

# Internal Combustion Engines

1998

Issued March 2000

MA333L(98)-1

(Formerly Series No. MA35L)

Information about the scope of the survey, methodology, explanation of terms and historical notes for this survey may be found in the introduction of the 1997 Manufacturing Profiles, issued August 1999.

Current data are released electronically on Internet for all individual surveys as they become available. Use: <http://www.census.gov/econ/www/manumenu.html>. Individual reports can be accessed by choosing "Current Industrial Reports (CIR's)," clicking on "Report Number Index;" from the "Industrial Products by Numeric Index," choose the survey of interest. Follow the menu to view the PDF file or to download the worksheet file (WK format) to your personal computer.

These data are also available through the U.S. Department of Commerce and STAT-USA Electronic Bulletin Board by subscription. To access, dial 202-482-3870 and follow the prompts to register. Also, you may call 202-482-1986 or 1-800-STAT-USA, for further information. The Internet address is: [www.stat-usa.gov/](http://www.stat-usa.gov/).

NOTE. Data are now published on the new North American Industry Classification System (NAICS) basis and therefore are not always comparable to the old Standard Industrial Classification (SIC) code. For further information on NAICS, see [www.census.gov/epcd/www/naics.html](http://www.census.gov/epcd/www/naics.html).

## SUMMARY OF FINDINGS

In 1998, a total of 27,522,894 internal combustion engines (except outboard, nondiesel automotive, aircraft and military tank) were shipped or produced and incorporated at the same plant, representing a 10-percent increase from the 25,077,135 produced in 1997. Gasoline or gas-gasoline engines totaled 26,352,042 in 1998, 10 percent above the figure of 23,988,749 for 1997. The number of nonautomotive diesel, semidiesel, and dual-fuel engines produced in 1998 amounted to 296,249, a 1-percent decrease from the 299,699 reported in 1997. There were 850,879 automotive diesel, semidiesel, and dual-fuel engines produced in 1998, 10 percent more than the 777,049 produced in 1997. Production of gas engines (LPG and natural) was 23,724 in 1998, 34 percent more than the 17,688 produced in 1997.

Current  
Industrial  
Reports

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call J. Stanis Batton, 301-457-4750.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-457-4673.

U S C E N S U S B U R E A U

Helping You Make Informed Decisions

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. Census Bureau



Table 1. Internal Combustion Engines by Type of Engine: 1998 and 1997  
 [Engines and quantity in units. Value in thousands of dollars]

Product description	Engines		Total shipments and interplant transfers	
	Engines produced 1/	Engines produced and incorporated 2/	Quantity	Value f.o.b. plant
1998				
Total . . . . .	27,522,894	10,854,446	16,668,448	13,306,762
Gasoline (except automotive). . . . .	26,352,042	(D)	(D)	2,817,334
Nonautomotive diesel. . . . .	296,249	(D)	(D)	3,209,928
Automotive diesel. . . . .	850,879	-	850,879	6,821,054
Natural gas and liquefied petroleum gas .	23,724	(D)	(D)	458,446
1997				
Total . . . . .	r/ 25,077,135	r/ 9,457,848	15,619,287	11,819,595
Gasoline (except automotive). . . . .	r/ 23,988,749	(D)	(D)	2,408,524
Nonautomotive diesel. . . . .	299,649	(D)	(D)	r/ 3,032,636
Automotive diesel. . . . .	771,049	-	771,049	5,957,064
Natural gas and liquefied petroleum gas .	r/ 17,688	(D)	(D)	421,371

Product description	Shipments to other companies		Interplant transfers	
	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant
1998				
Total . . . . .	(D)	9,853,438	(D)	3,453,324
Gasoline (except automotive). . . . .	(D)	(D)	589,286	(D)
Nonautomotive diesel. . . . .	203,992	1,733,411	(D)	1,476,517
Automotive diesel. . . . .	660,734	5,533,338	190,145	1,287,716
Natural gas and liquefied petroleum gas .	20,909	(D)	(D)	(D)
1997				
Total . . . . .	(D)	8,767,265	(D)	3,052,330
Gasoline (except automotive). . . . .	(D)	(D)	544,867	(D)
Nonautomotive diesel. . . . .	208,939	r/ 1,654,137	(D)	r/ 1,378,499
Automotive diesel. . . . .	596,199	4,823,640	174,850	r/ 1,133,424
Natural gas and liquefied petroleum gas .	r/ 14,845	(D)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies.  
 r/Revised by 5 percent or more from previously published data.

1/Represents total number of engines produced; incorporated into products at same establishment or shipped.

2/Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Table 2. Gasoline Engines by Horsepower Rating: 1998 and 1997  
 [Engines and quantity in units. Value in thousands of dollars]

Product code	Product description	No. of cos.	Engines produced 1/	Engines produced and incorporated 2/	Total shipments and interplant transfers															
					Quantity	Value f.o.b. plant														
1998																				
33361810	Gasoline engines. . . . .	25	26,352,042	(D)	(D)	2,817,334														
3336181011	Under 11 hp . . . . .	16	23,529,191	(D)	(D)	(D)														
3336181013	11 to under 21 hp . . . . .	7	1,965,394	(D)	(D)	662,387														
3336181015	21 to under 61 hp . . . . .	10	501,517	(D)	(D)	333,623														
3336181017	61 hp and over. . . . .	9	355,940	(D)	(D)	(D)														
1997																				
33361810	Gasoline engines. . . . .	23	r/ 23,988,749	(D)	(D)	2,408,524														
3336181011	Under 11 hp . . . . .	14	r/ 21,379,482	(D)	(D)	(D)														
3336181013	11 to under 21 hp . . . . .	6	2,192,033	(D)	(D)	740,086														
3336181015	21 to under 61 hp . . . . .	7	137,831	(D)	(D)	114,024														
3336181017	61 hp and over. . . . .	8	279,403	(D)	(D)	(D)														
<table border="0" style="width:100%; text-align:center;"> <tr> <td colspan="3"></td> <td>Shipments to other companies</td> <td colspan="3">Interplant transfers</td> </tr> <tr> <td colspan="3"></td> <td>Quantity</td> <td>Value f.o.b. plant</td> <td>Quantity</td> <td>Value f.o.b. plant</td> </tr> </table>										Shipments to other companies	Interplant transfers						Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant
			Shipments to other companies	Interplant transfers																
			Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant														
1998																				
33361810	Gasoline engines. . . . .	25	(D)	(D)	589,286	(D)														
3336181011	Under 11 hp . . . . .	16	(D)	(D)	348,272	48,909														
3336181013	11 to under 21 hp . . . . .	7	1,922,595	(D)	(D)	(D)														
3336181015	21 to under 61 hp . . . . .	10	454,348	(D)	(D)	(D)														
3336181017	61 hp and over. . . . .	9	(D)	(D)	(D)	(D)														
1997																				
33361810	Gasoline engines. . . . .	23	(D)	(D)	544,867	(D)														
3336181011	Under 11 hp . . . . .	14	(D)	(D)	356,732	46,122														
3336181013	11 to under 21 hp . . . . .	6	2,147,393	(D)	(D)	(D)														
3336181015	21 to under 61 hp . . . . .	7	(D)	(D)	(D)	(D)														
3336181017	61 hp and over. . . . .	8	(D)	(D)	(D)	(D)														

D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data.

1/Represents total number of engines produced; incorporated into products at same establishment or shipped.

2/Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

Table 3. Nonautomotive Diesel Engines by Horsepower Rating: 1998 and 1997  
 [Engines and quantity in units. Value in thousands of dollars]

Product code	Product description	No. of cos.	Engines produced 1/	Engines produced and incorporated 2/	Total shipments and interplant transfers															
					Quantity	Value f.o.b. plant														
1998																				
33361830	Nonautomotive diesel engines. . .	17	296,249	(D)	(D)	3,209,928														
3336183011	Under 101 hp. . . . .	9	(D)	(D)	(D)	68,063														
333618301	101 to under 151 hp. . . . .	6	(D)	(D)	(D)	(D)														
3336183015	151 to under 176 hp. . . . .	6	29,400	(D)	(D)	(D)														
3336183017	176 to under 251 hp. . . . .	8	46,355	(D)	(D)	270,411														
3336183019	251 to under 301 hp. . . . .	6	49,577	(D)	(D)	(D)														
333618301	301 to under 401 hp. . . . .	6	25,721	(D)	(D)	326,304														
333618301D	401 to under 451 hp. . . . .	5	5,569	-	5,569	87,725														
333618301F	451 to under 601 hp. . . . .	3	9,876	-	9,876	222,499														
333618301H	601 to under 701 hp. . . . .	3	2,517	(D)	(D)	64,598														
333618301J	701 to under 801 hp. . . . .	4	(D)	-	(D)	(D)														
333618301L	801 to under 1,501 hp. . . . .	5	6,205	(D)	(D)	(D)														
333618301M	1,501 hp and over. . . . .	6	3,830	(D)	(D)	(D)														
1997																				
33361830	Nonautomotive diesel engines. . .	18	299,649	(D)	(D) r/	3,032,636														
3336183011	Under 101 hp. . . . .	10	(D)	(D)	(D)	62,007														
3336183013	101 to under 151 hp. . . . .	7	(D)	(D)	(D)	(D)														
3336183015	151 to under 176 hp. . . . .	7	(D)	(D)	(D)	(D)														
3336183017	176 to under 251 hp. . . . .	7	42,661	(D)	(D)	284,002														
3336183019	251 to under 301 hp. . . . .	6	46,695	(D)	(D)	322,368														
333618301B	301 to under 401 hp. . . . .	6	26,534	(D)	(D) r/	238,598														
333618301D	401 to under 451 hp. . . . .	5	6,991	(D)	(D)	112,605														
333618301F	451 to under 601 hp. . . . .	3	14,177	-	14,177	304,047														
333618301H	601 to under 701 hp. . . . .	3	r/ 4,222	-	4,222	125,789														
333618301J	701 to under 801 hp. . . . .	3	3,008	-	3,008	104,780														
333618301L	801 to under 1,501 hp. . . . .	5	r/ 5,794	(D)	(D)	(D)														
333618301M	1,501 hp and over. . . . .	6	r/ 3,588	(D)	(D)	(D)														
<table border="0" style="width:100%; text-align:center;"> <tr> <td></td> <td>Shipments to other companies</td> <td></td> <td>Interplant transfers</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Quantity</td> <td>Value f.o.b. plant</td> <td>Quantity</td> <td>Value f.o.b. plant</td> <td></td> <td></td> </tr> </table>								Shipments to other companies		Interplant transfers					Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant		
	Shipments to other companies		Interplant transfers																	
	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant																
1998																				
33361830	Nonautomotive diesel engines. . .	17	203,992	1,797,578	(D)	1,476,517														
3336183011	Under 101 hp. . . . .	9	(D)	53,724	(D)	(D)														
333618301	101 to under 151 hp. . . . .	6	(D)	(D)	(D)	(D)														
3336183015	151 to under 176 hp. . . . .	6	(D)	(D)	(D)	(D)														
3336183017	176 to under 251 hp. . . . .	8	(D)	142,750	(D)	(D)														
3336183019	251 to under 301 hp. . . . .	6	(D)	234,705	(D)	(D)														
333618301	301 to under 401 hp. . . . .	6	16,709	213,456	9,008	99,718														
333618301D	401 to under 451 hp. . . . .	5	(D)	(D)	(D)	(D)														
333618301F	451 to under 601 hp. . . . .	3	(D)	215,170	(D)	(D)														
333618301H	601 to under 701 hp. . . . .	3	1,764	72,251	(D)	(D)														
333618301J	701 to under 801 hp. . . . .	4	(D)	62,716	(D)	(D)														
333618301L	801 to under 1,501 hp. . . . .	5	2,576	202,805	(D)	(D)														
333618301M	1,501 hp and over. . . . .	6	1,195	275,671	(D)	(D)														
1997																				
33361830	Nonautomotive diesel engines. . .	18	208,939	1,654,137	(D) r/	1,378,499														
3336183011	Under 101 hp. . . . .	10	(D)	(D)	(D)	(D)														
3336183013	101 to under 151 hp. . . . .	7	(D)	(D)	(D)	(D)														
3336183015	151 to under 176 hp. . . . .	7	(D)	(D)	(D)	(D)														
3336183017	176 to under 251 hp. . . . .	7	(D)	146,249	(D)	(D)														
3336183019	251 to under 301 hp. . . . .	6	(D)	(D) r/	8,496	r/ 87,602														
333618301B	301 to under 401 hp. . . . .	6	r/ 16,149	215,119	10,382	r/ 113,479														
333618301D	401 to under 451 hp. . . . .	5	4,359	75,318	(D)	(D)														
333618301F	451 to under 601 hp. . . . .	3	(D)	222,706	(D)	(D)														
333618301H	601 to under 701 hp. . . . .	3	(D) r/	103,652	(D)	(D)														
333618301J	701 to under 801 hp. . . . .	3	(D)	63,493	(D)	(D)														
333618301L	801 to under 1,501 hp. . . . .	5	(D)	(D)	(D)	(D)														
333618301M	1,501 hp and over. . . . .	6	1,061	r/ 171,67	(D)	(D)														

- Represents zero. D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data.

1/Represents total number of engines produced; incorporated into products at same establishment or shipped.

2/Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

Table 4. Automotive Diesel Engines by Horsepower Rating: 1998 and 1997  
 [Engines in units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1998		1997	
			Engines 1/	Value 2/	Engines 1/	Value 2/
33361850	Automotive diesel engines.....	8	850,879	6,821,054	r/ 685,072	r/ 5,051,380
3336185011	Under 226 hp.....	8	(D)	(D)	(D)	(D)
3336185013	226 to under 251 hp.....	7	(D)	(D)	(D)	(D)
3336185015	251 hp and over.....	7	269,505	3,573,112	r/ 233,900	r/ 2,889,110

D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data.

1/Represents total number of engines produced; incorporated into products at same establishment or shipped.

2/Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

Table 5. Gas Engines (Except Automotive) by Horsepower Rating: 1998 and 1997  
 [Engines and quantity in units. Value in thousands of dollars]

Product code	Product description	No. of cos.	Total shipments, including interplant transfers		Value f.o.b. plant	Engines produced and incorporated 2/
			Engines produced 1/	Quantity		
1998						
33361890	Natural gas and liquefied petroleum gas engines. . . . .	12	23,724	(D)	458,446	(D)
3336189011	Under 501 hp. . . . .	11	(D)	(D)	(D)	(D)
3336189013	501 hp and over. . . . .	5	(D)	(D)	(D)	(D)
1997						
33361890	Natural gas and liquefied petroleum gas engines. . . . .	12	r/ 17,688	(D)	r/ 421,371	(D)
3336189011	Under 501 hp. . . . .	10	(D)	(D)	(D)	(D)
3336189013	501 hp and over. . . . .	4	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data.

1/Represents total number of engines produced; incorporated into products at same establishment or shipped.

2/Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

**Table 6. Engines Produced by Piston Displacement and Fuel System: 1998 and 1997**

Piston displacement	1998	1997
Total. . . . .	27,499,170	25,059,447
Gasoline. . . . .	26,352,042	23,988,749
Under 251 cc. . . . .	(D)	(D)
251 and over. . . . .	(D)	(D)
Nonautomotive diesel . . . . .	296,249	299,649
Under 251 cc. . . . .	(D)	(D)
251 to 3,700 cc. . . . .	38,517	(D)
3,701 and over cc. . . . .	(D)	(D)
Automotive diesel . . . . .	850,879	771,049
Under 251 to 3,700 cc. . . . .	(D)	(D)
3,701 and over cc. . . . .	(D)	(D)

cc Cubic centimeters. D Withheld to avoid disclosing data for individual companies.

**Table 7. Engines Produced (Except Outboard, Automotive, and Aircraft) by Type of Engine and End Application: 1998 and 1997**

End application	Gasoline engines		Nonautomotive diesel engines	
	1998	1997	1998	1997
Total. . . . .	26,352,042	23,988,749	296,249	299,649
Oil field and petroleum-related generating and stationary equipment. . . . .	-	-	(D)	(D)
Other generator sets. . . . .	(D)	(D)	35,081 r/	32,532
Irrigation. . . . .	(D)	(D)	(D)	(D)
Agricultural vehicular. . . . .	(D)	(D)	(D)	(D)
Off-highway mobile construction equipment. . .	41,713	(D)	136,981	126,805
Marine (except outboard). . . . .	(D)	(D)	13,941 r/	13,349
Railroad, motive power type. . . . .	-	-	2,306 r/	1,969
Chain saws. . . . .	2,949,163	2,829,297	-	-
Garden tractors. . . . .	(D)	(D)	-	-
Lawn, home, and recreational equipment. . . . .	17,542,101	15,870,301	-	-
Other general industrial. . . . .	1,884,612	(D)	42,495	44,684

- Represents zero. D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data.

Table 8. Production, Exports, and Imports of Internal Combustion Engines: 1998 and 1997  
 [Quantity in units. Value in thousands of dollars]

Product code	Product description	Manufacturers' production		Exports of domestic merchandise 2/		Imports for consumption 3/	
		Quantity	Value of shipments f.o.b. plant 1/	Quantity	Value at port	Quantity	Value
1998							
	Total.....	27,522,894	13,306,762	2,163,449	2,407,292	3,451,332	2,105,390
3336185	Automotive diesel engines.....	850,879	6,821,054	43,275	369,261	38,895	20,905
3336183	Nonautomotive diesel engines.....	296,249	3,209,928	120,740	1,675,047	402,021	981,530
3336181	Gasoline engines.....	26,352,042	2,817,334	1,997,788	323,614	2,911,438	1,057,597
3336189	Gas and liquefied petroleum gas and engines.....	23,724	458,446	1,646	39,370	98,978	45,358
1997							
	Total.....	25,077,135	11,819,595	2,061,851	2,590,940	2,571,759	2,002,966
3336185	Automotive diesel engines.....	771,049	5,957,064	81,260	815,651	18,721	143,697
3336183	Nonautomotive diesel engines.....	299,649	3,032,636	102,767	1,390,782	339,928	885,494
3336181	Gasoline engines.....	23,988,749	2,408,524	1,873,972	314,703	2,169,196	948,768
3336189	Gas and liquefied petroleum gas and engines.....	17,688	421,371	3,852	69,804	43,914	25,007

1/Value of shipments f.o.b. plant of production quantities shipped as engines, including interplant transfers.

2/Source: Census Bureau report EM 545, U.S. Exports

3/Source: Census Bureau report IM 145, U.S. General Imports. These data include both import value and duty value.

Table 9. Comparison of North American Industry Classification-Based Product Codes with  
Schedule B Export Numbers and HTSUSA Import Numbers: 1998

Product code	Product description	Export number 1/	Import number 2/
3336181	Gasoline engines (except outboard marine, aircraft, automobile, highway truck, bus, and tank).....	8407.29.0010	8407.29.0010
		8407.29.0050	8407.29.0020
		8407.31.0000	8407.29.0030
		8407.32.5000	8407.29.0040
		8407.33.5000	8407.31.0040
		8407.34.5000	8407.31.0080
		8407.90.1010	8407.32.1000
		8407.90.1050	8407.32.9040
		8407.90.9030	8407.32.9080
		8407.90.9050	8407.33.1030
			8407.33.1060
			8407.33.1090
			8407.33.9040
			8407.33.9080
			8407.34.0560
			8407.34.0590
			8407.34.1030
			8407.34.1060
			8407.34.1090
			8407.34.9000
			8407.90.1010
			8407.90.1020
	8407.90.1060		
	8407.90.1080		
	8407.90.9020		
	8407.90.9040		
	8407.90.9060		
	8407.90.9080		
	8411.99.9030		
	8411.99.9060		
3336183	Nonautomotive diesel, semidiesel, and dual fuel engines.....	8408.10.0010	8408.10.0005
		8408.10.0020	8408.10.0015
		8408.10.0030	8408.10.0020
		8408.10.0040	8408.10.0030
		8408.10.0050	8408.10.0040
		8408.20.5000	8408.10.0050
		8408.90.1000	8408.20.1040
		8408.90.9010	8408.20.1080
		8408.90.9020	8408.20.9000
		8408.90.9030	8408.90.1040
		8408.90.9040	8408.90.1080
		8408.90.9050	8408.90.9010
			8408.90.9020
			8408.90.9030
	8408.90.9040		
	8408.90.9050		
3336185	Automotive diesel, semidiesel, and dual fuel engines.....	8408.20.2000	8408.20.2000
3336189	Piston-type natural gas engines, including liquefied petroleum gas engines.....	8407.90.9010	8407.90.9010

1/Source: 1998 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States Annotated (1998).