50 EXCAVATOR SPECIFICATIONS

Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with PCA and SAE Standards. Except where otherwise noted, these specifications are based on a unit with canopy (TOPS), 0.16 cu. yd. (0.12 m³) bucket, dozer blade, full fuel tank, 175-lb. (80 kg) operator and standard equipment.

**Rated Power @ 2650 rpm:**

<table>
<thead>
<tr>
<th>SAE</th>
<th>DIN 6270</th>
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</thead>
<tbody>
<tr>
<td>39 hp (29 kW)</td>
<td>29 kW</td>
</tr>
</tbody>
</table>

Net engine power is with standard equipment including air cleaner, exhaust system, alternator, and cooling tower standard conditions per SAE J1349 and DIN 2070, using No. 2-D fuel @ 35 API gravity. No derating is required up to 7500 ft. (2290 m) altitude.

**Engine:** Yanmar 4TN78T-RJB

- **Type:** 4-stroke cycle, turbocharged diesel
- **Bore and stroke:** 3.07 x 3.39 in. (78 x 86 mm)
- **No. of cylinders:** 4
- **Displacement:** 100 cu. in. (1.640 L)
- **Compression ratio:** 17.7:1
- **Maximum net torque @ 1800 rpm:** 92 lb-ft (125 Nm) (12.7 kg-m)
- **Lubrication:** Pressure system w/full flow filter
- **Cooling fan:** Dry Blower type
- **Air cleaner wire restriction indicator and safety element:** Dry
- **Electrical system:** 12 volt w/alternator
- **Battery (12 volt):** Reserve capacity: 120 minutes

**Hydraulic System:** Open Center

Three section gear pump and two control valves (9- and 2-spool) provide independent and combined operation of all functions.

- **Max. oil flow:** 33.4 gpm (126 L/min)
- **System operating pressure:** 2420 psi (16 690 kPa) (170 kg/cm²)
- **Relief valves:**
  - **Boom:** 2560 psi (19 650 kPa) (200 kg/cm²)
  - **Arm:** 2560 psi (19 650 kPa) (200 kg/cm²)
  - **Bucket:** 2560 psi (19 650 kPa) (200 kg/cm²)
  - **Digger blade:** 2560 psi (19 650 kPa) (200 kg/cm²)
  - **Boom swing:** 2420 psi (16 690 kPa) (170 kg/cm²)
  - **Travel:** 2420 psi (16 690 kPa) (170 kg/cm²)
  - **Swing:** 2560 psi (19 650 kPa) (180 kg/cm²)
- **Oil filtration:**
  - One suction filter
  - One 10-micron full flow return filter with bypass
- **Auxiliary valve:** (optional)
  - **Maximum flow:** 11.6 gpm (44 L/min)
  - **Operating pressure:** 2560 psi (17 650 kPa) (180 kg/cm²)

**Cylinders:**

- **Bore:** 3.9 in. (100 mm)
- **Rod Diameter:** 2.2 in. (55 mm)
- **Stroke:** 26.2 in. (665 mm)

- **Arm (1):**
  - **Bore:** 3.5 in. (90 mm)
  - **Rod Diameter:** 2.2 in. (55 mm)
  - **Stroke:** 29.3 in. (745 mm)

- **Bucket (1):**
  - **Bore:** 3.2 in. (80 mm)
  - **Rod Diameter:** 2.2 in. (55 mm)
  - **Stroke:** 24.2 in. (615 mm)

- **Boom swing (1):**
  - **Bore:** 1.5 in. (40 mm)
  - **Rod Diameter:** 1.5 in. (40 mm)
  - **Stroke:** 20.9 in. (530 mm)

- **Digger blade (1):**
  - **Bore:** 3.5 in. (90 mm)
  - **Rod Diameter:** 2.2 in. (55 mm)
  - **Stroke:** 9.6 in. (240 mm)

**Swing Mechanism:**

- **Swing speed:** 0.10-7 rpm (0.10-7/min)
- **Swing lock:** Manual for transporting
- **Turntable bearing:** Single-row, taper-type ball bearing with induction-hardened, lubricated internal gear and pinion.

**Undercarriage:**

- **Propel motors (one for each side):** Axial-piston hydraulic motors with planetary drives. Independent drive to each track permits counterrotation.
- **Digger blade:** 14 in. (350 mm) high x 6 ft. (1.84 m) wide

**Track Frame:**

- **Heavy-duty undercarriage frame with all-welded, stress-relieved construction. Side frames welded to track frame.

**Tracks and Rollers:**


**Upper rollers (each side):** 1
**Lower rollers (each side):** 1
**Track shoes (each side):** 37

**Canopy:**

- Walk-through canopy allows access to operator's station from either side. Canopy frame is a tip-over protective structure (TOPS) with integral roof for operator protection. Both right and left control stands can be locked to prevent unwanted actuation of digging functions. Adjustable vinyl seat, fore and aft.

**Controls:**

- All hydraulic functions are actuated by low-effort direct-acting controls. Two levers control swing, boom, arm and bucket functions. Right and left propel levers control forward, reverse and track counterrotation. A floor-mounted pedal controls boom swing. A lever to the right of the operator controls raising and lowering the blade.

**Boom and Arm:**

- The boom can be pivoted 60 degrees left and right. The boom and arm are welded, low-stress, full box-section design.
- **Arm length:** 5 ft. 4 in. (1.62 m)

**Servicing and Vandal Protection:**

- Handrails provided for easy servicing. Tit-up engine cover provides unrestricted access. Engine cover and fuel cap have built-in locks. Cab models have a lockable door.

**Additional Standard Equipment:**

- **Canopy:** Horn
- **Position hand throttle:** Operator's manual compartment
- **Monitor system:**
  - Air cleaner restriction indicator light
  - Alternator charge indicator light
  - Engine oil pressure warning light, audible alarm
  - Engine coolant temperature
  - Fuel level
  - Hourmeter
  - Glow (pre-heater) indicator light

**Engine:**

- **Cold weather (pre-heater) starting aid
- Dual fuel filters
- Automatic fuel air-bled system

**Lights:**

- (1) frame mounted
- (1) boom mounted

**Front attachment:**

- One-piece boom
- Dirt seals on all bucket pins
- Bolt-on bucket teeth

**Undercarriage:**

- Propellor motor and hydraulic line covers
- Single flange lower track rollers
- Bolt-on rock guards — front idler and drive sprocket
- Seat belt
- Lift hooks
- Frame: 485 lb. (220 kg) counterweight

**Optional or Special Equipment:**

- **Cab:**
  - Interior light
  - Windshield wiper
  - Cigarette lighter and ashtray
  - Coat hook
  - Floor mat
  - Roof hatch
  - Integral TOPS structure
  - Deluxe reclining vinyl seat with fore and aft adjustment

**Windows:**

- Wrap-around split-glass front window, top-half slides vertically with sliding right side window
- Roll-down cab door window

**Auxiliary valve function:** — for optional attachments

**Conversion kit (to SAE pattern)**
50 EXCAVATOR SPECIFICATIONS AND DIMENSIONS

Weights:
SAE operating weight w/canopy (TOPS),
  full fuel tank, operator and bucket ............. 9270 lb (4205 kg)
Cab (TOPS) .................................. add 330 lb (150 kg)
Valve auxiliary function ........................ add 88 lb (40 kg)
Less bucket .................................. deduct 258 lb (117 kg)

Capacities:  
  U.S.  
  Liters
Fuel tank .................................. 14.3 gal  
                                      54
Cooling system ............................. 7.8 qt  
                                         7.4
Engine lubrication w/filter ................. 7.9 qt  
                                         7.5
Hydraulic system ........................... 27.7 gal  
                                         105
Hydraulic reservoir ........................ 21.1 gal  
                                         80
Planetary propel drive (ea. side) .......... 0.8 qt  
                                         0.8
Swing drive ................................ 2.4 qt  
                                         2.3

Operating Information:
Dimensions:
Max. digging depth w/o blade ............... 11 ft 6 in (3.50 m)
Max. digging depth w/blade .................. 12 ft 2 in (3.70 m)
Max. reach @ ground level .................... 18 ft 3 in (5.56 m)
Max. dumping height ........................ 10 ft 8 in (3.25 m)
Max. boom swing angle right/left degrees  60°/60°
Boon offset distance @ max. boom swing angle, right 22.8 in (580 mm)
                                           22.8 in (580 mm)
     swing angle, left 22.8 in (580 mm)  
Forces:
  5 ft 4 in (1.62 m) Arm  
Max. arm digging force ..................... 4520 lb (20.1 kN)(205 kg)
Max. bucket digging force ................... 6945 lb (30.9 kN)(3150 kg)

Flotation:  
15 in (380 mm) Shoes
Average ground contact area ................ 2389 sq. in (15 413 cm²)
Canopy:
  Average ground pressure .................. 3.88 psi (26.8 kPa)(0.273 kg/cm²)
Cab:
  Average ground pressure .................. 4.01 psi (27.6 kPa)(0.282 kg/cm²)

Performance:
Swing speed .................................. 0-10.7 rpm
Travel speed .................................. Hi-speed 2.24 mph (3.6 km/h)
                                         Lo-speed 1.18 mph (1.9 km/h)
Gradability .................................. 58 percent (30 degrees)

BUCKETS:
  Bite Width  | SAE Heaped | Weight
  w/Sidecutters  22 in (550 mm) | .16 cu. yd (.12 m³) | 258 lb (117 kg)
### 50 EXCAVATOR LIFT CAPACITIES WITH CAB

Ratings at bucket lift hook, machine equipped with 15-in. (380 mm) shoes, 0.16 cu. yd. (0.12 m³) PCSA heaped bucket and standard counterweight, situated on firm, uniform supporting surface. **Boldface** type indicates hydraulic-limited capacities, lightface type indicates stability-limited capacities, in lb. (kg). Figures do not exceed 87 percent of hydraulic capacities or 75 percent of weight needed to tip machine.

**Blade on Ground**

<table>
<thead>
<tr>
<th></th>
<th>6 ft. 7 in. (2.0 m)</th>
<th>9 ft. 10 in. (3.0 m)</th>
<th>13 ft. 1 in. (4.0 m)</th>
<th>@ Max. Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 ft. 10 in. (3.0 m)</td>
<td>—</td>
<td>—</td>
<td>1521 (690)</td>
<td>1587 (720)</td>
</tr>
<tr>
<td>6 ft. 7 in. (2.0 m)</td>
<td>—</td>
<td>—</td>
<td>1433 (650)</td>
<td>1235 (560)</td>
</tr>
<tr>
<td>3 ft. 3 in. (1.0 m)</td>
<td>—</td>
<td>3042 (1380)</td>
<td>2249 (1020)</td>
<td>2138 (970)</td>
</tr>
<tr>
<td>Ground</td>
<td>5423 (2460)</td>
<td>3483 (1580)</td>
<td>2315 (1050)</td>
<td>1908 (820)</td>
</tr>
<tr>
<td>-3 ft 3 in. (-1.0 m)</td>
<td>5137 (2330)</td>
<td>3471 (1550)</td>
<td>2270 (1030)</td>
<td>1984 (900)</td>
</tr>
<tr>
<td>-6 ft. 7 in. (2.0 m)</td>
<td>4034 (1830)</td>
<td>2624 (1190)</td>
<td>2058 (920)</td>
<td>1676 (760)</td>
</tr>
</tbody>
</table>

**Blade Above Ground**

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<tr>
<td>9 ft. 10 in. (3.0 m)</td>
<td>—</td>
<td>—</td>
<td>1521 (690)</td>
<td>1345 (610)</td>
</tr>
<tr>
<td>6 ft. 7 in. (2.0 m)</td>
<td>—</td>
<td>—</td>
<td>1433 (650)</td>
<td>1146 (520)</td>
</tr>
<tr>
<td>3 ft. 3 in. (1.0 m)</td>
<td>—</td>
<td>2249 (1020)</td>
<td>1455 (660)</td>
<td>1036 (470)</td>
</tr>
<tr>
<td>Ground</td>
<td>4079 (1850)</td>
<td>2160 (980)</td>
<td>1477 (670)</td>
<td>925 (420)</td>
</tr>
<tr>
<td>-3 ft 3 in. (-1.0 m)</td>
<td>4034 (1830)</td>
<td>2006 (910)</td>
<td>1257 (570)</td>
<td>948 (430)</td>
</tr>
<tr>
<td>-6 ft. 7 in. (2.0 m)</td>
<td>4034 (1830)</td>
<td>2183 (990)</td>
<td>1235 (580)</td>
<td>1124 (510)</td>
</tr>
</tbody>
</table>

### 50 EXCAVATOR LIFT CAPACITIES WITH CANOPY

Ratings at bucket lift hook, machine equipped with 15-in. (380 mm) shoes, 0.16 cu. yd. (0.12 m³) PCSA heaped bucket and standard counterweight, situated on firm, uniform supporting surface. **Boldface** type indicates hydraulic-limited capacities, lightface type indicates stability-limited capacities, in lb. (kg). Figures do not exceed 87 percent of hydraulic capacities or 75 percent of weight needed to tip machine.

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<td>1235 (560)</td>
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<tr>
<td>3 ft. 3 in. (1.0 m)</td>
<td>—</td>
<td>3042 (1380)</td>
<td>2072 (940)</td>
<td>1806 (820)</td>
</tr>
<tr>
<td>Ground</td>
<td>5423 (2460)</td>
<td>3483 (1580)</td>
<td>2315 (1050)</td>
<td>1852 (840)</td>
</tr>
<tr>
<td>-3 ft 3 in. (-1.0 m)</td>
<td>5137 (2330)</td>
<td>3471 (1550)</td>
<td>2270 (1030)</td>
<td>1984 (900)</td>
</tr>
<tr>
<td>-6 ft. 7 in. (-2.0 m)</td>
<td>4034 (1830)</td>
<td>2624 (1190)</td>
<td>1952 (890)</td>
<td>1631 (740)</td>
</tr>
</tbody>
</table>

**Blade Above Ground**

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<td>1146 (520)</td>
</tr>
<tr>
<td>3 ft. 3 in. (1.0 m)</td>
<td>—</td>
<td>2205 (1000)</td>
<td>1411 (640)</td>
<td>1058 (480)</td>
</tr>
<tr>
<td>Ground</td>
<td>3902 (1770)</td>
<td>2006 (910)</td>
<td>1229 (560)</td>
<td>948 (430)</td>
</tr>
<tr>
<td>-3 ft 3 in. (-1.0 m)</td>
<td>3958 (1750)</td>
<td>1962 (890)</td>
<td>1124 (510)</td>
<td>1102 (500)</td>
</tr>
<tr>
<td>-6 ft. 7 in. (-2.0 m)</td>
<td>4034 (1830)</td>
<td>2205 (1000)</td>
<td>1720 (780)</td>
<td>1609 (730)</td>
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</tbody>
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Digging Depth and Reach:

Boom Swing