TRUCK CRANE

TG-500M

TG

JAPANESE SPECIFICATIONS

CARRIER MODEL	SPEC. NO.
NISSAN DIESEL W-KG520TN	TG-500M-4-10103
MITSUBISHI W-KS506S	TG-500M-4-20103

Control No. JA-01

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TG-500M

CRANE SPECIFICATIONS

CRANE CAPACITY

10.65m	Boom	50,000kg	at 3.0m	(12 part-line)
18.0m	Boom	28,000kg	at 5.0m	(7 part-line)
25.3m	Boom	20,000kg	at 6.0m	(5 part-line)
32.7m	Boom	14,000kg	at 6.5m	(4 part-line)
40.0m	Boom	8,000kg	at 9.0m	(4 part-line)
9.0m	Jib	3,500kg	at 75°	(1 part-line)
14.6m	Jib	2,500kg	at 78°	(1 part-line)
Single top		4,000kg		(1 part-line)

MAX. LIFTING HEIGHT
Boom 39.5m
Jib 54.0m

MAX. WORKING RADIUS
Boom 34.0m
Jib 38.3m

BOOM LENGTH
10.65m – 40.0m

BOOM EXTENSION
29.35m

BOOM EXTENSION SPEED
29.35m / 122s

JIB LENGTH
9.0m, 14.6m

MAIN WINCH SINGLE LINE SPEED
High range: 102m/min (3rd layer)
Low range: 48m/min (3rd layer)

MAIN WINCH HOOK SPEED
High range: 8.5m/min (12 part-line)
Low range: 4.0m/min (12 part-line)

AUXILIARY WINCH SINGLE LINE SPEED
High range: 95m/min (2nd layer)
Low range: 45m/min (2nd layer)

AUXILIARY WINCH HOOK SPEED
High range: 95m/min (1 part-line)
Low range: 45m/min (1 part-line)

BOOM ELEVATION ANGLE
-3° – 80°

BOOM ELEVATION SPEED
-3° – 80° / 68s

SWING ANGLE
360° continue

SWING SPEED
2.0 rpm

WIRE ROPE
Main Winch
18mm × 215m (Diameter × Length)
7×7+6×Fi(29) Class C ordinary · Z twist
Spin-resistant wire rope
Breaking strength 24.3t
Auxiliary Winch
18mm × 130m (Diameter × Length)
7×7+6×Fi(29) Class B ordinary · Z twist
Spin-resistant wire rope
Breaking strength 22.3t

BOOM
5-section hydraulically telescoping boom of hexagonal box construction
Two telescoping methods
Telescoping method A
(2nd and 3rd stages synchronized and 4th and 5th stages synchronized)
Telescoping method B
(2nd - 5th stages synchronized)

BOOM EXTENSION
3 double-acting hydraulic cylinder
1 wire rope type telescoping device
With flow regulator valve with pressure compensation

JIB
2-staged type which stores alongside below the base boom section and extendible from under the boom.
(with 2nd stage being a pull-out type)
Hydraulic non-stage offset (5°-45°) type

SINGLE TOP
Single sheave. Mounted to main boom head for single line work.

HOIST
Hydraulic motor driven planetary gear reducer
With free-fall device.
Automatic brake (with foot brake for free-fall device)
2 single winches
With flow regulator valve with pressure compensation

BOOM ELEVATION
2 double-acting hydraulic cylinders
With flow regulator valve with pressure compensation

SWING
Hydraulic motor driven planetary gear reducer
Swing bearing
Hand brake
Swing free/lock changeover type

OUTRIGGERS
Fully hydraulic H-type (floats mounted integrally)
Slides and jacks each provided with independent operation device.
Full extended width 7.4m
Middle extended width 4.6m

FRONT JACK
Hydraulic operated type

MAX. OUTRIGGER LOAD
47.0t

HYDRAULIC PUMPS
4 gear pumps

HYDRAULIC OIL TANK CAPACITY
675 liters

SAFETY DEVICES
Automatic moment limiter (AML)
With working range limiting function
Over-winding cutout
Level gauge
Working area control device
Outrigger extension width detector
Hook safety latch
Cable follower
Winch drum lock
Winch drum rotation indicator
Swing lock
Hydraulic safety valve
Telescopic counterbalance valve
Elevation counterbalance valve
Jack pilot check valve
Front jack grounding detector
Front jack over load alarm

EQUIPMENTS
Crane cab heater
Oil cooler
Boom angle indicator
Radio
Fan
Block

CARRIER SPECIFICATIONS

MANUFACTURER
NISSAN DIESEL MOTOR CO., LTD

CARRIER MODEL
W-KG520TN

ENGINE
Model RF8
Type 4-cycle V8-cylinder, direct-injection, water-cooled diesel engine
Piston displacement 16,991cc
Max. output 340PS at 2,200rpm
Max. torque 120kg·m at 1,400rpm

CLUTCH
Dry single-plate coil spring type

TRANSMISSION
7-forward and 1-reverse speeds
Synchronized-mesh gear (for 2nd – 7th speeds)

REDUCER
Hypoid gear type

FRONT AXLE
Reverse Elliot-type steel pipe cross section
(with stabilizers on front and rear axles)

REAR AXLE
Full floating, cast torque rods

SUSPENSION
Front Laminated leaf spring type
Rear Equalizer and torque rods

STEERING
Recirculating ball screw type with linkage power assistance

BRAKE SYSTEM
Service Brake
2-circuit air brake, 8-wheels internal expanding brake.
Parking Brake
Mechanically operated, duo-servo shoe type acting on drum at transmission case rear.
Auxiliary Brake
Electro-pneumatic operated exhaust brake.
Emergency
Spring brake

ELECTRIC SYSTEM
24 V DC. 2 batteries of 12V-115F51(96Ah)

FUEL TANK CAPACITY
300 liters

CAB
Two-man type

TIRES
Front 13.00R20-24PR
Rear 11.1-20-16PR

STANDARD EQUIPMENTS
Car heater
Car radio

GENERAL DATA

DIMENSIONS

Overall length	12,850mm
Overall width	2,820mm
Overall height	3,750mm
Wheel base	1,470mm + 3,780mm + 1,400mm = 6,650mm
Tread Front	2,230mm
Rear	2,110mm

WEIGHTS

Gross vehicle weight	
Total	38,470kg
Front	18,180kg
Rear	20,290kg

PERFORMANCE

Max. traveling speed	65km/h
Min. traveling speed	1.2km/h
Gradeability (tan θ)	0.57
Min. turning radius	11.0m

CARRIER SPECIFICATIONS

MANUFACTURER
MITSUBISHI MOTOR CORPORATION

CARRIER MODEL
W-KS506S

ENGINE
Model 8DC10
Type 4-cycle V8-cylinder, direct-injection, water-cooled diesel engine
Piston displacement 16,752cc
Max. output 335PS at 2,200rpm
Max. torque 120kg·m at 1,300rpm

CLUTCH
Dry single-plate type
Hydraulic control with clutch booster

TRANSMISSION
10-forward and 2-reverse speeds
Constant-mesh gear (1st speed, 2nd speed, reverse)
Synchronized-mesh gear (for 3rd – 10th speeds)

REDUCER
1-stage speed reduction type
Hypoid gear type

FRONT AXLE
Reverse-elliot type steering knuckles

REAR AXLE
Full-floating type; cast-steel housing

SUSPENSION
Front Laminated semi-elliptical leaf spring type
With torsion bar stabilizer
(only for the front front axle)
Rear Equalizer beam and torque rod type

STEERING
Recirculating ball screw type
With linkage type hydraulic power booster

BRAKE SYSTEM
Service Brake
2-circuit air brakes for all wheels
Leading and trailing shoe type.
Parking Brake
Spring brake, acting on 4 rear wheels
Auxiliary Brake
Exhaust brake

ELECTRIC SYSTEM
24 V DC. 2 batteries of 12V-145F51 (112Ah)

FUEL TANK CAPACITY
300 liters

CAB
Two-man type

TIRES
Front 13.00R20-24PR
Rear 11.00-20-14PR

STANDARD EQUIPMENTS
Car heater
Car radio

GENERAL DATA

DIMENSIONS

Overall length	12,860mm
Overall width	2,820mm
Overall height	3,750mm
Wheel base	1,450mm + 3,850mm + 1,350mm = 6,650mm
Tread Front	2,240mm
Rear	2,050mm

WEIGHTS

Gross vehicle weight	
Total	38,480kg
Front	17,895kg
Rear	20,585kg

PERFORMANCE

Max. traveling speed	70km/h
Min. traveling speed	1.9km/h
Gradeability (tan θ)	0.33
Min. turning radius	11.0m

TOTAL RATED LOADS

[TELESCOPING METHOD a]

Unit : ton

Outriggers fully extended (Over rear · Over sides)					
A / B (m)	10.65 m	18.0 m	25.3 m	32.7 m	40.0 m
3.0	50.00	28.00			
3.5	43.00	28.00			
4.0	38.00	28.00	20.00		
4.5	34.00	28.00	20.00		
5.0	30.20	28.00	20.00		
5.5	27.50	25.60	20.00	14.00	
6.0	25.00	23.50	20.00	14.00	
6.5	22.70	21.80	18.60	14.00	8.00
7.0	20.70	20.00	17.30	13.50	8.00
7.5	18.90	18.50	16.20	13.00	8.00
8.0	17.40	17.00	15.30	12.50	8.00
8.5	16.05	15.70	14.40	11.90	8.00
9.0	14.90	14.70	13.60	11.30	8.00
10.0		12.20	12.05	10.30	7.50
11.0		10.20	10.05	9.40	6.95
12.0		8.60	8.45	8.60	6.45
13.0		7.30	7.20	7.90	6.00
14.0		6.25	6.05	6.75	5.60
16.0		4.50	4.35	5.15	4.85
18.0			3.25	3.95	4.25
20.0			2.30	3.05	3.60
22.0			1.60	2.30	2.85
24.0				1.70	2.25
26.0				1.30	1.80
28.0				0.85	1.35
30.0					1.00
32.0					0.70
34.0					0.40

A = Boom length B = Working radius

[TELESCOPING METHOD a]

Unit : ton

Outriggers fully extended + Front jack (Over front)					
A / B (m)	10.65 m	18.0 m	25.3 m	32.7 m	40.0 m
3.0	50.00	28.00			
3.5	43.00	28.00			
4.0	38.00	28.00	20.00		
4.5	34.00	28.00	20.00		
5.0	30.20	28.00	20.00		
5.5	27.50	25.60	20.00	14.00	
6.0	25.00	23.50	20.00	14.00	
6.5	22.70	21.80	18.60	14.00	8.00
7.0	20.70	20.00	17.30	13.50	8.00
7.5	18.90	18.50	16.20	13.00	8.00
8.0	17.30	17.00	15.30	12.50	8.00
8.5	15.50	15.30	14.40	11.90	8.00
9.0	13.90	13.75	13.60	11.30	8.00
10.0		11.30	11.20	10.30	7.50
11.0		9.45	9.35	9.40	6.95
12.0		7.95	7.85	8.60	6.45
13.0		6.75	6.65	7.50	6.00
14.0		5.80	5.70	6.50	5.60
16.0		4.30	4.20	5.00	4.85
18.0			3.10	3.85	4.25
20.0			2.25	3.00	3.40
22.0			1.60	2.30	2.75
24.0				1.70	2.15
26.0				1.30	1.70
28.0				0.85	1.30
30.0					1.00
32.0					0.70
34.0					0.40

A = Boom length B = Working radius

[TELESCOPING METHOD a]

Unit : ton

· Outriggers middle extended (360°) · Outriggers fully extended (Over front)					
A / B (m)	10.65 m	18.0 m	25.3 m	32.7 m	40.0 m
3.0	40.00	28.00			
3.5	34.00	28.00			
4.0	28.60	28.00	20.00		
4.5	25.40	25.30	20.00		
5.0	19.10	18.90	18.80		
5.5	14.90	14.80	14.70	14.00	
6.0	12.10	12.00	11.90	14.00	
6.5	10.00	9.95	9.80	11.10	8.00
7.0	8.35	8.30	8.20	9.40	8.00
7.5	7.10	7.05	6.95	8.10	8.00
8.0	6.05	6.00	5.90	7.00	7.60
8.5	5.20	5.15	5.05	6.15	6.80
9.0	4.45	4.40	4.30	5.35	6.00
10.0		3.20	3.25	4.15	4.70
11.0		2.35	2.30	3.20	3.70
12.0				2.50	3.00
13.0					2.40

A = Boom length B = Working radius

[TELESCOPING METHOD b]

Unit : ton

Outriggers fully extended (Over rear · Over sides)							
A / B (m)	10.65 m	18.0 m	21.7 m	25.3 m	29.0 m	32.7 m	40.0 m
3.0	50.00	14.00					
3.5	43.00	14.00	14.00				
4.0	38.00	14.00	14.00	14.00			
4.5	34.00	14.00	14.00	14.00	14.00		
5.0	30.20	14.00	14.00	14.00	13.20		
5.5	27.50	14.00	14.00	14.00	12.50	11.00	
6.0	25.00	14.00	14.00	14.00	11.80	10.80	
6.5	22.70	14.00	14.00	14.00	11.20	10.40	8.00
7.0	20.70	14.00	14.00	13.40	10.70	9.90	8.00
7.5	18.90	14.00	14.00	12.80	10.20	9.50	8.00
8.0	17.40	14.00	14.00	12.30	9.70	9.10	8.00
8.5	16.05	14.00	14.00	11.80	9.20	8.70	8.00
9.0	14.90	14.00	14.00	11.30	8.80	8.30	8.00
10.0		13.00	13.20	10.50	8.00	7.70	7.50
11.0		11.00	11.20	9.80	7.30	7.10	6.95
12.0		9.40	9.60	9.20	6.80	6.50	6.45
13.0		8.10	8.20	8.25	6.30	6.10	6.00
14.0		7.00	7.10	7.15	5.80	5.70	5.60
16.0		5.30	5.40	5.40	5.10	4.90	4.85
18.0			4.20	4.20	4.20	4.30	4.25
20.0			3.30	3.30	3.30	3.30	3.60
22.0				2.50	2.60	2.60	2.85
24.0					2.00	2.10	2.25
26.0					1.55	1.60	1.80
28.0						1.15	1.35
30.0						0.80	1.00
32.0							0.70
34.0							0.40

A = Boom length B = Working radius

[TELESCOPING METHOD b]

Unit : ton

Outriggers fully extended + Front jack (Over front)							
A / B (m)	10.65 m	18.0 m	21.7 m	25.3 m	29.0 m	32.7 m	40.0 m
3.0	50.00	14.00					
3.5	43.00	14.00	14.00				
4.0	38.00	14.00	14.00	14.00			
4.5	34.00	14.00	14.00	14.00	14.00		
5.0	30.20	14.00	14.00	14.00	13.20		
5.5	27.50	14.00	14.00	14.00	12.50	11.00	
6.0	25.00	14.00	14.00	14.00	11.80	10.80	
6.5	22.70	14.00	14.00	14.00	11.20	10.40	8.00
7.0	20.70	14.00	14.00	13.40	10.70	9.90	8.00
7.5	18.90	14.00	14.00	12.80	10.20	9.50	8.00
8.0	17.30	14.00	14.00	12.30	9.70	9.10	8.00
8.5	15.50	14.00	14.00	11.80	9.20	8.70	8.00
9.0	13.90	14.00	14.00	11.30	8.80	8.30	8.00
10.0		12.20	12.40	10.50	8.00	7.70	7.50
11.0		10.25	10.40	9.80	7.30	7.10	6.95
12.0		8.80	8.95	9.05	6.80	6.50	6.45
13.0		7.60	7.75	7.85	6.30	6.10	6.00
14.0		6.60	6.75	6.85	5.80	5.70	5.60
16.0		5.05	5.20	5.30	5.10	4.90	4.85
18.0			4.10	4.20	4.20	4.25	4.25
20.0			3.20	3.30	3.30	3.30	3.40
22.0				2.50	2.60	2.60	2.75
24.0					2.00	2.10	2.15
26.0					1.55	1.60	1.70
28.0						1.15	1.30
30.0						0.80	1.00
32.0							0.70
34.0							0.40

A = Boom length B = Working radius

[TELESCOPING METHOD b]

Unit : ton

· Outriggers middle extended (360°) · Outriggers fully extended (Over front)							
A / B (m)	10.65 m	18.0 m	21.7 m	25.3 m	29.0 m	32.7 m	40.0 m
3.0	40.00	14.00					
3.5	34.00	14.00	14.00				
4.0	28.60	14.00	14.00	14.00			
4.5	25.40	14.00	14.00	14.00	14.00		
5.0	19.10	14.00	14.00	14.00	13.20		
5.5	14.90	14.00	14.00	14.00	12.50	11.00	
6.0	12.10	13.10	13.40	14.00	11.80	10.80	
6.5	10.00	10.95	11.20	11.30	11.20	10.40	8.00
7.0	8.35	9.30	9.50	9.60	9.80	9.85	8.00
7.5	7.10	7.95	8.20	8.30	8.45	8.50	8.00
8.0	6.05	6.90	7.10	7.20	7.35	7.40	7.60
8.5	5.20	6.00	6.20	6.30	6.40	6.50	6.80
9.0	4.45	5.25	5.45	5.55	5.65	5.75	6.00
10.0		4.05	4.25	4.30	4.50	4.55	4.70
11.0		3.15	3.35	3.40	3.50	3.60	3.70
12.0		2.45	2.65	2.70	2.80	2.85	3.00
13.0		1.90	2.10	2.15	2.25	2.25	2.40

[TELESCOPING METHOD a, b]

Unit : ton

Without outriggers (Over rear)	
A / B (m)	10.65 m
3.0	8.00
3.5	6.40
4.0	5.10
4.5	4.20
5.0	3.40
5.5	2.80
6.0	2.30
6.5	1.90
7.0	1.60
7.5	1.25
8.0	1.00

A = Boom length
B = Working radius

[TELESCOPING METHOD a, b]

Unit : ton

· Outriggers fully extended + Front jack (360°) · Outriggers fully extended (Over rear · Over sides)						
C / D / E (°)	9. 0 m			1 4. 6 m		
	5 °	2 5 °	4 5 °	5 °	2 5 °	4 5 °
80	3. 50	2. 40	1. 60	2. 50	1. 25	0. 80
79	3. 50	2. 40	1. 60	2. 50	1. 25	0. 80
78	3. 50	2. 40	1. 60	2. 50	1. 25	0. 80
77	3. 50	2. 40	1. 60	2. 40	1. 25	0. 80
76	3. 50	2. 40	1. 58	2. 30	1. 22	0. 80
75	3. 50	2. 30	1. 55	2. 15	1. 20	0. 80
73	3. 15	2. 15	1. 52	2. 00	1. 15	0. 77
70	2. 75	1. 95	1. 50	1. 80	1. 10	0. 75
68	2. 50	1. 80	1. 45	1. 65	1. 05	0. 72
65	2. 20	1. 65	1. 40	1. 45	1. 00	0. 70
63	1. 95	1. 55	1. 33	1. 35	0. 95	0. 69
60	1. 70	1. 40	1. 25	1. 20	0. 87	0. 67
58	1. 40	1. 25	1. 15	1. 10	0. 82	0. 65
55	0. 95	0. 85	0. 80	0. 80	0. 70	0. 60
53	0. 70	0. 65	0. 60	0. 60	0. 50	0. 45
50	0. 40	0. 35	0. 30	0. 30		

[TELESCOPING METHOD a, b]

Unit : ton

· Outriggers middle extended (360°) · Outriggers fully extended (Over front)						
C / D / E (°)	9. 0 m			1 4. 6 m		
	5 °	2 5 °	4 5 °	5 °	2 5 °	4 5 °
80	3. 50	2. 40	1. 60	2. 50	1. 25	0. 80
79	3. 50	2. 40	1. 60	2. 50	1. 25	0. 80
78	3. 40	2. 40	1. 60	2. 50	1. 25	0. 80
77	2. 90	2. 15	1. 60	2. 40	1. 25	0. 80
76	2. 40	1. 80		2. 00		

C = Jib length D = Jib offset E = Boom angle

NOTES:

1. The total rated loads shown are for the case when the outriggers are set horizontally on firm ground. The values above the bold lines are based on the crane strength while those below are based on the crane stability.
2. The weights of slings and hooks (460kg for a 50 ton capacity hook, 280kg for a 20 ton capacity hook and 100kg for a 4 ton capacity hook) are included in the total rated loads shown.
3. The total rated load is based on the actual working radius including the deflection of the boom.
4. The chart below shows the standard number of part lines for each boom length. The load per line should not exceed 4.17t for the main winch and 4.0t for the auxiliary winch.

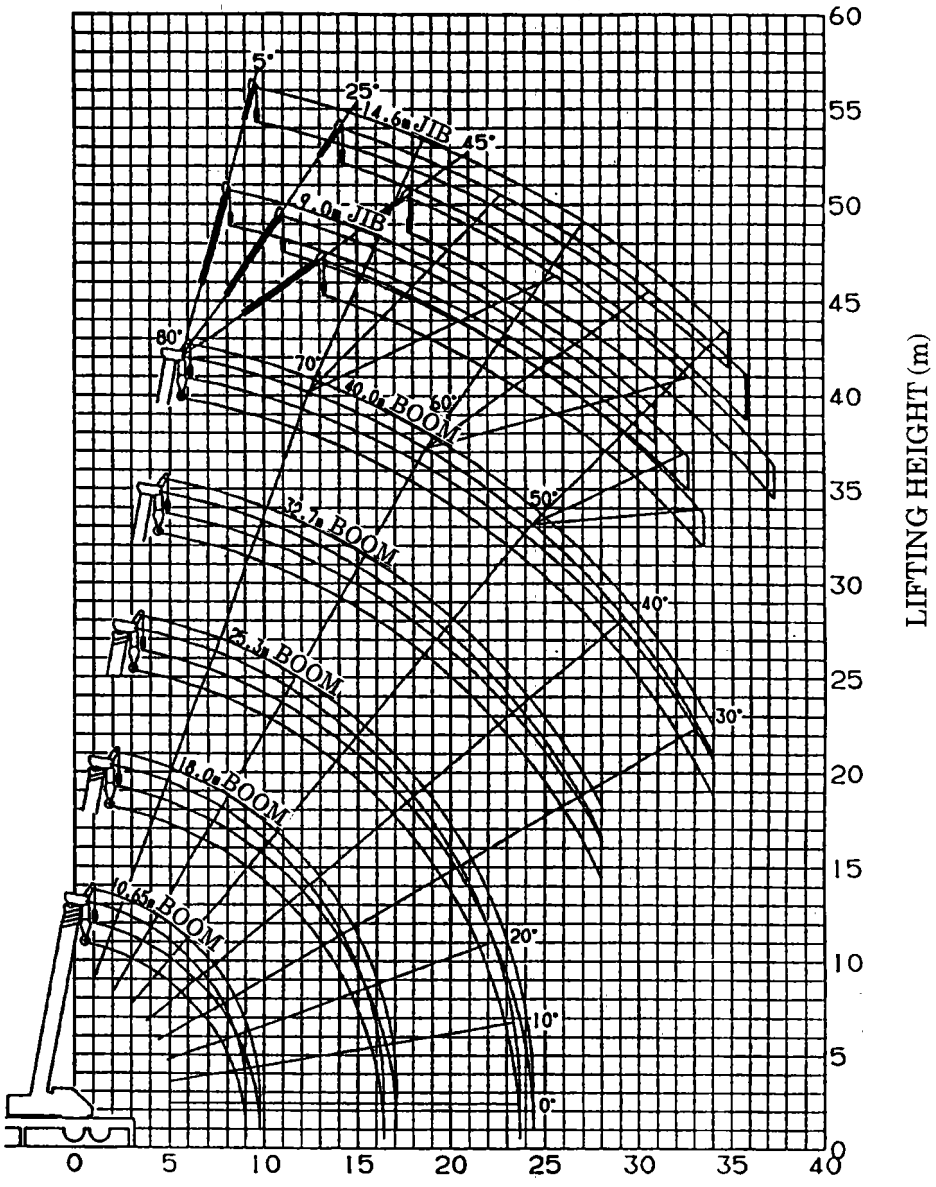
R \ A	10.65m	18.0 m	21.7 m	25.3 m	29.0 m	32.7 m	40.0 m	J
a	12	7	—	5	—	4	4	1
b	12	7	5	5	4	4	4	1

A = Boom length J = Jib / Single top R = Telescoping method

5. As a rule, free-fall operations 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 1/5th of the total rated load (the load per line must be 0.85t or less for the main winch and 0.8t or less for the auxiliary winch) and sudden braking operations must be avoided. Free-fall operations should not be performed when the outriggers are not used.
6. The total rated load for the single top is equal to the total rated load for the boom and must not exceed 4.0t. However, when hooks, slings, etc. are attached to the boom, operations should be based on the total rated loads determined by subtracting the weights of the hook, slings, etc. attached to the boom from the total rated load of the boom.

WORKING RADIUS - LIFTING HEIGHT

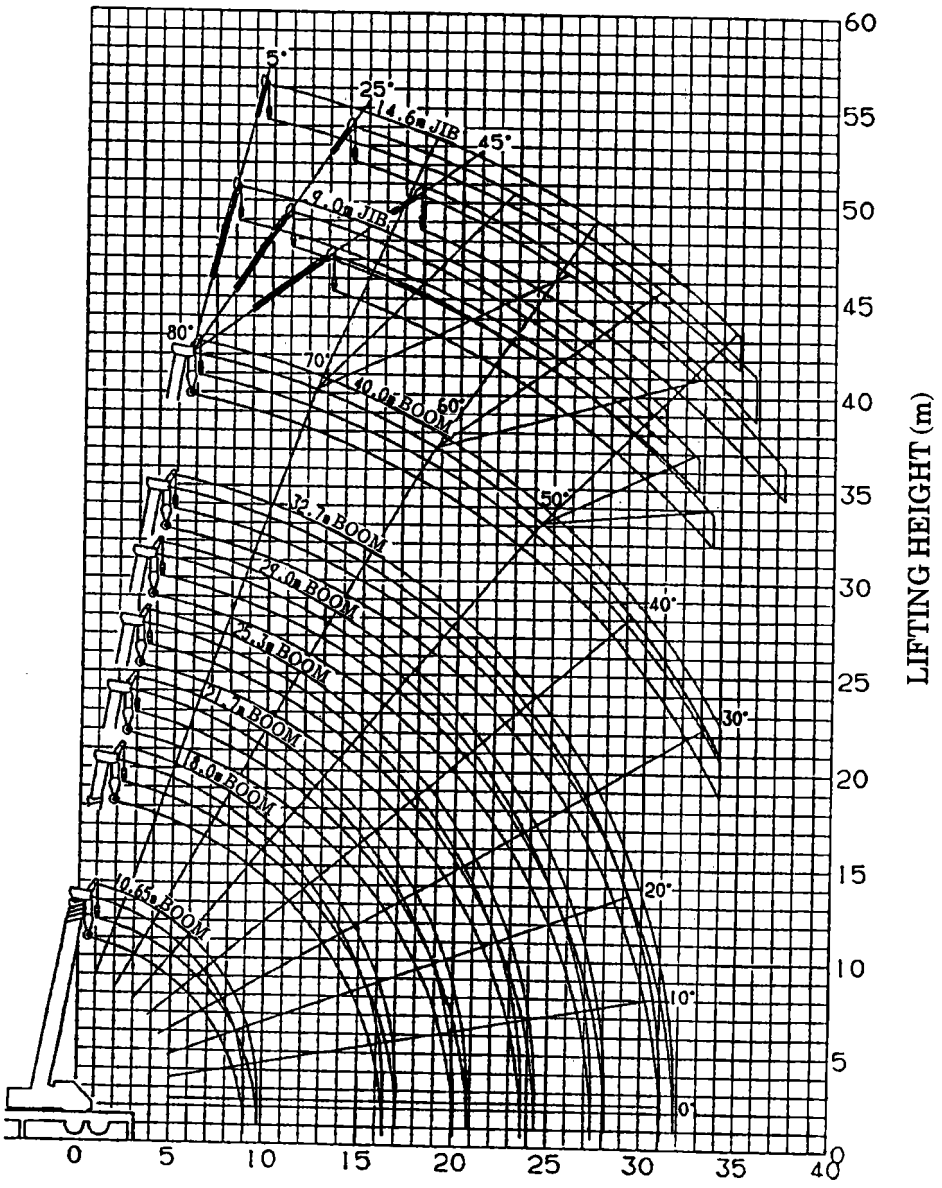
[TELESCOPING METHOD a]



NOTES:

1. The deflection of the boom is not incorporated in the figure above.

[TELESCOPING METHOD b]

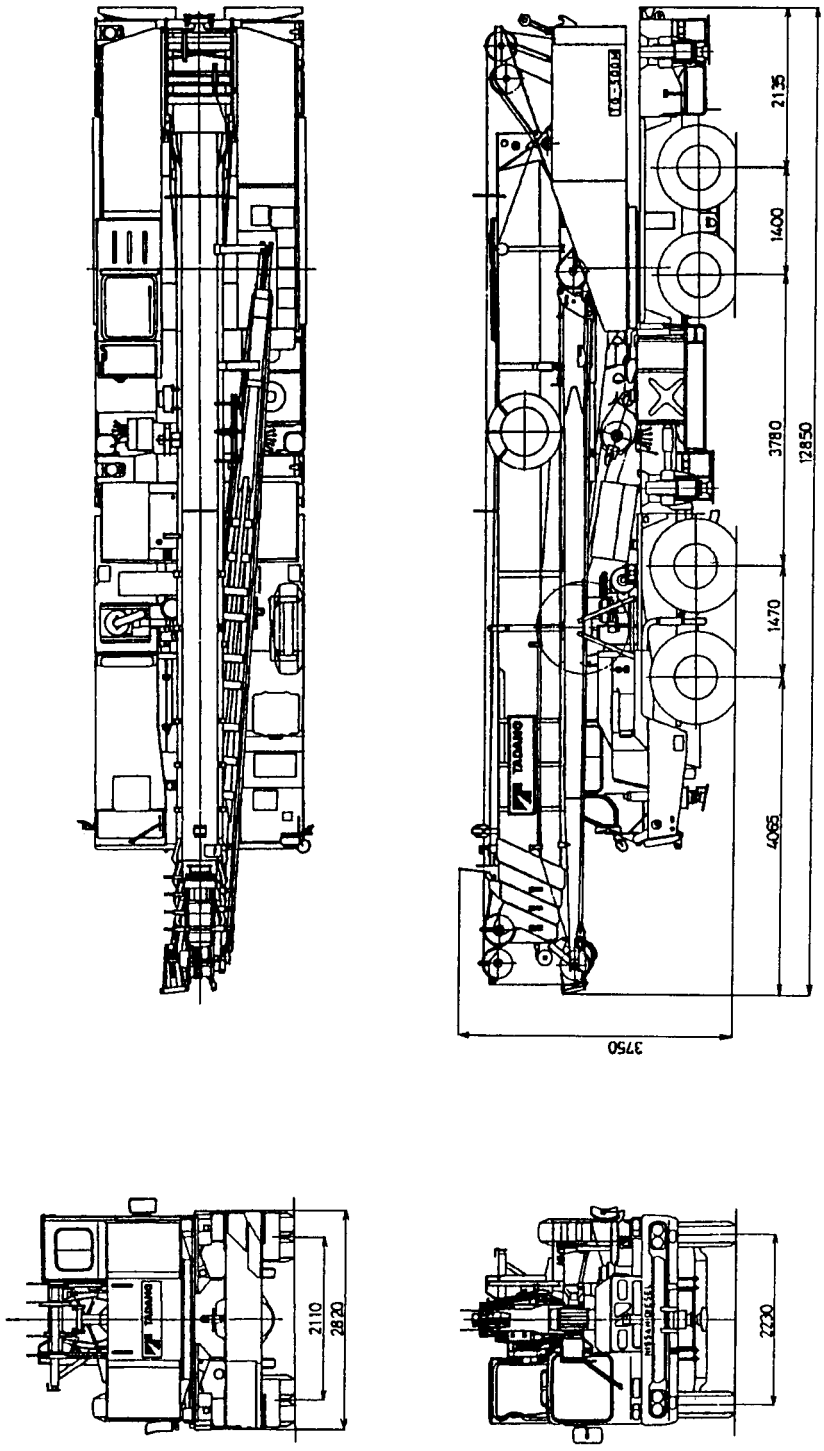


NOTES:

1. The deflection of the boom is not incorporated in the figure above.

DIMENSIONS (1/100)

W-KG520TN



DIMENSIONS (1/100)

W-KS506S