



Custom Orders

These pages explain the design options available from ROSS Racing Pistons on all of our custom made pistons. We suggest that you first check our [stocking pistons section](#); chances are we stock the exact combination that you need. If after checking our extensive listing of on the shelf (stocking) pistons you do not find what you desire, then ROSS will be happy to custom design and manufacture the piston that you require to your specifications. In the event that you do not find a listing for your engine, call the ROSS technical assistance line for a price quote and complete information.

No one piston design is correct for all applications. For this reason, many ROSS Racing Pistons are custom made to the customer's specifications. Different types of racing require different piston designs. Not only does the type of racing, head style, induction system, fuel and camshaft specifications affect the design features of a racing piston, but different engine types have their own needs.

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[6 Cylinder Custom Pistons](#)

[8 Cylinder Custom Pistons](#)

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[Ring Grooves](#)

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2168 S. Hathaway Street • Santa Ana, CA 92705

Ph: 714-546-6907 • Fax: 714-546-6979 • www.embeepformance.com

Custom Orders: 4 Cylinders

Custom piston prices in this section do not include pins but pinfit is included. A complete selection of optional pins can be found [here](#).

**THE MINIMUM NUMBER OF CUSTOM PISTONS MADE AT ONE TIME IS FOUR.
ABSOLUTELY NO EXCEPTIONS!**

What We Need To Know

Please download our [order form](#) and have it available when you are ready to place your order. *If you do not have all the info, call our Technical Assistance line - we are here to help you!*

Notes: (when applicable)

1. Price includes Oil Ring Spacers.
2. Ludicrous Liteness Design.
3. Indicates 1/16, 1/16, 1/8 rings utilized.
4. Will also work with 17/18 degree heads.

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Custom Orders: 6 Cylinders

Custom piston prices in this section do not include pins but pinfit is included. A complete selection of optional pins can be found [here](#).

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Custom Orders: 8 Cylinders

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Custom Orders: Nostalgia Racing

ROSS is the leader in the design and manufacturing of nostalgia racing pistons, whether it be for an Offy or a Blown Fuel 392 Chrysler. For a general indication on what can be done, read the section on ROSS Classics, as well as the "What You Get" section. For complete information and a price quote, or if your engine is not listed, call our technical assistance department.

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Custom Orders: Valve Pockets

Valve Pockets will be custom machined to work with your camshaft and valves. To ensure that your valve pocket depth will be correct, we must know how much lift at the valve your camshaft will give at six degrees before and after Top Dead Center when the camshaft is in the split overlap position.

CAUTION: Due to the acceleration ramps now being used by many camshaft grinders, the gross lift of the camshaft has little to do with the valve pocket depth. To ensure that the intake valve pocket depth will be correct we MUST have the above information AND the amount that the intake valve is proud or recessed in relation to the surface of the head. In the event that you cannot supply this data, we will make every attempt to cut the pockets correctly based on our past experience, however, we will in no way be responsible should your valve to piston clearance be incorrect.

ROSS valve pocket depth is measured vertically from the piston deck to the bottom of the valve pocket (NOT at the angle of the valve). Special diameter, depths, angles and locations are available. Tulip pockets and Plunge valve pockets are available at an extra cost.

Plunge Pockets Intake Part # 5016 Plunge Pockets Exhaust Part # 5017

RACER NET PRICE \$8.60 PER PISTON

Notes: (when applicable)

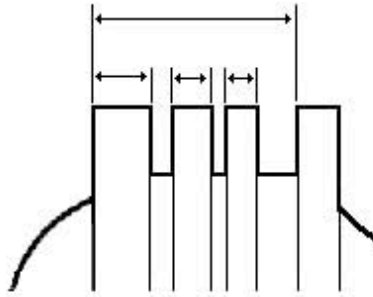
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Custom Orders: Ring Spacing



On all ROSS custom made pistons, you may specify the amount of spacing between the ring grooves. In most instances, moving the rings up higher (thin lands) on the pistons will allow the pistons to be lighter, as the side mill cut can then be wider. Care must be taken not to make the ring lands too narrow (most especially the top land) as detonation or high cylinder pressure can break thin lands. We feel that in most instances the customer should "trust our judgement" about the ring spacing.

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Custom Orders:

Internal Milling

Window Milling

One of the most effective ways to lighten pistons is with the ROSS Window Mill option. This entails milling "blank windows" into the inside of the skirts in a manner that will remove a considerable amount of weight from the inside of the pistons without adversely affecting the strength of the skirt. This weight removal process works best on engines which have relatively long skirts such as the Chrysler 440.

Part # 5003

RACER NET PRICE \$9.02 PER PISTON

Inside Head Milling

Inside Head Milling operations consist of milling material from under the dome which is not essential to piston strength. This operation varies greatly depending upon the design of the piston being milled. In most applications, pistons built on Hollow Dome Forgings will not benefit from this operation. Part # 5002 Racer Net Price \$9.02 per piston Pin Boss Milling This operation can remove several grams of aluminum by angle milling material from between the top of the pin hole and the inside of the piston head. This operation is not recommended for endurance applications.

Part # 5007

RACER NET PRICE \$9.02 PER PISTON

Maximum Internal Milling

Maximum Internal Milling includes all three of the internal milling operations, as well as any other milling cuts which would lighten the pistons without seriously detracting from it's strength. Used in drag racing, sand drags, etc.

Part # 5005

RACER NET PRICE \$25.03 PER PISTON

Custom Orders: Forgings



ROSS has one of the most complete selections of general purpose and specific use forgings in the entire custom piston industry. We make pistons from 2.283" (58 mm) through 5.520" (140.2 mm) diameter for hollow dome, flat top and dish top applications.

As can be seen in the photo, the lack of external features on the ROSS forging allows us complete freedom in machining special features for your pistons.

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Custom Orders: About Nitrous

If you are going to run nitrous in your engine, be sure to advise ROSS of this at the time of your order. Nitrous places extreme demands on the pistons. For this reason, ROSS uses a different design criterion for pistons which will be used in nitrous engines. Also, please specify the approximate horsepower rating of the system you plan to use.

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ROSS Racing Pistons | 625 S. Douglas St. | El Segundo, CA 90245
ORDER LINE | 800-392-7677 TECH LINE | 310-536-0100
FAX LINE | 310-536-0333

sales@rosspistons.com | **webmaster@rosspistons.com**

Notes: (when applicable)

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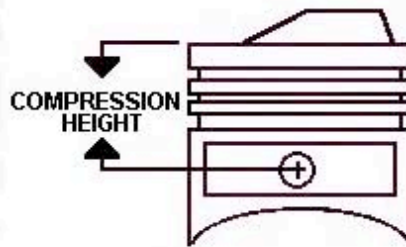
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Custom Orders: Compression Height



The compression height is the distance from the center of the pin hole to the deck of the piston. ROSS custom pistons are available in any practical compression height to compensate for stroker or destroker cranks, long rods, or blocks which have been milled excessively, etc.

To calculate the compression height, use the following formula:

Block Height minus 1/2 the crank stroke, minus the rod length, minus the deck clearance (amount piston is "in the hole").

For example, a 350 Chevy engine with a stock 3.480 stroke, stock length 5.700 rod, standard .017 deck clearance and standard 9.025 block height would be:

3.480 stroke divided by 2 = 1.74

9.025 - 1.740 - 5.700 - .017 = a compression height of 1.568.

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Custom Orders: ROSS Classics

ROSS fills the need for a high quality forged aluminum piston for classic, antique and street rods with the ROSS Classic Piston line. All ROSS Classic pistons are custom made for your particular application. For this reason, ROSS can supply pistons for practically all engines in bore sizes between 2.283 (58 mm) and 5.520 (140.2 mm).

Due to the large variety of engines for which ROSS Classic Pistons are available, no attempt is made to list all of them. Should you require pistons for an engine not listed in our regular custom piston section in this catalog, simply call 800) 392-7677.

In situations which the engine is unusual, you may send ROSS a stock sample piston outlining changes you desire in your new pistons (such as bore size) and this will prevent confusion and assume that the correct pistons are manufactured. The ROSS Design department can also work from sketches, combustion chamber molds, etc.

Due to the fact that all ROSS Classics are custom machined, there is no additional charge for unusual bore sizes, ring grooves other than stock, different compression ratio, etc. Read the rest of the "Custom Piston" area for complete details.

***Caution: The use of ROSS Classics may not be legal in some street engines.
See the "Warranty and Emissions"***

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Custom Orders: Gas Ports

Gas Ports allow cylinder pressure to go directly behind the top ring and aid in sealing. Gas Ports are very effective when used with tight ring grooves and high ring positioning. Not recommended with blowers, dyke rings, or in endurance motors.

Top Gas Ports Part # 5009
Side Gas Ports Part # 5010

RACER NET PRICE \$20.65 PER PISTON

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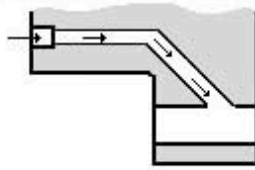
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Custom Orders: Pin Oilers



ROSS pin oilers scrape oil from the cylinder wall and force feed it to the pins. On designs which have a high pin placement due to long strokes and/or long rod lengths, ROSS will angle drill the pin oilers. ROSS includes this operation on each custom piston at no extra charge unless otherwise ordered.

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Custom Orders: Ring Grooves

ROSS Racing Pistons can be machined for any popular ring combination at the time of manufacture. All compression ring grooves at ROSS are machined to the Society of Automotive Engineers (SAE) D-Wall specifications (except dykes rings which have a radial thickness of .170), unless the customer requests otherwise, or ROSS supplies the rings.

The radial thickness can easily be determined by using the following formula:

Radial Thickness = Bore Diameter divided by 22

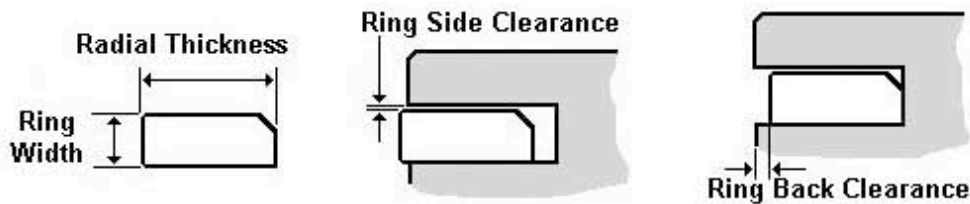
For example:

4.250 bored divided by 22 = .193

The radial thickness of a 4.250 bore D-Wall ring is .193.

This is the standard depth used by leading ring manufacturers such as Childs and Albert, Speed-Pro, and Total Seal.

Side (or lateral) clearance is the measurement of the space between the sides of the piston groove and the ring. Unless otherwise ordered, ROSS will machine all pistons for a side clearance of .002 to .004. Some engine builders prefer to have us reduce the side clearance (especially with gas ported pistons), however under no circumstances do we recommend less than .0015.



Back clearance can best be measured by pushing the ring into the piston ring groove until it bottoms against the root of the groove. The amount that the face of the ring is below the ring lands is the ring back clearance. It should not protrude beyond the lands when the ring is bottomed in the groove. All ROSS compression ring grooves are machined for approximately .004 back clearance unless otherwise ordered

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Custom Orders: Lock Removal Indents

Everyone likes double Spirolox for piston pin retention because they work so well but "no one wants to take the damn things out!". All ROSS custom pistons are available with Lock Removal Indents at *no* extra charge. They make lock removal a snap! Just insert a small screwdriver behind the locks and snap them out.

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NHRA, IHRA



ROSS pistons listed in this section are approved by NHRA as factory replacements for Stock Class. Advanced design techniques and the highest quality possible gives a free running piston in the bore with superior ring seal which will promote quick engine acceleration with less power robbing blow-by.

- Please allow our normal manufacturing time as these pistons are not in stock.
- Please advise us of your exact cylinder bore size.
- Pins are NOT included in price.
- Please note that several new part numbers were in the process of being developed and approved at the time that this catalog was being printed. If your engine is not listed, please call.
- No one has more pistons approved than ROSS!

PART #	MAKE	C.I	YEAR	RACER PRICE
68536	AMC	401	1972-1974	720.63
68524	AMC	390	1970	646.32
68540	AMC	232, 258	1965-1977	560.89
68541	AMC	401	1971	720.63
68538	BUICK	350	1968-1974	720.63
75941	BUICK	350	1975-1979	720.63
75092	BUICK	231 NON-TURBO		720.63
73555	BUICK	N/A	1971-1975	720.63
64625	BUICK	231	1978-1987	720.63
66508	CADILLAC	425	1977-1979	646.32
75085	CHEVROLET	250	1966-1971	495.79
75088	CHEVROLET	402	1970	720.63
73484	CHEVROLET	173		408.77
75099	CHEVROLET	194	1962-1967	495.79
69578	CHEVROLET	350		615.59
77563	CHEVROLET	409	1961-1965	720.63
78649	CHEVROLET	427	1966-1967	720.63
99577-6	CHEVROLET	229	1980-1984	495.79
62806-8	CHEVROLET	283	1957-1967	615.59
62806-6	CHEVROLET	230	1962-1970	495.79
99586	CHEVROLET	305	1983-1992	615.59
99584	CHEVROLET	427	1966-1969	783.95
99581	CHEVROLET	396	1965-1969	678.66
99580	CHEVROLET	396	1966-1969	678.66
99579	CHEVROLET	350	1967-1970	615.59
99578	CHEVROLET	327	1962-1969	615.59
78692	CHEVROLET	427	1968-1969	720.63
78689	CHEVROLET	402	1971-1972	720.63

NHRA, IHRA

PART #	MAKE	C.I	YEAR	RACER PRICE
78672	CHEVROLET	350	1971-1974	615.59
78671	CHEVROLET	327	1962-1968	678.66
78657	CHEVROLET	200	1978-1979	678.66
99577-8	CHEVROLET	305	1976-1986	678.66
68537	CHEVROLET	545	1971-1976	615.59
63184	CHEVROLET	350 LS1	1998-1900	678.66
62866	CHEVROLET	402	1970	678.66
63497	CHEVROLET	350	1971-1972	678.66
60671	CHEVROLET	305	1987-1991	678.66
68063	CHEVROLET	232 VORTECH	1990-1998	678.66
99585	CHEVROLET	454	1971	783.95
68474	CHEVROLET	151	1985-1962	445.43
56953	CHEVROLET	262	1985-1995	678.66
78648	CHRYSLER	426	1963-1964	720.63
62300	CHRYSLER	413	1962	646.32
60820	CHRYSLER	440	1966-1970	646.32
54751	CHRYSLER	170	1960-1969	408.77
57989	CHRYSLER	273	1965-1967	678.66
58342	CHRYSLER	440	1970-1972	646.32
55328	CHRYSLER	340	1968-1971	615.59
53959	CHRYSLER	238/318	1987-1994	615.59
74233	CHRYSLER	383	1960-1971	646.32
68472	CHRYSLER	426 STREET HEMI	1966-1971	783.95
69194	CHRYSLER	135	1983-1986	408.77
53718	CHRYSLER	360	1973-1980	720.63
71157	CHRYSLER	360	1993-1999	720.63
99590	CHRYSLER	426W	1963-1964	720.63
78691	CHRYSLER	400	1972-1978	646.32
74231	CHRYSLER	273	1964-1969	615.59
99588	CHRYSLER	340	1972-1973	720.63
53842	CHRYSLER	440 6 PACK	1970-1972	646.32
50132	FORD	390	1966-1970	646.32
55773	FORD	289	1963-1968	678.66
53207	FORD	427	1966-1967	783.95
78693	FORD	140	1974-1982	445.43
54937	FORD	428	1968-1970	783.95
99596	FORD	351W	1970-1972	615.59
66525	FORD	SHELBY	1968	783.95

NHRA, IHRA

PART #	MAKE	C.I	YEAR	RACER PRICE
67020	FORD	BOSS 429	1969-1970	837.53
71148	FORD	351W		678.66
78472	FORD	351C	1973-1974	678.66
78473	FORD	429	1969-1971	720.63
68586	FORD	N/A	1981-1983	408.77
99595	FORD	302	1987-1995	678.66
60241	FORD	SHELBY	1967	783.95
75100	OLDSMOBILE	350	1971-1976	720.63
78690	OLDSMOBILE	350	1968-1970	615.59
74227	OLDSMOBILE	403	1977-1979	720.63
74229	OLDSMOBILE	307	1980-1989	720.63
38720	OLDSMOBILE	455	1968-1970	615.59
54176	OLDSMOBILE	455	1971-1976	678.66
66045	PONTIAC	400	1967-1979	678.66
73026	PONTIAC	301	1981	615.59
99600	PONTIAC	455	1970-1974	678.66
69387	PONTIAC	350	1974-1977	408.77
78518	PONTIAC	301	1977-1981	615.59

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