

# 2014 ENGINE BUILDING MARKET PROFILE

presented by

**ENGINE  
BUILDER**



## A Survey Of The Engine Building Industry Engine Builder Magazine, July 2014

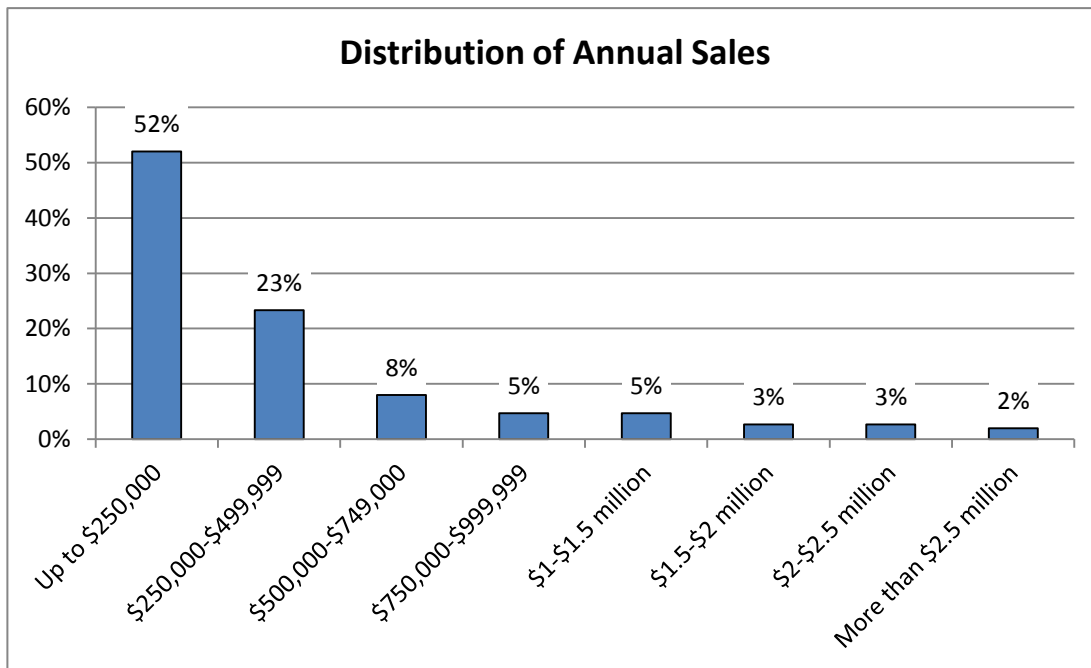
Each year *Engine Builder* magazine conducts a thorough review of the rebuilding/machining industry. This report contains the data from the most recent study done among subscribers and members of the AERA organization. Much of the data was published as the *Machine Shop Market Profile*.

### General Business Issues

*Do you keep an inventory of rebuilt engines?*

About 14% of those responding to the survey keep an inventory of rebuilt engines.

*What was your 2013 gross sales volume? (parts and labor)*



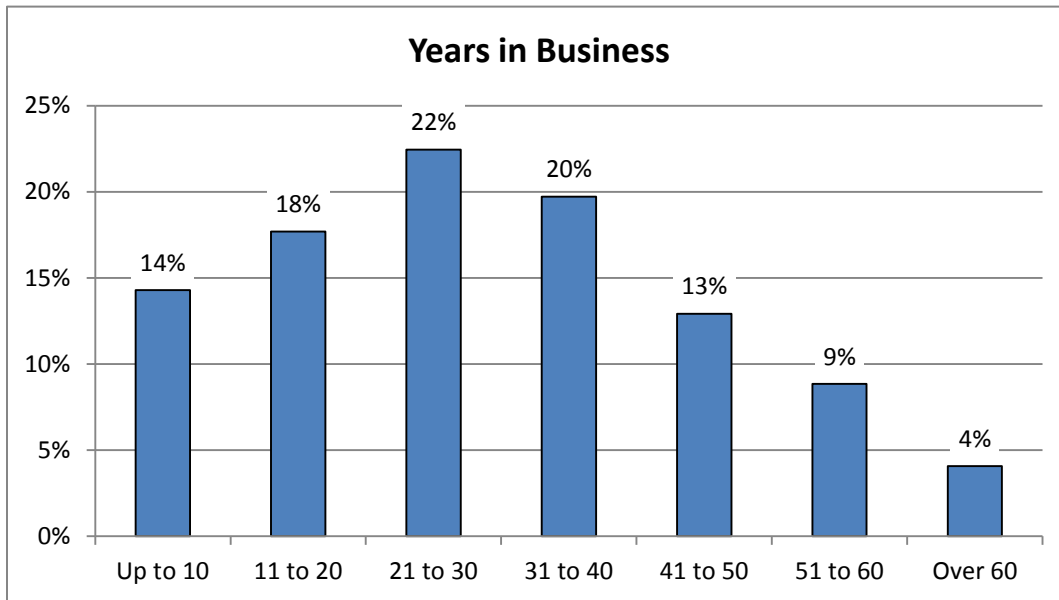
The largest segment has sales up to \$250,000, the computed average across all locations is \$523,000 per year.

*How does this 2013 gross sales volume compare to your 2012 gross sales volume?*

Up	37%
Same	45%
Down	18%
	100%

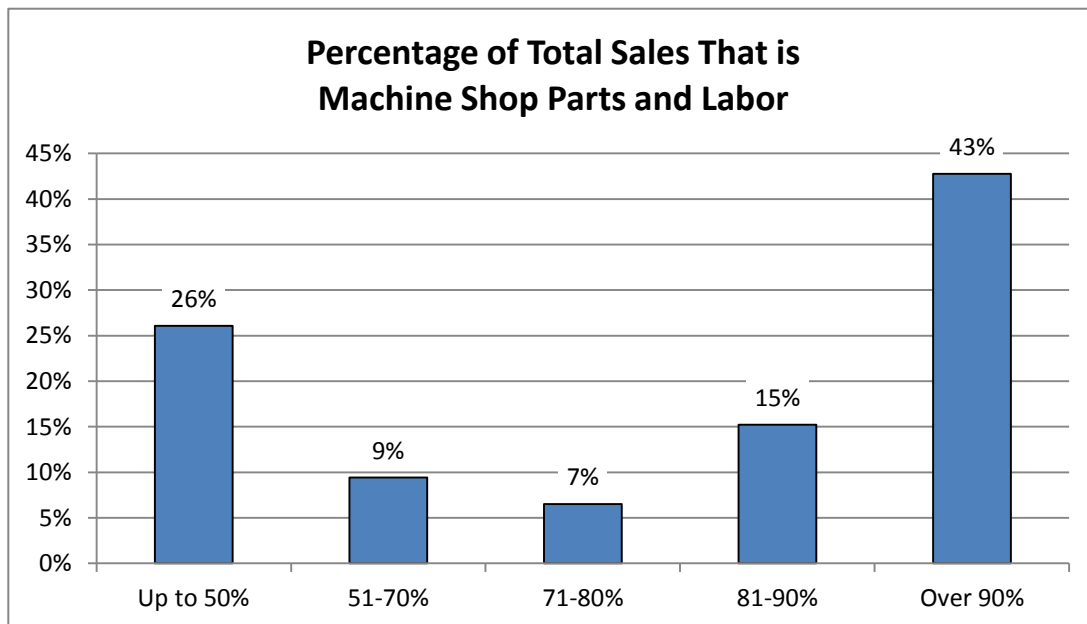
Those seeing an increase saw an average of 14.5%, while those seeing a decrease saw an average of about 14%.

How many years has your shop been in operation?



The average value is 30.2 years.

What percentage of your total 2013 sales volume can be attributed to machine shop parts & labor sales?

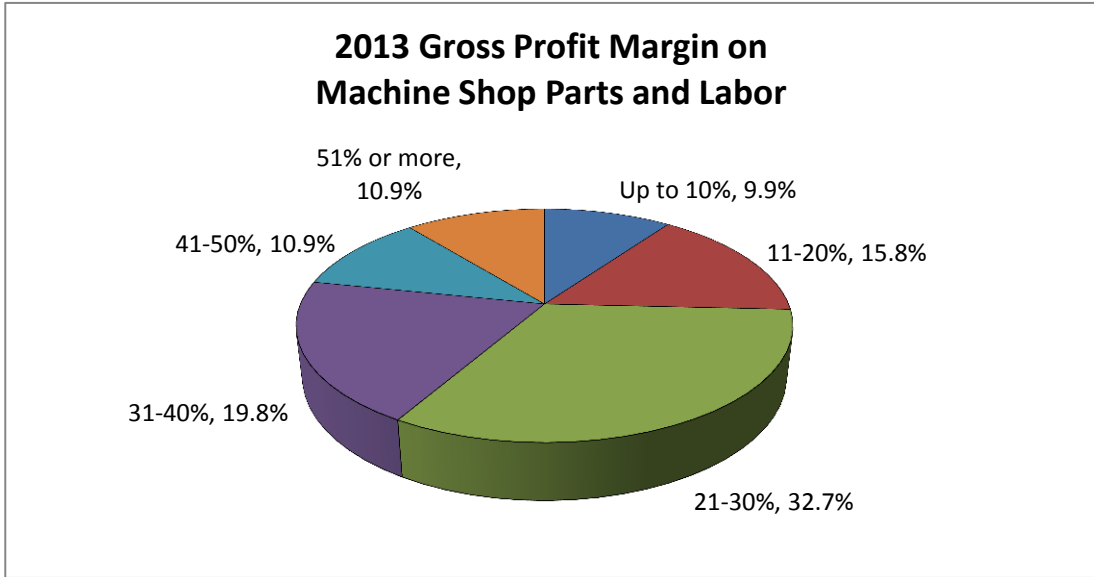


Average 75% Median 90%

Note: The Median value is that which has as many observations above it as below.

This distribution shows that there are some shops for which this type of work is a sideline but for the vast majority it is their dominant activity.

What was your 2013 gross profit margin (sales minus cost of goods) on machine shop parts & labor?



The average gross profit margin was 30.2%, and about half the shops reported a GPM of 21% to 40%.

How does your 2013 gross profit margin compare to your 2012 gross profit margin?

Up versus 2012	26%	<i>Note: any given column or row may not add to 100% due to rounding.</i>
The same as 2012	61%	
Down versus 2012	<u>13%</u>	
	100%	

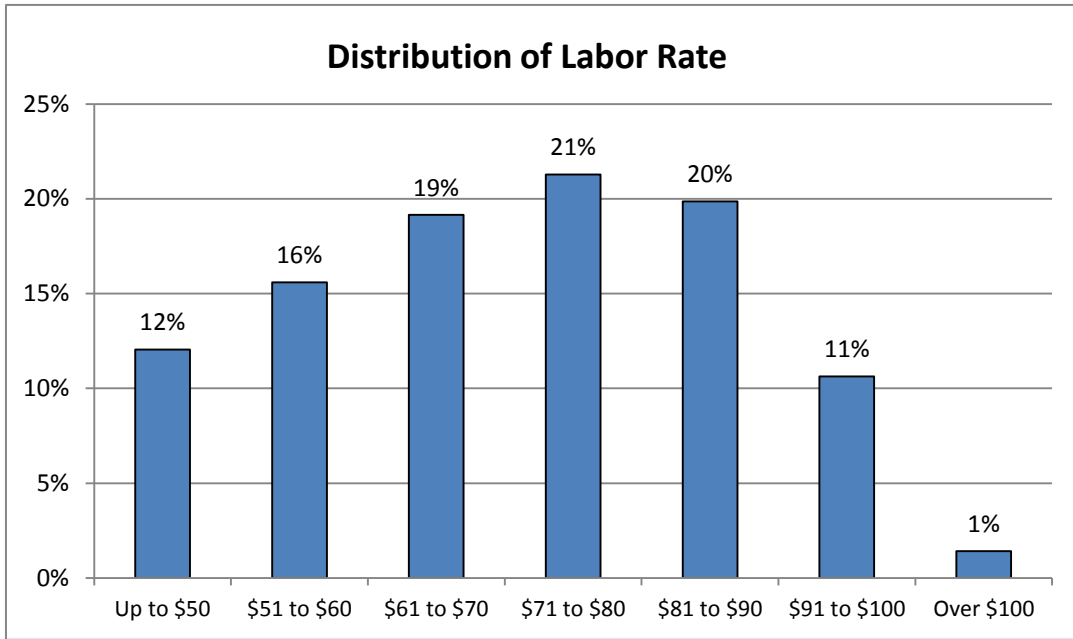
The largest group reported their gross profit margin was unchanged from the previous year. Those seeing an increase saw an average of 8.4% while those seeing a decrease reported an average of 11.9%.

What was your pretax profit in 2013? (Net profit after all expenses, but before taxes)

We saw an average of \$46,000 in profit but the values ranged from a loss of \$19,000 to a profit of nearly \$400,000. The median value is perhaps the more useful figure and this was \$39,000.

What is your present hourly shop labor rate charged to customers?

Average \$72.50  
Median \$75.00



What is your average markup on hourly shop labor paid to employees? (i.e. % markup from hourly wage paid to shop employees to hourly rate charged to customers)

Average 108%  
Median 60%

There is a very wide distribution of answers to this question as the average is nearly twice the median value.

For every dollar in shop labor billed, how many dollars in **parts sales** did you generate in 2013?

Average \$ 6.28  
Median \$ 1.00

Again, a very wide range of values seen here, as the average is several times the median.

The majority of answers clustered around \$1.

*Have you attended a trade show related to your business over the past 12 months?*

Yes 31%

*Of the following trade shows which do you consider the most important to your business?  
(check all that apply)*

PRI Show	61%
AERA Seminars	45%
AAPEX/SEMA	21%
Race & Performance Expo	18%
Hot Rod & Restoration Show	11%
APRA Big R Show	3%

*Do you have a website for marketing & sales of your rebuilding services and products?*

Yes 47%

*What new market niches or new machine shop services did you enter in the last 12-18 months?*

Small engine	Diesel HD	Industrial
High Performance	Diesel Auto	Restoration
Marine		

The most common were:

Small engine	36%
Diesel HD	27%

*What is the most profitable market you do business in?*

Diesel HD was named as the most profitable market.

*What do you feel is the single biggest competitor to your machine shop services or rebuilt engines?*

Used engines being installed	Low financing on used cars
Low financing on new vehicles	Better quality engines in new cars
Higher gas prices	PER engine sales
Retail engine sales	The economy

The most common were:

Used engines being installed
The economy

## **Production**

*What percentage of your engine rebuilding business is short blocks, long blocks, complete engines, separate heads and separate cranks?*

	<u>Gas</u>	<u>Diesel</u>
Heads	49%	67%
Long blocks	17%	6%
Complete engines	15%	11%
Cranks	10%	12%
Short blocks	<u>9%</u>	<u>3%</u>
	100%	100%

*What percentage of your total machine/rebuild work is on "import," i.e. foreign name plate engines?*

Average	30%
Median	25%

*What percentage of your total head/rebuild work is on "import," i.e. foreign name plate heads?*

Average	39%
Median	35%

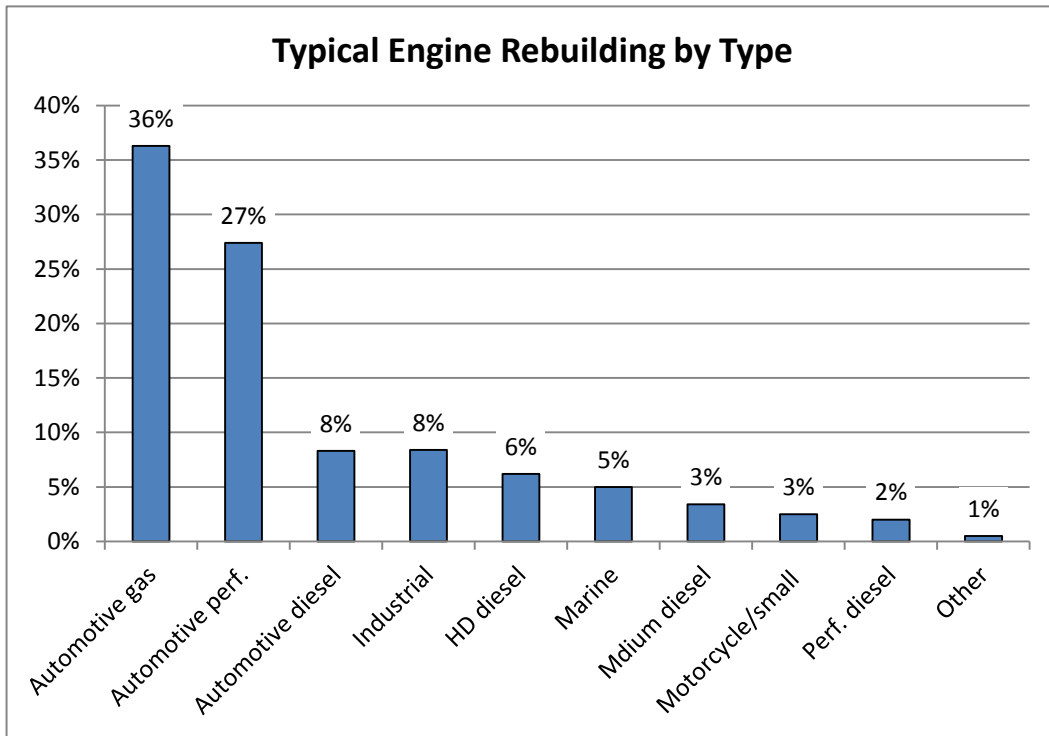
*What percentage of your engine rebuilding falls into the following categories?  
(must total 100%)*

	<u>Typical</u>	<u>% Any</u>
Automotive gasoline	36%	96%
Automotive performance	27%	88%
Automotive diesel	8%	62%
Industrial	8%	50%
Heavy duty diesel	6%	38%
Marine	5%	62%
Medium duty diesel	3%	46%
Motorcycle/small engine	3%	38%
Performance diesel	2%	23%
Other	<u>1%</u>	8%
	100%	

The typical pattern is that given by all the shops taken as one.

The "Any" column shows the percentage of shops that are active in that category.

See chart on next page



*What percentage of your engine machining/rebuilding production is:  
(must total 100%)*

Cylinder head resurfacing	16%
Valve guide and seat work	16%
Cylinder boring	15%
Disassembly	14%
Valve reconditioning	11%
Block resurfacing	9%
Clutch resurfacing	8%
Cylinder head crack repair	6%
Connecting rod recon.	7%
Flywheel	7%
Crank grinding/polishing	7%
Crank welding	7%
Other	<u>16%</u>
	100%

This is the typical pattern given by all the responding shops taken as one.



Please rank the most popular engines that you have rebuilt in the past year, and what percent of the total engine production does each of these engines represent?

	First <u>Mention</u>	
Chevy 350	44%	The first engine mentioned is most often the Chevrolet 350. The most common #2 engine is the Ford 302.
Other Chevy/GM	26%	
Any Ford	10%	Nearly all shops list the Chevrolet 350 or a Ford V8 somewhere in the top 5.
HD/Commercial	13%	
Import	0%	About 1/3 of shops list a foreign make somewhere in their top 5, and about 20% list an HD or industrial engine in their top 5.
Chrysler	0%	
Other	<u>8%</u>	
	100%	

What are the top five heads your shop rebuilds and what percent of total cylinder heads rebuilt does each of these heads represent?

	First <u>Mention</u>	
Any GM/Chevy	50%	When asked which is their #1 head, it is no surprise that Chevrolet is the most common brand given (typically 350 cubic inch). However, we see industrial/commercial heads and import makes given at a higher rate.
HD/Commercial	17%	
Any Ford	10%	
Import	10%	
Chrysler	3%	
Other	<u>10%</u>	
	100%	

Approximately what percentage of your total rebuilt engine sales are returned on warranty?  
 What percent of these returns are actually customer installation or diagnostic/misapplication problems?

Average returned	1.8%
Average customer caused	73%

What percent of your engine production is performance related?  
 What percent of your cylinder head work is performance related?

	<u>Engines</u>	<u>Heads</u>
Average	31.3%	28.8%
Median	20%	20%

*When welding or crack repair is required on cylinder heads, do you do the work yourself or send the head out for repair?*

	Aluminum <u>Heads</u>	Diesel <u>Heads</u>
Do it in house	52%	43%
Send it out	<u>48%</u>	<u>57%</u>
	100%	100%

*When repairing a crack in a head, what percent of the time do you: (add to 100%)*

	Aluminum <u>Heads</u>	Diesel <u>Heads</u>
Weld the crack	90%	10%
Pin the crack	<u>10%</u>	<u>90%</u>
	100%	100%

*Of the total number of heads coming into your shop, what percentage are scrapped versus repaired?*

	Aluminum <u>Heads</u>	Diesel <u>Heads</u>
% Scrapped	15%	10%
% Repairable	<u>85%</u>	<u>90%</u>
	100%	100%

*When a head must be scrapped, what percentage of the time do you: (adds to 100%)*

	Aluminum <u>Heads</u>	Diesel <u>Heads</u>
Source a new casting	80%	50%
Source a used casting	<u>20%</u>	<u>50%</u>
	100%	100%

*What percentage of the cylinder heads you rebuild are aluminum?*

*What percentage of the cylinder heads you rebuild are diesel?*

	<u>Aluminum</u>	<u>Diesel</u>
Average	49%	36%
Median	50%	25%

*Do you plan to expand your engine rebuilding operation in the next 2 years?*

Yes 36%

*Do you have service bays for installation and/or repair?*

Yes 28%

*What percentage of your engine cores come from the following sources?*

*What percentage of your cylinder head cores come from the following sources?*

	<u>Engines</u>	<u>Heads</u>
Customer core	78%	78%
Salvage yards	12%	9%
New castings	7%	11%
Core suppliers	<u>3%</u>	<u>2%</u>
	100%	100%

*When purchasing engine hard parts, do you prefer to use one supplier for all your needs or multiple suppliers?*

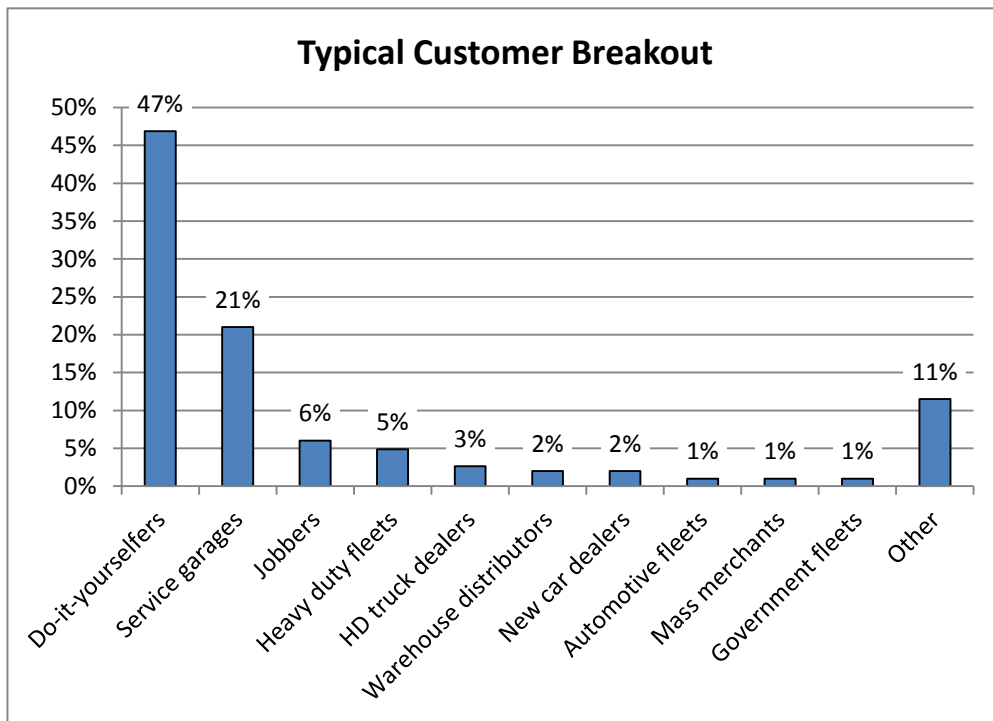
One supplier 24%  
Multiple suppliers 76%  
100%

## **Sales**

*What percentage of your rebuilt engines do you sell to the following types of customers?*

	<u>Typical</u>	<u>% Any</u>
Do-it-yourselfers	46%	86%
Service garages	21%	84%
Jobbers	6%	27%
Heavy duty fleets	5%	24%
HD truck dealers	3%	14%
Warehouse distributors	2%	11%
New car dealers	2%	16%
Automotive fleets	1%	11%
Mass merchants	1%	8%
Government fleets	1%	14%
Other	<u>12%</u>	24%
	100%	

See chart on next page



*What percentage of your rebuilt engines sales are domestic versus import?*

	<u>Gas</u>	<u>Diesel</u>
Domestic	75%	82%
Import	<u>25%</u>	<u>18%</u>
	100%	100%

*What is the average number of engines you rebuilt per month in 2013?*

(Includes short blocks, long blocks and completes)

<u>Engines</u>	<u>Gas</u>	<u>Diesel</u>
4 cyl	6.3	0.81
6 cyl	3.8	1.9
8 cyl	8.5	0.5
Other	<u>0.5</u>	<u>0.1</u>
Total	19.1	3.3

*What is the average number of cylinder heads you rebuilt per month in 2013?*

(Includes those for long blocks and completes)

<u>Heads</u>	<u>Gas</u>	<u>Diesel</u>
4 cyl	14.9	2.5
6 cyl	7.3	4.2
8 cyl	13.9	2.3
Other	<u>0.8</u>	<u>0.6</u>
Total	36.9	9.6

What is the average number of crankshafts you rebuilt per month in 2013?

(Includes those for short blocks, long blocks and completes)

<u>Cranks</u>	<u>Gas</u>	<u>Diesel</u>
4 cyl	5.0	1.1
6 cyl	3.6	1.6
8 cyl	8.5	0.3
Other	<u>0.4</u>	<u>0.3</u>
Total	17.5	3.3

Compared to 2012, how did your 2013 engine production fare?

Compared to 2012, how did your 2013 cylinder head production fare?

Compared to 2012, how did your 2013 crankshaft production fare?

	<u>Engines</u>	<u>Heads</u>	<u>Cranks</u>
Increased	56%	60%	25%
Stayed the same	29%	23%	60%
Decreased	<u>16%</u>	<u>17%</u>	<u>15%</u>
	100%	100%	100%

In the past year, have your engine kit sales to retail/DIY customers:

In the past year, have your engine kit sales to wholesale/professional installer customers:

	<u>DIY</u>	<u>Installers</u>
Increased	12%	6%
Stayed the same	76%	76%
Decreased	<u>12%</u>	<u>18%</u>
	100%	100%

What percentage of your engine components do you purchase separately or in bulk, and what percentage do you purchase in custom-assembled kits?

Separately or in bulk	74%
Custom-assembled kits	<u>26%</u>
	100%

What is the present value (depreciation included) of your machine shop equipment?

Average	\$165,000	Median	\$75,000
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How much did you spend on shop equipment (new and used) in 2013?

Average	\$17,600	Median	\$5,000
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*For the following equipment, how many do you own?*

<u>Equipment</u>	<u>Percent of shops who own</u>	<u>Percent w/ &gt;1</u>
Valve guide & seat machine	100%	32%
Valve refacer	100%	34%
Head/block resurfacer	95%	29%
Cylinder boring bar	93%	34%
Pin-fitting & rod recon.	93%	20%
Crack detection	88%	49%
Cylinder honing machine	85%	12%
Blasting equipment	85%	29%
Pressure testing	83%	10%
Solvent cleaning	80%	24%
Crankshaft polisher	76%	20%
Spray washers	76%	5%
Valve seat grinder/cutter	76%	17%
Flywheel grinder	73%	5%
Lathe	66%	22%
Engine balancing	61%	5%
Line boring (blocks)	56%	10%
Crankshaft grinder	54%	12%
Aqueous cleaning	49%	17%
Crankshaft straightener	41%	10%
Heat cleaning	41%	0%
Aluminum head welding	39%	7%
Dynamometer	24%	5%
Electrical testers	24%	10%
Line boring (OHC heads)	24%	0%
Crankshaft welder	17%	2%
Micropolishing equipment	17%	0%
Wet blasting/Cleaning	12%	0%
CNC machining center	10%	2%
Ultrasonic cleaning	10%	2%
Cam grinder	2%	0%

**People**

*Including yourself, what is the total number of employees at this location?*

Average      6.5                      Median      4.5

*How many of your employees are machine shop employees?*

Average      4.0                      Median      3

*What is the average length of time (in years) your machine shop employees have been employed at this location?*

Average      16.4                      Median      13

*What is the average hourly wage of the following employees?*

Experienced machine operator	\$ 18.95
Newly hired machine operator	\$ 11.99
Counterman/sales	\$ 12.39
Core disassembly person	\$ 11.00

*Do you have a shop foreman?*

Yes              45%

*If yes, is your shop foreman a working machinist?*

Yes              87%

*Which of the following benefits do you provide to your employees?*

Paid vacation	72%
Work clothes	55%
Hand tools	45%
End of year bonus	45%
Major medical	34%
Training/education	34%
Hospitalization	31%
Disability insurance	24%
Pension plan	24%
Eye care	14%
Multiple bonuses	10%
Profit sharing	7%
Life insurance	3%
Dental care	3%
No benefits	21%

Some data from a separate survey of *Engine Builder* subscribers:

*How long have you been a subscriber to Engine Builder magazine?*

Average 9.7 years

*Engine Builder is printed 12 times each year.*

*How many of the last 12 issues have you read?*

1 to 4 issues	2%
5 to 8 issues	4%
9 or more	93%
None	<u>1%</u>
	100%

*Do you save issues of Engine Builder for future reference?*

Yes 86%