

M E R L I N

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BOTTOM BRACKET®
NON-GREASE GUARD MANUAL
FOR ALL 1990 MODELS AND EARLIER

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TOOLS NEEDED

1)...TWO 14-MM OPEN-END WRENCHES

2)...CLEANING SOLVENT (DENATURED ALCOHOL, ACETONE)

3)...3/8-INCH (APPROX.) ALUMINUM DOWEL OR DRIFT



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INSTALLATION KIT CONTENTS

- 2 - ALUMINUM SPACERS
- 2 - 0.093 SHIMS
- 4 - 0.047 SHIMS
- 2 - 3/8 WASHERS
- 1 - 3/16 ALLEN WRENCH
- 1 - 1/2 ML. TUBE OF LOCTITE (RC/609)

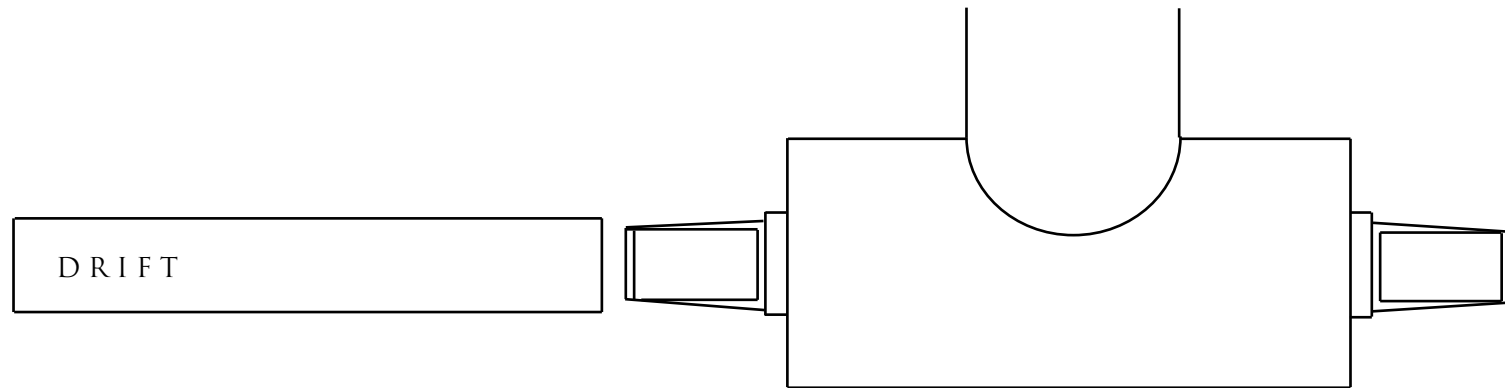
REPLACEMENT PARTS

- 2 - SEALED BEARINGS, TYPE 6903RK (OR EQUIVALENT)
- 2 - COLLARS (MOUNTAIN BIKES ONLY)
- 1 - SPINDLE (OPTIONAL)



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SPINDLE REMOVAL

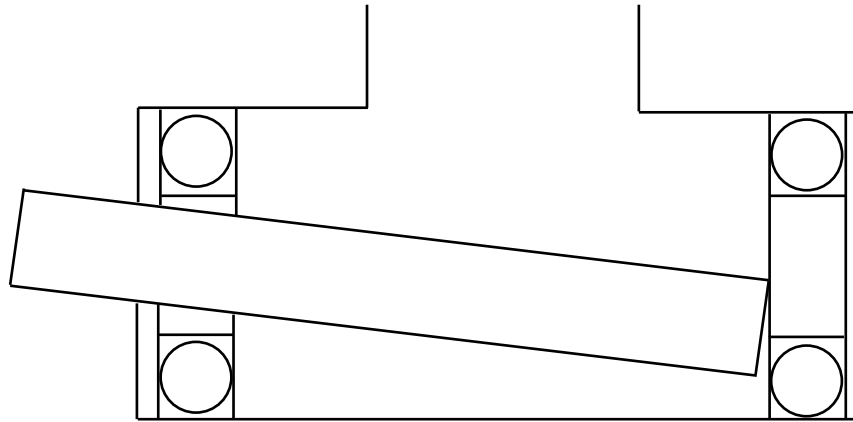


- 1) REMOVE THE OLD SPINDLE, USING THE DRIFT TO DRIVE IT OUT ONE SIDE. SOME FORCE MAY BE REQUIRED TO BREAK THE BONDS OF THE LOCKTITE BETWEEN THE SPINDLE AND BEARINGS. IF THE SPINDLE IS TO BE RE-USED, BE CAREFUL NOT TO DAMAGE THE SPINDLE THREADS.



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BEARING REMOVAL



- 1) REMOVE THE BEARINGS WITH THE DRIFT. TAP THE BEARINGS FROM THE SHELL IN A UNIFORM FASHION AROUND THE INSIDE FACE. SOME FORCE WILL BE REQUIRED TO BREAK THE LOCTITE BOND.
- 2) INSPECT THE BOTTOM BRACKET SHELL TO CONFIRM THAT THE BREATHER HOLES IN THE SEAT AND DOWN TUBES ARE STILL SEALED. IF NOT, COVER THEM WITH PLASTIC TAPE AND SEAL THE TAPE AND SURROUNDING AREA WITH SILICONE SEALANT.



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SELECTING SHIM & SPACER LENGTH

BEARING INSTALLATION TABLE

SPINDLE LENGTH BLOCKS & SHIMS

113 MM	No Shims
120 MM	1- 0.093" per side
122.5 MM	1- 0.093" & 1- 0.047" shim per side
125 MM	1- 0.093" & 2- 0.047" shims per side

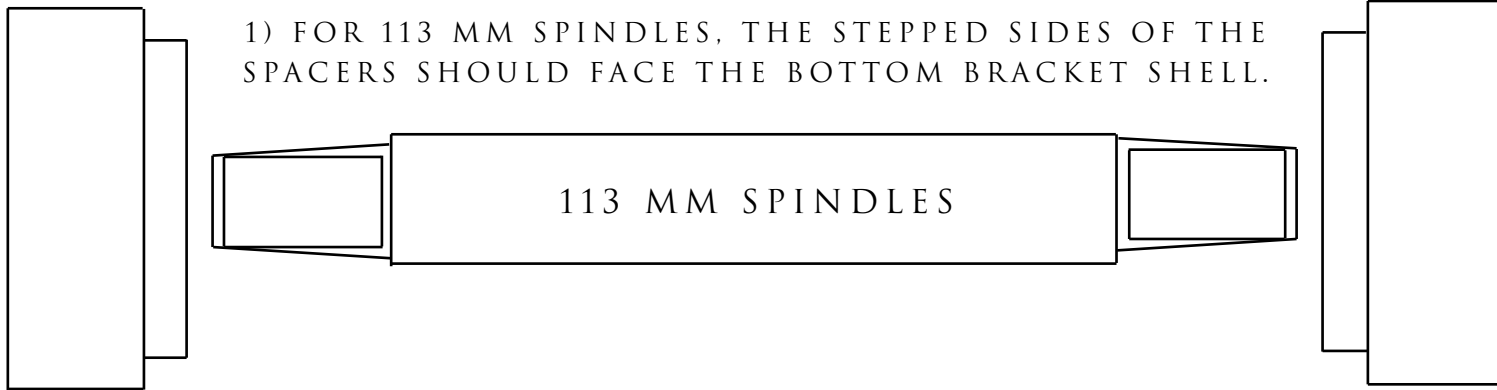
- 1) MEASURE THE SPINDLE, END TO END, IN MILLIMETERS. SELECT THE APPROPRIATE SHIMS AND SPACERS FOR BEARING AND SPINDLE INSTALLATION FROM THE FOLLOWING TABLE.



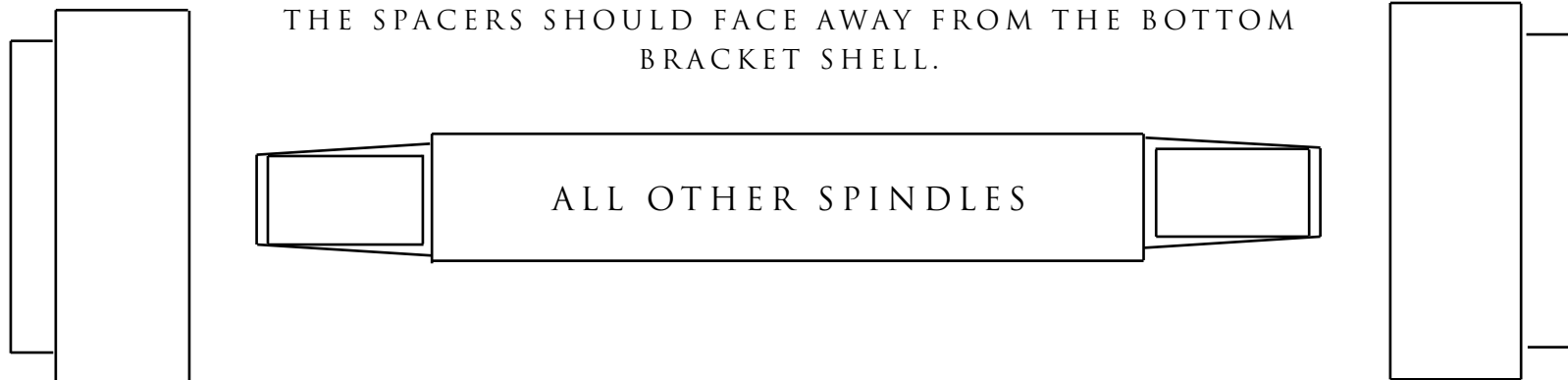
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SPACER ALIGNMENT FOR SPINDLES

1) FOR 113 MM SPINDLES, THE STEPPED SIDES OF THE SPACERS SHOULD FACE THE BOTTOM BRACKET SHELL.



1) FOR ALL OTHER SPINDLE LENGTHS, THE STEPPED SIDES OF THE SPACERS SHOULD FACE AWAY FROM THE BOTTOM BRACKET SHELL.





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LOCTITE INSTALLATION

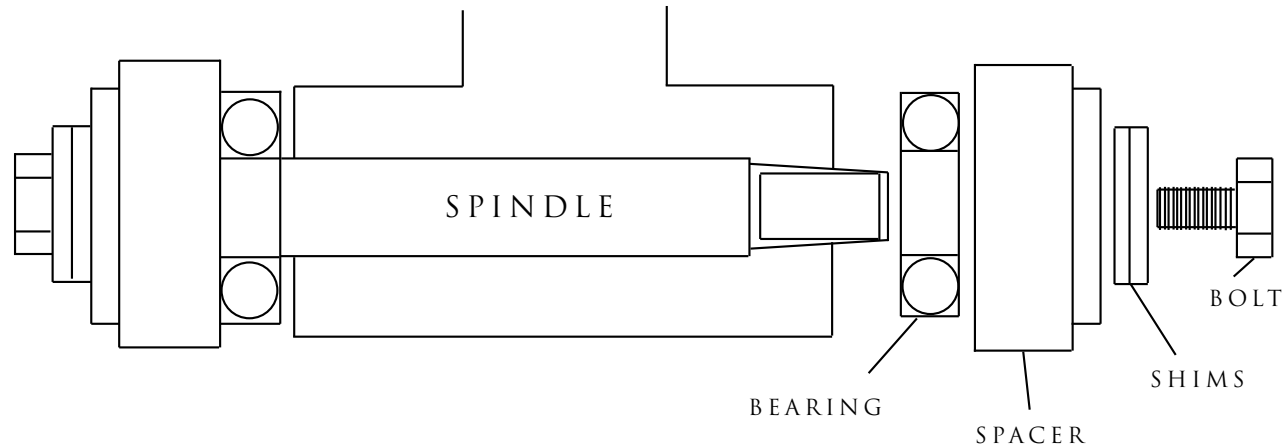
- 1) IN ACCORDANCE WITH THE LOCTITE APPLICATION INSTRUCTIONS, CLEAN ALL TOOLS AND PARTS OF GREASE AND DUST. CLEAN THE INNER AND OUTER RACES OF THE BEARINGS. BE CAREFUL NOT TO GET SOLVENT IN THE BEARINGS THEMSELVES. ALSO, THOROUGHLY CLEAN THE SPINDLE AND THE INTERIOR OF THE BOTTOM BRACKET SHELL.
- 2) APPLY A LIGHT FILM OF LOCTITE AROUND THE STEPPED AREAS INSIDE THE BOTTOM BRACKET SHELL ON BOTH SIDES.
- 3) APPLY ONE DROP OF LOCTITE TO THE SPINDLE, 1/2-INCH FROM THE END FLATS. SMEAR THE DROP EVENLY AROUND THE CIRCUMFERENCE OF THE SPINDLE.
- 4) SLIDE A BEARING AND THE APPROPRIATE SPACER AND SHIM(S) (SEE TABLE ABOVE) ONTO THE END OF THE SPINDLE WITH THE LOCTITE. THREAD A BOLT AND WASHER INTO THIS END OF THE SPINDLE UNTIL IT IS TIGHT.
- 5) APPLY LOCTITE TO THE OTHER END OF THE SPINDLE IN THE SAME MANNER.
- 6) HOLD THE ASSEMBLY BY THE BOLT AND SLIDE THE SPINDLE THROUGH THE BOTTOM BRACKET SHELL UNTIL THE BEARING ABUTS THE SHELL.



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LOCTITE INSTALLATION-(B)

- 1) SLIDE THE SECOND BEARING, SPACER, AND SHIM(S) ONTO THE OTHER END OF THE SPINDLE. INSTALL THE BOLT AND WASHER INTO THE SPINDLE. IF THE BOLT WILL NOT REACH THE SPINDLE, REMOVE THE SHIMS FROM THAT SIDE TO GET THE BOLT STARTED. ONCE THE BEARINGS ARE PARTIALLY SEATED, STOP AND RE-INSTALL THE SHIMS.



- 2) TIGHTEN THE SECOND BOLT WHILE HOLDING THE FIRST. CHECK THAT THE BEARINGS REMAIN STRAIGHT AS THEY ARE PRESSED INTO THE SHELL. CONTINUE TO TIGHTEN THE BOLT UNTIL THE SPACERS ARE FLUSH WITH THE SHELL.
- 3) REMOVE THE BOLTS, WASHERS, SPACERS, AND SHIMS. IF THE SECOND BOLT IS DIFFICULT TO REMOVE, HOLD THE FLATS OF THE SPINDLE WITH A WRENCH WHILE UNTHREADING THE BOLT. BE CAREFUL NOT TO MOVE THE SPINDLE OUT OF POSITION.
- 4) MEASURE THE SPINDLE ON EACH SIDE TO CONFIRM PROPER ALIGNMENT. IF INCORRECT, USE A SPACER AND EXTRA SHIMS ON THE SHORT SIDE OF THE SPINDLE. HOLD THE LONG SIDE WITH A WRENCH ON THE SPINDLE FLATS. TIGHTEN THE BOLT UNTIL THE SPINDLE ALIGNMENT IS CORRECT.
- 5) **FOR MOUNTAIN BIKES ONLY:** INSTALL BOTH COLLARS AND TIGHTEN THE SET SCREWS.
- 6) LET THE BIKE STAND FOR ONE HOUR TO ALLOW THE LOCTITE TO CURE.