

**FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN ENGINE DAMAGE AND VOID YOUR WARRANTY!!**

## INSTALLATION:

**NOTE: IF ASSEMBLING MONSTER BIG BORE KIT ON TC, EVO, OR XL, CASE BORING IS REQUIRED.**

**WARNING: THE CENTER CASE BOLT SHOULD BE REMOVED, THE HOLE TAPPED, AND PLUGGED WITH 1/8" NPT PLUG, THE USE OF A CASE BOLT WILL VOID THE WARRANTY**

1. INSPECT ALL COMPONENTS FOR MISSING OR DAMAGED ITEMS
2. GAP THE RINGS, REFER TO PAGE 2 FOR MORE INFORMATION
3. CLEAN
  - CYLINDER BORES WITH BRAKE CLEANER, WIPE WITH CLEAN WHITE TOWEL REPEAT UNTIL TOWEL IS NO LONGER DIRTY
  - PISTONS, RINGS, WRIST PIN BORES, AND WRIST PINS (INSIDE AND OUT) WITH RED SOLVENT OIL
  - WRIST PIN AREA OF CONNECTING RODS
  - ALL GASKET SURFACES SHOULD BE CLEANED AND DRY DURING ASSEMBLY
4. COAT ALL COMPONENTS WITH RED SOLVENT OIL, INCLUDING CYLINDER BORE
5. INSTALL
  - BASE GASKET WITH CASE SEALER ON TOP AND BOTTOM
  - PISTON ONTO CONNECTING ROD, VERIFY CIRCLIPS ARE SEATED
  - RINGS ONTO PISTONS, REFER TO PAGE 2 FOR MORE INFO
6. USING A RING COMPRESSION TOOL, COMPRESS THE RINGS
7. SLIDE CLEANED AND LUBRICATED CYLINDER OVER THE PISTON AND RINGS  
*NOTE: IF ANY RING SHOULD POP OUT, REMOVE THE CYLINDER AND START OVER*
8. PREPARE CYLINDER HEAD BOLTS PER THE MANUFACTURER'S INSTRUCTIONS

**STOP! DO NOT USE FACTORY TORQUE SPECS!** REFER TO PAGE 3 FOR MORE INFO

9. TORQUE HEAD BOLTS USING FACTORY TORQUE SEQUENCE (NOT TORQUE VALUE)

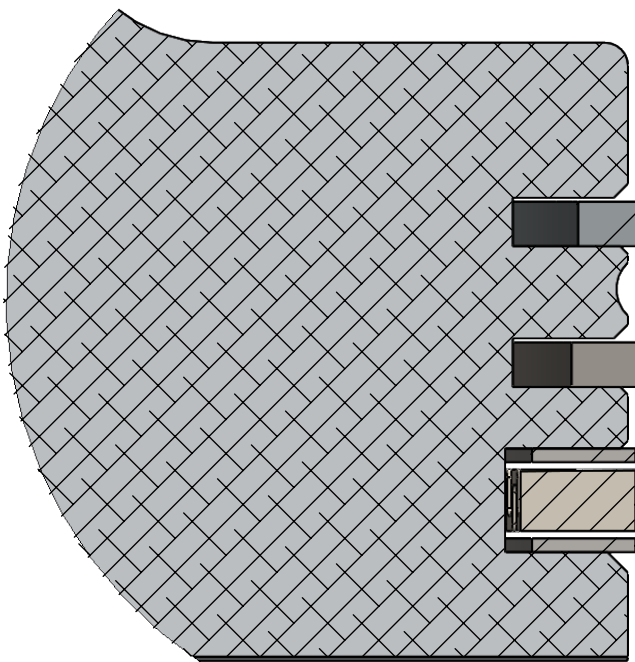
## ENGINE BREAK-IN GUIDELINES:

1. BUILD OIL PRESSURE: REMOVE THE SPARK PLUGS AND CRANK THE ENGINE FOR NO MORE THAN 6 SECONDS, REPEAT 5-6 TIMES
2. HEAT CYCLING: START THE ENGINE, BRING IT TO NORMAL OPERATING TEMPERATURE, THEN LET IT COOL TO ROOM TEMPERATURE, REPEAT 3 TIMES
3. TUNE ENGINE (A PROFESSIONAL TUNE IS RECOMMENDED AND REQUIRED BEFORE MAKING ANY DYNO PULLS). THE FINAL TUNE WILL NEED TO BE COMPLETED AFTER THE ENGINE IS BROKEN-IN.
4. **A.) IF BREAKING IN ON THE DYNO**, REEMEMBER TO LET ENGINE SLOW USING DYNO WHEEL ONLY BETWEEN PULLS  
CYCLE 1 - BRING ENGINE TO OPERATING TEMP, PERFORM 3 PULLS AT 50% THROTTLE FROM 1500-3000 RPM, ALLOW ENGINE TO COOL TO ROOM TEMPERATURE  
CYCLE 2 - BRING ENGINE TO OPERATING TEMP, PERFORM 3 PULLS AT 75% THROTTLE FROM 2500-5000 RPM, ALLOW ENGINE TO COOL TO ROOM TEMPERATURE  
CYCLE 3 - BRING ENGINE TO OPERATING TEMP, PERFORM 3 PULLS AT 100% THROTTLE FROM 3000-5500 RPM, ALLOW ENGINE TO COOL TO ROOM TEMPERATURE  
**B.) IF BREAKING IN ON THE STREET**  
RIDE 50 MILES, VARY THROTTLE INPUT, AVOID PROLONGED IDLING, DO NOT EXCEED 3000RPM
5. CHANGE OIL AND FILTER USING 20W50 BEL-RAY V-TWIN MINERAL OIL AND A HIGH FLOW FILTER (SUCH AS A FLO RESUSABLE FILTER)
6. RIDE 500 MILES, VARY THROTTLE INPUT, AVOID PROLONGED IDLING, AVOID EXCEEDING 5500RPM
  - USE THIS TIME TO COMPLETE TUNING THE ENGINE
  - A SMALL AMOUNT OF OIL USAGE DURING THIS TIME IS NORMAL AND WILL STABILIZE AFTER BREAK-IN
7. CHANGE OIL AND FILTER USING 20W50 BEL-RAY V-TWIN MINERAL OIL (SEMI OR FULL SYNTHETIC)
8. CHANGE OIL AND FILTER EVERY 2500 MILES FOR THE LIFE OF YOUR ENGINE

\*IF ANY COMPONENTS ARE DAMAGED DURING INSTALLATION, PLEASE CONTACT REVOLUTION PERFORMANCE AT 866-892-2109 FOR REPLACEMENTS



**REVOLUTION  
PERFORMANCE**



CROSS-SECTION OF PISTON & RINGS

**TOP RING (CHROME)**- INSTALL WITH DOT OR LETTER FACING UP  
 MIN RING GAP IS BORE x .0045" (FOR EXAMPLE: 4.25"x.0045"= .019" MIN GAP)  
 MAX RING GAP IS +.004" (FOR EXAMPLE: .019"+.004"=.023" MAX GAP)

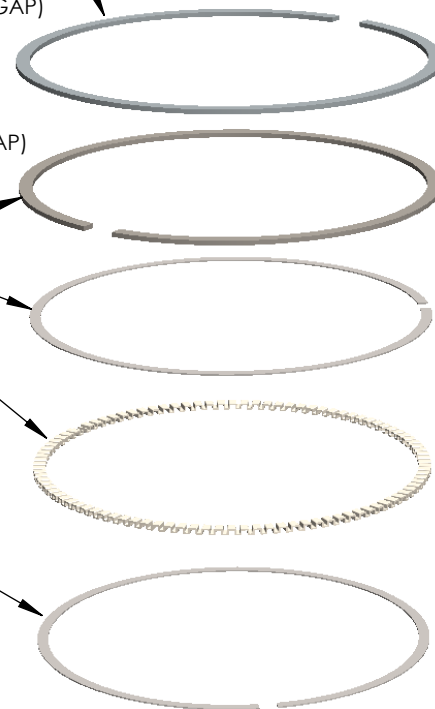
**2ND RING (BLACK)** - INSTALL WITH DOT OR LETTER FACING UP  
 MIN RING GAP IS BORE x .005" (FOR EXAMPLE: 4.25"x.005"=.021" MIN GAP)  
 MAX RING GAP IS +.004" (FOR EXAMPLE: .021"+.004"=.025" MAX GAP)

**TOP SCRAPER RAIL**  
 (NO GAPPING REQUIRED)

**EXPANDER RAIL**

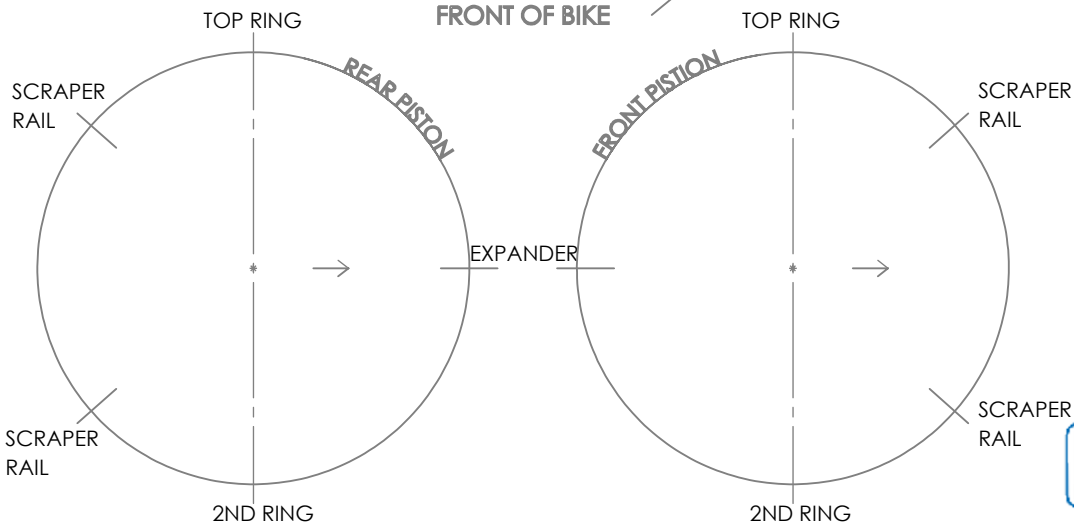


**BOTTOM SCRAPER RAIL**  
 (NO GAPPING REQUIRED)



FRONT PISTON SHOWN

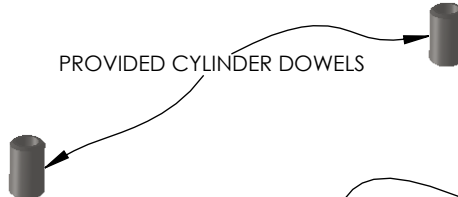
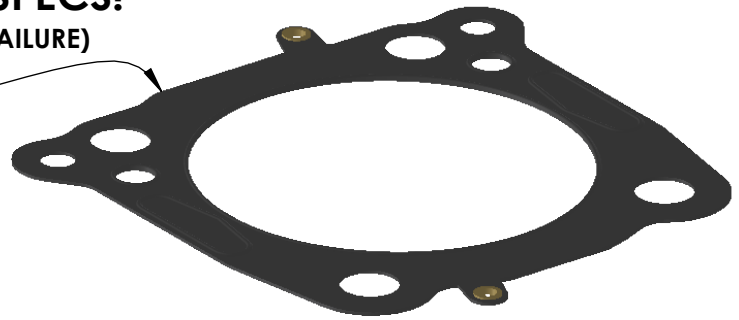
RING GAPS



**\*DO NOT USE FACTORY TORQUE SPECS!\***

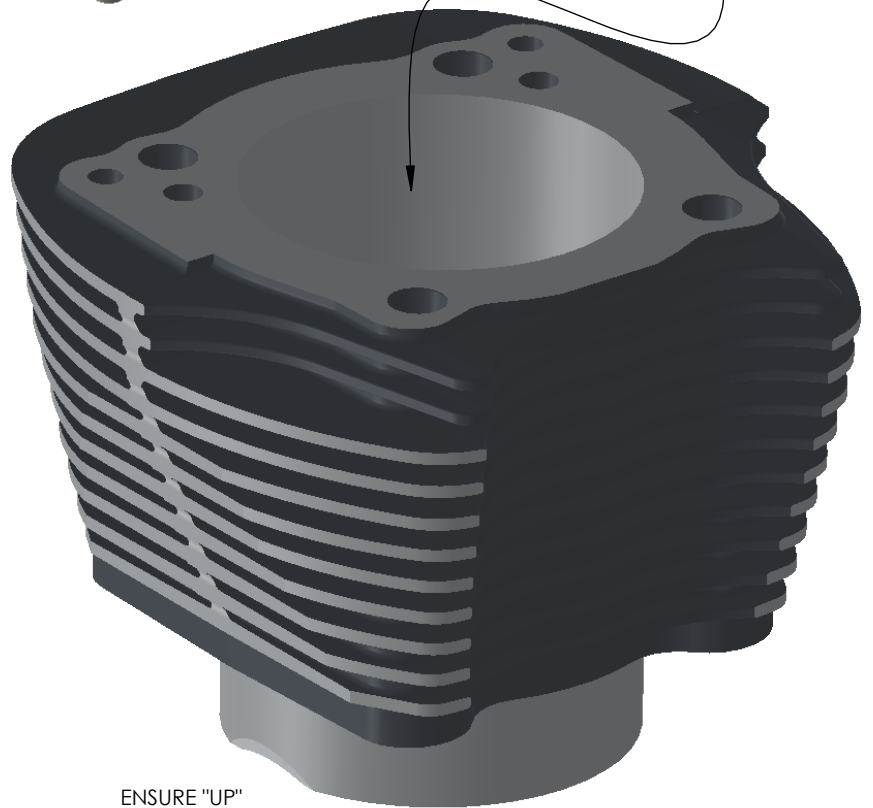
(OVER-TORQUING COULD CAUSE CRANKCASE FAILURE)

- ALL COMPONENTS SHOULD BE THOROUGHLY CLEANED BEFORE BEGINNING ASSEMBLY (REFER TO PAGE 1)
- CYLINDER BORE, PISTON, RINGS, AND WRIST PIN SHOULD BE GENEROUSLY COATED WITH RED SOLVENT OIL BEFORE ASSEMBLY
- USE A RING COMPRESSOR FOR COMPRESSING RINGS DURING INSTALLATION
- REFER TO HEAD BOLT MANUFACTURER'S INSTRUCTIONS FOR CORRECT PREPARATION (SOME REQUIRE ASSEMBLY LUBE FOR PROPER TORQUE READINGS)
- TORQUE HEAD BOLTS USING THE FACTORY TORQUE SEQUENCE PER THE TABLE BELOW



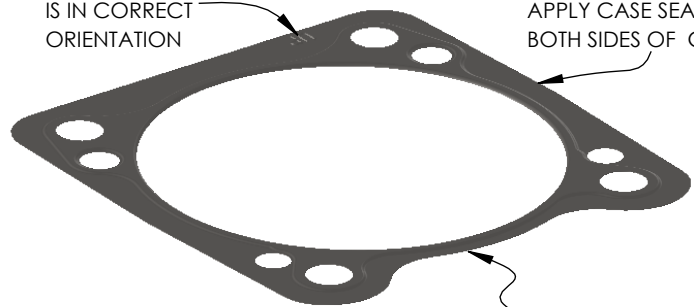
PROVIDED CYLINDER DOWELS

MAKE SURE CYLINDER BORE AND GASKET SURFACES ARE CLEAN! THIS WILL HELP THEM LAST AND ENSURE THERE ARE NO LEAKS



ENSURE "UP" IS IN CORRECT ORIENTATION

APPLY CASE SEALER TO BOTH SIDES OF GASKET



NOTCHED SIDE OF BASE GASKET TOWARDS CAM SIDE

STAGE	OEM STUDS (FT-LBS)	AFTERMARKET STUDS* (FT-LBS)
1	10	10
2	20	20
3	25	25
4	30	30
5	38	35

\*ARP, FEULING, KIBBLEWHITE, AND S&S STUDS

IF YOU HAVE QUESTIONS OR CONCERNS, PLEASE CALL 866-892-2109 AND DISCUSS THEM WITH OUR KNOWLEDGEABLE STAFF

