ROUGH TERRAIN CRANE

TR-400M

JAPANESE SPECIFICATIONS

<table>
<thead>
<tr>
<th>OUTLINE</th>
<th>SPEC. NO.</th>
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<tbody>
<tr>
<td>5-section Boom, 2-stage Jib</td>
<td>TR-400M-1-00101</td>
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Control No. JA-01
**CRANE SPECIFICATIONS**

**CRANE CAPACITY**
- 9.0m Boom: 40,000kg at 3.0m
- 15.1m Boom: 25,000kg at 4.0m
- 21.2m Boom: 18,000kg at 4.5m
- 27.3m Boom: 10,000kg at 8.0m
- 33.4m Boom: 6,500kg at 9.0m
- 7.5m Jib: 4,000kg at 70°
- 13.0m Jib: 2,500kg at 70°
- Single top: 4,000kg

**MAX. LIFTING HEIGHT**
- Boom: 34.0m
- Jib: 46.6m

**MAX. WORKING RADIUS**
- Boom: 31.0m
- Jib: 34.0m

**BOOM LENGTH**
- 9.0m – 33.4m

**BOOM EXTENSION**
- 24.4m

**BOOM EXTENSION SPEED**
- 24.4m / 100s

**JIB LENGTH**
- 7.5m, 13.0m

**MAIN WINCH SINGLE LINE SPEED**
- High range: 126m/min (4th layer)
- Low range: 63m/min (4th layer)

**MAIN WINCH HOOK SPEED**
- High range: 12.6m/min (10 part-line)
- Low range: 6.3m/min (10 part-line)

**AUXILIARY WINCH SINGLE LINE SPEED**
- High range: 120m/min (4th layer)
- Low range: 60m/min (4th layer)

**AUXILIARY WINCH HOOK SPEED**
- High range: 120m/min (1 part-line)
- Low range: 60m/min (1 part-line)

**BOOM ELEVATION ANGLE**
- 0° – 80°

**BOOM ELEVATION SPEED**
- 0° – 80° / 55s

**SWING ANGLE**
- 360° continue

**SWING SPEED**
- 2.8rpm

**WIRE ROPE**
- **Main Winch**
  - 18mm × 185m (Diameter × Length)
  - 7 × 7 + 6 × F(29) Class C ordinary 2 twist
  - Spin-resistant wire rope
  - Breaking strength: 24.3t

- **Auxiliary Winch**
  - 18mm × 106m (Diameter × Length)
  - 7 × 7 + 6 × F(29) Class C ordinary 2 twist
  - Spin-resistant wire rope
  - Breaking strength: 24.3t

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

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

**JIB**
- 2-staged swingaround boom extension which stores alongside boom base section
  - (with 2nd stage being a pull-out type)
  - Dual offset (5°, 30°) type

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

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

**BOOM ELEVATION**
- 2 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: 7.0m
  - Middle extended width: 5.4m
  - Minimum extended width: 4.0m

**MAX. OUTRIGGER LOAD**
- 32.0t

**HYDRAULIC PUMPS**
- 2 variable piston pumps
- 2 gear pumps

**HYDRAULIC OIL TANK CAPACITY**
- 555 liters

**SAFETY DEVICES**
- Automatic moment limiter (AML-US)
  - 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)
  - Reclining seat (with headrest)
  - Jib extending device
  - Radio
  - Fan
CARRIER SPECIFICATIONS

ENGINE
Model: NISSAN DIESEL MOTOR CO., LTD. PE6(T)
Type: 4-cycle, 6-cylinder, direct-injection, water-cooled diesel engine (with turbo charger)
Piston displacement: 11,670cc
Max. output: 280PS at 2,200rpm
Max. torque: 110kg-m at 1,200rpm

TORQUE CONVERTER
4-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
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 (Option)

FRAME
Welded box-shaped structure

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

FUEL TANK CAPACITY
300 liters

CAB
Two-man type

TIRES
Front: 18.00-25-24PR (OR)
Rear: 18.00-25-24PR (OR)

SAFETY DEVICES
Emergency steering device
Spring lock device

GENERAL DATA

DIMENSIONS
Overall length: 11,680mm
Overall width: 2,980mm
Overall height: 3,740mm
Wheelbase: 4,200mm
Tread
Front: 2,420mm
Rear: 2,420mm

WEIGHTS
Gross vehicle weight
Total: 34,660kg
Front: 17,330kg
Rear: 17,330kg

PERFORMANCE
Max. traveling speed: 34km/h
Gradeability (tan θ): 0.6
Min. turning radius
4-wheel steering: 6.1m
2-wheel steering: 10.4m
## TOTAL RATED LOADS

(1) With outriggers set (360°)

### Outriggers fully extended

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A = Boom length  
B = Working radius  
C = Jib length  
D = Jib offset  
E = Boom angle
## Outriggers minimum extended

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**NOTES:**

1. The total rated loads shown are for the case when the outriggers are 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: 450kg, auxiliary winch hook: 100kg) 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 4.0t for both the main winch and the auxiliary winch.

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</table>

**A = Boom length  H = No. of part-line  J = Jib / 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 350kg from the total rated load of the boom and must not exceed 4.0t.
(2) Without outriggers

<table>
<thead>
<tr>
<th>B (m)</th>
<th>Stationary</th>
<th>Creep (travelling at 1.6 km/h or less)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.0 m BOOM</td>
<td>15.1 m BOOM</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>G</td>
</tr>
<tr>
<td>3.0</td>
<td>20.0</td>
<td>13.5</td>
</tr>
<tr>
<td>3.5</td>
<td>20.0</td>
<td>11.5</td>
</tr>
<tr>
<td>4.0</td>
<td>17.7</td>
<td>9.5</td>
</tr>
<tr>
<td>4.5</td>
<td>16.0</td>
<td>8.0</td>
</tr>
<tr>
<td>5.0</td>
<td>14.6</td>
<td>6.7</td>
</tr>
<tr>
<td>5.5</td>
<td>13.3</td>
<td>5.7</td>
</tr>
<tr>
<td>6.0</td>
<td>12.1</td>
<td>4.8</td>
</tr>
<tr>
<td>6.5</td>
<td>11.0</td>
<td>4.1</td>
</tr>
<tr>
<td>7.0</td>
<td>10.0</td>
<td>3.5</td>
</tr>
<tr>
<td>8.0</td>
<td>7.9</td>
<td>2.5</td>
</tr>
<tr>
<td>9.0</td>
<td>6.4</td>
<td>1.8</td>
</tr>
<tr>
<td>10.0</td>
<td>5.2</td>
<td>1.2</td>
</tr>
<tr>
<td>11.0</td>
<td>4.3</td>
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<tr>
<td>12.0</td>
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<td>1.0</td>
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<td>2.4</td>
<td>1.0</td>
</tr>
<tr>
<td>16.0</td>
<td>1.6</td>
<td>1.0</td>
</tr>
<tr>
<td>18.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

B = Working radius  F = Front  G = 360°

NOTES:
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: 5.75 kg/cm²).
2. The weights of the slings and hooks (main winch hook: 450 kp) 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 4.0 t.

<table>
<thead>
<tr>
<th>A</th>
<th>9.0 m</th>
<th>15.1 m</th>
<th>21.0 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>10</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

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

5. The total rated load for the single top shall be the value obtained by subtracting 230 kg from the total rated load of the boom and must not exceed 4.0 t.
6. Free-fall operations should not be performed without outriggers.
7. The 27.3 m boom, the 33.4 m boom and the jib should not be used without 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.

Approx. 2°

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 1.6 km/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.
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°).