	Over Front	360° Full Range	Over Front	360° Full Range	Over Front	360° Full Range	Over Front	360° Full Range
3.0	8.50	6.00	6.60	5.00				
3.5	8.25	5.00	6.60	4.80		3.20		
4.0	8.00	4.30	6.60	4.10	5.00	3.20		
4.5	6.80	3.60	6.00	3.40	5.00	3.20		
5.0	5.80	3.00	5.30	2.80	5.00	3.20	2.80	1.85
5.5	5.00	2.50	4.75	2.30	4.70	2.70	2.80	1.85
6.0	4.50	2.05	4.30	1.90	4.30	2.30	2.80	1.85
6.5	4.00	1.70	3.80	1.60	3.90	2.00	2.80	1.85
7.0			3.40	1.30	3.60	1.70	2.70	1.70
8.0			2.65	0.85	3.00	1.25	2.35	1.35
9.0			2.10		2.45	0.90	2.15	1.05
10.0			1.65		2.00	0.65	2.00	0.75
11.0			1.30		1.65		1.70	
12.0			1.00		1.35		1.45	
13.0					1.10		1.20	
14.0					0.90		1.05	
15.0					0.70		0.90	
16.0					0.55		0.75	
Critical Boom Angle	-	-	-	45°	25°	53°	45°	62°

Unit: Metric Ton

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Notes for the Rated Lifting Capacity Chart

Rated Lifting Capacity Charts (1)
Outrigger Operation

1. The rated lifting capacities are the maximum loads guaranteed on firm level ground and includes the weight of the hook, block and other lifting equipment. The ratings above the heavy lines on the Chart are determined by the strength of the Crane. Other portions are determined by the stability.

Type of Hook	20 ton	3 ton
Weight	230 kg	60kg

2. The working radius as given on the Chart are the actual values including the deflection of the boom. Operation of the Crane is based on the working radius.
3. Full extension of outriggers is 5.8m. The other lengths at intermediate extension are 3.6m and 4.7m.
4. When lifting to the side of the Crane take the length of the extended outriggers into account as shown on the Chart as this affects lifting capacity. When lifting to the front or rear of the Crane outriggers must be fully extended.
5. The rated lifting capacities of the rooster sheave are equal to those of the main boom less the weight of the main hook up to a maximum rated lifting capacity of 3,000 kg. Deduct hook weight (239 kg) when rooster sheave is installed.
6. When the boom length exceeds the specified length on the Chart the Crane must be operated on the lifting capacities rated for the longer rated boom length or the chart above whichever has the smallest lifting capacity value.
7. When operating the boom with the jib installed loads must be reduced by 500 kg and the weight of the lifting equipment. Do not use the rooster sheave.
8. Check the Charts for all different working values and critical angles. Do not operate a radius or boom length lower than the specified critical angle. At these positions the Crane may overturn without any load on the hook.
9. Work on a maximum of 3,000 kg per part of hoist per wire rope. Each length of boom should be worked by specified values on chart below.

Length of Boom	Hoist
8.4m-14.5m	7
14.5m-26.7m	4
Rooster Sheave	1

10. As a rule the load should not be lowered in free fall mode. This option is only designed for lowering the hook. If you are compelled to do so the weight of the specified lifting capacity must be reduced by 20%. Abrupt operation of the free fall brake is dangerous and may damage machine.
11. The charts for the minimum outrigger lengths are for Type-H Cranes with outriggers.
12. Operation of this equipment in excess of rated loads or incorrectly handled may result in overturn or damage to the machine and will void liability.

Rated Lifting Capacity Chart (2)
Use of Outrigger and 7.0m Jib

1. The rated lifting capacities are the maximum loads guaranteed on firm level ground and includes the weight of the hook, block and other lifting equipment. The ratings above the heavy lines on the Chart are determined by the strength of the Crane. Other portions are determined by the stability.

3 Ton Hook Weight: 60 kg

2. The working radius of the jib is based on work with a 26.7m boom. If operating with a different boom length use the boom angle on the Chart as a base.
3. Full extension of outriggers is 5.8m. The other lengths at intermediate extension are 3.6m and 4.7m.
4. When lifting to the side of the Crane take the length of the extended outriggers into account as shown on the Chart as this affects lifting capacity. When lifting to the front or rear of the Crane outriggers must be fully extended.
5. Checks these charts for all different working values and critical angles. Do not operate at a radius or boom length lower than the specified critical angle. At these positions the Crane may overturn without any load on the hook.
6. As a rule a load should not be lowered in free fall mode as this option is only designed for lowering the hook alone. If you are compelled to do so the weight of the specified lifting capacity must be reduced by 20%. Abrupt operation of the free fall brake is dangerous and may damage machine.
7. Operation of this equipment in excess of rated loads or incorrectly handled equipment may result in overturn or damage to the machine and void liability.

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Notes for the Rated Lifting Capacity Chart

Rated Lifting Capacity Chart (3)
Free on Tyres Operation

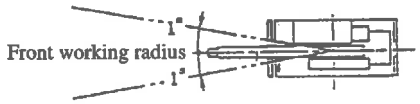
1. The rated lifting capacities are the maximum loads guaranteed on firm level ground and includes the weight of hook, block and other lifting equipment.

   The ratings above the heavy lines on the Chart are determined by the strength of the Crane. Other portions are determined by the stability.
   (Specified air pressure is 8kg/cm^2).

Type of Hook	20 ton	3 ton
Weight	230 kg	60kg

2. The working radius as given on the Chart are the actual values including the deflection of the boom. Operation of the Crane is based on the working radius.

3. When rotating from the front to the side of the Crane the weights will differ to those on the Chart.



4. The rated lifting capacities of the rooster sheave are equal to those of the main boom less the weight of the main hook up to a maximum rated lifting capacity of 3,000 kg. Deduct hook weight (239 kg) when rooster sheave is installed.

5. Don't use a jib or free fall on this Crane.

6. When operating Crane while stationary apply the parking brake.

7. When travelling the high and low switch must be set in low range.

8. When travelling always keep load close to the ground to avoid swaying. Don't brake abruptly. Take extra care when cornering or starting to move. Crane speed must not exceed 4 km/h.

9. When travelling in the Crane do not operate the levers in the operator's cab.

10. Check above Charts for all different working values and critical angles. Don't operate at a radius or boom length lower than the specified critical angle. At these positions the Crane may overturn without any load on the hook.

11. Work on a maximum of 3,000 kg per part of hoist wire rope.

    Each part of the boom should be worked off specified values on the chart below.

Length of Boom	8.4m-14.5m	14.5m-26.7m	Rooster Sheave
Hoist	7	4	1

12. Operation of this equipment in excess of rated loads or incorrectly handled equipment may result in overturn or damage to the machine and will void liability.

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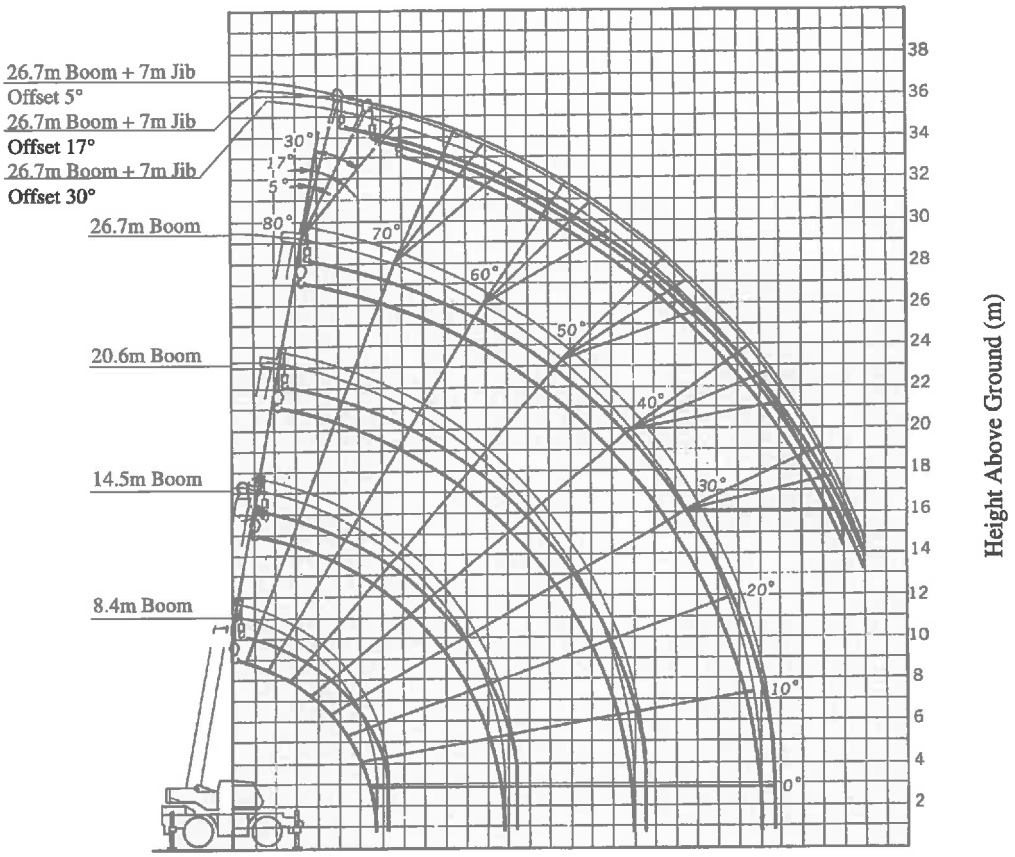
Working Range



Deflection of Boom and Jib Excluded

Note: Kato Products and Specifications are subject to improvements and changes without notice