



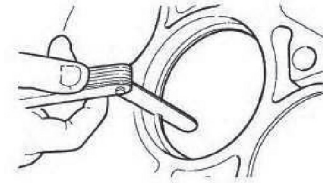
# KB PISTONS

## Installation Instructions For Hypereutectic Pistons

**TOP RING:** bore x gap factor (SEE BACK PAGE FOR YOUR SPECIFIC APPLICATION FACTOR) = end gap

Example: 4.030" bore x .0065" factor (street naturally aspirated) = .026" minimum gap

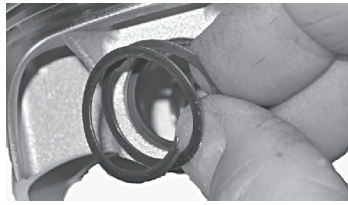
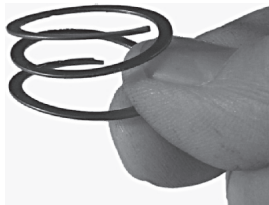
**SECOND RING:** Naturally Aspirated – .004" per inch of bore min.  
Boosted – .005" per inch of bore min.



### LOCK RING INSTALLATION

**Spiral lock rings** – used in KB series

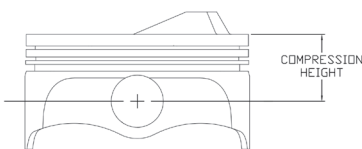
1. Spring the lock about 1/2" to 3/4" to get your thumb between the coils.
2. Insert tang into groove. Slightly twist your wrist towards the groove angling the lock downward into the groove.
3. Using a small flat screwdriver push down on the lock to push it into the groove. Continue in a circular rotation. Do not try and spiral the lock in.



### PISTON NOMENCLATURE:

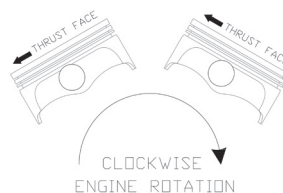
#### Compression Height

Centerline of wrist pin to top of piston, do not include dome height.



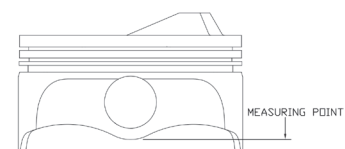
#### Offset Wrist Pin

The short side of the offset must be towards the thrust face of the engine.



#### Measuring Point

Measure even with the bottom of the wrist pin pad and 90° to the pin.

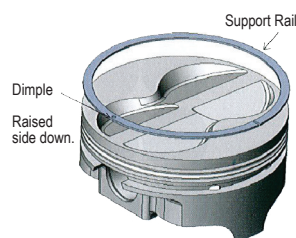


### OIL SUPPORT RAIL:

Applications where the wrist pin is intersecting the oil groove require an Oil Support Rail to bridge the gap the wrist pin cut out has made. All three of the oil control rings are installed on top of the support rail.

**Special Note:** Raised dimple on support rail is positioned down and indexed in the open area the wrist pin has made in the oil ring groove.

Verify the oil support rail is flat at the point where the dimple is punched into it. If there is a slight bow lightly bend the rail straight.



### Warranty Disclaimer

Due to the nature of performance applications, the parts sold by United Engine & Machine Co. Inc. are sold without any express warranty or any implied warranty of merchantability or fitness for a particular purpose. UEM shall not, under any circumstances, be liable for any special, incidental or consequential damages, including, but not limited to damage, or loss of profits or revenue, cost of purchased or replacement goods, or claims of customers of the purchaser, which may arise and/or result from sale, installation or use of these parts.

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The information contained in this instruction should not be considered absolute. Final decisions concerning the installation and use of these products are ultimately the responsibility of the customer. UEM makes no guarantee of warranty on emissions.



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# General Clearance Guidelines

APPLICATION	Ring End Gap Factor	PISTON TO WALL CLEARANCE	
		4.000" - 4.100"	4.100" and up
STREET NATURALLY ASPIRATED	.0065"	.0015" - .0020"	.0020" - .0025"
STREET TOWING	.0070"	.0015" - .0020"	.0020" - .0025"
STREET NITROUS OR SUPERCHARGED	.0075"	.0020" - .0025"	.0025" - .0035"
CIRCLE TRACK 2 BBL/RESTRICTOR GAS	.0070"	.0015" - .0045"	.0020" - .0050"
CIRCLE TRACK UNRESTRICTED	.0080"	.0025" - .0045"	.0030" - .0045"
CIRCLE TRACK ALCOHOL CARB	.0080"	.0030" - .0045"	.0030" - .0050"
DRAG GASOLINE	.0075"	.0015" - .0045"	.0020" - .0045"
DRAG ALCOHOL	.0065"	.0015" - .0045"	.0020" - .0045"
MARINE NATURALLY ASPIRATED	.0070"	.0030" - .0045"	.0035" - .0050"
MARINE SUPERCHARGED	.0080"	.0030" - .0045"	.0035" - .0050"
PROPANE	.0065"	.0015" - .0045"	.0020" - .0045"

Modern piston design locates the top ring higher for improved performance. A high top ring operates at higher temperatures and requires a larger top ring end gap. To find the proper ring end gap, multiply your bore size by the ring end gap factor listed on the chart (i.e., Street Naturally Aspirated 4.000" bore x .0065" gap factor = .026" total top ring end gap).

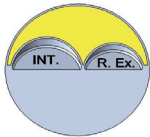
Your hypereutectic performance piston will expand less than typical cast or forged pistons. Because of this and the wear characteristics of the hypereutectic alloy, you can run tight piston-to-wall clearances.

SECOND RING: Naturally Aspirated – .004" per inch of bore min.  
Boosted – .005" per inch of bore min.

**Final piston clearance should be based solely on the demands of your application.**

Factors such as fuel type, altitude, outside temp., humidity, tune up, and many others factors need to be taken into account for your final clearance.

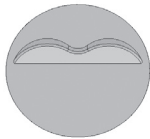
## PISTON ORIENTATION



### QUENCH AREA (YELLOW):

Quench is the area behind the valves. This area should match the flat area on your cylinder head. Proper quench promotes cooling of the piston and can be effective in reducing detonation.

Target quench - .040" .060" total distance from piston to cylinder head at TDC with gasket.



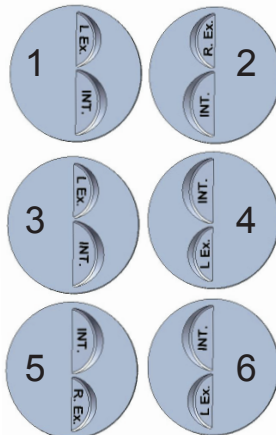
**NOTE:** Some pistons come with symmetrical valve reliefs. This allows the piston to be fitted to any cylinder with just orientating the quench area towards the center of the block.

**CHECKING CYLINDER HEADS:** Check cylinder heads with clay or some other method before balancing and final assembly to assure proper piston to head clearance. .040" minimum clearance.

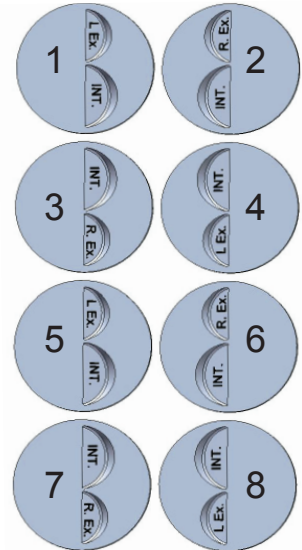
**CHEVY** 302, 305, 327,334, 350, 377, 383, 400, 434  
**CHRY** 318, 340, 360, 383, 400, 408, 440, 450, 463, 468, 493, 498, 505, 520  
**BUICK** 455  
**PONTIAC** 389, 400, 428, 455

**CHEVY V6 4.3L / 262 CI**  
4 LEFTS AND 2 RIGHTS

FRONT



FRONT



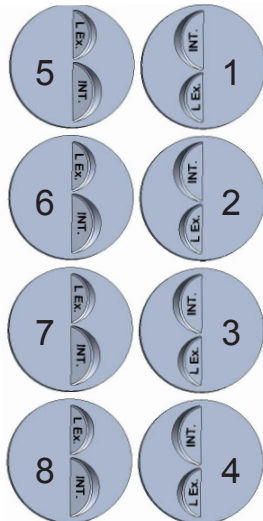
**FORD** 289, 302, 331, 347, 351W, 372W, 383W, 393W, 408W, 416W, 418W

**FORD** 390FE, 406FE, 410FE, 427FE, 428FE, 438FE, 452FE, 455FE, 482FE

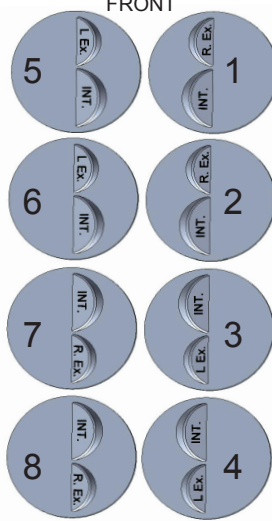
**FORD CLEV** 351C, W/C and Modified  
**FORD BB** 429, 460, 502, 520, 545 **CHEVY BB** 396/402, 427, 454, 489, 502, 540

**TOYOTA** 22R 1985 AND NEWER

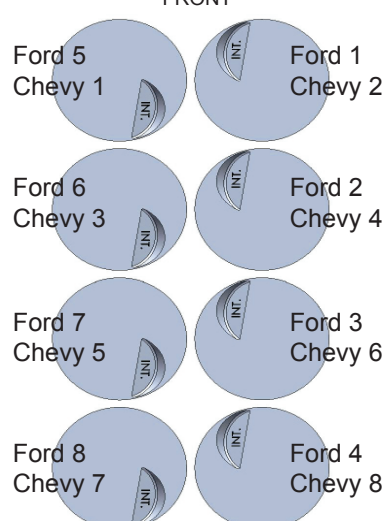
FRONT



FRONT



FRONT



FRONT

