



1837-1987  
**150**

# 50 EXCAVATOR



Model shown may include options.

## FEATURES

39 SAE net hp (29 kW)

9270 lb. (4205 kg) standard operating weight

12 ft. 2 in. (3.70 m) maximum digging depth

18 ft. 3 in. (5.56 m) maximum reach at ground level

Excavator track-type undercarriage with hydraulic track adjustment—2.24 mph (3.6 km/h) maximum travel speed

60-degree pivot boom, left and right, allows tight-quarters digging and adds versatility

Standard dozer blade for backfilling and leveling

Standard walk-through canopy allows easy operator station access—optional high-visibility cab provides all-weather comfort

Exceptionally quiet operation

Easy daily maintenance

**TED B. MILLER CO. INC.**

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# 50 EXCAVATOR SPECIFICATIONS

Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with PCSA and SAE Standards. Except where otherwise noted, these specifications are based on a unit with canopy (TOPS), 0.16 cu. yd. (12 m<sup>3</sup>) bucket, dozer blade, full fuel tank, 175-lb. (80 kg) operator and standard equipment.

<b>Rated Power @ 2650 rpm:</b>	<b>SAE</b>	<b>DIN 6270</b>
Net	39 hp (29 kW)	29 kW

Net engine power is with standard equipment including air cleaner, exhaust system, alternator, and cooling fan, at standard conditions per SAE J1349 and DIN 6270, 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. (1.643 L)
Compression ratio	17.75:1
Maximum net torque @ 1800 rpm	92 lb-ft (125 Nm) (12.7 kg-m)
Lubrication	Pressure system w/full flow filter
Cooling fan	Blower type
Air cleaner w/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.

Main pumps	3-section gear pump
Max. oil flow	33.4 gpm (126 L/min)

System operating pressure . . . 2420 psi (16 690 kPa) (170 kg/cm<sup>2</sup>)

### Relief valves:

Boom	2850 psi (19 650 kPa) (200 kg/cm <sup>2</sup> )
Arm	2850 psi (19 650 kPa) (200 kg/cm <sup>2</sup> )
Bucket	2850 psi (19 650 kPa) (200 kg/cm <sup>2</sup> )
Dozer blade	2560 psi (17 650 kPa) (180 kg/cm <sup>2</sup> )
Boom swing	2420 psi (16 690 kPa) (170 kg/cm <sup>2</sup> )
Travel	2420 psi (16 690 kPa) (170 kg/cm <sup>2</sup> )
Swing	2560 psi (17 650 kPa) (180 kg/cm <sup>2</sup> )

### 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/cm <sup>2</sup> )

Cylinders:	Bore	Rod Diameter	Stroke
Boom (1)	3.9 in. (100 mm)	2.2 in. (55 mm)	26.2 in. (665 mm)
Arm (1)	3.5 in. (90 mm)	2.2 in. (55 mm)	29.3 in. (745 mm)
Bucket (1)	3.2 in. (80 mm)	2.2 in. (55 mm)	24.2 in. (615 mm)
Boom swing (1)	3.5 in. (90 mm)	1.6 in. (40 mm)	20.9 in. (530 mm)
Dozer blade (1)	3.5 in. (90 mm)	2.2 in. (55 mm)	9.8 in. (250 mm)

All cylinders are ground, heat-treated, chrome-plated and polished. Boom cylinder rod end has a built-in hydraulic cushion.

## Swing Mechanism:

Swing speed	0-10.7 rpm (0-10.7/min)
Swing lock	Manual for transporting
Turntable bearing	Single-row, shear-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. Hydraulic brake valves. Independent drive to each track permits counterrotation.  
Dozer 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** . . . . . Track chain with heat-treated connecting pins. Permanently lubricated track rollers, idlers and sprockets with floating seals. Hydraulic track adjustment with shock-absorbing recoil springs.

Upper rollers (each side)	1
Lower rollers (each side)	4
Track shoes (each side)	37
Track shoe type	Triple grouser

## Canopy:

Walk-through canopy allows access to operator's station from either side. Canopy frame is a tip-over protective structure (TOPS) with steel 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 designs.  
Arm length . . . . . 5 ft. 4 in. (1.62 m)

## Servicing and Vandal Protection:

Handrails are provided for easy servicing. Tilt-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
- Positive position hand throttle
- Operator's manual compartment
- Monitor system:
  - Air cleaner restriction indicator light
  - Alternator charge indicator light
  - Engine oil pressure warning light w/audible alarm

### Gauges:

- Engine coolant temperature
- Fuel level
- Hourmeter
- Glow (pre-heater) indicator light

### Engine:

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

- Lights:** (1) frame mounted  
(1) boom mounted

### Front attachment:

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

### Undercarriage:

- Propel 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
- Sliding right side window
- Roll-down cab door window

- Auxiliary valve function — for optional attachments
- Control conversion kit (to SAE pattern)

## 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 m<sup>3</sup>) 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

Note: Upper figure - lifting over front (blade end)  
Lower figure - lifting over side or 360 degrees

	6 ft. 7 in. (2.0 m)	9 ft. 10 in. (3.0 m)	13 ft. 1 in. (4.0 m)	@ Max. Reach
9 ft. 10 in. (3.0 m)	—	—	<b>1521 ( 690)</b> 1433 ( 650)	<b>1587 (720)</b> 1235 (560)
6 ft. 7 in. (2.0 m)	—	—	<b>1808 ( 820)</b> 1455 ( 660)	<b>1676 (780)</b> 1036 (470)
3 ft. 3 in. (1.0 m)	—	<b>3042 (1380)</b> 2248 (1020)	<b>2138 ( 970)</b> 1367 ( 620)	<b>1808 (820)</b> 1014 (460)
Ground	<b>5423 (2460)</b> 3770 (1710)	<b>3483 (1580)</b> 2094 ( 950)	<b>2315 (1050)</b> 1345 ( 610)	<b>1852 (840)</b> 1014 (460)
-3 ft. 3 in. (-1.0 m)	<b>5137 (2330)</b> 3461 (1570)	<b>3471 (1550)</b> 1962 ( 890)	<b>2270 (1030)</b> 1367 ( 620)	<b>1984 (900)</b> 1168 (530)
-6 ft. 7 in. (-2.0 m)	<b>4034 (1830)</b> <b>4277 (1940)</b>	<b>2624 (1190)</b> 2028 ( 920)	—	<b>2072 (940)</b> 1676 (760)

### Blade Above Ground

Note: Upper figure - lifting over front or rear  
Lower figure - lifting over side or 360 degrees

	6 ft. 7 in. (2.0 m)	9 ft. 10 in. (3.0 m)	13 ft. 1 in. (4.0 m)	@ Max. Reach
9 ft. 10 in. (3.0 m)	—	—	<b>1521 ( 690)</b> 1433 ( 650)	1345 (610) 1146 (520)
6 ft. 7 in. (2.0 m)	—	—	1543 ( 700) 1410 ( 640)	1102 (500) 970 (440)
3 ft. 3 in. (1.0 m)	—	2249 (1020) 2094 ( 950)	1455 ( 660) 1323 ( 600)	1036 (470) 925 (420)
Ground	4079 (1850) 3483 (1580)	2160 ( 980) 2006 ( 910)	1477 ( 670) 1257 ( 570)	1036 (470) 948 (430)
-3 ft. 3 in. (-1.0 m)	<b>4034 (1830)</b> 3395 (1540)	2160 ( 980) 1874 ( 850)	1345 ( 610) 1235 ( 560)	1213 (550) 1124 (510)
-6 ft. 7 in. (-2.0 m)	<b>4034 (1830)</b> <b>4277 (1940)</b>	2183 ( 990) 1895 ( 860)	—	<b>2094 (950)</b> 1676 (760)

## 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 m<sup>3</sup>) 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

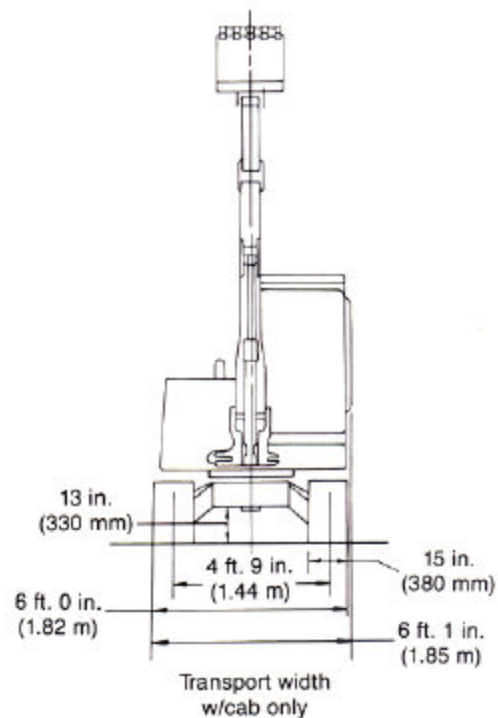
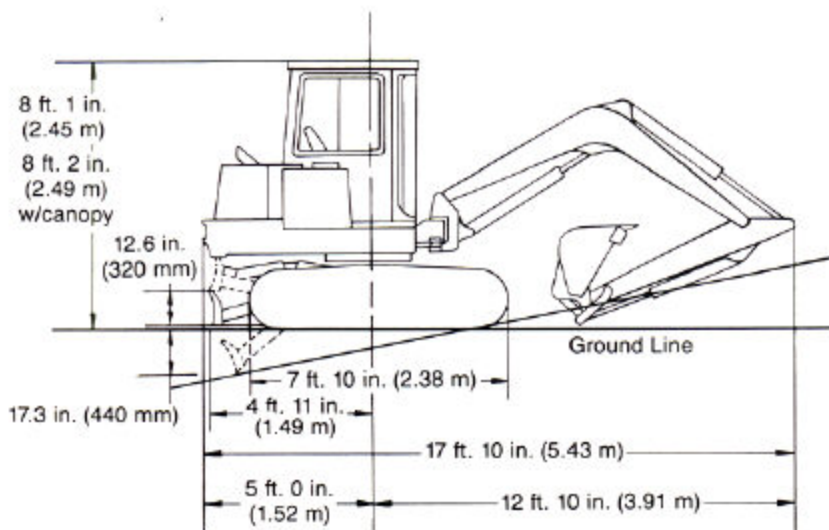
Note: Upper figure - lifting over front (blade end)  
Lower figure - lifting over side or 360 degrees

	6 ft. 7 in. (2.0 m)	9 ft. 10 in. (3.0 m)	13 ft. 1 in. (4.0 m)	@ Max. Reach
9 ft. 10 in. (3.0 m)	—	—	<b>1521 ( 690)</b> 1411 ( 640)	<b>1587 (720)</b> 1168 (530)
6 ft. 7 in. (2.0 m)	—	—	<b>1808 ( 820)</b> 1411 ( 640)	<b>1676 (760)</b> 970 (440)
3 ft. 3 in. (1.0 m)	—	<b>3042 (1380)</b> 2072 ( 940)	<b>2138 ( 970)</b> 1279 ( 580)	<b>1808 (820)</b> 926 (420)
Ground	<b>5423 (2460)</b> 3307 (1500)	<b>3483 (1580)</b> 1874 ( 850)	<b>2315 (1050)</b> 1279 ( 580)	<b>1852 (840)</b> 948 (430)
-3 ft. 3 in. (-1.0 m)	<b>5137 (2330)</b> 3395 (1540)	<b>3417 (1550)</b> 1852 ( 840)	<b>2270 (1030)</b> 1212 ( 550)	<b>1984 (900)</b> 1146 (520)
-6 ft. 7 in. (-2.0 m)	<b>4034 (1830)</b> <b>4034 (1830)</b>	<b>2624 (1190)</b> 1962 ( 890)	—	<b>2072 (940)</b> 1631 (740)

### Blade Above Ground

Note: Upper figure - lifting over front or rear  
Lower figure - lifting over side or 360 degrees

	6 ft. 7 in. (2.0 m)	9 ft. 10 in. (3.0 m)	13 ft. 1 in. (4.0 m)	@ Max. Reach
9 ft. 10 in. (3.0 m)	—	—	<b>1521 ( 690)</b> 1433 ( 650)	1257 (570) 1146 (520)
6 ft. 7 in. (2.0 m)	—	—	1543 ( 700) 1410 ( 640)	1058 (480) 948 (430)
3 ft. 3 in. (1.0 m)	—	2205 (1000) 2006 ( 910)	1433 ( 650) 1279 ( 580)	1036 (470) 882 (400)
Ground	3902 (1770) 3262 (1480)	2050 ( 930) 1830 ( 830)	1410 ( 640) 1257 ( 570)	1036 (470) 948 (430)
-3 ft. 3 in. (-1.0 m)	3858 (1750) 3329 (1510)	1962 ( 890) 1830 ( 830)	1345 ( 610) 1212 ( 550)	1213 (550) 1102 (500)
-6 ft. 7 in. (-2.0 m)	<b>4034 (1830)</b> <b>4034 (1830)</b>	2205 (1000) 2006 ( 910)	—	1720 (780) 1609 (730)



**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°
Boom offset distance @ max. boom	
swing angle, right	22.8 in. (580 mm)
left	22.8 in. (580 mm)

**Forces:**

	<b>5 ft. 4 in. (1.62 m) Arm</b>
Max. arm digging force	4520 lb. (20.1 kN)(2050 kg)
Max. bucket digging force	6945 lb. (30.9 kN)(3150 kg)

**Flotation:**

	<b>15 in. (380 mm) Shoes</b>
Average ground contact area	2389 sq. in. (15 413 cm <sup>2</sup> )
Canopy:	
Average ground pressure	3.88 psi (26.8 kPa)(.273 kg/cm <sup>2</sup> )
Cab:	
Average ground pressure	4.01 psi (27.6 kPa)(.282 kg/cm <sup>2</sup> )

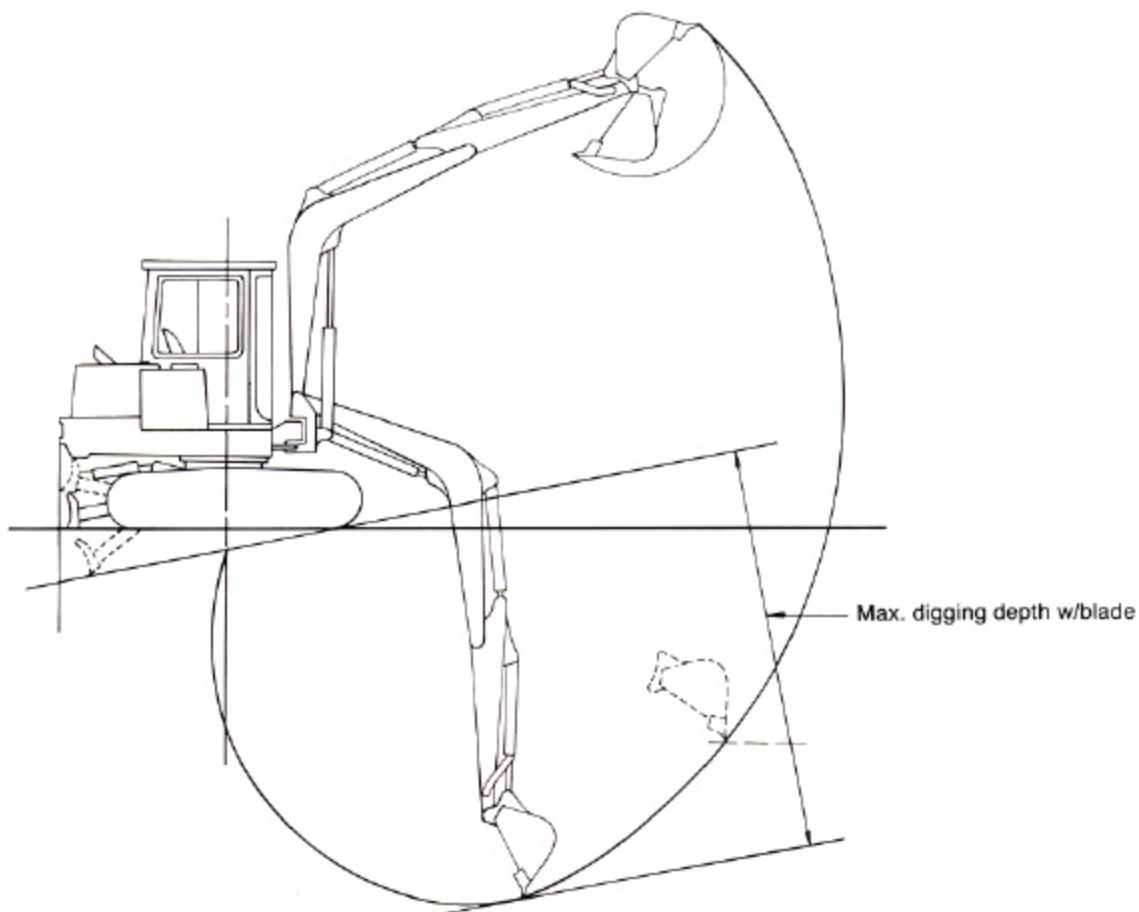
**Performance:**

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 w/Sidecutters	SAE Heaped	Weight
22 in. (550 mm)	.16 cu. yd. (.12 m <sup>3</sup> )	258 lb. (117 kg)

Digging Depth and Reach:



Boom Swing

