NIPPON GROVE

TMS 5000

HEAVY DUTY
HYDRAULIC CRANE

TRAPEZOIDAL BOOM SERIES

POWER
&
UTILITY

SHOWA AIRCRAFT IND. CO., LTD.

THE GROVE TRAPEZOIDAL* BOOM

A Long Reach Boom of Superior Strength and Capacity

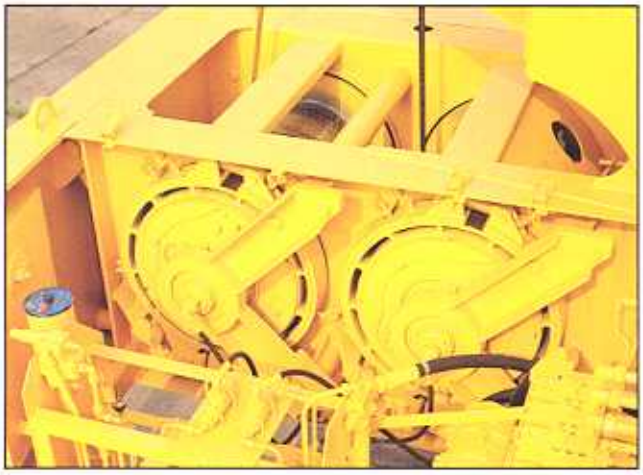
The most advanced heavy duty, extremely mobile, hydraulic crane . . . equipped with the popular GROVE TRAPEZOIDAL* telescoping boom designed for heavy rigging . . . and precise long boom work.

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.

EXCELLENT STABILITY in a load-free state.



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.

FOUR SECTION HYDRAULIC OIL PUMPS—Two dual section gear type pumps driven from front of carrier engine have a air assisted pump disconnect operated from carrier cab for efficient road travel.

"SWINGAROUND" LATTICE JIB

The "SWINGAROUND" lattice jib for the TM5000 stows conveniently beside the boom base section and swings quickly into working position.

SHOWA AIRCRAFT IND. CO., LTD.
No. 3, 3-Chome, Nihonbashi-Muromachi, Chuo-Ku, Tokyo 103, Japan
Telephone: Tokyo 279-1453 Telex: 222-3766

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

Distributor.

Printed in Japan

TMS5000-B0-8206-AU

NIPPON GROVE

FULL HYDRAULIC

CARRIER-MOUNTED CRANE

MODEL TMS 5000

50 M/TON CAP

SUPERSTRUCTURE SPECIFICATIONS

BOOM – 11.3m – 35.0m (37.1 ft. – 114.8 ft.) 4 section, full power simultaneous 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° to 80°.

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), even during heavy load hoisting and/or lowering operation without shock.

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

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 (14,527 lbs.) at 1st & 2nd speeds
3.29 ton (7,263 lbs.) at 3rd & 4th speeds

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

LOAD METER* – Electric load meter is consist of three roller type rope tension detector with load cell and load scale is changeable.

BOOM LENGTH INDICATOR – Boom length indicator is consist of a cable reel and a potentiometer. Cable stretches correspond to boom extension and in proportion to the cable length, potentiometer indicates boom length.

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.

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

SWING – Ball bearing swing circle, 360° 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 6.6m (21.7 ft.) and retract to 2.65m (8.7 ft.) centerline-to-centerline.

HYDRAULIC SYSTEM:

RESERVOIR – 630 ℓ (166 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 580 ℓ/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 200 kg/cm² (2,845 PSI).

OIL COOLER – Electric motor drive, fin and tube.

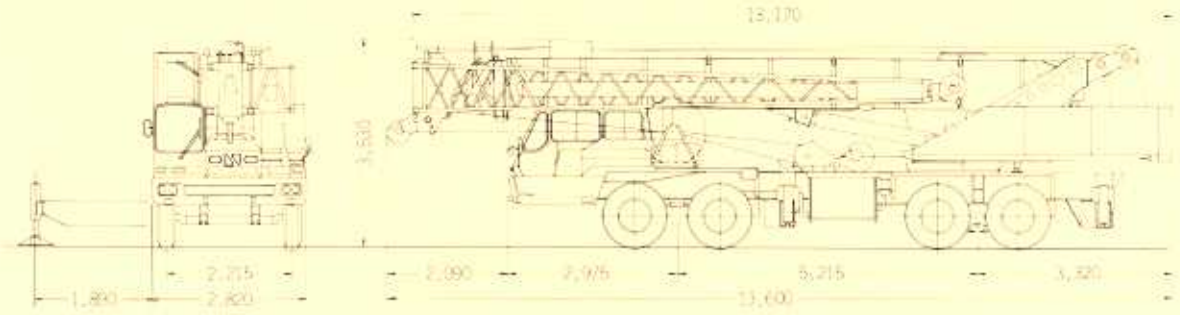
POWER DISTRIBUTION – (Main & Aux. Hoist), (Lift), (Telescope, Hoist Boost), (Swing, Outrigger).

* denotes optional equipment

DIMENSIONS

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

Unit : mm



CARRIER SPECIFICATIONS

Make and Model	:	NISSAN DIESEL MOTOR CO. Model KG51T (8 x 4)
Wheel Base	:	1,470 mm+3,780mm+1,400mm
Engine		
Model	:	NISSAN RD8
Max. Out-put	:	300 PS/2,500 r.p.m.
Max. Torque	:	100 kg·m/1,400 r.p.m.
Air Filter	:	Dual-element dry-paper with precleaner
Fuel Capacity	:	300 liters (79.3 gallon)
Electric System	:	24 volt
Clutch	:	Single disc, dry type with clutch booster
Clutch Control	:	Air servo hydraulic control system with booster
Transmission		
Main & Aux.	:	Synchromesh 9 speeds forward and 1 reverse
Front Axle	:	Dual non-drive with boosted steering
Rear Axle	:	Tandem drive with differentials and interaxle differential
Tires		
Front (4)	:	12.00-20-18 PR—Rib pattern
Rear (8)	:	12.00-20-18 PR—Lug pattern
Steering	:	Ball nut type with hydraulic booster
Service Brakes	:	2 system air for all 8 wheels (Std.) and spring brake for 4 rear wheels (Opt.)
Parking Brake	:	Manual operated internal expanding type positioned behi transmission
Suspension		
Front	:	Independent leaf spring (Std.). Equalized load sharing leaf spring (Opt.).
Rear	:	Torque rod and equalizer beam type
Cab	:	Full vision, all steel, fully enclosed, safety glass windows throughout, two men tandem seat, mounted on front right side carrier (Std.).
Max. Rd. Speed	:	74 km/h (46 m.p.h.)
Gradeability (tan θ)	:	0.43
Turning radius	:	11.8 m (38.7 ft.)
G.V.W.	:	Approx. 37.5 ton

Note: Specification are subject to be changed without notice.

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NIPPON GROVE

FULL HYDRAULIC

CARRIER-MOUNTED CRANE

MODEL TMS 5000

50 M/TON CAP

TMS5000 RATED LIFTING CAPACITIES IN KILOGRAMS

MAIN BOOM CAPACITIES

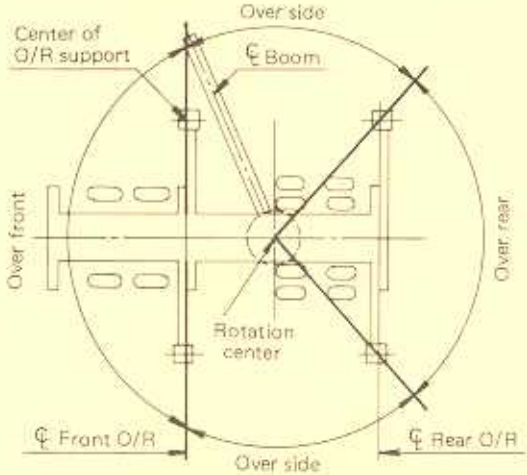
Radius in Metres	On Outriggers Fully Extended																		On Rubber
	Over Rear						Over Side						Over Front and 360°						
	11.3m	15.0m	20.0m	25.0m	30.0m	35.0m	11.3m	15.0m	20.0m	25.0m	30.0m	35.0m	11.3m	15.0m	20.0m	25.0m	30.0m	35.0m	11.3~15.0m
3.0	50,000 (70.5)	34,000 (75.5)					50,000 (70.5)	34,000 (75.5)					28,000 (70.5)	24,000 (75.5)					8,000
3.5	44,000 (67.0)	34,000 (73.5)	27,000 (78.0)				44,000 (67.0)	34,000 (73.5)	27,000 (78.0)				28,000 (67.0)	24,000 (73.5)	20,000 (78.0)				7,000
4.0	38,500 (63.5)	34,000 (71.5)	27,000 (76.5)	20,000 (79.5)			38,500 (63.5)	34,000 (71.5)	27,000 (76.5)	20,000 (79.5)			28,000 (63.5)	24,000 (71.5)	20,000 (76.5)	16,000 (79.5)			6,100
4.5	34,200 (60.5)	31,000 (69.5)	27,000 (75.0)	20,000 (78.5)			34,200 (60.5)	31,000 (69.5)	27,000 (75.0)	20,000 (78.5)			23,500 (60.5)	21,100 (69.5)	20,000 (75.0)	16,000 (78.5)			5,500
5.0	30,500 (57.0)	27,800 (67.0)	25,200 (73.5)	20,000 (77.0)	15,000 (79.5)		30,500 (57.0)	27,800 (67.0)	25,200 (73.5)	20,000 (77.0)	15,000 (79.5)		20,000 (57.0)	18,400 (67.0)	17,700 (73.5)	14,800 (77.0)	12,000 (79.5)		4,800
5.5	27,500 (53.5)	25,500 (65.0)	23,700 (72.0)	19,800 (76.0)	15,000 (78.5)		27,500 (53.5)	25,500 (65.0)	23,700 (72.0)	19,800 (76.0)	15,000 (78.5)		17,000 (53.5)	16,100 (65.0)	15,500 (72.0)	13,300 (76.0)	11,300 (78.5)		4,300
6.0	23,800 (50.0)	23,500 (62.5)	22,000 (70.5)	18,900 (75.0)	15,000 (78.0)	10,000 (80.0)	25,000 (50.0)	23,500 (62.5)	22,000 (70.5)	18,900 (75.0)	15,000 (78.0)	10,000 (80.0)	14,500 (50.0)	14,000 (62.5)	13,400 (70.5)	11,950 (75.0)	10,500 (78.0)	9,000 (80.0)	3,800
6.5	20,800 (46.0)	20,800 (60.0)	20,400 (69.0)	18,000 (73.5)	15,000 (77.0)	10,000 (79.0)	23,000 (46.0)	22,000 (60.0)	20,400 (69.0)	18,000 (73.5)	15,000 (77.0)	10,000 (79.0)	12,500 (46.0)	12,200 (60.0)	11,700 (69.0)	10,800 (73.5)	9,900 (77.0)	9,000 (79.0)	3,300
7.0	18,600 (41.5)	18,600 (58.0)	18,500 (67.5)	17,100 (72.5)	14,200 (76.0)	10,000 (78.5)	21,400 (41.5)	20,400 (58.0)	18,850 (67.5)	17,100 (72.5)	14,200 (76.0)	10,000 (78.5)	10,700 (41.5)	10,600 (58.0)	10,000 (67.5)	9,650 (72.5)	9,100 (76.0)	9,000 (78.5)	2,900
7.5	16,500 (37.0)	16,500 (55.5)	16,500 (66.0)	16,300 (71.0)	13,500 (75.0)	10,000 (78.0)	18,800 (37.0)	18,800 (55.5)	17,400 (66.0)	16,300 (71.0)	13,500 (75.0)	10,000 (78.0)	9,200 (37.0)	9,100 (55.5)	8,800 (66.0)	8,600 (71.0)	8,400 (75.0)	8,250 (78.0)	2,500
8.0	14,800 (31.5)	14,800 (53.0)	14,800 (64.0)	14,800 (70.0)	12,700 (74.0)	10,000 (77.0)	16,300 (31.5)	16,300 (53.0)	16,000 (64.0)	15,400 (70.0)	12,700 (74.0)	10,000 (77.0)	7,900 (31.5)	7,800 (53.0)	7,750 (64.0)	7,700 (70.0)	7,650 (74.0)	7,600 (77.0)	2,100
9.0	12,100 (15.0)	12,100 (47.5)	12,100 (61.0)	12,100 (67.5)	11,500 (72.0)	10,000 (75.5)	12,800 (15.0)	12,800 (47.5)	12,800 (61.0)	12,800 (67.5)	11,500 (72.0)	10,000 (75.5)	5,600 (15.0)	5,700 (47.5)	5,850 (61.0)	6,100 (67.5)	6,200 (72.0)	6,400 (75.5)	1,500
10.0		9,800 (41.5)	10,100 (57.0)	10,150 (65.0)	10,150 (70.0)	10,000 (74.0)		10,750 (41.5)	10,750 (57.0)	10,750 (66.0)	10,400 (70.0)	10,000 (74.0)		4,300 (41.5)	4,500 (57.0)	4,750 (65.0)	5,000 (70.0)	5,250 (74.0)	1,000
11.0		8,350 (34.0)	8,550 (53.0)	8,800 (62.0)	8,850 (68.0)	8,750 (72.5)		9,100 (34.0)	9,200 (53.0)	9,200 (62.0)	9,300 (68.0)	8,750 (72.5)		3,300 (34.0)	3,550 (53.0)	3,750 (62.0)	4,000 (68.0)	4,250 (72.5)	
12.0		7,200 (24.5)	7,500 (49.0)	7,650 (59.5)	7,650 (66.0)	7,700 (71.0)		7,750 (24.5)	7,850 (49.0)	7,900 (59.5)	7,900 (66.0)	7,900 (71.0)		2,500 (24.5)	2,750 (49.0)	3,000 (59.5)	3,200 (66.0)	3,450 (71.0)	
13.0			6,550 (45.0)	6,600 (56.5)	6,600 (64.0)	6,700 (69.0)			6,750 (45.0)	6,850 (56.5)	6,900 (64.0)	6,900 (69.0)			2,150 (45.0)	2,350 (56.5)	2,600 (64.0)	2,850 (69.0)	
14.0			5,750 (40.0)	5,800 (53.5)	5,800 (61.5)	5,900 (67.5)			5,900 (40.0)	6,000 (53.5)	6,000 (61.5)	6,050 (67.5)			1,600 (40.0)	1,850 (53.5)	2,050 (61.5)	2,300 (67.5)	
15.0			5,050 (35.0)	5,100 (50.5)	5,100 (59.5)	5,150 (65.5)			5,100 (35.0)	5,200 (50.5)	5,200 (59.5)	5,250 (65.5)			1,150 (35.0)	1,400 (50.5)	1,600 (59.5)	1,850 (65.5)	
16.0			4,450 (29.0)	4,500 (47.0)	4,500 (57.0)	4,550 (63.5)			4,450 (29.0)	4,500 (47.0)	4,500 (57.0)	4,550 (63.5)			800 (29.0)	1,050 (47.0)	1,250 (57.0)	1,500 (63.5)	
18.0				3,550 (40.0)	3,550 (52.0)	3,550 (59.5)				3,550 (40.0)	3,550 (52.0)	3,550 (59.5)							
20.0				2,750 (31.0)	2,750 (46.0)	2,800 (55.0)				2,750 (31.0)	2,750 (46.0)	2,800 (55.0)							
22.0				2,150 (18.0)	2,200 (39.5)	2,200 (50.5)				2,150 (18.0)	2,200 (39.5)	2,200 (50.5)							
24.0					1,700 (32.0)	1,700 (45.5)					1,700 (32.0)	1,700 (45.5)							
26.0					1,300 (23.0)	1,300 (40.0)					1,300 (23.0)	1,300 (40.0)							
28.0						950 (34.0)						950 (34.0)							
30.0						650 (26.5)						650 (26.5)							

NOTE: Reference boom angle (degrees) required for given lift appears below the load.

JIB CAPACITIES O/R Fully Extended		
Boom Angle in Degrees	Over Side & Rear	
	9.3m	15m
80	4,500 (18.0)	3,000 (10.0)
75	4,500 (12.0)	3,000 (14.0)
74	4,500 (13.0)	3,000 (15.0)
72	4,500 (14.5)	2,650 (16.5)
70	3,600 (16.0)	2,300 (18.0)
68	3,000 (17.5)	2,000 (20.0)
65	2,200 (19.0)	1,500 (22.0)
60	1,300 (22.5)	900 (25.5)
55	700 (25.5)	

NOTE:
Reference working radius (metres) for 35m boom and jib required for given lift appears below the load.

LIFTING AREA DIAGRAM



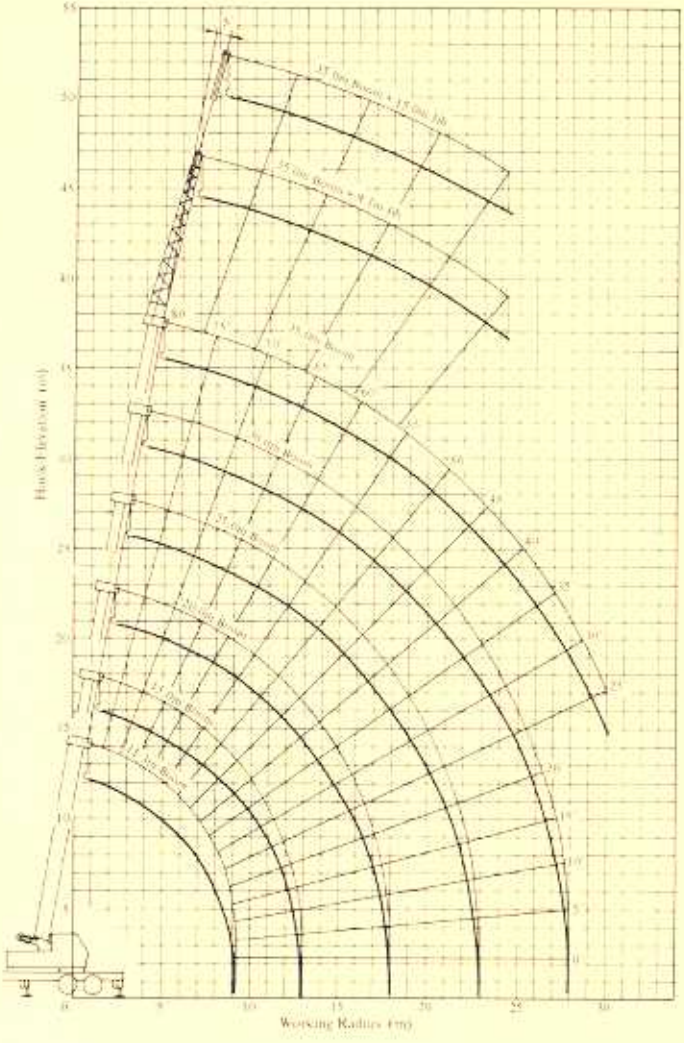
HOOK WEIGHT

50 tonne 5 sheave hook block	450 kg
20 tonne 2 sheave hook block	200 kg
4.5 tonne headache ball	100 kg

DEFINITIONS

1. Operating Radius; Horizontal distance from a projection of the axis of rotation to the supporting surface before loading to the center of the vertical hoist line or tackle with load applied.

TMS 5000 RANGE DIAGRAM



NOTE:

1. Rated lifting capacities are based on freely suspended loads. They are the maximum covered by the manufacturer's warranty with the machine levelled and standing on a firm supporting surface.
   Capacities with outriggers do not exceed 75% of tipping load as required by AS 1418 and are based on outriggers being extended to their maximum positions and tires raised free of crane weight before extending the boom or lifting loads.
2. Capacities shown within bold line area (▭) are based on structural strength and tipping should not be relied upon as a capacity limitation.
   Capacities appearing below bold line are based on machine stability.
3. Do not operate at a radius or boom length where capacities are not listed. At these positions the machine may overturn without any load on the hook.
4. When either boom length or radius or both are between values listed the smallest capacity shown at either the next larger radius or boom length shall be used.
5. Capacities include the weight of hook block, slings and auxiliary lifting devices and their weights shall be deducted from the listed capacities to obtain the net load which may be lifted.
6. Maximum rating on rooster sheave is 4500kg.
7. Deduct 150kg from main boom capacities when headache ball is suspended under rooster sheave.
8. Deduct 1500kg from main boom capacities when 9.3m jib erected. Deduct 1700kg from main boom capacities when 15m jib erected.
9. Do not lower extended main boom below 55 degrees when jib is erected.
10. Jib capacities are based upon structural strength at a given main boom angle regardless of main boom length.
11. When slewing a load from one working zone to another (e.g. "overside" to "over rear" or "over front") care must be taken to ensure that the rated capacity for that zone is not exceeded otherwise tipping will occur rapidly and without advance warning.

ADDITIONAL NOTES FOR "OVER FRONT AND 360°" LIFTING.

12. All capacities are based on stability.
13. Operation with jib not permitted.
14. Do not lower the boom below 60 degrees when boom fully extended.

ADDITIONAL NOTES FOR "ON RUBBER" LIFTING.

15. Capacities are applicable only with machine on firm level surface and do not exceed 66 2/3% of tipping load as required by AS 1418.
16. "ON RUBBER" lifting depends on proper tire inflation (690kPa, 100psi), capacity and condition.
17. "ON RUBBER" operation is only permitted directly over rear using main boom lengths (11.3m to 15.0m).
18. For "PICK AND CARRY" operation, boom must be centered over rear of machine, slew lock pin engaged and load should be restrained from swinging. "ON RUBBER" loads may be transported at maximum vehicle speed of 4km/hr on a firm and level surface only.

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