

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 m³) bucket, dozer blade, full fuel tank, 175-lb. (80 kg) operator and standard equipment.

Rated Power @ 2650 rpm: **SAE** **DIN 6270**
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/cm²)

Relief valves:
Boom 2850 psi (19 650 kPa) (200 kg/cm²)
Arm 2850 psi (19 650 kPa) (200 kg/cm²)
Bucket 2850 psi (19 650 kPa) (200 kg/cm²)
Dozer blade 2560 psi (17 650 kPa) (180 kg/cm²)
Boom swing 2420 psi (16 690 kPa) (170 kg/cm²)
Travel 2420 psi (16 690 kPa) (170 kg/cm²)
Swing 2560 psi (17 650 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	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

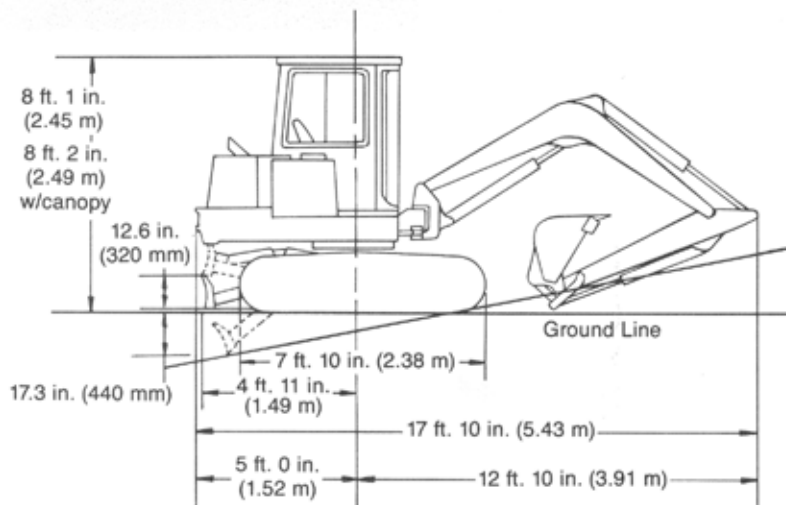
Windows:

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

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

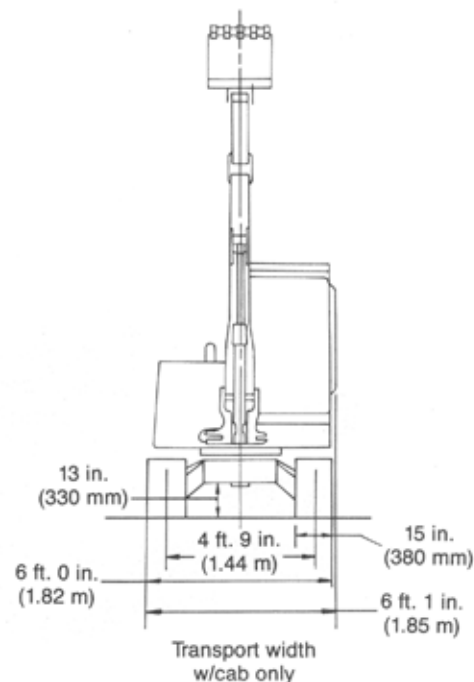
Flotation:	15 in. (380 mm) Shoes
Average ground contact area	2389 sq. in. (15 413 cm ²)
Canopy:	
Average ground pressure	3.88 psi (26.8 kPa) (.273 kg/cm ²)
Cab:	
Average ground pressure	4.01 psi (27.6 kPa) (.282 kg/cm ²)

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 ³)	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

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)	—	—	1521 (690) 1433 (650)	1587 (720) 1235 (560)
6 ft. 7 in. (2.0 m)	—	—	1808 (820) 1455 (660)	1676 (760) 1036 (470)
3 ft. 3 in. (1.0 m)	—	3042 (1380) 2248 (1020)	2138 (970) 1367 (620)	1808 (820) 1014 (460)
Ground	5423 (2460) 3770 (1710)	3483 (1580) 2094 (950)	2315 (1050) 1345 (610)	1852 (840) 1014 (460)
-3 ft 3 in. (-1.0 m)	5137 (2330) 3461 (1570)	3471 (1550) 1962 (890)	2270 (1030) 1367 (620)	1984 (900) 1168 (530)
-6 ft. 7 in. (-2.0 m)	4034 (1830) 4277 (1940)	2624 (1190) 2028 (920)	—	2072 (940) 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)	—	—	1521 (690) 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)	4034 (1830) 3395 (1540)	2160 (980) 1874 (850)	1345 (610) 1235 (560)	1213 (550) 1124 (510)
-6 ft. 7 in. (-2.0 m)	4034 (1830) 4277 (1940)	2183 (990) 1895 (860)	—	2094 (950) 1675 (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 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

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

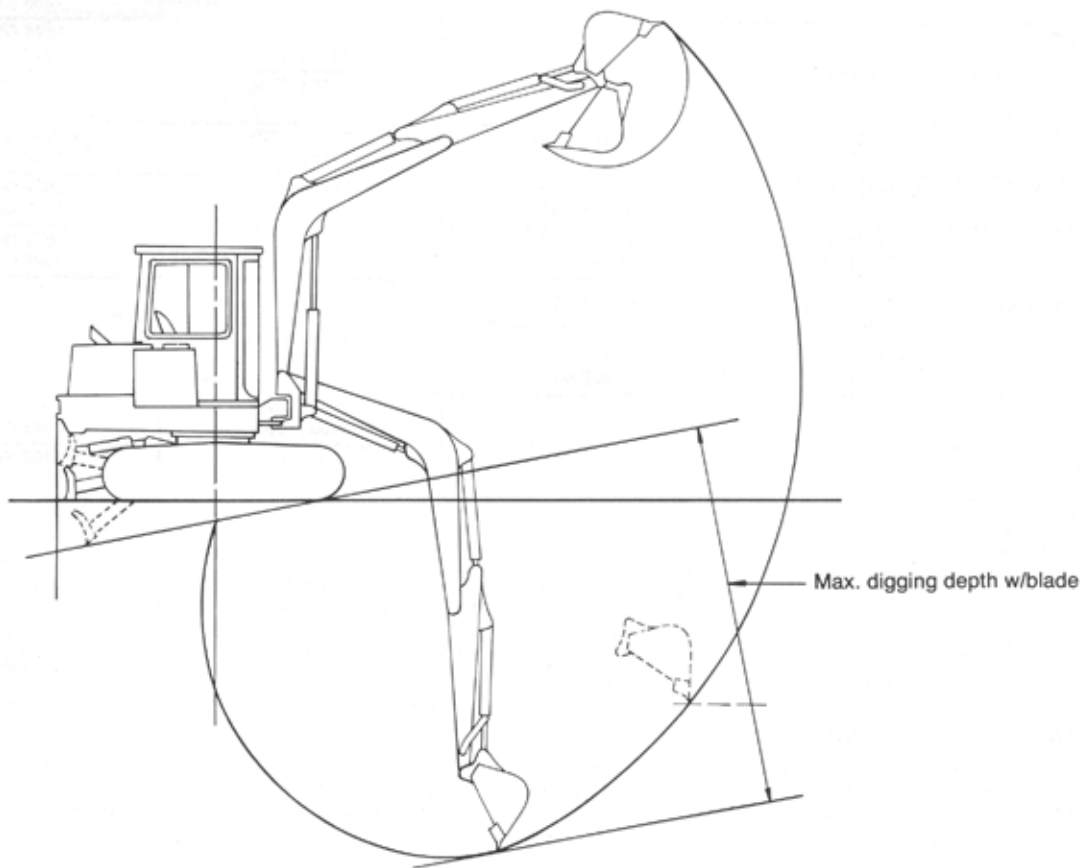
	6 ft. 7 in. (2.0 m)	9 ft. 10 in. (3.0 m)	13 ft. 1 in. (4.0 m)	@ Max. Reach
9 ft. 10 in. (3.0 m)	—	—	1521 (690) 1411 (640)	1587 (720) 1168 (530)
6 ft. 7 in. (2.0 m)	—	—	1808 (820) 1411 (640)	1676 (760) 970 (440)
3 ft. 3 in. (1.0 m)	—	3042 (1380) 2072 (940)	2138 (970) 1279 (580)	1808 (820) 926 (420)
Ground	5423 (2460) 3307 (1500)	3483 (1580) 1874 (850)	2315 (1050) 1279 (580)	1852 (840) 948 (430)
-3 ft 3 in. (-1.0 m)	5137 (2330) 3395 (1540)	3417 (1550) 1852 (840)	2270 (1030) 1212 (550)	1984 (900) 1146 (520)
-6 ft. 7 in. (-2.0 m)	4034 (1830) 4034 (1830)	2624 (1190) 1962 (890)	—	2072 (940) 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)	—	—	1521 (690) 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)	4034 (1830) 4034 (1830)	2205 (1000) 2006 (910)	—	1720 (780) 1609 (730)

Digging Depth and Reach:



Boom Swing

