



**NIPPON  
GROVE**

TRAPEZOIDAL BOOM SERIES

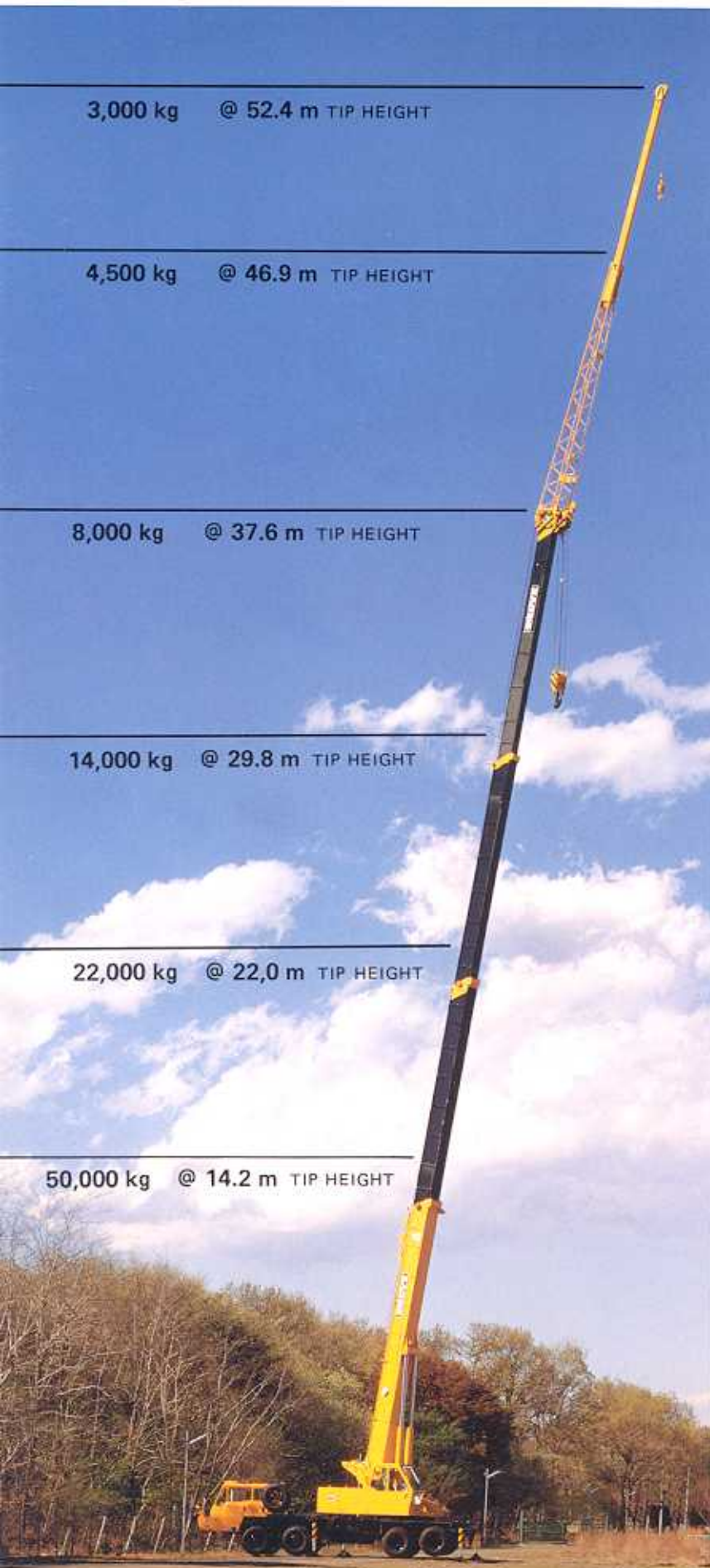
**TMS  
4500**

**HEAVY DUTY  
HYDRAULIC CRANE**



**G NIPPON GROVE CO., LTD.**

# THE GROVE TRAPEZOIDAL\* BOOM



3,000 kg @ 52.4 m TIP HEIGHT

4,500 kg @ 46.9 m TIP HEIGHT

8,000 kg @ 37.6 m TIP HEIGHT

14,000 kg @ 29.8 m TIP HEIGHT

22,000 kg @ 22.0 m TIP HEIGHT

50,000 kg @ 14.2 m TIP HEIGHT

## *A Long Reach Boom of Superior Strength and Capacity*

The most advanced heavy duty, extremely mobile, hydraulic crane . . . equipped with the popular GROVE TRAPEZOIDAL\* telescoping boom designed for heavy rigging . . . and precise long boom work.

### TRAPEZOIDAL\* BOOM

The GROVE TRAPEZOIDAL\* BOOM represents the best concepts in hydraulic boom design. The high strength-to-weight ratio enables the GROVE TRAPEZOIDAL\* BOOM to deflect less and achieve greater capacity with fully extended boom at any working radii compared to conventional rectangular booms. Each extendable section of boom has an independent hydraulic cylinder. Extension and retraction are controlled by only one lever in the operator's cab.

\*THE GROVE TRAPEZOIDAL BOOM IS A PATENTED GROVE FEATURE.



**DESIGNED FOR SAFETY AND EFFICIENCY –**

OPERATOR'S CAB features full visibility and easy operation. The interior of the all steel cab is designed for operator efficiency, convenience and comfort. The tilt back control lever stand and tilting back rest give the operator better visibility for the entire duty cycle at both high and low boom angle positions. Other features include outrigger jack controls, full engine controls, rear window, tinted skylight and sliding side window for additional ventilation.



**FOUR SPEED HOIST –** Driven by a single high torque radial piston motor. The hoist features grooved tandem drums, individual power clutches, and automatic spring loaded brakes. With turn of the selector switch, operator can select any line speed up to maximum of 160 m/min. even while hoisting or power lowering operation without shock. Free fall of the main and auxiliary hoists with foot pedal control is standard equipment.

Max. Single Line Speed: (Main & Aux.)	1st	51 m/min.
	2nd	80 m/min.
	3rd	102 m/min.
	4th	160 m/min.
Max. Single Line Pull: (Main & Aux.)	1st & 2nd speeds	5.93 ton
	3rd & 4th speeds	2.97 ton



**FOUR SECTION HYDRAULIC OIL PUMPS –** Two dual section gear type pumps driven from front of carrier engine have manual pump disconnect operated from carrier cab for efficient road travel.



**"SWINGAROUND" LATTICE JIB**

The "SWINGAROUND" lattice jib for the TMS4500 stows conveniently beside the boom base section and swings quickly into working position.



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4-14, Tsukiji 5-Chome, Chuo-Ku, Tokyo 104, Japan  
Telephone: Tokyo 542-6993 Telex: 0252-4505

*Licensed by  
Grove Manufacturing Company  
a division of Kidde, Inc.*

Distributor:



# NIPPON GROVE

## FULL HYDRAULIC

# CARRIER-MOUNTED CRANE

# MODEL

# TMS 4500

## 50 M/TON CAP.

### SUPERSTRUCTURE SPECIFICATIONS

**BOOM** — 11.3m — 35.0m (37.1 ft. — 114.8 ft.) 4 section, full power sequence telescoping trapezoidal sections. Integral holding valves on each telescoping cylinder. Boom telescope sections are supported on anti-friction wear pads.

Side adjustable wear pads prevent metal to metal contact of inner boom sections.

**JIB\*** — 9.3m — 15.0m (30.5 ft. — 49.2 ft.) telescopic swing around, stowed on left side of base boom. 5.7m (18.7 ft.) rectangular roller mounted extension is manually extended and retracted from within 9.3m (30.5 ft.) lattice base section. Offset angle 5 degrees.

**BOOM NOSE** — Six sheaves, 342mm (13.5 in.) tread dia., mounted on roller bearings. Removable pin type rope guards allow easy reeving.

**AUXILIARY BOOM NOSE\*** — Single 342mm tread dia. sheave mounted to the main boom nose for single line work.

**BOOM ELEVATION** — Dual double acting hydraulic cylinders with integral holding valves, elevation from  $-1.5^{\circ}$  to  $80^{\circ}$ .

Combination controls provided for hand or foot operation.

**MAX. LIFTING HEIGHT** — Main boom — 35.9m

Extended jib — 49.4m

**HOIST** — Tandem-drums 4 speeds main and auxiliary hoists are driven by 2 speeds hydraulic radial piston motor through two stage spur gear reduction. Both hoist drums are controlled by individually engaged internal expanding clutches powered by an accumulator and individually actuated spring loaded automatic external band brakes. Both power lowering and free fall are available for main and auxiliary hoists.

Line speed can be changed up to 160m/min. (525FPM).

Drum dimensions:	dia.	342mm(13.5in.)
(Main & aux.)	length	643mm(25.3in.)
	flange dia.	590mm(23.2in.)

Max. single line speed (at 4th layer):

51m/min (167FPM)	— 1st speed
80m/min (262FPM)	— 2nd speed
102m/min (334FPM)	— 3rd speed
160m/min (525FPM)	— 4th speed

Max. single line pull (at 1st layer):

6.59 ton (14,528 lbs.)	at 1st & 2nd speeds
3.29 ton ( 7,264 lbs.)	at 3rd & 4th speeds

**WIRE ROPE\*** — 18mm dia. (Normal) Please consult distributor for option.

**LOAD METER\*** — Hydraulic load meter is based on three roller type rope tension detector and is calibrated correspond to each rope part line.

**RATED LOAD INDICATOR\*** — Indicate rated lifting load correspond to each boom length and boom angle.

**CAB** — Full vision, all steel, fully enclosed, safety glass windows throughout, mounted on turn-table right side. Control lever stand is tilt back adjustable and combination hand and foot controls are provided for boom elevation and engine throttle.

Outrigger jack cylinder control switches. Adjustable operator's seat with tilting back-rest.

Engine start and stop switch, electric windshield wiper, swing horn, door lock, dome-light and dash-light.

Kerosen heater, defroster fan and radio (Opt.).

**SWING** — Ball bearing swing circle,  $360^{\circ}$  continuous rotation.

Hydraulic radial piston motor drive, planetary gear reduction free swing with cushion valve. Dry disc type swing brake operated by foot pedal and hand lever. Swing speed 2.1 R.P.M.

**OUTRIGGER** — Double box telescoping beams and vertical jack cylinders with integral holding valves. Beams extend to 6.2m (20.3 ft.) and retract to 2.56m (8.4 ft.) center-line-to-centerline.

#### HYDRAULIC SYSTEM:

**RESERVOIR** — 668 ℓ (176 gallon) all steel welded construction with integral baffles, clean out access and exterior oil sight level.

**PUMP** — 2 section gear type driven from transmission P.T.O. and 2 section gear type driven from fly wheel P.T.O., pump disconnect operated from carrier cab, combined capacity 580ℓ/min. (153 gallon)

**CONTROL VALVES** — Precision four-way, double acting with integral relief valves.

Four individual valve banks permit independent control of four crane functions simultaneously.

Maximum operating pressure 200kg/cm<sup>2</sup> (2,845PSI).

**OIL COOLER** — Electric motor drive, fin and tube.

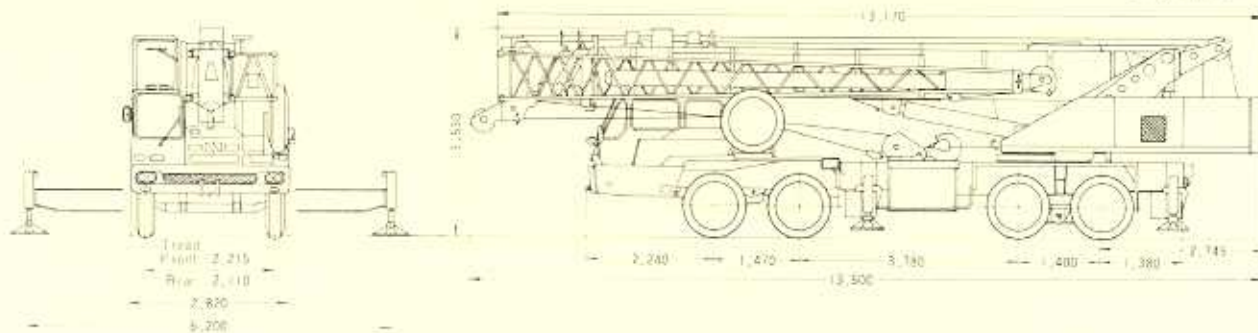
**POWER DISTRIBUTION** — (Main & Aux. Hoist), (Lift), (Telescope, Hoist Boost), (Swing, Outrigger).

\* denotes optional equipment.

## DIMENSIONS

- Overall Length : Approx. 13,600mm  
 Overall Width : Approx. 2,820mm  
 Overall Height : Approx. 3,530mm

Unit: mm



## CARRIER SPECIFICATIONS

Make and Model	: NISSAN DIESEL MOTOR CO. Model KG51T (8 x 4)	Tires	
Wheel Base	: 1,470mm+3,780mm+1,400mm	Front (4)	: 12.00-20-18 PR — Rib pattern
Engine		Rear (8)	: 12.00-20-18 PR — Lug pattern
Model	: NISSAN RD8	Steering	: Ball nut type with hydraulic booster.
Max. Out-put	: 300 PS/2,500 r.p.m.	Service Brakes	: 2 system air for all 8 wheels (Std.) and spring brake for 4 rear wheels (Opt.).
Max. Torque	: 100 kg·m/1,400 r.p.m.	Parking Brake	: Manual operated internal expanding type positioned behind transmission.
Air Filter	: Dual-element dry-paper with precleaner.	Suspension	
Fuel Capacity	: 300 liters (79.3 gallon)	Front	: Independent leaf spring. (Std.): Equalized load sharing leaf spring. (Opt.).
Electric System	: 24 volt	Rear	: Torque rod and equalizer beam type.
Clutch	: Single disc, dry type with clutch booster.	Cab	: Full vision, all steel, fully enclosed, safety glass windows throughout, two men tandem seat, mounted on front right side carrier. (Std.).
Clutch Control	: Air servo hydraulic control system with booster.	Max. Rd. Speed	: 74km/h (46.0 m.p.h.)
Transmission		Gradeability (tan $\theta$ )	: 0.27
Main	: Synchromesh 5 speeds forward and 1 reverse.	Turning Radius	: 11.8m (38.7 ft.)
Aux.	: Lo-Hi type synchromesh sub transmission with electro-pneumatic shifting device.	G.V.W.	: Approx. 37.9 ton
Front Axle	: Dual non-drive with boosted steering.		
Rear Axle	: Tandem drive with differentials and interaxle differential.		

Note: Specifications are subject to be changed without notice.

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# NIPPON GROVE

## FULL HYDRAULIC

# CARRIER-MOUNTED CRANE

# MODEL

# TMS 4500

## 50 M/TON CAP.

### RATED LIFTING CAPACITY

(KILOGRAM)

Radius in Meters	OVER SIDE AND REAR								
	Main Boom Length in Meters				Boom Angle in Degrees	35.0m Boom & 9.3m Jib		35.0m Boom & 15m Jib	
	11.3m	19.2m	27.1m	35.0m		Ref. Radius		Ref. Radius	
3.0	50,000 (68.0)	27,000 (78.0)			80	8.0	4,500	10.0	3,000
3.5	44,000 (65.0)	27,000 (76.5)			75	12.0	4,500	14.0	3,000
4.0	39,000 (62.0)	27,000 (75.0)	18,000 (80.0)		74	13.0	4,500	15.0	3,000
4.5	33,000 (59.0)	27,000 (73.5)	18,000 (79.0)		72	14.5	4,500	16.5	2,650
5.0	28,000 (56.0)	27,000 (71.5)	18,000 (78.0)		70	16.0	3,600	18.0	2,300
5.5	23,500 (52.5)	21,700 (70.0)	18,000 (76.5)	10,000 (80.0)	68	17.5	3,000	20.0	2,000
6.0	20,250 (49.5)	19,000 (68.5)	18,000 (75.5)	10,000 (79.5)	65	19.0	2,200	22.0	1,500
6.5	17,700 (45.5)	16,700 (67.0)	16,000 (74.5)	10,000 (79.0)	60	22.5	1,300	25.5	900
7.0	15,600 (41.5)	14,600 (65.5)	14,500 (73.5)	10,000 (78.0)	55	25.5	700		
7.5	13,800 (37.0)	13,000 (63.5)	13,250 (72.5)	10,000 (77.0)					
8.0	12,300 (32.5)	11,800 (61.5)	12,200 (71.0)	10,000 (76.5)					
9.0		9,650 (58.0)	10,150 (68.5)	10,000 (74.5)					
10.0		7,800 (54.5)	8,450 (66.5)	8,750 (72.5)					
11.0		6,600 (50.5)	7,100 (64.0)	7,700 (71.0)					
12.0		5,660 (46.5)	6,000 (61.5)	6,650 (69.0)					
13.0		4,800 (41.5)	5,170 (59.0)	5,850 (67.5)					
14.0		4,000 (36.0)	4,420 (56.5)	5,100 (65.5)					
15.0		3,400 (30.0)	3,820 (54.0)	4,500 (63.5)					
16.0		2,800 (22.5)	3,250 (51.0)	3,930 (62.0)					
18.0			2,400 (45.0)	3,000 (58.0)					
20.0			1,750 (38.0)	2,250 (54.0)					
22.0			1,200 (30.0)	1,650 (49.5)					
24.0				1,120 (45.0)					
26.0				680 (40.0)					

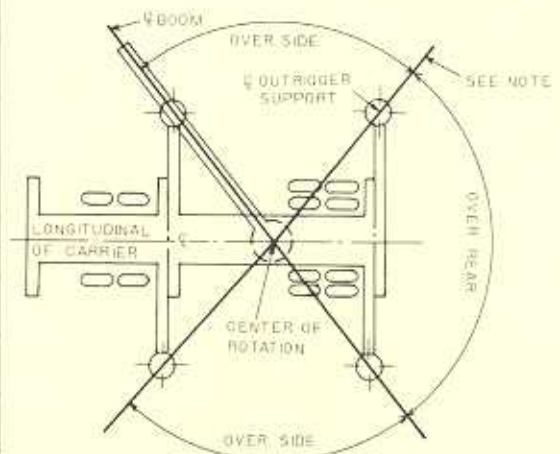
Hook Weight:

50 ton, 5 sheave hook block 450 kg

20 ton, 2 sheave hook block 200 kg

4.5 ton, headache ball 100 kg

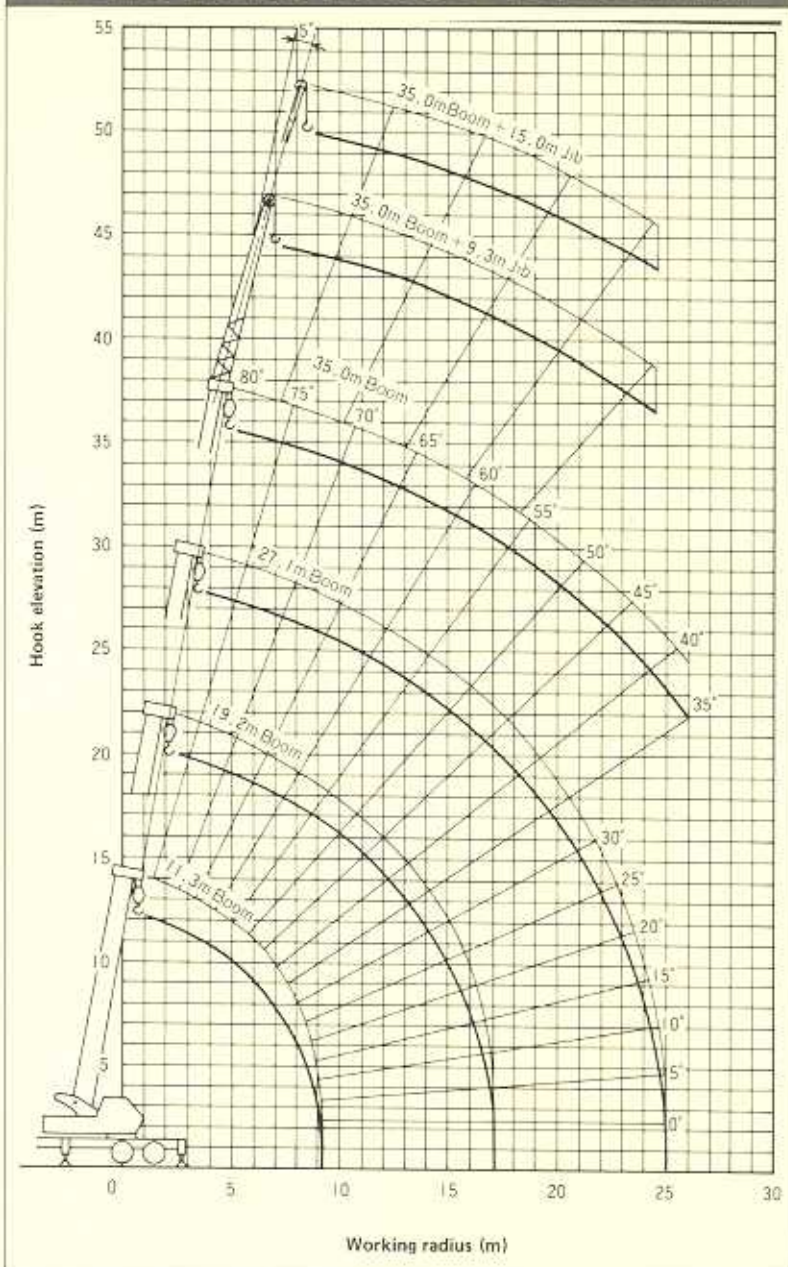
### LIFTING AREA DIAGRAM



**NOTE:** Bold lines determine the limiting position of any load for operation within working areas indicated.

**NOTE:** Boom Angle (Shown in Parenthesis) is reference angle between the boom base section and the horizontal, after lifting the rated load.

# TMS 4500 RANGE DIAGRAM



## NOTE

- Rated lifting capacities are based on freely suspended loads. They are the maximum covered by the manufacturer's warranty with the machine leveled and standing on a firm Supporting surface. Ratings with outriggers are based on outriggers being extended to their maximum positions and tires raised free of Crane Weight before extending the boom or lifting loads.
- Capacities shown in above bold line column (□) are based on structural strength and capacities appearing below bold line are based on tipping or machine stability. Operation is not intended or approved for any conditions outside of those shown herein.
- All load handling devices and/or boom attachment are considered part of the load and suitable allowances must be made.
- Deduct 0.15 ton from main boom ratings when using rooster sheave.  
Deduct 1.6 ton from main boom ratings when 9.3 m Jib erected.  
Deduct 1.8 ton from main boom ratings when 15 m Jib erected.
- Fully extended boom must not be used below boom angle 35°.  
9.3 m Jib must not be used below boom angle 55°.  
15 m Jib must not be used below boom angle 60°.
- When either boom length or radius or both are between values listed, the smallest load shown at either the next larger radius or adjacent boom length shall be used.

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