

United Bicycle Institute

Bicycle Overhaul Check List

Make/Model _____ Color _____ Bench Number _____

Student Names _____

NOTE: Please read each section in its entirety before beginning.

Disassemble Bike

- Clamp bike in repair stand by **seat post only** after wrapping with a shop rag.
- Shift front and rear derailleurs into neutral position. Cut derailleur cable ends, loosen derailleur cable anchor bolts, and remove derailleur cables and housings.
- If bicycle is equipped with caliper brakes, cut brake cable ends and remove cables and housings. If bicycle is equipped with linear pull brakes, loosen brake quick releases and remove brake cables from brake levers, cut brake cable ends and remove cables and housings.
- Remove wheels from bicycle.
- If bicycle is equipped with a quill stem, loosen quill expander bolt and remove handlebars from bicycle. If bicycle is equipped with a threadless stem, remove stem faceplate and remove handlebars from bicycle.
- Remove chain from bicycle. If equipped with a master link, remove master link and remove chain.
- Remove pedals from crank arms.
- Remove cranks. **Be sure to check for crank bolt washers.**
- Loosen cable guide bolt and remove bottom bracket.
- Remove both front and rear derailleurs.
- If bicycle is equipped with caliper brakes, remove brake calipers from bicycle. If bicycle is equipped with linear pull brakes, remove brake arms from bicycle.
- Remove brake pads from brake calipers/brake arms. Pay attention to the orientation of washers, if any are present.
- If bicycle is equipped with a threaded headset, measure locknut lip clearance, loosen and remove locknut, any spacers or accessories, and threaded race. Set fork aside, keeping track of bearing orientation. If bicycle is equipped with a threadless headset, loosen top cap, measure stem/steerer gap, remove stem, any spacers or accessories, compression ring, and headset race. Set fork aside, keeping track of bearing orientation.
- Remove cassette or freewheel from rear wheel using appropriate tool.
- Remove tires and tubes from both wheels.

Instructor Check: _____

Stop! Do not continue until directed by instructor.

Headset

- Clean pressed races of any excess grease.
- Lubricate and install bearings, taking care to install in proper orientation.
- If the bicycle has a conventional threaded headset, reassemble according to the directions in the UBI manual (page 259, steps 5-10).
- If the bicycle has a threadless headset, reassemble according to the directions in the UBI manual (pages 264-265, steps 4-8).

- ❑ **Headset should be adjusted so bearings operate as smoothly as possible without play.**
- ❑ Reinstall quill stem to maximum height and handlebars (if threaded) or handlebars and stem faceplate (if threadless) and secure bolts. **DO NOT TORQUE.** Handlebar/stem bolts will be torqued at the end of the overhaul.

Instructor Check: _____

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Wheels

- ❑ Adjust both front and rear hubs so bearings operate as smoothly as possible without play. (Consult UBI manual page 28, step 9, for help).
- ❑ True front and rear wheels in truing stand using a tightly fitting spoke wrench. Wheels should be laterally true, radially true and dished to within **1mm** tolerance. (Consult UBI manual pages 52-53, steps 4-7 for help with truing procedure.)
- ❑ Disassemble both front and rear hubs (UBI manual pages 24-26).
- ❑ Reassemble and adjust both front and rear hubs (UBI manual page 135, steps 3-4). Lightly grease full length of quick release skewers before installing into axles.
- ❑ Check wheels in dropouts for final hub adjustment. There should be no play in the hubs when quick releases are fully closed. Readjust hubs if necessary. When correct, remove wheels.
- ❑ If freewheel equipped: grease freewheel threads and reinstall freewheel. If cassette equipped: reinstall cassette, grease lockring threads, install and torque to manufacturer's specifications.
- ❑ Install tubes and tires, centering label over valve hole with label facing the right side, unless rotation direction on tire indicates otherwise.
- ❑ Inflate tires to **20 psi** and check that the tire bead is properly seated, and then inflate to maximum pressure as printed on the tire's sidewall.

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Bottom Bracket

- ❑ Loosen chainring bolts about ½ turn and retorque according to manufacturer's specification. Replace any damaged bolts.
- ❑ Clean threads of bottom bracket shell and regrease.
- ❑ Apply grease to fixed cup threads.
- ❑ Tighten fixed cup to appropriate torque.
- ❑ Grease threads and reinstall adapter cup; torque to manufacturer's specification.
- ❑ Reinstall crank arms.
- ❑ Torque crank bolts to manufacturer's specifications. **Be sure to reinstall crank bolt washers.**
- ❑ If provided, install toe clips, straps and reflectors on pedals.
- ❑ Grease threads on pedals and install to proper torque.

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Brakes

All Brakes:

- ❑ **Seat wheels properly in dropouts.**
- ❑ **Install wheels with quick releases properly tightened.**
- ❑ Inspect all brake housing. Replace if necessary
- ❑ Grease brake cables and install into housing.
- ❑ Set up brakes according to directions provided in the UBI manual (caliper brakes: page 207, steps 2-7, and page 211, steps 3-7; linear pull brakes: pages 216-218, steps 2-16).
- ❑ Be sure to grease all cable anchor bolts.

Be sure to adhere to the following guidelines when setting up brake shoes:

- ❑ **Shoe Height:** Pad should contact rim so there is a **1mm** gap between top of pad and top of rim or sidewall of tire.
- ❑ **Shoe Angle:** Pad should follow rim squarely from top to bottom
- ❑ **Shoe Interface:** Pad face should contact rim squarely and equally with surface of rim.
- ❑ **Shoe Toe-in:** There should be a **.5 – 1.5mm** gap at the rear of the pad just as the front makes contact with the rim.

Final Brake Check and Failure Test:

- ❑ Stress cables and seat the housing system by squeezing the brake levers several times. This will ensure that all anchor bolts are tightened properly and there are no flaws in the system.
- ❑ When finished pre-stretching, lever travel should not exceed two thirds of its full travel to the handlebars.
- ❑ Brakes should be centered and both brakes should feel the same at the lever.

Instructor Check: _____

Stop! Do not continue until directed by instructor.

Derailleurs

- ❑ Make sure shift levers are in their neutral position.
- ❑ Grease front derailleur clamp bolt threads and reinstall.
- ❑ Check and adjust front derailleur cage height and angle. Bottom of outside cage should be **1-3 mm** above highest point of large chainring. Cage angle should be parallel to large chainring.
- ❑ Torque front derailleur clamp bolt to manufacturer's recommendation.
- ❑ Grease hanger bolt threads and reinstall rear derailleur. Torque bolt to manufacturer's recommendation. **Avoid trapping "B" tension screw against face of derailleur hanger.**
- ❑ Grease derailleur cables and reinstall into housing (UBI manual page 176, steps 1-7).
- ❑ Reinstall chain using proper installation method (Shimano chain installation: UBI manual page 124, steps 6-7).
- ❑ Adjust rear derailleur limits (UBI manual page 163, steps 4-5).
- ❑ Perform rear derailleur index adjustment (UBI manual page 178).
- ❑ Once rear derailleur index adjustment is acceptable, adjust front derailleur limits and perform front derailleur index adjustment (UBI manual page 179).

Final Derailleur Adjustment and Fine Tuning:

- Shift through all possible gear combinations and fine tune front and rear derailleur adjustments, if necessary.

Instructor Check: _____

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Finish

- Align handlebar and stem with front hub or fork crown and torque stem or quill binder bolts and stem faceplate bolts to manufacturer's specifications.
- Trim and cap all cables.
- Perform a complete safety check on bicycle:
 - Check brakes by firmly squeezing levers several times.
 - Check tightness of stem, handlebars, control levers, seat post and saddle.
 - Check tightness of front and rear quick release skewers and/or axle lock nuts.

Call instructor for final inspection.

- Deliver bicycle to storage area, per directions from instructor.
- Turn in overhaul checklist.

Final Instructor Check: _____

STUDENT COMMENTS:

DO NOT WRITE BELOW THIS LINE. FOR INSTRUCTOR USE ONLY.

CHECKED BY: ***DATE:***

INSTRUCTOR EVALUATION:
