KIT MUST BE INSTALLED BY QUALIFIED ENGINE BUILDERS!

THIS KIT REQUIRES THE FOLLOWING:

- CASE BORING & CASE MODIFICATIONS
- CRANK MODIFICATIONS
- OIL COOLED HEADS MUST HAVE HOLE WELDED AND GASKET SURFACES MACHINED
- IF THESE SERVICES ARE NOT PROVIDED BY REVOLUTION PERFORMANCE, ANY WARRANTY CLAIMS WILL REQUIRE THE CASES, CRANK, CYLINDER KIT COMPONENTS, AND HEAD WITH FASTENERS TO BE SENT IN FOR EVALUATION, AT THE COST OF THE ENGINE OWNER OR THE SHOP PERFORMING THE SERVICE

IF YOU WOULD LIKE FOR REVOLUTION PERFORMANCE TO PROVIDE THESE SERVICES FOR YOU, PLEASE CONTACT US AT 866-892-2109 EXT 301

- BEFORE BEGINNING, INSPECT KIT FOR DAMAGED OR MISSING ITEMS

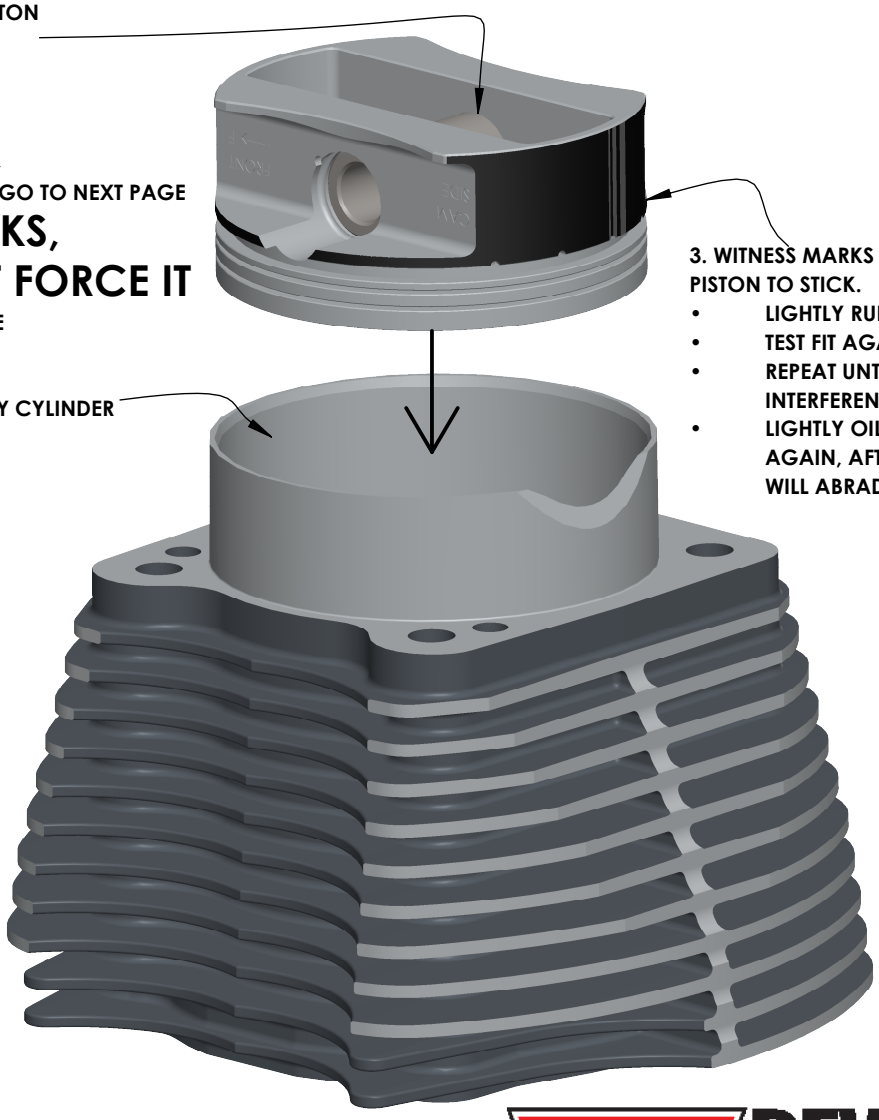
PISTON HAS BEEN COATED WITH LINE2LINE COATING AND MUST BE PREPARED BEFORE INSTALLATION

1. INSERT WRIST PIN INTO PISTON SO IT CAN BE HELD ONTO (NO CLIPS NEEDED)

2. INSERT PISTON INTO BORE,
IF LITTLE OR NO RESISTANCE GO TO NEXT PAGE

IF PISTON STICKS, STOP, DO NOT FORCE IT

REMOVE PISTON FROM BORE



3. WITNESS MARKS FROM INTERFERENCE, CAUSING PISTON TO STICK.

- **LIGHTLY RUB THIS AREA WITH SCOTCH-BRITE**
- **TEST FIT AGAIN.**
- **REPEAT UNTIL THERE IS ONLY A SLIGHT INTERFERENCE FIT (5-10LB DRAG)**
- **LIGHTLY OIL THE CYLINDER AND CHECK AGAIN, AFTER A FEW STROKES THE PISTON WILL ABRADE IN AND FIT LOOSER**

INSTALLATION INSTRUCTIONS

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

NOTE: IF USING OEM HEADBOLTS, THEY ARE ONE-TIME USE, AND CANNOT BE REUSED

INSTALLATION:

1. GAP THE RINGS, REFER TO PAGE 3 FOR MORE INFORMATION
2. 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
3. COAT ALL COMPONENTS WITH RED SOLVENT OIL, INCLUDING CYLINDER BORE
4. INSTALL
   - BASE GASKET WITH CASE SEALER ON TOP AND BOTTOM
   - PISTON ONTO CONNECTING ROD, VERIFY CIRCLIPS ARE SEATED
   - RINGS ONTO PISTONS, REFER TO PAGE 3 FOR MORE INFO
5. USING A RING COMPRESSION TOOL, COMPRESS THE RINGS
6. SLIDE CLEANED AND LUBRICATED CYLINDER OVER THE PISTON AND RINGS
   NOTE: IF ANY RING SHOULD POP OUT, REMOVE THE CYLINDER AND START OVER

7. PREPARE CYLINDER HEAD BOLTS PER THE MANUFACTURER's INSTRUCTIONS

STOP! DO NOT USE FACTORY TORQUE SPECS! REFER TO PAGE 4 FOR MORE INFO

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

ENGINE BREAK-IN GUIDELINES:

- BUILD OIL PRESSURE: REMOVE THE SPARK PLUGS AND CRANK THE ENGINE FOR NO MORE THAN 6 SECONDS, REPEAT 5-6 TIMES
- STANDING HEAT CYCLING: START THE ENGINE, BRING IT TO NORMAL OPERATING TEMPERATURE, THEN LET IT COOL TO ROOM TEMPERATURE, REPEAT 3 TIMES
- TUNE ENGINE (A PROFESSIONAL BASE TUNE IS REQUIRED BEFORE MAKING ANY DYNO PULLS). THE FINAL TUNE WILL NEED TO BE COMPLETED AFTER THE DYNO HEAT CYCLES.

BREAKING IN ON THE DYNO: REMEMBER 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, TURN OFF, ALLOW ENGINE TO COOL TO AMBIENT TEMPERATURE
- CYCLE 2 - BRING ENGINE TO OPERATING TEMP, PERFORM 3 PULLS AT 75% THROTTLE FROM 2500-5000 RPM, TURN OFF, ALLOW ENGINE TO COOL TO AMBIENT TEMPERATURE
- CYCLE 3 - BRING ENGINE TO OPERATING TEMP, PERFORM 3 PULLS AT 100% THROTTLE FROM 3000-6000 RPM, TURN OFF, ALLOW ENGINE TO COOL TO AMBIENT TEMPERATURE
- COMPLETE THE FINAL TUNING PROCESS.

THE ENGINE WILL HAVE 30-50 MILES AT THIS POINT. A SMALL AMOUNT OF OIL USAGE DURING THIS TIME IS NORMAL AND WILL STABILIZE • CHANGE OIL AND FILTER USING 20W50 BEL-RAY V-TWIN MINERAL OIL AND A HIGH FLOW FILTER (SUCH AS A FLO REUSABLE FILTER).

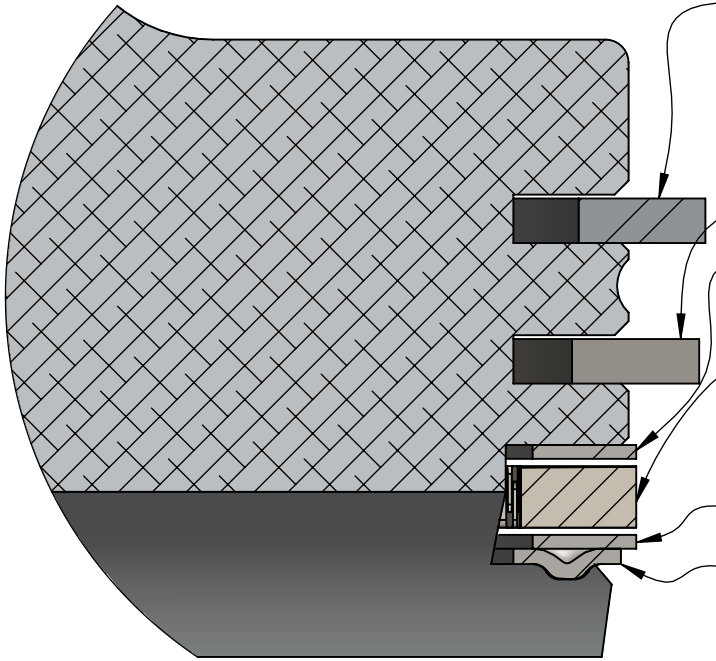
WE DO NOT RECOMMEND BREAKING IN ON THE STREET. PLEASE CONSULT YOUR TUNING SOFTWARE COMPANY TO RECOMMEND A TUNING CENTER NEAR YOU.

RIDE 500 TO 1000 MILES BEFORE CHANGING THE OIL AND FILTER USING 20W50 BEL-RAY V-TWIN MINERAL OIL (SEMI OR FULL SYNTHETIC). 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**

BEL-RAY TOTAL PERFORMANCE LUBRICANTS

RP REVOLUTION PERFORMANCE



CROSS-SECTION OF PISTON & RINGS

TOP RING (CHROME)- 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)

2ND RING (BLACK) - 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)

TOP SCRAPER RAIL
(NO GAPPING REQUIRED)

EXPANDER RAIL

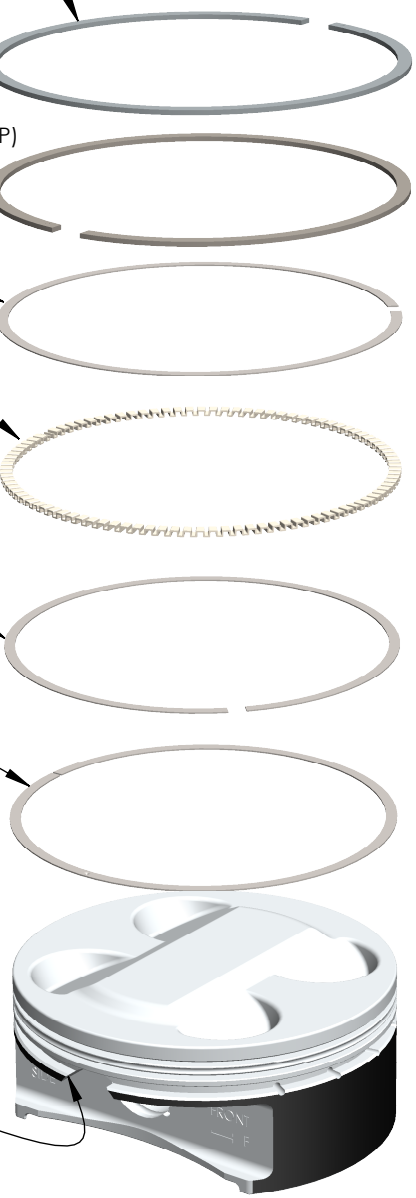
UP

BOTTOM SCRAPER RAIL
(NO GAPPING REQUIRED)

SUPPORT RAIL - REQUIRED FOR SCRAPER RAIL SUPPORT
WHEN RING GROOVE IS NOT SOLID DUE TO WRIST PIN HOLE

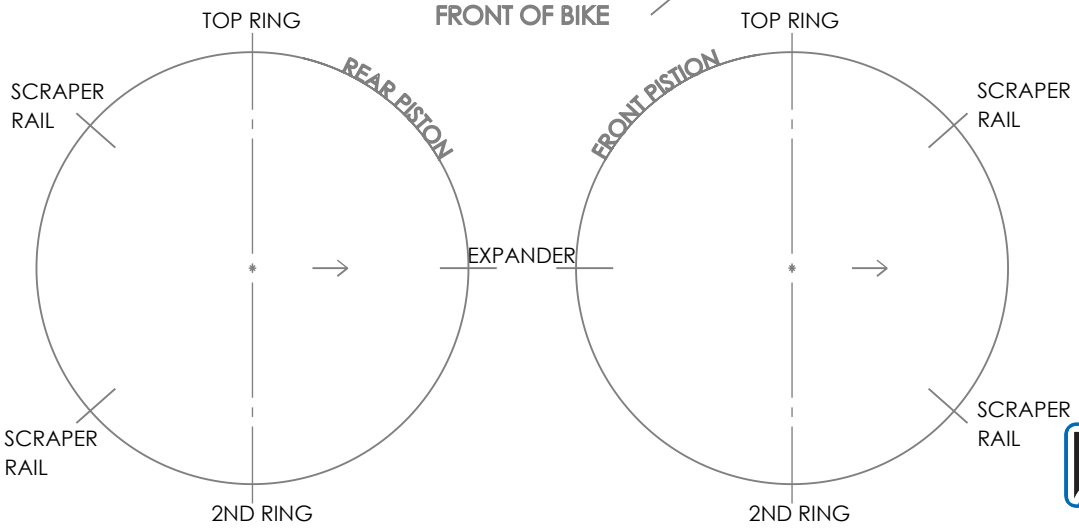
- INSTALL DIMPLE END FIRST, WALKING RING AROUND PISTON TO AVOID DAMAGE
- DIMPLE FACING DOWN
- DIMPLE LOCATED NEAR WRIST PIN

NOTE: YOU MAY FIND IT EASIER TO INSTALL THIS RING BEFORE INSTALLING THE PISTON. IF YOU DO THIS, THE SUPPORT RAIL WILL NEED TO BE SLID TO THE TOP OF THE RING GROOVE SO THE WRIST PIN CAN BE INSTALLED



RING GAPS

FRONT OF BIKE



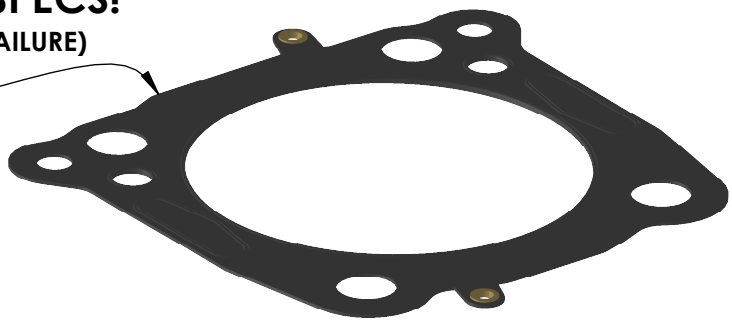
SUPPORT RAIL IS
REQUIRED DUE TO THIS CUTOUT

FRONT PISTON SHOWN

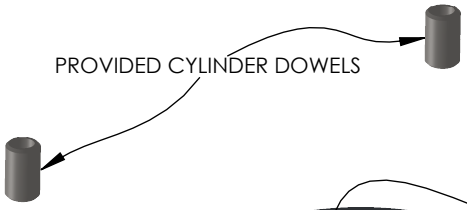
ALL METAL GASKETS

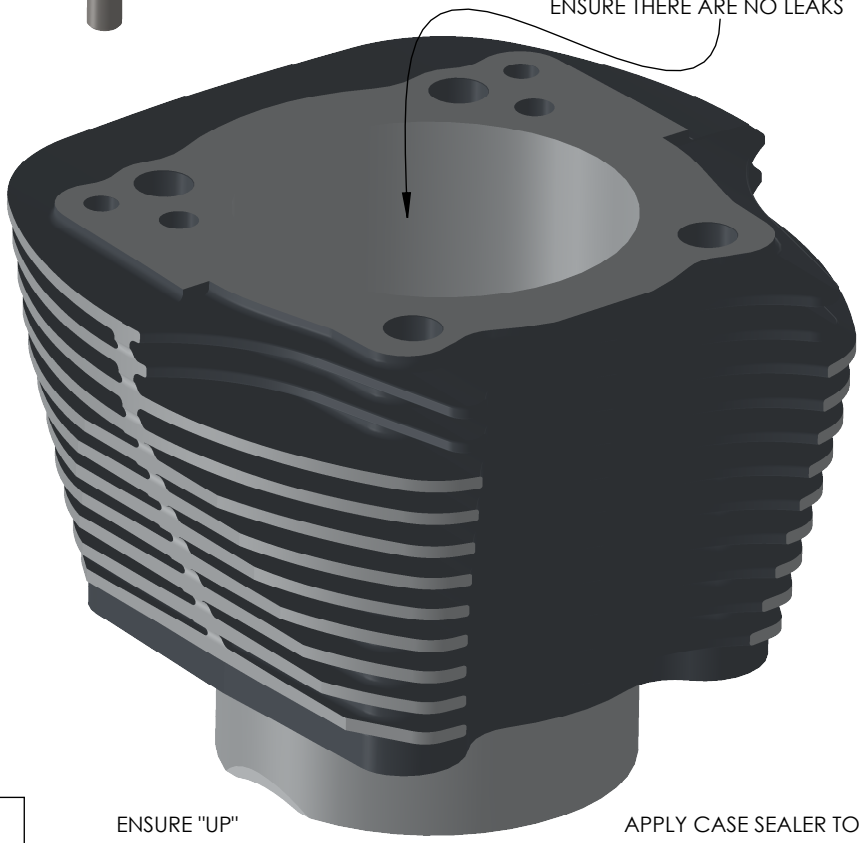
DO NOT USE FACTORY TORQUE SPECS!

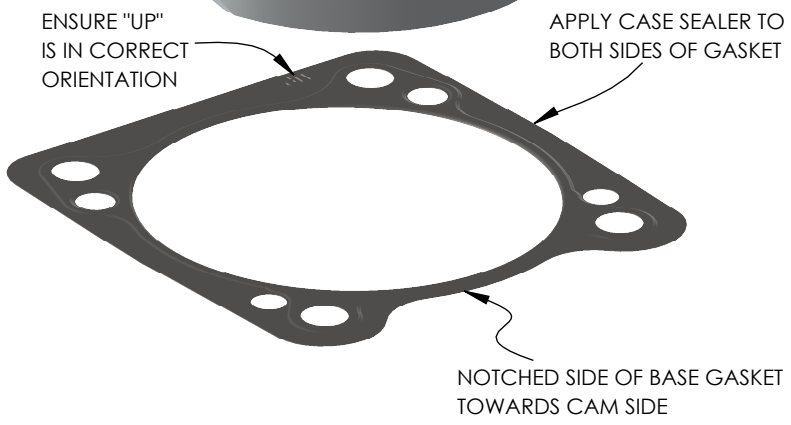
(OVER-TORQUING COULD CAUSE CRANKCASE FAILURE)



- ALL COMPONENTS SHOULD BE THOROUGHLY CLEANED BEFORE BEGINNING ASSEMBLY (REFER TO PAGE 2)
- 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
- THE STOCK HEAD BOLTS CANNOT BE REUSED, THEY MUST BE REPLACED
- 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







STAGE	OEM STUDS (FT-LBS)	AFTERMARKET STUDS* (FT-LBS)
1	10	10
2	20	20
3	25	25
4	30	30
5	35	35
6	40	40
7	48	45

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

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

BEL-RAY TOTAL PERFORMANCE LUBRICANTS

RP REVOLUTION PERFORMANCE