



YENGST ASSOCIATES

Machinery Market Research



EQUIPMENT ANALYSIS

North America

Mini-Excavators

October 2007



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Equipment Analysis North America

Mini-Excavators October 2007

Yengst Associates, Inc.
35 Old Ridgefield Rd.
Wilton, CT 06897
Telephone +1 203 762-8096
Facsimile +1 203 762 8330
Website: www.yengstassociates.com
E-mail: mail@yengstassociates.com

European Marketing Office:
Off-Highway Research Limited
35 Great James Street
London WC1N 3HB
UNITED KINGDOM
Telephone +44 (0) 20 7404 1128
Facsimile +44 (0) 20 7404 1129
Website: www.offhighway.co.uk
E-mail: mail@offhighway.co.uk

Japanese Marketing Office:
Rayden Research Limited
Yurakucho Denki Bldg.
North Tower 15F
1-7-1 Yurakucho
Tokyo 100-0006, JAPAN
Telephone +81 3 3212 3671
Facsimile +81 3 3212 3675
E-mail: kawahara@ff.ij4u.or.jp

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Mini-Excavators

EXECUTIVE SUMMARY



This report examines the mini-excavator market in North America and is an update to our last report of October 2005. Mini-excavators, as far as we are concerned, are compact excavators rated up to six metric tons. Some OEMs, Caterpillar, Yanmar, IHI and Takeuchi for example, classify mini-excavators as units that weigh up to ten metric tons however this report only takes units with operating rates up to six metric tons into consideration. We include units with greater than six metric ton operating weights in our hydraulic excavator report.

There have been a couple of major events in the mini-excavator market since our last report both of them regarding Bobcat. The single most important event in the mini-excavator market since our last report was the sale of the Bobcat Company to Doosan Infracore at the end of July 2007 for \$4.9 billion. This is important because Doosan has been working hard to get a foothold into the North American construction equipment market and this acquisition does just that. The second major event was that Bobcat lost its place as the largest supplier of mini-excavators to the North American market to Kubota. Prior to 2006, Bobcat had consistently been the largest supplier of the machines.

Currently, 23 OEMs offer mini-excavators to the North American market; some of the players have changed since our last report dated October 2005. For example, Hinowa and NorTrac dropped out of the mini-excavator business since our last report and Boxer has entered it. Other significant changes have occurred in the realm of individual OEM's market position and market share and will be discussed further in the report.

Another interesting item is that Bobcat is no longer the only OEM to make mini-excavators in North America. Boxer, a newcomer to the market, produces its sole BX-10 model in Ponca City, Oklahoma. We expect that Doosan will not make any major changes at Bobcat at least through 2007 and 2008, and the company will likely not alter the Bobcat marketing strategies, which have been very successful over the years.

Table 1 summarizes 2006 activity at year end in terms of sales, production, field population, imports and exports and forecasts 2007's results. North American mini-excavator sales in 2006 were 29,500 units, with roughly 78 percent being imported. Japan is the single largest exporter of mini-excavators to the North American market with more than 21,000 units shipped in 2006.

Mini-excavator sales have grown 35 percent since 2004, going from sales of 21,650 units to 29,500 units in 2006. The rate of growth has slowed, however, to only five percent in 2006 over 2005 and we expect a decline in sales in 2007. In 2006 Kubota surpassed Bobcat for the number one market share of mini-excavators with sales of 5,700 units. Bobcat is second with 5,300 units followed by Caterpillar with 4,200 and Takeuchi with 3,500 units. Takeuchi had been number three in 2004. The top four companies accounted for approximately 64 percent of the market in 2006. We **forecast** mini-excavator sales to decline 11 percent in 2007 to 26,000 units and decline further in 2008 to roughly 23,500 units and then slowly grow to 33,000 units by 2011, exceeding our earlier predictions. There are currently fewer gray market machines one bright light of the declining dollar. For this reason many of the gray market machines are going

to Europe and Asia where they can be sold for more. This is good for the North American market because it doesn't have to compete with them.

Table 1: Mini-Excavators Statistical Summary - 2006

Statistical Category	
Estimated NA Market Value (\$ millions)	\$900
North American Sales (units)	29,500
United States	26,000
Canada	3,500
North American Production (units)	10,600
Imports	22,960
Percentage of NA Sales Imported	78%
Exports	4,800
Percentage of NA Production Exported	45%
Field Population (units)	131,000
United States	114,000
Canada	17,000
Forecast (% Change)	
Production 2006 - 2007	(15.1)%
Sales 2006 - 2007	(11.1)%

Source: Yengst Associates

As of 2006, Bobcat and Boxer are the only OEMs that produce mini-excavators in North America. All other OEMs import mini-excavators from Japan, South Korea, United Kingdom, Austria, China, Germany, France and Italy. The majority of mini-excavators are imported from Japan, approximately 21,150 units in 2006. Bobcat imports its Model 316 from Japan. Kubota and Takeuchi are the two largest importers followed by Deere, Caterpillar, Komatsu, Yanmar and IHI.

The **field population** of mini-excavators, or the number of active units functioning in North America, was estimated to be around 131,000 units in 2006, a 57 percent increase from 2004. Note that we have changed the parameters of calculating field population in particular useful life and scrappage values. We predict the population will meet or beat 175,000 units in the next two to three years.

NORTH AMERICAN SALES

Yengst Associates classifies mini-excavators as any excavator weighing six metric tons or less. As we have discussed, not all OEMs adhere to this classification and may count machines as heavy 10 or 11 tons as compact excavators. We do not include them in this report but they are covered in our report on standard excavators.

As shown in Table 2 on the following page and the chart that follows, sales in the United States comprise the majority of mini-excavator sales in North America, averaging 86 percent of the previous 10-year sales. In the past ten years North American sales of **mini-excavators** have grown over 700 percent from 3,580 units in 1997 to 29,500 units in 2006. The U.S. average for the previous five years is approximately 18,200 units, while Canada's five-year average is approximately 2,875 units.

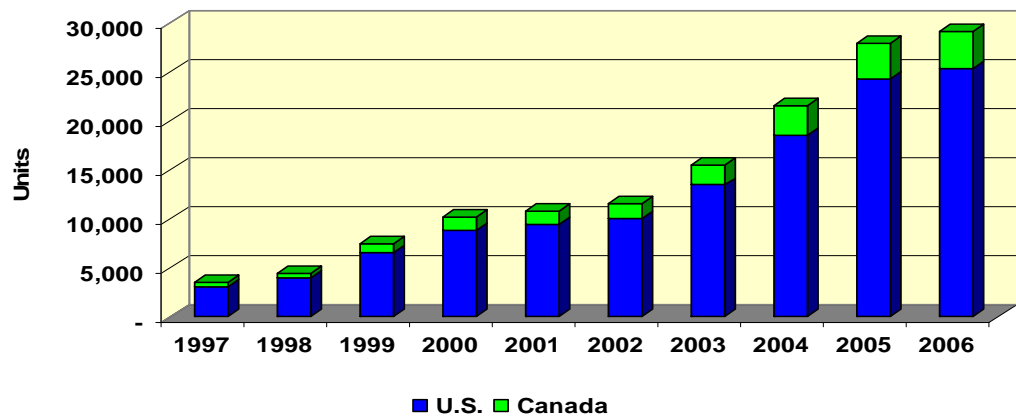
Table 2: Mini-Excavators - North America
Sales by Country 1997- 2006 (units & percent)

Year	US		Canada		Total N. America	Annual Chg (%)
	Units	%	Units	%		
1997	3,065	86	515	14	3,580	34
1998	3,740	85	660	15	4,400	23
1999	6,550	88	925	12	7,475	70
2000	8,150	84	1,550	16	9,700	30
2001	8,935	85	1,575	15	10,510	8
2002	9,500	86	1,500	14	11,000	5
2003	13,175	85	2,325	15	15,500	41
2004	18,620	86	3,030	14	21,650	40
2005	24,350	87	3,650	13	28,000	29
2006	26,000	88	3,500	12	29,500	5

Source: Yengst Associates

Sales peaked in 2006 and had the smallest annual increase with only five percent growth over 2005 since 2002 when growth was also 5 percent. The slowing in sales has occurred in the U.S. what with the housing market problems and its repercussions. So far in 2007, as of September, the Canadian market is remaining strong and it has not yet been impacted by the slowdown in U.S. housing and the credit crunch. However, we know that sales are dropping in the United States.

Mini-Excavator Sales in North America



One thing that has remained constant over the decade has been the ratio of sales between the U.S. and Canada. Traditionally approximately 85 percent of North American sales are in the U.S. with the remaining 15 percent in Canada. This is typical of most construction machinery sales in North America. The mini-excavator and other compact equipment have proved continued usefulness on work sites, especially in activities that cannot be performed by their larger, more traditional counterparts. This is one of the primary reasons sales of these smaller machines have seen such a steady rise in the past several years. Another factor contributing to the steady increase in compact excavator sales has been the low cost to own and operate this type of machine compared to that of other traditional machines.

The weak housing start market impacts the sales and rentals of most construction machinery but doesn't necessarily hit the **mini-excavator** product market as hard as it might because it is not as heavily dependent on residential construction.

Mini-excavators are often used by landscapers and utility companies, in certain mining applications and in other applications aside from residential construction.

**Sales Breakdown
By Size**

End-users consider various factors when determining what size machine they need such as what type of job the machine is going to do and in what type of place such as a construction site, mine, forest, farm etc. Other factors might include whether there are going to be doorways, elevators or shafts, for example, which would require a smaller machine.

**Table 3: Mini-Excavators
North American Sales 2002 vs. 2006**

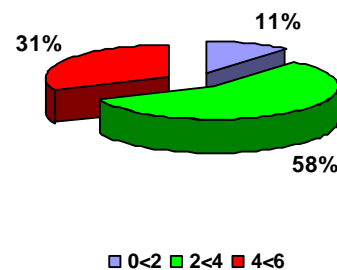
Years	(Metric tons)	0 < 2	2 < 4	4 < 6	Total
2002	Qty.	1,970	7,660	1,970	11,600
	%	17%	66%	17%	100%
2004	Qty.	2,820	12,970	5,860	21,650
	%	13%	60%	27%	100%
2006	Qty.	3,200	17,100	9,200	29,500
	%	11%	58%	31%	100%

Source: Yengst Associates

In Table 3 above we have broken down mini-excavator sales into three weight classes: 0<2 metric tons, 2<4 metric tons and 4<6 metric tons. Most manufacturers offer models in all three size classes.

In 2006, the **2 < 4 ton** weight class of mini-excavator was still the most popular selling weight class accounting for about 58 percent of total sales down from 66 percent in 2002. The **4<6 ton** weight class has enjoyed increasing popularity since 2002 accounting for 31 percent of total sales compared to 17 percent five years ago. Machines weighing less than two (**<2 tons**) have declined in popularity in the past four years; the small category represented 17 percent of sales in 2002, dropped to 13 percent in 2004 and is now at 11 percent.

Sales of Mini-Excavators by Size Class (mt) 2006



**Sales Breakdown
By Region**

Of the 29,250 units of mini-excavators sold in North American in 2006, approximately 88 percent, or 26,000 units, were sold in the United States and 12 percent, or 3,500 units in Canada. The South continues to be the most popular region with approximately 40 percent of sales being in Southern states. The West is second with 20 percent followed by the Northeast and Midwest at 16 and 12 percent of U.S. sales respectively.

Doosan Infracore and Ditch Witch claim the Northeast as being their top selling region however that will change now that Doosan owns Bobcat. Sales so far in 2007 have declined in the Northeast, South and West because of weather and the declining housing market.

Below is our regional breakdown of states by region for your reference. The South consists of the most states and includes Washington, D.C.

Table 4: Mini-Excavator Sales Breakdown by Region: 2004 vs. 2006 (Units and Percent)

Region	2004		2006	
	Sales	%	Sales	%
South	7,800	36	11,700	40
Midwest	4,350	20	3,500	12
West	3,475	16	6,100	21
Northeast	3,040	14	4,700	16
Total USA	18,665	86	26,000	88
Canada	3,035	14	3,500	12
Total No. America	21,700	100	29,500	100

Source: Yengst Associates

U. S. Regional Breakdown of States

Midwest	Indiana, Illinois, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, N. Dakota, S. Dakota
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania
South	Delaware, Dist. Of Columbia, Florida, Georgia, Maryland, N. Carolina, S. Carolina, Virginia, W. Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, Texas
West	Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming, Alaska, California, Hawaii, Oregon, Washington

Source: U.S. Census Bureau

End Market Segments

Mini-excavator sales to the rental market grew exponentially between 2002 and 2004 from 60 percent of to 75 percent of the market however today it is closer to 73 percent. This is largely due to the prolonged decline in residential construction

Sales of Mini-Excavators : 2004 vs. 2006 (Units & Percent)

Major Market Segments	Sales	%	Sales	%
Rental: Dealer & Independent	16,200	75	21,450	73
Building: Residential & Commercial	3,000	14	4,000	14
Public Utilities	800	4	1,050	4
Landscaping	600	3	1,000	3
Other Construction	200	<1	300	1
Total - Major Segments	20,700	95	27,800	95
Others	1,000	5	1,500	5
Total Sales	21,700	100	29,500	100

and the fact that rental houses are no longer purchasing the large amount of equipment they have in the last few years because their fleet ages are down. We estimate that 21,450 mini-excavator units

were sold to dealers or independent contractors who rent them out to others. The residential and commercial construction market follows in second place with 14 percent of the market.

Market Trends

Mini-excavators are known for being more versatile than their larger counterparts. They can maneuver and position themselves where the larger sized excavator models cannot. Many have tracks instead of wheels so they can tread sensitive

surfaces without damage. They can be craned anywhere or even transportable by an average truck with a trailer hitch.

Due to their small size, mini-excavators can fit through doorways and do work indoors. They can be hoisted and lowered into mine shafts for work in mines. There is even a small homeowner end-use segment of the market that uses the machines to work on their part-time farm lands. Other segments entering the market are the demolition, road-building and recycling industries. In some circles the mini excavator is beginning to be referred to as the "Swiss army knife" of construction machinery. There are many attachments available besides the standard bucket, these include augers, hydraulic hammers, thumbs and scoops with teeth and can be attached quickly by couplers. A somewhat new, optional attachment is the power angle dozer blade that dozes wider than the tracks and hastens backfilling and grading operations.

Some newer trends for mini-excavators include **ergonomic** features such as more comfortable seating, air-conditioning and other amenities to make the operator more comfortable. Many models are producing less noise and vibration, which are comforts to other people as well the operator. Zero tail swing (ZTS), which makes the machine easier to turn without the operator having to watch carefully as to whether or not he will hit something, is becoming standard on the smaller machines. Case's entire line of mini-excavators is ZTS. Short tail swing, the tail swing is kept to a minimum; machines have also become the norm. Hitachi's Zaxis series models all feature short tail swing or both short and zero tail swing. Machines can have zero tail swing alone and short tail swing when certain attachments are applied. Many now also come with backfill blades to push the dirt and debris.

The rental segment demand has tapered off as the rental fleets are relatively new and the cost of credit and slumped housing market have resulted in a change in their purchasing strategies.

As shown earlier, there has been a shift in sizes of machines being purchased and used. Sales are slowly favoring bigger mini-excavators, not smaller ones. The mid-range machines rated between 2<4 metric tons is still the most popular size, machines rated over 4 metric tons to 6 metric tons are now 31 percent of the market. While we do not cover machines rated above the 6 metric ton limit, it is interesting that buyers are acquiring those machines as well in greater numbers.

MARKET SHARES

Kubota, Bobcat, Caterpillar and Takeuchi were the top four sellers of mini-excavators in North America in 2006 selling 18,700 units for a combined total of 64 percent of the market. Table 6 below details sales by OEM for the past five years. Kubota replaced Bobcat in the number one position in 2006, which was a surprise. Prior to 2006, Bobcat had held the number one position since the machine was first offered on the market. Caterpillar took the third place spot from Takeuchi in 2005 and held onto it in 2006.

Table 6: Sales of Mini-Excavators – North America 2002- 2006

OEM	2002	%	2003	%	2004	%	2005	%	2006	%
Bobcat	3,600	31	4,350	28	5,800	27	6,500	24	5,300	18
Kubota	1,525	13	2,170	14	3,150	15	4,800	17	5,700	19
Caterpillar	825	7	1,395	9	1,800	8	3,700	13	4,200	14
Takeuchi	1,400	12	1,850	12	3,100	14	2,800	10	3,500	12
Deere	625	5	1,400	9	1,900	9	2,500	9	2,600	9
Komatsu	800	7	930	6	1,325	6	1,600	6	1,800	6
IHI	650	6	775	5	1,150	5	1,150	4	1,200	4
Case	125	1	200	1	225	1	615	2	800	3
Yanmar	475	4	620	4	850	4	1,200	4	1,400	5
Others	1,575	14	1,810	12	2,350	11	3,035	11	2,925	10
Total	11,600	100	15,500	100	21,650	100	28,000	100	29,500	100

Source: Yengst Associates, Inc. Others includes: Doosan, Ditch Witch, Gehl, Hinowa, Hyundai, JCB, NorTrac, Pine Brook, Thomas, Terex, Vermeer, and Volvo.

We estimate that 29,500 mini-excavators were sold in North America in 2006. Kubota sold approximately 5,700 units, about 19 percent of the market, Bobcat sold approximately 5,300 units, about 18 percent, Caterpillar follows closely with 4,200 units sold, 14 percent, and Takeuchi sold about 3,500 units, about 12 percent of the market. It is important to note that Hinowa and NorTrac were no longer players in the North American mini-excavator market in 2006.

Table 7: Mini-Excavator Supplier Sales by Size Class in 2006

Metric Ton	0 < 2		2 < 4		4 < 6		Total Units
Manufacturer	Qty	%	Qty	%	Qty	%	
Bobcat	575	18	3,100	18	1,625	18	5,300
Kubota	600	19	3,250	19	1,850	20	5,700
Caterpillar	475	15	2,450	14	1,275	14	4,200
Takeuchi	375	12	2,025	12	1100	12	3,500
Deere	325	10	1,775	10	900	10	3,000
Komatsu	200	6	1,050	6	550	6	1,800
IHI	150	5	700	4	350	4	1,200
Yanmar	125	4	825	5	450	5	1,400
Case	100	3	500	3	200	2	800
Others	275	9	1,425	8	900	10	2,350
Total	3,200	100	17,100	100	9,200	100	29,500

Source: Yengst Associates; Others: New Holland, Doosan, Ditch Witch, Gehl, Hyundai, JCB, Pine Brook, Thomas, Terex, Vermeer, and Volvo.

Table 7 above details sales of the top North American OEMs by weight class in 2006. Kubota is the industry leader with about 19 percent of the market in all three sizes followed by Bobcat, Caterpillar, and Takeuchi, as shown.

NORTH AMERICAN PRODUCTION

Bobcat produces nine mini-excavator models in the U.S. and imports one from Japan. Bobcat produced approximately 10,600 units in 2006 in its Bismarck, ND facility. This represents a 12 percent drop from 2005 when they produced an estimated 12,000 units. As shown in Table 8 below, production peaked in 2005 at 12,000 units. Bobcat's mini-excavator sales fell nearly 20 percent in 2006, which might explain the drastic drop in production numbers. We expect production to drop another 11 percent in 2007.

**Table 8: Mini-Excavators
Estimated North American Production by Manufacturer 2002- 2006**

	2002	%	2003	%	2004	%	2005	%	2006	%
Bobcat	8,000	100	9,000	100	11,000	100	12,000	100	10,600	100

Source: Yengst Associates

Bobcat is no longer the only company producing mini-excavators in North America. Boxer has produced its BX-10 mini-excavator in Ponca City, Oklahoma since 2004 however we estimate that it makes less than 20 units per year. Boxer Equipment is owned by Mertz Manufacturing, which is itself a subsidiary of Compact Power, Inc.

**EXPORTS /
IMPORTS**

Bobcat is the only OEM to **export** mini-excavators outside of North America. Bobcat produced approximately 10,600 units in 2006 and sold approximately 5,300 units domestically. We estimate that approximately 4,800 units were exported to countries outside of North America, primarily to Europe. The remainder of Bobcat's production was likely kept in field inventory.

Table 9: Estimated Mini-Excavator Imports 2004 vs. 2006

Source Country	2004	%	2006	%
Japan	14,000	84	21,150	92
United Kingdom	400	2	500	2
Germany	850	5	400	2
South Korea	350	2	400	2
China	100	<1	300	1
Austria	100	<1	150	1
France	500	3	30	<1
Italy	325	2	30	<1
Total	16,625	100	22,960	100

Source: Yengst Associates

All of the companies that offer mini-excavators in the North American market, except Boxer, **import** their machines from Japan, France, the United Kingdom and South Korea. Bobcat imports one model, the 316, from Japan. Table 9 details North American imports by country of origin for 2004 and 2006. The majority of all mini-excavators, 92 percent, are brought in from Japan. As shown, total imports were close to 23,000 units in 2006. The United Kingdom, Germany and South Korea each account for two percent of the imported units in North America. The remaining countries account for one percent or less than one percent of total imports.

Kubota, Caterpillar and Takeuchi import all their units from Japan. In 2006 Kubota imported approximately 6,000 units, Caterpillar imported approximately 2,100 units and Takeuchi imported approximately 3,900 units all from Japan. In addition, we estimate that Deere-Hitachi imported approximately 2,950 units from Japan. Cat also imports from the UK.

Terex imports its mini-excavators from Germany (about 400 units in 2006). Vermeer imports from Italy, as machines are sourced from Libra. In 2006 Italy and Germany each accounted for less than one percent of total imports to North America; however, in 2004 Germany represented five percent of the import market. This change is due to the fact that New Holland now imports its units from Japan instead of Germany.

COMPONENT SUPPLY

Although Bobcat is no longer the only supplier of mini-excavators that produces its machines in North America, they are the primary supplier producing in North America.

Bobcat has introduced the 335 and 425 models to their lineup since our 2005 report on mini-excavators. Bobcat currently offers ten models to the North American market that weigh six metric tons. All Bobcat machines are powered with Kubota engines, ranging from 9.9 to 49 hp, with operating weights ranging from 0.8 to 4.8 metric tons. The digging depths for these machines range from 5'1" to 11'2". The newer 335 model is a niche size model weighing approximately 9,170 lbs or 4.1 metric tons with a conventional swing. It is considered a medium-sized mini-excavator and can stay on a trailer for transport. Industry sources say the smaller mini-excavator models (< two tons) are also niche sizes and have shown growth in recent years.

Hydraulic pumps vary depending on the specific model. The largest model, the 337, has only one piston pump. The smallest model, the 316, has two gear pumps. The others feature anywhere from two to five piston pumps, gear pumps or both. Bobcat has stopped using JS Barnes hydraulic pumps in their machines and they are moving away from using Comer motors. The top brand component Bobcat now uses is **Rexroth**, especially for hydraulic pumps. Other brands they use are **Valvoil** (hydraulic controls) and **Eaton** (hydraulic components), depending on the specific model. All rubber tracks are supplied by **Bridgestone** for all models.

Boxer produces one mini-excavator, the BX-10, which has been available since late 2002 or early 2003. It is manufactured at the CIP Equipment plant out of Ponca City, Oklahoma. It has a 13 horsepower Honda GX440 gasoline engine, dual hydraulic pumps by **Cassaba** and tracks made by **Solideal**. The boom swings 180 degrees but the machine itself sits on a fixed turret. The BX-10 is also equipped with a hydraulic blade.

FIELD POPULATION

We estimate the lifespan of the average mini-excavator to range from eight to 12 years and have revised our scrappage estimates since this report was last produced. Based on these criteria, we think the mini-excavator field population in North America in 2006 was approximately 130,750 units. This represents a 57 percent increase from 2004. This seems high but makes sense when one considers that 57,250 units were sold in 2005 and 2006 combined and all of those machines are still in the field population. We think that approximately 87 percent of the population continued to be in the United States in 2006, as it was in 2004, and the remaining 13 percent in Canada.

**Table 10: Mini-Excavators
Estimated Field Population 2004 vs. 2006**

Region	2004	%	2006	%	Change 04 - 06
USA	72,200	87	114,000	87	+58
Canada	11,200	13	17,000	13	+52
Total	83,400	100	131,000	100	+57

Source: Yengst Associates

We expect total North American sales to decline in 2007 and again in 2008 relative to the weakened housing construction market. The population of machines will continue to rise, however, as considerably more machines are

entering the market each year than are being scrapped or sold to the export market. The field population will likely approach 175,000 units in the next two to three years.

FORECAST

Table 11 details our forecast for North American **production** and **sales** through 2011. In our previous report we estimated that Bobcat would produce approximately 11,000 to 12,000 units during the next few years unless another OEM began producing mini-excavators in North America before that time. Boxer has entered the arena in North American production; however, we do not think that they will be a material player for quite some time, perhaps not at all. We have revised our previous forecasts because of the slowdown in the U.S. economy in general and in residential construction in particular. We now expect production levels to be at 8,000 to 9,000 units this year and next, as shown below, with 2007 sales down 15 percent less than was manufactured in 2006. We estimate the North American mini-excavator production to bottom out at 8,000 units in 2008 before climbing again back to 11,000 by 2011.

Some economists think that the current residential construction slump will begin to recover in 2008 but others expect it to continue until 2009. We believe the housing construction slowdown will carry through most or all of 2008, with little improvement anticipated before 2009. Although the mini-excavator market is not completely dependent on the housing market, housing does play a major role for sales of the machines nevertheless. Construction overall will soften over the next 18 months because of tightening credit markets and the over-hang in inventories of unsold houses.

**Table 11: Mini-Excavators
Projected Production & Sales in North America Through 2011**

(Units)	2006	2007	2008	2009	2010	2011	06 vs. 07
Production	10,600	9,000	8,000	9,000	10,000	11,000	(15.1)
Sales	29,500	26,000	23,500	27,000	31,000	33,000	(11.9)

Source: Yengst Associates

We estimate North American **sales**, as shown in Table 11 above, to follow the same pattern as production. Sales in 2006 reached 29,500 units a record high. We expect sales to drop 12 percent in 2007 to 26,000 units due to the impact of a weakened housing market and the fact that rental equipment industry are no longer buying the large quantities of equipment as they have for the last few years. This is because they now have newer fleets and any additional purchases would be to expand fleet size which is unlikely given today's economic climate. We expect sales to reach a low point in 2008 at 23,500 units when the full effect of the slowing U.S. economy and the culmination of the declining housing market will be felt. We look for sales to gain some momentum in 2009 and grow through 2011 to roughly 33,000 units.

SUPPLIER SUMMARY

As there was in our previous report on mini-excavators, there are still 23 manufacturers that sell mini-excavators in North America. Some players have left the mini-excavator market while others have joined in coincidentally keeping the total number unchanged at this time. One of the new players is Boxer, which produces its single model in the U.S. Bobcat has fallen to the number two seller of mini-excavators in North America with about 5,300 units sold in 2006 accounting for 18 percent of the total market. Kubota now has the largest market share in North

America selling 5,700 units in 2006. The top eight suppliers are listed in Table 12 in order of their sales numbers. Caterpillar moved up in our sales ranking in 2005.

Table 12: Top Mini-Excavator Suppliers

Supplier	Source(s)	# of Models	2006 Sales	Sales Rank	Market Share (%)
Kubota	Japan North America /	10	5,700	1	19%
Bobcat	Japan	10	5,300	2	18%
Caterpillar	Japan, UK	7	4,200	3	14%
Takeuchi	Japan	8	3,500	4	12%
Deere - Hitachi	Japan	8	3,000	5	10%
Komatsu	Japan	8	1,800	6	6%
Yanmar	Japan	7	1,400	7	5%
IHI	Japan	9	1,200	8	4%
Case/New Holland	Japan	10	1,050	9	4%
Doosan	South Korea	3	50	10+	<1%

Source: Yengst Associates / Company Information

Bobcat

Bobcat is second in sales of mini-excavators in North America. Bobcat, which recently was sold by Ingersoll-Rand to Doosan Infracore, offers ten models. Since our last report in 2005, the Models 331-G and 341-G have been dropped and the 335 and 425 have been added. The “-G” has been dropped from the model names. The 316, Bobcat’s smallest mini-excavator, is imported from Japan while the rest are produced in Bismarck, North Dakota. Bobcat mini-excavators are all powered by Kubota engines. The 316 weighs slightly less than one metric ton. It has a horsepower rating of 9.9 hp and a digging depth of 5’1. The other nine models range from 1.7 to 4.8 metric tons, have horsepower ratings ranging from 13.3 to 49 hp and digging depths of 7’5” to 11’2”.

Bobcat has been the industry leader for many years, but lost sales leadership to Kubota in 2006, as sales declined for the company in line with the downturn in the housing construction market. Bobcat sales of mini-excavators had increased every year since the early 90’s through 2005. As we have stated several times in this report, Bobcat is the one large supplier producing machines in North America, whereas all other large suppliers are importing machines from overseas sources. (Compact Power, Inc. is the only other company producing in the United States, with very small output.)

Bobcat is a major exporter of mini-excavators, selling an estimated 4,800 units overseas, primarily in Europe, in 2006. The company is making inroads in South America and in other global markets to expand sales of its products outside of North America. Bobcat just announced setting up a new plant in the Czech Republic to support requirements for small mini-excavators and other Bobcat products in Europe, Africa and the Middle East (EAME region). By the end of 2008, Bobcat expects to be manufacturing 80 percent of the products it sells in the EAME market in the Czech Republic.

Case / New Holland

Case offers a total of 10 mini-excavator models to the North American market: five under the Case brand and five under the New Holland brand. All of their machines are imported from Japan, have operating weight ranging from 1.5 to 5.2 metric tons, have “zero tail swing” and a cab option. Case sees its line of CX Series compact excavators as having the advantage of the ability to travel and work within tight restricted areas. The company expects to introduce Tier 3 models in 2008 to meet government regulations. Case/New Holland sales for

2006 were 1,050 units with the bulk of the increase in the Case brand at 800 units.

Caterpillar

There are seven mini-excavator models in Caterpillar's product lineup. The Model 301.5 has been discontinued and the 303.5C CR has been added. All models now have Mitsubishi engines whereas previously the smaller models had Caterpillar engines. In aggregate, Cat's machines range in weight from 1.6 to 5.0 metric tons. Horsepower ratings range from 18 to 47 hp and the digging depths run from 6 feet to 11'5". Since our last report, all the information in our specs for Caterpillar has shown changes. The 303.5C CR and the 305C CR both feature turbo engines with an angle blade option that maneuvers 25 degrees all around.

The smaller models (under 3 tons) are imported from the United Kingdom, while the three larger models (3.4 to 5 tons) are imported from Japan. Caterpillar sold about 4,200 units in 2006, up about 14 percent from 2005 sales. These sales compare to only 300 units sold in 2000. Approximately 80 percent of the company's North American sales are in the U.S. and the remaining 20 percent in Canada. Caterpillar ranks third with regard to sales following Kubota and Bobcat. The 303CR and 304CR (about 3 and 4 tons) are the most popular models.

*We are currently updating our Company Profile on **Caterpillar, Inc, which should be available in November**, providing a more detailed insight into the company, its operating results, and its products.*

Doosan

Doosan Infracore (Doosan), formerly known as Daewoo, offers three mini-excavator models imported from South Korea with operating weights ranging from 2.8 to 5.5 metric tons. The big surprise of the year was when Doosan **bought Bobcat** from Ingersoll-Rand in July 2007 for \$4.9 billion. We estimate that Doosan's sales of mini-excavators for 2006 were less **than 50 units, however, now that they have acquired Bobcat they will be a major player in the mini-excavator market** on a global scale.

Deere

Deere is fourth in the mini-excavator market. Its mini excavators are produced by Hitachi in Japan within the Deere-Hitachi joint venture agreement in which the two companies share manufacturing and marketing of their excavator lines. Deere brand mini-excavators accounted for 9 percent of the market in 2006 and were over 10 times higher than in 2000. (Hitachi brand mini-excavators are marketed in North America by John Deere for Hitachi, although Hitachi's market share is in the range of 1 percent. The Deere and Hitachi mini-excavator models are practically the same machines with different names, engine vendors, and paint jobs. As noted in our company profile on Deere & Company in March 2006, Deere handles the sales of the mini excavators as well some other products in North America for both itself and Hitachi, while Hitachi handles some distribution networks for Deere in parts of the Far East.

Four mini excavators are sold under the Deere brand; they are the 17D, 27D ZTS, 35D ZTS and 50D ZTS. All are new derivations of the previous machines. The new excavators feature Yanmar engines instead of Isuzu power. The 17D is an update of the 17 ZTS. The 17D is one of the first models to be Tier IV approved. It features tracks that contract and then expand again for passage through small or tight spaces such as doorways.

The Hitachi brand lineup also consists of four models that are almost identical to their Deere counterparts. The Deere 17D corresponds to the Hitachi Zaxis 17U-2, which was updated from the Hitachi EX17U. The other three models are in the Zaxis series are the 27U-2, 35U-2 and 50U-2. The numbers are the same as in the Deere models and the specs are very similar. See our spec sheet for further details at the end of this report.

We estimate Deere-Hitachi to have imported about 2,900 units in 2006. (That number consists of both Deere and Hitachi brand units combined.) Deere sold approximately 2,600 units in 2006 while Hitachi sales were estimated at roughly 350 units.

IHI

IHI (Ishikawajima Heavy Industries) has been producing mini-excavators for over 25 years in Japan and began selling them in North America in 1994 through its North American distributor, IHI Compact Excavator Sales LLC. The company offered its first zero tail swing model in 1995. IHI offers nine mini-excavator models that weigh six tons or less. They also offer more models that are slightly heavier than six tons that they may still classify as compact or mini excavators but are not included in this report. In our last report IHI offered ten models under six tons.

The product lineup consists of the NX-2 and N-2 series machines. There is one NX model, the 55NX, which is the largest of the lineup and weighing about 5.7 metric tons. The smallest model, the 9NX-2, also comes in a new electric version called the 9NX-2 Electric. Unlike its standard counterpart and all the other models in the lineup, this model has a 5 hp Baldor motor instead of the typical Yanmar diesel engine.

IHI sold approximately 1,200 units in 2006, up slightly from an estimated 1,150 units sold in both 2005 and 2004. IHI holds a four percent share of the market.

Komatsu America

Komatsu America offers eight models that weigh less than six tons in its lineup, up from seven machines in our 2005 report. The new model is the PC58UU-3, which weighs 5.2 metric tons and is their largest mini-excavator under six tons. All models are imported from Japan. Komatsu supplies its own engines. Horsepower ratings range from 8.7 to 40 hp. Digging depths range from 4'11" to 13'1".

Komatsu has 6 percent of the mini-excavator market in North America based on 2006 estimated industry sales data. All of its machines are produced in Japan and imported from there. Komatsu, Ltd. also manufactures machines for Ditch Witch (Charles Machine Works).

Kubota

Kubota offers 10 mini-excavators, up from seven from our previous report. The three new additions are to the U series and consist of the U15, U25 and U45 added to the preexistent U35. All of the U series models feature auxiliary hydraulics. The U15 features front pin bushings, a protected boom cylinder and hoses as well as retractable seat belts. The U25 also features protected hoses as well as a digital panel, travel speed selector, strong bucket force and swivel negative brake. The U45 features an angle blade with float, controlled climate cab, two-patter selection, an accumulator and an automatic idle system among other things.

Kubota imports all models from Japan and all excavators are powered by Kubota engines. Kubota imported about 6,000 units in 2006 and sold 5,700 in North America. Kubota is the largest seller of mini-excavators in North America, accounting for 19 percent of the market. The company had been behind Bobcat

for many years, but overtook Bobcat in 2006 for the first time. Kubota's top customer base is independent contractors. The top five industries it sells to are the sewer and water industry as well as residential, landscaping, dealer and rental markets.

We should note that Kubota has recently announced plans to compete in the compact track loader market, which will compliment the company's other construction machinery products. Actual machine sales for the new product line are not expected before 2008.

Takeuchi

Takeuchi Manufacturing was founded in Japan in 1963. In 1971 they produced the first mini-excavator. The company opened its first North American subsidiary, Takeuchi Mfg (US) Ltd in 1979 and has been exporting mini excavators to North America since. The company has also been selling compact track loaders in North America since 1986 and it offers compact wheel loaders. Takeuchi US has dealers throughout the United States, Canada, Puerto Rico and the Virgin Islands.

Takeuchi currently offers eight models of its TB series in North America rated below 6 metric tons. Two of the models are zero tail swing machines. All models are all imported from Japan. The newest model is the TB138FR, which is a zero tail swing excavator. It weighs about 3.8 metric tons and has a digging depth of roughly 11'3". Like all the other models in the series, it has a Yanmar engine. The power rating is 27.8 hp. Most of the other models have had changes made to the Yanmar engines used since our last report on mini-excavators. (Takeuchi also offers several other small excavators rated above 6 tons, which are not included in this report.)

Takeuchi sold 3,500 units in 2006, up from 2,800 units in 2004 – a 25 percent increase. Takeuchi represents 12 percent of the market and is in third place in North American sales behind Kubota and Bobcat.

Yanmar

Yanmar currently offers seven mini-excavators in its lineup. All of Yanmar's models are imported from Japan. Yanmar also offers two additional models they classify as mini-excavators even though they each weigh more than six tons, the VIO 75-A and the B7-5A. (We do not include them in this report but they are covered in our reports on standard excavators.)

There have been some changes in Yanmar's mini-excavator models since our last report. The model names have changed as have many of the basic specifications. What was once called the B08-3 model is now the SV08-1 with a different Yanmar engine and slightly higher horsepower rating. The remaining models are all in the VIO series and their names have had marginal changes. For example the VIO40-3 has now become the VIO45-5, with an upgraded Yanmar engine, increased horsepower rating, increased weight and slightly higher digging depth. (See out spec sheet at the end of the report for details.)

Yanmar offers its patented "pin grabber type" Hydraulic Quick Coupler on its machines, which have a value of about \$2,000. They also offer the patented VIO Crawler Track Advanced Stability (VICTAS) track system for increased side-to-side and overall stability without increasing the width of the track. All VIO models have True Zero Tail Swing meaning the whole cabin stays within the tracks.

Yanmar is estimated to have sold approximately 1,400 units in 2006, a 65 percent increase from 2004. Yanmar's sales now account for five percent of the market instead of four as they have been for the past five years.

Table 13: 'Other' Mini-Excavator Supplier Summaries

Supplier	Manufacturing Location(s)	2006 Sales	Comments
Boxer	USA	<25	Boxer is new to the mini-excavator market and offers one model. Boxer joins Bobcat as being the only suppliers that produce mini-excavators in North America.
Coyote Loader	Japan	<25	Coyote Loader entered the North American market a few years ago and now offers six models produced by Nagano in Japan.
Doosan (Daewoo)	South Korea	< 50	Doosan Infracore (Doosan), also known as Daewoo, offers three mini-excavator models imported from South Korea. It bought Bobcat from Ingersoll-Rand in July 2007.
Ditch Witch	Japan	300	Ditch Witch entered the NA market in 2003 with five mini-excavator models, adding one new model in 2005. The machines are produced by Komatsu in Japan.
Gehl / Mustang	Austria	125	Gehl and Mustang each offer eight mini-excavator models (same machines but different model numbers). Neuson Kramer of Austria (recently purchased by Wirtgen) is the manufacturer.
Hyundai	South Korea	150	Hyundai offered one mini-excavator model in 2003. They offer ten models today, all imported from South Korea.
JCB	United Kingdom	350	JCB offers eight compact excavators in the <2 and 4<6 metric ton categories. JCB manufactures the machines in the United Kingdom.
Kobelco	Japan	300	CNH is responsible for the NA distribution of five Kobelco mini-excavator models produced in Japan. Kobelco holds an approximate one percent share of this market.
Pine Brook	China	100	Pine Brook offers three mini-excavator models and holds a very minor position in the North American market. Yuchai Construction Machinery of China is the machine source.
Terex	Germany	400	Terex minis are produced by Terex Schaeff in Germany. Terex acquired Schaeff in 2002. The company offers ten models. Terex accounts for about one percent of the NA market.
Thomas Equipment	Japan	<50	Thomas Equipment offers a line of five mini-excavator models out of existing inventory. Thomas stopped importing mini-excavators in early 2006 as they are restructuring through bankruptcy.
Vermeer	Italy	100	Vermeer entered the North American market in 2003 with seven mini-excavator models. Libra of Italy produces the machines for Vermeer.
Volvo CE	France, South Korea	500	Volvo currently offers eleven compact excavators with sales reaching approximately 500 units in 2006. Most models come from France; two of the largest machines are imported from South Korea.

Source: Yengst Associates

Table 14: Mini-Excavator Supplier Addresses

<p>BOBCAT 250 E. Beaton Drive West Fargo, ND 58078-6000 USA Phone: 701.241.8700 www.bobcat.com</p>	<p>HITACHI PO Box 1187 Kernersville, NC 27284 Phone: 336.996.8100 www.hitachi-c-m.com</p>	<p>PINE BROOK 580 Ontario Street Toronto, Ontario M4X 1M7 CAN Phone: 416.929.7016 www.pinebrookco.com</p>
<p>BOXER (Compact Power Inc.) PO Box 40 Fort Mill, SC 29716 Phone: 800.476.9673 www.boxerequipment.com</p>	<p>HYUNDAI 955 Estes Avenue Elk Grove Village, IL 60007 Phone: 905.335.3441 www.hceusa.com</p>	<p>TAKEUCHI 1525 Broadmoor Blvd Buford, GA 30518 Phone: 770.831.0661 www.takeuchi-us.com</p>
<p>CASE 100 S. Saunders Road Lake Forest, IL 60045 Phone: 847. 735.9200 www.casece.com</p>	<p>IHI/Compact Excavator Sales LLC 202 Production Drive Elizabethtown, Kentucky 42702 Phone: 800.538.1447 www.ihcompactexcavator.com</p>	<p>TEREX 200 Nyala Farm Road Westport, CT 06880 Phone: 203.222.7170 www.terex.com</p>
<p>CATERPILLAR 100 NE Adams Street Peoria, IL 61629-2325 USA Phone: 309.675.1000 www.cat.com</p>	<p>JCB 2000 Bamford Blvd Pooler, GA 31322 Phone: 912.447.2000 www.jcb.com</p>	<p>THOMAS EQUIPMENT 29 Hawkins Road Box 510 Centreville, NB E7K 3G4 CAN Phone: 506.276.4511 www.thomasloaders.com</p>
<p>COYOTE LOADER SALES 6721 Chittenden Road Hudson, Ohio 44236 Phone: 330.650.5101 www.coyoteloaders.com</p>	<p>KOBELCO 501 Richardson Road Calhoun, GA 30701 Phone: 706.629.5572 www.kobelcoamerica.com</p>	<p>VERMEER 2411 Vermeer Road Box 200 Pella, IA 50219 Phone: 641.628.3141 www.vermeer.com</p>
<p>Doosan Infracore America Corp. 2905 Shawnee Industrial Way Suwanee, GA 30024 Phone: 770.831.2200 www.dhiac.com</p>	<p>KOMATSU AMERICA CORP. 1701 West Golf Road Rolling Meadows, IL Phone: 847.437.5800 www.komatsuamerica.com</p>	<p>VOLVO CE One Volvo Drive Asheville, NC 28803 Phone: 828.650.2000 www.volvoce.com</p>
<p>DEERE One John Deere Place Moline, IL 61625 Phone: 309.765.8000 www.deere.com</p>	<p>KUBOTA 3401 Del Amo Blvd Torrance, CA 90503 Phone: 310.370.3370 www.kubota.com</p>	<p>YANMAR AMERICA CE DEPT. 101 International Parkway Adairsville, GA 30103 Phone: 770.877.7570 www.yanmar.com</p>
<p>DITCH WITCH (Charles Machine Works) PO Box 66 Perry, OK 73077 Phone: 580.336.4402 www.ditchwitch.com</p>	<p>MUSTANG 1880 Austin Road Owatonna, MN 55060 Phone: 507.451.7112 www.mustangmfg.com</p>	
<p>GEHL 143 Water Street West Bend, WI 53095 Phone: 262.334.9461 www.gehl.com</p>	<p>NEW HOLLAND 245 East North Avenue Carol Stream, IL 60188 Phone: 630.260.4000 www.newhollandconstruction.com</p>	

Source: Company Information

Table 15: Mini-Excavator Specifications

Manufacture/ Model	Mfg Source	Operating Weight (lbs)	Operating Weight (mt)	Engine Source	Engine Model	HP	Maximum Dig Depth (ft)
BOBCAT							
316	Japan	1,676	0.8	Kubota	D-722-EB	9.9	5'1
323	Bismarck, ND	3,655	1.7	Kubota	D-722-EB	13.3	7'5
325	Bismarck, ND	6,145	2.8	Kubota	D-1703-M-E2B	28	8'4
329	Bismarck, ND	7,098	3.2	Kubota	D-1703-M-E2B	28	10'2
331	Bismarck, ND	7,185	3.3	Kubota	V2203-M-DI-E28	40	10'2
335	Bismarck, ND	9,170	4.1	Kubota	V2203-M-DI-E2B-	40	11'6
337	Bismarck, ND	11,085	5.0	Kubota	V2003-M-DI-TE2B	48	12
425	Bismarck, ND	5,489	2.5	Kubota	V1505-M-E2B	26.4	8'3
430/430H	Bismarck, ND	7,885	3.6	Kubota	V2203-M-DI	42.8	10'1
435-H	Bismarck, ND	10,555	4.8	Kubota	V2203-M-DI-TE2B	49	11'2
BOXER							
BX-10	Ponca City,	1,900	0.9	Honda	IGX440	13	78"
CASE							
CX17B	Japan	3,638	1.7	Mitsubishi	L3E-W231KBS	15.2	7'1
CX27B	Japan	5,556	2.5	Yanmar	3TNV82-A-SYB	21.3	8'4
CX31B	Japan	6,679	3	Yanmar	3TNV88-PYB	28.4	9'2
CX36B	Japan	7,958	3.6	Yanmar	3TNV88-PYB	28.4	10'11
CX50B	Japan	10,261	4.7	Yanmar	4TNV88-XYB	40.8	11'9
CATERPILLAR							
301.6C	UK	3,549	1.6	Mitsubishi	L3E NA Diesel	18.1	6'8
301.8C	UK	3,703	1.7	Mitsubishi	L3E NA Diesel	18	6
302.5C	UK	6,052	2.7	Mitsubishi	S3L2 NA Diesel	24.9	8'6
303.5C CR	UK	8,355	3.8	Mitsubishi	S3Q2-T	39	10'3
303C CR	Japan	7,575	3.4	Mitsubishi	S4Q2	30	9'7
304C CR	Japan	10,582	4.8	Mitsubishi	S4Q2	42	10'6
305C CR	Japan	11,465	5.2	Mitsubishi	S4Q2-T	47	11'5
COYOTE							
CE08	Japan	1,676	0.8	Kubota	D722	7.4	5'1
CE15	Japan	3,150	1.4	Mitsubishi	L3E	17	7'8
CE25	Japan	6,084	2.8	Mitsubishi	S3L2	24	8'6
CE35	Japan	7,326	3.3	Mitsubishi	S3L2	27	10'4
CE35R	Japan	7,980	3.6	Kubota	V2403	27	10'3
CE55	Japan	11,794	5.3	Mitsubishi	S3L2	42.3	12'3
DOOSAN INFRCACORE							
DX27z	South Korea	6,150	2.8	Yanmar	3TNV82A-SDB	22.1	8'10
DX35z	South Korea	7,937	3.6	Yanmar	3TNV88	27.2	10'4
Solar 55V Plus	South Korea	12,100	5.5	Yanmar	4TNV94L-XDB	51.1	12'5
DEERE							
17D	Japan	4,319	2	Yanmar	3TNV70	14.8	7'1
27D ZTS	Japan	6,393	2.9	Yanmar	3TNV88	26.4	8'7
35D ZTS	Japan	7,672	3.5	Yanmar	3TNV88	29.9	10'1
50D ZTS	Japan	10,428	4.7	Yanmar	4TNV88	39.9	11'10
DITCH WITCH							
MX9	Japan	1,960	0.9	Komatsu	2D68E	8.3	5
MX182	Japan	4,090	1.9	Komatsu	3D67E-5	15	7'6
MX202	Japan	5,060	2.3	Komatsu	3D76E-5	20.8	8'1
MX272	Japan	6,515	3	Komatsu	3D82AE	25.5	8'7
MX352	Japan	8,630	3.9	Komatsu	3D88E-5P	29.1	10'4
MX502	Japan	11,440	5.2	Komatsu	4D88E-5X	39	12'5

Source: Company Information

Table 15: Mini-Excavator Specifications (cont'd)

Manufacturer/ Model	Mfg. Source	Operating Weight (lbs)	Operating Weight (mt)	Engine Source	Engine Model	HP	Maximum Dig Depth (Ft)
GEHL							
EXC153	Austria	3,759	1.7	Yanmar	3TNV76-SNS	24	7'9
EXC223	Austria	4,447	2	Yanmar	3TNV76-SNS	18	8'7
EXC303	Austria	6,875	3.1	Yanmar	3TNV88-NNS	29.2	9'11
EXC353	Austria	7,715	3.5	Yanmar	4TNV88-WNS	32	11'7
EXC373	Austria	8,215	3.7	Yanmar	4TNV88-WNS	32	11'3
EXC383Z	Austria	8,002	3.6	Yanmar	3TNV88-PNS	28.8	11
EXC503Z	Austria	10,582	4.8	Yanmar	4TNV88-PNS	38	12.8
EXC603	Austria	12,566	5.7	Yanmar	4TNV98-VNS	69	13'7
HITACHI							
Zaxis 17U-2	Japan	4,079	1.9	Yanmar	3TNV70	14.8	7'1
Zaxis 27U-2	Japan	6,393	2.9	Yanmar	3TNV88	26.4	9'7
Zaxis 35U-2	Japan	7,672	3.5	Yanmar	3TNV88	29.9	11'4
Zaxis 50U-2	Japan	10,428	4.7	Yanmar	4TNV88	39.9	11'10
HYUNDAI							
R15-7	South Korea	3,460	1.6	Mitsubishi	L3E	17	7'2
R16-7	South Korea	3,594	1.6	Mitsubishi	L3E-W231	17	7'8
R22-7	South Korea	4,850	2.2	Mitsubishi	L3E-W231	17	7'8
R28-7	South Korea	6,060	2.7	Mitsubishi	S3L2	24	9'6
R35-7	South Korea	7,320	3.3	Mitsubishi	S3L2	27	11'3
R36N-7	South Korea	7,981	3.6	Mitsubishi	S3L2-Y131NSB	27	10'3
R55-7	South Korea	12,570	5.7	Yanmar	4TNV 94L	53	13'4
R55W-7	South Korea	12,020	5.5	Yanmar	4TNV 94L	55	12'6
R75-7	South Korea	7,430	3.4	Mitsubishi	S4S	55.5	13'1
R80-7	South Korea	7,800	3.5	Yanmar	4TNV98	58	13'7
IHI							
9NX-2 Electric	Japan	2,100	1	Baldor	n/a	5	5'2"
9NX-2	Japan	2,060	1	Yanmar	2TNV70	10	5'2"
15NX-2	Japan	3,850	1.7	Yanmar	3TNV70	14	7'
25NX-2	Japan	6,100	2.8	Yanmar	3TNV76	21.1	8'3"
30NX-2	Japan	7,075	3.2	Yanmar	3TNV84	23.9	10'6"
35NX-2	Japan	7,440	3.4	Yanmar	3TNV84	26.5	11'4"
55NX	Japan	12,498	5.7	Yanmar	4TNV88	37.1	12'5"
28N-2	Japan	6,189	2.8	Yanmar	3TNV76	2.11	8'3"
35N-2	Japan	7,759	3.5	Yanmar	3TNV84	26.5	10'4"
55N-2	Japan	12,733	5.8	Yanmar	3TNV94L	55.5	12'8"
JCB							
Micro	UK	2,502	1.1	Perkins	103-10	17	6'2
8018	UK	3,664	1.7	Perkins	403C-11	19	7'8
8027Z rep	UK	6,533	3	Perkins	103-15	27.8	8'3
8032Z rep	UK	7,423	3.4	Perkins	103-15	27.8	8'8
804 Super	UK	7,729	3.5	Perkins	103-15	27	10'3
8040	UK	9,480	4.3	Perkins	404-22c	46.4	10'11
8045	UK	10,472	4.8	Perkins	404-22c	46.4	11'7
8052	UK	11,468	5.2	JCB	104-22	47.8	13'1
KOBELCO (CNH)							
13SR Gatekeeper	Japan	3,240	1.5	Yanmar	3TNE68-YB	12	6'11
27SR-3	Japan	5,557	2.5	Yanmar	3TNV82ASYB	21.3	8.4
30SR-3	Japan	6,680	3	Yanmar	3TNV88PYB	28.4	9.3
35SR-3	Japan	7,960	3.7	Yanmar	3TNV88PYB	28.4	10'1
50SR-3	Japan	10,275	4.7	Yanmar	4TNV88XYB	40.8	11'9
KOMATSU AMERICA							
PC09-1	Japan	1,985	0.9	Komatsu	2D70E	8.7	4'11
PC18MR-2	Japan	4,090	1.9	Komatsu	3D67E-5	15	7'1
PC20MR-2	Japan	5,060	2.3	Komatsu	3D67E-5	20.8	7'9
PC27MR-2	Japan	6,590	3.0	Komatsu	3D82AE	25.5	8'8
PC5MR-2	Japan	8,245	3.7	Komatsu	3D88E-5	29.1	10'5
PC40MR-2	Japan	10,560	4.8	Komatsu	4D88E-5	39.4	11'6

Table 15: Mini-Excavator Specifications (cont'd)

Manufacturer/ Model	Mfg. Source	Operating Weight (lbs)	Operating Weight (mt)	Engine Source	Engine Model	HP	Maximum Dig Depth (Ft)
KOMATSU							
PC50MR-2	Japan	11,110	5.0	Komatsu	4D88E-5	39.4	12'6
PC58UU-3	Japan	11,540	5.2	Komatsu	4D88E	40	13'1
KUBOTA							
K008-3	Japan	2,200	1	Kubota	D722	10.2	5'7
KX41-3	Japan	3,693	1.7	Kubota	D902	17	7'8
KX71-3	Japan	6,305	2.7	Kubota	V1505	27.5	9'9
KX91-3	Japan	7,110	3.2	Kubota	D1503	28	10'5
KX121-3	Japan	9,063	4.1	Kubota	V2203-M	42	11'5
KX161-3	Japan	11,532	5.2	Kubota	V2403-M	47	12'6
U15	Japan	3,704	1.7	Kubota	D1105	12.9	7'7
U25	Japan	5,625	2.6	Kubota	D1105	20.7	9'3
U35	Japan	8,234 ?	3.7	Kubota	D1503-M	28	10'4
U45	Japan	11,850	5.4	Kubota	V2203-M	42	11'10
MUSTANG							
ME1503	Austria	3,560	1.6	Yanmar	3TNV76-SNS	23.7	7'2
ME2203	Austria	4,255	1.9	Yanmar	3TNV76-SNS	23.7	8'1
ME3003	Austria	6,700	3.0	Yanmar	3TNV88-NNS	36.6	9'1
ME3503	Austria	7,530	3.4	Yanmar	4TNV88-WNS	48.2	10'7
ME3703	Austria	8,030	3.7	Yanmar	4TNV88-WNS	48.2	10'3
3803ZT	Austria	7,826	3.5	Yanmar	3TNV88-NNS	36	11
5003ZT	Austria	10,582	4.8	Yanmar	4TNV88-PNS	47	11'7
6003	Austria	12,566	5.7	Yanmar	4TNV98-VNS	68	12'6
NEW HOLLAND							
E15	Japan	3,240	1.5	Yanmar	3TNE68-YB	11.9	6'11
E27	Japan	5,557	2.5	Yanmar	3TNV82A-SYB	21.3	8'4
E30	Japan	6,680	3.0	Yanmar	3TNV88-PYB	28.4	9'3
E35	Japan	7,960	3.6	Yanmar	3TNV88-PYB	28.4	10'1
E50	Japan	10,275	4.7	Yanmar	4TNV88-XYB	40.8	11'9
PINE BROOK							
ME-15	China	3,300	1.5	Perkins	103-10	17	7'5
ME-25	China	6,200	2.8	Isuzu	3LD1	24	8'6
ME-35	China	7,500	3.4	Isuzu	3LD1	26	11'6
TAKEUCHI							
TB108	Japan	2,033	0.9	Yanmar	2TNV70	9.6	5'6
TB016	Japan	3,524	1.6	Yanmar	3TNV70-STB	13.5	7'10
TB125	Japan	6,165	2.8	Yanmar	3TNV82Q-TB1	22.5	9'6
TB135	Japan	7,636	3.5	Yanmar	3TNV82-QTB	27.8	11'2
TB145	Japan	10,562	4.8	Yanmar	4TNV88-QTB	37.5	12'6
TB138FR	Japan	8,316	3.8	Yanmar	3TNV88X-TBZ	27.8	11'3
TB153FR	Japan	12,450	5.6	Yanmar	4TNV88-PTBZ1	38.2	12'10
TB180FR	Japan	18,370	8.3	Yanmar	4TNV98	60.5	14'11
TEREX							
TC 16	Germany	3,792	1.7	Mitsubishi	L3E-W 262 KL	18	7'9
TC 20	Germany	4,455	2.0	Mitsubishi	L3E-W 262 KL	18	8'2
TC 29	Germany	6,480	2.9	Mitsubishi	S4L	28	9'7
TC 35	Germany	7,980	3.6	Mitsubishi	S4L	32.5	11'10
TC 37	Germany	8,047	3.7	Mitsubishi	S4L2	32.5	11'1
TC 48	Germany	10,920	5.0	Mitsubishi	S4Q2-61 KL	47	12'10
TC 50	Germany	11,067	5	Yanmar	4TNV88	39.4	12'1
TC 60	Germany	13,140	6.0	Mitsubishi	S4Q2	51.5	12.3
TC 75	Germany	17,086	7.8	Deutz	KHD BF 4 M	72	14'7
TC 125	Germany	28,219	13	Deutz	BF 4 M 2012	94	15'4

Source: Company Information

Table 15: Mini-Excavator Specifications (cont'd)

Manufacturer/ Model	Mfg. Source	Operating Weight (lbs)	Operating Weight (mt)	Engine Source	Engine Model	HP	Maximum Dig Depth (Ft)
THOMAS							
15S	Japan	3,236	1.5	Mitsubishi	L3E	17	7'9
15V	Japan	3,236	1.5	Mitsubishi	L3E	17	7'9
25	Japan	5,842	2.7	Isuzu	3LD1PA-04	26	9'6
35	Japan	7,121	3.2	Isuzu	3LD1PA-20	29	11'3
45	Japan	9,832	4.5	Isuzu	4LE1PA-03	45	13'5
VERMEER							
CX216	Italy	3,307	1.5	Kubota	D1005-E	18	7'1
CX218	Italy	3,637	1.7	Kubota	D1005-E	18	7'8
CX219z	Italy	3,968	1.8	Kubota	D-722-EB	14.3	8
CX224	Italy	5,291	2.4	Kubota	V1305-E	25	8'4
CX229	Italy	6,063	2.8	Kubota	V1305-E	25	8'8
CX234	Italy	6,725	3.1	Kubota	D1703-E	32	10'2
CX254	Italy	11,023	5.0	Kubota	V2003-T	52	11'8
VOLVO							
EC15B	France	3,993	1.9	Mitsubishi	L3E	19	7'9
EC20B	France	4,267	1.9	Mitsubishi	L3E	19	9'1
EC25	France	6,286	2.9	Mitsubishi	S3L2	27	10'5
EC30	France	6,948	3.2	Mitsubishi	S3L2	27	10'9
EC35	France	7,898	3.6	Volvo	D2.2	36.3	12'1
EC45 PRO	France	10,333	4.7	Volvo	D2.2	36.3	16'7
ECR28	France	6,219	2.8	Volvo	D1.2	19.3	9'7
ECR38	France	7,561	3.4	Volvo	D1.6	27.6	10'9
EW55B	France	12,125	5.5	Volvo	D3.1	51	19'4
EC55B PRO	South Korea	12,125	5.5	Volvo	D3.1	52	14'4
ECR58	South Korea	12,298	5.6	Volvo	D3.1	52	21'2
YANMAR							
VIO15-2A	Japan	3,704	1.7	Yanmar	3TN68-EBVA	11.4	7'3
VIO20-3	Japan	4,910	2.2	Yanmar	3TNV76-PBV	19.2	8'7
VIO27-5	Japan	6,460	2.9	Yanmar	3TNV82A-SBV	21.6	9'6
VIO35-5	Japan	7,850	3.6	Yanmar	3TNV88-QBV	28	11'4
VIO45-5	Japan	10,121	4.6	Yanmar	4TNV88-PBV	38.7	12'8
VIO55-5	Japan	11,312	5.1	Yanmar	4TNV88-PBV	38.7	13'8
SV08-1	Japan	2,337	1.1	Yanmar	2TE67L-BV	10.3	5'4

Source: Company Information



Charles Yengst, President

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For additional information, please contact:

Yengst Associates, Inc.

P.O. Box 781

35 Old Ridgefield Road

Wilton, Connecticut 06897-0781

USA

Telephone: 1-203-762-8096

Fax: 1-203-762-8330

E-mail: mail@yengstassociates.com

Website: www.yengstassociates.com

