

HYDRAULIC ROUGH TERRAIN CRANE

TR-600EXL

 (Left hand steering)

GENERAL DATA

CRANE CAPACITY	60,000 kg at 3.0 m		
BOOM	5-section, 11.0 m – 42.2 m		
DIMENSION	Overall length	approx.	13,630 mm
	Overall width	approx.	3,315 mm
	Overall height	approx.	3,780 mm
MASS	Gross vehicle mass	approx.	46,500 kg
	-front axle	approx.	23,250 kg
	-rear axle	approx.	23,250 kg
PERFORMANCE	Max. travelling speed	computed	40 km/h
	*Gradeability(tan θ)	computed	57 % (at stall)

* Machine should be operated within the limit of engine crankcase design(30°: MMC 6D16-TUA).

CRANE SPECIFICATIONS

MODEL

TR-600EXL

CAPACITY

60,000 kg at 3.0 m

BOOM

5-section full power partially synchronized telescoping boom of hexagonal box construction with 6 sheaves at boom head.

Extension speed.....31.2 m in 148 s

JIB

2-staged swingaround boom extension. Dual offset (5°/30°) type. Box type top section telescopes from lattice type base section which stores alongside base boom section with single sheave at jib head.

Length.....9.8 m and 17.1 m

SINGLE TOP (AUXILIARY BOOM SHEAVE)

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

ELEVATION

By a double-acting hydraulic cylinder, fitted with holding valve.

Elevation speed.....-1.3° to 80° in 68 s

HOIST – Main winch

Variable speed type with grooved drum driven by hydraulic axial piston motor through winch speed reducer.

Equipped with automatic brake (Neutral brake) and counterbalance valve.

Controlled independently of auxiliary winch.

Single line pull.....46.1 kN{4,700kgf}

Single line speed.....140 m/min

(at the 4th layer)

Wire rope.....No-spin type

Diameter X length.....19 mm X 231 m

HOOK BLOCK – 40 t capacity

4 sheaves, swivel type hook with safety latch.

CRANE SPECIFICATIONS

HOIST – Auxiliary winch

Variable speed type with grooved drum driven by hydraulic axial piston motor through winch speed reducer.

Equipped with automatic brake (Neutral brake) and counterbalance valve.

Controlled independently of main winch.

Single line pull.....54.9kN{5,600kgf}

Single line speed.....120 m/min (at the 2nd layer)

Wire rope.....No-spin type

Diameter X length.....19 mm X 129 m

HOOK BLOCK 5.6 t capacity

Swivel hook with safety latch for single line use.

SWING

Hydraulic axial piston motor driven through planetary speed reducer.

Equipped with manually locked/released swing brake.

Swing speed.....2.4 min⁻¹{rpm}

HYDRAULIC SYSTEM

Pumps.....2 variable piston pumps for telescoping, elevating and winches. Tandem gear pump for steering, swing and optional equipments.

Control valves.....Multiple valves actuated by hand levers with integral pressure relief valves.

Circuit.....Equipped with air cooled type oil cooler.

Oil pressure appears on AML display for main circuit.

Hydraulic oil tank capacity... approx. 740 liters

Filters.....Return line filter

CRANE CONTROL

By 5 control levers based on ISO standard layout.

CAB

Both crane and drive operations can be performed from one cab mounted on rotating superstructure.

One sided one-man type, steel construction with sliding door access and tinted safety glass windows opening at side, rear and roof.

Operator's 3 way adjustable seat with high back and seat belt.

TADANO Automatic Moment Limiter (Model:AML-L)

Main unit in crane cab gives audible and visual warning of approach to overload. Automatically cuts out crane motions before overload. With working range (load radius and/or boom angle and/or tip height) limit function.

Eight functions are constantly displayed.

Digital liquid crystal display:

Boom angle

Either boom length or potential hook height

Either actual load radius or swing angle

Actual working radius

Actual hook load

Permissible load

Either jib offset angle or number of parts of line of rope

Boom position indicator

Either outrigger position or on-tire indicator

Bar graphical display :

Either moment as percentage or main hydraulic pressure and torque converter oil pressure

(Display changes by alternation key)

OUTRIGGERS

Hydraulically operated H-type outriggers. Each outrigger controlled simultaneously or independently from the cab.

Equipped with sight level gauge. Floats mounted integrally with the jacks retract to within vehicle width.

All cylinders fitted with pilot check valves.

Equipped with extension width detector for each outrigger.

Extended width

Fully.....7,200 mm

Middle.....6,700 mm

Middle.....5,500 mm

Minimum.....2,800 mm

Float size (Diameter).....500 mm

COUNTERWEIGHT

Integral with swing frame (contained removable weight)

Mass.....7,600 kg

NOTE : Each crane motion speed is based on unladen conditions.

CARRIER SPECIFICATIONS

TYPE

Rear engine, left hand steering, driving axle 2-way selected type (by manual switch).

4 × 2 front drive

4 × 4 front and rear drive

FRAME

High-tensile steel, all welded mono-box construction.

ENGINE

Model.....MITSUBISHI 6D16-TUA

Type.....4 cycle, turbo charged, 6 cylinder in line, direct injection, water cooled diesel engine.

Piston displacement.....7,546 cm³

Bore × stroke.....118 mm × 115 mm

Max. output (SAE).....Gross 158 kW{215PS}at
2,800min⁻¹{rpm}

Max. torque (SAE).....706 N·m{72 kgf·m}at
1,250min⁻¹{rpm}

TRANSMISSION

Electronically controlled full automatic transmission. Torque converter driving full powershift with driving axle selector.

3 speeds - High range - 2 wheel drive ; 4 wheel drive

3 speeds - Low range - 4 wheel drive

AXLES

Front..... Full floating type, steering and driving axle with planetary reduction.

Rear Full floating type, steering and driving axle with planetary reduction.
Non-spin differential.

STEERING

Hydraulic power steering controlled by steering wheel.

Three steering modes available:

2-wheel front

4-wheel coordinated

4-wheel crab

SUSPENSION

Front.....Rigid mounted to the frame.

RearPivot mounted with hydraulic lock out cylinders.

BRAKE SYSTEM

Service..... Air over hydraulic disc brakes on all 4 wheels.

Parking / Emergency.....

Spring applied-air released brake acting on input shaft of front axle.

Auxiliary...Electro-pneumatic operated exhaust brake.

ELECTRIC SYSTEM

24 V DC. 2 batteries of 12 V - 120 Ah capacity.

FUEL TANK CAPACITY

300 liters

TIRES

Front.....29.5-25-22PR(OR), Single × 2

Rear.....29.5-25-22PR(OR), Single × 2

TURN RADIUS

Min. turning radius(at center of extreme outer tire)

2-wheel steering.....11.9 m }

4-wheel steering..... 6.7 m }

EQUIPMENTS

STANDARD EQUIPMENTS

Automatic moment limiter(AML-L)

External lamp (AML)

Pendant type over-winding cutout

Winch automatic fail-safe brake

Winch drum rotation indicator (visual)

Over-unwinding prevention

Cable follower

Winch drum mirror

Hook safety latch

Pilot check valves

Holding valves

Counterbalance valves

Hydraulic pressure relief valves

TADANO twin swing system

Swing brake

Swing lock

Boom angle indicator

Boom elevation foot pedal

Boom telescoping foot pedal

Outrigger extension width detector

Emergency stop system (engine stop)

Sight level gauge

Hydraulic oil cooler

Electric windshield wiper and washer

Roof window wiper and washer

Roof window unlock warning

Tachometer/Speedometer

Synthetic leather trimmed cab interior

Cloth covered cab seat with seat belt

Cab floor mat

Sun visor (Front and roof)

Fuel tank (10 liters) and piping for cab heater

Neutral position adjustable control lever

Automatic drive system

Transmission neutral position engine start

Overshift prevention

Parking braked travel warning

Tilt-telescope steering wheel

Back-up alarm

Air cleaner dust indicator

Air dryer

Water separator with filter

Engine over-run alarm

Hydraulic lockout suspension

Non-spin differential (Rear)

Towing eyes - front and rear

Emergency steering

Outrigger control box (Both sides of carrier)

OPTIONAL EQUIPMENTS

Electric fan

Air conditioner (Hydraulic oil cab heater/defroster with dehumidification function and cab cooler/defroster)

Tire inflation kit

Hook block - 60t capacity (6 sheaves, swivel type with safety latch. Mass : 600 kg)

RATED LIFTING CAPACITIES ISO4305

ON OUTRIGGERS

Unit:kg

Outriggers fully extended (7.2 m) 360°Rotation							
A \ B	11.0	14.9	18.8	24.7	30.5	36.3	42.2
3.0	60,000	37,500	35,400				
3.5	53,400	37,500	35,400				
4.0	48,200	37,500	34,200	14,100			
4.5	43,700	37,500	32,500	14,100			
5.0	39,700	37,500	30,800	14,100			
5.5	36,400	36,000	29,100	14,100	14,000		
6.0	33,700	33,500	27,600	14,100	14,000		
6.5	31,400	31,100	26,400	14,100	14,000		
7.0	29,300	28,900	25,300	14,100	14,000	11,300	
8.0	24,500	24,800	23,000	14,100	14,000	11,300	
9.0	16,800	20,700	20,300	14,100	14,000	11,300	7,900
10.0		16,800	17,000	14,100	13,200	11,100	7,900
11.0		14,100	14,000	13,800	12,200	10,300	7,900
12.0		11,900	11,700	12,700	11,100	9,600	7,900
13.0			9,800	11,000	10,200	9,000	7,800
14.0			8,300	9,500	9,400	8,500	7,500
15.0			7,100	8,200	8,500	7,800	7,100
16.0			6,000	7,100	7,500	7,200	6,800
17.0				6,200	6,700	6,700	6,400
18.0				5,400	5,900	6,300	6,100
19.0				4,700	5,200	5,700	5,700
20.0				4,100	4,600	5,100	5,200
22.0				3,200	3,500	4,100	4,200
24.0					2,700	3,200	3,400
26.0					2,100	2,500	2,800
28.0					1,600	1,900	2,200
30.0						1,400	1,700
32.0						1,000	1,200

Outriggers fully extended (7.2 m) 360°Rotation								
C	9.8 m Jib				17.1 m Jib			
	5°offset		30°offset		5°offset		30°offset	
	B	W	B	W	B	W	B	W
80°	9.0	3,100	13.1	2,800	11.6	2,000	17.8	1,100
75°	14.2	3,100	17.6	2,400	17.5	2,000	23.1	1,000
70°	19.0	3,100	21.9	2,000	22.9	1,800	27.8	900
65°	23.2	2,500	26.0	1,700	27.7	1,500	32.1	800
60°	27.2	1,900	29.6	1,400	32.0	1,100		
55°	30.7	1,100	32.9	1,000				

A: Boom length(m)
 B: Load radius(m)
 C: Boom angle
 W: Rated lifting capacity

ON OUTRIGGERS

Unit:kg

Outriggers extended to middle (6.7 m) 360°Rotation							
A \ B	11.0	14.9	18.8	24.7	30.5	36.3	42.2
3.0	60,000	37,500	35,400				
3.5	53,400	37,500	35,400				
4.0	48,200	37,500	34,200	14,100			
4.5	43,700	37,500	32,500	14,100			
5.0	39,700	37,500	30,800	14,100			
5.5	36,400	36,000	29,100	14,100	14,000		
6.0	33,700	33,500	27,600	14,100	14,000		
6.5	31,400	31,100	26,400	14,100	14,000		
7.0	28,700	27,800	25,300	14,100	14,000	11,300	
8.0	23,300	22,200	21,100	14,100	14,000	11,300	
9.0	16,300	17,700	17,000	14,100	14,000	11,300	7,900
10.0		14,500	13,800	14,100	13,200	11,100	7,900
11.0		12,100	11,500	12,700	12,200	10,300	7,900
12.0		10,100	9,600	10,800	11,100	9,600	7,900
13.0			8,100	9,000	9,800	9,000	7,800
14.0			6,800	7,700	8,500	8,500	7,500
15.0			5,700	6,500	7,400	7,800	7,100
16.0			4,900	5,400	6,500	6,800	6,800
17.0				4,600	5,700	6,000	6,400
18.0				3,900	5,000	5,200	5,700
19.0				3,400	4,400	4,600	5,000
20.0				2,900	3,800	4,000	4,500
22.0				2,100	2,800	3,100	3,500
24.0					2,000	2,300	2,800
26.0							2,100

Outriggers extended to middle (6.7 m) 360°Rotation								
C	9.8 m Jib				17.1 m Jib			
	5°offset		30°offset		5°offset		30°offset	
	B	W	B	W	B	W	B	W
80°	9.0	3,100	13.1	2,800	11.6	2,000	17.8	1,100
75°	14.2	3,100	17.6	2,400	17.5	2,000	23.1	1,000
70°	19.0	3,100	21.9	2,000	22.9	1,800	27.8	900
65°	23.2	2,500	26.0	1,700	27.7	1,500		
60°	27.4	1,700						

A: Boom length(m)
 B: Load radius(m)
 C: Boom angle
 W: Rated lifting capacity

RATED LIFTING CAPACITIES ISO4305

ON OUTRIGGERS

Unit:kg

Outriggers extended to middle (5.5 m) 360°Rotation							
A \ B	11.0	14.9	18.8	24.7	30.5	36.3	42.2
3.0	60,000	37,500	35,400				
3.5	53,400	37,500	35,400				
4.0	48,200	37,500	34,200	14,100			
4.5	43,700	37,500	32,500	14,100			
5.0	38,000	37,500	30,800	14,100			
5.5	32,700	32,000	28,600	14,100	14,000		
6.0	28,200	28,000	26,000	14,100	14,000		
6.5	24,300	24,000	23,000	14,100	14,000		
7.0	21,200	21,000	20,400	14,100	14,000	11,300	
8.0	16,600	16,200	15,800	14,100	14,000	11,300	
9.0	13,000	13,000	12,400	13,600	13,500	11,300	7,900
10.0		10,600	10,100	11,400	11,600	11,100	7,900
11.0		8,800	8,200	9,500	9,800	10,000	7,900
12.0		7,200	6,700	8,000	8,500	8,800	7,900
13.0		5,800	5,600	6,800	7,300	7,700	7,600
14.0			4,600	5,700	6,300	6,800	6,800
15.0			3,700	4,800	5,400	5,900	6,100
16.0			2,900	4,000	4,600	5,100	5,300
17.0				3,400	3,900	4,400	4,700
18.0				2,800	3,300	3,800	4,100
19.0				2,300	2,800	3,300	3,500
20.0					2,300	2,800	3,000
22.0						2,000	2,200

Outriggers extended to middle (5.5 m) 360°Rotation								
C	9.8 m Jib				17.1 m Jib			
	5°offset		30°offset		5°offset		30°offset	
	B	W	B	W	B	W	B	W
80°	9	3,100	13.1	2,800	11.6	2,000	17.8	1,100
75°	14.2	3,100	17.6	2,400	17.5	2,000	23.1	1,000
70°	19	3,100	21.9	2,000	22.9	1,800	27.8	900
65°	23.4	1,800						

A: Boom length(m)
 B: Load radius(m)
 C: Boom angle
 W: Rated lifting capacity

ON OUTRIGGERS

Unit:kg

Outriggers extended to minimum (2.8 m) 360°Rotation							
A \ B	11.0	14.9	18.8	24.7	30.5	36.3	42.2
3.0	30,000	26,000	22,000				
3.5	24,000	21,000	19,000				
4.0	19,700	17,600	16,200				
4.5	16,400	14,500	14,000	12,900			
5.0	14,000	12,400	12,000	11,700			
5.5	12,000	10,600	10,500	10,500			
6.0	10,200	9,200	9,200	9,400	9,100		
6.5	8,900	8,000	8,000	8,300	8,200		
7.0	7,800	7,000	6,900	7,400	7,400		
8.0	5,700	5,300	5,000	5,700	6,000	6,000	
9.0	4,000	3,900	3,500	4,500	4,800	5,000	
10.0		2,700	2,300	3,400	3,800	4,000	4,200
11.0				2,400	2,900	3,200	3,400
12.0					2,100	2,500	2,700
13.0							2,100

A: Boom length(m)
 B: Load radius(m)

NOTES FOR "ON OUTRIGGERS" TABLE

- Rated lifting capacities shown in the table are based on condition that crane is set on firm level surface. Those above bold lines are based on crane strength and those below, on its stability.
- Rated lifting capacities based on crane stability are according to ISO 4305.
- The mass of the hook (600 kg for 60,000 kg capacity, 470 kg for 40,000 kg capacity, 150 kg for 5,600 kg capacity), slings and all similarly used load handling devices must be added to the weight of the load.
- For rated lifting capacity of single top, reduce the mass of main hook from the relevant boom rated lifting capacity. Rated lifting capacity of single top should not exceed 5,600 kg.
- Standard number of parts of line for each boom length is as shown below. Load per line should not surpass 46.1

kN{4,700 kgf}for main winch and 54.9 kN {5,600 kgf}for auxiliary winch.

Boom length (m)	11.0	14.9	18.8	24.7	30.5	36.3	42.2	Jib / Single top
No. of parts of line	13	8	8	4	4	4	4	1

The lifting capacity data stored in the AUTOMATIC MOMENT LIMITER (AML-L) is based on the standard number of parts of line listed in the chart. Maximum lifting capacity is restricted by the number of parts of line of AUTOMATIC MOMENT LIMITER (AML-L).

RATED LIFTING CAPACITIES ISO4305

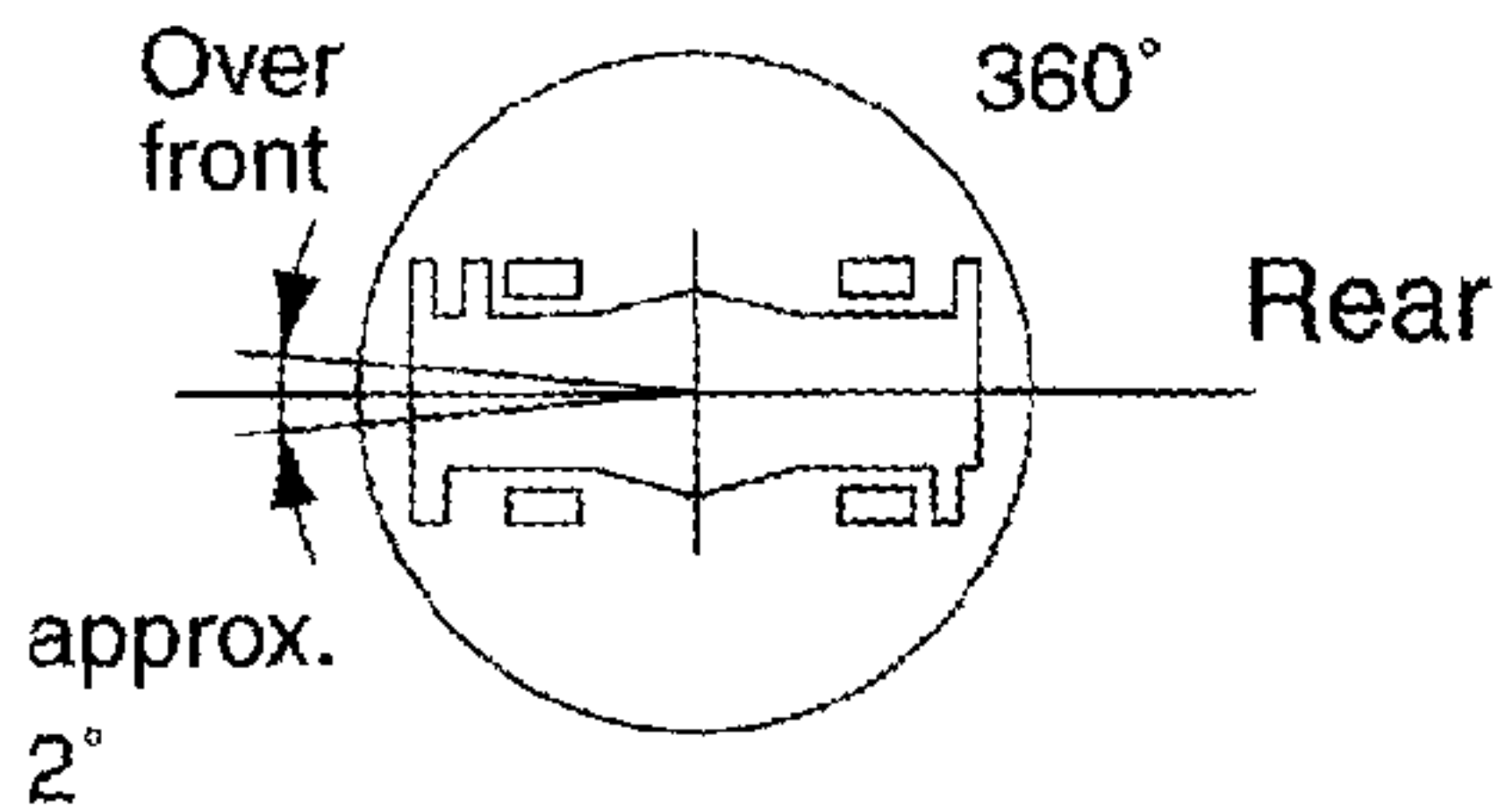
ON TIRES

Unit:kg

A B	Stationary					A B	Creep				
	Over front			360°			Over front			360°	
	11.0 m	18.8 m	30.5 m	11.0 m	18.8 m		11.0 m	18.8 m	30.5 m	11.0 m	18.8 m
3.0 m	30,000			15,600		3.0 m	22,800			11,000	
3.5 m	27,300			15,000		3.5 m	21,200			10,400	
4.0 m	25,200			14,000		4.0 m	19,500			9,700	
4.5 m	23,500			11,500		4.5 m	17,900			9,000	
5.0 m	21,400			9,600		5.0 m	16,300			8,200	
5.5 m	19,100			8,300		5.5 m	14,800			7,300	
6.0 m	16,700			7,200		6.0 m	13,500			6,300	
6.5 m	14,800	12,900		6,200	5,600	6.5 m	12,300	11,300		5,500	4,900
7.0 m	13,100	12,000		5,400	4,700	7.0 m	11,300	10,500		4,800	4,100
8.0 m	10,500	10,100		4,000	3,300	8.0 m	9,600	8,900		3,500	2,900
9.0 m	8,500	8,000		2,900	2,300	9.0 m	8,000	7,000		2,500	2,000
10.0 m		6,400				10.0 m		5,600			
11.0 m		5,100	5,900			11.0 m		4,500	5,100		
12.0 m		4,100	5,000			12.0 m		3,500	4,400		
13.0 m		3,200	4,200			13.0 m		2,700	3,700		
14.0 m		2,400	3,500			14.0 m		2,100	3,100		
15.0 m			2,900			15.0 m			2,500		
16.0 m			2,400			16.0 m			2,000		
17.0 m			2,000								

A: Boom length
B: Load radius

WORKING AREA



Without outriggers "Over front" operation should be performed within 2 degrees in front of chassis.

NOTES FOR "ON TIRES" TABLES

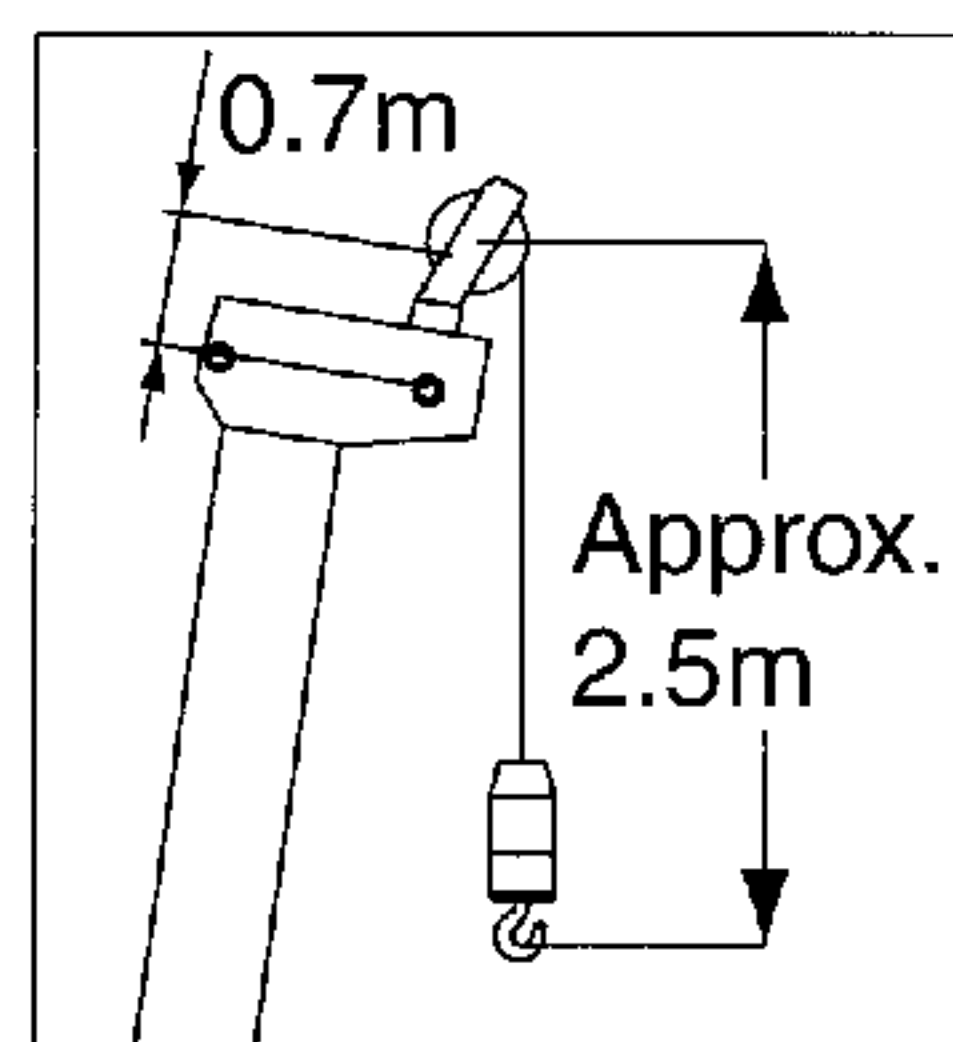
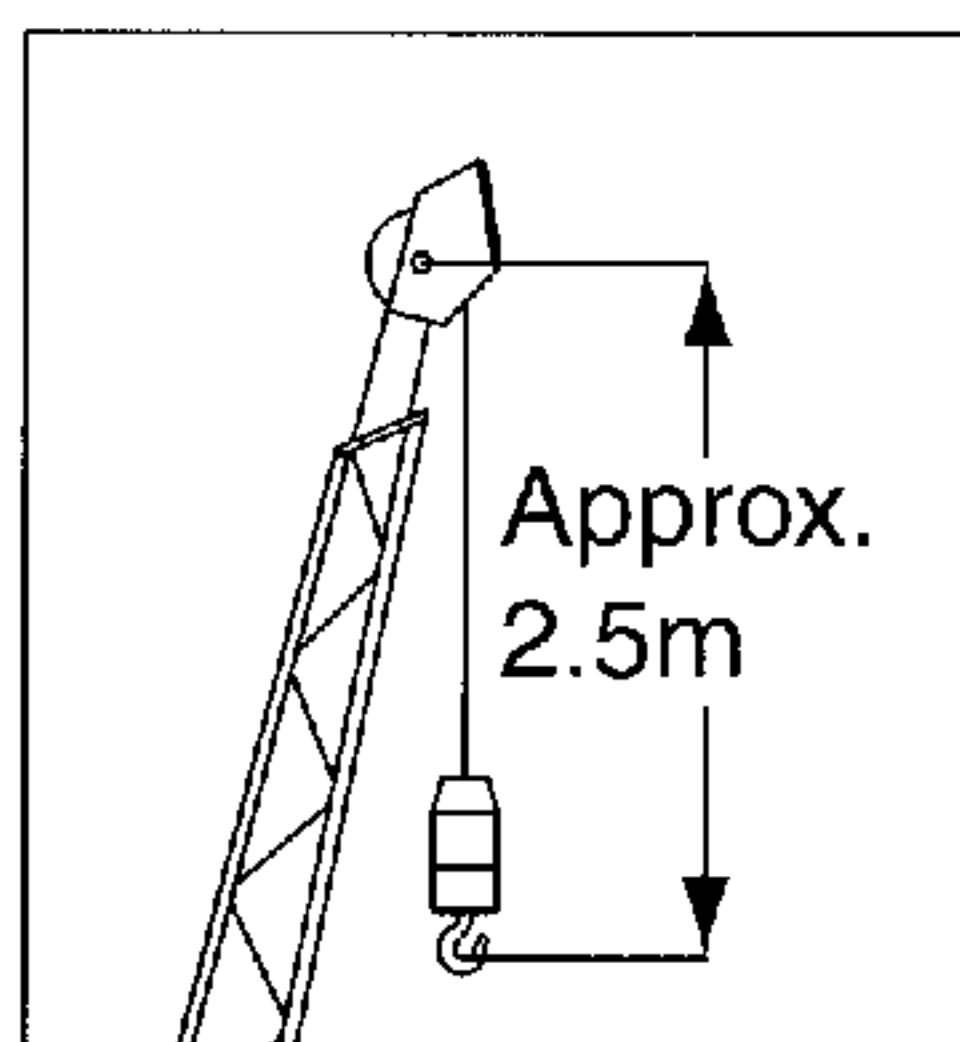
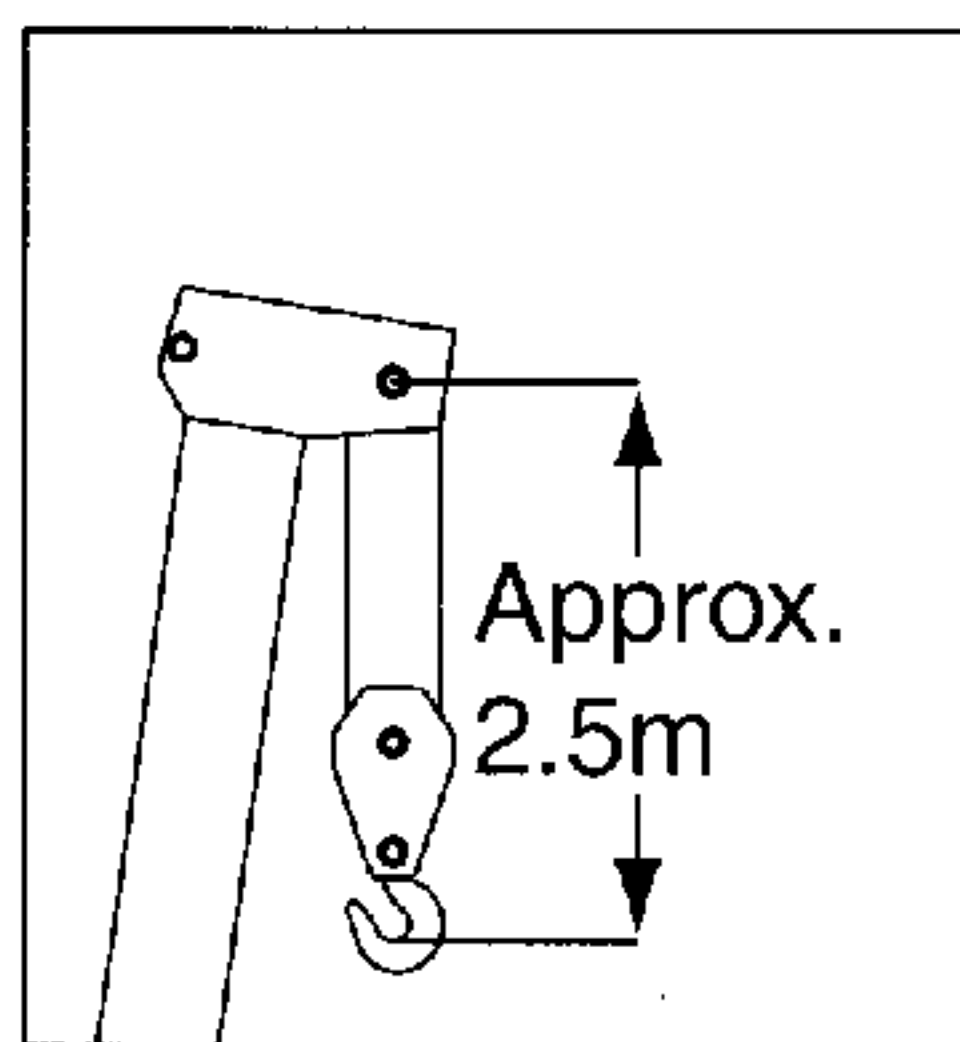
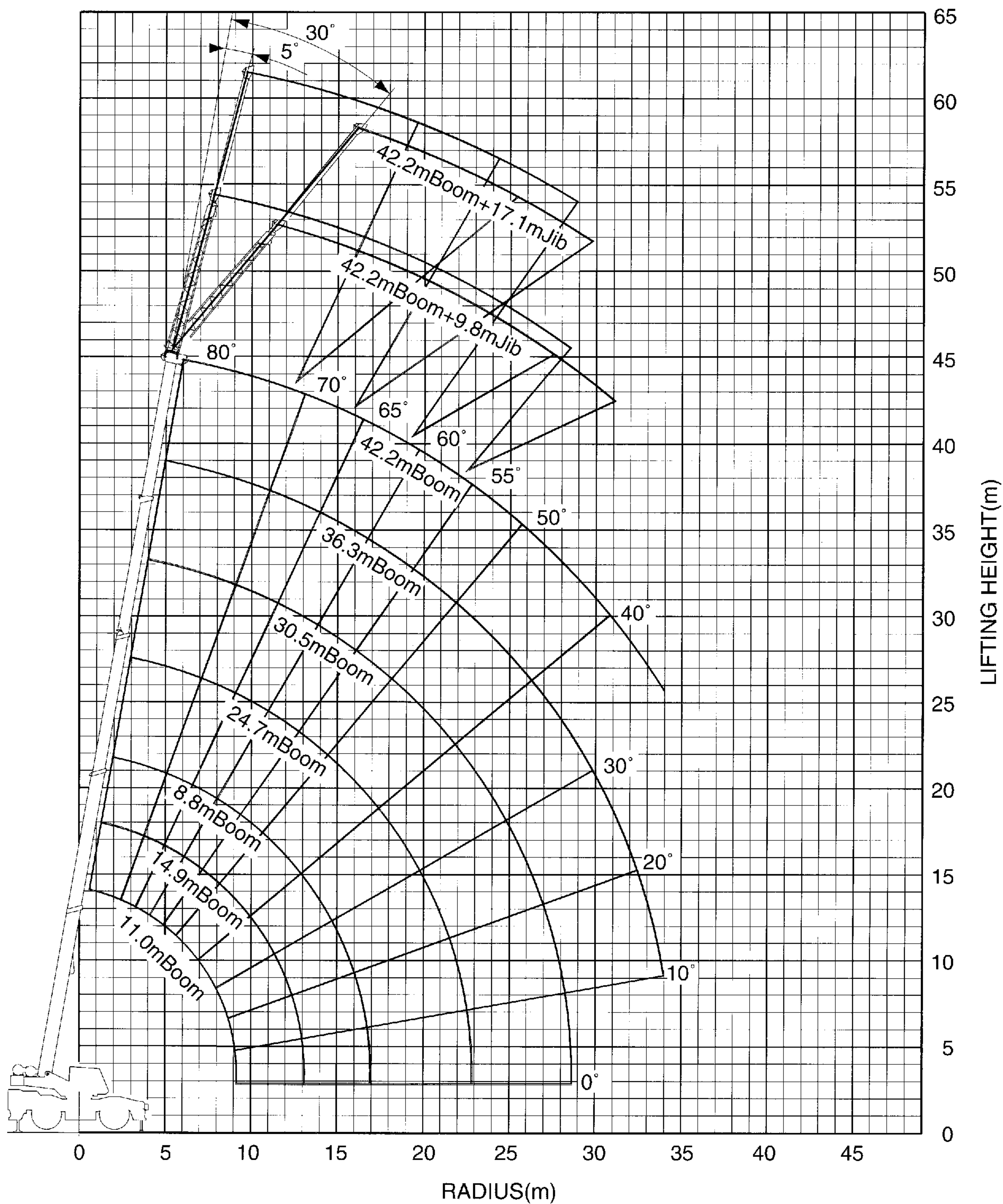
- Rated lifting capacities shown in the table are based on condition that crane is set on firm level surface, with suspension lock applied. Those above bold lines are based on tire capacity and those below, on crane stability. They are based on actual working radii increased by tire deformation and boom deflection.
- Rated lifting capacities based on crane stability are according to ISO 4305.
- The mass of the hook (600 kg for 60,000 kg capacity, 470 kg for 40,000 kg capacity, 150 kg for 5,600 kg capacity), slings and all similarly used load handling devices must be added to the weight of the load.
- For rated lifting capacity of single top, reduce the mass of main hook from the relevant boom rated lifting capacity.
Rated lifting capacity of single top should not exceed 5,600 kg.
- On tires lifting with "jib" is not permitted. Maximum permissible boom length is 30.5 m (over front) and 18.8 m (360° rotation).
- CREEP is motion for crane not to travel more than 60 m in any 30 min. period and to travel at the speed of less than 1.6 km/h.

- During "CREEP" duties travel slowly and keep the lifting load as close to the ground as possible, and especially avoid any abrupt steering, accelerating or braking.
- Do not operate the crane while carrying the load.
- Tires should be inflated to their correct air pressure of 420 kPa{4.2 kgf/cm²}.
- For CREEP operation, set Drive select switch to "4-WHEEL(Lo)" and set gear shift lever to "1".
- Standard number of parts of line for on tires operation should be according to the following table.
Load per line should not surpass 46.1 kN{4,700 kgf} for main winch and 54.9 kN{5,600 kgf} for auxiliary winch.

Boom length (m)	11.0	11.0 to 30.5	Single top
No. of parts of line	6	4	1

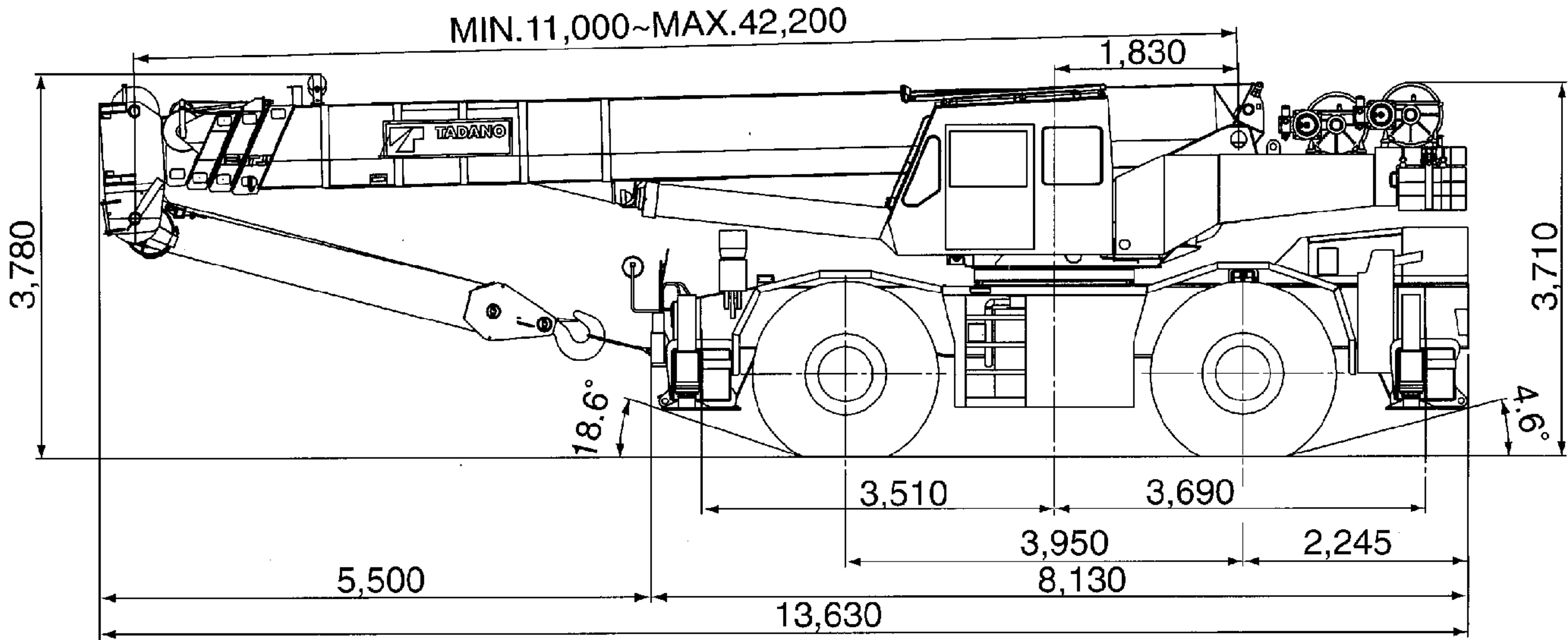
The lifting capacity data stored in the AUTOMATIC MOMENT LIMITER (AML-L) is based on the standard number of parts of line listed in the chart. Maximum lifting capacity is restricted by the number of parts of line of AUTOMATIC MOMENT LIMITER (AML-L).

WORKING RANGE



NOTE: The above lifting height and boom angle are based on a straight (unladen) boom, and allowance should be made for boom deflection obtained under laden conditions. The above working range is shown on condition with outriggers fully (7.2m) extended.

DIMENSIONS



Overall width.....3,315 mm
 Tail swing radius.....4,120 mm
 Tread (track)
 Front.....2,502 mm
 Rear.....2,502 mm

Note : Dimension is with boom angle at - 1.3°.

TR-600EXL Axle Weight Distribution Chart Unit:kg

	GVW	Front	Rear
Basic standard machine includes: 5-section boom (11.0 m~42.2 m) 2-stage jib (9.8 m, 17.1 m) Mitsubishi 6D16-TUA 29.5 x 25-22PR tires Single top 40 ton 4 sheaves hook block 5.6 ton hook ball	46,500	23,250	23,250
Remove: 1. 2-stage jib (9.8 m, 17.1 m) 2. Removable counterweight	-1,000 -5,920	-1,798 2,610	+798 -8,530

Specifications are subject to change without notice.



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