

NK-500E-v

FULLY HYDRAULIC TRUCK CRANE

- Maximum rated lifting capacity: 50.5t
- Maximum boom length: 40m
- Maximum jib length: 15m
- Maximum lifting height: 39.8m(boom), 54.7m(40m boom+15m jib offset 5°)



KATO



Power That Won't Quit





THE CRYSTALLIZATION OF ADVANCED TECHNOLOGY. THE STURDY FULLPOWER BOOM CUTS DEFLECTION WAY DOWN

- For greater ease of use, operability and safety, the boom is of a robust construction that reduces vertical deflection and lateral bending during operations.
- The tough Fullpower boom utilizes a sequential, synchronized extension/retraction control system that permits single-lever control and speeds up operations at all boom lengths from low lifts at 10.8m (fully retracted) to high lifts at 40.0m (fully extended).



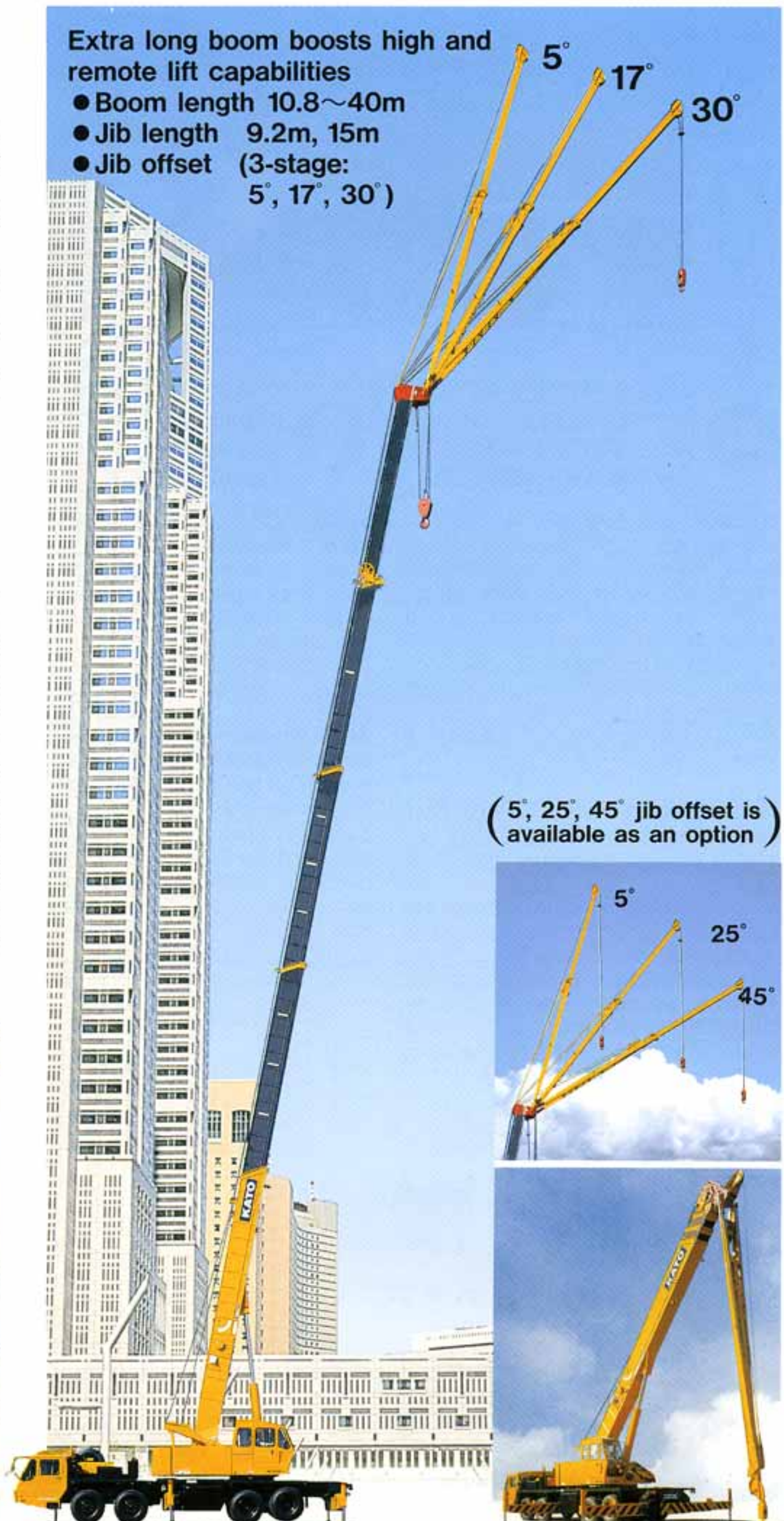
ALL-ROUND COMFORT! SPACIOUS CAB GUARANTEES A PLEASANT WORKING ENVIRONMENT

- The spacious cabin is finished in relaxing colour tones and comes with a sliding door that facilitates ingress and egress and can be left open without getting in the operator's way. A push-up type window is incorporated in the roof for better ventilation. Careful consideration has been given to human engineering for maximum operator comfort; the lengths of the levers can be adjusted and the highbacked seat can be moved forward or backward, raised or lowered to suit any physique. The result is a comfortable, roomy cabin that helps banish fatigue even during extended periods of operation.

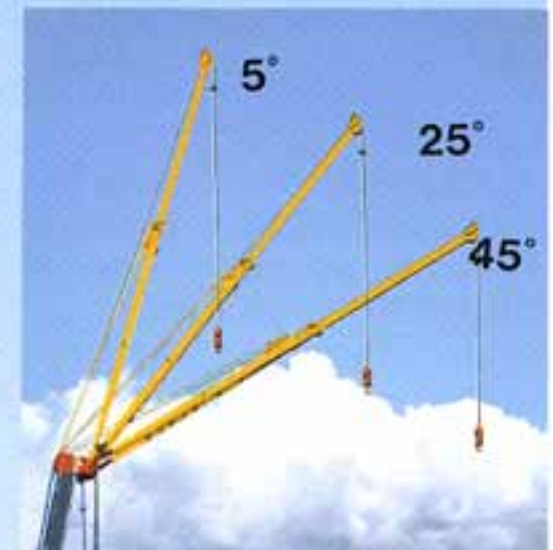


Extra long boom boosts high and remote lift capabilities

- Boom length 10.8~40m
- Jib length 9.2m, 15m
- Jib offset (3-stage: 5°, 17°, 30°)



(5°, 25°, 45° jib offset is available as an option)



Exceptionally Wide Operating Range



ACS CONTROLS PERFORMANCE ACCORDING TO OUTRIGGER STATUS

● **Sturdy, fully hydraulic outriggers...** The outriggers are designed for 2-stage extension, 7.2m at maximum stroke and 4.85m at intermediate stroke for greater stability during operations on restricted sites. Float mounting and dismounting operations have been eliminated by incorporating them into a single unit with the vertical cylinders, thus helping to reduce operation times.

OPTIONAL HYDRAULIC FRONT JACK PROVIDES EXCELLENT 360° LIFTING CAPABILITIES

● A hydraulic jack installed under the front extremity of the carrier chassis enables the crane to offer the same lifting performance in all directions. This means that there are fewer limitations caused by the orientation of the crane when it enters a site, so the crane has a greater operational range.



● Hydraulic front jack (option)



intermediate stroke 4.85m

maximum stroke 7.20m



CONSTANT FIVE-POINT DISPLAY OF OPERATING CONDITION

● The ACS has digital displays that show safety level, boom angle, boom length, working radius and critical load at all times, without troublesome button operation. For further safety the display of safety level is colour-zoned to enable the operator to take in the condition of the load at a glance.

● **Protection against breakdowns and malfunctions...** For double protection in the unlikely event of a malfunction in the ACS Moment Limiter or any other problems, a trouble indicator has been provided to generate an emergency signal in the appropriate display to warn the operator.



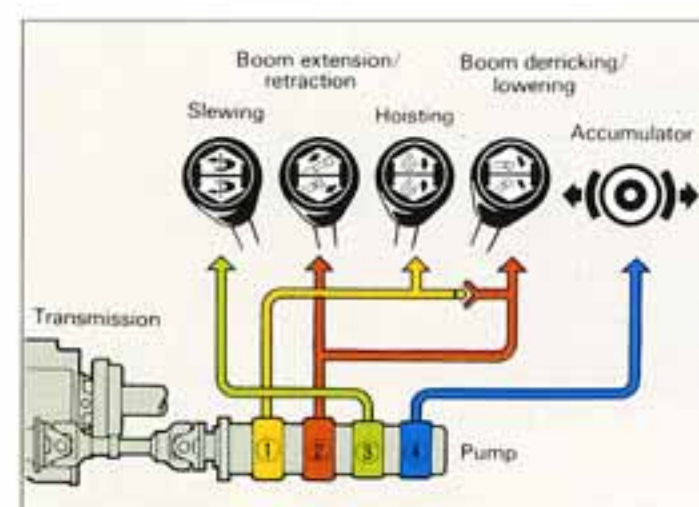
JUST THE JOB FOR COMPOUND OPERATIONS!

● The NK-500E-v features 2 independently-driven winches. This feature is particularly useful in compound operations because the main and auxiliary winches are controlled by separate levers that permit them to perform hoisting and lowering operations independently yet at the same time. The result is faster operations and greater efficiency.



4-PUMP SYSTEM FOR SMOOTH COMPOUND OPERATION

● The use of 4 separate pumps enables the NK500E-v to perform 3 operation simultaneously, such as winch (hoisting, lowering), boom (derricking, telescoping) and slewing, without these operations affecting each other. This makes operation smoother and more efficient.



RATED LIFTING CAPACITY

* BS 1757 : 1986
Based on * DIN 15019-2
* 75% of tipping loads

Note : Front jack is optional.

Outriggers fully extended with front jack — 360° full range Outriggers fully extended without front jack — over side and over rear							
Working radius (m)	10.8 m Boom	14.45 m Boom	18.1 m Boom	21.75 m Boom	25.4 m Boom	32.7 m Boom	40.0 m Boom
3.0	50.50	28.00	28.00	24.00			
3.5	42.20	28.00	28.00	24.00	18.00		
4.0	37.00	28.00	28.00	24.00	18.00		
4.5	33.00	28.00	28.00	24.00	18.00		
5.0	30.20	28.00	28.00	24.00	18.00	13.00	
5.5	27.50	26.50	25.60	23.20	18.00	13.00	
6.0	25.00	24.00	23.50	21.50	18.00	13.00	
6.5	22.70	22.30	21.80	19.90	18.00	13.00	7.50
7.0	20.70	20.30	20.00	18.40	16.80	13.00	7.50
7.5	18.90	18.60	18.50	17.10	15.70	13.00	7.50
8.0	17.40	17.10	17.00	15.90	14.80	12.30	7.50
8.5	15.95	15.70	15.60	14.65	14.00	11.60	7.50
9.0	14.35	14.20	14.10	13.50	13.20	11.00	7.50
9.5		12.85	12.70	12.55	12.45	10.50	7.50
10.0		11.70	11.55	11.45	11.40	10.00	7.30
11.0		9.75	9.60	9.50	9.45	9.10	6.80
12.0		8.20	8.10	8.00	7.95	8.30	6.30
13.0		7.00	6.85	6.75	6.70	7.55	5.90
14.0			5.85	5.75	5.70	6.50	5.50
16.0			4.25	4.15	4.10	4.95	4.70
18.0				3.00	2.95	3.75	4.00
20.0				2.10	2.05	2.80	3.30
22.0					1.30	2.10	2.55
23.0					1.00	1.80	2.25
24.0						1.50	2.00
26.0						1.05	1.50
28.0						0.65	1.10
30.0							0.75
31.0							0.60
Standard hook	for 50.5 ton				for 20 ton		
Hook weight	500 kg				270 kg		
Parts of line	12	7	7	6	5	4	3
Critical boom angle	—	—	—	—	—	25°	35°

(Unit: Metric ton)

Outriggers intermediately extended without front jack — 360° full range Outriggers fully extended without front jack — over front							
Working radius (m)	10.8 m Boom	14.45 m Boom	18.1 m Boom	21.75 m Boom	25.4 m Boom	32.7 m Boom	40.0 m Boom
3.0	32.00	28.00	28.00	24.00			
3.5	32.00	28.00	28.00	24.00	18.00		
4.0	32.00	28.00	28.00	24.00	18.00		
4.5	26.30	25.00	24.00	22.00	18.00		
5.0	19.90	19.70	19.40	18.00	16.50	13.00	
5.5	15.75	15.55	15.30	15.20	15.00	13.00	
6.0	12.80	12.60	12.40	12.30	12.25	11.80	
6.5	10.60	10.45	10.25	10.15	10.10	10.60	7.50
7.0	8.95	8.75	8.60	8.50	8.45	9.45	7.50
7.5	7.60	7.45	7.25	7.15	7.10	8.10	7.50
8.0	6.50	6.35	6.20	6.10	6.05	7.00	7.50
9.0	4.80	4.70	4.55	4.45	4.40	5.30	6.00
10.0		3.50	3.35	3.25	3.20	4.10	4.70
11.0		2.55	2.40	2.35	2.30	3.15	3.75
12.0		1.80	1.70	1.60	1.60	2.40	2.95
13.0						1.80	2.35
14.0						1.30	1.85
15.0							1.40
Standard hook	for 50.5 ton				for 20 ton		
Hook weight	500 kg				270 kg		
Parts of line	12	7	7	6	5	4	3
Critical boom angle	—	—	40°	51°	58°	62°	66°

(Unit: Metric ton)

Outriggers fully extended with front jack — 360° full range Outriggers fully extended without front jack — over side and over rear													
Boom angle (°)	40 m Boom + 9.2 m Jib						Boom angle (°)	40 m Boom + 15 m Jib					
	Offset 5'		Offset 17'		Offset 30'			Offset 5'		Offset 17'		Offset 30'	
	Working radius (m)	Load (t)	Working radius (m)	Load (t)	Working radius (m)	Load (t)		Working radius (m)	Load (t)	Working radius (m)	Load (t)	Working radius (m)	Load (t)
81	9.00	3.50	10.75	2.70	12.25	2.00	81	10.60	2.50	13.45	1.60	16.05	1.00
80	9.95	3.50	11.75	2.70	13.15	2.00	79	12.85	2.50	15.50	1.60	18.00	1.00
79	10.90	3.50	12.50	2.66	14.00	2.00	78	14.00	2.50	16.45	1.55	18.85	1.00
78	11.80	3.50	13.40	2.54	14.85	2.00	77	15.00	2.35	17.40	1.48	19.80	1.00
77	12.70	3.32	14.20	2.42	15.70	1.94	76	15.95	2.22	18.35	1.42	20.75	0.97
76	13.50	3.13	15.00	2.32	16.50	1.88	75	16.90	2.10	19.30	1.36	21.65	0.96
75	14.40	2.97	15.90	2.22	17.30	1.83	74	17.85	1.98	20.20	1.31	22.50	0.94
74	15.25	2.82	16.70	2.13	18.15	1.78	72	19.75	1.78	22.00	1.22	24.25	0.90
72	16.85	2.55	18.30	1.95	19.70	1.67	70	21.50	1.61	23.80	1.14	25.95	0.87
70	18.50	2.33	19.90	1.81	21.25	1.58	68	23.40	1.48	25.45	1.07	27.55	0.83
68	20.05	2.14	21.40	1.69	22.70	1.48	66	25.10	1.36	27.15	1.00	29.10	0.81
66	21.60	1.97	23.00	1.58	24.20	1.40	64	26.85	1.26	28.75	0.95	30.70	0.78
64	23.15	1.83	24.55	1.48	25.65	1.31	62	28.45	1.16	30.40	0.90	32.20	0.75
62	24.65	1.71	26.05	1.40	27.10	1.24	60	30.05	1.08	31.95	0.86	33.65	0.73
60	26.15	1.51	27.45	1.32	28.40	1.17	58	31.70	1.01	33.45	0.82	35.05	0.72
59	26.85	1.38	28.10	1.28	29.15	1.14	57	32.40	0.90	34.20	0.79	35.80	0.71
58	27.45	1.23	28.75	1.18	29.80	1.10	56	33.05	0.80	34.95	0.74	36.45	0.70
56	28.75	1.02	30.05	0.95	30.95	0.90	54	34.40	0.60	36.30	0.55	37.75	0.52
54	30.00	0.80	31.25	0.72	32.10	0.69							
52	31.15	0.60	32.50	0.52	33.30	0.50							
Standard hook	for 4 ton						Standard hook	for 4 ton					
Hook weight	120 kg						Hook weight	120 kg					
Parts of line	1						Parts of line	1					
Critical boom angle	51°						Critical boom angle	53°					

(Unit: Metric ton)

Outriggers intermediately extended without front jack — 360° full range Outriggers fully extended without front jack — over front													
Boom angle (°)	40 m Boom + 9.2 m Jib						Boom angle (°)	40 m Boom + 15 m Jib					
	Offset 5°		Offset 17°		Offset 30°			Offset 5°		Offset 17°		Offset 30°	
	Working radius (m)	Load (t)	Working radius (m)	Load (t)	Working radius (m)	Load (t)		Working radius (m)	Load (t)	Working radius (m)	Load (t)	Working radius (m)	Load (t)
81	9.00	3.50	10.75	2.70	12.25	2.00	81	10.60	2.50	13.45	1.60	16.05	1.00
80	9.95	3.50	11.75	2.70	13.15	2.00	79	12.85	2.50	15.50	1.60	18.00	1.00
79	10.90	3.50	12.50	2.66	14.00	2.00	78	14.00	2.50	16.45	1.55	18.85	1.00
78	11.80	3.43	13.40	2.54	14.85	2.00	77	14.90	2.20	17.40	1.48	19.80	1.00
77	12.45	2.88	14.20	2.42	15.70	1.94	76	15.70	1.87	18.35	1.42		
76	13.20	2.44	15.00	2.11	16.50	1.81	75	16.60	1.58				
75	13.95	2.06	15.70	1.75									
74	14.80	1.73											
Standard hook	for 4 ton						Standard hook	for 4 ton					
Hook weight	120 kg						Hook weight	120 kg					
Parts of line	1						Parts of line	1					
Critical boom angle	73°		74°		75°		Critical boom angle	74°		75°		76°	

(Unit: Metric ton)

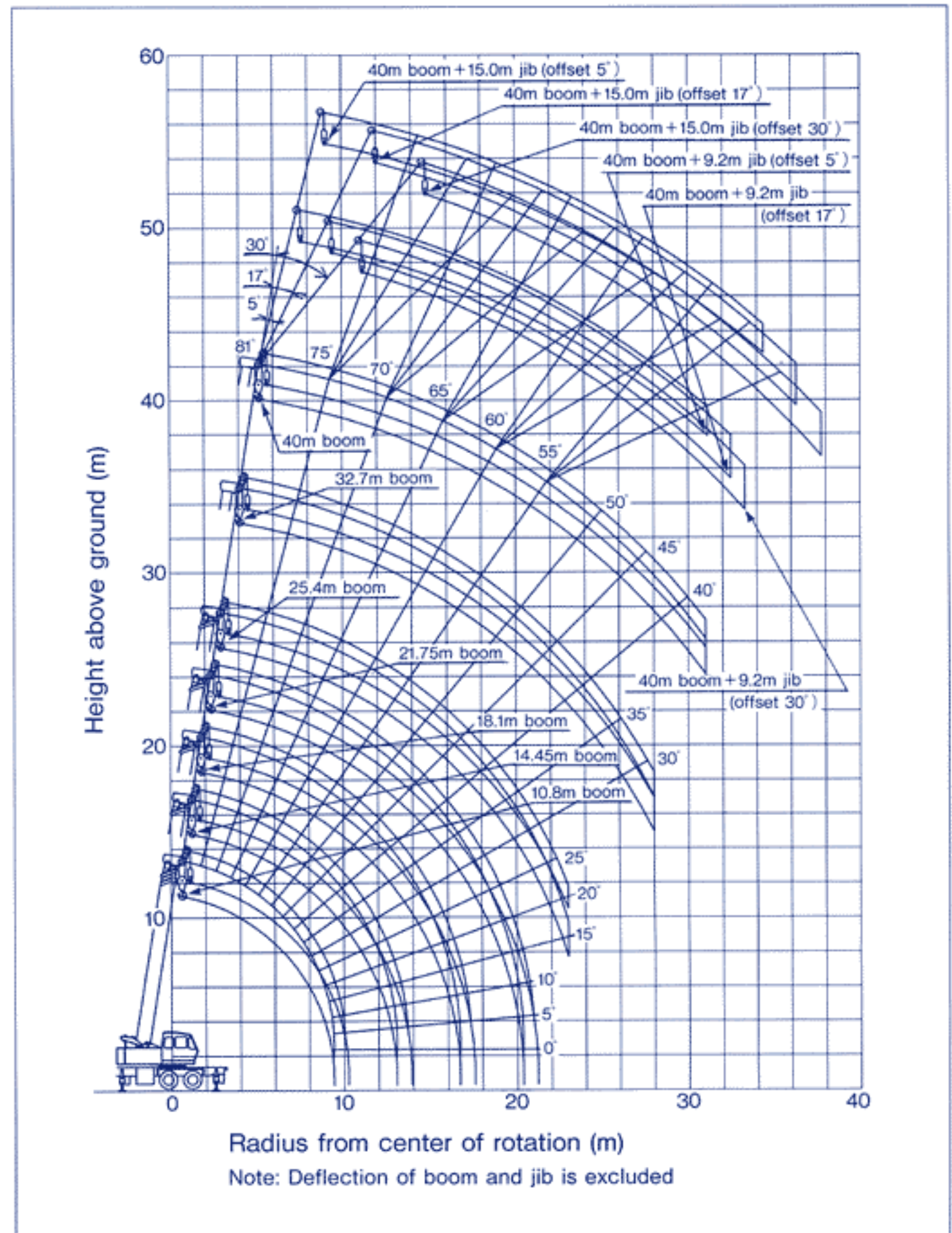
Outriggers fully retracted — 360° full range (blocked on vertical cyls.)	
Working radius (m)	10.8 m Boom
3.0	8.00
3.5	6.40
4.0	5.10
4.5	4.20
5.0	3.40
5.5	2.80
6.0	2.30
6.5	1.90
7.0	1.60
7.5	1.25
8.0	1.00
Standard hook	for 50.5 ton
Hook weight	500 kg
Parts of line	12

(Unit: Metric ton)

NOTES:

- 1) The rated lifting capacities are the maximum load guaranteed on a firm level ground and include the weight of hook block and other lifting equipment. The capacities enclosed with bold lines are based on the structural strength of machine and the others are based on the stability of machine.
- 2) The working radii as given in the table are the actual values including the deflection of the boom. Therefore, operate the machine based on the working radius. However, the working radii shown for jib operations are based on the values obtained when the boom is fully extended (40m). Jib operations should be performed on the basis of boom angle only, regardless of boom length when the boom is not fully extended.
- 3) The rated lifting capacities for the rooster sheave are equivalent to the rated lifting capacities for the main boom to a maximum of 4000kg. At all times the weight of all lifting equipment in use (including main hook block suspended from boom head) forms part of the load and must be subtracted from the rated lifting capacity.
- 4) If the boom length exceeds the specified value, the rated lifting capacities for the boom length above and below the present boom length should be referred to, and the crane should be operated within the smaller lifting capacity.
- 5) When using the main boom with the jib installed, 2,000kg plus the weight of hook block and other lifting equipment, etc., should be subtracted from the rated lifting capacities. When performing the above operation, do not use the rooster sheave.
- 6) Critical boom angles for each boom length are shown on bottommost line of lifting capacity table. If the boom angle is lowered to less than the critical boom angle, the machine will tip over without load. Therefore, never lower the boom below these angles.
- 7) The standard number of parts of line is shown in the rated lifting capacity table. When the standard number of parts of line is not used, the minimum number of parts of line is determined so that weight per part will not exceed 4,000kg.
- 8) Over front lifting performance is inferior to over side and over rear lifting performance. Great care should be taken when transferring from over side to over front since there is a danger of overloading.
- 9) Free fall is adopted in principle to lower the hook only. If it is necessary to lower a load by free fall, its weight should be less than 20% of the rated lifting capacity and abrupt braking should not be allowed.

WORKING RANGE



- 10) The rated lifting capacities do not account for wind on lifted load or boom. Do not operate this machine at wind speed of 10m/sec. or more.
- 11) The machine will tip over or be damaged if operated with a load exceeding that specified in the rated lifting capacity table or not conforming to correct handling. If such trouble occurs, the machine will not be guaranteed.

CRANE SPECIFICATIONS

Name and Type; KATO NK-500E-v FULLY HYDRALIC TRUCK CRANE

Performance

Maximum rated lifting capacity:

50.5 metric tons $\times$ 3.0m

Boom length: 10.8m-40.0m (5 section)

Fly jib length: 9.2m-15.0m (2 section)

Boom derricking angle: -2° - 81°

Boom derricking time: 63sec. (-2° - 81°)

Boom extending time: 132sec. (10.8m - 40.0m)

Hoisting line speed

Main winch: 115m/min. (at 3rd layer)

Auxiliary winch: 100m/min. (at 2nd layer)

Hoisting hook speed

Main winch (part of line; 12): 9.58m/min. (at 3rd layer)

Auxiliary winch (part of line; 1): 100m/min. (at 2nd layer)

Slewing speed: 2.4rpm

Crane cab: All steel welded construction

* Speed: Subject to no load

Wire rope for hoisting

Main winch; Type: 4 $\times$ F (40) (Non-rotating type)

Diameter: 18mm

Length: 180m

Auxiliary winch;

Type: 4 $\times$ F (40) (Non-rotating type)

Diameter: 18mm

Length: 120m

Hydraulic system

Oil pump: 4 section gear type

Hoisting motor: Axial piston type

Slewing motor: Axial piston type

Cylinder: Double acting type

Control valve: 3 position 4 way double acting with integral check and relief valves

Oil reservoir capacity: 650 lit.

Winch system

Main and auxiliary winches:

Driven by axial plunger type hoisting motor through planetary gear reduction. Controlled independently by respective operating lever.

Equipped with automatic brake.

With FREE FALL DEVICE

Safety devices

ACS (Automatic crane stopper)

Boom falling prevention device

Overhoist prevention device

Drum lock device

Drum turning indicator

Automatic winch brake

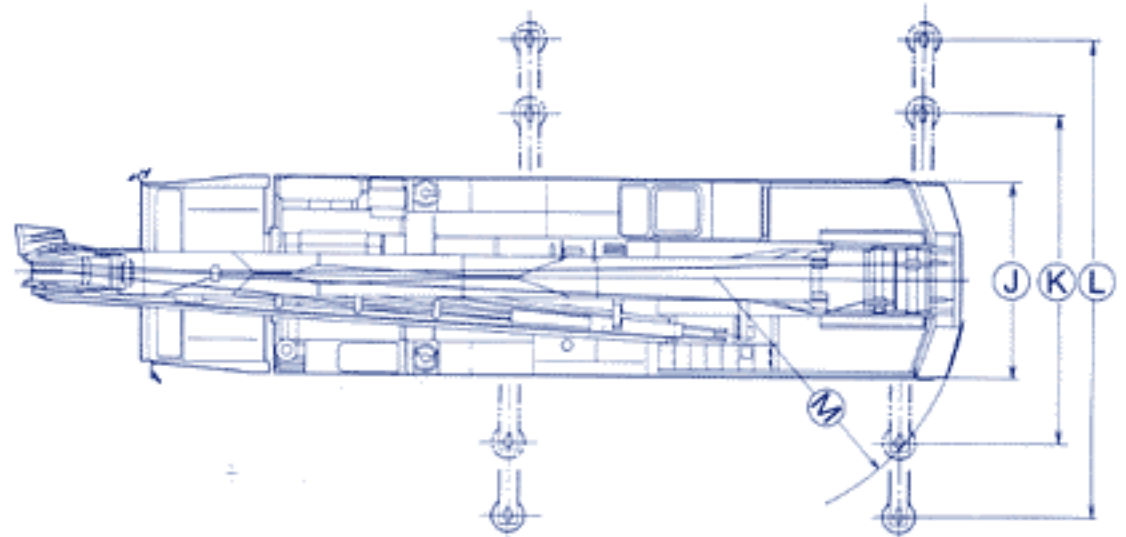
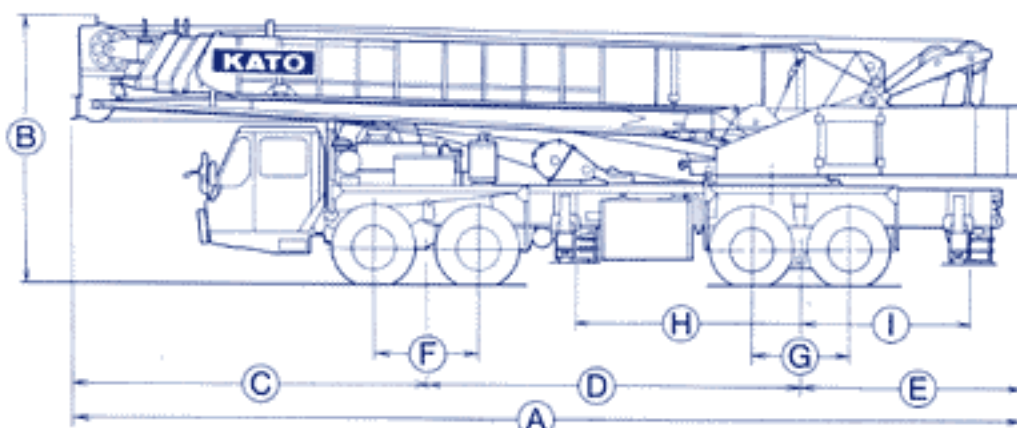
Irregular winding prevention device

Hydraulic safety valve

Outrigger lock device

Optional equipment

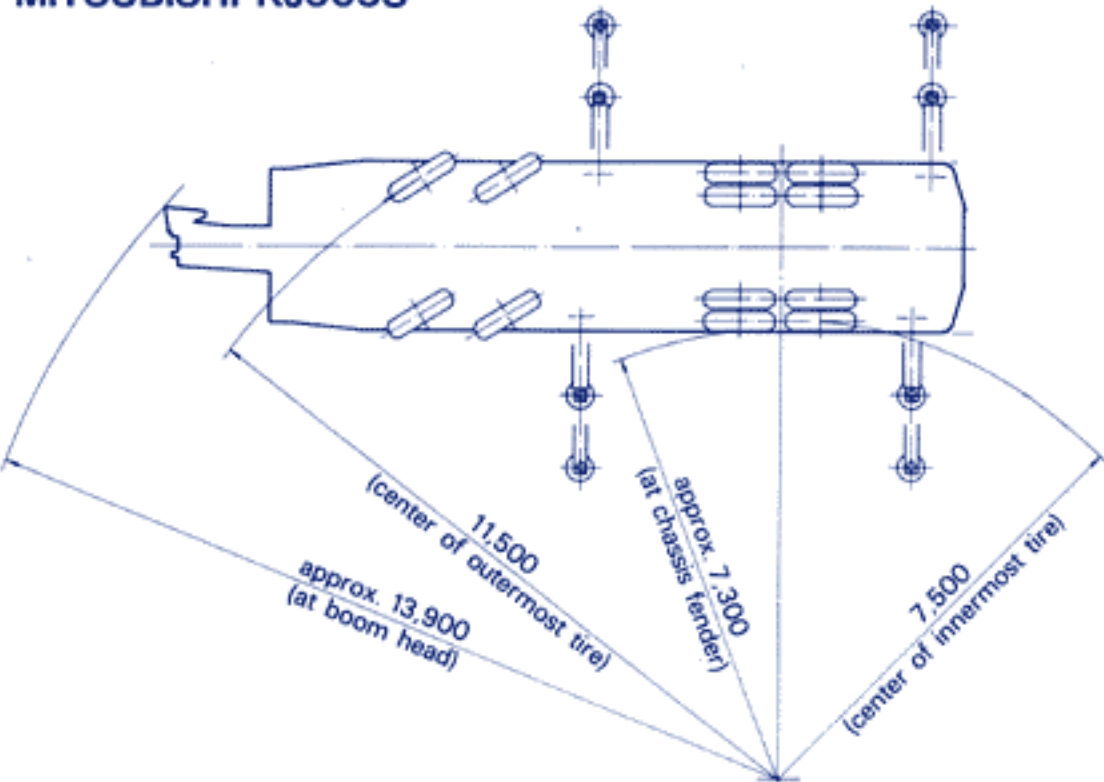
Cooler, heater, fan, radio for crane cabin, front jack



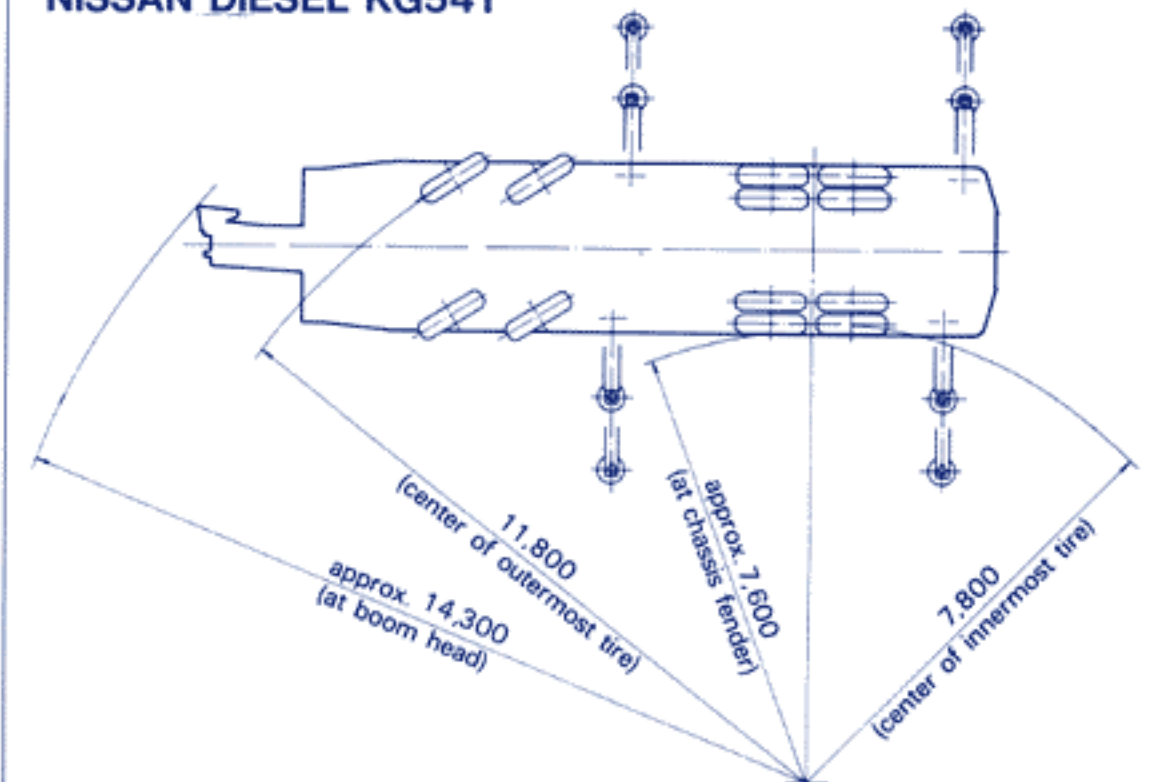
Carrier name Model	A	B	C	D	E	F	G	H	I	J	K	L	M
MITSUBISHI KJ505S	13,300	3,800	4,990	5,250	3,060	1,450	1,350	3,150	2,450	2,750	4,850	7,200	3,520
NISSAN DIESEL KG54T	13,300	3,800	5,125	5,215	2,960	1,470	1,400	3,340	2,350	2,820	4,850	7,200	3,520

(Unit: mm)

MITSUBISHI KJ505S



NISSAN DIESEL KG54T



CARRIER SPECIFICATIONS

Carrier model MITSUBISHI KJ505S

Maximum travelling speed: 80km/h
 Gradeability (tan θ): 28% (computed, @G.V.W. = 39,400kg)
 Minimum turning radius
 (centre of extreme outer tire): 11.5m

General dimensions

Overall length: approx. 13,300mm
 Overall width: approx. 2,750mm
 Overall height: approx. 3,800mm
 Wheel base: 1,450mm + 3,850mm + 1,350mm = 6,650mm
 Treads; Front: 2,240mm
 Rear: 2,055mm
 Centre to centre of extended outriggers: 7,200mm (Fully extended)
 4,850mm (Intermediatly extended)
 Gross vehicle weight: approx. 39,400kg
 Front: approx. 15,400kg
 Rear: approx. 24,000kg

Carrier

Maker: Mitsubishi
 Model: KJ505S
 Drive system: 8 $\times$ 4
 Engine:
 Maker: Mitsubishi
 Model: 8DC9-2A
 Type: 4 cycle, water cooled, diesel
 No. of cylinder: 8-90° V
 Piston displacement: 16,031cc
 Max.output horsepower: 300PS/2,200r.p.m.
 220kW/2,200r.p.m.
 Max.output torque: 105kg-m/1,400r.p.m.
 1,029N-m/1,400r.p.m.
 NOTO: The output is in accordance with JIS D1004, 1976.
 Rated power output guaranteed within 5% at standard ambient condition.
 Clutch: Single dry plate, hydraulic control with air booster
 Transmission: 10 forward & 2 reverse speed, synchromesh and constantmesh gear
 Axles; Front: Reverse "ELLIOT" type,
 Rear: Full floating type
 Steering: Ball nut type with power booster
 Suspension; Front: Semi-elliptic leaf springs
 Rear: Equalizer beams and torque rods
 Brake; Service: 2 circuit air brake,
 8 wheels internal expanding type
 Parking & Emergency: Spring loaded brake, acting on 4 rear wheels, variable air operated
 Auxiliary: Exhaust brake
 Electric system: 24V
 Battery: 12V-145F51 $\times$ 2
 Fuel tank capacity: 300 lit.
 Driver's cab: All steel welded construction, 2 person, low line type
 Tire size; Front: 12.00-20-18PR
 Rear (dual tire): 12.00-20-18PR

Carrier model NISSAN DIESEL KG54T

Maximum travelling speed: 71km/h
 Gradeability (tan θ): 38% (computed, @G.V.W. = 39,000kg)
 Minimum turning radius
 (centre of extreme outer tire): 11.0m

General dimensions

Overall length: approx. 13,300mm
 Overall width: approx. 2,820mm
 Overall height: approx. 3,800mm
 Wheel base: 1,470mm + 3,780mm + 1,400mm = 6,650mm
 Treads; Front: 2,230mm
 Rear: 2,110mm
 Centre to centre of extended outriggers: 7,200mm (Fully extended)
 4,850mm (Intermediatly extended)
 Gross vehicle weight: approx. 39,000kg
 Front: approx. 15,000kg
 Rear: approx. 24,000kg

Carrier

Maker: NISSAN DIESEL
 Model: KG54T
 Drive system: 8 $\times$ 4
 Engine:
 Maker: NISSAN DIESEL
 Model: RE8
 Type: 4 cycle, water cooled, diesel
 No. of cylinder: 8-V
 Piston displacement: 15,115cc
 Max.output horsepower: 315PS/2,300r.p.m.
 231kW/2,300r.p.m.
 Max.output torque: 105kg-m/1,400r.p.m.
 1,029N-m/1,400r.p.m.
 NOTO: The output is in accordance with JIS D1004, 1976.
 Rated power output guaranteed within 5% at standard ambient condition.
 Clutch: Single dry plate, hydraulic control with air booster
 Transmission: 9 forward & 1 reverse speed, constantmesh on each shift and synchromesh on range shift
 Axles; Front: Reverse "ELLIOT" type,
 Rear: Full floating type
 Steering: Ball nut type with power booster
 Suspension; Front: Semi-elliptic leaf springs
 Rear: Equalizer beams and torque rods
 Brake; Service: 2 circuit air brake,
 8 wheels internal expanding type
 Parking: Mechanical, internal expanding type acting on drum at transmission case rear
 Auxiliary: Exhaust brake
 Electric system: 24V
 Battery: 12V-115F51 $\times$ 2
 Fuel tank capacity: 300 lit.
 Driver's cab: Steel, two men, semi under floor type, one side cab
 Tire size; Front: 12.00-20-18PR
 Rear (dual tire): 12.00-20-18PR

NOTE: Illustrations may include optional equipment. KATO products and specifications are subject to improvements and changes without notice.



KATO WORKS CO.,LTD.

9-37, higashi-ohi 1-chome, shinagawa-ku, Tokyo 140, Japan.
 Tel. :Head Office Tokyo (03)3458-1111
 Overseas Marketing Department Tokyo (03)3458-1115
 Telex :222-4519 (CRKATO J)
 Fax. :Tokyo (03)3458-1152
 Cable:CRANEKATO TOKYO