ROUGH TERRAIN CRANE

TR-100ML
TR-100M

(H-type Outrigger)

JAPANESE SPECIFICATIONS

CARRIER MODEL	OUTLINE	SPEC. NO.
TR-100ML	Max. total rated load 10 ton	TR-100M-1-00102
TR-100M	Max. total rated load 4.9 ton	TR-100M-1-00104

Control No. JA-03

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TR-100ML, TR-100M

CRANE SPECIFICATIONS

CRANE CAPACITY

5.2m Boom	10,000kg	at 2.5m	(8part-line) ···TR-100ML
	4,900kg	at 3.9m	(4part-line) ···TR-100M
8.8m Boom	4,900kg	at 4.0m	(4part-line)
12.4m Boom	4,900kg	at 4.0m	(4part-line)
16.0m Boom	4,000kg	at 4.5m	(4part-line)
19.6m Boom	3,500kg	at 4.5m	(4part-line)
23.2m Boom	2,000kg	at 6.0m	(4part-line)
Single top	1,400kg		(1part-line)

MAX.LIFTING HEIGHT

Boom	23.9m
Single top	24.2m

MAX.WORKING RADIUS

Boom	21.9m
Single top	21.9m

BOOM LENGTH
5.2m – 23.2m

BOOM EXTENSION
18.0m

BOOM EXTENSION SPEED
18.0m/54s

MAIN WINCH SINGLE LINE SPEED
114m/min (5th layer)

MAIN WINCH HOOK SPEED
28.5m/min (4 part-line)

AUXILIARY WINCH SINGLE LINE SPEED
98m/min (3rd layer)

AUXILIARY WINCH HOOK SPEED
98m/min (1 part-line)

BOOM ELEVATION ANGLE
-2 °– 82 °

BOOM ELEVATION SPEED
-2 °– 82 °/30s

SWING ANGLE
360 °continue

SWING SPEED
2.8rpm

WIRE ROPE
Main Winch
10mm x 127m (Diameter x Length)
Spin-resistant wire rope
Auxiliary Winch
10mm x 55m (Diameter x Length)
Spin-resistant wire rope

BOOM
6-section hydraulically telescoping boom of box construction
(stages 2,3: synchronized; stages 4,5,6: synchronized)

BOOM EXTENSION
2 double-acting hydraulic cylinders
2 wire rope type telescoping devices

SINGLE TOP
Mounted and fixed on the top boom section.

HOIST
Driven by hydraulic motor and via bevel gear reducer.
With free-fall device.
Automatic brake (with foot brake for free-fall device)
2 single winches
With flow regulator valve with pressure compensation

BOOM ELEVATION
1 double-acting hydraulic cylinder

SWING
Hydraulic motor driven planetary gear reducer
Swing bearing
Negative brake

OUTRIGGERS
Fully hydraulic H-type (floats mounted integrally)
Slides and jacks each provided with independent operation device.

Fully extended width	4.5m
Middle extended width	3.5m, 2.5m
Minimum extended width	1.64m

OPERATION METHOD
Hydraulic pilot valve operation

MAX. VERTICAL LOAD CAPACITY OF OUTRIGGER
11.2t ···TR-100ML
9.8t ···TR-100M

HYDRAULIC PUMPS
Gear pump

HYDRAULIC OIL TANK CAPACITY
172 liters

SAFETY DEVICES
Automatic moment limiter (AML)
Over-winding cutout device
Working area control device
Free-fall interlock device
Outrigger extension width detector
Level gauge
Hook safety latch
Hydraulic safety valve
Telescopic counterbalance valve
Elevation counterbalance valve
Jack pilot check valve

EQUIPMENT
Air-conditioner with dehumidifier
Hydraulic oil temperature indication lamp
Radio
Oil cooler
Visual-type winch drum rotation indicator (option)
Operation pedals
ISO arrangement: for telescoping/auxiliary hoisting
TADANO arrangement: for elevating/telescoping

CARRIER SPECIFICATIONS

ENGINE
Model HINO W04D-T
Type 4-cycle, 4-cylinder, direct-injection, water-cooled diesel engine (with turbo charger)
Piston displacement 4,009cc
Max. output 150PS at 3,000rpm
Max. torque 38.0kg·m at 1,800rpm

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 (with Hi/Low settings)

REDUCER
Single reduction type hypoid gear

DRIVE
2-wheel drive (4X2) / 4-wheel drive (4X4) selection

FRONT AXLE
Full floating type

REAR AXLE
Full floating type

SUSPENSION
Front Parallel leaf spring type
Rear Parallel leaf spring type
Spring lock device (option)

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
12 V DC. 2 batteries of 24V (100Ah)

FUEL TANK CAPACITY
190 liters

TIRES
Front 11R22.5–16PR
Rear 11R22.5–16PR

CAB
One-man type
With interior equipment
Rubber mounted type
Fully adjustable foldable seat
(with headrest and seat belt)
Adjustable handle (tilt, telescoping)
Intermittent type windshield/roof wiper (with washer)
Power window
Side visor

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

EQUIPMENT
Centralized oiling device

GENERAL DATA

DIMENSIONS

Overall length		7,290mm
Overall width		2,000mm
Overall height		2,800mm
Wheel base		2,750mm
Tread	Front	1,680mm
	Rear	1,680mm

WEIGHTS
Gross vehicle weight

Total		12,115kg
	Front	6,050kg
	Rear	6,065kg

PERFORMANCE

Max. traveling speed	49km/h
Gradeability (tan θ)	0.6
Min. turning radius	3.9m (4-wheel steering)
	6.9m (2-wheel steering)

TOTAL RATED LOADS

(1) With outriggers set
[BOOM]

Unit : ton

Outriggers fully extended (4.5m)						–360 °–
B \ A	5.2m	8.8m	12.4m	16.0m	19.6m	23.2m
1.0m	10.00(4.90)	4.90				
1.5m	10.00(4.90)	4.90	4.90			
2.0m	10.00(4.90)	4.90	4.90	4.00		
2.5m	10.00(4.90)	4.90	4.90	4.00	3.50	
3.0m	8.00(4.90)	4.90	4.90	4.00	3.50	2.00
3.5m	6.10(4.90)	4.90	4.90	4.00	3.50	2.00
4.0m	5.40(4.90)	4.90	4.90	4.00	3.50	2.00
4.5m	(3.9m)	4.60	4.20	4.00	3.50	2.00
5.0m		4.20	3.80	3.55	3.15	2.00
5.5m		3.80	3.45	3.15	2.90	2.00
6.0m		3.35	3.15	2.85	2.70	2.00
7.0m		2.75	2.65	2.38	2.30	1.80
8.0m		2.45(7.5m)	2.20	2.00	1.95	1.60
9.0m			1.75	1.75	1.70	1.45
10.0m			1.38	1.55	1.50	1.30
11.0m			1.10	1.30	1.33	1.20
12.0m				1.08	1.13	1.10
13.0m				0.90	0.97	1.00
14.0m				0.75	0.83	0.86
15.0m				0.65(14.7m)	0.70	0.75
16.0m					0.60	0.66
17.0m					0.50	0.57
18.0m					0.42	0.50
19.0m					0.40(18.3m)	0.42
20.0m						0.35
21.9m						0.26
a (°)	0 ～ 82					

A= Boom length B= Working radius
a= Boom angle range (for the unladen condition)

[BOOM]

Unit:ton

Outriggers middle extended (3.5m) –Over sides–						
A / B	5.2m	8.8m	12.4m	16.0m	19.6m	23.2m
1.0m	10.00(4.90)	4.90				
1.5m	10.00(4.90)	4.90	4.90			
2.0m	10.00(4.90)	4.90	4.90	4.00		
2.5m	10.00(4.90)	4.90	4.90	4.00	3.50	
3.0m	8.00(4.90)	4.90	4.90	4.00	3.50	2.00
3.5m	6.10(4.90)	4.90	4.90	4.00	3.50	2.00
4.0m	5.40(4.90)	4.90	4.90	4.00	3.50	2.00
4.5m	(3.9m)	4.55	4.20	4.00	3.50	2.00
5.0m		3.75	3.65	3.40	3.15	2.00
5.5m		3.10	3.00	3.00	2.90	2.00
6.0m		2.60	2.55	2.60	2.70	2.00
7.0m		1.90	1.85	2.00	2.15	1.80
8.0m		1.60(7.5m)	1.35	1.55	1.70	1.60
9.0m			1.00	1.20	1.35	1.40
10.0m			0.75	0.95	1.08	1.13
11.0m			0.55	0.73	0.87	0.93
12.0m				0.56	0.70	0.76
13.0m				0.43	0.55	0.62
14.0m				0.33	0.43	0.51
15.0m				0.27(14.7m)	0.35	0.42
16.0m					0.25	0.33
17.0m					0.18	0.25
18.0m						0.19
a (°)	0～82				3～82	25～82

A= Boom length B= Working radius
a= Boom angle range (for the unladen condition)

[BOOM]

Unit : ton

Outriggers middle extended (2.5m) –Over sides–						
A / B	5.2m	8.8m	12.4m	16.0m	19.6m	23.2m
1.0m	10.00(4.90)	4.90				
1.5m	10.00(4.90)	4.90	4.90			
2.0m	10.00(4.90)	4.90	4.90	4.00		
2.5m	7.00(4.90)	4.90	4.90	4.00	3.50	
3.0m	5.20(4.90)	4.90	4.90	4.00	3.50	2.00
3.5m	4.10	3.95	3.70	3.80	3.50	2.00
4.0m	3.40(3.9m)	3.15	2.95	3.10	3.25	2.00
4.5m		2.50	2.35	2.55	2.65	2.00
5.0m		2.00	1.90	2.10	2.20	2.00
5.5m		1.65	1.55	1.75	1.85	1.90
6.0m		1.35	1.30	1.45	1.60	1.65
7.0m		0.92	0.90	1.05	1.17	1.25
8.0m		0.75(7.5m)	0.60	0.75	0.87	0.95
9.0m			0.38	0.53	0.65	0.72
10.0m			0.20	0.37	0.45	0.54
11.0m					0.30	0.40
12.0m						0.28
a (°)	0～82		17～82	36～82	50～82	51～82

A= Boom length B= Working radius
a= Boom angle range (for the unladen condition)

[BOOM]

Unit:ton

Outriggers minimum extended (1.64m) –Over sides–						
A / B	5.2m	8.8m	12.4m	16.0m	19.6m	23.2m
1.0m	8.00(4.90)	4.90				
1.5m	7.00(4.90)	4.90	4.90			
2.0m	5.00(4.90)	4.90	4.90	4.00		
2.5m	3.60	3.45	3.40	3.20	3.20	
3.0m	2.60	2.50	2.45	2.55	2.55	2.00
3.5m	2.00	1.850	1.80	2.00	2.05	2.00
4.0m	1.60(3.9m)	1.40	1.35	1.55	1.65	1.70
4.5m		1.05	1.00	1.20	1.33	1.40
5.0m		0.80	0.75	0.95	1.05	1.12
5.5m		0.60	0.55	0.75	0.85	0.92
6.0m		0.45	0.40	0.58	0.68	0.75
7.0m				0.30	0.43	0.50
8.0m						0.30
a (°)	0～82	26～82	55～82	61～82	65～82	69～82

A= Boom length B= Working radius
a= Boom angle range (for the unladen condition)

PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE EXTENDED:

1. The values in parentheses are for TR-100M.
2. The total rated loads shown are for the case where the crane is set horizontally on firm level ground. They include the weights of the slings and hooks.
   The values above the bold lines are based on the crane strength while those below are based on the crane stability.
3. Since the total rated loads are based on the actual working radii including the deflection of the boom, operations should be performed in accordance with the working radii.
4. The total rated load for the single top shall be the value obtained by subtracting the weight of the main hook from the total rated load of the boom and must not exceed 1.4t.
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 chart below shows the standard number of part lines for each boom length. The load per line should not exceed 1.25t for the main winch and 1.4t for the auxiliary winch.

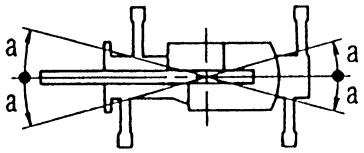
A	5.2m	8.8m	12.4m	16.0m	19.6m	23.2m	Single top
H	8(4)	4	4	4	4	4	1
K	10t Hook (4.9t Hook)						1.4t Hook
L	80kg (75kg)						20kg

The value in( ) is for TR-100M.

A= Boom length H= No. of part-lines
K= Hook type L= Hook weight

7. The hoisting performance for the "Over sides" range will differ according to the extended width of the outriggers. Operations should be performed in accordance with the performance corresponding to the extended width.
   Also, although the hoisting performances for the "Over front" and "Over rear" ranges are equivalent to those of the "outriggers fully extended" condition, the front and rear ranges (angle a) will differ according to the width to which the outriggers are extended in the left and right directions.

Extended width	Middle extended (3.5m)	Middle extended (2.5m)	Minimum extended (1.64m)
Angle a °	25	15	5



LOAD 28

(2) Without outriggers

When the spring lock (option)
is not available or not used:

Unit : ton

Travel with a load (1.6km/h or less)		–Over front–
A / B	5.2m	8.8m
1.0m	1.00	0.50
3.5m	1.00	0.50
7.0m		0.50
a (°)	0 ～ 82	

When the spring lock (option) is used:

Unit : ton

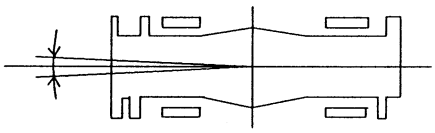
B	Travel with a load (1.6km/h or less)					
	5.2m Boom		8.8m Boom		12.4m Boom	
	F	G	F	G	F	G
1.0m	3.20	1.70	3.20	1.70		
1.5m	3.20	1.70	3.20	1.70	3.20	1.70
2.0m	3.00	1.40	3.00	1.35	3.00	1.35
2.5m	2.60	0.95	2.55	0.90	2.55	0.90
3.0m	2.15	0.65	2.10	0.55	2.10	0.55
3.5m	1.80	0.40	1.75	0.30	1.75	0.30
4.0m			1.45	0.18	1.45	0.15
4.5m			1.20		1.20	
5.0m			1.00		1.00	
5.5m			0.85		0.85	
6.0m			0.70		0.70	
7.0m			0.40		0.45	
8.0m					0.25	
a (°)	0～82	0～82	0～82	53～82	39～82	68～82

A= Boom length B= Working radius F= Front G= 360 °
a= Boom angle range (for the unladen condition)

PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE NOT MOUNTED:

1. The total rated loads shown are for the case where the tire air pressure on firm level ground is as specified (8.00kgf/cm^2). They include the weights of the slings and hooks.
   The total rated loads for using the spring lock are for the case where the spring-lock cylinder is extended as much as possible in addition to the above, which are based on the tire strength. The foundation, working conditions, etc. should be taken into consideration for actual work.
2. Since the total rated loads are based on the actual working radii including the deflection of the boom and the tires, operations should be performed in accordance with the working radii.
3. If the spring lock is not available or not used, no load can be hoisted in the over-side area. "Over front" crane operations should be performed only when the AML "over-front area indicator lamp" is lit. The boom must be kept inside a 2 ° area over front of the carrier when performing "Over front" crane operations without the outriggers.

Approx.2 °



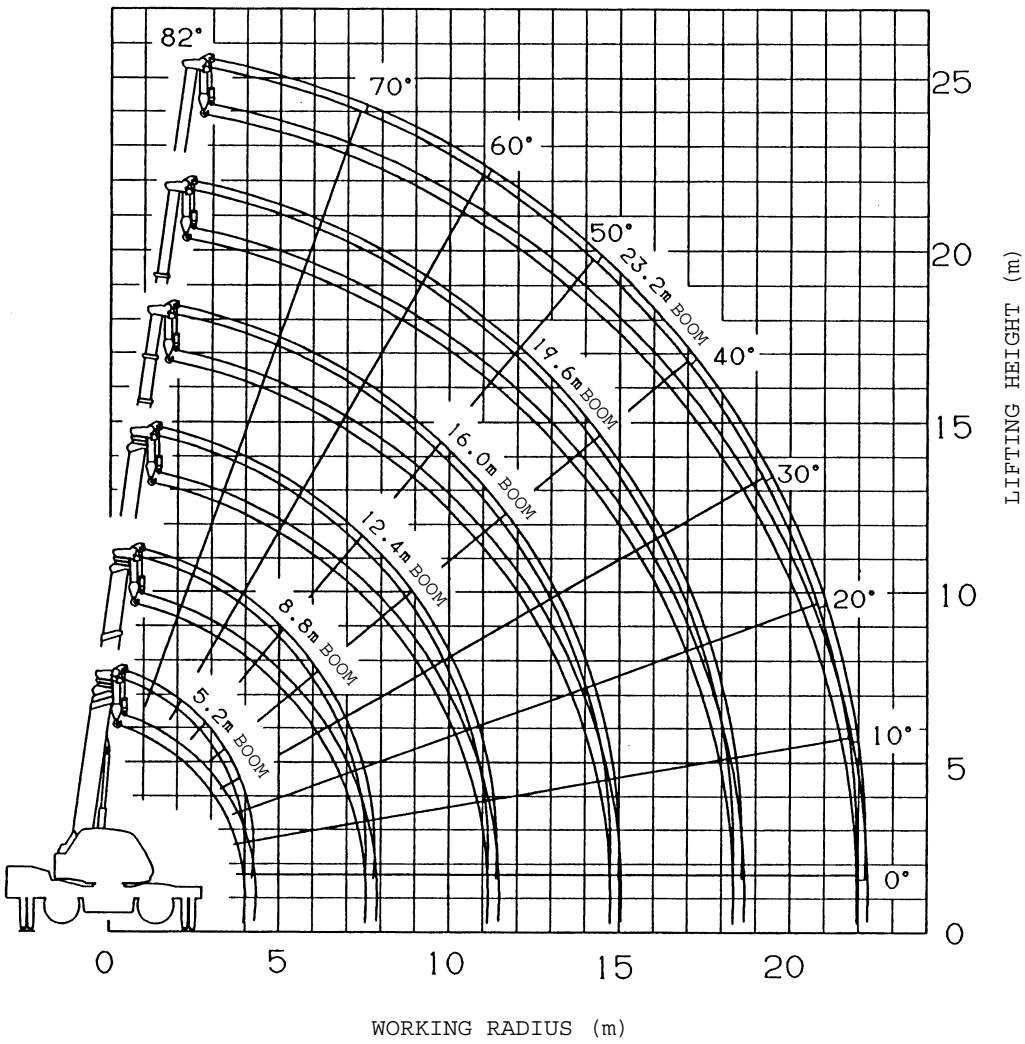
4. The chart below shows the standard number of part lines for each boom length.

A	5.2m～12.4m	Single top
H	4	1

A= Boom length H= No. of part-lines

5. The total rated load for the single top shall be the value obtained by subtracting the weight of the main hook from the total rated load of the boom and must not exceed 1.4t.
6. Free-fall operations should not be performed without outriggers.
   Booms over 8.8m (12.4m when the spring lock is used) in length should not be used without outriggers.
7. The "Drive Mode Selection" switch should be set to "4-wheel•Lo" for creeping while hoisting a load.
8. 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.
9. 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 where the outriggers are fully extended (360 °).

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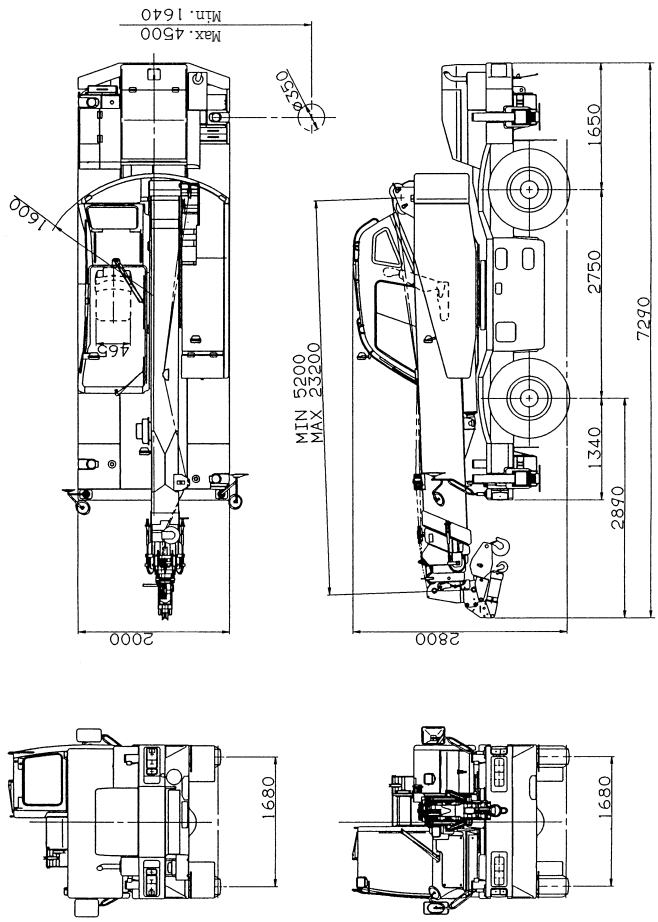
DIMENSIONS (1/100)



LOAD 28