TR

ROUGH TERRAIN CRANE

TR-200M

JAPANESE SPECIFICATIONS

OUTLINE	SPEC. NO.
5-section Boom	TR-200M-4-00109

Control No. JA-01

Return to index

TR-200M

CRANE SPECIFICATIONS

CRANE CAPACITY

8.5m	4-Boom	20,000kg	at 3.5m	(7 part-line)
	5-Boom	4,800kg	at 6.5m	(7 part-line)
14.4m	4-Boom	12,000kg	at 5.5m	(6 part-line)
	5-Boom	4,800kg	at 11.0m	(6 part-line)
20.3m	4-Boom	9,000kg	at 6.0m	(4 part-line)
	5-Boom	4,800kg	at 10.0m	(4 part-line)
26.2m	4-Boom	7,000kg	at 6.5m	(4 part-line)
	5-Boom	4,800kg	at 7.0m	(4 part-line)
32.1m	5-Boom	3,400kg	at 10.0m	(4 part-line)
Single top				
	4-Boom	3,000kg		(1 part-line)
	5-Boom	2,500kg		(1 part-line)

MAX. LIFTING HEIGHT
4-Boom 26.9m
5-Boom 32.7m

MAX. WORKING RADIUS
4-Boom 24.0m
4-Boom 30.0m

BOOM LENGTH
8.5m – 32.1m

BOOM EXTENSION
23.6m (5-Boom)

BOOM EXTENSION SPEED
23.6m / 45s

MAIN WINCH SINGLE LINE SPEED
High range: 121m/min (4th layer)
Low range: 58m/min (4th layer)

MAIN WINCH HOOK SPEED
High range: 17.3m/min (7 part-line)
Low range: 8.3m/min (7 part-line)

AUXILIARY WINCH SINGLE LINE SPEED
High range: 103m/min (2nd layer)
Low range: 50m/min (2nd layer)

AUXILIARY WINCH HOOK SPEED
High range: 103m/min (1th layer)
Low range: 50m/min (1th layer)

BOOM ELEVATION ANGLE
0° – 82°

BOOM ELEVATION SPEED
0° – 82° / 34s

SWING ANGLE
360° continue

SWING SPEED
3.4rpm

WIRE ROPE
Main Winch
16mm × 175m (Diameter×Length)
7×7+6×WS(36) Spin-resistant wire rope
Auxiliary Winch
16mm × 80m (Diameter×Length)
7×7+6×Fi(29) Spin-resistant wire rope

BOOM
5-section hydraulically telescoping boom of box construction.
(stages 2~5;synchronized: stages 2~4; synchronized)

BOOM EXTENSION
1 double-acting hydraulic cylinder
3 wire rope type telescoping device

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

HOIST
Driven by hydraulic motor and via planetary gear reducer.
With free-fall device.
Automatic brake (with foot brake for free-fall device)
2 single winches

BOOM ELEVATION
1 double-acting hydraulic cylinders

SWING
Hydraulic motor driven planetary gear reducer
Swing bearing
Swing free/lock changeover type
Hand brake

OUTRIGGERS
Fully hydraulic X-type (floats mounted integrally)
Slides and jacks each provided with independent operation device.
Full extended width 5.8m
Middle extended width 4.7m
Minimum extended width 3.6m

MAX. OUTRIGGER LOAD
22.6t

HYDRAULIC PUMPS
Variable piston pump and gear pump

HYDRAULIC OIL TANK CAPACITY
375 liters

SAFETY DEVICES
Automatic moment limiter (AML)
With working range function
Over-winding cutout
Working area control device
Level gauge
Hook safety latch
Winch drum lock
Hydraulic safety valve
Telescopic counterbalance valve
Elevation counterbalance valve
Jack pilot check valve
Swing lock

EQUIPMENTS
Crane cab heater (with defroster)
Hydraulic oil temperature indication lamp
Oil cooler
Winch drum rotation indicator
Operation pedals for elevating/ telescoping
Radio

CARRIER SPECIFICATIONS

ENGINE
Model MITSUBISHI 6D14
Type 4-cycle, 6-cylinder, direct-injection, water-cooled diesel engine (with turbo charger)
Piston displacement 6,557cc
Max. output 185PS at 2,800rpm
Max. torque 58kg·m at 1,600rpm

TORQUE CONVERTER
3-element, 1-stage unit (with automatic lock-up mechanism)

TRANSMISSION
Power shift type (wet multi-plate clutch)
3 forward and 1 reverse speeds

REDUCER
Axle dual-ratio reduction

DRIVE
2-wheel drive (4×2) / 4-wheel drive (4×4) selection

FRONT AXLE
Full floating type

REAR AXLE
Full floating type (with no-spin differential)

SUSPENSION
Front Parallel leaf spring type
Rear Parallel leaf spring type

STEERING
Fully hydraulic power steering
With reverse steering correction mechanism

BRAKE SYSTEM
Service Brake
Hydro-pneumatic brake
Disk brake
Parking Brake
Mechanically operated, internal expanding duo-servo shoe type acting on drum at transmission case rear.
Auxiliary Brake
Electro-pneumatic operated exhaust brake.
Auxiliary braking device for operations

FRAME
Welded box-shaped structure

ELECTRIC SYSTEM
24 V DC. 2 batteries of 12V (120Ah)

FUEL TANK CAPACITY
250 liters

TIRES
Front 14.00R24 ☆☆ ☆(OR)
Rear 14.00R24 ☆☆ ☆(OR)

CAB
Two-man type
With sun visor and trim
Rubber mounted type
Fully adjustable seat (with headrest, seat belt)
Adjustable handle (tilt, telescoping)
Roof windshield lock warning

SAFETY DEVICES
Emergency steering device
Spring lock device
Rear wheel steering lock device
Engine over-run alarm
Overshift prevention device
Parking brake alarm

GENERAL DATA

DIMENSIONS
Overall length	10,470mm
Overall width	2,490mm
Overall height	3,420mm
Wheel base	3,100mm
Tread Front	2,070mm
Rear	2,070mm

WEIGHTS
Gross vehicle weight
Total	23,200kg
Front	11,575kg
Rear	11,625kg

PERFORMANCE
Max. traveling speed	49km/h
Gradeability (tan θ)	0.6
Min. turning radius	4.7m (4-wheel steering)
	8.0m (2-wheel steering)

TOTAL RATED LOADS

(1) With outriggers set (360°)

(i) 4 section boom condition

Unit:ton

Outriggers fully extended				
A / B (m)	8.5m	14.4m	20.3m	26.2m
2.5	20.0	12.0	9.0	
3.0	20.0	12.0	9.0	
3.5	20.0	12.0	9.0	7.0
4.0	18.5	12.0	9.0	7.0
4.5	16.5	12.0	9.0	7.0
5.0	15.0	12.0	9.0	7.0
5.5	13.7	12.0	9.0	7.0
6.0	12.5	11.4	9.0	7.0
6.5	11.5	10.6	8.5	7.0
7.0		9.9	8.0	6.8
8.0		8.4	7.2	6.15
9.0		6.8	6.4	5.55
10.0		5.8	5.8	5.05
11.0		4.8	4.9	4.65
12.0		4.15	4.2	4.2
13.0			3.65	3.65
14.0			3.2	3.2
15.0			2.8	2.8
16.0			2.5	2.5
17.0			2.2	2.2
18.0			2.0	2.0
19.0				1.75
20.0				1.4
22.0				1.1
24.0				0.8

Unit:ton

Outriggers middle extended				
A / B (m)	8.5m	14.4m	20.3m	26.2m
2.5	20.0	12.0	9.0	
3.0	20.0	12.0	9.0	
3.5	20.0	12.0	9.0	7.0
4.0	18.5	12.0	9.0	7.0
4.5	16.5	12.0	9.0	7.0
5.0	14.5	12.0	9.0	7.0
5.5	12.0	12.0	9.0	7.0
6.0	10.1	10.3	9.0	7.0
6.5	8.7	8.9	8.5	7.0
7.0		7.9	7.85	6.8
8.0		6.15	6.15	6.15
9.0		5.0	5.05	5.05
10.0		4.15	4.2	4.2
11.0		3.5	3.55	3.55
12.0		3.0	3.05	3.05
13.0			2.65	2.65
14.0			2.3	2.3
15.0			2.0	2.0
16.0			1.75	1.75
17.0			1.55	1.4
18.0			1.35	1.2
19.0				1.0
20.0				0.85
22.0				0.6
24.0				0.4

Unit:ton

Outriggers minimum extended				
A / B (m)	8.5m	14.4m	20.3m	26.2m
2.5	20.0	12.0	9.0	
3.0	20.0	12.0	9.0	
3.5	18.9	12.0	9.0	7.0
4.0	14.2	12.0	9.0	7.0
4.5	11.3	11.5	9.0	7.0
5.0	9.3	9.5	9.0	7.0
5.5	7.9	8.0	8.1	7.0
6.0	6.8	6.9	6.95	6.95
6.5	5.9	6.0	6.05	6.05
7.0		5.3	5.35	5.35
8.0		4.2	4.25	4.25
9.0		3.4	3.45	3.45
10.0		2.8	2.9	2.85
11.0		2.35	2.4	2.4
12.0		2.0	2.0	2.05
13.0			1.7	1.7
14.0			1.4	1.35
15.0			1.1	1.1
16.0			0.9	0.9
17.0			0.75	0.75
18.0			0.6	0.6
19.0				0.45

A = Boom length
B = Working radius

(ii) 5 section boom condition

Unit:ton

Outriggers fully extended					
A / B (m)	8.5m	14.4m	20.3m	26.2m	32.1m
2.5	4.8	4.8	4.8		
3.0	4.8	4.8	4.8		
3.5	4.8	4.8	4.8	4.8	
4.0	4.8	4.8	4.8	4.8	3.4
4.5	4.8	4.8	4.8	4.8	3.4
5.0	4.8	4.8	4.8	4.8	3.4
5.5	4.8	4.8	4.8	4.8	3.4
6.0	4.8	4.8	4.8	4.8	3.4
6.5	4.8	4.8	4.8	4.8	3.4
7.0		4.8	4.8	4.8	3.4
8.0		4.8	4.8	4.7	3.4
9.0		4.8	4.8	4.3	3.4
10.0		4.8	4.8	4.0	3.4
11.0		4.8	4.5	3.8	3.2
12.0		4.3	4.3	3.5	3.0
13.0			3.85	3.2	2.85
14.0			3.4	3.0	2.7
15.0			3.0	2.85	2.5
16.0			2.7	2.65	2.4
17.0			2.4	2.4	2.3
18.0			2.2	2.2	2.15
19.0				2.0	2.0
20.0				1.8	1.8
22.0				1.5	1.5
24.0				1.1	1.1
26.0					0.9
28.0					0.7
30.0					0.5

Outriggers middle extended					
A / B (m)	8.5m	14.4m	20.3m	26.2m	32.1m
2.5	4.8	4.8	4.8		
3.0	4.8	4.8	4.8		
3.5	4.8	4.8	4.8	4.8	
4.0	4.8	4.8	4.8	4.8	3.4
4.5	4.8	4.8	4.8	4.8	3.4
5.0	4.8	4.8	4.8	4.8	3.4
5.5	4.8	4.8	4.8	4.8	3.4
6.0	4.8	4.8	4.8	4.8	3.4
6.5	4.8	4.8	4.8	4.8	3.4
7.0		4.8	4.8	4.8	3.4
8.0		4.8	4.8	4.7	3.4
9.0		4.8	4.8	4.3	3.4
10.0		4.3	4.45	4.0	3.4
11.0		3.65	3.8	3.6	3.0
12.0		3.15	3.25	3.1	2.8
13.0			2.85	2.7	2.5
14.0			2.5	2.5	2.3
15.0			2.2	2.2	2.1
16.0			1.95	1.95	1.9
17.0			1.7	1.7	1.7
18.0			1.55	1.55	1.55
19.0				1.3	1.3
20.0				1.1	1.1
22.0				0.9	0.9
24.0				0.6	0.6
26.0					0.4

Outriggers minimum extended					
A / B (m)	8.5m	14.4m	20.3m	26.2m	32.1m
2.5	4.8	4.8	4.8		
3.0	4.8	4.8	4.8		
3.5	4.8	4.8	4.8	4.8	
4.0	4.8	4.8	4.8	4.8	3.4
4.5	4.8	4.8	4.8	4.8	3.4
5.0	4.8	4.8	4.8	4.8	3.4
5.5	4.8	4.8	4.8	4.8	3.4
6.0	4.8	4.8	4.8	4.8	3.4
6.5	4.8	4.8	4.8	4.8	3.4
7.0		4.8	4.8	4.8	3.4
8.0		4.3	4.45	4.5	3.4
9.0		3.55	3.7	3.7	3.4
10.0		2.95	3.05	3.1	3.1
11.0		2.5	2.6	2.6	2.6
12.0		2.1	2.2	2.2	2.2
13.0			1.9	1.9	1.9
14.0			1.65	1.7	1.7
15.0			1.45	1.5	1.5
16.0			1.1	1.1	1.1
17.0			1.0	1.0	1.0
18.0			0.8	0.8	0.8
19.0				0.7	0.7
20.0				0.5	0.5

A = Boom length
B = Working radius

PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE EXTENDED:

1. The total rated loads shown are for the case when the crane is set horizontally on firm ground. The values above the bold lines are based on the crane strength while those below are based on the crane stability.
2. The weights of the slings and hooks (main winch hook: 220kg, auxiliary winch hook: 60kg) are included in the total rated loads shown.
3. The total rated load is based on the actual working radius including the deflection of the boom.
4. The chart below shows the standard number of part lines for each boom length. The load per line should not exceed 2.9t for the main winch and 3.0t for the auxiliary winch.

A	8.5m	14.4m	20.3m	26.2m	32.1m	J
H	7	6	4	4	4	1

A = Boom length H = No. of part-line J = Single top

5. As a rule, free-fall operation should be performed only when lowering the hook alone. If a hoisted load must be lowered by free-fall operation, the load must be kept below 1/5th of the total rated load and sudden braking operations must be avoided.
6. The total rated load for the single top shall be the value obtained by subtracting 160kg from the total rated load of the boom and must not exceed 3.0t. However, for a boom length which exceeds 26.2m, the limit shall be 2.5t.

2-(2) Without outriggers

(i) 4 section boom condition

Unit:ton

B	Stationary						Creep (travelling at 1.6km/h or less)					
	8.5m BOOM		14.4m BOOM		20.3m BOOM		8.5m BOOM		14.4m BOOM		20.3m BOOM	
(m)	F	G	F	G	F	G	F	G	F	G	F	G
3.0	12.2	8.2	8.7	7.2			8.5	6.5	6.7	5.0		
3.5	10.7	7.2	8.7	7.0	6.2	4.5	8.3	5.6	6.7	5.0	5.2	3.7
4.0	10.2	6.0	8.7	5.6	6.2	4.5	7.5	4.7	6.7	4.6	5.2	3.7
4.5	9.1	4.9	8.0	4.5	6.2	4.5	6.8	3.7	6.3	3.7	5.2	3.7
5.0	8.0	4.0	7.2	3.75	6.2	4.1	6.1	3.1	5.8	3.0	5.2	3.3
5.5	6.9	3.4	6.4	3.2	5.7	3.5	5.4	2.6	5.2	2.5	4.8	2.8
6.0	6.1	2.8	5.65	2.7	5.3	3.0	4.9	2.2	4.6	2.1	4.4	2.3
6.5	5.2	2.4	4.9	2.2	4.85	2.55	4.2	1.8	4.05	1.7	4.0	2.0
7.0			4.3	1.85	4.5	2.2			3.6	1.4	3.7	1.7
8.0			3.3	1.25	3.7	1.65			2.75	0.9	3.1	1.2
9.0			2.55	0.8	3.0	1.2			2.15	0.6	2.5	0.9
10.0			2.05	0.4	2.5	0.85			1.75		2.05	0.6
11.0			1.6		2.0	0.55			1.35		1.65	
12.0			1.25		1.6				1.05		1.3	
13.0					1.3						1.05	
14.0					1.05						0.85	
15.0					0.85						0.65	
16.0					0.65						0.5	
17.0					0.45							

B = Working radius F = Front G = 360°

(ii) 5 section boom condition

Unit:ton

B	Stationary						Creep (travelling at 1.6km/h or less)					
	8.5m BOOM		14.4m BOOM		20.3m BOOM		8.5m BOOM		14.4m BOOM		20.3m BOOM	
(m)	F	G	F	G	F	G	F	G	F	G	F	G
3.0	4.8	4.8	4.8	4.8			4.8	4.8	4.8	4.8		
3.5	4.8	4.8	4.8	4.8	4.8	4.5	4.8	4.8	4.8	4.8	4.8	3.7
4.0	4.8	4.8	4.8	4.8	4.8	4.5	4.8	4.7	4.8	4.6	4.8	3.7
4.5	4.8	4.8	4.8	4.5	4.8	4.5	4.8	3.7	4.8	3.7	4.8	3.7
5.0	4.8	4.0	4.8	3.75	4.8	4.1	4.8	3.1	4.8	3.0	4.8	3.3
5.5	4.8	3.4	4.8	3.2	4.8	3.5	4.8	2.6	4.8	2.5	4.8	2.8
6.0	4.8	2.8	4.8	2.7	4.8	3.0	4.8	2.2	4.6	2.1	4.4	2.3
6.5	4.8	2.4	4.8	2.2	4.8	2.55	4.2	1.8	4.05	1.7	4.0	2.0
7.0			4.3	1.85	4.5	2.2			3.6	1.4	3.7	1.7
8.0			3.3	1.25	3.7	1.65			2.75	0.9	3.1	1.2
9.0			2.55	0.8	3.0	1.2			2.15	0.6	2.5	0.9
10.0			2.05	0.4	2.5	0.85			1.75		2.05	0.6
11.0			1.6		2.0	0.55			1.35		1.65	
12.0			1.25		1.6				1.05		1.3	
13.0					1.3						1.05	
14.0					1.05						0.85	
15.0					0.85						0.65	
16.0					0.65						0.5	
17.0					0.45							

B = Working radius F = Front G = 360°

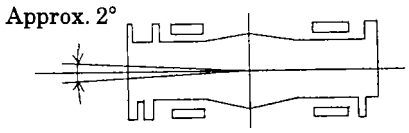
PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE NOT MOUNTED:

1. The total rated loads shown are for the case when the crane is set horizontally on firm ground. The values above the bold lines are based on the crane strength while those below are based on the crane stability. The foundation, working conditions, etc. should be taken into consideration adequately when using the crane for actual work. (Tire air pressure: 9.0kg/cm^2).
2. The weights of the slings and hooks are included in the total rated loads shown.
3. The total rated loads are based on the actual working radii into which are included the deflections of the boom and the tires.
4. The chart below shows the standard number of part lines for each boom length . The load per line should not exceed 2.9t (main winch hook).

A	8.5m	14.4m	20.3m	J
H	7	6	4	1

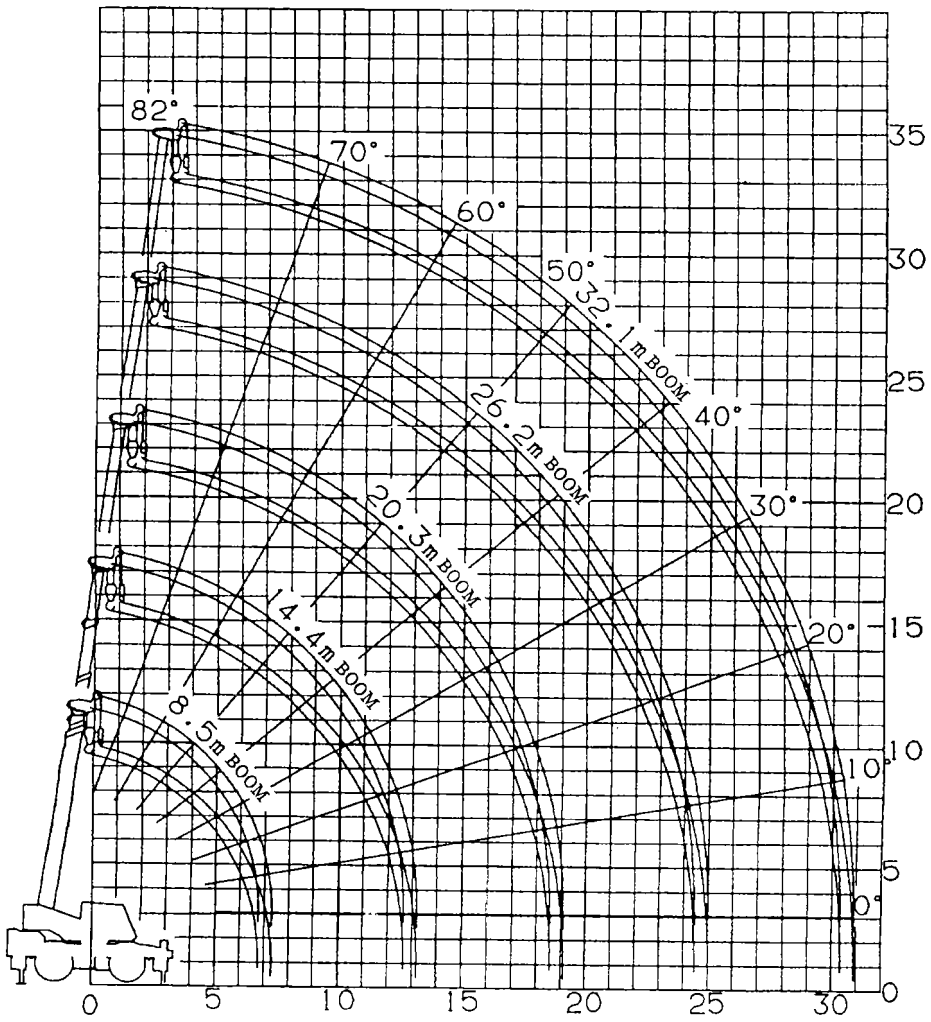
A = Boom length
H = No. of part-line
J = Single top

5. The total rated load for the single top shall be the value obtained by subtracting 120kg from the total rated load of the boom and must not exceed 3.0t.
6. Free-fall operations should not be performed without outriggers.
7. The 20.3m boom, the jib and the single top should not be used without the outriggers.
8. The boom must be kept inside a 2° area (1° each to the left and right) over front of the carrier when performing "Over front" crane operations without the outriggers.



9. When creeping while hoisting a load, the swing brake should be applied, the load should be kept as close to the ground as possible but not touching the ground and the speed should be kept at 1.6km/h or less. In particular, any abrupt steering, starting or braking must be avoided.
10. Crane operations should not be performed when creeping while hoisting a load.

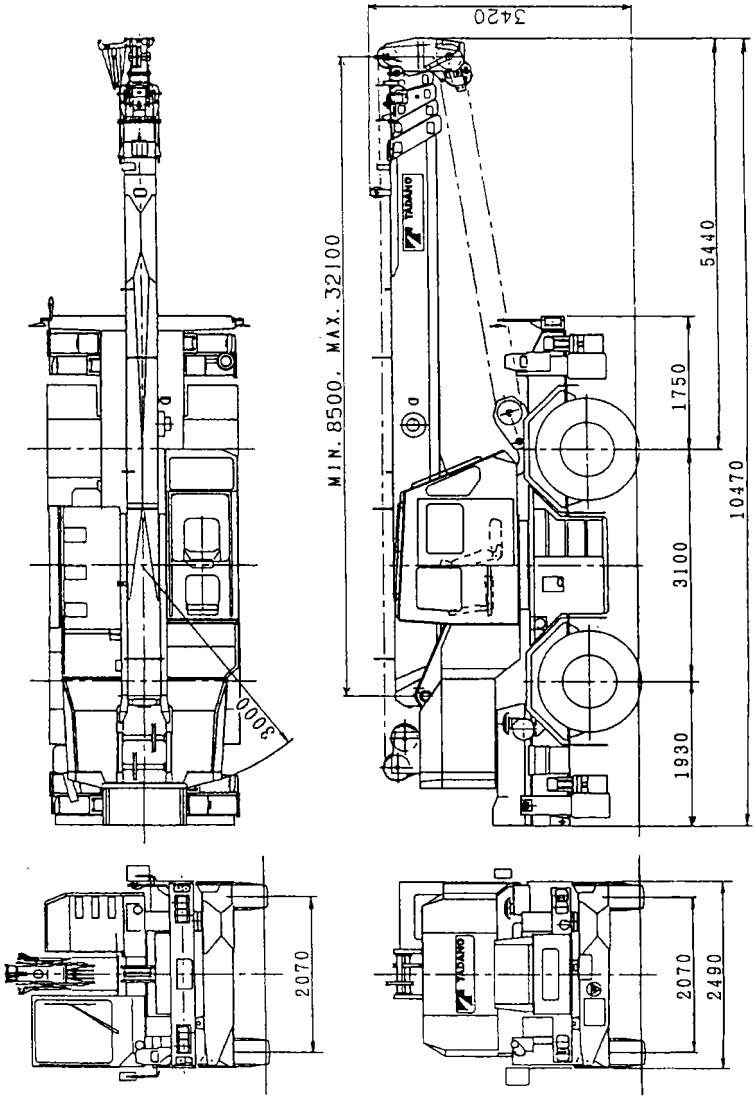
WORKING RADIUS - LIFTING HEIGHT



NOTES:

1. The deflection of the boom is not incorporated in the figure above.
2. The figure above is for the case when the outriggers are fully extended (360°).

DIMENSIONS (1/100)



◆ MEMO ◆