

# ROUGH TERRAIN CRANE

**TR-80M**  
**TR-80ML**

## *JAPANESE SPECIFICATIONS*

OUTLINE	SPEC. NO.
Max. total rated load 4.9 ton	TR-80M-1-00103
Max. total rated load 8.0 ton	TR-80M-1-00105

Control No. JA-03

# TR-80ML, TR-80M

## CRANE SPECIFICATIONS

### CRANE CAPACITY

4.9m Boom	8,000kg	at 2.5m ( 7 part-line)	... TR-80ML
	4,900kg	at 3.5m ( 4 part-line)	... TR-80M
9.0m Boom	5,000kg	at 3.5m ( 4 part-line)	... TR-80ML
	4,900kg	at 3.5m ( 4 part-line)	... TR-80M
13.1m Boom	4,500kg	at 4.0m ( 4 part-line)	
17.2m Boom	4,000kg	at 3.5m ( 4 part-line)	
21.3m Boom	2,000kg	at 6.0m ( 4 part-line)	
Single top	1,400kg	( 1 part-line)	

### MAX. LIFTING HEIGHT

Boom	21.5m
Single top	22.0m

### MAX. WORKING RADIUS

Boom	19.8m
Single top	20.3m

### BOOM LENGTH

4.9m - 21.3m

### BOOM EXTENSION

16.4m

### BOOM EXTENSION SPEED

16.4m / 70s

### MAIN WINCH SINGLE LINE SPEED

High range: 106m/min (5th layer)

### MAIN WINCH HOOK SPEED

High range: 26.5m/min (4 part-line)

### AUXILIARY WINCH SINGLE LINE SPEED

High range: 93m/min (3rd layer)

### AUXILIARY WINCH HOOK SPEED

High range: 93m/min (1 part-line)

### BOOM ELEVATION ANGLE

-2° - 80°

### BOOM ELEVATION SPEED

-2° - 80° / 27s

### SWING ANGLE

360° continue

### SWING SPEED

2.1rpm

### WIRE ROPE

Main Winch

10mm × 118m (Diameter × Length)

7 × 7 + 6 × Fi(29)

Spin-resistant wire rope

Auxiliary Winch

10mm × 50m (Diameter × Length)

7 × 7 + 6 × WS(36)

Spin-resistant wire rope

### BOOM

5-section hydraulically telescoping boom of box construction.

(stage 2: sequential; stages 3,4,5: synchronized)

### BOOM EXTENSION

2 double-acting hydraulic cylinder

1 wire rope type telescoping device

### SINGLE TOP

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

### HOIST

Driven by hydraulic motor driven 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 cylinders

### SWING

Hydraulic motor driven planetary gear reducer

Swing bearing

Hydraulically released brake

### OUTRIGGERS

Fully hydraulic X-type (floats mounted integrally)

Slides and jacks each provided with independent operation device.

Full extended width 4.4m

Middle extended width 3.4m

Minimum extended width 2.1m

### OPERATION METHOD

Hydraulic pilot valve operation

### MAX. OUTRIGGER LOAD

8.9t ..... TR-80ML

8.2t ..... TR-80M

### HYDRAULIC PUMPS

Gear pumps

### HYDRAULIC OIL TANK CAPACITY

172 liters

### SAFETY DEVICES

Automatic moment limiter (AML)

Multi-display indication

Over-winding cutout

Working area control device

Outrigger extension width detector

Level gauge

Hook safety latch

Hydraulic safety valve

Telescopic counterbalance valve

Elevation counterbalance valve

Jack pilot check valve

### EQUIPMENTS

Crane cab heater (with defroster)

Crane cab cooler

Hydraulic oil temperature indication lamp

Oil cooler

Operation pedals for telescoping

Radio

Multi-display

Television (option)

## GENERAL DATA

### ENGINE

Model HINO W04C-T  
Type 4-cycle, 4-cylinder, direct-injection, water-cooled diesel engine

Piston displacement 3,839cc  
Max. output 140PS at 3,000rpm  
Max. torque 35.0kg·m at 1,800rpm

### TORQUE CONVERTER

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

### TRANSMISSION

Power shift type (wet multi-plate clutch)  
High: 3 forward and 1 reverse speeds  
Low: 4 forward and 1 reverse speeds

### REDUCER

Single-stage hypoid gear speed reducer

### 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

- Hydrodynamic retarder
- Electro-pneumatic operated exhaust brake.
- Auxiliary braking device for operations

### FRAME

Welded box-shaped structure

### ELECTRIC SYSTEM

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

### FUEL TANK CAPACITY

190 liters

### TIRES

Front 11R22.5-14PR  
Rear 11R22.5-14PR

### CAB

One-man type  
With sun visor and trim  
Rubber mounted type  
Fully adjustable foldable seat  
(with headrest, armrest, seat belt)  
Adjustable handle (tilt, telescoping)  
Roof windshield lock warning  
Intermittent type roof wiper (with washer)

### SAFETY DEVICES

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

### EQUIPMENTS

Centralized oiling device  
Tire inflation kit

## GENERAL DATA

### DIMENSIONS

Overall length	6,695mm
Overall width	2,000mm
Overall height	2,800mm
Wheel base	2,750mm
Tread Front	1,680mm
Rear	1,680mm

### WEIGHTS

Gross vehicle weight	
Total	11,645kg
Front	5,680kg
Rear	5,965kg

### PERFORMANCE

Max. traveling speed	49km/h
Gradeability (tan θ)	0.6
Min. turning radius	4.05m (4-wheel steering)
	7.0m (2-wheel steering)

**TOTAL RATED LOADS**

(1) With outriggers set

Unit : ton

Outriggers fully extended (4.4m)							- 360° -
A \ B (m)	4.9m	5.6m	9.0m	13.1m	17.2m	21.3m	
1.0	8.00 (4.90)	8.00 (4.90)					
1.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)				
2.0	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50			
2.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50			
3.0	6.50 (4.90)	6.50 (4.90)	5.00 (4.90)	4.50	4.00		
3.5	5.50 (4.90)	5.50 (4.90)	5.00 (4.90)	4.50	4.00	2.00	
4.0		4.80	4.50	4.50	3.80	2.00	
4.5			4.00	4.00	3.50	2.00	
5.0			3.50	3.50	3.20	2.00	
5.5			3.10	3.15	2.90	2.00	
6.0			2.70	2.83	2.70	2.00	
7.0			2.20	2.33	2.30	1.80	
8.0			2.00 (7.5m)	1.95	2.00	1.60	
9.0				1.65	1.75	1.40	
10.0				1.40	1.50	1.25	
11.0				1.20	1.30	1.10	
12.0				1.05(11.6m)	1.10	1.00	
13.0					0.95	0.90	
14.0					0.80	0.83	
15.0					0.67	0.76	
16.0					0.60(15.7m)	0.69	
17.0						0.60	
18.0						0.52	
19.0						0.45	
19.8						0.40	
a (°)	0 ~ 80						

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

Unit : ton

Outriggers middle extended (3.4m)							- Over sides -
A B (m)	4.9m	5.6m	9.0m	13.1m	17.2m	21.3m	
1.0	8.00 (4.90)	8.00 (4.90)					
1.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)				
2.0	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50			
2.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50			
3.0	6.50 (4.90)	6.50 (4.90)	5.00 (4.90)	4.50	4.00		
3.5	5.50 (4.90)	5.50 (4.90)	5.00 (4.90)	4.50	4.00	2.00	
4.0		4.80	4.50	4.50	3.80	2.00	
4.5			3.85	4.00	3.50	2.00	
5.0			3.30	3.50	3.20	2.00	
5.5			2.75	3.00	2.90	2.00	
6.0			2.35	2.55	2.70	2.00	
7.0			1.70	1.90	2.05	1.80	
8.0			1.45 (7.5m)	1.48	1.60	1.60	
9.0				1.15	1.25	1.35	
10.0				0.90	1.00	1.12	
11.0				0.70	0.80	0.93	
12.0				0.62(11.6m)	0.64	0.78	
13.0					0.50	0.65	
14.0					0.40	0.54	
15.0					0.33	0.45	
16.0					0.28(15.7m)	0.37	
17.0						0.30	
18.0						0.23	
19.0						0.18	
19.8						0.15	
a (°)	0 ~ 80						

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

Outriggers Minimum extended (2.1m)							- Over sides -
A B (m)	4.9m	5.6m	9.0m	13.1m	17.2m	21.3m	
1.0	8.00 (4.90)	8.00 (4.90)					
1.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)				
2.0	7.00 (4.90)	7.00 (4.90)	5.00 (4.90)	4.50			
2.5	4.90	4.90	4.70	4.50			
3.0	3.60	3.60	3.50	3.70	3.90		
3.5	2.80	2.80	2.70	2.90	3.10	2.00	
4.0		2.20	2.10	2.30	2.50	2.00	
4.5			1.70	1.90	2.05	2.00	
5.0			1.35	1.55	1.70	1.75	
5.5			1.07	1.27	1.40	1.45	
6.0			0.85	1.05	1.17	1.22	
7.0			0.52	0.72	0.82	0.87	
8.0			0.40(7.5m)	0.50	0.60	0.64	
9.0				0.30	0.40	0.44	
10.0				0.18	0.27	0.31	
11.0					0.16	0.20	
a (°)	0 ~ 80			25 ~ 80	43 ~ 80	53 ~ 80	

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

**PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE EXTENDED:**

1. Values within ( ) are for the TS-80M type.
2. The total rated loads shown are for the case when the outriggers are set horizontally on firm ground. The values are based on the crane strength.
3. The weights of the slings and hooks are included in the total rated loads shown.
4. The total rated load is based on the actual working radius including the deflection of the boom.
5. 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 (1.23t in the case of the TR-80M type) and 1.4t for the auxiliary winch.

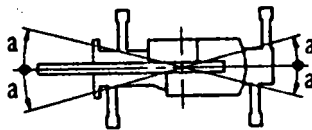
A	4.9m	5.6m	9.0m	13.1m	17.2m	21.3m	Single top
H	7 (4)	7 (4)	4	4	4	4	1
Hook type	8t Hook (4.9t Hook)						1.4t Hook
Hook weight	7.5 kg (7.0 kg)						2.0 kg

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

Values within ( ) are for TS-80M.

6. 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.
7. The total rated load for the single top shall be the value obtained by subtracting 60kg from the total rated load of the boom and must not exceed 1.4t.
8. 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 (3.4m)	Minimum extended
Angle a°	25	10



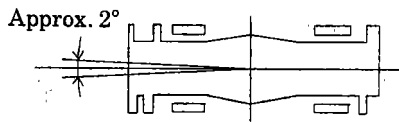
(2) Without outriggers (Over front)

(Unit: Ton)

Working radius	Boom length	4.9m – 9.0m
	Less than 5.0	1.00
	Boom angle range (for the unladen condition)	0° – 80°

**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 with the air pressure of the tires being at the prescribed pressure. The foundation, working conditions, etc. should be taken into consideration adequately when using the crane for actual work. (Tire air pressure: 7.00kg/cm<sup>2</sup>).
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 deflection of the boom and the tires.
4. Hoisting cannot be performed over sides when the outriggers are not used. Operations should be performed with the boom being inside a 2° area (1° each to the left and right) over front of the carrier.



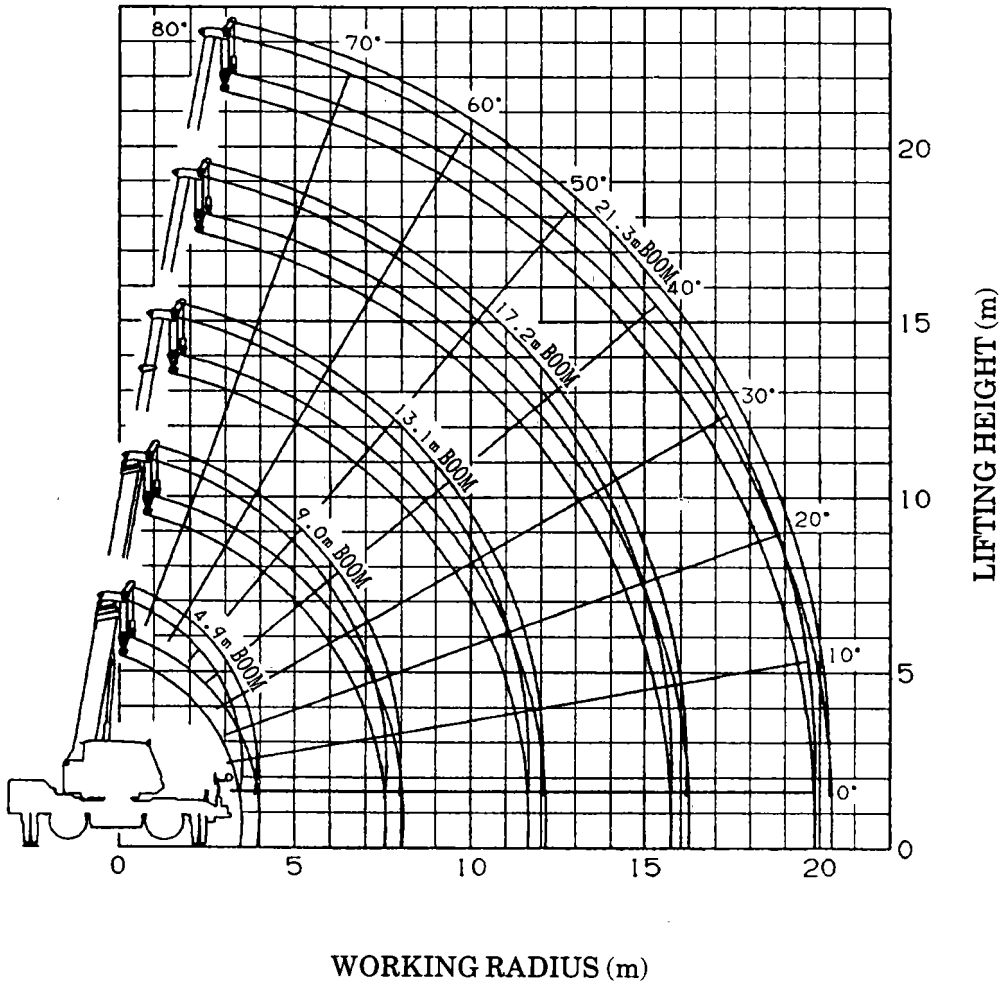
5. The chart below shows the standard number of part lines for each boom length.

Boom length	4.9m – 9.0m
No. of part-line	4

6. The total rated load for the single top shall be the value obtained by subtracting 60kg from the total rated load of the boom.
7. Free-fall operations should not be performed without outriggers.
8. Booms over 9.0m in length should not be used without outriggers.
9. The "Drive, Speed Selection" switch should be set to "4-wheel · Lo" for creeping while hoisting a load.
10. 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.
11. 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)

