

More Power Than Ever! 25t

NK-250E-v

FULLY HYDRAULIC TRUCK CRANE



Tough New Boom Reduces Vertical Deflection and Lateral Bending During Lifting **Operations** KATO'S revolutionary Compuload microcomputer control system monitors the crane's operational status at all times, keeping the operator constantly informed of what is going on through instant numerical readouts in an easy to read digital display. utold CC ...

Advanced Microcomputer Control System

Voice alarm is available as an option

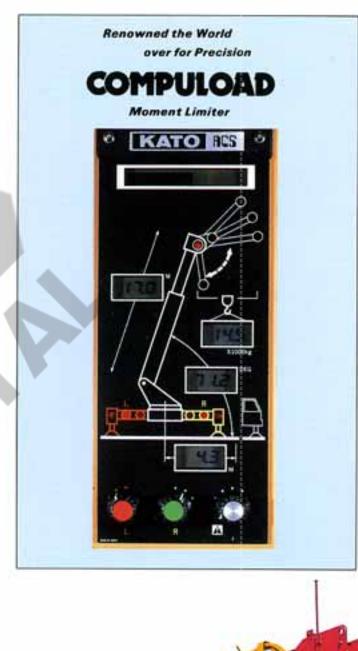




The advanced ACS Moment Limiter is a fully automatic overload prevention device incorporating calculation functions based on the latest electronic know-how. It provides precise output on up to seven safety factors: safety level (total moment), boom angle, working radius, boom length, critical load, actual load, and maximum hook lift. These factors are displayed on a graphic display panel. This arrangement permits easy readout without eye fatigue and facilitates a constant and accurate appraisal of changes in the safety factors, thereby enhancing the safety of crane operation.

CONSTANT FIVE-POINT DISPLAY OF OPERATING CONDITION

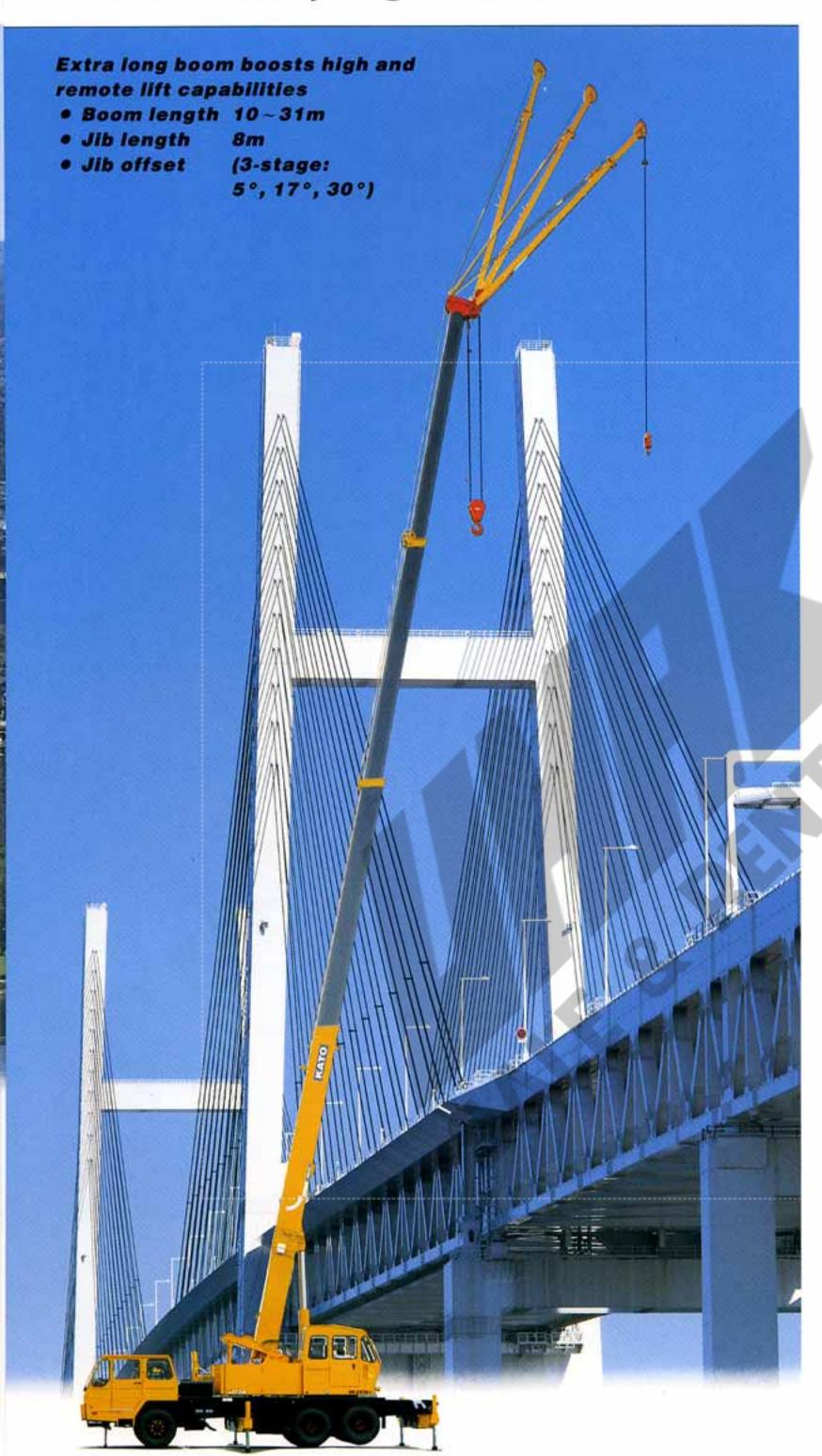
- In-panel indicators have been replaced by digital displays that show safety level, boom angle, boom length, working radius and critical load at all times, without any troublesome button operations. For further the display of safety level is colorzoned to enable the operator to take in the condition 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.





Photo; Hydraulic front jack and Oil cooler (Option)

3-Stage Jib Offset Extra long reach ideal for close-in, high-lift work





FULL POWER BOOM

- The tough new 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 10m (fully retracted) to high lifts at 31m (fully extended).
- For greater ease of use, operability and safety, the new boom is of a robust construction that reduces vertical deflection and lateral bending during operations.

FANTASTIC OPERATING RANGE! IDEAL FOR CLOSE-IN OPERA-TIONS THANKS TO 3-STAGE JIB OFFSET (5°, 17°, 30°)

• In addition to the conventional offset angles of 5° and 30°, the jib on the NK-250E-v can also operate at an extra offset angle of 17°. Selection of the 3 offset angles is simple and the feature is a real boon in close-in work during the construction of high-rise buildings or when performing high-lift operations in restricted spaces.



GREATER EFFICIENCY IN SINGLE-ROPE LIFTING OPERATIONS—CONVENIENT ROOSTER SHEAVE

• This feature greatly enhances operating speed when handling lightweight loads. The rooster sheave is easy to mount at the head of the boom, and the hoisting and lowering of single hook load can be carried out with greater ease and efficiency.









EXTRA-LARGE CABIN FOR GREATER COMFORT AND EASE OF OPERATION

- The spacious cabin is finished in highly relaxing color 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.
- Easy to use pedals have been attached to the winch levers for greater convenience in compound operations.
- Priority given to safety in operator's cab . . . For maximum operator comfort and safety all instrumentation utilizes the very latest electronic technology and, together with the various controls and levers, has been located in the optimum position for visivility and ease of operation.



Outriggers Capable of Intermediate Extension for Operations on Narrow Sites



Hydraulic Front Jack Makes 360° Lifting Possible

 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, boosts its operational range.



Hydraulic front jack (Option)



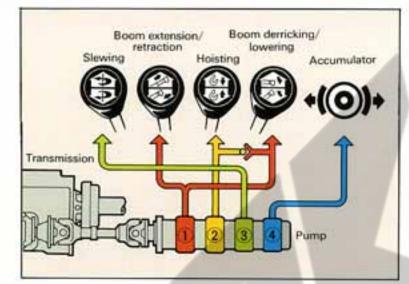
ACS CONTROLS PERFORMANCE **ACCORDING TO** OUTRIGGER STATUS

- Sturdy, fully hydraulic outriggers . . . The outriggers are designed for 2-stage extension, 6m at maximum stroke and 4m at intermediate stroke for greater stability during operations on restricted sites. Messy 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. Ample road clearance permits the simple setting of wooden blocks.
- Controls on either side of undercarriage for independent, simultaneous outrigger operation . . . All vertical and horizontal outrigger adjustments can be controlled independently and simultaneously by means of controls located on both sides of the undercarriage. The large stroke of the vertical cylinders permits quick, easy, levelling, even where conditions are poor, such as on sloping or uneven ground.

Independent Winches with Automatic Brakes for Greater Power, Speed and Operational Efficiency







FOR TOTAL PEACE OF MIND... CAREFULLY DESIGNED SAFETY DEVICES

Safety was a prime consideration during the design of the NK-250E-v, which is equipped with numerous safety devices, including the ACS Moment Limiter, an overhoisting prevention device, a slewing lock device, a boom derricking safety device, automatic brakes, an outrigger locking mechanism and hydraulic relief valves. All cylinders mounted in the boom, outriggers and so on are fitted with specially designed safety valves.



CONVENIENT SLEWING SYSTEM WITH FREE-LOCK SWITCHING

 The slewing system can be locked for operations involving delicate slewing during high or heavy lifting or left free for simple back-and-forth work. The result is safe, efficient operation in a wide range of applications.



A SPECIAL HYDRAULIC SYSTEM COMPRISING 4 POWERFUL PUMPS PERMITS

 The use of 4 separate pumps enables the NK-250E-V to perform 3 operations such as winch (hoisting, lowering), boom (derricking, telescorping) and slewing simultaneously and with outstanding speed and efficiency.





JUST THE JOB FOR COMPOUND OPERATIONS!

- The NK-250E-v features 2 independently-driven winches equipped with powerful automatic brakes. 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.
- The automatic brake prevents accidents resulting from incorrect operation, while the elimination of tiring pedal operations for the main and auxiliary winches represents a big reduction in operator workload.

2-stage winch speed control

For greater operational versatility, combined dual hydraulic circuits permit 2-stage speed control of the main and auxiliary winches by means of independent levers, enabling the operator to vary the speed of the two winches between high and low without any loss of hoisting power.



TRIPLE SAFETY BACKUP GUARANTEES SURER BRAKING FOR GREATER SAFETY

 The winch mechanism is equipped with three separate safety features: an automatic brake, a counterbalancing valve and a drum lock. These are designed to eliminate the danger arising from operating error and assure safer, more positive operation.

Tried and tested irregular winding prevention device

 The drum is grooved and equipped with a device to prevent irregularities in rope feeding. This not only keeps the rope winding smoothly but also prolongs rope life.

Non-rotating rope eliminates hook torsion

 The use of non-rotating rope prevents tangling during operations and damage to the rope caused by twisting of the hook, resulting in smoother, safer operations.

NK-250E-v

FULLY HYDRAULIC TRUCK CRANE



NOTE: KATO PRODUCTS AND SPECIFICATIONS ARE SUBJECT TO IMPROVEMENTS AND CHANGES WITHOUT NOTICE.



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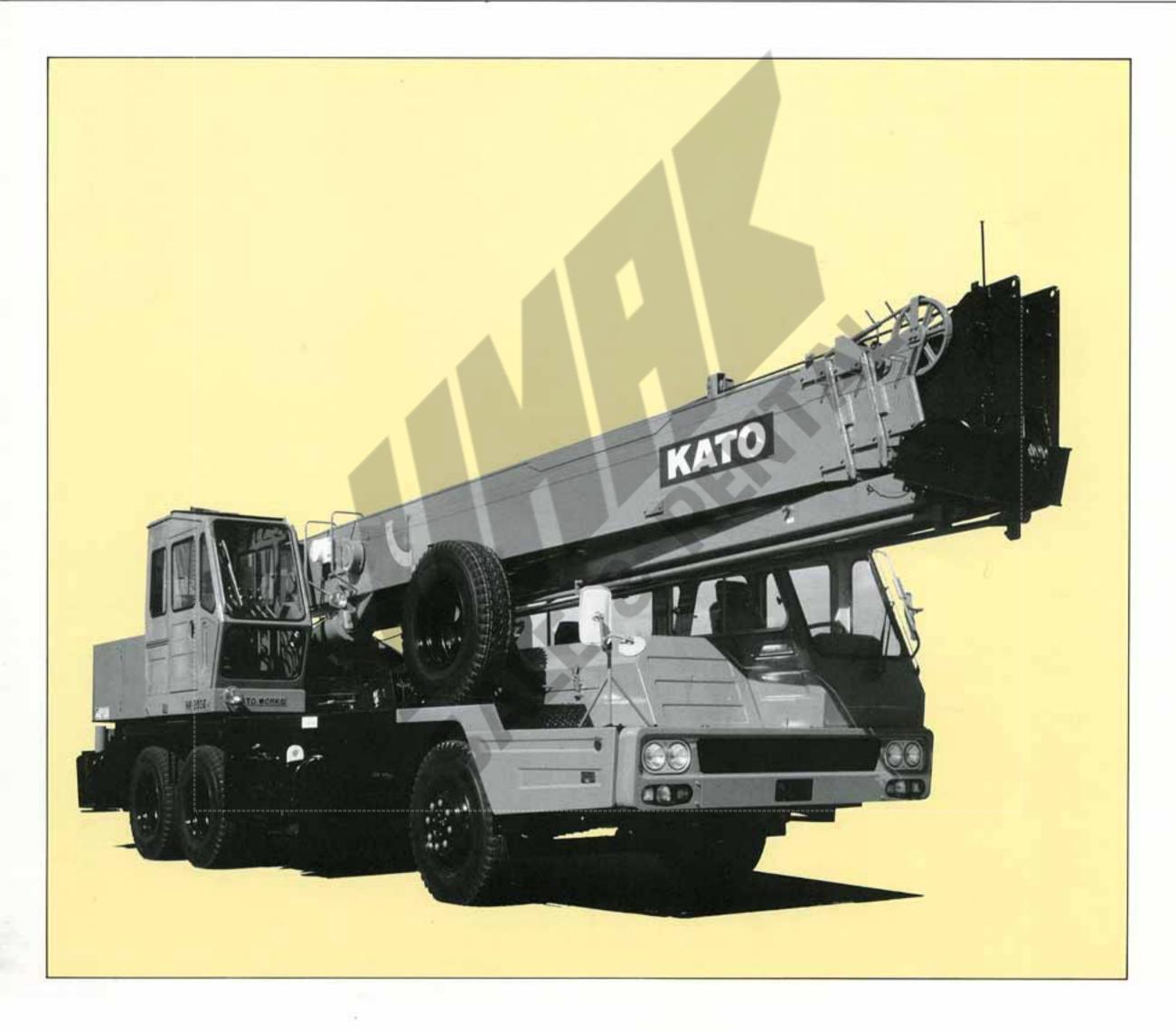
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KATO NK-250E-v

FULLY HYDRAULIC TRUCK CRANE

SPECIFICATION



KATO WORKS CO.,LTD.





31m Boom + 8m Jib (Offset 5°) 31m Boom + 8m Jib (Offset 17°)



RATED LIFTING CAPACITY

Based on

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

Note: Front	ack is optional.
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							7070 (or apping	10445			N	lote: From	nt jack is	optiona
Outrig Outrig	gers fully gers fully	extended	with from	nt jack front jack	- 360° - over	er side and over rear Outriggers fully extended wit									
Working radius (m)	10 m Boom	13.5 m Boom	17 m Boom	20.5 m Boom	24 m Boom	27.5 m Boom	31 m Boom	Working radius (m)	10 m Boom	13.5 m Boom	17 m Boom	20.5 m Boom	24 m Boom	27.5 m Boom	31 m Boom
2.5	25.00	17.50	14.50	and the state		28.55A252566	SERVICE SANGE	2.5	20.00	17.50	14.50		in maintaine		Situation .
3.0	25.00	17.50	14.50	9.50			Amma	3.0	20.00	17.50	14.50	9.50			
3.5	20.60	17.50	14.50	9.50	7.50			3.5	20.00	17.50	14.50	9.50	7.50		
4.0	18.00	17.50	14.50	9.50	7.50	6.50		4.0	16.50	17.50	14.50	9.50	7.50	6.50	
4.5	16.30	15.80	14.50	9.50	7.50	6.50		4.3	14.40	14.85	14.50	9.50	7.50	6.50	
5.0	14.85	14.40	13.25	9.50	7.50	6.50	6.00	5.0	10.50	10.50	10.20	9.50	7.50	6.50	6.00
5.5	13.65	13.25	12.20	9.50	7.50	6.50	6.00	5.7	7.90	7.80	7.60	7.40	7.50	6.50	6.00
6.0	12.30	12.20	11.30	9.50	7.50	6.50	6.00	6.0	7.10	7.00	6.80	6.80	7.00	6.50	6.00
6.5	11.20	11.00	10.50	9.50	7.50	6.50	6.00	6.5	6.00	5.90	5.65	5.85	6.15	6.50	6.00
7.0	10.25	10.00	9.80	8.80	7.50	6.50	6.00	6.6	5.85	5.70	5.45	5.70	6.00	6.30	6.00
7.5	9.40	9.20	9.10	8.30	7.50	6.50	6.00	7.0	5.20	5.00	4.80	5.10	5.35	5.60	5.50
8.0	8.65	8.45	8.35	7.80	7.00	6.10	5.65	8.3	3.60	3.40	3.20	3.60	3.85	4.00	4.10
8.3	8.25	8.05	7.95	7.50	6.75	5.90	5.45	9.0		2.80	2.65	3.00	3.25	3.40	3.50
9.0		7.20	7.10	6.95	6.25	5.45	5.05	10.0	12337	2.10	1.95	2.30	2.55	2.75	2.80
9.5		6.65	6.50	6.55	5.90	5.20	4.80	11.0	7	1.50	1.35	1.75	2.00	2.20	2.30
10.0		6.00	5.90	6.20	5.60	4.95	4.60	11.8	(1200000)	1.15	1.05	1.40	1.65	1.85	1.90
11.0		5.00	4.85	5.25	5.00	4.50	4.20	13.0			0.65	0.95	1.20	1.35	1.50
11.8		4.30	4.20	4.60	4.65	4.15	3.95	13.5			0.50	0.80	1.05	1.20	1.30
12.0			4.10	4.45	4.60	4.10	3.90	14.5				0.50	0.80	0.90	1.05
14.0			2.90	3.25	3.40	3.50	3.35	15.0		10000			0.70	0.80	0.90
15.3			2.30	2.70	2.85	3.00	-3.00	16.0			la .		0.45	0.55	0.70
16.0				2.40	2.60	2.75	2.85	16.5						0.45	0.60
18.0				1.75	1.95	2.10	2.15	17.5							0.40
18.8				1.50	1.75	1.90	1.95	100,200	300 - SE		/				
20.0					1.45	1.60	1.70								
22.0					1.10	1.20	1.30								
22.3					1.00	1.15	1.25			4		Y			
24.0						0.90	0.95								
25.8						0.65	0.75		2						
28.0		11.15.45	100000000000000000000000000000000000000				0.50		1/4		9				
29.3							0.40								
Standard hook	for 25 ton						A	Standard for 25 ton							
Hook weight	280 kg					1		Hook weight 280 kg							
Parts line		8				4		Parts line		8				4	
Critical boom angle	-	-	_	+	1	-	1	Critical boom angle	-	-	20°	35°	42°	48°	52°

(Unit: Metric ton) (Unit: Metric ton)

Outriggers fully extended with front jack — 360° full range Outriggers fully extended without front jack — over side and over re												
	31 m Boom + 8 m Jib											
Boom angle (°)	Offse	et 5°	Offse	t 17°	Offset 30°							
	Working radius (m)	Load (t)	.Working radius (m)	Load (t)	Working radius (m)	Load (t)						
80.0	7.7	2.75	9.1	1.95	10.4	1.35						
76.0	10.1	2.75	11.5	1.95	12.7	1.35						
75.0	10.5	2.75	12.1	1.88	13.5	1.35						
70.0	14.0	2.15	15.2	1.60	16.4	1.18						
65.0	17.2	1.78	18.2	1.35	19.3	1.04						
60.0	20.2	1.52	21.2	1.18	22.1	0.92						
53.0	23.8	1.28	24.8	1.00	25.7	0.80						
50.0	25.4	1.00	26.3	0.95	26.9	0.76						
48.0	26.3	0.85	27.2	0.82	28.0	0.72						
44.0	28.1	0.65	28.9	0.62	29.4	0.60						
39.5	30.0	0.48	30.6	0.45	31.2	0.45						
Standard hook			for 3	ton								
Hook weight			60	kg								
Parts line			1									
Critical boom angle	35°											

(Unit: Metric ton)

31 m Boom + 8 m Jib											
Boom angle (°)	Offse		t 17°	Offset 30°							
	Working radius (m)	Load (t)	Working radius (m)	Load	Working radius (m)	Load (t)					
80.0	7.7	2.75	9.1	1.95	10.4	1.35					
76.0	10.1	2.75	11.5	1.95	12.7	1.35					
75.0	10.5	2.75	12.1	1.88	13.5	1.35					
72.0	12.5	1.90	14.0	1.60	15.0	1.25					
69.0	14.3	1.35	15.6	1.20	16.7	1.07					
65.0	16.7	0.80	18.0	0.70	19.0	0.65					
60.5	19.1	0.35	20.3	0.32	21.5	0.30					
Standard hook			for 3	ton							
Hook weight			60	kg							
Parts line		1									
Critical boom angle	***************	59°									

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 incluing 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 (31 m).

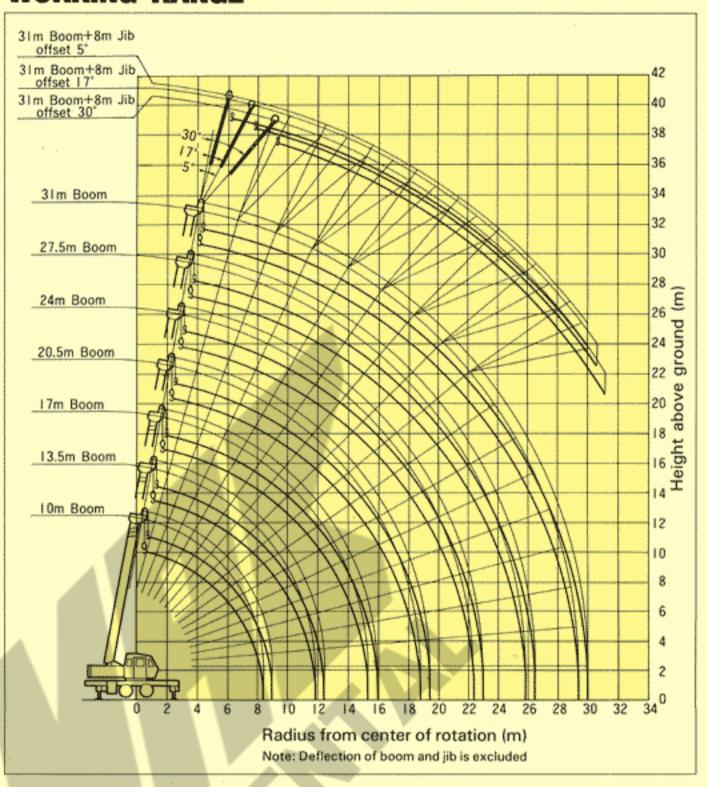
Jib operations should be performed on the basis of boom angle only, regardless of boom length when the boom is not fully extended.

- (3) The rated lifting capacities for the rooster sheave are equivalent to the rated lifting capacities for the main boom to a maximum of 3000 kg. At all times the weight of all lifting equipment in use (including main hook block suspended from boom head) forms part of 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, 650 kg 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) 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 3125 kg.
- (7) Without front jack, 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.
- (8) 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.
- (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 2006 of the ret

its weight should be less than 20% of the rated lifting capacity and abrupt braking should

not be allowed.

(10) 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 warranted. **WORKING RANGE**



SUPERSTRUCTURE SPECIFICATION

Name and Type: KATO NK-250E-v FULLY HYDRAULIC TRUCK

CRANE

Performance

Crane capacity: 25.0t × 3.0m, 10.0m Boom with outriggers

17.5t × 4.0m, 13.5m Boom with outriggers 14.5t × 4.5m, 17.0m Boom with outriggers 9.5t × 6.5m, 20.5m Boom with outriggers 7.5t × 7.5m, 24.0m Boom with outriggers 6.5t × 7.5m, 27.5m Boom with outriggers 6.0t × 7.5m, 31.0m Boom with outriggers

3.00t × 14.0m,10m ~ 31m Boom Rooster sheave

with outriggers

2.75t × 10.5m,31m Boom + 8m Jib (Offset 5°)

with outriggers

1.95t × 11.5m,31m Boom + 8m Jib (Offset 17°)

with outriggers Outrigger system:

1.35t × 13.5m,31m Boom + 8m Jib (Offset 30°)

with outriggers

Boom length: Basic

Maximum 31m

Jib length: 8m Max. lifting height:

30.8m (Boom)

39.2m

10m

(31.0m Boom + 8m Jib Offset 5°)

Main hoisting line speed:

110m/min (4th layer) 95m/min (2nd layer)

Auxiliary hoisting line speed: Main hook hoisting speed:

13.75m/min (4th layer of wire rope)

(8-part line)

Auxiliary hook hoisting speed: 95m/min (2nd layer of wire rope)

(1-part line)

Boom derricking time:

44sec (-3° ~ 80°) -3° ~ 80°

Boom derricking angle Slewing speed:

2.6 r.p.m.

* speed: subject to no load

Hydraulic System

Oil pump:

4 section gear type

Hoisting motor:

Axial plunger type

Slewing motor:

Axial plunger type

Cylinder: Control valve: Double acting type

3 position 4 way double acting with integral

check and relief valves

Oil reservoir capacity: 380 lit.

Superstructure

Hoisting mechanism:

Hydraulic motor-driven, gear reduction

(automatic brake system) single winch

× 2

Slewing mechanism: Ball bearing type

Boom derricking mechanism: Direct-acting clynder type

Hydraulic, vertically supporting with float and vertical cylinder in single unit

Hydraulic, vertically supporting with float and vertical cylinder in single unit

Hoisting Ropes

Front jack (option):

Main:

 $4 \times F(a + 40) \phi 16 \times 175 m$

Non-rotating wire rope

Auxiliary:

 $4 \times F(a + 40) \phi 16 \times 90 m$ Non-rotating wire rope

Safety Device

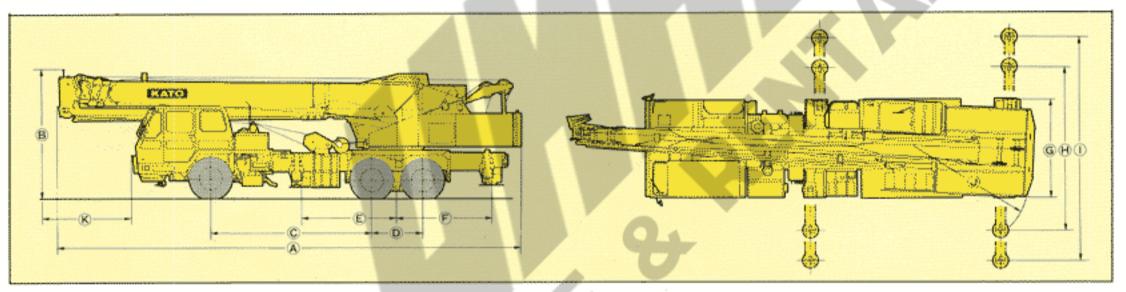
Microcomputer type ACS fully automatic overload

protection device (Moment Limiter)

Boom falling safety device, Overhoist prevention device, Drum lock device, Automatic winch brake, Irregular winding prevention device, Hydraulic safety valve, Outrigger lock device, Slewing lock device

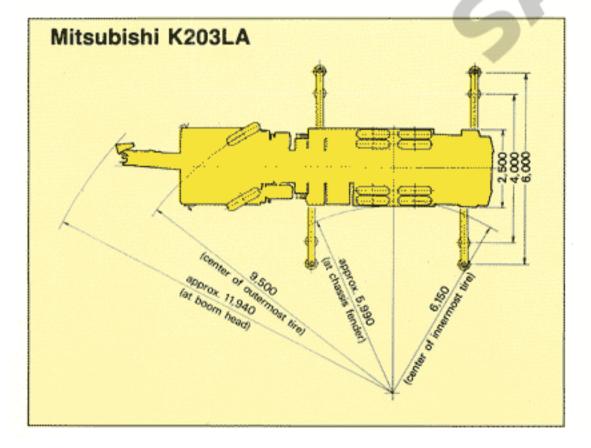
Option

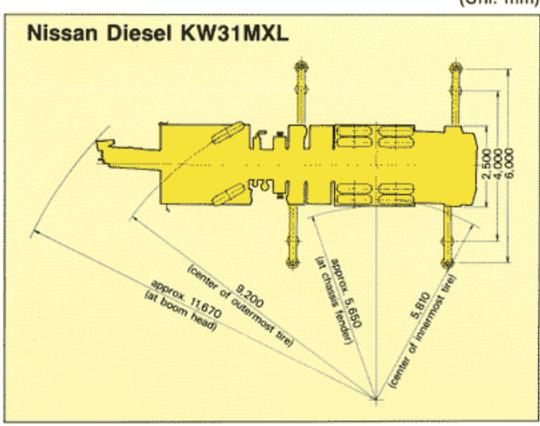
Oil cooler, Front jack, Voice alarm device for ACS, Heater, fan and radio for crane cabin



Carrier name and model	Α	В	С	D	Ε	F	G	Н	1	J	К
Mitsubishi K203LA	11,930	3,300	4,700	1,300	2,400	2,400	2,500	4,000	6,000	3,240	2,100
Nissan Diesel KW31MXL	11,930	3,300	4,700	1,300	2,450	2,450	2,500	4,000	6,000	3,240	1,850

(Uni: mm)





CARRIER SPECIFICATION

MITSUBISHI K203LA

65km/h Maximum traveling speed:

26.5% (computed, @G.V.W. = Gradeability $(tan\theta)$:

24,600kg)

Minimum turning radius

(center of extreme outer tire): 9.5m

General dimensions

approx. 11,930mm Overall length: approx. 2,500mm Overall width: approx. 3,300mm Overall height: 4,700mm Wheel base: 2,040mm Front Treads:

Rear

Center to center of

6,000mm (Fully extended) extended outriggers:

6 × 4

4,000mm

1,845mm

(Intermediately extended)

approx. 24,600kg Gross vehicle weight: approx. 6,100kg Front approx. 18,500kg

Rear

Carrier MITSUBISHI Maker: Model: K203LA

Drive system: Engine

Transmission:

Axles:

MITSUBISHI Maker:

6D22-1A Model: 4 cycle, water cooled, diesel Type:

6-inline No. of cylinder:

11,149cc Piston displacement: 225 PS/2,200 r.p.m. Max. output horsepower: 165 KW/2,200 r.p.m.

78 kg·m/1,400 r.p.m. Max. output torque: 764 N·m/1,400 r.p.m.

NOTE: The output is in accordance with JIS D1004, 1976. Rated power output guaranteed within 5% at stan-

dard ambient condition.

Single dry plate, hydraulic control Clutch:

with air booster 5 forward & 1 reverse speed, syn-

chromesh and constantmesh gear

Reverse "ELLIOT" type Front

Full floating type Rear

Ball nut type with power booster Steering:

Semi-elliptic leaf springs with shock Suspension: Front

absorber

Equalizer beams and torque rods Rear 2 circuit air brake, 6 wheels internal Brake: Servie

expanding type

Spring loaded brake, acting on 4 rear Parking & wheels, variable air operated Emergency

Exhaust brake Auxiliary

24V Electric system:

12V—115F51 × 2 Battery:

200 lit Fuel tank capacity:

All steel welded construction, 2 per-Driver's cab:

sons, low line type, offset left hand

side

11.00-20-14PR Tire size: Front

11.00-20-14PR Rear (dual)

NISSAN DIESEL KW31MAL

Maximum traveling speed: 71km/h

31% (computed, @G.V.W. = Gradeability $(tan\theta)$:

24,300kg)

Minimum turning radius

(center of extreme outer tire): 9.2m

General dimensions

Overall length: approx. 11,930mm approx. 2,500mm Overall width: approx. 3,300mm Overall height: 4,700mm Wheel base: 2,025mm Treads: Front 1,860mm Rear

Center to center of

extended outriggers: 6,000mm (Fully extended)

4,000mm

(Intermediately extended)

Gross vehicle weight: approx. 24,300kg approx. 5,850kg Front Rear approx. 18,450kg

Carrier

Maker: NISSAN DIESEL Model: KW31MAL Drive system: 6×4

Engine

Clutch:

NISSAN DIESEL Maker:

Model: PE6

4 cycle, water cooled, diesel Type:

No. of cylinder: 6-inline 11,670cc

Piston displacement: 230 PS /2,200 r.p.m. Max. output horsepower: 169 KW /2,200 r.p.m.

83 kg·m /1,300 r.p.m. Max. output torque: 813 N·m/1,300 r.p.m.

NOTE: The output is in accordance with JIS D1004, 1976.

Single dry plate

Transmission: 6 forward & 1 reverse speed, Reverse "ELLIOT" type Axles: Front

> Rear Full floating type

Ball nut type with power booster Steering: Suspension: Front

Semi-elliptic leaf springs with shock

absorber

Equalizer beams and torque rods Rear Brake:

2 circuit air brake, 6 wheels internal Servie

expanding type

Mechanical, acting on propeller shaft Parking Auxiliary Exhaust brake

Electric system: 24V

Battery: 12V---115F51 × 2

Fuel tank capacity: 200 lit

Driver's cab: Steel, two men, semi under floor type one side cab

10.00-20-16PR Tire size: Front

Rear (dual) 10.00-20-16PR

NK-250E-v

FULLY HYDRAULIC TRUCK CRANE



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